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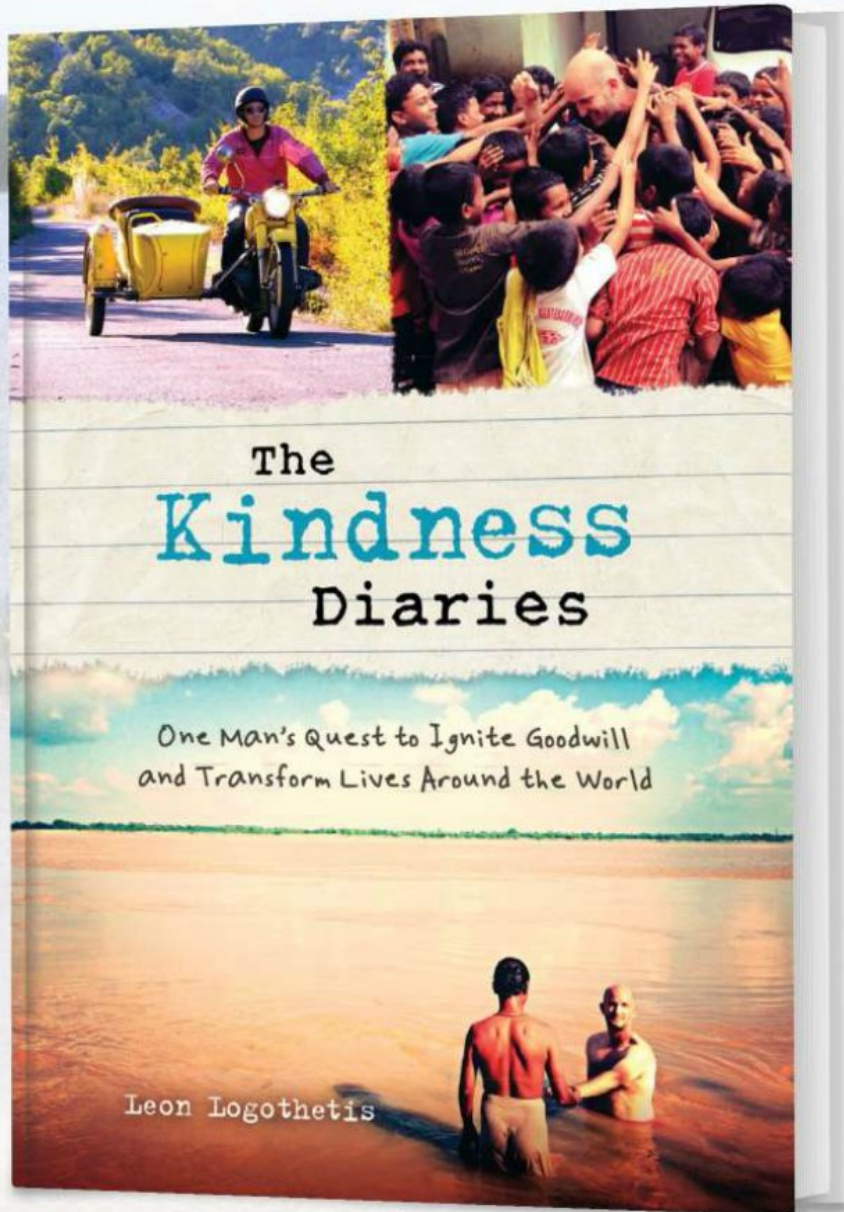
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GOT A DIY QUESTION?

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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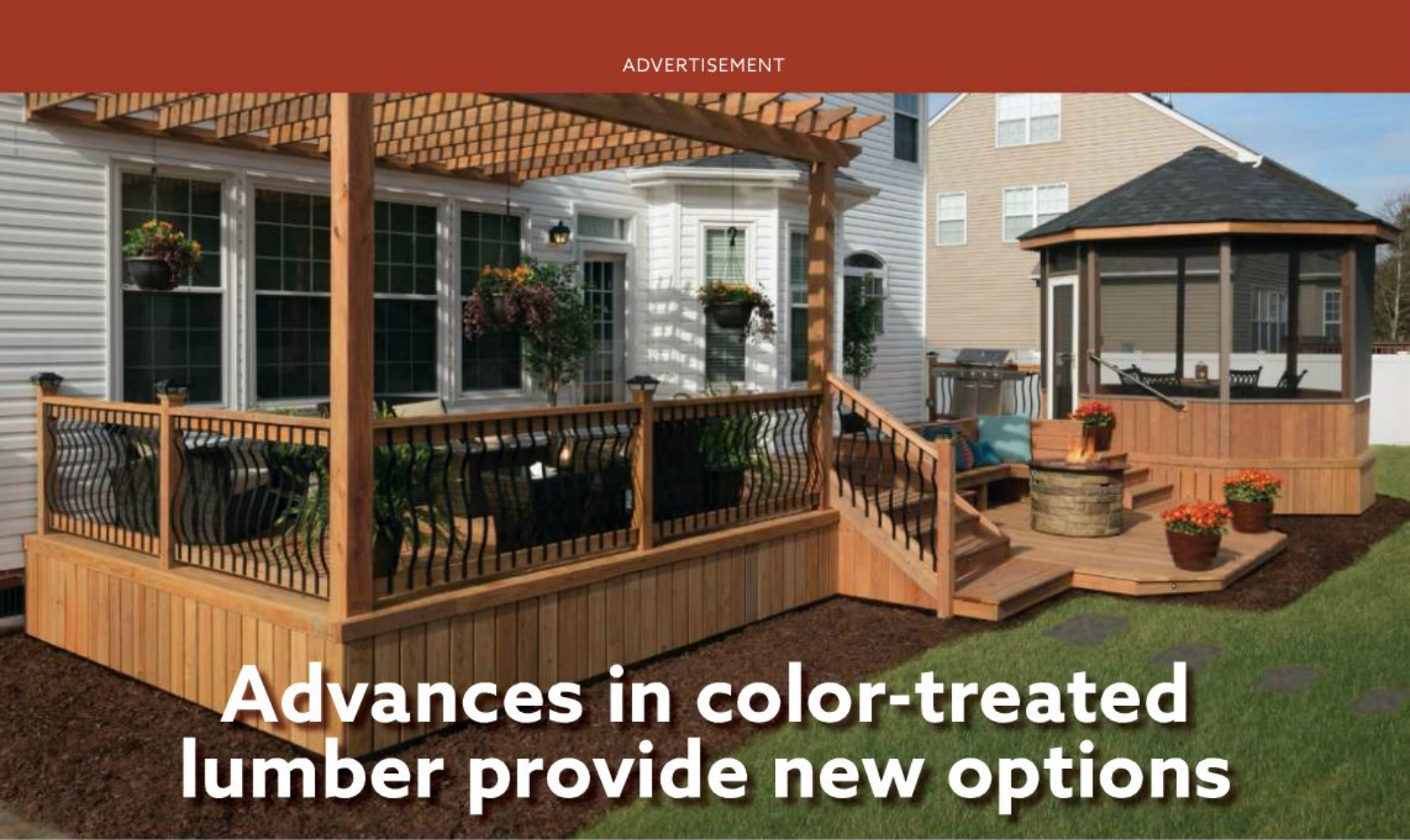
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Advances in color-treated lumber provide new options

Homeowners want new building products that provide more value with less maintenance and are environmentally friendly. With the advent of an environmentally preferred treating product—micronized copper azole (MCA)—many consider treated lumber the most cost-effective, eco-friendly and easy-to-install decking option. (Plus, it doesn't get that greenish hue that occurs with many older treating products.) And now there's something even better: a newly formulated, color-treated lumber that is on the verge of becoming mainstream, providing a unique, low-cost option for pros and DIYers.

ProWood Dura Color® pressure-treated lumber helps fill the gaps between everyday treated wood decking, cedar and redwood decking, and high-end synthetic decking. It's not a topical stain that fades away; it's a colorant that's driven deep into the wood fibers, creating beauty that's guaranteed to stand up to the elements for years. The Dura Color treating process provides a rich cedar-tone or redwood-tone appearance that doesn't fade to gray, unlike cedar and redwood. The color is part of a treating process that includes an EPA-registered, waterborne wood preservative system to protect against termite attack and fungal decay (rot). In addition, new water-repellant stabilizer additives are helping MCA-treated wood decking like ProWood resist the effects of weathering.



Latest advancements in color-treating technology let the wood's natural characteristics remain visible

So today you can get wood that protects against the elements and offers long-lasting, beautiful color.

Color-treated wood isn't new. Koppers Performance Chemicals (formerly Osmose Wood Preservation) is a leader in wood preservative technologies that has been providing color-treating solutions for years. In fact, Universal Forest Product companies have been

producing colored wood fencing for nearly a decade. But with the new color-treating technology, lumber decking has made significant strides, offering a better look for a treated lumber deck. Although composite and PVC decks have gained market share in recent years, pressure-treated wood decking still carries the lion's share of the market. And it's no wonder: It's inexpensive, easy to work with and can be found at any lumberyard.

In addition to decking, ProWood Dura Color is available in virtually any size dimensional lumber as well as finished products (like fencing and pergolas), giving DIYers more building options.

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STUFF we love

BY TRAVIS LARSON

editors@thefamilyhandyman.com

Best night-light in history

About once a year here at the office, we encounter "The Perfect Product." This year the title winner has to be the SnapRays Guidelight. Even though it's just a lowly night-light, it's practically perfect in every way. Here's why:

- Everyone needs it: If the sun goes down where you live, you need a few night-lights, right?
- Anyone can install it: It takes all of 60 seconds. Remove the single screw on the old cover plate, snap in the Guidelight and reinstall the screw. That's it.
- It's inexpensive to operate: The three tiny LEDs come on only when it's dark, thanks to the light sensor built into the cover.
- It's not an ugly plug-in. It looks exactly like an ordinary cover plate. The LEDs at the bottom light up the floor right where you need it.
- The price is reasonable: You'll spend \$15 for one, but they cost less if you buy a bunch.

The Guidelight is powered by two little prongs that snap over the terminal screws on the receptacle. Brilliant! No batteries, no wiring, no nuthin! You have a choice of two outlet cover types in ivory, almond or white. Go to snappower.com to light up your night.



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SPACE-SAVING HAULER

The foldable Cub Cadet Hauler can handle 800 lbs. of whatever you've got—mulch, soil, rocks—and unload it easily with the press of a foot pedal. You can fold one side down for easy access to a heavy bag of fertilizer or fold down all the sides and use it as a flat bed to haul logs, fence posts or lumber. There's an optional tool caddy for rakes and shovels and a handle kit to convert the trailer to a two-wheel pushcart.

The best thing about the Hauler is that it folds up small enough to be stored in your garage or shed. That's a big benefit: Most trailers stored outside die of exposure to the elements long before they would have worn out from actual use. The Cub Cadet Hauler is available wherever Cub Cadet products are sold and costs \$300 to \$400, depending on the options.



DIAGONAL CUTTERS REDUX

Diagonal cutters have been around for decades. Now Irwin Tools has introduced a new version called the PowerSlot (aka the VISE-GRIP Max-Leverage Pliers with PowerSlot, Diagonal Cutting, 8-inch #1902413).

Irwin engineered the mechanics so that the cutters exert twice the cutting power of conventional diagonal cutters with the same amount of hand squeeze. Couple that with super-duper hardened steel to handle all that cutting power and you have a set of diagonals worth the \$42 price tag. Read all about it and find a retailer at irwin.com. (And yes, we really did cut that chain link with them. You'd never be able to do that with everyday cutters.)

SMALL-ENGINE STORAGE SOLUTION

My brother borrowed my chain saw and returned it with a half-full quart of premixed gas. When he told me the gas cost \$8 for 1 qt., I told him he got ripped off. But after he left, I noticed the fuel had a 95 octane rating, contained no ethanol and had a shelf life of three years. It dawned on me that this was a perfect solution for engines I may not use very often, like my pole saw and pressure washer. Now I even run it through my lawn mower and snow blower on the last run of the season. I just make sure I hide the cans where my brother won't see them because admitting he did something clever is out of the question. This can of 50:1 fuel from Husqvarna is available at Lowe's.

Mark Petersen, Contributing Editor



POWER, CUBED

Long power strips are a great invention, but some electrical plugs are such space hogs that you can't use all the available outlets. And what about your phone, tablet and other USB devices?

The E-More Cube has four three-prong power outlets as well as two USB charging ports. The outlets are configured so there's no competition for charging space. The Cube is power-surge protected and takes up less space than a strip on a workshop or countertop. Plus, it looks cool! You can get one for about \$23 at many online retail sites—just search for "power cube."

Marcia Roepke, Art Director



DIY WORK WEAR

The mitt that can conquer the cold

I was never that fussy about gloves or mittens until I bought these pigskin mittens at my local hardware store a couple years back. They were the greatest! Not only did they fit somewhat like a glove, but they were comfortable, tough, water resistant and, best yet, warm. The inside of the mittens pairs up the index and middle finger and gives the ring and pinkie their own compartment. I can pick up lumber and actually carry bigger tools to the job site with some dexterity. You're not going to be picking up dimes or nickels off the sidewalk, but that's not a job for mittens anyway. They're so good that they usually sell out before the season ends, so order early. Find the Kinco Lined Pigskin Mitt at gearx.com for \$25.

David Radtke, Contributing Editor

Whatever your style, we have rolling door hardware that fits!



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STAND-UP BAGS

"Bags so thick, they stand on their own." At least that's what Gorilla Glue says. And they do, but you can't just throw stuff in there like you would with a garbage can. Gorilla Glue engineered the bags with a square base and super-heavy-duty plastic, and if you fold a little cuff at the top and treat them gently, they do stand up. These 42-gallon bags are incredibly tough—just the thing if you have heavy-duty trashing to do. The Self-Standing Bags cost about \$13 for a dozen at Walmart.

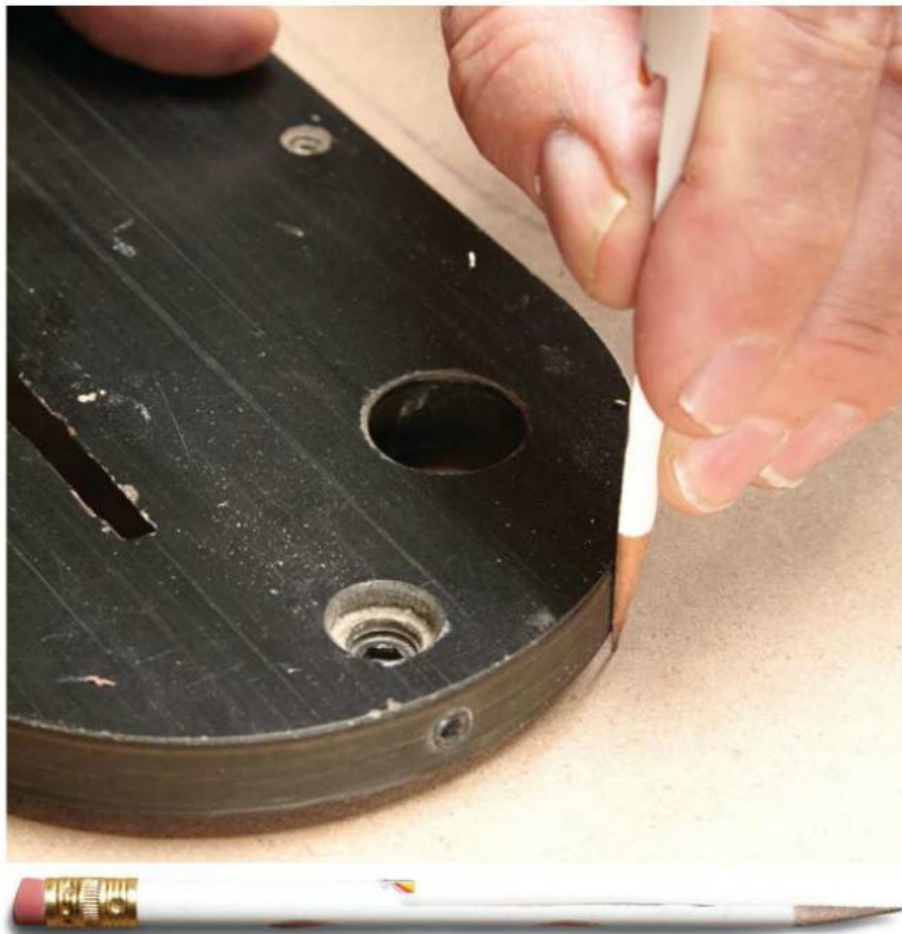
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FROM OUR READERS

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HALF-PENCIL MARKS EXACT COPIES

While trying to trace an exact copy of the throat plate for my table saw, I came up with this nifty technique using an ordinary pencil. I just shaved my pencil into a half-pencil by carefully grinding it on my belt sander. The flat edge enables my modified pencil to ride straight up along the edge of the template. It also works great for marking and then shaping inlays for my woodworking projects.

Tim Reese



Tile shower

My tile saw kicks out a lot of water every time I cut tile. To keep the front of my shirt dry, I wear a trash bag like a vest. I cut three holes (for head and arms) and slip it over my head. When I'm done, I dry it with a rag and store it with my tile saw.



Jon Jensen

Pet hair remover

When we were moving my daughter from her apartment, I wore my nonslip rubber-dipped gloves that I had gotten at a hardware store. While lifting her upholstered chair, I brushed some dog hair off with my gloves and noticed the hair rolling up into a bunch, leaving the upholstery virtually lint-free.

Seeing it work so well, I kept at it, and in just a few minutes the whole chair looked great. I left the gloves as a housewarming gift for my daughter's new apartment!

