

WOOD

The World's Leading
Woodworking Resource

Multifunction Workbench

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Plus these Great Plans

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- Cast aluminum gear head
- Includes dust collection bag w/adaptor, 6mm hex wrench, flange wrench, spring hook, and bottle for oil

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T10826 ~~\$69.95~~ SALE **\$59.95**

12 1/2" BENCHTOP PLANER WITH DUST COLLECTION

- Motor: 2 HP, 120V, single-phase, 15A
- Max. cutting width: 12 1/2" • Max. cutting height: 4 1/2"
- Max. cutting depth: 1/2" • Feed rate: 26 FPM
- Number of knives: 2 reversible HSS
- Knife size: 12 1/2" x 1/2" x 1/8"
- Cutterhead speed: 8750 RPM
- Number of cuts per inch: 60
- Approx. shipping weight: 72 lbs.



G0790 ~~\$299.00~~ ONLY **\$285.00**

12" X 18" VARIABLE-SPEED WOOD LATHE

- Motor: 3/4 HP, 110V, single-phase, 5.3A
- Swing over bed: 12" • Swing over tool rest base: 9 1/2"
- Distance between centers: 16 1/2" • Tailstock travel: 3"
- Speeds: 3 • Speed range: 650-3800 RPM
- Tool rest width: 5 1/4" • Spindle size: 1" x 8 TPI RH
- Spindle and tailstock taper: MT#2
- Includes live center, spur center, 3/4" faceplate, & knockout bar
- Overall dimensions: 38 3/4" long x 12" deep x 17" high
- Approx. shipping weight: 89 lbs.

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2 HP DUST COLLECTOR WITH 2.5 MICRON BAG

- Motor: 2 HP, 240V, single-phase, 3450 RPM, 9A
- 6" inlet with removable "Y" fitting with two 4" openings • Impeller: 12 3/4" aluminum
- Portable base size: 21 1/4" x 33 1/2"
- Bag volume: 5.7 cubic feet
- Height (with bags inflated): 78"
- Bag size: 19 1/2" x 33" (2)
- Air suction capacity: 1550 CFM
- Max. static pressure: 11"
- Standard bag filtration: 2.5 Micron
- Approx. shipping weight: 122 lbs.



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2-Stage Cyclone Separator W1049—a \$34.25 value

G1029Z2P ~~\$399.00~~ ONLY **\$345.00**

30TH ANNIVERSARY 14" DELUXE BANDSAW

CAST IRON WHEELS

- Motor: 1 HP, 110V/220V, single-phase, TEFC, 11A/5.5A
- Precision-ground cast iron table size: 14" sq.
- Table tilt: 45° R, 10° L
- Cutting capacity/throat: 13 1/2"
- Max. cutting height: 6"
- Blade size: 92 1/2"—93 1/2" L (1/8"—3/4" W)
- Blade speeds: 1800 & 3100 FPM
- Approx. shipping weight: 247 lbs.



INCLUDES QUICK BLADE RELEASE

FREE SHIPPING! to lower 48 states

G0555LANV ~~\$599.00~~ ONLY **\$545.00**



ULTIMATE 14" BANDSAW

- Motor: 1 HP, 110V/220V, single-phase, TEFC, 11A/5.5A
- Precision-ground cast iron table size: 14" sq.
- Table tilt: 45° R, 15° L
- Cutting capacity/throat: 13 1/2"
- Max. cutting height: 6"
- Blade size: 92 1/2"—93 1/2" L (1/8"—3/4" W)
- Blade speeds: 1500 & 3200 FPM
- Approx. shipping weight: 196 lbs.



INCLUDES QUICK BLADE RELEASE

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WOOD LATHE WITH DIGITAL READOUT

- Motor: 2 HP, 110V, single-phase, 14A
- Swing over bed: 16" • Swing over tool rest: 13"
- Distance between centers: 46"
- 1" x 8 TPI RH headstock spindle
- MT#2 spindle & tailstock tapers
- Spindle bore: 3/8"
- 10 Speeds: 600-2400 RPM
- Indexed headstock rotation at 0°, 60°, 90°, 120°, and 180°
- Overall size: 72 1/4" L x 19" W x 48" H
- Approx. shipping weight: 354 lbs.

DIGITAL SPEED READOUT



G0462 ~~\$625.00~~ SALE **\$595.00**



10" HYBRID TABLE SAW

- Motor: 2 HP, 120V/240V, prewired 120V, single-phase, 60 Hz • Amps: 15A at 120V, 7.5A at 240V
- Precision-ground cast iron table w/ wings: 40 1/2" W x 27" D
- Table height: 35 1/2" • Footprint: 21" L x 19 1/2" W
- Arbor: 3/8" • Arbor speed: 3450 RPM



- Max. depth of cut: @ 90°—3 1/4", @ 45°—2 1/4"
- Rip cap.: 30" R, 15" L
- Overall size: 57 1/4" W x 35 3/8" H x 37 1/2" D
- Approx. shipping weight: 348 lbs.

G0771 ~~\$795.00~~ INTRO. PRICE **\$675.00**

10" LEFT-TILTING SUPER HEAVY-DUTY TABLE SAW WITH RIVING KNIFE

- Motor: 3 HP, 240V, single-phase, 14A, 3450 RPM
- Cutting capacity: 8" L, 26" R
- Max. depth of cut @ 90°: 3"
- Max. depth of cut @ 45°: 2 1/2"
- Table size (with 2 solid extension wings attached): 40" W x 27" D
- Base dimension: 20 1/2" x 20 1/2"
- Approx. shipping weight: 508 lbs.



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DISCOVER

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Welcome to the new WOOD

Have you ever walked into your shop and just sensed that it was time to tidy up and invest some effort into making it work better? After brushing off layers of dust, sorting and stacking piles of lumber, and pitching tool accessories and manuals that no longer have tools, I always feel energized and ready to dive back into building the stuff I love.

I hope you get that same reinvigorated feeling as you peruse this issue of *WOOD*® magazine. We've cleaned up the look and added more pages to provide larger, clearer photos and drawings. And you'll find more pages about *you*, such as the reader project gallery on *page 8*, the shop feature on *page 10*, and the "to-do list" on *page 16*, filled with ideas to help keep your shop ship-shape.

And just as you don't toss out a favorite chisel because it's dull, we've kept—and sharpened—the things you already love about *WOOD*: great woodworking plans (at least six in every issue) for inspiring, practical projects you want to build. We still build every project in our own shop to provide you with complete and accurate step-by-step instructions to guarantee your success regardless of your skill level. No other woodworking magazine can deliver on that promise. And you'll still get the most reliable, unbiased tool reviews in the business, as well as a raft of shop-tested tips and techniques.

The creative crew you see *below* has invested many long hours brainstorming ideas, poring over research, and laying out (and re-laying out) articles, leaving no stone unturned as they analyzed every element to make *WOOD* better for you. Personally, I think they hit the ball out of the park.

But all that really matters, ultimately, is what *you* think. Because this is your *WOOD* magazine. Positive, negative, or otherwise, I'd love to hear your comments, so drop me an e-mail when you have a chance. Thanks!

See you in the shop!

Dave Campbell
dave.campbell@meredith.com

The creative team that works hard to make every issue of *WOOD* right for you. *Front, from left:* Nate Granzow, Kurt Schultz, Craig Ruegsegger, Lorna Johnson, Sheryl Munyon, and Karl Ehlers. *Back, from left:* me, John Olson, Lucas Peters, Bob Hunter, and Kevin Boyle.



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KNOW YOUR WOOD

This stuff grows on trees. So learn a little about the plant behind the product and you'll improve both your lumber-purchasing savvy and your woodworking skills. Start here:

Lumber lessons from the log. woodmagazine.com/lumberlessons

Learn to deal with defects. woodmagazine.com/dealwithdefects

How wood moves. woodmagazine.com/howwoodmoves

What wood is that? woodmagazine.com/whatwoodisthat

UNDER PRESSURE

Pressure makes diamonds, baby! See which clamps shine like jewels and which ones are lumps of coal.

woodmagazine.com/shinebaby



TRACK SAW

- Motor: 120V, 9A, 1100 watt, 5500 RPM
- Blade diameter: 160mm (6¼")
- Cutting capacity:
With track: 1¾" @ 90°, 1⅞" @ 45°
Without track: 2½" @ 90°, 1⅞" @ 45°



W1832
Track Saw Master Pack
Includes: Saw, Guide Rail,
and Accessory Pack



W1835 Track Saw only
D4363 Accessory Pack

D4362 Guide Rails

14" BANDSAW

- Motor: 1 HP, 110V/220V
- Precision-ground cast iron table size: 14" x 14" x 1½"
- Blade size: 93½" (⅞" to ¾" wide)
- Cutting capacity 13½" (throat)
- Cast iron frame and wheels
- Ball bearing blade guides
- Includes fence and miter gauge



*Feature
packed, and an
incredible value*



W1706 14" Bandsaw

PLANER MOULDER with Stand

- Motor: 2 HP, 240V, single-phase, 10.8A, 3450 RPM
- Precision-ground cast iron table size: 14⅞" x 10" x 7⅞"
- Max planing width: 7"
- Max planing height: 7½"
- Cuts per minute: 14,000
- 2 HSS knives



W1812 Planer Moulder with Stand

10" TABLE SAWS with Riving Knife

- Motor: 3 HP, 220V, single-phase motor
- Precision-ground cast iron table size: 27" x 40¼"; (W1819) 53⅞" with extension; (W1820) 74" with extension
- Max. rip capacity: (W1819) 29½", (W1820) 50"
- Camlock fence with HDPE face



*Free 10"
Carbide-Tipped
Blade*

W1819
SHOWN



W1819 10" Table Saw

W1820 10" Table Saw with Long Ext. Table

¾ HP 13" BENCH-TOP DRILL PRESS

- Motor: ¾ HP, 110V, 1725 RPM
- Overall height: 38"
- Spindle travel: 3¼"
- Swing: 13¼"
- Drill chuck: ⅝"
- Speeds: 12, 250-3050 RPM
- Table: 12⅞" dia.
- Table swing: 360°
- Table tilt: 45° left & 45° right



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W1668 ¾ HP 13" Bench-Top Drill Press

6" x 12" HEAVY-DUTY COMBINATION SANDER

- Motor: 1½ HP, 120V, single-phase, 10.5A, 1725 RPM
- Precision-ground cast iron tables (2)
- Sanding belt size: 6" x 48"
- Belt Speed: 1066 FPM
- Disc size: 12"
- Disc speed: 1725 RPM



*Made in an ISO 9001
factory*

W1712 6" x 12" HD Combination Sander



OSCILLATING SPINDLE SANDER



- Motor: ½ HP, 120V, 3.5A
- 58 oscillations per minute
- Stroke length: ⅝"
- Sanding drum length: 4⅞"
- 2000 RPM (½" spindle)
- Table size: 15" L x 11½" W
- Dust port size: 1½"
- Switch: Paddle ON/OFF with disabling key
- CSA certified meeting CSA C22.2 #71.2-10 and UL 987-7 standards

VERY POPULAR!



W1831 Oscillating Spindle Sander

WALL DUST COLLECTOR

- Motor: 1 HP, 110V/220V, single-phase
- Air suction capacity: 537 CFM
- Bag capacity: 2 cubic feet
- Standard bag filtration: 2.5 micron
- Static pressure: 7.2"



W1826 Wall Dust Collector

3-SPEED HANGING AIR FILTER

- Motor: ⅞ HP, 120V, 60Hz, 1A, single-phase
- Air flow: 260, 362, and 409 CFM
- Outer filter: 5.0 micron
- Inner filter: 1.0 micron



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AND REMOTE!*

W1830 Hanging Air Filter

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SOUNDING BOARD

YOUR VOICE



Perfect scribing? It's in the groove

Regarding the shop tip "Hole in one makes an above-par marking gauge" that appeared in issue 231 (March 2015), there is an easier way to accomplish the same thing without drilling a hole in your combination square. Simply place the blade with the factory-machined slot facing down. Tuck the tip of a pencil in the slot and scribe the line.

—Terry Godar
Mechanicsburg, Pa.

Readers respond to scamming scum

We received hundreds of bogus renewal offers from readers after the "Skip the scams" editorial in **issue 231**.

Thanks for your editorial exposing these activities and including their names so I and others know they are not legitimate.

—Joel Davis
Findlay, Ohio

I have received many of these phony subscription renewal letters over the years and always wished somebody would do something about them. Good luck.

—Richard Thomas
Stafford, Va.

I hope someone nails them to the wall.

—George Wait
Jackson, Mich.

If there is any way I can help you prosecute these [expletive], please let me know.

—Kurt Sutton
Nacogdoches, Texas

Here ya go. Give 'em this as a suppository.

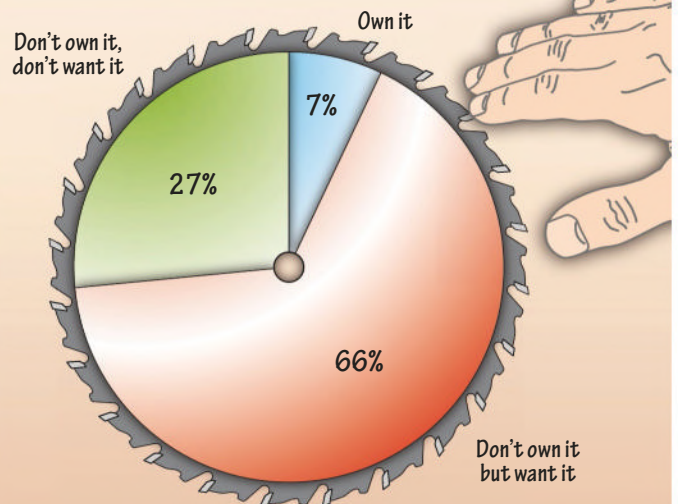
—Ed Moore
Indianapolis

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Woodworkers give thumbs-up to finger-saving saws

The debut of Bosch's REAXX (see page 80) tablesaw recently reignited discussions about skin-sensing tablesaw safety technology, including SawStop. We asked woodworkers about their acceptance of this technology.

Do you own/would you like to own a tablesaw with skin-sensing safety technology?



Source: April 2015 WOODPulse Survey

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SOUNDING BOARD

YOUR PROJECTS



An intricate marquetry jewelry cabinet built by **Jeff Breen** of Rockwood, Ontario.



Mark Fenton of Clinton, Utah, lucked into a load of koa and, after months of looking for the right plan to do justice to the beautiful wood, finally found it: the Morris chair from issue 212 (July 2012).



Modifying plans for the rolling workshop storage (issue 167, Dec/Jan 2005/2006), Eagle Scout **Joseph Szpila** of Bridgewater, New Jersey, crafted a "comfort cart" for the Goryeb Children's Hospital.



Larry Wise of Minnitaki, Ontario, designed this Adirondack swing to emulate the curve of a prosthetic leg belonging to a soldier on his son's military base. He then sold it and donated the proceeds to Wounded Warrior Project.

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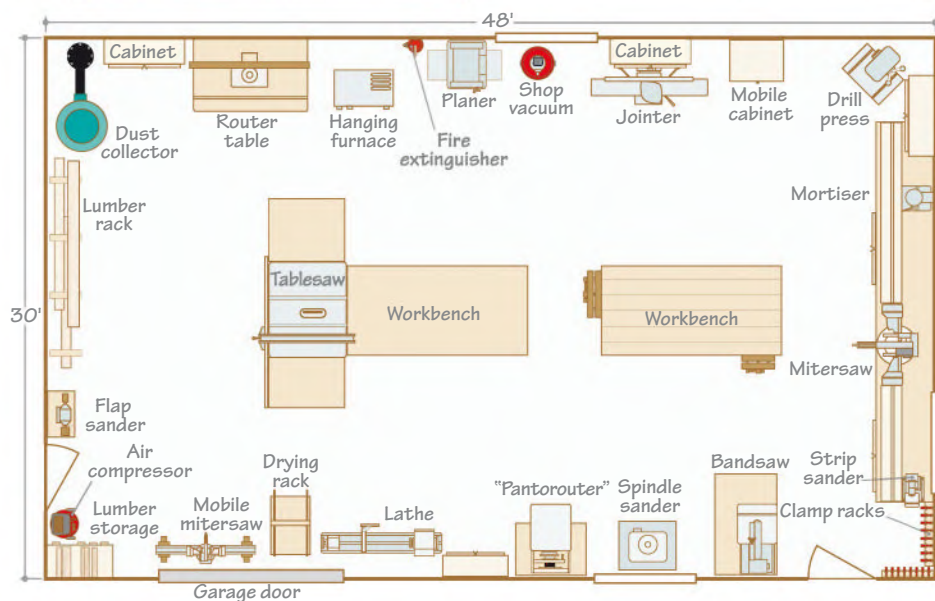
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SOUNDING BOARD

YOUR SHOP



There's nothing fancy about the fixtures in Wisconsin cabinetmaker John Kutya's 1,440-square-foot shop. Most are made of inexpensive dimensional lumber and sheet goods. But they do the job, and their cost efficiency meant John was left with enough savings to buy better tools. One of the more peculiar of those tools is John's "pantorouter" (*inset*)—a shop-made mortise-and-tenon-routing machine. "I built our dining-room table and 10 chairs, and this machine saved me a ton of hours." 🌲

Show us your shop

Send digital photos of your shop to woodmail@woodmagazine.com and we may showcase it in a future issue of WOOD®!

Best Fence™

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BF \$299

- 1 - Saw stand w/ adj. legs
- 1 - 64" Fence with scale
- 2 - Adjustment Post
- 1 - Precision Saw Stop



WATCH THE VIDEO!

BF 1 \$399

- 1 - Saw stand w/ adj. legs
- 1 - 64" Fence with scale
- 2 - Adjustment Post
- 1 - Precision Saw Stop
- 4 - Wheels with axles



Sliding Adjustment Post

BF 2 \$499

- 1 - Saw stand w/ adj. legs
- 2 - 64" Fence with scale
- 4 - Adjustment Post
- 1 - Precision Saw Stop
- 4 - Wheels with axles



Adjustable legs

BF 3 \$599

- 1 - Saw stand w/ adj. legs
- 3 - 64" Fence with scale
- 4 - Adjustment Posts
- 1 - Precision Saw Stop
- 4 - Wheels with axles
- 1 - Accessory Bag
- 1 - Male/Male Connector
- 1 - Crown Molding Stop
- 1 - Cut List Stand
- 1 - UpperHand
- 1 - Tripod



Cut list stand

BF 4 \$799

- 1 - Saw stand w/ adj. legs
- 4 - 64" Fence with scale
- 4 - Adjustment Post
- 1 - Precision Saw Stop
- 4 - Wheels with axles
- 1 - Accessory Bag
- 2 - Male/Male Connector
- 2 - Crown Molding Stop
- 1 - Cut List Stand
- 2 - UpperHand
- 2 - Tripods
- 1 - Mag Power Mount
- 1 - Work Table



Best Fence PRO 4 system

Compact and mobile!



PROBLEM

Clunky and cumbersome



SOLUTION

Precise and mobile



Feature

Bag keeps accessories on hand



Feature

Precision stop
Seconds to calibrate



Feature

Roll it anywhere!

Q Do I need both a drawknife and spokeshave?

A spokeshave seems to be the little brother of a drawknife, and I've seen both used to make spindles. But do they work the same? Should I add both to my tool collection?

— Dennis Royster, Camden, N.J.

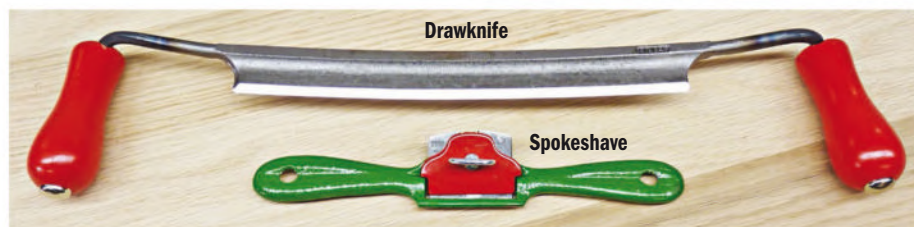
A You'll see both tools used for shaping spindles, chair legs, and other curved forms, Dennis, but they work differently. A drawknife removes a lot of wood quickly with little finesse, so unless you prefer hand-work for roughing out workpieces, you may not find much use for a drawknife.

A spokeshave (*right*) more closely resembles a hand plane, with its adjustable, replaceable blade fitted tightly to the tool's body for finer shavings. The short sole of a spokeshave comes flat or rounded, making it a good choice for shaping and smoothing curved and flat surfaces that other tools can't, such as cleaning up a cabriole leg after bandsawing it to rough shape. Unlike a drawknife, you can push or pull a spokeshave, depending on grain direction and the most comfortable working position.

As the name suggests, you grasp the handles of a drawknife (*right*) and draw the single-bevel cutting edge toward you. As with a bench chisel, you use the tool bevel-up for hogging off large chips, and flip it over with the bevel down for finer, controlled work. 🌲



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SHOP TIPS

WORK FASTER, SMARTER, SAFER

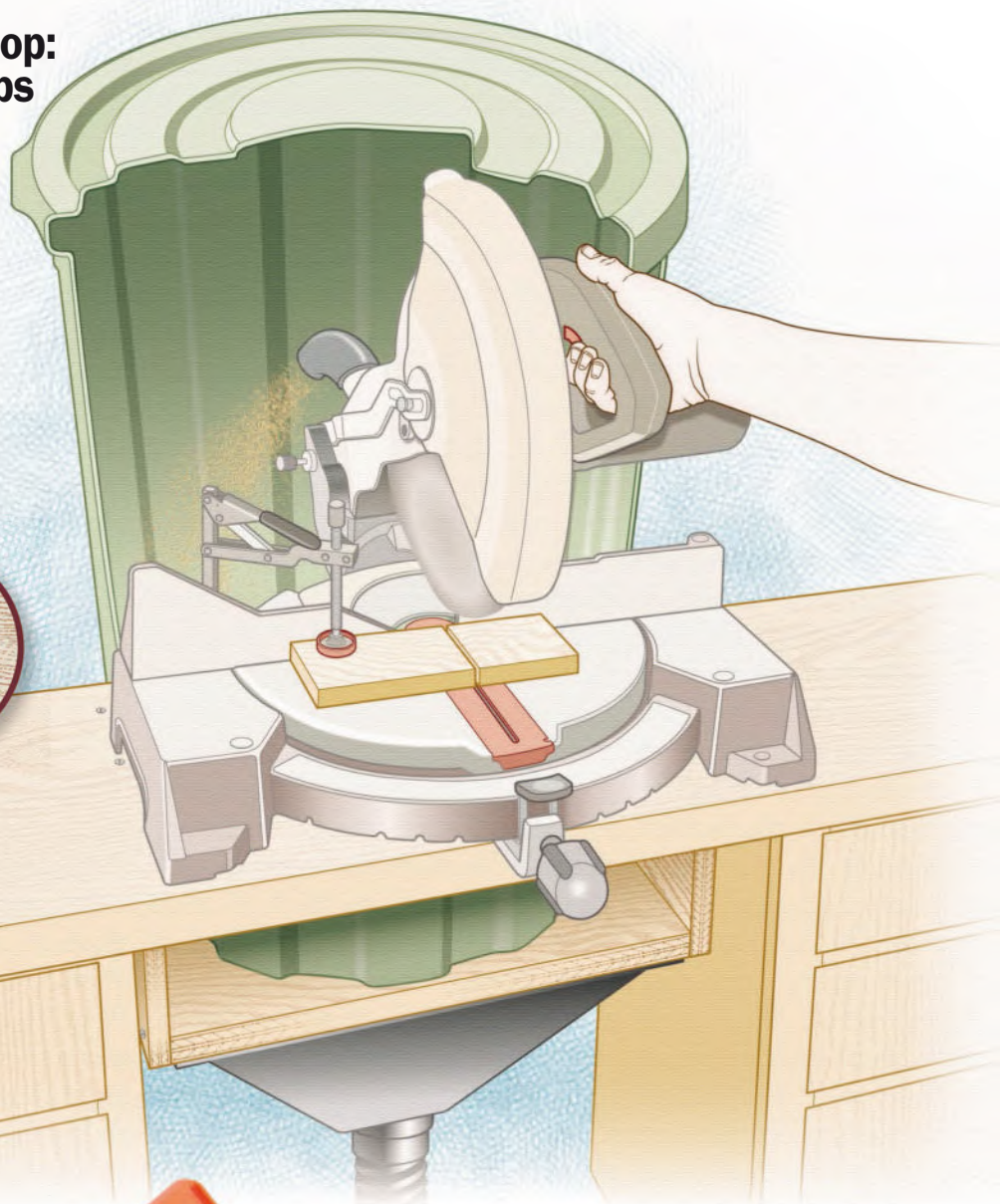
From back stoop to backstop: This trashy tip catches chips

Mitersaw cuts spray chips and dust everywhere. Capture the debris by surrounding your saw: Just cut away the front of an inexpensive plastic trash can and slide it over your mitersaw stand or workbench. Cut through the base of the can and bolt on a Big Gulp dust hood (no. DBGULP, \$15.95, pennstateind.com) for dust collection, and you'll find that you never need to take out this trash can again.

—Dale Nesheim, Sioux Falls, S.D.



For sending this issue's **Top Shop Tip**, Dale receives \$300 worth of Jorgensen CabinetMaster parallel-jaw clamps from Pony Tools.



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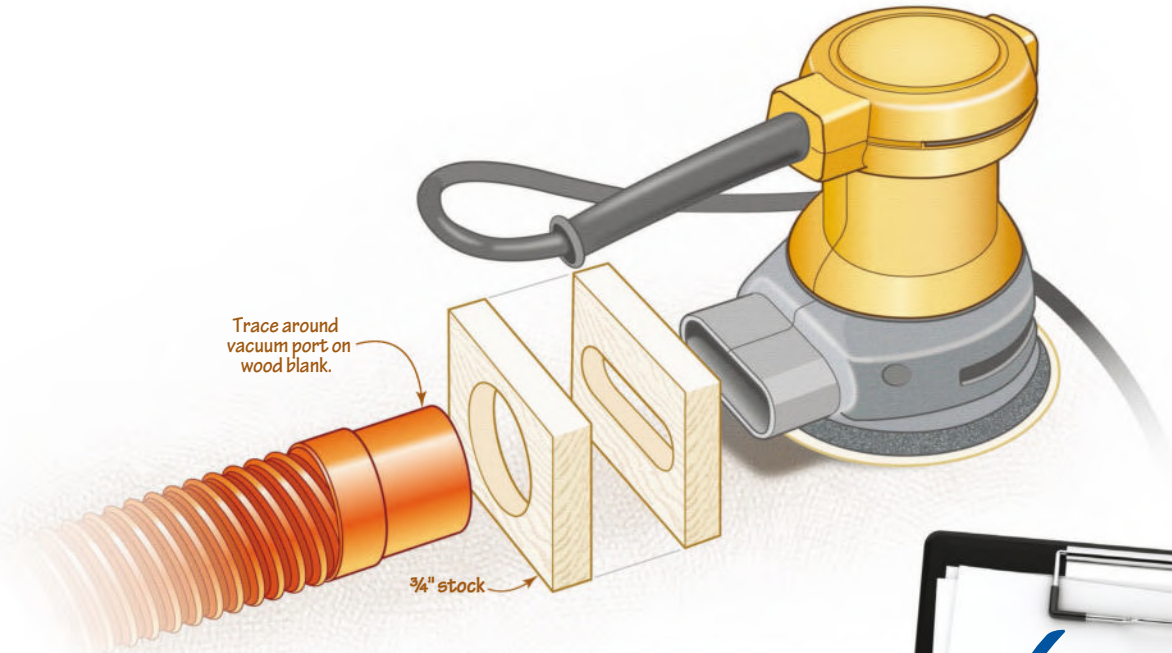
SHOP TIPS

Play matchmaker with dust-collection hoses

One of the most frustrating parts of setting up good dust collection is the lack of standard fitting sizes. Often, I resorted to duct tape to join a hose and tool port. Then I came up with these simple adaptors. Simply trace the diameters of the port and hose on scrapwood

blanks, cut or rout the holes to size, and sand the inside profile until you get a snug friction fit over the hose and port. Glue the two pieces together face-to-face, and you've got a cheap, effective adaptor.

