

OUTDOOR TOOLS we can't live without!

THE FAMILY **Handyman**

#1 in DIY Home Improvement

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Built or bought,
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Build our anti-gravity
HANGING BOOKCASE
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Lawn mowers,
car antennas,
boats and more

ANNUAL REPORT

THE BEST IN DIY 2010

New gear,
hot trends &
old favorites

June 2010

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A READER'S DIGEST PUBLICATION

Tips for
Pet Lovers
& their pets



DIYer fashion?
You better believe it!
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work gloves, even skivvies!

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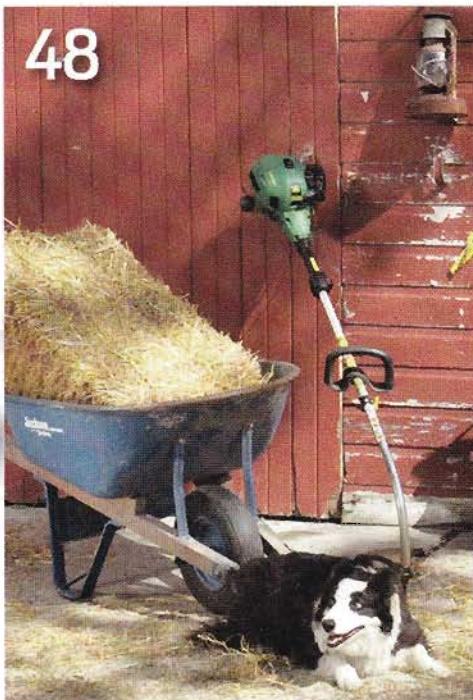
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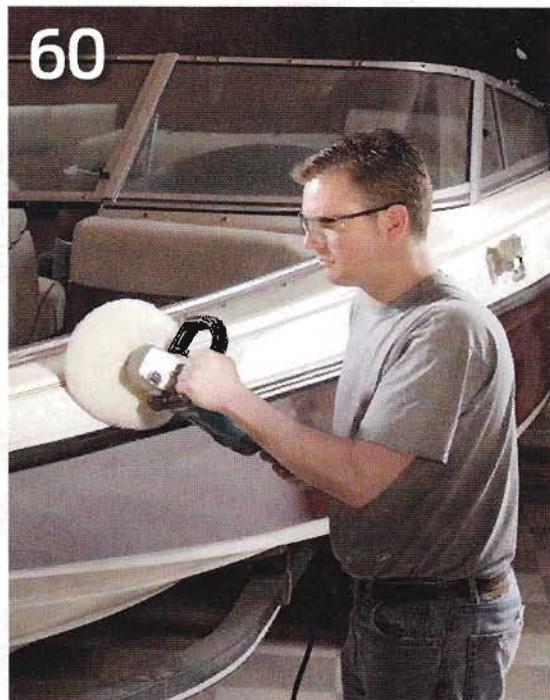
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thefamilyhandyman.com

**Hundreds of DIY
projects & fixes**
Storage, garage,
kitchen, bath & more!

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DIY tips & hints**

Great search tool
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time, skill or cost

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other DIYers

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as our thank-you gift.

MEET A FIELD EDITOR

David Gibson

Kittery Point, ME



David began his hands-on education young in "the most fascinating place on Earth" (his grandfather's workshop). Since then, he's tackled all the standard DIY tasks from carpentry to plumbing. He also has several niche interests, like electronics and old boat repair. He even spent 10 years building and repairing pipe organs. These days, David divides his time between software design and restoring his 175-year-old home.

Become a Field Editor!

We're always looking for volunteers willing to share their experiences. Whether you're a pro or a DIY beginner, e-mail us at editors@thefamilyhandyman.com.

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PUBLISHED BY HOME SERVICE PUBLICATIONS, INC.,
A SUBSIDIARY OF
THE READER'S DIGEST ASSOCIATION, INC.

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Volume 60, No. 6, 509th Edition. The Family Handyman®, ISSN: 0014-7230, USPS: 515-930. Home Service Publications, Inc. (Published by), 260 Madison Ave., Fifth Floor, New York, NY 10016. Published monthly (except bimonthly in July/August, December/January). Periodicals postage paid at New York, NY and additional mailing offices. Postmaster: Send change of address notice to The Family Handyman Subscriber Service Dept., Box 8174, Red Oak, IA 51591-1174; 800-285-4961. Subscriptions: In the U.S.A., its territories and possessions, \$24 for one year (10 issues). For countries outside the U.S.A., subscriptions are \$28.97 per year in American currency. Canadian GST registration number R123771891. CPM agreement number 1447815. Printed in the U.S.A. Copyright ©2010 Home Service Publications, Inc. All rights reserved. Unauthorized reproduction, in any manner, is prohibited. The Family Handyman, Handy Hints and Great Goals are registered trademarks of RD Publications, Inc. Wordless Workshop, Workshop Tips and Dare trademarks of RD Publications, Inc. Subscribers: If the U.S. Postal Service alerts us that your magazine is undeliverable, we have no further obligation unless we receive a new address within one year.

The best in DIY 2010

What are the best things in this DIY life we lead? Well, the list is way too long for one issue, but here are a dozen or so of our favorites—some new, some classic, some universal, some intensely personal. You've probably got your favorites, too, so tell us about them!

» BEST PATENT EXPIRATION EVER

Oscillating tool explosion



From top to bottom:

Chicago's Multifunction Power Tool.

\$40. harborfreight.com

Dremel's Multi-Max. \$100. dremel.com

Ridgid's Multi-tool. \$200

(sold as part of the Jobmax combo kit). ridgid.com

Bosch's Multi-X. \$180. boschtools.com

Craftsman's Nextec Multi-Tool. \$100. craftsman.com

Rockwell's SoniCrafter. \$120

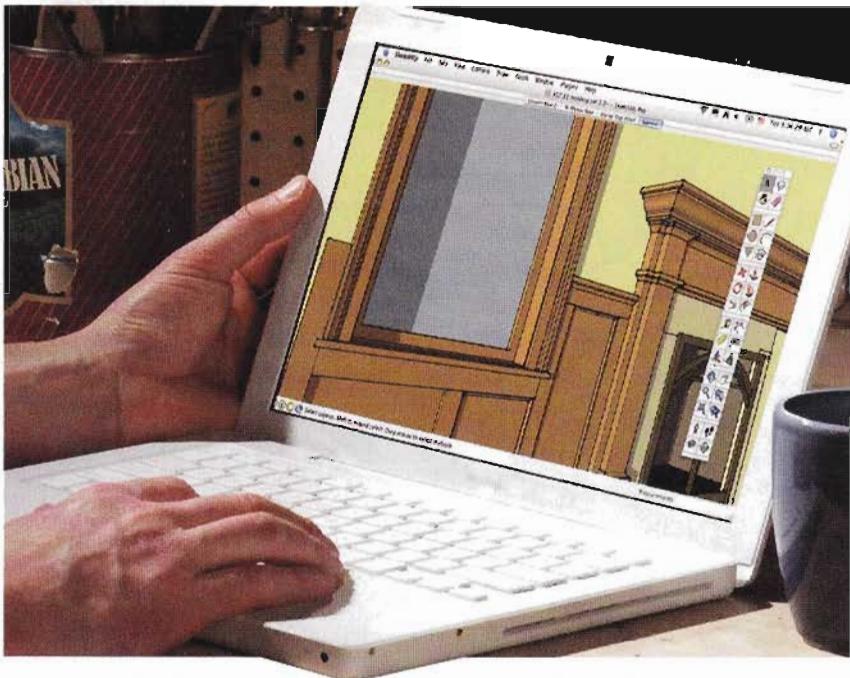
(20-piece version) rockwelltools.com

Fein's MultiMaster. \$310

(FMM 250Q Select version). feinus.com

There's been an explosion in the number of oscillating tools appearing on tool shelves over the past year. The patent for the tool, held by Fein, has expired. So a bunch of tool companies jumped on the opportunity like a chicken on a cricket and came up with their own versions. An oscillating tool is that rare kind of tool that you didn't know you needed until you had one. And now anyone can afford to pop for one—the new versions cost as little as \$40, compared with \$310 and up for Fein versions.

The tool operates very simply. The business end vibrates back and forth like crazy. That's it. But attach different heads like sanders, scrapers, rasps and even shears, and these things can accomplish all types of different tasks.



» BEST DIY SOFTWARE

SketchUp

Next time you want to draw up a project plan, skip the napkin. Use a computer to dial in the design so you'll know what it's going to look like. You'll also have a picture of how it goes together and the exact dimensions, so you can catch mistakes. You don't need to be a computer geek to pull it off, either. The SketchUp CAD (computer-assisted design) system is the way to go. Why? Simple—the basic version is free, the program is easy to learn and it's super useful. You're limited only by your imagination. There are so many great features that we can't cover them here. We recommend you go to sketchup.google.com, download the free version and try it out. For help getting started, go to sketchucation.com and check out the tutorials. You'll soon discover that SketchUp is more than a program; it's a community.

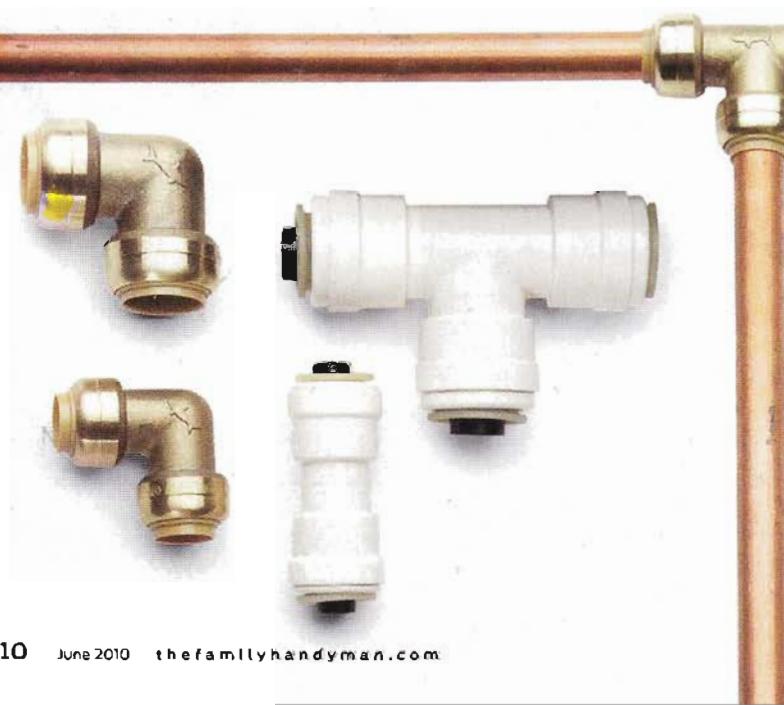


» BEST BEDTIME READING

Grizzly tool catalog

Some guys look forward to the *Sports Illustrated* swimsuit issue, but I get my thrills paging through the Grizzly Industrial catalog—glossy photos of gorgeous woodworking machines (some with cover plates removed, leaving very little to the imagination). The hot model I'm currently lustng after is the tall, slender Ultimate 14-in. band saw (G0555). Just \$450! That's typical of Grizzly—industrial-grade equipment at super-low, direct-to-consumer prices (don't forget to add shipping costs, though). Grizzly couples high-value tools with Grade-A customer service. What more could you want? The catalog also features smaller tools, metalworking equipment and hardware. Request it at grizzly.com or skip the catalog and gawk at the tools online.

Gary Wentz



» BEST PLUMBING INNOVATION

Push-in fittings

Connecting water lines with a push-in fitting feels like cheating. You just push the copper, CPVC or PEX into the fitting and you're done. No tools, no flames, no fumes, no skills. The only difficult step is silencing the nagging voice in your head that says: "That was too easy. It's going to leak." Rest assured that push-in fittings have earned a thumbs-up from plumbing watchdog organizations like IAMPO, UPC and IPC. Most home centers stock a wide range of types and sizes, costing \$5 to \$12 apiece. (Ouch!)



» BEST CARRY-EVERYTHING VEHICLE

The minivan as truck

It was a sad day for me when I sold my pickup truck and bought a minivan. You know the story: second kid on the way, too hard to get the car seat into the truck, yada yada. I couldn't imagine life without a truck. Boy, was I wrong. My kids have left home, I'm on my second van (a 2004 Toyota Sienna), and I wouldn't trade it for anything. I can take the seats out and load it up with plywood, 10-ft. lumber and all sorts of tools, then close the door. Everything's secure, out of the rain and easy to get at. The next day, in go the seats and I can haul eight people. When I'm ready to get out of town, I can carry two canoes on the roof rack, four people, two dogs and a mountain of camping gear.

I admit minivans score zero for style. But for practicality, I love 'em.

Ken Collier



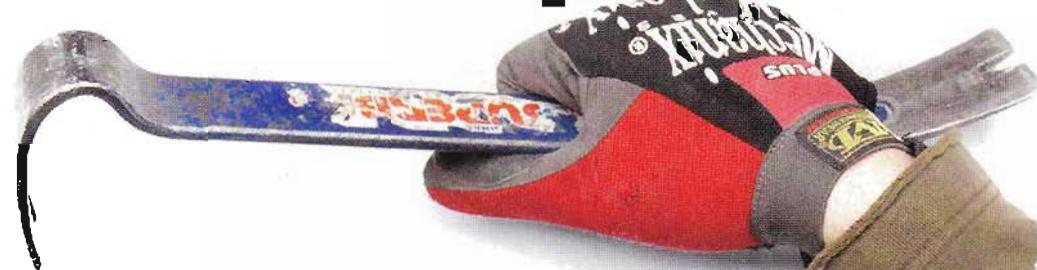
Sheets of plywood one day, mountains of camping gear the next.

» BEST END FOR A DIY DAY

End-of-day first sip of wine

My favorite moment: I've been busting my butt all day putting up drywall, framing a bathroom or ripping out tile. The workday is done, it's quiet and the tools are put away. I walk hunched over into the kitchen and pour myself a glass of wine and wander back to the job site. And I spend an empty drywall pail and take a load off. A big sip and a big sigh. I think a little about what I did today. And what happens tomorrow.

Ellsa Bernick



» BEST FRIEND TO HANDS

High-tech work gloves

I love my high-tech work gloves and here's why. They're tough like leather gloves and fit tight like surgeons' gloves. That means your fingers stay nimble enough to handle nails and screws. Try doing that with any other gloves. Mechanix Wear and Ironclad are two brands available. You can find both online or at home centers and hardware stores. Choose from dozens of styles and varieties depending on what kind of work you do. Prices range from \$15 to more than \$30. Yes, they cost a tad more than those fuzzy yellow or thin brown ones. But they'll last a whole lot longer, and you'll be a whole lot more comfortable. Best of all, on Monday morning, those keyboarding hands of yours won't look like you spent the weekend shelling oysters.

Larry Roepke



REAL DIY LIFE

I was up in the north woods with a buddy, hand-digging holes for footings to build a sauna. We were mixing concrete, making forms and hauling buckets of water. The ground was muddy, rocky and root-filled, but my Mechanix Wear gloves took good care of my claws. Especially when it came to wrestling out a boulder the size of a coffee table.

Larry Roepke



SECO LSII
BRAD NAILER,
1985 COST: \$265
(IN 2010
DOLLARS: \$521)



SECO FINISHPRO
18MG BRAD NAILER
2010 COST: \$130

» BEST DEAL IN TOOLS

Affordable trim guns

It's no secret that pro-grade tools have gotten cheaper and better in the last 20 years. But one of the best values is in the trim gun arena. I paid \$265 for this Senco brad nailer ([top photo](#)) in '85, and it only shoots 18-gauge brads from 5/8 to 1 in. But my new Senco shoots brads from 5/8 to 2-1/8 in. and only costs \$130. Versions are available from all air nailer companies, including Ridgid, Craftsman, Porter-Cable, Bostitch and Campbell Hausfeld. If you are a very "part-time" trim guy, you can pin your brains out for under \$45. Still thinking about renting—or even borrowing? Are you crazy?

» BEST "FINALLY GETTING IT RIGHT"

Low-flow toilets that work

The first generation of low-flow toilets sucked—or rather, they didn't. Fifteen years later, some of these toilets actually work. The best models use gravity or pressure-assisted technology to help move things along. Design changes include larger trapways and flush valves. For a great discussion and comparison, check out [toiletology.com](#) and [terrylove.com/crtoilet](#).

He's a
tough guy.
But he
cleans
up after
himself.



No Residue Duct Tape.

To find out where to buy, go to
[ScotchToughTape.com](#)

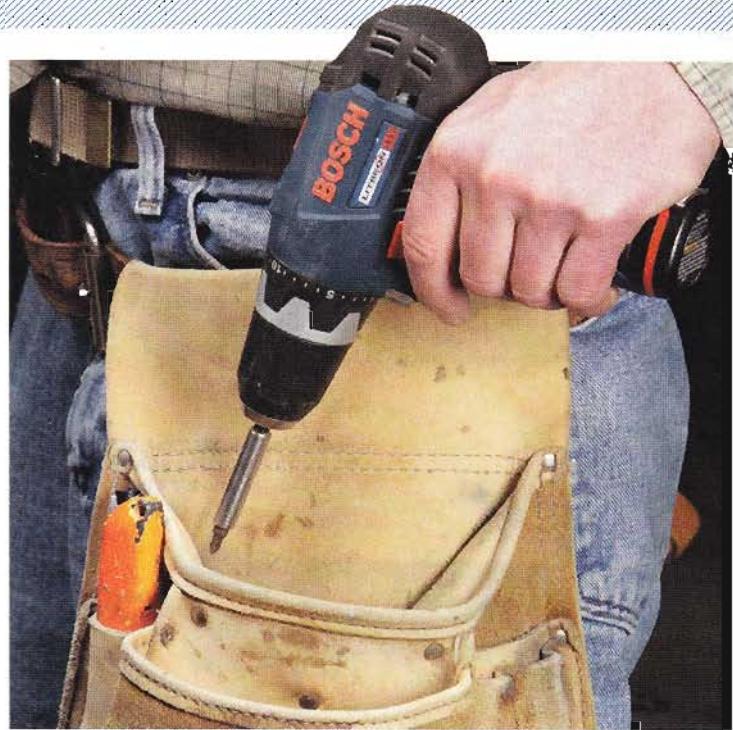
©2009 3M. Scotch, the Scotch Tough Duct Tape Design and the Plaid Design are trademarks of 3M.



Compact lithium-ion cordless drills

Midsize drills powered by lithium-ion batteries have hit a real sweet spot for DIYers: They're powerful enough to use for driving 3-in. screws and small enough to fit in a tool belt or even your back pocket.

The one shown is a Bosch PS20-2A 12-volt model. Different ones are available from Ridgid, Ryobi, Milwaukee, Craftsman and others in 10.8- or 12-volt packages, ranging from \$50 to \$150. We prefer models that have two speeds, an LED light and compact batteries that slide in the handle (like the one shown). These are sweet, sweet tools.



Car diagnostic tools



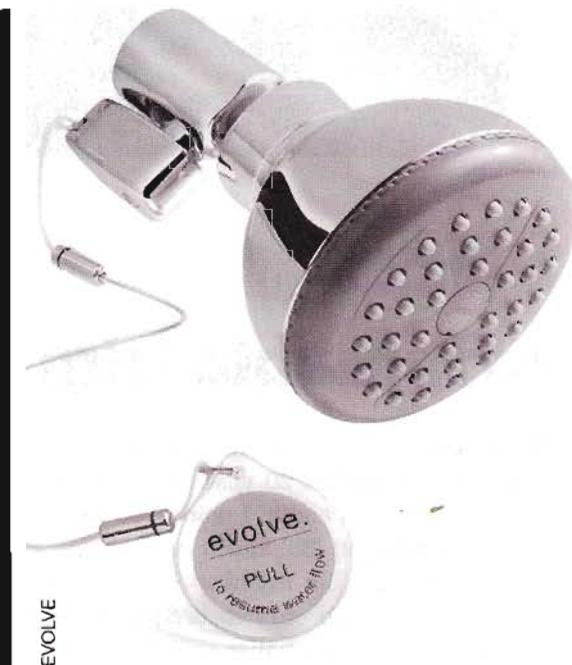
You used to have to pay big bucks to have a garage check the computer codes to figure out what was wrong. Now you can have your own code reader for less than those guys charge for one troubleshooting session. The CarMD code reader (photo left; \$99 from carmd.com) earns its keep. Just hook it up to your car's OBDII port and later to your computer.

The reader will upload the code information to CarMD's database. There you'll get advice from professional mechanics on the most likely cause of your problem.

I like doing my own diagnostics, so I use the AutoXray 6000 EZ-Scan Scanner (\$290 from amazon.com). It works on Ford, GM, Chrysler and Toyota vehicles and reads generic and enhanced OBDII trouble codes. But it also displays live data right from the computer. So I can see sensor values without popping the hood or breaking out the test equipment. With live data, you can find out right away whether the sensor is bad or is being tricked by something like a vacuum leak.



Rick Muscoplat



EVOLVE

One hot showerhead

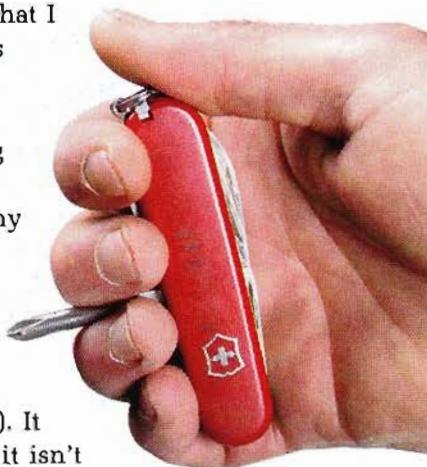
There are a lot of low-flow showerheads available, and some of them actually have enough oomph to get the shampoo out of your hair. The new Roadrunner showerhead from Evolve (\$40 in chrome) does that and more. Once the water reaches a perfect 95 degrees F, it slows to a trickle to let you know the water is hot. When you're ready, just flip a switch on the showerhead and the flow returns to normal. Perfect for morning multitaskers! evolveshowerheads.com

» TRIED-AND-TRUE POCKET ROCKET

Swiss Army "Tinker"

I have a multi-tool that I love, and a gorgeous super-sharp folding knife. They go camping and fishing with me. But the knife that stays in my pocket every other day of the year is the classic Swiss Army Tinker (one online source is swissknifeshop.com). It costs \$20, so losing it isn't traumatic; it's light and compact; and I find myself using the Phillips-head screwdriver about a thousand times every weekend. It's not perfect (I wish the knife would take a sharper edge), but it's "the one that gets used" in my DIY life.

Ken Collier



» BEST EAR CANDY

The best DIY compliment — is one from a pro

After four years of hard work, we finally finished our 1,200-sq.-ft. addition. At our housewarming party, Al Benson, a pro house painter known for his "honest" criticism, was walking around instead of making small talk. I could tell he was looking for nail pops, sloppy cut-in work, roller marks and paint drips. I got ready for an earful, but instead he pronounced our job flawless. I felt like I'd won the lottery.

Ellisa Bernick



WHAT'S YOUR VOTE for the best things in your DIY life?

Write to us at editors@thefamilyhandyman.com. We'll pay you \$100 if we publish it. 

He's a
tough guy.
But you
can see
right
through
him.



Transparent Duct Tape.

To find out where to buy, go to
ScotchToughTape.com

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HOME CARE & REPAIR

by Jeff Gorton
editors@thefamilyhandyman.com



Art Direction MARCIA ROEPKE • Photography TOM FENENGA

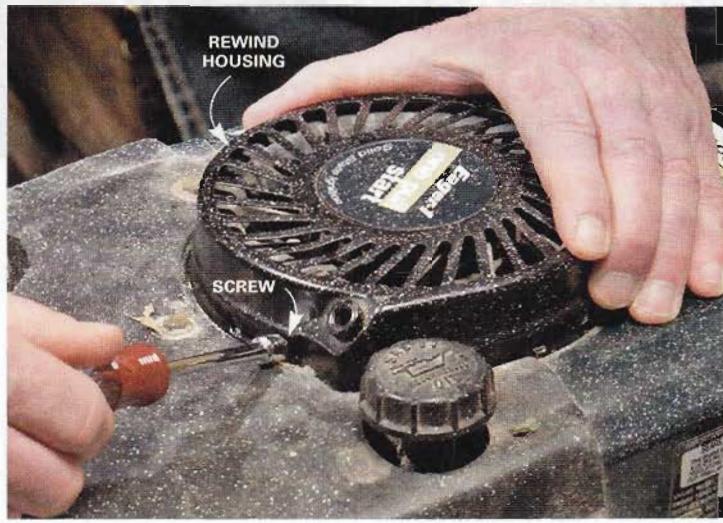
Broken starter rope

You tug one last time to get the lawn mower started, and suddenly the rope breaks and the end goes spinning into the hole. Don't blow a gasket. If you have even a tinge of mechanical aptitude, replacing a starter rope is pretty easy. If the spring breaks—a rare event, according to our repair expert—the fix is a lot harder, and we recommend you take the mower to a repair center.

The first step is to remove the rewind assembly from the lawn mower, and how you do this varies. It's usually held on by three or more screws. Remove the screws and lift off the rewind (**Photo 1**). Some mowers have a shroud covering the top of the mower. On these you'll have to search for and remove the screws that hold the shroud in place. If your rewind unit is held on

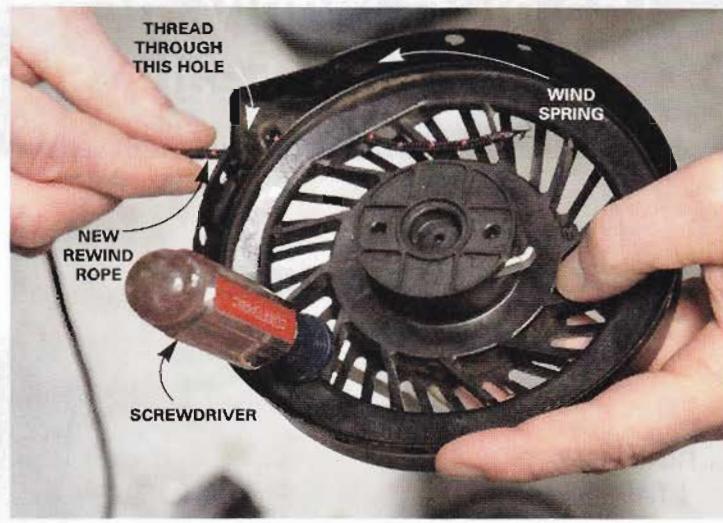
by rivets instead of screws, see "No Screws?" on p. 18.

After you remove the rewind unit, flip it over and look inside to find the knotted end of the broken rope. Grab it with a needle-nose pliers and pull it out. You'll thread the new rope through this hole. You'll find replacement starter ropes at home centers, hardware stores and small-engine repair centers.



1 REMOVE THE REWIND UNIT

Remove the screws that hold the rewind to the engine and lift it off. Use a nut driver to remove hex head screws.



2 REPLACE THE ROPE

First, remove the broken piece of rope by unwinding it, grabbing the knot and pulling it out. Then rewind the spring and hold it in place with a screwdriver.



3 TIE A KNOT

Tie a knot in the end of the rope. Let the pulley wind the rope back into the rewind. Reinstall the rewind unit and any other parts you've removed.

Before you install the new rope, you have to rewind the spring by twisting the rope pulley in the same direction it goes when you pull on the rope. You'll know when you're turning the pulley in the right direction because it will get harder to turn. Keep turning the pulley until you feel resistance and it won't turn easily. Then let it unwind about one-half to one revolution until the hole in the pulley lines up with the hole in the rewind housing. Wedge a screwdriver against the pulley to keep the spring from unwinding while you thread the rope through the holes (**Photo 2**). Tip: With leather gloves on, melt the end of the rope with a match. While the plastic is hot, give it a quick twist to create a pointed end so it's easier to thread in.

