

**WIN JET'S NEW "SUPERSAW"**

See page 27

# WOODWORKER'S JOURNAL

Volume 27  
Number 1  
February 2003



## Drilling Dynos

**8** Full-size  
machines  
tested

**Build the  
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**More Inside:**  
New 8" jointers  
Gluing and clamping  
Band saw jigs  
Glazing vs. staining



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- FLOOR-TO-TABLE HEIGHT: 35 1/2"
- 1725 RPM SPINDLE SPEED
- SPINDLE OSCILLATES AT 72 SPM
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- 10 TAPERED & THREADED SPINDLE SIZES
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## 12 SPEED 17" FLOOR DRILL PRESS

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- PRECISION GROUND CAST IRON TABLE: 13 3/4" SQ.
- SPINDLE TAPER: MT#3
- SPINDLE TRAVEL: 4 3/4"
- SWING: 17"
- DRILL CHUCK: 3/4"
- 12 SPEEDS: 210, 310, 400, 440, 630, 670, 1260, 1430, 1650, 2050, 2350, 3300 RPM
- DRILLING CAPACITY: 1" STEEL
- OVERALL HEIGHT: 64 1/2"
- TABLE TILTS 90° IN BOTH DIRECTIONS
- APPROX. SHIPPING WEIGHT: 275 LBS.

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## 2 HP DUST COLLECTOR

- MOTOR SIZE: 2 HP, 220V SINGLE-PHASE
- PORTABLE BASE SIZE: 21 1/2" x 33 1/2"
- STATIC PRESSURE: 12.3"
- AIR SUCTION CAPACITY: 1550 CFM
- STANDARD BAG FILTRATION: 30 MICRON
- MOTOR AMP DRAW: 12 AMPS (220V ONLY)
- APPROX. SHIPPING WEIGHT: 130 LBS.

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## 10" HEAVY-DUTY TABLE SAW

- 1 1/2 HP, SINGLE-PHASE, 110/220V MOTOR
- PRECISION GROUND CAST IRON TABLE
- TABLE SIZE (W/ WINGS ATTACHED): 27 1/2" x 40 5/8"
- CUTTING CAPACITY AT 90°: 3 1/4" AND AT 45°: 2 1/2"
- 5/8" x 1 1/4" ARBOR ACCEPTS DADO BLADES
- MAXIMUM RIPPING CAPACITY: 24"

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• APPROXIMATE SHIPPING WEIGHT: 220 LBS.

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## 10" LEFT-TILTING SUPER HEAVY-DUTY TABLE SAW

- 3 HP, SINGLE-PHASE, 220V MOTOR
- PRECISION GROUND CAST IRON TABLE
- TABLE SIZE (W/ WINGS ATTACHED): 40 1/2" x 27"
- EXTRA-LARGE HANDWHEELS
- CUTTING CAPACITY: 8" L & 26" R OF BLADE
- MAXIMUM DEPTH OF CUT @ 90°: 3"

**MOTOR COVER & DUST HOOD INCLUDED**

- MAXIMUM DEPTH OF CUT @ 45°: 2 1/4"
- 5/8" DIAMETER ARBOR ACCEPTS DADO BLADES UP TO 1 3/8"
- APPROX. SHIPPING WEIGHT: 430 LBS.

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## 24" DRUM SANDER WITH VARIABLE SPEED

- 5 HP, 220V DRUM MOTOR DRIVES 2 ALUMINUM SANDING DRUMS
- 1/4 HP CONVEYOR MOTOR: VARIABLE SPEED
- CONTROL PANEL WITH AMP LOAD METER
- HANDLES STOCK UP TO 23 1/2" WIDE AND 4 1/4" THICK
- HOOK AND LOOP SANDPAPER INSTALLS EASILY ONTO THE DRUMS
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## THE ULTIMATE 14" BANDSAW

- MOTOR: 1 HP, TEFC, 110V / 220V SINGLE-PHASE
- PRECISION GROUND CAST IRON TABLE: 14" x 14"
- 2 SPEEDS: 1500 & 3200 FPM

**New!**

- CUTTING CAPACITY/THROAT: 13 1/2"
- MAXIMUM CUTTING HEIGHT: 6"
- QUICK CHANGE BLADE RELEASE/TENSIONING
- TABLE TILT: 45° RIGHT, 10° LEFT
- FENCE: DELUXE EXTRUDED ALUMINUM
- WHEELS: FULLY BALANCED CAST ALUMINUM WITH RUBBER TIRES
- BLADE SIZE: 92 1/4" (1/4" TO 3/4" WIDE)
- BALL BEARING BLADE GUIDES
- 4" DUST PORT
- INCLUDES ONE 3/8" BLADE
- APPROXIMATE SHIPPING WEIGHT: 210 LBS.

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## 17" HEAVY-DUTY BANDSAW

- MOTOR: TEFC CAPACITOR START INDUCTION, 2 HP, SINGLE-PHASE/60 Hz, 110V/220V

**New!**

- PRECISION GROUND CAST IRON TABLE: 17" x 17" x 1 1/2" THICK
- CUTTING CAPACITY HEIGHT: 12"
- CUTTING CAPACITY LEFT OF BLADE: 16 1/4"
- WHEELS ARE FULLY-BALANCED CAST ALUMINUM WITH RUBBER TIRES
- DELUXE EXTRUDED ALUMINUM RIP FENCE
- BLADE GUIDES: EURO-STYLE ROLLER DISC
- BLADE SIZE: 132" x 1/4" - 1" (STANDARD 1/2")
- 2 SPEEDS: 1600, 3300 FPM
- 4" DUST PORT x 2
- TABLE TILT 10° LEFT, 45° RIGHT
- QUICK CHANGE BLADE RELEASE/TENSIONING WITH BLADE TENSIONER INDICATOR
- HEIGHT FROM FLOOR TO TABLE: 37 1/2"
- APPROXIMATE SHIPPING WEIGHT: 321 LBS.

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## 19" HEAVY-DUTY BANDSAW

- MOTOR: 2 HP, SINGLE-PHASE, 60 Hz, 110V/220V

**New!**

- TEFC CAPACITOR START INDUCTION
- PRECISION GROUND CAST IRON TABLE: 19" x 19" x 1 1/2" THICK
- CUTTING CAPACITY LEFT OF BLADE: 18 1/4"
- CUTTING CAPACITY HEIGHT: 12"
- 2 SPEEDS: 1700, 3600 FPM
- BLADE SIZE: 143" x 1/4" - 1 1/4"
- QUICK CHANGE BLADE RELEASE/TENSIONING
- WHEELS ARE FULLY-BALANCED CAST ALUMINUM WITH POLYURETHANE TIRES
- DELUXE EXTRUDED ALUMINUM RIP FENCE
- BLADE GUIDES: ROLLER DISC
- BLADE TENSION INDICATOR
- MICRO ADJUSTING GEAR TABLE
- 4" DUST PORT x 2
- TABLE TILT 10° LEFT, 45° RIGHT
- APPROXIMATE SHIPPING WEIGHT: 383 LBS.

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- 2 HP, SINGLE-PHASE, 110V MOTOR, 15 AMPS
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- FEED RATE: 25 FPM
- ON/OFF TOGGLE SWITCH
- MAX. CUTTING HEIGHT: 6"
- MIN. BOARD THICKNESS: 3/16"
- CUTTERHEAD RPM: 8,540
- 57 CUTS PER INCH
- APPROX. SHIPPING WEIGHT: 85 LBS.



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**4 BLADE CUTTERHEAD!**

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- SANDING BELT MOTOR: 5 HP
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- APPROX. SHIPPING WEIGHT: 1,000 LBS.



**G9983**  
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### 1 1/2 HP SHAPER

- MOTOR: HEAVY-DUTY 1 1/2 HP, 110/220V
- 2 INTERCHANGEABLE SPINDLES: 1/2" AND 3/4"
- TWO SPINDLE SPEEDS: 7,000 AND 10,000 RPM
- TABLE SIZE: 20 1/4" x 18"
- SPINDLE TRAVEL: 3"
- SPINDLE OPENINGS: 1 1/4", 3 1/2", AND 5"
- FLOOR-TO-TABLE HEIGHT: 33 1/2"
- MAXIMUM CUTTER DIAMETER: 5"
- APPROX. SHIPPING WEIGHT: 220 LBS.



**G1035**  
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### 3HP SHAPER

- HEAVY-DUTY 3 HP, SINGLE-PHASE, 220V MOTOR W/REVERSING SWITCH
- 3 INTERCHANGEABLE SPINDLES: 1/2", 3/4" AND 1"
- TWO SPINDLE SPEEDS: 7,000 AND 10,000 RPM
- 3" SPINDLE TRAVEL
- SPINDLE OPENINGS: 1 1/4", 2 1/4", 4", AND 5 1/2"
- PRECISION GROUND CAST IRON TABLE
- TABLE SIZE WITH STANDARD WING ATTACHED: 30 1/2" x 28 1/2"
- FLOOR-TO-TABLE HEIGHT: 34"
- APPROX. SHIPPING WEIGHT: 353 LBS.



**G1026**  
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### 4" JOINTER

- 2-HSS KNIFE CUTTERHEAD
- 1/2 HP, 110V MOTOR
- CAST IRON BED
- 23" TABLE LENGTH
- INFEEDE TABLE DEPTH-OF-CUT GAUGE
- 16,000 CUTS PER MINUTE
- 3/16" MAXIMUM DEPTH OF CUT
- 45° AND 90° FENCE STOPS
- CUTTERHEAD SPEED: 8,000 RPM
- JACK SCREW KNIFE ADJUSTMENT
- 2 1/2" DUST PORT
- APPROXIMATE SHIPPING WEIGHT: 28 LBS.

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### 6" X 47" JOINTER WITH HANDWHEELS

- 1 HP, 110/220V, SINGLE-PHASE MOTOR
- RABBETING CAPACITY: 1/2"
- MAX. DEPTH OF CUT: 1/2"
- 3-KNIFE BALL BEARING CUTTERHEAD
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- POWERFUL 1 1/2 HP, 220V, SINGLE-PHASE MOTOR
- 3-KNIFE CUTTERHEAD IS 3" IN DIA. AND RUNS IN SHIELDED, PRE-LUBRICATED BALL BEARINGS
- MAX. DEPTH OF CUT: 1/2"
- INFEEDE TABLE HAS RABBETING LEDGE
- SUPER HEAVY-DUTY CAST IRON BED
- HEAVY-DUTY CENTER-MOUNTED FENCE

- APPROX. SHIPPING WEIGHT: 450 LBS.



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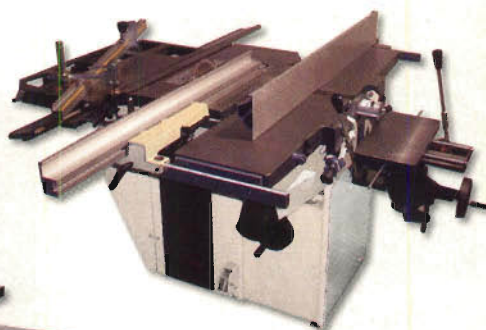




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our  
20th  
anniversary  
but  
you  
get the  
gifts!

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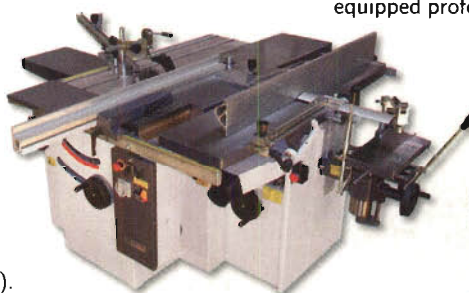


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# Woodworker's Journal

## Features

January/February 2003



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### 28 Gluing and Clamping

*By Ian Kirby*

When almost all is said and done, your clamping and gluing techniques can make — or break — a project. Learn the proper procedures from this master craftsman.

### 34 Three-in-one Router Table

*By Barry Chattell*

More router table equals more projects in the shop. Triple your power and your productivity with this three-in-one router table and its separate fences and micro-adjusters.

### 40 Taboret Table/Plant Stand

*By Mike McGlynn*

Stickley style in a simple project: it'll take you just a couple of weekends to evoke the Arts and Crafts era with this little taboret.

### 44 Arts & Crafts Picture Frame

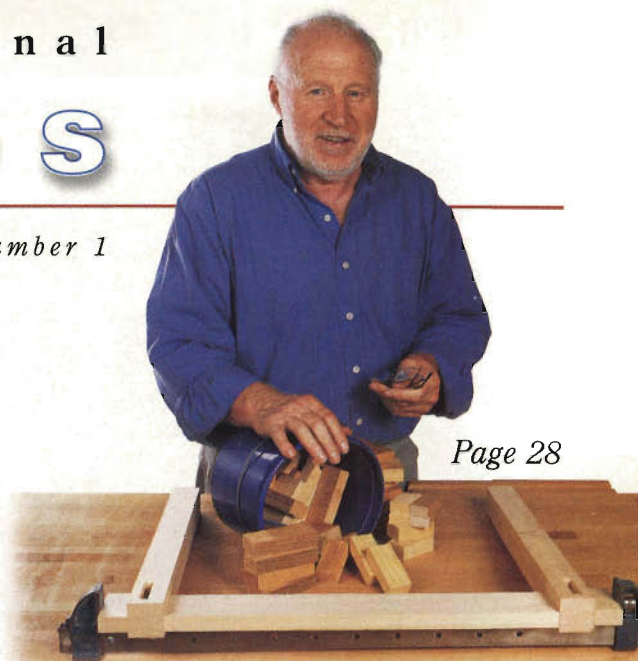
*By Sandra Newman and Joseph Ebler*

Careful grain selection enhances the classic elements of tapered rails and arches in this piece from two professional framemakers.



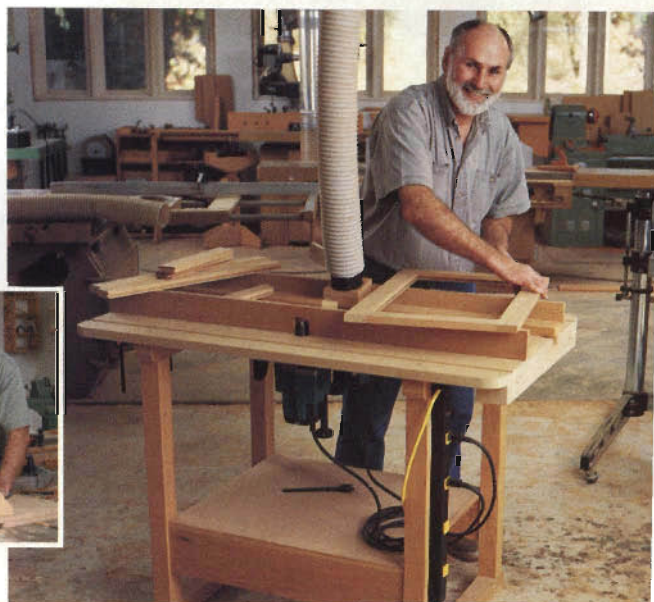
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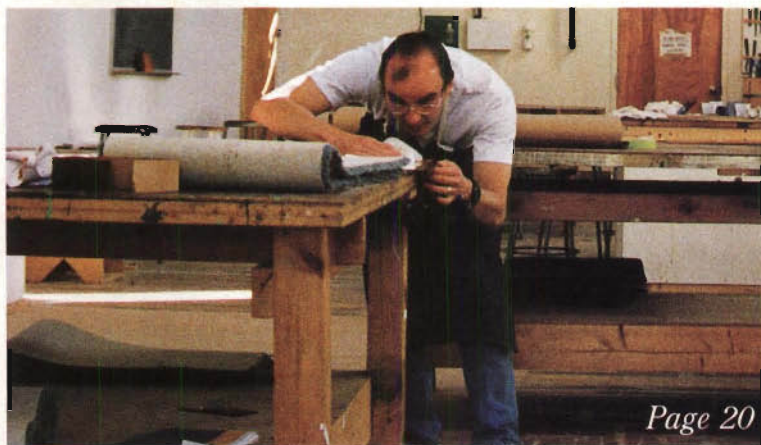


# Woodworker's Journal Departments

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Woodworkers: we're all one tool short of a full shop.

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His sander's time has run out. How to replace it?

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It's a real "hassle" to ID this strange tool.



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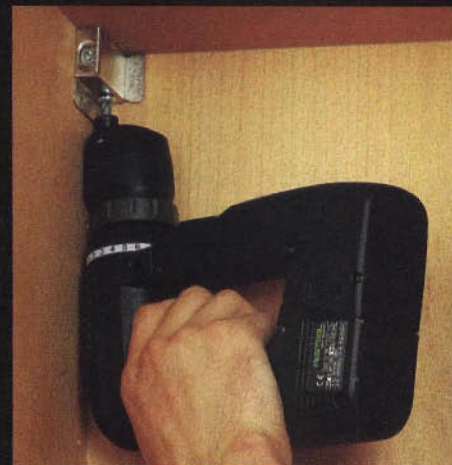
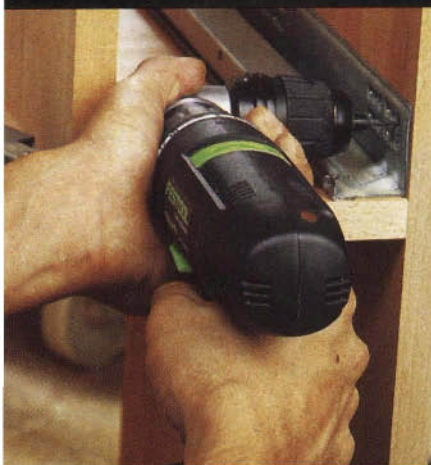
### 76 Shop Test

Russell Trainum reviews 8" jointers and picks his winners.

### 92 What's In Store

Fresh new angles on woodworking tools.





## Cornering ability.

Working in a tight spot? Then you need a tool with good cornering. Like the new Festool CDD FX and TDD FX cordless drills with FastFix chuck. Switch from the straight chuck to the angle chuck and speed through the job. Need to drill right up against a wall? Snap on the eccentric chuck. Don't have a lot of room? Just take off the chuck and place the bit directly into the drill holder shaft to save over 1.5" of length.

We build a unique line of tools – sanders, routers, planers, saws, dust vacs and drills. Each of our tools has features that help you work faster, safer, easier and more precisely. All are built to last and backed by the longest guarantee in the industry.

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## One Tool Short of a Full Shop

**Y**our holiday gift projects are completed (well, mostly) and handed out to their happy recipients. (Be honest; how many of you said "I'll need that back for another week to wrap up the finish"?). Having just completed this period of rushed productivity, you've likely become aware of both the strengths and shortcomings of your shops — everything from the thrill of a new aftermarket table saw fence to the agony of not having enough clamps (probably discovered in the middle of a critical glueup). You've also concluded that there's a critical tool you simply "must have" to improve your life (OK ... your woodworking). I know this to be true: We are, all of us, perpetually one tool short of a full shop.

Now is just the time of year to do something about that sorry state of affairs. Chances are, you've got a bit of holiday cash laid aside or a few tax refund dollars targeted toward improving your shop's lot in life. If so, I invite you to spend some time with our tool experts to

help guide you in that noble pursuit. While they're not retired engineers with loads of fancy measuring equipment, our reviewers do share one skill that's critical to the job. They know how to put a tool through its paces and will speak frankly about how well it works.

When Chris Marshall, for instance, reviews a drove of drill presses for us, he says he

**If you want reviews that offer more than the info already on the side of the box, you're in the right magazine. This time, Chris Marshall tested runout and compared drilling power on a forest of drill presses. His review starts on page 52.**

likes to look for the little things that matter to woodworkers. He sets up, does some "real world" testing and works hard at revealing the strengths and weaknesses of each tool. We don't do tool charts — sorry, we've rarely come across one that accomplishes much more than regurgitating details available on the sides of boxes or on the manufacturer's web site. Instead, we ask our reviewers to give you the straight scoop on tools, in plain English.

Bottom line: If you're looking for fancy charts that detail decibels down to the nearest nanotweeter, you're reading the wrong magazine. If, however, you're looking for an honest, well-informed opinion from a fellow woodworker, stick with the *Journal*. We'll be here for you.

*Larry N. Storken*

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See it at [boschtools.com](http://boschtools.com)

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## Dovetail Devotees

### Buy 'Em ...

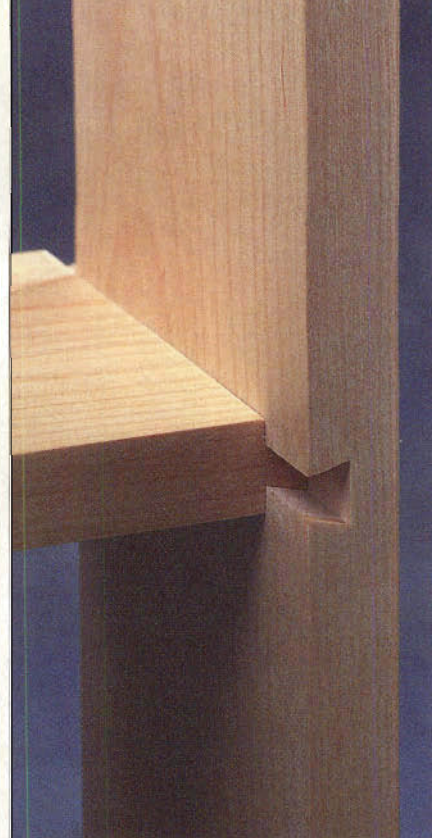
When I flipped through the October 2002 *Woodworker's Journal* and saw the illustration on page 84 ("Jigs for Routing Dovetails"), I said "YES! This is it!" You see, I purchased a jig for routing dovetails a year ago and I tried to make some dovetails. And as Bill [Hylton] said, "You seesaw between increasing and decreasing the cut depth, never hit the right setting, get totally frustrated, and shelve the @\$%^&! jig, never to use it again" ... well, not until I saw the illustration on page 84, and there was the answer.

Tell Bill "Thank you! thank you!" Nowhere in all

**The Sliding Dovetail System answered the pleas of reader Michael Halko.**

of the books and magazines that I have about joinery do they tell me at what depth to set the bit. Now I can do all of the dovetail projects I wanted to do a year ago. Thanks for the article and keep more like this one coming. It is the small details, like 5/16", that make a BIG difference.

Stan Relf  
Colorado Springs, Colorado

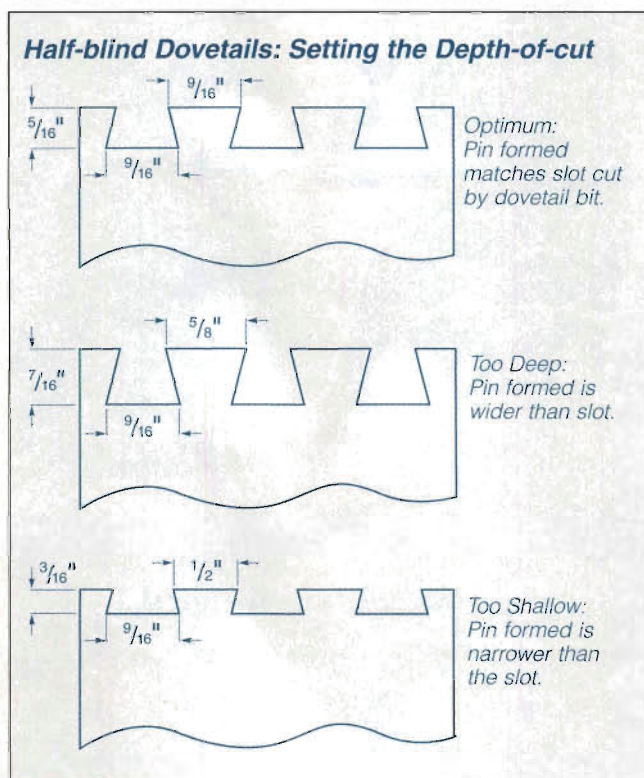


### ... Or Make 'Em

I was asked, pleaded with and even begged for months to make a reproduction of an antique barber's shaving mug rack, and every time I would make up some lame excuse why I couldn't work on it. The whole time I was thinking "I don't have a \$400 piece of equipment to make the sliding dovetails for the shelf supports" that were on the original.

I had the dovetail groove jig pretty much figured out, but it was the tails which were giving me the trouble. I was actually going to go as far as to remove the dovetail bit from the portable router after cutting the grooves and put it in my shaper table. Then I realized all the time and scrap I would have wasted trying to match the setup of the groove jig. Then I received my April 2002 issue of *Woodworker's Journal* and, voila! There it was: Jack Gray's *Sliding Dovetail System*.

I quickly assembled all the pieces to Jack's specs. The only change I made to the



Here is the illustration that got Stan Relf so excited. His letter is above.

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plans was to the tail jig. By adding two support ribs to the back of the tail jig fence, this adds greater firmness and retains the accuracy of the system, still leaving plenty of room for clamps.

I thought only an expensive piece of equipment could make the actual sliding dovetail joint that Jack was so gracious to show us how to produce from just a few simple blocks of wood. Thanks again!

*Michael Halko, Jr.  
Cedar Knolls, New Jersey*

### A Big Tax Dodge?

[The October 2002 issue of] *Woodworker's Journal* passed on the news that the Stanley Works was moving their incorporation status off U.S. soil and onto a "tax haven" island in the Caribbean (*Shop Talk*, page 19).

While the company would certainly like to candy coat such an action, what they are not admitting to is that what they are doing is (just for now, I hope) a legally acceptable way of laundering their income so as to keep it exempt from U.S. taxes. While I certainly don't want to pay taxes, I do in fact enjoy what my country provides me in the way of

services and protection so in the end I, as well as the rest of you, must pay our taxes. Just because Stanley can legally launder their income in such a fashion does not mean that I must honor such a company with any future purchases. I was, until the "off-shore" move was announced, a proud stockholder of Stanley, which used to be a company that represented quality and care, but no more. I refuse to honor a company that wants my money but doesn't care to share the burden of supporting the country in which they want to operate and in which their employees reside. Further, I am contacting my employers in hopes that they and all their divisions will also cease doing any business with Stanley or any of its subsidiaries. A good company has become just another corporate bandit.

*Richard E. Brown  
Harvard Medical School  
Boston, Massachusetts*

**Editor's Note:** Since the story Richard writes about was published, The Stanley Works, under pressure from a number of fronts, withdrew its application to reincorporate in Bermuda.



**Richard Brown's letter hammers the Stanley Works for even thinking of moving their incorporation offshore. They decided not to.**

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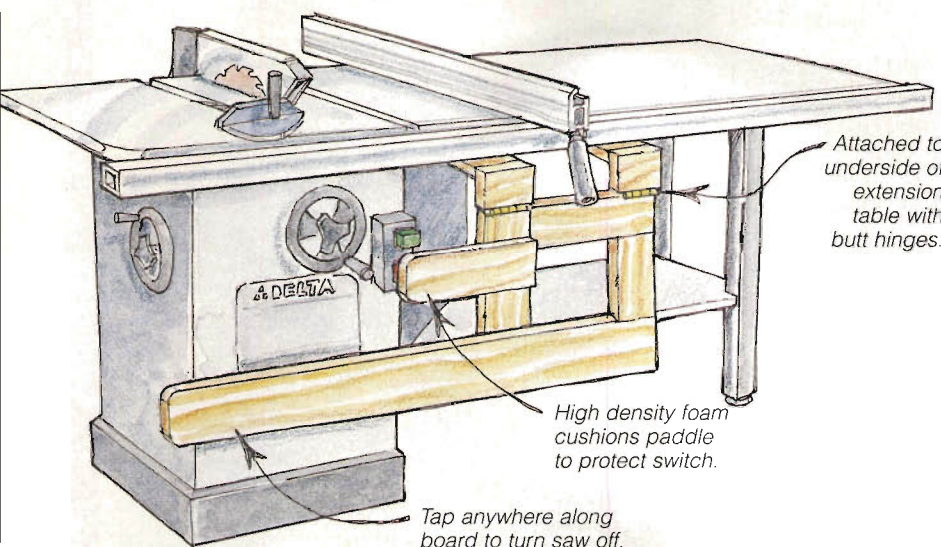
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## Getting the Most from Your Machines



### Table Saw Safety Switch

I installed the rather large safety switch shown above a few months ago and it works so well that now I can't imagine how I got along without it. It is simple to make, the only hardware required being two 3" butt hinges. The swinging frame screws to the underside of the table and I padded the "off" paddle with

extra foam to ease pressure on the switch. I used 2 1/2" ash — which I happen to have plenty of — to make my frame, but any scrap hardwood would do equally well.

*Nathan Alifon  
Fort Fairfield, Maine*

### Draining Compressor Condensate

Everyone seems to have a different way to drain condensate from compressor tanks, so here's my method. I simply replaced the existing drain valve on the tank with a cable drain made for the air brake system of trucks. These drains cost about \$10 and come with a chain which you can route to any convenient location.