Cheri Hildebrandt



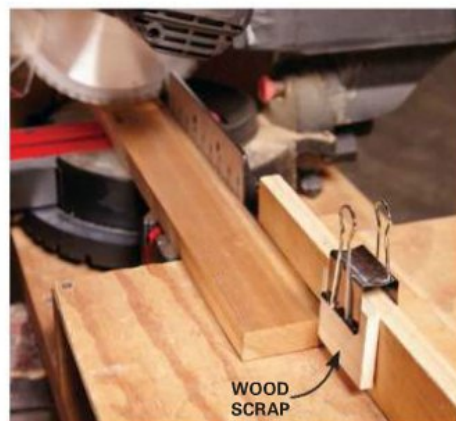


NEW LAPTOP FOOT

While typing on my laptop keyboard, I noticed that it rocked slightly. I checked out the bottom and saw that one of the hard rubber feet was missing. Not one to spend a lot on computer repairs, I grabbed my caulk gun and a tube of black silicone and squeezed out a small amount at the missing foot location. Then I leveled the caulk with a toothpick and let it set overnight. The next day, the silicone was hard and worked perfectly. A couple months later, it's still attached!

Charles Crocker

Get \$100 for your Handy Hint! See p. 4 for details.



Miter saw stop

I use binder clips for a lot of things around the shop, and here's one that I thought I'd share. When I need to make multiple cuts all the same length, I just clamp my jumbo binder clip to my fence and use a 1/4-in.-thick wood scrap pinched in the clip as a stop. Works like a charm! When it's not in use, I clamp it to the cord so it's always nearby.

John Muchow



Improvised T-bevel

Not long ago, I needed to make some angled wood parts to build a new soffit on my garage. I didn't have the customary tool for the job, but I had some steel joining plates. I screwed through one of the holes in the plate, set my angle, then added another screw to lock the angle. I could then use it as a template to mark all the pieces at the same angle and cut them with my circular saw.

Ryan Bartsch



Check out our iPad edition for a whole lot of bonus Handy Hints. It's available at the App Store.



Finger-saving nail holder

I build a lot of small projects, including wren and bluebird houses, and I use lots of small nails—so small that at times I can't grip them to start the nail. My solution: a plastic lid from a small peanut can. Just trim the lid back and drill a small hole near the end. Then cut a slit leading away from the hole so when you pull the lid back it releases from the nail.

Miles Stromback

MODERN DECK BUILDING

Expert tips for great looks
that will last decades

There are tons of new decking products on the market, and building methods continue to evolve and improve. To keep up with the changes, we traveled to builders' shows and deck expos to meet with tool and product manufacturers and get advice from top-notch deck builders. Here are some of the best tips and products we found.

by Mark Petersen

editors@thefamilyhandyman.com

Smart spacing

These yellow deck board spacers can be used to space boards either 1/8 in. or 3/16 in. apart. Our experts like large spacers like these because they're easy to grab and pull out, and less likely to fall down between the boards. They're also highly visible, which makes them less of a trip hazard. You can find the Johnson DeckMate spacers at some home centers or online for about \$5 each.



DECISION TOOL

Besides picking the color of the decking, you'll have to decide on the color of the fascia boards, railings, spindles, hardware, posts and caps. And those aren't easy decisions, especially when all you have to go on is a brochure with tiny color swatches. AZEK has a new, free app for the iPad that can help. Check it out at azek.com or the App Store on iTunes. The app allows you to change the color and texture on several different stock deck scenes, and once you find the combination that suits you best, there's a place to keep notes so you won't forget and have to start all over.

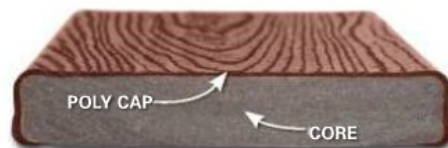
Visualizers like this are super handy, but our experts still recommend a hands-on experience before you make your final decision. Go to the supplier and check out a sample of the actual product. Pick it up and feel the texture. If there's a display, take off your shoes and walk around on it.



BEST WAY TO FLASH A LEDGER BOARD

Deck ledger boards are a common source of water infiltration, and it can be years before you discover the damage caused by water finding its way behind the ledger and into your home. The process below may seem a little excessive, but the extra time spent following these steps may save you thousands of dollars in repairs.

1. Install house wrap on the wall several inches higher than where the top of the ledger board will be.
2. Install a Z-flashing approved for pressure-treated lumber where the bottom of the ledger will be.
3. Cover the top of the Z-flashing with house wrap tape.
4. Fasten the ledger board over the Z-flashing.
5. Install flashing approved for pressure-treated lumber on top of the ledger.
6. Cover the top of the flashing with window/door flashing tape.
7. Install house wrap over the flashing.
8. Fasten the house wrap to the wall with house wrap tape.
9. Install the siding...finally!



Tougher decking

Just a few years ago, most manufactured decking was "composite," typically a combination of wood fibers and polymers. Composite was a big improvement over wood, but today most manufacturers offer something even better: "capped" or "shelled" decking.

The core of capped decking is similar to composite or made from cellular PVC, but that core is covered with a layer of denser, tougher polymer. That means better resistance to scratches, stains and fading. Brands include AZEK, TimberTech and Trex. It costs about \$5 to 10 per sq. ft. Paying more usually gets you a thicker or tougher cap, plus deeper texturing and blended coloring for a more natural look. The decking shown above, Trex Transcend, is made from 95 percent recycled material and includes a 25-year fade and stain warranty.

Better than lags

Structural screws work great for hanging a ledger board and fastening thick framing members. The main advantage of structural screws over traditional lag screws is that they don't need a pilot hole, which cuts the installation time in half! The Strong-Drive TIMBER Screws shown here have a low-profile head and are driven in with a large Torx bit. An 18-volt impact driver or 1/2-in. drill should be enough to get the job done.





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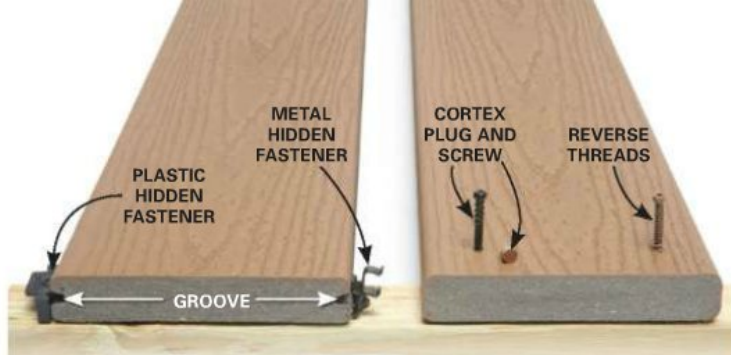
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Hide ugly ends

The ends of manufactured deck boards are ugly, and you don't want to leave them exposed. There are a couple ways to hide them. The easiest solution is to raise the fascia board so the top is flush with the top of the decking (**Photo A**). But keep in mind that most fascia/skirt boards are 11-1/4 in. wide, which means they aren't wide enough to fully cover both the deck boards and a 2x12 joist.

Another way to hide the ends is to install a border/perimeter board around the outside edges of the deck (**Photo B**). This method can really dress up your deck, especially if you choose an accent color for this board. The downside of a perimeter board is that it requires extra framing underneath.



FASTENING OPTIONS

Screwing through the face of the boards is by far the fastest, easiest and most structurally sound method of fastening deck boards. Modern deck screws have reverse threads to suck the decking down tight to the joists and specially designed heads to prevent mushrooming. Some face-screwing systems, like the Cortex system from FastenMaster, allow you to counter-sink the screws and fill the holes with plugs made out of the same material as the decking. Installing the plugs is time consuming, but the fastener locations are almost invisible.

Boards with grooves on the sides can be held down with hidden fasteners. Hidden fasteners are self-gapping and easy to install, and you can't beat them if you want a nice, clean, fastener-free look. Each decking manufacturer has a recommended fastening system, but our experts avoid the kind that require fastening from underneath. They also prefer fasteners that don't require removing half the deck in order to replace one damaged board in the middle.



Longer spans, fewer posts

Engineered lumber has been used inside buildings for years because it's stronger and straighter than regular lumber. And now there are versions for outdoor use. It may not be cost effective to frame an entire deck with engineered lumber, but installing an engineered-lumber drop beam is a great way to reduce the number of posts and footings needed to support a deck. The one shown here is made by Weyerhaeuser.



AVOID ROT WITH FLASHING TAPE

Pressure-treated lumber that stays wet will eventually rot. Flashing tape keeps water from getting trapped between doubled-up joists. If you're resurfacing an existing deck frame, tape over any joists that have a lot of holes from the previous nails or screws. Buy black tape if you can find it; shiny silver and white tapes may be noticeable between the gaps in the decking. The tape shown will be covered by the perimeter deck board. A 4-in. x 50-ft. roll of flashing tape costs about \$15 at home centers.



Stronger decking

NyloDeck is unlike most decking on the market. It's made from 100 percent recycled carpet fibers. It cuts and installs like other decking products, but it's much stiffer. Unlike most other manufactured decking, it can span joists spaced 24 in. on center and can be installed at a 45-degree angle over joists spaced 16 in. on center. That comes in handy when you're resurfacing an existing deck frame. The extra stiffness also helps constrain new treated lumber, which tends to twist and warp. NyloDeck doesn't eliminate the need for blocking between the joists, but it does help prevent a wavy-looking finished product. NyloDeck sells for \$9 to \$10 per sq. ft. To learn more, go to nyloboard.com.



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Blocking keeps decks flat and square

Manufactured decking isn't as stiff as wood decking, so it allows joists to bow. And that leads to a wavy deck surface. To help keep joists flat, our experts always attach blocking perpendicular to the joists. They also install diagonal blocking to keep the entire frame from racking. Use narrower lumber (2x8 blocking on 2x10 joists) so the blocking looks less conspicuous from a distance. Once everything is secure, our experts run a string on the top side of the joists and plane down the remaining high spots.



Spruce up your existing deck

New metal balusters can give your existing wood deck a sleek, modern feel. These two options are made by Deckorators. The Baroque balusters are simply screwed to rails. The round Classic balusters are held in place by hidden connectors that require no hole drilling. Deckorators balusters don't need to be painted or stained, which is probably the most tedious deck maintenance task there is. A five-pack of the Baroque costs \$33, and a 10-pack of the Classic costs \$20 plus \$7 for 20 connectors. You can find them at Lowe's.



GOOD-LOOKING, MAINTENANCE-FREE POSTS

One way to spruce up posts is to cover them with a maintenance-free material. AZEK makes a PVC Column Wrap that's super easy to install. Simply glue together three sides, slide them over the post, glue and clamp the last side in place, and then never worry about painting or staining again. AZEK Column Wrap is available for 4x4, 6x6 and 8x8 posts. One 10-ft., four-sided kit for a 4x4 post costs \$125. Order it at home centers and lumberyards that carry AZEK products.



NO-DIG FOOTINGS

Our experts gave up concrete deck footings a couple years ago. Instead, they've been using the Diamond Pier foundation system. To install a Diamond Pier footing, just drive in four pipes with a demo hammer. That eliminates a ton of digging and concrete work.

The standard deck model is the DP-50 and costs about \$125. Most home centers and lumberyards that carry this product will also have breaker hammers you could borrow or rent. Check out the videos at pin-foundations.com. The Diamond Pier system is relatively new, and you need to make sure it's approved in your area.



STARBORN INDUSTRIES

Perfect screw sinker

When you're screwing decking, this Smart-Bit Deck Screw Depth Setter is a great tool to make sure all the screws are set at a consistent depth. The type of bit can be changed to match the screws, and the depth of the screws can be adjusted. It also has a free-spinning collar with a rubber bumper to prevent marring. You can get one at decksdirect.com for less than \$20.



DECK BUILDERS EXTRAORDINAIRE

Bob Januik and Matt Norden, owners of Precision Decks, let us know what's new in the world of decks. They've been building decks for 20 years and are constantly trying new methods and materials.

Water-shedding deck

DuxxBak decking is a unique composite decking that doesn't allow water to pass between the deck boards, keeping the area under the deck dry. A dry space under the deck is a great place to continue your deck party during a rain shower, or to create some useful dry storage.

In order to channel the water away, the decking needs to run perpendicular to the house, so remember to install the framing joists parallel to the house. And make sure the substructure has enough slope to carry the water away. Go to greenbaydecking.com to find more information on DuxxBak and locate a dealer. Expect to pay about \$9 to \$10 per sq. ft.



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HACKED!

Customize store-bought
“RTA” furniture to suit
your needs

by Tim Johnson

editors@thefamilyhandyman.com



MODERN CONSOLE

Spend a little, get a lot. That's the idea behind ready-to-assemble (RTA) furniture. But RTA furniture isn't just inexpensive. It's also super adaptable. Because you assemble it yourself, RTA furniture invites tinkering. In fact, customizing RTA pieces is so common that it has its own name: "hacking."

We used furniture pieces from IKEA. You can also find RTA furniture at discount stores and home centers.



BUILT-IN BENCH



CRAFT CENTER

MODERN CONSOLE



Mimic a mid-century modern classic by turning a simple shelving unit on its side, wrapping it with plywood inside and out, and attaching legs. Our materials cost was about \$250.

Build it

Notice that the end panels of the original assembled Kallax shelving unit protrude beyond the sides. Remove both panels (**Step 1**) and trim off the protruding edges (**Step 2**). Then reattach both panels flush with the sides (**Step 3**). Cut hardwood plywood panels to wrap around the unit (**Step 4**). Make the top and bottom panels long enough to cover the side panels, and cut the side panels to fit tightly between the top and bottom pieces. Cut all the panels wide enough to create a 3/16-in. lip around the front of the shelving unit. Adhere iron-on edge banding to these pieces.

Fasten the panels with flat-head sheet metal screws after drilling countersink pilot holes through the unit. The unit's frames are hollow, so be careful not to punch through their thin faces when drilling the countersinks. Make sure the screw heads seat flush.

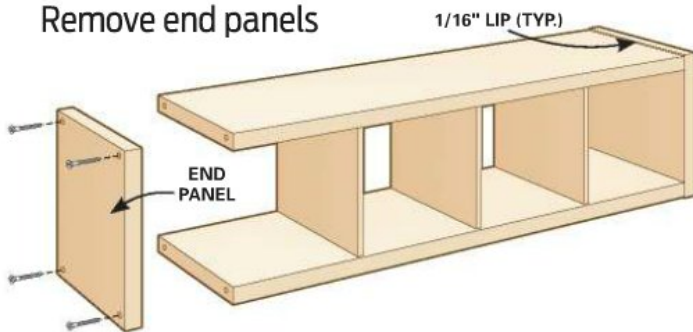
Cut plywood to cover the bottom and sides inside the unit (**Step 5**). Don't fasten these pieces with screws; instead, go for a friction fit. Apply iron-on edge banding to the exposed edges.

Remove all the plywood parts to apply finish. Finish the legs too. Reinstall the panels and inserts—tack the inserts with small nails or brads. Then attach the legs (**Step 6**).

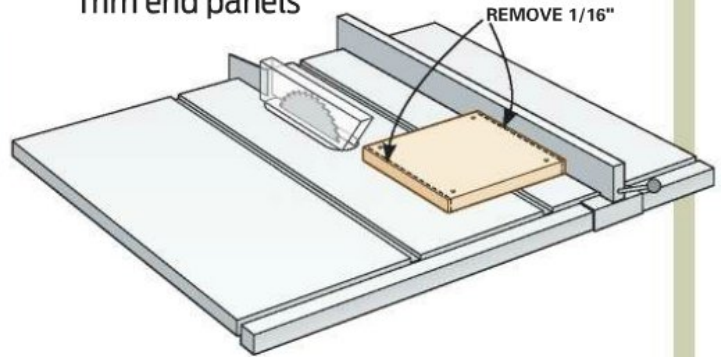


BASIC UNIT

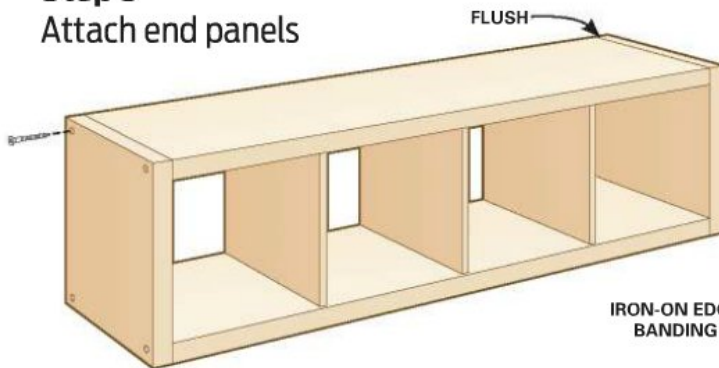
Step 1 Remove end panels



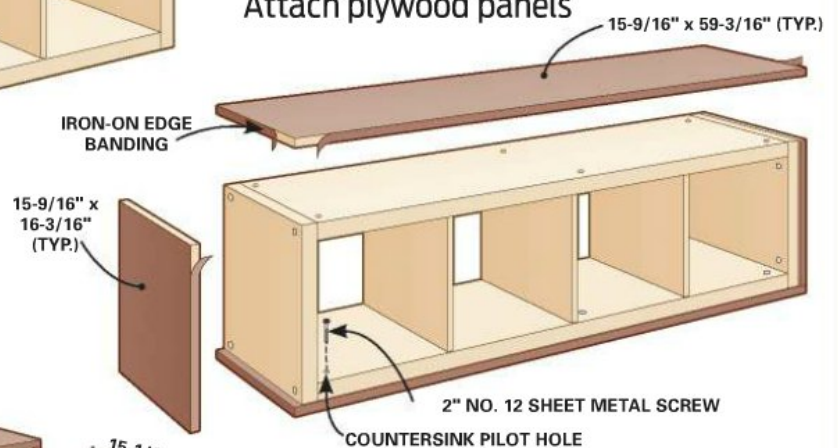
Step 2 Trim end panels



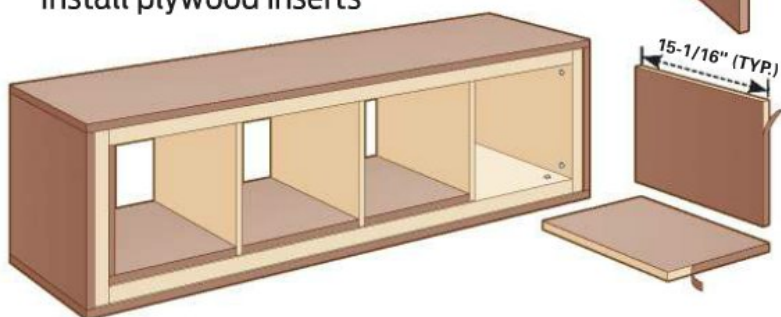
Step 3 Attach end panels



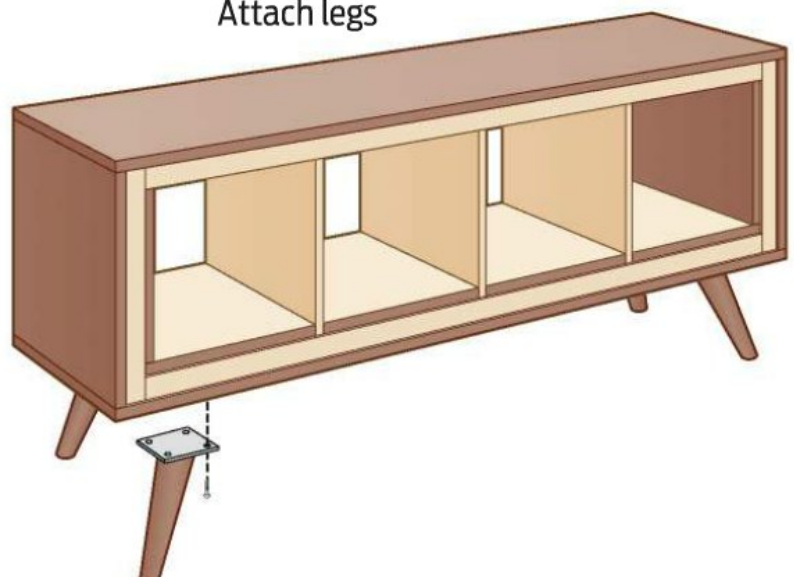
Step 4 Attach plywood panels



Step 5 Install plywood inserts



Step 6 Attach legs



Materials List

ITEM	QTY.
IKEA Kallax Shelving Unit, Birch, No. 902.758.44	1
8" McCobb legs, soft maple (tablelegs.com)	4
Angle top plate for legs (tablelegs.com)	4
4' x 8' x 3/4" birch plywood	1
Birch iron-on edge banding	25'
No. 12 x 2" flat-head sheet metal screws	24
Wood stain and polyurethane	