Push the end of the rope through both holes and tie a knot (**Photo 3**). Heat the knot a little bit with a match and pull it tight to keep it from coming undone. Remove the screwdriver while you keep pressure on the pulley with your fin-

No screws?

Rivets hold this rewind unit to the metal shroud. To access the rewind unit, remove the bolts that hold the shroud to the engine. If the rivets are loose, drill them out and replace them with bolts and locknuts.



ger, and gradually let the rope wind onto the wheel. You may have extra rope to cut off after everything's back together. Mount the rewind unit and reinstall any shrouding or other parts you had to remove. Put the handle on the rope and tie a knot. Position the knot so that there's a little tension on the rope when you release the handle. If the rope on your lawn mower extends up the handle, make sure to place the rope handle in its final position before tensioning the rope slightly and tying the knot.

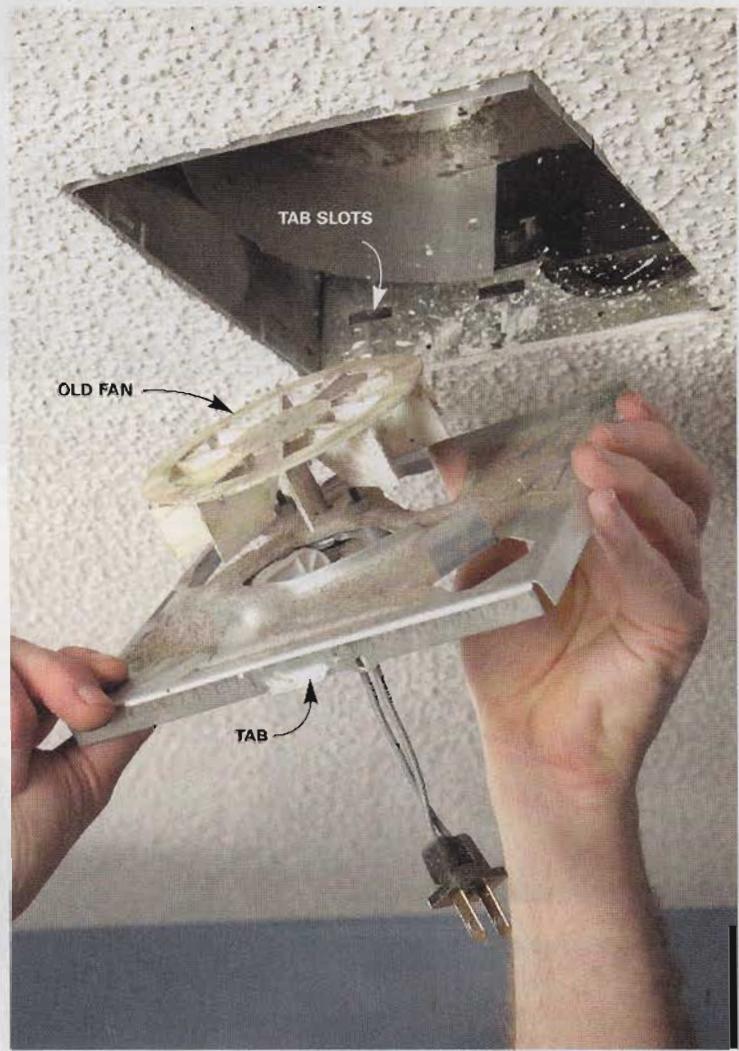
Upgrade your bath fan

If your bath fan is noisy or just doesn't seem to move enough air, there's an easy fix that doesn't require any new wiring, venting or ceiling patching. Nutone's No. 690NT Bath Fan Upgrade Kit (\$30 to \$40 at home centers or online) fits several models of Nutone, Broan and Nautilus fans. You'll find the model number of your fan stamped on the metal plate that the fan motor is attached to. To see if your fan can be upgraded, go to nutone.com and type "690NT" into the search box. The Web page lists model numbers and shows photos of the compatible fans. **Photos 3 and 4** show how to install the replacement parts. The kit comes with complete instructions, the new fan and an attractive white grille.



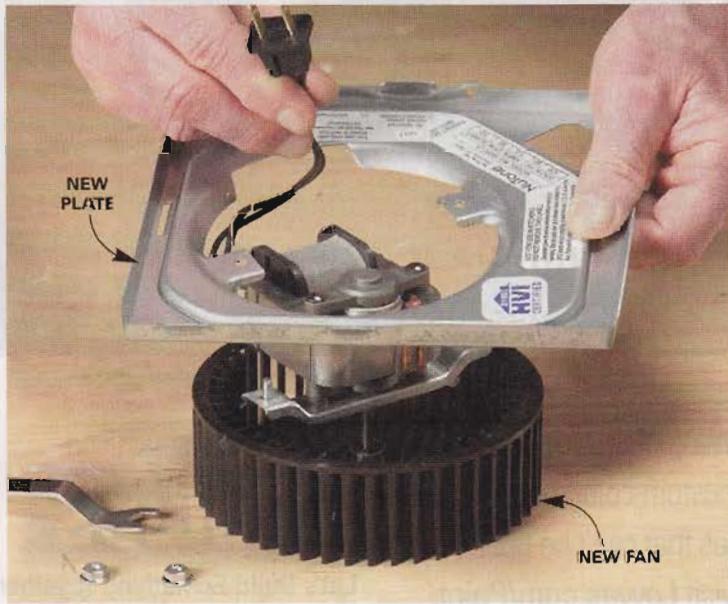
1 REMOVE THE COVER

Grab the edge of the cover and pull down. Squeeze the springs to release them from the slots and remove the cover.



2 TAKE OUT THE OLD FAN

Make sure the wall switch for the fan is turned off. Either remove the screw that holds the fan in place or push out on the metal fan housing to release the tab holding the fan. Then simply pull the fan down and unplug it.



3 ATTACH THE NEW FAN TO THE PLATE

Match one of the new mounting plates to the style of your old plate, and attach the new fan to the plate with the screws provided.



4 MOUNT THE NEW FAN

Install the new fan, either hooking the tabs or reinstalling the screw. Plug in the fan and install the new cover.

Dangerous outlets!

According to a 10-year report released by the U.S. Consumer Product Safety Commission, approximately 2,400 children receive emergency room treatment every year for injuries caused by inserting objects into electrical outlets.

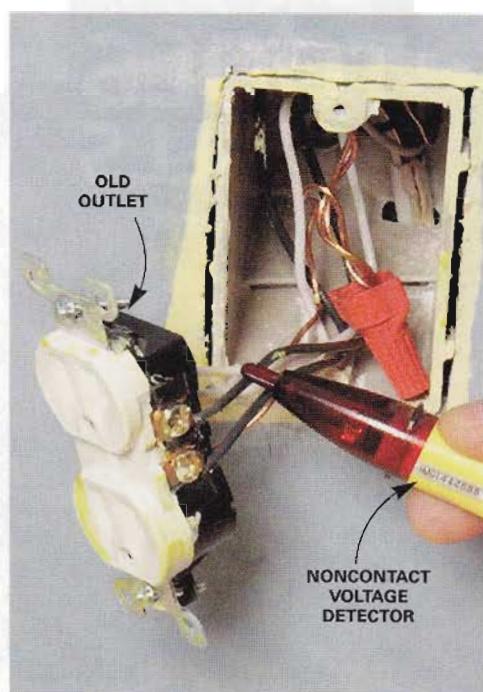
STANDARD OUTLET TAMPER-RESISTANT OUTLET



Childproof your outlets for good

The price of tamper-resistant outlets has dropped to about a buck apiece, now that they're required by electrical code and manufacturers have ramped up production. Replace the outlets in the rooms your kids use the most and get rid of those pesky plastic outlet plugs, which are inconvenient to use, easily lost and a choking hazard. The new tamper-resistant outlets look just like regular outlets but have an interior cover that will open only when the two prongs of a plug are inserted simultaneously. This prevents children from sticking something into one of the slots and getting burned or electrocuted.

Replacing an outlet is simple. Start by turning off the circuit breaker or removing the fuse that controls the outlet at the main service panel. Then, after checking to make sure there's no power to the outlet, carefully unscrew the outlet and replace it with a tamper-resistant version. For details on how to install an outlet, go to thefamilyhandyman.com and type "electrical outlet" into the search box.



TEST FOR SAFETY

Turn off the power at the main electrical service panel and remove the outlet. Hold the noncontact voltage detector against each wire in the box to make sure the power is off before removing the old outlet.

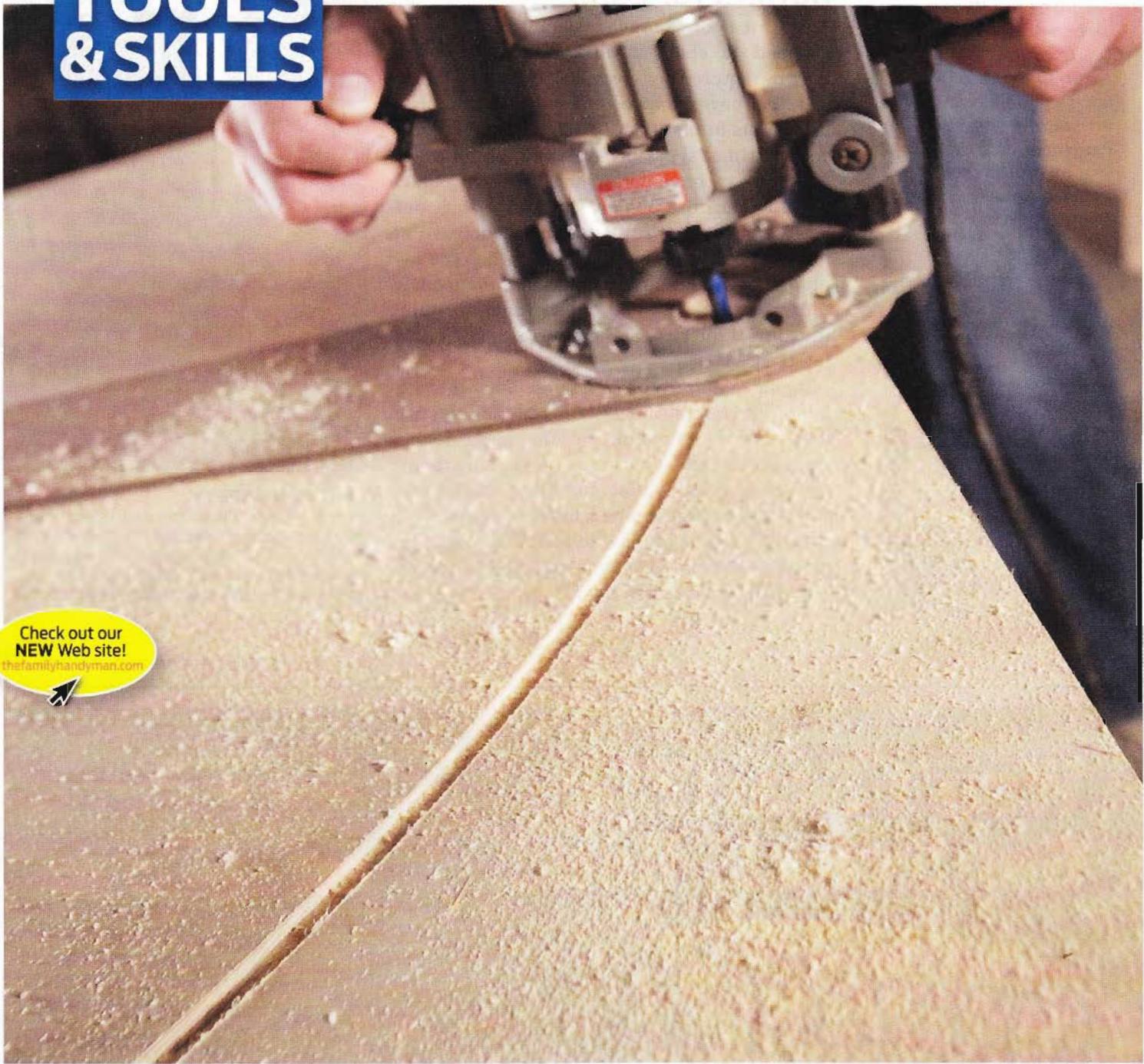
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Marking and cutting curves

Whether you're building a frame for an arched opening, making curved brackets or fashioning arch-top casing, marking and cutting curves is part of the process. In this story, we'll show you several techniques and tips for marking, cutting and fine-tuning curves. Some methods are best suited for rough curves. Others are refined enough for furniture making. Choose the tech-

nique that works best for the project at hand.

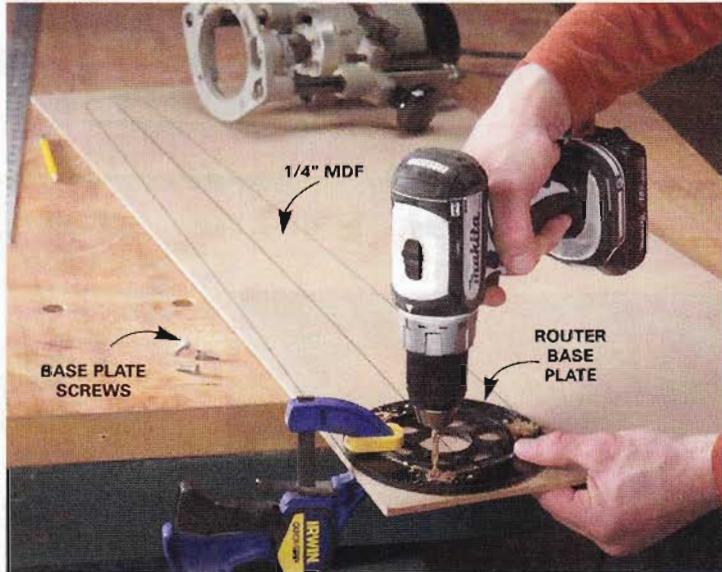
Cut precise curves with a router trammel

This simple router trammel is easy to build and allows you to cut a perfect circle. For circles up to 6 ft. across, use a piece of 1/4-in. plywood, MDF or hardboard that's about 4 ft. long and at

least as wide as your router base. Start by removing the base plate from your router and clamping it to one end of the trammel material. If you want your trammel to be stylish, trace around a coffee cup to make a nice-looking rounded end. Then draw tangent lines connecting the circles and cut the sides. If you don't care about looks, simply make a long rectangular trammel.

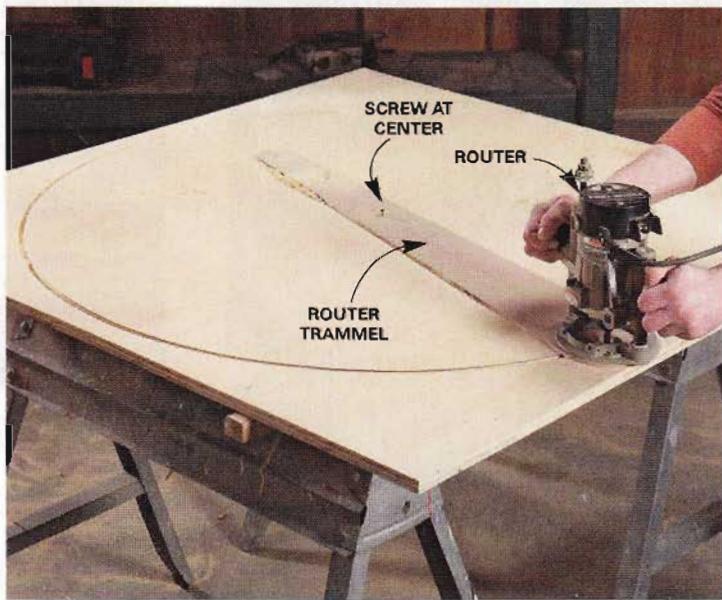
Trace around the base plate and use the mounting holes as a guide for drilling holes in the trammel (**Photo 1**). Cut out the trammel and drill a 1-1/2-in. hole in the center of the router end to clear the router bit. Countersink the mounting screw holes so the screw heads won't tear up your workpiece. Attach the router to the trammel with the base plate screws.

Screw the trammel to the workpiece, centering it on the circle you want to cut out. Mount a straight plunge-cutting bit in your router and set the router bit to cut about 3/8 in. deep for the first pass. A plunge router works best, but if you don't have one, hold the router above the wood and start it. Carefully plunge it into the wood and begin moving it counterclockwise around the circle. Complete the circle, then readjust the depth and make another pass until you cut all the way through.



1 LAY OUT THE TRAMMEL

Draw the sides and ends of the trammel. Trace around the base plate and drill holes for the mounting screws.

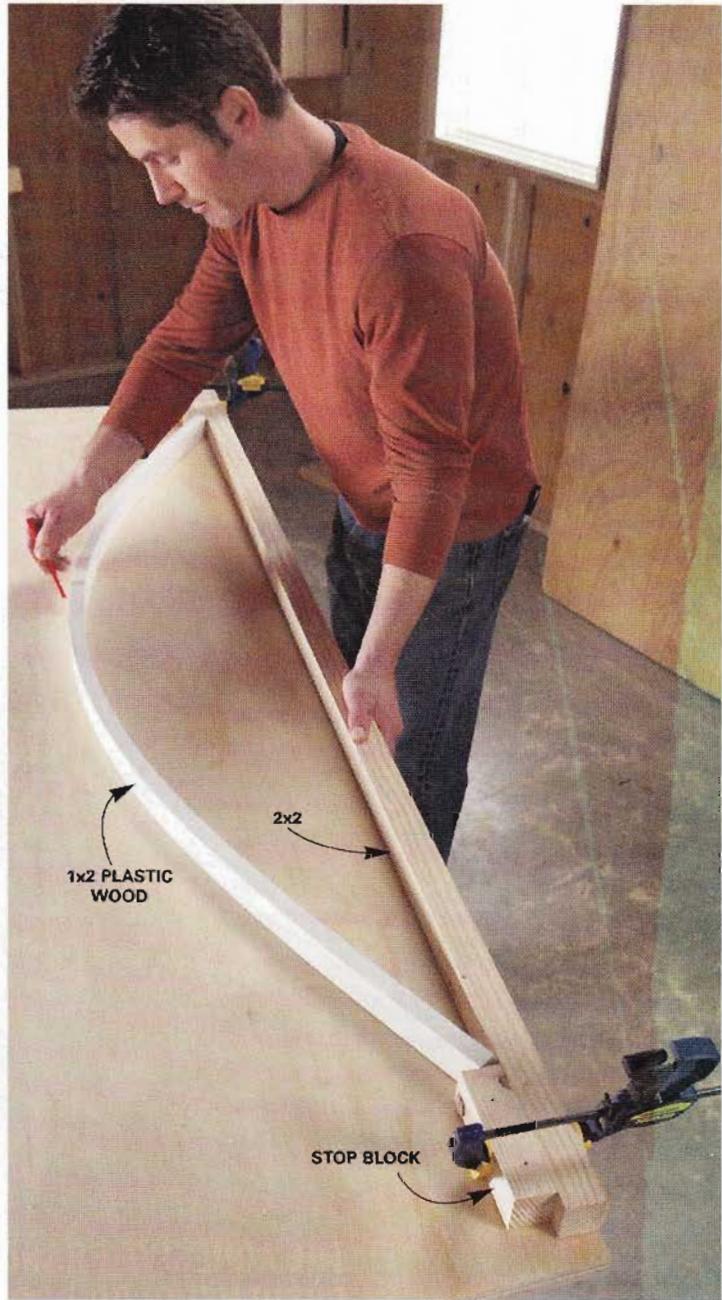


2 ROUT A PERFECT CIRCLE

Screw the trammel to the center of your workpiece and cut out the circle with your router. Make two or three passes in a counter-clockwise direction.

Plastic wood template

Often you can simply "eyeball" the best curve for the job by bending a piece of wood and using it as a template. But variations in wood grain can result in inconsistent curves. Here's a tip to make this technique even better. Use plastic wood or a plastic molding instead. It bends very uniformly and yields near-perfect symmetrical curves. Azek, Fypon, Kleer and Versatex are several brands available at home centers. Choose a thickness that'll bend to the curve you need. For gradual bends or wide curves, use 3/4-in.-thick material. For tighter bends (those with a smaller radius), use a 1/2-in. x 1-1/4-in. plastic stop molding or something similar. Support the ends of the plastic wood with blocks attached to a strip of wood. Adjust the position of the blocks to change the curve.



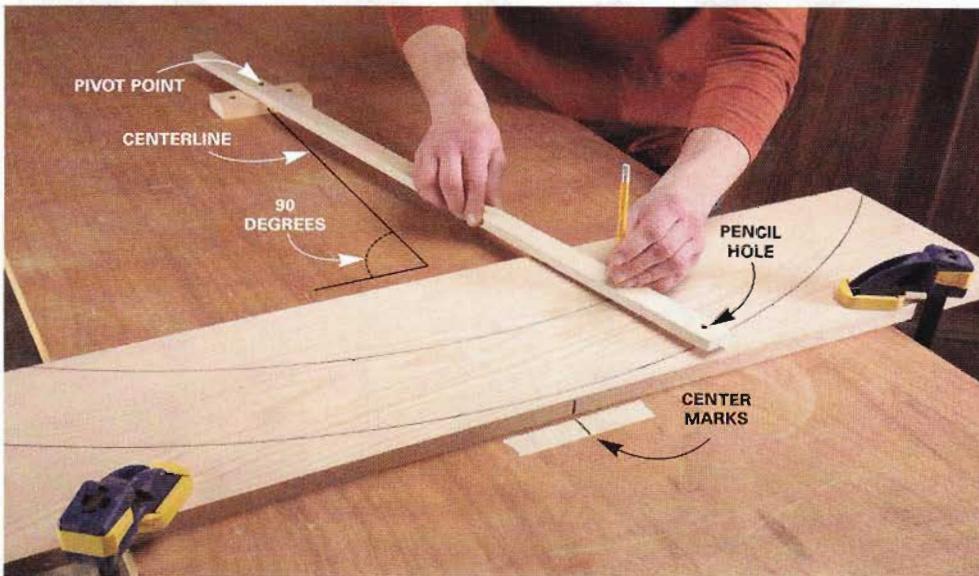
BENT PLASTIC WOOD MAKES A PERFECT CURVE

Clamp blocks to a 2x2 and spring-fit a length of 1x2 plastic wood between them. Adjust the position of the blocks to change the curve.

Draw large curves with a giant compass

Grab any narrow board or strip of plywood and drill a few holes—voilà, instant compass. Drill a pencil-size hole a few inches from the end of the board. Then drill a screw-size hole at the pivot point. The distance between them should be the radius of the curve, if you know what that measurement is. Otherwise, just use the trial-and-error method, drilling a series of pivot holes until you can swing the trammel and draw the right-size arch. It's easy to draw parallel curves too. Just drill two pencil holes spaced the desired distance apart.

There's no limit to the size of the arch you can draw. If your plan calls for a 10-ft. radius, find a long stick and use the floor as your workbench.

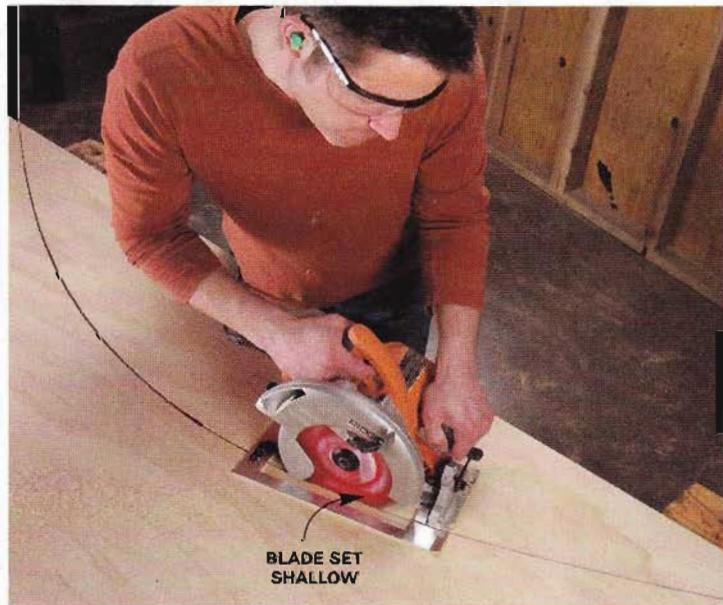


DRILL TWO PENCIL HOLES FOR PARALLEL CURVES

Clamp the board and screw the compass to the workbench. Use a scrap to elevate the compass to the same height as the board you're marking. Make sure the pivot point of the compass is at 90 degrees to the center of the board.

Cut gradual curves with a circular saw

The first tool that comes to mind for cutting curves is a jigsaw, but if the curve is gradual, try a circular saw instead. It's surprisingly quick and easy to cut a smooth curve with a circular saw. This method is for cutting rough curves. Don't try to make furniture with this technique. The trick is to make sure the curve is gradual enough that the blade doesn't bind. If you try this method and the blade binds or starts to heat up and smoke, switch to the jigsaw. The thinner the material you're cutting, the sharper the curve can be. Set the blade depth so it barely projects through the bottom of the wood.

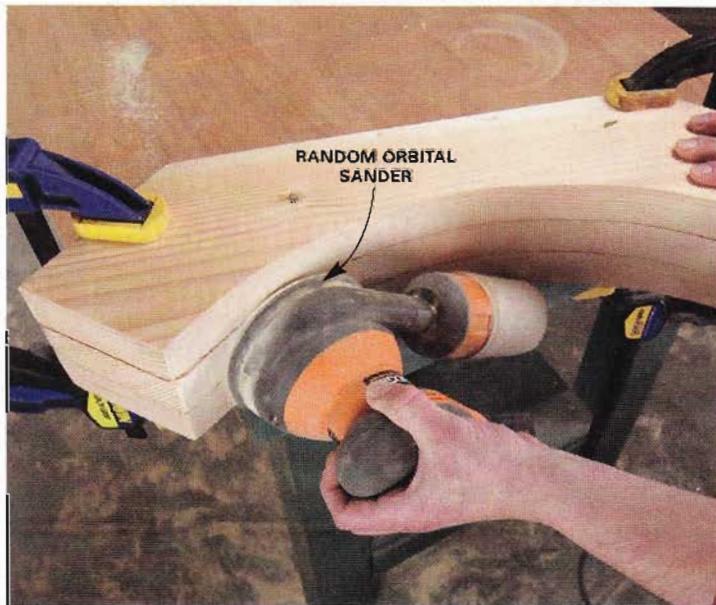


YOU DON'T NEED A JIGSAW TO CUT CURVES

When you're forming gradual curves, you can speed things up by using a circular saw instead.

Stack and sand for matching parts

When you have several identical curved parts, the best way to sand them is to stack them and sand them all at once. You'll save time and the parts will all match perfectly. The wider surface keeps you from rounding off edges. If the parts require a lot of sanding, a belt sander is a good choice. If you don't have to remove much wood, try a random orbital sander. The key to success is to keep the sander moving at all times to avoid creating any flat spots. Check your progress by running your hand over the parts. Mark high spots with a pencil so you'll know where more sanding is needed.