*Geoffrey Chadwick  
Veradale, Washington*

### Handy Containers

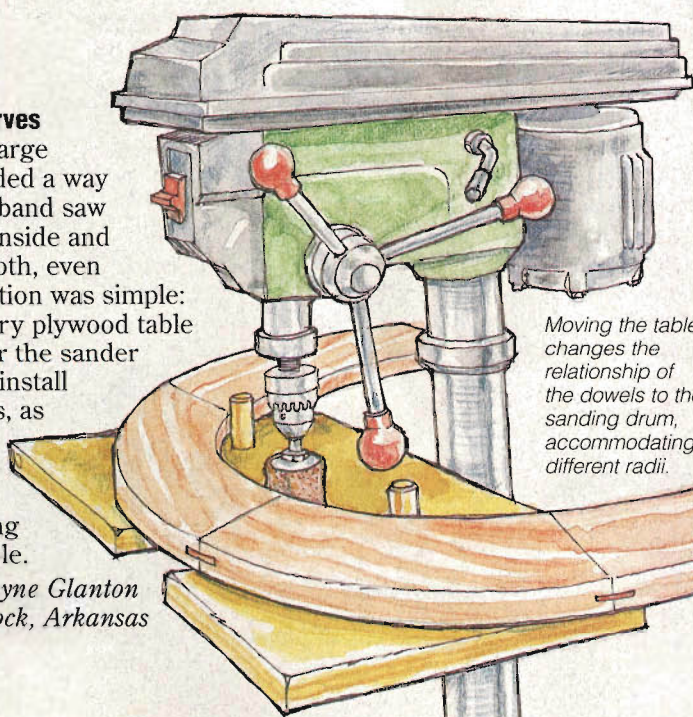
When mixing small quantities of water putty or other filler, I've discovered that there is nothing like an old tennis ball cut in half. (Best done with a sharp knife rather than the band saw, which could "grab" it.) When you're finished with the putty, simply turn the ball inside out, remove the residue, and it's ready to use again.

*Alex Nadler  
Swansea, Illinois*

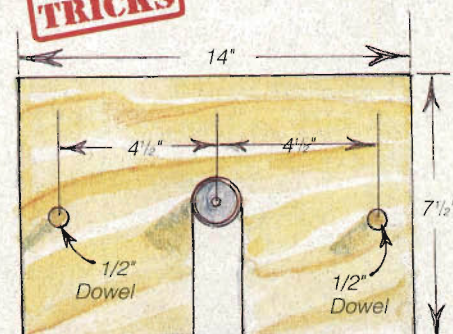
### Sanding True Curves

I make a lot of large arches and needed a way to sand out the band saw marks — both inside and out — to a smooth, even curve. The solution was simple: make an auxiliary plywood table with a cutout for the sander drum and then install a couple of pegs, as shown. I can easily change the sanding radius by shifting the plywood table.

*Dwayne Glanton  
North Little Rock, Arkansas*



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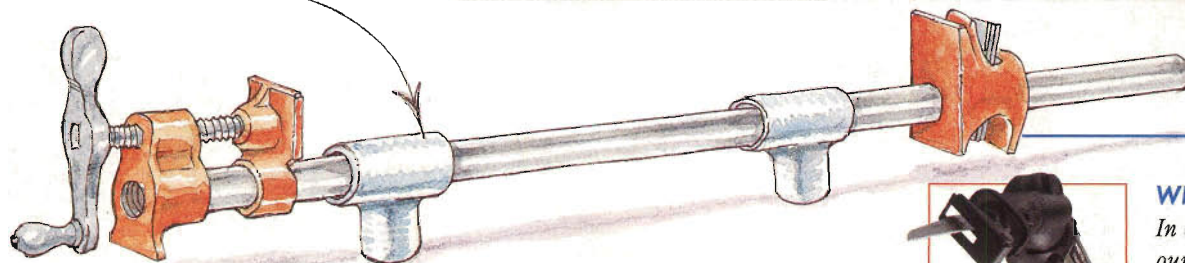


### Transferring Gridlines

In your last issue, the Greene and Greene table by Michael McGlynn features a number of grid drawings that we woodworkers are required to enlarge to their full size. I used to spend considerable time actually drawing out the grid itself — a tedious process — until I heard about pattern cutting boards that are available in the sewing section of most variety stores. I bought one of these 3 X 5 ft. folding cardboard affairs with a 1" grid already printed on a white background. After taping computer paper over the grid, I can simply sketch in the design.

*Ronnie Sorg  
Eden, North Carolina*

1" diameter plumber's tees stabilize otherwise wobbly pipe clamps.

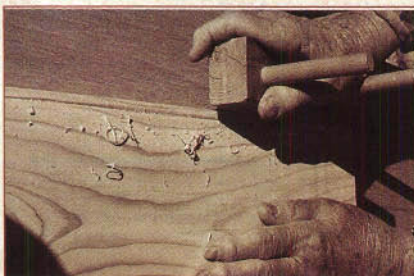


### Pipe Clamp Stabilizers

This simple trick stabilizes iron pipe clamps and helps keep them free of glue. You'll need a pair of 1" diameter plumbers tees for each clamp. Drill a bit of extra clearance with a 1 1/8" spade bit so the tees are an easy, sliding fit on the 3/4" diameter pipe. Position a pair on each clamp and carry on with the glueup. Even if you get glue on the tees it won't stick to the PVC.

*James Piskura  
Indianapolis, Indiana*

## YESTERDAY'S TOOL — TODAY'S TRICK



### Shop-made Beading Tool

I'm told that boatbuilders have known about this tool for centuries, but it's new to some of us furniture makers. It is what I call a "low-tech" tool — a flat-head steel screw mounted in a wooden block, as shown above. Adjusting the screw, in or out, determines the position of the bead from the edge. To sharpen, just hone the flat head of the screw on an oil or water stone.

The beauty of this tool is its simplicity and the fact that it will follow curves and even small radii.

*Arthur Mitchell  
Blue Grass, Virginia*

### Non-slip Saw Blades

I've had the same Delta table saw since 1951 — more than half a century. Recently I was experiencing problems with some of the new, coated blades. Seemed like no matter how hard I tightened the arbor nut, they still continued to slip on me. After a little head scratching, the solution turned out to be simple: I just sand off the non-slip coating in the area around the nut and washer.

*Vincent Polichetti  
Brooklyn, New York*



### WINNER!

In addition to our standard payment (below) Dwayne Glanton of North Little Rock, Arkansas,

will also receive a **Porter-Cable 9470 Tiger Claw Saw** for being selected as the "Pick of the Tricks" winner.

We pay from \$100 to \$200 for all tricks used. To join in the fun, send us your original, unpublished trick.

Please include a photo or drawing if necessary. Submit your tricks to Woodworker's Journal, Dept. T/T, P.O. Box 261, Medina, MN 55340.

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## Sanders, Flakes and Snipe

**Q** I had been using the same sander for 20 years, and it finally died. What are the purposes of all the sanders available now (palm, random orbital, 1/2 sheet, etc.) How do I decide which is best for each job?

*Bill Picard  
DePere, Wisconsin*

**A** All the sander types you mentioned are orbital sanders, used for finish sanding. On an orbital sander, the pad moves eccentrically in tight little circles ranging from 3/32" to 3/16" in diameter at speeds ranging from about 4,000 to about 12,000 orbits per minute (opm). Larger orbits and faster speeds result in faster stock removal. Your old sander was most likely an early, slow-speed orbital model with large "orbits," perhaps as large as 1/4".

The pad on a random orbit sander both rotates and oscillates.

Since their pads don't rotate, regular orbital sanders usually have square or rectangular pads, which make them good for getting into corners and up against adjacent perpendicular surfaces. Models with

Sanders like this 1/2 sheet are good for large surfaces like tabletops.



larger (1/2-sheet) pads are good for large surfaces, such as tabletops, because they bridge a larger area and remove proportionately more material in the same length of time. They're heavier than palm sanders, though; so you won't find yourself using them often for vertical or overhead surfaces.

In a random orbit sander, the orbital action induces the pad to rotate as well as oscillate. The speed of rotation changes with the downward pressure applied to the sander. This random rotation disrupts the squiggly scratch pattern created by the orbital action and creates a choppy one that is less noticeable. Because of the combined motion, random orbit sanders cut more aggressively than standard orbital sanders.

Random orbit sanders have round pads, usually 5" or 6" in diameter, that make them well suited to sanding curved or contoured parts as well as flat surfaces.

If I had to buy just one finishing sander, I'd go for a palm-grip random orbit sander — preferably one with variable speed, on-board dust collection capability, and a hook-and-loop pad.

The hook-and-loop disks are more expensive than the self-sticking PSA disks, but you can reuse them. The variable speed comes in handy for delicate work.

— Ellis Valentine

Contact us by writing to "Q&A", Woodworker's Journal, 4365 Willow Drive, Medina, MN 55340, by faxing us at (763) 478-8396 or by e-mailing us at: [Q&A@woodworkersjournal.com](mailto:Q&A@woodworkersjournal.com).

Please include your home address, phone number and e-mail address (if you have one) with your question.



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Recalls are in effect involving some Black & Decker tools. The switch on some Firestorm and Quantum Pro cordless drill/drivers can overheat, posing the possibility of a fire hazard. Also, the motor housing on some 10" BT2500 table saws may crack, posing a risk of electric shock.

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866-357-0324 (table saw recall hotline)

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— WJ Editors



**Q** I want to mix a 1½ pound cut of shellac using dry flakes and alcohol. My question is, do I need a conversion factor since I am mixing ounces by weight (flakes) with ounces by volume (alcohol)?

Paul L. Stotler  
Leonardtown, Maryland

**A** Good question. No, you don't need a conversion factor since the formulas for shellac are already "converted."

If you were trying to mix to a percentage, such as a 25 percent solution, you'd need to stick to either weight or

volume, but "pound cut" is already a mixed measure. It calls for a certain weight of shellac flakes to a certain volume of liquid alcohol. A 1½ pound cut means you add 1½ pounds of flakes to one gallon of alcohol.

Obviously, that means you end up with more than a gallon of shellac. For smaller amounts, convert to ounces versus pints. Three ounces of flakes in one pint of alcohol also gives you a 1½ pound cut.

— Michael Dresdner



**WINNER!** For simply sending in his question on planer snipe, Craig Sheriff of Ormond Beach, Florida wins a Bosch 1294VSK Sanding Kit (above).

Each issue we toss new questions into a hat and draw a winner.

continues on page 18 ...

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Planer snipe is a common problem — with several solutions, including resetting the knives on your cutterhead.



**Q** My dad and I have a DeWalt DW733 planer that we can't stop from creating snipe. Both long and short stock will end up with about 2" - 3" of wasted wood on the trailing end of the board. We have tried everything, from holding pressure on the boards on the outfeed table to following (pushing) the stock with a scrap board (this works best, but wastes too much wood). We are tired of wasting wood or adding an extra 4" to our measurements. What can we do to prevent the snipe from happening?

*Craig Sheriff  
Ormond Beach, Florida*

**A** So many woodworkers have written about, talked about (and cursed about) trying to eliminate snipe, that you'd think it was some kind of devious bird flying around the shop wreaking havoc. (Maybe someone should start a support group?) While easy to diagnose, planer snipe (the slight surface gouge a thickness planer sometimes makes near the beginning or, more often, at the end of a board) can be a difficult problem to solve.

It sounds like you've already tried a few of the more common remedies — carefully supporting the outfeeding stock (to prevent it from springing up into the cutterhead after it passes the infeed roller), pushing the stock with a scrap board (which works better on planers with pressure bars your portable doesn't have), and simply making parts longer and cutting off the sniped portion — but haven't cured the problem.

You don't mention whether or not locking the cutterhead has an effect. Your DW733 planer has a top-mounted lever that locks the cutterhead against the four steel columns that support it. The lock is designed to reduce deflection of the cutterhead assembly that can cause sniping. Here are other common remedies to try:

- Make sure the knives are set to the right height in the cutterhead. Knives set too high create a larger than normal cutting circle, which

increases the likelihood of sniping.

- Check the alignment of the planer's outfeed table. It should be in line with or very slightly higher (.003" or less) than the planer bed. If it's lower or cocked at an angle, it could be causing snipe.

- Make sure the bottom face of each board you plane is jointed flat (a standard procedure for thickness planing). This keeps the board flat on the bed as it passes under the cutterhead.

- Reduce the depth of the final pass you take on a board to 1/32" or less.

If all else is in good shape with your planer, there's a slight chance that the pressure of the outfeed roller isn't set high enough to keep the board flat after it leaves the infeed roller. Unfortunately, this isn't a problem that you can fix yourself; you'll have to send the planer to an authorized repair center.

— Sandor Nagyszalanczy

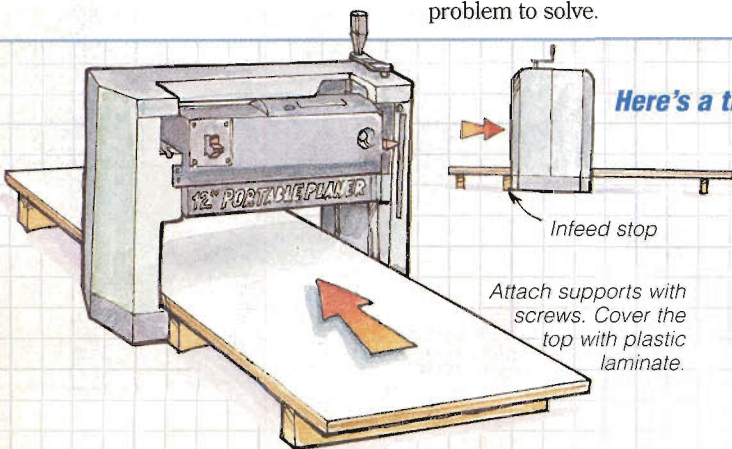


## THIS ISSUE'S EXPERTS

**Ellis Valentine** is a former editor of *American Woodworker* and the founder of WoodCentral.com and WoodFinder (Wdfinder.com).

**Michael Dresdner** is a nationally known finishing expert and author of *The New Wood Finishing Book* from Taunton Press.

**Sandor Nagyszalanczy** is a professional writer, photographer and author of seven books, including *Woodshop Dust Control*, from Taunton Press.



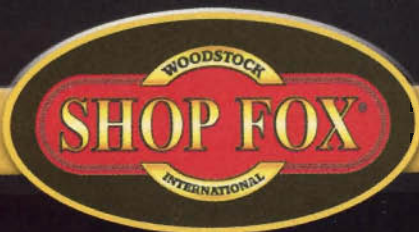
*Here's a trick from a reader that helped him eliminate "snipe"...*

### Avoiding Planer Snipe

I had a problem with "snipe" on long boards when feeding them through my 12" benchtop planer. I solved the problem by making a simple auxiliary feed bed that extends farther than the outfeed tables. It is simply a piece of MDF cut just wide enough to fit within the feed guides. I glued plastic laminate to the top of the MDF and attached three supports. The middle support was attached against the infeed side to prevent the table from being pulled through the planer.

*Richard W. Meure  
Redwood City, California*





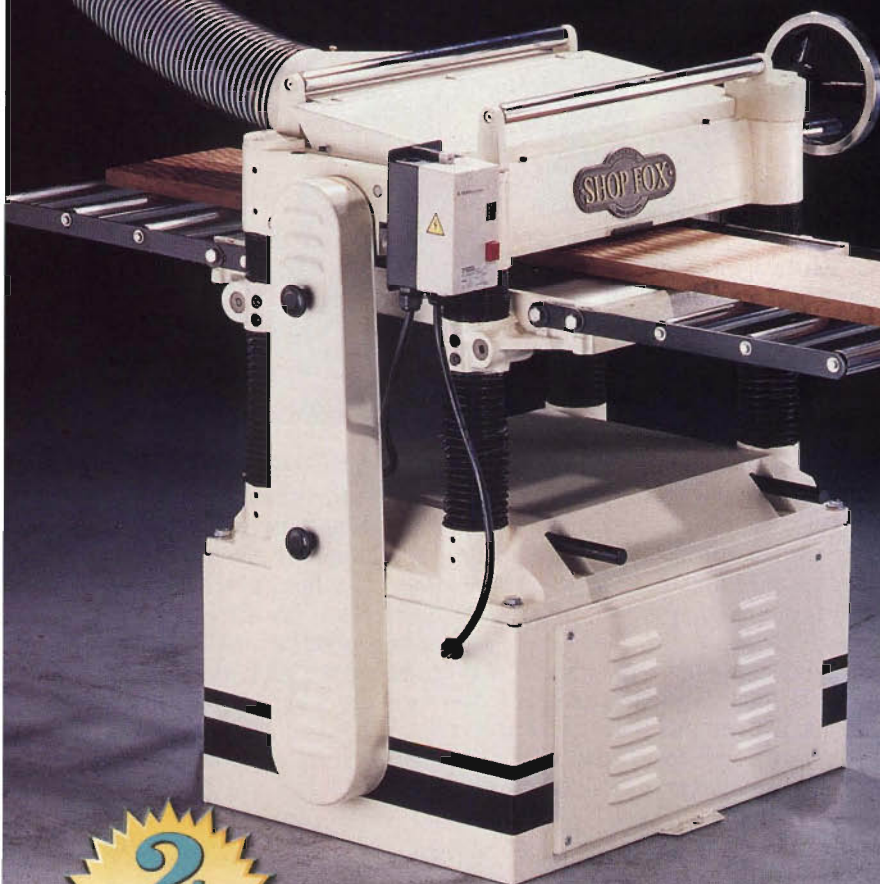
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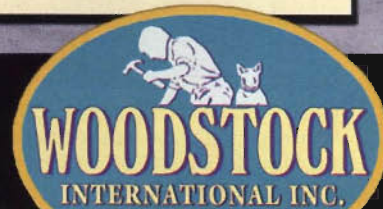
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## Just Desserts: A Winner Learns to Finish

### The Perfect Vacation

#### *A Week at Anderson Ranch*

Michael McCray, our latest grand prize winner, stood there with a huge grin on his face. And why not? In addition to the Delta Unisaw he won through our annual Subscriber Sweepstakes (*page 27 in this issue*), Michael also was awarded a week's schooling at the renowned Anderson Ranch Arts Center near Aspen, Colorado. His class choice was Professional Wood Finishing, an intensive workshop taught by conservation and restoration expert Teri Masaschi.

### Finishing Class

The week was a mixture of individual tutoring and round-table discussions covering the basics of simple clear finishes as well as staining, bleaching, painting and special effects. Teri also interspersed short lectures on the finer aspects of finishing.

"Michael," she said, "was absolutely the most interested student in the group. He took everything to heart, and seemed so happy to be here."

For her part, Teri was there because each summer the Ranch attracts some of the world's biggest names in ceramics, photography,



**Michael McCray, a mechanical engineer from New Mexico, spent his summer vacation honing his woodworking skills at the Anderson Ranch Arts Center. He won the trip through the Woodworker's Journal annual subscription sweepstakes.**



painting, drawing, sculpture and, of course, woodworking. Pick up a well-thumbed library book in any of these fields, and odds are the author has led a workshop at Anderson Ranch ([www.andersonranch.org](http://www.andersonranch.org); 970-923-3181). Since 1966, the year founder Paul Soldner set up a gallery and inaugurated informal workshops, the campus has enjoyed a growing international reputation in several artistic fields.

### No More Cheap Desserts

As for Michael, he took up woodworking about five years ago to replace golf. His first project was an interpretation of a Sante Fe chair, which was built with hand tools and a palm sander. He likes to dream of becoming a professional after he retires from Intel, "graduating from microchips to wood chips." As for his finishing

class, he says he has a brand new outlook on the whole process:

"When I built my first few projects, finishing was no more than an afterthought. It was like ending a really good meal with a bowl of Jell-O®. Now I know that there are some very nice gourmet desserts available."

— John English



**Finishing expert Teri Masaschi, right, called on her years of experience to teach Michael's finishing class. Here, she got a hand from wood program director Susan Working.**



**The Sam Maloof Wood Barn, which houses woodworking equipment and classes, is named after a Ranch patron and instructor.**



## Working with Wood at Anderson Ranch

### Non-Western Methods to Get a Fresh Look

Susan Working, an accomplished artist and businessperson, is the new director of the woodworking program at Anderson Ranch, a critical center of learning in the woodworking world.

Working has taught at the California College of Arts and Crafts, RISD, and Laney College in Oakland. She recently exhibited with woodworker Stephen Proctor in Palo Alto, California, and her work will soon be featured in Michael Hosaluka's new book.

With her background in mixed media, it's no surprise that she envisions a certain amount of experimentation in the woodshop.

"I see more and more woodworkers mixing media in their

Susan uses mixed media in her own work, like "Stitched": mahogany, steel and gold leaf.



Photo by James Baker; inset by Mark Johnston

work — adding metal, paint, textiles and so on. There is also a lot of interest in developing and inventing sustainable materials and methods of work. For example, there seems to be a lot of interest in creative uses of recycled materials, salvaged woods and certified woods. And there is a desire for information about sources and characteristics of the new, ecologically sensitive materials we are seeing in the industry, such as sunflower board and wheatboard.

Plus, of course, there is a huge amount of interest in non-toxic, environmentally sensitive methods of finishing."

New materials aren't the only trend Working sees in the woodshop. "Along with what I think is a related interest in hand tools and pre-industrial techniques" she says, "I think America's woodworkers are now more curious about non-Western methods, techniques, tools and design philosophies.

"I believe people who are interested in woodworking are generally pretty soulful: they're looking for that hand-body-spirit connection that David Pye describes so eloquently in his essay 'The Workmanship of Risk': *Whether they use machines or hand tools makes little difference. The risk remains, and the search for a voice.*

— John English



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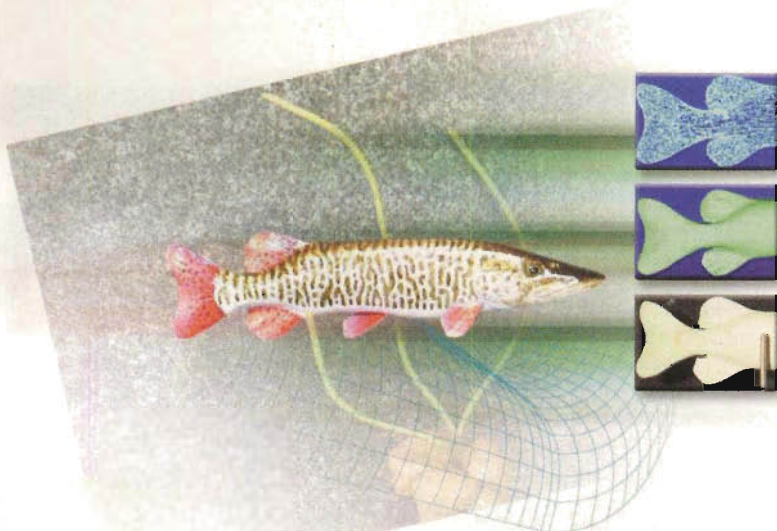
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## SHOP TALK



An MRI for your carving? Almost. Taxidermist Scott Clinton took his muskie to the local engineer for some 3-D photos that can be translated to a CNC file, so he can cut out a whole school.

## Carver's Fish Tale Comes True

*CNC router uses digital model to create 50-100 fish per day*

Scott Clinton wanted to find a way to expedite his hobby of hand-carving wooden fish. It typically takes him several days to carve each fish body, which he then painstakingly paints to give each piece its own distinct markings. He enjoys the work, but Scott decided that he had to come up with a way to expedite the process.

At a friend's suggestion, Scott brought his 11" carving of a muskie to Jordan Pepin of QC Inspection Services in Burnsville, Minnesota. Jordan had recently purchased Geomagic Studio software, used for what the company calls 3D photography: the process of automatically capturing a physical object and turning it into a digital model. Scott's project served as a test case for the software's ability to capture complex physical objects containing organic shapes.

Jordan did multiple scans of the hand-carved fish with a white-light scanner. The scans were then aligned and imported into the software, which automatically created a triangle mesh and cleaned the file to fill in any holes. Finally, Jordan used Geomagic Studio to create a surface model ready for export to a CAD/CAM program.

"It usually takes me about 15 - 20 hours to carve each individual muskie body by hand," says Scott. "If I am working quickly, I can create about one sculpture a week. With the digital model, a CNC can produce 50 - 100 fish in a day. This leaves me free to spend my time hand painting the finishing touches on each sculpture."

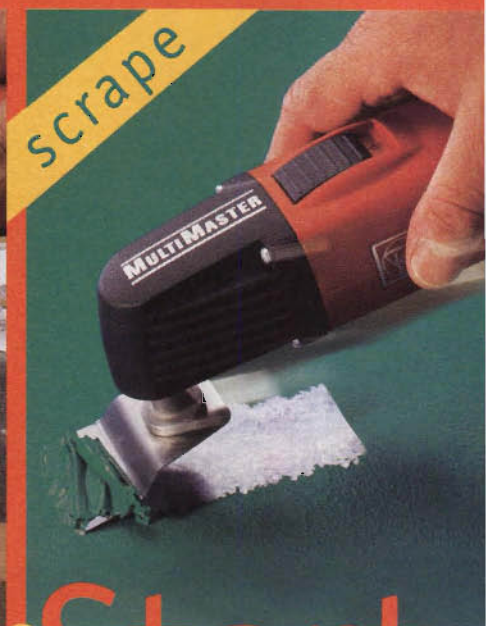
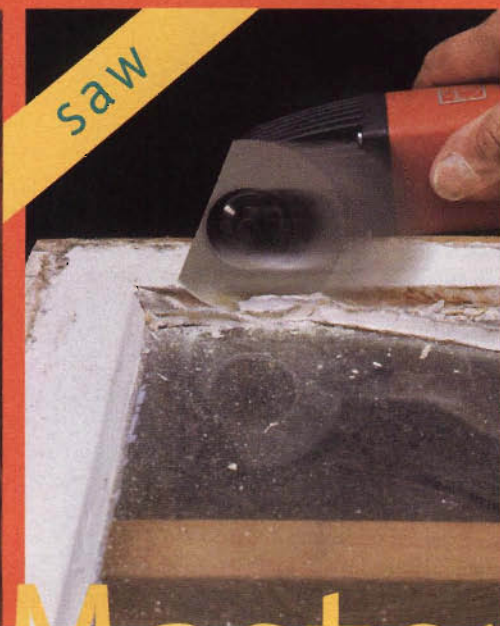
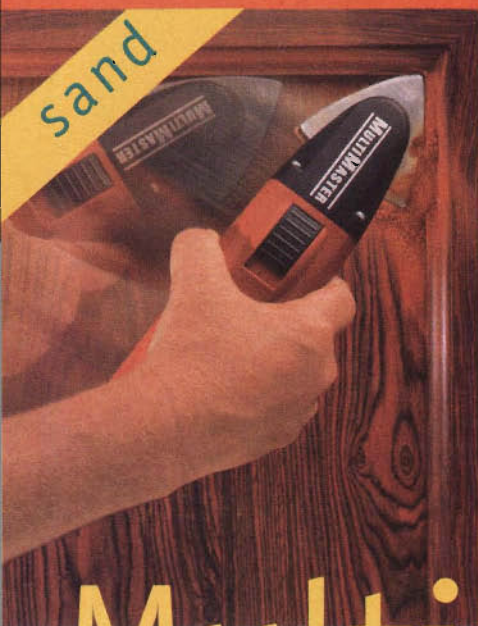
Using the digital model, Scott will be able to repair inconsistencies on the muskie body by changing a fin, moving an eye, or smoothing a lip. He can exactly reproduce one side of the sculpture and reverse it, so that the two halves are mirror images. He can also change the shape of the fish, bending it so it appears to be in motion.

The digital reproduction of the original muskie sculpture took one person four to five hours to complete. Scott is happy with the way the digital fish turned out, and excited about experimenting with new ideas. "Computer technology has opened a whole new world to artists," says Scott. "I can experiment digitally with different sizes and shapes. The artistic possibilities are endless."

