

Better Homes and Gardens®

# WOOD®

THE WORLD'S LEADING WOODWORKING MAGAZINE  
WINTER 1997 ISSUE 102

*For sharper tools, try our*

## Drill Press Wet-Wheel Grinder

### FEATURE PROJECT OVAL COFFEE TABLE

**PLUS:** • Full-service workbench  
• Chip-carved plate • Maritime clock

<http://www.woodmagazine.com>



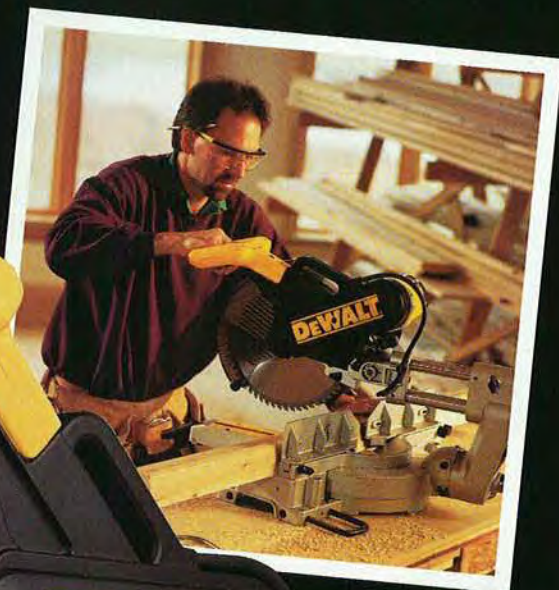
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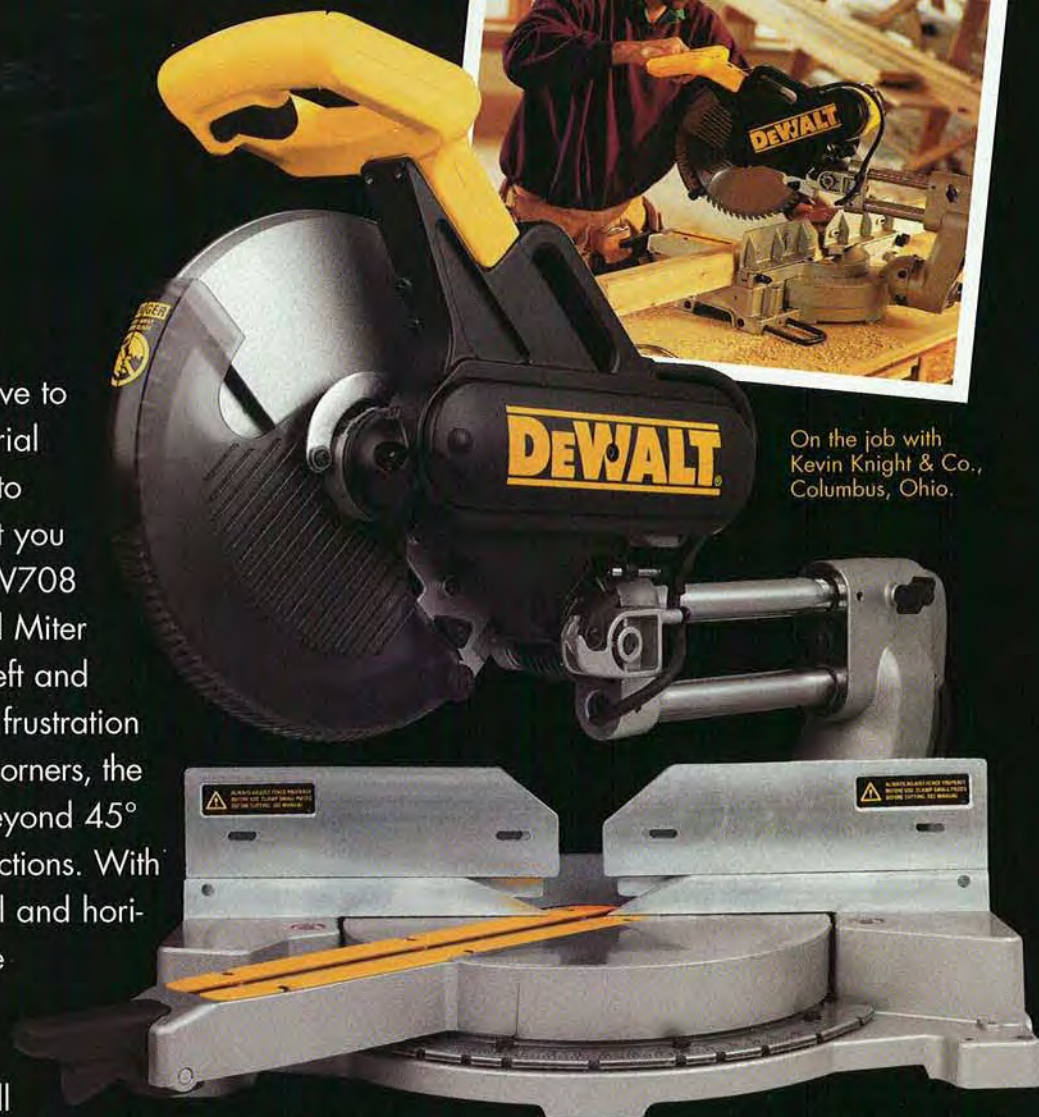
## FLIP THE SAW. NOT THE WORK.

Now you don't have to pick up your material and flip it around to make the bevel cut you need. The new DW708 Sliding Compound Miter Saw bevels both left and right. And, to end frustration with out-of-square corners, the DW708 bevels beyond 45° to 48° in both directions. With unmatched vertical and horizontal capacity, the DW708 makes cuts other miter saws can't. The tall

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On the job with  
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Columbus, Ohio.

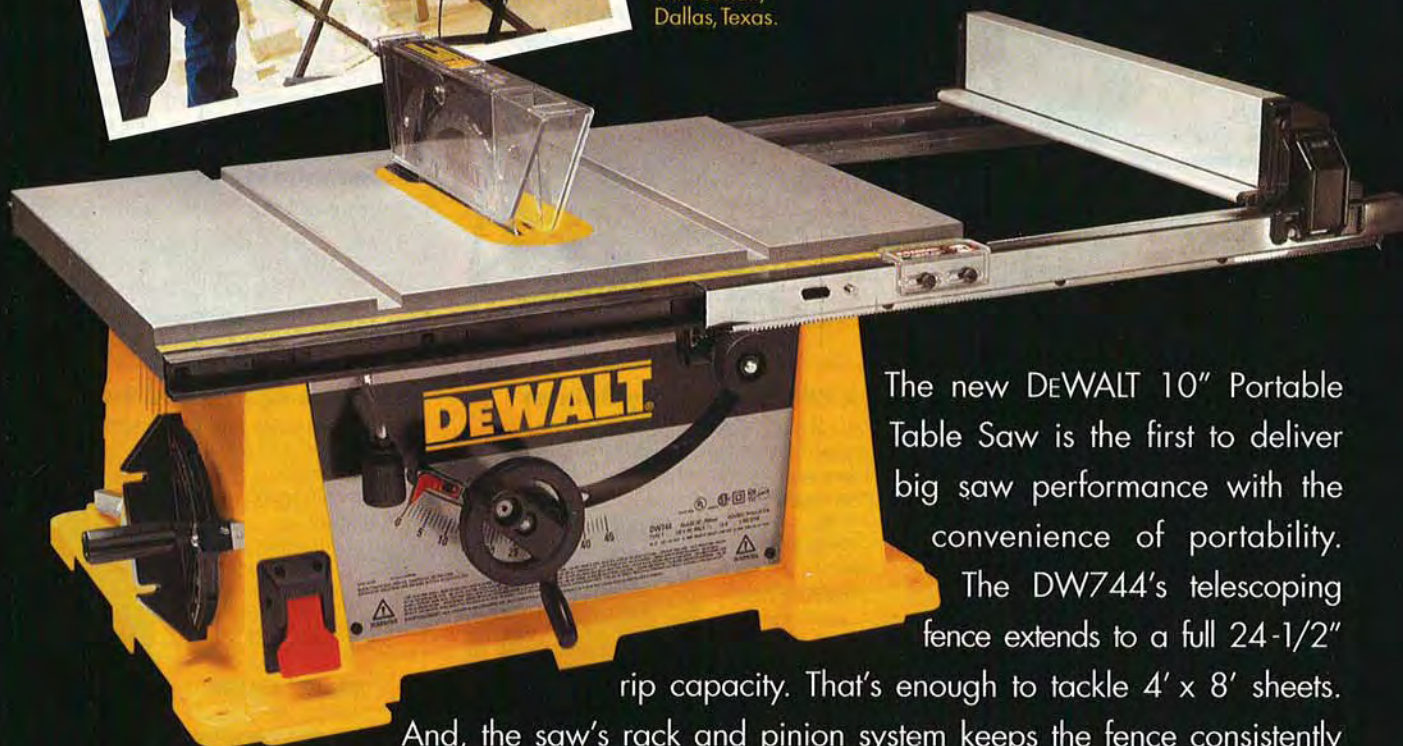






RIP IT UP,  
THEN PACK IT UP.

On the job with  
Jack Rule Custom  
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Dallas, Texas.



The new DEWALT 10" Portable Table Saw is the first to deliver big saw performance with the convenience of portability. The DW744's telescoping fence extends to a full 24-1/2"

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- Large Capacity: 4"
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**Model G1064**

only ~~\$39<sup>95</sup>~~  
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- Includes wooden box
- Top quality!
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- 1/3 H.P., 110V motor
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- 1/2" rabbeting capacity
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## 8" x 65" Heavy-Duty Jointer

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- Heavy duty, center mounted fence
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- Approx. shipping weight: 450 lbs.



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- 1 H.P., 110/220V motor, 1720 RPM
- Built in 4" dust collection port
- Cast iron 25" x 25" table tilts to 45° - up to 20°
- 10 spindle sizes
- Spindle oscillates at 75 strokes/min.
- Approx. shipping weight: 345 lbs.



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only ~~\$495<sup>00</sup>~~  
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## 1-1/2 H.P. Shaper

- 1-1/2 H.P., 110/220V motor
- 2 Interchangeable spindles: 1/2" & 3/4"
- 2 spindle speeds: 7,000 & 10,000 R.P.M.
- Cast-iron table
- Approx. shipping weight: 225 lbs.



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A low, low price ~~\$425<sup>00</sup>~~  
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## 3 H.P. Shaper

- 3 H.P., 220V motor
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- 2 spindle speeds: 7,000 & 10,000 R.P.M.
- Precision-ground cast-iron table
- Table w/standard wings measures: 30" x 28"
- Approx. shipping weight: 375 lbs.



**Model G1026**  
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**ONLY \$30 SHIPPING!**

## 14" Bandsaw

- 3/4 H.P., 110/220V motor,
- Maximum throat distance: 13-1/2"
- Maximum cutting height: 6"
- Blade speed: 2400 F.P.M.
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- Accepts blades from 1/16" to 3/4" wide
- Approx. shipping weight: 200 lbs.



**Model G1019**  
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- Cast iron table & wings
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- Front & rear quick lock fence
- New sturdy stand
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- Cast iron table w/wings: 27-1/8" x 40-5/8"
- 2 cast iron extension wings
- Re-designed fence w/T-slots
- See-through guard
- Approx. shipping weight: 270 lbs.

**Model G1022Z**  
only \$449<sup>00</sup>  
**ONLY \$30 SHIPPING!**

### 10" Tilting Arbor Super Heavy-Duty Table Saw



- 3 H.P., 220V motor
- Heavy-duty rip fence
- Cast-iron table & wings
- Triple belt drive
- T-slotted table
- Approx. shipping weight: 425 lbs.

**Model G1023**  
REG. \$795<sup>00</sup> only \$695<sup>00</sup>  
**ONLY \$30 SHIPPING!**

### 10" Tilting Arbor Super Heavy-Duty Table Saw



- 3 H.P., 220V motor
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- Shop Fox® Fence
- Built in dust port
- 1 pc. steel type cabinet
- Beveled table edge
- Approx. shipping weight: 450 lbs.

**Model G1023Z**  
only \$1095<sup>00</sup>  
**ONLY \$30 SHIPPING!**

### 2 H.P. Dust Collector



- 2 H.P., 220V motor
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- 2 Intake holes
- Portable Base
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**Model G1029**  
only \$255<sup>00</sup>  
**ONLY \$30 SHIPPING!**

### 12" Planer



- 2 H.P., 110V motor
- Cast iron columns
- Max. cutting width: 12"
- Min. board thickness: 1/4"
- Cutterhead R.P.M.: 8500
- 55 cuts per inch
- Approx. shipping weight: 90 lbs.

**Model G1017**  
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**only \$30 Shipping!**

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**Model G1021**  
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### 16" Bandsaw



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- Max. lumber height: 6"
- Planing feed rate: 20 F.P.M.
- Moulding feed rate: 10 F.P.M.
- Approx. shipping weight: 230 lbs.

**Model G1037**  
REG. \$795<sup>00</sup> only \$695<sup>00</sup>  
**only \$30 Shipping!**

### 20" Planer



- 3 H.P., 220V motor
- 2 speeds
- Cast iron construction
- Precision ground cast iron table
- Anti-kickback fingers prevents board back ups
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# Better Homes and Gardens® WOOD®

THE WORLD'S LEADING WOODWORKING MAGAZINE

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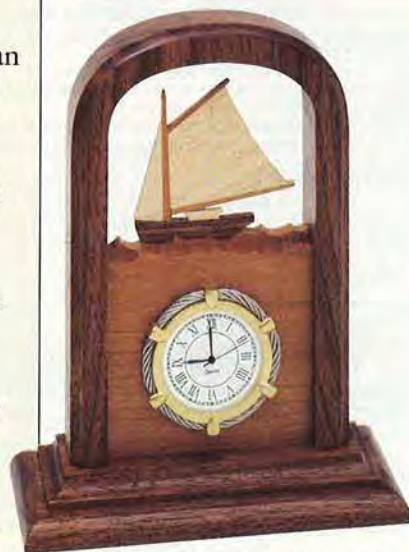
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*Better Homes and Gardens® WOOD®* magazine (ISSN-0743-894X) is published nine times a year in January, February, March, April, June, August, October, November, and December by Meredith Corporation, 1716 Locust St., Des Moines, IA 50309-3023. Periodicals postage paid at Des Moines, Iowa, and additional mailing offices. *Better Homes and Gardens* trademark registered in Canada and Australia. Marca Registrada en México. **ONE-YEAR SUBSCRIPTION PRICES:** U.S. and its possessions, \$25; Canada, \$36; other countries, \$45. Canadian GST Reg. #BN 12348 2887 RT. **POSTMASTER:** Send address changes to *Better Homes and Gardens WOOD Magazine*, P.O. Box 55050, Boulder, CO 80328-5050.

**CUSTOMER SERVICE INFORMATION:** For service on your magazine subscription including change of address, phone toll-free **800/374-9663**. Or, write to *Better Homes and Gardens WOOD Magazine*, P.O. Box 55050, Boulder, CO 80328-5050. Please enclose your address label from a recent issue.

**EDITORIAL INFORMATION:** Address letters and questions to THE EDITOR, *WOOD Magazine*, 1912 Grand Avenue, Des Moines, IA 50309-3379.

**ATTENTION RETAILERS:** To carry *WOOD* magazine in your store, call 800/659-5990, or write: Select Title Program, *WOOD* magazine, 900 Kingsland, Batavia, IL 60510.



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## THE EDITOR'S ANGLE

# THESE WOOD BASKETS MAY VERY WELL HAVE SAVED HIS LIFE



In the fall of 1996, *WOOD®* magazine reader Joe Melcher got some bad news. He had prostate cancer. Like so many other men in his situation, he had to decide how to fight it. Joe chose radiation. And he also made another decision that may have been every bit as lifesaving. He took up basketmaking. "I needed something to keep my mind off my illness, and making baskets has really helped me get through this stressful time."

I found out about Joe's condition in the spring of 1997 when his wife Barbara, a part-time employee here at *WOOD* magazine, brought in some of Joe's work one day. There must have been 20 different styles and shapes of baskets, and were they ever great looking. Then, when Barbara told me that Joe was largely self taught, I was even more impressed with his skill.

A few days later, I asked Barbara if she thought Joe would mind doing a workshop for the *WOOD* magazine staff. She checked, and a few weeks later Joe showed up with all the necessary materials and supplies in hand.

It turns out that Joe is not only a terrific basketmaker, but also a highly effective teacher. In about six hours, under Joe's able direction, each of his 10 eager students crafted a basket that looks professionally made. (Don't be surprised if you see a step-by-step basketmaking article in an upcoming issue.)

One of Joe's *WOOD* magazine students, Jim Downing, got so excited by his basketmaking success that he hosted a basketmaking party for some of his relatives a few weeks later. He reports that everyone had a great time doing their basketmaking thing.

So, how's Joe getting along these days? He's confident that he's got his cancer licked, and he's still cranking out a ton of beautiful baskets. And in addition to the satisfaction basketmaking gives him, Joe cites this advantage, especially for weight-conscious woodworkers: "I can sit down all afternoon making baskets and not even think about going to the refrigerator."

Thanks Joe, and the best of luck to you and Barbara in the future. 🌿

*Larry Clayton*

Photograph: Larry Clayton





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## TALKING BACK

### Nailing down the facts

In the June 1997 issue, in Talking Back, a Canadian gentleman states that all nails have a stamping line and two saw-toothed edges—not quite true. Cold-formed nails, formed from a coil

of wire, have neither a saw-toothed edge nor a stamping line. To keep these nails from splitting the wood, blunt the point first, then drive the nail.

—George Fanning, Orange, Calif.

### Get a grip with this homemade solution

I love the tenoning jig that appeared in the June 1997 issue. But, when I couldn't find a local supplier for the plastic knobs, I built a knob using scrap birch and a 3/8" T-nut. Here's how:

**1** Draw vertical and horizontal centerlines on 3/4x4x4" stock.

**2** With a 1" forstner bit, drill a hole 1/4" deep in the center as shown below.

**3** Next, drill out the grips using the same bit to cut holes at 3, 6,

9, and 12 o'clock, spaced 1 3/8" from the center of the blank.

**4** Using a circle cutter set to 1 1/2", cut the knob free.

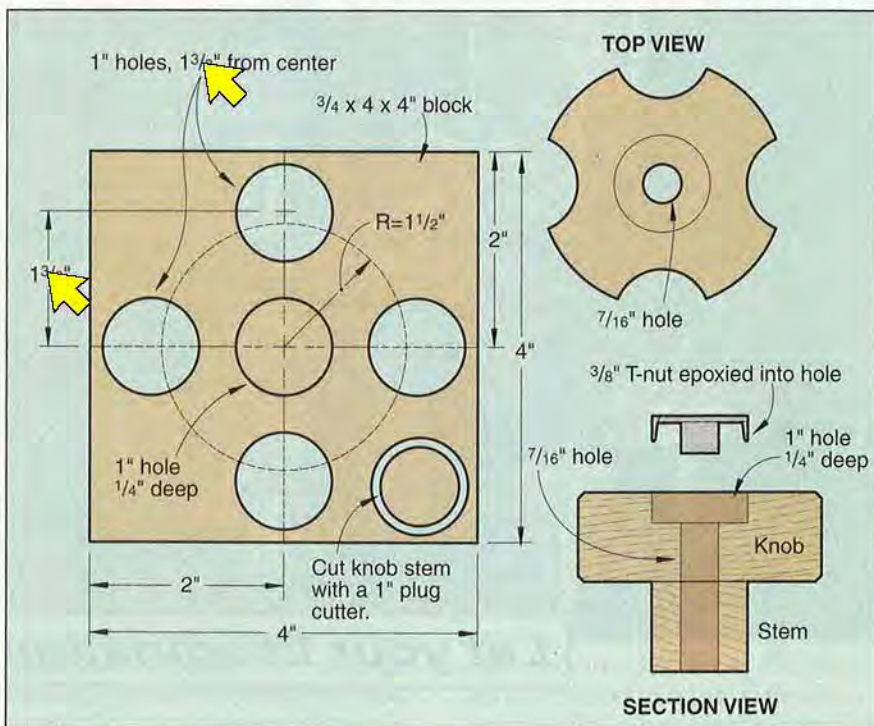
**5** From remaining material, cut a 1" knob stem with a plug cutter.

**6** Glue knob and stem together.

**7** Drill a 7/16" hole through the center of the assembly to accommodate the 3/8" bolt and 3/8" T-nut.

You'll have an attractive knob that you can really get a grip on.

—Dennis O'Leary, Windsor, Calif.



### Let us know what's on your mind

We welcome your comments, criticisms, suggestions, and yes, even compliments. We'll do our level best to respond to you, perhaps on this page!

Write to us at: Talking Back, WOOD Magazine, 1912 Grand Ave., Des Moines, IA 50309-3379. Send e-mail to: [woodmail@woodmagazine.com](mailto:woodmail@woodmagazine.com)

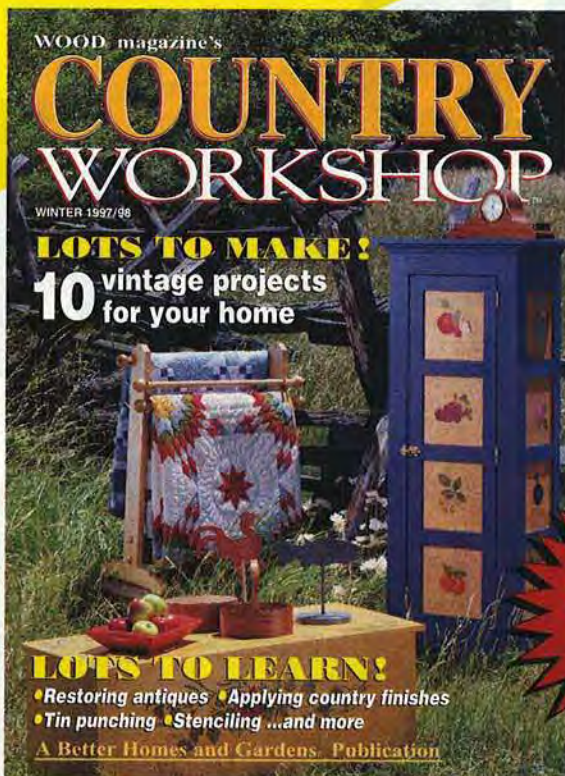
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# ALL-NEW!

From the editors of Better Homes and Gardens® WOOD® Magazine



## Take your woodworking skills up a notch or 10 with these fun-to-build country classics!

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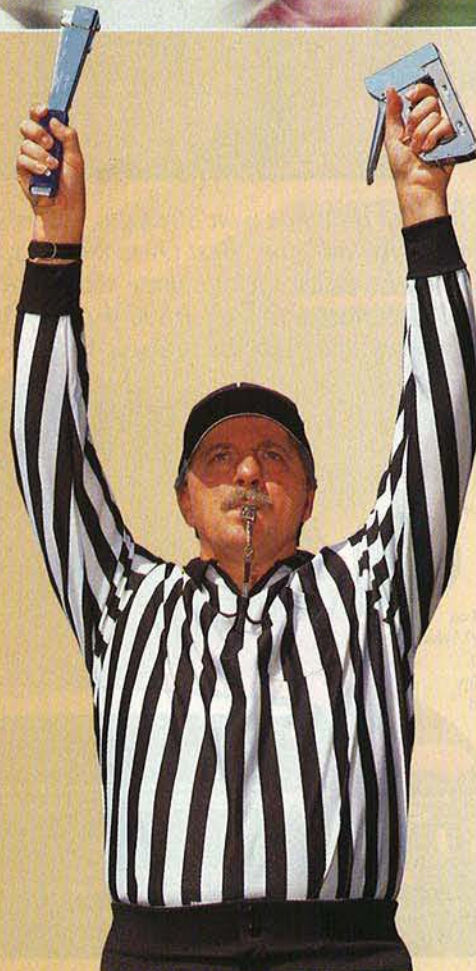
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Continued from page 8

## Out of the valley and into the kitchen

I loved the "Punched-tin wall cabinet" in the January 1997 issue. But, I decided to find out what would happen if I used regular aluminum flashing, or valley tin. The doors now have a warm cop-

pery tone that goes well with the copper flavor of our kitchen. Here's how I did it:

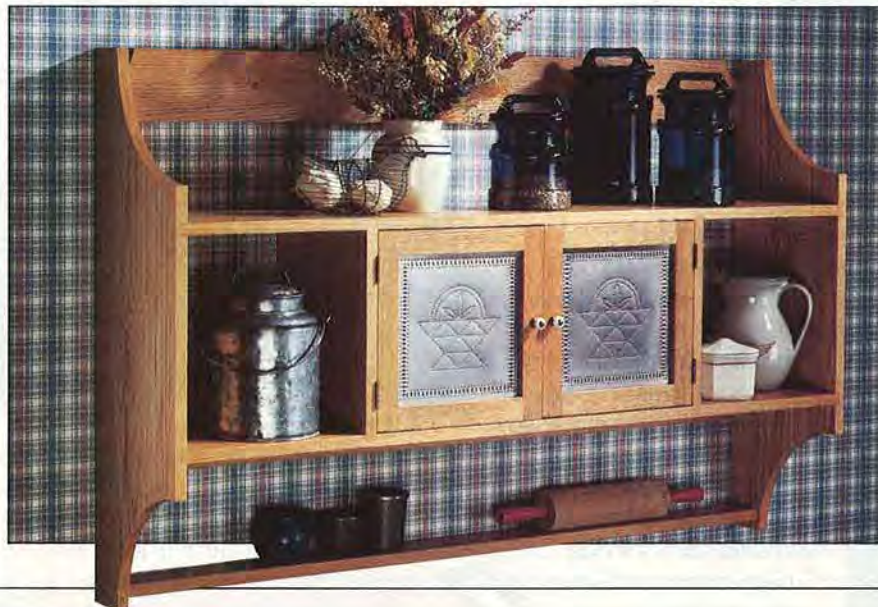
First, wear gloves to cut the flashing to size. Next, punch out your pattern on the shiny side

and clean it with detergent. Then, soak it in white vinegar for 24 hours. After soaking and to avoid problems with water spots, let it air-dry completely before going to the next step.

Once the flashing dries, place it in the oven, with the shiny side up, and turn up the heat to broil. In 15 to 20 minutes, the surface should develop a nice bronze or coppery tone (the back side will turn black). The longer you heat it, the darker it will become.

After punching, soaking, cooking, and cooling, coat the flashing with a few coats of spray-on lacquer or polyurethane. Without this protection, the new copper color will scratch easily. The final result looks great and adds even more warmth to our already warm and cozy kitchen. ♣

—Ken Hayes, Ontario, N.Y.



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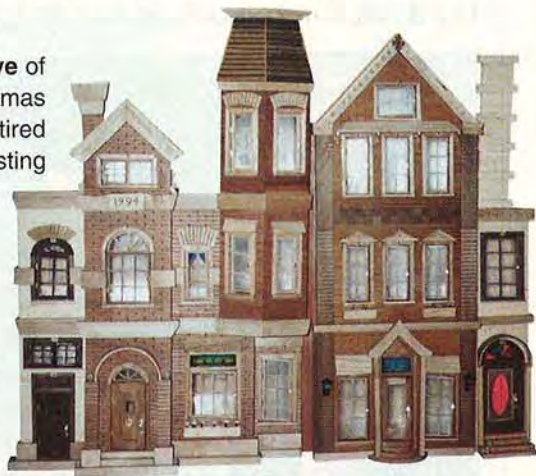
# Project Showcase

 Print this article

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## Village's doors and windows count days to Christmas

Asked to build an advent calendar that wasn't "a bunch of boxes," **Ruth Waye** of St. Charles, Missouri, took inspiration from those popular decorative Christmas villages. Her village calendar stands 27" tall and spans almost three feet. Retired from teaching (and other occupations, "because I have found many interesting things to work at"), Ruth, 71, says she's been working with wood for at least 60 years.



## Serving tray showcases exotic woods and veneers

This serving tray, like others that **Matt Morian** has built, started out as a piece of  $\frac{5}{16}$ " aircraft birch plywood. Matt, a Jasper, Texas, ag implement dealer, veneered the tray with satinwood and lacewood, adding a ready-made shell inlay and banding. Koa edging and handle brackets, wenge feet, and turned pink ivory handles complete the 13x19" tray.



## Cherry china cabinet tops Texan's woodworking so far

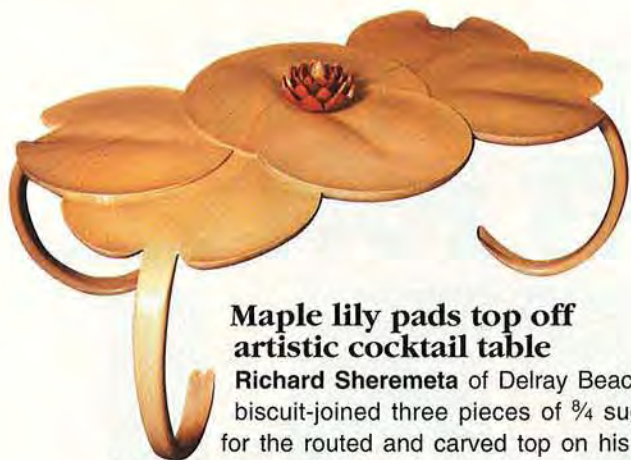
"This is the capstone of my nearly 50 years of furniture making," says **Don Jackson** of his Queen Anne china cabinet. Don, a university registrar living in Blanket, Texas, spent six months building the 92"-tall cherry cabinet for his wife's birthday. His design incorporates features taken from photos and illustrations in books. "Marilynn is proud of it," Don reports, adding, "this is all that matters to a woodworker-husband, isn't it?"

## Father-to-be fills nursery with handmade furniture

While **Chad Frey** and his wife, Michele, anticipated the birth of their first child, Chad got busy in his San Jose, California, workshop outfitting the nursery. He built a crib (from *WOOD*® magazine plans), some wall shelves, and this oak dresser of his own design. The birth of Christopher Michael Frey has undoubtedly altered household routines. But Chad, a plumber by trade, says he still finds time for woodworking.







### Maple lily pads top off artistic cocktail table

**Richard Sheremeta** of Delray Beach, Florida, biscuit-joined three pieces of  $\frac{3}{4}$ " sugar maple for the routed and carved top on his Lily Pond cocktail table. He also resawed the  $\frac{3}{16}$ " strips for the bent-leg laminations from  $\frac{3}{4}$ " stock. A civil engineer and longtime woodworker, Richard has won many awards for his artistic furniture. This table, featuring a carved Honduras mahogany lily blossom, is 18" tall, with a 24x42" top.



### Attention to detail enlivens Old West carvings

Driven by his interest in the Old West, woodcarver **Lynn Doughty** recreates frontier times in detailed tableaux and caricature figures, such as the old prospector shown. "While my work is of a humorous nature, I strive to ensure it remains correct in both detail and setting," the Jay, Oklahoma, carver says. He's working now on a saloon scene.

### Clocks chime relief for busy wife, mother, woodworker

A 4-H woodworking project 20 years ago blossomed for **Jeannie McConkey**. Now she designs and builds grandfather clocks and other furniture. Jeannie has given her two sons clocks, and she's constructed a rolltop desk and gun cabinet for her husband and a china hutch for herself. A University of Nebraska soil fertility researcher living in Scottsbluff, Nebraska, Jeannie retreats to her shop for both fun and stress relief.

### High-style rustic furniture incorporates carved decor

**Jack Orrick** of Muncie, Indiana, taught himself woodcarving about five years ago. Later, the retired lawman started building rustic furniture, and decided to incorporate carving into his designs. "Every piece is a new challenge because nature helps determine the final creation," Jack says. He crafted this 42"-tall chair from gnarled, bark-on beech wood. Carved heads with long, winding beards top the back posts.

*Continues on page 16*





# Project Showcase

Continued from page 15

## Gathering the wood was the longest part of secretary project

**Charlie Bodine** of Big Lake, Minnesota, collected different types of wood for more than a year before building this drop-front secretary. The 40" tall desk features figured maple, distressed cherry, and rosewood, with biscuit and dowel joinery. "Woodworking has been in my blood for more than 20 years, but I have only been a cabinet-maker for the last six years," says Charlie, who works for a central Minnesota cabinet shop.

## Sideboard gave woodworker a chance to try stone cutting

**Steven Murphy** took some liberties with the Craftsman style, topping his sideboard with about 75 pounds of solid granite, which he cut and polished himself. Built to add workspace to a small kitchen, the piece wouldn't be as practical with a wood top. Steven picked up woodworking from his father, first cutting wood on a scrollsaw built by his grandfather. Most of his father's tools now reside in Steven's Berkeley, California, basement workshop.



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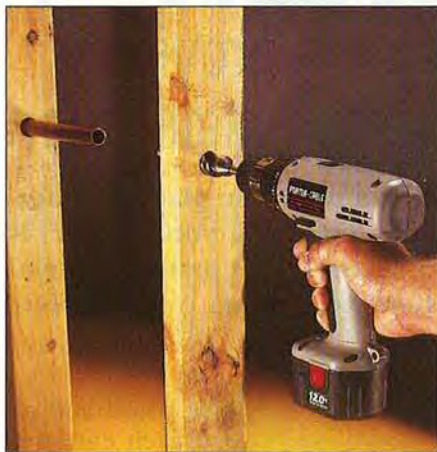
- Send sharp color slides or glossy prints of the item. (We can't use Polaroid photos.) Avoid cluttered or busy backgrounds in your shots. Photos cannot be returned.
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- Describe features, wood, finish, and overall dimensions.
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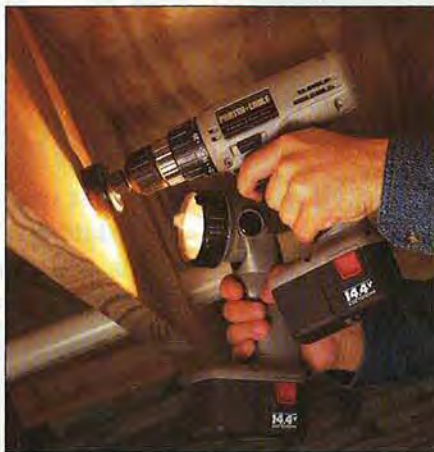
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# Table-mount your router—the easy way



A phenolic mounting plate lends your router table a professional look, and eases router installation and removal.

## A plastic plate provides simple, secure installation

You just can't beat a phenolic plastic mounting plate for table-mounting your router. It holds the router securely, yet makes removal easy. Here's how to install one in your router table.

### Cut the table opening

**1** Position the router mounting plate on the tabletop. Locate it for convenience, ensuring that the router will clear any under-table obstructions. Trace the plate's outline on the tabletop as shown in *step 1* of the illustration below.

**2** Next, lay out the cutting line for the tabletop opening. To do this, draw a line  $\frac{1}{2}$ " inside the router plate outline, as shown in *step 2* of the drawing. Mark a point 2" each direction from each corner, and connect them to make corners like those shown.

**3** Drill a start hole for your jig-saw's blade where shown. Cut the opening in the tabletop.

### Route the recess

**1** Cut four routing guide boards from  $\frac{3}{4}$ "-thick solid stock, 4–5" wide. You'll need two pieces the same length as your router mounting plate and two more as long as the sum of the plate width plus two guide-board widths. Each should have a straight, true edge that's square to both ends.

**2** With strips of double-faced tape at the corners, affix the router plate to the tabletop inside the drawn outline. Lay one of the long guide boards on the tabletop, abutting the front edge of the mounting plate, as in *step 3* of the drawing. Slip a thin spacer, such as a business card, between the

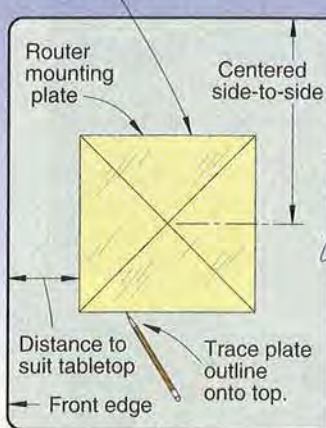
edge of the guide board and the mounting plate at each end, then clamp the board.

**3** Clamp the remaining guide boards around the plate as shown, spacing each board away from the plate with business-card shims. With the boards in position, remove the router mounting plate and the shims.

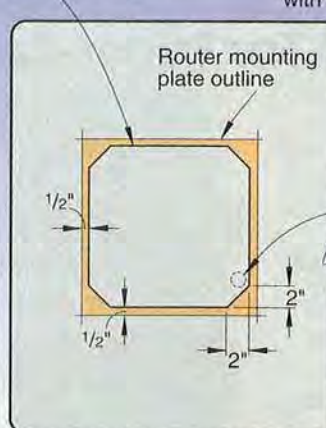
**4** Install a straight bit with top-mounted pilot bearing in your router. (Bits of this type go by a variety of names, among them: pattern, flush-trimming, hinge-mortising, bottom-cleaning, or stair-routing. We used an Oldham no. 340-4FT bit.)

*Continued on page 20*

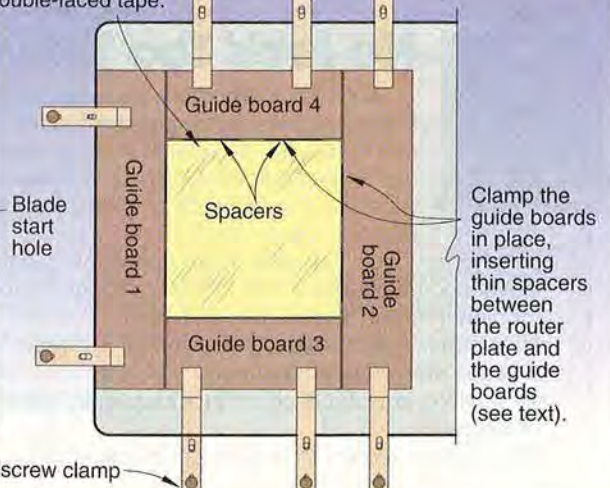
**STEP 1** Position plate on tabletop.



**STEP 2** Lay out the opening cutlines inside the traced outline.



**STEP 3** Secure router plate inside traced outline with double-faced tape.



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## Table-mount your router

*Continued from page 18*

**5** With the router base resting on the surface of the guide boards, adjust the cutting depth to rout  $\frac{1}{8}$ " deep into the tabletop. Then, guiding the bit's pilot bearing along the inside edge of the guide boards, rout the recess. Make additional passes, lowering the bit each time until you reach a depth equal to the thickness of the router mounting plate.

### Install the plate and router

**1** Sand the mounting plate's corners to match the recess's rounded, routed corners. Lay the plate in the recess, and  $\frac{3}{4}$ " in from each corner drill a  $\frac{1}{16}$ " hole through the plate and tabletop.

**2** Remove the plate from the table, and enlarge the holes through it to  $\frac{1}{4}$ ". Countersink the holes on the plate's top surface.

**3** Guiding on the  $\frac{1}{16}$ " holes in the tabletop, drill  $\frac{3}{8}$ " holes for threaded inserts. Put two nuts on a  $\frac{1}{4}$ " bolt about 2" long, and thread it into one of the threaded inserts. Jam the nuts against the top of the insert, and turn the bolt with a wrench (a ratchet handle with a socket works best) to screw the insert into the hole. Similarly install the remaining three inserts.

**4** Bore the router-bit hole at the center of the plate. Size the hole  $\frac{1}{8}$ " larger in diameter than the largest bit you'll be using.

