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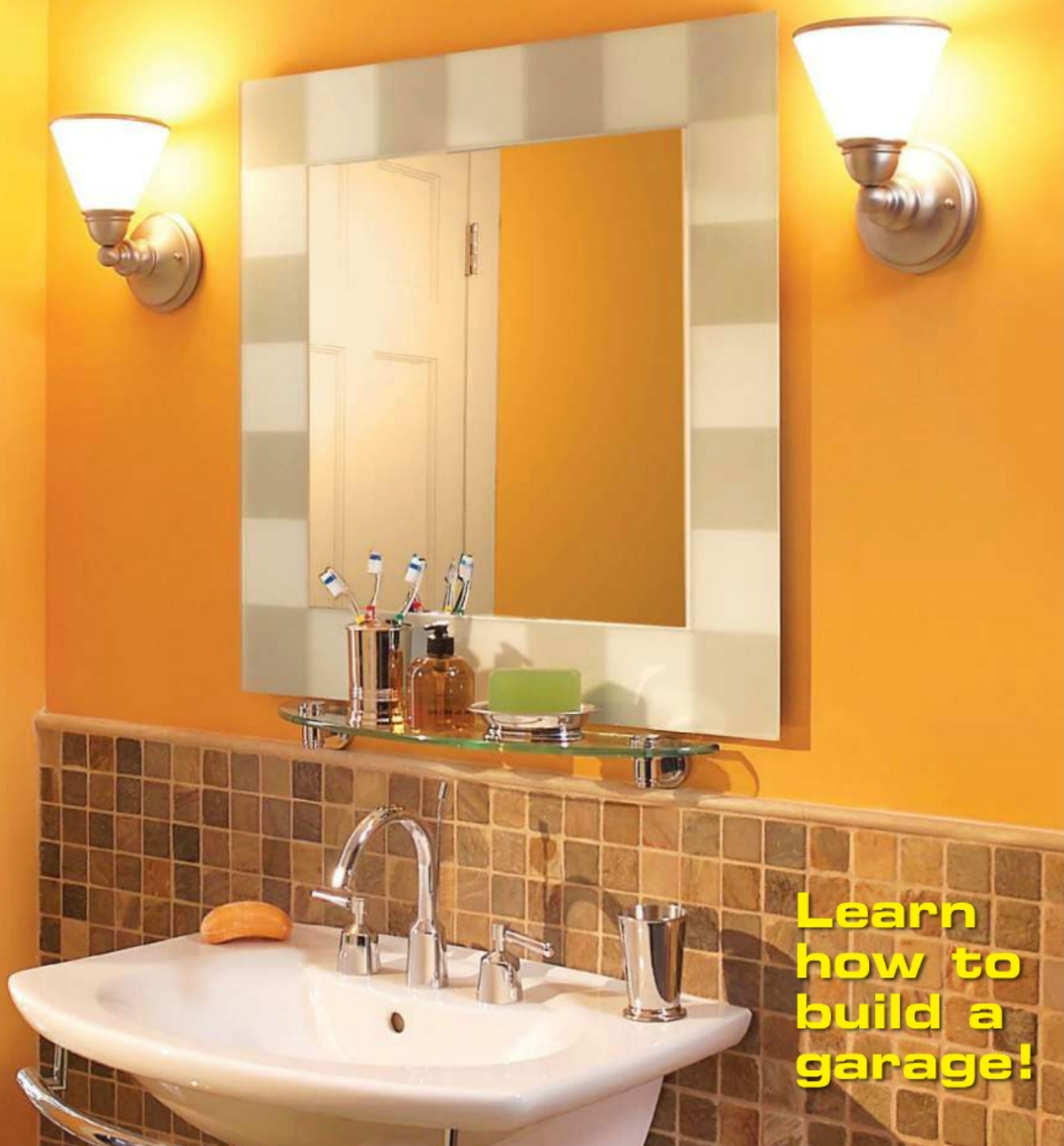
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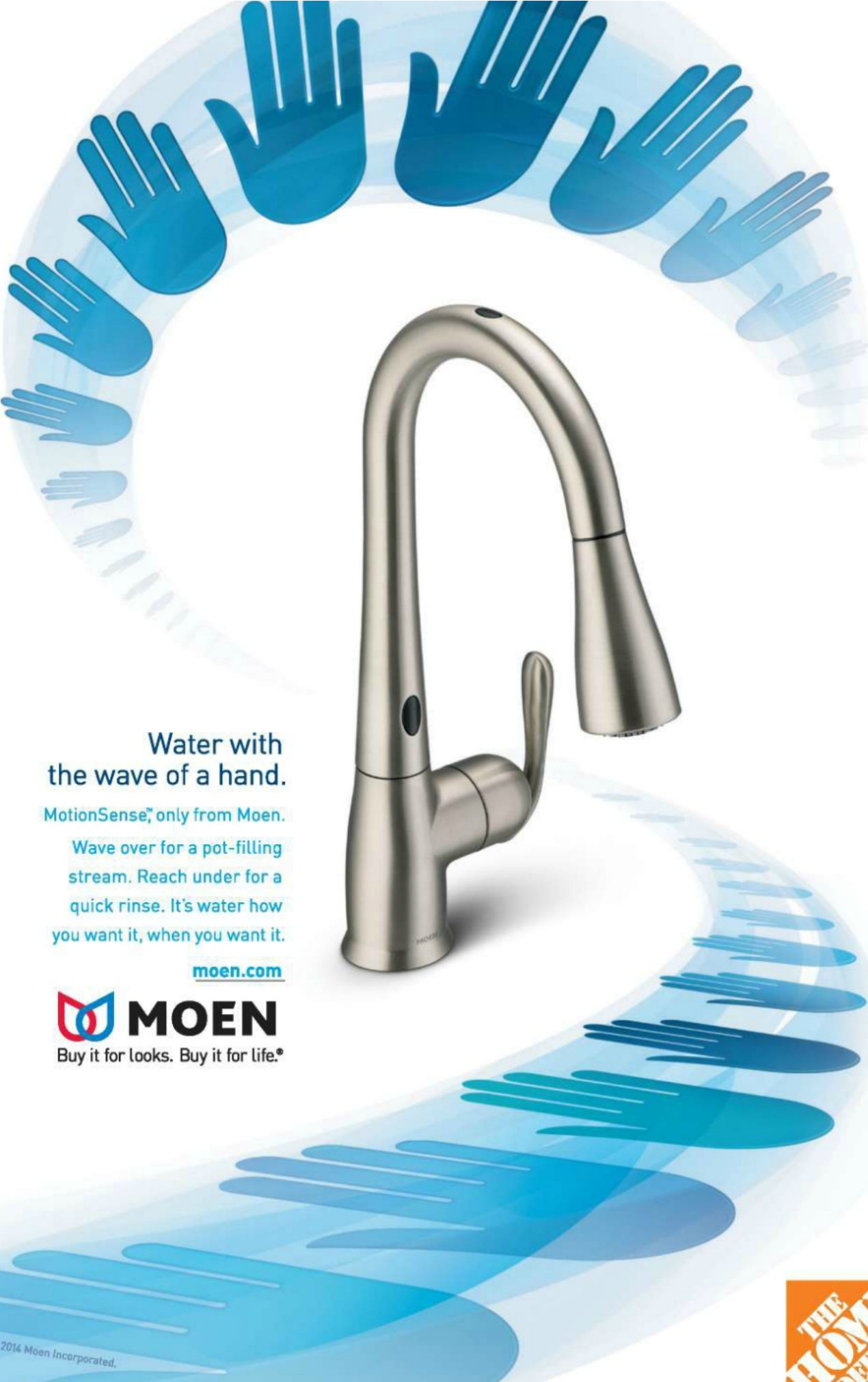
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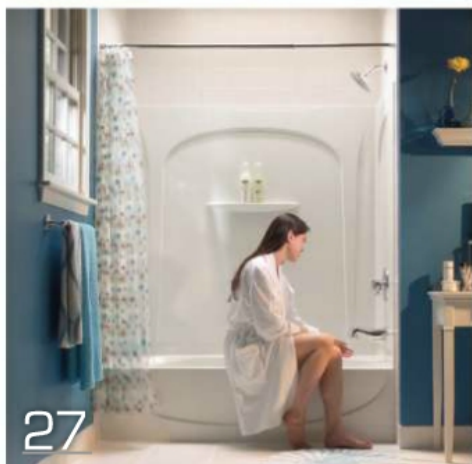
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Table of CONTENTS

OCTOBER 2014

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FEATURES

18 Weekend bath remodel

Install a larger mirror and better lighting to make your bathroom feel fresh, bright and inviting.

27 A new tub and surround

Transform your bathroom with glossy, easy-to-clean surfaces. Your choices are better than ever.

40 Finish a tabletop

That big reflective surface needs a perfect finish, and here are 34 tips to help you achieve it.

52 Framing a garage

We'll take you step by step through the framing process and help you make this big project more manageable.



Table of CONTENTS

OCTOBER 2014

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DEPARTMENTS

4 Stuff We Love

A stepladder with a platform to stand on, an easy-to-use gas can, a space-saving mower and more.

14 Handy Hints®

Smart ways to eliminate shoe clutter, line a trailer bed and manage your shop tools.

61 DIY Quiz

Find out your home improvement IQ with this month's test.

65 Pro Tips

How to get a fast, smooth finish—indoors or out—with an airless paint sprayer.

73 Car + Garage

Seat covers too far gone for cleaning or repair? You can install new ones yourself.

78 Home Care + Repair

Here's how to get better and faster Wi-Fi, fix a washer and save on electronics recycling.

90 Wordless Workshop™

Make better use of your closets with this simple shelf organizer.

92 Great Goofs®

Up on the roof without a ladder, a super-simple dryer fix and a milkshake splatter-fest.



GOT A DIY QUESTION?

Finding answers is easy at familyhandyman.com. Just use the search box at the top of the page to get expert step-by-step help with your project. Or register on the site and join our DIY Forum, where you can ask questions or give advice.

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We pay \$100 for Handy Hints®, Great Goofs® and Wordless Workshop™ submissions that we publish. Please include a photo of yourself from the shoulders up. Submit your original contribution, along with photos or sketches, by e-mail to: handyhints@thefamilyhandyman.com greatgoofs@thefamilyhandyman.com

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We welcome your ideas and opinions. Write to: The Editor, The Family Handyman, 2915 Commers Dr., Suite 700, Eagan, MN 55121. Fax: (651) 994-2250. E-mail: editors@thefamilyhandyman.com

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STUFF we love

BY TRAVIS LARSON

editors@thefamilyhandyman.com

Stepladder gives you 360-degree movement

The new Werner Podium stepladder will make you slap your forehead and say, "Why didn't somebody think of this 40 years ago?" It's a stepladder with a standing platform. So instead of teetering on rungs and leaning painfully on your shins, you stand on a square platform with plenty of room to turn around a full 360 degrees. If you need to lean out, there's a curved railing to steady yourself. And the railing is designed to hold tools. We used the 5-ft. model for our September '14 garage door repair story, and it worked like a champ. The platform is 3 ft. above the ground, giving us a 9-ft. reach. That was the perfect height for working on garage door springs in a garage with a 10-ft. ceiling.

Choose from five models with collapsed heights of 5 to 12 ft., platform heights ranging from 3 to 10 ft., and a reach range from 9 to 16 ft. Werner Podium ladders are available for \$120 and up at home centers.

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PREP *for* SUCCESS

The better the wood preparation, the better the end result. Get off to a good start with your wood project.

Top 5 Tips

- 1 Inspect your wood project for any holes, cracks, splits or loose joints that need repair — best completed prior to staining and finishing.
- 2 Fill small holes and cracks in the wood using Minwax® Stainable Wood Filler. Don't smear it around, as that will require more sanding to remove excess. Use a screwdriver tip to pack filler into hole, mounding slightly to allow for shrinkage.
- 3 Sand with the grain of the wood. This will remove minor nicks and scratches and will open the wood's pores to accept more stain.
- 4 Wood is unpredictable. Test any technique, material or product on an inconspicuous spot before you proceed.
- 5 Since wood pores are irregular, use Minwax® Pre-Stain Wood Conditioner before you stain to reduce the likelihood of blotchiness.

For more tips and tricks, visit Minwax.com



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STUFF we love

BY TRAVIS LARSON

editors@thefamilyhandyman.com



Wow— a gas can that's easy to use!

When gas container safety regulations changed in 2009, many gas-can manufacturers produced nozzle mechanisms that were anything but user-friendly. But fortunately for consumers, the folks at nospill.com came up with a gas container that meets the new standards, is easy to use and includes features you've always wanted in a gas can.

First, the can has an auto-stop nozzle. Just lower the nozzle into your lawn mower tank and press the button. The flow stops when the tank is full. No more gas spills. Brilliant! And the nozzle is self-venting, so the tank fills much faster and without the gurgle-gurgle of other cans. Plus, no more guessing how much gas is left in the can. You can see the level through the viewing stripes on the container.

The No-Spill can is available in 1.25-, 2.5- and 5-gallon sizes. The most popular size, 2.5 gallons, retails for about \$25. Go to nospill.com to find a dealer near you.

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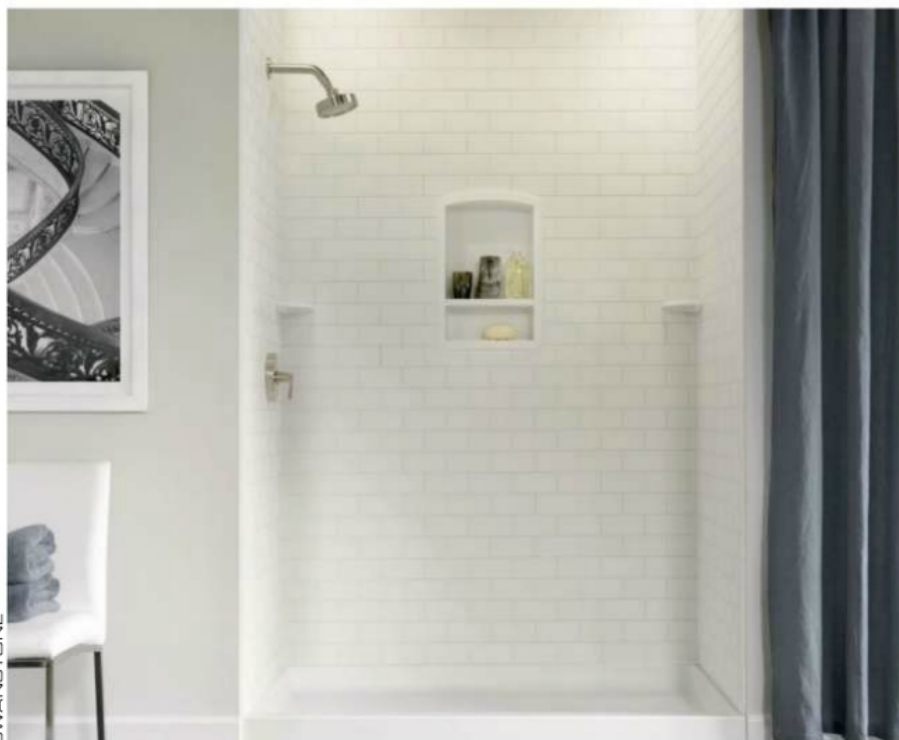
HIGH-TECH SOLUTIONS



Soil testing made easy

If you're an aspiring gardener or a lawn enthusiast, you might want to bag a General 4-in-1 Soil Condition Meter. Stick it in the ground and you can measure soil pH, moisture content and temperature. Plus, it'll tell you how much sunlight falls on any particular spot in the course of a day. The pH meter isn't as reliable as having samples tested in a lab, but General claims an accuracy rate of within .5 percent, which is close enough for most plants and grass.

Serious gardeners and turf lovers use that information to get the most out of their gardens and lawns. This little tool might add a bit more green to your thumb too. It's pretty new, so you might have trouble finding it at garden centers. But search for "General DSMM600" online and you'll find sources selling it for about \$25.



NO MORE GROUT!

I've been a fan of Swanstone tub surrounds for many years. The company makes a super-tough, great-looking solid-surface tub surround as well as shower bases and sinks. Recently, while planning a bath remodel, the customers suggested using ceramic tile in the shower area. I gave them the "looks-great-now-but-wait-a-few-years" grout-cleaning speech and then introduced them to the Swanstone line of products. After showing them the new subway tile design on the website, we ordered and installed it. It looks like classic "subway tile," but there's no grout to keep clean! They love it.

Swanstone shower walls are way easier to install than tile. Just use silicone adhesive on primed drywall. The sheets cut nicely with a 60-tooth carbide blade. Just remember to support them well while cutting. Do your cutting outdoors and wear safety glasses, a dust mask and, of course, hearing protection. Choose from 35 colors and several kit sizes for tubs or showers. Figure on spending \$900 to \$1,200 (special ordered from home centers). Learn more at swanstoneproducts.com.

David Radtke, Contributing Editor

Better paint—cleaner siding

I swear the siding on my house acts like a giant dirt magnet. It doesn't help that I have a long gravel driveway that produces bucket loads of dust in the dry summer months. But Behr may have solved my problem with its new Marquee exterior paint. I recently watched a demonstration at a trade show where siding samples painted with Marquee and a couple other brands were covered with fine dirt. The dirt just fell off the siding that had the Behr paint. I was impressed—enough that I'm going to give it a try next time my house needs a fresh coat. It will be nice to have a clean-looking house more than twice a year. You can buy Behr Marquee at Home Depot for less than \$50 a gallon. To watch a demonstration video, go to youtube.com and search for "behr marquee paint."

Mark Petersen, Contributing Editor



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Hang a door without shims

I hang a door about once every five years, and it's always a frustrating experience. By the time I square the door, insert the shims and fire in a nail, the frame always seems to have moved a bit. Then I have to cut the nail and start all over. What a pain. Now I use these cool door-hanging clips in the Quick Door Hanger Bracket Kit (about \$5 at homedepot.com and many hardware stores).

The kit comes with six clips. Zap three clips on each side of the door using a power screwdriver. Then slide the door into the rough opening. The clips rest against the drywall, automatically squaring the door with the wall. Next, secure all six clips to the studs with drywall screws. Loosen the screws on the hinge side, plumb the jamb and retighten the screws. Make similar adjustments on the strike side and you're done. You don't need a nail gun, shims or a helper.

Rick Muscoplat, Contributing Editor



DIY WORK WEAR

Cheap and easy hand protectors

I have a supply of nitrile gloves for those messy jobs when I want to keep my hands free of solvents, varnish and grease. But they get spendy and are too much trouble to pull on for just a couple of minutes' work. That's why I have a box of food handler gloves in my shop. They're great for short-term dirty jobs, like spraying on oil penetrant or spray-painting a little item that I have to hold for a minute or two. The gloves slip on and off really fast, and because they're so cheap, I don't feel bad tossing them. They don't offer the same chemical

protection that vinyl, nitrile or latex gloves do. You can find a box of 500 for about \$13 at home centers.

**Travis Larson,
Senior Editor**



WHY I LOVE MY FIRE EXTINGUISHER

My smoke detector often sounded when I pulled a pizza out of the oven. But one time, where there was smoke, there was fire, too: Seven-foot flames from an unattended candle were simultaneously licking the ceiling of my daughter's nearby bedroom.

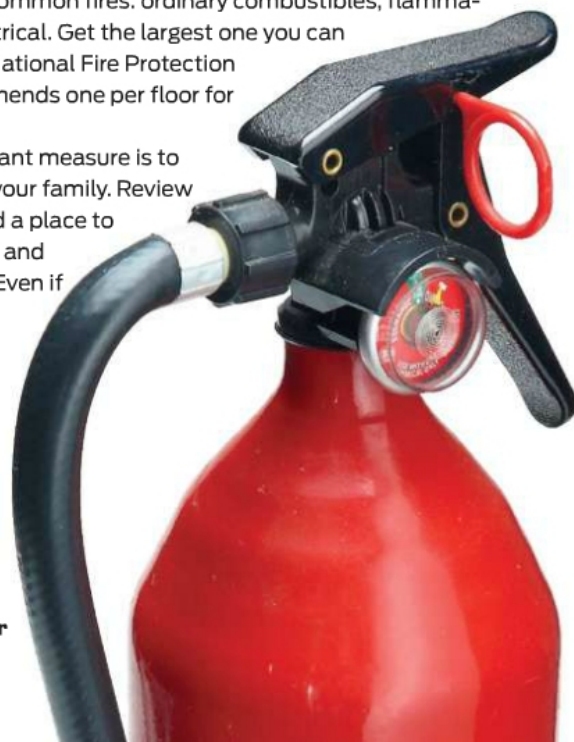
Seeing the orange glow from her partially opened door, I yelled for everyone to immediately get outside and call 911. I grabbed a fire extinguisher hanging from the kitchen pantry and knocked out the fire.

