

Tips for Buying Tools on the Web

Tool Buyer's Guide

AMERICAN
WOODWORKER.
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2001

How to buy
the right

- Tablesaw
- Router
- Air Compressor
- Jointer
- Cordless Drill
- Miter Saw
- Lathe

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for 2001

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with purchase
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- MAX. CUTTING HEIGHT: 6"
- MAX. CUTTING DEPTH: 1/8"
- MIN. BOARD THICKNESS: 1/4"
- FEED RATE: 26 FPM
- 2 H.S.S. KNIFE CUTTERHEAD
- CUTTERHEAD RPM: 8,500
- FEED RATE: 26 FPM
- 55 CUTS PER INCH
- HEAVY STEEL COLUMNS
- 2 H.P., SINGLE PHASE MOTOR, 110V, 16 AMPS
- APPROX. SHIPPING WEIGHT: 85 LBS.



G1017 WITH STAND

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- MAX. CUTTING DEPTH: 1/8"
- CUTTERHEAD RPM: 5,000
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Rated "Best Instruction Manual" in a Hollow Chisel comparison by American Woodworker - February 1998



G3183

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SALE
\$199⁹⁵

5 SPEED FLOOR RADIAL DRILL PRESS

- SWING: 34" • DRILL CHUCK: 3/4"
- SPINDLE TAPER (EXT.): JT #33
- SPINDLE TRAVEL: 3 1/4"
- SPEEDS: 5, 550-3,470 RPM
- MOTOR: 1/2 H.P., 110V
- APPROX. SHIP. WEIGHT: 150 LBS.



G7946

\$42⁰⁰
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G7946

\$179⁹⁵

12 SPEED 17" FLOOR DRILL PRESS

- SWING: 17" • DRILL CHUCK: 3/8"
- SPINDLE TAPER: MT #3
- SPINDLE TRAVEL: 4 1/4"
- SPEEDS: 12, 210-3,300 RPM
- MOTOR: 1 H.P., SINGLE PHASE, 110V/220V
- APPROX. SHIP. WEIGHT: 275 LBS.



G7947

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G7947 \$375⁰⁰

6" x 47" HEAVY-DUTY JOINTER

- TABLE SIZE: 6" x 47"
- HEAVY-DUTY ONE PIECE STEEL STAND w/BUILT IN CHIP CHUTE
- RE-DESIGNED FENCE SYSTEM - POSITIVE STOPS @ 45° & 90°
- 1/2" RABBETING CAPACITY
- 3-KNIFE BALL BEARING CUTTERHEAD
- MOTOR: 1 H.P., SINGLE PHASE, 110/220V
- APPROX. SHIPPING WEIGHT: 235 LBS.

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INCLUDES A FREE PAIR OF SAFETY PUSH BLOCKS!

G1182ZX
INTRODUCTORY PRICE!

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1 1/2 H.P. SHAPER

- TABLE SIZE: 20 1/4" x 18"
- 1/2" & 3/4" INTERCHANGEABLE SPINDLES
- 3" SPINDLE TRAVEL
- 1 1/4", 3 1/2" & 5" SPINDLE OPENINGS
- 5" MAXIMUM CUTTER DIAMETER
- MOTOR: HEAVY-DUTY 1 1/2 H.P., 110/220V
- TWO SPEEDS: 7,000 & 10,000 RPM
- SHOWN WITH OPTIONAL WING
- APPROX. SHIPPING WEIGHT: 220 LBS.



G1035

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\$395⁰⁰

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48 STATES

1 H.P. DUST COLLECTOR

Voted Best New Tool for 1999 in the single-stage dust collector category by Popular Woodworking Magazine!

- PORTABLE BASE SIZE: 15" x 25 1/2"
- NUMBER OF 4" INTAKE PORTS: 1
- MOTOR SIZE: 1 H.P., SINGLE PHASE
- MOTOR AMP DRAW: 14 AMPS (AT 110V)
- AIR SUCTION CAPACITY: 500 CFM
- APPROX. SHIPPING WEIGHT: 79 LBS.



G8027

\$129⁹⁵

\$20⁰⁰
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48 STATES

2 H.P. DUST COLLECTOR

- PORTABLE BASE SIZE: 21 1/4" x 33 1/2"
- (2) 4" INTAKE PORTS
- 1550 CUBIC FEET/MIN. AIR SUCTION
- 30 MICRON BAG FILTRATION
- MOTOR: 2 H.P. SINGLE PHASE, 220V
- APPROX. SHIPPING WEIGHT: 130 LBS.
- INCLUDES A FREE 2 - STAGE CYCLONE SEPARATOR (A \$34.95 VALUE!)



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- MAXIMUM CUTTING HEIGHT: 4"
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Miter gauge doubles as a rip fence!
TABLE SIZE: 13 1/2" x 13 1/2", TILTS TO 45°
• BLADE LENGTH: 62"
• APPROX. SHIPPING WEIGHT: 38 LBS.

G8976 REG. \$139⁹⁵

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CORDLESS
SAW KIT
G8598

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CORDLESS DRILL KIT
G8595

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18 V, 3/8"
CORDLESS DRILL KIT
G8596

\$69⁹⁵



18 V, 1/2"
CORDLESS DRILL KIT
G8597

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OUR DRILLS ARE BUILT WITH JOHNSON MOTORS, JACOBS® CHUCKS & PANASONIC® BATTERIES

14" BANDSAW

- CUTTING CAPACITY / THROAT: 14 1/4"
- MAXIMUM CUTTING HEIGHT: 6"
- TABLE TILT: 45° RIGHT, 15° LEFT
- BLADE SPEEDS: 2,500 AND 3,350 F.P.M.
- BLADE SIZE: 98" (1/8" TO 3/4" WIDE)
- MOTOR: 1 H.P., TEFC, 110V/220V, SINGLE PHASE
- APPROX. SHIPPING WEIGHT: 165 LBS.

COMES COMPLETE WITH A
1/2" BLADE, RIP FENCE
AND MITER GAUGE!

G10192

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G9915	72" WIDE x 30" DEEP x 1 1/4" THICK	\$179.95	\$42.00
G9916	96" WIDE x 30" DEEP x 1 1/4" THICK	\$235.00	\$42.00
G9917	120" WIDE x 30" DEEP x 1 1/4" THICK	\$345.00	\$42.00
G9918	60" WIDE x 36" DEEP x 1 1/4" THICK	\$179.95	\$42.00
G9919	72" WIDE x 36" DEEP x 1 1/4" THICK	\$215.00	\$42.00
G9920	120" WIDE x 36" DEEP x 1 1/4" THICK	\$475.00	\$42.00

16" BANDSAW

- MAXIMUM CUTTING WIDTH: 16 1/2"
- MAXIMUM CUTTING HEIGHT: 7 3/4"
- TABLE TILT: 45° RIGHT, 10° LEFT
- BLADE SPEEDS: 2,275, 2,720 & 3,265 F.P.M.
- BLADE SIZE: 113"
- MOTOR: 2 H.P., TEFC, 110V/220V, PREWIRED TO 220V
- APPROX. SHIPPING WEIGHT: 456 LBS.

COMES COMPLETE WITH A
1/2" BLADE, RIP FENCE
AND 2 1/2" DUST PORT!

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\$50⁰⁰
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18" PROFESSIONAL BANDSAW

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- TABLE TILT: 45° RIGHT, 10° LEFT
- BLADE SPEED: 3166 F.P.M.
- BLADE SIZE: 130"
- MOTOR: 2 H.P., TEFC, 110V/220V, PREWIRED TO 220V
- APPROX. SHIPPING WEIGHT: 345 LBS.

Takes 130" Blades from
1/4" to 1 1/4"

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ANY SHOP!

G4186Z

\$895⁰⁰

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20" BANDSAW

- MAXIMUM CUTTING WIDTH: 20"
- MAXIMUM CUTTING HEIGHT: 13 3/4"
- TABLE TILT: 45° RIGHT, 10° LEFT
- BLADE SPEEDS: 3,500 F.P.M.
- BLADE SIZE: 154 1/2"
- MOTOR: 3 H.P., TEFC, 220V
- APPROX. SHIPPING WEIGHT: 613 LBS.

Takes 154 1/2" Blades from
3/16" to 1 1/4"

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Issue No. 83, Fall/Winter 2000

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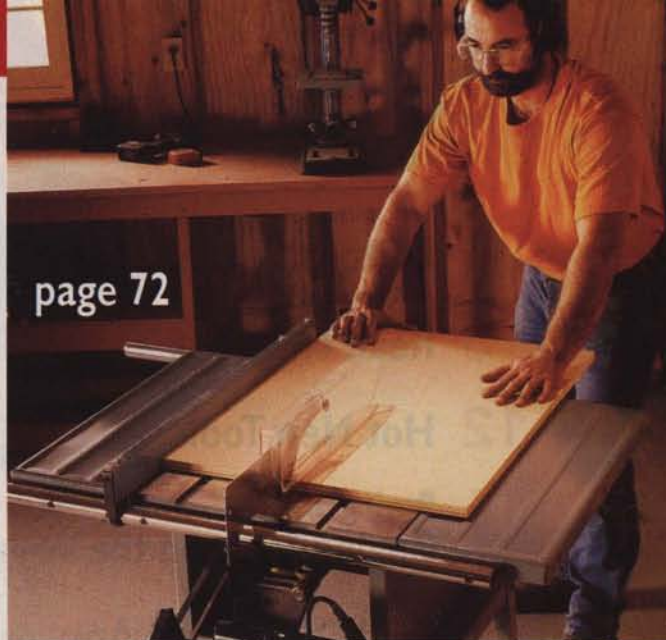
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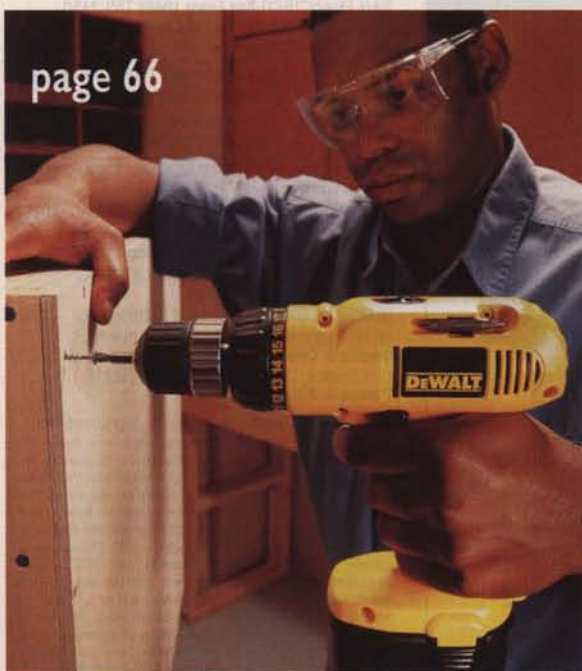
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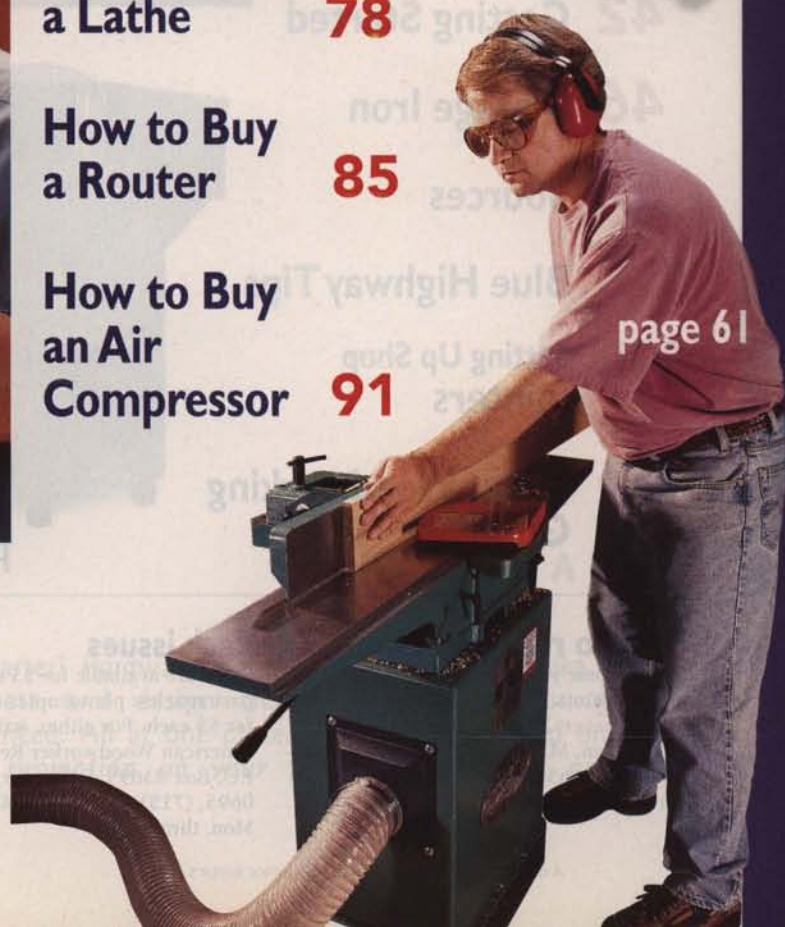
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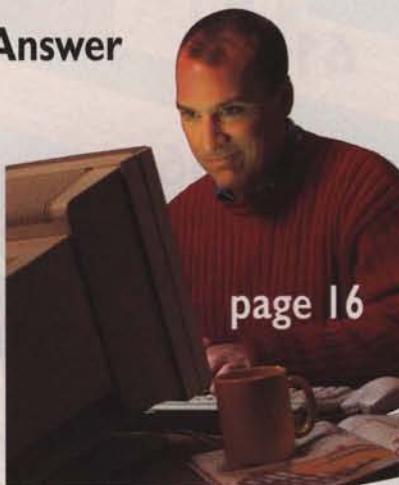
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How to reach us

We welcome your comments, suggestions, or complaints. Write to us at: **American Woodworker**, 2915 Commers Dr., Suite 700, Eagan, MN 55121 Phone: (651) 454-9200 Fax: (651) 994-2250 e-mail: amwood@concentric.net

Back issues

Some are available for \$5 each. Copies of past articles: photocopies are available for \$3 each. For either, write or call: American Woodworker Reprint Center, P.O. Box 83695, Stillwater, MN 55083-0695, (715) 246-4344, 8 AM to 5 PM CST, Mon. through Fri.

AMERICAN WOODWORKER

EDITOR Ken Collier

ASSOCIATE EDITORS Tom Caspar, Tim Johnson, Dave Munkittrick

CONTRIBUTING EDITORS Ed Krause, George Vondriska

ART DIRECTOR Patrick Helf

GRAPHIC DESIGN INTERN Shelley Moen

TOOL BUYER'S GUIDE EDITORS Walker Angell, Alan Lacer, George Vondriska

TOOL BUYER'S GUIDE ART DIRECTORS Kirsten Ford, Jennifer Ionta, Barbara Pederson
COPY EDITOR Mary Flanagan

FACT CHECKING SPECIALIST Nina Childs Johnson

PRODUCTION TEAM Judy Rodriguez, Bill Sympson

SHOP ASSISTANTS Ben Davis, Jeff Larson, Al McGregor

READER SERVICE SPECIALIST Roxie Filipkowski

ADMINISTRATIVE ASSISTANTS Lori Callister, Shelly Jacobsen

PUBLISHER Michael P. Reilly

ADVERTISING SALES DIRECTOR Rick Straface

MARKETING DIRECTOR Robert Calandruccio

SHOW MANAGER Jonathan Frank (215-862-9081)

AMERICAN WOODWORKER SHOW BOOTH SALES Kristen Metzner (215) 321-9662 ext 42

PROMOTION MANAGER Andrea Vecchio

PROMOTION COORDINATOR Joanne Noé

ADVERTISING COORDINATOR Susan Bordonaro

ADVERTISING SALES

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EDITOR-IN-CHIEF Gary Havens

OFFICE ADMINISTRATIVE MANAGER Alice Garrett

VICE PRESIDENT, U.S. MAGAZINE FINANCE

Joseph Williams

VICE PRESIDENT, CIRCULATION, US MAGAZINE

PUBLISHING Craig Reynolds

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DELTA TAKES A SERIOUS LOOK AT BENCHTOP WOODTURNING



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Editor's Letter

Why Tool Tests?

If you're in the market for a tool, a good magazine tool test can really help you out. It's great to get comments from fellow woodworkers on the internet, in your local woodworking club, or even just standing in line at The Home Depot, but usually these folks know only one or two tools, and they may not be the latest models, either. What makes magazine reviews so useful is that editors can compare all the latest models, side-by-side.

Two Tool Tests per Issue

That's why we've increased our tool tests to twelve per year—more than any other woodworking magazine. We know how much you use them. You'll find two in each of our regular bi-monthly issues. In this issue, our annual Tool Buyer's Guide, you'll find an index to past tool tests on page 8. Plus, there's an assortment of past tool tests on our Web site, www.americanwoodworker.com.

What Tests Can't Tell You

Unfortunately, no tool test can tell you all you need to know. In fact, one of the most important features of a tool is nearly impossible to test—longevity. Sure, you can pull a tool apart and look at the bearings, but it's

entirely possible for a tool to be built like the proverbial tank, only to fail because of some other weakness, say in the wiring. And what good does it do to hear, "Oh, I had one of those and it broke down the first week." Every manufacturer, even the most quality-conscious, produces an occasional lemon. So what's a woodworker to do?

Personally, I rely on brand reputation, plus good repair or replacement service. So even if I'm unlucky and get one of those rare lemons, I can have it taken care of.

Focus on Features

The best thing you can get from a magazine tool test is advice about features. What features are good for what kind of work, which ones seem to work well, which don't. Because our

editors are all former professional woodworkers, they have plenty of experience to draw on, but we add to that with a panel of outside testers. We don't let one editor, with personal likes and dislikes, dominate the evaluation process. For example, a detailed instruction manual can be a lifesaver for one person. For someone else, it's, "I don't need no stinkin' instructions."



Contributing Editor Ed Krause tests air flow for our tool test on dust collectors, #80, June 2000 (see page 8 for reprints).

We've increased our tool tests to two per issue—more than any other magazine. But it's important to understand what tool tests don't tell you.

Our goal is to make the results as accurate and unbiased as possible, and to make our tool tests as useful to you as we can.

Ken Collier, Editor
ken_collier@readersdigest.com

P.S.

Speaking of accurate, we have just set up a separate **fact-checking department** at American Woodworker. This is unique among woodworking magazines. This department makes sure all the factual statements in our tool tests are 100-percent correct. **AW**

DELTA TAKES A SERIOUS LOOK AT BENCHTOP WOODTURNING

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MODEL #46-250

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FULL-SIZE CHUCK FOR
BOWL TURNING.

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and The American Woodshop with Scott Phillips.



The New Tool Buyer's Guide

The charts of tool specifications have moved to the Web, so we can give you more advice on tool buying.

We've redesigned the Tool Buyer's Guide this year, to give you even more assistance with your tool buying decisions. Here are some of the changes we've made:

Charts are on the Web

In the past, the American Woodworker Tool Buyer's Guide has been the one unique source for all the important specifications, including prices, for woodworking power tools. We've assembled those fact-packed charts again this year, and they're up-to-the minute accurate, but we've put them on our Web site: www.americanwoodworker.com. The tools covered are air compressors, air nailers, bandsaws, belt sanders, belt-disc sanders, cordless drills, drill presses, dust collectors, portable jigsaws, jointers, lathes, miter saws, thickness planers, routers, random-orbit sanders, scrollsaws and tablesaws.

You Can Get Printed Tool Charts

If you're not hooked up to the Web, the best thing to do is to find a library, friend, or local school that is. However, if that isn't feasible, you can order printed versions of individual tool charts, while supplies last. Tell us which tool you are interested in, and allow three to four weeks for processing. Send a self-addressed, stamped, business-size envelope to "Charts," Box 83695, Stillwater, MN 55083-0695.

Rants and Raves

Woodworkers often have some pretty strong opinions about tools, and some of them may be useful in making your buying decisions. So we've included a section called "Rants and Raves" for each tool. If you have your own rants and raves (about tools that is, not politics or society), shoot them to us at amwood@concentric.net.

Hand Tools

Although power tools are typically the most expensive tools in a shop, everyone wants the right hand tools for their work, too. So we've included a regular feature on buying hand tools.

Recommendations

And because we recognize that we're not the only magazine you might check for buying advice, we've done some of your research for you, by tracking down tool reviews in other magazines and reporting on their findings.

And finally, because some of the most useful information we have is in the tool tests we've published in the past, here is an index to those tests:

Tool Test Index

We maintain a library of previously published tool tests from American Woodworker. These are side-by-side shop-based performance comparisons of all the available brands within a category of tools. Many of these are on our Web site, www.americanwoodworker.com. You can also order black and white copies for \$3 each from: American Woodworker Reprint Center, Box 83695, Stillwater, MN 55083-0695, (715) 246-4344, 8AM-5PM CST, Monday through Friday.

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Mortisers, Benchtop; Aug '00, #81; Feb '98, #64
Oscillating Spindle Sanders; Oct '00, #82
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Tablesaw Blades; Apr '98, #65
Tablesaw, Contractor's; Dec '97, #63
Tablesaw Fences; Oct '97, #61

AW

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- 1236 Wood Lathe, \$549.99
\$69 8-piece chisel set FREE
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with remote control, \$229.99
\$40 washable electrostatic filter FREE
- Mini Lathe, \$329.99
\$179 14-piece pen-turning starter kit FREE



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Hot New Tools

Quiet 2-1/4-hp Makita Routers ▶

Yes, it says quiet. According to Makita, their new RD1100 series routers are the quietest in their class at 81 decibels. (That's quiet, but you should still wear hearing protection.)

These routers are available in variable speed, with a range of 8,000 to 24,000 rpm, and have a soft start. Without the soft start, the powerful 11-amp, 2-1/4-hp router could wrench itself out of your hands. Another excellent feature is the electronic speed control. As you push the router to take a more aggressive cut, or it hits harder material, the speed control kicks in to maintain consistent rpm at the bit.

Two base styles are available; D-handle (shown) or the traditional two-knob base. The RD series' motors are interchangeable with either base.

Both 1/4-in. and 1/2-in. collets come with the router. You change bits using two wrenches.

These babies are brand new. The retail price should end up at around \$245.

Makita, (800) 462-5482



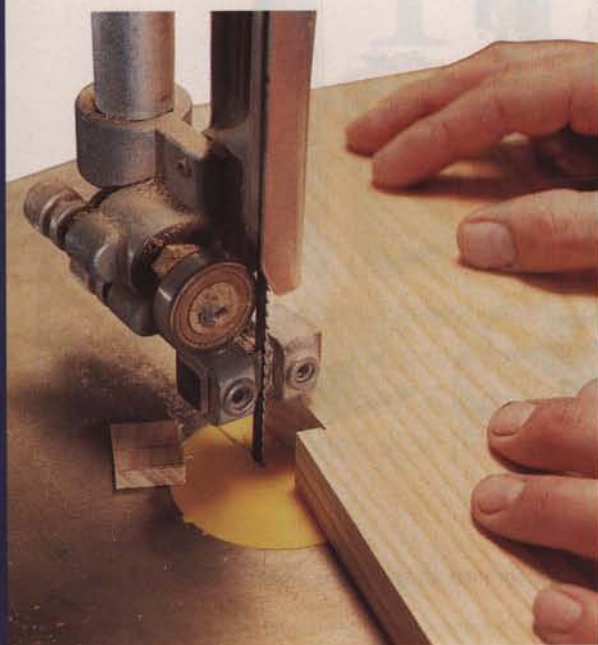
◀ Zero-Clearance Bandsaw Inserts

I hate it when tiny offcuts jam between the bandsaw blade and the table insert. They wedge up in there enough to make me shut off the saw, wait for it to stop, and then clear out the pesky little pieces. If this problem binds you up too, try these new table inserts. They'll keep small parts (and your fingers) away from the blade.

Slice a relief into the insert with the blade you'll be using, and you'll have a perfect fit. Make a custom insert for each blade you commonly use.

Four inserts, made to fit Delta or Jet saws, cost \$10 per set, and they'll last a long time. The blade cuts slightly into the insert when you're turning corners, especially tight ones, but you'll do lots of cutting before you need to throw out an insert. I made them for my 3/8 in. and smaller blades, and won't go back to a regular insert for those blades again.

Woodworker's Supply, (800) 645-9292



BILL ZUEHLKE PHOTOGRAPHY



Easy to turn on. Hard to turn off.

When we designed our new scroll saw, we gave it the features you wanted most. (We know, because we asked you.)

We put the power switch and variable speed controls where they made sense, up top. We designed the table to tilt both ways, instead of just one way. And the table "clicks in" every 15 degrees to make bevel cutting easy and sure. Of course, we also included handy features like a tool-less blade change, an adjustable blower and an integrated light. And we put it all on a heavy cast-iron base for solid performance. All of which makes it one of the easiest scroll saws to have fun with, right out of the box. In fact, the only hard part is turning it off.



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Tools for the Imagination[™]
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Low bucks, big cuts ▶

At \$130, Ryobi is offering a lot of saw for the money. Their new 10-in., 14-amp miter saw will hog through a 4x4 (nominal size) at 90 degrees. Ryobi has worked hard to make this a light-weight, easy-to-maneuver tool that knows how to do its job. It comes with a 40-tooth blade, dust bag, table extensions, stop block and hold down. There are positive stops at nine cutting angles. It's ready to work right out of the box!

Ryobi, (800) 525-2579



◀ Delta downdraft table

Delta's newest weapon in the fight against dust is a well-designed downdraft table. The 1/2-hp motor pulls plenty of dust through the large holes in the tabletop. A shroud surrounds the table, preventing high-velocity chips from ending up on the floor. The entire filter cage slides out so you can wash it off.

This is a serious tool for serious work. At 135 lbs. and \$550, it's a lot of tool dedicated to one job. But if you have lots of sanding to do in your shop, it's a big step toward keeping the dust off your floor and out of your lungs.

Delta, (800) 438-2486

Hot New Tools continues on page 102

another Revolution...

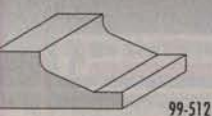


Freud has always been first in cutting tools technology. **First** with anti-kickback design. **First** with Teflon® coatings. **First** with Super micrograin carbide. Now, in their never ending quest for superior cutting tools, Freud engineers have designed another "**first for the industry**". A four-wing raised panel cutter that will revolutionize the way you make raised panel doors. Freud's patented 2+2 Raised Panel Router Bits produce glass-smooth cuts, even on cross grain! This new design has an ingenious configuration of both positive and negative shear angles that eliminates the fuzz on the top edge of the profile. Available individually and in sets. Once you've tried Freud's 2+2's, you'll see all others are second class.

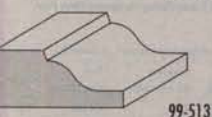
- **Anti-Kickback Design*** chip limitators restrict tooth bit reducing the effects of kickback.
- **Freud's Super Micrograin Carbide** for durable, long lasting cutters that really hold an edge.
- **DuPont Teflon® Coatings** reduce friction, heat and resin build-up and protects from corrosion.
- **Multi-Axis Grinding** provides consistent relief angles on the entire cutting edge for a flawless finish.
- **Shear Angle** Lets the bit slice through the wood, producing a superior finish on all materials.
- **Computer Balancing** eliminates vibration and chatter resulting in clean, smooth profiles.
- **Advanced Tri-Metal Brazing** creates a stronger, more impact resistant bond between the carbide and the bit.

Patented Design

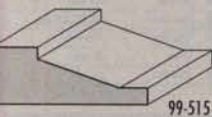
U.S. Patent No. 5,899,252



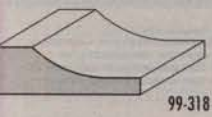
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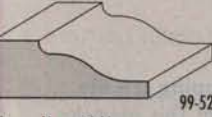
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99-515

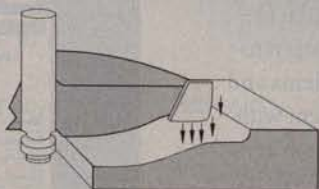


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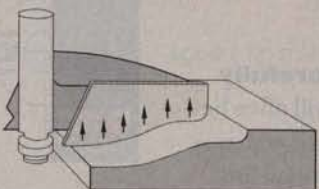


99-520

Other profiles available.



The small wings cut downward on the wood fibers to shear the top edge off for a perfect splinter free edge.



The large wings shear upwards for a perfect finish on the raised panel profile.

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Information courtesy of DuPont® Industrial Coatings
Not all Freud products feature anti-kickback design.

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Buying Tools on the Web

You've decided on the tools for your shop and you're ready to make a purchase. A few of the items you want are at your local store, but several you can't find anywhere. If this is your situation, or you just want to save some money, try shopping on-line. I have yet to find anything for woodworking that was not available somewhere on the net. From hand tools to stationary power tools to lumber and veneer, it's all there and it's easily and immediately accessible.

Here are some tips to make sure everything goes safe and smooth. Many are important whether you're purchasing from an electronic retailer, an on-line auction, or a traditional catalog outfit.

Comparison shop

The Web allows you to quickly go from site to site to compare products and prices. Sites such as www.toolseeker.com (right) will do some of the click-work for you.

Know the return policy

Before purchasing, make sure you understand the return policy and how warranty issues will be handled. If you receive a broken tool you don't want to be stuck having to pay for it or for shipping or handling charges.

Whose warranty?

Watch out for "gray market" items. These are items that are packaged and warranted for international sale, not for the U.S. market. Though they are

legal and can be a great deal, the warranty will need to be honored by the electronic retailer, not the manufacturer. I occasionally purchase gray market items when I judge that the price difference outweighs the potential warranty pitfalls.

Credit card use

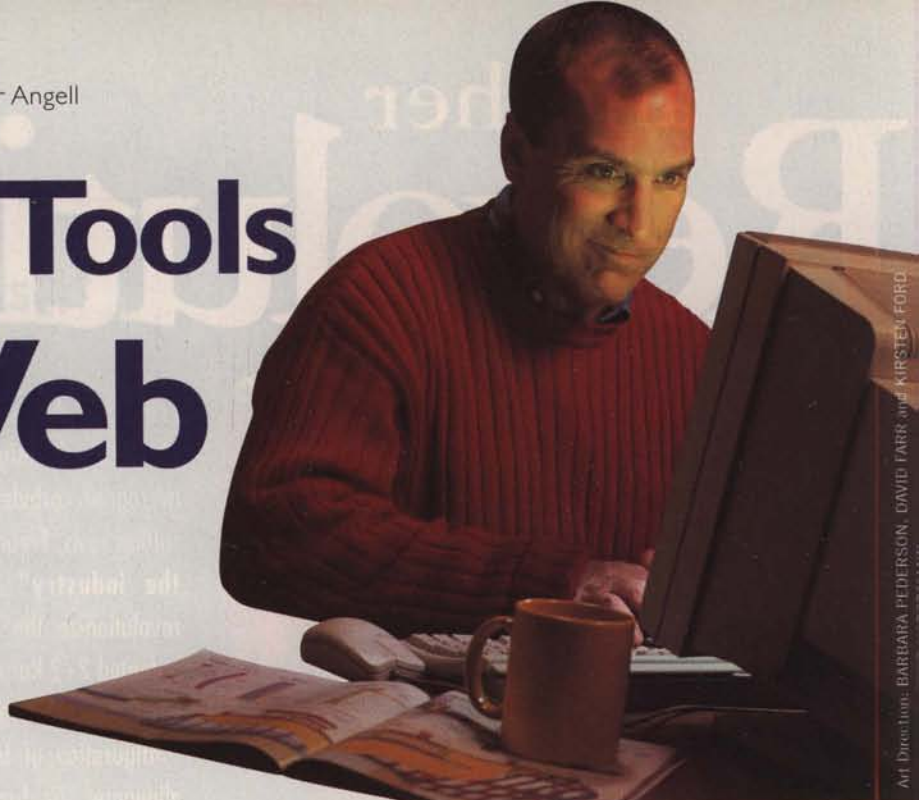
If there are problems you should always try to resolve them with the on-line merchant first. Only if this fails should you contact your credit card company and ask them to issue a charge-back. You need to fully document the problems and you'll need to provide them with copies of any receipts, invoices and packing slips you've received. If you're buying from an individual on an auction site you can use an escrow service to provide similar protection.

Read each page carefully

During checkout there will often be a pre-selected box asking if you want to be added to an e-mail list. If you don't like to get a lot of promotional e-mail make sure you un-select this box.

Keep the summary information

A good site will provide you with a summary page or an e-mail configuration immediately after you place your order. This should include the quantities and purchase prices of all items, where and how they are to be



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The first router that actually conforms to your idea of perfection.

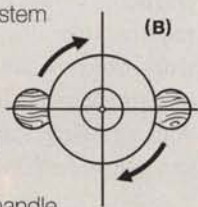
Your unwavering devotion to precision has finally met its equal: introducing the Bosch 1617EVS Router. Every feature is designed to finally give you the levels of

accuracy and control you've always demanded from a router, but have never found.

For example, not satisfied with the typical "close is close enough" bit depth adjustment, we've given you a patented Linear Height Adjustment System, which includes a Microfine Adjustment Dial (A) that can position the bit exactly where you want it.

And with adjustments as fine as .004 of an inch, we do mean exactly.

Bosch also patented a Precision Centering Design™ system (B) that keeps the bit perfectly positioned in the cut regardless of handle position, especially critical when following



a template or turning a corner.

