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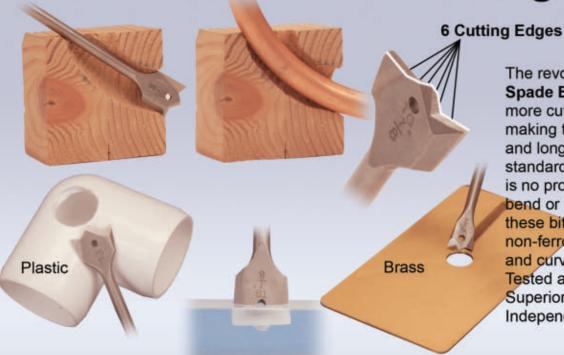
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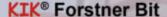
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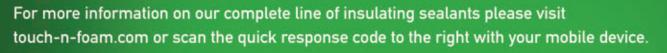
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### From The Editor-In-Chief

t seems like everybody's got a blog these days, and *Extreme How-To* is no exception. I have recently taken the helm as "Administrator" of our little corner of the blogosphere, which is like being both the captain of the ship and the guy swabbing the deck. In case you haven't checked it out, the blog gives our staff the opportunity to dish out news items in a timely fashion, update our readers on special offers and contests, and keep you in the loop regarding the projects we're working on and what topics we'll cover in upcoming issues of the magazine.

If we find something interesting, we'll share it with you. If we find something funny, we'll post it on the blog. We'll dish the dirt on new building techniques and technology, and we'll offer our take on the latest tools and building materials that we find in our daily grind, whether we're learning on the jobsite or passing along news from the home-improvement press wire.

From my point of view, the cool thing about online editorial content is its flexibility. With no physical publication, I face no page-count requirements (or limitations), and there are none of those stressful deadlines that shackle every other aspect of the publishing industry. The blog provides an easy, additional way for us to host fresh content in an informal



manner, covering a wide range of topics related to both inside and outside the home. And through our "comments" section, we look forward to feedback from our readers on subjects that you would like to see us address. I'd like the *EHT* blog to be both informative and fun, and I welcome any suggestions you may have to help us make that happen. Check us out at blog.extremehowto.com.





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• We plan to soon • repaint several rooms in our house. Do you recommend flat paint, satin or a semi-gloss sheen?

 The choice of paint • sheen depends on the room in question. Paints with flat sheen are non-reflective. so they tend to conceal imperfections in walls and other surfaces, and they help to make uneven surfaces appear more uniform. Flat paints are a good choice for ceilings and for rooms and spaces that aren't exposed to moisture or heavy soiling (bedrooms, home offices, living rooms). Being very reflective, highgloss paints tend to highlight imperfections in walls and

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woodwork, but they are durable and stain-resistant—and much easier to clean than paints with less gloss. High-gloss sheen is ideal for windows and trim, children's rooms and playrooms. Paints with semi-gloss sheen are a smart compromise between the two sheen extremes, providing some of the benefits of each. They can be used on the walls and cabinets of kitchens and baths. Additional sheens include eggshell and satin, which are less "shiny" than semi-gloss paints so they won't highlight nicks and imperfections quite as much, but since they have a little gloss, they'll be easier to clean than flat paints.

• I've noticed that some tool manufacturers are making laser layout tools that generate a green laser rather than a red laser. What's the difference?

• The color green is closer to the center of the visible light spectrum, so it's easier for the human eye to perceive the color at night or in low-light conditions. Different colors of light, including laser beams, are determined by wavelength. A normal red laser has a wavelength of 650 nanometers versus a green laser that has even more energy in a wavelength of 532 nanometers. The smaller wavelength allows a higher frequency of waves to transmit within a given time. This gives humans the ability, when indoors, to see the green light better and more accurately than a red light. In fact, the beam of a green laser level is 400 percent brighter than a traditional red beam laser level.



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#### **New Hand Tool Highlights**

A Look at New Innovations in those Toolbox Staples



By Matt Weber

rom time to time the trusty old toolbox takes on a spacious quality, all sad, lonely and in need of attention. Give it some overdue TLC by blessing it with some new hand tools. Surprise it with fresh pair of pliers, or maybe some unblemished wood chisels. Show that you're still interested. Your toolbox will love you for it.

#### CHANNELLOCK LINEMAN'S PLIERS

Channellock, granddaddy of the slip-joint pliers, offers two new upgrades to the company's selection of lineman's pliers for tackling any kind of rewiring or electrical work around the house. The company's 369 High-Leverage Lineman's Plier has a new design placing the rivet closer to the head, which gives the jaws greater leverage for cutting the thickest gauge wiring. The 369 has knife-and-anvil, laser-heat-treated cutting edges and the company's trademark Code Blue comfort grip handles.

Another take on the lineman's pliers from Channellock is the new fish-tape puller. When routing wires or cable through a wall, this specialty version of a lineman's plier has an innovative channel that runs from the tip of the jaws out the rear of the tool, providing clearance for the tape. The channel enables grabbing the end of a fish tape with the front of the pliers, rather than the side. This technique affords a better grip, more control when pulling, plus it doesn't bend the "hook" or kink the tape, which causes problems when trying to rout it through a wall. (www.channellock.com)

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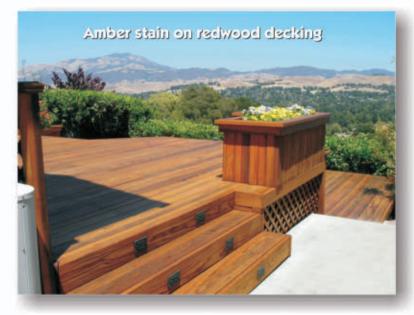
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wood chisels are exactly the type of pro-grade instrument you'll want to protect. Each chisel features a razor-sharp edge and high-quality hardened steel blade, but the latest line-up is designed for three distinct user groups.

For the precision woodworker who cuts dovetail joints, the new Woodworking Chisel features a 100 CRV blade, hardened to 58-61 HRC for improved sharpness and edge retention. Designed for manual operation or use with a wooden mallet, this bevel-edge chisel is structured with a slim handle for added control, precision and comfort (available in 10 sizes, from 1/8- to 2-in. wide).

The Construction Chisel has an all-purpose bevel edge with an upgraded hardened and tempered blade for jobs like mortising a door



hinge or strike plate. With its ProTouch grip, the handle is comfortable to hold and its oversized steel strike cap can withstand repetitive hammer strikes (available in nine sizes).

The High-Impact Chisel features a fully-forged steel core for unbeat-

able durability while still providing the same quality cutting performance. The extra-large steel strike cap can withstand hammer pounding at multiple angles, and the split-proof acetate handle is reinforced for toughness (available in seven sizes). (www.irwin.com)







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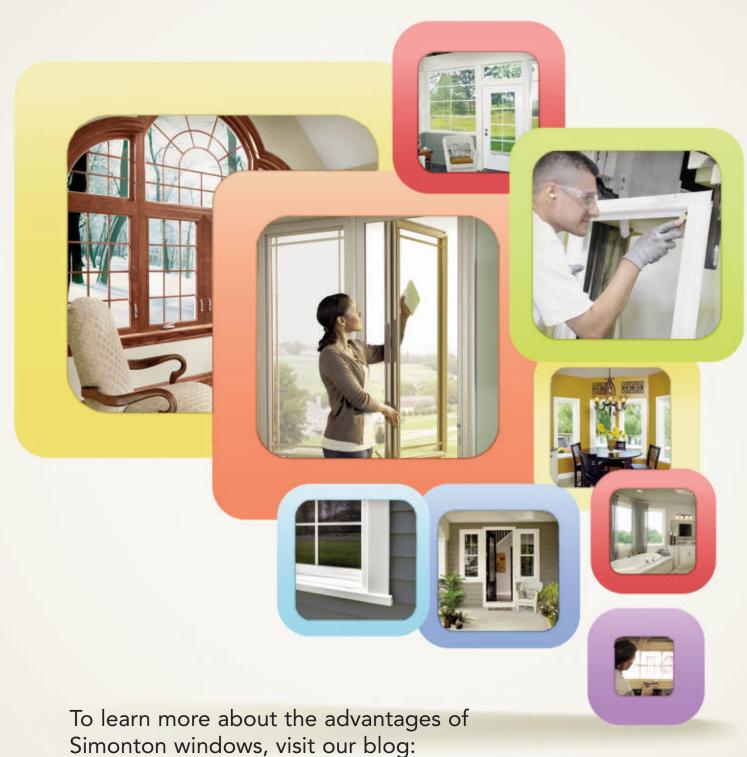