The fire department arrived within minutes but did not have to do anything except determine that there was no further threat. While you never want to endanger life in such a situation, the easy and quick access to my fire extinguisher saved my house from major damage. The next day I bought four new extinguishers: one for each floor and the garage.

A good extinguisher for home use is the ABC model, which works on the three most common fires: ordinary combustibles, flammable liquids and electrical. Get the largest one you can easily handle. The National Fire Protection Association recommends one per floor for your home.

The most important measure is to have a fire plan for your family. Review an escape route and a place to meet safely outside and away from the fire. Even if you put out the fire yourself, summon the fire department to inspect the scene to make sure the fire is out. Call your local fire department for more information.

**Barry Shoultz,
Field Editor**



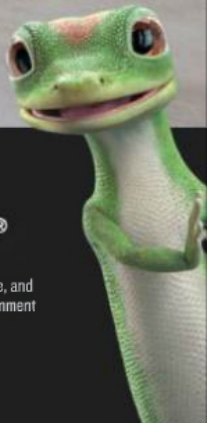
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SPACE-SAVING MOWER

If you're in the market for a new lawn mower and space is at a premium in your garage or shed, consider Toro's new Recycler mower with SmartStow. Other mowers have folding handles, but the SmartStow is powered by a 190-cc Ready Start Briggs & Stratton engine that can be tipped straight up without all the gas and oil draining out.

When you're finished with the lawn, all you need to do is fold down the handle, flip the mower upright and slide it against the wall. This cool feature, along with an onboard washout port, makes it a breeze to hose down the underside of the mower deck. And when you run over that missing bocce ball and trash your blade, you can install a new one without having to drain the fluids. Although the variable-speed front wheel drive takes the labor out of pushing, it makes it difficult to mow super-straight lines, as the mower has a tendency to wander. Buy a 22-in. self-propelled model at home centers or other Toro dealers for about \$350.



Clean brushes and rollers whenever you want!

Here's one of those super-simple inventions that anyone who paints should have: reusable hard plastic covers for paintbrushes and rollers. Just stick the wet brush or roller in its cover and you're done—zero cleanup. Done and ready for lunch, a coffee break or bed. Later, open it and you're ready to resume painting. These covers aren't meant for permanent wet brush and roller storage, but just to help you postpone cleaning the tools until the job is finished. They're great for storing and protecting clean brushes and rollers between jobs too. Brush covers cost \$5 each and roller covers, \$7. You can save money by buying them in bundle packs. Order directly from thepaintbrushcover.com.



Emergency fuel gets you out of a jam

If you or a family member likes to drive with a near-empty tank, this product can be a lifesaver. Magic Tank is a 1/2-gallon jug of specially designed emergency fuel that's safe enough to store in your trunk for up to 10 years.

If you run out of gas, just pour it into your tank and drive to the nearest gas station. It'll get you the same miles per gallon as 1/2 gallon of real gas. You can also use it in your portable generator or four-cycle small engine to buy you enough time to finish the job. The only requirement is that the engine must be warm—it won't start or run in a cold engine. Order a 1/2-gallon bottle of Magic Tank for \$20 from mymagictank.com.

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Handy HINTS®

FROM OUR READERS

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SHOE SOLUTION

We have a strict policy at our house about removing your shoes before entering the house. (It works most of the time.) Once we implemented the rule, the next problem was the clutter of shoes blocking the door. While I was looking at the coatrack in the entry, it dawned on me that I could do the same for shoes, so I built another one and hung it close to the floor.

Jimmy Keen



READER PHOTO

Trailer liner

I use a 4 x 8-ft. trailer to haul mulch and dirt to the house. It's extremely handy except when it comes to cleaning out the cracks and corners after each load. I discovered that a Bagster from the local home center could serve as a great trailer liner. The bag is not only the same size as my trailer but also tall enough to fold over my load and strap down so that I don't blow the contents on the drivers behind me. The bag is tough enough to stand up against shovel strikes and pulling along the ground, and it also works great for sand, dirt and gravel.

Joel Eisenbraun



Cuff 'em, Danno

I use rubber gloves for all types of tasks involving solvents, chemicals, grease, paint, stain, bleach and especially motor oil. To keep whatever liquid you're using from dripping down your arm, fold a cuff at the end of the glove. It'll catch the drips before they find their way to your armpit.

Mike Cutini



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HOUSEPLANT POT LINER

I have several houseplants in pots around the house and had soil leaking out of the bottom of the pot when I watered. When I was discarding the coffee filter, I had a great idea. Works there—why not in the potted plants! Now, when I repot the plants, I set a filter on the bottom of the pot and then fill the pot with dirt! No more wet soil leaking out.

Tom Horner

Make a list

With three different vehicles to keep track of and the time lapse between oil changes, I've got to write things down to keep them straight.

When I change the oil, I tear off the flap of the box that identifies the filter number, and then I write down the size of the drain plug and the type of filter wrench I use for each vehicle on the flap. I keep the info inside the car. When it's time for the next change, I pull out the tab to see which filter to buy and which tools to use. I don't waste time crawling under the car several times to get the right wrench.

Daniel Oberholtzer



✓Yes



✓Yes



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I bought an energy-saving outlet strip for my TV and its components. One outlet controls several other outlets on the strip, so when I turn off my TV, the adjacent controlled outlets for my VCR, DVD player and receiver sense that no current is going to the TV anymore, and those outlets shut off.

Then I decided to try it out in the shop. I use it with my router table, disc sander and orbital sanders, so when I flip one of them on, my shop vacuum also starts up to take care of dust collection. It also has two outlets that are independent for other accessories you'd like on all the time. You can buy the outlet strips at amazon.com. One choice is the Belkin Conserve Socket with Energy Saving Outlet (about \$30).

D. Linley

DUST CATCHER

As an art gallery owner, I hang a lot of paintings and photos, which means drilling lots of holes for wall anchors, which means lots of dust on the floor. I catch it all with a Post-it note that I fold in the middle and stick to the wall just under where I plan to drill. It catches all the dust, keeping it off the floor and any furniture below.

Tim Benton



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WEEKEND BATH REMODEL

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WHAT IT TAKES

TIME: One weekend

COST: \$100 and up, depending on your choice of mirror and fixtures

SKILL LEVEL: Intermediate. Some familiarity with electrical projects is useful.

TOOLS: Basic

by Travis Larson and Ken Collier

editors@thefamilyhandyman.com

You don't have to gut a bathroom to make the room feel fresh, bright and inviting and improve the storage. If your sink, tile and shower are still in good shape, then handsome light fixtures, a stylish mirror and a new medicine cabinet may be all you need to revitalize the space. These upgrades will cost only a fraction of a total redo, and you can install them yourself in one weekend.

In this article, we'll show you how to remove a medicine cabinet and overhead lights and replace them with a big mirror and wall lights (sconces) on each side. You'll get two big benefits: The larger mirror will make your bathroom seem larger, and the two sconces will be much more effective than one light over the mirror. They give you an even light, without deep shadows, much like the "makeup lights" used by actors and models.

The drawback of this project is that you'll have to find a place for the items that were stored in the medicine cabinet. We installed a small glass shelf for the everyday items, and a shallow cabinet on the other side of the room for infrequently used items.

This project doesn't require special carpentry skills or tools, but you should have basic wiring experience. Of course, any time you open a wall, you may find unexpected pipes, electrical cables or framing. If you can't work around them, hire a pro to propose a solution. And before getting started, apply for an electrical permit so that an inspector will check your work. Talk to your inspector about the timing of the inspection. Typically it will occur after the wiring is done but before the wall is repaired, and possibly again after the fixtures are installed.

Select your mirror

Mirrors come in many sizes, so before you run off to the store, map your wall (**Photo 1**). The goal is to select a mirror size that'll not only look good but also leave ample room for the light sconces. Use a stud finder to locate all the framing within the wall and then measure the distances from the center of the sink to neighboring walls or other cabinets.

Measure from a centerline over the sink and then mark all the framing and clearances on a drawing. Next, mark the distances from the neighboring studs to the centerline. That'll help you position the new electrical boxes in the open stud spaces.



1 MARK OUT THE WALL

Determine stud locations then make a sketch of the wall, marking the sink center and studs. Use the stud locations to plan the size of your mirror; the lights should fall between, not on, the studs.



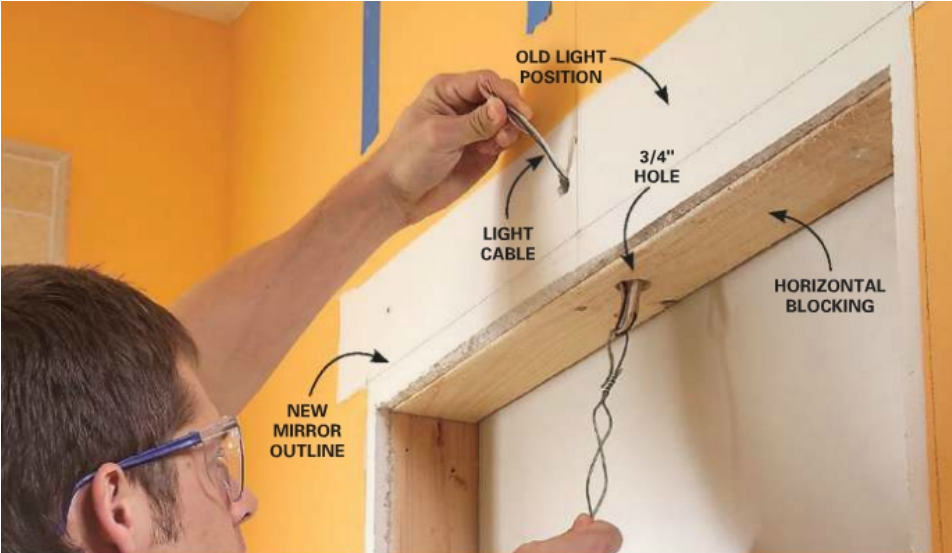
2 REMOVE THE MEDICINE CABINET

Back out the screws inside the cabinet, tape the doors closed and lift the cabinet out of the wall.



3 REMOVE THE LIGHT BAR

Remove the cover, disconnect the wires, and then unscrew the mounting plate from the wall. Make sure the power is off.



4 PULL THE CABLE INTO THE OPENING

Drill a 3/4-in. hole in the horizontal blocking, then fish the cable into the wall opening using a coat hanger or stiff wire. Install 2x4 backing for new drywall (see Photo 6).



5 MARK THE MIRROR AND FIRST FIXTURE

First, draw the edges of the mirror, making them level and at a pleasing height. Trace around the base of the first sconce.



6 MARK THE SECOND SCONCE

It should be level with the first and the same distance from the mirror edge. Trace the outline of a remodeling box inside the sconce outline and cut out the box hole.

When you shop for a mirror, your goal is to pick the widest one that'll fit in the space above the sink, while making sure the light fixtures fit into the open stud spaces, not on top of a stud. We show one of many mirror-mounting systems, which vary widely. Most mirrors come with the hardware and instructions for simple installation.

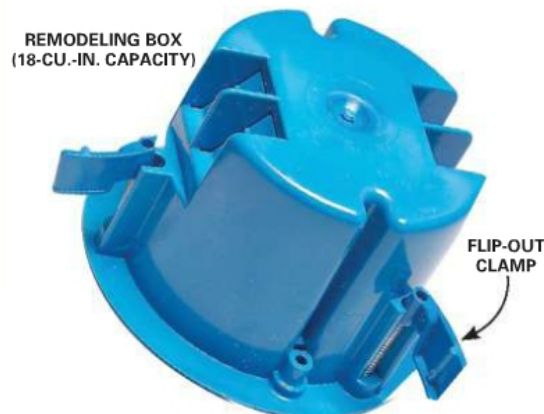
Select your light fixtures

Choosing your sconces calls for some thought. Avoid colored globes because they'll cast less light and affect skin tones. We recommend white frosted glass to lessen the glare of the bulbs. If good makeup lighting is important, select fixtures that are rated for 100-watt bulbs. Then replace the existing light switch with a dimmer switch (\$15) so you can set the lighting intensity to fit your needs (and mood!).

Remove the old medicine cabinet and light

Before you tear into the wall, plug the sink drain to keep fasteners and debris from going down. Pull the old medicine cabinet free of the wall by removing the screws that hold the cabinet sides to the framing (Photo 2). Those screws should be obvious when you open the door. Sometimes you'll need to cut through caulk between the drywall and the cabinet frame with a utility knife. Then turn off the circuit breaker that powers the existing light and remove the light fixture.

Fixtures vary, but most have a finished cover that's held on with thumbnuts. Remove the thumbnuts to access the mounting bracket screws that hold it to the wall (Photo 3). Once you have access to the wiring, check it with a noncontact voltage tester to make sure the power is off. Then disconnect the wire connectors and work the wires through the bracket as you pull the fixture mount free of the wall. If there's a cable clamp at the back of the fixture, loosen that first.





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GETTING POWER TO THE SCNCE LIGHTS

In most cases, you can use the same cable that fed the overhead light to supply power to the new sconces. But the cable is rarely long enough to reach either sconce directly. That's why we suggest running the existing cable to a new junction box positioned close to the old light but hidden behind the mirror. From there you can feed two new cables to both new sconce boxes.

The existing cable to the light fixture usually leads from the wall switch up into and across the ceiling and then down through the framing above the old light. To find out if that's your situation, drill a 3/4-in. hole through the 2x4 at the top of the medicine cabinet recess and try to pull the cable into the opening (Photo 4). If

there's enough cable to reach a new junction box, you can proceed as we show in the photos. However, according to the electrical code, the box must remain "accessible." If the box is behind the mirror, you have to fasten the mirror in such a way that you can easily remove it.

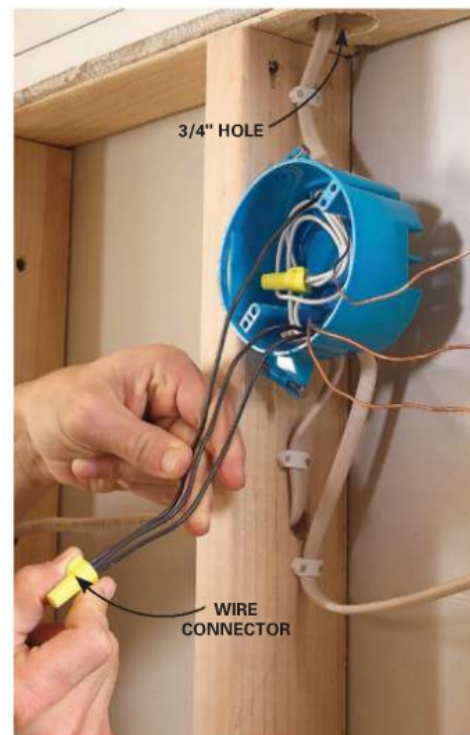
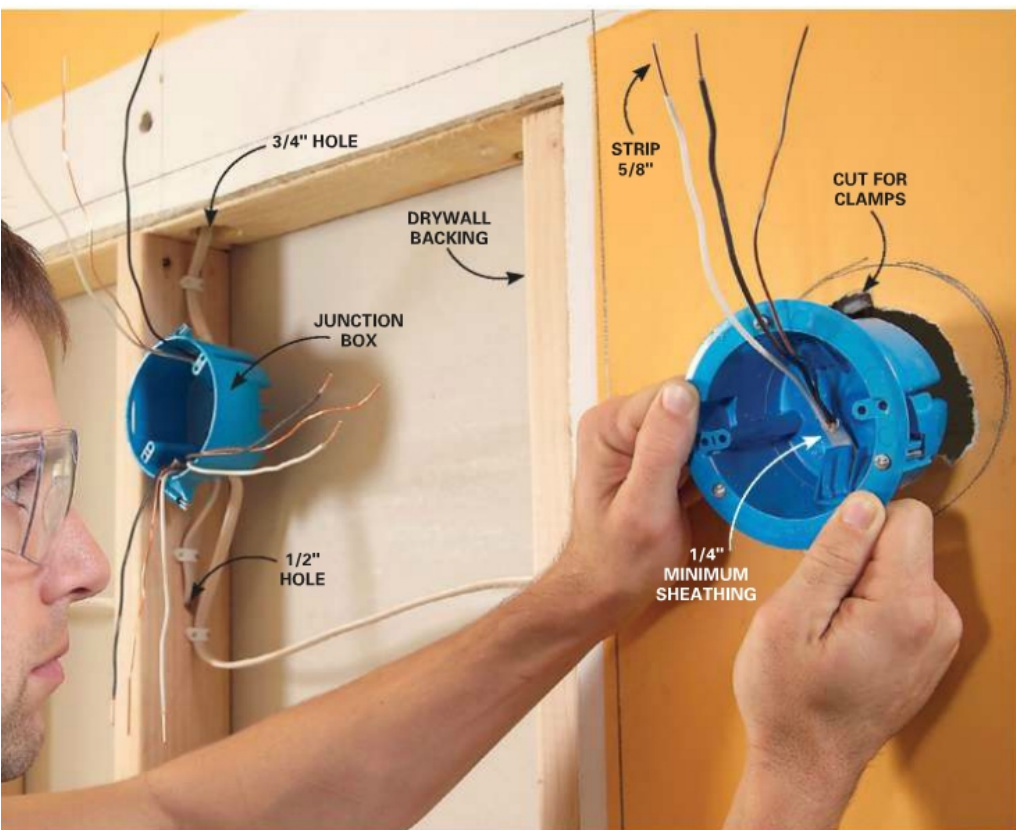
There are three alternatives for handling the junction box:

1. If the cable comes from an accessible attic above, pull the wire up into that space and mount a covered junction box in the attic.
2. If the cable comes from above and is too short or the space above is inaccessible, install a new junction box at the old fixture location and cover it with a



decorative cover plate painted to match the wall.

3. If the cable comes through the wall studs to the old fixture, pull it back and run it to the nearest sconce box. Then run a second cable from that box to the sconce box on the opposite side.



8 CONNECT THE WIRES

Connect the new cable to the existing cable, black to black, white to white, and ground to ground. Screw a connector onto the exposed wires and tuck the wires into the boxes.

7 INSTALL AND WIRE THE BOXES

Nail the junction box and run the existing cable to it. Then run cable to the remodeling boxes used for the sconces and tighten them in place.

Mark the new mirror and scone locations

With the old cabinet removed, mark the new mirror location (**Photo 5**). Use a level to mark the center of the sink above the opening. Center the mirror in place and ask family members to vote on the best height. (Some mirrors come with instructions that include recommended heights or even templates to help with placement.) After the position is decided, outline the mirror on the wall. Use those marks to help position one of the sconces. Then trace around the base 65 to 75 in. from the floor (**Photo 5**). Or simply hold the scone up and adjust it up and down until you find a pleasing position.

Center a remodeling box in the circle and trace around it. Then position the box on the other side to match the first (**Photo 6**), leveling across to mark the bottom and measuring from the mirror edges to mark one side. If this position falls over a stud, readjust both boxes. Draw the second remodeling box hole and cut out both openings with a dry-wall saw. Push the boxes into the holes as far as you can and mark the shoulders that surround the flip-out clamps (**Photo 7**). Pull out the boxes and cut out those areas as well, testing and recutting as necessary until they'll slip into the holes. You want them to fit tightly for maximum scone support. Then set the boxes aside for now.