The most powerful motor in its class – 2 HP, 12 AMP, variable speed – is harnessed by our innovative Soft Start

steel and wrapped in a light but strong

(C) magnesium housing, offering the highest power-to-weight ratio in its class.

Plus, classic hardwood handles reduce fatigue, and somehow just feel right. Self-releasing collets prevent stuck bits, and allow for easy bit changes.

So, has your need for perfection been stirred? Are you looking at your old machine with a mixture of contempt and pity?

Maybe now's the time to meet a router as precise

as you. And a Bosch dealer who

Technology, (C) which eliminates harmful start-up torque and reduces wear and tear. And the innovative Constant Response Circuitry maintains a consistent speed, no matter how tough the material.

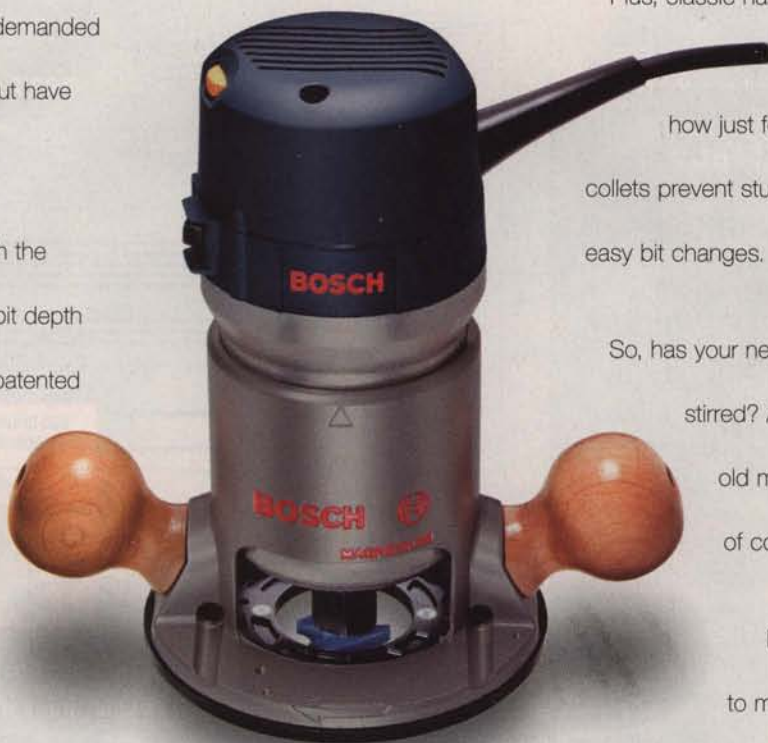
Speaking of tough, the one-piece armature shaft is machined from solid

understands your obsession.

For more information, please call 1-877-267-2499 or visit boschtools.com. And discover all the advantages of over-engineering.

BOSCH

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Buying Tools on the Web

shipped, and how the items were paid for. You should also receive a follow-up e-mail when the items ship, including information on any items that were back ordered, when they expect to ship, and a tracking number for the shipment. You can use this number at the shipper's site to see where your shipment is and when it will arrive. Printing these pages and keeping the e-mails will eliminate any confusion should there be problems later.

Credit Card Fraud

If you're reluctant to enter your credit card information on an on-line order form, you're not alone. Consider, however, that if you're purchasing from a reputable merchant who uses a secure transmission protocol (more on this below) you probably have less to worry about than if you give your credit card to the unknown waiter in a restaurant.

Most credit card fraud on the Internet is by outfits that generate illegal card numbers or obtain them through stolen wallets.

How do you know if the connection between your computer and the electronic retailer is secure? The pages that collect your address and credit card information should use a secure protocol called a secure sockets layer or SSL. When your browser is using SSL to communicate with the retailer you will notice a lock icon on your browser (blue lock with gold background in the lower left corner of Netscape, gold lock in the lower right corner of Internet Explorer). If you don't see the lock icon, either the site does not support secure transactions (in which case you should use another site), or your browser is too old and needs to be upgraded (you'll need at least version 4.0 of either browser).

The screenshot shows the Amazon.com product page for the Delta 37-350AK D3-20 8" Precision Jointer with Extra Set of Knives. The page includes the Amazon logo, navigation tabs (All, Books, Music, Video, Electronics, Software, Toys & Games, Health & Beauty, Home, Garden, Pet Supplies, Baby, Industrial & Scientific, Automotive, Sports & Outdoors, Travel, Food & Wine, Books, Music, Video, Electronics, Software, Toys & Games, Health & Beauty, Home, Garden, Pet Supplies, Baby, Industrial & Scientific, Automotive, Sports & Outdoors, Travel, Food & Wine), a search bar, and a product image of the jointer. The product title is "Delta 37-350AK D3-20 8\" Precision Jointer with Extra Set of Knives". The price is \$1,499.99, and it is marked as "Availability: This item usually ships within 2-3 days." There is a link to "See larger picture". The shipping information states: "Shipping: This item requires special handling and ships separately from other items in your order. It will be delivered to your door but not unpacked or assembled. We are sorry that we cannot ship this item to Alaska or Hawaii. Our Tool Crib of the North Catalog, however, can! Please call them at 1-800-358-3096." The features list includes: "16,500 cuts per minute for a smooth finish", "Extra-long 42 inch infeed table for supporting long work", "1-1/2 hp single phase motor for powerful cutting", "Parallelogram support system for easy table height adjustment", and "Two-year limited warranty on machines, parts, and accessories". The shipping weight is 39.42 pounds and the ASIN is B00002ZUT. The average customer review is 4.5 stars out of 5, based on 2 reviews. There are links for "Related Accessories" and "Customers who bought this item also bought these products". The editorial reviews section includes a quote from Justin Paul: "Delta 37-350AK Machine Review (7/11/01) Justin Paul". The "From the Manufacturer" section describes the jointer as a high-performance and large capacity machine. The "All Customer Reviews" section shows a link to "Write an online review" and a link to "Share your thoughts with other shoppers". The bottom of the page shows a link to "Click here for more info" and a link to "13 of 13 people found the following review helpful: D3-20: A real delight".

Amazon.com provides a wealth of information on purchases, including product specs, editorial reviews and comments from other consumers.

Inspect your purchase

When your package arrives, check it over and make sure the delivery person notes any external damage on the manifest before you sign. Open your package immediately and inspect the contents. Do they agree with the packing slip? (Some items may be back ordered.) Is anything damaged? If there are any problems, contact the on-line retailer immediately.

Plan for freight delivery

A freight company will deliver larger items such as tablesaws. They'll give you a call a day or two before the delivery to arrange a time. Make sure you inform them of any issues such as no loading dock or forklift so they'll be sure

to send a truck with a liftgate.

Keep in mind that freight companies are used to dealing with businesses, not home-based consumers. Give them some slack when they tell you that they'll be there sometime between noon and 5:00 p.m.—that's probably the best they can do.

Each freight company is different, but generally the driver is only required to get the item off the truck which means they'll lower it on a liftgate, slide it off, and ask for your signature. Plan ahead and arrange for help. Because most woodworkers can't resist playing with new tools, you can probably invite some friends over to help and let them test-drive the tool when it's set up.

AW

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From the beginning, Dodge Ram has exhibited a healthy disregard for the rules of convention. It led the way with new full-size pickup conveniences, capabilities, and – dare we say – even style. Today, many of the innovations Dodge Ram brought to full-size pickups are considered absolute musts in the segment. Lead. And let the others follow. That's Dodge Ram's attitude.

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Always use seat belts. Remember, children 12 and under in the front seat only with the passenger airbag turned off. Properly secure all cargo. Mopar® accessories shown optional. *Based on registration data from The Polk Company for U.S. households owning/leasing a truck and then buying/leasing a new competitive one during the 1996-1999 calendar years.

Question & Answer

Router Table or Shaper?

Q. I have a good-quality, 1-1/2-hp router and I'm thinking about either building a router table or buying a shaper. What are the differences? If I build a router table would I need to also buy a 3-hp router or would my 1-1/2 hp be good enough?

Will Larson

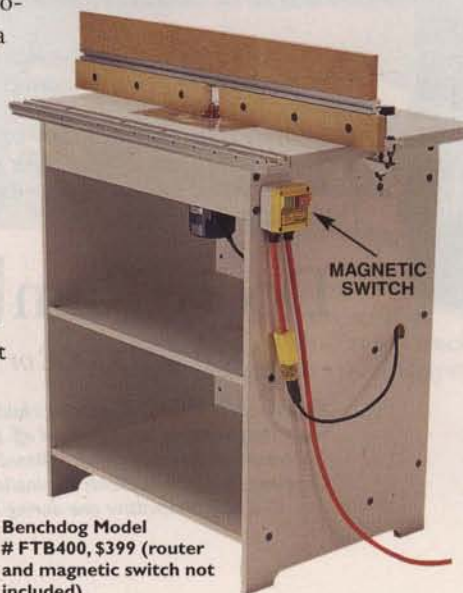
A. The traditional argument is that shapers are geared for production shops, while a router table is best for home/small shop applications. Not anymore.

According to router expert Pat Warner (www.patwarner.com) the major benefits to building or buying a router table are, first, you can save some money by using the router you already have. Second, you can perform operations such as dovetails and inside cuts like dadoes and mortises. Third, there are more router-bit profiles available than shaper-cutter profiles. Building a router table is also a fun weekend project.

So why buy a shaper? Shapers can run all day for years without a complaint, they are quieter and smoother running than routers, and often their more powerful induction motor means you

A router table gives you double-duty from your router by holding it secure and upside-down in the table, allowing you to do many shaper-type operations. For occasional shaping tasks it fits the bill nicely, but if you do a lot of shaping it may not be the best option. However, it does do dovetails (and dadoes too!).

can do in a single pass what a router might require several passes to do. Shapers can also run in reverse, so it's easier to cut with the grain. Shaper cutters generally last longer and can be sharpened more often than router bits, and you have the ability to install rub collars above and/or below the cutter for pattern work. It's also easier to fit a guard on top of a cutter, which might save your fingers some day. Most shapers come with collets for router bits, although they don't perform well with small bits, because of



Benchdog Model #FTB400, \$399 (router and magnetic switch not included).



A shaper is exclusively designed for shaping, with a powerful induction motor, very accurate height adjustment, a precision fence and smooth, quiet operation. For edge shaping it's the way to go, but it won't do dovetails! Jet Model # JWS22CS, \$750.

their lower spindle speeds (10,000 rpm compared to the 20,000 of a router.)

Shapers start at about \$375 and can cost up to around \$1,500. (For smaller work check out the Grizzly benchtop shaper for \$89). Because you already have a useable router, a router table will cost anywhere from \$25 if you mount it in your tablesaw extension (you can use your tablesaw fence for the router) to more than \$400 for a commercially made router table with all the bells and whistles. If you chose to build a router table, a 1-1/2-hp router is sufficient for many operations, but variable speed is a plus. Without it, don't try to run any large-diameter bits (over about 1-1/2 in.). If you do much shaper-type work, you'll eventually want to either install a 3-hp variable-speed router in your table or get a shaper to use in addition to your router table. It's not a waste of money to build a table now and buy a shaper later (or vice-versa) because both have their own benefits.

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In a test of multi-purpose 10" saw blades Wood Magazine declared that general purpose 40-tooth ATB's outperformed the conventional 50-tooth ATB/R combination blades. If you're looking for the ultimate all purpose work horse, let the CMT General lead you to battle. For fast, clean crosscuts and rips in hardwoods and laminates victory is sure to be yours with CMT. Wood Magazine was "tickled pink" with the performance of our thin kerf General. You will experience similar emotions.

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CMT's GENERAL blades are for tablesaw use only.

Question & Answer

Do Link Belts Work?

Q. Several people have suggested that I install link belts on my stationary tools, even if the tool is brand new. What will this accomplish?

Marcus Felcher

A. There are three primary reasons for using link belts: 1. vibration reduction; 2. longer belt life; and 3. easier installation. Drawbacks? Just the cost: around \$15 for a typical 3-ft. belt.

According to Robin Palmer at Fenner Drives, traditional black V-belts have non-elastic continuous inner cords that are very effective at transmitting vibration between the motor and tool. Link-belts, on the other hand, are made up of numerous interlocked segments (see photo, at

right). Each segment is comprised of a polyurethane elastomer along with multiple plies of polyester fabric. Because there is no continuous non-elastic cord, vibration is significantly reduced. Link-belts transmit about 35 percent as much vibration as a traditional belt.

Because the length of these belts is fully adjustable by adding or removing links, they make tension adjustment easier on some machines, and often make aligning pulleys easier as well. Link belts last longer, too, because it's usually the cords that break in traditional belts.

Make sure you get an instruction sheet with your link belt, so you'll know how to add and remove links and adjust the tension properly. Also, according to George Cole at In-Line Industries, you need to periodically check the tension on newly installed belts because they may stretch a little,



A link belt, like this one from Fenner Drives, can reduce vibration in a tool.

especially on high-torque machines like table saws.

Sources

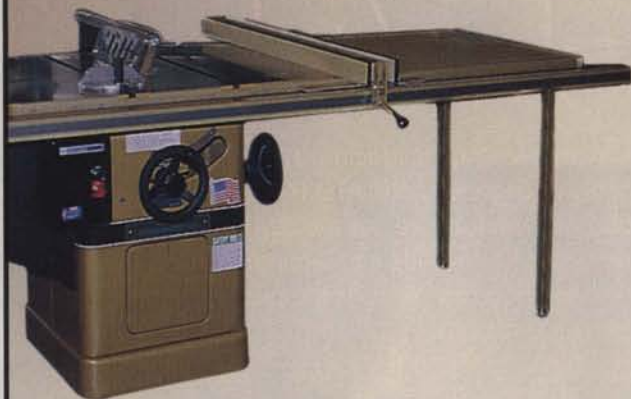
Fenner Drives, www.fennerdrives.com, 800-243-3374.

In-Line Industries, (800) 533-6709. (In-Line also makes a tune-up kit, sold directly or through Woodcraft Supply, that includes a link belt and a set of precision pulleys that further reduces vibration.)

Link belts are available by the foot from Woodcraft Supply, www.woodworkingtools.com, (800) 225-1153.

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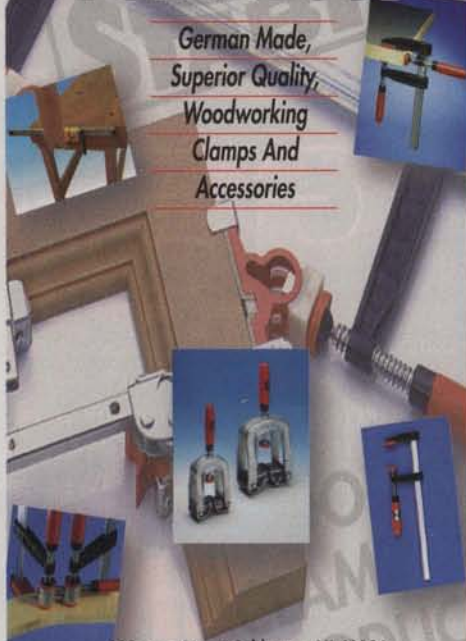
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Laser Guides for Miter Saws

Q. On The New Yankee Workshop Norm used a miter saw that had a laser on it to guide the cut. I can't find anything like it. Can you help?

Dick O'Keefe

A. The saw Norm uses was manufactured by Porter-Cable several years ago and is no longer available.

However, there are aftermarket laser guides available:

The SG-DMS (\$169) from Checkpoint (www.checkpoint3d.com, 310-891-1550) is designed to be mounted to the blade housing of most miter saws (photo, at right) as well as many circular and radial-arm saws. The Checkpoint device produces a rectangular shaped dot to aid in alignment.

Bladepoint (www.bladepoint.com, 617 770-4575) manufactures a device that replaces the arbor washer on your saw (\$149). The line produced by Bladepoint also works well on some radial-arm and circular saws. Call Bladepoint for specific information regarding your tool model.

For work that doesn't require a very high degree of accuracy, these accessories can help you work quicker and more accurately (at least more accurately than a quick eyeballing). The drawback, besides cost, is that getting closer than about 1/16-in. accuracy on a consistent basis may be difficult. Ray Caluori at Bladepoint says that after you use one for awhile, your accuracy will increase and that 1/32-in. accuracy is possible. Bladepoint is also developing a higher end version that will provide a higher degree of accuracy and should be available within the next four months.

The Checkpoint laser provides a rectangle (approx. 3/32 in. x 3/16 in.) for alignment. You can align it side-to-side so that the rectangle is to either side of where the blade will cut or centered on the cut, which allows you to line up either left or right of the blade. Originally designed for the Skill 77 circular saw, it works on many circular, miter and radial-arm saws. You turn the unit on with a twist switch on the end of the housing.



You'll need to drill a small hole in the blade housing for the Checkpoint to shoot its laser through. A small piece of clear acrylic protects the laser from sawdust and other debris. The kit includes all mounting hardware and the clear acrylic dust shield.

The Bladepoint laser replaces your arbor washer and shoots a straight line along your material just to the left of the blade cut. It works on other tools that have a 5/8-in. arbor including radial-arm saws and hand-held circular saws.



A centrifugal switch turns the Bladepoint on automatically when you start your saw. This is convenient for many operations, but does require your saw to be running to do any alignment with the laser. Note the crooked arrangement of the batteries. This is so they'll continue to work when spinning at several thousand rpm.

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Question & Answer

Why Have a Magnetic Switch?

Q. I've heard you should buy tools with a magnetic switch. Why does this make any difference?

Martin Helquist

A. There are two very good reasons for doing this, both involving safety.

First, magnetic switches provide protection in the event of a power failure. Suppose you are ripping on your tablesaw and your breaker trips. You run to the basement, flip the breaker back on, and hear a loud *thwap*, as your board goes right through the wall of your shop! A magnetic switch would have prevented this. It switches the tool off when the power is interrupted, and stays off when the power is restored. Even a momentary power outage, as can occur during a storm, will turn off the switch.

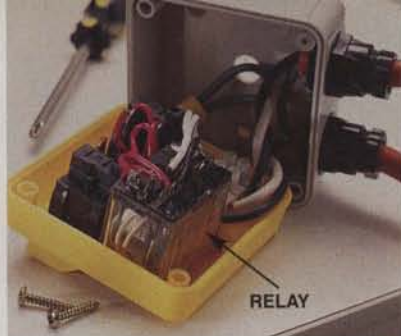
The second advantage is that a but-

ton is often easier to hit than a toggle if you need to shut off power quickly.

Magnetic switches have a relay inside, basically an electromagnet that pulls a spring-loaded switch. Turn on the electromagnet, it pulls the switch on; remove current from the electromagnet, even momentarily, and the switch flips off.

Some stationary tools come equipped with magnetic switches, but beware of fakes. The best way to tell is to turn the tool on, unplug it for about 15 seconds, then plug it back in. If the tool turns itself on you don't have a magnetic switch.

You can purchase aftermarket magnetic switches from Woodcraft Supply (\$54) or on-line at www.woodcraft.com (photo, above right). Reitech (www.reitech.com)



A magnetic switch provides an extra margin of safety because it shuts off automatically if power to the tool is interrupted.

offers a switch that combines power-outage protection with GFCI protection and a very large (10 in. by 12 in.) off button. Available from Tools-On-Sale (www.7cornershdwe.com). **AW**

If you have a question you'd like answered, send it to us at: Question & Answer, American Woodworker, 2915 Commers Drive, Suite 700, Eagan, MN 55121. Sorry, but the volume of mail prevents us from answering each question individually.

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The Future of Portable Power Tools

When I started following the tool industry 15 or so years ago, I couldn't have imagined the tools in today's well-equipped tool chest. A 24-volt cordless drill? Yeah, right—that's like two car batteries! Must weigh 50 pounds! Oh sure, and I suppose the Dow will go over 10,000, right?

The cordless drills we had back then weren't terribly impressive. Advances in microelectronics, plus the millions of dollars driving the research and development programs at fiercely competitive tool companies, made these dreams come true. But what's next? What new tools and features are around the corner?

To find out, I talked to engineers and tool designers at major tool manufacturers to uncover what wasn't even on the drawing board yet, but still in the dream stage. They didn't tell me everything, I'm sure, but here's what's coming to store shelves and Web sites near you—not soon, perhaps, but eventually.

If you've ever fought with the tracking control on your belt sander, you'll be glad to know that help is on the way. A few companies have already made improvements here, but a technological leap is coming soon. Making sensors and electronic tracking controls is easy—making them affordable is the trick. And all sanders, especially the popular palm-sized, random-orbit tools, are getting the quiet treatment. The rumor is that you'll be able to sand safely, without hearing protection, in a few years.

Engineers are looking closely at the

electric motors inside your power tools as well. The next wave of power tools will carry motors that are not only lighter, but also more powerful. Thanks to experimentation with different materials for the laminations, windings, and insulation in the motor, a 9-amp motor will someday fit into the same tool housing a 4-amp motor occupies now.

In the past, a metal gear housing meant high quality (and high weight), while plastic housings meant the manufacturer cut corners everywhere they could. Today, the newest tools sport plastic-glass composite housings that are lightweight but stronger than steel. The future holds even better composites that are lighter and will bounce back into shape after an impact that would dent metal or shatter plastic.

Plastic-glass composite housing has already shown up on pneumatic tools, but mostly on the low-power brad nailers and finish guns. The future holds more of the same, plus more big nailers shedding a few pounds. You'd think that if big nailers were too light, the recoil would knock you over, but there are ways around that problem, too. By pulling a little more air from the next generation of compressors, a future nailer

can use a little air to offset the recoil and still have plenty of power to drive the nail. Stay tuned for this one.

Some folks think the "cordless revolution" is just about over now that some 24-volt tools tip the scales at nine or 10 pounds. I think there's still room to expand the field. Taking cordless technology into new tool categories is the fad of the future. Circular saws were surprising

enough, but jigsaws, power planers and miter saws? Stanley-Bostitch has developed a roofing nailer powered by a 20.4-volt battery. Cordless nailers aren't new—Paslode introduced the first one in 1986—but this is the first one that doesn't use smelly MAPP gas as a propellant. Rechargeable batteries are getting lighter, too. Nickel Metal Hydride batteries had some problems when

first introduced, but the industry, led by Makita, is making them work in a big way now. Lithium batteries power your cell phone, which drains power slowly, but tools are greedy power-users and lithium can't keep up, yet. There are some rumors that cobalt batteries might turn out to be worth developing as well.

Just remember: All manufacturers told me that the best ideas come from the people who buy and use the tools. So keep those messages and e-mails coming!

"The rumor is that you'll be able to use a belt sander without hearing protection in a few years."

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- 150 lb capacity



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- All-steel construction
- 15½" wide ball bearing roller
- 250 lb capacity



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- All-steel construction
- 5½" wide ball bearing rollers
- 150 lb capacity

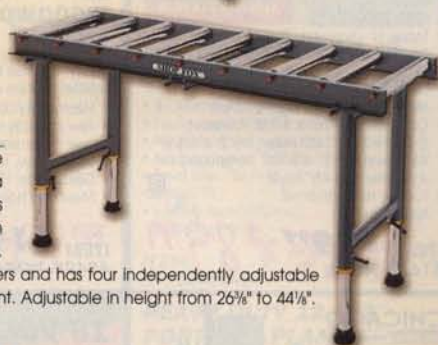


D2274 5 ROLLER STAND

- Adjusts in height from 26½" to 45"
- All-steel construction
- 15½" wide ball bearing rollers
- 250 lb capacity

D2271 ROLLER TABLE

Use this versatile roller table wherever you need extra workpiece support. Features all-steel welded construction and measures 19" x 65" long. Comes with 9 ball bearing rollers and has four independently adjustable legs for any leveling requirement. Adjustable in height from 26½" to 44½". **1000 lb capacity**



D2275 TOOL STAND

This sturdy universal tool stand measures 24" tall, 27½" x 31½" at the base and 17½" x 22" at the top. Includes non-slip rubber feet. **1,000 lb capacity!**



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D2057 HEAVY-DUTY MOBILE BASE

- Adjusts from 19" x 20½" to 29½" x 29½"
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D2058 SUPER HEAVY-DUTY MOBILE BASE

- Adjusts from 18" x 24½" to 28½" x 33½"
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Molybdenum carbide M2 tips 5/8" arbor
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Teeth: 24, C2 carbide, 10mm arbor, maximum RPM: 7000

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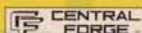
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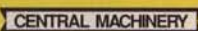
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60	37958-1KMA	\$699
120	37959-1KMA	\$699



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Buying a Block Plane



I love my power tools, but there's one old-fashioned hand tool that I turn to almost every day in my shop—a block plane.

When I need to soften the edges of a freshly milled board, I pick up a block plane.

If I must shave a miter that doesn't quite fit, I put a fresh edge on my block plane.

There's a block plane in my tool belt when I go to trim a sticky kitchen cabinet door in the summer.

It's clear: A block plane is a tool of a thousand uses.

Utility and Cabinetmaker's Block Planes

In the past, every carpenter and handyman owned a block plane. Dozens of models were readily available. Many were light weight, inexpensive utility planes designed

to cut softwoods.

These utility planes are what you're likely to find today at a hardware store. Uncomplicated in design, utility planes generally do not have a lateral lever or an adjustable mouth. They're OK for occasional use, but chances are the blade won't hold an edge as long as the blade in a more expensive plane.

A cabinetmaker working with hardwood needs a better block plane, one with a high-quality blade, heavier body and most of the features of a full-size bench plane (see Three Features to Look For, page 38). You'll find these premium block planes in tool catalogs and some hardware stores. They're divided into two types: standard-angle and low-angle.



What's new?

We're really impressed by the new Veritas low-angle block plane from Lee Valley Tools. It's a high-quality plane at an affordable price (\$70).

Two innovations make this plane stand out from the rest: a traditional English mechanism that's a combination lateral lever and depth-of-cut adjuster, and two setscrews that keep the blade from shifting side-to-side. Add to that an extra-thick blade with a huge bed for support and you've got one terrific tool!



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Hand Tools

The Standard-Angle Plane

The blade of a standard-angle block plane cuts at about 45 degrees, the same angle as a bench plane (see What's the Deal With Cutting Angles?, page 40). But from the outside it looks like a block plane cuts at a lower angle. So what's going on? The answer lies in looking at how the blade is oriented. In a bench plane, the bevel goes down. In a block plane, the bevel goes up. Thus the block plane blade *sits* at a lower angle, but its effective *cutting* angle is about the same.

Despite the similarity in cutting angles, a block plane isn't a substitute for a bench plane. Its sole is too small to true a large surface and its body is too light to take big shavings.

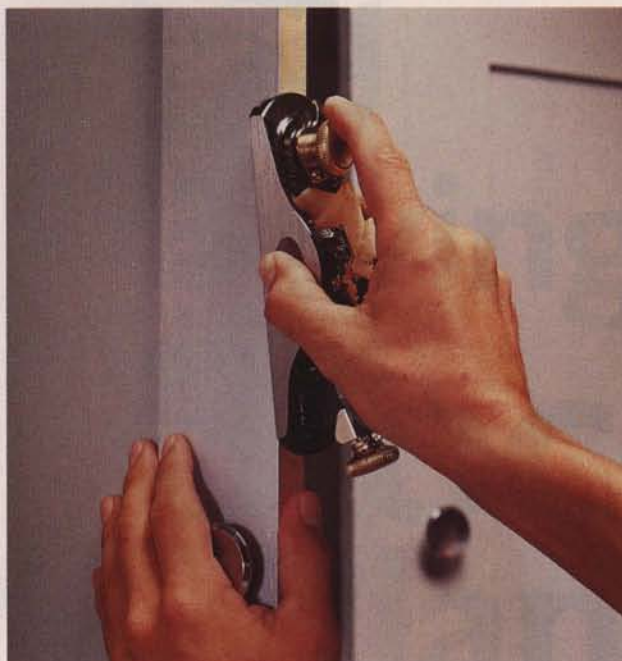
Choose a standard block plane for common situations where you'll take small shavings, like easing edges, cutting chamfers and trimming the sides of cabinet doors.

The Low-Angle Plane

The blade of a low-angle plane is pitched about 8-degrees lower than a standard plane. It's easier to push a plane with a lower cutting angle, which comes in handy when dealing with the stiff grain of a miter or the end grain of a door's stile. Holding the plane askew actually lowers the cutting angle even more. To work best, the blade has to be super-sharp and precisely set.

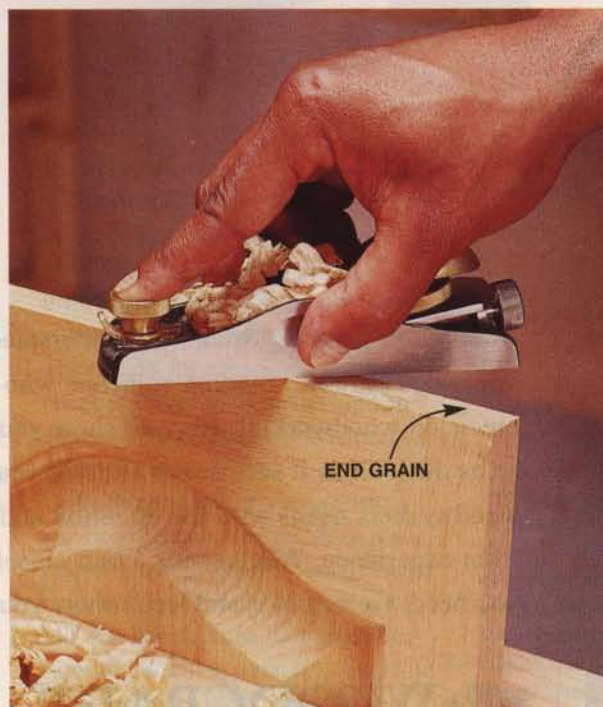
Tearout may be more of a problem with a low-angle plane than with a standard-angle plane. Steeper cutting angles generally result in less tearout.

Reserve a low-angle plane for tricky situations where each shaving is critical. It's designed specifically for miters and end grain.



One-handed planing is a breeze with a standard-angle block plane. You can trim a sticky cabinet door without having to remove it.

Why choose a block plane for end grain?
Its blade won't chatter, because it's supported right down to the tip.



Cut through end grain with a low-angle block plane. A sharp blade leaves a surface that hardly needs sanding.

Sources

Garrett Wade
(800) 221-2942
E.C.E., Lie-Nielsen,
Record, Stanley

Highland Hardware
(800) 241-6748
E.C.E., Lie-Nielsen,
Record, Stanley

The Home Depot
Buck Bros.

Lee Valley Tools
(800) 871-8158
E.C.E., Rali, Record,
Stanley, Veritas

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Hand Tools

Three Features to Look For

Adjustable mouth

To minimize tearout in hardwoods, narrow the opening between the blade and sole. Pushing a lever moves the mouth plate in and out. You can easily reset the mouth to a large opening for thick shavings.

Softwoods rarely tear out, so a plane without an adjustable mouth works fine.



Extra rigidity

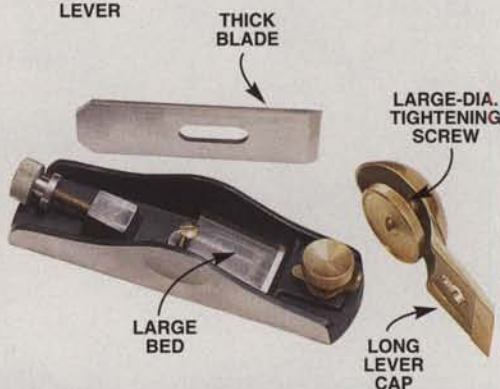
You'll get better control using a plane with a blade that's firmly locked down. The best system combines a thick blade, a large bed, a large-dia. tightening screw and a long lever cap that pushes down directly above the bed.



Lateral lever

Swing this lever from side to side to set the blade parallel to the sole, a critical adjustment for any plane.

Block planes without lateral levers are fussier to adjust. You have to shift the blade itself by hand.



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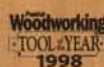


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BLOCK PLANES

Name	Street Price	Adjustable Mouth	Lateral Lever	Extra Rigidity	Blade Width	Body Material	Comments
Low-Angle Planes							
Lie-Nielsen Low-Angle	\$95	No	No	Yes	1-1/4"	Bronze	Very small mouth opening.
Lie-Nielsen Low-Angle Adjustable Mouth	\$150	Yes	No	Yes	1-3/8"	Ductile Iron	Good manual.
Record 060-1/2	\$50	Yes	No	No	1-5/8"	Cast Iron	
Stanley Low-Angle	\$40	Yes	Yes	No	1-3/8"	Cast Iron	
Veritas Low-Angle	\$70	Yes	Yes	Yes	1-5/8"	Ductile Iron	Good manual.
Standard Planes							
Lie-Nielsen Standard	\$95	No	No	Yes	1-1/4"	Bronze	Very small mouth opening.
Lie-Nielsen Standard Angle Adjustable Mouth	\$150	Yes	No	Yes	1-3/8"	Ductile Iron	Good manual.
Record 09-1/2	\$50	Yes	Yes	No	1-5/8"	Cast Iron	
Stanley Standard	\$40	Yes	Yes	No	1-5/8"	Cast Iron	
Utility Planes							
Buck Bros. 6-1/2"	\$11	No	No	No	1-9/16"	Cast Iron	Adjust depth of cut by hand.
Buck Bros. 7"	\$16	No	Yes	No	1-5/8"	Cast Iron	Has blade adjustment screw.
Stanley 12-247	\$15	No	No	No	1-5/8"	Cast Iron	Milled sides, adjust depth of cut by hand.
Other Types							
E.C.E.	\$60	No	No	No	1-1/2"	Hornbeam	50-degree cutting angle, blade adjustment screw.
Rali 105	\$26	No	No	No	1-7/8"	Steel Lever	Lever adjusts depth of cut.
Kakuri	\$25	No	No	No	1"	White Oak	40-degree cutting angle, adjust blade by hand.