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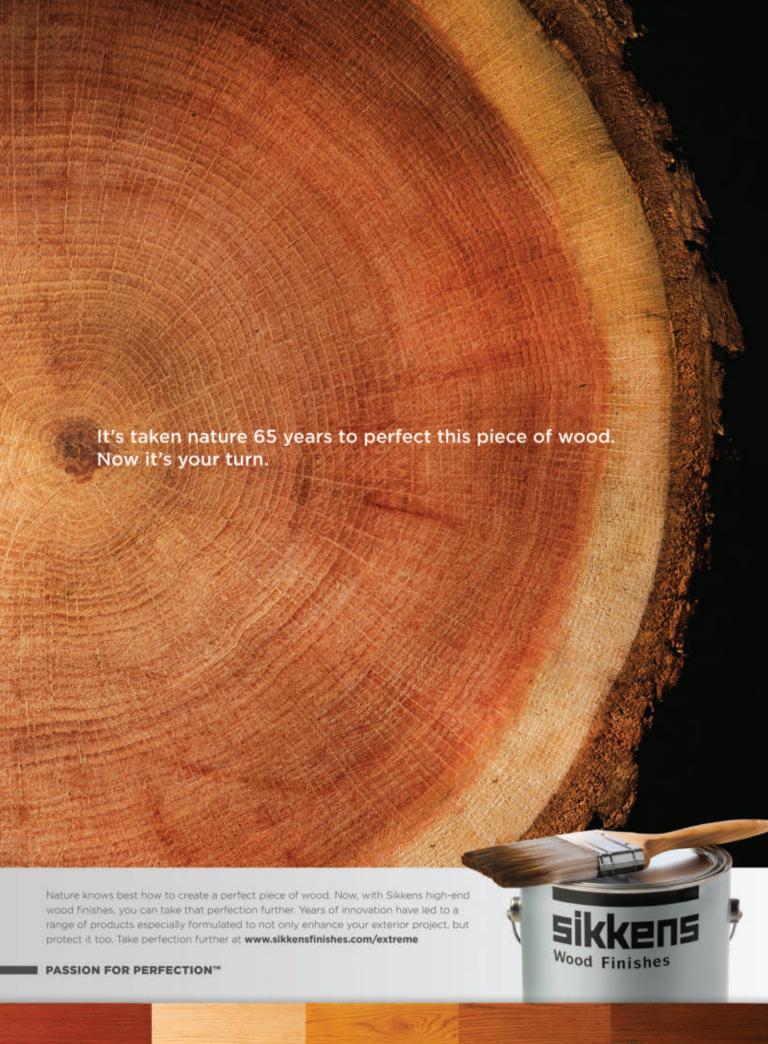
The level's unique angled frame helps ensure positive contact with flat, angled or cylindrical surfaces. A great tool for framing, post work, the Level 360 comes in three versions (12-, 24- and 36- in.) and is made of tough ABS resin to prevent warping or cracking in rugged jobsite conditions. (www.centurydrill.com)

#### X-ACTO WOOD CARVER

Excellent for shaping wood but also suited for cutting vinyl flooring, the new X-Acto wood-carving knife is a great tool with many uses. The knife works well with linoleum and plastic, and its concave blade allows the user to make custom niches and artistic cuts that would be very difficult to do with a straight edge. And because of the blade's shape, it can even be used to trim off excess shingles when you're putting a new roof on a shed or a house. (www.xacto.com)







#### TOOL SCHOOL

#### **BESSEY AV2**

The natural expansion and contraction of flooring materials requires careful spacing between the floor and the wall. The new AV2 Flooring Spacer from Bessey

Tools is designed to make floor installation easier for DIY'ers and pros alike. Setup is fast and simple. Just insert the AV2 between the wall and the first row of flooring and turn the red dial to adjust







for wall irregularities. The spacer enables precise alignment with an integrated millimeter scale (5 to 20mm), and they're easy to remove—just rotate the dial to release. These compact spacers are roughly the size of a business card, and you can buy a set of four for less than \$10. (www.besseytools.com)

#### FORRESTER NAILPULLER

The Forrester Nailpuller is a handy deck and framing tool that uses leverage, rather than your back or elbow, to pull nails and screws—even without the heads. A smart labor-saver on the jobsite, the Nailpuller features all steel construction, a durable handle with padded non-slip grip and replaceable nail-pulling teeth. It





makes an excellent companion for Forrester's Duckbill Deck Wrecker pry bar for deck demolition. (www.deckwrecker.com)

#### JORGENSEN VISE

A good workbench deserves a quality vise, such as the Jorgenson Professional Woodworker's Vise from Woodworker's Hardware. This pro-grade vise includes a quick-release action that lets you bypass the screw for fast opening





#### **TOOL SCHOOL**

and closing. This feature is a definite time-saver when working with multiple work pieces. Built for speed and durability, the vise includes countersunk holes on the jaws allowing for optional wood facing. It will fit any bench up to 2-

1/4-in. thick, offers a 9-in. jaw capacity and comes with a 1-in. diameter solid hardwood handle. (www.wwhardware.com)



#### **SILKY POCKETBOY SAW**

The Silky Pocketboy Saw is a compact, lightweight folding saw with a 5-in. blade. It prunes branches up to 3-in. diameter and can also be used on wooden boards with superior finish quality. It features a rust-resistant, chrome-plated, taper-ground blade with a non-set tooth design for greater cutting efficiency. The specially designed teeth are razor sharp to provide a fast, clean, smooth cutting action. The teeth are impulse-hardened to stay sharp longer and have a chrome finish to resist the effects of tree resin. The saw fits easily in your pocket, backpack or glovebox, and the blade is easily replaceable when it becomes dull or damaged. The blade locks securely in line with the handle or with the handle



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#### **Electrolytic Rust Removal**

A Handy Technique for Treating Tools, Blades and More



By Charlie Self

ost of us have at least a small collection of rusted items—items that need a lot of work to make useful or decorative, so we get out the sandpaper and wire brush. The decorative bits and pieces usually still look pitted and unattractive after all the work, and rust is still hiding under any finish.

Using an old battery charger and a non-conducting container can rapidly cure most, or sometimes all, the pitting problem while removing the rust. An old friend, Bobby Weaver, has been removing rust from old saw blades using this technique, and had decided to do some other items, too. In this case, he had a couple of cow bells he wanted to use as parts of lawn

decorations. The rust was bad enough that he didn't want to wear himself out trying to remove it, so he used his setup for de-rusting saw blades and plane irons.

He needed a new container: The old container had a burn slit down one side where a blade had touched an anode to create a short. Bobby picked up a tub at a local store, making sure it was long enough to hold his saw blades. If just the cow bells or similar sized items are done, a five gallon plastic bucket works very well, too. Sizing the container to the items being de-rusted saves time and hassle. The cow bells are much too small for this tub, but saw blades fit well. as do shovel blades and rake heads.

#### **SAFETY**

For the most part, this is a reasonably safe procedure, but it's essential to remember that you're working with electricity and an alkaline substance (washing soda). Some people say shutting the charger off while working on the anodes and placing the cathodes (rusty objects) is safe enough. Personally, having been bitten by electric gremlins too many times, I like to unplug the charger before messing with anything down the line. That's why I don't change a table saw blade with the saw plugged in; a switch failure or voltage surge could cost me some body parts I'd rather not give up. A 12-volt shock isn't much, but wet wires and floors and other problems can create dangerous conditions, so unplug the charger. It takes only a second.

