Zero (Chip-Out) Tolerance

Don't accept workpiece chip-out on your tablesaw. Instead, eliminate it by using a zero-clearance insert for every cut you make.

Watch a FREE video on zero-clearance inserts at woodmagazine.com/zcivideo

Anyone who's ever crosscut oak plywood knows how face-grain chip-out can ruin an edge. Once the damage is done, you're forced to either fill those voids or accept the flaws on your project.

But you don't have to live with chip-out. A shop-made zero-clearance insert replaces your tablesaw's factory-supplied throat plate—and its wide gap that allows unsupported wood fibers to tear away during a cut. Because you cut the blade slot with the blade you're using, the zero-clearance insert fully supports the fibers.

It's a good idea to use an insert for every blade and every cut you make. Plowing a ¾"-wide dado? Use a custom-fitting insert to stop chip-out. How about a ½" dado? Make another insert. Cutting a 30° bevel? Get an insert just for that. You can easily make insert plates, so cut out a dozen blanks and keep them handy for every time you change blades or bevel angles. After using an insert for a specific setup, mark it with that setting (and blade) and save it so you'll have it for the next time you make the same cut.

How to make inserts fast

You can buy pricey, premade phenolic inserts, but we like to make our own zero-clearance inserts from ⅜- or ½"-thick Baltic birch plywood. This stable material proves strong, and doesn't have voids between plies. Medium-density fiberboard (MDF) also makes a good insert, but lacks the strength of plywood. Hardwoods, although strong, can shrink or swell with seasonal changes in humidity, and don't work as well as plywood.

With a pattern bit installed in your router table, use your saw's original insert to make duplicates. Some insert plates have antilift tongues [**Photo A**] or lateral-adjustment screws—with these you need to create a pattern to use for making copies. To do this, trace your insert plate onto a blank of plywood or MDF, smoothing the tongue or screw areas. Cut close to the line at your bandsaw, and then sand the pattern until it fits snugly into your saw's throat. If you want the antilift benefit of the tongue, you can add this to your inserts by cutting a groove on the bottom side and then gluing in a thin strip of hardwood that protrudes under the tabletop.

Cut out rectangular plywood blanks slightly larger than the pattern. Using cloth-backed, double-faced tape, secure the blank to the pattern, and then bandsaw to within ⅛" of the pattern. Next, rout the blanks to shape using a pattern bit or flush-trim bit in your router table [**Photo B**].

Customize the inserts to fit your tablesaw

Now that you have the blanks cut to shape, make a finger hole (for removing the insert) by drilling a ¾" hole through each insert. Keep it at least 1" to the side of where the blade will project through the insert.

continued on page 30

MAKE A PATTERN OF THE INSERT

The insert plate on Ridgid's TS3650 tablesaw has a tongue on the outfeed end that slips under the tabletop and into a pocket to prevent lifting during a cut.

FLUSH-TRIM BLANKS TO PATTERN

If your bit is long enough, you can rout two inserts at a time by double-face taping them together, and then to the pattern.

On many saws with 10" blades, the blade retracts only ¼" or so below the table surface [**Photo C**], meaning your unkerfed insert blank won't sit flush with the tabletop. You've got three options here: First, use a smaller diameter blade—like one of the outer blades from your stacked dado set, or a blade from your portable circular saw—to cut a relief slot that your 10" blade will fit into. (Unless the blade you use has the same kerf width as your 10" blade, don't raise it high enough to break through the surface.)

Your second option is to adhere the blank onto the metal insert plate, clamp it in place, and then slowly raise your spinning 10" blade until it just pokes through the plywood blank [**Photo D**]. Now separate the two plates and install the zero-clearance insert over the blade.

With option #3, rout a ¼" channel along the bottom of the insert deep enough to give the blade initial clearance [**Photo E**] when you place it in the saw. However, do not rout deeper than half the thickness of the insert. More than half would weaken it and create a potential safety hazard.

You'll also have to cut relief holes or slots for blade guards, splitters, or riving knives. You can do this with your tablesaw and 10" blade—with the original insert installed—if the relief exits the back of the insert. If it does not, use a jigsaw [**Photo F**]. You might also have to relieve the bottom face for such things as the arbor assembly and flange, or for parts specific to the original insert [**Photo G**]. Machine these shallow relief areas at the drill press with a Forstner bit or on a router table.

Now level the insert with the tablesaw top

If your insert sits too high, drill or rout relief areas on the bottom where it sits on the throat tabs or rabbet. If your insert sits too low, add leveling screws so you can adjust the fit perfectly from the top. (Use either setscrews or machine screws.) To do this, either transfer the screw locations from the original insert, or use thumbtacks to mark them [**Photo H**]. Now drill shank holes, and countersink or counterbore on the top face. Add the screws [**Photo I**] and then raise or lower them to make the insert flush [**Photo J**].

CHECK THE BLADE DEPTH

C

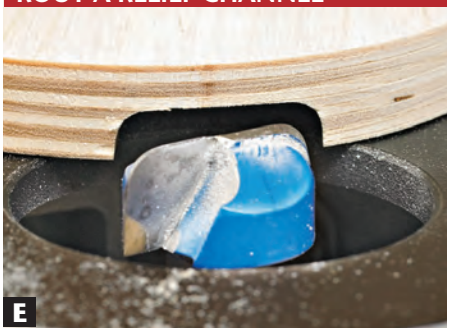
With this steel rule resting on the insert ledges, you can see that the 10" blade requires a relief cut in a blank insert.

PRECUT THE BLADE KERF

D

Because the insert rests on top of the saw, secure it firmly with double-faced tape and a board and clamps.

ROUT A RELIEF CHANNEL



E

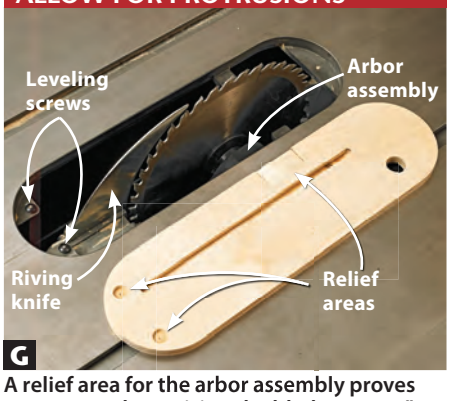
Use any bit that can rout a channel. We used this dish-carving bit to create a ¾"-wide relief necessary for a 45° bevel cut insert.

JIGSAW A RIVING-KNIFE SLOT

F

After making a relief cut with a ¼"-diameter router bit, we used a jigsaw to create clearance for the riving knife.

ALLOW FOR PROTRUSIONS



G

A relief area for the arbor assembly proves necessary when raising the blade to cut 2" or thicker workpieces.

MARK SCREW LOCATIONS EASILY

H

Place thumbtacks onto the ledges, and then gently lower the insert into place. Tap it lightly to make indentations.

ADD ADJUSTMENT SCREWS

I

Add hex screws for leveling. Add wood screws to one edge and end for lateral adjustments if the insert is too loose.

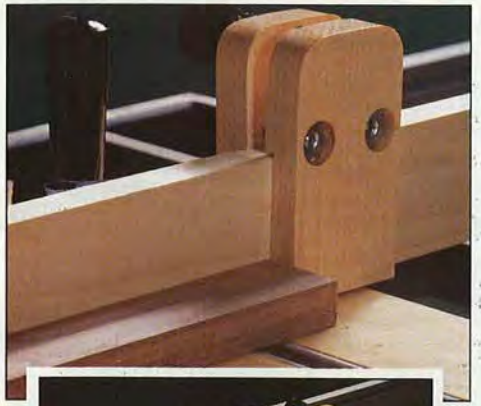
LEVEL THE INSERT TO THE TOP

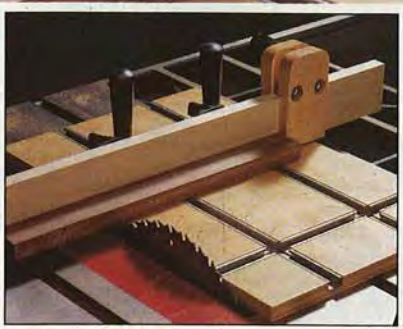
J

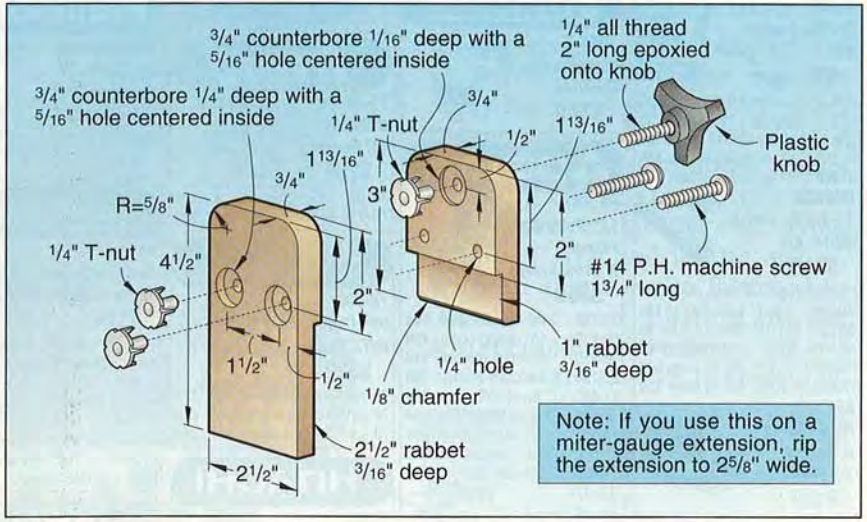
Adjust the leveling hex screws to ensure the insert sits flush with the tablesaw's top. If it sits too high your workpieces will catch on it.

Print this article

PRECISION MITER STOP







Use this handy stop on your own 2⅝"-wide miter-gauge extension, or add it to the sliding tablesaw jig shown *at left* and featured in the December 1996 issue of *WOOD®* magazine. It fits on the fence and allows you to cut piece after piece to the same length.

Project Design: James R. Downing Illustration: Roxanne LeMoine Photographs: John Hetherington

3-in-1 Work Support

1 PLATFORM TOP
Great as an assembly or finishing stand, this top is also a handy place to stack parts while machining.

2 GLIDE TOP
Use this top when you need to support the end of a long workpiece on your drill press or mitersaw.

3 ROLLER TOP
Adjust this top's height to catch the outfeed from your tablesaw or planer.

Whether you're machining long stock or simply looking for a place to rest your workpiece, you'll find this versatile stand ready to help. With adjustable height and interchangeable glide, roller, and platform tops, it's a perfect match for any number of tasks.

First, build a sturdy base

1 Cut four ¾×2¼×29" pieces of stock, and glue and clamp them together in pairs to form two 1½"-thick blanks for the uprights (A). Joint and trim them to the size listed in the **Materials List**. Install a dado blade in your tablesaw, and plow grooves in the uprights, where shown on **Drawing 1**, **Step 1**. Cut the fillers (B) to size, and glue and clamp them in place, where shown. The fillers' and the uprights' bottom ends are flush.

2 With the dado blade in your tablesaw, form the dadoes and rabbets in the uprights' edges, where shown in **Step 2**. Now form the half-laps and drill the hole, where shown in **Step 3**.

3 Cut four ¾×4¼×16¼" pieces of stock, and glue and clamp them together in pairs to form two 1½"-thick blanks for the feet (C). Joint and trim them to size. Make four photocopies of the Foot pattern on **Drawing 5**, *page 122*, and cut them out along the lines. Tape the half-patterns together to form the whole foot. (Half of each pattern will be face down.) Adhere the patterns to the foot blanks with spray adhesive.

4 Form half-laps, where indicated on the pattern, to mate with the laps at the bottoms of the uprights. Now bandsaw and sand the feet to the pattern lines. Remove the patterns. Glue and clamp the feet to the uprights. When the glue dries, sand the joints smooth. Set the leg assemblies (A,B,C) aside.

5 Plane two ¾×4½×96" boards to ½" thick. From one, cut the six rails (D) to size. Set the other board aside for the top supports (G). From 1"-thick stock, cut the spacers (E) to size. Make the spacer jig, shown on **Drawing 2**. Glue and clamp spacers to each end of three rails, as shown in **Photo A**. Then glue and clamp a third spacer at the rails' centers, where shown on **Drawing 4**.

6 Stand the two legs upright on your workbench. Spread glue in the lower dadoes in one edge of each upright, and slip in one rail/spacers assembly. Spread glue in the dadoes in the uprights' other edges and on the spacers, and clamp a second rail in place, as shown on **Drawing 4**. Repeat this process for the other two rail/spacer/rail assemblies. Make sure the rails' ends are flush with the uprights' outside faces and that the whole assembly is square.

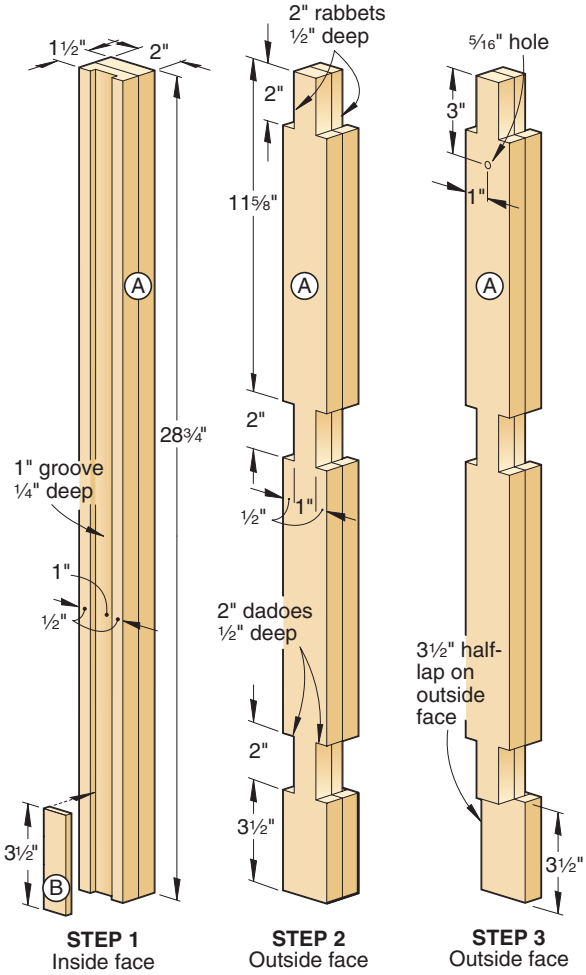
Add extensions and tops

1 From 1" stock, cut the extensions (F) to size. Mark a stop line for the groove's end on one edge of the extensions, where shown on **Drawing 4a**. Chuck a ¾" straight bit in your table-mounted router, and in ⅛" increments, rout the stopped grooves, as shown in **Photo B**. Square the ends of the grooves with a chisel.

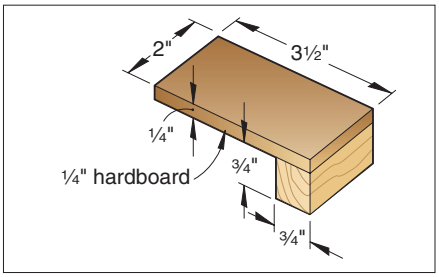
2 Drill the 5/16" hole, where shown on **Drawing 4a**. Bandsaw and sand the rounded corners. (The bottoms have only one rounded corner.) Cut two pieces of aluminum mini-track (a type of T-track) to length, drill screw pilot holes, and screw the tracks in place. See the **Source** on *page 120* for our mini-track supplier.

3 Retrieve your previously planed ½" stock and cut the top supports (G) to size. Drill counterbores near the ends of three supports, where shown on **Drawing 4b**. Tape a second support to the ones just counterbored, and, centering the bit in the counterbore, drill 5/16" holes through the paired supports. Mark the radius on the corners, as shown, and bandsaw and

1 UPRIGHT



2 SPACER JIG



A

Clamping the spacer jig to the rails helps you accurately position the end spacers.