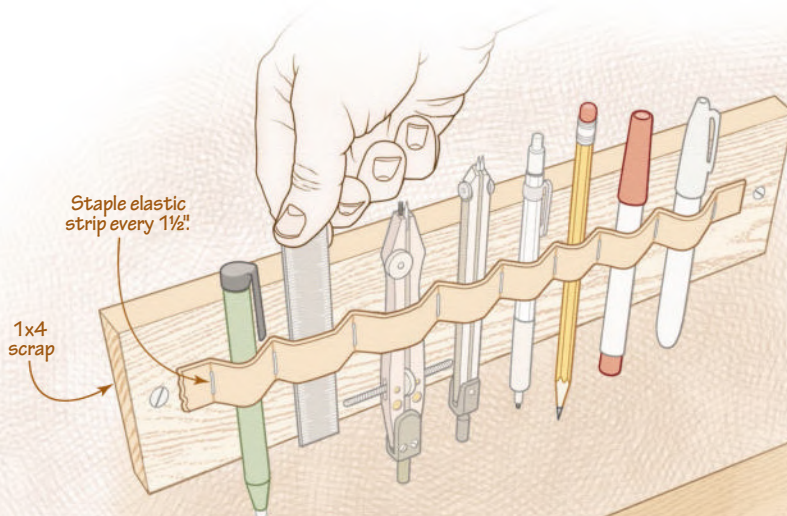
—Bill Tumbleson, Halstead, Kan.



It's not a stretch to say this tool keeper holds tight

Rather than let my small tools—pencils, compass, small rules, etc.—slide around inside a drawer, I keep them easily accessible in this simple caddy. Just staple an elastic band to a piece of hardwood, adding staples as dividers every inch or so along its length, before mounting the board on the wall.

—Benjamin Kauffman, Chesapeake, Va.



continued on page 18

WOOD magazine September 2015

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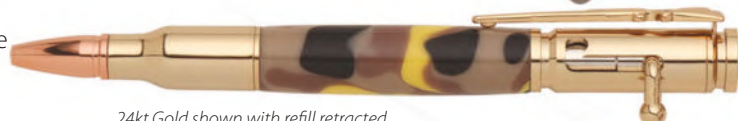
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24kt Gold shown with refill retracted

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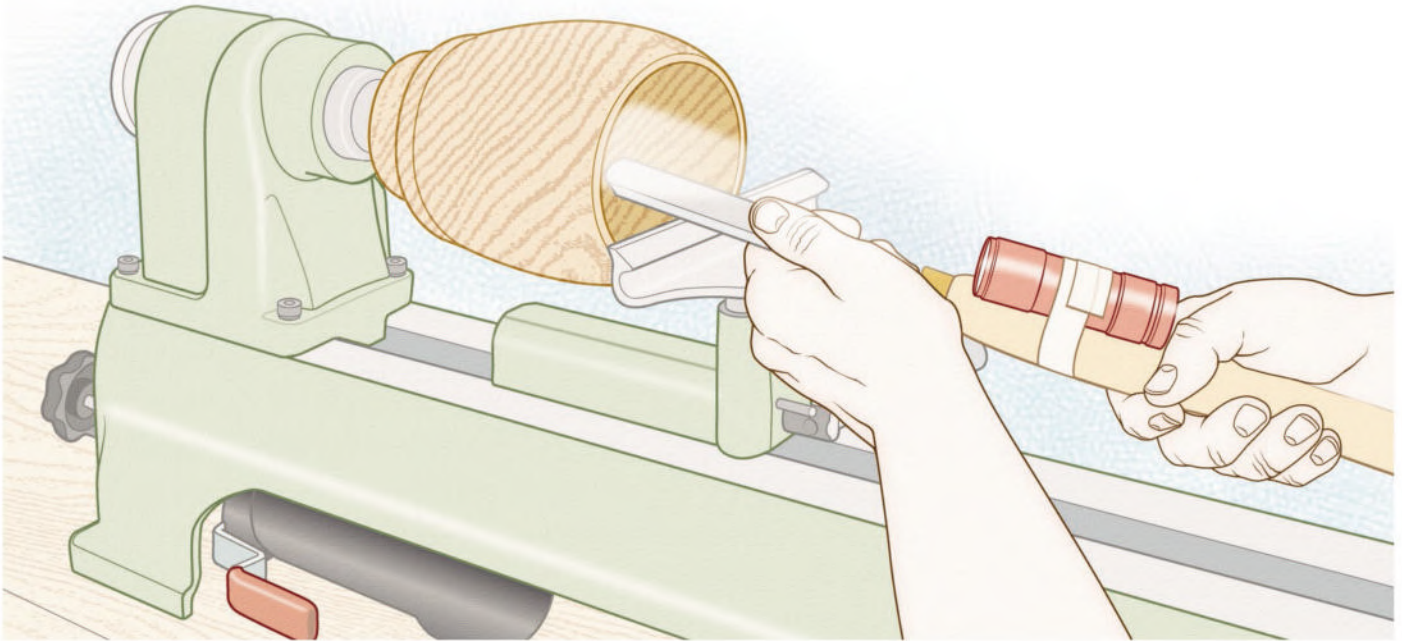
	Item #	1-4	5-24	25-49	50+
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SHOP TIPS

Strap on a light to improve your “in” sight

When turning deep, hollow vessels, the dark interior made it difficult to see the cutting section of my tool. By taping a small LED flashlight to the handle of the tool, I illuminate the interior without sacrificing my grip or wasting time trying to position a stationary light to do the job.

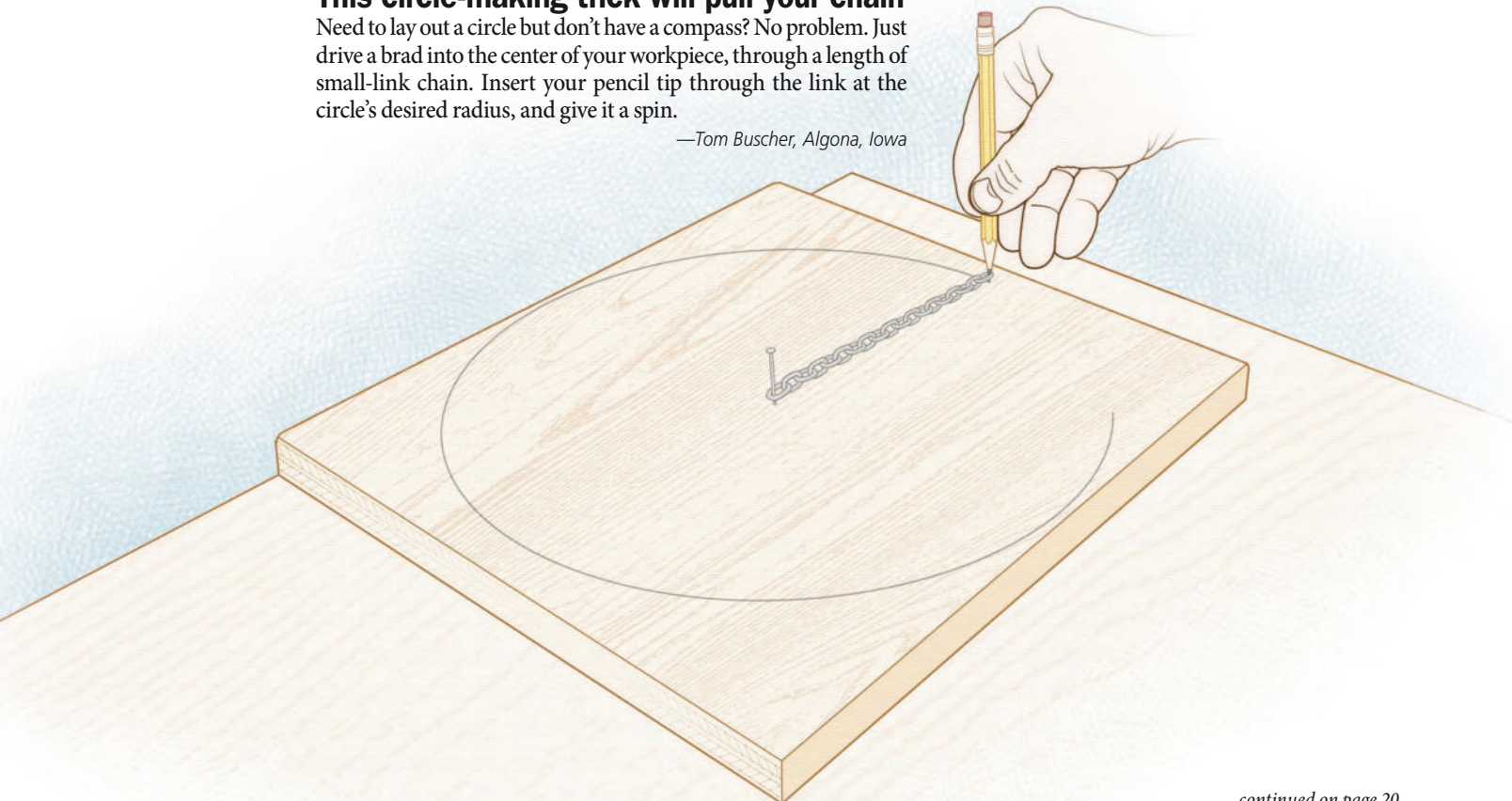
—Harry West, Tucson, Ariz.



This circle-making trick will pull your chain

Need to lay out a circle but don't have a compass? No problem. Just drive a brad into the center of your workpiece, through a length of small-link chain. Insert your pencil tip through the link at the circle's desired radius, and give it a spin.

—Tom Buscher, Algona, Iowa



continued on page 20

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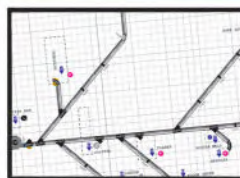
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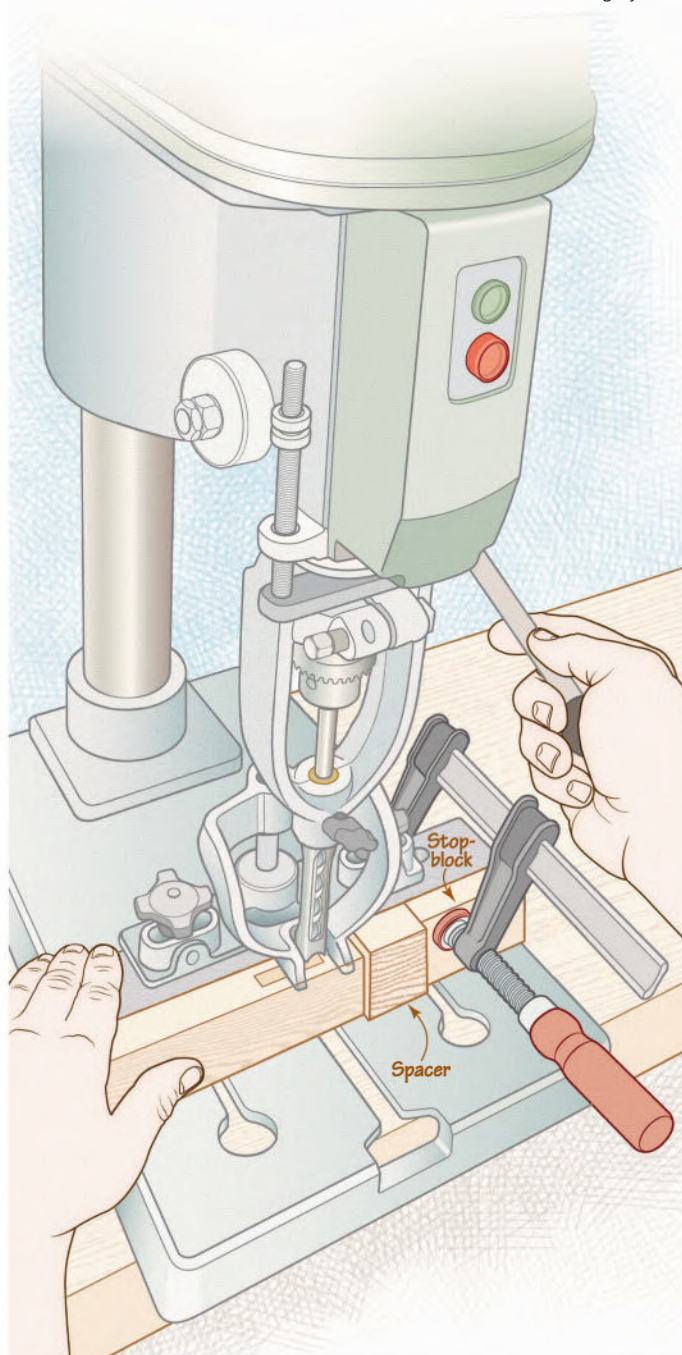
SHOP TIPS

To make matching mortises, set limits

I love using my benchtop mortiser to plow lots of slots quickly, but laying out all of those mortises can be a nuisance. This simple trick not only eliminates most of the marking, but also ensures all the mortises match perfectly.

Cut a spacer as long as your desired mortise, minus the mortising chisel's width. Position and clamp a stopblock to the mortiser's fence so that the chisel will cut the first end of the mortise. Make the first cut. Then insert the spacer between the workpiece and the stopblock. Make the next cut on the opposite end of the mortise. Clear the space between the two cuts to complete the mortise. Now, you can reuse the spacer for subsequent identical mortises. 🌲

—Charles Mak, Calgary, Alta.





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A Dream Shop Without a Nightmare Budget

by Ruth Walker, thewoodgal.com



When I began visiting woodworking forums to research and solicit ideas for my dream shop, I quickly found there was no shortage of opinions (some downright fanatical) on how I should spend my money. But because my shop is also a source of income, I had to prioritize those features that keep me flexible, keep me working, and keep my business solvent. So I ran every big-ticket item through the filter of those priorities. Not only did I end up with a fantastic working shop, but I also managed to create a wonderful retreat I'll enjoy for years to come. And all without breaking the bank. Here are some of the critical decisions that I had to make about the most hotly debated wish-list items I was considering.

Do I need 200-amp electrical service? Every piece of online advice I got seemed to shout an emphatic "Yes!" My electrician said, "No." I have to admit I knew very little about what my electrical needs might be. After talking at length about what the shop would be used for, we determined I'd most likely be running no more than two big pieces of equipment at a time (my big 12" jointer and the 3-hp dust collector, for example). He told me he'd be happy to give me 200-amp service, but was honest enough to tell me I just didn't need it for my uses.

Instead, I invested the money in forming a central channel in the shop's concrete floor, *right*, which will future-proof the shop somewhat should my electrical and dust-collection needs change.



The channel in the center of the shop is sized to carry wiring and future dust-collection ducting. And a 2×12 is the perfect size for a cap.



An insulated slab along with additional insulation in the ceiling means my shop only requires a woodburning stove for winter heat and an open window for summer cooling.

Do I need an in-shop bathroom? Though another hotly debated, top-of-the-list item on the forums, the \$5,000 rough quote to add the bathroom and tie it into the sewer line made the decision for me. It was a luxury I just couldn't afford. Since my home is 25 steps away, the two minutes I would save when nature called weren't worth the cash.

Instead, I invested that money into under-slab insulation and additional blown-in insulation in the cathedral ceiling. Iowa can deliver some extreme temperatures, both in the winter and summer. This keeps me working comfortably for months rather than two additional minutes.

For "running water," I added a rain barrel on a shop-made stand. Hooked to a wash basin which empties into the floor drain, the barrel lets me clean up before heading into the house and doesn't take up as much floor space as a dedicated bathroom would have.

Do I need a spray booth? This was one luxury on which my forum friends and I agreed. Yes! My commissioned pieces are often large and on deadline, so spraying is my best finishing option. But I was having so much difficulty settling on a spray-booth size that I decided to defer the matter until after the shop was built and I'd had time to work in it awhile.

My temporary solution, however, might just become a permanent one. I acquired a discarded 10x10' metal gazebo frame, draped \$50 worth of tarps over the top of it, and secured them with binder clips. A barn fan exhausts through the wall on one end of the booth to give me a perfect place to spray without exposing the rest of my shop to overspray and fumes.

And the best part: Should I need to expand the footprint of the booth, I can easily build a temporary addition with more tarps and a few 2x4s. 🌲



My makeshift plumbing in front of my makeshift spray booth. Both temporary solutions saved me money and precious floor space and are likely to become permanent.



Ruth Walker builds commissioned furniture in her dream shop and blogs about her woodworking and gardening at thewoodgal.com. Her shop was recently featured in America's Best Home Workshops 2015. You can pick up a copy at woodstore.net/ABHW2015.

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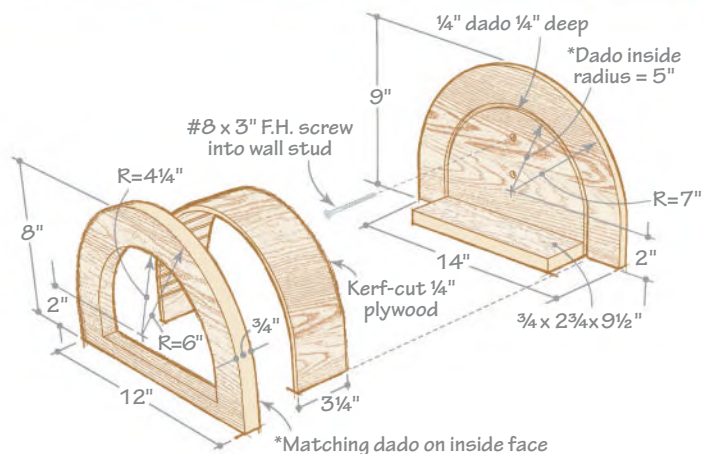
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Air Hose Hanger

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Note: For easiest bending, the plywood face grain should run along its shortest dimension.

This simple caddy tames unruly air hoses and accessories. To build it, start by routing a dado in the front and back arch blanks using a router trammel. Bandsaw the arches to shape and sand the edges smooth. Then, cut a series of $\frac{3}{16}$ "-deep kerfs in a strip of $\frac{1}{4}$ " plywood to bend it to fit inside the dados. Trap a shelf between the front and back to hold accessories—utilizing space that would otherwise be wasted. 🌲



Project design: **Dave Howerton**
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Start with sturdy legs

1 From 1 1/4"-thick stock, cut four 3 1/2"x17 1/4" blanks for the legs (A). Lay out and cut the mortises and notch in each leg [Drawing 1]. We used a mortising machine to make

the mortises, but a drill press and a 3/8" Forstner bit, followed by a chisel to square the sides, also works.

2 Lay out the arc on each leg, then bandsaw and sand to the lines. Sand the legs to 220 grit. Save the cutoffs to use as clamping aids later.

► Don't have 1 1/4" stock? Laminate two 3/4"-thick pieces to get the needed thickness.

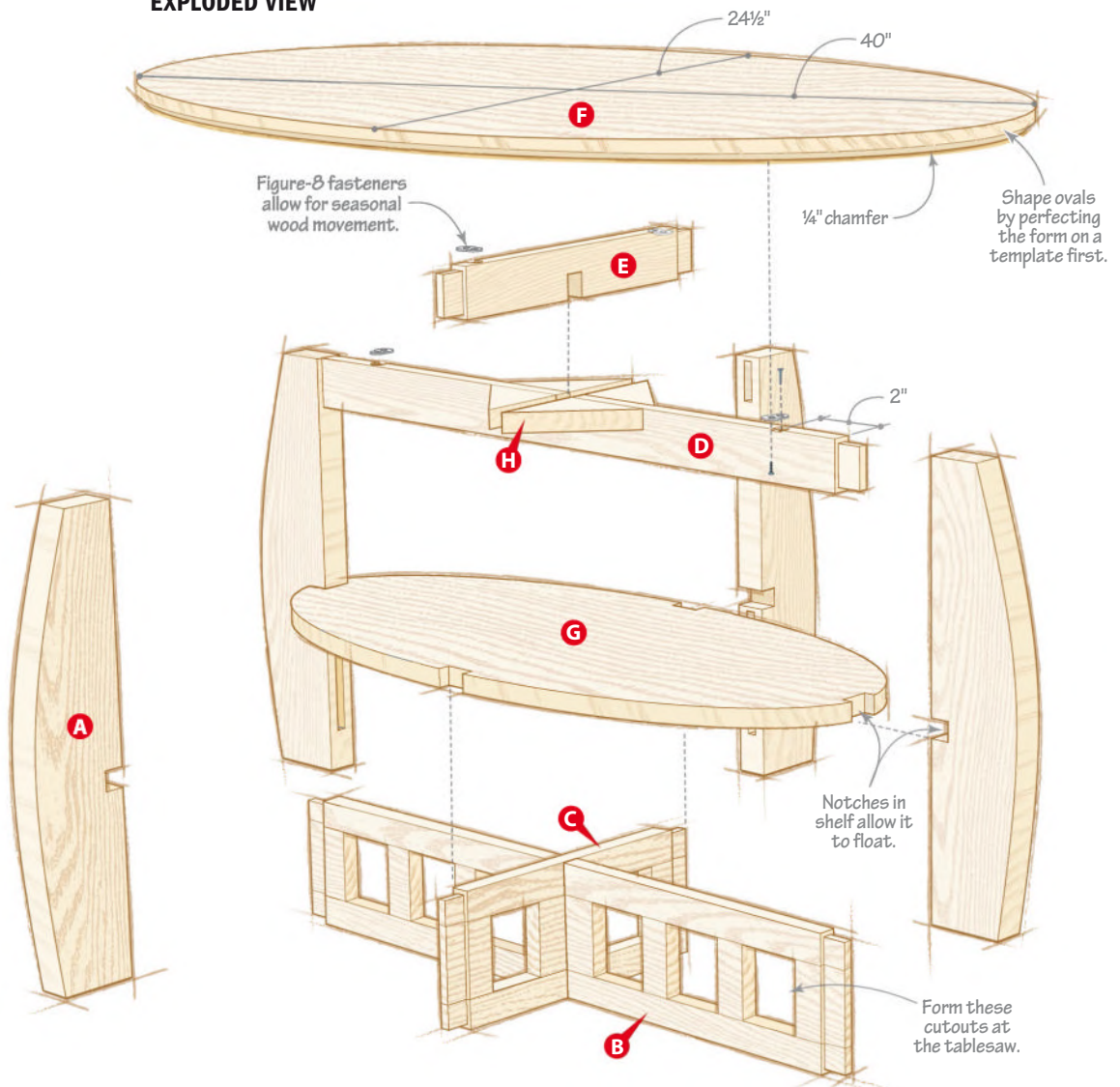
► Mark smooth arcs using a fairing stick. woodmagazine.com/fairing

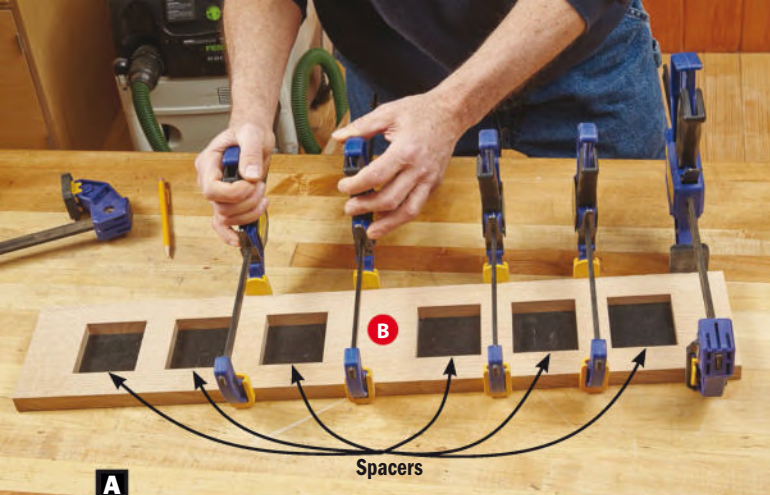
Rip and reglue the rails

To perfectly shape the cutouts in the lower rails (B, C), you'll rip off the top and bottom strips, remove the waste, then glue the rails back together.

1 Cut the lower rails 1/4" wider than listed in the **Materials List** on page 30. Rip a 1 1/4"-wide strip from each edge, marking the parts to ensure you can return them to their original orientation. Crosscut the inside

EXPLODED VIEW





A

Glue up the lower rails. With the lower rail assemblies laid out, apply glue to the inside strips' edges. Make sure the assemblies' faces and ends are flush before clamping.



B

Route the top and shelf. When template-routing the top (F) and shelf (G), use a sharp, bearing-guided straight bit and approach the end grain slowly to avoid tear-out.

strips to create the openings where shown in **Drawing 2**. Again, keep track of the orientation of the parts.

2 From scrap stock, cut eight 2 $\frac{5}{8}$ "-wide spacers. Insert them between the cross-cut inside strips and glue up the lower rail assemblies (B, C) [Photo A].

3 Cut the upper rails (D, E) to size [Drawing 3]. Mount a dado set $\frac{3}{16}$ " high in your tablesaw and attach auxiliary fences to your miter gauge and rip fence. Cut the tenons on the rails (B, C, D, E) [Drawings 2a and 3a], followed by the half-lap notches centered on the length of each rail. Then, sand the rails to 220 grit.

Tip! Get perfect half-laps by cutting each one a hair shallower than the final size and sneaking up to the perfect depth.

Make the top and shelf

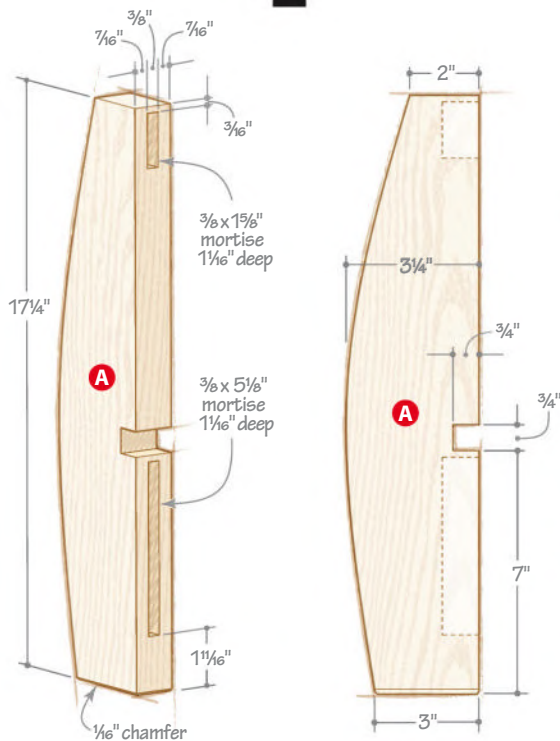
1 To make the top (F) and shelf (G), you'll use templates to help you rout the parts to shape. (See "Nail a perfect oval," next page.) Trace the templates onto your part blanks, cut just outside the marked template lines, then sand precisely to the line for a curved edge that looks and feels perfectly smooth.

2 Glue up blanks for the top (F) and shelf (G) 1" oversize. Transfer the shape of the top and shelf to the blanks using the templates. Bandsaw $\frac{1}{32}$ " outside the marked line. Attach the templates to the panels with double-faced tape and flush-trim the panels to final size [Photo B].

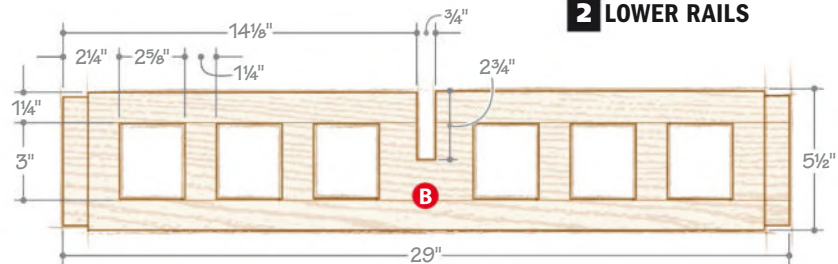
3 Remove the template for the shelf (G). Mark and jigsaw four centered notches [Drawing 4]. Sand the shelf to 220 grit.

► Cutting $\frac{1}{32}$ " outside your outline leaves just enough extra material to remove with a router and bearing-guided straight bit. The result: a perfectly shaped top.

