

**WOOD** Special Interest Publications

**TWO  
BLADES FOR  
ANY CUT**  
p.18

# Best-Ever **Tablesaw** **Jigs, Tips & Ideas**

**2009**

**62**  
Time-Saving  
Shop Tips

**21**  
Jigs for Dead-on  
Accuracy

Cut Perfect Miters  
with This  
Easy-to-build Sled  
pg. 98

**Make Your  
Tablesaw a Mean,  
Clean-cutting Machine**

**How to Buy the Best:**


- Tablesaw
- Miter Gauge
- Rip fence
- Blade or Dado Set

Display until September 15, 2009

\$6.99 U.S.



0 72440 14263 3 94



WITH EACH PRECISE CUT,  
A MAN BUILDS MORE  
THAN JUST A PROJECT.  
HIS REPUTATION.

Introducing the exclusive **Craftsman 10" Laser Table Saw**. The innovative portable saw that combines a riving knife designed to prevent kickback with a unique laser that projects an accurate pre-cut line, and puts them both on the largest table surface in its class, giving you the support and control you need to make the right cut, the first time. Every time. And making sure that no piece of wood, or your good name, is ever at risk again. For tools and advice from America's Most Trusted Tool Brand, visit the Garage of Knowledge™ at [craftsman.com](http://craftsman.com)

© 2008 Sears Brands, LLC

THERE'S A CRAFTSMAN IN ALL OF US



# Best-Ever Tablesaw Jigs, Tips & Ideas 2009

woodmagazine.com

Editor-in-Chief **BILL KRIER**  
 Managing Editor **MARLEN KEMMET**  
 Deputy Editor **DAVE CAMPBELL**  
 Publication Writer **BILL NOLAN**  
 Techniques Editor **BOB WILSON**  
 Tool & Techniques Editor **BOB HUNTER**  
 Multimedia Editor **LUCAS PETERS**  
 Multimedia Editor **CRAIG RUEGSEGGER**  
 Senior Design Editor **KEVIN BOYLE**  
 Design Editor **JEFF MERTZ**  
 Production/Office Manager **MARGARET CLOSNER**  
 Administrative Assistant **SHERYL MUNYON**  
 Photographers **JASON DONNELLY, SCOTT LITTLE, JAY WILDE**  
 Contributing Illustrators **TIM CAHILL, LORNA JOHNSON, ROXANNE LeMOINE**  
 Contributing Craftsman **JIM HEAVEY**  
 Contributing Proofreader **IRA LACHER**

Art Director **KARL EHLERS**  
 Project Art Director **JOHN GEARHEART**  
 Associate Art Director **GREG SELLERS**

SUBSCRIBER SERVICE Go to [woodmagazine.com/help](http://woodmagazine.com/help)  
 or write to WOOD magazine, P.O. Box 37439,  
 Boone, IA 50037-0439

Publisher **MARK L. HAGEN**

## ADVERTISING AND MARKETING

CHICAGO: 333 N. Michigan Ave., Suite 1500,  
Chicago, IL 60601

Marketing Manager **AMANDA SALHOOT**  
 Advertising Manager **JACK CHRISTIANSEN**  
 Account Executive **RYAN INTERLAND**  
 Direct Response Advertising Representative  
**LISA GREENWOOD**

Assistant **TIM BAARDA**  
 ATLANTA: Navigate Media  
 DETROIT: RPM Associates

Business Manager **JEFF STILES**  
 Consumer Marketing Director **TODD BIERLE**  
 Associate Director of Marketing-Newsstand **TOM DEERING**  
 Production Manager **SANDY WILLIAMS**  
 Advertising Operations Manager **JIM NELSON**  
 E-Commerce Manager **MATT SNYDER**

Vice President/Group Publisher **TOM DAVIS**

## MEREDITH PUBLISHING GROUP

President **JACK GRIFFIN**  
 Executive Vice President **DOUG OLSON**  
 Chief Revenue Officer **TOM HARTY**  
 Finance & Administration **MIKE RIGGS**  
 Manufacturing **BRUCE HESTON**  
 Consumer Marketing **DAVID BALL**  
 Corporate Sales **MICHAEL BROWNSTEIN**  
 Meredith 360° **JEANNINE SHAO COLLINS**  
 Interactive Media **LAUREN WIENER**  
 Corporate Marketing **NANCY WEBER**  
 Research **BRITTA WARE**  
 Chief Technology Officer **TINA STEIL**  
 New Media Marketing Services **ANDY WILSON**



President and Chief Executive Officer **STEPHEN M. LACY**  
 Chairman of the Board **WILLIAM T. KERR**

In Memoriam — E.T. Meredith III (1933-2003)

©Copyright Meredith Corporation 2009. All rights reserved. Printed in the U.S.A.  
 Retail Sales: Retailers can order copies of WOOD for resale  
 by e-mailing [jennifer.buser@meredith.com](mailto:jennifer.buser@meredith.com).



## Editor's Letter



# Behind every aspiring woodworker is a good tablesaw

**A**sk a group of woodworkers to name the centerpiece of their shop, and nine out of 10 will probably respond, "my table-saw." Why? For starters, a tablesaw can precisely and cleanly rip and crosscut boards for furniture and DIY projects. Learn a few fence and blade adjustments and you'll be cutting on-the-money grooves, dados, tenons, and rabbets. Build a few of the inexpensive jigs from this publication and you'll be mitering picture frames, tapering legs, and resawing thicker stock. Combine those cuts and jigs to create joinery from basic to beautiful.

In this publication we've compiled the best tips (more than 60 of them, starting on *page 106*), techniques, and jigs from the past 25 years of WOOD® magazine to help your tablesaw do more, and do it more accurately. You'll also learn a basketful of tablesaw joinery tricks and acquire helpful buying information about the tablesaw, blade, and accessories that will best suit your needs.

**Marlen Kemmet**  
 WOOD magazine Managing Editor

*Marlen Kemmet*

# Contents

## Best-Ever Tablesaw Jigs, Tips & Ideas

### Chapter 1

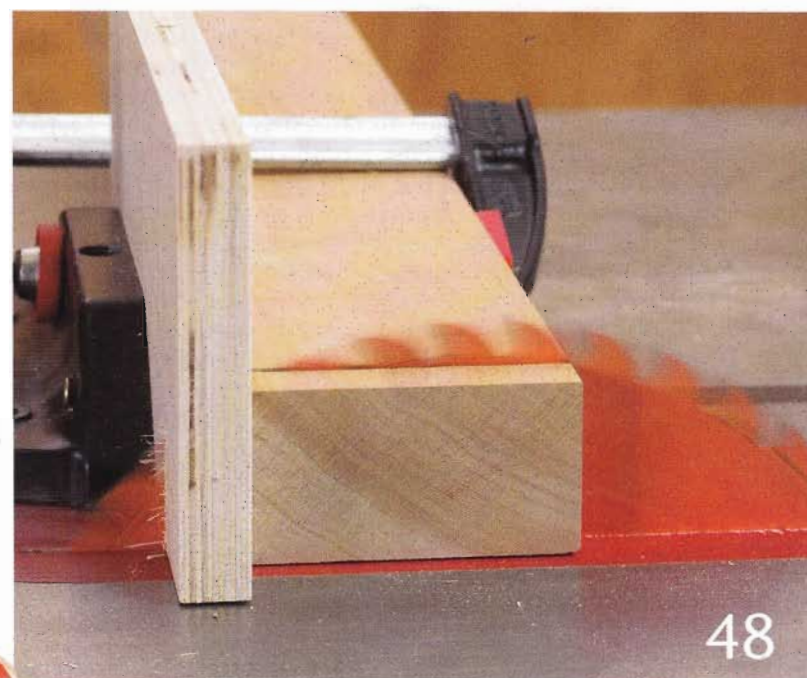
#### Shop-Savvy Tools

- 4 How to Buy a Tablesaw
- 10 Hybrid Tablesaws
- 14 General-Purpose Tablesaw Blades
- 18 Rip, Crosscut, or Hybrid: Which 10" blade do you really need?
- 20 Miter Gauges & Sleds
- 24 Tablesaw Rip Fences
- 26 What to Look For in a Dado Set
- 28 Tablesaw Accessories

### Chapter 2

#### Master the Basics

- 32 Tuning Up Your Tablesaw
- 40 8 Ways to Tablesaw Success
- 43 Be Safety Savvy Around Your Tablesaw
- 46 Don't Let a Panel Become a Projectile
- 47 How to Level Tables to Tools
- 48 Stop Tear-Out
- 50 Banish Burned Ripcuts





64

### Chapter 3 Shop-Built Add-Ons

- 52 The Do-It-All Mobile Tablesaw Base
- 57 Auxiliary Table
- 58 3 Simple Blade-Storage Projects
- 64 Space-Saving Double-Duty Tablesaw Workbench
- 70 Easy-Lock Feather Board
- 71 Tablesaw Hold-Downs
- 72 Rip-and-Flip Outfeed Table
- 76 Zero (Chip-Out) Tolerance
- 78 2 Fast Fixes to Collect Dust

### Chapter 4 Easy-Does-It Joinery

- 80 2 Ways to Make Precise Rabbet Cuts
- 82 Create Superstrong Bridle Joints
- 84 Half-Lap Joints
- 86 Master the Mortise-and-Tenon Joint

### Chapter 5 Must-Have Jigs

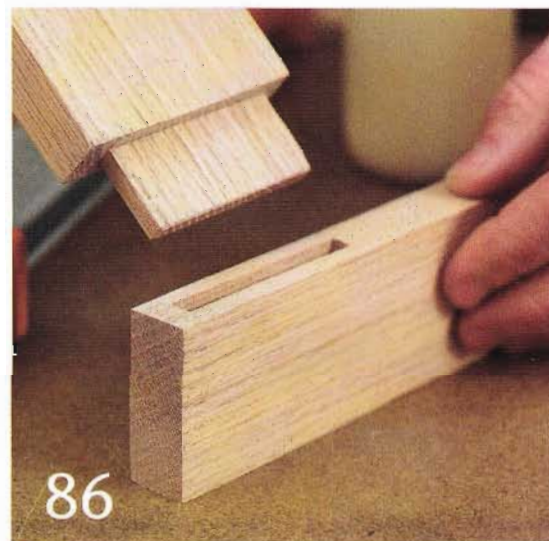
- 93 Simple, Handy Thin-Strip Ripping Jig
- 94 Bevel-Cutting Jig
- 95 Texas-Size Fence
- 96 Resawing Jig
- 98 Shop-Made Miter Sled
- 99 Adjustable Miter-Gauge Extension
- 100 Alignment Block
- 101 Panel-Cutting Sled
- 102 Versatile Four-Sided Tapering Jig
- 104 Box-Joint Sled

### Chapter 6 Tablesaw Shop Tips

- 106 A mother lode of practical tricks and shortcuts helps you realize your tablesaw's full potential.



58



86



106

# Shop-Savvy Tools

Get more from your tablesaw by doing some smart shopping up front and then adding basic accessories that help you work more efficiently and safely.

## How to Buy a Tablesaw



Tools Editor Bob Hunter tried out a number of tablesaws for this article, and turns that into buying advice for you.

### Get one that's right for your shop and the way you work

**A**sk a hundred woodworkers which machine a beginner should buy first, and most will heartily recommend a tablesaw. They do so with good reason: It's ideal for sawing stock to size, getting it square, machining miters and bevels, and cutting nearly all types of joinery.

Whether you're buying a tablesaw for the first time or upgrading your old clunker, begin by narrowing your focus.

First, you'll have to choose from the four types of tablesaws: benchtop/job-site, contractor, hybrid, and cabinet. Any of these saws, when well-tuned, make accurate cuts, but step-up features increase a saw's usefulness—and cost.

#### 8 key factors to consider when buying a tablesaw

■ **Power.** If you regularly work with hardwoods thicker than  $\frac{3}{4}$ ", get a saw with at least a  $1\frac{1}{2}$ -hp motor. (It takes 3 hp to make heavy cuts with no bogging down.) Totally enclosed fan-cooled

(TEFC) induction motors run cooler and quieter than the universal motors typically found on benchtop/job-site saws.

■ **Electrical service.** Tablesaws with 2-hp or larger induction motors typically require 220-volt service. Before you buy, know your shop's power capabilities, or be willing to add a 220 line. Also, consider what machines you'll operate at the same time, such as a dust collector, so you don't overload circuits.

■ **Price.** You can pay anywhere from \$150 for a benchtop saw to well over \$3,000 for a professional-level cabinet

saw. As the woodworkers' creed says, "Get all the tool you can afford."

■ **Capacity.** All tablesaws feature at least a 10"-diameter blade, but tabletop sizes vary greatly. And maximum rip capacities range from 1' to over 4', an important consideration if you work regularly with sheet goods.

■ **Safety.** Some saws include better safety guards and features (anti-kickback riving knives, blade-brake technology) than others, but often at higher prices. For example, a riving knife keeps boards from pinching against the back edge of the blade, thus preventing kickback. A few saws have this feature now, and many more will in the next few years, as manufacturers comply with new safety regulations. Blade-brake technology, available exclusively on models from SawStop, almost instantly stops a spinning blade should a hand or finger come into contact. It could mean a small cut instead of an amputation. For a closer look at this safety feature, see *page 8*.

■ **Space.** If you work in a small garage or basement, your shop might not accommodate a tablesaw with 7' fence rails. Instead, opt for a more compact machine with a rip capacity of 30" or less. In addition to the footprint of the machine, you'll need to leave infeed and outfeed space for ripping long workpieces, and side space for crosscutting long stock. Don't let a too-big tablesaw eat up the very space you need to work in.

■ **Dust control.** Cutting wood creates dust, but not all tablesaws can control it. Closed-base saws with dust ports prove most effective at channeling debris to a dust collector, while many open-base contractor and benchtop/job-site saws simply let the dust fly.

■ **Availability and service.** Online dealers can ship a tablesaw to your shop, but will they provide parts should it break down? You might prefer to buy from a local retailer if you're not confident in making your own repairs.

Now let's compare the four basic categories of tablesaws—cabinet, contractor-style, hybrid, and benchtop—to see which will best suit your needs.



Watch a FREE 5-minute video on choosing a tablesaw at [woodmagazine.com/tablesaws](http://woodmagazine.com/tablesaws)



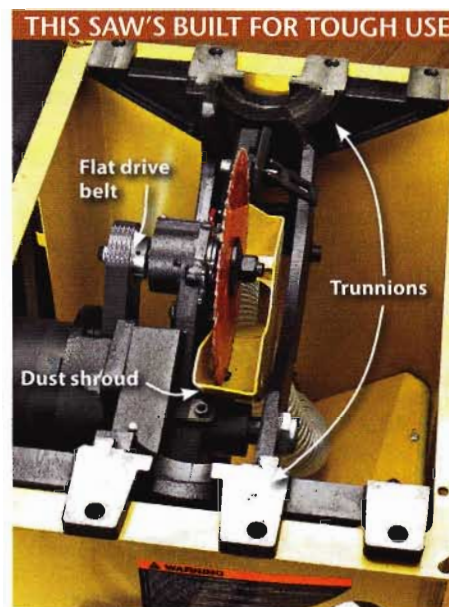
## Cabinet saws deliver powerful performance

Just as automobile buffs dream of luxury vehicles or speedy sports cars, woodworkers long for cabinet-style tablesaws. With heavy-duty components and 3-hp motors, these machines slice through wood like it's pudding, yet deliver and maintain pinpoint accuracy when set up correctly. The term "cabinet saw" comes from the enclosed steel base that enhances dust collection as well as reduces blade and motor noise, though not all tablesaws with cabinets belong in this group. The saw of choice for professional woodworking shops, this will cost you at least \$1,000 for a new machine.

A typical 3-hp cabinet tablesaw weighs 500 lbs or more because of its big motor and cast-iron components. (Pro models feature 5-, 7½-, or 10-hp motors and can have 12" or 14" blades.) The motor, which is mounted below the blade inside the cabinet, drives the blade with either two or three V-belts or one wide, ribbed flat belt.

To harness this kind of power, cabinet saws feature an all-cast-iron inner structure (yoke, trunnions, gears). The large trunnions mount to the cabinet, shown *above right*, rather than to the cast-iron top, as with other tablesaw styles. This is an advantage because adjusting the top parallel to the blade—necessary for accurate cuts—requires only loosening three of the four bolts that connect it to the cabinet, and pivoting the top.

Cabinet-style saws typically come with fence rails that provide 50–54" of rip capacity—mighty handy for working with 4×8' sheet goods. Don't need that much? You can get one instead with 30"-capacity rails, an attractive option for small shops. Most cabinet saws feature T-square-style fences with heavy-duty rails.



Heavy-duty trunnions provide durability and accuracy, and also dampen vibration.

### Cabinet Saw Pros:

- Powerful motor for bog-free cuts
- Trunnions mount to cabinet for easy, long-lasting table adjustments
- Heavy-duty fence and rails
- Large rip capacity
- Enclosed base improves dust collection
- Large, comfortable handwheels
- Low blade and motor noise levels
- Typically, a large power switch in an easy-to-reach location
- A few models have built-in or included mobile bases

### Cons:

- Prices start at around \$1,000
- Requires 220-volt electrical service
- Heavy, so mobility is limited
- Large footprint on saws with long fence rails

### Contractor saws aren't just for contractors

This type of table saw gets its name from decades back, when home builders used them on location. Today, you'll seldom see one on a job site, thanks to the evolution of the lighter-weight benchtop/job-site saw.

Contractor-style saws feature cast-iron tops, and most now include cast wings. This added vibration-dampening weight helps hold an accurate setup longer than a saw with stamped-steel wings. However, the trunnions, much smaller than those on a cabinet saw, mount to the tabletop from underneath, as shown *below*. This makes alignment more difficult because you must reach inside the saw to loosen and move the arbor assembly rather than the top.

Power ratings on these saws range from 1½ to 2 hp with 110-volt motors, which extend out the back of the saw (as shown at *right*) and drive the blade with one belt. Because the hanging motor adds 15–20" of depth to the saw, it limits the use of outfeed stands or tables and prevents you from stowing the saw flat against a wall.

With a contractor saw, you get 30" to 36" of rip capacity standard (with 50"-capacity rails optional on some models), smaller handwheels, and much lighter weight (200–350 lbs). These saws tend to vibrate more than cabinet-style saws, suffer greater likelihood of drive-belt slips (because only the weight of the motor provides tension), and generate higher noise levels. Many models include dust hoods for connection to a dust collector, and some even include plastic shrouds around the blade to channel dust.

#### CONTRACTOR-STYLE TABLESAW



Although its components are lighter-duty than those of cabinet saws, you still can set up a contractor-style saw for pinpoint precision. However, you might have to compensate for the reduced power with slower feed rates and thin-kerf blades. Cuts in thick, hard stock may prove difficult or impossible.

A bare-bones contractor saw costs about \$400, or as much as \$800 with added features. Deluxe models overlap the price range of hybrid table saws—and even approach some low-cost cabinet saws—so compare before buying.

#### Contractor Tablesaw Pros:

- Prices range from \$400 to \$800
- Rip capacity equals cabinet-style saws on some models
- Dust hoods or shrouds on some models
- Lighter weight than cabinet saws
- Accurate when set up correctly
- A few models have built-in mobile bases

#### Cons:

- Limited power means struggles in thick, hard materials
- Trunnions mount to top rather than base, making adjustments difficult and shorter-lasting
- Lighter-duty components allow more vibration
- Open design reduces dust-collection efficiency and increases noise
- Motor hangs out the back of the stand, adding to footprint

#### SMALLER PARTS=MORE WORK



The small forged-steel trunnions on this saw secure to the top rather than the base, making top-to-blade alignments trickier.



**BENCH-TOP TABLESAW**

## Benchtop saws: Good options for small shops

You don't have to be a contractor or trim carpenter to appreciate these portable table saws. In spite of their small stature and light weight, you can cut hardwoods if you reduce your feed rate and use a thin-kerf blade, but some struggle in 2"-thick hardwoods.

Benchtop/job-site saws feature 110-volt universal motors that provide respectable power but are loud and prone to vibration, thanks in part to direct- or gear-drive power trains. Models with closed bases feature good dust collection, but the smaller ports are sized for shop vacuums. Many benchtop saws have shallow miter slots that accept only light-duty miter gauges. They also can be unsafe when cutting large work-pieces by yourself because of the narrow footprint and small table-top. Rip capacity tops out at 25" on the better saws in this class, with some as little as 12". Because of the small tops, you'll need infeed and outfeed support for boards more than 4' long, as well as support for crosscutting stock of that length. The better-equipped benchtop/job-site saws carry price tags that rival those of middle-of-the-pack contractor saws.

### Benchtop Tablesaw Pros:

- Prices range from \$150 to \$700
- Lightweight and easily portable, especially with collapsible wheeled stands
- Motors run on 110-volt electricity
- Up to 25" rip capacity on some models
- Decent dust collection on closed-base models
- Small footprint

### Cons:

- Noisy universal motors tend to lack the power of full-size table saws
- Increased vibration leads to less-than-furniture-quality cuts.
- Aluminum or molded plastic tabletops lack the durability and vibration dampening of cast iron
- Some models cannot accept full 3/4" stacked dado sets on their arbors
- Blade-height adjustments typically made with a single, small, uncomfortable handwheel
- Most models don't have geared-bevel adjustments and must be done manually, making them tougher to set accurately
- Higher-priced saws overlap mid-priced contractor-style saws
- Light-duty fences
- Thin throat insert plates make it difficult or impossible to make your own zero-clearance inserts

**HYBRID TABLESAW**

## Hybrids blend big-saw features at 110 volts

A hybrid table saw marries the small-shop needs of a contractor-style saw (110-volt electricity, light weight) with some handy cabinet-saw benefits (cast-iron guts, enclosed base for good dust collection and less noise) in a modest price range. Features vary from one saw to another. For example, some models have forged-steel trunnions as on a contractor saw, and others have cast-iron trunnions, though they're smaller than those on cabinet saws.

To enclose the cabinet, manufacturers mount the motors below the arbor assemblies, as with cabinet saws, but these 1½- to 2-hp motors won't have the muscle of a cabinet saw. Like a contractor-style saw, most have trunnions that mount to the tops rather than the cabinets, making top-to-blade adjustments even more difficult (thanks to the enclosed base) and increasing vibration slightly.

Hybrids come standard with 30"-rip capacity fence rails, but you can upgrade to longer rails for up to 54" capacity. The fences typically are the same heavy-duty models sold with cabinet saws.

### Hybrid Tablesaw Pros:

- Prices range from \$700 to \$1,100
- Up to 54" rip capacity on some models (with optional fence rails)
- Enclosed cabinet aids dust control and reduces noise
- Heavier weight than contractor saws
- Motors run on 110-volt electricity
- Some models have cabinet-mounted trunnions

### Cons:

- Most models have top-mounted trunnions, making blade/table alignment more difficult
- Power (1½ to 2 hp) similar to contractor-style saws



## SawStop cabinet saw: Just what the doctor ordered

Seven years ago, the SawStop tablesaw blade brake created an industry-wide stir at the International Woodworking Fair in Atlanta. Since then, the inventor's dream has now become reality, as table-saws equipped with the device are finally on the market. We've been using a SawStop cabinet-style tablesaw in the *WOOD*® magazine shop since November 2004, and so far, the machine has met or passed our expectations for cutting performance and safety.

If you're unfamiliar with SawStop, here's the nutshell look: A spring-loaded, solid-aluminum brake pawl (see photo below) quietly waits beneath the tabletop, about 1/8" from the blade's teeth. If your skin touches any part of the blade while it's turning, electronic circuitry detects the touch and releases the brake pawl

into the teeth, stopping the blade almost instantly. That sudden stop—and the blade dropping below the tabletop at the same time—turns a potential amputation into a much-less-serious injury.

We test-fired SawStop a number of times (using an all-meat wiener as a finger substitute) to simulate likely blade-contact situations: fed straight into the blade; thumped on the top of the blade to replicate kickback, and dragged across the top of the blade. (You can view video of some of our test results on our Web site at [woodmagazine.com/sawstop](http://woodmagazine.com/sawstop).) As you can see from the photo at right, in some cases the skin of the wiener was barely nicked. In others, the frank suffered some damage that might still require a trip to the emergency room, but not an amputation.

But what about false firings? Air- or kiln-dried woods don't conduct electricity like flesh, and in more than six months of daily use, SawStop's blade brake only fired once when we didn't expect it. We ran dripping-wet pressure-treated lumber through the blade, and that triggered the brake. The next time we cut wet wood or conductive materials, such as brass and aluminum, we tested the material by first touching it to the blade with the saw turned off. Diagnostic lights on the power switch told us that cutting the material would trigger the brake, so we had to temporarily override the safety system, using the "bypass" key switch.

When you change from a blade to a dado set, you must also swap the standard brake cartridge for a dado cartridge. (This keeps the brake pawl in close proximity to the edge of the smaller-diameter dado set.) At first, this change-over proved to be a nuisance, but before long, we could change to a dado set or back in less than 90 seconds, start to finish.

The blade brake is a great safety device, but SawStop's European-style riving knife (shown at right) adds another layer of safety. Acting as a splitter, it prevents kickback; standing just shy of the blade height, it helps keep you from accidentally dragging your hand into the back of the blade. And the riving knife installs in place of the splitter/blade guard with a flick of a lever. Our riving knife comes off only for dado cuts and then goes right back on the saw afterward—a testament to how much we like it.



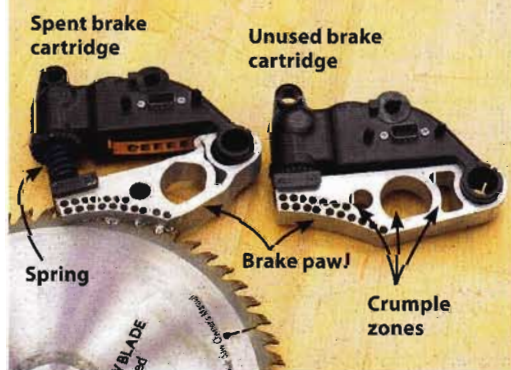
SawStop's braking system halted the blade fast enough to limit injury to these surrogate "fingers." Most surprising to us was the light damage from a 3/4" dado set (far right).

All those safety devices would mean little if the SawStop cabinet saw was underpowered or poorly built. But that's not the case. Fit and finish on this machine is above average, with massive, smooth-operating handwheels and nicely machined tables. We also appreciate the oversize blade-changing wrenches that keep our hands well clear of the blade.

SawStop also sells a contractor-style saw equipped with the blade brake, riving knife, and a 1 3/4-hp motor for \$1,599. That price includes stamped-steel extension wings and a 30" fence system.

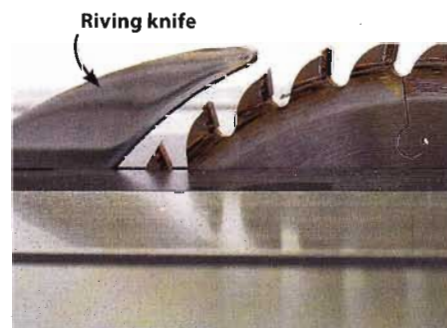
—Tested by Jeff Mertz, Design Editor, and Kevin Boyle, Senior Design Editor

## THOSE ARE THE BRAKES



"Crumple zones" built into SawStop's aluminum brake pawls help them absorb the impact of a tablesaw blade spinning at 4,000 rpm. Heat created by the impact fuses the blade to the brake, requiring replacement of both.

## RIVING KNIFE STOPS PINCHING



This riving knife raises and lowers with the saw blade, always remaining just a hair lower than the top of the blade. That means it won't interfere with a sacrificial pushblock when ripping narrow stock, for example.

## SawStop 10" Cabinet Saw (3 hp)

<b>Performance</b>	★★★★★
<b>Price</b>	\$3,100, without a rip fence (add \$369 for 36" fence; \$419 for 52" fence); \$69, replacement blade-brake cartridge; \$89, replacement dado-brake cartridge

**SawStop**  
503-638-6201; sawstop.com



# Turn Your Hobby into a New Career.

## Learn furniture and cabinet making with at-home training.

With Penn Foster, you can learn the skills you need to turn a hobby into a profitable career in as little as six months. Learn the advanced woodworking techniques used in furniture and cabinet making. You can work for an established woodworking business or even start a business of your own.

**Convenient.** Penn Foster programs are designed to train adults for employment in the fastest-growing fields. You choose the time and place to complete your coursework, and you work at your own pace. All learning materials are sent directly to you.

**Flexible.** Study online, in print, or a combination of both. You decide which method best suits your learning style. You work independently, but not alone. Expert instructors and support staff — dedicated to helping you complete your coursework — are just a phone call or an email away. And you can interact with other Penn Foster students through our online community, including social networks, blogs, and discussion groups.

**Accredited.** Penn Foster Career School and Penn Foster College are nationally accredited by the Accrediting Commission of the Distance Education and Training Council (DETC). In addition, Penn Foster Career School is regionally accredited by the Middle States Commission on Secondary Schools for its high school and vocational-technical programs.



**Affordable.** Our low-cost tuition includes all materials as well as instructor support. We offer 0% APR financing and customized payment plans to best meet your individual needs.

**ACT NOW AND SAVE UP TO 33% Limited-Time Offer!**

**Career Services.** Current students and graduates are notified — through their personal message boards — of job openings submitted directly to Penn Foster by employers from around the country. Graduates of Penn Foster can take advantage of Penn Foster Career Services, which include access to job searches, tips on interviewing, and resume building with the help of a Certified Professional Resume Writer.

For fastest service, call toll free:

**1-800-572-1685 ext. 6511**

Call anytime, 24 hours a day, 7 days a week.

Or visit our website at

**www.PennFoster.edu**

Online enter ID# AWSS79T

Or mail the coupon today.



**PENN FOSTER**  
CAREER SCHOOL

925 Oak Street, Scranton, PA 18515-0700  
www.PennFoster.edu

**384 Furniture and Cabinet Maker**

**Building Trades**

- 06 Electrician
- 104 Carpenter
- 15 Home Inspector
- 145 Home Remodeling and Repair
- 14 HVAC Technician
- 151 Plumber
- 102 Professional Landscaper

**High School**

- 07 Penn Foster High School
- 750 Penn Foster High School w/ Health Care Concentration

**Business**

- 70 Small Business Management

**Mechanics**

- 04 Auto Repair Technician
- 55 Diesel Mechanics
- 33 Motorcycle Repair Technician
- 89 Small Engine Repair

**Technology**

- 07 Penn Foster High School
- 750 Penn Foster High School w/ Health Care Concentration

**Business**

- 70 Small Business Management

**Technology**

- 54 AutoCAD®
- 79 Electronics Technician
- 27 PC Maintenance and Repair
- 83 Web Page Designer
- 72 Appliance Repair
- 25 Gunsmith
- 58 Private Investigator
- 31 Professional Locksmithing



**PENN FOSTER**  
COLLEGE

Administrative Office  
14300 N. Northlight Blvd.  
Suite 111  
Scottsdale, AZ 85260  
www.PennFosterCollege.edu

**Associate Degree Programs**

- 61 Accounting
- 60 Business Management
- 418 Computer Information Systems
- 406 Criminal Justice
- 81 Finance
- 407 Graphic Design
- 412 Human Resources Management

- 66 Industrial Engineering Technology
- 80 Marketing
- 62 Mechanical Engineering Technology
- 408 PC Maintenance Technology
- 456 Retail Management

Please send me FREE information on the Career School or College program I have selected above. No obligation. Choose ONE only.

Name \_\_\_\_\_ Age \_\_\_\_\_

Street \_\_\_\_\_ Apt. # \_\_\_\_\_

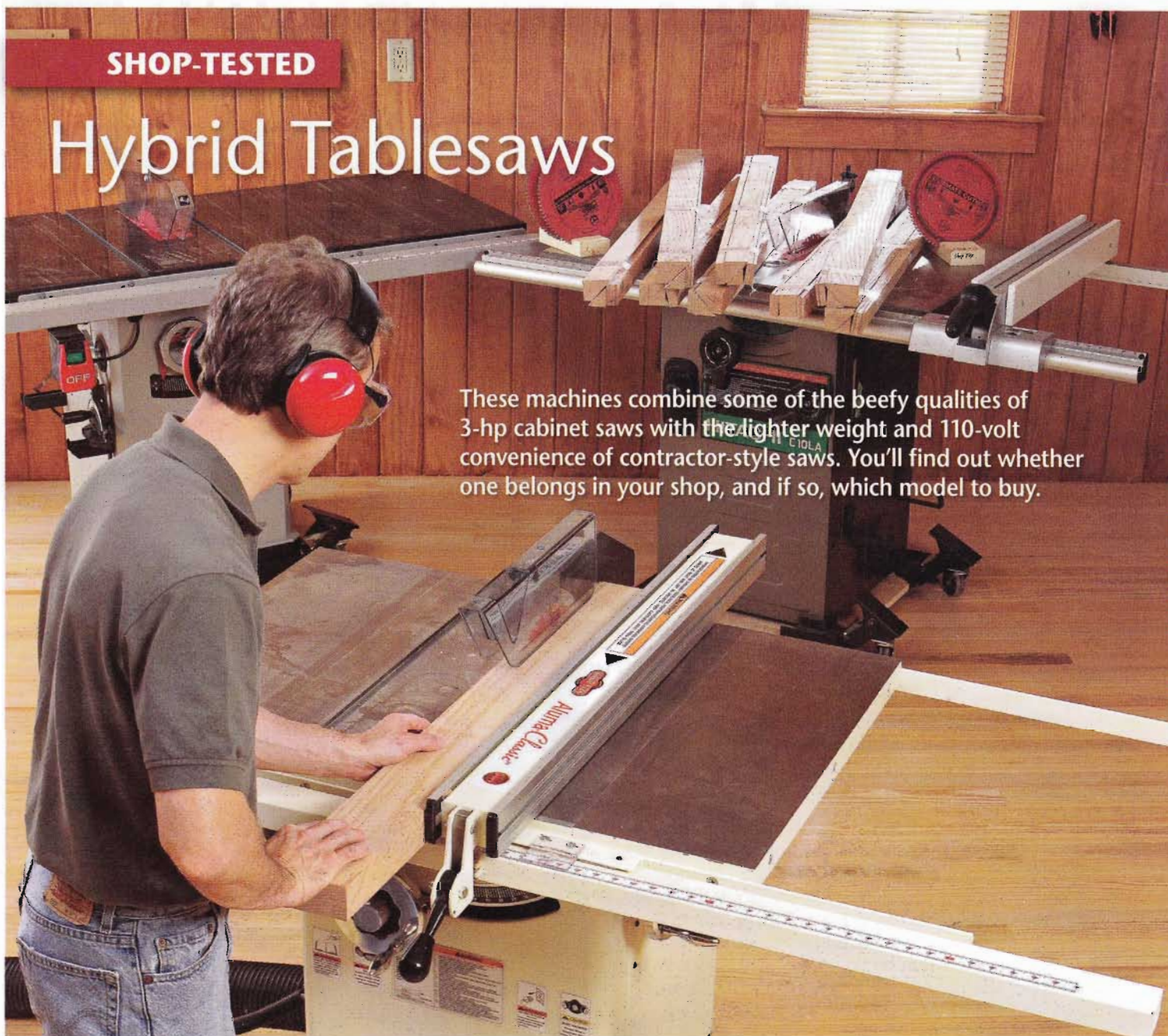
City/State \_\_\_\_\_ Zip \_\_\_\_\_

Phone ( ) \_\_\_\_\_ Email \_\_\_\_\_

Mail coupon to Student Service Center,\* Dept. AWSS79T, 925 Oak Street, Scranton, PA 18515-0700.

\*Under contract with Penn Foster College, AZ

186GF



SHOP-TESTED

# Hybrid Tablesaws

These machines combine some of the beefy qualities of 3-hp cabinet saws with the lighter weight and 110-volt convenience of contractor-style saws. You'll find out whether one belongs in your shop, and if so, which model to buy.

**C**enturies ago, someone bred a horse with a donkey to produce the mule—a hybrid that packs strength and durability into a midsize package. Fast-forward to the late 20th century, when power-tool manufacturers crossbred 3-hp cabinet tablesaws with 1½-hp open-leg contractor saws. The resulting hybrid saws typically look like cabinet saws (with dust- and noise-capturing closed bases), but perform and adjust more like contractor saws. Most hybrid saws are priced between deluxe contractor saws (\$700) and bare-bones cabinet saws (\$1,200), although two hybrids in this test come in north of the

\$1,200 mark. So with these machines borrowing features from both “parents,” do they really provide you with the best of both worlds?

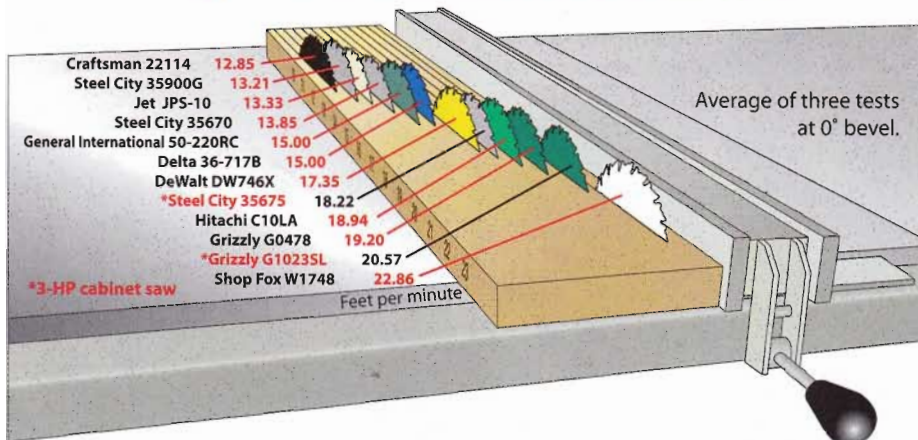
To find out, we gathered 10 models for head-to-head testing. We also tested two 3-hp cabinet saws that fall into the price range of these hybrids. Using new Freud 10" blades on each saw, we ripped, cross-cut, mitered, and beveled solid red oak and birch plywood, just as you would in your own shop. In some respects, we found vast differences between the saws; in others, which unit performed best became a toss-up. Read on to find out how they fared.

## A catchy title means nothing without power

Each of the hybrids has a 110-volt induction motor, rated from 1½ to 2 hp, mounted below the blade. To test each model's true power, we outfitted them with identical full-kerf 24-tooth blades, then ripped 2"-thick red oak as fast as each saw could handle, at 0° and 45° bevels. As shown in the chart on the next page, the Shop Fox W1748 demonstrated the most power, as it breezed through the wood without bogging down. It even bested two 3-hp saws.

Grizzly's G0478, a near twin to the Shop Fox, finished second among

## Shop Fox Dominates Power Test



We tested each saw's power and cutting speed by ripping 2"-thick red oak with identical Freud 24-tooth blades, pushing the wood as fast as each machine could handle it.

hybrids, 3½ feet per minute off the pace, with the Hitachi C10LA and DeWalt DW746X close behind. The 1⅝"-wide drive belts on the three top-performing saws (including the 3-hp Grizzly G1023SL) seem to transfer power better from the motor to the blade.

Four saws cut only about half as fast as the Shop Fox. Although these models don't have the power of the leaders, they still cut everything we threw at them when we reduced the feed rate. As with a contractor saw, these hybrids will cut faster using thin-kerf blades.

### Sturdy fence, miter gauge will be your best friends

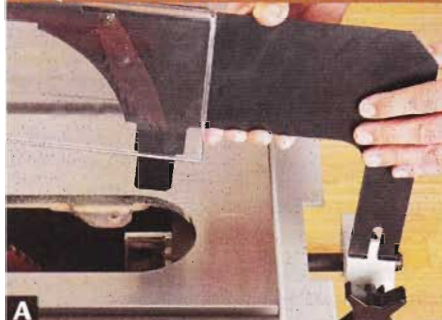
All of the saws feature T-square-style fences. We liked the Steel City 35670's Deluxe Fence best because it deflected the least (.0033") during tough rip cuts. It has UHMW sideboards, slides easily along the rail, and locks solidly in place. Jet's ProShop aluminum fence features two T-slots on top—handy for mounting accessories—and finished second in the deflection test at .004". Delta finished third (.005"), followed by Hitachi (.0053"), and DeWalt (.006").

We like the matching Aluma-Classic fences on the Grizzly and Shop Fox for their features—T-slots on each face, a scale marked in ⅓" increments over its full length, and a magnifying cursor—but they deflected 0.0077" and 0.009" (sixth and seventh, respectively) in the test. When using a properly aligned blade guard or splitter, you likely won't notice a problem with this amount of fence deflection. But when we ripped on these saws with no guard or splitter, the workpiece cutoff wandered into the back teeth of the blade slightly and resulted in a little spray of sawdust back

toward us. Greater amounts of deflection could create potential kickback when you don't use the splitter.

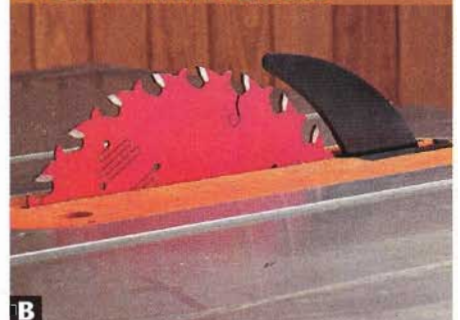
The miter gauges are all basic units, with stops at 0° and 45°. We give a slight edge to those that use retractable pins (Craftsman, General International, Jet, and Steel City) to contact the adjustable stops. The pins provide a more stable bearing surface than the wobbly flip-up metal tabs of the other miter gauges.

### A QUICK CHANGE OF THE GUARD



**A** Guards on Steel City and Craftsman saws slide into a tension clip inside the throat and over a bolt on the back. No tools required.

### A GOOD SAFETY FEATURE

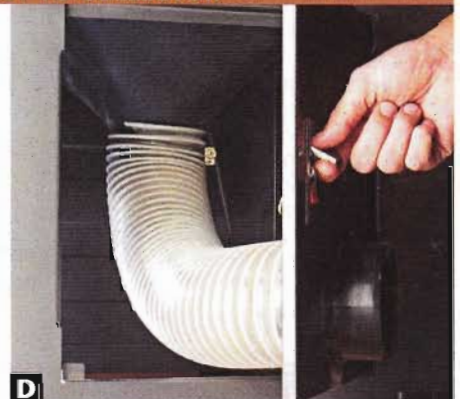


**B** A riving knife, like this one on the General International hybrid, keeps the blade kerf open and prevents kickback.

### BUILT-IN COMPONENTS CHANNEL DUST TO COLLECTOR



**C** DeWalt's blade shroud captures dust at the point of cut, and funnels it to a 2½" port and your shop vacuum or dust collector.



**D** Dust falls downward from the blade to the hopper in Hitachi's cabinet, and into the 4" port in the center of the hopper.

## More findings that should help shape your decision

■ **Safety guards.** Like the manufacturers, we encourage you to use your blade guard and splitter. Because most prove difficult to remove and replace, you might be tempted to leave them off. Fortunately, Steel City and Craftsman saws have quick-release systems [Photo A], which eliminate the hassle. The General International and Steel City's granite-top 35900G have separate riving knives [Photo B], for use when you need to remove the guards. These riving knives mount behind the blades to maintain the kerf openings and prevent kickback, but do not shield you from the blades.

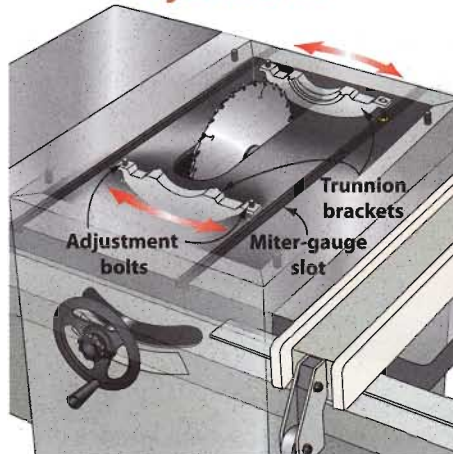
■ **Dust collection.** The enclosed bases keep most of the dust out of your shop's air, but not all the debris goes into your dust collector. The DeWalt outperformed the pack in spite of its open back and bottom, thanks to a shroud around the blade [Photo C]. Hitachi's hopper-shaped bottom worked well to corral dust [Photo D]. The others allowed much dust to build up in the

## ■ Aligning the tabletop to the blade.

Kudos to Craftsman and Steel City for their cabinet-mounted trunnions, *far right*, that make it easy to align the miter slots to the blade. The other saws' trunnions mount directly to the underside of the tabletop, *near right*. They require loosening four to six bolts inside the cabinet, while you move the trunnion to make the adjustment—not an easy task in many.

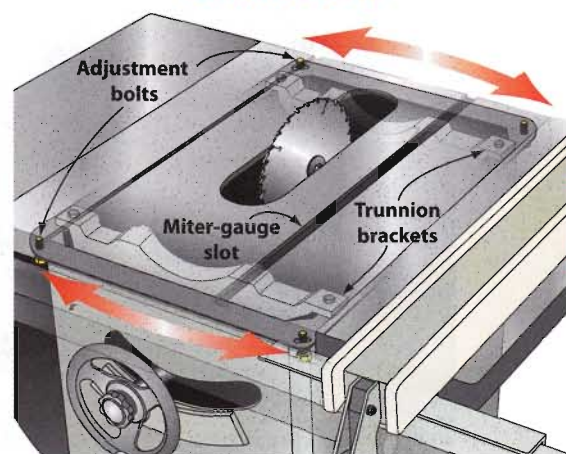
■ **Switches.** These come in two types, magnetic or mechanical. We prefer magnetic switches with large paddles over the “off” button. A magnetic switch prevents the machine from restarting if there is a power outage during a cut.

## Hybrid Saw



Adjusting trunnions mounted to the top proves difficult because you must reach inside the cabinet to loosen and move them.

## Cabinet Saw



Cabinet-mounted trunnions stay put while you loosen the bolts and pivot the table from above to align the blade with the miter slot.

## A close-up look at the hybrids (Note: mobile bases not included)

### Craftsman 22114, \$750

800-383-4814, [craftsman.com](http://craftsman.com)

#### High Points

- ▲ The safety guard easily mounts and dismounts with no tools.
- ▲ The power switch mounts anywhere along the fence rail.
- ▲ Setscrews make leveling table extension wings easy, a big plus when assembling the machine.
- ▲ The trunnions mount to the cabinet rather than the top, making it easy to align the top to the blade.



#### Low Points

- ▼ The aluminum rip fence deflected 0.027"—the most in our test—despite front and rear clamps.
- ▼ It was the slowest-cutting and loudest saw in the test.

#### More Points

- ▶ Centered fence rails provide a little over 25" rip capacity left of the blade (most in the test) and right of the blade (least in the test). Also, we found the rip fence microadjuster difficult to use.
- ▶ You must take the arbor washer off the arbor for dado widths greater than 1 1/16".

### DeWalt DW746X, \$1,200

800-433-9258, [dewalt.com](http://dewalt.com)

#### High Points

- ▲ In spite of having the only open cabinet back, it provided the best dust collection, thanks to its blade shroud and 2 1/2" funneled dust port.
- ▲ It exhibited above-average power, outmuscling six of its peers during heavy test cuts.
- ▲ At about 40 x 55", this saw has the most compact footprint without sacrificing rip capacity.



#### Low Points

- ▼ Its power switch is small and hard to reach, especially with a knee or thigh.
- ▼ When making bevel cuts, the blade moved from its setting unless locked.
- ▼ The rip fence proved difficult to adjust parallel to the blade, and you must move the single sideboard to the opposite face for left-of-blade rips.

### Delta 36-717B, \$1,150

800-223-7278, [deltaportercable.com](http://deltaportercable.com)

#### High Points

- ▲ Its large off-switch was easy to reach and bump with a leg.
- ▲ A support leg and melamine-coated particleboard extension wing are standard equipment.
- ▲ Beefy handwheels ease blade adjustments and lock solidly.
- ▲ The bevel-scale cursor sits close to the scale for the easiest setting of angles.
- ▲ At 86 decibels, it's one of the quietest saws in the test.
- ▲ The rip fence deflected little during cuts.



#### Low Points

- ▼ Its triangular miter gauge was difficult to use and set accurately.
- ▼ The blade guard must be held or propped up while changing blades.

### General International 50-220RC, \$1,550

888-949-1161, [general.ca](http://general.ca)

#### High Points

- ▲ One of only two tested saws with a riving knife (if you choose to remove the blade guard).
- ▲ The arbor lock makes one-wrench blade changes quick and easy.
- ▲ Its large off-switch was easy to reach and bump with a leg.



#### Low Points

- ▼ We could not correctly calibrate the digital bevel display with the blade.
- ▼ Despite a blade shroud and 2 1/2" hose that connects to the 4" port, dust collection proved no better than models without shrouds.

#### More Points

- ▶ The rip fence was solid and held with little deflection, but at 2 1/8" tall, it's the shortest fence in the test by nearly 1/2".
- ▶ Because the heavy-duty arbor assembly rides vertically on four columns rather than a cantilevered arm, it's more difficult to raise the blade.
- ▶ With an aluminum rip fence, the price drops to \$1,470.

## "If I'm willing to spend \$1,000 on a hybrid..."

...should I instead get a 3-hp saw for about the same money?" To find out, we tested two comparably priced 3-hp tablesaws: Grizzly's G1023SL and Steel City's 35675. Both need 220-volt power and have a few similarities (left-tilting arbor, UHMW-faced T-square-style rip fences, cabinet-mounted trunnions for easier top-to-blade alignment, and magnetic switches). The saws also displayed about equal power, with the Grizzly cutting at 20.57 fpm in 2"-thick red oak, and the Steel City cutting 18.22. But both saws trailed the 2-hp Shop Fox W1748 hybrid in our testing.

The G1023SL sells for \$995 equipped for 30" rip capacity. You get a miter gauge, but no saw blade or plug for the power cord. The 35675 sells for \$1,400 with 30" rip capacity. With that you get a 40-tooth blade, miter gauge, and a table-wing extension. You can upgrade each machine's fence rails for 50" rip capacity.

**The bottom line:** These tablesaws don't quite have the oomph of pricier cabinet saws, such as a Delta Unisaw or Powermatic 66, but they're not bad. As



Grizzly  
G1023SL



Steel City  
35675

for the choice between these or a hybrid, we say get three horses if you're wired for 220. The Steel City 35675 has the edge in capacities and standard equipment, but for \$200 less we'd opt for the performance advantage from the Grizzly G1023SL.

### Grizzly G0478, \$775

800-523-4777, grizzly.com

#### High Points

- ▲ This saw proved the second most powerful hybrid in the test, and it runs smoothly with only slight vibration.
- ▲ It has the greatest capacity for crosscuts (13 3/8"), with the miter gauge resting on the top.
- ▲ We like its aluminum rip fence, with T-slots on each side and a magnifying cursor.

#### Low Points

- ▼ This power-hungry saw requires a dedicated 20- or 30-amp circuit (depending on the gauge of wire used) for 110 volts to avoid tripping a breaker.
- ▼ Despite many attempts, we couldn't get the miter slot and blade parallel (.004" off was the best we could do; we strived for half that).
- ▼ It does not come with a plug for the power cord, or a saw blade.

#### More Points

- ▶ It has a magnetic power switch, but the off-switch is smaller than most and hard to locate with a leg.
- ▶ Although the handwheels crank easily, it takes more than 46 revolutions to fully raise the blade—more than twice as many turns as most of the saws tested.



### Hitachi C10LA, \$1,100

800-829-4752, hitachipowertools.com

#### High Points

- ▲ Despite a 1 1/2-hp motor, this saw outpowered beefier saws.
- ▲ The included small outfeed table proved handy and effective.
- ▲ Microadjusters on the rip fence proved accurate and easy to use.

#### Low Points

- ▼ Its power switch is small and hard to reach.
- ▼ You must remove the outfeed table, six hexhead bolts, and the back panel to access the motor and trunnions for adjustments.
- ▼ We could not get all the detents on the miter gauge set accurately.
- ▼ The blade guard must be held or propped up while changing blades, and the narrow throat opening makes blade changes more difficult.

#### More Points

- ▶ There's no lock on the blade height handwheel, although we never had problems with the blade slipping.



### Jet JPS-10, \$950

800-274-6848, jetttools.com

#### High Points

- ▲ Its sturdy aluminum rip fence held securely, with only slight deflection, and has the best magnifying cursor on the scale.
- ▲ Its large off-switch was easy to reach and bump with a leg.
- ▲ The arbor lock makes one-wrench blade changes quick and easy.

#### Low Points

- ▼ It ranked among the least powerful saws in the test.
- ▼ It has the smallest capacity for crosscuts (10 1/2"), with the miter gauge resting on the tabletop.

#### More Points

- ▶ Although its cabinet does not extend fully to the floor, it is enclosed and provided respectable dust collection.



### Shop Fox W1748, \$980

800-840-8420, shopfox.biz

#### High Points

- ▲ Far and away, this saw tested the most powerful, and it ran smoothly with only slight vibration.
- ▲ We like its aluminum rip fence, with T-slots on each side and a magnifying cursor.

#### Low Points

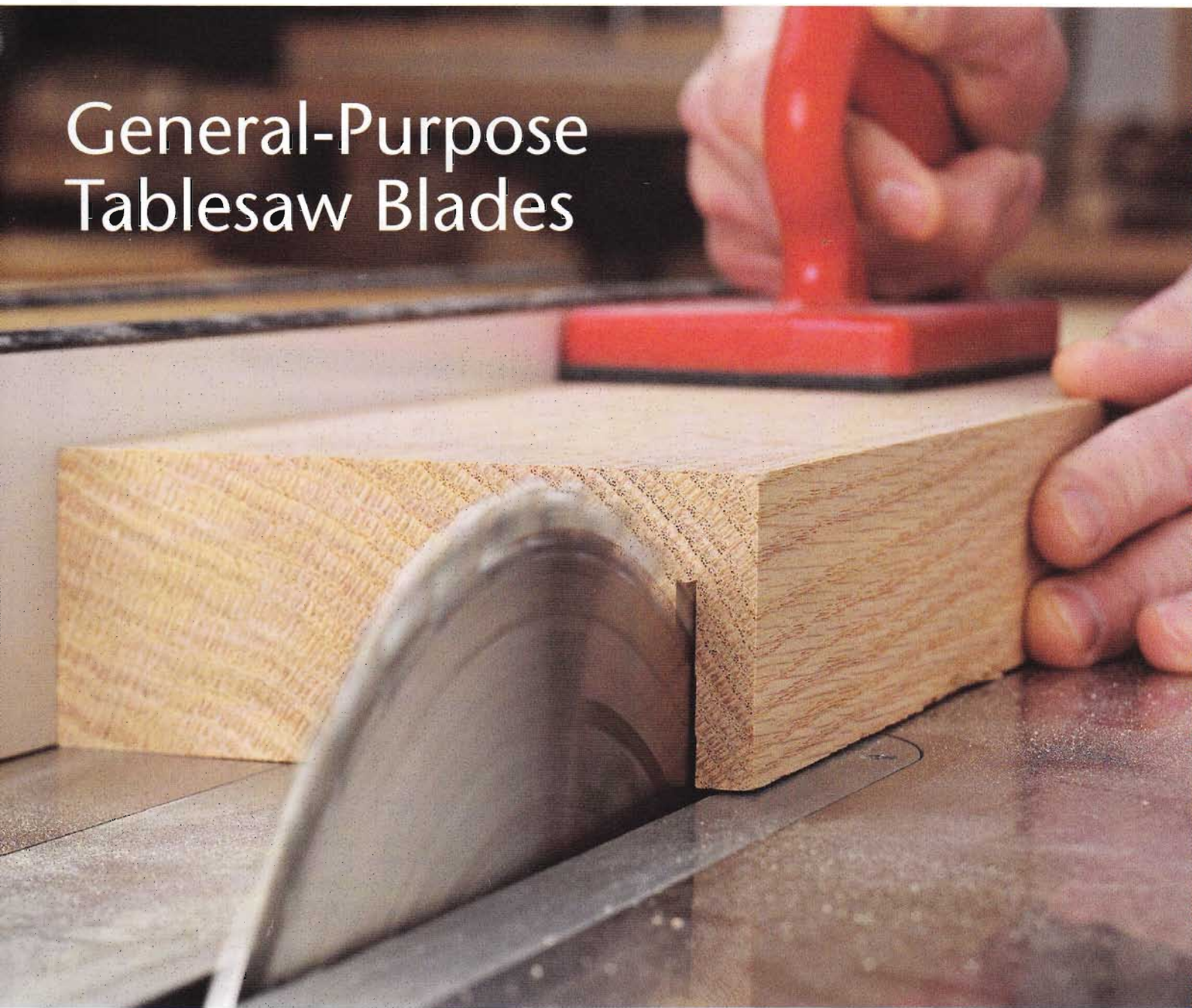
- ▼ This power-hungry saw requires a dedicated 20- or 30-amp circuit (depending on the gauge of wire used) for 110 volts to avoid tripping a breaker.
- ▼ Bolt placement made adjusting the trunnions more difficult than most when aligning the top parallel to the blade.
- ▼ It does not come with a plug for the power cord, or a saw blade.

#### More Points

- ▶ It has a magnetic power switch, but the off-switch is smaller than most and hard to locate with a leg.
- ▶ Although the handwheels turn easily, it takes more than 43 revolutions to fully raise the blade. 🌲



# General-Purpose Tablesaw Blades



We put 28 of the leading 10" models through rigorous trials in search of the perfect "do-everything" blade. The good news: We found several that qualify.

Changing tablesaw blades ranks right up there with changing speeds on a drill press or lathe: We know certain cuts call for specific blades for peak performance, but still, we don't always take the time to make a switch. Now you don't have to sweat those changes—if you have a proven general-purpose blade on your tablesaw.

In previous tests, we found that 40-tooth general-purpose blades typically outperform 50-tooth combination blades, with less scoring and quicker feed rates on rip cuts. So

we rounded up 28 general-purpose blades (16 thin-kerf, 12 full-kerf) from 19 manufacturers and tested them in crosscuts and rip cuts in hard maple, melamine-coated particleboard, and birch plywood using 10" contractor- and cabinet-style tablesaws.

During this test, we hand-fed stock, using the feedback from the saw and workpiece to tell us how fast to feed the material, just as you would do in your home shop. As a result, the performance grades reflect the cut quality you can expect from each blade.



## What we learned

On the following pages, you'll find a comparison chart for the 28 tested blades. We tested cuts in 4/4 and 8/4 red oak because so many of you use that popular species. On the *last page* of this article, you'll find clear criteria for what constitutes an A, B, C, or D grade for each cut, along with photos showing what the various grades represent in three of the test cuts.

■ Even the best blade will not perform well in a saw that's not properly adjusted. So take the time to remove any run-out from your saw's arbor. Align the fence, miter slots, and blade parallel with each other. Err on toeing out the back end of the fence .001" or .002" away from the blade—that will reduce the likelihood of the workpiece binding between the blade and fence.

■ Many of the tested saw blades yield clean cuts on the top face of melamine-coated particleboard. Only the Freud P410 produced chip-free cuts on the top and bottom faces of melamine (using a standard tablesaw throat plate and a slow feed rate). To improve the bottom-cut performance of the other blades, we tested them using a zero-clearance insert at *right top*. About half of the blades, such as the Forrest WW10407125, improved noticeably, as shown *right middle*. We got even better results in birch plywood crosscuts. There, a zero-clearance insert eliminated bottom tear-out with nearly every blade, potentially raising their crosscut tear-out performance in plywood by two full grades, *right bottom*. Remember that the grades in the chart were determined using a standard tablesaw throat plate, not a zero-clearance insert. To make an insert, go to [woodmagazine.com/zeroclearance](http://woodmagazine.com/zeroclearance).

■ Thick carbide saw teeth give you more resharpenings. Some of the blades have teeth with complicated grinds, so have your blades sharpened by a service with up-to-date computer-controlled grinding equipment that will duplicate the manufacturer's original grind. To be on the safe side, check the manufacturer's Web site for recommended sharpening services. For example, you can return Forrest and Ridge Carbide blades to the manufacturer for resharpening. Freud's site has a list of recommended sharpening services.

■ Ease of feed depends primarily on whether a blade has thin-kerf teeth (.118" or narrower) or full-kerf teeth (.125" thick or thicker), so we separated the chart into thin- and full-kerf categories. A 3-hp tablesaw on a 220-volt circuit has enough muscle to power a full-kerf blade through nearly any cut. But if you're using a 110-volt saw you'll find that a thin-kerf blade plows more easily through tough cuts. Of course, either type will struggle if dull.

## Recommendations

For the purpose of choosing the Top Tool and Top Value winners, we had to look at how the blades performed in all of the tested materials. But as you look at the grades in the chart, keep in mind the type of saw you use and what type of work you do. For example, if you work entirely in 3/4" hardwoods, focus your attention on the grades for cuts in 4/4 maple and oak. Buy the best-priced blade that performs in the materials you'll cut with it. In other words, don't pay extra for a blade because it excels in a material you'll never cut.

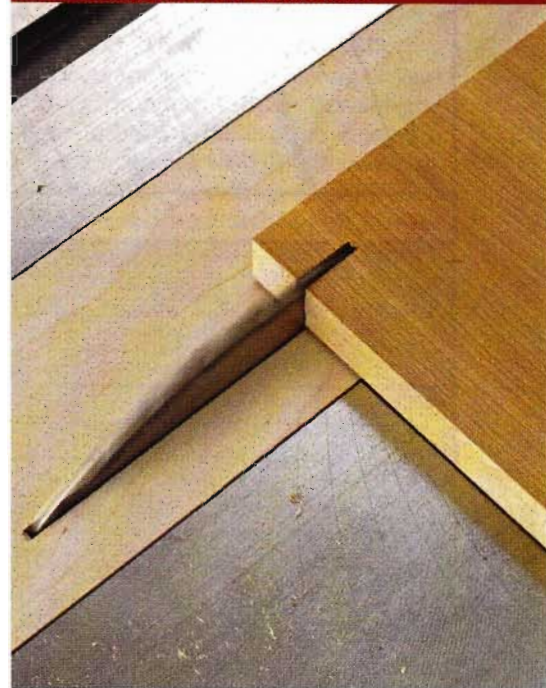
### Full-kerf blades priced \$97 or more:

You'll be happy with the cuts you get with any of these premium blades. The Freud P410 and Infinity 010-044 scored slightly better than the others, earning Top Tool honors. Both of those blades owe some of their success to their highly beveled 30° teeth that cut crisp edges, but will dull faster than the 20° beveled teeth on the Forrest WW10407125 and 15° beveled teeth on the Ridge Carbide TS21040. So we're also recommending the Forrest blade for work in solid stock. However, if used without a zero-clearance insert, the blade will produce more tear-out or chip-out in plywood or melamine than the Freud or Infinity blades.

### Full-kerf blades priced \$62 or less:

The Amana 610400 and Systematic 51821 scored best, earning Top Value recognition. Both blades produced some chip-out or tear-out on the bottom face of sheet, and will do better if you use a zero-clearance insert and feed the material slowly.

## AN EASY WAY TO IMPROVE ANY BLADE'S PERFORMANCE



This shop-made zero-clearance insert fully supports delicate veneer fibers as the blade's teeth exit the cut.

## ZERO-CLEARANCE INSERTS UPGRADE SHEET-GOOD CUTS

### Forrest WW10407125

Test edge → with zero-clearance insert

Test edge → without zero-clearance insert

Melamine-coated particleboard, bottom face shown.

### DeWalt DW7140PT

Test edge → with zero-clearance insert

Test edge → without zero-clearance insert

Crosscuts in birch-veneer plywood, bottom face shown.

## 10" GENERAL-PURPOSE TABLESAW BLADES

PRICE RANGE	MANUFACTURER	MODEL	TEETH BEVEL ANGLE, DEGREES	KERF WIDTH, INCHES	PERFORMANCE RATING (1)												SELLING PRICE	PHONE NUMBER								
					4/4 HARD MAPLE (2,3)		4/4 RED OAK (2,3)		8/4 HARD MAPLE (2,3)		8/4 RED OAK (2,3)		3/4 BIRCH PLYWOOD(3)	3/4 MELAMINE (4)												
					CROSSCUT SCORING	CROSSCUT TEAR-OUT	RIP-CUT SCORING	RIP-CUT TEAR-OUT	CROSSCUT SCORING	CROSSCUT TEAR-OUT	RIP-CUT SCORING	RIP-CUT TEAR-OUT	CROSSCUT SCORING	CROSSCUT TEAR-OUT	RIP-CUT SCORING	RIP-CUT TEAR-OUT										
<b>FULL-KERF BLADES (.125" or thicker)</b>																										
\$97 OR MORE	FORREST	WW10407125	20	0.125	B+	A-	A-	A	A	A	B+	A	A	A-	A	A	A	A-	A-	B+	A-	B-	A-	C	\$115	800-733-7111
	FREUD	P410	30	0.126	A-	A	B+	A	A	A	B+	A	A-	A	A-	A	A	A	B+	A	B+	A	A	A	\$100	800-334-4107
	INFINITY	010-044	30	0.125	A	A	A-	A	A	A	A	A	A	A	A	B+	A	A	A	B+	A-	A	B+	B+	\$100	877-872-2487
	RIDGE CARBIDE	TS21040	15	0.125	B+	A	B-	A	A	A	B	A	A-	A	B	A	B	A	A	A	A	B-	A-	B+	\$97	800-443-0992
\$62 OR LESS	JESADA	110-440	20	0.126	C	B-	C	A	C	B	C	A-	D-	D	D-	B	C	C	C	B	A-	B-	B	\$100	877-898-6657	
	CMT	213.040.10	20	0.130	B	A	C	A	B-	A	C	A	C	B	C	A	B	A-	C+	A	C	A-	C	\$65	888-268-2487	
	SYSTIMATIC	51821	20	0.125	B+	A	C	A-	A-	A	C	A	B	B+	B	A	A	A-	B	A	B-	A-	C	\$62	800-343-1616	
	AMANA	610400	10	0.126	B-	B+	C+	A-	B-	A	B	A	C+	A	B	A	B	A-	B	A	C	A	B	\$60	800-445-0077	
	ITP/H.O. SCHUMACHER	40-HATB-VP	40	0.125	B	A	C	A	A-	A	C	A-	B+	A	C	A	B	B+	C	B	B	B+	B+	\$55	866-537-0700	
	AMANA	PR1040	20	0.134	C+	A	C	A-	B+	A	B	A	C	A	B	A	B	A-	B	A	C	A	C	\$55	800-445-0077	
	BOSCH	PRO1040GP	15	0.128	C	B	D	A-	C	A-	C	A-	D	C	D+	A	D	B	D	B-	C	B	D+	\$48	877-267-2499	
<b>THIN-KERF BLADES (.118" or thinner)</b>																										
\$90 OR MORE	FORREST	WW10407100	20	0.100	B+	B+	B	A	A-	A-	B	A	A-	A	A-	A	A-	A-	A-	A	C-	A-	B	\$115	800-733-7111	
	RIDGE CARBIDE	TS21040TK	15	0.093	A-	A	A-	A-	A	A	B+	A	A-	B+	A	A	B+	A	A	A-	B	B	B+	\$97	800-443-0992	
	TENRYU	GM-25540	15	0.111	B+	A	B	A	A	A	A	A	A	A	A	A	B+	A	A	A	A	A	B	\$90	800-951-7297	
\$40-\$65	AMANA	TB10400	10	0.090	C+	B+	C	A	B	A	B-	A-	B	A	B	A	B	A-	B	A	C	A-	B	\$65	800-445-0077	
	SYSTIMATIC	37437	20	0.093	C	B	C	B	B	A-	B	A	C	A-	C	A	C	B+	B-	A-	B	A-	B-	\$65	800-343-1616	
	OLDHAM	1007740	10	0.115	D	B	C	A-	B-	A-	B	B+	D	C	D	B	D	C	D+	A-	B-	A-	C	\$50	800-433-9258	
	DELTA	35-7657	15	0.118	C+	A-	B-	A	B	A-	C	A	B	A-	B	A	B	A-	B+	A	C	A-	C+	\$45	800-223-7278	
	CMT	251.042.10	15	0.098	B	A	C	A	B	A	C	A	B	A-	C	A	B-	A-	C	A	C	A-	B+	\$45	888-268-2487	
	CRAFTSMAN	32808	15	0.100	A-	A	B-	A	A-	A	B	A	A-	A	B+	A-	B+	B+	B	B	C	A-	C	\$40	800-383-4814	
	MAKITA	A-94459	15	0.091	C	A	C	A	B	A-	C	A	C	C	C	A-	B	B	C	A	C+	A-	B-	\$45	800-462-5482	
\$35 OR LESS	DEWALT	DW7140PT	10	0.098	A-	A-	C	A-	A-	B+	C	A	A-	A-	B	A	A-	A-	B-	A	C	B+	C	\$35	800-433-9258	
	FREUD	LU86R010	10	0.094	B+	A	B	A-	A	B	B	A	A	A	B	A	B+	B	B+	A	C+	A	D-	\$42	800-334-4107	
	VERMONT AMERICAN	27831	12	0.098	C	D+	D	B	C	C	C	B	C	C	C	A-	D	C	D	C+	D+	D	D	\$30	800-626-2834	
	FREUD	D1040X	15	0.098	B+	B+	B+	A-	A-	B+	B	A	A-	A	B+	A	A-	A-	B+	A	C+	A-	C	\$33	800-334-4107	
	HITACHI	310878	20	0.098	C	B	B	A-	B	A-	B	A	C	B-	B-	A-	C	B	B	B	C+	C	D+	\$30	800-829-4752	
	DEWALT	DW3114	10	0.095	B+	A-	B-	A-	A-	B-	B+	A-	B+	B+	A-	A	B+	B-	B+	B	C	B	D+	\$28	800-433-9258	
	IRWIN MARATHON	14070	10	0.095	B	C	C	B-	B+	C	C	B	C	C	D	B	B	D	C	C	D-	D	D-	\$28	800-464-7946	

### Full-Kerf Blades



CONTACT INFORMATION

WEB SITE

forrestblades.com

freudtools.com

infinitytools.com

ridgecarbide.com

razorwoodworks.com

cmtusa.com

simondsinternational.com

amanatool.com

itptooling.com

amanatool.com

boschtools.com

forrestblades.com

ridgecarbide.com

tenryu.com

amanatool.com

simondsinternational.com

oldham-usa.com

deltaportercable.com

cmtusa.com

craftsman.com

makitatools.com

dewalt.com

freudtools.com

vermontamerican.com

freudtools.com

hitachipower.com

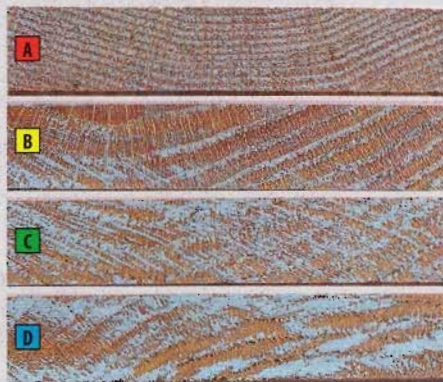
dewalt.com

irwin.com

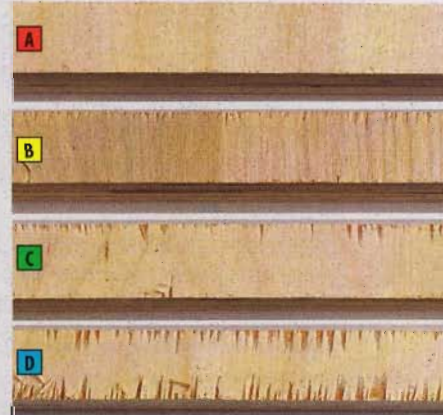
**Grade samples:**  
(Blue chalk used to show scoring)  
**8/4 hard maple rip cuts**



**4/4 red-oak crosscuts**



**birch-veneer plywood crosscuts**  
(Top edges are test edges, bottom face shown)



NOTES:

- A Excellent  
B Good  
C Fair  
D Poor

2. BLADE-SCORING EVALUATION CRITERIA

Maple, Red Oak

- A = Absence of blade marks; joint-ready
- B = Blade marks can be removed with light sanding
- C = Blade marks can be removed with heavy sanding
- D = Blade marks can be removed with jointer or hand plane

3. TEAR-OUT EVALUATION CRITERIA

Maple, Red Oak, Birch Plywood

- A = No tear-out on top and bottom faces
- B = No tear-out on top face, slight tear-out on bottom face
- C = Little to no tear-out on top face, significant tear-out on bottom face
- D = Consistent tear-out on top face, significant tear-out on bottom face

4. CHIP-OUT EVALUATION CRITERIA

Melamine

- A = No chipping on top and bottom faces
- B = No chipping on top face, slight chipping on bottom face
- C = Little to no chipping on top face, significant chipping on bottom face
- D = Consistent chipping on top face, significant chipping on bottom face

**Thin-kerf blades priced \$90 or more:**

Top Tool honor goes to the Tenryu GM-25540. It costs less and performs slightly better than the other two blades in this group. But, if kerf thinness is paramount, note that the Forrest WW10407100 and Ridge Carbide TS21040TK are slightly thinner than the Tenryu.

**Thin-kerf blades priced \$40-\$65:**

The Craftsman 32808 had higher grades overall than the other blades in this category and price range. Here, too, a zero-clearance insert will noticeably improve your results on the bottom side of sheet goods.

**Thin-kerf blades priced \$35 or less:**

The Freud D1040X was the best-value in the test, scoring within an eyelash of the Craftsman 32808. If you're on a budget, here's a blade that earns an A or B grade in every cut except sheet goods where you'll need a zero-clearance insert for improved bottom-side results.

Find more WOOD® magazine  
tool reviews at:  
[woodmagazine.com/toolreviews](http://woodmagazine.com/toolreviews)



**Thin-Kerf Blades**



Tenryu GM-25540



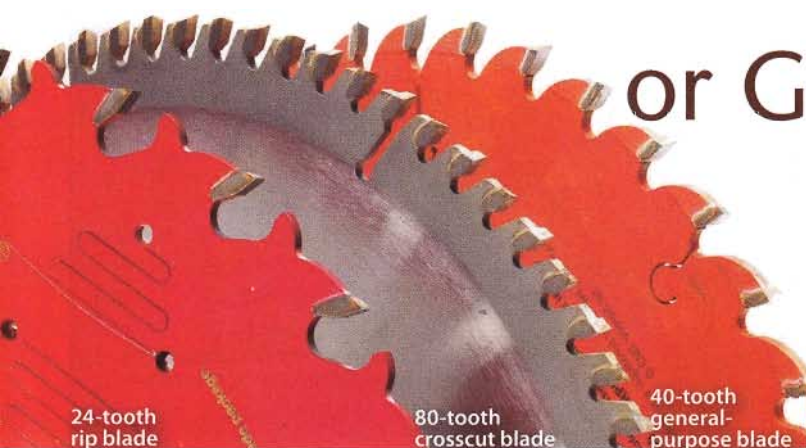
Craftsman 32808



Freud D1040X

# Rip, Crosscut, or General-Purpose:

Which 10" saw blades do you really need?



If you've gone shopping for a tablesaw blade recently, you might have noticed the job isn't as simple as it used to be. Once upon a time, you bought one blade (24-tooth) for ripping (cutting with the grain) and another (80-tooth) for crosscutting—and spent half the day, it seemed, swapping blades on your saw.

Today, manufacturers sell general-purpose 40-tooth blades for tablesaws. They claim these general-purpose blades work just as well cutting with the grain as across it. But there must be a compromise in quality between general-purpose blades and dedicated rip and crosscut blades, right? To find the answer to that burning question, we compared the cuts of all three blade types, from several manufacturers, in solid stock and hardwood-veneer plywood. (A sample of our cut is shown *below*.)



## Our recommendation: Get two blades, not three

When they were sharp, general-purpose blades performed as well as dedicated rip and crosscut blades. As the blades dulled, however, we started to see differences. So, if you work primarily in veneered plywood, a good crosscut blade will serve you well for both ripping and crosscutting those sheet goods. Switch to a sharp general-purpose blade for solid stock.

But if you work in both solid woods and sheet goods, making rips and crosscuts, buy two identical general-purpose blades instead. Install one in your tablesaw, and set the other aside. At the first sign of dulling (burned edges and/or increased feed resistance), switch to the second blade, and get the first blade cleaned and sharpened. That way, you'll always have a fresh blade ready for action. 🌲

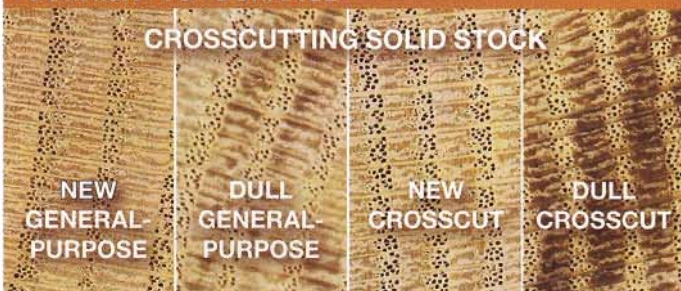
## Three key lessons learned from our tests

### LESSON 1: RIPPING SOLID WOOD? RIP BLADES BURN LESS



General-purpose and 24-tooth rip blades cut red oak cleanly when new. But after dulling them equally, general-purpose blades burned more. We only saw this burning on solid wood; ripping veneered plywood, we observed no edge-burning or chipping of the veneer.

### LESSON 2: CROSSCUT BLADES TURN "BURNISH" TO "BURNAGE"



When cutting across the grain, we found that new 60- and 80-tooth crosscut blades nearly burnished the end grain, with slightly less chipping on the face of the workpiece than general-purpose blades. As blades dulled, however, crosscut blades proved more likely to burn.

### LESSON 3: PLYWOOD CUTS CLEANER WITH A CROSSCUT BLADE



On oak-veneer plywood, crosscut edges chip easily because of the open grain of the thin veneer. New crosscut blades chipped out slightly less than general-purpose blades on top of the cut. When dull, both blades' performance worsened, but proved about equal.

# WOODCRAFT®

For A Free Catalog Or To Find Your Local Woodcraft Store, Visit [www.woodcraft.com](http://www.woodcraft.com) Or Call 800-225-1153.

Visit a Woodcraft store near you to see the new Delta UNISAW Table Saw!



