

PRECISE LAYOUT FOR PLYWOOD PROJECTS p.62

ISSUE 243 NOVEMBER 2016

Better Homes and Gardens®

WOOD

The World's Leading
Woodworking Resource

Perfect Your Finish

p.42

Great Plans

- ▶ **Arts & Crafts Table** p.26
- ▶ **Keepsake Box** p.44
- ▶ **Toy Battleship** p.36
- ▶ **Big-time Wall Clock** p.58

Plus FREE
cabinet plans See p.50

3 Essential Hand Planes

p.54



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- Portable base footprint: 27 $\frac{1}{2}$ " x 47 $\frac{1}{2}$ "
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- Lower bag size (dia. x depth): 19 $\frac{1}{2}$ " x 33"
- Max. material capacity: 5.7 cubic feet
- Powder-coated finish
- Height with bags inflated: 94"
- Approx. shipping weight: 137 lbs.



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G0786 ~~\$385.00~~ SALE **\$299.95**



16" X 46" SWIVEL-HEAD WOOD LATHE WITH CAST-IRON LEGS AND DIGITAL READOUT

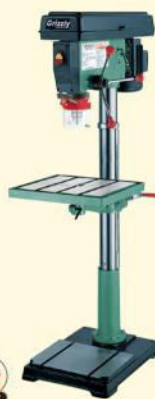
- Motor: 2 HP, 110V, single-phase, 14A
- Swing over bed: 16"
- Swing over tool rest: 13 $\frac{1}{2}$ "
- Distance between centers: 46"
- 1" x 8 TPI RH headstock spindle
- MT#2 spindle & tailstock tapers
- Spindle bore: $\frac{3}{8}$ "
- Variable speed: 600–2400 RPM
- Includes 6" faceplate, cup live center, and spur center
- Indexed headstock rotation at 0°, 60°, 90°, 120°, and 180°
- Overall dimensions: 72 $\frac{1}{2}$ "W x 19"D x 48"H
- Approx. shipping weight: 354 lbs.



G0462 ~~\$625.00~~ SALE **\$565.00**

12 SPEED 20" FLOOR DRILL PRESS

- Motor: 1 $\frac{1}{2}$ HP, 110V/220V, single-phase, prewired 110V
- Swing: 20"
- Drill chuck: $\frac{1}{4}$ "– $\frac{5}{8}$ "
- Drilling capacity: 1 $\frac{1}{4}$ " steel
- Spindle taper: MT#4
- Spindle travel: 4"
- 12 Speeds: (210, 310, 400, 440, 630, 670, 1260, 1430, 1650, 2050, 2350, 3300 RPM)
- Collar size: 3.642"
- Precision-ground cast-iron table
- Table size: 18 $\frac{3}{4}$ " x 16 $\frac{1}{2}$ "
- Switch & wiring: 110V only
- Overall height: 70 $\frac{1}{4}$ "
- Approx. shipping weight: 331 lbs.



INCLUDES BUILT-IN LIGHT (BULB NOT INCLUDED)



G7948 ~~\$709.00~~ SALE **\$675.00**

14" DELUXE ANNIVERSARY BANDSAW

- 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 $\frac{1}{2}$ " left of blade
- Max. cutting height: 6"
- Blade size: 93 $\frac{1}{2}$ " L (1 $\frac{1}{8}$ "– $\frac{3}{4}$ "W)
- Blade speeds: 1800 & 3100 FPM
- Approx. shipping weight: 247 lbs.



INCLUDES QUICK-RELEASE BLADE TENSION LEVER

G0555LANV ~~\$555.00~~ SALE **\$525.00**



10" HYBRID TABLE SAW WITH RIVING KNIFE

- Motor: 2 HP, 110V/220V, single-phase, prewired to 220V, 16A/8A
- Precision-ground cast-iron table with wings measures: 27" x 40"
- Arbor: $\frac{3}{8}$ "
- Arbor speed: 3850 RPM
- Capacity: 3 $\frac{1}{8}$ " @ 90°, 2 $\frac{3}{8}$ " @ 45°
- Rip capacity: 30" R, 12" L
- Quick-change riving knife
- Cast-iron trunnions
- Approx. shipping weight: 416 lbs.



INCLUDES BOTH REGULAR & DADO BLADE INSERTS

G0715P ~~\$850.00~~ SALE **\$825.00**



30TH ANNIVERSARY 17" HEAVY-DUTY BANDSAW

- Motor: 2 HP, 110V/220V, single-phase, TEFC, prewired 220V, 1725 RPM
- Amps: 20A at 110V, 10A at 220V
- Precision-ground cast-iron table size: 17" x 17" x 1 $\frac{1}{2}$ " thick
- Table tilt: 10° left, 45° right
- Floor-to-table height: 37 $\frac{1}{2}$ "
- Cutting capacity/throat: 16 $\frac{1}{4}$ "
- Blade size: 131 $\frac{1}{2}$ " L ($\frac{1}{8}$ "–1"W)
- Approx. shipping weight: 342 lbs.



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G0513ANV ~~\$895.00~~ SALE **\$850.00**



18" OPEN END DRUM SANDER

- Sanding motor: 1 $\frac{1}{2}$ HP, 110V, single-phase, 11.5A
- Drum surface speed: 4000 FPM
- Conveyor feed rate: variable, 2–12 FPM
- Max. stock dimensions: 36"W x 4 $\frac{1}{2}$ "H
- Min. board length: 6"
- Min. board thickness: $\frac{1}{8}$ "
- Sanding drum size: 4"
- Dust collection port: 2 $\frac{1}{2}$ "
- Overall size: 35"W x 24"D x 50"H
- Approx. shipping weight: 300 lbs.



G0458 ~~\$895.00~~ SALE **\$855.00**



15" HEAVY-DUTY PLANER

- Motor: 3 HP, 240V, single-phase, 14A
- Max. cutting width: 15"
- Max. stock thickness: 6 $\frac{1}{2}$ "
- Min. stock thickness: $\frac{1}{4}$ "
- Min. stock length: 6 $\frac{1}{2}$ "
- Max. cutting depth: $\frac{1}{8}$ "
- Feed rate: 16 and 30 FPM
- Cutterhead diameter: 3"
- Number of knives: 3 HSS
- Knife size: 15" x 1" x $\frac{1}{8}$ "
- Cutterhead speed: 5000 RPM
- Table size: 20 $\frac{1}{2}$ " x 15" x 3 $\frac{1}{2}$ "
- Overall size: 32"W x 28"D x 23 $\frac{1}{4}$ "H
- Approx. shipping weight: 382 lbs.



G0815 ~~\$1,150.00~~ SALE **\$895.00**



8" JOINTER WITH PARALLELOGRAM BEDS

- Motor: 3 HP, 240V, single-phase, TEFC, 3450 RPM, 12A
- Maximum depth of cut: $\frac{1}{8}$ "
- Maximum rabbeting capacity: $\frac{1}{2}$ "
- Total table size: 8" x 76 $\frac{1}{2}$ "
- Infeed table size: 8" x 43 $\frac{1}{2}$ "
- Cutterhead diameter: 3"
- Cutterhead speed: 5350 RPM
- Cutterhead knives: 4 HSS, 8 $\frac{1}{16}$ " x $\frac{3}{4}$ " x $\frac{1}{8}$ "
- Cuts per minute: 21,400
- Deluxe cast-iron fence size: 36 $\frac{1}{2}$ "L x 1 $\frac{1}{4}$ "W x 5"H
- Approx. shipping weight: 562 lbs.



G0490W ~~\$1,025.00~~ SALE **\$975.00**



*To maintain machine warranty, 220V operation requires additional conversion time and a \$250 fee. Please contact technical service for complete information before ordering.



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Thankfulness counts

With the holidays right around the corner, it's always a good time to step back for a moment... take a deep breath... and count our blessings (and there are many). Here are some of the things I'm thankful for this year:

►Dad's and Grandpa's tools. They're not the highest quality, and scarred from use, but when I use them it's as if those talented hands and hearts are helping guide me.

►Being surrounded by an amazingly talented group of woodworkers every day. They're a great team, and they always focus on putting your needs and interests first.

►A career where my wife and kids don't have to wonder whether I'll come home at the end of the day. And I'm equally thankful for first responders and military personnel for whom that is always a real question.

►Blogs, podcasts, and streaming videos that make me feel like I actually know prolific web woodworkers, such as Frank Howarth, Matthias Wandel, and Marc Spagnuolo.

►Tool companies that continue to develop and launch interesting and innovative new products for woodworkers. Not every one is a home run, but I appreciate that they're still standing at the plate, swinging.

►Local hardware and hardwood dealers. Don't get me wrong: I love free 2-day shipping from a mega-etailer, but a 10-minute round trip is even faster. And you can't talk through a woodworking puzzler over coffee with Amazon.com.

►Readers who feel comfortable reaching out to me by phone, email, and through social media to share comments and concerns about *WOOD*® magazine. If you didn't care, you wouldn't call.

Enough sentimentality; it's time to get back into the shop. After all, there are Christmas gifts to make, and lots of great project plans in this issue to get you started. Think I'll start my list with that big, beautiful clock on page 58.

See you in the shop!



Dave Campbell

dave.campbell@meredith.com

Facebook and Twitter: @WOODeditor

"Cornucopia" by Judy Gale Roberts. Get plans for this project at intarsia.com.



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PLANS

- 26 Mackintosh-inspired Hall Table**
You'll love the simple method for the dead-square cutouts and mortises.
- 36 Toy Battleship**
Our Mil-Spec toy series pays homage to the Navy with this fab floater.
- 44 Segment-built Keepsake Box**
Build a solid-wood stunner that uses no veneer to create the 3-D effect.
- 48 Shop Project: Router Trammel**
This handy jig runs circles around other methods for routing round workpieces.
- 58 Big-time Wall Clock**
The 20"-diameter face highlights an exotic scrap from your stash.

TOOLS & TECHNIQUES

- 32 How to Machine Double Dovetails**
Add eye-popping joinery to your giftable boxes this year.
- 42 Finishing Your Finish**
Jim Heavey offers a few simple steps that make your finish a point of pride.
- 50 Idea Shop 6: First Cabinets**
You've spent months building your space and skills. Now put both to good use.
- 54 Essential Hand Planes**
Even hardcore power-tool woodworkers need these for fast, accurate work.
- 62 Precise Layout for Plywood Projects**
These tips prevent dimensional discrepancies from becoming disasters.
- 65 How to Replace a Tablesaw Rip Scale**
- 68 Tools & Materials**
The best measuring tapes, rules, and tools, and more.

DEPARTMENTS

- 1 Taking Measure**
Counting blessings.
- 4 Wood-Wide Web**
A tribute to the doors.
- 6 Sounding Board**
Your voice, your projects, your shop.
- 12 Ask WOOD**
Cleaning a stained tablesaw top.
- 16 Shop Tips**
Dust-hose control and more.
- 24 Unvarnished**
The joy of giving handmade gifts.
- 88 What's Ahead**
A sneak peek at your next *WOOD*.

36



62

54





26



32

woodmagazine.com



44

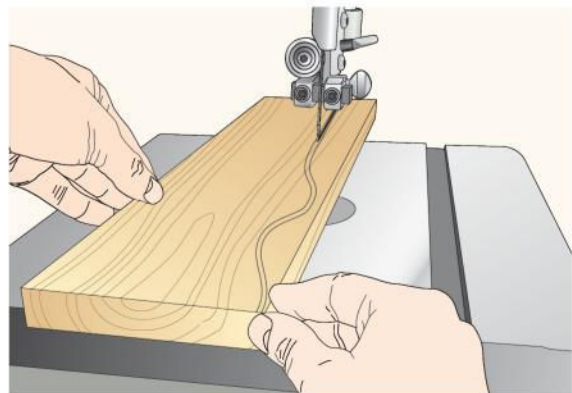
3

ALL ABOUT THE DOORS

C'mon Baby, Fight My Fire. Try not to set your shop on fire with these tips.
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Hello, I Love Glue. We will tell you the name of the right glue for any application.
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Love Me Two Lines. When you double the lines, your bandsaw cuts won't go astray.
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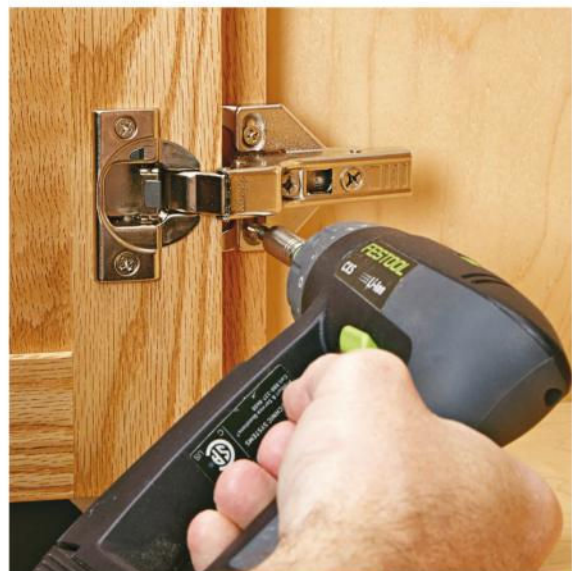
OH! NOT THE DOORS YOU WERE EXPECTING? FINE...



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Hidden holesaw project

I made several of the Holesaw Bracelets (issue 237, December/January 2015/2016) as gifts, but didn't have the heart to toss out the center scraps. So, I hole-sawed them one more time down to 1 3/8" outside diameter, added another layer of wood to conceal the center bore, then tapped the other end of the hole and installed a wine stopper (item no. 48837, \$9, rockler.com). To make the small parts easier to handle during sanding, I threaded a 3/8"-16 bolt into the tapped hole.

—Scott Courtney
South Orange, N.J.



Potentially hairy situation

I was shocked to see the photo of a young girl turning a spindle without her hair secured in Doug Stowe's article in issue 241 ("Unvarnished," September 2016). She is within inches of a serious injury.

Welcoming kids into a great and creative environment is wonderful. But always, always, safety must be the first consideration. These kids should either have their hair restrained, tied back, or wear a snug-fitting hat that contains all that lovely hair.

—Brad Bradford
Tamassee, S.C.

Thanks for sharing your concerns, Brad. Of course, long hair should be tied back when working with the lathe or any other tool that has rotating parts. Lily's hair is no longer than shoulder length and restrained by her full face shield, so it would be very difficult—but not impossible—for her hair to accidentally come in contact with the lathe or spinning workpiece. Lily is an experienced woodturner who has heard, and heeded, my safety rules for years.

—Doug Stowe

Quasianonymous thumb donor

As a high school wood shop teacher, I was thrilled to receive the Complete WOOD Magazine Archive on USB. It was donated by someone named "Kent" after I registered my name and school on WOODStore.net. If there is a way to forward my sincere thanks to Kent, please do so.

—Larry Thibault
Santa Cruz High School
Santa Cruz, Calif.

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Facebook-fave hand tools

We asked our Facebook followers to tell us their favorite hand tools. Here are a few responses:



My 6" Starrett combo square. Stays in my apron pocket all the time.

—Randall Rice

Any of my Japanese hand tools, but my most prized is my blue-steel smoothing plane.

—Aaron Adams-Suarez

An old 1/2" paring chisel I picked up at a garage sale. Someone turned a new handle and it fits like it was made for me.

—Barry Bratus



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continued on page 8

WOOD magazine November 2016

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YOUR PROJECTS



Sam Sutherland of Walla Walla, Wash., applied two coats of high-gloss epoxy glaze to finish the top of this pine-and-cherry computer desk he made.

Jeff Heister of Oregon City, Ore., filled natural voids in the walnut burl with crushed turquoise inlay when building this desktop clock. It stands on a natural-edge maple-burl base.



This maple tray, turned by **Steve Mawson** of Lincoln, Neb., took India ink, a wood-burning skew, and a four-step finishing process to complete the job.



Send us a photo of your work

Want to see your work showcased in **WOOD®** magazine? Send a high-resolution digital photo of your completed project to woodmail@woodmagazine.com.

The new PowerLift Pro[®] computer controlled router lift.



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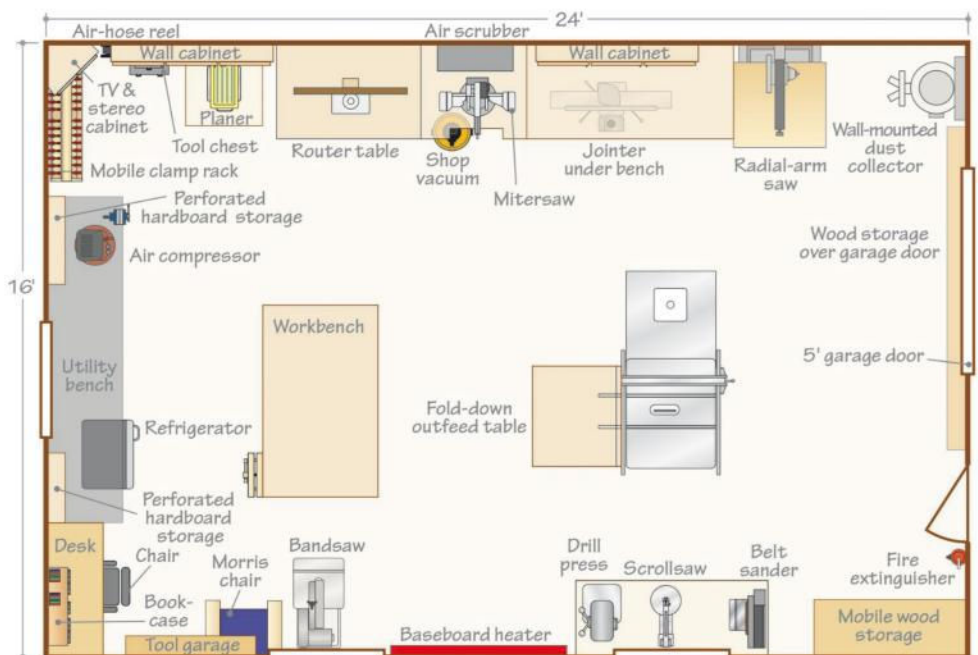


Mike's router table, 10" compound miter saw, and radial-arm saw (not seen) share a 10½'-long bench. Dust ports connect to a shop-vacuum-powered 2½" ductwork system.

Mike Hayes' experience as a restaurant chef informed his shop design when he built it several years ago: "In the kitchen, I had to know every day that all my tools were in the right place. Everything we needed was hanging on racks—there wasn't time to look for things in a drawer." In his woodworking shop, he applied the concept by storing most tools on open shelves, unimpeded by doors.

For the interior of his shop, Mike chose affordable ¾" oriented-strand board (OSB). "OSB just doesn't show dirt," he says, although he confesses to recoating the floor with polyurethane every few years due to daily wear.

And, just as a chef tweaks a recipe many times to perfect it, Mike "built" a scaled version of his 16×24' shop from cardboard and rearranged the tools within it several times before actually breaking ground. "I originally planned a 16×20' shop," he says,





The 5x6' overhead door and ramp of Mike Hayes' 16x24' shop make it easy to move equipment and materials in and out.



A 26x71½" bench provides space for Mike's drill press, scrollsaw, and 4" belt sander. He stores a mini-lathe and other tools below.



Despite the shop's compact footprint, Mike squeezed in a small desk, refrigerator, and even a comfy chair below the open shelving.

"but it wasn't working out right, so I added on to my model."

The only thing he would do differently is make it taller. "I was used to the low ceiling in my old basement shop. Without a roof, the luxury of a 10' ceiling didn't show up on my scale model," he chuckles.

Show us your shop

Send high-resolution digital photos of your shop to woodmail@woodmagazine.com and we may showcase it in an upcoming issue!

DO IT ALL WITH A SUPERMAX 19-38

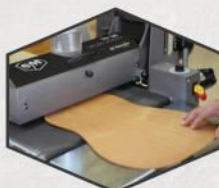
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Cove-cutting (black and) blues

Q I recently made cove molding on my tablesaw, cutting at an angle across the blade. But after the job was done, I noticed a dark stain in the cast iron on the outfeed side of the cove cut. What caused this? And how can I get rid of the stain?

—Michael Patterson, Athens, Ga.

A The same thing happened to the saw in our shop, Michael. We talked to several manufacturers about this, and none could help us pinpoint the exact cause. The best we can figure out, the culprit is the heat generated by making this trapped cut. The sawdust that isn't sucked away by the dust collector gets heated by the friction of cutting and dragged along in the groove by the board as you cut. This warm debris apparently causes a reaction with either the cast iron and/or any coatings applied to the top. This results in the dark stain you see *above*.

To remove the stain, hand-sand the top with 400- or 600-grit wet/dry sandpaper. (But don't use water!) Sand in straight lines front to back to minimize visible sanding scratches. You might not remove all the stain, but should get most of it, depending on how deep the stain has penetrated the cast iron.

To help prevent this from happening again, use a throat insert with a wider opening that will allow more debris to fall through. A zero-



clearance insert, although providing tear-out protection, limits the amount of debris slipping through the slot. Also, before making cove cuts again, try cleaning the saw top with a solvent, such as mineral spirits, that evaporates quickly. This should remove any residue from previously applied surface lubricants or protectants. (When done with your cuts, clean the top and reapply those products as needed.) 🌲

► Learn how to make cove molding on your tablesaw.

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Antique Brass



Antique Pewter

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Fly Fishing

Gearshift

Music

Steampunk

Dragon



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Fly Fishing Twist Pen Kit Authentic details abound; the top features and open spooled fly fishing reel with detailed fly line on the spool. Below the reel is an engraved trout and the clip is a fly fishing rod.

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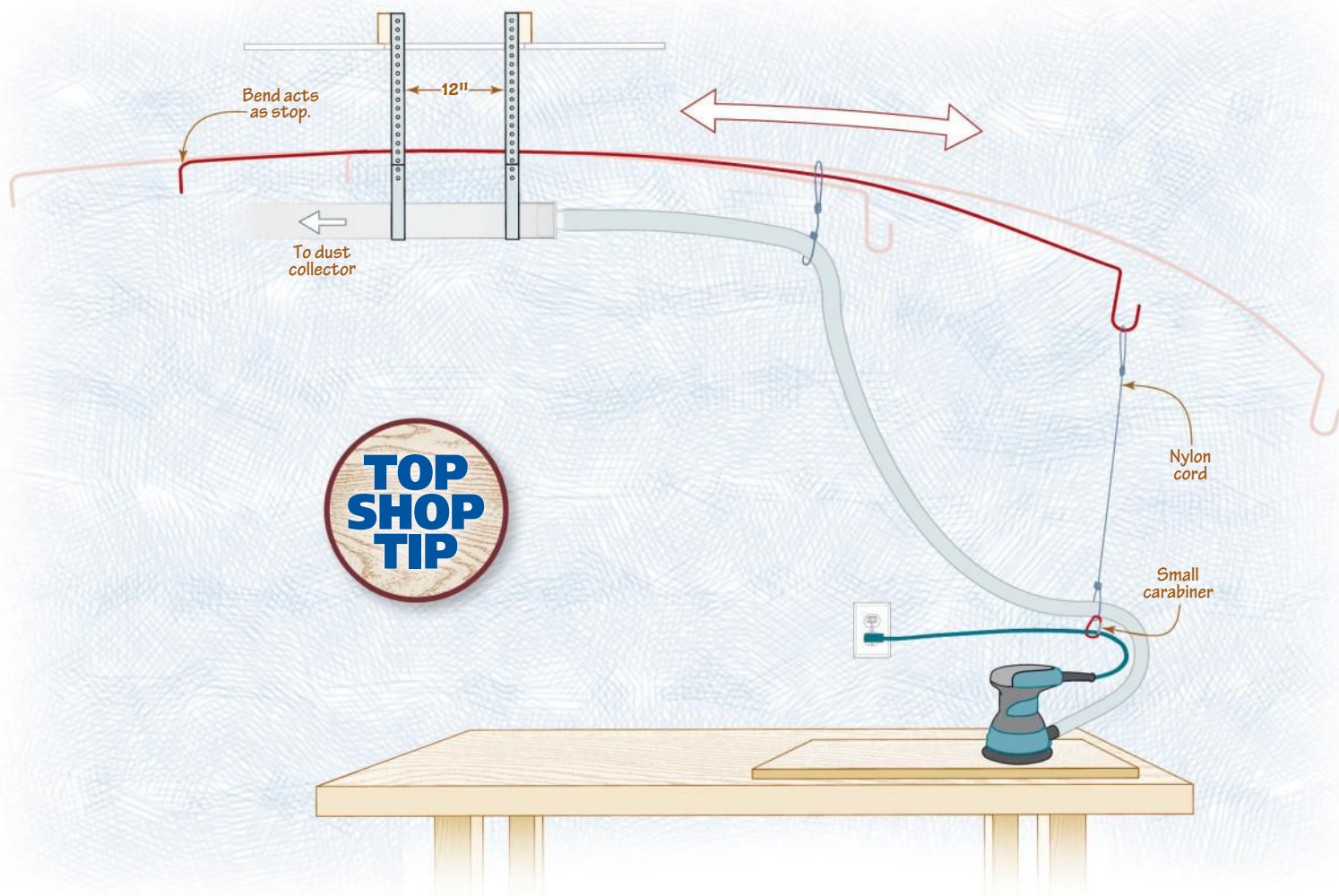
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SHOP TIPS

WORK FASTER, SMARTER, SAFER



Fishing-rod action keeps sander hose manageable

I grew tired of the dust hose attached to my random-orbit sander catching on the edges of panels during sanding, so I tried tethering the hose from a fixed point on the ceiling. That got the hose off the panel, but allowed little flexibility in steering the sander. Then I noticed the nearby steel supports holding a garage-door opener, and the proverbial lightbulb came on.

I bent a hook on one end of a 10'-long, 1/4" steel rod, slid it through the holes in the supports, and rigged up things as shown above. (You don't have to place this system near a garage-door opener—simply use slotted angle steel at any point on your shop's ceiling.) This way, the rod flexes little when not slid out, keeping the extra hose suspended high and out of the way. As you sand farther

out, you simply slide out the rod to gain the extra hose. The extended rod gives additional up/down flexibility to the tauter hose while still keeping it off the worksurface.

I'm able to sand a 3×6' panel without adjusting the position of the rod. (It doesn't slide in and out by itself as you work.)

—Steven Smith, Ballwin, Mo.

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Send your tip, photos or drawings, and contact info to shoptips@woodmagazine.com

Because we try to publish original tips, please send yours only to **WOOD** magazine.



For sending this issue's *Top Shop Tip*, Steven receives a Hitachi C12RSH2 12" Sliding Dual Compound Miter saw, with laser marker, worth \$450.