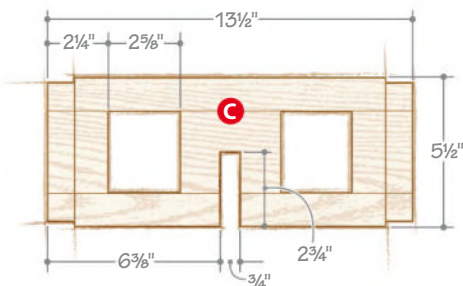
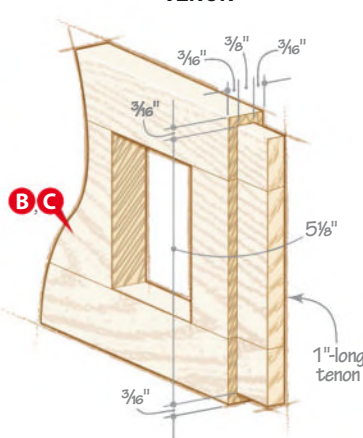
1 LEG



2 LOWER RAILS



2a LOWER RAIL TENON



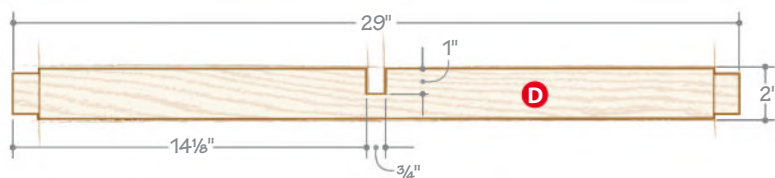
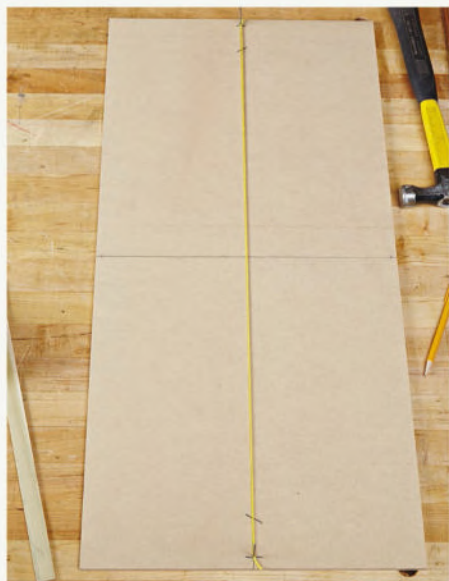
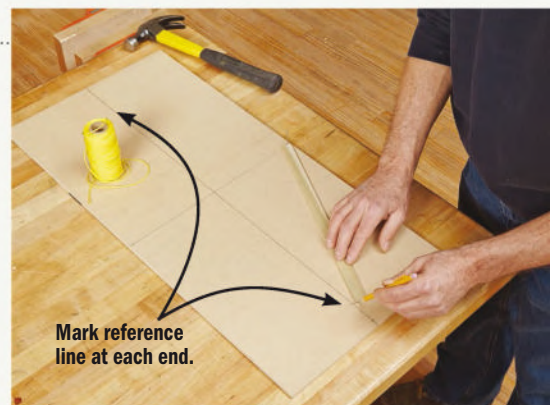
SHOP TIP

Nail a perfect oval

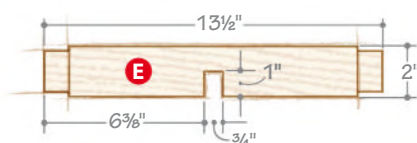
To make the oval templates needed for the top (F) and shelf (G), cut a $25\frac{1}{2} \times 41$ " blank and a $14\frac{1}{2} \times 30$ " blank from $\frac{1}{4}$ " hardboard. Draw perpendicular lines that intersect in the exact center of each template's face. Working on one template at a time, cut a narrow scrap as long as the width of the finished oval **[Materials List]**. Tack a nail at the end of the short axis line, butt the scrap against the nail, and mark each end of the long axis (*right*). Remove the nail.

Cut a piece of mason's line (found at most home centers and preferable for this application because it can be held by a finishing nail without unraveling) slightly longer than the template. Drive a nail through each end of the string at the ends of the long axis (*below*), ensuring the string is pulled taut. Pull the nails from the template, keeping the string attached to them, and nail them in place at the two reference marks.

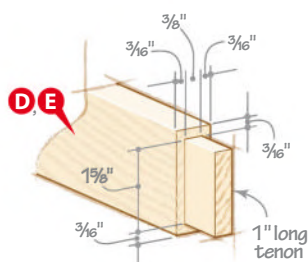
Place a pencil against the string, resting on an outside mark. Carefully draw half of the oval, keeping consistent pressure against the string (*below center and right*). Repeat for the other half. Then, repeat for the other template.



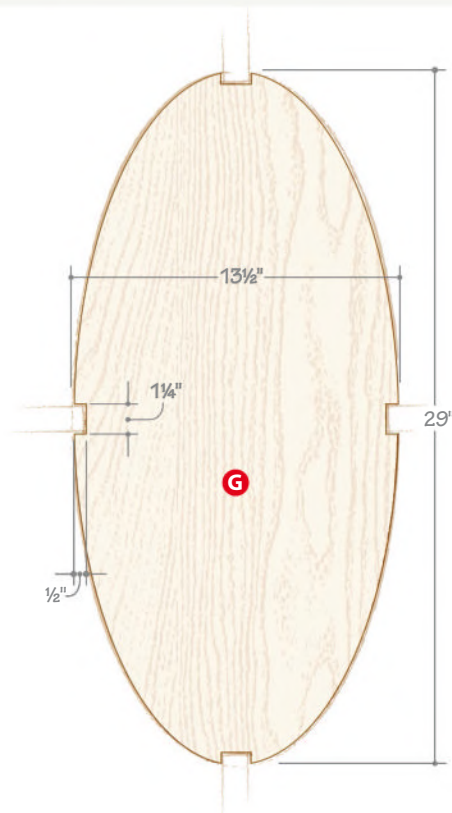
3 UPPER RAILS

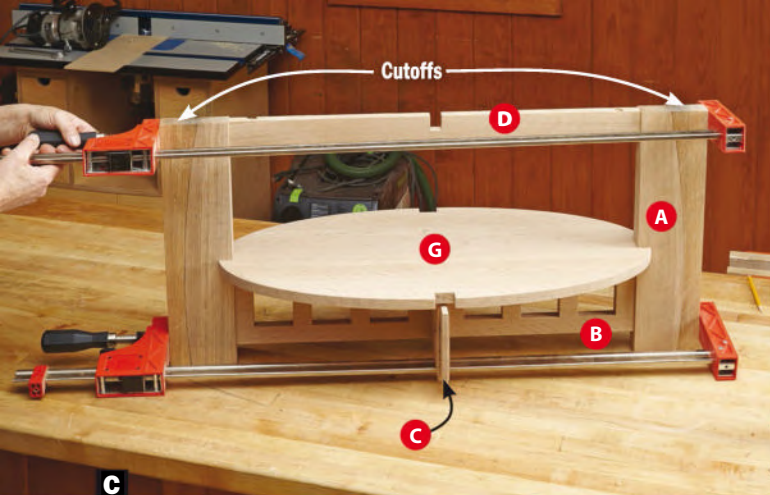


3a UPPER RAIL TENON

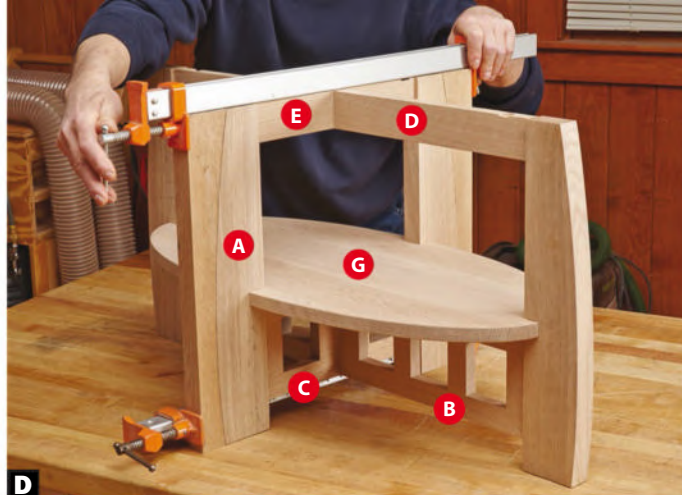


4 SHELF





C **Begin the assembly with a dry run.** Fit the tenons on the two long rails (B, D) into one of the legs (A). Fit the lower short rail (C) into the lower long rail's notch. Place the shelf (G) into the leg's notch. Add the second leg, using the leg cutoffs as clamp aids.



D **Complete the base assembly.** Apply glue to the tenons of the two short rails (C, E) and slide on the two remaining legs (A), clamping them in place.

Put it all together

1 Gather two legs (A) and their corresponding cutoffs, the lower rails (B, C), the long upper rail (D), and the shelf (G). Dry-assemble the base [Photo C], and if everything fits well, glue the parts together.

2 After the glue dries, glue the upper short rail (E) to the upper long rail (D). Then, glue on the last two legs (A) [Photo D].

3 Cut the braces (H) to size [Drawing 5] and glue them in place [Exploded View]. Drill four $\frac{3}{16}$ " recesses for the figure-8 fasteners in the top edge of the upper rails (D, E).

4 Retrieve the top (F) and chamfer its bottom edge. Finally, finish-sand the top to 220 grit and apply a finish to all parts. We used Varathane's Gunstock stain followed by three coats of Old Masters semigloss oil-based polyurethane, sanding between coats

with 800-grit sandpaper. When the finish dries, install the top. Now, kick back and admire your work. 🌲

► Try a no-fume Arts and Crafts-style finish. woodmagazine.com/artsandcraftsfinish

Produced by Nate Granzow with Brian Bergstrom

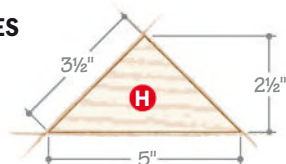
Project design: Kevin Boyle

Illustrations: Lorna Johnson, Kurt Schultz



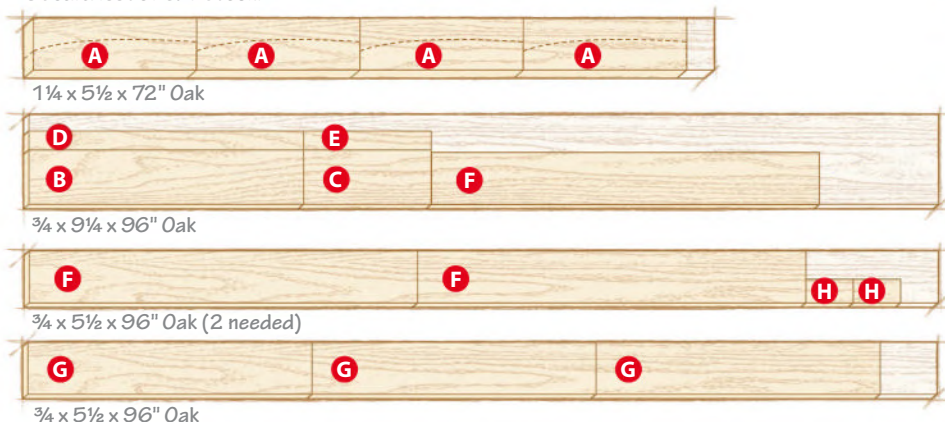
► Stay tuned for a Limbert-style end-table plan in the November issue.

5 BRACES



Cutting Diagram

Requires 18 board feet of 4/4 and 5 board feet of 6/4 stock.



Materials List

Part	FINISHED SIZE			Matl.	Qty.
	T	W	L		
A* legs	1 1/4"	3 3/4"	17 1/4"	0	4
B* long lower rail	3/4"	5 1/2"	29"	0	1
C* short lower rail	3/4"	5 1/2"	13 1/2"	0	1
D long upper rail	3/4"	2"	29"	0	1
E short upper rail	3/4"	2"	13 1/2"	0	1
F* top	3/4"	24 1/2"	40"	0	1
G* shelf	3/4"	13 1/2"	29"	0	1
H braces	3/4"	2 1/2"	5"	0	4

* Parts initially cut oversize. See the instructions.

Material key: O—quartersawn white oak.

Supplies: Figure-8 fasteners (4), mason's line.

Blade and bits: Dado blade; 45° chamfer, flush-trim router bits; $\frac{3}{8}$ ", $\frac{9}{16}$ " brad-point drill bits.

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CELEBRATING 25 YEARS

7 ways to

Whip Snipe

Snipe

Why waste wood when you can nip the dips on the ends of your power-planed boards? Here's how.

A little lift sends snipe packing



1 On a benchtop planer, raise the table-leveling bolts until the ends of the infeed and outfeed tables are about the thickness of a penny higher than the planer bed.



2 The cast-iron tables on some stationary planers tilt by turning the adjustment setscrews. On planers without setscrews, insert metal shim stock to lift the tables.

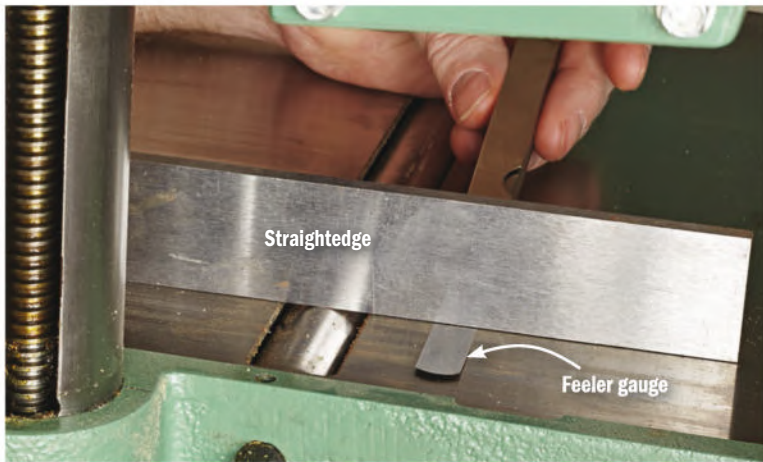


3 If raising the tables doesn't completely eliminate snipe, gently lift the free end of a workpiece slightly on the infeed side and again on the outfeed.



“Train” workpieces

4 If you cannot completely rid your planer of snipe, butt workpieces of equal thickness end-to-end so your machine thinks it's one long workpiece. Use scrap in front of the first and following the last workpiece.



Roll away the snipe

5 Stationary planers have table rollers whose main function is to reduce workpiece drag on the table. Raising these rollers on some models about .002" above the table helps prevent snipe. If this increases snipe on your planer, drop the rollers level with the table surface.



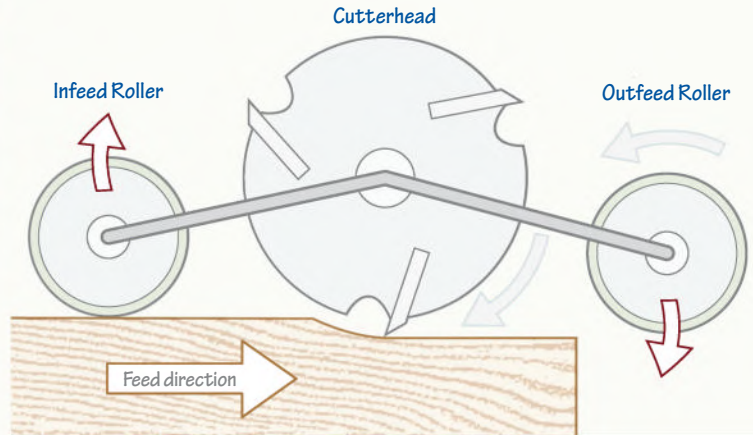
Give thin workpieces a ride

6 Workpieces thinner than $\frac{3}{8}$ " can flex and elevate into the cutterhead, creating snipe. To avoid this, adhere your workpiece to a carrier board, such as MDF, for added stability.

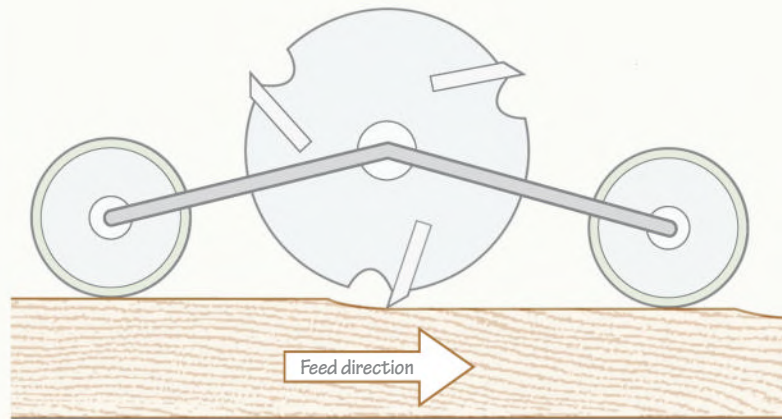
Finish with a light touch

7 The deeper the cut, the greater the chances for snipe. So as you zero in on the final thickness, remove only $\frac{1}{64}$ " or so in your last pass or two on each face. 🌲

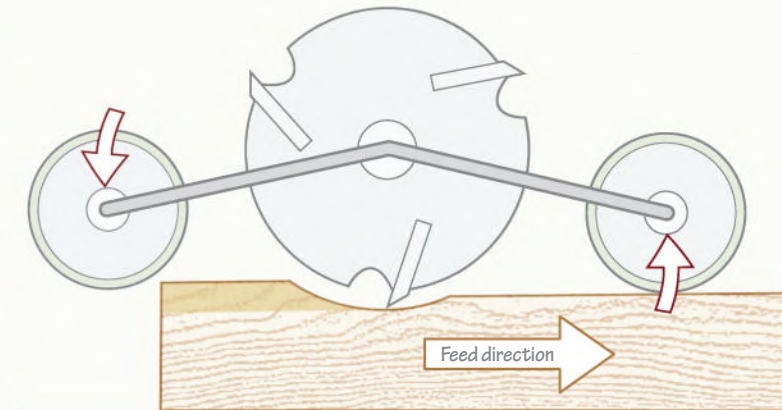
How Snipe Happens



As the workpiece enters the planer, the infeed roller grabs it and pulls it toward the cutterhead. But the board's thickness can push the roller upward slightly. This causes the roller-and-cutterhead carriage to rack, which causes the cutterhead to make a deeper cut (snipe).



As the outfeed roller grabs the workpiece and both rollers press it tightly to the table, the carriage levels out and the cutterhead takes an even-depth cut along the length, shallower than that at the sniped end.



Finally, as the workpiece's tail end clears the infeed roller, the carriage racks again, but in the opposite direction. This results in snipe at the trailing end of the workpiece.



Window or Door Arbor

Add punch to your home's exterior with these custom-made add-ons. They provide shade and give flowers or viny plants something to hold onto as they grow.

This arbor, built above patio doors, incorporates outward arcs on the brackets, beams, and battens (parts B, C, E, and F). Clear exterior deck finish gives it a natural look.





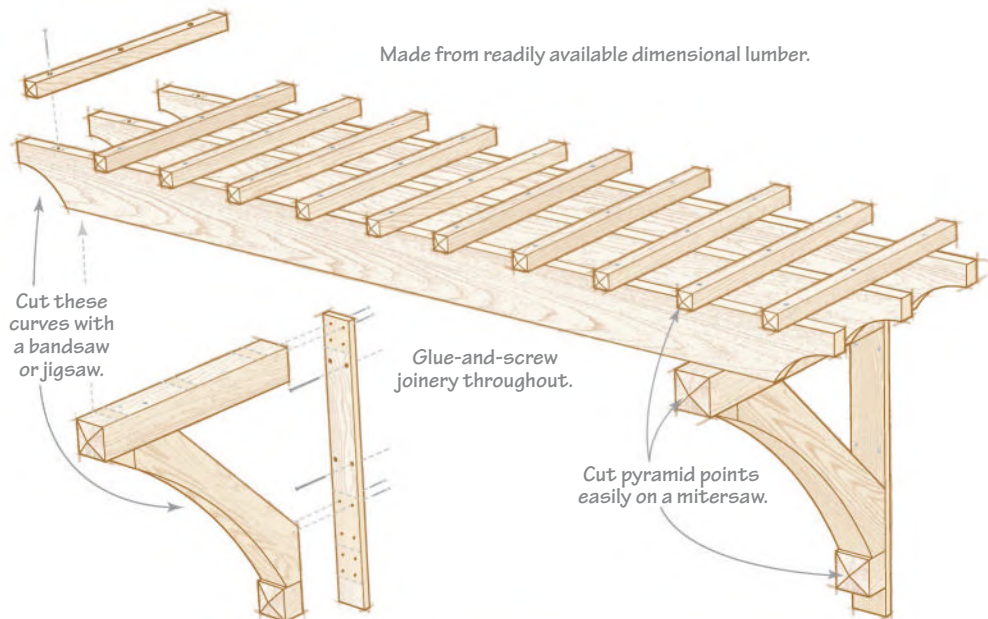
D I M E N S I O N S :
120"W x 26 1/4"D x 37 1/2"H
(for the window arbor shown)

Approximate
materials
cost, per arbor:

\$100

(you'll need
one 1x4x8,
one 4x6x8,
one 4x4x8,
three
2x6x12s, and
five 2x2x8s)

woodmagazine.com

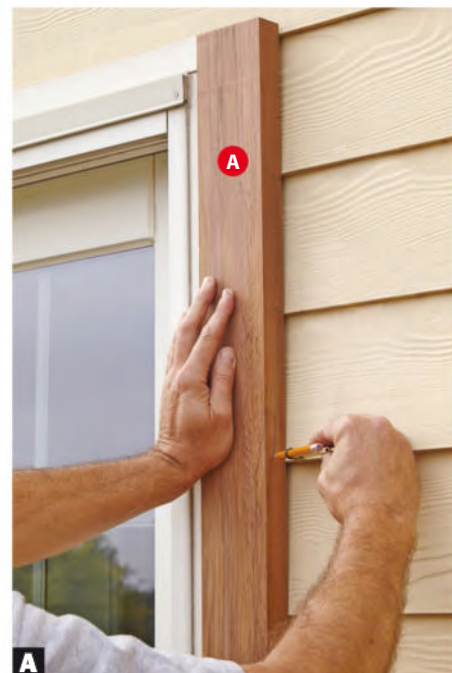


You'll build each arbor in sections on the ground, starting with the triangular brackets. Mount them to the house, and then build the beam assembly and install it. But before starting construction, inspect and measure the window or door where you'll mount the arbor. Make sure there's solid wood upon which to mount the brackets, as well as sufficient width to allow for a foot or so of beam overhang. We mounted the window arbor, *left*, to existing trim boards on each side of the frame. For the door arbor, we notched the bracket mounts [Photo A] to fit over the siding (more on that later).

We built ours from well-dried Western red cedar. Redwood and cypress would also withstand the elements. If you plan to paint your arbor, a lower-priced wood, such as poplar or pine, will work.

Now, bust out those brackets

1 For bracket mounts (A) [Drawing 1] that will mount to flat trim or siding, such as in our window version, cut the mounts to size from 1x (3/4"-thick) stock. For brackets mounted over lap siding, make these parts from 2x (1 1/2"-thick) stock, and notch these parts as shown in Photo A.



Flush-fit the bracket mounts. Hold a bracket mount (A) in place against the siding. Set a compass so the gap equals the thickness of the siding. Then run the pivot pin along the siding, transferring the contours onto the bracket mount. Finally, cut the notches on a bandsaw. No bandsaw? See the tip below.

SHOP TIP

Go long to make a deep cut

If you don't have a bandsaw or access to one, make the cuts in the 3 1/2"-thick (or wide) arbor stock with a jigsaw and a blade at least 6" long to allow for the reciprocating action of the saw. We like Bosch's T744D 7" blades—slightly over 1/16" thick—because they cut cleanly without deflecting.





B

Pyramid ends on the quick. Mark a line around the 4×4 bracket top $\frac{1}{2}$ " from the end. Cut a 16° miter that intersects the line, and repeat for the remaining sides.

2 Cut the bracket tops (B) to length from 4×4 stock [Drawing 1], and a 4×4 blank at least 12" long for the bracket bottoms (C). Bevel-cut one end of the bracket tops [Photo B]. Then, bevel both ends of the bracket-bottom blank before cutting those parts to final length. (For curved ends, see Drawing 1b.)

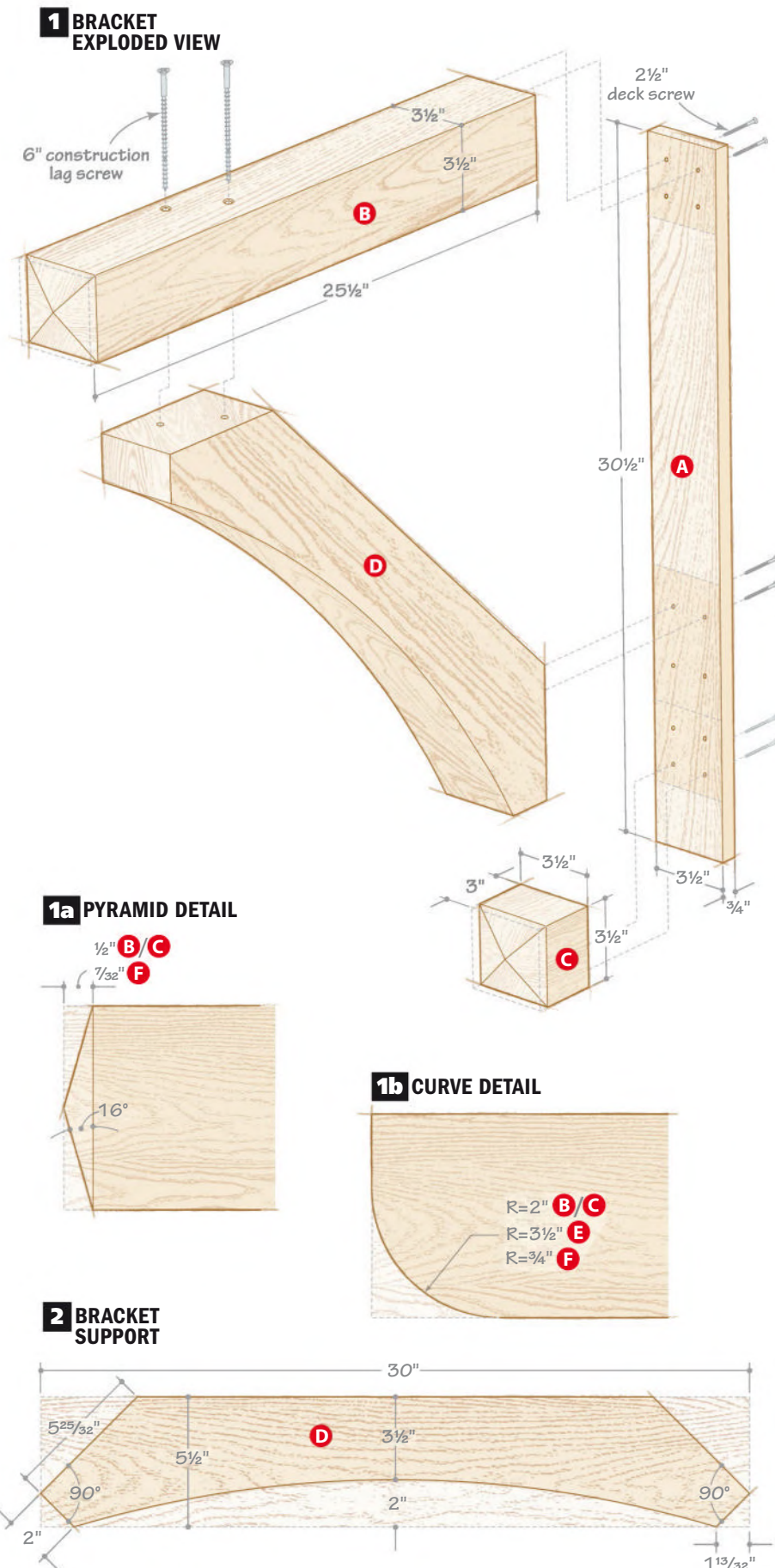
3 From a pair of 30"-long 4×6s, lay out the bracket supports (D) [Drawing 2] and cut them to shape. Sand the cuts smooth.

4 Apply exterior-rated glue or construction adhesive to the bracket tops (B) and screw them to the mounts (A) [Drawing 1]. Next, attach the supports (D) to the assembly in the same manner. Finally, attach the bracket bottoms (C) beneath the supports.