— Kathleen Wheatley



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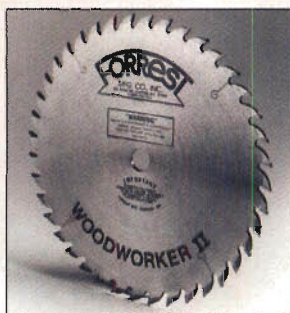
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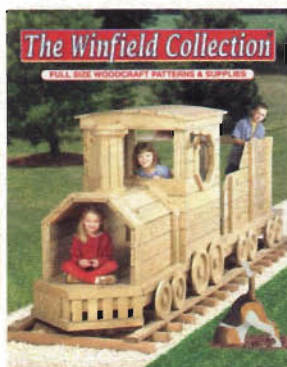


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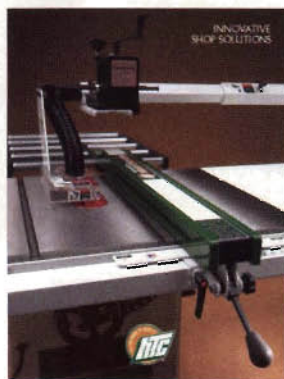
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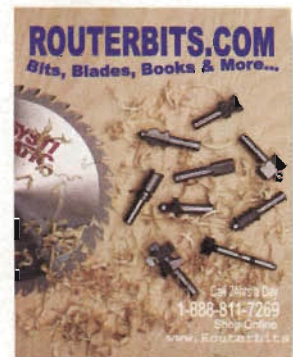
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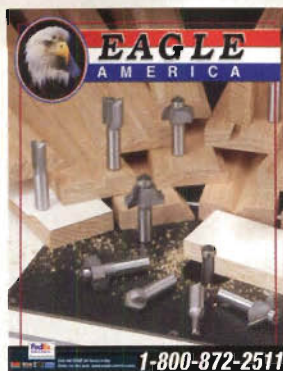
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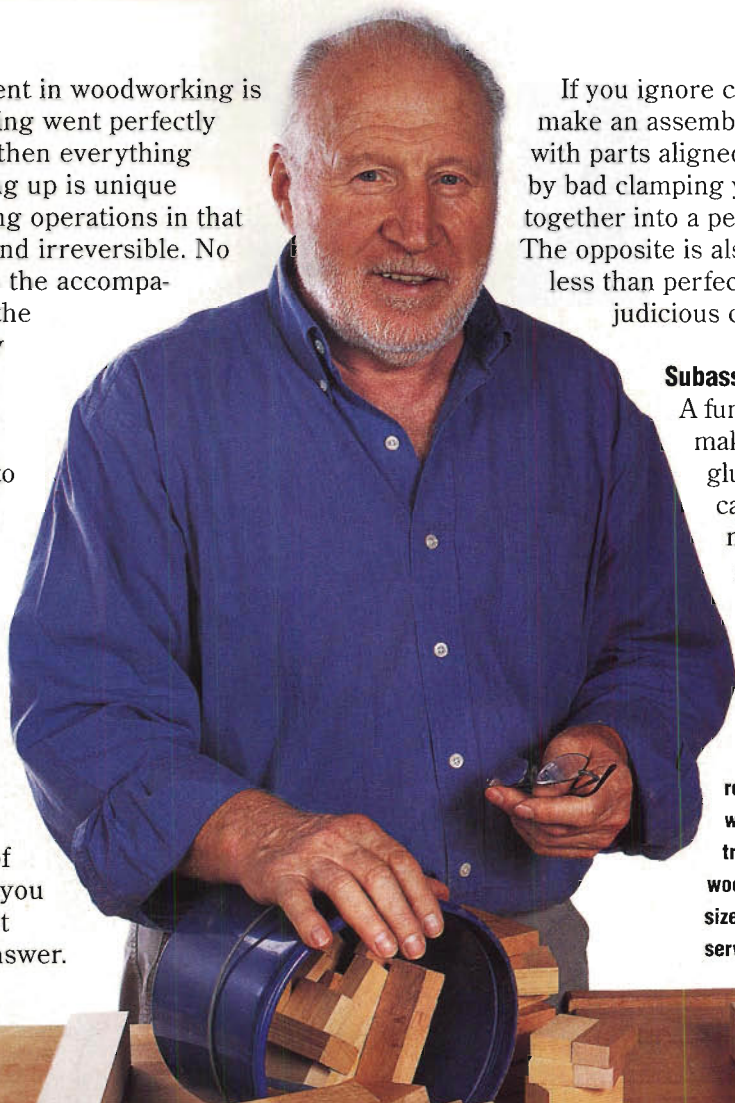


# Gluing and Clamping with Confidence

*Learn the keys to calm glueups and accurate assemblies.*

By Ian Kirby

**A** common lament in woodworking is that “everything went perfectly until glueup, then everything went wrong.” Gluing up is unique among woodworking operations in that it’s time-sensitive and irreversible. No doubt that explains the accompanying tension and the frequently unhappy results. To avoid a calamity, you must apply the same rigorous methods to gluing up that you applied to selecting and preparing the material, measuring and marking out the parts, and cutting the joints. What follows is a methodology that works regardless of the type of clamps you use. Technique, not hardware, is the answer.



If you ignore clamping technique, you could make an assembly of perfect parts and joints, with parts aligned and shoulders spot-on, then by bad clamping you could glue the assembly together into a permanent state of inaccuracy. The opposite is also true: an assembly that is less than perfect can be made acceptable by judicious clamping.

## Subassemblies and Dry Clamping

A fundamental technique of making a piece of furniture is to glue it up in small sections called “subassemblies.” The more subassemblies you can get together, the easier the

**Clamping blocks are vital to a successful mortise-and-tenon glueup. Their incidental role is to protect the workpiece; their essential role is to transmit pressure exactly where it’s needed. Save your blocks and treat them as clamping tools, not scrap wood. After you have made about four sizes, chances are that used blocks will serve well for the next job.**

## Ian’s arsenal of applicators

**M**y applicator arsenal consists of rollers, paddles, and brushes. Each type is capable of wetting the surface by rolling or rubbing. Although the nozzle of a glue bottle is a suitable dispenser, it’s a poor applicator because merely squeezing a bead of glue onto the joint surface cannot guarantee uniform coverage and a thorough wetting.



Three types of glue applicators that will cover most gluing requirements: roller, paddle, and brush.

**Roller** A roller is the best applicator for edge joints and veneering. It wets the surface quickly and effectively and controls and spreads the glue evenly. I use a short nap three-inch trim roller. After use, store roller and tray in a zip-lock freezer bag. I occasionally wash them and blow dry with an air gun nozzle.



**“Gluing up is unique among woodworking operations in that it’s time-sensitive and irreversible.**

**No doubt that explains the accompanying tension and the frequently unhappy results.”**

**— Ian Kirby**

total operation will be. At the end you glue all the subassemblies together as the “final assembly.” The absolutely essential step is that each subassembly and the final assembly are clamped together first without applying glue to the joints. This is called “dry clamping.”

Dry clamping obliges you to gather all the necessary clamps, clamping blocks, and measuring tools. It also allows you to practice and refine your assembly procedure and accuracy checks before committing to the permanence of glueup.

### Preparing the Parts Before Glueup

Generally speaking, once a subassembly is glued together it will be more difficult to get at the inside faces with a plane or sanding tool than when it’s in bits. For this reason I “clean up” and “polish” all those faces of each piece before assembly. By clean up I mean prepare the surface ready to apply polish, and by polish I mean, in most cases, shellac and wax.

Cleanup entails the removal of machine marks and machine tearout, which on a flat surface will have come from a jointer or planer. Because it’s essential to retain the flat, straight, and accurate machined

face, I clean up with a hand plane. No other tool can match it for speed, accuracy, and surface smoothness.

I use a shellac and wax finish because it’s quick and easy, and it retains or enhances the color of the wood. The big payoff is that prefinished surfaces resist glue penetration, so don’t attempt to wipe up any squeeze-out. Let it dry, then insert a sharp, wide chisel under the edge and the excess glue will easily release, leaving a clean corner or face. Of course, you must be careful to keep the finishing material off all joint faces.

### Applying the Glue

Different glueups require different glue applicators. Whichever one you use, the aim is the same: to thoroughly wet all of the contact surfaces on both parts being joined with a thin, uniform layer of glue. A common mistake is to think that glue applied to one surface will transfer to the other mating part during clampup. That’s not the case. Because of viscosity and surface tension, glue will not wet easily unless it is diligently worked into the surface.



A trim roller is ideal for edge joints. Load the roller in the tray, then spread to uniform thickness.



A paddle can be custom-shaped to apply glue effectively to hard-to-reach surfaces.

**Paddle** The great virtue of a paddle is that you can easily shape it to suit the situation. To ensure a wetted surface and uniform coverage, rub the paddle over the joint face several times. A tongue depressor makes an excellent paddle.

**Brush** A plumber’s flux brush fits into mortise joints and the tight pin spaces in dovetail joints. If the bristles are too flexible to spread glue firmly, stiffen them by cutting them shorter. The bristles can also be custom-shaped if

necessary. After use, store the brush in a jar of water and dry it on a paper towel before its next use.

Applying too much glue is the most common mistake. The right amount is gauged by minimal squeeze-out — no more than a thin bead at the joint line. This results from getting the right amount of glue in the right place. Excess glue that drips, drizzles, or oozes from the joint is a waste of money and a waste of time spent cleaning up the mess.



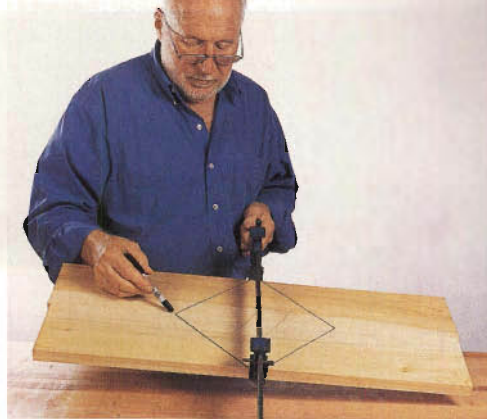
## Applying Clamping Pressure

Because there isn't a "one size fits all" explanation of how to apply pressure in the right place, I'll use examples of several joints to explain different techniques.

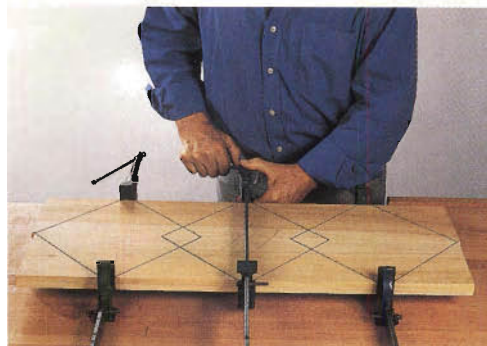
### 1. Edge-to-edge joints:

Let's start with a typical edge-to-edge joint, in this case two boards each about 6" wide and 18" long. We know from experience and measurements that if a bar clamp is placed on center across the panel, pressure from the clamp heads will fan out at about 45° from each side. In other words, there is a 90° fan that will deliver the same pressure on the glue line over the area of the fan. Understanding pressure fans enables you to determine how many clamps are required to glue up a joint between boards of any width and length. The number of clamps needed is a function of the width and length of the two boards. However, there's more to a successful glueup than spacing clamps according to pressure fans. If you put clamps all on the same side of the panel, it will curve or bow under pressure. To counter this, alternate the clamps on each side of the panel.

How much pressure to apply varies with each setup. Bar clamps generally have a 5/8" thick threaded rod going to the head. Pressure is delivered by turning a handle or lever on the end of the rod. Because pressure is controlled by two variables, muscle power and the length of the handle, I can only explain in generalities. One thing, however, should be



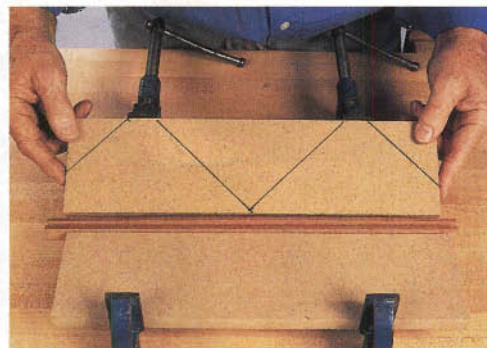
Clamping pressure fans out from the clamp heads at 45° in each direction and is transmitted to the glue line as indicated by the author.



Understanding pressure fans enables you to determine how many clamps are required to glue boards into a panel.



Too much pressure can bow a flat panel. Use a straightedge to check for flatness (inset). If it is bowed, reduce pressure and alternate clamps top and bottom.



Lippings are narrow strips of solid wood glued to the edge of plywood or MDF panels. To reduce the number of clamps needed, trap the lippings between two panels (which act as oversize clamping blocks), and take advantage of the extensive pressure fan.

obvious: tightened to maximum, that threaded rod exerts an enormous amount of pressure. If you have crunched the clamp heads into softwood boards 3/4" thick or deflected the fibers on the edge of 3/4" oak boards, then you have applied too much pressure. Apart from the obvious damage to the boards, so much glue has probably been forced from the joint that it's at risk of "glue starvation" and possible joint line failure.

Before closing the clamps on any edge-to-edge assembly, you must check that the joint line is tight and that the boards are aligned. Put one board in the vise or stand it on edge on the bench and put the second one on top. Using a straightedge, check that the two boards are aligned. Once you have glued and clamped the joint, confirm that the alignment is retained. Making a distorted panel from two flat boards is one of the commonest errors in woodworking.

### 2. Mortise-and-Tenon Joints:

Aligning the parts and closing the shoulder line of a mortise-and-tenon joint is more complex than other joints. You achieve both objectives only by directing clamp pressure at exactly the right place — accomplished by using specially prepared pieces of wood called clamping blocks. The dimensions of each block arc is critical because moving it one way or another is the key to clamping the assembly into accuracy. The clamping block must be wide enough not to



bend under load and its footprint on the mortise should equal the outside dimension of the shoulder being clamped. Assuming the joint has been accurately made, correct alignment of the clamping blocks with their corresponding shoulders will ensure that the assembly will check out accurately. There are three checks to make, and they can be explained in principle by describing how you would make them on two legs and a rail — one end of a simple table.

*Alignment of parts* — Using a straightedge, check that the faces of the legs are aligned. Achieve alignment by adjusting the clamping blocks up or down.

*Parts square to one another* — Determine that the assembly is square by checking that the diagonals are equal. First, check that the two opposite parts, the legs, are exactly equal in length. (If not, and you make the diagonals equal, you have just clamped it up out of square!) To make the assembly square, adjust the relevant clamping blocks up or down the leg.

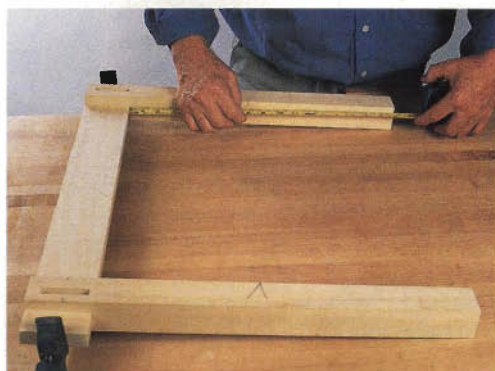
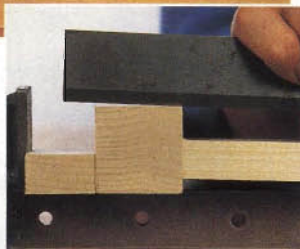
*Assembly out of twist* — Check for twist by sighting the parts one on another. A pair of winding sticks is very helpful. To correct for twist, first ease off the clamp pressure as much as you can without the clamping blocks falling out, then grab the legs and force them into the required flat geometry. Finally, retighten the clamp.

### 3. Angled Parts:

In these situations, the clamping blocks are angled to compensate for the shoulder



Confirm by straightedge that the faces of the legs are aligned. An incorrectly placed block (inset) causes misalignment.



Once you're sure the legs are aligned, confirm that they are equal in length.



Next, confirm that the diagonals are also equal.



Finally, confirm that the assembly isn't twisted. The author uses a pair of shop-made winding sticks for this process.

line angles. The key to holding them in the right place is to nail or glue a plywood pad onto the edge which faces the clamp. Where possible, I put the clamp on top of the assembly. This arrangement stabilizes the entire clamping setup, and you can best see what you're doing. The pad also protects the workpiece as the clamp heads are tightened.

### 4. Tongue-and-Groove Joints:

Manufactured sheet materials are often assembled with a tongue-and-groove corner joint. It's strong, useful, and can be made straight from a table saw. The length of the tongue need only be one-third the thickness of the material and the groove one pass over a 1/8" kerf blade. This leaves just a bit more material to the outer edge at the bottom of the groove where the joint is at its weakest.

The clamping problem is how to apply pressure only on the narrow strip of shoulder. A typical clamping block coupled with the vagaries of loose clamp heads will put pressure beyond the shoulder line and cause the sides to bow inward and the joint to open.

The answer is a clamping block with a rebate cut into it equal to the shoulder dimension. In this way, the otherwise thin block you would need is easily positioned and strengthened. It also protects the work from the clamps. The inside face must be thoroughly waxed to prevent it being glued to the workpiece. You don't need to run a rebate on a piece of wood. Instead, glue and staple



two pieces together. I used some 3/8" birch ply glued to softwood strips.

#### 5. Bare-faced Mortise-and-Tenon:

A bare-faced mortise-and-tenon is one with no shoulder on one side. You will find it described in old woodworking books, and I saw it recently used in a magazine project. If you are ever tempted to use the joint, it's essential to make clamping blocks similar to those just described for the tongue-and-groove joint. I recommend, however, that you reject the joint entirely. I've never seen a job where you couldn't get at least a 1/16" shoulder on the other side of the tenon, which makes it a "normal" mortise-and-tenon joint. Absent that small shoulder, the slightest pressure without the correct clamping blocks will twist the assembly out of alignment. It's the kind of joint that looks OK in a diagram, but in real work it's a clamping nightmare.

#### 6. Miter Joints

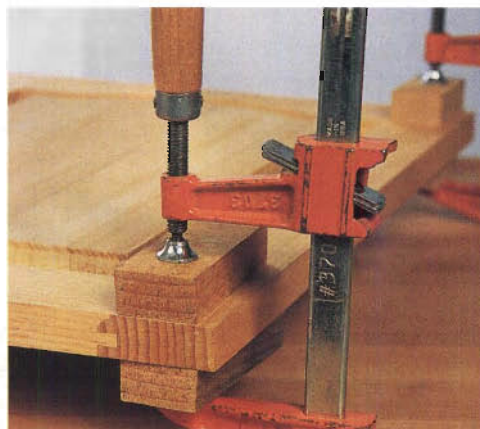
There are various types of band clamps and corner clamps designed to overcome some of the difficulties of clamping a miter joint. However, if you are making a case using mitered corners and



The clamping blocks and checking procedure for gluing up a door are the same as for a mortise-and-tenon.



Angled clamping blocks compensate for the shoulder line angle. The addition of a plywood pad helps hold the block in position and protects the workpiece.



The only way to apply pressure to the gluing surfaces of a mortise-and-tenon joint is by clamping across the joint faces.

it has to be made right, then mitered clamping blocks are the best solution. You can apply pressure across the joint exactly where and by how much you want, and it won't affect any other part of the assembly. The photo (page 33) shows a fast-acting clamp, but it could just as well be a C-clamp — it depends on the size of the job. Any softwood is OK for the blocks, which are glued in place leaving a gap for inspecting the joint line. Block dimensions are calculated by drawing lines at right angles to the base of the miter. I remove the blocks by band saw and hand plane. It's not the chore you might think — it's woodwork!

#### 7: Dovetail Joints

Gluing dovetail joints is totally different from gluing mortise-and-tenon joints. If you follow my dovetail joinery practice, the end grain of the pins falls short of the long grain of the tails. This removes the need for elaborate and fussy clamping blocks. However, that's not the reason for making dovetail joints this way — it's just a fortuitous outcome. Using a brush or paddle, apply glue, assemble the joint, and clamp each dovetail

## The right bench, rehearsal time and good clamps

It's impossible to make accurate glueups without an accurate table. A sturdy table, 36 inches high, with a flat top clad with plastic laminate, is ideal. Failing that, a piece of varnished Masonite, well-waxed to resist glue penetration, and placed over your benchtop will do just fine. Even the time of day is important. Most woodworkers like to glue up in the evening and let the

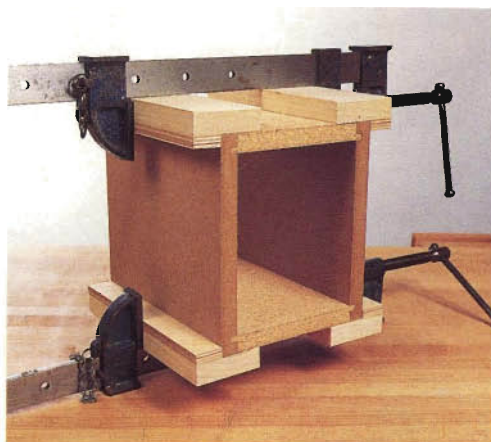
glue set overnight. To meet this goal, work often gets rushed, the clamp-up rehearsal is ignored or abbreviated, and, suddenly, all the elements for a disastrous glueup appear: fatigue, unpreparedness, and anxiety. It's far wiser to wait until morning. Your mind is fresh and the pressure to rush the job has gone.



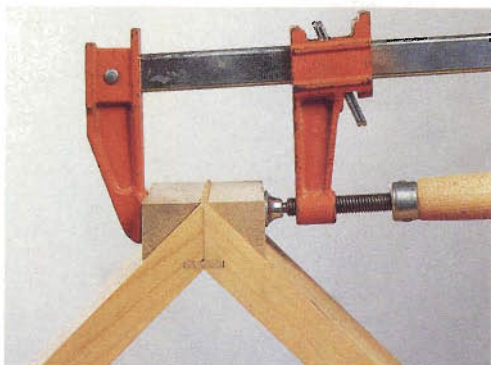
home one-by-one. They will not spring back if correctly made because of the high-friction fit between pins and tails. Don't delay assembly after applying the glue to the long grain of pins and tails because each part quickly swells, making a tight fit even tighter. And don't try to hammer the parts home, as you quite properly did during the dry clamping procedure. Clamping is the proper way, and once the joint is closed tight one tail after another, there is no further need to leave the clamps on the assembly.

### Joint Face Clamping

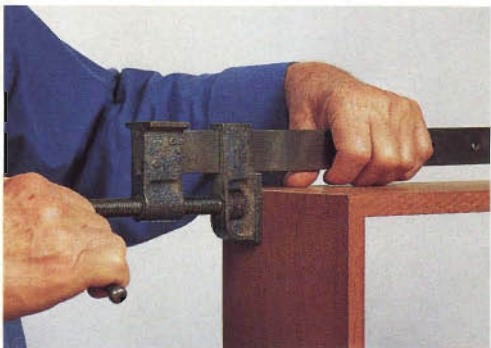
The complexity of mortise-and-tenon joinery require additional comments. Bar clamps alone will close the shoulder lines and make the geometry of the assembly accurate. They do not apply pressure, however, to the gluing surfaces of the mortise and tenon. I apply pressure by clamping two blocks, about the same size as the tenon, across the joint. If you use yellow glue and the bar clamps are in the way, remove them after 15 or so minutes and clamp the blocks in place. Be sure the shoulder line



A tongue-and-groove joint in sheet stock is best clamped using specially-made blocks in which the rebate equals the shoulder dimension.



Mitered clamping blocks allow you to apply pressure across a joint without affecting any other part of the assembly.



Clamp each dovetail home one-by-one. The high friction fit between pins and tails holds the joint together while the glue cures.

remains undisturbed. The glue in the joint is still sufficiently plastic to respond to this cross pressure. I believe that cross clamping considerably increases the strength of a mortise-and-tenon joint.

### A Second Pair of Hands

You can glue and clamp almost any edge-to-edge joint without help. However, when it comes to mortise-and-tenon joints, you are definitely short-handed. One solo try at repositioning clamping blocks to pull an assembly into alignment will convince you how important a helper can be. The job of your assistant is to take care of the sliding head end by positioning it to length, aligning the clamp parallel to the rail, and positioning the clamp block correctly.

Master these clamping techniques and you will be assured stress-free accurate assemblies time after time.

*Master woodworker Ian Kirby is a regular contributor to Woodworker's Journal. His book, The Accurate Router, is available from Linden Publishing.*

### Bar Clamps

Bar clamps are used almost exclusively throughout this article. I use Record clamps in my shop, but most woodworkers that I visit use pipe clamps. The principles demonstrated here apply equally to both types, and all references to bar clamps include pipe clamps.

A good clamp should sit firmly on the glueup table, the bars should be identical in section, and the heads should move easily into position. You can increase the bench stability of pipe clamps by making or purchasing saddles.

Some bar clamps come with plastic sheaths that fit over the heads. They are more sales pitch than practical use. Depending on what you are clamping, you will either use a specially-shaped clamping block or the unprotected heads against the workpiece. In the latter case, too much pressure will distort the edge of the workpiece — a crude though effective guide to let you know that you are cranking down too heavily.









# The Ultimate Router Table

*A triple threat addition to your shop.*

By Barry Chattell

**S**ometimes, for the projects I build, one router just isn't enough. In fact, sometimes two aren't. My solution? A two-router tabletop complete with a horizontal routing attachment. I've actually created several router tables over the years. Each served me well until I needed another feature or added a specialty set of larger router bits. Recently, I got the idea to put all the best features into one table and then share the idea with other people who love woodworking.

Made from medium density fiberboard (MDF) and hardwood, this table will saddle up two routers at once to cut your bit changes in half.

My basic table design includes a separate fence, which pivots on a bolt and tightens down with just one clamp, for each router. I've even added micro-adjusters so you can dial in the slightest changes or reset a fence exactly, without a fuss. A shop-made dust port and coupling on the fences connect to a dust collector to keep things clean. I've found bigger work surfaces to be better, so this tabletop is a generous 28 $\frac{1}{4}$ " x 48".

The routers hang directly from the table instead of on removable insert plates. Why? I prefer the continuous work surface and no plate leveling

hassles. It also helps you wrangle depth changes on plunge routers without the plates popping up. Since the routers are fixed to the table, I opted for an open base style to keep everything readily accessible.

Tenoning operations on long workpieces won't be a balancing act anymore if you outfit your table with the horizontal routing attachment I describe in this article.

## **Making the Tabletop**

Get this project under way by cutting the table (piece 1) to size and rounding off the corners with 2" radii. Go ahead and cut the supports and stringers (pieces 2, 3 and 4) while you are at the table saw.

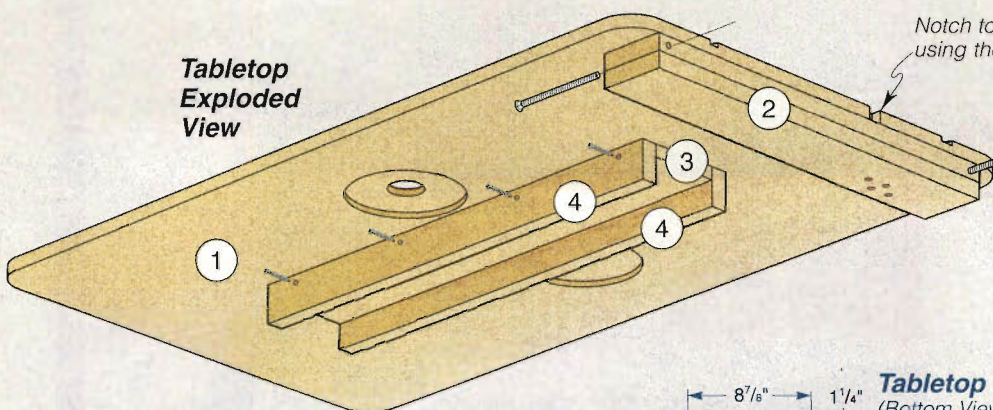
Find and mark centerpoints for the router recesses using the *Elevation Drawing* on page 36. Drill a 1/8" hole through the table at both centerpoints to mark these spots.

Use a handheld router and a flush trim bit with a 1" cutting length to mill both router recesses. To do this, first make a template that matches your router base shape on a piece of 1" MDF. Trace the base, cut out the shape with a jigsaw and sand the opening until the router base fits snugly in the template.