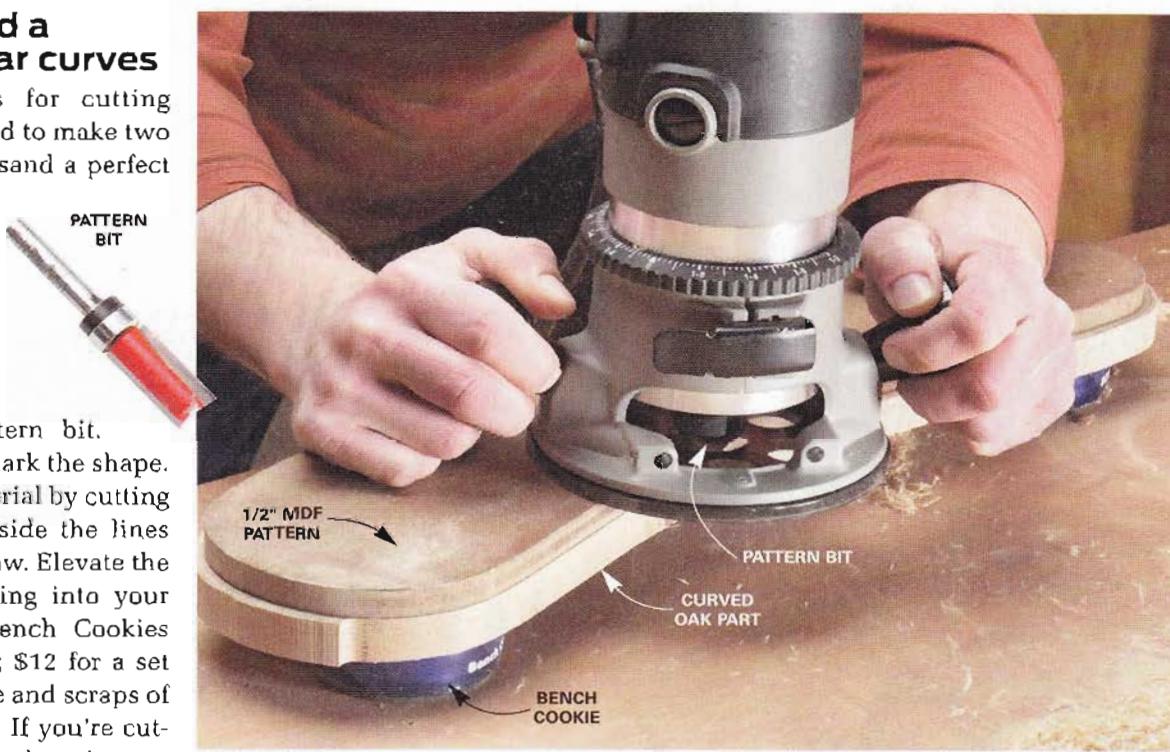
USE A RANDOM ORBITAL SANDER FOR TIGHT CURVES

Line up the parts and clamp them together. If they're small parts like these, clamp them to the workbench to hold them in place. Sand the curves smooth with a belt sander or random orbital sander.

Use a pattern and a router for irregular curves

When your plan calls for cutting curved parts and you need to make two or more, first shape and sand a perfect full-size pattern from a piece of 1/2-in. medium-density fiberboard. Then use a router with a top-bearing pattern bit to cut out the parts.

Here are a few tips for routing with a pattern bit. First, use the pattern to mark the shape. Then remove excess material by cutting about 1/4 to 1/8 in. outside the lines with a jigsaw or a band saw. Elevate the workpiece to avoid cutting into your workbench. We used Bench Cookies (available at rockler.com; \$12 for a set of four). But hot-melt glue and scraps of wood are another option. If you're cutting material that's thicker than the pattern bit is deep, cut as deep as you can. Then remove the pattern and use the part as the pattern to complete the cut.



MAKE MATCHING PARTS WITH A PATTERN

Trace out and rough-cut your part. Attach the pattern with hot-melt glue. Use a top-bearing pattern bit to follow the pattern and shape the part. Move the router counterclockwise around the pattern.

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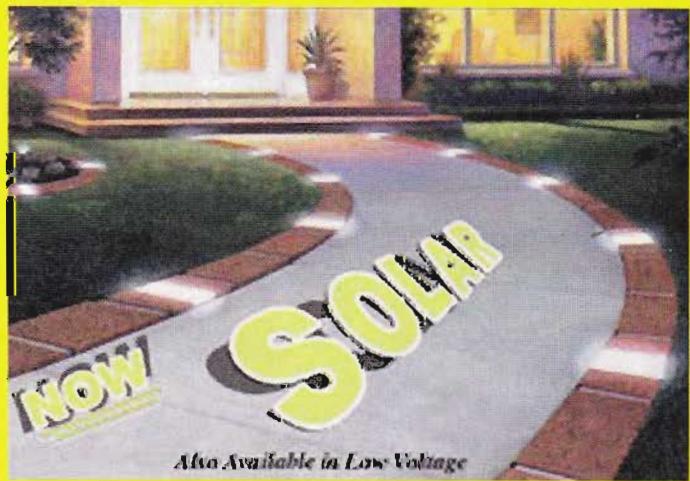


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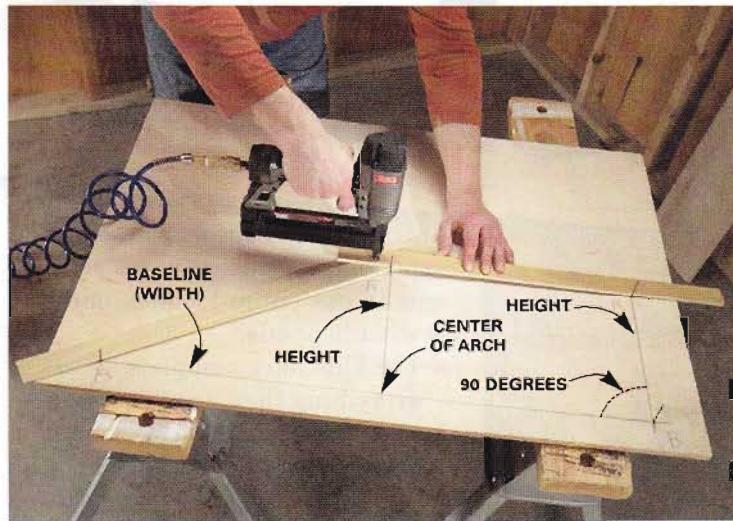
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Mark an arch with two sticks

Here's a quick way to draw an accurate curve if you know how wide and tall you want the arch to be. Let's say you want to draw an arch that's 3 ft. wide

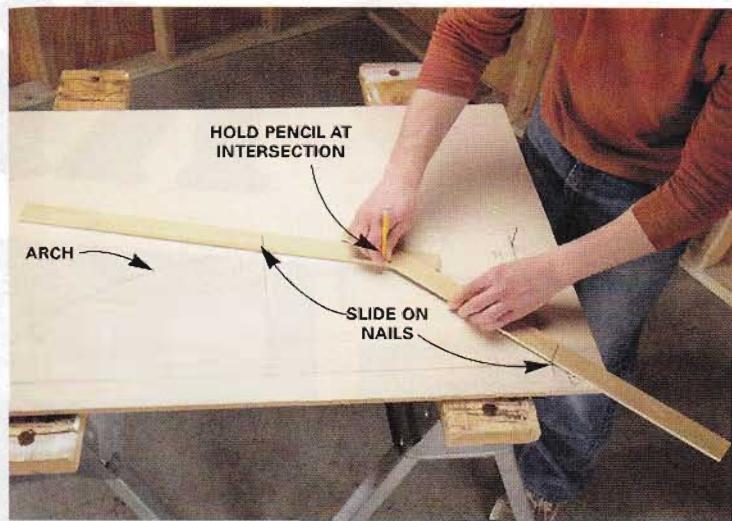
and 9 in. high. Drive two nails at the ends of the 3-ft. baseline. At the center of the baseline, draw a perpendicular line and make a mark 9 in. above the baseline. Drive a nail at the mark. At one end of the baseline, draw another

perpendicular line and make another mark 9 in. above the baseline. Drive another nail at this mark. **Photo 1** shows how to arrange and connect two sticks that you will use to draw the arch (**Photo 2**).



1 SET UP FOR ARCH DRAWING WITH TWO STICKS

Drive nails at the ends of the baseline and at the height of the arch. Lay one stick across two height nails and lay the other from the center height to the end of the baseline. Connect the sticks with short pins or hot-melt glue.



2 SLIDE THE STICKS OVER THE NAILS

Nestle a pencil into the crook of the sticks. With one end of the sticks resting on the baseline end nail and the other on the center height nail, slide the sticks along the nails to draw the arch. Repeat on the opposite side to complete the arch.

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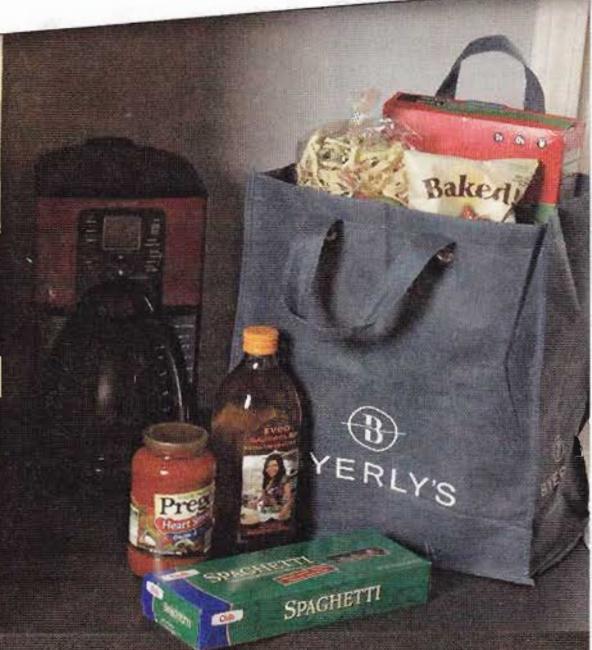
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I Kitchen



life-changing. I speak from personal experience. I recently added rollouts to our entire kitchen, and this is what happened:

- The kids have complete access to everything they need—from cereal to the recycling. Now they can get their own breakfast and take the cans to the curb—no excuses!
- My sore back and my husband's bum knee are less of an issue since we no longer have to constantly stoop to find things in our base cabinets.
- Dinner prep goes a lot faster now that we're not hunting for pot lids and baking pans piled on top of one another on our jumbled, dark shelves.
- We're saving money by not buying things we already have (but that had been lost in the recesses of our cabinets). We can pull our shelves into the light and see everything, including the rancid oil and three boxes of cornstarch we somehow acquired—need some?
- The kitchen feels larger and works better. The rollouts maximize every cubic inch of storage space, so I can store rarely used appliances in my cabinets instead of on my counters.

Are you a convert yet? This article will give you tips for planning, buying and building kitchen rollouts so they can change your life too. You can build a simple rollout drawer like the ones shown in a couple of hours for \$20. But don't say I didn't warn you. Once you see that rollout in action, you'll want to retrofit all your kitchen cabinets. What are you waiting for?

Rollouts

by Elisa Bernick ■ editors@thefamilyhandyman.com

They changed my life—and they'll change yours, too!

Think inside the box

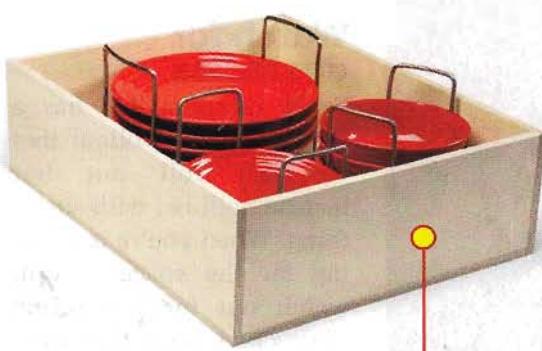
Building a slew of identical drawer boxes is easier, but having a variety gives you more versatility. Think about what you're going to store and build the boxes to suit your needs.



Rollout drawers with sloping sides keep tall things stable yet still let you see all the way to the back of the shelf. These are good for nesting pots and pans or storing different-size items on the same shelf.



Lower sides (3 in. is typical) work well for smaller items such as canned goods and spices. The low sides make reading labels easier.



Shelves with higher sides all around (6 in. tall rather than the typical 3 in.) are ideal for tippy plastic storage containers or stacks of plates.

Use the right slides

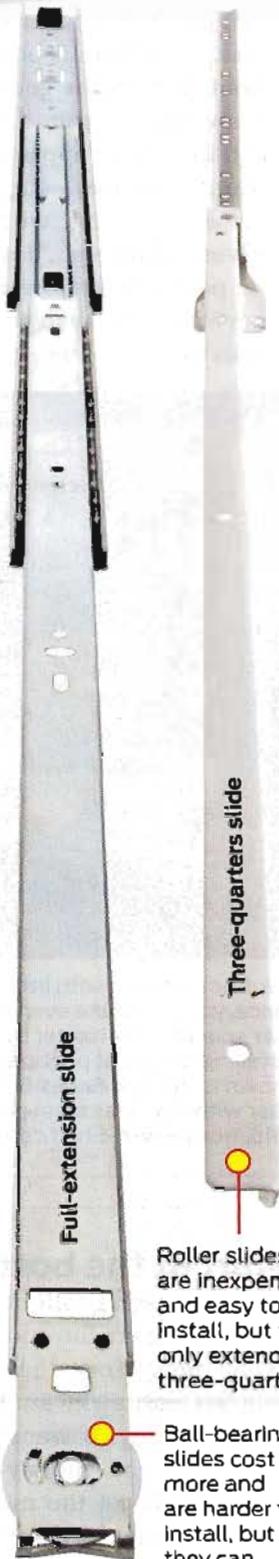
There are a dozen kinds of drawer slides out there, but if you want to keep shopping and installation simple, stick to these two types: **Roller slides** glide on plastic wheels. They're inexpensive, a cinch to install (it takes about two minutes) and nearly impossible to screw up. You'll find them at home centers under various names including side mount, under mount and bottom mount. Most are rated to carry 35 to 100 lbs. For heavy-duty rollouts holding items such as canned goods, use slides rated for at least 100 lbs. The big disadvantage: Most roller slides extend only three-quarters of their length—the back of the drawer stays in the cabinet,

tip

Make drawer boxes about 1/32 in. smaller than you need. It's easy to shim behind a slide with layers of masking tape to make up for a too-small drawer. It's a lot harder to deal with a drawer that's too wide.

Ball-bearing slides glide on tiny bearings. The big advantage of these slides is that they extend fully, giving you complete access to everything in the drawer.

They're about three times the cost of roller slides, and they're usually rated to carry 75 to 100 lbs., but you can get 200-lb. versions for about \$40 a pair. Home centers carry ball-bearing slides, but you'll find a wider variety at woodworkershardware.com. The big disadvantage: They're fussy to install. If your drawer is a hair too big or small, these slides won't glide.



Roller slides are inexpensive and easy to install, but they only extend three-quarters.

Ball-bearing slides cost more and are harder to install, but they can extend fully.

Make the most of skinny spaces

Kitchen designer Mary Jane Pappas typically recommends 18- to 30-in.-wide rollout drawers for cabinets: "Any larger and they're too clumsy. Any smaller and too much of the space is used by the rollouts themselves." But there is one type of rollout that makes good use of narrow spaces, even those only 3 to 6 in. wide. Pappas says that pullout pantries—single tall, narrow drawers with long, shelves, drawers, baskets or even pegboard (photo below)—can be an efficient way to put skinny spaces to work.



In a small kitchen with little storage space, you can make even narrow filler spaces work harder by installing a vertical pegboard rollout. Shown is the 434 Series 6-in. Base Filler with stainless steel panel. \$315, from Rev-A-Shelf.com.

Start at the bottom

The most useful rollout shelves and drawers are the ones closest to the floor since these eliminate the most awkward bending and crouching. If want to limit your time and money investment, you'll get the most bang for your buck by retrofitting these areas first.

Store-bought rollouts—what to look for

You can spend as little as \$10 for a simple wire rollout basket or as much as \$100. So what's the difference?

- Look for rollouts with quality hardware. Second-rate slides and rollers can sag or seize up under sacks of flour and pots and pans. Examine the slides to check whether they're roller slides (which extend only three-quarters of their length) or ball-bearing (which extend fully). Ball-bearing slides tend to support heavier items and roll more smoothly.
- Choose sturdy, chrome-plated steel rollouts for heavier items. Steel rollouts come in different gauge metals. Before ordering online, shop around at different retailers so you can physically compare the weight and density of the steel used by different manufacturers.
- Epoxy-coated wire rollouts and plastic inserts work fine for light-duty items, but they have a tendency to crack, bend and scratch if packed with heavy loads like canned goods.



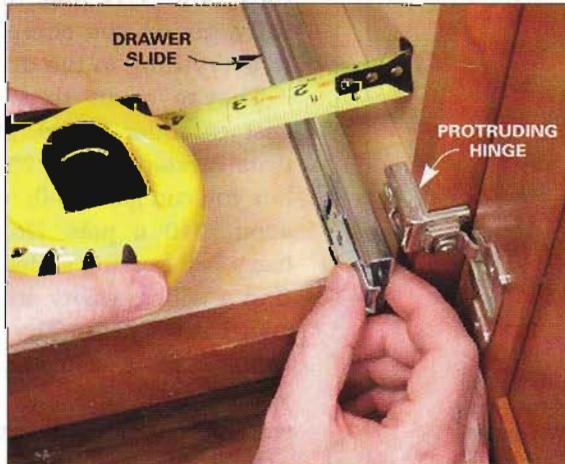
IKEA's Rationell Varlera pullout basket (\$20; Ikea.com) works well for medium-weight items.



The Lynk Rollout Undersink Drawer (\$65 at home centers) can take heavy use.



Rubbermaid's Slide Out Undersink Basket (No. 80360; \$20 at home centers) handles light items.



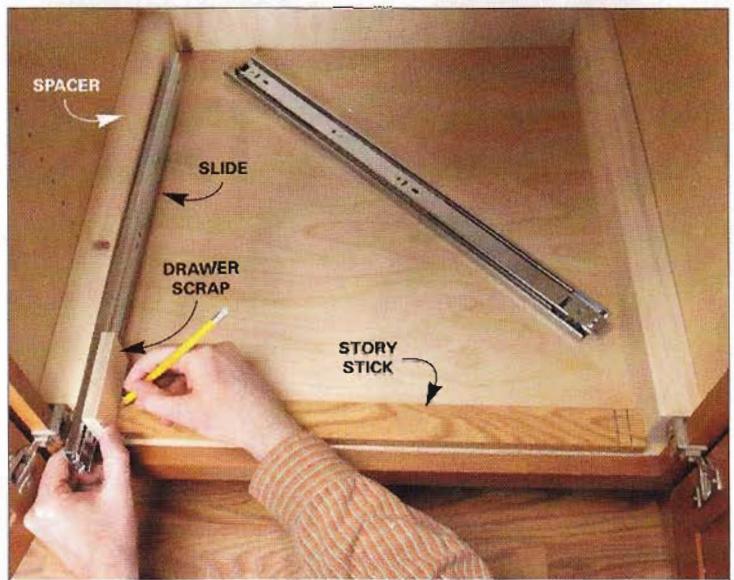
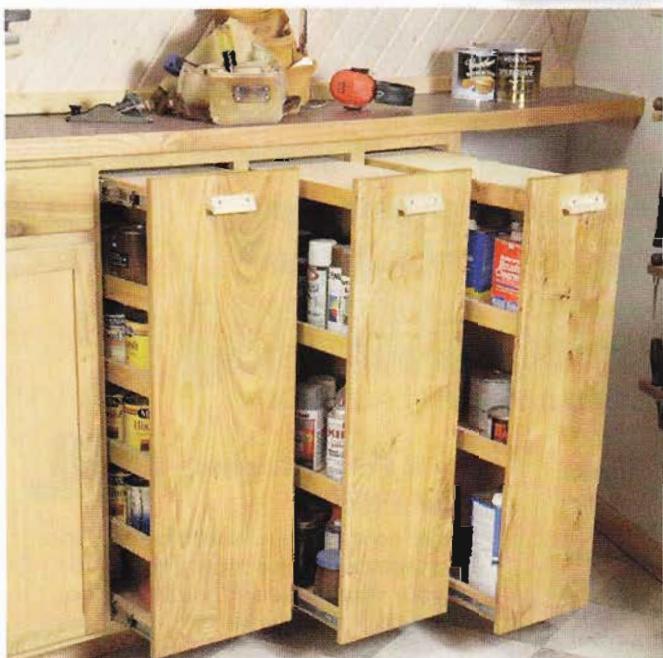
Watch for obstacles

Every cabinetmaker has a story about the rollout that wouldn't roll out but instead collided with something. When you're measuring for the spacer width, watch out for protruding hinges and doors that don't open fully or that protrude into the cabinet opening.

Confessions of a rollaholic

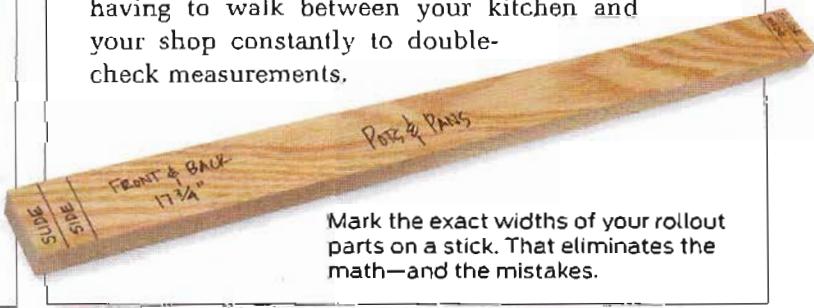
I'm addicted to rollouts. Last winter I replaced every single cabinet shelf in our kitchen with rollouts, custom-designed for whatever needed storing. I've built about 15 more for my shop. I've learned that the key to a useful rollout is to decide what you want it to hold and design it around that purpose. These vertical rollouts in my shop are dedicated to jugs, cans and jars of finishes and solvents. Before starting, I carefully laid out exactly what would go on each shelf on the workbench to get the sizes and spacing just right. They work fantastic.

Travis Larson (aka Shop Rat)



Avoid mistakes with a story stick

The most obvious way to size rollout parts is to measure the opening of the cabinet and then do the math. But that's a recipe for mistakes because it's easy to forget to subtract one of the components (like the width of the slides or the drawers) from the overall measurement. So try this: Forget the math and mark your measurements on a piece of scrap wood. It's a great visual aid that helps you prevent mistakes and having to walk between your kitchen and your shop constantly to double-check measurements.



Mark the exact widths of your rollout parts on a stick. That eliminates the math—and the mistakes.

Divide up wide spaces

If the cabinet is more than 30 in. wide, consider installing two narrower rollouts side by side rather than a single wide one. This means some extra building work and buying more slides, but the smaller rollouts will operate more smoothly and easily. Wider shelves and drawers tend to bind or rattle as you slide them in and out.

Reader success story:

My daughter called her pantry "the black hole" because she could never find what she needed on the deep shelves. I replaced the five full-width shelves with two six-drawer stacks of sturdy full-extension drawers from IKEA, supported by interior center panels. We spaced the drawers carefully for

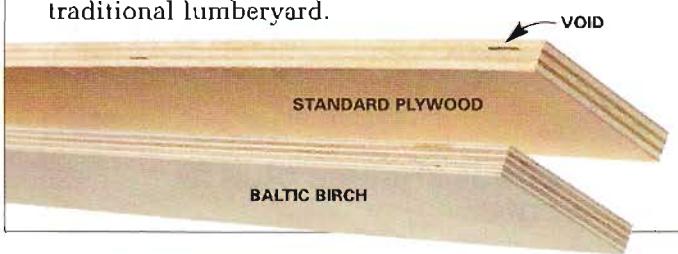
the types of items she planned to store. Finishing touches include soft-close dampers on the drawers and iron-on edge-banding for the birch plywood panels. [The Rationell 18-in.-deep, fully extending drawers cost about \$38 each at ikea.com.]

Jim Wagener, Ashfield, MA



Baltic birch is best

Cabinetmakers love Baltic birch plywood for roll-outs because the edges look great. Unlike standard hardwood plywood, Baltic birch never has voids in the inner core. It may not be labeled "Baltic birch" at home centers, but you'll be able to identify it by comparing it with other hardwood plywood in the racks. It'll have more and thinner laminations in the plywood core. The biggest disadvantages of using Baltic birch are that it costs more than standard hardwood plywood and can be harder to find. A 4 x 8-ft. sheet will run you \$65 compared with \$50 for standard hardwood plywood. If your home center doesn't carry it, try a traditional lumberyard.



Keep drawer boxes simple

All the drawer boxes in my shop are super simple: butt-joint corners and glued-on bottoms. No rabbets, dadoes or dovetails. They don't look very impressive, but they've held up for years. So I built my kitchen rollouts the same way. If simple boxes can carry tools and hardware, I figure they can stand up to kitchen use, too.

Gary Wentz, Senior Editor



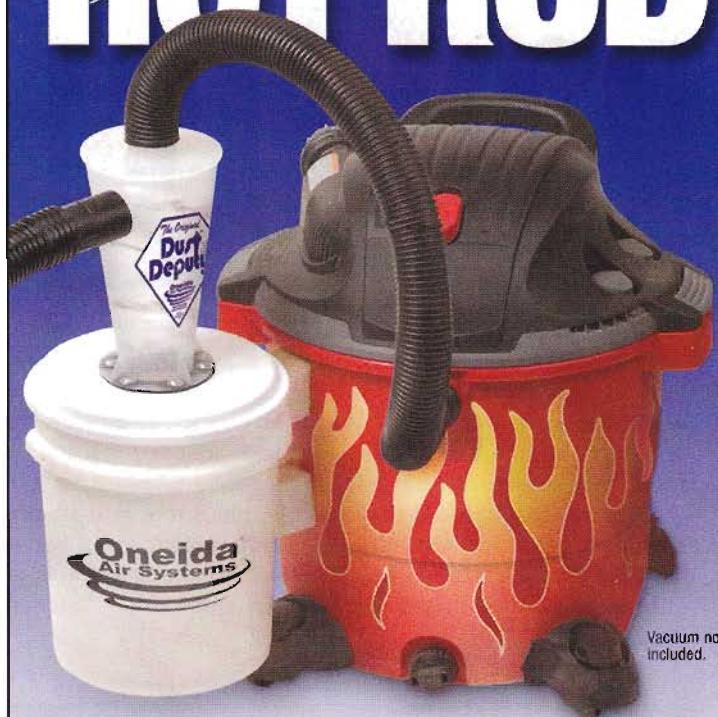
Field editor tip:

Consider having drawer boxes made to your exact specs and then install them yourself. The average cost of a solid maple, dovetailed single drawer that we order is about \$35. Compared with buying material and finishing it yourself—not to mention the dovetail joints—you can't beat it. And it looks much nicer.

Steve Zubik, Nest Woodworking, Northfield, MN



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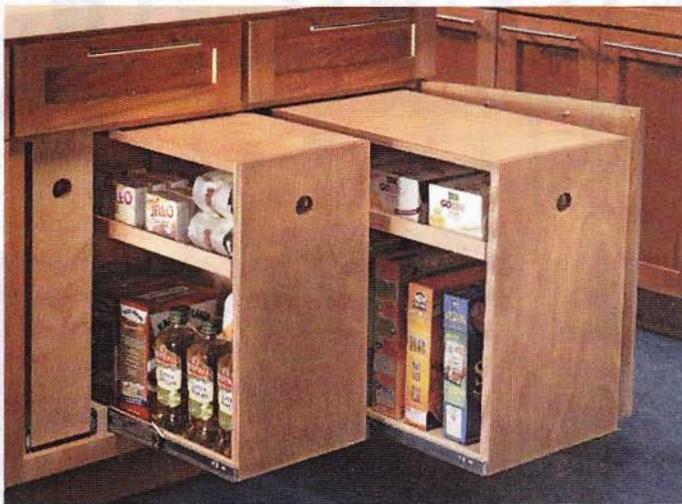
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Simple pantry rollouts

A great way to get more storage space in even the smallest kitchen is by putting those narrow spaces and filler areas to work with a rollout pantry. We have two great projects to choose from. One is a handle-free version that lets you line up more than one rollout bin in a single cabinet. The other is a more traditional, three-drawer pantry rollout that reuses your existing cabinet door and hardware. Both versions make it possible for you to use every cubic inch of storage space in your kitchen. Visit thefamilyhandyman.com and search "kitchen storage."