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Hand Tools

What's the Deal with Cutting Angles?

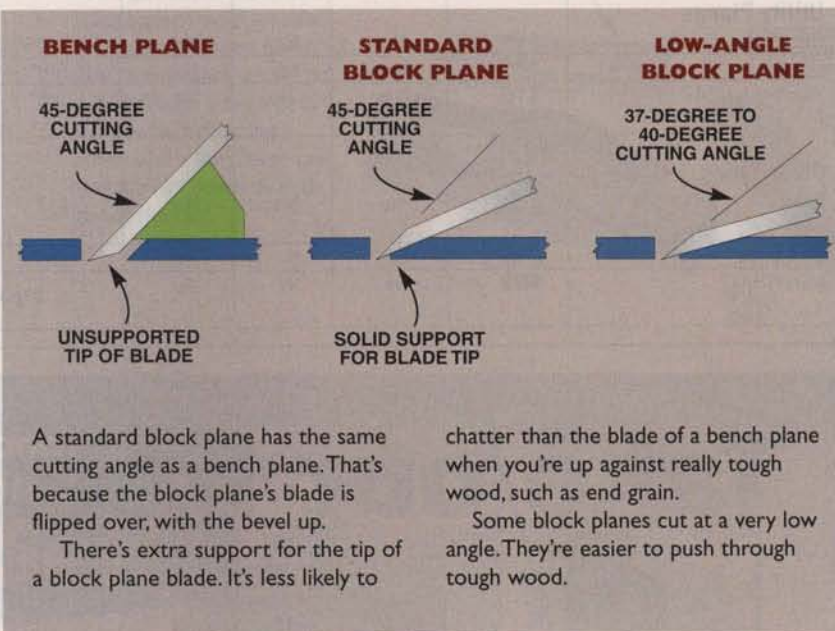
Cutting angles affect the amount of effort it takes to push a plane. The lower the angle, the easier it is for a blade to cut wood fibers, particularly end grain.

Block planes are often touted as having lower cutting angles, but do they really? The answer for a standard block plane is, no. Even if you sharpen it at the fairly low angle of 25-degrees, it cuts at the same angle

as a bench plane: 45-degrees.* A low-angle block plane cuts at about 37-degrees, which is an improvement.

Why choose a block plane for end grain? Here's the real reason: its blade won't chatter, because it's supported right down to the tip (illustration, below).

*Note: For some cool tips on how to re-shape the blade of your standard block plane to lower its cutting angle, read "Sharpening," by Leonard Lee, The Taunton Press, \$18, www.amazon.com.



Other Types of Block Planes

E.C.E.



• The E.C.E. has a wooden sole made from extremely durable and self-lubricating lignum vitae. The bevel faces down, so the blade's tip isn't quite as well supported as in a metal block plane.

RALI



• The Rali 105 features double-edged disposable blades. You're ready to make shavings right out of the package. A lever adjusts the depth of cut, but

there's no way to make a lateral adjustment.

• Kakuri makes a small Japanese plane with a high-quality, pre-sharpened blade. It cuts on the pull stroke. You'll need a small mallet and some practice to set the blade.

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The \$3,000 Shop

One woodworker's tips for setting up shop.

For many woodworkers just getting started, the biggest question is what tools to purchase first. If you know what kind of work you want to do, it's easier to answer this question, but many people, when setting up shop, don't know exactly what kind of projects they want to do.

To help, we asked one experienced woodworker how he would set up shop, with a budget of \$3,000.

Jim Miles has been working as a professional woodworker for 12 years. Before that he worked as a trim carpenter for a remodeling company. His work is mainly custom cabinets: library bookshelves, large entertainment centers, plus staircase work, kitchens and baths, and some store fixtures. He does a lot of work with plywood and veneered MDF, as well as solid wood for doors, drawer fronts and face frames. Here's what he had to say:

"First, I should say that I'm kind of a cheapskate when it comes to tools. I've heard people say to buy the best tool you can afford, but frankly, I like to spend my money on wood instead of tools. So I guess you could say I'm a value-oriented tool buyer.

Here's what I would buy with \$3,000. I'll assume anyone setting up shop already has the basic hand and portable power tools from fixing up their house—a hammer, drill bits, shop vacuum, cordless drill and orbital sander. I'll concentrate on the purely woodworking stuff."

Grizzly G10235 10-in. Tablesaw: \$895 (including 52-in. rails)

This is a great deal on a cabinet-base tablesaw, with a 3-hp motor. I have one like it that I've used steadily for a few years, and though I had to spend some time fiddling with it to get the fence right, it's been a good performer for me. I like the stability and good dust collection of a cabinet saw. I also suggest buying the 52-in. rails for \$120.

Milwaukee 6490 Miter saw: \$280

I love this tool. I got turned on to it by a friend who's a trim carpenter, and uses it all day every day. It is so accurate, and with a fine-tooth blade it is perfect for all the face frame crosscutting work that I do. I often have 8-ft. pieces to cut, which would be pretty awkward on the tablesaw. Granted, it is more expensive than most in its class. You can find good miter saws for less than \$200. For crosscutting wide pieces of plywood, I use a cross-cut sled (shop-made out of scrap plywood) on the tablesaw.

Jet 6-in. Jointer JJ-6CSX: \$489

I have one of Jet's older models, but the newer ones seem even better. A pretty no-frills machine, just solid and well machined, with good electricals, at a good price.



Freud FT2000
plunge router.

3-hp Freud Plunge Router: \$190

I park this router in my router table pretty much all the time, and take it out for the rare occasion when I need the plunge feature. I don't know much about brands here, but I've had a Freud 3 hp for a couple years, and it's done well for me. The most important thing is that this router has variable speed, so you can use big bits safely.

Porter-Cable 690 Router: \$160

Sometimes I feel as if I could make a living with nothing but a good table saw, miter saw and router. This Porter-Cable router is one of four in my shop, and it's a great all-around machine.

Grizzly G1028 1-hp Dust collector: \$240

This is a tool I ended up buying for value. I have it hooked up with a wye connector, with one leg permanently hooked up to my tablesaw, the other free to connect to the planer or router table, my two other big dust makers.

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Getting Started

Delta 22-540 12-in. Planer: \$275

I don't use a lot of rough lumber, so this relatively light planer is just fine for me. I mainly use it for surfacing the edges of a stack of face frame stock, so the edges

are smooth and they're all exactly the same width. It gives a pretty good surface finish and is easy to tuck out of the way when I need more space. This is a fairly old design now, so it seems to be priced a bit lower than many of the others.



Delta 12-in. planer.

Kreg Master Pocket-Screw Jig: \$130

Because I do lots of plywood work, I need simple, fast joinery methods for sheet goods. I use lots of screw fasteners, and this pocket-screw jig, which is built like a tank, can be used for just about everything from assembling cases to face frames.

Kreg pocket-screw jig.



Pancake Air Compressor and Brad Nailer: \$250

I use my air nailers all the time, mainly for attaching molding to cabinets, but also for drawers and general assembly work. I have a big old compressor and a couple nailers, but for starting out, I would get one of the package deals that include a small pancake or hot dog compressor and an 18-gauge brad nailer. Several companies make them, including Senco, Campbell Hausfeld and Porter-Cable.

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Grand Total: \$2909

I haven't included them in the costs, but there a few shop-made tools that a beginning woodworker should plan on building:

A Workbench

I have to confess that it was years before I bought a good vise, so I guess for the kind of cabinetwork I do a vise is not essential. But a big, flat workbench with power outlets on all sides is essential. Mine is 3 ft. by 6 ft. Forget fancy tool trays and elaborate tail vises. That stuff went out with hand-sawing lumber. Build a sturdy box from sheet stock, with a big slab top. I make all my shop tables and other fixtures from MDF. It's cheap, smooth and if you support it well, very flat.

Extension Tables for Your Tablesaw

My saw has an extension table on the outfeed side, 50 in. on the right of the blade and 12 in. on the left of the blade. They're all out of melamine-sided MDF. The extension to the left of the blade is a bit unusual, but because I work alone (and have enough space) it really helps with balancing full sheets of MDF, which are heavy suckers.

Router Table

You can find some fancy designs with drawers and whatnot, but I'm happy with the simple but strong one I built from MDF. I use it mostly for door work and routing long moldings. It's got a big, 3 ft. x 2 ft. surface, and holds a 3-hp router. The big thing to watch out for when building a router table is that the insert that holds the router and the table are perfectly flush. If it's low, you'll have a dickens of a time measuring, and if it's high, your stock will catch on the front edge.

Rolling Cart or Two

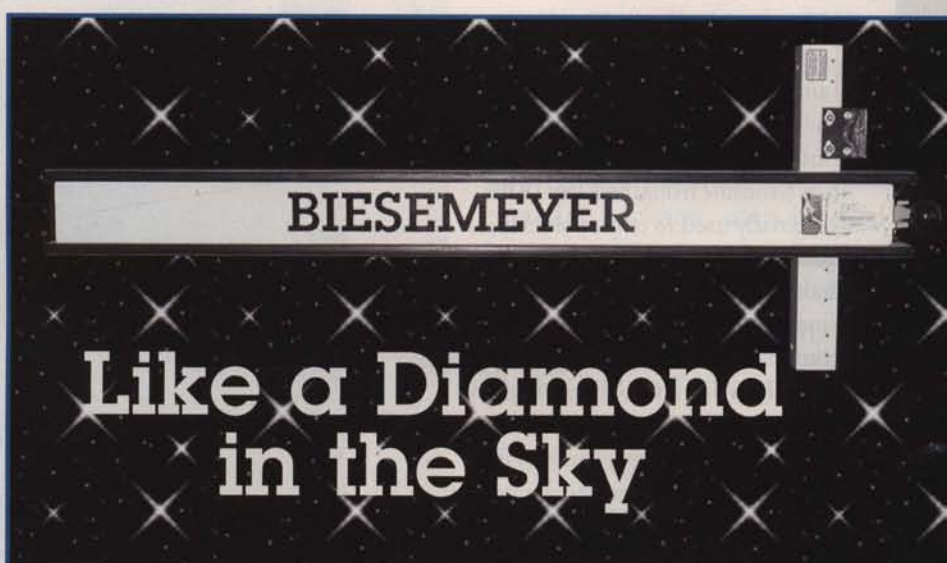
Make them out of scrap material, maybe about 18 in. x 32 in. on top, and

1/4 in. lower than the top of your tablesaw. I use these carts constantly. They carry parts from tablesaw to workbench, from workbench to router table. I use two of them to help hold a full piece of sheet stock for that first trip through the tablesaw. They're

enormously handy.

With these tools, a woodworker should be pretty well set up to do the kind of cabinet work I do. For the future, I'd also plan on getting a plate joiner, and lots of clamps. It seems to me I never have enough clamps. **AW**

Getting Started



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Restoring a Tablesaw

I often tease Thad Whitesel, a friend and avid restorer of old tools, that he could do away with electricity and put a line shaft in his shop. He's got a 24-inch bandsaw from the early 1930s (originally used to cut ice blocks), an Oliver lathe from the late 1920s, a chain mortiser made in 1911 and an American Machinery 14-in. tablesaw from the mid 1920s. All originally driven by a line shaft, all restored and running on electric motors.

Many old tools were run by a line shaft. They were connected via leather belts to a shaft up near the ceiling. The shaft, driven by water or some other means, powered the entire shop. Thad has learned plenty about getting old tools up and running. Let's dip into his expertise and find out what it took to restore his vintage iron.

Why old tools?

TW: I really enjoy the challenge of making the old stuff functional. And when I'm done, I know the tool inside and out, because I've handled every piece of it.

How do you find old tools?

TW: There's no single clearinghouse for this stuff. You've got to search creatively. Try auctions, school closings and used-tool dealers. Word of mouth is priceless. Once people know you're a junkie (no reflection on the tools!) they'll contact you.

What tools are the most sought after?

TW: Everybody and their brother wants Northfield, Oliver, Defiance,

Yates, American and Whitney. Demand pushes the prices up.

What condition are the tools in when you find them?

TW: That's all over the map. I've seen some that just need a little cleaning. My mortiser, on the other hand, had a tree growing through it when I found it. It needed lots of work. You'll pay less for the rougher stuff, but beware of what you're getting.

Anything in particular to watch out for?

TW: First I look for cracks in the castings. Especially check the areas around the bearings. Use a wire brush to get past the rust so you can really see the metal. Then have a look at the bearings. If you can feel slop in any shafts on the machine, plan on replacing the bearings. Ball bearings are

relatively easy to replace, but bronze or lead (babbitt bearings) take lots of skill and know-how. Cracked castings are bad news, and should be avoided.

How much will you pay?

TW: It depends on how much work the tool needs. To get my tablesaw I traded a used contractor's saw that was probably worth \$400. For my mortiser I paid the cast iron salvage rate; 10 cents per lb. It cost me \$150.

Once you get them, then what?

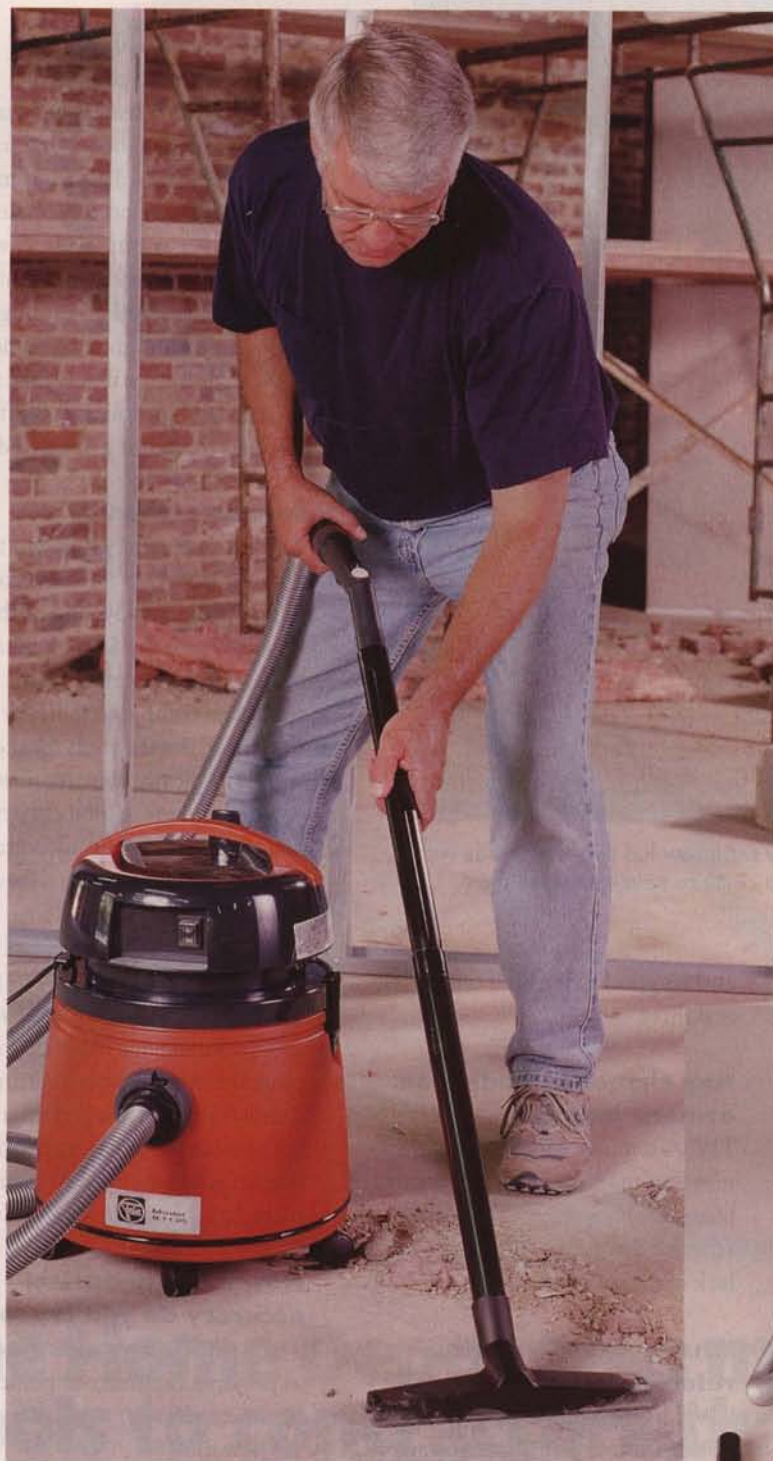
TW: Plan on getting help with the moving process. Most of these dinosaurs are massively heavy. You'll probably need a truck with a liftgate. Heavy-duty dollies can help move the tool around if your floors are fairly flat. You can find companies that specialize in moving big stuff in the Yellow Pages.



Thad Whitesel has restored many old tools, including this 1920s American Machinery twin arbor, 14-in. tablesaw.

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This mid-1920s American Machinery tablesaw has two arbors, one with a rip blade, one with a crosscut. You turn a crank to switch between them.

What's the first rebuilding step?

TW: Shoot some pictures, videos or both. Then start cleaning. Carefully document what you're starting with, and every step of disassembly. Keep all the parts logically sorted and labeled. You'll probably need a gear puller and a few gallons of WD-40 to get the parts separated. Move slowly. Don't pull or pry parts until you know they're ready to come off, or you can crack them.

Any cleaning tips?

TW: Elbow grease. I generally use wire brushes and occasionally light sand-blasting. Don't use chemical strippers on paint. Some of them can damage the metal. If you're real lucky, all the machine needs is a thorough cleaning

and it's good to go. Plan on getting real dirty.

Any chance of finding an owners' manual?

TW: Not much. Most of the companies that made the old stuff are out of business. If they're not, they're reluctant to give out manuals because of a lack of safety features on these tools.

What else can you use for a reference?

TW: I like the books by Dana Batory, Astragal Press (see Sources, page 50). You can also check out antique stores and tool groups. I've had some success contacting the city offices where the company was based. They sometimes have access to records left behind by the tool company.

What if you need replacement parts?

TW: Used-tool dealers may have some stuff, but plan on becoming friends (close friends!) with a good machine shop. You'll have no choice but to have some parts custom-made. I've been doing enough restoration that I've gotten pretty good at running an engine lathe and making some of my own parts, but I still rely on a machine shop for the complicated stuff. When it comes to painting, try a body shop.

Sounds expensive.

TW: It can be. But you've got to write off your labor. My tablesaw cost \$200 in repair parts and \$400 for the motor, in addition to the \$400 purchase price. Big equipment like this really should be compared to heavy industrial tools, not the tools most consumers typically own. It's possible that you'll spend more total dollars than you would for a consumer-grade version of the tool, but you have a lot more tool when you're done.

For example?

TW: Look at my saw. It has twin arbors. Rotate one blade up for ripping, the other for crosscutting. What a cool feature! It also has engravings in the table surface from the boat builder who was the first owner. Incredible history!

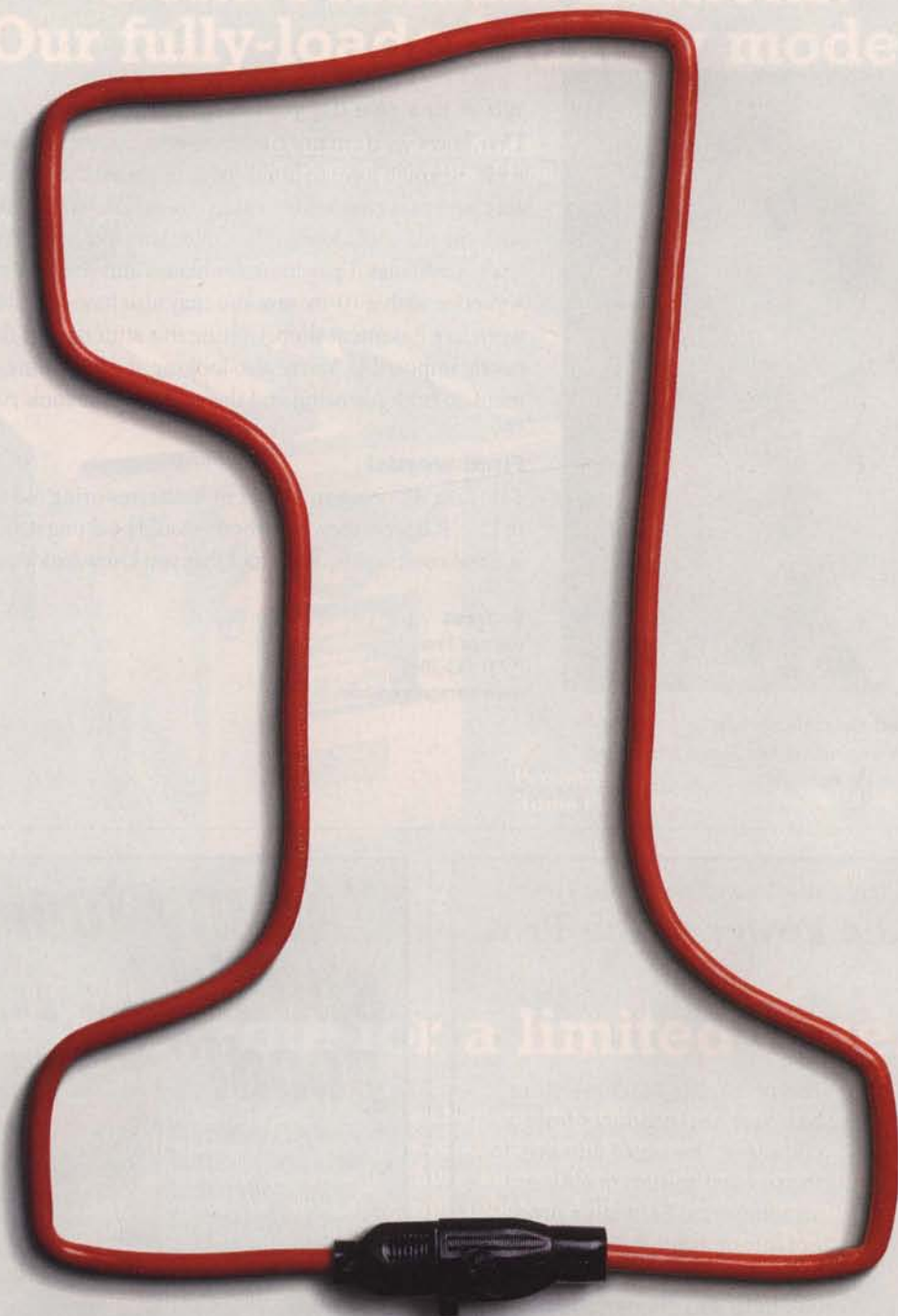
How much historical accuracy do you try for?

TW: I work to keep tools as accurate as possible, but make alterations if it increases safety or to accommodate the new motors.

What do you use for motors?

TW: I put 220-volt motors on all my stuff. I don't use any 3-phase motors. Plan on spending \$100 per horsepower for good replacement motors.

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Vintage Iron



Thad hand polished the table surface to preserve the engravings of the original owner. These are angles frequently used in cutting boat parts.

What are the biggest negatives?

TW: There aren't many guards or other safety features on old tools, so you'll have to build those in yourself. Some commercial accessories available for modern tools, like jigs, might not work with the old tools. Remember, tablesaws like mine take big, industrial-size blades. I pay more for blades and sharpening than someone with a 10-in. saw. You may also have a problem if you work in a basement shop. Getting this stuff up and down stairs is nearly impossible. You're also looking at a huge time commitment, in both restoring and then keeping the tools running.

Final words?

TW: Like restoring an old car or house, restoring old tools is a labor of love. If it were easy, everybody would be doing it. But the payoff is a real cool, high-quality tool that you know inside and out. **AW**

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How to buy a Miter Saw

By Walker Angell



They're called chop saws or miter saws, often interchangeably, and they're quickly becoming one of the hottest tools to have in your shop. For many of us they have eliminated the need for a radial-arm saw, once a staple shop tool.

There are three configurations to choose from, each with its own advantages. You can check out detailed specs on the Web at www.americanwoodworker.com.

All of these saws are available with a variety of blade diameters for greater capacity, though you'll give up some accuracy with the larger blades.

You'll find a complete listing of miter saws with prices and specifications at www.americanwoodworker.com. See page 8 for information on ordering printed copies.

Conventional Miter Saw

The simplest and easiest for achieving dead-on accuracy. The blade can rotate up to at least 45 degrees (up to 60 degrees on some models) for miter cuts. If you need a compound



cut though, you'll need to make a jig to hold your stock at the correct angle.



Compound Miter Saw

In addition to rotating for miter cuts, these machines can also tilt for bevel cuts and allow you to combine miter and bevel to produce compound cuts.

Sliding Compound Miter Saw

The granddaddy of capacity, this saw (see lead photo) slides on rails to increase cutting capacity, with one model able to cut boards longer than a 4x12. Some also allow you to cut slots or wedges across your material. The blade-width slots can be combined to make a dado. Although you gain a lot in capacity, these saws often sacrifice some accuracy (see Rants & Raves on page 56). Most of the designs require a significant amount of room behind the saw for the sliding mechanism, so take this into account when making your selection.

Know the Features

What to Look For

Ideally you should try out a miter saw before buying. In any event, keep these features in mind:

Easy adjustments

The table should rotate easily for setting the miter angle and you should be able to set an angle very close to a positive stop without it jumping into the stop. Skinning your knuckles when you adjust the bevel angle isn't a lot of fun, so make sure you can reach and adjust it easily if you think you'll use it often.

Solid fence

The fence should be solid and comfortable to hold stock against, and high enough for the material you'll cut. You don't want one that cuts into your fingers. Also look for fence extensions that flip out of the way and pre-drilled holes that allow you to install a sacrificial fence.

Blade brake

A brake will stop the blade allowing you to move on to the next cut quicker. This also provides a margin of safety by eliminating the danger of a freely spinning blade.

Blade guard

This is important! The blade guard should adequately protect you from the blade, yet it should not get in the way or bind against anything when you're making a cut. A good guard stays out of the way when you're changing blades.

Comfortable for you to use

Most people find a horizontal handle more comfortable than a straight or vertical handle. Is it easy to lower, cut, and raise? Remember that you start

the cut near you and push the saw away, the opposite of a radial-arm saw.

Throat plate

Ideally the saw should come with a zero-clearance throat plate or be designed to accommodate a shop-made one. This will assist in line-up and reduce chip-out.

Easy-to-read miter and bevel scales

Pointers should be close to the printed lines. If it uses a clear acrylic sight, lines on both the top and bottom will significantly increase accuracy. You shouldn't have to squint to see the bevel scale while you're adjusting it. Positive stops for frequently used angles such as 22-1/2, 45, and 90 are very helpful and ideally the saw should include positive stops on both the left and right.

Hold downs

You'll need good ones, especially if you'll be doing a lot of miter or bevel cuts. Your material will tend to creep if it's not held rock steady and hand strength is not enough on some miter cuts.

Accessories

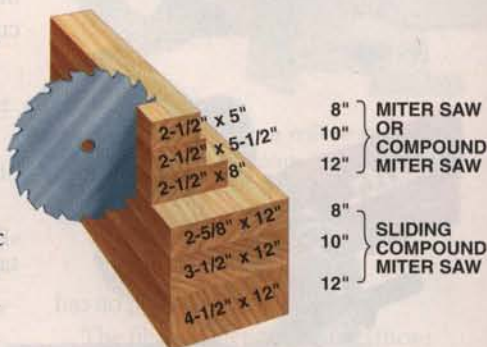
Does it come with what you need or will you spend a bunch extra? Many miter saws include dust bags, extension wings and hold-downs. Some don't.

Blade

All else being equal, give some consideration to the blade. For woodworking you'll typically want a carbide-tipped, 60- to 80-tooth finish-cutting blade with a negative face hook. A thick-kerf blade will be more accurate than the thinner kerf blades standard on some saws.

Power

The motor should be powerful enough to cut through the type and size of material you most often work with. Any saw will cut through a pine 2x4, but it takes more power to go through a piece of 8/4 maple.



Determine your capacity needs before you go shopping. These are the board sizes that miter saws can handle. Some models cut a little more, some a little less; go to www.americanwoodworker.com for a list of models, including 90- and 45-degree miter, and 45-degree bevel capacity. Even the most accurate saw won't do you any good if it can't cut the material you typically use.

Miter saw or radial-arm saw?

Can a miter saw truly replace a radial-arm saw? In many cases, absolutely! What a radial-arm does that a miter doesn't is rip (which is dangerous on a radial-arm anyway and *should* be done on a tablesaw), cut wide stock (the sliding compound miter saws have evened the field here), and cut dados. The one place a radial-arm still shines is in cutting dados across the short side of long stock. Where miter saws excel is in portability and repeatable accuracy.

What's New

Makita has upped the stakes in the cordless tool arena with the first cordless miter saw. It is a 7-1/2-in. sliding compound saw that uses the same 18-volt battery as the Makita cordless drills. Very portable, and fairly light weight, it sells for



New this year, the Makita 7-1/2-in. cordless compound miter saw (\$480) brings cordless technology to this class of tools for the first time.

\$480. For carpenters who need a very easily moved miter saw, for working on a scaffold, or scooting around doing trim work, it's quite handy. For woodworkers it's more of a sign of what the future will bring than a useful shop tool for the here and now. In our tests, it did not give the quality of cut that a woodworker would want, plus in a shop you'd rarely take advantage of the cordless feature. But a cordless random-orbit sander, or even a belt sander, that'd be different.

Another big improvement to these saws has been the blades. We are seeing higher quality, negative rake, alternate top-bevel teeth, anti-stick coatings and better sound dampening. (Don't you just hate that ringing sound from some miter saws?). A saw is really only as good as its blade, and these better blades are making miter saws capable of much smoother, cleaner cuts.



Better blades for miter saws make better cuts. We like the negative rake, alternate top bevel blades with anti-stick coatings and good sound dampening.

Rants & Raves

"The gripe I have with the miter saws currently on the market is that they are all designed for framing and jobsite work. I think a lot of the problems with them could be eliminated if a few were designed to be kept in the shop (more mass, better dust collection, long fences with good stops, more accurate angle adjustment, zero clearance inserts, etc.)."

Steve Wilson

"I can tell you that I've been looking for a truly accurate sliding compound miter saw for months. I bought and returned four of them from different manufacturers and examined several

others. My conclusion is that nobody makes an accurate sliding compound miter saws. They work fine as a chop-saw, but not in the sliding operation.

The reason is simple: they have no way to adjust for "heel." This is the condition where the plane of the blade is not parallel to its travel. That is, the front and rear of the blade are not in alignment. The result is a wavy edge on the workpiece. They all seem to work on narrow boards, but I have not found a good one for cutting wide boards."

Chuck Decker

Why I Love my Miter Saw

"My DeWalt sliding compound miter saw is the most used tool in my shop. It's able to cut through any size or hardness of board I put on it, including some really old and hard maple. Setting up angles on it is a snap and it returns to 90 degrees every time without my having to get out a square to reset everything. I know some people have concerns about the accuracy of sliders and of larger blades, but mine has met my needs consistently."

Loren H.

Visit our Web site: www.americanwoodworker.com to see a comprehensive comparison of manufacturers, models, cost and features.

Miter Saw Dust Control

Miter saws produce a lot of dust. And few, if any, provide adequate dust collection. Typically, miter saws have a single plastic port coming out of the blade housing, and it's severely angled and small in diameter. Many of these ports are also strange sizes that make connection to shop vacuums or central dust collection systems difficult.

Few of the dust bags included with the saws collect much of the dust, which is fortunate because if they did you'd spend a fair amount of time emp-

tying the little buggers every few cuts.

One improvement is to ditch the standard dust bag and attach a shop vacuum to the dust port. You can use just about any vacuum, but there are several designed specifically for this kind of work (Fein, Porter-Cable, Ridgid and Shop-Vac). Prices range from \$130 to \$500. They have switches that are triggered by the tool, a long, flexible hose, and a lower noise level (important because the miter saw makes quite a racket all on its own!). Soft plastic hoses and adapters are available (\$30 from Eagle America, 800-872-2511) to make fitting the vacuum to the miter saw easier. For a review of vacuums for portable power tools, see AW #80, May/June 2000, page 69.

If, like many woodworkers, you have your miter saw permanently mounted in a table with extension fences and stops, you can hook up the saw to a central dust collection system. The best approach is to collect from the port on the tool, and also to make a trough at the back of the tool, with a back piece that goes up behind the saw. Make them out of sheet metal or a similar smooth, slippery material. Dust that is kicked back by the blade will hit the back board and fall into the trough. Hook up the trough to your collector and it should get most of the dust.

All manufacturers haven't totally missed the boat when it comes to dust collection. Metabo's KGS E 1670 has a three-point system that collects dust from underneath the table, from behind and from the blade guard (photo, above right). The only problem is, you've got a long drive to get one unless you live in Europe. They're not available in the U.S. and Metabo



Dust collection on a miter saw isn't simple, but a three-point system like this will generally do a good job. Too bad these aren't currently available in the U.S.

has no plans to change that.