**5** Remove the router's base plate. Using it as a template, mark locations for the screws that attach the router to the plate. Drill and countersink holes of appropriate size for the screws used. Attach the router to the plate with flat-head machine screws.

**6** Drop the plate and router into the recess. Secure the plate with a  $\frac{1}{4}$ "-20x $\frac{3}{4}$ " flathead machine screw at each corner. 🌿

Illustrations: Roxanne LeMoine; Lorna Johnson  
 Photograph: Hetherington Photography



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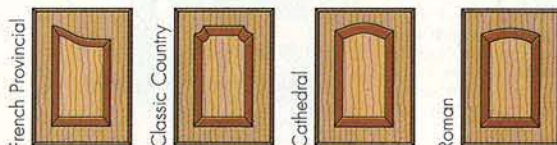
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**Top Shop Tip** winner Martin Beijer displays a trunk he recently built.

Although he's been a woodworker for only seven years, Martin Beijer has built a lot of projects in that time, including an entertainment center and a knock-down wagon. Lately, he's focused on producing decorative wooden boxes.

Even when building these relatively small boxes, Martin must take full advantage of his limited workshop space. So, he makes multiple use of tools and work surfaces. For example, he gets triple duty out of his table-saw extension table, *right*.

Your solution to a particular woodworking problem may be worth \$40. If it's selected as the Top Shop Tip, you'll win a tool prize valued at \$250 or more. To submit a tip, send a letter, including your daytime phone number, and a photo or drawing of your idea, to:

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*Bill Krier*

ASSISTANT MANAGING EDITOR

## Extension table pulls extended duty

I already have my router mounted in the extension wing of my table-saw to save space. But when I wanted to build a downdraft sanding table, I figured out a way to get triple duty out of the extension.

First, I cut a second acrylic insert the exact size of the one for my router. Then, I marked out and drilled a gridwork of  $\frac{5}{16}$ " holes spaced  $\frac{3}{4}$ " apart in the insert. Next, I built a dust box as shown *below*. Finally, I glued the box to the bottom of the acrylic insert.

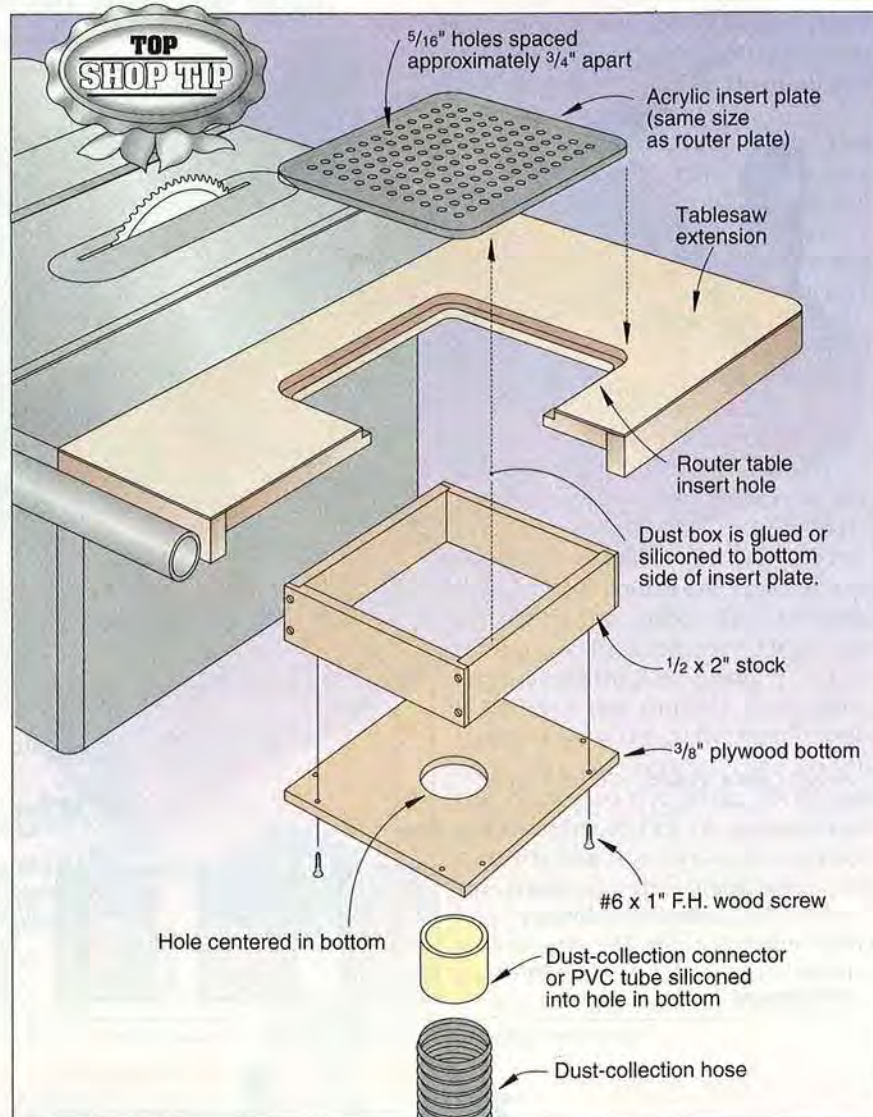
Now when I need to sand a project, I lift out the router, drop in



For submitting the Top Shop Tip for this issue, Martin wins a DeWalt DW321K Heavy-Duty Jigsaw. Congratulations, Martin!

the sanding insert, connect the dust-collection hose, and sand away. My shop stays cleaner, and I still have room to move around.

—Martin Beijer, Castak, Calif.

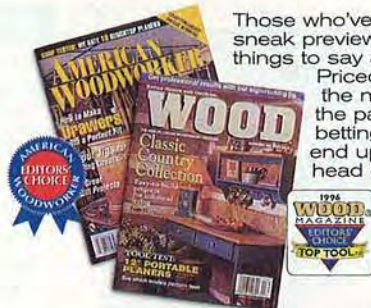


Continued on page 24





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## TIPS FROM YOUR SHOP (AND OURS)

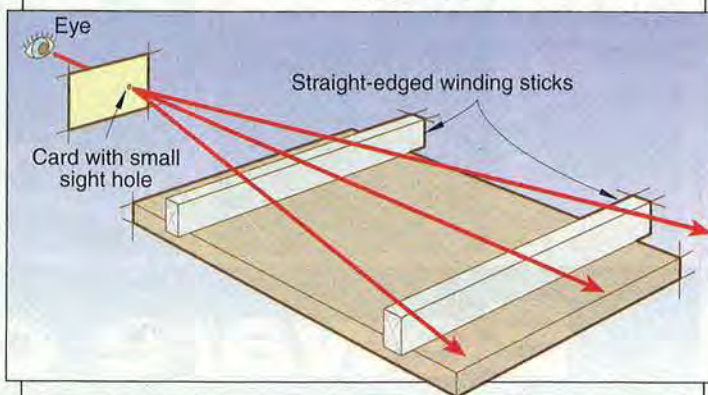
Continued from page 22

## Pinhole aperture brings flatness into focus

To check the surface of a panel for twists or warps, many woodworkers use winding sticks. You lay two straight-edged sticks on the panel and sight across the top edges of the sticks. If the panel isn't flat, the edges of the sticks won't appear to be parallel. I've used this method in the past, but as I've gotten older, my eyesight doesn't allow me to focus on both sticks at once.

To overcome this problem, I punch a small hole (less than 1/32") in a note card. Sighting through this "pinhole aperture," as shown below, increases the depth of field and brings everything into clear focus. I use the same technique to sight along the edge of boards to check them for straightness.

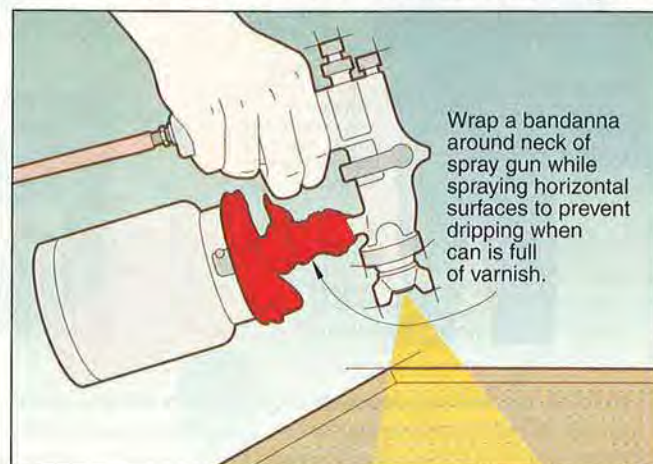
—Jeff Gaynor, Rootstown, Ohio



## Bandanna catches paint gun drips before they fall

It seemed that whenever I tipped my spray gun to apply finish to a horizontal surface, a drip from the canister would spoil my work. To keep drips in check, I wrap a bandanna around the neck of the spray gun. The bandanna absorbs any leaks before they drip so I can concentrate on laying down smooth, even coats of finish.

—Perry McFarlin, Assistant Art Director, WOOD® magazine



Continued on page 26



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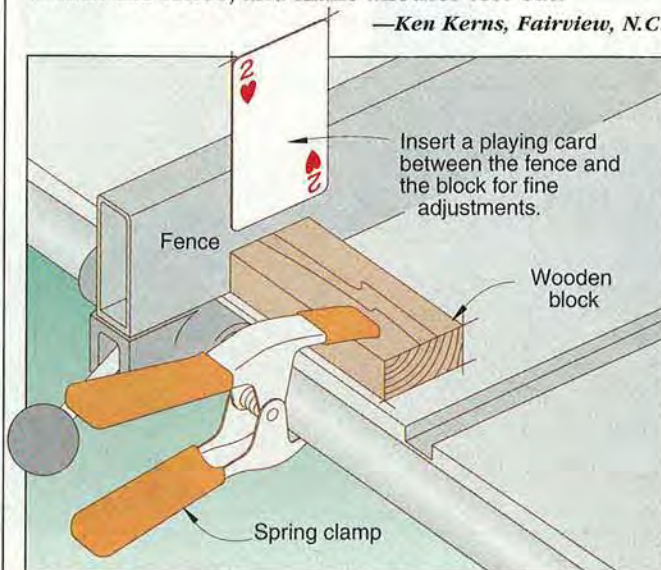
## TIPS FROM YOUR SHOP (AND OURS)

*Continued from page 24*

### Micro-adjust your tablesaw fence with playing cards

My tablesaw fence doesn't have a micro-adjustment knob, but that doesn't stop me from making finely tuned cuts. To make a cut on the money, I make a test cut in scrap and check the measurement. Then I slide a wooden block against the inboard or outboard side of the fence—depending on which way I need to adjust the cut—and clamp the block to the saw table. Next, I loosen the fence, insert a playing card or two between the block and the fence, relock the fence, and make another test cut.

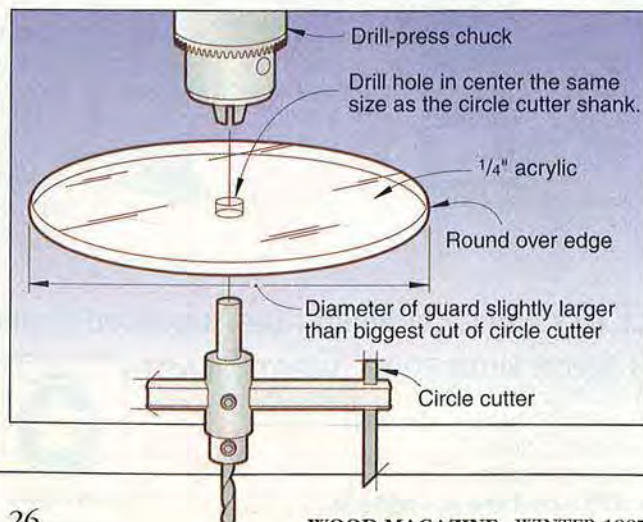
—Ken Kerns, Fairview, N.C.



### Plastic disc guards fingers from spinning circle cutter

I recently purchased an 8" adjustable circle cutter for cutting clock-face holes. But the spinning arm of the cutter scared the heck out of me when I used it. So, to keep my fingers away from the danger, I made a guard from 1/4" acrylic as shown below. The guard fits between the cutter and the drill-press chuck, and the clear plastic lets me see the work.

—Pat Grashorn, Gilcrest, Colo.



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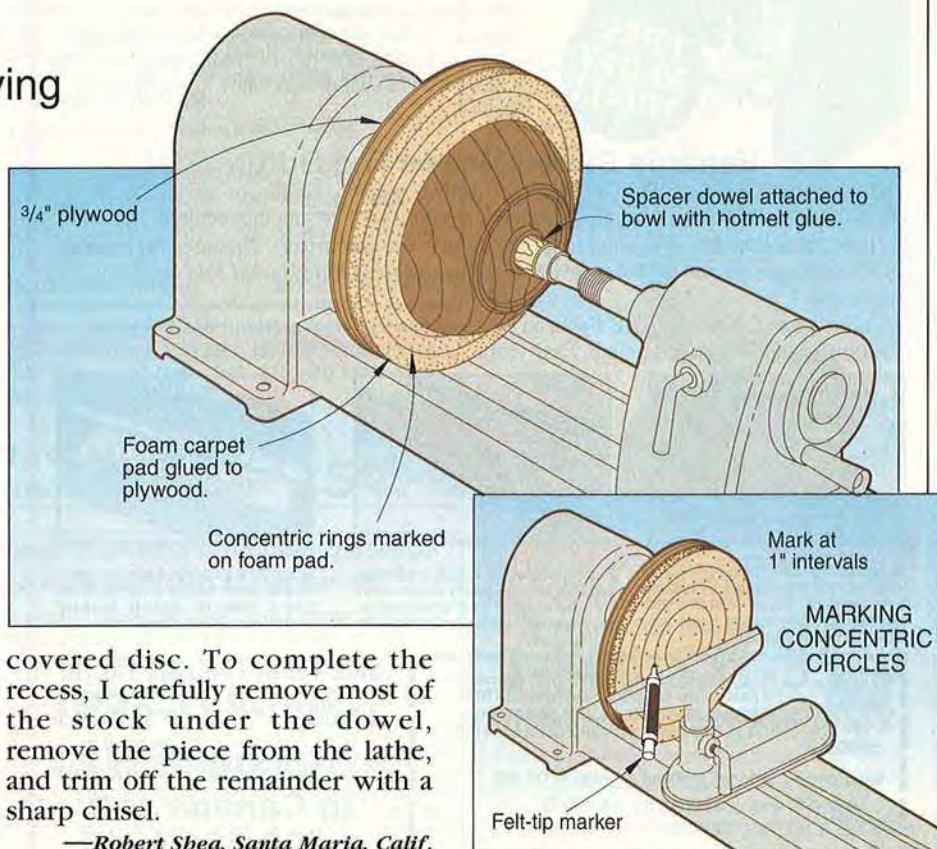
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## Carpet pad makes relieving bowl bottoms a breeze

Cutting the relief in the bottom of a turned bowl is easy now that I've developed a padded faceplate. I mounted a large 3/4" plywood disc to a standard lathe faceplate. Then, using contact cement, I glued a piece of foam carpet pad to the front side of the plywood disc.

Starting about 2" from the center, I marked out concentric circles at 1" intervals using a felt-tip marker as shown in the inset drawing *lower right*. The circles allow me to center bowls of different diameters on the foam-covered face of the plywood disc.

To mount a bowl, I use a dab of hotmelt glue to secure a short length of 1" dowel to the bottom of the bowl. The tailstock center fits against the dowel and holds the bowl firmly against the foam-



covered disc. To complete the recess, I carefully remove most of the stock under the dowel, remove the piece from the lathe, and trim off the remainder with a sharp chisel.

—Robert Shea, Santa Maria, Calif.

Continued on page 28



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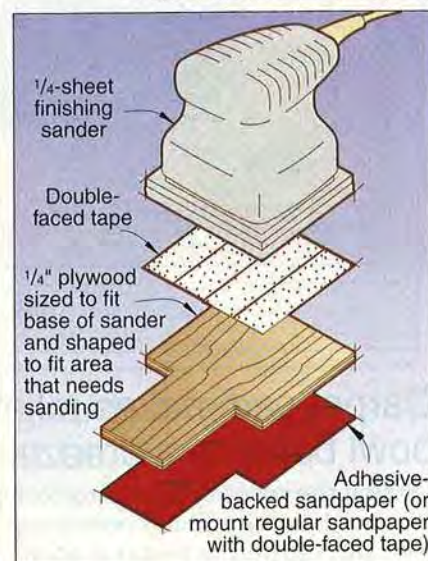
Continued from page 27

### For tight spots add an extender to sander

When you come across a small spot your 1/4-sheet finish sander can't reach, try this trick. Cut a piece of 1/4" plywood in the shape of the base of your sander, and include in this shape a short extension that will fit into the area you can't reach.

Attach this auxiliary base to the pad on your palm sander with double-faced tape. Then, cut out a piece of adhesive-backed sandpaper in the shape of your auxiliary base, and secure it to your modified sander. During use, apply light pressure to avoid dislodging the auxiliary base.

—Karl Faust, Gilbertville, Pa.



### A FEW MORE TIPS FROM OUR WOODWORKING PROS

- Looking for a safe, simple way to scrollsaw tiny parts? If so, turn to *page 74*.
- In the same article, learn how stacking the parts before scroll-sawing can help you achieve a perfect edge joint between irregularly shaped pieces.
- See how we positioned guide boards to rout a rabbeted opening for a router-table insert on *page 18*. Apply this technique whenever you need to rout a precisely sized opening. 🌲

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- ★★★★★ Excellent in Melamine-faced particleboard
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Diam.	No. of teeth (blades)	No. of wings (Chippers)	Arbor	Cutting width
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Includes four 1/8", one 1/16" & one 3/32" Ply-Groove™ Chipper

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#### Specifications: (both blades 10" diameter with 5/8" arbor)

Item #	No. of Teeth	Kerf Width	Hook Angle	List Price	Sale
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110-800 Ultra Cut	80	.125"	5°	\$100.90	<b>\$85.80</b>
110-233 Maxi-Combo & Ultra Cut Set				\$179.30	<b>\$119.00</b>

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210-500 Maxi-Combo Lite	50	.097"	12°	\$79.00	<b>\$64.90</b>
210-222 Both Thin-Kerf Blades				\$148.00	<b>\$99.90</b>
SBS-005 5" diam. blade stabilizers (set of 2)				\$25.20	<b>\$19.90</b>



Maxi-Combo's chamfered raker teeth virtually eliminate chipping.

Ultra-Cut's 40° top bevel slices the outside edges of the kerf first for chip-free cuts in 2-sided laminates.

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"If you don't like to change blades, or can only afford one blade, this one outperforms any combination blade I've seen." Dave Henderson, WOOD MAGAZINE

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# Port Orford Cedar

## The ship-shape wood that went underground

Sir Thomas Lipton, a wealthy British tea merchant turned yachtsman, had a fondness for Port Orford cedar (*Chamaecyparis lawsonia*). For the 30 years following the turn of the century, his racing sailboats, which challenged five times for the America's Cup, were built from it. Although Sir Thomas never captured the cup, he made Port Orford cedar a mainstay among boatbuilders (and his tea a household word).

Known also as Lawson's cypress, Port Orford cedar grows only in a 30-mile wide band from Coos Bay, Oregon, to Eureka, California. From pioneer times, the tree was harvested for its durable wood.

Uses for the stock ranged from venetian-blind slats to mine timbers and railroad ties. It also saw limited application as plywood in the construction of light aircraft.

Because Port Orford cedar resists acid, it became prime stock for storage-battery separators.

In addition to supplying all of the above needs, Port Orford cedar has long been the favorite wood of archers. Not for their bows, though, but for arrows. Besides straight grain, the wood has strength combined with lightness.

Perhaps Port Orford cedar's strangest destiny was the graveyard. Donald Culross Peattie, in his *A Natural History of Western Trees*, cites a great demand for the wood as caskets in China and Japan. Its lightness, durability, and satiny, finished texture, plus gingerlike odor, made it perfect. So much was used that Peattie writes: "Sometimes one wonders if there is not almost as much of it [Port Orford cedar] underground in Asia as there is above ground here." ♣

To meet the demands of international yacht racing, builders frequently turned to Port Orford cedar for their boats.

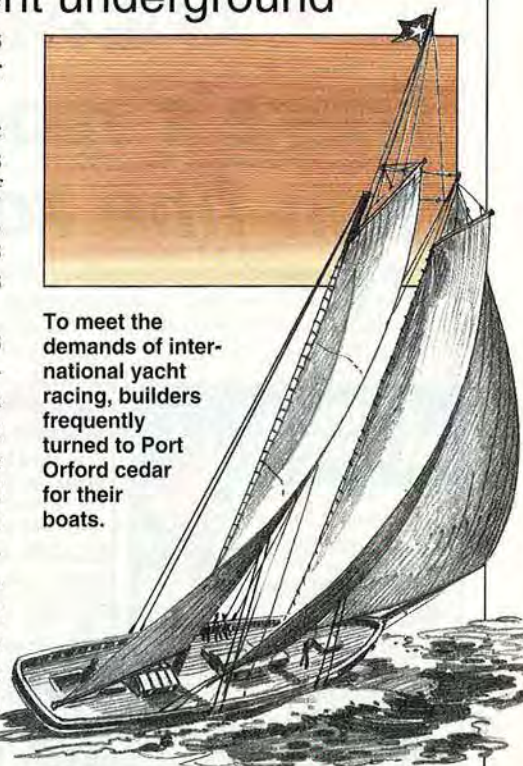


Illustration: Jim Stevenson

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\*Ball bearing included

**Carbide Tipped!**



\*Raised Panel Router Bit



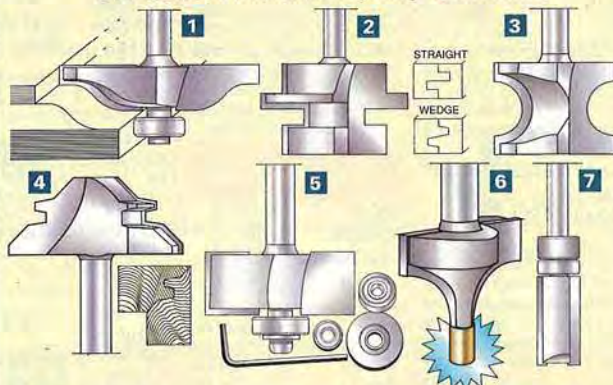
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# BEECH

## A tree with European ties and an American heritage

**L**ong ago, English bodgers crafted the legs of Windsor chairs from beech trees they felled in the forest. The long-wearing wood also became peasant footwear in the shape of shoes and clogs. And in the iron smelters of Germany, France, and England, beech was the fuel.

The vast beech forests that once covered large parts of Indiana, Kentucky, Ohio, and central Michigan were thus familiar to early European immigrants and travelers. But westward-moving pioneers in the new land discovered that the American beech grew in the choicest soils. So with ax and saw, they felled the trees to plant crops. In doing so, they destroyed the nut crop of the then numberless passenger pigeon. This move, combined with mass hunting, spelled their extinction.

Today, although the blanketing beech forests are gone, the tree remains plentiful throughout its range. Its hard, pliable, strong, and pretty wood, however, primarily furnishes stock for paper. That's because kiln-drying beech in commercial quantities has its pitfalls. Yet, some beech does become woodenware and furniture parts, as well as barrels for aging beer.

### Wood identification

While beech species grow in every hemisphere, the one you'll find in North America is American Beech (*Fagus grandifolia*). "Blue beech," which shares the same range, proves to be hornbeam.

In lower elevations, beech often grows in pure stands, with trees to 120' in height and 4' in diameter.

Beech has an unmistakable bark of shiny, silver-grey that fits its trunk like smooth skin. It seems to beg knife-point initialing, as was done by Daniel Boone on a Tennessee tree: "D. Boone, Cilled A Bar On Tree In Year 1760."

In early spring, yellow-green blooms appear with the newly formed leaves on beech's branches. By fall, small triangular nuts covered by prickly burs occur. These sweet, edible nuts provide wildlife with forage.

The wood of beech resembles yellow birch, but with a tint of red in the darker brown heartwood. The straight-grained, evenly textured stock frequently has an attractive ray fleck. It is hard,



Natural range

strong, and heavy—at 45 lbs. per cubic foot, it matches red oak.

### Uses in woodworking

Because beech steam-bends as readily as ash, it works well for chair legs and backs. In fact, this under-used wood could be made into any type of interior furniture, cabinets, flooring, and trim. As drawers, beech actually becomes slicker as it rubs against other wood members.

Woodturners use beech for items such as goblets with delicate stems. It's also ideal for food-use vessels like cutting boards and spoons because it imparts no odor or taste, and takes abuse. Carvers, though, find it difficult to tackle.

### Availability

Beech may not fill a bin at your hardwood retailer, especially if you live far from its range. However, the large suppliers that carry this hardwood normally offer it at a price below that of hard maple. And, you may find it in long boards up to 12" wide, but usually not as plywood.

Continued





# PERFORMANCE PROFILE

## beech

(*Fagus grandifolia*)

Beech sapwood

Beech heartwood

Slow-grown beech from the northern part of its range will give you the most woodworking satisfaction because of its tighter grain. But avoid stock that's only air-dried or you'll invest as much work getting rid of warp, twist, checking, and discoloration as you will making parts. Otherwise, work the wood using the following tips.

### Machining methods

Beech reacts to most machining much like maple or yellow birch, with some exceptions:

- Beech's hardness sometimes means chipping or tearout when planing or jointing with revolving cutterheads. If this happens, try reversing the board and taking a shallower cut.
- Deciding on grain direction when feeding the jointer can be a problem because of the evenness of beech's grain. If it gets confusing, simply set the table height for

a  $\frac{1}{16}$ " cut and proceed. If there's no tearout, gradually increase the cut to  $\frac{1}{8}$ ".

- Nearly as dense as hard maple, beech requires ripping with a rip-profile blade of 24 teeth or fewer to prevent dust buildup and burning in the kerf. Don't try to feed the wood any faster than the blade wants to cut it, and use your saw's splitter to defeat binding.
- Depend on a fine-toothed cross-cut blade to cut beech to length, again to prevent burning.
- When drilling beech, back the bit out frequently to clear the hole. This avoids burning, especially in end grain.
- Ballbearing pilots on your router bits and slow feed will eliminate burning. So will shallow passes across the grain.
- Beech works well with all glues. Detect squeezeout by wiping along the joint with paint thinner.
- Because of beech's hardness, always predrill for fasteners.

• Unlike maple, beech won't blotch when stained, and you can stain it to resemble other woods, particularly cherry.

• You'll find that beech accepts all types of finishes equally well. If you have stock with a distinct ray fleck, enhance it with clear penetrating oil.

### Carving comments

• Although generally not a carver's choice for hand tools, beech can be shaped with power carving burs. But don't start with aggressive burs. Use medium, then fine.

### Turning tips

• An excellent turning wood, beech presents few problems other than its hardness, which results in scratches if sanding is done across grain on the lathe. Always sand with the grain while the lathe is turned off. ♣

### SHOP-TESTED TECHNIQUES THAT ALWAYS WORK

*Any exceptions, and special tips pertaining to this issue's featured wood species, appear elsewhere on this page.*

- For stability in use, always work wood with a maximum moisture content of 8 percent, with 6 percent preferable.
- Feed straight-grained wood into planer knives at a 90° angle. To avoid tearing, feed figured wood or that with twisted grain at a slight angle of 15°, and take shallow cuts of about  $\frac{1}{32}$ ".
- For clean cuts, rip with a rip-

profile blade that has 24-32 teeth. For crosscutting, use a blade with about 40 teeth.

- Avoid drilling with twist drills. In wood, they tend to wander off the mark as well as cause breakout. Use a backing board under the workpiece.
- Drill pilot holes for screws.
- Rout with sharp, preferably carbide-tipped, bits and take shallow passes to avoid burning.
- Carving hardwoods generally means shallow gouge bevels—15° to 20°—and shallow cuts.

### BEECH AT A GLANCE

Cost	\$ \$ \$ \$ \$
Weight	🐘 🐘 🐘 🐘 🐘
Hardness	T T T T T
Stability	▲ ▲ ▲ ▲ ▲
Durability	🕒 🕒 🕒 🕒 🕒
Strength	💪 💪 💪 💪 💪
Toxicity	☠ ☠ ☠ ☠ ☠
Workability	🔪 🪚
Look-alike	Yellow birch



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# The ABC's of BANDING CURVES

If you've dreamed of making the perfect bond between a curved surface, such as an oval tabletop, and a band of complementary wood, this technique fulfills it.

**K**nowing how to add a band of complementary solid wood to an oval tabletop, or even a special serving tray, raises your woodworking skill a level or two. This is especially true if you can make the band fit with a barely visible joint line, as in our banded tabletop in the photo *above*. Here, we created the perfect joint between the ribbon-mahogany plywood center

section and the straight-grained, solid mahogany band. To add this skill to your woodworking repertoire, follow the step-by-step instructions here and on the following pages. We'll use the oval top for the coffee-table base on *page XX* as our working example. Also refer to the Curve-Banding Technique drawings on the following pages as you go through all the steps to a perfect fit.

## You'll need a template for the center sections

To build the four quarters of the oval tabletop's center section (we'll call this the *field* from here on), you will need to use the template used in the construction of the base top (A) in the coffee-table article. Follow the instructions on the full-sized pattern to shape it for use as a master template for this banded tabletop.

*Continued*





# Banding Curves

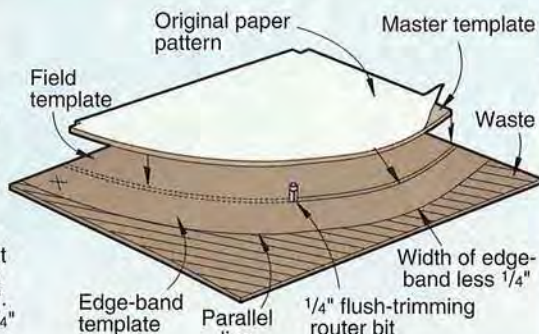
## THE CURVE-BANDING TECHNIQUE

### STEP 1

Using the master template as a guide, rout the field and edge-band templates to shape. Note that the field template created is exactly the same size as the master template, and the edge-band template is  $\frac{1}{4}$ " less in width than the required finished width of the edge-band.

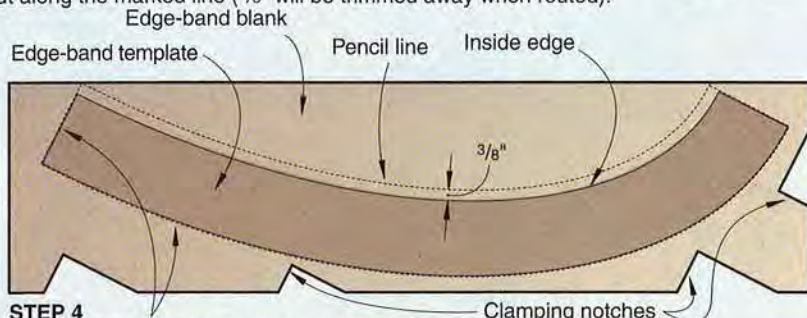
### STEP 2

Mark a line on the edge-band template parallel to the curved cut from Step 1, equal to the finished width of the edge band minus  $\frac{1}{4}$ ". See photo A for reference. The  $\frac{1}{4}$ " will be regained in Step 5. Cut along the marked line to finish shaping the edge-band template.



### STEP 3

Attach the edge-band template with double-faced tape to the edge-band blank. Mark a parallel line  $\frac{3}{8}$ " from inside edge of edge-band template onto the blank. Using a jigsaw, cut along the marked line ( $\frac{1}{8}$ " will be trimmed away when routed).

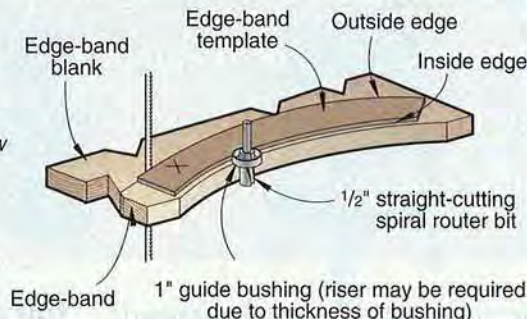


### STEP 4

Trace around the edge-band template on the other three sides. Do not cut these lines until after glue-up.

### STEP 5

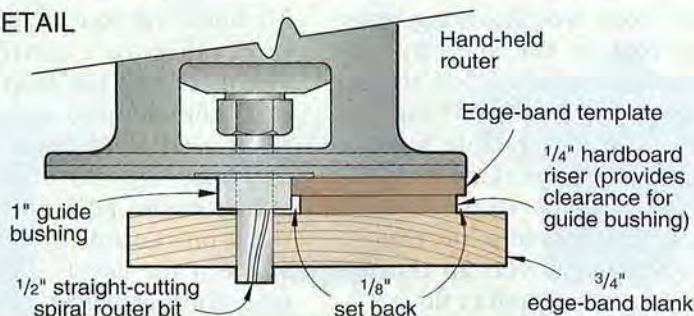
Now we gain back the  $\frac{1}{4}$ " lost in Step 1. Using a router with a 1" guide bushing and a  $\frac{1}{2}$ " straight-cutting spiral bit, rout the inside edge of the edge-band to shape (see the Riser detail below and photo B for reference).



### STEP 6

Mark outside edge onto blank. Saw along marked line to complete edge-band after glue-up.

### RISER DETAIL



Now, to make a matching pair of templates for the field and edge-band, adhere the master template to another sheet of  $\frac{1}{4}$ " hardboard with double-faced tape. Install a  $\frac{1}{4}$ " flush-trimming bit in your router, and at your router table, cut through the hardboard using the master template as your guide, as shown in Step 1 of the Curve-Banding Technique drawings left.

At this point, you'll have made a one-quarter field template with a true curved edge and the beginning of an edge-band template that has a matching curved edge. However, because you removed  $\frac{1}{4}$ " of wood from the edge-band template stock with the flush trimmer, you will need to compensate for this difference when routing the band to shape. Later, we'll tell you how to do this.

## Cut the band template and band stock

For our coffee-table top, set a compass at 2". Mark a pencil line on the edge-band template stock that parallels the curve of the field, as in photo A. With a jigsaw, cut the edge-band template from the hardboard sheet by sawing just outside the line. Then, sand to the line.

Use this finished template to lay out the sections of edge-band on your solid stock by making a saw



Mark the band-section template stock with a compass set to 2". Draw the line to parallel the curve of the field.



line with your compass  $\frac{3}{8}$ " from the curve (see Step 3 in the Curve-Banding Technique drawings, *opposite page*), then pencil along the remaining three sides. Next, cut along the penciled saw line with your jigsaw to remove waste. You'll also want to cut out the clamping notches on the edge-band section blank at this time.

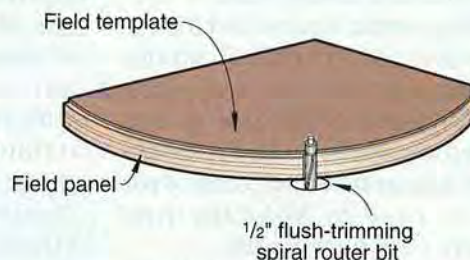
From the remaining  $\frac{1}{4}$ " hard-board stock, mark and cut out a edge-band section riser that's  $\frac{1}{8}$ " narrower on both sides of the curve than the band template. Attach this riser to the *underside* of your rough-cut edge-band section blank with double-faced tape. The riser provides clearance for the thickness of the 1" guide bushing that you'll use with a  $\frac{1}{2}$ " straight bit in your handheld router to trim the rough-cut edge-band section, as shown in the Riser detail drawing, *opposite bottom*. (We used a carbide-tipped spiral bit to make the cut in one pass. Lowering a bit for multiple passes results in a poor fit.)

Secure the edge-band section template and the template riser to your rough-cut edge-band section blank with double-faced tape. Clamp down the assembly so that the curve of the workpiece clears the edge and the clamps are out of the router's path, as shown in the photo B. Trim the edgeband

*Continued*

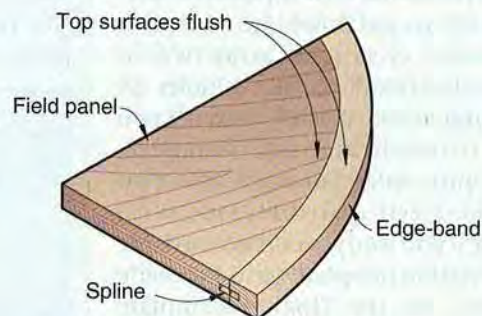
#### STEP 7

Attach field template with double-faced tape or clamps to field panel previously cut to rough shape. Rout curved edge of field panel as shown in photo D. Field panel will mate perfectly with the inside edge of the edge-band.

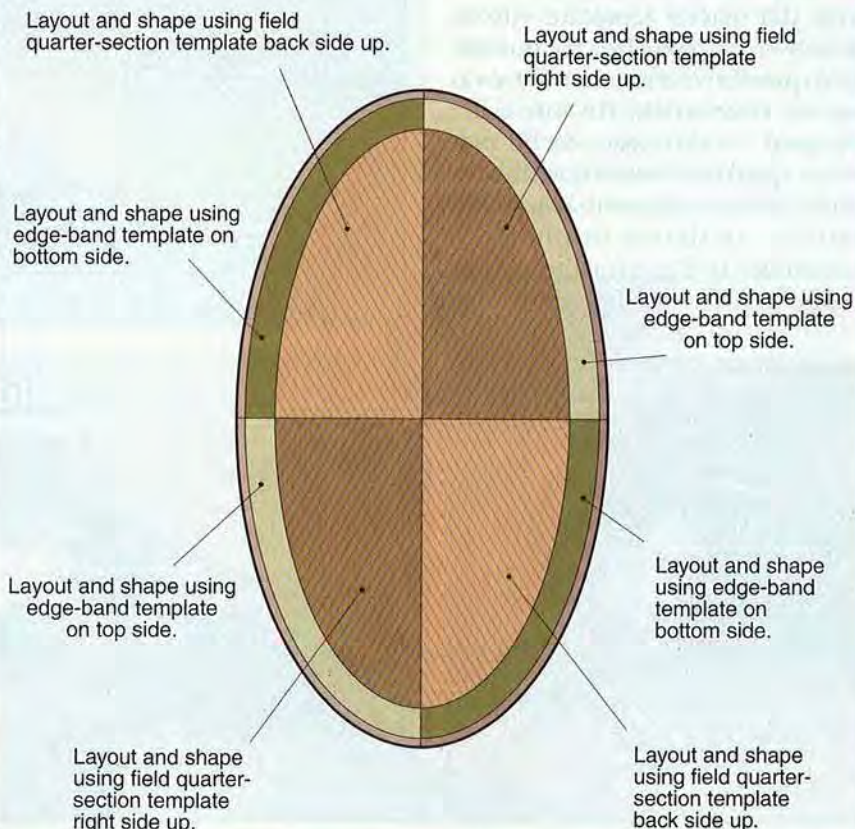


#### STEP 8

Presto! The edges of the edge-band and field panel are a perfect match. We used a continuous spline slot ( $\frac{1}{8}$ " slot  $\frac{1}{2}$ " deep) with short lengths of spline stock (2"-long) to join the pieces and keep the top surfaces flush. See photo E for reference.



#### TIPS FOR TEMPLATE USE



**B**



To match the band-section template, trim away  $\frac{1}{8}$ " from the band-section stock with a handheld router.