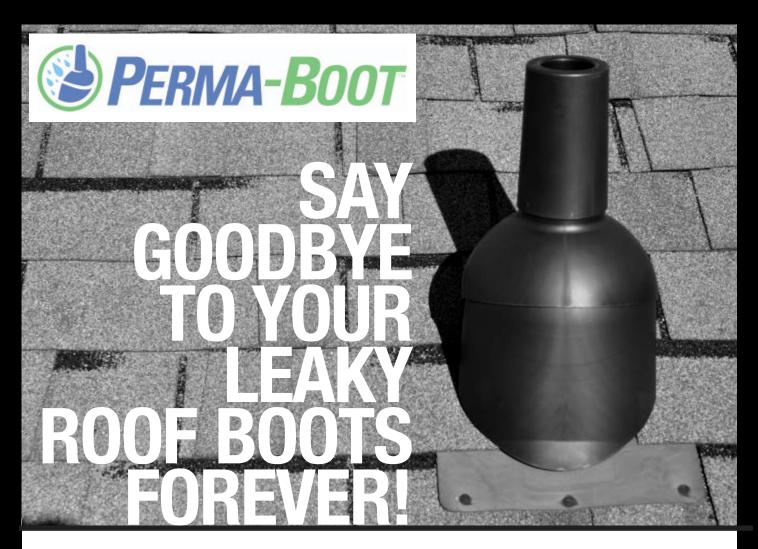
If your hands get wet, stop working with any wiring until they are thoroughly dry.

The washing soda is alkaline, so if you're sensitive to such substances, wear rubber gloves.

Remember: Anodes are positive and red; cathodes are negative and black. Make sure anodes and cathodes are like East and West: Never the twain shall meet. Bobby shifted a tub one day and burned that 16-in. slit down its side.



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#### **DO IT YOURSELF**

For this job newer battery chargers don't work very well. Bobby picked his up at a flea market; it is quite old. I've tried my newer computer chip-laden automatic charger and it doesn't work well at all.

He's also found that using six volts works better than using 12 volts.

Additionally, a well-ventilated space is needed because the process vents hydrogen and oxygen as it breaks down the water.

# POSCH CONTROL

You'll need a drill with a quality spiral-tipped bit to drill holes in the rebar for a good wire connection.

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#### **MATERIALS & TOOLS**

Items needed for an electrolytic rust-removal chore are not extensive:

**Container.** A non-conductive (plastic) container like those made by Rubbermaid is required.

Electrolyte booster & water. We used washing soda at 1 tablespoon per gallon of water.

Sacrificial anodes. We used 20-in. lengths of rebar, but almost any ferrous metal works. Stainless steel may also be worth experimenting with, for those with the time. Unless you have a power hacksaw, it's a good idea to get the seller to cut your rebar, so



Install the sacrificial rods using lengths of rebar.

determine lengths needed before you buy.

Alligator clips. Use as many as you need for connecting anodes to items being de-rusted.

**#14 wire.** Use enough wire to reach around the tub and connect all the anodes.

Battery charger. It's possible to use a car battery, but is not as effective. I've never tried it that way, but you might need to recharge a battery several times. Too, you're locked into one voltage, 12 volts with most modern batteries.

Clamps. Bobby used his oldest, most beat up 2- and 3-in. spring clamps, which worked well.

Also, a 1/4-in. bit in a good drill is needed to drill through the rebar. The rebar may also be scraped and the wire wrapped around tightly, or an alligator clip used, but drilling through gives a better connection.



Once drilled, the #14 wire can be threaded through and twisted around the rebar.



Shown here all six rebar rods are installed.

#### **METHOD**

Place the anodes around the rim of the tub, using clamps. You can wire the anodes together before or after placement. We did them before. Make sure the wires are firmly twisted in place. Bobby likes to use old, large office clamps on those that don't feel secure.

Fill the tub as far as needed with water. Pour in the washing soda. Mix well.

Using wires with alligator clamps, hook the rusty parts up as cathodes (negative, black if you've got the right color alligator clamps). Settle the parts in the tub, making sure they do not touch the rebar anodes.

Hook the battery charger's positive clamp to the first anode. This clamp must stay out of the water

or it will eventually erode. Hook the battery charger's negative clamp to the wire clamped to the rusted parts.

Plug in the battery charger. Look for a stream of bubbles rising from the rusted parts. This indicates the setup is working. The bubbles are hydrogen gas, and oxygen, which is why a well ventilated space is needed.



Add water to the tub.



#### **DO IT YOURSELF**

Go enjoy a glass of tea and a sandwich. Come back in several hours: Small objects may be done, but for larger objects you'll see a rusty looking scum on the water.

Give those a few more hours, or overnight. There is no problem with time using this process. When the rust is gone, the process quits working even though it's still



The tub should be sized for the objects being treated. Although this article shows a cow bell, this tub is usually used for saw blades, shovel blades and rake heads.



Add washing soda as the electrolyte booster. Stir the pot.





Hook up the negative pole to the battery charger.

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#### **DO IT YOURSELF**

hooked up. We ended up leaving the cow bells in the solution for several days.

If at all possible, stand the rusty object up so that there is an anode on each side. We laid the

cow bells down, which made a bad difference (as did a slew of power outages during one of the worst windstorms in many years).

Dark gray or black oxide is the color when the piece is removed.

That can be removed with a wire brush, sanded or taken off with a wire wheel.



The cow bell is ready to dunk.



After the reaction, here's the cow bell, fresh from the bath.



Clean off the treated item. As you can see in the lead photo, most of the oxide is soft and easily powders off the cow bell.



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You can see from the shots of me using a sanding block on the big cow bell that the oxide is soft. It just about powders off, but the sanding block doesn't get in any remaining pits, or into seams. I did some of that with a brass brush, but we'll put it back into the solution when our power situation stabilizes to get a cleaner overall look before I paint it. There will still be pits, and a few raised spots, but these cow bells already sound pretty good.



A brass brush can get into the surface pits for a cleaner overall look before painting.









# Tools & Techniques for Cutting & Drilling Tile

**Bv Matt Weber** 

ile is hard. Tile is unforgiving. Tile bends for no man, but when it's under too much pressure, it can snap like a postal worker. The rigid ceramic or stone material of tile makes it tough stuff to cut, and your standard saw blades simply won't get the job done. When it comes to cutting or drilling tile, you need the right equipment. This article explores a variety of tools and techniques to make the job easier the next time you're hitting the hard stuff.

#### **DIY BASICS**

For small installations of glazed tile, DIY'ers can sometimes get away with a small handheld glass cutter. Simply use a straight-edge as a guide to score the glazed surface of the tile with the cutter. Then, place the tile over a dowel aligned beneath the score mark, and press down on both sides of the tile to snap it along the line.

A step up from this process can be found with a snap tile cutter. To make straight cuts with this tool, first mark the cut line on the tile. Place the tile on the cutter's base plate, align the cut line with the guide bars and lower the carbide-tipped cutter onto the line. Draw the carbide wheel or blade across the tile surface to score it. Then press down on the handle to break the tile along the score line.





A snap tile cutter is a simple tool that can speed up installation of a variety of tile jobs. However, most of these tools won't work with thick tiles such as quarry tiles or pavers. Plus, they can only make straight cuts that extend across the entire tile. For curved cuts, partial cuts or anything irregular, you'll need different tools.

#### NIP IT

"When a problem comes along, you must nip it." Devo said that, or maybe Barney Fife.

Tile nippers provide a simple way to make small partial cuts that can't be made with a straight-cutting tool. In many cases you must cut an access hole in tile for a pipe or other obstacle. In other cases you may need to remove a corner to install around a set of

cabinets. Similar challenges are bound to come up in virtually any tile project.

A tile nipper looks much like a pair of pliers but takes patience and practice to master. By taking small bites (1/8 in.), you can remove material in a controlled fashion as you progress from the outer edge of the tile toward your cut line. The smaller the nibbles







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you make with the nippers, the more control you have of the cut and the less likely the tile will crack or shatter beneath the pressure of the blades. Practice on a scrap piece of tile to get the feel of the tool before making any critical cuts in your installation.

The nipper's teeth usually leave a fairly ragged edge along the cut. This may not be an issue if the cut will be concealed with a plumbing escutcheon or some similar device. However, in areas where looks matter, it may help to smooth the rough edges of the cut with a file.