 **DELTA®**

**Delta UNISAW Table Saw,  
3 HP, with 36" BIESEMEYER Fence System  
Model 36-L336**

#### Includes:

- Bi-Level Dust Extraction For Improved Dust Collection
- Single-Cast Trunnion System Provides Increased Accuracy
- Sure-Lock Dual Front Cranks Provide Convenient Access To Dual Front Cranks
- Precision Bevel Gauge For Ease Of Visibility
- Tool-Free Split Guard For Improved Blade Line Of Sight
- 2-Position, Quick Change Guard System For Improved Safety And Functionality
- On-Board Storage Is Expandable And Conveniently Located Underneath The Table Board
- Black Precision BIESEMEYER Fence And Tube
- Black Precision BIESEMEYER Fence Body
- Unisaw Black Table Board 36" BIESEMEYER Fence
- Black 2" x 2" x 34 $\frac{1}{4}$ " Fence Legs
- BIESEMEYER Standard Accessory Drawer
- 5 Year Warranty

**Also available with a 52" Fence  
in 3 HP and 5 HP models!**

109W108P

**QUALITY WOODWORKING TOOLS • SUPPLIES • ADVICE®**

SHOP-TESTED

## Miter Gauges & Sleds

Why spend your hard-earned cash on a miter gauge when one comes free with every tablesaw? Because today's aftermarket crosscut accessories add increased reliability and accuracy—in some cases, down to  $\frac{1}{10}^\circ$ .

Ask any woodworker to tell you the most disappointing thing about a new tablesaw (the blade aside), and you'll probably hear, "the miter gauge." That's because the fenceless, three-stop gauges that come with most saws pale next to aftermarket models that help you cut perfect miters time after time with no trial-and-error testing. With upgrade gauges—and sleds that excel at cutting panels—costing from \$50 to \$360, how do you know which one to buy? To find out, we thoroughly tested 10 aftermarket miter gauges and four crosscut sleds. Here's what we learned.

### First call: Gauge or sled?

As prices of aftermarket miter gauges approach those of sleds, we asked ourselves: "Which type performs best?" Here's how the two styles compare:

■ **Thickness capacity.** With a miter gauge, the workpiece rides on the table saw top, giving you the full capacity of the 10" blade—usually about 3½". The ¾" thickness typical of a sled lessens that capacity. Advantage: miter gauges.

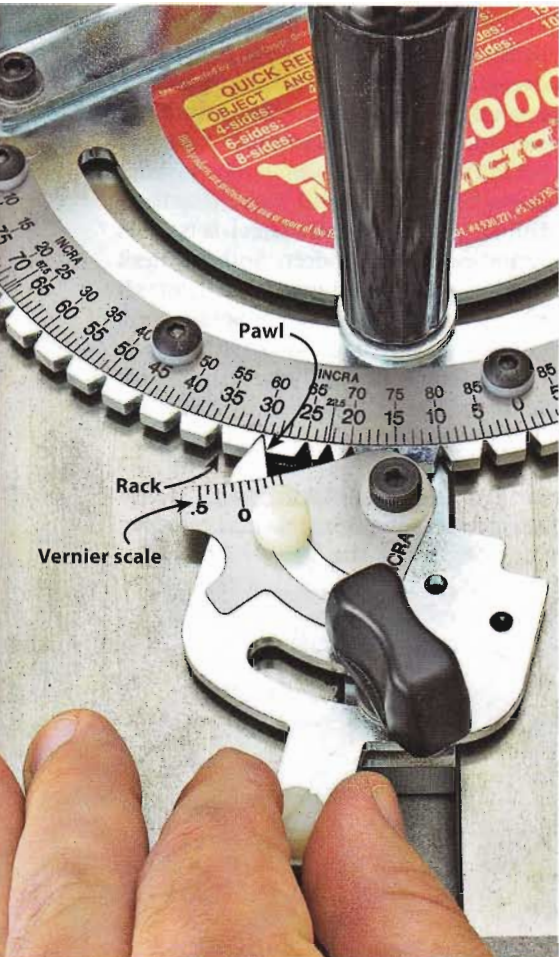
■ **Panel size.** What you lose in thickness capacity with a sled, you more than gain back in width capacity. Miter gauges limit you to workpieces about 13" wide; the expansive surface of a sled more

than doubles that capacity on most models. Advantage: sleds.

■ **Workpiece movement.** Because your workpiece rides on the sled rather than the table, you encounter no workpiece/tabletop friction, which can steer or mar a large piece. Advantage: sleds.

■ **Cut quality.** Most sleds come oversize, and you rip off the excess during setup. That provides a zero-clearance edge for cleaner cuts; but then you can't make bevel cuts using the sled. Toss-up.

■ **Storage.** Sleds often are heavy, and their size makes them more difficult to store than miter gauges. Advantage: miter gauges.



### HOW A RACK-AND-PAWL STOP SYSTEM WORKS

The pivoting pawl on the Incra 1000SE engages rack detents at 5° increments (plus a few other common angles). Without the pawl, the vernier scale slides in to show other angles with .1° accuracy.

### The four Rs of miter scales and stops

■ **Reliability.** After assembling and calibrating each gauge and sled, we tested the accuracy of scales and preset angle stops using a Wixey Digital Angle Gauge (\$40, wixey.com). To cross-check the 45° settings, we also cut four-sided mitered frames in 3½"-wide MDF to check the fit of the joints—a fraction-degree of error here becomes obvious when multiplied across the eight 45° cuts. In all cases, the readings on the miter scales agreed with the Wixey, and the 45° cuts yielded well-fitted joints.

Except for the ProMiter 100, which has no stops, all of the miter gauges and sleds have stops at common miter angles such as 45°, 30°, and 22½°. Some have many more. The stop systems consist of various mechanisms: rack-and-pawl (shown above), pin (right center), or ball

detents (not shown). All proved reliable in our testing.

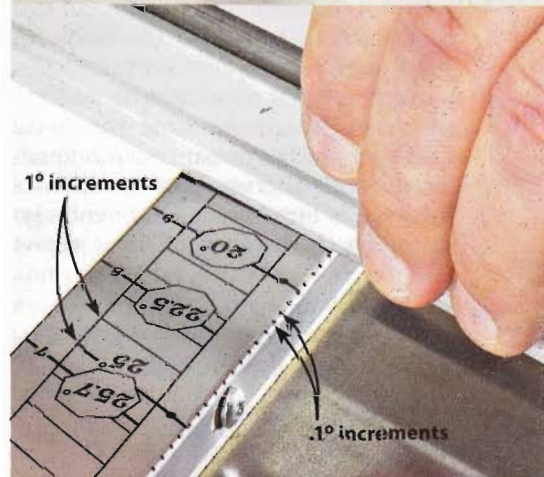
■ **Repeatability.** On nearly all of the miter gauges and sleds, you're free to set any miter angle you want (except the Rockler Sure-Loc, which can be set only in 1½° increments). But how precisely can you return to it? The ProMiter 100, at right, displays the miter angle on an easy-to-view digital readout accurate to .1°, making it quick to set any angle repeatably. JessEm's MiterExcel provides positive miter stops every ½° throughout its range, and adds a vernier scale (right center) to achieve that same .1° precision. Jointech's SmartMiter sled has ½° stops, too; Incra's 1000SE and Kreg's KMS7102 also sport .1° vernier scales.

But you don't need hundreds of stops or a digital display to get reliable repeatability. The widely spaced increments on the edge of the Dubby Board make it easy to eyeball fractional degrees, as shown at bottom right. Oddly, Woodhaven's 4954K sled has no miter scale at all, so except for its stopped angles (0°, 11¼°, 15°, 22½°, 30°, and 45°), you need a protractor to set other angles. (Woodhaven sells an accessory to assist.)

■ **Readability.** The scales on most models are easy to read and intuitive, with one exception: Rockler's 1½° increments with 4½° major divisions proved confusing, except for marked angles such as 22½° and 45°. Rockler's Steve Krohmer calls this limitation "more theoretical than practical. Sure-Loc handles more than 95 percent of all real-world cutting applications, and the repeatability and accuracy—especially at this pricepoint—are exceptional."

■ **Range.** Although your saw's factory-supplied gauge likely maxes miters at 45° clockwise and counterclockwise, 50° is more the norm for these gauges and sleds. That gives you room to counter an out-of-square corner. The Incra 1000SE, Sure-Loc, and Woodhaven 4996K can rotate up to 90° in both directions—parallel to the blade. Actually, you'd never do that, but the extra range does give you the capacity to cut steep angles, such as when making a scarf joint.

Sleds fall short here. The Dubby can't rotate counterclockwise from 0°, and both the Delta 36-205 and Woodhaven 4954 require some disassembly to hit the opposite 45° range. Only the Jointech sled can cut 45° both directions out of the box. But you pay for it with reduced crosscutting capacity—only about 13" of sled in front of the fence.



### THREE WAYS TO .1° ACCURACY

ProMiter's bright LED readout (top) displays the miter angle without any second-guessing. JessEm (center) uses two pins: The first locks in a 5° range, the second secures a specific .5° increment within that range. For .1° accuracy, pull the second pin, and read the vernier scale. The scale on the edge of the Dubby sled (bottom) is marked in .1° increments; you can eyeball smaller fractions from there.



### SPLIT BAR HAS SPLIT PERSONALITY

To fit Rockler's split miter bar to a saw, simply spread the top and bottom portions to fill the slot, and then secure the locking screw. But on T-slots, you can't lift the bar out mid-slot.

### Passing the bar examination

Remember using a hammer and punch to "peen" the miter bar on your factory-supplied miter gauge to get a slop-free fit between the bar and miter slot? No longer. You can custom-fit the bars on today's miter gauges and sleds to your saw's miter slot with a few turns of a hexhead wrench or screwdriver.

As a rule, we prefer top-adjusting miter bars because those that adjust from the side require trial-and-error fitting. For example, fitting the bar of

Delta's 30-plus-pound 36-205 sled turned into an exercise—literally. The exception to the rule is Dubby's spring-loaded plungers that self-fit, meaning we didn't have to adjust them.

Of the top-adjusting bars, JessEm's brass bearings should wear less than the nylon bearings or steel setscrews found on other models. And Rockler's unique split bar, shown at *left*, maximizes bar-to-miter-slot contact for good control. But on tablesaws with T-style miter slots, it can only be installed or removed from the end of the slot.

### Here's where we sit on the fences

Each gauge and sled comes with an extruded aluminum fence, except for the Incra V27, where it's optional. All of the fences proved straight and true in our tests.

Most of the models have measuring tapes for use with their length-stop systems. When calibrated to your blade, these make accurate, repetitive length cutting a no-brainer. For the ultimate in repeatability, the Incra 1000SE and Jointech both use interlocking rack systems on their stops that engage in precise 1/32" increments. Need to dial in an exact length somewhere in between? Micro-adjustments found on the Incra 1000SE, JDS Accu-Miter, Woodhaven 4996K, and Dubby afford that luxury.

Except for the Jointech fence, all can be repositioned close to the blade for good workpiece support on miter cuts. Jointech's design eliminates the need to move the fence each time you make such cuts, and the nuisance of recalibrating the scale afterwards. Kreg addresses this type of bugaboo in a different way: A stop on the back of the fence allows

you to relocate the fence to its calibrated location instantly.

We found three styles of length stops on the tested gauges and sleds:

- **Sliding block.** This simple stop rides in a slot on the fence face.

- **Flip stop.** This pivoting stop manually rotates up and out of the way for making that first cleanup cut to square the end of a board. Then it flips back down against the fence for the final cut.

- **Bypass stop.** This functions like a flip stop, but nudging a workpiece against the curved stop, as shown at *right*, lifts it out of the way so you don't have to.

The downside of most bypass and flip stops is that the point of a mitered cut can slide past the stop, lifting it away from the fence face and rendering it inaccurate. The designs of the stops on the Incra and Jointech fences prevent angled ends from sliding by.

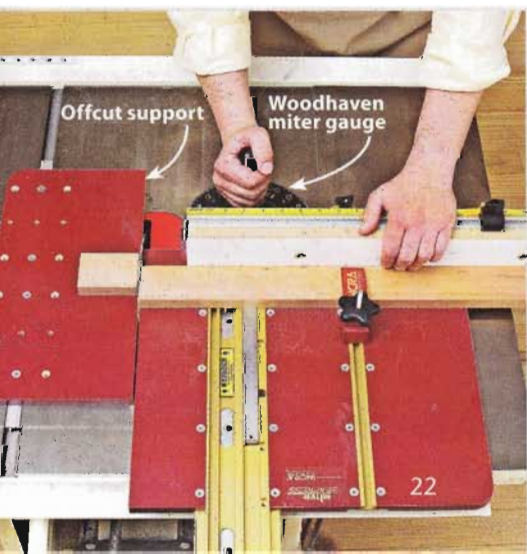
Whether by clamps or T-slots, you can mount a wooden face on any of the fences to prevent back-side tear-out on cuts. Woodhaven's 4996K even comes with an auxiliary wood face, and the Dubby includes a sacrificial wood block on the cutting end of the

aluminum fence. Adding that fence face on most models, though, prevents you from using the length stops. The Incra 1000SE and Kreg are the exceptions here: Their stops can reach over a 3/4"-thick auxiliary fence.



### FOR DOUBLE CUTTING, TAKE THE BYPASS

Kreg's bypass stop allows a workpiece to slide under to make a quick squaring cut; then drop back into place for the final cut. The breakaway section detaches to accommodate a 3/4"-thick auxiliary wood-fence face.



### Upgrade a good gauge to a sled

If you've already spent money on a step-up miter gauge and now wonder if you should have bought a sled instead, you're in luck. You can install any miter gauge in Incra's Miter Express, shown at *left*, and—poof!—instant miter sled! And with a couple of quick screw turns, you can again use your gauge without the sled.

Upon initial setup, you zero-clearance-cut the edges of both the sled and the offcut support to fit your saw, just as you would with the dedicated sleds in our test. The offcut support keeps the offcut from

bouncing back into the spinning blade. Here's another benefit: Because you can replace the zero-clearance panel on the sled itself, you can keep different panels on hand for different cuts (one for 45° bevels and another for your dado set, for example) and swap them out as you need them.

Miter Express sells for \$111, or with the Incra 1000SE miter gauge we tested, for \$260. We think it's a great way to improve the cut quality and crosscut capacity of any miter gauge. 🌲



**NEW!**

# Accurate Track™



Shows 10" cabinet saw, Accurate Track™ and out feed table.



Trim or crosscut 48" wide material accurately.



Shows guide bar of crosscut sled engaging Accurate Track™.



- Increases accuracy
- Adjusts precisely
- Increases guidance by 6 inches
- Allows use of oversized fixtures & jigs
- Patent pending

VIEW OUR VIDEO DEMO:  
[accurate-track.com](http://accurate-track.com)  
 800.880.9976  
 CALL TODAY!

## Put the world's best woodworkers in your pocket

What if you could have the world's best woodworkers teaching you in your shop?

**Now you can!**



Paul Schurch



Judy Gale Roberts



Marc Adams



Mike Mahoney

Learn joinery from **Marc Adams** ...Tablesaw tips and tricks from **Gary Rogowski** ...  
 Veneering and marquetry from **Paul Schurch** ...Woodworking secrets from **Jim Heavey** ...  
 Turning from **Mike Mahoney** ...Intarsia from **Judy Gale Roberts** ...  
 Super-simple finishing from the **Wood Whisperer** ...

# Better Woodworking

**WOOD** Magazine's Video Library

Shop for dozens of downloadable videos from top woodworkers.

View them any time on your computer, or take them with you on your iPod or other portable media player.

[woodmagazine.com/videos](http://woodmagazine.com/videos)

# Tablesaw Rip Fences

## Key Factors for Picking a Good Rip Fence

The fence that came with your saw may not be top quality. Here's what to look for when you upgrade to a full-featured model.

**1** **Consistently locks parallel to the blade.** A fence that veers away from the blade when locked results in a wider kerf and requires more power; one that pulls toward the blade pinches the workpiece between the fence and blade, causing poor-quality cuts, burned edges on your stock, and, at worst, dangerous kickback.

**2** **Minimal deflection.** If the fence strays from parallel when the pressure's on—when ripping large sheet goods, for example—your cuts may not be straight, and may exhibit scoring from the blade teeth. Worse, the fence may spring back when you relax the pressure momentarily, burning the edge and raising the risk of kickback.

**3** **Faces are perpendicular to the tabletop.** For thick workpieces, or those that are cut on edge (such as tablesawn raised panels), the fence face must be square to the table. Fences provide a reliable mechanism for this alignment.

**4** **Flat faces.** Again, it comes back to poor cut quality and kickback if the face bows toward the blade. If it bows away, your cut may be curved instead of straight and true.

Vega U50: \$319

### High points

- ◆ Very smooth slide on its round steel rail, and leveling screws are handy when setting the rail to the correct height.
- ◆ Level locking microadjuster is more intuitive and easier to use than ratcheting knobs.
- ◆ Fence faces come predrilled for mounting accessories, and the back of the fence hooks on the rear rail to keep it from lifting off the table when using vertical feather boards.

### Low points

- ◆ When we moved the fence left of the blade, the out-of-parallel right fence face caused stock to pinch between the fence and blade.

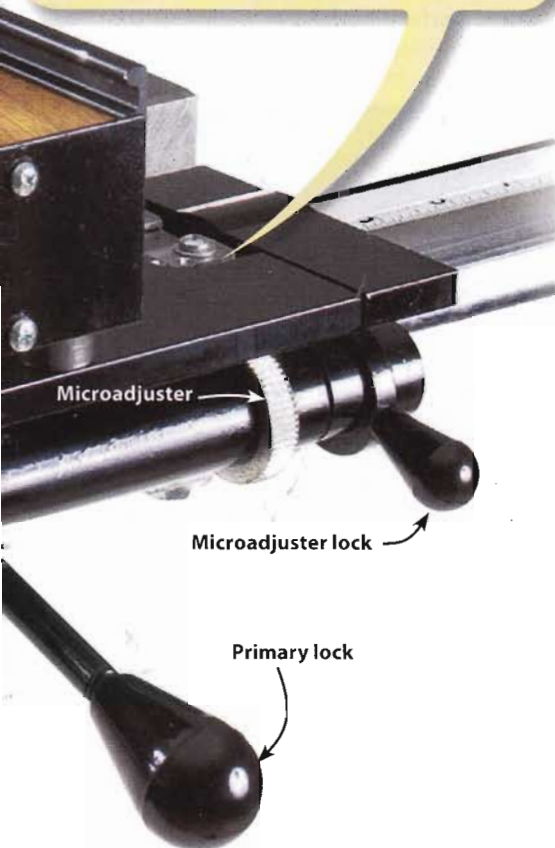


800-222-8342, [vegawoodworking.com](http://vegawoodworking.com)

If you're still measuring between your table saw's blade and fence before every cut, just to be sure, a new rip fence may be in your future. A high-quality fence gives even an inexpensive contractor-style saw the precision and convenience of a saw costing nearly twice as much. But how do you decide what fence to buy?

Manufacturers offer multiple fence configurations and rail lengths, from 30" to 52" rip capacity. Many fences come in both home shop (also called "contractor" or "utility") and commercial (or "pro") versions. The commercial versions of these fences typically have longer faces (by about 5") and beefier bodies and rails. And they cost \$30-\$70 more than their home-shop brethren. If you frequently work with heavy sheet goods, or use your table saw all day every day, consider going commercial.

**5 Easy-to-read scale.** Most scales have large print and are marked in  $\frac{1}{32}$ " increments for the first 12", with  $\frac{1}{16}$ " increments for the dimensions above 12". A dual-hairline cursor tells you when your eye is properly aligned for precise reading. See the photos, *above right*, for two examples of notable scales.



### Three more considerations

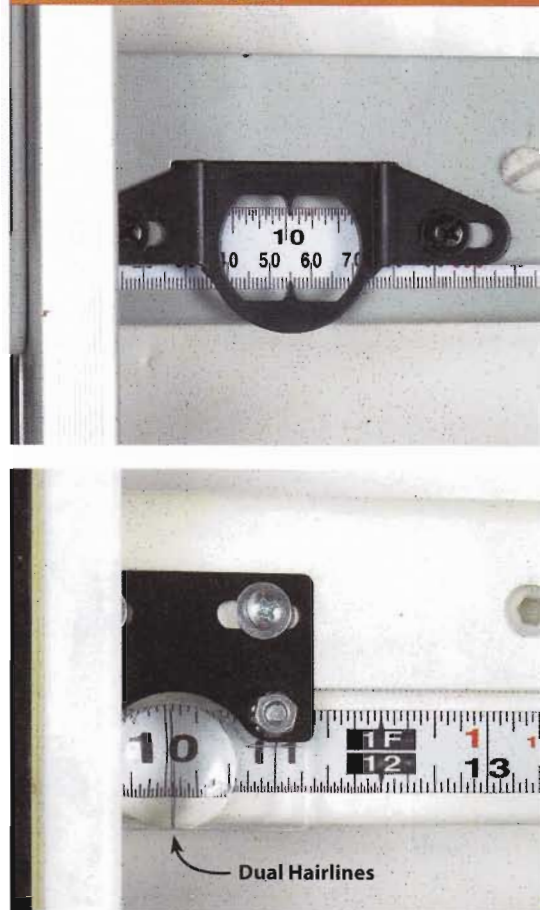
■ **Microadjustability.** Some fences have microadjusters for fine-tuning their location. With most of these systems, you temporarily hold the fence in place with its microadjuster lock, tweak the fence's location by rotating a knob or thumbwheel, then secure the primary fence lock. A few move the fence in precise .001" increments for repeatable accuracy; others employ a screw drive for continuous adjustment.

■ **Smoothness of travel.** Front-locking fences can be adjusted for smoother travel, but this adjustment must be balanced with the resulting increase in deflection.

■ **Installation.** Fences will fit most contractor- or cabinet-style saws; it just depends on how much work you want to do. The most common spacing of fence-mounting holes on today's table saws is 16" on center, and more than half of the fences bolt onto such a saw without your having to drill the top. The rest may require boring holes into the top, the mounting rails, or both.

If you already have  $1\frac{1}{2} \times 2\frac{1}{2}$ " or  $2 \times 3$ " tube-steel rails on your saw, you can save time and serious money (\$100-\$150) on some models by buying the fence only and using your saw's existing rails. Call the manufacturer or visit its Web site to see whether this is an option. 🌱

### GOOD SCALES MAKE SALES



The  $\frac{3}{16}$ " distance between the top scale and its stamped-steel cursor invites error: Viewed slightly from the left, you can't tell that the cursor is set on the 10" mark. Dual hairline cursors—one above the other—(bottom) become one when you look straight down.

### Our top-tested fence: Biesemeyer 52" Commercial, \$545



#### High points

- ◆ Earned high marks across the board, with low deflection.
- ◆ "Universal" mounting bracket comes predrilled to fit a variety of saws, making it one of the fastest to install. (Call the manufacturer or visit its Web site for specific models.)

#### More points

- ◆ There's no way to adjust the face perpendicular to the tabletop, but we didn't need to—it was perfectly square to the table out of the box.



800-438-2486, [deltaportercable.com](http://deltaportercable.com)

# What to Look For in a Dado Set

**W**hen a woodworking project calls for a dado, groove, or rabbet, your best option may be a dado set. Although a router and straight bit will also do the job, you'll often find that they require multiple passes to achieve the necessary width or depth, with each additional pass inviting error. On the other hand, with a dado set installed in your tablesaw, you can cut most slots precisely with only one pass using your saw's rip fence instead of setting up a straightedge.

But, with dado sets ranging from \$30 to \$300, how do you know which one is right for the work you do? To find out, we put a pile of carbide-toothed sets—both stacked and adjustable—to the test. We quickly learned that nearly all adjustable sets (sometimes called “wobblers”) simply don't make cuts clean enough for cabinet-grade woodworking. (See *below*.)

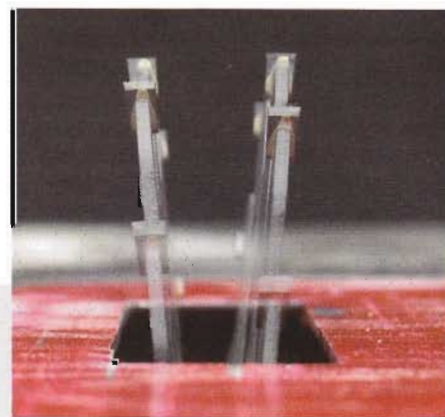


In a recent test, *WOOD*® magazine's deputy editor, Dave Campbell, compared results from stacked versus adjustable dado sets.

## Here's what to look for

Woodworkers demand four key performance characteristics from their dado sets: clean edges, square shoulders, ridge-free bottoms, and minimal scoring (V-shaped grooves in the dado corners created when the outside blades cut deeper than the chippers). However, perfection in all of the areas is rarely required. Depending on how you use a dado set, you might be able to save money by purchasing one that performs best in only the ways you're most likely to use it. So, for example, if you work mostly in solid woods, don't pay the extra money for the sets that cut well in plywoods and laminates.

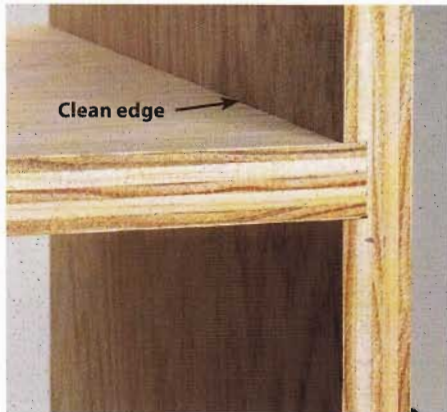
To help you sort it all out, we'll show the four primary dado uses, and the critical performance characteristics for each use.



## How a “wobbler” works

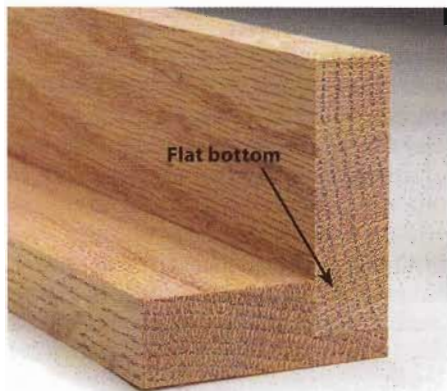
Instead of having two outside blades and multiple chippers, a wobbler has just one or two blades, sitting cockeyed on the saw arbor, to cut a side-to-side path as it spins. The distance between the blade path extremes, shown at *right*, is the width of the dado. In our testing, we've found these designs inadequate for quality woodworking, because they leave tattered edges on plywood and ridges in the bottom of the dado.

That's not to say that adjustable sets don't have a place in your shop. For instance, most are inexpensive—in the \$25–\$40 range. They work fine for applications that aren't critical, such as tenoning for fence rails or half-laps in construction materials. Save your expensive dado set for precision work, and use an adjustable or other low-cost set for rough work.



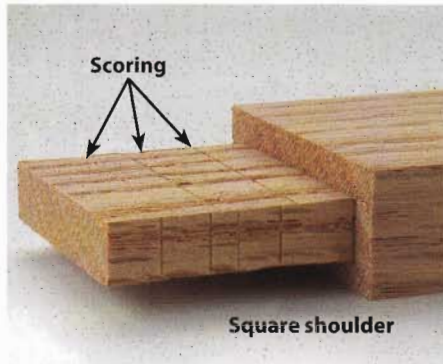
### Shelf dados in plywood or melamine

Getting a clean edge is the top priority for these cuts. The outer veneers on today's plywoods are thinner than ever, making them more brittle and subject to severe tear-out, especially when cutting across the grain. Brittleness also factors in with melamine-coated particleboard, which tends to chip out badly when cut with a dado set having fewer than 46 teeth per outside blade. Less critical is the depth of the scoring grooves. In most cases, solid-wood edge-banding will hide any imperfections.



### Rabbets and dados in solid stock

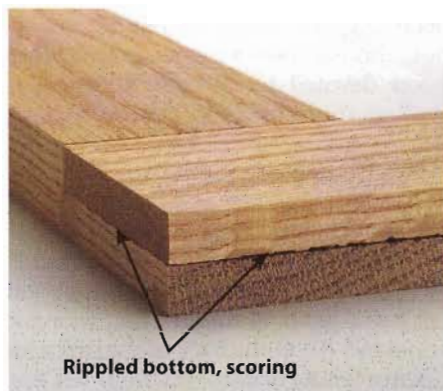
With no brittle veneer to be concerned about, you can achieve clean edges in solid wood with most sets. However, because most rabbets, dados, and box-joint fingers in solid stock remain visible on the finished project, flat bottoms and shallow scoring cuts take on high significance.



### Tenons

Square shoulders and clean edges are key to first-rate tenons. Scoring in the corners means little, because the cut surface will be completely hidden with the assembled joint. (Some woodworkers argue that a little scoring is actually a good thing here, as it provides a place for excess glue.)

Ridges on a tenon can be a bit more problematic, creating less surface area for adhesion within the joint. But in the *WOOD*® magazine shop we like to cut tenons just a hair oversize, then sand them to a good fit. This process lessens the importance of flat-bottomed dados.



### Half-lap joints

Arguably, half-lap joints provide the ultimate test of a dado set because without square shoulders, flat bottoms, and clean edges, the joint looks bad at best, and lacks strength at worst. Rippled bottoms mean less gluing surface and, unlike with tenons, sanding isn't a good solution. Scoring grooves show up on both exposed edges of the joint, so you can't hide them.

### More findings from our experience

■ Some sets have chippers with four or more teeth. (Two teeth per chipper used to be standard.) These sets balance better when more than one chipper is installed. On two-tooth chippers, distribute the chipper teeth evenly around the hub when using more than one chipper.

■ Many sets include a  $\frac{3}{32}$ " chipper to more readily cut dados to fit plywood, which is typically  $\frac{1}{32}$ " thinner than its stated thickness. You just substitute this special chipper for a  $\frac{1}{8}$ " chipper in your stack. Again, it's quicker (and cleaner) than adding  $\frac{3}{32}$ " of shims.

■ If mishandled, steel shims can become inaccurate—a careless bend will never flatten out completely. Plastic shims and tempered-steel shims resist such accidental damage. Magnetic shims stay in place on the blade or chipper without fear of dropping them into the saw while installing the set.

■ While 8" dado sets are most common, the 1"-depth capacity of a 6" set may be plenty for the kind of work you do. Although you can't assume equal results with smaller-diameter blades, we've found over the years that a company that makes a quality 8" set also makes a quality 6" set. As you might expect, the smaller sets cost a little less, too.

■ Make sure your saw's rip fence is set parallel to the blade, and keep it there. Some woodworkers like to set the back of their fence a little farther from the blade to reduce the likelihood of kick-back, but we have found that the practice contributes to poor cuts with a dado set. 🌲



Watch a FREE 5-minute video on perfect-fitting dados at: [woodmagazine.com/deadondado](http://woodmagazine.com/deadondado)

# Tablesaw Accessories

Even an old beater can perform like a high-performance machine if you trick it out properly. Here are our favorite products for doing just that.



For most woodworkers, the shop revolves around the tablesaw. So pump up that machine to work its best. Usually, this requires upgrading factory parts with aftermarket add-ons, such as the miter gauge *above* or a miter

sled described on *page 20*. We also describe aftermarket tablesaw fences in detail on *page 24*. But with hundreds—if not thousands—of catalog and Web pages devoted to tablesaw accessories, finding the right ones can be a crap-

shoot. To help you out, we shop-tested dozens of today's greatest tablesaw add-ons and winnowed the list down to these items most deserving a spot in your shop. (Prices shown do not include shipping, where applicable.)



## Digital Angle Gauge, \$40

Wixey  
wixey.com

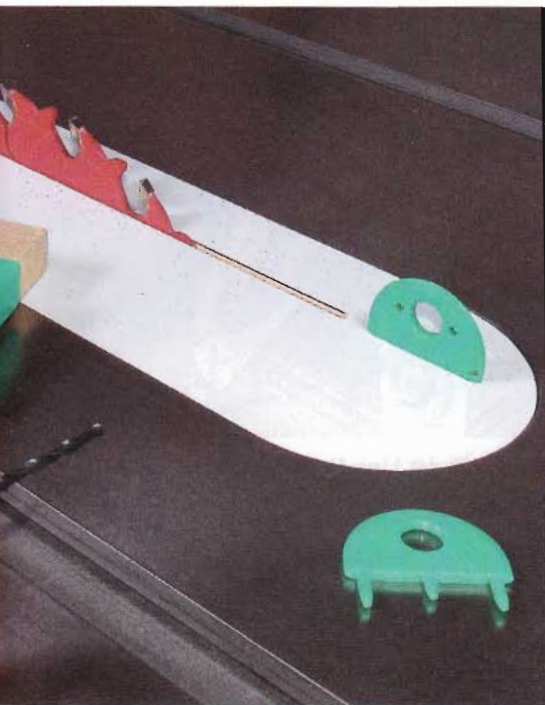
To check your blade-bevel angle, first set the digital angle gauge on your tablesaw top and “zero” it. Then, stick it on the side of your blade, and tilt the blade. The digital display shows the blade tilt accurate to 0.1°. Your tablesaw doesn't even have to be level for it to work: The gauge measures how the angle differs from the surface where it was zeroed.

## Outfeed Rollers, \$335

HTC (model HOR-1038U)  
800/624-2027, [htcproductsinc.com](http://htcproductsinc.com)

We've had HTC's 37"-wide Outfeed Rollers on the cabinet saw in our shop forever. They provide at least 48" of stone-solid workpiece support behind the blade, making it easier to rip long and wide pieces such as sheet goods. Yet, they add only about 10" to the back of the saw when folded down—no tools needed—when we need more floor space.





### MJ Splitters, \$20

Micro Jig, Inc.  
407-696-6695, [microjig.com](http://microjig.com)

Most serious tablesaw accidents result from kickback (when the rising teeth at the rear of the spinning blade lift and launch the workpiece back at the operator). Splitters prevent kickback, but if you put your factory guard on the shelf, you give up the protection provided by its splitter. MJ Splitters mount on zero-clearance throat-plate inserts you buy or make yourself. (Learn how at [woodmagazine.com/zeroclearance](http://woodmagazine.com/zeroclearance).) The slightly off-center mounting pins allowed us to rotate the splitter 180° to actually press the workpiece against the fence. It's like having a tiny feather board for the "keeper" behind the cut. Use the green splitters with your full-kerf blades; use yellow splitters with thin-kerf blades.

### GRR-Ripper, \$70

Micro Jig, Inc.  
407-696-6695, [microjig.com](http://microjig.com)

We balked, too, when we saw the price tag. \$70...for a pushblock? But we had to use the GRR-Ripper system only once to realize its value far exceeds its price tag. The "tunnels" created by the fixed outside legs and repositionable middle leg allow the GRR-Ripper to pass over the blade without damage while keeping your hand well away. Just as important, those grippy legs provide equal pressure on both pieces as you feed, further reducing the likelihood of kickback. For ripping stock less than 3" wide, we lowered the black outrigger to tabletop level, as shown at right, and handled narrow workpieces—even as narrow as 1/4"—with safety and confidence.



### Hold-downs, \$40

Shown: Grip-Tite, Mesa Vista Design  
800-475-0293, [grip-tite.com](http://grip-tite.com)

Every tablesaw (and router table, for that matter) needs a good set of hold-downs and hold-ins, such as feather boards, to keep the workpiece flat on the table and tight against the fence. The hold-downs shown here mount on the side of the fence and feature roller "feet" that allow the workpiece to glide past while holding it down.



### Flip-Top Portable Work Support, \$30

Ridgid (available at The Home Depot)  
800-474-3443; [ridgid.com](http://ridgid.com)

If you don't have a cabinet saw, Ridgid's Flip-Top stand makes a great extra hand in the shop. We found that its tilting top gently guides a sagging workpiece up to tablesaw-top level, so we could set the Flip-Top a few feet behind the saw for outfeed support without fear of knocking it over. We tried. Repeatedly. (The large 21x25" footprint helps, too.) This inexpensive support is stingy on storage space, folding to only 3 1/2" flat.



### Sub-Fence Hole Clamps, \$25/pair

Mesa Vista Design  
800-475-0293, [grip-tite.com](http://grip-tite.com)

Traditional clamps always seem to get in the way of the workpiece when you use them to temporarily mount an auxiliary fence face. (And we just hate driving screws into a perfectly good fence if we can avoid it.) Sub-Fence Hole Clamps fit into holes you drill into the top edge of your auxiliary fence face. Use just one Hole Clamp to add a stop-block to your rip fence to gauge repeated crosscuts.

### PALS (Precision Alignment and Locking System), \$20

In-line Industries  
800-533-6709, [in-lineindustries.com](http://in-lineindustries.com)

Own a contractor-style tablesaw? PALS may be the best 20 bucks you'll ever spend. After a quick 10-minute installation (PALS replaces the rear trunnion bolts on your saw), you just turn a screw to align the blade parallel to your saw's miter slots. The process is much more civilized—not to mention accurate and cleaner—than lying on the floor whacking your trunnions with a mallet.



### Universal Mobile Base, \$100

HTC (model HTC-3000)  
800-624-2027; [htcproductsinc.com](http://htcproductsinc.com)

HTC has made smooth-rolling mobile bases for many years, and now they've added foot-operated wheel locks on the fixed casters, making it unnecessary to stoop over to tighten knobs. What we found really handy, though, is the foot-

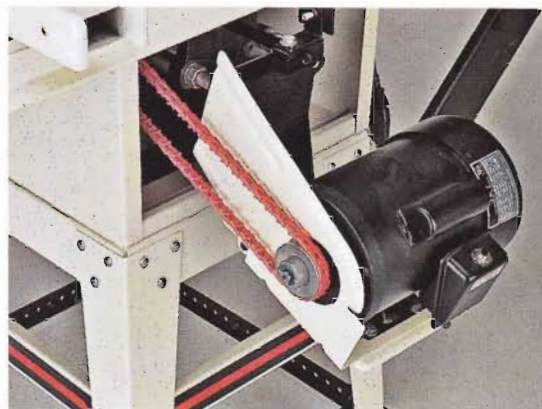
pedal locks that lift the swivel-caster end to keep the machine from shimmying while we worked. (Those locks also retrofit some older HTC bases, if you want to upgrade.) We've listed just one base for pricing purposes, but you'll find these orange pedals on HTC's full line of universal and custom-fit bases.



### Retracting Casters for Contractor-Style Saws, \$45 (set of four)

Woodcraft (item no. 141550)  
800-225-1153, [woodcraft.com](http://woodcraft.com)

For less money than a full-blown mobile base, you can add wheels and stoop-free locking to a contractor-style saw (or virtually any other machine with splayed steel legs). Stepping on the spring-loaded lock lever on each Retracting Caster lifts the saw's leg about 1/8" off the ground; step on it again, and the saw rests on its own feet for a rock-solid foundation. Our favorite part: The ball casters swivel 360°, so we could move the saw any direction without having to jockey it into its parking space.



### Power Twist Link Belt, \$8.50 per foot

Rockler (item no. 52233)  
800-279-4441; [rockler.com](http://rockler.com)

If your contractor-style saw sits idle much of the time, its drive belt will stiffen into an oblong shape. That can make your saw as jittery as a chihuahua chugging espresso. A Power Twist Link Belt tames the vibrating beast because it conforms to the drive pulleys like a bike chain to a sprocket, so it never sets into that oblong shape. Also, like a bike chain, you can loosen or tighten the belt by adding or removing links.

### PG2000 Penetrating Lubricant, \$8

ProGold Lubricants  
800-421-5823, [progoldmfr.com](http://progoldmfr.com)

We used to recommend white lithium grease for lubricating the gears that control the blade tilt and elevation mechanisms. For the past couple of years, though, we've been lubing the saws in the *WOOD*® magazine shop with PG2000. Unlike heavy-bodied grease that turns sawdust into a gummy paste, PG2000 sprays on like water, and bonds with the metal to create a low-friction barrier between parts. Dust doesn't stick to it, so it won't cling to bevel stops, where it can render them inaccurate. 🌿

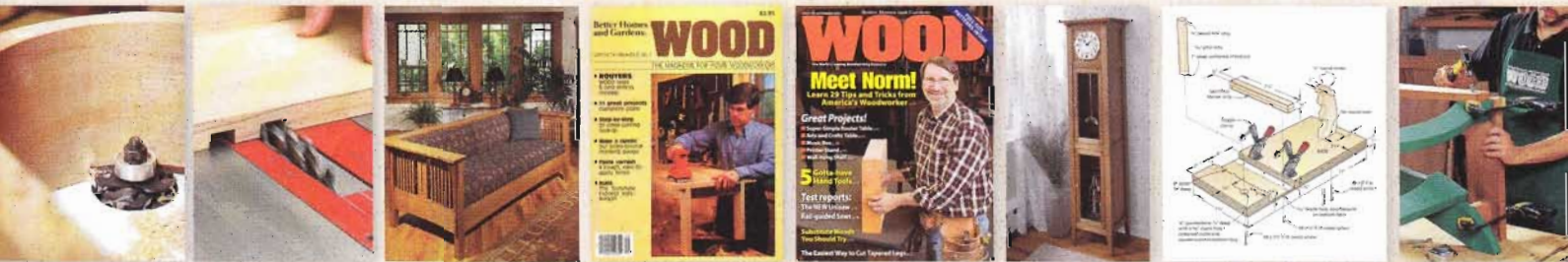




# Every issue. Every project. Every tip & technique.

Special  
**25th**  
Anniversary  
Offer

The Complete **WOOD**® Magazine Collection on DVD.



For the first time ever, you can own every issue of **WOOD** magazine from the past 25 years in an easy-to-use, easy-to-search DVD format.

- Thousands of Shop Tips
- 1,100+ projects with detailed instructions
- Hundreds of woodworking techniques

Each high-quality DVD contains five years' worth of **WOOD** magazine.

**Volume 1** — 1984–1989      **Volume 3** — 1995–1999  
**Volume 2** — 1990–1994      **Volume 4** — 2000–2004  
**Volume 5** — 2005–2009

Buy only the discs you need to complete your collection, or get all 195 issues for one low price. **The more you buy, the more you save.**



Any DVD for \$49.95  
Two DVDs for \$89.95 (**save \$10**)  
Three DVDs for \$119.95 (**save \$30**)  
Four DVDs for \$139.95 (**save \$60**)  
All five DVDs for \$149.95 (**save \$100**)  
plus shipping & handling

**BEST VALUE!**  
Like getting  
2 DVDs **FREE!**

Preorder online at [woodmagazine.com/DVDlibrary](http://woodmagazine.com/DVDlibrary) or by phone at **888-636-4478**

Volumes 1 to 4 will ship in August 2009.

Volume 5 will ship in November upon completion of the final 2009 issue.

WD0909

# Master the Basics

Get familiar with your tablesaw by mastering the fundamentals: Tune it up, use basic accessories, adopt good safety measures, and avoid common snafus.

## Tuning Up Your Tablesaw

**P**roperly tuned, a tablesaw is one of the most accurate machines you'll ever operate. Timely tune-ups ensure cuts that are right on the money, and promote safety by eliminating most of the causes of dangerous workpiece kickbacks.

### Start by gathering up your tune-up tools

You probably already have all or most of the basic tune-up tools: 8" and 12" plastic drafting triangles, a 4' level or aluminum rule, a set of SAE or metric wrenches (depending on the type of screws and bolts used on your machine), spring or C-clamps, and several pieces of scrap stock. You'll also need a set of feeler gauges for checking clearances. You can buy these pocket-size sets of thin metal blades in .001" increments at auto parts stores and some hardware stores. These sets cost only a few dollars each, so it's a good idea to have an extra set or two for use as precision shims, too.

That's the low-tech list. For greater precision, consider investing in a dial indicator such as the A-Line-It (\$145 from In-Line Industries, 800-533-6709, or [in-lineindustries.com](http://in-lineindustries.com)).

Dial indicators measure dimensional differences as small as .001"—about one-third the thickness of a human hair. Accessories that come with the A-Line-It let you configure the indicator to perform many different tasks on several machines.



For tuning up a tablesaw, or any other saw that uses a 10" circular blade, you also might want to purchase a calibration plate like the one shown *above*. These are precision-ground blades with no teeth to get in the way of your measurements. A calibration plate also doubles as a disc sander. (Freud Calibration and Sanding Disk,

no. CD010, \$28. Call 800-472-7307 or visit [freudtools.com](http://freudtools.com) to find a dealer.)

### A few opening procedures

Begin your tune-up by unplugging the saw. Remove the blade so the blade, arbor flange, blade washer, and arbor threads can be thoroughly cleaned and inspected. (If you're not sure about the

position of these parts, see the drawing at *right* titled "Aligning the Drive Pulleys.") Now, rub the blade washer and nut lightly across a sheet of 320-grit abrasive. For best results, mount the abrasive to a flat surface such as a piece of plate glass. Any burrs or high spots will show up as bright, shiny areas. These should be flattened with emery cloth or a whetstone.

Also, check the blade's arbor hole, using a finger to feel for burrs. Remove the burrs using a small whetstone. The same goes for any nicks or burrs you detect on the arbor flange.

Finally, if you have a contractor-style saw, check and tighten all of the stand's nuts and bolts to eliminate rattles.

## The nine steps to a perfectly tuned tablesaw

Now you're ready to get that saw in tune. Because each of these adjustments depends on the one that goes before it, make them in the order described here.

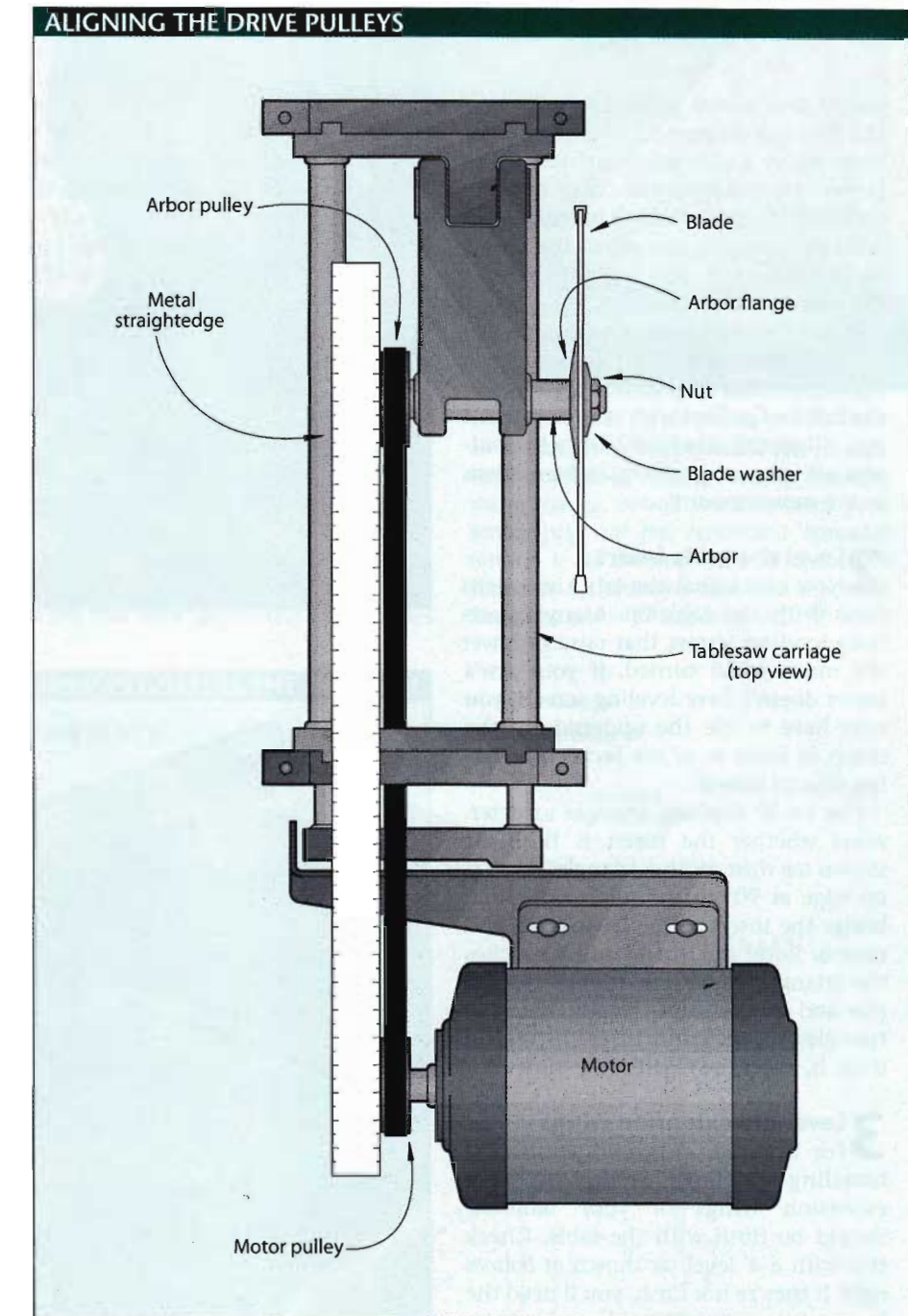
### 1 Align the drive pulleys

If you have a direct-drive saw, you obviously can skip this step. Multi-belt cabinet saws rarely go out of alignment, either. But contractor-style models, which have a motor that hangs from the back of the saw turning a long belt, are prone to vibrations that transmit directly to the blade.

Before you tune up any machine, examine its belts, pulleys, and bearings. Check belts for cracks, fraying, and wear. If the top of a belt is more than  $\frac{1}{8}$ " below the edge of the pulley, replace it.

Even if the belt looks okay, remove it and inspect the pulleys. Look for a shallow groove on the pulley's inside bevel where the belt makes contact. If you can feel a ridge between this groove and the portion of the pulley that does not contact the belt, replace the pulley. Worn pulleys shorten the life of your belts and bearings, and sometimes cause annoying vibration as well. As long as you're buying new pulleys, consider replacing the old ones with machined and balanced pulleys.

Finally, before you reinstall the belt, spin all bearings. They should turn



smoothly and silently, with no detectable back-and-forth movement. A dial indicator can tell you the precise amount of movement. It should be 0. Up to .001" is acceptable, but keep an eye on the bearings because any play at all causes bearings to wear faster.

Now, check the motor's pivoting base. Its job is to tension the belt, and the pivot should only be free enough to let the motor swing downward as the blade lowers and upward as it rises.

Next, if space permits, lay a straight-edge against the outer edges of the arbor

pulley and motor pulley, as shown in the drawing on *page 33*. If both sides of each pulley touch the straightedge, the pulleys are in alignment. If one or more points of the pulleys don't make contact with the straightedge, adjust the motor or pulleys until the straightedge lies flush against both pulleys.

If you can't maneuver a straightedge into your saw, align the pulleys by eye. Crouch behind the saw and sight along the belt and pulleys with your dominant eye. (Close the other one.) Once the pulleys are aligned properly, tighten them or the motor mount.

### 2 Level the table insert

Now check that the table insert fits flush with the tabletop. Many inserts have leveling screws that raise or lower the insert when turned. If your saw's insert doesn't have leveling screws, you may have to file the underside of the insert to lower it, or use layers of masking tape to raise it.

Use an 8" drafting triangle to determine whether the insert is flush, as shown *top right*. With a triangle, stand it on edge at 90° to the miter slot. First, bridge the insert at the front edge, and raise or lower the insert until it touches the triangle. Move the triangle to the rear and do the same. Finally, slide the triangle over the entire insert. If you feel it catch, lower the insert some more.

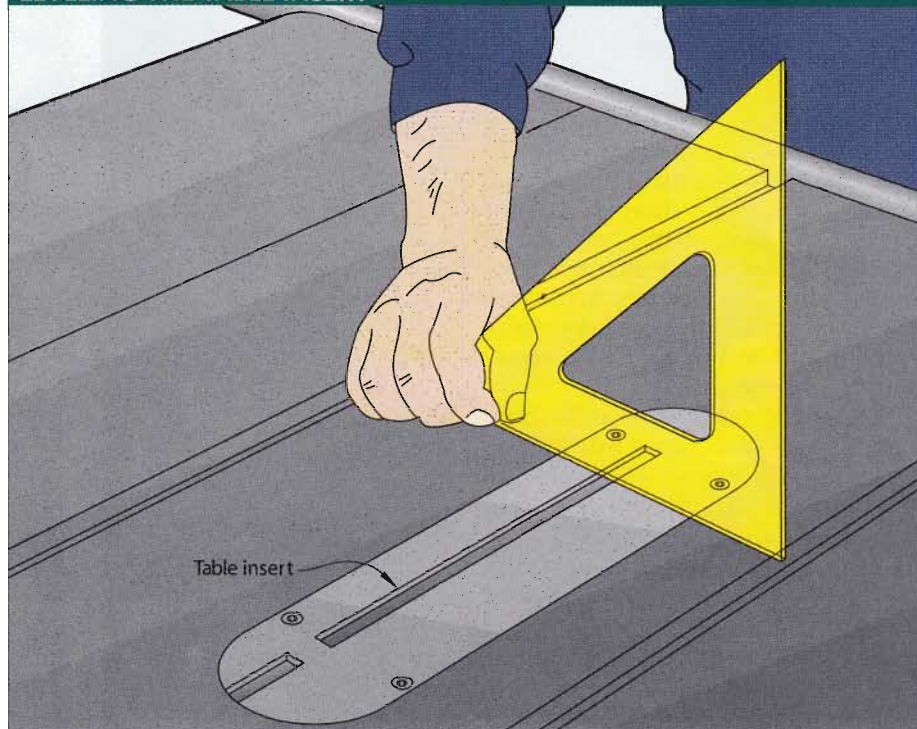
### 3 Level the extension wings

For accurate cuts and controlled handling of large workpieces, the extension wings of your tablesaw should be flush with the table. Check this with a 4' level, as shown at *bottom right*. If they're not flush, you'll need the level, a fine file or 220-grit sandpaper, a spring or C-clamp, and a set of feeler gauges you can use for shims.

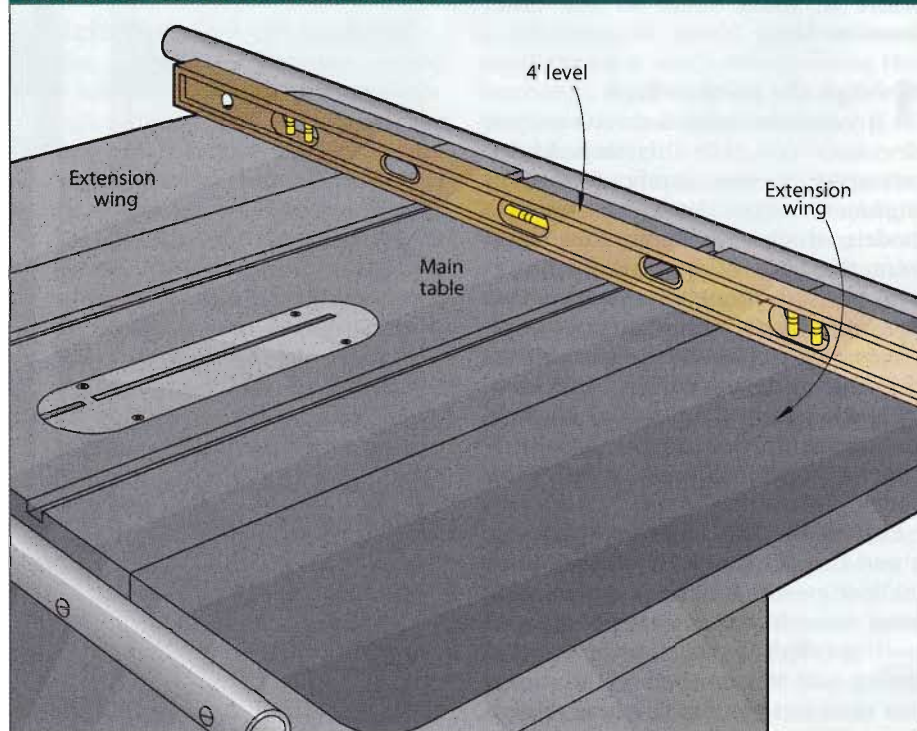
Begin by removing the wings and, with the file or sandpaper, gently rounding off the top edges of the saw table and wings. This removes sharp edges and burrs. Also, sand off any paint on the mating edges of the wings.

Now, bolt the wings back on the saw, but don't tighten the bolts all the way.

#### LEVELING THE TABLE INSERT



#### LEVELING THE EXTENSION WINGS



Let the wings sag, with a  $\frac{1}{16}$ " gap at the top where the wings meet the table.

Place the level so it stretches across the front edge of one wing and the tabletop. Clamp the level to the extension wing at the outer edge. Pushing the level flat

against the table aligns the wing. Slowly tighten the front mounting bolt, keeping a close eye on the bottom of the level. If it lifts from the table as you tighten the bolt, the bottom edge of the wing needs shimming; if a gap appears

at the center of the level, the top edge needs shimming.

Check at a minimum of three points along each table edge. You need to do this because wings can bow along their length (even cast-iron ones). By shimming at three locations, you can remove most, if not all, of any bow.

To make shims, insert feeler-gauge blades one at a time directly above or below the bolt. Tighten and check the alignment. It may take some trial and error to find the right thickness. Once you do, cut enough ¼"-long pieces of the blade to fit above or below all the wing bolts. Repeat this trial-and-error process with the other wing.

#### 4 Check the blade for alignment with the miter slots

For a saw to accurately crosscut and rip, its blade must be parallel to the miter slots. A misaligned blade will force work into or away from the blade, causing burning or kickbacks.

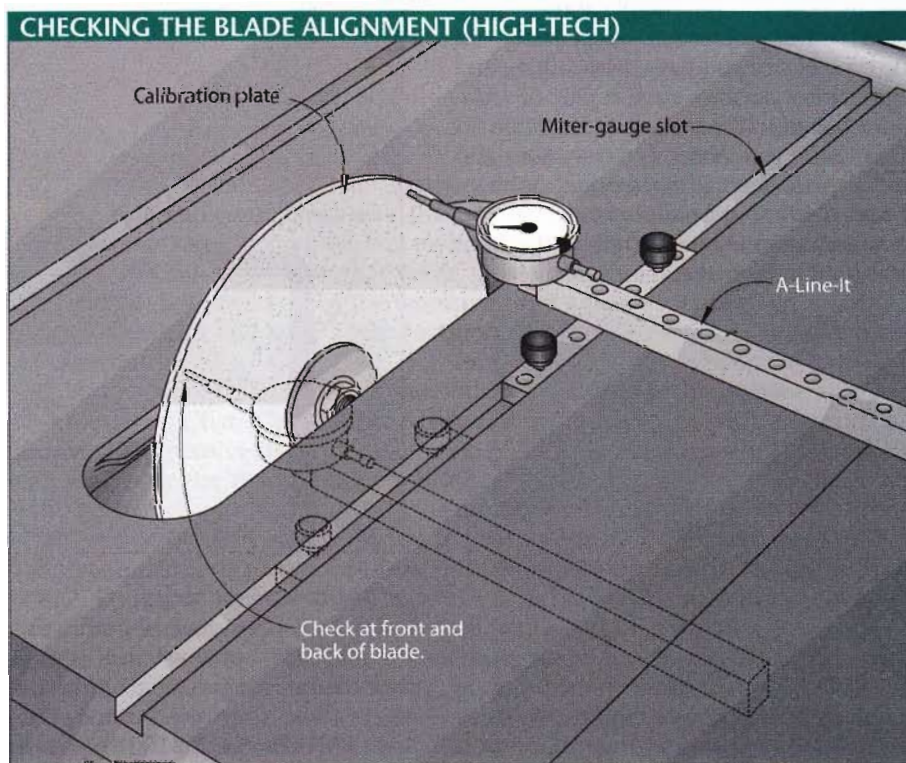
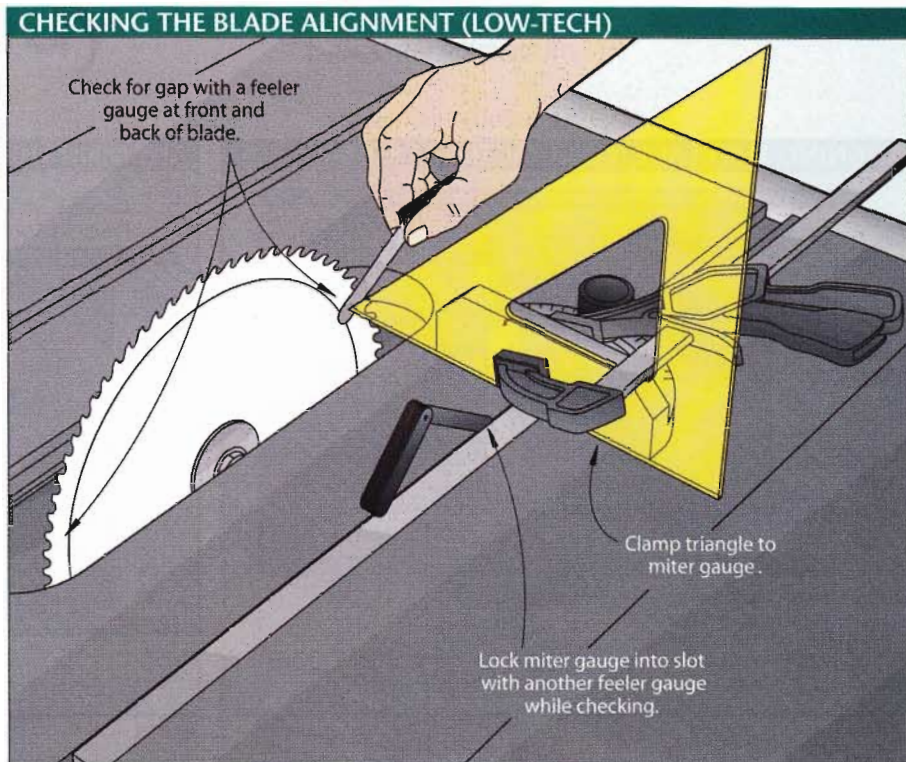
To check your blade alignment, remove the guard and splitter, and install your best blade or a calibration plate.

Raise the blade or calibration plate to the top of its travel, then lower it a half-turn. (We've tuned many saws that slightly skew the blade at its topmost setting, which can throw off your results.)

Next, adjust the miter gauge to 90°, and set it into the slot on the arbor-nut side of the blade. If your miter gauge fits sloppily in the slot, use feeler gauges to shim it snugly against the side of the slot nearest the blade.

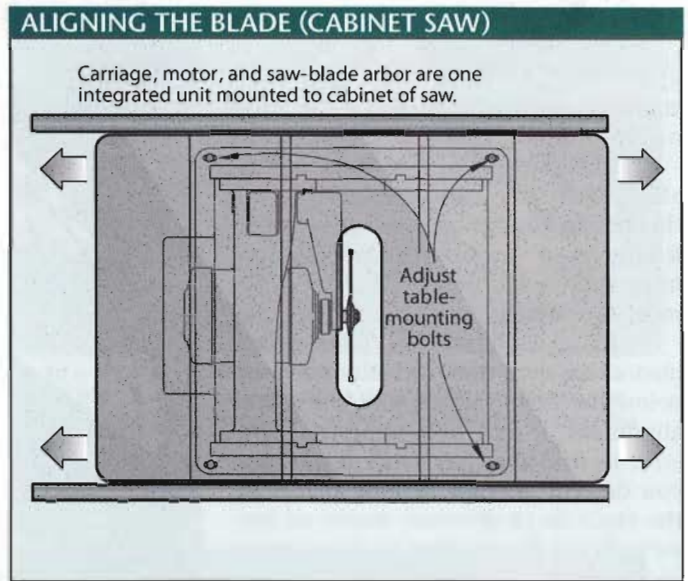
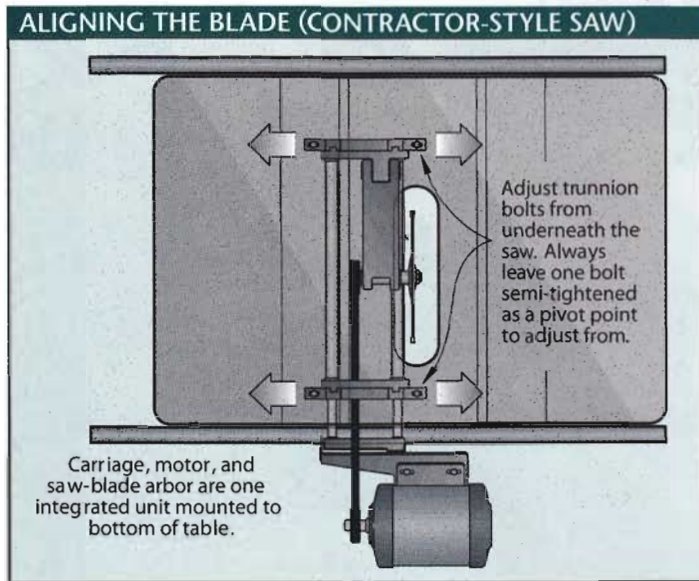
Mark a reference point on the blade just below the teeth or gullets, and rotate the mark to the front of the table. Stand an 8" drafting triangle against the miter gauge, with the point lined up with the mark on your blade. Lock the miter gauge in place, slip a .010" feeler gauge between the triangle point and the blade, take up all play, and clamp the triangle to the miter gauge.

The feeler gauge should slide in and out without deflecting the blade. Remove the feeler gauge and rotate the blade mark to the rear. Slide the miter gauge to the rear—again lining up the triangle point



with the mark on the blade—and lock the miter gauge in place. The same feeler gauge should fit. If it doesn't, try others until you determine how far your blade alignment is off. If it's more than .002", determine which direction the back of the blade needs to go.

The illustration *above* shows a "high-tech" way to check the blade alignment with a dial indicator and a 10" calibration plate. Many dial indicators measure in 0.001" increments. Instructions packed with the A-Line-It explain how to position and read a dial indicator.



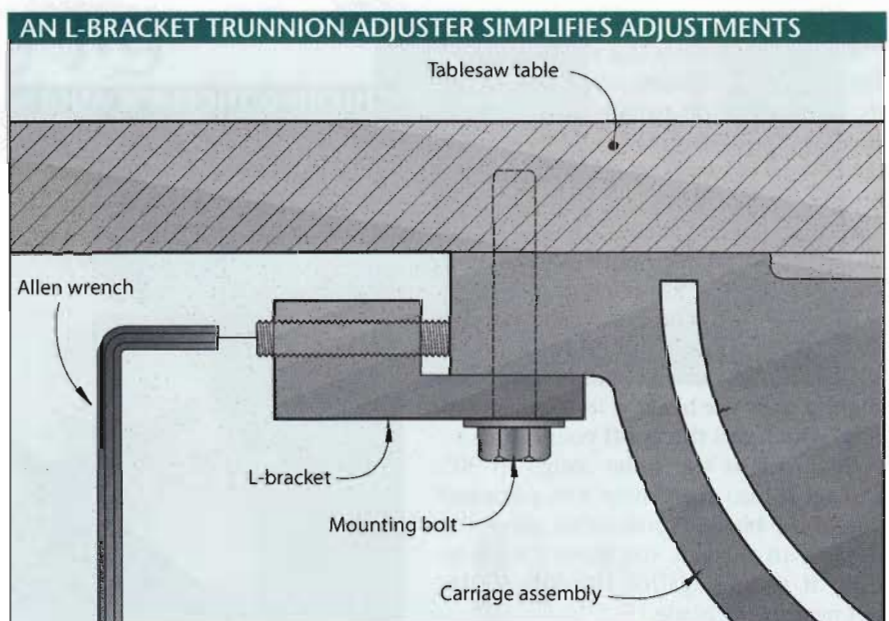
### 5 Align the blade parallel with the miter slots

Exactly how you get the blade into alignment varies somewhat, depending on the type of saw you have. Direct-drive and contractor-style saws have a pair of trunnions bolted to the bottom of the table. To align these, you loosen the trunnions and shift them to one side or the other, as shown at *top left*. We find it easier to move the rear trunnion assembly. Leave one of the front bolts semi-tightened and use it as a pivot.

Using a piece of stock and a hammer, gently tap the trunnion in the direction you want to move it. For greater control over this adjustment, you also can shift the trunnions with an L-bracket trunnion adjuster like the one shown at *right*. Precision Alignment & Locking System (PALS) is available for most tablesaws for \$20 from In-Line Industries, 661 S. Main St., Webster, MA 01570. Call 800-533-6709, or visit [in-lineindustries.com](http://in-lineindustries.com).

When the same feeler gauge can be inserted at the front and rear of the blade, the blade is parallel and the bolts can be tightened. After tightening them, check one more time to make sure the trunnion didn't move.

With cabinet saws, the trunnions and table are independently bolted to the cabinet, making adjustments easy. With these, loosen three of the table-mounting bolts, as shown *top right*, and tap the table into alignment with a mallet or hammer and a block of wood.



### 6 Set the bevel stops

Built-in stops govern a tablesaw's 90° and 45° bevel settings. Check your owner's manual to find out where these stops are located, then use an 8" triangle to learn whether they're accurately set.

First, raise the blade or calibration plate just shy of its highest position. Check the 90° setting by positioning the triangle on the table with one leg of the 90° angle against the table and the other against the body of the blade, taking care to avoid the teeth.

If you see a gap at the top or bottom of the triangle, use the tilt wheel to move the blade until the gap disappears. Unlock the 90° stop, bring it into contact with its matching point on either the trunnion or lead screw nut, and relock the stop. With the triangle, double-check that the blade remains at exactly 90° to the table.

Set the 45° bevel stop in the same way, tilting the blade to the 45° position and placing the triangle with its 45° leg against the body of the blade. Again, check after you relock the stop to be sure it hasn't shifted.

## 7 Adjust the blade guard and splitter

To do its job properly, the splitter must remain parallel with the saw blade, in the middle of the kerf. To check the splitter, cut a thin piece of cardboard or plywood in half, place the pieces against both sides of the blade or calibration plate, and center the splitter, as shown *right*. Look for equal gaps between the blade and plywood edges.

## 8 Set the miter gauge

For accurate cuts, check your miter gauge often. Place it on a flat surface, such as your saw table, and use the 90° angle of a triangle to determine whether the gauge is square, as shown *bottom right*. To set the 45° left and right angles, use the 45° edge of the triangle to establish and lock in your miter settings.

## 9 Align the fence

Kickbacks, excessive sawdust, burnt cuts, and crisscross saw marks are all symptoms of an improperly aligned fence. But properly aligned, you might be surprised to learn, doesn't always mean that the fence should be set parallel to the blade. Instead, for safe, burn-free ripping cuts, we recommend setting your fence .015" to .030" open at the rear. This prevents work from binding between the blade and the fence if the wood warps as you rip it.

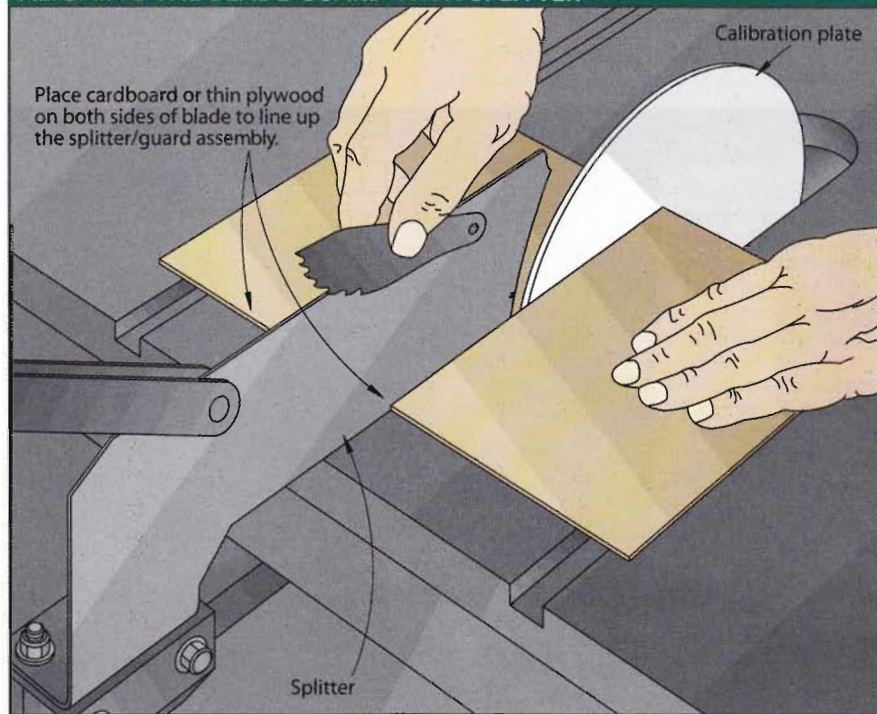
The big trick to aligning a fence is keeping it that way, which means it's best to realign it before every major cutting project. To make this an easy adjustment now and in the future, rip a 4"-long, ¾"-thick hardwood block to the width of your miter slot. Then, cut this piece in half to get two 2"-long blocks.

To align the fence, fit these blocks into the miter slot at the front and rear edges of the table. Loosen the bolts that adjust parallelism, drop the blade beneath the table, and slide the fence against both blocks.

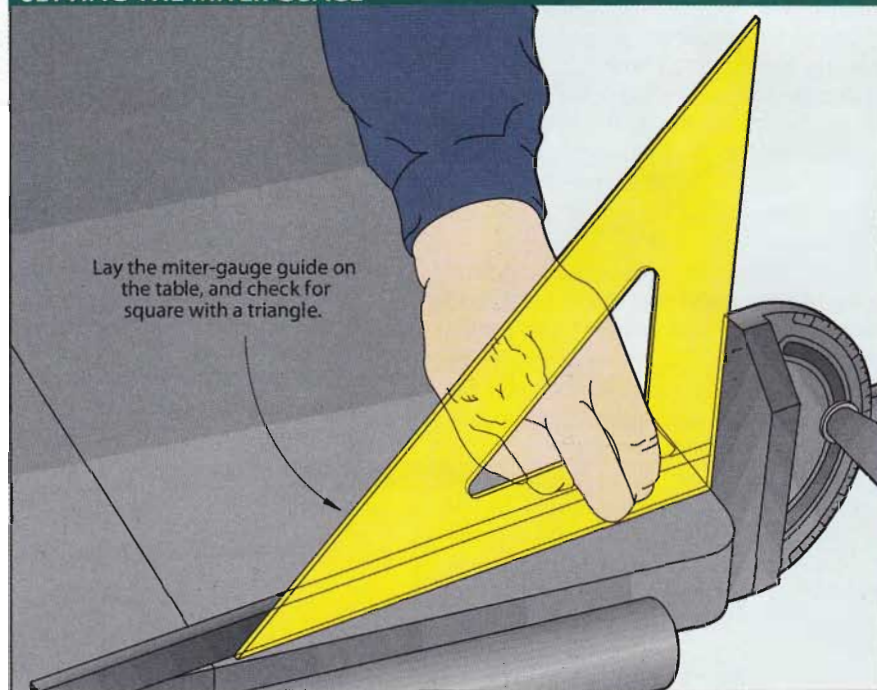
At the rear, start with a .015" feeler gauge between the fence and block. With the fence placed firmly against the block at the front and the block and feeler gauge at the rear, lock the fence head. Retighten the alignment bolts on the fence.

Now remove the blocks, plug in the saw, and rip a test cut. Inspect the fence

### ALIGNING THE BLADE GUARD WITH SPLITTER



### SETTING THE MITER GAUGE

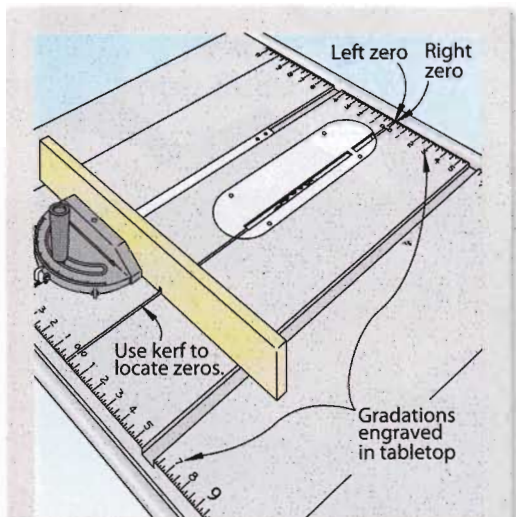


side of the ripped edge for burns and crisscross saw marks. If you find any, add a little more space between the fence and blade. If you need to add .030" or more space, replace the blade and recheck.

(If you are getting less-than-clean cuts with a dado blade, reset your fence parallel with the blade. Just open it up again for ripping.)



Watch a FREE 5-minute video on tablesaw basics at [woodmagazine.com/tsbasics](http://woodmagazine.com/tsbasics)



## Can you draw the parallels?

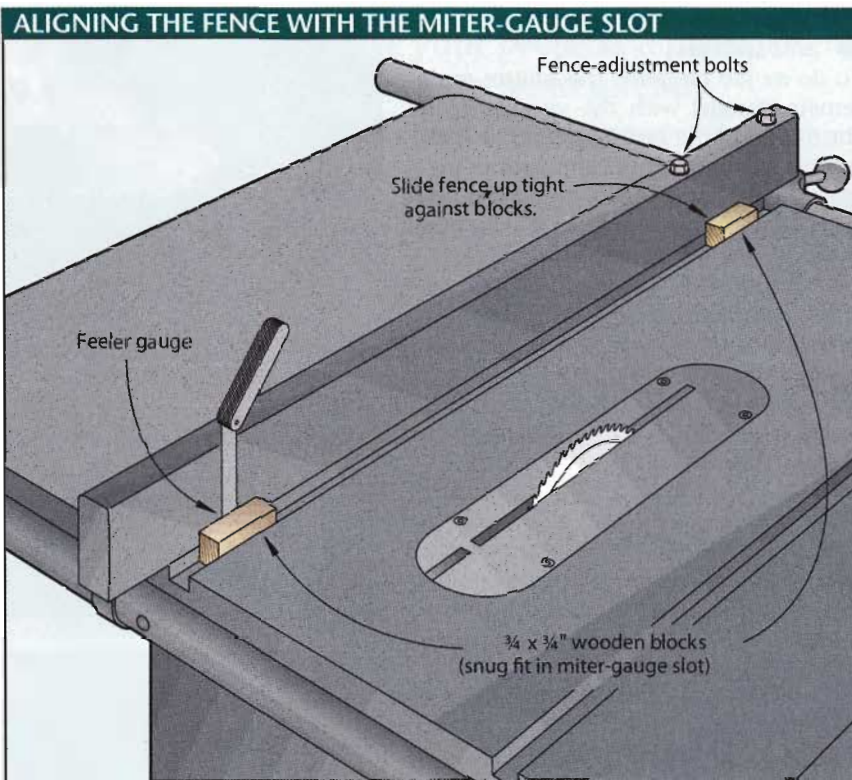
By itself, my tablesaw fence just isn't reliable when it comes to locking it parallel to the blade. So, I transferred the graduations of a ruler to the front and back edges of the tabletop, as shown in the drawing above. Here's how.

I attached an auxiliary fence to the miter gauge, then cut a kerf in the fence. Using this indexing kerf, I scribed "zero" marks on my tabletop at the front and rear edges. (Remember, there are "zeros" for both sides of the blade.)

Next, I stretched strips of masking tape along the front and rear of the table, and transferred the graduations from a steel rule to the tape. I used my engraver to trace through the graduations, then removed the tape and lightly sanded the sharp edges left by the engraver.