Wire the boxes

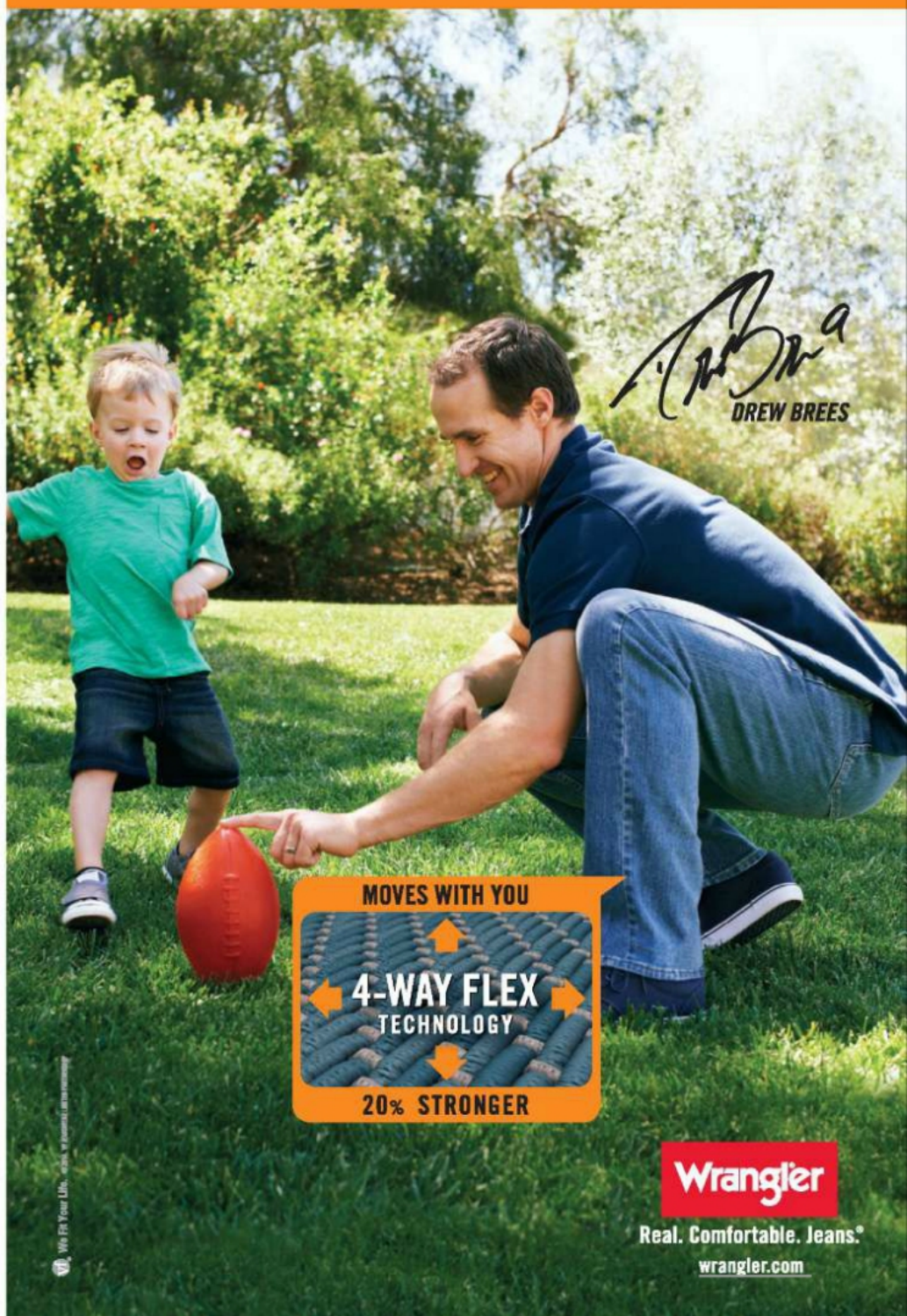
Let the cable hang while you nail in the drywall backing (**Photo 6**), then nail a round junction box to the center framing and feed the existing power cable into the box. If you have to deal with more wires than we show, you'll need to calculate the box size required. Go to familyhandyman.com and search for "electrical box size" for details. Drill 1/2-in. holes through the middle of the framing and run the new cables through the scone holes. Wherever cables run into a box, strip off 8 in. of sheathing and strip 5/8 in. of the insulation from the ends of the wires (**Photo 7**). Then slip the cables through the clamps at the back of the boxes until at least 1/4 in. of sheathing penetrates the boxes.

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9 PATCH THE DRYWALL

After the inspector has approved the wiring, patch the drywall, tape the seams and sand the joints. Repaint the entire wall.



10 MOUNT THE LIGHT FIXTURES

Attach the mounting bracket to the box and attach the ground wire to the grounding screw. Then connect the wires as shown and mount the fixture.

Join the black (hots), white (neutrals), and bare or green ground wires as we show. In the sconce boxes, protect the ends of the wires with wire connectors and fold the wires into the boxes. Now you can hang drywall in the hole, tape the joints and sand and repaint the wall (**Photo 9**). Finally, mount the lights following the manufacturer's instructions (**Photo 10**).

Hang the mirror

Mirrors have a variety of mounting systems. The manufacturers supply directions and often even a template to help position the wall fasteners accurately. Work off your centerline and make sure the mirror is level (or plumb). We highly recommend that you discard the plastic drywall anchors that come with some units and replace them with screw-in anchors (E-Z Ancor is a brand we like) for a safer, stronger mounting system. You'll find these anchors at any home center or hardware store.



11 HANG THE MIRROR

Hang the mirror using wall anchors. You must be able to easily remove the mirror to access the cover plate.

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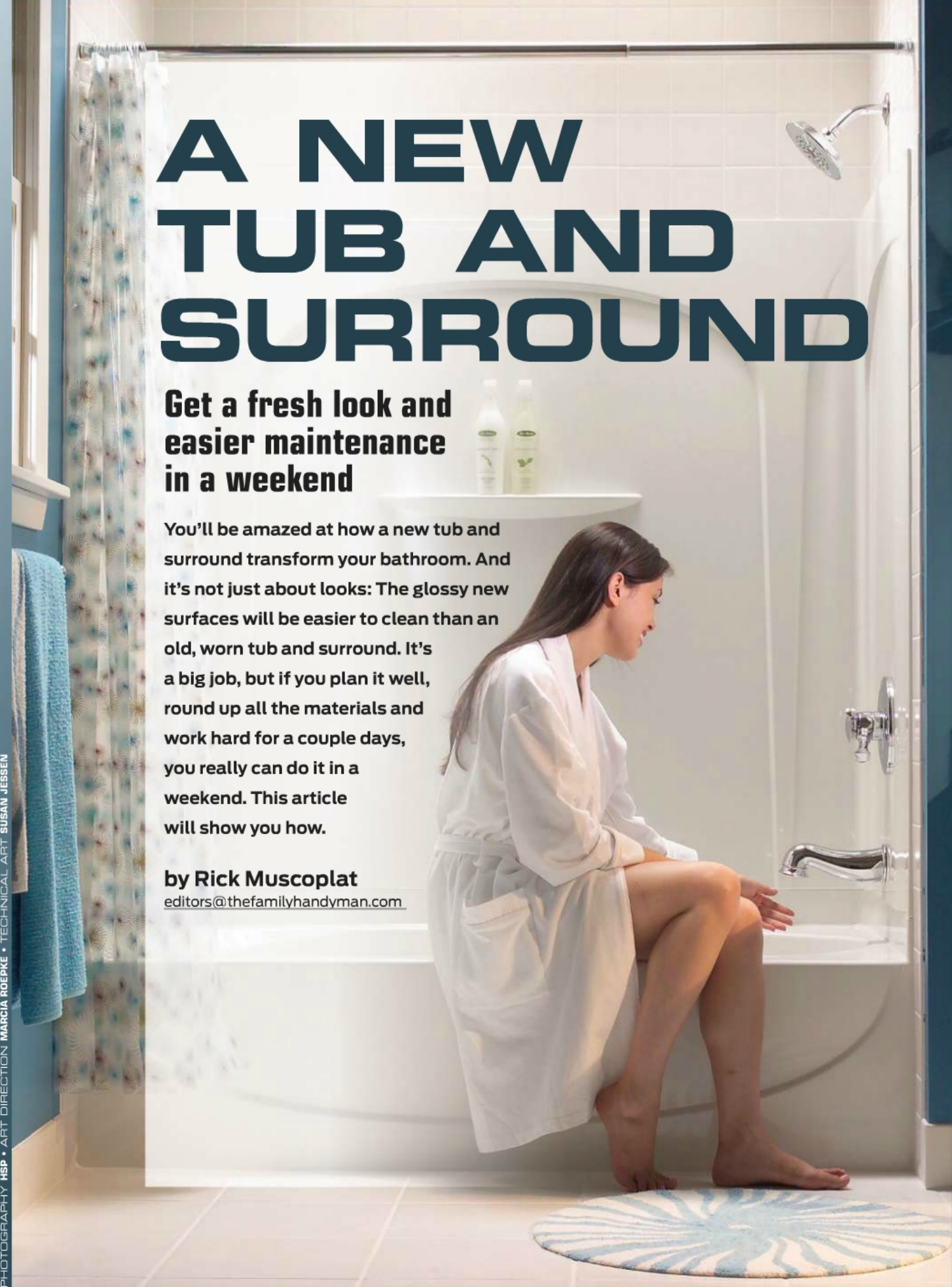
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A NEW TUB AND SURROUND

Get a fresh look and easier maintenance in a weekend

You'll be amazed at how a new tub and surround transform your bathroom. And it's not just about looks: The glossy new surfaces will be easier to clean than an old, worn tub and surround. It's a big job, but if you plan it well, round up all the materials and work hard for a couple days, you really can do it in a weekend. This article will show you how.

by Rick Muscoplat
editors@thefamilyhandyman.com



1 REMOVE THE PLUMBING TRIM

From the drain to the showerhead, it all has to come off before you can tear out the old tub and surround. To avoid damage, remove the showerhead even if it's above the surround. You can reuse the faucet, but this would be the perfect time to replace it.



2 DISCONNECT THE DRAIN

Loosen the compression nuts to the overflow and drain assembly. Then remove the overflow pipe from the P-trap. If you can't remove the old compression nuts, cut off the entire overflow and drain with a reciprocating saw. Place tape over the trap opening to keep out demolition debris.



3 CUT THE DRYWALL

Score a line about 1 in. larger than the "rough-in" dimensions of the new surround. Then continue slicing through the drywall with a utility knife until you reach the studs.



4 RIP OUT THE OLD SURROUND

Sink a hammer claw into the drywall at a corner and pry the drywall and surround away from the studs. Then pull just the surround away from the drywall to peel it off the drywall.

Start with an honest assessment

Here's the brutal truth about surrounds: It doesn't matter whether your existing walls are in pristine condition or are water damaged; they have to come down before you install a new unit. You simply can't glue or mount a new surround over existing walls. Doing so is a recipe for trouble down the road. And, since you're already investing the effort to rip out the walls, consider replacing the tub and faucet at the same time. It's much easier to replace them when you're already down to

WHAT IT TAKES

TIME: A full weekend.

COST: \$100 to \$600 for most styles.

SKILL LEVEL: Medium. The job requires basic plumbing and carpentry skills.

TOOLS: Hand tools, safety gear, reciprocating saw, drill and hole saws, caulk and a caulking gun.

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Figure A
Tub and surround

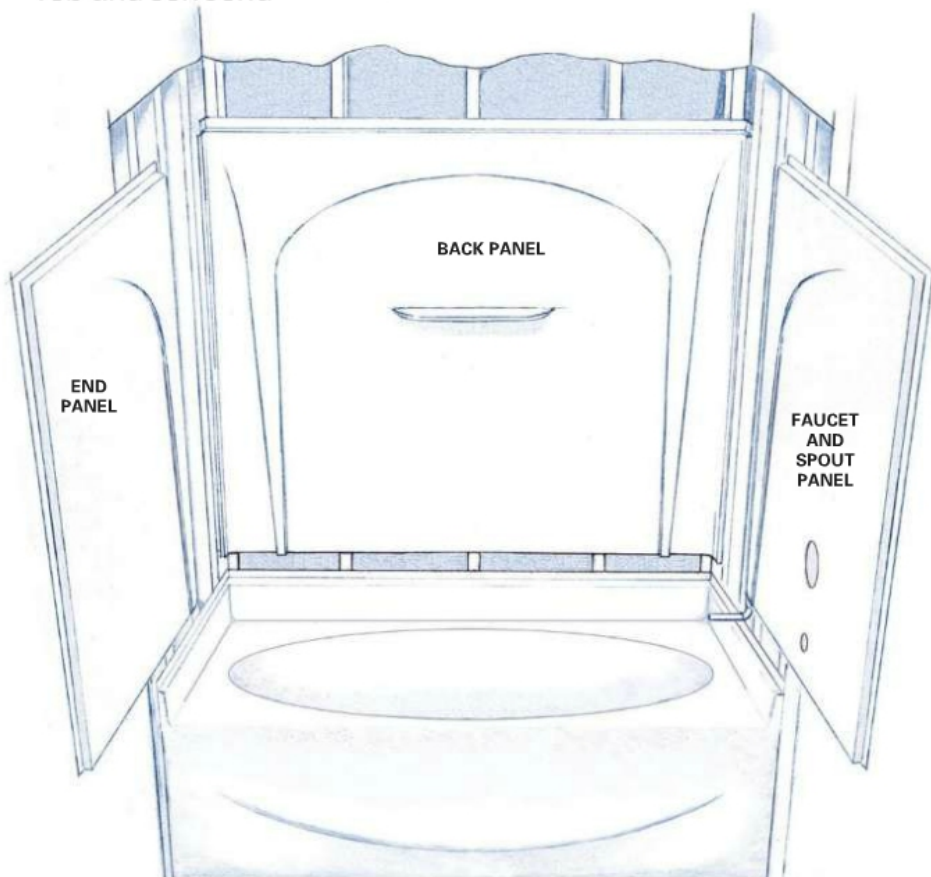
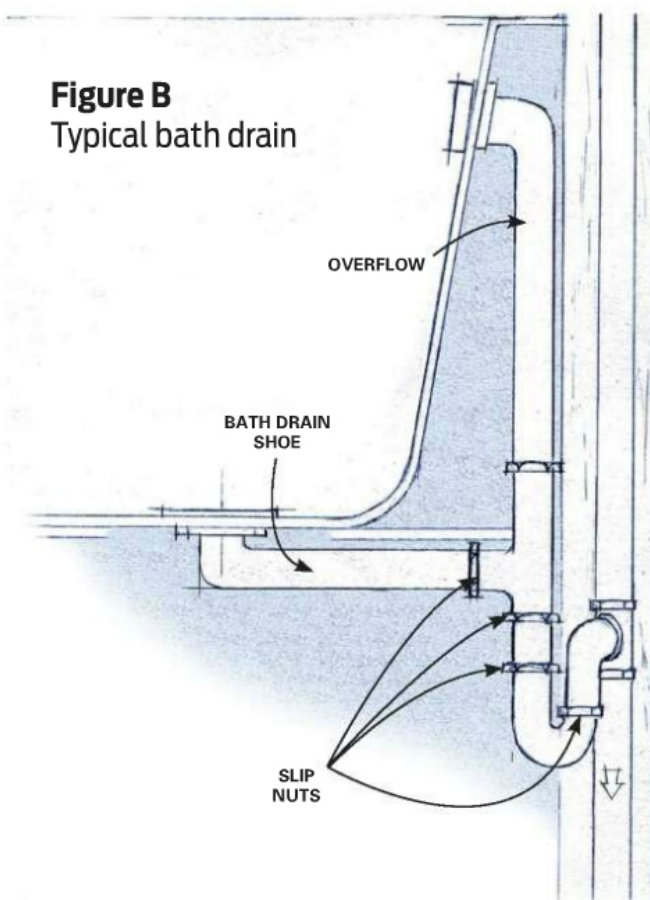


Figure B
Typical bath drain





5 REMOVE THE TUB

Cut an angled piece off the tub apron so you can lift it straight up. Fiberglass or acrylic tubs are easy to cut with a jigsaw. Wear eye protection.

bare studs than to tear the walls out a second time years from now. Plus, if you buy a tub/wall combo, the two will match perfectly.

In addition to the cost of a tub/surround combo, plan to spend \$80 for a new brass/chrome overflow and drain kit (or \$25 for plastic/chrome). We won't cover the plumbing steps in detail. Go to familyhandyman.com and search for "faucet" and "tub drain" to see how to replace a faucet and drain assembly. Most DIYers can easily handle the overflow and drain installation.

Then measure and plan

Carefully measure the length and width of your existing bathtub. Add about 3/4 in. to your measurements to account for the thickness of the old wall surround or tile and cement backer. Then order the new tub/surround combo that's closest to your measurements. Be sure to get a tub with an equally large footprint or plan to replace the flooring. The tub/surround combo we chose is a four-piece design (Figure A).

Remove the walls and tub

Turn off the water at the main shutoff before removing the faucet hardware. Then remove the faucet handle, trim and spout (Photo 1). If you're leaving the old faucet valve in place, you can turn the water back on after the trim pieces are off.

Next, locate and remove the plumber's tub access panel so you can remove the drain. Find the access panel in the room or closet directly behind the tub drain. Or, remove the drain from an open ceiling directly below the tub drain. Loosen the compression slip nuts and remove the overflow, P-trap and bath drain shoe (Photo 2 and Figure B). If the connections are stuck, cut them with a reciprocating saw and replace with new plastic drain parts once the new tub is in place.

Spread thick canvas drop cloths over the bathroom floor, sink and countertop. Then don eye protection, leather gloves and a dust mask, because this next part is really messy. Refer to the rough-in measurements for the new surround. Add 1 in.



6 ADD NAILERS

Slide the new nailers behind the drywall. Screw them to the bottom plate and drive screws through the drywall into the nailer. The nailers provide a fastening surface for the new surround and drywall filler strips.



7 LEVEL THE TUB

Place a level on the tub rim and insert shims until it's level. Then move those shims under the tub feet and tack them into place. Recheck for level again and make any final adjustments.

to the measurements, then mark the old drywall and cut through it with a utility knife (Photo 3). Slice through all the caulked seams in corners and where the surround panels meet the tub. You can use a drywall saw as long as you make shallow cuts to avoid hitting water pipes or wiring in the stud cavity.

Next, remove the surround walls and drywall. Start at an outside corner and pry out both the surround and the drywall (Photo 4). Once you get a small section of drywall and surround out, grab just the surround and peel it off the drywall. Then remove the remaining drywall.

Continued on p. 35

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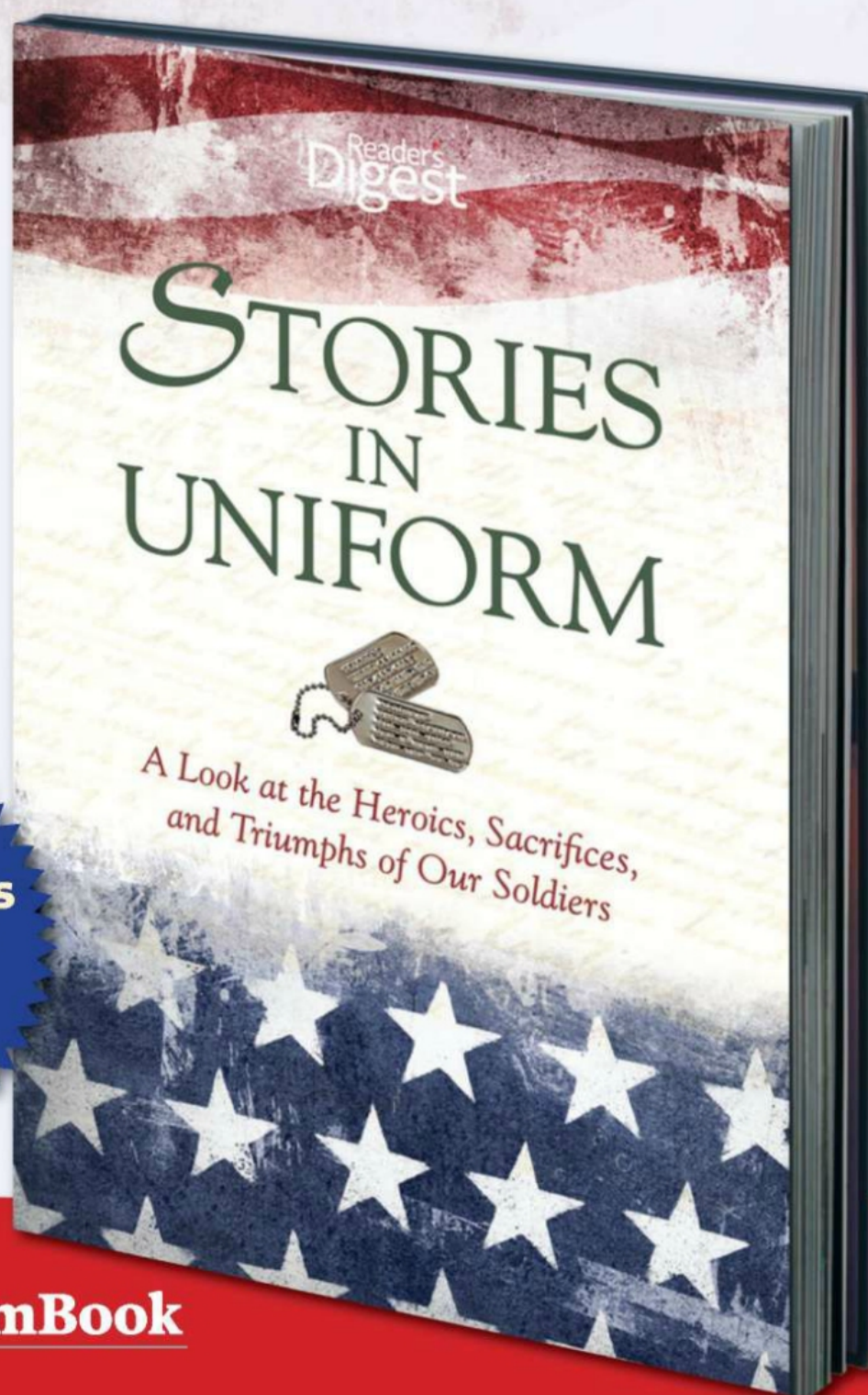
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8 FASTEN THE TUB

Set heavy cardboard below the nailing flange to protect the tub in case you swing and miss the mark. Then secure the flange with nails, screws or clips as required by the tub manufacturer. To avoid cracking the tub, shim any gaps between the studs and the flange.



