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Discover how to bend table skirts, create an exciting-looking oval tabletop, and taper legs while making this fine furniture piece.

Build our cabinet-style workbench with flip-up tables for benchtop tools.

Build this smart jig and turn your drill press into a handy, effective, sharpening center.

Take a stab at a decorative Swiss-style plate designed by the master, Wayne Barton.

Create a desktop clock that combines a framed sailboat with a nautical movement.

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WOOD MAGAZINE  WINTER 1997
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 basketworking article in an upcoming issue.)

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

Photograph: Larry Clayton
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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 3/4” 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 1¾” from the center of the blank.
4. Using a circle cutter set to 1½”, 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.
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Now through December 5, 1997 you will receive a new SLAPSHOT hammer stapler or SURESHOT staple gun with the purchase of a qualifying DUO-FAST tool—while supplies last. So, contact your DUO-FAST source and GET IN THE GAME.
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 coppery 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.
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 9/16” 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.

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.

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?”
Maple lily pads top off artistic cocktail table
Richard Sheremeta of Delray Beach, Florida, biscuit-joined three pieces of ¾ sugar maple for the routed and carved top on his Lily Pond cocktail table. He also resawed the ¾" strips for the bent-leg laminations from ¾ stock. A civil engineer and longtime woodworker, Richard has won many awards for his artistic furniture. This table, featuring a carved Honduran mahogany lily blossom, is 18" tall, with a 24×42" 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
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 cabinetmaker 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 scroll saw built by his grandfather. Most of his father's tools now reside in Steven's Berkeley, California, basement workshop.

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Table-mount your router—
the easy way

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 ½" 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 jigsaw’s blade where shown. Cut the opening in the tabletop.

Rout the recess
1 Cut four routing guide boards from ¾"-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

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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 ½" 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 ¾” in from each corner drill a ¾” hole through the plate and tabletop.

2 Remove the plate from the table, and enlarge the holes through it to ¾”. Countersink the holes on the plate’s top surface.

3 Guiding on the ¼” holes in the tabletop, drill ½” holes for threaded inserts. Put two nuts on a ¼” 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 ¼” 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 flathead machine screws.

6 Drop the plate and router into the recess. Secure the plate with a ¼”-20 x 3/4” flathead machine screw at each corner.
KNOW THE FACTS: made in Italy Since its beginning in a small workshop in the center of Pesaro, Italy over 30 years ago, CMT Utensili has always been a worldwide recognized symbol for quality.

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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 \( \frac{3}{8} \)" 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 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.

Tips from Your Shop (And Ours)
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Bill Fier
ASSISTANT MANAGING EDITOR

Continued on page 24
Practical as they are, most portable planers are notorious snipers. If you're looking to minimize sniping without sacrificing portability, check out Delta's new 12½" Portable Planer (Model 22-560), with its exclusive snipe control lock. Call toll free for the name of your nearest Delta dealer. Delta International Machinery Corp., 800-438-2486. In Canada, 519-836-2840.

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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 1/2") in a note card. Sight 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
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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 ¼” 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 Grasborn, Gilcrest, Colo.
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 ¾” 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.
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A FEW MORE TIPS FROM OUR WOODWORKING PROS

- Looking for a safe, simple way to scroll saw 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.
You’ve seen the rave reviews of Jesada Tools’ router bits, now take a look at what editors of the leading woodworking magazines say about our blades. They’ve tested our blades and dado set against the best on the market and they’re convinced. Now you can take advantage of our great prices and convince yourself.

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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 lawsonii). 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.”

Illustration: Jim Stevenson

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Long 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, 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.
beech
(*Fagus grandifolia*)

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 chopping 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 $\frac{1}{8}$".
- 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.

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**BEECH AT A GLANCE**

<table>
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Compiled with woodworker Todd Friey  Illustrations: Steve Schindler
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Knowing 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
Now, to make a matching pair of templates for the field and edge-band, adhere the master template to another sheet of ¼" hardboard with double-faced tape. Install a ¼" 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 ¼" 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
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 edging section blank at this time.