# Banding Curves

section blank along the curve with your handheld router.

**Safety note:** To avoid chipout along the curve, hold the router between you and the workpiece, and move it slowly right to left, cutting backward. Because the router wants to "climb" out of the cut, be sure to hold the tool securely with both hands.

To complete the entire band, you'll now have to repeat the preceding steps three more times. However, you must rout two of the edge-band section blanks by turning them upside down (you can't match identical images). This principle also applies to two of the field quarters, but with these, you only need to reverse the master template (use it upside down). See the Tips for Template Use drawing, *previous page*.

## Lay out and build the field-quarter sections

With the master template you've already shaped to size, lay out the field-quarter sections of the oval top on your stock. (In our case, we used  $\frac{3}{4}$ " mahogany-faced plywood quartered with the ribbon-stripe figure laid out in a sunburst pattern, as shown in photo C. Remember to flip over the master template for two of the quarters

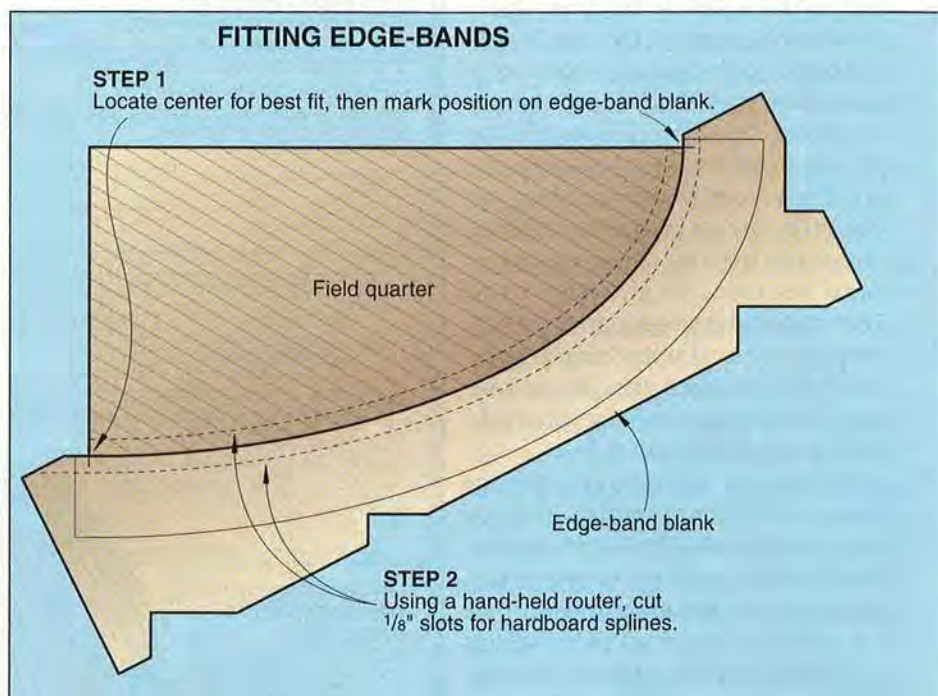
as previously noted. Lay your pencil over at an angle and draw a line for sawing the curve at least  $\frac{1}{8}$ " from the template. Now, cut out each field-quarter section with your jigsaw.

Double-faced tape will adhere the master template to one of the field-quarter sections, or use clamps. With your table-mounted router fitted with a  $\frac{1}{2}$ " flush-trimming bit, true the curved side to the template edge as shown in photo D, *below*. Now, check the

fit between a section of edge-band that you've made and the curve of the field-quarter section. Flush-trim the curved edges of the remaining field-quarter sections.

## Here's how to join the bands to the field quarters

On your worktable, lay out the four field-quarter sections and their corresponding edge-band section blanks. Fit a edge-band section blank to each quarter. With a pencil, mark their exact



With the master template, lay out the top on the mahogany plywood. Here, we laid out the top in a sunburst pattern.



After sawing out the field sections with a jigsaw, true the curved edges with a flush-trimming bit at the router table.



Space and dry-fit single 2"-long splines of  $\frac{1}{8}$ " tempered hardboard into the slots of the field/band joints.



location, as indicated in the **Fitting Edge-Bands** drawing, *opposite*.

Next, install a  $\frac{1}{8}$ " slot-cutting bit in your handheld router. Then, clamp each field-quarter section to your workbench (make sure they lie top side up) and rout a  $\frac{1}{2}$ "-

deep spline slot on the curved edge. Do the same with the matching curved edges of the edge-band section blanks (clamp them down top side up, too).

Cut as many 2"-long splines as needed from  $\frac{1}{8}$ "-thick tempered

hardboard, and dry-fit them into the slots of the band/field joint of each field-quarter section, see photo E. Be sure the joints fully close and the register marks line up. Glue and clamp the edge-bands to each field-quarter section using the clamping notches, as in photo F.

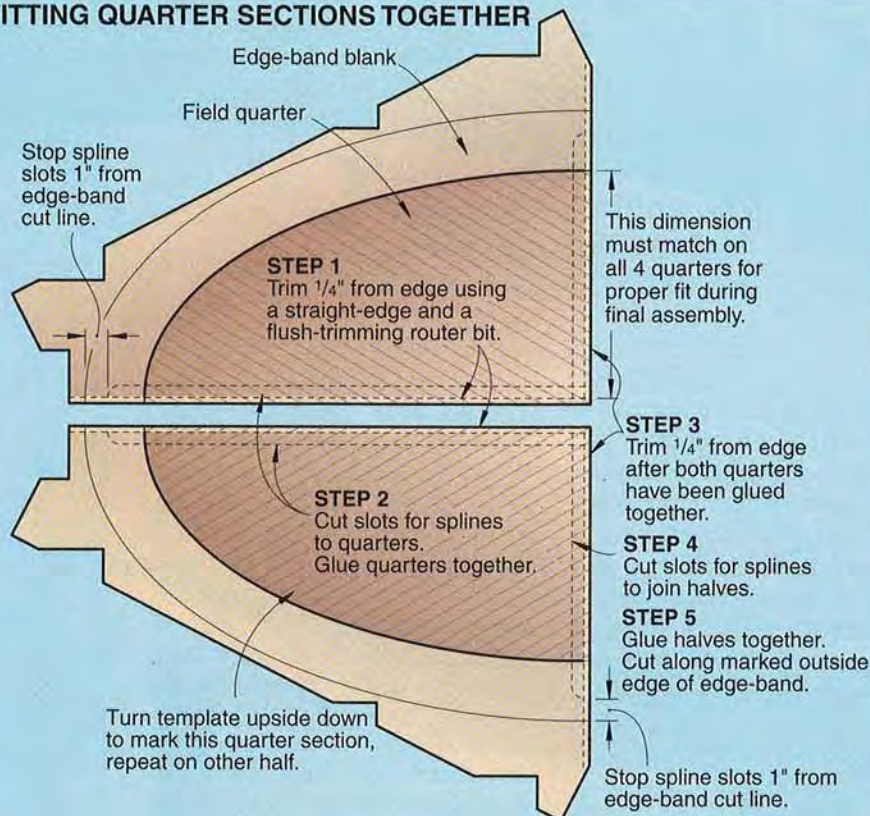
## Spline and glue the quarters of the tabletop

After the glue dries, trim each field-quarter section as instructed in *Step 1* of the **Fitting Quarter Sections Together** drawing, *left*. Then use the slot-cutter to rout  $\frac{1}{2}$ "-deep spline slots as in *Step 2*. Check splines for fit, then glue and clamp the quarters using a clamping block, as in photo G, to keep halves flat.

When the glue dries, proceed as in *Step 3* and trim  $\frac{1}{4}$ " from each half field. Move to *Step 4*, cut  $\frac{1}{2}$ "-deep spline slots, and dry-fit  $\frac{1}{8} \times 1\frac{1}{16}$ " splines cut to fit. Now, glue and clamp the halves together until dry, as shown *below*.

Cut away waste outside the cut-line, then sand to line. To profile the edge as we did for the coffee table, see drawing on *page 45*. ♣

## FITTING QUARTER SECTIONS TOGETHER



Notches in the band-section blanks allow a tight glue-up to the field quarters. A glue block keeps the pieces flat.



After joining the field quarters into halves, glue and clamp the halves together. Trim band waste when the glue dries. Profile the edge of the top with a router or leave plain. Then, finish-sand and apply a clear finish.

Written by Peter J. Stephano with James R. Downing Photographs: Hetherington Photography Drawings: Lorna Johnson





Construct this beautiful top and coffee table using the techniques shown in the previous article. Then, use the instructions given here to build the tapered legs, kerfed skirts, and top panel. We think you'll find the results well worth your efforts.



# ELEGANT OVAL COFFEE TABLE

If you're sitting there thinking, "I could never build this project," think again. With our simplified construction process and our crystal-clear step-by-step instructions, you can't miss. Go ahead, give it a try.

***Note:** To make this project even easier for you to build, we've arranged for a hardwood lumber kit that includes all of the mahogany and plywood needed. We've also added a source for the router bits. See the Buying Guide at the end of the article for additional details.*

*The following instructions describe how to build the coffee table base. To build the beautiful matched-grain banded top, refer to the previous article beginning on page 37.*

## Let's begin with the top panel

**1** Cut the full-sized quarter pattern from the *WOOD PATTERNS*® insert in the center of the magazine, and use spray adhesive to adhere it to a piece of ¼" thick material (we used hardboard). Follow the pattern to cut the quarter pattern template to shape.

**2** Drill ⅝" holes through the template where indicated on the paper pattern.

**3** Cut the base top blank (A) to the size listed in the Bill of Materials and as shown on the Cutting Diagram from ¾" plywood. Mark two intersecting centerlines using the dimensions shown in the Cutting Diagram to divide the base top blank into four equal quadrants.

**4** Align the centerlines on the template with the intersecting lines on the base top blank, and trace around the curved edge of the template to mark an oval on the base top blank. (When marking the oval perimeter on two of the quadrants, the template will be paper side down.) At this point your marked oval should measure 20½" wide by 38½" long.

**5** Using the holes in the template as guides, drill ⅝" holes through the base top blank (A). Next, countersink all holes *on both the top and bottom* of the top panel.

**6** Carefully cut the oval-shaped base top to shape (we used a bandsaw), cutting just outside the marked line. Then, sand to the line (we used a stationary disc sander) to finish forming the oval base top (A).

## Machine the mahogany kerfed skirts next

**1** Cut the skirts (B, C) to the sizes listed in the Bill of Materials from ¾" mahogany.

**2** Using the Skirt Top View on the next page for reference, cut a ⅛" rabbet ½" deep across both ends of each skirt on the inside face. Then, cut a ¾" rabbet ½" deep along the entire length of the top edge of each skirt also on the inside face.

**3** Using the Skirt Top and Side Views for reference, cut ⅛" kerfs ⅝" deep and ⅜" from center-to-center on the inside face. Cutting the kerfs will allow the skirts to bend around the base top (A) later.

## Here's how to attach the skirts to the top panel

**1** Mark a centerline across the top edge of each skirt. You'll use these centerlines to align the skirts with the centerlines previously marked on the top (A). See the Exploded View drawing and Quarter Pattern Template for reference.

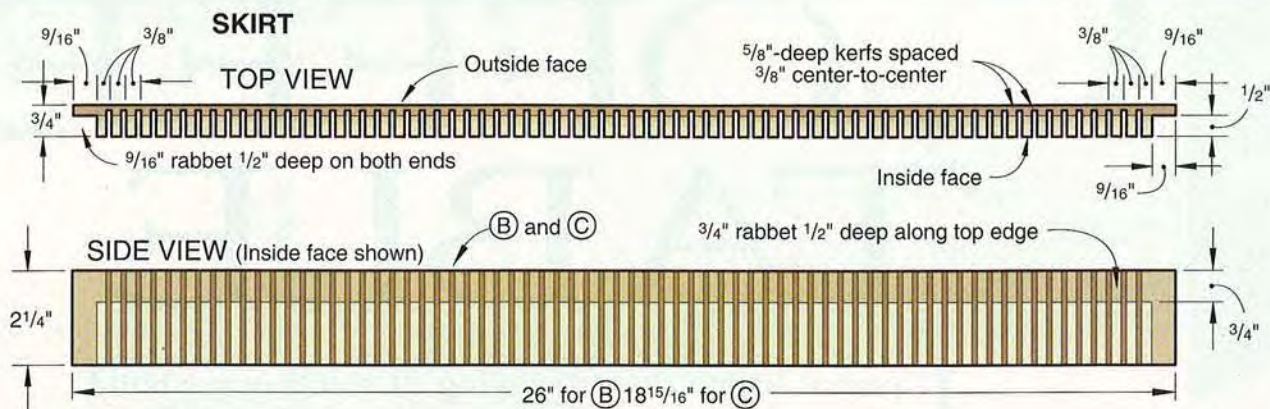
**2** Spread glue on the mating edges of the top (A) and side skirts (B). Align the centerlines

*Continued*

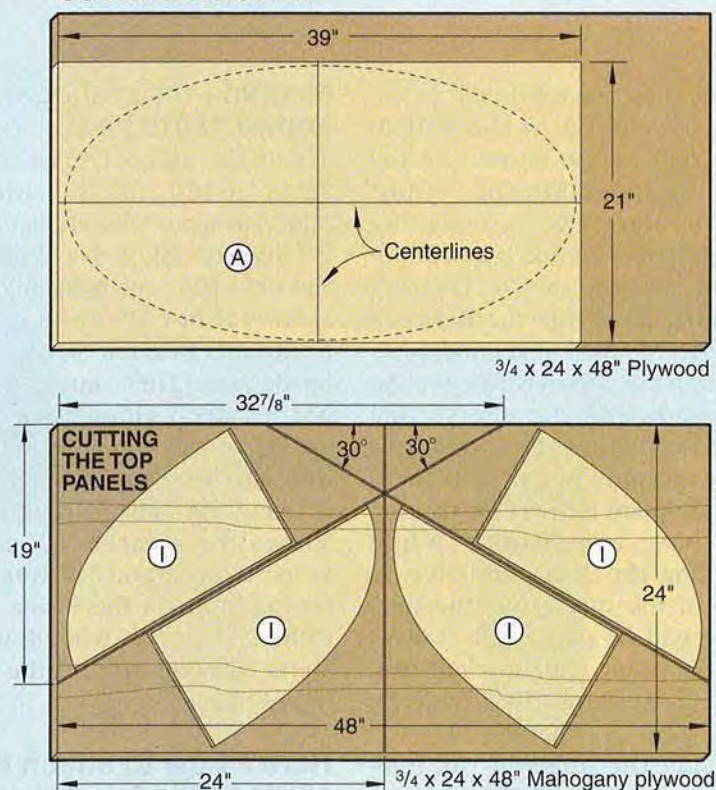




# COFFEE TABLE



## CUTTING DIAGRAM



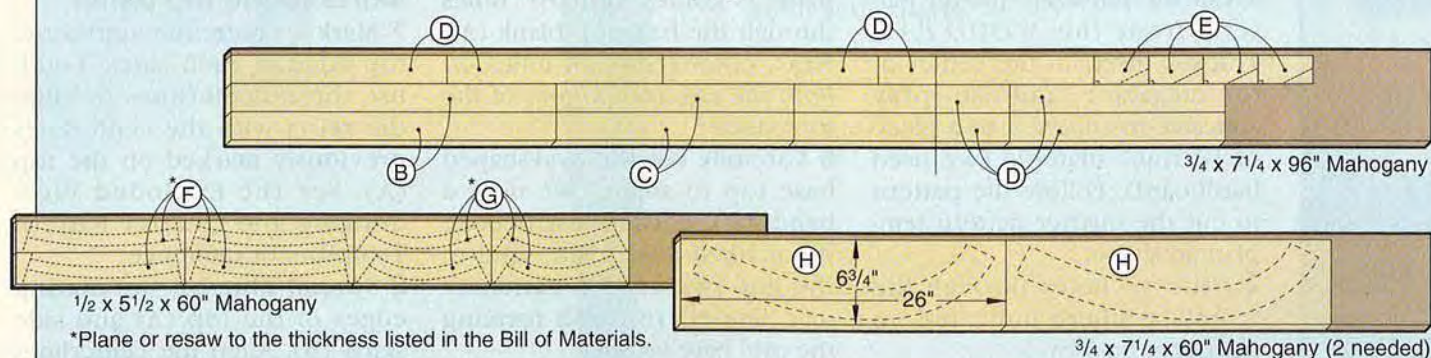
## Bill of Materials

Part	Finished Size			Matl.	Qty.
	T	W	L		
A base top blank	3/4"	21"	39"	P	1
B side skirts	3/4"	2 1/4"	26"	M	2
C end skirts	3/4"	2 1/4"	18 15/16"	M	2
D legs	1 1/2"	2 1/4"	17 1/4"	LM	4
E braces	3/4"	2 1/4"	4 3/8"	M	4
F* side skirt bead blanks	5/16"	2 1/2"	13 1/2"	M	4
G* end skirt bead blanks	5/16"	2 1/2"	11"	M	4
H top banding	3/4"	6 3/4"	26"	M	4
I top quadrant blank	3/4"	24"	48"	MP	1

\*Cut parts marked with an \* oversized. Trim to finished size according to the how-to instructions.

**Materials Key:** P-Plywood, M-mahogany, LM-laminated mahogany, MP-mahogany plywood.

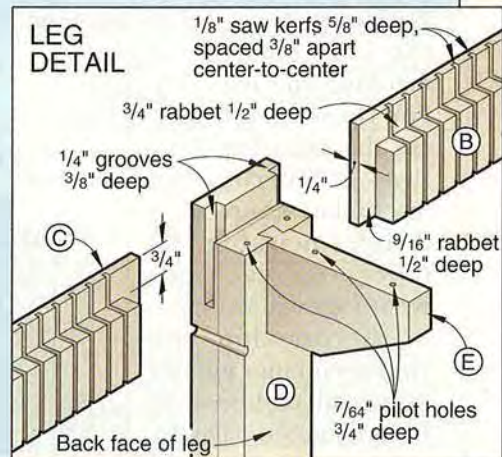
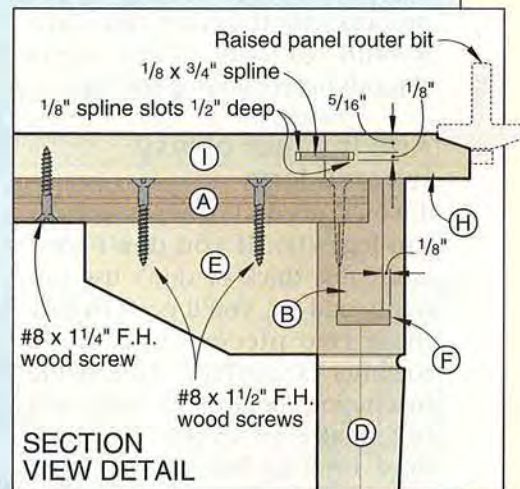
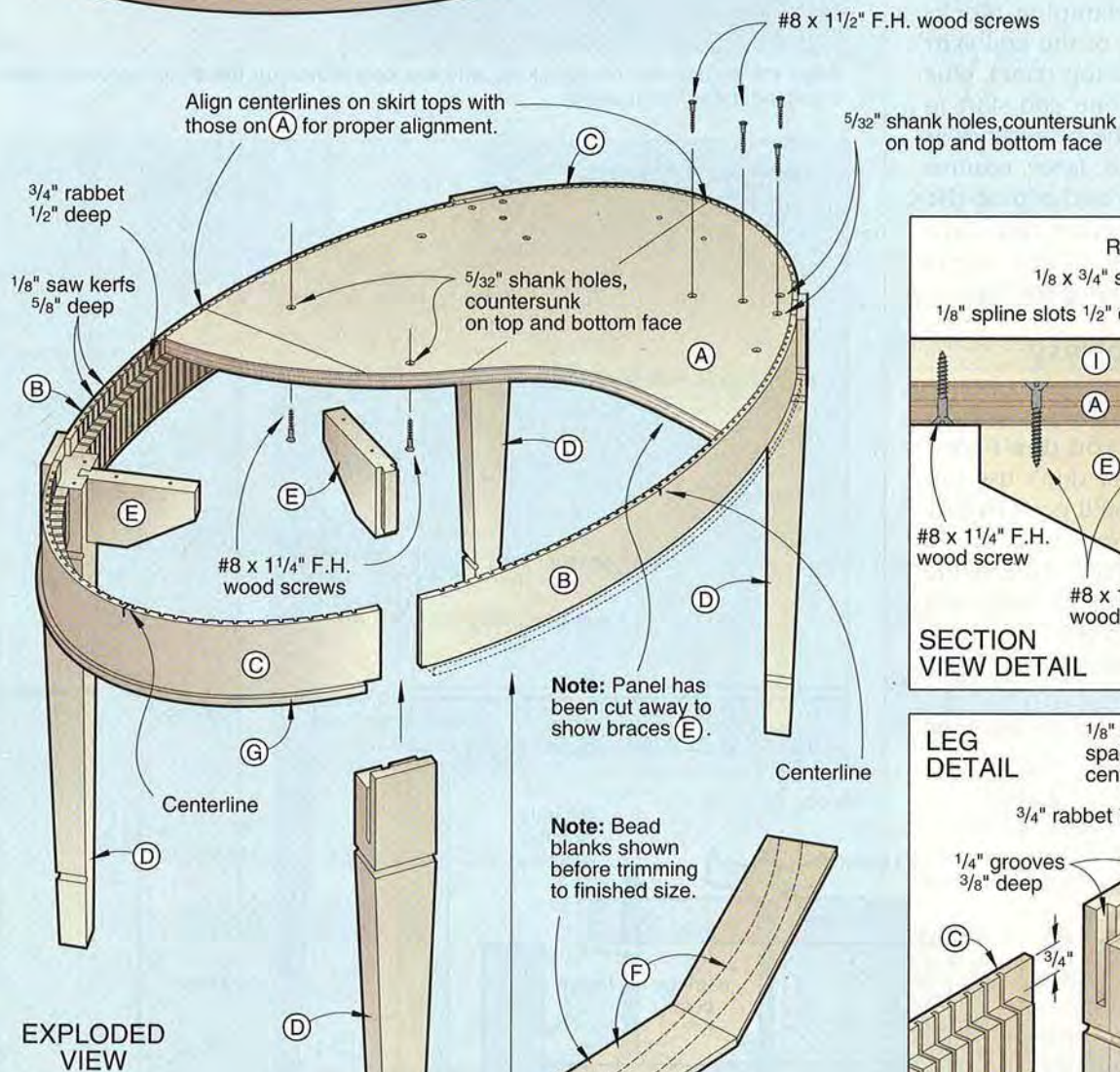
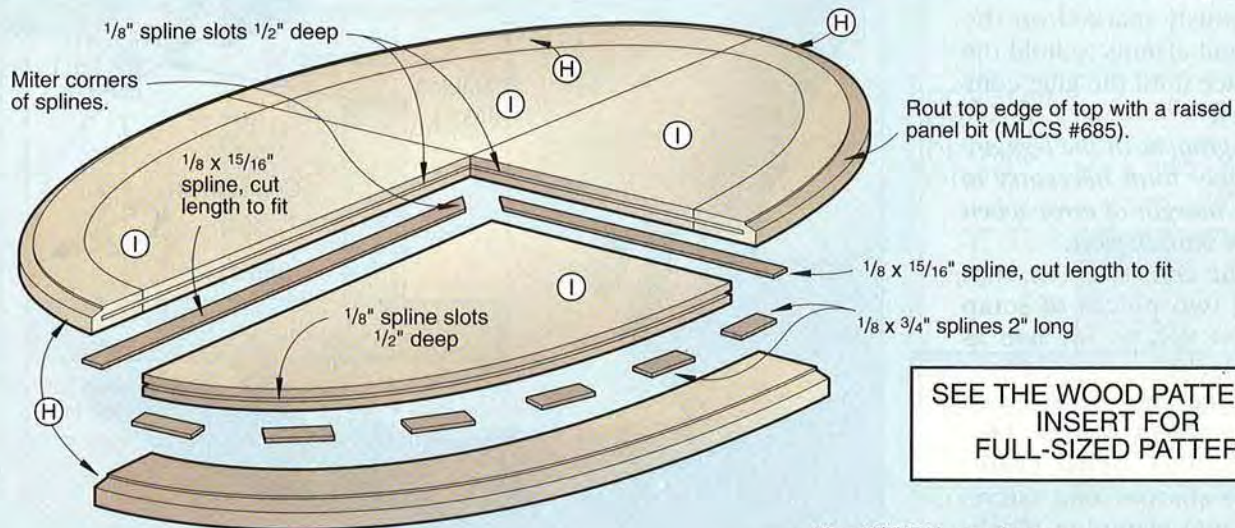
**Supplies:** #8x1 1/4" flathead wood screws, #8x1 1/2" flathead wood screws, clear finish.



\*Plane or resaw to the thickness listed in the Bill of Materials.

Text continues on next page







# COFFEE TABLE

on the side skirts with the centerlines previously marked on the top. Use band clamps to hold the skirts in place until the glue completely dries.

**Note:** The grooves in the legs are slightly deeper than necessary to allow for a margin of error when clamping the skirts in place.

**3** To add the end skirts (C), start by cutting two pieces of scrap stock to  $\frac{3}{8} \times \frac{1}{2} \times 2\frac{1}{4}$ " for use as clamping blocks.

**4** Dampen the outer face of one skirt with warm water. This helps the skirt bend easier around the sharper end curve. Using the two clamping blocks to hold the ends of the end skirt firmly against the top panel, glue and band-clamp one end skirt in place, aligning the centerlines as shown in *photo A*. Later, remove the band clamp and repeat the process with the other end skirt.

**5** Sand the face of the skirts smooth before adding the legs.

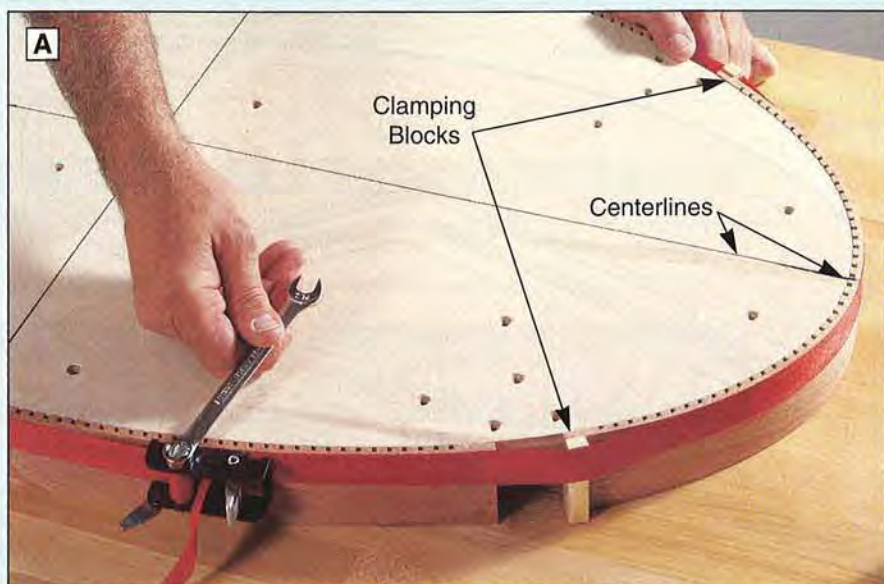
## Add the four classy tapered legs

**1** You'll need  $1\frac{1}{2}$ "-thick stock for the legs (D). If you don't have stock this thick or don't use our hardwood kit, you'll need to laminate two pieces of  $\frac{3}{4}$ " stock together face-to-face. To test the machining required to form each leg, make an extra leg blank now. Each leg blank should measure  $1\frac{1}{2} \times 2\frac{1}{4} \times 17\frac{1}{4}$ ".

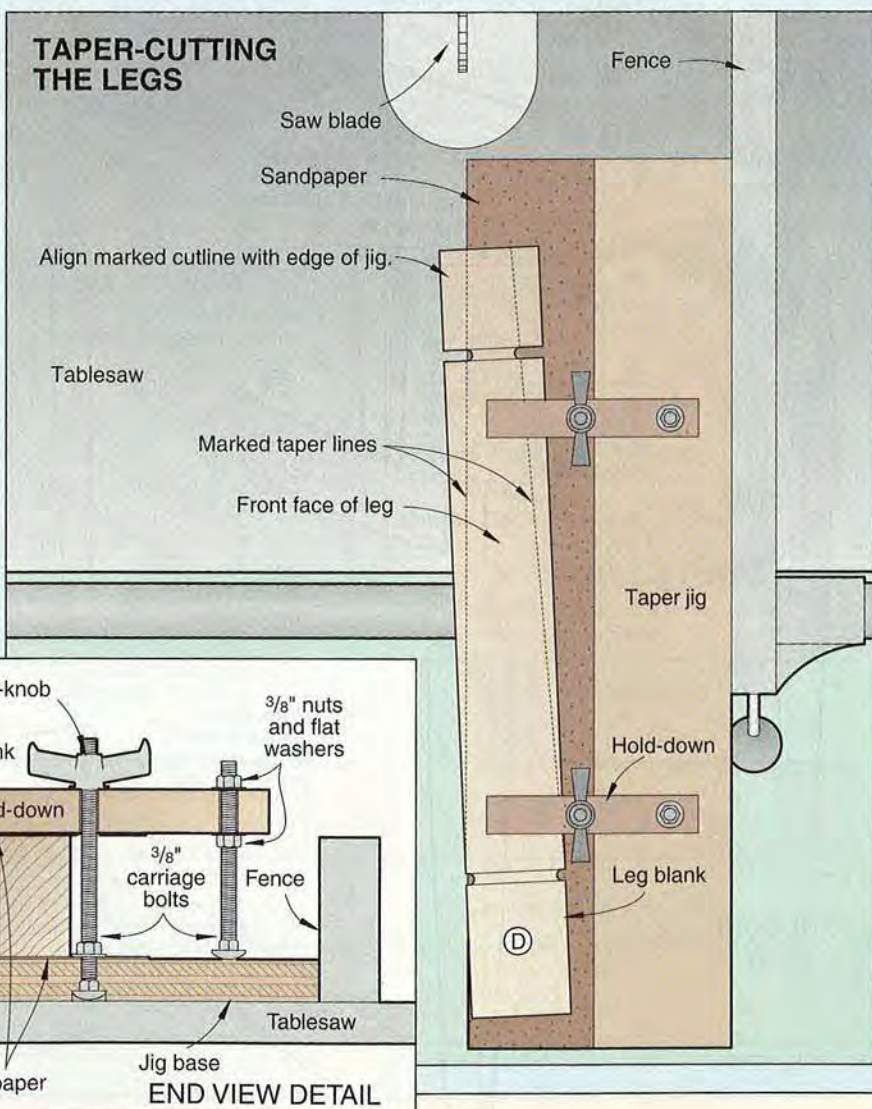
**2** Refer to *Steps 1-6* on Forming the Legs drawing to machine the legs (D). For these steps, test-cut the extra leg blank first to verify the machining set-ups.

**3** After marking the tapers on each leg where shown on *Step 6* of the drawing, use your own taper jig, our universal tablesaw jig from issue 93, page 70,

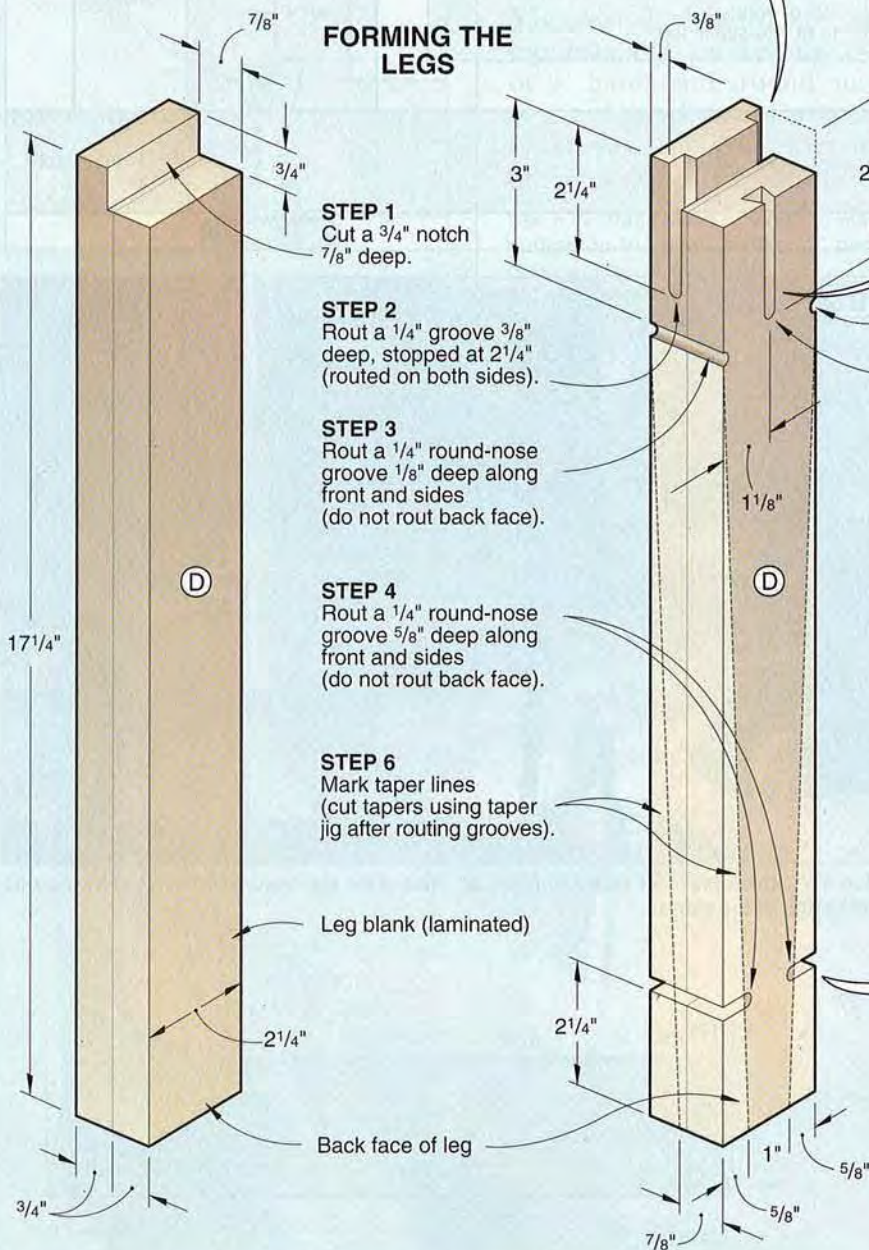
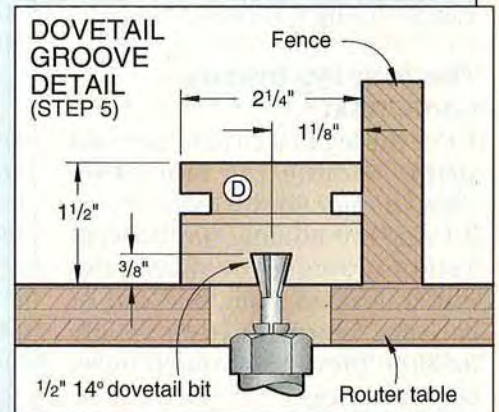
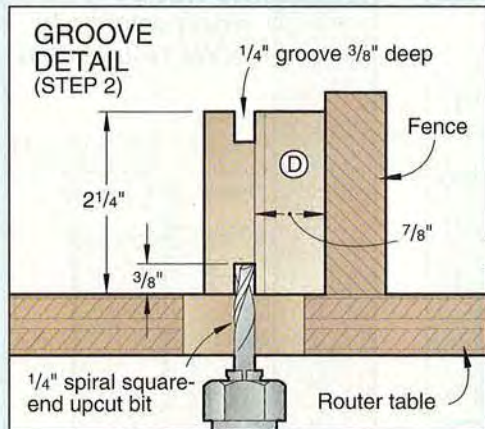
*Continued*



Align the centerlines on the skirts with the centerlines on the base top when band-clamping the skirts in place.







**STEP 1**  
Cut a 3/4" notch  
7/8" deep.

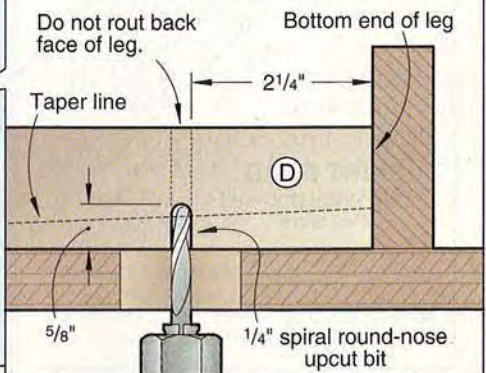
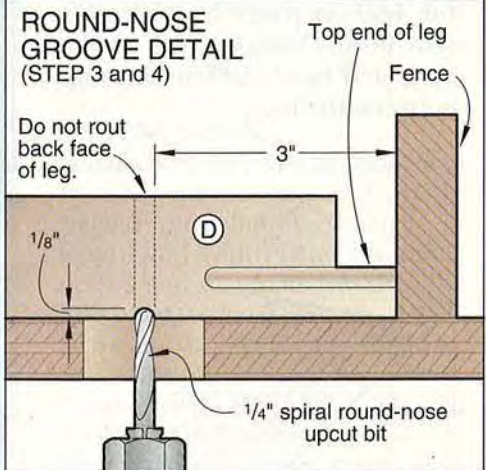
**STEP 2**  
Route a 1/4" groove 3/8" deep, stopped at 2 1/4" (routed on both sides).

**STEP 3**  
Route a 1/4" round-nose groove 1/8" deep along front and sides (do not rout back face).

**STEP 4**  
Route a 1/4" round-nose groove 5/8" deep along front and sides (do not rout back face).

**STEP 6**  
Mark taper lines (cut tapers using taper jig after routing grooves).

**STEP 5**  
Route a 1/2" dovetail groove 3/8" deep, stopped at 27/8" from the top end.





# COFFEE TABLE

or the one shown on *page 84* of this issue, and cut the marked tapers on each leg as shown on *Taper-Cutting the Legs* drawing.