BILL ZUEHLKE (2)

Classic rollout shelves plus a trash center

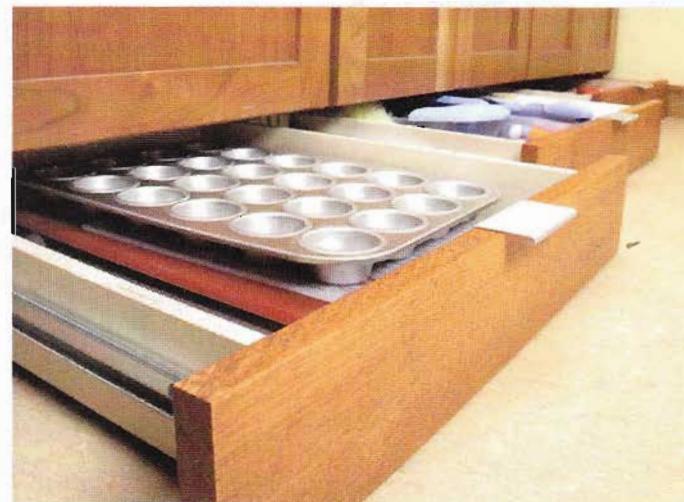
Base cabinets have the least convenient storage in your kitchen. This article will show you how to bring everything in your cabinets within easy reach by retrofitting your base cabinets with classic rollout shelves. It also shows how to construct a special rollout for recycling and trash without using expensive bottom-mount hardware. The article gives you step-by-step instructions for measuring, building the rollout drawer and its carrier, attaching the drawer slides, and mounting the unit in the cabinet. Visit thefamilyhandyman.com and search "kitchen storage."

BILL ZUEHLKE



Rollouts for underused locations

The space under sinks is often overlooked, but it's prime real estate for rollouts. This article gives step-by-step instructions for how to build two types of customizable rollout trays that fit around and below plumbing pipes, garbage disposers and other obstacles beneath your sink. These rollouts transform that "I'm not sure what's under there" storage space into an organized and efficient location for cleaning supplies that lets you see everything you've got in one glance. Visit thefamilyhandyman.com and search "kitchen storage."



HOME

Rollouts at ankle level

Turn wasted toe-kick cavities into clever flat storage space for serving trays, cutting boards and baking pans. This article shows you how to construct self-contained rollout shelving units that you assemble in your shop and then just slip into place beneath your existing cabinets. The article steps you through measuring and building the shelf and carrier units, and then installing them in your kitchen. Even if you've never built or installed a drawer before, this article will show you how. Visit thefamilyhandyman.com and search "kitchen storage."

MEDIA STORAGE: MAKE IT PERSONAL

Design an Entertainment System That Suits Your Space—and Style



The key information you need to create the perfect system for yourself is basic: how much equipment and how many accessories you want to store, the size of your television and the amount of space you have.

One-size-fits-all might work for some styles of clothing, but not when it comes to your home entertainment system. Your collection of CDs, DVDs, electronics and video games are as individual as you are.

At IKEA, you can build a home entertainment system to accommodate whatever your media ensemble looks like. Whether you need a few drawers and a surface for the TV or a wall-to-wall system, designers at IKEA have combined storage and beauty to make your home entertainment system the centerpiece of the room.

So where to begin? The key information you need to create your perfect system is basic: how much equipment and how many accessories you want to store, the size of your television and the amount of space you have. Then ask yourself whether you prefer to display your TV or keep it behind closed doors. Do you have decorative items you'd like to show off? If so, think open shelves and perhaps some lighting.

Whatever the space and your preferences, the perfect solution lies in a combination of the BESTÅ storage system, FRAMSTÅ panel system and INREDA interior fittings by IKEA. The affordable BESTÅ system is designed to be flexible and to fit—and grow with—your needs. What's more, it's functional and durable enough to stand up to everyday use.

From shelf units and TV benches to glass, matte or high-gloss doors, BESTÅ is a one-of-a-kind system. The only real constraints are the size of your space—and your imagination.

STYLE FILE: WHAT WORKS FOR YOU? Is your CD collection taking over every room in the house or have you streamlined by going entirely digital? Whether your living room is oversize or carved out of a corner in a studio apartment, there's an IKEA entertainment system that will handsomely—and effortlessly—accommodate your media equipment.



GREAT ROOM/GRAND STORAGE

A well-designed great room is where family—and varied family entertainment—comes together. By dedicating a stretch of wall to the BESTÅ BOÅS entertainment system, every kind of media—books, magazines, DVDs, CDs—plus electronic components fit neatly onto the shelves and into the drawers.

You can hang a flat-screen TV directly on the reinforced panel and hide the cables behind it. The BESTÅ shelving unit accommodates sliding doors to hide the set when it's off. Outfitted with INREDA magazine shelves, book ends, DVD, CD and even wine racks, the system helps you keep track of it all.



LIVING ROOM/OPEN AND CLOSED STORAGE

If space is limited for displaying your collections and storing your media, the combination of open and hidden storage featured in the BESTÅ/FRAMSTÅ entertainment system is ideal. This multifunctional entertainment hub allows you to

show off decorative objects on adjustable FRAMSTÅ glass shelves and keep electronics, CDs, DVDs and other components out of sight. The wall bracket for a flat-screen TV allows you to tilt the unit upwards, making it easy to plug in cords.



THE MULTITASKING ROOM/MINIMAL STORAGE

In small spaces—or if you simply need less media storage—the BESTÅ BURS entertainment system allows you to accommodate a flat-screen up to 50 inches wide in just under 5 feet of space. And no need for lamps; you can mount a series of INREDA

cabinet lights underneath the BESTÅ BURS wall shelf to illuminate the area. Two large drawers with removable boxes provide plenty of space for games, DVDs and CDs. And the BESTÅ BURS wall shelf itself holds up to 118 DVDs.

LOOKING FOR HELP?

Familiarize yourself with the options, then go online to start with a pre-configured system or build your own (IKEA-USA.COM/BESTA). And we encourage you to visit IKEA stores, where you can plan your system and make the best choices by walking through the BESTÅ studio. Not feeling up to putting it together? Your local IKEA store can provide you with the contact information of an independent in-home assembly service. For a small fee, they'll build your system for you. Whichever way you choose to work, IKEA knows your entertainment system must keep on working for you. **THAT'S WHY BESTÅ OFFERS A 10-YEAR LIMITED WARRANTY. SEE IKEA STORE OR IKEA-USA.COM FOR DETAILS.**

Visit us at IKEA-USA.com to find a store near you.

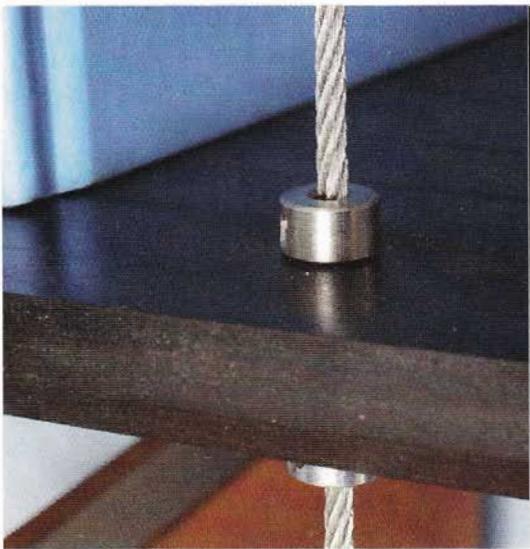


IKEA®

Suspended shelf



Steel cable and shaft collars add style & strength



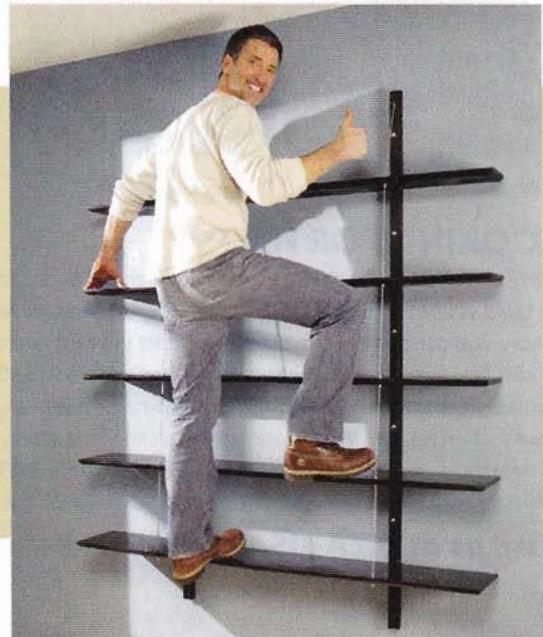
by Jeff Gorton
editors@thefamilyhandyman.com

This wall-hung bookshelf is one of the easiest we've ever built. If you can stack blocks, you can build it. And installing the cable doesn't require any more skill than drilling a hole. Things will go a lot quicker if you own a table saw, a miter saw and a pneumatic nailer, but you could easily build this project with just basic hand tools and a circular saw. We used a router to bevel the shelf edges, but this is optional.

If you're dead-set on finishing this project in a weekend, here's how. Skip the Friday night movie and cut out the parts and get one coat of finish on. Then get up early on Saturday and apply another coat or two of finish and you'll be ready to assemble and install the shelves on Sunday. We spent a little under \$200 for the materials, including the oak boards, cables and other hardware.

It's stronger than it looks

Your first question when you see this bookcase might be "Is it strong enough?" And the answer is a resounding yes. It's extra strong, in fact. The back edges of the shelves are securely supported with screws and blocks, and the front edges are hung from aircraft-strength cable. We even epoxied the top of the cable to the standards just to make sure. Each shelf is held up by shaft collars that are tightened onto the cables with setscrews. So don't worry about the strength. These shelves could hold your dumbbell collection!



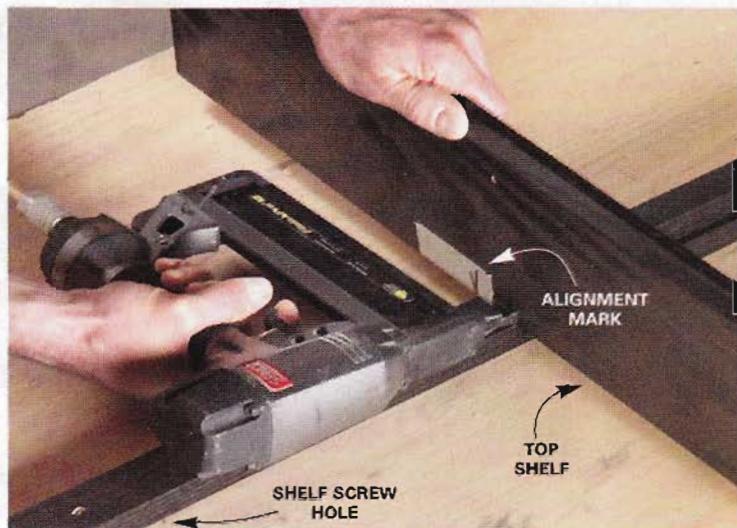


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1 DRILL AN ANGLED HOLE FOR THE CABLE

Start by drilling straight down about $1/8$ in. Then tilt the drill to about a 45-degree angle and use the starter hole to keep the bit in place as you start to drill. The angle of the hole isn't critical.



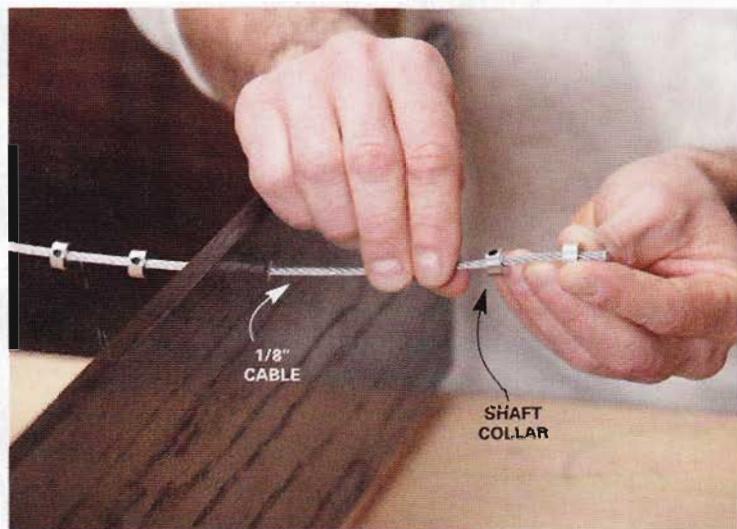
2 NAIL THE SHELVES TO THE CLEATS

Drive a brad through the shelf into the support cleat. These brads just hold the shelves in place when you flip the bookshelf over to drive in the shelf screws (Photo 5) and secure the cable (Photo 6).



3 ASSEMBLE THE SHELVES

Add a cleat under the shelf and nail it in. Then add another shelf and tack it to the cleat. Continue like this until you get to the bottom. Now do the same thing on the other side.



4 THREAD THE CABLE

Start at the bottom shelf and run the cable through the collars and shelves. Add two collars between each pair of shelves. At the top, thread the cable through the angled hole.



5 FASTEN THE SHELVES

Flip the bookshelf over and drive screws into the back of each shelf through the holes in the standards.

Cut the parts

Start by ripping the shelves to the widths given in the Cutting List (p. 45). We used a full-width 1x10 for the bottom shelf and successively narrower boards as we went up. Making all the shelves the same width would be OK, too. While you're at it, rip two 1-in.-wide strips from the 1x2s for the support cleats. Next, cut the boards to length. We used a 45-degree chamfer bit and router to bevel the ends and front edges of the shelves, but you could leave them square if you'd like. After the parts are cut and prefinished, you're ready to assemble the shelf.

Assemble the shelves

The shelves are too big to build on a normal workbench. If you're young and nimble, you could put them together on the floor. Otherwise, save your back and line up a few old doors on a pair of sawhorses.

Continued on p. 45

Figure A Bookcase

Materials List

ITEM	QTY.
1x10 x 5' board	2
1x8 x 5' board	2
1x6 x 5' board	1
1x2 x 6' board	4
1-1/4" wood screws	10
3" wood screws	10
No. 10 finish washers	10
3/8" steel washers	2
3/4" wood screws	2
Five-minute epoxy	1
No. 10-32 cap nuts	2

Cable and collars are available from McMaster-Carr (630-600-3600; mcmaster.com). Enter the product numbers into the search box to find the items listed. You may also be able to find cable at home centers or hardware stores. The cable costs 62¢ per ft., and the collars are 89¢ each.
 5/32" bore shaft collars (6432K73) 22
 1/8" 6x7 fiber-core cable (3449T16) 14'

Cutting List

KEY	QTY.	SIZE & DESCRIPTION
A	1	3/4" x 5-1/4" x 59-1/2" shelf
B	1	3/4" x 6-1/4" x 59-1/2" shelf
C	1	3/4" x 7-1/4" x 59-1/2" shelf
D	1	3/4" x 8-1/4" x 59-1/2" shelf
E	1	3/4" x 9-1/4" x 59-1/2" shelf
F	2	3/4" x 1-1/2" x 68-1/4" standards
G	10	3/4" x 1" x 11-1/4" cleats
H	2	3/4" x 1" x 7-3/4" cleats

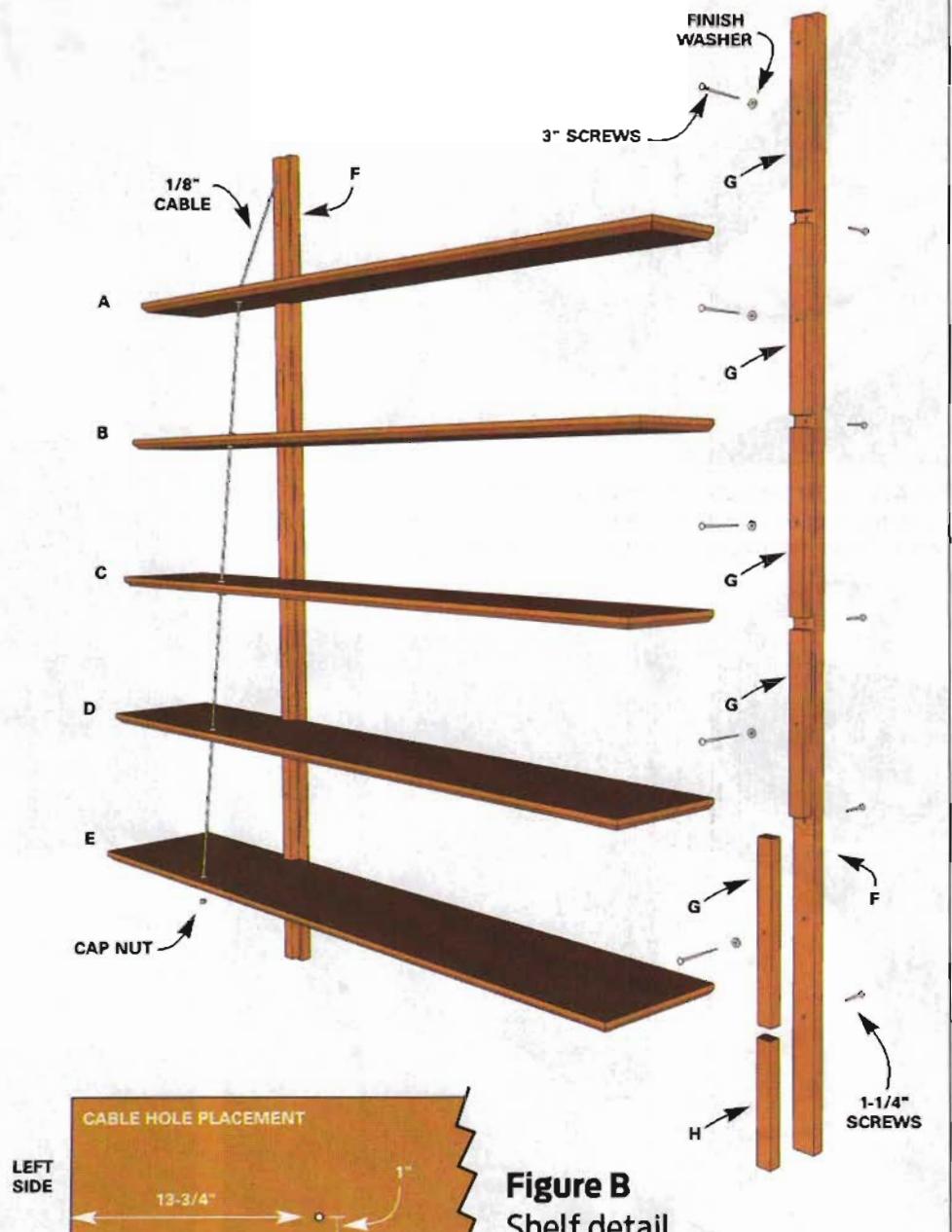


Figure B
Shelf detail

- Assembly is straightforward; follow **Photos 1 – 6** and the details shown in **Figures A and B**. Here are a few tips to help:
- Mark the back of the shelves 13 in. from the ends so you'll know where to line them up with the standards (**Photo 2**).
 - Keep the shelves and standards at a right angle to each other as you attach the cleats. That'll ensure that the cleats fit tight to the shelves.
 - Don't drive nails where you'll be drilling holes.
 - Drill mounting screw holes after you have all the cleats installed. It's easier to do it before you mount the shelves on the wall.

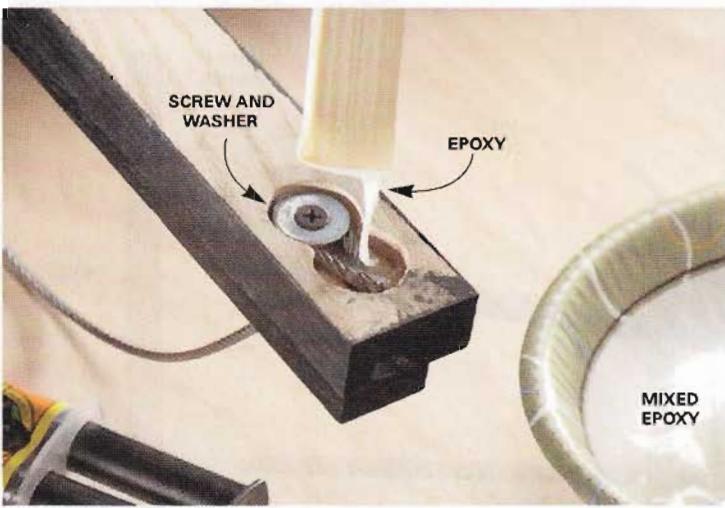
String the cable

The cable is flexible and easy to cut, so it's a breeze to install. Just remember to put two collars on the cable, between each pair of shelves, as you thread the cable through the holes. Leave about 4 in. of cable sticking out the

top and an extra foot or so on the bottom. The extra cable on the bottom lets you use our "cable pedal" method for removing slack (**Photo 8**). After stringing the cable, flip the whole works over so you can drive the shelf screws (**Photo 5**) and anchor the top of the cable (**Photo 6**). Take a coffee break while the epoxy sets up.

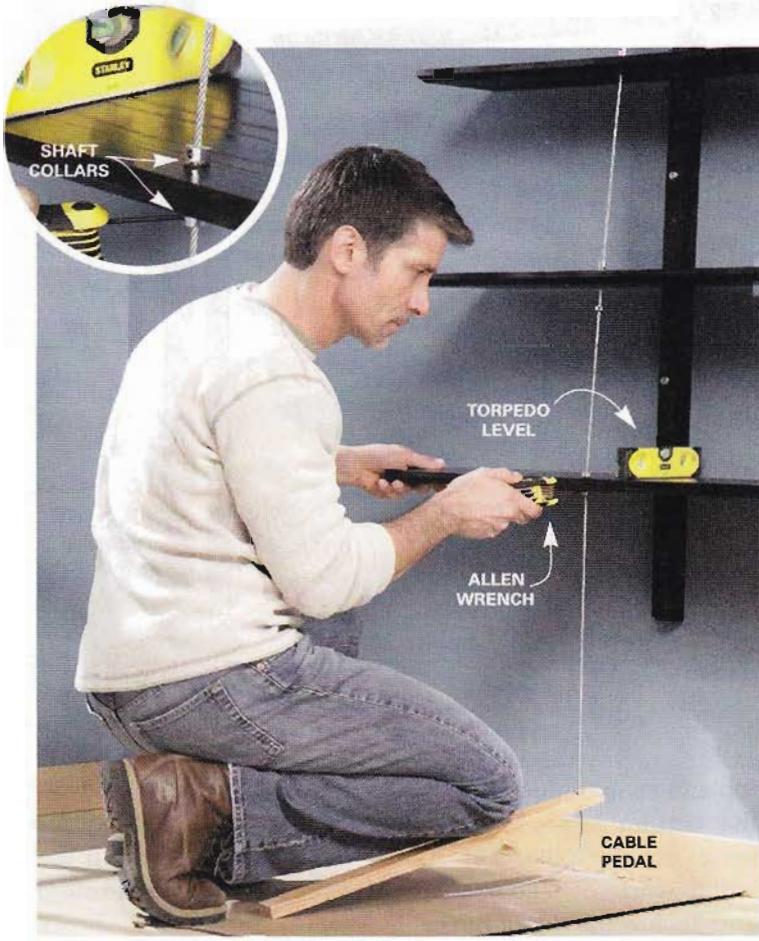
Mount the shelves

The shelf standards are spaced 32 in. on center to align with studs. So all you have to do is locate two studs where you want the shelves to go and mark them with masking tape. Setting the shelves on blocks (**Photo 7**) is a handy way to hold them up while you drive the first few screws. Start by driving one of the top screws. Before you drive the top screw in the second standard, check to make sure the shelves are level. After the two top screws are in place, make sure the standards are plumb before you drive the remaining screws.



6 ANCHOR THE CABLE WITH EPOXY

Loop the cable in the recess and hold it down with a washer and screw. Then mix five-minute epoxy and fill the recess with it.



8 TENSION THE CABLES

Tighten the cable using a scrap of wood with a hole in it to put tension on the cable while you tighten the setscrew on the collar below the lowest shelf. Then snug the remaining collars to the top and bottom of the shelves and tighten the collars.

We used No. 10 finish washers under the screws for a decorative effect.

Tighten the cable

At this point, the cable is slack and the collars are still loose. Your goal is to take the slack out of the cable and then



7 MOUNT THE BOOKSHELF

Locate two studs that are 32 in. apart with a stud finder. Screw the standards to the studs, making sure the shelves are level and the standards are plumb.



9 TRIM AND CAP THE CABLE

Use a side-cutting pliers or lineman's pliers to cut the cable. Leave 1/4 in. protruding. Cover the end of the cable with a cap nut. Use hot-melt glue or silicone caulk to hold the cap nut in place.

adjust each shelf so it's level from front to back while you tighten the collars (Photo 8). Use an Allen wrench to tighten the setscrews. Remember, you don't need too much tension on the cable, just enough to remove the slack. Finish up by cutting the cable and covering the end with a cap nut (Photo 9).



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favorite yard tools

At *TFH*, we're constantly talking about our favorite tools. This year, we decided to take the debate outside. Check out our favorite indispensable tools to make yard and garden work easier.

wheelbarrow

Indestructible wheelbarrow

If you're going to buy a wheelbarrow, get one that'll last you forever. Jackson wheelbarrows are heavy duty—they won't twist under heavy loads, and the large leg stabilizers let you set down loads without the wheelbarrow tipping over.

The large 16-in. front wheel makes pushing full loads easier. And the deep bed (6 cu. ft. or more) gives you plenty of space for mixing concrete or hauling dirt. Pro wheelbarrows like these cost \$100 and up—but you'll never have to buy another one. They're available at Lowe's and other retailers. To find a dealer near you, visit jacksonprofessional.com.

—Ken Collier,
editor in chief

Working dogs

Good dogs are like good tools—they get the job done. Amelia keeps rabbits and woodchucks out of the garden, but her finest talent is rounding up guinea fowl.

Weed trimmer upgrade

After being repeatedly frustrated by the string disappearing inside the head of my weed trimmer, I installed the SharperBlade Trimmer Blade (\$25). It's not a string—it's a blade made from nylon embedded in polymer, and it cuts like a lawn mower blade.

The blade never needs sharpening. As you use it, the polymer wears down to expose a new edge. I've been using mine for three years, and I'll never go back to string. The only downsides: It'll send a stone flying and it's hard on trees (don't get too close). You can install the blade on any trimmer that has a removable head and threaded shaft (nearly all do). Get it at sharperblade.com (866-766-9563).

— Brett Martin,
associate editor

Got a treasured outdoor tool?

Tell us about your favorite outdoor tool and what makes it special or different. We'll pay you \$100 if we publish it. Write to editors@thefamilyhandyman.com.

trimmer blade



mower



Gas-free mower for small yards

I never have to deal with gas, oil, exhaust fumes or starting problems with my Neuton mower—it runs on a rechargeable battery. And my wife likes it because it's easy to operate and push uphill.