The fiber-cement industry (those folks who think cement makes better siding than wood!) is really pushing tool manufacturers to improve the dust collection on saws. Because a fair number of carpenters use miter saws, I think we can safely assume that better dust collection is on the way.



Forget the dust bag, and use a shop vacuum to collect the dust from a miter saw. Triggered systems like this one turn on automatically when you turn on the saw. Many also do a superior job of capturing those annoying fine dust particles.



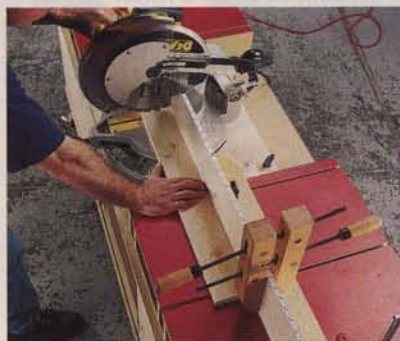
The rubber hood on this Porter-Cable saw extends down from the port on the blade guard and makes for more effective dust collection than most traditional designs.

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Great Accessories

Extension Tables, Fences and Stops

If you don't plan to be hauling your miter saw around like a carpenter, one of the best things you can do is to mount it semi-permanently in a table. There should be raised sides to support long boards, and extension fences on both sides. The fences will allow you to attach stops for repeated cuts at the same length. The stops can



A fence and stop system will improve accuracy and save time. This one is shop-made and uses a clamp for a stop. It is part of our "Ultimate Tool Stand," #82, October '00, page 48.

be as simple as a block of wood clamped to the fence, or as elaborate as some commercial units, with micro-adjustments and the capacity to flip up out of the way until needed.

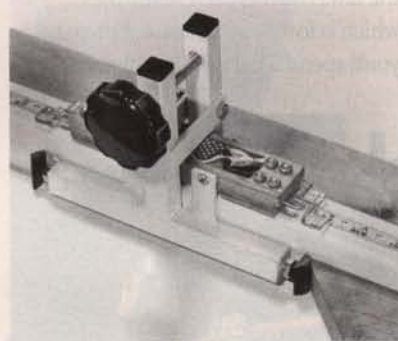
You can also mount a self-stick tape measure to the extension fence.



The Rousseau system (\$127 from www.rousseauco.com) can be installed on your shop-built table and includes a handy extension providing over 10 ft. of support. Both stops flip out of the way.

Then you can set the stop to the correct distance without even touching the tape.

This kind of setup is extremely convenient. You can set the stop for the finished length, take a long board to the saw, make one cut, butt it to the stop, cut one part, then another, then another, all to the same length.



The Biesemeyer system (\$73 to \$419 from www.tools-plus.com) includes the table and fence, and has five different stops, including some that are perfect for miters. The stops are sold separately and can be used on your own fence.

Reviews

American Woodworker, #71, February 1999

We awarded an Editors' Choice award to the Makita LS1220 and Best Buy award to the Craftsman 23514 in a comparison of compound miter saws. Makita ran away with several awards with its only losses to Delta for dust collection and Craftsman for bevel and miter scales.

Popular Woodworking, January 1999

They awarded their Tool of the Year to the Makita LS1013.

Wood magazine, March 1998

They gave their Editors' Choice award to the Hitachi C10FS, the Milwaukee 6494-6, and the Delta 36-235 in a review of 10-in. and 12-in. compound miter saws. The editors noted that only the Hitachi and Milwaukee 10-in. saws and the Delta and DeWalt 12-in. saws made consistently perfect cuts. Their chart indicates that the Delta 36-220 10 in. also produced a perfect score. Makita, Skil and Delta received honors for best dust collection.

Wood magazine, April 1996

In this review they awarded Top Value to the Craftsman 23488, the Hitachi C10FS, and the Tradesman 8335. Recommendations included the Delta Sidekick, Makita LS1011 & LS1211, and Hitachi C10FS.

Workbench #260, July/Aug 2000

They awarded an Editors' Choice to the Delta 36-225.

AW

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How to buy a Jointer

By Walker Angell

If the foundation is off, everything else will be off."

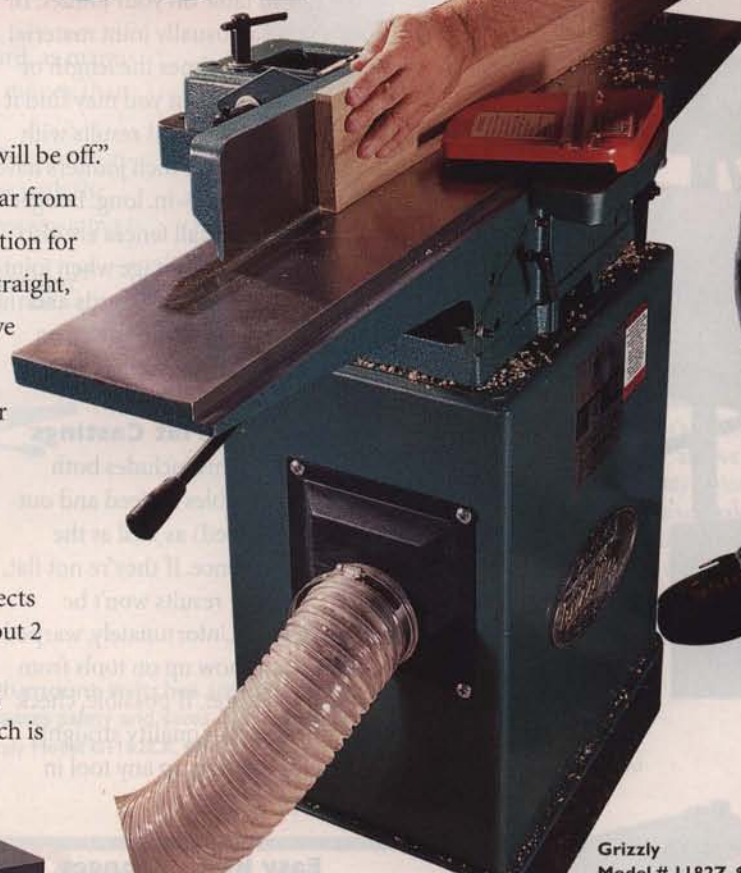
Such are the words of wisdom you'll hear from any good craftsperson. The proper foundation for most woodworking projects begins with straight, flat faces and square edges. If you don't have these in the beginning, you'll spend hours fixing problems down the road. The jointer is the tool that lays this solid foundation.

Benchtop Jointers

Benchtop jointers are fine for smaller projects that don't require material longer than about 2 feet. Its universal motor doesn't have the power of its larger cousins and it produces more noise. It also takes up less space, which is important in small shops.



Delta Model # 37-070, \$275.



Grizzly Model # 1182Z, \$375.

Cabinet-Style Jointers

A cabinet-style jointer is the heart of many woodworking shops. The heavier weight and enclosed cabinet provide better stability, less vibration, better dust collection and longer motor life.

Combination Jointer-Planers

Many combination machines have very solid, wide jointers, often 12-in. or more. Check out the tools made by Robland (www.lagunatools.com), Hammer (http://www.hammer.co.at/eng/index_eng.html), and Felder (<http://www.felder.co.at/idxeng.html>).

You'll find a complete listing of jointers with prices and specifications at www.americanwoodworker.com. See page 8 for information on ordering printed copies.

Open-Stand Jointers

Open-stand jointers are generally less expensive than the cabinet-style jointers, but the gap is quickly narrowing.



Jet Model # JJ-60, \$430.

Know the Features

Bed Length and Fence Size

According to most manufacturers, you can joint material that is as long as the infeed table on your jointer. In reality you can usually joint material about 1-1/2 to 2 times the length of your infeed table, but you may find it difficult to obtain good results with longer material. Six-inch jointers have beds from 46- to 55-in. long. Longer is better. Tall fences are also an advantage when jointing wide boards and panels. For more on fences, see page 64.

Flat Castings

This includes both tables (infeed and outfeed) as well as the fence. If they're not flat, your results won't be either. Unfortunately, warped castings can show up on tools from any manufacturer. If possible, check for flatness with a quality straight-edge before setting up any tool in your shop.

Easy Knife Changes

Jointer knives are adjusted with small screws (jackscrews) or springs beneath the blade which push it up against a jig. Many woodworkers say jackscrews provide the highest level of accuracy, but others argue that springs are just as good and much easier to set. (See Setting Up Shop, page 118 for more on this subject.)

A wheel-style adjustment on the infeed table is slower to adjust than a lever. Many woodworkers, however, say they can more easily make fine adjustments with a wheel than a lever.

Depth-of-Cut Adjustment: Lever or Wheels

This is a major design difference between machines. Some woodworkers give their opinions of each on the next page.

Adjustable Outfeed Table

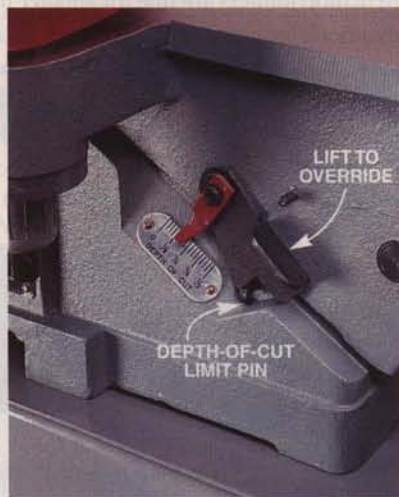
Tuning up your jointer without it may be difficult.

Motor Horsepower

Taking a 6-in. wide or wider cut out of a piece of hardwood takes some effort. If you do a lot of jointing of hardwood a 1-hp motor is a necessity. There's also a safety issue here. It's not good to have your motor grind to a stop in the middle of a board.



A lever adjustment on the infeed table allows for fast depth-of-cut changes.



A depth-of-cut limit is a safety feature on many new machines. It prevents taking more than 1/8-in. in one pass. The limit can be overridden for operations that require deeper cuts, such as rabbets.

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What's New in Jointers

Small jointers have greatly improved over that last year or so. Here are some of the latest features:

Motors are getting more powerful. You'll find larger motors (1 hp instead of 3/4 hp) on several reasonably priced jointers from Delta, Jet and Grizzly.

Cabinet stands are becoming the standard, as manufacturers offer them for only slightly more money than open stands.

Back-saver switches are a trend that we hope continues. Both Grizzly and Delta make machines with the high-mounted switches. Anything that saves stooping is great in our book.



High-mount switches are easier to reach, which increases safety and saves wear and tear on your back.
Grizzly Model G1182ZX, \$445.



Delta 6-in. Professional Jointer,
Model # 37-195, \$550.

A quick-release lock on Delta's infeed table lever allows you to quickly unlock the table to make depth setting changes. When you release the trigger, the table locks.

Rants & Raves

Whether a jointer uses levers or wheels to adjust the cutting depth seems trivial, but this issue is often hotly debated by serious woodworkers like these:

"I've heard bad comments about lever adjustments. I have a Delta with levers and I really don't see what everyone is complaining about as far as not being able to set the amount of cut accurately. I have had no problem. The setting is easy and smooth on mine. In fact, I like the levers because they allow a quick setting of the cut. I like the set screw on mine because it holds

the infeed adjustment well. I do like the rack-and-pinion fence adjustment on the new Delta. My adjustment mechanism is not very smooth."

Eric Anderson

"I've had both types of jointers; with levers and with wheels. I prefer wheels because it's infinitely easier to make very slight adjustments in the outfeed table. Although accuracy isn't strictly necessary on an infeed table for jointing, again, I find a wheel easier for making small changes. Fences? I wish I had the rack-and-pinion fence on the new Delta jointers. Each time I move my fence, I have to reset it to 90

degrees with a machinist's square. The 90-degree stop is only approximate."

"NoSpamEd," the Internet

"When I bought my jointer at a show several years ago, I asked each dealer (Delta, Jet, Grizzly, Hitachi) for a square and asked each one to square the fence. The only one that could do it was Hitachi, so I bought it and have had no regrets. Each time the others were squared the fence pulled out of alignment when the knob was tightened. Sad!"

Chuck Callaghan

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Jointer Fences

An accurate, well functioning fence is critical to getting the best results from your jointer.

What makes a good fence?

A good fence should allow you to:

1. Set the fence at an angle and have it maintain that angle when the fence is adjusted in or out. You need to move the fence in and out to maintain uniform wear on your knives.
2. Quickly and easily set the fence to exactly 90 degrees to the table and ideally 45 and 135 degrees as well.
3. Easily adjust the distance between the fence and the rabbet ledge.
4. Keep a piece of wide material stable as it is run through on edge. This is where fence height is important.
5. Stay flat, without twist, so the fence is at the correct angle all along its length. If you do find twist in your fence, talk to your dealer about replacing it.

Manufacturers have struggled with the first three for years. It's one thing to build a system to handle fence alignment very accurately on a \$10,000 jointer, but it's a whole differ-

ent story on a jointer that costs \$500. There are three systems you will see for dealing with mounting the fence to the jointer:

- **End Mounted.** You don't see these anymore, except on used machines. Adjustment is more difficult than on any of the center-mounted fences.

- **Center Mounted.** The way most fences are mounted today. This generally works well, however some users have experienced problems getting the alignment to *remain* accurate. On many, adjusting the distance to the rabbet ledge, if you use it, takes some effort.

- **Rack-and-Pinion.** This appears to be the most reliably accurate system yet for jointer fences. It was introduced by Delta in 1999. Once set, the fence remains perfectly square to the table as it is moved in and out. Accurate settings for rabbets are also a cinch. The drawback is that this system

A rack-and-pinion adjustment allows you to easily adjust the fence, especially for rabbets, and keeps the fence in excellent alignment to the tables. It does take up much more floor space, however.



A typical center-mount fence.

Sometimes these fences can get out of alignment to the tables when you move it.

makes the jointer stand quite a bit farther from the wall, which may be a problem in small shops.

Fence Size

All jointer fences are big enough for face jointing. The problem arises when you joint the edge of a large board or a glued-up panel. For this operation it is critical that the board be held at a constant and accurate angle to the knives. The 3-1/2-in. to 5-in. high fences on most jointers do not provide the support necessary for material wider than about 6 or 7 in. Higher fences are better.



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How to Buy a Jointer

Six inch or eight inch?



Grizzly
Model # G1182Z; \$375.



Model #G1018;
\$675.

Bigger is better when it comes to jointers. Eight-inch jointers not only allow you to flatten wider boards, but with their longer beds (typically around 62 in. long) they allow you to edge joint much longer material. They have greater mass for stability (great when you have to joint an 8-ft. chunk of hard maple) and usually around 50 percent more motor power.

The downside, as is so often the case in woodworking, is cost. Eight inch jointers start at around \$700 and for a given manufacturer's tools you typically spend almost twice what you would for a 6-in. jointer. It's too bad, because the difference in performance is significant.

Why I Love my Delta DJ-20



Some woodworkers are passionate about their jointers. These are often the folks who are lucky enough to have one of the larger jointers with a long wide bed.

"I love my Delta DJ-20. Just a tap or tug and I've got the infeed where I want it. In spite of what some people say about the lever adjustments, I have no more problems setting my jointer to an exact cut than with wheel adjustments. The parallelogram-shaped raising and lowering mechanism is very smooth and hard to beat. Because each table is located on four eccentric adjustable bushings, and infinite adjustment is possible to keep the tables parallel and in plane with each other. No need to shim if tightening the gib screws doesn't work."

Sy Kaplan

Reviews

Here's what jointers some of the woodworking magazines have recommended:

American Woodworker,
April 1997

In an 8-in. jointer review the Delta DJ-20 received the Editors' Choice award and the Star S3101 received the Best Buy nod.

American Woodworker,
December 1999

In a 6-in. jointer review the Delta 37-195, General 80-100LM and Jet JJ6CSX all received Editors' Choice awards. The Bridgewood BW6R and Sunhill 924028 were Best Buy winners.

Fine Woodworking,
December 1995

In a 6-in. jointer review, if cost wasn't an issue, they liked the Delta DJ-15 or the Powermatic 50. Bridgewood, Sunhill, Wood-Tek, Enlon and Grizzly all received favorable reviews for value-oriented shoppers.

Wood magazine,
December 1995

In a 6-in. jointer review the General 1180 was a clear winner. The editors found it precise, balanced, smooth and flawlessly finished. They also recommended the Delta 37-190 for the more budget-conscious woodworker.

Great Accessory



Extra knives are indispensable for good jointer operation. It's important to have sharp knives in your jointer, and one or two extra sets (\$40 a set) will help ensure that you always have a sharp set ready.

AW

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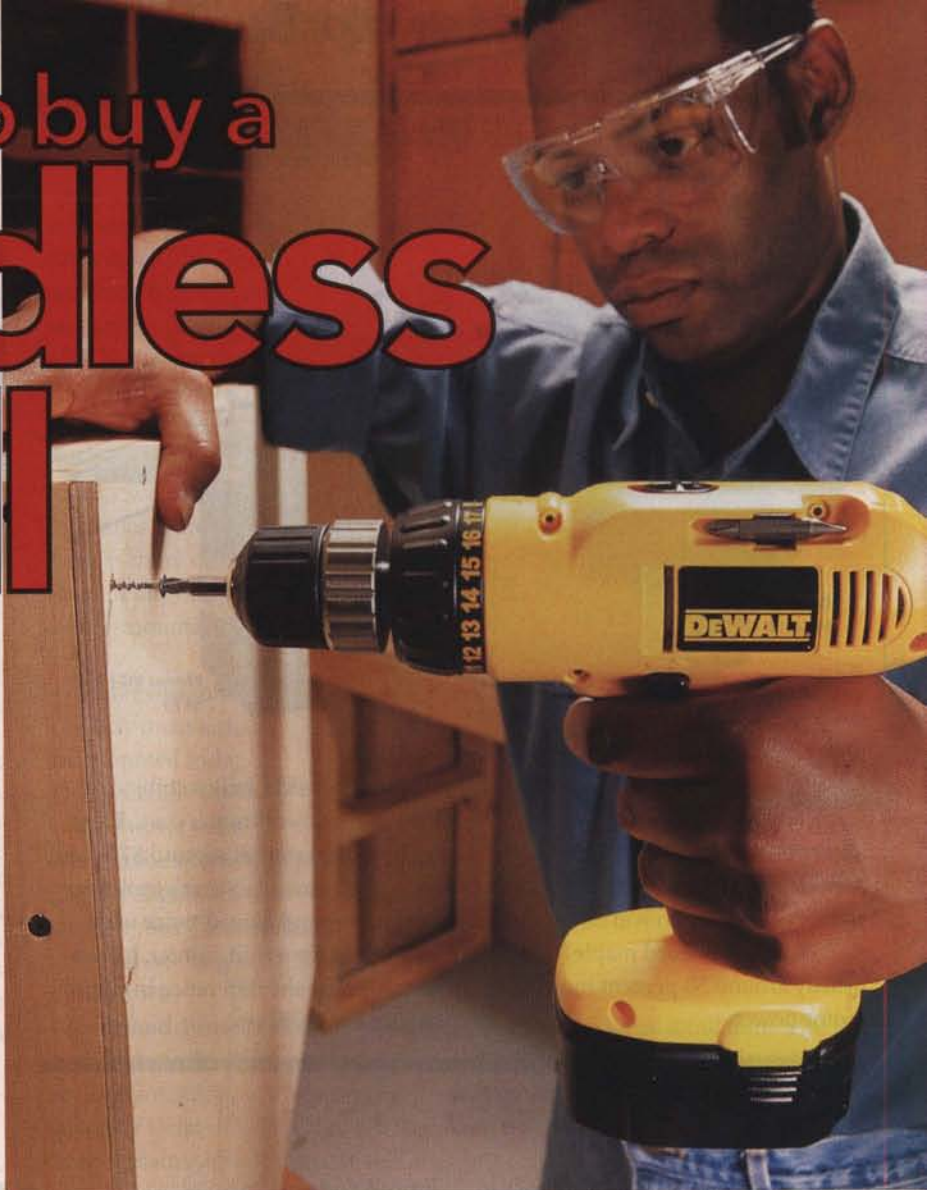
How to buy a Cordless Drill

By Walker Angell

It's rare that you'll find a wood-working shop that doesn't have at least one cordless drill. It's actually two tools in one; a drill and a power screwdriver, with a two-speed gearbox that lets you select high speed/low torque for drilling and low speed/high torque for driving screws. The clutch is used for driving screws to prevent stripping out the hole or the screw.

Many woodworkers even have two (or more) cordless drills. This reduces the number of bit changes so you can have your pilot/countersink in one and your driver bit in the other. It also allows you to keep one lightweight drill and one heavyweight. The smaller and lighter weight drills are great when you need to drill a lot of small holes or drive small screws, but you'll need more power for drilling larger holes in hardwood.

You'll find a complete listing of cordless drills with prices and specifications at www.americanwoodworker.com. See page 8 for information on ordering printed copies.



A whole range of power and weight options are available in popular 7.2-volt to 15.6-volt models. If you need more power than this, you can get a 24-volt Bosch that delivers 500 lbs. of torque and will give you a 6.2-lb. workout. If your arm is tired from that, try a Makita 4.8-volt drill that floats in your hand at 1.8 lbs.

Know the Features

What it really comes down to is finding a drill (or drills) with the power you need and the comfort you desire.

Comfort

This is a personal preference. If you can, hold several drills and pretend to drill some holes with them (looking funny in the store for a few minutes will pay off with years of comfort). Is the handle comfortable, or too big, or too small? Is the head angle (the relationship of the driver to the handle) correct for you? How easy is it to change direction? In most cases you'll find a few that are much more comfortable for you than the others.

Power

Higher voltage batteries provide more power. Although more expensive, NiMH batteries appear to have a longer run time per pound than NiCd, but the jury is still out on this one (see Batteries on page 69).

Longevity

The amp-hour rating, usually abbreviated Ah, gives you an indication of how long you can go between charges. Higher Ah ratings won't provide any more power, but their charges last longer, generally in direct proportion to the rating number (a 3.0Ah battery will last twice as long as a 1.5Ah). Higher Ah-rated batteries usually don't weigh any more than lower Ah batteries.

Weight

Although a drill may seem light enough in the store, think about holding it at a difficult angle for a long period.

Don't get carried away by the "Tim Taylor Syndrome" and get the biggest, most powerful cordless drill you can

afford. For one thing, it'll weigh *much* more than more moderate 9.6-volt to 14.4-volt drills. For another, when you're working in the shop, an outlet and perhaps a drill press are right at hand for those really large holes. The lighter weight of moderate-size drills will make your arm happy for years.

Speed

Higher speeds drill holes faster, and usually cleaner, than slower models. Be especially careful of larger, more powerful drills, which may be geared down for heavy use, and lacking the higher speeds that are better for everyday small bits.

Drive Train

The drive system should include:

1. A 2-speed gearbox so you have the option of high speed or high torque.
2. Smooth speed control at the trigger so you can start screws or bits slow and then speed up (electronic speed controls, especially those that provide constant rotation speed, are particularly good).
3. An electric brake for safety and so you can move on to the next hole or screw quickly.
4. A multi-torque clutch so you can apply just enough torque to drive a screw home without stripping the screw or hole.

Chuck

With the exception of a few impact/hammer drills and some bargain-basement specials, everything's keyless now—and it's a good thing, too! You want one that loosens and tightens easily and that gets a solid hold on the bit. You'll also need to decide between 1/2-in. and 3/8-in. capacity. One-half-in. chucks are necessary for some larger bits, but they weigh more than the 3/8-in.

chucks. Most woodworkers choose 3/8-in. chucks.

Chuck Lock

An automatic chuck lock is a convenient feature on keyless chucks. When you turn the outer ring of the chuck to change bits it automatically locks the chuck. Makes doing this three-handed operation much easier with two hands.

Handle Style

T-handles are the most popular because they're better balanced and fit into tight spaces easier. While you



How to Buy a Cordless Drill

can always use a second hand behind the motor on a T-handle, a pistol-grip gives you a lot of one-handed power so you can to push directly in line with the bit. Some rubber on the handle helps your holding power as well.

Reversible Battery

Some models allow the battery to be inserted with the bulk facing forwards or backwards. This can come in handy in tight spaces.

Side Handle

Need some extra power and control? An optional side handle will let you really apply some force.

Charger

Overcharging will significantly reduce the life of your batteries. A good charger won't allow this to happen, no matter how long you leave the battery in it. Indicator lights showing when the battery is being charged, when it's fully charged, and when there's a problem may be important for you.

Included Accessories

If you have a need for multiple cordless tools (the flashlights that use these batteries are really great), having interchangeable batteries is a big plus. In this case, choose a drill that's part of a coordinated line of tools.

For a complete listing, including specs, of conventional T-handle and pistol-grip drills, right-angle drills, and hammer drills, check out www.americanwoodworker.com.

What's New

The big news during the last year has been the continued escalation of the voltage wars. Porter-Cable and Bosch have entered the field with drills

greater than 18 volts. Prices are high—\$199 to \$299. If that makes you cringe, Grizzly has entered the cordless-tool market in a big way,

with drills, saws and other cordless tools generally priced less than \$100 each.



The Porter-Cable 19.2-volt cordless drill delivers 390 lbs. of torque and enters the ring at a welterweight 5.5 lbs. It's part of the Porter-Cable 19.2-volt network that includes this drill, a 6-in. circular saw, a Tiger reciprocating saw, hammer drill and flashlight.



Panasonic's 3.0Ah NiMH batteries give you up to 50 percent longer run times than 2.2Ah NiCd batteries, according to the manufacturer. These batteries also weigh the same as the NiCds so you get the extra run time without extra weight.



The Bosch 24-volt drill/driver develops up to 500 lbs. of torque, which should satisfy just about anyone's craving for power. Though its 6.2 lbs. might give your arms power to match the drill by the end of the day, it does have an excellent power-to-weight ratio. It's part of a line of 24-volt tools from Bosch that includes a 6-1/2-in. circular saw and flashlight.



\$52 gets you this 14.4-volt Grizzly G8595 3/8-in. cordless drill/driver. It includes one battery, a charger, and a 14-piece drill bit and screwdriver set. Grizzly also has jigsaws, sanders and flashlights that share the same battery.

Visit our Web site: www.americanwoodworker.com to see a comprehensive comparison of manufacturers, models, cost and features.

Batteries

The Heart of Cordless Tools

The battery pack that comes with a battery-powered tool is actually a collection of battery cells, usually AA size, but 1.2-volt instead of the standard 1.5-volt AAs we use for most consumer electronics.

Batteries work by converting chemical reactions to electricity. A battery is comprised of two metals immersed in a liquid electrolyte. In a NiCd the metals are nickel and cadmium. When the battery is charged, the nickel is oxidized (similar to copper turning green). When the battery is used, the nickel is reduced and the cadmium is oxidized by electron flow between the two. This flow of electrons is what produces electrical flow through the motor of a tool.

A NiMH (nickel metal-hydride) battery is similar except that it uses metal hydrides instead of cadmium. Metal hydrides have the potential to produce power for longer periods

than cadmium. These batteries last significantly longer in small electronic devices, such as digital cameras, but the jury is still out as to whether this holds true for higher power applications such as cordless tools. Used NiMH batteries are not considered a hazardous waste, as used NiCd batteries are.

Is There Battery Memory?

Although there is such a thing as memory for NiCd and somewhat for NiMH cells, it is rare that this effect is

ever present. Memory only happens when a cell is continuously charged and discharged exactly the same amount in a repetitive cycle over a long period of time. The only known example is NASA's use of NiCd batteries on a satellite that were charged/discharged *exactly* the same every day by a computer. You stand a better chance of never making a single mistake in woodworking throughout your entire life than of experiencing memory effect in your power tool batteries.

Battery Care

Take care of your batteries and they'll take care of you:

DON'T deliberately discharge your battery past its usefulness to avoid memory. This could damage one or more cells and will shorten the life of the battery. Use the battery until it doesn't provide enough power to do the intended job, and then charge normally. Newer batteries can be recharged at any point in the discharge cycle several times in a row without any negative effect.

DO let the battery cool down before charging if it is hot from recent use.

DO use *only* the charger that came with your batteries. Different batteries have different charge characteristics and your charger is designed for specific batteries.

DON'T leave the pack on trickle charge for a long period of time unless the manufacturer specifically says this is OK.

DON'T charge or use the batteries in extreme temperature conditions. Optimum conditions are between 40 degrees F and 90 degrees F, although most batteries will tolerate a range of about 15 degrees F to 104 degrees F. NiMH batteries will only perform well below 40 degrees F if they are warmed by use or charging.

DON'T overcharge the batteries.

DO use a good-quality charger.

DO fully charge batteries before storage. Recharge NiCd batteries monthly and NiMH batteries about every six months.

DO properly dispose of NiCd batteries. Most battery stores, such as Batteries Plus, accept batteries for recycling at no charge or you can go to www.rbrc.com for a listing of stores. Also check with your municipal waste management department for recommendations. NiMH batteries are safe for your home trash.



The 15 1.2-volt cells in this battery pack are wired in series to provide 18 volts of power. The heat sensor tells the charger if the cells are getting too hot so it can slow down the charge rate.

Visit our Web site: www.americanwoodworker.com to see a comprehensive comparison of manufacturers, models, cost and features.

One Great Accessory

Just about everyone who has a cordless drill finds some kind of quick-change bit system essential.

The simplest is a magnetic bit holder (\$18). It allows you to quickly change between Phillips and other screwdriving bits, and the magnet holds screws to the bit for faster driving. To change to drilling, you must manually remove the bit holder.

For around \$35 you can also get a quick-change system with special hex-shank bits, so you can quickly change from drilling to driving. You can get various drill sizes, plus countersink, counterbore and even Vix bits that fit the system. These systems are made by Dusty Bit (612)381-1060 for Craftsman, DeWalt and Makita.



A magnetic bit adapter (\$3.45 from The Home Depot) holds your bit and magnetizes it to hold onto screws at the same time.

Use a quick-change adapter to make the switch between drill bits, pilot countersinks and screwdriver bits (or magnetic bit holders) easier and faster. Also available are extensions, plug cutters, deep-well nut drivers, spring-loaded drill guides and threaded arbors. Insty-Bits (www.instybits.com) also has straight and T-handles available.

Why I Love my Cordless Drill

"I bought a 14.4 DeWalt cordless drill three or four years ago and I haven't used my corded drill since. Haven't even touched it, except to shove it out of the way. I use the DeWalt even when I have to switch back and forth between drilling and driving. The speed control seems a lot smoother than with corded drills and I like having the two different speed ranges. Its only disadvantages are its weight and it is hard to find a place to lay it down where it won't slide off the bench."

Bruce Holder

Rants & Raves

"For weight considerations alone, I would not buy more than a 12-volt cordless drill."

Kevin (Internet)

"I have never gotten more than two years out of a battery. Sometimes less. With some of the lower priced cordless tools it's cheaper to buy a new tool than replace the battery and/or charger. I think it's kind of bogus that the manufacturers don't standardize their batteries and chargers."

Ed Fan (Internet) **AW**

Reviews

Here's what other woodworkers magazines had to say about cordless drills.

Wood magazine,
August 1997

In a review of 9.6-volt, 12-volt, and 14.4-volt models, the Porter-Cable drills were noted as having the best combination of high performance and moderate cost. For the occasional woodworker they recommended the Skil and Wagner drills for value.

Popular Woodworking,
March 1997

In a review of 14.4-volt drills, they didn't pick any editors' choices, but the DeWalt DW991-K-2 and the Makita 6233DWAE had the highest aggregate scores for fit and finish, ease of use, and length of time between charges.

Shop Notes #26, March 1996

They awarded Final Picks to the Black & Decker 2872-K and Bosch 2210K.

Visit our Web site: www.americanwoodworker.com to see a comprehensive comparison of manufacturers, models, cost and features.

No other hand-held vacuum in the world has this much suction...

The Euro-Pro Shark provides the power of an upright in a hand-held vacuum and sucks dirt from places ordinary hand vacs can't reach.

by Sandra Brosberg

I'm a neat freak. I admit it. But with a cat, two dogs and two children, it's tough to keep everything clean. Everytime I turn around, there's a new mess on the kitchen floor, the living room carpet or the bathroom tile. Whenever I spotted a mess, I had to go to the closet and drag out the upright vacuum cleaner. Thank goodness I discovered the Shark Turbo hand vacuum! With seven times the suction of ordinary hand-held vacuums, it gives me the cleaning power of a top-of-the-line upright.

Unlike any other. The Shark Turbo hand vac easily outperforms all others. With its unique 600-watt motor, it offers the most powerful suction available in a hand-held vacuum. It sucks dirt from corners, crevices and other difficult areas that ordinary hand vacs miss. It is powerful enough to pull dirt from a computer keyboard yet portable enough to use on stairs. It's perfect for cleaning cars, boats and RVs. Why drive to the gas station and pump quarters into an industrial vacuum when the Shark Vac can give you similar results in your own driveway?