B

Mark the bit location on your fence. Stop routing when the stop line on the extension aligns with the mark on the fence.

sand the corners. To ensure perfect hole alignment, keep the pairs together until you are ready to glue them to their respective tops.

4 Cut the tops (H) to size. Install a dado blade in your tablesaw, and cut the centered grooves, as shown in **Drawing 4c** for the glide top and **Drawing 4** for the roller top. Cut a strip of ⅛"-thick UHMW plastic to fit the glide top's groove width and length. Adhere it in the groove with double-faced tape. See the **Source** for our UHMW supplier.

5 Tilt your tablesaw blade to 15°. Clamp the glide top to a ¾×5¾×36" carrier board, and cut the bevels, as shown on **Drawing 3** and in **Photo C**. The glide strip's protruding edges are beveled in this operation. Stand the glide top on end, clamp it to the carrier board, and bevel the ends, as shown in **Photo D**. Repeat with the roller top. Sand the bevels smooth.

6 Slide the extensions (F) into the base, and secure them with bolts and T-knobs, as shown on **Drawing 4**. Select a pair of top supports (G) and install the T-nuts. Fasten the supports to the extensions with studded T-knobs. See the **Source** for our T-knob supplier. Apply glue to the top edges of the supports, and clamp the glide top to them, centered and equally overhanging the ends. Remove the clamped assembly before the glue dries, clean up any excess glue, and set it aside. Repeat with the roller top.

7 Cut the panel (I) to size, and miter-cut the ends (J) and sides (K) to fit around it, as shown on **Drawing 4**. Glue and clamp the ends and sides to the panel. Fasten the last pair of top supports to the panel using the same procedure as with the glide and roller tops.

Materials List

Part		FINISHED SIZE T	W	L	Matl.	Qty.
A*	uprights	1½"	2"	28¾"	LM	2
B	fillers	¼"	1"	3½"	M	2
C*	feet	1½"	4"	16"	LM	2
D	rails	½"	2"	28"	M	6
E	spacers	1"	2"	3"	M	9
F	extensions	1"	1½"	24⅞	M	2
G	top supports	½"	2"	27"	M	6
H	tops	1"	5¾"	28"	M	2
I	panel	¾"	14½"	28"	BP	1
J	ends	¾"	1½"	16"	M	2
K	sides	¾"	1½"	29½"	M	2

*Parts initially cut oversize.

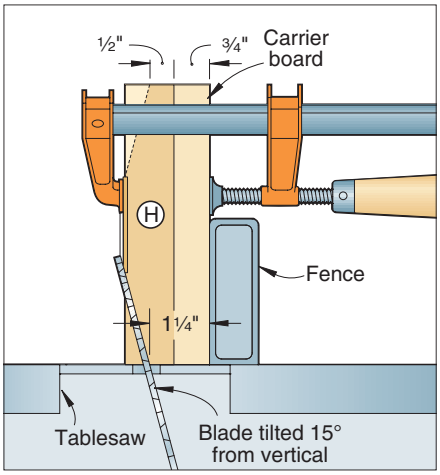
Materials Key: LM–laminated maple, M–maple, BP–birch plywood.

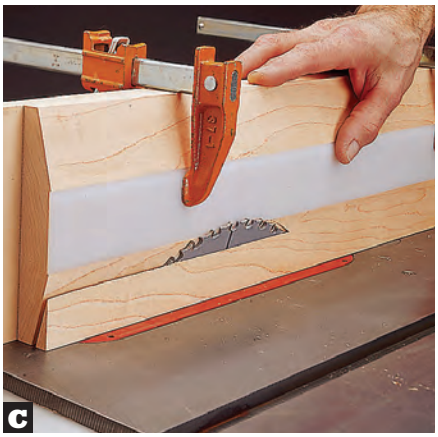
Supplies: ¼" flat washers (4), ¼" T-nuts (6), ¼x1¾" hexhead bolts (2), spray adhesive, double-faced tape, finish.

Source

Hardware. 48" aluminun mini-track w/ tape, no. 145825, $18.99; T-knobs w/ ¼" insert, no. 85J95, $0.99 (2); T-knobs w/ ¼x2" stud, no. 27R16, $1.10 (2); ⅛×4×48" UHMW plastic, no. 124225, $8.50; ⅝" ball-bearing rollers w/ screws, no. 07B09, $2.99 (9). Available from Woodcraft. Call 800/225-1153, or go to woodcraft.com.

3 BEVEL DETAIL





C A carrier board stabilizes the glide top for bevel-ripping.

D Use the same carrier board to safely bevel the ends.

Time to disassemble, finish, and reassemble

1 Remove the extensions from the base, and the mini-track from the extensions. Remove all the T-knobs and bolts. Leave the T-nuts and UHMW strip in place.

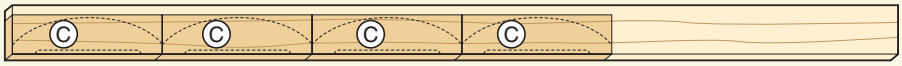
2 Finish-sand all the parts and assemblies to 220 grit. Remove the sanding dust, apply two coats of polyurethane, sanding between coats with 220-grit sandpaper. (We wiped on General Finishes Armour Seal, following the directions on the can.)

3 When the finish dries, reinstall the mini-track in the extensions, and slide them into the base, securing them with bolts, washers, and T-knobs. Drill screw pilot holes, and fasten the ball-bearing rollers in place, as shown on **Drawing 4**. Mount your choice of tops to the extensions with studded T-knobs and washers.

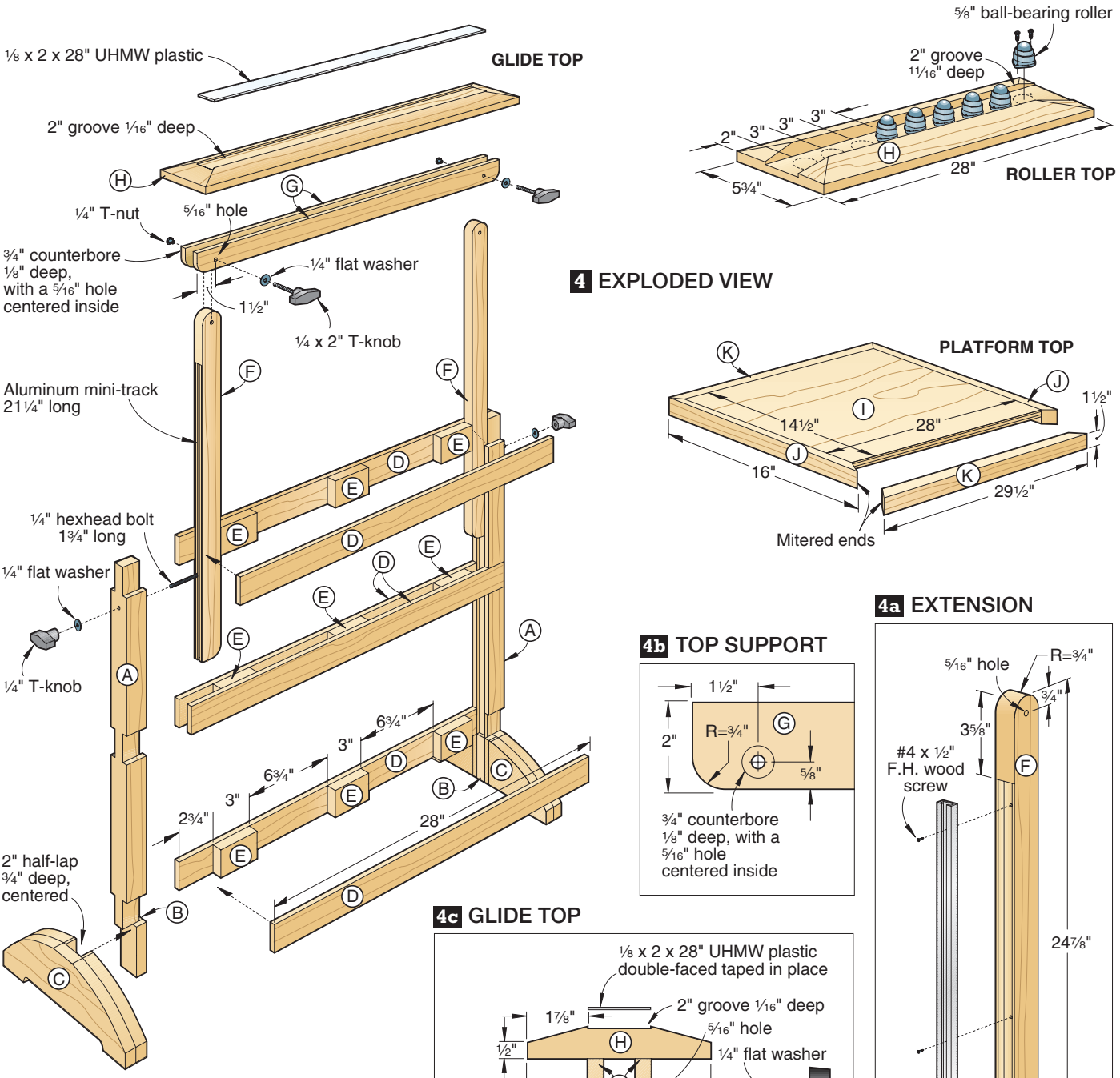
Written by **Jan Svec** with **Kevin Boyle**
Project Design: **Kevin Boyle**
Illustrations: **Roxanne LeMoine; Lorna Johnson**

Cutting Diagram

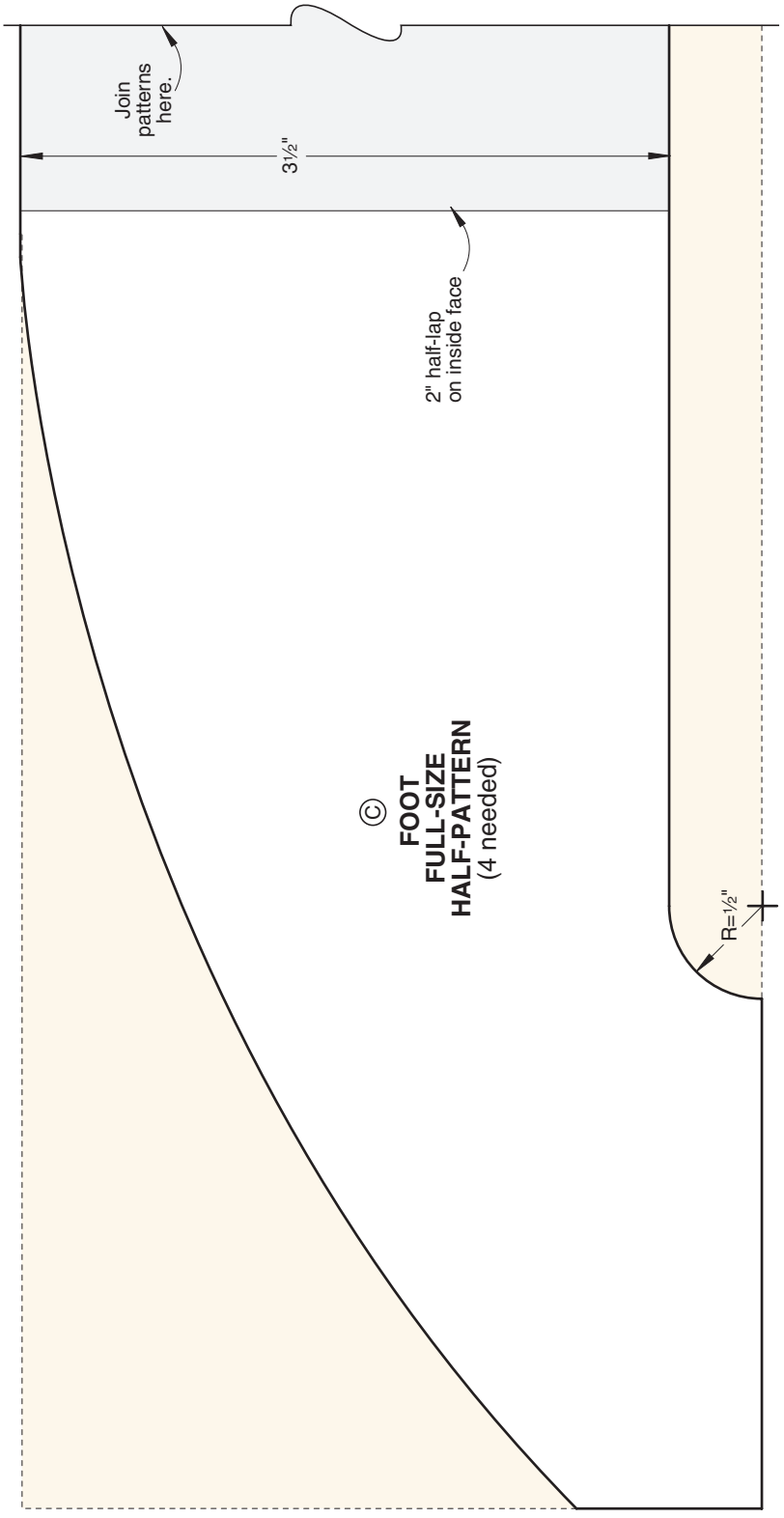
¾ x 7¼ x 96" Maple (5.3 bd. ft.) *Plane or resaw to the thicknesses listed in the Materials List.



¾ x 5½ x 96" Maple (4 bd. ft.)


⅛ x 2 x 28" UHMW plastic
GLIDE TOP
2" groove 1/16" deep
H
G
¼" T-nut
5/16" hole
¾" counterbore ⅛" deep, with a 5/16" hole centered inside
¼" flat washer
1½"
¼ x 2" T-knob
Aluminum mini-track 21¼" long
F
E
D
¼" hexhead bolt 1¾" long
¼" flat washer
¼" T-knob
A
B
C
6¾"
3"
2¾"
28"
2" half-lap ¾" deep, centered
⅝" ball-bearing roller
2" groove 11/16" deep
3"
2"
5¾"
ROLLER TOP
4 EXPLODED VIEW
PLATFORM TOP
K
J
I
14½"
28"
16"
29½"
1½"
Mitered ends
4b TOP SUPPORT
1½"
2"
R=¾"
⅝"
¾" counterbore ⅛" deep, with a 5/16" hole centered inside
4c GLIDE TOP
⅛ x 2 x 28" UHMW plastic double-faced taped in place
2" groove 1/16" deep
1⅞"
½"
5/16" hole
¼" flat washer
¼" T-nut
¼ x 2" T-knob
4a EXTENSION
5/16" hole
R=¾"
¾"
3⅝"
#4 x ½" F.H. wood screw
24⅞"
⅛"
¾" groove ⅜" deep on inside face
Aluminum mini-track 21¼" long
¾ x 4½ x 96" Maple (3.3 bd. ft.)
¾ x 4½ x 96" Maple (3.3 bd. ft.)
1 x 7¼ x 96" Maple (6.7 bd. ft.) (5/4 stock)
¾ x 14½ x 28" Birch plywood

5 FOOT FULL-SIZE HALF-PATTERN



Raised-Panel Jig

With this one jig, you can build three popular styles of door panels for your next cabinet project.

Raised panels have long been a sign of fine craftsmanship—perhaps because they appear difficult to make. But as you'll see here, that need not be the case. On *page 14*, we'll show you a simple method for using this jig to cut panels with a tablesaw.

Combine scrap material with a few hardware items and you'll have a jig destined for a lifetime of service. See *page 11*, for a hardware source for the knobs.

Start with the basics

1 Cut two pieces of ¾" MDF to the dimensions in the **Materials List** to make the upright (A) and base (B). Scrollsaw or bandsaw the 1½" radii on the two corners of (B), cutting outside the line. Then sand to the line.

2 Using your dado blade, cut two ¾" dadoes ¼" deep in the top of the base, where shown on **Drawing 1**.

3 After adding an auxiliary fence to your saw tablesaw rip fence, cut a rabbet ¾" wide and ¼" deep along the bottom edge of the upright (A), where shown on **Drawing 1.**

4 Next, drill 5/16" holes in the upright (A) and at the ends of the slot locations in the base. Lay out the sides of the slots, and scrollsaw them to shape with a #12 blade. Cut two braces (C), as dimensioned on **Drawing 2**.