Now, I can align my fence parallel to the blade, front and rear, without a lot of fussing and test-cutting. As a bonus, the marks work even if I have an auxiliary face attached to my fence.

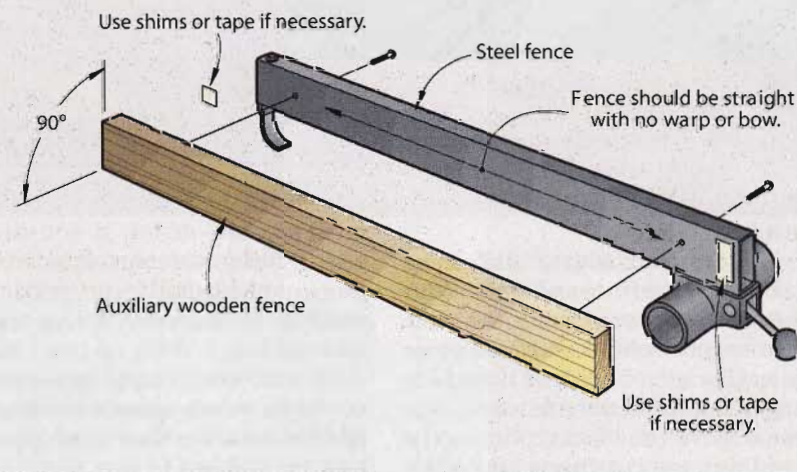
—Barry Brigmon, Gadsden, Ala.



## How to straighten a warped tablesaw rip fence

Many stamped-steel fences tend to warp—and no amount of adjusting will correct a fence that's bowed or twisted along its length or doesn't sit at a 90° angle to the table. Check your fence by holding a straightedge against it. Also, use the triangle to learn whether the fence is 90° to the table.

If you spot any gaps between the fence and the straightedge or triangle, install an auxiliary fence as shown below. Select a stable board that's flat and straight, cut it to size, and drive screws into the wood through pre-punched holes in the steel fence. True up the auxiliary fence with paper or tape shims. 🌲



Find more tablesaw tips at:  
[woodmagazine.com/tipsforum](http://woodmagazine.com/tipsforum)





# WOOD<sup>®</sup> Magazine's WOODWORKING SHOWDOWN

## ONLINE PROJECT CONTEST

Announcing the Woodworking Showdown Online Project Contest. Here's your chance to show the world what you do in your shop!

**Upload your project photos May 4 thru November 30, in one of six categories. There will be one winner for each category with more than \$6,700 in prizes!**

Two months of voting begins December 1. Everyone can vote daily on project photos to determine the winners.

To learn more about the Woodworking Showdown and to upload your project photos, visit:

[www.woodmagazine.com/showdown](http://www.woodmagazine.com/showdown)



## 6 CATEGORIES, 6 GREAT PRIZES!

### BEST FURNITURE PIECE

**Powermatic  
14" Bandsaw**

\$1,200 retail value



### BEST SMALL PROJECT

**Workshop  
Accessory  
Super Pack**

\$1,030 retail value



*Peachtree Woodworking Supply Inc.*  
"Your One Stop Supply Shop"

### BEST SHOP PROJECT

**Jet 10"  
Proshop  
Tablesaw**

\$1,000 retail value



**J E T.**

### BEST SHOP

**Granite  
Top 10"  
Tablesaw**

\$1,300 retail value



### BEST OUTDOOR PROJECT

**NEW  
Automatic  
Chainsaw  
Sharpening Tool**

\$1,200 retail value



**LOGOSOL**  
Swedish wood processing products

### BEST HOME IMPROVEMENT PROJECT

**\$500 Worth of  
Assorted  
Titebond  
Products, PLUS  
a \$500 Lowe's  
Gift Card**

\$1,000 retail value



**Enter today at: [www.woodmagazine.com/showdown](http://www.woodmagazine.com/showdown)**

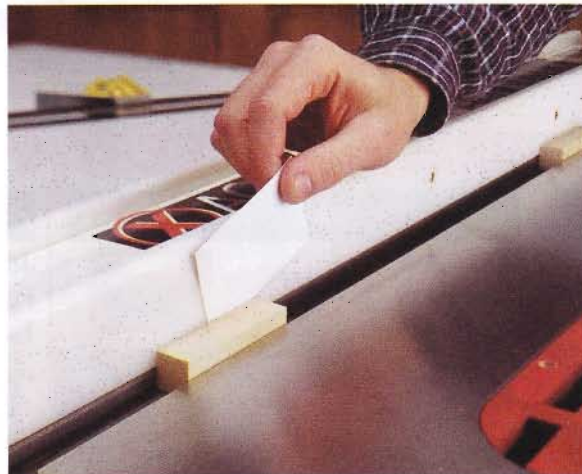
Subject to Official Rules at [www.woodmagazine.com/showdown](http://www.woodmagazine.com/showdown). No purchase necessary to enter or win. To enter, visit [www.woodmagazine.com/showdown](http://www.woodmagazine.com/showdown), complete the registration form, then follow the links and instructions to upload up to six (6) original photos into one (1) album of your original woodworking project. The entry period for the *WOOD Magazine Woodworking Showdown* begins May 4, 2009, and ends November 30, 2009. Entries must be received by 11:59 p.m., C.T., on November 30, 2009. Open to legal residents of the 50 United States, and the District of Columbia, 18 years or older. Multiple entries accepted; each entry must be for a different project. Void where prohibited. Sponsor: Meredith Corporation

# 8 Ways to Tablesaw Success

A little fine tuning and some shop-built accessories are all you need for a sweet-running machine. Try these tips for smooth and safe cuts.

## 1 Get the blade height right

Everyone has a different idea on how far saw-blade teeth should protrude above the stock. As a general rule, raise the blade  $\frac{1}{2}$ " above the surface of softwood stock to reduce heat buildup. For hardwoods, raise the blade to  $\frac{3}{4}$ " above the surface. To ensure cooler cutting, you want the blade to eject waste from the gullets between the teeth. That means the bottom of the blade gullets should be almost flush with the surface of the stock, as shown *above*.



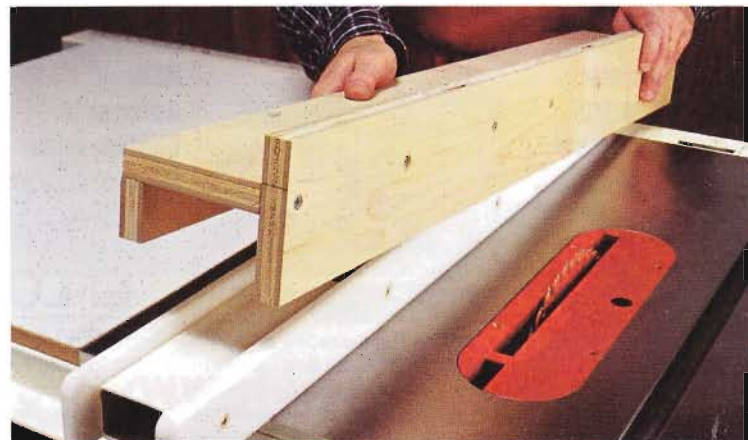
## 2 Finesse the fence

To set the fence parallel to the blade, start by cutting 2"-long blocks to fit snugly into one miter-gauge slot. Position the fence against them, and use a thin shim to check for an equal gap at both ends, as shown at *left*. Setting the fence exactly parallel yields the best results, especially with dados. If the workpiece burns or binds, cant the outfeed end away from the blade between .010" and .030" (about the thickness of a business card).

## 3 Add function to the fence

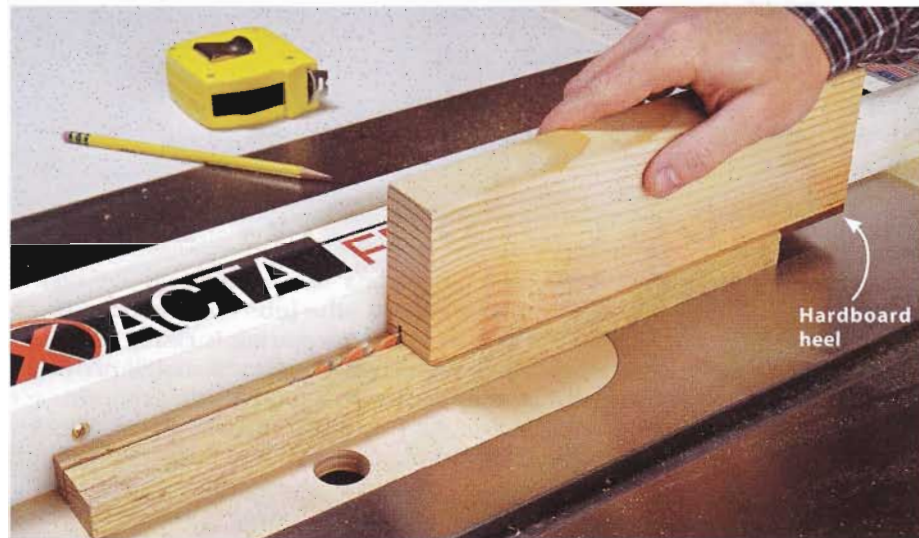
For some operations, such as cutting tenons with a dado blade or cutting with the blade against the rip fence, you'll find it handy to have an auxiliary fence face. Easy to make, this accessory prevents damage to the fence, and can support a tall face for cutting wide workpieces on edge.

For general use, cut a  $\frac{3}{4}$ " plywood face 4" wide by the length of your fence. How you attach the face depends on your fence. If your fence has holes through it, attach the face with bolts. Just counterbore the holes in the face so the bolt heads sit below the surface. Or make a "saddle" that slips over the fence, as shown at *right*. Clamp the saddle at the outfeed end, or mount a pair of T-nuts in the saddle's back "leg," and use short bolts as setscrews to secure it.



#### 4 Create a mightier gauge

When crosscutting long boards or cutting multiple pieces to the same length, an extension board for the miter gauge is a must. Make one from scrap  $\frac{3}{4}$ " plywood, about 3" wide and up to 36" long, as shown at *right*. For even greater accuracy, give the extension a grip on the workpiece by covering the face with adhesive-backed sandpaper. Screw the extension to the miter gauge so it protrudes beyond the blade, then cut a kerf through it. Next, make a clamp-on stop-block about  $\frac{1}{4}$ " shorter than the fence height to prevent sawdust from building up and causing inaccurate cuts.



#### 5 Make sacrificial guides

Any time you are ripping pieces narrower than 6", be sure to use a pushstick to guide your stock while keeping your hands safely away from the blade. Make your own pushstick by simply cutting a birds-mouth notch in one end of a  $\frac{3}{4}$ " $\times$ 2 $\times$ 12" piece of stock. If you have to rip pieces narrower than 1", make a wide pushblock from a 2 $\times$ 4 and a piece of hardboard, as shown at *left*. The blade will cut into the pushblock, but the hardboard "heel" pushes both the workpiece and waste safely past the blade. Rather than getting fancy, make your pushsticks from scrap stock, and sacrifice them to the blade instead of risking the loss of your fingers.

#### 6 Get proper clearance

The standard throat plate on most saws has a wide opening to allow you to tilt the blade. This leaves the underside of the workpiece unsupported and susceptible to chip-out, and can allow thin wood strips to drop into the gap. To minimize these problems, make a zero-clearance insert. Just trace your insert onto plywood of the proper thickness (you may have to plane it down), and cut it to rough shape. Plywood is better than solid stock, which may warp. Either sand the insert to exact shape, or attach it to the throat plate using double-faced tape, and shape it using a pattern-routing bit in your table-mounted router. (See how-to instructions on *page 49*). You also can use thinner plywood and drive short flat-head screws into the bottom face to act as levelers.

Lower your saw blade all the way and check the insert's fit. If the blade doesn't retract far enough to allow the insert to sit flush with the table surface, reinstall the standard throat plate and cut a kerf in the underside of the zero-clearance insert. Recheck the fit, then clamp the insert in place using a long board. Turn on the saw and slowly raise the blade to full height to cut through the plate, as shown at *right*. Use the same procedures to make a dado insert.



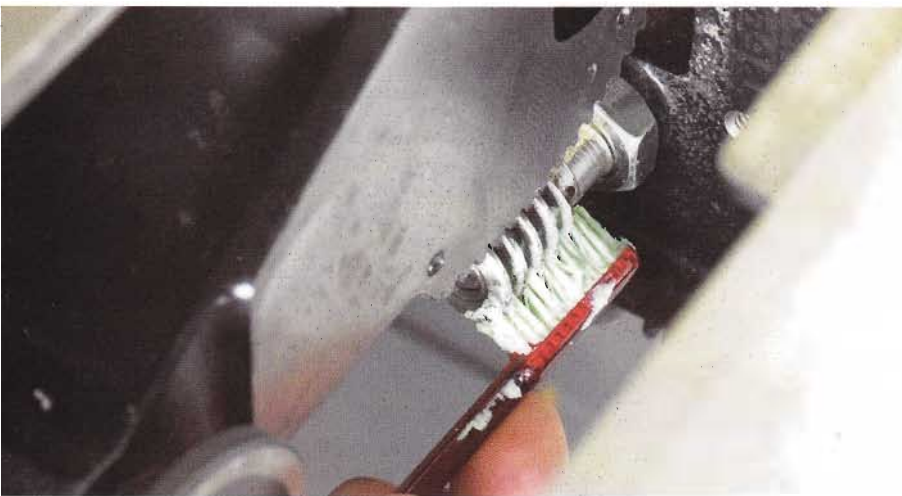
### 7 Take time for regular maintenance

Your saw will run better and last longer if you take care of it on a regular basis. Do the following every month or two:

Begin by unplugging the saw. Remove the throat plate, blade guard, and the blade. Inspect the blade for resin buildup, and clean it, if necessary. Make sure the washer and blade stabilizer (if used) are clean, smooth, and flat.

Removing the drive belt and motor from the back of a contractor-style saw is a fast and easy step, and it dramatically improves access to the saw's interior for cleaning and lubrication. A shop vacuum with a crevice attachment will remove most of the chips, and an old paintbrush will help loosen stubborn pockets of dust, and use a couple of blasts of compressed air to complete the job, as shown at *right*. Make especially certain that you've removed all dust near the stops that limit the tilt control so you'll get full travel.

If the worm gears or the rows of teeth have any residue, scrub them with a brass brush. For really tough build-up, dip the brush in paint thinner. Keep the solvent away from the arbor bearings, which are usually sealed and need no lubrication. Afterward, wipe any remaining residue from the worm gears in preparation for the next step.



### 8 Time for a lube job

After all of the gearing is clean, lubricate it with a non-silicone automotive paste wax applied with a toothbrush, as shown at *left*. Also wax the curved slots in the front and rear trunnions. Fully tilt and elevate the blade several times, and then remove all the wax, leaving only a film.

Push a plastic straw tip onto a spray can of white lithium grease, and lubricate the pivots of the arbor assembly (where it swings upward) and shafts behind the worm gears, as shown *lower left*. This aerosol, available at auto-parts stores, sprays and penetrates like a liquid and congeals into a grease. Again, wipe off all lubricant you can with a rag.

Inspect the arbor flange, making certain that it's clean and smooth. Turn the arbor by hand, and try to wiggle it. Any noise or sideways play indicates a problem with the bearings, one which requires immediate attention.

Blow dust out of the fence-locking mechanism. Give the fence and the entire surface of the table and extension wings a coat of non-silicone paste wax or a special anti-rust product such as Boeshield T-9 (800-962-1732 or boeshield.com). 🌲



Watch a FREE 5-minute video on tablesaw adjustments at [woodmagazine.com/tsadjustments](http://woodmagazine.com/tsadjustments)

# Be Safety Savvy Around Your Tablesaw

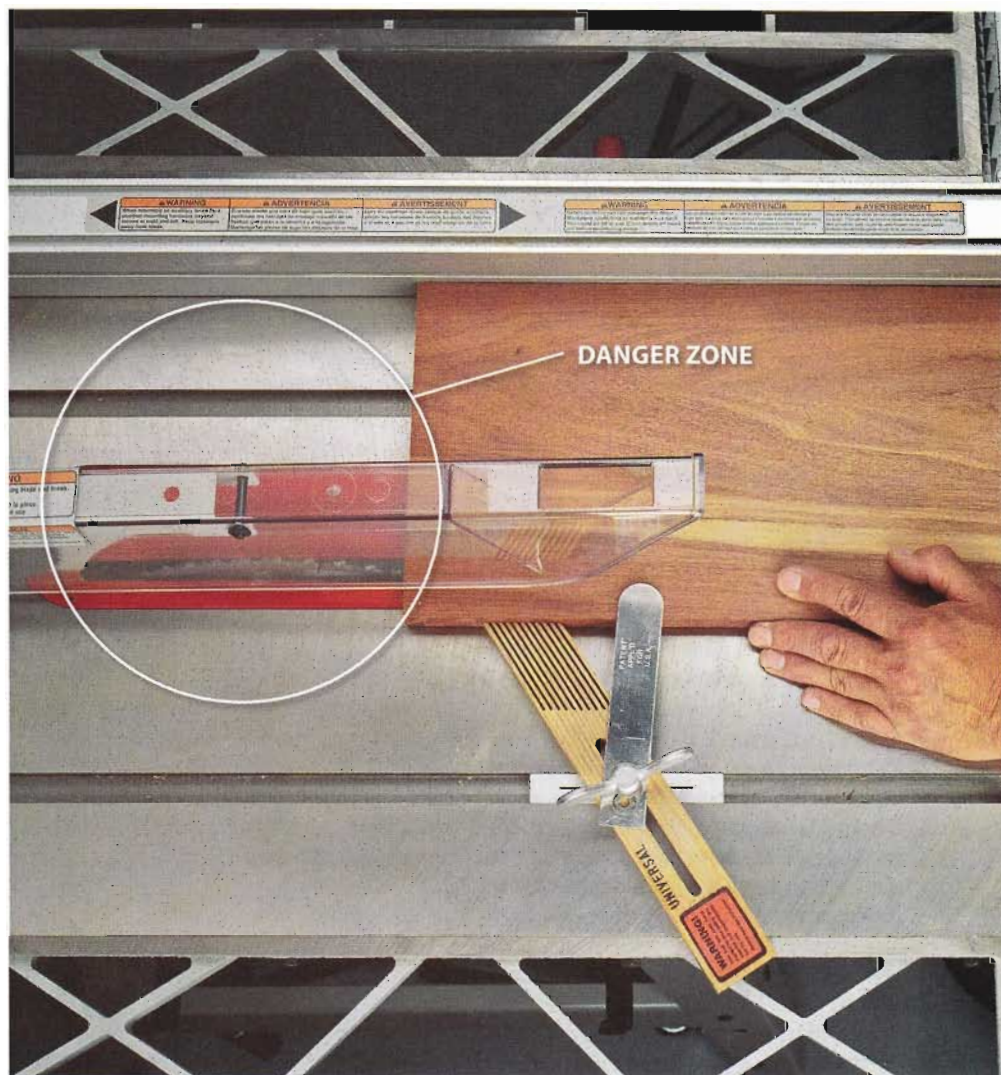
Plan, take your time, and follow some basic but essential precautions to avoid nasty accidents as you work.

**T**ablesaws rank high as the cause of many woodworking accidents—not surprising, considering that most woodworkers own one. Any tool with a sharp-toothed blade spinning at 4,000 rpm has a potential to inflict damage. Still, a tablesaw is a safe and super-effective tool when used properly. Armed with the following advice, rules, and techniques, you'll have the confidence to get the best out of your table-saw, and safely, too.

## Before sawing, begin a checklist to follow

California Polytechnic Institute developed a Code of Safe Practice for woodworking machines as a guide for operators and supervisors in the industry. We've added to it, and suggest you always follow the checklist before doing any cutting with your tablesaw.

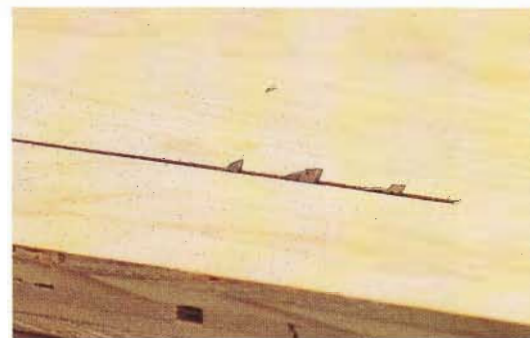
■ Before making any cut, remove from the saw table all scrap materials, fasteners, and other debris. (That includes not using the top of your fence as a tool tray.) These objects not only distract, they also can become missiles. Be sure to clear a 2' perimeter all around the saw (more where you'll stand if ripping long stock).



■ Use the blade that best suits the job (never a crosscut blade for ripping or vice versa), and make sure it's sharp. Check the arbor nut for tightness and the blade itself for chipped teeth, cracks, and other defects. Do all of this with the machine unplugged.

■ Set the blade height. There are lots of ideas floating around about proper blade height, but Freud's Jim Brewer has recommended that about half the highest tooth should protrude above the workpiece, as shown at *right*. Flat-ground teeth should extend no more than 1/4" above the wood. Hollow-ground or planer blades must be raised as high as possible to avoid binding. Brewer emphasizes that the bottom of the tooth should never be higher than the workpiece top. (See *page 40* for blade-height recommendations for different types of stock.)

■ Inspect all saw safety devices (the blade guard, splitter, and anti-kickback device, if present) for proper operation. The blade guard must move up and



down freely to accommodate different wood thicknesses, as shown *top*.

■ Double-check the location and condition of the on/off switch.

■ Realign the electrical cord to avoid tripping over it.

■ Align the fence parallel to the blade, and lock it at the width of the cut.

■ Protect your eyes. Without face-hugging safety glasses, airborne dust and chips can blur your vision (not good in the middle of a cut), or worse, injure your eyes permanently. Have safety

## Chapter 2 | Master the Basics

glasses ready to wear; or if you're cutting material that tends to chip, a full-face shield. A decent pair of safety glasses costs less than a visit to the ER, so buy a pair and wear them.

Because a tablesaw gets so much use in woodworking, turning it on to make a cut becomes as automatic as flipping on a light switch. But it shouldn't. Ponder this advice:

■ **Be alert!** The tablesaw injury story often begins with, "I was making the last cut of the day...." Never run your tablesaw when you're tired. Fatigue leads to errors in judgment that in turn lead to miscut workpieces—or worse. In fact, studies show that many serious tablesaw injuries happen to woodworkers when most other people are getting ready for a good night's sleep. Also, repetitive cutting chores can lull you into carelessness, so take frequent breaks. And stay away from the saw altogether if you're on medication or have been drinking alcohol.

■ **Don't rush.** Plan all your cuts.

■ **When ripping stock,** always anticipate the possibility of kickback. Plan to minimize any damage from it to you or the workpiece. For instance, don't stand directly in line with the blade, but off to the side of it.

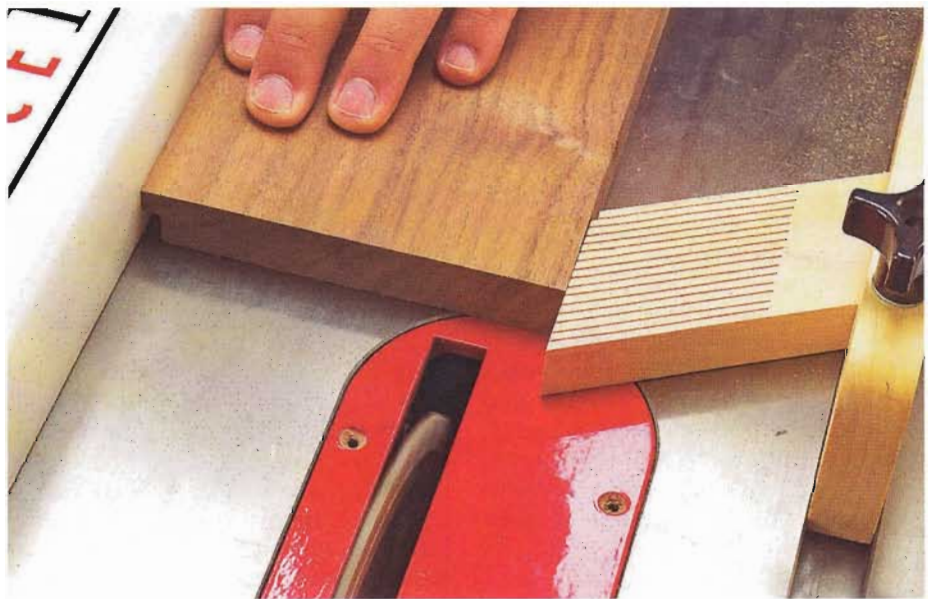
■ **To make sure your pushing hand** won't accidentally run into the blade, hook the small and ring fingers of your pushing hand over the fence to slide with the wood.

■ **If you're planning to rip boards** longer than 3', get a helper to support the wood after it passes through the blade. (Or use an outfeed table or roller.)

■ **Always use the fence or the miter gauge,** but never both. The photo at *top right* illustrates what *not* to do. Never attempt freehand sawing (with no assistance from the fence or the miter gauge); turning the stock on the blade even slightly causes the wood to bind and kick back. The same may happen if you attempt to use the fence and the miter gauge together. If you try to crosscut with the miter gauge, using the fence as a stop; for example, the cutoff piece trapped by the blade may fly back at you.

■ **Don't remove the blade guard** from your saw unless it's absolutely necessary to make a specific cut.

■ **Don't overreach.** Make sure you have a pushstick handy for any cuts that require your hand to pass within 6" of the blade. See Two do-it-yourself pushsticks *opposite* for a pair of tried-and-true pushsticks you can make easily. The design on the left



works best for maintaining pressure on the leading edge of your workpiece; the design on the right helps you push a workpiece from the rear edge.

■ **If you have doubts about the safety** of making a cut, don't do it.

### Now get in position to saw

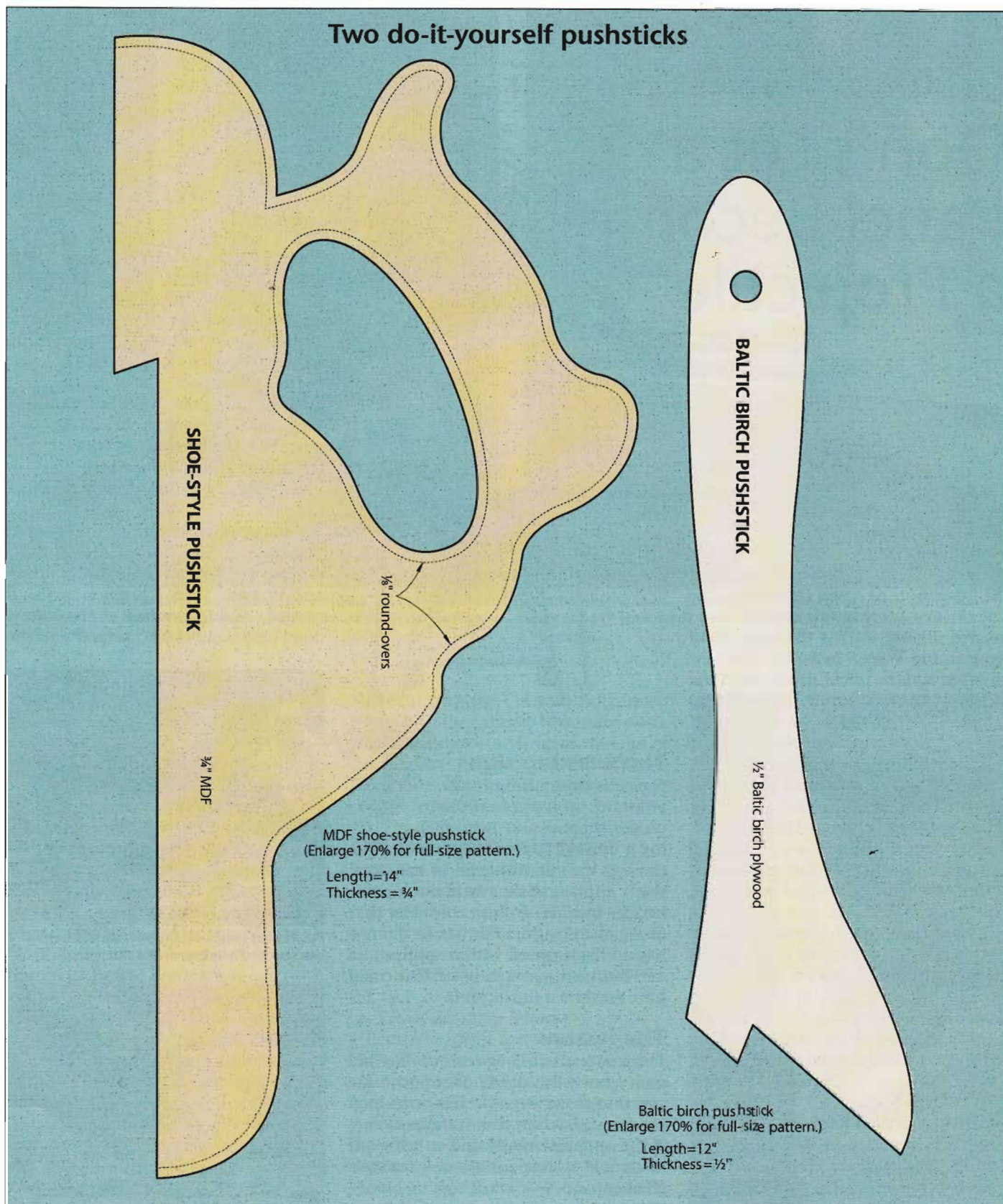
You've got everything on hand, gone through the checklist, and thought through all your cuts. As you saw, keep the following precautions in mind:

■ **Stand with your weight** equally balanced on both feet. If the board should suddenly give, you don't want to fall into the blade.

■ **To avoid reaching across the blade,** make sure the blade never comes between your body and your hands, either front-to-back or side-to-side.

■ **Use a feathered friend.** The fingers of a feather board handily hold a workpiece snug against the fence so you can concentrate on feeding the wood at a steady pace. Mount the feather board so that the fingers end before the cutting starts, as shown *above*, to prevent trapping the offcut and launching it across the shop. Make sure the pressure exerted by the feather board isn't distorting the fence or binding your workpiece.

## Two do-it-yourself pushsticks



■ As you saw, don't reach over the blade to push stock. Always keep your hand as far away from the blade as practical. Use a pushstick as needed.

■ If you're making repetitive cuts, take

frequent breaks. Accidents happen after boredom leads to carelessness.

■ After completing the cut and switching off the saw, let the blade come to a complete stop on its own. Don't use

scrap wood as a "brake" by pushing it against the blade to stop its rotation.

■ When you've finished sawing for the day, lower the tablesaw blade below the tabletop. ♣

A real-life lesson in safety

# Don't Let a Panel Become a Projectile



## The incident

I had crosscut several 4x8 sheets of plywood on my cabinet saw without a problem. As I was completing the cut on one more sheet, my left hand rotated slightly, forcing the large offcut against the blade. Instantly, the saw shrieked and the offcut struck me in the stomach, causing a rush of pain that doubled me over. Before I could shut off the saw, the shriek returned. When I had straightened up, the piece between the blade and fence launched and hit me—this time in the crotch! In agony, I fell to the sawdust-covered floor.

After about 10 minutes, I crawled upstairs to call 911. Unable to stand to retrieve the phone, I reached into a cabinet, grabbed a skillet, and threw it at the wall, knocking the phone onto the floor. After considering my embarrassing situation, though, I decided not to follow through with the call. Thirty minutes later, when I finally was able to stand, I found a 3"-long gash across the top of my left thigh, which I dressed myself.

—Greg Sowinski, Lima, Ohio

## The woodworker

Greg is a reporter in his hometown for *The Lima News*, covering the criminal justice system. An intermediate-level woodworker with four years experience, he enjoys building cabinets and furniture.



## The warning signs

Greg was crosscutting a large, awkward workpiece without proper support and help, making it difficult to feed the piece straight through the cut. Although he had done this a number of times without a problem, he mistakenly grew confident that he could do it again. Further, he did not have a blade guard with a splitter and anti-kickback pawls in place that could have prevented the incident.

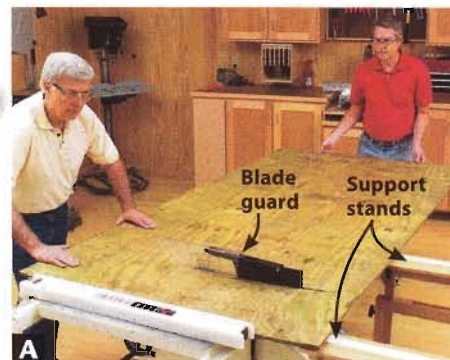


## The lessons

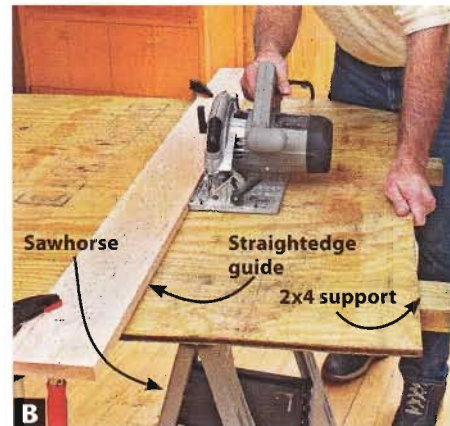
The lessons that Greg learned “are old ones I knew but didn’t obey.” To make sure that an accident like this never happens to you, follow these pointers:

- Use support stands and a helper to safely cut a large panel on a tablesaw [Photo A].
- As an alternative, cut pieces from a large panel using a portable circular saw, a straightedge guide, and reliable panel support [Photo B]. Cut the pieces approximately 1" oversize to allow for edge cleanup on the tablesaw.

- Use a blade guard with splitter and anti-kickback pawls. The splitter keeps the kerf open while cutting the stock, and it prevents the piece from twisting and lifting onto the blade. The pawls dig into the wood to keep it in place if it begins to kick back.
- Check that your fence is parallel to the blade. A workpiece can become pinched if the fence is not parallel.
- Position your hands where you can safely feed the panel straight through the cut.
- If the saw starts to shriek, turn it off, if possible.
- Bring a telephone with you or install one in your shop for quick access if needed. And, regardless of the injury, don't hesitate to call for help. 🌿



Position at least two support stands behind the saw and a helper at the side.



Clamp a straightedge guide to the panel. Keep the saw tight against the guide.



# How to Level Tables to Tools

It's easy to do, and essential for the safe and effective operation of workshop machinery.

**W**hether you're incorporating a benchtop tablesaw into a cabinet to extend its capacity, or making your own supports for a tool, such as a miter saw or thickness planer, you need to level the table to the tool (bring them into the same plane). Coplanar tables provide a continuously even worksurface for stable stock support, accurate cutting, and safe workpiece movement. Below, you'll learn how to level tables in four simple steps.

You also can use this process to check and level accessories, such as infeed and outfeed support tables, to your tools. Because accessories have various types of leveling provisions, refer to the manufacturer's instructions on how to adjust them.

## STEP 1

Find two straightedges of sufficient length to span the tool and extension tables. You can use metal straightedges, or make wooden ones by jointing the edges of two boards. For example, to reach across the 51"-long extension table shown at *top right*, and a 20"-wide cast-iron tablesaw top, we made straightedges by jointing a pair of 1×6×72" boards.

Clamp the straightedges along the front and back of the extension table or top, as shown in the *top* photo. (When leveling an accessory table to a tablesaw, clamp straightedges to the saw table.)



## STEP 2

Determine the approximate shim thicknesses needed for leveling by measuring the offset between the tool table and extension near the straightedges [Photo A]. Then, at the table's opposite edge, measure the gaps between the straightedges and the tool table.

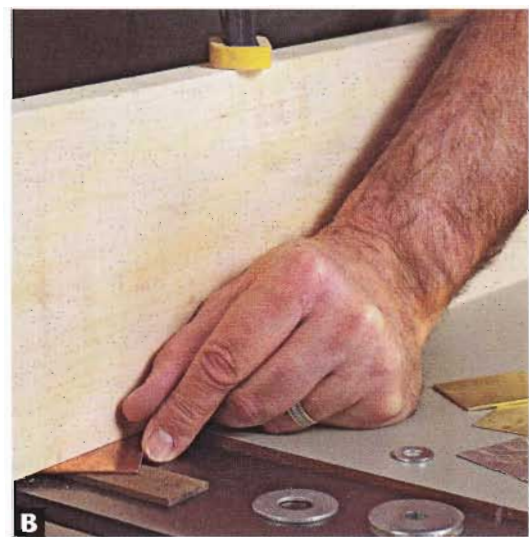
## STEP 3

Insert shims to get a snug fit between the tool table and straightedges [Photo B]. Suitable shims include metal flat washers; 1/8" and 1/4" hardboard; sheet metal (available at hobby stores and home centers); and metal shim stock such as from an automotive feeler gauge. When you need just a smidgen more thickness for a perfect fit, add a piece or two of aluminum foil (it measures just .002" thick) to the stack.

As an alternative to combining shims, you can make custom shims by planing hardwood, such as oak or maple, to the exact thicknesses needed. Don't use any material that will compress at all under the weight of the machine.

## STEP 4

Remove the shims; drill holes in them, if necessary, for your tool's mounting screws; and install the shims under the tool. Also, recheck the level periodically, because tool movement, knocks, and changes in humidity can cause the table to become misaligned. 🌳





# Stop Tear-Out

Build these safeguards into the way you work, and keep tear-out from tearing up a promising project.

**O**ccasional splinters in your hand may be a fact of life in woodworking, but splintered wood is easy to avoid when working at your table saw. Just make prevention of tear-out gremlins part of your most common woodworking routines.

### Three ways to tame a table saw

Job one in any shop means establishing sound table saw habits. You've probably guessed some of the easy ones—aligning the rip fence parallel to the blade, and using sharp carbide blades free of pitch buildup. Now, add three more:

#### 1 Use auxiliary fences to back up your crosscuts

Nearly all table saw miter gauges are machined to accept wood auxiliary fences via screw holes or slots, so get into the habit of stocking up on auxiliary fence blanks of different sizes. In addition to giving your workpieces wider

support, these sacrificial fences prevent tear-out as the blade emerges from the back edge of the wood. Tear-out transfers to the fence instead of the workpiece [Photo A]. Any straight hardwood with parallel faces can function as fence material, as will Baltic birch plywood or MDF.

#### 2 Customize inexpensive inserts

Zero-clearance table saw inserts, shown *above*, block tear-out from both standard and dado blades. There's one big difference: Dado widths can vary, requiring zero-clearance inserts to match. You could invest a bundle in manufactured inserts if you have a half-dozen different dado widths you

use regularly. For a thriftier solution, make your own inserts. Here's a simple way to do it:



The auxiliary fence tears out, not the workpiece.

Clamp your work firmly to an auxiliary miter-gauge fence to keep your blade from tearing out the back side of the cut.



**B** This flush-trim bit's bearing follows the edge of the original tablesaw insert to help you cut a precise copy for a zero-clearance insert.



**C** Use flathead wood screws to raise the zero-clearance insert flush with your saw table. A finger hole helps speed insert changes.



**D** Position a 2x4 scrap to secure the blank insert as you raise the blade. Avoid covering the cut so you can see the blade's progress.

To start, measure the thickness and width of your factory insert, and plane your hardwood stock to that thickness. Rip stock to just wider than your insert, and cut blanks about 1/2" longer than the original insert.

Using your factory insert as a pattern, trace around the stock. Then, bandsaw the insert to rough shape, leaving about 1/16" beyond the cutline.

Next, center and attach the insert to the blank with double-faced tape. Fit your table-mounted router with a pattern or flush-trim bit so that the bearing rides on the factory insert's edge. Then, use the insert as your pattern to rout away the remaining excess [Photo B].

If your factory insert has a hold-down pin, insert a dowel of comparable diameter into the insert. For leveling feet, use #4 flathead wood screws shorter than the thickness of your insert [Photo C].

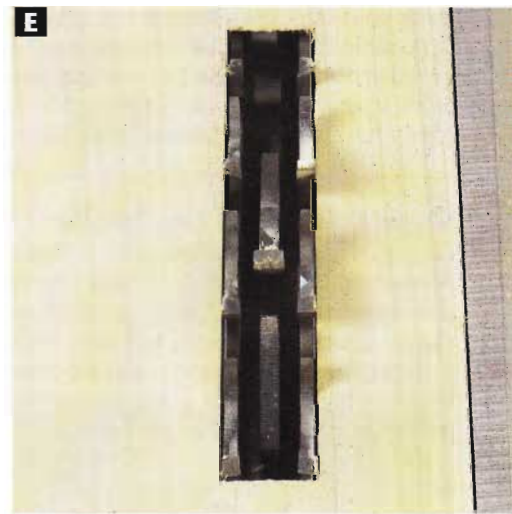
To break in a new insert, lower the blade completely and fit your saw with a fresh insert. Hold the blank insert in place by partially covering it with a piece of scrap secured by clamps [Photo D]. Then, slowly raise the dado blade until it reaches the approximate height of the dado you plan to make [Photo E]. You can always raise the blade later to cut deeper dados.

Once you're done, label the insert by dado-blade width, and save it for future projects. Make it a habit to crank out blank tablesaw inserts in bulk so you'll have one available to fit every dado width.

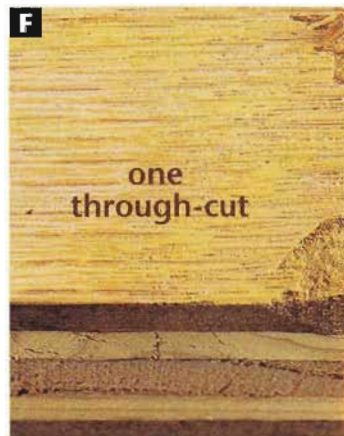
### 3 Divide and conquer tear-out

If you treat all materials the same, some are bound to punish you for this bad habit. For instance, hardwood-veneer plywood splinters instantly, as demonstrated by the one-pass crosscut [Photo F].

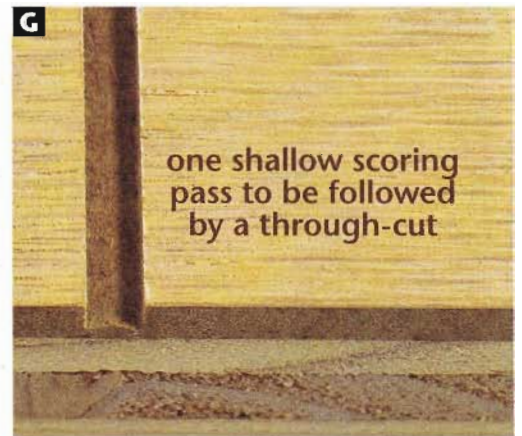
For tear-out-prone materials, including oak, ash, and panels veneered with melamine, start with a tablesaw equipped with a zero-clearance insert. Next, set your blade height to 1/16" so that the tips of the carbide teeth slice through the veneer and most of one ply of the panel [Photo G]. Unlike cutting the panel in a single pass, the blade teeth in this shallow pass create less downward pull on the wood fibers. Then, reposition the panel, raise the blade, and complete the cut. The result: no tear-out. 🌲



**E** A custom-made tablesaw insert prevents tear-out by keeping the blade from pulling wood fibers below the table surface.



vs.



The oak-veneer plywood sample on the left shows severe tear-out from crosscutting in a single pass. The sample on the right shows a 1/16"-deep starter cut that cleanly slices through the veneer, to be followed by a second cut through the rest of the panel for a chip-free edge.

# Banish Burned Ripcuts

Whether cutting hard maple or a dense exotic, sidestep scorched wood by adjusting your saw.

**B**urned ripcuts like those at *right* are warning signs of a tablesaw problem that demands prompt attention. If you ignore the problem, it will get worse. Beyond that, you'll ruin lumber, waste time, stress your blade, overwork your tablesaw's motor, and even risk injury.

Possible causes include a misaligned blade, rip fence, or splitter. Or maybe the blade is dull or caked with pitch. Your feeding technique may suffer, or the lumber itself could be the culprit. With so many possibilities, follow our step-by-step guide aimed at quick diagnosis and treatment. You'll have your machine purring properly in a jiffy.



## Step 1: Inspect the blade

Unplug the saw, remove the blade, and inspect it for chipped carbide teeth and pitch buildup. Although a saw shop can repair chipped teeth, you may find it more cost-effective to replace the blade. A dirty blade is a less expensive problem, cured with a product made just for blades. In a recent test, Empire Blade Saver came out on top (866-700-5823, or [empiremfg.com](http://empiremfg.com)). Boeshield's Blade & Bit Resin Gum & Pitch Remover, *below*, also did well (800-962-1732, or [boeshield.com](http://boeshield.com)).



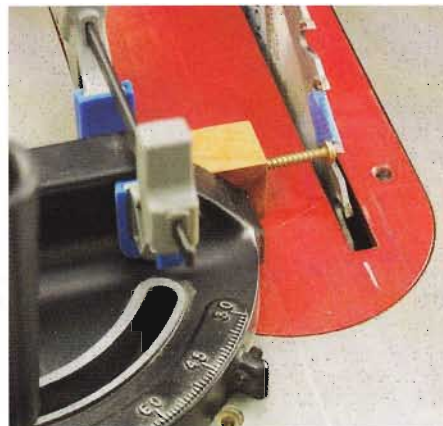
When working with a sharp blade, remove pitch buildup using a dedicated cleaner.

## Step 2: Check the blade alignment with the table

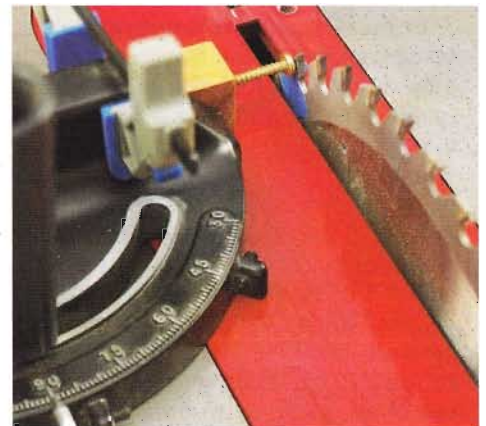
After cleaning, dry the blade and re-install it. Make sure that its rim runs parallel to the tablesaw's miter-gauge slot. The set-up shown in the photo *below* may look low-tech, but it delivers all the precision you need for this step.

Unplug your saw, and then partially drive a roundhead brass screw into the end of a piece of scrapwood. Clamp the wood to your miter gauge so the tip of the head lightly touches the side of one tooth. (Ensure that the miter gauge is set

at 90° at this point.) Identify this tooth with a permanent marker or masking tape on the blade. Rotate the blade backward by hand, and slide the miter gauge until the screw-head again touches the edge of the same tooth. Ideally, the screw should touch the tooth with the same amount of pressure in both positions. (You can gauge that pressure by the slight "tick" sound that the tooth makes as you slowly rotate it past the screw-head.) If not, you'll need to tweak the alignment of the blade to the miter gauge. If problems persist, adjust the saw table to the miter-gauge slot.



Check for equal contact against the brass screw at both the front, as shown at *left*, and rear positions, shown at *right*, of the saw tooth that you've marked with masking tape.



### Step 3: Adjust the table

With a cabinet saw, you'll need to move the table. Slightly loosen the four bolts that attach the base to the top, and tap an edge of the table to align the miter slots on the table with the blade. Adjust the table alignment until it's perfect, tighten the top, and check again. Align a contractor-style saw by moving the blade-support system, as shown at *right*.

On a contractor-style saw, loosen the bolts and tap the trunnion to align the blade to the miter-gauge slot.



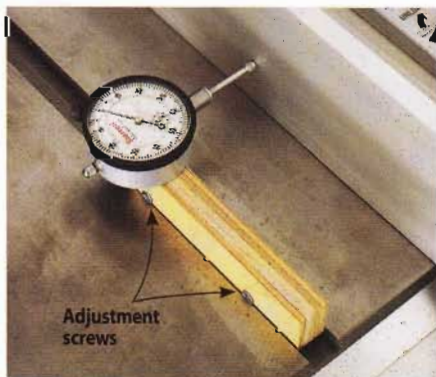
### Secrets to blade alignment

The trick to aligning the table and blade is loosening the trunnion bolts as little as possible. That minimizes losing the setting when you tighten the bolts. One more secret: Keeping one of the front bolts quite tight will make that corner act as a pivot point. Once aligned, first tighten the bolt diagonal from the pivot, and then snug down the other two.

### Step 4: Align the fence

By aligning the rip fence parallel to the miter-gauge slot, you automatically put the fence parallel to the blade. We like to use a dial indicator for this step because it also reveals whether the fence itself is straight when locked into place.

First, plane a piece of wood until its thickness exactly matches the width of your miter-gauge slot, and screw the dial indicator to it. You can skip the planing by selecting a slightly undersize piece of wood and using flat-head screws to achieve a perfect fit, as shown *below*. Zero the dial indicator against the fence at the infeed side of the table, and then check the reading at the outfeed end of the slot. Finally, adjust your fence until the two readings perfectly match.



A dial indicator screwed to a shop-made block helps you check that the rip fence is parallel to the miter-gauge slot.

### Step 5: Line up the splitter

Your saw's splitter and anti-kickback pawls are two important components of accurate and safe rip cuts. As its name implies, the splitter keeps the kerf open after the blade makes the cut, preventing pinching that can burn a cut. Follow the simple procedure shown *below* to check that the splitter is centered behind the blade. Loosen the mounting bolts to shift the splitter behind the blade.

The spring-loaded anti-kickback pawls are the pointed guards held against the stock with pressure. The pawls glide over the stock as long as the cut is proceeding normally, but jam into the wood if the blade tries to shoot it backward toward you during a kickback. Prevent an accident by making certain that the pawls operate correctly.



Use a straight piece of wood to check that the splitter is directly behind the blade so it doesn't interfere with the cut.

### Step 6: Check your technique

When making rip cuts, you need to perform three movements simultaneously: pushing the stock firmly against the fence at the point just before the blade makes contact, holding the wood firmly downward against the table, and moving the wood steadily forward. A feather board clamped to the miter-gauge slot supplies pressure against the fence so you can concentrate on the other movements. Whenever possible, use a pushstick to get the wood safely past the blade. A pushstick is especially important for narrow cuts, keeping hands out of harm's way.

It may sound complicated, but it's a lot easier than learning to ride a bicycle. And once you've mastered rip cuts, you'll have a lifelong skill that will help you build projects with better precision.



To rip stock successfully, keep it snug against the fence and saw table. Use a pushstick and feather board to help you do this.

### Maybe it's the wood that's causing the trouble

Wood that's cupped, twisted, or bowed invites burned rip cuts. If you're faced with problem wood, you'll find that it's safer to rip it with a bandsaw or jigsaw because there's no risk of kickback. Next, you can flatten each board by using your jointer and thickness planer. Crosscutting wood into slightly overlength blanks before ripping is another technique that minimizes problems—working with shorter pieces also makes each one easier to handle.

Hidden stresses in the wood may cause problems during rip cuts. A tree that grew on a slope, for instance, can produce reaction wood that curls like a spring when cut. And a drying defect called case-hardening also can create stresses in the lumber's structure that make the wood move unpredictably when cut. In both cases, turn off the saw, remove the workpiece, and replace it with better stock. 🌲

# Shop-Built Add-Ons

Work more efficiently and give your tablesaw extra versatility by crafting these handy accessories in your shop.

## The Do-It-All Mobile Tablesaw Base

It's sad but true that the space beneath most tablesaws goes to waste. But that needn't be the case, as you can see here. Our cabinet stores a plentiful supply of saw blades, router bits, and other woodworking gear on the sliding trays. Plus, the entire cabinet is easy to move around in your shop, thanks to a pair of casters. Just store it against the wall when the cutting is done.

**Note:** Our cabinet was made to fit a Ryobi BT3000 benchtop tablesaw. You might need to change the overall dimensions to fit your particular benchtop saw.

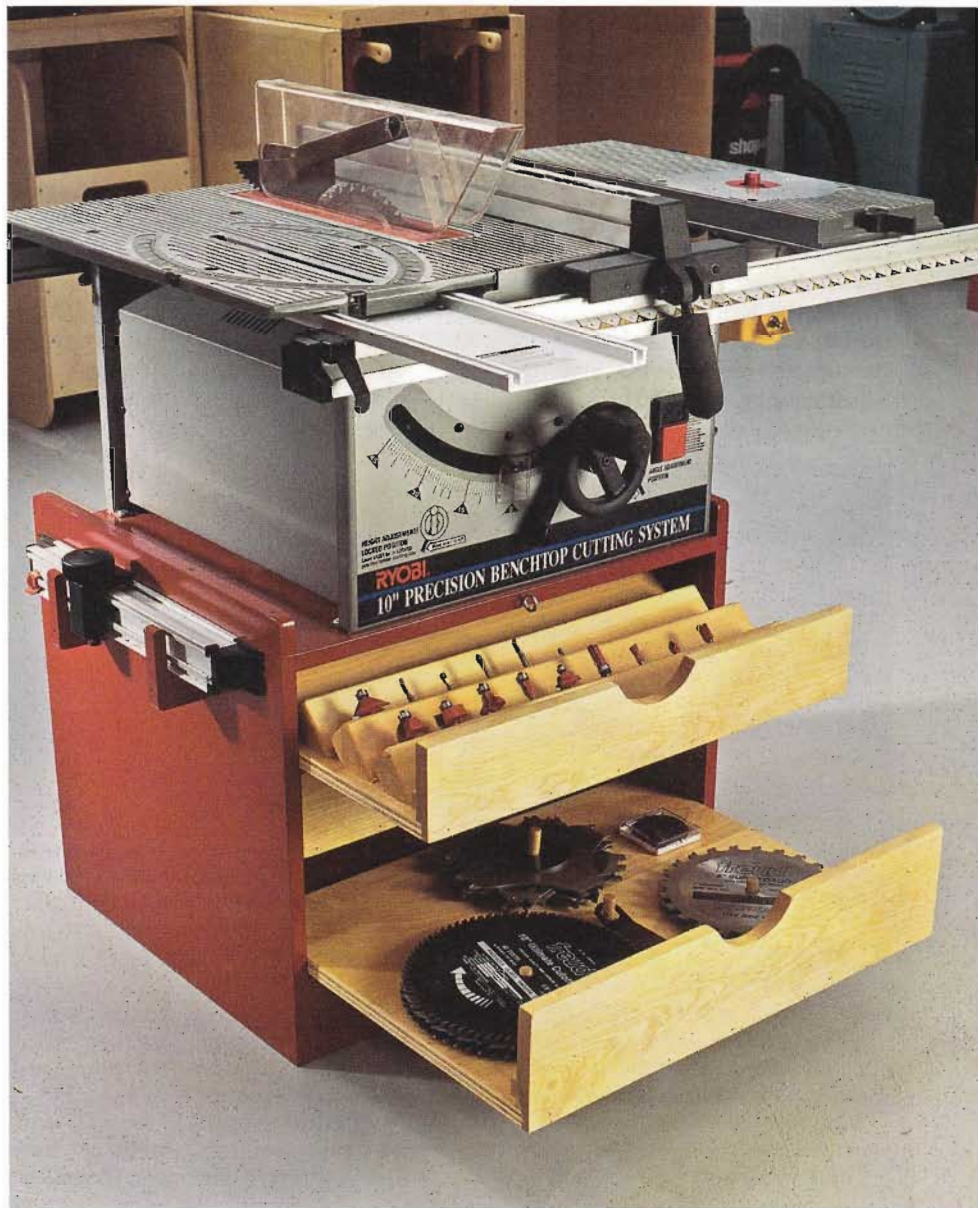
### Start with the plywood panels and edging

**1** Cut the sides (A, B) to the sizes listed in the **Materials List** from  $\frac{3}{4}$ " birch plywood. Note that side A is  $\frac{3}{4}$ " shorter than side B to allow for clearance against the floor later after adding the casters.

**2** Cut the back (C) and the top and bottom (D) to size.

**3** From the edge of  $\frac{3}{4}$ "-thick stock, rip the maple edging (E, F, G, H) to size plus 1" in length. Glue and clamp the edging to the edges of the plywood panels where shown [Drawing 1, page 54]. Later, trim the ends of the edging flush. See the **Shop Tip** on page 107 for our method of trimming the edges of the solid-stock edging flush with the surfaces of the plywood.

**4** Mark the locations of the rabbets, grooves, and dadoes in the plywood panels (A, B, C), and cut or rout them to size [Drawing 1]. We fit our tablesaw with a  $\frac{3}{4}$ " dado blade and wooden auxiliary rip fence to cut the dadoes, rabbets, and grooves. Then, we test-cut scrap pieces first to verify a snug fit of the plywood pieces in the dadoes and grooves.





To secure the cabinet, a metal bar can be padlocked to the two screw eyes that are mounted above and below the drawers.

### Add the tray supports

- 1 From  $\frac{1}{4}$ " hardboard, cut the tray supports (I, J) to size.
- 2 Position and screw the bottom supports (J) 1" above the bottom dado. Then, using a piece of  $\frac{3}{4}$ "-thick stock as a spacer, position the remaining supports (I), drill screw-mounting holes, and screw the supports in place as shown in the photo *above right*. (Note that we placed a long piece of  $\frac{3}{4}$ "-thick walnut in the bottom  $\frac{3}{4}$ " dados to align the two side panels (A, B) before attaching the supports.)

### Let the assembly begin

- 1 Dry-clamp the plywood panels (A, B, C, D) together to check the fit, and trim if necessary. Then, glue and clamp the pieces, checking for square. (To prevent unsightly glue stains on the plywood, we placed masking tape next to the glue joints before gluing. Later, after the glue dried, we peeled off the tape, taking the glue squeeze-out with it.)

- 2 Measure the length of the opening, and cut the toe-kick (K) to shape, tapering the corner where dimensioned [Drawing 1a]. Drill countersunk screw holes, and glue and screw the toe-kick in place.

- 3 Turn the assembled table saw base upside down, drill mounting holes for the  $2\frac{1}{2}$ " rigid casters, and screw the casters in place.

- 4 Cut the border strips (L) to size. Drill the countersunk screw holes where shown [Drawing 1]. Screw the strips to the top of the cabinet.

### Add the three trays for plenty of storage

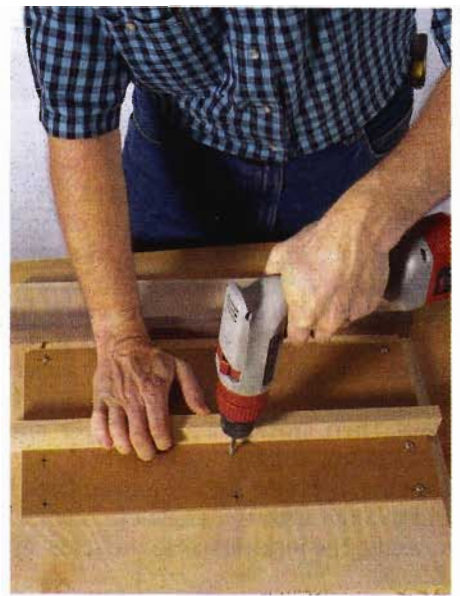
- 1 From  $\frac{3}{4}$ " maple, rip and crosscut the tray fronts (M, N) to size [Drawings 2 and 3]. From  $\frac{3}{4}$ " plywood, cut the tray bottoms (O) to size.

- 2 Transfer the full-sized handle-cutout pattern *below* to poster board. Cut the poster board template to shape. Center the template on the front face of each tray front. Trace its outline onto each tray front, and cut the radius to shape to create the concave opening. Now, sand the tray fronts smooth.

- 3 Cut a  $\frac{3}{4}$ " rabbet  $\frac{3}{8}$ " deep along the bottom back edge of each tray front (M, N) [Drawings 2 and 3].

- 4 Cut a cleat (P) to size for each tray. Drill six countersunk holes in each cleat. With the bottom edge of the cleat flush with the top edge of the rabbet, glue and screw the cleats to the tray fronts. Glue and screw a tray front/cleat assembly to each tray bottom (O), checking that the front is square to the tray bottom.

- 5 To make the router-bit holders (Q), cut four pieces of  $2 \times 4$  stock to  $21\frac{7}{16}$ " long [Drawing 3a]. Mark a centerline along both edges (not surfaces) of each piece of  $2 \times 4$  stock. Starting  $1\frac{23}{32}$ " from the ends



For evenly spaced tray supports, use a piece of  $\frac{3}{4}$ "-thick stock to position the pieces before screwing them in place.

and spacing the centerpoints 2" apart, mark centerpoints on the  $2 \times 4$ .

- 6 Drill  $\frac{1}{4}$ " and  $\frac{1}{2}$ " router-bit shank holes in the  $2 \times 4$  stock. The number of  $\frac{1}{4}$ " holes vs.  $\frac{1}{2}$ " holes will be determined by your bit collection. (After drilling into the wood, we wobbled the bit slightly to allow the bit shanks to be removed easily from the holes.)

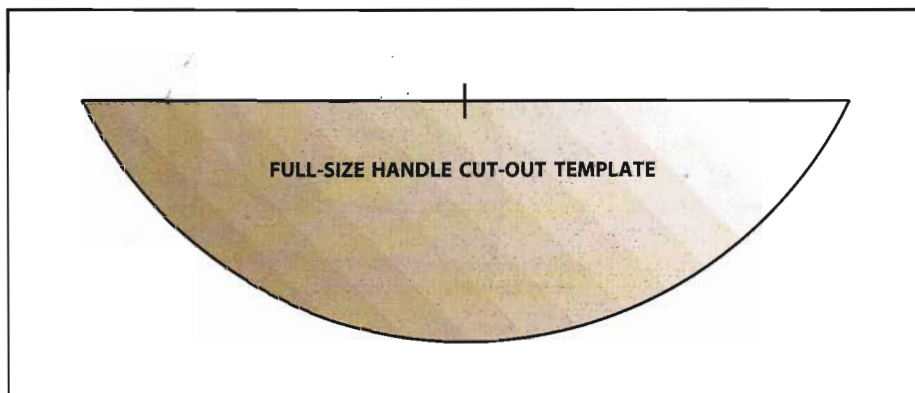
- 7 Rout  $\frac{1}{4}$ " round-overs along all edges of each piece of  $2 \times 4$ .

- 8 Using Drawing 3a for reference, angle the blade on your table saw, and rip each  $2 \times 4$  section in two. Sand each holder (Q) smooth.

- 9 Locate and drill countersunk screw holes on the bottom side of each tray (O). Screw the bit holders to the top of each tray.

- 10 Use Drawing 2 on page 56 to assemble the blade, shim, and dado-cutter holders.

- 11 Cut the drawer slides (R) to size. Then glue and clamp them to the cabinet bottom (D) flush against the cabinet sides (A, B).



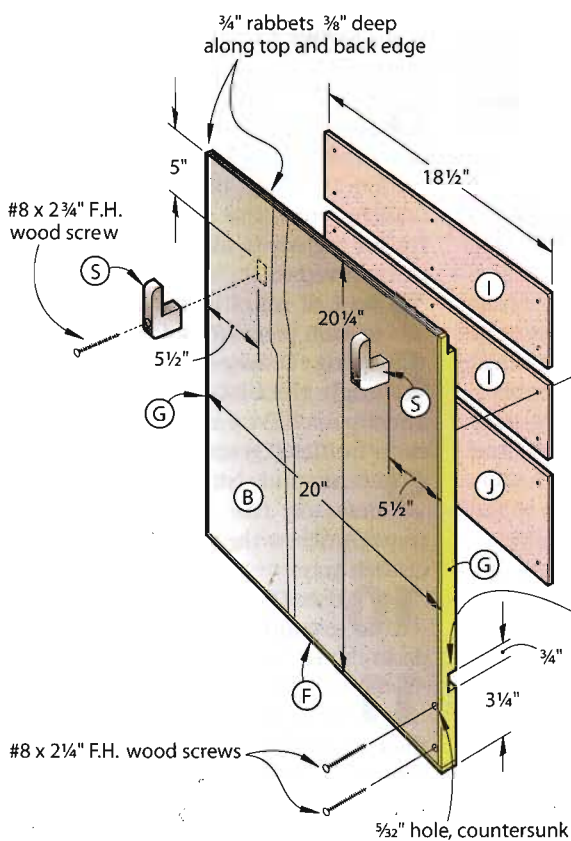
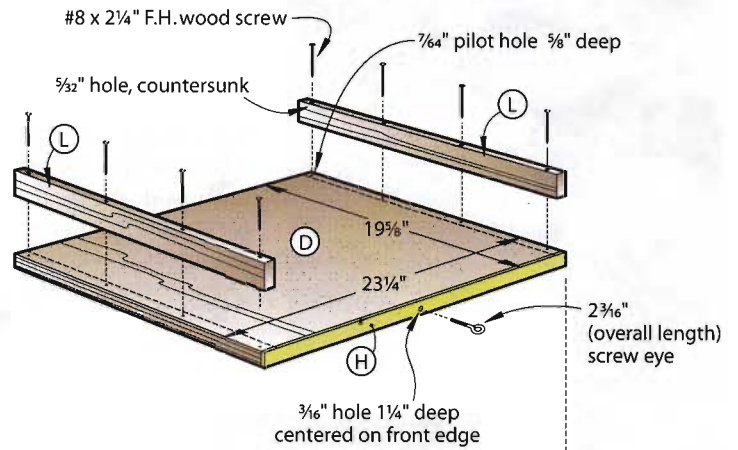
Find more shop project plans at:  
[woodmagazine.com/tsfreeplans](http://woodmagazine.com/tsfreeplans)



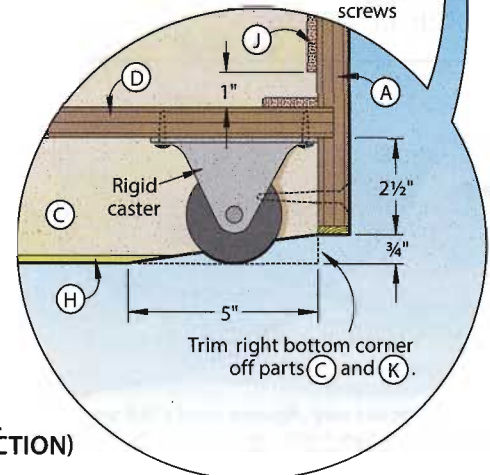
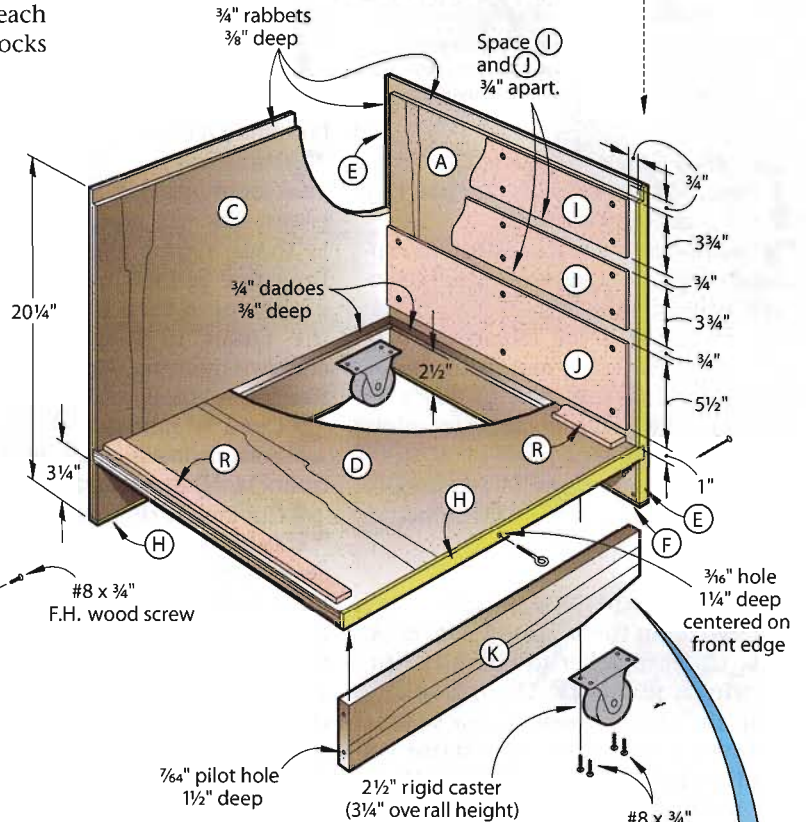
## Consider a few add-ons

**1** For hanging the miter-gauge extension on the side of the cabinet, twice transfer the miter-gauge extension holder full-sized pattern to  $\frac{3}{4}$ "-thick stock. Cut the holders (S) to shape, drill a screw hole in each, and screw the holders to the side of the cabinet where shown [Exploded View].

**2** For added security, drill pilot holes and add a pair of  $2\frac{13}{16}$ " screw eyes to the cabinet where shown [Exploded View]. Then, crosscut a piece of  $\frac{1}{4}$ "x1" aluminum bar stock to 15" long for the locking bar. (See the **Locking Bar** drawing, *opposite*, for reference.) Drill a  $\frac{5}{16}$ " hole at each end to align with the screw-eye holes. Later, use padlocks to secure the locking bar to the screw eyes.

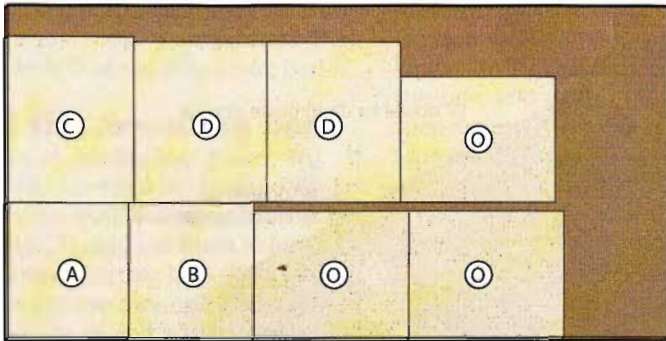


**1** EXPLODED VIEW

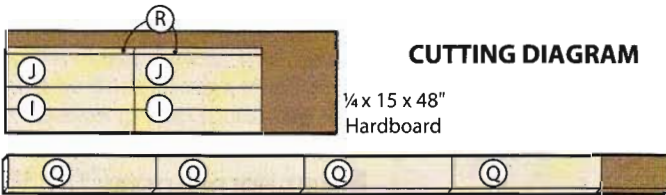
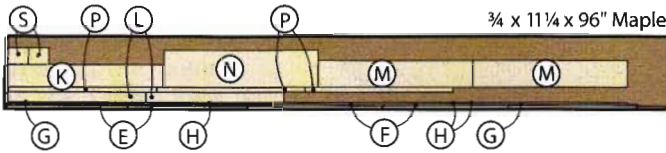


**1a** WHEEL DETAIL (SIDE VIEW SECTION)





3/4 x 48 x 96" Birch Plywood



1 1/2 x 3 1/2 x 96" Fir (2x4)

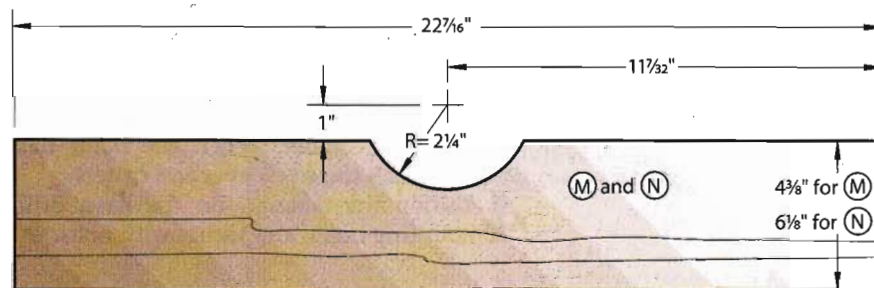
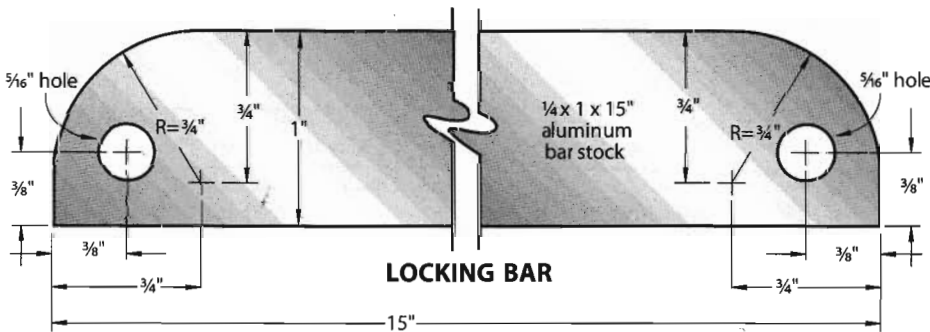
## Materials List

Part	Finished Size			Matl.	Qty.
	T	W	L		
A side	3/4"	19 1/2"	19 1/4"	BP	1
B side	3/4"	19 1/2"	20"	BP	1
C back	3/4"	23 1/4"	20"	BP	1
D top & bottom	3/4"	23 1/4"	19 3/8"	BP	2
E edging	1/4"	3/4"	19 1/4"	M	2
F edging	1/4"	3/4"	20"	M	2
G edging	1/4"	3/4"	20"	M	2
H edging	1/4"	3/4"	23 1/4"	M	3
I supports	1/4"	3 3/4"	18 1/2"	HB	4
J supports	1/4"	5 1/2"	18 1/2"	HB	2
K toekick	3/4"	3 1/4"	22 1/2"	M	1
L strips	3/4"	1 1/2"	20"	M	2
M fronts	3/4"	4 3/8"	22 7/16"	M	2
N front	3/4"	6 1/8"	22 7/16"	M	1
O bottoms	3/4"	18 1/4"	22 7/16"	BP	3
P cleats	3/4"	1"	21 7/16"	M	3
Q holders	1 1/2"	2 7/16"	21 7/16"	F	8
R slides	1/4"	1"	18 1/2"	HB	2
S holders	3/4"	2 1/4"	3 1/2"	M	2

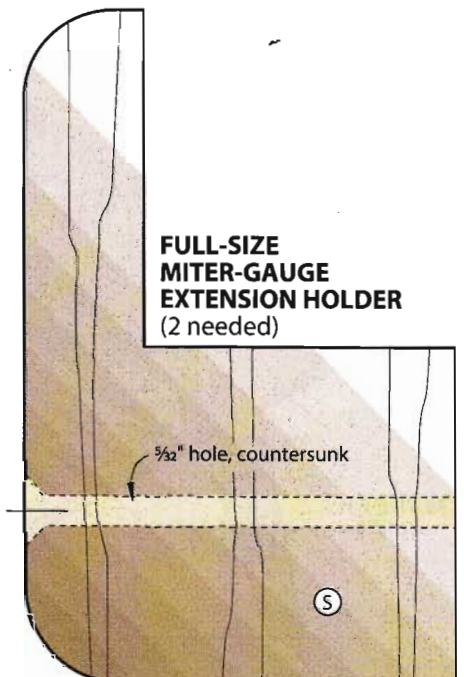
Length measured with the grain.

**Materials key:** BP–birch plywood, M–maple, HB–hardboard, F–fir.

**Supplies:** #8x3/4", #8x1 1/4", #8x1 1/2", #8x2 1/4", #8x2 3/4" flathead wood screws, 2–2 3/16" (overall length) screw eyes, 1/4x1x15" aluminum bar stock for locking bar, 2–2 1/2" rigid casters (3 1/4" overall height) with 8–#8x3/4" panhead sheet-metal screws, 3/8" dowel stock, 1/2" dowel stock, primer, red enamel paint, clear finish.

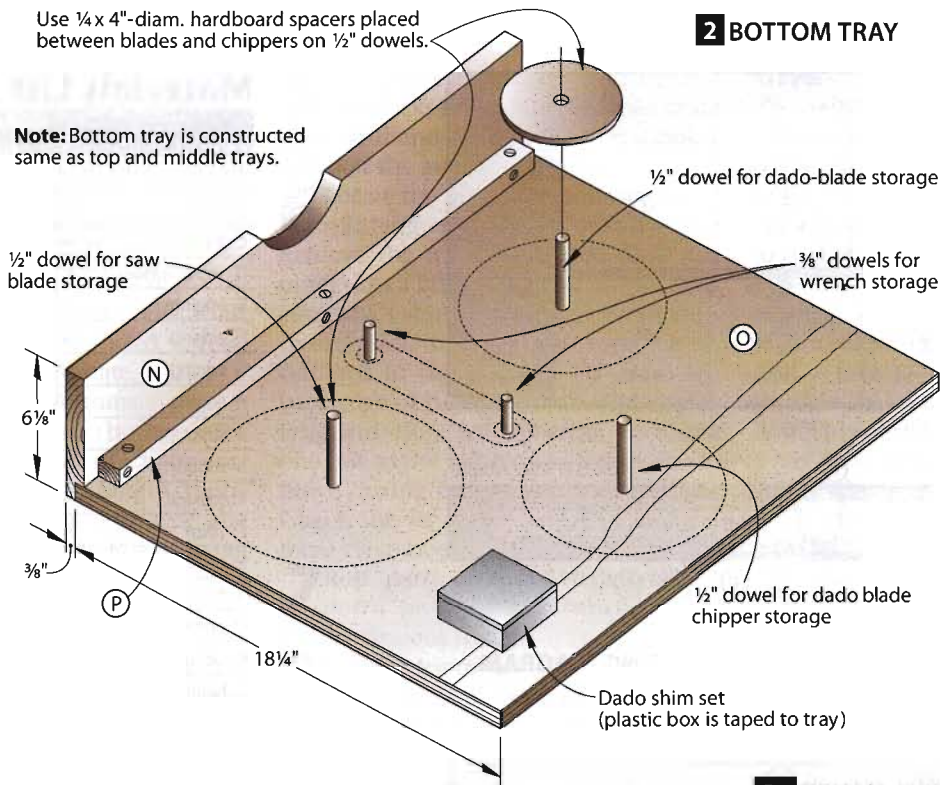


**TRAY FRONTS**  
(2 (M) and 1 (N) needed)

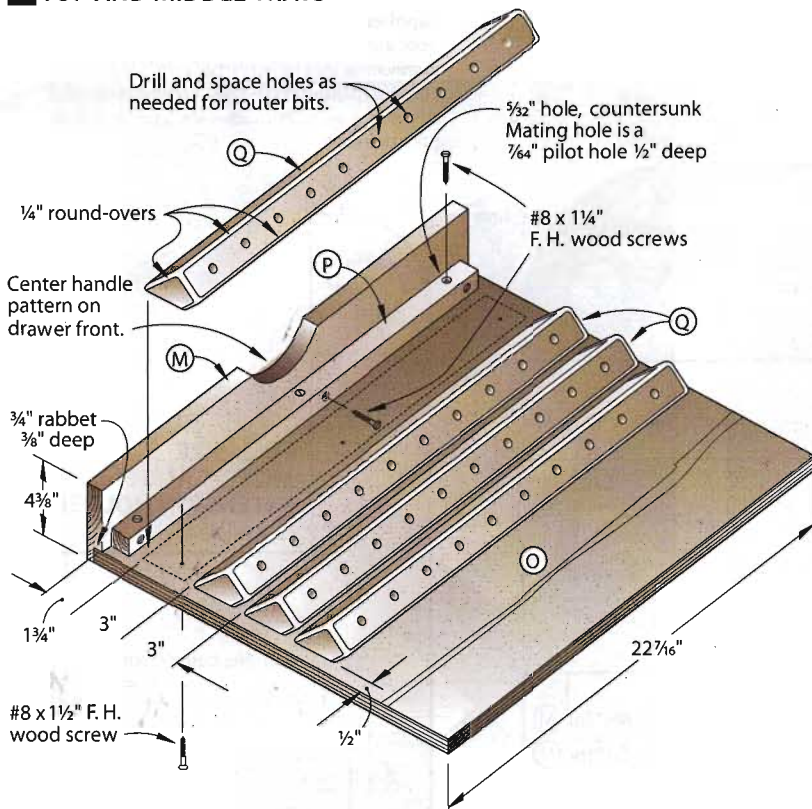


Use 1/4 x 4"-diam. hardboard spacers placed between blades and chippers on 1/2" dowels.

