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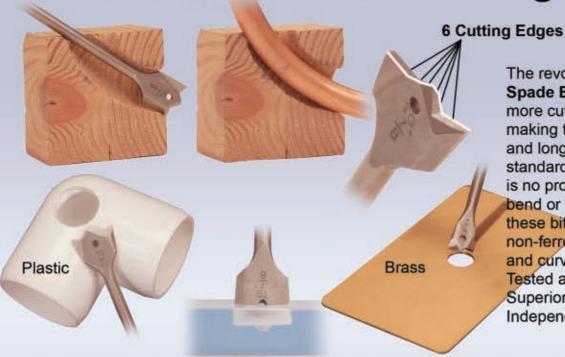
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Bores



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From The Editor-In-Chief

own South in the land of *EHT*, winter can get chilly—but nothing like the northern climates—and our heating systems often rely on conventional furnaces and fireplaces while our neighbors up North are more versed in the latest heating technologies. With the many modern options to choose from, selecting a system for a new or remodeled home can be a complicated process. For example, lately I've gotten a lot of emails primarily from Southern readers asking for information on multi-fuel stoves.

A common complaint with heating costs comes when the homeowner is locked into a single type of fuel and the price keeps rising. A worse situation could be the inability to buy fuel at all due to shortages, new emission restrictions or other such unforeseen circumstances. Some areas of the country view the emissions of a home's traditional wood stove as an environmental concern and target such appliances for regulation. Cleaner burning options like wood pellet stoves are popular, but even this fuel became unavailable to many across the U.S. Northwest and Canada during a shortage in 2008. A multi-fuel stove can provide clean, low cost, energy-efficient home heating with a variety of fuel sources. The new generation of EPA-certified multi-fuel appliances can burn corn, wheat, wood pellets, biomass and more.

Fortunately, down in Alabama fireplaces are not widely considered the enemy of air quality and remain a popular choice in both gas-fired and wood-burning versions. The latest models have evolved well beyond the drafty designs of old. Available as fireplace inserts, stoves and warm-air furnaces, hearth products have made great strides in style, function, fuel and operation. You'll find an article on "Choosing a Woodburning Appliance" on page 66.

Radiant floor heat systems don't rely on forced air at all. Utilizing either hot-water PEX piping or electric heating elements, these underfloor systems transfer heat evenly throughout the rest of the objects in the room, allowing the average air temperature to be lower while maintaining a higher level of comfort for the people in it.

Another innovative technology is an efficient high-pressure air delivery system that can provide heating, cooling, filtration and ventilation. The Hi-Velocity SDHV (Small Duct High Velocity) System works on the principle of pressure rather than air velocity. Unlike a conventional furnace, the main difference is that the supply ductwork is all "small diameter" or "mini duct". This makes it easy to install inside existing walls with minimal remodeling. The flex duct fits inside a typical framed wall without having to disturb the drywall. With the use of high-pressure and low-pressure zones, the Hi-Velocity system continuously mixes the room's air from floor to ceiling to eliminate hot and cold spots.



When choosing any type of heating system, familiarize yourself with today's many options and consider the following factors: The cost and availability of the fuel; type of appliance and heat distribution; cost to purchase, install and maintain the appliance; the system's efficiency; and the environmental impact of the heating fuel. For more information on selecting a system for your home, visit www.energysavers.gov.

1-1/2



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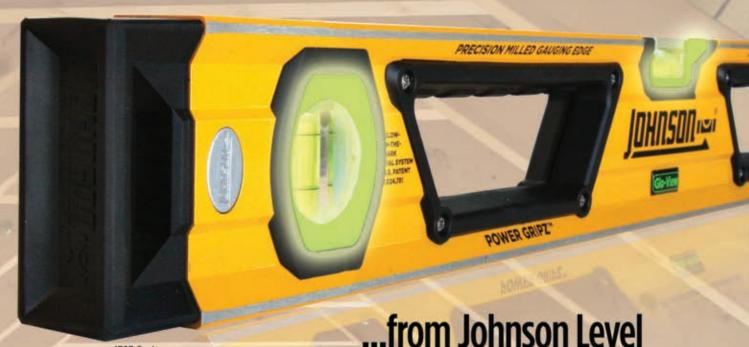
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Q

I have a rental house with a bathroom that has problems with sewer odor.