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Item #	TCLC10VS	TCLC10VS-B	TCLC10VS-A	TCLC12VS	TCLC12VS-B	TCLC12VS-A
Lathe	✓	✓	✓	✓	✓	✓
Slimline Pen Kits		5 (24 kt Gold)	20 (Variety)		5 (24kt Gold)	20 (variety)
Slimline Pencil Kits		5 (24 kt Gold)	20 (Variety)		5 (24kt Gold)	20 (variety)
Pen Mandrel		✓	✓		✓	✓
Mandrel Wrench			✓			✓
3pc Carbon Steel Chisels		✓			✓	
Mini Pen Blank Mix		✓ (Makes 10 kits)	✓ (Makes 40 kits)		✓ (Makes 10 kits)	✓ (Makes 40 kits)
Mid Cure Epoxy Glue		✓	✓		✓	✓
7mm Barrel Trimmer		✓	✓		✓	✓
Tube Insertion Tool			✓			✓
Shellawax Creame		✓ (30ML)	✓ (250ML)		✓ (30ML)	✓ (250ML)
Pen Assembly Press			✓			✓
Pen Making DVD		✓	✓		✓	✓

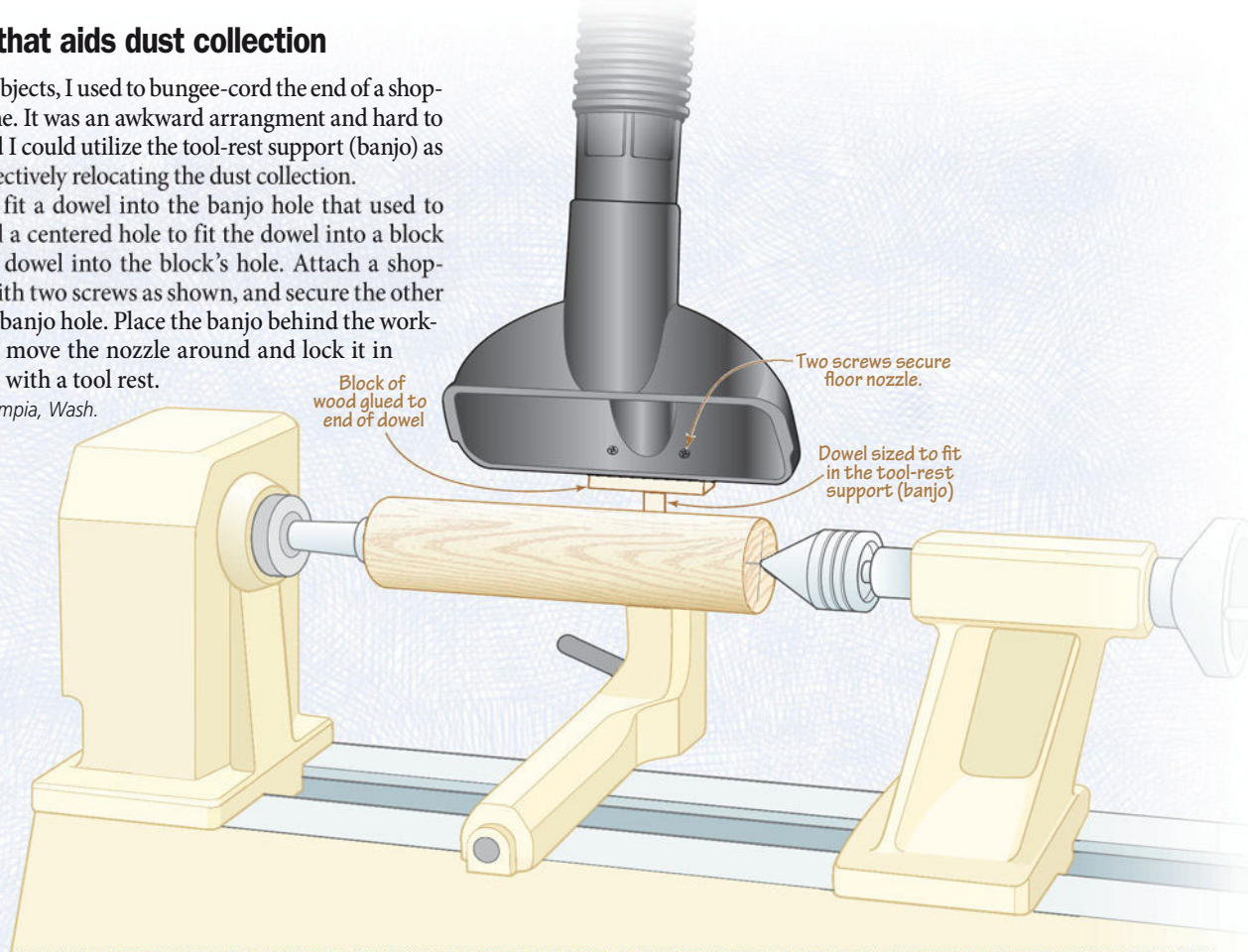
SHOP TIPS

We love a banjo that aids dust collection

When sanding turned objects, I used to bungee-cord the end of a shop-vacuum hose to the lathe. It was an awkward arrangement and hard to relocate. Then I realized I could utilize the tool-rest support (banjo) as an aid for easily and effectively relocating the dust collection.

To make your own, fit a dowel into the banjo hole that used to hold the tool rest. Drill a centered hole to fit the dowel into a block of wood, and glue the dowel into the block's hole. Attach a shop-vacuum floor nozzle with two screws as shown, and secure the other end of the dowel in the banjo hole. Place the banjo behind the workpiece. You can quickly move the nozzle around and lock it in position, just as you do with a tool rest.

—Bill Wells, Olympia, Wash.



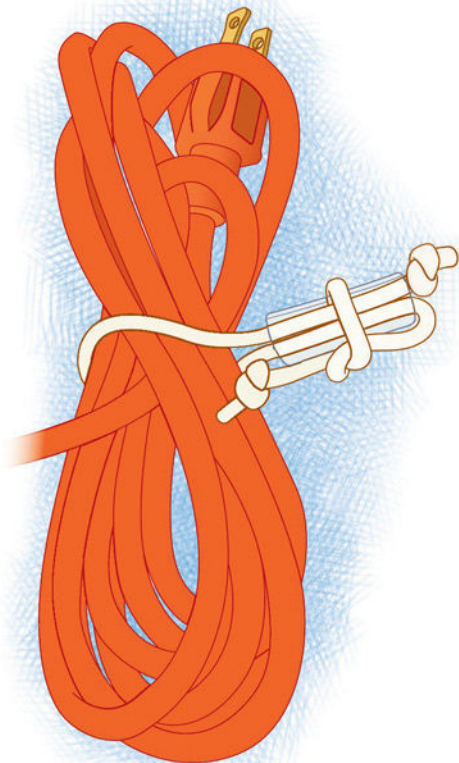
Keep power cords (and more) under control

I grew tired of wrapping power cords around their tools only to have them unravel. Some tools come with a cord keeper that's hard to use and easy to lose. So I came up with a cord lasso that's effective, inexpensive, and easy to make.

Each lasso requires a short (18–20") length of venetian blind cord and a 1" length of $\frac{3}{8}$ " vinyl tube. To make a lasso, first tie a simple knot in both ends of the blind cord. Fold that cord in half and slip the looped end through the tube. (The fit should be snug.) Bundle the power cord, hold it in one hand, slip the loop over the bundle, and pull one of the knots to cinch tight the lasso. Loop the long end of the lasso over the tube and cinch it tight with an overhand knot, as shown *right*. Friction holds everything together securely, but you can easily loosen the lasso by sliding the overhand knot off the tube.

To tie up bundles of larger items, such as dowel rods, pipes, or boards, use $\frac{1}{4}$ " rope and $\frac{1}{2}$ " PVC tubes $1\frac{1}{4}$ " long. So long as two lengths of the cord or rope fit snugly in the tube, the lasso will work effectively.

—Ralph Day, Lakeville, Minn.



Take a few minutes to avoid hours of finish cleanup

In my small shop, the tablesaw top doubles as an assembly and finishing surface. After accidentally knocking over an open can of stain sitting on the tablesaw, requiring hours of saw disassembly and cleaning, I took a few minutes to prevent that from happening again. With a few scraps you can build a can holder, like the one *below*. Add a small hole so you can hang it on a nail or hook.

—Jeff Watson, Seattle



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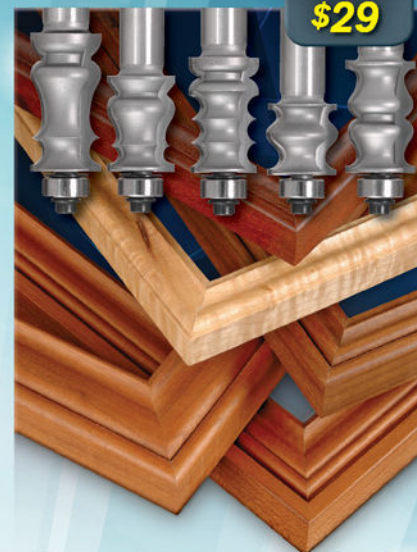
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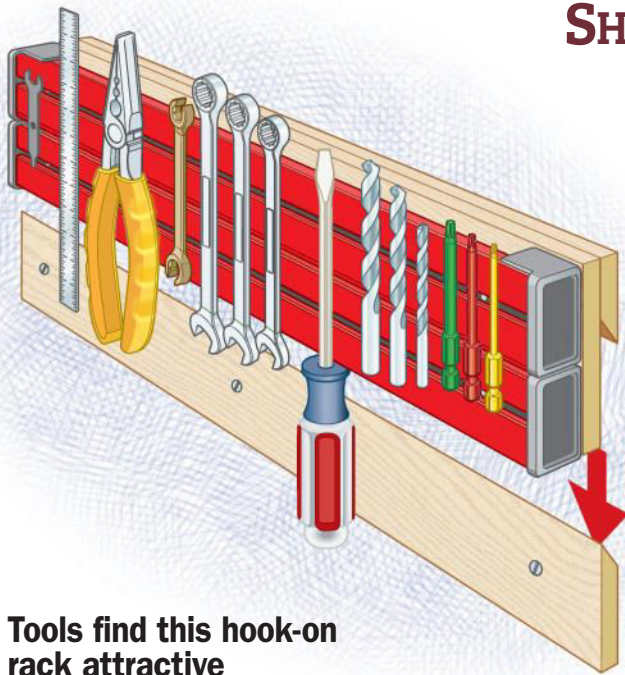
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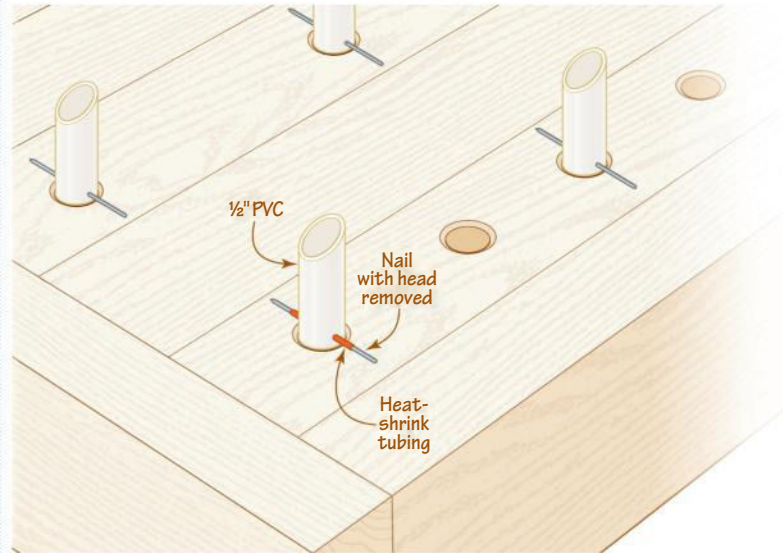
SHOP TIPS



Tools find this hook-on rack attractive

I like magnetic tool holders for holding small metal tools that might otherwise end up scattered around the shop. But instead of simply screwing the magnetic bar to the wall, I mounted it onto a French cleat. With cleats already installed throughout the shop, I can take tools with me to each workstation and rehang them there.

—Jim Moorehead, Barrigada, Guam



Pipe up for finishing helpers

When I went to stain my latest project, I didn't have enough painter's pyramids to elevate it off my workbench. Not wanting to postpone finishing, I made risers from 1/2" PVC pipe. I simply cut one end of each piece at 45°, drilled a hole midway through the pipe, and inserted a nail with the head cut off, securing it with heat-shrink tubing. The pipes fit nicely in bench-dog holes and make minimal contact with the workpiece.

—Merle Riesgaard, Conroe, Texas

WOOD magazine November 2016

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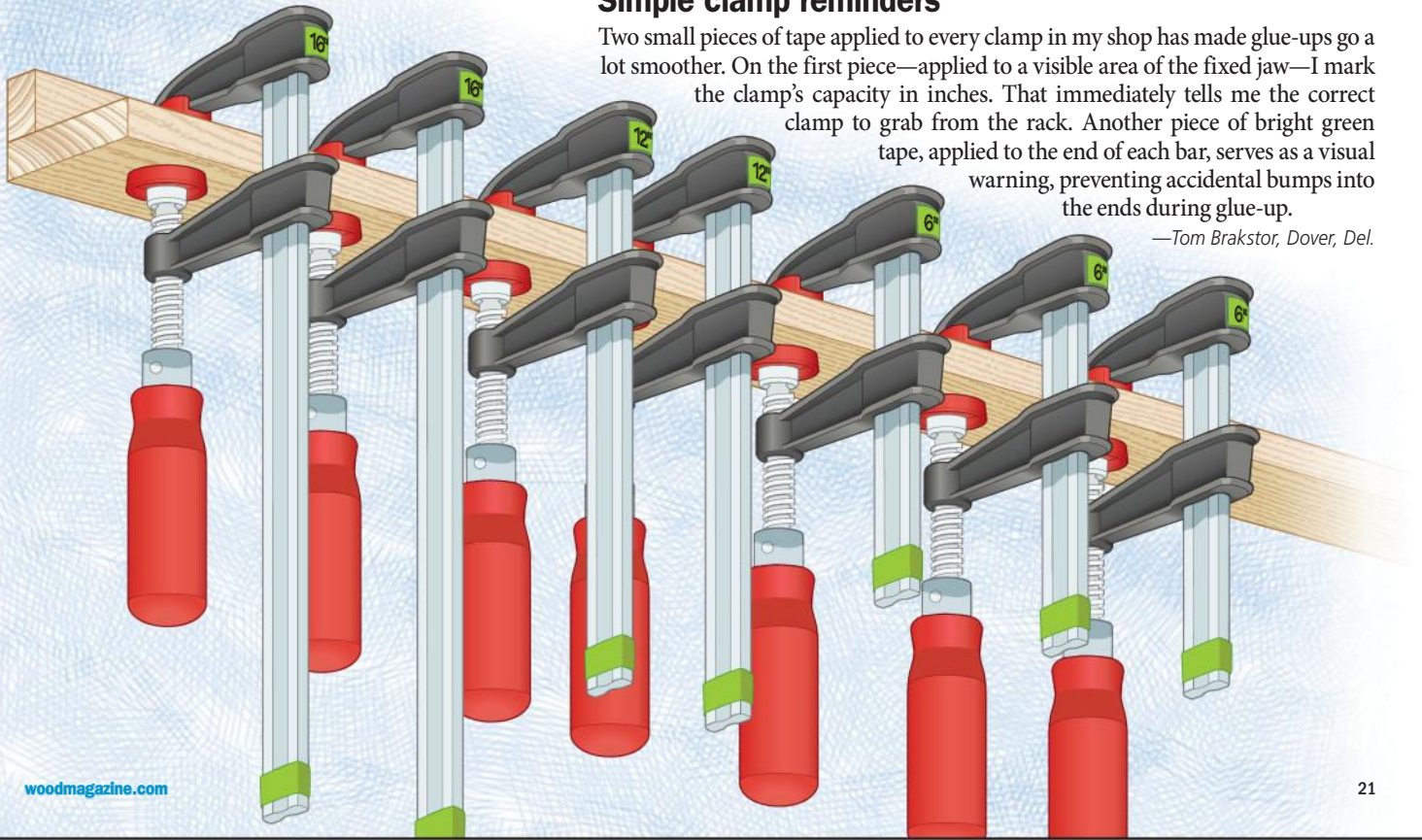


SHOP TIPS

Simple clamp reminders

Two small pieces of tape applied to every clamp in my shop has made glue-ups go a lot smoother. On the first piece—applied to a visible area of the fixed jaw—I mark the clamp's capacity in inches. That immediately tells me the correct clamp to grab from the rack. Another piece of bright green tape, applied to the end of each bar, serves as a visual warning, preventing accidental bumps into the ends during glue-up.

—Tom Brakstor, Dover, Del.



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21

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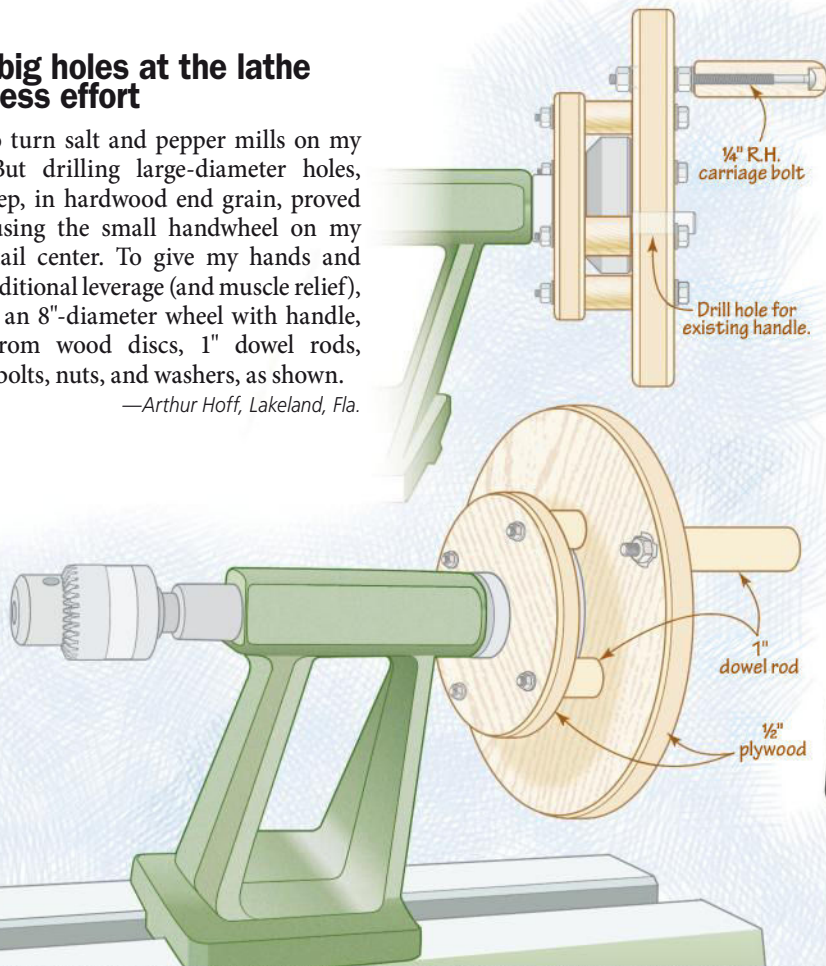
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SHOP TIPS

Bore big holes at the lathe with less effort

I like to turn salt and pepper mills on my lathe. But drilling large-diameter holes, 3–5" deep, in hardwood end grain, proved tough using the small handwheel on my lathe's tail center. To give my hands and arms additional leverage (and muscle relief), I added an 8"-diameter wheel with handle, made from wood discs, 1" dowel rods, T-nuts, bolts, nuts, and washers, as shown.

—Arthur Hoff, Lakeland, Fla.



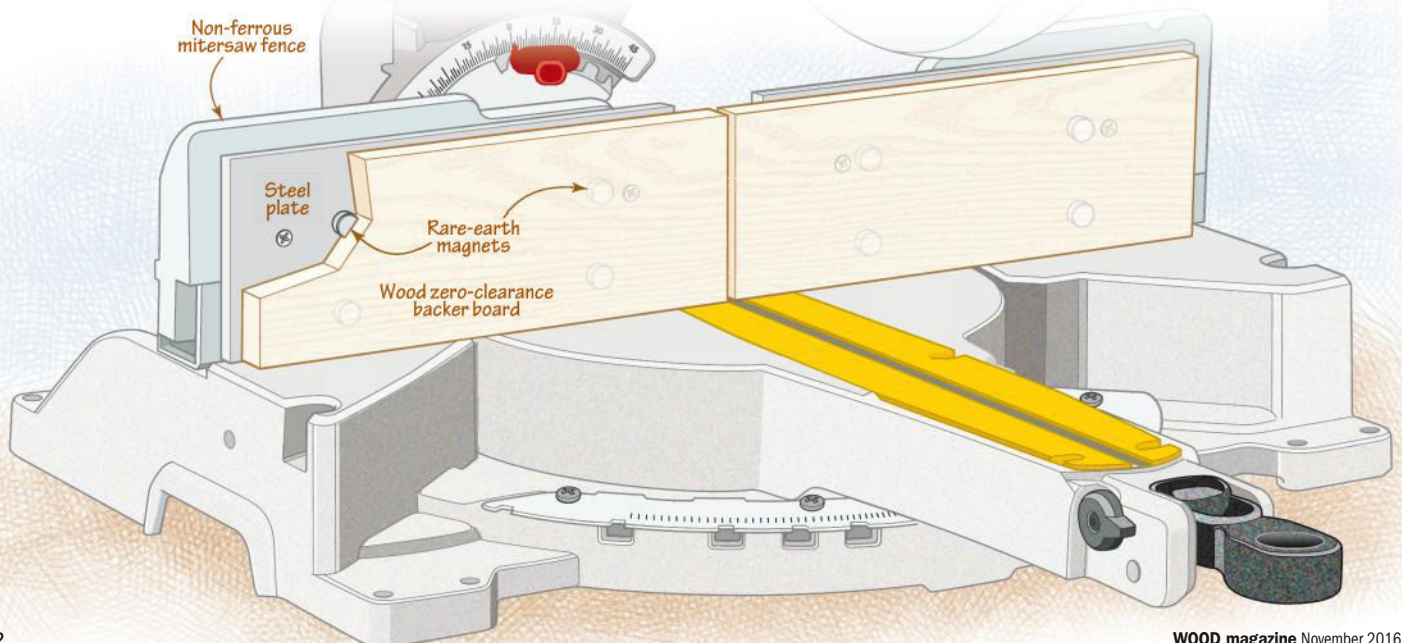
Fast-change zero-clearance backer boards for your miter saw

I like the clean cuts I get using zero-clearance wood backer boards bolted to my miter saw's fences. But bolting and unbolting those boards as I changed cut angles became a time-consuming chore. Here's a better way.

First, bolt steel plates to your saw's fences. Position them so they don't interfere with any type of miter cut. Make wood backers from 1/2" material and drill four recesses in the back of each for holding rare-earth magnets.

Glue in the magnets using yellow woodworker's glue—it holds fine but allows you to knock out the magnets when replacing the backers. 🌲

—Bruce Melton, Rolling Prairie, Ind.





IT'S GOOD TO BE

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Give a Little, Get a Lot

by Victoria Woodcock

*Gifting your work can have
great rewards for all involved*



I have been a woodturner for a while now, and I find it to be the perfect marriage between art and craft. Planning, designing, turning, and finishing a wooden object are near-magical activities that allow me to use and expand my creativity.

In my work, I incorporate a lot of wood from fallen or trimmed trees, thus utilizing a natural resource to its fullest, and I use leftover lumber from cabinetmakers, helping to get the most from every board. But there is another aspect to woodturning that was unexpected and most welcome: wooden objects as a means of appreciation for the person who receives it.

Customers purchase some of the objects I make, and I find that to be a satisfying activity, but the reactions from individuals whenever I gift something to them always

amaze me. I have given items to people who have just lost a family member, or to friends or family who are struggling, and to people who have accomplished something they didn't think they could do, and it changes the recipient every time.

Gifting a handmade wood object inspires and transforms both the person who receives it and the maker. For the recipient the gift becomes a commemorative treasure that pulls together all of their experiences and recognizes the effort they have put forth. It says "great job," or "look at all you accomplished," or simply "thank you." It shows appreciation of them and their efforts in a very concrete and visible manner.

The maker's experience is just as powerful. Gifting a handmade wooden object gives me the opportunity to be generous.

*The reactions I get
from individuals
whenever I gift
something to them
always amaze me.*



Turn the useless into something meaningful. Transforming scrap headed for the burn pile or trash bin into a simple creation can bring joy to both the maker and the recipient.

I feel that life has become more challenging in recent years. Many of us live far from family and friends. Others have had to endure illness or the loss of employment. Gifting something allows me to recognize this and say "You're not alone." I can extend comradeship and gentleness to others, which, given the hardness that contemporary life can have, is always welcome.

So here's my challenge to you: Seek out opportunities to be generous with your skills, tools, and wood. You'll transform someone's life and greatly enrich yours at the same time. 🌳

► Victoria Woodcock began woodworking many years ago under the tutelage of her self-taught shipwright uncle. She is a skilled furnituremaker and turner, passionate about folk and traditional craft. Follow Victoria at selkiewoodworks.blogspot.com.



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Mackintosh-style Occasional Table

The through-mortises and crisp, square cutouts may look difficult, but they really are quite easy. The secret to success is in a careful glue-up.

Although not an exact replica, this table is an interpretation of one Charles Rennie Mackintosh designed for Hill House in Helensburgh, Scotland, ca. 1904.

Though not as well known in America as Stickley or Roycroft, Mackintosh (1868–1928) was an important figure in the European Arts & Crafts movement. His work encompassed both architecture and furniture.

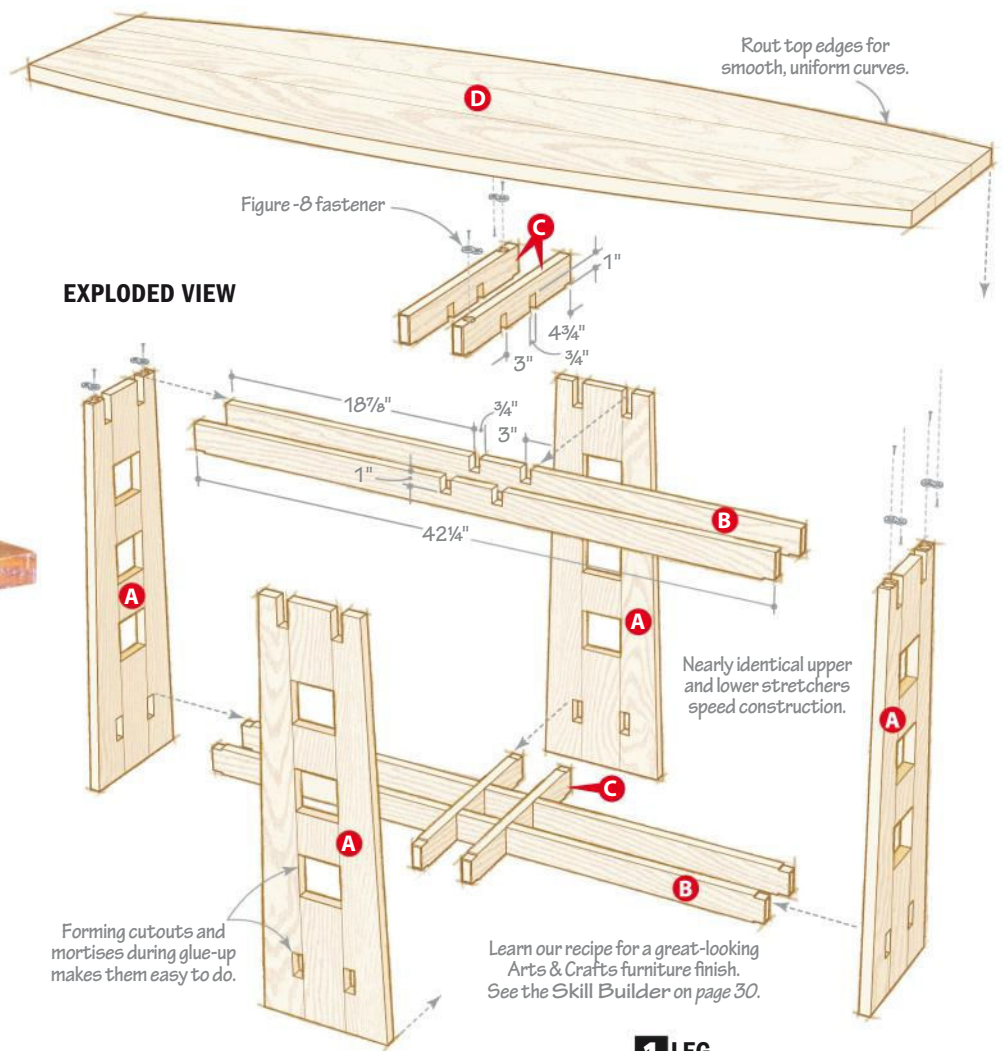
D I M E N S I O N S :
60" W x 18" D x 30" H

Approximate materials cost:

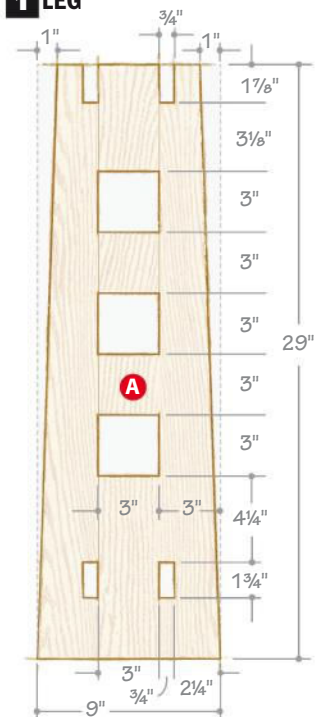
\$230

16

through-mortises and tenons—all cut at the tablesaw



1 LEG



First, make four legs

1 For each leg (A), cut three 3/4x3 1/2x30" boards. Arrange the boards in each leg for the best grain match and mark them for reassembly. Rip the boards to 3" wide and joint the mating edges.