#### **WET SAWS**

Tile professionals and serious DIY'ers often rely on wet saw for cutting tile. A wet saw uses a circular blade with an integrated water reservoir (usually with an electric pump) to cool the









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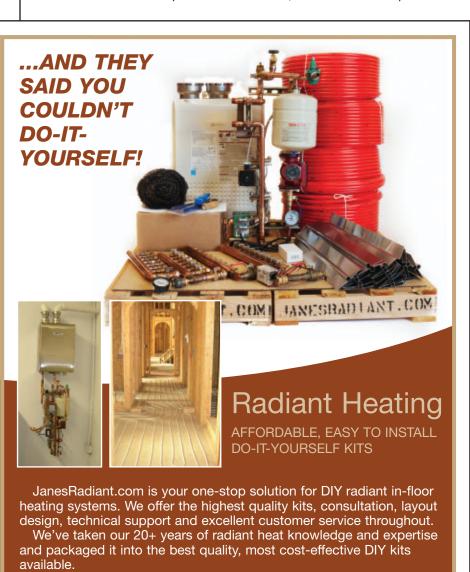
Application





cutting action. Wet saws are available in a variety of configurations. With the table-saw type, the blade protrudes from beneath the table surface and the tile is pushed

over it. With a bridge-type saw, a motorized cutting head rides along guide rails and is drawn over the tile. With a sled-type saw, the tile rests on a platform





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that glides along guard rails as it is pushed into an overhead blade. Portable handheld wet saws are also available. The overspray from wet saws can be very messy, so they're typically used outdoors.

Wet saws are generally equipped with diamond-tipped cutting wheels and can remove ceramic and stone material with great precision and minimal heat buildup. Equipped with a miter gauge, they make cut accurate cuts at any angle. The blades do, however, cut more slowly than a wood blade cuts lumber.

Although the circular blade of the wet saw enables only straight cutting, you can use the saw to make irregular cuts. When you need to fit a tile against a post or molding, simply scribe the profile of the obstacle on the tile. Then, make a series of closely spaced parallel straight cuts up to the profile line. Use tile nippers to remove the thin strips of tile between the kerfs.







#### **TILE & GLASS BITS**

When you need to mount fasteners in tile, glass-and-tile bits for boring the pilot holes have an arrowhead-shaped tip designed for penetrating brittle materials. Begin drilling the hole at a slow speed and use a spray bottle of water to cool the cutting surface, which helps drilling performance and extends the life of the bit. Gently increase speed and pressure as needed.







Quick tip: The most difficult part of drilling tile is breaking through the hard glaze on the surface, which can cause the drill bit to slip or skate out of position. One trick is to cover the tile with masking tape, mark the hole on the tape, then drill through the tape into tile. The tape provides extra grip on the surface to keep the bit in place.

For cutting larger holes in tile, you can select from carbide-tipped masonry bits or diamond-tipped hole cutters. Just like the smaller bits, the cutting action of the carbide bits should be lubricated with water to reduce heat.

However, unlike smaller bits, the diamond-tipped hole cutters are designed to drill at higher speeds and can even cut dry. They create holes with large



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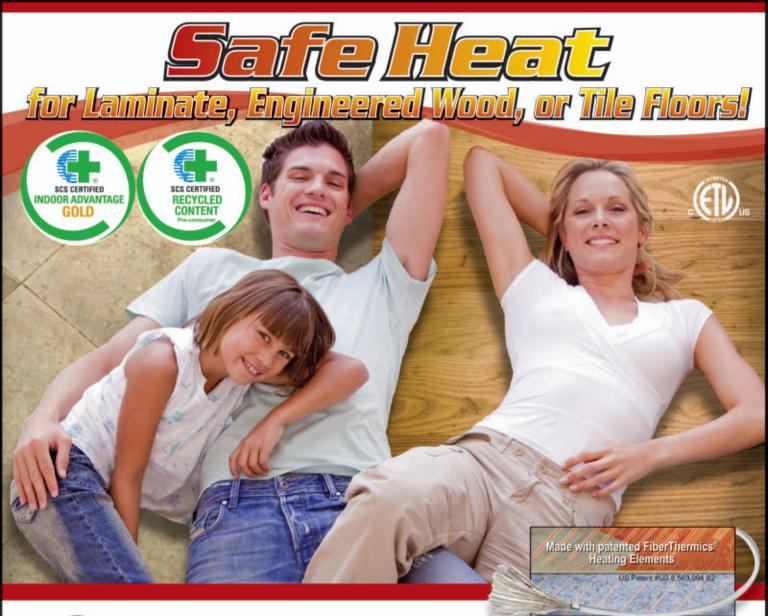
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diameters for pipe and cable access located in the center of a tile. To use a hole cutter, chuck the bit tightly into a drill or rotary tool. Turn on the tool so the bit reaches full speed. Gingerly tilt the bit into the tile so its edge begins to penetrate the surface. Once the edge of the saw begins to make a cut deep enough to keep the bit in place, slowly tilt the tool upright so the rim of the bit contacts the surface on all sides. Continue cutting until the bit plunges completely through the tile. Although many hole-cutters can cut dry, lubricating with water will still prolong bit life.

#### **NEW INNOVATIONS**

The most unique tool we tested for this article is the new ExaktSaw, which is a multipurpose flooring tool with a 2-in. circular blade. The small



diameter of the blade gives it the ability to make curved cuts in tile—an impossibility with a larger blade. The ExaktSaw also has the unique ability to plunge-cut, with the blade completely enclosed in the tool until the operator presses a trigger that lowers it into the cutting surface. This means the user is not limited to approaching cuts from the edge of the tile. You can plunge











cuts right in the center with ease and accuracy. The tool comes with a variety of blades for cutting wood and metal, but when fitted with the diamond-tipped abrasive blade, it ran curved cuts through porcelain tile without a hitch. Set the blade depth to avoid over-cutting, and you can make all your cuts right on a scrap piece of plywood next to your flooring installation, saving trips to an outdoor wet saw.



Another notable tool advancement is the line of Morse Diamond Grit reciprocating saw blades from the M. K. Morse Company. Like diamond-tipped hole cutters these blades use brazed industrial diamond grit for a durable, fast-cutting solution for granite, ceramic tile, glass block, marble and more. Although a recip saw isn't the most accurate cutting tool for tile installations, it is a high-productive tool for demolition projects where tile isn't being installed, but



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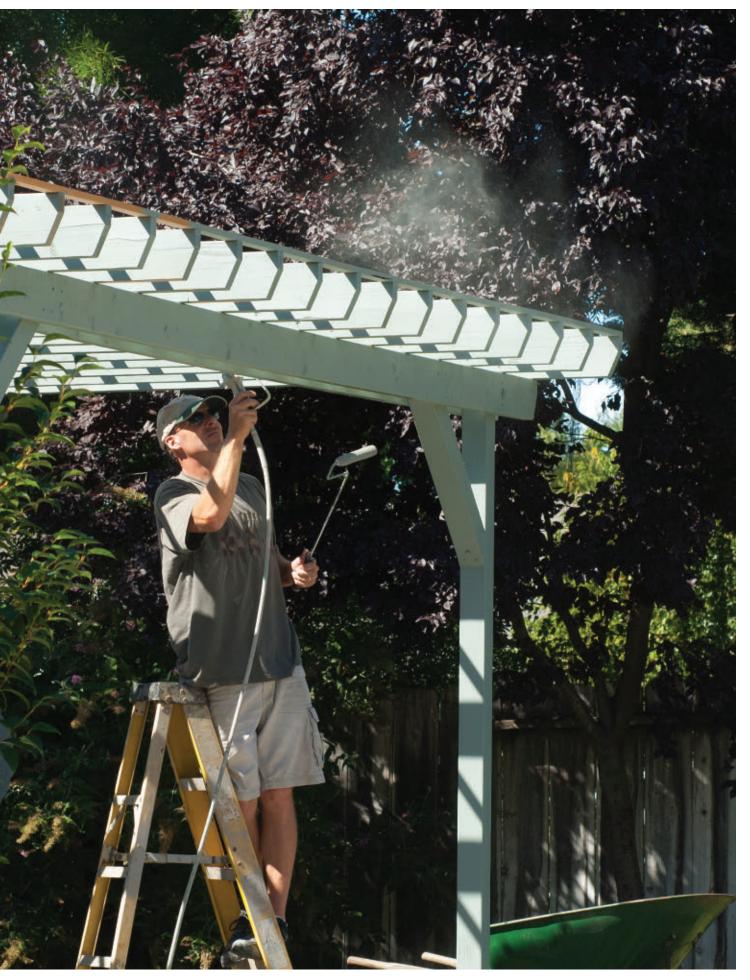


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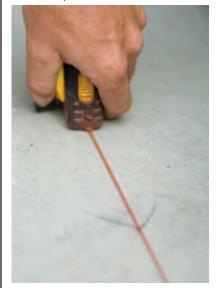




# HIGH SHADE

#### STEP BY STEP

Monroe measured out from the house at both ends of the patio and used a chalk line to make sure the support posts were all in line and parallel to the house.