## The four leg braces come next

**1** Cut the leg brace (E) to size and shape. See the Leg Brace Part View *at right* for reference.

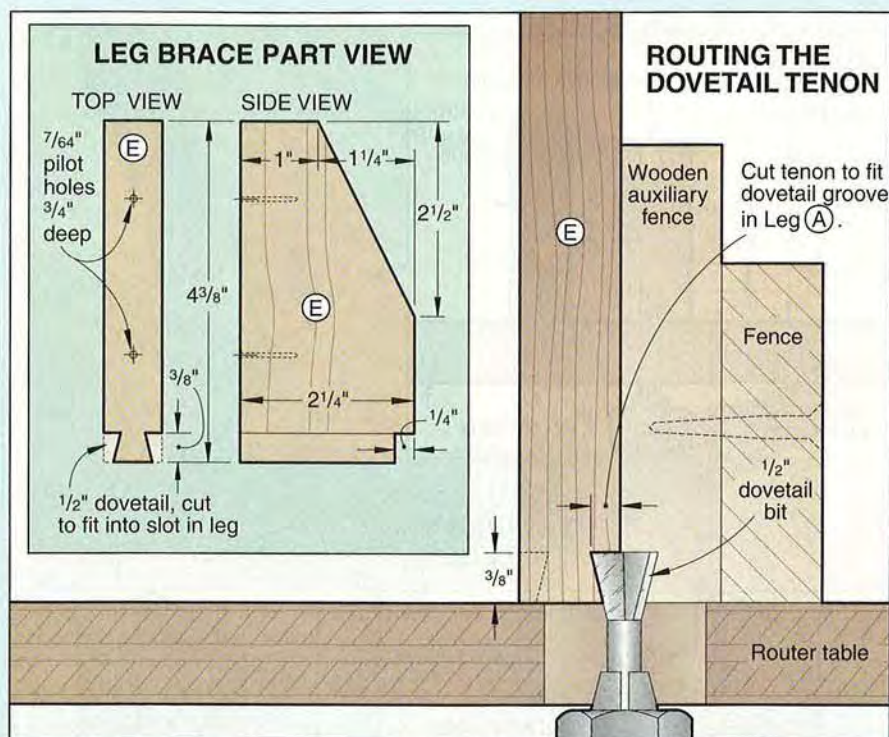
**2** Using the Routing the Dovetail Tenon drawing for reference, rout a dovetail along one end of each leg brace (E) to fit snugly into the previously routed dovetails in the legs.

**3** Using the Side View of the Leg Brace for reference, cut-off the bottom  $\frac{1}{4}$ " of the dovetail tenon. (We did this on our bandsaw.)

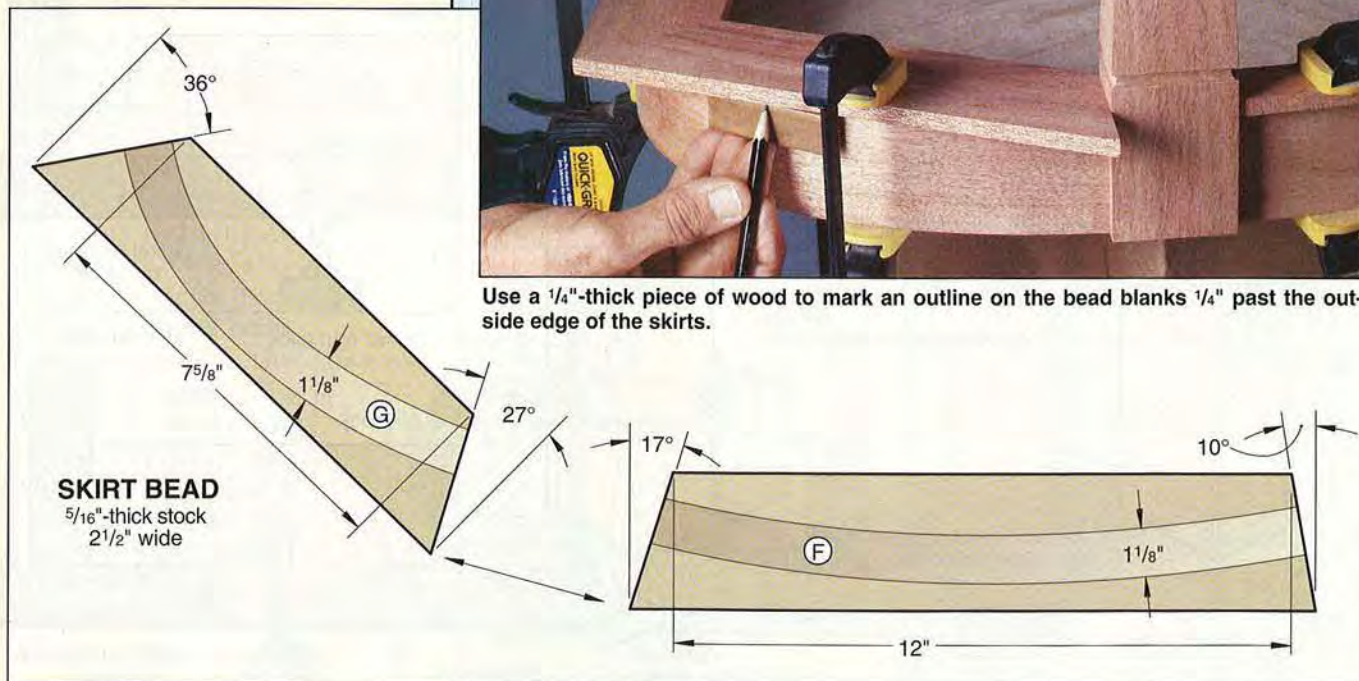
## Now, add the bead to the bottom of the skirt

**1** Cut the skirt bead blanks (F, G) to the sizes listed in the Bill of Materials and shown on the Skirt Bead drawing.

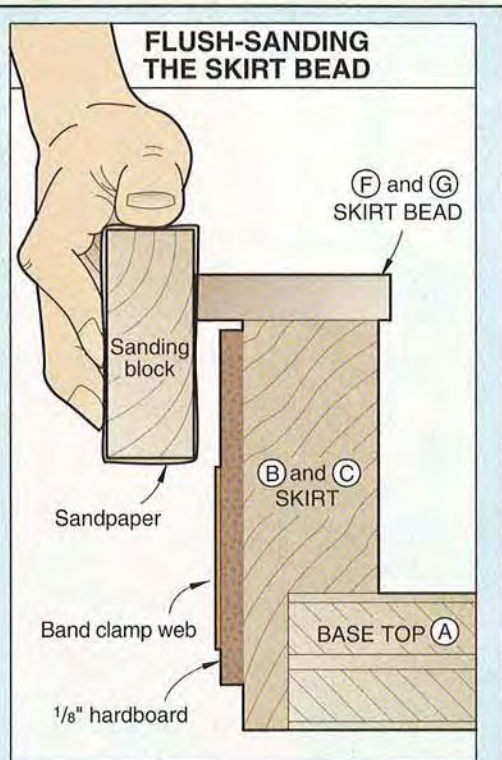
**2** Place the base top (A) upside down on your workbench. Slide the legs in place between the skirt beads. Miter-cut the ends of each skirt bead blank to fit snugly between the legs.



Use a  $\frac{1}{4}$ "-thick piece of wood to mark an outline on the bead blanks  $\frac{1}{4}$ " past the outside edge of the skirts.







**3** Clamp the bead blanks to the skirts as shown in *photo B*. Using a  $\frac{1}{4}$ "-thick piece of wood as a spacer, trace around the outer curve on the skirts to mark a  $\frac{1}{4}$ " overhang on the bead blanks.

**4** Remove just one of the bead blanks from the table, and band-saw just outside the marked line. Mark a second line parallel to and  $1\frac{1}{8}$ " from the cutline to mark the inside curve. Cut this curve to shape. Next, glue and clamp the shaped skirt bead back in place. Repeat with each skirt bead.

**5** Remove the legs from the table-top assembly. Band-clamp a strip of  $\frac{1}{8}$ " hardboard around outside of the skirt where shown on the Flush-Sanding the Skirt Bead drawing. Sand the outside edge

of the bead with 80-grit sandpaper, changing to a finer grit as you approach the finished profile. Continue sanding until the beads are flush with the surface of the hardboard strip as shown in the drawing. This will result in an even  $\frac{1}{8}$ " overhang around the entire outside edge of the skirt.

**6** Sand the inside edge of the bead to remove any saw marks.

**7** Place the base top (A) on your workbench bottom side up. Slide the base top over the edge of your workbench, and fit the leg/leg braces in place as shown in *photo C*. Drive four screws through the base into the leg to secure the leg assembly in place. Repeat for each leg.

## Assemble the pieces, and add the finish

**1** Using the banding curves technique article for reference, construct the mahogany banded plywood tabletop.

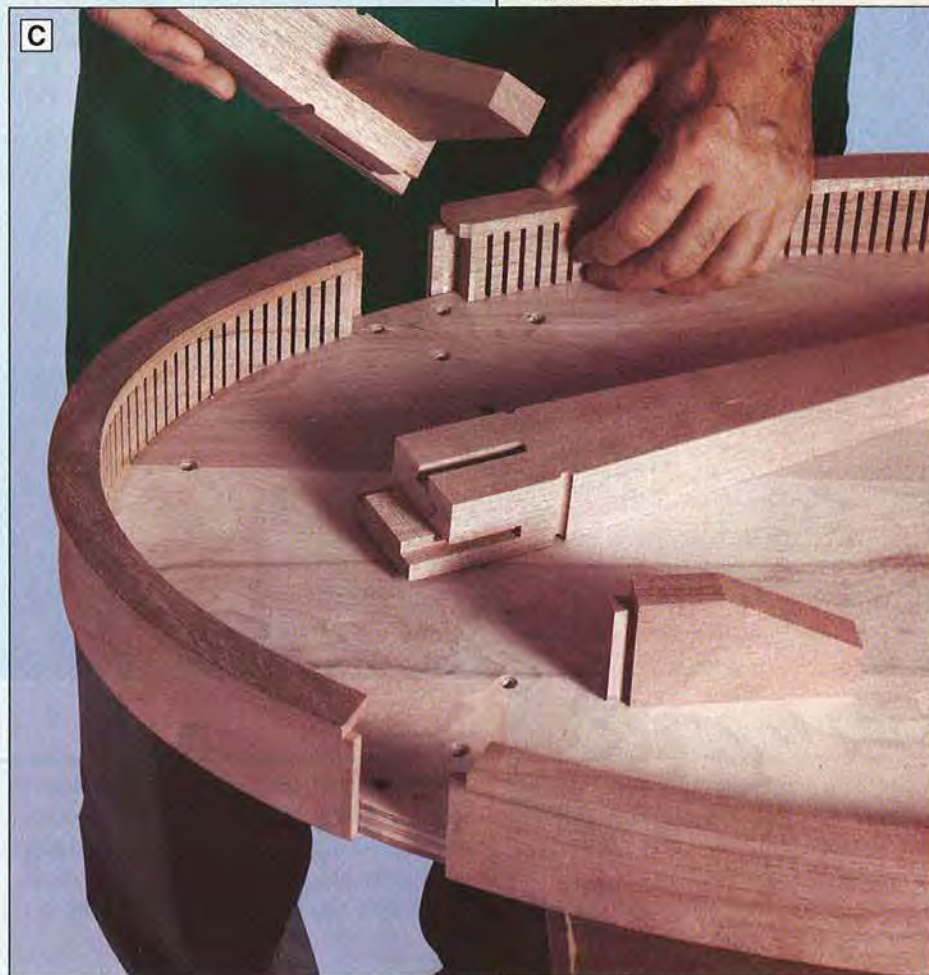
**2** Finish-sand, and add the finish. (We used Minwax Antique Oil Finish, following the directions on the can.) ♣

## Buying Guide

**Hardwood kit.** All the individual pieces shown on the Cutting Diagram cut slightly oversized in length and width from the thicknesses and materials listed in the Bill of Materials. Kit no. 1022, \$189 ppd. Heritage Building Specialties, 205 North Cascade, Fergus Falls, MN 56537. Or call 800/524-4184 to order.

**Router Bits.**  $\frac{1}{4}$ " spiral round-nose upcut bit, #610;  $\frac{1}{4}$ " spiral square-end upcut bit, #603;  $\frac{1}{2}$ "  $14^\circ$  dovetail bit, #405;  $\frac{1}{2}$ " flush-timming bit, #5503;  $25^\circ$  raised panel bit, #685. For prices and shipping, contact MLCS, P.O. Box 4053 Rydal, PA 19046. Or call 800/533-9298 to order.

Written by Marlen Kemmet  
Project Design: Jan Hale Svec  
Illustrations: Kim Downing; Lorna Johnson  
Photographs: Hetherington Studio;  
Hopkins Associates







### CONSISTENCY COUNTS

To check the accuracy of the built-in tension gauges, we used a Starrett 682EMZ Saw Tension Gauge. We tested each saw with the same type of blade at identical tension.

### ***FAST FACTS***

- All the saws in our test have ample power to resaw, but the actual sawing “muscle” varied greatly, even among machines with similar horsepower ratings.
- With one exception, the saws come with guide blocks as standard equipment. In general, these guides work well and are easier to adjust than ball-bearing guides.

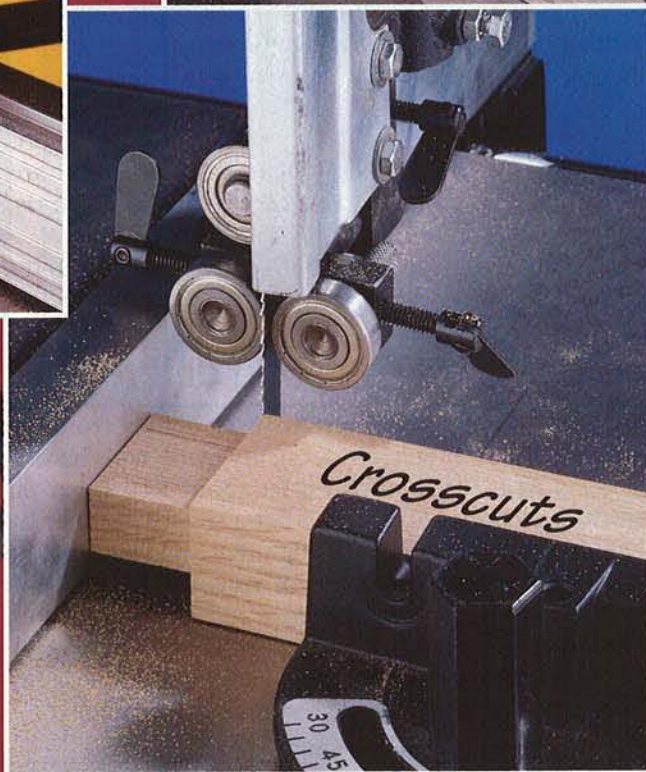
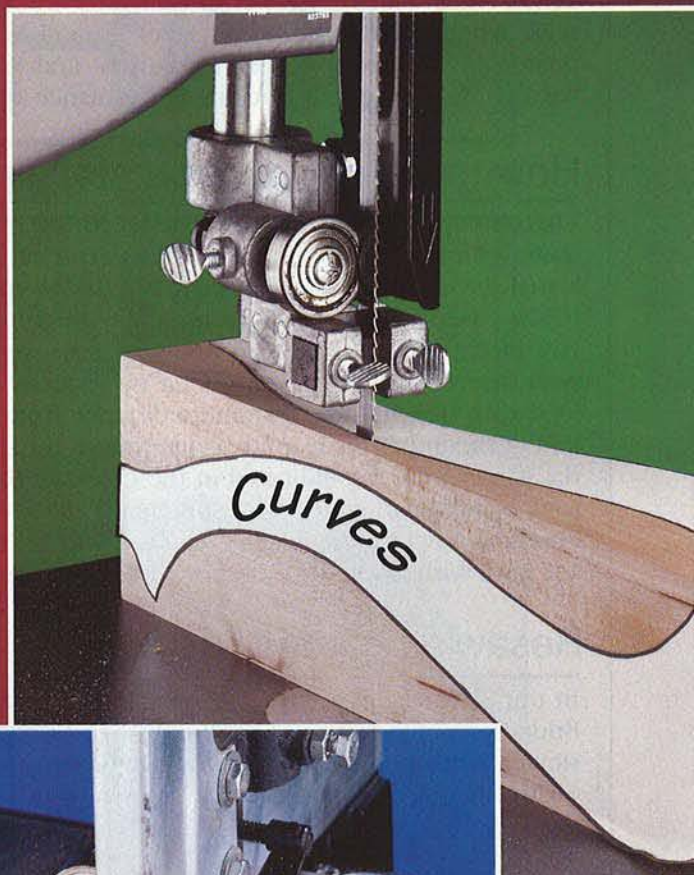
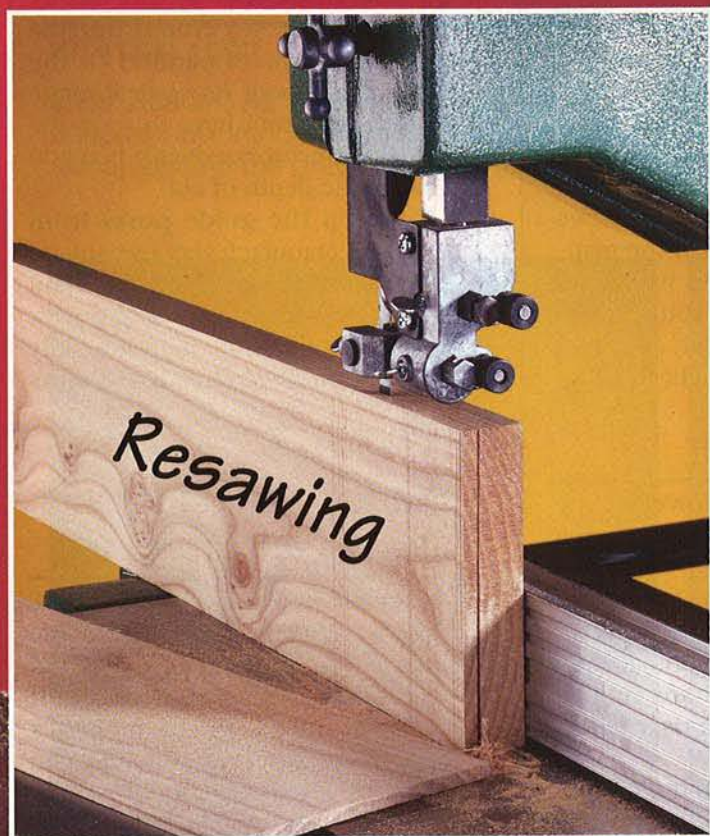


Print this article



# STATIONARY BANDSAWS

The versatile cutting tool no woodworker should be without



- You'll want to replace the blade that comes with a new bandsaw. A high-quality blade dramatically improves bandsaw performance—it cuts better and runs truer.

*Continued*





## Our testing produced piles of sawdust

After spending several hours cleaning off the packing grease, assembling the machines, and reading the instruction manuals, we familiarized ourselves with the adjustments and features of each saw. After noting the fit and finish of main components, we also inspected the saws closely to check out key parts such as wheel bearings and guides.

To test resawing capability, we installed a ½"-wide, hook-style Lenox blade with 3 teeth per inch in each saw, and turned several 6"-wide white oak planks into stacks of ½"-thick boards. We took those boards and cut intricate curves with ¼" and ⅜" blades, using these narrow blades to check tracking performance and guide adjustments.

## How much saw do you really need?

**Throat capacity**—the distance between the blade and the support frame—limits the width of material you can cut. For the saws tested, actual throat sizes ranged from 12¼" (Bridgewood PBS320) to 16½" (Grizzly G1073). For small projects, any throat size will work, but if you plan to cut out life-size plywood lawn ornaments or projects with large curved edges, consider a 16" capacity saw.

**Cutting height**—the maximum distance from the table to the bottom of the upper blade guide—determines the thickness of the material you can cut. As indicated in the chart, all of the saws will cut at least 6" material, generally a sufficient capacity unless you want to bevel-cut bowl turning blanks. You can outfit the Delta, Jet, and Sears 14" saws with an optional riser block to boost cutting height to 12".

## Resawing hardwoods requires power

In our resawing test, all the saws handled the task. However, the Bridgewood PBS320, Powermatic 044, and Grizzly G1148 required a slower feed rate to prevent them from bogging down.

The saws in our test ranged in horsepower from ¾- to 1½-hp, but those ratings proved deceiving. The ¾-hp Sears 24834 bogged down less during resawing than the 1-hp Jet JWBS14CS, even though their motors each have 10-amp ratings. That said, both still have enough power to handle thicker capacities when you install the riser block, provided you slow down the feed rate.

The resawing champs are the Grizzly G1073 and Delta 28-280. Their 1½- and 1-hp motors draw 16 and 13.4 amps respectively.

## A good blade makes a big difference

We recommend buying good aftermarket blades from companies such as Lenox, Olson, or Starrett. A quality blade with hardened teeth typically costs \$12-\$15 compared to about \$10 for a "standard" blade. For the extra few dollars, you get a slightly thinner blade with smooth welds and a straight back edge that runs truer and produces better cuts. Since there's less drag, it runs cooler and lasts longer, which also means fewer blade changes.

Unless you work extensively with abrasive exotic woods such as wenge or cocobolo, steer clear of bi-metal blades. These blades cost more and require more tension than some saws can deliver.

## Sawing accuracy relies

To keep the blades running true, bandsaws have guide assemblies above and below the table. Guide blocks or bearings within these assemblies keep the blade from shifting side to side. Thrust bearings, mounted behind the blade, keep it from bowing backward as you cut. The key factors affecting guide performance include:

- **Guide posts.** The upper guide assembly mounts to a guide post that you raise and lower depending on the thickness of the stock you're cutting. It's crucial that the guide post travel parallel to the blade throughout its vertical range so that you don't have to reset the guides or thrust bearings when you change the depth of cut.

To keep the guide posts from twisting, manufacturers use square steel bar stock or tubing, or round steel rods with alignment grooves. Of the saws with round posts, only the post on the Delta 28-280 locks

## Blade tracking affects sawing accuracy, too

A bandsaw's wheels should be balanced to run true, and the blade should track along the crowned center of the upper wheel tire. If the blade rides to the front or back edge of the wheel or wanders, you won't be able to position it properly between the guides.

The wheels in all the saws were surprisingly well balanced, and all of them tracked ⅜" and larger blades. But as indicated in the chart, several saws had problems tracking ¼" blades on center, and only the Delta, Reliant, and Star Tools saws tracked ⅜" blades without a lot of tweaking. Of those three saws, only the Delta has hard, composite metal square guide blocks, making it unique in its ability to cut intricate curves with great precision.



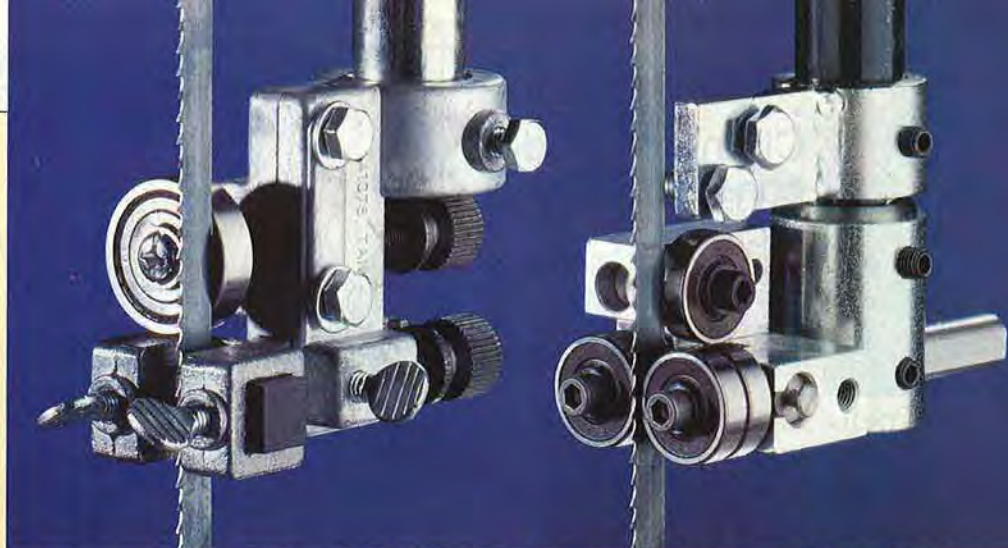
## on quality guides

at all heights without twisting, due to its round-bottomed groove and ball-shaped locking screw.

We liked the added convenience of the spring-loaded tension screw on the Sears 24834 and Jet JWBS14CS that keeps the guide post from crashing to the table when you loosen the locking screw. Grizzly offers a similar feature on the G1073.

**•Guide blocks or bearings.** All of the saws except the Powermatic 044 come with guide block-style guides, as shown *right*. The square guide blocks, found on the Delta, Jet, and Sears 24834, worked the best with the  $\frac{1}{4}$ " and  $\frac{1}{8}$ " blades since they put more surface area in contact with the blade than round steel guide blocks.

Ball-bearing guides reduce wear and heat buildup in the blade, and they work particularly well with  $\frac{1}{4}$ "-wide and wider blades. None of them worked well with  $\frac{1}{8}$ " blades.



The upper guides on the Sears 24834 (shown) as well as the 14" saws from Delta and Jet, come with square guide blocks and a thrust bearing. Micro-adjustment knobs simplify setting the guides. (Guard removed for clarity.)

The optional ball-bearing Carter guides for the Jet JWBS14CS adjust with fingertip pressure and have setscrews to lock the guide bearings in place. This accessory costs about \$150. (Guard removed for clarity.)

The standard guide bearings on the Powermatic 044 require a wrench and were hard to adjust. The optional Carter guides for the Jet JWBS14CS, shown *above*, require an allen wrench, but work well and adjust easily. Star Tools' optional guides perform smoothly and adjust without any tools.

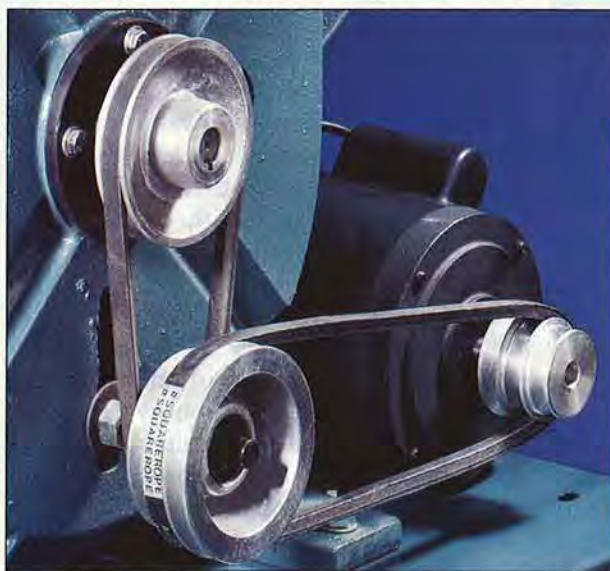
The Sears 24834, Jet JWBS14CS, Delta 28-280, and Grizzly G1073 feature micro-adjustment screws on the upper guides (as shown in the photo *above left*), which simplify setting the guides with precision. The Delta and Grizzly models also have micro-adjustments on the lower guides.

## For wood, one speed is really all you need

For most crosscutting, ripping, and resawing, a blade speed between 2,600 and 3,000 feet per minute (fpm) works well. The single-speed saws all run at 3,000 fpm, while the top speed on the multispeed saws also falls within this range.

If you want more control when making intricate cuts, get a saw that also has speeds in the 1,800-2,000 fpm range. Even slower speeds (800-1,000 fpm) produce better cuts in materials such as plastics and nonferrous metals that clog up blades at higher speeds. Only the Reliant EE166 and Star Tools S3502 offer such a low-end speed.

With the exception of the direct-drive Bridgewood PBS320, all the



The Star Tools S3502 (shown) and the Reliant EE166 use three-step pulleys on the motor and a jackshaft to provide three speeds. The second V-belt, which transfers the power from the jackshaft to the lower wheel, is difficult to tension.

saws have pulleys and drive belts to bring their blades up to speed.

The three-speed Grizzly 1073 has a three-step pulley on both the motor and lower wheel shaft, making speed changes a snap. The three-speed Star Tools and Reliant models use a jackshaft arrangement, shown *left*. A bolt-on cover complicated changing these belts.

The two-speed Sears 24393 and Grizzly G1148 use one belt with a pair of double-groove pulleys. Changing speeds requires awkwardly reaching through the spokes of the lower wheel to reposition the belt, although the pivoting motor mount makes belt tensioning easy.

*Continued*





## Changing blades: consider these factors

•**Tensioning.** We checked the tensioning scales as shown on the *first page of this article*, and only the

Delta 28-280's scale registered remotely close. You're better off checking the tension by hand, with the saw unplugged. A properly tensioned blade should deflect about 1/4" when you apply moderate finger pressure to its side.

To quickly adjust blade tension, look for a tensioning knob located above the upper wheel housing as shown *below*. The knob on the Reliant saw mounts on a short adjusting rod close to the scale, making it hard to reach.

You also want the tensioning spring to properly tension the blade with just a few turns. The



The tensioning scale on the Delta 28-280 registered the closest to proper tension of any of the saws. The tensioning knob extends above the top of the upper wheel cover, providing easy access.

Sears 24393 required only three turns, the Grizzly G1073 six turns, and the Delta 28-280 10 turns to make the blade taut. The weak spring in the Star Tools and Reliant models required 20 or more revolutions of the tensioning knob.

•**Wheel covers.** Saws with hinged wheel covers (see the chart) speed up blade changing immensely.

## A DETAILED LOOK AT 10 BANDSAWS

BRAND	MODEL	CAPACITY		MOTOR		BLADE				TABLE					
		THROAT (INCHES)	MAXIMUM THICKNESS (INCHES)	HORSEPOWER	AMPS (1)	VOLTAGE	BLADE SPEED (FEET PER MINUTE)	LENGTH (INCHES)	RATED WIDTH CAPACITY (INCHES)	DRIVE TYPE (2)	TABLE EXIT (3)	TABLE TILT RANGE	SIZE (INCHES)	TRUNNION TYPE (4)	TABLE HEIGHT FROM FLOOR (INCHES)
14" & UNDER	BRIDGEWOOD	PBS320	12 1/4	6 1/2	1	5	220	3440	88	1/8-3/4	D F	45°R, 10°L	15x15	P	42
	DELTA	28-280	13 3/4	6 1/4	1	13.4	110/220	3000	93 1/2	1/8-3/4	B S	45°R, 10°L	14x14	S	43 1/2
	JET	JWBS-14CS	13 1/2	6 1/4	1	16	110/220	3000	93 1/2	1/8-3/4	B S	45°R, 10°L	15x15	S	44
	POWERMATIC	044	13 1/2	9	1	7	110/220	3000	102	1/8-3/4	B S	45°R, 15°L	15x15	S	44
	SEARS CRAFTSMAN	24834	13 1/2	6	3/4	10	110	2400	93 1/2	1/8-3/4	B S	45°R	14x14	S	44 1/2
15" & 16" MODELS	GRIZZLY	G1148	14 3/4	7 1/2	3/4	13	110/220	1750, 2600	103	1/8-3/4	B S	45°R, 10°L	16x16	S	38
		G1073	16 1/2	7 3/4	1 1/2	16	110/220	1900, 2400, 2900	113	1/8-1	B S	45°R, 10°L	17x17	S	42
	RELIANT	EE166	15 3/4	9 3/4	1 1/2	18	110/220	1000, 1600, 2800	111	1/4-1	B S	45°R, 10°L	16x16	S	39 1/2
	SEARS CRAFTSMAN	24393	14 3/4	8 1/2	3/4	11	110/220	2000, 3000	111	3/16-3/4	B F	45°R	15x15	P	36
	STAR TOOLS	S3502	15 3/4	9 3/4	1 1/2	18	110/220	1000, 1600, 2800	111	1/4-1	B S	45°R, 10°L	16x16	S	39 1/2

**NOTES:**

- Amps at 110 volts unless 220 only.
- (B) Belt drive  
(D) Direct drive
- (S) Side of table  
(F) Front of table
- (S) Saddle type  
(P) Single pivot-pin type
- (SL) Sealed  
(SH) Shielded
- (U) Upper only  
(B) Both upper and lower  
(N) Neither
- (BB) Ball-bearing  
(P) Graphite-impregnated plastic  
(S) Steel
- (AL) Aluminum  
(CI) Cast iron  
(FS) Fabricated steel
- Excellent Good  
 Fair Poor
- All adjustments and guard/cover removals factored in.
- Factors considered include knob size/location and number of turns.
- Tracked 1/8" blade easily  
 Tracked 1/8" blade with minor adjustments  
 Had difficulty tracking 1/8" blade
- Easy to open, hinged  
 Knobs fail to keep door solid  
 Hinged but threaded knobs take longer to open  
 Hinged one-piece with threaded knobs  
 Covers not hinged
- Easy tilt, smooth  
 Easy tilt  
 Jerky operation
- Solid support  
 Minor movement  
 Major movement  
 Has one-piece stand/saw cabinet.

### NOTES:

1. Amps at 110 volts unless 220 only.
2. (B) Belt drive  
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(P) Graphite-impregnated plastic  
(S) Steel
8. (AL) Aluminum  
(CI) Cast iron  
(FS) Fabricated steel
9. **E** Excellent **G** Good  
**F** Fair **P** Poor
10. All adjustments and guard/cover removals factored in.
11. Factors considered include knob size/location and number of turns.

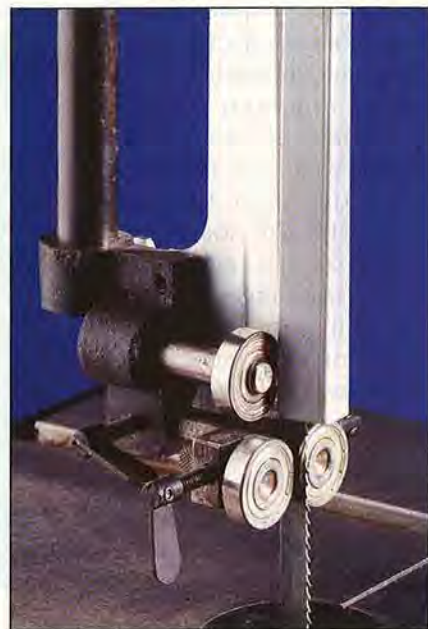
12. **E** Tracked 1/8" blade easily  
**G** Tracked 1/8" blade with minor adjustments  
**F** Had difficulty tracking 1/8" blade
13. **E** Easy to open, hinged  
**G** Knobs fail to keep door solid  
**G** Hinged but threaded knobs take longer to open  
**F** Hinged one-piece with threaded knobs  
**P** Covers not hinged
14. **E** Easy tilt, smooth  
**G** Easy tilt  
**F** Jerky operation
15. **E** Solid support  
**G** Minor movement  
**F** Major movement  
★ Has one-piece stand/saw cabinet.

Look for quick, positive latches like those on the Delta, Grizzly G1073, Jet, and Sears 14" models.

•**Blade guards.** Most saws have L-shaped guards that cover the right side and front of the blade. This type provides protection, and allows you to conveniently change blades with the guard in place.

But the Bridgewood PBS320, Grizzly G1148, Reliant EE166, and Star Tools S3502 all have U-shaped blade guards that wrap around the blade on three sides, as shown in the photo *right*. This requires you to remove the guard in order to change the blade—a real hassle.

**Note:** As this issue went to press, Star Tools replaced its model S3502 with an S3502N. The updated model will have several improvements including hinged doors, larger motor, dust-collection port, cast-iron wheels, and brake.



The blade guard on the Star Tools S3502 (and several other models) wraps around the blade, requiring you to remove it to change blades. Ball-bearing guides shown are optional.



## BETWEEN \$400 AND \$750

BEARINGS/GUIDES										PERFORMANCE (9)										COUNTRY OF ASSEMBLY (20)			WEIGHT (POUNDS)		SELLING PRICE		COMMENTS	
LOWER WHEEL BEARING (5)	MICRO-ADJUST GUIDES (6)		UPPER GUIDE (7)	LOWER GUIDE (7)	WHEEL MATERIAL (8)	FRAME MATERIAL (8)	DUST PORT SIZE (INCHES)	BLADE CHANGING (10)	TENSIONING (11)	BLADE TRACKING (12)	WHEEL COVERS (13)	TRUNNION OPERATION (14)	STAND STABILITY (15)	VIBRATION	GUIDE POST (16)	UPPER GUIDE (17)	LOWER GUIDE (17)	RIP FENCE (18)	OPTIONS (19)									
	SL	N	BB	BB	CI	FS	2½	F	F	G	F	F	G	E	E	G	F	G		I	143	\$660*						Small capacity and requires 220-volt service.
	SL	B	S	S	AL	CI	1¼	E	E	E	E	E	E	E	E	F	NS		F, R	U	224	750						Precision and power; the top saw in the test.
	SL	U	P	P	AL	CI	2½	E	G	G	E	G	E	E	G	E	G	NS		C, F, R	T	185	580					Good performance, but lacks power of top saws.
	SH	N	BB	BB	AL	FS	3	F	G	F	G	F	G	E	E	F	F	NS		F	T	165	645					Good capacity, but guides are hard to adjust.
	SH	U	P	P	AL	CI	2½	E	G	G	E	G	E	E	G	E	G	NS		F, R	T	195	550					A great value with power and features.
	SH	N	S	S	AL	FS	2	G	G	G	G*	E	E	G	G	G	G	G		BB	T	164	445*					Good capacity for the money.
	SL	B	S	S	CI	CI	2½	E	E	F	E	E	G	G	G	E	E	E		BB	T	445	575*					Heavy-duty, powerful saw at a bargain price.
	SH	N	S	S	AL	CI	--	G	P	G	P	G	F	G	G	G	G	G			T	285	500*					Similar to Star—lacks convenience features.
	SH	N	S	S	CI	FS	4	G	E	G	E	G	*	G	E	G	G	F			T	220	700					A solid performer.
	SH	N	S	S	AL	CI	--	G	P	G	P	G	F	G	G	G	E	G		BB	T	285	525*					Big capacity, good operation for low price.

16. **E** Follows blade front-to-back and side-to-side; locks straight forward.

**G** Follows blade but must take care to lock straight forward.

17. **E** Easy to set, easy access, micro-adjust

**G** Easy to set, good access

**F** Limited access or hard to set

18. **E** Solid lock, good height

**G** Lock slightly harder to use, short height

**F** Not adjustable, hard to lock in vertical

**NS** Not standard

19. (C) Carter brand ball-bearing guides

(BB) Ball-bearing guides

(F) Fence (R) Riser block

20. (U) United States

(T) Taiwan

(I) Italy

21. Prices current at time of article's production.

(+) Plus shipping.

No sales tax on out-of-state sales.

**WHERE TO CALL:**

Bridgewood

Available from Wilke Machinery Co.

717/764-5000

Delta

800/438-2486

412/963-2400

Grizzly

800/523-4777 (East of Mississippi)

800/541-5537 (West of Mississippi)

Jet

800/274-6848

206/351-6000

Powermatic

800/248-0144

615/473-5551

Reliant

Available from Trendlines

800/877-7899

Sears Craftsman

Call or visit your local Sears store

Star Tools

888/678-8777

562/654-3065

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Star Tools  
 888/678-8777  
 562/654-3065



DELTA  
28-280



JET  
JWBS-14CS



## Other points to consider

• **Table tilt/trunnions.** All of the saws we tested tilt 45° right, and most tilt at least 10° left. Trunnions control table tilt, and it's the smoothness of the trunnions that matters most. If you plan to switch back and forth between straight and bevel cuts on a regular basis, choose a model that rates excellent or good in the chart.

• **Sealed lower wheel bearings.** Because sawdust accumulates in the lower wheel housing, the lower wheel bearings should have rubber seals to protect them from dust. As indicated in the chart, some manufacturers install shorter-lived metal-shielded bearings.

• **Stands.** Most stands were solid, but vibration and a lack of rubber

foot pads caused the Star Tools and Reliant saws to shimmy. The Sears 24393 stands directly on the floor, which puts its table at 36" — an uncomfortably low working height for our 6'2" tester.

• **Accessories.** Fences don't come standard on some of the saws. These and other options can boost the price of a saw substantially.

## The bottom line: what we'd buy if we were in the market

The Delta 28-280 is the top band-saw in this test. If the \$750 price tag seems too high, you can buy an open-stand version (28-275) with a 3/4-hp motor for about \$600.