Do you have any advice on how to address this?

The first suspect is the toilet. Gently try to move the bowl of the toilet. If the bottom moves even slightly in any direction, then the sewer gas is probably escaping around the wax ring that seals the toilet to

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the floor. If this is the case. remove the toilet and replace the wax seal. If the toilet is not a problem then check the drains of other fixtures. When a plumbing fixture hasn't been used in a while, the traps below the drain can dry out, allowing gases to escape. Pour a cup of water down the drain to reseal a trap. Also, clean the floor thoroughly and, if possible, ensure the bathroom has adequate ventilation and an operable window or exhaust fan.

How do I level a concrete floor with low spots to prepare for tile installation?

.....

To install tile, laminate or hardwoods over a subfloor containing some dips, depressions, holes or cracks, you need to level it before you proceed. The best way to do this is with leveling compound. Some of these products can be mixed like mortar and troweled flat over the dips. Other products are marketed as self-leveling compounds, which are a thin, watery type of cement that levels itself out (like liquid) when it is applied to a concrete surface. It dries quickly, so you might want to practice working with it on a hidden surface before you start. Before applying leveling compound, roll sealing primer over

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the concrete with a floor roller, working it into the low spots and crevices. Allow the primer cure for 48 hours. Mix the compound with water and apply it to the floor following the manufacturer's instructions. Work in sections of a few square feet at a time, and use a concrete trowel to spread the edges of the compound and feather the edges flat. Allow the compound to cure for several hours before installing the flooring.

I'm building a new home and trying to decide on a heating system.

How do I compare heating fuel costs?

Heating system fuels are measured and sold in different units such as gallons of oil, therms of natural gas, or kilowatt hours (kWh) of electricity, so comparing the price of dissimilar units is not useful. A better approach is to compare the fuel cost per amount of heat produced. You can find a free Heating Fuel Comparison Calculator (in Excel) at the U.S. Energy Information Administration website, www.eia.gov. However, don't rely solely on fuel cost when choosing a system. Numerous factors will determine the heating system that best meets your needs, ranging from cost of the installation, maintenance and operational requirements, system efficiency, building codes and more. For example, one kWh of electricity can cost between \$35 and \$10.40 to generate a million Btu's, depending on whether the appliance in question is a furnace or a geothermal heat pump.



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Laser Tools for 2012



By Matt Weber

odern technology is a mixed bag. Although I'm generally disappointed in the glaring absence of flying cars and hover-boards that I envisioned as a kid, the U.S. did recently invade Mars, and our generation has lots of awesome laser gadgets at our disposal. Here's a look at today's laser tools for home improvement.

LASER LINE GENERATORS

Laser layout tools can generate perfectly plumb and level guidelines that save a great deal of time when compared to painstakingly measuring and marking each reference point with pencils, tapes, hand levels or string levels.

Contractor-grade tools like the Quad-Line Self-Leveling Cross Line Laser from Johnson Level & Tool can project a grid of red guidelines on walls or ceilings, just like some futuristic thingamajig that you'd expect to see on Star Trek. The Quad-Line provides easily visible reference lines that assist all sorts of projects, whether you're installing trim, shelves, cabinets, wall tile, or masking a wall for paint—the possibilities are endless. The unit generates three



The Quad-Line professional laser generator from Johnson Level & Tool projects three vertical lines, two horizontal lines and one plumb-down beam.

vertical lines, two horizontal lines and one plumb-down beam. Plus, the laser is "self-leveling" insofar as an alarm blinks and beeps when it's beyond leveling range, indicating that it needs adjustment at its tripod base. There's also a manual mode as well as a locking mechanism that protects the laser's inner components during transportation. The laser has an interior range up to 200 ft. (depending on light conditions). The Quad-Line package includes one Ni-MH rechargeable battery pack, 6.4-volt battery adapter, magnetic target, hard-shell carrying case and tinted glasses for better visibility of the laser lines in low-light conditions.