CRAFT CENTER

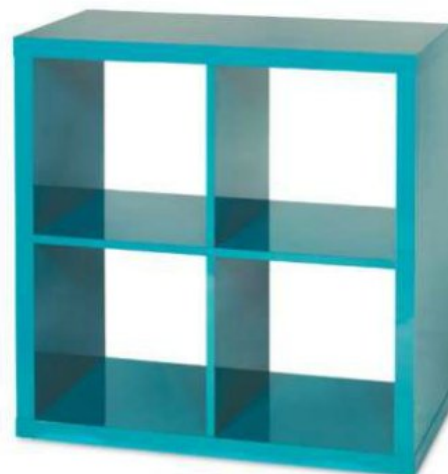


Build a worktable with a huge surface, convenient storage and easy mobility by sandwiching three small storage units between a base with casters and a plywood top with hardwood edging. We spent about \$330 on materials for the table shown here.

Build it

Cut hardwood plywood for the top and base and install hardwood edging and iron-on edge banding as shown in **Step 1**. Position two Kallax shelving units back to back and fasten them to the base with flat-head sheet metal screws after drilling countersink pilot holes through the Kallax frames (**Step 2**). The frames are hollow panels, so be careful not to punch through their thin faces when drilling the countersinks. Make sure the screw heads seat flush.

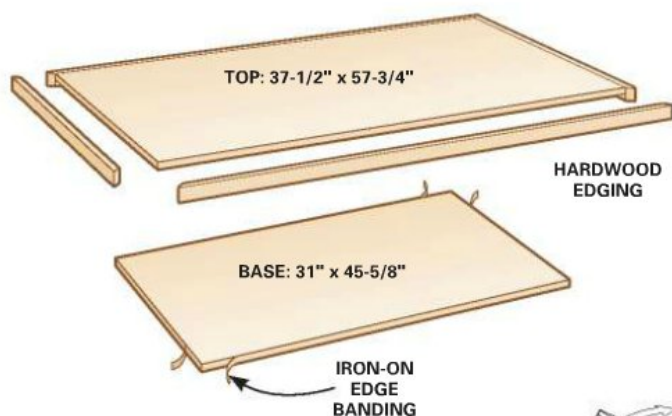
Install the third Kallax unit across the front of the base, using the same method. Then tip the assembly over onto the top and fasten it as before (**Step 3**). Install locking swivel casters (**Step 4**). Then tip the assembly right-side up and round over all the top's sharp edges with a router and a round-over bit. Complete the job by installing Kallax drawer inserts and applying your favorite finish to the top (**Step 5**).



BASIC UNIT

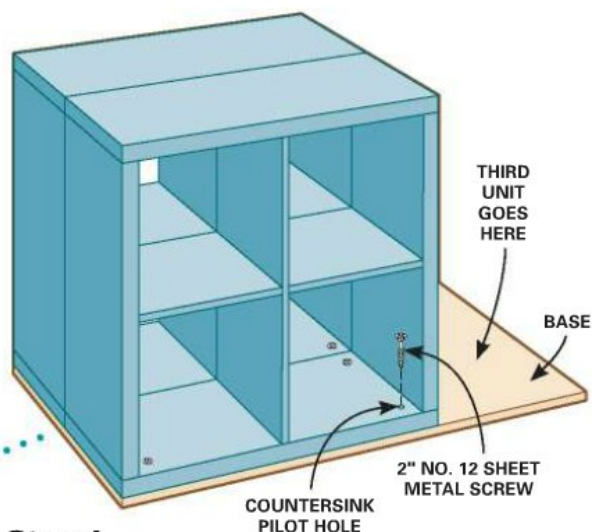
Step 1

Make the top and base



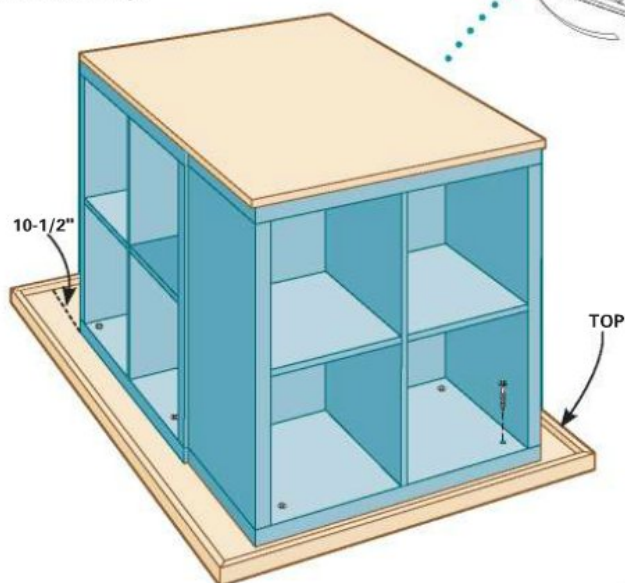
Step 2

Fasten units to base



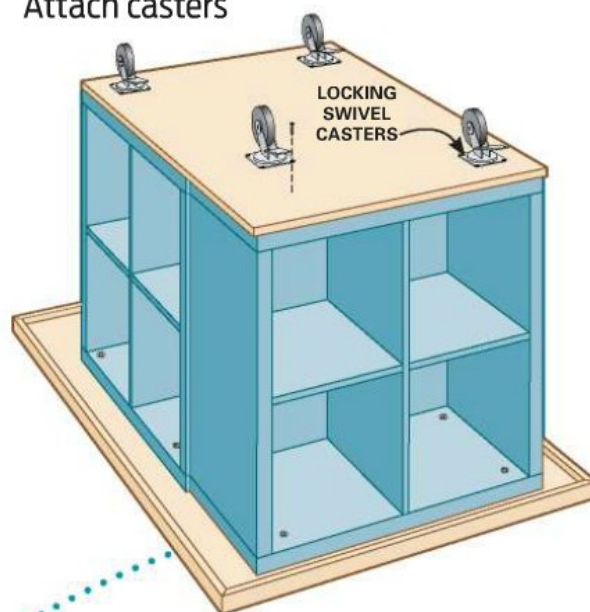
Step 3

Fasten top



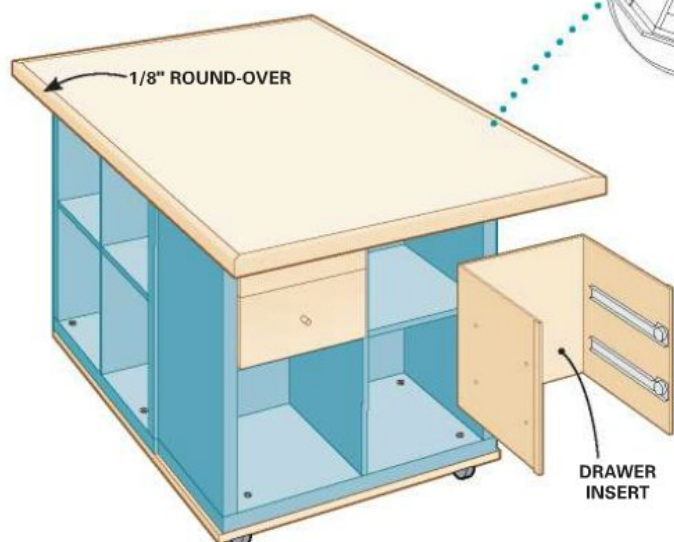
Step 4

Attach casters



Step 5

Round edges and install drawers



Materials List

ITEM	QTY.
IKEA Kallax Shelving Unit No. 202.794.59	3
IKEA Kallax Insert with Two Drawers No. 702.866.50	2
4" x 8" x 3/4" birch plywood	2
Birch iron-on edge banding	25'
3/4" x 1-1/2" birch or maple solid wood	20'
3" locking swivel casters	4
No. 12 x 2" flat-head sheet metal screws	24
Polyurethane, wood glue	

BUILT-IN BENCH



Create a classic mudroom bench by fastening base molding and a new top to a cabinet designed to display a flat-screen TV. Our bench materials cost about \$250, plus \$50 for base molding. Your base molding cost will depend on the type and quantity you choose.

Build it

Assemble the Hemnes TV unit through Step 27 of the manufacturer's instructions. Move it into position and shim the legs as necessary to level it. Then install a support block under the rails beneath the center divider (**Step 1**). This allows the unit to be used as a bench. Fasten the unit to the wall through its upper back rail (**Step 2**).

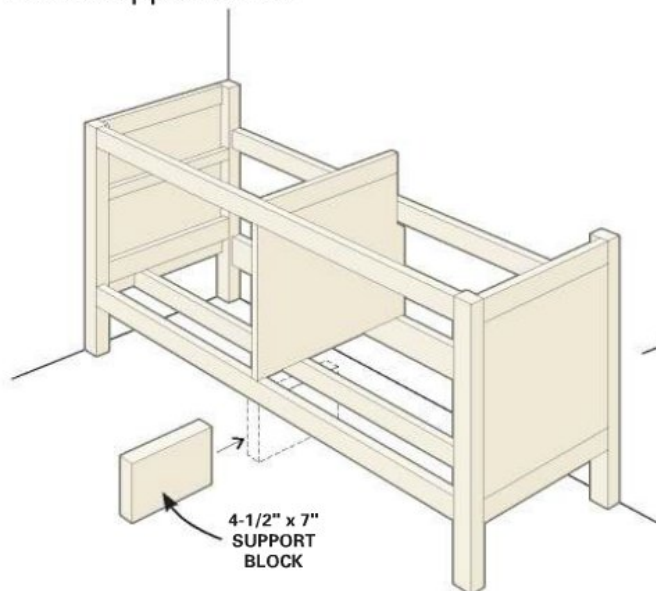
Build a new top by gluing hardwood edging to 3/4-in.-thick hardwood plywood and then rounding over all the sharp edges (**Step 3**). Sand the top, stain it and apply your favorite finish. Use corner brackets to fasten the top to the bench (**Step 4**). Then fasten base molding around the bench to build it in (**Step 5**). Install the drawers to complete the project.



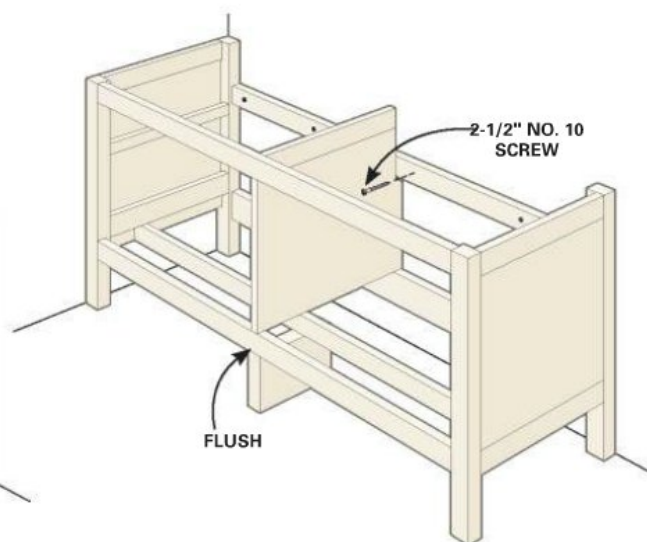
BASIC UNIT

Steps 1–5 are shown on p. 31

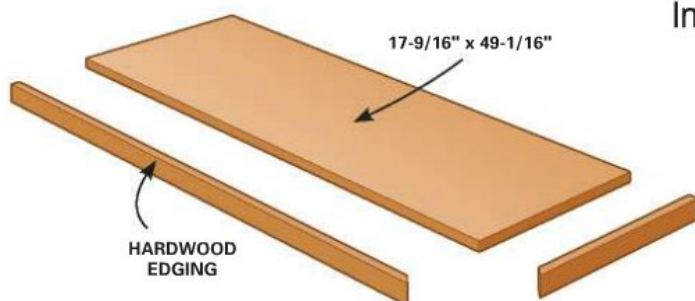
Step 1 Install support block



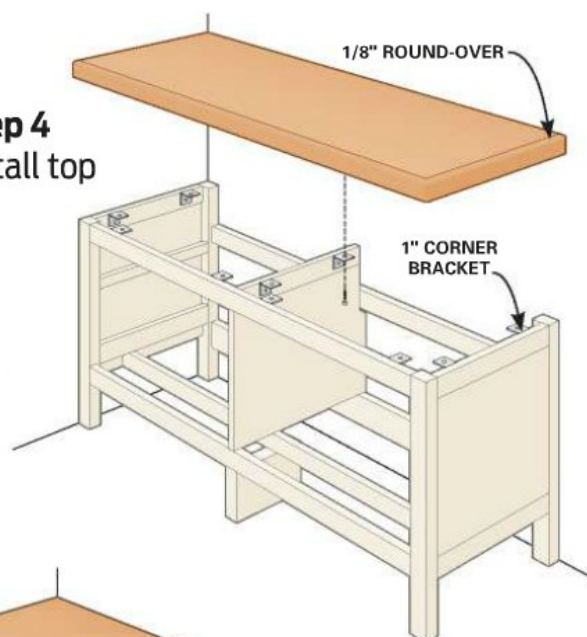
Step 2 Fasten bench to wall



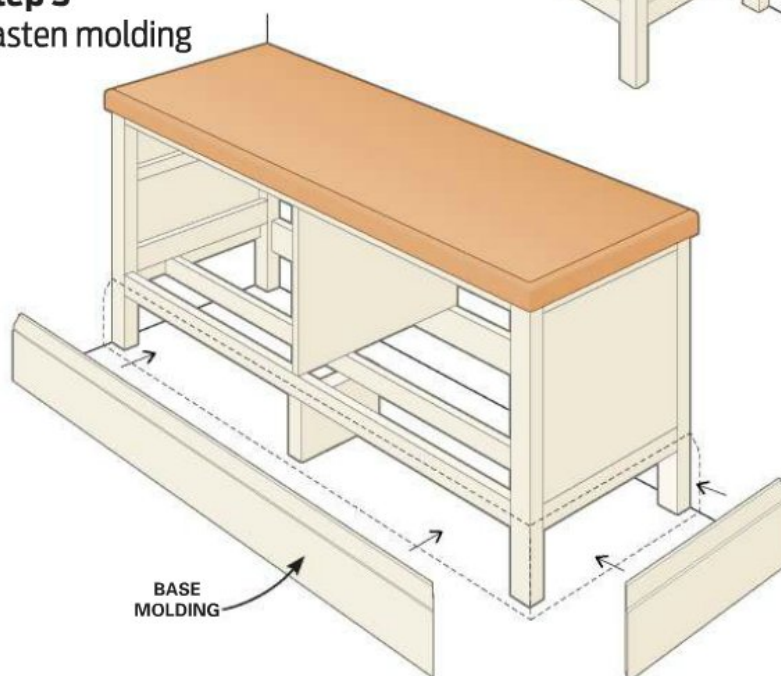
Step 3 Build plywood top



Step 4 Install top



Step 5 Fasten molding



Materials List

ITEM	QTY.
IKEA Hemnes TV Unit No. 002.509.61	1
4' x 8' x 3/4" birch plywood	1
3/4" x 1-1/2" birch or maple solid wood	8'
1" corner brackets	10
5-1/2" base molding	6' min.
Wood stain, polyurethane, wood glue	

SEPTIC SMARTS

Save big money by understanding how a septic system works—and what can go wrong.

A well-designed, properly installed septic system can last for decades—or fail in just a few years. It's up to you.

Maintaining a healthy septic system isn't all that expensive, but you could easily spend tens of thousands to dig up and replace a septic system that has totally failed. As the old saying goes, an ounce of prevention is worth a pound of cure.