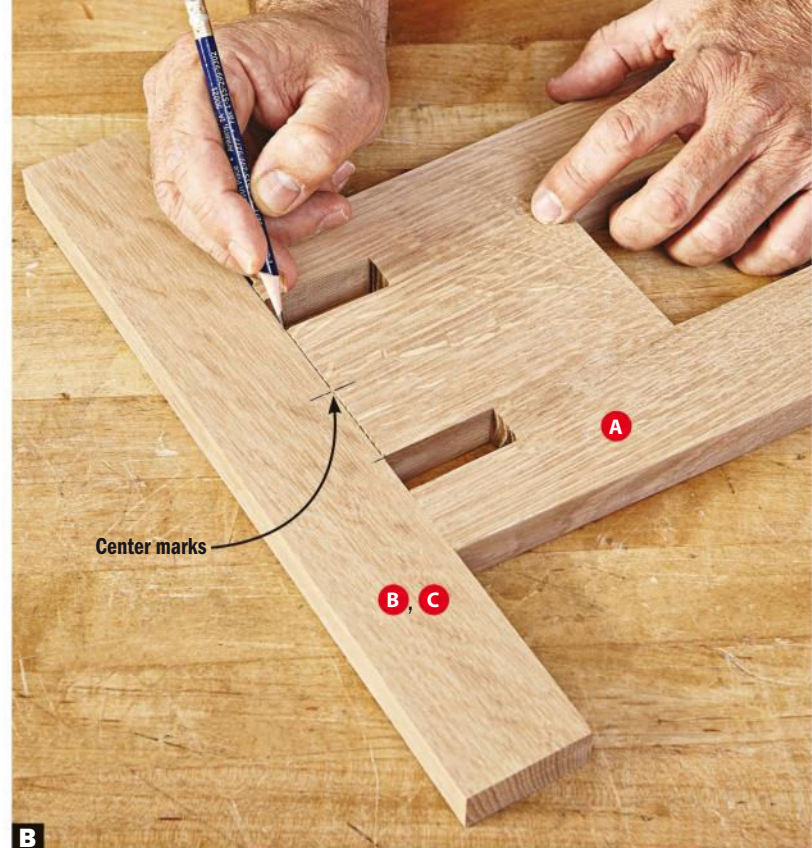
2 In turn, dry-clamp the boards for each leg with the top ends flush. Working from the top end, lay out the four mortises and three square cutouts [Drawing 1]. Make sure the layout lines for the cutouts extend onto the outside boards. Mark the positions of the segments of the center board that will remain after removing the cutouts.

3 Cut the mortises with a tablesaw-mounted dado set. Crosscut the cutouts from the center board. Finish-sand the end grain of the center-board segments.

Tip! For tight mortise-and-tenon joints, finish-sand a scrap of 3/4" stock and use it to check the depth of the mortise cuts.



A Square the top ends of the leg boards. Align the center-board segments with the layout lines to form the cutouts.



B Align the stretcher and leg center marks and carefully transfer the leg-mortise locations to the stretchers.

► Get a free plan for a tablesaw taper jig. woodmagazine.com/taperjig

4 Glue and clamp each leg, taking care to keep the surfaces flush [Photo A].

5 With the glue dry, trim the bottom ends of the legs to final length [Materials List, Drawing 1]. Mark and cut the edge tapers, then joint smooth the just-cut edges. Drill counterbores for figure-8 fasteners in two legs [Exploded View, Drawing 2].

Now, assemble two (nearly) identical grids

1 Cut the long stretchers (B) and short stretchers (C) to size [Materials List].

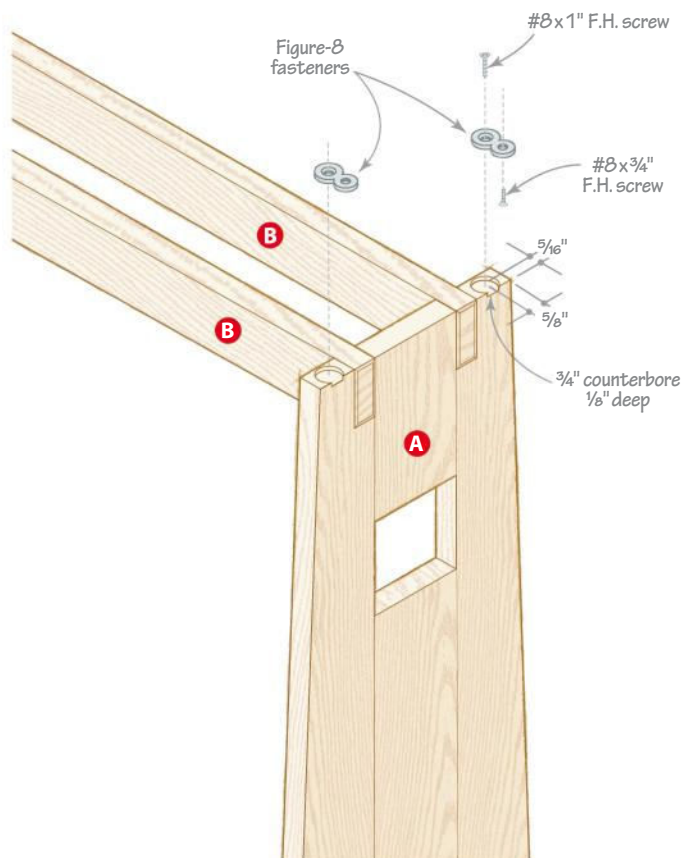
2 To accurately position the stretcher half-lap notches [Exploded View], mark the center of the length of each stretcher and the center of the top width of one leg (A). Mark notch locations on each stretcher [Photo B].

3 Using scrap pieces of stretcher stock to make test cuts, adjust the width and cutting depth of a dado set to make snug-fitting half-lap notches [Exploded View]. Cut the notches in the top edges of the long stretchers (B) and the bottom edges of the short stretchers (C).

4 Rabbet the ends of the stretchers to form tenons, then chamfer them [Drawing 3].

5 Dry-fit the stretcher half-laps and make any necessary adjustments. Assemble the stretchers [Photo C]. Drill shallow counterbores for figure-8 fasteners in the upper short stretchers (C) [Exploded View].

2 TABLETOP FASTENERS



Tip! To reach all surfaces, sand the legs, stretchers, and top to 220-grit before assembly.



C

Apply glue to the bottoms of the long-stretcher notches, slide the short stretchers into place, and clamp the upper and lower stretcher assemblies.



D

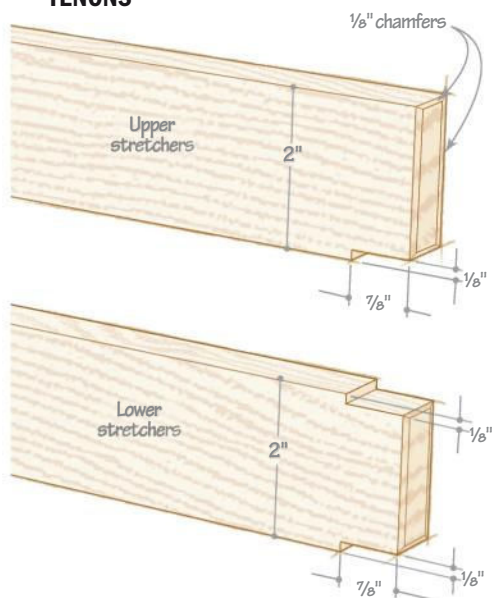
Glue and clamp the legs to the lower stretcher assembly. Make sure the legs are square to the stretchers.

Assemble the base

1 Apply glue to the lower stretcher assembly tenons, slip them into the side-leg mortises, and clamp them in place. Then add the end legs [Photo D].

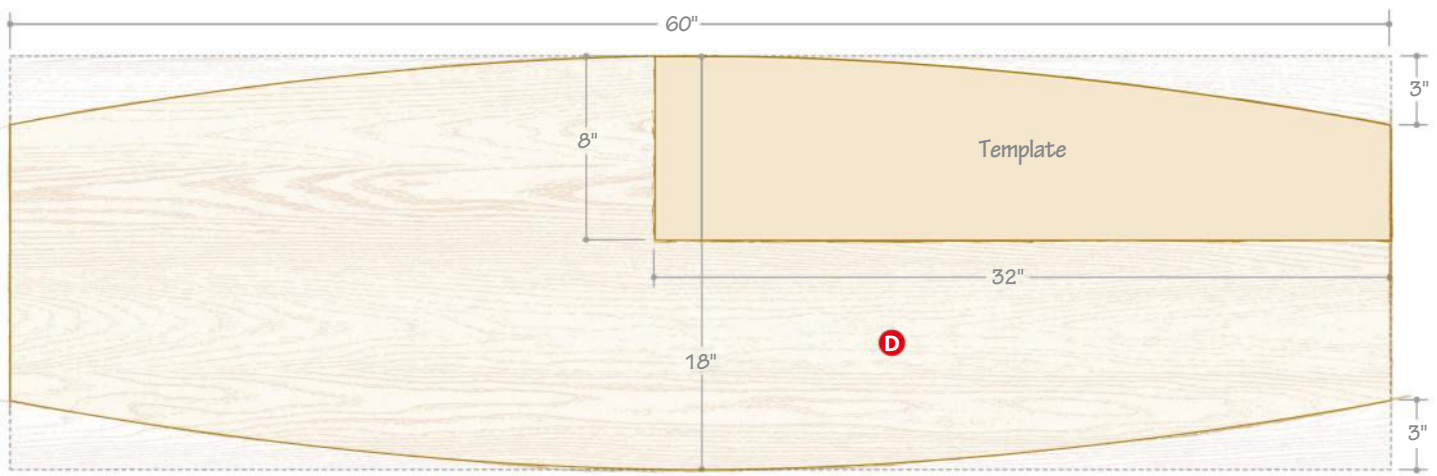
2 With the glue dry, add the upper stretcher assembly [Photo E]. Clamp and check for square.

3 STRETCHER TENONS



E

Apply glue to the mortises and tap the upper stretcher assembly into place with a non-marring mallet.



4 TOP

Top it off

1 Edge-glue an oversize panel for the top (D) [Materials List]. With the glue dry, cut it to finished length.

2 Create a template for the top (D). To do this, use a fairing stick to draw one-half of the edge curve on a $\frac{3}{4}$ x 8 x 32" piece of MDF [Drawing 4]. (The extra 2" length provides a smooth transition when flipping the template to form the second half of the curve.) Bandsaw and sand the curve to the line.

3 Use the template to draw the curve along the edges of the top (D) [Drawing 4]. Cut just outside the lines. Clamp the template in place and use a router with a flush-trim bit to finish-cut the edges. Finish-sand the top.

► Make your own fairing stick.
woodmagazine.com/fairing

Tip! For the smoothest flush cuts, choose a router bit with shear (angled) cutting edges or downcut spiral edges. To prevent tear-out when routing curved edges, always rout "downhill" with the grain, rather than "uphill" into the grain.

Apply finish and assemble

1 Inspect all parts and finish-sand where needed. Apply stain and a clear topcoat. For an authentic-looking Arts & Crafts finish, see the Skill Builder, right.

2 With the finish dry, attach figure-8 fasteners to the end legs (A) and upper short stretchers (C) [Exploded View]. Center the top

(D) on the base. Using the figure-8 fastener holes as guides, mark pilot-hole locations on the bottom face. Drill the pilot holes and fasten the top to the base. 🌲

Skill Builder

To enhance the figure of the quartersawn white oak used for this table and give it an authentic-looking Arts & Crafts glow, first apply Lockwood no. 144 Early American Maple Golden Amber water-soluble aniline dye. With the dye completely dry, apply Varathane no. 263 Gunstock oil-based stain and let it dry for 24 hours. Cool or humid environments may require more time for the solvent to completely evaporate. Finally, topcoat with General Finishes Enduro-Var satin water-based polyurethane [Sources].

Produced by **Craig Ruegsegger** with **Kent Welsh**
Project design: **Kevin Boyle**
Illustrations: **Roxanne LeMoine, Lorna Johnson**

Cutting Diagram



Materials List

Part	FINISHED SIZE			Matl.	Qty.
	T	W	L		
A* legs	$\frac{3}{4}$ "	9"	29"	EO	4
B long stretchers	$\frac{3}{4}$ "	2"	42 1/4"	O	4
C short stretchers	$\frac{3}{4}$ "	2"	14"	O	4
D* top	1"	18"	60"	EO	1

*Parts initially cut oversize. See the instructions.

Materials key: EO—edge-joined quartersawn white oak, O—quartersawn white oak.

Supplies: Figure-8 fasteners (6), #8 x $\frac{3}{4}$ " flathead screws (6), #8 x 1" flathead screws (6).

Blade and bit: Dado set, top-bearing flush-trim router bit.

Sources: Lockwood no. 144 Early American Maple Golden Amber water-soluble aniline dye, 1 oz., \$7.20, WD Lockwood, 212-966-4046, wdlockwood.com.

Varathane no. 263 Gunstock oil-based wood stain, quart, \$7.59.

Available at Menards stores or menards.com (add processing and shipping fees for online orders).

General Finishes Enduro-Var satin water-based polyurethane, quart, no. 151030, \$33, Woodcraft, 800-225-1153, woodcraft.com. To find your nearest retailer go to generalfinishes.com.

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Dazzle with Double Dovetails

This decorative joint is easier to create than you might think.

► This Incra system is centered around a multifunction router table fence, capable of much more than making double dovetails. Check it out at incra.com.

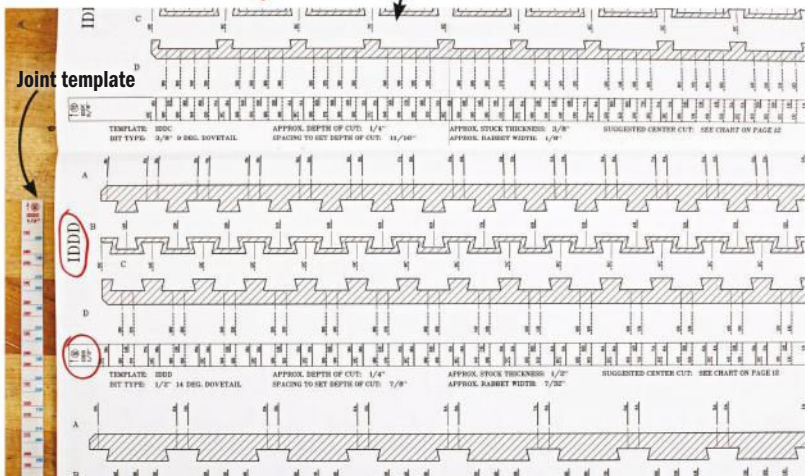
► Watch a free video of this technique. woodmagazine.com/doubledovetails

If a dovetail joint is considered the hallmark of true craftsmanship, a double dovetail carries twice the cachet. Also known as an inlaid dovetail, you craft it by cutting and assembling a dovetail joint, cutting and sanding the pin board flush to the tail board, and then routing and assembling a second dovetail joint. You can craft this dazzling half-blind dovetail joint using an Incra router-table system. Here's how.

Double down on the dovetails

The key to Incra's router-table system is its incrementally positioned fence and joint templates (shown, right) for making 38 different joints, including seven for double dovetails. Essentially, Incra has done all the math for you. Begin by choosing a double-dovetail joint from those diagrammed in the owner's man-

Manual with joint diagrams

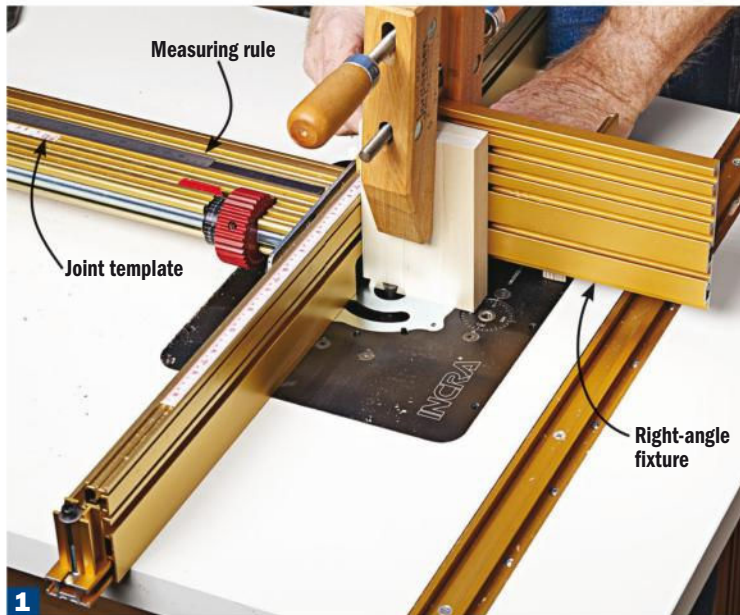


ual. There, it specifies which dovetail bit to use, the stock thickness, and other helpful information. Another chart helps match stock width to the templates, so you end up with a symmetrical joint. (You determine the length.)

Armed with that information, cut your stock to size. In addition to the four box sides (bird's-eye maple shown here), you'll need a

piece of contrasting wood (in this case, cherry) at least 8" long for the inlaid portion of the joint. You also need three scrap test pieces (two for the sides, one for the inlay piece) for setting the bit height and centering the fence to the bit. Rip all these pieces to the same width as the box sides. Now follow these steps to cut the joint.

► Although we use the fully tricked-out Incra system (\$1,245, plus router and bits), all you need to make double dovetails is Incra's LS Positioner fence and extended tabletop (about \$515). Attach them to your stand or cabinet, and use any router or lift combination.



1

Set the bit height as specified in the owner's manual diagram. Clamp two test pieces to the right-angle fixture. Position the fence to cover half the bit, and slide the fence's silver measuring rule to zero. Cut a half-width socket through both pieces, slide the fence $\frac{7}{8}$ " to the right (away from the bit), and cut a full-width socket. Unclamp the pieces, flip

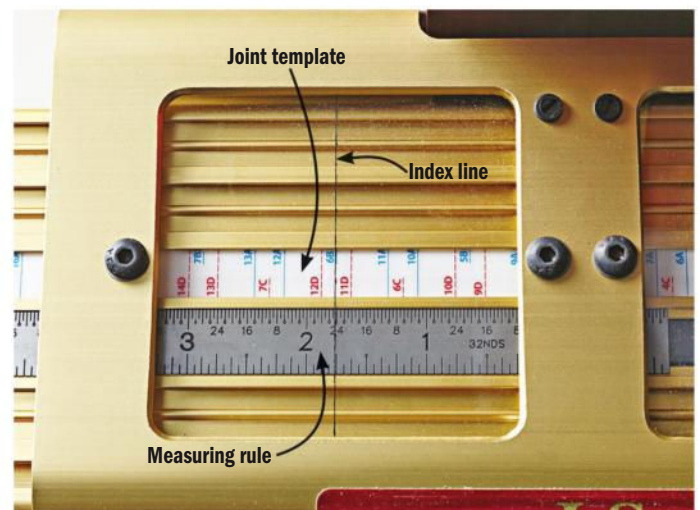


one around, and test the fit. A perfect joint (above) has no gaps and slides together with moderate hand pressure, but also stays together without being held. To tighten the fit, raise the bit; lower it to loosen it. Once you've set the bit height, don't adjust it again. You'll make all router cuts with this bit setup.

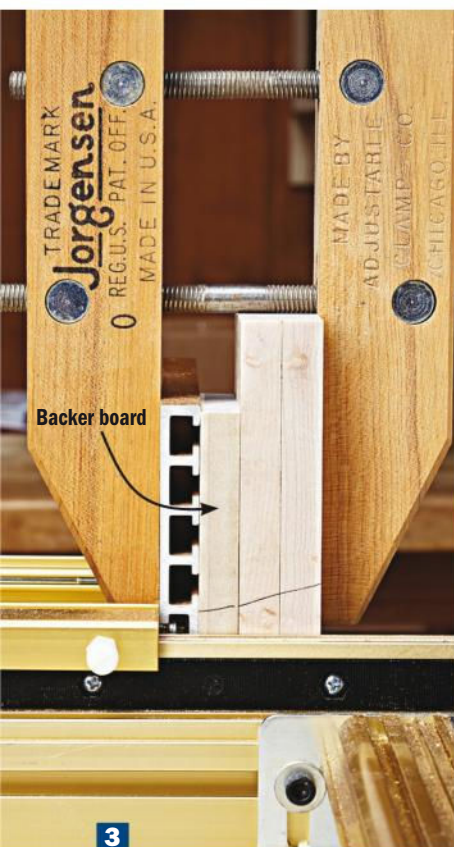


2

Now center the bit to the workpiece. Rout a dovetail groove, about centered, the length of the test piece, then flip it end for end, rout about 1", and then back it out. Check the groove: If the second cut offsets from the first, microadjust the fence half that much. Make



more test cuts and adjustments until the groove is perfectly centered. Then align the joint template to the position indicated in the owner's manual for centering your stock (in this case, 6B). Don't adjust this template again.



3

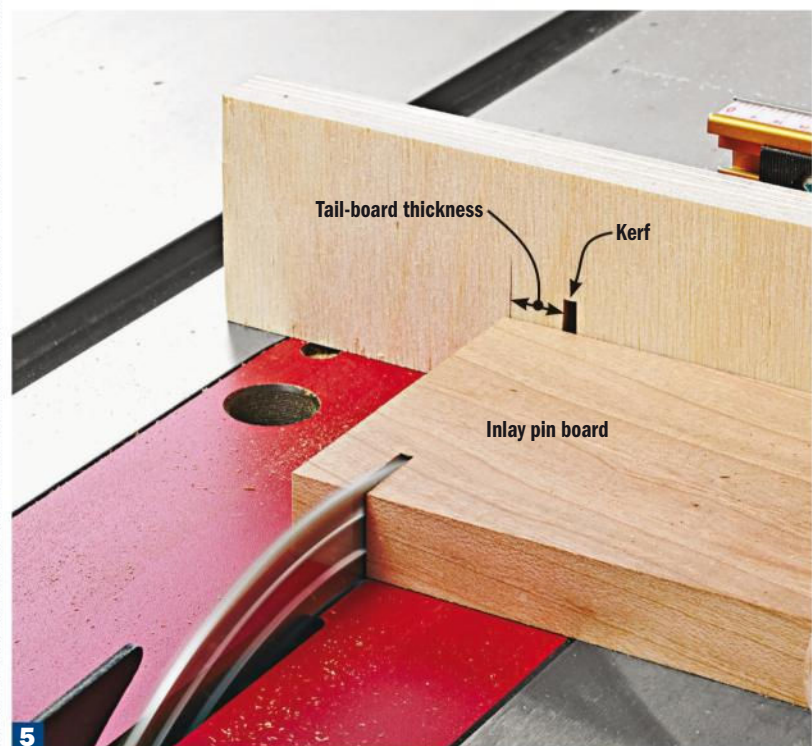
Rout the tails, Round 1. Position the fence to leave only $\frac{1}{32}$ " of the bit proud of the fence face. Align the measuring rule's zero to the fence's cursor, making this the starting point for all cuts the rest of the way. Clamp the two tail boards to the right-angle fixture, and mark the edge that rests against the fence. (This ensures later cuts will be made using the

same registration.) Rout the tails by positioning the fence at every "A" setting on the joint scale left of zero, and sliding the boards forward over the bit each time. The second pass through each socket (right) overlaps the first pass (left), widening the cuts. This creates wider sockets to allow for the inlay-wood pin boards.



4

Rout the inlay pin board. With the fence stop set about 4" in front of the bit, rout tail-socket grooves, up to the stop, at each "B" setting on the scale left of zero.

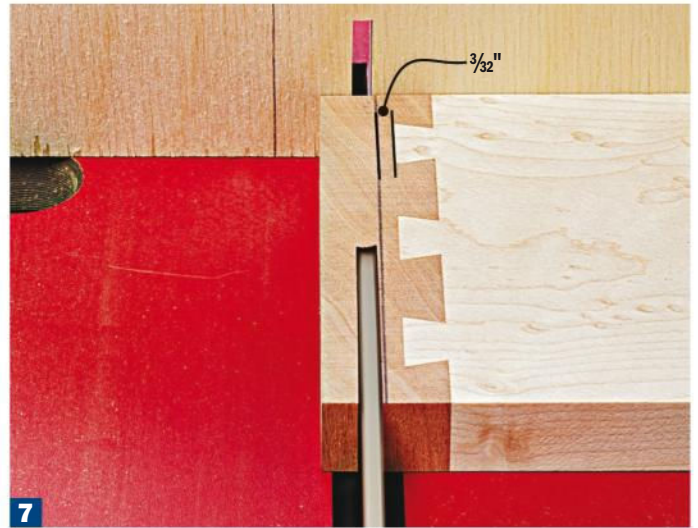


5

Crosscut the inlay pieces. Secure an auxiliary fence to your tablesaw's miter gauge, and make a mark past the kerf slot equal to the thickness of the tail boards. Slide the inlay pin board about $\frac{1}{32}$ " past this mark and crosscut. Repeat four times. (It's good to have a spare, in case one splits during assembly.)



6 **Glue your first pins and tails.** Apply glue to the inlay pin pieces and slide them onto the ends of the tail boards, centering them on the tail board's thickness. Clamp securely and allow to dry.



7 **Trim the new tail boards.** Sand or hand-plane the inlay pin pieces smooth with the tail board faces. Mark a line across the width $\frac{3}{32}$ " from the tips of the tails. (Some joints, noted in the owner's manual, call for a $\frac{1}{8}$ " offset.) Cut away the waste, sneaking up to the line by making two or more cuts.



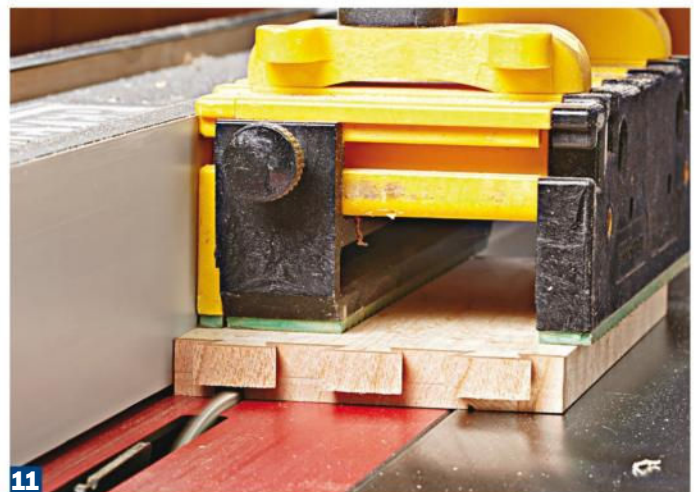
8 **Rabbet the tails.** Holding each tail board upright against the fence, rout a $\frac{7}{32}$ "-deep rabbet on the inside face. Rout this in three or four incremental passes to avoid tear-out. This reduces the tail thickness to match the depth of the pin board sockets.



9 **Rout the tails, Round II.** Sandwich the tail boards against the fence and right-angle fixture with the rabbets to the front and rear. This eliminates tear-out on the outer faces of the tails. Using the "C" settings on the joint template left of zero, rout new tails across the boards.



10 **Rout the final pins.** Retrieve the pin boards and rout tail sockets in each end, using the "D" settings left of zero. Use the fence stop to limit the depth of cut—typically equal to the diameter of the dovetail bit. Sneak up on this depth by extending the stop about $\frac{1}{32}$ " over the bit, then moving it away as needed.



11 **Cut a bottom groove.** Before assembling your double-dovetailed box, cut a shallow groove for the bottom panel in each tail board and pin board. Align this groove beneath a tail so it won't be seen after assembly. Set the saw blade low enough to avoid cutting into the tails. Cut a bottom panel to fit, then assemble your box.

Produced by **Bob Hunter**

Mil-spec Iowa-class Battleship

Whether patrolling the waves of your living room floor or anchored atop the fireplace mantle, this stately warship will make an impressive flagship for your wooden fleet.