Of the saws priced under \$600, our nod goes to the Jet JWBS-14CS, although it faces competition from the similar Sears Craftsman 24834.

The Craftsman motor seemed to overpower the Jet motor slightly, but the shielded lower wheel bearing on the Craftsman is more susceptible to dust infiltration than the sealed bearing in the Jet. At \$580, the JWBS-14CS costs \$30 more than the Craftsman, but comes with an enclosed stand. You

can buy an open-stand version of the Jet for about \$500.

The Grizzly G1073 has loads of resawing power, but we had to make a lot of adjustments before it performed to its full potential. ♦

Product testing: Dave Henderson  
 Graphic design: Perry McFarlin  
 Photographs: Marty Baldwin



# Full-Service



To customize our modular workbench, we included a flip-up router table in one cabinet as shown *at right* and a lift-up scrollsaw table as shown *at far right*.

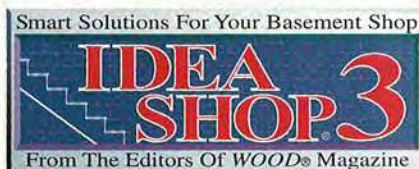




# Workbench

with a twist

At the heart of any good shop lies a great workbench. With that in mind, we went all out to design the unit shown here. On the next few pages, you'll learn how to build the end cabinets, drawers, and laminated benchtop. Then, in the next issue, we'll show you one of the center cabinets with the lift-up router table in it. And finally, in that same issue, we'll show this same cabinet with a rotating top for mounting a benchtop tool.



## Start with the two basic end cabinets

**1** Cut the cabinet tops and bottoms (A), sides (B), backs (C), and shelf (D) to the sizes listed in the Bill of Materials from  $\frac{3}{4}$ " medium density fiberboard (MDF). As noted on the Cutting Diagram, MDF measures 1" wider and longer than regular 4x8' sheet goods. Birch plywood would also work fine for these pieces.

**2** Cut the rabbets and dados in the sides (B) where shown on the Exploded View drawing. Note that only the left-hand cabinet is dadoed for the shelf (D).

**3** Glue and clamp the cabinets (A, B, C, D) together in the configura-

*Continued*





# Full-Service Workbench

tion shown on the Exploded View, checking for square.

**4** Cut the base front and back (E), sides (F), and cleats (G) to size.

**5** Cut the rabbets in parts E and F where shown on the Exploded View drawing. Glue and screw the bases (E, F, G) together in the configuration shown. Fill the counter-bored screw holes with wood filler, and later sand smooth with 220-grit sandpaper.

**6** Cut the left-hand cabinet front banding strips H and I to size. The thickness of the strips needs to be the same as the thickness of the MDF or plywood. Glue the strips to the front of the cabinet where shown on the Exploded View.

**7** Using the Side Section Views for reference, drill the mounting holes and screw the bases to the bottoms of the cabinets. Note that the back edge of the cabinet overhangs the base by  $\frac{3}{4}$ ".

## Add the drawers for the two cabinets next

**1** From  $\frac{1}{2}$ " stock (we used birch plywood), cut all the drawer fronts (J,L,N,P,R), and sides (K,M,O,Q,S) to the sizes listed in the Bill of Materials. Cut the drawer bottoms (T) from  $\frac{1}{4}$ " hardboard and false fronts (U,V,W,X) from  $\frac{3}{4}$ " MDF.

**2** Using the dimensions on the Drawer drawing, cut rabbets in the drawer sides.

**3** Drill countersunk mounting holes, and glue and screw each drawer (not including the false drawer fronts) together, measuring diagonally to check for square.

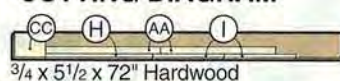
**4** Using the instructions supplied with the drawer guides and the dimensions on the Side Section Views, screw the guides to the bottom side edge of each drawer. Make sure each guide is flush with the front of the drawer box.

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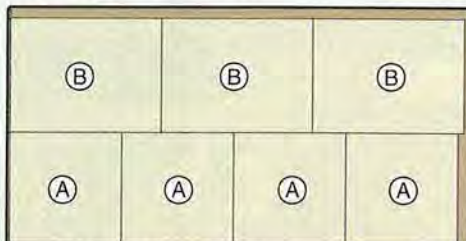
### Bill of Materials

Part	Finished Size			Mati.	Qty.	Part	Finished Size			Mati.	Qty.
	T	W	L				T	W	L		
CARCASSES AND BASES						DRAWER BOTTOMS AND FRONTS					
A top & bottom	¾"	23"	23½"	MF	4	T bottoms	¼"	21½"	22½"	HB	8
B sides	¾"	23¾"	31¾"	MF	4	U drawers 1, 2, & 3	¾"	3¾"	24"	MF	1
C back	¾"	23½"	31¾"	MF	2	V drawer 4	¾"	4¾"	24"	MF	1
D shelf	¾"	22¾"	23"	MF	1	W drawer 5	¾"	6¾"	24"	MF	2
E front & back	¾"	4"	23½"	MF	4	X drawer 6	¾"	10"	24"	MF	2
F sides	¾"	4"	19"	MF	4	BENCHTOP					
G cleats	¾"	4"	23½"	MF	4	Y top	1½"	23¾"	96"	LMF	1
H banding	¾"	¾"	22½"	H	1	Z banding	¾"	1½"	97½"	H	1
I banding	¾"	¾"	15"	H	2	AA banding	¾"	1½"	24½"	H	2
DRAWER 1						BB back	¾"	5¼"	97½"	H	1
J front & back	½"	1¾"	20¾"	BP	2	CC spacer	¾"	4½"	7"	H	1
K sides	½"	1¾"	22½"	BP	2	<b>Materials Key:</b> MF—medium density fiberboard, H—hardboard, BP—birch plywood, HB—hardboard, LMF—laminated medium density fiberboard.					
DRAWERS 2 & 3						<b>Supplies:</b> #8x1", #8x1¼", #8x1½", #8x2" flat-head wood screws; 8-3¾" pulls; 8 pair of 22" bottom-mount drawer guides; primer; paint; polyurethane. For the bench vise (we used a Wilton 4x7" pivot-jaw vise), 4-¾x3" lag screws with flat washers.					
L fronts & backs	½"	2¼"	20¾"	BP	4	<b>Buying Guide</b>					
M sides	½"	2¼"	22½"	BP	4	<b>Vise.</b> Wilton 4x7" pivot-jaw woodworking vise. Maximum opening 10", weighs 29 lbs. Enclosed spindle prevents sawdust from entering threads. Part no. 126504PR, \$99.99 plus \$8.99 shipping and handling. Woodcraft, 210 Wood County Industrial Park, P.O. Box 1686, Parkersburg, WV 26102-1686. Or call 800/225-1153 to order.					
DRAWER 4											
N front & back	½"	3¼"	20¾"	BP	2						
O sides	½"	3¼"	22½"	BP	2						
DRAWER 5											
P fronts & backs	½"	5¼"	20¾"	BP	4						
Q sides	½"	5¼"	22½"	BP	4						
DRAWER 6											
R fronts & backs	½"	8¼"	20¾"	BP	4						
S sides	½"	8¼"	22½"	BP	4						

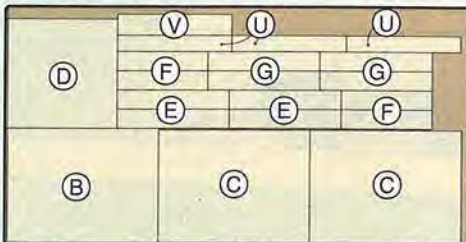
### CUTTING DIAGRAM



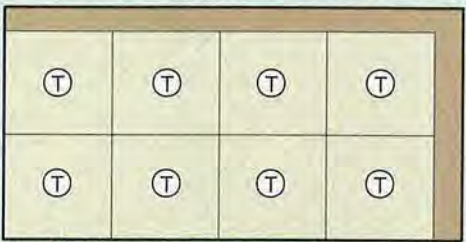
$\frac{3}{4}$  x 7 $\frac{1}{4}$  x 120" Hardwood



$\frac{3}{4}$  x 49 x 97" Medium density fiberboard (\*MDF)



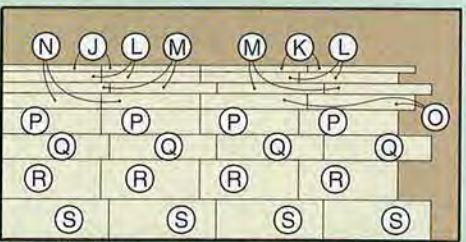
$\frac{3}{4}$  x 49 x 97" Medium density fiberboard (\*MDF)



$\frac{1}{4}$  x 48 x 96" Hardboard



$\frac{3}{4}$  x 49 x 97" Medium density fiberboard (\*MDF)



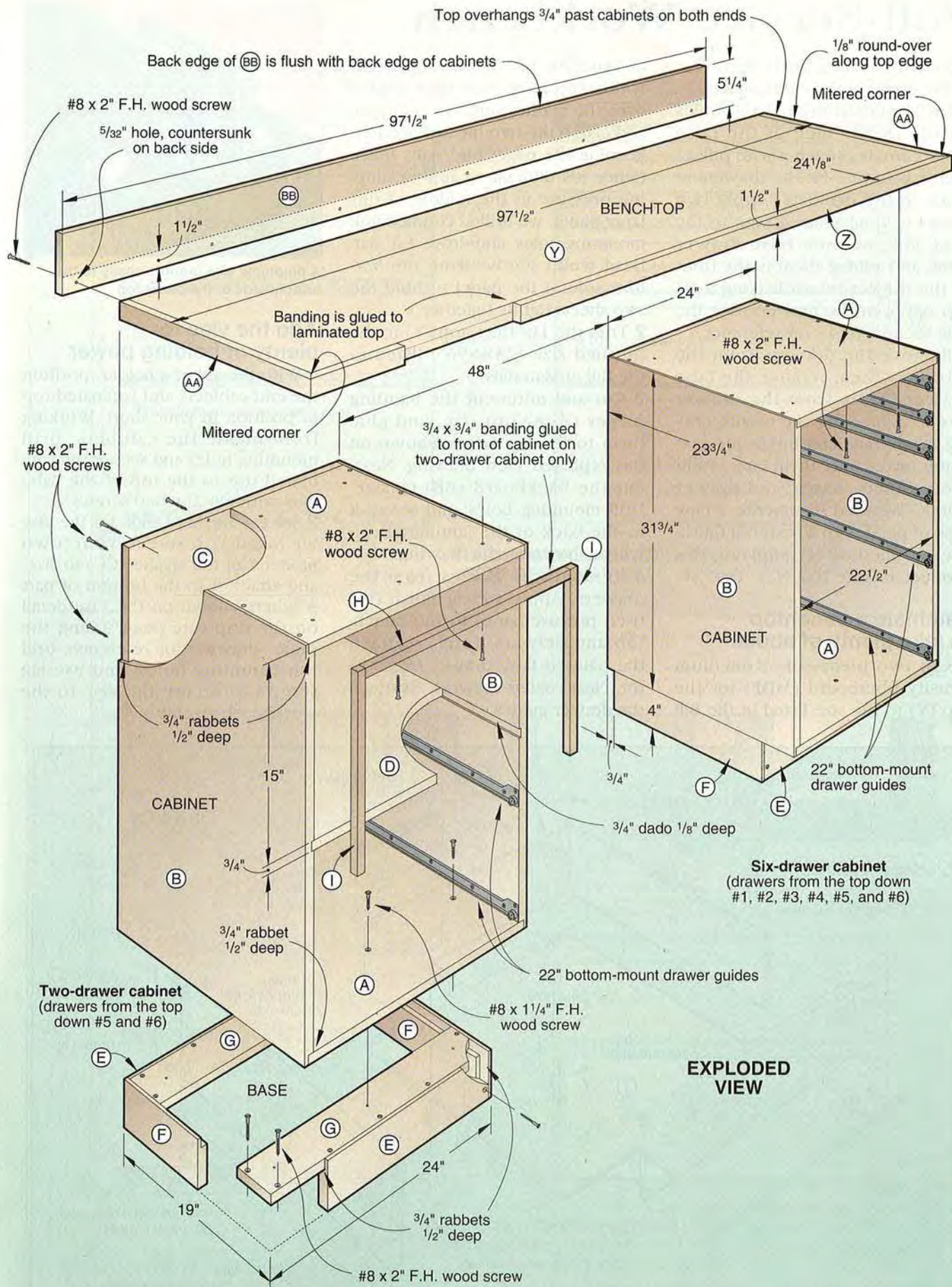
$\frac{1}{2}$  x 48 x 96" Birch plywood



$\frac{3}{4}$  x 49 x 48 $\frac{1}{2}$ "  
Medium density  
fiberboard (\*MDF)

\*Standard 4x8 sheet  
particleboard or  
plywood will work  
in place of MDF







# Full-Service Workbench

Mount the mating guide hardware to the inside of the end cabinets.

**5** Drill counterbored shank holes on the *inside* face of the false drawer fronts. Attach a wire pull to each false front. Fit the drawers in place in the cabinets. Apply two pieces of double-faced tape to the back side of each false drawer front, and adhere them to the front of the drawer boxes leaving a  $\frac{1}{8}$ " gap between the drawers. See the Side Section Views for reference.

**6** Remove the drawers from the cabinets. Then, remove the false drawer fronts from the drawer boxes, numbering the corresponding false fronts and boxes for ease when reattaching them later. Paint the cabinets, bases, and drawer fronts. (We used Hammerite, a new type of paint with a textured finish. See our method for applying this product in issue 100, Nov. 1997.)

## Laminate a benchtop to take plenty of abuse

**1** Cut two pieces of  $\frac{3}{4}$ " medium density fiberboard (MDF) for the top (Y) to the size listed in the Bill

of Materials plus 1" in length and width. Spread an even layer of glue over the mating surfaces, and glue and clamp the two pieces together, keeping the edges and ends flush. (Since it's difficult to apply clamping pressure in the middle of this large panel, we drilled countersunk mounting holes, and drove  $1\frac{1}{4}$ " flat-head wood screws from the *bottom side* of the panel to hold the two sheets tightly together.)

**2** Trim the  $1\frac{1}{2}$ "-thick top (Y) to the finished size ( $23\frac{3}{8} \times 96$ ") listed in the Bill of Materials.

**3** Cut and miter-cut the banding pieces (Z, AA) to size, and glue them to the top where shown on the Exploded View drawing. Next, cut the backboard (BB) to size. Drill mounting holes, and screw it to the back of the laminated top where shown on the drawing.

**4** Remove the guides from the drawers. Apply a clear finish (we used polyurethane) to the benchtop and drawers. Later, reattach the painted false drawer fronts to the clear-coated drawers. Reattach the drawer guides.

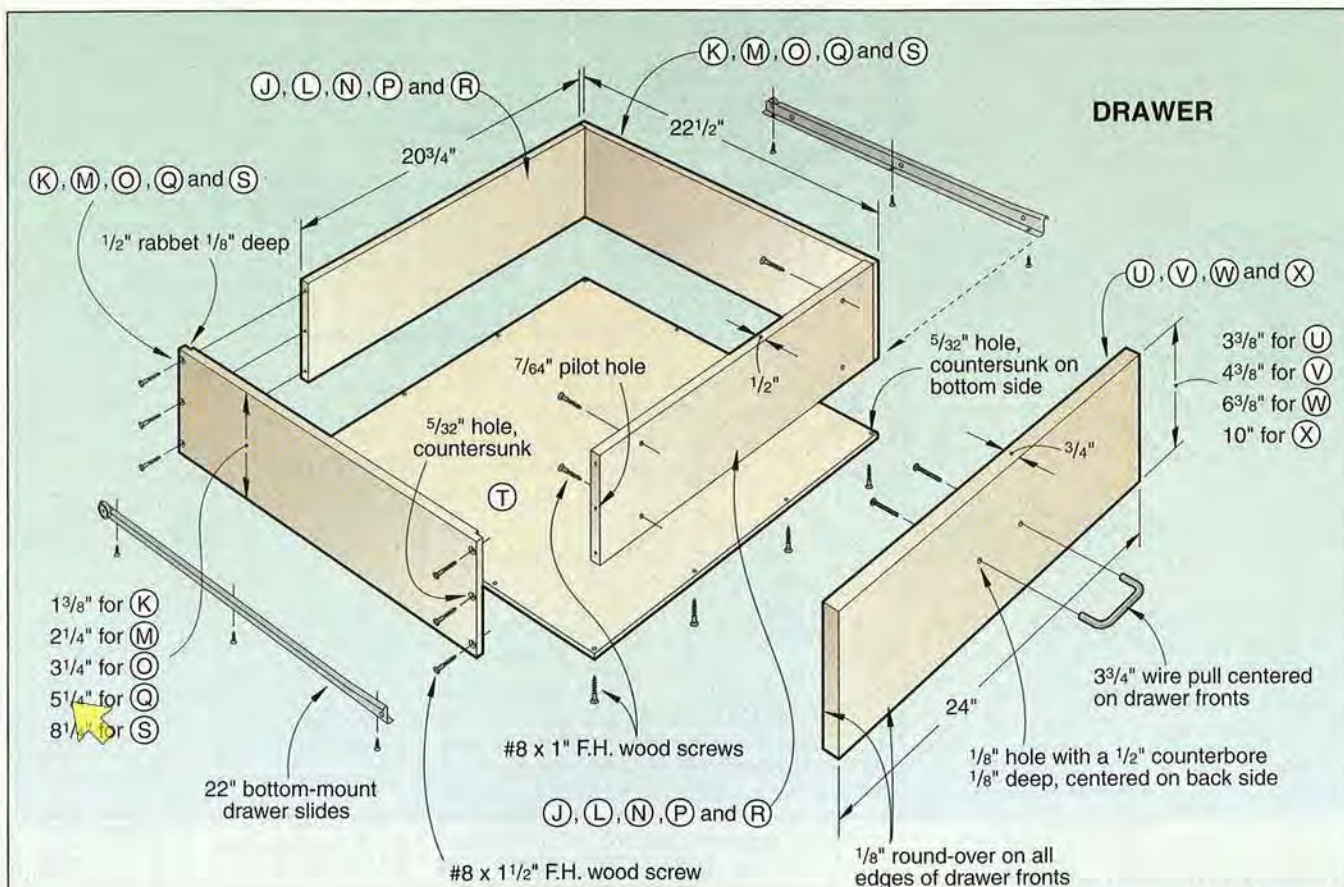


A pivot-jaw vise mounts easily to the bottom side of the benchtop.

## Add the vise for plenty of holding power

**1** With the aid of a helper, position the end cabinets and laminated top in position in your shop. Working from inside the cabinets, drill mounting holes and secure the laminated top to the top of the cabinets with #8 $\times$ 2" wood screws.

**2** See the Buying Guide for the vise we used, or select your own model. Cut the spacer (CC) to size, and attach it to the bottom of part A where shown on the Vise detail on the opposite page. Using the same drawing for reference, drill the mounting holes, and use lag screws to secure the vise to the workbench assembly. 🌿









# Build your own Wet-Wheel Grinder

You'll get razor-sharp  
results with a  
minimal investment

If you've ever turned a cutting tool blue trying to restore its edge on a bench grinder, have we got a jig for you! Starting with a standard horizontal wet-wheel grinding stone, and a drill press for power, we've modified the stone so it provides a steady flow of water over its surface. And the stone's steel backing plate rides on water-cooled plastic bearings, so the stone runs smooth and flat. We'll show you how to assemble this super sharpener for about \$100, and explain how to use it, too.

**EDITOR'S NOTE:** After building this jig in the WOOD® magazine shop, we discovered why its inventor, Design Editor Jim Downing, was so excited about it. We had so much fun using it that we couldn't stop. We sharpened every chisel in the shop, several plane irons, half-a-dozen pocket knives, and anything else we could find with a cutting edge.

To make it easier for you to build your own sharpening jig, we've assembled a complete hardware kit with the metal parts drilled and tapped. See the Buying Guide for details.

## Let's start with the jig's base

**1** Cut a piece of  $\frac{3}{4}$ " plywood for the jig table (A) to the size listed in the Bill of Materials. Mark the center-point of the table (A), and using a compass and the centerpoint, draw a circle on the table the same diameter as the rim of the water pan.

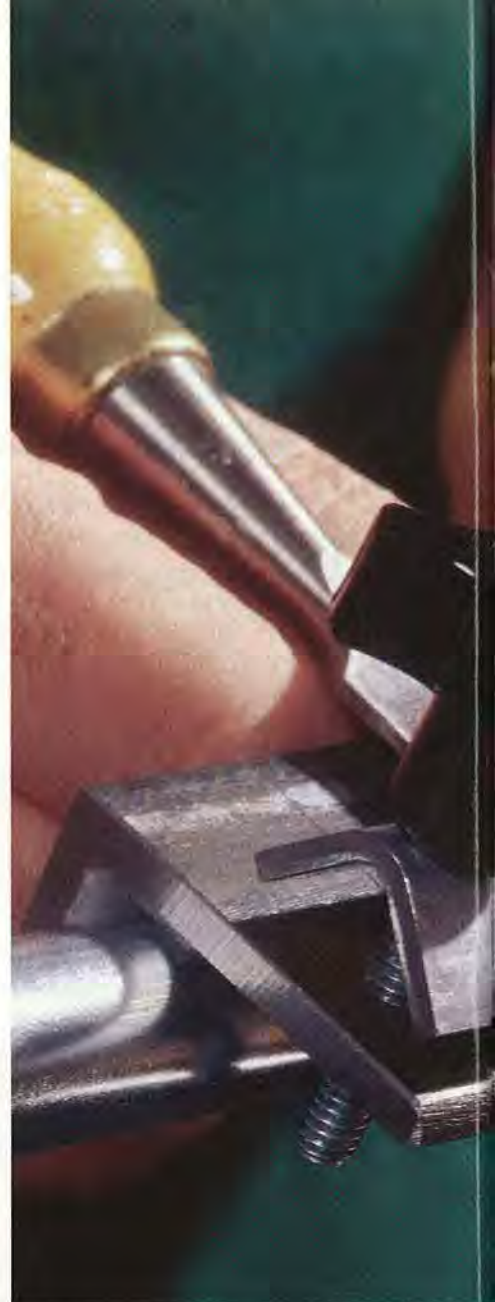
To customize the jig for your drill press, center the table (A) on your drill-press table. Mark the location of the drill-press table mounting slots, staying  $\frac{3}{4}$ " outside the marked diameter of the water pan.

**2** Using your drill press, drill the  $\frac{7}{64}$ " pilot hole in the center of the table, and  $\frac{1}{4}$ " mounting holes, and the holes for the tool rest support rods where shown on the Exploded View drawing.

**3** Miter-cut the edge banding (B, C) to finished size. (We took a piece of  $\frac{1}{2}$ " $\times$ 3" $\times$ 42" maple, rounded over all the long edges with a  $\frac{1}{4}$ " round-over bit, then ripped it to yield two pieces 1 $\frac{1}{4}$ " wide.) Attach the edge banding (B, C) to the table (A) with waterproof glue and nails, fill the nail holes, then finish-sand the table assembly.

**4** Brush or spray a coat of oil-based primer on the entire table, then spray on two coats of enamel. (We used Krylon All-Purpose Gray Primer #1318 and Smoky Gray Spray Enamel #1608.)

*Continued*



Print this article





### COOL RUNNING

Because a stream of water constantly flows across the stone, you'll never burn a tool's cutting edge using this jig.



# Wet-Wheel Grinder

## Add the water pan assembly

**1** Cut the UHMW bearing blocks (D) to size as shown in the Bearing Block detail. Drill and countersink the screw holes where shown.

**2** From 1/2" scrap, cut the positioning block to 3 5/16" x 3 5/16". Drill a 5/32" hole through its center.

**3** Locate the center of a 1 1/2 x 9" aluminum cake pan as shown in the photo below. Drill a 5/32" hole through the pan's center.

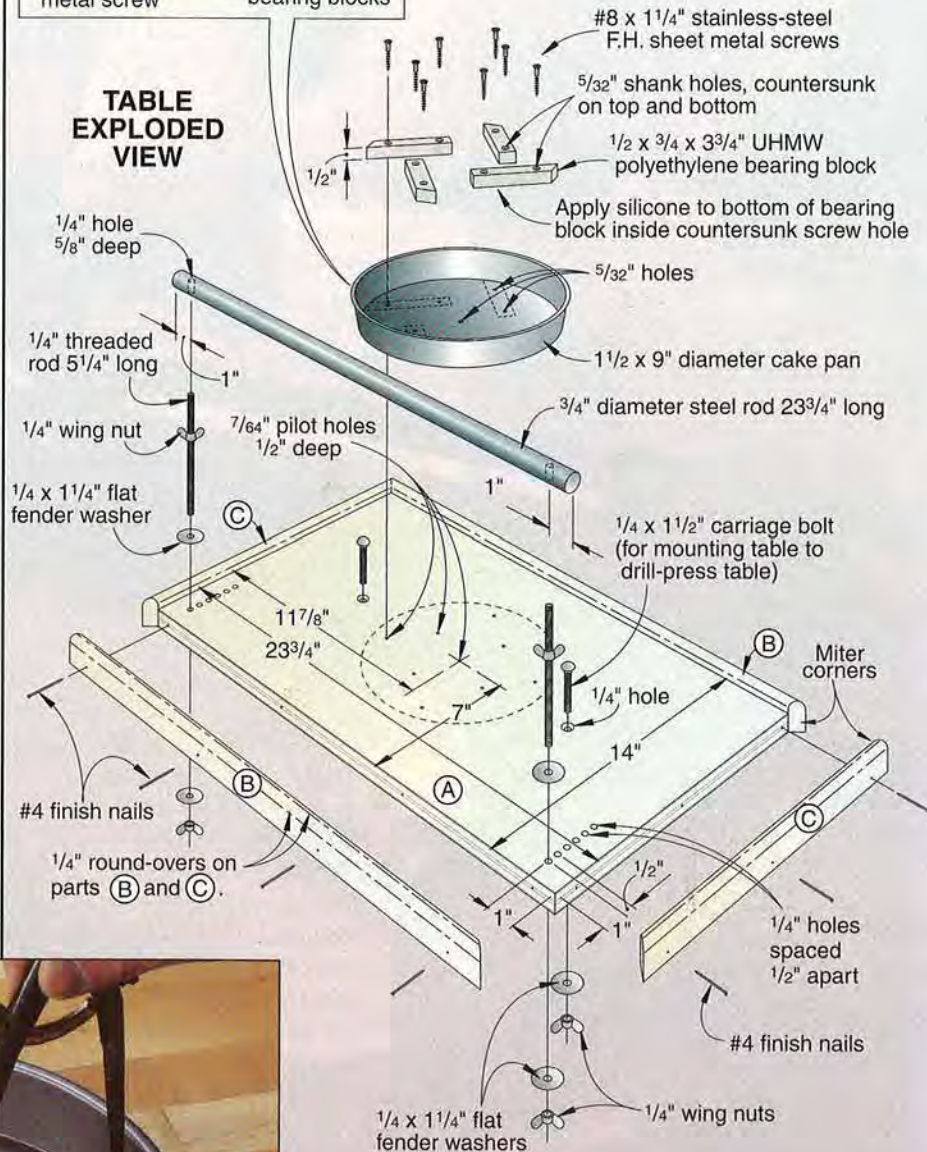
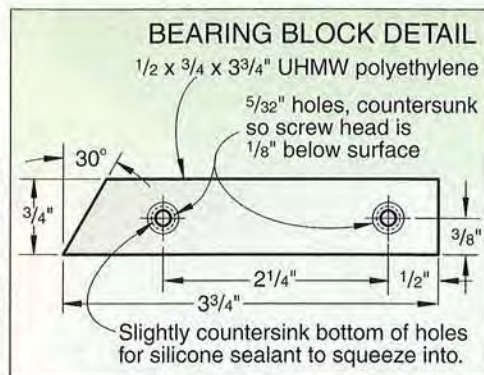
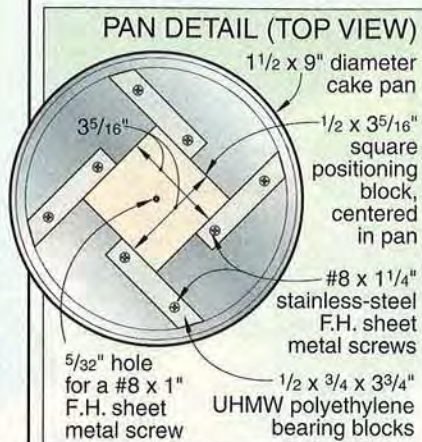
**4** Screw the scrapwood positioning block and pan to the center of the table. Position the bearing blocks where shown in the Pan detail drawing, then drill 7/64" pilot holes through the pan and into the table.

**5** Enlarge the pan holes to 5/32". Apply silicone sealant to the countersink on the bottom side of the bearing blocks, then fasten the blocks in place with stainless-steel screws as shown. Remove the positioning block, apply silicone sealant to the hole, and install a panhead screw to seal the hole.

*(Note: If you purchase the hardware kit, the too rest and honing guide parts come pre-drilled and tapped. Simply assemble the parts as shown in the Exploded View drawing.)*

## Now, machine the tool rest

**1** Cut a scrap piece of 3/4" particle-board to 2 1/2 x 23 3/4". Tilt your table-



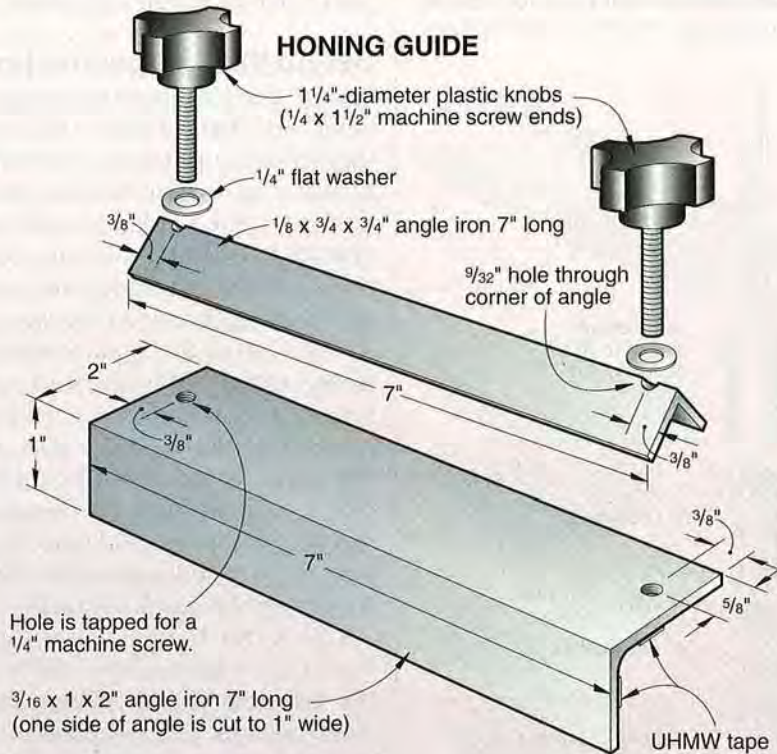
To locate the pan's center, adjust your compass to the radius of the pan's bottom. Place masking tape across the pan's center, and with the point of the compass at the edge of the pan as shown, strike an arc. Move the compass point a third of the way around the pan and strike another arc. Then move it again and strike a third arc. The centerpoint lies at the center of the three intersecting arcs.







With the  $\frac{3}{4}$ " steel rod mounted in the V-block, use a plastic drafting triangle or square to mark the centerline on each end of the rod.



### Bill of Materials

Part	Finished Size			Matl.	Qty.
	T	W	L		
A table	$\frac{3}{4}$ "	14"	23 $\frac{3}{4}$ "	P	1
B side banding	$\frac{1}{2}$ "	1 $\frac{1}{4}$ "	24 $\frac{3}{4}$ "	M	2
C end banding	$\frac{1}{2}$ "	1 $\frac{1}{4}$ "	15"	M	2
D bearing blocks	$\frac{1}{2}$ "	$\frac{3}{4}$ "	3 $\frac{3}{4}$ "	U	4

**Materials Key:** P—plywood, M—maple,  
U—UHMW polyethylene

### Buying Guide

**Hardware kit.** One piece of  $\frac{3}{16}$  x 1 x 2" angle iron 7" long, drilled and tapped; one piece of  $\frac{1}{8}$  x  $\frac{3}{4}$  x  $\frac{3}{4}$ " angle iron 7" long, and one  $\frac{3}{4}$  x 23 $\frac{3}{4}$ " steel rod with  $\frac{1}{4}$ " holes, one piece of UHMW polyethylene cut slightly oversized for the bearing blocks (D), plus all the hardware listed in the Supplies listing below except for the grinding wheel and finish. WOOD KIT GJ1, \$52.95 ppd. Add \$56.95 ppd. per wheel for MK-60 (60-grit Makita wheel) or MK-1000 (1000-grit Makita wheel). Schlabaugh and Sons Woodworking, 720 14th Street, Kalona, IA 52247 or call 800/346-9663 to order.

**Supplies:** #4 finish nails,  $\frac{3}{4}$  x 23 $\frac{3}{4}$ " steel rod,  $\frac{3}{16}$  x 2 x 7" angle iron,  $\frac{1}{8}$  x  $\frac{3}{4}$  x 7" angle iron, 2— $\frac{1}{4}$ " carriage bolts 1 $\frac{1}{2}$ " long, 2— $\frac{1}{4}$ " all-thread rods 5 $\frac{1}{4}$ " long, 6— $\frac{1}{4}$  x 1 $\frac{1}{4}$ " fender washers, 6— $\frac{1}{4}$ " wing nuts, 8—#8 x 1 $\frac{1}{4}$ " stainless-steel sheet-metal screws, 1—#8 x  $\frac{1}{2}$ " stainless-steel panhead sheet-metal screw, 1— $\frac{1}{2}$ " carriage bolt 2 $\frac{1}{2}$ " long, 2— $\frac{5}{8}$ " flat washers, 1— $\frac{1}{2}$ " flat washer, 2— $\frac{1}{4}$ " flat washers, 1— $\frac{1}{2}$ " nut, 1— $\frac{1}{2}$ " coupling nut, 1— $\frac{3}{8}$ "-drive  $\frac{1}{16}$ " deepwell socket, 1— $\frac{1}{4}$  x  $\frac{3}{8}$ " socket adapter, galvanized sheet metal (approx. 3 x 3"), 1— $\frac{7}{64}$ " self-tapping screw  $\frac{3}{8}$ " long, 2— $\frac{1}{4}$ "-diameter plastic knobs with  $\frac{1}{4}$ " machine screw studs 1 $\frac{1}{2}$ " long,  $\frac{1}{2}$  x 14" UHMW polyethylene self-adhesive tape, 4— $\frac{1}{2}$  x  $\frac{3}{4}$  x  $\frac{3}{4}$ " UHMW polyethylene blocks, 1—1 $\frac{1}{2}$  x 9"-diameter aluminum cake pan, 1—200 x 25 x 75mm Makita grinding wheel (60- or 1000-grit), silicone sealant, enamel finish and primer.

saw blade to 45°, adjust the depth to  $\frac{1}{2}$ ", and set the fence so the tip of the blade rips through the center of the stock. Make one pass, rotate the stock 180°, and make a second pass to form a V-shaped notch centered on the board.

**2** Cut a  $\frac{3}{4}$ "-diameter steel rod to 23 $\frac{3}{4}$ " long, then smooth and chamfer the ends with a file or grinder.

**3** Apply cloth-backed double-faced tape lengthwise near each end of the rod to keep it from rotating, then place the rod in the V-block. Use a plastic triangle or square to mark a vertical line centered on each end of the rod as shown in the photo above left. Extend the mark along the top of the rod.

**4** With a metal punch, mark the centerpoint of the holes, where shown, then drill the holes. Remove the rod from the V-block, and set the V-block aside.

**5** Cut the  $\frac{1}{4}$ "-diameter all-thread support rods to 5 $\frac{1}{4}$ " long, and file a slight chamfer on the ends. Assemble the tool rest as shown in the Exploded View drawing.

### The honing guide comes next

**1** Use a hacksaw, reciprocating saw, or jigsaw with a metal-cutting blade to cut the  $\frac{3}{16}$  x 2" angle iron to 7", then cut one side of the 2" angle to 1" wide. File or grind all the cut edges smooth, and drill and tap the holes where shown in the Honing Guide drawing.

**2** Cut the  $\frac{1}{8}$  x  $\frac{3}{4}$ " angle iron to 7", and place it angle-side-down in the V-block you used previously. Drill a pair of  $\frac{1}{8}$ " pilot holes  $\frac{3}{8}$ " in from each end. Switch to a  $\frac{3}{32}$ " bit, and drill the holes to finished size.

**3** Clean the underside of the larger angle with solvent. Apply two strips of UHMW tape to the angle where shown.

**4** Using a square and a scratch awl, scribe tool alignment marks at  $\frac{1}{2}$ " intervals across the top face of the 1 x 2" angle, then assemble the honing guide.

*Continued*



# Wet-Wheel Grinder

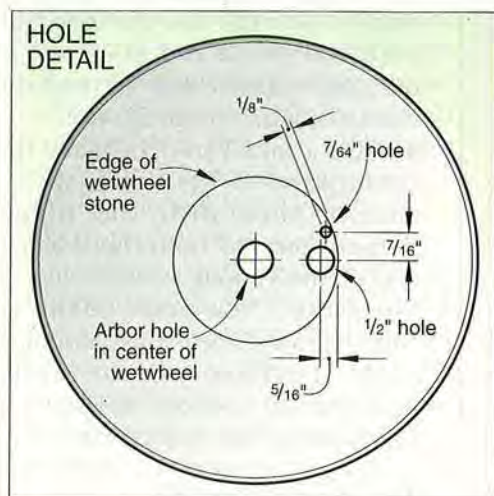
## Finish up with the wet wheel

(Note: We looked at several different wet-wheel grinding stones before settling on Makita 60- and 1000-grit wheels. While more expensive than most, these stones have a harder, more durable composition, and are mounted on a heavy steel backing plate.)

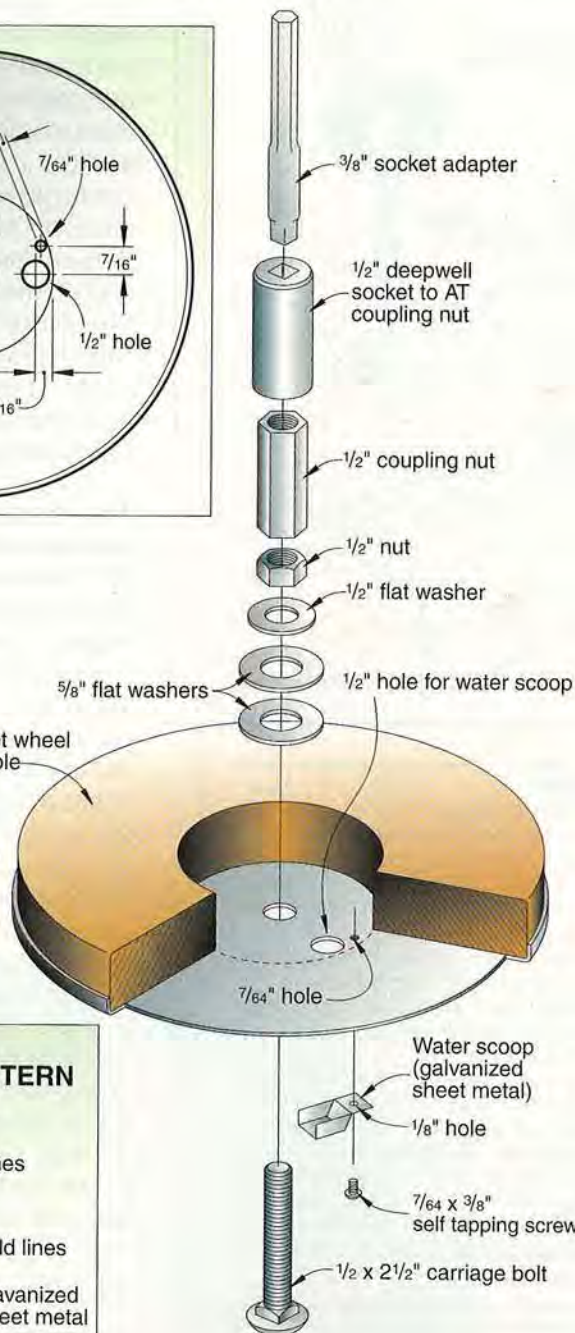
**1** Mark out and drill the two off-center holes in the wet-wheel backing plate where shown on the Hole detail below.