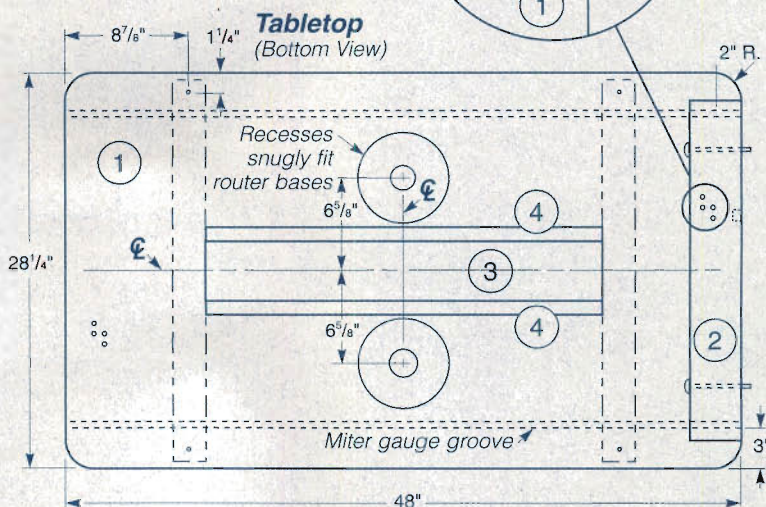
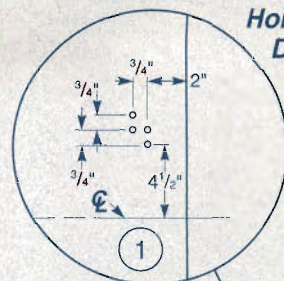
## **Valuable features:**

- Dual router mounts
- Always level top
- Horizontal routing
- Dust collection
- Micro adjusters
- Power strip
- Open access base
- Horizontal raised panel routing





### Fence Attachment Hole Layout Detail

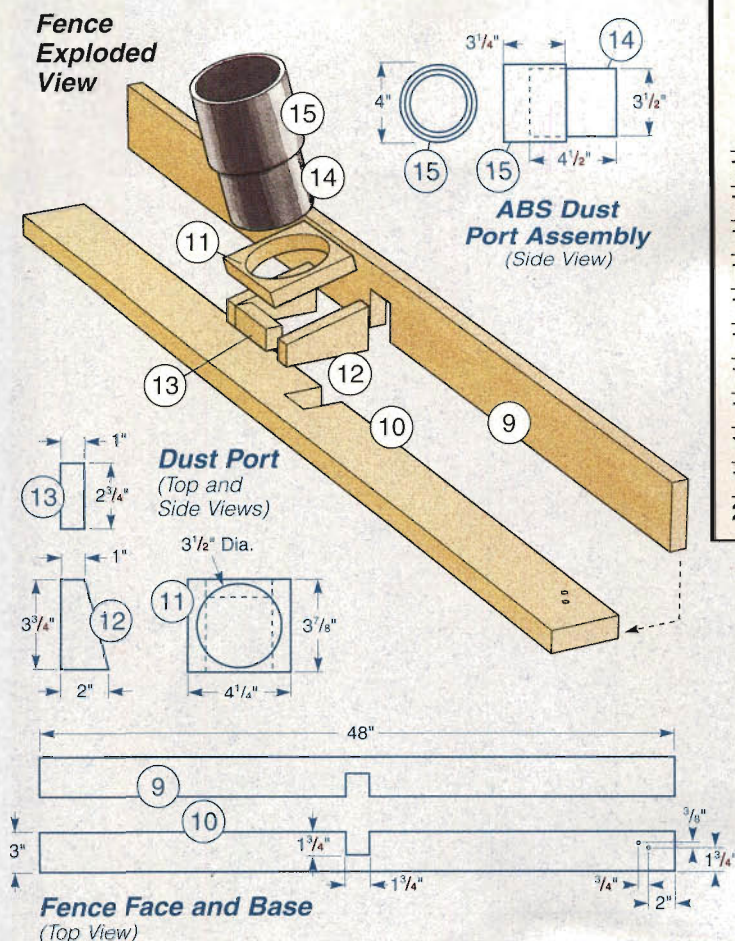


\* One required. \*\* Two required.



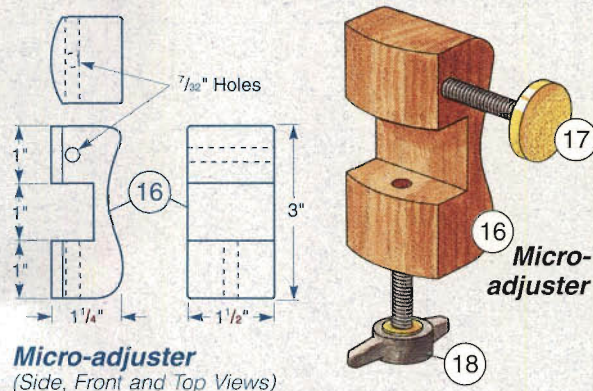






## MATERIAL LIST TABLE ATTACHMENTS

	T x W x L
9 Fence Faces (2)	3/4" x 3" x 48"
10 Fence Bases (2)	1" x 3" x 48"
11 Dust Port Tops (2)	3/4" x 4" x 4 1/4"
12 Dust Port Sides (4)	3/4" x 2" x 3 11/16"
13 Dust Port Ends (2)	3/4" x 1" x 2 3/4"
14 ABS Pipe Dust Port Insert (2)	3 1/2" OD x 4 1/2"
15 ABS Pipe Coupling (2)	4" OD x 3 1/4"
16 Micro-adjusters (2)	1 1/2" x 1 1/4" x 3"
17 Knurled Adjuster Bolts (2)	1/4"-20 x 2 1/2"
18 T-knob Bolts (2)	1/4"-20 x 1 1/2"
19 Horizontal Routing Attachment	1" x 18 1/4" x 27 3/8"
20 Ratchet Handles (2)	3/8" - 16 (female style)



Build two fences so you'll have the flexibility of creating two different router setups at once.

Cut all the parts for both fences now (pieces 9 through 13). Be sure to cut the 1 3/4" bit clearance slots in the fence faces and bases. I found it easier to make the dust port top pieces by first cutting the 3 1/2" dia. holes in larger stock, then sawing pieces 11 to their final size. Follow the fence *Elevation Drawing* to locate and drill the 5/16" lateral adjustment bolt holes.

Glue and clamp the faces and bases together, then build the dust ports by gluing pieces 11 through 13 in place. Center the dust ports around the bit clearance slots.

If you'll be connecting these fences to a 4" dust collector hose, make a coupling for each dust port from black ABS pipe. To do this, solvent weld pieces 14 and 15 together. The smaller pipes

will friction fit into the fence dust port holes, and the larger coupling should slide snugly inside the hose.

### Making the Fence Micro-adjusters

The fences mount to the table with a carriage bolt, washer and wing nut installed in the lateral adjustment holes. The opposite fence ends must be secured with a clamp. Since my fences can pivot on the carriage bolts, I've created

micro-adjusters (pieces 16, 17 and 18) that allow you to shift the fences ever so slightly in relation to the bit. The photo on this page demonstrates how the micro-adjustment feature works. Essentially, a short T-knob bolt tightens the micro-adjuster to the table, and a top knurled bolt is then turned in or out to scootch the fence in either direction. Regardless of how you turn the knurled bolt, you'll need to slightly loosen the hand clamp that secures the fence in place to realign the fence with the micro-adjuster.

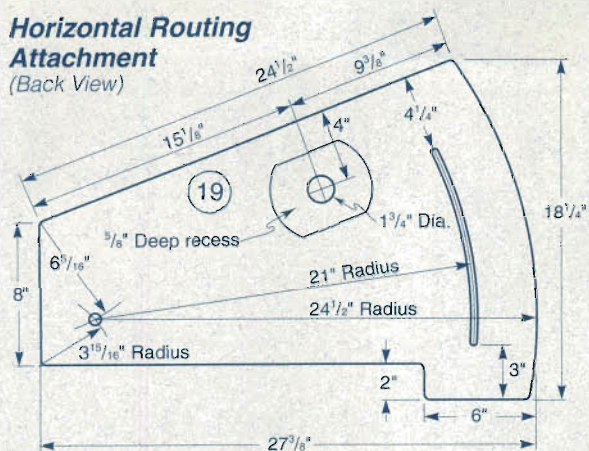
I made the micro-adjuster bodies from hardwood stock — laminating three strips of 1/2" thick material in opposite grain directions. Rip and crosscut pieces 16 to size. Step to your band saw to cut a notch in the wider faces of the micro-adjusters (to fit around the table edge). Use the *Drawings* above as guides for locating and drilling the two 7/32"



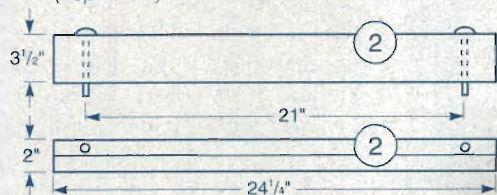
Turning the knurled bolt in or out on these micro-adjusters makes it easy to move the fence in fractions of an inch or to locate an exact fence position again if needed.



### Horizontal Routing Attachment (Back View)

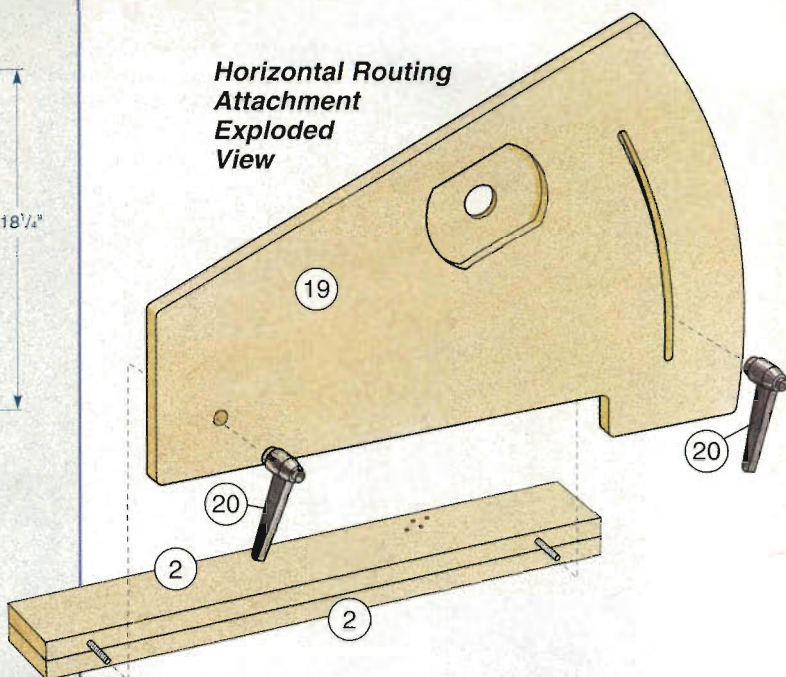


### End Supports (Top View)



The end supports (pieces 2) are glued and screwed to the tabletop as shown in the Elevations Drawings on page 36.

### Horizontal Routing Attachment Exploded View



on long parts. It is so much easier to mill horizontally without having to stand pieces on end to make the tenons. I also

sunk holes in the recess to mount your router, and bore a bit clearance hole. Drill the 3/8" dia. pivot hole next. You'll need a trammel or circle-cutting jig to rout its curved slot with a 3/8" dia. straight bit. Install the attachment on carriage bolts, using the ratchet handles.

through holes for the adjustment bolts. These drawings also illustrate how I shaped my micro-adjusters on the drum sander to make them more comfortable to grasp and move around.

Thread the bolts into their holes so that the shorter T-bolt clamps the micro-adjuster in place, while the longer, knurled one dials into the fence.

prefer to make my raised panels using this attachment.

Follow the *Drawing* above carefully to lay out and cut the router mounting board. Use the same routing method you used earlier to make a router recess in this piece. Lay out and drill counter-

Notice in the inset photo at left how you can also use the micro-adjuster for tweaking the router bit height vertically.

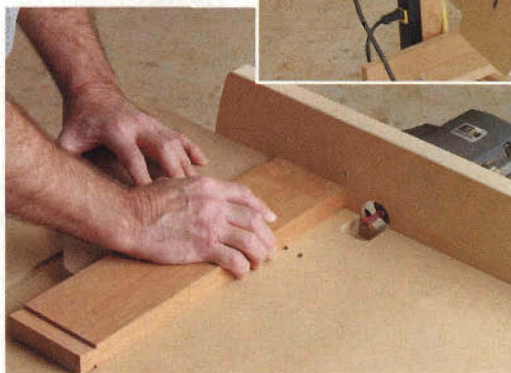
As a final convenience, and to help accommodate the fact that there is more than one router mounted to the table, I affixed a power strip to the table's leg.

I've built quite a few router tables in my day ... and I must confess that it is unlikely that this will be my last. At this moment, I can't think of one more feature to add. But

trust me, I'm sure one will come to me very soon.

### Horizontal Routing Attachment

If imitation is the purest form of flattery, I hope Patrick Spielman will be tickled by my adaptation of his horizontal routing attachment (piece 19). I found it in his book, *Router Jigs & Techniques*. In a nutshell, this handy accessory holds the router perpendicular to the table. It pivots up and down and locks in place with a couple of ratcheting handles (pieces 20). I use mine all of the time to cut mortises and especially tenons



This horizontal routing attachment holds the router perpendicular to the table. Cutting tenons on long workpieces is a breeze when they're lying flat.



Barry Chattell is a woodworker in paradise. He makes his home on an island off the coast of British Columbia. The horizontal routing jig used in his table can be found in *Router Jigs & Techniques* by Patrick Spielman, ©1988. Reprinted with permission of the publisher, Sterling Publishing Co., Inc.



# Taboret

By Mike McGlynn

**T**his little Arts & Crafts taboret is an adaptation of an original Stickley piece. It's a great introduction to building Arts & Crafts furniture and is easily completed in just a couple of weekends.

I made my table from quartersawn red oak, but a more traditional choice would be quartersawn white oak. It requires small amounts of 4/4, 6/4, and 8/4 material. I selected stock with a nice, but not too wide, decorative flake pattern.

## The Milling Routine

My first step is to lay out and rough cut my pieces. I go through the same routine for milling with every project. First, crosscut (leave pieces 1" long); second, joint, rip, and plane (leaving pieces 1/4" oversized in width and height and 1" in length); and third, leave the milled pieces in the shop for a week. Only then do I mill to final dimension. This routine saves me the headache of watching pieces change shape when they are milled to final dimensions immediately.

The top (piece 1) is made of two or three pieces of 3/4" stock. I try to pick pieces that have very complementary grain — possibly out of the same board. I trim these pieces so I only have about 1/4" to remove after glueup. This means I don't have to worry about clamp dents. I put three biscuit joints per joint and glue up with Titebond® 2 or epoxy. (Regular Titebond, I've found, ends up looking like a dark line after I apply the waterbased aniline dye.)



# Table / Plant Stand

*Fine woodworking doesn't have to take forever. Here's a simple project that will make heads turn.*

After the glueup, I trim the top to size, sand, rout the edges with a 1/4" roundover and set it aside.

The crossed feet (pieces 2) come next. See the *Elevation Drawings* on page 42. The arched underside is best formed with a combination of band sawing and template routing. I first make a 1/4" thick arch template that I can use to both mark and template rout the arch's shape. Using this template, I mark the arch and then step to the band saw to cut to about 1/16" outside the line. After sawing, I double-stick tape the template to the foot and template rout it to its final shape.

The lap joint where the feet cross is deceptively simple looking. The keys to this joint are accurate layout and to creep up slowly on the final fit. As can be seen in the *Drawings*, each foot is dadoed halfway through. I like to do this with a series of passes on the table saw, with the very tip of the teeth reaching the halfway layout mark. This leaves me with a corrugated dado bottom that is easily pared to a final, flush fit. When you are done, form the angles on the ends of the feet.

Next comes the hardest part — the aprons (pieces 3). They're hard because they not only tilt inward, but are tapered vertically and meet the legs in a miter. Because of their inward lean the mitered edges are not 45° but instead are just strong. I start machining these pieces by cutting the top and bottom edges

## Three Steps to Stable Stock

1. **Crosscut all the pieces 1" oversized.**
2. **Joint, rip and plane them 1/2" oversized.**
3. **Store the prepared pieces for one week in your shop.**



square and to size. Next, I lay out and cut the square decorative mortises. It's much easier to lay these out and cut them now than after the panels are tapered. I start the mortises by drilling out most of the waste with a Forstner bit and then cleaning up with a sharp chisel, as shown in the photo at left.

Tapering the aprons requires the use of two fairly simple jigs (see the *sidebar* on the next page), one for each edge. The only trick to remember here is that the jigs must be perfectly complementary or the aprons will end up asymmetrical.

The last step on the aprons is to cut the spline and glue relief grooves.

The final parts to make are the legs (pieces 4), which have a slight 5° miter cut on each end and stopped spline grooves to accommodate the aprons.

Prior to dry assembling the table, I cut some white oak splines (pieces 5) to fit nice and tight into the grooves I just machined.

## The Dry Assembly Routine

As with milling, dry assembly is a critical step that I use a time-tested process on. For this project, it involves assembling the legs and aprons with the splines and a couple of band clamps, assembling the feet and screwing them together from the bottom side of the lap joint, marking the *landing points* of the legs onto the feet, drilling holes and pilot holes and screwing them together from underneath.

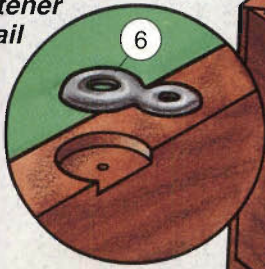


## MATERIAL LIST

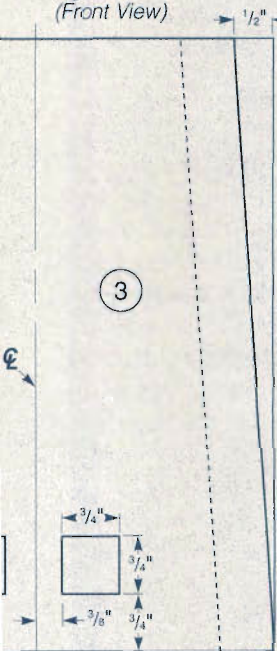
	T x W x L
1 Top (1)	3/4" x 14" x 14"
2 Feet (2)	1 7/8" x 1 7/8" x 16 5/8"
3 Aprons* (4)	3/4" x 8" x 6 1/4"
4 Legs (4)	1 3/8" x 1 3/8" x 15 3/8"
5 Splines (8)	1/8" x 7/16" x 6"
6 Tabletop Fasteners (4)	Steel

\* Length is 1/16" oversized for machining.

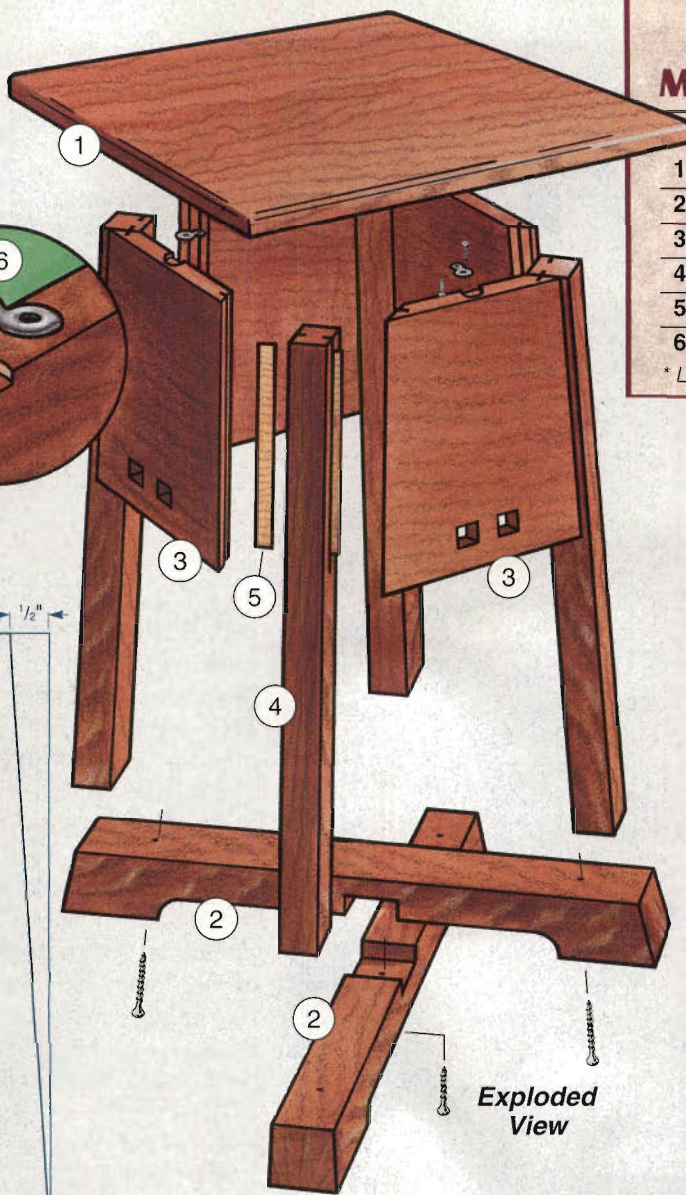
### Fastener Detail



### Apron (Front View)

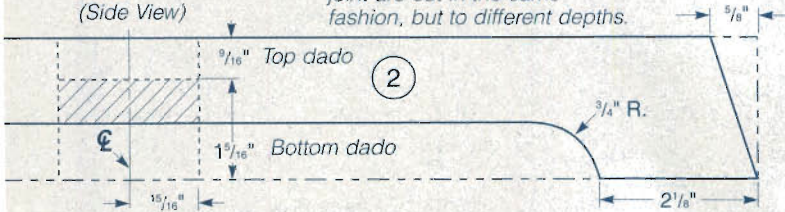


### Exploded View

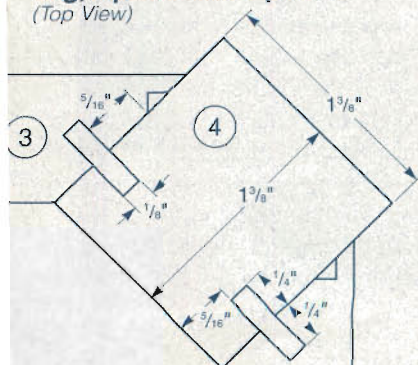


NOTE: The dados for the lap joint are cut in the same fashion, but to different depths.

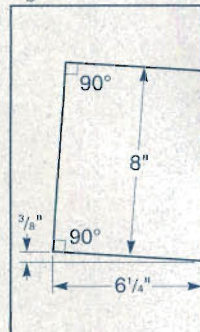
### Feet (Side View)



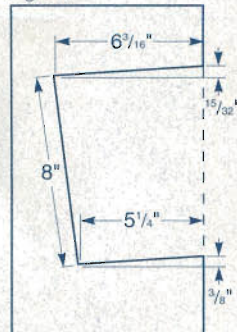
### Leg, Aprons and Splines (Top View)



### Jig #1



### Jig #2



### Apron Cutting Jigs (Top View)

## Cutting the Apron Angles

Because of their trapezoidal shape and mitered edges, the aprons are the hardest pieces to mill on this table. A couple of easy to use jigs help simplify the process. Make them out of 3/4" plywood (see *Drawings*, below left). Be sure you mark the inside and outside of the aprons before cutting their edges.



Tilt your blade 45° away from the rip fence and use Jig #1 to cut the right side of each apron first.

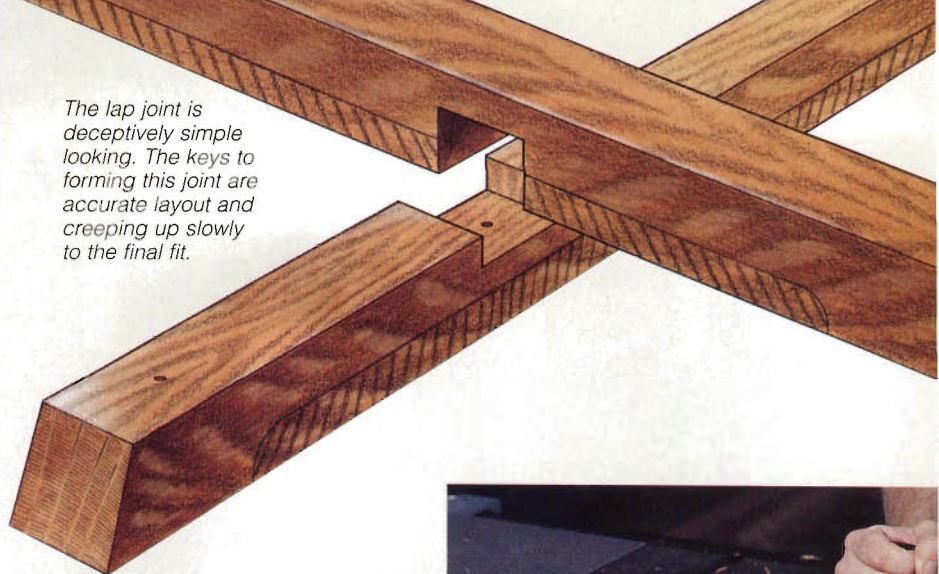


Keep your blade and rip fence in position and switch to Jig #2 to cut the left side of each apron. The scab piece on top keeps the newly mitered edge from riding up during the cut.



**"I stain all the parts with water-based aniline dye. Remember to keep your head out of the line of fire. You don't want a big bead of sweat landing on your just dyed piece."**

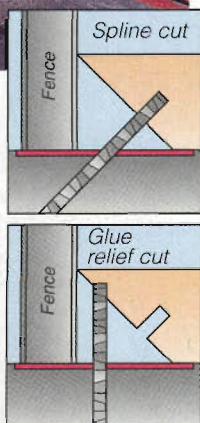
*The lap joint is deceptively simple looking. The keys to forming this joint are accurate layout and creeping up slowly to the final fit.*



At this point, I take a small Forstner bit and drill a pocket on top of each apron for the tabletop fasteners (pieces 6). I screw the fasteners in place and attach the top with them. If everything fits well, I disassemble all the pieces to prepare for finishing.



After the aprons are cut to size, remove the jigs and reset the blade to make the 1/4" deep cuts for the spines, as shown at right. Next, straighten the blade and reset it to nick the apron between the spline groove and outside edge: a relief groove to catch glue squeeze-out.



## Finishing

My first finishing step is to raise all the grain with a damp rag and sand everything smooth with 120 grit paper. I take care not to sand so

much that my lap joint gets loose. With everything sanded and the edges broken, I stain all the parts with water-based aniline dye. If it's warm in your shop, remember to keep your head out of the line of fire. You don't want a big bead of sweat landing on your just dyed piece.

When my parts have dried, I burnish them lightly with a fine Scotchbrite™ pad to take off any minute fuzz. I assemble the pieces while wearing rubber gloves to prevent any sweat on my hands from marking the stained surfaces. The assembly follows exactly the same process as the dry assembly except I glue the aprons and splines and use soft rags to pad the band clamps so they don't scar the finish. I also leave the top off for the time being.

My usual finish is three sprayed coats of catalyzed lacquer, but most any finish will do as long as it isn't waterbased, which would cause the stain to smear.

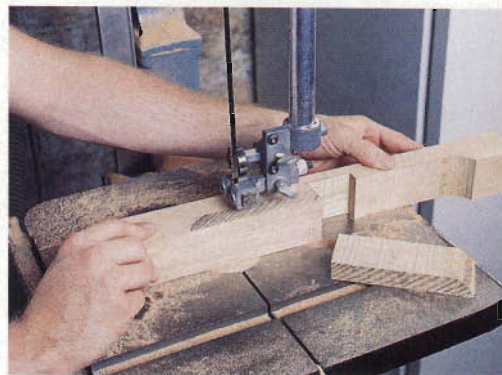
The final step is to attach the top with four screws through the tabletop fasteners. The table is now complete.

This is a great project for someone looking to advance their skills, but does not take weeks and weeks to build. In addition, it is a handsome table that will be a beautiful addition to almost any decor.

*Contributing editor Mike McGlynn builds furniture for a living in Minneapolis, Minnesota.*



The lap joint dadoes on the feet are cut first. Clearly mark your stock, and remember to reset the blade height for the second foot.



Once the dadoes are cut, move to the band saw to remove the waste at the bottom of each foot. Then template rout the final shape.



With a stop block in place to create a 7" spline groove, cut the right side of each leg, then reset the fence to cut the opposite sides.



# Arts & Crafts Picture Frame





While this frame appears simple, it contains sophisticated elements of the Arts & Crafts Movement. Splayed sides, typical of Charles Limbert, emphasize the vertical orientation of the prints. The graceful bottom arch, reminiscent of Harvey Ellis, lightens the bottom rail and contributes to the delicacy of the frame, while the overhanging top rail echoes Japanese and more typical Arts & Crafts influences.



By Sandra Newman and Joseph Ebler

**T**he craft of framemaking has a long and rich history comparable to that of furnituremaking. In recent times, however, the use of pre-cut and pre-finished moldings has reduced most picture framing to little more than gluing and underpinning ready-made molding lengths to size. We believe the joy of framemaking comes from designing and carrying through your own individual creation.

#### **Balance in Frame Design**

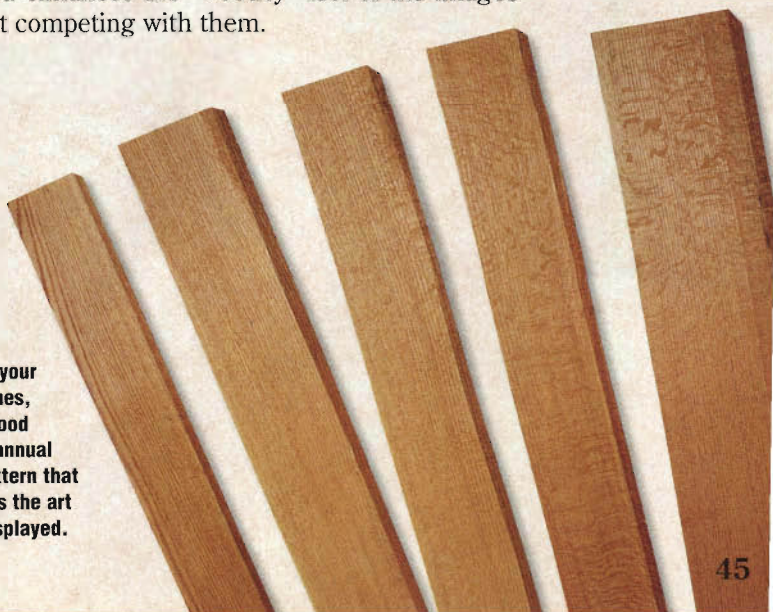
Ideally, a frame design should complement both the art's subject matter and style, with the relationship between the framing components — artwork, mat and frame — established through rules of proportion. It is also important to relate the width of the frame to the overall size of the print, making sure that the frame appears sturdy enough to support the perceived visual weight of the artwork. Keep in mind that a print containing large shapes often calls for a wider frame than a print of the same size containing very small details.