9 CUT PLUMBING OPENINGS

Cut the faucet and spout openings from the finished side of the surround with hole saws. Or drill a starter hole on the finished side and cut the hole from the back using a jigsaw.



10 PLACE THE END PANELS

Tip the end panels into place to check how they mate to the back panel. Make adjustments to the back panel. Then secure the panels to the studs.

Now you're ready to remove the old tub. Slice through any caulk along the edge where the tub meets the bath flooring. Then use a jigsaw or a reciprocating saw to cut a chunk out of the plastic/fiberglass tub apron and remove the tub (Photo 5).

If you have an enameled steel tub, remove the remaining dry-wall from the faucet and end walls. Then get someone to help you roll the tub out and carry it out of the bathroom. If it's cast iron, break it into pieces first—it's too heavy to remove intact. Cover it with a tarp to stop flying shards. Use a sledgehammer and aim for a lower corner of the apron. Once you break the first chunk, the rest of it will be easier to break. Continue breaking away small chunks until you can move the tub.

Clean up, add nailers and check the apron gap

Remove all nails and screws left in the studs. Replace any moldy insulation and scrub moldy surfaces with a mold cleaning and remediation product (Concrobium is one brand). Replace any rotten wood. Let the area dry thoroughly before replacing the insulation and vapor barrier. Then add nailer studs to the end wall (Photo 6). But hold off on adding nailers at the drain end until the new tub is in place—you may need the extra stud cavity space to help you maneuver.

Dry-fit the tub and check the area where the tub apron (outer edge) meets the existing floor. Trace the tub apron outline and cut the existing flooring material to get a contoured fit. If the new tub is smaller than the old footprint, cut away just enough flooring to patch in solid-surface material after the tub is securely set in place (use silicone to glue the strips in place).

Once you've dealt with the apron/flooring gap, toss a clean canvas drop cloth into the tub to protect the finish (if the new tub doesn't come with a protective covering). Then lay a 4-ft. level on the tub flanges and add shims under the level to determine how much the tub must be shimmed (Photo 7). Tack or hot-glue hardwood or plastic shims under the tub feet to prevent shifting when you set the tub into place. Don't try to level the tub by raising it and attaching the flange to the studs—the flanges aren't designed to bear weight. And don't use softwood shims—they'll crush under the weight of a full tub and you'll wind up with a gap between the tub and the walls.

Apply a bead of clear silicone around the tub drain opening and mount the new drain and drain shoe. Then follow the manufacturer's directions for prepping the floor. Some tubs must be set onto a wet mortar base, while others just install on top of a stapled felt pad. Once you've prepped the floor, move



11 SCREW THE PANELS TO STUDS Secure the wall flanges with the recommended screws. Shim any gaps between the studs and the wall flanges. Don't overtighten the screws or you'll crack the flange.

the tub back into place and check for level one last time. Make final adjustments with additional shims. Then secure the tub flange to the studs using the recommended fasteners (**Photo 8**).

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12 PATCH THE GAPS Cut tile backer or water-resistant drywall to fill in along the surround. You can hide the filler strips with tile as we did, or you can cover them with drywall tape, coats of joint compound and paint.

Install the new surround walls

Set the back section of the surround on the tub rim, holding it in place temporarily with a nail above the top flange. Then



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dry-fit the side panels and check for gaps. Shave down any warped or out-of-plumb studs so the panels fit squarely on the studs. Shim out any low areas.

Next, measure from the back panel or corner stud (depending on the manufacturer's instructions) to the centers of the tub faucet and spout. Then measure up from the tub flange and mark the faucet wall. Repeat your measurements before cutting the holes. Then cut the faucet and spout holes with hole saws or a jigsaw (**Photo 9**).

Some wall surround designs require a bead of caulk where flanges meet; other manufacturers recommend caulking the gaps after the walls are in place. However, some products feature caulkless corner and tub seals. Refer to the manufacturer's installation instructions to determine whether your kit requires caulk, the type of caulk to use, and where and when to apply it.

Center and secure the back wall first. Then apply caulk where needed and set the end panels in place (**Photo 10**). Tap with a rubber mallet to make final adjustments. Secure all the panels to the studs with the fasteners specified by the manufacturer (**Photo 11**).

Finish the walls and plumbing

If you plan to tile around the new surround walls, fill the gap between the wall flanges and the old drywall with either 1/4-in.- or 3/8-in.-thick tile backer board (**Photo 12**). However, if you plan to tape and paint, fill the gaps with water-resistant wallboard and tear-away drywall bead. Then apply joint



13 INSTALL THE PLUMBING TRIM

To prevent leaks, apply silicone caulk under the drain ring and behind the faucet trim and spout.

compound and sand. When you're done, simply tear off the bead and you'll have an attractive edge meeting the surround walls.

Finish the job by installing the drain, trap and overflow. Then reinstall the faucet trim and handle and the tub spout (**Photo 13**). Caulk any tub and wall gaps as recommended by the manufacturer.

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SHOPPING FOR A TUB AND WALL SURROUND KIT

Tubs and surrounds come in all types of materials and price ranges. They all have a hard shiny surface, but they differ in stiffness, repairability and projected longevity. We divided them into three material categories and price ranges. The first two categories are the most popular.

Premium composites and solid-surface: \$600 to \$1,200

Premium composite tub and surround combinations offer caulkless seams and more realistic tile and texture patterns. Solid-surface panels offer the largest selection of styles, including faux granite, quartz and marble. You can order matching solid-surface trim kits that eliminate the need for tile around the edge. Expect a life span of 30-plus years. Some brands include a lifetime warranty. The composite units mount directly to studs with screws and clips; the solid-surface panels glue to either walls or studs.

PROS:

- Strongest and most scratch- and chip-resistant of any material
- Most realistic tile and texture patterns
- Longer life (30-plus years; some with lifetime warranty)
- Caulkless designs eliminate recaulking
- Scratches and chips can be repaired

CONS:

- More expensive
- Harder to cut

- Some models require a mortar bed under the tub
- Requires a special order at most home centers

EXAMPLES:

- Sterling Ensemble tile pattern tub/surround combo (shown below), \$961
- Swanstone tub surround (shown at bottom), \$860



STERLING TUB/SURROUND COMBO

STERLING



SWANSTONE TUB SURROUND

SWANSTONE

Fiberglass and composites: \$300 to \$600

In this category, you get sturdy shelves and overall stiffness, plus a more durable surface.

Fiberglass units are stronger and far more chip- and-scratch resistant than the surrounds in the next category. Composite surrounds and tubs are the strongest and have the longest projected life span. Most mount directly to bare studs with screws, nails or manufacturer-provided clips, although a few can be glued to a clean, smooth surface. Add about \$200 for a matching tub.

PROS:

- Affordable
- Easy to install
- Longer life (15 to 20 years)
- Composite units have tighter corner radii, so shelves and soap dishes can be molded right into the corners, opening up personal shower space.
- Light scratches can be repaired.

CONS:

- Fiberglass units have wide radius corners so shelves must be located on the back wall.

EXAMPLES:

- Swanstone TI30000.010; \$490
- Swanstone RM5801-SS shower wall; \$432 at Sears

Acrylic-surface plastic surrounds: \$55 to \$300

Models in this category all have the same surface layer, but they vary a lot in stiffness.

The lowest-priced units are just flat sheets of acrylic-capped polystyrene that you glue to moisture-resistant dry-wall. Spend a bit more and you'll get features like tile patterns, molded shelves and soap dishes. But since they're made from the same thin material, they can be pretty flimsy even when glued to the wall. Spend a bit more and you get stiffer acrylic-capped ABS plastic. However, the best models in this category include fiberglass reinforcement to make the shelves really stiff. The \$55 surrounds are popular because they fit a tight budget, and they're fine for low-use

showers. But for most bathrooms, we suggest you spend about \$200 to \$300 for a fiberglass-reinforced unit.

PROS:

- Low cost
- Usually in stock at home centers
- Easy to cut and drill

CONS:

- Scratches and chips more readily than other surfaces and can't be repaired
- Shortest life (10 to 15 years)

- Back wall shelves intrude into shower space

EXAMPLES:

- ASB No. TWS3013A; \$63 at homedepot.com
- Peerless Avondale; \$100 at lowes.com
- Delta Classic 400; \$255 at homedepot.com
- Sterling Ensemble wall set; \$260 at lowes.com
- Lyons Elite shower wall panel; \$300 at menards.com

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FINISH A TABLETOP

34
tips for
glass-smooth
perfection

Finishing a tabletop is tricky. On a big table especially, coating the entire surface before the finish becomes too sticky is the ultimate test of speed and skill. And your work has to be perfect. More than any other furniture surface, a tabletop reflects light and shows off every little flaw.

But that doesn't mean you can't do it. These tips will make the tough parts easier and help you achieve a perfect finish.

by Gary Wentz

editors@thefamilyhandyman.com

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1 WET THE FLOOR

A floor dampened with a mop or spray bottle has two benefits: It prevents you from kicking up dust as you walk around. And it raises the humidity, so polyurethane dries slower and remains workable longer.

2 Declare war on dust

Airborne dust is the wood finisher's nemesis. It settles on wet coatings and creates ugly pimples in the dried finish. You can sand them out, but it's better to minimize that labor by minimizing dust sources. Clean up the work area and change out of the dusty clothes you wore while sanding.

3 Limit air movement

If you're using water-based finishes, control airborne dust by turning off forced-air heating or cooling, and by closing windows and doors. This doesn't apply to oil-based finishes; ventilation is required to remove harmful fumes.



4 TENT THE WORK AREA

Open rafters and trusses are an endless source of falling dust. So if you're working under an open ceiling, hang plastic sheeting above. Keep the plastic at least 12 in. from light fixtures or remove the bulbs. Sometimes, adding plastic "walls" is a lot easier than cleaning up the entire area. If you're using oil-based finishes, hang the sheets about a foot from the floor to allow for ventilation.



5 PROP UP THE TABLETOP

Set the top on screws so you can easily finish the edges.

6 Work fast

Depending on the conditions, oil-based poly may become too sticky to work with after just five to ten minutes. Water-based poly dries even faster. So have all your supplies lined up and ready to go before you start. And once you've started, there's no time for coffee or bathroom breaks.

7 Do a final sanding by hand

A random orbital sander is perfect for most of the sanding. But do a five-minute final sanding by hand using the same grit. Hand-sanding with the grain removes swirls and torn wood fibers left by the orbital action of the sander.

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8 REMOVE THE LEGS

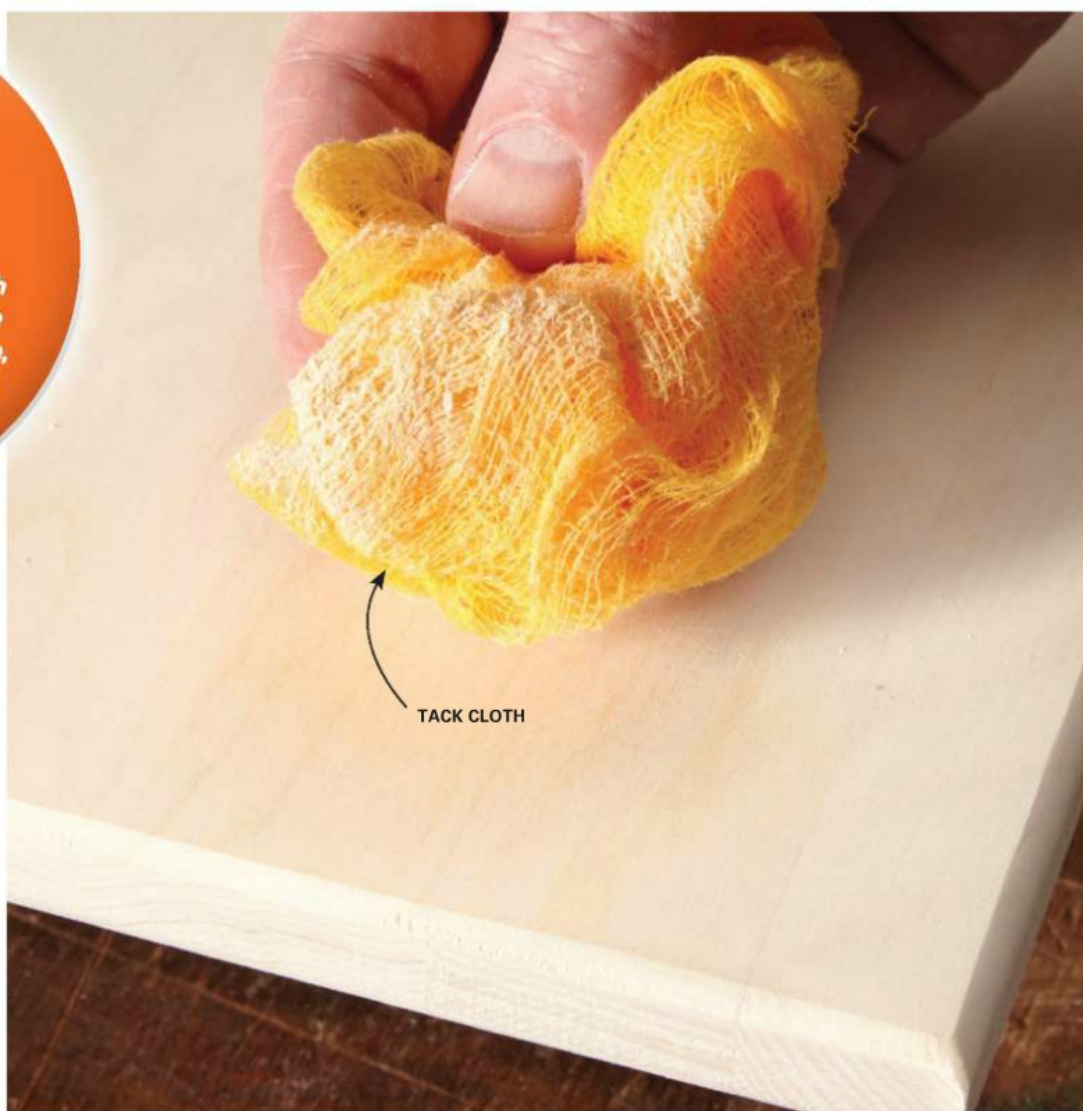
A disassembled table is much easier to move and the legs are easier to finish. On a typical table, removing each leg is as simple as unscrewing a nut.

9 Sand every square inch the same

Any variation in sanding steps can show up in the final finish. If, for example, you run out of 80-grit sanding discs halfway through the initial sanding, you might be tempted to switch to 100-grit. But don't. Even after sanding with higher grits, stain may look different in differently treated areas.

10 Avoid blotches

Most common wood species—pine, birch, maple and cherry—absorb stain unevenly. For a more consistent finish, apply a pre-stain conditioner.



TACK CLOTH

11 VAC AND TACK

A vacuum with a brush attachment will remove 99 percent of the sanding dust. But that's not enough. This photo shows how much dust is left over. After vacuuming, wipe with a tack cloth (available at home centers) if you plan to use oil-based stain or coatings. If you're using water-based finishes, use a lint-free rag dampened with mineral spirits.



12 Prevent regrets

The very best way to avoid wood finishers' remorse is to test your finishes on wood scraps of the same species as your masterpiece. Sand the scraps in exactly the same way you sand the table: Sanding lighter or harder or using different grits will change the look of any finish you apply.

13 Start with high-gloss poly

A few coats of semigloss or satin polyurethane looks like a sheet of dull plastic over the wood. So build up coats of gloss poly first. Then, if you want less sheen, dull the finish by wet sanding (Tip 27) or wiping on a couple coats of satin or semigloss.



14 Inspect your sanding work

Stain will highlight any flaws in your sanding job (swirls or cross-grain scratches). Then you'll have to resand—and sanding stained wood is a real pain. To find flaws *before* you stain, use low-angle light (see Tip 16). Wiping on mineral spirits also helps to reveal problems.



16 CUSTOMIZE YOUR LIGHTING

Overhead lighting is great for most shop work, but it's bad for finishing. Try this instead: Turn off the overhead lights and position a bright light 4 to 5 ft. off the floor. The low-angle glare will highlight every flaw.

17 Skip grits when sanding

You don't have to use every available grit as you progress from coarse to fine. Instead, you can jump from 80-grit to 120- to 180-, skipping 100- and 150-grit.

18 Seal end grain

The end grain of wood soaks up finishes and often turns much darker than the face grain. Check for this on your test block (see Tip 12). If you get an ugly result, pretreat the end grain with a dose of finish that will limit absorption (wood conditioner, sanding sealer, shellac or polyurethane thinned 50 percent). Apply the treatment with an artist's brush and be careful not to slop onto the face grain.

15 Don't oversand

Most professionals we talked to stop at 150-grit on coarse-grain woods like oak or walnut and 180-grit on fine-grain woods like cherry or maple. But that doesn't apply to end grain. End grain shows sanding scratches more than face grain, so you may have to sand to 220- or even 320-grit.



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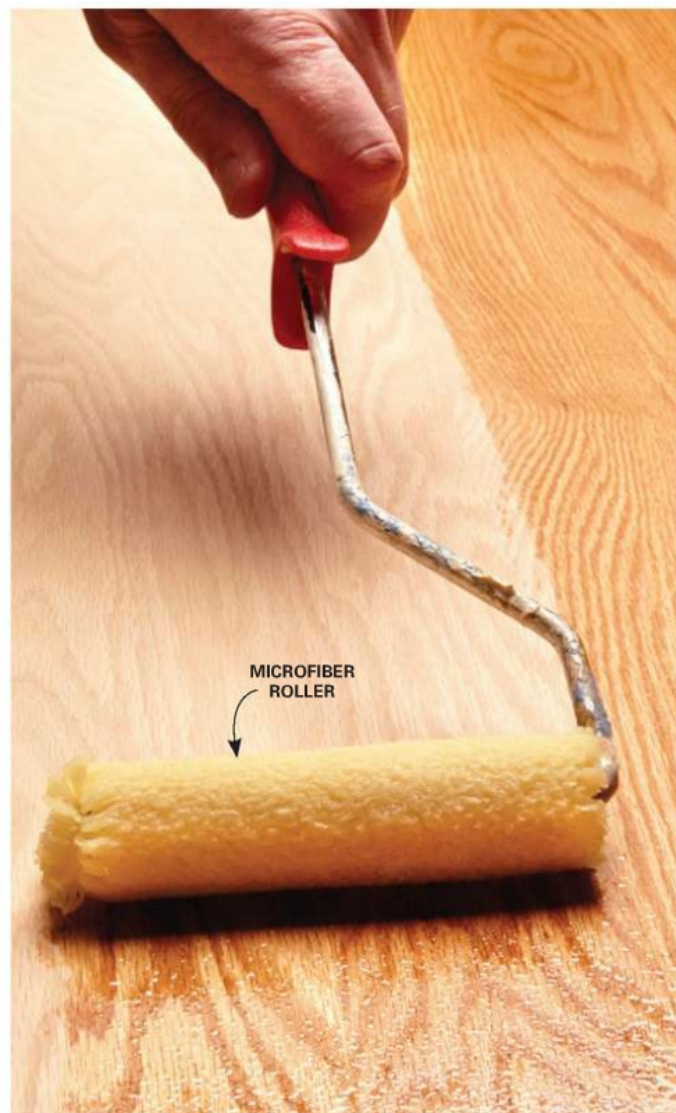
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19 Go with polyurethane

There are lots of clear finishes. But for a combination of usability and durability, you can't beat polyurethane. Oil-based poly, which dries slower than water-based, is best for beginners because it allows more working time. The other important difference is clarity: Water-based poly is absolutely colorless, while oil-based has an amber tone, which can be good or bad depending on the look you want.