No bag, no mess. Its convenient dustcup design is another great feature—no more hassling with messy replacement bags! When the dustcup is full, simply

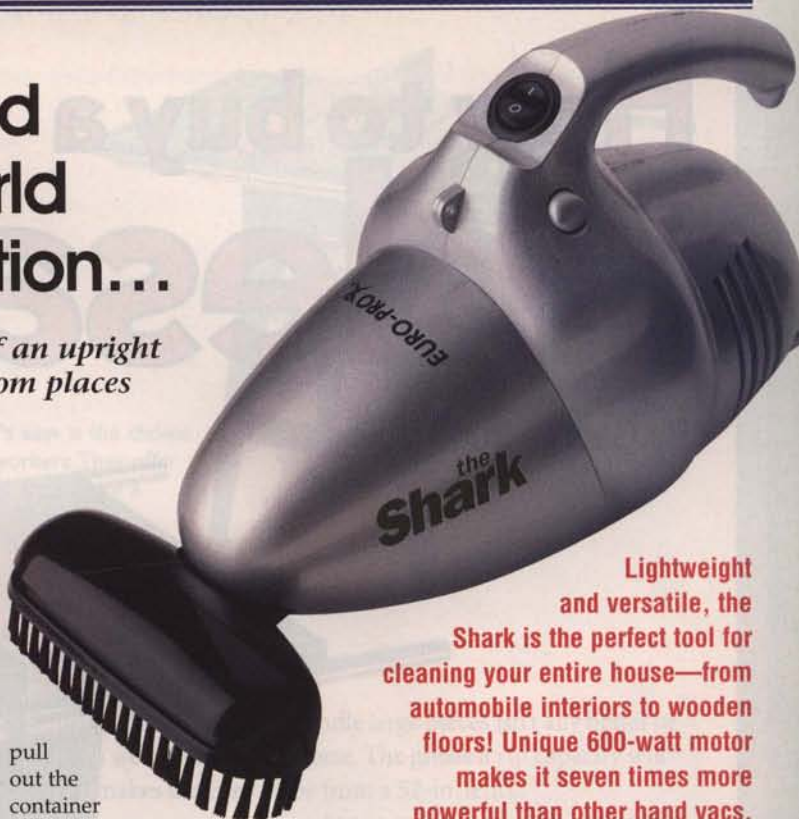


pull out the container and empty the filter. Then, you simply rinse the filter in cold water and let it dry. Just snap it back in and you're ready to clean again. You'll never have to buy bags again.

Ergonomic design ensures ease of use.

The Shark comes complete with two accessory brushes and a flexible hose to provide the ultimate in cleaning versatility. Its lightweight design is easy to hold and maneuver around even the tightest of corners. Plus, a convenient shoulder-strap makes cleaning a breeze! Once you've seen the powerful results you get from this amazing cleaner, you can leave that upright in the closet. It gives you the portability and practicality of a hand-held vacuum with the powerful suction of vacuum cleaners many times as large.

Try it risk-free. You'll be amazed at how much cleaner the Shark Turbo hand vac leaves your home. The Shark comes with a one-year manufacturer's limited warranty and TechnoScout's exclusive risk-free home trial. If you're not fully satisfied, return it within 90 days for a complete "No Questions Asked" refund.



Lightweight and versatile, the Shark is the perfect tool for cleaning your entire house—from automobile interiors to wooden floors! Unique 600-watt motor makes it seven times more powerful than other hand vacs.



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For years, we have found high tech solutions from the innovators and brought them directly to you...months before they were available in stores. Now, TechnoScout.com is the high-tech, low-stress way to a better life.

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How to buy a Tablesaw

By George Vondriska



The tablesaw is the workhorse of your shop, offering more versatility than virtually any other tool. Here's how to get the one best suited to your needs. We've got information on the types of saws, what's new, great accessories and even some argument from woodworkers (can you believe it?) about the best saw to buy.

Benchtop Tablesaws

These saws are made with portability in mind, so they are lightweight and small. Benchtop saws have a limited rip capacity, generally less than 24 in., with a couple of exceptions. Benchtop saws are the least expensive tablesaws and are best suited for jobsites or small-scale work in a small shop. Although many people use them for woodworking, for serious shop use we recommend a contractor's saw or cabinet saw.

Contractor's Saws

Designed with some amount of portability in mind, but heavier and larger than the benchtop saws, these saws are the most popular choice among small shop woodworkers. With 1-1/2- to 2-hp motors, they have plenty of power for most cutting operations. Most will work with 110 or 220 volts, making it easy to plug and play.

With the right fence you can get rip capacities as wide as 52 in., making them great for handling plywood.

You'll find a complete listing of table-saws with prices and specifications at www.americanwoodworker.com. See page 8 for information on ordering printed copies.

Add an outfeed table, and you can handle just about anything. And when you're done, it's easy to roll these saws back against the wall.

The motor usually sticks out the back of these saws, making a big hole for dust to escape through. An exception is DeWalt's new saw (see page 75) with its built-in dust shroud.

A contractor style saw will serve you well for many years of heavy use. It has the benefit of some portability; a bonus in all but the biggest of shops. For heavy cuts, a thin-kerf blade will help keep the saw from bogging down in thick hardwood.

Cabinet Saws

These are the saws most woodworkers drool over. Not just for cabinet-makers, they get their name from the cabinet that houses the entire saw mechanism. With everything enclosed, dust collection is better on these saws than contractor's saws.

Contractor's saws weigh in at 200 to 300 lbs., cabinet saws at 400 to 500 lbs. That extra weight comes from

A contractor's saw is the choice of most woodworkers. They offer the same cutting capacity of a cabinet saw, but with mobility and a motor that will work off a 120-volt circuit. Their downside: dust collection is sometimes tough, and the motor can bog down in very heavy cuts.

heavier tables and mechanisms and larger motors. The extra weight helps dampen vibration, but makes them a bear to move around.

With motors as big as 3 to 5 hp, there's no bogging down these saws, but you'll need a 240-volt outlet to power them.

Tables are about the same size as contractor's saws, so the ability to

handle large pieces isn't any better or worse. The greatest rip capacity will be from a 52-in. fence.

At two to three times the price of a contractor's saw, these machines are designed for heavy daily use, making them the choice of many professional woodworkers.



Rip fences are greatly improved on almost all new saws. Unlike the rip fences of a decade ago, these are rigid, they stay parallel to the blade and many give you direct-read (the ability to read the width of cut directly off the fence) without the use of a tape measure.



A cabinet saw is the preferred tool of professional woodworkers. It has a 3- to 5-hp motor, which usually requires a 240-volt circuit, but its weight gives it great stability and the cabinet base makes for efficient dust collection.

Blade Guards

Blade guards on tablesaws are a pain. We struggle with them, they slow us down, and many woodworkers end up working without them. But tablesaw accidents are common and often permanently disabling. Your guard is cheap insurance, and we recommend using it whenever possible—in spite of the hassle. We do in our shop.

Unfortunately, the guards that come with most saws are mediocre, and aftermarket guards, though excellent, are pricey. We wish some

enterprising manufacturer would come up with a solid, easy-to-use guard for less than \$100. Until then here are the options:

Align the Splitter

The splitter (see photo, below left) sits behind the saw blade to prevent the wood from pinching the blade, which can burn the wood and produce kickback. The splitter also carries the pawls, which also prevent kickback. The splitter must be aligned properly or you'll get an awful cut. While aligning is often a cumbersome task, it is essential. Consult your owner's manual for the exact procedure for your saw.

Aftermarket Guards

Aftermarket guards are excellent, though expensive (\$200 and up). They typically have the guard on an arm that extends over the board (see photo, above right). This allows the guard to be used while cutting rabbets and dados. Some of the guards can be hooked up to a dust collector, which allows you to capture the plume of dust that kicks forward from the saw blade. They are also



Overarm guards, like this one from Excalibur (\$360), allow easy on and off, dadoing, and dust collection from above the blade.

very easy to move out of the way for operations like tenoning, where using the guard is impossible.

You have plenty good reasons to have a guard in place. Carefully align the guard you have, or buy an aftermarket guard now. And don't argue!

Sources

Biesemeyer
(800) 782-1831
Delta
(800) 438-2486
Excalibur
(800) 357-4118
HTC
(800) 624-2027



Align the splitter with the blade to keep your guard functioning properly. Consult your owner's manual for details on how to move the splitter.

One Great Accessory

The standard miter gauges for tablesaws are notoriously inadequate. If you want to use your table-saw for really precise crosscuts, at any angle, consider an aftermarket miter gauge.

These tools offer positive stops at all the common angles, bars that fit the slot on your tablesaw perfectly, long fences and stops for repetitive cuts. Prices run from \$165 to \$185. We tested five brands in AW #81, July/August '00, page 81 and found

that all worked extremely well. Our favorites are by Woodhaven (right) and Incra.

Sources

Accu-Miter
(800) 382-2637, www.thejdscompany.com
Incra
(972) 418-4811, www.incra.com
Osborne
(800) 852-9655, www.osbornemfg.com
Vega
(800) 222-VEGA
Woodhaven
(800) 344-6657, www.woodhaven.com



Aftermarket miter gauges, like this one from Woodhaven (\$170) give you much greater accuracy and repeatability.

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What's New

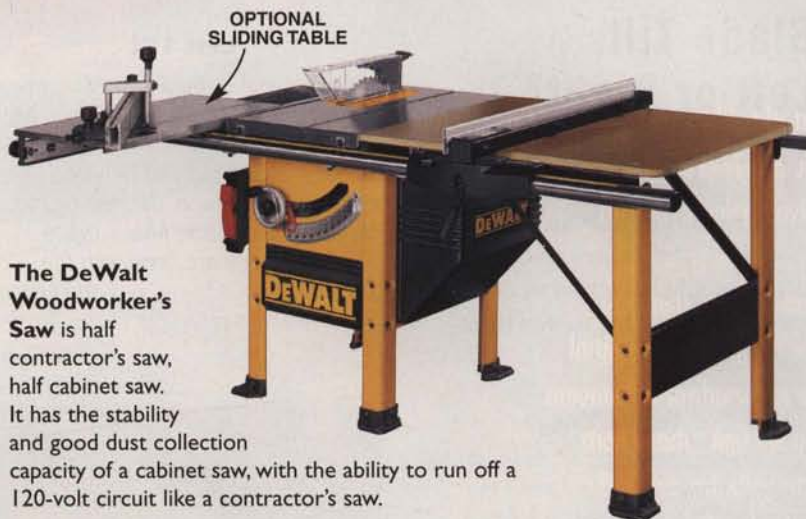
One of the most interesting developments in tablesaw design last year was the introduction of the DeWalt Woodworker's Tablesaw.

It's a cross between a contractor's saw and a cabinet saw. It has an excellent direct-read fence, left-tilting blade, 1-3/4-hp, 120-volt motor and a sturdy, low-vibration base.

Our favorite feature, though, is that this saw is designed for dust collection. The motor doesn't hang out the back, as on a contractor's saw, leaving a big gap, and a plastic shroud around the blade makes for very efficient collection, even with a shop vacuum.

The motor design also gives the saw a much smaller footprint—an excellent feature for the woodworker with a small shop.

Optional accessories include 52-in. rails (\$230), a heavy-duty outfeed table (\$100), a mobile base (\$95) and



The DeWalt Woodworker's Saw is half

contractor's saw, half cabinet saw. It has the stability and good dust collection capacity of a cabinet saw, with the ability to run off a 120-volt circuit like a contractor's saw.

an integrated sliding crosscut table (\$450). Street price for the basic saw with 30-in. rails is around \$900.

We're particularly impressed by the sliding crosscut table (\$450). You can buy sliding tables for other saws, but we appreciated that the DeWalt slid-

ing table didn't hang way off the side of the saw, a boon to the small-shop woodworker. In our test, it was also very accurate.

Why I Love my Biesemeyer Fence

Everybody's got something they love about their tools. For Jennifer Feist, it's her Biesemeyer fence. Here's what she says.

"For years I struggled with a crummy fence on my tablesaw. Every time I

wanted to make a cut, I had to measure at the front and back of the blade. Of course when I locked the fence it would move a little, and I'd have to start over again. I was never certain I had the fence perfectly parallel to the blade.

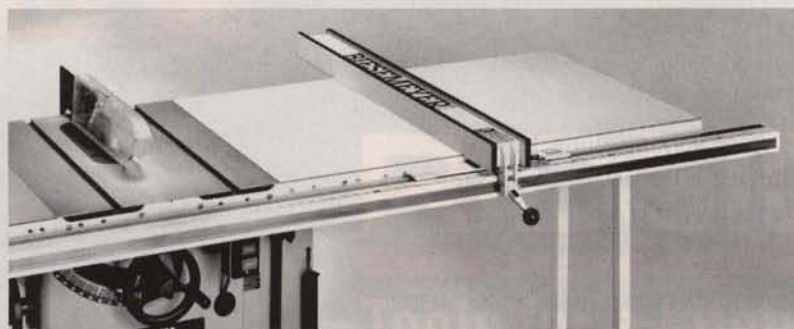
Finally I had enough. I

pulled the old fence off my saw, made it into a boat anchor, and put on a 30-in. Biesemeyer fence. The T-square design is amazing. Once I set the fence parallel to the blade, it stays parallel no matter where I set it.

The cursor is excellent. I calibrate it to my blade, and have never used a ruler to set up a rip again. Just read it at the rail (see photo, left), and you're good to go.

The Biesemeyer fence made my saw much easier to use. That's why I love it!"

Jennifer Feist



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Rants & Raves

Blade Tilt, Left or Right?

You can buy a tablesaw with a blade that tilts left, or one with a blade that tilts right. Which one should you get? There's no one answer to this, but lots of woodworkers will be happy to give you their opinions.

Right Tilt

"I've always used right-tilt saws. When making a mitered cut between the fence and the blade, I find it much easier to measure for the long point of the miter with a right tilt. Plus, the outside of my material, my reference face, is down on the table. This guarantees that my fence-to-long-point distance is the same on every piece. On narrow parts I can always use my fence to the left of the blade if I want the blade to tilt away from the fence."

Jerry Conway

Left Tilt

"Because the blade tilts away from my fence, I'm less likely to cut into it. My material is riding over the top of the blade so it isn't trapped between the blade and the fence, decreasing the chance of kickback. Miterers made using the fence are done with the material good-side-up, so I don't have to worry about chipping."

Bob Vayle



Bottom Line

There used to be a huge price difference between left- and right-tilt saws, but not any more. Traditionally, only cabinet saws were available with left tilt, but now there are left-tilt contractor's saws also.

I see it as a great advantage on left tilt saws that your material doesn't get trapped between the blade and fence. If I planned on doing lots of case work that required mitering large pieces of sheet stock, I'd buy a left tilt. Otherwise, it's a toss up.

Blade tilt, for cutting bevels, is an essential feature. But which is better, right tilt (shown) or left tilt?

Reviews

American Woodworker,
#63, December 1997

Three contractor's saws received Editors' Choice awards: Delta's 34-445 and 36-630 saws, and Jet's JWTS-10CW-PF. The Best Buy award went to Grizzly's G1022ZF.

American Woodworker,
#49, December 1995

In a test of cabinet saws, the Powermatic 66 was given the Editors' Choice award. The Enlon EN-3202 received the Best Buy award.

Popular Woodworking,
July 1991

Three cabinet saws rose to the top of this test. The General 350-1, and Jet's JCS-10A.

Shop Notes, No. 21

In a test of contractor saws, the editors of Shop Notes liked the Jet TWTS 10JE, the Delta 34-444, and the Powermatic 63 saws, with the Jet rising a little above the other two.

Fine Woodworking, June 1999

Testing at this magazine brought the Delta Unisaw, Jet JTAS-10 and the Powermatic 66 to the top of the cabinet saw pile.

AW

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THE MOST VERSATILE SANDER YOU CAN OWN. PERIOD. END OF STORY.

Contours. Edges. Inside curves. Faces. Bevels.

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The 4" x 24" belt sander quickly and efficiently sands end grain, faces and edges. The range of spindles provided lets you accurately sand curves from as little as 1/2" to more than 3" in diameter. And conversion from belt to spindle mode is a cinch; tool-less and takes just a few seconds. Everything you need to get started is included and stores conveniently on board, at your fingertips.



The durable cast aluminum worktable tilts from 0° to 47° for precise bevel sanding.

The tough polypropylene base won't rust or dent, yet provides a large, stable footprint when mounted to sawhorses or on a shop bench. And the quiet Emerson induction motor powers a patented belt and pulley free drive to provide years of trouble free performance.

Highest rated by WOOD® magazine for performance and value - 5 out of 5 ★'s.

Backed by the RIDGID Lifetime Warranty. Made in the USA.

In the curves or on the straightaway, this one sander does it all...period.



Ultra fine finishes and efficient stock removal on faces and edges courtesy of oscillating belt sanding action.

Handles just about any curve you can dream up as a spindle sander.

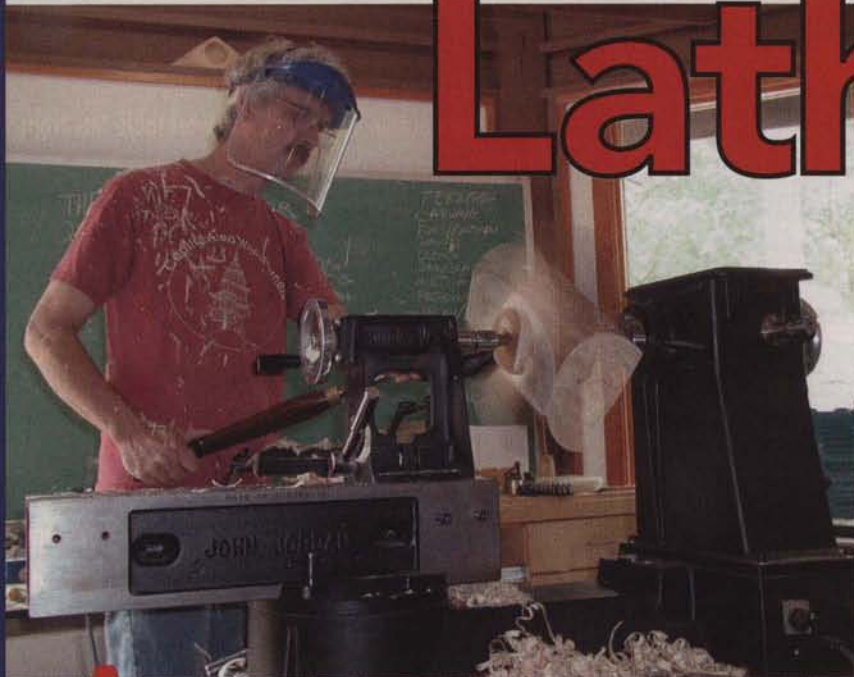


RIDGID®

Tools for a Lifetime

How to buy a Lathe

By Alan Lacer



Everything in Between

If you intend to primarily make furniture components, balusters, handles, or lamps, then you want a lathe with at least 36 in. between centers, speed range between 600 and 2,000 rpm, and a headstock and tailstock that accept Morse-taper drives (#2 is most common) and accessories.

If your interests are broad and you intend to do a little of everything, or you're just getting started and don't even know what you want to do, consider a standard lathe. These are great starter machines that don't require a huge investment—several good ones cost less than \$600—and will do just about any type of turning, except large bowls. In this category of lathes you frequently find 12-in. maximum turning diameters (swing), approximately 36 in. between centers, and a speed range of 500 to 2,000 rpm.

Look for a standard lathe with a common spindle size and threads because it will be much easier to find accessories. The most common is 1-in. dia. with 8 tpi (threads per inch), but 3/4 in. x 16 tpi and 1-1/4 in. x 8 tpi are also popular. The same is true for spindle taper: No. 2 Morse taper is most common, and accessories for it abound. This allows the use of common accessories or upgrades such as live centers and Jacob's chucks.

Keep in mind this basic principle: larger lathes give you more freedom. Even the smallest miniatures can be done on a big bowl lathe.

Are you driven to turn large, green bowls or are you more intrigued with pens and small boxes? Maybe you only want a lathe for making table legs and chair parts. Perhaps you want to do a little of everything. Answers to these questions will help you choose the right lathe.

Big Projects

If you're inclined to bowl turning (especially diameters greater than 12 in. and plenty of green stock), then look for these features: plenty of horsepower (minimum of 1-1/2 hp), low-end speeds under 500 rpm, hefty bearings and shafts (usually 1-1/4 in. or larger), capacity for large diameters (at least 16 in.), sturdy legs or stand, tool rests and tailstocks that lock securely and are easily adjusted, spindle lock (simplifies the process of mounting and removing faceplates and chucks), and considerable mass (300 pounds or more).

Small Projects

If your passion lies at the other end of the spectrum, with pens, miniatures, lidded boxes and the like, there are any number of fine mini-lathes on the market. These are excellent if you have very limited space and portability is a priority. Look for higher top-end speeds (2,400 rpm and faster), ease of moving the tool rest and tailstock, ease of speed changes, ease of mounting on a table or bench, and weight (under 60 pounds if portability is a major factor). However, don't buy a small lathe *just* for small work. Large lathes are excellent for even the smallest miniature work!

You'll find a complete listing of lathes with prices and specifications at www.americanwoodworker.com. See page 8 for information on ordering printed copies.



Grizzly Model G1067Z, \$399.

Standard lathes are a good choice for all-around woodturning. They normally accept up to 12-in.-dia. workpieces (a few will take up to 16 in.) and a maximum workpiece length of approx. 36 in.



Woodfast Model #910V, \$3,495 (without stand and motor, \$2,045).



Delta 46-250 Midi Lathe, \$299.

Midi-lathes are a new category. Larger than most mini-lathes, they can handle longer spindles (with optional accessories), but are still easy to transport and affordable.

Mini-lathes come in two types: very light and portable, like this one, or a heavier general-purpose style. The ultra-light ones are good for pens and very small work, the general-purpose mini-lathes can do everything up to small bowls. See AW #78, February 2000, page 68 for a complete review.



Taig mini-lathe from Lee Valley Tools, (800) 871-8158, \$209.

Speed and Power

The power you'll need in a lathe depends on the mass of the object you wish to turn and the tool you will be using. Here's a rule of thumb: For an all-round lathe, choose between 3/4 hp and 1 hp. For mini-lathes you can get by with 1/4 hp, but 1/2 hp is better. For work under 12 in. or less (especially green-wood bowls), 3/4 hp is sufficient. For a heavy lathe choose at least a 1-1/2 hp.

Speed and Speed Changes

How fast you turn is a function of the diameter of the work. Peripheral speed is more important than spindle speed. At 800 rpm a pen blank seems to hardly be turning, while at the same speed the rim of a 20-in. bowl is screaming. As a general rule, the smaller the diameter the higher the speed; the larger the diameter the slower the speed. So, on a pen-making lathe you'll rarely turn below 600

rpm but you often may wish to crank it up to 2,400 rpm. On a large bowl lathe you may seldom turn above 1,200 rpm, but you might want a low-end speed of 300 rpm or less for roughing large diameters.

There are three common methods of speed control:

1. **Belted pulleys** for manual speed changes (photo, below left.)
2. **Mechanical variable speed**, which usually offers a range from 500 to 2,500 rpm (photo, at right).
3. **Electronic variable speed**, either AC or DC. These often give a range from 0 to 3,000 rpm when combined with belted pulleys and reverse.

There are pluses and minuses to each variable-speed system.

- The belted pulleys you change by hand can be slow and awkward, they offer the least number of speed options, and they have a tendency to slip if the motor is not locked securely. On the positive side, these are the simplest and least likely to malfunction, they can often be modified with different sizes of pulleys to vary the speed, and you may find that you do 90 percent of your work with only one or two speeds anyway.
- The mechanical variable-speed system is fixed in terms of speed range, is often the most noisy, and can only be adjusted while the lathe is running. This is both an annoyance and a possible safety hazard. Imagine you just mounted a large bowl blank and realize the speed is set to 2,500 rpm! But this system gives a wide range of speed options and speed changes are as simple as pulling a lever.
- The electronic variable-speed systems share the best of belts and

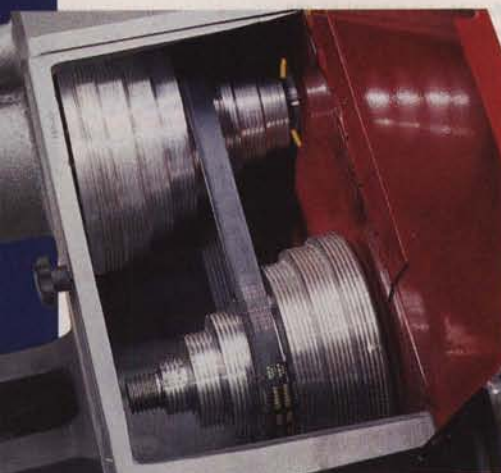


Mechanical variable-speed lathes have been around for more than 50 years. By simply moving a lever you get an infinite number of speed variations within a fixed range. The downside is the system is noisy and it can only be adjusted with the lathe running.

mechanical systems: ease of speed change (as easy as turning a dial), and a range of speeds from 0 to as high as 4,000 rpm. Quality systems are expensive on a full-size lathe; from \$300 to \$800. Neither DC systems nor the newer AC systems (see page 81) are completely quiet and both are electronic gizmos that you can do little to fix yourself if they go haywire.

Reverse is another speed control option that some turners like on a lathe. They believe that a better surface is achieved if the work is sanded in both directions—a belief not held by all turners!

Noise can be a problem with both mechanical and electronic variable-speed drives. In a quiet place, turn on the lathe you're considering and try out speed changes. Be sure you'll be comfortable with that noise level in your own shop.



Belted pulleys, whether V-belts or flat-ribbed belts, usually give three to eight different speeds. The advantage of this system is simplicity, economy and durability. The disadvantage is that changing speeds is awkward and there is only a limited range.

Visit our Web site: www.americanwoodworker.com to see a comprehensive comparison of manufacturers, models, cost and features.

What's New

In the last few years there has been a real explosion of specialty lathes at both ends of the scale: large, massive lathes primarily aimed at bowl and vessel turning, and the mini- and midi-lathes for small-scale turning.

On the heavy side, new lathes include the Omega Stubby, Vicmarc VL300, Powermatic 3520, Oneway 2436, Poolewood 2000 and 3000 and a heavy-duty Jet, appearing under the Powermatic label.

New mini- and midi-lathes include the Klein Design, Mini Jet, Oneway 1018, Delta Midi Lathe, Vicmarc 100, Sherline Pen Lathe and Carba-Tech. A few of these are heavy and powerful enough to turn green bowls up to 10-in. in diameter.

At both ends the quality continues to improve and more options are available, such as AC or DC variable-speed systems and improved leg and stand designs. (See www.americanwoodworker.com for a complete list.)

AC Variable-Speed Drives

There has been a proliferation of AC variable-speed drives. They first appeared on lathes dedicated to bowl work but now they are starting to appear on standard machines. This type of drive gives a wide range of speeds going all the way down to 0, just like a DC variable-speed drive.

The AC variable speed offers several advantages over DC:

1. No surging problems or fluctuating speeds that some DC-fitted lathes suffer from.
2. None of the DC "hum" that can be quite loud on some less-expensive systems.
3. It uses the relatively inexpensive three-phase motor, but runs on 220-volt, single-phase input (through the miracle of high-tech electronics).



AC or DC variable-speed units appear on the largest and smallest of lathes these days. Systems available may allow the speed to range from 0 to as high as 6,000 rpm with just the twist of a knob. Both types require a matched motor and controller assembly.

Why I Love all 15 of my Jet Lathes



Jet lathe, model #1236, \$800.

"Running a woodworking school, I needed a versatile and dependable lathe that would see hard service for a number of weeks each year, but would not break the budget.

The Jet 1236 has been just the ticket. The lathes were easy to assemble, worked right out of the box, and maintenance requirements have been minimal. They're great general-purpose lathes, having been used for turning of all types: bowls, lidded boxes, tool handles, table legs, tops, you name it.

We have had some breakage of tool rests, and a few live centers have worn out, but all and all the machines have

held up amazingly well in the seven years that I've owned them. When replacement parts were necessary, they arrived quickly with little down time. The stock stand is a little too light weight, and greatly benefits from a plywood shelf loaded with several bags of ready-mix concrete."



Marc Adams

Visit our Web site: www.americanwoodworker.com to see a comprehensive comparison of manufacturers, models, cost and features.

One Great Accessory

Perhaps the most common upgrade accessory for a lathe is the adjustable chuck, known as a scroll chuck. They provide ease and speed in mounting a whole range of projects, from bowls to miniatures and goblets—any work that is not held between centers. These chucks vary considerably from the standard three- or four-jaw machinist chucks, offering greater surface area to grasp the blank (which means greater and safer holding capacity) and numerous options such as screw centers, a variety of jaw sizes and shapes, and even jigs for turning the bottoms of bowls. The quality has dramatically increased and the number of options has grown to the point of being overwhelming. Basic chucks start at around \$160 and go for more than \$400 if you

buy all the bells and whistles. Scroll chucks can often be found in general woodworking supply catalogs such as Woodcraft Supply, (800) 225-1153, at turning supply companies such as Craft Supplies, (800) 551-8876, Packard Woodworks, (800) 683-8876 and Oneway Manufacturing, (800) 565-7288.



Four-jaw scroll chucks have become almost a standard accessory for projects that require support at only one end. A variety of jaw sizes allow the use of even a large chuck to grip relatively small projects, such as the top shown above.



In recent years scroll chucks have increased in size and capacity, improved gripping methods with serrated jaws, and a broad spectrum of jaw options.

For more information on lathe reviews contact the American Association of Woodturners, (651) 484-9094, www.woodturner.org.

Visit our Web site: www.americanwoodworker.com to see a comprehensive comparison of manufacturers, models, cost and features.

Rants & Raves

"Whoever invented the gap-bed lathe was not a woodturner! It's impossible to put the tool rest base behind a plate or bowl and the gap is just waiting for the base to slip into it—potentially a real nasty accident."

Clay Foster, Krum, TX

"I wish the lathe manufactures would have a contest to produce the quietest machine."

Del Stubbs, Chico, CA

"Being wheelchair bound I have found the mini-lathe at my kitchen table a real boon to keep me woodworking."

Jamie Canfield, Boise, ID

"Frustrating to spend a considerable amount on a quality lathe and the centers don't align. This makes it hard for drilling operations, reverse chucking of bowls and supporting the lid with the tailstock in box making. I wish I had checked this out before buying my lathe."

Matthew Hill, Oklahoma City, OK

"Being left-handed I find my pivoting headstock lathe much, much easier to use for bowl work."

Mike O'Shea, Chicago, IL

"The most frustrating thing in turning for me is a tool rest (or its base) that loosens while you're working. This is both dangerous and extremely annoying."

Chuck Dewalt, Tulsa, OK

"Pinch points on the two locking levers of the tool rest base or between the headstock and handwheel make me crazy!"

Richard Burrows, Knoxville, TN

"I love a smooth operating tailstock spindle with a long throw and a positive locking system on the base. These features are wonderful when boring or just mounting work between centers."

Chester Eagan, Carmel, NY

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- 1 Hinge Mortising (1/2"), 1 Panel Pilot (1/4")
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- 3 Dovetail (14°-1/2", 5/8" & 9°-3/8"), 1 45° Chamfer,
- 6 Round Over (1/8", 3/16", 1/4", 5/16", 3/8", 1/2")
- 5 Straight (1/4", 5/16", 3/8", 1/2", 3/4")
- 2 Roman Ogee (5/32", 1/4"), 1 Rabbeting (3/8")
- 3 Round Nose (1/4", 3/8", 1/2"), 1 Bevel (25°)
- 1 Slot Cutter (1/4"), 1 V-Groove (1/2")
- 1 Panel Pilot (3/8"), 1 Allen Wrench and one bearing to convert Round Over bit into Beading bit.

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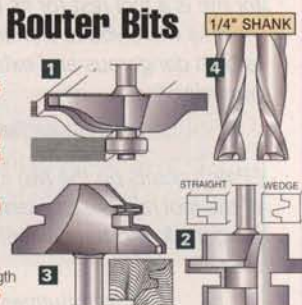
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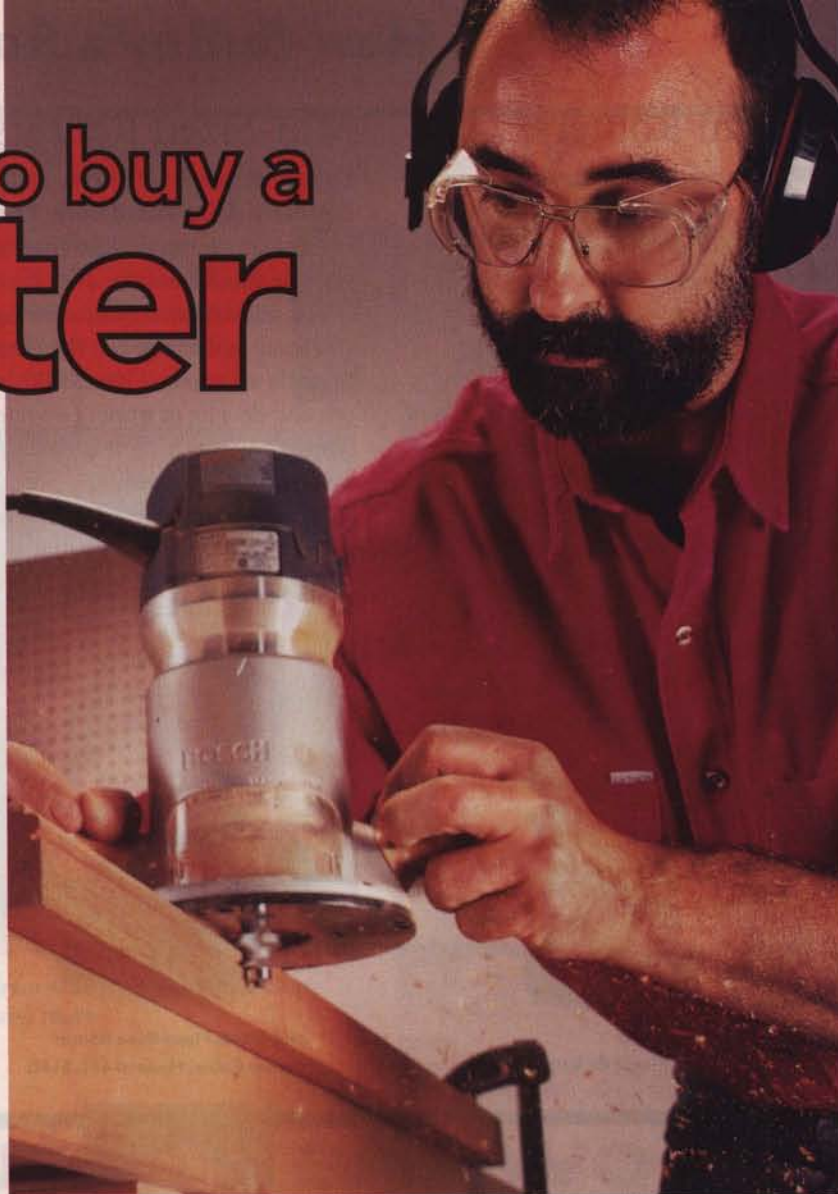
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How to buy a Router

By George Vondriska

Routers are incredibly versatile. Profiling edges, trimming parts to fit, even cutting large parts to size—a router can do it all. A recent survey showed most shops have more than one router. What's best for you and your shop? Here's the router round up.