5 Drill 5/32" pilot holes, and then glue and screw the jig together using #8×1½" brass screws, where shown. **Tip:** Use brass screws anytime your jig's screw holes are close to the saw blade.

Now, add the extras

1 Cut the guide strip (D) to fit your miter-gauge slot in depth and width. Trim the piece to 28" long, and drill countersunk ¼" holes centered on the strip 3" from each end. Attach the guide strip to the base using the hardware shown.

2 Cut the upright stops (E) to size, and drill the hole and counterbore hole, where shown on **Drawing 2**. Secure the stops to the ends of upright (A).

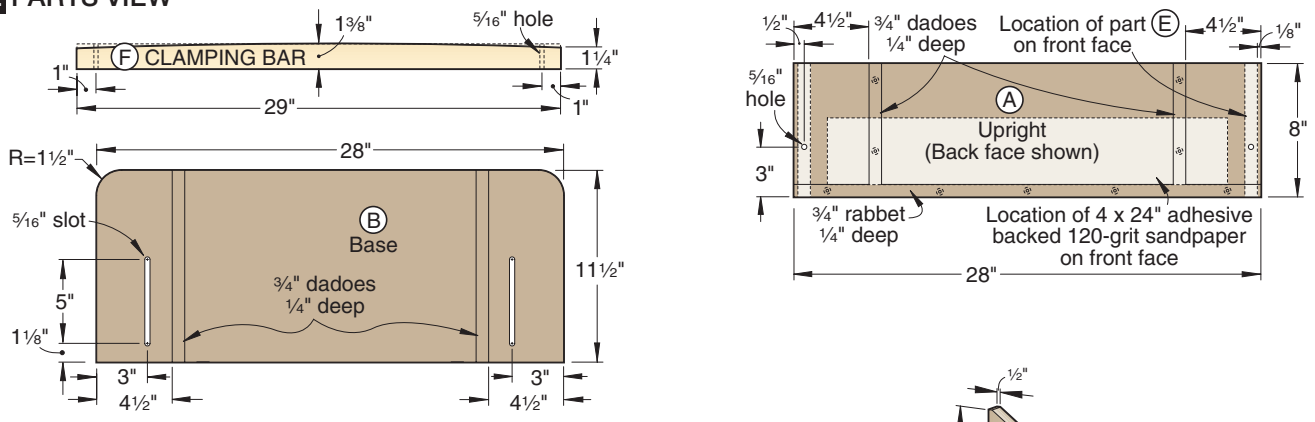
3 Cut the clamping bar (F) to size, and drill 5⁄16" holes, where shown. Lay out and shape the clamping bar curve, as shown on **Drawing 1**, using a bandsaw. Sand smooth.

4 Next, attach the clamping bar to the jig using the hardware shown. **Tip:** If you have trouble finding extra-long machine screws, cut two pieces of all-thread. Then secure the four-arm knobs to the screws using 5-minute epoxy.

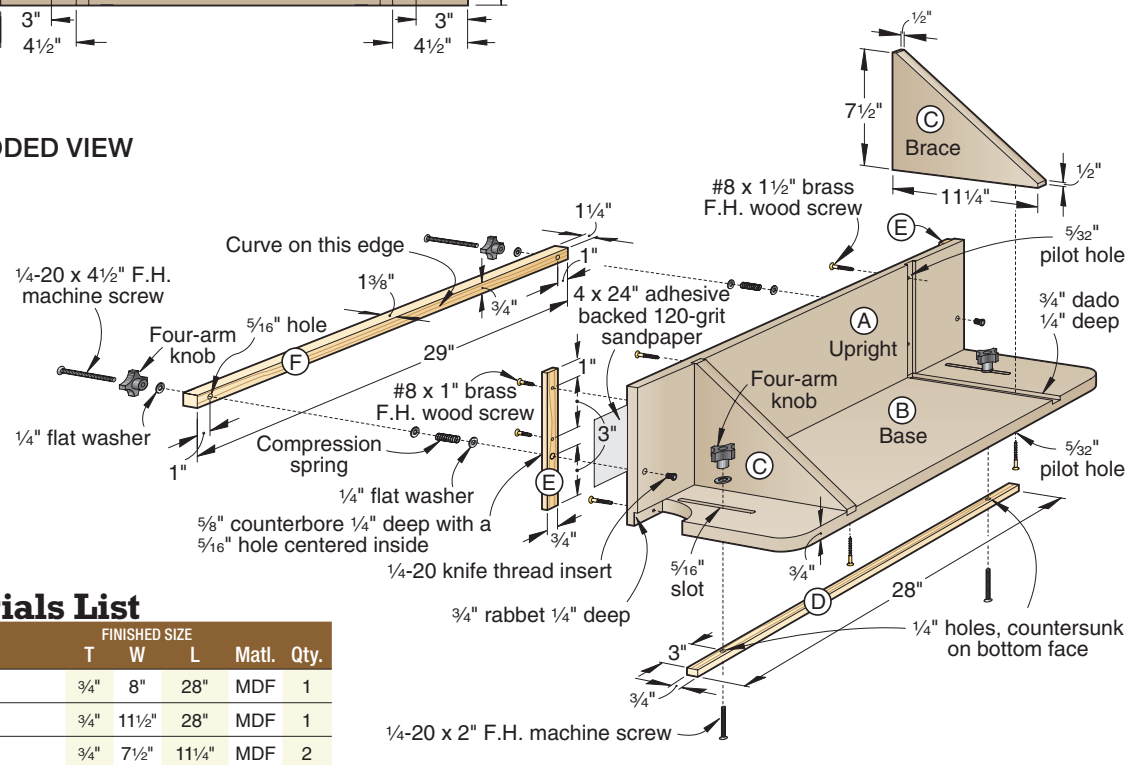
5 Remove the hardware and the clamping bar and guide strip, and sand all parts to 150 grit. Now apply two coats of finish, sanding between coats with 180-grit abrasive.

6 Cut a piece of adhesive-backed 120-grit sandpaper, and apply it to the jig face, as shown on **Drawing 1**. Then, reassemble the jig.

1 PARTS VIEW



2 EXPLODED VIEW



Materials List

Part		FINISHED SIZE T	W	L	Matl.	Qty.
A	upright	¾"	8"	28"	MDF	1
B	base	¾"	11½"	28"	MDF	1
C	braces	¾"	7½"	11¼"	MDF	2
D	guide strip	⅜"	¾"	28"	M	1
E	upright stops	⅜"	¾"	8"	M	2
F	clamping bar	¾"	1⅜"	29"	M	1

Materials key: MDF–medium-density fiberboard, M–maple.

Supplies: #8x1½", #8x1" brass flathead wood screws; ¼-20x2" (2), ¼-20x4½" flathead machine screws (2); ¼-20 four-arm knobs (4); ¼" flat washers (8); 1½x⅜" compression springs (2); ¼-20 knife thread insert (2); 4" adhesive-backed 120-grit sandpaper.

How to Cut
Custom Raised Panels

Cut raised panels with a tablesaw

For the woodworker who doesn't have a router table or the budget for expensive raised-panel bits, cutting raised panels on the tablesaw is an effective alternative. This method does have one drawback: You'll need to invest time and elbow grease into finish-sanding the panel bevels.

To solve the challenge of supporting panels safely while cutting bevels, build the panel-cutting jig shown on *page 12*.

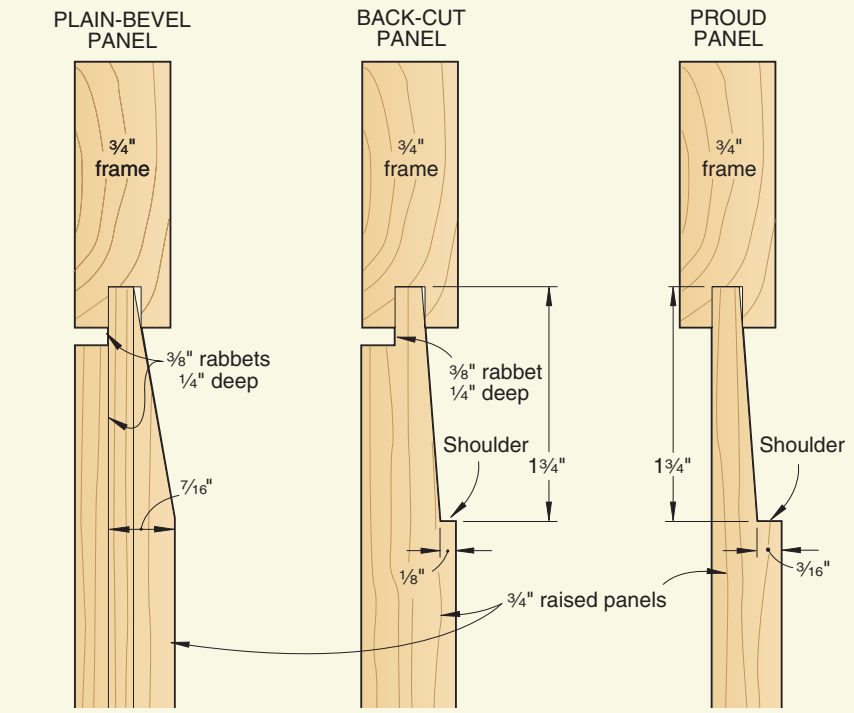
Prepare the panels

Before cutting the door panels to size, match the wood tones and arrange the grain patterns for best appearance. For example, center the cathedral (inverse V) pattern on narrow, single-board panels. When gluing up wider panels, use pieces cut from the same board for consistent grain and color.

Next, decide which style of panel you want. The drawing at *right* shows three popular styles: a plain-bevel panel, one that's flush with the frame (called a back-cut panel), or a proud panel (with the panel raised above the frame). All will give panels a custom look. Glue up the stock needed to make your panel blanks. Then, cut your panels to finished size.

Note: *To minimize wood movement, we suggest using boards no wider than 5" when gluing up your panels.*

THREE POPULAR PANEL STYLES



PROS
- contemporary look
- easy-to-sand bevels

CONS
- no panel detail to catch the eye

PROS
- shoulder detail catches the eye

CONS
- bevels are a bit more difficult to sand

PROS
- can decorate shoulder with profile router bits

CONS
- bevels are a bit more difficult to sand

Mark the bevels

Looking at the end of the panel blank, lay out the desired bevel using a sliding bevel square. Also, if your panel needs a tongue and rabbet lay them out, at this time.

To cut a raised panel with shoulders (the square lip on the face of the panel), first adjust the tablesaw's fence 1¾" from the blade. Cut a saw kerf ⅛" deep (3/16" deep if making proud panels) and 1¾" from all four edges and ends of the panel's face, as shown in **Drawing 3.** This kerf will determine the shoulder location.

Set up the jig for smooth, accurate cuts

For your jig to function well, it must slide parallel to the saw blade with its upright at a right angle to the saw's tabletop. With either blade or upright out of alignment, scoring and burning will occur.

The following set-up procedure assumes that your miter-gauge slot aligns parallel with your saw blade. If not, make that adjustment.

With a steel rule, measure the distance from the saw blade to the jig's upright. Move the jig side to side as needed so the distance between the saw blade and the jig is the same as the panel's tongue (and rabbet) thickness. When the upright is the correct distance from the blade, and parallel to the blade, tighten down the knobs in the guide strip. Now, adjust the blade bevel, as shown in the photo *opposite top.*

Let's cut a raised panel

Clamp your panel into the jig, exterior face out, and cut the bevels. Panels can be cut in four passes through the saw. First, cut across the end grain to reduce chip-out. Then cut the bevels on the panel edges. Move through the blade at a consistent speed, slowing down only if the saw strains.

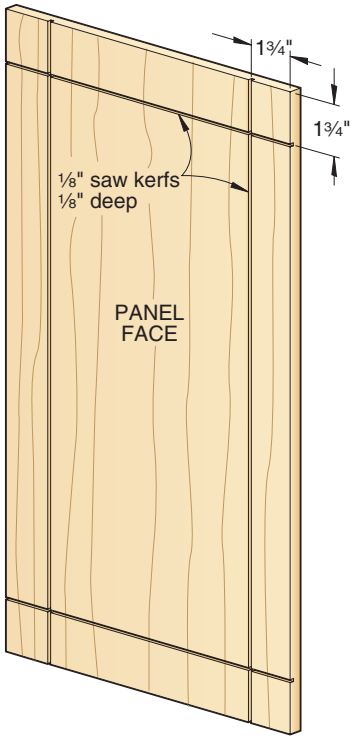
Note: *If your saw bogs down in the cut, you may need to use a thin-kerf blade or make the cut in successively deeper passes.*

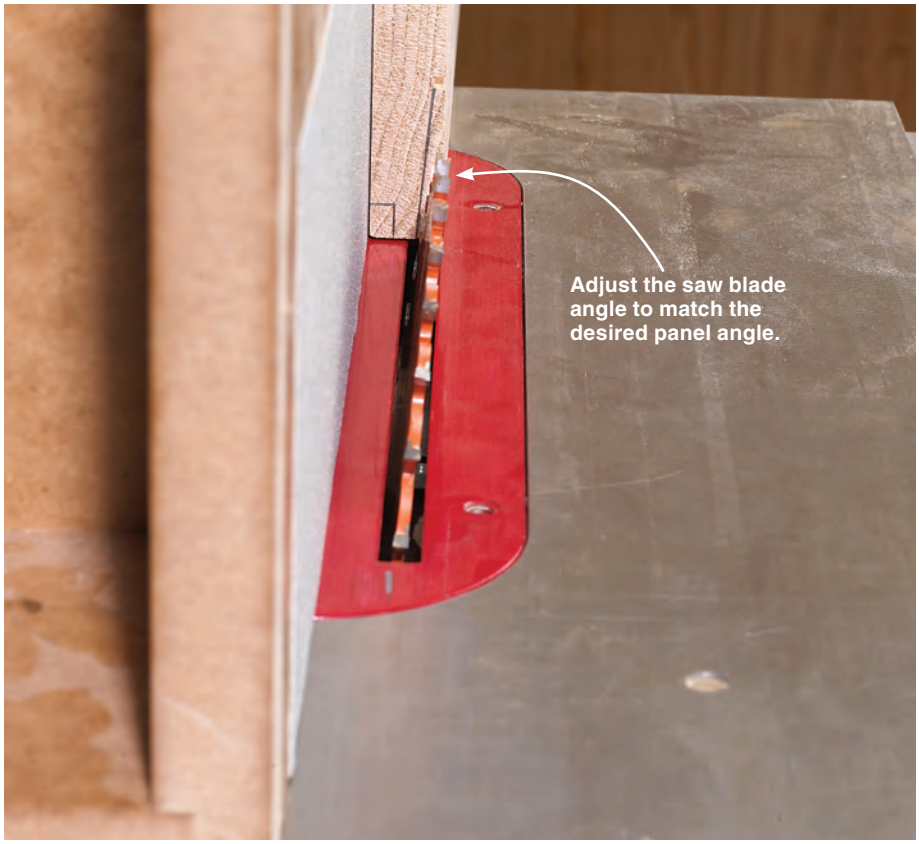
Sand the panel bevels

Remove any saw marks with 100-grit sandpaper and a hardwood block. Then finish-sand the bevels with 150- and 220-grit sandpaper. Take care when sanding not to remove the ridge at the intersection of the bevels. Stain the panels before you assemble the door.

Written by **Pat Lowry**
Illustrations: **Roxanne LeMoine; Lorna Johnson**

3 PANEL KERFS DEFINE SHOULDERS

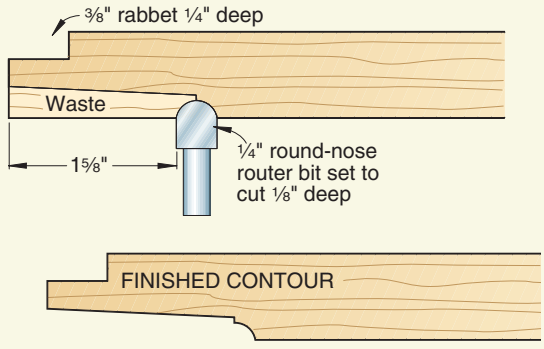




To adjust the blade to match your bevel, place the panel into the jig with the exterior face out. To adjust the angle and height of the saw blade, sight down the blade, and align it with the layout marks, as shown *above*. Clamp a test piece into the jig and run it through. Readjust the settings until the angle and bevel thickness are accurate.