DIMENSIONS:
8 3/8" H x 36" L x 6 3/4" W

Almost
15,000
mile range at
15
knots
(Your mileage may vary)

1:300
Approx. scale of
this model to the
actual ship

Landlubber's guide to nautical terms

To sound like true sea-farers, we'll use the appropriate nautical terms when referring to the sides and ends of the ship. Here's what you need to know to discern your stern from your elbow:

Bow: the front of the ship

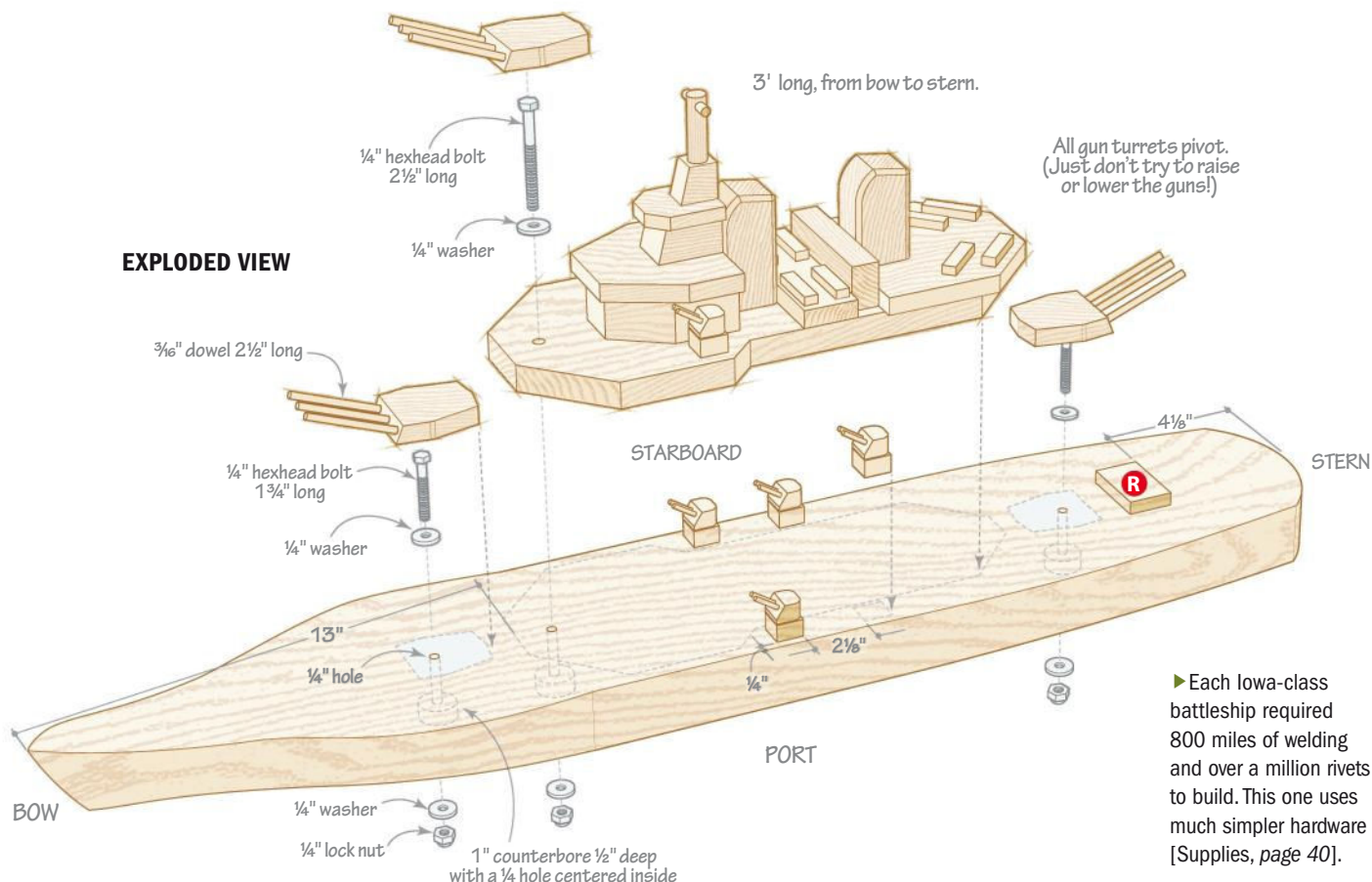
Stern: the rear of the ship

Starboard: the right side of the ship as you face the bow

Port: the left side of the ship as you face the bow

Fore: Near or toward the bow

Aft: Near or toward the stern



► Download patterns for this project. woodmagazine.com/243patterns

Tip! Finish-sand parts as you make them and before gluing them in place.

Shape the hull

1 Prepare a 1 3/4"-thick blank for the hull (A) (lamine multiple pieces, if need be) [Materials List]. Enlarge and tape together the Hull Full-size Pattern on pages 40–41 and spray-adhere it to the top face of the blank. Bandsaw the hull to shape [Photo A] and sand smooth.

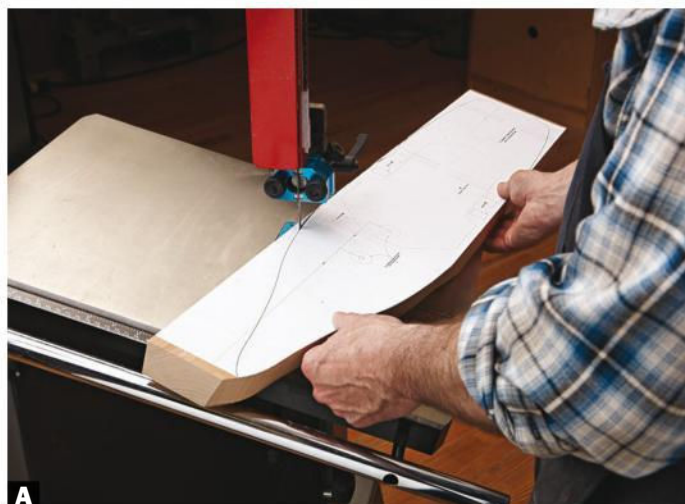
2 Lay out and drill the three holes and counterbores for the 16" gun turrets (Q)

on the hull (A) where shown on the pattern. Remove the pattern and finish-sand the hull to 220 grit.

Stack the decks

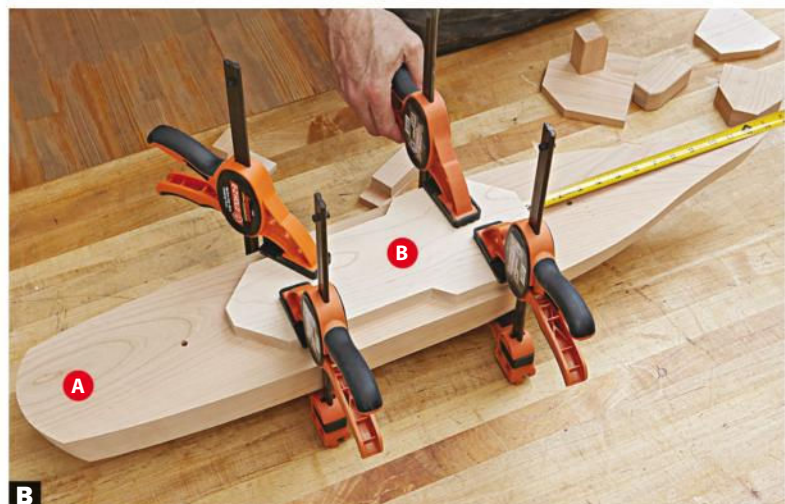
1 Cut parts B–M to shape [Drawing 1, Materials List]. Label each to help with assembly.

2 Glue O1 level (B) to the top of the hull (A) [Photo B, Exploded View]. After the glue dries,



A

Angle the hull. Tilt your bandsaw table 15°, then cut the fore edges of the hull along the port and starboard sides. Bandsaw the stern using the same angle. Reset the table perpendicular to the blade and cut the remaining portions.



B

Advance to level one. Glue and clamp O1 level (B) to the hull (A), centering it side to side and 13" from the bow.



C

Build up the decks. After adding the aft ABL deck (C), allow the glue to dry for 10 minutes or more, then add the subsequent parts, centering each on the width of 01 level (B).



D

Block the turrets to tackle the holes. Use double-faced tape to secure each turret to a block with a 22° angle. Then drill the holes for the guns.

use the $\frac{1}{4}$ " hole in the hull (A) as a guide to drill through 01 level.

3 Glue the aft ABL (armored box launchers) deck (C) in place, centered side to side and with $\frac{1}{4}$ " overhang aft [Drawing 2a]. Working your way forward, add the rear gun platform (D), forward ABL deck (E), and stack one (F) [Photo C].

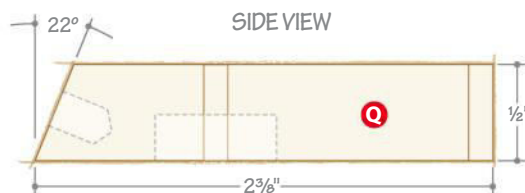
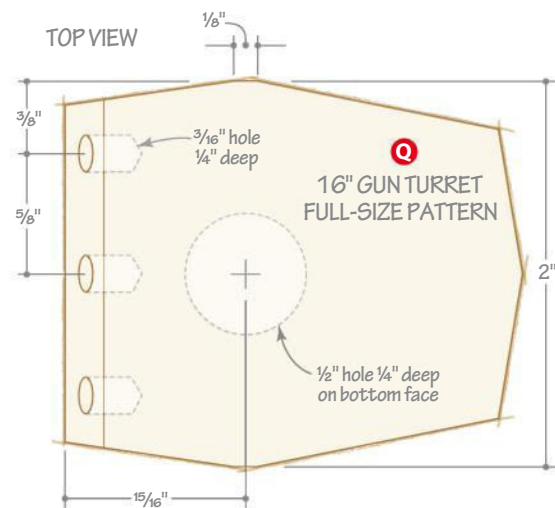
4 Glue parts G–L in place, following Drawing 2, with each piece centered side-to-side on the one below it. Glue the armored box launchers (M) in place [Drawing 2a].

5 Cut the gun director (N) to length. Drill the hole [Drawing 2], and glue in a length of $\frac{1}{4}$ " dowel. Glue this assembly into the radar tower (K).

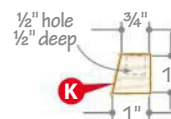
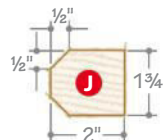
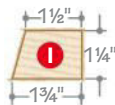
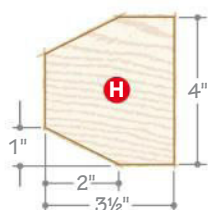
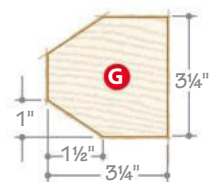
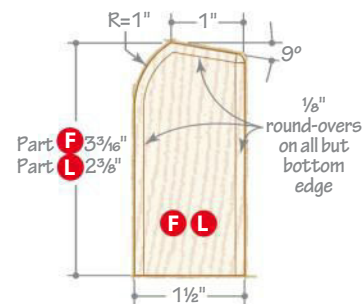
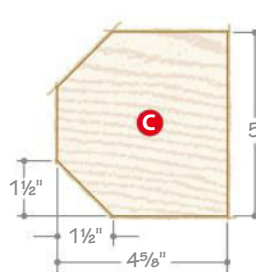
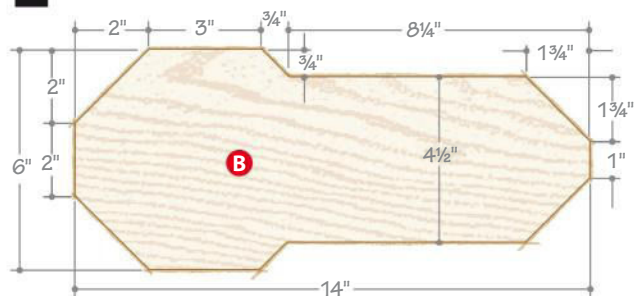
► Each Iowa-class battleship housed a complement of 2,800 sailors during WWII.

Make and mount the armament

1 To make the anti-aircraft guns (O/P), cut three $\frac{1}{2} \times \frac{3}{4} \times 6$ " maple blanks. Adhere a copy of the Anti-aircraft Gun Pattern to each blank. Cut the bevel on each end, then drill the holes in O, and the $\frac{5}{16}$ " hole in P where shown [Drawings



1 PARTS VIEWS



3 and 3a]. Crosscut O and P to length, sand the radii on P, then remove the patterns.

2 Clamp each anti-aircraft gun (P) in a hand screw with the beveled end flush with the jaws. At the drill press, drill two $\frac{1}{8}$ " holes where shown [Drawing 3a]. Set the guns aside.

3 Cut three blanks for the 16" gun turrets (Q). Adhere a copy of the 16" Gun Turret Pattern to each one, and bevel-cut one end. Drill the holes where shown [Pattern, Photo D], and cut the turrets to shape. Set the turrets aside.

4 Cut the aft storage locker (R) to size and glue it in place [Exploded View].

5 Mix two-part epoxy and use it to secure the head of a machine screw into each anti-aircraft gun (P) [Drawing 3] and a bolt into each 16" gun turret (Q) [Exploded View].

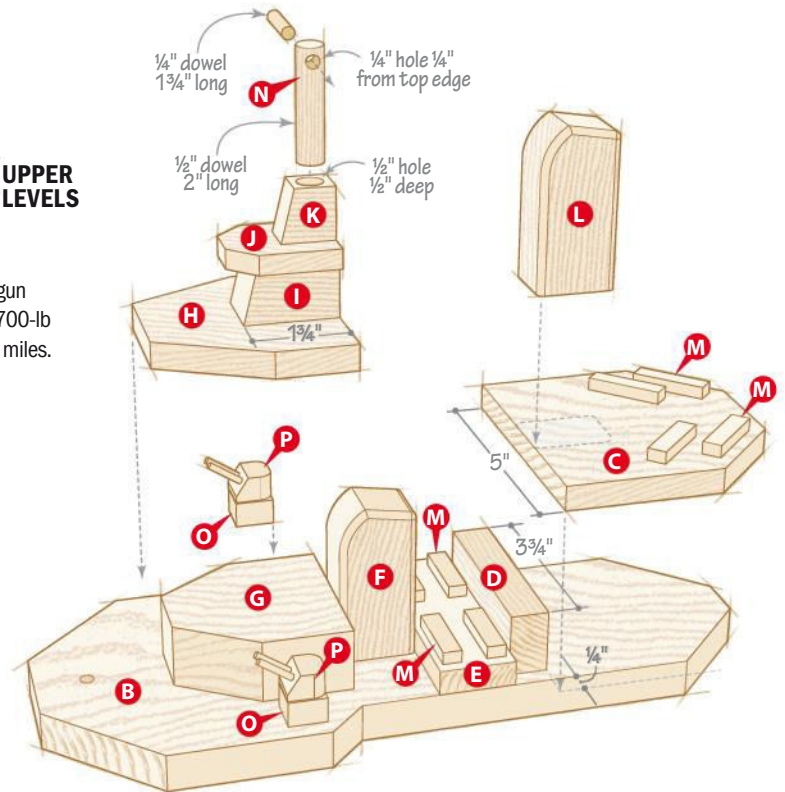
6 After the epoxy cures, cut the dowels for the gun barrels, and glue them in place [Drawing 3, Exploded View]. Mount the anti-aircraft gun bases (O) to the guns (P), and glue the bases in place [Exploded View, Drawing 2a].

7 Apply a finish to all pieces. We sprayed on three coats of aerosol satin-finish lacquer.

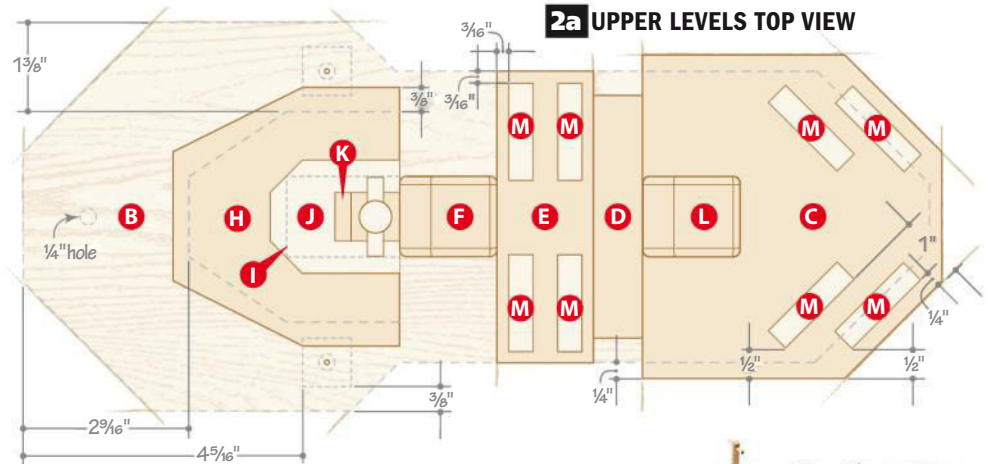
8 Secure the 16" guns to the hull [Exploded View]. The only thing left to do is break a miniature bottle of champagne against the bow and weigh anchor. 🍾

2 UPPER LEVELS

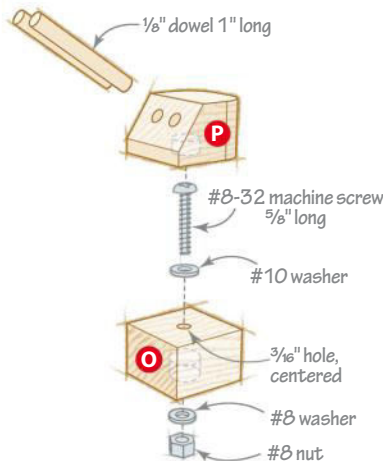
► Each 16" gun can fire a 2,700-lb projectile 24 miles.



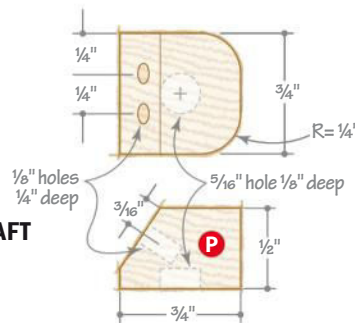
2a UPPER LEVELS TOP VIEW



3 ANTI-AIRCRAFT GUN



3a ANTI-AIRCRAFT GUN DETAIL



► All four Iowa-class battleships survive today as museums: the Iowa (BB-61) in Los Angeles; the New Jersey (BB-62) in Camden, N. J.; the Missouri (BB-63) in Pearl Harbor, Hawaii; and the Wisconsin (BB-64) in Norfolk, Va.



Materials List

Part		FINISHED SIZE			Mtl.	Qty.
		T	W	L		
A	hull	1¾"	6¾"	36"	C	1
B	01 level	¾"	6"	14"	M	1
C	aft ABL deck	½"	5"	4⅝"	C	1
D	rear gun platform	¾"	1¼"	3¾"	C	1
E	forward ABL deck	½"	1½"	4½"	C	1
F	stack one	1¼"	1½"	3⅝"	C	1
G	02/03 level	1¼"	3¼"	3¼"	C	1
H	04 level	½"	4"	3½"	M	1
I	conning tower	1"	1¼"	1¾"	C	1
J	tower	¾"	1¾"	2"	M	1
K	radar tower	¾"	1"	1"	C	1
L	stack two	1¼"	1½"	2⅝"	C	1
M	armored box launchers	¼"	¾"	1½"	M	8
N	battery director	½" diam.		2"	M	1
O*	anti-aircraft gun bases	½"	¾"	¾"	M	6
P*	anti-aircraft guns	½"	¾"	¾"	M	6
Q	16" gun turrets	½"	2"	2⅝"	M	3
R	aft storage locker	¾"	1¼"	2"	M	1

*Parts initially cut oversize. See the instructions.

Materials key: C-cherry, M-maple.

Supplies: ¼-20x1¾" hexhead bolts (2), ¼-20x2½" hexhead bolt, ¼" washers (6), ¼" lock nuts (3), #8-32x⅝" machine screws (6), #8 washers (6), #8 nuts (6), #10 washers (6), ⅝x16" maple dowel, ¾x24" maple dowel, ¼x1¾" maple dowel, ½x2" maple dowel.

Bits: ⅝" round-over router bit; ⅝", ½", 1" Forstner bits.

Order plans for other projects from our Mil-Spec series.

woodmagazine.com/mil-spec



The 42" wingspan of the **AC-130** supports four spinning propellers. Drop down the rear door to load cargo inside.

Issue 236 (Nov. 2015).



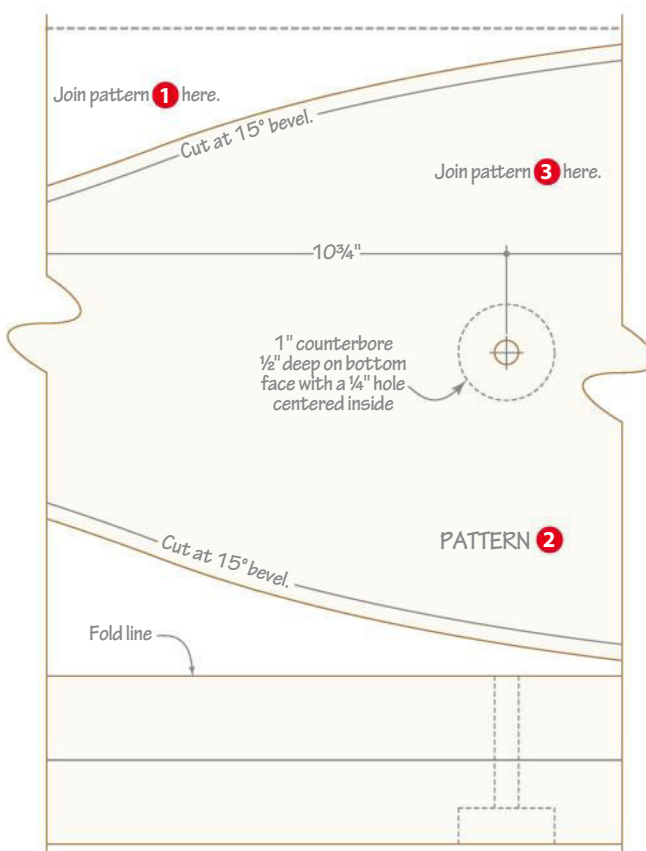
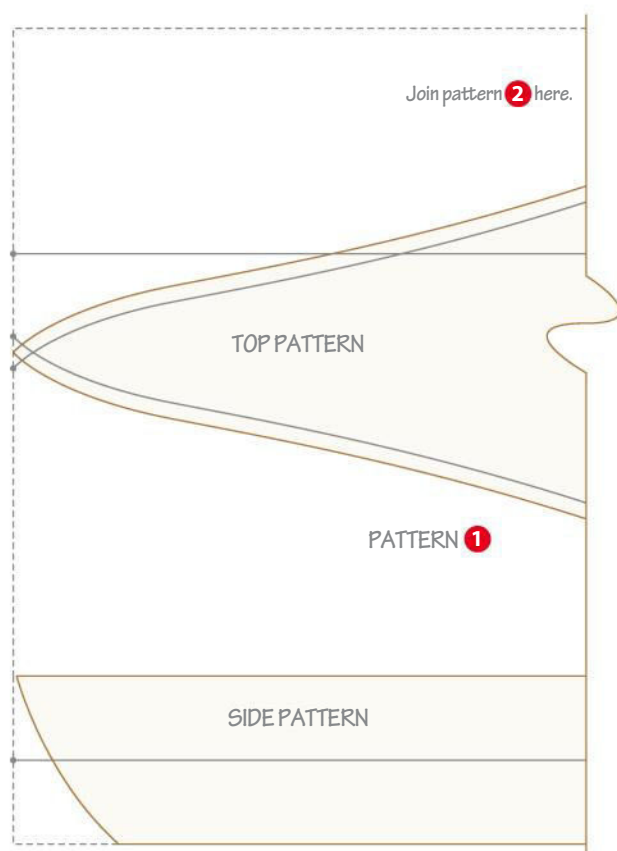
The **M1A1 Abrams Tank** is ready to roll and provide support for your green plastic army men. Plus it fits inside the AC-130.

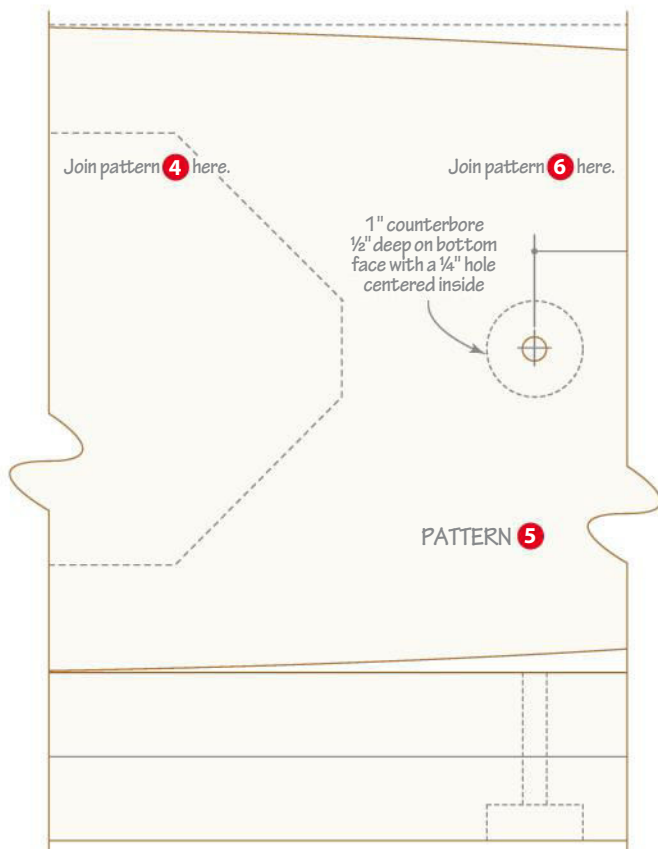
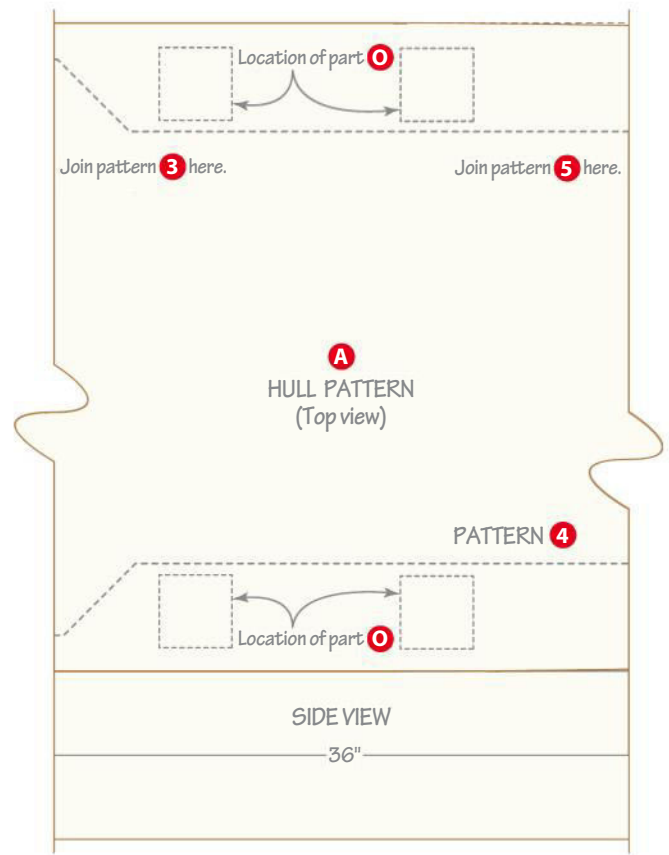
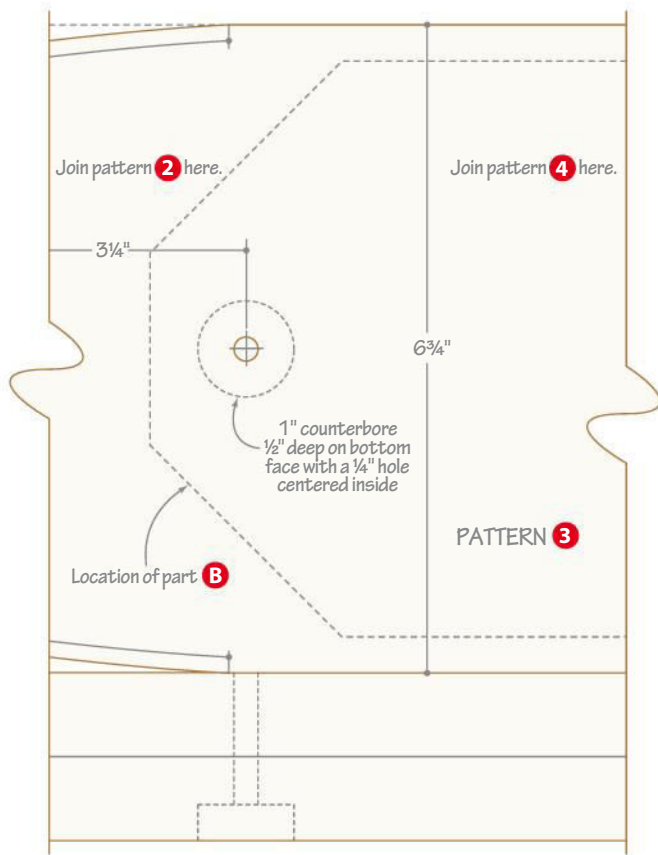
Issue 239 (May 2016).