The Bosch GLL2-40 doesn't offer as many bells and whistles as the contractor-grade Quad-Line, but it is an easy-to-use and accurate cross-line laser for interior jobsites up to 30 feet. It's a self-leveling laser with single-button operation that makes it simple to select horizontal, vertical,

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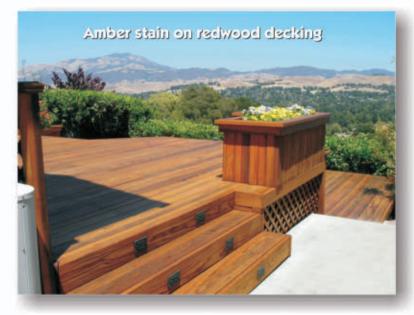
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cross-line or manual mode operation. This lightweight cross-line laser includes a detachable floor and magnetic mount that allows full rotation so you can position it right where you need it. The mount is also equipped with a convenient 1/4- or 5/8-in. tripod mounting thread for additional mounting options.



The Bosch GLL2-40 is an easy-to-use and accurate cross-line laser for interior jobsites up to 30'.



SURFACE LEVELS

The latest advancement in lasertool technology is the new GSL 2 Surface Level from Bosch. This first-of-its-kind laser continuously checks floor levels and flatness. It works by projecting two lasers very closely together across the floor. Rotate the unit on its base. casting the lasers across the floor all around the room. Wherever there is a bump or recess in the floor, the beams will separate into two distinct lines, enabling you to mark the problem areas for re-work. Furthermore, when you reach a problem area of the floor, you can align the lasers with the





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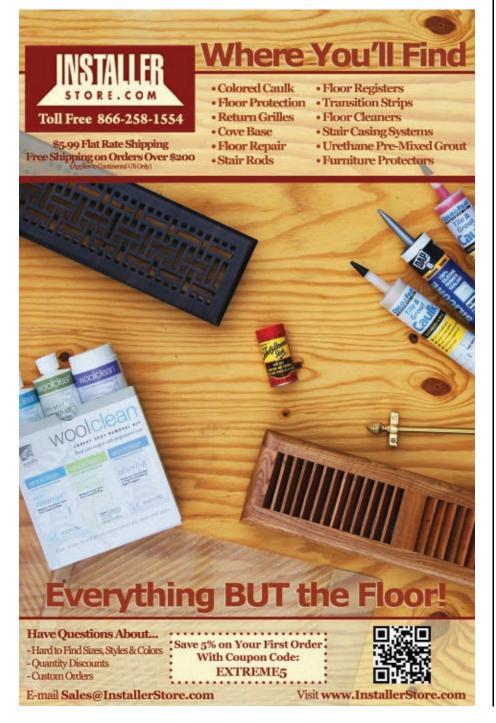
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accessory target plate to determine the height deviation at the uneven spot. The GSL 2 requires just one person to operate and eliminates the need for multiple floor spot checks that can kill time and productivity.

LASER MEASURING DEVICES

Among the *EHT* staff's favorite tool innovations of the last decade is the advent of the laser measuring devices that are suited for the light-duty contractor and DIY'er.





Laser measuring devices, such as the Leica DISTO 210, can instantly take an accurate measurement at the push of a button.

These tools are also called distance-meters, ranger finders or laser "tape" measures, depending on manufacturer (or construction crew). The tools work similarly to a conventional tape measure but utilize a laser beam instead of metal tape. Once you have the laser aimed, just press a button and the device calculates the distance and displays it on screen. The measurement is taken with precision laser optics that accurately measure the distance of the beam that hits a target object. If there's no wall, post or other object at the end of your measurement, you'll need to set up a target where the laser beam can reflect.