**2** Copy the full-sized pattern for the water scoop, and affix it to a piece of galvanized sheet metal. Drill the  $\frac{1}{8}$ " mounting hole, then cut the water scoop to size.

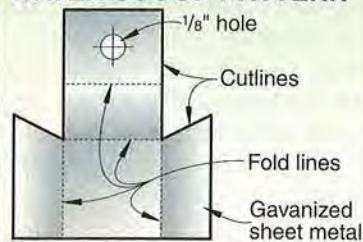
**3** Cut the end of a piece of  $\frac{1}{2}$ "-thick scrap at  $30^\circ$  and use it as a form to help bend the scoop to shape. Attach the scoop to the wet wheel, as shown in the Wet Wheel Exploded View drawing, aligning it over the  $\frac{1}{2}$ " hole. Assemble the  $\frac{1}{2}$ " carriage bolt, washers, and nuts as shown below.



## WETWHEEL EXPLODED VIEW



## FULL-SIZED WATER SCOOP PATTERN



## How To Use Your

Now that you've completed the jig, it's time to put a keen edge on your chisels, plane irons, and other cutting tools. But which wheel should you use, 60- or 1000-grit? You may want to consider buying both.

We found that for general purpose sharpening, the 60-grit wheel gave us a sharp edge quickly, making it ideal for regrinding nicked or damaged edges. For honing a fine edge on knives and carving tools, you'll need the 1000-grit wheel.

## Set up the sharpening jig

Install the jig on your drill-press table, but don't tighten the mounting screws. Center the wet wheel in the pan, and install the socket adapter and socket in the drill chuck. Raise the table and center the coupling nut under the socket, leaving a gap between the two.

Now, lower the quill so the coupling nut fits inside the socket, and reposition the jig so the wheel remains centered in the pan. Lock the quill and drill-press table in place, and tighten the mounting screws. To change wet wheels, simply raise the quill, swap the wheels, then lower and lock the quill.

Add water to the pan until the level reaches just above the top of the bearing blocks. (Because the stone absorbs water, we like to pre-soak the wheel for 10-15 minutes.) Adjust your drill-press speed to the slowest setting—usually 250 rpm—then turn it on. The wheel should turn fast enough to pump water up from the center of the wheel and out over the stone without throwing water out of the pan. You may need to add or remove water, or adjust the drill-press speed to achieve the proper flow.

## Let's sharpen a chisel

Before you put a fine edge on a chisel, you need to lap the back side to remove factory grind marks and flatten the surface. The photos *above right* show how to lap a chisel and the results you want.



# Wet-Wheel Grinder

With the chisel lapped, insert it into the honing guide, and align the edge with one of the scribed lines. Tighten the knobs to hold the chisel firmly in position.

Set the honing guide and chisel in place on the tool rest as shown in the Fine-tuning the Tool rest drawing. Raise or lower the toolrest to achieve the proper edge bevel as shown. To make sure the tool rest stays parallel to the table, we measure the height at both ends, using a combination square.

With the tool rest adjusted and the honing guide removed, turn on the drill press. Place the honing guide on the tool rest and gently lower the chisel blade onto the rotating stone. Start with the chisel near the center of the stone, then move it back and forth toward the edge of the wheel as shown in the Grinding Motion drawing at *right, bottom*.

After grinding the entire bevel, carefully remove the chisel from the honing guide and wipe it dry. It will have a fine burr left from the grinding that must be removed. Simply run the cutting edge lightly across the end-grain edge of a piece of hardwood to leave a chisel that's ready for action.

## Don't forget maintenance

Since you're introducing water into your shop, take extra time to wipe up spills and drips around your drill press. To help prevent rust, wipe down the bare metal part of your drill press with WD-40 or light machine oil each time before you use the jig.

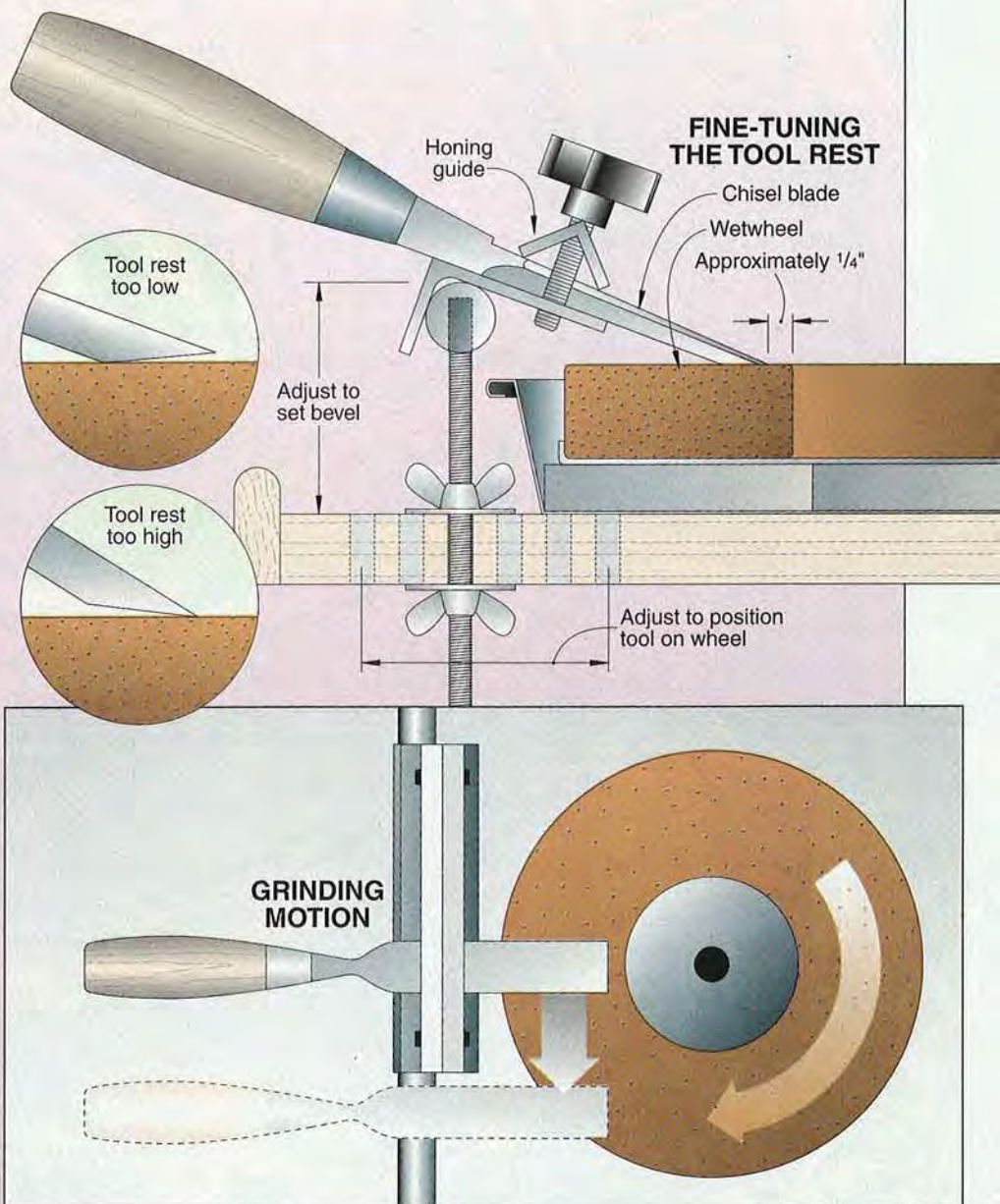
If your grinding wheel becomes even slightly grooved, you need to flatten it. Begin by removing the drive bolt assembly from the wheel. Affix a piece of 320-grit wet-and-dry silicon carbide sandpaper on a piece of glass with spray adhesive. Dampen the sandpaper with water, then rub the stone side of the wheel back and forth on the sandpaper. Rinse the sandpaper and wheel with water periodically. 🌿



To lap a chisel, place the back side on the wet wheel with the wheel spinning away from the cutting edge as shown.



You must lap the back side of chisels to remove factory grind marks, corrosion, and protective coatings. After lapping, the back side of the chisel should appear shiny and scratch-free.



Project Design: James R. Downing  
Graphic Design: Perry McFarlin

Photographs: Hetherington Studios  
Illustrations: Kim Downing







# Picture-Pretty CHIP CARVING

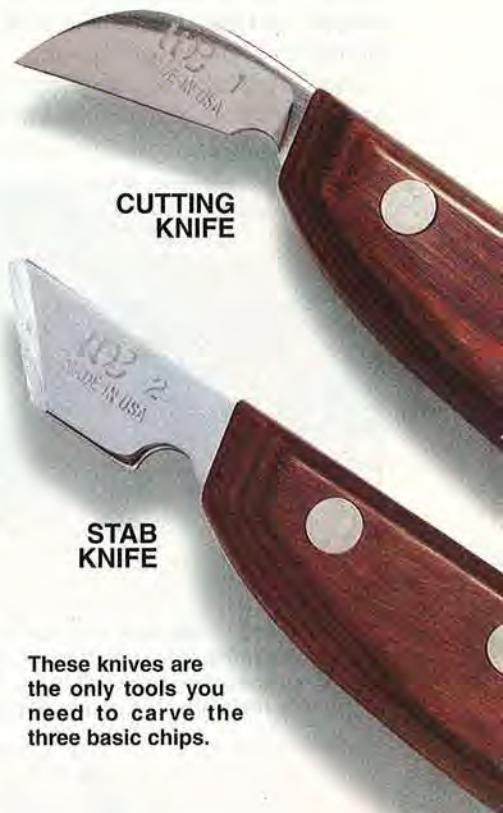
## Traditional techniques yield decorative images

Leave it to Wayne Barton to put a new spin on the old art of chip carving. Wayne, master of traditional Swiss-style chip carving, has brought a novel look to his art with *positive imaging*, illustrated by the plate left. Here's how to carve a plate for yourself.

Traditional chip carving calls for slicing geometric segments out of the surface of a piece of wood, resulting in an incised pattern. Sometimes, a combination of cuts creates a design feature that appears to be relief-carved, as with a rosette.

Positive imaging enlarges on that, focusing on the relief images, not the incised lines and triangles, as the major design elements. For positive imaging, you cut out chips solely to remove the background around the design. This means the chips may be free-form pieces rather than the more geometric forms of traditional chip carving.

Though the chips may differ, you cut them the same way as in traditional Swiss-style chip carving. So, before digging into the positive-image plate, let's dip into some chip-carving basics. If you're already handy at chip carving, you can excuse yourself and rejoin us at "Applying the pattern" on page 70.



These knives are the only tools you need to carve the three basic chips.

### Two knives will do it all

Wayne's Swiss-style chip carving calls for only two knives, shown above right. The cutting knife is the principal tool—you'll carve all of the chips with it; the stab knife comes into play only to make decorative impressions. (The Buying Guide shows our source for the Premier chip-carving knives shown.)

Your chip-carving success and enjoyment depend on having sharp knives. For sharpening, Wayne prefers flat ceramic stones—a medium-grade stone for shaping the edge and an ultrafine one for honing it. He prefers the ceramic stones because of their hardness—they resist surface dish.

Sharpen the cutting knife to an angle of 10° or less. To gauge the sharpening angle easily, lay the blade flat on the stone, then lift the back edge just enough to slip a dime under it. The cutting edge must extend straight to the point of the blade to make clean cuts. Sharpen the stab knife to the factory angle, 30°.



# CHIP CARVING

## Tips on holding the knives

For carving, you'll hold the cutting knife one of two ways.

**First grip position.** To begin, sit down in a chair without arms, and hold the workpiece on your lap. Grasp the knife in your right hand (or left, if you're left-handed). Place the first joint of your thumb at the blade end of the handle, and wrap your fingers around the handle as shown *below*. Then, turn the inside of your wrist toward your body and rest the tip of your thumb, the knuckle of your index finger, and the point of the blade on the workpiece.

This lays the blade away from you at about 65° to the wood. Viewed from the side, an imaginary line

bisecting the angle formed by the point of the knife should stand perpendicular to the workpiece.

Move your hand and the knife as a unit; that is, don't flex your hand to draw the knife toward your thumb. Maintain a constant angle between the blade and the work.

**Second grip position.** Tilt the top edge of the knife toward you, and place your thumb along the back of the blade. Rest your index-finger knuckle on the carving to maintain a 65° tilt of the blade, shown *bottom left*.

**The stab knife.** Grip this knife as you would an ice pick. Hold it perpendicular to the workpiece with the long point away from you, and stab it straight into the wood. Then, rock the handle toward you to extend a line out from the knife-tip impression.



You'll hold the knife this way for most cutting. Keeping the end of the thumb and the index-finger knuckle on the workpiece maintains the proper angle.



For some relief cuts, you'll hold the knife in this position.

## Carving the chips

Swiss-style chip carving relies on three basic cuts—the straight chip, the curved chip, and the triangular chip. Knowing how to carve these basic chips will help you carve the positive-image chips.



### Straight chip

To carve the straight chip (intersecting ones shown *left*), start with the cutting knife in the first

position. Slice along the pattern line in one direction. Then, turn the workpiece 180° and cut in the other direction to release the chip.

When one pattern line represents a chip, cut along it in one direction, then make the relieving cut. Where two lines mark a chip, cut along each, plunging the knife in deeply enough that the cuts meet midway between the lines.

## Applying the pattern

Make two photocopies of the full-sized pattern. You'll find it in the *WOOD PATTERNS*® insert in the middle of the magazine.

Cut one pattern copy into two parts—the plate center and the rim. Also, trim the rim pattern around the scalloped outside edge for ease in positioning it on the plate. Slip a piece of graphite transfer paper (not carbon paper)

between the pattern and the plate, and tape the pattern at a few spots.

Templates aid in tracing the pattern onto the plate accurately. To make a set, cut from the second copy of the pattern two of each of the repeating elements, such as the shield shape with floral design around the rim. Allow a margin around each piece. Then, with spray adhesive or rubber cement,



Cut tracing templates from pattern segments glued onto cardstock. You'll need templates of both the inside and outside pattern lines for each segment.





### Curved chip

Carve a curved chip (two shown *left*) as you would a straight one, except raise the end of the knife handle slightly. This reduces the length of the blade in the wood, making it easier to follow a curved line. The tighter the radius, the more you need to raise the handle to negotiate the curve.

Because the angle between the workpiece and the knife remains constant, straight and curved chips of the same width will be the same depth. Wider chips will be deeper, and narrower ones shallower.

Similarly, chips having nonparallel sides will be shallower where the sides are closer together, deeper where they diverge. When carv-

ing such chips (the swirling shapes in the center rosette, for instance), push the knife in more deeply as you approach wide spots, and withdraw it as you work toward narrower areas.



### Triangular chip

Triangular chips make up the four corners of the figure *left*. Holding the knife in the first position, cut from the far end of the first side toward yourself. Turn the workpiece about 90°, and switch to the second grip to cut the second side. Then, without turning the workpiece, go back to the first grip to complete the final cut. Plunge the knife to the full depth of the chip at the start of each side, and gradually reduce the cutting depth as you near the end.

adhere the cutouts to light cardstock. (We made our templates from an old file folder.)

Using a sharp knife, trim around the outside pattern line of one copy of each element. On the second copy, cut out a template for the inside part, shown *below left*.

Then, to transfer the pattern onto the plate, lay the template for an element on top of the correspond-

ing shape on the pattern. Trace around it with a soft-lead pencil, as shown *below*. Trace other pattern features, employing French curves or a flexible ruler for accuracy.

After tracing the rim pattern, remove the paper pattern and transfer paper. Then, carve the rim. After carving the rim, trace the pattern for the center onto the plate, and carve it.



Position your template on the appropriate part of the pattern for accurate tracing.

## Carving the plate

In general, start from the outside and work inward when carving the plate. Dividing the plate into quarters and working within one quarter at a time is another way to organize the work.

Here are some other chip-carving tips from Wayne:

- Start with the largest chips in the area you're working.
- Begin carving a chip with the cut across the grain.
- Avoid cutting toward work you've already done when starting a new chip.
- Look ahead of the blade—where you're going—as you carve; this makes it easier to follow a line.
- In case of a splinter or tearout, apply a dab of wood glue to the piece with a toothpick, then press it back into place.

When you've completed the carving, erase any remaining pencil marks. An ink eraser usually does the trick. Then, sand the plate lightly with 220-grit sandpaper. Be careful not to flatten or round over the sharp edges that give the carving its crisp look.

Blow the sanding dust out of the cuts. Stain the plate, if you wish. Spray on a coat of dull (flat) polyurethane. Build the finish with a couple of thin coats, but don't apply the finish so heavily that it fills in the carving detail. ♣

### Buying Guide

**Plate, carving knives, and supplies.** Scalloped-edge basswood plate, \$13.75; set of two Premier chip-carving knives, \$49.90; set of ceramic sharpening stones, \$48, all plus shipping. Books and videos also available; call for prices.

Alpine School of Woodcarving Ltd.,  
225 Vine Ave.,  
Park Ridge, IL 60068.  
Or call 847/692-2822.

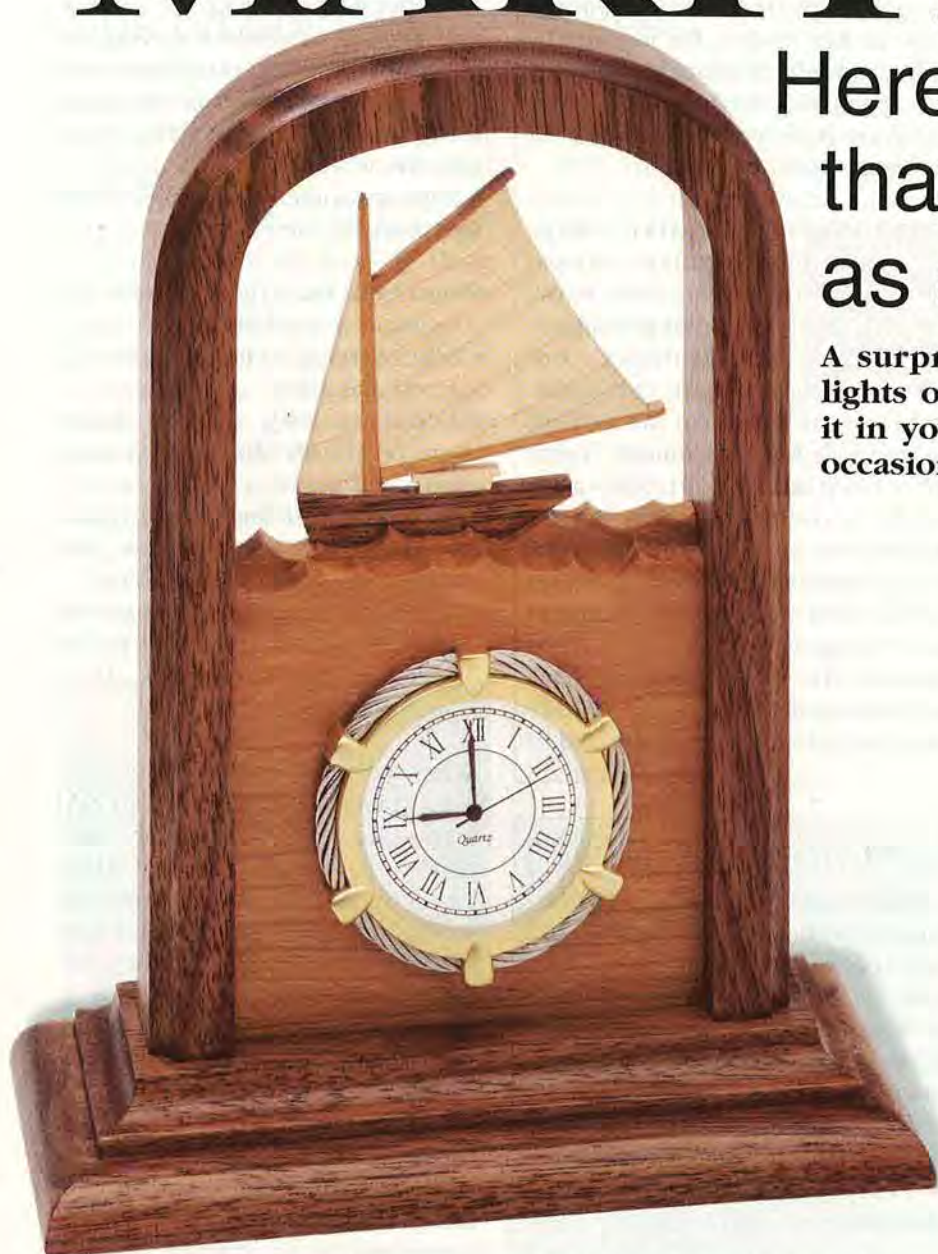
Project Design: Wayne Barton  
Photographs: King Au; Wm. Hopkins  
Illustrations: Roxanne LeMoine; Lorna Johnson



# MARITIME

## Here's a clock that's as cool as a sea breeze

A surprisingly detailed sailboat highlights our nifty nautical clock. Anchor it in your den or office, and enjoy the occasional daydream cruise.



### Start with the arch

- 1 Photocopy the Full-Sized Half Pattern for the arch (A) on *page 74*. Make a full pattern, and adhere it to 1"-thick stock with spray adhesive or rubber cement.
- 2 Bandsaw the arch slightly outside the line. Sand to the line, keeping the sides straight and parallel. Remove the pattern.
- 3 Chuck a piloted  $\frac{1}{8}$ " cove bit in your table-mounted router. Refer to the Cove Detail illustration, and rout the outside edge on both sides of the arch. Finish-sand.

### The base comes next

- 1 Cut the base (B) to the size shown in the Bill of Materials.
- 2 Chuck a  $\frac{1}{2}$ " core box bit in your table-mounted router. Referring to *step 1* of the Routing Detail illustration on the *opposite page*, set the router cutting depth and position the table's fence. A solid fence works better than a split fence for this job. To reduce corner chipout, rout first across the ends, then rout the edges.
- 3 Change to a piloted round-over bit. Set the fence and cutting

depth as shown in *step 2* of the illustration, and rout the edge. Finish-sand the base.

### Now, add water

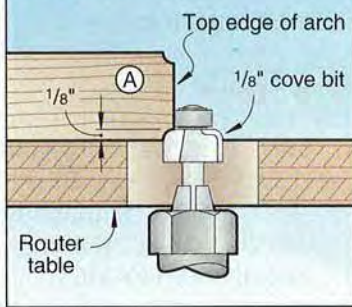
- 1 Cut blanks for parts C, D, and E to the sizes shown.
- 2 Adhere the part C pattern to its blank. With a  $1\frac{3}{8}$ " Forstner bit, bore the clock hole where shown. Scrollsaw the top edge, and leave the pattern attached.
- 3 Using double-faced tape, attach the part E blank to the front face of the part D blank. Place the part E blank where shown by the shaded area on the parts D/E pattern.
- 4 Adhere the parts D/E pattern to the stacked blanks. Align the bottoms of the pattern and blank D.
- 5 Scrollsaw the waves and the boat hull, as shown in the photo *right*. Remove the pattern from part D. Separate the boat hull (E) from the piece behind it, but leave the pattern in place.
- 6 Refer to the Exploded View drawing, then glue parts C and D together, aligning the bottoms and sides of both parts.
- 7 After the glue dries, trim the sides (indicated by the broken lines on the pattern) so the C/D assembly will fit inside the arch. An easy way to do this is to lay the assembly on your bench, with the arch lying on top of it. Align the bottoms, center the clock hole

*Continued*

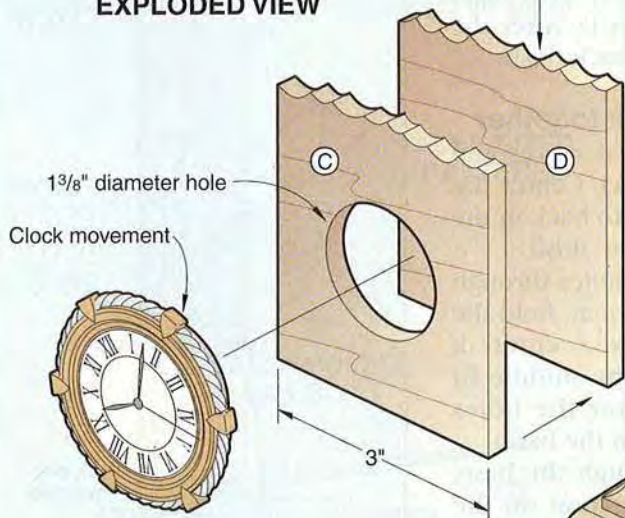


# TIMEPIECE

## COVE DETAIL



## EXPLODED VIEW



#6 x 1 1/2" F.H. wood screws

## Bill of Materials

Part	Blank Size			Matl.	Qty.
	T	W	L		
A arch	1"	4"	6 1/8"	W	1
B* base	3/4"	2 1/2"	5 1/2"	W	1
C front	1/4"	3 1/2"	3 1/4"	C	1
D back	1/4"	3 1/2"	3 1/4"	C	1
E hull	1/8"	3/4"	3 1/4"	W	1
F, G, H** sails, cabin	1/8"	2 1/8"	2 1/2"	M	1
I, J, K** mast, spars	1/8"	3/8"	7"	C	1

\*Finished size \*\*Cut the small parts from one blank in accordance with how-to instructions.

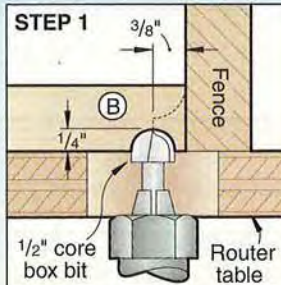
Materials Key: C=cherry, M=maple, W=walnut

Supplies: Clock insert (see Buying Guide), #6x1 1/2" flathead wood screws, woodworker's glue, finish.

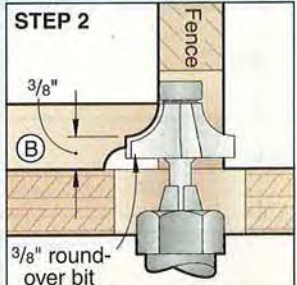
3/32" pilot hole  
3/4" deep into bottom edge of arch for wood screw

9/64" shank hole, countersunk on bottom side

## STEP 1



## STEP 2



## ROUTING DETAIL

Stack-cutting the waves on part D and the boat hull (E) ensures that the parts fit together tightly.



# MARITIME TIMEPIECE

between the arch legs, and scribe the cutting line with a knife. Make the cuts, remove the pattern, and finish-sand.

## Time to build the boat

**1** Equip your scrollsaw with a zero-clearance table overlay or blade-slot insert.

**2** Cut the maple blank for the sails and cabin (parts F, G, and H) and the cherry one for the mast and spars (parts I, J, and K). Adhere the patterns to the blanks.

**3** Scrollsaw the cabin (F). Glue it to the hull (E) where shown on the hull pattern. (We glued the parts together, laying them on a piece of waxed paper.)

**4** On the Assembled Sailboat drawing, note that three edges of the mainsail (G) mate with the mast and spars and one edge of the jib (H) glues to the mast. Scrollsaw both sails, staying slightly outside the line along each mating edge. Sand to the lines, ensuring the mating edges are straight.

**5** Cut the blank for parts I, J, and K into sections where shown. Again referring to the drawing, glue the mast blank (K) to the sail (G). Similarly, glue the blanks with the spar patterns (I and J) to the mainsail. To glue the small parts, lay waxed paper over rigid foam (insulation board, for example), and stake around the pieces with straight pins.

**6** After the glue sets, scrollsaw the mast and spars, shown *right*. Sand the edge of the mast (K) straight, then glue the jib (H) in place.

**7** Let the glue dry, then sand the bottom of the jib and mast as necessary to mate with the hull. Glue the assembly in place.

**8** Remove all patterns after the glue dries. Sand both sides of the assembled boat flush by rubbing it across 150-grit sandpaper glued to a flat piece of scrapwood.

**9** Glue the boat to the waves on part D, the back of the boat flush with the back of part D. After the glue dries, sand the back flush.

## Let's put the parts together

**1** Glue the assembled waves and boat into the arch (A). Center the assembly from front to back in the arch. Sand the bottom flush.

**2** Lay out the screw holes through the base. To locate them, hold the arch legs to the base, centered, then mark where the middle of each leg falls. Center the holes from front to back on the base.

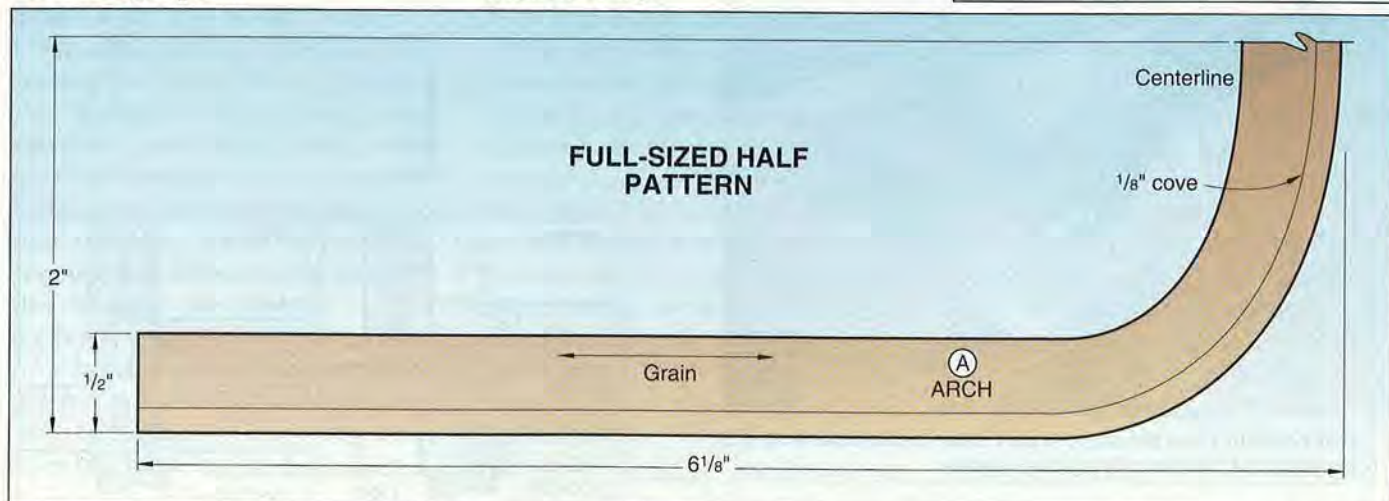
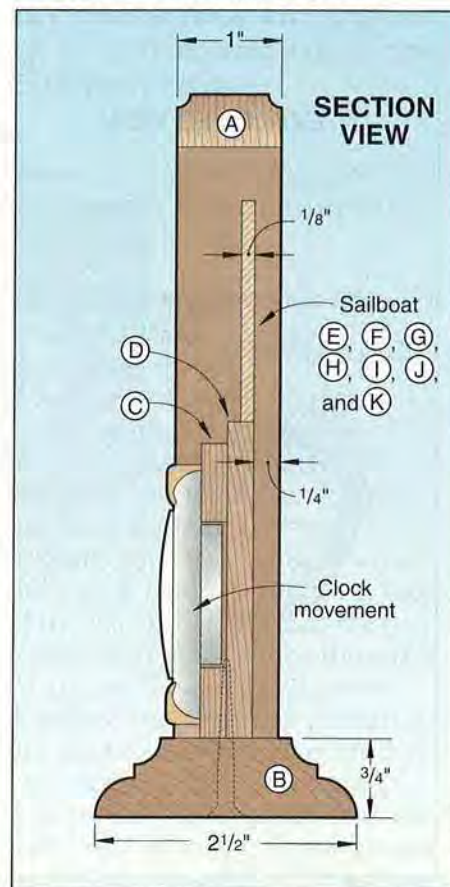
**3** After drilling through the base, hold the arch in position on the base, and mark the screw hole locations in the leg bottoms by drilling through the base holes. Countersink the screw holes on the bottom of the base.

**4** Attach the arch assembly to the base with two #6×1½" flathead wood screws.

**5** Spray on two coats of semigloss clear finish, sanding between coats. Install the clock insert. ⚙️

## Buying Guide

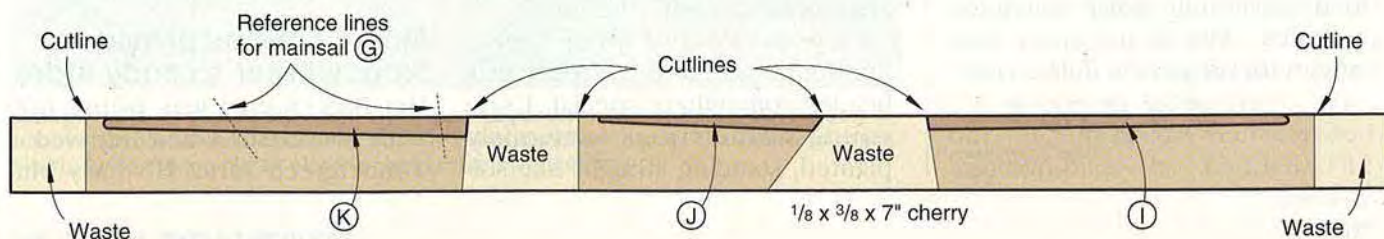
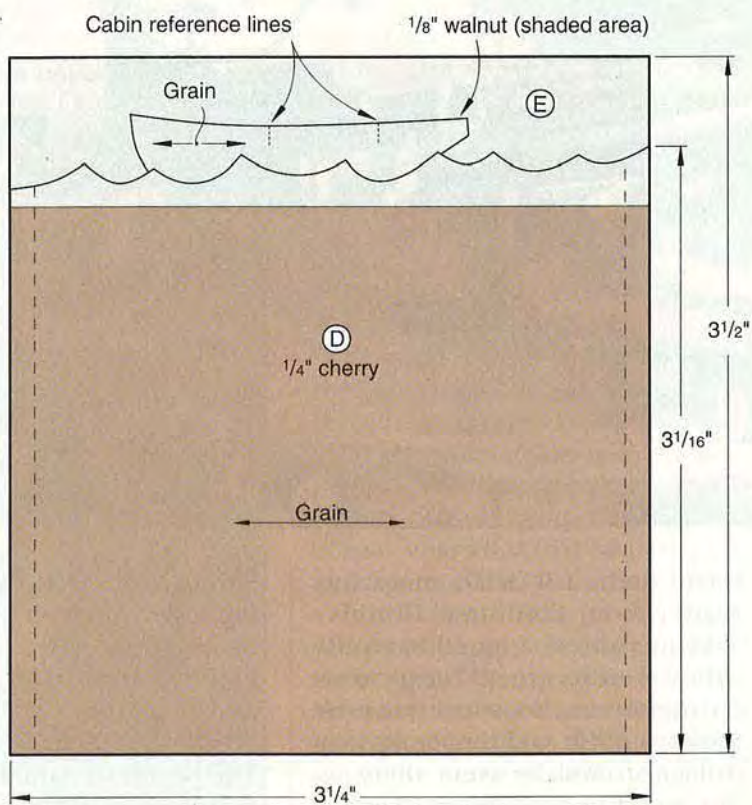
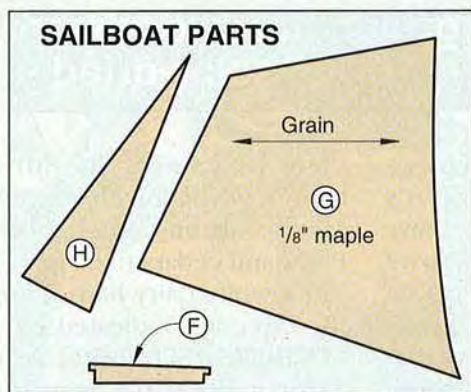
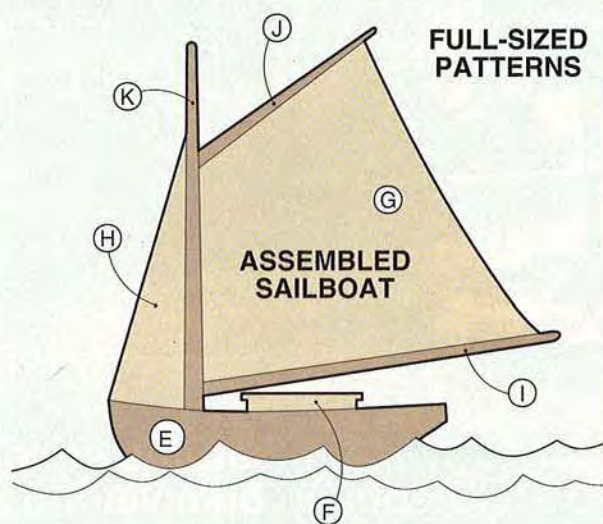
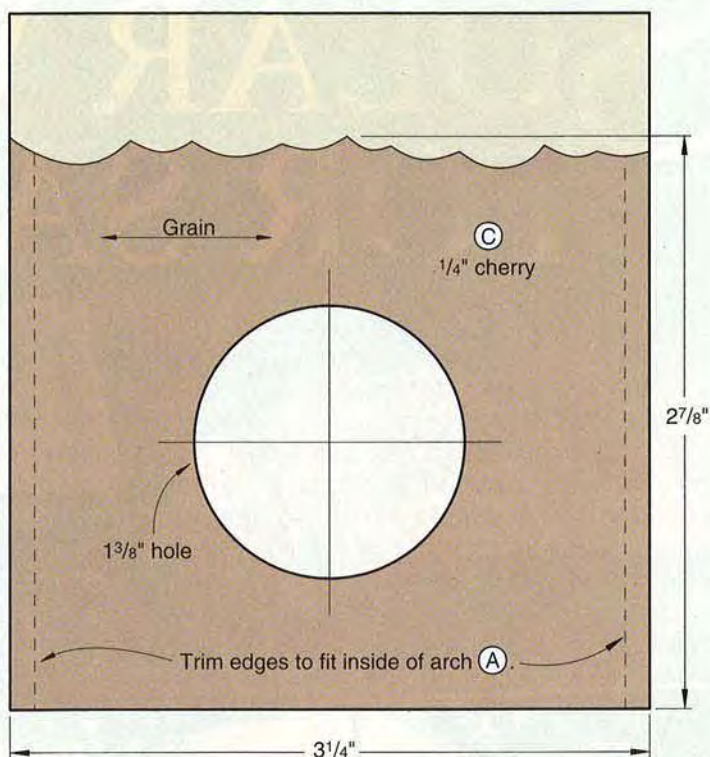
**Clock insert.** Quartz clock insert, brass trimmed with stainless steel cable, item no. 200117, \$20.90 ppd. in U.S. Schlabaugh and Sons, 720 14th St., Kalona, IA 52247, or call 800/346-9663.