Battery-powered mowers like this one are perfect for small lawns like mine. They eliminate the need to store fuel, are more eco-friendly than gas engines and are light enough to lift over retaining walls. Neuton mowers start at \$400 plus shipping from neutonpower.com (800-798-2921).

— Jeff Gorton,
associate editor

YARD TOOLS WE LOVE

Super-sharp pruning saw

I carry these Japanese pruning saws when I'm camping, canoeing or working in my yard. The saws have aggressive teeth, so they can saw through tough branches in less time than it takes to get out a chain saw. I even use them to cut through frozen branches.

On some models, the blade can be folded into the handle, allowing you to carry the saw safely in your pocket. The saws start at \$22 at home centers.

—Ken Collier,
editor in chief

pruning saws



Perfect gloves for dirty work

These gloves are ideal for gardening. The rubber palms protect your hands from muddy soil and prickly plants, while the mesh or cotton back lets air circulate so your hands can breathe. The gloves are tough but still let you pick up small objects. When they get dirty, just wash them and head back outside again. You can find them at home centers for about \$5.

—Nancy Scherer,
the boss's wife

Find expert advice on using fertilizer and seed spreaders; search for "broadcast spreader."

weed killer



Early-start weed terminator

I sprayed Ferti-lome's Weed Free Zone herbicide in the spring and it wiped out my creeping charlie, clover, dandelions and other broadleaf weeds.

What makes Weed Free Zone special is that you can use it in early spring when it's only 45 degrees F and the weeds are just starting. Most herbicides require you to wait until temps reach 60 degrees or higher—by that time weeds have had several weeks to grow. It also works fast—you can see it killing some weeds, like dandelions, in just six hours. A quart of concentrate costs \$35. It's available at some garden centers. To find a dealer, visit fertilome.com.

— Tom Fenenga,
staff photographer

Check out our
NEW Web site!
thefamilyhandyman.com

Jack-of-all-trades gardening tool

My all-in-one gardening tool has saved me a lot of trips to the garage. I use the bypass pruners for cutting back hydrangeas and spireas. The saw is handy for tearing through fibrous, difficult stems like rugosa rose canes and honeysuckle vines, which don't always cut cleanly with a pruning tool. I've been using the small knife blade to slice open bags of potting soil, mulch and manure. You can find the tools for \$15 and up at amazon.com.

— Elisa Bernick,
associate editor

gardening multi-tool

For tips on sharpening your garden tools, search for "sharpen garden tools." To learn how to keep your mower in tip-top shape, search for "lawn mower maintenance."

If you want the Leatherman Hybrid Gardening Multi-Tool shown, get it while it lasts at amazon.com. The company recently retired this version. 

the Well-dressed Handyman

Besides the right tools for a job, you want the right clothes. That means clothes that'll keep you warm in the winter, cool in the summer and comfortable year-round. This story features a selection of our favorite clothes—some tried-and-true items that have stood the test of time, and some new clothes that offer something different.

Since everything here was picked (mostly) by a bunch of hammer-swinging guys, we can't guarantee that you'll look fashionable wearing this stuff. But you will feel good.



ULTRA COMFORT

FAVORITE EARMUFFS: We've worn a lot of hearing protection, but earmuffs that have a built-in radio or MP3 player are our favorites.

Earmuffs like these (Peltor Digital Worktunes, WTD2600) muffle loud power tools while playing tunes.

And they fit so comfortably, you'll forget

you're wearing them. Cost: \$50 and up.

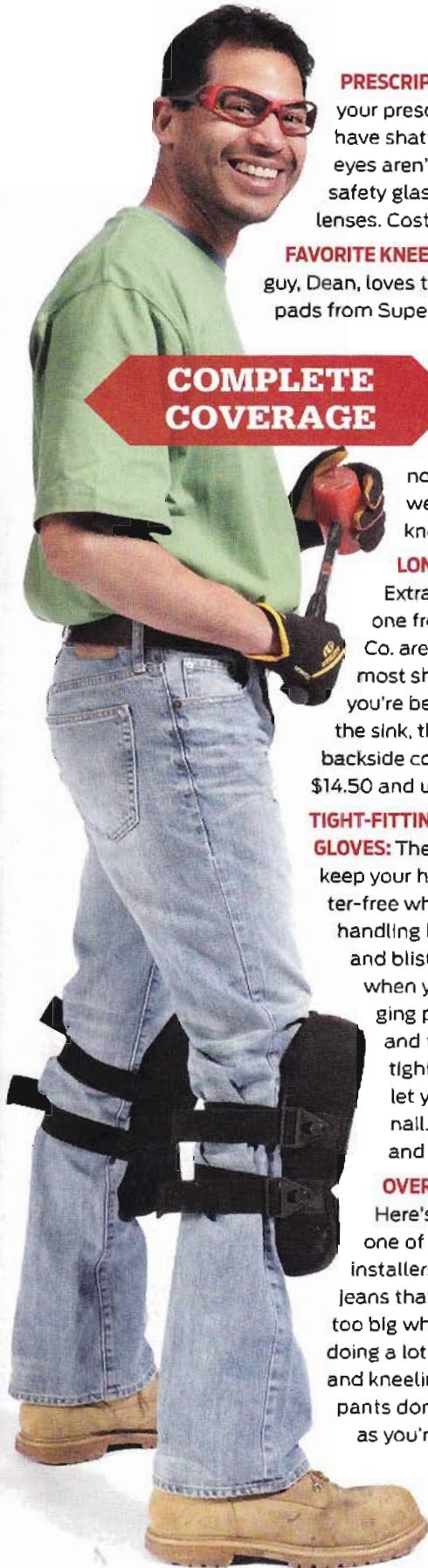
UV PROTECTIVE SHIRT: The sun's rays can penetrate cotton T-shirts and, over time, damage your skin. If you spend a lot of hours outside, wear a shirt that protects against the rays. Look for UV (ultraviolet) or UPF (ultraviolet protection factor) on the label. Cost: \$20 and up.

KEEPS-YOU-DRY UNDERWEAR: Comfort starts down under. Underwear that pulls sweat away from your body (like this Buck Naked underwear from Duluth Trading Co.) keeps you dry. These skivvies don't ride up and cling to your inner thigh either. Cost: \$14.50 and up.

COMPRESSION SOCKS: These socks reduce fatigue when you're on your feet all day. They're super tight to improve circulation and keep your feet and ankles from swelling. We like the Medical LegWear socks from Jobst (starting at \$30).

See p. 57 for buying information.

Andy's last DIY project was gutting his mom's rental house and ripping up the old carpet (yes, he had her permission!). At night he attends grad school, working toward his MBA.



COMPLETE COVERAGE

PREScription SAFETY GLASSES: If your prescription glasses don't have shatter-proof lenses, your eyes aren't fully protected. These safety glasses have prescription lenses. Cost: \$55 and up.

FAVORITE KNEE PADS: Our tile guy, Dean, loves these Platinum knee pads from SuperiorBilt. They support your knees and shins and distribute your body weight down your legs. You're not putting all your weight on your kneecaps. Cost: \$40.

LONG-TAIL T-SHIRTS:

Extra-long tees like this one from Duluth Trading Co. are longer than most shirts. When you're bent over under the sink, they've got your backside covered. Cost: \$14.50 and up.

TIGHT-FITTING WORK GLOVES:

GLOVES: These gloves keep your hands splinter-free while you're handling lumber and blister-free when you're digging postholes, and they fit tight enough to let you hold a nail. Cost: \$15 and up.

Oversize JEANS:

Here's a tip from one of our flooring installers—wear jeans that are one size too big when you're doing a lot of bending and kneeling. Roomier pants don't pull tight as you're working.



Dominic built an old-fashioned farm porch on his house last winter. He's a firefighter and a youth hockey coach.



BANDANA: A bandana keeps sweat out of your eyes and protects your head from sunburn. And unlike baseball caps, sweaty bandanas can be tossed in the washer and dryer and not lose their shape.

TINTED SAFETY GLASSES: We like these safety glasses and sunglasses in one—one-eye protection plus shade. And they look cool.

Attach a \$3 strap to hang the glasses around your neck when you're not wearing them. Cost: \$8 and up.

WICKING T-SHIRTS:

These "wicking" T-shirts are made mostly of polyester to pull sweat away from your body. We've been wearing them, and they really do keep you drier. Cost: \$12 and up.

CARPENTER SHORTS:

We wear these shorts everywhere in the summer. They have extra pockets for hand tools and cell phones, and the seams have extra stitching to withstand abuse. Cost: \$20 and up.

See p. 57 for buying information.

Jay just replaced the base, trim and crown molding as part of his five-year, "uber-cheap" remodel of his house. He works as a painter, a drywaller and a skimcoater.

BIFOCAL SAFETY GLASSES. If you switch between safety glasses and reading glasses, get bifocal safety glasses. They protect your eyes while letting you read the fine print. The guys in our office who wear them say they work great. Cost: \$10 and up.

TOOL VEST. Al, our electrician, loves vests from Skillers. You can fill the pockets with tools so they're always at your fingertips. And they're not all bunched together like in a tool belt. Cost: \$60 and up.

CARPENTER PANTS. We wear these pants in the shop, the office and everywhere else (well, almost!).

They fit nicely over work boots and have a ton of pockets for tools, glasses and an iPod. Cost: \$22 and up.

GLOVES FOR DIRTY JOBS. With a rubber palm and cotton back, these gloves are perfect for grabbing a scummy pipe or cleaning crud out of gutters. We wear them whenever we're handling grimy parts or materials. Cost: \$5.

WALKING TOOLBOX



WIDE-BRIM HAT. When you're ready to leave your baseball caps behind, graduate to a wide-brim hat—it'll do a much better job of shielding your face and ears from the sun. This one from Tilley has a secret pocket inside for money, papers or keys. Cost: \$60 and up.

INSECT REPELLENT CLOTHING. ExOfficio says its Insect Shield clothes protect against insects for up to 70 washings. We don't know how effective they are, but they look and feel good. Cost: \$60 and up for shirts; \$85 and up for pants.

LIGHTWEIGHT, WATERPROOF BOOTS. We like these boots from Muck Boots when working in wet, muddy conditions. Rinse them off and they're as good as new. The breathable liner helps keep your feet from getting hot.

MUD, SUN, BUGS? NO PROBLEM!

and smelly. Unlike cheap rubber boots, these rubber boots stay flexible for years and have a super thick heel. Cost: \$75 and up.



Ally's latest DIY project was restoring some old furniture with her dad. She is a Shakespearean actress.

Ed's latest DIY project was installing a new bedroom floor made from salvaged wood. His day jobs are acting and working for a telecommunications company.

Buyer's Guide

BATTERY-OPERATED CLOTHING

COLUMBIA SPORTSWEAR CO. Clothing, jackets, footwear, including the Bugathermo boots. (800) 622-6953. columbia.com

GERBING. Jackets, pants and gloves. (866) 371-4328. gerbing.com

THERMOLOGIC. Jackets, vests, gloves and hats. (877) 945-6837. thermologic.net

OUTDOOR GEAR

CABELA'S. Outerwear, underwear, shirts, pants, footwear, work wear and rainwear. (800) 237-4444. cabelas.com

CARHARTT. Shirts, pants, outerwear and footwear. Including insulated overalls and jackets, carpenter's jeans, work shorts and dungarees. (800) 833-3118. carhartt.com

DICKIES. Shirts, pants, outerwear and work scrubs, including insulated overalls and jackets, work pants and carpenter's shorts. (866) 411-1501. dickies.com

EXOFFICIO. Outerwear, pants, shorts, shoes, shirts, including Insect Shield clothing. (800) 644-7303. exofficio.com

SKILLERS USA. Work clothes, pants, knee pads and multi-pocket vests. (800) 325-8707. skillersusa.com

T-SHIRTS, UNDERWEAR AND SOCKS

DULUTH TRADING CO. Outerwear, underwear, shirts and pants, including Buck Naked underwear and long-tail T-shirts. (800) 505-8888. duluthtrading.com

JOBST. Compression socks. (800) 537-1063. jobst-usa.com

UNDER ARMOUR. Shoes, underwear and athletic clothing, including wicking and UPF shirts. (888) 727-6687. underarmour.com

BOOTS

MUCK BOOTS. Boots, shoes and clogs. (800) 777-9021. muckbootcompany.com

HATS

TILLEY. Hats, underwear, socks, shirts, shorts and pants. (800) 363-8737. tilley.com

GLOVES

ATLAS GLOVE. Rubber palm, breathable-back gloves. (800) 426-8860. Available at hardware and garden stores

IRON CLAD. Work gloves, pants, UPF shirts, jackets, underwear and compression socks. (310) 643-7800. ironclad.com

MECHANIX WEAR. Work, racing and high-tech gloves. (800) 222-4296. mechanix.com

EYEWEAR, HEARING PROTECTION AND KNEE PADS

MSA SAFETY WORKS. Hearing, head and eye protection, including tinted safety glasses. (888) 672-4692. msasafetyworks.com

PELTOR. Hearing protection. (800) 444-4774 for technical support. peltor.com

PHILLIPS SAFETY PRODUCTS. Safety glasses, including prescription safety glasses. (888) 440-9797. phillips-safety.com

RADIANS. Hearing, head and eye protection. (877) 723-4267. radians.com

SUPERIORBILT. Platinum knee pads. (800) 272-8786. custombuildingproducts.com

BEAT THE COLD

HEATED HAT. Moms everywhere are gonna start saying, "Be sure to wear a heated hat!" This one from Thermologic has flaps to keep your noggin and your ears warm and rechargeable batteries that last up to four hours. We haven't tested it in a Minnesota winter, but the technology shows a lot of promise. And it's one comfortably fitting hat. Cost: \$80.

HOODED SWEATSHIRT. If you're going to wear a sweatshirt, go with a hooded one. The hood keeps your neck warm, even if you don't pull it over your head. Cost: \$10 and up.

FAVORITE OVERALLS. Insulated coveralls feel like a straitjacket. But insulated overalls let you easily lift your arms and twist your torso. They're what *TFH* editors wear in the winter (and have been wearing for decades). Cost: \$50 and up.

HEATED GLOVES. After wearing battery-powered gloves for three years, we have just one complaint: They sometimes get too hot (so we turn them off). The 7-volt batteries in these Gerbing gloves last up to 10 hours per charge. Cost: \$150 and up.

HEATED BOOTS. And for the totally electric DIYer, there are battery-powered Bugathermo boots from Columbia. They'll warm your tootsies for up to eight hours per charge, and they feel very flexible. Since they're new, we don't know how they'll hold up long term. Cost: \$250. Ouch!

Mike's latest DIY project was installing a hardwood floor in his own house. By day, he's a roofer, and he also refinishes floors.



FATHER'S DAY



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GIFT GUIDE

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THE FINISHING TOUCH TO A PERFECT FATHER'S DAY

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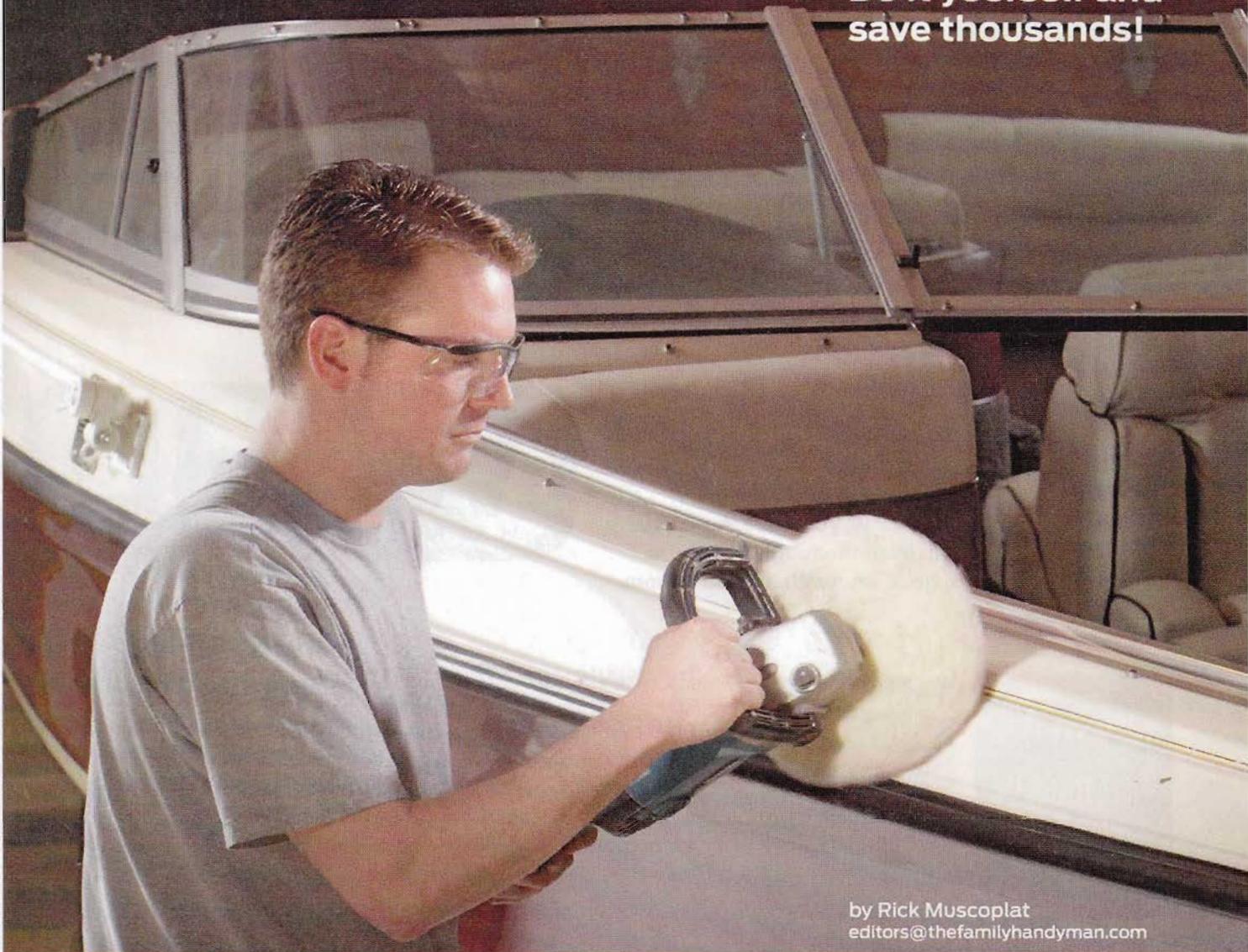
SEAL THE DEAL WITH DAD

Give your dad a Father's Day gift he can use again and again. Spend some quality time helping him to protect his deck and keep it looking beautiful, or do it all for him with Thompson's. Either way, it's a gift he can enjoy all summer long. Visit [www.thompsonswaterseal.com](http://thompsonswaterseal.com) for more information.



Fiberglass face-lift

Fix boats, personal watercraft, even truck toppers. Do it yourself and save thousands!



by Rick Muscoplat
editors@thefamilyhandyman.com

Even the best boat captain has had a docking turn into a scuff-and-chip event. But you don't have to pay astronomical marina fees to get your boat fixed. You can do it yourself with advice from expert fiberglass repair specialist Chris Hassis. He's fixed boo-boos on fiberglass personal watercraft, snowmobiles and

pickup toppers, and even luxury yachts. You'll need the right tools and materials—and lots of patience. But he'll show you how to save a ton of money and make your boat look like new. We were astounded at this refurbished boat's rebirth. The boat now looks every bit as good as it did in the showroom.

Most hired-out repairs of any type are roughly 50 percent labor and 50 percent materials. Not so with this fix—hull repairs are all about labor. The repairs on this boat would cost roughly \$3,000 at a shop. But the materials only cost \$250 and the buffer \$150! So roll up your sleeves. Your repairs might not be perfect, but your boat will look unbelievably better than it did before. Just don't try to rush or skimp on the materials. And know that this job is much bigger than it looks.

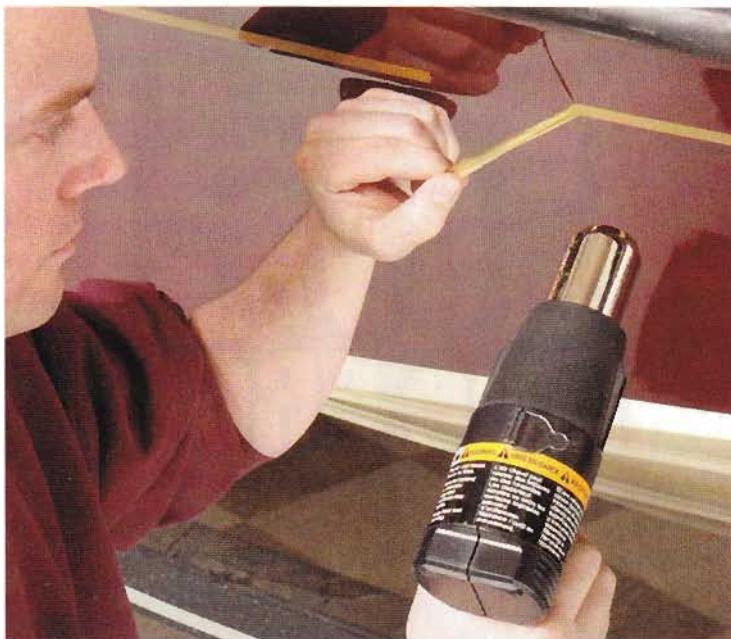
All fiberglass boats have a thick structural core of fiberglass strands impregnated with polyester resin. But the part you actually see is the gel coat. That's the thin layer of pigmented resin that gives the boat its sheen and color. Most light scratches are in the gel coat layer. They can be sanded out and the area built back up with new gel coat. But if they penetrate the core, they need to be filled. You can tell that the scratch is into the core if you see fiberglass fibers (Photo 2).

Remove graphics

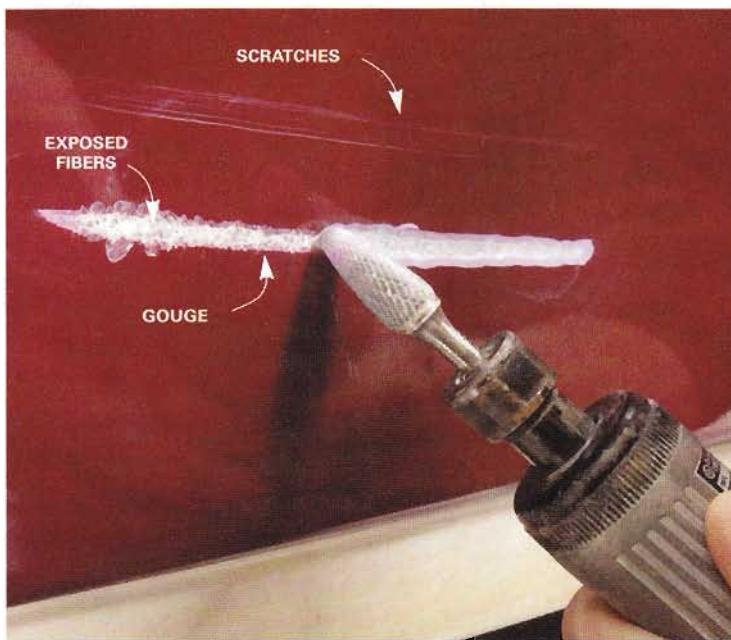
No boat spiff-up is complete without new license numbers, transom names and pinstripes. Just do an Internet search for "boat graphics" and you'll find thousands of options to choose from. Find stripes by searching for "boat pinstripes." Remove the old ones by warming them with a heat gun (Photo 1). But be careful—if you overheat the surface, you can burn the gel coat. If yours are painted on, sand them off with 1,200-grit sandpaper.

Fixing gouges and deep scratches

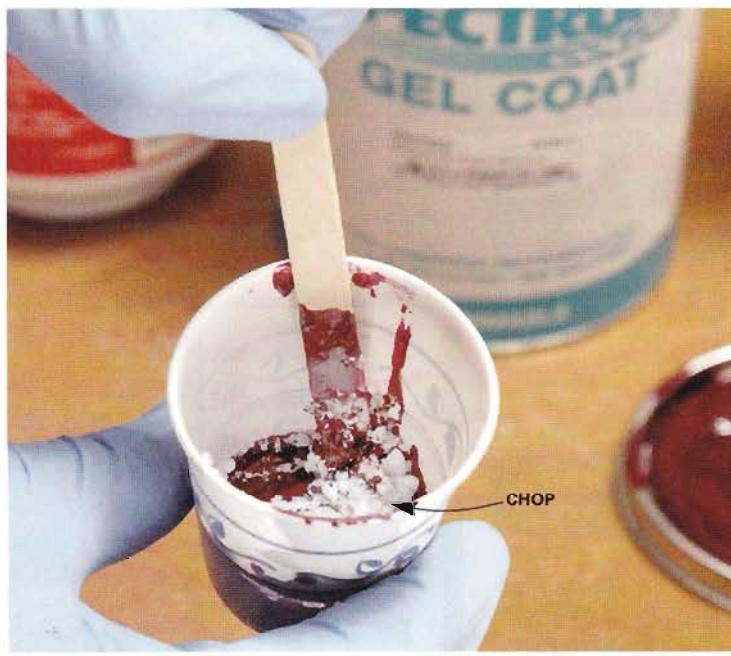
To fix gouges and deep scratches, you'll need "chop" (powdered fiberglass) filler, gel coat and gel coat reducer. Jot down your boat's model and serial numbers and contact the manufacturer to order gel coat (about \$100 per qt.) to match your boat's color. It may not be an exact match, but it'll be a lot closer than mixing colors from scratch. Then order some gel coat reducer (Patch-Aid is one brand; \$49 per qt. from minicraft.com or spectrumcolor.com) to thin the mixture enough to go through the spray gun. For gouge repair, you'll mix chop filler (Chris uses Cab-O-Sil, which is available for \$8 per qt. from



1 REMOVE OLD NUMBERS AND PINSTRIPES
Set the heat gun to a low setting and peel off the old decals and numbers. Use adhesive remover to get rid of any residue.

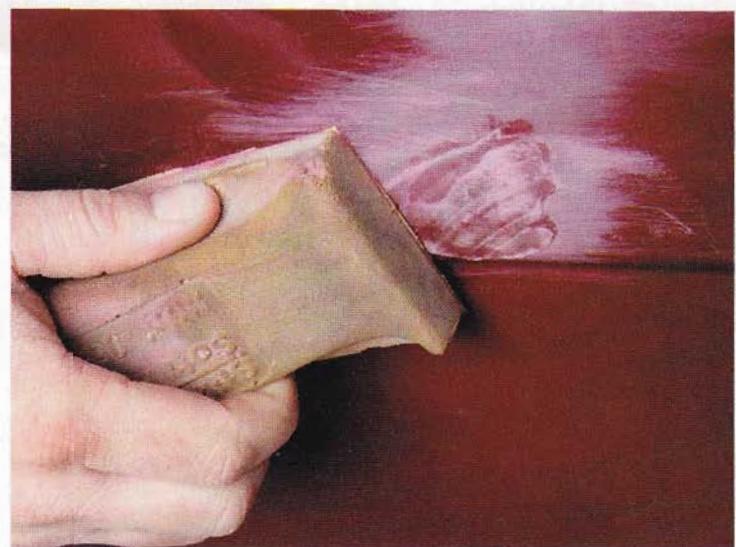


2 PREPARE DEEP GOUGES
Cut a U-shaped groove into the gouge with a high-speed die grinder or rotary tool and a burr nose bit. Taper the edges of the gouge to eliminate sharp edges in the old gel coat.