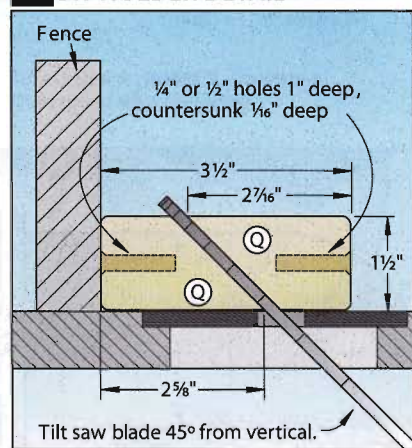
**Note:** Bottom tray is constructed same as top and middle trays.



### 3 TOP AND MIDDLE TRAYS



### 3a BIT HOLDER DETAIL



### Sand it, paint it, and bring on the tablesaw

- 1** Remove the rigid casters and screw eyes, and finish-sand the entire cabinet.
- 2** Apply two coats of clear finish to the trays, sanding with 220 grit between coats.
- 3** Apply a coat of primer to the cabinet. Later, apply two coats of red enamel paint to the cabinet. When the paint has dried, reattach the screw eyes and casters.
- 4** Position the tablesaw on the base, drill mounting holes, and secure with bolts. 🪛

Project design: **Jim Downing**

Illustrations: **Kim Downing; Lorna Johnson**

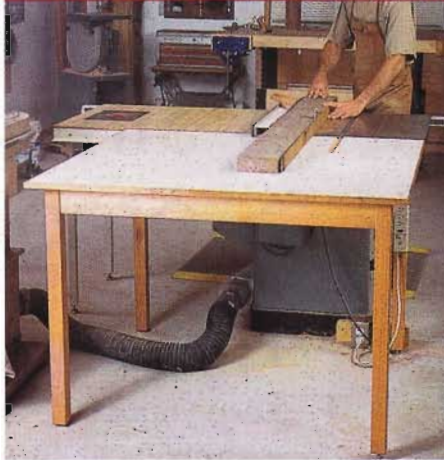
# Auxiliary Table

**R**ipping long boards calls for some extra support beyond your saw table. This handy outfeed table serves the purpose nicely, as shown *near right*. You also can use it to rough-cut large sheets of plywood (*far right*). To cut sheet goods, pull the table away from your saw, attach a cutting guide to the panel and make the first cut with your circular saw. Next, remove the waste, slide the panel over to the tablesaw, and trim it to size. When not used for cutting, the table serves as a surface for project assembly.

## How to make the sturdy auxiliary outfeed table

To construct this auxiliary table, first measure the height of your tablesaw and

### A MULTIPURPOSE OUTFEED TABLE FOR SAWING



Having a big outfeed table at the far end of your saw is the best way to keep control over long boards or sheet goods during the cut.

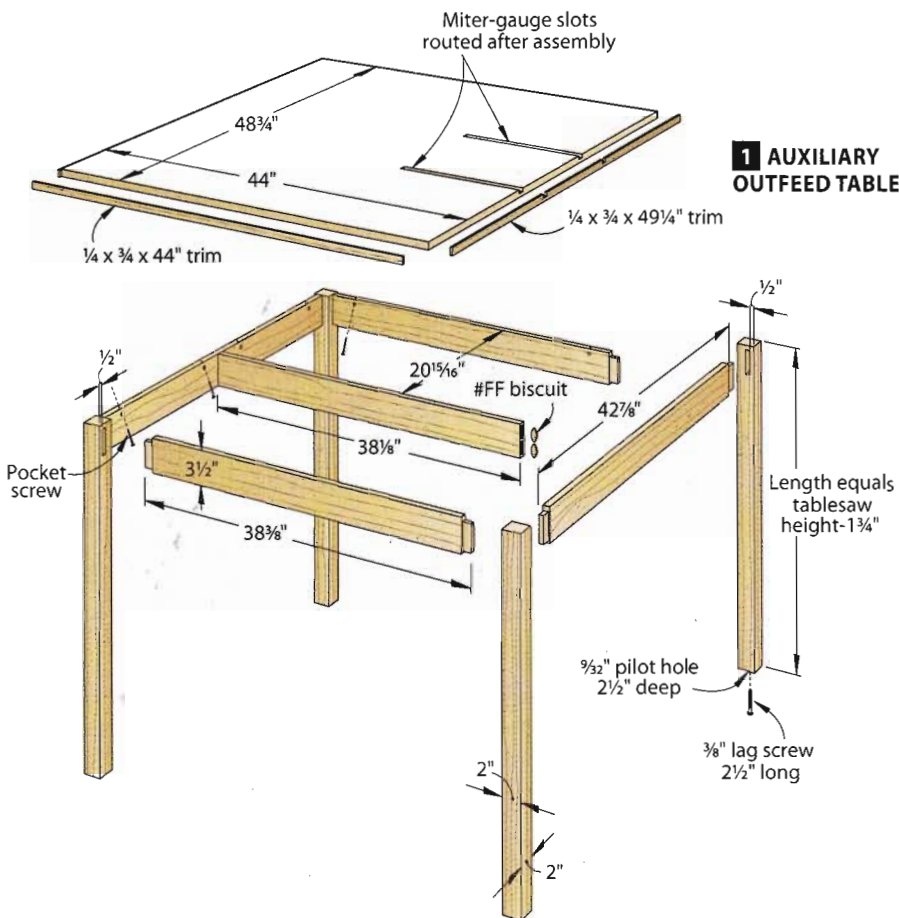


Pulling the table away from the saw transforms the outfeed table into a plywood crosscutting station.

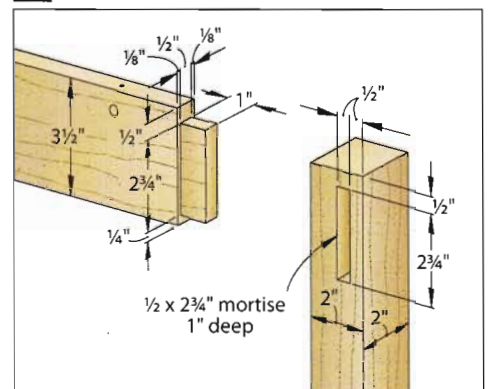
use that as a guide to determine the total height of the table that includes the melamine top, legs, and lag screws [Drawing 1]. You'll want to keep the table's height just below the saw table so you can adjust up to it with the lag screws. Here, you'll attach the aprons to the 2x2" legs using mortise-and-tenon joinery [Drawing 2] to combat the stress encountered when the table is dragged around the shop to fill different needs.

After cutting the parts to size, mill the tenons on the tablesaw. Cut the mortises with your mortiser or drill press. Test-fit the aprons and legs, and then measure the center rail to fit, and cut the biscuit slots where shown. Next, drill the pocket-screw holes for attaching the top. After cutting and drilling the parts, glue and clamp the aprons to the legs.

To make the top, cut the 1/4" melamine-coated particleboard to size, and then cut and attach the edging with glue. Screw the top to the rails; then flip the table over and insert the lag-screw levelers. Adjust the table height so that it's about 1/16" below the height of your saw. Finally, mark the location of your saw's miter-gauge slots on the tabletop, and rout these grooves so that the top doesn't interfere with the travel of your miter gauge or any jigs that use these slots. 🌲



### 2 MORTISE-AND-TENON DETAIL



# 3 Simple Blade-Storage Projects

## Protect-and-Serve Blade Rack

Keep your blades sharp, safe, and ready for action with this wall-mounted system.



This accommodating wall-mounted rack keeps saw blades accessible, separated, and protected from damage. It includes storage slots for standard blades plus a complete 8" stacked-dado set. Dowel pins provide places for dado shims, wrenches, a blade stabilizer, and throat plates. The rack stores blades from 7¼" to 10" in diameter.

Start by cutting the ¾×7½×29½" back. (To store more blades, add 2" to the length for each additional slot.) Now drill the screw and dowel holes.

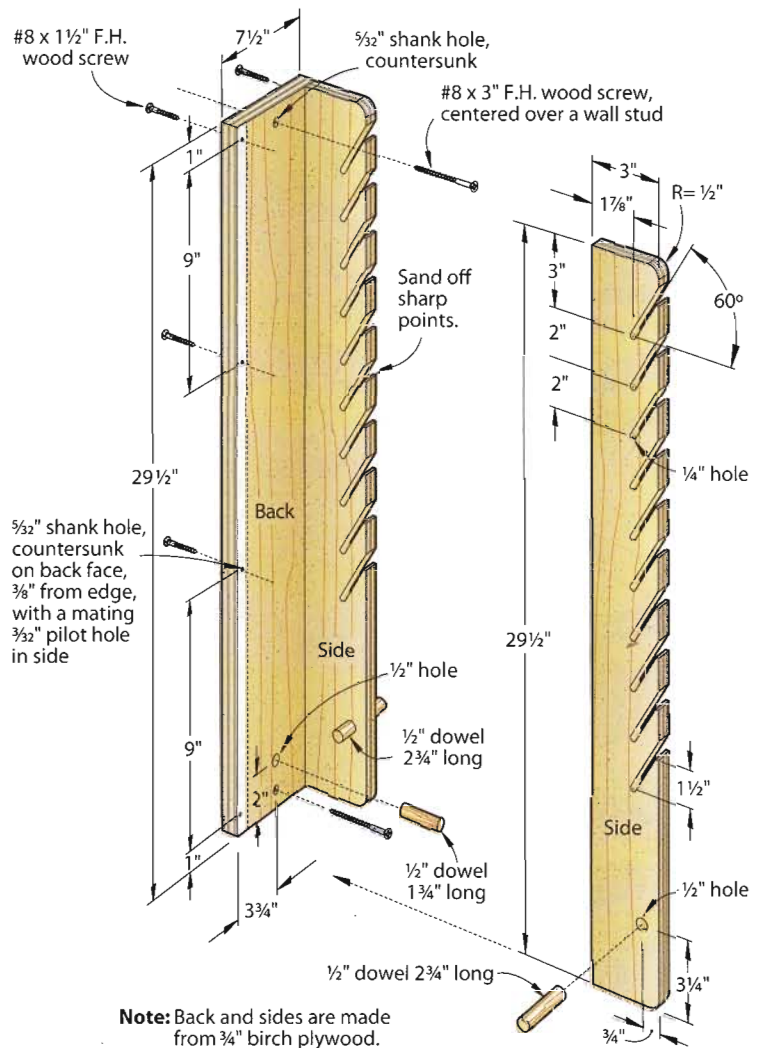
Next, cut the sides. Using double-faced tape, temporarily join them together face-to-face. This lets you lay out and machine slots into both sides identically.

Drill a ½" hole through both sides to hold the dowels you'll add later. Lay

out and cut the radiused corners. Mark the locations of the ¼" starter holes for the slots, and then mark the slot locations. Drill the starter holes, and cut the slots using a bandsaw or jigsaw. Cut just inside the lines, and then sand the slots smooth using a piece of 1/8" hardboard wrapped

in 100-grit sandpaper. Also sand off the sharp points on each slot, where shown.

To complete the rack, screw the sides to the back, and glue in the dowels. Add a coat of clear finish, and mount the holder to the wall by driving 3" screws into a stud.



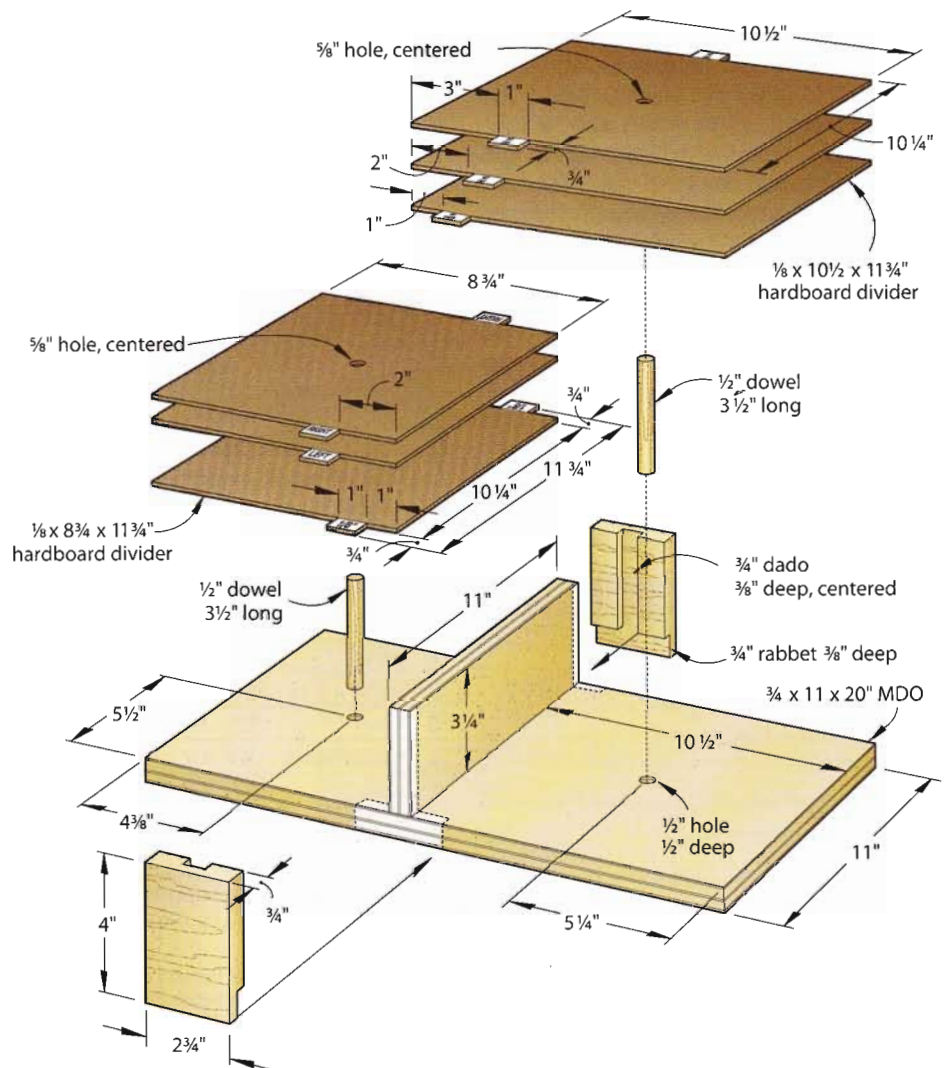
# Top-Drawer Blade Organizer

It works great for bottom drawers, too.

**T**his handy divider lets you organize and protect your favorite saw blades. We dimensioned ours to fit into a shop-cabinet drawer in a sawing/routing center. Feel free to modify your organizer to suit a drawer you have in mind.

To build your own, use the drawing below to cut all the pieces to size, noting the locations of the extending  $\frac{3}{4}$ "x1" tabs on each divider. For our 10" blades, we used the wider dividers on the right; for our 8" dado set, the narrow dividers are on the left.

Drill two  $\frac{1}{2}$ " holes in the base piece where dimensioned, and glue a  $\frac{1}{2}$ " dowel  $3\frac{1}{2}$ " long into each. Next, drill a  $\frac{5}{8}$ " hole into each  $\frac{1}{8}$ " hardboard divider. The dividers slide over the  $\frac{1}{2}$ " dowels to separate saw blades while preventing the teeth from contacting and damaging one another. Mark the tab of each hardboard divider with the appropriate blade description, and set that blade on top of that particular divider.



Find more shop organizer plans at:  
[woodmagazine.com/tsfreeplans](http://woodmagazine.com/tsfreeplans)



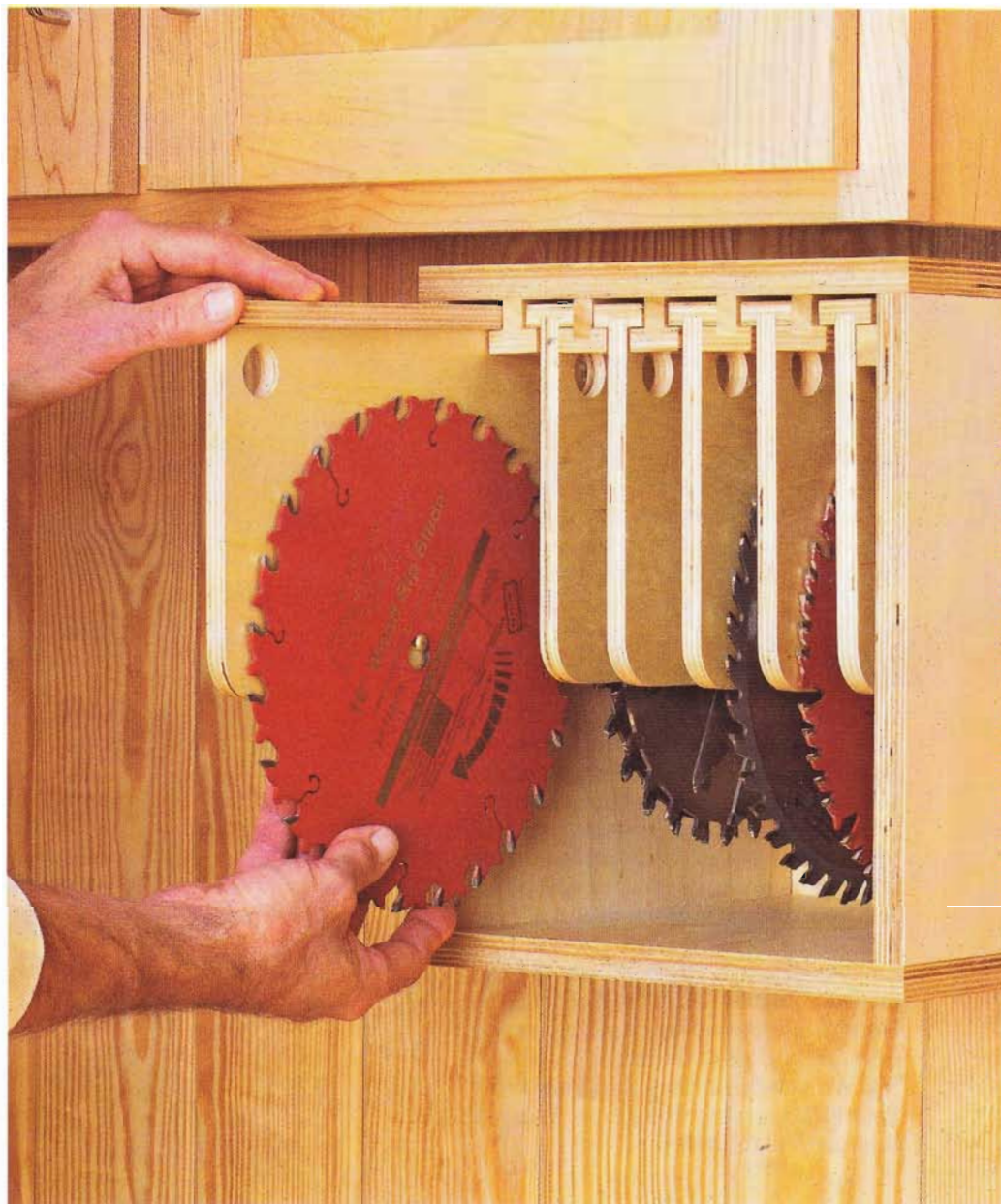
## Tablesaw Blade Locker

It helps clear clutter from your workbench.

**B**uild this compact storage unit and say good-bye to shuffling through blades stacked on a shelf or in a drawer. The pull-out panels keep everything at your fingertips while protecting the carbide teeth.

### Cut the parts to size

- Cut the rails (A) and panels (B) to size [**Materials List**, below right].
- From 1/8" tempered hardboard, cut the stops (C) to size.
- Plane stock to the same thickness as the 1/2" plywood, and cut the cleats (D) to size.
- Cut the top and bottom (E) and sides [F] to size. Then cut the case cleat (G) and wall cleat (H) to width and 1/4" longer than listed. Rip 45° bevels on the mating edges of the case cleat and wall cleat [**Drawing**, bottom right].



### PROJECT HIGHLIGHTS

- Overall dimensions: 11 1/2" wide x 12" deep x 13 3/4" high.
- Stores a stack dado set and six 10" saw blades.
- Expand it to store additional blades by making a wider case and adding more pull-out boards.
- Hang your dado set on three pull-out boards so you can get right to the blades and chippers you need.
- A pair of interlocking cleats makes wall mounting a snap.
- If space allows, use the top of the case as a shelf and hang tablesaw accessories, such as throat plates and pushsticks, from the sides.

### Materials List

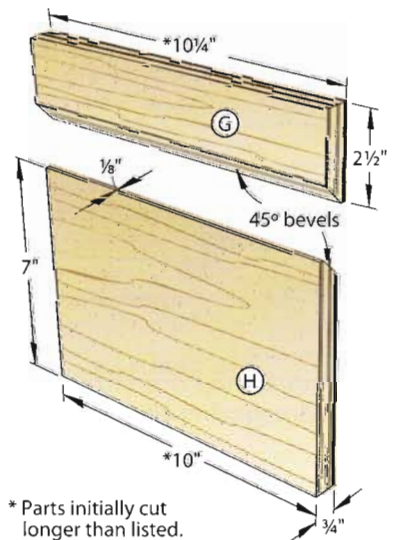
PART		FINISHED SIZE			Matl.	Qty.
		T	W	L		
A	rails	1/2"	1 1/8"	12"	BP	11
B	panels	1/2"	7"	11 1/4"	BP	6
C	stops	1/8"	1/2"	1"	H	12
D	cleats	1/2"	3/4"	12"	P	7
E	top and bottom	3/4"	12"	11 1/2"	BP	2
F	sides	3/4"	12"	12 1/4"	BP	2
G*	case cleat	3/4"	2 1/2"	10"	BP	1
H*	wall cleat	3/4"	7"	9 3/4"	BP	1

\*Parts initially cut oversize. See the instructions.

**Material key:** BP—birch plywood, H—tempered hardboard, P—poplar.

**Supplies:** #8x1 1/2 and #8x2 1/2" flathead wood screws, #10x3/4" brass roundhead wood screws.

**Blade and bits:** Stack dado set, 1" Forstner bit.



\* Parts initially cut longer than listed.

## Make the pull-out boards

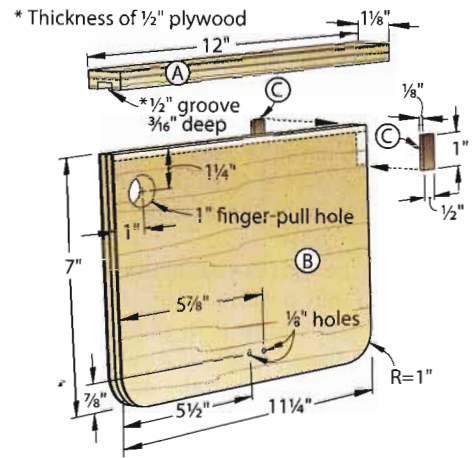
■ Adjust a dado blade to cut a groove to match the thickness of the ½" plywood panels (B). Then cut a centered ⅜"-deep groove into each rail (A).

■ Chuck a 1" Forstner bit into your drill press, and drill a finger-pull hole into each panel (B). Mark 1" radii on the panel bottom corners. Saw and sand

them to shape. Drill two ⅛" holes into each panel for #10 roundhead screws.

■ Glue and clamp a rail (A) to the top edge of each panel (B), with both parts flush at the front.

■ Glue and clamp a hardboard stop (C) to the upper rear corner of each panel (B) on both sides.



## Assemble the hangers

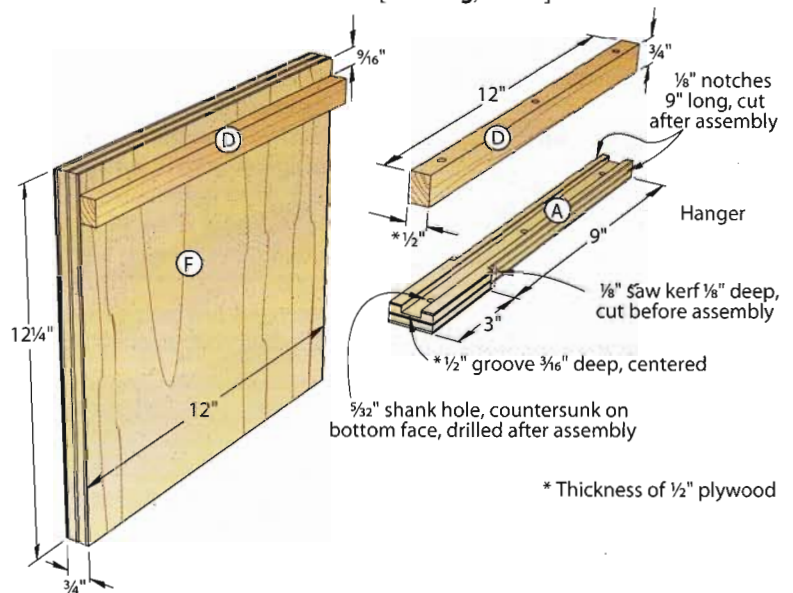
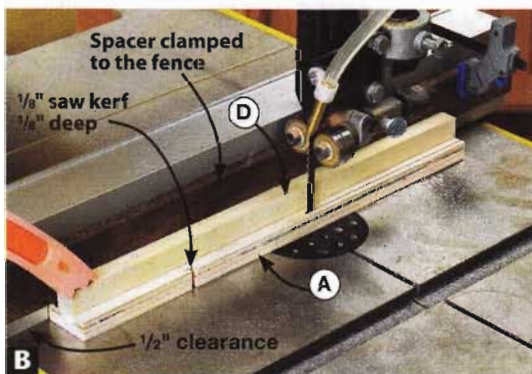
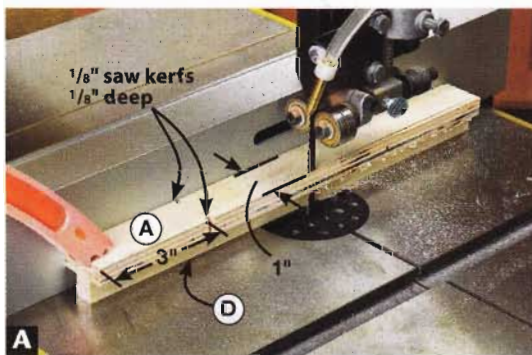
■ To form the ends of the 9"-long notches in the rails (A) of the hangers (D), fit your tablesaw miter gauge with an extension and a stopblock. Then cut ⅛" saw kerfs ⅛" deep into both edges of each rail 3" from the front end [Drawing, below right].

■ Glue and clamp a cleat (D) into the rail (A) grooves, flush at the ends. Then, to complete the 9"-long rail notches, position your bandsaw fence 1" from the blade. With the hanger (A/D) rails (A) up, cut to the saw kerf [Photo A]. Next measure the distance from the cleat (D)

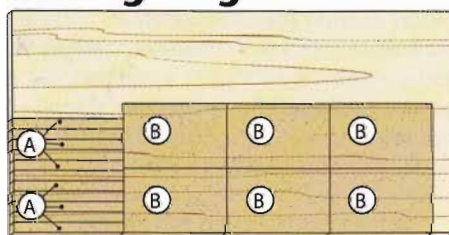
to the edge of the rail, and cut a spacer to this width and the length of the bandsaw fence. Clamp the spacer to the fence ½" above the bandsaw table. Now rotate the hangers, and with the rails down, cut the opposite notches [Photo B].

■ Drill three countersunk holes through each hanger (A/D) [Drawing, below].

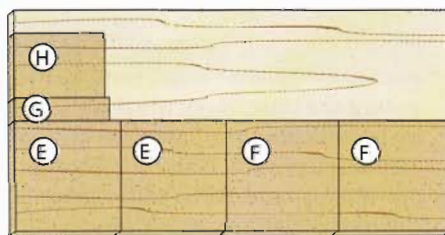
■ Retrieve the sides (F) and the remaining cleats (D). Glue and clamp the cleats to the inside faces of the sides [Drawing, below].



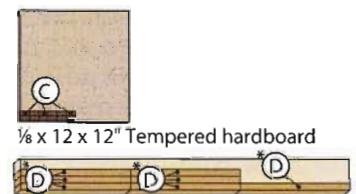
## Cutting Diagram



½ x 24 x 48" Birch plywood



¾ x 24 x 48" Birch plywood



⅛ x 12 x 12" Tempered hardboard

¾ x 3½ x 36" Poplar (1 bd. ft.)

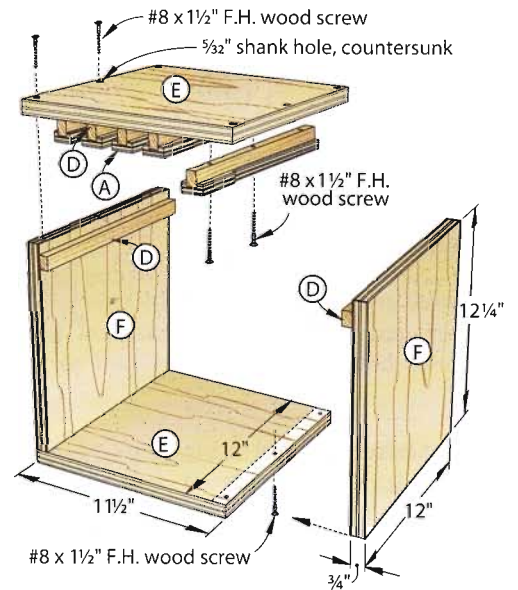
\*Plane or resaw to the thickness listed in the Materials List.

## Build the case

■ Finish-sand all the parts and assemblies. Then apply a clear finish. (We applied two coats of satin polyurethane, sanding between coats with 220-grit sandpaper.)

■ Retrieve the top (E). Center one hanger [A/D] on the bottom face, flush at the front, and clamp it in place. Using the hanger shank holes as guides, drill pilot holes in the top, and drive the screws. Then, inserting 17/32"-wide spacers between the cleats (D), add the remaining hangers [Photo C].

■ Clamp the top assembly (A/D/E), bottom (E), and side assemblies (D/F) together, flush all around. Then drill countersunk screw holes through the top and bottom (E) and in the sides (F) [Drawing, far right]. Drive the screws.



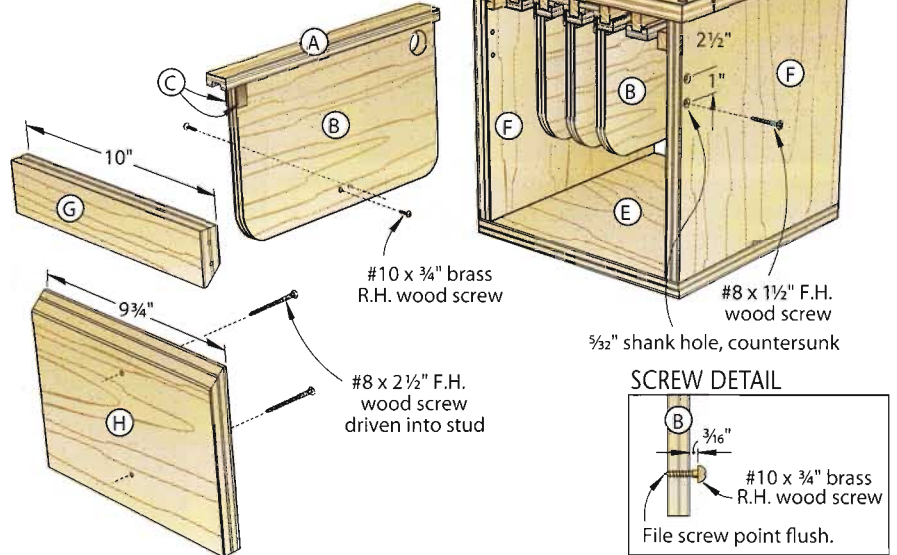
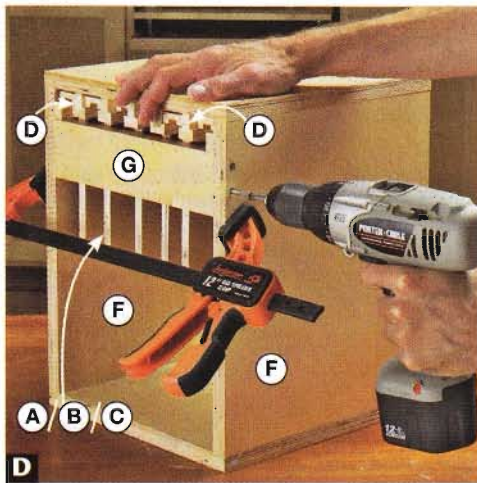
## Assemble the locker

■ Drive roundhead screws into the 1/8" pilot holes in the panels (B) of the pull-out boards (A/B/C) [Drawing, right]. Leave 3/16" between the head of the screw and the panel [Screw Detail]. File the protruding screw points flush on the opposite side of the panel.

■ Slide the pull-out boards (A/B/C) into the case from the rear. Measure the

inside dimension of the case. Cut the case cleat (G) to this length. Then cut the wall cleat (H) 1/4" less than this length. Position the case cleat between the sides (F), flush with the back edges and snug against the bottoms of the side cleats (D). Clamp the case cleat in place.

Drill countersunk screw holes through the sides and into the case cleat. Drive the screws [Photo D].



## Now hang it up

■ Check for a wall stud in the desired location of the blade locker. If there is a stud, mark the location on the wall cleat (H), and drill two countersunk screw holes in a vertical arrangement. Hold the cleat level against the wall. Using the screw holes as guides, mark the screw locations on the wall. Drill pilot holes into the stud, and screw the cleat to the wall.

If there is no stud, drill the cleat holes in a horizontal arrangement, and use hollow wall fasteners to mount the cleat. Hang the blade locker by interlocking the case-cleat (G) and wall-cleat bevels. Slide out the pull-out boards, and hang your blades on the roundhead screws.

**Note:** To allow the case cleat (G) to clear the wall cleat (H) when mounting the blade locker under an overhead obstruction, such as a wall cabinet, draw a level line 11" below the obstruction, and align the bottom of the wall cleat with this line. 🌲



# FREE SHIPPING\*\*

**You'd pay hundreds more if you purchased these router bits separately!**

A dream buy for wood workers... 35 high-quality router bits for just \$1.14 each! This incredible set has a huge assortment of bits that let you V-groove, flush trim, chamfer, dovetail and much more with professional results every time. Bits have 1/4" shank and are solid carbide or carbide tipped for years of dependable use and clean cuts with a working error of less than 0.2 mm. Bits come in a wooden storage case with labels to keep them Compare At: \$310.09 clean and organized. **YOUR PRICE** Item No. UB59-56652

**EX-TREMELY LIMITED QUANTITIES**

**BIGGER & BETTER**  
**35**  
**PIECE-SET**



**\$39.99** FREE Ship \$2.50

**Ditch the cords, gas & hassles...trim it the easy way!**

**18V**

From finishing lawns to leveling tall field grass, this cordless rechargeable 9" string trimmer makes it quick, easy & convenient! Don't put up with tangled extension cords or the weight & mess of a gas powered model. Get this rechargeable string trimmer! It has a wide 9" cutting path & an 8000 rpm motor to power through tall grass & weeds, an ergonomic handle & a reliable automatic string dispenser. Comes with 18V Ni-Cad battery pack with approx. 40 minutes run time per charge, 10' of line, adjustable length handle & charger adapter. Additional batteries & charger/adapters available. Ask your operator for details. Compare At: \$117.80 **YOUR PRICE** Item No. UB59-57337



**Up to 40 minutes run time per charge!**

**POLLUTION FREE**

**WHISPER QUIET**

**CORD FREE**

**EX-TREMELY LIMITED QUANTITIES**

**\$39.99** \$5.95 Ship \$9.95

**Elegant 10' cantilever umbrella creates a 62 square foot oasis from the sun & elements!**



**BLOW OUT SALE!**

**10 foot diameter keeps everyone in the shade!**

**Hand crank**

**Green**

**Natural**

"I purchased one of these umbrellas five years ago and LOVE it. I recently purchased one for my sister, she and her husband rave about how great it is. I find it incredible that such a nice product can be this price. Thank you Heartland America." --JB Portland, OR

For years, cantilevered umbrellas like this have graced open-air cafes throughout Europe. This huge 10' canopy has a cantilevered support column that provides 50% more shade than ordinary umbrellas! You'll enjoy your porch, patio & deck more than ever with this quality umbrella. New improved model includes a hand crank for convenient opening & closing; has a durable polyester fabric design, aluminum pole for strength & durability; steel ribs, top pole, cross base & 8' height. In green or natural color. Order now & be ready for the summer sun. Compare At: \$315.00 **YOUR CHOICE \$99.99** each \$28.95 Ship \$39.95 Green No. UB59-81487 Natural No. UB59-81488

**Savooureux Pro Line**  
**SAVES 80% ENERGY**  
**COOKS 50% FASTER**  
**HEATS UP 10 APPLIANCES**  
Cooks from frozen to finished with NO defrosting!  
Compare At: \$129.99 **NOW ONLY! WAS: \$99.99** \$3.95 Shipping \$7.95 Item No. UB59-69219



**Bake, roast, barbecue, broil, air-fry, air-broil, grill & steam foods to mouth-watering perfection at faster-than-microwave speeds!**

Convection oven from Savooureux Pro Line™ combines the performance of ten appliances in one! It cooks virtually anything at breakneck speeds & uses 80% less energy too. Plus, the convection technology circulates hot air around foods to seal in flavor & juices & cooks foods evenly. Cooks at speeds microwaves & convection ovens don't match. Lets you cook without added oils or fats for healthier foods. Also features 12-liter capacity bowl, 1300 watts of power, adjustable thermostat, timer & more. Comes with dual lower rack, tongs & a lid holder. 13" x 13" x 8".

**The next energy crisis could strike at any time! Will you be ready?**

Price breakthrough! This 1000W generator is priced under 130¢ - **1000 WATTS** that's \$579 less than competing models! When the power goes out or you're camping miles away from the nearest outlet, this generator delivers the juice you need. The 2HP air cooled two-stroke engine & brushless generator deliver the power you need to run lights, power tools, electric appliances & more. Features a 120V AC outlet with circuit breaker, 12V DC outlet, a DC trickle charger for charging your car battery & eight hours of run time per tank of gas at half load. Also has a hushed design for reduced noise. 15" x 13" x 14". Not available in CA. Outdoor use only (see manual). Compare At: \$709.00 **NOW ONLY! WAS: \$299.99** \$17.95 Ship \$34.95 Item No. UB59-50557



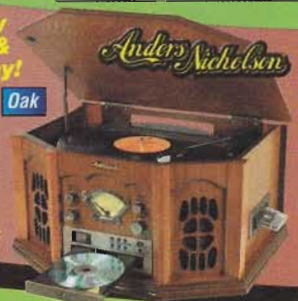
**PUBLIC NOTICE:** Natural disasters and power problems strike with little or no notice. So plan ahead & don't get caught in the dark this year. Our limited allocations of generators will sell out quickly, so reserve yours today to avoid disappointment!

**BE AWARE! BE PREPARED!**  
**UP TO 8 HOURS OF RUN TIME**  
**GAS POWERED**  
**Price reflects \$20.00 mail-in rebate. Price before rebate is \$149.99. Rebate expires 9/30/09.**

**ENERGY SAVER**  
**Miracle LED recessed bulb costs only \$1.17 a year to operate!**  
MSR: \$49.90/pair  
**ONLY \$14.99\*** /each FREE Ship \$7.50  
\*Sold In Pairs  
No. UB59-60879



**The look of yesterday with the technology & sound quality of today!**  
Compare At: \$249.00 **WAS: \$140.00**  
**NOW ONLY \$99.99** /each  
Oak No. UB59-40008  
Cherry No. UB59-40009 Ship \$22.95 \$11.95



**Strap it on your wrist and help disarm the silent killer!**  
Compare At: \$109.99 **ONLY \$19.99** FREE Ship \$7.50  
No. UB59-97272



**St. John's MEDICAL**

**HOSPITAL QUALITY**

**1 TOUCH Auto-inflation AND Auto Deflation**



National Headquarters: Call Toll-Free, 8085 Century Blvd. 24 hours a day, Chaska, MN 55318 7 days a week

CA RESIDENTS WARNING: The products offered for sale in this ad may contain chemicals, including lead, known to the state of California to cause cancer and birth defects or other reproductive harm.

**HEARTLAND AMERICA®**

*The Best Values Direct to you from the Heartland!*

\*\*Some limitations may apply. Ask your operator for details. Overweight items have dramatically reduced shipping.

**1-800-229-2901**

**FREE SHIPPING\*\***  
Receive FREE Shipping On Your 1st Online Order!  
www. Enter Code: UB59UB59  
**HEARTLANDAMERICA.com**

# Space-Saving Double-Duty Tablesaw Workbench



Watch a FREE two-minute video of the Tablesaw Workbench in action at: [woodmagazine.com/tswvideo](http://woodmagazine.com/tswvideo)

Attention, small-shop and garage-shop woodworkers: Here's a project designed with you in mind. It's a combination workbench and outfeed table. Plus, for the space-starved shop, it stores in the same footprint as your tablesaw.

## PROJECT HIGHLIGHTS

- Overall dimensions: 61½" wide × 32⅛" deep × 39¾" high (casters in the down position).
- You can customize the workbench to fit any type of tablesaw. The workbench shown at *right* and *below* fits a contractor's model with a 30" fence.
- Levelers let you adjust the bench to match your tablesaw height for use as an outfeed table.
- To renew the worksurface, simply flip or replace the ¾" plywood top panel.
- For the items needed to build this project, see *page 65*. You'll find the **Supplies** at hardware stores and home centers. For the casters, see **Source**.

## Skill Builder

- Learn how to form large dadoes and rabbets using your tablesaw fence as a workpiece stop.

**Note:** To position the workbench over your tablesaw, remove the blade guard, rip fence, and miter gauge. The bench dimensions allow 1" clearance at the top of the tablesaw and 1" clearance at each side. There is no front-to-back clearance: With the workbench positioned over the tablesaw, the back fence rail touches the inside of the upper back rail (F) [Drawing 4], and the back of the front fence rail rests against the front legs (C).



Use it as an outfeed table...



...or an assembly bench.

## Measure your tablesaw

No matter the type of tablesaw you own, or how it's accessorized, you can customize this project to fit your needs.

**1** Measure your tablesaw [Drawing 1], and enter the dimensions in the empty brackets. (Our sample tablesaw dimensions are shown in parentheses.) If by chance your saw dimensions match those of the sample tablesaw, stop here. Simply use the part dimensions for the sample tablesaw shown on the **Materials List** at bottom right.

**2** For dimensions in brackets larger or smaller than the ones in parentheses [Drawing 1], here's how to size the workbench to your tablesaw. (Don't let the following lengthy explanation scare you off. The process is really quite simple.)

■ Subtract the smaller *length* dimension from the larger one. Enter the difference in the L column under the **CALCULATE** heading on the **Materials List** for parts A, D, E, H, J, and K, and in the **W** column for part N. Precede by a plus symbol (+) for a length in brackets that's larger than the one in parentheses, and a minus symbol (-) for a length in brackets smaller than the one in parentheses.

■ Subtract the smaller *height* dimension from the larger one. Enter the difference in the L column under the **CALCULATE** heading for part C, and in the **W** column for part E. Precede by a plus symbol (+) for a height in brackets larger than the one in parentheses, and a minus symbol (-) for a height in brackets smaller than the one in parentheses.

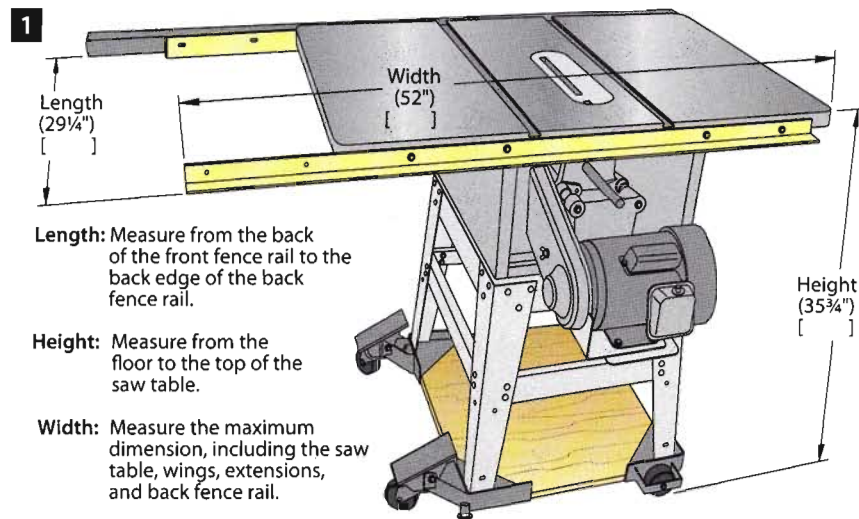
■ Subtract the smaller *width* dimension from the larger one. Enter the difference in the L column under the **CALCULATE** heading for parts F, G, I, and N, preceded by a plus symbol for a width in brackets larger than the one in parentheses, and a minus symbol for a width in brackets smaller than the one in parentheses.

■ Divide by 4 the width-dimension difference determined in the previous step. Record the dividend in the L column under the **CALCULATE** heading for parts L and M. Precede by a plus symbol, as directed *above*.

■ For a *width* dimension in brackets smaller than the one in parentheses, divide the dimension difference by 2. Enter the dividend in the L column under the **CALCULATE** heading for part B, preceded by a minus symbol. (Do not make part B longer than the length listed for the sample tablesaw.)

■ Now add the numbers in the **W** and **L** columns under the **CALCULATE** heading to, or subtract them from, the **W** and **L** dimensions under the heading that reads **SAMPLE TABLESAW**. Enter the new dimensions in the **W** and **L** columns under the **YOUR TABLESAW** heading. Then, to avoid confusion, cross out the obsolete dimensions listed under the **SAMPLE TABLESAW** heading.

Now, for example, let's say your tablesaw measures 30½" long, and you've entered this number on **Drawing 1** in the brackets under **Length**. In this case, complete the row in the **Materials List** as shown [Example, right center].



**Length:** Measure from the back of the front fence rail to the back edge of the back fence rail.

**Height:** Measure from the floor to the top of the saw table.

**Width:** Measure the maximum dimension, including the saw table, wings, extensions, and back fence rail.

Note: Our tablesaw dimensions are shown in parenthesis.

**EXAMPLE:**

**Step 1**  
30½" - 29¼" = 1¼"

**Materials List**

Base	FINISHED SIZE:	SAMPLE TABLESAW			CALCULATE		YOUR TABLESAW		Matl.	Qty.
		T	W	L	W	L	W	L		
A	pivot blocks	1½"	3"	<del>23¾"</del>		+1¼"		25"	M	2

**Step 4** Cross out the obsolete dimension.

**Step 2** The length in brackets is larger than the length in parentheses.

**Step 3** 23¾" + 1¼" = 25"

## Materials List

Base	FINISHED SIZE:	SAMPLE TABLESAW			CALCULATE		YOUR TABLESAW		Matl.	Qty.
		T	W	L	W	L	W	L		
A	pivot blocks	1½"	3"	23¾"					LM	2
B	levers	¾"	7/8"	27½"					M	2
C*	legs	3"	3"	34½"					LP	4
D	end rails	1½"	3"	29¼"					P	4
E	end panels	¾"	23"	24"					BP	2
F	back rails	¾"	8"	60"					BP	2
G	rail stiffener	¾"	1½"	54"					M	1
<b>Top</b>										
H	end trim	¾"	2½"	30"					M	2
I	front/back trim	¾"	2½"	61½"					M	2
J	top supports	¾"	1¾"	29¼"					M	3
K	end cleats	¾"	1¾"	24"					M	2
L	outer cleats	¾"	1¾"	11¾"					M	2
M	inner cleats	¾"	1¾"	14¾"					M	2
N	top panel	¾"	30"	60"					BP	1

\*Parts initially cut oversize. See the instructions.

**Materials key:** LM—laminated maple, M—maple, LP—laminated pine, P—pine, BP—birch plywood.

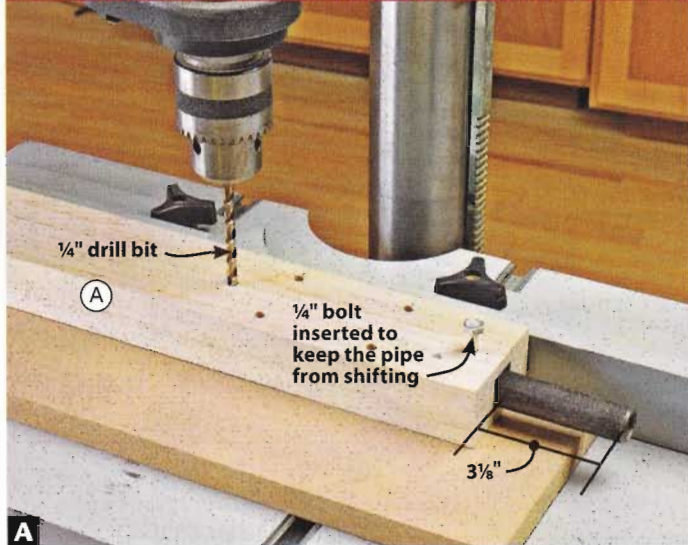
**Supplies:** #8×1¼", #8×1½", #8×2", #8×2½" flathead wood screws; ¾" levelers with T-nuts (4); ¼×1½" hexhead bolts (6); ¼×2" hexhead bolts (24); ¼" washers (52); ¼" lock nuts (32); ¼×2" eyebolts (2); 7/8" washers (6); 1/8×¾×36" steel bar; ½×36" schedule 40 steel pipe (2).

**Blades and bits:** Stack dado set; ¼" round-over and 45° chamfer router bits.

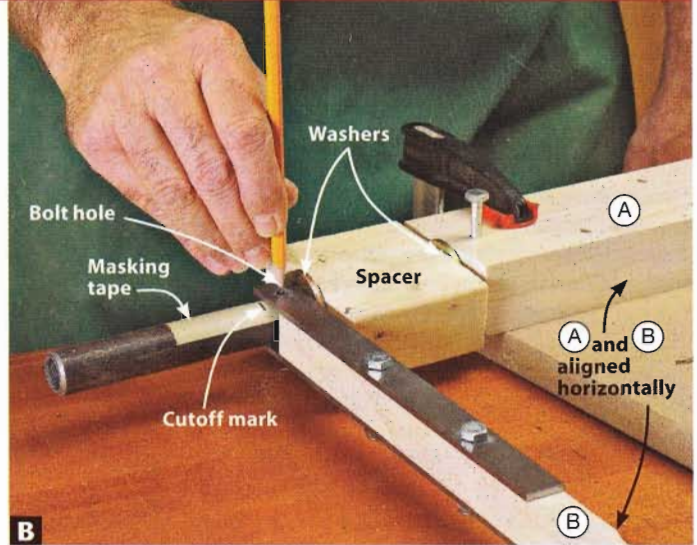
## Source

**Casters.** 4" swivel caster with brake no. 36992, \$9.99 ea. (4). Call Hartville Tool, 800-345-2396, or go to hartvilletool.com.

## DRILL THE PIVOT BLOCKS AND CUT THE PIPES TO LENGTH



**A** With 3/8" of pipe protruding from one end of the pivot block (A), drill holes through the block and pipe at the marked hole centers.



**B** With washers, a spacer, and the lever assembly in place, mark the pipe length and lever attachment bolt-hole location.

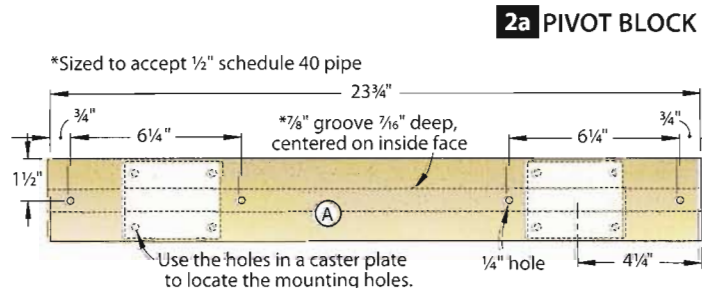
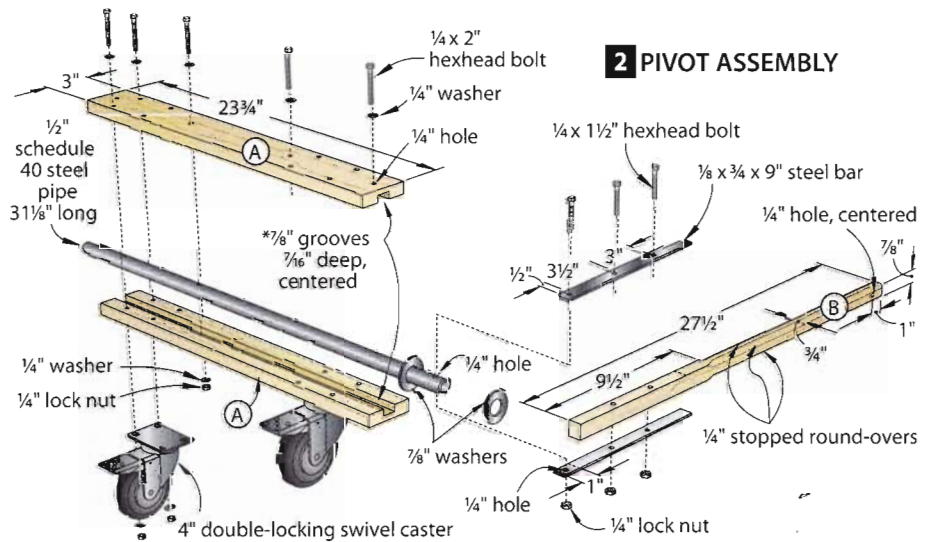
### Build the pivot assemblies

**1** For the pivot blocks (A), cut four 3/4"-thick pieces of stock to the width and length listed. (We used maple. If you've adjusted the length of part A, use the new length.) Then, making two passes with a dado blade, cut centered grooves in each piece [Drawings 2 and 2a]. Clamp the pieces together in the arrangement shown, and verify that 1/2" schedule-40 steel pipe slips through the square hole. Now glue and clamp the pieces, keeping the ends and edges flush.

**2** Lay out the hole centers on the bottom face of each pivot block (A) [Drawing 2a]. (Use the caster plates to locate the caster-mounting holes.) Drill only the caster-mounting holes.

**3** Cut two levers (B) to size. Rout stopped round-overs along the edges [Drawing 2]. Then, from a 1/8 x 3/4 x 36" steel bar, cut four 9"-long pieces. Drill holes where shown. Now, position a bar on each lever, with the bar protruding 1" beyond the end of the lever. Using the holes in the bar as guides, mark hole positions on each lever. Also mark the hole center at the opposite end of each lever. Drill the holes on your drill press. Bolt the bars to the levers.

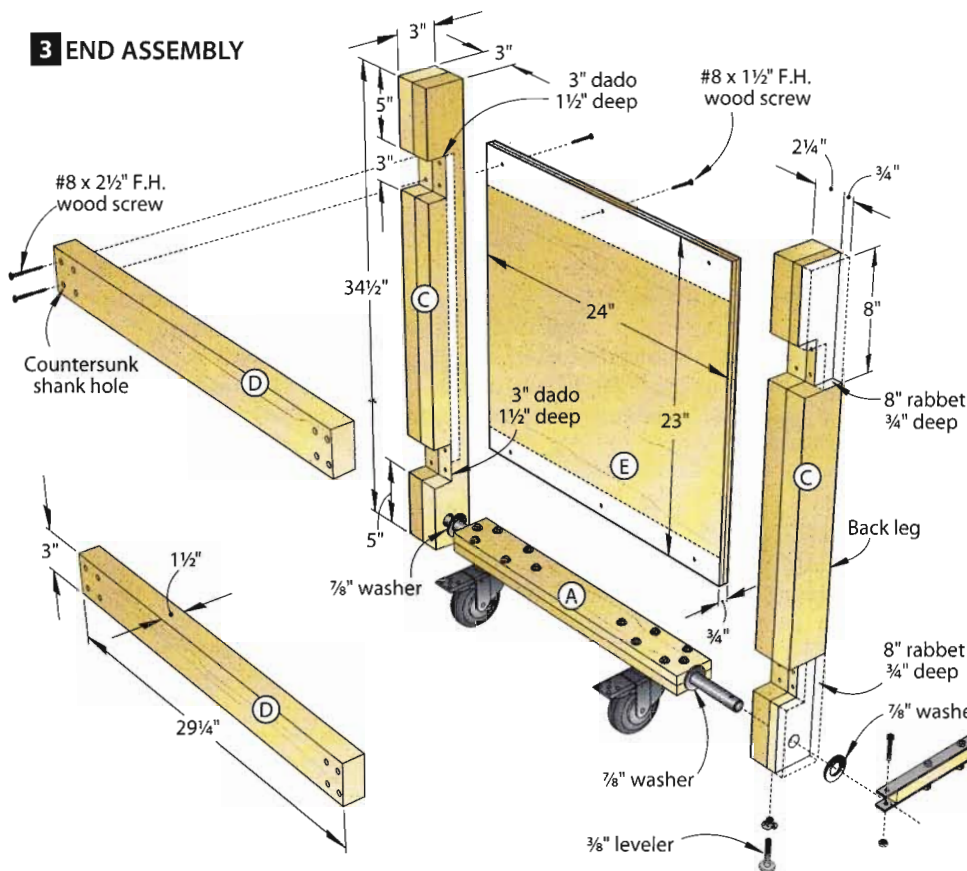
**4** Slide a 36"-long section of 1/2" schedule-40 steel pipe into each pivot block (A), letting the pipe protrude 3/8" at one end. Then drill the four 1/4" holes that go through both the pivot block and pipe, where previously marked [Photo A]. To keep the pipe from shifting in the pivot block, insert bolts into the holes as you drill them.



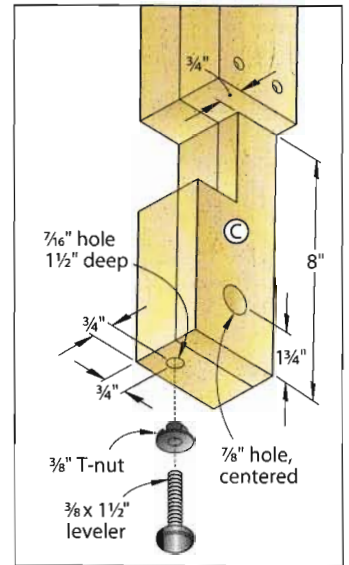
**5** To cut the pipes to finished length, first cut a 3"-long spacer from 2x4 scrap. (The spacer represents the thickness of a leg (C).) Drill a centered 7/8" hole through the 3" dimension. Then slide two washers and the spacer onto the long protruding pipe end of one pivot-block (A) assembly. Apply masking tape to the

pipe, and with the lever (B) and pivot block aligned horizontally, mark the finished length and the bolt-hole location [Photo B]. Repeat with the other assembly. Now mark the pipes and pivot blocks for reassembly, remove the pipes, and cut them to length. Using a V-block on your drill press, drill the bolt holes.

### 3 END ASSEMBLY



### 3a LEVELER DETAIL (Back leg shown)



### Assemble the ends

**1** For the legs (C), cut eight 2x4 pieces  $\frac{1}{2}$ " longer than listed. Laminate them in pairs to form four 3x3 $\frac{1}{2}$ " blanks. Then, joint one edge smooth, rip the opposite edge to width, and crosscut the legs to length. To avoid problems when building projects from construction lumber, see the **Shop Tip**, below.

**2** To form 3"-wide dadoes in the inside faces of the legs (C) [Drawing 3], install a  $\frac{3}{4}$ " dado blade in your table saw,

and adjust it to cut  $\frac{1}{2}$ " deep. To establish one edge of the dadoes, position the fence 5" from the *right* side of the blade, and attach an extension to the miter gauge to back the cuts. Then, using the fence as a stop, cut dadoes at both ends on the inside face of each leg. Next, to establish the other edge of the dadoes, reposition the fence 8" from the *left* side of the blade. Again using the fence as a stop, cut a second dado at each end of all

four legs. Now, make repeat cuts to remove the waste.

**3** To form the 8"-wide rabbets at the tops and bottoms of the back legs (C) [Drawings 3 and 3a], leave the table saw set up as in the previous step, but lower the blade to cut  $\frac{3}{4}$ " deep. Then, making sure you will have mirror-image parts, cut dadoes at both ends of the back face of the back legs. Now, make repeat cuts to remove the waste from the dadoes to the ends of the legs.

**4** Drill a  $\frac{7}{8}$ " hole for the pivot assembly pipes at the bottom of each leg [Drawing 3a]. Then drill a hole for the leveler T-nut.

**5** Cut the end rails (D) to size. Glue and clamp them into the leg (C) dadoes, with the rail ends flush with the front surface of the front legs and with the rabbeted surface of the back legs [Drawing 3]. Check the assemblies for square. Then drill holes, and drive the screws. (For #8 screws in softwood, drill  $\frac{5}{32}$ " shank holes and  $\frac{3}{32}$ " pilot holes.)

**6** Cut the end panels (E) to size. Glue and clamp the panels to the end rails (D), with the top of each panel flush with the top of the upper rail. Drill screw holes, and drive the screws.

### SHOP TIP

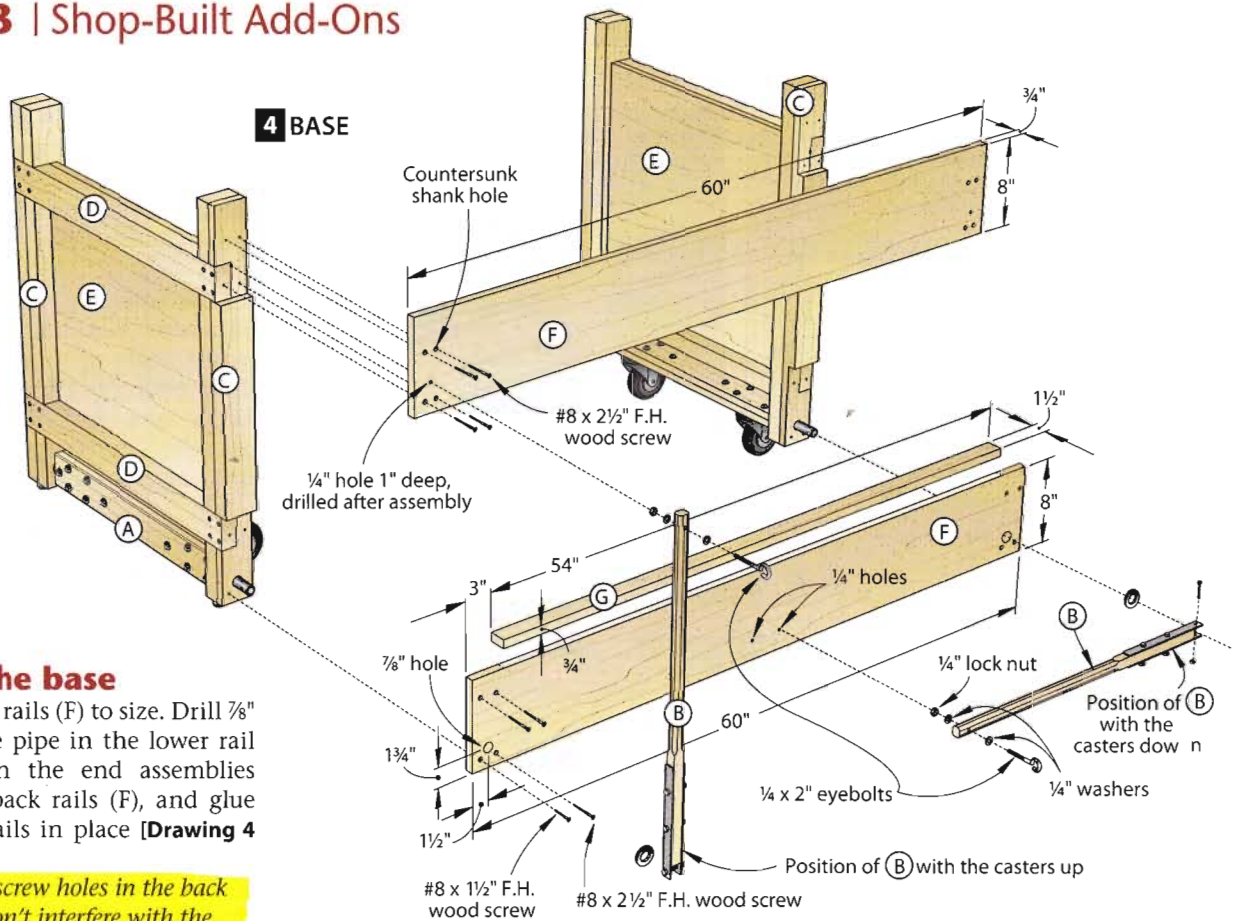
#### How to keep construction lumber straight

Construction lumber (2x4s, 2x6s, etc.) has a high moisture content. When brought into a shop, the lumber dries out, causing it to shrink and often twist. Of course, your project will go together easier with straight lumber. Here's a simple solution.

First, select lumber that does not include the center (pith) of the tree. Cut the parts to rough length as soon as you bring the lumber home. Then, place the parts in a trash bag, as shown at *right*, and close it with a twist tie. Remove the parts for machining,



and return them to the bag until you are ready to assemble them. After building the project, the wood dries, but now twisting of any one part is restrained by the other parts.



**Complete the base**

**1** Cut the back rails (F) to size. Drill 7/8" holes for the pipe in the lower rail [Drawing 4]. Join the end assemblies (C/D/E) to the back rails (F), and glue and screw the rails in place [Drawing 4 and Photo C].

**Note:** Locate the screw holes in the back rails (F) so they don't interfere with the screws that fasten the end rails (D) to the legs (C). To avoid interfering with the leg levelers, use a 1 1/2"-long screw at the lower outside corners of the bottom back rail.

**2** Apply a finish to the pivot blocks (A) and levers (B). (We used two coats of Minwax Antique Oil Finish.) Attach the casters to the pivot blocks [Drawing 2].

**3** Place the base upside down on the floor, and slide the pipes through the legs (C), washers, pivot-block (A) assemblies, and lower back rail (F) [Drawing 3]. Align the pivot-block holes with

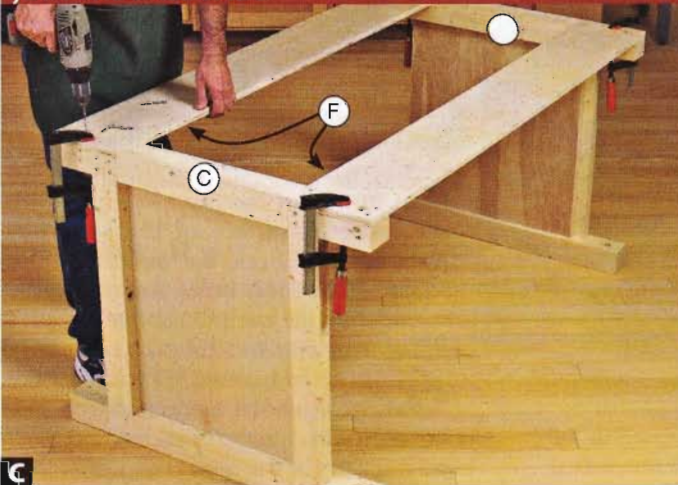
the pipe holes, and bolt the pipes in place [Drawing 2]. Now slip a washer and a lever (B) assembly onto each pipe; then bolt the levers in place [Drawing 4].

**4** Adhere masking tape to the lower back rail (F) at the location of the lever (B) ends when the casters are down. Draw a line on the tape 1 3/4" from the bottom edge of the rail. Drill holes in the rail for the eyebolt lever pins [Drawing 4, Photo D]. Apply tape to the upper

back rail at the locations of the lever ends when the casters are in the up position. Mark lines on the tape 1 1/2" from the ends of the rail. Rotate the levers so the casters are in the up position, then drill 1"-deep holes through the rail and into the legs (C).

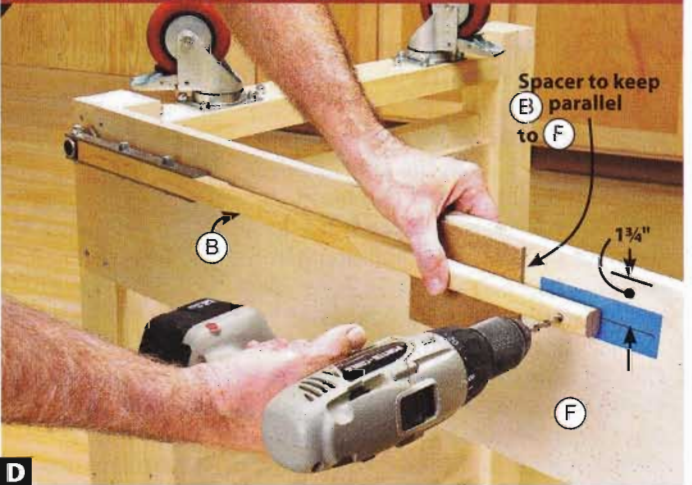
**5** Turn the base right side up. Cut the rail stiffener (G) to size, and glue and clamp it to the top edge of the lower back rail (F) [Drawing 4].

**JOIN THE BASE ENDS**



Glue and clamp the back rails (F) into the end-assembly-leg (C) rabbets. Check for square, drill screw holes, and drive the screws.

**DRILL THE LEVER-PIN HOLES**



Using the hole in the lever (B) as a guide, align the drill bit with the marked line, and drill a lever-pin hole through the rail (F).

## Add the top

**1** Cut the end trim (H) and front and back trim (I) to size. Set the back trim aside. Clamp the end trim and front trim to the legs (C), with the top edge of the trim protruding  $\frac{3}{4}$ " beyond the tops of the legs [Drawing 5]. (Use a scrap of  $\frac{3}{4}$ " plywood for a gauge.) Drill screw holes and drive the screws. (For #8 screws in hardwood, drill  $\frac{3}{32}$ " shank holes and  $\frac{7}{64}$ " pilot holes.)

**2** Cut the top supports (J), end cleats (K), outer cleats (L), and inner cleats (M) to size. Then clamp the parts in place, with the top edges  $\frac{3}{4}$ " below the top edges of the end trim (H) and front trim (I), and with the top edges of the top supports flush with the top edge of the upper back rail (F) [Drawing 5]. Now drill screw holes and drive the screws. Retrieve the back trim, and clamp it to the upper back rail. Drill screw holes, and drive the screws.

**3** Cut the top (N) to size. Clamp it in place, resting on the upper back rail (F), top supports (J), and cleats (K, L, M). Drill screw holes, and drive the screws. Rout a  $\frac{3}{16}$ " chamfer along the outer edges of the trim (H, I).

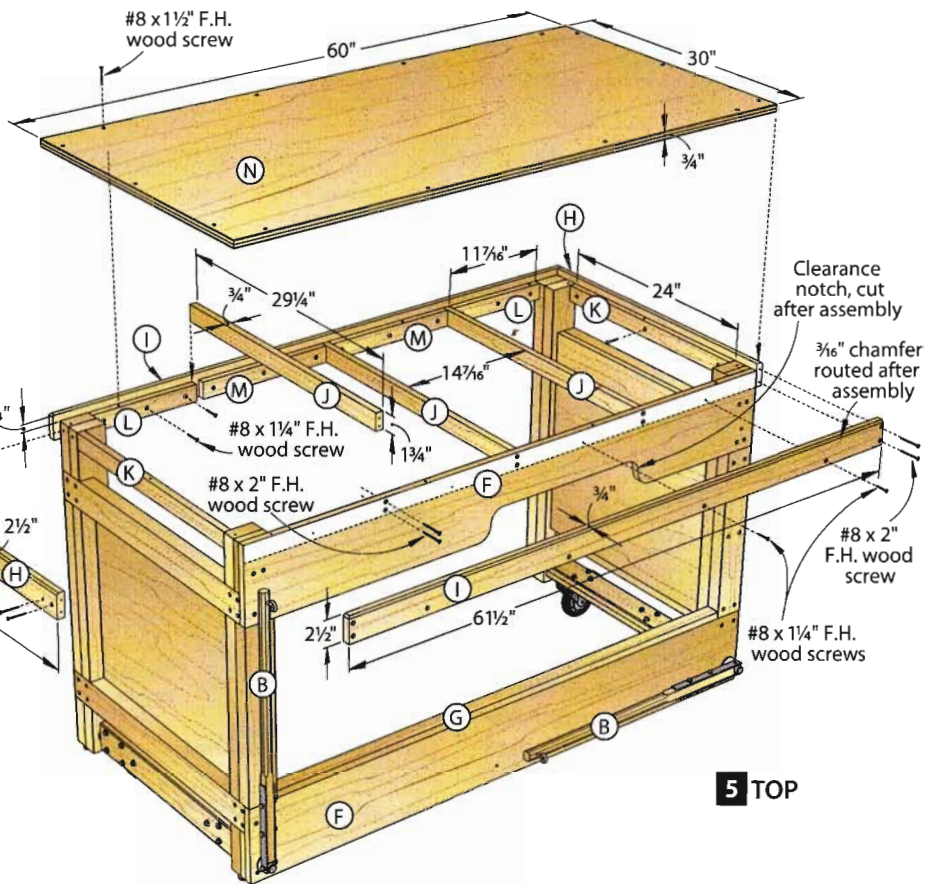
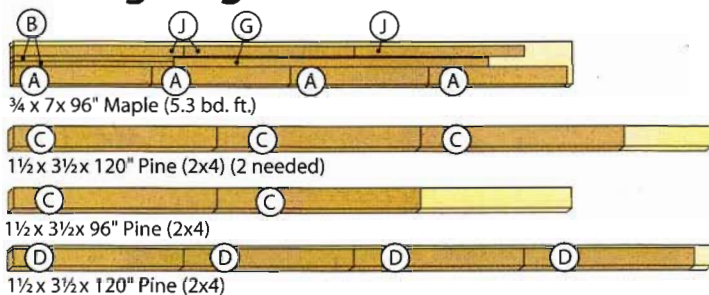
**4** Position the workbench over your tablesaw. On the inside face of the upper back rail (F), mark the location of any part of the tablesaw that protrudes beyond the back fence rail and interferes with the upper back rail. Then transfer the marks to the outside face of the upper back rail. Now lay out a notch, adding 1" of clearance all around the obstruction. Jigsaw, and sand the notch.

## Apply finish and hardware

**1** Inspect the bench, and finish-sand, where needed. Ease any sharp edges with a sanding block. Apply the finish.

**2** Tap the T-nuts into the holes in the bottoms of the legs (C), and screw in

## Cutting Diagram



**5 TOP**

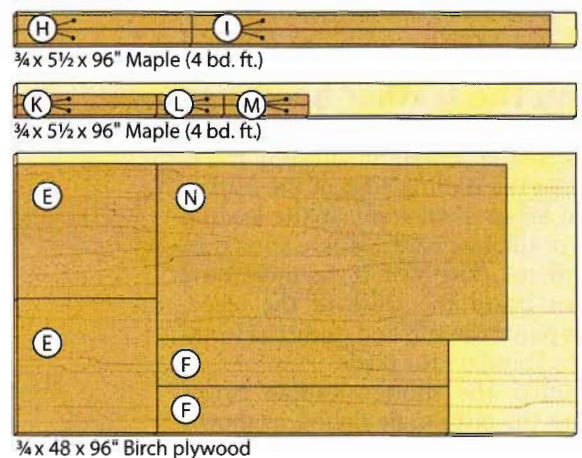
the levelers. Insert eyebolts into the lever (B) end holes, and secure them with washers and lock nuts [Drawing 4].

## Using the workbench

**1** To use the bench as a tablesaw out-feed support, rotate the levers (B) to the vertical position (casters up), and insert the protruding ends of the eyebolts into the holes in the upper back rail (F). Adjust the levelers so the bench height matches your tablesaw height but doesn't wobble on an uneven floor.

**2** To position the bench over your tablesaw, first remove the blade guard, miter gauge, and rip fence from the tablesaw. Then withdraw the eyebolts from the holes in the upper back rail (F). Rotate the levers (B) to the horizontal position (casters down), and insert the eyebolts into the holes in the lower back rail (F). Now roll the bench into place, and depress the caster locks with your foot. 🌲

Written by **Jan Svec** with **Chuck Hedlund**  
Project design: **Jeff Norris**, Delta, B.C.



# Easy-Lock Feather Board

Guarantee perfect rip cuts with this quick-to-set tablesaw helper.

**W**hen ripping stock on your tablesaw, keep it firmly and safely against the fence with this adjustable locking feather board. Not only does it prevent wavy cuts, it also guards against dangerous kickback.

To build one, use the drawing *below right* to cut handle (A) and feather board (B) to size and shape, noting the location of the angled notch and counterbored hole in the handle. Use a bandsaw to cut the curved portion of the handle and the 2½"-long kerfs in the feather board, as shown. Cut the 30° angled notch in the handle's bottom edge using a dado blade in your tablesaw, along with an auxiliary wood fence on your miter gauge for support.

To finalize the feather board, countersink and slide a ⅝" washer onto the head of the machine screw, slide the threaded end through the handle, and fit a washer and 4-arm knob onto the end. Fit the feather board into the angled notch, and slide the bottom edge of the handle and the washer into the miter-gauge slot on your tablesaw where shown [Section View]. If the washer is too wide for your miter-gauge slot, grind down the outside edges for a good fit.