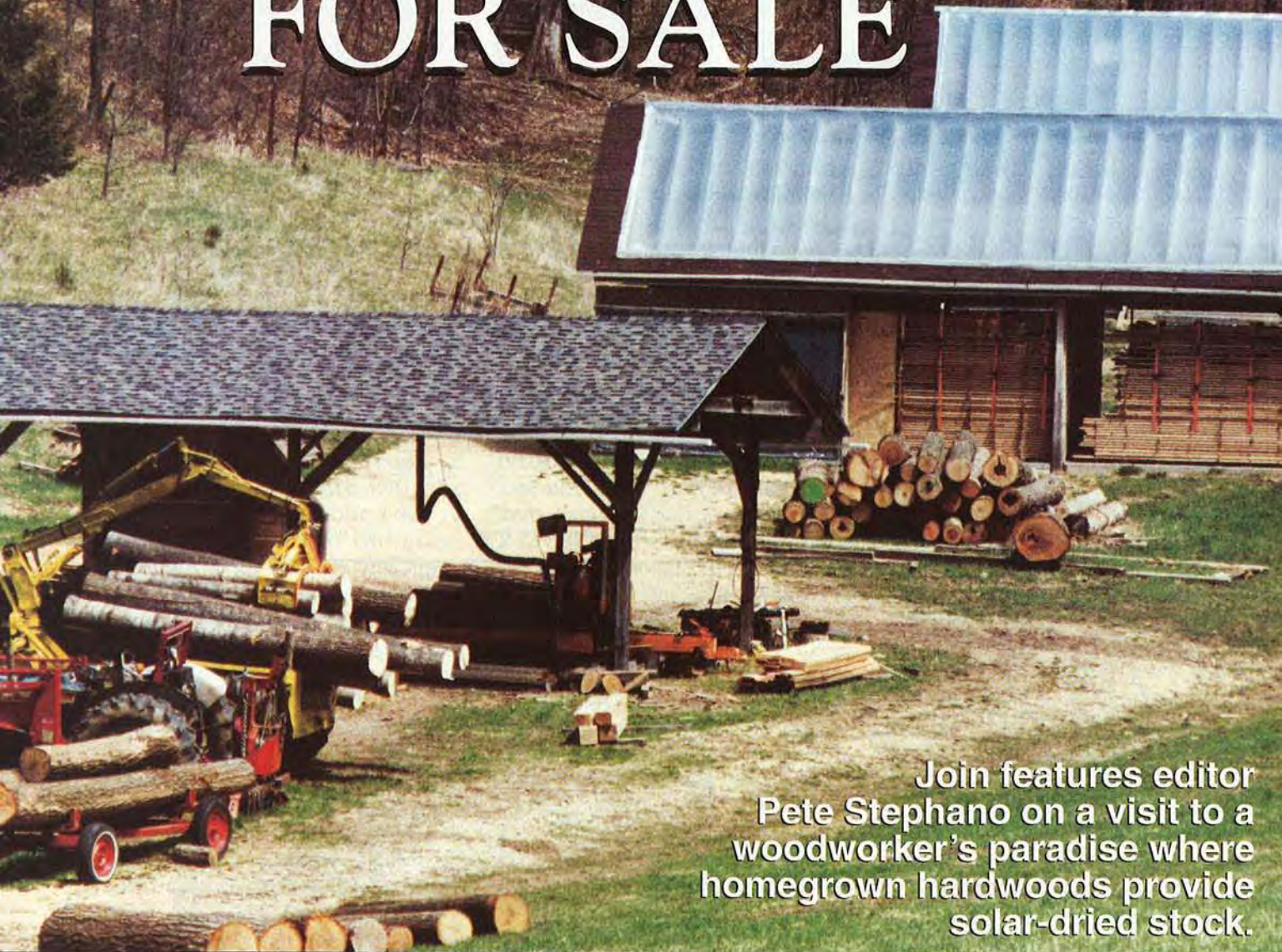


Glue the blanks for the mast and spars to the sail to saw the small parts easily.





# SOLAR WOOD FOR SALE



Join features editor  
**Pete Stephano** on a visit to a  
woodworker's paradise where  
homegrown hardwoods provide  
solar-dried stock.

David Rath, a *WOOD*® magazine reader from Elmhurst, Illinois, told me about a small sawmill called Timbergreen Farm, near Spring Green, in southwestern Wisconsin. He said that craftsmen from near and far went there to buy wood because there's such a large species selection and it's dried so carefully that it machines perfectly. The description was enough for me to schedule a visit.

*Peter J. Stephano*  
Peter J. Stephano  
Features Editor

Spring Green is a beautiful, charming town. Situated in a valley, it's flanked by wooded hillsides. Dairy cattle graze the green meadows and several trout streams ripple their way to the Wisconsin River. The area is so naturally pretty that Frank Lloyd Wright chose a site there for his famed home and architectural school, Taliesin.

A few miles out of Spring Green, the notion hit me that I really was headed somewhere special. I saw young walnut trees, obviously planted, standing straight like sol-

diers in a field. The hills held bright white birch mixed with aspen, oak, and other hardwoods. Pines and cedars filled in.

At a white dairy barn, I turned in the direction indicated by a sign, "TIMBERGREEN FARM 2 MILES." After making my way into yet another valley, there it was.

## Mixed species provide a woodworker's candy store

Jim Birkemeier was piling logs with his tractor when I arrived at Timbergreen Farm. His navy blue



Print this article





baseball cap and matching coveralls, his working "uniform," displayed the dust of his morning's efforts. (A consulting forester by profession, Jim works with his mom and dad, Helen and Bill, in a family operation.)

The heart of Timbergreen Farm's lumber business, Jim pointed out, was the open-sided sawmill—a seven-year-old, 24-hp Wood-Mizer LT-40 bandsaw mill. "One man, mostly me, can operate this," Jim noted. "It has a hydraulic lift, but I prefer to roll logs onto the mill from a raised deck. It's faster."

"How much wood do you saw in a year?" was an obvious question. "Maybe 100,000 board feet," he said. Then, with obvious pride, Jim told me that nearly all the logs he saws come from the farm's 200 wooded acres. As a forester, he has developed a management

◀ Nestled at the upper end of a valley, Timbergreen Farm's wood drying units take advantage of winds that funnel up the hill. The bandsaw mill is in the foreground.



Jim Birkemeier, at left, helps customer and local craftsman Bob Schadd load up his morning's purchase of stock.

plan with a goal of growing high-quality timber trees, such as red oak. But to give those trees room to grow means the selective harvest of lesser-used trees, too. Unlike clearcutting, where an entire forest or portion of it is cut down, Jim's forestry practice takes but a few scattered trees at a time. This keeps the Timbergreen forest—and others that he manages—productive forever.

"As a result," he said, "we harvest, saw, dry, and sell aspen, white oak, red oak, basswood, butternut, red maple, red elm, white elm, cherry, white ash, hickory, some walnut, white pine, and a little eastern red cedar. In our salesroom, I can have 40,000 board feet of kiln-dried wood in a mix of all those species."

## Wood you have to sticker only once

"The wind always blows right up the valley into the stacks, no matter which direction it's coming from elsewhere," Jim pointed out, feigning wonderment as we gazed at part of the drying facility, one of two solar kilns that he designed and built. "The buildings add a venturi effect. That is, the wind whips through the stacks at a faster speed than we can feel outside. So, the wood air-dries to 12 percent moisture in three months, winter or summer, instead of the usual six months to a year."

As we inspected the air-drying wood that filled one of the buildings' three side-by-side chambers, Jim explained the process. "After the stickered wood in a chamber—3,500 board feet divided into two piles—has air-dried to 12

*Continued*



Cindy Huppert, Jim Birkemeier's partner, pressure-washes a log of red oak to remove dirt that would otherwise dull the mill's bandsaw blade. The homebuilt rack slowly turns the log via an electric chain-drive mechanism.



# SOLAR WOOD FOR SALE

percent, we close the chamber with the sliding doors, making that chamber into a solar-heated kiln [see drawing *right*]."

"The air recirculates from the lumber piles back up and through the solar collector," Jim added. "It takes about about two months to get the boards to six percent moisture content."

Having personally stickered wood to air dry, only to resticker it later in a kiln, I was impressed. Keeping the wood in one spot was something I hadn't seen anywhere before in my travels.

Of course, Jim has learned about drying variables. "There's the thickness of the wood, and our Wisconsin weather," he chuckled.

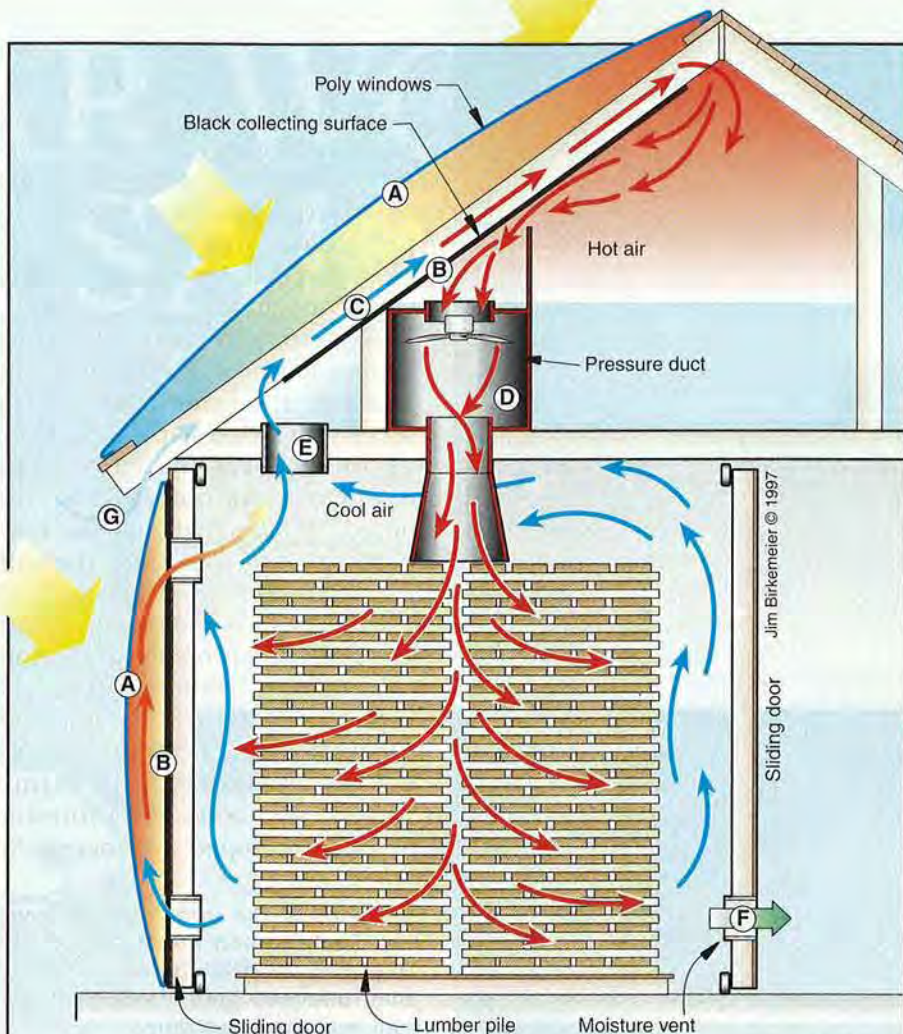


Pete Stephano unloads the stock he purchased at Timbergreen Farm. He holds a quartersawn white oak board. Against the tree leans spalted white oak.

"I prefer to kiln-dry boards of the same thickness. When we can't do that, the thicker wood goes on top. At night, the heat rises, drying the upper boards a little faster.

"The industry standard for loss [checking, cracking, etc.] during drying runs about seven percent," said Jim. "We have next to none. And there's no stress in the wood. That keeps customers coming back again and again." ♣

Photographs: Jim Birkemeier; Pete Stephano  
Drawing: Kim Downing



- 1 Poly windows (A) let solar energy through to black surface (B), creating hot air.
- 2 Air flows by convection (C) up the black surface to the top of the roof.
- 3 Fan in the pressure duct (D) blows hot air throughout the lumber.
- 4 Cool air is released into the cool air duct (E).
- 5 Heavier moist air exits through a moisture vent (F) located near the collector floor.
- 6 Small amounts of fresh air enter at the bottom of the solar collector (G) to replace vented moist air.

## Find your own paradise

There are several thousand small sawmills across the U.S. To find those in your state, contact the department of natural resources' forestry division for a current list. Or, you can call Wood-Mizer at 800/553-0182 to find a bandsaw mill owner near you. When you shop small mills, don't expect wood always surfaced and edged. And check out their drying and storing methods. What you want is straight stock dried to six percent.

## Don't call, drop by

Timbergreen Farm welcomes company and customers. The Birkemeiers do have a lumber price list (by species and grade, prices vary from \$1 to \$3.50 per board foot), but they don't sell mail-order. There's usually someone around, especially on Saturdays. To arrange for a tour or lumber shopping, write:

Timbergreen Farm,  
S11463 Soeldner Rd.,  
Spring Green, WI 53588. Visit  
[www.execpc.com/timbergreen](http://www.execpc.com/timbergreen)  
on the Internet.



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4"	12	04184-3KGA	<b>\$9<sup>99</sup></b>

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Constructed from heat-treated cast iron, these durable clamps keep your work rock steady. Just screw the handle side onto a 3/4" threaded pipe and slide the spring loaded end on. You're ready to go! Pipe not included.

- Handle screw operating range: 2-1/8"
- 1-1/2" throat depth
- Weight: 2-7/16 lbs.

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## 1/2" PIPE CLAMP

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- Weight: 1-4/5 lbs.

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- Includes pilot bearing

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## 4 PC. ROUNDING OVER BITS

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- Set includes 4 rounding over bits w/pilot bearing tips
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### 10 PC. LARGE HOLE SAW KIT

Includes cutting cup sizes 2-1/2", 3", 3-1/2", 4", and 5", plus 3/8" mandrell, drive plate, hex wrench, & blow mold case.

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# Are you Solvent Savvy?

Solvents smell bad, and they're flammable. But you have to use them in finishing your projects. Here you'll learn which ones to use and how to deal with these common shop materials.

You can gauge the danger of any solvent by the toxicity warning on its label. So make sure that you always read it for health-risk warnings, then proceed with caution. Such material requires careful handling and personal protection. But it won't hurt to exercise reasonable care even with materials labeled as nontoxic or that you know little or nothing about. Nontoxic doesn't always mean harmless.

## Countermeasures give you protection

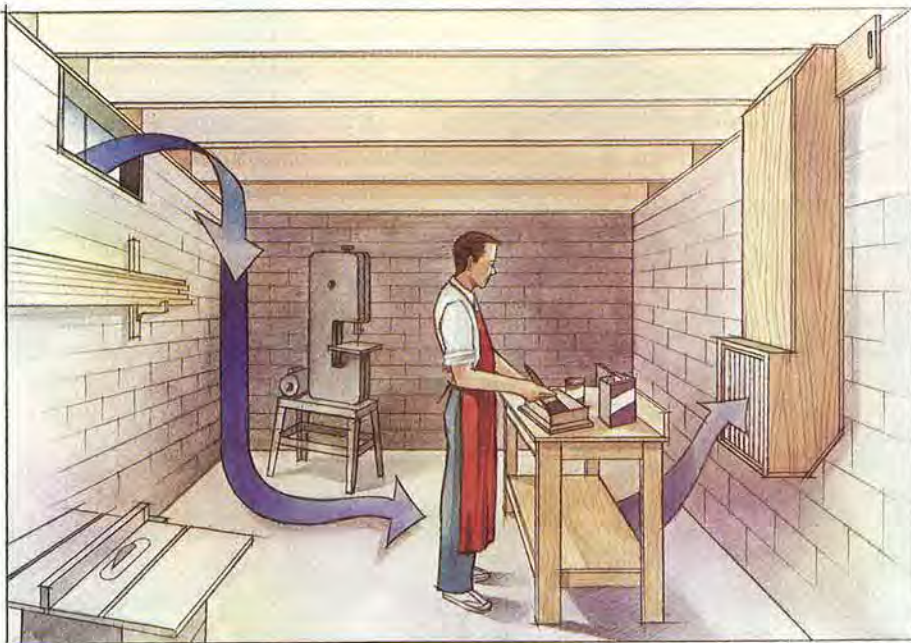
Your countermeasures to the possible effects of toxic materials should include ventilation, a respirator, rubber gloves, and hygiene. Each adds a layer of protection, and doesn't cost much.

•**Ventilation.** An open door and window, or two open windows and a floor fan, may not provide adequate ventilation. If your shop adjoins living quarters, a good rule of thumb states that if you or someone else can smell solvent, your ventilation falls short. The drawings *above right* and *opposite page* depict a simple situation that provides adequate dilution ventilation (fresh air dilutes the noxious vapor) for brushing or wiping solvents in a basement shop. The ventilator is *not* intended for spraying flammable finishes. In addition to a flow of fresh air, you'll need a respirator.

## COMMON SOLVENTS AND THINNERS

Solvents dissolve cured finishes. Thinners dilute finishing solutions. Those are the definitions of two sometimes misunderstood words. But in the chart below, you'll see that the same material many times does both.

MATERIAL	WHAT IT DISSOLVES	WHAT IT THINS
Denatured alcohol	shellac, lacquer, water-based	shellac
Lacquer thinner	shellac, lacquer, water-based	lacquer, catalized lacquer
Mineral spirits, naphtha, turpentine	wax	wax, oil, varnish
Water	n/a	water-based



•**Respirators.** Select a dual-filter chemical respirator that fits comfortably over your nose and mouth (look for one with "NIOSH/MSHA Approved for organic vapors" on the package). These come in both full-face and half-mask models; the latter costs less (\$20), and as you might expect, offers less protection.

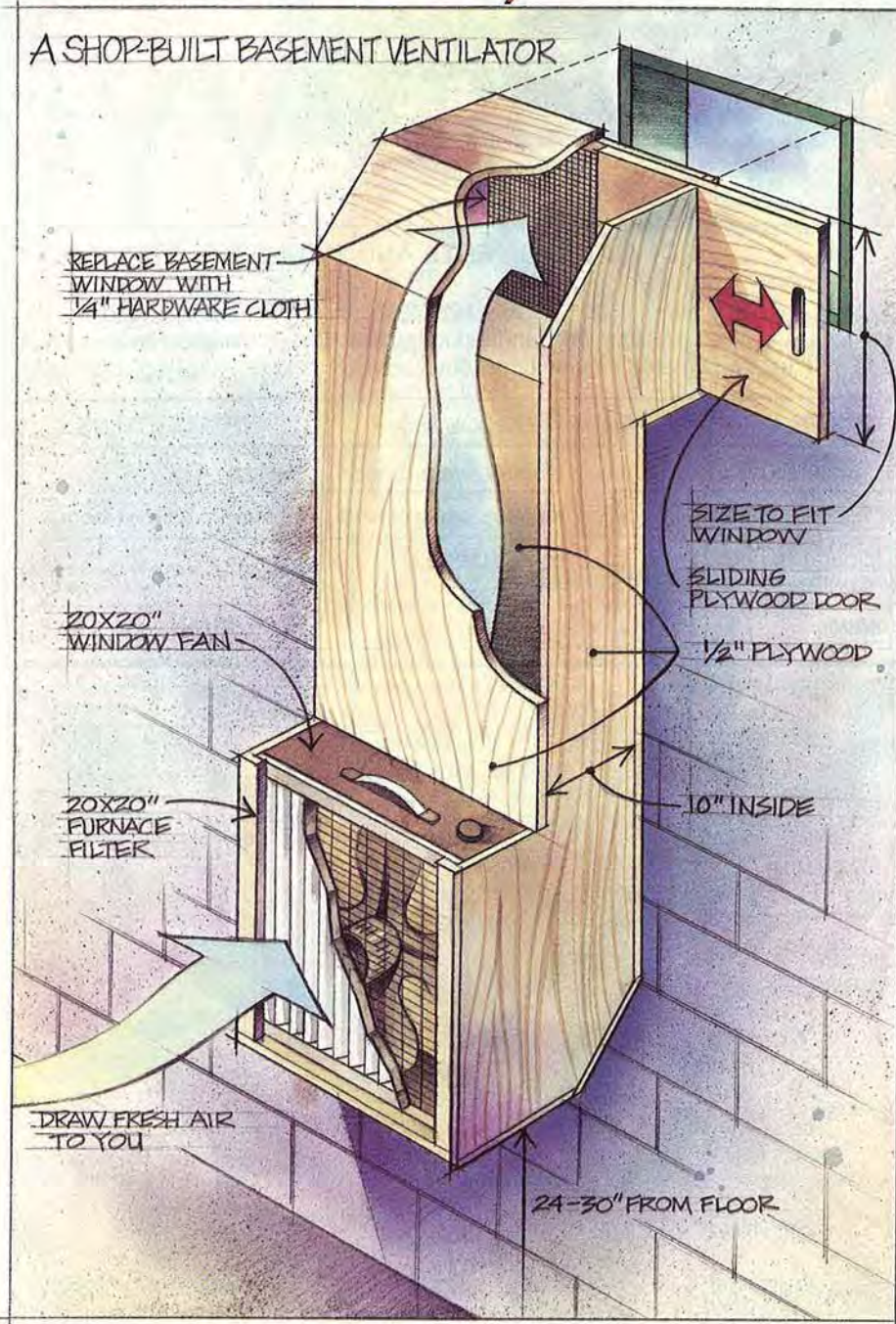
•**Gloves.** Absorption of toxins through the skin is just as dangerous to you as inhalation. And dis-

posable latex gloves prove useless when handling many solvents—some chemicals pass right through them. Look for gloves made from nitrile in your hardware or paint store (they cost about \$2 per pair).

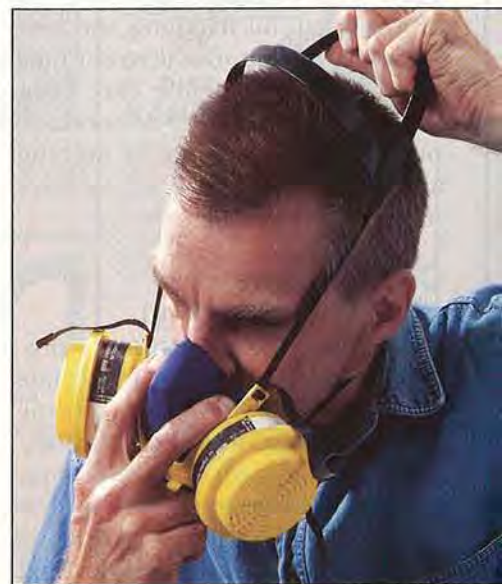
•**Hygiene.** Always wash your hands—even if you wore gloves—and face after handling solvents. And don't eat or drink while working with the material. Smoking isn't advised, either.

*Continued on page 82*





Labels on solvent containers carry health-risk warnings, but offer little advice for protecting yourself.



A half-mask, dual-filter respirator fits comfortably and offers vapor protection.

Cleaning spilled finish or paint off your skin with a solvent is a bad practice, too. Instead, wipe off as much as possible, then wash with a hand cleaner or abrasive soap.

## Quality cabinets secure flammable liquids

Count on solvents to be flammable. And with enough heat, they can blow up. Stored on open shelves in your shop, they pose additional hazards should a raging fire occur.

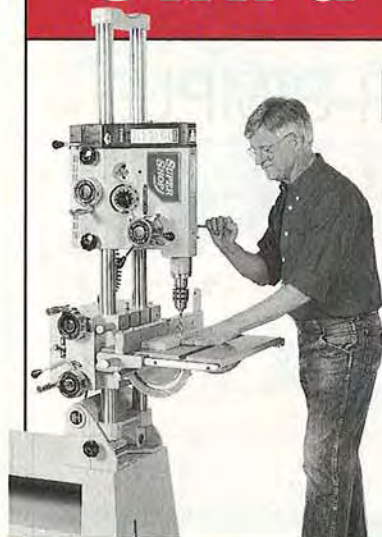
For your best protection in the case of solvents, consider buying a flammable-liquid storage cabinet made of heavy, 18-gauge steel. They securely close, and depending on how much you care to spend, can have dual walls, vents, fusible links that automatically close the doors at a certain temperature, and keyed locks. Depending on size, they range in price from \$300 to \$700. All carry the warning: **FLAMMABLE, KEEP FIRE AWAY** or similar cautions.

Don't overlook your dirty, solvent-soaked cloths, either. Stretch them out to dry clothesline style before reusing or disposal, or shell out for a lidded, metal oily-waste can in which to deposit used cloths. One of 6-gallon capacity costs about \$40. Oil-soaked cloths left crumpled in a corner become potential bombs that can spontaneously combust. ☛

Photographs: John Hetherington  
Drawings: Brian Jensen



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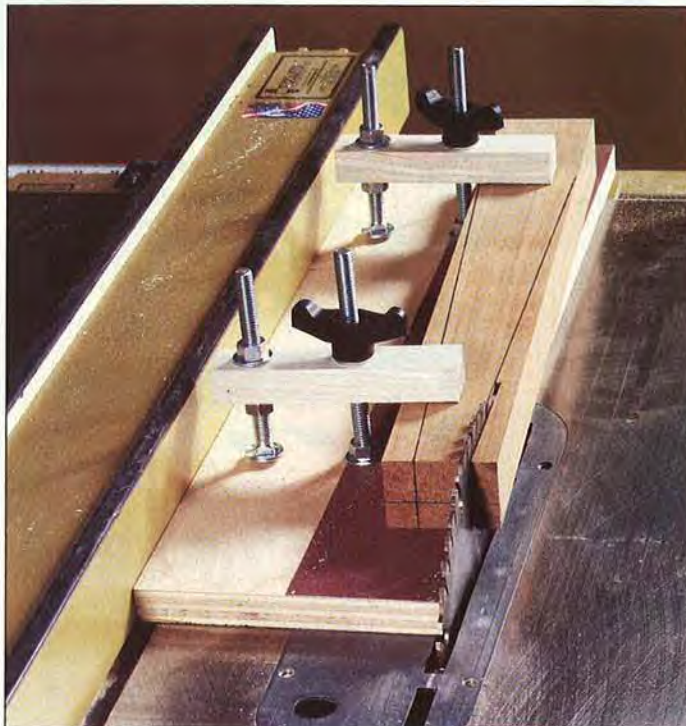
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# SUPER-SIMPLE TAPER JIG

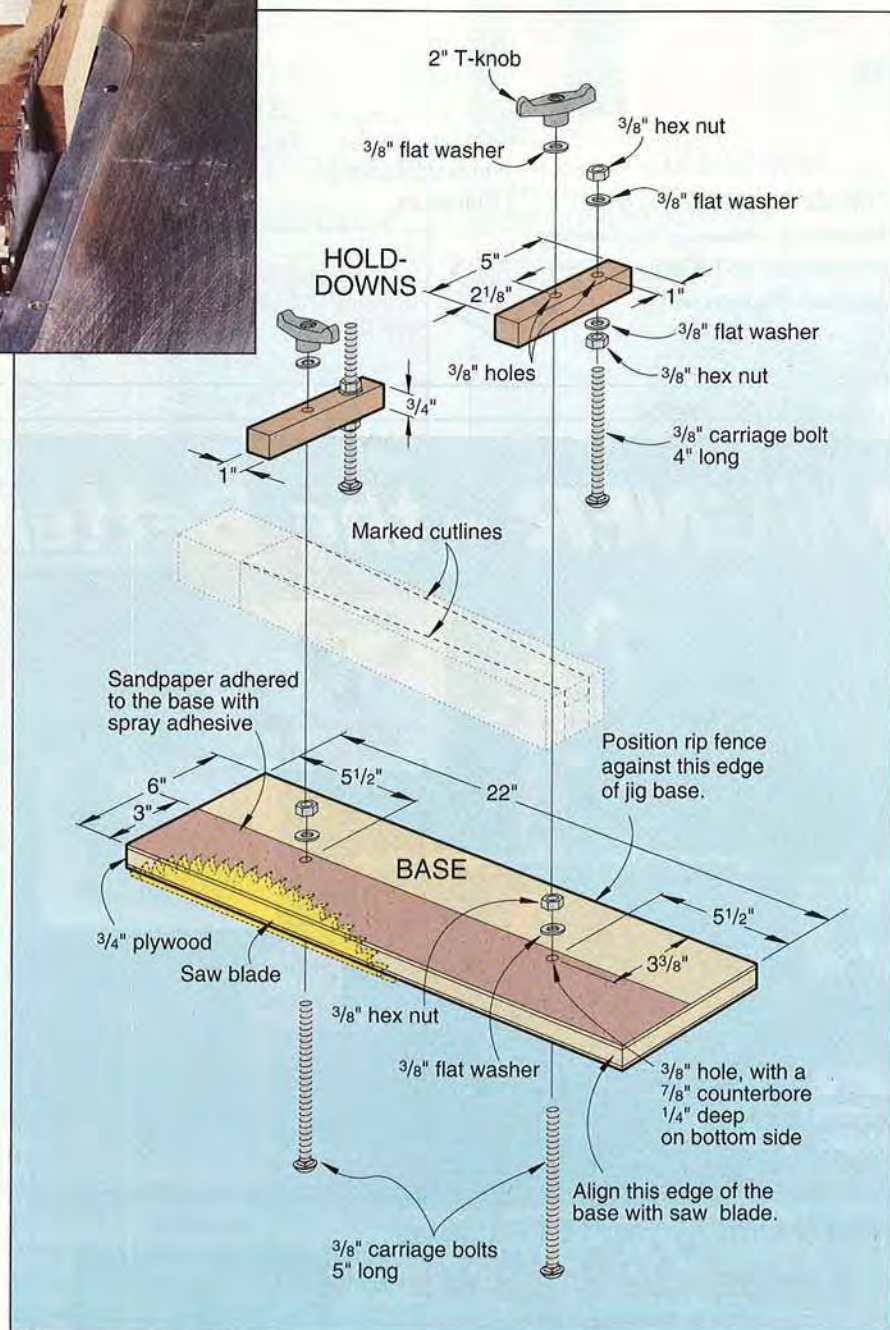
**T**aper jigs don't get much more basic than this hold-down taper jig. Build the plywood base and hardwood hold-downs as shown on the drawing. Then, mark the angled cutline(s) on your workpiece. Position the rip fence so the inside edge of the jig base is against the fence and the outside edge of the base is flush with the blade. Align the marked cutline on the workpiece with the outside edge of the jig next to the blade. Secure in place, and make the cut as shown in the photo above.

To simplify matters, we've added a Buying Guide for the hardware used on the jig.

## Buying Guide

**Hardware kit.** 2-2" T-knobs, 2- $\frac{3}{8}$ " carriage bolts 4" long with nuts and washers, 2- $\frac{3}{8}$ " carriage bolts 5" long with mating nuts and washers, and a 3x22" strip of sandpaper. Kit no. TAP-J, \$9.95 ppd. Schlabaugh and Sons, 720 14th Street, Kalona, IA 52247, or call 800/346-9663 to order.

Project Design: Jan Hale Svec  
Illustration: Roxanne LeMoine  
Photograph: Hetherington Studio





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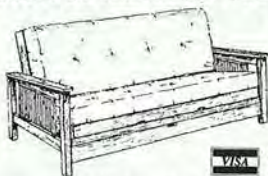
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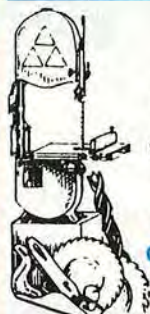
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	60 Grit	\$6.35
	50 Grit	\$6.80
	40 Grit	\$7.30
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	80 Grit	\$1.55
	60 Grit	\$1.90
	50 Grit	\$2.00
	40 Grit	\$2.15
3 2/3" x 9"	100 & Finer	\$1.95
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## PRODUCTS THAT PERFORM



Print this article

## Dremel Contour Sander rivals higher-priced models

Woodworkers responded enthusiastically to the introduction of the Porter-Cable model 9444 Profile Sander a few years ago. It could sand into tight corners like a detail sander, and it could also smooth molded profiles. Now, Dremel has a lower-priced tool that performs similar functions.

The Dremel Contour Sander has a variable-speed motor and a reciprocating, in-line stroke similar to the P-C machine (you can buy the P-C in a single- or variable-speed version). But, rather than use adhesive-backed or hook-and-loop sandpaper, Dremel developed a sandpaper tube that slips over the contour pad. The pad and tube then slide into a clip that holds the tube-wrapped pad in place. If the paper loads up, you simply unclip the pad, rotate the sandpaper tube to an unused section, and snap the pad and tube back into place. The system worked without a hitch.

Sold as a kit, the sander comes with 10 of the 18 available contour pads, three sandpaper tubes,

and a diamond-shaped hook-and-loop sanding pad in a hardside case. Additional contour pads and sandpaper tubes in five grits sell separately.

The Contour Sander works aggressively, and its compact design makes it comfortable to hold. I found only one minor problem. The detail pads used for sanding beads flex too much to retain their shape under pressure, and can cut ridges in your work if you're not careful. The Contour Sander is not built as ruggedly as the P-C machine, but it's a great little tool if you don't want to invest a lot of money in a sander you won't use every day.

—Tested by Bob McFarlin

## PRODUCT SCORECARD

### Contour Sander Kit

Performance	★ ★ ★ ★ ☆
Price	About \$79
Value	★ ★ ★ ★ ★

Dremel, 4915 21st St., Racine, WI 53406-9989. Call 800/437-3635 or visit <http://www.dremel.com>



Continued on page 98



# PORTER+CABLE

BN125	18 GA. BRADNAILER KIT 5/8" - 1 1/4"	87
BN200	18 GA. BRAD NAILER KIT 3/4" - 2"	134
CF1400	1 HP PANCAKE COMPRESSOR	192
CF1540	1 1/2 HP SIDE STACK COMPRESSOR	292
CF240	2 HP SIDE STACK COMPRESSOR	314
DA250	15 GA. ANGLE FINISH NAILER KIT 1 1/4" - 2 1/2"	199
DA250A	15 GA. ANGLE FINISH NAILER KIT 1 1/4" - 2 1/2"	234
FN250A	16 GA. FINISH NAILER KIT 3/4" - 2 1/2"	188
FR350	FRAMING NAILER W/CASE 3 1/2" CAPACITY	289
NS100	NARROW CROWN STAPLER KIT 1/2" - 1"	94
NS150	NARROW CROWN STAPLER KIT 1/2" - 1 1/2"	157
100	7/8 HP ROUTER	107
314	4 1/2" TRIM SAW	152
330	SPEED BLOCK FINISHING SANDER	65
332	QUICKSAND 5" RNDM ORB W/STIKIT PAD	58
333	QUICKSAND W/HOOK & LOOP, DUSTLS	64
334	QUICKSAND W/STIKIT, DUSTLESS	64
335	6" QUICKSAND W/REVERSIBLE PAD	84
340	1/4 SHT FIN SANDER W/DUST P/U	54
347K	7 1/4" FRAMERS SAW, 15 AMP WITH CASE	128
352VS	3" X 21" BELT SANDER DUSTLESS W/VAR SP.	164
360	3" X 24" BELT SANDER W/DUST BAG	214
360VS	3" X 24" BELT SANDER, VS WITH BAG	228
361	3" X 24" BELT SANDER	203
362	4" X 24" BELT SANDER W/DUST BAG	223
362VS	4" X 24" VS DUSTLESS BELT SANDER	238
505	1/2 SHT FIN SANDER	138
556	BISC JOINER W/CASE & TILT FENCE	136
690	1 1/2 HP ROUTER	162
691	1 1/2 HP "D" HANDLE ROUTER	162
693PK	1 1/2 HP PLUNGE ROUTER, FIXED BASE, CASE	196
693PKX	693PK WEDGE GUIDE & TEMP GUIDE SET	229
697	ROUTER TABLE WITH 1 1/2 HP MOTOR	232
698	ROUTER TABLE ONLY	134
743K	7 1/4" FRAMERS SAW, LEFT SIDED WITH CASE	128
5116	OMNI JIG	268
6931	PLUNGE ROUTER BASE	82
7116	NEW 24" OMNIJIG	299
7335	5" RANDOM ORBIT SANDER	134
7336	6" RANDOM ORBIT SANDER	137
7518	3 1/4 HP FIXED BASE ROUTER-5 SPEED	282
7519	3 1/4 HP FIXED BASE ROUTER-1 SP	254
7538	3 1/4 HP PLUNGE ROUTER-1 SPEED	258
7539	3 1/4 HP PLUNGE ROUTER-5 SPEED	278
7800	DRYWALL SANDER	338
7810	POWER TOOL TRIGGERED WET/DRY VAC	266
9118	PORTA PLANE KIT W/CASE, CRBD BLD	234
9125	3 1/4" PLANNER WITH CASE	139
9444	PROFILE SANDER KIT WITH ACCESSORIES	96
9444VS	VAR. SPEED PROFILE SANDER KIT	112
9737	RECIP TRIMMER SAW, 9.6A, QUICK CHNG CHUCK	159
9830	9.6V CORDLESS KIT W/2 BATTERIES, CASE	144
9862	12V CORDLESS KIT W/2 BATTERIES, CASE	174
9862F	12V KIT W/2 BATT, CHARGER & FLASHLIGHT	184
9863	12V BACK HANDLE KIT W/2 BATTERIES	178
9872	14.4V CORDLESS DRILL KIT W/2 BATT. & CASE	198
9873	14.4V BACK HANDLE KIT W/2 BATTERIES	206
97310	LAMNT TRIMMR KIT W/3 BASES & CS	188
97549	JIG SAW W/CASE & 3 BLADES	139

# Panasonic

EY3502EQMKW	12V CORDLESS METAL SAW	288
EY3503FQKW	12V WOOD SAW KIT W/2 BATT	249
EY6100EQKW	12V PREDATOR CORDLESS KIT W/KEYLESS CHUCK, 2 IRONMAN BATTERIES, 15 MIN. CHARGER & CASE, VSR	178
EY6230FQKW	15.6V CORDLESS KIT COMPLETE	208

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1275DVS	3" X 24" VS DUSTLESS BELT SANDER	213
1276DVS	4" X 24" VS DUSTLESS BELT SANDER	228
1285DH	5" RANDOM ORBIT SANDER	82
1307DEVS	6" VS DSTLS RNDM ORB SNDR	246
1584VS	CLIC BARREL HANDLE JIG SAW, VS	142
1584VSW	1584VS JIG SAW W/CASE & 10 BLADES	159
1587AVSK-50	50TH ANNIV. JIG SAW KIT W/13 BLADES	156
1587DVS	DUSTLESS VAR. SPEED JIG SAW	177
1587VS	TOP HANDLE JIG SAW, VAR SP.	142
1604A	1 3/4 HP ROUTER W/CASE & ROUTER PAD	144
1609AKX	DELUXE INSTALLERS KIT W/4 BASES	229
1613EVS	2 HP VAR SP PLUNGE ROUTER	298
1613EVSJ	1613EVS W/RA1051 DELUXE EDGE GUIDE	208
1613EVSJK	1613EVS, EDGE GUIDE, TEMP GUIDE KIT	229
3107DVS	5" RANDOM ORBIT SANDER, VS	99
3107DVSJ	5" RANDOM ORBIT SANDER WITH CASE	114
3275DVS	5" DUSTLESS VS RANDOM ORBIT SANDER	144
3277DVS	6" DUSTLESS VS RANDOM ORBIT SANDER	149
3272AK	3 1/4" PLANNER KIT WITH CASE	118
3296K	3 1/4" PLANNER KIT WITH CASE	178
3310K	12V CROLS T HANDLE W/2 BATT, CS & CHR	174
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DW991KS2	14.4V CDS DRILL & CIRC SAW KIT	338
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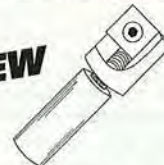
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# Woodworker's Resource

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- Send coupon and remittance to address above
- ALLOW 4-6 WEEKS FOR DELIVERY
- Coupon expires January 25, 1999

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## PRODUCTS THAT PERFORM



Continued from page 92

## Drill Doctor cures the dull-drill-bit blues

When it comes to frustration, sharpening a dull drill bit ranks just behind trying to drill a hole with one. But Darex Corporation offers a sure cure for the dull-bit blues with its new bit sharpener.