3 PREPARE THE FILLER
Stir in enough chop to get the mixture to the consistency of peanut butter. Then add hardener (follow the manufacturer's ratio) and stir, stir, stir.

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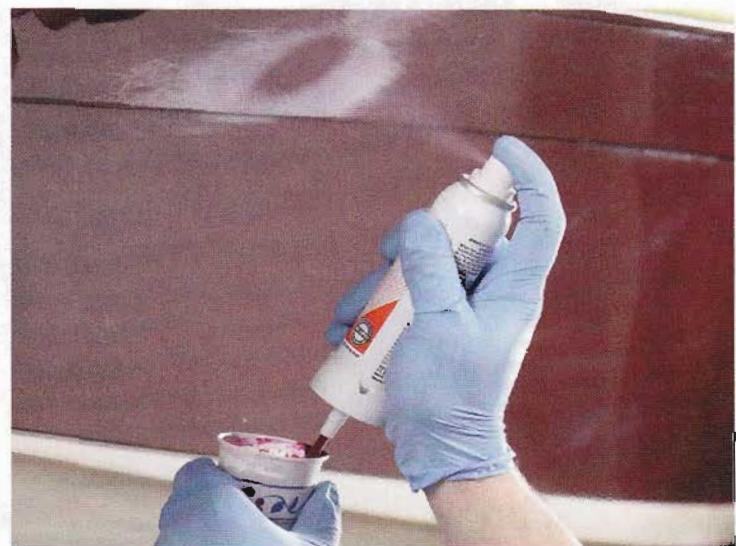


4 FILL IN THE GOUGE

Scoop the gel coat putty into the gouge. Then press it into the fibers with a craft stick. Add more putty until you're about 1/32 in. above the surface. Clean up any goofs with acetone.

5 SAND THE PATCH

Knock down the excess putty with 80-grit sandpaper and a rubber sanding block. Then switch to 240-grit.



6 MIX NEW GEL COAT

Add the hardener after you've mixed in the reducer. Follow the manufacturer's recommended ratio of hardener to gel coat.

7 SPRAY ON THE FINAL COAT

Pulse the sprayer to get short bursts of gel coat. Feather the spray along the edges to reduce sanding.

epoxy5050.com) with the gel coat to create a thick paste. Then pick up paper cups, stir sticks, acetone (for cleanup) and rags. You'll also need a disposable spray gun (Preval is one brand; \$7 online or at paint and art supply stores). To finish the job, you'll need a professional-type buffer. The variable-speed feature is important, and so is the high power of a professional buffer. So don't skimp on one or think you can get by with a \$29 wax polisher. Use a wool buffering pad (such as a Dewalt DW4988 pad; \$23), and buffering compound (3M Imperial Compound and Finishing Material is what Chris uses). Get them from

amazon.com, westmarine.com or a marine supplier.

Grind out gouged areas with a V-shaped grinder bit (Champion SF1; \$14 from heavydutystore.com; Photo 2). Sand out the light scratches, starting with 80-grit and ending with 240-grit.

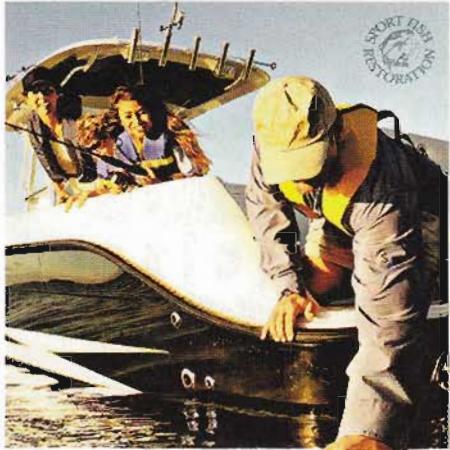
Mixing gel coat is a messy and stinky process—so wear chemical-resistant gloves, safety goggles and a respirator. Start with a small amount of gel coat and stir in the hardener to make a putty that's the consistency of peanut butter (Photo 3). Once you add the hardener, you've only got a 10- to 20-minute "open" time, so mix small batches and work on one gouge at a

time. Thorough mixing is critical to proper curing. Spend a full minute stirring. If you don't, you'll end up with patches of sticky resin that can take days to harden.

Overfill gouges so the filler mounds slightly. You'll sand it flush after it cures. Curing can take one to two hours—depending on humidity levels. So test it by touch. If it's sticky, it's not fully cured. Once it's fully hardened, sand it with 80-grit sandpaper (Photo 5).



PRECHARGED SPRAYER



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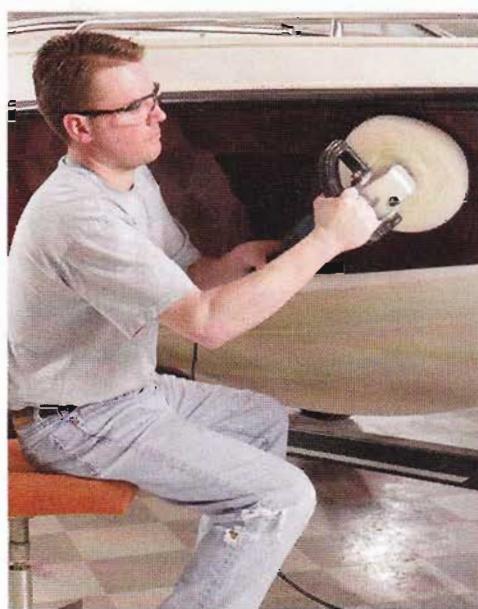


TAKEMEFISHING.org

Now you're ready to mix a fresh batch of gel coat (without the chop) and spray the scratched and patched areas (**Photos 6 and 7**). Chris recommends using a disposable spray gun and paper cups. Unthinned gel coat won't go through the sprayer. Add the recommended amount of reducer (read label directions) and hardener and mix the ingredients. Spray the patched areas with short bursts. Spraying gel coat isn't like spraying paint. It splatters on and has to be sanded and buffed to get to a smooth gloss. So don't be disappointed that the finish isn't paintlike right away.

Final-sand, buff and wax

Wait for the gel coat to cure. Sand the repairs with 600-grit and then 800-grit sandpaper. For the perfect finish, sand with 1,200-grit wet/dry paper then buff (**Photo 8**). Apply buffering compound directly to the pad. Work on a 2 x 2-ft. area and use light to medium pressure at a fairly low speed. Reduce pressure as the compound starts to dry. Wipe off the haze as you go. Apply the graphics and then wax.



8 BUFF TO A GREAT SHINE

Take a seat and heft the buffer into position. Start slowly and buff small sections at a time.



9 APPLY NEW DECALS

Position the new boat numbers and tape the sheet in place. Then lift the sheet up, remove the backer and press each number individually. Don't try to apply them all at once—they'll wrinkle.

Order of events

- Wash and rinse the boat. That will show you all the dings that need fixing. Mark them with masking tape so you won't forget any.
- If you're replacing pinstripes, license decals or other graphics, remove them next.
- Fill any deep gouges and spend your time sanding out scratches while the filler sets up.
- Apply gel coat to the filled gouges and finish to the scratches and then final-sand the filled gouges.
- Buff all the repaired areas and then the rest of the boat.
- Apply any graphics to finish up.

Color-matching gel coats

Sometimes you can't get your hands on factory gel coat (your boat is too old or the manufacturer is out of business). Then you have two options. You can order an off-the-shelf color that's close to yours and decide that "close enough is good enough." The other option is to custom mix, but be aware that this is no easy task. Buy a color chip chart for off-the-shelf colors (from a local marine supplier, or get the No. 01900 color chart from rayplex.com for \$12). Mix your own color with a kit (No. 33114; \$35) from rayplex.com (905-579-1433).



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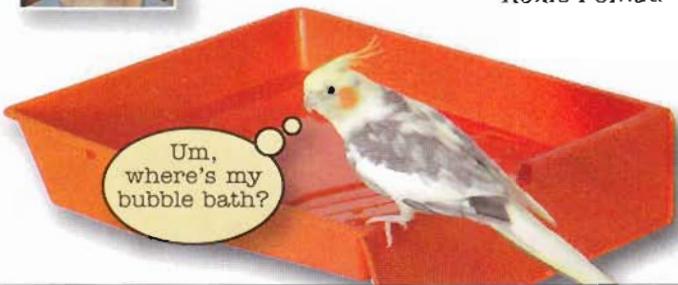
from our readers ■ editors@thefamilyhandyman.com

Paint tray birdbath

Molly, our cockatiel, loves to take baths—and her favorite bathtub is a plastic paint tray. The ribs on the bottom of the tray give her traction, and the tray's slope lets her wade in the shallow water until she's ready to move into the deep end. Paint trays are cheap and easy to clean, and they also make great turtle pools (but don't tell Molly).



Roxie Polnau



Um,
where's my
bubble bath?

Bunny rabbit A/C

Hot summer days are tough on bunnies. Here's a great way to recycle plastic water bottles and keep your bunnies cool at the same time. Fill the bottles with water, freeze them solid and then set them out in the rabbit hutches. The bunnies love to laze against the bottles as the ice thaws. This works great with puppies, too.



Maureen
McLaren

Ant-proof pet food dishes

Every summer, ants invade our kitchen, and one of their favorite destinations is our dog's food bowl. We came up with this simple way to keep them out of her bowl—we set her dish in a pan of water. Not only does it keep the ants out of the dog food, but Sage can take a gulp of water from the pan whenever she needs a drink.

Joanne Jensen



No-barking zone

Does your dog's barking in the car drive you nuts? Try this trick: Every time your dog barks, close the windows (watch her head). She'll quickly learn that barking means no fresh air and no slobbery tongue flapping in the breeze.

After a few car rides, you'll both be driving around in blissful silence.

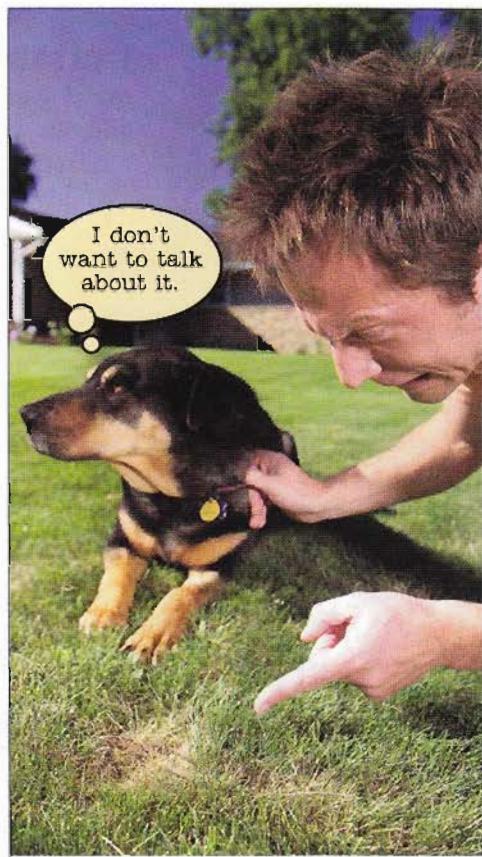
Troy Koonce



Bell training for dogs

Here's an easy way your dog can let you know she needs to go outside without any barking or scratching at the door. Hang some bells from the doorknob and your dog will quickly learn to associate the sound of the bells with the door opening. Soon she'll nudge them herself. You can speed things along by jiggling the bells and saying "Outside? Wanna go outside?" for a few days every time your dog goes out. Your dog will be able to "talk" to you about going outside even when you're somewhere else in the house.

Mitch Gustafson

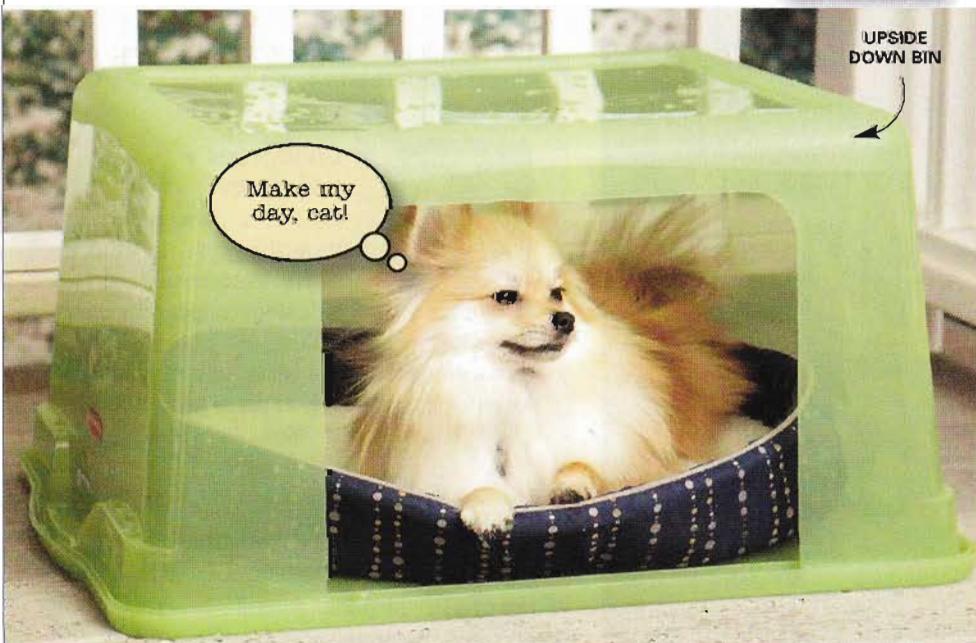


BILL ZUEHLKE

Rainy-day doghouse

I was eyeing a nice little doghouse that would hold up in the rain, but the \$90 price tag was a little rich for my blood. I decided to make my own for a fraction of the price using a plastic storage bin. I cut a small hole in it, flipped it over on its lid and stuck a dog bed inside it. Linus loves watching the rain from inside his snug little house, and I saved \$85! The only problem is that our cat likes it so much I can't keep her out of it. Guess I'm going to have to make her one too.

Corey Ash



Dog-spot solutions

Growing a neat lawn in an area frequented by dogs is difficult but not impossible. Acidic dog urine discolors and kills the grass, leaving a patchwork of brown spots. Here are a few tricks for keeping the grass green.

1. Apply lime or gypsum regularly to neutralize the acid in the soil and restore the balance that grass prefers.
2. Water the area heavily each week to dilute the urine.
3. Don't fight it! Replace the grass with small round gravel (pea rock) bordered with stone cobbles or brick. Place landscape fabric beneath the rock to prevent weeds from popping up and your problem is solved, permanently. And another plus—less grass to mow!

We want your feedback!

Help us improve *The Family Handyman* by sharing your opinion of this and other articles. See p. 4 for details.



I prefer sparkling water.

Portable water dish

My dog and I take long walks together, and on hot days we both get pretty thirsty. Before leaving the house, I always stuff a plastic shower cap in my pocket. That way, I can give my dog a drink from any handy tap, drinking fountain or my water bottle whenever she needs a slurp.

Karen Hamilton



SHOWER CAP

Bird retrieval

A pet bird that gets loose can be difficult to recapture. Try closing the curtains and turning off all the lights. Birds don't usually fly in the dark, so it'll land and be easy to spot with a flashlight.

Wind-proof dog dishes

How many times have you gone outside to fill your dog's food or water dish only to find that it's blown halfway across the yard? The really heavy pet dishes are expensive, but here's a cheap dog dish that won't blow away. Fill a plastic ice cream bucket with a couple of inches of sand, and then put a second container the same size inside it. Use the inside bucket as your dog's dish and it'll stay right where you put it.

Rick Castillo

Who ate my fudge ripple?



SAND

Pet tips from our Field Editors



High-tech pet doors

After the neighborhood raccoon discovered my doggy door, I installed a locking door that unlocks when it detects the transmitter on my dog's collar (\$100 to \$170). Unlocking sometimes takes a few seconds and the door has jammed a few times, but it keeps out the wildlife and stops winter drafts much better than the old low-tech door. There are also motorized models that open the door automatically (starting at about \$250). To browse a wide variety of doors, check out petdoors.com (800-826-2871).

Thomas Czerwinski, Austin, TX



PETSAFE



Paws off countertops

Here's a great way to teach cats that countertops are off limits: Lay contact paper along the edge of the top, sticky side up. Cats hate the stuff and will avoid your countertops after a few sticky experiences.

*Bess Knudsen, Deltona, FL
[Bess isn't just a field editor; she's also a professional animal behaviorist.]*



Childproof = pet-proof

Like kids, pets get into places they shouldn't. To stop them, I turn to inexpensive childproofing products: latches for cabinets, locks for doors, and gates for doorways. Discount stores carry some of these products. For a wider selection, shop online. Kidsafeinc.com is a good place to start.

Jim Duffy, Mays Landing, NJ

Want to become a Field Editor?

We're always looking for volunteers who are willing to share their experiences. Whether you're a pro or a DIY beginner, e-mail us: editors@thefamilyhandyman.com.

Low-fat dog treats

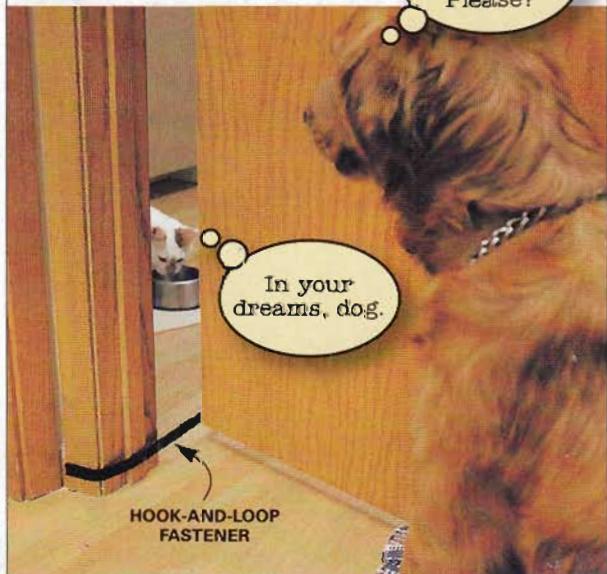
My vet suggested we replace our overweight dog's high-calorie treats with plain rice cakes. Personally, I think they're tasteless, but our dog goes nuts over them! They're super low fat and they're a lot cheaper than his regular treats too.

Charlotte Dix



Private dining

To stop my dog from eating the cat's food, I moved the cat's dish into the laundry room. Then I attached adhesive-backed hook-and-loop fasteners to the back of the laundry room door and to the front of the trim. After filling the dish, I hook up the fasteners so the door only opens 5 in. Now my cat can come and go and eat his meal in peace.

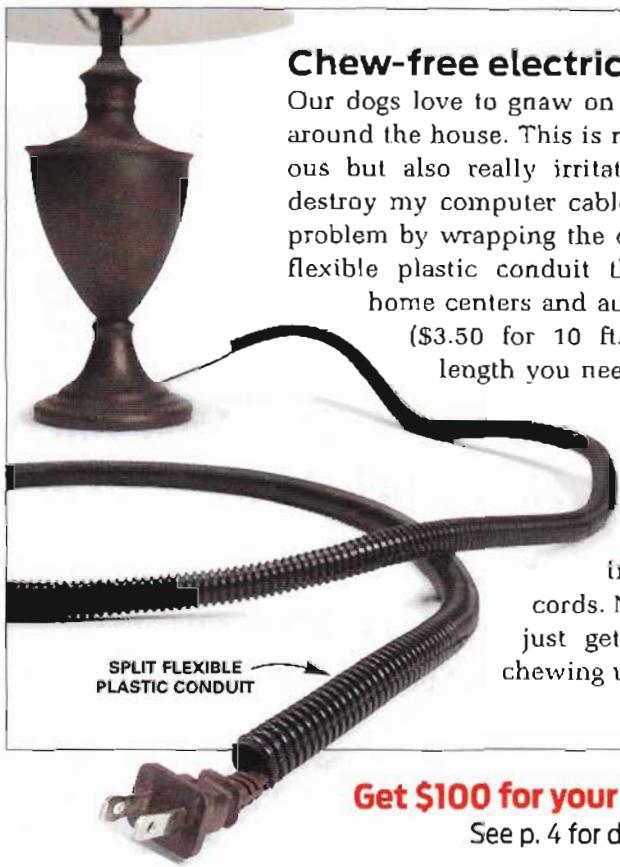


RAMON MORENO

Chew-free electrical cords

Our dogs love to gnaw on electrical cords around the house. This is not only dangerous but also really irritating when they destroy my computer cables. I solved the problem by wrapping the cords with split flexible plastic conduit that you get at home centers and automotive stores (\$3.50 for 10 ft.). Just cut the length you need and push the cords into the presplit slot. Our dogs have completely lost interest in the cords. Now if we could just get them to stop chewing up our slippers!

Ann Bursch



Get \$100 for your Handy Hint!

See p. 4 for details.

Easier bath time

For a calmer and easier bath time, make a dog washing station in your shower. Cover the drain with a hair catcher (\$3.50 at hardware stores) to prevent fur from clogging it. Cut a hole in a bath mat so it fits over the drain and lay it in the shower to prevent your dog from slipping around. Temporarily replacing your showerhead with a handheld sprayer (\$10 at home centers) gives you more control and lets you avoid spraying water into your pet's ears. Dogs like the extra space in the shower, you don't have to reach awkwardly over the tub and everyone involved will find bath day a whole lot more pleasant.

Jillayne Houlton





Build an outdoor dog kennel

QUESTION

I want to build an outdoor dog kennel. Can you give me some guidelines for sizing the kennel and choosing materials?

We contacted Lisa Peterson, director of communications for the American Kennel Club, for design advice and to find out some of the most common mistakes.

We were hoping to get a sizing formula. But it turns out there's no such thing. Kennel sizing is based on how much time your dog will be spending in the kennel and how much room you have to spare. If your dog is going to be

outside all day, he needs a larger kennel so he can run and exercise. If you make it too small, he'll take every opportunity to "get even" with you and your neighbors with nonstop barking and other bad behaviors. So larger is better.

For walls and doors, chain link fencing is your best bet (4 ft. tall minimum, and taller if you have a larger dog). It's affordable and easy to assemble, and you can buy premade wall and door sections at any home center. Buy a spring-loaded "snap clip" to secure the swing-down latch (some dogs can fig-

ure out how to open those latches and escape).

If your dog is a digger, you'll have to embed a "direct burial" treated 2x12 below the fence. Or bury the fence itself about 1 ft. into the soil (see **Figure A**). Those methods aren't foolproof, but they'll usually prevent a "great escape." Screen off any sides that face streets or sidewalks by sliding privacy slats through the fencing. That'll cut down on barking and overall stress.

When it comes to flooring material, concrete may seem like the best choice because you can slope it for drainage

and it's easy to clean. But it's actually a mistake. The hard floor will, over time, cause calluses, worn pads, splayed toes and painful joints. Instead, Lisa recommends either large pea gravel (some dogs eat smaller gravel) or large flat stones (flagstone). The irregular shapes actually help your dog develop stronger paws. But before you throw down gravel or set the stones, take the time to install a sand base for drainage at least 6 in. deep if you're building on clay. Then lay down landscaping fabric to prevent weed growth. You'll probably scoop out gravel along with the poop, so it'll need replenishing every year. If you have enough space,

the ultimate dog oasis is a grassy area within the kennel.

Several companies offer composite flooring materials for dog kennels. It definitely looks better than gravel and is easy to clean. But if your dog likes to chew things, it's not a good choice—unless, of course, your vet does free surgery. Plan on a surfaced path to the kennel. If you just have grass, you'll soon have a muddy path. All that mud will get tracked into the house.

Finally, dogs need protection from the elements. A doghouse isn't mandatory, but if you don't provide one, you should at least install a small roof and a windbreak. Dogs can withstand cold,

but not cold and wind or rain. An elevated cot will get them off a freezing cold or searing hot floor. Even if you include a doghouse, provide other shaded areas in the kennel (landscape fabric stretched across the top works well).

When placing a doghouse, avoid the common DIY mistake of setting it in a corner (the roof is a perfect launching pad for a jump-over). Instead, locate it outside the kennel with an entrance hole cut through the fence. Or place it in the center of the kennel. If you're stuck with a corner location, make the fence higher in that area to prevent jump-outs.

QUESTION

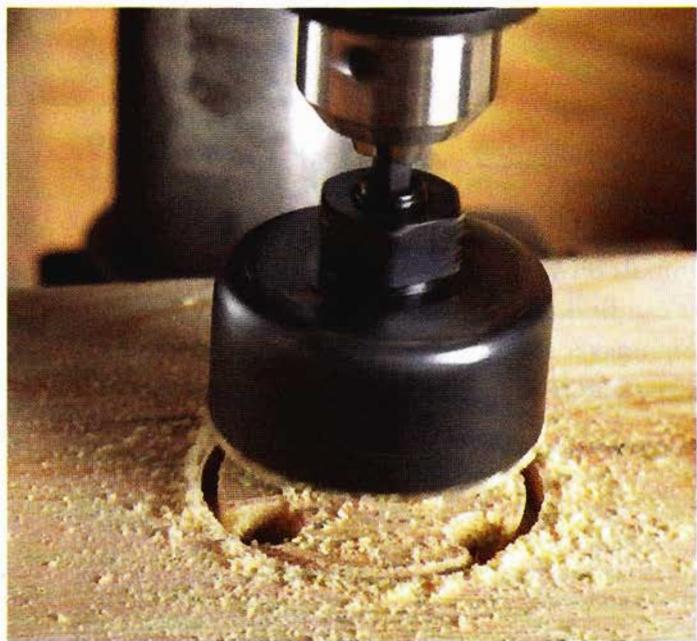
Hole saw hassles

I dread using hole saws in wood or metal. Wood takes forever, and metal dulls the teeth. I'm also confused by the different varieties—and the huge price range. Which type should I get? Is there a way to speed up the drilling process?

We talked to Matt Savarino, the hole saw expert at Lenox Tools, to get to the bottom of your dilemma. Matt told us that most DIYers don't need expensive hole saws. In fact, for occasional cuts in wood, he says the cheapest carbon steel saws work just fine (see Photo 1). But don't try using them in metal—that'll destroy the saw teeth in seconds.

But if you're cutting a hole in your steel door for a dead bolt, or cut lots of holes, step up to a bimetal hole saw. The teeth are made from a harder steel than the shell, so they last longer. But that doesn't mean they're indestructible. Always provide lubrication when drilling into metal. Cutting oil is best, and even ordinary motor oil is better than nothing (see Photo 2). You can use bimetal saws to cut through all types of materials except ceramic, porcelain, granite and the like. For those, you need a carbide-grit hole saw.

Even if you drill relief holes, hole saws take forever to drill through thick wood. If the holes are less than 1-1/2 in. in diameter, don't bother with hole saws; use spade bits.



1 HOLES IN WOOD

The best way to cut holes faster is to drill relief holes to exhaust wood chips and keep the blade cooler.



2 HOLES IN METAL

In metal, always use bimetal hole saws and keep the teeth sharper longer by using lubricating oil.