Fixed Base

These routers have various means of adjusting the depth of cut. The bottom line is that the motor slides up and down in the base. Once you set the depth of cut, the router motor is clamped in place. The motor can be removed from most fixed-base routers, making bit changes easy. They're great for routing edges, making template-guided cuts or for use in a router table.



Makita Model # 3601B with D-handle, \$225.

Plunge Base

The router motor slides up and down on columns, allowing you to start the router with the tool on your work, plunge into a cut, and retract the cutter when you're done. A lever locks the router in the up or down position and a turret helps control the depth of cut. Motors in plunge routers are generally not removable. Plunge routers are great for operations where you want a distinct starting and stopping point, like dados and mortises.



DeWalt Model # 621, \$220.

You'll find a complete listing of routers with prices and specifications at www.americanwoodworker.com. See page 8 for information on ordering printed copies.

How to Buy a Router

Trim Routers

These easy-to-handle routers are generally 1 hp or less, making them a light-duty tool. Light duty doesn't mean poor quality, it means they're best used with smaller diameter bits like small roundovers, ogees and straight bits. What you'll like is the router's light weight and small motor diameter. These combine to make them easy to work with. Collets (the part that holds the bit) on trim routers are for 1/4-in. shank bits only. Trim routers are commonly fixed-base only.



Trim Router
Ryobi Model #TR30U, \$95.

Mid-Sized Routers

These tools are 1-1/2 to 2 hp. and capable of doing lots of work. They're available in plunge or fixed base, and variable speed. Look for one offering 1/4-in. and 1/2-in. collets, allowing you to run either size bit. This size router is manageable hand-held, but can also do a lot of work in a router table. If you're buying your first router, or going to own only one, this is the kind to get. A fixed-base model will give you the most versatility.



Mid-Sized, Fixed-Base Router
Porter-Cable, Model # 690, \$160.

Big Boys

More power, Scottie? Here it is. In the neighborhood of 3 hp, plunge or fixed base, there's little router work these bad boys can't do. Downside? They're pretty heavy, making them a lot to hold onto in handheld routing. These tools are great for router tables, giving you ample power for any bit. Look for a feature called soft start on these machines. Instead of instantly snapping up to full speed, the tool ramps up to full power. This is especially useful when you're using the router handheld so it doesn't get wrenched from your hands.



Large Plunge Router
Freud, Model # FT2000, \$180.

Know the Features

Electronic Variable Speed

Electronic variable speed (EVS) allows you to control the rpm for any size cutter. Single-speed routers spin at about 22,000 rpm. That speed serves bits 1 in. or less in diameter, but is way too fast for bigger bits. If you intend to run large bits like rail and stile, lock miter, or panel raising bits, you've got to be able to slow the router speed down. Running a large bit too fast can result in serious injury.

Spindle Locks

A spindle lock is pretty handy when it comes to changing router bits. A spring-loaded plunger engages the motor shaft, locking it in place. The

plunger releases, freeing the shaft, when you're done changing bits. A spindle lock means using only one wrench on the shaft of the router, which can save your knuckles.

Switch Location

A spring-loaded switch right on the handles of the router means you can have the tool firmly held by both hands when you turn it on. This gives you more control on startup. The larger the router, the more important this feature is. If the switch isn't right on the handles, it should be in a position you can reach without completely letting go of the handles.

Collet

If you're buying a 1-1/2 hp or bigger router, get one that will accept both 1/4-in. and 1/2-in. collets. This gives you more bit options. Whenever you have the choice, buy 1/2-in. shank bits. This will give you more stability, especially with large bits.

Look for a self-releasing collet system. As you loosen the collet, it pulls the router bit out, making removal from the router much easier.

Visit our Web site: www.woodworker.com to see a comprehensive comparison of manufacturers, models, cost and features.

What's New

Two routers have come out in the last year or two that show some of the new high-tech features being built into routers.

The Bosch 1617EVS is an excellent all-around fixed-base router. It has a magnesium base, which lowers the weight, the motor is 2 hp with electronic variable speed and soft start for greater control and safety with big bits. It has a unique system for rapidly changing the depth-of-cut setting, while also allowing for dial-controlled micro-adjustments. Street price: \$190.

The Porter-Cable 7529 is also 2 hp, but has a plunge design. It has both electronic variable speed and an electronic brake, which stops the spindle almost instantly. No more waiting around for your bit to stop spinning before you set the machine down! It also has integral dust collection like that pioneered by the DeWalt 2-hp plunge router. Two switches, one

toggle and one trigger, make the machine adaptable for both handheld and router-table use. Street price: \$190.



Porter-Cable Model # 7529 2-hp plunge router.



Bosch Model # 1617EVS 2 hp fixed-base router.

Why I Love my Router

When it comes to routers, we all develop our favorites. Steve Slaby of New Richmond, WI thinks his Porter-Cable 690 is the greatest thing since sliced bread.

"When I was ready to buy my first router, I knew I wanted something in the 1-1/2-hp range. A couple people recommended the 690 to me, so I bought it with the fixed base.

As my woodworking grew, I started to wish I had a plunge router. Instead of buying a new router, all I had to do was buy the plunge base for the 690 motor. It sure saved me a lot of money. I didn't have to buy a second router.



Now that I'm using my router table a lot, I bought another fixed base that I leave fastened to the table. All I have to do is slide the motor out and put it into my other fixed base or plunge base. It's a great system.

I wouldn't buy any router that didn't let me slide the motor out of the base. It makes using the router very convenient. Being able to run the same motor in a plunge, fixed base or D-handle base is great."

Steve Slaby

Rants & Raves

"I've tried to use a plunge router in my router table, but the micro-adjust makes adjusting the router up and down awkward. It's such a slow process. Manufacturers should be able to improve this."

Tom Dane

"I love the way manufacturers are going after dust collection. It's been a long time coming to routers."

Mark Northrop

"Toggle switches on top of routers should be outlawed. I shouldn't have to let go of the handles to turn a tool on and off."

Gail Berry

"I use a 3-hp router a lot for pattern cutting. The soft start on these big routers is a real blessing."

Phil Marquart

Visit our Web site: www.americanwoodworker.com to see a comprehensive comparison of manufacturers, models, cost and features.

Removable Bases

Easy bit changes and router table use

If you're router shopping, take a long look at routers with removable bases. They're high up on our list of features to look for.

Being able to separate the motor from the base gives you several big advantages.

Bit Changes

It's so much easier to swap router bits when you don't have to work around the base. Take the motor out where you can get to the collet easily.



Bit changing is particularly easy with the motor removed from the base.

Ease of Use in a Router Table

In a router table, it can be a nightmare to change bits unless the motor can be removed. Forget contorting your neck, arms and hands to get at a collet in a router hanging upside down in a table.

If you want to use the same router for both handheld and router table use, simply buy a second base and leave it permanently in the router table.



For ease of use you can get a second base and leave it in the table.



Alternative Bases

Some folks like to use a D-handle base for edge routing. With a removable base, you can get the D-handle as an accessory. And one manufacturer, Porter-Cable, has a package based on the 690 router. You get one motor, a fixed base and a plunge base at a special price. It's a great deal compared to buying two separate routers.

You'll find removable-base routers manufactured by Bosch, DeWalt, Milwaukee, Porter-Cable and Ryobi. See the charts on our Web site, www.americanwoodworker.com for a complete listing.

Porter-Cable makes a package with one model 690 motor, a plunge base and a fixed base for one attractive price (\$210).

Visit our Web site: www.americanwoodworker.com to see a comprehensive comparison of manufacturers, models, cost and features.

One Great Accessory

Dust Collection Base

Routers make lots of two things: noise and dust. While router mufflers aren't yet with us (brilliant engineers, are you listening?), dust collection for routers is. Specifically, we've been using the Porter-Cable (PC) dust collection system for routers in the AW shop, and we love it.

Two subbases are available. One is

designed to fit PC routers with a 5-3/4-in. subbase, the other to fit PC routers with a 7-in. subbase. They're \$45 and \$55 respectively. Each base can be used in two configurations. For routing edges, you attach a semi-cylindrical shroud (photo, left) which encloses the bit but still allows you to maneuver. For working in the middle of a board, such as when dadoing (photo, right), you remove the shroud and attach an angled hose fitting. The subbase is hollow, and with this arrangement the dust is pulled from all around the bit. A 1-1/2-in. hose will connect the base to your shop vacuum.

If you want to use the dust collection base on a router other than a PC, you'll have to drill some new mounting holes. A good alternative to drilling a bunch of holes is sticking it on with strong double-faced tape.

We've used this system for routing MDF, which typically fills the shop with clouds of maddeningly fine dust. With the PC dust collection device



For surface and plunge routing, the hollow subbase connects to your vacuum with an angled fitting.

hooked up to a Fein or Porter-Cable shop vacuum, the dust output was negligible.

There is one other player in this arena, and that is the DeWalt plunge router with built-in dust collection. These machines have a hollow base, like the Porter-Cable subbase, with one of the plunge rods acting as a port for the dust, a very compact and effective arrangement. The only drawback is that it doesn't collect dust as effectively when edge routing.



For edge routing, a plastic shroud fastens to the bottom of the Porter-Cable dust collection subbase.

Reviews

Here's what American Woodworker and some other magazines have had to say about routers:

American Woodworker,
February, 2000

In a test of 3-hp, variable-speed routers the Editors' Choice award went to the Porter-Cable 7539, DeWalt DW625, Bosch 1615 EVS, and the Porter-Cable 7518 was chosen as the best router for a router table. The Freud FT200E was given the Best Buy award.

American Woodworker,
August, 1998

In a test of mid-sized plunge routers the Editors' Choice award went to the DeWalt 621 and Porter-Cable 693PK. Best Buy went to the Hitachi TR-12.

Wood magazine, April, 1998

In a test of mid-sized fixed-base routers Wood's Editors' Choice for routers over \$125 went to the DeWalt 610 and Porter-Cable 691. Editors' Choice for routers under \$125 went to the Craftsman 17506.

Wood magazine, October, 1997

In a test of mid-sized plunge routers the Editors' Choice for routers over \$125 went to the DeWalt 621, Porter-Cable 693 and Bosch 1613 EVS. Editors' Choice for routers under \$125 went to the Ryobi R175.

Shop Notes, No. 30

In a test of 3-hp or bigger plunge routers three routers came out on top; the DeWalt DW625, Makita 3612C and the Hitachi M12V.

AW

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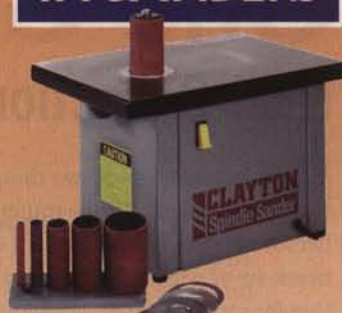
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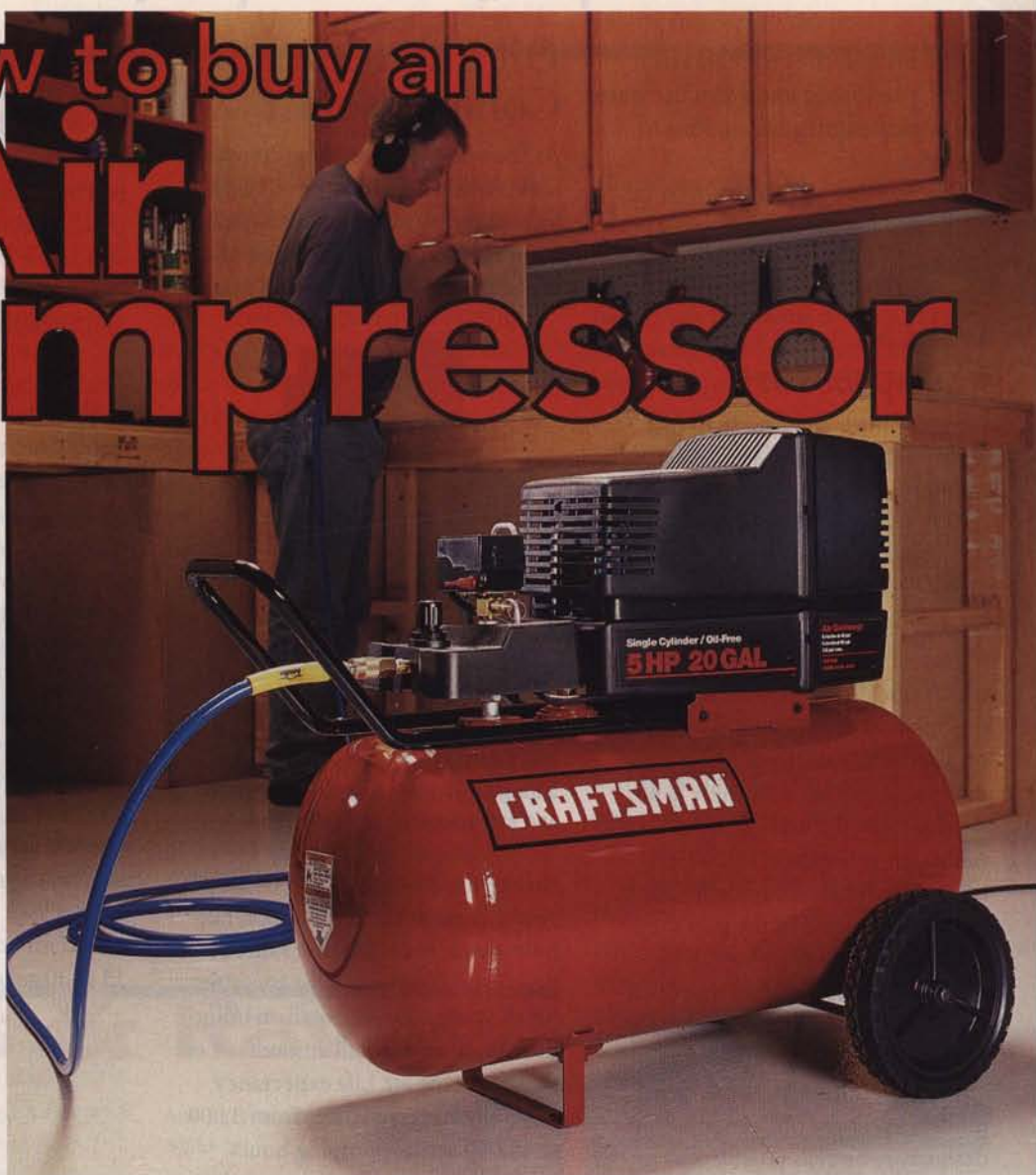
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How to buy an Air Compressor

By
Walker Angell



Air compressors are an essential tool in many shops. You can use one to drive nailers plus other useful air-powered tools such as drills, sanders, die grinders, carving chisels and impact wrenches. Compressed air is also useful for spraying paint and other finishes, blowing dust off tools and materials, and pumping up tires, rafts and other inflatables. Each fall I use my compressor to blow out my sprinkler pipes so they won't freeze during the winter, saving me a \$75 service charge.

You can even turn physics on its head and use the blowing air of your compressor to create a vacuum for use by vacuum clamps and veneer presses (see AW # 81, August '00, page 88).

You'll find a complete listing of air compressors with prices and specifications at www.americanwoodworker.com. See page 8 for information on ordering printed copies.

How to Buy an Air Compressor

When selecting a compressor you should know that there are two basic designs and two sizes to consider.

The two designs are the older oil-lubricated design and the newer oil-less models.

Oilless Compressors

Oilless compressors are designed with a low-friction coating on their moving parts to eliminate the need for oil, are generally less expensive than their oil-lubricated counterparts and don't require you to change the oil on a regular basis. Oilless compressors can operate on a slope, which is really convenient for some out-of-shop experiences, like working on a rooftop. And, the air they produce is cleaner because there is no residue from the lubricating oil (although you should still use an inline filter when spraying finishes).

Disadvantages? In the past they were noisier and their overall life expectancy was less than that of oil-lubed units. We asked several manufacturers about these problems, and all said that, although some earlier models have some problems, newer designs are both as reliable and as quiet as their oil-lubed systems and should serve most woodworkers for at least a decade or more.



Oilless compressors require little maintenance, work at any angle and are less expensive. They are also very noisy.

Oil-Lubricated Compressors

As the name implies, these compressors use oil for lubrication. They're significantly quieter than most oilless compressors and, if taken care of, can last a lifetime or two. You will need to



Oil-lubricated compressors last for a long time with regular maintenance and are quieter than oilless models.

change the oil periodically (once per year is enough for home shops, but follow your manufacturer's directions) and if you use it for spraying finish you'll need to install an inline filter because of small amounts of oil that get in the air. Life expectancy generally runs anywhere from 3,000 to 15,000 actual pumping hours.

How much air do you need?

Depending on the tools you want to run, there is a big difference in the size of compressor you will need.

Some tools, such as nailers, spray guns, air guns for cleaning and impact wrenches, use a small volume of air. You can use 2-hp or less compressors without any trouble. Tools that use an air motor, such as sanders and grinders, take much more air and normally need a 5-hp compressor.

Square cubic feet per minute (SCFM) is the measure of how much

air a compressor delivers. It is measured at a specific air pressure, usually 90 psi. If you plan to use only one tool at a time, find out the largest SCFM requirement of those tools, multiply by 1.2 and make sure you stay above that number. If you want to run multiple tools, add them up and multiply by 1.2

Tank size and shape

Tools that are used intermittently, such as nailers and drills, will work just fine on small tanks. Carpenters often choose the "pancake" (see photo below) or "hot dog" models for easy portability. Woodworkers who seldom move their air compressor usually choose larger tanks, in the 20-gallon range, just so the compressor doesn't cycle on as often. For tools that run continuously, such as a sander, you need a lot more stored air. Mark Mlyniec at Campbell-Hausfeld says that a good rule of thumb is to have at least a 60-gallon tank at 13 SCFM for continuous-duty tools, and 13 to 30 gallons for everything else.



Package kits are available from several manufacturers. They combine a compressor, nailer, hose and quick-connect fitting in an attractively priced package.

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How to Buy an Air Compressor

What's New

The most interesting news in air compressors is the availability for consumers of higher pressure, 2-stage machines. In the past, the maximum pressure developed by a compressor was around 125 psi. This was the pressure that the compressor would "cut out." Recently Porter-Cable and

Craftsman have introduced compressors capable of developing 175 psi. What's the big deal, you say? After all, you can't use an air nailer at that kind of pressure! Well, imagine that tank below the compressor. It will hold much more air at a higher pressure. You're essentially squeezing the air in tighter. Effectively, there can be as much as 140 percent more air delivered. According to Porter-Cable, their new 2-stage model

CPLKC708V2, which has an

80-gallon tank and a cut-out pressure of 175 psi, has the equivalent air storage of a 194-gallon tank!

There is a second feature that is being built into some of these machines. That is a higher "cut-in" pressure (the pressure level that kicks on the compressor). In compressors currently on the market, this cut-in pressure is about 95 psi, only a few psi above the pressure where an air tool may begin showing poor performance. Sometimes you'll notice that your air tool doesn't work as well when the compressor kicks in, or you have to wait until the pressure builds up a bit. On the new 2-stage compressors, the cut-in pressure is higher, so the compressor refills the tank well before you see a decline in tool performance.

A last feature that's being built into these new compressors is a high-flow regulator. Previously this was only available on huge industrial set-ups. It allows a larger volume of air for those air-hogging tools like sanders and routers.



Porter-Cable and Craftsman have introduced a new line of compressors that store air at a much greater pressure than the typical 125 psi. These new units store air at anywhere from 135 to 175 psi, increasing the amount of stored air in the tank which results in longer run-times for your tools.

Rants & Raves

"This is the second time my 5-hp, 20-gallon oilless compressor has died. I don't think I'll fix it this time."

Kevin Singleton

"I've had an oilless compressor for over eight years without a single problem. I've heard from fellow woodworkers that they don't last, but mine has and I use it every weekend all year. It's a LOT noisier than others, but I built a little room just for it with my benchtop drill press on top and you hardly notice when it runs."

Carol Fuller

"I bought an Airy kit that included both an 18-gauge pinner and stapler. I really like to use a lot of traditional methods and hand tools, but there are many times when it's much easier and faster to just grab one of these for a

few pins or staples. I would never give mine up."

Jim Laika

"I have a little pancake compressor that I got for roofing my garage, and it works great in the shop. I use it for nailers and some light spraying. The only thing I hate is the racket it makes when it goes on. I wish someone would come up with a muffler for these tools."

Don Sympton

"Not a day goes by that I don't use at least one pneumatic tool in my shop. Mostly it's my brad nailer, but I also have a small grinder that's real handy for making things fit, especially repairing old toys and a sander that cuts an hour's worth of work down to minutes."

Steve Johnston

Why I Became an Air Head

"I purchased an Emglo compressor several years ago to drive a nailer for a project I was working on. Little did I know how much I would use it. Since then I've acquired numerous air-powered tools for both woodworking and general fix-it stuff. I really like the air-powered versions of electric tools because they have a lot more power that lets me get projects done quicker. The compressor has worked flawlessly."

John McKinley

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One Great Accessory

Piping

Most people who own an air compressor find that it's a tool they continue to find new uses for. The one drawback is that the machine is hard to lug around and the hoses are a pain. Many woodworkers solve these problems with a built-in air line. These are standard in commercial shops of all kinds (just ask your auto mechanic!).

Your system can be as simple as a single pipe down one wall of your shop, or may include branches to specific places such as a finishing area or to your garage for auto work or inflating bike tires. One of the biggest advantages for many people is that an air line allows them to locate the air compressor further away, so the noise isn't as annoying.

Here are some tips to make setting up an air line as easy and successful as possible:



A hose reel is a convenient way to handle long lengths of air hose. Crank-style reels cost from \$29 to \$129. Spring-loaded ones that reel in the hose with just a flick cost considerably more.

Use Copper Pipe

Galvanized and copper pipe are both good, but copper is easier to install. You can splice into it relatively easily and it's fairly economical. Do not use PVC. If PVC breaks, for example from a kicked-back board, you'll have

sharp shrapnel flying through you and your shop.

Runs and Risers

Horizontal runs should slope downward so the air flows in a downward direction. This isn't for the air, but so that accumulated moisture will run towards the end of the line.

When you branch off a horizontal main line the branch should always go up. If the line needs to go down, first run it up and then turn down. This allows dry air to be pulled to your tool while the water remains in the main line. Dry air is always better for spraying and air tools.

Outlets

Place a quick-connect fitting wherever you want to hook up an air tool. Never place outlets at the bottom of a pipe run. If you have a vertical run that needs an outlet, run the pipe a foot or two below the outlet and use a tee to serve the outlet. Outlets are often easier to use and easier on your hose if they're installed at about a 45-degree angle or slightly more towards the floor.

Find a place on the wall for any filters, oilers and regulators. Ideally the filter/air dryer should be installed as close to your spray gun as possible.

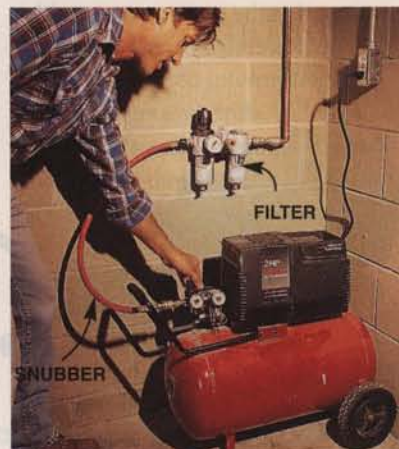
Some tools require 3/8-in. quick-disconnect fittings. If you have any of these, all fittings should be 3/8 in. If you expect to use hose longer than about 50 ft. you should use the 3/8-in. connectors and larger hose to reduce airflow restrictions.

Locations

Besides the standard waist-high outlets around the walls, consider putting some outlets above work surfaces where you commonly use air-powered tools. You can attach a recoil hose and have air quickly and easily available.

Drains

You need drain-cocks installed at the low points of the system for draining water. Besides installing them, remember to use them. **AW**



Use a snubber hose (\$15) to connect your compressor to the air line pipes. It absorbs the vibrations from the compressor. This installation has an air filter and dedicated 20-amp circuit for the compressor.



A recoil hose over or near work surfaces where nailers are used frequently is very handy. These hoses have a lot of stretch to give you flexibility with your tool and then coil themselves up to get out of the way when not in use.

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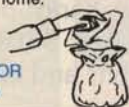
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Think hand-cut dovetails are hard to make? Prepare to be surprised. In two hours, you'll learn to lay out and cut rough dovetails by hand. Sharp tools provided.
Capacity: 12

Sharpening, Paul Anthony

Fri., 3:30-5:30; Sat., 12:00-2:00
Learn how to put a truly keen edge on your chisels and plane irons. Bring a couple of your favorite tools for a serious tune-up. Capacity 12

Using a Cabinet Scraper, Joseph Hoover

Fri., 1:00-3:00 pm
Tired of choking on dust clouds? Tired of sanding scratches? Tired of choking on dust clouds? Learn how to tune up and use a cabinet scraper for smoothing woods. Capacity: 15.

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Finishing Basics, Joseph Hoover

Fri., 1:00-2:30 pm; Sat., 12:00-1:30 pm.
Learn how to select the best finish for the job. Understand wood stains and use them correctly. From surface preparation to final polish, you'll learn what it takes to get a quality finish.

Must-Have Hand Tools, Andy Rae

Fri., 1:00-2:30, Sat., 2:30-4:00
Which hand tools are worth your time and money? No gimmicks here, just commonsense tools that no woodworker should be without. From the right planes and chisels to hand-held power tools, learn which tools get and how to use them.

Planning Your Project, Carol Reed

Fri., 1:00-2:30; Sat., 2:30-4:00
A good plan leads to a good project. Learn how to choose, customize, or make a plan from scratch, and how to create a materials list, select the appropriate joinery and hardware, and determine the best finish.

Tables Tables Tables, Frank Klausz

Fri., 3:30-5:00; Sat., 12:00-1:30
From coffee tables to conference tables, this slide show and discussion covers a lot of ground. A master cabinet-maker shares tips on design, joinery, wood selection, hardware, and everything else you need to know to build the best tables.

Using Your First Router, Carol Reed

Fri., 3:30-5:00; Sun., 12:00-1:30
So you finally got a router. Discover how to use it to make joints and decorative edges. Learn about fences, router tables, guide systems and other useful accessories.

Understanding Wood, Geoffrey Noden

Fri., 3:30-5 pm; Sat., 2:30-4:00 pm.
Get "wood savvy." Learn about quartersawn vs. plainsawn, kiln dried vs. air-dried, warp, board foot measure, grain direction, designing for wood movement, composing figure, and other insights for improving your woodworking.

Gluing Up, Geoffrey Noden

Sat. and Sun., 12:00-1:30
A successful project depends on a quick, efficient, well-ordered glue up. Discover the professional tricks for preparing surfaces, applying various glues, aligning pieces, and clamping up.

Getting Started at Woodworking, Frank Klausz

Sun., 12:00-1:30
Learn how to select and understand tools, machines, and materials, and how to choose projects and joinery suited to your needs and abilities.

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Shop-Built Edge Banding Clamp

An edge banding clamp is one of those tools you don't need very often, but when you glue a face around a radiused edge, nothing else can do the job. And when you need these clamps, you usually need lots of them. At a minimum of \$10 each, the cost can add up. In contrast, Frank Gregg's shop-built edge banding clamps cost only a couple dollars each, plus they won't mar the surface of your work.

The spring-loaded cams slide easily over the edge and grip the two faces when the clamp block presses against the edge. To remove the clamps, loosen the drive screw and open the cams. Plan on making six to 12 clamps at a time for maximum efficiency.

The clamp has four basic parts: 1. the housing, 2. the cams, 3. the clamping block, and 4. the knob. To make the clamps, follow these steps:

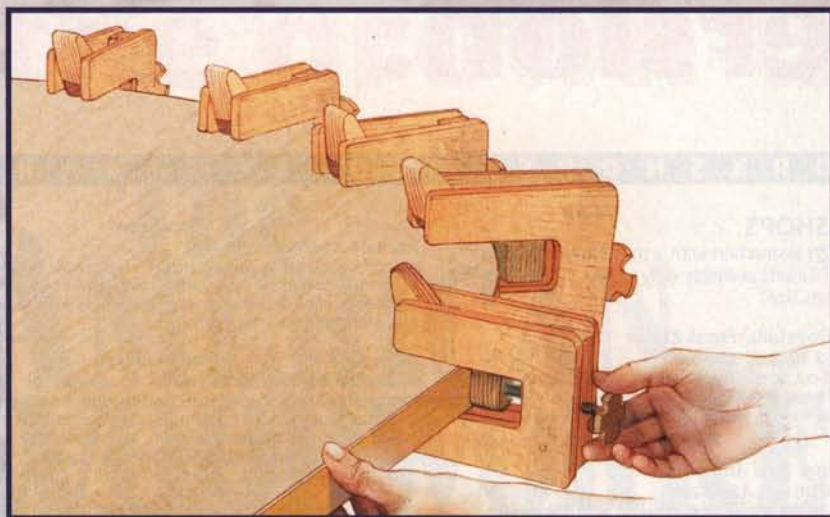


FIG. A Clamping a face on a radiused edge.

STEP 1. Cut out all the wooden parts shown in Figs. C and D.

STEP 2. Glue together the teardrop-shaped cams and the spacer block for the housing. Both the cams and the

spacer block use two layers of 1/2-in. plywood.

STEP 3. Make the sockets for the cam springs by boring a 5/8-in. dia. x 1/8-in.-deep hole in one side of each

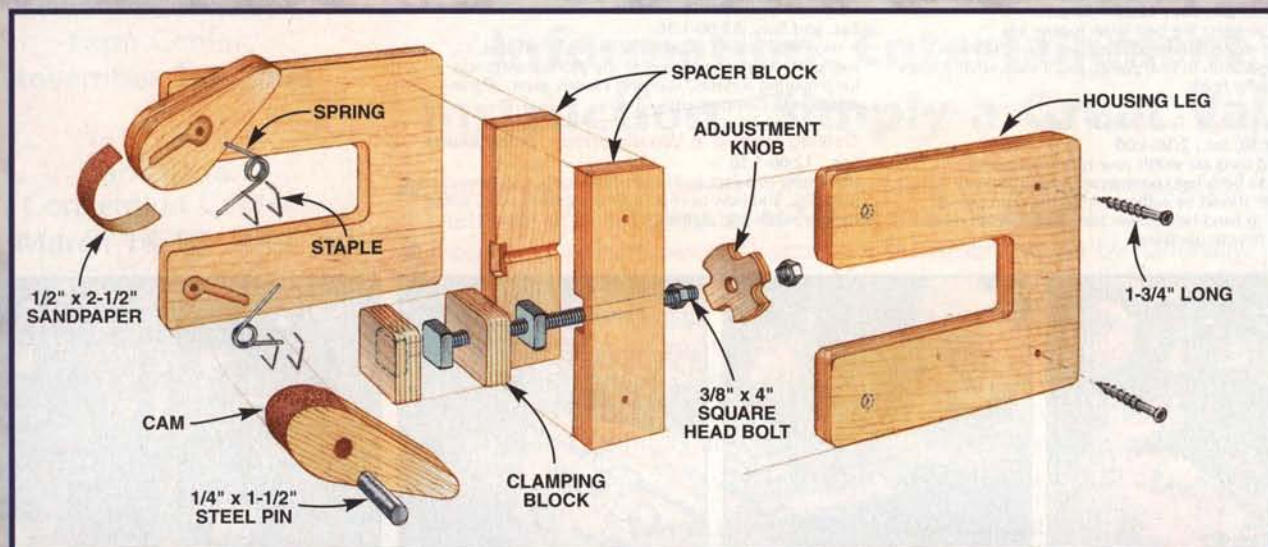


FIG. B Assembling the edge banding clamp.