From the remaining \( \frac{3}{4} \)" hardboard stock, mark and cut out a edge-band section riser that's \( \frac{3}{4} \)" 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

**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 \( \frac{1}{4} \)" 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**

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 bands.

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 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 1/4" 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 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

FITTING EDGE-BANDS

STEP 1
Locate center for best fit, then mark position on edge-band blank.

STEP 2
Using a hand-held router, cut 1/8" slots for hardboard splines.

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 1/4" tempered hardboard into the slots of the field/band joints.
location, as indicated in the Fitting Edge-Bands drawing, opposite.

Next, install a ¼" 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 ½"-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 ¼"-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 ½"-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 ¼" from each half field. Move to Step 4, cut ½"-deep spline slots, and dry-fit ¼×1½" 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.
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.
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 hard-wood 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 ½" 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 ½" 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 ¾" 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 ¼" deep and ⅛" 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

SKIRT

TOP VIEW

Outside face

9/16"-deep kerfs spaced 3/16" center-to-center

Inside face

3/4" rabbet 1/8" deep along top edge

SIDE VIEW (inside face shown)

B and C

3/4" rabbet 1/8" deep on both ends

21/4"

26" for B 1815/16" for C

CUTTING DIAGRAM

3/4 x 24 x 48" Plywood

3/4 x 24 x 48" Mahogany plywood

3/4 x 7 1/4 x 96" Mahogany

Bill of Materials

<table>
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<tr>
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<td>B side skirts</td>
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<td>M</td>
<td>2</td>
</tr>
<tr>
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<td>9/16&quot; 2 1/2&quot; 13 1/2&quot;</td>
<td>M</td>
<td>2</td>
</tr>
<tr>
<td>D legs</td>
<td>1 1/2&quot; 2 1/2&quot; 17 1/4&quot;</td>
<td>LM</td>
<td>4</td>
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<tr>
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<td>9/16&quot; 2 1/2&quot; 4 1/2&quot;</td>
<td>M</td>
<td>4</td>
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<tr>
<td>F side skirt bead blanks</td>
<td>9/16&quot; 2 1/2&quot; 13 1/2&quot;</td>
<td>M</td>
<td>4</td>
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<tr>
<td>G end skirt bead blanks</td>
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<td>M</td>
<td>4</td>
</tr>
<tr>
<td>H top banding</td>
<td>9/16&quot; 6 1/2&quot; 26&quot;</td>
<td>M</td>
<td>4</td>
</tr>
<tr>
<td>I top quadrant blank</td>
<td>9/16&quot; 2 1/2&quot; 4 1/2&quot;</td>
<td>MP</td>
<td>1</td>
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*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 1/8" flathead wood screws, 8x1 1/2" flathead wood screws, clear finish.

1/2 x 5 1/2 x 60" Mahogany

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

Text continues on next page
Miter corners of splines.

1/16" spline slots 1/2" deep

1/8 x 15/16" spline, cut length to fit

1/8 x 3/4" splines 2" long

Rout top edge of top with a raised panel bit (MLCS #685).

Align centerlines on skirt tops with those on (A) for proper alignment.

3/4" rabbet 1/2" deep

1/16" saw kerfs 1/16" deep

5/32" shank holes, countersunk on top and bottom face

#8 x 1 1/4" F.H. wood screws

Centerline

Note: Panel has been cut away to show braces (E).

Note: Bead blanks shown before trimming to finished size.

Raised panel router bit

1/8 x 3/4" spline

1/8" spline slots 1/8" deep

1/8" rabbet 1/2" deep

1/4" grooves 1/8" deep

9/16" rabbet 1/2" deep

7/8" pilot holes 3/4" deep

Back face of leg

SECTION VIEW DETAIL
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 \(\frac{3}{8} \times \frac{3}{4} \times 2\frac{3}{4}''\) 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\(\frac{5}{8}\)\(\times\)2\(\frac{1}{4}\)\(\times\)17\(\frac{3}{4}''\).