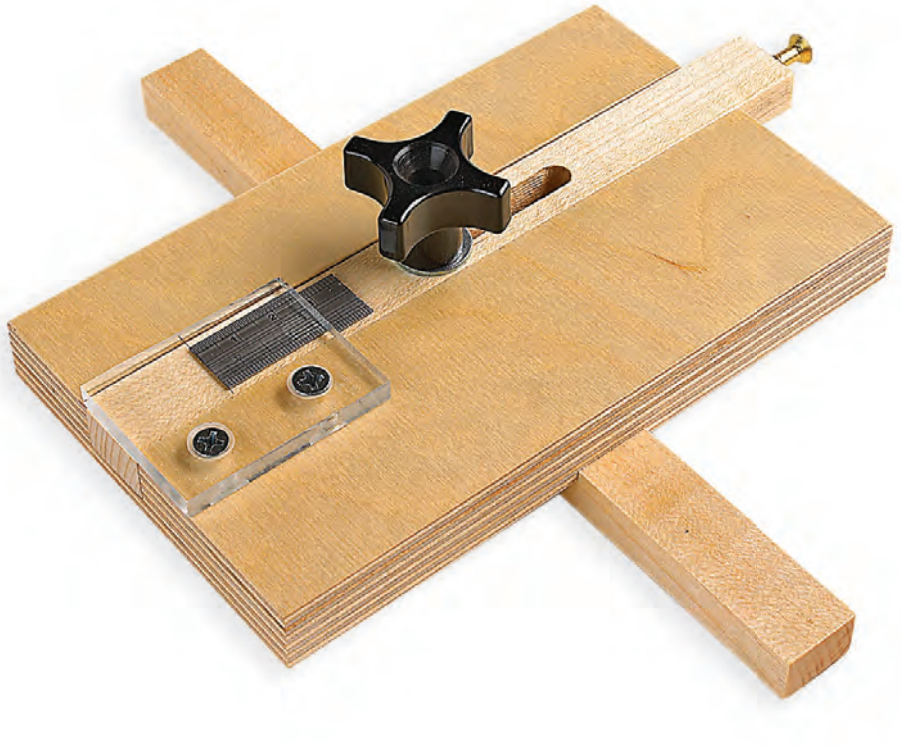
Add detail to your raised panels

After raising the panel on your tablesaw, use a ¼" round-nose bit in your router table to detail the square shoulder on the face of the panel. Set the bit 1⅝" from the fence, as shown *below*. Then rout the detail, starting with the end grain first, followed by the edge grain.



A ¼" round-nose bit creates a distinct panel.

Thin-Strip Ripping Jig



Here's a safety-minded jig that will make you feel more comfortable ripping tiny pieces.

Sometimes you need to rip several thin strips of wood to equal thickness to serve as edging, veneer, or bending stock. Slicing off thin stock on the fence side of the blade, however, could prove unsafe. That's because it becomes awkward to use your blade guard and pushstick when you cut close to the fence. The solution: Run the wide portion of your workpiece between the fence and blade, cutting the strips on the side of the blade opposite the fence. You could accomplish this by measuring for each cut, but that's tedious and inaccurate. This thin-strip ripping jig does the job safely, accurately, and quickly.

Refer to **Sources** on *page 11* for hardware for this project.

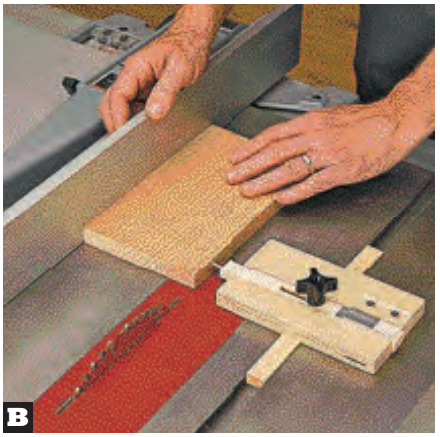
First, build the jig

1 Cut a piece of ¾" plywood to the dimensions shown for the base on *page 7*. Cut a dado on the bottom side of the base for the guide bar, where shown. Now, cut the ¾" dado on the top side of the base for the sliding bar.

2 Cut two pieces of maple to size for the miter-slot guide bar (adjust the dimensions shown if necessary to fit your tablesaw's slots) and the sliding bar. Center the miter-slot guide bar in the bottom dado, and glue it in place. Drill a pair of 5/16" holes in the sliding bar, where shown, scrollsaw the material between them, and smooth the inside of the slot with a file.

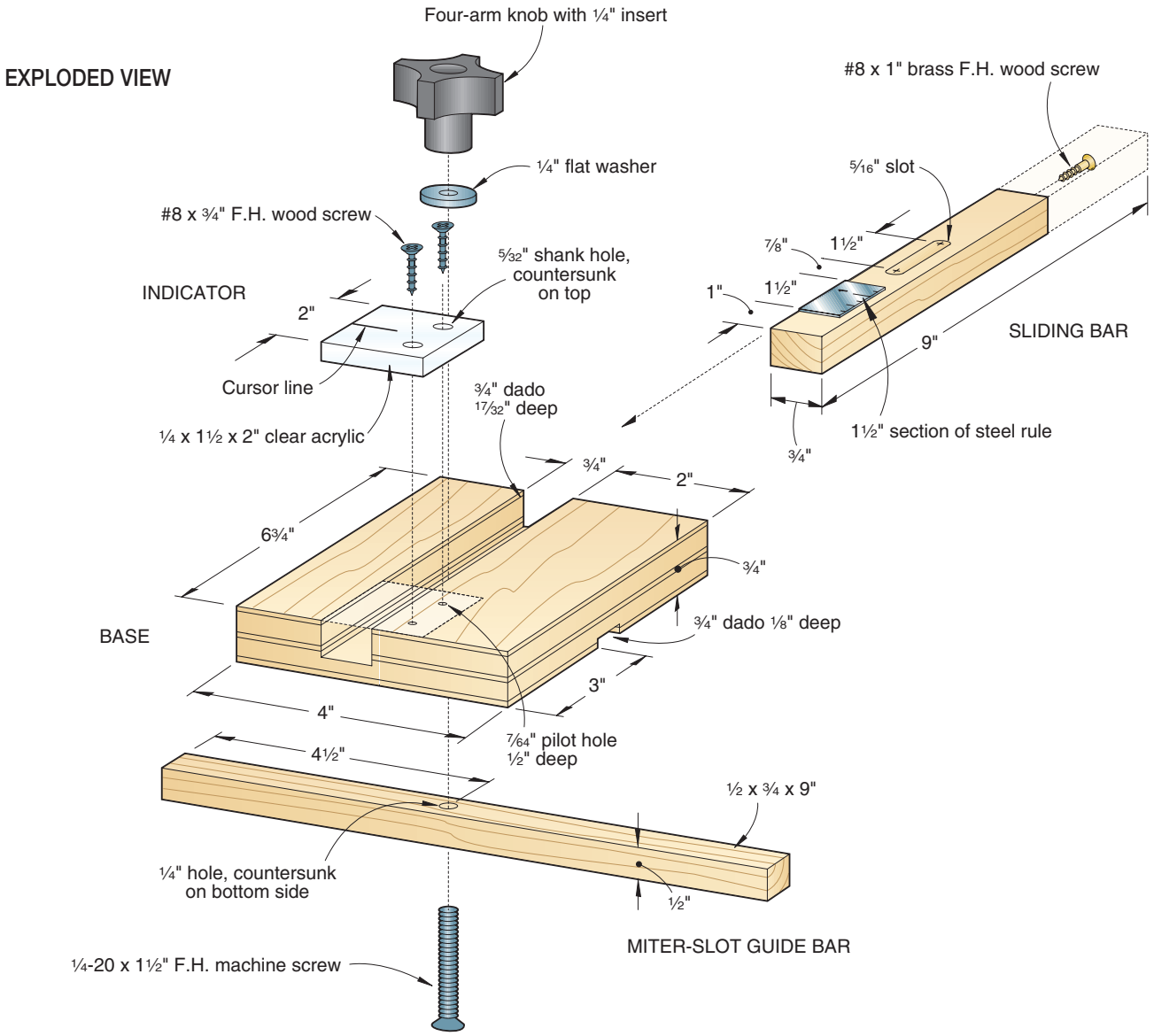
3 Set the jig in your tablesaw's left miter-gauge slot. Place the sliding bar in the dado with its left end flush with the base. Slide the jig forward, and mark the

A To make a cursor, scribe a line across the acrylic indicator with a sharp knife and a square. Color the scribed line with a permanent marker. Wipe off the excess ink with a cloth, leaving a fine line.



B Size your thin-strip ripping jig to suit your tablesaw, so that a 1" screw in the guide bar can contact the blade. Install a zero-clearance throat plate to prevent the sawn strip from falling into the saw.

C Remove the jig before making the cut so the workpiece doesn't bind between the rip fence and the screw head. Replace the jig in the slot without making any adjustments to set up the next cut.



point where a left-leaning sawblade tooth touches the bar. Make a second mark ½" closer to the base. Remove the bar, and crosscut it at the second mark.

4 Drill a 7/64" pilot hole in the sliding bar, centered on the end you just cut. Drive a brass screw halfway into the wood. (We used brass to avoid any chance of damaging a tablesaw blade.) You'll turn this screw in or out to fine-tune your jig's basic "zero" setting, or to adjust it for a blade of different thickness or with a different tooth set.

5 From the bottom side of the assembly, drill and countersink a ¼" hole through the miter-slot guide bar and base for the machine screw that holds the plastic knob. Sand all of the wood parts to 180 grit, and apply three coats of clear finish.

6 Make a mark 1" from the left end of the sliding bar. Cut the first 1½" from an inexpensive steel rule, align its left end with the mark, and attach it with epoxy.

7 Cut a piece of ¼" acrylic to the dimensions shown for the indicator. Drill and countersink the two mounting holes, and scribe and mark a cursor line, as shown in **Photo A.** Attach the indicator to the base, and add the knob.

Now, cut some strips

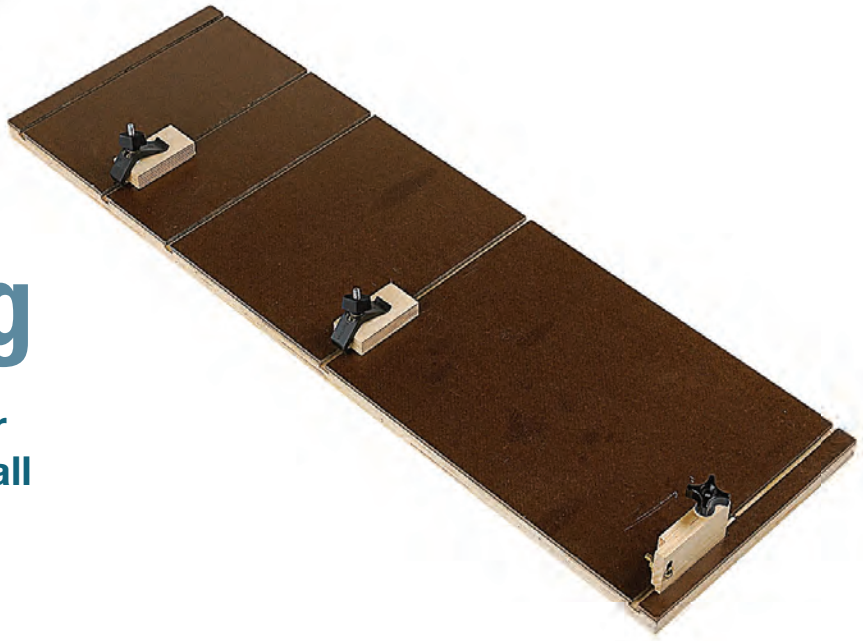
To cut a thin strip with the jig, place its guide bar in the left-hand miter gauge slot on your tablesaw. Loosen the knob, set the cursor to zero (the bottom end of the rule), and retighten the knob. Slide the jig so that the brass screw head is beside the saw blade. Turn the screw in or out with a screwdriver until the head lightly contacts a left-leaning tooth. Pull the jig toward you, loosen the knob, set the cursor for the desired strip thickness, and retighten the knob.

Position your workpiece against the rip fence, and move the fence to bring the left edge of the workpiece against the screw head, as shown in **Photo B**. Lock the fence, set the jig out of the way, and you're ready to cut a strip, as shown in **Photo C**.

After completing the cut, clean up the workpiece on the jointer. Replace the jig in the slot. Then unlock the rip fence, move it to bring the jointed edge against the screw head, lock the rip fence, remove the jig, and saw another strip. Repeat the process as many times as necessary to produce all of the strips that you need for your project.

Written by **Jim Pollock** with **Jeff Mertz** and **Kevin Boyle**
Illustrations: **Roxanne LeMoine; Lorna Johnson**

Four-Sided Tapering Jig



Here's a slick way to taper four sides of a table leg—all with one simple jig.

You can taper one side of a table leg without much head-scratching, but tapering all four sides equally presents more of a challenge. With this jig, however, you can cut all four tapers without changing your setup. You simply rotate your workpiece between cuts.

Locate the hold-downs to suit the length of your workpiece. (The pivot block can sit at either end of the jig.) If your tablesaw has a 10" blade, you can handle workpieces up to 2" thick.

Refer to **Sources** on *page 11* for hardware for this project.

Build the jig

1 For the base, cut a piece of ¾" plywood to the size shown on **Drawing 1**, then cut a piece of ¼" hardboard to the same dimensions.

2 Cut ⅝" dadoes 3/16" deep in one face of the plywood, where dimensioned. Glue the hardboard to the dadoed face with yellow glue. Now, clamp the assembly between two scraps of plywood to ensure even pressure. After the glue dries, remove the clamps, set your dado blade for a ¼"-wide cut, put an auxiliary fence on your miter gauge, and cut a slot through the hardboard, centered over each plywood dado, as shown in **Photo A**.

3 Cut a piece of maple to ¼×⅜×12", then cut two 3" pieces and one 3½" piece from this blank for the guide bars. For the hold-down bases, cut a piece of ¾" plywood to 1½×12". Cut a ¼" groove down the center of one face of this plywood, where dimensioned on the drawing. Drill two ¼" holes near opposite ends of the groove, with each hole centered in the groove and ½" from the end. Cut a 3" piece from each end to make two hold-down bases. Next, glue one guide bar piece in the groove on each hold-down base. After the glue dries, drill a ¼" hole through each assembly, using the previously drilled holes as guides.

4 Cut a maple blank to ¾×2×12" to make the pivot block. (We begin with an oversized piece to assure safety during the cutting process.) Cut a rabbet on one end of the blank, where shown on **Drawing 1a**. Now, drill two holes to form the ends of the adjustment slot, remove the material between the holes with a coping saw or scrollsaw, and clean up the slot with a file. Cut a ¼" groove centered on the bottom edge of the blank. Next, drill a ¼" hole centered in the groove 2½" from the rabbeted end. Glue in the 3½" guide bar piece, making it flush with the rabbeted end. After the glue dries, drill a ¼" hole through the blank, using the previously drilled hole as a guide. Trim the blank to 3½" in length. Sand and finish the assembly.

5 Assemble the hold-downs as shown. For the pivot block, file or grind one edge of the washer flat, as shown on **Drawing 1a**, and then assemble the nut, screw, and washer as shown. Adjustable up or down in the slot, this screw serves as an indexing pin. Once set for a particular workpiece, it guarantees that every cut in the sequence is an equal distance from the center of the workpiece.