A post base with slotted hardware allows the base to be turned and moved from side to side around the anchor bolt. Once the post base is positioned and firmly anchored, the sides can be bent up to accommodate the 4x4 post. Be sure to use the correct type of nails to go with the post base. In this case, teco nails were used.

Plumbing and bracing the 4x4 post is a two-man job. One guy checks the level and makes adjustments while the other fastens the brace to the post.



A concrete form stake driven at an angle makes a good anchor for the 4x4 post braces. Each post should have two braces at 90 degrees from each other.

Each post can be marked using the laser level at a random elevation. From this mark, layout the cut marks on each post to keep the elevations consistent. Using





a laser detector/receiver in conjunction with a laser level helps on larger layouts, especially where sunlight makes beams hard to see.

Monroe's crew used a double set of 2x8 boards as beams connected to the 4x4 posts.

Deck screws hold the beams in place until stronger hardware can be installed. Notice that all splices in the beams are centered on the posts.



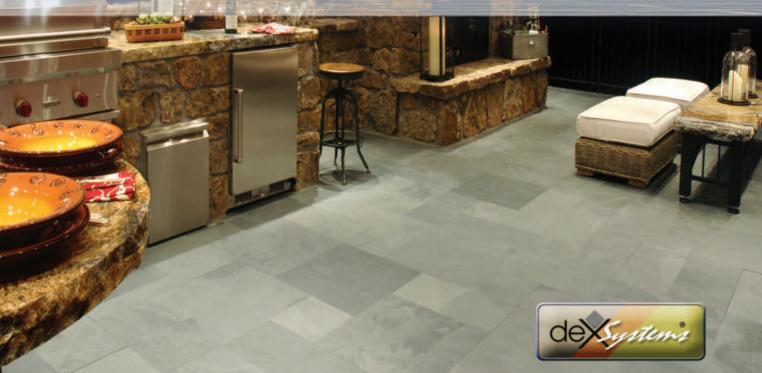


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# HIGH SHADE

The crew used a layout line to project where the side of the house met the cantilever on the outside of the beams. They measured from the post to the layout

mark so they could project the same location on the roof surface. Once they determined a point that matched the outside posts on the roof, they used



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measurements between the posts to mark the side-to-side locations of the other roof posts.

After leveling one joist from the outside beam to the roof, Monroe determined which course of roofing material would make a good post location to place the post on the rake of the roof (up or down the slope). After determining the location for the roof support posts, He used a utility knife to cut out the composite shingles down to the roof sheeting. A speed square bumped against the bottom edge of a course of shingles makes a good straight



edge for cutting out the composite roofing to receive the roof support posts. He cut all the way through the roofing material to the roof sheeting so the roof post could be solidly anchored.

After taking his best guess at the pitch of the roof, Monroe cut a piece of the roof post material and checked for plumb with a short level.

The crew measured from the bottom of the leveled joist and marked the post, which represents the thickness of the beam that will sit on the post.





Monroe used sheet metal to cut out pieces for the flashing around the roof support posts. He used a section of 4x4 post to form the bends in the flashing.



It took four pieces of sheet metal to make up the flashing around each post. The flashing components must be installed in the proper sequence beginning with the downhill side pieces first and ending with the uphill on top. Once the crew decided the shape

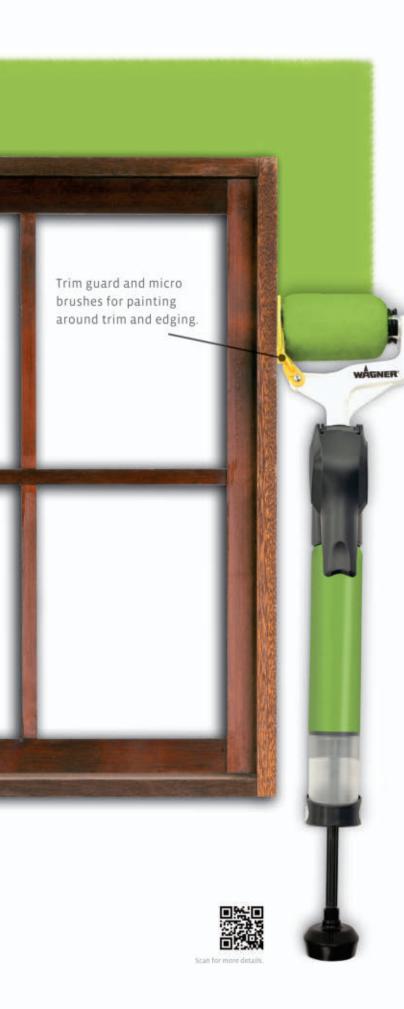


of each flashing piece, they repeated the process for each post.

Monroe used a chisel to separate the roofing components to receive the top piece of the flashing that would surround the roof support post.







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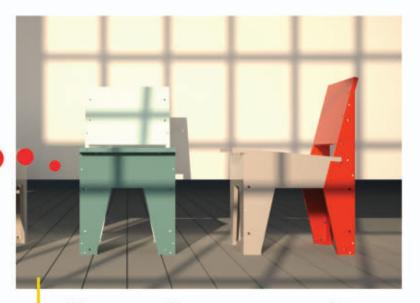
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Anne Filson and Gary Rohrbacher have created designs for beautiful, functional furniture (called AtFAB) that customers can fab themselves or have made for them using a ShopBot or other CNC tool. To prototype and make the pieces ready-to-fab, they connected with Jeff Shapiro through 100kGarages, and have been collaborating for the past two years. Says Anne, "We've become friends as fellow makers. That's been central to our success."



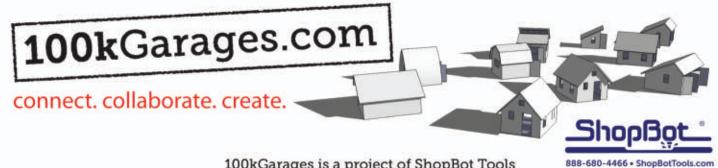
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# HIGH SHADE

The crew anchored the roof support posts through the sheeting and into the posts with screws driven from under the eaves. They used additional framing material as blocking to reinforce the rafter tails at each post location.



The beam on the house side of was made from doubled 2x material mounted on the posts. With the beams in place, the guys









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# HIGH SHADE



loaded the joists by sliding them to a waiting crew member on the roof.

The crew used a string line across the ends of the joists to get them in line. Fastening duties were handled by deck screws toe-nailed through each side of the joist into the beams.





The crew cut 45-degree bevels on the ends of the braces that prevent lateral movement in the structure.

Monroe initially tacked the braces in place with decking screws followed later with large lag bolts.

The post and beam structure with joists looks very much like a deck build.

The bolts run through the beams and the post with a bolt







head and washer on one side and a washer and nut on the other. The crew cut counter bores in the beams to slightly recess washers for the bolts.

Some lumber cleanup was necessary for the lath pieces which run perpendicular to the joists. Operations like this are much easier to do on saw horses before installation.



#### **DESIGN OPTION**

You may want to make your shade cover with a slope either toward or away from the house, in case you decide to put a rain cover over it. A lightweight roofing material such as translucent plastic corrugated roof panels could be added without too much work.



# HIGH SHADE

When installing the lath, one of the first orders of business was to straighten some warped joists. The crew started by marking the layout used on the beams on the first pieces of lath and screwing the lath to the joists where the layout lined up easily. With the lath anchored at many of the joist intersections, they could use a large adjustable wrench to align the joist to the lath on the wayward framing members.