Good maintenance starts with understanding how a septic system works and how it can fail. Let's take a look underground and see what's supposed to happen in a well-functioning septic system. After that, I'll show you why things go wrong and give you some pointers for keeping your system in top shape.

by **Jim vonMeier**

editors@thefamilyhandyman.com



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HOW IT WORKS

It's a cafeteria for bacteria

Bacteria are what makes a septic system work. They break down waste, leaving water clean enough to safely percolate down into the earth. The whole system is designed to keep bacteria healthy and busy. Some live in the tank, but most do their work in the drain field.

The septic tank acts like a settling pond. Greases and oils float to the top. Heavier solids sink to the bottom.

1. All waste flows to the septic tank.

2. Watery waste, called "effluent," fills most of the tank. Anaerobic bacteria begin breaking down the organic material in the effluent.

3. A layer of sludge falls to the bottom. Sludge is composed of inorganic solids and the byproducts of bacterial digestion.

4. A layer of scum floats to the top. Scum is primarily composed of fats, greases and oils.

5. A filter prevents most solids from entering the outlet pipe.

6. Effluent flows to the drain field.

7. Holes in the drain field pipe allow effluent to seep into surrounding gravel.

Gravel around pipes allows water to flow into soil and oxygen to reach bacteria.

8. Aerobic bacteria in gravel and soil complete decomposition of the waste.

9. Clean water seeps down into the groundwater and aquifer.

The drain field provides a large area where bacteria can thrive and treated water can seep into the ground.

DISTRIBUTION BOX

DRAIN FIELD

SEPTIC TANK

WHAT GOES WRONG

Don't abuse the system

A septic system that was properly designed and installed needs only occasional "pumping" to remove the sludge and scum from the tank. But without knowing it, you can do things that harm—or destroy—the system.

Waste that decomposes slowly (or not at all) gets flushed down drains. Cigarette butts, diapers and coffee grounds often cause problems.

If used heavily, garbage disposers can send too much solid waste into the system.

Lint from synthetic fibers flows from washing machine. Bacteria in the tank and drain field can't break it down.

Household chemicals like disinfecting cleaners and antibacterial soaps kill bacteria. Most systems can handle light use of these products, but the less you use them, the better.

Too much wastewater over a short period of time flushes out the tank too rapidly.

Too much sludge reduces bacteria's ability to break down waste. Excess sludge can also overflow into the drain field.

Sludge or scum plugs holes in the pipe.

Roots from trees and shrubs can clog and damage a drain field.

Compacted soil and gravel block seepage of effluent and deprive bacteria of oxygen. This is often caused by cars driving or parking on the drain field.



✓Yes



✓Yes



xNo



✓Yes



✓Yes



✓Yes



✓Yes



✓Yes

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- Dig a Small Pond



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SEPTIC SOLUTIONS

Get your tank pumped...

Your tank must be pumped out regularly by a pro. Pumping removes the buildup of sludge and scum, which slows down bacterial action in the tank. Your tank may need pumping each year, but it's possible to go two or three years between pumpings, depending on the size of your tank and the amount of waste you run through the system. Ask your inspector to make a rough recommendation for how often your tank should be pumped.

...but don't hire a pumper until you need it

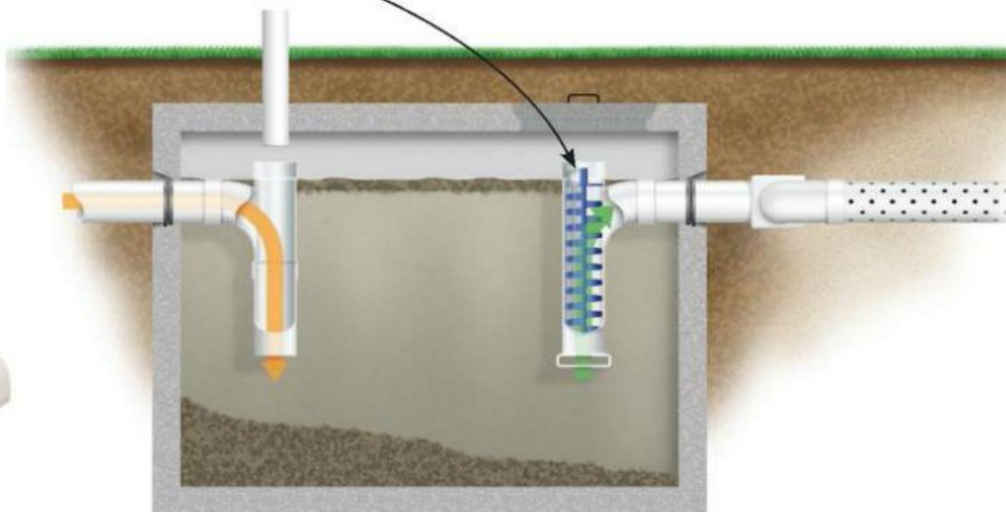
Regular inspections and pumping are critical. But if you're not squeamish, you can check the sludge level yourself with a device called The Sludge Judge. It costs \$100 to \$125 and is widely available online. Once you've determined that your tank is one-third full of sludge, call a contractor to come pump it out.



EFFLUENT FILTER

Install an effluent filter

Ask your contractor to install an effluent filter on the outflow pipe on your tank. (It will probably cost \$50 to \$100, plus labor.) This device helps prevent solids from entering the drain field and will need to be cleaned out on occasion by a contractor.



SEPTIC SOLUTIONS

Get an inspection

A thorough initial inspection by a pro will cost \$300 to \$500; after that, regular inspections cost less than \$100 each. Your pro will be able to tell you how often your system should be inspected.

Simple as a septic system may seem, evaluating its health really requires an expert. There are plenty of contractors who will gladly pump the sludge out of your tank, but in my experience many don't fully understand how a septic system works or how it should be maintained. I highly recommend looking for a contractor who has received some formal training in the science of septic systems. Some states have adopted certification programs for septic contractors—check with your Secretary of State's office to see if yours is among them.

A complete inspection will determine whether your system is up to code (many are not) and the condition of the tank and drain field. A good inspector will also be able to tell you whether your tank is large enough for your household, and the maximum volume of water you can pass through it in a day.

You may be able to improve the performance of your system by adding bacteria with a product such as RID-X. Your pro should be able to tell you if your system will benefit from this treatment.

Alternatives to a new drain field

If an inspection or sewage backup reveals that your drain field is in trouble, the ultimate solution is to replace it. The cost can be huge, however, so it's worth discussing other options with a contractor.

■ **Clean the pipes.** A contractor can clear out the drain field pipes with a rotary pressure washer. "Jetting" the pipes usually costs about \$200.

■ **Treat the system with chemicals.** Ask your contractor about treating your system with a commercial product (not a homemade one) that increases the amount of oxygen in the drain field. I recommend Septic-Scrub (arcan.com). A typical treatment costs \$500 to \$1,000.

■ **Loosen the soil.** In states where it's legal, some contractors can fracture compacted soil around the pipes by injecting high-pressure air in numerous locations around the drain field, a process called "terra-lifting." Depending on the situation, this can cost less than \$1,000 or more than \$4,000.

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Protect your drain field from lint

Install a filter on your washing machine's drain. This device prevents lint from entering the system, particularly the synthetic fibers that bacteria can't digest. I've developed one of these filters myself and named it the Septic Protector (septicprotector.com). It costs about \$150, plus shipping, and includes a replacement filter.

Don't overload the system

Limit your water use. Reducing the amount of water that runs into your tank, particularly over a short period of time, will prevent the flushing of untreated waste into your drain field. You can replace old toilets with low-flow models, install reduced-flow showerheads, and simplest of all, wash laundry throughout the week rather than just on Saturday morning.

Meet the Expert

Jim vonMeier believes septic systems are the answer to America's water shortage because they deliver purified water to depleted aquifers. He travels the country advocating, lecturing and testifying on septic systems. If you have a septic system question, write to him at jvonmeier@septicprotector.com.



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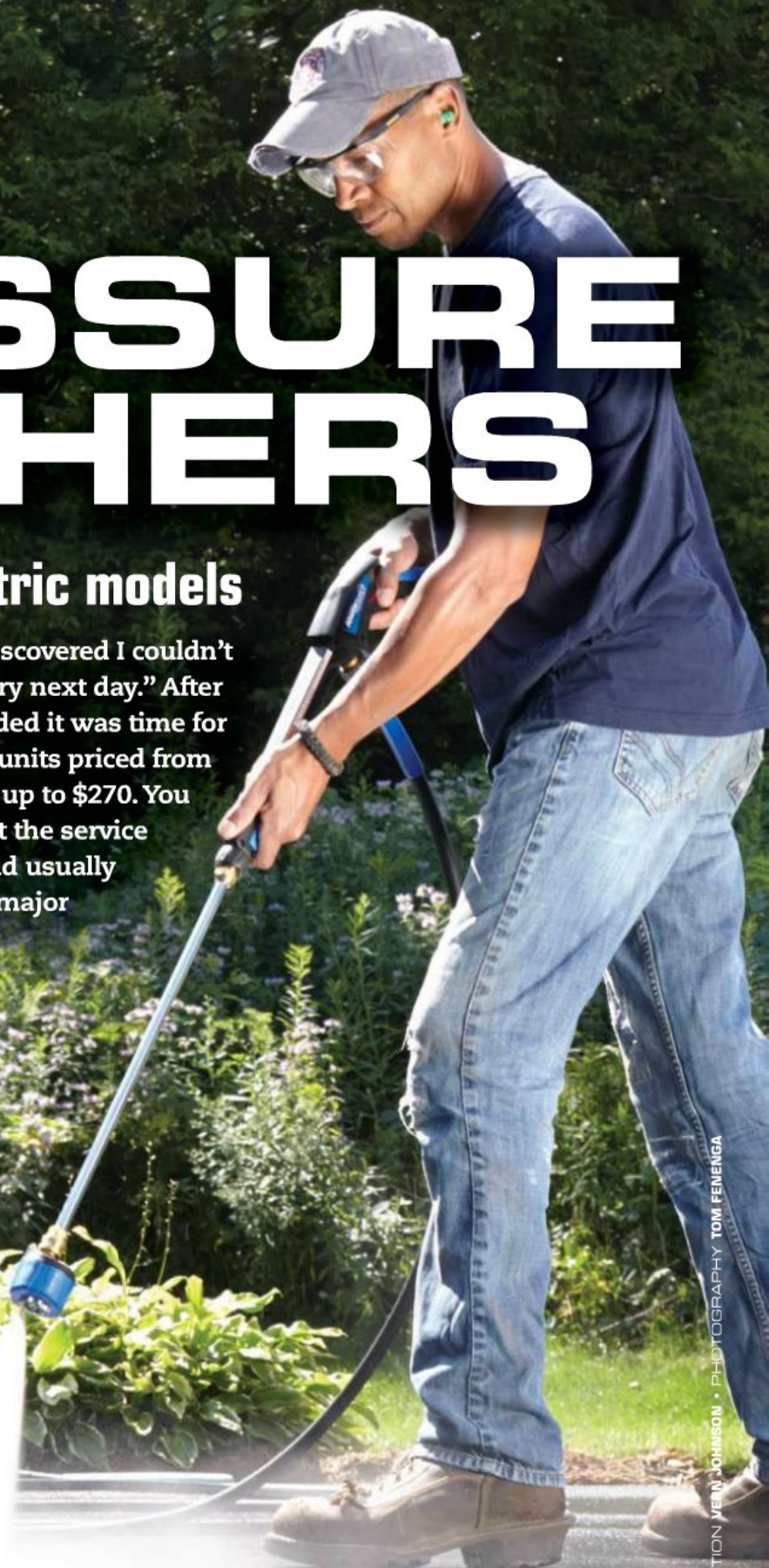
2015 **Best in
DIY**

by Rick Muscoplat
editors@thefamilyhandyman.com

PRESSURE WASHERS

We test 13 gas and electric models

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Two critical ratings

Pressure washers carry two ratings that reflect their cleaning power: pressure, measured in pounds per square inch (psi), and water flow rate, which is measured in gallons per minute (gpm). A machine with lower ratings can do almost all the jobs a more powerful machine can do. But a machine with higher ratings will clean much, much faster.

Pressure matters, but...

Higher pressure cleans faster, but don't allow small differences in psi to drive your decision. You probably won't notice much difference between 2,800 and 3,000 psi, for example. The gas models we tested range from 2,500 psi to 3,100 psi; the electrics from 1,700 to 1,800 psi.

Gas vs. electric

Gas models have one huge advantage: They clean faster, due to much higher pressure and flow rates. They can handle any job a homeowner can throw at them, including heavy concrete cleaning.

Electric models have all the other advantages. They're much smaller and half the weight of a gas machine. They start up as soon as you squeeze the trigger and shut down as soon as you let go. So you won't have any gas hassles or starting issues, and you'll never have to worry about pump damage from extended idling. And since there's no exhaust, you can use them indoors.

If you need maximum power and want to get the job done fast, go with gas. Otherwise, enjoy the convenience of an electric pressure washer.

What they can and can't do

Pressure washers are great for removing deep-seated dirt, grease, peeling paint and even graffiti from concrete, asphalt, siding, decks, lawn furniture, garbage cans, boats and trailers, and outdoor power equipment. Electric models can remove light stains and dirt from concrete but may not have enough oomph for the heavy stains.

With accessories, you can turn your gas-powered pressure washer into a wet sandblaster or use it to power a water broom or a mechanical sweeper. Add a telescoping extension wand and gutter cleaner (such as the General Pump Giraffe 24-ft. wand, \$190, and gutter cleaner, \$15, both from pressurewashersdirect.com) and you can clean your second-story siding and gutters without climbing a ladder.

But pressure washers are also very good at destroying items around your home. The high pressure can break windows, gouge wood siding and decking, and force water behind siding and flashing, causing extensive damage. They work great for blasting mud off your car or truck but leave a fine film of dirt behind. A regular garden hose and wash mitt actually work better for normal car washing.

THE DIFFERENCES ARE IN THE DETAILS

A pressure washer has a simple mission: to blast out water at super-high pressure. All of the machines we tested did that without trouble and performed as promised. So aside from pressure and flow rates, we found that features made the real differences between models. Some models were just plain more convenient to use than others. Here's what we learned:

The hose matters—a lot

All high-pressure hoses are a hassle to wrestle with, but some are stiffer and more stubborn than others. If the hose fights you during setup and storage, you'll dread using the unit. And we encountered a few really bad hoses. The best ones were flexible, unrolled easily and didn't retain much coil memory. The worst ones were thick and bulky and retained their coil memory, making them a hassle to work with and store.



Dial nozzles are great

Pressure washer nozzles come in two varieties: individual snap-in quick-change nozzles and a dial-type multi-spray pattern nozzle. We found no difference in performance. But for convenience, the dial nozzle wins the contest hands down.

The number of nozzles included with the machine varied by manufacturer. The Powerhorse unit came with just two nozzles, one for soap and one for spray. Other machines had three, four or five nozzles. Additional nozzles cost about \$8 each and are available at most home centers.

All the gas machines we chose used a standard nozzle coupling. If the gas machine you like comes with individual nozzles, you can convert it to a dial style for about \$25. However, some electric units use a proprietary hose, gun and nozzle fitting, making it much more difficult to find additional or replacement accessories and parts.

Get Your Round Trip Ticket...

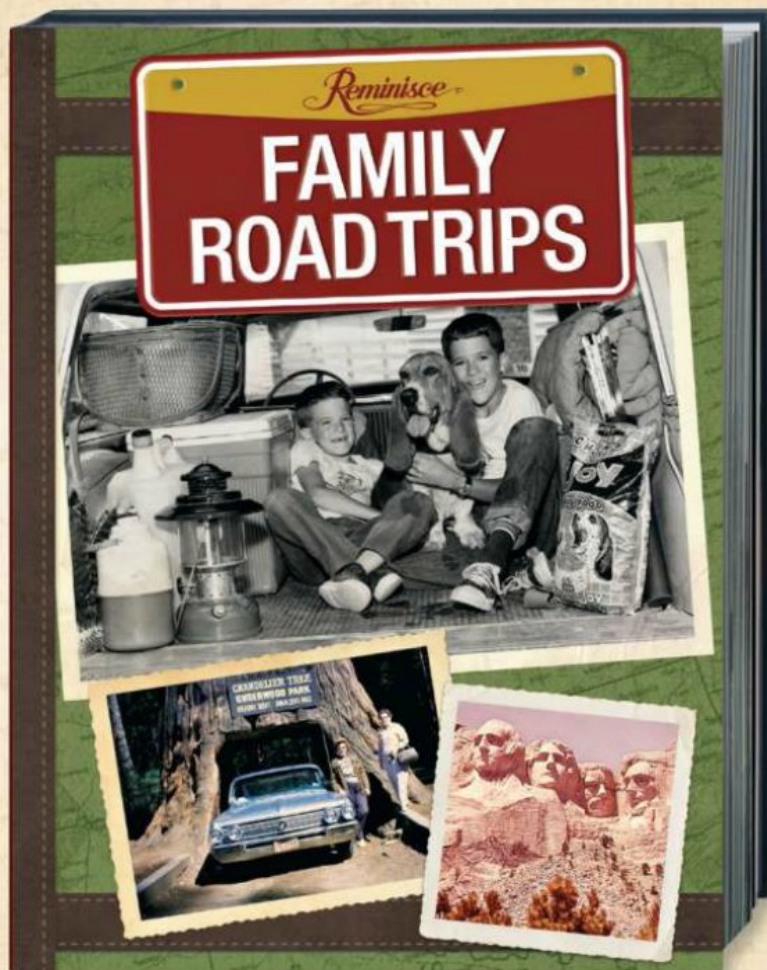
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Variable pressure vs. fixed

Most pressure washers run at maximum pressure all the time, but some let you turn down the pressure for delicate surfaces. This is a nice feature, but you can get the same effect just by using a wider spray pattern and holding the nozzle farther away from the surface. Or buy an add-on pressure regulator like the Simpson Dial-N-Wash (\$35 at home centers).