#### **Grain Selection**

Arts & Crafts period furniture was left unpainted both to display the methods of construction and to reveal the beauty of the wood. The wood of choice was quartersawn white oak. Although the designation of quartersawn is usually thought of as specific, the variations within that classification actually are quite wide. When considering a frame design, we are confronted with the enjoyable decision as to which one of the grain patterns to use. They range from rift (which is very straight grain with a combed effect), through small flakes and tiger stripes, to wood which looks like lightning strikes.

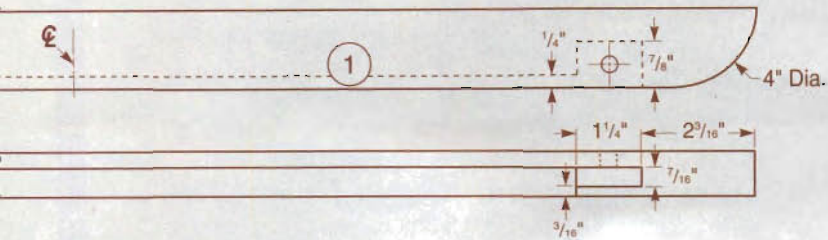
Considering both subject and style of the artwork helps when choosing material. In our frame, the moderately heavy grain selected enhances the “woody” feel of the images without competing with them.

When building your own frames, select wood with an annual grain pattern that enhances the art being displayed.



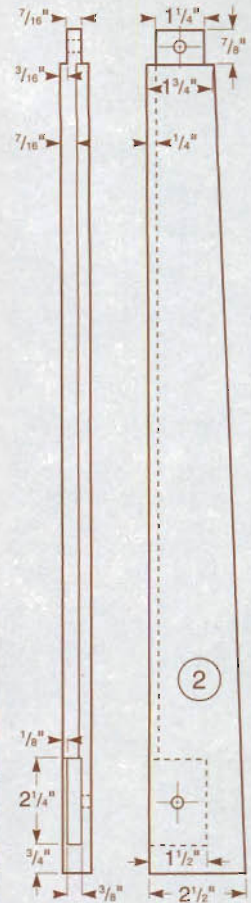


### Top Rail (Front and Bottom Views)

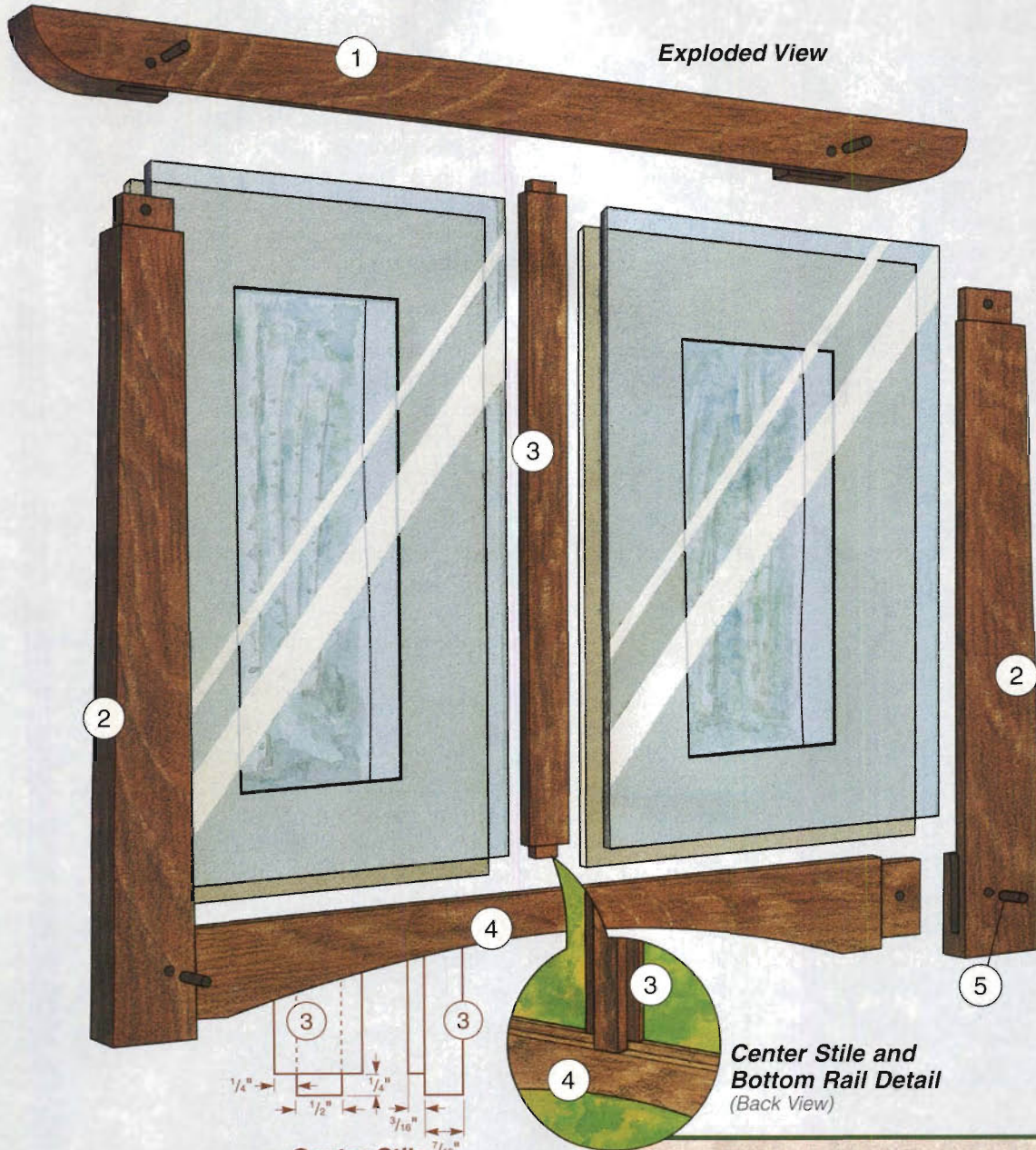


*TIP: Machine all the mortises, tenons and rabbets before you cut the curves and tapers into the frame members.*

### Side Stile (Side and Front Views)

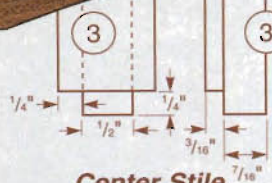


### Exploded View

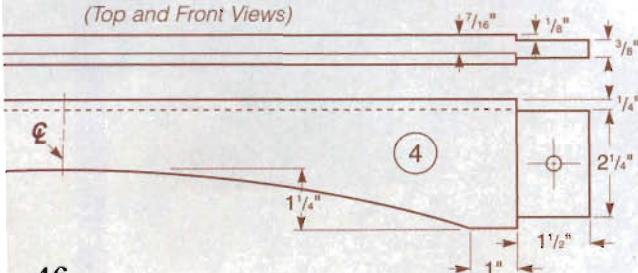


**Hanging Hardware:**  
1- or 2-hole "D" hangers are preferable to screw eyes, because they allow the frame to hang straight on the wall. Install the hangers a third of the way down from the top edge of frame. Use braided picture wire of the sufficient strength to support the frame and its art.

### Center Stile (Front and Side Views)



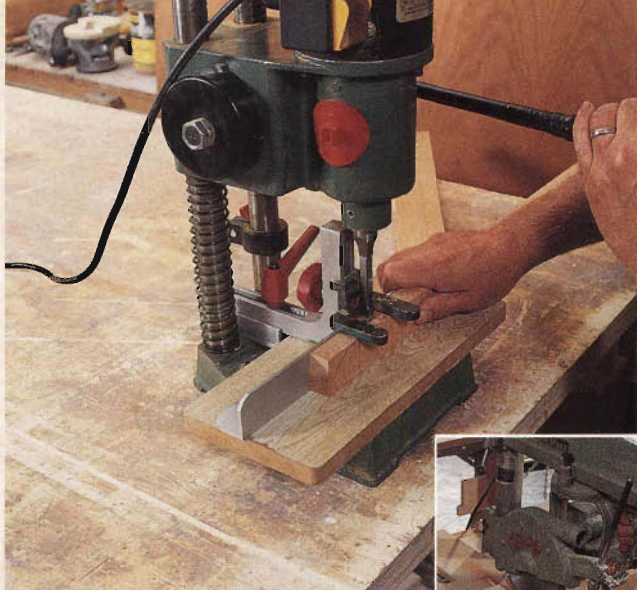
### Bottom Rail (Top and Front Views)



## MATERIAL LIST

	T x W x L
1 Top Rail (1)	7/8" x 1 1/2" x 26 1/8"
2 Side Stiles (2)	3/4" x 2 1/2" x 21 7/8"
3 Center Stile (1)	5/8" x 1" x 18 1/4"
4 Bottom Rail (1)	5/8" x 2 3/4" x 21 3/4"
5 Pins (4)	3/8" Dia. x 3/4"





Chop mortises into the appropriate frame members first and then make tenons to match. Later they will be pinned to create simple and long-lasting joints. Mortise and tenon joints must fit perfectly to be attractive.



Once an appropriate grain is selected, you must balance the wood grain placement in the frame. This means the sides should somewhat mirror each other, and the top and bottom pieces should be of similar grain pattern.

While the finished frame is quite elegant, the joinery is very basic. The primary joint used is the pinned blind mortise and tenon joint, which adds to the project's simplicity. But in its simplicity lies complexity — there is “no room to hide.” Simple joints must fit together exceptionally well.

### Tenons and Mortises

Machine all the tenons and mortises while the stock is sticked up and take special note of the thickness dimensions. Cut the frame pieces to length and width as shown in the Material List. Next form the mortises in the top rail and sides (pieces 1 and 2). A mortising machine makes short work of this task, but any method, from traditional to modern, will work. Use the *Elevation Drawings* at left for all of the construction details. Now that you have the mortises prepared, move on to making the tenons. As shown above, we use a radial arm saw outfitted with a dado head to reveal the tenons, including those on the center stile and bottom rail (pieces 3 and 4). In our shop, we've found that it is more effective to match the tenons to the mortises rather than make the mortises match the tenons. Test fit your joints as you go: they should be snug, but not too tight. Now step over to your router table and, with a straight

bit chucked into your router, set up to shape the rabbets into the inside edges of the frame pieces. As you can see by the *Elevation Drawings*, these rabbets are stopped within the length of all of the frame members except the center stile. With this step you create left and right versions of the side stiles, so take a moment to plan for that.

### Tapers, Curves and Rounded Corners

With those tasks completed, you are ready to cut the tapers, gentle curves and rounded corners which announce the Arts & Crafts influence of this picture frame. Grab your side stiles and mark out the taper cut on each piece. To achieve this cut, we prefer to use a simple taper jig on the table saw. But again, method takes a second place to accuracy, and you could easily cut the tapers on the band saw or by hand if you choose to do so.

And speaking of the band saw, use it to shape the curve and corners on the bottom and top rails. Mark a 4" radius on each of the top rail's corners. Cut them on the band saw and sand the saw marks smooth later. The curve or arc that details the bottom edge of the bottom rail is also simple to mark. Measure up 1 1/4" from its bottom edge at the center point and then flex a thin strip of hardboard or a metal ruler from two corner marks (shown on the *Elevation Drawings*) to the indicated center point. Trace the curve onto the rail (ask a friend to help you), and you are ready to band saw. Sand the sawn edge smooth. In fact, now is a good time to sand the various pieces up to 180 grit. It is also the proper time to test fit all the pieces and be sure the whole assembly fits together well.

The authors recommend a well applied coat of Minwax® dark walnut stain. Stain color is subjective, however, and personal preferences may vary.

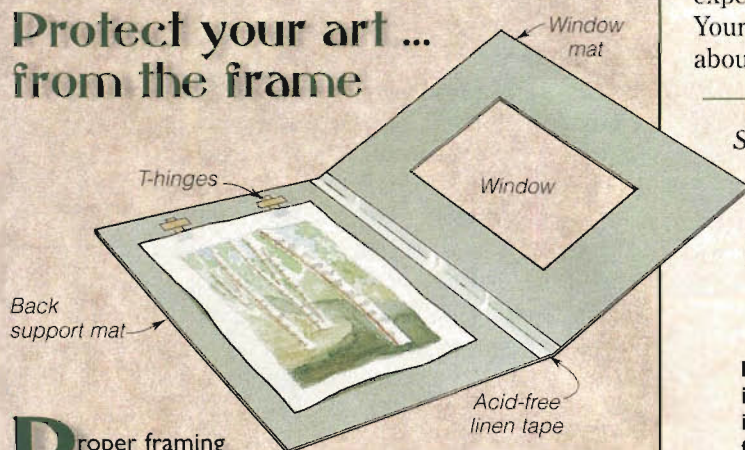






Alone or in concert with other Arts & Craft furniture, the authors' double picture frame adds elegance to the art, the room and the owner's life.

## Protect your art ... from the frame



**P**roper framing preserves your artwork and prevents future problems. An archival frame package consists of a backboard or support for the art (which must be properly hinged or mounted), a window mat, glazing and a dust cover. As a wood frame ages it becomes acidic, which is damaging to artwork. We recommend aluminum-faced frame sealing tape to isolate the art from the frame's rabbet.

**Glazing:** Select glass or Plexiglas™ that has been coated to filter out the UV rays. Clean glazing with an anti-static brush prior to assembling the frame package.

**Hinging:** Japanese rice paper attached with wheat or rice starch is our choice. **Matting:** Use only pH neutral mat board. Attach the window mat to the back support with archival linen tape along their longest side. **Dust cover:** Acid-free paper must cover the entire back of the frame, affixed to the outer edges with double-side tape (ATG 924). Finally, keep the frame away from the wall with small "bumpers" (cork, plastic or felt buttons) placed in the bottom corners.

## Putting it All Together

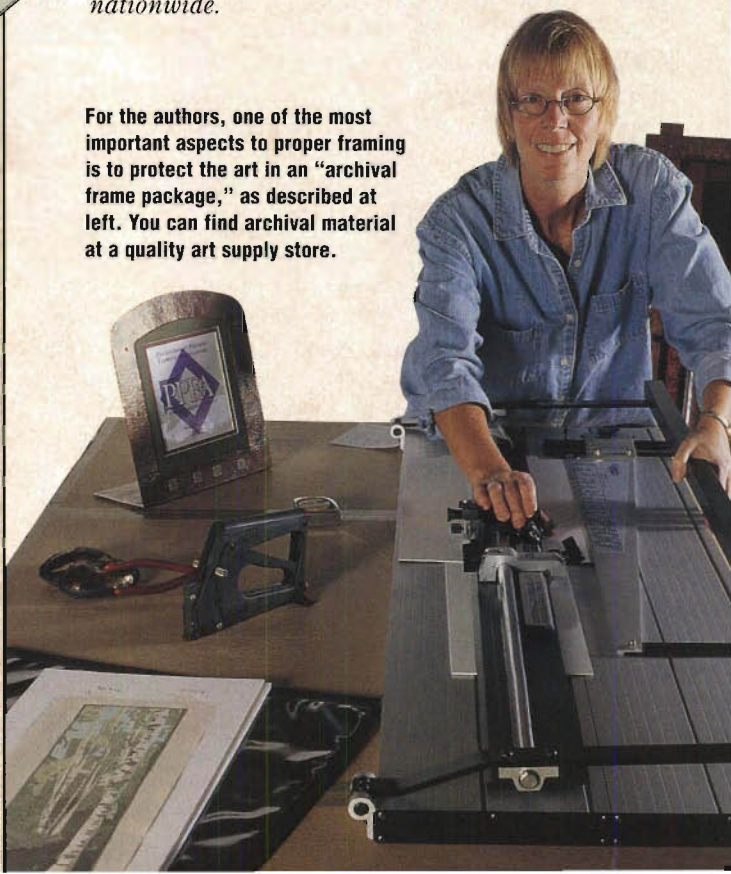
With the frame dry assembled and clamped together, mark the locations of the joint pins (pieces 5). Step over to your drill press and bore holes deep enough to go all the way through the tenons you will be pinning. Cut your pins so they will be just a bit proud of the frame members and prepare for final assembly.

Glue, clamp and pin the frame together, making sure that the assembly is square and flat in your clamps. Secure the center stile with a bit of glue and one tiny brad at each end. Pre-drill for the brads ... it would be a catastrophe to split your wood at this point. Once the glue is cured, sand the pins flush and give the entire frame a final finish sanding. Stain the frame to complement the art you are framing and complete the job with low luster polyurethane.

Next, you need to mat and mount your art (see the sidebar below left) and hang the frame on the wall. (There are several options for frame hangers available.) Once it's up, you will get to experience the bittersweet reality of a quality picture frame maker. Without a doubt, your guests will comment and compliment the art which you are displaying ... but you'll know that they are also experiencing the pleasure of a well made picture frame. Your work may not be the star of the show, but talk about an award winning supporting cast!

*Sandra Newman and Joseph Ebler of Fine Lines Framemakers have been designing and building period style frames since 1993. Their frames are recognized by Arts and Crafts enthusiasts nationwide.*

For the authors, one of the most important aspects to proper framing is to protect the art in an "archival frame package," as described at left. You can find archival material at a quality art supply store.





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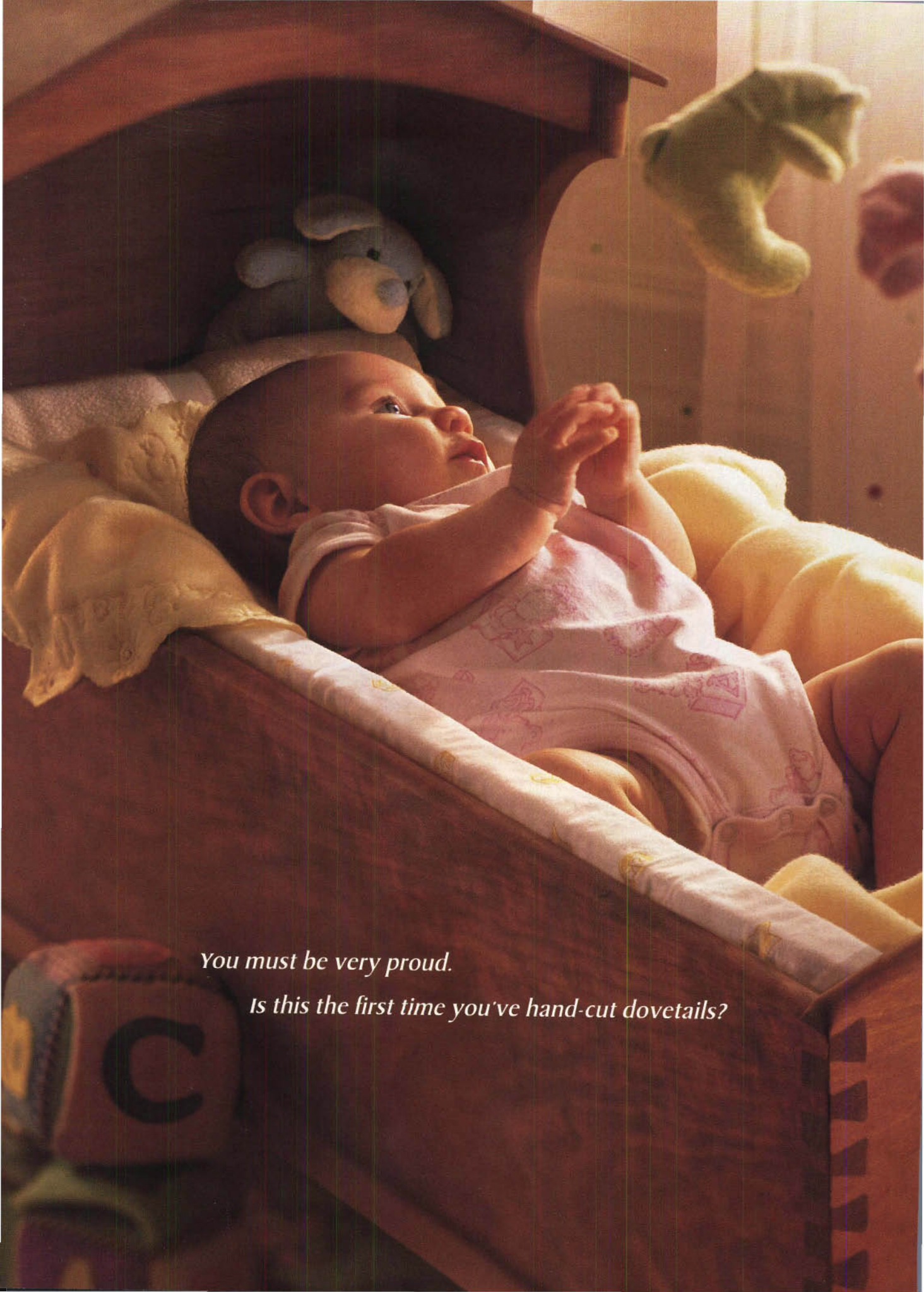
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## Drill Press Showdown

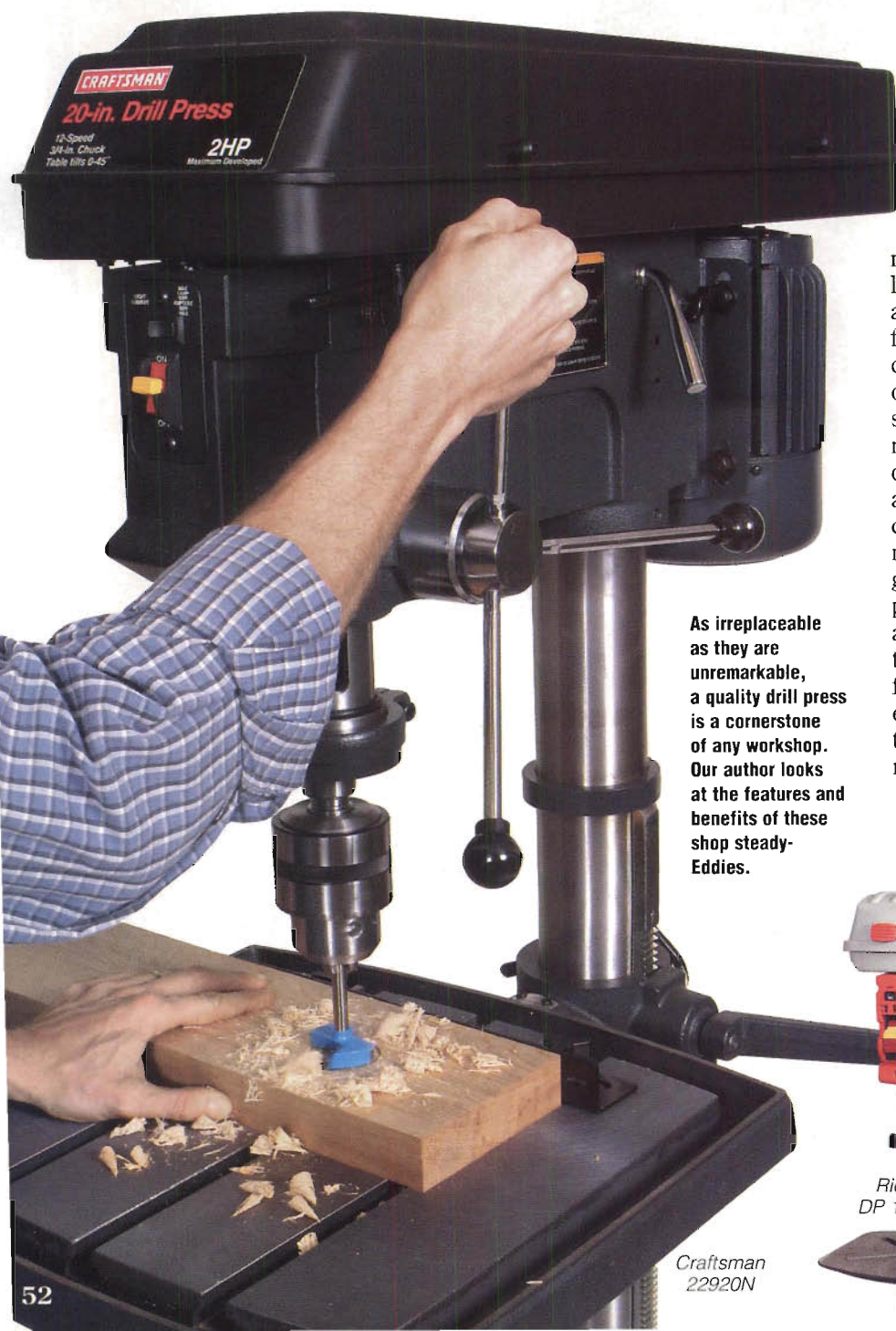
By Chris Marshall

Let's face it: a drill press isn't the coolest machine in the shop. It's got about as many bells and whistles as a utility pickup with an AM radio. But the unassuming, largely unchanging drill press still earns its keep day after day in our shops by drilling, mortising and drum sanding.

The mechanics of moving a spinning chuck up and down are so stone simple that what a drill press lacks in razzmatazz it makes up for in years of reliability. Sooner or later you're going to want one, and likely as not, you'll never need to replace it.

Among dozens of different models, I've tested eight mid- to large-size drill presses that represent a good cross section of capacity, features and price. Now that the chips are cleared, I'll admit that any of these machines will drill smooth, straight holes. Each will take a mortising attachment or sanding drum to expand its versatility. For average woodworking tasks, you can't really lose, regardless of which machine you buy. Still, this test group confirmed for me that drill presses aren't carbon copies of one another. A helpful feature here or there can really tip the scales in favor of one machine over another, especially when the playing field is so technologically flat. Here's how they measured up for me.

As irreplaceable as they are unremarkable, a quality drill press is a cornerstone of any workshop. Our author looks at the features and benefits of these shop steady-Eddies.



Craftsman  
22920N



Ridgid  
DP 1550



JET  
JDP-17MF



## Ridgid DP 1550

### Ridgid DP 1550

About a year ago, Ridgid announced this Emerson-made, 1550 model drill press, to be a replacement for its older model 1500. While the speed range and motor capacity remain the same, this new kid comes with several improvements and added features for about the same price tag. Among the changes, Ridgid swapped the original open-vented motor with a 1/2 HP totally enclosed fan cooled motor (TEFC). Its cast-iron table is now a flat woodworker's style with a clamping flange around the edge instead of the former machinist's table with T-slots. Southpaws will appreciate that the 1550 is also ambidextrous: you can switch the feed handle from the usual right-hand position to the left. No other drill press offers this option.

Power is now delivered to the chuck through a poly-V belt and pulley system rather than the conventional pulley style of other drill presses. Ridgid says the new drive system transfers power more efficiently because the belts make more contact with the pulleys.

When I challenged the machine to drill some 2" Forstner bit holes, the motor began to thump and vibrate under load. Ridgid determined my



### Ridgid DP 1550

Street price: \$300
Motor: 1/2 HP TEFC
Speed range: (12) 250 - 3,100 rpm
Chuck size: 5/8"
Chuck to column sweep: 7 1/4"
Quill stroke: 3 3/4"
Phone: 800-474-3443
www.ridgidwoodworking.com



The Ridgid drill press is outfitted with a collar-style depth stop. Rotating the collar clockwise and tightening the threaded key locks the chuck down. Rolling the collar counterclockwise sets up stopped drilling tasks.

machine to be defective and promptly sent me another identical machine to test. The replacement exhibited no similar vibration troubles. It bored smooth holes, and runout measured a respectable .005" at the chuck. While it drove

my 1" Forstner bit without a hiccup, the 1/2 HP motor did meet its match when making 2" dia. holes — I could stop the chuck with a firm pull on the feed lever.

This machine is nicely appointed with Sof-Touch™ knobs and handles rather than hard plastic, a work light, chuck key storage and a column-mounted bit tray. The base is among the best of all these machines with four flares that provide a broad stance. Ridgid sells a mortising attachment to fit the 1550, and the motor should have plenty of oomph to cut mortises the full 3 3/4" quill depth.

With a gutsier motor, the 1550 could be a bargain lover's dream. As is, you're buying a full plate of features and enough power for medium-duty use. It's also covered by Ridgid's lifetime warranty against material defects and workmanship.

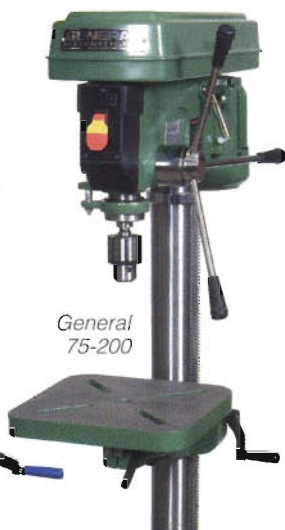
### JET JDP-17MF

JET's JDP-17MF has been around for about four decades with origins in the company's metalworking line. It has a 16 1/2" swing, so you can drill to the center of a workpiece that wide. While some

*Tool Review continues on page 54...*



Delta  
70-200



General  
75-200



Bridgewood  
BW-1758F



Woodtek  
816-805



Grizzly  
G7947



## JET JDP-17MF



The JET comes with a wonderfully simple depth stop feature. Two knurled nuts located above the stop block on the threaded rod limit quill travel for stopped drilling. A third nut holds the quill down for drum sanding.