Monroe snapped a chalk line on the joists at the desired intervals for lath placement. Using layout lines helps keep everything straight and parallel.

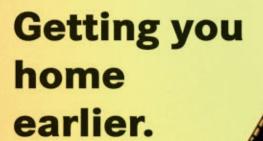


With many of the lath pieces in place, the crew systematically nailed the lath to the joists at each intersection while watching the layout lines closely.











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## HIGH SHADE

Monroe used an airless sprayer in one hand and a small roller in the other to apply the heavy bodied exterior stain to finish the patio cover. **EHT** 











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## **Clean Rust Off Concrete**



By Rob Robillard

his article will help you save time, labor and money by showing you the best way to clean rust off concrete or bluestone. Many homes have concrete and bluestone walkways, steps and patios. The problem is that rust stains can occur from patio furniture, umbrella stands, fire pits or toys. These stains can be very difficult to remove.

Following are the necessary functions needed to easily remove a rust stain from your concrete using muriatic acid.

#### SAFETY INFORMATION

As a safety precaution, do-ityourselfer's should avoid muriatic acid where possible. Only use muriatic acid after exhausting other cleaning methods like TSP (tri-sodium phosphate), or less caustic concrete stain removers. In other words, muriatic acid is not the first choice for masonry cleaning but the last resort.



The metal stand of a patio umbrella created unsightly stains on the patio surface.

Muriatic acid is a highly reactive liquid acid, and one of the most dangerous chemicals you can buy for home use. It is an industrial-strength solution of hydrogen chloride gas dissolved in water, also known as hydrochloric acid. With the exception of some plastics, muriatic acid can damage most anything it touches, including clothing, metal and skin. It emits a suffocating odor that can quickly burn the lining of the nose, throat and even the lungs.

Typical home applications include heavy-duty masonry cleaning, preparation of masonry for painting or sealing, removal of efflorescence or mineral deposits and pH reduction in swimming pools. If you consider using muriatic acid, please heed all safety recommendations both here and on the product's label.

Contact with the eyes, for example, can cause irreversible damage and permanent blindness. Contact with the skin can cause severe burns. Dress appropriately; wear safety glasses, acid-resistant gloves, long sleeves and pants, and use a NIOSH-approved respirator equipped with the appropriate acid-grade filter.





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Muriatic acid should be a measure of last resort. Use it only after you have already tried less caustic cleaning agents.

Additionally, have a neutralizing agent and a reliable, steady source of water available. Baking soda or garden lime can quickly neutralize the acid if spilled. Water should be freely available in case you accidentally get acid on your skin.

Since muriatic acid can damage or kill foliage, cover or wet all nearby foliage with water before application of the acid.

Work in an area with adequate ventilation. Use a fan to bring fresh air to the work area if necessary. Muriatic acid is nonflammable, but the vapors are highly corrosive and irritating. Using muriatic acid indoors is not recommended. The corrosive vapors can begin chemical reactions in metals, leading to long-term permanent damage.

### **CLEANUP & DISPOSAL**

In some cases you may need to clean up an accidental spill.

Spreading a generous quantity of baking soda or lime (the powdered or crushed type used for lawn or gardens) and adding water will

cause a distinctive "fizz" as the chemicals reacts with the acid, releasing carbon dioxide and producing harmless salt and water. Garden lime is less expensive than baking soda and is sold in larger bags.

Muriatic acid should never be poured down a sink or storm



Keep baking soda or lime on hand to neutralize the acid.





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## **SKILL SAVVY**

drain, or flushed down a toilet. Doing so can cause extreme damage to pipes, dissolve solder and damage the biological balance of your septic system. Throwing away even a closed container of muriatic acid with the trash can be dangerous for trash handlers, their trucks and possibly cause unexpected chemical reactions in land-

fills. Neutralize your container prior to discarding. (Call your local recycling center for more information.)

## HOW TO USE MURIATIC ACID

Muriatic acid should be diluted to at least 1 part acid to 10 parts water. For small areas, a quart container of acid is usually sufficient. Mix the acid and water in a plastic container. Always pour acid into water, never water into acid. Mixing the two causes a reaction that gives off heat. This reaction is much more sudden and violent when water is poured into the acid.

The diluted acid can be applied with a long-handled masonry scrub brush or sprayer, depending on the circumstances. If you're going to spray, it's best to buy a cheap sprayer and throw it away



Always pour acid into water—never water into acid.



Apply the acid with a sprayer or long-handled masonry brush, scrubbing the rust stain.





Let the acid sit for no more than a few minutes, less if you can see the rust lifting.



Neutralize the acid with baking soda or lime and rinse.

when finished. If using a sprayer to apply the acid, take precautions to cover nearby objects and vegetation with plastic. Do not use a sprayer on a windy day.

## STEPS TO CLEANING **MASONRY**

Begin by wetting the concrete stain and all of the surrounding area.

Mix the acid with water. Although, one part acid to 10 parts water (by volume) is typical, dilutions as light as one part acid to 16 parts water also work well. (Note: A 1/16 ratio is 1 cup acid to 1 gallon of water.) Read the label on your product and follow the recommendations.

Brush or spray the acid onto the affected area. Do not use a metal sprayer. A plastic sprayer

will work for a while, but will eventually be destroyed by the acid. For large jobs, have a few extras nearby and throw away used sprayers when finished.

Let the acid sit for no more than a few minutes, and even less if you can see the rust lifting.

Scrub off any remaining residue with a stiff brush while rinsing



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## **SKILL SAVVY**

thoroughly with water. Long-handled brushes are ideal for this job.

Neutralize the acid with lime or baking soda and rinse thoroughly. Use a garden hose with a highpressure nozzle. For stubborn stains, Rinse the area again, wetting the stain thoroughly. Apply a small amount of muriatic acid directly to the stain and repeat the cleaning process.

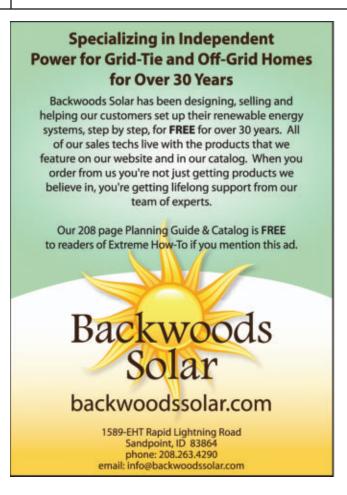
You need to be aware that this



For stubborn stains, reapply the acid to the stain only and repeat the cleaning process.

process may leave your concrete or blue stone looking cleaner than the surrounding area. To minimize this difference in appearance, work only on the stain and rinse quickly, trying to keep the acid mixture on the surface of the stain. The longer it is left on the concrete, the more it will clean, and possibly etch the surface creating a noticeable contrast.

You can also use lime to neutralize leftover muriatic acid. Get a large bucket. I prefer the 5-gallon size since the chance of dangerous spattering is minimized in a large bucket. Put three or four cups of lime in the bottom of a Igallon of water. Give it a stir. Slowly add the acid to the bucket, keeping your face away while pouring (and wearing your respirator). Stir, adding more acid and





more lime until all the chemical "fizzing" has stopped.

The fully neutralized acid can then be safely disposed down a sink or storm drain without fear of damage to your septic system or the environment.

Note: Consider recycling your leftover muriatic acid. If you know someone who owns a pool you can give them the leftover acid. It's a great pH reducer. **EHT** 





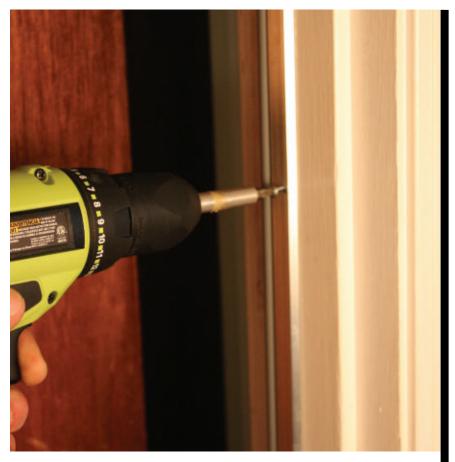
Rinse the area thoroughly with a high-pressure garden hose.