MICROFIBER ROLLER

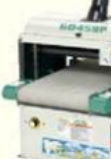
20 Roll on oil-based poly

Coating a big surface with a brush—before the poly becomes goopy—requires speed and skill. Rolling, on the other hand, is faster, easier and almost goof-proof.

Rolled-on poly looks terrible at first, but the bubbles disappear in minutes, leaving a smoother surface than most of us can achieve with a brush. Beware of ridges formed by the edges of the roller and humps where you start and stop. You can minimize both of those flaws by applying lighter coats. We experimented with several kinds of rollers and got the best results with microfiber mini rollers. We also tried rolling on water-based poly; don't do it.






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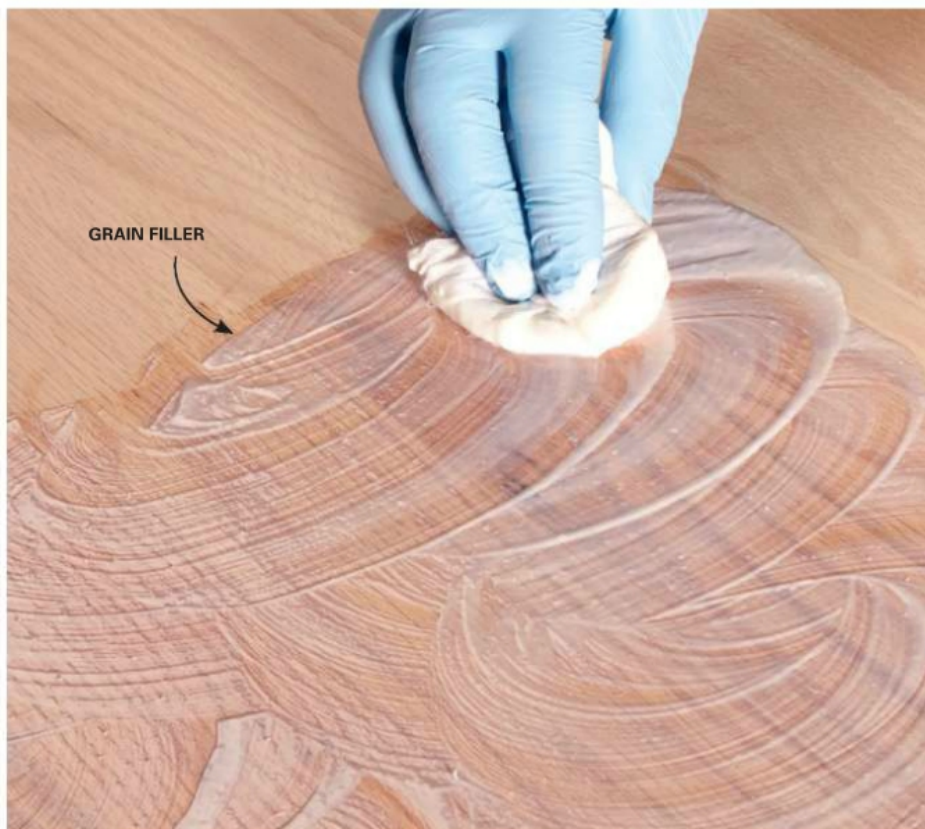
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GRAIN FILLER



21 FILL THE GRAIN

The deep grain lines in woods like oak or walnut will telegraph through the clear finish, no matter how many coats you apply. And that's fine; it's part of the character of coarse-grain woods. But if a perfectly smooth surface is the look you want, use a grain filler. You'll find several products online or at woodworking stores. With most, you wipe on the filler, squeegee off the excess with a plastic putty knife and then sand after it's dry for a smooth-as-glass surface.



22 WIPE AWAY DRIPS

After the table is completely coated, wrap a rag around your finger and wipe off any drips along the underside.

23 Keep an eye on edges

Regardless of how you apply poly, you'll likely end up with some runs on the edges. So constantly check the edges as you work and be ready to smooth out runs with a brush.



25 Coat the underside

Wood absorbs moisture from the air, shrinking and swelling with changes in humidity. Polyurethane (or any coating) slows that absorption. So if you coat only the topside, the unfinished underside will shrink or swell at a different rate. That means a warped table. But one coat on the underside will stabilize the tabletop.

26 Apply at least three coats

With a thicker layer of protection, damage to the underlying wood is less likely—so your tabletop will look better longer, and reviving the finish will be easier. Some finishers apply four or even five coats.

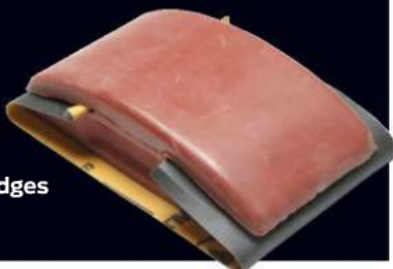
24 SAND BETWEEN COATS

A quick hand-sanding between coats flattens out flaws before the next coat. Polyurethane tends to gum up sandpaper, so use paper or pads that resist clogging (320-grit). On shaped edges, use synthetic steel wool, such as Scotch-Brite pads, labeled "very fine."



27 WET-SAND BEFORE FINAL COATS

Load a sanding block with 600-grit wet/dry paper, dribble on some soapy water and rub the finish smooth. Then wipe the table dry, look for flaws and rub some more. Don't stop until you achieve perfection. Smooth shaped edges with synthetic steel wool.



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28 Clean off the white stuff

As the table dries after wet-sanding, a white residue will appear. Be sure to clean it off completely. Residue left in the grain lines of coarse-grain wood will be trapped under the final coat and haunt you forever.

29 Don't sand through

If you sand through the polyurethane and remove some stain, you can touch up with more stain. But the repair won't be perfect, so take pains to avoid that mistake. Sand very lightly after the first coat, just enough to remove the dust whiskers. After the second coat, you can sand a little harder to flatten larger flaws. Always be careful around the edges of the table; that's where it's easiest to sand through.

30 Spray the legs

Table legs—especially shaped legs—are almost impossible to coat smoothly with a brush. So instead, hang them from the ceiling with wire and spray them.



SPRAY POLY



31 Pluck out problems

Tweezers are an essential emergency tool. If a fly, brush bristle or lint ends up in the finish, you can surgically remove it.



32 Apply water-based poly with a pad

Water-based poly dries faster than oil, so it's even harder to brush over a big surface. The solution is a paint pad, which applies poly fast and smooth. Just dip the pad into a pan of poly and drag the pad across the surface. Be sure to smooth out any ridges pushed up by the edges of the pad.

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33 WIPE ON THE FINAL COATS

Wet-sanding leaves the surface perfectly smooth but dull. To restore the shine, apply two coats of wipe-on polyurethane (available in gloss, semigloss and satin). Wiping results in a very thin, fast-drying coat, so flaws like dust nubs or sags are less likely.

34 Never use wax or polish

All you need for routine cleaning and care of your table is a damp cloth. When normal wear eventually dulls the finish, you can renew it in just a few minutes with another coat of wipe-on poly. But if you've ever used furniture wax or polish, a fresh coat of poly may not stick.

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HOW TO FRAME A GARAGE



Tips to help you plan, build a solid foundation, frame and more

We here at The Family Handyman recently had the opportunity to pool our talents and build a garage. We were reminded of what a great project it is for an advanced DIYer. So here is some of our best advice on building a garage. We concentrated on framing, which is the most distinctive part of the project. We couldn't include how to roof it, install siding and windows, etc., but you can search for those topics at familyhandyman.com and find all the information you need.

You'll want to enlist a few friends and family members for a project of this size. It's helpful to have at least one worker with some framing experience, but the rest of the crew's skill level can vary from intermediate to "Which end of the hammer do I hold?"

We'll also talk about a lot of other topics for anyone who's interested in tackling a "detached" (not attached to the house) garage. These include the permit process, design considerations, slab details, roof truss options, materials ordering, and much more.

by Mark Petersen

editors@thefamilyhandyman.com



Do your homework

The very first thing you should do when you plan to build a garage is pick up or download the information packet provided by your municipality. If your local government doesn't have one, ask the building official what you need to know before getting started. Although sometimes it's easier to apologize later than to ask permission, that's not the case when building a garage—get your plan approved! Here are some questions you should ask.

How big can it be?

Sure, it would be nice to build a 40 x 60-ft. dream garage with 12-ft. walls, but there will be local rules, ordinances or covenants on square footage and how tall new structures can be. Here are some rules you may encounter:

- Only a certain percentage of a lot can be covered with impervious structures, including buildings, decks, driveways, aprons and sidewalks.
- There will be a limit on the total number of buildings allowed.
- The garage might have to be shorter than the house.

Where can it be built?

Talk to your neighbors first. Mrs. Whitman may not appreciate your new garage blocking the sun from the garden she's nurtured for the past 20 years. The city/county will want to know where you plan to build. Here's what you'll have to do:

- Get a copy of the survey of your property from the city/county.
- Draw an outline of the proposed building on the survey.
- Find property markers (at least the two or three that are relevant).
- Dig a hole and check for solid soil (you can't build on spongy soil).
- Talk about your plans with neighbors.
- Apply for variance if the plans don't conform.

Put some thought into the design

You can get great design ideas from several online sites, but it's not necessary to spend hundreds of dollars on a blueprint. All the city or county will need to see is a basic drawing showing length, width, height, roof pitch, soffit size, etc. But consider the following during the design phase:



1 MARK THE WALL LOCATIONS

Snap lines as a guide for the inside of the walls. That way you'll end up with straight walls even if the slab is not. Measure in 4 in. so the sheathing will sit flush with the slab.



2 LAY OUT THE WALL PLATES

Cut the plates to length and mark the stud, door and window locations on the top and bottom plates at the same time. Be sure to add 3 in. to rough openings to allow for trimmers beneath the headers.



3 ASSEMBLE THE WALLS

To avoid a wavy wall, sight down each stud to determine which way it's "crowned" (bowed) and then position them all with the crown facing up so they don't act like a rocking chair. Have one crew member haul the studs, one line them up and one nail them.



4 BUILD THE WINDOW AND DOOR OPENINGS

Assemble a window opening in this order: king studs, header, trimmer, lower cripples, windowsill, upper cripples. Don't cut out the plate that spans the bottom of a door opening until the wall is set. The last step is nailing on the top plates.

- Match the house roof pitch, overhang size, siding and roofing if possible.
- Place windows so you can see people coming and going.
- Don't place windows where you may want a cabinet or pegboard.
- Put the service door close to the house.
- Add an extra service door in back if needed.
- Build taller walls to accommodate a larger overhead door.
- Upsize to 2x6 walls for more space for insulation and increased R-value.
- Position the building to avoid water runoff problems.

Choose from several foundation options

The type of foundation or footings and slab you build your garage on will depend on your budget, the size of the garage, the grade and the soil conditions. Pouring just a slab with a thickened perimeter is the least expensive and a perfectly acceptable option if you have good soil conditions (not spongy). Adding one course of block to a slab keeps the framing farther up from the ground, which may be necessary depending on the grade. The most expensive option is laying several courses of blocks on top of

frost footings, and then resting the edges of the slab on the blocks. But this is also the most durable and long-lasting option. Large garages and sites with deep organic topsoil conditions may require either this method or lots of digging and lots of fill.

To slope or not to slope...

If you plan to park a car in your garage, you'll want a sloped floor so the water/snow tracked in can run back out. Even if you want a flat floor for a shop space, the area near the overhead door should be sloped down so rainwater doesn't run

Enjoy A Bath Again... Safely and Affordably



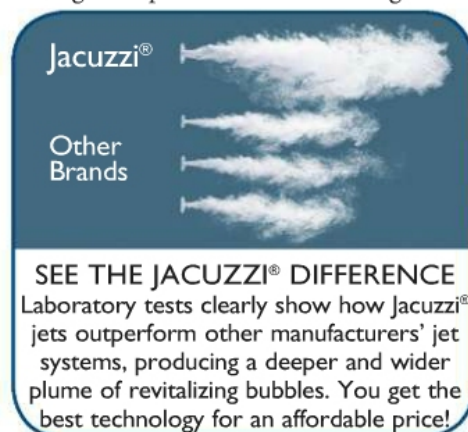
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- Low Threshold Step

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There is nothing like the simple pleasure of taking a warm bath. The cares of the day seem to fade away, along with the aches and pains of everyday life. Unfortunately for many aging Americans with mobility issues, slipping into a bath can result in slipping onto the floor. The fear of falling has made the simple act of bathing and its therapeutic benefits a thing of the past until now. Jacuzzi®, the company that perfected hydrotherapy, has created a walk-in tub that offers more than just safe bathing, peace-of-mind and independence, it can actually help you feel better.

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Some swirl, some spiral, some deliver large volumes of water and others target specific pressure points. They are all arranged in precise locations designed to



deliver a therapeutic massage, yet they are fully adjustable so that your bathing experience can be completely unique.

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What To Look For in a Walk-In Tub:

Five major considerations to help make an informed decision before buying a Walk-In Tub:

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- ✦ **Warranty** - Ask for a lifetime "no leak guarantee." The best tubs offer a lifetime warranty on both the tub and the operating system.
- ✦ **Pain Relieving Therapy** - Find a tub that has both water and air jet therapy to soak away your aches and pains preferably with a perfectly balanced water to air mix. This tub is the first to offer a specialized foot massage experience. Its unique spinning motion provides optimal therapy to feet and legs. Best of all, you get it at no additional charge.
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- ✦ **Endorsements** - Only consider tubs that are ETL or UL listed. Also look for a tub tested to IAPMO standards and that's USPC Certified.

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5 STAND THE WALLS

Set the walls on foam sill sealer to fill small gaps under the bottom plate. Have someone keep a foot on the bottom plate so it doesn't slide as the wall is lifted. Temporarily brace the first wall upright onto sturdy stakes driven into the ground. Then raise and brace the opposite walls and then the two end walls, nailing the corners together as you go. Add the top plates last.



6 PLUMB THE CORNERS

Push or pull the top of the wall to plumb it. Then nail a long 2x4 diagonally from the top plate to the bottom to hold it in place. Repeat this at all corners, bracing each one from both sides. Place all these braces (and the ones that come later) inside the building so you won't have to remove them for sheathing.



7 STRAIGHTEN THE TOP OF THE WALL

Sight down the top plate and push or pull until it's perfectly straight. Then brace the top of the wall with long 2x4s. Nail two 2x4s together if necessary. If you don't trust your eye, run a string between two nails, one at each end of the wall. Hold the string a bit away from the top plate and line the wall up with that.



8 INSTALL THE SHEATHING

Nail or staple the sheathing in place with approved fasteners. Space the sheets 1/8 in. apart. This is a two-person job.

back into the building. A good concrete crew will be able to slope just the areas that need it and keep the other areas flat, so you won't have to build on an unlevel surface.

Communicate with the concrete guys

Even if you hire a cement contractor to pour your slab, you need to be involved in the process. Here are some minimum requirements you should insist on:

■ Proper elevation: Wood framing, sheathing and wood siding need to be

6 in. from the final grade (vinyl siding can be touching the ground, and fiber cement can be within 2 in.).

■ Four to 6 in. of base material, laid down and compacted.

■ Concrete with a 4,000-psi mixture.

■ A pour that's no less than 3-1/2 in. thick (thicker if you plan to park heavy items like antique tractors on it).

■ Reinforcement with mesh, rebar or fiber mesh mixed into the concrete.

■ Sloped floor (at least near the overhead door).

■ Approved plate anchors properly

spaced (communicate the wall layout to avoid anchors in door openings).

■ Control joints (spaced no more than 12 ft.).

Asking a lot of questions up front will minimize misunderstandings and avoid conflicts. Here are other topics that should be discussed:

■ Ground insulation options for heated spaces.

■ Floor drains.

■ Installing PVC pass-throughs for electrical or plumbing rough-ins.

■ Rebar grounding for electrical panel.



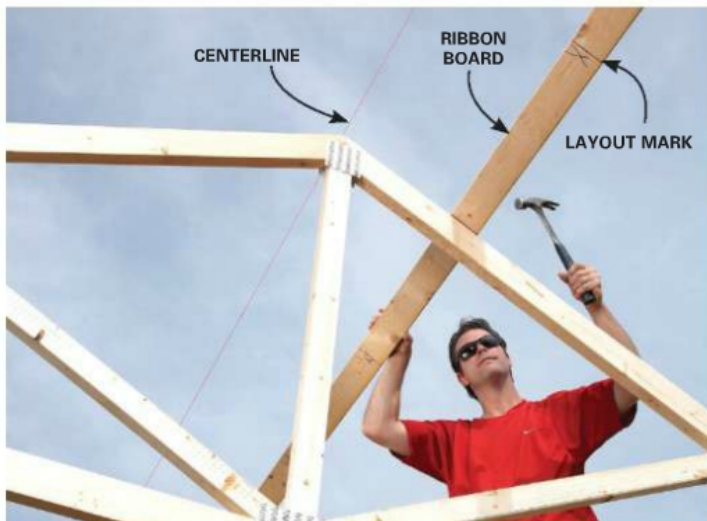
9 SET THE GABLE-END TRUSSES FIRST

Lay out the truss locations on the plates, spacing them every 2 ft. Nail 2x4s together to form L's, and use them to temporarily hold the gable end trusses upright. Install a couple of blocks to keep the bottom of the truss from sliding off the top of the wall. Attach plywood spacers to the 2x4s and blocks to represent the plywood sheathing that will be installed after the trusses are set.



10 STRETCH A CENTERLINE

It's important that the gable-end trusses be perfectly centered before toenailing them to the plates. Stretch out a mason's line to act as a guide for the rest of the common trusses. The top chords on these trusses are lower, so run the line about 5 in. taller than the center of the gable-end trusses.



11 TACK ON A RIBBON BOARD

Set a truss toward the middle and install a ribbon board near the peak and perpendicular to the truss direction. Premark the ribbon board to match the layout on the top plates. Don't remove the ribbon board until most of the roof decking has been installed.



12 HEAVE UP THE REST OF THE TRUSSES

It's easier to slide trusses up on their side. In order to maintain the room to accomplish that, haul up the rest of the trusses and lean them against the end or center truss.

- Pads outside of the service door and aprons in front of the overhead door.
- Cement sealer (but don't seal the floor if you plan to install an epoxy floor coating).
- Inspection scheduling (who will call?).
- Always call 811 to have your utilities located before you do any digging.

If possible, hire a local contractor who's familiar with the rules in your municipality. Most experienced crews have developed a relationship with the local building official (hopefully a good one) and know what to expect.

Order the right stuff

Don't stress about ordering the materials; let your lumber supplier do that for you. The closest home center is probably your first thought, but give your local lumberyard a chance. The prices may be a touch higher, but you'll get the experience of folks who do material "take-offs" for builders and remodelers all day long.

No matter who creates the materials list for you, take a close look at it. Your list could include caulking, nails, flashing and other items you may not need. Even worse, you may not have everything you

do need, and the last thing you want is your whole crew twiddling their thumbs waiting for materials to show up. Here's what to look for when checking your materials list:

- Pressure-treated lumber for bottom plates.
- Top and bottom plates that are long (14 or 16 ft.).
- It's more efficient to use the same sheathing for the roof and walls. Half-inch or 7/16-in. OSB (oriented strand board) is the most common material builders use.