Prep the beams and battens

1 Cut the beams (E) to length to fit your arbor location. We cut ours 25" longer than the outer width of the assembled brackets once installed, giving a $12\frac{1}{2}$ " overhang on each end. Lay out and cut the arcs on the ends of each beam [Drawing 1b or 3].

2 Determine the number of battens (F) you want for your arbor's top assembly [Drawing 3], spacing them about 7" apart. Our window arbor required 15 battens. Cut the battens to length from 2×2 stock, with the same pyramid or curved detail on the outward-facing ends as on the bracket tops and bottoms (B, C) [Drawing 1a, 1b].



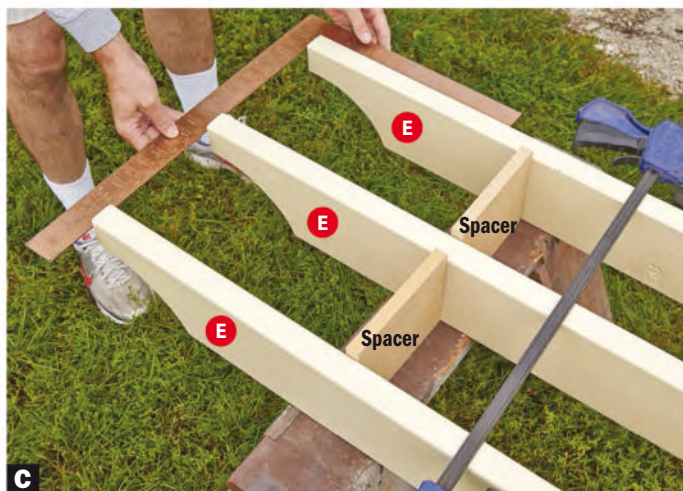
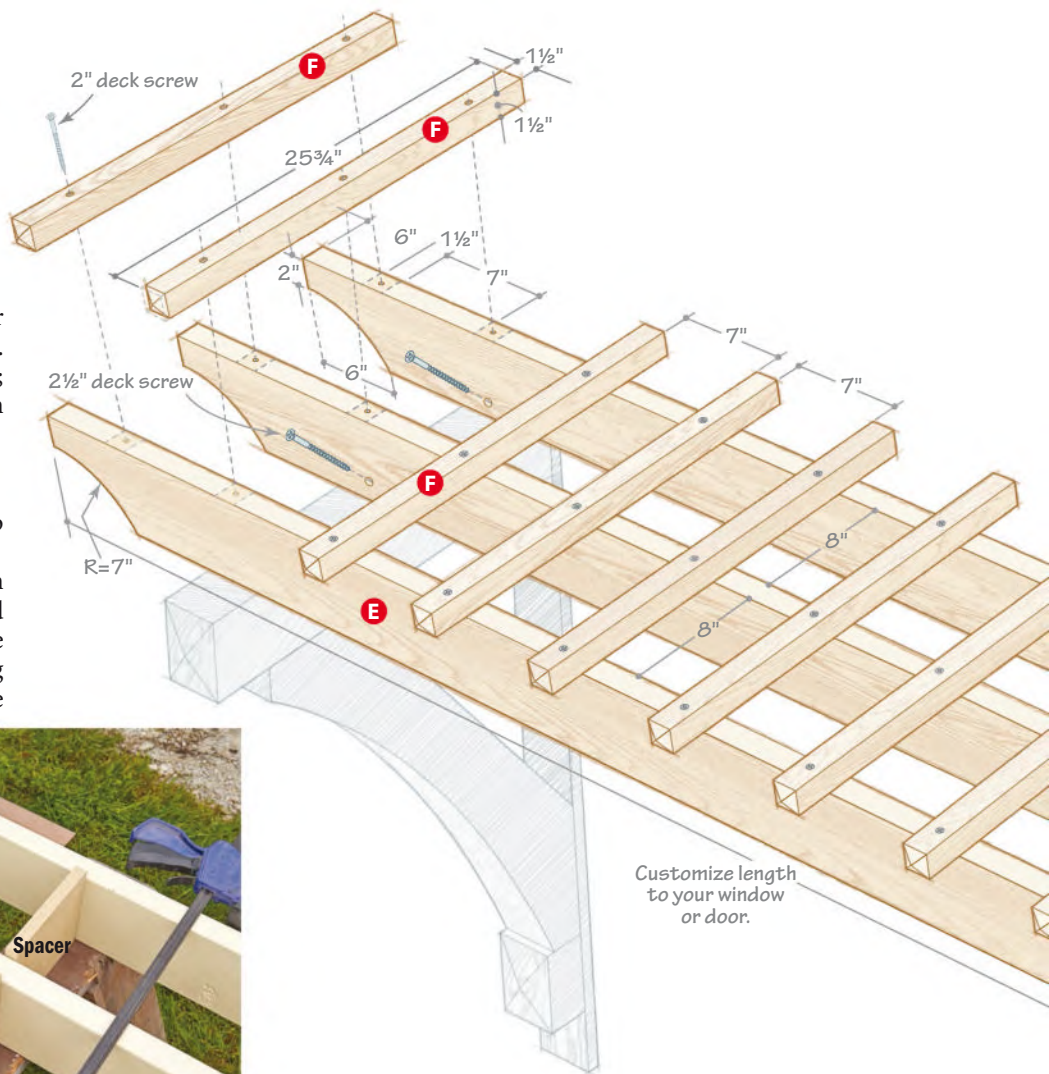
3 TOP EXPLODED VIEW

3 Prime all parts with oil-based exterior paint; latex primer will not hold on cedar. When dry, apply a finish coat of your choice; we used latex paint that matched the trim on the house.

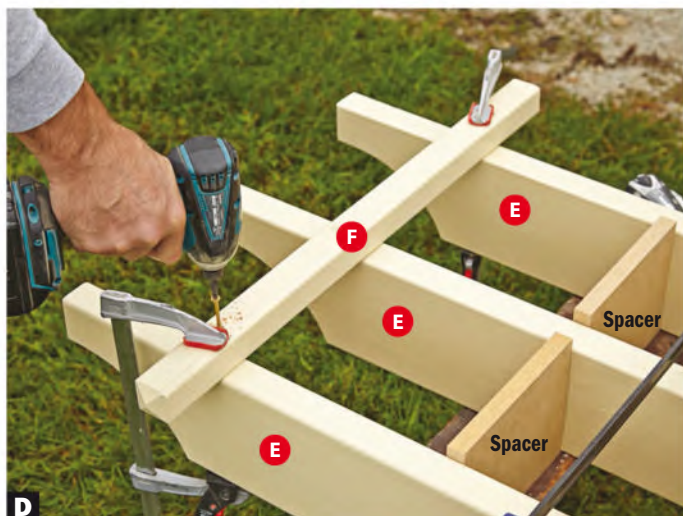
Assemble and install your arbor

1 Using sawhorses on level ground, clamp together the beams (E) [Photo C].

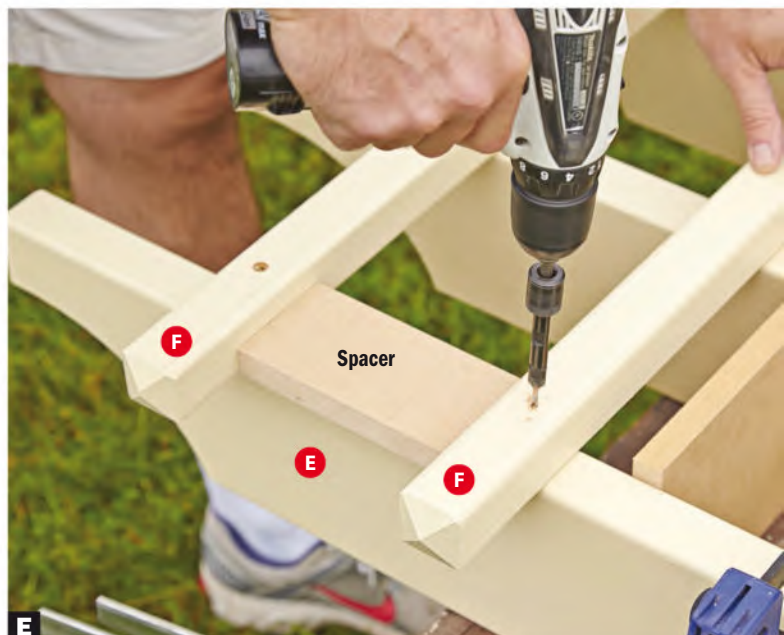
2 Retrieve one of the battens (F), place it on the beams 6" from one end and centered front to back [Drawing 3, Photo D], and secure it to the beams. Repeat for the remaining battens [Photo E]. When finished, cover the



C Align the beams. Insert 8"-long scrapwood spacers to fix the spacing between the beams, use a framing square to align the ends, and clamp them together.



D Attach the first batten. Clamp a batten to the beams with the pyramid point facing forward. Drill countersunk pilot holes and attach to the beams with screws.



E Add the remaining battens. Use a pair of spacers (7" in our case) to fix the gap between battens, and then screw each succeeding batten in place.



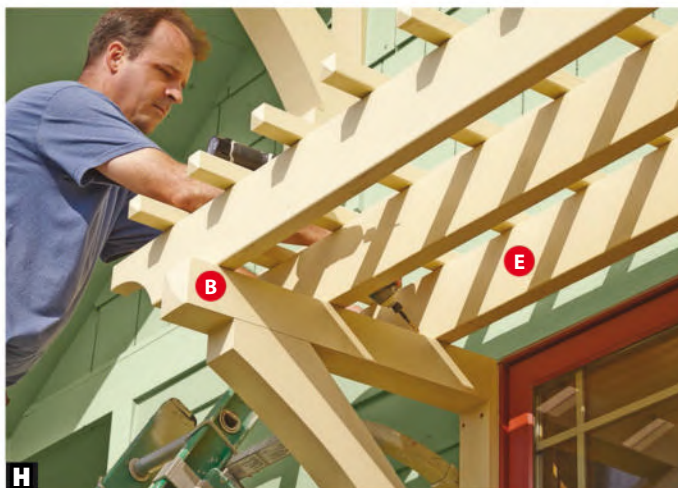
F

Mount the brackets. After drilling countersunk pilot holes in the brackets, secure them to the house with 3½" deck screws. Paint over the screwheads when finished.



G

Rely on a buddy. Lift the top assembly onto the installed brackets, centering it on the brackets side-to-side and front to back.



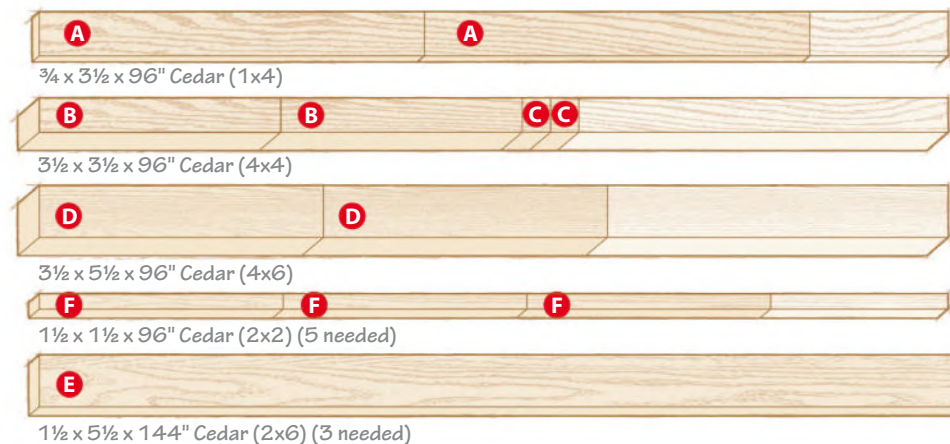
H

Screw it in place. Secure the top assembly to the brackets with 2½" deck screws driven at an angle through the beams into the bracket tops. Paint over the screwheads when finished.

screwheads with paint to match the arbor and protect them against weather damage.

3 Attach the bracket assemblies (A–D) to the window trim or wall [Photo F].

Cutting Diagram



4 Secure the beam-and-batten assembly (E/F) to the brackets [Photos G and H].

Produced by **Bob Hunter** with **Kevin Boyle**
Project design: **Kevin Boyle**
Illustrations: **Lorna Johnson**

Materials List

Part	FINISHED SIZE			Matl.	Qty.
	T	W	L		
A bracket mounts	¾"†	3½"	30½"	C	2
B bracket tops	3½"	3½"	25½"	C	2
C* bracket bottoms	3½"	3½"	3"	C	2
D bracket supports	3½"	5½"	30"	C	2
E beams	1½"	5½"	‡	C	3
F battens	1½"	1½"	25¾"	C	‡

*Parts initially cut oversized. See the instructions.

†1½" if mounting over lap siding. See the instructions.

‡Adjust to fit your application. See the instructions.

Material key: C—cedar.

Supplies: 2", 2½", and 3½" deck screws; 6" construction lag screws; exterior glue or adhesive.

Bit and blade: Countersinking bit, 7" jigsaw blade (optional).

► 15 top woods for exterior projects.
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► Prefer a freestanding arbor?
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Prairie-grass Desk Lamp

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APPROXIMATE COST: \$27 in lumber and light

50
Lumens
31
Hours
run time
0
cords



Form the base

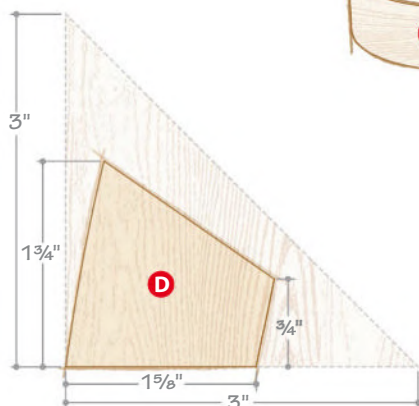
The free-form shapes of the base assembly offer a good opportunity to practice gridded-pattern enlargement because the shapes are meant to be pleasing rather than critical to the project's construction. For best appearance, consider using two book-matched pieces for the base.

1 Enlarge each of the patterns on page 43 to full size. From $\frac{3}{4}$ " stock, cut two base (A) blanks and one arm (B) blank to size. From $\frac{3}{8}$ " stock, cut two blanks for the supports (C). Join the two base blanks together and the two support blanks together using double-faced tape.

2 Spray-adhere the patterns to their blanks. Use an awl to locate the $\frac{1}{4}$ " hole on one of the supports (C). Then, cut the parts just outside the lines before sanding to the lines. Set aside a scrap of $\frac{3}{4}$ " stock for the support block (D) blank [Drawing 1].

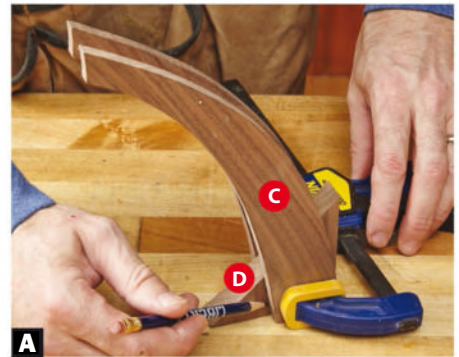
► If your bandsaw struggles to cut true in the $1\frac{1}{2}$ "-thick stock, try a fresh blade or cut the two bases (A) separately.

1 SUPPORT BLOCK



3 Next, you'll clean up and sand the pieces. So, separate the taped-together blanks and remove all patterns. Joint or sand the mating edges of the base halves (A). Biscuit-join and edge-glue the base, pressing the halves together by hand for a few minutes to allow initial setup of the glue before carefully setting the base aside to dry. After the glue dries completely, sand parts A, B, and C to 220 grit. **Note:** As you sand, make sure the hole location you marked earlier on the support (C) doesn't vanish. If necessary, re-mark it with the awl.

4 Retrieve the support block (D) blank you set aside earlier. Use the supports (C) to trace the edges of the block [Photo A]. Then, lay out the height using the measurements in Drawing 1. Cut the block to height and sand the top and bottom edges. Apply glue between the lines on both faces of the support block [Photo B] and clamp it between the supports using the traced lines as alignment guides. **Note:** Remember to face the marked hole location outward during glue-up. When the glue has dried, cut and sand the edges of the block flush with the supports.

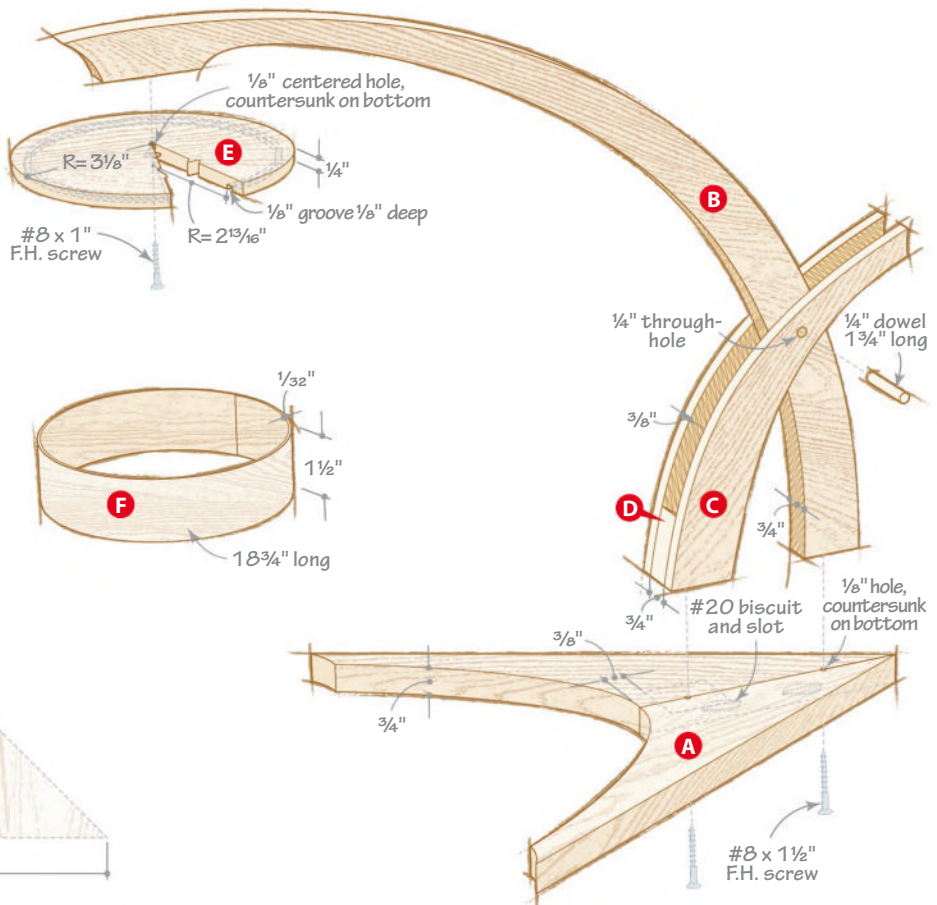


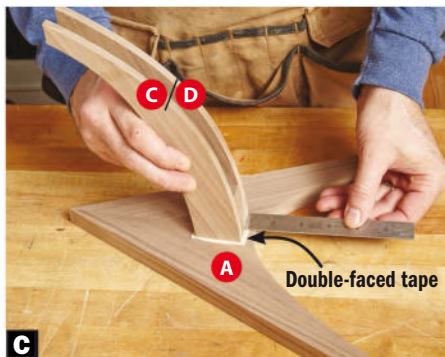
A One part marks the next. Ensure that the supports (C) are aligned when you clamp the support block (D) between them. Then, mark the curve of the supports on both sides of the support block.



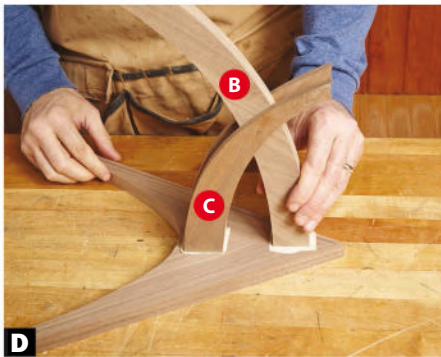
B Don't overdo the glue. Limit yourself to a thin layer of glue to ensure that the alignment lines aren't obscured and the block doesn't float during clamp-up.

EXPLODED VIEW





C **Temporarily secure the support with tape.** Use a rule to locate the support assembly (C/D) $\frac{3}{8}$ " from the base's (A) curve while visually centering it on the base's glue line before pressing it in place.



D **Align by eye.** Center the marked hole location of the support assembly (C/D) on the arm's (B) width while centering the bottom edge of the arm on the base's (A) glue line.



E **A backer prevents blowout.** For a clean hole, back up your workpiece with scrap and drill as straight as your eyeball will allow using a brad-point bit.

5 Apply double-faced tape to the bottom of the support assembly (C/D) and adhere it to the base (A) [Photo C]. Repeat with the arm (B), using the support assembly as an alignment guide [Photo D]. Then, drill and countersink pilot holes in the bottom of the base and screw it to the arm assembly (B/C/D) [Exploded View].

6 Drill a $\frac{1}{4}$ " hole through the arm assembly at the marked location [Photo E]. Glue a dowel in place and, after the glue dries, cut and sand it flush with the supports (C). Remove the screws from the base, separate the base and arm assembly, and remove the double-faced tape. Then, reattach the arm assembly using a little glue and the screws.

Add a shade

We used two jigs to cut, then groove, the circular lamp shade top: a circle-cutting bandsaw jig and the router jig explained in the **Shop Tip**, next page.

1 Use a compass to mark a centerpoint and a $6\frac{1}{4}$ " circle on $\frac{1}{4}$ " stock. Drill a $\frac{1}{8}$ " hole through the center. Cut and sand the circle to shape. Rout the groove in the underside of the lamp shade top (E) [Shop Tip].

2 Resaw a $\frac{1}{32} \times 1\frac{1}{2} \times 19$ " strip for the lamp shade (F). To keep the thickness uniform, we cut ours on the tablesaw from a $1 \times 1\frac{1}{2} \times 19$ " strip. **Note:** Use a zero-clearance insert in your tablesaw and cut the thin strip on the offcut side of the blade to avoid dangerous kickback. Sand the strip and cut it to length.

3 Mark the lamp shade's (F) overlap. Then glue up the shade [Photos F and G]. After the glue dries, carefully sand the outside of the joint so the seam blends together. Then, glue the shade in place in the lamp top (E) [Photo H] and allow it to dry.

4 Countersink the hole in the lamp shade top (E) on the inside of the shade assembly and screw it to the arm (B). Apply your finish of choice. (We sprayed three coats of satin aerosol lacquer.) The LED puck light we chose (see **Supplies on Demand**) comes with a magnetic mounting plate for easy removal and battery access. Mount the plate using #2 $\times\frac{1}{4}$ " roundhead screws. Then, just add batteries to bring a little light to your world. 🌳



F **Mark the overlap.** Carefully bend the lamp shade (F) into a loop and slide it in place in the lamp shade top's (E) groove. Allow the loop to relax against the groove's outside edge, then trace the overlap.



G **The groove becomes the form.** Add a thin layer of glue to the marked overlap; bend the shade; then, realign and clamp the overlap. Rest the shade in the groove to hold its shape while the glue dries.



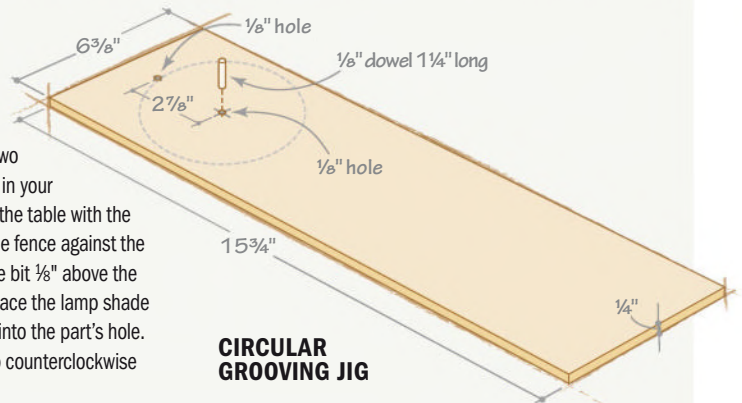
H **Attach the shade.** Apply a thin bead of glue to the outer wall of the groove. Carefully place the shade in the groove and rotate it back and forth a few times to spread the glue evenly.

SHOP TIP



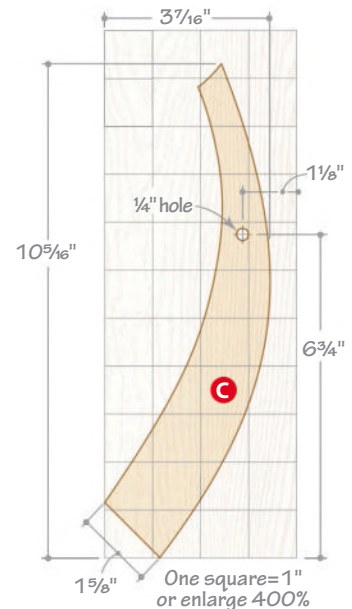
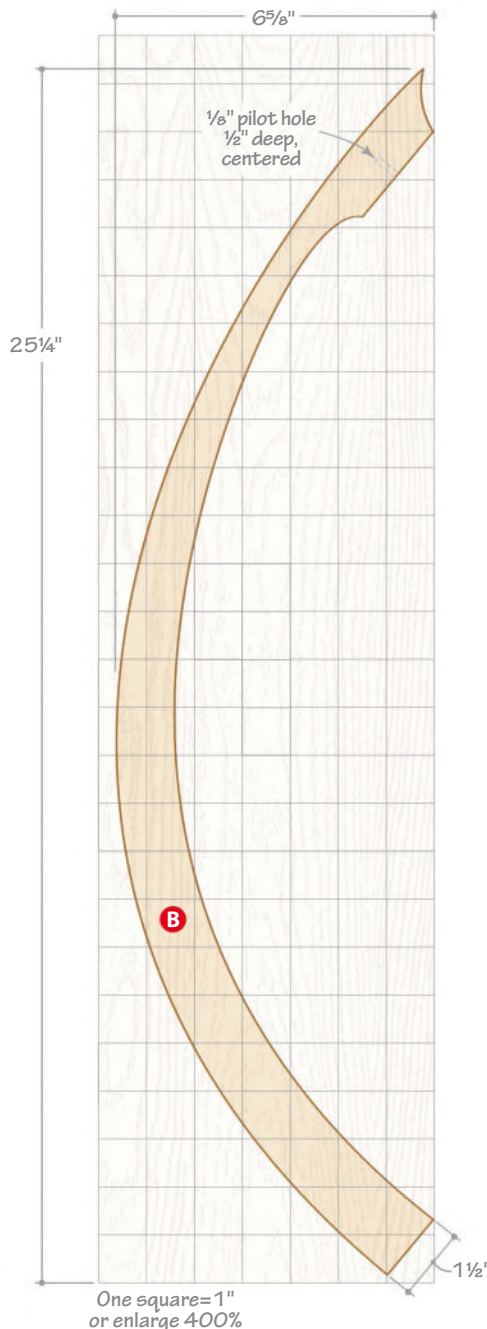
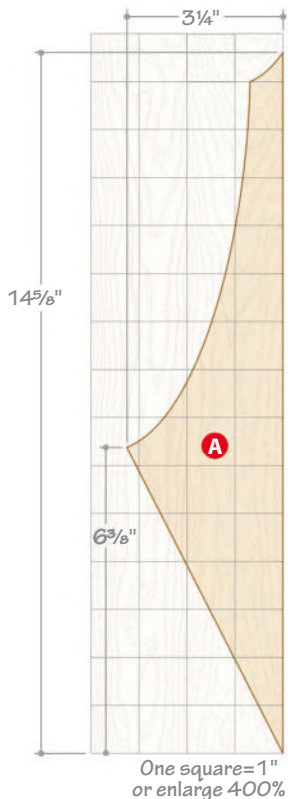
Simple jig routs circles around parts

Build this jig from a piece of MDF or hardboard and a dowel, centering the two holes $2\frac{7}{8}$ " apart. With a $\frac{1}{8}$ " straight bit in your table-mounted router, clamp the jig on the table with the bit protruding through the hole. Snug the fence against the edge of the jig for support, and raise the bit $\frac{1}{8}$ " above the face of the jig. Turn on the router and place the lamp shade top (E) on the jig, inserting the jig's pin into the part's hole. Gently press down. Then, rotate the top counterclockwise until you make a full revolution, *left*.