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.
FORMING THE LEGS

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

STEP 2
Rout a 1/4" groove 3/8" deep, stopped at 2 1/4".

STEP 3
Rout a 1/4" round-nose groove 1/8" deep along front and sides.

STEP 4
Rout a 1/4" round-nose groove 3/8" deep along front and sides.

STEP 5
Rout a 1/2" dovetail groove 9/16" deep, stopped at 2 1/8" from the top end.

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

ROUND-NOSE GROOVE DETAIL (STEP 3 and 4)

Leg blank (laminated)

Back face of leg
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 ¼" 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 ¼"-thick piece of wood to mark an outline on the bead blanks ¼" past the outside edge of the skirts.
3 Clamp the bead blanks to the skirts as shown in photo B. Using a ⅛"-thick piece of wood as a spacer, trace around the outer curve on the skirts to mark a ¼" overhang on the bead blanks.

4 Remove just one of the bead blanks from the table, and bandsaw just outside the marked line. Mark a second line parallel to and 1⅛" 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 tabletop assembly. Band-clamp a strip of ⅛" 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 ⅛" 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. ¼" spiral round-nose upcut bit, #610; ¼" spiral square-end upcut bit, #603; ½" 14° dovetail bit, #405; ¼" flush-timming bit, #5503; 25° 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 Hule 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 Gage. 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.
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 greases, 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 1/2"-wide, hook-style Lenox blade with 3 teeth per inch in each saw, and turned several 6"-wide white oak planks into stacks of 1/2"-thick boards. We took those boards and cut intricate curves with 1/8" and 1/6" 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 12 1/2" (Bridgewood PBS320) to 16 1/2" (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 3/4 to 1 1/2 hp, but those ratings proved deceiving. The 3/4 hp Sears 24834 bogged down less during resawing than the 1 hp jet JWB814CS, 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 1 1/2- 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 welded 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 wands, 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 3/8" and larger blades. But as indicated in the chart, several saws had problems tracking 1/4" blades on center, and only the Delta, Reliant, and Star Tools saws tracked 1/6" 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 fea-
ture 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 4/5" and 3/8" 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
4/5"-wide and wider blades. None of
them worked well with 3/8" blades.

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 sim-
plify setting the guides with preci-
sion. 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, rip-
ing, 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
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 jack-
shaft arrangement, shown
left. A bolt-on cover com-
plified 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 \( \frac{1}{4} \) in. 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 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 requires 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. 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.
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 bandsaw in this test. If the $750 price tag seems too high, you can buy an open-stand version (28-275) with a ¾-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 outpower 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.

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**Product testing:** Dave Henderson

**Graphic design:** Perry McFarlin

**Photographs:** Marty Baldwin
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.
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 ¾" 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 dadoes 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-
Full-Service Workbench

Add the drawers for the two cabinets next
1. From ½" 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 ¼" hardboard and false fronts (U, V, W, X) from ¾" 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.