- Header material.
- H-clips for the roof decking.
- Hurricane clips to secure the trusses to the walls.
- Material for overhead garage doorjamb.

It's a good idea to cross-check the actual lumber order too. If an inexperienced person did the material take-off, you could have a mess on your hands. Use these rules of thumb to check the materials list:

- Studs: One stud for every linear foot. This will leave plenty extra for trimmers, corners, blocks and cripples.
- Treated bottom plate: Total number of linear feet plus 20 percent.
- Top plates: 4 ft. for every 1 ft. of the perimeter. You'll need the extra material for the bracing and blocking.
- Sheathing: Add the total square footage of wall area (less the garage door opening and roof area), including the overhangs, and divide that by 32 to give you the total number of sheets of sheathing you'll need. And then add a couple!

Trusses

Hand-framing the trusses will save you a little money but add a whole lot of time to your project. Prefabricated trusses are straight and strong, and they're super easy to install. The person who orders your lumber will also order your trusses. Order early—allow two to four weeks for delivery.

The trusses will be delivered with a packet of installation instructions. These instructions tell you which truss goes where (for multiple roof lines), and they'll indicate how the trusses need to be braced. Each truss manufacturer has different bracing requirements. You won't pass inspection without this packet on-site!

Make the most of the crew

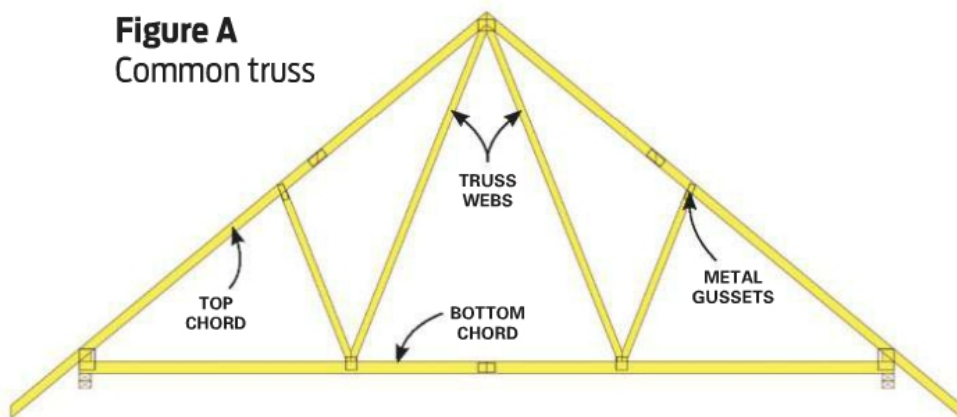
Your most experienced carpenter shouldn't be hauling wood—that's a job for a newbie (sorry, newbies). The key to getting the most from your crew is to assign tasks that match skill level. Here's a good way to divide your labor:

Expert: Do layouts, assemble window and door openings, straighten walls.

Some experience: Cut lumber and sheathing, build headers, nail studs and sheathing, help with trusses.

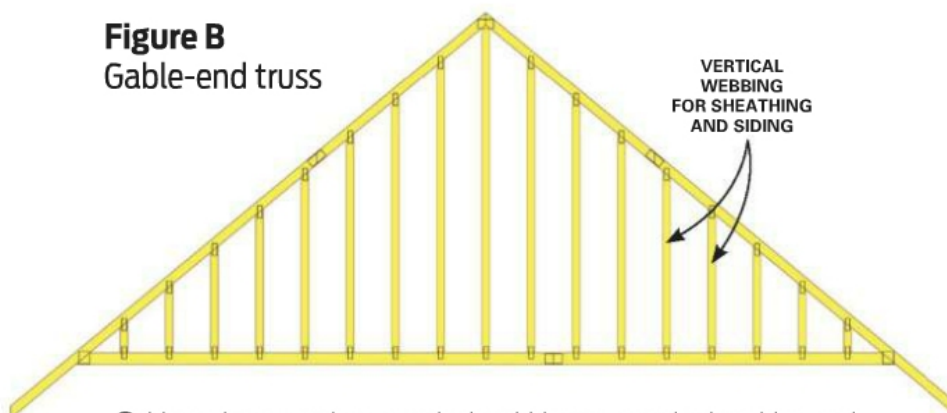
No experience: Haul lumber, fetch fasteners and other supplies, hold the "dumb end" of the chalk line, crown studs, lift

Figure A
Common truss



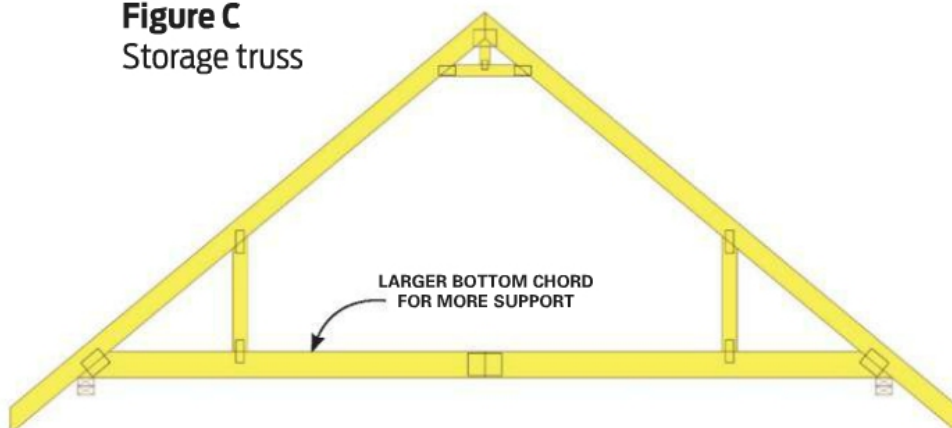
A common truss is made up of top and bottom chords supported by diagonal webbing and held together with metal gussets.

Figure B
Gable-end truss



Gable-end trusses have vertical webbing to attach sheathing and siding to. Some gable trusses are sized to match the common trusses. Others, called "dropped-top chord trusses," stand about 3-1/2 in. lower than the common trusses. That allows lookouts to run over the gable truss and makes wide overhangs stronger (see Photo 15).

Figure C
Storage truss



Storage trusses have no webbing in the center, creating more room for stuff. The bottom chord is beefier so it will support the extra weight. Storage trusses cost about 30 percent more than common trusses.

JUST RELEASED: United States Baseball Legal Tender Coin



Cooperstown, N.Y.

The National Baseball Hall of Fame and the U.S. Mint have just released the **FIRST EVER curved** American coin. This legal tender half dollar has been struck to honor the 75th anniversary of the National Baseball Hall of Fame and Museum.

First Ever Curved American Coin

The coin's curved design is a first in American history. The outward curving 'tails' side of the coin depicts a baseball—complete with intricate stitching. The inward curving 'heads' side of the half dollar reveals a classic leather baseball glove, with the curve perfectly reflecting the natural shape of a weathered and well-loved baseball mitt. Among the celebrity judges who selected this **FIRST EVER** curved design were Hall of Famers Joe Morgan, Brooks Robinson, Ozzie Smith, Don Sutton, and Dave Winfield. The curved design is like nothing you have ever seen before. You won't believe it when you hold it!

Going...Going...GONE

Public demand for these coins has exploded and a number of versions have already sold out quickly. The 2014 Baseball Hall of Fame Half Dollar will forever go down in history as a runaway best seller. But even though the coins are disappearing at record speed, you don't have to strike out.

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TOPS OF TRUSSES
ALIGNED WITH STRING

13 SET THE REST

Setting trusses works best with one person in the center and one on each end. Nail a truss to the ribbon board, and then toenail it to the top plate. Come back and install hurricane clips. Renting a rolling scaffold really speeds things up and makes the whole operation much safer.



HURRICANE
CLIP



LOOKOUT

15 SNAP A LINE FOR THE GABLE OVERHANG

The lookouts sit on the dropped-top chord gable-end trusses and get nailed to the nearest common truss. For a perfectly straight overhang, run the lookouts long, snap a line and trim them to size.



14 NAIL ON THE SUBFASCIA

Align the subfascia with the tops of the trusses using any straightedge. Have a helper move the subfascia up or down as needed to get the right angle. Don't forget to run it long enough to meet up with the gable overhang later.



INSTALL
H-CLIP
HERE

16 INSTALL THE ROOF DECKING

The tops of trusses aren't always straight, so mark a line on the top edge of the decking every 2 ft. to indicate the center of each truss. Then push or pull the trusses to align them with the marks before nailing the top of each row of plywood. Strengthen the plywood seams by installing H-clips where two sheets of OSB butt together.



H-CLIP

walls, keep the job site clean, install hurricane clips.

Advice from the inspector

We spoke to a local building inspector and asked about the most common mistakes made by homeowners when building a garage:

1. Inspection schedule: There will likely be several inspections at different stages of the building process. Don't skip any.

2. Attic ventilation: If a garage is going to have a ceiling installed, there needs to be 1 sq. ft. of vents installed for every 300 sq. ft. of floor space—60 percent venting in the soffits and 40 percent in the roof. Even if you plan on finishing later, go ahead and install the roof vents before the roofing. It will be much easier now than later.

3. Erosion control: As soon as you start moving dirt around, a silt fence or some

other means of erosion control needs to be installed. This prevents the rain from washing the soil into your neighbor's yard or into the storm sewer, which can pollute our rivers.

4. Portal fanning requirements: The small walls on each side of an overhead garage door need additional beefy bracing to tie the walls to the foundation as well as the header to the wall (talk to your local building official for details).

DIY Quiz

BY MARK PETERSEN

editors@thefamilyhandyman.com

Put on your thinking cap and take this month's quiz to see just how smart you are when it comes to DIY.

Here's how it works:

- There are easy, intermediate and really tough questions all mixed together.
- There may be more than one correct answer!
- Find the answers and get your DIY rating on p. 64. Good luck!



ART DIRECTION MARCIA ROEPKE • PHOTOGRAPHY HSP • TECHNICAL ILLUSTRATION FRANK ROHRBACH III

1. True or False? It's mandatory to use a manifold when working with PEX.

2. What is the best way to connect PEX to plumbing fixtures?

- A. Run PEX directly to the fixture.
- B. Run PEX to a copper stub-out.
- C. Run PEX to a shutoff valve and connect the fixture to that.
- D. There is no one best way. It depends on your situation.

3. True or False? Red PEX can only be used for hot water lines.

4. What is the best way to avoid kinking PEX when making a 90-degree turn?

- A. Heat the PEX before bending.
- B. Install a bend sleeve.
- C. Avoid sharp turns altogether.
- D. Install a 90-degree elbow fitting.

5. What is the best choice for connecting PEX tubing?

- A. Crimp ring
- B. Cinch clamp
- C. Stab-in fittings
- D. All of these are good choices.



6. How far should a horizontal 2-in. plumbing waste line drop over 10 ft. for proper drainage?

- A. 1-1/4 in.
- B. 2-1/2 in.
- C. 5 in.
- D. As much as space allows

7. What is a French cleat?

- A. A means of hanging shelves and cabinets
- B. A soccer shoe
- C. Hardware for tying off a boat
- D. A brace to keep shelves from sagging

8. What is the best lubricant for door locks?

- A. Ordinary salad oil
- B. Lithium grease
- C. Dry graphite
- D. WD-40

9. Which type of driver would you use on this screw?

- A. Torx
- B. Phillips
- C. Robertson
- D. Hex



10. True or False? A good way to tell if a door is left-handed is to open the door and stand with your back to the hinges. If the door is on your left, it's a left-hand door.

11. Where is the best place to set a mousetrap?

- A. Middle of the room
- B. Near a food source
- C. Along the wall
- D. Outside



12. Where should you use sanded grout instead of unsanded?

- A. Wall tile
- B. Grout lines wider than 1/8 in.
- C. Polished stone
- D. All of the above

13. Which is the best way to store gas in small engines like lawn mowers when they will sit idle for more than 60 days?

- A. Don't store it—drain the gas completely.
- B. Make sure the gas contains a fuel stabilizer.
- C. Leave the gas in, and then drain it and replace with fresh gas the next time you start the engine.
- D. You'll have no problems if you always fill your engines with fuel that contains a high level of ethanol.

14. Which is an acceptable source for pulling power to a new electrical outlet you want to install in your bedroom?

- A. Dedicated kitchen circuit
- B. Hardwired smoke detector
- C. Switched light fixture
- D. Furnace circuit

15. True or False? You are less likely to strip out a nut or bolt with a six-point socket than with a 12-point socket.



Answers on p. 64.

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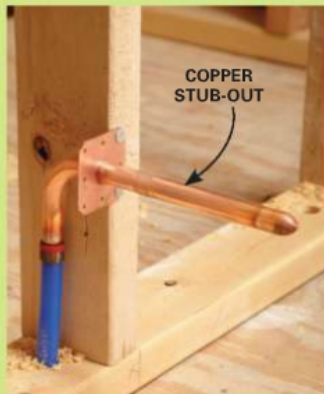
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DIY Quiz Answers

1. False. You can install PEX just like you would other pipe, with main lines and branches to each fixture. But you lose a lot of the benefits of PEX this way. With the home-run system, you install a manifold in the utility room or some area that's close to the main water line (as shown on p. 61), and run a separate PEX tube to each fixture as shown below.

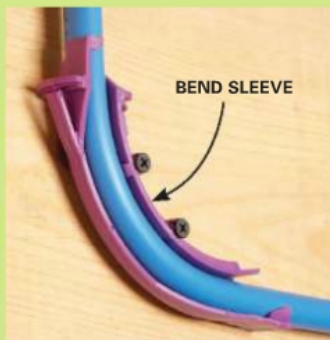
For more information on PEX plumbing, search for "pex" at familyhandyman.com.

2. (D) If there is a shutoff valve on the manifold, PEX can be run directly to the fixtures. If the connection will be visible, like a toilet supply, it looks cleaner to connect the PEX to a copper stub-out. Even if there is a shutoff at the manifold, some plumbers like to connect to another shutoff just before the fixture and connect the PEX to that.



3. False. The colors are just to help you keep track of the hot and cold lines. You can use any color PEX, including white or black, for any water line.

4. (B) and (D) PEX can be damaged by overbending it. (The minimum bend radius is typically six to eight times the outer diameter, depending on the manufacturer.) One way to avoid kinking and overbending is to use bend sleeves. Keep in mind that bend sleeves require open working space. In tight situations, you may have to install a 90-degree copper stub-out instead.



5. (D) All of these fittings are perfectly acceptable. Many stab-in fittings cannot be hidden behind walls. Cinch clamps are the easiest and require inexpensive tools. Some professional plumbers prefer crimp rings. But above all, make sure that the fittings you use are approved by the manufacturer of the PEX you're installing—don't mix and match!

6. (B) The ideal slope for most household waste pipes is 1/4 in. of drop for every foot (10 ft. x 1/4 in. = 2-1/2 in.). Liquids will drain with less of a slope, but solids may not. Also, too steep a slope will cause the liquids to outrun the solids instead of floating them along (sorry for that mental image!).

**WHAT'S YOUR
LEVEL OF
EXPERTISE?**



7. (A) French cleats are handy for hanging shelves and cabinets, especially if they'll need to be removed periodically. A French cleat consists of two pieces of wood ripped at 45-degree angles. The bevel that is attached to the object you're hanging faces down and is held firmly in place by the one on the wall that's facing up.

8. (C) Any of these products will work in a pinch (yes, even salad oil). However, Schlage, a major lock manufacturer, recommends a dry graphite lube because it's long lasting, adheres to most surfaces with minimum surface preparation, air-dries rapidly at room temperature and still performs in extreme temperatures. Plus, since the graphite remains dry, it doesn't attract dust or grit.

9. (A) Torx screws feature drive heads with six contact points. The additional contact points spread the driving torque and prevent the kind of "cam-out" you get with Phillips or square-head drive screws.



10. True. But when you order an exterior door, you'll also need to specify whether the door swings (opens) out or in.

11. (B) and (C) Set mousetraps in areas where mice have left signs of their presence. This is usually near potential food sources. Mice don't like open areas, so set the traps inside closed spaces like closets and cabinets or along the wall.

12. (B) Sanded grout doesn't shrink as much as unsanded, which makes it ideal for wider grout lines. Sanded grout doesn't stick as well to vertical grout lines on wall tile, and it can scratch polished surfaces like marble and granite.

13. (B) Gasoline can break down in as few as 30 to 60 days. Gas stabilizers lengthen its shelf life. Old gas produces gum and varnish that wreak havoc on a small engine's fuel delivery system. Draining the gas completely is difficult, and an empty fuel system can dry out seals and cause metal parts to corrode. And the more ethanol in your fuel, the faster it degrades.

14. (B) You can't power new outlets to just any old circuit in your house. Here are some you definitely want to avoid: switched light fixtures; and dedicated circuits for bathrooms, laundry rooms, appliances like garbage disposers, refrigerators, furnaces, dishwashers and trash compactors. Easily accessed receptacles in living areas and unfinished basements are your best bet.

15. True. A 12-point socket is fine for most lightweight repairs, but the thicker walls of a six-point socket make it much less likely to slip off a stubborn fastener or round over the corners. The area of contact is also larger on a six-point socket, and the contact is made on the flat part of the fastener instead of just at the corners, where the fastener is most vulnerable.

**Beginner: 0 - 5 correct
Intermediate: 6 - 12 correct
DIY Guru: 13 - 15 correct**

PRO tips

BY MARK PETERSEN

editors@thefamilyhandyman.com



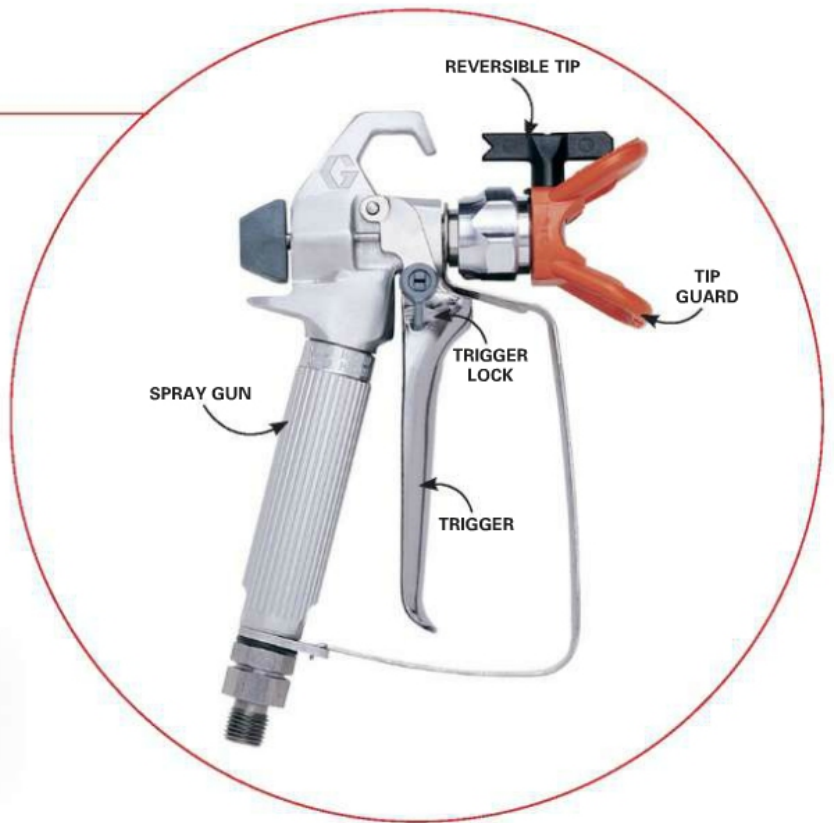
ART DIRECTION ELLEN THOMSON • PHOTOGRAPHY TOM FENENGA

Exterior spray painting

Every professional painter owns an airless paint sprayer. There's just no more efficient way to deliver paint onto a surface, and for most pros, every minute saved is money in the bank. And the smooth, even finish that sprayers deliver just can't be matched with a brush or roller.