►The U.S.S. Iowa has the only bathtub on a naval vessel. It was installed for President Franklin Roosevelt's use.

Produced by **Craig Ruegsegger** with **Kevin Boyle**
Project design: **Kevin Boyle**
Illustrations: **Roxanne LeMoine, Lorna Johnson**

Enlarge Hull Patterns 200% and join where indicated.







Paste wax

Finish your finish

By Jim Heavey

I've always believed that if a project's finish doesn't pass the "touch test"—when running your hands over the project, you feel a flawless, satin-smooth surface—that finish diminishes the impact of quality design or construction. So here are a few simple tricks that will make your finish a point of pride.

Focus on surface preparation

Nothing beats good preparation when it comes to attaining a great finish. First, sand all surfaces on your project, with the exception of end grain, to the same grit level. Sand the end grain to twice the grit level of the project to provide a more even appearance when stained or finished.

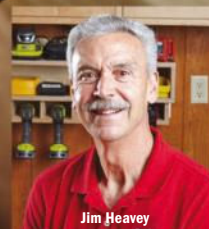
All sanding dust should be removed with a vacuum and a blast of compressed air. I use tack rags to remove fine dust immediately prior to applying a finish, wiping gently to avoid contaminating the surface with the sticky residue on the rag.

Apply a finish when the time is right

Stains must dry completely prior to topcoat application. The drying and curing times found on the instruction labels typically assume a 70-degree temperature and 50 to 70 percent humidity. Very cool or humid conditions greatly prolong those times.

Don't attempt any finish application the same day you're working in the shop. Fine airborne dust from sawing or sanding

Fine steel wool



Jim Heavey



A

Nibs can ruin a good finish. They can embed in the finish while brushing, or airborne particles can settle on the wet surface prior to drying.



B

Give your workpiece shelter. Polyurethane finishes dry slowly, so their surfaces are more likely to attract airborne dust. Protect those surfaces by suspending poster board slightly above the workpiece, or covering the project with a box with air holes in the sides.

► Learn to choose the right finish for any project.
woodmagazine.com/choosefinish

causes those dreaded dust nibs in your finish [Photo A]. To help prevent “floaters” from settling on your fresh finish, shield the piece while it dries [Photo B].

When possible, apply finish on horizontal surfaces. Gravity helps the finish self-level, creating a flatter, smoother surface. This may involve rotating the project for each side, but the results are well worth it. Remember, self-leveling on a vertical surface is called a drip.

If you’re brushing on a finish, always start with a clean brush. Brushes stored uncovered in a dusty shop transfer accumulated dust to a project’s surface. Store brushes in their original packaging, or wrap them in newspaper.

In general, three coats of finish on any project is sufficient. The first coat is pulled into the pores and acts as a seal. The second and third coats add protection and sheen.



C

Smooth out brush marks. Smooth out brush marks to hasten leveling by tipping off the finish prior to drying. Hold the nearly dry brush at about a 45° angle and lightly drag it in the direction of the grain.

woodmagazine.com

Overcoming finish flaws

Now, let’s deal with the inevitable finish imperfections and make that good finish a great one. Fix major flaws in a coat by sanding the surface flat using 320-grit sandpaper and applying one last coat of a thinned finish. Thinner finish flows out easier and dries quicker, thereby reducing the chance of bubbles [Photo C]. Solvent-based finishes, such as polyurethane and varnish, can be thinned from 25 percent to as much as 50 percent using mineral spirits. Waterborne finishes can be diluted only about 10 percent with water. Instead of brushing or wiping a diluted finish, you can spray on a thin coat [Photo D].

Penetrating finishes, such as Danish oil, absorb into the wood surface instead of building up, like polyurethane. Once cured, smooth the surfaces by applying paste wax with 0000 steel wool [Opening photo]. Working in the direction of the grain, that fine steel wool (equivalent to 600–800 grit sandpaper) removes any surface imperfections and provides the grip for the wax. Buffing the wax finishes the job.

In a perfect world, every woodworker would have a finishing guru available at a moment’s notice. With practice and patience you won’t need one. Now, go ahead and touch it! 🌲

► Learn how to sand between coats for a perfect finish.

woodmagazine.com/sandingsolutions

► Often, sanding off dust nibs only moves them to a new spot. Instead, let the surface dry completely and scrape them off with the blade from a razor knife. A bit of paste wax will hide all the evidence they were once there.



D

Spray the final coat. Aerosol cans do not leave brush marks and result in very smooth surfaces. Spray evenly, holding the can approximately 12" from the surface.

Zigzag Box

No veneer. It's all done with solid wood.



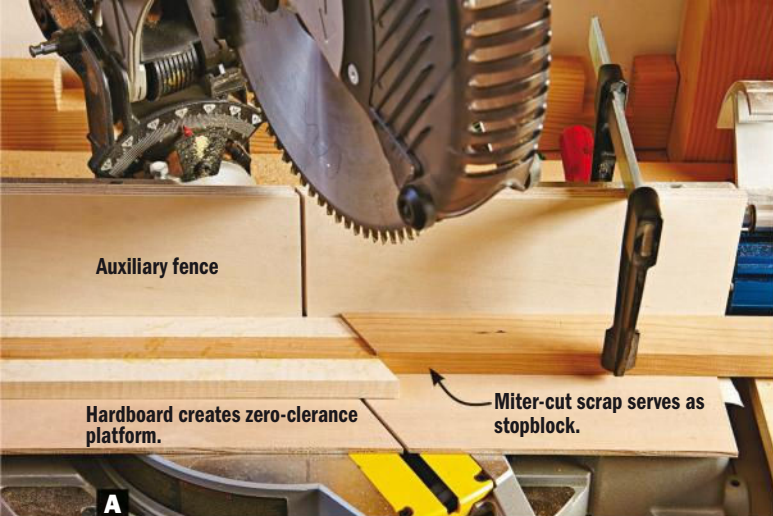
DIMENSIONS:
10½" L x 6" D x 4⅞" H

Approximate materials cost:

\$75

including stop hinges

54
zigzag segments



Auxiliary fence

Hardboard creates zero-clearance platform.

Miter-cut scrap serves as stopblock.

A

Pivot the blade for a 31.6° miter cut. (This should be a preset detent on the saw.) Install an auxiliary fence and platform to back up the cuts. Then trim the end of a piece of scrap. Clamp the scrap to the fence 3/4" from the blade.



Zero-clearance insert prevents cutoffs from falling into blade.

C

Just a little off the sides. Rip an MDF carrier about 10" wide, then attach a blank to it with double-faced tape. Rip one edge of each blank, then rip the opposite edge.



Narrow scraps

B

Alternate cherry and walnut segments arranging them for the best grain flow. Keep narrow scraps under the mitered edges—that way, even if they get glued on, they'll be ripped away in the next step.



Banding

D

Overlong banding prevents snipe when planing the blank to final thickness. Keep the faces as flush as possible during glue-up.

► To prevent kickback, let the saw stop after each cut before raising the blade.

Tip! Stack the cutoffs in sequential order to help arrange them later for best effect.

Tip! If you have a couple of less-than-perfect top segments, put them on the ends, as they will be cut away later.

3 Plane the side and end (A, B) blanks to 5/8" thick. Set up your miter saw as shown in Photo A. Trim one end of each side blank, then cut 24 segments, 3/4" long, from each one. Reposition the stopblock and cut seven 1"-long segments from each top (C) blank.

4 Dry-fit 24 side/end (A, B) segments along a straight scrap and elevated on narrow scraps [Photo B]. Glue the segments together, then repeat to make a second blank. Do the same with the segments for the top (C), using all of the cherry and walnut segments. Set the top blank aside for now.

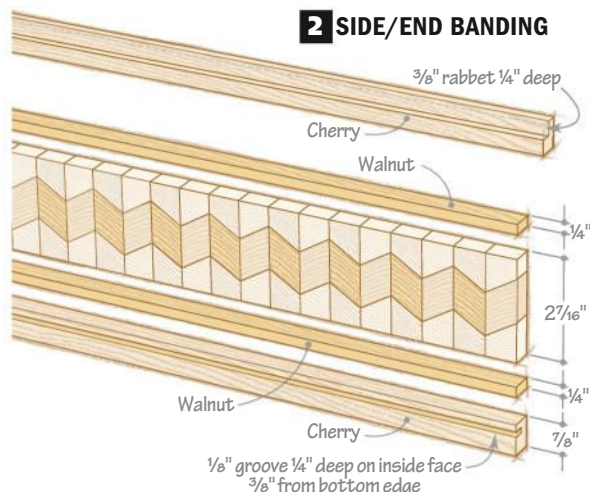
5 After the glue dries, rip each edge of the side/end blanks, keeping the walnut and cherry segments centered on the width [Photo C].

6 Prepare four 5/8x7/8x34" cherry strips and four 1/4x5/8x34" walnut strips for banding. Glue these to the edges of the side/end blanks [Drawing 2, Photo D].

7 After the glue dries, plane the side/end blanks to 1/2" thick. Trim off most excess banding length, leaving about 1/16" extra at each end.

8 Rabbet the top banding of each side/end blank [Drawing 2]. Then plane the top (C) to match the depth of the rabbet.

2 SIDE/END BANDING





E Glue the box together using tape to hold the miters closed and clamps to secure the top (C) in the rabbets.



F Cut a bit for a perfect lid fit. After ripping an end or side, insert a spacer to prevent pinching the kerf around the blade, then apply tape to hold the lid in place during subsequent cuts.

9 Trim the bottom banding to $\frac{3}{4}$ " wide. (This keeps the top and bottom banding the same width after the lid is cut away from the box later.) Cut the groove in the bottom banding [Drawing 2].

Box it up and pop the top

1 Bevel-cut each end of the side/end blanks at 45° so the point of the miter runs along the end of a walnut segment at one end, and a cherry segment at the opposite end. Counting from the bevel-cut cherry segment, bevel-cut an eight-segment-long end (B) from each blank, leaving the full width of a walnut segment at the end. Counting from the bevel-cut walnut end of the blank, bevel-cut a 14-segment-long side (A), so that the miter cuts along a cherry segment, leaving its full width.

2 Cut the bottom (D) to fit in the grooves and dry-fit the box [Exploded View]. Trim the top (C) to fit in the rabbet, keeping the pattern centered on the panel.

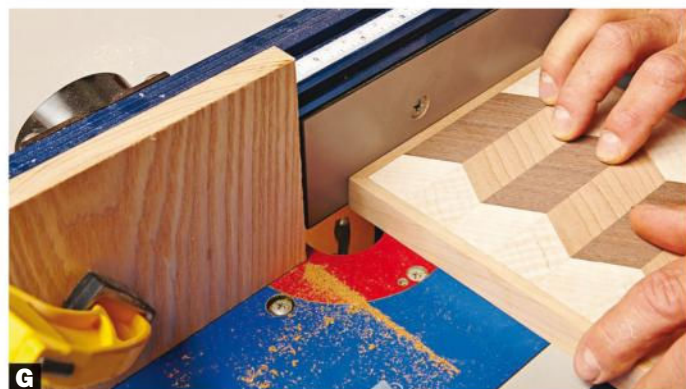
3 Finish-sand all the inside surfaces to 220 grit. Then glue up the box [Photo E].

4 After the glue dries, raise your tablesaw blade $\frac{5}{8}$ " above the table, and position the rip fence so the blade cuts along the bottom edge of the top banding, leaving the full width of the walnut banding [Photo F]. Separate the lid from the box.

5 Remove saw marks on the lid and box by placing self-adhesive sandpaper on your tablesaw top and sanding the cut surfaces.

A few final details

1 To cut mortises for the hinges [Source], install a $\frac{5}{16}$ " straight or spiral bit in your router table. Position the fence to center the bit on the thickness of a box side, and raise the bit to match the thickness of a hinge leaf. Clamp a stopblock to the fence to cut the length of a leaf [Exploded View, Photo G], with



G Push the workpiece straight into the bit, then stop the router and allow the bit to stop before removing the workpiece.

the hinge knuckle resting outside the box. Check your setup on scrap.

2 Cut the mortises on the right side of the lid and left side of the box by pushing these pieces into the bit and to the stopblock. For the two remaining mortises, mirror the stopblock position on the opposite side of the bit. Press the elevated workpiece against the stopblock, then lower it onto the spinning bit, and push the workpiece along the fence.

3 Finish-sand the box and apply a finish. We used satin-finish aerosol lacquer. Install the hinges. Present your zigzag box, and see if the lucky recipient can keep a straight face. 🌲

► Building more boxes? Try steeper or shallower miters for the segments to make a zigzag with a different pitch. Cut narrower or wider segments for a busier or more relaxed pattern.

Materials List

Part	FINISHED SIZE			Matl.	Qty.
	T	W	L		
A* sides	$\frac{1}{2}$ "	$4\frac{7}{16}$ "	$10\frac{1}{2}$ "	Z	2
B* ends	$\frac{1}{2}$ "	$4\frac{7}{16}$ "	6"	Z	2
C* top	$\frac{3}{8}$ "	$5\frac{1}{2}$ "	10"	Z	1
D bottom	$\frac{1}{8}$ "	$5\frac{1}{2}$ "	10"	P	1

*Parts initially cut oversize. See the instructions.

Materials key: Z-cherry, maple, and walnut; P-maple plywood.

Bit: $\frac{5}{16}$ " straight or spiral router bit.

Source: Solid brass side rail hinges (1 pair), no. 11040, \$45, Rockler Woodworking and Hardware, 800-279-4441, rockler.com

Produced by **Craig Ruegsegger** with **Kevin Boyle**
Project design: **Calvin Longcore**, Kalamazoo, Michigan
Illustrations: **Roxanne LeMoine**, **Lorna Johnson**

Rout Perfect Circles

A simple trammel guides your router to complete the circuit.

You can cut large circles with a router, bandsaw, or jigsaw. Of those three, only a router with a straight or spiral bit ensures a true circle requiring very little edge cleanup. To do so, you'll need a trammel that extends out from the center of the circle and replaces the router's subbase.

Make it from $\frac{1}{4}$ " hardboard or plywood, about 8" longer than the circle's radius.

It takes only about 10 minutes to make and install a trammel onto your plunge router, and once you make it, all you need to do for a different diameter is drill a new pivot-screw hole. Here's how to do it.



1

Start with a center hole. Glue up your blank and on its bottom face mark the center. Drill a pilot hole for the pivot screw. We drilled a $\frac{7}{64}$ " hole for a #8x $\frac{3}{4}$ " screw, about $\frac{2}{3}$ through the thickness.



2

Mount the router. Remove your router's subbase and use it as a pattern to mark mounting holes on the trammel. Drill and countersink those and drill a bit hole; then mount the trammel to the router.



3

Measure and mark the radius. Install a spiral bit. (We used $\frac{3}{8}$ ", but any size works.) Measure from the edge of the bit (inset) and mark the length of the circle's radius on the trammel.



4
Attach the trammel. At the mark you just made, mount the trammel onto the workpiece with a screw, being careful not to go through the top's good face. Tighten the screw snugly, but be sure the trammel can rotate smoothly.



5
Rout a shallow circle. Begin routing the circle by plunging $\frac{1}{4}$ " deep and moving the router in a counterclockwise rotation. Complete the full circle and then shut down the router, but don't remove it.



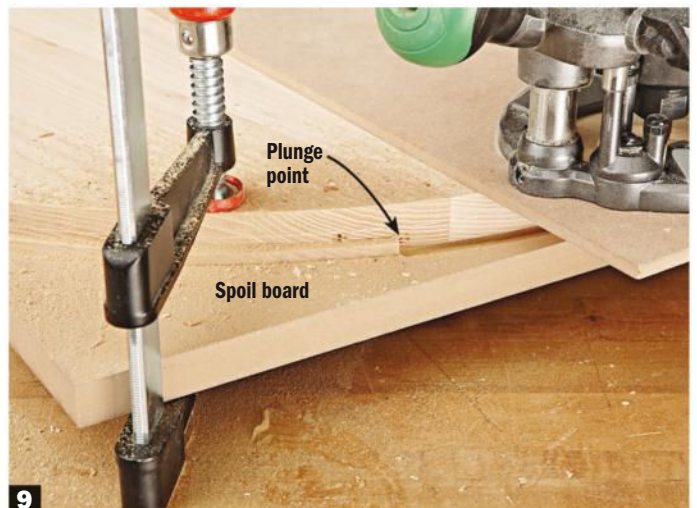
6
Back up for straight bits. If you use a straight bit rather than a spiral, you must climb-cut (routing backwards) the areas of the circle prone to grain tear-out. Do this in $\frac{1}{8}$ "-deep increments.



7
Cut away the excess. With the router trammel still attached to the workpiece, cut through the middle of the groove. Rotate the router out of the way as you cut around the circle.



8
Continue plunge-cutting. Elevate the workpiece on riser blocks tucked inside the circle (to avoid contact with the bit). Rout the shape in $\frac{1}{8}$ "-deeper passes, stopping with about $\frac{1}{8}$ " of material left to go.



9
Prevent good-face tear-out. For the final pass, clamp a scrap "spoil board" beneath the workpiece. The spoil board prevents splintering on the underside, which will ultimately be the top. Reposition the clamps as needed to clear the router's path.

Idea Shop 6:

Build your own cabinets

With two of the next four paychecks, you'll buy the materials to build a set of base and upper cabinets. In doing so, you'll learn pocket-hole joinery, a fast way to assemble face frames and other components of cabinets and furniture. But first, use your set-aside money to purchase a thickness planer to sit alongside your jointer, completing the one-two punch for dressing lumber.

► A **face frame** hides the plywood edges at the front of a cabinet, defines the door and drawer openings, and strengthens the carcass.

► Watch a video of the shop growing, updated with each paycheck.
woodmagazine.com/is6progress

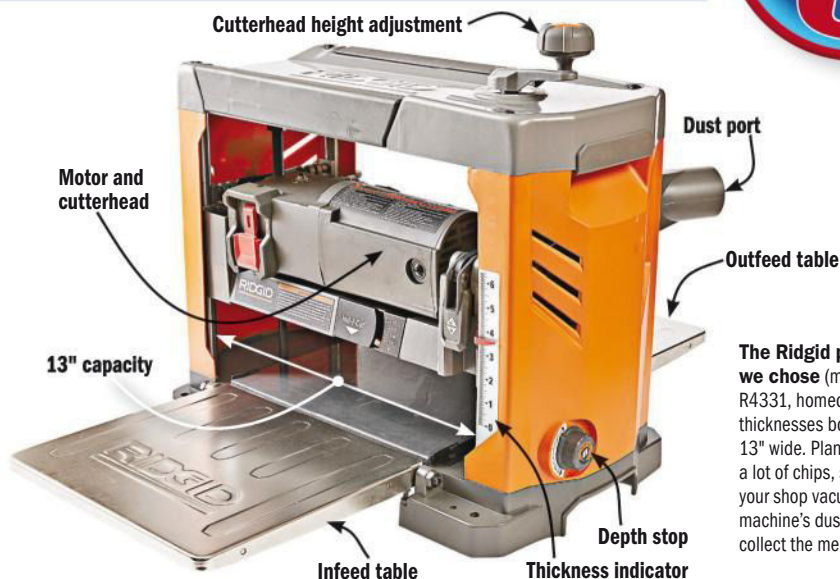
Learn through this series of Idea Shop 6 articles how to set up a shop by working within a budget of \$150 every two weeks over 26 pay periods. Coinciding with each paycheck, we provide online a collection of related articles, plans, and videos. To get an e-mail reminder of that posting, sign up for our newsletter at woodmagazine.com/newsletter. The first article in this series appeared in WOOD® 238 (March 2016). Catch up with previous installments at woodmagazine.com/ideashop6.



Paycheck 21

With the jointer acquired earlier, you can flatten one face of a board and then make the edges square to that face. But it takes a planer to shave the remaining face parallel to the flat one, and reduce a board to the desired thickness. To understand how a jointer and planer work together and why you need both machines, review the article at woodmagazine.com/jointplane. Then visit woodmagazine.com/mostfromplaner for ten tips on effectively using your new tool. Secure the planer to the fliptop bench beside the jointer and you'll be ready to mill lumber to finished size.

- Before you head to a lumberyard or sawmill for rough-cut material, learn lumber language. woodmagazine.com/shophardwood



The Ridgid planer we chose (model R4331, homedepot.com) thicknesses boards up to 13" wide. Planers generate a lot of chips, so connect your shop vacuum to the machine's dust port to collect the mess.

Paycheck 22

- Download free plans for the cabinets, jigs, and fixtures shown in this article. woodmagazine.com/ideashop6

- Build drawers and frame-and-panel doors using just your tablesaw. woodmagazine.com/drawerjoint
woodmagazine.com/frameandpanel

Now that you can easily mill boards to consistent size, prepare lumber for a set of base cabinets. Plywood makes quick work of assembling the boxes, and a pocket-hole jig helps you make the face frames fast from solid wood. For the countertop, simply trim $\frac{3}{4}$ " MDF with $1\frac{1}{2}$ "-wide hardwood to protect any exposed edges.

Pocket-hole joinery requires a special jig, *below*, to drill angled holes on the hidden face of a workpiece. Washer-head screws driven into the holes bite into the mating piece, pulling the joint tight.

To add adjustable shelves inside your cabinets, make a simple shelf-pin drilling jig, *below right*, that perfectly aligns the holes for all four pins.



A countertop bridging two cabinets creates another shop worksurface. Plywood door panels rest in frames joined by stub tenons and grooves, a joint you easily can cut on the tablesaw.

The pocket-hole jig, drill-bit stop collar, and materials for the cabinets eat up most of this check.

- Learn to install three types of drawer slides. woodmagazine.com/drawerslides

The Kreg R3 pocket-hole jig

comes with a special bit for drilling the flat-bottomed holes, and a long square-drive bit for installing the screws. You can buy plugs to fill visible holes.



- Get free tips on making pocket-hole joints. woodmagazine.com/pocketpointers

woodmagazine.com



Fabricated from a couple of scraps, this jig automatically spaces the next shelf-pin hole by indexing from the hole you just drilled. A stop-collar on the bit limits the hole depth so you don't drill through the workpiece.



Paycheck 23

► Download tips for selecting hinges and hanging cabinet doors. woodmagazine.com/hinges

With this check, purchase more material for building a set of upper cabinets. The construction is similar to the base cabinets but, with only doors and no drawers, even easier. Don't worry if you haven't yet completed the

base cabinets started earlier. We've budgeted time through paycheck 25 to finish up, allowing the tool kitty to grow to allow another big-ticket purchase.

Tip! For the most versatility, hang the upper cabinets from French cleats so you can easily move them as needed.

Note: We saved a few dollars by not adding pulls or handles to the cabinet doors and drawers.



Paycheck 24

Adding the base and upper cabinets created loads of storage space for tools and accessories. To store even more items in plain view, build another pegboard storage panel, similar to that built with paycheck 20. We sized ours

to fit between the upper cabinets. Hanging above the countertop that bridges the base cabinets, it provides a spot to keep frequently used tools right at hand. Deposit the leftover money into your savings fund. 🌳

Produced by **Craig Ruegsegger**
with **Lucas Peters**

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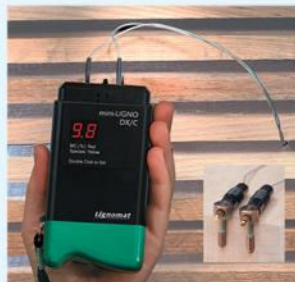


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3 Essential Hand Planes For Any Woodworker

Whether you're a beginning woodworker crafting a few pieces for your home or a seasoned professional making furniture for a living, you'll experience tasks that a plane—with a sharp blade, mind you—can do better than any other power or hand tool. And you don't need a fleet of planes of every size to tackle those jobs. For most situations, this trio will do nicely.

► Learn how to use, sharpen, and restore hand planes.

woodmagazine.com/handplanes

1

Start with a block plane

Buy this one first. It's the smallest, least expensive (less than \$170 for quality makes), and most versatile of all planes. You can use a block plane to trim just about anything: easing sharp edges, flush-trimming dovetails or wood plugs, or chamfering elements, as shown at *right*, quicker than it takes to set up a router. It fits snugly into your hand for comfortable, intuitive use. Standard block planes feature a cutting angle of 45°, but the 37° angle on low-angle models cuts end grain cleaner without sacrificing performance in edge and face grain.

Recommended models

Low angle:

Veritas no. 05P22.71, \$167; no. 05P70.06, \$209; 800-871-8158, leevalley.com.

Lie-Nielsen no. 1-60-1-2, \$165; no. 1-102 apron plane, \$115; 800-327-2520, lie-nielsen.com.

Standard angle:

Veritas no. 05P22.81, \$167.

WoodRiver no. 151124, \$100, Woodcraft, 800-225-1153, woodcraft.com.



Quick and easy chamfers. Use a low-angle block plane to chamfer the bottoms of table legs to prevent grain splintering. Cut upwards at about a 45° angle.



Perfect flush trim. Clean up uneven drawer sides with a few swipes of a block plane. Reverse the cutting direction if you tear out the wood.



A mouth you can control. Some block planes feature an adjustable mouth, allowing you to better control the depth and smoothness of the cut.

2

Take a load off your shoulders and cheeks

Or, more accurately, pare away thin shavings from the shoulders and cheeks of your tenons. Granted, a shoulder plane (sometimes also called a rabbet or rebate plane) serves a specialized purpose, but one can be invaluable if you work regularly with mortise-and-tenon joints. Because its blade and body match in width, you can cleanly remove material right into 90° corners. This makes shoulder planes perfect for trimming tight-fitting tenons and rabbets. Some also trim dados and grooves if narrow enough to fit in the channel. Small shoulder planes measure $\frac{5}{8}$ " to $\frac{3}{4}$ " wide, while larger ones go up to $1\frac{1}{4}$ " wide. Cutting angles vary from 40°, where it acts like a block plane peeling off ultrathin, curly shavings, to 85°, paring off stubble-like whisps like a scraper plane.



Shoulder separation. Use a shoulder plane to shave away tenon thickness on each cheek until it fits snugly into its mortise.

Recommended models

Veritas no. 05P43.71 (large), \$247; no. 05P41.71 (medium), \$209.
Lie-Nielsen no. 1-073 (large), \$250; no. 1-042 (medium), \$195.

3

Get a jack of all trades

For jobs that require a steeper cutting angle (figured wood, for example) or even a little more oomph than a block plane can handle (such as tapered table legs), you'll want a bench plane. Commonly designated with numbers from 1 to 8 (and some fractional sizes in between), bench planes range in length from about 5" (no. 1) to 24" (no. 8), with the weight and price increasing with size. The most versatile bench planes measure about 12" to 15" long and are referred to as jack planes. With this length you can flatten and smooth faces and edges of boards and glued-up panels. Cutting angles begin at 45°, but optional accessories can increase it to 50° or 55° for those instances when you work with tear-out-prone wood species.