Bill of Materials

<table>
<thead>
<tr>
<th>Part</th>
<th>Finished Size</th>
<th>Material Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>CARCASES AND BASES</td>
<td>T</td>
<td>W</td>
</tr>
<tr>
<td>A</td>
<td>top &amp; bottom</td>
<td>¾&quot;</td>
</tr>
<tr>
<td>B</td>
<td>sides</td>
<td>¾&quot;</td>
</tr>
<tr>
<td>C</td>
<td>back</td>
<td>¾&quot;</td>
</tr>
<tr>
<td>D</td>
<td>shelf</td>
<td>¾&quot;</td>
</tr>
<tr>
<td>E</td>
<td>front &amp; back</td>
<td>¾&quot;</td>
</tr>
<tr>
<td>F</td>
<td>sides</td>
<td>¾&quot;</td>
</tr>
<tr>
<td>G</td>
<td>cleats</td>
<td>¾&quot;</td>
</tr>
<tr>
<td>H</td>
<td>banding</td>
<td>¾&quot;</td>
</tr>
<tr>
<td>I</td>
<td>banding</td>
<td>¾&quot;</td>
</tr>
<tr>
<td>DRAWER 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>J</td>
<td>front &amp; back</td>
<td>¾&quot;</td>
</tr>
<tr>
<td>K</td>
<td>sides</td>
<td>¾&quot;</td>
</tr>
<tr>
<td>DRAWERS 2 &amp; 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>fronts &amp; backs</td>
<td>½&quot;</td>
</tr>
<tr>
<td>M</td>
<td>sides</td>
<td>½&quot;</td>
</tr>
<tr>
<td>DRAWER 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>front &amp; back</td>
<td>½&quot;</td>
</tr>
<tr>
<td>O</td>
<td>sides</td>
<td>½&quot;</td>
</tr>
<tr>
<td>DRAWER 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>fronts &amp; backs</td>
<td>½&quot;</td>
</tr>
<tr>
<td>Q</td>
<td>sides</td>
<td>½&quot;</td>
</tr>
<tr>
<td>DRAWER 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R</td>
<td>fronts &amp; backs</td>
<td>½&quot;</td>
</tr>
<tr>
<td>S</td>
<td>sides</td>
<td>½&quot;</td>
</tr>
</tbody>
</table>

Materials Key: MF—medium density fiberboard, H—hardboard, BP—bitch plywood, HB—hardboard, LMF—laminated medium density fiberboard.

Supplies: #8×1½", #8×1¼", #8×1¾", #6×2" flathead wood screws; 3-¾" pulls; 8 pair of 22" bottom-mount drawer guides; primer; paint; polyurethane. For the bench vise (we used a Wilton 4x7" pivot-jaw vise), 4-⅛x3" lag screws with flat washers.

Buying Guide

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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 ¼" 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 ¾" 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 1¼" flathead wood screws from the bottom side of the panel to hold the two sheets tightly together.)

2 Trim the 1½"-thick top (Y) to the finished size (23¾"x96") 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.

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 #8×2" 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 sharpen-er for about $100, and explain how to use it, too.

Let’s start with the jig’s base
1 Cut a piece of ¾" plywood for the jig table (A) to the size listed in the Bill of Materials. Mark the centerpoint 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 ¾" outside the marked diameter of the water pan.

2 Using your drill press, drill the ¼" pilot hole in the center of the table, and ¾" 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 ½×3×42" maple, rounded over all the long edges with a ¼" round-over bit, then ripped it to yield two pieces 1¼" 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.)

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.

Continued
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 ¼" scrap, cut the positioning block to 3½" x 3½". Drill a ½" hole through its center.
3. Locate the center of a 1½ x 9" aluminum cake pan as shown in the photo below. Drill a ½" 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 ⅛" pilot holes through the pan and into the table. Enlarge the pan holes to ½".
5. 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 tool rest and boning 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 ¾" particleboard to 2½ x 23¾". 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 ⅛" steel rod mounted in the V-block, use a plastic drafting triangle or square to mark the centerline on each end of the rod.

HONING GUIDE

1 ¼"-diameter plastic knobs
(¼ x ⅛" machine screw ends)

¾" hole through corner of angle

1/4" flat washer

⅛" x ⅜ x ¾" angle iron 7" long
(on one side of angle is cut to 1" wide)

Hole is tapped for a ¼" machine screw.

⅛ x 1 x 2" angle iron 7" long
(one side of angle is cut to 1" wide)

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saw blade to 45°, adjust the depth to ½", 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 ¾"-diameter steel rod to 23¾" 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 ⅛"-diameter all-thread support rods to 5¾" 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 ¾ x 2" angle iron to 7", and 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 ¾ x ⅜" angle iron to 7", and place it angle-side-down in the V-block you used previously. Drill a pair of ⅛" pilot holes ¾" in from each end. Switch to a ⅛" 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 ½" intervals across the top face of the 1x2" 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 ½" mounting hole, then cut the water scoop to size.