Working with a paint sprayer may seem intimidating, but it only takes a few minutes to get the hang of the

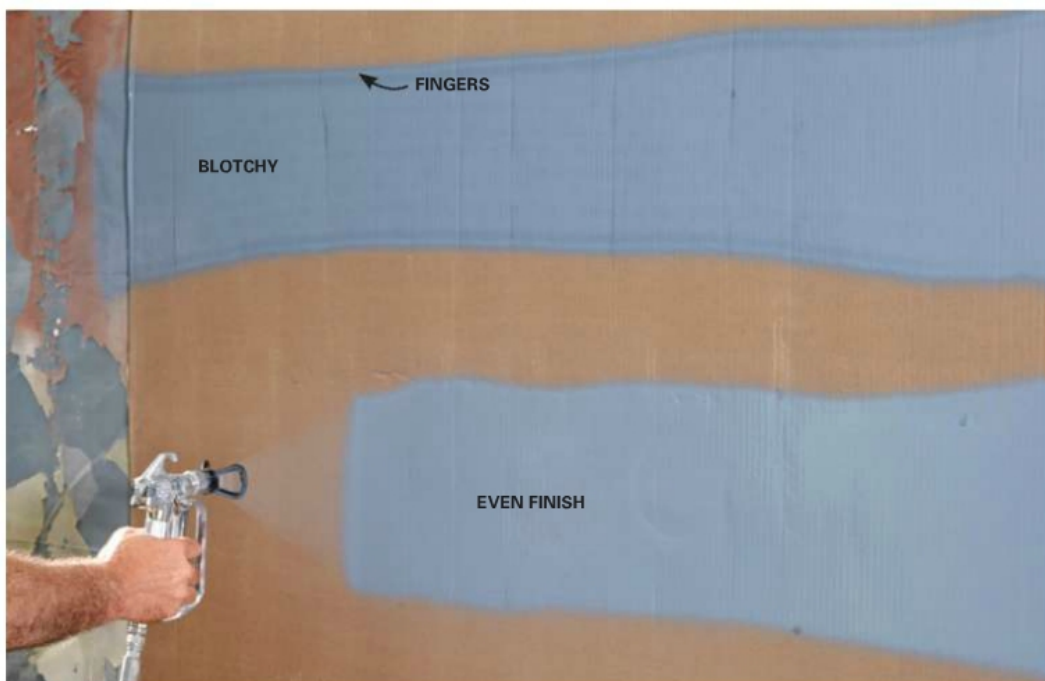
proper technique. We visited the training/testing facility at Schoenfelder Renovations in Hopkins, MN, where Daryl Becker showed us the basics. He also shared some extra gems you won't read about in the operator's manual for your paint sprayer. In this story, we'll focus on exterior painting, but most of these tips apply to any painting job that involves a sprayer.



What's an airless sprayer?

Airless sprayers work by pumping paint at very high pressures (up to 3,000 psi). They can suck paint from a large bucket (fewer refills), and the gun is lighter because it's not attached to the paint reservoir, as is the case with many air sprayers. Airless sprayers can spray both paint and finishes. There are different tips for different materials.

An entry-level model will cost about \$250. The Graco X7 model shown retails for \$370 at home centers. Pros use models that range from \$500 up to several thousand dollars. The basic operations of the machines are the same; what you get for your extra dollars is mostly durability. You can rent an airless sprayer for about \$85 a day.



ADJUST THE SPRAYER, STARTING WITH LOW PRESSURE

The thickness of the paint will determine the proper pressure setting on the sprayer. Start with the pressure on low and make a pass on a scrap piece of cardboard or rosin paper. If the pressure is too low, the spray pattern will be uneven and there'll be "fingers" on the edges. Keep upping the pressure until you get a nice, even spray pattern with a consistent edge. If the pressure is all the way up and the pattern is still weak, you may have to go up one tip size.



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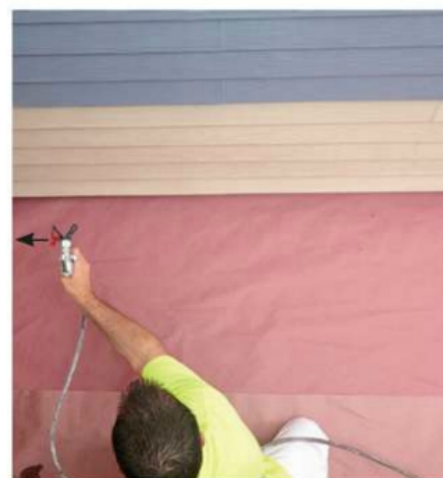
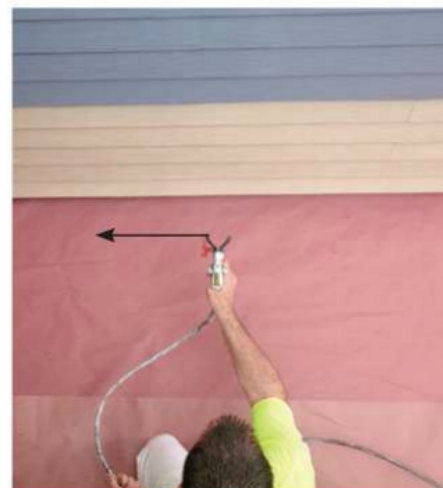
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Keep the gun perpendicular to the wall

To achieve a consistent layer of paint, the tip of the sprayer should be held about 12 in. from the surface and the gun should always remain perpendicular to the wall. This technique is the foundation for a professional finish. It seems tricky at first, but after only a few passes you'll be painting like a pro. Practice on a low-visibility wall until you get the hang of it.

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Tape off windows and doors

Before you crack open that first bucket of paint, tape off your windows and doors. We prefer the dispensers that roll out the tape and plastic at the same time. You can buy a high-end dispenser like the 3M M3000K shown for about \$70 at paint stores. More basic models can be purchased at home centers for \$20. Only the face of the trim needs to be protected (more on that later).



Keep a lid on it

Always keep the lid on the bucket. Just remove the small cap and stick the intake tube into the smaller hole. This will keep debris out of the paint and prevent clogs. Plus, an open bucket dries out faster, and dried clumps of paint can also clog the works. Always use a 5-gallon bucket. If your project only requires 3 gallons, pour that amount into an empty 5-gallon bucket and draw your paint from that.

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OVERLAP 50 PERCENT AND KEEP THE GUN MOVING

Overlap the pattern about 50 percent. Release the trigger at the end of each pass. Start the gun in motion before pulling the trigger. If you start spraying with a stationary gun, you'll get a glob of paint. When spraying under lap siding or the side of trim boards, angle the tip upward so you get enough paint on the bottom portion of the board. Always start at the top of the wall and work your way down.



Back-brush the nooks and crannies

If you thought you could just blast the wall with a sprayer and call it a day, I've got bad news for you. The paint sprayer is only a paint *delivery* system. In order to achieve a coating that will last for years, you need to push the paint into every crack and crevice and underneath every lap with a brush. It seems like a tedious extra step, but it's absolutely necessary.



Back-roll, then recoat

After you back-brush, it's time to back-roll. Don't spray an area so large that the paint dries before you can roll it out (drying times vary greatly depending on the weather). A roller with a thicker nap is better at reaching the uneven surfaces. Many pros use a roller with a 3/4-in. nap because it gets up into more of the recessed areas. And while it's tempting to roll lap siding horizontally, always roll in an up-and-down motion. It's hard to stop the paint from dripping off the bottom of the laps if you roll horizontally.

One coat may be enough if you're just freshening up the paint with a new coat of the same color. But if you're working with new siding or changing colors, a second coat will be needed. But no back-brushing or back-rolling is necessary on the final coat, so it goes fast, and the final coat hides many of the smaller brush and roller marks.



MEET THE PRO

Daryl Becker has been a professional painter for eight years. He's now a supervisor and has overseen projects ranging from minor residential touch-ups to painting the entire exteriors of Lowe's and Target stores.

Pay attention to the weather

Our expert told us that one of the most common mistakes newbies make is ignoring the weather. Painting a wall in direct sunlight on a really hot day is next to impossible—the paint dries before there's time to back-brush and back-roll. If you can, pay attention to where the sun shines on the house at different times of the day. Plan your painting day so you can stay on the shady side. And make sure you don't get rained on. Most paint containers specify the length of time the paint must be dry before being exposed to water.

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Use a shield to get closer

If you plan to spray your soffits, do that first. When it comes time to paint the walls, use a shield to protect the soffits from overspray. The pros use shields like this one, but you could get by with a sturdy piece of cardboard. The same trick works with the foundation, electric meters or whatever else you don't want to mess up with overspray. And the shield doesn't have to be precisely positioned; you can come back and clean up the line with your brush.



Spray the edge of the trim the same color as the wall

Only tape off the face of the windows and doors, then spray the edges of the trim at the same time as the walls. After the walls are done, come back and roll on the trim color. Eliminating the laborious task of cutting in the edge of the trim around each and every lap in the siding may seem like cheating, but it's not. First, no one will ever notice. Second, the caulking between the trim and the siding is rarely perfect, and trying to cut in paint over blobs of caulking rarely results in a nice clean line.



Avoid overspray messes

Even a finely tuned spray pattern will create some overspray. Wind and high humidity will cause the overspray to travel farther. Make sure you cover plants, decks and walkways and move cars and any other items you don't want paint on.

Caution: Houses built before 1978 may contain lead paint. Before disturbing any surface, get a lab analysis of paint chips from it. Contact your local public health department for information on how to collect samples and where to send them.



Reverse the tip to purge clogs

Most spray tips have an arrow on them because they're reversible. A forward pointing arrow means you're ready to paint. If you start to get an uneven spray pattern, you probably have a clog in the tip. To purge the debris, turn the tip 180 degrees and spray some paint onto a piece of cardboard or rosin paper for a couple seconds. Then turn the tip back around and continue painting. If you still aren't getting good results, you may need to clean the tip or one or more of the inline filters. These filters are located in various places depending on the sprayer.

CAR + garage

BY RICK MUSCOPLAT

editors@thefamilyhandyman.com

Spruce up your car with new seat covers

Whether you fill your vehicle with construction materials, haul kids and grandkids around or just spill lots of coffee, you know how easy it is for factory seat covers to get grungy. If they're beyond rescuing with an upholstery cleaner and you want to spruce up your vehicle's interior, you have only three options: Pay a professional automotive upholsterer to reupholster your seats (well over \$1,000), buy used seats from a junkyard, or buy and install seat covers yourself.

Aftermarket seat covers cost as little as \$50 per seat for a universal-fit style or about \$150 per seat for top-of-the-line custom-fit covers. We'll show you how to order and install custom-fit seat covers. The installation is similar across makes and models. The job takes about two hours for front and rear seats. The only tools you'll need are a wire coat hanger and some tape to fish the straps under plastic trim pieces (if equipped). Everything else is included with the seat covers.



ART DIRECTION VERN JOHNSON • PHOTOGRAPHY TOM FENENGA



1 RELEASE THE BIB PANEL

Follow the bib panel straps and unclip them from the springs or pull the elastic straps out from under the springs. Then lift the bib panel up to access the gap between the back and the bottom cushion.

NOTE: We couldn't show you the trim disconnect and seat cover attachment points with the seat still in the vehicle. So we bought a junkyard Subaru seat to show how everything fits together.

How to buy seat covers

Seat covers come in two styles: universal and custom-fit. You can buy universal seat covers right off the shelf at an auto parts store or order them online. Custom-fit seat covers must be ordered to fit your exact year, make, model and seat style. They're far more expensive than universal-fit seat covers. But they fit like a glove, stay put when you slide in and out, and are more comfortable. Plus, custom-fit seat covers include breakaway stitching so the air bag can deploy properly if your vehicle has side bolster air bags.

To get around the air bag issue and keep costs down, universal seat covers simply eliminate the fabric that would normally cover the seat air bags. Then, to reduce slipping, the manufacturers coat the underside of the fabric with an anti-skid rubber. That makes them a bit more uncomfortable to sit on for long periods. And they will inevitably slip out of place and wrinkle because they're not an exact fit for your seats.

For some strange reason we don't understand, officially licensed designer camouflage and sports patterns are the most popular seat cover fabrics these days. Since the fabric designers get a royalty on every sale, you'll pay more for those patterns. If you want to keep the cost down, skip the trendy camo and sports fabrics and choose a solid color.

If you order custom-fit seat covers, you'll have the option of also ordering matching armrest and headrest covers, console covers, seat back storage and map pockets.

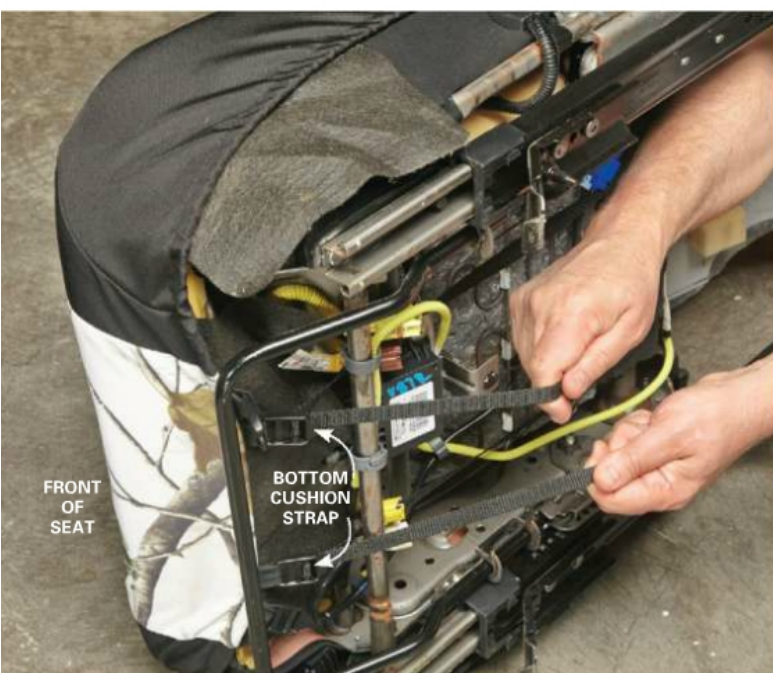
Buy custom-fit and universal seat covers from retail and online auto parts stores (see the Buyer's Guide on p. 78), or directly from the manufacturer.

We bought the custom-fit seat covers for this 2010 Subaru Outback at nwseatcovers.com. We bucked up and picked the trendy Bill Jordan Realtree AP Snow camo pattern and added headrest covers. The front seat covers cost \$341 and the rears, \$331. Here's how they install.



2 THREAD THE STRAPS THROUGH THE GAP

Push the bottom cushion straps through the gap between the seat back and the bottom cushion. Then pull the straps completely through until the seat cover is taut.



3 BUCKLE THE SEAT CUSHION STRAPS

Route the bottom cushion straps toward the front of the seat, making sure the straps don't interfere with the seat adjuster mechanism. Thread the strap into the buckle and cinch it tight to remove wrinkles in the seat cover.



4 TIGHTEN AND CONNECT THE BUNGEE CORDS

Pull the bungee cords to cinch the skirt on the bottom seat cover. Then connect the ends using the supplied S-hook.

Install new seat covers

You don't have to remove the seats from the vehicle to install new seat covers. And since most seats are made the same way, these instructions will work with the majority of makes and models. However, if the seat cover manufacturers' instructions differ from ours, follow theirs instead.

Start with the front seat covers

The bottom seat cushion covers usually attach to the seat with straps, buckles and S-hooks. You'll have to thread bottom cushion straps through the gap between the seat back and the bottom cushions (where the back reclines). That's easy in older vehicles. But the gap in newer vehicles is usually covered with a "bib" panel. Don't worry. The bib is easy to disconnect. It's connected to the seat springs with either clips or an elastic strap. Just reach under the seat and disconnect the straps (**Photo 1**). Then lift the bib to access the gap.

Next, fit the seat cover onto the bottom cushion and thread the rear straps through the gap (**Photo 2**). Route the straps toward the front buckles and tighten (**Photo 3**). Then connect the bungee cords (**Photo 4**). Tuck the puckered seat cover "skirt" behind the plastic trim panels (if equipped).

Remove the headrests. Then slide the cover over the seat back cushion (**Photo 5**). Push the bottom straps through the gap and into the buckles just like you did on the bottom cushion (refer to **Photo 3**). Reconnect the bib panel and pull down on the rear portion of the seat back cover to remove wrinkles. Then stick the hook-loop edge to the bib to secure it. Stretch the headrest covers onto the headrest (**Photo 6**) and reinstall them on the seats.



5 INSTALL THE SEATBACK COVER

Pull the cover down until it reaches the side bolsters (cushions). Then compress the bolster while you pull the fabric down to the bottom.



6 INSTALL THE HEADREST COVERS

Stretch the elastic edges around the headrest and pull it down. Tug at the cover fabric until it fits smoothly on the contour of the headrest.

Then move to the backseats

If your vehicle has 60/40 rear bench seats, remove the bottom cushion first. If you have bucket seats in the rear, install them just like you did on the front seats.

To remove a bench seat bottom cushion, run your hand along the front edge to locate the latch points. Try jerking straight up at the latch points. If the cushion doesn't release, push it straight back as



7 INSTALL REAR BENCH SEAT COVER

Fit the cover onto the bench seat and thread the straps into the buckles. Tighten until snug. Check the fit and adjust. Then tighten the buckles, secure the bungee cords and connect the remaining straps to the springs with S-hooks.

ADD A BUN WARMER AND LUMBAR SUPPORT

If your vehicle didn't come with seat heaters, now's the time to add them. Add-on electric seat heaters fit between your existing seat cushions and the new seat covers and secure with elastic bands and straps. The seat heater control connects to a cigarette lighter or power outlet. The model we show here (the ProHeat pad and controller; \$84 from nwseatcovers.com) has an adjustable heat setting and automatic shutoff to prevent battery drain (in case you forget to turn it off).

And, if you want lumbar support, slide this unit (\$66 at nwseatcovers.com) under the seat back cover before strapping it in place. Route the pump and tube out to the side. Once the seat covers are fully installed, adjust the firmness with the pump.



you lift up to release it from the hook latches. Then remove the entire bottom cushion from the vehicle and set it on a bench. Install the bottom cushion seat cover with straps and S-hooks (**Photo 7**).

Remove the rear headrests and slide the rear seat back covers onto the rear seats. Secure with the attached hook-and-loop fasteners. Add headrest covers and replace the headrests. You're done.

Buyer's Guide

Here are a few online sources of seat covers:

- autoanything.com
- nwseatcovers.com
- realtruck.com

Seat covers are also available at some NAPA stores.

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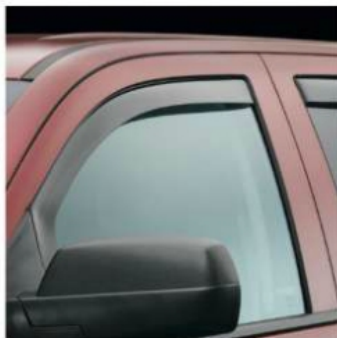
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Get faster and better Wi-Fi in your home

If you have a wireless (Wi-Fi) router in your home, chances are you have areas with a strong signal and fast speeds—but also areas where you can't connect to the Internet at all. That's especially true of large or sprawling homes.

You can fix some Wi-Fi coverage and speed problems by tweaking router settings, relocating the router or adding an expander device. However, if you're using a router with outdated Wi-Fi technology, you may be fighting a losing battle. In that case, you're better off buying a new router that has the latest Wi-Fi technology. We'll show you how to check your existing router to see whether it's worth tweaking it, or time to bite the bullet and buy a new one. You don't need any special tools, but you'll need the owner's manual for your router. If you don't have it, we'll show you how to get it.

Is your Wi-Fi system up to date?

All Wi-Fi router manufacturers follow industry standards developed by the Institute of Electrical and Electronics Engineers (IEEE). The original standard was IEEE 802.11, and each successive standard includes a letter suffix. The oldest and slowest residential router standard is 802.11b, followed by 802.11g and 802.11n. The newest, the 802.11ac standard, represents a monumental leap in terms of speed and reliability. We won't go into all the techno mumbo jumbo, but trust us, if your router isn't at least an 802.11n vintage, there's no way you're going to improve your Internet speeds.



So your first job is to find out the generation of your current router. Locate the specifications for your router in the owner's manual. If you don't have it, download it from the Internet (**Photo 1**). Then find the specifications page and look for the IEEE standard (**Photo 2**).