Higher hose connections are easier

The pumps and hose connections on vertical-shaft gasoline engines are mounted at the bottom of the unit, near the ground. The pumps on horizontal-shaft engines sit about 8 in. higher. The designs work equally well. It's just a matter of convenience when attaching the garden and high-pressure hoses. If you have bum knees or trouble bending over, that slight height advantage makes it easier to connect hoses.



Pneumatic tires roll better

The machines with pneumatic tires were the easiest to move around, especially on steps and gravel. But they need occasional reinflation. Plastic or molded rubber wheels get stuck much more readily.



Soap tanks are more work

Pressure washers provide the best results when you pretreat with pressure washer soap. Some machines include an onboard soap tank. We initially thought that was a great idea. But we found it to be a nuisance overall. We had to constantly refill the tank on large jobs. And afterward, the tank needed to be cleaned out (dried soap can damage the pump).

Instead, we prefer the siphon tube approach. Just shove the end of the tube into a gallon of cleaner and start soaping. When you're done, rinse the siphon tube, cap the jug and call it done. You can convert a machine with an onboard tank by disconnecting the tank tube and installing a siphon tube/filter accessory (less than \$10 at home centers) to the soap port on the pump.

TWO UNIQUE FEATURES

Craftsman Grip & GO

The pumps on gas-powered pressure washers can overheat and self-destruct (a \$200 repair) if you let them idle for more than a few minutes. The Craftsman No. 020573 Grip & GO pressure washer's electric start feature fires up the unit when you squeeze the trigger and shuts it down when you let go. That means you don't have to manually stop and start the machine every time you want to move it. And the electric start is easier for those who have trouble using a rope pull.

Briggs & Stratton POWERflow+

Most gas-powered pressure washers top out at 2.7 gallons per minute (gpm), and the electrics max out at 1.4 gpm. But the Briggs & Stratton POWERflow+ machines can pump a lot more water (5 gpm for the gas version and 4 gpm for the electric). That extra flow is just what you need to quickly rinse soap and debris off a driveway or your siding. Just turn the dial nozzle to the POWERflow+ setting and the machine will automatically jump to the higher flow rate.

RYOBI NO. RY14122

1,700 psi • 1.2 gpm • 25-ft. hose •
35-ft. cord • Three nozzles • Three-year warranty •
32 lbs. • Onboard soap tank

\$159

This unit is an all-round winner, not only our favorite machine but also the most affordable. This small compact unit comes with a high-quality flexible hose and a very attractive price. It also has the best warranty of all the electric machines.



**BEST OVERALL,
BEST VALUE**



BRIGGS & STRATTON POWERflow+ NO. 020559

1,800 psi • Up to 4 gpm • 26-ft. hose •
35-ft. cord • 7-in-1 dial nozzle •
One-year warranty •
30 lbs. • Onboard soap tank

\$230

In addition to the extra-high flow rates and the high-quality dial nozzle, this model includes a hose reel. However, the hose is larger to carry the extra flow, and that bulk makes it harder to wind onto the reel.



CRAFTSMAN NO. 020561

1,700 psi • 1.3 gpm • 39.5 lbs. •
26-ft. proprietary hose • 35-ft. cord •
Three proprietary nozzles •
One-year warranty •
Proprietary onboard soap bottle •
Onboard steam cleaner

\$269

This handy pressure washer also includes a built-in steam cleaner. For really tough dirt, apply soap, then steam, and finish the job with a blast from the pressure wand. We didn't like the proprietary soap bottles and found the hose reel difficult to operate.



GREENWORKS NO. 51012

1,700 psi • 1.4 gpm • 25-ft. hose •
35-ft. cord • Five nozzles •
One-year warranty • 46 lbs. •
Dual onboard soap tanks

\$189

Flexible hose and smooth hose reel. Lots of nozzles and two soap tanks for different soap formulas.



KARCHER K3 FOLLOW ME

1,800 psi • 1.3 gpm • 15-ft. proprietary hose •
Proprietary nozzles—variable and turbo •
One-year warranty • 15 lbs. • Onboard soap tank

We liked the portability of this unit so much that we had to create a special award. It's not only small and easy to store but is less than half the weight of most electrics. Karcher had portability in mind when it designed this machine. Instead of being mounted on a cart, the unit has four wheels, so it follows you around as you wash (you have to uncoil the garden hose so it doesn't kink). Or just pick it up and carry it with you—it weighs only 15 lbs.



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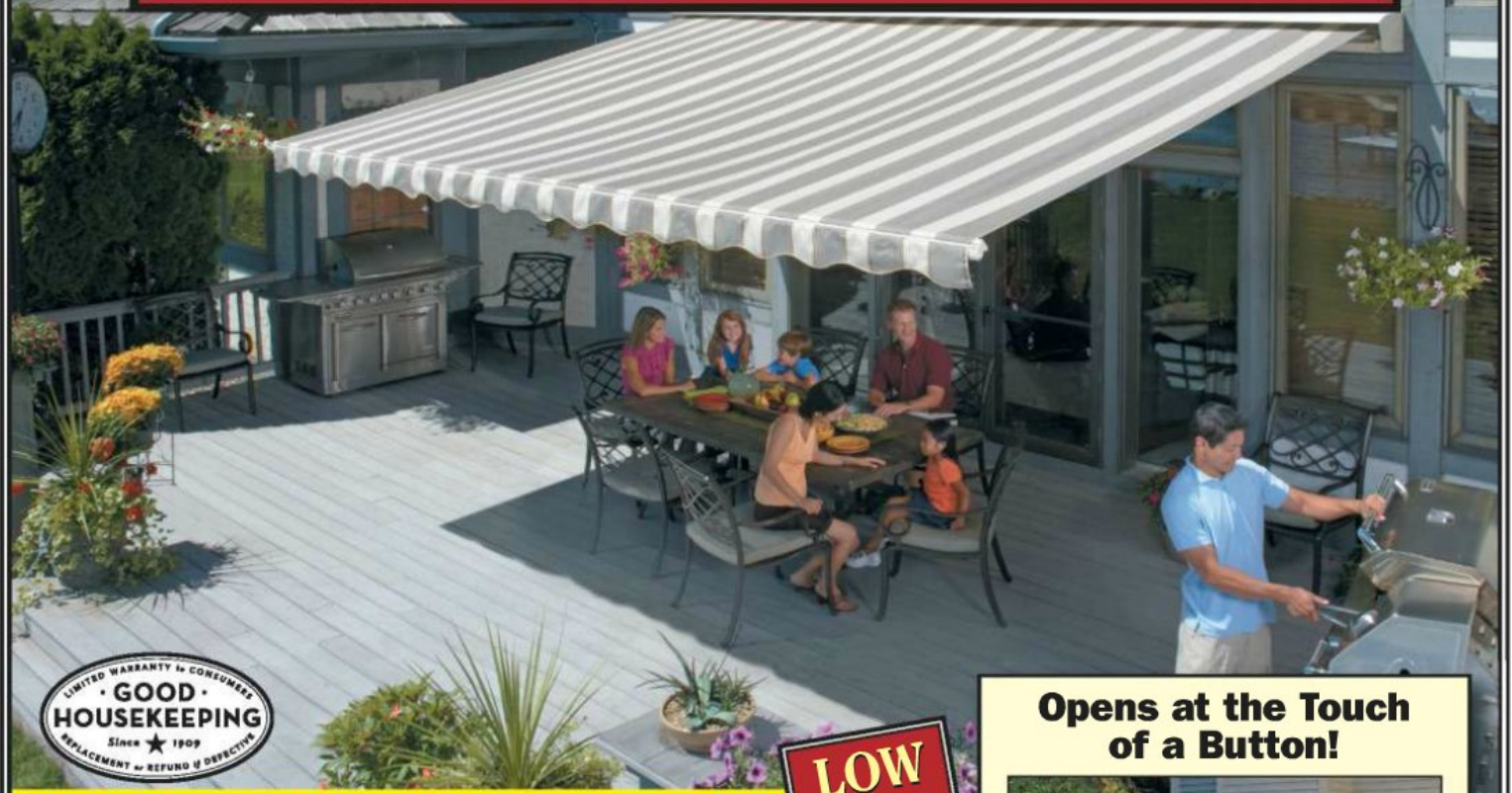
\$219



Best ways to kill your pressure washer

- Leave water in the pump and hose over the winter
- Let it idle for long periods (gas models)
- Kink the garden hose while washing
- Fail to clean the pump inlet screen

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Five nozzles • One-year/Two-year warranty •
Pneumatic tires • Siphon tube • 65 lbs.

\$379

This unit shares our Best Overall award with the Ryobi. The beauty of this machine is its simplicity. The pump connections are higher off the ground and out in the open, making this machine the easiest and fastest to set up, especially if you have knee issues or have trouble bending over. The pneumatic tires give the smoothest ride of all the machines. The hose is very flexible and includes double O-rings for a better seal. Powered by a Honda horizontal shaft engine with a manual choke.


RYOBI NO. RY80940B

3,100 psi • 2.5 gpm • 25-ft. hose •
5-in-1 dial nozzle • Three-year warranty •
Flat-free tires • Onboard soap tank • 65 lbs.

\$399

Like the Simpson, this machine impressed us enough to win our Best Overall award. Its hose is our favorite by far. It's the easiest to unroll, lies flat and rolls up easily for storage. The fold-down handle is brilliant in its simplicity—just pull the spring-loaded pin and fold. The large wheels make the machine easy to move. It's powered by a Honda vertical shaft engine. Our only beef is that the pump connections are right at ground level.


TROY-BILT NO. 020568

2,800 psi • 2.3 gpm • 25-ft. hose •
Four nozzles • Two-year warranty •
Flat-free tires • On-board soap tank • 63 lbs.

\$320

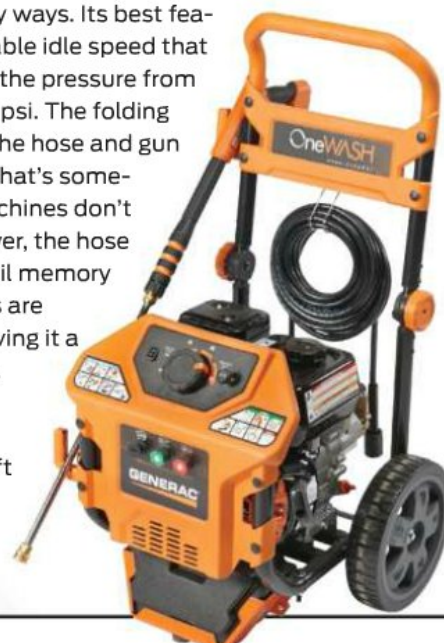
This unit doesn't have any bells or whistles. It's just a solid machine with enough pressure and nozzles and flow rate to handle just about any job you'll encounter. Powered by a Briggs & Stratton vertical-shaft engine with an automatic choke, it does the job, and at a great price.


GENERAC OneWASH NO. 6602

Adjustable pressure 2,000 to 3,100 •
2.8 gpm (at max psi) • 30-ft. hose • 3 nozzles •
Two-year warranty • Flat-free tires • On-board soap
tank • 68.5 lbs.

\$399

Generac tried to do it all with this machine and succeeded in many ways. Its best feature is the variable idle speed that lets you adjust the pressure from 2,000 to 3,100 psi. The folding handle stores the hose and gun components. That's something other machines don't provide. However, the hose has a strong coil memory and the wheels are hard plastic, giving it a very rough ride. Powered by a Generac horizontal-shaft engine.



BRIGGS & STRATTON POWERflow+

3,000 psi • 2.5 and 5.0 gpm • 30-ft. hose • **\$399**
7-in-1 dial nozzle • Two-year warranty • Flat-free tires •
Onboard soap tank • 60 lbs.

The single best feature on this machine is its high flow rate. Just turn the 7-in-1 dial nozzle to either the 25° or 40° setting and the pump shifts into high gear. Use the higher volume spray to sweep soap and debris off your siding or driveway. This machine is powered by a Briggs & Stratton vertical-shaft engine with an automatic choke. Due to the higher flow rates, this unit uses an extra-thick hose. We found that hose difficult to unroll and store, and its coil memory was a problem.



POWERHORSE* NO. 1577110

3,000 psi • 2.5 gpm • 25-ft. hose • **\$369**
Two nozzles • Two-year warranty •
Pneumatic tires • Siphon tube • 75 lbs.

Built in-house by Northern Tool (northerntool.com), this machine has a proprietary horizontal shaft engine. The pump connections are out in the open, making it easy to connect hoses. The pump also has a built-in variable-pressure regulator so you can adjust pressure to fit the job. Plus, the pump isn't sealed for life like on all the other machines. So you can actually change the oil and possibly extend the pump life. We were disappointed with the stiff hose and coil memory, and the fact that it came with only two nozzles.

*exclusively
from Northern Tool



PACIFIC HYDROSTAR* NO. 69734

2,500 psi • 3 gpm • Five nozzles • **\$399**
26-ft. hose • 90-day warranty •
Pneumatic tires • Siphon tube • 95 lbs.

This machine comes with all the nozzles you'll need, along with a high flow rate, and a built-in pressure regulator. However, the 3-gpm flow rate comes at the expense of pressure. At 2,500 psi, it's the lowest of the group. Powered by a proprietary horizontal-shaft engine, it's also the heaviest of all the gas models, weighing in at 95 lbs. We were disappointed with the 90-day warranty. But the machine frequently goes on sale for \$340.

*exclusively
from Harbor Freight



CRAFTSMAN GRIP & GO NO. 020573

3,000 psi • 2.7 gpm • 30-ft. hose • **\$450**
5-in-1 dial nozzle • Two-year warranty • Flat-free tires •
Proprietary onboard soap bottles • 62 lbs.

This is the machine to buy if you or your family members can't deal with pull starting. Just flip the switch and squeeze the trigger. The auto start-up and shutdown feature also eliminates pump damage caused by extended idling. We didn't like the soap injection system because it uses proprietary soap bottles that are available only at Sears. But you can retrofit the unit with a standard siphon tube/filter. Because the battery must be plugged in year-round, you'll need an AC outlet in your storage area. It's powered by a Briggs & Stratton vertical-shaft engine with an automatic choke.



PRO tips

BY MARK PETERSEN

editors@thefamilyhandyman.com

Scaffold smarts

Whether you're changing sky-high warehouse light-bulbs or replacing windows on a two-story home, using scaffolds is a safe and easy way to get things done off the ground. We picked the brain of a scaffold expert, and he gave us great advice on how to work smart and stay safe on and around scaffolds.

ART DIRECTION ELLEN THOMSON • PHOTOGRAPHY TOM FENENGA





HAUL THE SCAFFOLD SAFELY

Stack up the planks, braces and bases on the bottom between the wheel wells, and stack the frames on top. Avoid propping the frames up on the side of the bed. It's best to have everything as low as possible so parts don't get blown or bounced out. And frames that stick out past the side of the bed can be a conk hazard for someone walking by the truck. If you have a shorter bed, you may have to keep the tailgate open; just make sure to secure it all with a tie-down strap.



Plank the whole bay

Whenever possible, cover the whole width of the scaffold with planks. This creates a larger work area and reduces the risk of a fall. When it isn't possible, especially when you're working midway up ladder frames like these, install another plank higher up to create a sort of guardrail. See "Build a Handy Workbench" on p. 57. When you work on casters, install a diagonal "goosener" brace. It will keep the scaffold square and stable.



SAFE SOLO SETUP

Install the base jacks or casters first so you don't have to lift the entire scaffold to slide them in. Install both cross braces on one frame. It will stay upright with the support of the cross braces (**Photo A**). Move the second frame into position and attach the cross braces to that (**Photo B**). Slide the scaffold about 14 in. from the wall before installing the planks.



MEET THE EXPERT

Joel Almquist started out working on scaffolds as a commercial mason. Every morning his boss would say, "Let's make sure everybody goes home tonight." Joel always took safety seriously and now works at Scaffold Service Inc. in St. Paul, MN, where he teaches scaffold safety to pros in the trades.



INSTALL A GUARDRAIL

Installing a guardrail is the best way to prevent accidentally stepping off the edge of the platform. Safety harnesses aren't necessary when you're working on this type of scaffold. In fact, if you fall while wearing a safety harness, you could pull the whole platform down with you, endangering everyone working in the area.



Build a stable base

Scaffold frames are designed for use with either casters or base plates. If you skip them, the frame tubes can get damaged and structurally weakened. Set a 2x10 block of wood under each leg, even when using a base plate. This will help prevent sinking into soft soils or hot asphalt.

Setting the scaffold on blocks when working on concrete isn't necessary, but it's still a good idea. An uneven floor or a slightly cupped base plate could result in a small mating surface. The slight flex in wood ensures a nice, even distribution of weight. When you're working on an uneven surface, level and plumb the scaffold with an adjustable base jack. Never set the scaffold on masonry or stacks of wood.



MAINTAIN A THREE-POINT GRIP

When you're climbing a scaffold, always maintain a three-point grip. That means that one hand and two feet, or one foot and two hands, should stay in contact with the scaffold at all times. Keep your body as close to the frame as possible. Leaning way out could cause the whole works to tip over right on top of you. And never climb on the cross braces; they're not designed to handle the weight.



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Keep stuff from falling

Keep the planks clear of clutter to reduce the risk of tripping or kicking stuff onto unsuspecting souls working below. Keep your tools and supplies in buckets, caddies and toolboxes whenever possible. Install a 2x4 toe board to prevent items from falling. Hold it in place at the corners with wire. It's tempting to hang tools from the railings, but don't do it. Adding weight to the railings increases the odds that they could fail if someone leans against them. Hard hats for ground workers are always a good idea.



Access the platform with a ladder

Use a ladder to safely and easily access a scaffold, especially when you're working with wood planks hanging over the ends. Run the ladder at least 3 ft. past the surface of the planks. Lean the ladder on the wall rather than the scaffold itself or you could tip it over when climbing up.



WORKING WITH WOOD PLANKS

It's perfectly acceptable to work on wooden planks, but there are a few things you should know. Use at least 2x10 planks made from a sturdy wood like Douglas fir. Some softer pine boards won't hold up. Especially avoid boards with large knots.