### JET JDP-17MF

Street price: \$399
Motor: 3/4 HP TEFC
Speed range: (16) 200 - 3,630 rpm
Chuck size: 5/8"
Chuck to column sweep: 8 1/4"
Quill stroke: 4 3/8"
Phone: 800-974-6848
www.jettools.com

drill presses offer more swing (two are featured here), this JET offers a pleasing combination of features and performance that seems well paired for average to heavier duty woodworking.

For starters, the machine comes with a 3/4 HP TEFC motor that didn't lug or jitter drilling large Forstner bit holes. Power transfers to the chuck through three nicely machined aluminum pulley clusters and the typical V belts. I liked the jamb-nut style depth stop on this unit much better than the collar varieties common to many drill presses here. Setting up stopped holes is as easy as spinning down a couple of nuts on a threaded indicator rod to the desired stop depth. Underneath the stop block there's a third nut

for locking the quill in an extended position: just what you'll need to do for drum sanding.

When it came to static testing, the spindle and chuck revolved in almost a perfect axis — only .001" of runout. A check with a machinist's square revealed the table to be square to the chuck in all directions. Some of the other tables required tweaking to square them up, but not this JET.

Other nice bells and whistles include a 13 3/4" dia. woodworker's style table with slots for attaching jigs or fences, smooth rack and pinion gears for making table height adjustments and a work light. The light could use a protective cover, however, where the bulb protrudes below the motor housing. (Incidentally, several other models with lights have the same issue.)

You'll get 4 3/8" of reach from the quill, which is an ample stroke to drill or mortise through any reasonably sized table leg or bedpost. Around \$399 is what it takes to add one of these presses to your shop, and I think it's an excellent value. If you buy before March 31, 2003, you'll even get a \$50 certificate toward accessories, which will just about pay for a JET mortising attachment.

All the units in this test (except for the Ridgid) come with a metal drift key that fits in a slot in the quill column. A rap on the drift key with a hammer knocks the spindle and chuck loose for maintenance.

## Delta 70-200

If you drill about the same number of holes in metal as wood, this whopper of a drill press from Delta may be the right crossover machine for you. Its price tag will put a good dent in your wallet, but the machine offers loads of capacity and power.

On the consumer level, a 20" sweep is about as big as it gets, and it allows the 70-200 to drill 10" in from the edge of a workpiece. Its 1 HP TEFC motor has plenty of muscle to get the job done. When I ran a 2" Forstner bit into some tough Southern yellow pine, there

*Tool Review continues on page 56 ...*

### Delta 70-200

Street price: \$750
Motor: 1 HP TEFC
Speed range: (9) 150 - 2,200 rpm
Chuck size: 5/8"
Chuck to column sweep: 10"
Quill stroke: 4 3/8"
Phone: 800-321-9443
www.deltawoodworking.com

## Delta 70-200





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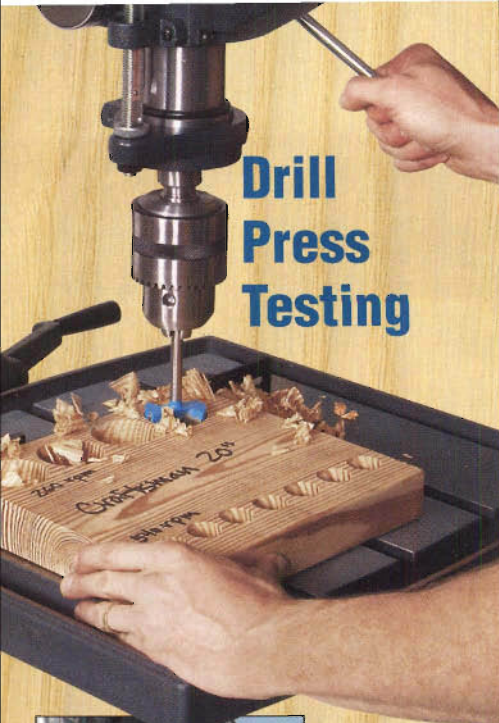
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## Drill Press Testing



Price and features aside, the real measure of a drill press is how accurately and easily it drills holes, right? To test the first standard, I measured how smoothly the chucks spun by using a dial indicator set

against an aircraft-grade twist bit clamped in the chuck. Dial indicators measure deflection in thousandths of an inch. Rotating the chuck slowly by hand (at the pulleys) revealed quite a range between machines, from virtually no runout upwards to .010". In his book *Mastering Woodworking Machines*, Mark Duginske, a noted tool maker, engineer and expert woodworker, considers .010" to be the upper limit of wobble for a chuck spinning in a true orbit, so I held that to be my standard, as well. For a dynamic test, I chucked 1" and 2" diameter carbide-tipped Forstner bits into each drill press and bored a series of 3/4" deep holes. The test lumber was dense, Southern yellow pine 2 x 10 — I had no intention of making this easy. A piece of the same board was used for testing each machine. The 2" holes were drilled at 250 - 310 rpm ranges, depending on the model, while the 1" holes were bored at higher 500 - 610 rpm settings.

was no loss of power regardless of how hard I pulled on the feed lever. This machine is geared to offer nine different speeds, from knuckle-dragging 150 rpm — perfect for spinning large wood bits — up to 2,200 rpm for smaller holes in metal and wood.

This big Delta comes with a massive iron work table measuring 18 3/4" wide by 16 3/4" deep — several inches larger than the tables of mid-sized drill presses. The table is cast with T-slots for attaching fences or metalworking vises. Despite the

table's heft, raising and lowering it was no problem, thanks to rack and pinion gears.

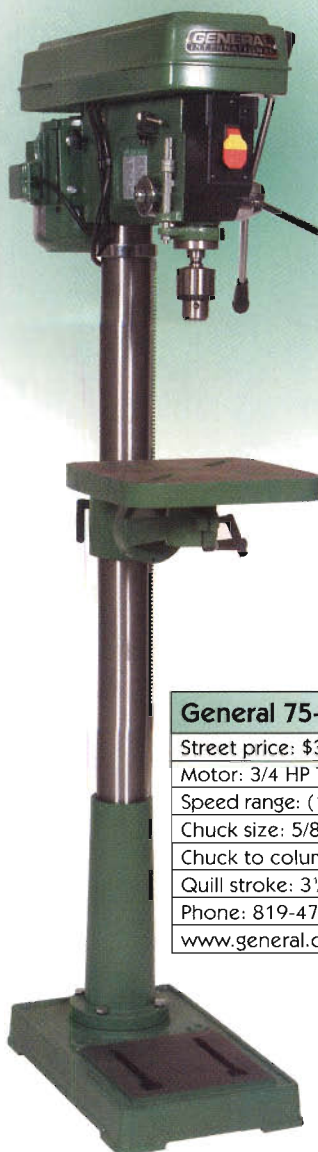
Runout was well within the acceptable range, registering .004" at the chuck, and the table was dead-on square.

Controls for this machine are straightforward, with a collar depth stop and a large push-button on/off switch. The Delta could use a work light. You don't realize how nice task lighting is until it's missing. The feed levers on this machine are longer than others, and the extra reach felt a little awkward when rotating through the full 4 3/4" quill stroke.

One drawback (for some) will be that this Clydesdale-sized drill press weighs more than 300 pounds. All drill presses are top-

heavy to start with, so moving around the big ones can be a little unwieldy. Plan to park this machine in one place and leave it there. But once it's in position, the 75-200 will certainly drill away without complaint for years.

## General 75-200



**Changing belts on the pulley sheaves switches drilling speeds. It's a standard operation for all drill presses, including the General. Loosening two T-knobs and pivoting a lever allows you to slide the motor toward the motor head and create belt slack.**

### General 75-200

Hailing from Canada, General's 75-200 is the mid-sized

sedan of the company's drill press fleet. With a 17" sweep, 3/4 HP TEFC motor and a competitive sticker price, this model deserves a second or third look when you're shopping for your next drill press.

Three-quarter horsepower seems to provide the right

### General 75-200

Street price: \$349
Motor: 3/4 HP TEFC
Speed range: (12) 340 - 2,800 rpm
Chuck size: 5/8"
Chuck to column sweep: 8 1/2"
Quill stroke: 3 1/4"
Phone: 819-472-1161
www.general.ca

*Tool Review continues on page 58 ...*



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amount of gusto for average wood drilling and mortising tasks. The General bored both 1" and 2" Forstner bit holes without complaint. It uses the same belt-changing apparatus as the rest of these machines, save for one aspect. Usually the center pulley pivots on a post to compensate for the various belt arrangements. This machine has the middle pulley mounted on a sliding bar instead, and the bar is held in place with two bolts. Belt changes require loosening the bolts. I prefer the pivot-post style, which makes belt

swaps a tool-free operation.

Otherwise, the General offers a solid core of good features, including a silky smooth rack and pinion table raising mechanism, a woodworker's style table with through slots, 12 speed options, on-board chuck key storage and a work light. This model also has a jamb-nut depth stop with two hex nuts. It could use a third nut

below the stop block for holding the quill down to drum sand. I like the large, paddle style on/off switch that stops the action quickly if need be with a bump from hand or forearm. Bolt on a mortiser, and this model will cut mortises up to 3 1/4" deep.

My dial indicator revealed just .002" of runout at the chuck. Except for some rough edges around the lightbulb opening, the overall fit and finish of this machine testifies to careful workmanship. At around \$350, the 75-200 is a good buy. It would be a bigger steal if its shorter quill travel matched the comparably sized JET and Grizzly presses reviewed here.

## Bridgewood BW-1758F

Bridgewood's BW-1758F is priced a tad below other mid-sized drill presses, but it isn't skimpy on features. This model comes with a 3/4 HP induction motor, cleanly machined aluminum pulley clusters and a 13 1/4" dia. flat table with through slots. Like most other drill

presses, this one has a collar depth stop, rack and pinion gears for winding the table up and down and a work light.

Drill presses convert easily into mortisers with an accessory attachment. With it, creating square holes and mortises is a simple task.



### Bridgewood BW-1758F

Street price: \$329
Motor: 3/4 HP TEFC
Speed range: (12) 250 - 3,000 rpm
Chuck size: 5/8"
Chuck to column sweep: 8 1/4"
Quill stroke: 3 5/16"
Phone: 800-235-2100
www.WilkeMachinery.com

## Increase Your Reach

Looking for more reach? One option is to invest in a radial-style drill press. Grizzly's offers up to 17" of swing by sliding the head forward on its rack and pinion column. The head tilts up to 45° for boring angled holes, and you can pivot the entire assembly on its vertical post for more contorted drilling.



I was impressed when this machine pulled just .001" of runout at the chuck. Even at its slowest speed, the Bridgewood bored 2" Forstner bit holes without fuss and did a fine job with 1" holes, too. In all, you'll get 12 speed options and enough sweep to reach to the center of an 16 1/2" workpiece. At full throw, the quill drops 3 5/16", enough for boring most holes or chiseling mortises.

Now for a few shortcomings. Unlike the rest of the drill presses shown here, the BW-1758F lacks a TEFC-style motor. This simply means that the open motor housing should get an occasional blast of compressed air to keep the armature and bearings clean. The on/off switch is located on the side of the motor head instead of in front, where it would be easier to reach. The push buttons themselves are quite small as well, so shutting down the machine requires a bit of groping unless you look for the switch. My test unit's light switch didn't keep the light on when I pushed it, for some reason.

Switch issues aside, this Bridgewood is a solid machine that drills quietly and accurately at a fair price.

*Tool Review continues on page 60 ...*





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be positioned anywhere along the fence rail, plus thoughtful details like a reset button and power indicator light.

So to review, the JET 10" SuperSaw has better specs, more features, and a warranty that's twice as long. Oh, and did we mention it costs less? Visit your JET distributor for more details.



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## Woodtek 816-805

### Woodtek 816-805

I found Woodtek's 16½" drill press to be a bit of a mixed blessing. It suffers in the finish and features categories but still delivers on performance and price.

First, here's the scoop on the machine's positive qualities. It comes with a rugged, 3/4 HP TEFC motor that provided ample power for my test drilling. Rack and pinion gears make it simple to position the table at any height. The table is a standard machinist's style with T-slots. You'll get 12 speed options, which seem more than enough for woodworking, 8½" of working room from chuck to column and 3¼" of depth for drilling or mortising. There's a collar depth stop for boring non-through holes. A "remove-to-lock" toggle switch powers things up,

### Woodtek 816-805

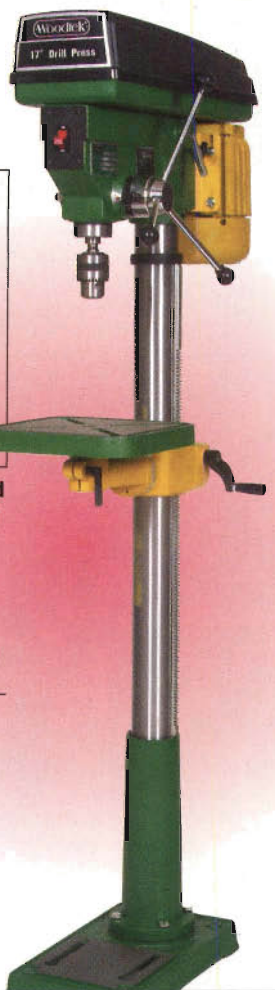
Street price: \$379
Motor: 3/4 HP TEFC
Speed range: (12) 340-2,800 rpm
Chuck size: 5/8"
Chuck to column sweep: 8½"
Quill stroke: 3¼"
Phone: 800-645-9292
www.woodworker.com

and even though it's smaller than other on/off switches, you'll find it right in front where it should be. At the time of this writing, the machine also includes a mortising attachment, making it the only drill press in this lineup that comes ready for mortising right out of the carton.

In the mix of its strengths, however, the Woodtek unit I tested had a few troubling characteristics. For one, it pulled the highest runout at the chuck: .010". For ordinary woodworking, however,



**Totally enclosed fan cooled (TEFC) motors are found on most drill presses. A fan draws air through the motor housing for cooling. The Woodtek motor is also finned on the sides to help dissipate heat.**



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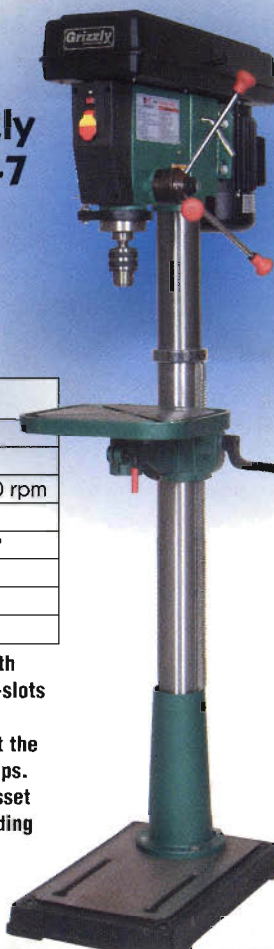
## Grizzly G7947

this amount of wobble won't be noticeable. A different chuck may have smoothed things out more. The Woodtek also comes with a plastic top cover over the pulleys, which fit poorly on the metal bottom housing, and there's no work light. The belt circumferences seem undersized for shifting to extreme high and low speeds. It took a pry bar to persuade the belts on and off the pulleys. Finally, the base on this machine is smaller than other bases, so the tool feels a little more unstable. Be sure to fasten the base to the floor or to a piece of plywood just to be safe.

### Grizzly G7947

Street price: \$375
Motor: 1 HP TEFC
Speed range: (12) 210 - 3,300 rpm
Chuck size: 5/8"
Chuck to column sweep: 8 1/4"
Quill stroke: 4 3/4"
Phone: 800-523-4777
www.grizzly.com

The Grizzly drill press comes with a machinist's style table with T-slots for mounting attachments. One downside to these tables is that the recesses tend to fill up with chips. The oversized base is a great asset to this well priced machine, adding a little measure of stability.



### Grizzly G7947

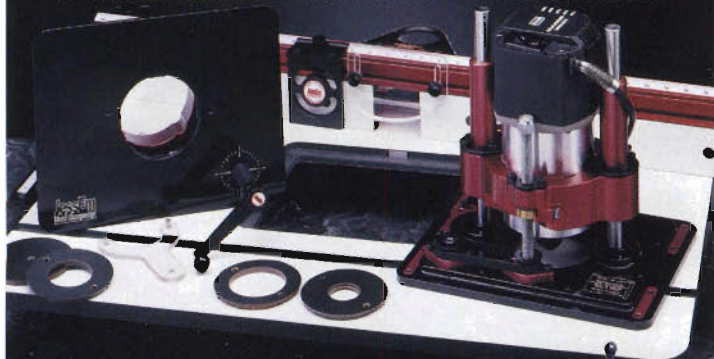
When stepping up to this 17" sweep Grizzly, its size and stature just might make you want to look for the claws. The folks at Grizzly have outfitted it with numerous oversized parts that should help it perform a lifetime of heavy-duty service at a remarkably fair price.

Starting at the power plant, the G7947 delivers 1/4 more HP than competitive models. It drove my test bits without lumbering or growling. The cast pulley clusters step the power into 12 speeds, and they're easy to change. Sliding the motor forward provides ample belt slack.

The quill sleeve on this machine is larger than even the 20" models, and it offers a full 4 3/4"

*Tool Review continues on page 62 ...*

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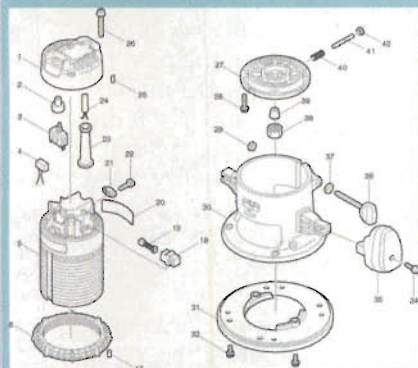
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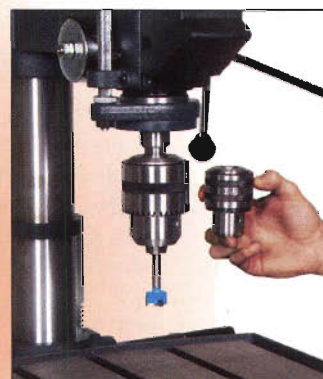
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## TOOL REVIEW

### Craftsman 22920N



Most drill presses come with a standard 5/8" capacity chuck (shown at right in photo above). The Craftsman packs a truly colossal chuck, capable of grabbing bits with 3/4" shanks. It's shown here hanging onto a 1" Forstner bit.

#### Craftsman 22920N

Street price: \$650
Motor: 2 HP TEFC
Speed range: (12) 150 - 4,200 rpm
Chuck size: 3/4"
Chuck to column sweep: 10 1/4"
Quill stroke: 4 3/4"
Phone: 800-932-3188
<a href="http://www.sears.com/craftsman">www.sears.com/craftsman</a>

on/off switch and a jamb-nut depth stop. I liked the oversized base, which should keep this machine upright even though it's several inches taller than the others. The vertical column is as large as the 20" models

to support all the weight up top.

I couldn't find much to gripe about with the G7947. The depth stop could use a stouter stop block — it's a steel "L" bracket that tended to work loose when I drilled repetitive stopped holes. The table crank lever also projects farther out from the machine than other drill presses, and it could catch you in just the wrong place if the machine isn't parked against a wall.

All in all, \$375 seems a bearishly low price for this sturdy machine. It should prove to be an exceptional value in your shop.

#### Craftsman 22920N

Craftsman's Herculean 22920N drill press shares the 20" sweep category with the Delta 70-200. While both machines are equally suited for production work, the Craftsman packs a few more helpful features.

of vertical travel for hogging out deep mortises and holes. You'll get 8 1/2" of reach from column to chuck. The chuck spindle spun the chuck in an axis that measured a decent .006" runout. Feed handles are long, and they're outfitted with comfortable rubber knobs. So are the other controls. Even the feed handle return spring feels burlier than the rest; it snapped the quill back up almost too forcefully.

You'll get the usual mix of niceties on this tool, including a T-slot table with rack and pinion gearing, work light, paddle style



Sears outfits this machine with a TEFC motor that the company says will develop 2 HP. Power is delivered over a broad speed range, from a grunting 150 rpm to 4,200 rpm. At nearly the lowest speed setting, my test machine had no difficulty cutting 2" Forstner bit holes, and the belts were easy to remount on other pulleys. On the business end you'll get a 3/4" capacity chuck, the largest of any press here. The 22920N will reach 10 1/4" from the column for drilling wide work, and the quill drops a full 4 3/4" for chomping deep mortises and holes. Despite its big motor head and drive train, the chuck still spun with just .004" of runout.

One thing the 22920N could use for safety's sake is a larger on/off switch. The present switch is a small "remove-to-lock" toggle.

Down below, this machine comes with a huge machinist's table measuring 19 1/4" by 18 3/8". It was square to the chuck and slid easily on rack and pinion gears. I like the oversized column and base on these bigger machines, which should ensure that they'll stay upright and planted.

In terms of capacity and performance, the Craftsman and Delta run a neck and neck race. But I think Sears goes the extra mile here by outfitting their machine with a work light and a "no-brainer" jamb-nut depth stop. A table fence is also standard equipment. If you're in the market for a linebacker-sized drill press, be sure to stop at Sears and have a closer look.

*Contributing editor Chris Marshall writes project stories and tool reviews for Woodworker's Journal when he's not wheeling drill presses around his shop.*

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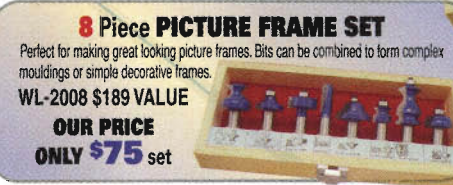
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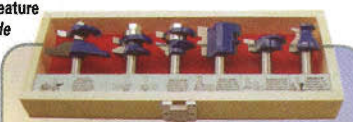
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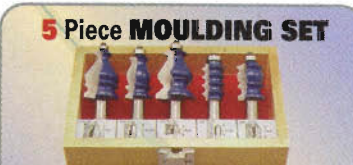
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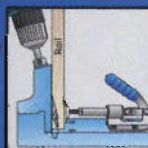
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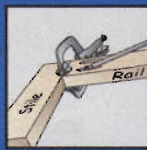


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## Glazing and Pickling

By Michael Dresdner

**Is control (of stain color) an issue with you? Have you ever experienced “stain applicator’s remorse”? After applying a stain, have you ever been so unhappy with the color you just wanted to remove it all and start over? Glazing may be just the technique you are looking for.**

**G**lazing is a highly controllable way of adding color to wood. It uses the same basic materials as stain, but in a slightly different way. Instead of putting stain into the wood, you float it in a thin layer between coats of finish. Glaze adds color, but still allows the lighter wood below to show through, giving depth to your finish. The ability to manipulate the color so completely allows you to gain almost total control over the coloring process.

### Glazing vs. Staining

Stain is any colored liquid that you apply to raw wood. There’s a lot to be said for staining wood. It brings out grain patterns while darkening and changing the wood’s color. But stain also can cause problems. Raw wood absorbs stain, so to some degree, the wood controls how much color gets taken in, and where it lodges. That can result in uneven or splotchy

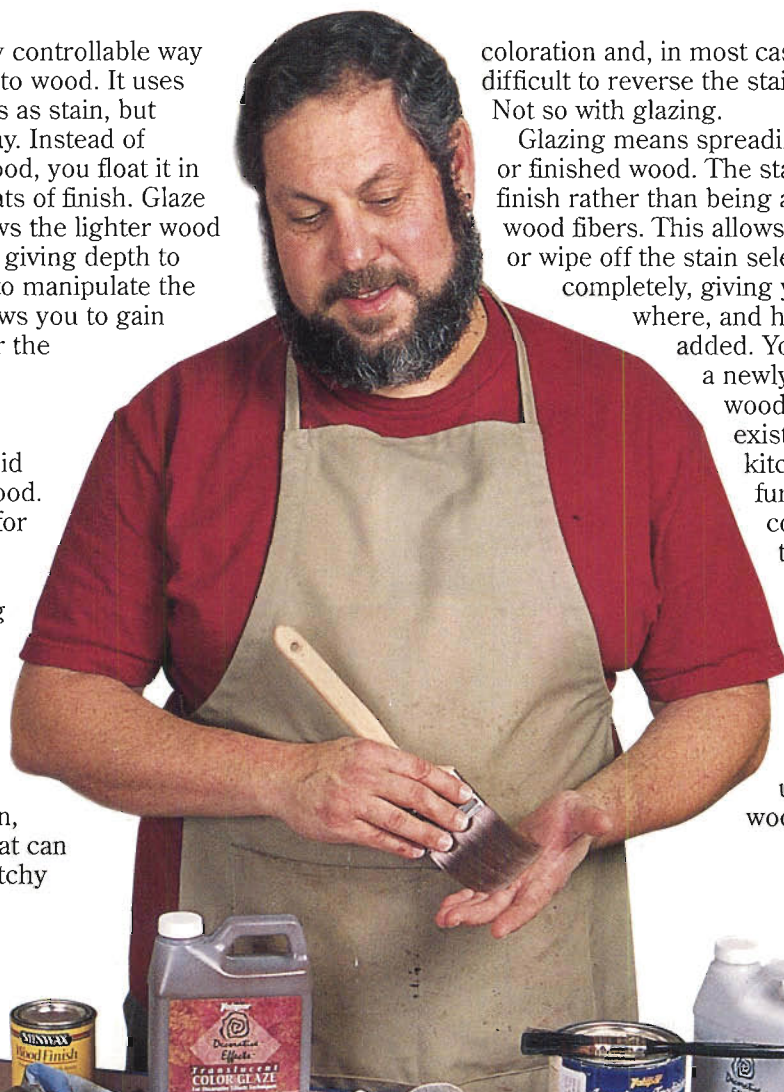
coloration and, in most cases, it is very difficult to reverse the stain and start over. Not so with glazing.

Glazing means spreading stain on sealed or finished wood. The stain sits on top of the finish rather than being absorbed into the wood fibers. This allows you to manipulate or wipe off the stain selectively or completely, giving you control over where, and how much, color is added. You can glaze over a newly sealed piece of wood, or over an old existing finish, like kitchen cabinets or furniture, to change colors without going through the rigors of paint removal.

### The Materials

When it comes to the glaze itself, you have many choices. You can use regular oil-based wood stains, buy

The door on the right will look like the one to the left after it is glazed.





"Glaze adds color, but still allows the lighter wood below to show through, which gives depth to your finish."

ready-to-use glazes, mix your own oil-based mixtures from scratch, modify oil-based paint, or use a combination of latex paint and commercial glaze base to make a waterbased glaze.

The simplest method is to buy off-the-shelf glaze. It is formulated to dry slowly in order to give you time to blend it evenly on the surface. I was able to find pre-mixed waterbased glazes at most of the major home improvement stores, but there were very few colors available. Just across the aisle, stacks of familiar gel and liquid oil-based wood stains offered a huge range of color options, and they'll also work nicely as glazes, provided they don't dry too fast.

If you're feeling more adventurous, want a custom color, or to control the speed at which the glaze sets, consider mixing from scratch. Start with Japan colors, artist's oil colors, universal tinting colors, oil-based enamel paint, or any mix of the four. They are all compatible with one another, and all thin with the same solvents. Add

some mineral spirits or naphtha to thin the colorant to working consistency. Naphtha evaporates a bit faster, while mineral spirits (also called paint thinner) gives you a slightly slower

glaze. To add lubricity or extend the working time, add a small amount of boiled linseed oil, but don't overdo it. Start with just a teaspoon or two, and add more only if the glaze is drying too fast.



The left half of this door is raw wood while the right side is sealed. Stain has been applied to both sides, but wipes cleanly off the sealed side while permanently coloring the raw wood.

Along with the premixed glazes you'll find glaze base. This is a whitish clear liquid designed to be mixed with equal parts of latex paint to make a custom colored glaze. Since stores will mix paint in every color of the rainbow, you can easily make up the glaze of your dreams.

#### Working the Glaze

It goes without saying that you should practice all new finishing techniques, including glazing, on scrap wood first. Glazing can be a lot of fun and very rewarding, but it does take some skill.

*continues on page 68 ...*



From left to right: An off-the-shelf liquid stain atop a can of gel stain; a jug of ready-to-use glaze; the ingredients for making your own oil-based glaze from scratch; a jug of commercial glaze base, designed to be mixed with the latex paint beside it.