3. Cut the end of a piece of ½"-thick scrap at 30° 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 ½" hole. Assemble the ½" carriage bolt, washers, and nuts as shown below.

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.

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.

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 dishing.

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°.
CHI P 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.

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,
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 carving 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 each element on top of the corresponding 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.

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 Air; Win. Hopkins
Illustrations: Roxanne LeMoine; Lorna Johnson
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 ½" 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 ½" 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 1½" 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.
Timepiece

Cove Detail

Top edge of arch

1/8" cove bit

Router table

Sailboat

1/4" cove on front and back

No cove on inside edges

Exploded View

1 1/8" diameter hole

Clock movement

Bill of Materials

<table>
<thead>
<tr>
<th>Part</th>
<th>Blank Size</th>
<th>T</th>
<th>W</th>
<th>L</th>
<th>Matl.</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A arch</td>
<td>1&quot;</td>
<td>4&quot;</td>
<td>6 1/2&quot;</td>
<td>W</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>B base</td>
<td>3/4&quot;</td>
<td>2 1/2&quot;</td>
<td>5 1/2&quot;</td>
<td>W</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>C front</td>
<td>1/4&quot;</td>
<td>3 1/4&quot;</td>
<td>3 1/2&quot;</td>
<td>C</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>D back</td>
<td>1/4&quot;</td>
<td>3 1/4&quot;</td>
<td>3 1/2&quot;</td>
<td>C</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>E hull</td>
<td>1/4&quot;</td>
<td>3/4&quot;</td>
<td>3 1/2&quot;</td>
<td>W</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>F, G, H*</td>
<td></td>
<td>2 1/2&quot;</td>
<td>2 1/2&quot;</td>
<td>M</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>I, J, K*</td>
<td></td>
<td>1/4&quot;</td>
<td>3/4&quot;</td>
<td>7&quot;</td>
<td>C</td>
<td>1</td>
</tr>
</tbody>
</table>

*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.

3/16" pilot hole
3/4" deep into bottom edge of arch for wood screw

9/32" shank hole, countersunk on bottom side

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

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

Routing Detail
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 x 1 1/2" flathead wood screws.

**Buying Guide**

**Clock insert.** Quartz clock insert, brass trimmed with stainless steel cable, item no. 200117, $20.90 ppd. in U.S. Schlabach 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.

FULL-SIZED PATTERNS

ASSEMBLED SAILBOAT

SAILBOAT PARTS

Reference lines for mainsail (G)

Cutline

Waste

1/8 x 3/8 x 7” cherry

Waste

Waste
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.

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 soldiers 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
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 sees come from the farm's 200 wooded acres. As a forester, he has developed a management 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
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.

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,
511463 Soeldner Rd.,
Spring Green, WI 53588.
Visit www.execpc.com/timbergreen on the Internet.

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
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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.

- **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 disposable 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.

---

**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.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>WHAT IT DISSOLVES</th>
<th>WHAT IT THINS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denatured alcohol</td>
<td>shellac, lacquer, water-based</td>
<td>shellac</td>
</tr>
<tr>
<td>Lacquer thinner</td>
<td>shellac, lacquer, water-based</td>
<td>lacquer, catalized lacquer</td>
</tr>
<tr>
<td>Mineral spirits, naphtha, turpentine</td>
<td>wax</td>
<td>wax, oil, varnish</td>
</tr>
<tr>
<td>Water</td>
<td>n/a</td>
<td>water-based</td>
</tr>
</tbody>
</table>