To minimize the difference in concrete appearance after cleaning, work only on the stain and rinse quickly. The longer the acid is left on the concrete, the more it will clean and possibly etch the surface.



## **Seal of Approval**

Installing Aluminum Weather-stripping Around a Leaky Door.



By Matt Weber

ven the most energy-efficient HVAC systems boasting all the latest technology can still cost you plenty if that conditioned air is wasted through leaky doors, windows or walls.

One of our project houses had a door with a poor weather seal, leaving a substantial gap around its perimeter. Unlike an interior partition, this door separated the conditioned living space from an unfinished basement. A general rule of thumb: If you can see light between the closed door and the jamb, then you have a problem. In this case, the gap between the jamb and the edges of the door

measured up to 1/2 in. at its widest point. Calculate the total area of that long, leaky opening, and it equates to leaving a window cracked. Conditioned air could be felt drafting out of the house at a notable rate.

The solution to a problem like this is to install a simple weather-stripping kit. This is an entry-level project that is well within the skill set of even the greenest DIY'er. All that's required is the kit, a drill/driver, measuring tape and a hacksaw, and you can stop the energy loss.

#### **INSTALLATION**

Hardware stores sell several varieties of weather-stripping, but the best type for doors has a rigid aluminum bar along with a soft rubber gasket, called a bulb. When attached to the door frame, the bulb compresses against the closed door to prevent the passage of air and moisture. The kits are usually sold with three pieces, one for the top and two for the sides of the door. The side pieces





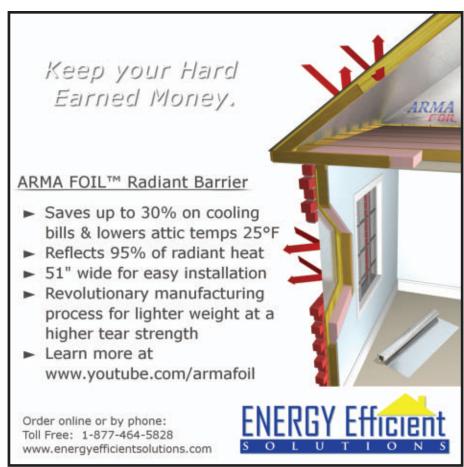
## **QUICK FIX**



often come in standard door heights, but any of the three components can be trimmed to size.

Use a tape measure to determine the length from the bottom of the door frame to the top of the jamb. If it's necessary to cut the material, use a hacksaw to cut the aluminum and a utility knife to cut the rubber gasket. I had misplaced my hacksaw and trimmed the stripping with a powered cutoff saw, but a hacksaw actually works better because there's no risk of kickback.

Close the door and press the weather-stripping firmly against it. If installing in a metal door frame, then mark the screw holes in the weather-stripping with a pencil. Metal door frames will require pilot holes to be predrilled with a 1/16-in. spiral tip bit. If predrilling is not required, you can usually





Measure from the door sill to the upper jamb.



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## **QUICK FIX**

drive the screws (included with the kit) directly into the door frame

When driving the screws, leave them proud without securing

them tightly. The weather-stripping should be left loose until all the screws have been started.

Once they're all in place, make sure the door is tightly closed.



The best weather-stripping has a rigid aluminum bar and rubber gasket.



Cut the strip to length. I used a chop saw, but a hacksaw works best.



Position the strip against the closed door.



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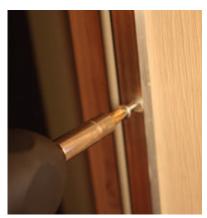




The screw slots are oblong, allowing room for final adjustment. Press the weather-stripping firmly against the door, compressing the rubber bulb. (Don't compress it more than 50 percent or you could damage the gasket). When you're satisfied with placement, drive down the screws tightly.

Repeat the procedure for the other side of the doorway. With both sides installed, measure between the two strips to determine the length of the top strip.

When cutting, err on the side

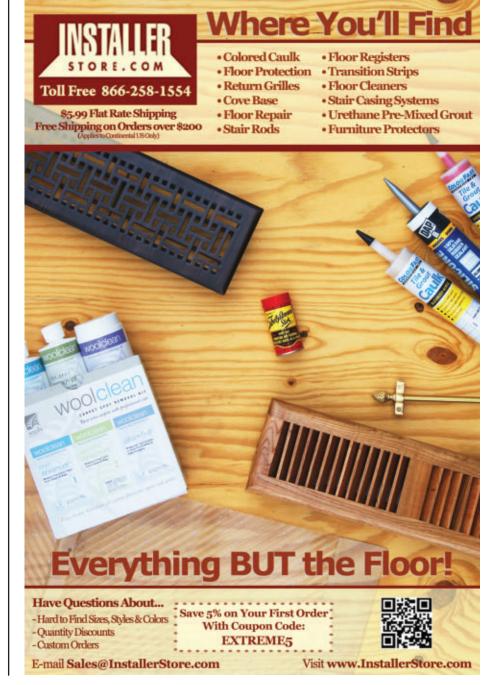


Predrill the holes if fastening in a metal door frame. Otherwise, start the screws, but leave them loose.

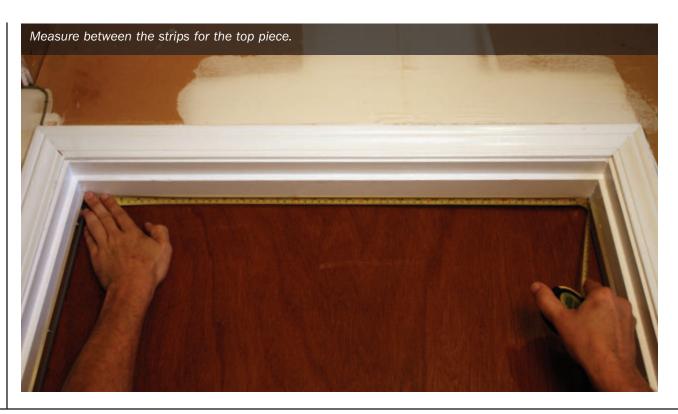


Repeat the procedure for the opposite side of the door. Once the strips are in place, close the door and position the strips so the gasket is compressed against the door surface. Tighten down the screws.





## **QUICK FIX**









## **QUICK FIX**

of too long and adjust as necessary. Install with screws just like the first two strips. Close the door a few times to check the seal and make minor adjustments. The oblong screw slots enable you to back out the fasteners, move the strip as necessary and then retighten until you've completely closed off the gap. **EHT** 



Adjust the weather-stripping to completely close the gap, then fasten all screws tightly.





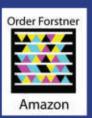














**Spade** 



Brad



**Forstner** 













## **Airing Out**

## Installing Magnaflow's Turbo-back Exhaust on the Duramax



By Tim Walton

e've all heard that impressive, at least to motorheads, roar of a loud diesel exhaust. There's no doubt that this type of pipe offers plenty of air flow, but your neighbors may not appreciate such an exhaust system if they hear it every day.

Recently my uncle bought a pickup where the previous owner had shortened the exhaust just past the cab. It sounded cool for a couple days, but the novelty soon wore off. I installed a Magnaflow exhaust system on his Power-Stroke-powered Ford, and instantly it became a favorite of mine for the sound quality and dyno-proven performance.

Magnaflow builds their exhaust

systems to run quietly enough at idle and cruise to let you enjoy conversations and music. But step on it and it comes to life with a healthy exhaust note that indicates the entire system is breathing easier and freeing up power.

For improved breathing on a 2006 GMC Sierra Duramax, we chose Magnaflow's Pro Performance system, which features a satin finish, 100-percent stainless steel muffler with stainless steel band clamps and mandrel-bent stainless steel tubing. MagnaFlow says their mufflers are "100 percent stainless steel and lap-joint welded for solid construction and rugged reliability, even in the most extreme conditions."

They feature a free-flowing, straight-through perforated stainless steel core, stainless mesh wrap and acoustical fiber fill to deliver that smooth, deep tone.

We opted not to add a polished stainless tip to this work truck, however Magnaflow has optional tips in a variety of styles to customize the look of your exhaust system.