CIRCULAR GROOVING JIG

Gridded Patterns



Materials List

Part	FINISHED SIZE			Matl.	Qty.
	T	W	L		
A† base	3/4"	13 1/8"	13"	W	1
B* arm	3/4"	6 5/8"	25 1/4"	W	1
C* supports	3/8"	3 7/16"	10 5/16"	W	2
D* support block	3/4"	1 3/4"	1 3/4"	W	1
E* lamp shade top	1/4"	6 1/4" diam.		W	1
F* lamp shade	1/2"	1 1/2"	18 3/4"	A	1

*Parts initially cut oversize. See the instructions.

†Edge-glued from two smaller pieces cut from blanks. See the instructions.

Materials key: W—walnut, A—ash.

Supplies: #20 biscuits, #8 × 1 1/2" flathead screws (2), #8 × 1" flathead screw (1), #2 × 1/4" roundhead screws (2), 1/4" walnut dowel 1 3/4" long, 1/8" dowel.

Bit: 1/8" straight router bit.

Supplies on Demand: Order the 3-LED puck light at woodmagazine.com/234lamp.

► Find tips for enlarging gridded patterns.
woodmagazine.com/enlargeplans

Produced by **Lucas Peters** with **Kevin Boyle**
Project design: **Kevin Boyle**
Illustrations: **Lorna Johnson**

Resaw Kings

A close-up photograph of a person's hands operating a large industrial bandsaw. The person is wearing a brown leather apron over a dark shirt. They are holding a thick, light-colored wooden board steady with their left hand while their right hand is near the saw's handle. The bandsaw is cutting through the wood, creating a clean split. The machine has a green top and various adjustment knobs and bolts. The background is a plain, light-colored wall.

Step up to a big bandsaw with loads of power and the capacity to resaw boards 12" wide—or even wider.



Almost any bandsaw can slice smooth scrollwork through inches-thick hardwoods; most can cut cabriole legs 'til the cows come home. But when it's time to resaw wide—really wide—stock to book-match panels or maximize the yield from thick boards, you need a bandsaw with lots of blade above the table, plus the ponies to punch through all that wood. We put six premium-priced bandsaws through their paces to see which get the job done best.

Bringin' the power

One lesson we learned right away: Don't rely on horsepower ratings as the sole measure of a bandsaw's cutting power. Efficient transfer of power from motor to wheels to blade relies on more factors than simply motor size, and some saws do this well with lower-rated motors.

To discover each saw's true power, we put them through an extreme test of resawing 12"-wide hard maple—the greatest common capacity among the machines—as fast as we dared push it, timing each cut, and then averaging five trials. Four saws (Grizzly G0513X2BF, Grizzly G0514X2B, Jet JWBS-18QT-3, and Shop Fox W1729) powered through each cut without bogging down. The General International 90-240M1 and 4-hp-rated Rikon 10-346 slowed a bit, but never stalled. Bottom line: All of the tested bandsaws have sufficient power to handle this task.

Resawing reveals crucial differences

After tuning up each saw to compensate for blade drift (when the blade fails to cut parallel to the fence, easily adjusted by tweaking the rip fences) we outfitted them with new Timber Wolf $\frac{3}{4}$ " 2/3VPC resaw blades. Then, we resawed multiple thin slabs from an 8/4 maple blank, using a slow but steady feed rate. Most of the saws cut slabs that varied in thickness $\frac{1}{32}$ " or less, an acceptable amount. But the blades on the Jet and Rikon saws deflected more than that. So we searched for solutions.

We discovered that by tracking the blade on the Jet's crowned wheels more toward the rear, as shown *below*, we could resaw within that $\frac{1}{32}$ " range. That trick did not, however, work on the Rikon's flat wheels. When we attached the resaw pivot bar to the rip fence and cut along a marked line on the board's edge—steering by hand—the deflection disappeared. But this method also leaves rougher surfaces on the workpieces—and more cleanup at the planer or drum sander—a net loss about equal to the original amount of blade deflection.

Next, we tried different blades on the Rikon and got acceptable results. So if you experience deflection that you cannot resolve by tweaking the saw, try a different blade: It might solve the problem for you.

Fast facts:

All six test bandsaws have:

- ▶ 17–19" cast-iron wheels
- ▶ Prices from \$1,350 to \$2,300
- ▶ Motors prewired for 220 volts (except the 110-volt General International 90-240M1)
- ▶ Rack-and-pinion upper guideposts and quick-release blade-tension levers

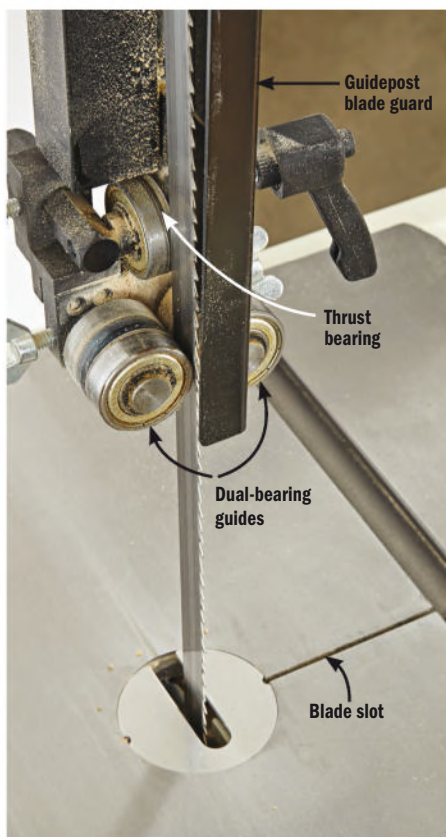
▶ Learn to resaw.
[woodmagazine.com/
resaw](http://woodmagazine.com/resaw)



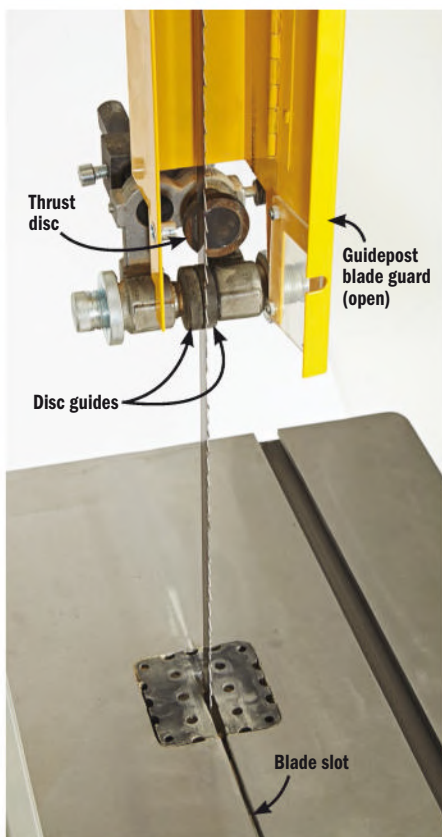
Typical blade position. With most of the tested saws, we got good results with the blade centered on the wheels.



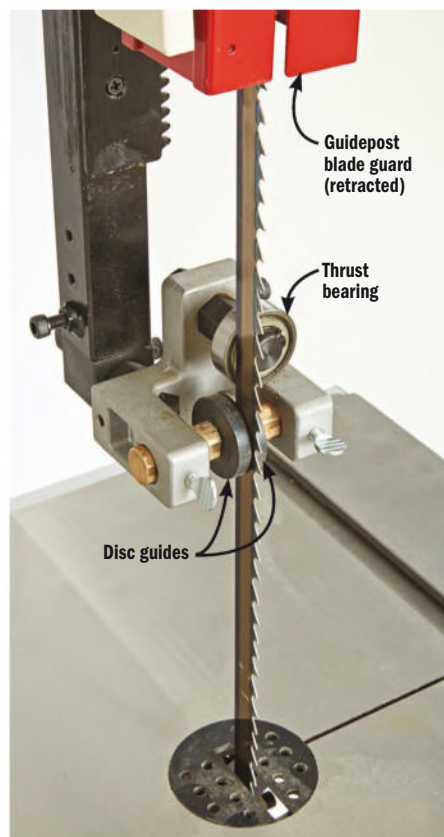
Ride the crown. Because Jet's wheels have such a pronounced crown, we had to center the teeth on the peak of the crown to minimize blade deflection.



Bearing guides. Four saws use dual-bearing side guides and inline thrust bearings that work well. On this Jet, the right-angled guidepost blade guard makes blade changes difficult.



Disc guides. The Rikon saw uses European-style disc guides and thrust discs. The upper guidepost blade guard hinges open to provide access for adjusting the guides.



Disc and bearing guides. The Shop Fox uses disc guides with a perpendicular thrust bearing. The guidepost blade guard must be retracted to provide access to adjust the guides.

Blade guides hold the key to a bandsaw's performance

The easier it is to adjust a bandsaw's guides, the more likely you are to change blades when situations call for it. The General International, both Grizzlys, and the Jet have bearing guides and a single thrust bearing behind the blade (*above*) that excel when resawing with wide blades. Of these, the Jet proved easiest to set, thanks to tool-free adjusters on all guides. Blade guards on the General International, Grizzly, and Shop Fox saws impaired access, making upper-guide adjustments more difficult.

The Rikon bandsaw uses European-style, non-spinning disc guides all around, shown *top center*, and the Shop Fox combines disc guides with a thrust bearing, *top right*. These two setups proved fussy to set, but performed better during curve-cutting than the bearing guides.

Rikon makes blade changes easiest with the blade slot extending from the center of the table to its front edge. With the other saws, the slot extends to the table's right edge, requiring you to pivot the blade 90° after clearing the guides.

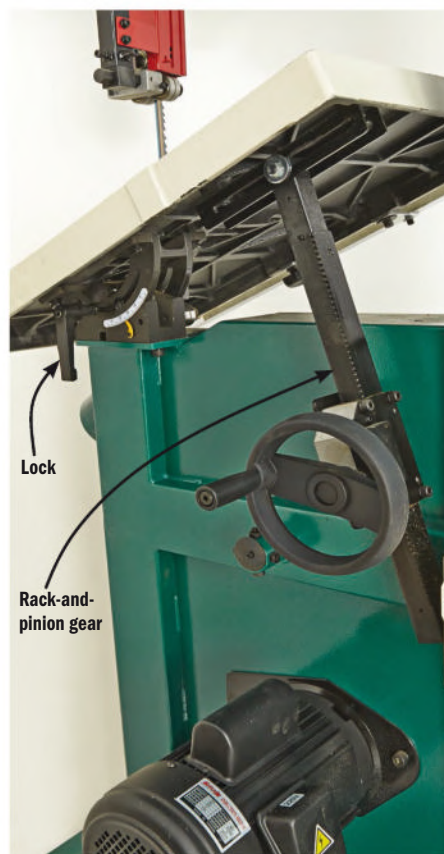
Table the workload

All of the saws have cast-iron tables measuring 17–19½" deep, and all but the Jet (19") are at least 23¾" wide. They all have a miter slot to the right of the blade, and all but one stand 37½" from the floor, a comfortable height for most folks. The Rikon table measures 33½" from the floor, a good height for resawing boards 12" or wider, but a backache-producer for curve-cutting and typical ripping.

We like the table on Grizzly's G0514X2B best because it locks solidly and has a massive rack-and-pinion tilt mechanism, shown *right*. Jet's table lacks a rack-and-pinion adjuster and, despite two trunnions with separate locks, frequently came loose when placing boards on the table. But if you let the table rest on its 90° stop (beneath the left side) and avoid putting heavy weight on the right side of the table, you can sidestep this problem.

► Bandsaw setup and tune-up tips.
woodmagazine.com/bandsawtuneup

Here's the beef. The Grizzly G0514X2B's table tilts via a large crank that operates a rack-and-pinion gear. The ratcheting lock proved easiest to use and most reliable at holding.





General International 90-240M1, \$2,200

888-949-1161, general.ca

Likes: This saw showed impressive cutting power, despite being the only 110-volt machine in the test. It cuts true with little deflection, even at its maximum 12" resaw capacity. And the rip fence, though only 2 $\frac{5}{8}$ " tall, switches from the left to right of the blade without altering the fence. The quick-release blade-tension lever operated smoothest among the test group. A rack-and-pinion adjuster makes tilting the table easy.

Dislikes: Lacking a brake, the blade coasted for 22 seconds after shutdown. Eccentric shafts on the bearing guides mar easily when tightening the setscrews, so expect to remove these occasionally and restore with a file.

Notes: You can rewire this saw's motor to run on 220 volts to draw fewer amps from your power source.



Grizzly G0513X2BF, \$1,350

800-523-4777, grizzly.com

Likes: This saw comes equipped with both an automatic brake that stops the blade in less than two seconds at shutdown, and a foot brake for emergencies. In our power testing, this model cut nearly as quickly as its larger sibling, the G0514X2B. At its full 12" resaw height, blade deflection was less than $\frac{1}{32}$ ". Its cast-iron fence includes a 6"-tall aluminum resaw face that attaches quickly and holds tall stock better than the other fences. The magnetic power switch prevents accidental restarts after an emergency stop or loss of power, and the keyed lockout adds another level of safety.

Dislikes: This saw vibrated more than any other in the test. You realign the rip fence for blade drift by adjusting the fence rail, but it bumped out of alignment easily. Eccentric shafts on the bearing guides mar easily when tightening the setscrews, so expect to remove these occasionally and restore with a file.

Notes: This saw does not come with a power cord. Grizzly offers five lower-priced versions of the G0513 machine with fewer features than this one.



Grizzly G0514X2B, \$1,725

800-523-4777, grizzly.com

Likes: Sharing many features of the G0513X2BF, this taller, heavier saw cut quickest overall (by a slight margin) in our power testing, resawed with less than $\frac{1}{32}$ " of deflection, and required the least adjustment for blade drift. Its heavy-duty rack-and-pinion table stands out from the group for ease of tilting and locking. Its electronic brake stops the blade in less than two seconds at shutdown.

Dislikes: Like the G0513X2BF, this machine vibrated more than we'd like, and has the same issues with the rip-fence rail and blade-guide adjustment and accessibility.

Notes: Grizzly offers four lower-priced versions of the G0514 machine with fewer features than this one.



Jet JWBS-18QT-3, \$1,940

800-274-6848, jettools.com

Likes: Our favorite feature: the dual-bearing blade guides that adjust without tools. The bottom guides have microadjusters, a helpful feature that we would like to have on the top guides as well. The blade-tension release lever has two positions: one for simply minimizing tension when not in use, and another for full release when changing blades. This saw also has plenty of power, an easy-to-use rip fence, a magnetic switch, and, despite having only one 4" port, dust collection as good as the other tested saws, which are equipped with two ports apiece.

Dislikes: The table-tilt did not lock as securely as we'd like, requiring regular checking for squareness to the blade. And when raising the upper guides fully, the cabinet sometimes knocked them out of alignment. Lacking a brake, the blade coasted for 37 seconds after shutdown.

Notes: The power cord does not come with a plug.



Rikon 10-346, \$2,300

877-884-5167, rikontools.com

Likes: You get the greatest resaw capacity (a staggering 19") with this machine but you need to add auxiliary support to the rip fence for workpiece stability. Though deflection was an issue with some blades, others deflected no more than $\frac{1}{16}$ " at the maximum resaw height, perfectly acceptable for that span. Although this saw slowed a bit while resawing wide boards, it never lost enough to be a problem, even with 19"-wide boards. The blade-tension release is readily accessible from the front of the saw. The table tilts easily on a rack-and-pinion gear, locks solidly, and gives easy access to change blades. The magnetic power switch and blade foot brake add safety.

Dislikes: We like the microadjusters on the blade guides, but too much play in the mechanism sometimes negated the fine-tuning, and the rear thrust discs created sparks anytime blades rubbed against them. When we didn't use the foot brake, the blade coasted for 61 seconds after shutdown. And the LED task light, although bright, proved difficult to position so we could see the cutline.

Notes: The 162" precut blade length was difficult to find at retail.



Shop Fox W1729, \$1,970

800-840-8420, shopfox.biz

Likes: Similar in size to the Grizzly G0514X2B but with a 2-hp-rated motor, the W1729 nonetheless nearly matched the Grizz for top cutting speed—and did it with almost no vibration. It resaws with little to no blade deflection. The disc blade guides work well for cutting curves, especially when changing directions (such as S-shaped curves).

Dislikes: The 3 $\frac{5}{8}$ "-tall rip fence does not come with a resaw pivot bar, so you'll need to attach an auxiliary fence face for resawing boards wider than 8". Lacking a brake, the blade coasted for 22 seconds after shutdown.

► Read reviews of more bandsaws and accessories—or add your own.
reviewatool.com/bandsaws

WOOD MAGAZINE'S
REVIEW A TOOL

17-19" Bandsaws from \$1,350 to \$2,300

MANUFACTURER/ MODEL	PERFORMANCE RATINGS (1)											MOTOR (2)			BLADE		CUT CAPACITIES, INCHES		TABLE			BLADE GUIDES			Type of Blade Brake (5)	Weight, Pounds	Power Cord Length, Inches (6)	Warranty, Years	Country of Assembly (7)	Selling Price (8)
	PRIMARY					SECONDARY																								
	Power	Absence of Blade Deflection Ease of Adjusting Blade Guides Curve-Cutting Accuracy Ease of Changing Blades				Ease of Tensioning Blade Absence of Vibration Absence of Blade Drift Ease of Tilting and Locking Table Rip-Fence Effectiveness Miter-Gauge Effectiveness						Voltage	Amperage	Rated Horsepower	Length, Inches	Width (Min., Max.), Inches	Maximum Resaw Height	Maximum Width (Throat)	Dimensions (Width x Depth), Inches	Height From Floor, Inches	Max. Tilt Range (Right/Left), Degrees	Style (3)	Thrust Bearing (3)	Tool-Free Adjustments? (Yes/No) (4)						
GENERAL INTERNATIONAL 90-240M1	B+	A	B	B	B	A	B	A	B-	C+	C	110*/220	15*/7.5	2	131½	⅞, 1	12	16¼	23⅝×17	37½	45/4	D	B	N	N	350	79	2	T	\$2,200
GRIZZLY G0513X2BF	A	A	B	B	B	B	C	A	B	B-	B	220	10	2	131½	⅞, 1	12	16¼	23⅝×17½	37½	46/6	D	B	N	E, F	356	N/A	1	T	\$1,350
GRIZZLY G0514X2B	A	A	B	B	B	B	C	A	A	B-	B	220	12	3	143	⅞, 1¼	12	18¼	27×19½	37½	48/6	D	B	N	E	427	77	1	T	\$1,725
JET JWBS-18QT-3	A	A	A	B+	B-	B+	B+	A	C-	B	C	230	13	3	137	⅞, 1½	12½	18½	19×19	37½	45/15	D	B	Y	N	415	75*	5	T	\$1,940
RIKON 10-346	A-	B	B-	A	A	B+	B	B	A-	B	NA	220	16	4	162	¼, 1½	19¼	17½	24¾×19	33½	45/5	E	E	Y*	F	500	129*	5	C	\$2,300
SHOP FOX W1729	A	A	C	A	B	B	A	A	B	C	B	115/230*	20/10*	2	143	⅞, 1	12¼	18¼	27×19½	37½	45/8	E	B	Y*	N	367	78	2	T	\$1,970

1. **A** Excellent **D** Poor
B Good **NA** Not applicable
C Fair

2. (*) Prewired

3. (B) Single ball bearing
(D) Dual ball bearing
(E) European discs

4. (*) Some guides do; others do not

5. (E) Electronic
(F) Foot-activated
(N) No brake

6. (N/A) Does not come with a cord
(*) Does not include a plug

7. (C) China
(T) Taiwan

8. Prices current at time of article production and do not include shipping, where applicable.

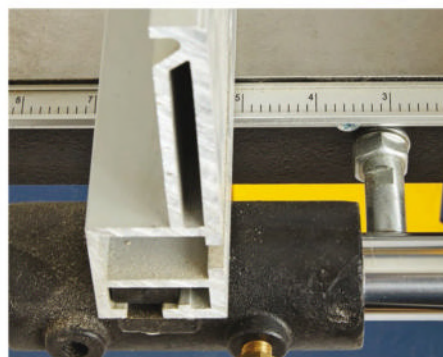
Quick hits

► We found all of the blade-tension gauges unreliable for setting correct tension on all sizes of



blades. Instead, we tensioned each blade so it allowed ¼" side-to-side deflection with the blade guides retracted (left).

► All the saws include a rip fence that mounts on a rail at the front of the table. But only the Rikon fence face aligns directly with its scale (below), a big plus



when using an auxiliary fence because it, too, aligns accurately with no adjustments. The others use cursors that proved fussy or problematic.

► Although most bandsaws come with a small miter gauge, we almost never need one for bandsawing, and so place little value in them. But the miter slots in the tables do come in handy for holding jigs.

NOTE: Laguna is replacing its 18" bandsaw (model LT18 3000), and the new model was not available for this review.

In a close race, two saws inch ahead

Frankly, we were a little disappointed, given the price range of these saws, in their collective performance and capacities, compared to some of the premium 14" bandsaws we've used. We just expected the gap between those classes to be more significant. That said, these are certainly no duds but, rather, worthwhile machines you

should have on your radar for their power and horizontal throat capacity.

No single machine stood out as the clear front-runner, so we awarded Top Tool honors to two saws: the Grizzly G0514X2B and Jet JWBS-18QT-3. The Grizzly cut fastest, cut cleanly, and has the tallest fence, best table system, and our favorite blade brake. The Jet

has the most intuitive and effective blade guides as well as a user-friendly blade tension system, and almost as much power as the Grizzly.

At \$1,350, the Grizzly G0513X2BF delivers a good mix of cutting performance with features, earning the Top Value award. 🌳

Produced by **Bob Hunter** with **Brian Simmons**

Multipurpose Workcenter

Store lumber, cut it to length, shape and assemble it, and organize supplies in one super station.

Efficient fluorescent light helps you clearly see your work.

Handily store boards up to 12' long.

Connect a shop vacuum to the saw for dust collection. Disconnect it for use around the shop.

DIMENSIONS:
94"H x 29 1/4"D x 120"L

Approximate materials cost:

\$725

including hardware and Kreg fence

Up to SIX drawers

Start with the uprights

Our workcenter has three bays, so we built four of the upright assemblies shown in **Drawing 1**. If you want to make your station longer or shorter, simply build one more upright assembly than the desired number of bays.

Tip! While you're set up to cut the rails, cut 17 more parts to the same size to use for parts H, N, and Q later.

► Build a simple tablesaw tapering jig. woodmagazine.com/taperjig1

1 Cut the uprights (A, B), rails (C), and arms (D, E) to size [**Materials List**, page 59; **Drawing 1**]. Save two cutoffs at least 12" long for checking tablesaw setups later. Cut the tapers on the arms and sand the arms to 150 grit.

2 Lay out the locations of the dados and rabbet on one back upright (A) [**Photo A**]. Make sure the lowest dado aligns with the top of the front uprights (B) [**Drawing 1**]. Then transfer the lines to all of the back uprights. Lay out the rabbets on the ends of the front uprights.

SHOP TIP

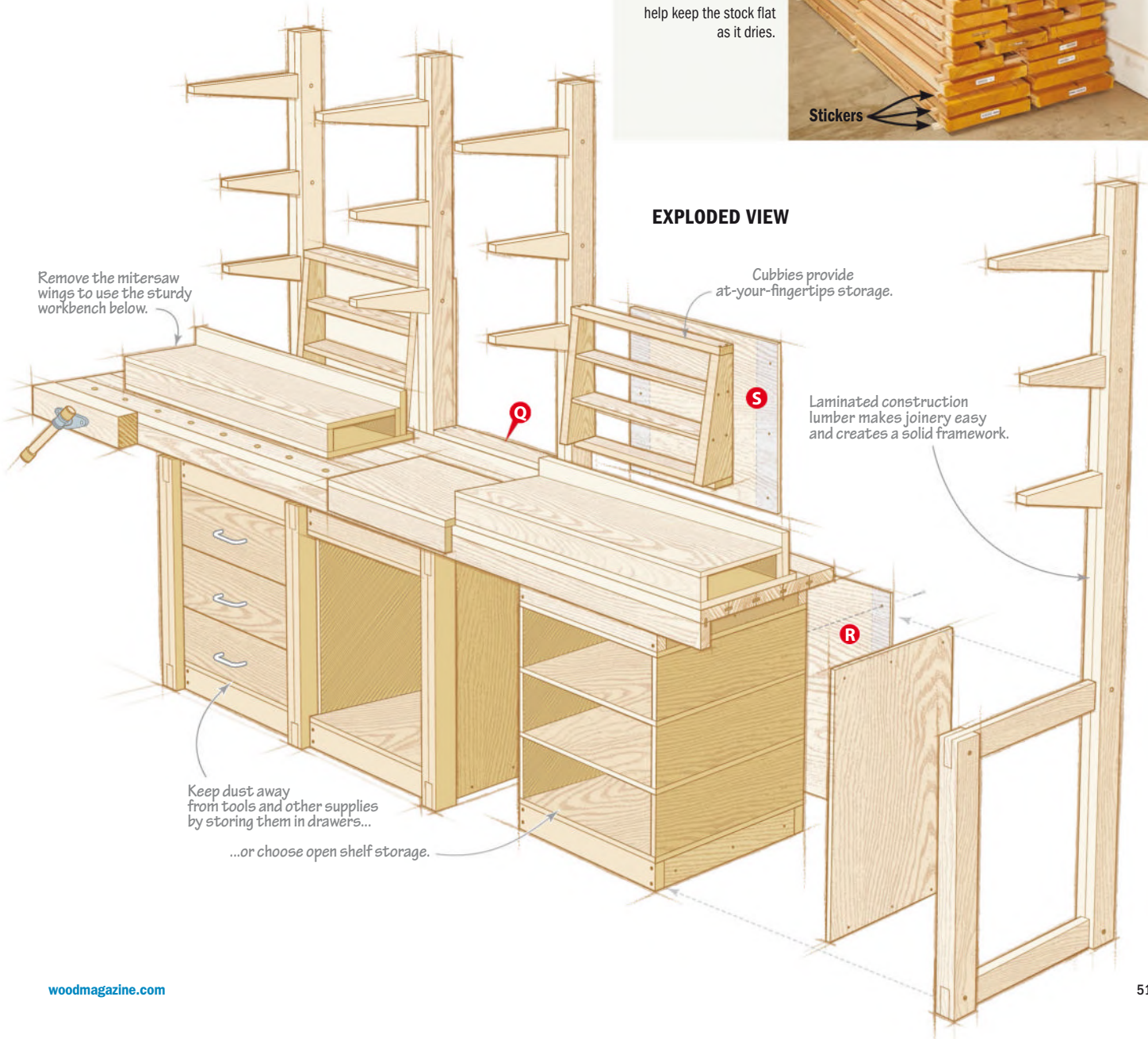
Properly prep construction lumber for top results

We cut the 3½"-wide pieces for this project from 2×8s and 2×12s instead of 2×4s. These wider boards yield more riftsawn grain for better stability and appearance.

When purchased, our lumber tested between 14 and 15 percent moisture. That's too wet to work because as the lumber dries, it may twist, warp, and cup. So we stacked it with ¾×¾" stickers (spacers) between each layer to allow air to circulate around each board, *below*, and let the stack air-dry until it reached 8 percent moisture. (It took six weeks.) We then ripped parts to finished width as needed, removing the rounded edges to provide tight, gap-free joints.

Purchase your plywood, on the other hand, just before you need it. Allowing it to dry before beginning will cause it to curl. Securing it to the workcenter assemblies with glue and screws keeps it flat as it dries.

Stack the lumber, aligning the stickers vertically. Weigh down the top layer with additional boards to help keep the stock flat as it dries.