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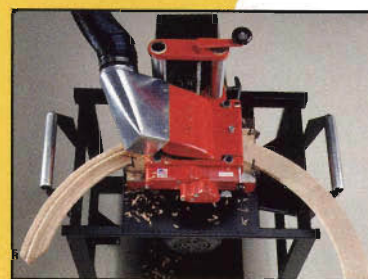
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## FINISHING THOUGHTS



**1. Apply a liberal amount of glaze to make sure you get it in all the recesses, then wipe off some of the excess. Don't worry about the puddles in the corners — you'll take care of that during the next step.**



**2. Use a dry brush to redistribute the glaze evenly over the piece. If the bristles get too wet with glaze, wipe them off on a shop towel or cloth.**

Start with wood that has been sanded, just as you would for staining. Apply at least one good coat of whatever finish you choose, making sure the wood is sealed. You can glaze over any type of coating as long as it is dry. A smoother, thicker finish will let the glaze move around more easily, whereas a thinner one will allow some glaze to collect in the pores, resulting in a more “woody” look.

Apply the glaze liberally, making sure it gets into all recesses, then wipe off some with a rag. Use a dry, soft bristle brush to spread the glaze evenly over the surface. The brush will move glaze around, but also pick up excess glaze puddled in corners. If the bristles get too wet, wipe them off with a towel.

### Highlighting

In addition to simply adding a uniform layer of color, you can use glaze to selectively highlight those areas you want to reinforce. For example, you can add depth to carvings by wiping off the high areas and leaving extra color in

the recesses. Even flat tabletops and doors can get a “cameo” look by wiping more glaze off the center and leaving the corners or edges a bit darker.

### Final Steps

The nice thing about glaze is that if it is not coming out how you imagined, you can grab some mineral spirits (for oil-based glaze) or water (for latex glaze), wipe the glaze off, and start over. When you are happy with the results, let the glaze dry thoroughly (usually overnight, but sometimes longer) and seal it with at least one more coat of whatever topcoat you choose. Since glaze is applied fairly thin, few compatibility issues arise, but to be safe, I generally seal in the glaze with a thin coat of SealCoat™ before proceeding to any other clear finish.

*Michael Dresdner is a nationally known finishing expert, woodworker and contributing editor for Woodworker's Journal.*



**3. If the piece requires highlighting, use 0000 steel wool (for oil) or fine nylon abrasive pads (for water) to remove a little more glaze.**



**4. If you don't like how the glaze is coming out, grab some mineral spirits (for oil-based glaze) or water (for latex glaze), wipe the glaze off and start over.**

“Limed or pickled finishes are simply pieces glazed with white or off-white instead of darker colors”

“Pickled” wood is a style that comes into and out of fashion from time to time. The advantage of applying a pickled finish as a glaze is the ability to “work” the finish. As with any glaze, you can highlight or intensify the color ... or even remove it completely and start over. To a large degree, whether you are pleased with how a finish looks is subjective. Proper materials and good technique are the keys to achieving a controlled and repeatable look.



Limed or pickled finishes are simply pieces glazed with white or off-white products instead of darker colors. The process, and materials, are identical.



Because white pigment does not absorb easily into wood, pre-mixed white pickling stain, like the oil-based one above, can be applied directly to raw wood. The white stain will lodge in the pores of woods like oak and ash, and will be more difficult to remove or manipulate than with a glaze.



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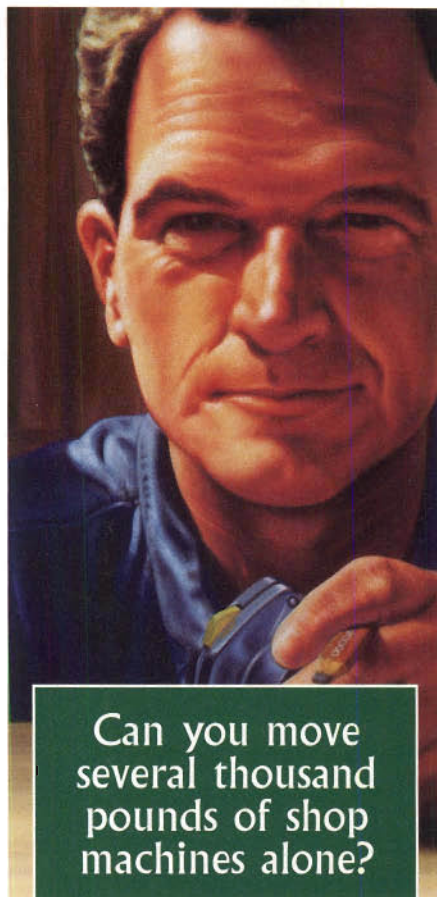
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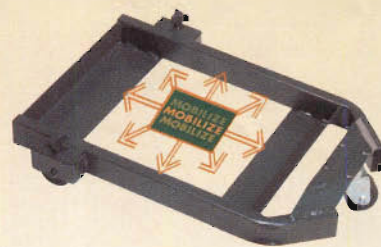
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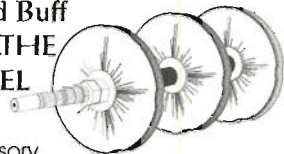
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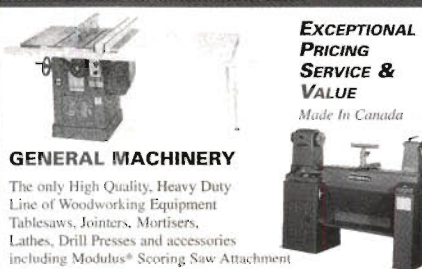
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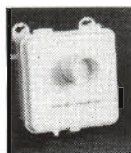
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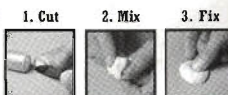
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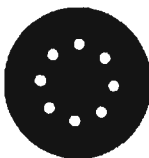
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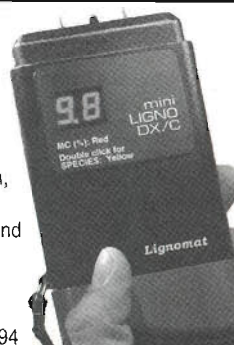
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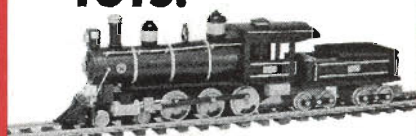
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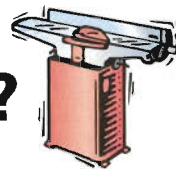
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By Russell Trainum



The 8" jointer is a dream machine for hobby woodworkers. Moving from a 6" jointer to one of these shop beauties is like going from a Vespa to a Harley. But what exactly are the benefits provided by an 8" upgrade?

Of course, limits are always there — many of us would love to have a 12" jointer, but even if we could afford one, most of us would have to rebuild our shop floors to accept something that heavy.

My criteria for testing the four jointers presented here were fairly simple: I looked for machines with 8" cutting widths, center-mounted fences, and the capability (at least), of being switched to 240-volt use.

### Stepping Up to an 8" Jointer

Certainly more money changes hands than is the case with a 6" jointer, so something more than

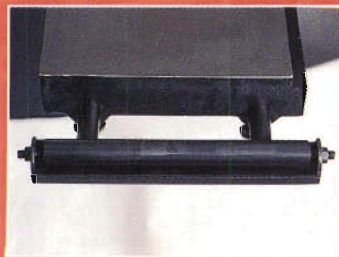
being able to say, "Hey, guys, I've got an 8" Shicklegruber jointer" is in order. What do you get? Start with 1/3 more cutting width when flattening — removing cup and similar fun formations — from wood. Follow that up with more mass. Once the unit is assembled and placed, that extra mass is of great benefit in reducing vibration. Greater power is also a big help. It is essential for the full width cuts, but makes narrower cuts easier, too, so cuts are smoother. Possibly the greatest benefit you get is the extra bed length, which is a variable. The longest 8" I tested is the

What else do you get? One of the nicest benefits of all is the longer, taller, heavier fence. The Powermatic 60A has a fence that is 4" tall and a full three feet long. Add that heavier, taller fence to the wider, longer table, and you can easily handle material lengths that would have you tottering and teetering and getting weird rocking cuts on a standard 6" jointer, something that is definitely not helpful in building great projects.

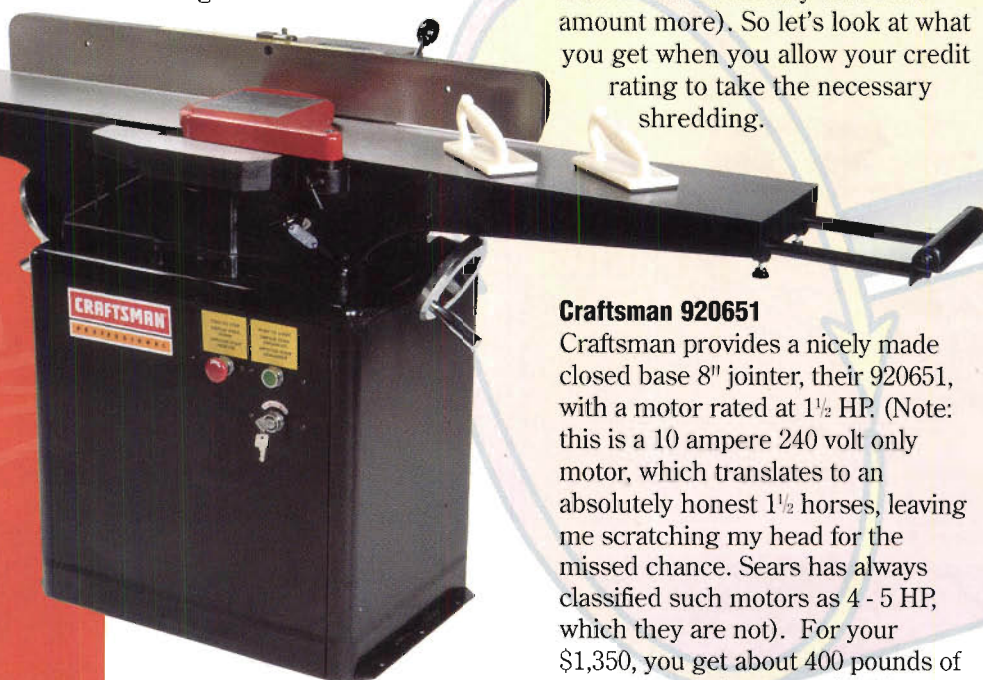
For the most part, 8" jointers can cost a great deal more than 6" models (Grizzly is the exception ... their two models only cost a fair amount more). So let's look at what you get when you allow your credit rating to take the necessary shredding.

### Craftsman 920651

1½ HP  
13,500 cuts per minute  
Price: \$1,350  
Phone: 800-349-4358  
[www.sears.com](http://www.sears.com)



Craftsman's roller set increases the table length of the 920651 to eight feet, useful for long stock.



Delta DJ-20, at 76". The Craftsman, though, kicks out about 15" extra on each end, so its basic 66" long bed is increased.

### Craftsman 920651

Craftsman provides a nicely made closed base 8" jointer, their 920651, with a motor rated at 1½ HP. (Note: this is a 10 ampere 240 volt only motor, which translates to an absolutely honest 1½ horses, leaving me scratching my head for the missed chance. Sears has always classified such motors as 4 - 5 HP, which they are not). For your \$1,350, you get about 400 pounds of cast iron and sheet metal, with very little plastic (switches and such). The black color is dramatic and fit and finish were top grade all the way through. The 3,450 rpm motor



gives 13,500 cuts per minute with the three knife cutterhead. Maximum cut depth is 1/8" — the cut depth on these machines is more a function of board finish than of actual power, because I found they would all cut deeper than the listed depth, but that those cuts were also fairly rough. The center-mounted fence tilts from 45° to 135° and has a good, solid angle stop. Assembly was reasonably easy, for one person with an engine crane and a sufficiency of 2" wide nylon slings. I strongly suggest that anyone assembling any of these machines have help.

The Craftsman fence is a solid chunk of cast iron and is 38 1/4" long by 4" tall, on a 66 1/2" long bed (actual measurements). Overall table width, including rabbeting shelf, is 9". The pullout rollers add enough length (a shade under 15" each) to bring total usable table length to 96", a full eight feet. The infeed table has a positive stop at 1/8", and it is very easy to leave it set there for most jointing operations. Unlock and change at will — the guard works as well as any, and markings on the scales are precise and easy to read.

The Craftsman 920651 is a solid, functional machine that looks good and acts good. It worked well with lengths up to 8' and widths to 3" (12/4 cherry). On 4/4 x 5" oak, jointing and planing, it did exactly as needed, with no bobbles. The long material went through

smoothly with the infeed extension only part way out. It comes wired for 240 volts, and the motor cannot be wired for 120. There is a 4" dust port that connects to any 4" dust collector. Table flatness did not exceed 0.005", corner-to-corner and lengthwise.

#### Delta DJ-20

Delta's DJ-20 (model 37-350) has been a classic for years. The 76 1/2" table looks something like a polished aircraft carrier landing space when you first open the crate. Everything else in the category is shorter. The motor spins at 5,500 rpm to provide 16,500 cuts per minute with the 3 3/8" three knife cutterhead. A parallelogram support system means the table moves in the same area as the cutterhead when the cutterhead is raised or lowered. Each table has four supports on extension spring counterbalances, so adjustment takes almost no physical effort. The rabbeting fence is also the largest in the category. Levers are used for table adjustments, but the movements are crisp and easy, so



A scale on the back of the DJ-20's center-mounted fence measures the angle set. It's exceptionally sturdy.

#### Delta DJ-20

1 1/2 HP  
16,500 cuts per minute  
Price: \$1,400  
Phone: 800-321-9443  
[deltawoodworking.com](http://deltawoodworking.com)

that accuracy isn't a problem — in fact, accuracy is seldom a problem with jointers, as they're on the early stages of stock preparation, not on the final end.

The 5" by 36" fence has positive stops at 45° in and out so that beveling and chamfering can be accurately done. The fence is center-mounted and there is a scale in the back of the fence to handily measure the angle set. For flattening stock, there's also a scale mounted at the end of the fence to measure stock thickness after it comes through the planing operation. There are also positive stops at 45° and 90°. Fence lockdown and angle change is smooth and easy. The fence moves across the bed easily and tightens down perpendicular to the blades quickly and without extra fiddling.

Knives project only .02" above the cutterhead, helping to reduce the chances of kickback. Table locks are the easiest to use of any, and allow fast and easy height changes for the infeed table. The outfeed table is only adjusted when the knives are sharpened and changed so that their height changes, but is easily carried out, using two

*Shop Test continues on page 78 ...*

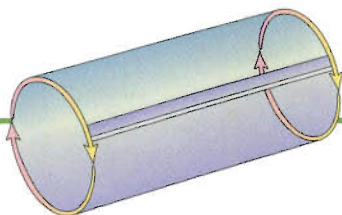


adjusting screws. Knife changes are fairly easy, but, as with all of these units, not a whole lot of fun. Knife adjustment is locked in place with four screws per knife.

The tables have aluminum lips so that replacement is easy when the lips become worn. The infeed table is an extra long 46" (longer than both tables on most 6" jointers), while the outfeed table is 32" long. Rabbeting depth capacity is 5/8".

The fit and finish of the DJ-20 were superb, and table flatness

**8" jointers can cost a great deal more than 6" models ... so let's look at what you get when you allow your credit rating to take the necessary shredding.**



from corner-to-corner and lengthwise did not exceed .005". The model I got had the 1½ HP 120/240-volt motor. The DJ-20 is available with several different motors, including a three phase, and has a working weight of 335 pounds, plus the weight of the base and motor (another 120 or so pounds). That's plenty to keep it from wiggling under load.

The working feel of this machine is excellent. You feel in control even with stock as much as 8' long, which is not always the case even

with 8" jointers. That long, long infeed table is what does it. This jointer will definitely face plane a 3/8" depth on 5" wide red oak, but the finish on that pass was not nearly as good as the finish on 1/8" and shallower passes — this held true with all the machines. Gobble off lots of wood and you get a rougher finish than if you just slice off a bit at a time. Current street price of the DJ-20 is about \$1,400.

### Grizzly G1018

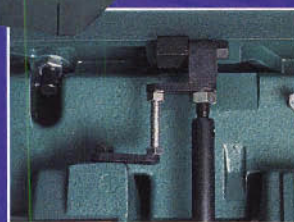
As this is written, Grizzly's G1018 is available for a delivered price of \$750. It is a best buy for this category, though it lacks some of the finesse and features of the machines costing nearly twice as much. The G1018 has a sister machine, the G1018HW, that uses handwheels instead of levers to adjust the tables. The price is the same.

Overall, this 8" jointer has a 65" long table and a three knife, 3" cutterhead running in shielded (not sealed) pre-lubed ball bearings. The 1½ HP, 240-volt motor has a magnetic safety switch and gives a 1/2" maximum depth of cut. There is also a rabbeting ledge on the infeed table. The center-mounted fence is solid and sets easily. The beds move smoothly on dovetailed ways. Gibs are adjustable for wear.



### Grizzly G1018

1½ HP  
15,000 cuts per minute  
Price: \$725  
Phone: 800-523-4777  
[www.grizzly.com](http://www.grizzly.com)



Fence adjustments and cutting depth on the Grizzly are accomplished with levers, which is more than adequate for this bargain jointer.



Fit and finish of the cast iron is superb, but the paint wasn't as well done as on the other machines. There were a few runs, and some thin spots, but considering the price, that is not only forgivable, it is nearly forgettable. This is a solid, chunky machine, shipping at about 450 pounds, and retaining all but about 50 pounds of that for a solid stance and comfortable feel when working. Overall quality, fit and feel were good enough that I'm comfortable saying this will make a good jointer for a woodworker who wants an 8" but doesn't want to spend over \$1,000 to get one.

*Shop Test continues on page 80 ...*



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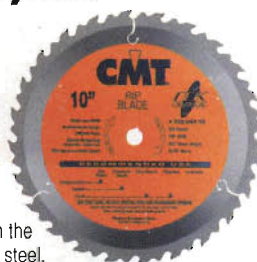
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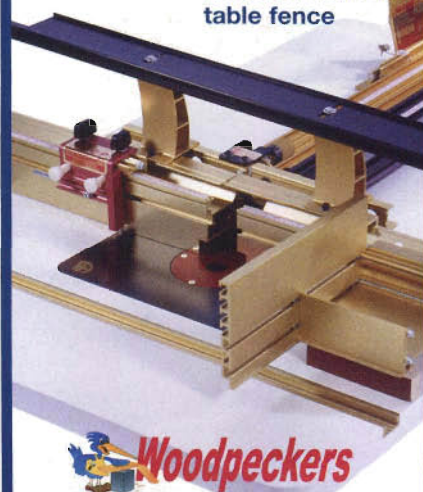
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## Powermatic 60A

2 HP  
21,000 cuts per minute  
Price: \$1,700  
Phone: 800-248-0144  
[www.powermatic.com](http://www.powermatic.com)



Above is the Powermatic 60A depth of cut gauge; its guard is at right. Jointer guards were similar across the board, and the author notes that Powermatic has a good reputation for longevity.



### Powermatic 60A

Powermatic's 60A is another classic 8" jointer with a very long table (72", second only to the Delta DJ-20's 76"). The adjustable infeed and outfeed tables are mounted on dovetailed ways, and the infeed table has an extra long extension ledge for rabbeting. The infeed table adjusts by lever, which is a quick adjustment type for precise cuts. The fence is another center-mount, with positive stops at 45° right and left, and a plunger stop at 90°. This is a single phase, 2 HP, 240-volt machine, with enough power to do all that is claimed and then some. Fit and finish were just about perfect. This long bed jointer was *another* that reminded me of

a shined up aircraft carrier when the crate was opened. The motor and cutterhead operated the smoothest of all tested here, but none of the jointers had a rough running cutterhead.

The 60A is available in several motor/bed configurations, including three phase (two types) and the model I checked, the 240-volt single phase. This is a 2 HP rated machine, and has more than sufficient power for the intended work.

Fence lockdown and angle change are among the easiest of all these jointers. The 36" x 4" fence also moves across the bed easily and tightens down parallel to the bed edges (perpendicular to the blades) quickly and without extra effort.

The knives are heat treated, so should hold their edges well. Sharpened or new knives install reasonably easily, using jackscrews. The blades should extend only .015" above the cutterhead surface when properly installed, after which the blades are aligned level with the outfeed table. The motor is a TEFC. It is shielded from dust and chips by the inner dust chute on the sheet metal base, as is the case with all the tested jointers. The 60A runs smoothly, and does

an excellent job of cutting edges and flattening faces in materials to about six or seven feet long. The price comes in at about \$1,700 plus shipping.

### Popular Choices

There are other 8" jointers available, but these are the most popular, or so it seems. Grizzly is my best buy leader, with very good quality compared to excellent quality on the other machines. Additionally, no one today seems to outdo Grizzly in customer service, so if you do have a problem, it will be solved quickly.

The Craftsman 8" industrial jointer is a really good tool, and offers an exceptionally long bed possibility with its roller extensions. Properly set, these make the jointing or facing of 8' long material very easy. And they're easy to properly set. The Powermatic 60A is a marvelous jointer, exceptionally well made, powerful, and easy to use. It is pricey compared to the rest of the field but, as with many values, you get what you pay for. Many of us have seen Powermatic equipment that has been in service for upwards of 40 years with minimal care, and there's *no reason* to think the 60A jointer is going to be any different.

Overall, though, the Delta DJ-20 presented the best case to me for an 8" jointer. Its long infeed table, combined with a really wide base, with plenty of power and easy table adjustments, made this my top choice. It is an expensive machine, and is not for everyone, particularly hobbyist woodworkers, but it is a tool to which many of us can aspire as we grow in our craft of woodworking.





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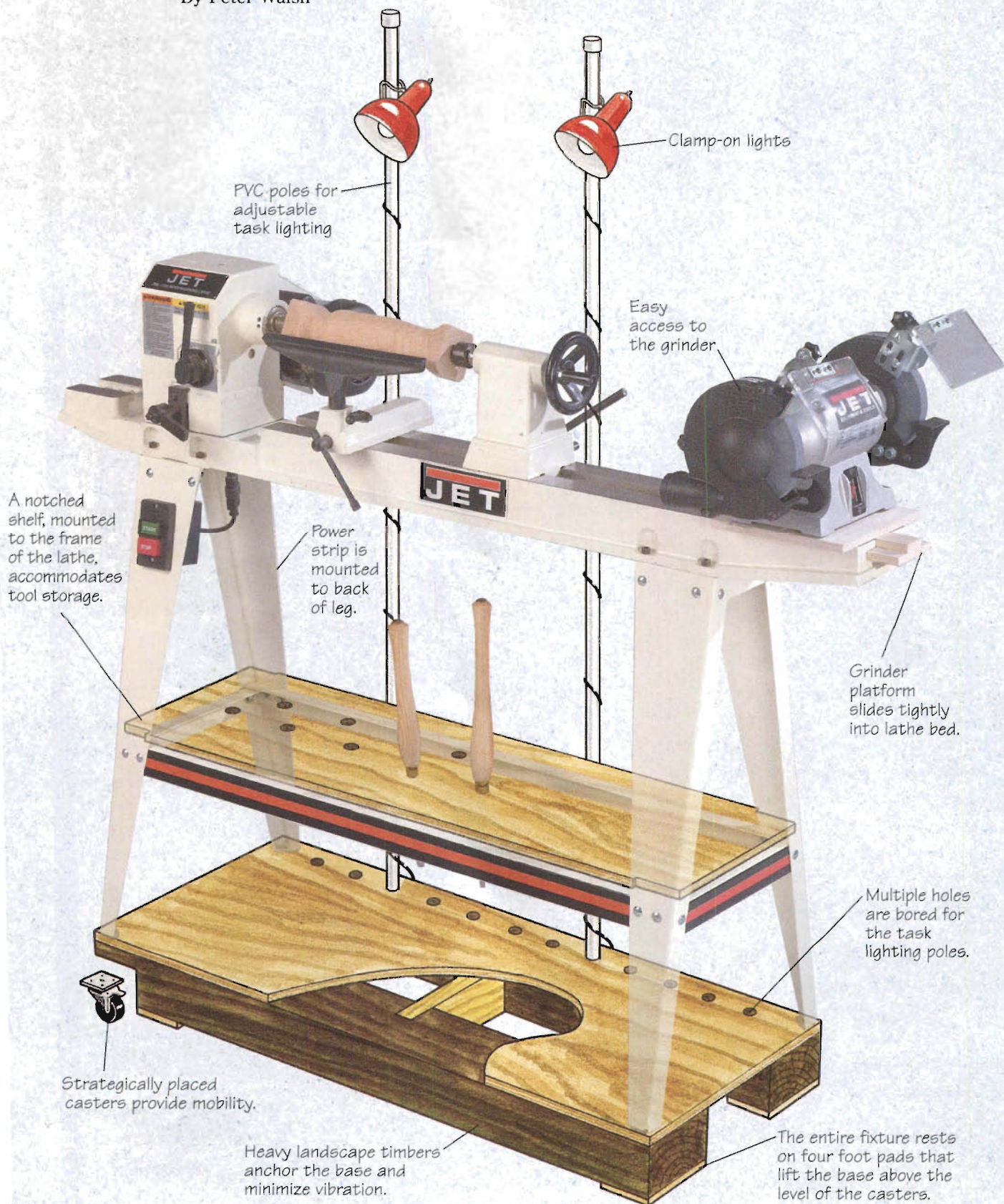
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## Creating a Portable Lathe Station

By Peter Walsh





## 6 GREAT FEATURES

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- Mobility
- Stability
- Versatile lighting
- Ready sharpening
- Easy tool access



Like a teenager with his first car, I couldn't wait to soup up my brand new floor standing lathe. The first order of business was to add enough weight to ensure that it would stay put under duress. On the other hand, I have limited space and need to easily move my lathe out of the way when it's not in use. Other custom features I added included handy tool storage, adequate task lighting and a bed-mounted grinder platform.

The heavy-duty base adds significant mass and rigidity to the stand, and helps to reduce vibration while turning very large or eccentric stock. Portability results from casters strategically positioned in notches cut into the base timbers.

To provide a four-point stance, I added 3/4" plywood pads below the notched landscape timbers. When I'm ready to move my station, I secure loose objects and simply pick up the tailstock end until the casters clear the pads (about 20°). The lathe itself is centered on the bottom subassembly and bolted in place. A series of deep holes on the back edge of the base allows me to position the lamp poles right where I need them to suit my turning tasks.

I also drilled a series of different sized holes in the top shelf for chisel/tool storage. Since I can't see the blade of each tool when they're stored, I simply color coded the handles.

I also added a grinder jig to the lathe station. Its T-shaped construction allows it to slide into the end of the lathe bed. When positioned, the jig provides a secure and convenient way to sharpen turning tools.

Power for the grinder and other auxiliary items (lights, sander, etc.) comes from a power strip that I mounted vertically on the stand leg (not visible in the photo at left) under the lathe motor. This

Quick access to your grinder is one of the key features that makes this lathe station a winner. Deep holes provide a solid foundation for the fixture's task lighting — another of the author's innovations.



placement facilitates access and yet is out of the way of any turning operation. I do not recommend using the power strip for lathe power.

My early experiments with task lighting led me to the detached pole concept. Vibrations from the grinder and lathe were blowing-out too many fixed mounted lightbulbs. Moving the lamps to the poles solved the vibration effect and had the added benefit of providing light to both grinding and turning operations. Using clamp-on lamps allows me to easily adjust their height on the poles.

Another option you may want to consider is the addition of a couple of boxes to store the multitude of chucks, faceplates, centers and other turning and finishing materials you're sure to add to your collection. My lathe station took a day to construct and cost approximately \$70.00. Although this particular lathe station was built around my JET lathe, the concepts can be easily adapted to any stand-based lathe.

*Peter Walsh is an amateur cabinetmaker and woodworker who is just getting into turning.*



## Adjustable Circle-cutting Jigs for the Band Saw

By Mark Duginske

If you can't cut a straight line without a fence, how are you going to cut a perfect circle freehand? Fear not, band saw expert Mark Duginske's easy to make adjustable circle-cutting jigs are all you'll need.

When it comes right down to it, a circle jig can be as simple as a board with a nail pounded in it and then filed to a point. The basic idea involved in using a circle-cutting jig is to locate a rotation point a certain distance from the blade. The rotation point is held constant by the jig. As the workpiece is rotated on the point, an accurate circle is cut. The distance between the point and the blade determines the radius of the circle.

The rotation point on these jigs can be either a sharp point or a solid stud that fits into a hole in the workpiece. I've found that the point works well on small to medium-sized pieces while the stud works better on large pieces, especially green wood turning blanks. The stud also works well for additional fixtures or jigs that rotate on top of the circle-cutting jig.

Two things have to be kept in mind with any circle-cutting jig. First, the rotation point must be even with the front of the blade to get an accurate circle, and second, the rotation of the workpiece into the blade can cause the jig to slide backward unless it is held firmly in place.

### Full Circle-cutting Jig

Making a practical and versatile circle-cutting jig, like the one in the photos at right, is easy and enjoyable. The jig consists of a plywood platform with an attached piece of solid wood that fits in the band saw's miter slot. In use, the jig slides forward and backward in the miter slot. Its forward motion is limited by a stop which is also screwed to the underside of the

With a shop-made jig and the proper band saw blade in place, cutting circles (or segments of circles) couldn't be easier. An afternoon in the shop will be all it takes to get you cutting circles like a pro!