We recommend a no. 5 jack plane because it has a 2"-wide blade, which will fit most sharpening systems, and is light enough that it won't wear you out quickly. A no. 5½ jack is an inch or two longer and has a 2¾"-wide blade, which might not fit in some sharpen-

ers. But that extra size adds a couple of pounds, which can be a benefit because it increases momentum for powering through cuts, although it does require greater exertion at the beginning of a stroke. Choosing between these two really comes down to your preference and strength. 🌲

Produced by **Bob Hunter** with **John Olson**

Recommended models

No. 5:
Veritas no. 06P05.71A, \$329.
Lie-Nielsen no. 1-5, \$325.
WoodRiver no. 150875, \$170.
No. 5½:
Lie-Nielsen no. 1-5-1-2, \$375.
Veritas no. 06P15.71A, \$339.
WoodRiver no. 158002, \$195.



Add degrees for difficulty. By replacing the frog, as with these two no. 5½ planes, you can increase the cutting angle while still using the same blade.



Steeper cutting angles, as on this 50° no. 5½ jack plane, better cut figured wood or difficult grain without tear-out.

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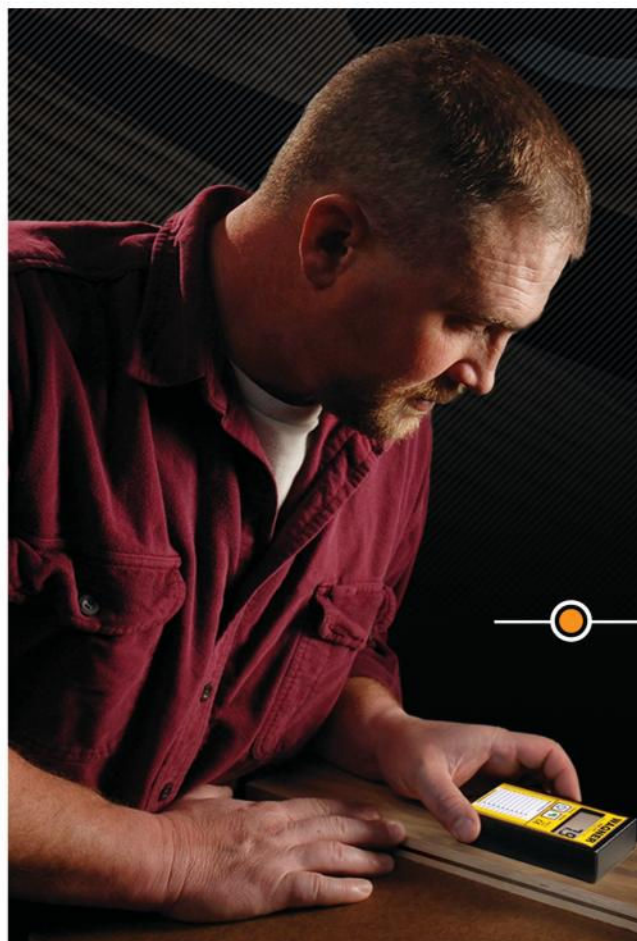
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Approximate materials cost:

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including AA-battery clock kit

Approximate weight:

6 1/2 lbs

The contrasting dark glue layers of the Baltic-birch plywood mimic the streaks in the spalted-maple clock face.



Begin the build with a solid piece of walnut that you'll cut into four parts, then reassemble to surround the contrasting spalted-maple clock face [**Exploded View**].

2 Cut the clock face (B) to size [Materials List] from a piece of contrasting wood, preferably with interesting grain or character. Drill a hole in the center for the clock movement's post [Exploded View].

Note: The clock body (A) center pieces and face (B) must be equal in width so all parts glue together without glueline gaps.

Technical drawing of a wooden ring assembly. The drawing includes the following labels and dimensions:

- $\frac{3}{8}$ " dowel $\frac{1}{2}$ " long
- $\frac{3}{8}$ " hole $\frac{3}{8}$ " deep
- Washer
- Brass nut
- Cap nut
- $R=10\frac{1}{8}"$
- $R=10\frac{1}{8}"$
- 1"





C

Rout a perfect circle. Plunge and rout around the ring blank's (C) perimeter in three equal-depth passes. This creates a perfect circle without overstressing the bit.



D

Rout the inner diameter. As with the outer perimeter, rout the inner in three equal depths.

Now dial up the ring

1 Cut two 24x24" sheets of 1/2" Baltic birch plywood for the ring (C), and laminate them. When that dries, draw corner-to-corner lines on one face to locate the centerpoint. (You'll also use these lines later to lay out the hour positions.) Using a large compass, draw a 22"-diameter circle, then cut the circle with a bandsaw or jigsaw. Drill a 5/16" pivot hole through the center. (This matches the 5/16" post on the clock movement.)

2 Make a ring trammel [Drawing 1] and mount your plunge router to it. Install a 1/4" downcut spiral bit in your router and plunge through the trammel. Measure and drill the pivot holes where shown.

3 Adhere the ring (C) blank to a backer board with double-faced tape around the perimeter and in the center. (This holds the

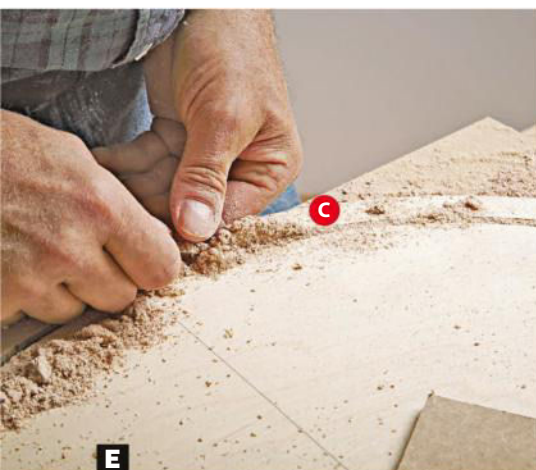
ring in place while routing, and enables you to rout the full thickness of the blank without cutting into your work surface.) Install a 1 1/2"-long dowel into the blank's center hole, and place the "outer ring" pivot hole onto the dowel. Rout the outer diameter [Photo C].

4 Reposition the ring trammel on the "inner ring" pivot hole, and rout around the ring (C) blank [Photos D and E]. Discard the center portion.

5 Lay out the locations for the twelve hour indicators on the ring (C) [Photo F], drill centered holes for each position, sand to 220 grit, and glue in short walnut dowels [Exploded View]. Wipe away any glue squeezeout. (The dowels remain proud of the ring surface.)

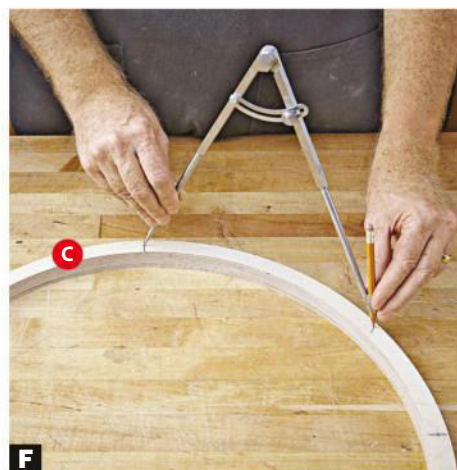
► Learn more about routing with a shop-made trammel on *page 48*.

► Can't find a walnut dowel for the hour indicators? Make your own with a plug cutter.



E

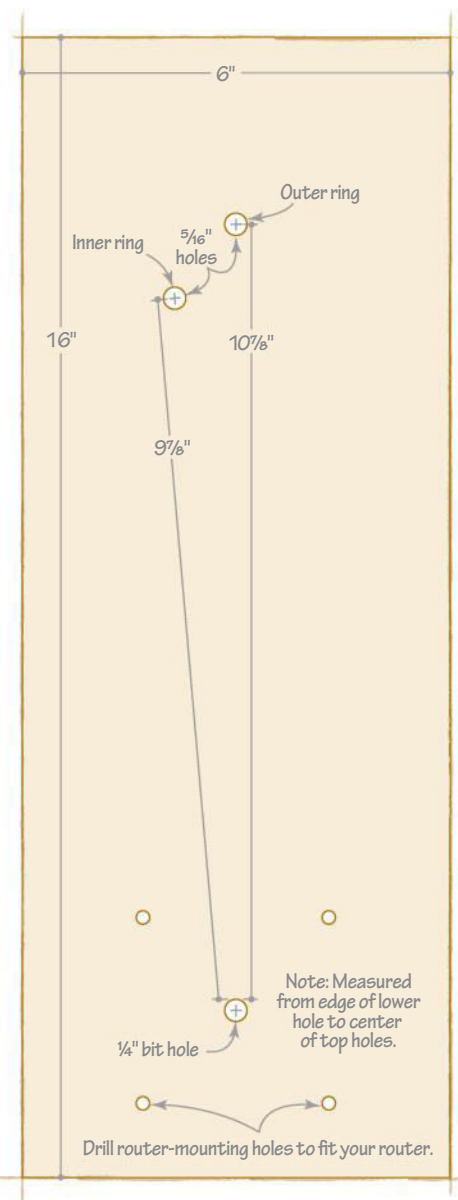
Clear the way. The downcut spiral bit eliminates surface tear-out, but also packs the sawdust into the groove. Clear it after each pass with a small screwdriver and compressed air.



F

Lay out the time positions. Using a compass set at 10 7/8", mark the remaining hour positions by positioning the compass at the 12, 3, 6, and 9 locations. Watch a video of this technique at woodmagazine.com/clockvideo.

1 RING TRAMMEL





Rout dados to fit the ring. Start with the “outside” pivot hole and rout in three incremental depths. Switch to the “inside” pivot hole and rout the inner perimeter in three passes. Next, use the “center” pivot hole and clear away the remaining waste.

Fit the ring to the body

1 Make a dado trammel [Drawing 2]. Clamp the clock body (A/B) to a worksurface, and rout dados for the ring (C) [Photos G and H].

2 Crosscut the clock body (A/B) to length equidistant from the center [Drawing 3]. Miter-cut the corners as shown. Rout a centered keyhole slot near the top back.

3 Sand the clock body (A/B) to 220 grit. Glue in the ring (C) with the 12 and 6 indicators centered on the clock body.

4 Apply a finish of your choice. We sprayed on four coats of lacquer, sanding after the first and last coats with a 320-grit sanding sponge. Install the clock movement.

5 Hang your clock on a screw or nail in the wall, and then sit back and enjoy your “free” time. 🌳

Produced by **Bob Hunter** with **Brian Bergstrom**

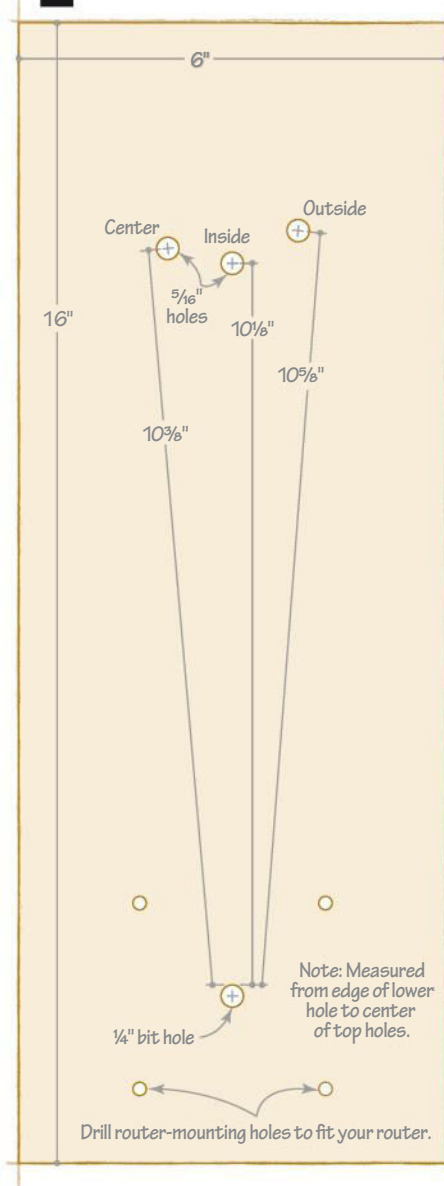
Project design: **John Olson**

Illustrations: **Roxanne LeMoine, Lorna Johnson**

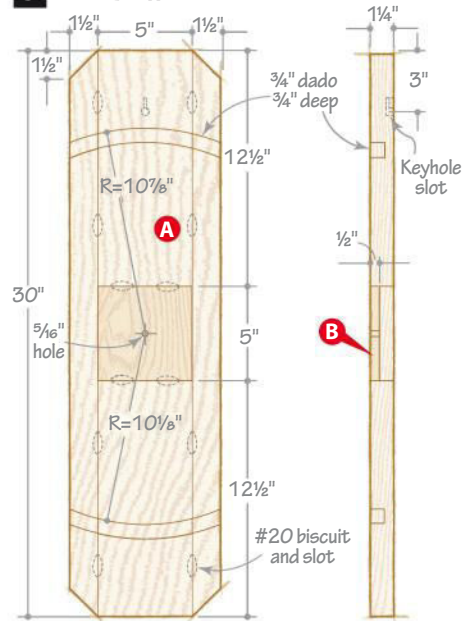
► Learn to rout keyhole slots.

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2 DADO TRAMMEL



3 PART VIEW



Cutting Diagram



1 1/4 x 9 1/4 x 36" Walnut



1/2 x 5 1/2 x 12" Spalted maple



1/2 x 24 x 48" Baltic-birch plywood

Materials List

Part	FINISHED SIZE			Matl.	Qty.
	T	W	L		
A* body	1 1/4"	8"	30"	W	1
B face	1/2"	5"	5"	SM	1
C* ring	1"	21 3/4" diameter		LP	1

*Parts initially cut oversize. See the instructions.

Materials key: W-walnut, SM-spalted maple, LP-laminated Baltic-birch plywood.

Supplies: 5/16" dowel (any species); 3/8" walnut dowel; 1/4" hardboard.

Bits: 5/16" and 3/8" drill bits; 1/4" downcut spiral router bit; 3/8" keyhole router bit.

Source: Clock kit, no. RS-1130, \$21.40 plus shipping, 888-636-4478, woodstore.net.

Precise Layout for Plywood Projects

Knowing where and how to vary from your plans keeps tiny fractions from leading to big project problems.

Woodworking pop quiz: When is $\frac{3}{4}$ " plywood *not* actually $\frac{3}{4}$ " plywood? Answer: Only always.

As face veneers have become thinner (manufacturers get more mileage out of each log), plywood thicknesses have shrunk. So if you rely on the stated thickness when planning or building your projects, you wind up with loose-fitting joints, part dimension errors, and assembly problems. But don't count on a consistent $\frac{1}{32}$ " difference from the stated thickness, either. Depending on the quality of your stock, you may even find thickness variations between two sheets or on a single sheet.

Use these four strategies to prevent those discrepancies from becoming dimensional disasters on your plywood-based projects.

1 Piston-fit parts between dados and rabbets

PROBLEM: I cut $\frac{3}{8}$ "-deep rabbets in my $\frac{3}{4}$ " plywood cabinet sides to accept the top and bottom, but my planned 26"-wide cabinet came out too narrow. The undersized plywood left less than $\frac{3}{8}$ " of material after the $\frac{3}{8}$ " rabbets.

SOLUTION: Start with your project's absolute critical dimension—in this case, the final 26" width of the cabinet. After cutting the rabbets in the sides, hold the pieces



Measure parts from parts. Extend your tape to the cabinet width (the critical dimension) and hold that dimension against one rabbet. The exact length of a part to fit between the rabbets is where the edge of the other rabbet meets the tape.



Make drawers that fit properly. To determine the correct length of the drawer front and back, place the drawer sides together and line up the critical dimension with the bottom of the dado.

together back-to-back and let your tape measure tell you the exact length needed to get to a perfect 26" cabinet width, as shown on the *previous page*. In this case, you would cut the top and bottom $25\frac{1}{16}$ " long.

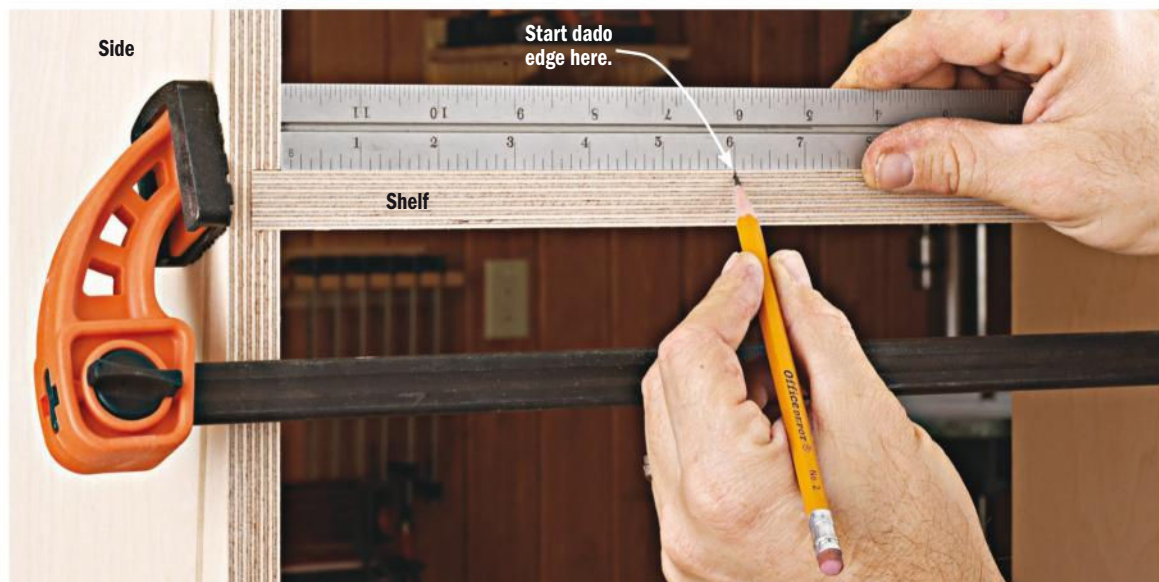
Use a similar strategy to determine the length of drawer fronts and backs joined with rabbets, dados, butt joints, or lock rabbets, *above*.

2 No-math method to a perfect drawer fit

PROBLEM: I separated side-by-side drawers in my project with a $\frac{3}{4}$ " plywood divider. But, when I assembled the cabinet, the drawers openings were wider than they should have been.

SOLUTION: Once again, it's best to measure directly from the project rather than

rely on calculations. Before cutting the divider dado, dry-fit the sides and shelf first, then lay out the dado location, as shown *below*. That way, if the dados the shelf fits into are shallower or deeper than specified in the plans, your drawer opening width remains correct.



Dry-fit, then mark to fit. For a 6" drawer opening, dry-fit the cabinet parts, then mark the divider dado location 6" in from the assembled side.

3 Lay out real-world rabbets and dados

PROBLEM: I cut a $\frac{3}{4}$ "-wide rabbet to accept a $\frac{3}{4}$ " plywood cabinet top, and now the cabinet sides stand proud of the top. It looks like I cut the rabbet too wide.

SOLUTION: Instead of laying out a $\frac{3}{4}$ " rabbet and cutting to that line, use an off-cut from the cabinet top as a gauge to mark the true rabbet width, as shown at *right*. Then, cut to that line using a dado set or straight router bit. Keep that sanded scrap handy for gauging shelf dados, too.



Rabbet hunt. Hold a finish-sanded scrap of stock flush with the top edge of the cabinet side and mark the exact thickness of the plywood top with a sharp pencil or marking knife.

► Set up your dado blade for perfect-fitting grooves and dados on the first cut. See page 62.

4 Know when to measure and when to trace

PROBLEM: I measured all the dado locations for my $\frac{3}{4}$ " plywood drawer dividers starting from the top of the carcass, accounting for my $4\frac{3}{16}$ "-high drawers. Now the gap increases above each successively lower drawer.

SOLUTION: The difference in plywood thickness, multiplied by each additional divider, created those ever-larger gaps. There are two solutions here, depending on whether the critical dimension in the project is the height of the drawer opening, or the overall height of the carcass.

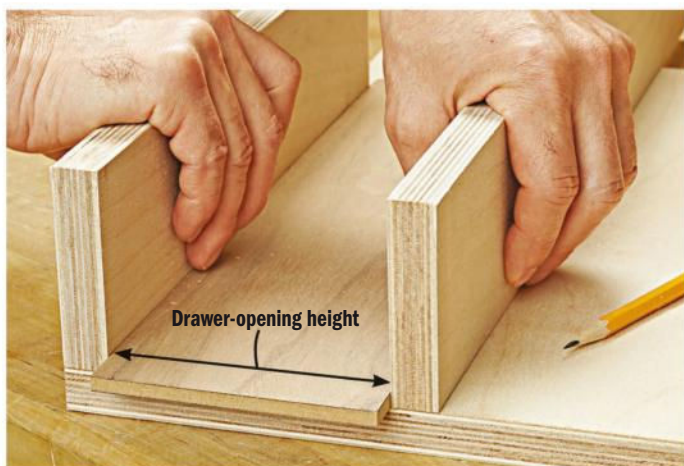
If the drawer opening is the critical dimension, use a spacer and two strips of scrap plywood to lay out the dados. In this example, the drawer-face height, plus $\frac{1}{16}$ " for clearance, gives you a $4\frac{1}{4}$ " critical dimension. Rip a scrap to this width to use as a spacer. Mark the rabbet for the cabinet top using **Tip 3** above, then position a second scrap alongside the spacer to locate the first



Align centerlines. Mark a centerline on one end of a scrap of the divider stock. Align the mark with each mark on the carcass side, square the scrap with the edge, then mark the dado location.

dado, as shown *below left*. Remove the spacer, and mark alongside the plywood. Then just leapfrog the spacer and plywood scraps to lay out the remaining dados, *below right*. If your cabinet has drawers of different heights, cut a spacer to match the height of each drawer opening.

To create equal-size openings without adjusting the height of the carcass, determine the centerline of each drawer divider and mark that on the edge of the carcass. Then center a plywood scrap on that mark and mark the locations of the dados, as shown *above*. 🌲



Use real-world samples. A spacer the same width as the drawer-opening height (including reveal) shows you the exact location of the divider. A scrap of plywood provides the exact width of the dado for the divider.



Gauge, measure, repeat. After marking the first dado location, repeat the process to determine the placement of the remaining dividers.

Replace a Worn Rip-fence Scale

After years of use, your tablesaw's rip-fence scale can wear to the point you can't even see some of the markings. And because it's happened gradually, you've probably learned to live with it that way. Well, replacing that scale is no big deal. You can get a replacement tape from your tablesaw's manufacturer or a universal one from the source on *page 67*. Turn the page and see how simple it is to install.



1 Verify the zero setting

Before removing the old scale, make sure the fence bezel's cursor aligns with the zero mark when the fence rests against the blade.



2 Set up masking guides

Firmly apply masking tape above and below the scale, cutting the ends at the zero mark. Then peel off the old scale using a razor blade scraper, as shown on the previous page, taking care not to cut into the masking tape.



3 Undo the glue

With a synthetic abrasive pad and solvent—we used lacquer thinner on this tough stuff—remove the adhesive from the fence rail. The masking tape prevents the solvent from discoloring the paint on the rest of the rail.



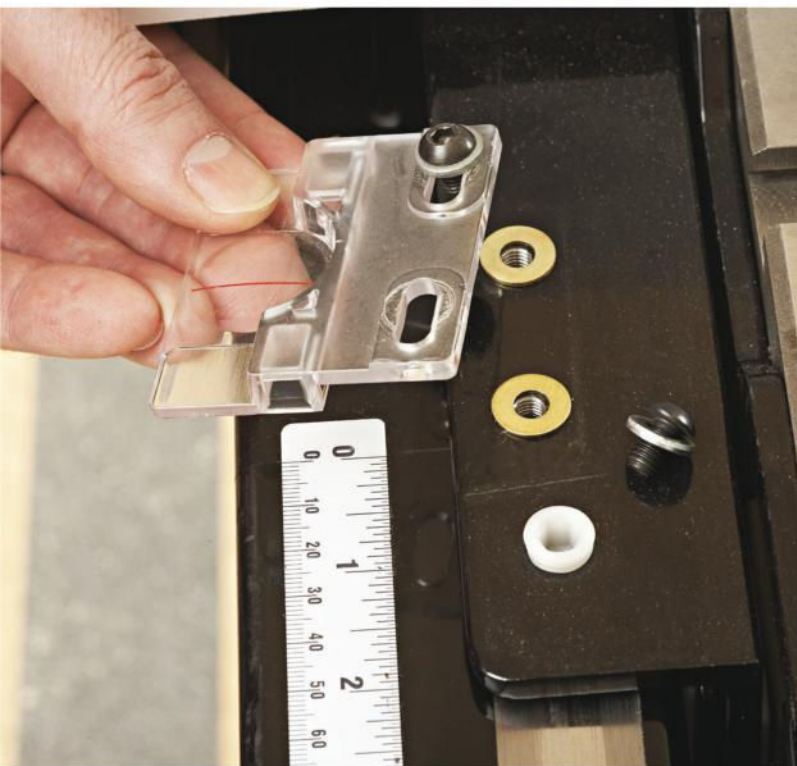
4 Apply the new self-adhesive scale

After the solvent evaporates, remove the top strip of masking tape. Adhere the new scale beginning with the zero mark at the end of the tape. Align it with the masking tape the full length of the rail.



5 Roll out the rule

Lift off the remaining masking tape. Firmly secure the scale to the rail and remove any air bubbles with a handheld roller. Don't have one? You can also use the butt of a hard-handled chisel or hammer.



6 Give it a raise

If your fence's bezel rubbed the markings off the old scale, as ours did, insert a pair of thin brass washers to raise it slightly above the scale.



7 Line it up

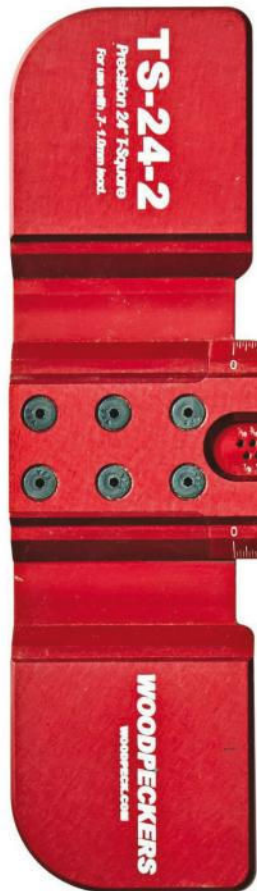
Finally, position the fence against the blade and lock it in place as in Step 1. Align the cursor with the zero mark on the new scale and tighten the screws. Now let 'er rip! 🌲

Source

Self-stick tape rule: 6' left-to-right reading, no.69116, \$10, Rockler Woodworking and Hardware, 800-279-4441, rockler.com.

Measuring Up

Woodworking requires precise measurement, and these five tools deliver it in spades.



Woodpeckers 24" Precision T-square no. TS-24-2, \$115

Also available in 12" (no. TS-12-2, \$85) and 32" (no. TS-32-2, \$145) lengths.
800-752-0725, woodpeck.com

Made of sturdy, thick aluminum, this square has markings in 1/32" increments along both edges of the blade, as well as pencil holes down the middle at each 1/16" increment, so you can mark precisely in one spot or slide the square along an edge to lay out a parallel line.



Milwaukee 16' tape measure no. 48-22-7116, \$20

Also available in 25' length, no. 48-22-5126, \$25.
800-729-3878, milwaukeetool.com

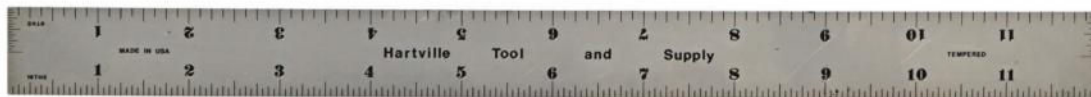
This ruggedly constructed model has markings on both faces of the nylon-coated tape, a stop to prevent finger pinches upon retraction, and an easy-to-use lock.



Stanley 16' LeverLock tape measure no. STHT30812, \$6

Also available in 12' (no. STHT30810, \$4) and 25' (no. STHT30825, \$10) lengths.
800-262-2161, stanleytools.com

LeverLock tape measures work opposite the way most thumb-lock models do: The tape holds its position when you pull it out, and retracts only when you depress the bottom-mounted lever, eliminating the fuss of a thumb lock.