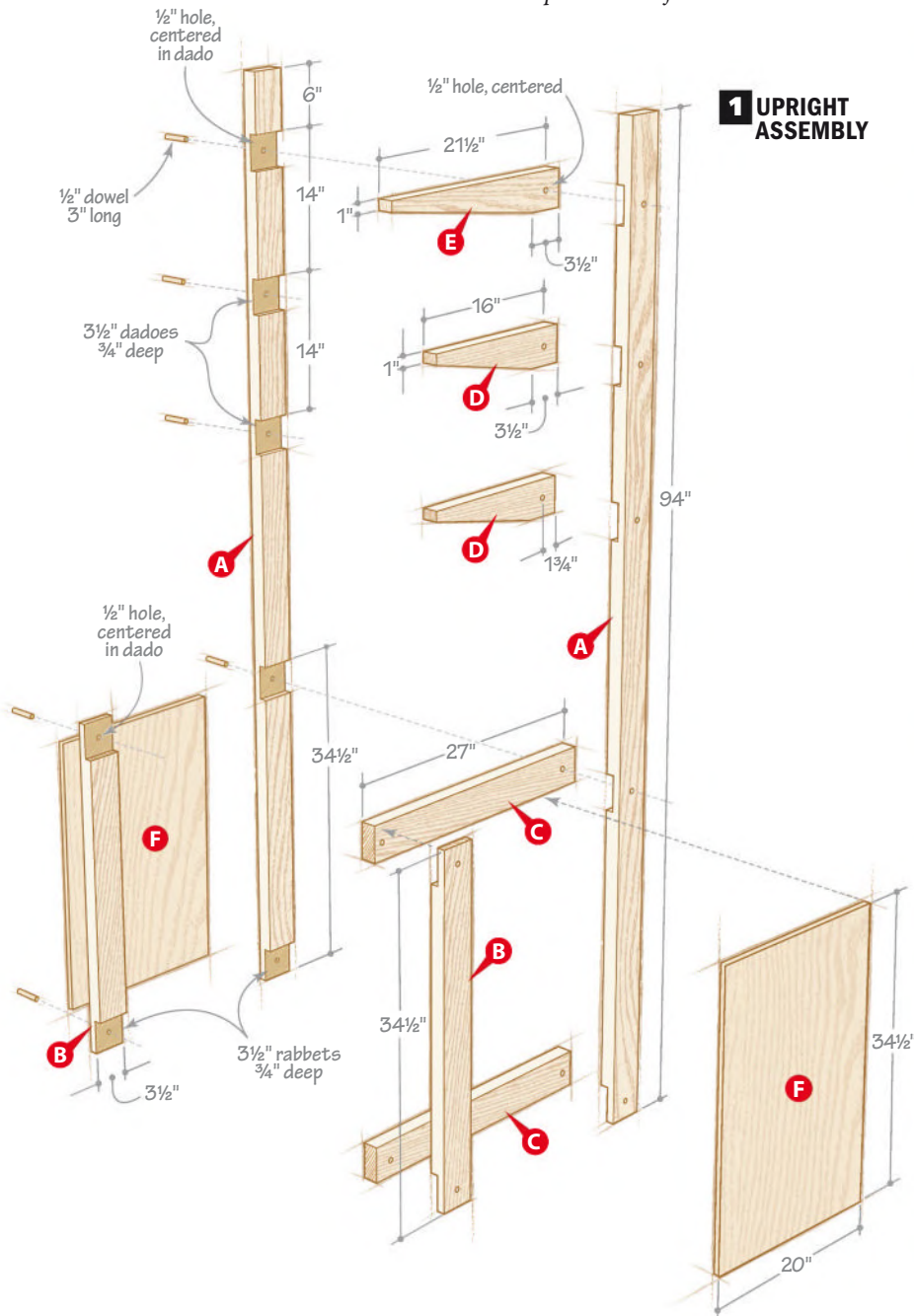
► Find plans for the work support shown in Photo C in issue 135 (Sept. 2001) or purchase them at woodmagazine.com/3n1support.

3 Install a dado set in your tablesaw. Cut a test rabbet on the ends of two cutoffs and check the setup as shown in **Photo B**. Make any needed adjustments, then cut the dados and rabbets in the uprights (A, B) [**Photo C**].

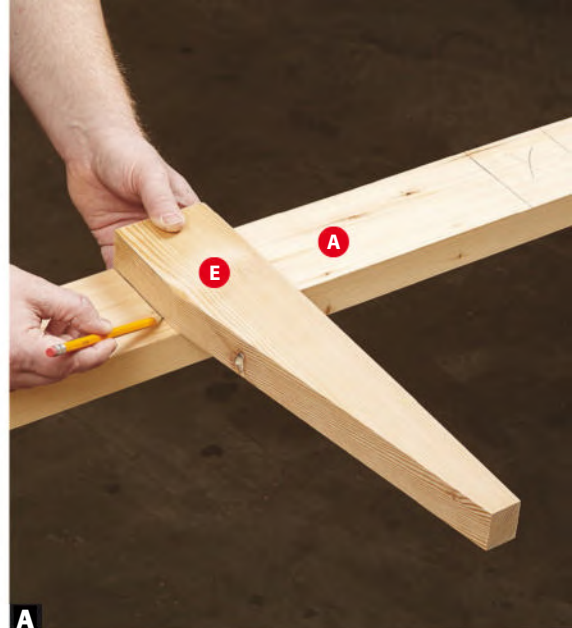
4 Assemble the upright assemblies as shown in **Photos D-G**. After the glue dries, drill the $\frac{1}{2}$ " holes centered on each joint and glue in a length of dowel [**Drawing 1**]. Sand the dowels flush and sand the assemblies to 150 grit.

5 Cut the panels (F) to fit between the uprights (A, B) and glue them in place.

Note: The two outer upright assemblies (A-E) have a panel on only the inside face. Inner assemblies have a panel on each face.



1 UPRIGHT ASSEMBLY



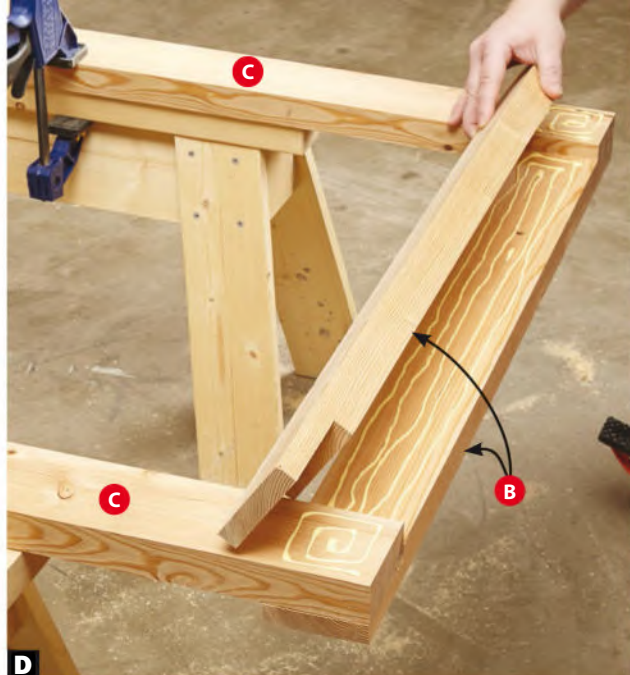
A Get a tight mortise. Measure to the top of each dado, then place an arm against the mark to locate the bottom edge of the dado.



B Two rabbets make an open mortise. Sandwich the two test pieces together with the rabbets facing each other; a cutoff from the rails (C) should fit snugly in the resulting mortise.



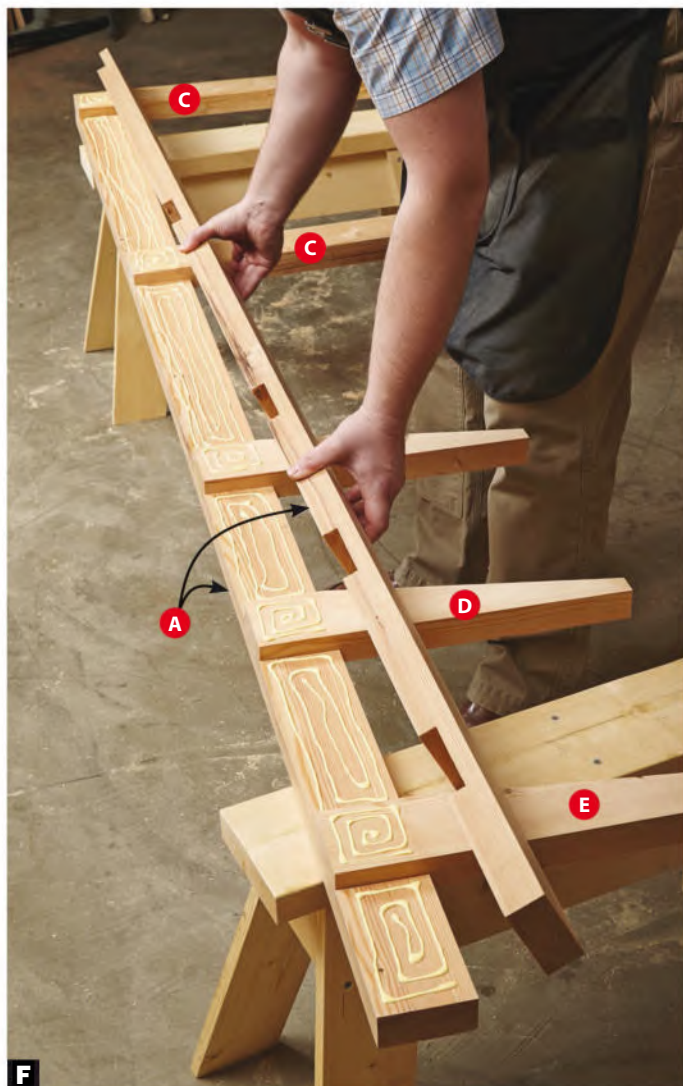
C Handle long parts easily. To steady the back uprights (A), set up a support to the side of the saw and clamp the workpiece to a miter-gauge extension.



D
Glue up in stages. Glue and clamp one front upright (B) to two rails (C), check for square, and let the glue set for at least 30 minutes. Then flip the assembly, add the other upright, and reclamp across the uprights.



E
Attach the arms to the uprights. Glue the arms (D, E) to only one back upright (A) with their ends flush with the rear edge of the upright.



F
Add the front assembly. Position the rails (C) in a back upright (A), then add glue and the second upright to sandwich the rails and arms (D, E).



G
Don't skimp on clamps. Clamp at each arm and rail and in the space between each. Make sure the edges of the back uprights (A) are flush.

Connect the uprights

The uprights are tied together by simple square frames with plywood skins that add rigidity. The space between the top and bottom frames provides storage.

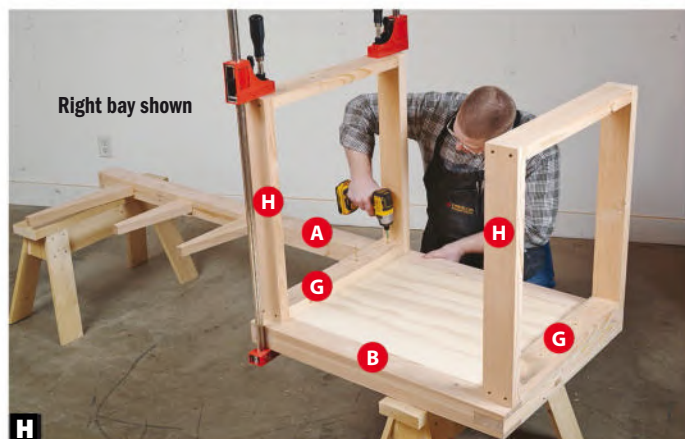
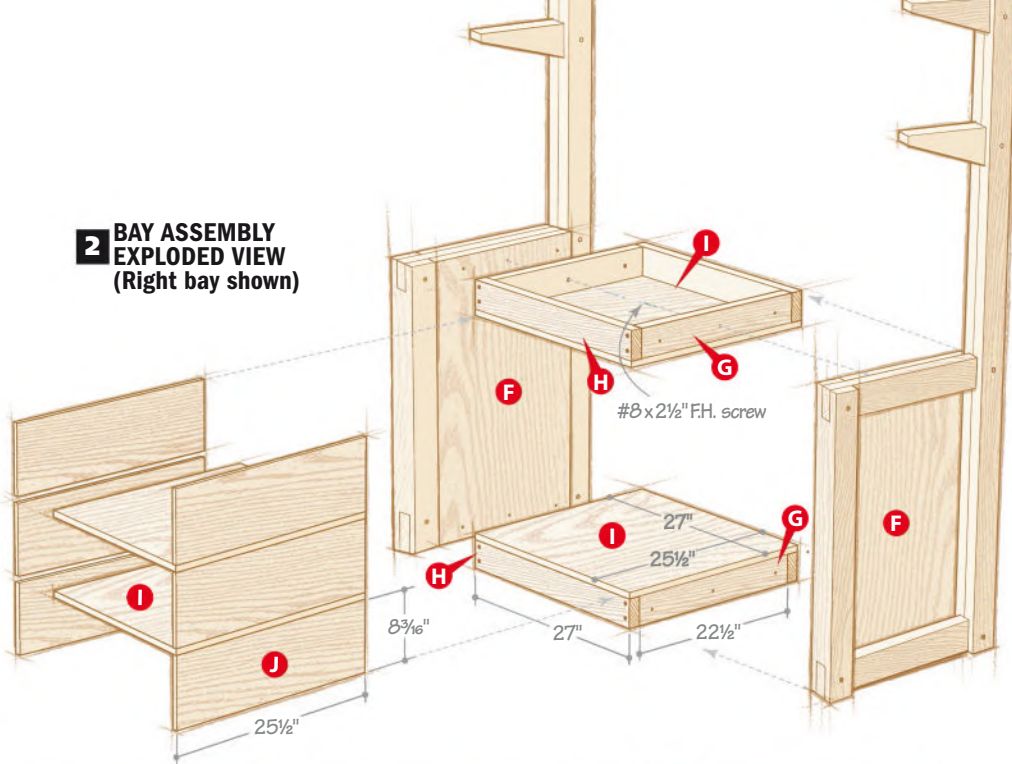
1 To make the frames, cut the sides (G) and fronts/back (H) to size [Drawing 2]. Glue and screw together six frames.

2 Rest an interior upright assembly (A-F) on a pair of sawhorses. Glue and screw two frames (G/H) to the assembly [Photo H]; then add an outside assembly [Photo I]. Repeat to make two bay assemblies.

3 Cut the shelves (I) and dividers (J) to size. Install them as shown in Photo J. The two remaining shelves will be used when joining the two bays in the next step.

4 Retrieve the two remaining frames (G/H) and use them to connect the two bays (A-J) [Photo K]. Screw a shelf (I) to the underside of the top frame, and another to the top of the bottom frame.

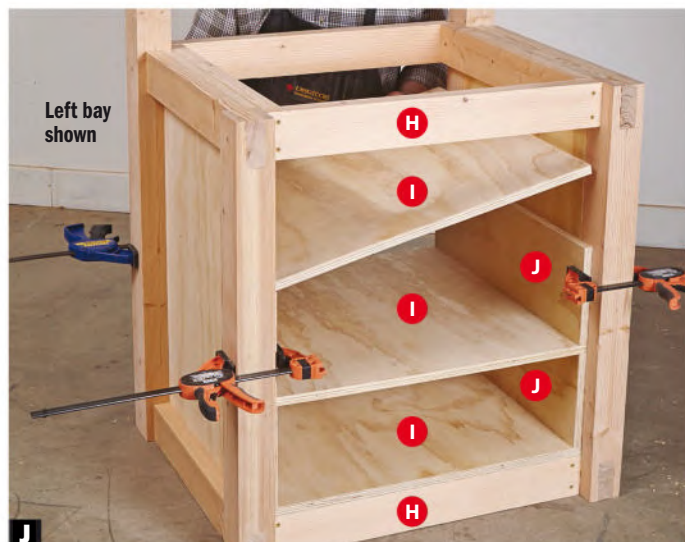
2 BAY ASSEMBLY EXPLODED VIEW (Right bay shown)



Add the frames (G/H) aligning them with the ends of the front uprights (B) and the back edge of the back upright (A). Clamp the assemblies together while you drive screws.



Attach the next upright assembly the same way. Check that the rear edges of the back uprights align along their full length. The second assembly will be a mirror image of the first.



Divide the bays for storage. Glue a shelf (I) to the bottom frame (G/H). Glue a divider (J) to each panel (F), resting on the shelf. Then add another shelf and continue working your way up, attaching a shelf to the underside of the top frame.



Tie the bays together. Screw, but don't glue, the two remaining frames (G/H) to the panels (F). This allows for disassembling the workcenter if need be.



L **Joint long boards with a plane.** Clamp each board to the bays with a support at each end. Joint each edge square to the faces. Watch the process at woodmagazine.com/planejoint.



M **Grooves for splines help align.** Rout grooves along two mating benchtop boards. Run the router on the top faces of the boards to ensure the top faces align.

Build a benchtop

► Time spent sharpening a plane iron pays off. woodmagazine.com/sharp

1 Prepare five $1\frac{1}{2} \times 5 \times 10'$ boards for the benchtop [Drawing 3]. Arrange them edge to edge on top of the workcenter for best appearance and mark the mating edges. Joint these edges [Photo L], then rout grooves in them [Photo M]. Drill dogholes in the front board where shown in Drawing 3 and rout a groove in its lower face to accept a spline for the edging (L).

2 Glue up the benchtop one board at a time, working from the back forward [Photo N]. Cut the edging (L) to size and rout a groove in one edge [Drawing 3]. Glue and clamp the edging in place. After the glue dries, sand the splines flush with the ends of the benchtop.

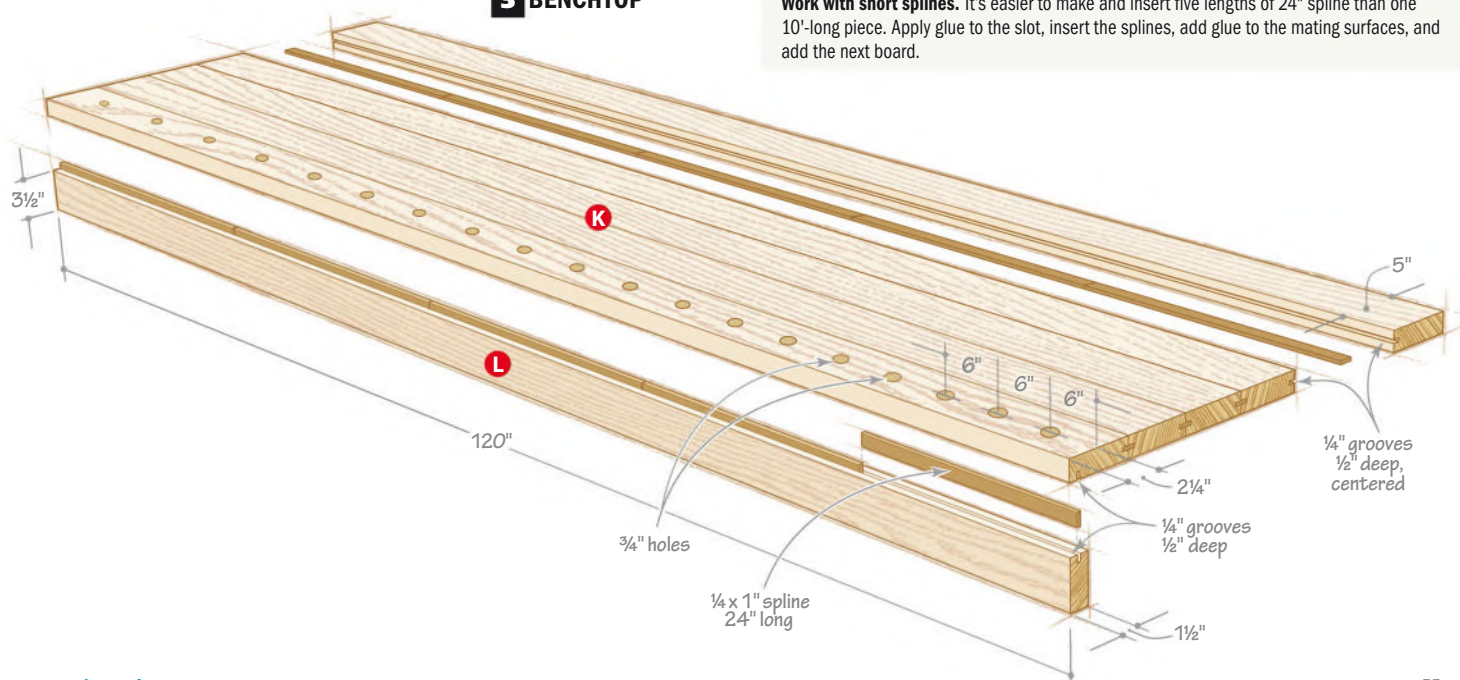
3 With the help of a friend (or two), position the benchtop (K/L) on the bay assemblies (A–J). Sand the benchtop to 150 grit, then screw it to the frame sides (G).

SHOP TIP



N **Work with short splines.** It's easier to make and insert five lengths of 24" spline than one 10'-long piece. Apply glue to the slot, insert the splines, add glue to the mating surfaces, and add the next board.

3 BENCHTOP



4 We added a vise to the front of the benchtop (no. 70G08.02, \$85, leevalley.com, 800-871-8158). Follow the instructions provided with the vise to mount it.

Storage cubbies corral tools

1 Cut the cubby sides (M), top/bottom (N), shelves (O, P), and center spacer (Q) to fit between the back uprights (A) [Drawing 4; Exploded View, page 51]. Cut the angle on the cubby sides and sand all pieces to 150 grit.

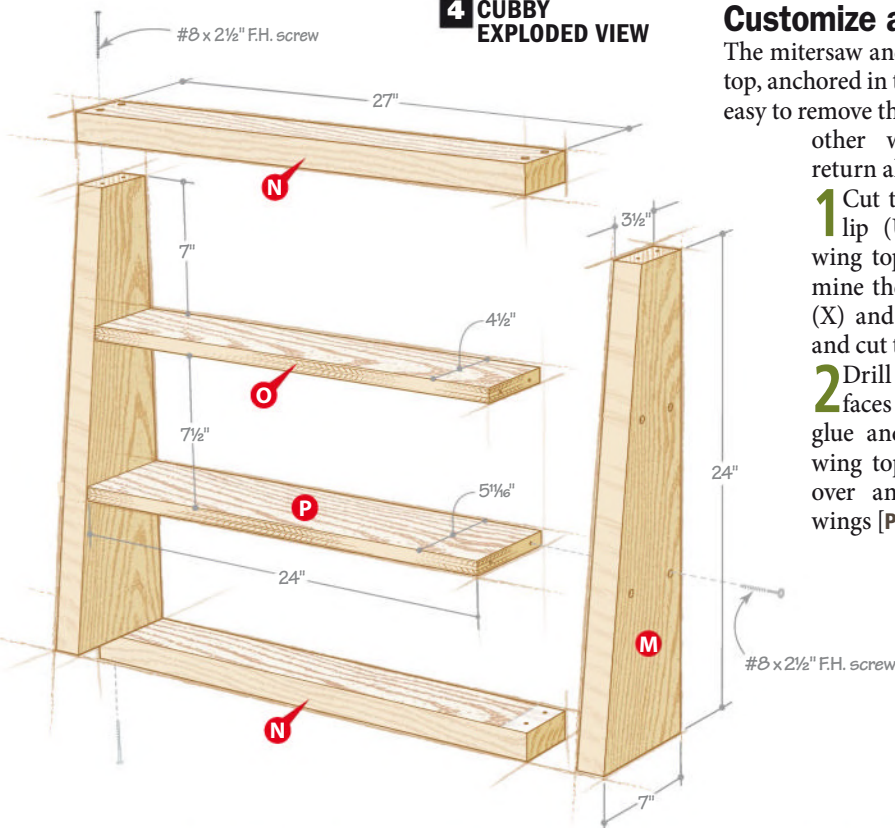
2 Screw the cubbies together with all parts flush at the back. Secure a cubby into the space between the back uprights on each end bay by screwing through the cubby sides (M).

3 Cut the backs (R, S) to size [Exploded View]. Screw (don't glue) the lower back in place behind the bays, then screw and glue the upper backs in place behind each cubby.

4 Cut a notch in the center spacer (Q) and the panel (F) below the center section of the benchtop to allow the hose of your shop vacuum to pass through. Screw the center spacer in place between the back uprights in the center bay.

Tip! Before driving screws into the edge of plywood, drill $\frac{3}{32}$ " pilot holes to prevent splitting the workpiece.

4 CUBBY EXPLODED VIEW



Customize a saw platform

The mitersaw and wings rest on the benchtop, anchored in the dogholes. This makes it easy to remove them to use the benchtop for other work, and then quickly return all three parts to position.

1 Cut to size the saw mount (T), lip (U), fence bases (V), and wing tops (W) [Drawing 5]. Determine the width of the fence backs (X) and wing risers (Y) [Photo O] and cut them to finished size.

2 Drill pocket holes in the inside faces of each wing riser (Y) and glue and screw the risers to the wing tops (W). Flip the assembly over and finish assembling the wings [Photo P].



Find the wing height. Place the wing top (W) next to your mitersaw and measure from the plywood to the saw table. This is the width of the wing risers (Y). Add 3" to this dimension for the width of the fence backs (X).



Assemble the wings. Apply glue to the edges of the risers (Y), align the ends of the risers and fence base (V), then drive screws through the fence base and into the risers.



Q Mark the dog holes. Push a $\frac{3}{4}$ " Forstner bit through two dogholes under each wing and the saw mount. Give the bit a tap to mark the centerpoint of each doghole.



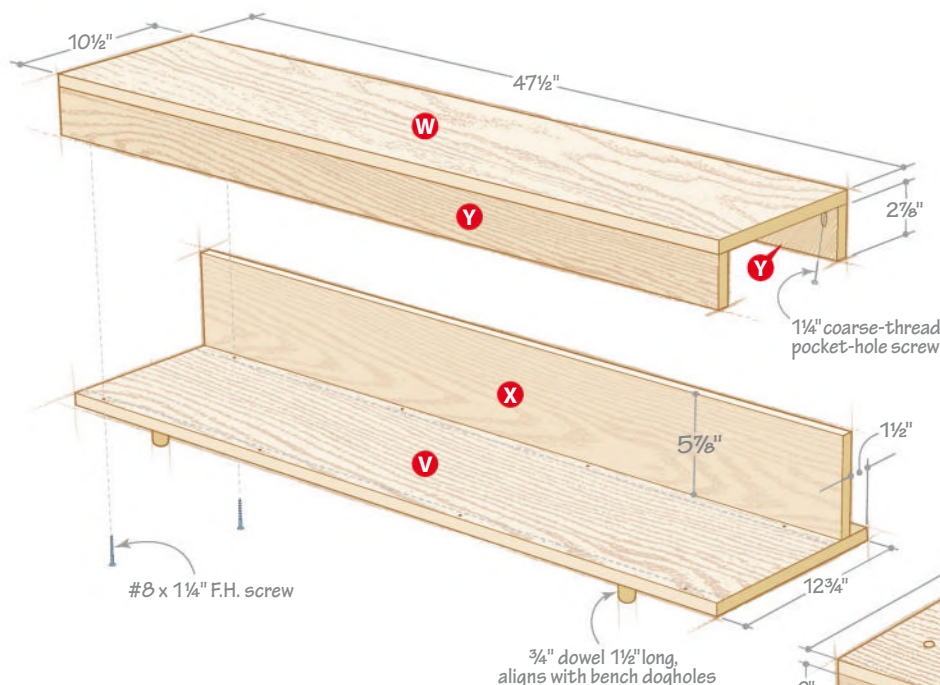
R Drill dowel holes. Drill $\frac{1}{2}$ "-deep holes on the marks to accept $\frac{3}{4}$ " dowels. Using the drill press ensures perpendicular holes so the dowels will drop into the dogholes easily.

3 Glue and screw the lip (U) to the underside of the saw mount (T), flush with the front edge [Drawing 5]. Set the saw mount and wings (V–Y) in position on the benchtop and place your saw on the mount. Use a long straightedge to help align the miter saw fence with the fence backs (X). Make sure the saw clears the back uprights (A) and short arms (D) when pivoted to each side. With the saw and wings properly aligned, clamp them in place, and mark through the

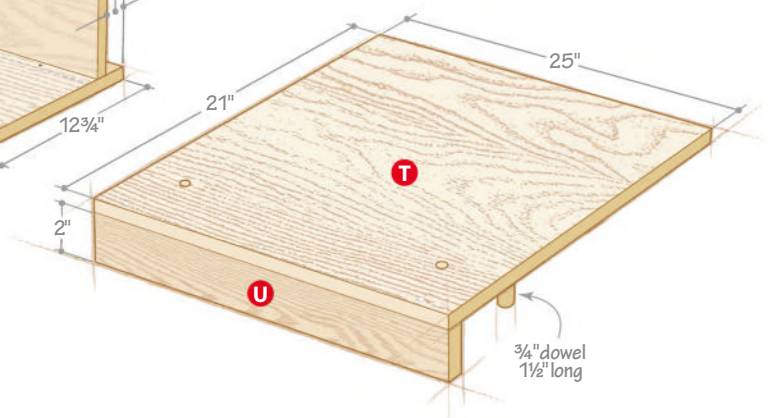
holes in the saw base onto the top face of the mount. Then, insert a $\frac{3}{4}$ " Forstner bit through at least two dogholes below the mount and each wing [Photo Q].