Laminated veneer lumber (LVL) is ideal. Planks obtained from a rental center should have a stamp on the edge indicating they're safe to use. Wood planks should hang over the edge of the frame a minimum of 6 in., but don't have them overhang by more than 18 in. or they could tip if you step too close to the edge. Install a cleat to hold the planks in place.



BUILD A HANDY WORKBENCH

One way to organize your workspace is to create a workbench by installing planks at a higher level than the ones being walked on. A workbench adds a level of safety as well because you'll be less likely to trip on supplies and tools.

Rent or buy?

If you only need to use a scaffold for a weekend, then renting is probably your best option. If you have a three-month-long project, you may want to consider buying your own scaffold. That way you'll have it for the next job. Consider storage before you buy; frames and planks take up a lot of wall space. Another option is to buy and then sell when you're done. If you enjoy wheeling and dealing, the cheapest option is to buy used and then sell it off again.

You can buy a 5 x 7-ft. frame and brace scaffold with adjustable base jacks, three planks and guardrails for \$400 to \$500 new or \$200 to \$300 used, depending on the quality. The same setup will cost about \$50 to rent for a day and \$95 to rent for a week. So do some math to help you decide.



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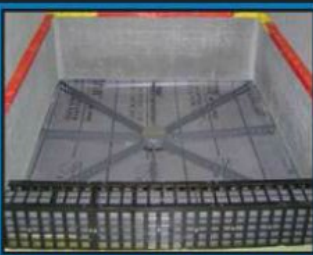
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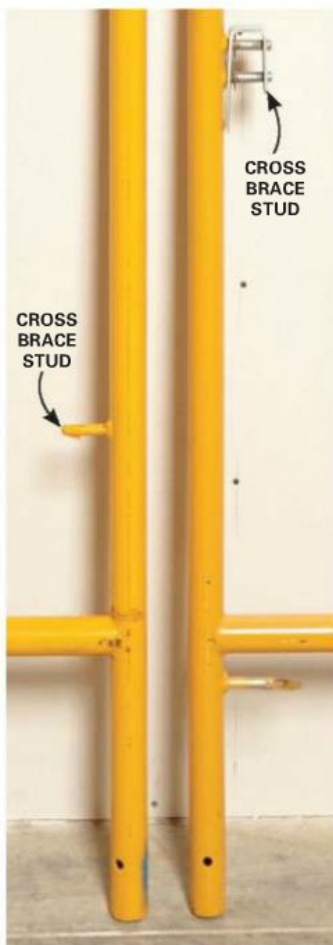
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Don't mix and match

Combining scaffold styles can result in an unstable and dangerous platform. Just because most scaffold frames are yellow doesn't mean they're the same. There are at least five different styles of scaffold, and many have no identifying marks. The same manufacturer often builds several different styles.

To add to the confusion, the differences in tube diameters and cross brace stud locations can be small enough that the pieces "kind of" fit together. The only way to really be sure is to measure the overall frame dimensions, the inside and outside tube diameters, and the cross brace stud spacing.



Stay clear of power lines

You don't have to touch a power line to get electrocuted. Electricity can arc from the line to conductive materials (like scaffolds). Keep a minimum distance of 10 ft. from all power lines.

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Top Ten TIPS

BY ELISA BERNICK

editors@thefamilyhandyman.com

A dust-free home

ART DIRECTION ELLEN THOMSON • PHOTOGRAPHY TOM FENENGA & HSP

Studies show that the average six-room home in the United States collects 40 lbs. of dust each year. Sounds impressively awful, right? But don't confuse all that dust with dirt and bad house-keeping. It's actually a combination of dead skin, animal fur, dander, decomposing insects, dust mites, food debris, lint, fabric fibers, drywall particles, tracked-in soil, soot and pollen. It also contains hazardous chemicals that migrate from home products and enter through open doors, windows and on the soles of your shoes. Household dust can trigger allergy and asthma symptoms. While it's impossible to get rid of dust completely, here are our top tips for keeping dust at a minimum so you and your family stay healthier.

1 Clean with microfiber products

Microfiber products attract and hold dust with an electrostatic charge, unlike dry rags and feather dusters, which just spread dust around. Machine washable microfiber products can save you money over disposable brands because you can use them over and over. Just make sure to let them air dry (so they'll stay soft), and don't use bleach or fabric softener, which degrades the fibers and reduces their ability to attract and hold dust.

Microfiber dusting tools for blinds, ceiling fans, floors and general cleaning are available online and at many stores. Buy your microfiber cloths in the automotive section. "Cleaning" and "detailing" towels are the same as "dusting" cloths, and they're often a lot cheaper.



2 Bag and box it

Stray fibers from clothes, bedding and pillows are a major source of dust. The solution is to store these things in bags and clear plastic containers. You can use space-saving vacuum-seal bags, garment bags or even large garbage bags to help cut down on dust from clothes and fabrics. Clear plastic containers will lock fibers in and dust out and let you see what's inside. And because seasonal clothes shed fibers year-round, store your winter coats inside garment bags to help contain fibers and keep the coats themselves from becoming coated with dust.

3 Upgrade your furnace filter

Your home's forced-air heating or cooling system helps to control dust by filtering the air. A standard cheap fiberglass filter protects your furnace from large dust particles and provides maximum airflow, but it does little to reduce household dust. More expensive pleated filters usually provide a good balance between cost and filtration efficiency. These filters trap 80 to 95 percent of particles 5 microns and larger.



But if you have family members with allergies, consider spending more on high-efficiency filters, which capture 99 percent of airborne particles as small as 0.3 microns (bacteria and viruses, fumes and pollen). Be aware that you'll have to run your furnace fan full time to get the maximum benefit from a high-efficiency filter, and you'll have to change the filter frequently to prevent damage to your furnace from the reduced airflow.

If you go the high-efficiency route, install a filter monitor such as FilterScan (\$100), which automatically alerts you when your furnace filter needs changing, or the GeneralAire G99 Filter Gage (\$17), which requires you to manually check it. For more information, search "furnace filter monitor" online.



PLEATED FILTERS TRAP MORE AIRBORNE PARTICLES THAN FIBERGLASS FILTERS



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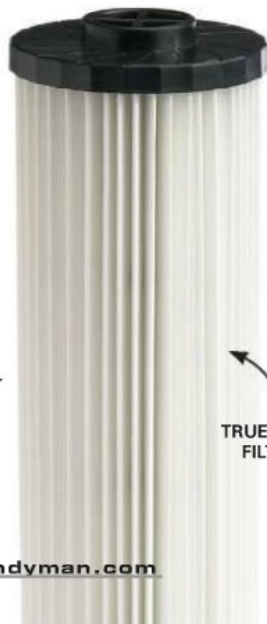
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4 Make the most of your vacuuming

The right vacuuming technique, combined with the right filters, bags and machine, has a significant impact on how much dust remains in both your carpeting and your house. Keep the following tips in mind:

- Vacuum entrance areas and high-traffic areas twice a week and the rest of the carpeting and large area rugs at least weekly.
- Make numerous slow passes over the same area in all directions (fast passes stir up more dust than is being sucked up).
- Take smaller rugs outside for a vigorous shaking every week and take large area rugs outside several times a year and beat them with a broom or tennis racket.
- Use certified True High-Efficiency Particulate Air (HEPA) filters to remove invisible particles and allergens. Look for the word "True" on the label; otherwise you're wasting your money.
- If you have allergies, upgrade to a sealed-body bagged vacuum with an airtight "sealed filtration" system that works together with a True HEPA filter. This means all of the exhaust will exit through the HEPA filter instead of leaking dust back into your house through the machine's housing. Sealed-body vacuums have rubber seals or gaskets around the lid and filter and will last 10 to 20 years. Brands include Riccar, Miele and Sanitaire. You can get a good bagged vacuum for \$350 to \$600.
- Buy high-quality vacuum bags. Inexpensive 2- or 3-ply paper bags leak more dust. Higher-quality cotton-lined paper bags are better, and top-quality synthetic cotton HEPA bags are the best. Bag capacity matters too. Higher-capacity bags capture more, smaller particles that would have otherwise clogged the filter.
- Clean all your bagless vacuum filters regularly and replace them every three months.
- Turn off the agitator brush on hard flooring so you're not blowing dust into the air.
- Maintain your vacuum: Empty the canister frequently (always outside) and change bags and belts when needed. Keep the agitator brush free of hair and other material, and check the vacuum for cracks and loose hinges and get it serviced every so often to keep it running smoothly.



TRUE HEPA FILTER



5 Dust with your dryer

Blankets, pillows, slipcovers, drapes and other textiles not only trap household dust, but they create it as they shed and disintegrate. Curtains and drapes in particular get very dusty because they absorb moisture and dirt from the outside and act as a landing pad for dust from ceiling fans and air vents. The best idea is to buy machine-washable items and launder them twice a year (OK, at least once). For non-machine-washable textiles, throw them in the dryer on the air-fluff setting (no heat) for 20 minutes with a damp towel. The damp towel will attract pet hair, and the tumbling movement and airflow will remove the smaller particles for you.

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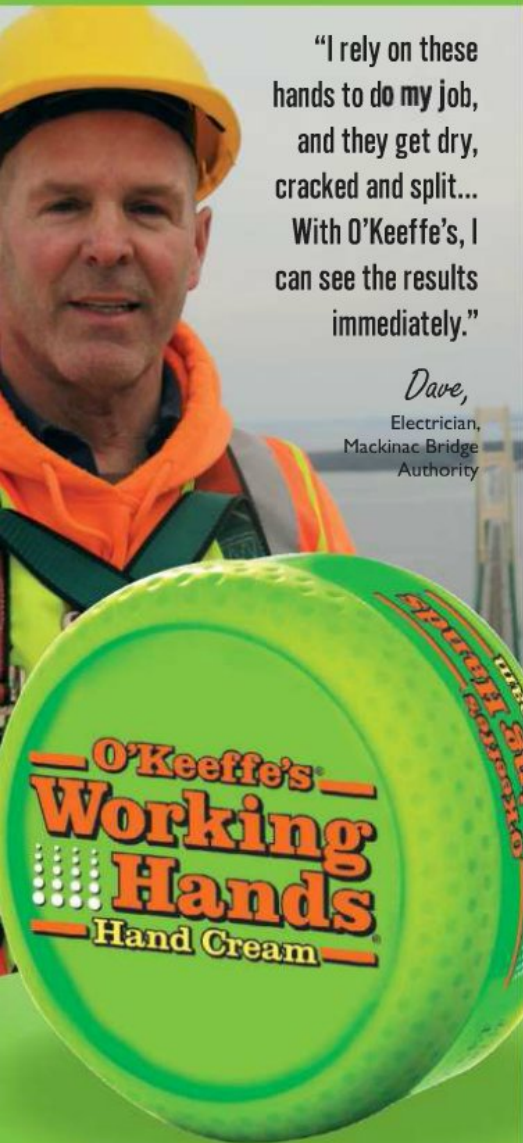
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6 Purify the air

Here are four things you can do to cleanse the dusty air in your home:

- Place air purifiers in your most-used rooms to help suck up dust before it settles. Choose units with True HEPA filters (\$80 to \$200 or more) rather than ionic cleaners, which release ozone, a respiratory irritant. Check out air purifier reviews at cadr.org.
- Add a plant to every room. Plants naturally absorb common indoor pollutants like benzene and formaldehyde. NASA studies have shown that many plants, including aloes, palms and ferns, can absorb as much as 80 percent of the formaldehyde in a room in 24 hours.
- Keep the humidity in your house between 40 and 50 percent to help lower static electricity, which can cause dust to stick to surfaces and make them harder to clean. A humidifier (cleaned regularly) and leafy indoor plants will both increase humidity levels. Just don't increase the level to more than 50 percent. This will promote the growth of mold, a far more dangerous condition than dust. You can monitor humidity levels with a cheap hydrometer from a gardening store.
- Keep your windows closed on windy days. Dust enters through doors and windows in the form of pollen, mold spores and airborne pollutants.

7 Ditch your carpeting

In most homes, carpet is by far the biggest dust reservoir. It's a huge source of fibers and absorbs dust like a giant sponge. Even the padding underneath holds dust, which goes airborne with each footstep. Although ripping out your wall-to-wall carpet may sound radical, it's the best thing you can do if you suffer from serious allergies. Replace carpeting with hard flooring like laminate, wood or tile, and wet mop it regularly (with a microfiber cloth) instead of sweeping. Sweeping is more likely to stir up dust than to remove it.





8 Ban shoes inside (but offer slippers)

More than half of household dust enters your home through windows, doors, vents and on the soles of your shoes. Think about where you walk all day long (restrooms, city streets, construction sites, etc.) and all the bacteria and debris your shoes collect. Do you really want to track that inside? An EPA study of homes where a doormat was added at the entrance and shoes were banned indoors showed a 60 percent reduction of lead dust and other contaminants in the home, as well as a significant reduction of allergens and bacteria.

Your first line of defense should be a coarse-fiber heavy-duty doormat placed outside exterior doors. Inside, have everyone remove shoes at the door. Keep a bench, a shoe rack and a basket of cheap slippers available so no one has to walk around in their stocking feet on chilly floors.

9 Clean the air while you clean the house

Your vacuum's agitator brush and exhaust whip up dust that eventually settles on the surfaces you've just cleaned. Filter out some of that dust before it settles by switching your thermostat to "fan on." This turns on the blower inside your furnace and filters the air even while the system isn't heating or cooling. Leave the blower on for about 15 minutes after you're done cleaning. But don't forget to switch it back to "auto." Most blowers aren't designed to run constantly.



10 Reduce remodeling dust

Remodeling dust goes everywhere air flows, so the key to stopping this dust is stopping airflow. Create an airtight plastic dust barrier curtain and completely seal the top and sides with tape. If you can't seal the bottom edge with tape, lay a board across it. Light plastic (1 mil or so) is fine for most jobs. If you need to pass through the dust barrier, use heavier 4- or 6-mil plastic and add an adhesive-backed zipper.

Also make sure to seal both supply and return air ducts with tape and plastic. That way you'll avoid plugging your furnace filter or coating every room in the house with a blanket of fine dust when the blower turns on. **Note:** Turn off the heating/cooling system while the ducts are covered. Operating the system with restricted airflow can damage it.



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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 pp. 68-69. Good luck!

1. True or False? When assembling a wall, you should lay out the studs with the crown (bowed) edge down before attaching them to the top and bottom plates.

2. Which uses the most water in a typical home?

- A. Toilet
- B. Clothes washer
- C. Shower
- D. Dishwasher

3. Which glue works on most surfaces, is great for filling gaps and is completely waterproof?

- A. Polyurethane
- B. Yellow
- C. Epoxy
- D. Cyanoacrylate

5. What is this tool called?

- A. Framing square
- B. T-square
- C. Combination square
- D. Speed square

6. What is a mission coupling designed to do?

- A. Keep a trailer hitch from falling off the tow ball.
- B. Join dissimilar drainpipes.
- C. Allow an automobile axle to spin at an angle relative to the spline.
- D. Disrupt the flow of electricity in case of a lightning strike.

7. What's the proper way to check your transmission fluid?

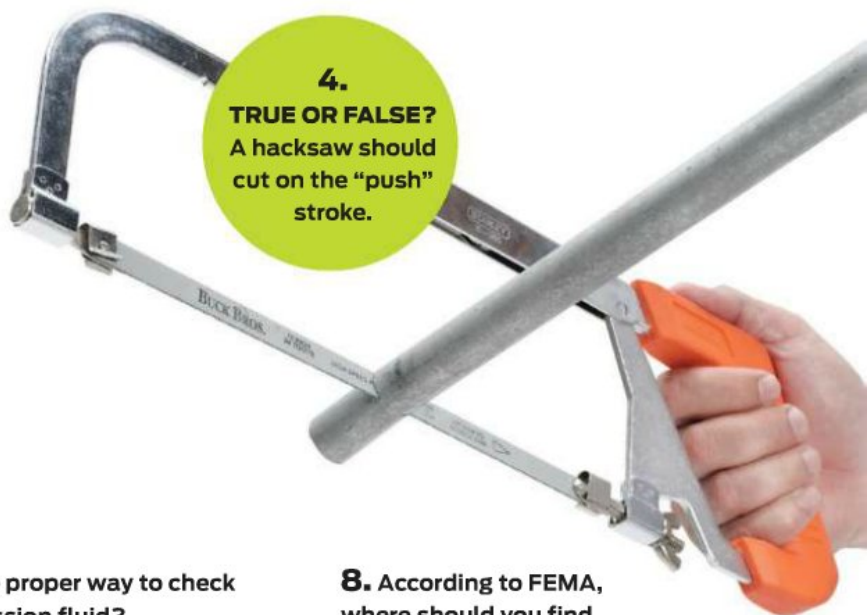
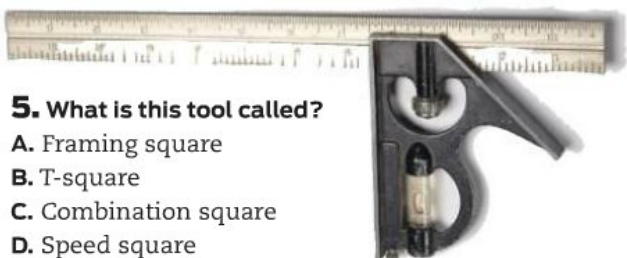
- A. Warm engine, car running, transmission in park.
- B. Cold engine, car running, transmission in neutral.
- C. Warm engine, car off, in park.
- D. My car doesn't have a transmission fluid level dipstick.

8. According to FEMA, where should you find shelter during an earthquake?

- A. In a doorway
- B. Outside
- C. Near a window
- D. Under a sturdy desk or other piece of furniture



ART DIRECTION VERN JOHNSON • PHOTOGRAPHY TOM FEINENGA



4. TRUE OR FALSE?
A hacksaw should cut on the "push" stroke.



9. What is this part of a water shutoff valve called?

- A. Cinch nut
- B. Packing nut
- C. Valve stem nut
- D. P-nut

10. What's the name of the board that secures a deck to a house?

- A. Main joist
- B. Drop-down beam
- C. Ribbon board
- D. Ledger board

11. Which type of glove is the most resistant to tears and chemicals, making it perfect for auto repairs?

- A. Latex
- B. Vinyl
- C. Nitrile
- D. Jersey

12. What type of hinge is this?

- A. European
- B. Butt
- C. Piano
- D. Strap



13. What is the one time of year you should cut your grass short (1-1/2 to 2 in.)?

- A. First cut of the year
- B. Last cut of the year
- C. Middle of the year
- D. Never cut your grass short.