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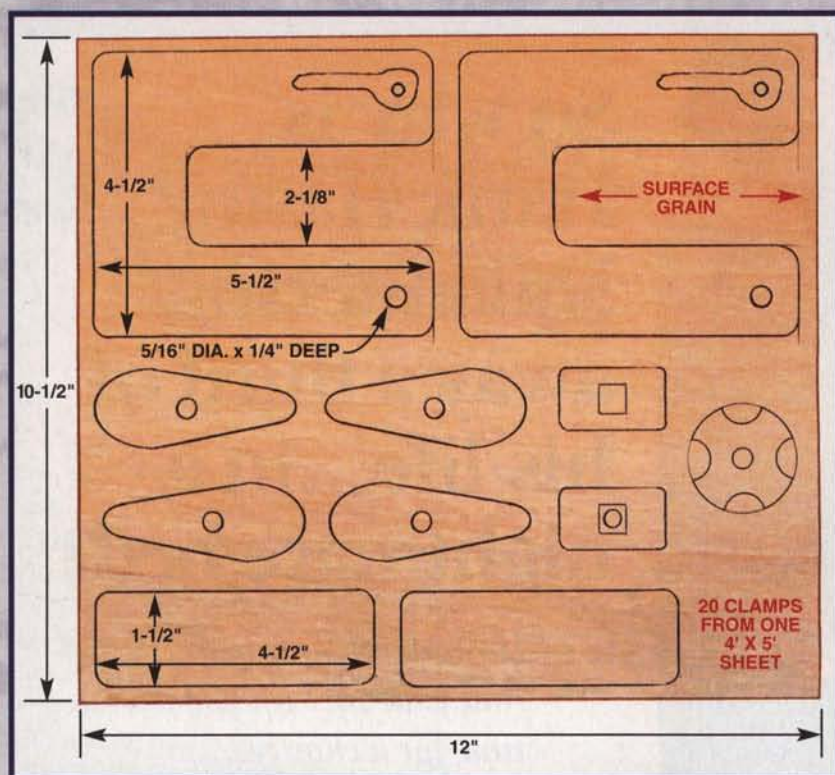


FIG. C Cut-out diagram.

cam and in the corresponding housing leg. Cut the 1/8-in.-wide grooves for the spring legs with hand chisels or a 1/8-in. router bit.

STEP 4. Drill a 5/16-in. hole through the cam for the steel pin. In the housing leg, drill a 5/16-in.-dia. x 1/4-in.-deep hole. Glue the sandpaper gripping surface on the cams.

STEP 5. In the two pieces of the clamping block, drill a 3/4-in.-dia. x 5/32-in.-deep hole. This cavity will hold the bolt head. In one of the pieces, drill a 7/16-in.-dia. hole for the bolt shaft. Glue the two pieces together capturing the bolt head.

STEP 6. In the spacer block, drill a 7/16-in.-dia. hole for the bolt shaft. With a hand chisel, fashion a socket for the 3/8-in. square nut. The square nut will go on the side of the spacer block opposite the knob.

STEP 7. Glue the spacer block to one of the housing sides and put the

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clamping block and bolt in position.

STEP 8. Assemble the clamp. Put a spring in the cam socket and staple a leg with a 1/4-in. staple. Place the 1-1/2-in. pin in the housing leg and slide the cam over it. Staple the other spring leg to the housing side. Repeat the process for the other cam and glue the two sides together at the spacer block.

STEP 9. Secure the knob to the bolt with a hex head nut on either side. **AW**

Material List for One Clamp

1/2-in. Baltic birch plywood (1 sq. ft.)
Serv-a-lite Torsion Spring #27 (2);
(800) 447-6760
5/16 x 1-1/2-in. steel pin (2)
3/8 x 4-in. full-thread square-head bolt (1)
3/8-in. hex-head nut (1)
3/8-in. square-head nut (2)
80-grit sandpaper



Major funding for this special project from Ford Motor Co. To learn more, visit www.ford.com

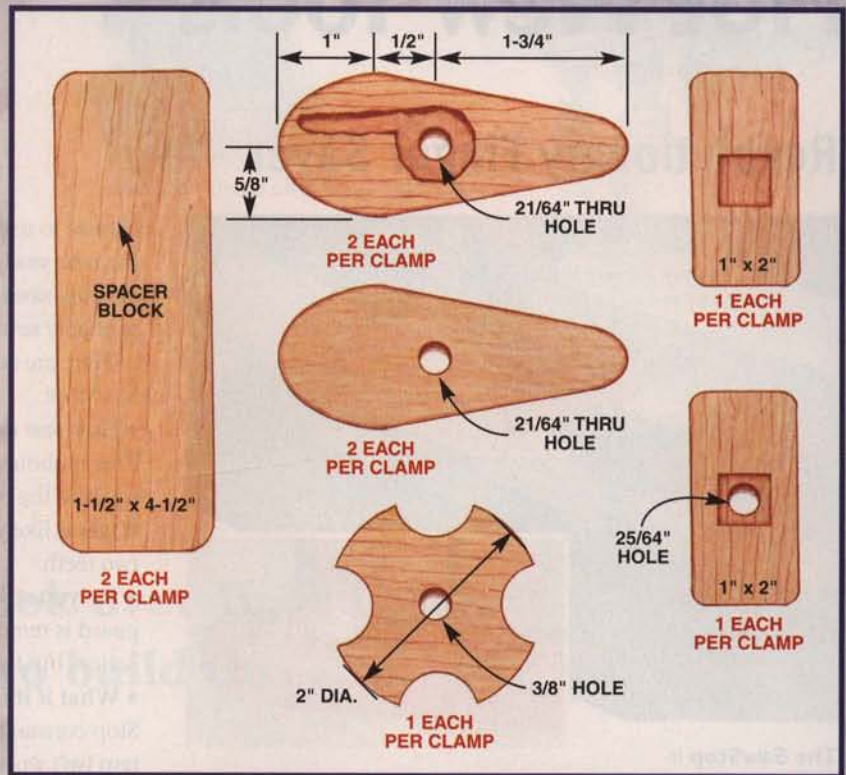


FIG. D Dimensions for small parts.

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Hot New Tools

Continued from page 14

Revolutionary Finger Saver



The SawStop is demonstrated here by allowing a hot dog to contact the blade. The blade stops almost instantly so the hot dog is barely nicked.

It's not often that we report on a product that's not available to you yet, but this time's the exception. This safety device, the SawStop, may forever change our woodworking tools. If you're in the market for a tablesaw, this is a product to keep your eye on. It's an inexpensive system that stops and retracts a spinning blade almost instantly if your finger touches it. The result may still be a nicked finger, but that beats the heck out of a missing finger. Right now the system is being developed for tablesaws, but the same technology will work on jointers, planers, miter saws and other woodworking tools.

The SawStop works on the same principle as those lights that go on and off when you touch them. There is a cartridge mounted below the blade (see photo at right) that contains the circuitry, a large spring and a plastic brake. Also, the arbor and blade are mounted on a simple swing-down arm. The SawStop passes a small current through the saw blade, which is electrically isolated from the rest of the saw by plastic bushings. It works with any saw blade. When your finger touches the blade, the large spring is released, jamming the plastic brake into the blade. At the same time, the current to the motor is shut off, and the blade and arbor swing down instantly. In the demonstration we witnessed (see photo, above) a hot dog run into the spinning blade was barely nicked.

Right now, this revolutionary device is being offered to saw manufacturers as a technology to be licensed and used in their tablesaws. The SawStop company estimates that it will add less than \$100 to the final cost of a tablesaw. If manufacturers

choose to use this technology, it could be available in the next year or two. Retrofitting a SawStop into an existing saw is likely to be much more expensive—probably several hundred dollars.

Here are some of the questions we heard about the SawStop:

- **How fast does it stop?** Within four milliseconds. This is about one-quarter of a saw revolution. But because the blade and arbor are also dropping, your finger is likely to make contact with only one or two teeth.
 - **Do you still need guards?** Emphatically, yes! The guard is removed in our photos so you can see the action, but the SawStop is not a guard replacement.
 - **What if it fails?** Once installed on a saw, the SawStop constantly monitors itself. If any part of the system isn't working, you won't be able to turn on your saw. While the saw is running, SawStop monitors itself every three seconds.
 - **Will damp material set it off?** No. You can cut anything non-conductive, which includes wood, even really green wood, according to SawStop.
- What's still uncertain is what this device will do to the accuracy, longevity and real costs of a production tablesaw. But what we've seen is very exciting and promises a future of much safer, more accessible woodworking. You can see a video demonstrating the SawStop at www.sawstop.com. It's worth a look.



The SawStop cartridge consists of a heavy spring, electrical circuits and a plastic brake pad. If your finger contacts the blade, the electronic circuit releases the spring, stopping the blade.



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New Bosch Plunge Router

Bosch has done an excellent job designing their new 1619EVS router. It feels great as a hand-held plunge router and includes lots of features that make it an exceptional router-table router.

When most plunge routers are mounted in a router table, you're forced to arm wrestle the springs to

adjust the height of the cutter. But it's no problem with this router. With one simple step, the plunge springs on the 1619 can be disabled. This makes it a breeze to use the micro-adjust to dial the motor up and down. When you want to use the router hand-held, release the springs and they're working for you again. By the way, the micro-adjust knob projects way past the motor, making it very easy to handle.

At 3.5 hp (15 amps), this router has the juice to drive big bits. Along with power, its electronically controlled speeds, ranging from 8,000 to 21,000 revolution per minute, will handle any bit. Electronic circuitry monitors the load on the cutter, and keeps the motor turning at the rpm you need. When you remove the plastic subbase to hang the router in a table, you have a 3-1/2-in.-dia. opening, big enough to handle panel-raising cutters.

You can't separate the motor from the base for bit changing, but the 1619 does have a spindle lock, for one-wrench bit changes.

At \$280 the 1619EVS is priced competitively with other routers in its class.

Bosch
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For hand-held cuts, put on the dust hood. It comes with the machine and includes an adapter to allow connecting either 1-1/4-in. or 1-1/2-in. hose.

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◀ Light-Weight 3-1/4 hp Router

Hard to imagine getting big power and light weight in one router, but Fein has done it with their 3-1/4 hp (15 amps) RT-1800 router. This is Fein's first entry into the big router market, coming in at \$390.

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That's lots of punch, but this welterweight is only 12 lbs., making it easy to handle.

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The Future of Woodworking

*The year is 2050.
What will our shops
be like?*

We've dusted off the crystal ball, looked at the tea leaves, and talked to industry experts to answer the question, "How will we be working wood in the future?" Like all predictions of the future, we've probably missed the most exciting things (hey, who predicted the internet 20 years ago?). But here's what our experts expect. Hold onto your hat, we're off to the future!

Instant Safety Brakes

Huge leaps will be made in safety. Every tool will have a device that stops the cutter in about two milliseconds if your finger makes contact. On a tablesaw, this means if you contact a spinning blade with your finger, the blade comes to a dead stop in about one-quarter revolution. This incredible advance means nicks on fingers instead of losing fingers.

Laser-Guided Adjustments

When it comes to setting up tools, there'll be no more measuring to the cutter for fence locations or cutter height. Lasers will be in place to precisely locate fences and cutter-heads. They'll feed the information back to digital readouts that are accurate to a few thousandths of an inch. Lasers and digital readouts will give excellent accuracy with a minimum of set up.

Every tool will contain a microchip to help control motor speed and

power, optimizing it for whatever operation you're doing. No more burning because you're not feeding the material at just the right rate.

Power-Packed Cordless Tools

Think there are lots of tools with batteries now? Wait a few years. Virtually every portable power tool will be run by battery. The problem being worked on now is how to provide lots of power for a long time; enough to run even a belt sander or router.

The answer may lie in what are called fuel cells. They're like batteries, but they never run down or require recharging. As long as the fuel is supplied, they put out electricity. You'll periodically add fuel to the cell so it can keep running.

For those tools that will continue to run on the batteries we're familiar

with today, solar chargers may play a large role. Just set the charge pack in direct sunlight, and your battery will be ready in no time.

The Computer in the Shop

You find a woodworking design you like on the Internet. With the push of a button, you download the plan into your computer. From there you send the plan to the computer-driven router in your shop. Put the material onto the router bed, press the Go button, and watch the machining happen. When the machining is complete, all holes are drilled, joints are cut and you're ready for assembly. Whether you make one part or ten thousand, they'll all come out the same. You could even have your computer print out part labels so you can identify how the parts go together.



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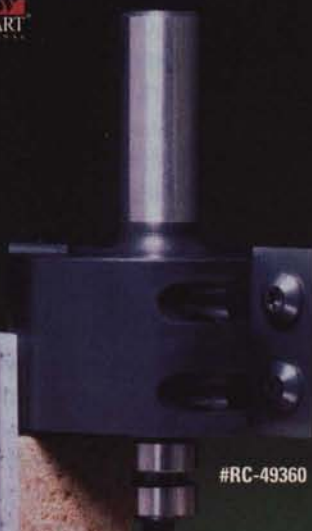
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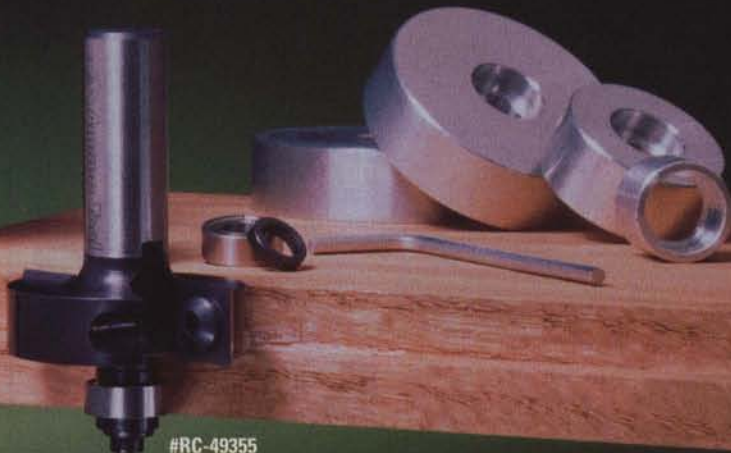
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The Future of Woodworking

Computer-driven machining is commonly used in industry today, but it's still a little pricey for the home hobbyist, with systems starting at around \$5,000. You'll see the price drop. A computer-driven router, not

including the computer, will cost a little more than a cabinet saw. And it'll offer some big advantages. One is the ability to consistently produce identical parts. Another is a computer's ability to calculate the best possible

yield from whatever material you're loading into the machine. In other words, you'll save money.

Now, a router cutting wood, even computer driven, isn't hard to visualize. And a laser being used for setting up tools doesn't seem far-fetched. But what about a computer-driven laser used to cut wood?

Like the router, the first step will be getting a plan. Once the plan is in your computer, you'll be able to send it to the laser. The laser will carve or engrave a surface, then cut the part out, perfectly shaped and dimensioned. No sawdust to clean up when the laser is done, just a little wood smoke to exhaust.

Don't look for the laser to replace your tablesaw, but we may see them in the shops of woodworkers doing lots of carving. Laser systems currently start at about \$10,000, but as demand increases, the price will drop.

Material

There ain't gonna be woodworking if there ain't gonna be wood. In 50 years, you'll still recognize the wood species you see in most shops. The North American hardwoods like red oak, maple, walnut and cherry should continue to be available (of course that's what they once said of chestnut!). While the available volume of these woods won't change much, expect to see a drop in quality. Clear and wide material will become a scarce commodity—and expensive.

The use of man-made materials and composites will continue to grow. There'll be wider acceptance, more variety and better quality. Particle-board made from wheat is already on the market, and you'll see it made from grass and other fibrous materials in the future.

One way you'll see solid woods get stretched is with veneer wrapping. A composite board is wrapped on all sides with solid veneer, giving it the appearance of real wood.

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The Future of Woodworking

Plastic wood composites are already a popular alternative for decks. As they continue to grow in popularity, you'll see them used for outdoor furniture too.

Imported species are in the same boat as our North American species. They'll continue to be available, but large quantities of perfect wood will be hard to get and spendy.

Adhesives

While glues are going to get better, don't sell your stock in the screw company yet. We'll still be using screws and nails along with glue, but we may not be using as much yellow and white glue.

Two types of glue will rise up in woodworking; polyurethane and hot-melt. One-component polyurethane will most likely be the glue most widely used. Longevity drives this. Yellow and white glues can become brittle over time. Polyurethane doesn't. Hot-melt will follow in a close second as it becomes stronger and easier to use.

Abrasives

Sandpaper won't look much different, but how it's made will change. The abrasives we're familiar with, like aluminum oxide and silicone carbide, will continue to be used. What we won't be able to notice is the environmentally friendly solvent-free adhesive used to fasten the particles to the backer. Advances in these adhesives will also make the sandpaper less likely to clog.

Finishes

Waterborne finishes will rise to the forefront. They'll be easy to use and very environmentally friendly. Finishes using mineral spirits and other volatile solvents may not even be available due to government mandates.

Thanks to the following companies and individuals for helping with this story:

3M Corporation
Brian Finder, University of Wisconsin-Stout
CMT

Epilog Laser
Forest Products Testing Laboratory
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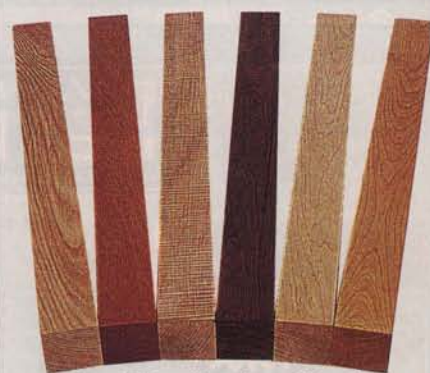
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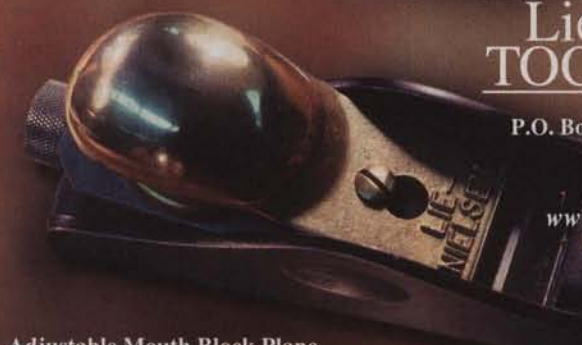
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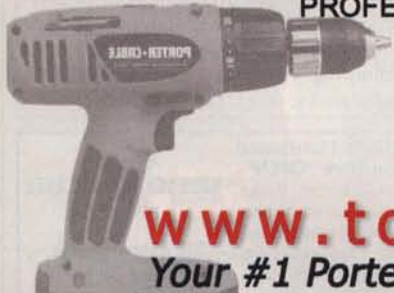


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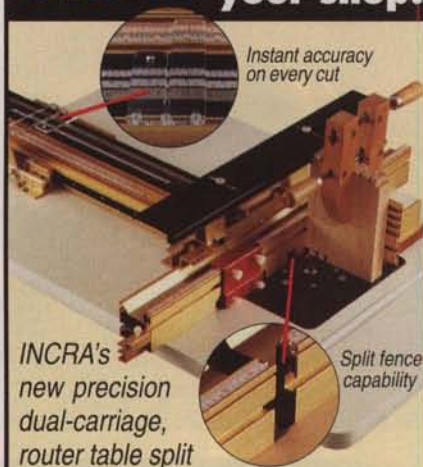
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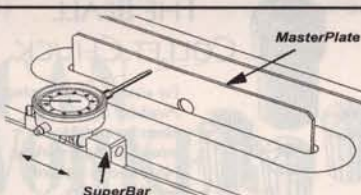
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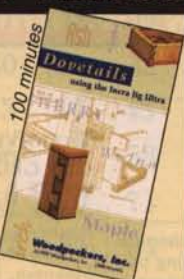
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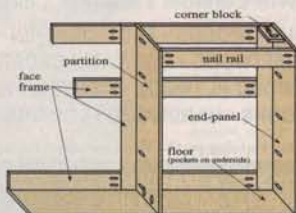


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Jointer Tune-up

Your jointer is like a musical instrument; when it's well-tuned it's a pleasure, when poorly tuned, it's agony. Many people don't even know what it feels like to work with a properly tuned jointer. If you think there's room for improvement in your jointer, read on. We'll show you a four-step process that allows you to properly align your tables, fence and knives. First, however, see "How Good is Your Cut?" on page 130 to test how well your jointer is currently performing.

REMEMBER:
Unplug your jointer before performing any of the following steps.

Order of operations in tuning up a jointer.

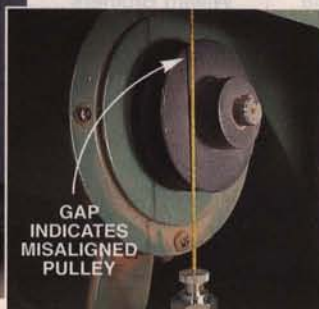


Dovetailed ways on the outfeed table with a gib adjustment screw. The adjustment gibs are loose pieces of brass between the ways.

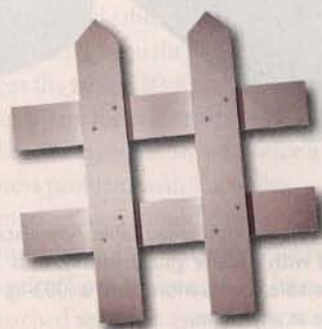
Step 1: Align the Pulleys and Belt

Start by checking the pulley alignment (Photo 1). Check the belt for wear or damage and for the correct belt tension. You should be able to deflect the belt inward approximately 1/2 in.

Also check the cutterhead and make sure it is secure and rotates freely without any play. See that the motor and all pulleys are securely mounted. This is easiest to do with the belt removed.



Align the pulleys before you do anything else. You can use a straightedge if there's room, but in tight quarters like this, use a plumb line. Tape it to the table of your jointer and let the bob hang a few inches below the lower pulley. When the pulleys are aligned, the string should lightly touch the top and bottom of both pulleys. You may need to shim under the base of the jointer to get the string to hang properly.



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Step 2: Align the Tables

If your tables are not flat or are out of alignment with each other it will be impossible to produce truly flat surfaces. Your work will be concave or convex, and tight joints will be unattainable. If the tables are aligned parallel, but the outfeed is lower than the infeed you'll also get snipe (Photo 3).

On most jointers the outfeed table is adjusted so it is parallel to the infeed table. Next the knives are aligned to the outfeed table and the fence is aligned to both the infeed and outfeed tables.

Once the infeed and outfeed tables are correctly aligned they should never need adjustment. However, if your jointer is moved around a lot, it is a good idea to periodically check the alignment. It's important that the outfeed table is both parallel to, and perfectly flush with, the infeed table when the infeed table is set to a cutting depth of zero (Photo 2).

2

Check

your outfeed table alignment quickly with the help of an accurate straightedge (see page 128) and Post-it notes.

The goal is for the outfeed table to be perfectly parallel to the infeed table. Set the depth-of-cut to zero and rotate the cutterhead so the knives are not in the way. Keep your straightedge slightly off-center so its weight rests on the infeed table. Any place a note can easily slide out should be checked with a feeler gauge. Ideally, with the Post-it notes removed, you should not be able to slip more than a .003-in. gauge between the straightedge and the table at any point.



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Table Alignment

1. Unplug the jointer from its power source and remove the knife guard.
2. Adjust the table gib screws, if necessary, so they are snug yet still allow the table to move along the dovetailed ways with moderate force. The gibs are usually adjusted with two or three screws on the side of the dovetailed ways (see lead photo, page 118).
3. Raise the infeed table so its cutting depth is set to zero.
4. Rotate the cutterhead so the knives are not protruding above the surface of the outfeed table.
5. Place a high-quality straightedge across the tables. It's a good idea to check along the back and front edges and both diagonals. If you notice a flatness problem with the tables themselves, you should contact the manufacturer. (Most manufacturers flat-grind both tables and the base as a matched set, after assembly, to ensure flatness.) Every manufacturer

Poor outfeed alignment can result in snipe. The outfeed table should be parallel with the infeed table when the depth-of-cut is set to zero. The knives should be set to the height of the outfeed table. Note that we are using a shop-made straightedge (page 128) to test the cut.

has different specifications for flatness and these specs may differ among tools within a manufacturer's product line. Flatter is better, but costs more to produce.

Making Adjustments

Do not make adjustments to the infeed table unless your owner's manual says to do so. All adjustments are normally made to the outfeed table.

It's not uncommon for the end of the outfeed table to sag. Straighten it out by inserting shims in the dove-

tailed ways of the outfeed table (Photo 4). Generally the amount of shim needed if the outfeed table sags at the outboard end is approximately one-third of the measured gap. If the sag is towards the cutterhead and the gap is on the portion of the table directly next to the cutterhead you should start with a shim about two-thirds the measured gap.

This is often a repetitive process of inserting shims, checking alignment, adjusting outfeed table height and

Setting Up Shop

3

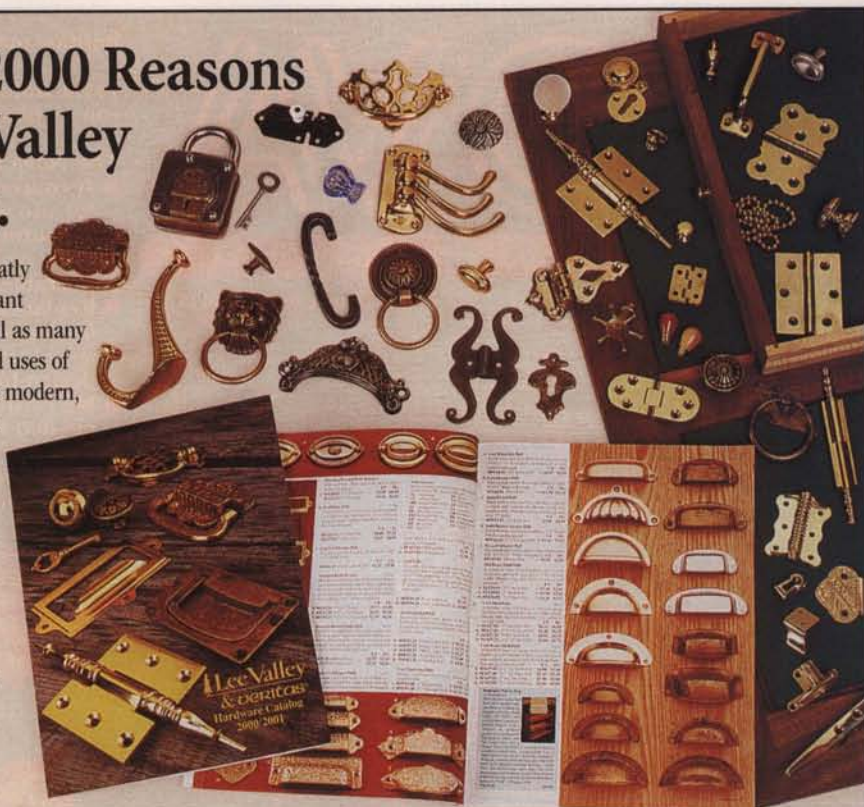
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4

If the outfeed table needs to be aligned, insert shims in the dovetailed ways. A feeler gauge set allows you to try different thicknesses until you get the proper alignment. Once you've got it, just cut off the set and leave the shim in the ways. Be sure to check and shim both sides.

repeating. It's worth taking your time with it. Once it's done you'll be very pleased with the results for a long time.

Step 3: Align the Knives

The table and pulley adjustments should be necessary only once in the life your tool. Changing and aligning the knives must be done much more often. Many woodworkers dread doing this, but once you've found a method that works,

it becomes as natural as tying your shoes.

We recommend using a competent sharpening service to sharpen the knives. It's important not only for the edge angle to be correct, but also for the edge to be perfectly straight so you avoid any cupping in your material. Own at least two sets of knives (three is better—they cost about \$40 per set) to save trips to the sharpener and so that you always have one set ready to use.

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Setting the Knives

Here are five good methods for aligning jointer knives:

Block of wood. The old-fashioned way that requires no precise tools. It can be difficult to achieve satisfactory results with this method, though some seasoned woodworkers swear by it (see AW #3, July 1988, page 18).

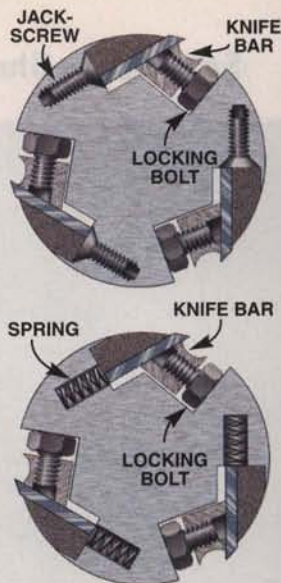
Straightedge. This method, recommended by several manufacturers, is often considered the easiest. Place the knives in the slots, snug-up the knife bar and align the cutterhead to top dead center. Place a straightedge on the outfeed table and let it hang over the knife. Adjust the knives until they just touch the straightedge.

Magnets. The use of long bar magnets, such as the Magna-Set (www.woodstockinternational.com, 800-840-2420), is popular with many woodworkers who swear they get accurate blade alignment. They're certainly a fast and simple way to go. However, the best alignment I got left my blades 0.004 in. high on one end and 0.002 in. high on the other. For many people the ease-of-use may outweigh the small loss of accuracy (see AW #3, July 1988, page 18).

Cutterhead jig. For some jointers, especially those with springs instead of jackscrews (illustration, at right),

manufacturers supply a jig for setting the knives. Because these jigs align the knife-edge relative to the cutterhead it is imperative that the cutterhead be aligned properly with the outfeed table. (Use a dial indicator to check.) If your cutterhead is aligned, this is the easiest method of all.

Dial Indicator. This is the method I prefer, and it's shown on pages 124 to 126. It provides exceptional accuracy and ensures that the knife-edge is in proper alignment with the outfeed table, although it can't be used for jointers that have springs instead of jackscrews. Although extremely accurate, using a dial indicator is probably the least-known method of setting jointer knives. A dial indicator is also useful for many other tasks around the shop, such as aligning your tablesaw blade to the miter slots.



Springs vs. jackscrews

Springs are easier, but jackscrews may be more accurate. If you have springs, you can't align your knives with a dial indicator as we've outlined here. Instead use the cutter-head jig that came with your tool or a Magna-Set.

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Dealing with Nicks

Occasionally your knives will get a nick that leaves a ridge in the finished material (below). If your knives are still sharp, simply shift one or two of the knives sideways. Shifting places the nicks out of alignment, producing a smooth cut. However, don't try to cut

rabbets with your knives off-center. Your results will be disappointing.

RIDGE

Setting Knives with a Dial Indicator

Here are a few things you should know before you get started:

1. Don't remove all the knives and then replace them one at a time. This causes alignment problems and can warp your cutterhead. Either remove and replace them one at a time (the preferred procedure), or if you must replace all of them at once, snug the knife bars fairly tight and then adjust the height of the knives one at a time.
2. Achieving accurate knife alignment is much easier if your knife bars are smooth and polished on the side that rests against the knife. This allows the knife bar to seat itself with little movement of the knife. It's a bit excessive, but I polished mine by sticking some sandpaper to a plate of glass and lapping the knife bar on varying grits until I achieved the desired flatness, smoothness and polish.
3. If your knives rest directly on the

jackscrews instead of a bushing, make sure the top of the jackscrew is flat, smooth and polished.

4. Many people apply lubricant to the knives to assist with the adjustment process. Mineral spirits provides some lubrication during the adjustment process and evaporates later so you don't have to worry about your knives flying out.

5. If you cut rabbets with your jointer, make sure to align the knife ends with the rabbit ledge of your outfeed table.

What you need

- **Dial indicator** with .001 in. graduations (Photo 5). Good, inexpensive dial indicators have a range of 0.25 in. to 1 in., .001 in. graduations, measure .1 in. per revolution, and have a revolution counter. They range in price from about \$8 to over \$200. A decent \$8 version should provide sufficient

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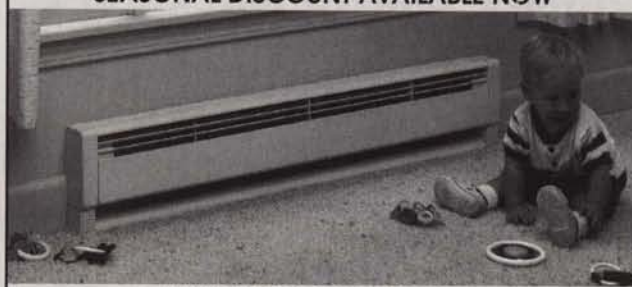
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3' 750 watts - Silicone		\$169	
\$15.00 shipping per heater		\$	
Total Amount		\$	

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accuracy. Many woodworking suppliers, such as Woodcraft Supply, (800) 225-1153, carry dial indicators.

• **Flat contact point.** Your dial indicator needs a contact point on the stem that has a flat surface to make alignment easier. Most come stock with a ballpoint contact point so make sure that you also get a flat one with a beveled-edge contact point (\$15 from Martin Instrument www.martininstrument.com, 800-964-2102).

• **Transfer stand.** A transfer stand holds your indicator in a fixed position relative to the flat bottom of the stand. My favorite is a heavy steel base, as shown in Photo 5 (\$80 from Martin Instrument). Because it relies on its weight instead of a magnet to hold it in place, I can easily slide the stand around as needed for adjustments. Magnetic bases with angled arms also work and are less expensive (\$12 from Martin Instrument).

Pre-load your indicator to take any play out of the gearing. With the indicator on your outfeed table near the knives, adjust the height of the indicator on the stand so the stem is perpendicular to the table surface and the needle has traveled at least one-quarter rotation. Don't worry about getting the needle to the 12 o'clock position, just turn the outer ring so that the zero mark is centered on the needle, wherever it ends up.