4 Remove the wings and saw mount. Drill and counterbore the bottom face of the saw mount to accept carriage bolts for mounting the saw. Drill holes on the marks on the bottom of the mount and wings [Photo R], and glue $1\frac{1}{2}$ " lengths of dowel into the holes. Bolt the saw to the mount.

► We added a Kreg Precision Trak and Stop kit to the wings.
woodmagazine.com/kregtrak



5 MITERSAW MOUNT AND WINGS





S Mount drawer slides easily. Rest a drawer slide on a spacer and secure the slide with two screws in the horizontal slots to allow for adjustment. Repeat on the other side.

Add drawers, if you like

1 To fit drawers into the openings in the outer bays, cut the drawer parts (Z-CC) to size [Drawing 6] for as many drawers as you want. Drill pocket holes in the outside faces of the fronts and backs (Z) and screw and glue them to the drawer sides (AA). Glue a drawer bottom (BB) to each assembly.

► Watch a free video on installing drawer slides.

woodmagazine.com/simpleddrawer

2 From $\frac{3}{4}$ " or thicker scrap, cut a $3\frac{3}{16}$ "-wide spacer. Separate the drawer slides and rest the cabinet half of a slide on the spacer [Photo S]. Attach the other halves of the slides to the drawer boxes [Photo T], flush at the front and centered on their height.

3 Slide the drawers in place, and check their operation and alignment in the openings. Make any needed adjustments to the positions of the slides, then drive additional screws to secure the slides.

4 Attach the pulls to each false front (CC), centered. Then, put a piece of double-faced tape on each drawer front (Z). Center the false front in the opening, press it against

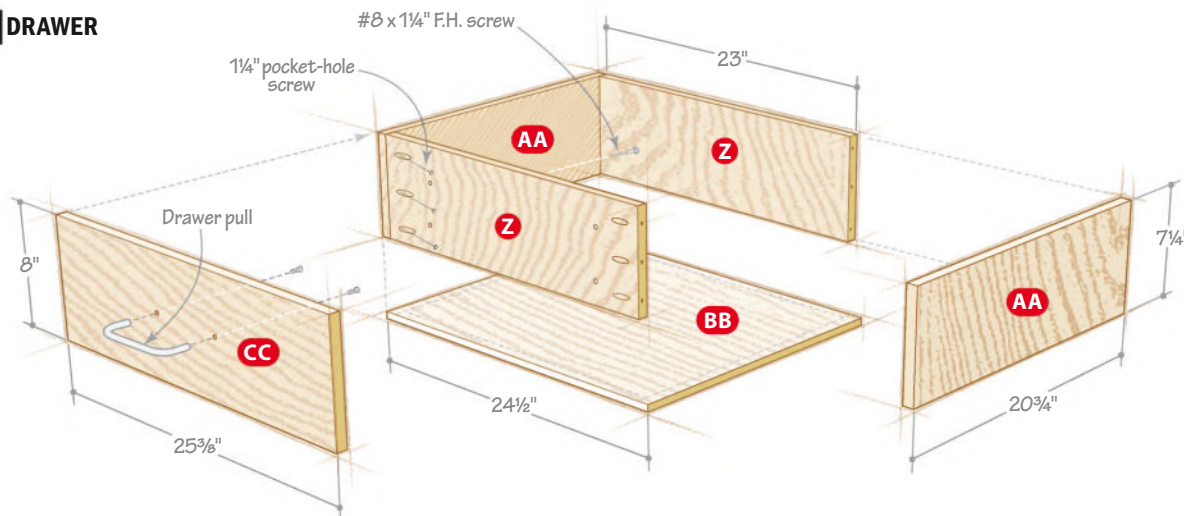


T Screw on the drawer half. Align the drawer half of the slide flush with the front of the box and centered on the drawer height.

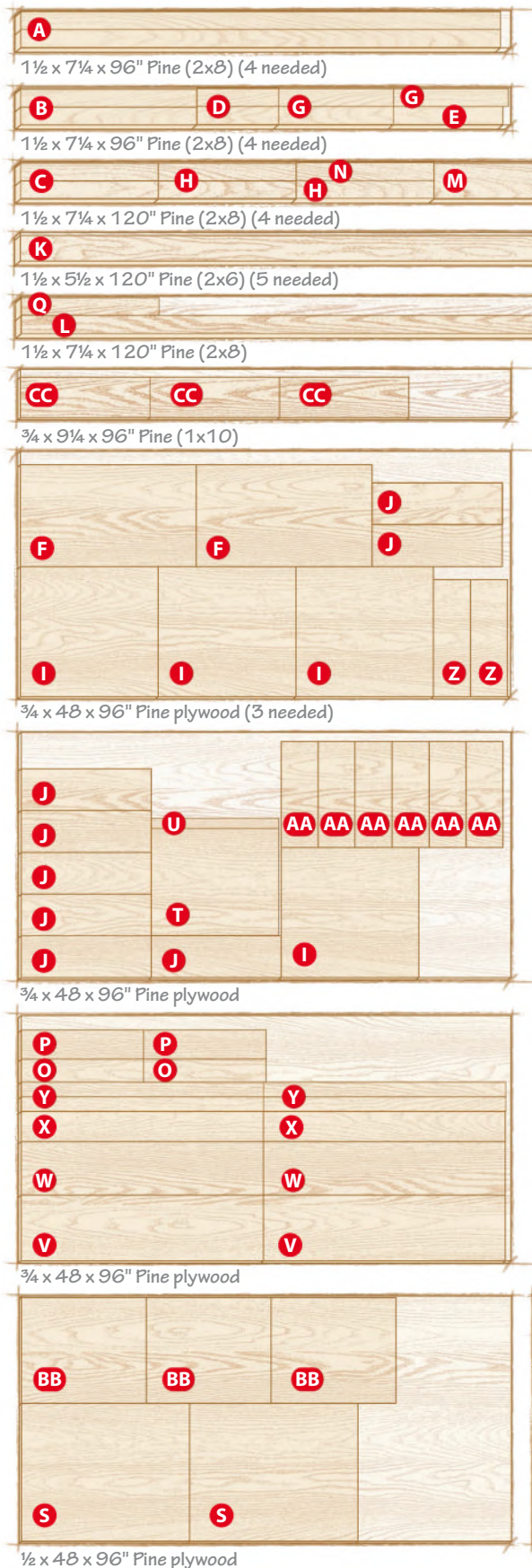
the drawer front, and pull the drawer out. Screw the false fronts to the drawers.

5 To light up the work area, we attached an 8' fluorescent fixture with four T5 bulbs to the long arms (E). Slide your shop vacuum in place, attach it to the saw, and you are ready to go! 🌲

6 DRAWER



Cutting Diagram



Materials List

Part		FINISHED SIZE			Matl.	Qty.
		T	W	L		
Uprights						
A	back uprights	1½"	3½"	94"	P	8
B	front uprights	1½"	3½"	34½"	P	8
C	rails	1½"	3½"	27"	P	8
D	short arms	1½"	3½"	16"	P	8
E	long arms	1½"	3½"	21½"	P	4
F	panels	¾"	20"	34½"	Ply	6
Frames						
G	sides	1½"	3½"	22½"	P	12
H	fronts/back	1½"	3½"	27"	P	12
I	shelves	¾"	27"	25½"	Ply	10
J	dividers	¾"	8¾"	25½"	Ply	12
Benchtop and cubbies						
K	benchtop	1½"	25"	120"	EP	1
L	edging	1½"	3½"	120"	P	1
M	sides	1½"	7"	24"	P	4
N	top/bottom	1½"	3½"	27"	P	4
O	top shelves	¾"	4½"	24"	Ply	2
P	bottom shelves	¾"	5½"	24"	Ply	2
Q	center spacer	1½"	3½"	27"	P	1
R	lower back	½"	34½"	93"	Ply	1
S	upper backs	½"	27"	33"	Ply	2
Miter saw mount						
T	saw mount	¾"	21"	25"	Ply	1
U	saw mount lip	¾"	2"	25"	Ply	1
V	fence bases	¾"	12¾"	47½"	Ply	2
W	wing tops	¾"	10½"	47½"	Ply	2
X	fence backs	¾"	5½"	47½"	Ply	2
Y	wing risers	¾"	2½"	47½"	Ply	4
Drawers (Quantities listed for three drawers)						
Z	fronts/back	¾"	23"	7¼"	Ply	6
AA	sides	¾"	20¾"	7¼"	Ply	6
BB	bottoms	½"	20¾"	24½"	Ply	3
CC	false fronts	¾"	8"	25¾"	P	3

*See the instructions to determine actual width.
Cut splines from scrap material.

Materials key: P-pine, Ply-plywood, EP-edge-glued pine.

Supplies: ½" oak dowels 48" long (2), ¾" dowel 12" long (1), 1¼" coarse-thread pocket-hole screws (52), #8x1¼" F.H. screws (40), #8x1½" F.H. screws (16), #8x2½" F.H. screws (28), #8x3" F.H. screws (36), drawer pulls (1 per drawer), 20" full-extension drawer slides (1 pair per drawer).
Blade and bits: Stack dado set, ¾" Forstner bit, ¼" slot-cutting router bit.

Produced by **Craig Ruegsegger** with **John Olson** and **Brian Bergstrom**
Project design: **John Olson**
Illustrations: **Roxanne LeMoine**, **Lorna Johnson**, **Kurt Schultz**

Tuning Up Your Mittersaw

By Jim Heavey



A few minutes spent tuning your mittersaw properly will deliver the perfect miters and crosscuts you seek. Considering how any error is multiplied by eight cuts when mitering a four-sided frame, precise setup is critical. These tips will provide spot-on accuracy.

Start with a quality cutter

If you're still using the contractor-grade blade that came with the saw, my first advice is to upgrade to one more suited to wood-working. Choose a blade with a negative hook angle to prevent climbing during a cut.

For a 10" blade, get one with 60–80 teeth; for a 12" blade, 80–100 teeth. These high tooth counts provide splinter-free edges when mitering and crosscutting.

Now, work the angles

Next, make sure that your new blade sits 90° to the base of the saw. Rest the handle of a quality square on the saw base with the blade of the square against the saw-blade body, not the teeth [photo above]. Your manual will explain how to adjust and set the stops on the saw's bevel post to eliminate any gap between the saw blade and the square.

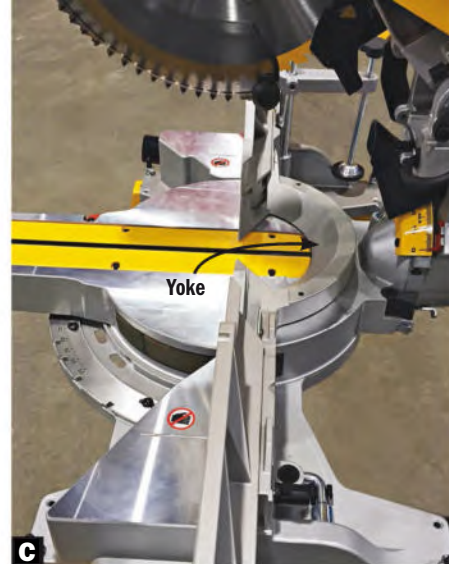
Blades from Ridge Carbide, Freud, and Forrest are my personal favorites. They come at a premium, but I believe the cost is well worth it.



A
Set the bevel. A plastic drafting triangle works well to check the 45° bevel angle. The triangle provides longer edges than the head of a combination square.



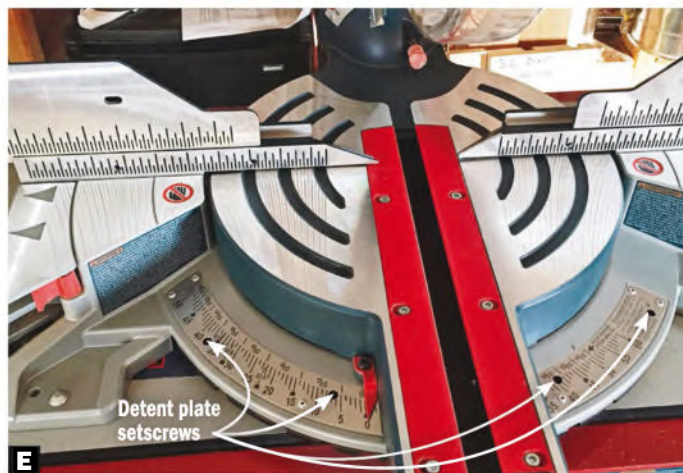
B
Square the fence to the blade. Place the square's handle against the fence and check for a gap between the square's blade and the plate (not the teeth) of the saw blade.



C
Adjusting a one-piece fence. On this one-piece fence, the left and right sides are connected by the yoke. Adjusting one side aligns them both.



D
Adjusting a two-piece independent fence. Set the left fence first. Then, place a straightedge flat on the saw's base and against the left fence to align the right side with it.



E
Adjusting a fixed fence. Loosen the setscrews found on each side of the miter scale to fine-tune the angle of the blade to the fence.

You can then set the cursor at the back of the saw to exactly 0°. Repeat this procedure to set the 45° bevel [Photo A].

Once the bevels have been set, adjust the saw's miter stops. First, set the blade 90° to the fence [Photo B]. Making this adjustment depends on the type of fence you have.

For a one-piece fence [Photo C], loosen the adjusting bolts or screws on each side of the fence and adjust either the right or left side to the blade body. You only have to adjust one side because this automatically sets the opposite side.

If your saw has separate (left and right) fences, aligning each side square to the blade may result in fences that do not align with one another. The solution is to square one fence to the blade and retighten that fence's bolts or screws. Then, align the opposite fence, as shown in Photo D. Finally, adjust the cursor to 0°.

On some saws, the fences are not adjustable [Photo E], so you instead align the blade and saw carriage square to the fence. Do this by setting the miter at the 0° detent and then loosening the screws on the miter detent plate. Rotate the table (and the detent plate) to position the blade 90° to the fence. Then, retighten the adjustment screws. There is no need to adjust any other miter settings.

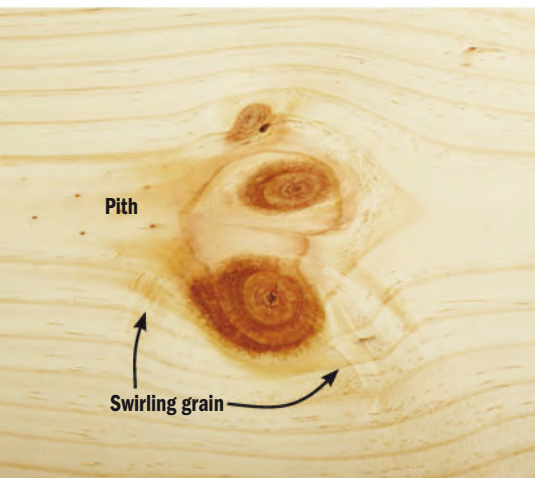
How did you do?

The true test of your work is to cut 45° miters on each end of four equal-length pieces of stock and check the fit by dry-clamping them into a square, right. A less-than-perfect joint at any corner means you'll need to review each alignment step and correct as necessary. Remember, miters draw the eye. With careful setup, yours will draw many admiring looks! 🌲



A band clamp brings all four corners together easily. Don't have one? Secure each corner with painter's tape.

How to get a Fine Pine Finish



Avoid pith and swirling grain. Wood in the tree's first few growth rings, and swirling wood near knots, will be prone to tear-out, splitting, and uneven finish absorption.

Many woodworkers love pine because of its low cost, easy workability, light weight, and wide availability. And, when clear-finished, pine radiates a warm glow found in few other woods. What's not to like? Well, if you prefer a darker, stained finish, things get a little dicier. That's because a bare pine surface absorbs stain unevenly, yielding an unnatural, blotchy, or zebra-like coloration. But don't let that deter you. Pine can be pleasingly stained—it just requires a bit of extra prep work.

4 steps to staining success

Within the pine bins at your local lumber retailer, you may find any number of tree species loosely defined as "pine." And even within the same pine species, boards can vary greatly in how they absorb stain. That

adds up to a lot of staining unpredictability. To manage the situation, you need to test your finish on sample boards made from the same wood used in the project. That's exactly what we did to demonstrate this surefire staining process for pine.

1. Buy the right boards. Most pine lumber has knots, an "imperfection" that's part of the wood's charm. Just avoid knots so loose they're about to fall out, especially ones near the tree's pith or with wildly swirling grain as shown, *left*. Secure and seal knots with an application of clear epoxy.

2. Sand smooth. After sanding all surfaces with successively finer grits up to 180 using a random-orbit sander, sand once more by hand with a 180-grit block, stroking with the grain to eliminate any swirl marks. Then,

PINE REQUIRES SEALING PRIOR TO STAINING



**Liquid stain (no sealant)
220 grit**



**Gel stain (no sealant)
220 grit**



**Liquid stain over extra-fine sanding (no sealant)
320 grit**

DARKEN WITH GEL STAIN; AVOID OVERSANDING



**One gel coat over wipe-on poly
180 grit**



**Two gel coats over wipe-on poly
180 grit**



**One gel coat over wipe-on poly
220 grit**

sand the ends to 220 grit to lessen the tendency of end grain to soak up extra finish.

3. Seal the wood. As shown in the *first three* swatches on the *upper* test panel, stain applied directly to a bare pine surface yields a blotchy look. Because gel stain absorbs into the surface less than liquid stain, it tints the surface more evenly. But it still leaves a blotchy surface with too much contrast from early- to late-wood grain lines.

To put the brakes on uneven stain absorption, you have to seal the surface. We tested four methods: simply sanding the wood to 320 grit, and applying three types of sealants: shellac, a store-bought conditioner specifically marketed for use on blotch-prone woods, and a wipe-on polyurethane finish. (It's available in stores, or you can blend your own by mixing polyurethane and mineral spirits

50/50.) After allowing those sealants to dry completely, then lightly abrading them with a 320-grit sanding sponge stroked with the grain, we applied a liquid stain. The swatch sealed with wipe-on poly (*last swatch, upper panel*) showed the most even staining, making it the go-to finish for prepping the surface prior to the next step.

4. Apply a gel stain. Although you can successfully apply any stain over a surface sealed with thinned polyurethane, a gel stain gives you the greatest control over the ultimate color. That's because its thicker consistency allows you to build (and darken) it with successive applications.

The *bottom* test panel shows the effect of adding a second gel coat on top of a first. Building stain coats takes time because each stain coat must dry completely. Otherwise,

you risk removing part of the initial coat with the application of the second coat.

On that panel we also tested gel stain directly applied to a surface sanded to 320 grit with no sealant (*last two swatches, bottom panel*). Again, as with the liquid stain, blotchiness still occurred. We also wanted to know if sanding the surface to 220 grit prior to sealing was of any benefit versus simply sanding to 180 grit. It wasn't (*first four swatches, bottom panel*).

Now stain your pine projects without fear of blotching—but don't be overly brave—you still need to test your finishing products and methods on scrap. 🌲

► For additional tips on working with pine, visit woodmagazine.com/pinetips.

Produced by Bill Krier

Liquid stain over shellac
220 grit

Liquid stain over conditioner
220 grit

Liquid stain over wipe-on poly
220 grit

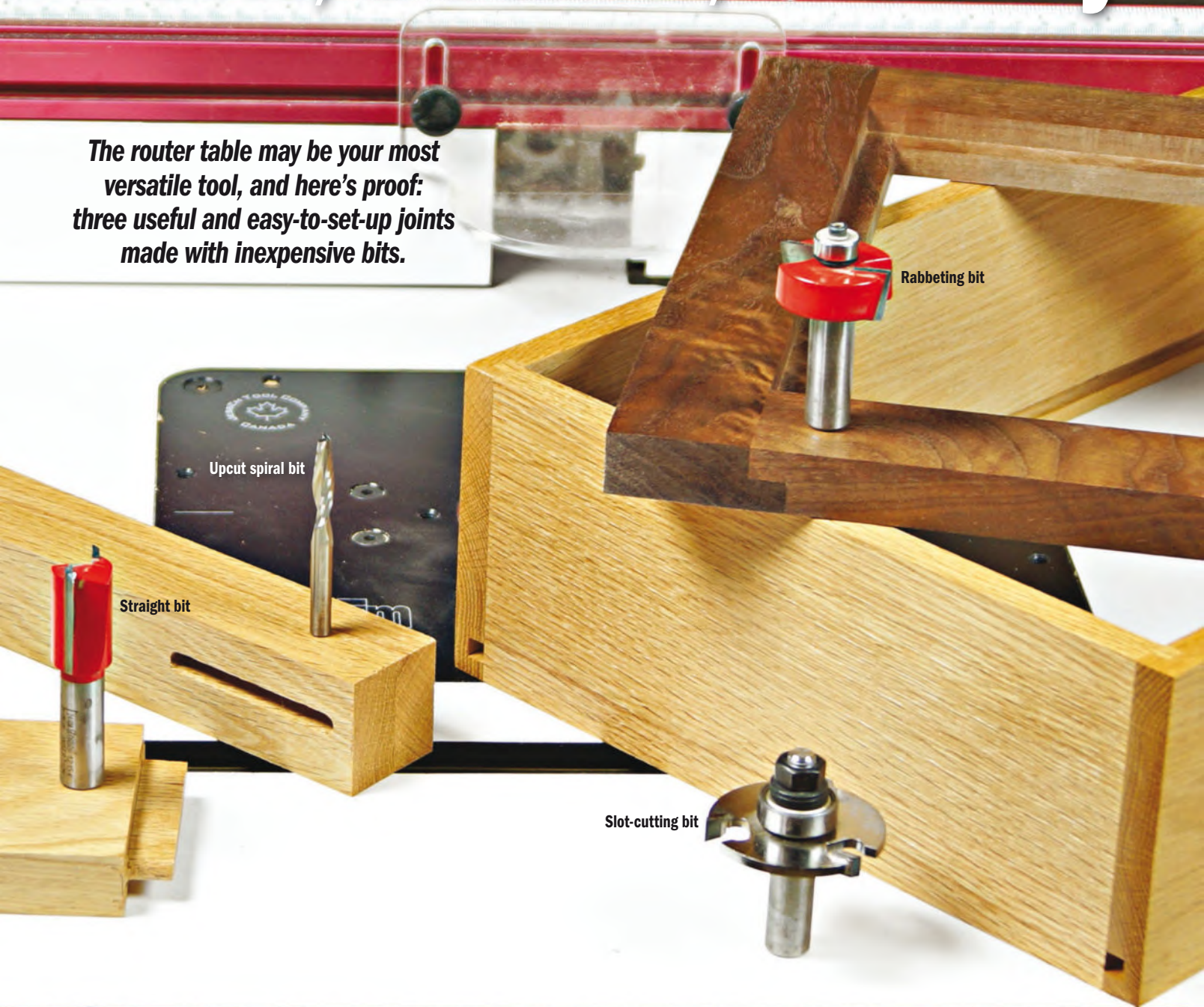
Two gel coats over wipe-on poly
220 grit

One gel coat over bare wood
320 grit

Two gel coats over bare wood
320 grit

4 Bits, 3 Joints, Too Easy

The router table may be your most versatile tool, and here's proof: three useful and easy-to-set-up joints made with inexpensive bits.



By George Vondriska

In addition to classes at Vondriska Woodworks in Hammond, Wisconsin, George teaches at woodworking shows and guilds across the country and "Weekend With WOOD." You may also recognize his name and face from videos he has hosted for the Woodworkers Guild of America.



Note: *Unplug the router for all setup operations.*



Crank out durable drawers with the drawer-lock joint

I love using this joint to make drawers. It's so fast! With one setup you'll cut the corner joint in the drawer fronts, backs, and sides *and* the groove to hold the drawer bottom. Before getting started, machine the

drawer stock to twice the thickness of the cutter. Cut two test pieces from that material and set the drawer parts to the side for now. Then follow the photo sequence *below* to set up and cut the joint.



1 Set the height of the slot cutter so the top of the cutter is flush with the top of your test material.



2 Position the fence for a 1/4"-deep cut (one-half the 1/2" material thickness).



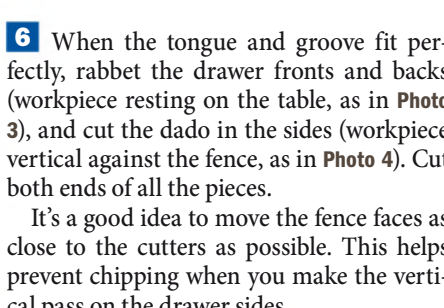
3 Rabbet the end of one of your test pieces. Use a backer board to steady the piece and prevent chip-out.



4 Stand a test side piece on end and cut a dado across it. Use a push pad to hold the test piece firmly against the fence.



5 Test the fit of the tongue in the groove. For a too-tight joint, lower the cutter. If the joint is too loose, raise the cutter.



6 When the tongue and groove fit perfectly, rabbet the drawer fronts and backs (workpiece resting on the table, as in **Photo 3**), and cut the dado in the sides (workpiece vertical against the fence, as in **Photo 4**). Cut both ends of all the pieces.

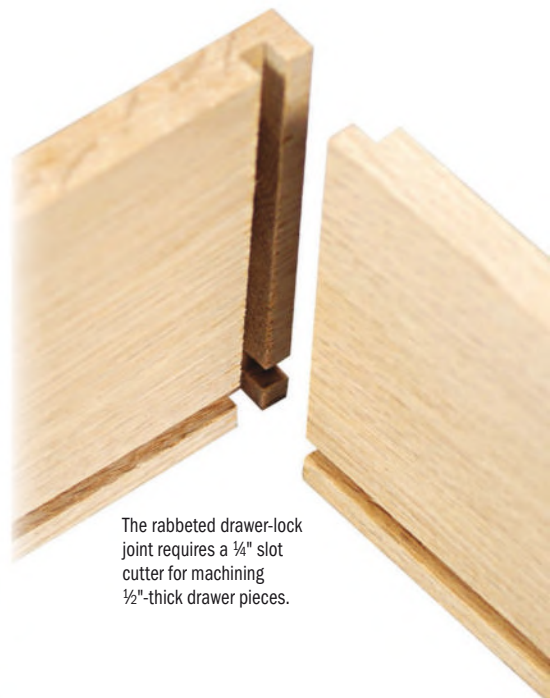
It's a good idea to move the fence faces as close to the cutters as possible. This helps prevent chipping when you make the vertical pass on the drawer sides.



7 Pay careful attention to the orientation of the parts when you cut the grooves for the drawer bottoms. Groove the fronts and backs with the rabbet facing **away** from the fence.



8 Groove the sides with the dados **facing** the fence. Cut the bottoms to size, and your drawers are ready to assemble.



The rabbeted drawer-lock joint requires a 1/4" slot cutter for machining 1/2"-thick drawer pieces.



If the fit is good but the front/back test pieces look like this, your material is too thick. Plane it down, cut off the test end, and repeat the previous steps.



You'll need a $\frac{3}{8}$ " or larger rabbeting bit to make the rabbeted-corner joint. Wider rabbets provide more gluing surface, but also cover more of the item to be displayed.

Rabbeted-corner joint simplifies frame construction

If you want to make a lot of picture frames fast, try this technique. With one setup you cut the corner joints *and* the rabbet for the picture and glass.

This joint works great for pictures up to 8×10" or so. Larger than that, because of the weight of the glass, I recommend a reinforced miter or half-lap joint instead.



1 Set the top of the bit's cutting edge just below the center of a test piece that matches the thickness of your project pieces.



2 Position both fence faces flush with the bit's bearing. A steel rule run along the fence should barely graze the bearing.



3 Rout a rabbet on one end of two test pieces. Use a backer board to steady the material.



4 Check the fit. If it looks like this, raise the bit in tiny increments until the faces align flush. Because you're taking material off both pieces, raise the bit by half the amount of the offset.