Exhaust systems, like the one featured here, can free up some horsepower by themselves. However, when used in conjunction with other modifications, such as improved air-intake flow and an engine programmer, they can really shine.

#### STEP BY STEP



Applying a quality penetrating oil to the bolts and fasteners can help break them loose.



Starting at the front of the pickup, we loosened and removed the V-band clamp, which connects the exhaust near the engine.

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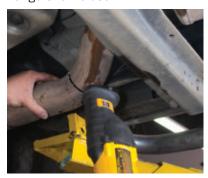


Removing the clamps at the next connection helped in the removal process.

Slide the clamp to one side to separate the front section from the back section of exhaust.



With a little lubrication a pry bar can be handy to remove the rubber hangers. Be sure to keep the hangers for re-use.



The layout of the exhaust can make it a challenge to remove without dropping a portion of the lower subframe. This is when a reciprocating saw can come in handy to make more manageable chunks of the exhaust.



The catalytic converter was easier to remove once we'd made our own cut in the exhaust.



James McCoy, head mechanic and owner of Garage 808, likes to remove any oil that may coat a new exhaust system. He uses some brake cleaner and a rag to remove it.



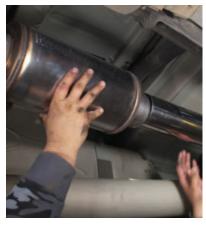
We started with the downpipe at the front of the exhaust system. Re-using the stock V-band clamp, we installed the replacement piece from Magnaflow. You can work front to back assembling the pipes, but leave all connections loose until final fitment.



Re-use the rubber exhaust hangers as you piece together the system. The exhaust system will hang in place until you tighten it and make final adjustments.



The Magnaflow system uses slip joints with clamps to hold them in place and seal them from leaking. Sliding the clamps over the exhaust before installing can help speed up the operation.



The Magnaflow muffler gives the exhaust system a nice note while keeping it quiet during idle and cruising.



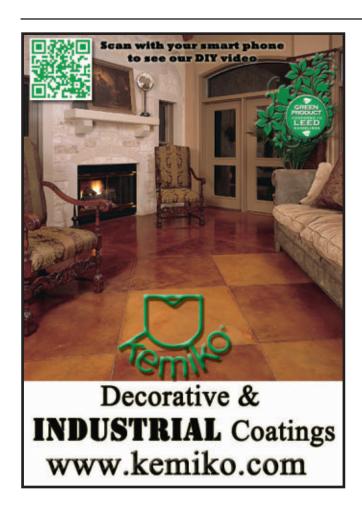
Pay attention to the orientation of the pipes to make sure they clear suspension components like the shock seen here. Note: If the suspension is unloaded on a lift, it may be in a different location with the truck on the ground.

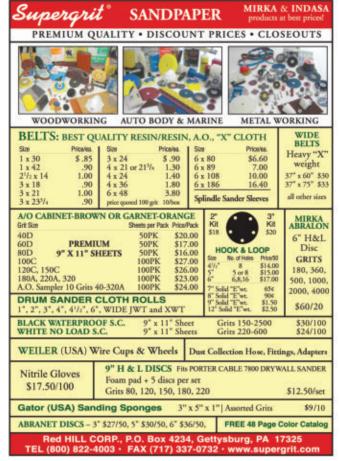


Make sure to torque the bigger clamps (not the hanger-type) to the recommended 65 lbs/ft to ensure a good seal and to hold the exhaust in place once you have proper alignment.



Double-check that there is at least a half an inch of clearance between the exhaust and other truck parts like the body, suspension and under-carriage. You can rotate the pieces of the exhaust to gain the needed clearance. Re-torque the clamps after 25-50 miles of driving to make sure nothing has loosened.

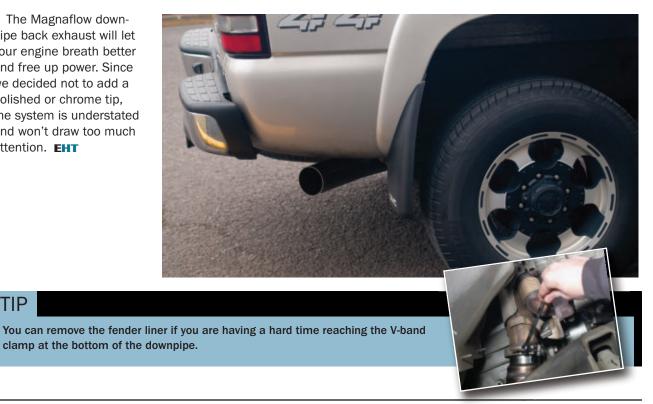




## **EVERYTHING AUTO**

The Magnaflow downpipe back exhaust will let your engine breath better and free up power. Since we decided not to add a polished or chrome tip, the system is understated and won't draw too much attention. **EHT** 

TIP









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## **LASQUARE**

News of the new LaSquare combination square came across the *EHT* desk right before we went to press. The combination square has been a toolbox for decades, but LaGesse Products has redesigned the concept with a 2-in. wide base that can be used on oddly shaped materials such as round or square tubing, handrails, pipe, crown molding, cement blocks, wooden posts and many other materials. Made entirely in the U.S.A., the LaSquare's patented design makes jobs easier, reduces work time and eliminates the need for extra tools. The extra-wide aluminum base adds stability and offers true line accuracy on multiple contact points.

Equipped with a built-in level and a stainless steel blade that is fully hardened and tempered, the LaSquare features a satin chrome finish with precisely etched graduation marks in standard measurements. Visit www.lagesseproducts.com.





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DuPont has launched a complete line of 4-oz. specialty lubricants with Teflon fluoropolymer for enhanced performance. Now plumbers and DIY'ers can easily store, transport and use the entire line. The ergonomic shape fits comfortably in most work pants and tool belts. The squeeze-bottle design eliminates overspray and reduces waste, and the precision tip ensures mess-free application. The new 4-oz bottles are made from PET plastic, the most recyclable plastic available. The lineup currently includes four types of lubricant: Multi-Use, Silicone, Penetrant and Non-Stick. Visit www.finishlineusa.com.

#### SPACE-TRAC SLIDING SHELVES

Designed to store up to 75 percent more material in the same footprint as conventional shelving, these high-density, light-duty modular storage systems feature a special sliding carriage design. Wheels with automotive-grade ball bearings glide smoothly along aluminum guidance tracks, even with fully loaded shelves. The shelves enable easy access to a higher number of items by sliding to create an aisle, sliding to reveal shelves, or by sliding a unit forward. Each model comes in total storage weight capacity options of 450, 750 or 900 lbs. and measures from 60- to 72-in. tall. Visit www.space-trac.com.



# PRODUCTS

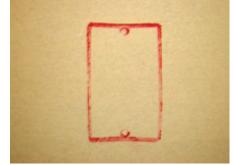
### **MARK-N-CUT TRANSFER SHEETS**

Mark-n-Cut Transfer Sheets are designed to eliminate measuring mistakes when installing drywall, plywood, paneling, flooring, shower enclosures, microwaves and more. They provide a simple method for saving time, money and wasted materials for both contractors and DIY'ers. Each patented Mark-n-Cut Transfer Sheet is an adhesive label with a transferable red pigment on the front surface designed to release when pressure is applied, as with

the tap of a rubber hammer. The pigment creates a mirror image of cut-outs such as electrical outlets, drain flanges, light fixtures, and other shapes on your work materials to use as a cutting template. This eliminates the need to use a measuring tape and pencil. Visit www.markncut.com.











#### ARMA FOIL RADIANT BARRIER

Arma Foil is a reflective radiant barrier that reflects up to 95-percent of the sun's radiant heat. The resulting energy savings can reduce cooling bills as much as 30 percent and lower attic temp-eratures by 25 degrees, according to the manufacturer. Arma Foil is a perforated radiant barrier for use in attics, walls, housewraps and more. It meets all the most current codes and standards for radiant barriers including the newest Fire Code (ASTM E84 / ASTM 2599) and new Corrosivity Testing (ASTM D3310). Plus, the product is made with a new proprietary process to produce a lighter weight material that is extremely tear-resistant. Visit www.energyefficientsolutions.com.

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