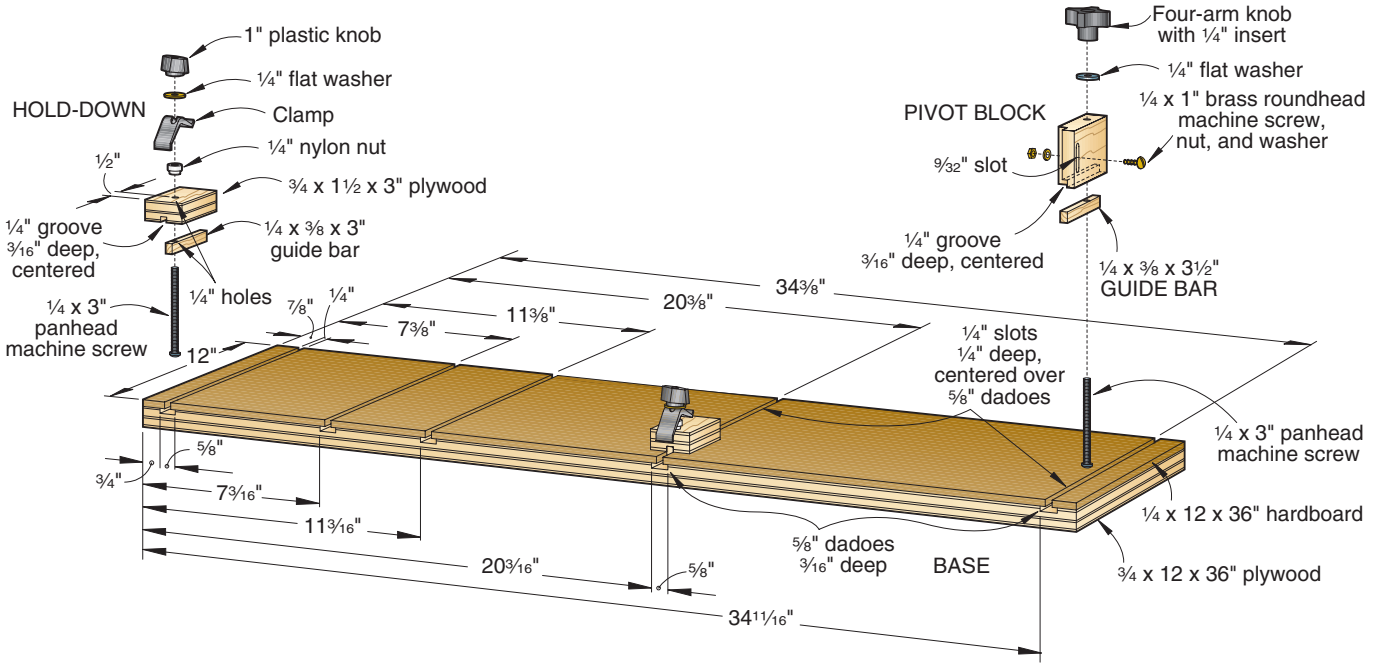
A

After cutting dadoes in the plywood base, glue the hardboard to the dadoed face. Mount the two outside blades of a dado set in your tablesaw, and cut slots through the hardboard centered over each dado.

B

Diagonal lines on the end of the workpiece locate the hole that fits onto the indexing pin. Draw the cutline for the final shape, and extend the lines to the edges to help you position the workpiece on the jig.

1 EXPLODED VIEW



Tap into tapering

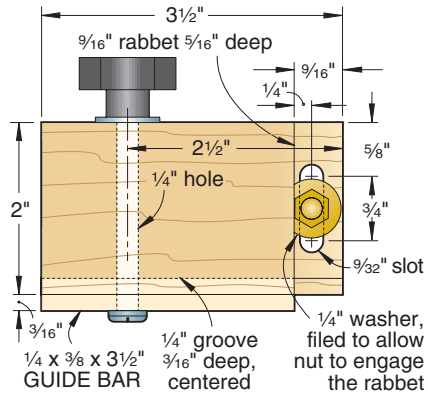
To taper a leg, cut your workpiece to its finished length, then rip it to the square dimensions that you want for the untapered section at the upper end. Draw a line on all four faces to mark where the taper will begin. Drill a ¼" centering hole ⅜" deep at the center of the bottom end, and add cut lines to show the final dimensions of that end, as shown in **Photo B**. Draw cut lines on the face connecting the leg-bottom marks with the taper-start marks. This helps you visualize the final shape, and serves as a safety reminder as you push the jig across the saw.

Mount the leg-centering hole on the indexing pin. Slide the pivot block until the planned outside face of the leg aligns with the edge of the jig. Turn the knob to lock the pivot block in place. Now, near the upper end of the leg, align the taper-start cutline with the edge of the jig. Slide the hold-down blocks against the leg, and tighten the nylon nut on each one to set the block's position. Tighten the top knob on each hold-down to clamp the leg in place.

Raise the saw blade ¼" above the leg. Butt the jig to the fence, move the fence until the saw blade just clears the left side of the jig, and then make the cut, as shown in **Photo C**. To make each of the three remaining cuts, loosen the hold-down knobs, rotate the leg one-quarter turn clockwise (as viewed from the pivoting end), reclamp, and cut.

This jig also serves another purpose, as shown in **Photo D**. When you need to cut a single taper, mark its start and stop points on the end and edge of your workpiece. Remove the indexing pin from the end block, and nest the end of the workpiece in the notch. Align the marks with the edge of the jig, and clamp. Place your hold-downs against the workpiece. Tighten the pivot block in place, and make the cut.

1a PIVOT BLOCK



Hold the taper jig tightly against the tablesaw rip fence as you cut. Before starting each pass, make certain that your left hand is well away from the line.

The width and adjustability of the taper jig allow you to handle a wide range of angle cuts. Here, with the jig flipped end-for-end, we're shaping a simple leg.

Dead-On 90°
Crosscut Sled

When you build this sled, your accuracy and efficiency at the tablesaw will soar.

A reliable tablesaw miter gauge handles a lot of crosscutting tasks, but not all. It rides in just one slot, and supports the workpiece on just one side of the blade, allowing for slop. This problem disappears, however, with an accurate crosscut sled. Our design is both inexpensive and simple to build. Plus, it includes reliable, adjustable stops for repeatable cuts. From the moment you put this jig to use at your tablesaw, you'll discover that making right-angle cuts is easier and safer.

Build a real workhorse

1 Select a flat piece of ¾" plywood, and cut the platform to the dimensions shown on **Drawing 1**.

2 Cut two ½×3×30" maple pieces for the fence, and cut a ⅝" groove 3/16" deep in the face of one piece, where shown on **Drawing 1a**. Glue the two blanks together, keeping the edges flush and the groove on the interior of the lamination. After the glue dries, cut a ¼" groove centered on the ⅝" groove. Then, cut a rabbet along the front of the bottom edge and a ½" groove centered along the top edge.

3 From ¾" maple, cut the blade guard sides and end. Glue and screw the end to the sides. Now, screw the blade guard to the fence, where shown on **Drawing 1**.

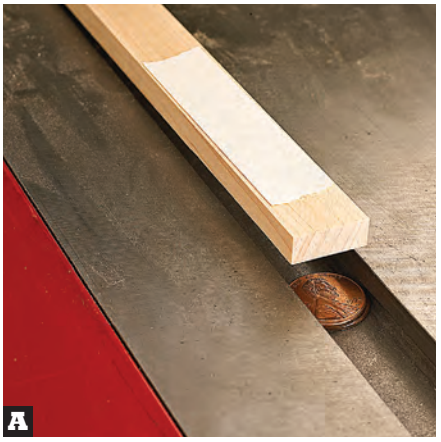
4 Cut the front rail from ¾" maple. Use a jigsaw to cut a notch, where shown, for the blade to pass through. Attach the front rail and the fence to the platform with screws.

5 Cut, sand, and finish two top blade guard supports. Using a fine-toothed tablesaw blade, cut a piece of ¼" clear acrylic to size for the blade guard cover. Attach the cover to the supports and the front rail.

6 From ¾" maple stock, cut two strips to serve as miter-slot guide bars. Set your tablesaw rip fence 8⅛" to the right of the blade, and lower the blade below the table's surface. (Note: Make sure your fence is parallel to the miter gauge slot before proceeding.) Apply double-faced tape to the top of each guide bar, and attach the bars to the platform, as shown in **Photos A** and **B**. Remove the assembly from the saw, and permanently attach the bars with screws.

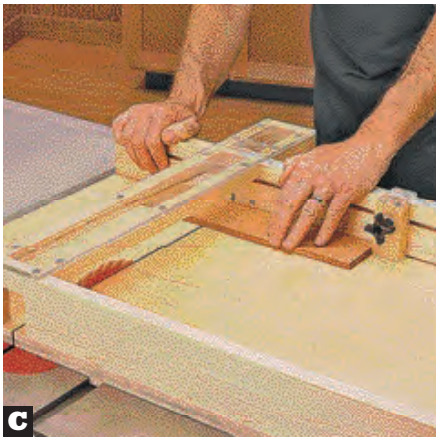
7 Cut a piece for the stopblock, and cut a dado in the back, where shown. Cut a guide bar, and glue it into the dado. Drill a shank hole through the block and bar, where shown. Now, cut a piece of ¼" acrylic plastic to size for the stopblock indicator. See **Drawing 1b**. Drill, saw, and file smooth the slot, where shown. Make a cursor line, as shown in **Photo A**.

8 Remove the top blade guard, sand the jig, and apply three coats of finish. Reattach the blade guard, assemble and install the stopblock, place the crosscut sled on your tablesaw, and make a cut from the front edge through the fence. Use a rule to set the stopblock 4" from the kerf. Mark the center of the stop block on its top



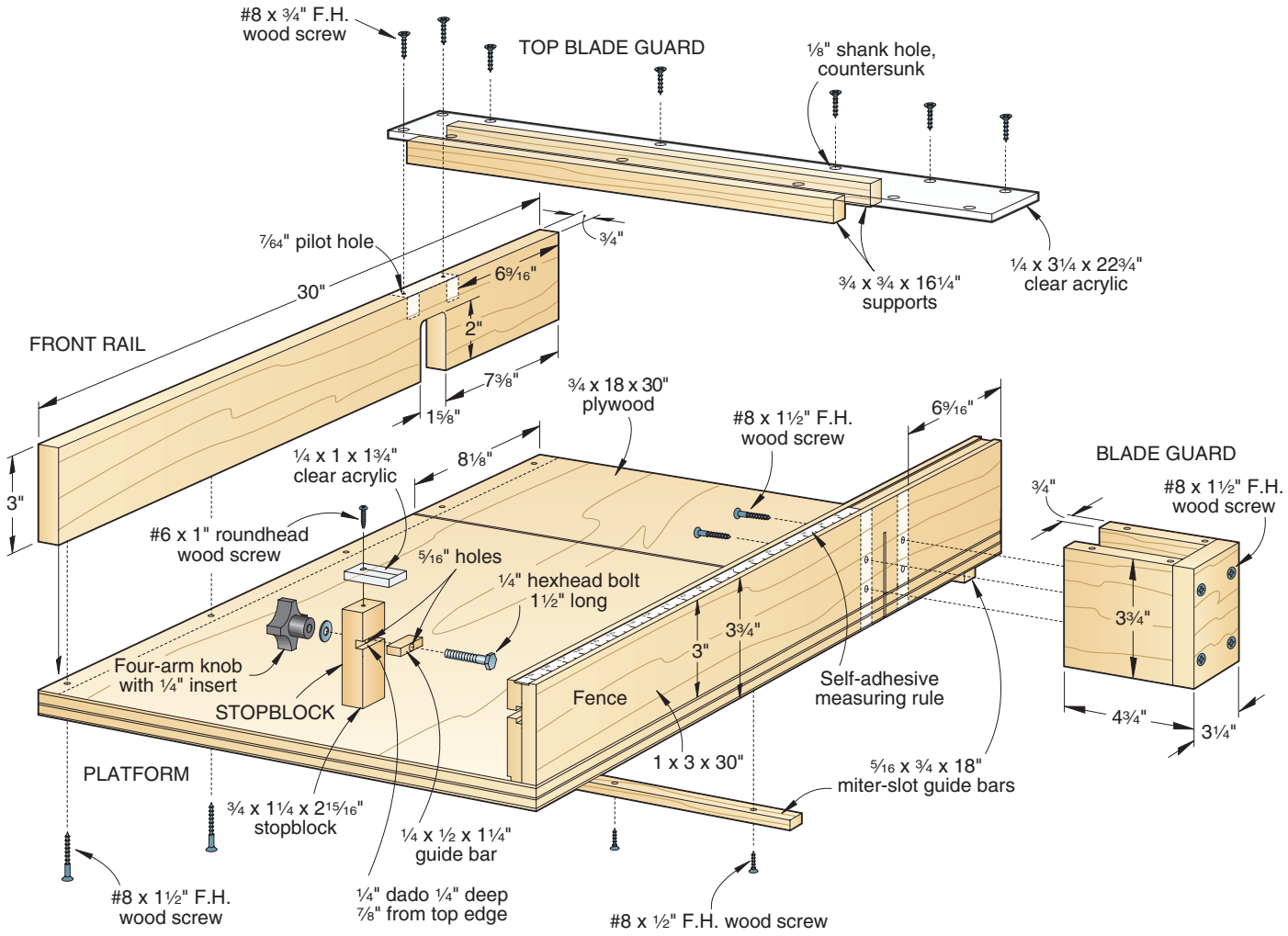
A Two pennies shim the miter-slot guide bars slightly above the tablesaw surface. Place a couple of these stacks in each miter-gauge slot, and set the bars on top.

B Keeping the right end of the platform against the rip fence, set the sled assembly on the guides. Press down firmly to stick the bars to the platform.



C Hold the workpiece firmly against the fence as you make a cut. Keep your hands outside the blade guard, and don't cut through its end.

1 EXPLODED VIEW

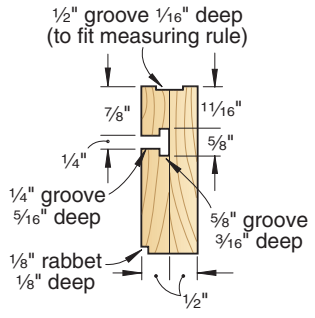


end, align the 4" line on the self-adhesive measuring tape with that mark, and attach the tape in the fence groove. Use tin snips to cut off the portion of the tape extending beyond the left end of the fence. Place the indicator on the stopblock, align the cursor with the tape's 4" line, and attach the indicator to the block with a screw.

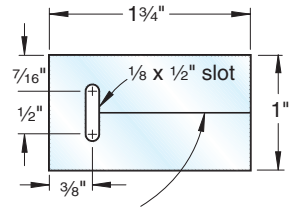
Now, let's go sledding

If a workpiece fits between the fence and the front rail, you can cut it on your crosscut sled, as shown in **Photo C**. Use the stop block to cut multiple pieces to the same length, provided that length falls within the stop block's range. Remove the stopblock when cutting pieces that extend beyond that range. When you install a blade of a different thickness or with a different tooth set than the one used to calibrate your stopblock, check the setting with a rule, and adjust the cursor.

1a FENCE SECTION VIEW



1b INDICATOR DETAIL



Score a line on the acrylic with a knife, and color it with a permanent marker.

Sources

For the jigs on pages 5–11, we used these Sources: Stainless steel rule no. 06K20.06, $1.40 each; 1¼" four-arm plastic knob no. 00M55.30, $1.30 each. Call Lee Valley at 800/871-8158, or go to leevalley.com.

Hold-down no. 142398, $4.99 (bolt and knob); self-adhesive rule, no. 08Y42, $9.99. Call Woodcraft at 800/225-1153, or go to woodcraft.com.

A trusty pair of tenoning jigs

The mortise-and-tenon joint offers two major advantages: strength and invisibility, making it ideal for furnituremaking. Shaping the mating parts requires multiple setups and various cuts. Tenons alone require two basic cuts: shoulder cuts and cheek cuts. Shoulder cuts establish the length of the tenon; cheek cuts, the tenon's width and thickness. (See **Drawing 2a**.) Zane designed two separate jigs for each cut, as shown *below* and on *page 54*. Build both in an hour or two, and get professional results that last a lifetime.