5



What you do

1. Lower the jackscrews (again, this method won't work with springs) about one to one and a half turns, install your sharpened knives and snug the knife bars. It's important that all of the new knives be snugged in place

before adjusting any of them.

2. Adjust your transfer stand and pre-load your dial indicator (Photo 5). If you have a flat contact point, it's important that it rest flat on the table surface or your measurements will be off.

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10" x 80 T (1/8" or 1/32" K)	\$169	\$143	\$135
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14" x 80 T (1" hole)	\$197	177	168
14" x 100 T (1" hole)	\$226	203	192
16" x 100 T (1" hole)	\$243	219	206

BUY ONE & SAVE - BUY MORE & SAVE MORE

Buy any sawblade or dado in this ad and save 10% off the sale prices. Buy additional sawblade(s) or dado(s) and save even more—15%! Sale good through September 30, 2000.

WOODWORKER II

5 1/8" to 14" diameter available

All purpose—tablesaws and portable circular saws.
Special 10% Discount! Take 15% off second blade of your choice.

EDITOR'S CHOICE AND TOP RATING
OVER 18 COMPETING SAW BLADES.

The 10" x 40T earned the Editor's Choice Award for the best performance regardless of the price. See American Woodworker magazine, April 1998, pp. 68-69.

	Sale Price	10% Off 1st Blade	15% Off 2nd Blade
14" x 40 T x 1"	\$145	\$134	\$127
14" x 30 T x 1"	\$125	125	118
12" x 40 T x 1"	\$125	116	110
12" x 30 T x 1"	\$119	107	101
10" x 40 T x 1/8" or 1"	\$119	107	101
10" x 30 T x 1/8" or 1"	\$95	89	84
9" x 40 T	\$105	98	93
9" x 30 T	\$95	89	84
8 1/4" x 40 T x 1/32"	\$95	89	84
8" x 40 T x 1/32"	\$95	89	84
8" x 30 T x 1/32"	\$85	80	78
7 1/4" x 30 T x 1/32"	\$85	82	59
**6" x 40 T x 1/32"	\$85	80	78
***5 1/8" x 40 T x 10mm	\$85	80	78

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	Sale Price	10% Off 1st Blade	15% Off 2nd Blade
6 1/2" x 40 T Delta, Sidekick, & Others	\$95	\$89	\$84
8 1/4" x 60 T Sears, Delta, Ryobi	\$105	98	93
8 1/2" x 60 T Hitachi, Dewalt, Ryobi, FreudTR125	\$115	107	101
9" x 80 T Delta & Others	\$125	116	110
10" x 80 T Delta, Bosch, Mitachi, Makita, Ryobi, AEG, & All	\$135	125	118
12" x 80 T Dewalt, Hitachi, Makita, B-D, Sears, & All	\$145	134	127
14" x 100 T Makita, Ryobi	\$165	170	161
15" x 100 T Hitachi, Ryobi	\$175	179	169

WOODWORKER I

7 1/4" to 14" diameter available

Designed for radial arm or tablesaws—fine crosscut.

	Sale Price	10% Off 1st Blade	15% Off 2nd Blade
8", 8 1/2", 7 1/4" x 60 T	\$105	\$98	\$87
10" x 60 T (1/8" hole)	\$125	116	103
12" x 60 T (1/8" or 1")	\$135	125	111

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8" Set	\$299	260	245
10" Set	\$349	314	297
12" Set	\$449	404	382

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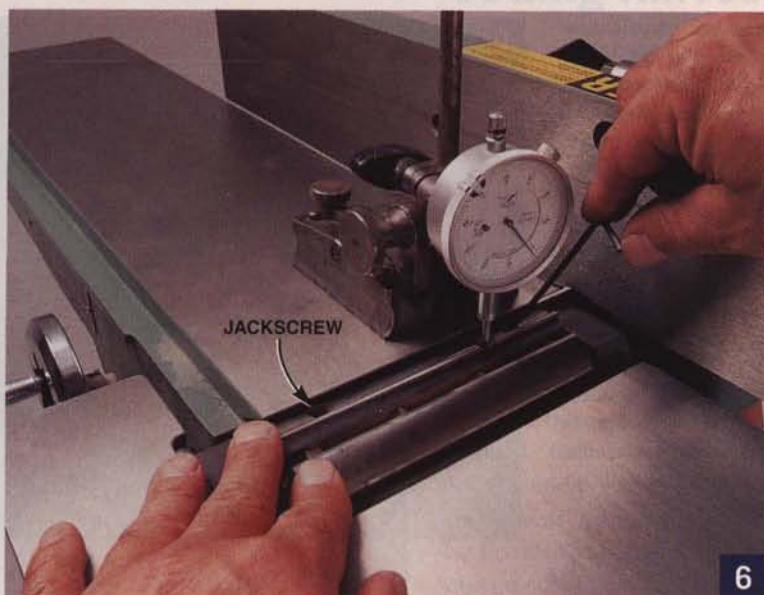
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Setting Up Shop



Raise the knives into correct alignment by turning the jackscrew. Your transfer stand should be on the outfeed table and the cutterhead at top, dead center (the highest reading on the indicator). Move back and forth between the two knife ends adjusting each approx .002 in. at a time until the knives are .001 in. above the outfeed table. Keep in mind that the final tightening of your knife gib may raise the knives by .002 in. or so which means you may need to stop raising the jackscrews at about .001 in. below the outfeed table.

Take care of the surface

To ensure good cuts and the longevity of your jointer, make sure the tables are smooth. A good hard rubbing with fine steel wool and a couple applications of paste wax make for easy movement of material and protect the surfaces from rust. Re-apply the paste wax to the tables and fence as necessary—at least every six to 12 months. Alternatives to wax such as Top-Cote also work well. Avoid car wax or other chemicals with silicone, which can cause problems when you apply finish to your projects.

3. Rotate the cutterhead (watch out for the knives) so that a knife-edge is approximately at top, dead center. Slide your gauge over so the transfer stand is still on the outfeed table, but the flat face of the indicator is resting on the knife. You can now rotate the cutterhead for exact top, dead center (highest measurement on the dial indicator).

4. With the indicator approximately over the jackscrew closest to the fence, adjust the jackscrew so the knife is approximately .01 in. (ten thousandths) below the outfeed table (Photo 6). Move the indicator and do the same for the other jackscrew. Try to position your indicator so the blade edge always crosses through the middle of the contact point.

5. Repeat Step 4, but adjust the knives to be .005 in. below the outfeed table.

6. Tighten the knife bar screws a bit more.

7. Repeat Steps 5 and 6, adjusting the knives to approximately .002 in. below where you want the final height. As you tighten the knife bars your knives may raise up about .002 in. This leaves them at the proper height. I prefer my operating knife height to be approximately .001 in. to .002 in. above the outfeed so as blade

wear occurs, my knives are about even with the outfeed table. This provides easier feed and a smoother cut than other settings I've tried.

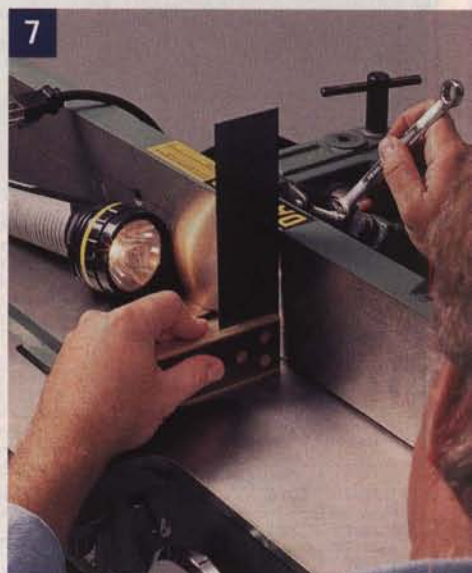
8. Repeat Steps 3 through 7 for the other two knives.

Step 4: Align the Fence

Your fence needs to be aligned so it produces perfect 90- and 45-degree edges when set to the stops. Use your best square (Photo 7).

Just as knives move up slightly when the bars are tightened, your fence may move slightly when tightened. A little bit of trial and error is necessary to determine how much and in what direction this is for your jointer.

When you've finished aligning the fence, you're done! Make a few test cuts, just to make sure everything is working right (page 130), and then enjoy your well-tuned jointer.



Check fence alignment to the table using a good-quality square and a flashlight. Any gap is noticeable and should be corrected. Slide the square along the length of the fence to check for twist.

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Setting Up Shop

You need a good straightedge

One of the frustrations of tuning a jointer is that you need a long and very precise straightedge.

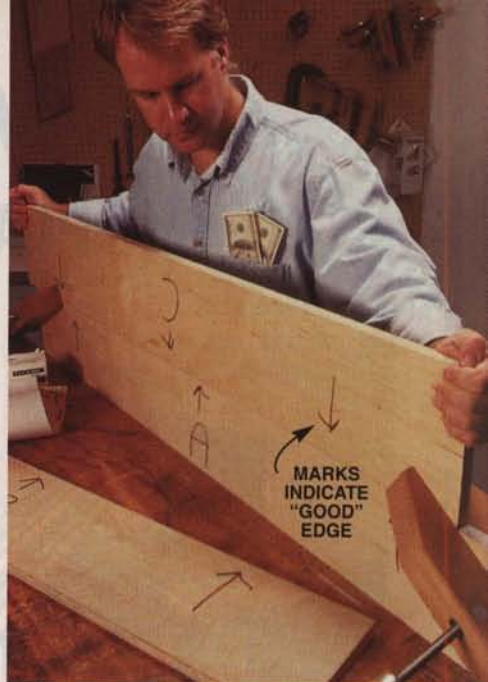
For most 6-in. jointers, the ends of the tables must be in alignment to within about .003 in. That means you want a straightedge with a tolerance of at least 0.0003 in. (three ten-thousandths). Why not just 0.003 in.? Generally accepted practice is that a reference device must have an accuracy of at least 10 times the tolerance of the object being measured. For example, if your table is off by .006 in. and your straightedge is off by 0.003 in. in the opposite direction, you could measure .003 in. off, even though you're actually .006 in. off.

You can purchase a good straightedge or make your own.

Buying a Straightedge

You can buy straightedges with varying tolerances. You may be able to find them through local suppliers to the machining industry or you can order them from a catalog (see Sources, page 129).

Some people use a level as their long straightedge, but construction levels are not designed to be accurate straightedges. You can expect a high-quality contractor-grade box-beam level (\$25 to \$50) to provide a straightedge accuracy of about 0.029 in. to 0.063 in. over 48 in. Levels that provide an accuracy of up to 0.002 in. are available, but for about three to six times the cost. I-beam levels are significantly less accurate than box-beam levels.



Three-Board Straightedge

Make a straightedge in your shop using three boards. Take two and rub them together with sandpaper in between. Rub together every possible pair until the three edges make contact along their entire length. At this point all three are perfectly straight.

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*Better Homes and Gardens®
WOOD® Magazine (Nov. '95)

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Several companies manufacture straightedges that provide the accuracy necessary for our jointer alignment method. Starrett makes three straightedges (#380, #385 and #387) with an accuracy of .0002 in. per foot. Buying one will set you back at least \$175. See if your local woodworking club or guild can purchase one for members to borrow.

Sources

Starrett, (978) 249-3551,
www.starrett.com

The Pinsky Edge, (800) 874-6753,
www.pinsky-edge.com

Making a Straightedge

There's an old trick for obtaining a fairly accurate shop-made straightedge. The principle is that if any three surfaces are in agreement with each other the surfaces must be straight.

What you do

1. Get some plywood and two lengths of fine-grit adhesive-backed sandpaper. Cut the width to a little more than the thickness of your plywood.
2. Cut three boards 48-in. long by 6-in. wide out of 3/4-in. hardwood plywood. Label the boards A, B and C in large letters and place a couple of arrows pointing toward one edge. This will become the straightedge.
3. Joint the target edges with your jointer or jointer plane to make them as straight and smooth as possible.
4. Clamp board A to your bench with the arrows pointing up and apply a strip of sandpaper to the target edge. Now take board B with its arrows pointing toward the arrows on board A and rub it back and forth against board A. Repeat with boards A and C.
5. Now place board B in the clamps, apply sandpaper to it and rub boards A

and C against it. Continue with the following combinations C to A, C to B, A to B, A to C, B to A and B to C until the edges of all three boards match.

6. When you believe you've achieved a fairly straight edge you can check it by scribbling a pencil mark down the board to be sanded and running it once against the reference edge for about 5 in. If the board is straight, the pencil mark should have been evenly sanded down. If so, apply sanding sealer to all surfaces of your straightedges to avoid warping.

If you have access to an accurate straightedge, such as a Starrett, you should check your shop-made edges against this as a reference and continue the process until you've achieved the tolerance you want. Keep in mind that the edges you make in wood may only remain accurate for a short time.

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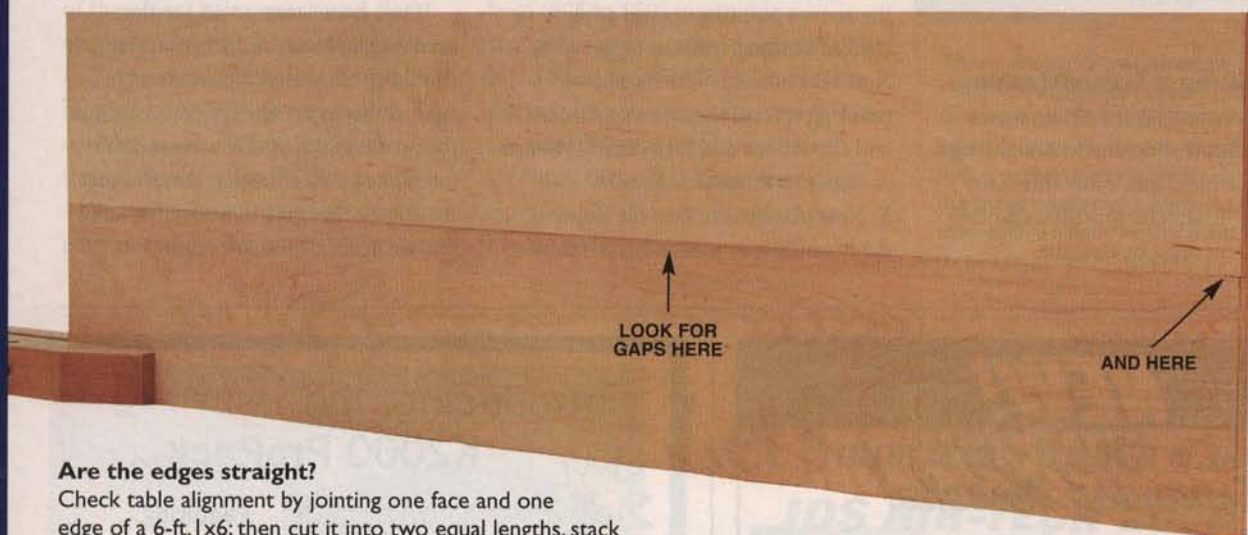
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How good is your cut? The two-board test

Dial indicators and precision straightedges are fine, but what's really important is that your jointer produce surfaces that are smooth and flat, with edges at the proper angle. These two real-life tests will tell you whether your jointer is performing perfectly. You'll need a 6-ft. and a 4-ft. 1x6 to do the test.

Test for Straight Edges

Check table alignment results by jointing one face and one edge of a 6 ft. 1x6, then cut it into two equal lengths. Stack the two halves on top of each other with the jointed edges together and the jointed 6-in. faces forward. Use a strong light from behind to check for any gaps. Concave or uneven joints indicate that the outfeed table is sagging away from the knives, convex joints (gaps on both ends, similar to a rocking horse) usually indicate that the outfeed table is sagging towards the knives and snipe at the ends of the edges is most often caused by knives that are set too high.



Are the edges straight?

Check table alignment by jointing one face and one edge of a 6-ft. 1x6; then cut it into two equal lengths, stack the pieces and check for gaps.

Check for Square Edges

Check that the fence is square by jointing one face and one edge of a 4 ft. 1x6. Then cut it into two equal lengths. Lightly clamp the two halves together with the jointed edges together and the jointed 6-in. faces up. Use a straightedge to see if there are any gaps across the two pieces. Gaps indicate that the fence is not properly set to 90 degrees. Placing these two pieces together doubles any error making it easier to see the alignment problems. **AW**

Is it square? Check fence alignment results by jointing one face and one edge of a 4-ft. 1x6; then cut it into two equal pieces, clamp together and check for flatness.



DELTA MACHINERY	
Model	Description
28-150	9" Bench Band Saw
50-860	850 CFM Air Cleaner with Free extra filter
31-695	6" Belt/9" Disc Sander
23-710	Sharpening Center
31-460	4" Belt/Disc Sander
40-540	16" var/spd Scroll Saw
11-990	12" Bench Drill Press
11-090	32" Radial Bench Drill Press
22-540	12" Bench Top Planer
22-560	12-1/2" Planer with extra knives and dust hood
36-865	Versa Feeder Stock Feeder
36-220	10" Compound Miter Saw
37-070	6" var/spd Bench Jointer
14-650	Hollow Chisel Mortiser with chisels and bits
17-900	16-1/2" Floor Drill Press
17-924	Mortise Chisel
36-250	10" Slide Compound Saw
31-780	Oscillating Spindle Sander with Free 31-781 spindle set
40-650	Q3 18" Scroll Saw
36-443	10" Contractors Table Saw with Free mobile base
37-285	6" Jointer w/ stand
31-250	NEW 18" Drum Sander
28-275	14" Band Saw 3/4 HP
31-280	Sanding Center w/ stand
37-190	6" Deluxe Jointer
50-850	1-1/2 HP Dust Collector

Tools listed below have \$50.00 rebates. Price shown is before rebate.

36-477	10" Platinum Edition Contractors Table Saw w/ 30" unfence, cast iron wing, table board & carbide blade	849
28-263	14" Platinum Edition Band Saw - 1 HP w/ Carter guides	849
37-195	6" Professional Jointer	625
33-830	10" Radial Arm Saw	851
22-680	15" Planer with stand and Free mobile base	1199

DELTA INDUSTRIAL MACHINERY	
36-955	10" 3 HP Platinum Edition Unisaw with 52" Unifence
36-957	10" 3 HP Platinum Edition Unisaw with 50" Biesemeyer fence
36-960L	10" 3 HP Platinum Edition tilt Unisaw with 50" Biesemeyer fence
43-424	3 HP Platinum Edition Wood Shaper with sliding shaper jig
36-955, 36-957, and 36-960L	Unisaws and Wood Shaper with \$100.00 rebates. Price shown is before rebate.
32-325	Line Boring Machine
37-350A	8" Jointer - DJ20
36-850	Four speed, 3 roller Stock Feeder 1/4 HP - single phase 115V, 632
36-851	Four speed, 3 roller Stock Feeder 1 HP - single phase 230V, 1010
28-640	20" Woodcutting Band Saw 2934
22-451	20" Planer - DC-580
31-390	6" x 132" Edge Sander

We can special order any industrial machine.

6537-22	Super Sawzall	362
6521-21	Super Sawzall w/ orbital	375
02241-1	3/8" Drill 4.5 amp magnam	240
0234-6	1/2" Drill 4.5A mag 0-850 rpm	255
0235-6	1/2" Drill w/keyless chuck	255
0241-1	1/2" Drill 4.5A mag 0-600 rpm	255
0222-1	3/8" Drill 3.5 amp 0-1000 rpm	221
0228-6	3/8" Drill 3.5 amp 0-1000 rpm	212
0375-6	3/8" coarse quarter Drill	255
6176-20	14" Chop Saw	340
6546-6	Screwdriver 200 & 400 rpm	150
6547-6	6546-6 w/bits, 1/4" chuck & cs	190
6390-21	7-1/4" Circular Saw w/ cs	267
5371-6	1-1/2" vsp Hammer Drill	360
6494-6	10" Compound Miter Saw	595
6266-21	Top Handle Jig Saw w/ case	319

MILWAUKEE TOOLS	
6537-22	Super Sawzall
6521-21	Super Sawzall w/ orbital
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0234-6	1/2" Drill 4.5A mag 0-850 rpm
0235-6	1/2" Drill w/keyless chuck
0241-1	1/2" Drill 4.5A mag 0-600 rpm
0222-1	3/8" Drill 3.5 amp 0-1000 rpm
0228-6	3/8" Drill 3.5 amp 0-1000 rpm
0375-6	3/8" coarse quarter Drill
6176-20	14" Chop Saw
6546-6	Screwdriver 200 & 400 rpm
6547-6	6546-6 w/bits, 1/4" chuck & cs
6390-21	7-1/4" Circular Saw w/ cs
5371-6	1-1/2" vsp Hammer Drill
6494-6	10" Compound Miter Saw
6266-21	Top Handle Jig Saw w/ case

FREUD CARBIDE TIPPED SAW BLADES	
Model	Description
LUB2M010	Cut-off 10"
LUB4M011	Comb 10"
LUB5R010	Super Cut-off 10"
LUB5R012	Super Cut-off 12"
LM72M010	Ripping 10"
LUB7R010	Thin Kerf 10"
LUB8R010	Thin Kerf 10"
LUB9R010	Ultimate 10"
LUB1M008	Compound Miter 8-1/2"
LUB1M010	Compound Miter 10"
SD306	8" Carbide Dado
SD506	8" Carbide Super Dado
SD508	8" Carbide Super Dado

MAKITA TOOLS	
Model	Description
5090DW	3-3/8" Saw Kit 9.6 volt
DA391D	3/8" angle Drill 9.6V
DA391DW	3/8" angle Drill Kit 9.6V
6095DWE6	5.6 volt Drill Kit w/2 batt.
6095DWLE2	6095DWE6 w/flashlight
6095DWBLE	NEW 30th Anniversary 9.6 volt Drill Kit with light
63200T-4	9.6 volt Battery
63200T-4	9.6 volt Battery
ML902	9.6 volt Flashlight

18 VOLT MAKITA TOOLS	
6343DWA6	1/2" Drill Kit
5620DWA	6-1/2" Circular Saw Kit
DK1016	1-1/2" & 6-1/2" Saw combo kit
DK1021BL	18 volt Combo Kit. Includes drill, 6-1/2" Circ. Saw, Recipro Saw, and flashlight

CORDLESS DRILLS WITH 2.0 AMP HIGH CAPACITY BATTERIES	
6213DWA6	12V 3/8" Drill Kit
6213DWA6	14.4V 3/8" Drill Kit

900B	3"x21" Belt Sander w/bag
9824DB	3"x24" Belt Sander w/bag
N1900B	3-1/4" Planer with case
N1912B	4-3/8" Planer
N5181AB	4" Disc Grinder 4.5 amp
DA3000R3/8"	Angle Drill
9401	4" x 24" Belt Sander w/bag
5007NBK7-1/4"	Circ Saw w/ case
LS1011	10" Slide Compound Saw
3612C	3 HP Plunge Router
LS1040	10" Compound Miter Saw
LS1013	10" Dual Compound Slide Miter Saw
BO5010	5" Random Orbit Sander
LS1220	12" Compound Miter Saw
9227C	7/9" Polisher
2702	8-1/4" Table Saw
2703	10" Table Saw
LS1212	12" Compd Slide Miter Saw
5057KB	7-1/4" Circ. Saw for Hard board

SENCO AIR NAILERS	
SPN20	Finishing Nailer w/ case
SLP20	Plunger w/cs 5/8 - 1-1/2"
SKS	Stapler 5/8 - 1-1/2"
SN65	Finishing Full Hd 2 - 3-1/2"
SN600	New Framing 2 - 3-1/2"
SFN40	Finish Nailer 1-1/4 - 2-1/2"

BOSTITCH AIR NAILERS	
Model	Description
N80S-1	Stick Nailer
RN45	Coil Roof Nailer 3/4 - 1-3/4"
N60FN-2K	Finishing Nailer w/ case
BT3S-2K	Brad Tracker 5/8" - 1-3/8" w/ case, oil, & brads
MLIIS	Flooring Stapler 15 gauge
S32SX-1K	Finish Stapler 1/2" - 1-3/8" w/ case & oil

JORGENSEN ADJUSTABLE HANDSCREWS	
Item#	Length
#1	10"
#2	12"
#3	14"

PONY CLAMP FIXTURES	
Model	Description
50	3/4" Black Pipe
52	1/2" Black Pipe

PANASONIC CORDLESS	
EY6431NQKW	1/2" 15.6V drill kit with two 3 amp-hr Ni-Mh batteries, 45 minute charger, & case
EY6431FQKW	1/2" 15.6V drill kit with two 2 amp-hr Ni-Cad batteries, 30 minute charger, & case
EY6470NQKW	1/2" 12V drill kit with two 3 amp-hr Ni-Mh batteries, 45 minute charger, & case
EY6406FQKW	3/8" 12V drill kit with two 2 amp-hr Ni-Cad batteries, 30 minute charger, & case
EYC133	5-3/8" 15.6V Wood Cutting Saw and Drill Kit
EY3790B	12V Lantern
EY3793B	15.6V Lantern

BIESEMEYER FENCES	
B-50	50" Commer. Saw
T-SQUARE 52	52" Homeshop
T-SQUARE 40	40" Homeshop
T-SQUARE 28	28" Homeshop

HITACHI TOOLS	
C8F2	8-1/2" Slide Compound Saw
C10FS	10" Slide Compound Saw
C15FB	15" Miter Saw
EC12	2 HP, 4 gallon Compressor
CR13VA	NEW Recipro Saw 11 amp

STABILA LEVELS	
25010	10" die cast Torpedo Level
24640	24" Level w/ hand holes
24670	48" Level w/ hand holes
03100	Compact Laser Level with prism

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DEWALT TOOLS	
Model	Description
DW124K	1/2" right angle Drill
DW321K	Top Handle Jigsaw Kit
DW364	7-1/4" Circ. Saw w/brake
DW379G	7-1/4" Framers' Saw
DW610	1-1/2 HP 2 Hand Router
DW411K	1/4 sheet Palm Sander w/ cs88
DW682K	Biscuit Joiner with case
DW705	12" Compound Miter Saw
DW621	2 HP Plunge Router
DW677K	3-1/4" Planer with case
DW272	Drywall Gun, 0-4000, 6.5 amp
DW276	Drywall Gun, 0-2500, 6.5 amp

DEWALT CORDLESS DRILLS	
DW972K-2	3/8" variable speed w/ 20 12V XR batteries
DW991K-2	3/8" variable speed w/ 20 14.4V XR batteries
DW991KS-2	DW991K drill, DW935 trim saw, 2 XR batteries & case
DW911	Jobsite Radio & Charger

DEWALT 18 VOLT CORDLESS TOOLS	
DW933K	Jigsaw Kit
DW936K	Recipro Saw Kit
DW997K-2	1/2" Drill Kit w/ 2 batt.
DW997K-2	1/2" Drill/Hammer Drill Kit
DW995KS-2	DW995K Drill, DW936 Saw and case

NEW 24 VOLT DEWALT TOOLS	
DW006K	1/2" Drill/Hammer Drill Kit
DW007K	6-1/2" Circular Saw
DW008K	Reciprocating Saw

DEWALT BENCH TOP TOOLS	
DW708	12" Slide Miter Saw
DW788	20" Scroll Saw
DW733	12" Planer w/ extra blades
DW744	10" Portable Table Saw

POWERMATIC MACHINES	
Model	Description
166070	3 HP Model 66 Table Saw
166091	5 HP Model 66 Table Saw
1270100	3 HP Model 27 Shaper
1791327	Hollow Chisel Mortiser
1610050	8" Model 60 Jointer
1791051	6" Model 54 Jointer
1791070	1-1/2 HP Dust Collector

PERFORMAX	
16-32	Plus Drum Sander
We stock all grits of Performax ready to wrap sandpaper.	

DAVID WHITE INSTRUMENTS	
LP6-20A	Sight Level package-20x
LP6-20XLA	Level Package
LT8-300P	Level Transil - 26x
4810-3	ML600 Visible Beam Laser
4700-2	Auto 900 Visible Beam Laser

BOSCH	
Model	Description
1587AVSC	Top Handle "CLIC" Jig Saw Kit with case and Progressor blades
1584VS	Barrel "CLIC" Jig Saw
Bosch Metal Case	for above Jig Saws
Bosch 30 blade assortment	for Jig Saws

1584VS or 1587VS	
with steel case and 30 Bosch blades	
3850K	18V Drill Kit w/ 2 batteries
1295DH	5" Random Orb Palm Sndr
1427ADVS	3"x21" vspd Belt Sander
1278VSK1	1-1/2"x12" Belt Sander
1275DVS	3"x24" v/s Belt Sndr
1276DVS	4"x24" v/s Belt Sndr
1194VSRK	1/2" vsp Drill w/ case
1613EVS	2HP v/s Plunge Router
3815K	12V T-handle Drill Kit
3615K	14.4V Drill Kit
3107DVS	5" Random Orbit Sander
3725DVS	6" Random Orbit Sander
3727DVS	6" Random Orbit Sander
3815	10" Slide Compound Saw
3912	12" Compound Miter Saw
11224VSR	7/8" SDS Rotary Drill
1703AEVS	5" Grinder - 8.5 amp
1347AK	4-1/2" Grinder with case
1638K	Drywall Cut-out Unit
1617	1-3/4 HP Router - 2 handle
1617EVS	2 HP Router with variable speed, 2 handle
1618	1-3/4 HP Router "D" handle
1618EVS	1-3/4 HP Router w/ var/speed
1640VS	Power Tenon Saw
4000	10" Table Saw
3960K-CC	24V Drill Kit

3850K	18V Drill Kit w/ 2 batteries
1295DH	5" Random Orb Palm Sndr
1427ADVS	3"x21" vspd Belt Sander
1278VSK1	1-1/2"x12" Belt Sander
1275DVS	3"x24" v/s Belt Sndr
1276DVS	4"x24" v/s Belt Sndr
1194VSRK	1/2" vsp Drill w/ case
1613EVS	2HP v/s Plunge Router
3815K	12V T-handle Drill Kit
3615K	14.4V Drill Kit
3107DVS	5" Random Orbit Sander
3725DVS	6" Random Orbit Sander
3727DVS	6" Random Orbit Sander
3815	10" Slide Compound Saw
3912	12" Compound Miter Saw
11224VSR	7/8" SDS Rotary Drill
1703AEVS	5" Grinder - 8.5 amp
1347AK	4-1/2" Grinder with case
1638K	Drywall Cut-out Unit
1617	1-3/4 HP Router - 2 handle
1617EVS	2 HP Router with variable speed, 2 handle
1618	1-3/4 HP Router "D" handle
1618EVS	1-3/4 HP Router w/ var/speed
1640VS	Power Tenon Saw
4000	10" Table Saw
3960K-CC	24V Drill Kit

3850K	18V Drill Kit w/ 2 batteries
1295DH	5" Random Orb Palm Sndr
1427ADVS	3"x21" vspd Belt Sander
1278VSK1	1-1/2"x12" Belt Sander
1275DVS	3"x24" v/s Belt Sndr
1276DVS	4"x24" v/s Belt Sndr
1194VSRK	1/2" vsp Drill w/ case
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1618EVS	1-3/4 HP Router w/ var/speed
1640VS	Power Tenon Saw
4000	10" Table Saw
3960K-CC	24V Drill Kit

JDS AIRTECH AIR CLEANERS	
Model	Description
750	12"x24"x28" 14 hp
8-12	20" CFM - 750 CFM
	20"x24"x44" 1/3 hp
	800 & 1200 CFM

JET TOOLS	
JJ6CSXW	6" Jointer - closed stand and extra knives..... Sale 499
JJ8CS	8" Jointer - closed stand Sale 118
JWBS140S	14" Band Saw 3/4 HP - open stand Sale 499

Great Woodworking Goofs

Dust Avenger

After moving into our new house, one of my first chores was to set up shop in the basement. I couldn't wait to get going on my first project, a simple oak bookcase. After a few weeks the bookcase was nearly finished and I spent an entire morning proudly sanding it, first with a belt sander, then with a finish sander, working from coarse to finer grits.

When I took a break for lunch and headed upstairs, I noticed a fine powder *everywhere*—on the windowsills, tables, chairs, countertops—and this powder wasn't there at breakfast!

Heading downstairs again I discovered the problem. There was a cold-air return grille in a duct directly above the spot I chose for my workbench. All the fine dust I was creating was drawn back into the furnace and blown throughout the rest of the house. The filter caught some of the dust, but not all of it. I spent the rest of the afternoon dusting and vacuuming. I sealed up the problem cold-air grille and cut a new one in a different (and cleaner) part of the basement.

Bob Welch

Possessed Belt Sander

My neighbor was sanding a newly created veneer and inlay tabletop when disaster struck. With the switch of his belt sander locked in the On position, he was giving the top the finishing touches. Just then his 2,500-watt electric heater kicked on, tripping the circuit breaker and killing power to everything in his garage shop, including the lights. He fumbled in the darkness for the door, went downstairs to the circuit panel and flipped the breaker. He didn't hear the grinding and banging until he was at the top of the stairs.

Racing to the garage and throwing open the door he saw his locked-On belt sander clawing its way across the new tabletop, ramming itself against the back of the workbench, then spinning around for another run. Ouch.

Frank Gresser

Renegade Router Bit

When I needed to cut a dado with my router recently, I used my table-saw as a work surface. I clamped my project to the saw and was almost done routing it when I realized something wasn't right. Because I was looking where I was going and not where I'd been, I didn't notice that the cut was getting deeper and deeper. The router bit was slowly slipping out of the chuck. The result? A wicked gash in the aluminum top of my beloved tablesaw.

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