## Using the feather board

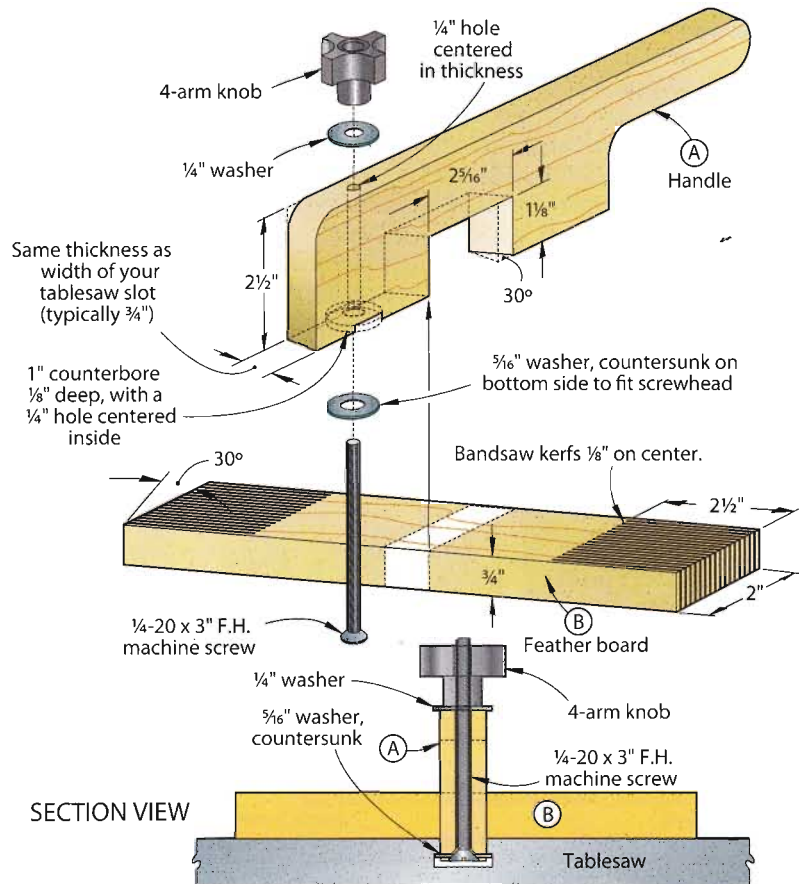
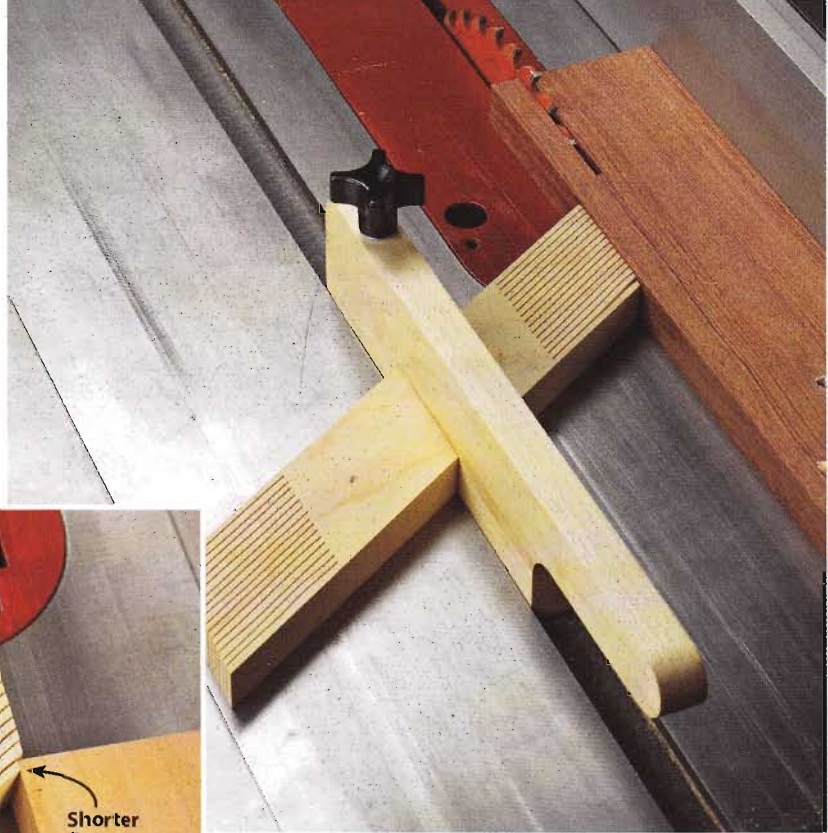
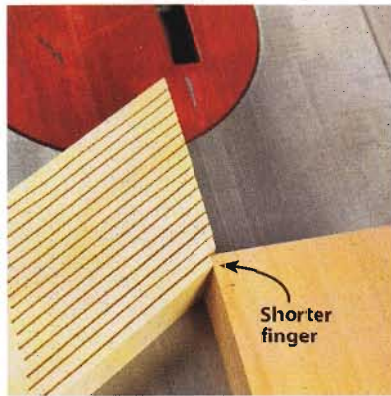
With the saw off, slide the workpiece between the feather board and fence. Position the trailing edge of the feather board about 1" in front of the leading edge of the saw blade, where shown in the photos *above right*. If you mount the feather board too close to the blade, it can pinch the kerf and cause the workpiece to bind on the blade.

Position the shorter leading finger against the piece to be ripped, as shown in the inset photo. The piece should

slide smoothly, yet be held firmly against the rip fence. If pushing the workpiece between the feather board and rip fence offers too much resistance,

back the feather board off slightly. Once properly positioned, tighten the 4-arm knob to secure the assembly in place. 🌲

Project design: **Vernon Lee; Scott Spierling**





# Tablesaw Hold-Downs

Boards of a feather work wonders together.

**W**hen we designed a tablesaw dust-collection hood for the *WOOD*® magazine shop (see plans at [woodmagazine.com/dusthood](http://woodmagazine.com/dusthood)), we knew we also had to replace the saw's anti-kickback pawls built into the original blade guard. Whether you build our hood or leave your saw's guard intact, you'll appreciate the additional stock control and safety provided by this feather-board system.

Build a pair of feather-board assemblies using the drawing *below right* as a guide, and attach the mini channel to the mounting rail (which you may need to modify slightly to suit your fence). Align the mounting rail flush with your fence's face, drill pilot holes in the rail where shown, and mark their locations on top of the fence. Drill and tap a hole to accept a #10-32 machine screw at each mark, then attach the rail assembly to the fence.

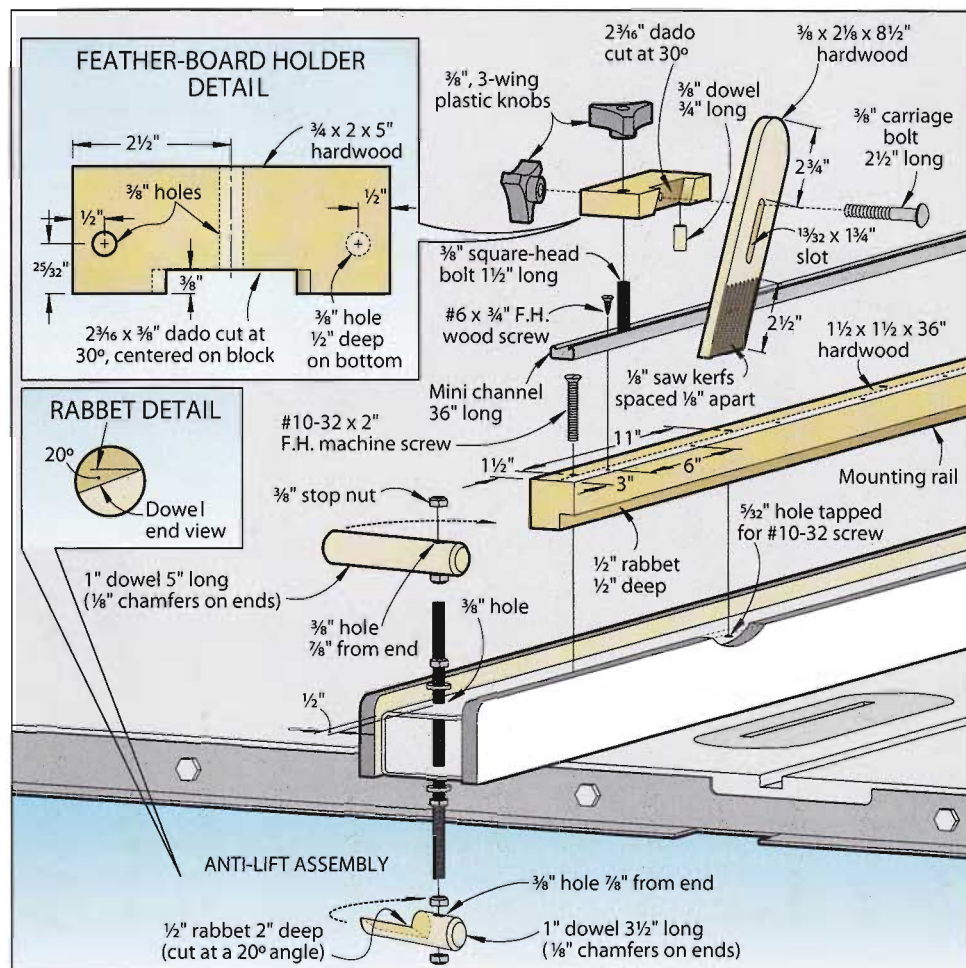
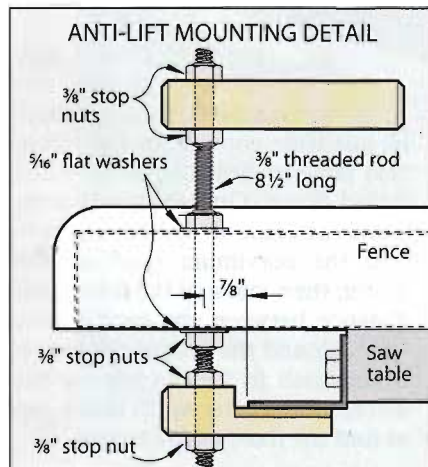
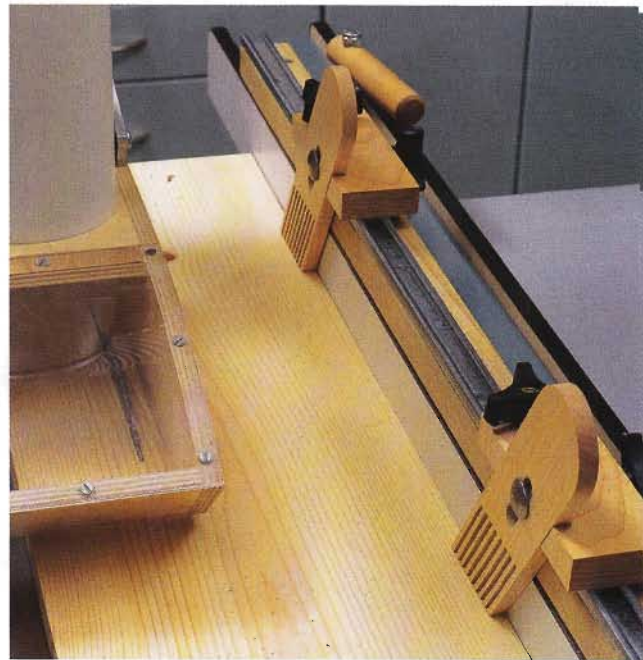
If your fence locks down at the back of the table, you won't need to add the anti-lift assembly shown in the drawings. However, a fence that locks only at the front will raise at the rear without this mechanism. To cut the 20° rabbet, rip the dowel 2" down its center. Lay the dowel on your drill-press table, oriented as shown in the **Rabbet Detail**, and bore the hole to accept the threaded rod. 🌲

## Source

**Hardware.** Knobs, square-head channel bolts, and mini channel for a pair of feather boards. Kit no. TS-FB, \$15.95 ppd. in U.S. (add \$2.85 for three additional knobs to fit the dust-collection hood). Schlabaugh and Sons Woodworking, 720 14th St., Kalona, IA 52247. Call 800-346-9663 to order.

Project Design: **James R. Downing,**  
**Chuck Hedlund**

Photograph: **Steve Uzzell**



## Rip-and-Flip Outfeed Table

**Note:** This fixture attaches to any stationary tablesaw, regardless of the style or material of your saw's extension wings. We built ours to fit a Ridgid TS2424 tablesaw with webbed, cast-iron extension wings. But we'll also show you how to mount the outfeed table to solid cast-iron, stamped-steel, and shop-built wooden tables.

### First, size the table to fit your saw

If your tablesaw fence clamps to the rear rail, as shown in the **Fence Clearances** drawing on the *opposite page*, you'll need to leave some space between the outfeed and saw tables for the fence to travel in.

To calculate the width of that space, measure from the back of your saw table to the rearmost part of the fence, and add  $\frac{1}{4}$ ".

Our handy folding fixture adds only inches to your saw when stored, but provides you with more than 3' of stock support beyond the blade for safer and more convenient cutting.

You'll also need to size the fixed table, which should be just wide enough for the extension table to clear the motor when folded down. On belt-driven saws, crank the blade all the way down to find the maximum reach of the motor, then measure the horizontal distance between the back of the saw table and the back of the motor. If you have to leave a gap for the fence, subtract the width of the gap to find the fixed table's length.

Finally, measure from the front of your saw's cabinet to the back edge of its table. Add the motor clearance measurement you just took, then subtract 1" to find the length of the mounting bars.

### Install the mounting bars

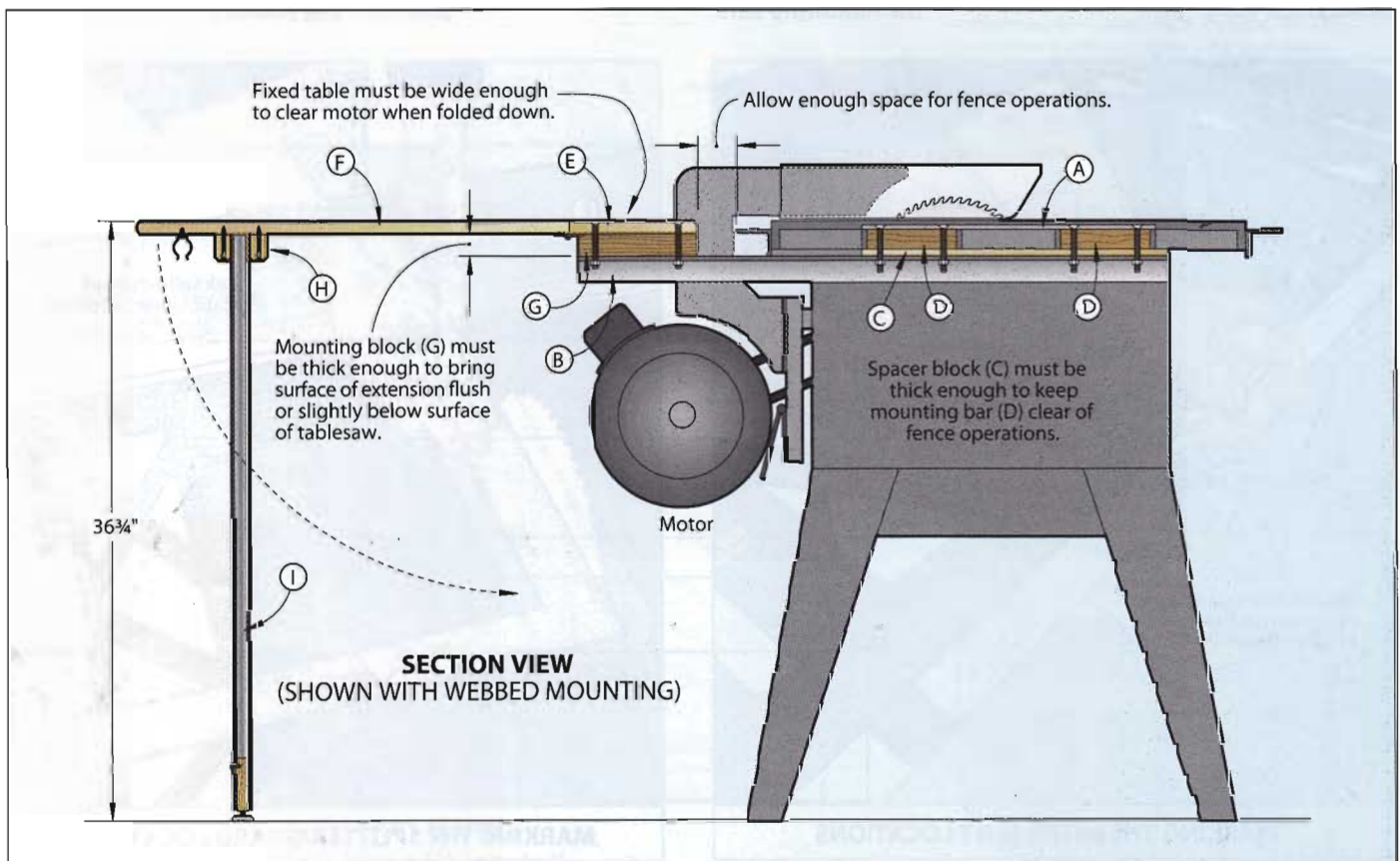
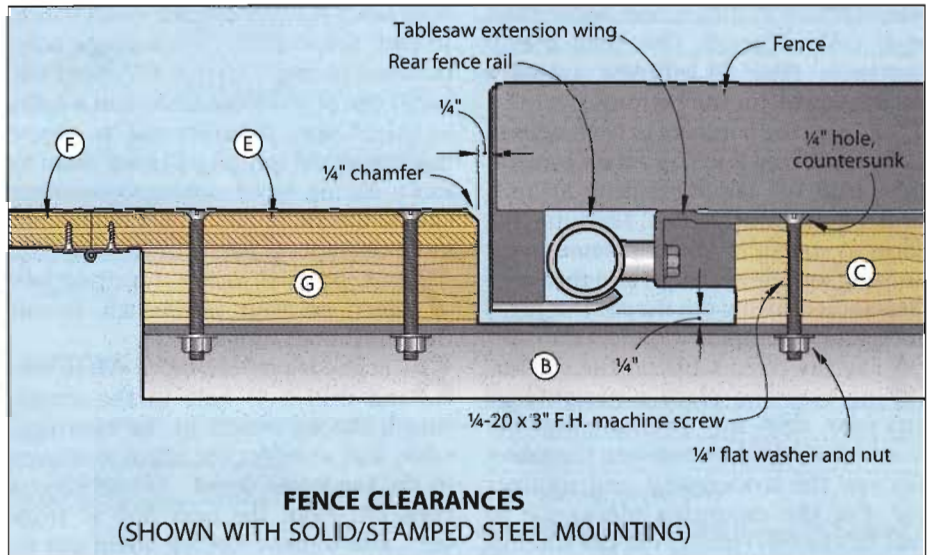
**1** Size the mounting plates (A), if needed, to straddle three cells (as shown in the **Web Mounting** detail drawing on page 75), and cut them to length.

**2** Cut the mounting bars (B) to length. To locate the mounting bars, crank the saw blade to full height and adjust the bevel to 45°. Using a level, mark a minimum clearance line on the back edge of the saw table, plumb above the farthest reach of the motor.

**3** Using the **Section View** (below) and the **Fence Clearances** drawing (at right) as guides, cut two spacer blocks (C) and filler blocks (D), if needed, to size. For a rear-locking fence, the spacer blocks must be thick enough to allow 1/4" clearance between the mounting bar and the fence mechanism. (See the **Fence Clearances** drawing.)

**4** Temporarily attach the spacer blocks to the filler blocks, steel bars, and

mounting bars with cloth-backed, double-faced tape. Drill and countersink mounting holes through the taped stack. For non-webbed tables, clamp the spacer blocks and mounting bars in place on the saw, and drill up from the bottom, then countersink the top. Remove the tape and bolt the assemblies in place.



## Make and mount the fixed and extension tabletops

**1** From  $\frac{3}{4}$ " medium-density fiberboard (MDF) or plywood, cut the fixed table (E) and extension table (F) to the size listed in the **Materials List**. Shape the radius on two extension-table corners.

**2** Cut top and bottom pieces of plastic laminate 1" longer and wider than each table segment. (We used a less-expensive type of laminate, called a balance sheet, for the bottoms.)

**3** Adhere the laminate to both sides of parts E and F with contact cement, then trim the laminate using a flush-trim bit in your router. Machine the edges as shown in the **Leg-Mount Detail** drawing (on the *next page*) and the **Fence Clearances** drawing (on the *previous page*), and paint, if desired.

**4** Lay the fixed table on the mounting bars and place a straightedge on your saw top overhanging the fixed table. Measure between the tabletop and the straightedge and subtract  $\frac{1}{16}$ ". Cut the mounting blocks (G) to this thickness. Finally, cut the mounting blocks 1" shorter than the length of the fixed table (E).

**5** Clamp the fixed table and mounting blocks in place on the mounting bars. Drill and countersink screw holes, and bolt the assembly together.

**6** Locate the miter-slot extensions and splitter/guard slot as shown *below*. Remove the fixed table, and dado the miter slots a little wider and deeper than your saw's slots so the bar clears easily. In each slot, drill a  $\frac{3}{4}$ " dust-escape hole, centered in the slot and  $1\frac{1}{2}$ " from the back edge of the fixed table. Cut a splitter/guard slot, remembering to shape one side so the splitter will have room to move during bevel-cutting operations. Check the fit at  $90^\circ$  and  $45^\circ$ , and cut more clearance if needed.

**7** Butt parts E and F together face down on your workbench. Install the continuous hinge.

**8** Cut the leg-mount block (H) to size and drill a 1" hole in the center. Attach the leg mount to the extension table, and chamfer the edges as shown in the **Leg Mount Detail**. Mount broom clips  $2\frac{1}{2}$ " from the back and 6" from each side to store the leg when not in use. Bolt the outfeed-table assembly to the mounting bars.

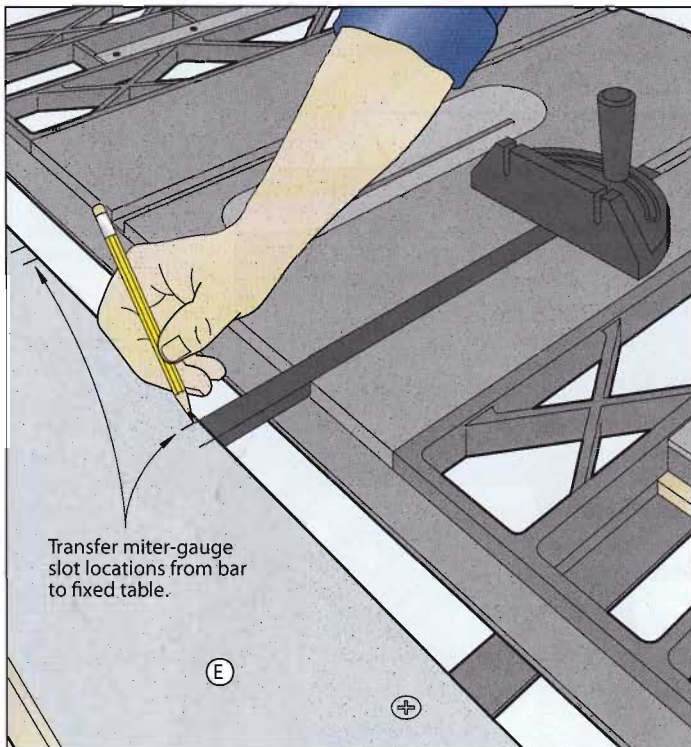
## Give it a leg to stand on

**1** With the extension table at full height, measure from the bottom of the extension to the floor. Subtract 1" for the adjustable floor glide, and cut a piece of 1" aluminum tubing (I) to that length.

**2** Cut a 3" length of  $\frac{7}{8}$ " dowel (you may need to sand down a 1" dowel) to fit inside the aluminum tubing, and drill a hole to accept the floor-glide insert in the center of one end. Slip the dowel into one end of part H and drill a  $\frac{5}{32}$ " hole where shown. Secure the dowel with a #8 panhead sheet-metal screw, then press the insert and floor glide into place.

**3** Now slip the leg into its mount on the extension table and double-check its length. Trim to fit or adjust the glide as necessary. 🌲

Project Design: **James R. Downing**  
Illustrations: **Kim Downing**



Transfer miter-gauge slot locations from bar to fixed table.

(E)

**MARKING THE MITER-SLOT LOCATIONS**



Mark splitter/guard location from saw blade.

**MARKING THE SPLITTER/GUARD LOCATION**

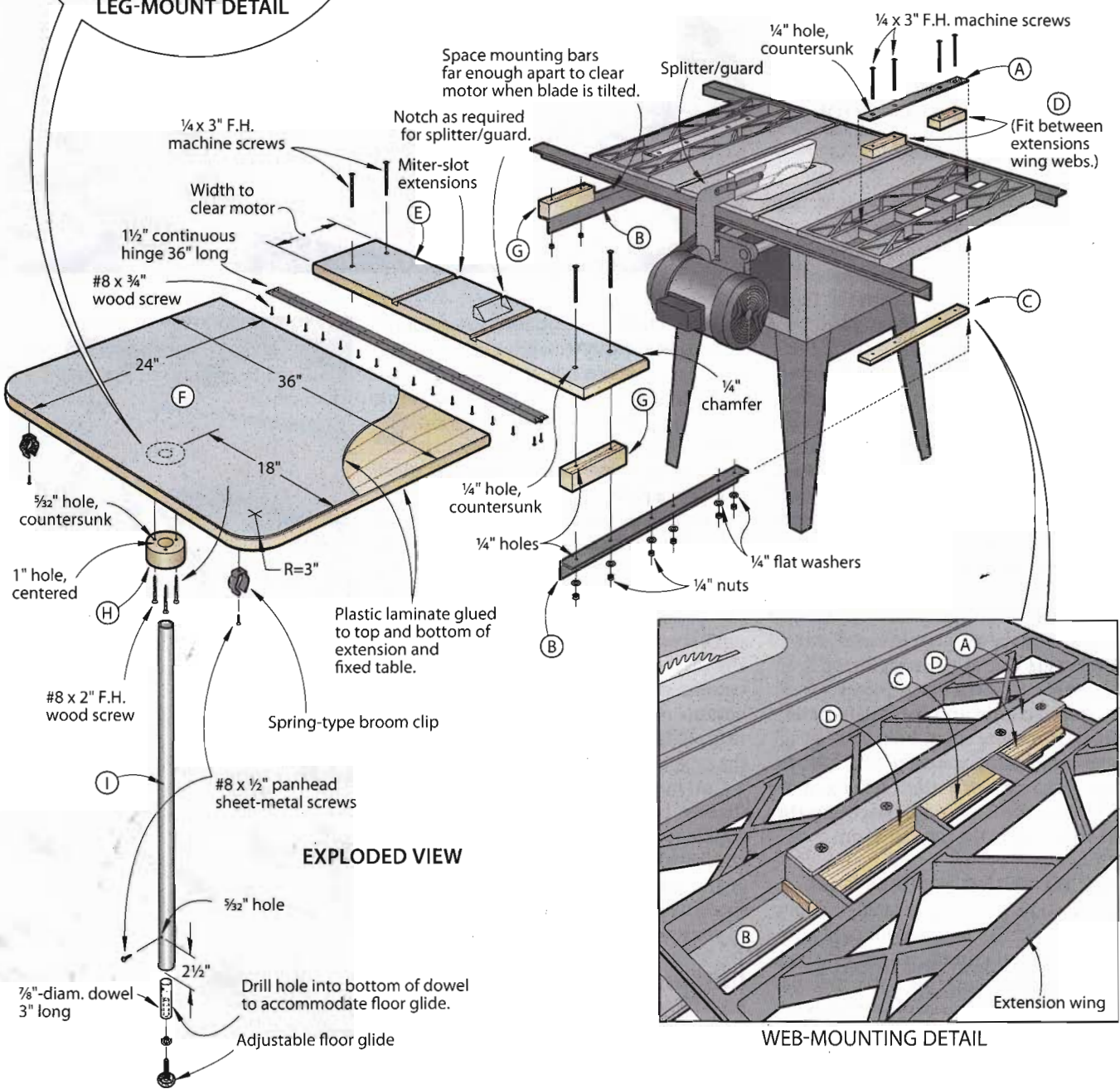
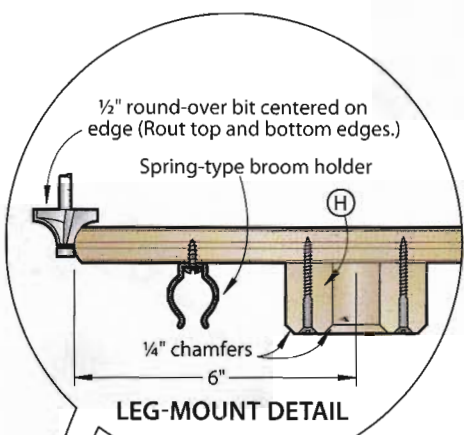
# Materials List

PART	FINISHED SIZE			Matl.	Qty.	
	T	W	L			
A**	mounting plates	1/8"	1 1/2"	*	S	2
B*	mounting bars	1 1/2"	1 1/2"	*	A	2
C*	spacer blocks	*	1 1/2"	*	SS	2
D*	filter blocks	*	1 1/2"	*	SS	4
E*	fixed table	3/4"	36"	*	C	1
F	extension table	3/4"	36"	24"	C	1
G*	mounting blocks	*	1 1/2"	*	SS	2
H	leg mount block	1 1/2"	3" diam.		SS	1
I	leg	1" diam.		*	AT	1

**Materials Key:** A—1/8" angle iron; S—steel bar stock; SS—solid stock; C—choice of plywood or medium-density fiberboard (MDF); AT—aluminum tubing.

**Supplies:** Plastic laminate; contact cement; 1/8x1 1/2" steel bar\*\*; cloth-backed double-faced tape; 1 1/2x36" continuous hinge; adjustable floor glide; spring-type broom clips (2); 7/8x3" dowel; 1/4-20x3" flathead machine screws, flat washers, and nuts; #8x2" flathead wood screws; #8x3/4" flathead wood screws; #8x1/2" panhead sheet-metal screws.

\*Size to fit your saw; see text.  
\*\*For webbed extension wings only.



# Zero (Chip-Out) Tolerance

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

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

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

It's a good idea to use an insert for every blade and every cut you make. Plowing a 3/4"-wide dado? Use a custom-fitting insert to stop chip-out. How about a 1/2" dado? Make another insert. Cutting a 30° bevel? Get an insert just for that. You can easily make insert plates, so cut out a dozen blanks and keep them handy for every time you change blades or bevel angles. After using an insert for a specific setup, mark it with that setting (and blade) and save it so you'll have it for the next time you make the same cut.

## How to make inserts fast

You can buy pricey, premade phenolic inserts, but we like to make our own zero-clearance inserts from 3/8"- or 1/2"-thick Baltic birch plywood. This stable material proves strong, and doesn't have voids between plies. Medium-density fiberboard (MDF) also makes a good insert, but lacks the strength of plywood. Hardwoods, although strong, can shrink or swell with



Watch a FREE video on zero-clearance inserts at [woodmagazine.com/zcivideo](http://woodmagazine.com/zcivideo)

seasonal changes in humidity, and don't work as well as plywood.

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

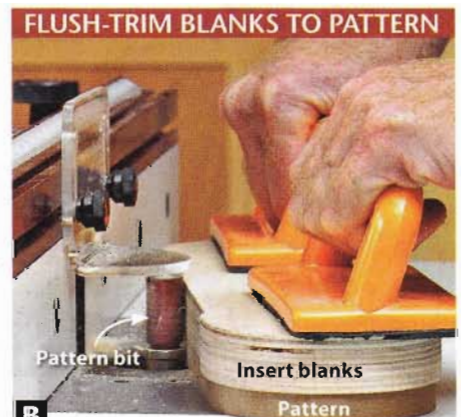
Cut out rectangular plywood blanks slightly larger than the pattern. Using double-faced tape, secure a blank centered on the pattern, and bandsaw to within 1/8" of the pattern. Next, rout the blanks to shape using a pattern bit or flush-trim bit in your router table [Photo B].

## Customize the inserts to fit your tablesaw

Now that you have the blanks cut to shape, make a finger hole (for removing the insert) by drilling a 3/4" hole through each insert. Keep it at least 1" to the side



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



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

of where the blade will project through the insert.

On many saws with 10" blades, the blade retracts only  $\frac{1}{4}$ " or so below the table surface [Photo C], meaning your unkerfed insert blank won't sit flush with the tabletop. You've got three options: First, use a smaller-diameter blade—like one of the outer blades from your stacked dado set, or a blade you use for your portable circular saw—to cut a relief slot that your 10" blade will fit into. (Unless the blade you use has the same kerf width as your 10" blade, don't raise it high enough to break through the surface.)

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

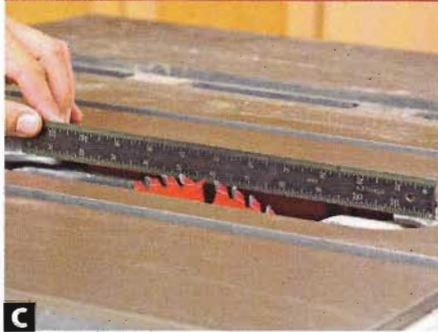
With option #3, rout a  $\frac{1}{4}$ " channel along the bottom of the insert deep enough to give the blade initial clearance [Photo E] when you place it in the saw. However, do not rout deeper than half the thickness of the insert. More than half would weaken it and create a potential safety hazard.

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

## Now level the insert with the tablesaw top

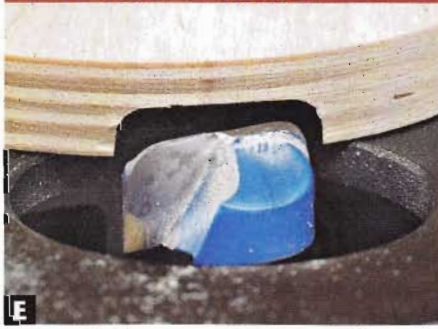
If your insert sits too high, drill or rout relief areas on the bottom where the insert sits on the throat tabs or rabbet. If it sits too low, add leveling screws so you can adjust the fit perfectly from the top. (Use either setscrews or machine screws.) To do this, transfer the screw locations from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

### CHECK THE BLADE DEPTH



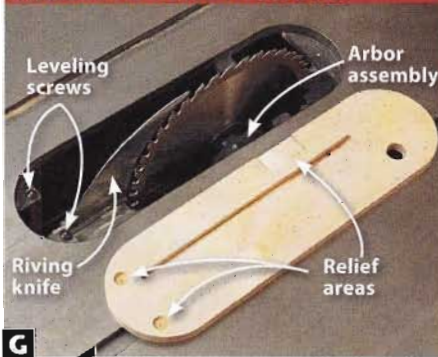
With this steel rule resting on the insert ledges, you can see that the 10" blade requires a relief cut in a blank insert.

### ROUT A RELIEF CHANNEL



Use any bit that can rout a channel. We used this dish-carving bit to create a  $\frac{3}{4}$ "-wide relief necessary for a 45° bevel cut insert.

### ALLOW FOR PROTRUSIONS



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

### ADD ADJUSTMENT SCREWS



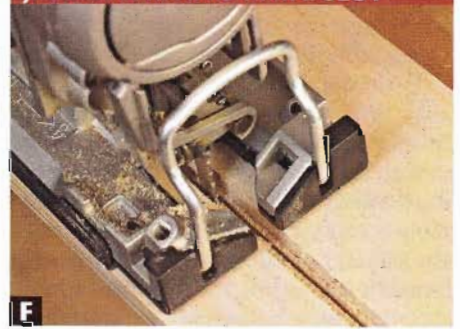
Add hex screws for leveling. Add wood screws to one edge and end for lateral adjustments if the insert is too loose.

### PRECUT THE BLADE KERF



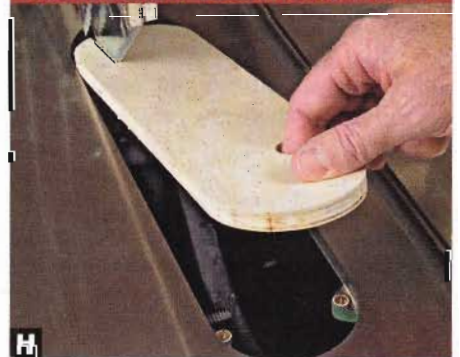
Because the insert rests on top of the saw, secure it firmly with double-faced tape and a board and clamps.

### JIGSAW A RIVING-KNIFE SLOT



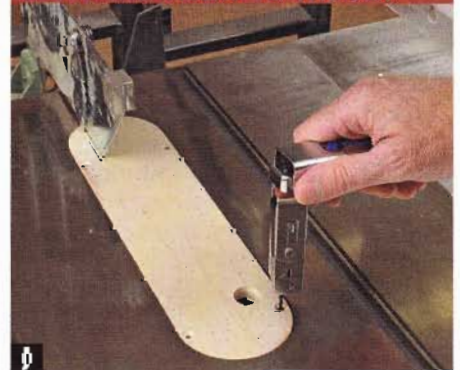
After making a relief cut with a  $\frac{1}{4}$ "-diameter router bit, we used a jigsaw to create clearance for the riving knife.

### MARK SCREW LOCATIONS EASILY



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

### LEVEL THE INSERT TO THE TOP

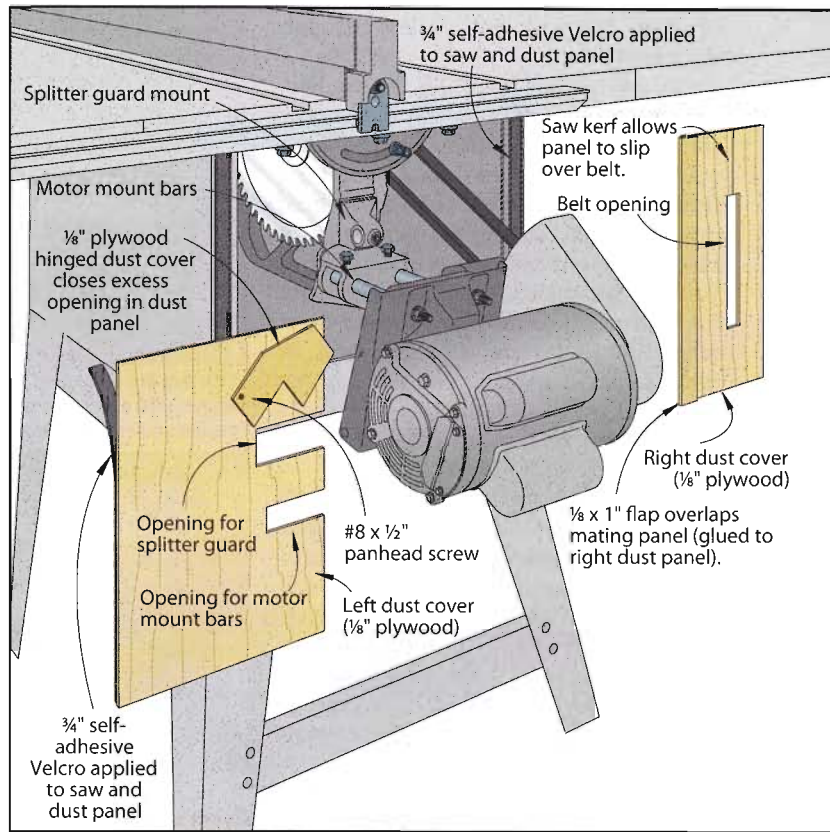


Adjust the leveling hex screws to ensure the insert sits flush with the tablesaw top. If it sits too high, your workpieces will catch on it.

# 2 Fast Fixes to Collect Dust

Minimize dust in your workshop with these easy-to-make projects.

The less dust floating around in your workshop, the better. Not only does your shop stay cleaner, but more important, your lungs stay healthier. With that in mind, we came up with a couple of remedies: an easy-to-make dust catcher for a contractor-style tablesaw, and a dust-collecting, saw-mounted sanding table. The sanding table accepts a 4" hose from a standard dust collector, while the tablesaw addition directs sawdust into a bag that hangs beneath it. We cut the tablesaw addition out of birch plywood, and used a piece of perforated hardboard for the top of the sanding table (*opposite*).



## 1 Plywood cover for tablesaw back

Contractor-style saws cost less than the cabinet style, but they spew all of the sawdust right into your workshop. Here's a simple way to set up a line of defense. Most contractor models are enclosed on three sides, but open on the back, where the motor hangs, and underneath. We used 1/8" Baltic birch plywood to make a two-piece cover for the back.

Measure the outside dimensions of the opening, then measure to find where you need to leave gaps for the belt and the motor mount. Again, use cardboard to arrive at the right shapes. Cut rectangular pieces to cover the various areas [Photo A], then tape those pieces together until you have the final shape. Use that as a pattern to cut the actual cover from plywood.

As shown in Photo B, one piece fits around the drive belt and another slides over to meet it. The kerf above the belt opening allows you to flex the thin plywood for installation. The lip glued onto the mating piece covers any gap.

Self-adhesive hook-and-loop strips, available at most fabric stores, hold the dust cover to the saw. Cut them to size, and apply them where shown.

You'll have to remove the cover to swing the saw blade to any angle other than 90°. The alternative would be to cut a pathway for the motor mount to follow, which would open up an escape route for the sawdust.

With all four sides sealed, you're ready to put a bag on the bottom. You can buy a bag that snaps onto most contractor-style saws [Photo B], after you've drilled the necessary holes. To order part number 145764 for \$49, including postage, call Woodcraft at 800-225-1153, or visit woodcraft.com.



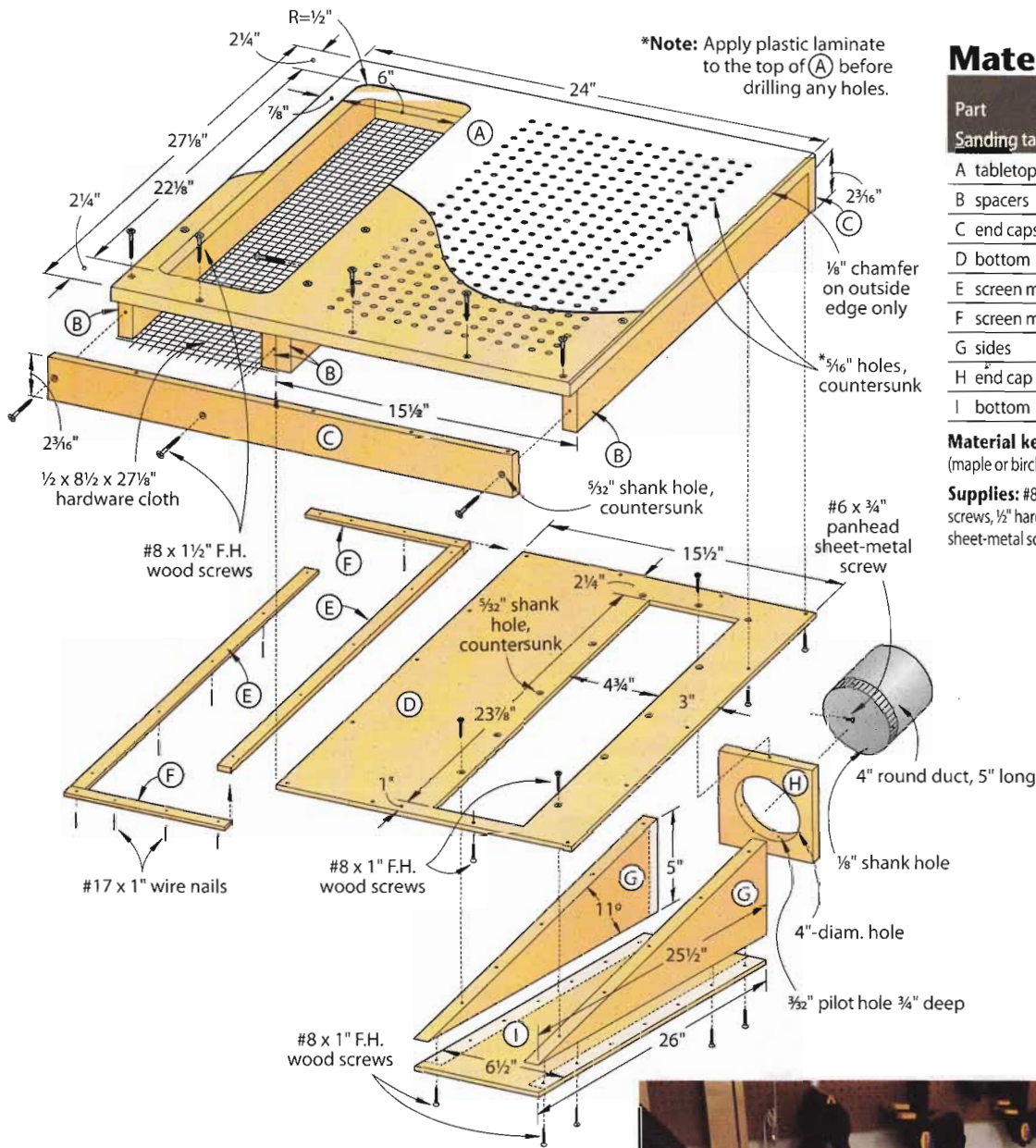
Left: All you need is a straightedge and a utility knife to make cardboard mock-ups for shop fixtures. Assemble the pieces with masking tape for a trial fitting.

Below: Shape the cover to fit as tightly as possible around the parts of your tablesaw. You'll still kick up sawdust above the saw, but a lot of the dust will fall right into the bag.



Written by **Jim Pollock** with **James R. Downing**  
Illustrations: **Kim Downing; Lorna Johnson**





## Materials List

Part	finished size			Matl.	Qty.
	T	W	L		
<b>Sanding table</b>					
A tabletop	3/4"	24"	27 7/8"	MF	1
B spacers	3/4"	2 3/16"	25 5/8"	H	4
C end caps	3/4"	2 3/16"	24"	H	2
D bottom	1/4"	15 1/2"	27 7/8"	HB	1
E screen molding	3/16"	3/4"	25 5/8"	H	2
F screen molding	3/16"	3/4"	8 1/2"	H	2
G sides	3/4"	5"	25 1/2"	H	2
H end cap	3/4"	5"	5"	H	1
I bottom	1/4"	6 1/2"	26"	HB	1

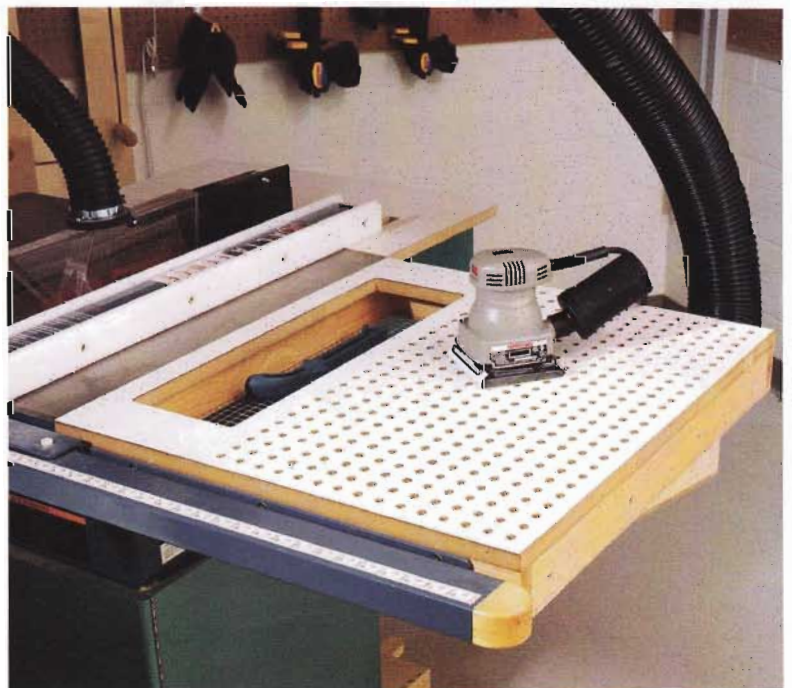
**Material key:** MF—medium density fiberboard, H—hardwood (maple or birch), HB—hardboard.

**Supplies:** #8x1" flathead wood screws, #8x1 1/2" flathead wood screws, 1/2" hardware cloth, plastic laminate, #6x3/4" panhead sheet-metal screws, 4" round duct 5" long, #17x1" wire nails.

## 2 Right-Hand-Man Sanding Table

We designed this sanding table to fit a 10" Jet contractor-style saw. You may have to alter the table size to fit your particular saw. Dust catchers such as this aren't meant to replace dust-collection devices you're already using. This one is a site-specific accessory that helps you manage the fine dust that results from using a handheld pad sander. Note also the handy built-in tool tray for storing sanding blocks, pushsticks, and other workshop items.

Build the table as shown above, to fit your particular saw. We used a piece of perforated hardboard to mark the numerous hole locations. Drill the holes and then countersink them slightly. Extend a piece of duct out the back of the unit to fit your dust-collection system or shop vacuum. 🌳



A built-in dust chute links the table to your shop vacuum or dust collector.

Project Design: **James R. Downing**  
Photograph: **Hetherington Studio**

# Easy-Does-It Joinery

Crafting sturdy, durable joints on your tablesaw is easier than you think. All you need is a few shop-built jigs, plus common shop tools you probably already have.

## 2 Ways to Make Precise Rabbet Cuts

**A** rabbet is simply a rectangular recess along the edge or end of a workpiece. Although most often found as a joint in casework, a rabbet also can pop up as a design feature in a molding, as a recess for holding artwork in a picture frame, along the edges of a cabinet door to help recess it partway into its face frame, or as a half-lap or shiplap joint.

In the *WOOD*® magazine shop we frequently cut rabbets with a tablesaw set up with a dado set or combination blade.

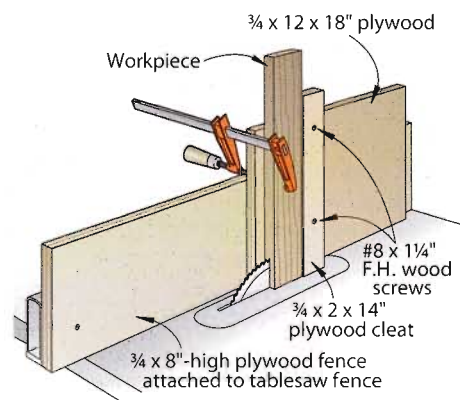


### Tablesaw with standard blade

If we're rabbeting just a piece or two, we'll leave our combination blade in the tablesaw and make the cut in two passes. The key: Precisely set the fence, and the height of the blade, for both cuts so one doesn't cut beyond the other.

First, cut the rabbet to its correct depth with the workpiece facedown on the tabletop (*left*). Then, stand the piece on edge (or end) to cut the rabbet to width (*above*).

Standing a narrow workpiece on end can be tricky if you need to rabbet the end. In that case, clamp the workpiece to a jig like the one shown *below* that holds it steady and upright as you guide it along the fence.



## Tablesaw with a dado set

We use this setup often because it yields clean rabbets in typically one pass—two passes for wide rabbets. For good results, use a high-quality dado set. Because it takes time to install the dado blades, we use this method when cutting several workpieces.

To do this successfully, first attach a  $\frac{3}{4}$ " wooden face to your tablesaw fence. By doing this, you can cut into the wooden face and fine-tune the width of the rabbet simply by making quick fence adjustments.

**Step 1** Install a  $\frac{3}{4}$ " dado blade in your tablesaw, and position the rip fence  $\frac{1}{8}$ " from the blade. Lower the blade beneath the saw table.

**Step 2** Attach a  $\frac{3}{4}$ "-thick auxiliary fence to the rip fence. (We prefer medium-density fiberboard, but any flat stock will do.) Mark a line on the auxiliary fence  $\frac{1}{16}$ " higher than the depth of the rabbet to be cut.

**Step 3** With the saw running, slowly raise the dado blade, cutting to the marked line. Lower the blade slightly, and turn off the saw.

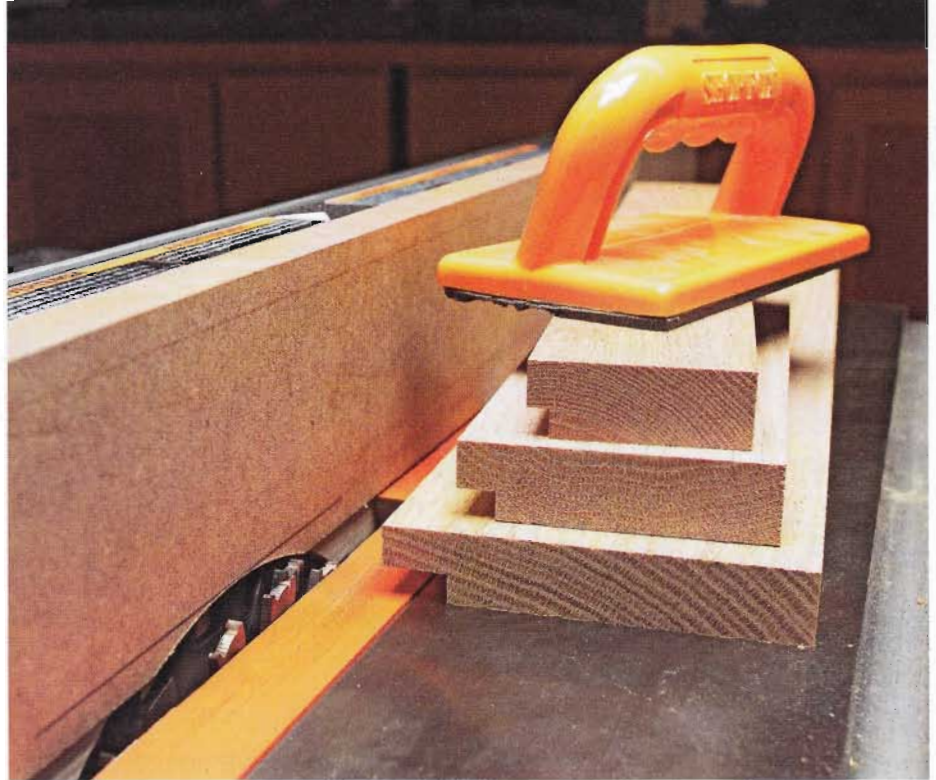
**Note:** Cutting into the auxiliary fence  $\frac{1}{16}$ " deeper than needed and then lowering the blade to cut the rabbet keeps the blade from dragging on the fence during the cut.

**Step 4** Adjust the fence position and blade height, making test cuts to arrive at the desired rabbet width and depth. Then rabbet your workpiece.

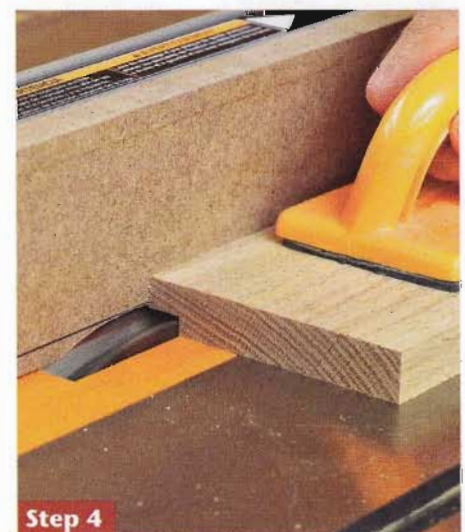
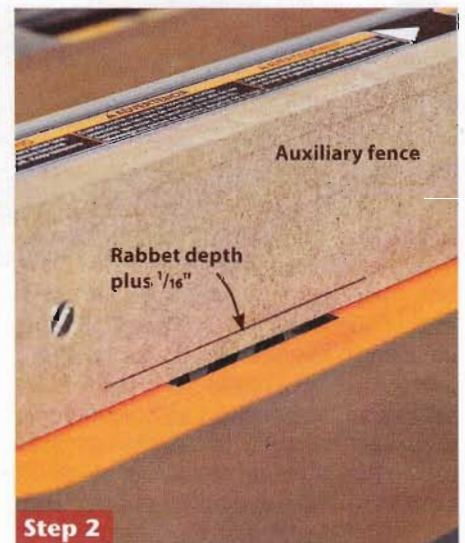
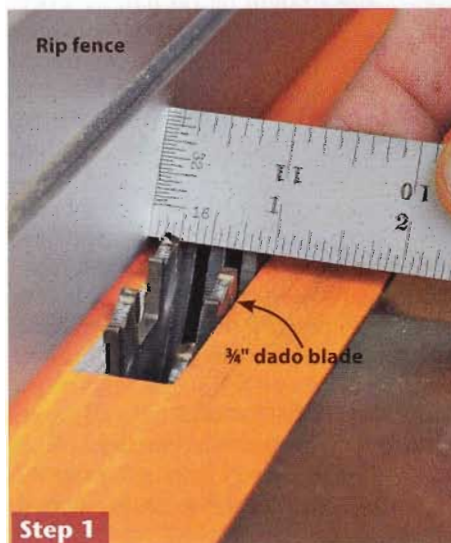
Keep the auxiliary fence handy for future use. When you need to cut a deeper rabbet, simply repeat steps 1–3, marking and cutting to the new rabbet depth. Then cut to the new line, as in Step 3. To avoid having a large opening in the auxiliary fence when cutting a shallow rabbet, make several auxiliary fences so each one covers a different range of depths. 🌲



Watch a FREE 5-minute video on more joinery techniques at [woodmagazine.com/tsjoinery](http://woodmagazine.com/tsjoinery)



These three  $\frac{5}{16}$ "-deep rabbets were cut in three different widths with a  $\frac{3}{4}$ " dado blade. Housing the blade in an auxiliary fence makes it easy.



# Create Superstrong Bridle Joints

This workhorse provides muscle and durability for frame-and-panel doors. And the real beauty: You can cut both mating parts easily on your tablesaw without fancy or expensive jigs.



**B**ridle joints offer the closest thing in joinery to a free lunch. They use a mortise and open tenon that doubles the gluing surface strength you'd get from a half-lap joint, making them strong enough to support the weight of glass panels in a cabinet door. That's the lunch; here's the free part: You can make them easier and quicker than mortise-and-tenon joints.

Both types of joints use a tenon on one piece that's inserted into an opening on the other piece. There's one big difference, though: Bridle joints use a mortise that's open on three sides instead of just one. So although bridle joints go together much the same as mortise-and-tenon joints, you don't have to chisel-cut squared-off mortises.

The open mortise can be cut with a router and straight bit on narrow stock, a tablesaw-mounted dado blade for wider stock, or just a single carbide-tipped blade (the method you'll learn here). To keep the tablesaw machining safe, we used a simple pushblock designed to support long, vertical stock.

This approach limits the width of your workpieces. You can cut only to the height your blade projects above the saw table. For most 10" tablesaws, that's a little over 3", so we'll practice on standard 3/4" stock that's been ripped to 3" wide.

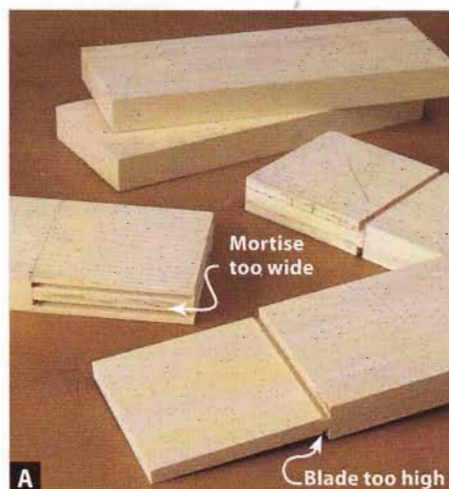
## Lay out your cuts

Once you have four practice pieces ripped to 3" wide by 17" long, lay out the joints using a marking gauge, pencil,

and combination square. Keep plenty of 3"-wide scraps on hand, like the ones shown in **Photo A**, to make test cuts.

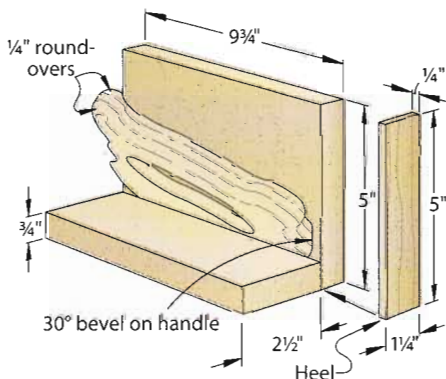
First, divide the four 3x17" practice workpieces into one pair for cutting open mortises on both ends and another pair for cutting tenons. The width of your workpieces determines the depth of the cuts for both the mortises and tenons.

Using a combination square, mark lines on all four sides of both the mortise and the tenon pieces. The lines should be the same distance from the end as the width of your stock. Because we're using 3/4"-thick stock, it's easy to divide each edge into three 1/4"-thick segments. Mark an "X" or squiggly lines on the waste portions of both the mortise and the tenon pieces [**Photo B**].

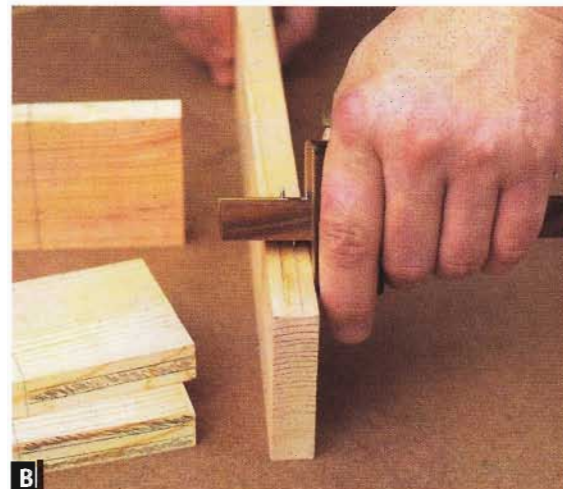


**A** Scraps let you fine-tune fence and blade settings. Once set, make identical mortises and tenons on each frame workpiece.

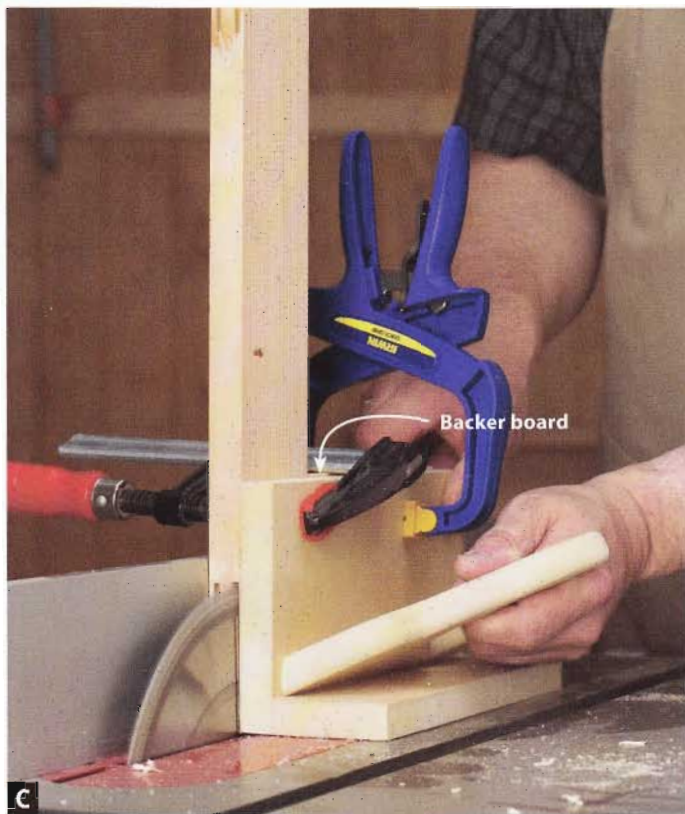
## TALL-STOCK PUSHBLOCK



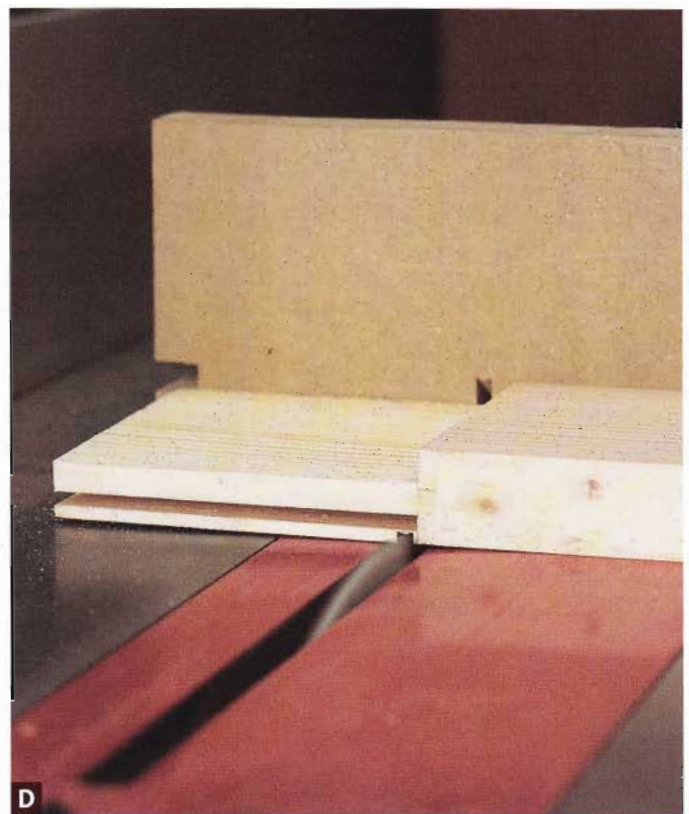
To help cut long stock, build this pushblock, using a handsaw as a pattern for the handle.



**B** Mark all four sides of both ends on each piece. Then lay out and shade the waste areas to be removed.



**C** With a pushblock for safety and clamps for stability, it's easy to make deep end cuts on a tablesaw. A backer board scrap behind the workpiece reduces tear-out.



**D** To complete the tenon, adjust the blade to cut precisely along the waste edge of your mark. The inside corner of your tenon must form a 90° angle.

## Make tablesaw tenons

Instead of cutting the tenons last—as you would on a mortise-and-tenon joint—we'll make those first. Start by sawing the deep cuts into the ends. To do this, raise the saw blade to a height equal to the workpiece width. Set the fence to cut the waste side of your tenon marks.

Use the pushblock to keep long stock steady and perpendicular to the saw table. Place a scrap backer board the thickness of your workpiece and height of the pushblock between the workpiece and the pushblock heel to prevent tear-out.

Clamp a workpiece to the upright face of the pushblock, and make one pass until the blade cuts through the tenon and scrap [Photo C]. Check that the blade barely touches your mark. Make these first tenon cuts on each end of two workpieces. You're making the equivalent of a rip cut in a 3"-thick piece of lumber, which can tax the horsepower on even a heavy-duty saw.

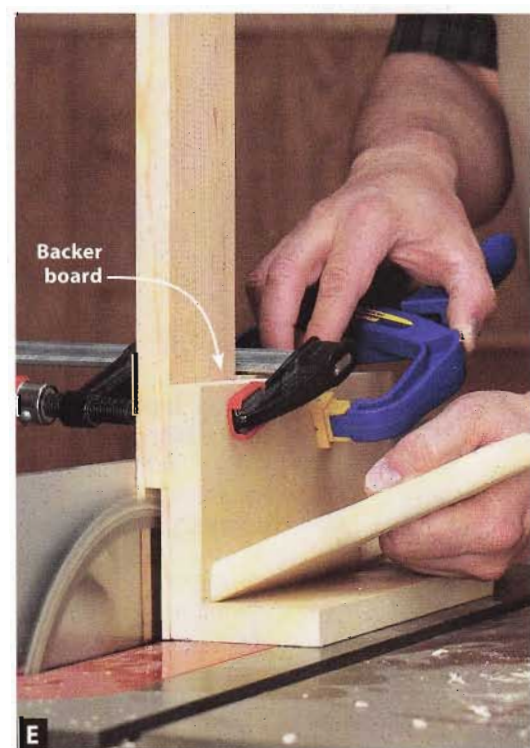
To finish cutting the tenons, drop your blade height to ¼" and reposition the saw fence until the outside edge of the blade cuts even with your tenon mark. Support your work with a miter gauge fitted with an auxiliary face to prevent tear-out.

Then cut both faces of your workpieces, [Photo D]. If the cut stays within the waste area and comes exactly up to the edge of your cutline, you've correctly adjusted your blade. Cut the tenons on each end of your two workpieces.

## Cut the open mortises

To create open mortises that fit your tenons, cut with caution on the waste side of your workpiece markings to avoid a loose joint. As with the deep cut on the ends of the tenons, support your work by clamping it to the vertical face of the pushblock ahead of a backer-board scrap [Photo E].

Return the blade to its earlier 3" height, and adjust the saw fence so the blade cuts completely inside the waste area marked on your workpiece. After making your first pass, rotate the workpiece to do the other half of the mortise. Depending on the thickness of your saw blade, you should be able to cut a ¼" open mortise in two to three passes. You want a snug fit, but not so tight that you split the mortise as you assemble the joint. The ends of the mortise and tenon should extend just slightly past the edge grain so you can sand them flush. 🌲

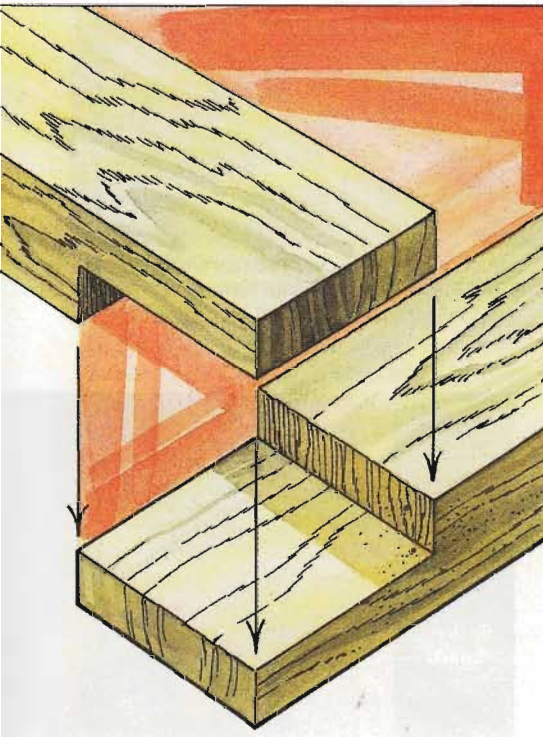


**E** The first half of this open mortise already has been cut. To complete this centered mortise, rotate the board to make another cut that's exactly the same distance from the face of your workpiece.

# Half-Lap Joints

## Plenty strong and easy to make

Sure, you can find woodworking joints more beautiful than the half-lap. And one or two joints might be stronger. But few woodworking joints match the half-lap for all-around usefulness and ease of construction.



### Just a few words before we make this joint

As you can see by the illustration *above*, a half-lap joint consists of two workpieces reduced to half of their thickness where they lap over each other. This provides a face-grain-to-face-grain joint with plenty of gluing surface. Simple butt joints, on the other hand, rely on an end-grain-to-edge-grain bond that can break easily. Even a dowel-reinforced butt joint won't prove as strong as a half-lap.

Half-lap joints do reveal end grain on both outside edges of the joint, so avoid using the joint where such an appearance proves objectionable. We often use half-laps for shop-cabinet door frames,

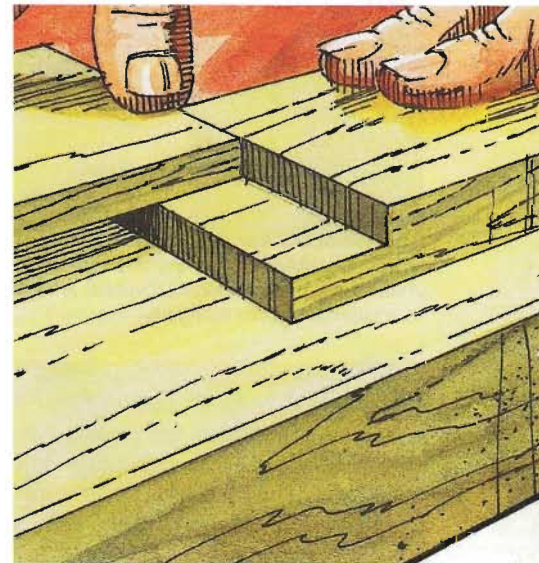
workbench leg frames, outdoor furniture, and internal web frames for furniture such as dressers.

You need only a tablesaw or radial-arm saw to make a half-lap. We prefer to use a dado set for fast and smooth results. If you don't own a dado set that will cleanly shear cross grain and leave the sawn surface flat and smooth, we suggest you use a router table outfitted with a straight bit. Here, we show how to make corner- and T-joints with a tablesaw, but you easily can adapt these techniques to your radial-arm saw or router table.



### Four easy steps to lap-joint success

**1** Install your complete dado set so you get the widest cut possible with it (typically  $\frac{13}{16}$ " ). Raise the blade above the table. (Exact height isn't important yet.) Adjust your rip fence so one workpiece edge butts against the fence and the opposite edge aligns with the side of the dado set farthest from the fence, as shown *above*.



If all of your workpieces are the same width, leave your fence at this position for all of the following cuts. If you're working with pieces of different widths, use a workpiece's mating piece to set the fence for its half-lap cut. For example, with a door frame use the horizontal workpieces (the rails) to set the fence for the cuts in the vertical workpieces (the stiles), and vice versa.

**2** Set the cutting depth of the dado set so it removes precisely one-half of the workpiece thickness. Test your cutting depth with two pieces of scrap stock of the same thickness as your workpieces. After cutting the scrap pieces, lay them on a flat surface and align them as shown *above*. The top and bottom faces should be flush.



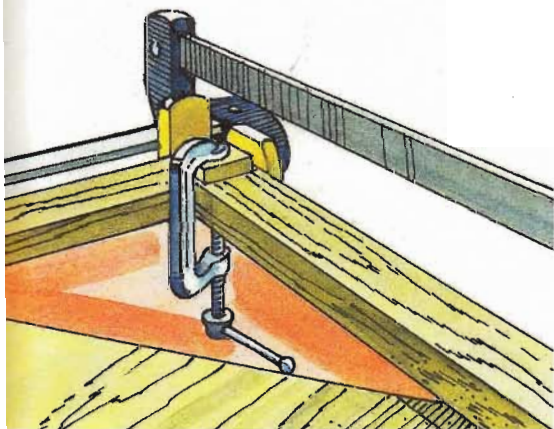
**3** Mark the face sides of your workpieces so you don't get them confused. Place the face side of one piece up, and the face side of the adjoining piece down, during this step.

Set your miter gauge for a square cut, and attach an auxiliary wooden fence to it. The auxiliary fence should come to within  $\frac{1}{2}$ " of butting against the rip fence.

Now, position the workpiece with one edge against the auxiliary fence and an end butted against the rip fence. Turn on the saw, hold the workpiece firmly against the auxiliary fence, and pass the workpiece over the dado set as shown *above*. Make successive passes to complete the half-lap cut.

**4** To clamp the joint, first apply wood glue to all mating surfaces. Draw the workpieces together with bar or pipe clamps. Then, bring the glued surfaces tightly together with a small clamp, as shown *below*. Place a scrap of wood on the joint faces to protect them from the clamp jaws.

Our free video on joint testing demonstrates how the half-lap measures up to other woodworking joints. View it at [woodmagazine.com/jointtest2](http://woodmagazine.com/jointtest2).



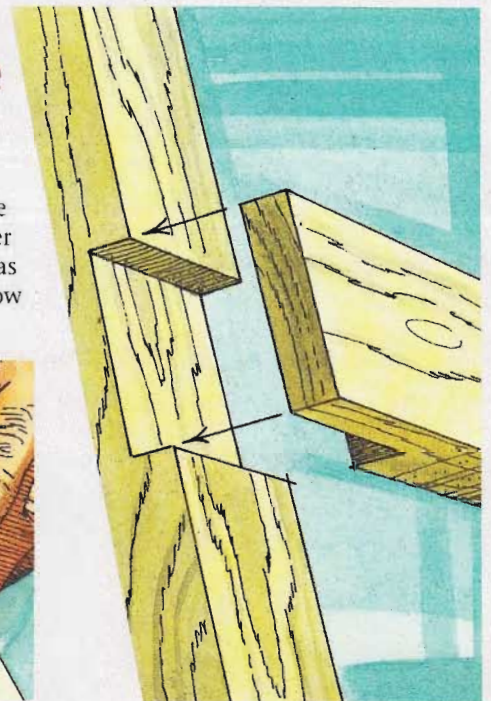
## What you need to know to make a half-lap T-joint

Sometimes, you may have to place a half-lap joint somewhere other than at the end of a workpiece, as shown at *right*. To do this, follow these two easy steps.

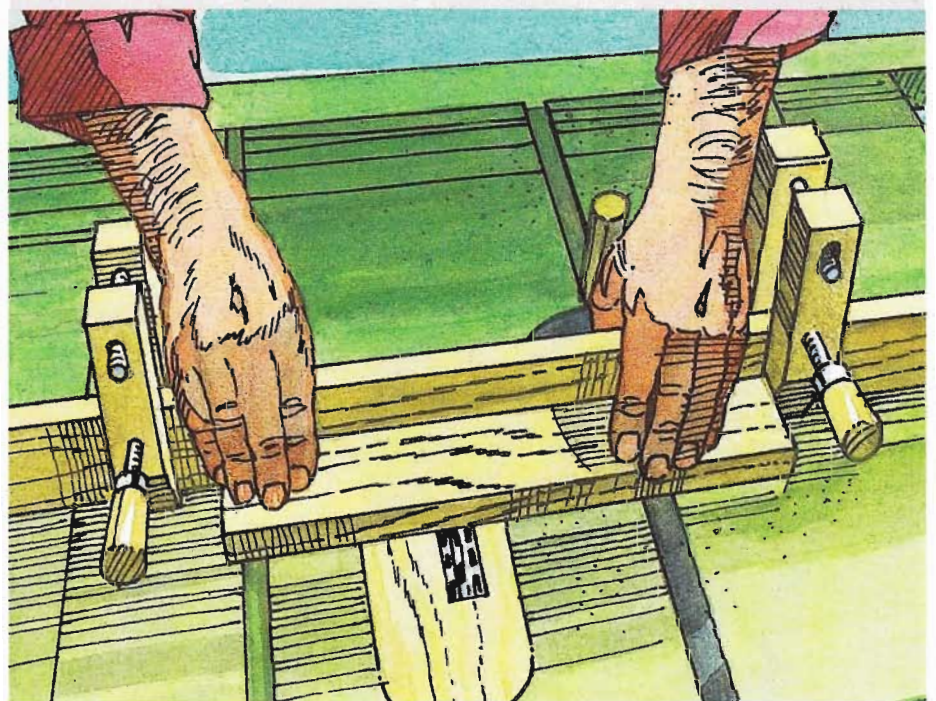


First, mark the position of the overlap on the edge of the workpiece that will be cut in its midsection, as shown *above*. For accuracy use a sharp pencil.

Set the unmarked edge against the miter-gauge auxiliary fence. Align the pencil marks with the sides of the dado set, and position two handscrew clamps as stops on the auxiliary fence. (If you don't have handscrew clamps, simply clamp two blocks of wood with C- or bar clamps.)