14. Which is the best ladder to use to access a roof that is 9 ft. tall?

- A. 10-ft. step
- B. 12-ft. extension
- C. 12-ft. step
- D. 16-ft. extension

15. What purpose does the anode rod serve in a water heater?

- A. It removes the metal taste from the water.
- B. It holds the heat more efficiently.
- C. It protects the tank from corrosion.
- D. Water heaters don't use anode rods.

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Find the DIY Quiz answers on pp. 68-69.

DIY Quiz Answers

1. False. It's easier to assemble a wall with the crowns up. That way, both ends of the studs sit solidly on the ground when you attach the top and bottom plates, instead of acting like rockers on a rocking chair.

2. (A) According to the EPA, "Toilets are by far the main source of water use in the home, accounting for nearly 30 percent of residential indoor water consumption. Toilets also happen to be a major source of wasted water due to leaks and inefficiency." Upgrading your toilet to a modern, more efficient model is a great way to conserve water.



3. (C) Epoxy consists of two parts that must be mixed just before using. Epoxy is waterproof and will adhere to most materials, and because it hardens into a tough plastic, it fills gaps between the materials being glued.

4. True. Install the hacksaw blade so the teeth face forward. The saws are designed so the blade will cut when it's pushed (the forward stroke) rather than when pulled. Some blades have an arrow that shows the correct installation (the arrow points toward the handle). Install the blade so it's tight in the saw and won't bend. When you do a lot of cutting, the blade will heat up and expand, so be sure to tighten it if it starts to bend.

5. (C) A combination square is great for all sorts of tasks, including checking 90- and 45-degree angles, striking and laying out lines, checking for level, setting blade heights, squaring a cutting fence, finding depths of dadoes and mortises, and more.



6. (B) Shielded couplings are often referred to as "mission couplings," and they work great to connect dissimilar drain lines: galvanized steel to plastic, cast iron to plastic, ABS to PVC. Make sure you use a "fully banded" coupling because the couplings with just the two individual hose clamps are not allowed in some situations.

7. (A) or (D) Check your transmission fluid level with the engine warm, the car running and the transmission in park. If you're low, add a pint and then recheck the level—repeat if necessary. Transmission fluids these days have very specific formulas, so check your owner's manual to see which kind to buy. Some new cars do not have a transmission level dipstick. The folks at oil-change stations should be able to check it for you.

8. (D) Go under a sturdy desk or other piece of furniture if one is close by and the path is clear. Stay away from windows, shelving, large light fixtures and any items that could fall and injure you. If you're in bed, stay there and cover your head and neck with a pillow. For more info, check out ready.gov/earthquakes.

9. (B) The packing nut holds the packing seal tightly around the valve stem.

10. (D) A ledger board is attached to the house with lag bolts or structural screws, and the joists are all fastened to that. Poorly fastened ledger boards are the No. 1 cause of deck failure.



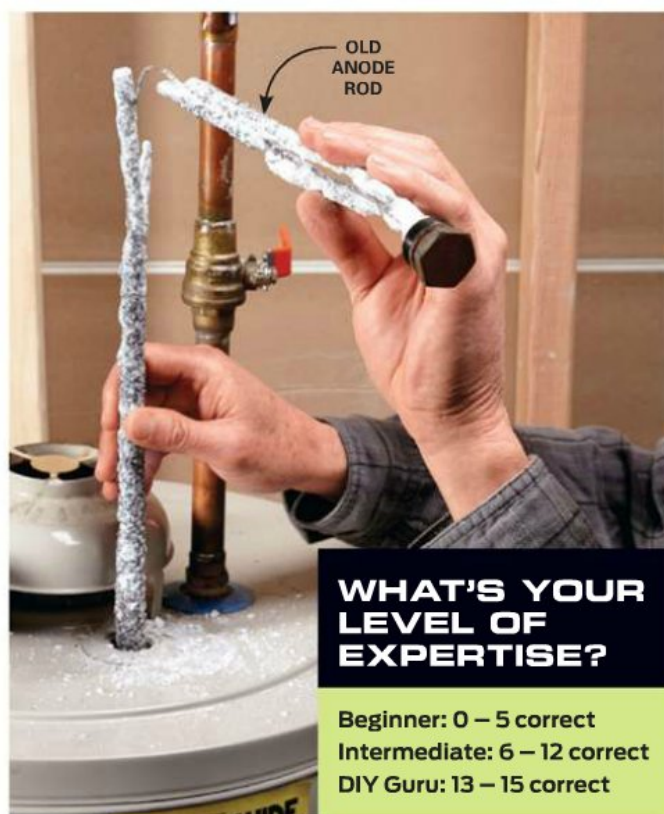
11. (C) It used to be that you were called a wimp if you wore gloves when you worked on cars. Aside from the wimp moniker, gloves were too clumsy for fine work. But we now know that some automotive fluids contain caustic or even carcinogenic chemicals. That's why most auto techs now wear nitrile gloves, as should you.

12. (A) European hinges are a modern cabinet hinge. They're usually concealed when the door is shut and can be installed on both frameless and framed cabinets. European hinges are easy to install; all you need is a simple jig and the proper size of Forstner bit.

13. (B) The last cut of the year is the one time to set your mower to cut 1-1/2 or 2 in. and mow your grass short. That'll do a couple of things. First, it'll lessen the chance of snow mold forming. And second, tall grass blades won't mat down and smother the new grass next spring.

14. (D) A 16-ft. extension ladder has a maximum reach of 15 ft. That's just enough when you consider the angle of the ladder and the 3 ft. above the support point needed for safe access. Never use a stepladder to climb onto your roof.

15. (C) Most water heater tanks are steel with a thin glass lining to protect the metal from corrosion. Since the lining eventually cracks, tanks have a second line of defense against rust: a long metal "anode rod" that attracts corrosive elements in the water. When the rod itself becomes so corroded that it can no longer do its job, the tank soon rusts out, leaks and needs replacement. However, if you replace your anode rod before it fails—about every five years—you can double the life of your water heater.



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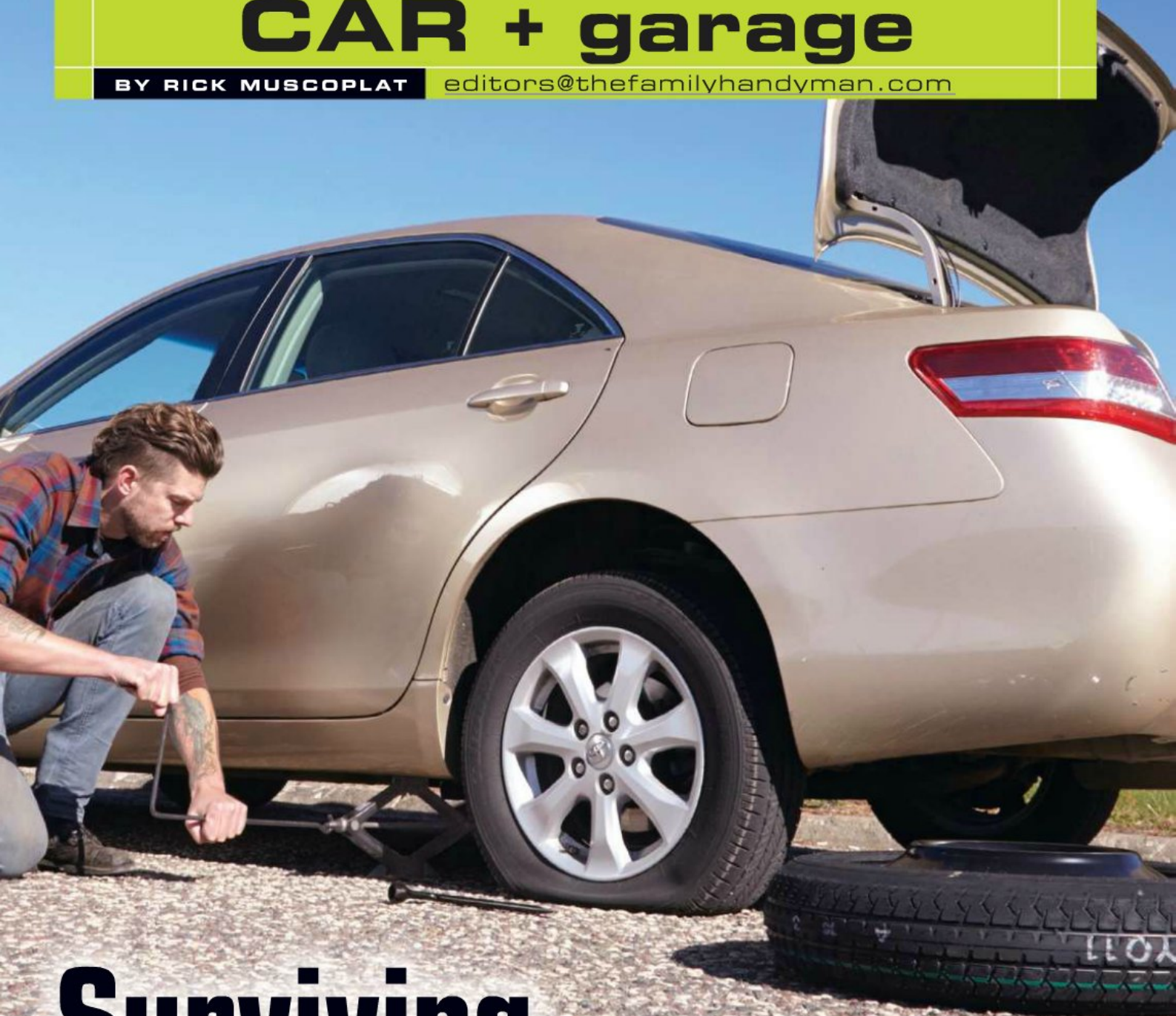
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CAR + garage

BY RICK MUSCOPLAT

editors@thefamilyhandyman.com



Surviving a flat tire

Your car or truck owner's manual shows you how to change a flat tire, assuming a best-case scenario. But the real world includes all kinds of surprises: lug nuts that won't budge, a wheel that's rusted to the hub or a spare tire that's so underinflated,

it's useless. In other words, even if you know how to change a flat tire, chances are pretty good you'll run into problems you're not prepared for. Don't think you're out of the woods just because you have roadside assistance. Because if you

get a flat tire in an area with no cell phone coverage, or the service is so backed up that it'll be hours before they get to you, you just might have to change your tire yourself.

To help you survive a flat-tire ordeal, we've collected these tips. Some we've taken from our own ugly encounters, and others we've learned from our readers.

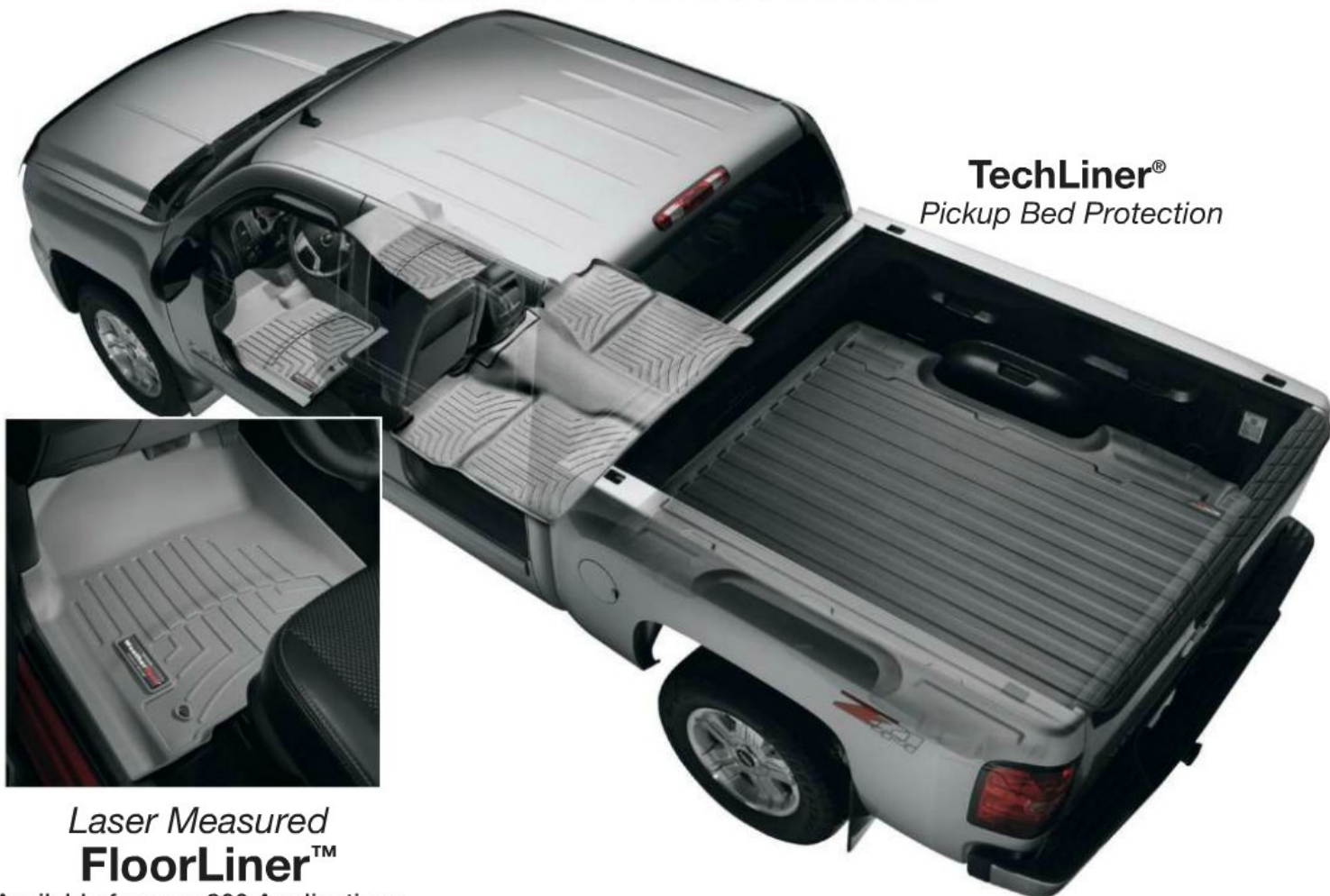
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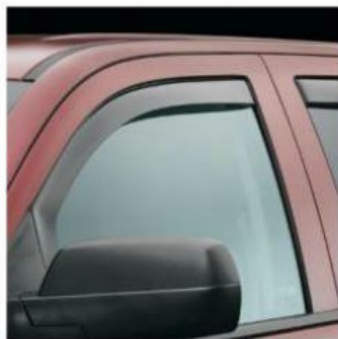
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Don't break your plastic wheel covers

Carmakers use two methods to secure plastic wheel covers: spring clips and screw-on plastic lug nuts. If you don't know which type is on your vehicle, try turning one of the plastic nuts with the socket end of your tire iron. If it rotates, you have the screw-on type. Unscrew all the plastic nuts and lift off the cover.

If the nut doesn't turn, you have the snap-on style. Those have to be pried off, and that's where some people get into trouble. If you jam the tapered end of your tire iron into a weak area on the cover, you'll break it to pieces. So be sure to pry behind one of the larger spokes and twist until the cover pops off.



KEYED SOCKET

KEYED LUG NUT

Do you know where your keyed socket is?

To avoid theft, many cars have one special lug nut on each wheel that requires a special "keyed socket" to loosen it. If you can't locate the key when you have a flat tire (or another driver in the family isn't aware of it), it won't be possible to remove the wheel. You'll have to use Fix-A-Flat (see p. 73), call for roadside service or have the vehicle towed to a shop. That can cost upward of \$200. So make a point of keeping the key in a safe place, like the glove box, that is known to everyone who drives the car.



PLUG INTO POWER PORT ON DASH

Pack a tire inflator

If you don't routinely top off the air pressure in your spare tire, don't be surprised if it's severely underinflated when you need it. Driving on a severely underinflated full-size spare is unsafe, and driving on an underinflated space-saver spare is downright dangerous. Solve that problem by keeping a plug-in tire inflator in your vehicle at all times (one choice is the Slime 12-Volt Digital Tire Inflator, No. 40022; \$30 at auto parts stores). Start the engine, plug the unit into your power port and bring the spare tire up to the recommended pressure (found on the decal inside the driver's door area) before installing it on the hub.



Removing a stuck wheel

If you don't rotate your tires every 5,000 miles, your wheels may be bonded to the hub by rust. Here's a way to knock the wheels loose, submitted by one of our readers.

With the lug nuts loosened about three-quarters of the way, grab the spare by the center hole and use it as a battering ram. Swing it horizontally with all your might so it strikes the stuck wheel at the 12 o'clock position. Repeat the blows at the 3 o'clock and 9 o'clock positions until the wheel breaks free from the hub.



Fix-A-Flat can get you out of a jam!

If you're not confident that you or the driver can change a flat tire, buy two cans of aerosol tire sealer from any auto parts store (Fix-A-Flat is one well-known brand) and keep them in the vehicle. The cans are sold in several sizes for compact, standard and truck-size tires. Tire sealants work on tread punctures 3/16 in. or less in diameter. They won't work on sidewall punctures, blowouts or any other catastrophic failures. You've got little to lose by trying sealant.

You can greatly increase your chances of a successful seal if you can find the puncture site and move the vehicle until the leak is facing down. If you see the culprit, don't remove it; it'll help seal the hole. If the can is frozen, thaw it with the defroster or floor heater vents until the contents move freely when shaken. Then fill the tire following the directions on the can. If the rim doesn't lift off the ground after using a second can, the puncture is too large to be sealed and you'll have to call for help.