5 With the bit height adjusted precisely, machine both ends of the horizontal rails with their good faces down.



6 Add featherboards and rabbet the inside edges of the rails as shown, face (rabbeted) side up.



7 Rabbet the inside edges of the vertical frame pieces (the stiles) with the good face up.



8 Assemble the frame by gluing the rails into the rabbets in the stiles. Use spring clamps to close the joint vertically, and bar clamps to make sure the stiles seat against the rails.

For larger frames, try a mitered half-lap joint.
woodmagazine.com/miteredhalflap

The easiest mortise-and-tenon joint ever

The router table works well for mortises up to 1/4" wide. With mortises larger than that, I find I have better control by plunging the bit into the work with a plunge router rather than plunging the work onto the bit.

Before heading to the router table, lay out the mortise locations on the workpieces, but mark on the faces *opposite* where the mortises will go. This way you can see the marks as you rout the mortised face.



The mortise-and-tenon joint requires two bits: a 1/4" upcut spiral bit for the mortise, and to cut the tenon, a straight bit whose diameter exceeds the length of the tenon.



1

Set the height of the spiral upcut bit to 3/16" (to accept a 1/2"-long tenon). Position the fence to locate the mortise on the workpiece. Slide a square piece of scrap against the flutes of the router bit. Transfer both edges of the bit onto the fence. The left line is your start line. The right line is your stop line. Lock the fence in place—from here out it must not move.



2

1/4" plywood skin

Clamp to the router table a 1/4" plywood skin with a cutout for the bit. (The skin reduces the depth of cut for the first pass so you need not adjust the router.) Align the line for the left end of the mortise with the start line. Plunge the workpiece onto the spinning router bit while also maintaining pressure against the fence.



3

Move the workpiece forward until the right mortise mark aligns with the stop line. Shut off the router, wait for the bit to stop spinning, and then lift the workpiece off the table. Remove the temporary plywood spacer and repeat the process.



4

Lay out a tenon on the end of a test rail the same thickness as your project pieces. Set the straight bit so the top of its cutting edges align with the bottom of the tenon layout line. Position the fence so the bit cuts a 1/2"-long tenon.



5

Back the test piece with a scrap and make a pass on each face to produce the tenon. Check the fit. If the tenon is too thick, raise the bit slightly. Remember, because you cut both faces, raise the bit by half the amount you need to remove.



6

When the tenon fits correctly, you should be able to push it into the mortise with hand pressure or gentle taps from a mallet. With the tenon partially seated in the mortise, there should be enough friction that, if you lift the tenoned workpiece, the mating piece comes with it.



7

Complete the tenon by standing the rail on edge and cutting the top and bottom shoulders. A 4x4 makes a great backer block for this cut. Note that the two faces of the fence touch to prevent the workpiece from falling into a gap between them.

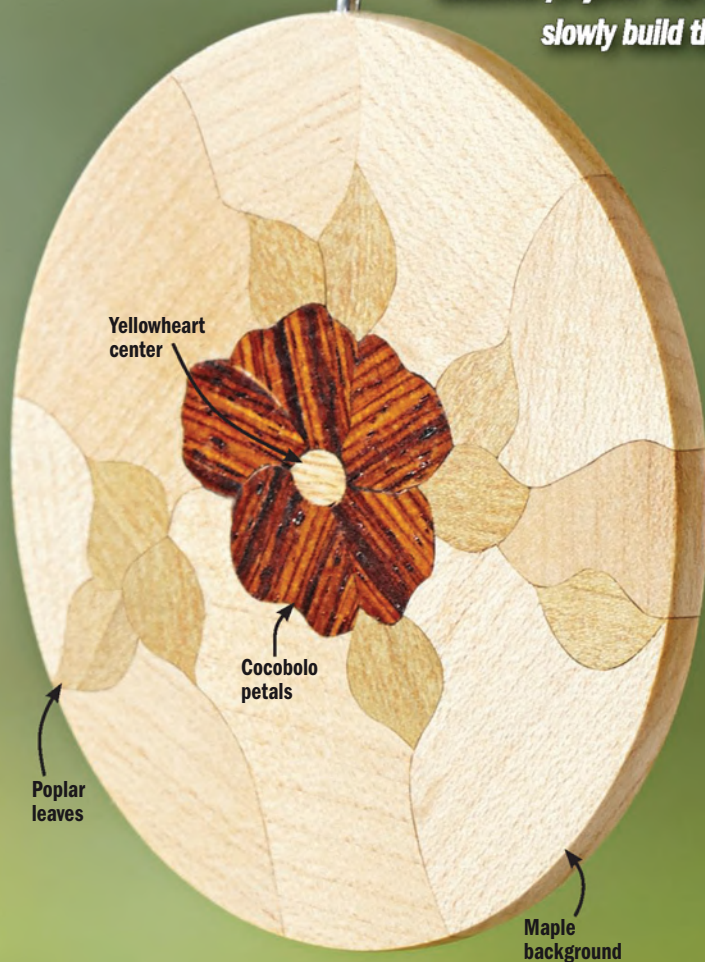


8

Finally, clamp the tenoned workpiece in a vise and use a bench chisel or rasp to round the tenon's corners to match the mortise. You're done! 🌲

Scrollsawn Ornament

Only have short stretches of shop time, but longing for a beautiful project? Cut and glue a couple of pieces each day to slowly build this delightful flower ornament.



Look no farther than your scrap box to find no-cost material for this project. The completed ornament measures 3 $\frac{3}{8}$ " in diameter.

At first glance, you might want to cut all the pieces at once and glue them together. But, there's a far easier—and more precise—way to scrollsaw small parts and fit them together. You can adapt the process to scrollsaw inlays and similar projects, too.

We made the ornament in the photo from four hardwood species, marked on the photo, left. You could use different woods, but make sure they contrast enough to let the design stand out.

Put the patterns on the wood

1 Make four copies of the **Full-size Pattern**, page 69. (If you want to make larger discs—for coasters or trivets, for instance—just enlarge the pattern.)

2 Prepare $\frac{1}{4}$ "-thick blanks from your desired species. For an ornament the size shown, you'll need one piece 1×8" for the center, two 1×8" for the petals, two 1×8" for the leaves, and three 2×8" for the background. Cut a few extras of each species to allow for fitting errors.

3 Cut the individual parts from the patterns with a sharp hobby knife [Photo A]. As you cut out each piece, note which end or edge goes nearest the center of the design. Cut the background patterns (parts 8, 11, 12, 15, 18, 19, 20, 23, and 24) to the outer dashed line. Put the patterns with their blanks.

4 Attach the patterns to the appropriate blanks with spray-mount adhesive [Photos B, C]. For ease of cutting and assembly, place patterns for adjoining parts (1 and 3 or 4 and 5, for example) on different blanks.



A
Go by the numbers. Work in numerical order as you separate the pattern parts. Keep parts that go on same-species blanks, such as the petals, together.



B
Stab and spray. Stick your knife into a pattern from the topside and pick it up to spray adhesive on the back. Count to 10 to let the glue dry.



C
Attach the patterns. Align the patterns with the grain. Keep the pattern edge or end nearest the ornament center near the end of the blank to leave a "handle" as you cut.

Note: A no. 5 universal blade, .038x.016" with 12.5 teeth per inch, cuts the ornament well.

Tip: We glued the ornament with ordinary yellow woodworking glue, but for a quicker grab and faster set, you could use No-Run, No-Drip Titebond glue. Cyanoacrylate (instant) glue would also work.

Start scrollsawing

1 Referring to the **Full-size Pattern**, cut the center and the first petal (parts 1 and 2) only along the top edge and the lines where they join, leaving the long tail of each blank attached for now. Test-fit the joint between the parts, refine it as necessary by sanding, then glue the pieces together [Photo D]. Hold the assembly together until the glue dries.

2 After the glue dries, cut the rest of the 2 center (part 2) to shape and saw straight across the blank below the petal (part 1) pattern, as indicated in **Photo D**.

3 Scrollsaw the next petal (part 3) along the 2 edge where it mates with parts 1 and 2.

Fit the petal to the assembly, glue it, and clamp or hold until the glue dries. Keep the faces flush [Photo E].

4 Continue adding petals to the flower in numerical order. (We built the ornament slowly, usually cutting, fitting, and gluing one or two parts every day to allow time for the yellow glue to dry.) As you work around

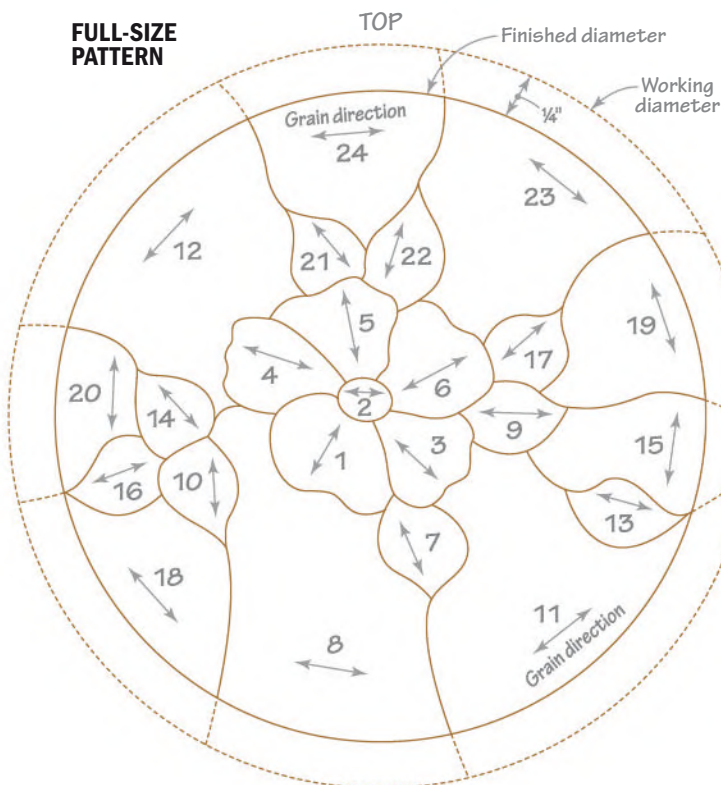


D
Glue the first two parts. Cover your work surface with waxed paper or other nonstick material for assembly. Hold or clamp parts until the glue dries.



E
Sand for a flat back. Flatten the back of the ornament as needed on a sanding block. A flat back makes scrollsawing easier as you assemble the ornament.

FULL-SIZE PATTERN





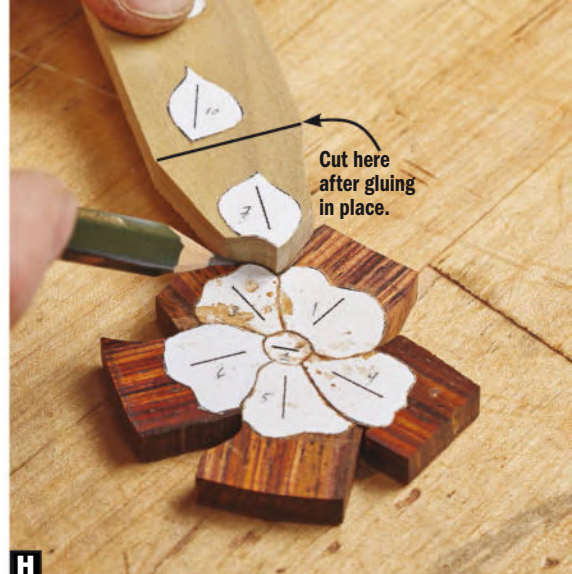
F

Scribe joint for precision. Lay the glued-up ornament on a piece of 1/4" scrapwood. Then, slide the patterned part under the assembly to mark the edge of the part precisely.



G

Fit the parts carefully. Gaps will spoil the look of your ornament and weaken the joints. Hold the parts up to the light to make sure you achieve tight joints.



H

Build out from the flower. Scrollsaw the first leaf (part 7) along the pattern edge that adjoins the flower, then scribe the leaf to the flower. Cut along the scribed line.



I

Fill in the background as you go. Saw the mating edge of the first background piece (part 8). Scribe it to the flower and leaf assembly. Continue fitting leaves and background pieces.



J

Clamp joints tightly. Small bar clamps work well on the ornament as you add leaves and background pieces. Ornament shown from the back.

the flower, you'll probably find it easier and more accurate to scribe pieces to fit rather than cutting strictly to the pattern lines [Photo F]. After cutting an edge, test it against the mating parts and adjust the contour as necessary [Photo G].

5 After you complete the flower, add the leaves and background pieces in numerical order. A good approach is to scrollsaw the mating edge of the part along the pattern line and scribe it to fit [Photos H and I].

Complete the ornament

1 Fit and glue parts 9–24 in order. Cut the outside edge of each background piece to the outermost dashed line (working diameter) as you build up the ornament. Clamp or hold each joint until the glue dries [Photo J].

2 After assembling all the parts, correct the finished-diameter cutting line around the outside edge of the design as necessary. Scrollsaw around the ornament and finish-sand the edge.

3 Remove the patterns. Sand the completed ornament on both faces with progressive sandpaper grits from 150 to 320. Keep both faces flat and parallel.

4 Apply a finish to both sides. We sprayed on three coats of aerosol satin lacquer, sanding between coats. Finally, drill a hole in the edge and add a small eye screw to make a hanging ornament. 🌳

Produced by **Larry Johnston** with **John Olson**
Project design: **Gregory Doremus**, Florence, Ky.
Illustration: **Lorna Johnson**

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Helpful Handsaws

These time-tested tools still have a place in modern workshops.

Though motorized saws dominate woodworking shops today, you'll inevitably run into situations where a handsaw helps you make a cut more easily or effectively. Here's how to get the most from your handsaws at those critical times.

Different strokes. Teeth (either rip or crosscut) point toward the handle on Japanese saws, so the saws cut on the pull stroke instead of the push stroke.

Western rip/crosscut saw

Handle

Teeth cut on push stroke.

Teeth cut on pull stroke.

Japanese-style saw

Handle

Times you'll want a handsaw

Some work, such as trimming dowels flush with a surface, miter-cutting a tenon, or cutting small pieces, such as trim, is best done with a handsaw. And it's often quicker and safer to hand-saw a board to rough length, compared with balancing an overlong piece across your tablesaw. Many woodworkers simply gain satisfaction from hand-sawing joints, such as tenons and dovetails.

Although the handsaw often proves a better choice, the quality of the cut usually won't match that of a tablesaw or miter saw equipped with a high-end blade. So, when cut quality matters, hand-saw slightly outside your line and plane or sand to the line, or cut to final size on a power saw.

The big three handsaws

Rely on these three kinds of handsaws.

Japanese-style saw. These saws, available in many sizes and types, including some with reinforced backs, cut on the pull stroke [photo left]. This keeps the blade under tension when cutting, allowing the blade to be thinner than a push-cut saw. It's also less likely to bind and buckle in a cut. Many woodworkers find pull saws easier to control. Japanese saws work well both for sizing cuts and joinery.

If you do a lot of flush-trimming, add a pullsaw with unset teeth to your collection—it prevents marring the surrounding surface. (Most saw teeth are set, or bent slightly toward opposite sides of the blade, so they cut a kerf wider than the blade thickness to prevent binding.)



Hold a handsaw correctly. Grip a Western-style saw handle with three fingers through the opening and your index finger extending along beside the handle, *left*. Hold Japanese saws and others with a straight handle with an overhand grip, *right*.



Keep your saws sharp

Hang your saws on a toolboard or cover the edges to protect the teeth in storage. Saws with induction-hardened teeth (photo, below) stay sharp as much as three times longer than those without. When the saw binds in the cut or veers in one direction as you cut, it's due for setting and sharpening. Unless you have some skill and experience in setting and filing saw teeth, take the saw to a sharpening pro.

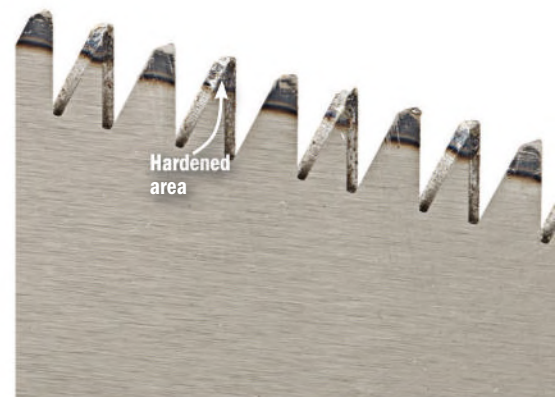
Western rip/crosscut saw. Today's traditional Western saws have a tooth profile and pitch (the number of teeth per inch) designed for fast cutting with reduced effort. One with a 14" blade (measured along the cutting edge), shown *top left*, is a handy size. You can also get a 22" or 26" blade. This is a good saw for breaking down long boards or cutting parts to rough size.

Tenon saw or backsaw. Made for precise cutting and joinery, this saw, shown *above* usually boasts finer teeth (more teeth per inch) than a general-purpose saw. Its distinctive feature, a steel or brass reinforcement or stiffener along the back of the blade, makes the blade rigid and helps it cut more true.

Making the cut

As you saw, stand square to the workpiece and maintain a straight line from your elbow through your wrist to the end of the saw. Move your arm in a straight line from the shoulder like a piston on a steam locomotive. Keep the saw square to the work by checking the reflection in the side of the blade (*above*). The workpiece should appear to pass unbent through the blade. As you cut, take full-length strokes with the saw blade to equalize wear across all the teeth.

Support the cut-off piece as you approach the end of the cut to prevent it breaking off and tearing a splinter off of the corner of the part you're cutting. 🌲



Hardened teeth. A band of darkened metal along the teeth indicates induction-hardened tips, which can't be filed. Grinding and setting may cost more than replacing the saw.

MDF Goes on a Diet

Newer versions work great with less weight.



The smooth, dead-flat faces and void-free interior of medium-density fiberboard (MDF) make it ideal for jigs, as a substrate under veneer or laminate, and for building utility cabinets. But if you've struggled to lift a 90-pound sheet, you need to get acquainted with this sheet-good's siblings: lightweight and ultralightweight MDF (L-MDF and U-MDF).

The reason lies in the resin

Like their beefier big brother, L-MDF and U-MDF are made from wood fibers, waxes, and resins fused under pressure and heat. But because less resin is used, the panels weigh significantly less than standard MDF.

However, the reduced weight comes with trade-offs. L-MDF and U-MDF scratch, chip, and ding easily. Horizontal spans sag significantly more than standard MDF



A **Lighter loads for a lightweight.** A shelf made of L-MDF or U-MDF won't support as much weight as the same length of regular MDF. If long spans are needed, reinforce the shelf by applying solid-wood edging at least 1" wide on one or both long edges, install a vertical divider to add support, or reduce spans when using L-MDF or U-MDF.

[Photo A], and they have less screw-holding strength [chart, right].

Also, you'll pay slightly more for L-MDF and U-MDF than for MDF. Distribution has been primarily on the coasts, making these items a special order in other regions.

The lower density of L-MDF and U-MDF make them easier to cut than the standard stuff. But the lighter versions still dull cutting edges and create clouds of fine dust, so always wear a respirator and eye protection. When fastening any type of MDF, drill and countersink pilot holes to prevent mushrooming [Photos B, C].

Weight, Weight...Don't Tell Me!

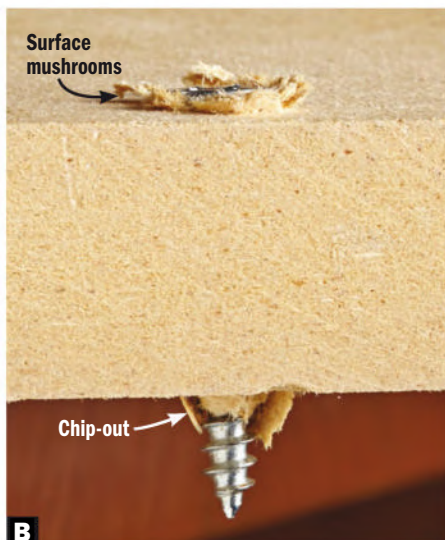
	STANDARD MDF	LIGHTWEIGHT MDF	ULTRALIGHT-WEIGHT MDF
Weight ($\frac{3}{4}$ " $\times$ 4 $\times$ 8' sheet)	90 lbs	76 lbs	64 lbs
Edge screw-holding strength	247 lbs	191 lbs	146 lbs
Face screw-holding strength	337 lbs	247 lbs	180 lbs

Source: Arauco Corporation, manufacturer of Trupan L-MDF and U-MDF

► Make exposed MDF edges more attractive: woodmagazine.com/edgeband.

Pilot-hole sizes

- For #6 screw: $\frac{5}{64}$ "
- For #8 screw: $\frac{3}{32}$ "
- For #10 screw: $\frac{7}{64}$ "



B **Countersink to prevent mushrooms.** Even with a pilot hole, driving a screw into MDF will raise fibers around the screwhead and blow out chips on the bottom face.



C To prevent this, drill countersinks on both faces of the through pilot hole, and on the mating surface of the mating piece. This provides relief for any forced-out material, allowing the parts to seat fully.

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We changed all four jaws of the aptly named Easy Chuck in less than 30 seconds, much faster than with the screwed-on jaws common to most chucks. A “zoom ring” at the back of the chuck lets you make coarse adjustments quickly; then you secure it with the included T-wrench. It grips stock well without slipping. The Easy Chuck comes in four spindle threads (no adapter needed for common lathes), and comes with one set of 1 $\frac{3}{8}$ ” jaws and a clever double-ended screw center. You can buy nine additional jaw sets to suit your work.

Easy Wood Tools
866-963-0294, easywoodtools.com

Easy Parting Tool (no. PT125), \$120

Don't like to sharpen? Then you'll love this $\frac{1}{8}$ ” parting tool. The replaceable carbide insert cutter cuts cleanly and accurately, and stays sharp through months of steady use. Replacement tips cost \$15 each.

Easy Wood Tools
866-963-0294,
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Raptor CBN 8” Fine Sharpening Wheel, \$196

This steel wheel, coated with cubic boron nitride (a carbide derivative), provides a flat grinding surface that doesn't wear—so you never need to dress it. It sharpens hardened tool-steel chisels quickly and with little heating, but low-carbon-steel tools clog the abrasive.

Craft Supplies USA
800-551-8876,
woodturnerscatalog.com



Nova Infinity 4-jaw Chuck

The jaws on this hybridized version of Nova's Supernova 2 chuck slide in and out sideways to replace. It's simple and convenient, and holds turning blanks securely. It comes with a set of no. 3 jaws, and you can use any of Nova's 14 other jaw sets with this chuck (once you buy adapters). To install it, you'll need to buy an insert to match your lathe's spindle threads. The upgrade kits that convert an existing Supernova 2 or Nova G3 chuck and jaw set to this system work just as well. Bottom line: If you use more than a few sets of jaws, the upgrades get expensive because you need adapters for each set.

New chuck (no. 8012), \$330
Upgrade jaw slide kit (no. 8100), \$135
Upgrade slide adapter 4-pack (no. 8200), \$45
Teknatool
866-748-3025, teknatool.com

Full-Face Safety Shield (no. 115-500), \$60

This scratch-resistant shield hangs on the bridge of your nose like glasses and provides full protection from spewing debris, yet still offers good ventilation around all sides. And you can wear regular prescription glasses (as shown) and the shield at the same time—all without fogging.

Infinity Cutting Tools
877-872-2487, infinitytools.com



Galbert Caliper, \$60

If you have difficulty reading the scale on a dial caliper, then you'll love this tool. The scale reads as easily as a measuring tape, with intuitive fractional marks. The measuring range is $\frac{1}{2}$ –2 $\frac{3}{4}$ ”.

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978-563-1425,
petergalbertchairmaker.com



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SawStop safety in a portable package

10" Job-site tablesaw on stand, \$1,300, 866-729-7867, sawstop.com

If you've been waiting for SawStop to introduce a more affordable tablesaw, the time has come. Although this 110-volt job-site saw sells for about twice the price of the leading models in that class, you get more than just the peace of mind SawStop's blade-brake technology delivers.

Among the impressive features on this saw:

- ▶ One revolution of the handwheel raises or lowers the blade completely.

- ▶ To tilt the blade, you depress a locking lever on the back of the handwheel and simply slide it where you need. It locks upon release, so no sliding around aimlessly. A microadjuster lets you fine-tune angles.

- ▶ The rip fence locks with a cam-action lever built into its top—convenient, and it prevents accidental bumps into the handle.

- ▶ The 25½" rip capacity lets you cut just past the midpoint of a sheet of plywood, so you can rip any size needed from a full sheet. There's also a swing-out ledge beneath the fence for supporting workpieces when the fence is extended beyond the table surface.

- ▶ A storage tray beneath the top houses the blade guard, anti-kickback pawls, and riving knife when not in use, as well as an extra blade-brake cartridge.

I ripped 8/4 hard maple and 2×8 treated pine, and the blade never bogged down. The

stand sets up and folds down easily, letting you store the saw neatly against a wall.

The only issues I had with it concern calibration. The bevel scale was off by nearly a degree, with no way to correct it. And, although the top and rip fence aligned to the blade spot-on, there's no way to adjust either should they lose that alignment.

—Tested by Bob Baker

▶ See SawStop's blade brake in action. woodmagazine.com/sawstop



Make a clean, quiet cut with this planer

16" helical-head planer, \$2,700, 877-884-5167, rikontools.com

Rikon's 16" helical-head planer cranks out virtually snipe-free workpieces with great surface quality and little to no tear-out. The carbide-insert cutterhead produces considerably less noise than my straight-knife planer, a welcome relief. Changing inserts proves easy because the welded-steel cover props open quickly and provides full access to the cutterhead. And I like that it will plane stock up to 9½" thick.

That said, when I tried to remove more than ¼" from a 16"-wide maple board, the planer bogged down. So be prepared to take it easy.

—Tested by Bob Saunders

▶ More planer than you need? Read reviews of other planers. reviewatool.com/planers



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TOOLS & MATERIALS

NEW AND NEXT

Bosch launches flesh-detecting tablesaw

Bosch's new REAXX tablesaw, due out this fall, has proprietary flesh-detecting Active Response Technology, which immediately drops the spinning blade below the table should a finger accidentally touch the blade. Not only are you safer, but the blade can be used again. The safety mechanism consists of a cartridge that's good for two activations. Replacement cartridges will cost about \$100. The 110-volt saw comes on a collapsible stand, has 25" rip capacity and a slide-out outfeed support.

10" job-site tablesaw (no. GTS1041A-09), \$1,500
877-267-2499, boschtools.com



New hybrid at an old-hybrid price

Grizzly has launched a new closed-cabinet 110-volt tablesaw to round out its sub-\$1,000 lineup. The G0771 offers a 2-hp-rated motor, cast-iron top and wings, T-square-style rip fence, 30" rip capacity, and quick-release blade-guard system with riving knife. Grizzly says the closed cabinet improves dust collection and deadens noise.

10" hybrid tablesaw (no. G0771), \$795
Grizzly, 800-523-4777, grizzly.com



DIY sliders

Looking for a sliding mitersaw at a value price? Ryobi has new 10" (shown) and 12" models. Both have cutline lasers, workpiece hold-down clamps, up to 50° miter-cut capacity, and stops for the most common angles. They're available at Home Depot.

10" sliding compound mitersaw (no. TSS102L), \$200
12" sliding compound mitersaw (no. TSS120L), \$300
Ryobi, 800-525-2579, ryobitools.com



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Elegant arches direct the eye to that exquisite scrap of exotic wood you've been saving for this, the perfect project.



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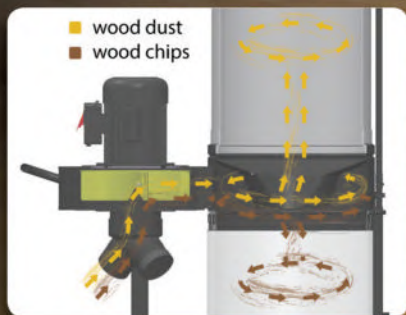


Brad-nailer shootout

We test a dozen of the top 18-gauge pneumatic brad nailers.

Delta's New Portable Series

Delta is proud to introduce our new Portable 10-in Table Saws and new Dust Collectors. When paired together, these units make a great addition to any size shop. With the power of our table saws and the efficiency of the dust collectors, you can finish your projects more precisely with less clean-up.



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NEW

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Height: 34.75 in.



NEW

36-6010

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