When positioned correctly, the stops will limit the area of removed stock to the space between the pencil marks. You simply butt one end of the stock against one stop and make a cut as shown *below*. Then, butt the other end of the stock against the remaining stop, and make another cut. Finally, remove the material between the two cuts. With the stops set up this way, you can make multiple pieces that will all turn out the same. 🌲

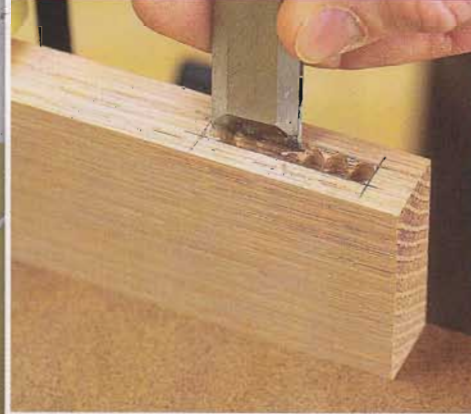


# Master the Mortise-and-Tenon Joint

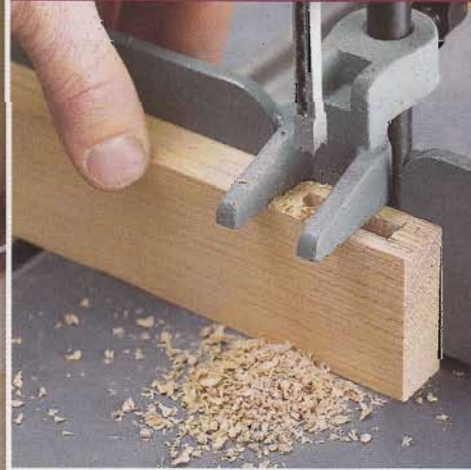
Here are several methods for making mortise-and-tenon joints. Pick the one that works best for your shop and budget.

## Mortise Methods

**1** Drill press and bench chisel



**2** Mortising attachment



**3** Benchtop mortiser

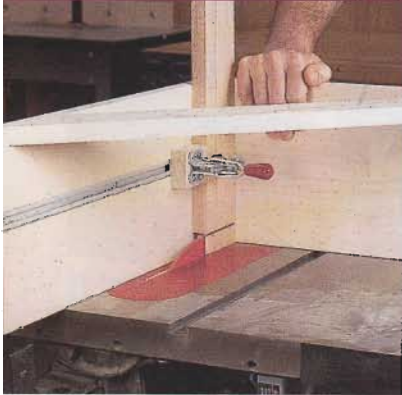


## Two Ways to Make Tenons

Tablesaw and dado set **1**



Tablesaw and jig **2**



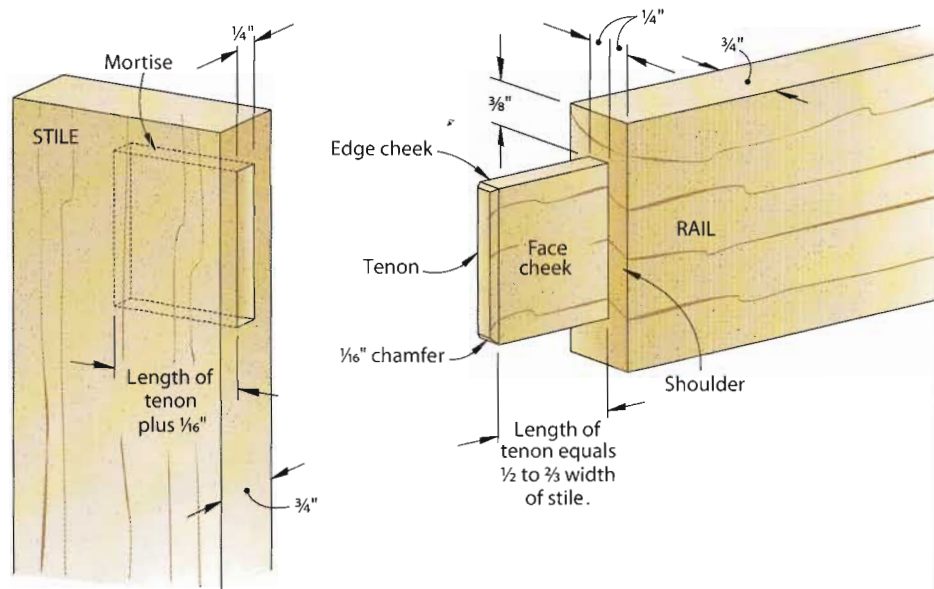


**M**astering mortise-and-tenon joinery has always ranked at the top of woodworkers' skill priority lists. That's because the joint's great strength makes it the premier joinery technique for making cabinets and furniture.

Machining mortise-and-tenon joint members takes only a moderate amount of time and fuss, provided you have a few basic tools. To help you succeed at the king of joints, we'll walk you through making the blind mortise-and-tenon joint (the most common, where the tenon is completely enclosed in the mortise), letting you choose the options that best suit your tools and preferences. But before we begin, take a minute to review the basic terms and design proportions in the drawing at right.

**Note:** Plane your stock to consistent thickness prior to making these joints. (Include a couple of scrap pieces for testing tenoning setups.) This step makes all of your work easier while ensuring accuracy.

## ANATOMY OF A BLIND MORTISE-AND-TENON JOINT



# Start with the mortise

Always cut the mortise first and then size the tenon to fit snugly. It's quicker and easier to adjust the dimensions of a tenon (as we'll show later) than to change a mortise.

Establish the mortise width at one-third of the workpiece thickness. This

ratio results in a joint with plenty of strength in both the tenon and the sidewalls. Most woodworking projects call for 4/4 stock, which measures approximately 3/4" thick after surfacing and sanding, so a 1/4"-wide mortise works well for most of your projects.

Also, avoid mortising less than 3/8" from the end of the workpiece. This prevents splitting as you shape the mortise and assemble the joint. For strength, make the mortise depth approximately one-half to two-thirds the width of the workpiece.

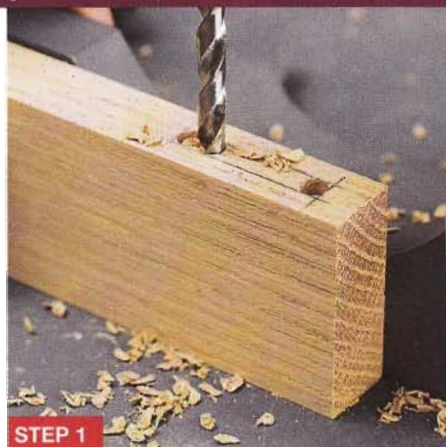
## MORTISE METHOD 1: Rely on your drill press

**Pro:** This method requires no expensive or specialized equipment.

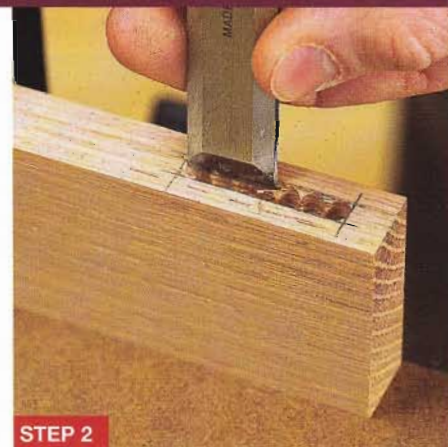
**Con:** Cleaning up the mortise with a chisel takes time.

If you have a drill press and chisels, you're ready to mortise. Equip your drill press with a brad-point or Forstner bit that matches the mortise width: These wander less than a standard twist bit as you drill the overlapping holes to form a mortise.

Now use a sharp pencil or marking knife and a combination square to lay out the mortise opening. Then set the drill-press fence to center the bit between the mortise sides, and adjust the depth stop. Finally, follow the two-step process shown in the photos at right.



Adjust the fence to center your drill bit in the layout lines. Hold the workpiece against the fence, and define the mortise length by drilling to full depth at each end of the layout. Now drill a series of overlapping holes in between.



Clamp the workpiece to your workbench. Place a wide, sharp chisel on the layout line and clean up the mortise walls with hand pressure or by tapping with a mallet. Use a narrow chisel to square the ends.

## MORTISE METHOD 2: Add a drill-press mortising attachment

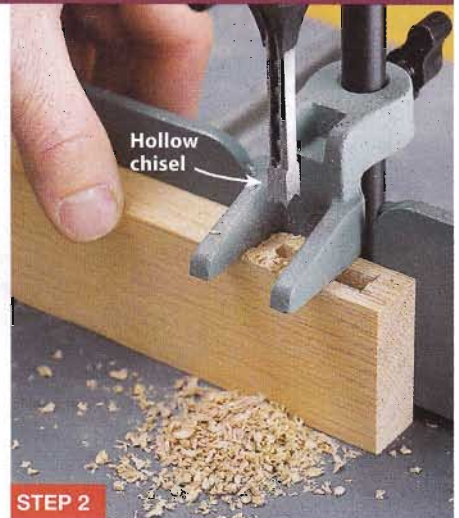
**Pro:** A no-chisel way to drill and square the mortise in one step. Moderate price.

**Con:** Installing and removing the mortising attachment takes time, and the drill press can't be used for other tasks with the attachment in place.

To speed up your work, avoid hand chisel work by equipping your drill press with a mortising attachment. Its hollow-chisel design—a drill bit surrounded by a sharp square sleeve—forms a square mortise by drilling a series of square holes. The mortising chisel you'll use most often is  $\frac{3}{8}$ " diameter. Delta's version, no. 17-786 sells for \$40 at amazon.com. Before you buy any mortising attachment, check with the dealer or manufacturer to make sure that it fits your drill press. The photos at *right* describe the simple procedure for using this handy accessory.



**STEP 1** Clamp the chisel holder to the drill-press quill, fasten the fence to your drill-press table, and slide the hold-down onto its support rod. Install the hollow chisel with its front edge parallel to the workpiece and set the drill-press depth as desired.



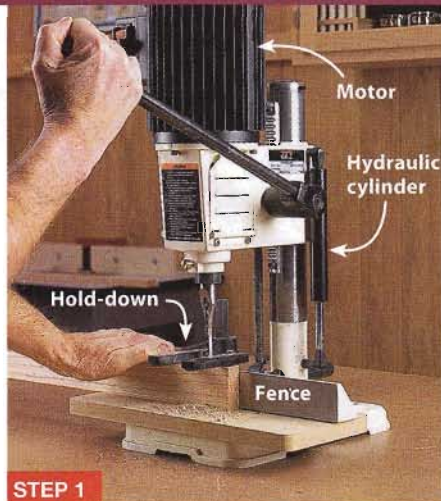
**STEP 2** With the hold-down tight atop the workpiece, use moderate pressure on the quill-feed lever to bore a hole at each end of the mortise. Complete the job by drilling a series of slightly overlapping holes between the end holes.

## MORTISE METHOD 3: Step up to a benchtop mortiser

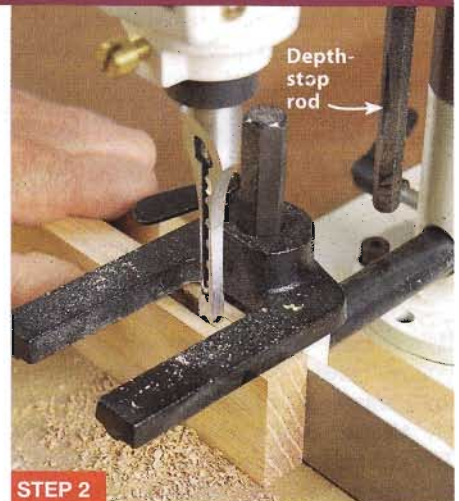
**Pro:** Yields quick, clean mortises with minimal setup.

**Con:** A benchtop mortiser serves only one purpose in your shop. Entry-level models cost \$350.

Woodworkers who make a lot of mortises find it handy to own a dedicated machine. A benchtop mortiser works like the drill-press attachment, but it's always ready to use. Also, drill-press attachments work fine for occasional use or for mortises smaller than  $\frac{3}{8}$ ". But most drill presses aren't designed to provide the pressure and leverage required to plunge a larger bit and chisel into hardwoods. Refer to the photos at *right* for details on using this type of tool.



**STEP 1** Set the fence of your benchtop mortiser to place the hollow chisel squarely within your mortise layout lines. Then adjust the hold-down to secure your workpiece against the fence.



**STEP 2** Adjust the depth-stop rod to establish the mortise depth and keep it consistent. Drill a hole at each end of the mortise and a series of slightly overlapping holes in between.

# Now it's tenoning time

**A**fter you finish the mortises, use your scrap test pieces to set up your tablesaw to form tenons. The ideal tenon slides into its mating

mortise with firm hand pressure. Center the tenon on the edge of the workpiece (between faces) and make it  $\frac{1}{16}$ " shorter than the mortise depth; this hidden

gap provides a place for excess glue and guarantees that the tenon won't bottom out in the mortise, spoiling the fit of the joint.

## TENON METHOD 1: Tablesaw and dado set

**Pro:** No jigs are needed, and you make all cuts with the workpiece completely supported by the table.

**Con:** Some lesser-quality dado sets produce a rough surface and can splinter wood when crosscutting; such surfaces must be sanded. Also, you might find it awkward to handle workpieces over about 4' in length

In the *WOOD*® magazine shop, we usually choose this method for cutting tenons because it's quick, simple, and reliable. Align your tablesaw rip fence parallel with the dado set and make sure that your miter-gauge fence sits at right angles to the dado set. These steps are critical for making a square, tight-fitting tenon.

You'll also need to install a miter-gauge auxiliary fence that extends to the rip fence. Make this fence by attaching a 2"-wide strip of straight material to the gauge with screws or double-faced tape. Now follow the step-by-step photos at *right*.

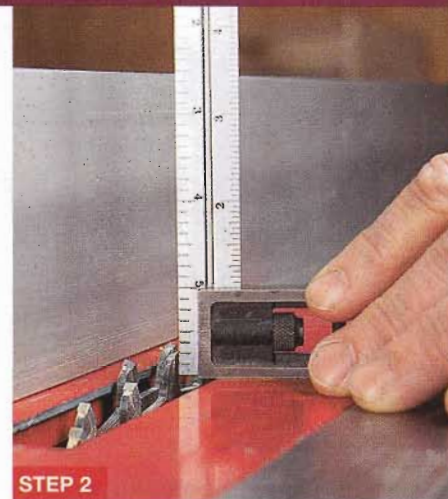


Find more tablesaw joinery techniques at [woodmagazine.com/deadondado](http://woodmagazine.com/deadondado)



STEP 1

Install a dado set and set the rip fence. The distance from the fence to the left side of the dado set equals the tenon length.



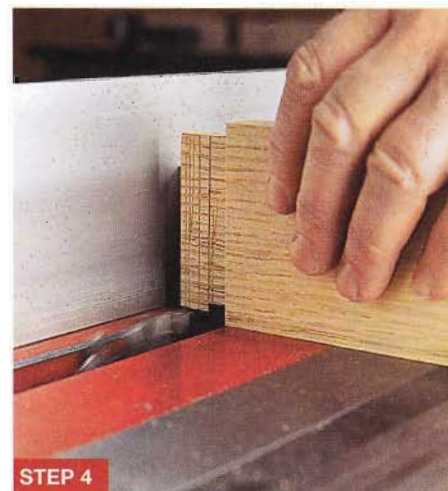
STEP 2

Adjust the dado-set height to establish the thickness of the tenon. For  $\frac{3}{4}$ " stock, set this height at  $\frac{1}{4}$ " and verify with test cuts.



STEP 3

Butt the workpiece end against the rip fence for the first pass. Follow with more passes to form the cheek; and then flip and repeat.



STEP 4

Adjust the dado-set height, if necessary, and cut the tenon edge cheeks with the same methods used for the face cheeks.

## TENON METHOD 2: Tablesaw and shop-made jig

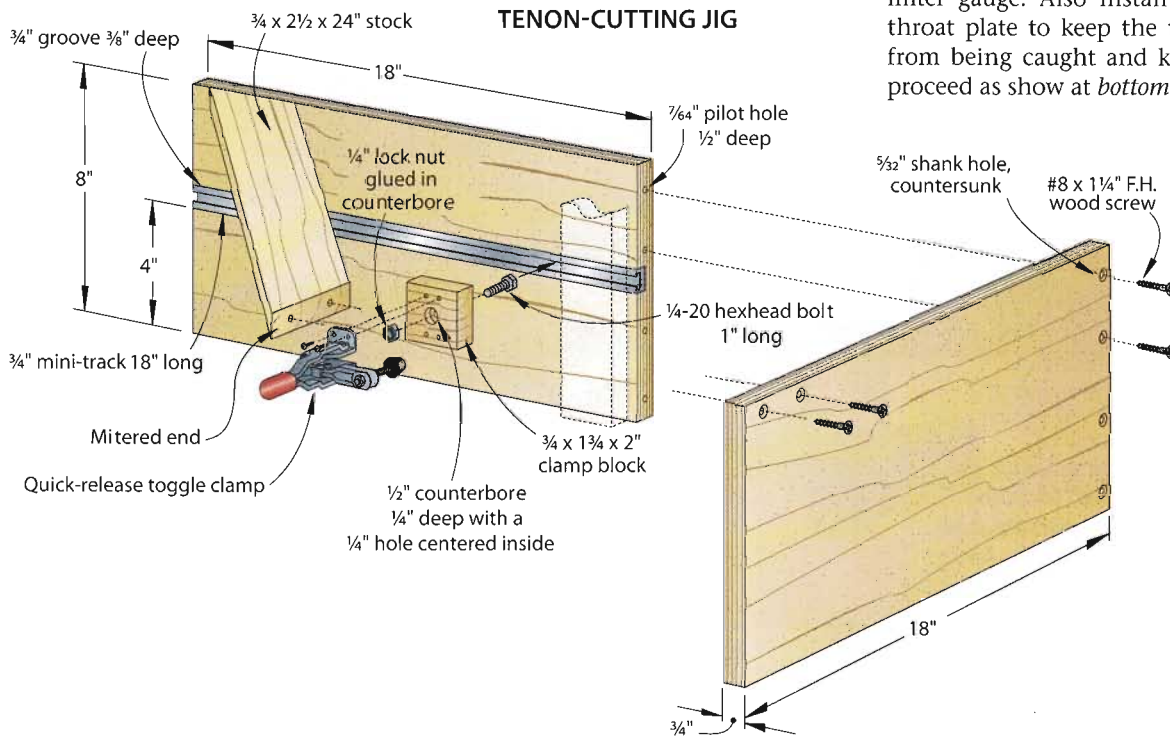
**Pro:** Smooth results at little cost.

**Con:** Saw blade's working height limits tenon length; jig takes up storage space in your workshop.

If you're not prepared to pay \$100 or more for a high-quality dado set, cut tenons with the workpiece held vertically on the tablesaw. You need a dependable jig for this operation; the drawing *below*

shows you how to build one at minimal expense. We designed it to clamp the workpiece in place and ride flush against the rip fence.

Now, mount a combination blade in your tablesaw, and add an auxiliary fence to the miter gauge. Also install a zero-clearance throat plate to keep the thin waste pieces from being caught and kicked back. Now, proceed as show at *bottom*.



**STEP 1**

Set the rip fence to establish the tenon length, and adjust the miter-gauge auxiliary fence so that it nearly touches the rip fence. Set the blade height to establish the tenon thickness. Butt the workpiece against the rip fence, and make four passes around the workpiece. Cut a test piece as well.



**STEP 2**

Before cutting the finished piece, use your test piece to set the rip fence. Raise the blade to the tenon's length and set the fence to cut the face cheek on the left side of the blade. Make the cut, flip the workpiece around, cut the other face cheek, and test the result in a completed mortise.



**STEP 3**

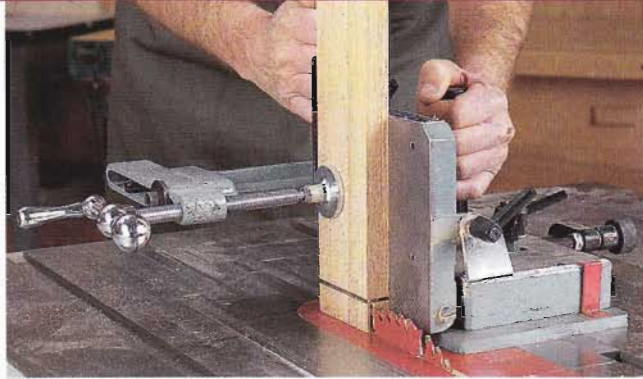
For the edge cheeks, remove the clamp and place a test piece as shown. Adjust the rip fence as necessary, hold the test piece firmly in place, and make the cut. Flip the piece edge-for-edge, cut the other edge cheek, and test the fit in a mortise. Adjust as needed, and cut the tenon edge cheeks.

## ALTERNATIVE TENON METHOD 2: Buy a commercial jig

**Pro:** A fine-tuning knob makes this jig easier to adjust than our shop-made version shown on *page 90*.

**Con:** Most jigs cost about \$100.

Would you rather buy a jig than make your own? A tenoning jig, such as the Delta version shown at *right*, offers great convenience and accuracy and should last a lifetime.



Cutting a tenon with a commercial jig is similar to the process used with our shop-made jig. Cut a kerf around the rail, use a zero-clearance throat plate, and then cut on the side away from the jig body. Cut the edge cheeks with a crosscut hand-saw or on the tablesaw.

## Fine-tune tenons for a snug fit

**D**espite your most careful efforts, sometimes you'll need to make a tenon thinner or thicker to achieve a good fit. Don't count on glue alone to fill gaps—that approach will only weaken the joint.

For a tenon that's slightly oversize, use a sanding block to remove a modest amount of material as shown in **Photo A**. Sandpaper wrapped around a block is likely to ruin the straight line of the shoulder, so use self-adhesive sandpaper on the bottom only. Or, if you prefer, use a rabbeting plane and a light touch, as shown in **Photo B**. For more tips, watch a video on mortise-and-tenon joinery at [woodmagazine.com/shoulderplane](http://woodmagazine.com/shoulderplane).

Fix a tenon that's too thin by gluing on oversize filler pieces as shown in **Photo C**. Saw, plane, or sand the tenon to final thickness after the glue dries.

Finally, use a sanding block to form a chamfer around the end of each completed tenon, as shown in **Photo D**. This simple step helps you get the tenon started into its mortise with no fuss at assembly time even if the glue has begun to swell the wood fibers. 🌲

### SANDING



**A** Use 150-grit sandpaper and a sanding block to slightly reduce the thickness of a tenon. Place self-adhesive paper on a block or stick regular sandpaper in place with spray adhesive or double-faced tape.

### PLANING



**B** A sharp rabbeting or shoulder plane removes material faster than sandpaper. Here you see a low-angle plane (Lie-Nielsen model 60½R), designed to cut efficiently across grain and leave a smooth surface.

### SHIMMING



**C** When a tenon proves to be too thin, glue a wood shim on each face cheek to keep the tenon centered. Make the shims thick enough to allow remilling of the tenon.

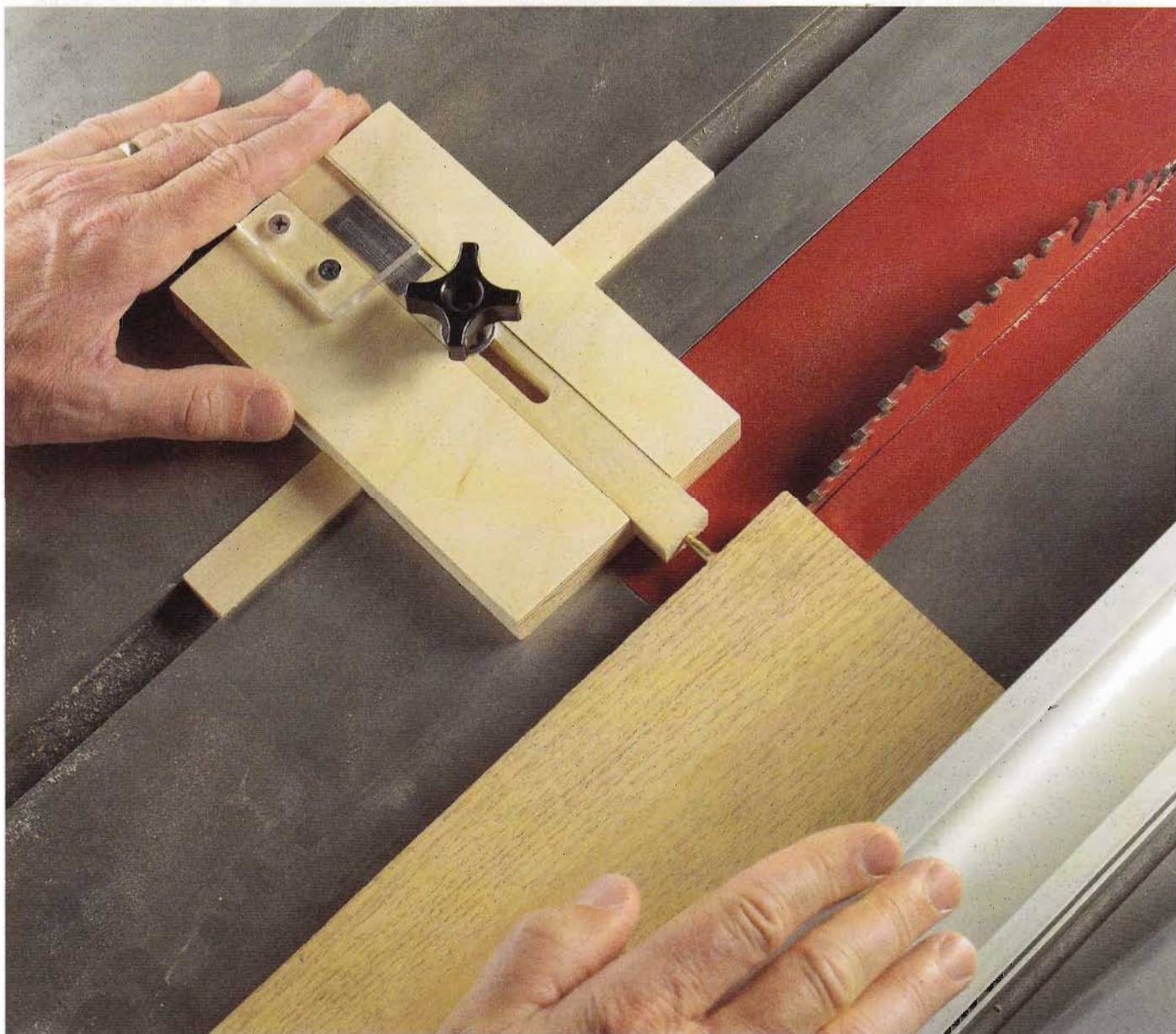
### CHAMFERING



**D** Grab your sanding block again to shape a ¼" chamfer around the tenon end. A chamfered tenon slides more easily into place as you put the joint together.

# Must-Have Jigs

They'll cut your work time, boost your precision, and give your projects a professional appearance. Build one or all, using stock you probably have on hand already.



**A**sk a few seasoned woodworkers about the benefits of stocking a shop with a variety of hardworking jigs. They'll likely tell you that some jigs get used again and again, while others gather dust. The ones shown in this chapter, we guarantee, won't be in the latter category.

We thoroughly tested each of these jigs, building them from scrap stock to save on cost. There are a number of materials used in these jigs, including oak-veneer plywood and hardboard. The hardware items you'll need are inexpensive and widely available. Take an evening or two to make them, and

we predict that you'll use the jigs often, especially for repetitive cuts. Jigs like the miter-gauge extension (*page 99*) handle a variety of crosscuts, miters, and dados; while ones like the thin-strip ripping jig (*above and right*) and the four-sided taper jig (*page 102*) provide you with more specialized services.

# Simple, Handy Thin-Strip Ripping Jig

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

## First, build the jig

**1** Cut a piece of  $\frac{3}{4}$ " plywood to the dimensions shown for the base on the drawing at right. Cut a dado on the bottom side of the base for the guide bar, where shown. Now, cut the  $\frac{3}{4}$ " dado on the top side of the base for the sliding bar.

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

**3** Set the jig in your table saw's left miter-gauge slot. Place the sliding bar in the dado with its left end flush with the base. Slide the jig forward, and mark the point where a left-leaning saw-blade tooth touches the bar. Make a second mark  $\frac{1}{2}$ " closer to the base. Remove the bar, and crosscut it at the second mark.

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

**5** From the bottom side of the assembly, drill and countersink a  $\frac{1}{4}$ " hole through the miter-slot guide bar and base for the machine screw that holds the plastic knob. Sand all of the wood parts to 180 grit, and apply three coats of clear finish.

**6** Make a mark 1" from the left end of the sliding bar. Cut the first  $1\frac{1}{2}$ " from an inexpensive steel rule, align its left end with the mark, and attach it with epoxy.

**7** Cut a piece of  $\frac{1}{4}$ " acrylic plastic to the dimensions shown for the indicator. Drill and countersink the two mounting holes, and scribe and mark a cursor line [Photo A]. Attach the indicator to the base, and add the knob.

## Now, cut some strips

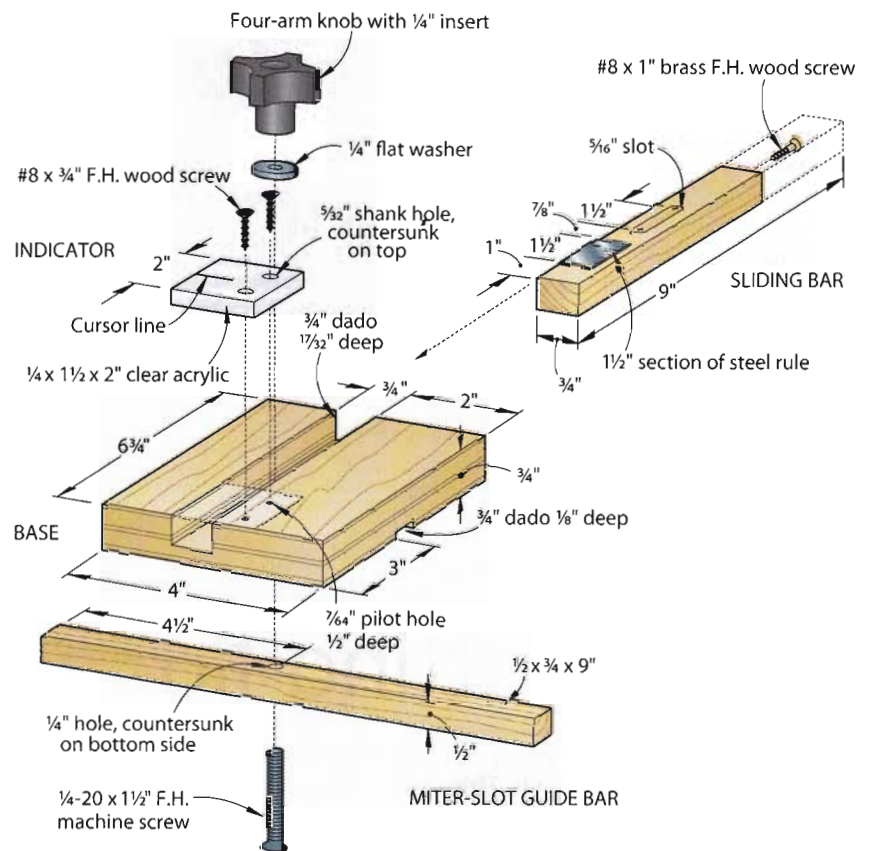
To cut a thin strip with the jig, place its guide bar in the left-hand miter-gauge slot on your table saw. Loosen the knob, set the cursor to zero (the bottom end of the rule), and retighten the knob. Slide the jig so that the brass screwhead is beside the saw blade. Turn the screw in or out until the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

a left-leaning tooth. Pull the jig toward you, loosen the knob, set the cursor for the desired strip thickness, and retighten the knob.



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

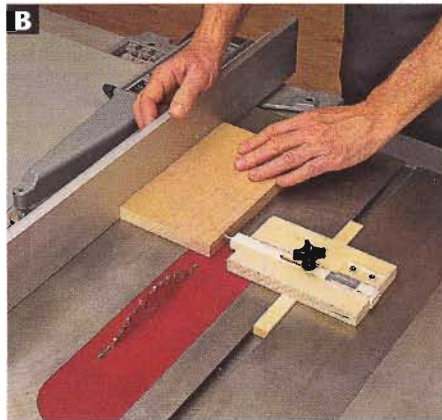
THIN-STRIP RIPPING JIG



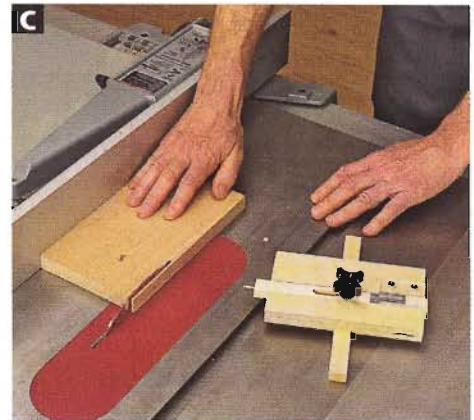
## Chapter 5 | Must-Have Jigs

Position your workpiece against the rip fence, and move the fence to bring the left edge of the workpiece against the screwhead [Photo B]. Lock the fence in place, set the jig out of the way, and you're ready to cut a strip [Photo C].

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



**B** Size your thin-strip ripping jig so a 1" screw in the guide bar can touch the blade. A zero-clearance insert prevents the sawn strip from falling into the saw.

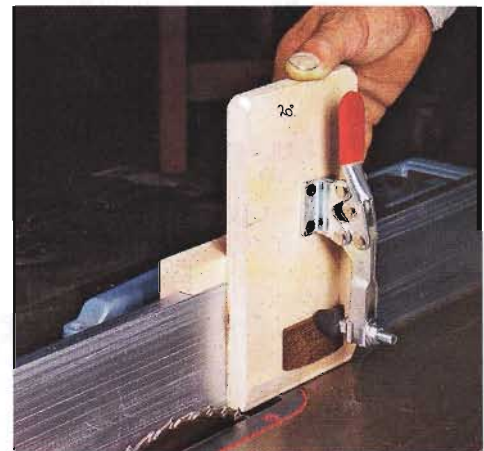


**C** Remove the jig before making the cut so the workpiece doesn't bind between the rip fence and the screwhead. Replace the jig in the slot to set up the next cut.

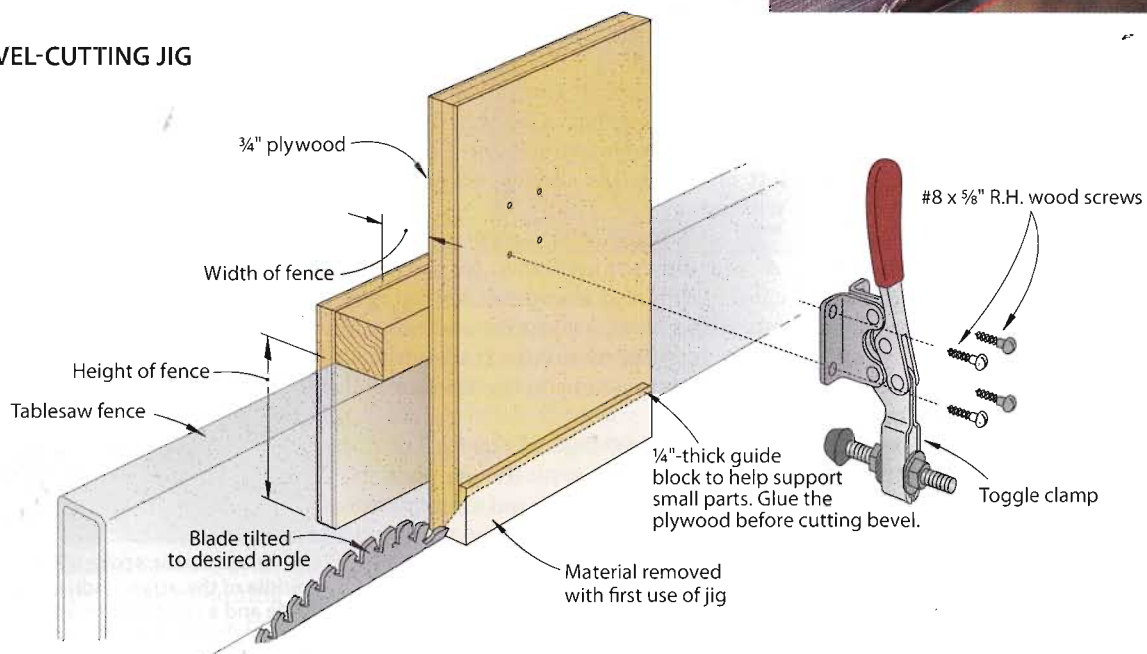
# Bevel-Cutting Jig

**S**awing bevels on small parts can be tricky and dangerous. This easy-to-build jig offers a novel way to bevel small parts while keeping your hands out of harm's way. The toggle clamp attached to the jig, shown at *right*,

securely captures the part as the jig slides forward along the rip fence. See the drawing *below* for a description of how the jig goes together. Make one of these for each degree bevel you want to cut. 🌲



### BEVEL-CUTTING JIG





# Texas-Size Fence

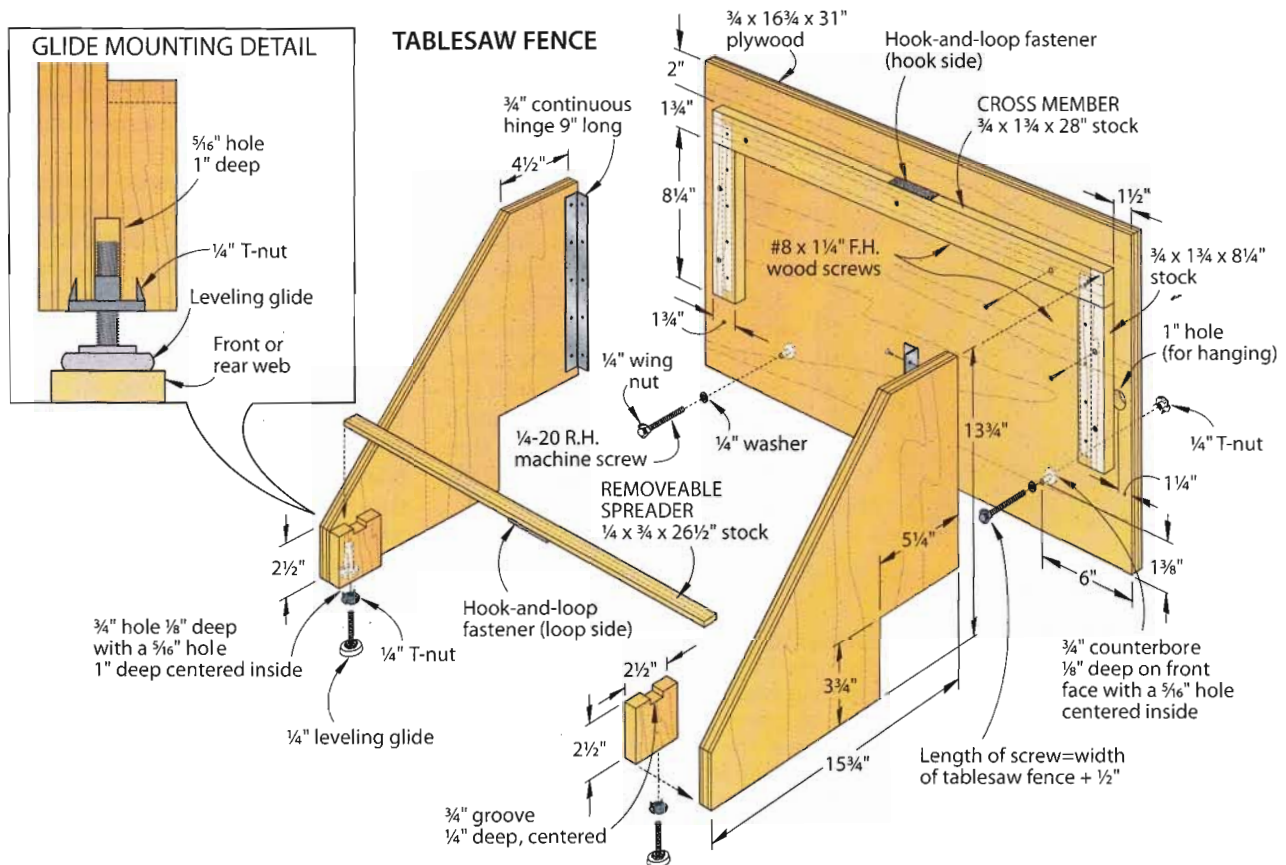
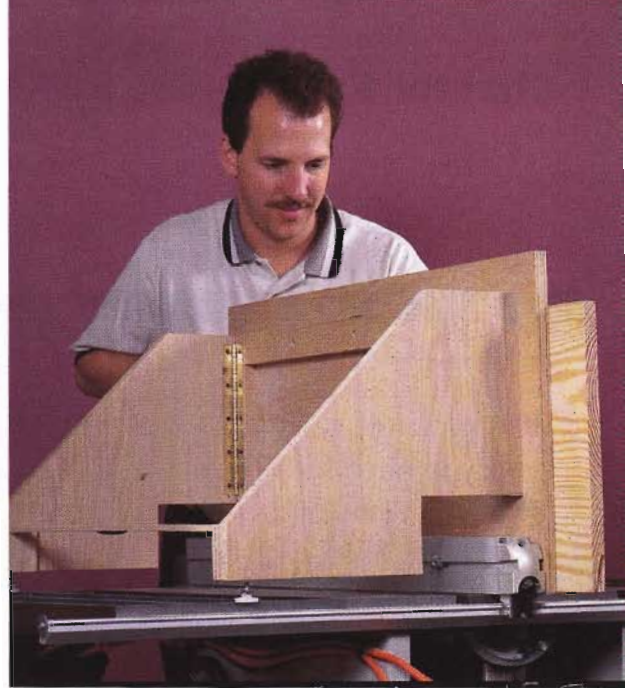
**N**ow you can stand workpieces, such as raised panels, upright and cut their edges on your tablesaw. Just use this auxiliary tablesaw fence designed by *WOOD* magazine reader Joe Xaver. The jig temporarily bolts to your saw's existing fence to help you make these cuts safely and accurately, and folding supports make for flat storage.

Before you begin, take a few measurements from your saw to ensure proper fit. First, examine your saw's existing fence to see if drilling it for the machine screws where shown in the drawing below will interfere with the fence's operation, and adjust the locations if necessary. For webbed extension wings, measure between the centers of

the webs at the front and rear of the extensions. Make the removable spreader this length, and add 1½" to find the length of the cross member. (The dimensions shown are for a table that is 26½" between the centers of the front and rear webs.) For saws with solid extension wings, shorten the dimensions shown for those pieces by 4".

Armed with that information, build the auxiliary fence as shown in the drawing. Drill 5/16" holes in your fence to match the location of the T-nuts, and bolt the tall fence to your saw's fence as shown in the photo above right. Before using the jig for the first time, adjust the nylon glides

so the tall fence is perpendicular to your saw's tabletop. When you're finished using the jig, unbolt the unit from your fence, pop out the removable spreader (attach it to the top edge of the cross member for storage), fold the legs, and hang the whole thing on a wall. 🌲



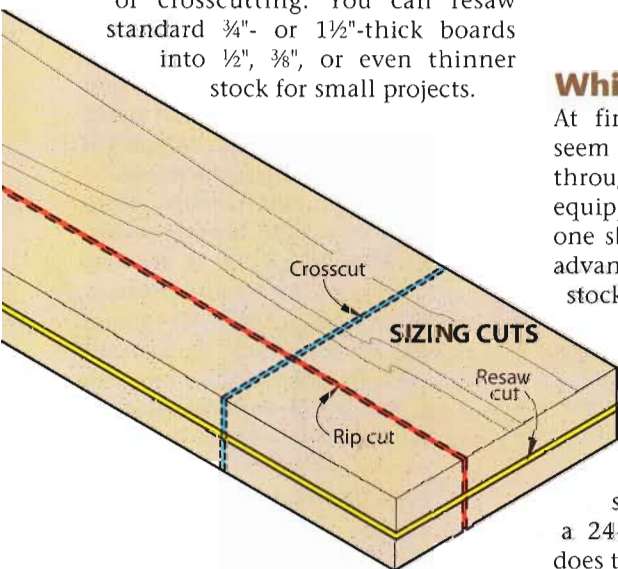
Project Design: **Joe Xaver, Auburn, Ill.**  
Photograph: **John Hetherington**

# Resawing Jig

When you just can't find the thin stock you need for a project, resaw it from thicker stock. Here's how to do it, using an easy-to-build jig.

**W**oodworkers routinely perform two sawing operations when sizing stock—ripping, which reduces a board's width, and crosscutting, which reduces its length. But there's a third way to cut stock down to size—resawing, which reduces its thickness, shown *below*.

Though less commonly practiced, resawing is just as useful as ripping or crosscutting. You can resaw standard ¾"- or 1½"-thick boards into ½", ⅜", or even thinner stock for small projects.

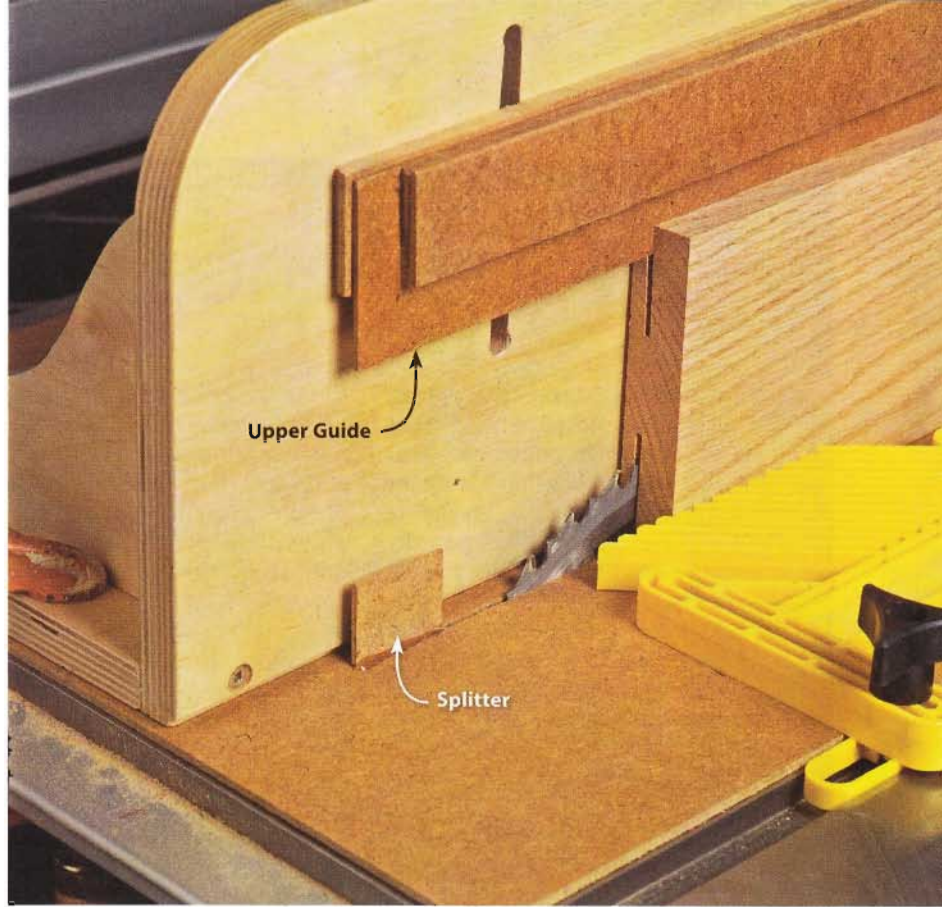


## Resawing vs. planing

When deciding whether to resaw stock or plane it to thickness, consider both resawing capacity and the amount of wood wasted.

**Capacity.** Most 10" tablesaws can resaw stock up to about 6" wide with our jig; the typical portable planer can handle material up to 13" wide. For stock wider than 6", you could use the saw's maximum cutting depth, then finish the job with a handsaw.

**Waste.** You lose ⅜" or so of the stock's thickness to the blade kerf and final surfacing when resawing. If you would have to plane away more than that to achieve the desired thickness, resawing is more economical. For example, in making ¾" stock into ⅜" material, resawing yields the ⅜" stock as well as a ⅜"-thick piece that could be finished to ⅜". Planing would produce the ⅜" stock and waste ⅜" as chips.



The splitter keeps the stock from binding against the blade, and the upper guide assembly helps hold the stock against the fence. Use a pushstick and feather board for safety.

## Which saw for resawing?

At first glance, the bandsaw would seem best suited to slicing edgewise through a board. But a tablesaw that's equipped with a resawing jig like the one shown in use *above* offers several advantages, even when cutting wide stock. The tablesaw's biggest plus is its rigid, true-running blade. It doesn't wander through the wood, as even a wide bandsaw blade will. Though the tablesaw cuts a wider kerf than the bandsaw, it leaves a much smoother surface. (We found that a 24-tooth, carbide-tipped rip blade does the best job.)

You probably would plane or sand away almost as much wood making the bandsawn stock ready for use. And, less planing and sanding means the job goes faster and easier.

The trick to resawing on a tablesaw is, of course, safely guiding past the blade stock that's standing on its narrowest surface. A simple jig will help you do this without twisting or tilting the stock, which would cause binding, burning, and kickback.

## Here's how to build the jig

The resawing jig has two main assemblies, the base and the fence, shown in the drawing, *next page*.

Build the base first. Cut a flush-fitting wood insert (A) for your tablesaw's throat. Next, cut the jig table (B) to fit between the miter-gauge slots on your saw. Lower the blade all the way, then lay the insert into the saw throat and clamp the jig table in position on the saw table.

Start the saw, and elevate the blade to full height, cutting a kerf through parts A and B. Shut off the saw, and screw the jig table to the insert. With a handsaw, lengthen the kerf behind the blade to accept the splitter (C). Draw two lines that extend the kerf to in front of the

blade, and drill a  $\frac{1}{8}$ " hole between them for the guide pin (D). Cut out the splitter and a piece of  $\frac{1}{8}$ " dowel for the guide pin. Chamfer the leading edge of the splitter, and glue it in place.

Cut fence parts E, F, and G from  $\frac{3}{4}$ " plywood. Cut the slots and the rabbet where shown on part F, and round the upper corners. Glue and screw E and F together at exactly 90°. Glue and screw the braces (G) in place on parts E and F.

Cut the upper guide parts (H and I) and the  $\frac{1}{8}$ " and  $\frac{1}{16}$ " spacers (J) to size. Chamfer the leading edge of part H. Drill and countersink two holes through part H, spaced to match the slots in part F. Epoxy a pair of  $\frac{1}{4} \times 2\frac{1}{4}$ " flathead machine screws into the holes, and glue part I over the heads. Notch the spacers (J) to match the slot spacing.

Drill and countersink two holes into the fence (F) where shown. Epoxy  $\frac{1}{4} \times 2\frac{1}{4}$ " flathead machine screws into the holes for spacer storage.

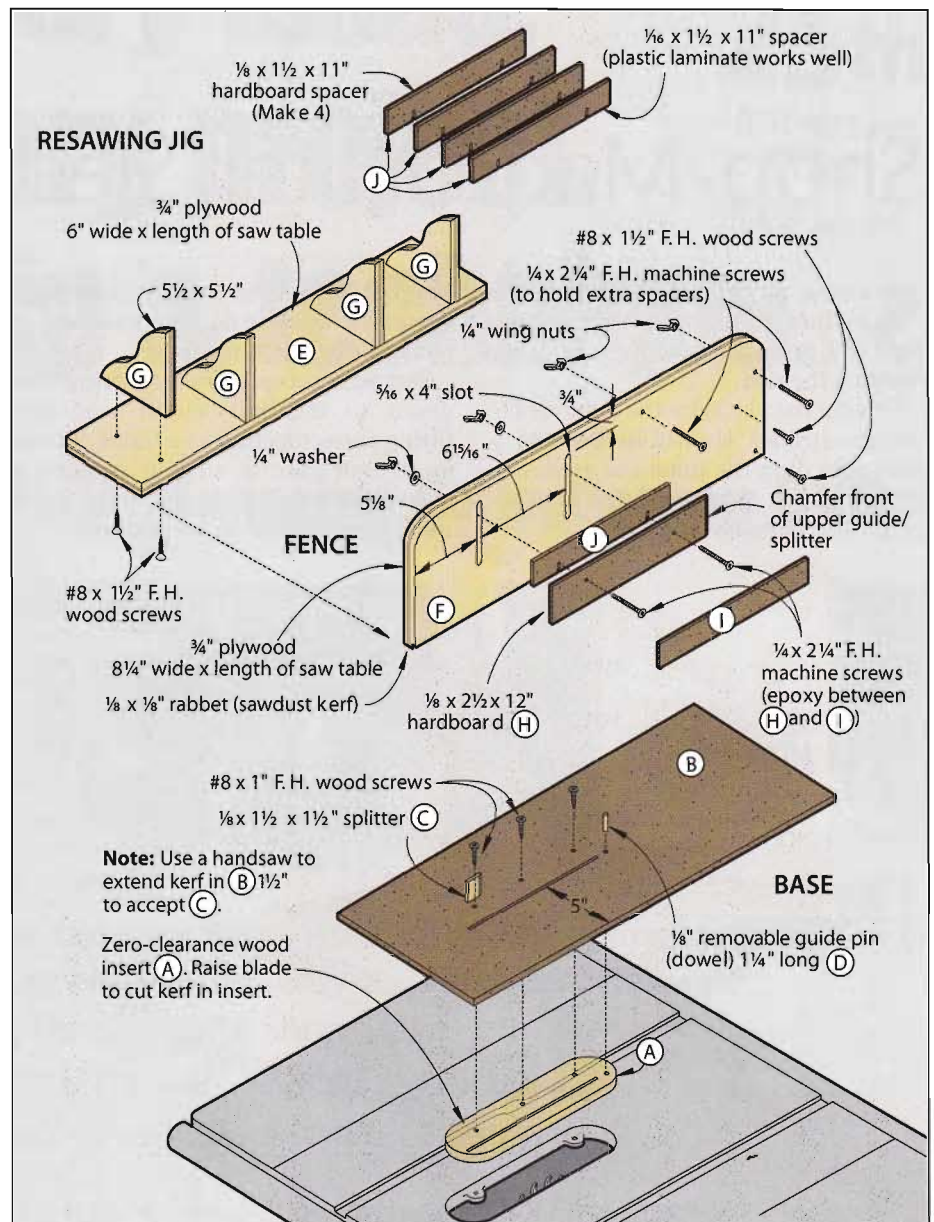
### Resawing with the jig

Place the base assembly on your saw table, and raise the blade to about  $1\frac{1}{2}$ " above the surface. Select a spacer or combination of spacers equal to the thickness you want for the resawn stock. To allow extra thickness for final surfacing, add a thin plastic laminate or cardboard spacer (about  $\frac{1}{16}$ ").

Sandwich the spacers between the fence and the saw blade, as shown at *right*. Ensure that the fence stands 90° to the base; if it doesn't, shim it. Clamp the fence in place, and remove the spacers from behind the blade. Insert the spacers between the upper guide and the fence, and tighten the wing nuts. Remove the guide pin from the base.

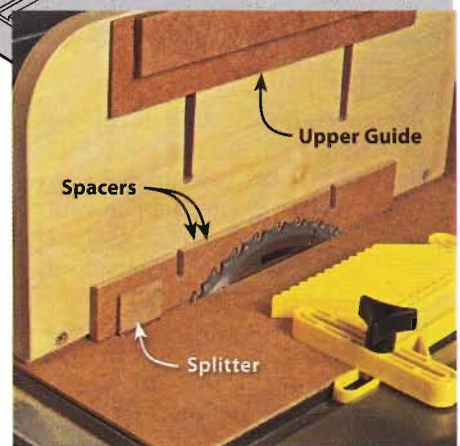
Set up a feather board as shown *opposite top* and *lower right*. Lower the saw blade to  $\frac{1}{2}$ " above the surface (it needs to be higher than the top of the splitter), and make the first cut. Feed the stock with a pushstick.

For the next cut, flip the stock end-for-end, keeping the same face against the fence. Bring the upper guide down to engage the kerf in the stock. (The upper guide holds the top of the sawn stock against the fence.) Saw the next pass, then install the guide pin in the base. (This helps prevent saw gouges



on the end of the stock.) Continue cutting alternate edges, raising the blade for each succeeding pass. 🌲

Photographs: Dean Tanner



Watch a FREE 5-minute video on three tablesaw jigs at [woodmagazine.com/tsjigsvideo](http://woodmagazine.com/tsjigsvideo)

To set the fence, place spacers between it and the blade. Clamp the fence, then put the spacers behind the upper guide.

# Shop-Made Miter Sled

Setting up perfect miter cuts can be time-consuming. With a miter sled, you do it only once while building the sled.

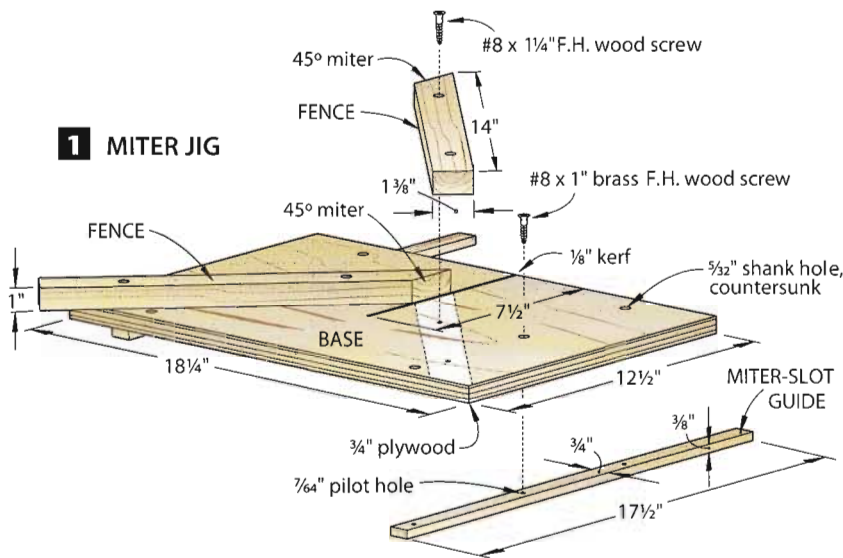
First cut the pieces for the miter sled to the dimensions shown in **Drawing 1**. After attaching the miter-slot guides, as shown in the **Shop Tip** below, put the jig on the tablesaw and cut a kerf  $7\frac{1}{2}$ "

into the base. Then follow the steps in **Drawing 2**, and use double-faced tape to temporarily attach the fences.

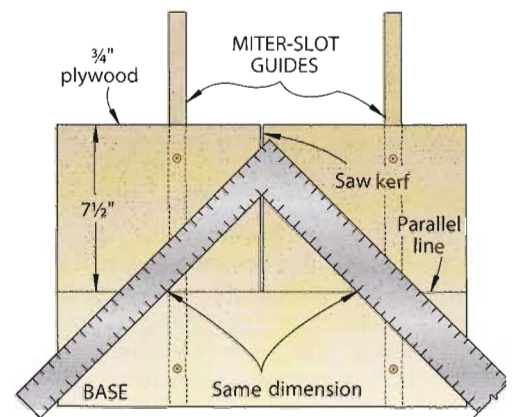
Test your setup by miter-cutting four pieces to identical length and dry-fitting them together as a frame. Check for a tight joint at all four corners. If needed, adjust the fences; then screw them down in their final positions.



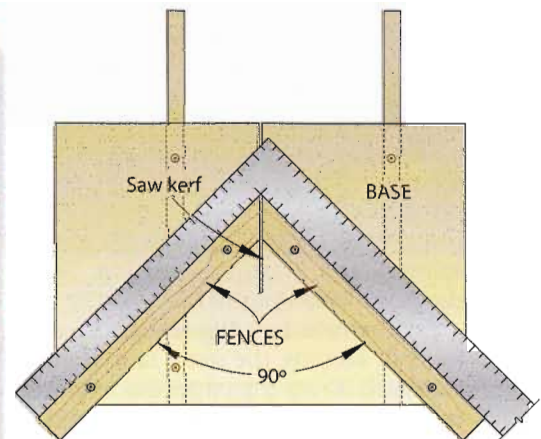
## 1 MITER JIG



## 2 INSTALLING THE MITER-JIG FENCES



**Step 1**  
Draw a line across the base parallel to its front edge. Center the inside corner of a framing square on the kerf and rotate it until the same dimension on both legs of the square intersects the parallel line.

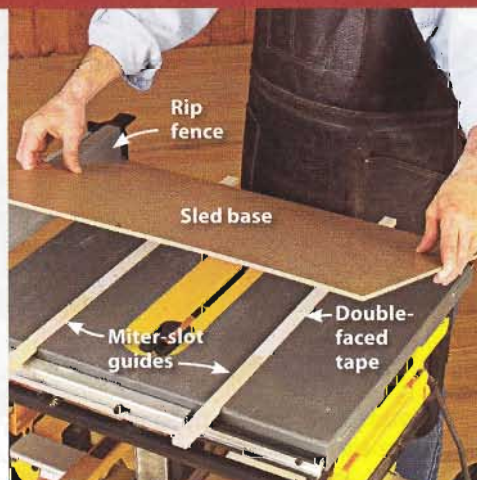


**Step 2**  
Attach the right-hand fence along one leg of the framing square and the left face against the other.

## SHOP TIP

### Set up guides quickly

To precisely mount miter-slot guides to a sled, first place a couple of washers in each miter-gauge slot. Then rest two guides, topped with double-faced tape, on the washers so the guide tops sit just above the saw table. Use the rip fence to square the sled base where you want it, as shown at right, as you press it firmly onto the guides. Now carefully remove the base with the guides attached, and screw the guides in place. 🌲



# Adjustable Miter-Gauge Extension

With shop scraps, a router bit, and a pair of bolts, you'll have this shop helper up and running in minutes.



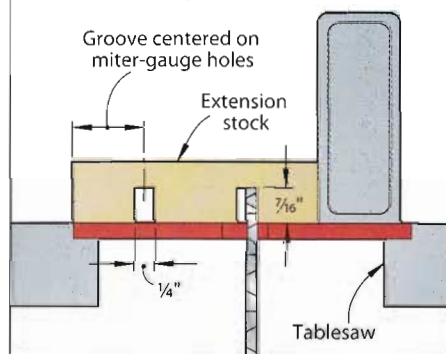
If you're like the craftsmen in the *WOOD* magazine shop, you usually have a wooden extension attached to your tablesaw miter gauge. An extension adds control when crosscutting and backs up cuts to prevent grain tear-out. Sometimes you'll clamp a stopblock to it for accurate repeat cuts or to control the length of a tenon or lap joint. While most scrap extensions are screwed to the miter gauge in only one position, here's how to make an infinitely adjustable one with router-cut T-slots and a pair of  $\frac{1}{4}$ " toilet-flange bolts. (Find these bolts in the plumbing department of hardware stores or home centers.) The extension is so easy to make, you won't hesitate to throw it away when it's used up.

The position of the attachment holes in your miter gauge determines the width of the extension. For a miter gauge with holes close to the bottom, a 3"-wide extension will accommodate two T-slots. (The Delta shown in the photos has holes  $\frac{7}{8}$ " from the bottom.) For a miter gauge with holes higher up, measure from the bottom of the gauge to the center of the holes, and double this dimension to determine the width of an extension with a single, centered T-slot. A range of 18–24" is a good length. Use solid stock, plywood, or medium-density fiberboard for an extension, and make several at a time so you'll always have a fresh supply.

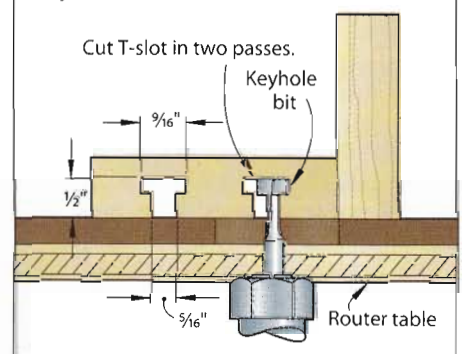
With your extension stock cut to size, use your tablesaw to cut grooves, where shown in **Step 1**, above right. Then switch

## FORM THE T-SLOTS IN TWO EASY STEPS

### Step 1 Cut rough grooves.



### Step 2 Rout four slots.

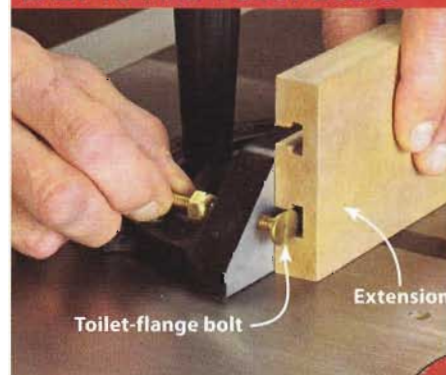


to your table-mounted router, and use a keyhole bit to rout T-slots, where shown in **Step 2**.

Enlarge the holes in your miter gauge to  $1\frac{1}{64}$ ", and fasten the extension to the miter gauge, as shown below. When

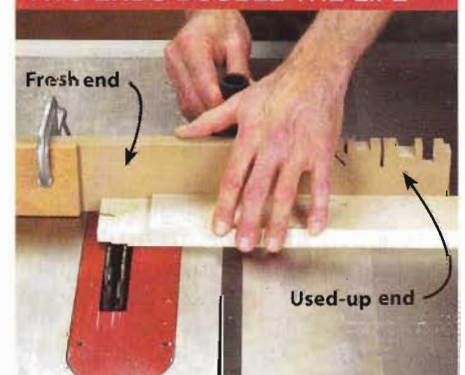
one end of the extension gets chewed up, loosen the bolts, and slide it off. Flip the extension end-for-end, slide it back over the bolts, and tighten the nuts, bringing the uncut end of the extension into play, as shown below. 🌲

## EASY-TO-FIND T-SLOT BOLTS



The elongated flat head of a toilet-flange bolt makes a perfect T-slot fastener. If space allows, substitute wing nuts in place of the supplied hex nuts.

## TWO ENDS DOUBLE THE LIFE



Whether your extension has twin T-slots or a centered one, you can mount it with either edge down. When one end is used up, flip the extension end-for-end.

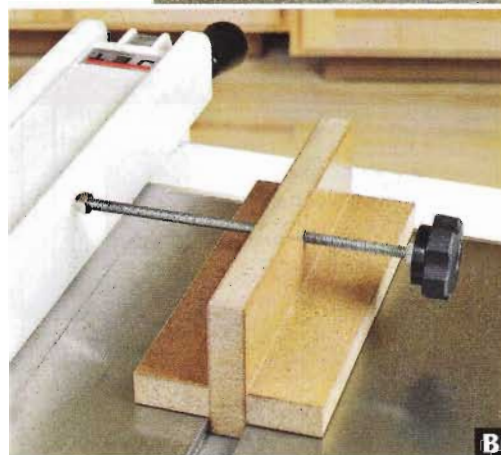
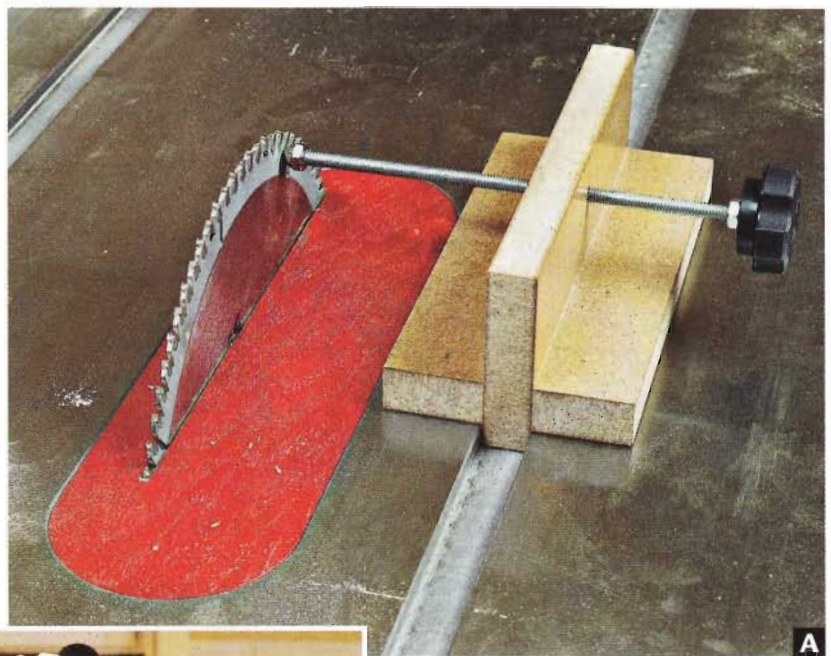
# Alignment Block

End burned cuts, kickback, and less-than-perfect miters by aligning your blade and fence parallel with each other.

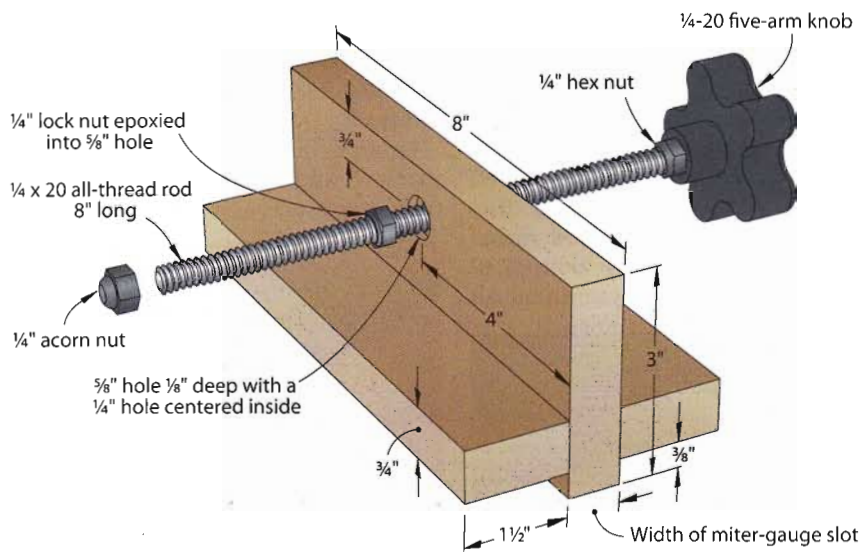
**U**se this simple jig to align both your tablesaw blade and rip fence for clean, accurate cuts. Start by cutting the three pieces of  $\frac{3}{4}$ "-thick stock to the sizes shown in the drawing. The center piece should be just a hair narrower than your tablesaw miter-gauge slot so it slides back and forth easily without play. Drill holes in the center piece to the stated sizes. Epoxy a  $\frac{1}{4}$ " lock nut into the  $\frac{5}{8}$ " hole, being careful not to get any epoxy in the inside threaded portion of the nut.

Glue and clamp the side pieces to the center piece. Crosscut a piece of  $\frac{1}{4}$ "x20 all-thread rod to 8" long. Thread a  $\frac{1}{4}$ " hex nut about  $\frac{1}{2}$ " onto one end of the rod. Then, thread a plastic knob onto the same end. Tighten the hex nut against the knob to lock the knob in place. Thread the rod through the lock nut (it threads slowly) and thread an acorn nut onto the end opposite the plastic knob.

To align your blade to the miter-gauge slot, position the block where shown [Photo A] at the front edge of the fully raised blade. Twist the threaded rod until the acorn nut just touches the blade. Move the block to the back edge of the blade. If there's a tighter fit or a gap shows between the blade and acorn nut, you'll need to adjust the trunnion or table (depending on your saw) until the blade parallels the slot. Use a similar process to align the rip fence [Photo B] parallel to the miter-gauge slot. 🌲



If the acorn nut touches the front and back of the blade or fence the same, you're parallel. If a gap or tighter squeeze exists at the front or back, you need to correct the alignment.

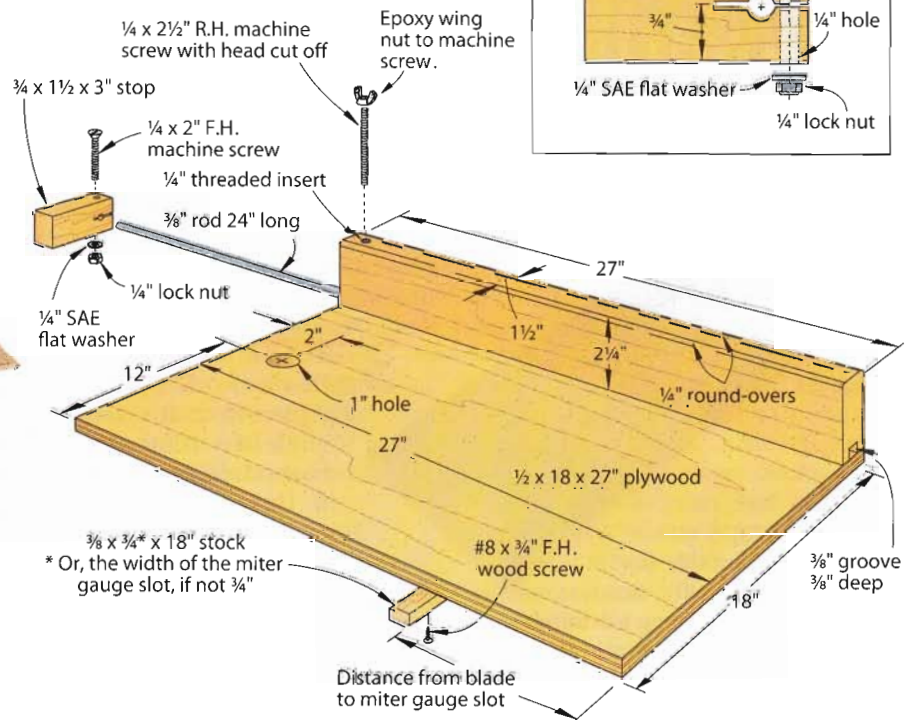
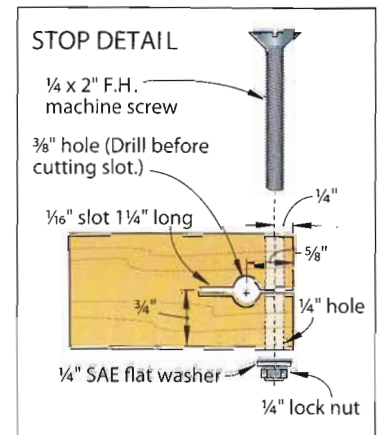


Find more jig plans at:  
[woodmagazine.com/freejigplans](http://woodmagazine.com/freejigplans)

Project design: Howard Autry, Sonora, Calif.



# Split a hair and make it square with our Panel-Cutting Sled



**W**hen you use our panel-cutting sled, you'll never have to wonder if the corner you just cut is square. For hair-splitting accuracy, the beefy fence is fixed at 90° to the blade and shows exactly where your saw blade will cut. And, the fence-leading design holds wider workpieces more solidly and keeps your work closer than fence-trailing jigs.

Build the jig according to the drawing *above right*. We made ours from birch-veneer plywood with a solid poplar fence, but you could use any 1/2" plywood or medium-density fiberboard and a straight scrap of 2x4. Cut both pieces 1/8" longer than shown; you'll trim them to their exact length after you build the jig.

**Note:** A well-tuned tablesaw is essential to complete the assembly. Your saw blade must be parallel to the miter slot. To watch a free video on how to tune up your tablesaw, go to [woodmagazine.com/tstuneup](http://woodmagazine.com/tstuneup).

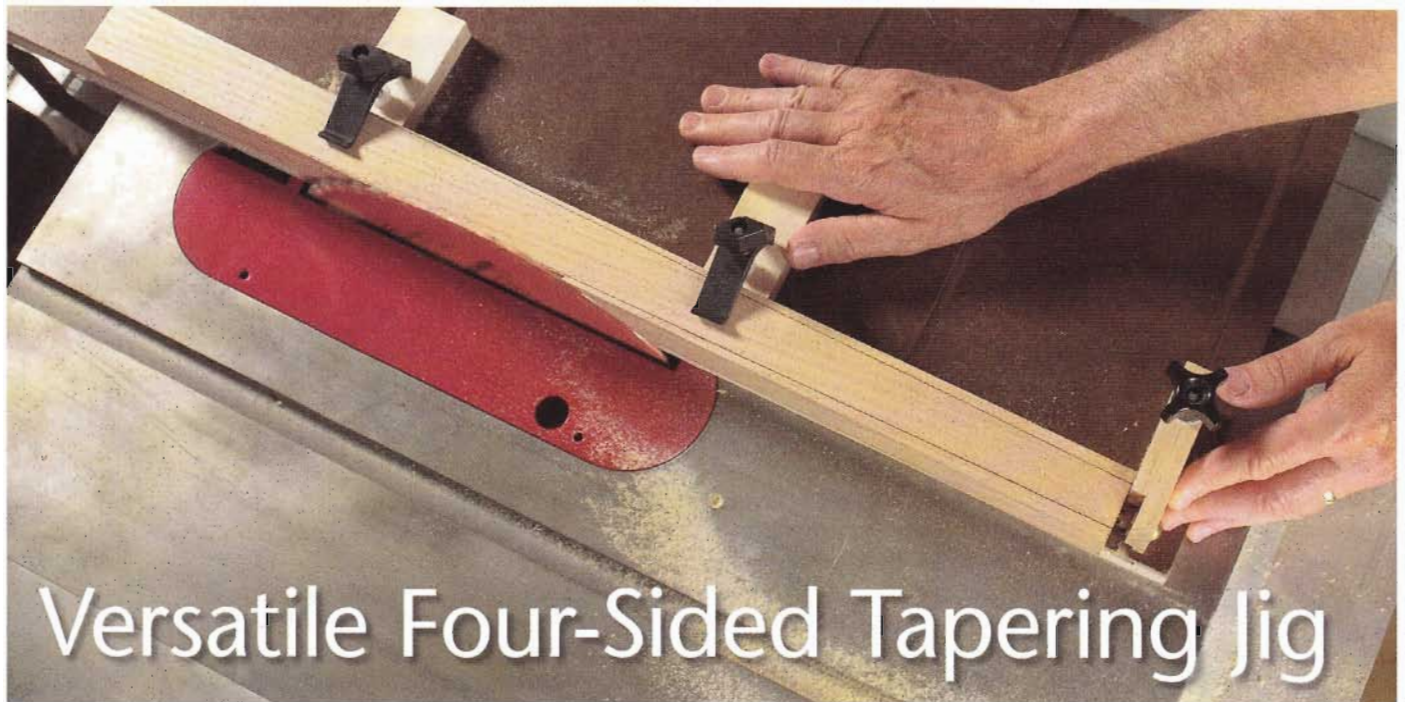
Before attaching the miter-slot bar, ensure the corner formed by the fence and the right edge of the sled is square. Make a mark 3" from the corner along one edge, and 4" along the perpendicular edge. Measure diagonally between the two marks. If the diagonal measures exactly 5", your corner is square. If it's more than 5", the angle is greater than 90°; less than 5", and it's less than 90°.