Zane's tenon-shoulder-cutting jig

Looking for a jig that cuts crisp, 90° shoulders quickly and accurately? Here's one that does, thanks, in part, to its adjustable stopblock. (See **Drawing 2**.) Note that the jig rides in the miter slot on the right side of the saw blade.

Step-by-step construction

1 Referring to **Drawing 2**, cut all of the parts, except the stopblock, to the dimensions shown. Drill the ¼" machine screw hole in the fence.

2 Next, attach the fence to the base with glue and countersunk screws, flushing it along the base back edge. Screw this assembly to the miter gauge, ensuring it protrudes 1" or more to the right of the miter gauge. Next, set the miter gauge and assembly into the miter-gauge groove, raise the saw blade ¼" above the jig base, and cut through both the base and the fence. Use the kerf to guide you in centering and installing the blade cover with screws and glue.

3 From ¾" stock, cut a 6" blank ripped to 1¼" wide. With a dado blade, cut the ¼×1½" notch on the bottom edge. Now cut the stopblock to finished length. To form the 1¼"-long slot used to adjust the jig when cutting tenons of various lengths, drill ¼" start holes, where shown, and then scrollsaw between the holes. Drill a centered pilot hole in the notched end and screw a panhead adjustment screw into the hole. The notch in the stop and the adjustable screw eliminate the possibility of sawdust, altering the location of the shoulder cut.

4 Finally, insert a ¼" machine screw through a washer, the fence, and the stopblock. Secure it with a small pull knob. Zane has added one more feature to this jig. He installs a ¼" plate of plywood over the base, but only on the right side of the saw kerf. The raised surface fulfills two functions: It prevents sawdust from getting underneath the end of your board, which would create an unwanted angle on the next shoulder cut, and it provides adequate space for small falloffs that potentially could bind the blade and result in kickback.

Putting the jig to work

Determine the length of your tenons. Then slide the stop to the desired location and tighten it in place. Raise the blade to the depth of the intended shoulders. (See the Tenon-Sizer Guidelines *above, right* for more on figuring tenon dimensions.) Now slide the workpiece against the stop edge, and run it through the blade. Rotate the workpiece to cut the remaining edge and faces as shown in **Photo F**. Says Zane, "I usually design my tenons with equal shoulders on all four sides. This way I only have to adjust the blade height once."

"One final thought, when cutting the shoulders, you don't need to push the jig all the way through the saw blade. Once the top of the blade reaches the fence, the shoulder cut is complete."

Tenon-Sizer Guidelines

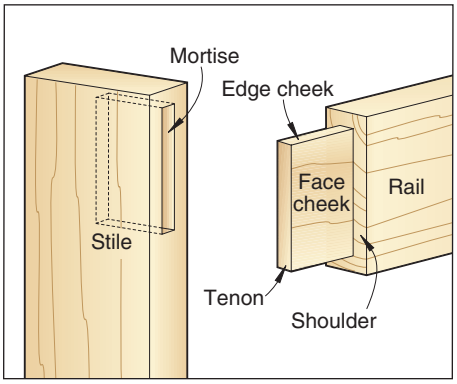
When the time comes to figure the tenon size, keep in mind the thickness of the wood you're working with, the widths of the chisels and drill bits you own, and the purpose for which you are using a mortise-and-tenon joint. Consider the basics:

- Apply the rule of thirds. For ¾" stock, that means making a ¼"-thick tenon with ¼" shoulders along each side.
- Regarding tenon width, make top and bottom shoulders the same depth as the side shoulders. (Doing this lets you cut all four shoulders using the same saw setup.)
- For full strength, make tenon lengths as long as two-thirds the width of the mating mortised workpiece. Err on the side of creating more gluing surface. The longer the tenon, the stronger. Application is your best guide. In a small picture frame, a short "stub" tenon may suffice; where racking may occur, as in a table leg/apron joint, opt for the "deeper" tenon prescribed above.

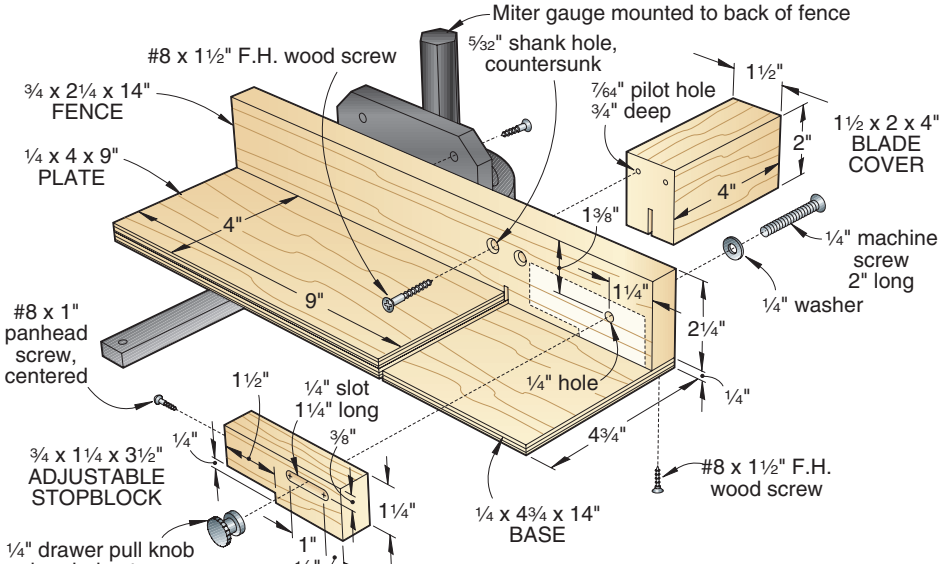
SAWING SAME-DEPTH SHOULDERS

Raise the blade to the establish the needed tenon depth. Then, using the jig, cut shoulders on the workpiece faces and edges.

2a MORTISE-AND-TENON JOINT

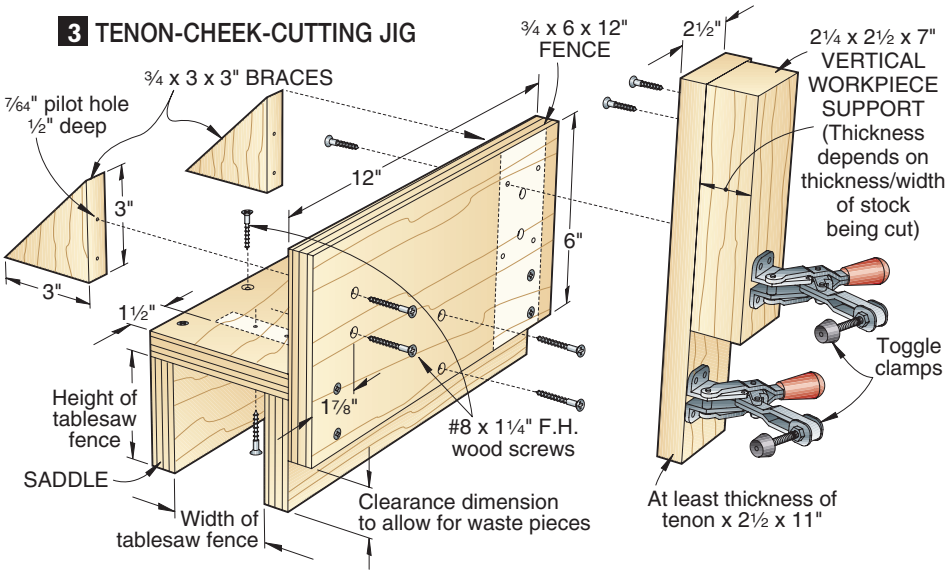


2 TENON-SHOULDER-CUTTING JIG



Tenon-cheek-cutting jig

One of the trickiest (and potentially most dangerous) operations on the tablesaw is making cuts into the end of a board stood vertically. The typical tablesaw fence stands too low to provide adequate support when holding the workpiece this way. That's why many woodworkers bandsaw these delicate cuts, and try to sand the cut tenons to perfection, or spend more than $100 to buy a commercial tablesaw tenoning jig. But Zane's tenon-cheek-cutting jig provides absolute accuracy and safety for the cost of two toggle clamps (and free stock from your scrap bin).



How to build the jig

This jig rides on both the fence and saw table, as shown in **Photos G and H**. Zane says, "It's absolutely critical that the jig holds the workpiece firmly. Any flexing will ruin your tenons, so I use only ¾" cabinet-grade plywood for the jig's box and fence assembly."

Note: *The design shown here is based on a tablesaw fence with parallel sides, such as a Biesemeyer-style fence. If your fence does not have this feature, the basic saddle assembly can be secured to a sliding base mounted on runners that ride in the miter tracks, or a base that slides along the fence.*

1 Using **Drawing 3**, cut the sides of the saddle to the exact height of your tablesaw fence. Cut the top of the saddle to span both sides when they sit flush against the fence. Glue and screw the top to the sides, ensuring perfect alignment.

2 Cut this jig's fence and braces to size, and then glue and screw them to the base. (The clearance area makes room for the waste while avoiding binding and kickback problems.) Zane advises, "Don't skimp on screws. This assembly needs to be rigid and dead true."

3 Finally, cut and glue up the parts for the vertical workpiece support. It accommodates boards of varying widths. The first (inside) piece is ¾" thick, the second 2¼". Note that these dimensions may vary, depending on the dimensions of the stock cut. Glue them together, leaving the thicker piece about 4" shorter than the thinner one. Glue and screw this assembly to the fence and install the low-silhouette toggle clamps. (Find these at woodworking specialty stores or in mail-order catalogs, such as Woodcraft: 800/225-1153, woodcraft.com.)

Now cut dead-on tenons

Set up the jig by adjusting the saw fence to cut the inside cheek of the workpiece. If you have shoulders of equal depth, you will cut all four cheeks without repositioning the fence. When cutting the face cheeks, be sure to lay the workpiece flush to the fence and secure it with the lower clamp, as shown in **Photo G**. When cutting the edge cheeks, add a spacer board for relatively thin stock and clamp it with the outer clamp (**Photo H**). If the workpiece is wide enough, the upper clamp will hold it in place without a spacer, as shown in **Photo I**.

When cutting tenons, the first cuts you typically make are the shoulder cuts. As a word of precaution, Zane says, "If you set your blade too high on a shoulder cut, you create a shallow kerf in the tenon that will be totally hidden when the joint is assembled. But if you set the blade too high on the cheek cuts, you will cut a kerf into the finished piece that will be visible where the two pieces of wood are joined." Keep a mortised mating piece on hand to test-fit the tenon while fine-tuning your saw setups. Once you achieve a snug-fitting mortise-and-tenon joint, you're ready to cut all of the tenons of that size needed for your project. Set your jigs aside until the next tenoning assignment.

Written by **Roger McEvoy**
Photos by **Ken Kneringer**
Illustrations: **Roxanne LeMoine**

CUTTING CLEAN, STRAIGHT FACE AND EDGE CHEEKS


G

Only if the jig fits snugly over the tablesaw fence and rides smoothly along it will it cut clean, well-proportioned tenon cheeks.

H

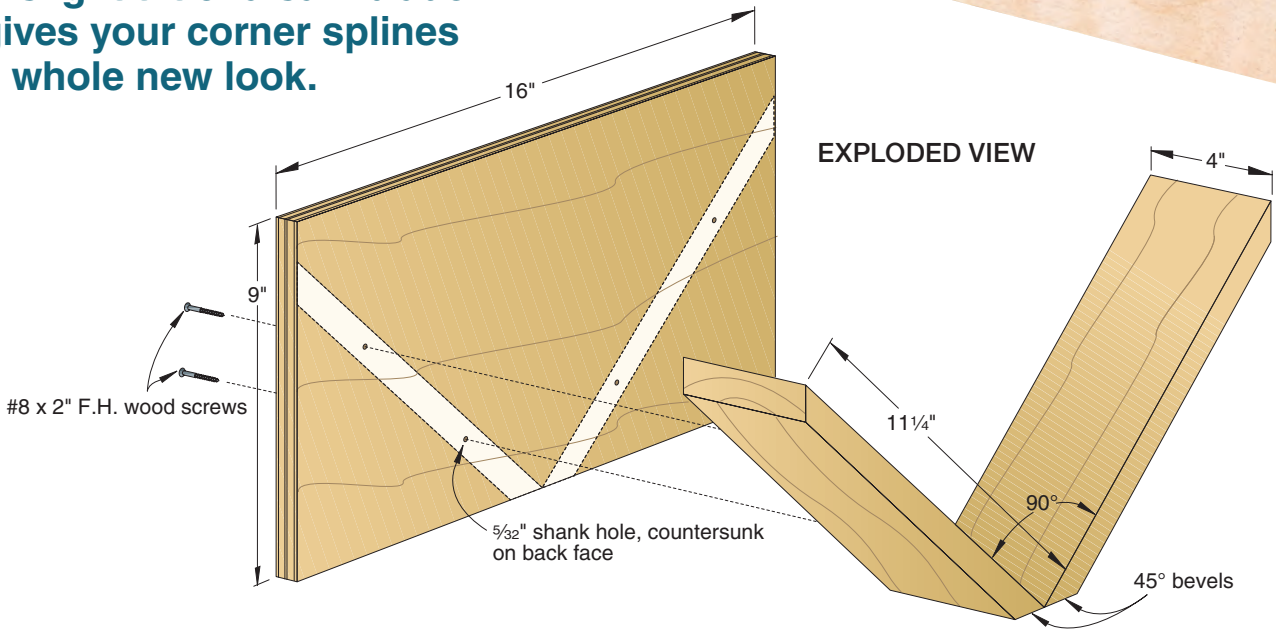
When cutting edge cheeks, Zane sometimes places a spacer between the opposite edge and outer clamp to achieve a firm hold.


I

On wider stock, Zane nixes the spacer and relies on the outer clamp to secure the workpiece when cutting cheeks.

Spline-Cutting Jig

A slight tilt of a saw blade gives your corner splines a whole new look.



It doesn't take much work to put a new spin on traditional splined miter joints. Just install the splines at an angle, as we did *above* on a maple-and-walnut letter tray, and you get eye-catching results.

First, make the simple spline-cutting jig for your tablesaw shown *above*. Then, mark three evenly spaced spline locations on a piece of scrap the same width as the tray side.

Install a blade in your tablesaw that produces the flattest possible kerf bottom. (We used an outside blade from our dado set.) Tilt the blade to 15°, and raise it so it extends about halfway into the mitered corner. Set your jig against the tablesaw rip fence, place your marked scrap in the jig, and adjust the fence to cut a test slot. Now make the other slots, readjusting the fence between cuts.

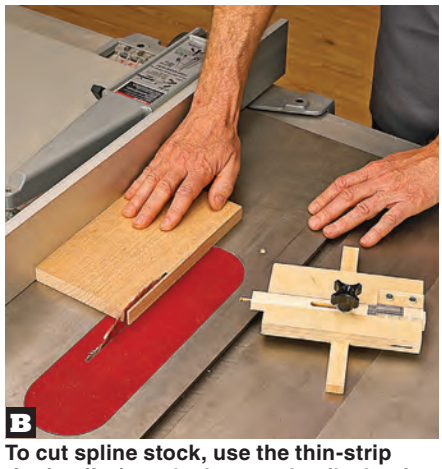
When you're satisfied with the design, place clear packing tape around the workpiece corners to reduce chip-out. Hold the workpiece firmly in the jig, and cut as shown in **Photo A**. Cut the top slot in each corner, adjust the fence, cut all four middle slots, adjust again, and cut the bottom slots. Remove the tape.

Rip spline stock from the edge of a board of contrasting stock, as shown in **Photo B**. Match its thickness to the kerf—usually ⅛". Then, cut individual splines from the strips, making them slightly longer than the slots. Spread yellow glue on the splines, slip them into place, and let the glue dry. Trim them off at the surface with a flush-cutting saw, or use a dovetail saw followed by a chisel. Sand flush.

By varying the number and placement of the corner splines, you can come up with other designs. You might try different saw blade angles, too.