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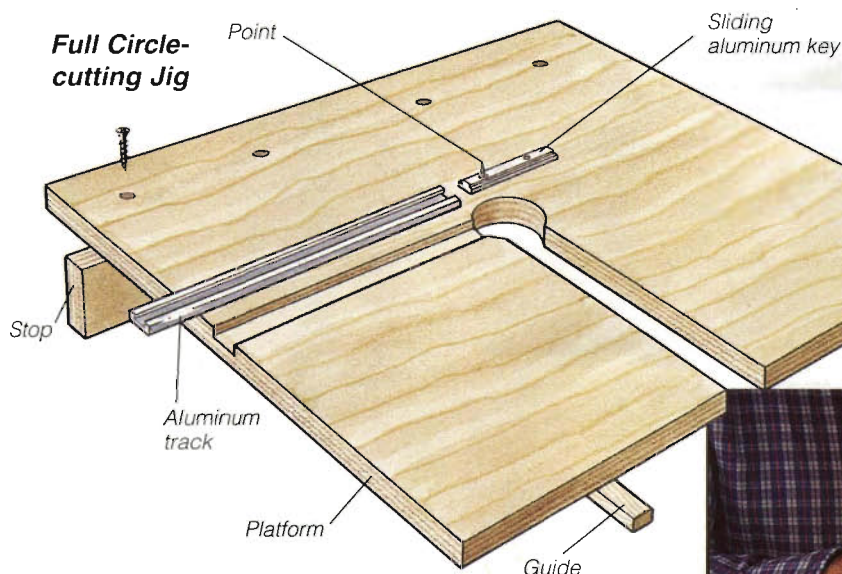
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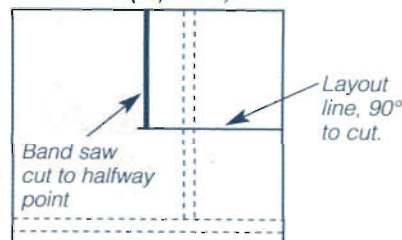
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### Laying Out the Jig Platform (Top View)



platform, as shown in the *Illustration* above. The reason this jig is so easy to use (and versatile) is because it employs an aluminum key which accepts a hardened steel rotation point. The key slides back and forth in the aluminum track.

Get started making your own jig by cutting a piece of plywood about 16" square and a piece of solid wood sized to fit your miter slot to act as a guide. Next, make the stop from more plywood. As you can see from the *Elevation Drawing* above, the stop is mounted a bit forward of the edge of the platform; the exact location will be determined shortly.

Attach the guide to the bottom of the platform with glue and a couple of brads. After the pieces are nailed together, step to your saw and advance the platform into the blade (with the guide engaged in the miter slot) until you've cut halfway across. At this point, turn off the saw and mark a line 90° to the saw cut. Remove the platform and step to your router table. Plow a stopped groove centered on the line you just marked, 3/8" deep by 3/4" wide to accommodate the aluminum track. Mount the track with screws. Next, use your drill press and band saw to enlarge your initial saw cut as shown in the drawing above.

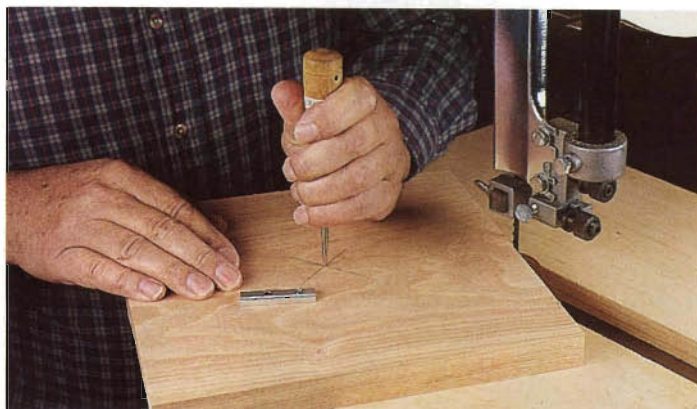
Slide the platform back onto the saw and locate the stop so that the exact center of the track is aligned with the front edge of the saw blade. Secure the stop with screws. You may need to nip off a small length of the guide to achieve proper positioning.

To use the jig, punch a small hole into the center of the workpiece and position it on the steel point. Now, slowly move the jig and the workpiece into the blade until the stop catches on the edge of the table. Slowly rotate the workpiece on the point until the circle is completed.

Understand that if the table is tilted, the circle that is cut will be a little wider at the top than at the bottom. This is actually quite useful when thick bowl blanks are being cut. If this jig is used, more accurate bowl blanks will be made.



Adjust the rotation point to half the dimension of the circle you wish to cut. Set screws keep the key secure in the aluminum track.



Next, puncture a shallow hole centered in the bottom of the workpiece. Place the workpiece on the rotation point using the punctured point to locate your piece on the jig.



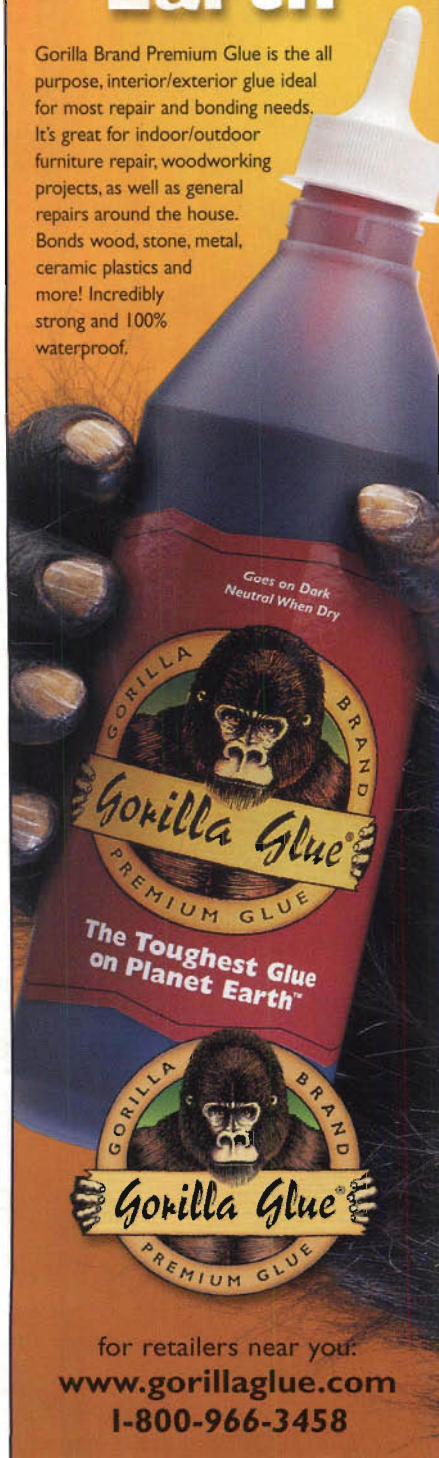
With the saw running, advance the workpiece and jig slowly until the stop catches. Then rotate the workpiece until the circle is complete.

*continues on page 88 ...*



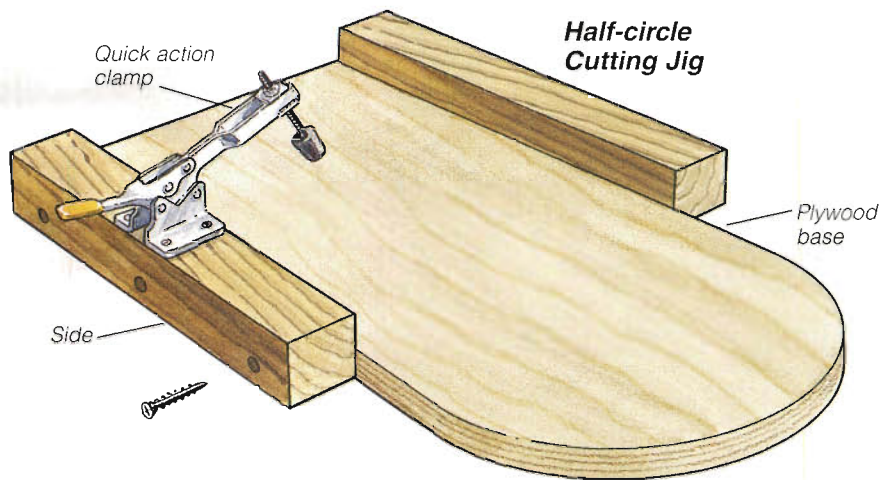
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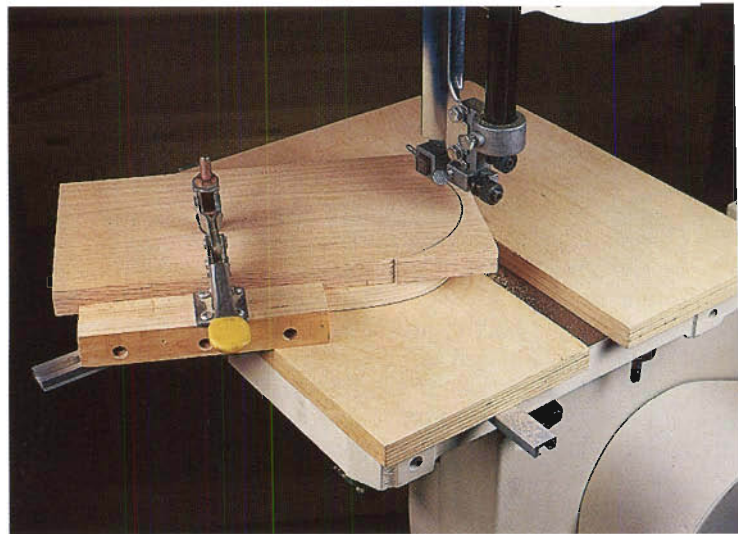


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This half-circle jig is designed to be an addition to the full-circle jig on the previous page. Consisting of a plywood base with sides and a clamp, it is an easy and useful add-on.



## The Half-circle Cutting Jig

There are at least three methods for cutting partial circles using a band saw jig. The first consists of advancing the jig and the workpiece into the blade as you do with the full-circle jig. An easier method is to clamp the jig to the table and rotate only the workpiece.

A third approach (and the one that I prefer) is to use a jig that holds the workpiece in combination with a full-circle cutting jig. This new jig rests on top of the full-circle cutting jig. In this scenario, the half-circle jig and workpiece are rotated together.

The half-circle jig shown here (see *Illustration* above) is simply a plywood base with a rotation point on its bottom. This base rotates atop the full-circle cutting jig I just described. Two plywood

sides are added to stabilize the workpiece. A quick-action clamp can also be mounted on one of the side pieces. The clamp will help keep the workpiece stable during the cut. To make a half-circle jig, start by cutting a piece of plywood equivalent in width to the diameter of the half-circle desired. (A specific jig for each radius size is required.) Now punch a hole for the rotation point. The hole should be located at exactly half the width of your plywood (which is the radius of the circle).

Using the rotation point on the full-circle jig, make a half-circle cut in the plywood base. Now attach the two sides to the plywood base (see photo) and the clamp if you so choose. Now you're ready to make multiple accurate half-circle cuts.

*continues on page 90 ...*



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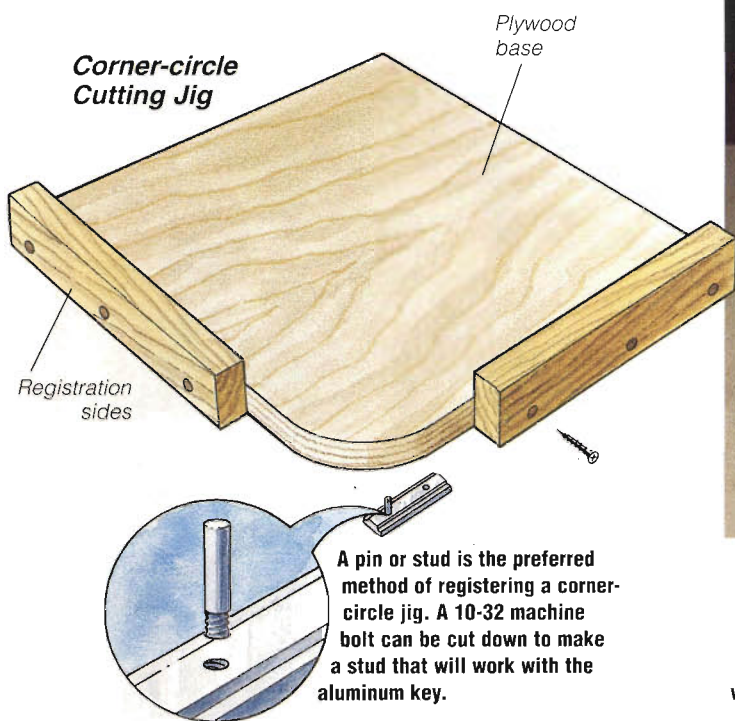
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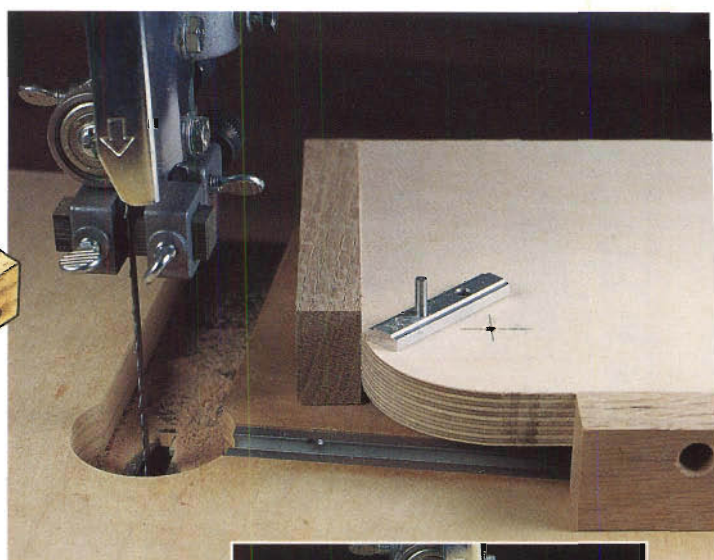
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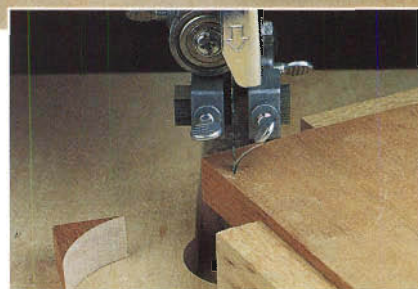


## Corner-circle Cutting Jig

The third of my circle-cutting jigs is used for making quarter circles or "radius" cuts. Rounded corners are common on tabletops, desktops, the corners of drawer faces ... all sorts of applications. The jig itself is a simple piece of plywood which rotates on a pin or point (such as the one found in my full-circle jig). I like to add strips of wood on the edges of the jig to help register the workpiece during the cut. To make one for yourself, you have to first determine the radius you wish to cut. Measure the distance from each edge of your plywood base to the rotation point and punch a registration hole. Then, using the point in the full-circle jig (adjusted via the key to the proper distance), cut off the corner. Add two pieces of wood to the sides, as shown in the *Illustration* above. In use, you'll simply place the workpiece in the corner-circle jig and



Sitting atop the full-circle cutting jig, a corner-cutting jig is a shop workhorse. This jig, teamed up with the proper blade, will trim accurate corners every time.



rotate the workpiece and jig together into the blade to make the cut. A puncture hole on the workpiece is not required with this jig.

Jigs like this corner-circle, and even the half-circle jig from the previous page, benefit from using a pin (sometimes called a stud) for the rotation point, rather than the sharp point so handy in the full-circle jig. The *Drawings* and photos on this page demonstrate that technique. You can easily make a stud to fit our key insert by cutting the head off of a 10-32 machine bolt.

By combining all three of these jigs, you will create a systematic approach to cutting accurate circles and circle segments in no time at all.

*Inventor, woodworker and author Mark Duginske is one of the top band saw experts in the country. His book Band Saw Bench Guide, is published by Sterling.*

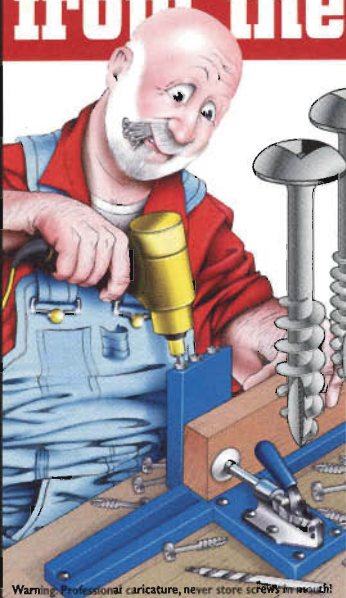
## The Right Blade for Cutting Circles

I have found that a coarse blade works better than a fine blade for cutting circles on the band saw. To cut 3/4" material, a 1/4" hook style blade with 4 to 6 teeth per inch works quite well. For thicker material, especially green wood which turners often need to cut, you'll want a coarser and wider blade. The coarsest blade useable on a 14" band saw for curved cuts is a 1/2" hook with three teeth per inch.

Take your time when you saw and let the blade do the work. You may even want to experiment with backing the workpiece up to make sure it's not binding or leading. I can tell you from experience that if the blade starts to drift, it is just about impossible to get it back on track. I also suggest that you tilt the top wheel back so the blade rides against the bearing. You don't want the blade coming forward during these cuts.



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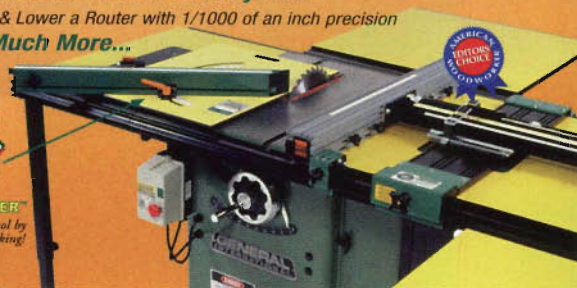
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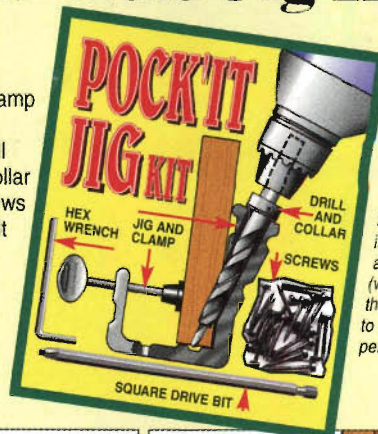
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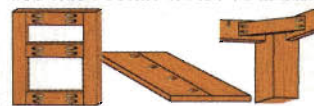
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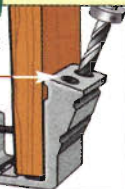
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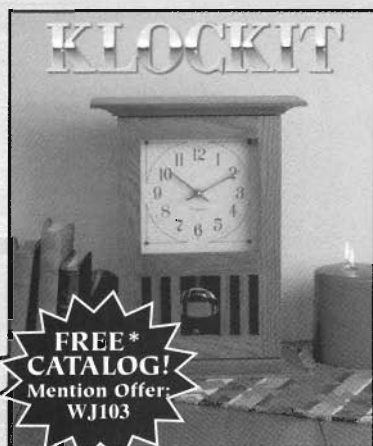


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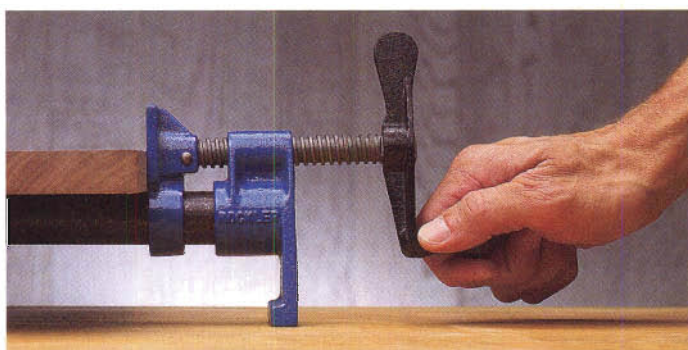


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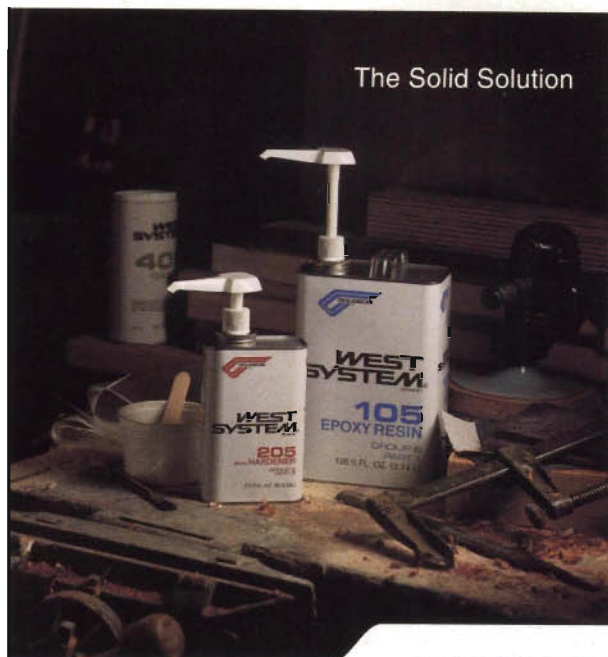


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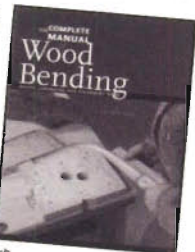
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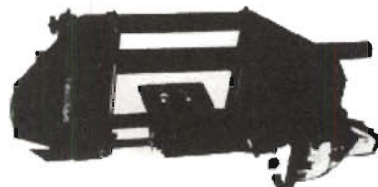
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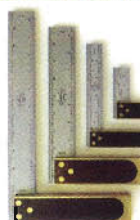
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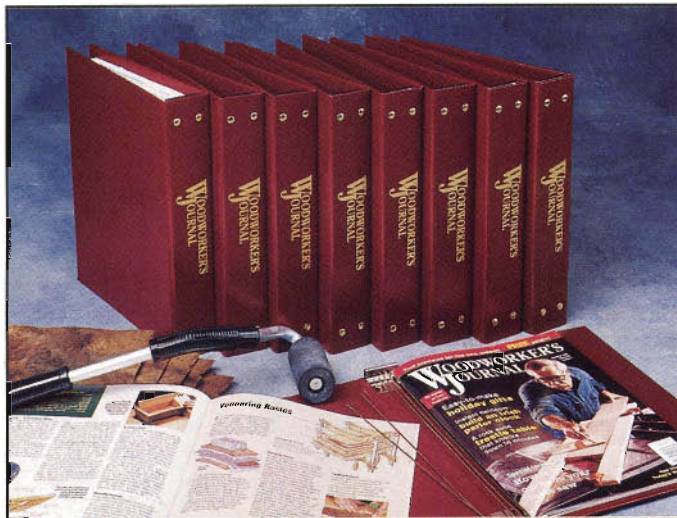
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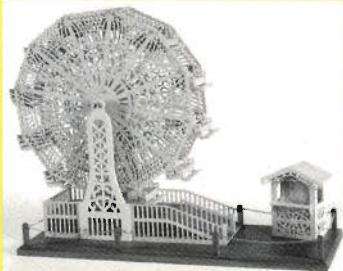
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## A Real “Shoe-In”?

By Joanna Werch Takes

Let's start the new year of *Stumpers* with a Texas-sized mystery — specifically, the tool pictured at right which has piqued the curiosity of **Douglas Tiller** of Blooming Grove and **Nadine Rogers** of Corsicana. Douglas tells us “it can be mounted on a board or worktable via the screw clamp,” and it has a crank handle attached to a rotatable, recessed disc. Opposite the disc is a cylinder, with a hinged arm “which swings to hold or push some object through the cylinder.”

These pard'ners from the Lone Star state haven't found any marks or names on the tool, but they're reckonin' *Stumpers* readers will have some ideas what it's for.

The answer to the *October 2002* mystery tool, readers like **Betty Lou Morell** of Weare, New Hampshire, said, was “a shoe-in” — but I need to boot that theory right out the window.

**Ken Collier** of Spring Valley, California, had sent in a tool that he claimed was a “hasseler” distributed by Ford Motor Company in the early 20th century for the installation of beehive springs. According to Ken, “the spear end would be slipped through the spring and then hooked under the frame, by turning the crosspiece and compressing the spring down until it could be fitted into the proper place on the car, then released and removed, leaving the spring installed.”

**Mike Eaton** of Eaton Detroit Spring, Inc., in Michigan, agreed with him — and, since Mike's company deals with automobile springs for American vehicles from 1902 to the present, he should know.

**Dick Dorn** of Oelwein, Iowa sent in his shoe stretcher to identify *October's* mystery spear as what **J.E. McDonald** of Sherman, Texas called “the metal working part of an old shoe stretcher” — but the tool's owner disagrees.

The problem is that all the rest of you wrote in to tell us it's part of a shoe stretcher — specifically, according to **Wally Dibble** of Logansport, Indiana, “a toggle separator.” A lot of you were pretty convincing.

**Michael Hopper** of Camarillo, California, remembers shoe stretchers from his mother's shoe store and **John A. Bauer** of Beatrice, Nebraska “a shoe salesman all my life,” quickly ID'd the tool as missing its wooden forefoot.

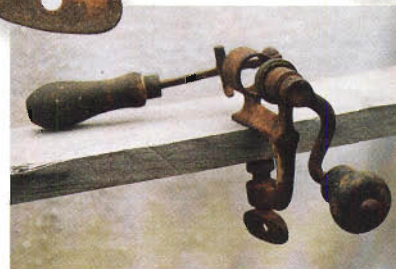
According to **Charles I. Francis** of Baldwinville, New York, the “wooden foot portion is sawn vertically in half, toe to heel. The so-called wings on the ‘modified wing nut’ are pins or studs that fit loosely into holes drilled horizontally on the inside of the wooden foot near the heel.”

To use a shoe stretcher, instructs **John F. Barrett** of Gig Harbor, Washington, “insert the unit into a shoe as far forward as possible. Rotate the screw clockwise until the shoe leather is very tight — but be careful not to tighten too much because it can split the shoe.” **Pauline Kulp** of Stratford, Wisconsin, adds that some stretchers have “five small holes on one side and four on the other side toward the front of the wooden forms that could insert little egg-shaped steel buttons on pegs, to make a little extra room for bunions.”

Hmm. Bunions ... springs. Nope, they're not even remotely the same thing. It appears that with this *Stumper*, we've proved that different tools are popular with different crowds — and that identifying a shoe-in can be a real hassle.

**WINNER!** For taking the time to respond to *Stumpers*, **Dan Ganley** of Downingtown, Pennsylvania wins **Makita's Sanding Package** including a 6" random orbit sander (model BO6030)

and a 3" x 24" belt sander (model 9920). We toss all the *Stumpers* letters into a hat to select a winner. If you have a question or answer, send it to *Stumpers* Dept., *Woodworker's Journal*, P.O. Box 261, Medina, Minnesota 55340. Or e-mail us: [jtakes@woodworkersjournal.com](mailto:jtakes@woodworkersjournal.com)



The Texans who own this doodad have clamped it to a 1" board — but they don't know what's supposed to go in the hole.



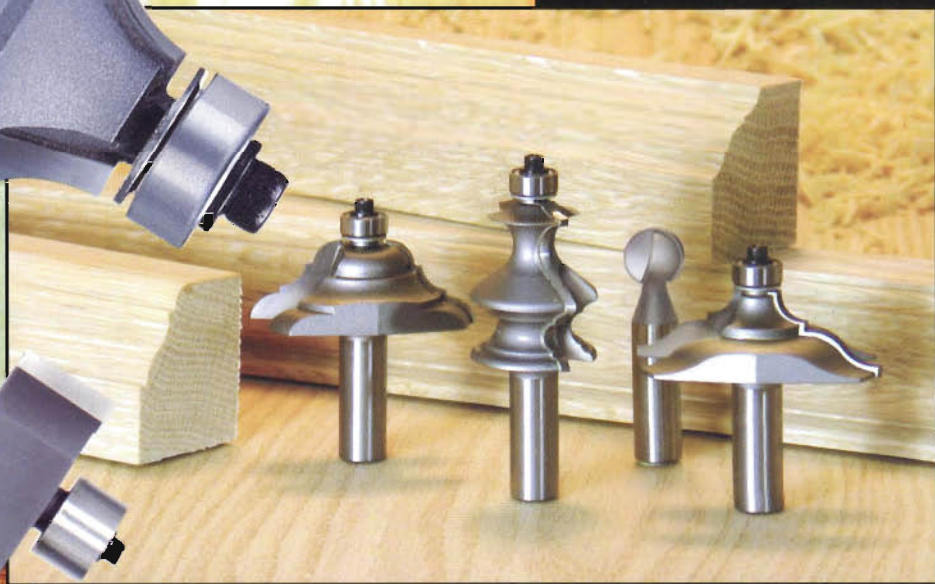


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