Next, measure the distance between your tablesaw's blade and miter slot and add 1/8". Using that measurement and a combination square, scribe a line on the sled bottom, measuring from

the saw-blade edge. Attach the miter-slot bar along the scribed line.

With the sled's guide bar in your tablesaw miter-gauge slot, crank the saw blade up to full height. Run the sled through the blade, slicing off the extra 1/8" from both the base and the fence.

You can now cut with confidence by aligning the cutline on your workpiece with the edge of the fence. For repetitive cuts less than 27", clamp a stopblock to the fence. When cutting pieces up to 48", lock in the sled's built-in stopblock. 🌲



# Versatile Four-Sided Tapering Jig



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

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

## Time to get started

**1** Cut a piece of  $\frac{3}{4}$ " plywood to size [Drawing 1], and then cut a piece of  $\frac{1}{4}$ " hardboard to the same dimensions for the base.

**2** Cut  $\frac{3}{8}$ " dados  $\frac{3}{16}$ " deep in one face of the plywood where dimensioned [Drawing 1]. Glue the hardboard to the dadoed face with yellow glue. Now, clamp the assembly between two

scraps of plywood to ensure even pressure. After the glue dries, remove the clamps, set your dado blade for a  $\frac{1}{4}$ "-wide cut, put an auxiliary fence on your miter gauge, and cut a slot through the hardboard centered over each plywood dado [Photo A].

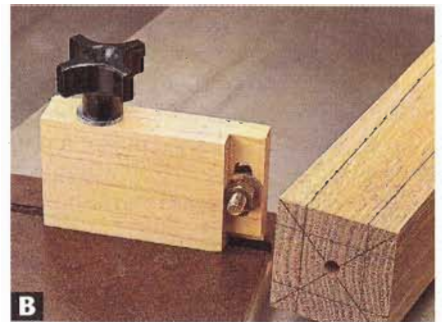
**3** Cut a piece of maple to  $\frac{1}{4} \times \frac{3}{8} \times 12$ ", then cut two 3" pieces and one  $3\frac{1}{2}$ " piece from this blank for the guide bars. For the hold-down bases, cut a piece of  $\frac{3}{4}$ " plywood to  $1\frac{1}{2} \times 12$ ". Cut a  $\frac{1}{4}$ " groove down the center of one face of this plywood, where dimensioned on the drawing. Drill two  $\frac{1}{4}$ " holes near opposite ends of the groove, with each hole centered in the groove and  $\frac{1}{2}$ " from the end. Cut a 3" piece from each end to make two hold-down bases. Next, glue one guide bar piece in the groove on each hold-down base. After the

glue dries, drill a  $\frac{1}{4}$ " hole through each assembly, using the previously drilled holes as guides.

**4** Cut a maple blank to  $\frac{3}{4} \times 2 \times 12$ " to make the pivot block. (We begin with an oversized piece to assure safety during the cutting process.) Cut a  $\frac{9}{16}$ " rabbet on one end of the blank [Drawing 2]. Now, drill two holes to form the ends of the adjustment slot, remove the material between the holes with a coping saw or scrollsaw, and clean up the slot with a file. Cut a  $\frac{1}{4}$ " groove centered on the bottom edge of the blank. Next, drill a  $\frac{1}{4}$ " hole centered in the groove  $2\frac{1}{2}$ " from the rabbeted end. Glue in the  $3\frac{1}{2}$ " guide bar, making it flush with the rabbeted end. After the glue dries, drill a  $\frac{1}{4}$ " hole through the blank, using the previously drilled hole as a guide. Trim the blank to  $3\frac{1}{2}$ " in length. Sand and finish the assembly.



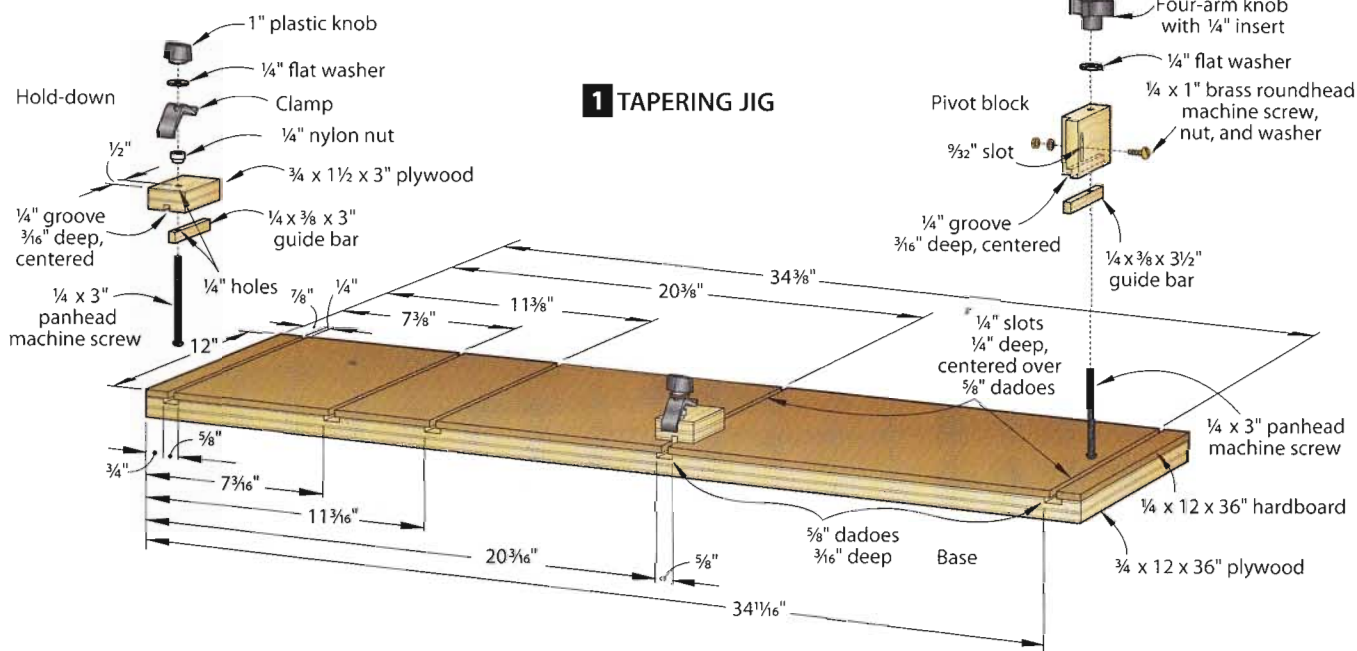
**A** After cutting dados in the plywood base, glue the hardboard to the dadoed face. Mount the two outside blades of a dado set in your table saw, and cut slots through the hardboard centered over each dado.



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



## 1 TAPERING JIG



**5** Assemble the hold-downs as shown. (For hold-down clamp no. H0879, \$4, go to [grizzly.com](http://grizzly.com) or call 800-523-4777.) For the pivot block, file or grind one edge of the washer flat [Drawing 2], and then assemble the nut, screw, and washer as shown. Adjustable up or down in the slot, this screw serves as an indexing pin and workpiece support. Once set for a particular workpiece, it guarantees that every cut in the sequence is an equal distance from the center of the workpiece.

### Tap into tapering

To taper a leg, cut your workpiece to finished length, and then rip it to the square dimensions you want for the untapered section at the upper end. Draw a line on all four faces to mark where the taper will begin. Drill a  $\frac{1}{4}$ " centering hole  $\frac{3}{8}$ " deep at the center of the bottom end, and add cutlines to show the final dimensions of that end [Photo B]. Draw cut lines on the face connecting the leg-bottom marks with the taper-start marks, as shown in the photo, both to visualize the final shape, and to serve as a safety reminder as you push the jig across the saw.

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

one to set the block's position. Tighten the top knob on each hold-down to clamp the leg in place.

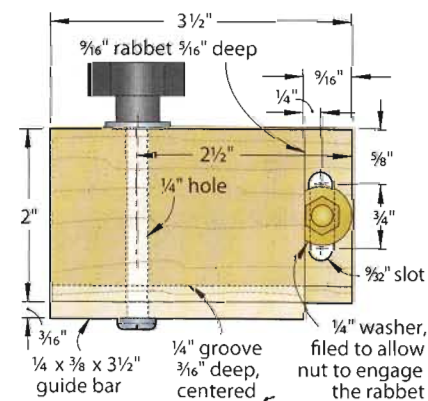
Raise the saw blade  $\frac{1}{4}$ " above the leg. Butt the jig to the fence, move the fence until the saw blade just clears the left side of the jig, and then make the cut [Photo C]. To make each of the three remaining cuts, loosen the hold-down knobs, rotate the leg one-quarter turn clockwise (as viewed from the pivoting end), reclamp, and cut.

This jig also serves another purpose [Photo D]. When you need to cut a single taper, mark its start and stop points on the end and edge of your workpiece. Remove the indexing pin from the end block, and nest the end of the workpiece in the notch. Align the marks with the edge of the jig, and clamp. Place your

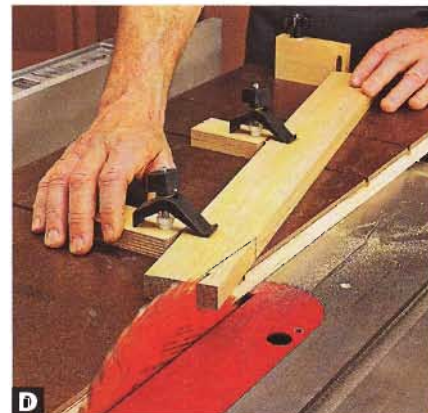


**C** Hold the taper jig tightly against the tablesaw rip fence as you cut. Before starting each pass, make certain that your left hand is well away from the line.

## 2 PIVOT BLOCK



hold-downs against the workpiece. Tighten the pivot block in place, and make the cut.



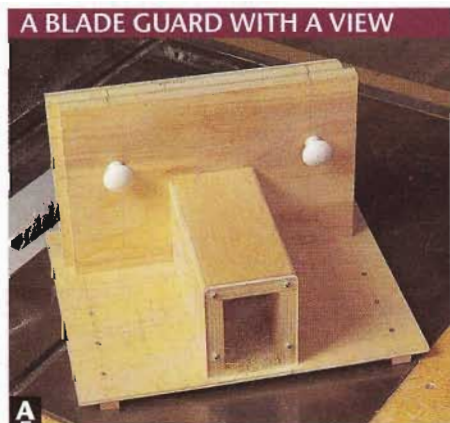
**D** The width and adjustability of the taper jig allow you to handle a wide range of angle cuts. Here, with the jig flipped end-for-end, we're shaping a simple leg.

# Box-Joint Sled

Sometimes mistakenly referred to as a finger joint, the box joint features good looks and great strength. A well-made one consists of crisp, interlocking, rectangular fingers that fit snugly together. To achieve this, setup is critical. Thankfully, the jig shown here provides the adjustment capability you need, regardless of how wide or thick your workpiece. And by merely switching adjustable fences, you can use the basic sled for different-size fingers. The overall dimensions of the jig can vary depending on the length and width of your table saw top, or your available scrap. The drawing at right provides recommended sizes. The size of, and the width between, the runners depends on the dimensions and spacing of your saw's miter-gauge slots.

## Building the jig

**1** Cut the base to size from  $\frac{1}{4}$ ",  $\frac{1}{2}$ ", or  $\frac{3}{4}$ " material. Now cut two miter-gauge runners to the height and width of your slots, each at least 14" long. Test the fit in the slots, avoiding any play. Use your saw fence to square the sled base, locating the saw blade at the center of the base. Now, with the runners extending 2" beyond the front edge of the base, and with the base resting flat on the saw top, attach the runners. Use an 18-gauge brad nailer and  $\frac{5}{8}$ " nails to temporarily pin the base to the runners to make sure everything remains square. Then drive  $\frac{1}{2}$ " wood screws through the  $\frac{1}{4}$ " base and into the runners for strength.



**A** An acrylic back to the blade guard will remind you not to saw through the jig. Four screws hold the piece in place.

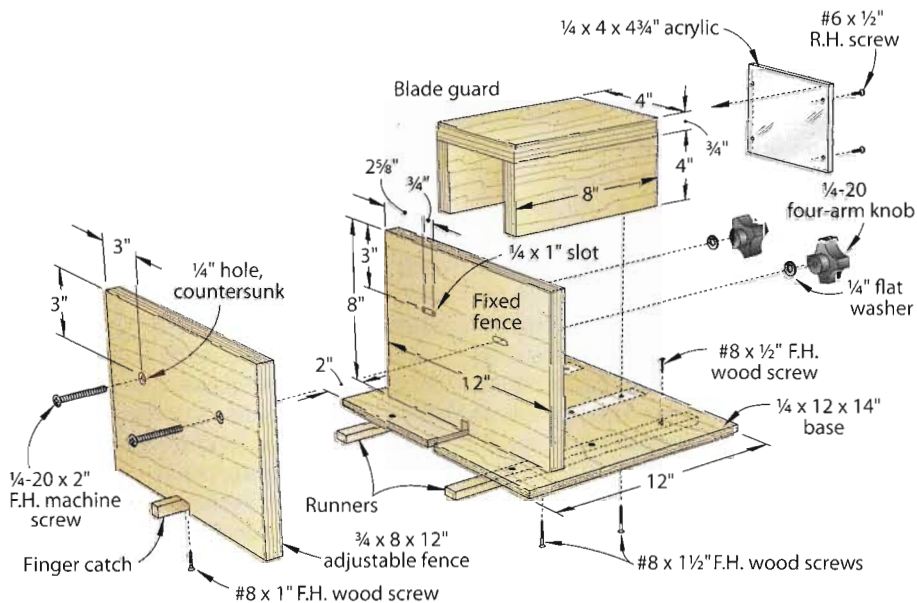
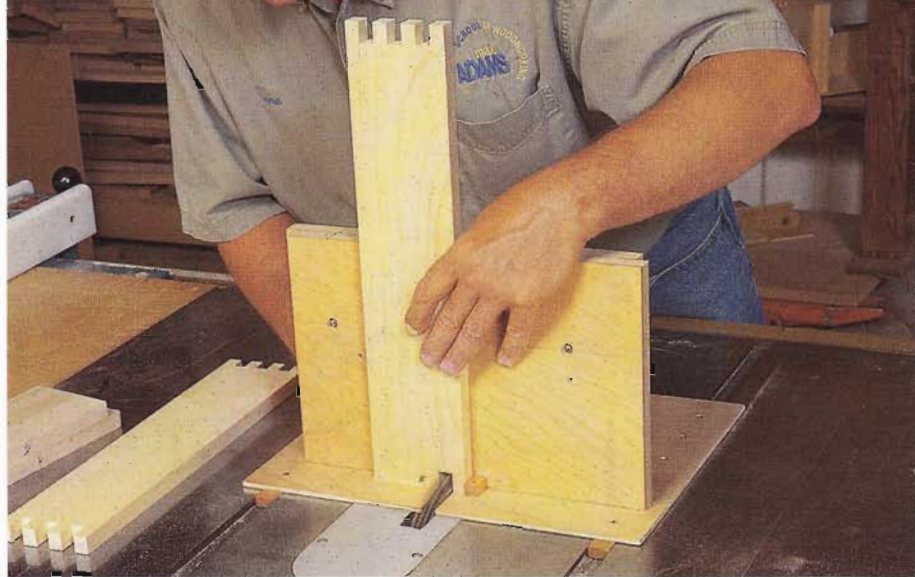
**2** Cut two fences to size—one a fixed fence, the other an adjustable one. The fences need to be rigid, so use  $\frac{3}{4}$ " birch plywood. Drill and cut out the  $\frac{1}{4}$ "x1" slots in the fixed fence where shown. Attach this fence perpendicular to the base, spacing it 2" behind the front edge. Glue and screw the fence to the sled base to ensure that this assembly doesn't move at all.

**3** Next, for safety and fixed-fence support, add a blade guard to the sled. Begin by cutting the parts to size, and assemble it as shown using glue and screws. Now, screw the blade guard to the base, making sure it fits snugly against the fixed fence. Then, close up the back of the blade guard with a piece of 4x4 $\frac{3}{4}$ " acrylic. This material will enable you to look inside to see if you have unwanted chunks of wood that can bind the dado blade, and you'll be less prone to cut through the acrylic back plate. This view panel makes the jig an even safer tool [Photo A].

## Completing the sled for dead-on box joints

To finish the sled, install your dado blade in the saw, and set it to the width of the fingers that you intend to cut. Raise the top of the blade  $\frac{1}{2}$ " above the sled base. Make a single pass to create the initial kerf in the fixed fence. To avoid cutting through the back of the blade guard, follow this safety tip: Insert and clamp stops into the miter slots to limit sled travel.

Clamp the adjustable fence to the fixed fence, with the bottom edge and ends flush to the sled base. Now make another pass with the dado blade to create an opening equal to the desired finger width. Cut a 4"-long,  $\frac{1}{2}$ "-thick piece of wood to the exact width of the intended fingers. Now cut it into two pieces: one 1 $\frac{1}{2}$ " long; the other, 2 $\frac{1}{2}$ " long. Use the shorter piece for the finger catch on the adjustable fence. The longer piece will be your setup spacer when positioning the adjustable fence on the



sled. Glue and screw the finger catch into the opening on the adjustable fence, flush with the back face.

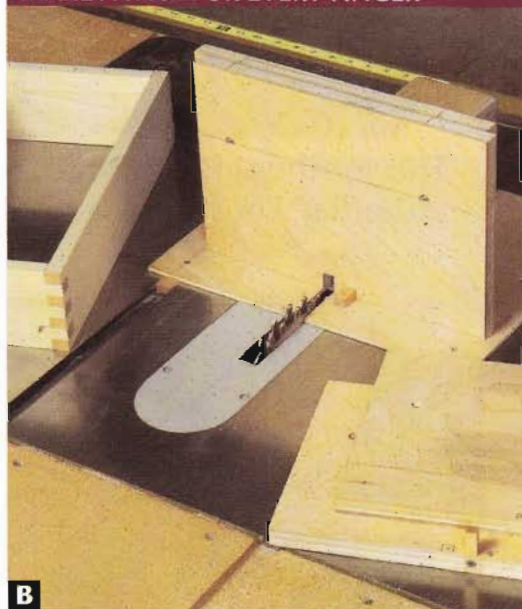
**Note:** We recommend making an adjustable front fence for each finger width you want to make the jig more versatile, as shown in **Photo B**.

To position the adjustable fence accurately, first place it against the fixed fence, and slide the sled forward until the dado blade is next to the finger catch. Place the setup spacer between the blade and the finger catch. Now clamp the adjustable fence to the fixed fence, and drill two 1/4" holes through the adjustable fence, centering them in the fixed-fence slots. Finally, insert the machine screws through the holes and slots, adding the washers and knobs. (We used drawer pulls we had lying around the shop, but we recommend four-arm knobs like those in the drawing.) Make a cut through the adjustable fence and check it [**Photo C**].

Now test-mill two scraps of wood of the exact thickness. Place the first workpiece (outside face out) on the jig with one edge snug against the finger catch and one end resting on the sled base. It is absolutely critical that you hold the workpiece firm and motionless. Make your first pass through the saw [**Photo C**]. Slide the sled back from the blade, reposition the workpiece by slipping the notch you just cut over the finger catch, and make the second cut. Continue cutting notches until you have cut out all the fingers across the entire end of the test workpiece.

To cut the corresponding fingers in the mating test workpiece, flip the first board around so that its front face now rests against the adjustable fence, with the first slot you cut fitted over the finger catch. Place the second test workpiece edge-to-edge against the first and make the first pass through the blade [**Photo E**]. Complete the cuts using the

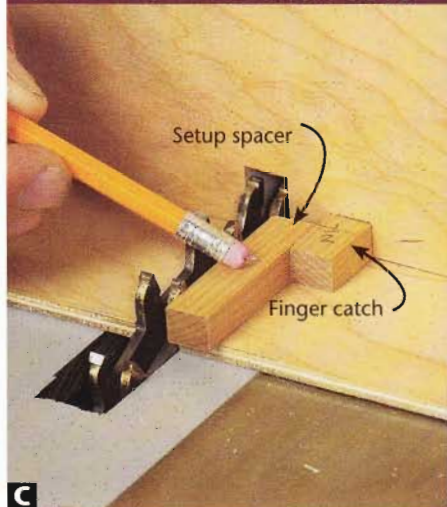
## MAKE A FACE FOR EVERY FINGER



**B**

You can make several easy-to-add front faces for different size box-joint fingers. These attach with machine screws, washers, and knobs.

## SET UP FOR PRECISION CUTS



**C**

To establish the precise location of the finger catch and front fence, place a setup spacer between the saw blade and catch.

## CUTTING MATING FINGERS FOR A SNUG-FITTING JOINT



**D**

With the edge of the workpiece against the finger catch, cut the first notch. Slip the notch over the catch to cut succeeding notches.



**E**

Use the notched first workpiece, as shown, to establish the location of the beginning (open) notch to be cut in the mating workpiece.

## Let's cut box-joint fingers

The length of box-joint fingers equals the thickness of the mating sides. Adjust the dado-blade height accordingly. When setting up for the actual depth, err on the side of making fingers too long. That way, once you glue the joint, you easily can sand the ends flush because they stand proud of the mating sides. Cut the sides and ends of the box 1/16" longer than the plan calls for. Set the blade height 1/32" higher than the thickness of your boards. After gluing and assembling the joint, sand away the extra finger length for perfect-fitting, glass-smooth joints.

step-and-repeat process used earlier until you have cut all the fingers.

Finally, fit the mating test workpieces together. If the fingers seem tight or fail to interlock, the space between the finger catch and the dado blade is too wide. Loosen the knobs, slide the adjustable fence a hair closer to the blade, and retighten. If you have play between the fingers, move the adjustable fence a hair away from the blade. Repeat the test until you get a snug fit. Now you're ready to cut and glue up the joint parts. 🌲

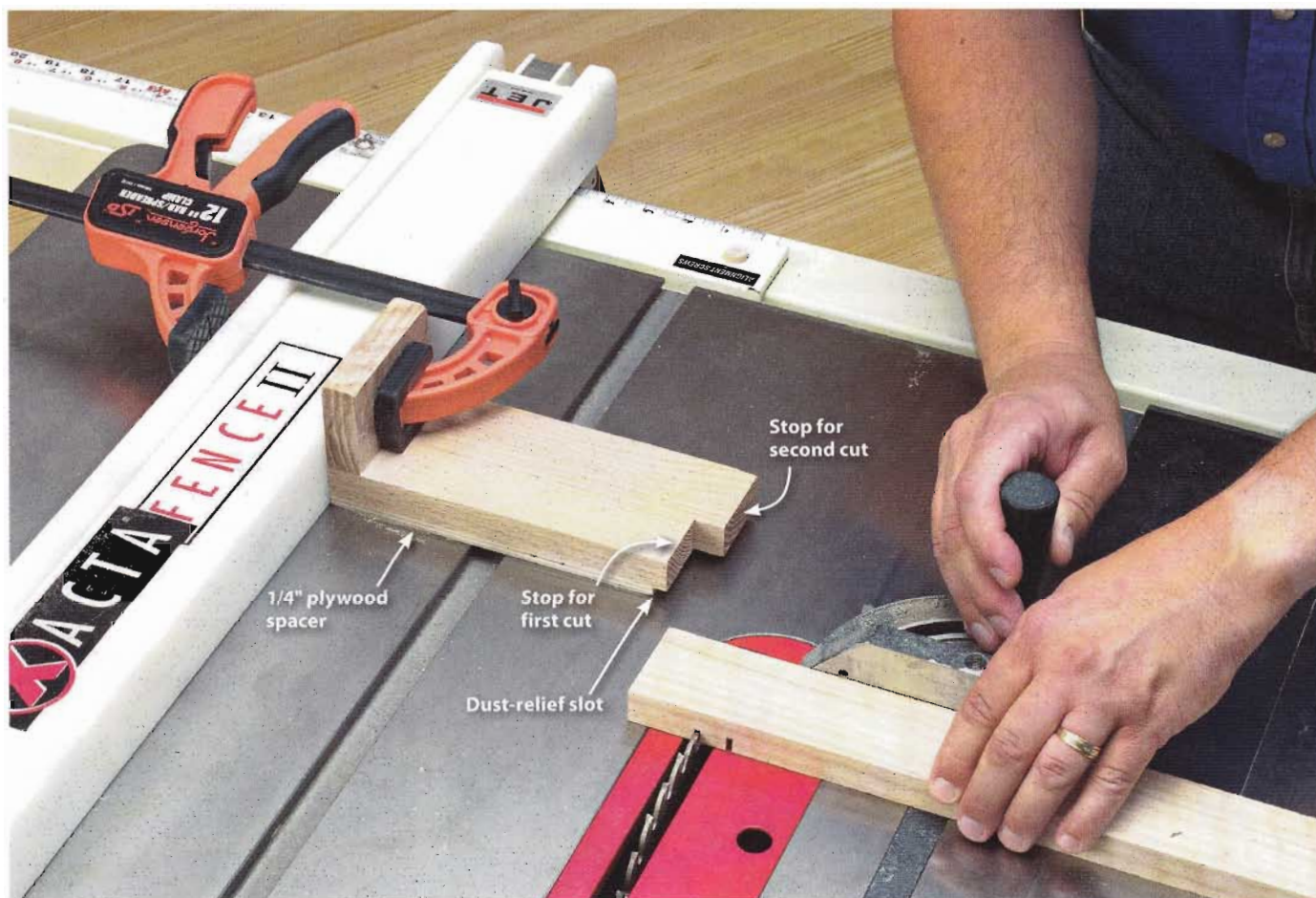
Project design: **Zane Powell**  
Written by: **Roger McEvoy**  
Photographs: **Ken Keringer**



Watch a FREE 5-minute video on box joints at [woodmagazine.com/tsboxjoints](http://woodmagazine.com/tsboxjoints)

# Tablesaw Shop Tips

This mother lode of practical tricks and shortcuts will help you realize your tablesaw's full potential. Let's start with some favorites from the *WOOD*® magazine shop guys.



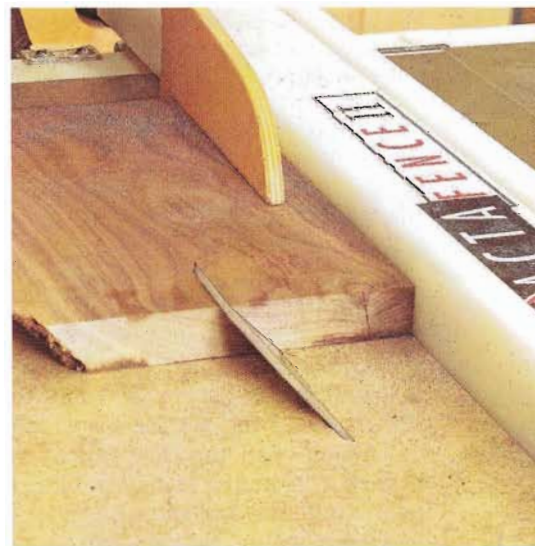
## Two-step stop defines a dado

Don't have a dado set? Or do you need to machine a dado wider than your stacked set can handle? You can cut consistently wide slots using this double stop. The key dimension is the distance between the ends of the stops: Subtract the saw-blade or dado-set width from the width of the desired dado, and then offset the stop ends by that amount. Position the stock against one stop, make the first cut, and then reposition it against the other stop and make the second cut. (If you're using a single saw blade, "nibble" away the waste between the kerfs.) To keep the jig accurate, we created a dust-relief slot by adding a 1/4" plywood spacer, slightly offset, to the bottom of the fixture.

## Make a quick zero-clearance tabletop

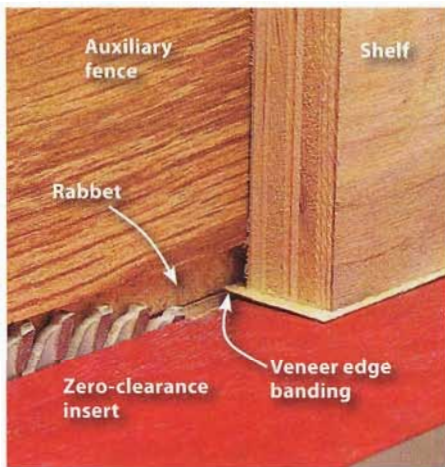
Instead of crafting a new zero-clearance insert to replace your tablesaw's factory throat-plate insert, create a temporary tabletop for your saw in seconds, as shown *above*. Set the fence for the cut you intend to make; then mount a piece of 1/4" hardboard to your tablesaw top with clamps or cloth-backed, double-faced tape. Hold the hardboard down with another scrap, and then slowly raise the spinning blade through the hardboard to the desired cutting height.

**Note:** Blade guards have been removed in these photos for clarity. Always use the appropriate safety guards with your tools.



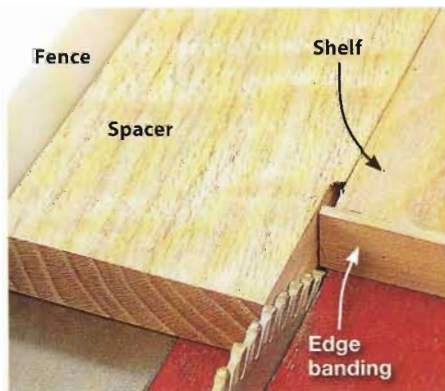
## Trim edge banding

Don't precariously perch a router on the edge of a plywood shelf to clean up overhanging edges on solid-wood or veneer banding. Instead, make an auxiliary fence 4–6" tall and cut a rabbet into its face at least as wide as the blade kerf. Mount the auxiliary fence to your rip fence and position it so that its face is flush with the outside edge of the blade. (Test the setup by running scrapwood against the fence: If the blade contacts the scrap, nudge the fence closer to the blade and test it again.) Hold the shelf to be trimmed—banding down, with the excess edging in the rabbet, as shown *below*—and trim it flush. For best results, use an 80-tooth carbide blade and zero-clearance insert.



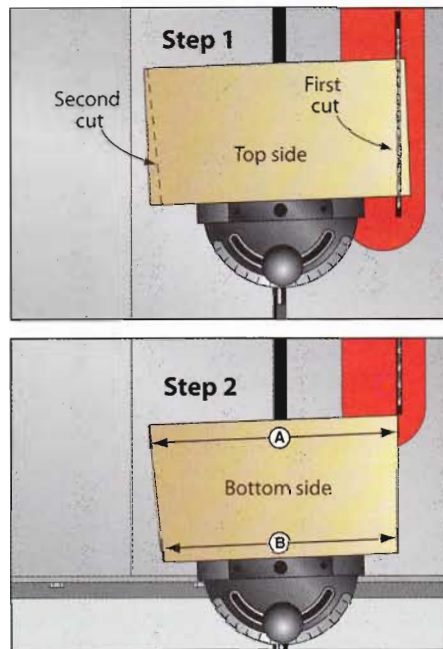
## Trim edge banding, the sequel

Use a similar technique to flush-trim the excess length from solid-wood edge banding. This time, though, cut a notch just a whisker wider than your saw blade in a piece of scrapwood spacer, as shown *below*. Again, position your fence so that the outside edge of the spacer is flush with the outside of the blade, and make a test cut. Finally, trim off the end of the banding, as shown.



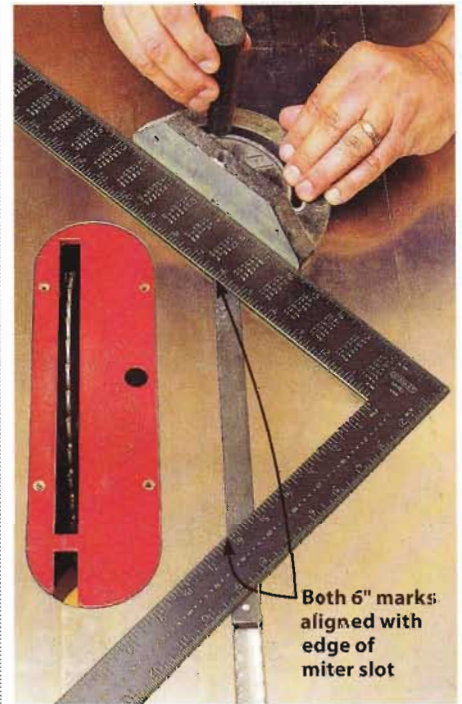
## Calibrate your miter gauge, part I

To ensure that your miter gauge squares with the blade, try this trick: Set it for a 90° cut and then crosscut one end of a 6" (or wider) scrap. Flip the scrap top-for-bottom, keeping the same edge against the miter gauge, as shown, and repeat the cut at the other end of the scrap. Now, compare the lengths of the two edges of the scrap using a precision steel rule. If A and B match exactly, the miter gauge is square. If they're not, adjust the gauge and repeat the test cuts until they are, and reset the cursor.



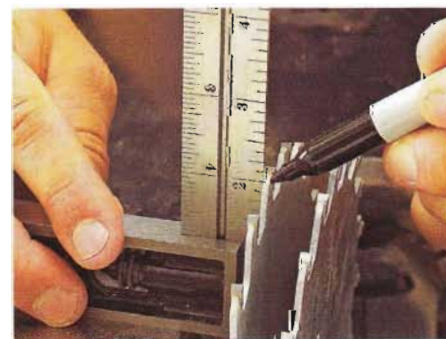
## Calibrate your miter gauge, part II

The calibration tip at *left* doesn't work to check the 45° setting, so do this instead. Lay a reliable framing square on the tabletop so the edge of the miter slot aligns with the same dimension marking on both legs of the square. (In the photo, we used the 6" markings inside the square.) Now, loosen the miter gauge, slide it flat against one leg of the square, and retighten it. Reset the 45° stop, if your miter gauge has one.



## Locate "wide" teeth fast

With an adjustable dado blade (sometimes called a "wobbler"), it's hard to tell which tooth cuts farthest to the left and which cuts farthest to the right. Find the widest-cutting tooth—or teeth, in the case of the dual-blade adjustable dado shown—using a square. Then label that tooth's post with a permanent marker. Now you can measure from that tooth when setting up your cut.



## Leave a perfect footprint

Cast iron is softer than you might think, and an uneven floor can actually transfer its warp up to your table saw top. So, after you've found the perfect level spot for your saw, mask off the legs and then spray paint the floor around each foot to mark their locations. Now you can stow the saw (in an equally level spot), and later move it back to the correct location with confidence.



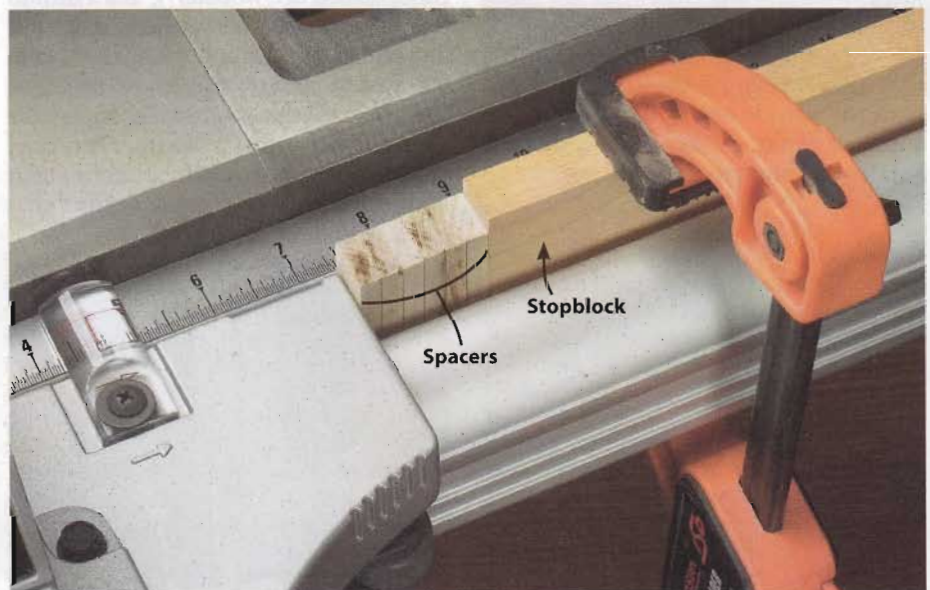


### Multiple thin-strip ripping

I've developed a safe way to quickly cut thin strips of equal thickness on a table-saw. First, plane a piece of scrap that equals the thickness of the strips you need plus the thickness of the saw-blade kerf. Cut the scrap piece into short blocks as shown *above* and position the fence so the board you're ripping just grazes the inside edge of the saw blade.

Next, attach a stopblock to your fence rail with a clamp (*right*) so the block touches the fence's rail bracket. Finally, loosen the fence and add spacers between the stop block and fence, as shown. Install your feather board and make the first rip. Each added spacer will correctly position the fence for the next rip—no measuring required.

—Robert Wilde, Welling, Alberta



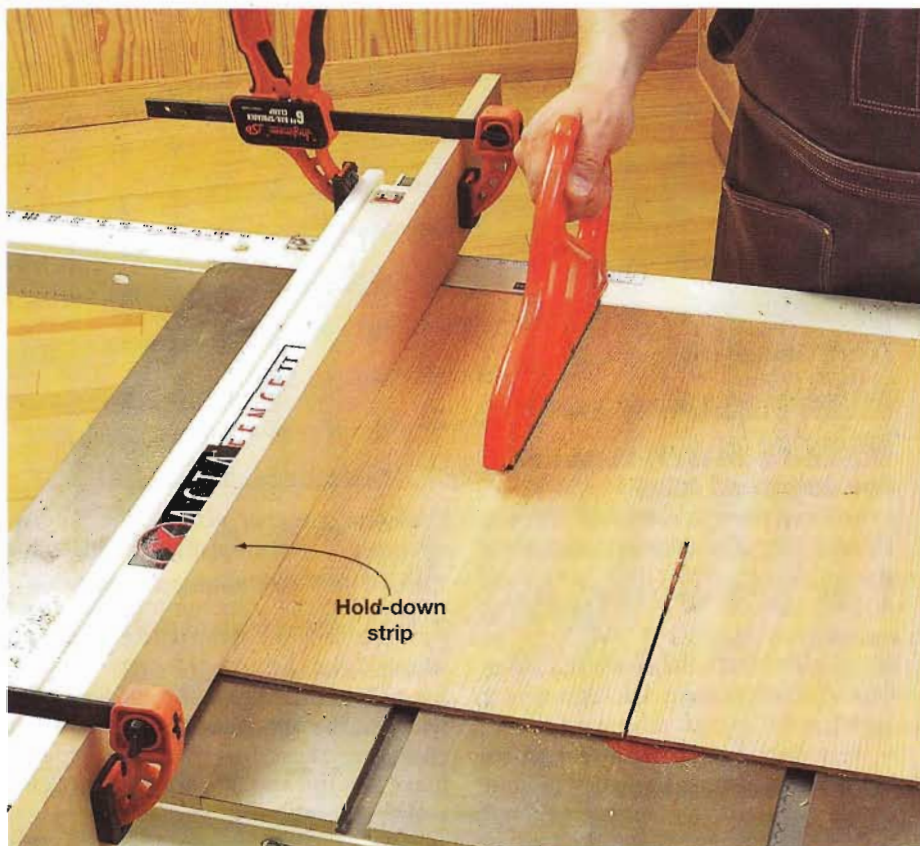
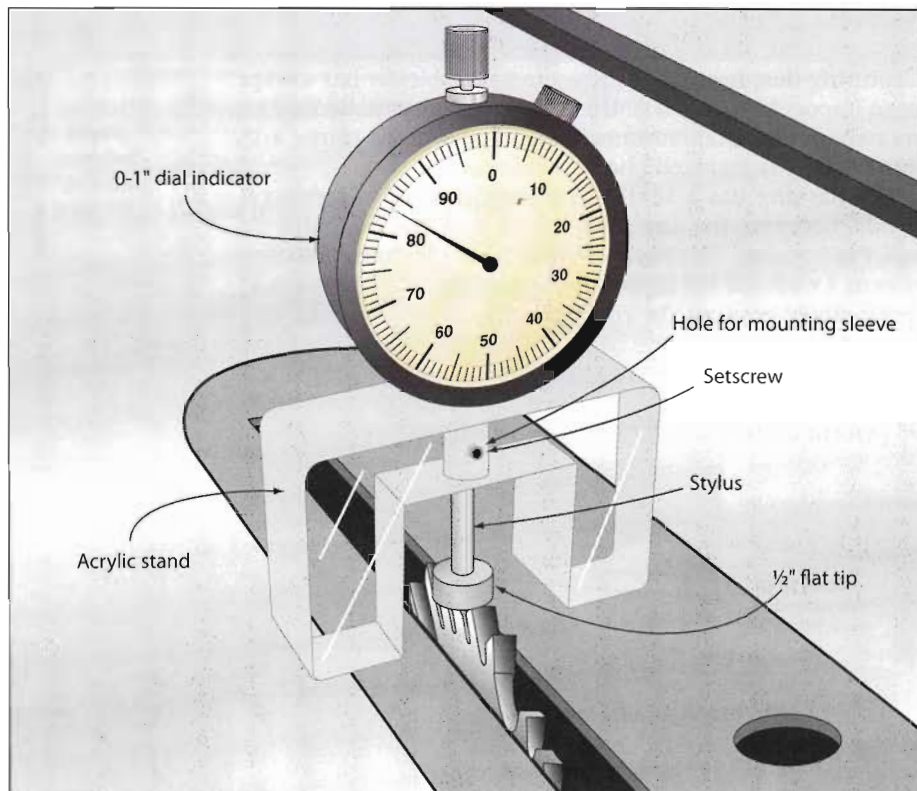
## Dial in blade height for ultimate accuracy

Unsatisfied with the “almost” accurate results I would get from setting the blade and bit height on my tablesaw and router, I created this simple, inexpensive dial-indicator stand that brings surgical precision to establishing cutting depth.

To create the stand, cut it as shown from  $\frac{3}{4}$ ”- or 1”-thick acrylic (my first choice) or hardwood. In the top of the stand, drill a hole large enough for a 0–1” dial indicator’s mounting sleeve and install a setscrew to hold it firmly in place. Next, add a  $\frac{1}{2}$ ”-diameter flat tip to the indicator stylus. The tip is necessary because of the alternating bevels of the saw blade teeth.

To use the indicator, first zero it out against the tablesaw table. Then position it over the blade or bit, and measure the depth of cut. These inexpensive indicators (\$13 to \$20) provide accuracy to within .001”, and the satisfaction of getting the most out of your tools.

—John Lorbiecki, Hubertus, Wis.



## Keep plywood grounded

Recently, I was ripping a 12”-wide piece of  $\frac{1}{4}$ ” oak plywood on my tablesaw. Just before I finished, the plywood climbed up the blade, turned to the left, and became a missile, injuring my left hand. To avoid repeating this kind of mishap, I adopted this safety-minded procedure.

First, I eliminated saw misalignment as the problem. I double-checked that the fence ran parallel with my saw blade to prevent binding. Next, since I wasn’t using my saw’s blade guard and splitter, I reinstalled them to prevent further binding. (Ours is omitted for photography purposes.) Also, I avoided using the fence along with a miter gauge.

As another precaution, I clamped a hold-down strip to the fence about  $\frac{1}{8}$ ” above the panel, allowing the panel to slide freely. Then I set the blade to no higher than  $\frac{3}{8}$ ” above the surface of the plywood. Finally, I used a pushstick designed to ride on top of the wood, with a heel on its base to push the plywood through the cut.

—Roy Tiefisher, Coeur d’Alene, Idaho

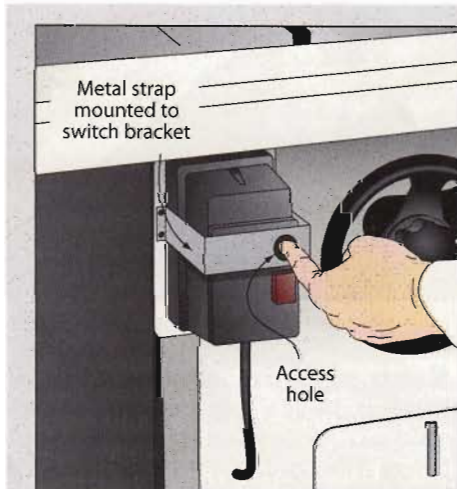
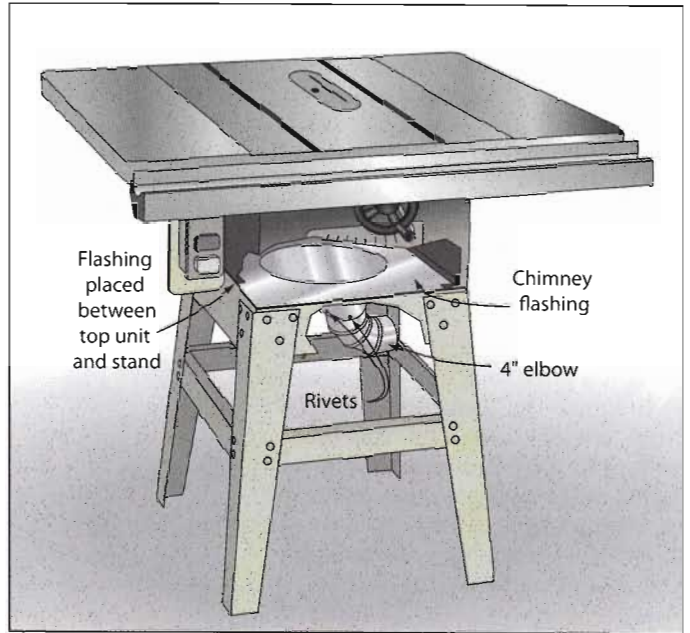
### Make contractor-saw dust disappear in a flash(ing)

Capturing dust from my contractor-style tablesaw has always been impossible because of the wide-open bottom. Recently, I spotted an all-metal chimney flashing at a home center and immediately recognized I had my solution.

The flashing has a 16×18" base large enough to sandwich firmly between the saw's leg stand and the top unit to seal the housing. To create a coupling for my dust-collection system, I widened the tapered 3½" opening to 4", inserted a 4" metal elbow, caulked the connection to seal it, and fastened the two together with pop rivets.

The small openings around the blade adjustments provide a little replacement air for better airflow, and I now catch 98 percent of the dust that was getting away before.

—Erin Bennett, Toledo, Ohio

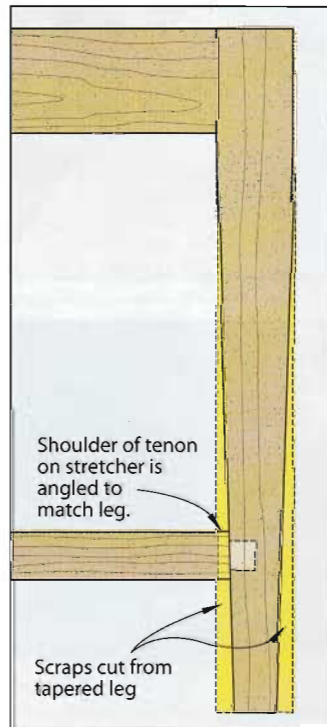


### Strap adds extra margin of tablesaw safety

A coworker recently had a close call with our cabinet-style tablesaw. While using his tape measure to set the rip fence, he leaned against the saw. The key ring in his pants pocket accidentally pressed the saw's recessed "start" button—with his hand only about ¼" from the blade. Fortunately, he wasn't injured, but after seeing this near accident, I decided to add an extra measure of safety.

I shaped a metal strap to fit around the front of the switch box and stand out from the start button about 1". I then drilled an access hole in the strap and mounted it over the switch box with the access hole directly over the start button. Now, for the saw to turn on, you really have to *want* it to start.

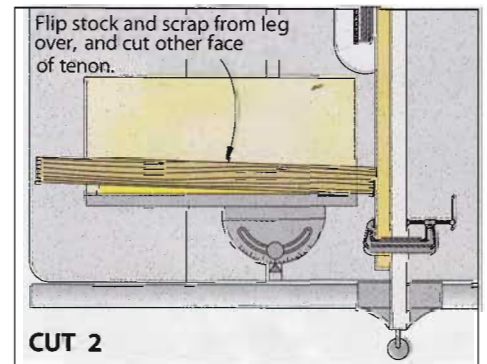
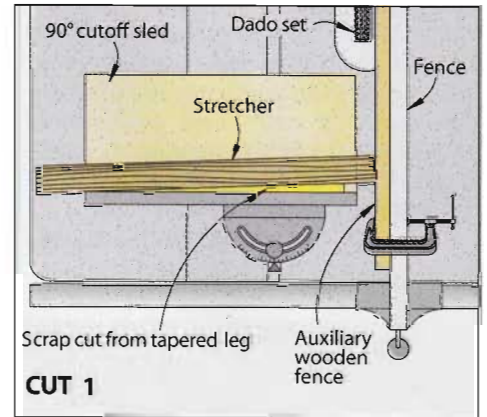
—Mark Patrick, Ionia, Mich.



### Made-to-match tenons for tapered legs

When mortising a stretcher into the tapered part of a table leg, matching the angle on both tenon shoulders doesn't have to be a mind-boggling operation. Start by cutting the mortise in the untapered leg, then trim the waste from the leg using a tapering jig on your tablesaw.

Next, take one of the offcut tapers and place it against the fence of your cutoff sled (or your miter gauge set to 90°), as shown in the **Cut 1** drawing.



Hold the stretcher against the tapered scrap, and dado one tenon shoulder with your dado set.

Now, flip the stretcher top-to-bottom and the tapered scrap end-for-end (as shown in the **Cut 2** drawing), keeping the point of the taper at the edge of the sled. Cut the opposite shoulder without changing the tablesaw fence. Finally, make the top and bottom shoulder cuts by hand or with a bandsaw.

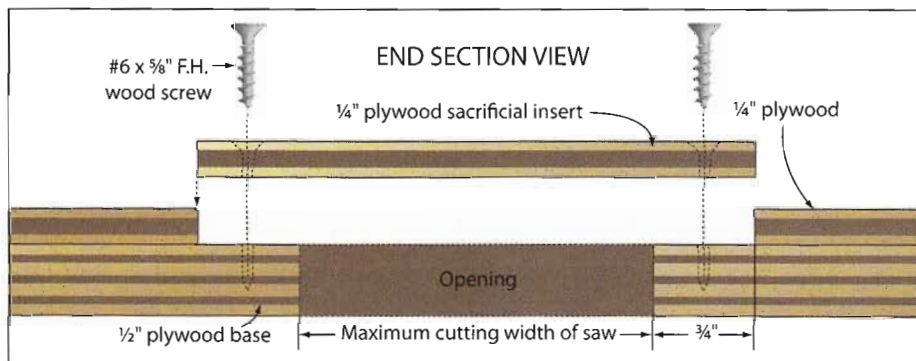
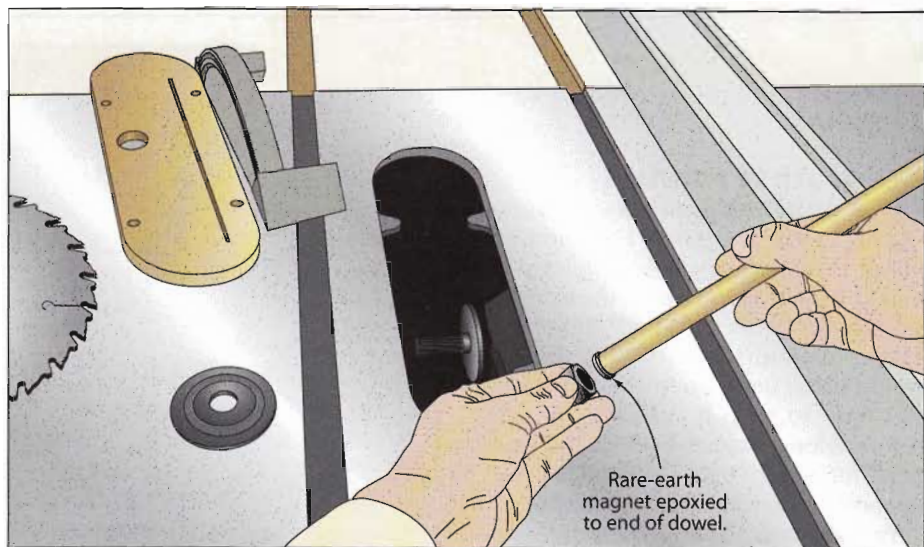
—David Sobel, Tampa, Fla.



## Find buried treasure while keeping your hands clean

Few things are as frustrating as watching a small metal part, such as an arbor nut or washer, disappear into a deep pile of sawdust inside a tablesaw cabinet. I don't get worked up anymore since I epoxied a rare-earth magnet to the end of a 36" dowel. I simply plunge the magnet end into the dark depths and quickly find that needle in the haystack (and sometimes, a few other things as well).

—Lawrence Byers, Lansing, Mich.



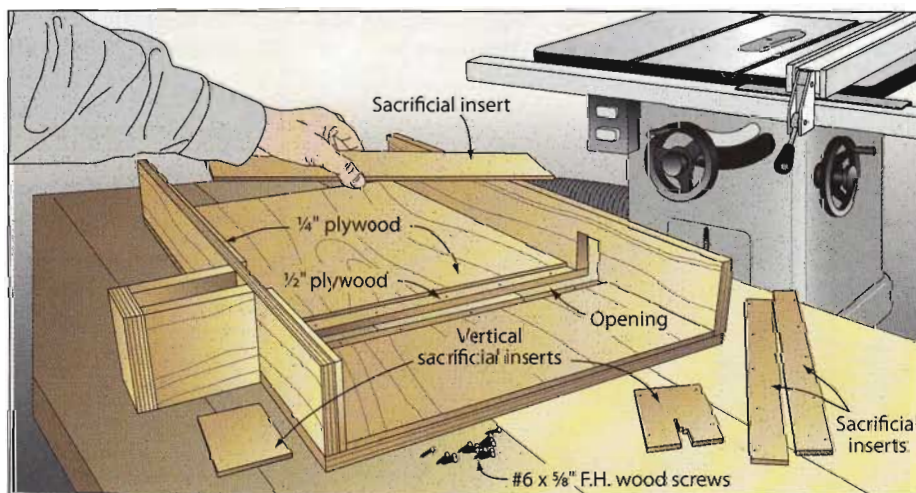
## Sacrificial insert saves sled's integrity

My tablesaw crosscut sled has been one of the most useful tools in my workshop. However, I've also found that, unless I use the same blade each time, the kerf widens and I can't rely on it anymore for chip-free cuts. And I can't make bevels or dado cuts without trashing the sled. My solution: sacrificial inserts over both cutting areas of the saw.

To apply this idea in your shop, first determine the maximum cutting width of the saw from a 45° bevel cut to a full dado stack at 0° bevel. Then, set back the 1/4"-plywood sled bed 3/4" from each side to create a shoulder for the insert. Use the same technique to size and locate the vertical sacrificial insert for the rear fence. Attach the inserts with wood screws, keeping the screw heads below the surface of the insert so they won't accidentally scratch a workpiece.

You can now install different inserts for each blade, bevel angle, or dado size. When either insert no longer provides the needed zero-clearance, simply replace it.

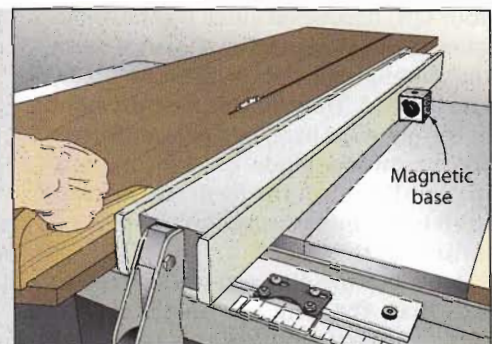
—Don Mullikin, St. Petersburg, Fla.



## Magnetic anchor deadens fence deflection

My tablesaw's front-locking rip fence sometimes deflects, causing problems when I'm ripping a large workpiece. To stop the deflection, I use a magnetic dial-indicator base (no. H3328, \$8, from Grizzly Industrial, 800-523-4777 or grizzly.com) to steady the outfeed end of the fence. I place the magnet on the outside of the fence, where shown, and flip the switch. The magnet holds the fence in place under 10–15 pounds of pressure, giving me just enough insurance to cut with confidence.

—Sayed Nooraga, Enola, Pa.

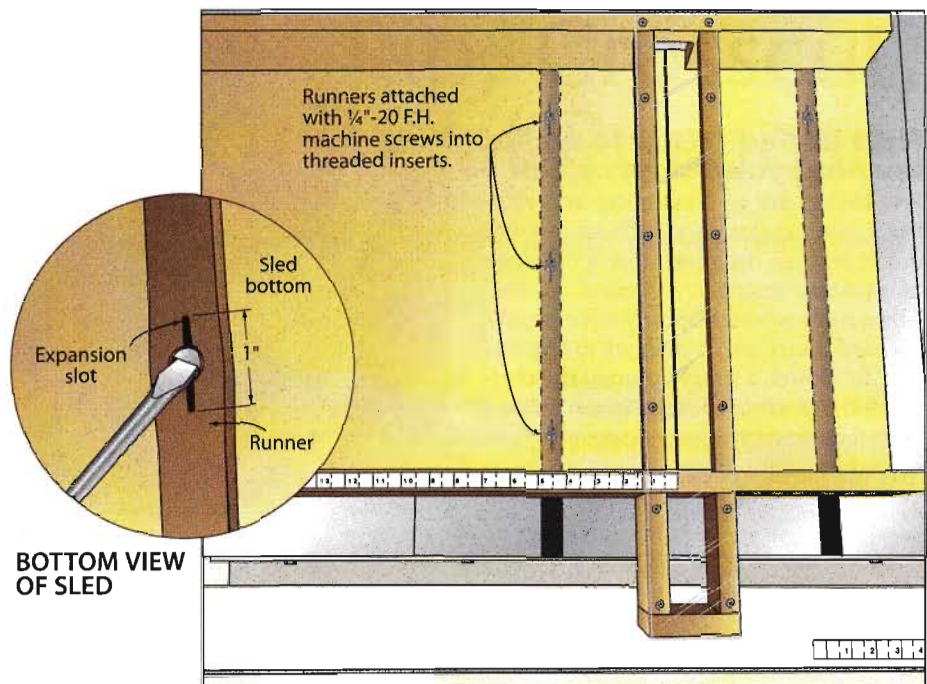


## All-weather runners for a tablesaw sled

I live in a climate where the humidity varies a lot, causing wood to expand and contract considerably. As a result, my tablesaw's crosscut sled, made from MDF (medium-density fiberboard), would often hang up in the miter slots as I tried to push it through. To solve the problem, I created adjustable runners for snug, but smooth-running, operation regardless of the weather.

To add these expandable miter runners to one of your sleds, begin by cutting runners that are  $\frac{1}{16}$ " shallower and narrower than your miter slots. Next, attach some cloth-backed double-faced tape to the top of the runners and center them in the miter slots. Lay some pennies in the bottom of the slots so the runners will be proud of the surface, and shim the sides to keep them centered. Expose the tape and lay your jig squarely on the runners to temporarily position them.

Remove the jig (with the runners attached), and drill and countersink pilot holes through each runner and into the jig. Mark the runners so you



can attach them exactly as you drilled them, and then remove the runners and tape. Use a jigsaw to cut the 1" expansion slots shown in the drawing. Now, install  $\frac{1}{4}$ -20 $\times$  $\frac{1}{2}$ " threaded inserts into the jig bottom at each pilot-hole location, and attach the runners to the sled with the flat-head machine screws. Tightening the

screws causes the runner to spread slightly until it fits perfectly in your tool's miter slot.

I check the fit each time I use my crosscut sled and adjust the width of the runners as needed. To further reduce friction, I occasionally wax the runners and the bottom of the sled.

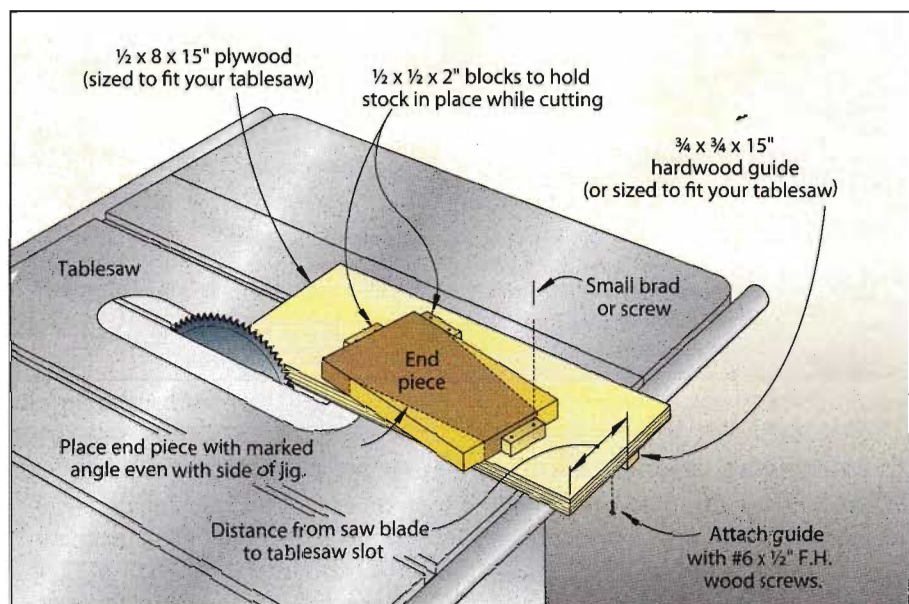
—Larry Plagens, Conroe, Texas

## An angle on cutting tapered workpieces

Making cuts match perfectly on tapered workpieces can be tricky. Here's how to accurately and safely cut angles such as those on the end walls of an angled bird feeder or birdhouse.

First, cut the long angles with a band-saw, and then sand the edges to the pattern line on a disc sander. If you are making several feeders, we suggest you use the tablesaw jig shown in the drawing. Make this jig from  $\frac{1}{4}$ " plywood, fastened to a  $\frac{3}{8}$  $\times$  $\frac{3}{4}$  $\times$ 15" (or sized to fit your saw) hardwood guide for the miter-gauge slot. Measure the distance from the miter-gauge slot to the saw blade, and add  $\frac{1}{16}$ ". Transfer this measurement to the plywood base, and glue and screw the hardwood guide outside of these marks. Then, cut the jig to size by placing it in the miter-gauge slot and passing it through the blade.

After cutting the end-wall pieces to size, draw the long side angles on one end-wall piece, and use this piece as a



guide for mounting the small placement blocks on the jig. Fasten these blocks in place with brads or small screws.

Place the end-wall piece in the jig, and cut an angle on one side. Turn the end

over, and cut the second angle. You can now produce as many bird-feeder end walls as you wish.

—from the WOOD® magazine shop

## Quick-and-easy board straightener

I don't spend extra money to have a straight edge milled on the stock I buy because a long time ago I figured out a way to straighten virtually any board on my tablesaw as long as the board is fairly flat. All you need is a straight scrap of material you can screw to the workpiece, as shown. The straight scrap rides against the fence, allowing a straight cut on the opposite edge. With one straight edge in place, you only need to remove the straight scrap, turn the board around, and straighten the other edge. The attached trowels help me hoist large workpieces up to tabletop height.

—Niki Avrahami, Garwolin, Poland



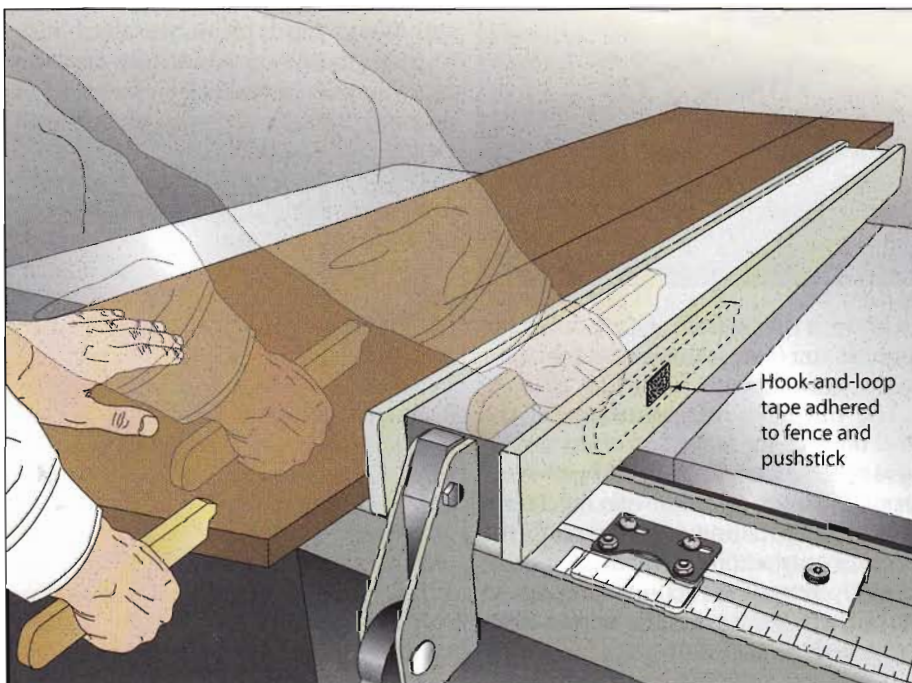
## If you can't find your pushstick, you can't use it

I keep a variety of pushsticks near the machines that require them. But looking for a pushstick is sometimes like hunting for deer—you always see them,

but when you need one, they seem to disappear. Here's my solution.

Using heavy-duty, self-adhesive hook-and-loop tape, I secured the pushsticks in easy-to-reach spots that won't interfere with the machine's operation.

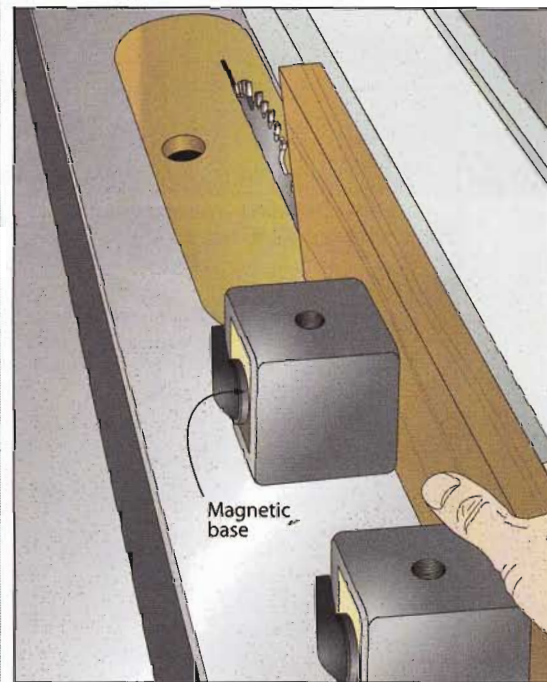
—David Birch, Syracuse, Utah



## Magnets and metal lend a helping hand in a pinch

Engineers and welders have long known about a wonderful little device—the magnetic base. Unlike other magnets, these bases (about \$8–\$10) are magnetic only when you turn them on. Although typically used with swivel-arm clamps and dial indicators, they also work well by themselves all around the shop, for example to hold a workpiece against a fence like a feather board. Once activated, they will stick to your cast-iron table or any other ferrous surface almost like they're bolted in place.

—Warren Perkins Jr., Millington, Mich.



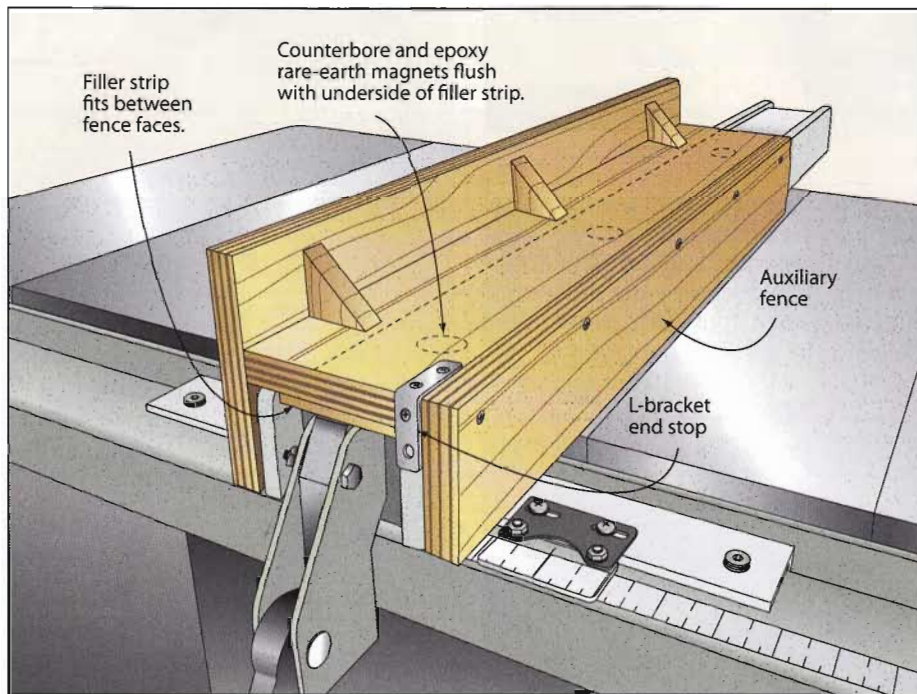
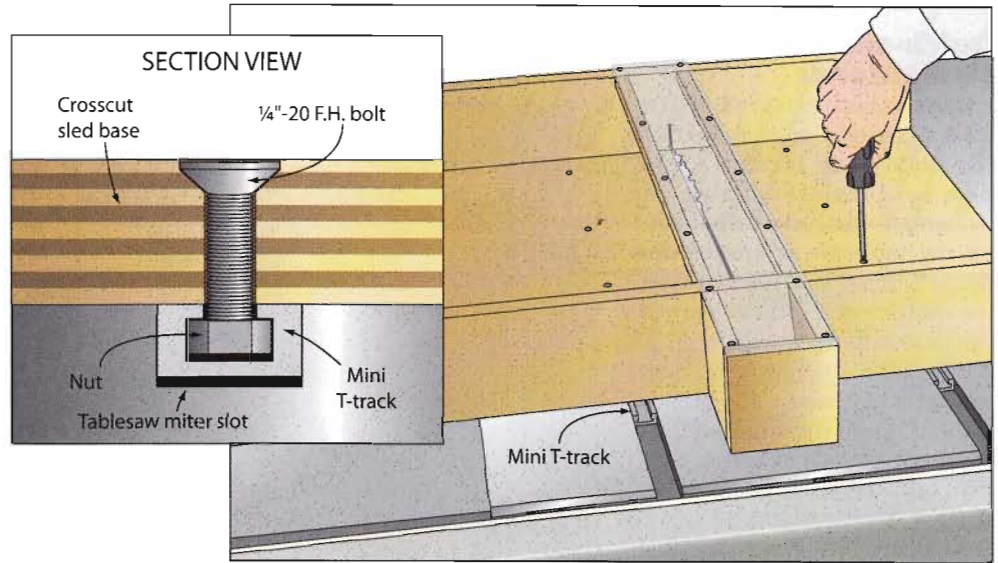
Find FREE tablesaw tips and tricks at:  
[woodmagazine.com/tipsforum](http://woodmagazine.com/tipsforum)



## Use T-tracks for dead-on runner accuracy

When I made my tablesaw cross-cut sled, I used mini T-tracks for the runners. Besides providing a more stable runner material than wood, the little bit of play between the slot and the mounting nut allowed me to fine-tune the precise location of the runners while they are installed on the tablesaw.

—Stephane Hamel, Richibucto Road, N.B.



## This tablesaw fence jig has a magnetic personality

Because I don't care for the idea of drilling into my expensive Biesemeyer-style tablesaw fence to attach jigs, I mount them to the fence with rare-earth magnets. To attach the magnets to the jig, cut a filler strip of wood to fit on top of the fence and between its polyethylene or laminated wood faces. Bore through holes in the filler strip for the magnets, glue and screw the strip to the jig, and epoxy the magnets in place.

To prevent the jig from sliding down the fence as you feed, attach a steel L-bracket to the jig as shown.

The magnetic attachment grabs the steel body of the fence and offers several advantages. First, I don't have to work around clamps. Second, with no clamps or screws, installing and removing the jig takes only seconds. Finally, I was able to easily retrofit several existing jigs to make them work with the new mounting system.

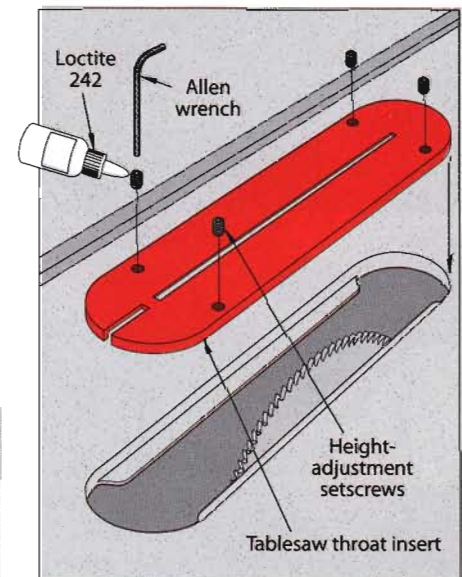
—Scott Spencer, Rochester, N.Y.

## Glue setscrews to keep tablesaw insert level

My tablesaw's throat insert used to cause me grief. Vibration from the motor loosened the setscrews a bit over time, and the insert dropped down below the tabletop. When I tried to rip a board, the bottom edge of the forward end would catch, resulting in an end-grain tear-out.

To keep the setscrews firmly in place, I put a dab of Loctite 242 glue on the threads. The glue prevents the setscrews from moving, but a hearty twist with an Allen wrench breaks the glue bond.

—R. J. Lemerise, Utica, Mich.



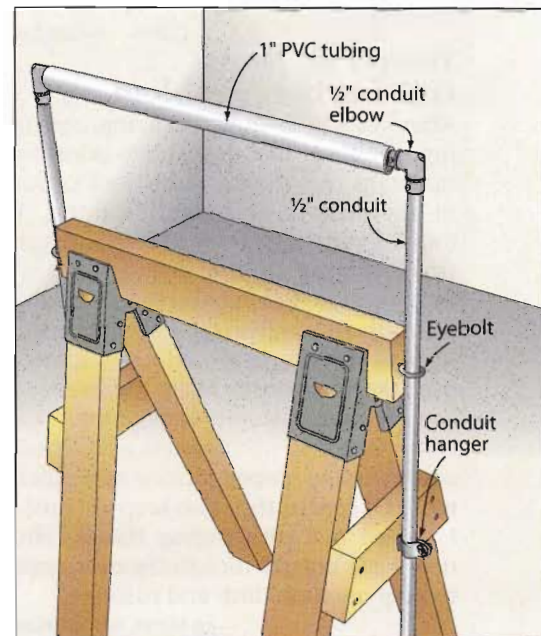
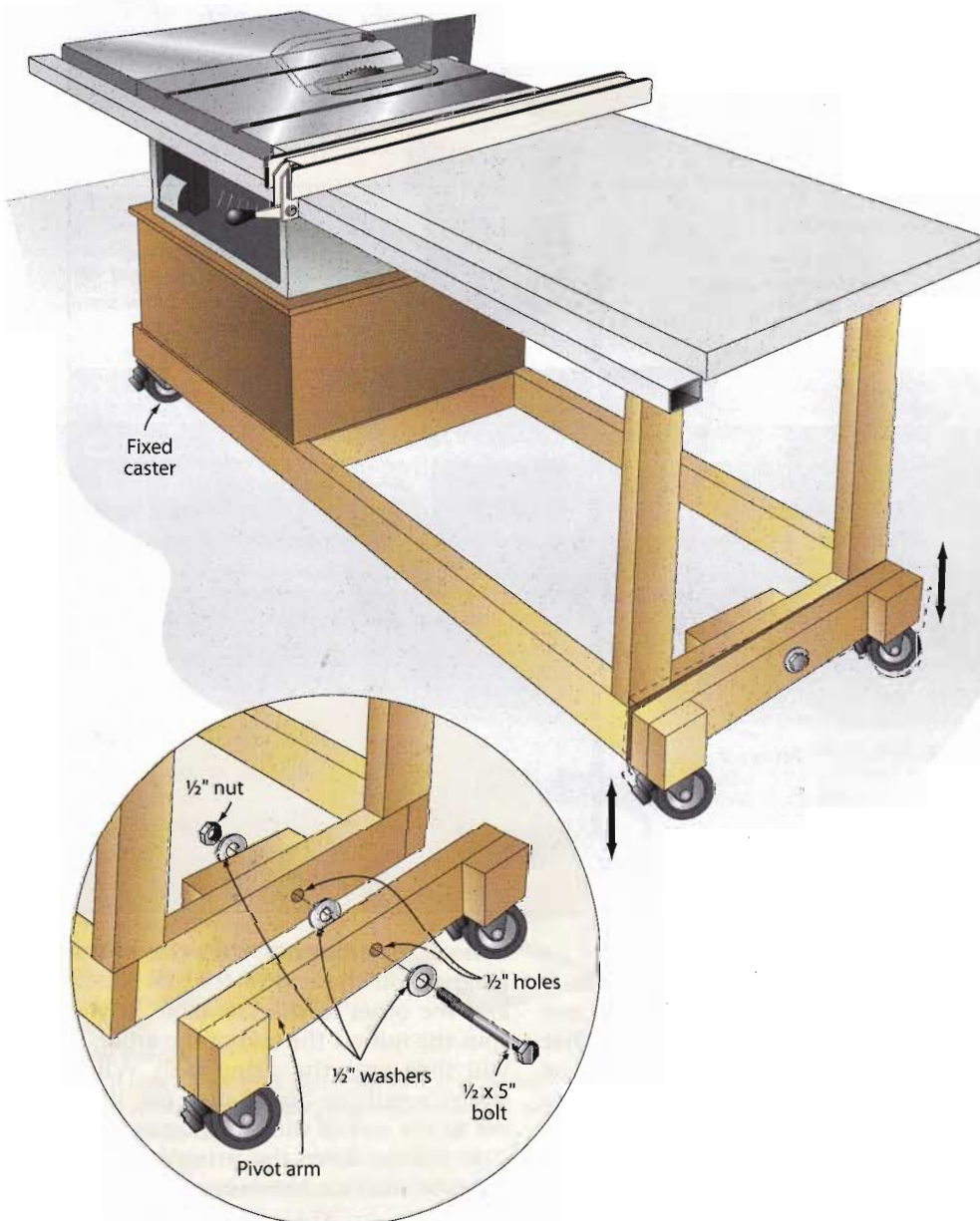
## Pivoting casters for stability and smooth travel

When designing a mobile base for my tablesaw and its extension table, I was concerned about how a four-wheeled base might twist and rack as the large, heavy saw moved across my uneven garage floor. Using the principle that any three points in space form a plane (like a tripod), I built a frame that includes both a triangular plane for stability and four casters for better weight distribution on the casters.