Hartville Tool 12" precision steel rule no. 13404, \$25

Also available in 24" length (no. 13414, \$45).
800-345-2396, hartvilletool.com

With markings in 1/32", 1/16", and 1/8" increments on three of four edges (the fourth edge has a metric-marked centering scale, on the face opposite of that shown), this rule will handle all your needs. It also has 1/32" scales on each end for setting blade and bit heights.

General Tools square-head steel protractor no. 17, \$10

800-697-8665, generaltools.com

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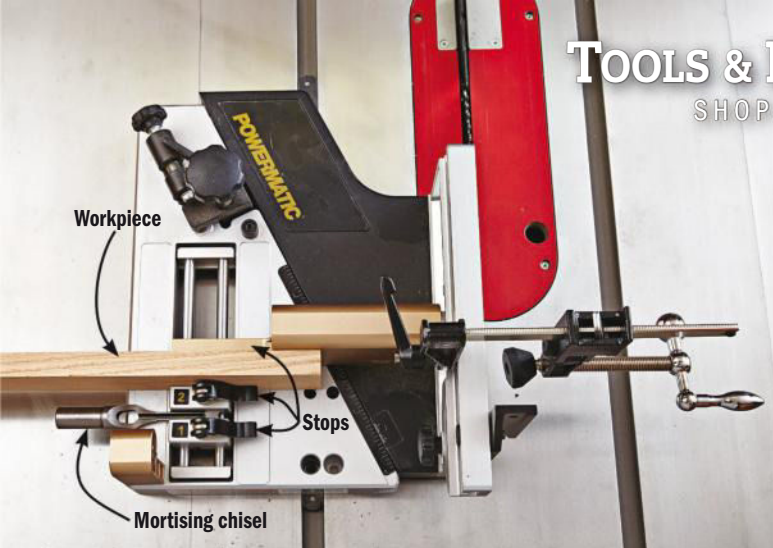
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Cut perfect-fitting tenons on the first try

Tenoning jig, no. PM-TJ, \$300

With most tablesaw tenoning jigs, you have to make several trial-and-error cuts before zeroing in on perfectly centered tenons. Not so with Powermatic's PM-TJ jig. And if you make mortises with a hollow-chisel mortising machine or attachment, you really should consider getting this jig for making the tenons.

Here's how it works. With the jig in the miter slot, slide the right portion against the blade, and lock the first stop securely. Next, fit your mortising chisel between the first and second stops, and lock the second. Finally, place your tenon workpiece between the second

and third stops, and lock the third. Done! Now clamp the workpiece to the fence and cut the tenons.

I made tenons on several different-size workpieces to fit different-size mortises, and got perfect-fitting tenon cheeks the first time each time. That's impressive. However, cutting the edge cheeks for the same tenons takes more setup (trial and error); it would be nice if I could cut these with the same quick setup.

Powermatic
800-274-6848, powermatic.com

—Tested by Jan Svec

Laguna lathe muscles up to big turning challenges

18" wood lathe, no. MLAREVO 1836-220, \$2,500

It's not often I run across a lathe that won't bog down, but this beefy Laguna qualifies. The 2-hp electronic variable-speed motor cranks out power in spades, and the heavy cast-iron legs, headstock, tailstock, and steel bed hold everything rock steady, even when making aggressive cuts with a 1/2" bowl gouge on a massive block of maple.

The upfront controls and digital readout prove easily accessible and readable, but I frequently bumped the speed control when working close to the headstock, inadvertently increasing RPMs. The headstock and tailstock slide nicely along the polished bed, and the tool rest and banjo hold solidly.

I like the optional bed extension, not only for working longer spindles (from the



standard 36" to 56"), but also for the increased bowl capacity (from 18" to 32"). However, the banjo can only extend for bowls up to 21"; you must buy an optional banjo to maximize the bowl size.

—Tested by Brian Simmons

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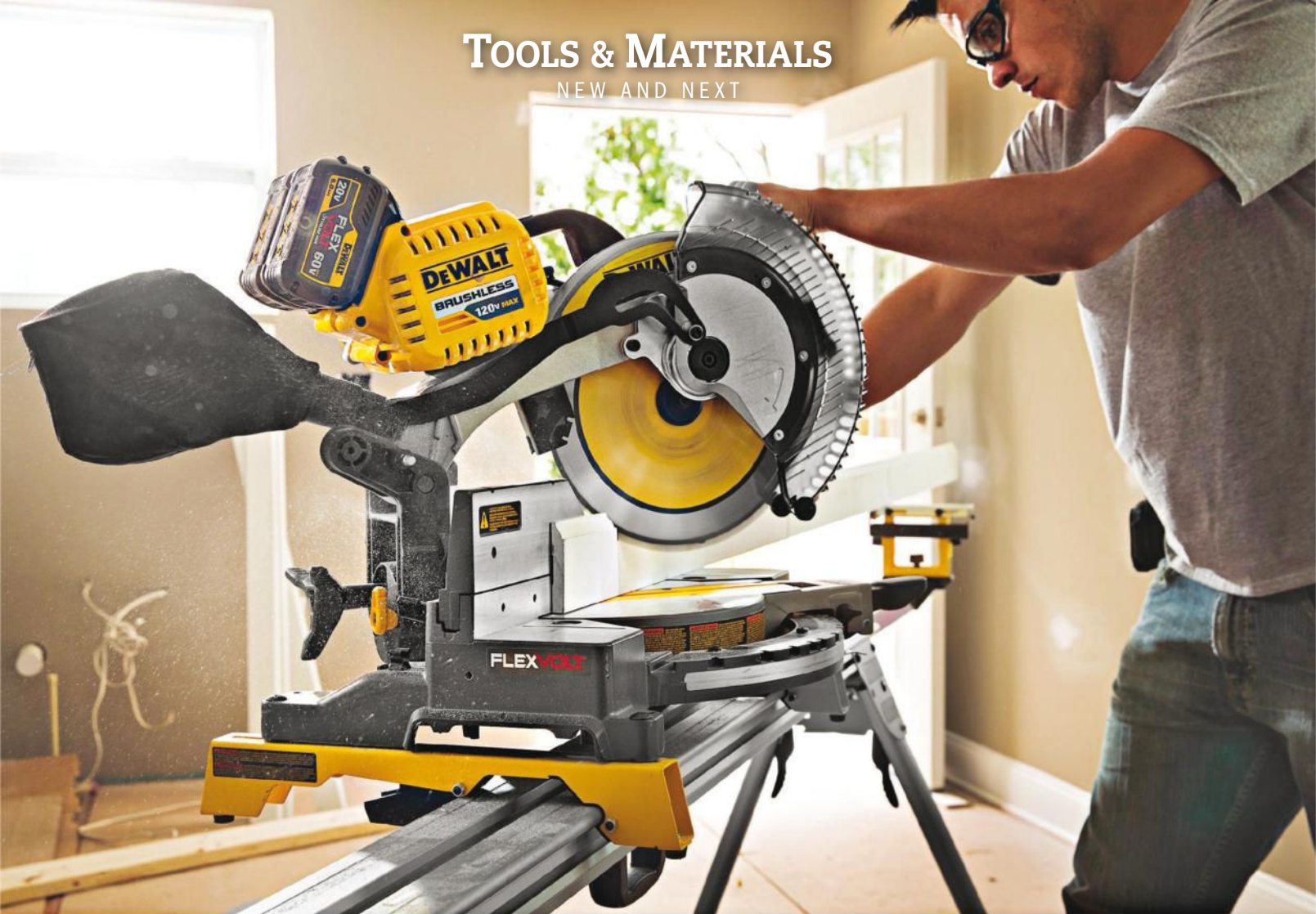
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DeWalt launches 60-volt battery system

DeWalt's Flexvolt battery system works with tools in three voltage platforms (20, 60, and 120), automatically adapting its power delivery to match the tool. For example, when attached to one of the new 60-volt tools, the pack delivers 60 volts of power. When attached to a 20-volt tool, it steps down to 20 volts and delivers longer run time than a standard 20-volt pack. These packs will be available in 6- and 9-amp-hour models.

This battery system powers four new saws (all with brushless motors), including an 8¼" tablesaw with 24" rip capacity (\$499); and a 7¼" circular saw with a right-side blade (\$299 with one battery pack, \$379 with two).

Two mitersaws round out the lineup. A 12" compound mitersaw (\$649) has a 10" maximum crosscut and 6½" maximum vertical cut. A 12" sliding compound mitersaw (\$799) has a 16" maximum crosscut and 6¾" maximum vertical cut. Both mitersaws require two 60-volt packs, and each comes with an electric adapter that works in place of the batteries.

DeWalt

800-433-9258, dewalt.com





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- Revitalizing blend prevents drying and cracking of hardwoods and bamboo

Cutting Board Oil

- Contains food grade mineral oil stabilized with Vitamin E*
- Meets FDA requirements for food contact
- Safe for all food preparation surfaces
- It is tasteless, and will never go rancid

*The mineral oil used in Howard Cutting Board Oil is from virgin mineral oils and has no contact with nuts or gluten or other potentially allergenic materials either in production, storage, or transport.

- Kitchenware
- Bamboo
- Wooden Cutlery
- Butcher Blocks
- Cutting Boards
- Salad Bowls
- Food-Prep Surfaces
- Children's Toys
- Cribs



Call 800-266-9545
For A Dealer Near You
www.howardproducts.com



42 subjects. 15 expert instructors. One amazing woodworking experience.

Weekend With **WOOD**TM

North America's Premier Woodworking Educational Event

May 18–21, 2017

at the *WOOD*® magazine shops in Des Moines, Iowa

LIMITED
SEATING!
**REGISTER
TODAY!**

Here's what you'll get:

- ▶ Inspiring, informative instruction from the world's best woodworkers, including Mario Rodriguez, George Vondriska, and more.
- ▶ Small class sizes with large-screen video for maximum visibility and teacher access
- ▶ A swag bag stuffed with woodworking goodies
- ▶ After-hours events for meeting and networking with fellow woodworkers
- ▶ Hot buffet lunches served on-site
- ▶ Optional events to entertain and inform your spouse while you focus on woodworking*



Woodworkers rave about Weekend With **WOOD**

"I have attended many conventions, business, and trade events. Rarely have I experienced one that was as well thought-out and ran as smoothly as Weekend With WOOD."

"Excellent classes, superior instructors, and the WOOD staff made us feel as though we were wanted, appreciated, and well-guided through the entire four days."

"This was my first Weekend With WOOD, and I compliment the entire WOOD team and instructors on a fabulous weekend."

"I've been building cabinets for more than 30 years, and I'll now be making them the way I learned at Weekend With WOOD."



* Additional purchase required

Learn more and register at weekendwithwood.com or call 888-636-4478

How Does Harbor Freight Sell GREAT QUALITY Tools at the LOWEST Prices?

We have invested millions of dollars in our own state-of-the-art quality test labs and millions more in our factories, so our tools will go toe-to-toe with the top professional brands. And we can sell them for a fraction of the price because we cut out the middle man and pass the savings on to you. It's just that simple! Come visit one of our 700+ Stores Nationwide.

SUPER COUPON

20% OFF

Limit 1 coupon per customer per day. Save 20% on any 1 item purchased. *Cannot be used with other discount, coupon or any of the following items or brands: Inside Track Club membership, Extended Service Plan, gift card, open box item, 3 day Parking Lot Sale item, automotive lifts, compressors, floor jacks, saw mills, storage cabinets, chests or carts, trailers, trenchers, welders, Admiral, Badland, CoverPro, Daytona, Diablo, Earthquake, Franklin, Grants, Holt, Jupiter, Lynx, Maddox, Portland, Proddox, Silk-Tek, StormCat, Union, Vanguard, Viking. Not valid on prior purchases. Non-transferable. Original coupon must be presented. Valid through 1/30/17.



15838178

SUPER COUPON

FREE

WITH ANY PURCHASE

3-1/2" SUPER BRIGHT NINE LED ALUMINUM FLASHLIGHT



ITEM 62522
62573/69111
69052 shown

\$4.97
VALUE

Limit 1 - Cannot be used with other discount, coupon or prior purchase. Coupon good at our stores, HarborFreight.com or by calling 800-423-2567. Offer good while supplies last. Shipping & Handling charges may apply if not picked up in-store. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one FREE GIFT coupon per customer per day.



15799180

PITTSBURGH AUTOMOTIVE

#1 SELLING FLOOR JACKS IN AMERICA™

ALUMINUM RACING JACKS

- Lightweight aircraft aluminum
- Pit crew quality design

SUPER COUPON

- Weighs 34 lbs.
- Lifts from 3-1/2" to 14-1/8"

Customer Rating
★★★★★

ITEM 60569 shown
68053/69252
62160/62496/62516

**RAPID PUMP®
1.5 TON
ALUMINUM
RACING JACK**

**SAVE
\$60**

\$59.99
~~\$89.99~~ comp at \$119.99



15813517

Limit 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

- Weighs 52.6 lbs.
- Lifts from 3-3/8" to 18-1/2"

Customer Rating
★★★★★

ITEM 62531
62309 shown

**RAPID PUMP®
2.5 TON
ALUMINUM
RACING JACK**

**SAVE
\$50**

\$149.99
~~\$159.99~~ comp at \$199.99



15822576

Limit 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

- Weighs 56 lbs.
- Lifts from 3-3/4" to 19-1/4"

Customer Rating
★★★★★

ITEM 62248/62530
68052 shown

**RAPID PUMP®
3 TON
ALUMINUM
RACING JACK**

**SAVE
\$80**

\$169.99
~~\$179.99~~ comp at \$249.99



15836615

Limit 3 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

HEAVY DUTY STEEL JACKS

- Precision welded construction
- For professional mechanics

SUPER COUPON

- Weighs 74 lbs.
- Lifts from 5" to 18-1/4"

Customer Rating
★★★★★

ITEM 69227
62116/62584
68048 shown

**RAPID PUMP®
3 TON HEAVY DUTY
STEEL FLOOR JACK**

**SAVE
\$61**

\$79.99
~~\$89.99~~ comp at \$141.88



15840482

Limit 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

- Weighs 73 lbs.
- Lifts from 2-7/8" to 20"

Customer Rating
★★★★★

ITEM 62326/61253
61282 shown

**RAPID PUMP®
3 TON LOW PROFILE
HEAVY DUTY
STEEL FLOOR JACK**

**SAVE
\$180**

\$89.99
~~\$99.99~~ comp at \$269.99



15792789

Limit 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

- Weighs 99 lbs.
- Lifts from 2-5/8" to 23-3/4"

Customer Rating
★★★★★

ITEM 68050/62310
60678 shown

**RAPID PUMP®
2 TON LOW PROFILE
LONG REACH
STEEL FLOOR JACK**

**SAVE
\$100**

\$119.99
~~\$139.99~~ comp at \$219.99



15820646

Limit 3 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

**2 PIECE
VEHICLE WHEEL DOLLIES**

- 1500 lb. capacity

Customer Rating
★★★★★

ITEM 60343
67338 shown

**SAVE
41%**

\$49.99
~~\$59.99~~ comp at \$85.99



15832334

Limit 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

**PITTSBURGH AUTOMOTIVE
3 TON HEAVY DUTY
STEEL JACK STANDS**

Customer Rating
★★★★★

ITEM 61196/69597
62392/38846 shown

**SAVE
42%**

\$19.99
~~\$24.99~~ comp at \$34.99



15836535

Limit 3 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

**PITTSBURGH AUTOMOTIVE
1000 LB. CAPACITY
MOTORCYCLE LIFT**

Customer Rating
★★★★★

ITEM 69904
68892 shown

- Lift range: 7" to 30"

**SAVE
\$874**

\$299.99
~~\$429.99~~ comp at \$1173.99



15793475

Limit 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.



NEW **ADMIRAL** **FLAWLESS • PRECISION • DURABILITY**

7-1/4" 40 TOOTH FINE FINISH SAW BLADE
LOT 93895/62735 shown
\$12.99 **\$9.99**
SAVE NOW
Customer Rating ★★★★★
15871554

LIMIT 9 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

7-1/4" 24 TOOTH FRAMING SAW BLADES PACK OF 3
LOT 62742
\$15.99
SAVE NOW

LIMIT 7 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

12" 80 TOOTH FINE FINISH SAW BLADE
LOT 62725
\$24.99
SAVE 54%
~~\$29.99~~ comp at \$54.97

LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

ALUMINUM OXIDE SANDING SPONGES - PACK OF 10
Lifetime
COARSE ITEM 46751
MEDIUM ITEM 46752
FINE ITEM 46753
\$3.99
SAVE 27% Customer Rating ★★★★★
~~\$4.99~~ comp at \$5.47
15877212

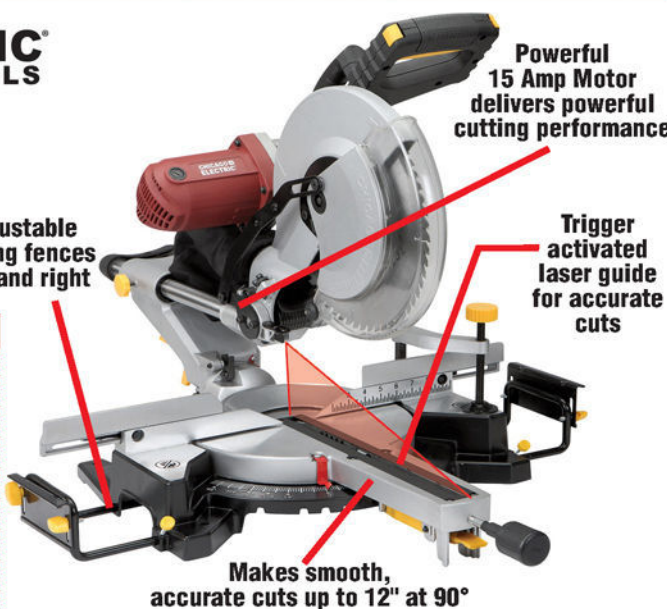
LIMIT 6 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

CHICAGO ELECTRIC® POWER TOOLS

★ **WINNER** ★
Best Value Award
- The Family Handyman

SUPER COUPON
SAVE \$259
12" SLIDING COMPOUND DOUBLE-BEVEL MITER SAW WITH LASER GUIDE
LOT 69684 shown 61969/61970
\$139.99 **\$109.99** Customer Rating ★★★★★
~~comp at \$399~~
15880834

LIMIT 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.



NOW SUPER COUPON
HEAVY DUTY MOBILE MITER SAW STAND
16 FT.
SAVE \$29
\$99.99 **\$119.99** Customer Rating ★★★★★
~~comp at \$129~~
15876178

LIMIT 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON
7-1/4" 10 AMP HEAVY DUTY CIRCULAR SAW WITH LASER GUIDE SYSTEM
LOT 61440 69078 shown
\$29.99 **\$39.99** Customer Rating ★★★★★
~~comp at \$63.28~~
15879920

LIMIT 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

8" 5 SPEED BENCHTOP DRILL PRESS
ITEM 62520/60238 shown
\$54.99
SAVE \$60 Customer Rating ★★★★★
~~comp at \$115.56~~
15876547

LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON
STEP STOOL/WORKING PLATFORM
HaulMaster
ITEM 62515 66911 shown
\$19.99
SAVE 65% Customer Rating ★★★★★
~~comp at \$57.55~~
15895999

LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON
80 PIECE ROTARY TOOL KIT
drillmaster
ITEM 97626 shown 63235/68986/69451
\$6.99
SAVE 71% Customer Rating ★★★★★
~~comp at \$24.15~~
15862487

LIMIT 6 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON
RECIPROCATING SAW WITH ROTATING HANDLE
LOT 65570 shown 61884/62370
\$23.99 **\$29.99** Customer Rating ★★★★★
SAVE 59% ~~comp at \$59~~
15873249

LIMIT 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON
10 AMP DEEP CUT VARIABLE SPEED BAND SAW KIT
LOT 62800
\$99.99 **\$139.99** Customer Rating ★★★★★
SAVE \$179 ~~comp at \$279~~
15864219

LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON
2.5 HP, 10" TILE/BRICK SAW
Customer Rating ★★★★★
LOT 62391 69275 shown
\$219.99 **\$279.99** **NEW** **SAVE \$279**
~~comp at \$499~~
15857252

LIMIT 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON
1.51 CUBIC FT. UNION SOLID STEEL DIGITAL FLOOR SAFE
ITEM 61565/62678 91006/62977 shown
\$99.99 **SAVE \$190** **\$129.99** Customer Rating ★★★★★
~~comp at \$289.99~~
15855312

LIMIT 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

7 FT. 4" x 9 FT. 6" ALL PURPOSE WEATHER RESISTANT TARP
ITEM 69115/69137
69249/69129/69121/877 shown

Customer Rating ★★★★★

SAVE 64%

~~\$409~~ **\$299**
comp at \$8.48

15937457

LIMIT 6 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

TORQUE WRENCHES PITTSBURGH

Customer Rating ★★★★★

SAVE 60%

DRIVE ITEM

1/4"	2696/61277
3/8"	807/61276
1/2"	62431/239

• Accuracy within ±4%

YOUR CHOICE ~~\$2199~~ **\$1199**
comp at \$29.99

15996209

LIMIT 7 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

16" VARIABLE SPEED SCROLL SAW
ITEM 93012 shown
62519/63283

Customer Rating ★★★★★

SAVE \$49

~~\$69.99~~ **\$99.99**
comp at \$119

15971058

LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

24" CLAMP AND CUT EDGE GUIDE PITTSBURGH
ITEM 66126

Customer Rating ★★★★★

SAVE 83%

~~\$129.99~~ **\$79.99**
comp at \$49.23

15963032

LIMIT 7 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

4 PIECE ANTI-FATIGUE FOAM MAT SET
ITEM 61607
62389/94635 shown

Customer Rating ★★★★★

SAVE 61%

~~\$99.99~~ **\$69.99**
comp at \$17.97

15925374

LIMIT 8 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

CENTRAL PNEUMATIC

WOW SUPER COUPON

"The Perfect Compressor with Powerful, Quiet and Consistent Airflow... Plus We Love the Low Price" - Street Trucks Magazine

2.5 HP, 21 GALLON, 125 PSI VERTICAL AIR COMPRESSOR
ITEM 69091/67847 shown
61454/61693/62803

Customer Rating ★★★★★

Air delivery:
4.7 CFM @ 90 PSI
5.8 CFM @ 40 PSI

Long life oil-lubricated motor

Reduced vibration stabilizers

Heavy duty 2.5 HP motor
Single capacitor motor with thermal overload protection

SAVE \$337

~~\$179.99~~ **\$159.99**
comp at \$497

15945887

LIMIT 3 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

2 HP, 29 GALLON 150 PSI CAST IRON VERTICAL AIR COMPRESSOR
ITEM 61489
62765/68127 shown

Customer Rating ★★★★★

Air delivery:
5.9 CFM @ 90 PSI
7.3 CFM @ 40 PSI

SAVE \$99

~~\$359.99~~ **\$339.99**
comp at \$439

15911148

LIMIT 3 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

60 LED SOLAR SECURITY LIGHT
ITEM 62534/69643 shown

Customer Rating ★★★★★

SAVE 52%

~~\$39.99~~ **\$32.99**
comp at \$69.99

15939872

LIMIT 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

3 GALLON, 100 PSI OILLESS PANCAKE AIR COMPRESSOR
ITEM 60637/61615
95275 shown

Customer Rating ★★★★★

Air delivery:
0.6 CFM @ 90 PSI
1 CFM @ 40 PSI

SAVE 59%

~~\$59.99~~ **\$39.99**
comp at \$98.62

15971715

LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

6" DIGITAL CALIPER PITTSBURGH
ITEM 47257 shown
61585/62387

Customer Rating ★★★★★

SAVE 66%

~~\$179.99~~ **\$99.99**
comp at \$29.99

15934250

LIMIT 7 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

2 HP, 8 GALLON 125 PSI PORTABLE AIR COMPRESSOR
ITEM 69667
68740 shown

Customer Rating ★★★★★

Air delivery:
4.5 CFM @ 90 PSI
5.5 CFM @ 40 PSI

SAVE \$59

~~\$119.99~~ **\$99.99**
comp at \$159

15949542

LIMIT 3 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

2.5 HP, 10 GALLON 125 PSI OIL LUBE AIR COMPRESSOR
ITEM 62802/67708 shown
61490/62441/69092

Customer Rating ★★★★★

Air delivery:
5.3 CFM @ 90 PSI
6.2 CFM @ 40 PSI

SAVE \$109

~~\$139.99~~ **\$129.99**
comp at \$239

15905532

LIMIT 3 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

1.5 HP, 6 GALLON 150 PSI OILLESS PROFESSIONAL AIR COMPRESSOR
ITEM 62511/62380
68149/62994
67696 shown

Customer Rating ★★★★★

Air delivery:
2.5 CFM @ 90 PSI
3.4 CFM @ 40 PSI

SAVE \$69

~~\$129.99~~ **\$99.99**
comp at \$169

15978944

LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

1500 WATT DUAL TEMPERATURE HEAT GUN (572°/1112°) drillmaster
ITEM 62340/62546
63104/96289 shown

Customer Rating ★★★★★

SAVE 71%

~~\$149.99~~ **\$89.99**
comp at \$31.47

15940345

LIMIT 7 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

For Special Deals Now* TEXT TOOLS to 222377

*Up to 4 messages/month via auto dialer, message and data rates may apply, consent not required for purchases, text TEXTSTOP to cancel

SUPER COUPON

RETRACTABLE AIR HOSE REEL WITH 3/8" x 50 FT. HOSE
ITEM 69265/62344 93897 shown

SAVE \$129

\$59.99 ~~comp at \$189~~

Customer Rating **★★★★★**

16040624

LIMIT 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

CENTRALPNEUMATIC

SAVE \$93

18 GAUGE 2-IN-1 NAILER/STAPLER
ITEM 63156 68019 shown

WE CARRY A FULL LINE OF FASTENERS

Customer Rating **★★★★★**

\$15.99 ~~comp at \$109~~

• Handles 5/8"- 1-1/2" staples, 5/8" - 2" brads, 18 gauge staples with 5/8" to 1-1/2" narrow crown
• Lightweight design
• Quick-release nosepiece for fast clearing of jams
• Full sequential tip safety trigger
• 360° rotatable exhaust

16016386

LIMIT 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

MICROFIBER CLEANING CLOTHS PACK OF 4
ITEM 63030 69678 shown

SAVE 65%

\$1.99 ~~comp at \$5.76~~

Customer Rating **★★★★★**

16028648

LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

20 OZ. GRAVITY FEED SPRAY GUN
ITEM 47016 shown 67181/62300

SAVE 79%

\$9.99 ~~comp at \$49~~

Customer Rating **★★★★★**

16016119

LIMIT 6 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

2-IN-1 FLOORING NAILER/STAPLER
ITEM 69703 61689 shown

SAVE \$379

\$99.99 ~~comp at \$479~~

Customer Rating **★★★★★**

16001185

LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

23 GAUGE PIN NAILER
ITEM 60241 60664 68022 shown

SAVE 66%

\$19.99 ~~comp at \$59.50~~

Customer Rating **★★★★★**

16031629

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SUPER COUPON

3 PIECE TITANIUM NITRIDE COATED HIGH SPEED STEEL STEP DRILLS
ITEM 69087/60379/91616 shown

SAVE 85%

\$8.99 ~~comp at \$59.97~~

Customer Rating **★★★★★**

16023615

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SUPER COUPON

6" SELF-VACUUMING AIR PALM SANDER
ITEM 60628 98895 shown

SAVE \$80

\$19.99 ~~comp at \$99.99~~

Customer Rating **★★★★★**

16012547

LIMIT 6 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

3/8" DESICCANT DRYER WITH OIL REMOVAL FILTER
ITEM 69923

SAVE \$70

\$39.99 ~~comp at \$110~~

Customer Rating **★★★★★**

15984220

LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

20 PIECE AIR COMPRESSOR STARTER KIT
ITEM 68191 shown 61310/62688

SAVE 52%

\$8.99 ~~comp at \$18.97~~

Customer Rating **★★★★★**

15992799

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SUPER COUPON

900 PEAK/700 RUNNING WATTS 2 HP (63 CC) 2 CYCLE GAS RECREATIONAL GENERATOR
ITEM 60338 69381 shown

SAVE \$73

\$89.99 ~~comp at \$163.06~~

Customer Rating **★★★★★**

16001613

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SUPER COUPON

CHICAGO ELECTRIC POWER TOOLS

18 VOLT CORDLESS IMPACT WRENCH
• 330 ft. lbs. max. torque
ITEM 62658 60380 shown Battery and charger included.

SAVE \$199

\$99.99 ~~comp at \$299~~

Customer Rating **★★★★★**

16015419

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SUPER COUPON

NO. 33 BENCH PLANE
WINDSOR DESIGN
ITEM 97544

SAVE 82%

\$7.99 ~~comp at \$45.44~~

Customer Rating **★★★★★**

16010641

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SUPER COUPON

MULTI-USE TRANSFER PUMP
PITTSBURGH
ITEM 62961 63144 61364 66418 shown

SAVE 65%

\$4.99 ~~comp at \$14.37~~

Customer Rating **★★★★★**

15992400

LIMIT 7 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

60", 4 DRAWER HARDWOOD WORKBENCH
ITEM 93454/69054/63395/62603 shown
WINDSOR DESIGN

SAVE \$255

\$139.99 ~~comp at \$395~~

Customer Rating **★★★★★**

15986375

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SUPER COUPON

CENTECH AUTOMATIC BATTERY FLOAT CHARGER
ITEM 42292 shown
69594/69955

SAVE 82%
Customer Rating ★★★★★

\$5.99 ~~\$8.99~~
comp at \$34.99

16049957

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SUPER COUPON

70 gallon capacity 2 HP INDUSTRIAL 5 MICRON DUST COLLECTOR
CENTECH MACHINERY
ITEM 61790
97869 shown