Photographs: **Hetherington Photography**
Illustration: **Roxanne LeMoine; Lorna Johnson**

Double-check the orientation of your workpiece before cutting. Here we're holding the bottom of the tray to the left, so the slots will point downward.



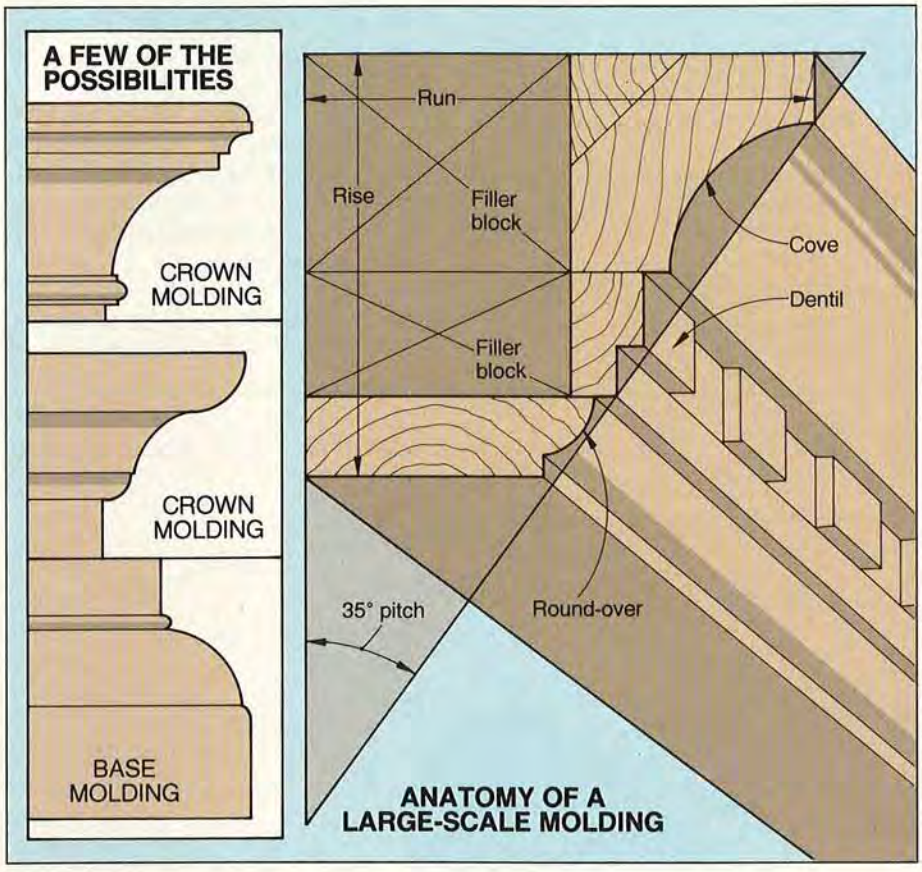
To cut spline stock, use the thin-strip ripping jig (see the how-to details, beginning on *page 5*) to cut spline stock. Reposition the fence between cuts.

PROVEN TECHNIQUES FROM THE SHOP TESTED WOOD MAGAZINE SHOP

ADD THE CROWNING TOUCH TO YOUR PROJECTS

LARGE-SCALE MOLDINGS

Like the gingerbread trimmings on a Victorian home, large-scale moldings such as those at *right* lend stately elegance to projects from curio cabinets to clocks. And surprisingly, you don't need a lot of fancy jigs or tools to make them. Come along and we'll show you how it's done.



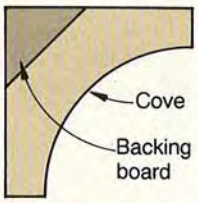
Although large-scale moldings appear complex, they're actually made up of several easy-to-make smaller moldings. It's not until you stack moldings together that they take on a look of "How did you ever do that?" To help you through the process, we'll show you how to plan the molding and how to shape its large components—coves, round-overs, bullnoses, and dentils—on your tablesaw. Then, you can combine these big pieces with smaller, router-made moldings for a stunning effect.

HOW TO PLAN A LARGE-SCALE MOLDING

With the help of the cutaway drawing *above right,* you can design your own moldings by following these guidelines:

- Depending on the size of your workpiece, you should first determine the **rise** and **run** of a descending or ascending molding. You want the molding to be in proportion with the overall dimensions of the workpiece, neither overpowering its design nor too small to make an impact. This can be a tricky task, so you might try browsing through your local furniture store for an idea of molding dimensions for pieces similar in size to your project.
- After determining rise and run, connect these perpendicular lines with an angled **pitch line** between 15° and 40°.
- Now, draw the profile of the molding, roughly following the pitch line for a smooth, flowing look. In this article, we'll show you how to produce these elements often found in large-scale moldings: **coves** (concave curves), **round-overs** (convex curves), **bullnoses**, and **dentils**.
- You can mix and match these elements until you come up with a pleasing effect. But, before you cut and assemble the molding, make a full-sized cardboard profile. Hold this pattern in place on your project as a final check of its size and proportion.
- To help you get started, we've drawn three more variations as shown *above.*

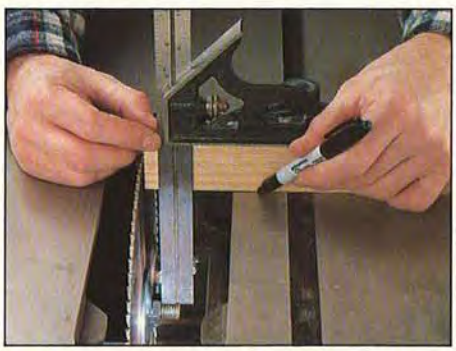
HOW TO CUT COVES WITH YOUR TABLESAW



Many large-scale moldings have fairly large coves plus several smaller moldings to enhance this prominent feature. Armed with the step-by-step instructions *below,* you can cut any of six different-sized coves shown on the next page.

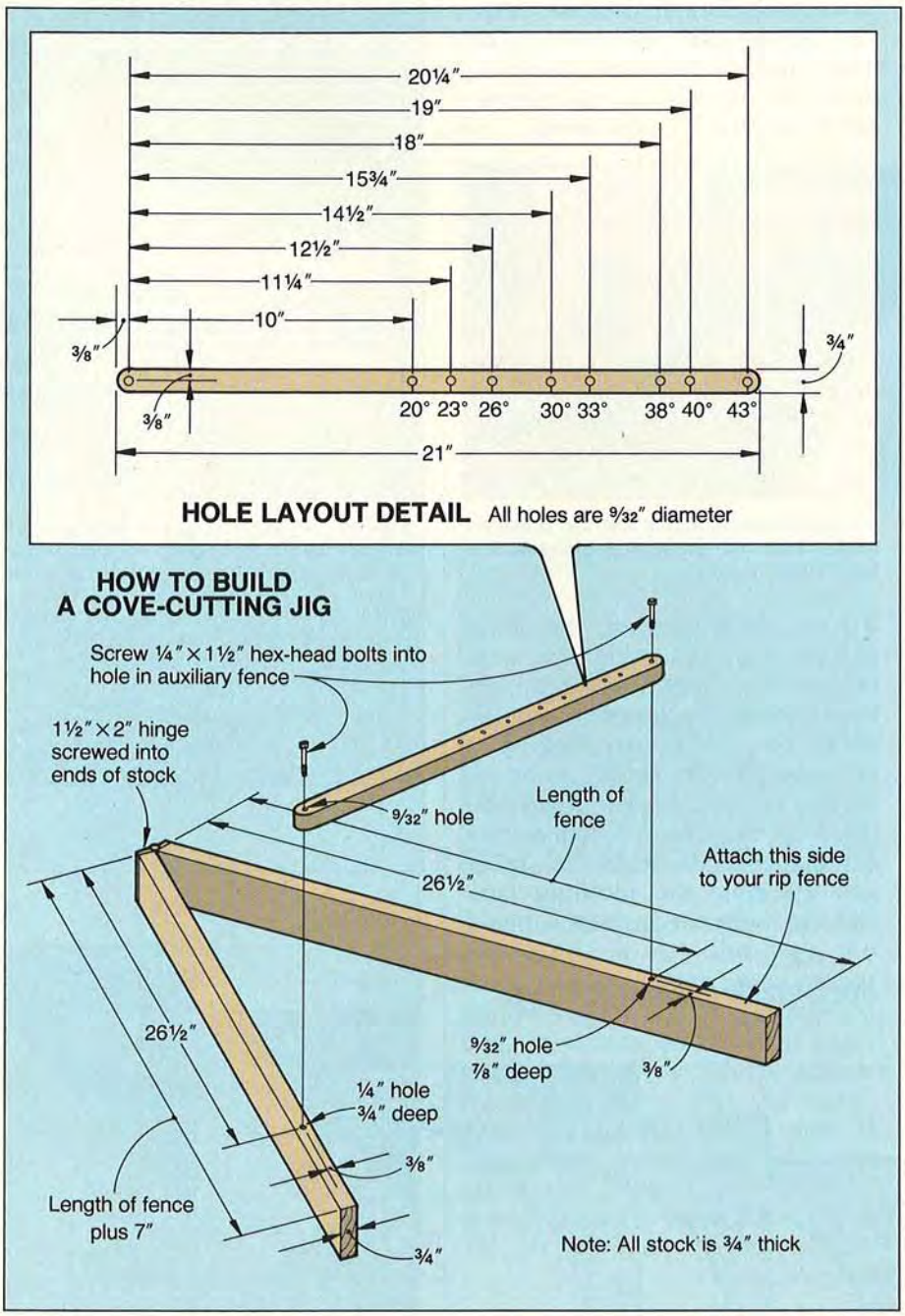
1 Before you get to the fun part, though, you need to build the simple cove-cutting jig shown at *right.* This will enable you to guide the workpiece at an angle over the blade. After completing the jig, attach it to your rip fence.

2 After choosing a cove radius, check the chart on the following page for the depth of the cove. Raise your tablesaw's blade for the prescribed depth of cut, and mark a centerline onto the tabletop directly over the saw arbor as shown *below.* Replace the saw's insert, lower the blade below the table, and extend the mark across the width of the insert.



With your blade set for the height of the final coving cut, mark the arbor's center on your tablesaw top.

Continued



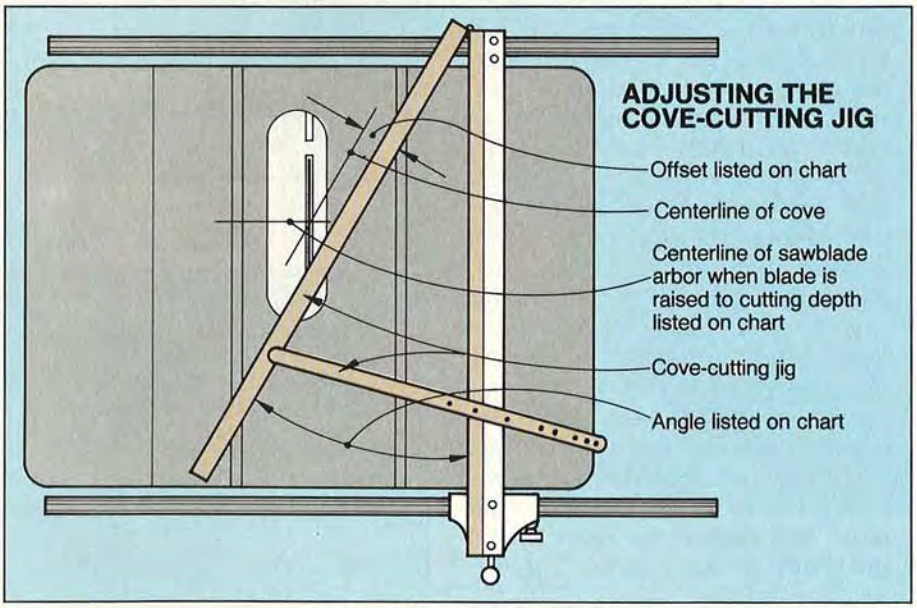
3 Check the chart for the necessary fence angle and fence-to-blade offset. After adjusting the jig to the proper angle (see the drawing *below right* for how to do this), slide it toward the blade until you reach the desired fence-to-blade offset as shown *below.*

Set the auxiliary fence for the fence-to-blade offset by measuring perpendicularly from the fence.

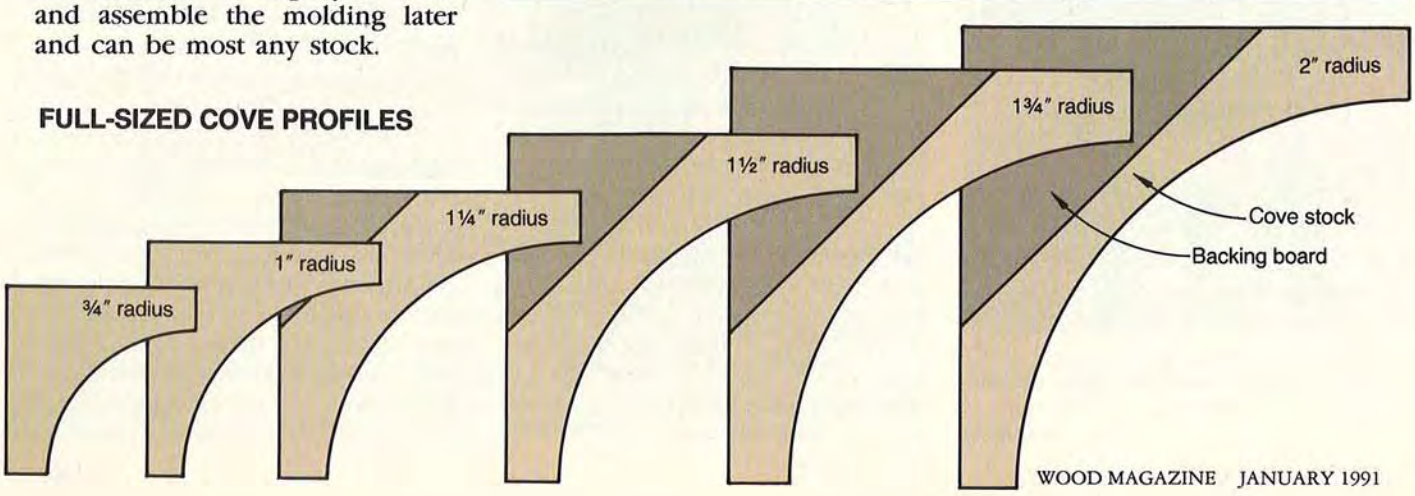
4 Now, refer again to the chart, and cut your stock to size. Be sure to cut the stock several inches long to allow for miter-cutting later. As you can see by looking at the cove profiles *below,* some require a backing board. This backing must be glued on before you cut the cove. It helps you miter and assemble the molding later and can be most any stock.