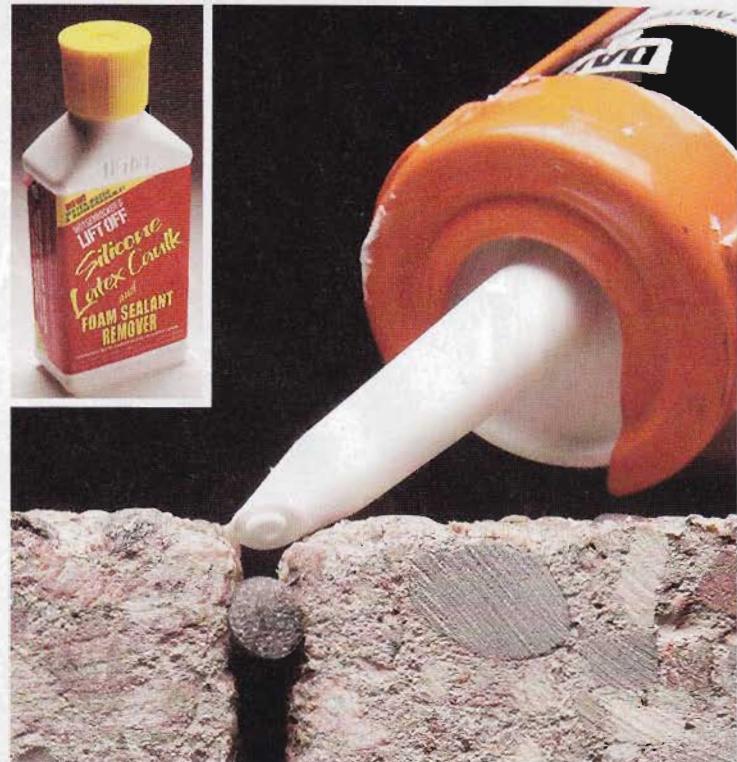
QUESTION

Fill big gaps before caulking

I keep filling the control joints in my concrete patio, but the caulk keeps peeling away from both sides of the crack. What's going on and how can I fix it?

The solution is to use a combination of backer rod (\$2.50 to \$4 for 20 ft. at home centers) and caulk. First remove the caulk that's in the gap. For latex caulk, pour caulk remover (such as Lift Off; about \$6 at home centers and hardware stores) over the caulk, let it sit for two hours, then dig out the caulk with a stiff putty knife. For silicone or polyurethane caulk, use mineral spirits. If you're not sure what type of caulk you have, start with the caulk remover. For stubborn sections, give the remover more time to work, then continue scraping. You don't have to remove every last piece of caulk, especially if it's at the bottom of the gap, but the top 1 in. of the crack needs to be cleaned off pretty well.

Use a backer rod with a diameter that's 1/8 to 1/4 in. larger than the crack. Push the rod into the gap so the top is about 1/4 in. below the concrete surface. Fill the gap with caulk, then smooth the caulk with a plastic spoon. Be sure to use a caulk that's formulated for use with concrete (it'll say so on the label).



BACKER ROD IS THE KEY

Insert backer rod into the gap, then run a bead of caulk over the top. For a smooth, even bead, tool the caulk with a plastic spoon.

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Folds Up Flat!

A large advertisement for the Cyclone Rake. It features a man operating a green riding lawn mower with a yellow Cyclone Rake attachment. The Cyclone Rake is sucking up fallen leaves from a lawn. A black carrying case for the Cyclone Rake is behind him. A red starburst graphic in the bottom right corner says "Try it Risk-Free for All of 2010". The text "THE AMAZING Cyclone Rake®" is prominently displayed at the top. Below it, the headline "Effortless Property Cleanup!" is shown. A detailed description of the product's features follows. At the bottom, there's a call to action with a phone number, website, and price information. A small inset image in the bottom right shows the Cyclone Rake folded up for storage.

QUESTION

Reark a stem seal on a street valve

The street-side valve at my water meter has been dripping for years. I tightened the stem nut, but it still leaks. The utility wants \$40 to shut the water off. Can I repack the stem with the water on?

Yes, you can. But you have to close the valve first. The gate valve will keep water from gushing out of the stem when you repack the nut.

Buy Teflon packing cord at any hardware store or home center. You'll get some water spray once you loosen the packing nut, so move anything you care about away from the meter area.

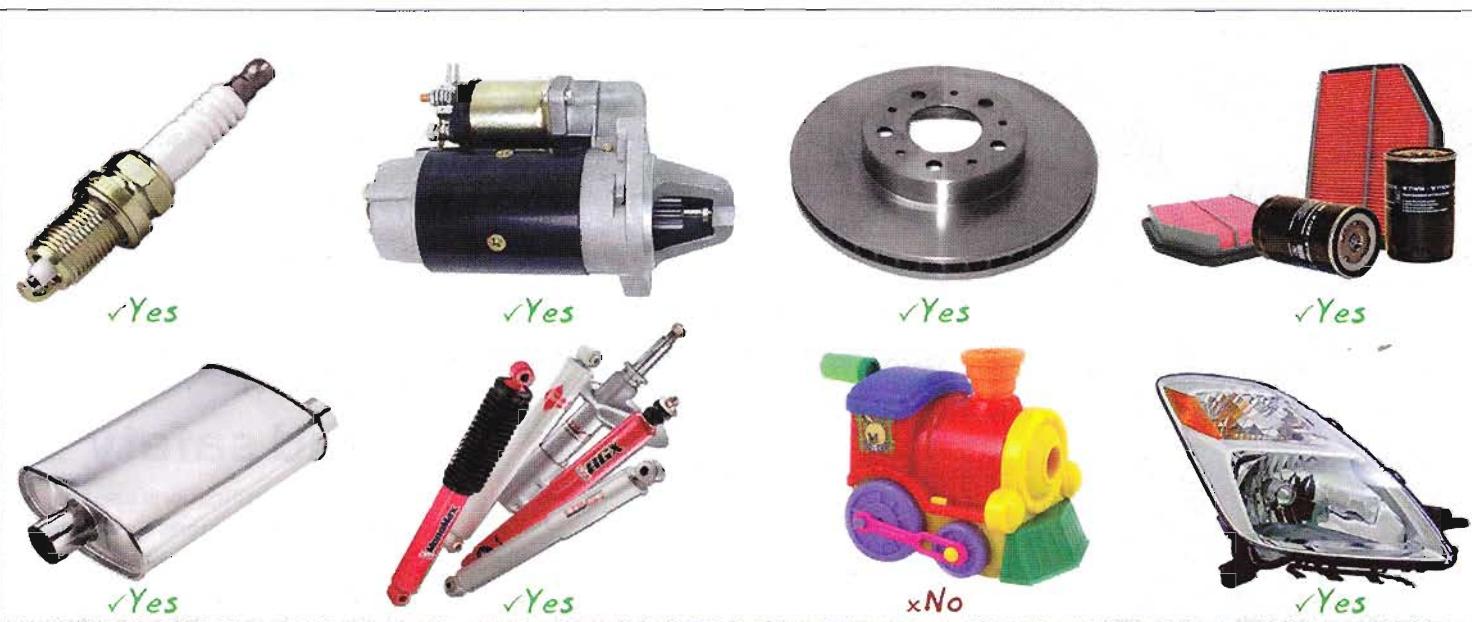
Most old valves have rust and mineral deposits in the gate valve's receiving groove. That crud can jam the gate and damage the valve. So flush the valve before you crank down on the handle.



REPACK THE STEM

With the valve in the off position, loosen the packing nut and slide it toward the handle. Then repack the stem with the Teflon packing cord.

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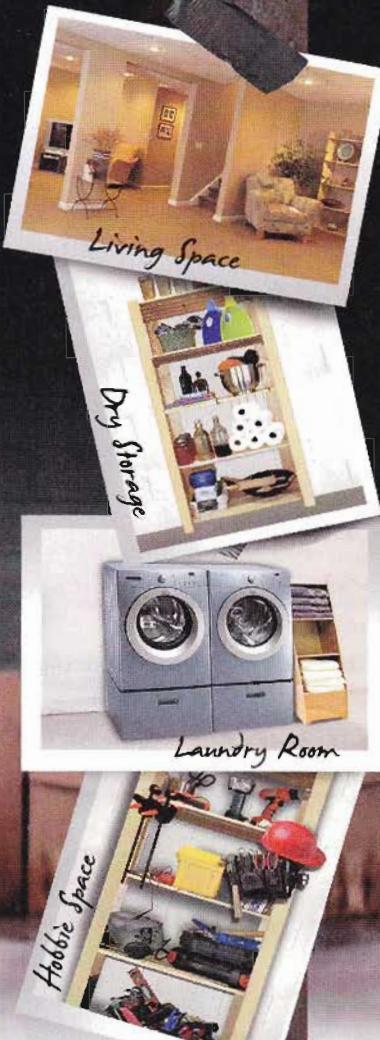
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Figure A
Which plumbing system is cheaper?



COMMENT

PEX wrangling

In a recent article (Feb. '10, p. 13), I praised PEX tubing as a cheaper, easier alternative to copper pipe. A few readers wrote to say that I should have focused on CPVC plastic pipe instead of PEX. They have a good point: CPVC is much cheaper than PEX—and more important—doesn't require special, expensive tools. If your plumbing jobs are small and infrequent, CPVC may be a better option. But if you'll tackle any major plumbing projects in future years, I think buying a few PEX tools is a good long-term investment. PEX is easier to install than CPVC and goes in at least twice as fast. And I'll happily spend \$50 to \$100 on tools that save hours of labor and frustration.

Gary Wentz, senior editor

COMMENT

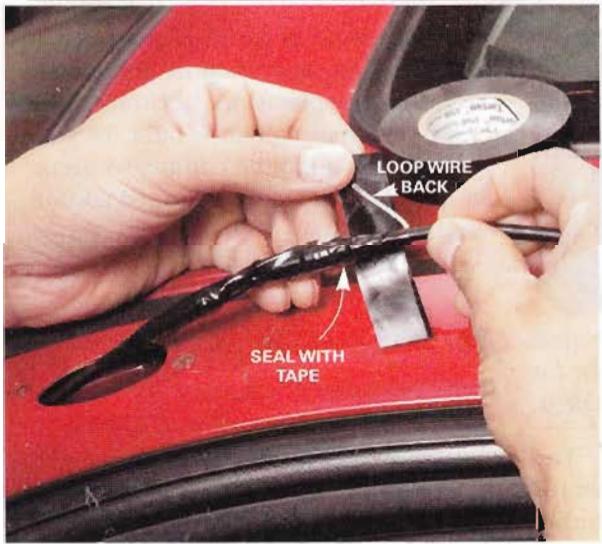
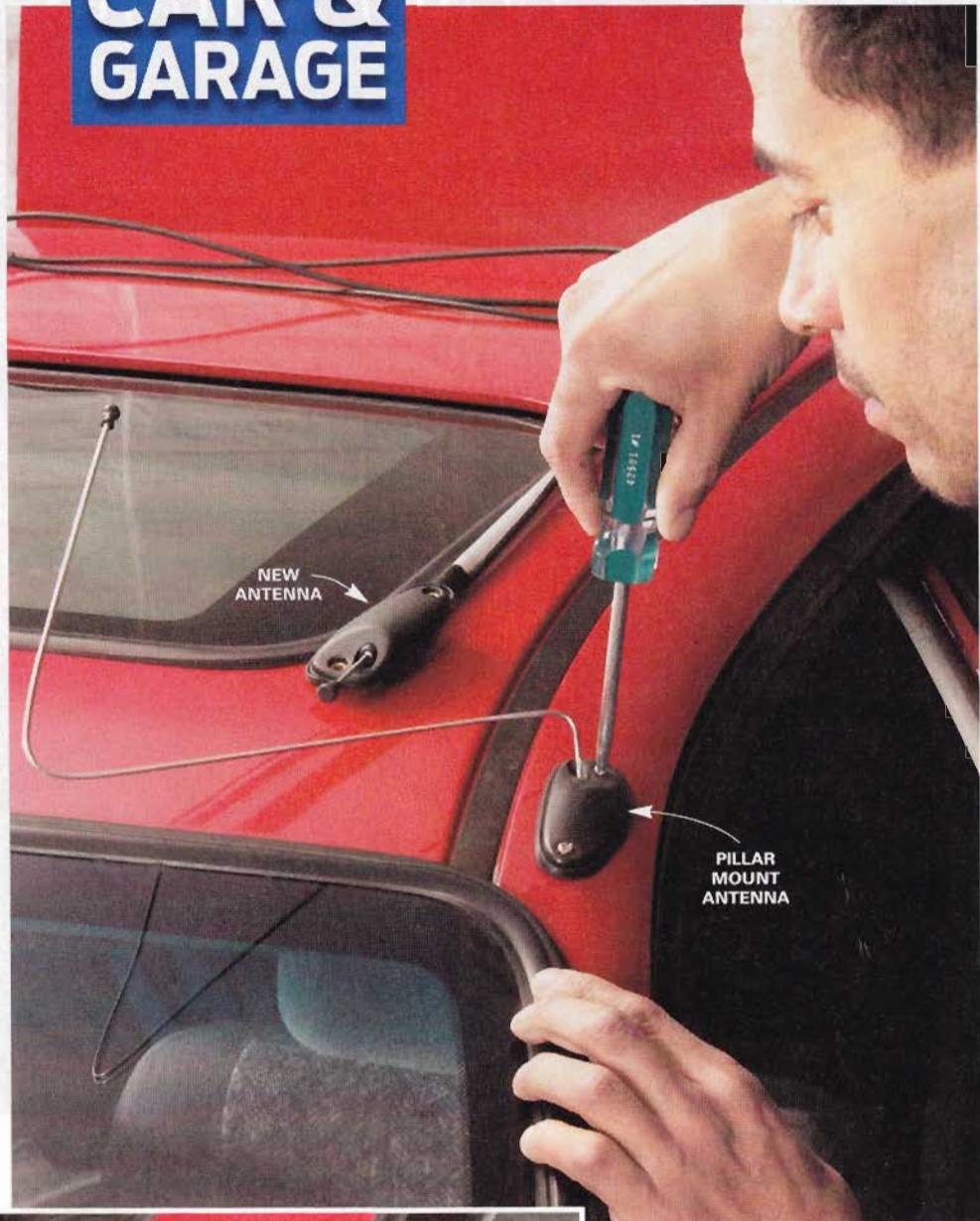
Flat panel TVs

In the Feb. '10 issue (p. 50), we showed two guys holding a flat panel TV while a third person judged its placement. Many readers wrote in to tell us we were nuts. They suggested cutting a template out of the box the TV came in and using that to judge placement. They're right. Using three people to figure out the proper TV placement was overkill. Use the template idea instead. But when it's time to heft the TV onto the wall bracket, get a buddy to help you. The pros won't do it alone. Neither should you.

COMMENT

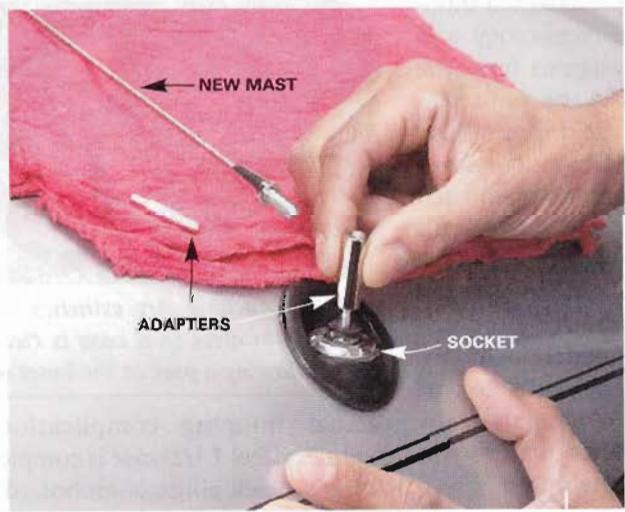
Lead safety

Lead-safe certifications used to apply only to painters. Not anymore. Now, all contractors who disturb lead paint during a repair or remodel in any home built before 1978 must be EPA certified. That means you should ask the plumber, electrician and carpenter if they're certified before you hire them. The certification process teaches contractors how to contain the work area, minimize harmful dust and clean up thoroughly. The certification costs \$300 per year, so it shouldn't add much to your bill. And the extra cleanup charges should be minimal. 



PILLAR MOUNT

Fish the new cable through the door pillar by using the old one to pull it through. Securely splice together the new cable to the old one.



FIXED MAST

Replace the old base stud with the matching one from the kit. Then screw in the new mast.

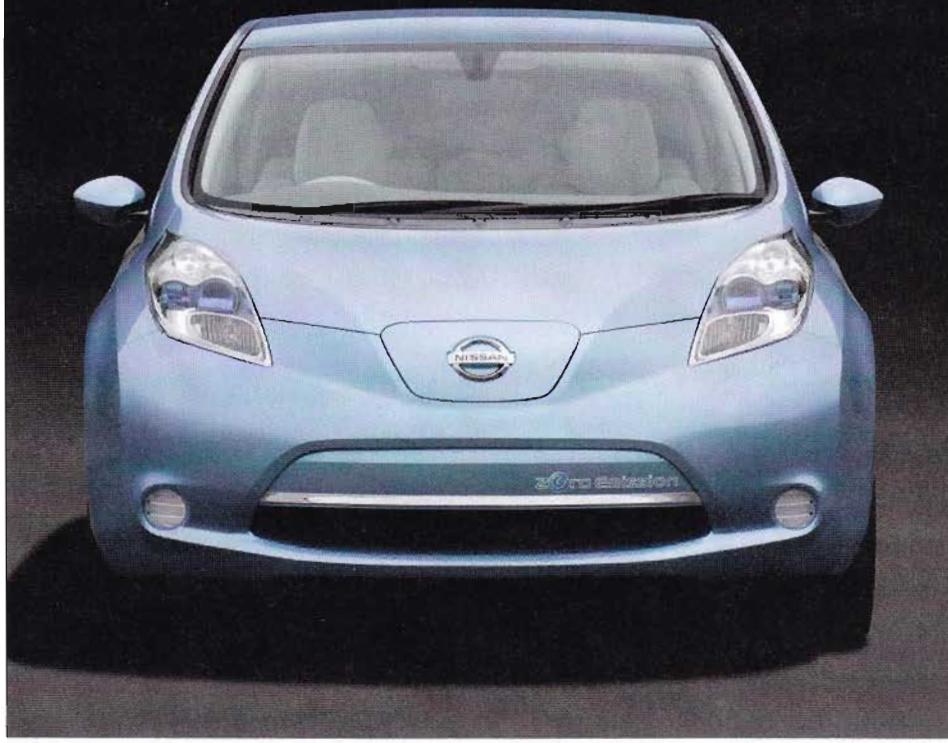
Replace your bent antenna?

Need to fix a bent or broken antenna? That problem goes back as far as car radios and marauding teenagers. The two most common styles are "pillar mounts," which slide in and out of the top of door pillars, and "fixed masts," nonretractable ones that are mounted on fenders. (We'll discuss fixing power antennas in a future issue.) Both styles are easy to fix yourself. Start the repair by buying a replacement unit (less than \$20) from an auto parts store or antennamastsRus.com (920-686-0644).

New pillar-mount antennas come with the coaxial cables already attached. So after you unscrew and pull out the old unit, cut the old cable and use it to fish the new cable through the pillar to the radio. (Splicing the old cable to the new one isn't recommended; you may get radio interference.) But be careful! If the splice comes apart inside the pillar, you'll have to remove the pillar trim to fish the new cable. Form a hook in the old cable, loop a picture-hanging wire through it and then wrap it with tape for added insurance. You'll have to remove the car radio to hook up the new cable. For about \$5, you can buy removal instructions from carstereoremoval.com.

Fixed-mast antennas are much easier to replace. Buy a universal kit (\$15) from any auto parts store. Just unscrew the bent mast with an adjustable wrench and install the new mast. You may have to install an adapter (included in the kit) to match the thread size.

The all-electric Nissan Leaf



Nissan Motors is headed to the finish line with the Leaf—its all-electric, zero-emissions car. The Leaf promises to zoom you to and from work and around town for about 100 miles before it needs recharging (top speed 90 mph). You can recharge it at home with a 220-volt outlet in four to eight hours. Or, you can charge it (80 percent) at a quick-charge station in about 30 minutes. Ultimately, there'll be charging stations that offer

electricity in lieu of gasoline. A built-in feature will tell you where the nearest recharging station is. So when it runs out of juice, just zip it into a station, connect it to a quick charger and get a latte while you check your e-mail.

Want to know how many miles you have left in the battery? Just look at the dash readouts—it spits out the information as “reachable area,” not “remaining charge” like some hybrids.

Nissan packed the Leaf with lots of



The batteries in electric and hybrid vehicles take up a lot of space. Nissan put them under the car to free up trunk space.



Get “reachable area” power readings right on the dash—a new concept in fuel gauges.

geeky IT features. Let's say you plug it in at home and set it to slow-charge (eight hours). But something comes up and you need it to quick-charge. Simple. Call the car from your cell phone and switch it to quick-charge. Or, if it's hotter than blazes outside and you dread toasting your buns when you open the door, turn on the A/C from your phone.

The Leaf is officially categorized as a medium-size hatchback. But that doesn't mean it's a squash box. It seats five adults (you read that right—adults). And Nissan didn't get that interior room by stuffing the battery in the trunk. The battery was put under the car because, duh, nothing else was using that space. Besides freeing up the trunk, that lowers the center of gravity, giving you more stability in turns.

To conserve watts, Nissan chopped the head off every energy hog it found. They reduced aerodynamic drag with a hood that splits the airflow and directs it toward the headlights. Then the headlight lenses spin the air so it flows outward, away from the side mirrors. Speaking of headlights, you won't find any energy-gulping halogens in this baby. Nissan developed LED headlamps that throw as much light as halogens but use 50 percent less power.

The Nissan Leaf debuts this fall. Nissan hasn't announced a list price yet, but the company promises it will be priced in the same range as other family sedans. For more information, go to nissan-zeroemission.com.

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NEW TECHNOLOGY

Smarter towing

The 2011 Chevrolet Silverado with the Duramax 6.6L diesel can haul and tow more weight than any other vehicle in its class. Cram in up to 6,335 lbs. of your old LPs or tow up to 16,000 lbs. of your mother-in-law's furniture. To bring all that weight to a safe stop, Chevy added intelligent exhaust braking. Exhaust braking has been around forever; truckers call it a "Jake brake." But it's always been so noisy that some states ban its use at night. Chevy figured out a quieter way to use the exhaust pressure. Plus, the braking system is smart. When used with cruise control, it'll automatically slow the vehicle on downhill grades. You don't even have to touch the pedal. Exhaust



braking prolongs brake pad life and prevents brake overheating.

To safely tow more weight, the 2500HD and 3500HD models offer an intelligent trailer anti-sway feature. When the system detects trailer sway, it either applies the trailer's electric brakes or reduces engine speed, depending on the amount of sway and other driving conditions.

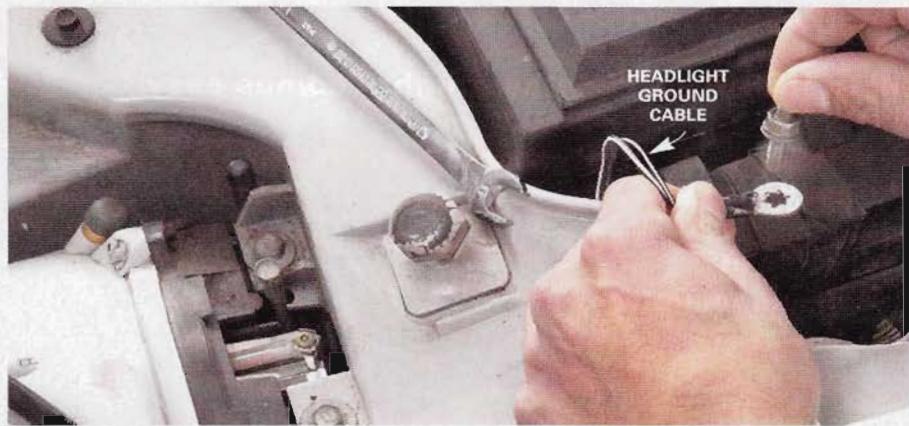
EASY FIX

Repair a dim headlight

If your car has a headlight that puts out about as much light as a flashlight with weak batteries, we've got a fix for you. Most DIYers think they've got a bad headlight switch or a bad connection in the power feed. But most dim headlights are caused by a corroded ground wire. Just trace

the wiring harness from the back of each headlight assembly and see where it connects to the vehicle body. Clean it as described below.

Disassemble the connection, clean it with a wire brush and reassemble it. Coat the parts with dielectric grease to slow down corrosion.





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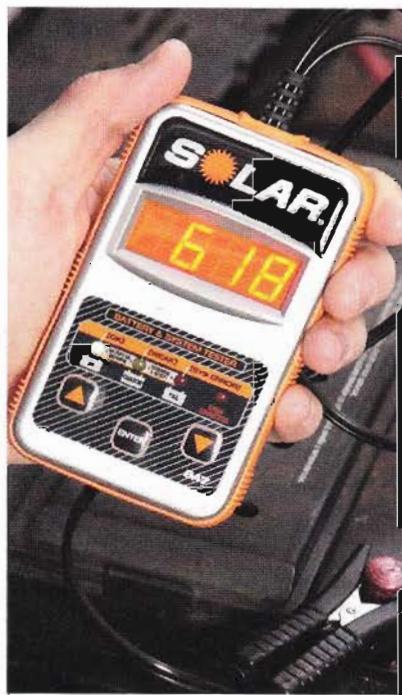


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BATTERY TOOLS



The tester displays the actual CCA readout as well as a green or red pass/fail light. Then test the starter and charging system following the tester directions.

New battery tester

Testing the condition of your battery and charging system with a digital multimeter works OK. But the voltage test alone doesn't tell the whole story. You really need to perform a load or capacitance test on the battery to determine its real condition. But until now, those testers have cost well over \$300.

Solar, a manufacturer of battery chargers and testing equipment, has come out with a reasonably priced digital tester (No. BA7; \$69 from djvmerchandise.com) that performs a genuine battery load test, a starter draw assessment and an alternator check (photo above). The tester works on automotive, conventional and maintenance-free batteries, as well as on the newer "absorbed glass mat" (AGM), gel cell and marine starting and running batteries. It doesn't do everything the \$300 models do, but it's a reasonably priced solution for most DIY applications.

Replace stabilizer bar end links

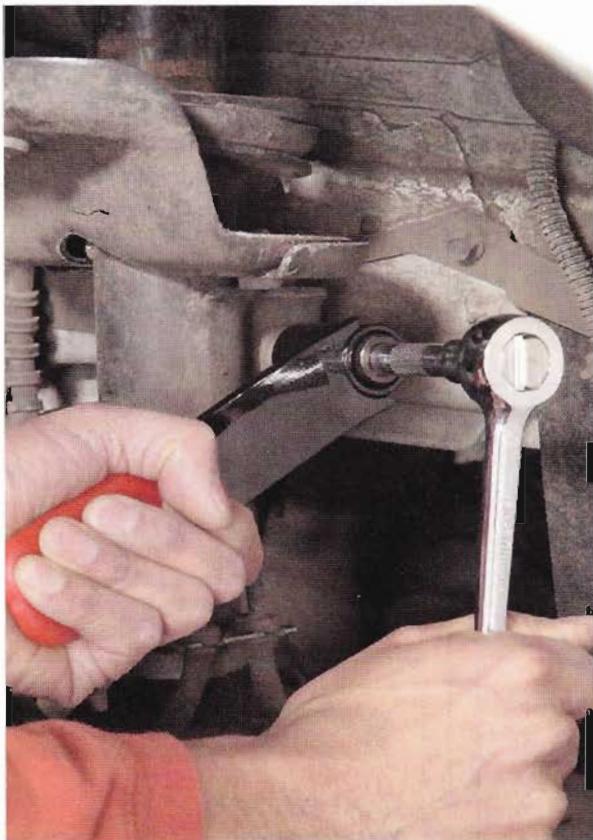
Worn stabilizer bushings and end links can cause horrible clunking noises when you drive over bumps. Unfortunately, there's no good way to check them by feel (they're loaded with vehicle weight) or by sight. So you have to start replacing parts until you find the noisy culprit.