If your router is older than 802.11n, buy a new 802.11ac router. If you lease a combination modem/router from your cable or DSL provider, contact the company and ask if it has newer equipment available. If it doesn't, you'll save money in the long run by returning the leased equipment and buying your own modem and an 802.11ac router.

If you already have an 802.11n router

First, update the router's "firmware" (the software that operates your router). Find the latest firmware on the manufacturer's website. You can often solve connection and speed problems by simply installing the most recent firmware version. To discover the current firmware version in your router and learn how to obtain and install firmware updates, see the instructions in your owner's manual.

Next, try changing the channel

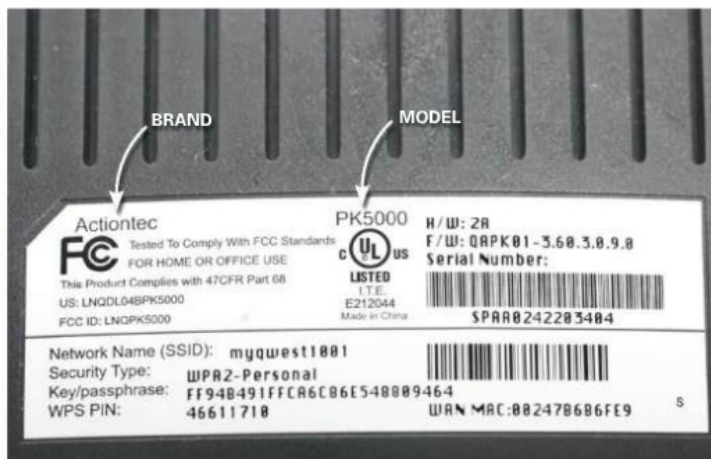
Wi-Fi routers and wireless devices work like walkie-talkies in that two people can't talk at the same time on the same channel. If your neighbors' routers are using the same channel as yours, both routers can slow to a crawl. In that case, changing the channel may help.

If you're leasing the modem/router from your Internet provider, call its tech support line and ask how to change the channel. If you own your router, follow the log-in and channel changing instructions in the manual. If the new channel gives you faster Internet speeds, you're done. If not, move on to the next step.

Relocate the router

If your router is located in a corner room, you may be able improve speeds and coverage by simply moving it to a central location. The signal may be degraded by having to traverse layers of drywall, bricks or other materials. Since rewiring is a lot of work, first try hooking it up in a central location with temporary wiring to see if it helps the signal strength. Here's how:

If you have cable Internet service, buy



1 FIND THE MAKE AND MODEL

Find the FCC label on your router. Note the make and model. Then go to the "support tab" on the manufacturer's website and download the owner's manual.



3 TEMPORARILY RELOCATE THE ROUTER

Disconnect the modem/router from its present location and run a longer cable to a central location in your home. Then connect the modem and router to the temporary cable and recheck signal strength in all rooms.

a 50-ft. coaxial cable and a male/male connector. Disconnect the coax cable from your modem/router and install the connector and then the extension cable. Then move the modem/router to a central location and connect the extension (Photo 3). If you have DSL service, plug the modem/router into the phone jack closest to the center of your house (or buy a longer phone cable to reach the center).

Next, use a smartphone, tablet or laptop to check the Wi-Fi signal strength in each room (Photo 4). If relocating the router provides a noticeable improvement, you've found the answer—move the router. If you still have a signal strength problem, try adding a range extender.

Rebroadcast the signal to remote rooms

Range extenders receive the signal from the router and rebroadcast it so you get coverage over a wider area. They're available in different speeds and power ratings (two examples

Continued on p. 86

• F5 segment and end-to-end loopback c		
Wireless	IEEE 802.11g	Multi SSID (4)
	IEEE 802.11b	
	IEEE 802.1x	WMM
	WPA/WPA2	WPS
	WEP 64/128/256 bit encryption	Auto Channel
	SSID Broadcast enable/disable	MAC Address Authentication
Ethernet	ISO/IEC 8802-3; ANSI/IEEE standard 802.3	

2 FIND THE ROUTER'S WI-FI STANDARD

Look for the Wi-Fi standard on the specifications page of your owner's manual. It may be listed as a single standard like IEEE 802.11b, 802.11g or 802.11n. Or the manual may list something like 802.11nbg to denote a router that meets the 802.11n standard, but is also backwards-compatible with "g" and "b" laptops and older devices.



4 CHECK SIGNAL STRENGTH

Turn on the Wi-Fi in your smartphone, tablet or laptop and move it from room to room, noting the number of Wi-Fi bars (not cell phone bars).



5 IF NEEDED, ADD A RANGE EXTENDER

Install either a desktop or a wall plug-in range extender halfway between the Wi-Fi router and the weak/dead area. Access the extender with your laptop and program it with your router password.

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6 INSTALL AN ADAPTER ON YOUR OLD LAPTOP

Slide an 802.11ac adapter into a USB port on your old laptop. Enter the password for your new 802.11ac router and reap the benefits of high-speed Wi-Fi.

are the Netgear EX6200 High Power Wi-Fi Range Extender, \$129, and the EX6100 plug-in Wi-Fi Range Extender, \$90; both from newegg.com). Plug the extender into a standard receptacle and follow the programming instructions to make it work with your existing router (Photo 5).

Buy a new 802.11ac router and USB dongle

The newest 802.11ac routers provide the fastest speeds and the most features. For example, some models manage data traffic to all devices in your home so no single device can hog all the bandwidth. That's an important feature if someone wants to use the Internet while another family member is streaming video or gaming. Plus, some 802.11ac routers provide a whole-house backup feature so you can keep data from every device in one place. And you can install a USB adapter to let your old laptop receive the 802.11ac signal (Photo 6).

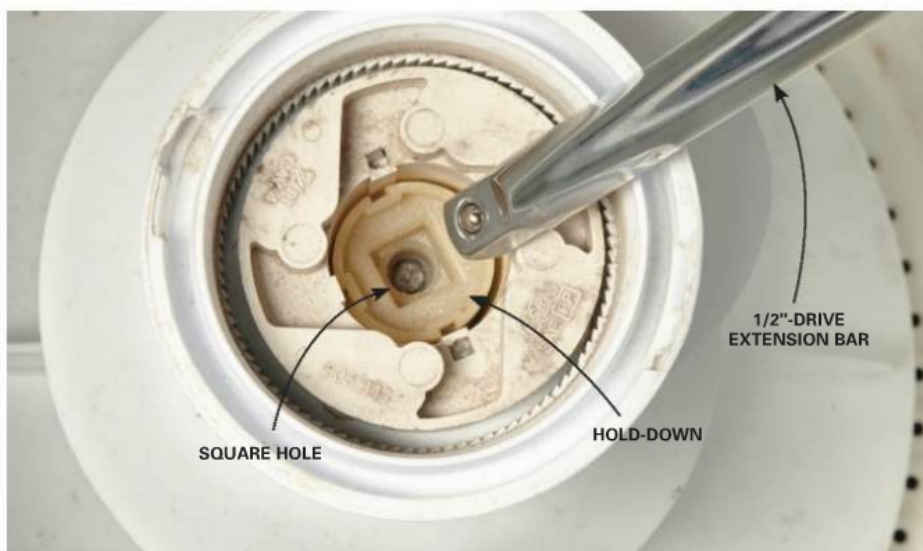
NOTE: When adding a range extender or updating your laptop with a USB adapter, we recommend buying the same brand as your router to ensure compatibility and receive the best technical support from the manufacturer. The Netgear devices shown here are just one brand. But many other companies, such as Asus, D-Link, Linksys, Apple and ZyXEL, also make 802.11ac components.

FIX BROKEN AGITATOR DOGS ON A WHIRLPOOL WASHER

Whirlpool washing machines use a ratcheting-style agitator. The ratcheting pawls (called "dogs") can wear out with age, or break if you overload the machine. When that happens, the agitator won't rotate. The parts are cheap (less than \$5 at appliance repair stores) and the repair is easy. Whirlpool used two ratchet designs, depending on whether the washer has a plain agitator or one equipped with a fabric softener dispenser. Replacing the dogs in a plain agitator is more complicated and that's the one we show here.

Remove the agitator cap by prying up around the outer edge with a small flat-blade screwdriver. Then unscrew the center hold-down (Photo 1). Reach in and remove the ratchet assembly. Turn it upside down and remove the snap-in retaining plate (Photo 2). Then install the new dogs and retaining plate (Photo 3). Then reinstall the ratcheting assembly, tighten and pop on the lid.

If your washer has a fabric softener dispenser, remove it and unscrew the ratchet assembly retaining bolt. Then lift the agitator out and tip it upside down. The ratchet assembly will fall out—there's no retaining plate. Replace the dogs as shown here. Then load the ratchet assembly into the upside-down agitator, flip it over and tighten the bolt. Snap on the fabric softener dispenser.



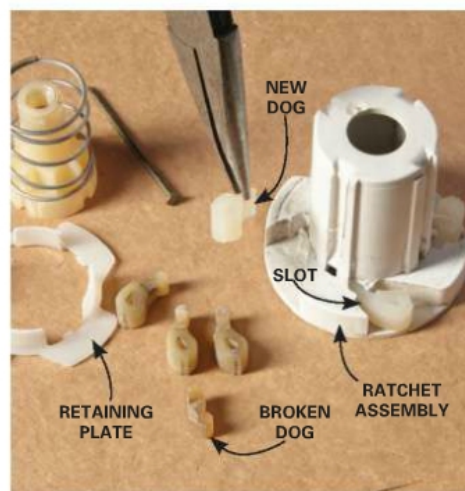
1 UNSCREW THE HOLD-DOWN

Slide a 1/2-in.-drive, 6-in.-long socket extension bar into the square hole in the hold-down and unscrew. Then remove the hold-down.



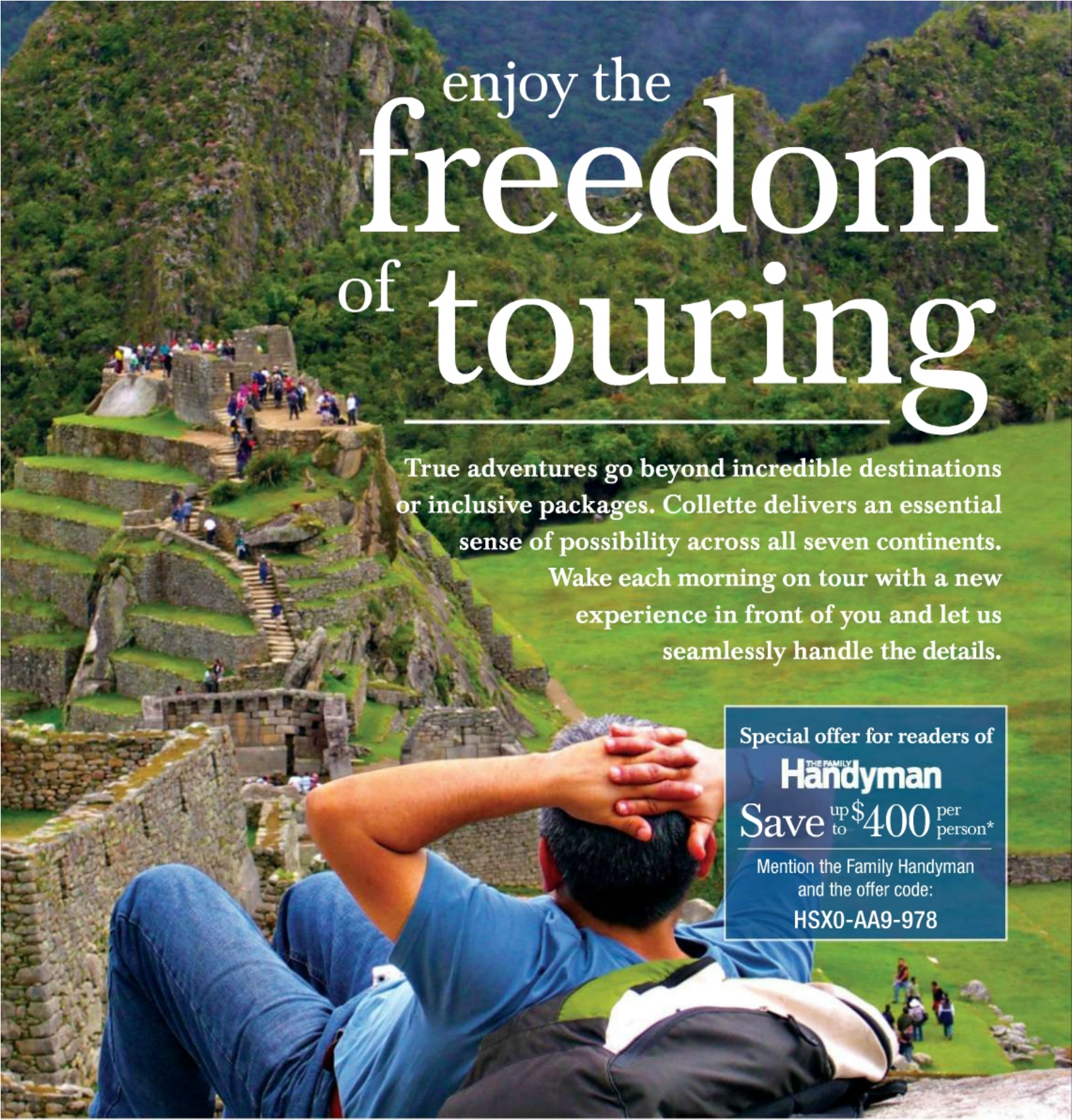
2 REMOVE THE PLASTIC PLATE

Poke a nail or small flat-blade screwdriver into the recess on each side of the ratchet assembly to unlock the retaining plate. Then pull it off to expose the dogs.



3 REPLACE THE DOGS

Drop four new dogs into the round slots. Then snap on the retaining plate.



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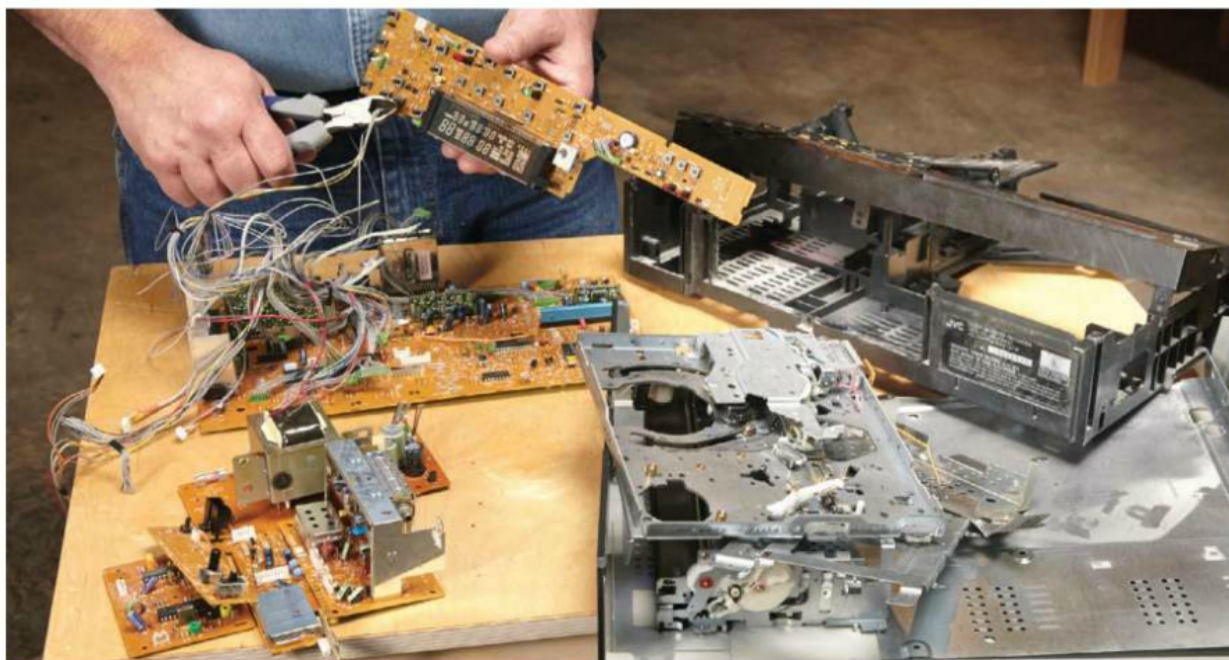
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Disconnect and remove the circuit boards. Yank off removable electrical connectors and clip the remaining wire harnesses with side-cutting pliers.

Save money on electronics recycling

Many communities offer free electronics recycling. But others charge a flat fee per piece, depending on the type of device and its weight. An old VCR, for example, can cost \$10. If you have to pay to get rid of electronics, here's how to save some money. Find an electronics recycler that'll accept removed circuit boards and charge only by the pound. Then disassemble the devices by removing the cover and front panel. Remove the circuit boards as shown and take them to the electronics recycling center. Recycle the metal and plastic parts with your household recycling.

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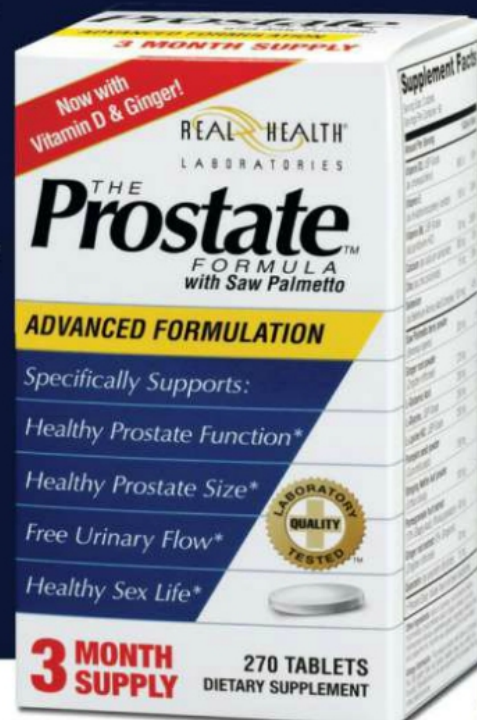
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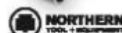
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HOOKIN' LADDER

About three or four times a year, my wife and I climb up on the roof of our house to blow off the leaves and pine needles that have accumulated, and as long as we're up there, clean our skylights. I usually place the ladder and go up first, blowing off debris while she rakes and cleans below. Then she joins me with a garden hose and cleaning supplies for the skylights and we work as a team.

The last time we were up there, the hose tangled with the ladder and sent it to the ground. The skylights were sealed, we had no cell phone and there were no neighbors within earshot. I had an idea: Lasso the ladder with the hose and pull it up! After several unsuccessful attempts, I hooked one of the ladder rungs with the handle of the hose sprayer and was able to gently pull the ladder back safely. We still work as a team, but from now on, it's one up and one down!



Dan Brown & Kellie Hogan



Our iPad edition has twice as many Great Goofs! It's available in the App Store.

An open-and-shut case

Our gas dryer wasn't getting the clothes dry, so I checked the vent to see if it was clogged. There was plenty of dryer lint—I spent an hour cleaning the vent with my shop vacuum. Then I tried the dryer, but it still didn't get warm. I reopened the dryer, checked all the electrical connections and the igniter position, but I just couldn't find the problem. I gave up and called an appliance repair shop.

When the technician arrived, he knelt down, looked in with a flashlight, then reached inside. He got up with a grin and said, "All fixed." I said, "You're kidding—what was wrong?" He said the gas valve was shut off. "You probably pushed it closed with the vacuum cleaner." He was there all of 10 minutes, apologized for his company's minimum billing and went off with a check, still smiling.

Dave Gurrie



Great goop

Like any teen, I loved a good milkshake. Our family never owned a blender, but I'd seen my dad use a paint-stirring attachment in his electric drill. I decided to try it out while my parents went shopping.

As soon as they pulled out of the driveway, I attached the paint stirrer. Then I filled a pitcher with ice cream, chocolate syrup and a half-quart of milk and pulled the trigger. It was working fine until the attachment wandered off-center. The pitcher wobbled wildly, and as I lost my grip, it spewed my milkshake throughout the kitchen. I labored feverishly to remove the goop before my parents returned. I thought I'd succeeded, but as they unpacked groceries, Mom asked suspiciously, "Why is this floor so sticky?" I had to come clean, even if the kitchen wasn't.

George R. Wilkens

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