HANDY GUIDE TO CUTTING COVES WITH A TABLESAW (USING A 10″ BLADE)

Cove radius	Width of cut	Depth	Fence-to-blade offset	Fence angle	Cove stock thickness × width (inches)	Backing board thickness × width (inches)
¾″	1 1/16″	7/32″	¾″	20°	¾ × 1⅝	Not Needed
1″	1 13/32″	5/16″	1″	23°	1 1/16 (5/4 stock) × 1¾	Not Needed
1¼″	1¾″	⅜″	1 1/16″	26°	¾ × 2⅛	½ × 2⅛
1½″	2 3/32″	7/16″	1¼″	30°	¾ × 2½	¾ × 2½
1¾″	2 15/32″	½″	1½″	33°	¾ × 3	1 × 3
2″	2 27/32″	9/16″	1⅝″	38°	¾ × 3¼	1⅛ × 3¼



FULL-SIZED COVE PROFILES



Editor's note: *Before taking the next step, make some cuts in scrap stock to test your results.*

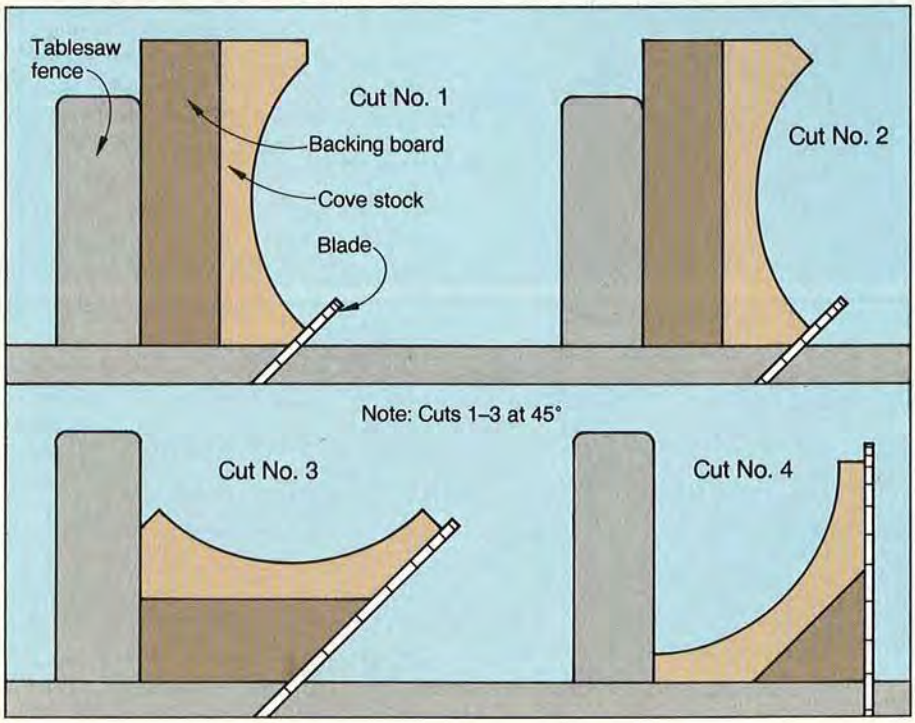
5 Raise the blade ⅛" above the saw table, and pass the workpiece over the blade as shown *below.* Continue to raise the blade and take light cuts until you achieve the full depth of the cove. You can use any 10" blade, but we made our smoothest cuts with an 80-tooth, carbide-tipped blade, taking no more than ⅛" of stock with each pass.

6 To sand the blade marks from the workpiece, make a custom sanding block by cutting off a slice of the cove profile, and transferring the cove shape to a block as shown in the inset photo *below.* Then, bandsaw the block to shape. As a sanding guide, draw pencil lines across the cove and sand the profile with 60-grit abrasive until the pencil lines disappear as we're doing *below.*

7 Now, cut the workpiece to its final shape by making 45° rips in the sequence shown *below.*

Masking tape, *foreground,* covers the unused opening in the tablesaw insert to reduce the flying sawdust.

As you sand the cove molding, be careful to remove only the saw marks. Smooth with 100- and 150-grit papers.

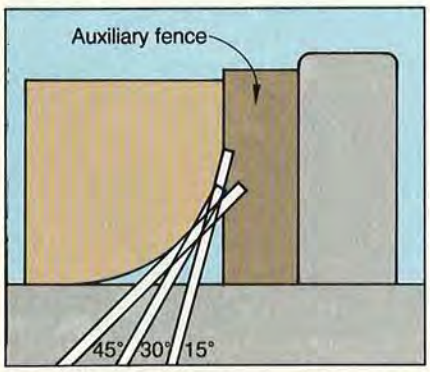


5 EASY STEPS TO A ROUND-OVER

Equipped with the right bit, you can safely rout round-overs up to a ¾" radius. But, if you don't have such a bit, or want to cut larger round-overs, then try this procedure:

1 First, attach an auxiliary fence of ¾"-or-thicker stock to your rip fence. Now, mark the desired radius on the end of the stock.

2 Set your blade for a 45°-bevel cut and elevate the blade to the necessary height for removing the stock up to the marked radius as shown *below.* Set the workpiece aside, turn on the saw, and carefully slide your fence over until the blade cuts about ⅛" into the auxiliary fence. Turn off the saw and align the fence and workpiece so the blade cuts just outside the marked radius. When you're satisfied that the cut will fall exactly on the outside of the line, make your cut.



3 Slide the fence to the side, set your blade at 40°, and align the fence and workpiece for a cut that removes stock up to the marked line. As shown on the next page, make a cut with Side A against the fence. Then, flip the workpiece end-for-end, place Side B against the fence, and make another cut.

4 Repeat Step 3 with the blade at 35°, 30°, 25°, 20°, 15°, 10°, and 5°.

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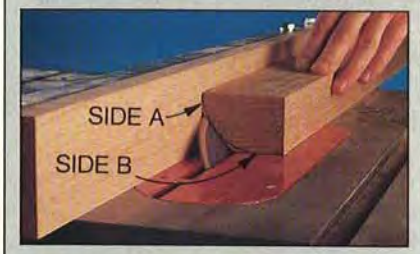
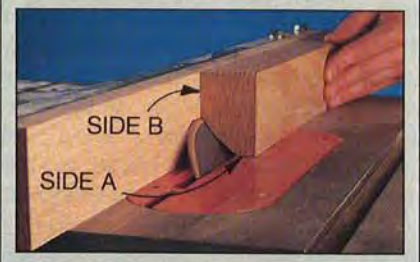


After completing a 45° bevel cut, make your first 40° cut with Side A against the fence.

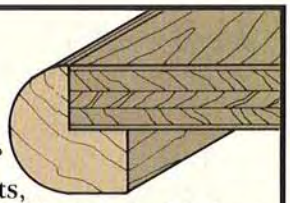


For the second 40° cut, flip the workpiece end for end and place Side B against the fence.

5 Now, make a sanding block for smoothing out the facets. Start by marking the same radius on a 6"-long block of wood as shown *below*. After bandsawing along the marked line, apply 60-grit adhesive-backed sandpaper to the block and sand the facets.

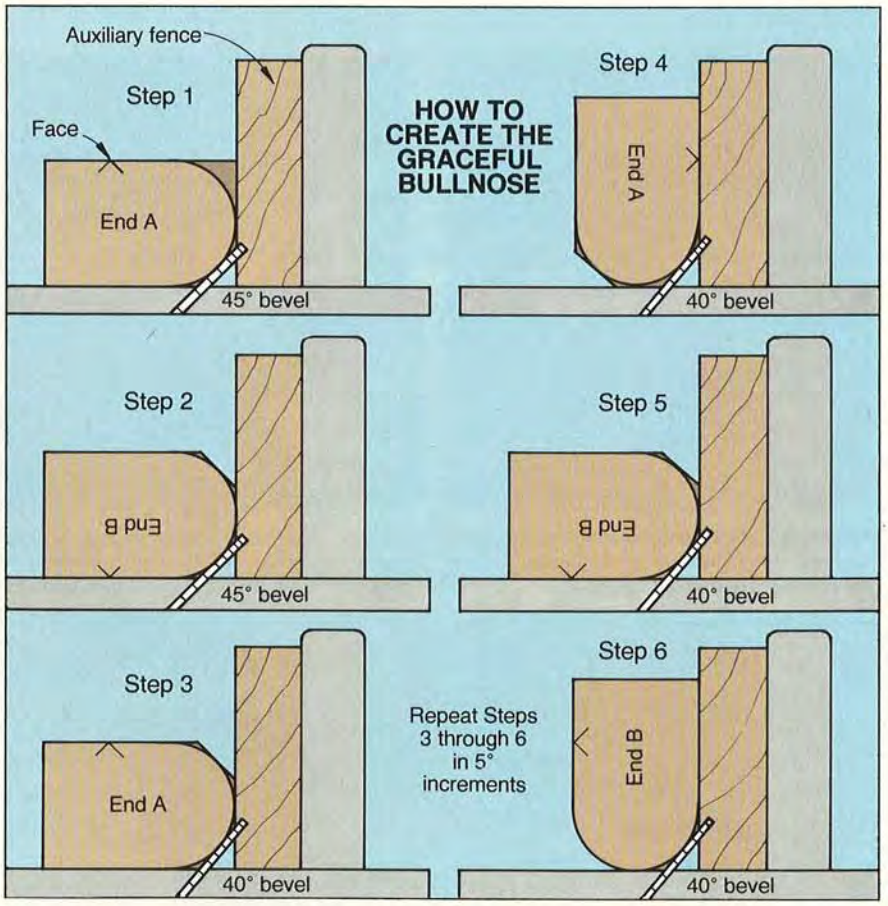
Transfer the radius of your round-over to a sanding block, then bandsaw the block to shape.

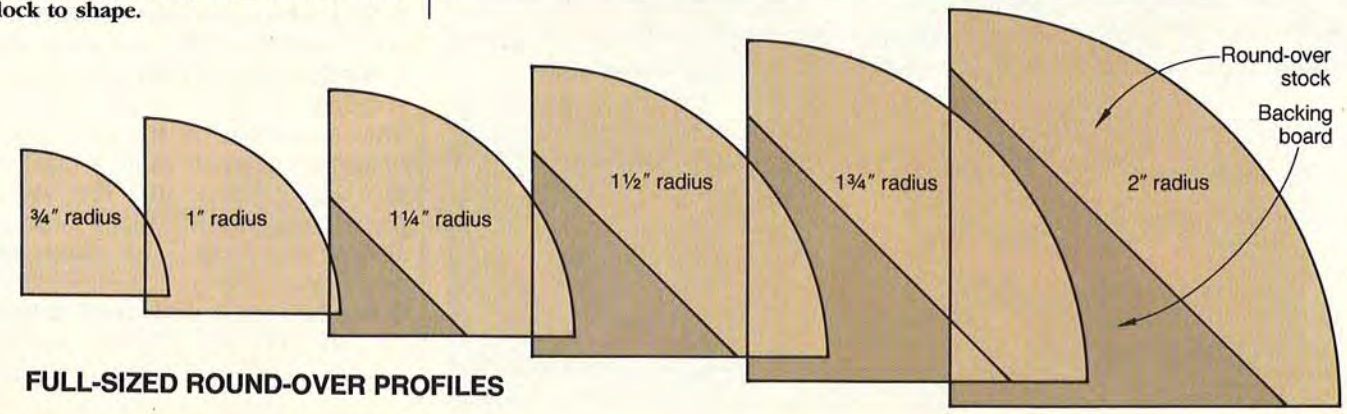
6 QUICK STEPS TO A BULLNOSE



By taking the round-over procedure a few steps further, you can make a bullnose profile such as the one shown *above*. These large bullnoses also make an attractive edge on counters and tabletops.

Just mark the radius on the end of a workpiece and follow the 6-step procedure *below*. After making the 45° and 40° cuts, repeat Steps 3–6 with the blade at 35°, 30°, 25°, 20°, 15°, 10°, and 5°. Then, transfer the radius to a sanding block and bandsaw it to shape as described in Step 5 at *left*. Smooth the facets with 60-, 100-, and 150-grit abrasives.





FULL-SIZED ROUND-OVER PROFILES

ADD STATELY ELEGANCE WITH THE DENTIL PROFILE

As you can see by looking at the molding on pages 38 and 39, these projections help create a stately, architectural quality. Dentils work best when combined with a large cove molding.

Typically, a dentil has square teeth separated by a distance equal to the width of each tooth as shown by dimension X in the drawings at *right* and *below*. For furniture, X normally equals ⅜" to ¾", Y is equal to or less than X, and dimension Z should be about one-third of X. Here's an easy way to make a dentil:

1 First, you'll need to construct a basic indexing jig similar to the one shown *below*. After attaching an auxiliary fence of ¾" plywood to your miter gauge, mount a dado blade in your tablesaw that's set to equal the width of one tooth (X). You'll get the best results with a sharp, stackable dado set that cuts a flat notch.

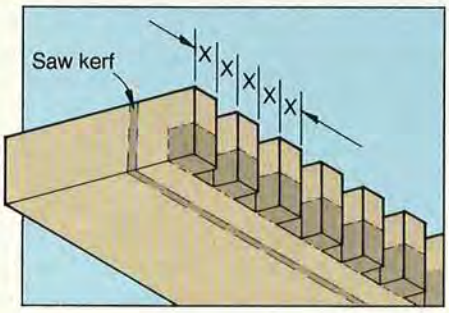
For this example, let's say X equals ⅜". In this case, you should cut a ⅜" notch (marked Notch A in the drawing *below*), ⅜" high through the miter-gauge auxiliary fence. Now, remove the fence and cut Notch B with exactly ⅜" between the two notches. Then, machine a piece of stock that's ⅜ × ⅜ × 1½" and glue this indexing pin into Notch A so it protrudes ¾" out from the face of the fence.

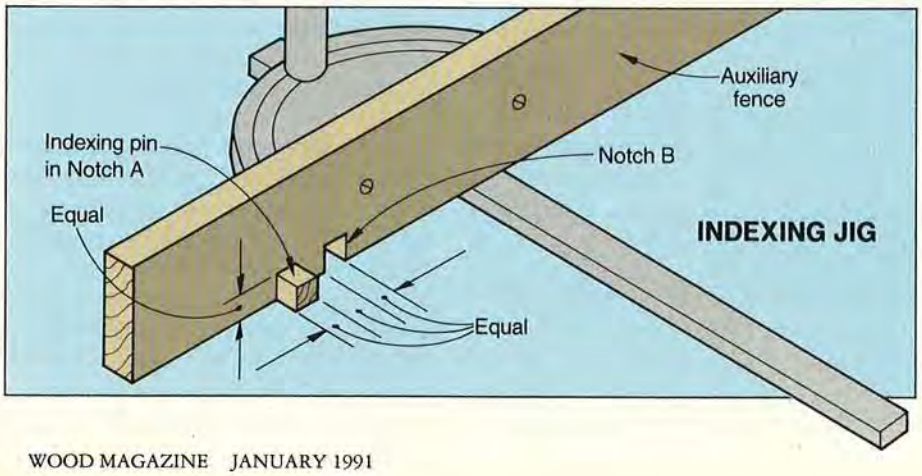
2 To cut the dentils, butt one squared end of your workpiece against the left side of the indexing pin and cut a notch into the workpiece. Place this notch over the indexing pin and make another cut. Repeat this process along the length of the workpiece as shown *below*.

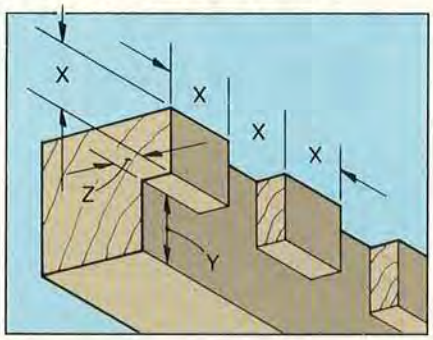
Firmly hold your workpiece against the auxiliary miter-gauge fence as you cut the dentil notches.

3 Next, cut a rabbet into the workpiece as shown by the shaded area on the drawing *below*. Then, cut the dentil to its finished width as shown by the saw kerf.

4 Before you miter your dentil stock, plan each cut so you have a nearly complete notch or tooth at each corner. When the dentil stock meets at a mitered corner, notches should meet notches or teeth should meet teeth.







Some tips for completing your large-scale molding

- Miter the individual moldings as you attach one layer at a time to your project. This way, you have better control over your miter cuts and can minimize any gaps between the pieces. Don't try to assemble the entire molding, then miter it and attach it to the project.

As you attach the layers, work from the bottom or top of the molding—the size of the molding and the project will dictate the most convenient procedure. For the gun case on page 44, we turned the cabinet upside down and started with the large cove moldings.

- As you glue together each layer, minimize nailing by clamping the pieces in place. (Don't forget to first dry-clamp the pieces in place to check for fit.) If you must use brads to adequately secure the piece, don't forget to predrill pilot holes. For a drill bit that's just the right size, just chuck one of the brads into your drill.
- Take your time to make sure the miters match closely. And, clean up any mismatched miters as you go rather than waiting until you completely assemble the molding to do any sanding or putty work.

Written by Bill Krier with Jim Boelling and Jim Downing
Illustrations: Kim Downing; Mike Henry
Photographs: Bob Calmer