SAVE \$200
Customer Rating ★★★★★

\$179.99 ~~\$229.99~~
comp at \$379.99

16042634

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SUPER COUPON

CHICAGO ELECTRIC POWER TOOLS
10 AMP, 3-IN-1, 1-1/8" VARIABLE SPEED SDS ROTARY HAMMER
ITEM 61882
69274 shown

SAVE \$224
Customer Rating ★★★★★

\$74.99 ~~\$99.99~~
comp at \$299

16096656

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SUPER COUPON

4 PIECE WOOD CHISEL SET WITH CLEAR PVC HANDLE PITTSBURGH
Customer Rating ★★★★★

SAVE 83%
ITEM 42429
69471 shown

\$4.99 ~~\$7.99~~
comp at \$29.97

16083234

LIMIT 8 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

EIGHT DRAWER WOOD TOOL CHEST
WINDSOR DESIGN
ITEM 62585
94538 shown

SAVE \$249
Customer Rating ★★★★★

\$69.99 ~~\$299.99~~
comp at \$319

16043990

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SUPER COUPON

KRAUSE & BECKER AIRLESS PAINT SPRAYER KIT

Paint directly from 1- or 5-gallon buckets

3000 PSI piston pump for high pressure and better coverage

Durable stainless steel components are resistant to rust

Easy twist knob pressure control

Includes 25 ft. hose for easy mobility when painting large surfaces

SAVE \$129
ITEM 62915
60600 shown

\$169.99 ~~\$289.99~~
comp at \$299

16075045

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SUPER COUPON

2" x 60 YARDS BLUE PAINTER'S TAPE
ITEM 95512

SAVE 54%
Customer Rating ★★★★★

\$4.99 ~~\$6.99~~
comp at \$10.99

16042762

LIMIT 9 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

350 LB. CAPACITY FOLDING SAW HORSE
CENTECH MACHINERY
ITEM 60710
61979
69446 shown

SAVE 44%
Customer Rating ★★★★★

\$9.99 ~~\$12.99~~
comp at \$17.97

16051486

LIMIT 7 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

4 FT. x 12 FT. CANVAS DROP CLOTH
ITEM 69309/38108 shown

SAVE 70%
Customer Rating ★★★★★

\$5.99 ~~\$8.99~~
comp at \$19.98

16105690

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SUPER COUPON

WIRELESS SURVEILLANCE SYSTEM 4 CHANNEL WITH 2 CAMERAS
GUNKER HILL SECURITY
ITEM 62368

SAVE \$260
Customer Rating ★★★★★

\$239.99 ~~\$279.99~~
comp at \$499.99

16046209

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SUPER COUPON

17 FT. TYPE I A MULTI-TASK LADDER
ITEM 62514/62656/67646 shown

HandMaster
• 300 lb. capacity
• 23 configurations

Customer Rating ★★★★★

\$119.99 ~~\$139.99~~
comp at \$404

16101832

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SUPER COUPON

HEAVY DUTY PORTABLE SCAFFOLD
FRANKLIN
ITEM 89979/62208
63051/69055
63050 shown

SAVE \$70
Customer Rating ★★★★★

\$179.99 ~~\$189.99~~
comp at \$250

16076774

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SUPER COUPON

24 OZ. ELECTRIC PAINT SPRAY GUN
KRAUSE & BECKER
ITEM 62627/63060
60446 shown

SAVE \$85
Customer Rating ★★★★★

\$14.99 ~~\$19.99~~
comp at \$99.99

16102351

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SUPER COUPON

HEAVY DUTY HAND TRUCK
HandMaster
ITEM 95061 shown
62775/62776/62973

SAVE 41%
Customer Rating ★★★★★

\$34.99 ~~\$59.99~~
comp at \$59.99

16072438

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US★GENERAL★PRO

SUPER HIGH GLOSS FINISH

"We Are Impressed With the
Quality...The Price is Incredible!"
— *Car Craft Magazine*

**INDUSTRIAL QUALITY EQUAL TO
CABINETS THAT SELL FOR UP TO \$6000**
QUALITY EQUAL TO SNAP-ON

**YOU WON'T FIND A BIGGER,
BETTER CABINET FOR THIS PRICE**



**INDUSTRIAL
STRENGTH**



- Rolled edges on drawers for superior rigidity
- Strong and smooth ball-bearing slides



- Gas struts on lids for easy opening and closing



- Heavy-duty casters for mobility when fully loaded

SUPER COUPON

US★GENERAL★PRO **A** **44", 13 DRAWER ROLLER CABINET**
ITEM 69387/62744
63271/68784 shown

Customer Rating ★★★★★

SAVE \$670

- 2633 lb. capacity
- Weighs 245 lbs.
- 14,200 cu. in. of storage

\$359⁹⁹
~~\$379⁹⁹~~
comp at \$1029.99

16122098

SUPER COUPON

US★GENERAL★PRO **B** **56", 11 DRAWER INDUSTRIAL CABINET**
ITEM 69395/67681 shown

Customer Rating ★★★★★

SAVE \$1100

- 3458 lb. capacity
- Weighs 441 lbs.

\$699⁹⁹
~~\$799⁹⁹~~
comp at \$1799.99

16134033

SUPER COUPON

US★GENERAL★PRO **C** **30", 5 DRAWER TOOL CART**
ITEM 69397/61427
63308/95272 shown

Customer Rating ★★★★★

SAVE \$230

- 704 lb. capacity

\$169⁹⁹
~~\$189⁹⁹~~
comp at \$399.99

16106016

SUPER COUPON

US★GENERAL★PRO **D** **44", 8 DRAWER TOP TOOL CHEST**
ITEM 62500/68787 shown

Customer Rating ★★★★★

SAVE \$631

- 559 lb. capacity

\$279⁹⁹
~~\$289⁹⁹~~
comp at \$910.99

16121467

SUPER COUPON

US★GENERAL★PRO **E** **18" SIDE CABINET**
ITEM 62661/68991 shown

Customer Rating ★★★★★

SAVE \$633

- 206 lb. capacity

\$179⁹⁹
~~\$199⁹⁹~~
comp at \$813.29

16119450

SUPER COUPON

US★GENERAL★PRO **F** **18", 7 DRAWER END CABINET**
ITEM 62580/68785 shown

Customer Rating ★★★★★

SAVE \$2020

- 457 lb. capacity

\$179⁹⁹
~~\$189⁹⁹~~
comp at \$2200

16130472

SUPER COUPON

US★GENERAL★PRO **G** **56", 8 DRAWER TOP CHEST**
ITEM 62662/61370 shown

Customer Rating ★★★★★

SAVE \$630

- 1628 lb. capacity
- Weighs 260 lbs.

\$399⁹⁹
~~\$429⁹⁹~~
comp at \$1029.99

16135182

SUPER COUPON

US★GENERAL★PRO **H** **26", 16 DRAWER ROLLER CABINET**
ITEM 61609
67831 shown

Customer Rating ★★★★★

- 1060 lb. Capacity
- 14,600 cu. in. of storage

SAVE \$633

\$319⁹⁹
~~\$369⁹⁹~~
comp at \$952.99

16119673

SUPER COUPON

POWDER-FREE NITRILE GLOVES
HARDY

Customer Rating ★★★★★

SIZE ITEM

MED	68496/61363
LG	68497/61360/97582
X-LG	68498/61359

• 5 mil thickness

YOUR CHOICE

SAVE 62%

\$5⁹⁹
~~\$7⁹⁹~~
comp at \$15.99

Item 68498 shown

16117617

SUPER COUPON

PITTSBURGH
4" MAGNETIC PARTS HOLDER

Customer Rating ★★★★★

SAVE 66%

\$1⁹⁹
~~\$2⁹⁹~~
comp at \$5.99

ITEM 62535/90566 shown

16109604

SUPER COUPON

US★GENERAL★PRO **I** **44", 13 DRAWER ROLLER CABINET**
ITEM 69387/62744
63271/68784 shown

Customer Rating ★★★★★

SAVE \$670

- 2633 lb. capacity
- Weighs 245 lbs.
- 14,200 cu. in. of storage

\$359⁹⁹
~~\$379⁹⁹~~
comp at \$1029.99

16122098

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QUALITY TOOLS

PREDATOR GENERATORS

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EMERGENCY



JOB SITE



RECREATION



HOUSEHOLD



LAWN & GARDEN



HEATING & COOLING

BEST BUY WINNER 2 YEARS IN A ROW

by a leading consumer products reviewer comparing Predator to other generators costing up to 9 times more

SUPER QUIET
(76 dB)

LOW OIL INDICATOR AND SHUTDOWN

Customer Rating
★★★★★

PERFECT AS A PORTABLE OR STANDBY GENERATOR. POWER YOUR HOME OR JOB SITE.

HEAVY DUTY STEEL ROLL CAGE

2 - 3 PRONG DUPLEX OUTLETS
1 - 240V TWIST LOCK OUTLET
1 - 12V DC OUTLET



SUPER COUPON

PITTSBURGH 40 PIECE 1/4" AND 3/8" DRIVE SOCKET SET
ITEM 61328/62843/63015
47902 shown

Customer Rating ★★★★★

• SAE and Metric

SAVE 60%

\$3.99 ~~\$4.99~~ ~~comp of \$9.99~~

16164723

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SUPER COUPON

HandMaster 72" x 80" MOVING BLANKET
ITEM 69505/62418
66537 shown

Customer Rating ★★★★★

SAVE 66%

\$5.99 ~~\$8.99~~ ~~comp of \$17.97~~

16167851

LIMIT 7 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

10 FT. x 20 FT. PORTABLE CAR CANOPY
ITEM 60728/63054/69034/62858 shown

Customer Rating ★★★★★

SAVE NOW

\$99.99 ~~\$149.99~~

16151588

LIMIT 8 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

ELECTRIC CHAIN SAW SHARPENER
CHICAGO ELECTRIC POWER TOOLS
ITEM 61613
68221 shown

Customer Rating ★★★★★

SAVE 44%

\$27.99 ~~\$34.99~~ ~~comp of \$49.99~~

16161090

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SUPER COUPON

CENTRAL PNEUMATIC HIGH SPEED METAL SAW
ITEM 60568/62541/91753 shown

Customer Rating ★★★★★

SAVE 74%

\$12.99 ~~\$18.99~~ ~~comp of \$49.99~~

16148520

LIMIT 10 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

Customer Rating ★★★★★

4000 PEAK / 3200 RUNNING WATTS 6.5 HP (212 CC) GAS GENERATORS
ITEM 69676 shown
69729/63080/63079
ITEM 69728/69675
63090/63089
CALIFORNIA ONLY

SAVE \$179

\$289.99 ~~\$339.99~~ ~~comp of \$469~~

16167988

LIMIT 11 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

Customer Rating ★★★★★

8750 PEAK / 7000 RUNNING WATTS 13 HP (420 CC) GAS GENERATORS
ITEM 68530/63086
63085/69671 shown
ITEM 68525/69677
63087/63088
CALIFORNIA ONLY

SAVE \$459

\$539.99 ~~\$599.99~~ ~~comp of \$999~~

16167559

LIMIT 12 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

Customer Rating ★★★★★

6500 PEAK / 5500 RUNNING WATTS 13 HP (420 CC) GAS GENERATORS
ITEM 68529/63083
63084/69672 shown
ITEM 68526/69674
63082/63081
CALIFORNIA ONLY

SAVE \$239

\$449.99 ~~\$489.99~~ ~~comp of \$689~~

16151185

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WOW SUPER COUPON

PREDATOR 6.5 HP (212 CC) OHV HORIZONTAL SHAFT GAS ENGINES
Customer Rating ★★★★★

SAVE \$228

\$99.99 ~~\$119.99~~ ~~comp of \$328~~

ITEM 60363/69730
ITEM 68121/69727 shown
CALIFORNIA ONLY

16153388

LIMIT 14 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

4" x 36" BELT / 6" DISC SANDER
CENTRAL MACHINERY
ITEM 62502/97181 shown

Customer Rating ★★★★★

SAVE \$87

\$59.99 ~~\$79.99~~ ~~comp of \$147.55~~

16156261

LIMIT 15 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

LOWEST PRICES *EVERYDAY*



**700+ Stores
Nationwide**

CHICAGO ELECTRIC WELDING

WOW SUPER COUPON

- No Gas Required
- 60-120 amps AC
- 20% duty cycle @ 90 amps

90 AMP FLUX WIRE WELDER

Customer Rating
★★★★★



ITEM 61849
62719
68887 shown

\$99.99

SAVE \$50

\$109.99 comp at **\$149.99**

LIMIT 3 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

170 AMP MIG/FLUX WIRE WELDER

- 30-170 amps DC
- 20% duty cycle @ 110 amps

Customer Rating
★★★★★



ITEM 61888
68885 shown

\$169.99 ~~\$184.99~~ comp at **\$549.99**

SAVE \$380

LIMIT 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

WELDING STORAGE CABINET

Customer Rating
★★★★★

NEW



Tools and welding supplies sold separately.

SAVE \$70

\$149.99

ITEM 62275/61705 shown ~~\$169.99~~ comp at **\$219.99**

LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

ADJUSTABLE STEEL WELDING TABLE

Customer Rating
★★★★★

NEW



SAVE \$90

\$59.99

ITEM 63069/61369 shown ~~\$70.99~~ comp at **\$149.99**

LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

240 VOLT INVERTER PLASMA CUTTER WITH DIGITAL DISPLAY

- 15-40 amps DC
- 60% duty cycle @ 40 amps
- 100% duty cycle @ 30 amps

Customer Rating
★★★★★



ITEM 62204

\$649.99 ~~\$699.99~~ comp at **\$1712.75**

SAVE \$1062

LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

ADJUSTABLE SHADE AUTO-DARKENING WELDING HELMET

Customer Rating
★★★★★



ITEM 61611
46092 shown

\$39.99 ~~\$49.99~~ comp at **\$79.99**

LIMIT 3 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

MECHANIC'S GLOVES

SIZE	ITEM
MED	62434/62426
LG	62433/62428
X-LG	62432/62429

YOUR CHOICE

SAVE 73% **\$3.99**

Customer Rating
★★★★★

\$5.99 comp at **\$14.97**

LIMIT 8 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

12" x 33-3/8" WOOD LATHE WITH REVERSIBLE HEAD

Customer Rating
★★★★★

SAVE \$68

\$279.99

ITEM 34706 ~~\$319.99~~ comp at **\$347.99**

LIMIT 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

16 OZ. HAMMERS WITH FIBERGLASS HANDLE

Customer Rating
★★★★★

SAVE 77%

\$3.99

YOUR CHOICE ~~\$4.99~~ comp at **\$17.99**

LIMIT 8 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

DOVETAIL JIG

Customer Rating
★★★★★

SAVE 47%

\$27.99

ITEM 34102 ~~\$34.99~~ comp at **\$53.77**

LIMIT 4 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

MOVER'S DOLLY

Customer Rating
★★★★★

SAVE 59%

\$7.99

1000 lb. capacity ~~\$10.99~~ comp at **\$19.97**

LIMIT 7 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

SAVE 47%

MECHANIC'S SHOP TOWELS

PACK OF 50

ITEM 69649
61878/61837
46163 shown

\$9.99

Customer Rating
★★★★★

\$12.99 comp at **\$18.98**

LIMIT 6 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

SAVE 60%

WIRELESS SECURITY ALERT SYSTEM

Bunker Hill Security

ITEM 93068 shown
69590/61910/62447

Customer Rating
★★★★★

\$11.99

\$16.99 comp at **\$29.99**

LIMIT 6 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

4-1/2" ANGLE GRINDER

drillmaster

SAVE 40%

\$11.99 ~~\$14.99~~ comp at **\$20.26**

Customer Rating
★★★★★

ITEM 95578/69645
60625 shown

LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

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- 700+ Stores Nationwide
- Lifetime Warranty On All Hand Tools
- HarborFreight.com
- 800-423-2567

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QUALITY TOOLS AT RIDICULOUSLY LOW PRICES

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SUPER COUPON

12" RATCHET BAR CLAMP/SPREADER
PITTSBURGH
ITEM 68607/68975/69221
62123/63017/69222 shown

SAVE 85%

\$299
comp at \$20.76

16275473

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SUPER COUPON

HIGH LIFT RIDING LAWN MOWER / ATV LIFT
PITTSBURGH
ITEM 61523 shown
60395/62325/62493

SAVE \$90

\$8999
comp at \$179.99

16319842

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SUPER COUPON

1/4" TRIM ROUTER
drillmaster
Customer Rating
ITEM 61626/62659
44914 shown

SAVE \$79

\$1999
comp at \$99

16288505

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SUPER COUPON

2.4" COLOR LCD DIGITAL INSPECTION CAMERA
CENTECH
ITEM 61839/62359 shown

SAVE \$135

\$6999
comp at \$205.75

16332984

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SUPER COUPON

MULTIFUNCTION POWER TOOL
CHICAGO ELECTRIC
ITEM 62279/62302
62866/68861 shown

SAVE 70%

\$1499
comp at \$49.99

16301179

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SUPER COUPON

2500 PSI, 2.4 GPM 4 HP (160 CC) PRESSURE WASHER
WITH 25 FT. HOSE
ITEM 62201

SAVE \$199

\$25999
comp at \$459.25

16236350

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SUPER COUPON

3100 PSI, 2.8 GPM 6.5 HP (212 CC) PRESSURE WASHER
WITH 25 FT. HOSE
ITEM 62204
CALIFORNIA ONLY

SAVE \$99

\$35999
comp at \$459.84

16266117

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PREDATOR
OUTDOOR POWER EQUIPMENT

NEW

FIVE QUICK CONNECT TIPS
0" - Maximum
15" - General
25" - General
40" - Delicate
Soap Nozzle

Fold-down handle design for compact and convenient storage

Five high-pressure quick-connect tips

On-board detergent tank

Commercial-grade axial pump for tough jobs

LOW OIL SENSOR

16275473

NEW PORTLAND™ ELECTRIC OUTDOOR

SUPER COUPON

1.5 HP ELECTRIC POLE SAW
Customer Rating
ITEM 68862/63190
62896 shown

SAVE 49%

\$6999
comp at \$99

16232719

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SUPER COUPON

14" ELECTRIC CHAIN SAW
ITEM 61592
67255 shown

SAVE 49%

\$3999
comp at \$79.97

16259358

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SUPER COUPON

14 AMP 1-1/2" CAPACITY CHIPPER SHREDDER
ITEM 66910/69293
61714 shown

SAVE \$121

\$9999
comp at \$221

16262868

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SUPER COUPON

3-IN-1 ELECTRIC BLOWER VACUUM MULCHER
Customer Rating
ITEM 62469
62337 shown

SAVE 42%

\$3999
comp at \$69.98

16256070

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SUPER COUPON

13" ELECTRIC STRING TRIMMER
Customer Rating
ITEM 62567
62338 shown

SAVE 49%

\$2499
comp at \$49.97

16259373

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SUPER COUPON

22" ELECTRIC HEDGE TRIMMER
Customer Rating
ITEM 62630/63075
62339 shown

SAVE 29%

\$3499
comp at \$49.97

16238422

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SUPER COUPON

4 PIECE 1" x 15 FT. RATCHETING TIE DOWNS
ITEM 63056/63057/60405/63094
63150/61524/62322/90984 shown

SAVE 57%

\$799
comp at \$18.85

16268110

LIMIT 9 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 1/30/17. Limit one coupon per customer per day.

SUPER COUPON

UNIVERSAL TOOL STAND
GENERAL MACHINERY
ITEM 69805/46075 shown

SAVE 63%

\$2999
comp at \$81.39

16282861

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SUPER COUPON

50 FT. ELECTRIC DRAIN CLEANER
HYDROSTAR
ITEM 61856/68285 shown

SAVE \$199

\$19999
comp at \$399

16325003

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TEXT TOOLS to 222377

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BATTLE TESTED

At Badland, before we'll put our name on a winch, it has to pass tests so strenuous they'd break the back of a lesser winch. We submerge them in water and slime for months on end. We pound and punish them and make them pull enormous loads through mud, sand, water and rock. We offer a full line of winches for off-road, powersport and industrial use. Badland exceeds your most demanding uses, over and over again to make sure they'll endure the most extreme conditions. We make sure that every Badland winch is reliable, durable and battle-tested. They've passed our tests, so you can be sure they'll pass yours.



OFF-ROAD



INDUSTRIAL



POWERSPORT

SUPER COUPON

42" OFF-ROAD/ FARM JACK
PITTSBURGH
ITEM 60668/6530 shown
• 3-1/2 ton capacity

SAVE 23%

Customer Rating
★★★★★

\$45.99 comp at \$59.99

16355817

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SUPER COUPON

WIRELESS WINCH REMOTE CONTROL
BADLAND

SAVE \$80

ITEM 61474 69229 shown

Customer Rating
★★★★★

\$29.99 comp at \$109.99

16373741

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SUPER COUPON

HITCH RECEIVER MOUNT FOR WINCHES
BADLAND

SAVE 33%

ITEM 69106

Customer Rating
★★★★★

\$39.99 comp at \$59.99

16355386

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SUPER COUPON

3/8" x 65 FT. REPLACEMENT WINCH CABLE WITH HOOK
BADLAND

SAVE 28%

ITEM 61667

Customer Rating
★★★★★

\$29.99 comp at \$41.99

16357689

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SUPER COUPON

SNATCH BLOCK
BADLAND

SAVE 51%

ITEM 62435 61673 shown

Customer Rating
★★★★★

\$19.99 comp at \$40.99

16361935

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SUPER COUPON

OFF-ROAD WINCHES

12,000 LB. ELECTRIC WINCH WITH REMOTE CONTROL AND AUTOMATIC BRAKE
ITEM 61256/61889 60813 shown

SAVE \$453

Customer Rating
★★★★★

\$299.99 comp at \$752.99

Reliable and Dependable When it Counts Most
Safety first, with the state-of-the-art completely sealed solenoids, sliding ring gear and automatic load holding brake.

Heavy Duty Rugged Battle Tested Construction
Re-designed and re-engineered super efficient planetary gear train, aircraft grade galvanized steel wire rope that has a breaking strength of 14,400 lbs. and salt spray resistant coatings to combat corrosion.

Innovation Leads to Top Performance
Highly efficient, low amp-draw 6 HP state-of-the-art Neutron Motor that is packed with muscle to maximize pulling capacity and deliver superfast linespeeds.

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SUPER COUPON

OFF-ROAD WINCHES

9000 LB. ELECTRIC WINCH WITH REMOTE CONTROL AND AUTOMATIC BRAKE
ITEM 61346/61325/62596/62278 shown

Customer Rating
★★★★★

SAVE \$100

\$249.99 comp at \$349.99

POWERSPORT WINCHES

5000 LB. ELECTRIC WINCH WITH REMOTE CONTROL AND AUTOMATIC BRAKE
ITEM 68144 shown 61384/61605

Customer Rating
★★★★★

SAVE \$157

\$169.99 comp at \$326.99

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SUPER COUPON

POWERSPORT WINCHES

3500 LB. ELECTRIC WINCH WITH REMOTE CONTROL AND AUTOMATIC BRAKE
ITEM 61604/61383 61257 shown

Customer Rating
★★★★★

SAVE \$312

\$119.99 comp at \$432

POWERSPORT WINCHES

2500 LB. ELECTRIC WINCH WITH WIRELESS REMOTE CONTROL
ITEM 61258 shown 61840/61297/68146

Customer Rating
★★★★★

SAVE \$100

\$59.99 comp at \$159.99

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WHAT'S AHEAD

A GLIMPSE AT GREAT GIFTABLES AND MORE IN THE DEC/JAN ISSUE (ON SALE NOVEMBER 22)



Midcentury dinette

Ash-trimmed plywood covers torsion-box interiors that make this set amazingly strong and comfortable.

Turned pen

She'll think of you every day when she uses the pen you made for her.



18-volt drill drivers Got one on your Christmas list? Make sure you get the right one with our shop-earned recommendations.



Multilevel shelving

This wall-hung beauty puts the "fun" in functional with a variety of display spaces.



Playful cutting board

For the music-loving cook in your life. The step-and-repeat building method makes it easier than you think!



WOOD magazine November 2016

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NEW The New CNC Piranha XL® Is Now Available!

The All-New CNC Piranha XL® features an extra-large table, which makes it perfect for projects like carvings, plaques, ornamental boxes and precision parts machined from wood, soft metals, or plastics. Just design your work with the included VCarve Desktop V8 Design software on a PC coP puter with USB 2.0 port (not included). Then siP ply save the prograP directly to a USB flash drive (not included), plug it into the Pendant, select your file, and hit the run button.

Includes: Piranha XL CNC, VCarve Desktop V8 Design Software, Vector Art 3D Sampler Pack, Color Touch-Screen Pendant Controller System, V-Router Bit, Instruction Manual and Two Hold-Down Clamps.



Features:

- Expanded Carving Platform
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- Exclusive Virtual Zero Software
- All New Touch-Screen Pendant Controlled Graphic Software Package

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161666 Bosch Motor Mount Bracket



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The **JORY BRIGHAM**

EXPERIENCE
California Dreaming
SWEEPSTAKES

GRAND PRIZE:

- 3-Day Training Class (Group Class) For Winner And Companion
- Winner Takes Home A Piece Of Custom Furniture Made During The 3-Day Course*
- SawStop Professional Saw – Valued At \$2,999
- Additional Tools And Accessories – Valued At Over \$1,000

Grand Prize Also Includes: Flight to and from San Luis Obispo, CA, for winner and companion. Four nights on-site lodging for winner and companion.

2ND PRIZE:

- WoodRiver® Ultimate Bench Plane Kit - \$649⁹⁶ Value!

3RD PRIZE (20 To Be Awarded):

- \$50 Woodcraft Gift Card

*Custom piece of furniture not pictured.

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Item #: SD608

SD600
Series
U.S. Patent No. 5,368,079



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USE FREUD'S PATENTED DIAL-A-WIDTH DADO

Whether you are a skilled professional or a weekend hobbyist, Freud has a dado for you. The SD608, Freud's Dial-A-Width Dado, has a easy to use patented dial system for easy precise adjustments while offering extremely accurate cuts.

FLAWLESS FINISH
CUTS CLEAN FLAT-BOTTOM GROOVES IN ALL MATERIALS

Veneered Plywoods

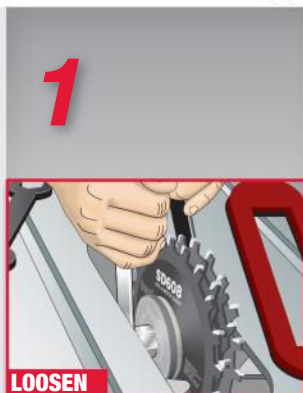
Solid Woods

Laminates & Melamines



EASY AS...

Each "click" of the dial adjusts the blade by .004"; with an adjustable width range of 1/4" to 29/32". A twist of the wrist is all it takes!



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