Start with the stabilizer bushings. They're the most likely candidates, and they're also the cheapest and easiest to replace (about \$10 a pair). Just remove the bushing brackets

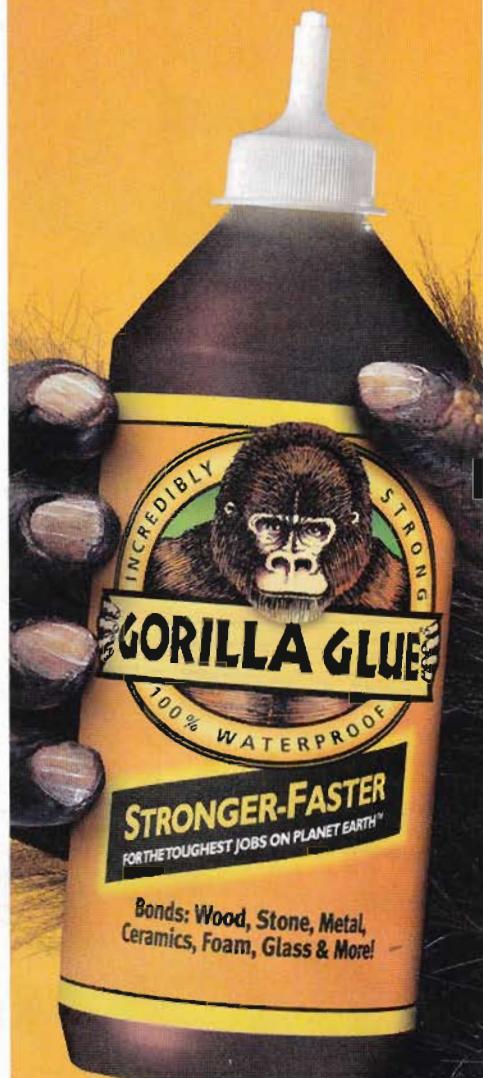
(one or two bolts each) and slip on the new bushings. But if you've replaced those and are ready to tackle the end links (\$40 each), stop! Removing the rusted nuts can easily turn into an all-day affair. Since you'll save about \$100 labor by doing the job yourself, it's worth getting one of these tool kits: Lisle No. 34110 (\$15) for Ford Taurus, Sable and Windstar vehicles. Or Lisle No. 33820 (\$23; both models available at sjdiscounttools.com) for additional Ford, GM and Chrysler vehicles. For more information on Lisle tools, visit lislecorp.com.

Once the nuts (two per link) are off, the rest of the job is a piece of cake (photo left).

LOOSEN THE NUT
Soak the nut and stud with penetrating oil. Then use the special tool to hold the ball stud while you put all your force into breaking the nut loose. Then use the holding tool and a metric box end wrench to finish the job.



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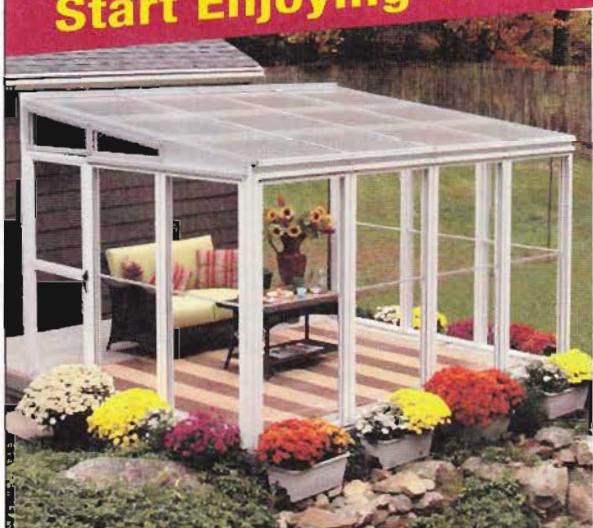
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ASK THE MECHANIC

Am I getting scammed?

Q I need a new alternator, and the shop recommends changing the serpentine belt, belt tensioner and idler roller at the same time. They look fine to me, and the belt isn't squealing. Am I being scammed?

A Nope. Your mechanic is actually looking after your best interests. Belts, tensioners and idler rollers rarely last the life of the vehicle.

The additional labor for the idler roller is minimal (about \$10), and the labor for the tensioner usually runs about \$50. If you plan to keep the vehicle, you'll save money in the long run by replacing these parts now.



Examine idler rollers for wear patterns. If you see wear, they're not spinning freely.

NEW ACCESSORIES

Cell phone and other stuff holder

I flipped out when I saw this cool Heininger 1072 CommuteMate Cell-Cup holder (\$19 for two at amazon.com). It's made from non-porous foam and holds most cell phones. Just pop it into your cup holder and load it up.



PHOTO FROM CELL-CUP

FREE TOOL!

Check serpentine belts for wear

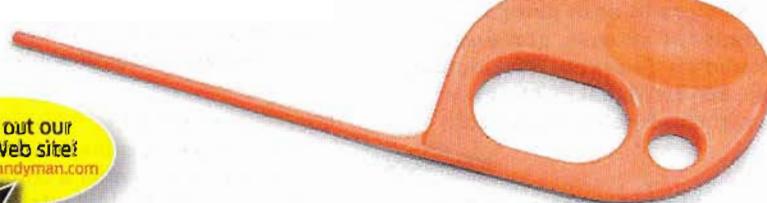
Starting in 2000, some carmakers began installing a new kind of serpentine belt made of ethylene propylene diene monomer (EPDM). The new belts last much longer and handle the heat better than the older neoprene formulations. That means fewer belt changes over the life of your vehicle. In fact, EPDM can go almost 100,000 miles between changes! But since EPDM doesn't crack like the old neoprene belts, you can't do a visual check. The only way to gauge belt wear is with—you guessed it—a belt gauge (photo below). DIYers can get a free belt wear gauge at gatesbeltwear.com.

If it's time to chuck your EPDM belt, replace it with the same kind. Don't be fooled by low-price belts. They're usually made from neoprene. Also, if your car has a neoprene belt and it's cracked, consider replacing it with EPDM. Yes, it's that much better.



Lay the wear gauge in the ribs on the belt and run your finger across them. If the gauge sits flush with the top of the ribs, the belt is worn out.

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PROBLEM SOLVER

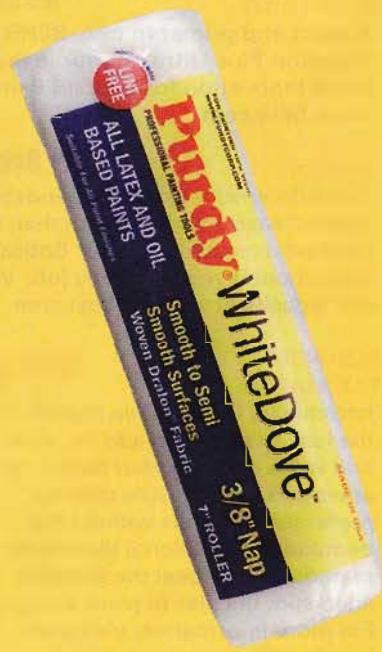
Screw and bolt getter-outter

Every DIYer worth his salt has stripped out his share of screws and bolts. That's when you search for the drill bits and screw extractors. Even if you can find them, do you know what size hole to drill for each extractor? Neither do I. That's where Drill-Out screw and bolt extractors (Alden AN-6207P six-piece set; \$40 at 7corners.com) come in handy. They're built with the drill bit and screw extractor as one piece. Put your variable-speed drill in reverse and start drilling the pilot hole.



When the hole is deep enough to tap, push the threaded collet portion into the hole and start up the drill. It will tap the threads for you. These extractors don't work every time, but your old ones won't work at all if you can't find them.

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An access ramp to take pride in

When the Music Center in Brattleboro, VT, needed a wheelchair access ramp, 17-year-old Evan Johnson took charge of the entire project. He handled everything from fundraising and planning to rounding up the volunteers, who stacked tons of gravel, landscape block and pavers. A wood ramp might have been easier, but Evan had good reasons to choose masonry: It will last forever, looks great and is perfect for a volunteer labor force. As Evan puts it, "Carpentry requires experience, but anyone can shovel gravel." The project helped Evan earn his Eagle Scout medal.



READER PHOTO

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\$500!**

"Every time I drive by the Music Center, I think: 'I built that ramp.' Feels great."

— Evan Johnson

Building and listening in New Orleans

Mark Hinton has been to New Orleans four times since Hurricane Katrina hit in 2005. Working with his church group, under the supervision of Habitat for Humanity, Mark has helped turn ruined houses into like-new homes. But he and his fellow volunteers have spent a lot of time listening, too: "Sometimes we would put down our tools and just listen to people. Everyone had a tragic story and needed to tell it." Mark plans another trip to New Orleans this summer.



"I found something I really love to do. If I could, I'd retire and do crisis-response work full time."

— Mark Hinton



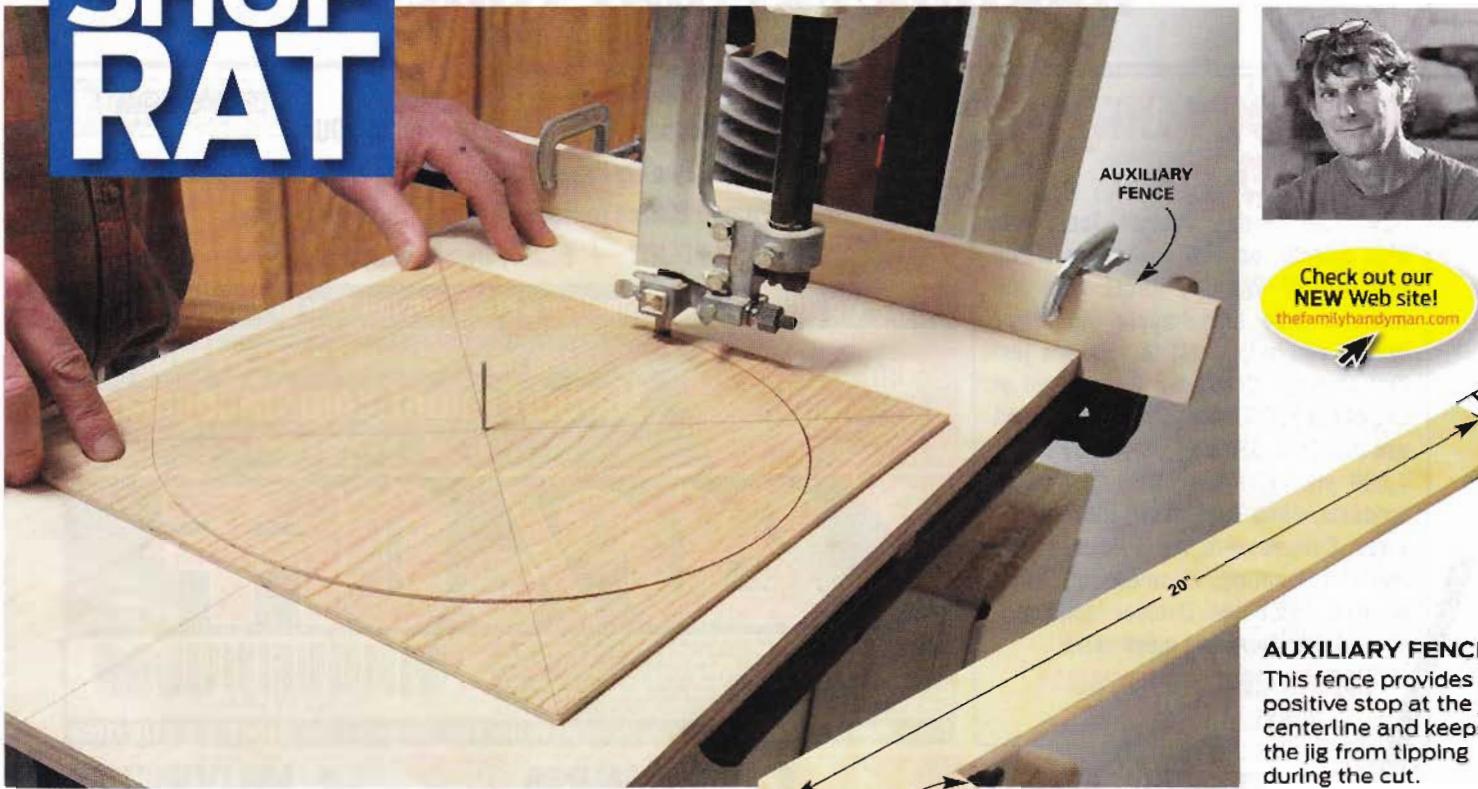
READER PHOTO

Editor GARY WENTZ • Art Direction MARY SCHWENDER

No purchase necessary to enter or win. Purchase will not improve your chances of winning. Contest is open to legal residents age 18 or older of the U.S., and its territories and possessions. Contest closes at 11:59 p.m. (ET) on Sept. 16, 2010. To enter and for official rules, visit thefamilyhandyman.com/myproject. We reserve the right to use any entry in the magazine and pay you \$100 for the photo. VOID WHERE PROHIBITED. Contest sponsored by The Reader's Digest Association, Inc., publisher of *The Family Handyman*.

SHOP RAT

by Travis Larson
editors@thefamilyhandyman.com

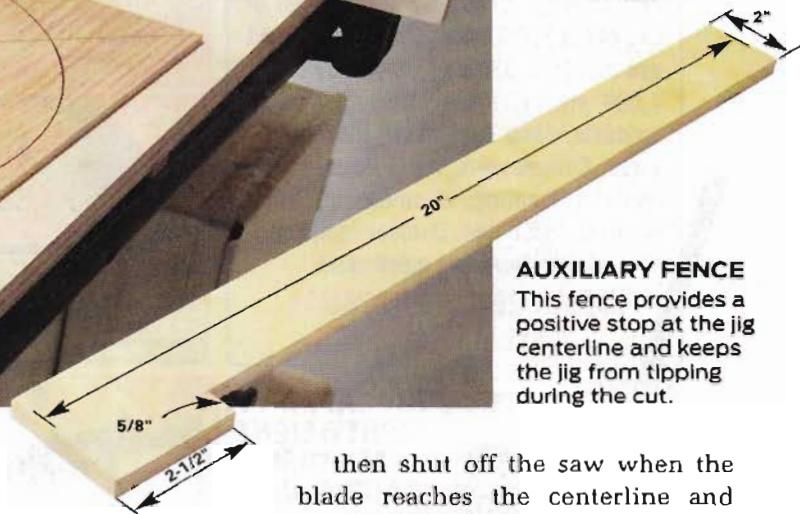


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Fast, perfect circles

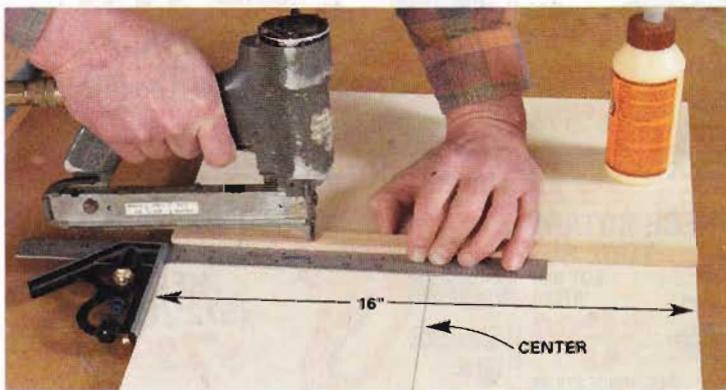
Cutting perfect circles is easy with a band saw—as long as you take a half hour to build yourself a cutting jig. I've cut circles with radii ranging from a few inches to a couple of feet. The only limit is the distance from the fence to the saw blade.

Use any 3/4-in. plywood to make the jig, and attach a runner to the underside that fits in the band saw's miter gauge slot. That will hold everything steady while you turn the actual circle stock through the blade. Then make yourself an auxiliary fence from another piece of 3/4-in. plywood as shown. Send the jig through the blade to create the saw kerf,



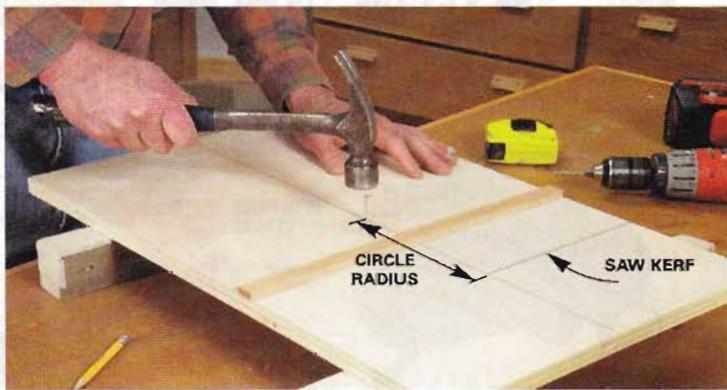
then shut off the saw when the blade reaches the centerline and lock the fence about 1/8 in. away from the jig. Clamp the auxiliary fence to the hand saw fence with the stop against the edge of the jig. Hold it slightly above the jig so the jig will slide easily beneath it. The auxiliary fence not only stops the jig at the right spot for turning circles but also keeps the jig from tipping up from the band saw table.

Cutting is simple. You'll need to choose narrow blades for small circles. Push the jig with the mounted cutting blank until you reach the stop and then just twist the blank through the blade. You'll have a small amount of cleanup to do where the cut starts and stops. You're done.



1 ATTACH THE RUNNER

Cut 3/4-in. plywood to 16 x 24 in. Draw centerlines on both sides, then glue and pin the runner to the bottom. Send the jig through the blade until you reach the centerline, then clamp the auxiliary fence to the jigsaw fence.



2 FINISH THE JIG

Tap a nail through the hole, then flip the jig over. Drill a hole in the middle of the blank and prop the circle stock over the nail shank.

TOM FENINGA except where noted



T-bar assembly lifts

Ever wonder what makes a woodworker tick? Here's Ken Collier, the editor in chief: "These T-bars are one of my happiest discoveries as a woodworker. They're just 5-in.-wide pieces of 3/4-in. plywood face-glued together, with another 5-in. piece screwed on the bottom for a base. Any larger assembly I do happens on the T-bars because they lift it off the table. It's easy to drive in screws, check the project for squareness and tighten clamps anywhere around the edges. I work alone most of the time, and the T-bars are my extra set of hands."

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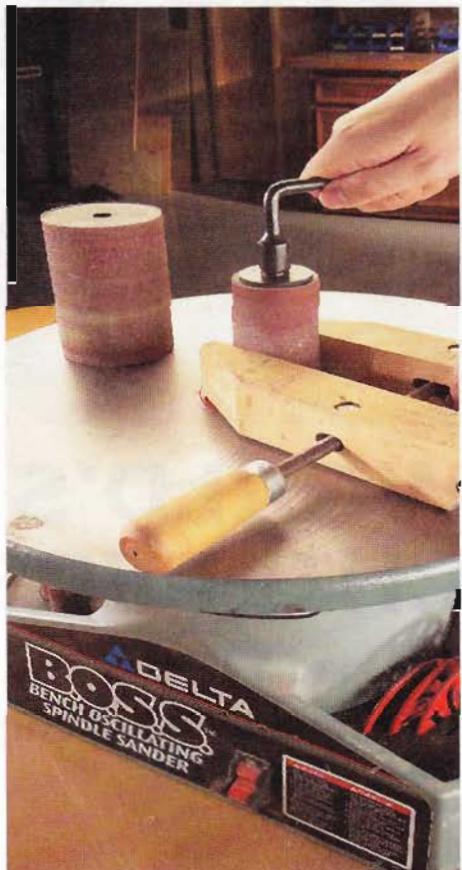


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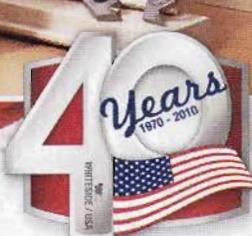
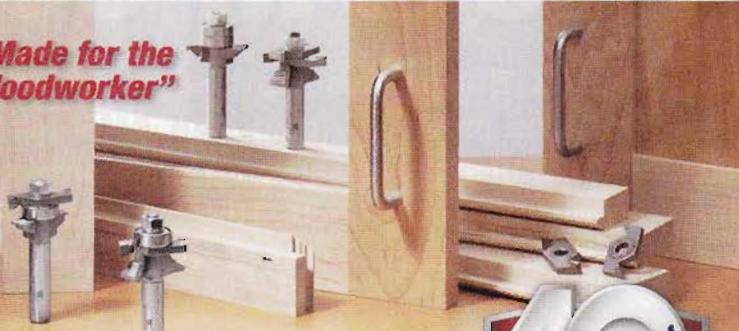
Easy-off sanding sleeves

I couldn't live without my spindle sander for super-smooth sanding of inside curves on projects, but for years I dreaded changing spindle sizes. That's because it was difficult to tighten the bolt enough to expand the rubber drum, so the sanding sleeve often slid up and down the drum while I was sanding. And if I managed to tighten up the bolt enough, it was nearly impossible to loosen it again. Last week, a hand screw miraculously jumped onto the sander table and solved the problem. I tightened it around the drum and easily twisted the bolt. Hallelujah!

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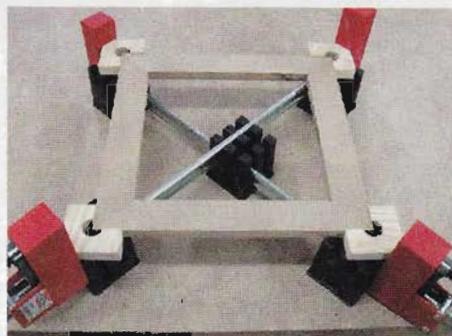
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READER PHOTO

Clamping blocks

Corner clamping blocks for assembling picture frames aren't a new idea; woodworking magazines have shown variations for years. But these are among the best I've seen. The holes span the corner, keeping the clamps from sticking to the frames when the glue squeezes out.

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for your Shop Rat tip!

See p. 4 for details.



READER PHOTO

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Counterweights for lathes

Lathes shake, rattle and roll, especially when you're starting a turning and roughing out unbalanced stock. That's why just about any wood turner has a tube of playground sand on the shelf below for stability. But Serge Duclos had a better idea. He filled old gallon jugs with playground sand. They don't take up as much room, they can do double duty as doorstops, and they never leak. Best of all, you'll have heavy weights on hand for glue-ups and other odd jobs.



Plant markers



Our thanks go to Mary Jo Lux, Seattle, WA, for this idea.

Get \$100 for your Wordless Workshop idea!

See Contributor Guidelines on p. 4.

GREAT GOOFS

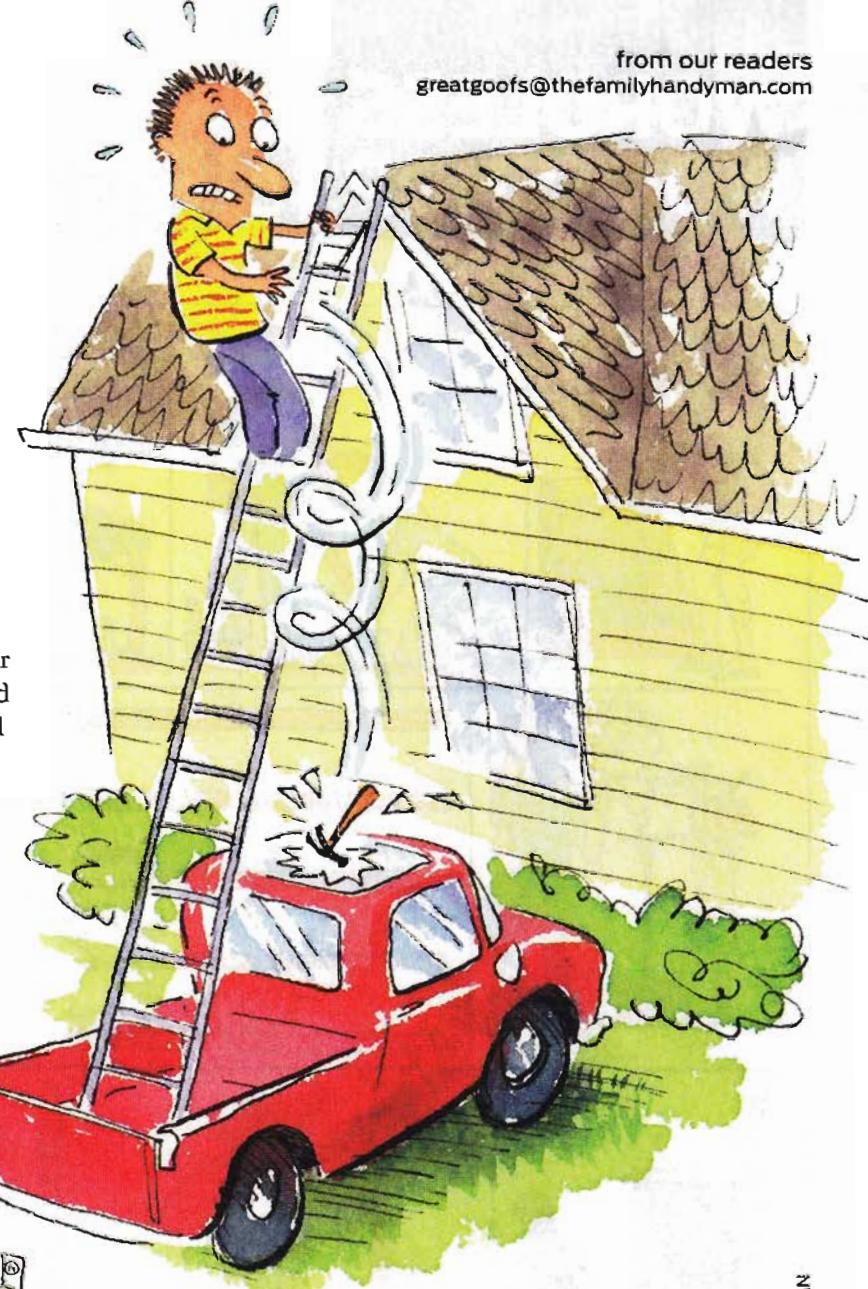
from our readers
greatgoofs@thefamilyhandyman.com

Sunroof disaster

I finally got around to replacing the flashing on one of our dormers. My extension ladder was too short to let me work comfortably at the peak of the dormer, so I drove my pickup into the front yard and placed the ladder in the bed, propping the bottom against the tailgate. It worked perfectly, giving me the extra height I needed.

I climbed up the ladder and went to work. No sooner had I gotten down to business than the hammer slipped out of my hand, ricocheted off the ladder rungs and smashed through the sunroof of my truck. A one in a million shot. To look on the bright side, at least it didn't go through my windshield. But from now on, I'll use scaffolding to work on the high points of my house.

— Ron Bender



Electric cake batter

When I was a teenager, I came home from school to find my mother making a cake. She was using her favorite electric mixer. The double-ended electric cord was plugged into the mixer at one end and into the wall outlet at the other. As she happily mixed away, she inadvertently knocked the cord out of the mixer, and it fell into the cake batter. So she fished it out and, not thinking, licked it off. The live cord shocked her tongue, making her jump about 3 ft. in the air. After the initial shock, she was fine, and now we laugh about it.

— Mary-Kay Reno

Magic cabinet mystery solved

I have a metal cabinet in my basement where I store my cans of spray paint. Every time I opened the door, a can would fall out and land on my foot. I'd pick up the can and put it back on the shelf. This happened at least a dozen times.

For the life of me, I couldn't figure out why a can would fall out every time I opened the cabinet. It was driving me crazy. Finally, I noticed a magnet stuck to the inside of the door, which was pulling out the cans. Mystery solved!

— Mark Yax

**Got your own do-it-yourself mistake?
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See Contributor Guidelines on p. 4.



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