Top off the air pressure as soon as possible. If you have a tire inflator on hand, do it now. This is a very temporary fix, so get the tire repaired professionally ASAP. Tire sealant must be removed within three days or 100 miles, whichever comes first. Inform the tire shop that you've used tire sealant so no one breathes in the propellants (not flammable, but not healthy either). The shop may charge extra for cleaning the sealant from the tire.

WHAT'S THE DEAL WITH TIRE PLUGS?

Many DIYers think they can permanently repair tire punctures with just a plug. They're wrong. A tire plug is just half of the repair. The tire's interior liner must also be repaired with a patch, and that means a trip to the tire store. Skip the patch and you risk a catastrophic blowout.

Assemble a mission-critical kit

Whether you change your tire yourself or rely on a tire sealant, keep these "mission-critical" items in your vehicle at all times.



Wheel chocks. Keep your car from falling off the jack, especially on slopes.

Gloves. Good to have all year long, but critical for handling cold metal in subzero temps.



Plug-in flashlight. Dark nights can make it impossible to see what you're doing.

Tire inflator. You'll need this to fill low spares and top off tires repaired with Fix-A-Flat.



Spare your limbs when installing the spare

Truck and SUV tires are really heavy. Some DIYers sit on the ground with their knees under the wheel so their legs can help with the lifting. That's a great way to lose a limb or two if the vehicle falls off the jack (which happens more often than you think). Instead, raise the vehicle just enough to get a 1-in. clearance between the tire and the ground.

Rotate the hub until one of the studs is in the 12 o'clock position. Roll the spare tire next to the vehicle and position it so the holes line up with the studs. Then grab the wheel by the rim, lift it up and hang the tire on the top stud. Then align the rest of the holes with the studs and push it on.



Save your back when loosening lug nuts

There's no way you can loosen the lug nuts once you raise the vehicle—the tire will just spin. Instead, break loose—but don't remove—the lug nuts while the tire is still on the ground. To save your back, place the tire iron on each lug nut so the handle is in the 9 o'clock position. Place both hands on the tire iron and push down with all your might. If that doesn't work, use a downward bouncing motion with your weight to break the nut loose.

HOME CARE + repair

BY RICK MUSCOPLAT

editors@thefamilyhandyman.com

Over time, every asphalt driveway develops cracks. They're more than just an eyesore; they actually speed up the demise of your driveway if you ignore them. And in cold climates, water seeps in and destroys the asphalt when it expands during freezing. If you plan to topcoat your driveway (which we'll cover in an upcoming issue), you'll need to fix the cracks first.

You can buy squeeze bottle and caulk tube-style crack filler products from any home center. They're quick and easy to apply, but they shrink and crack and don't last very long. However, there's another way to fill asphalt cracks: with melt-in filler that doesn't shrink—the same type used by highway crews. The melt-in material and trowelable cover mix cost about \$100 for a typical driveway.

It'll take almost a full day to repair several cracks if they're 20 ft. long or so, but the repairs will last much longer than other quick fixes. In addition to the melt-in and trowel mix products, you'll need a propane torch with an extension hose, and a leaf blower or compressed air gun. Use an angle grinder fitted with a diamond wheel to widen hairline cracks and to quickly remove previously applied crack fillers.

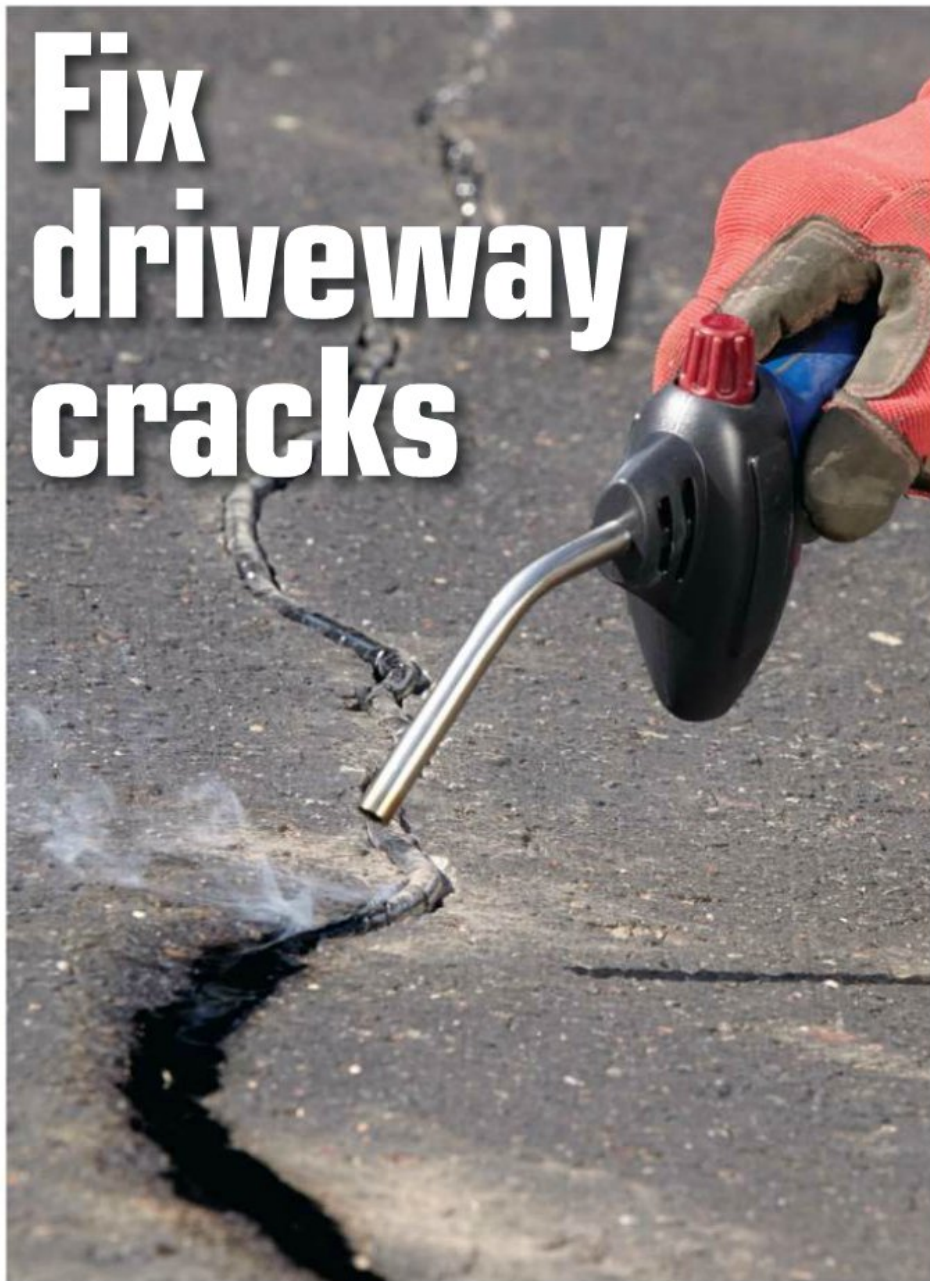
Buy the supplies and tools

We used melt-in 1/2-in.-diameter Latex-ite Pli-Stix Crack and Joint Filler and Latex-ite Trowel Patch for this project. Our driveway had several 25-ft.-long cracks. So we bought four 30-ft. packages of the crack filler (\$15 each) and four 2-gallon pails of the trowel patch (\$17 each). We already had a propane torch. But we bought an extension hose to eliminate the flame-outs that occur when you tip a propane cylinder upside down (WH0159 Bernzomatic Universal Torch Extension Hose, 5 ft., \$15).

Check the weather and prep the cracks

Choose a sunny day with no rain in the

Fix driveway cracks



forecast for at least 24 hours. Start by rolling the crack filler rope onto a sunny section of the driveway so it warms and softens. While it's warming, remove all the dirt, weeds and old crack filler from the cracks. Scrape out the old material with a flat-blade screwdriver or 5-in-1 paint tool. It's a painstaking process, but it's critical to getting a successful repair. So don't skip it or take shortcuts. Cleaning and filling hairline cracks are more time consuming, and the fix won't last, unless you widen them with an angle grinder and diamond wheel (**Photo 1**).

Once you finish digging out all the cracks, blow the dust and debris out of the cracks and off the driveway using a leaf blower or compressed air gun.

Add the filler and melt it

Push the melt-in filler deep into the cracks (**Photo 2**). If any filler bulges above the surface of the driveway, cut off the excess with a knife or compress it so it sits below the surface (**Photo 3**).

Then screw the extension hose onto your propane tank and mount the torch to the other end and fire it up. The melt-in filler burns easily, so don't

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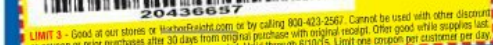


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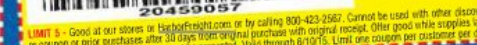


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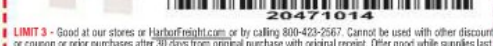


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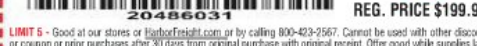


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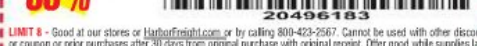


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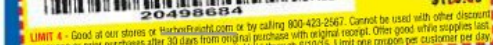


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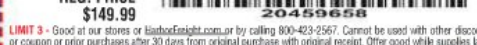


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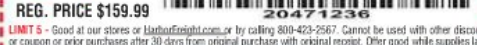


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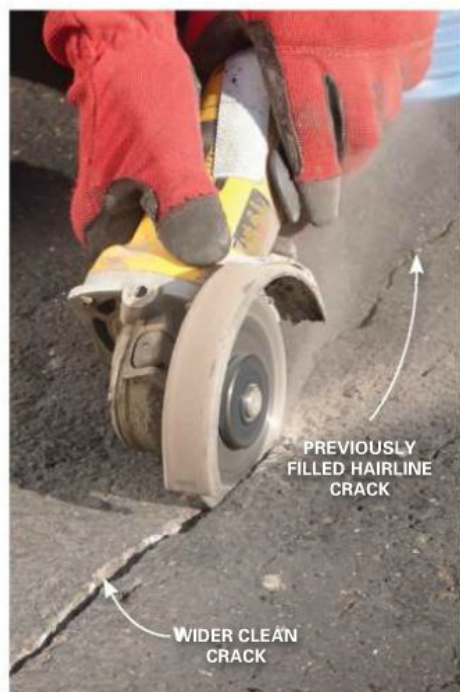
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try to melt it in one fell swoop. Using just the tip of the flame, slowly melt the filler (**Photo 4**). If the filler starts to burn, blow out the flames and use a faster sweeping motion or move the

flame farther from the crack.

Allow the filler to cool to the touch (at least 20 minutes) before covering it with the trowel patch material. Then lay down a bead of trowel patch and

smooth it (**Photo 5**). Let the trowel patch dry overnight. Apply a second coat if you see a depression where the crack was filled.



1 WIDEN HAIRLINE CRACKS

Plunge the diamond wheel into one end of the crack and drag backward to dig out any old filler and widen the crack.



2 STUFF THE CRACK WITH FILLER

Jam the filler deep into the crack using a flat-blade screwdriver. Add a second layer to fill deeper or wider cracks.



3 COMPRESS THE FILLER

Hammer the filler so it sits at least 1/16 in. below the surface of the driveway. Don't overfill.



4 MELT THE FILLER

Sweep the torch flame side to side slowly over a 12-in. section until the filler begins to melt. Then move on to the next section. Return to the previous section and heat again until the filler levels out and seeps into the crack.



5 ADD TROWEL MIX AND THEN SMOOTH IT

After the filler has cooled, scoop up the trowel patch and tap it onto the crack filler to create a small mound. Smooth it with a trowel and let dry overnight. If a depression remains the next day, apply a second coat.



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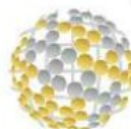
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Asphalt driveways can develop pitted areas from motor oil and coolant contamination and repeated freeze/thaw cycles. If the pits are 1/2 in. or less, you can fill them with a spreadable filler product. (Latex-ite Trowel Patch, \$17, is one choice available at home centers.)

Clean oil stains and prime with oil stain primer. Then coat the entire pitted area with patch material and let dry overnight (**Photo 1**). Apply a second coat to top off any partially filled pits (**Photo 2**) and smooth the surface. Let dry.



1 FILL THE PITS

Force the filler material into the cracks and pits with a trowel. Then smooth the streaks with an old broom.



2 ENLARGE THE AREA AND SMOOTH

Pour more filler material onto the pitted area and spread it with a floor squeegee to smooth the surface.

Recharge a reverse osmosis holding tank

If your reverse osmosis filtration system doesn't deliver as much water as it did when it was new and you've changed the filters and membrane, the problem may be an undercharged or leaking holding tank. The tank uses a traditional tire valve-style stem that can lose air over time. When the air pressure drops, the bladder can't push out as much water.

Here's how to check the pressure. First, you'll need a low-pressure tire gauge (one choice is the Victor Tire Gauge Low Pressure 1 to 20 psi; \$6 at amazon.com). You can't use an ordinary tire gauge. Next, turn off the water supply valve to the filter system and shut off the valve at the top of the holding tank. Disconnect the tubing at the tank valve. Dump all the water out of the tank. Then check the air pressure as shown below. Adjust to the recommended pressure. Then reinstall the tank and tubing and turn on the water.

Once the tank is filled, note the filled pressure. Wait a few days and check the pressure again. If the pressure is the same, you're done. If the tank has lost pressure, try replacing the valve core (available at auto parts stores). If the new core doesn't solve the problem, replace the tank.



CHECK THE TANK'S EMPTY PRESSURE

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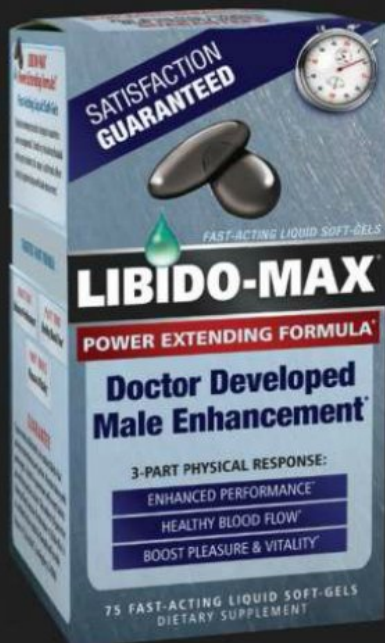
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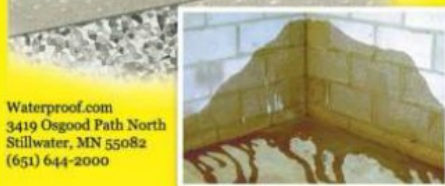
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Before you make a life-threatening mistake...

Learn the disgraceful truth about survival food!

There are things going on that need to be exposed.

No one knows when the next crisis will hit. But we do know that when it does hit, food will quickly become impossible to find.

It gets real bad, real fast. Power goes out. The roads get blocked. Store shelves are stripped bare. And within a few days, most families' food supplies are either eaten up or spoiled. That's how thousands wind up in FEMA shelters.

The good news is more folks are preparing for the inevitable disasters ahead by stockpiling survival food. So when food is in short supply, they won't be relying on government handouts.

The shocking bad news is some companies are taking advantage of the increased interest in preparedness by pushing pricey products that they call survival foods, but are not.

It's a disgrace, yet some people will do anything to make a buck.

Don't make this common mistake. The

warehouse stores want you to think huge cans of fruits and vegetables and enormous sacks of grain can make a good emergency stockpile.

They can't. Those bulky foods are difficult to store, heavy to transport and have very limited shelf lives. Plus, they always have to be rotated in and out to ensure any kind of freshness.

Some places sell MREs. Please, if you value your family's health, avoid MREs like the plague. They taste awful and are even dangerous to eat for more than a few days. Pity the soldiers who have no choice.

Don't waste money. Do some homework. You'll find there are some very expensive so-called survival foods out there that are truly gross tasting and contain so much **salt, MSG, and preservatives**, they could make you sick. So, what's the answer?

We recommend Food4Patriots. It's the source for high-quality, *real* survival foods that

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Go now to **GETFOOD74.COM** to ensure you'll have as much Food4Patriots survival food as you need. *In a crisis, you don't want to depend on others to feed your family.*



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AVALANCHE!!

Last winter we had such a huge snowfall that I became concerned about the weight of the snow on our fiberglass-paneled lean-to carport roof. To relieve the stress, I decided to thread my garage broom head to a telescoping painter's extension handle to pull off some of the snow. Just as I started pulling, the whole mass slid off at once, burying me in about 3 ft. of snow. The task was completed—just a little faster than I expected!

Brian Westerhoff

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



Dignity vs. the garage door

A story in *The Family Handyman* inspired me to tune up my overhead garage door. I set up my stepladder and prepared to lubricate the bearings and pulleys directly over the door. For some weird reason, I had the garage door opener remote resting on top of the ladder. You can guess what happened next: I bumped the remote button with my elbow. The door opened and swept me off the ladder on its way to the full open position. Surviving the fall with only a couple of bruises to my body and my dignity, I set the ladder back up, closed the



door and unplugged the opener before going back to work.

Bob Busch



Drill first, think later

While redoing our family room, I used an air nailer to attach baseboard trim pieces to a wall that contained a water supply line. A couple of days after installing the trim, I noticed some water on the basement floor and thought: "How long were those nails?" As soon as I pried off one of the trim pieces, water began spraying all over my new hardwood floor.

By the time I got the water shut off, it was puddled all over the floor. I was afraid of the floor getting warped, so I decided to drill a hole through the floor to drain the water into the basement. Well, of course I managed to drill through the same pipe that I had already nailed through! The plumbers had to make one cut in the family room and one in the basement to replace the damaged section. They then informed me that had I left the two pinholes, it would have been much easier to fix.



Calvin English

Got your own do-it-yourself mistake? **GET \$100 FOR YOUR GREAT GOOF!** See p. 4 for details.



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