To create the tripod effect, I installed two fixed casters on the base at the heavy end of the saw to form the first two points of the triangle. For the third point, I built a pivot arm with locking casters, and attached it to the base with a ½×5" bolt, washers, and nuts.

As the base rolls across the uneven floor, the two casters on the pivot arm are free to pivot up and down to conform to the floor, with the bolt acting as a pivot point. Yet, in use, the stand is as stable as any three-point wheelbase.

—Gordon Hofer, Santee, Calif.



## Add an adjustable outfeed roller to your sawhorse

When I needed an outfeed support for some long cedar deck boards I was ripping on my tablesaw, my sawhorses were not tall enough, nor would they allow the wood to slide past. Fortunately, some leftover ½" electrical conduit and 1" PVC tubing provided a solution. My wooden sawhorses now serve double duty as adjustable outfeed supports.

To make the roller frame, cut two pieces of conduit, a bit shorter than the sawhorse height, to work as side posts for the roller. Add a conduit hanger low on each end of the sawhorse to fix the roller height. Next, drive a wood-screw-type eyebolt, with an eye large enough to accommodate the conduit, into the sawhorse's top brace to act as a guide. Attach the side posts, and add a ½" conduit elbow. Measure the distance between the elbow ends, add 1", and cut the conduit crosspiece.

With the frame pieces cut and side posts installed, slip a piece of 1" PVC pipe over the crosspiece and fit the roller into the elbows. The roller parts are easily removed and rest nicely on the sawhorse cross braces. Also, the conduit hangers, equipped with wing nuts, offer infinite adjustability and can compensate for an uneven floor, or in my case, an uneven patio/yard where I set up my tablesaw.

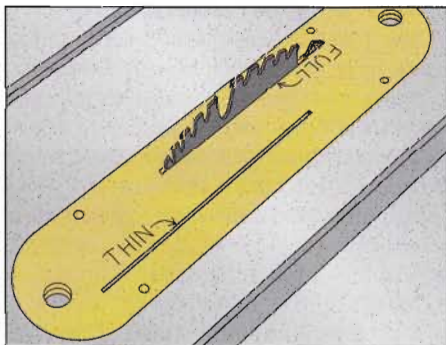
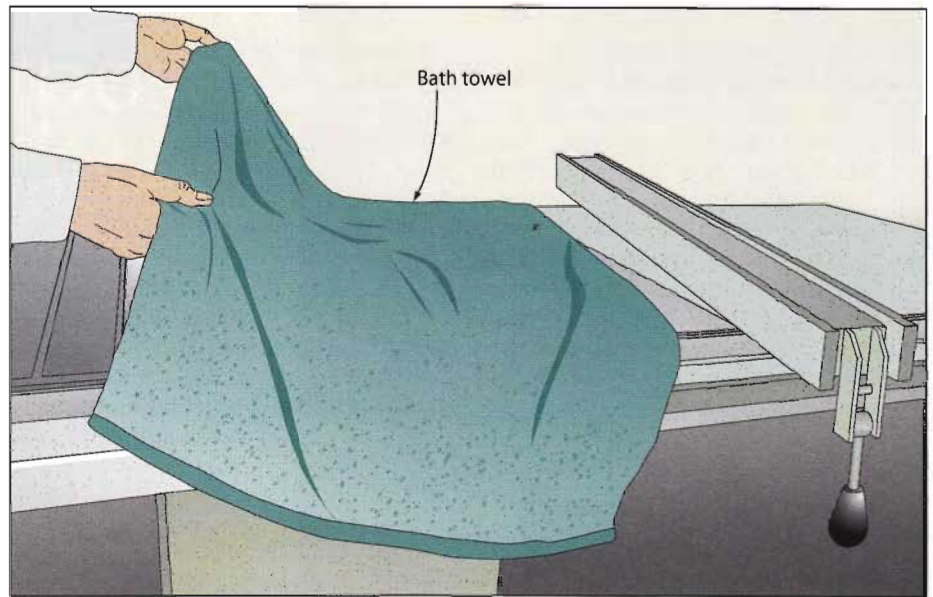
—Dave Baer, St. Louis

### Towels on tools rub out rust problem

After years of frequent scraping, scouring, sanding, rubbing, and waxing to maintain rust-free cast-iron tool tables in my shop near humid Houston, I found a very simple way to keep the rust from forming in the first place: Lay heavy cotton bath towels over the tools. A large bath towel on my saw table, held in place by the fence, and one spread over the ways of my lathe keep rust at bay and save me hours of cleaning.

My wife has sewn towels into fitted covers for my planer, jointer, and other tools. Of course, they also keep out dust. I started out with ragbag towels, but now have bought nice fluffy new ones to keep my tools dust- and rust-free.

—Joe Marsh, Spring, Texas



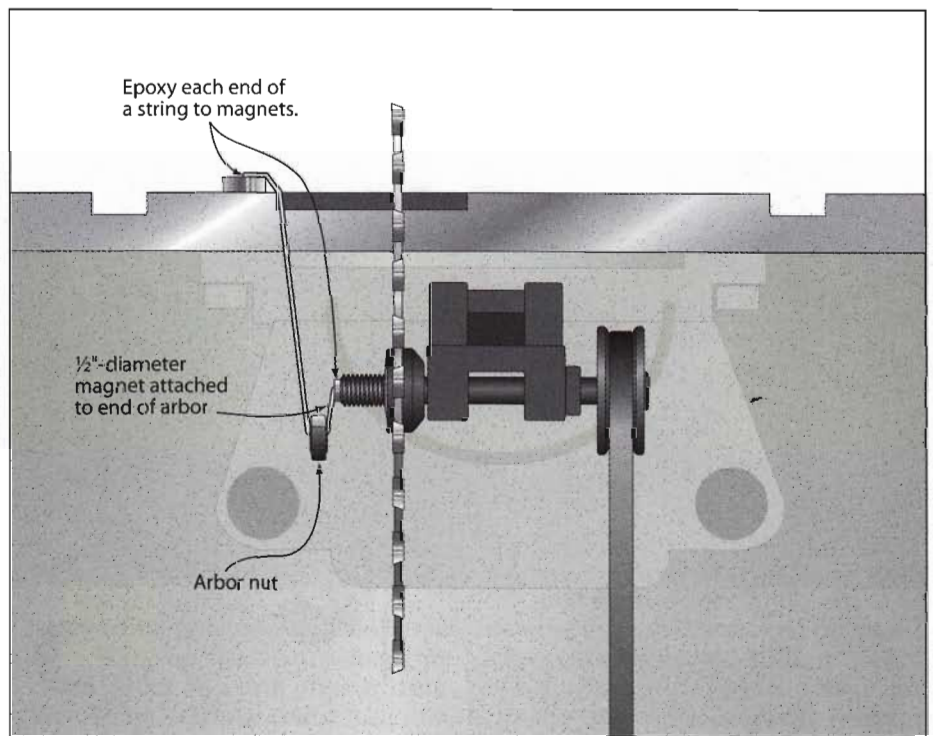
### Twin-slot table saw inserts pull double duty

I get twice as much mileage out of my shop-made zero-clearance inserts as most guys because I use the same plate for both full- and thin-kerf blades. How? When I make a new insert, I first cut the blade slot with my full-kerf blade, then rotate the insert 180°, load up my thin-kerf blade, and cut a thin-blade slot. I mark each slot so I know which one to use with which blade.

—Al Agnew, Salem, Ill.



Watch a FREE 5-minute video  
on making zero-clearance inserts at  
[woodmagazine.com/zcvideo](http://woodmagazine.com/zcvideo)



### Keep that pesky arbor nut in tow with a string

It's easy to lose control of the arbor nut when changing table saw blades. That often means crawling under the saw or trying to reach far into the cabinet.

To prevent an arbor-nut hunt, epoxy the ends of a piece of string to a pair of 1/2"-diameter magnets. (Powerful rare-earth magnets work well.) Before you

remove the arbor nut, stick one of the magnets on the end of the saw arbor, and the other to the saw table. If you spin the nut off the end of the arbor, it will slide onto the string loop. When you reinstall the blade, stick one magnet to the end of the arbor again, then slide the nut down the string and onto the arbor for fuss-free fastening.

—Bob Hoffmann, Atlanta

## Revive your zero-clearance insert

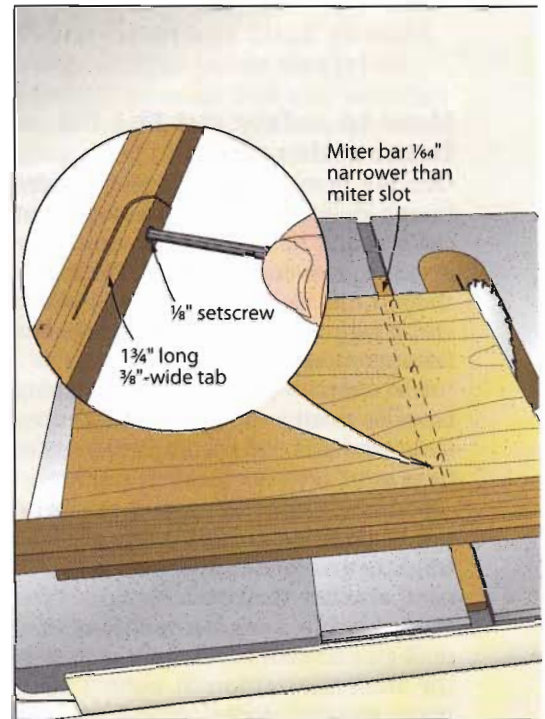
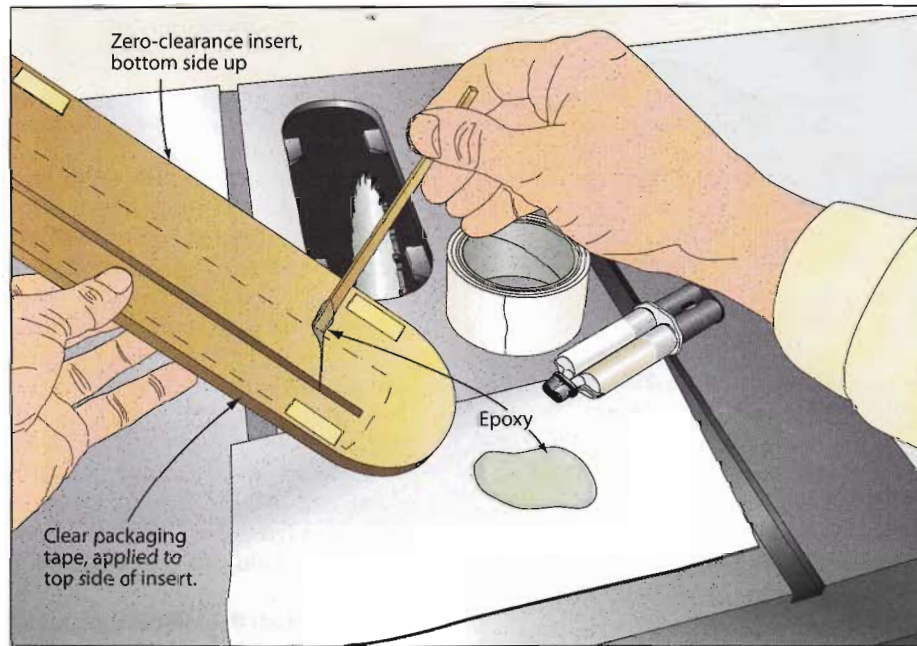
The zero-clearance throat insert on my tablesaw wasn't doing a good job at preventing tear-out anymore because its slot had become enlarged from years of use with different blades. Rather than make or buy a new insert, I decided to try to fix the old one.

I started by removing the insert from the saw and cleaning the slot thoroughly with acetone. Next, I applied a strip of

clear packaging tape over the slot from the top of the insert. After mixing up a little two-part epoxy, I flipped the insert over and drizzled the epoxy into the front of the slot. (It's not necessary to fill the whole slot, only where the teeth are likely to emerge while using the insert.)

After the epoxy cured, I lowered the saw blade, reinstalled the insert, then turned the saw on and raised the blade up through the newly repaired slot.

—Harold Pinder, Key Largo, Fla.



## Make an adjustable miter bar

Some tablesaw jigs, such as cutoff sleds, ride in the saw's miter slots, and a well-fitting miter bar is needed to keep these jigs accurate. You can make your own miter bar out of hardwood, but it's tricky to get—and maintain—that good fit. Here's how to make your own adjustable miter bar from wood.

Rip a  $\frac{3}{8}$ "-thick piece of hardwood, preferably hard maple, about  $\frac{1}{64}$ " narrower than your saw's miter slot. (Most are  $\frac{3}{4}$ " wide.) Using a scrollsaw or bandsaw, cut three J-shaped kerfs, as shown. Then drill a  $\frac{1}{8}$ " hole in each "tab," making sure you don't drill beyond the kerf. Thread a  $\frac{1}{8}$ " setscrew into each hole.

Now take the wooden miter bar to your tablesaw and fit it to the slot. If the fit is a little loose, tighten the setscrews until they bottom out. As you continue to tighten, they'll force the tabs out slightly, effectively making the bar wider.

When the bar slides freely in the slot with no side-to-side play, the fit is perfect. Attach the bar to your jig, and you're ready to roll.

—Robert Tutsky, Guilford, Conn.

## Cut perfect-size dados

If you use a stacked dado set on your tablesaw or radial-arm saw, you know the nuisance: You install what you hope is the perfect combination of blades, chippers, and shims. Then, on your test cut, you find the fit isn't quite right with the mating workpiece so you have to do it all over again—perhaps several times—to get a perfect fit. Here's how to get an accurate dado the second time, every time.

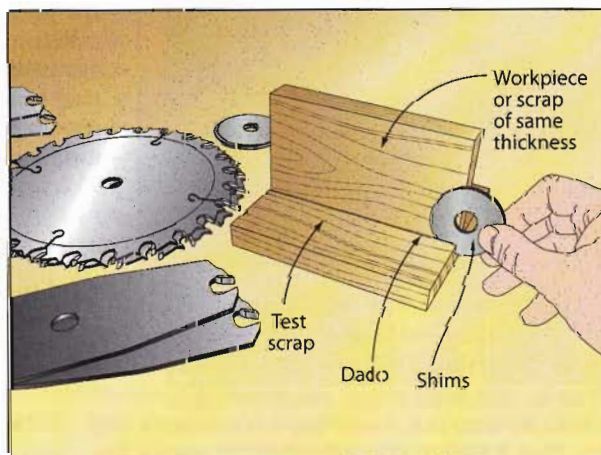
First, stack the blades and chippers to get close to the right width without going over. Next, insert enough dado shims to ensure that you'll make an oversize cut. Then, cut a test dado in scrapwood.

Now, test the fit with the mating workpiece or a scrap of equal thickness. (The fit should be loose.) Remove the dado set from your saw, keeping close

track of the shims that you remove from the stack. Insert some of those shims between the workpiece and one wall of the test dado until you get a snug fit.

Finally, reassemble the stacked set, this time without the shims that you used to tighten up the test cut. The dados you cut now will fit the workpiece perfectly.

—Joe Hurst-Wajszczuk, Westminster, Colo.



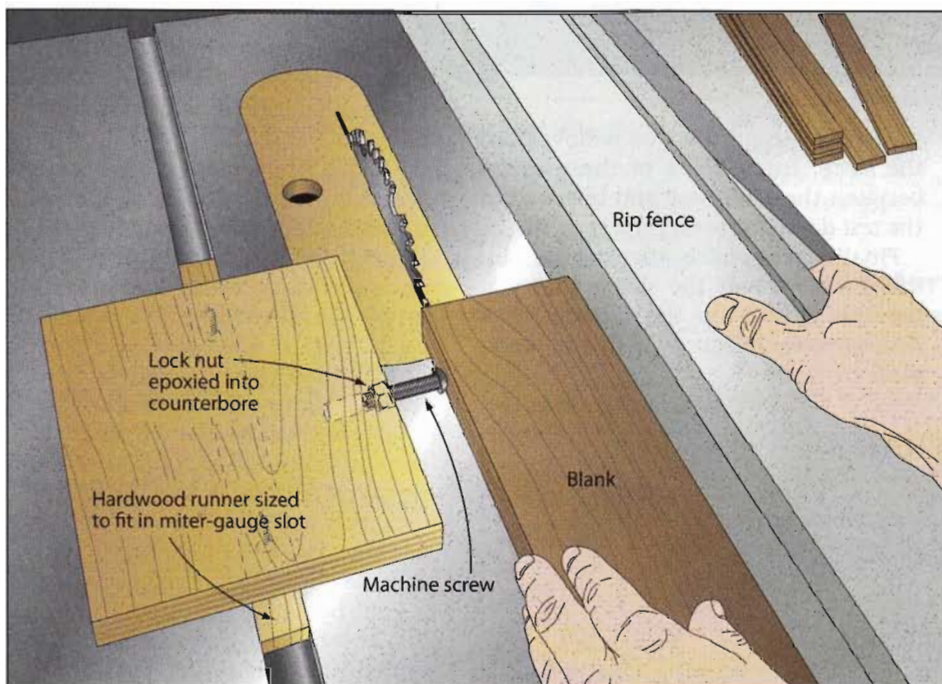
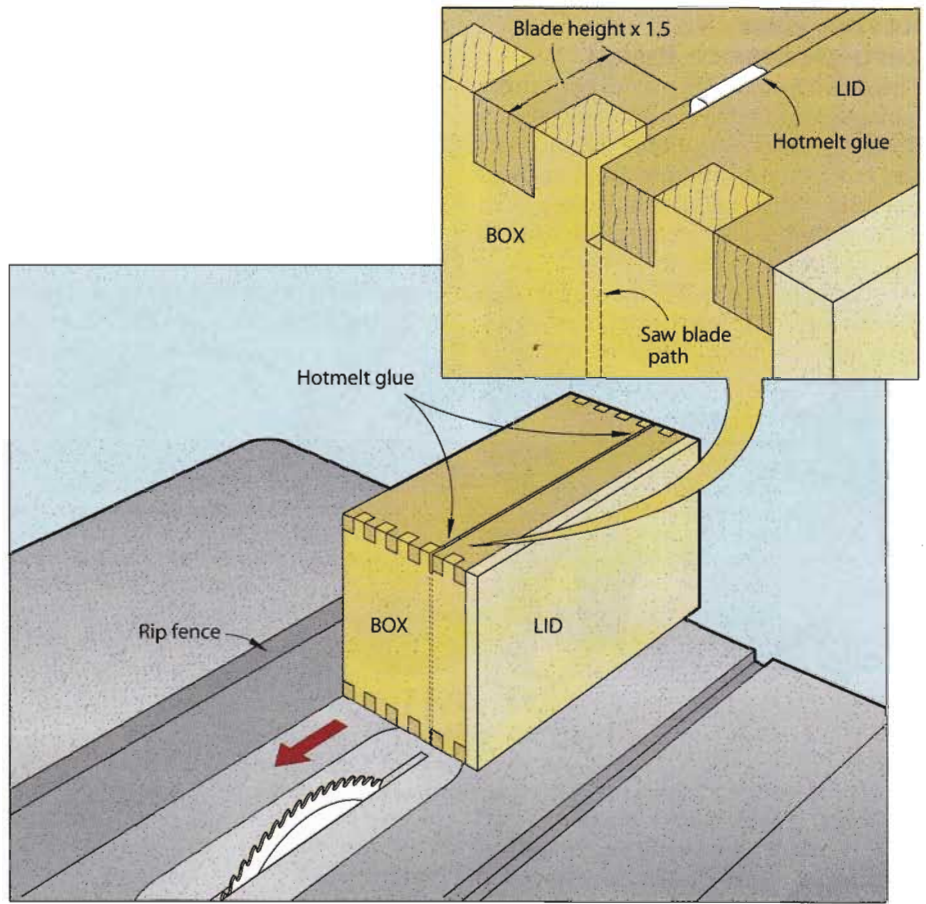
## How to safely cut the lid from a closed box

One big problem with cutting the lid from a closed box on a tablesaw is that the box and lid become more unstable as subsequent cuts are made. The bigger the box, the more potential for binding and gouging, and the more dangerous the operation becomes.

For several years, I've been making boxes as small as 4" square and 2" deep for jewelry and other small pieces, and as large as 16"×2'×4' for blankets and toys.

For safe, stable lid cuts, I raise the saw blade to the correct cutting height (slightly greater than the stock thickness) and cut the two long sides first. Next, I apply a small amount of hot-melt glue to each kerf, where shown in the inset illustration at right. I then make the end cuts and separate the box and lid by cutting the glue with a sharp utility knife. I also use the knife to peel or shave away the glue before sanding to remove the saw marks.

—John Ash, Lockport, Ill.



## Reliably reset your fence to rip thin strips

The only way to rip thin strips of stock safely on your tablesaw is to make a cut, then move the fence. Here's a jig that ensures each strip comes out the same.

The jig consists of a scrap of 3/4" plywood with a hardwood runner that fits the miter-gauge slot. Drill a 7/16" counterbore 1" deep in one edge of the jig, where shown above, and epoxy a 1/4" nylon-insert lock nut into it (nylon end in). After the epoxy

cures, thread a 1/4"-20 roundhead machine screw long enough to reach just past the blade while staying firmly seated in the lock nut.

To use the jig, fit its runner into the miter slot and turn the screw until the distance between the screwhead and the saw blade equals the thickness of the strips you want. Now, place your blank against the rip fence and slide both the blank and fence left until they contact the screw. Lock the fence down, remove the jig, and rip the strip.

Return the jig to the miter slot and again slide the fence and blank until they touch the screw. Remove the jig, rip, and repeat until your blank gets too narrow to work safely (about 3/4").

—from the WOOD magazine shop

Find more tablesaw tips & tricks:  
[woodmagazine.com/tipsforum](http://woodmagazine.com/tipsforum)

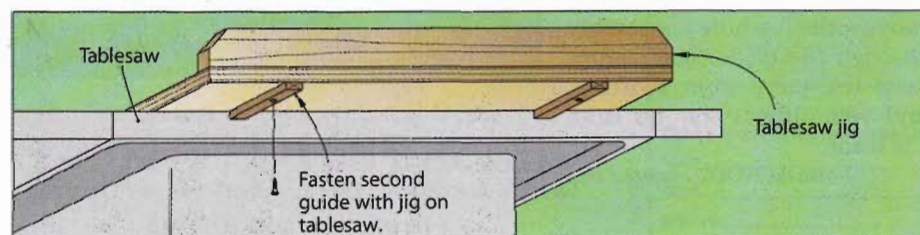
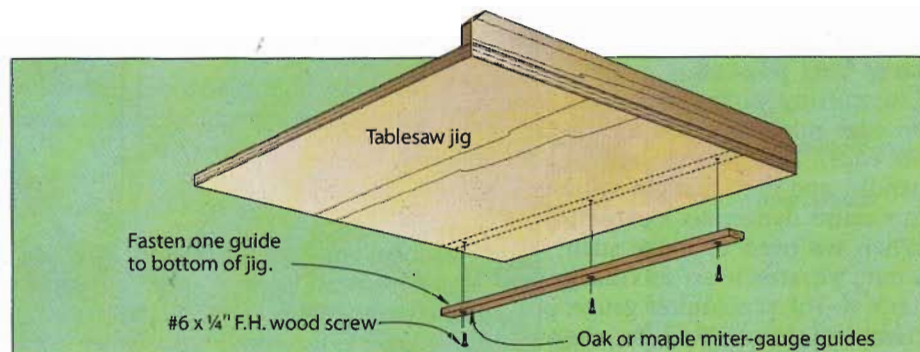
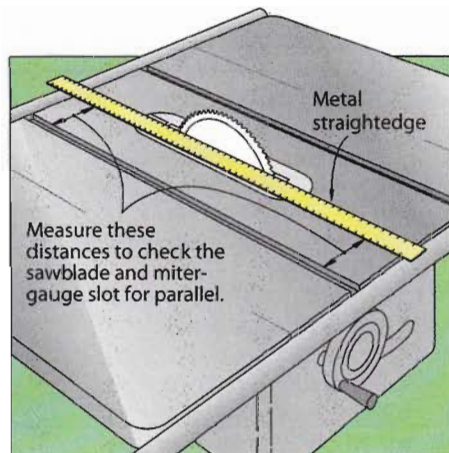




## How to get smoother-running jigs

If you have trouble keeping the runners that fit into the miter-gauge slot of your tablesaw parallel to the blade when you make saw jigs, here are a few suggestions for avoiding this problem.

First, make sure that the saw blade runs parallel to the miter-gauge slots. Place a straightedge against the side of the saw blade, as shown below. (Be sure the straightedge rests against the side of the blade and not against the projecting teeth.) Then, measure the distance from the ends of the table slots to the straightedge. (See drawing below.) If needed, adjust the blade alignment according to the saw manufacturer's manual. With the blade parallel to the slots, follow these steps for smoother-moving tablesaw jigs:



**1** Cut 3/8" x 3/4" (or sized to snugly fit your tablesaw slots) oak or maple strips for the runners a few days ahead of building the jig. Cut extra pieces, and stack and sticker these to allow them to stabilize. Then, select the straightest two sticks to use for your jig runners.

**2** Next, glue and screw one runner into position on the bottom of the jig. Allow the glue to set, and scrape off any glue residue.

**3** Place the second runner in the other miter slot, apply glue to its top surface, and then set the jig in place on the tablesaw. Slide both the jig and second runner slightly over one edge of the table and fasten the runner to the jig base with a small wood screw. Repeat this procedure on the other end of the runner. Finally, drive a third screw down through the jig surface and into the center of the hardwood runner while the jig is on the saw.

**4** When the glue on the runners dries, slide the jig back and forth in the miter-gauge slots to check the fit. Areas of the runners that bind against the sides of the miter slots will develop a metallic sheen from rubbing the metal. Abrade these areas with a sanding block to ease the motion of the jig. Then, lightly coat the runners with paraffin or other wax so the jig will move easily.

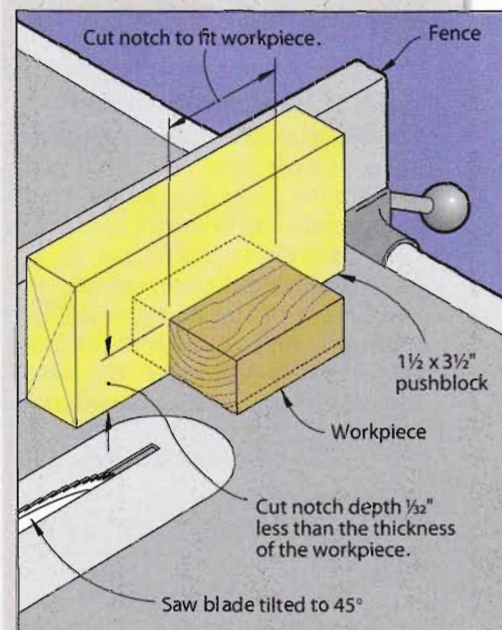
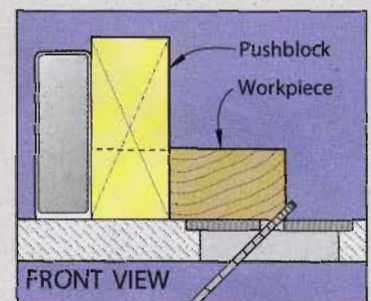
—from the *WOOD* magazine shop

## Custom pushblock safer for smaller pieces

I needed to chamfer the edges of a small block of wood to make a decorative post cap. When I tried to use my regular pushstick, the tablesaw blade twisted the block away from the fence, gouging the workpiece beyond repair.

To keep the workpiece under control, I built a custom pushblock from 2x4 scrap, as shown below. I cut a notch in the scrap to fit the workpiece. This allows the pushblock to hold the work firmly when making the cut, and prevents the saw blade from twisting and pulling the stock away from the fence.

—Richard Rosencrans, Cody, Wyo.



### Stop rust on machinery

If you leave your workshop unheated during the winter, rust is likely to form on the cast-iron tops of your machines. Waxing may help prevent this, but nothing is 100-percent effective. Here are several methods to keep the rust away.

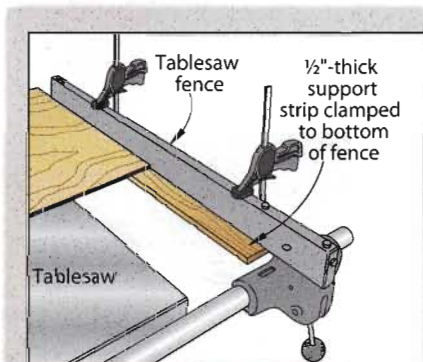
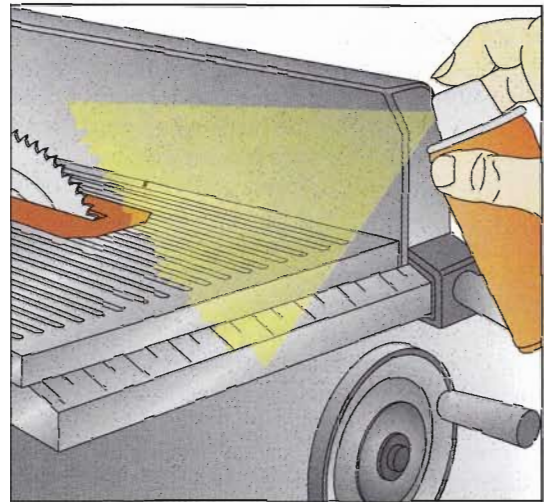
Cloth covers will help protect your machinery from condensation, which leads to rust. Don't use plastic ones, because they'll trap moist air underneath. You can even find specially made covers at some stores that handle wood-working machinery.

But before you put on those covers, set up another line of defense: Spray the surfaces of your machines with TopCote, an aerosol spray manufactured by Bostik (Bostik-us.com) and available at tool outlets. (Empire TopSaver, empiremfg.com.,

and Boeshield T-9, boeshield.com, both performed well in tests by *WOOD* magazine.)

Here are a couple of other ways to keep condensation under control: As long as the shop is unheated anyway, make sure it's well-ventilated, and hang a burlap bag full of calcium chloride near your machines, with a bucket underneath. Moisture collects in the calcium chloride, then eventually drips from the bottom of the bag. You can buy calcium chloride at stores that stock materials for professional builders and concrete contractors. Or you can go the opposite route: Close the shop up tight and set up a dehumidifier or two.

—from the *WOOD* magazine shop



### Add tablesaw support to maximize rip capacity

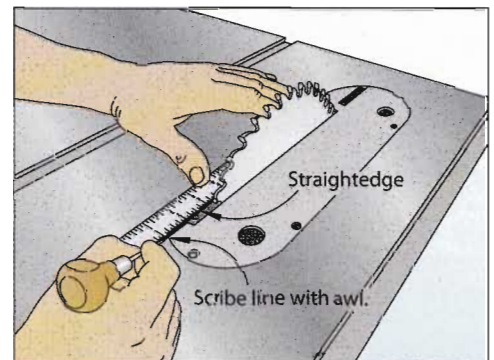
My table saw's fence rails reach well beyond the extension table, but I found a safe way to use those rails to the max without letting the workpiece sag. I clamp a support strip to the bottom of the fence, as shown above. The support holds the end of the workpiece level with the table and ensures precise contact with the rip fence. When I'm not using the support, it hangs on the wall near the saw.

—Tom Hock, Oconomowoc, Wis.

### Check the cut before you make the cut

Using a scratch awl, scribe a line on your table saw top, as shown, to indicate exactly where your favorite blade will cut. Then mark your stock, and align the mark with the scribed line. Make sure you rest the ruler against the teeth, not the gullets between, when marking.

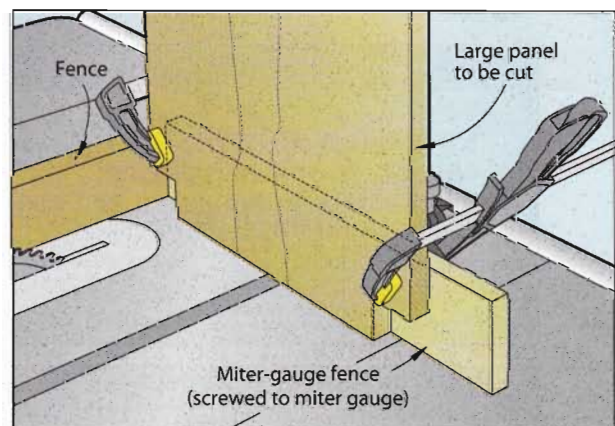
—from the *WOOD* magazine shop

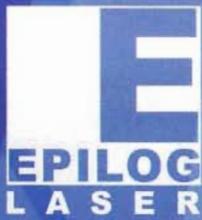


### A safe way to saw tall pieces

Crosscutting large workpieces on edge might put you a little on edge. They're awkward to handle, and even a slight twist can cause dangerous kickback. When we need to make such a cut, we attach an auxiliary fence to the saw's miter gauge, clamp the workpiece to the fence, as shown at right, then move the whole assembly through the blade. The clamps keep the piece from twisting, and your fingers stay far from the blade.

—from the *WOOD* magazine shop





Create custom engraved products with your own laser system!

- Custom engrave your products – from cabinet doors, to cigar boxes, to gun stocks.
- Cut intricate models from any type of wood, acrylic, leather, plastic, and more.
- With lease payments starting at about \$150/month\*, Zing laser systems are unbelievably affordable!



Systems starting at only \$7,995!



Find out how to get your own laser. Call 888-437-4564

MADE IN USA

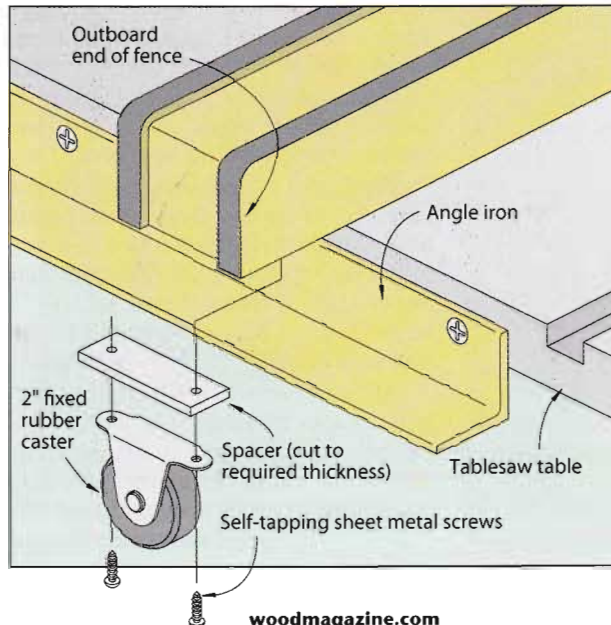
sales@epiloglaser.com • epiloglaser.com/bhg.htm

\*With Approved Credit

### A wheel of a solution for dragging rip fences

The rip fence on my Powermatic 66 tablesaw didn't glide as smoothly across the tabletop as I'd like, so I made a \$5 improvement. I bought a 2" fixed rubber caster at the hardware store and attached it to the bottom of the far end of the fence, as shown below. The wheel rolls on the angle iron attached to the back of the saw. I put a spacer between the caster and the fence to give me 1/32" clearance above the tabletop. The fence now glides effortlessly across the table.

— William Marazita, Santa Barbara, Calif.

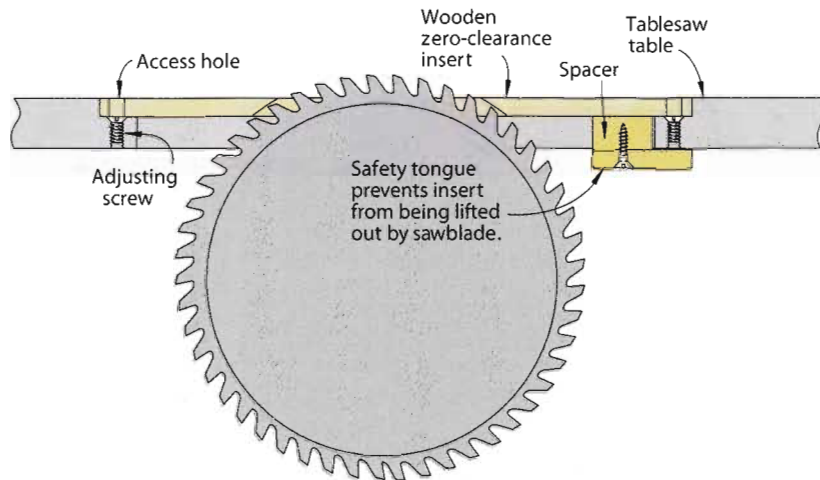


woodmagazine.com

### Tongue ties zero-clearance insert to tablesaw top

On your WOOD Online® forums ([woodmagazine.com/forums](http://woodmagazine.com/forums)), I read about homemade zero-clearance tablesaw inserts sent flying when caught by the blade. To prevent this, attach a safety tongue to the outfeed end of the insert, as shown below. Tip the insert so the tongue catches under the saw table, and drop the insert in place.

— Dave Goldthorp, Dunrobin, Ont.

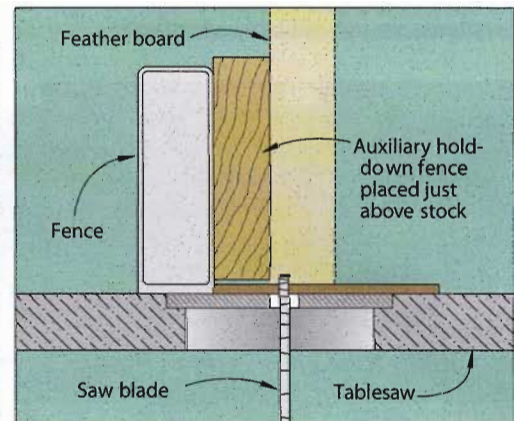
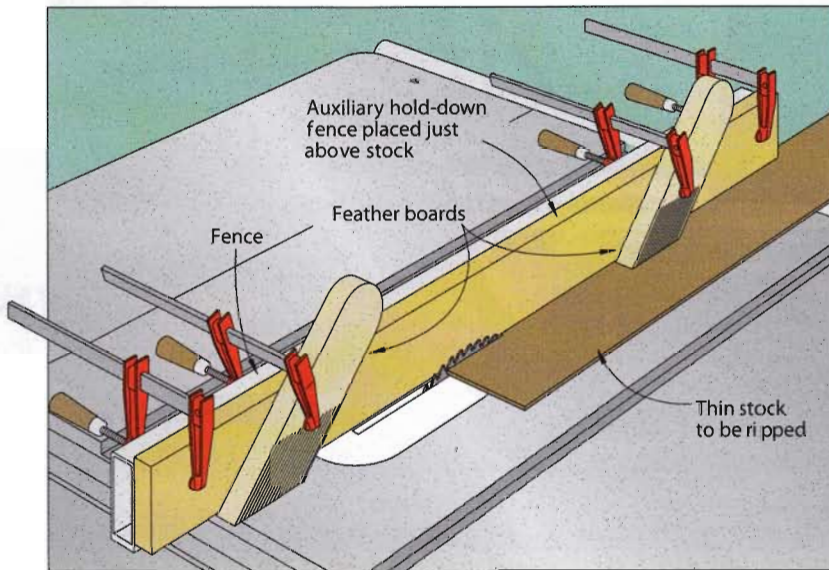


## How to safely rip thin material

Here's a good way to rip thin, whippy material such as a strip of laminate for self-edging a counter or tabletop. Clamp an auxiliary hold-down fence against your table-saw's rip fence just high enough to let the material pass

under it. Push the work against the tablesaw fence as you slide it through. (If your material slides under the tablesaw fence you will need to add an auxiliary zero-clearance fence that contacts the tablesaw top. This piece goes between the tablesaw fence and auxiliary hold-down fence.) You may want to also use feather boards or an anti-kickback device (mine came from Woodworkers Supply, 800-321-6840) to hold down the material as you work.

—Barney Howard, Sisters, Ore.



## Long tenons and deep dados strengthen frames

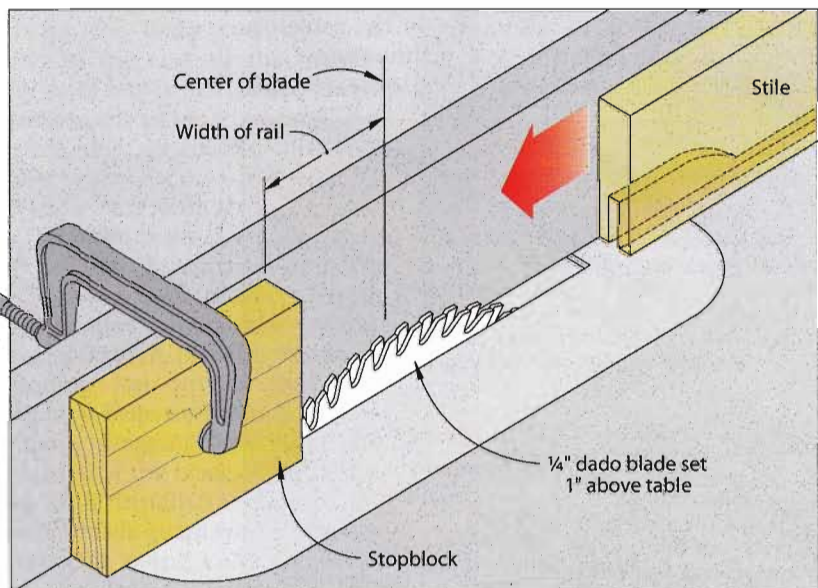
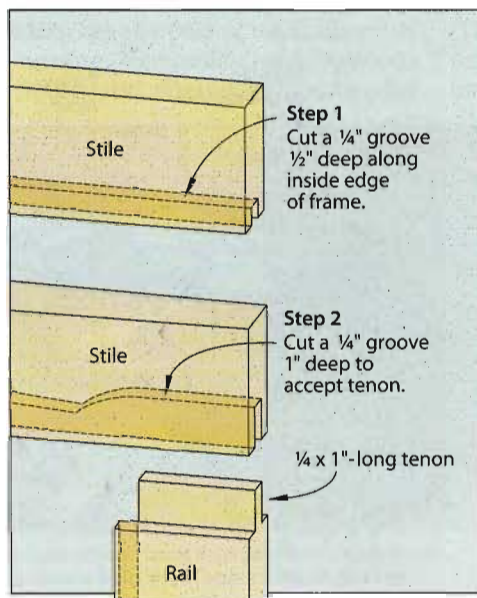
When building frame-and-panel doors, I make them extra strong by making the tenons extra long and then cutting deep dados to accommodate them.

Rather than chisel out deep mortises, I just cut the dados on a tablesaw.

In the stiles, center a  $\frac{1}{4}$ "-deep groove for the panel with your dado blade. Then, raise the tablesaw blade up to 1". Measure the width of

your tenon, and clamp a stopblock to your tablesaw fence, as shown *below*. Run the stile groove-side down into the dado blade again until it contacts the stopblock.

—Erv Roberts, Des Moines, Iowa



## Zero-clearance extension makes a mini-mill

While building a scale model recently, I needed to rip some  $\frac{1}{2}$ " stock to  $\frac{1}{8}$ " wide to make miniature lumber. Ripping pieces that small against my tablesaw fence was just begging for big trouble, so I made a zero-clearance fence extension from  $\frac{1}{8} \times 6 \times 24$ " hardboard and an equal length of  $\frac{3}{4}$ " stock, as shown at right.

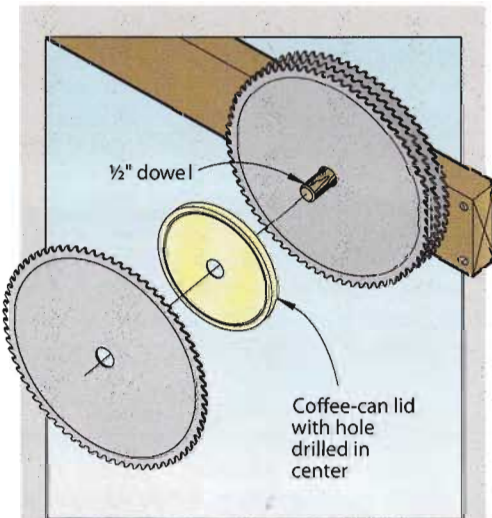
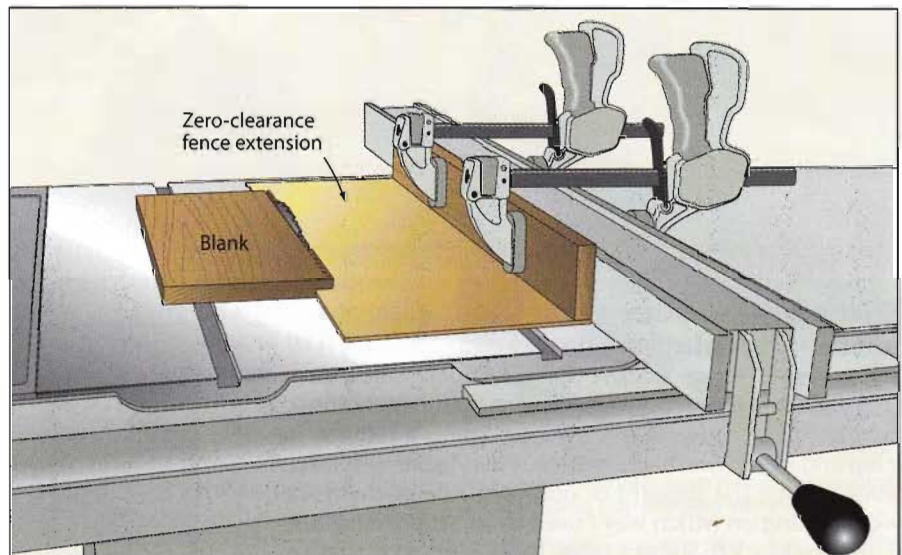
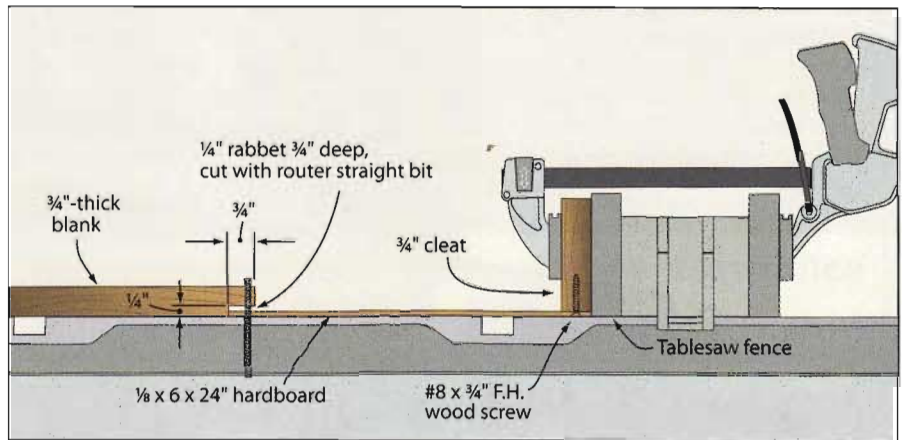
After installing an 80-tooth crosscut blade in my tablesaw, I lowered the blade below the tabletop. Next, I clamped the zero-clearance fence extension to my tablesaw's fence, set the fence so that the hardboard hung over the blade by about  $\frac{1}{2}$ ", then cranked the spinning blade up through the hardboard. (Press the hardboard down to the tabletop with a piece of scrapwood during this operation, keeping well clear of the emerging blade.)

To rip my  $\frac{1}{2} \times \frac{1}{8}$ " strips, I start with a  $\frac{3}{4}$ "-thick blank. Using a straight bit in my router table, I create a  $\frac{1}{4}$ " rabbet  $\frac{3}{4}$ " deep in the edge of the blank. I then

place the blank rabbet-face down on the tablesaw against the edge of the hardboard, which guides the blank through the cut, as shown above. With a little trial and error, I can adjust the router bit's cutting depth

to where the rabbet leaves me with a precise  $\frac{1}{8}$ " thickness. After each rip, I re-rout the rabbet for the next rip. Once set up, I never have to readjust the bit's cutting depth.

—Dan Myers, Kelso, Wash.



## Coffee-can lids make great spacers for blades

If you stack your tablesaw or circular-saw blades for storage or transport to a sharpener, you need spacers between them to prevent the carbide teeth from chipping each other. But rather than go to the trouble and expense of cutting out hardboard or plywood spacers, save a few of the plastic lids that come on 3-pound coffee cans. Bore a hole the size of your saw's arbor in the center, and place them between your blades.

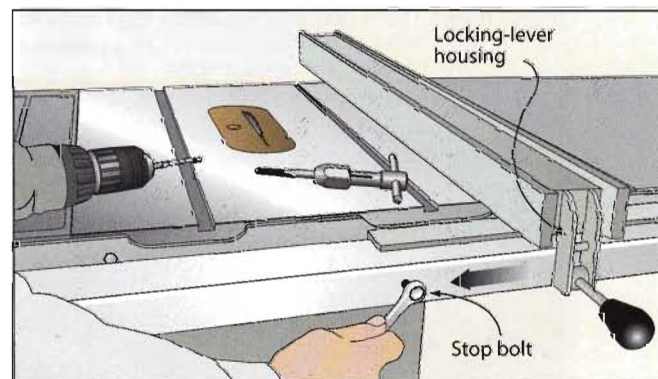
—Ken Kraft, Boise, Idaho

## Simple stop spaces fence and blade

My tablesaw's rip fence moves so easily along the rail that I wanted to make sure I could never accidentally slide the fence into the raised blade. So, I added a stop bolt to the fence rail that limits the fence's travel.

After setting the fence  $\frac{3}{4}$ " from the blade, I drilled and tapped a hole for a 1"-long stop bolt just left of the fence's locking-lever housing. (You may have to locate your stop bolt on the top of the rail, depending on your fence design.) Finally, I installed the bolt in the hole.

—Luther Woodward, East Liverpool, Ohio



Find more Tablesaw Tips & Tricks:  
[woodmagazine.com/tipsforum](http://woodmagazine.com/tipsforum)



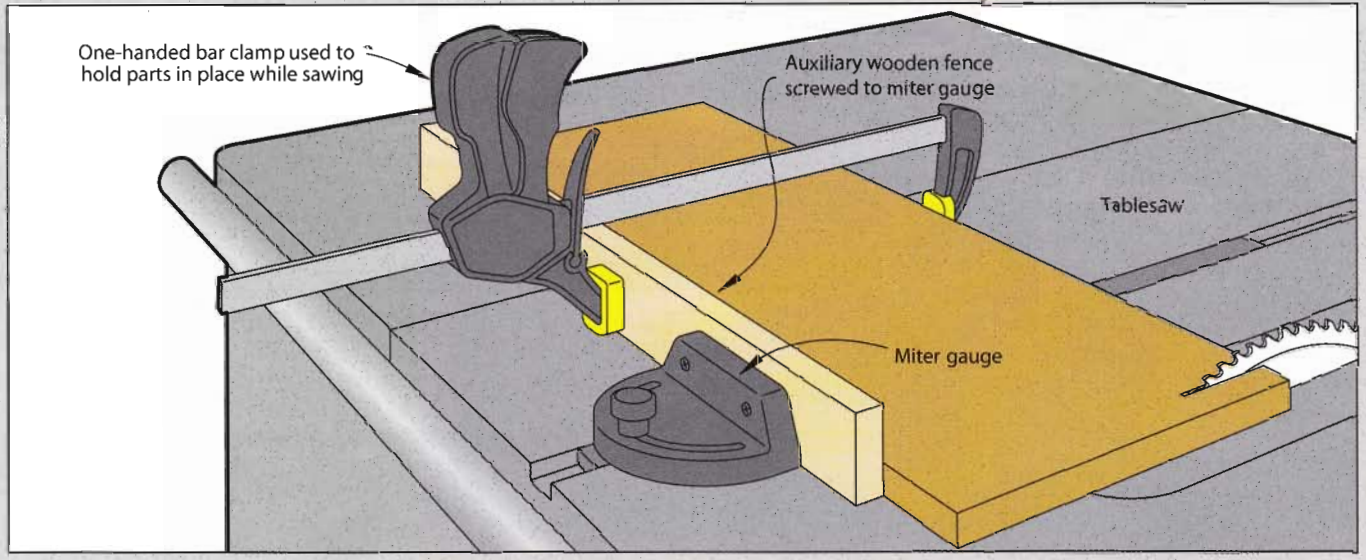
### Bar clamp helps keep crosscuts square

When an elbow injury made it difficult for me to squarely crosscut long workpieces, I had to find another way to get

the job done. My solution was to mount an auxiliary fence to my miter gauge, then clamp the workpiece to the fence with a one-handed bar clamp, as shown below. The clamp holds the workpiece

tightly against the auxiliary fence, ensuring a square cut. It also provides me with a convenient handle to help push the piece through the saw.

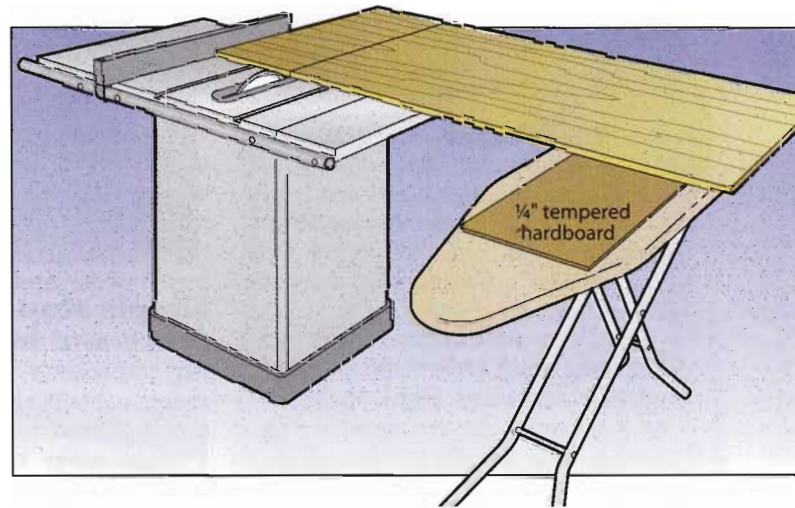
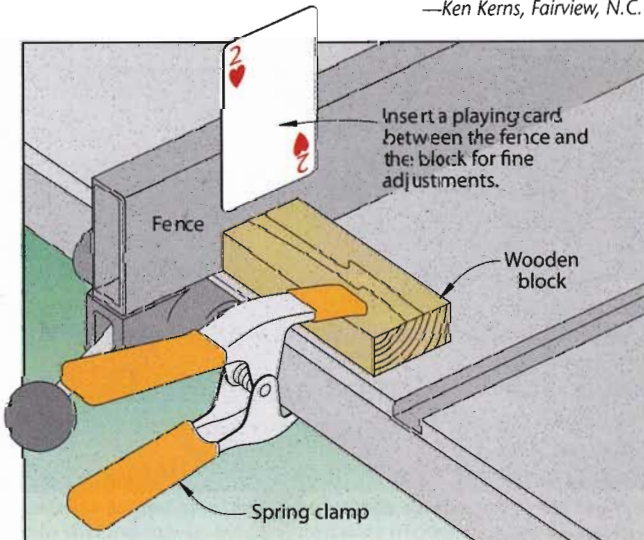
—Dave Rickett, Sylvan Lake, Alberta



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

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

—Ken Kerns, Fairview, N.C.



### Ironing board steadies long workpieces

When crosscutting a long piece of stock or sheet goods on a tablesaw, I use a handy substitute for expensive roller stands—an ironing board. The legs on most ironing boards adjust to the height of a tablesaw. I put a piece of 1/4" tempered hardboard on top of the ironing board to give the workpiece a slick surface to ride on and to protect the fabric cover on the ironing board. Don't attempt this technique with heavy workpieces that might tip over the ironing board.

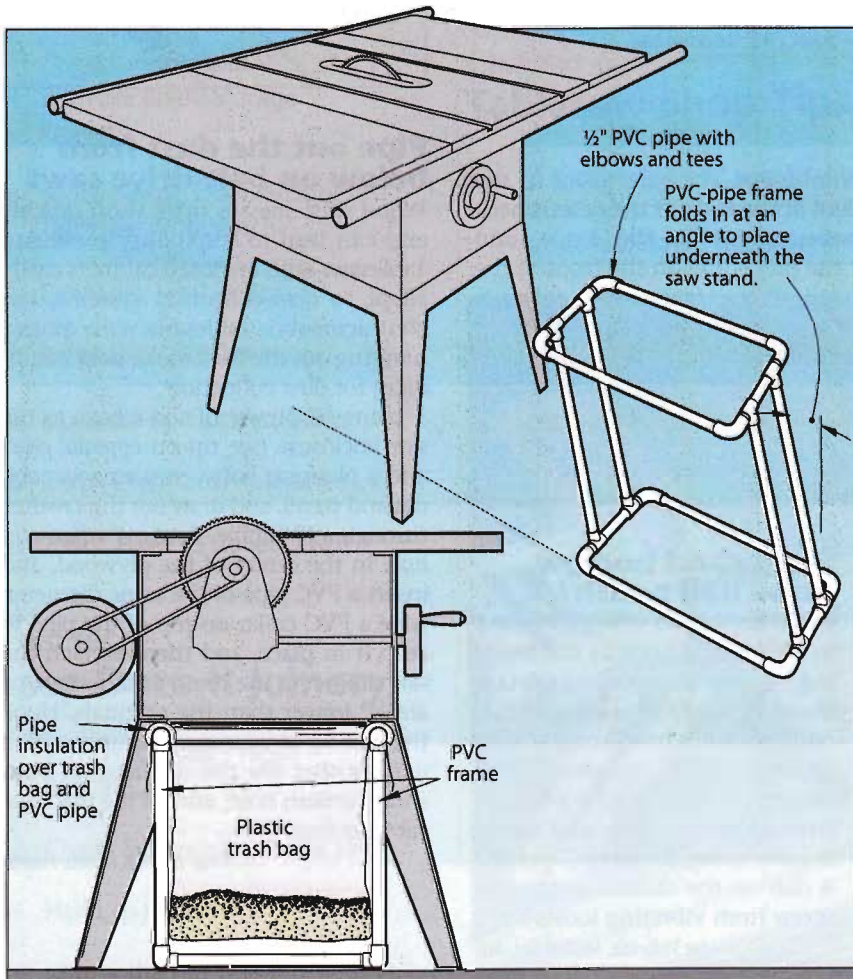
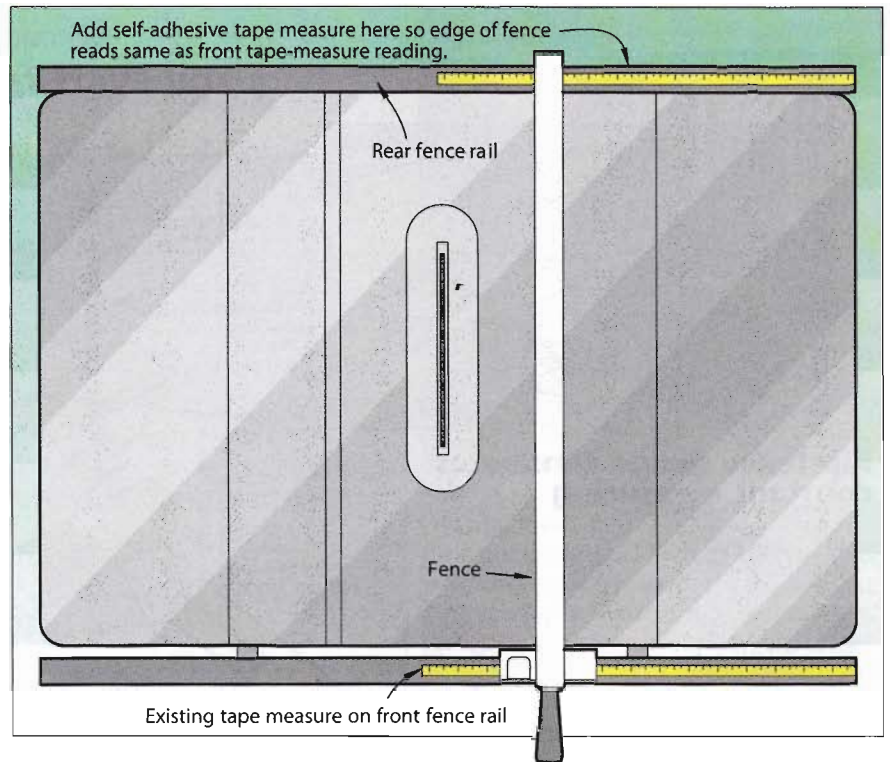
—Frank Lucca, Saratoga, Calif.

## End fence alignment hassle with rear-measuring tape

Having trouble getting your fence to line up parallel with the blade or miter-gauge slot on your tablesaw? If you have a fence with a square or flat rear rail, here's a quick and easy solution.

First, set your blade parallel to the miter slot by following the instructions in your tablesaw owner's manual. Then, buy an adhesive-backed tape measure of suitable length. Secure the tape measure to the rear fence rail so that it reads the exact same measurement at the right-hand miter slot as the measurement scale on the front of the fence. Whenever you position the fence, make sure the face of the fence bar aligns with the same measurements on the front and back rails before locking.

—Scott Geurin, San Clemente, Calif.



## Trash bag and PVC frame catch dust under tablesaw

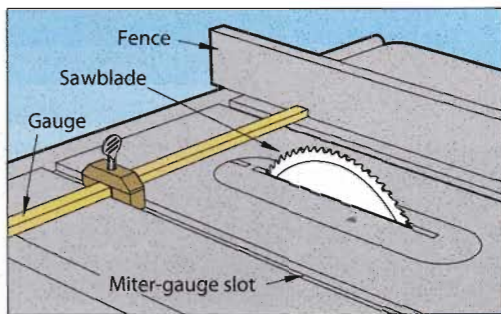
This PVC-pipe frame supports a trash bag that captures the dust falling through the bottom of your tablesaw cabinet. And it's easy to install and remove because the frame folds down.

Size the opening for the trash bag slightly larger than the opening in the bottom of your tablesaw cabinet. Make the height of the frame about 1/8" shorter than the distance from the floor to the bottom of your tablesaw cabinet. Pipe insulation will fill the slight gap between the PVC and the saw cabinet.

Assemble the frame with elbows, tees, and straight lengths of 1/2" PVC pipe. You'll need eight elbows and eight tees. Don't use any adhesive, however, where the tees join the horizontal pieces.

Drop a trash bag into the opening of the frame and secure it with sections of foam pipe insulation. Bend the frame over to slide it underneath the saw, then pull the frame upright into position. The trash bag captures the sawdust, and the foam pipe insulation seals the frame snugly against the bottom of the tablesaw cabinet.

—Norman Ward, Buena Park, Calif.

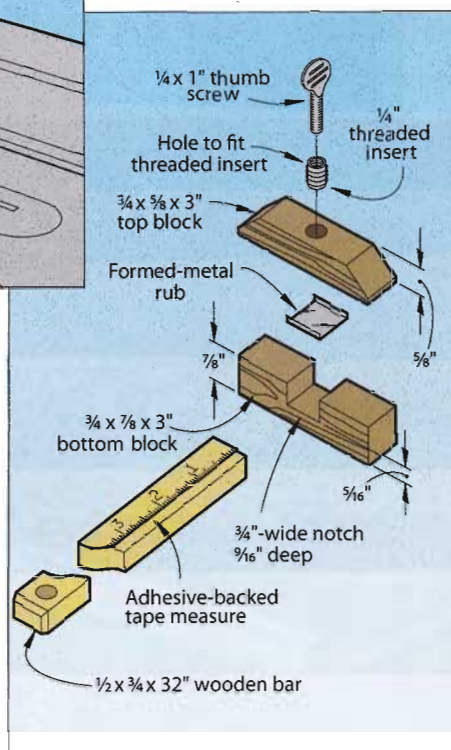


## Rip-fence gauge eliminates constant measuring

On tablesaw fences that don't always lock parallel to the blade, checking and rechecking the measurement sure gets aggravating. But if you don't check the fence, the workpiece may bind and kick back halfway into a cut.

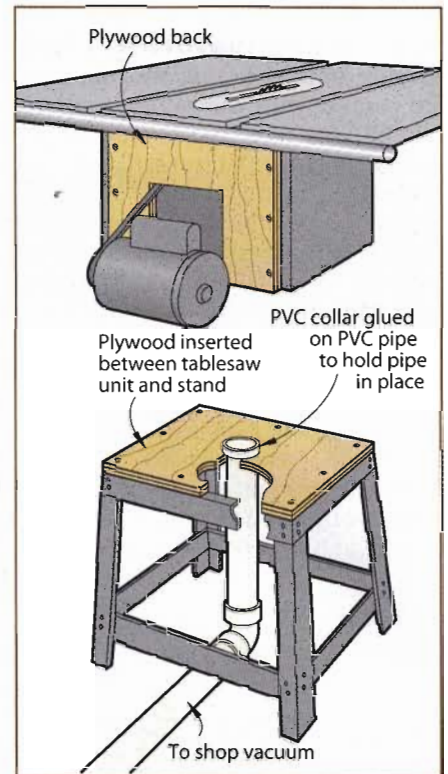
With this rip-fence gauge, you can align the fence in seconds. Build the block for the miter slot and the bar out of hardwood to the dimensions shown. Make the metal rub out of brass so that your thumbscrew doesn't dent the bar. (For a source of brass, check your local hobby shop.) For measuring from the fence to the blade, the adhesive-backed measuring tape should read from right to left.

To use the gauge, set the fence where you want it and place the block in the miter slot. Put the measuring bar in front of the saw blade, and extend it out until it touches the fence. Now, tighten



the thumbscrew. Place the gauge in the miter slot at the back of the table, check the measurement to the fence, and repeat the procedure on the front of the table. Adjust the fence until it reads exactly the same distance at the front and back of the table.

—Dwight L. Pierson, Rochester, Minn.

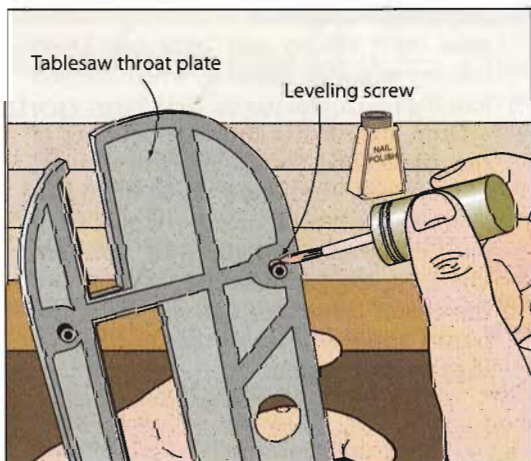


## Pipe out the dust from below on belt-drive saws

Wood dust messes up a shop quickly and can lead to respiratory problems. Tablesaws with enclosed cabinets easily adapt to dust-collection systems, but contractor-style tablesaws with motors hanging out the back make poor candidates for dust collection.

Using 3/4" plywood, add a back to the saw enclosure (see tip on opposite page) and a platform between your saw cabinet and stand, and draw out the sawdust through a PVC pipe. Bore a 4"-diameter hole in the center of the plywood, and insert a PVC pipe of the same diameter. Glue a PVC collar on top of the pipe to keep it in place, and then reattach the saw cabinet to the stand using bolts that are 3/4" longer than the originals. Hook the pipe up to your shop vacuum with a reducer that fits the diameter of your shop-vacuum hose, and let the machine eat your dust.

—Peter Hurney, Kailua, Hawaii



## Dear, can I borrow some nail polish?

What do you do when you need to set a screw, such as the leveling screw on your tablesaw throat plate or router-table insert, and you don't have any Loc-Tite on hand? Hike up your pants, adopt your most macho posture, strut up to your wife, and ask to borrow some fingernail polish. A dab on the threads keeps the screw from vibrating loose.

—Joe Valorose, Midlothian, Va.

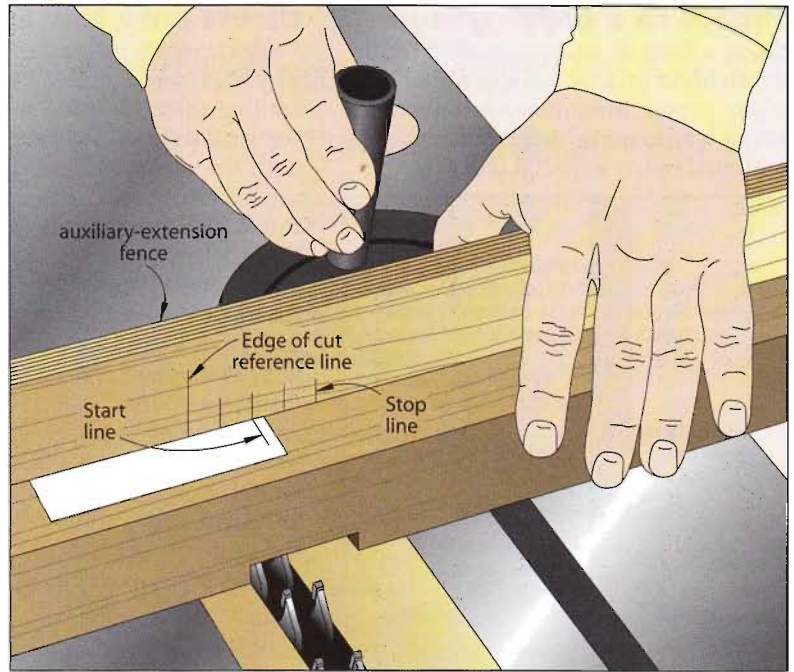


## Cutting wide dados efficiently

Every time you use a dado set to cut half-lap joints, do you seem to waste a lot of time lining up each successive cut to the edge of the blade?

If so, here's a way that will save you both time and energy. First, screw a plywood auxiliary extension to your tablesaw's miter gauge, and slide it once through the running dado blade to show you the edges of the cut. Use a pencil and square to draw a reference line from one edge of the cut up the face of the fence. Then make a series of evenly spaced marks away from your reference line along the face of the extension. Space these marks slightly less than the width of the dado-blade cuts to allow for overlap—for example  $1\frac{1}{16}$ " apart for a  $\frac{3}{4}$ " dado. Then make a single indexing mark on a strip of tape on the back of each workpiece to identify where your cut should start. Move that mark on the board to the next line on the extension for each successive cut until you reach the other edge of your half-lap.

—from the WOOD® magazine shop



## Don't Let Fungus Embarrass You!



#1 Anti-Fungal Available Without a Prescription

- ✓ Guaranteed Effective
- ✓ Trusted for over 25 Years
- ✓ Maximum Strength Formula
- ✓ No Side Effects

AVAILABLE AT:



And Other Fine Retailers

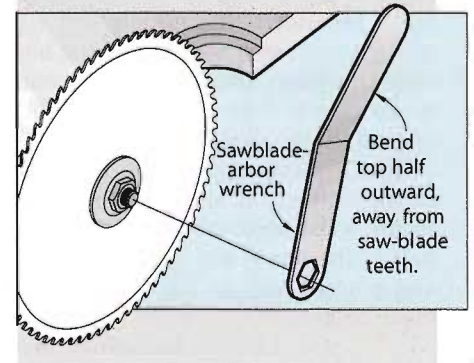
**#1**  
Pharmacist  
Recommended

**FREE!**

Nail care set and brochure on how to **NAIL** your fungus! Call 1-800-824-4894 or visit [www.funginail.com](http://www.funginail.com) for a coupon and additional information

## Bent blade wrench prevents hurting hands

It only takes one slip when changing tablesaw blades to incur a nasty gash. To help move your hand out of the line of fire, bend your blade wrench. Place the midpoint of your wrench in the jaws of a machinist's vise and tap the wrench with a hammer until it's bent about 30°.

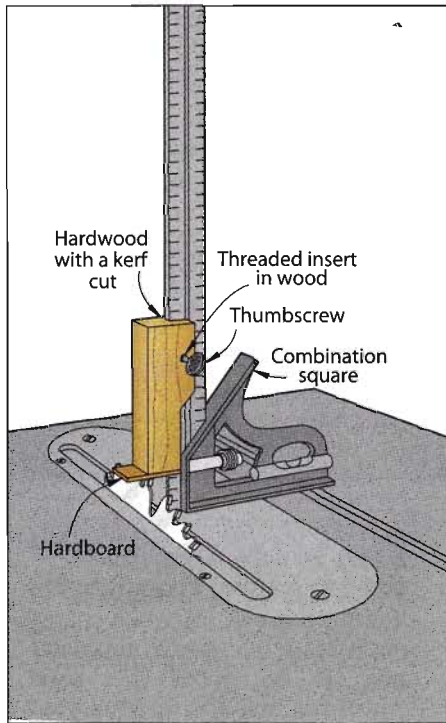


Find more Tablesaw Tips & Tricks:  
[woodmagazine.com/tipsforum](http://woodmagazine.com/tipsforum)



## Convert a combination square to a depth gauge

Using a ruler or tape measure to set the depth of cut on a tablesaw or router table often proves inaccurate. But there's a better way to make these measurements without buying a special tool.



Turn your combination square into an accurate depth gauge with two small pieces of wood, a thumbscrew, and a threaded insert. First, cut a 3/4"-thick block of hardwood about 3" long, and cut a kerf down the middle just wide enough to fit over the edge of the blade on your square. Then, saw out the notch in the lower half of the block to fit around the head of the square.

Glue a piece of 1/8"-thick hardwood to the bottom, as shown. With epoxy, secure a threaded insert into the upper half of the block, put in a thumbscrew, and you're ready to quickly gauge the blade height.

—Mark Albrecht, Houston

## Plywood carrier hoists sheets onto saw table, too

Large cabinetry projects involve cutting a lot of plywood panels. The thought of hauling those plywood sheets through the workshop and trying to tip them onto the saw table without damaging them, your tools, or yourself (or all three) isn't making you smile.

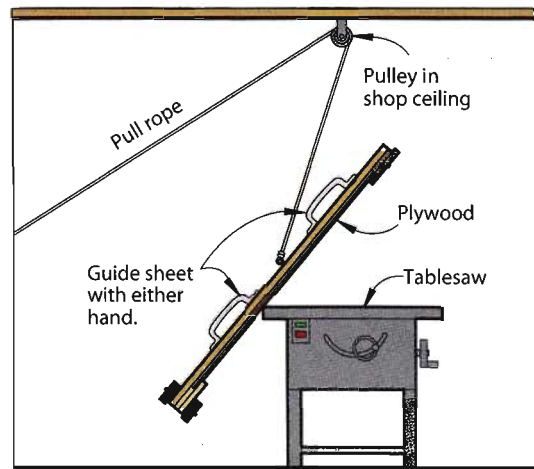
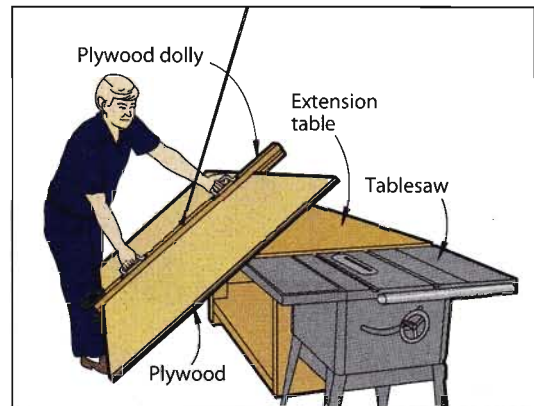
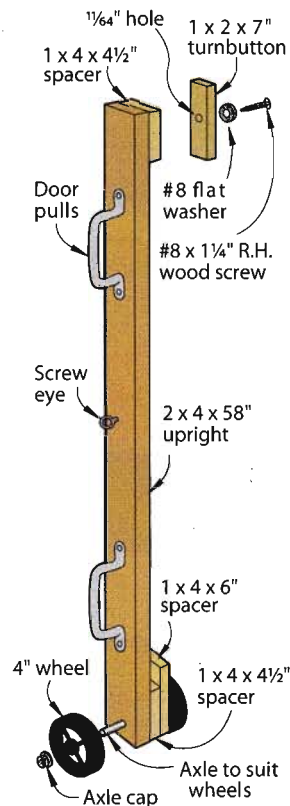
With this simple two-wheel dolly, a pulley, and a length of rope, rolling the sheets into your shop and hoisting them onto your saw table (equipped with a table extension or work supports sufficient to hold a full sheet safely) will seem almost easy. Refer to the illustration below to build the dolly. Drill an 1/64" hole through the center of the 1x2 turnbutton, and attach the part to the center of the top 1x4 block with a #8x1 1/4" roundhead wood screw. The

turnbutton must be free to rotate. Install sturdy pulls, such as those made for shed doors and gates, and place a heavy screw eye with threads at least 1" long near the center of the 2x4.

Hang a pulley above your saw table. (Make sure it can handle the weight of the plywood plus the dolly.) Pass a rope through the pulley and attach a hook or snap to the end.

Now, slide the sheet of plywood into the dolly. Secure it at the top with the turnbutton, and roll the plywood and dolly to the saw. Park it with the 2x4 facing away from the saw, and attach the rope to the screw eye. Now, hoist the sheet and dolly, pulling the rope with one hand, and guide it over the saw table. Lower into position, remove the dolly, and put the rope out of the way. 🌲

—Vern Baldus, Yuma, Ariz.



# GRK makes the right screw for just about anything...

Unless you're looking for a cheap solution to everything



Cabinet Screw



FIN Trim™ Screw

GRK specialty screws, engineered for the job at hand. At GRK we know there are plenty of guys out there who feel "good enough" is just fine. We also know you're not one of those guys. You're ÜberGrade. And no matter what you're about to work on, we make a screw designed for the job.



**GRK**FASTENERS™  
ÜberGrade™

THUNDER BAY, ONTARIO, CANADA  
800/263-0463 - GRKFASTENERS.COM

# Think Fast!



## When your woodworking calls for speed...Think Instant Bond!

Although our core Titebond® Wood Glue product line is ideal for a vast majority of woodworking applications, we realize there is a growing need for faster, and in some cases, "instant" adhesion capabilities. For this reason, we now offer the Titebond Instant Bond line of ethyl-cyanoacrylate-based wood adhesives (a.k.a. super glues), complete with an adhesive activator that accelerates the bonding process.

Titebond Instant Bond is a two-part bonding system that takes between 5-15 seconds to set and 30-60 seconds for initial cure. The adhesives provide a strong, permanent bond and are ideal for hard to reach joints or surface areas that are difficult to clamp. Designed primarily for wood and wood products, Instant Bond adhesives are also very effective on a wide variety of materials and substrates.



1.800.347.4583

For more information and details on the adhesives, visit [www.titebond.com/InstantBond](http://www.titebond.com/InstantBond)

Made in the USA