Continued on page 82
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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Taper 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, 2-3/8" carriage bolts 4" long with nuts and washers, 2-3/8" carriage bolts 5" long with mating nuts and washers, and a 3x22" strip of sandpaper. Kit no. TAP-I, $9.95 ppd. Schlabaug 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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<table>
<thead>
<tr>
<th>Lightweight Paper, Hook &amp; Loop</th>
<th>Stearate Hook &amp; Loop</th>
<th>Heavy E-weight paper, Hook &amp; Loop</th>
<th>Cloth PSA Discs</th>
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<tbody>
<tr>
<td>---------------------------------</td>
<td>------------</td>
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<td>---------------------------------</td>
</tr>
<tr>
<td>4½/8 holes</td>
<td>10 &amp; finer</td>
<td>$1.90</td>
<td>4½/8 holes</td>
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<tr>
<td></td>
<td>80 Grit</td>
<td>$2.05</td>
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<td>Assortment</td>
<td>$2.05</td>
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<tr>
<td>5½/6 holes</td>
<td>100 &amp; finer</td>
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<td>80 Grit</td>
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<td></td>
<td>Assortment</td>
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<td>6½/16 holes</td>
<td>100 &amp; finer</td>
<td>$3.00</td>
<td>6½/16 holes</td>
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<td>Assortment</td>
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**SHEETS** Priced in packages of 5.

<table>
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<tr>
<th>Silicon Carbide Wet/Dry Sheets</th>
<th>Aluminum Oxide Paper</th>
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<td>Size</td>
<td>Grit</td>
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<tr>
<td>---------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>9&quot; x 11</td>
<td>220 &amp; Finer</td>
</tr>
<tr>
<td></td>
<td>180 Grit</td>
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<tr>
<td></td>
<td>150 Grit</td>
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<td></td>
<td>100 Grit</td>
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<tr>
<td></td>
<td>80 Grit</td>
</tr>
<tr>
<td>4½ x 5½&quot;</td>
<td>220 &amp; Finer</td>
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<tr>
<td></td>
<td>180 Grit</td>
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<td>150 Grit</td>
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<td>120 Grit</td>
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<td>100 Grit</td>
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<td>80 Grit</td>
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<tr>
<td>3½ x 9&quot;</td>
<td>220 &amp; Finer</td>
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<td></td>
<td>180 Grit</td>
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<td>100 Grit</td>
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<tr>
<td></td>
<td>80 Grit</td>
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<table>
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<th>Aluminum Oxide Cloth</th>
<th>Size</th>
<th>Grit</th>
<th>Price</th>
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<td>9&quot; x 11</td>
<td>100 &amp; Finer</td>
<td>$1.75</td>
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<td>80 Grit</td>
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<td>60 Grit</td>
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<tr>
<td>4½ x 5½&quot;</td>
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<td>100 &amp; Finer</td>
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<td>80 Grit</td>
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<td>60 Grit</td>
<td>$2.80</td>
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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 hardcase 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 rugged as the P-C machine, but it’s a little tool you wouldn’t own without every day.

—Tested by Bob McFarlin
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Woodworker's Resource

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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 cure for the dull-bit blues with its new bit sharpener. The Drill Doctor 750SP puts factory grinds on dull bits from 1/8" to 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 $169.96
Value ★★★★★

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

Continued from page 92

Continued of page 100
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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 $7.50.

—Tested by Chuck Hedlund

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**PRODUCT SCORECARD**

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<td><strong>Performance</strong></td>
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WINTER WOOD-W]
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 cooperers at Seguin Moreau Napa Cooperage try to ensure that their barrels fulfill one-half of that relationship.

The tight barrels (as opposed to slacks 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 cooper at work. To arrange an appointment for a free tour, call 707/325-3408. 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
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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.
HOW TO USE THE PATTERN
FOR MAKING A TEMPLATE FOR
PARTS A, B, AND C.

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.

Field quarter pattern line

Centerlines marked on base top blank

Align centerlines on pattern with
those marked on base top blank.

Edge used to mark the outside
dge of the base top

Step 2 To form the master template for
parts B and C, 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

OVAL COFFEE TABLE
FULL-SIZED
QUARTER PATTERN
See page 42