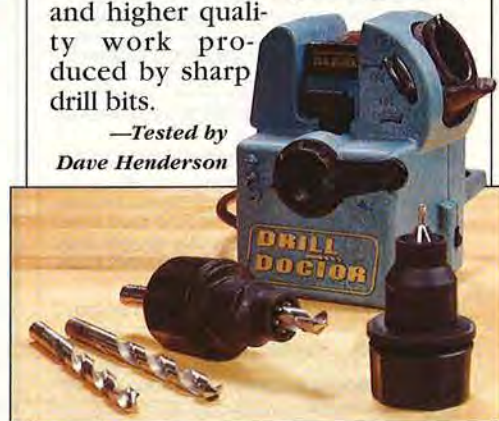
The Drill Doctor 750SP puts factory grinds on dull bits from  $\frac{3}{32}$ " to  $\frac{3}{4}$ " in diameter. Using a diamond-impregnated wheel, it handles plain ground, split point, and masonry bits, and puts either a 118° or 135° grind on the tips.

An adjustable chuck indexes the bit and sets the proper depth. You insert the chuck into a sharpening port and rotate it. Cams on the chuck and port raise and lower the bit so the wheel grinds the proper relief angles.

On damaged bits, I needed to repeat these steps several times to grind away enough material to get a good point. For split grinds you use another port to produce the split. Unfortunately, it won't sharpen brad-point bits.

The Drill Doctor's \$170 price tag would buy a lot of bits. But if you use your bits frequently, this machine should pay for itself over time in saved sharpening costs, and higher quality work produced by sharp drill bits.

—Tested by  
Dave Henderson



## PRODUCT SCORECARD

Drill Doctor 750SP  
drill bit sharpener

Performance ★ ★ ★ ★ ★

Price \$169.95

Value ★ ★ ★ ★ ☆

Darex Corp., Box 277, Ashland, OR 97520. Call 541/488-2224.

Continued of page 100



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80D	15.60	27.80C
100 thru 150C	14.50	25.60C

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80A	\$ 11.15	\$18.90C
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100 thru 400A	\$12.25	\$21.25C
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"C" = 100 SHEETS

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#### 8 Hole pattern for Bosch sanders

Dia.	Grit	Price
5"	60	\$ .48ea
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3X18	.86 ea	4X36	1.35 ea
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## Merle Clamp puts the squeeze on workpieces

When I recently built a laminated work surface, I needed to put some extra clamping pressure on the mitered banding around the top. I tried a nylon band clamp, but the nylon strap stretched too much to be effective.

The solution was the Merle Adjustable Clamp, which uses a 3/8"-wide spring steel band instead of a nylon strap. Similar to the tempered steel used for pallet tie-downs, this band won't stretch and helps you put tremendous clamping pressure around the perimeter of a frame. And unlike a nylon strap, glue won't adhere to the steel band—dried-on drips pop right off.

The clamp comes with cast-aluminum right-angle corner brackets that concentrate the band's pressure. With a bracket on each corner, you snug up the band, and tighten down a clamping bar to hold it in place. Then you twist the

plastic handgrip to apply the necessary clamping pressure.

The clamp has a convenient circular case with a crank handle so you can rewind the band for storage. It comes with a 22' band. An optional 40' band sells for \$7.99.

—Tested by Chuck Hedlund

### PRODUCT SCORECARD

#### Merle Adjustable Clamp

Performance	★ ★ ★ ★ ★
Price	\$24.95
Value	★ ★ ★ ★ ★

MLCS, P.O. Box 4053D, Rydal, PA 19046. Call 800/533-9298.



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1 1/2 hp Router with Plunge & Fixed Bases  
Also includes 1/4" & 1/2" collets and a heavy duty plastic case w/room for your router bits!

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Router table



•12 7/8" leg height allows use of 1 1/2 to 3 1/4 hp routers •Large 19 3/4" x 16 3/4" machined aluminum table with cast-in lip to support extensions. Built in dust port. Includes miter gauge

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### Model 7539

3 1/4 HP Plunge Router Var. Speed



•Includes 1/2" collet •High torque motor •Control knobs positioned close to base for accurate control. Features soft start, 3" plunge range. 15 amp, 10,000-21,000 rpm

**\$278.00**



### Model 9444VS

Var. Speed Profile Sander Kit

•Comes complete with: profile mounting plate, offset profile mounting plate, 17 different profile pads, holed standard sanding pad, dust pick-up wand, hook & loop holed sanding sheets, Adhesive backed sanding roll. The perfect refinishing tool!

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Quicksand 6" Random Orbit Finishing Sander



with Dust Collection  
•Adapter pad accepts both hook & loop and adhesive backed paper. 1.7 amp, 9,000 opm. Pad control to prevent pad spin-up; swirl free sanding

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3" x 24" Belt Sander with Dust Collection & Variable Speed



12 amp, 1,000 - 1,500 sfpm. New Whisper series for amazingly low noise.

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### Model 97549

Electronic Var. Speed Top Handle Bayonet Saw Kit



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### Model BN200CK

18 Gauge Brad Nailer Kit

includes:  
BN200 \$134.00  
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25' hose \$14.99  
\$340.99



Model CF1400  
1 hp, oil free compressor, 4 gallon pancake style tank

### Model NS150CK

18 Gauge 1/4" Narrow Crown Stapler Kit



includes:  
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\$363.99

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10"x40TX1/8" or 3/32"	\$156	\$119	\$107	\$95
30T 1/8" or 3/32"	\$135	\$99	\$89	\$79
9"x40T	\$146	\$109	\$98	\$87
30T	\$125	\$99	\$89	\$79
*8-1/4"x40TX 3/32"	\$136	\$99	\$89	\$79
8"x40T 3/32"	\$136	\$99	\$89	\$79
30T	\$115	\$89	\$80	\$71
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Delta 9"x80Tx5/8"	\$204	\$119
Ryobi-Makita & all 10"x80Tx5/8"	\$207	\$129
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SIZES AVAILABLE	LIST	SALE	SIZES AVAILABLE	LIST	SALE
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8" x 80T x 1/8" & 3/32" K	\$202	\$169	12" x 100T x 1-1/8"K	\$253	\$215
220mm x 80T x 1/8" x 30mm	---	\$159	14" x 80T x 1"	\$232	\$197
9" x 80T x 1/8" & 3/32" K	\$207	\$179	14" x 80T x 1"	\$266	\$226
10" x 80T x 1/8" & 3/32" K	\$207	\$159	16" x 100T x 1"	\$262	\$243
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Fine Woodworking Magazine test Oct. 96 page 43

After installing your blade and 5 in.  
stiffener the vibration in my saw went  
down another 20%. I ran several  
pieces of hardwood through the saw,  
both crosscut and ripping, and was  
amazed at the smoothness. It was like  
cutting butter, maybe smoother. I have  
never had a saw blade that cut this  
smooth.

Rick Price

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## These trees "talk"

Although nearly 40 million people have joined the U.S. cellular phone system to date, and lots more join each day, there's an unsightly side effect. Even many zoning boards disapprove of the 150'-tall antenna towers necessary to link the phones.

The scene may be changing, though. Four cellular companies—New Jersey's ARCNET, the Larson Company of Arizona, Nebraska's Valmont Industries, and AT&T—have joined forces to conceal their antenna towers as trees. With bark of epoxy resin and antennas inside the branches, the towers actually look like trees from a distance. The companies are presently using a white pine model, and plan to incorporate royal palms and saguaro cactus in the future.

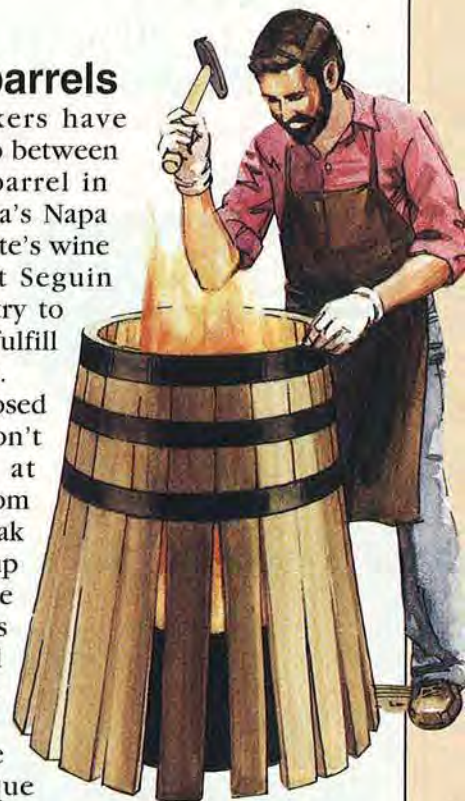
In the near future, cellular phone antennas resembling trees, like this white pine, may spring up to shade your neighborhood.

## Well-done wine barrels

For centuries, winemakers have understood the relationship between superior wine and the barrel in which it ages. In California's Napa Valley, the center of the state's wine industry, the coopers at Seguin Moreau Napa Cooperage try to ensure that their barrels fulfill one-half of that relationship.

The tight barrels (as opposed to slack barrels, which won't hold liquid) produced at Seguin Moreau are made from specially seasoned white oak staves. After a cooper sets up the staves, hammers on the metal hoops, and shapes the barrel with heat and flame, he "toasts" the inside with glowing charcoal embers, a technique that eventually adds unique character to the wine.

Visitors to Seguin Moreau Cooperage soak up the vanilla-like smell of the toasting barrels as they watch the coopers at work. To arrange an appointment for a free tour, call 707/252-3408. Or write, Seguin Moreau Napa Cooperage, Inc., 151 Camino Dorado, Napa, CA 94558.



## Do lathes get any bigger than this?

Dale Robbins isn't a Texan, but his lathe would do Texas proud. It weighs in at 4,500 pounds (including the 2,000 pounds of sand in the base that helps keep it motionless). The behemoth lathe can take a chunk of wood up to 1,000 pounds. Its 5-hp electric motor drives a hydraulic transmission with forward and reverse that spins wood at dialable speeds from zero to 1800 rpm.

The Elkhorn, Nebraska, construction contractor and hobby woodturner got fed up with the vibrations of lathes available in the marketplace. So he spent eight months designing and fabricating this giant. "I have 37½" of throw

above the tool rest and 50" between centers to turn the big pieces I like to turn," says Dale. "And I seldom turn anything below 500 rpm. I had a 350-pound chunk of wood mounted on it 4" off center, and it turned without even a shudder."

Because Dale likes to hollow his big vessels from the end instead of from the side, he has controls at the tailstock. "I can secure my gouge in the top of the tailstock [he has gouges 6' long and up to 2" in diameter] and just drive the machine," he chuckles.

Dale hasn't calculated exactly what the lathe cost, since he salvaged much of the material. "But I think it's better than any lathe I could buy." 🍷

Photographs: Dave Hamilton; Valmont/Microfect  
Illustration: Jim Stevenson

Dale Robbins prefers turning big wood fast, and this 5-hp, 4,500-pound mammoth lathe fills the bill.



Model	Description	List	Sale
31-695	6" Belt/9" Disc Sander	441	299
23-710	New Sharpening Center	217	169
31-480	6" Bench Grinder 1/4 HP	80	69
31-460	4" Belt/Disc Sander	198	125
40-580	16" 2 speed Scroll Saw	230	155
40-540	NEW 16" var/spd Scroll Saw	249	179
11-990	12" Bench Drill Press	255	184
11-090	32" Radial Bench Drill Press	405	279
43-505	1/2" Bench Router/Shaper	398	289
22-540	12" Bench Top Planer	342	329
28-195	NEW 10" Band Saw	390	300
22-560	NEW 12-1/2" Bench top Planer	395	395
36-865	NEW Versa Feeder Stock Feeder	249	199
36-220	10" Compound Miter Saw	294	199
28-185	Bench Band Saw	213	168
37-070	6" vspd Bench Jointer	351	265
14-650	Hollow Chisel Mortiser	380	329
33-990	10" Radial Arm Saw	981	799
36-905	30" Unifence	346	245
36-906	50" Unifence	444	325

After fences have \$30.00 rebate.  
Price shown is before rebate!

17-900	16-1/2" Floor Drill Press	490	399
37-190	6" Deluxe Jointer	603	445
36-285	8-1/4" Builders Saw w/ stand	268	268
36-210	10" Compound Miter Saw	344	219
34-555	Sliding Table	487	289
36-250	10" Slide Compound Saw	825	489
31-780	Oscillating Spindle Sander	253	194
37-100	12" Wood Lathe	575	465
46-760	6" Jointer DJ-15	1289	999

The following Delta tools have \$50.00 rebates! Take \$50 off price shown.

34-444	10" Contractors Table Saw	659	599
34-445Z	10" Table Saw w/ 30" fence, cast iron wing, 34-914 table board, & 35-032 blade	839	789
28-275	1/4" Band Saw 3/4 HP	345	335
28-280Z	1/4" Bands Saw 1 HP w/ 50-274 mobile base, 28-843 rip fence, & 28-266 cool blocks	839	789
40-550	Q3 18" Scroll Saw	547	479
22-675	DC380 15" Planer	1175	999
31-280	Sanding Center w/ stand	789	789

REBATES EXPIRE 12/31/97

#### MILWAUKEE TOOLS

6527	NEW Sawzall with case	343	169
6537-2	6527 w/quick lok blade change	224	175
0415-21	12V Drill w/quick chuck&2 batt900	175	175
0224-1	3/8" Drill 4.5 amp magnum	236	132
0234-1	1/2" Drill 4.5 amp magnum	255	129
0235-1	1/2" Drill w/keyless chuck	255	135
0244-1	1/2" Drill 4.5 amp 0-1000 rpm	255	129
0222-1	3/8" Drill 3.5 amp 0-1000 rpm	213	119
0228-1	3/8" Drill 3.5 amp 0-1000 rpm	207	109
0375-1	3/8" close quarter Drill	255	148
0379-1	1/2" close quarter Drill	288	165
6546-1	cds Screwdr 200 & 400 rpm	150	89
6547-1	6546-1 w/bits, 1/4" chuck & cs185	108	89
5399	1/2" D-handle Hammer Drill	355	219
6507	Original Sawzall with case	278	155
5397-1	3.8" w/ spd Hammer Drill Kit	275	145
3107-1	1/2" w/ spd right angle Drill Kit	360	194
3300-1	1/2" w/ spd right angle Drill	378	219
6582	Router 2 HP w/ collet	367	165
6142	4-1/2" Grinder w/cse & acc.	224	119
6355	7-1/4" Circular Saw 13 amp	229	125
6368	6365 w/fence, blade, & cse	259	142
6256	Top Handle Jig Saw	278	149
6490	10" Miter Saw	496	265
6491	6490 w/ carbide blade & bag	594	329
6494	10" Compound Miter Saw	585	315
6496-1	Top Handle Jig Saw	315	159
6266	10" Slide Compound Saw	1050	569

#### FREUD CARBIDE TIPPED SAW BLADES

Item	Description	Teeth	List	Sale
LU72M010	Gen Pur. A.T.B. 10"	60	69	42
LU82M010	Cut-off 10"	60	93	44
LU84M011	Comb 10"	50	78	42
LU85M010	Super Cut-off 10"	60	115	59
LM72M010	Ripping 10"	24	69	38
LU73M010	Cut off 10"	60	84	45
LU78M010	Thin Kerf 10"	24	72	44
LU88M010	Thin Kerf 10"	60	88	49
LU98M010	Ultimate 10"	60	128	68
LU91M010	Compound Miter 10"	60	88	54
F410	Quiet Blade 10"	40	95	49
TK303	7-1/4" Finishing	40	38	25
TK906	10" Combo	50	53	32
SD308	8" Dado - Carbide	230	119	59
SD506	6" carbide w/case & shims	292	145	79
SD508	8" carbide w/case & shims	344	168	99
FB100	16 piece Forstner Bit Set	338	194	119
94-100	5 pc. Router Bit Door System	320	169	99

The following Freud tool has a rebate!  
The price shown is before rebate.  
FT2000E Plunge Router - \$30 rebate Sale 205

FJ85	Top Hd Jig Saw	349	299
JS102	Biscuit Jointer	125	99
TR215	8-1/4" Miter Saw	249	199
FE82	3-1/4" Planer	349	299

Model	Description	List	Sale
766RDF	10 gallon turbo vacuum	845	465
766RDF-D	Drywall'er 10 gal turbo vacuum	915	549
766RDF-DAS	Above vac w/ auto start	950	589

#### MAKITA TOOLS

5090DW	3-3/8" Saw Kit 9.6 volt	280	155
DA391D	3/8 angle Drill 9.6V	166	114
DA391DW	3/8" angle Drill Kit 9.6V	341	189
ML900	Incandescent Flashlight 9.6V	9.95	

6095DW	9.6 volt Drill Kit w/ 2 batt	125	125
6095DWLE2	6095DWE w/flashlight	325	169
6095D	6095DWR Drill only & cse	Special	65
632007-4	9.6 volt Battery	47	30
632002-4	7.2 volt Battery	39	28
6230DWAE	9.6V 3/8" Drill Kit w/ 2 batt	351	199
6211DWEH	12V 3/8" Drill Kit w/ 2 batt	368	175
6311DWEH	12V 1/2" Drill Kit w/ 2 batt	399	205

#### CORDLESS DRILLS

Model	Description	List	Sale
6213DWAE	12V 3/8" Drill Kit	325	169
6233DWAE	14.4V 3/8" Drill Kit	358	199

#### SUPER CORDLESS SPECIALS

6073DW	7.2V cds Drill Kit. Variable speed & clutch. Complete with battery, charger, & case.	Super Sale	99
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9900B	3"x21" Belt Sander w/bag	347	179
9924DB	3"x24" Belt Sander w/bag	360	189
4301BV	Orb. var. spd. Jig Saw 3.5A	292	155
JR3000V	1/2" w/ spd Recip Saw w/case	264	135
9820-2	Blade Sharpener	433	215
1N190B	3-1/4" Planer with case	263	139
1912B	4-3/8" Planer	352	199
N9514B	4" Disc Grinder 4.6 amp	118	65
DA3000R3/8"	Angle Drill	355	179
2708W	8-1/4" Table Saw	637	309
6405	3/8" Drill Rev. 0-2100 rpm	115	65
6510LVR	3/8" Drill Rev. 0-1050 rpm	188	98
6013BR	1/2" Drill Rev. 6 amp	270	149
9401	4" x 24" Belt Sander w/bag	458	225
5079NBK7-1/4"	Circ Saw w/ case	250	125
LS1011	10" Slide Compound Saw	995	429
LS1211	12" Slide Compound Saw	1620	779
3901	Plate Joiner Kit	376	209
3612C	NEW 3 HP Plunge Router	492	259
LS1040	NEW 10" Cmpnd Miter Saw	540	259
LS1013	NEW 10" Dual Compound Slide Miter Saw	1088	599
BO5010	NEW 5" Random Orbit Sander with dust pickup	142	72

#### SENCO AIR NAILERS

SFN1	Finishing Nailer 1" - 2" w/ cs448	345	
SN325	Nailer 1-7/8" - 3-1/4"	665	389
SLP20	Pinner w/cs 5/8 - 1-5/8"	422	279
SKS	Stapler 5/8" - 1-1/2"	390	279
SN70	Framing - Clip 2" - 3-1/2"	725	449
SN65	Framing - Full Hd 2" - 3-1/2"	709	465
SFN40	Finish Nailer 1-1/4 - 2-1/2"	589	389

#### BOSTITCH AIR NAILERS

N80S-1	Stick Nailer	Super Sale	339
N80S-1	Coil Nailer	Super Sale	339
RN45	Coil Roof Nailer 3/4 - 1-3/4"	845	369
N60FN-2K	Finishing Nailer w/ case	575	275
BT35-2K	Brad Tacker 5/8" - 1-3/8" with case, oil, & brads	279	125
CWC100	1 HP Pancake Compressor	440	289
MIIF5	Flooring Stapler 15 gauge	902	529
S325S-1K	Finish Stapler 1/2" - 1-3/8" with case & oil	269	145

#### SKIL TOOLS

77	7-1/4" Worm Drive Saw	Super Sale	158
77M	77 Mag Worm Drive Saw	Super Sale	168

#### PANASONIC CORDLESS

EY6181CRKW	9.6V Drill Kit w/ 2 batteries, 1 hour charger, & case	307	169
EY6100EQKW	12V Drill Kit w/ 1 Ironman batteries, 15 min. charger, & case	379	179
EY6100SEOK	Same as above but has 1 Ironman battery and 1 diagnostic battery	379	204
EY6101SQK	12 volt 1/2" Drill w/ 15 min. charger, diagnostic battery, & case	438	249
EY6101EQKW	Same as above but has two Ironman batteries	540	249
EY5035FQWKW	NEW 5-3/8" 12V Wood Cutting Saw Kit	500	259

#### PASLODE IMPULSE GUNS

IM250	Trimspulse Finish Nailer Kit	1130	548
IM325	Impulse Framing Nailer Kit	1130	548
CT325SS	Cds Framing Nailer Kit	1120	495

#### CLAYTON OSCILLATING SPINDLE SANDERS

140	Portable end w/ 4-1/2" spindle	825	559
146	Portable sander w/ 9" spindle	665	609
100	Floor mount sander 4-1/2" spindle	785	709
106	Floor mount sander 9" spindle	845	759

#### SIUOX TOOLS

8030	3/8" var/spd Router	263	165
8000	3/8" var/spd close qtr. Drill	211	135
690	5" Air Random Orbit Sander	228	132

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DW708	12" Dual Compound Slide Miter Saw	Sale 679
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DW788	20" Scroll Saw	Sale 489
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DW733	12" Planer	Sale 459
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Model	Description	List	Sale
DW321K	Top Handle Jig Saw Kit	300	164
DW364	7-1/4" Circ. Saw w/broke	294	162
DW610	1-1/2 HP 2 handle Router	266	152
DW411	1/4 sheet Palm Sander	88	58
DW682K	Biscuit Joiner with case	448	199
DW705	12" Compound Miter Saw	734	359
DW625	3 HP w/ spd Plunge Router	359	279
DW625	router comes with DW6913 edge guide		
DW621	NEW 2 HP Plunge Router	400	218
DW621	comes with Free DW6956 fine height adjuster		
DW675K	3-1/8" Planer with case	292	164
DW431	3 x 21" w/spd Belt Sander	338	189
DW421	5" Palm Ran. Orb Sander	144	74
DW443	7" 2m Orb Sander	266	145
DW443	DW444 w/broke & leg pad	266	145
DW673K	Laminate Trimmer Kit	364	189
DW274	Drywall Gun, 0-4000, 6.3 amp	160	95
DW935K	14.4V 5-3/8" Trim Saw Kit	444	237

#### DEWALT CORDLESS DRILLS

DW952K-2	3-3/8" w/spd w/ two 9.6V XR batteries	284	129
DW962K-23/8"	variable speed w/ two 9.6V XR batteries	330	179
DW972K-23/8"	w/spd w/ two 12V batt	362	182
DW904	12 volt flashlight	49	28.95
DW991K-23/8"	variable speed w/ two 14.4V XR batteries	415	209
DW994KQ	1/2" variable speed w/ one 14.4V XR batteries	458	239
Above drill kits	come w/ charger & steel case!		
DW991KS-2	DW991K drill, DW935 trim saw, & case	Super Sale	345

#### DEWALT 18 VOLT CORDLESS TOOLS

DW936K	NEW Recip Saw Kit	520	289
DW955K	1/2" Drill Kit	428	229
DW997K	1/2" Drill/Hammer Drill Kit	454	249
DW936K	5-3/8" Saw Kit	458	249
DW995KS-2	DW995K Drill, DW936 Saw and case	Super Sale	385
DW991KC-2	DW991K 14.4V drill kit, DW937 14.4V recip saw, & case	349	199
DW995KC-2	DW995K 18V drill kit, DW938 18V recip saw, & case	395	
DW997KC-2	DW997K 18V drill kit, DW938 18V recip saw, & case	405	

#### HITACHI TOOLS


CF82	8-1/2" Slide Compound Saw	1169	469
C10FC	10" Miter Saw	533	189
C10FS	10" Slide Compound Saw	1627	739
C10FS	has \$50.00 rebate until 1/31/98		
C15F	15" Miter Saw	1346	659
NV45A	Cool Roofing Nailer	935	379
NT65A15	ga. Brad Nailer 1-1/4 - 2-1/2"	636	365
C10RA	NEW 10" Table Saw	632	319

#### BIESEMEYER FENCES

B-50	50" Commer. Saw ...	443	325
Above fence has \$50.00 rebate !			
T-SQUARE 52	52" Homeshop .....	360	275
Above fence has \$20.00 rebate !			
T-SQUARE 40	40" Homeshop .....	335	255
Above fence has \$20.00 rebate !			
T-SQUARE 28	28" Homeshop .....	325	245
Above fence has \$20.00 rebate !			



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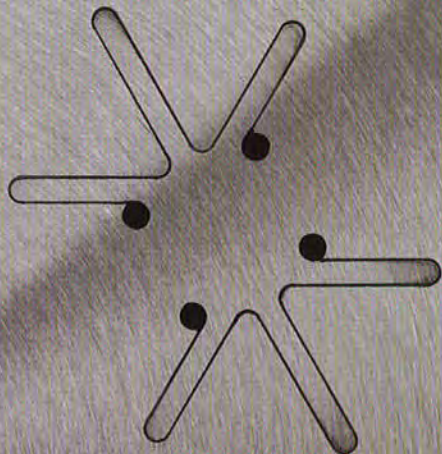


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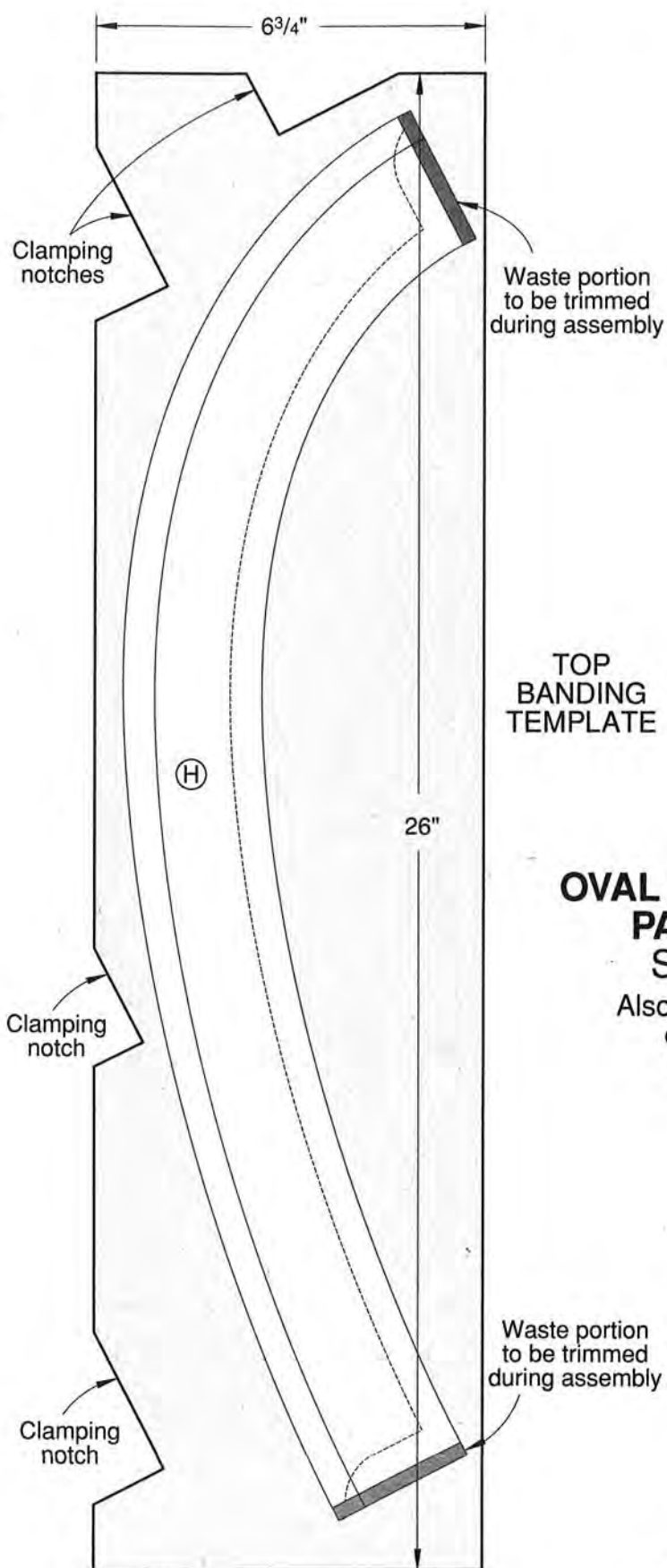
# WOOD PATTERNS®

Full-sized for your woodworking convenience

WINTER 1997

ISSUE 102

Dear Reader: As a service to you, we've included full-sized patterns on this insert for irregular-shaped and intricate project parts. You can machine all other project parts using the Bill of Materials and the drawings accompanying the project you're building.



## OVAL COFFEE TABLE PARTS VIEWS

See page 42

Also, see the full-sized quarter pattern on other side

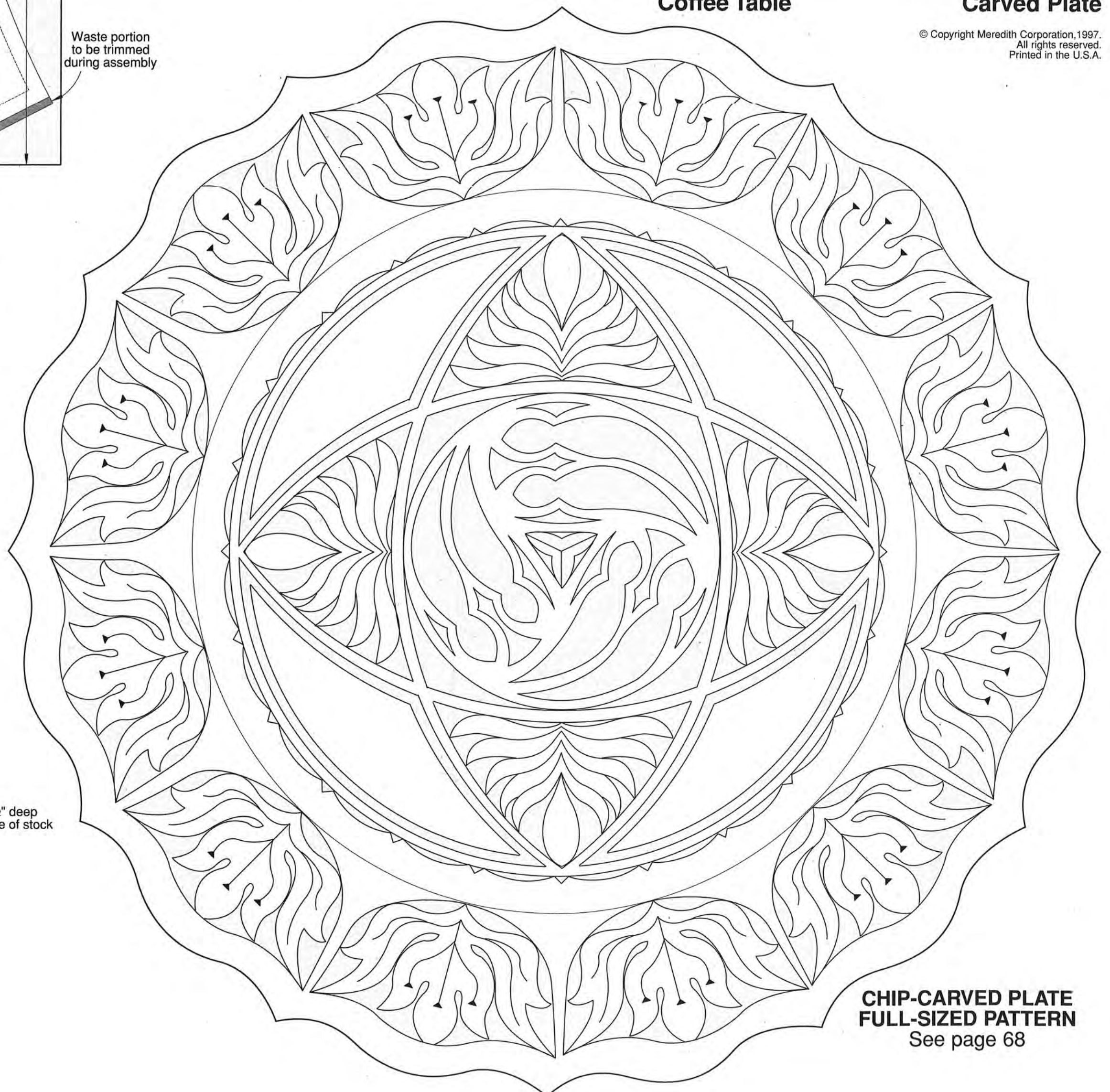
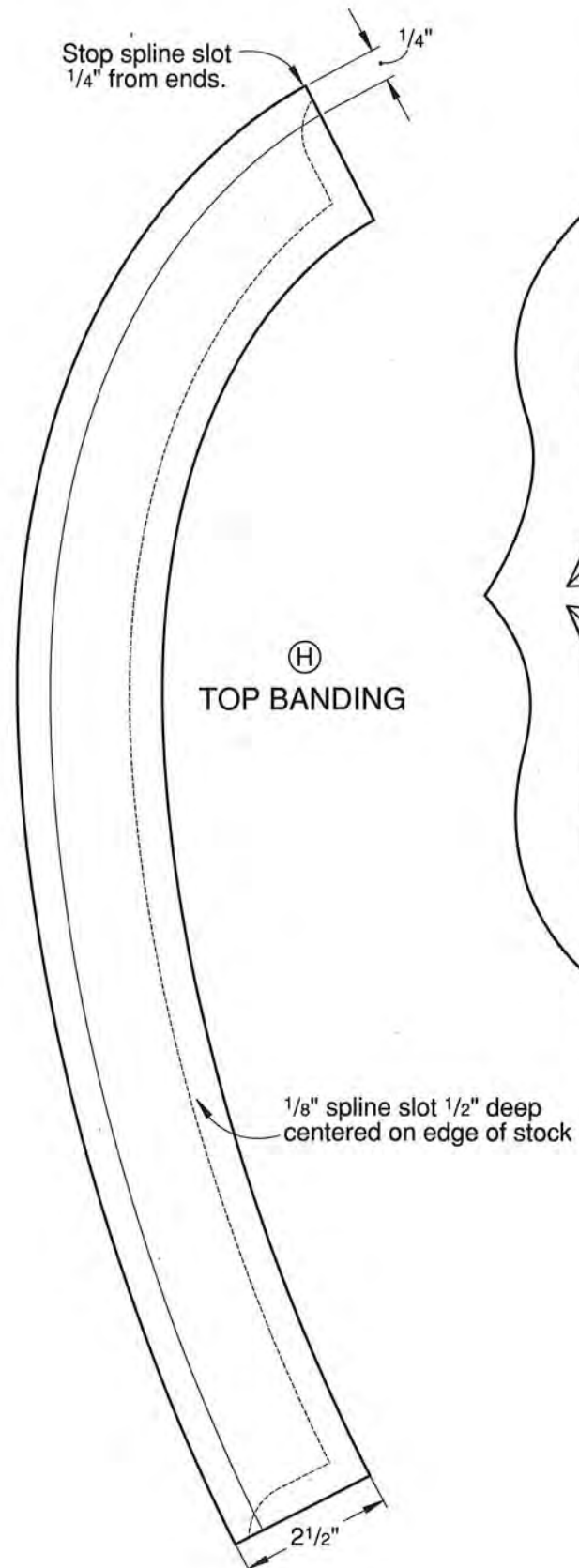


Coffee Table



Carved Plate

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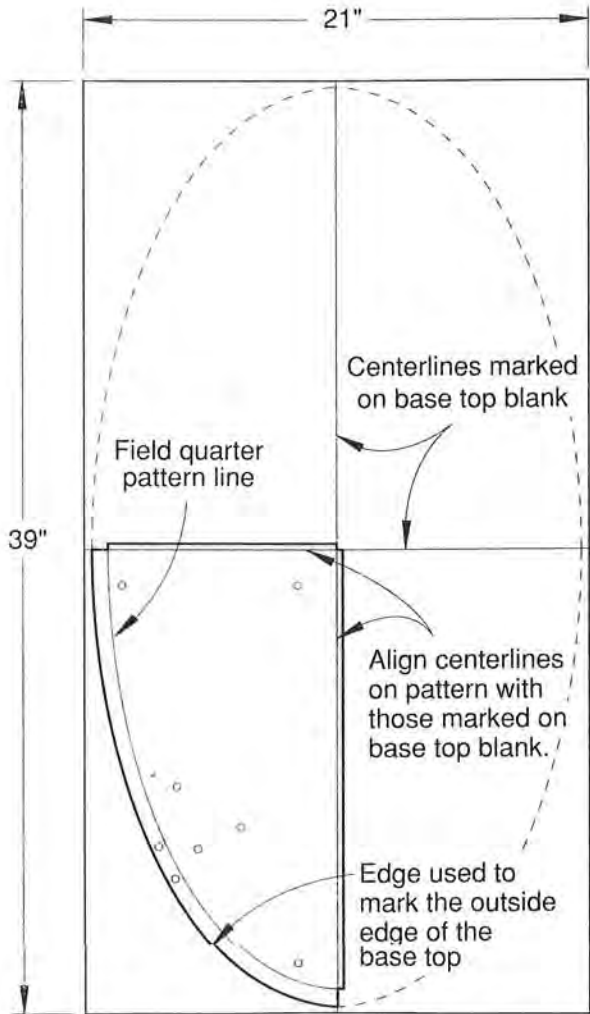
CHIP-CARVED PLATE  
FULL-SIZED PATTERN

See page 68



HOW TO USE THE PATTERN  
FOR MAKING A TEMPLATE FOR  
PARTS (A), (H), AND (I).

**Step 1** Use the full-sized quarter pattern to make a template for outlining the oval base top (A) according to instructions on page 43. When positioning the template on the base top blank (A), you'll need to align it as shown below.



**Step 2** To form the master template for parts (H) and (I), cut and sand to the field quarter pattern line on the hardboard template formed in Step 1 above.

Ready for use as a master template