These measuring devices have a multitude of uses. They're quicker than standard tapes. They can measure high ceilings and other hard-to-reach spaces without a second person or a ladder. Plus, they eliminate mistakes associated with a twisted or sagging metal tape.

Back in 1993, the Leica DISTO made its debut as the original laser measurer. Today, the entry-level versions of these laser tools can measure with an accuracy of ± 1.0 mm at the push of a button. Designed especially for indoor

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applications, some models have a range up to 230 ft. (even greater with the high-end contractor models). Standard features include shortcut keys for addition, subtraction, and calculation of area and volume. Look for a range finder with a multifunction end-piece; whether measuring from corners, slots or edges, the tool detects the end-piece automatically and figures it into the measurement. Available from Leica, Bosch, DeWalt and others, the tools are compact and lightweight enough to fit in your pocket, and the measurement results are clearly shown on a digital screen, some of which are even backlit for reading in the dark.

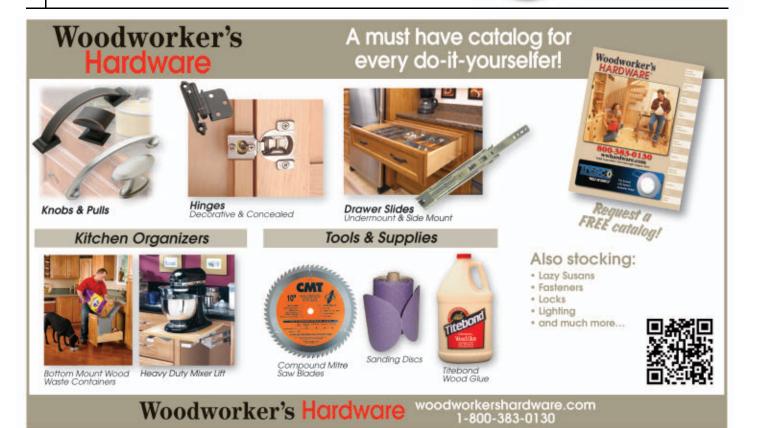
LASER-SITED THERMOMETER/SCANNER

For a home energy audit, consider using a laser-targeted thermometer. These handheld laser-sighted tools can detect surface temperatures to indicate energy loss around doors and windows, insulation, ductwork and other areas throughout the home. The new Infra Red Thermometer/Scanner (IRTC50) from General Tools & Instruments allows users to acquire a set-point temperature and determine whether subsequent readings are within or outside selectable ranges from that set point. As subsequent readings are taken, tri-color light and buzzer alarms

indicate if those readings are within, above or below the selected range. With precision laser targeting, this gun-style, point-and-shoot instrument easily scans and measures surface temperatures without requiring direct contact to inaccessible or dangerous objects.



Conduct a home energy audit with a laser-targeted thermometer/scanner. The IRTC50 from General Tools & Instruments can perform a progressive scan over a pre-determined area and check for temperature differentials.



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LASER LEVELS

Laser-equipped hand levels simply enhance the functionality of those must-have tools.

The 4-ft. e100 box level from Empire Level offers





The e100 Series of box levels from Empire Level features a digital readout and a laser centerline that projects from the end of the tool.

hi-tech features such as a digital readout and a laser centerline that projects from the end of the tool. The digital component reads slope, pitch and inch/foot in virtually any light, even when upsidedown. It also holds its digital memory for later reference, and includes an audio button to hear a beep within one degree of level or plumb. The e100 is made of aircraft aluminum with shockabsorbing end caps, and the pinpoint laser has a range of 50 feet.

For a smaller laser level, the compact CheckPoint Ultra-Mag G3 Torpedo Level has a four-vial system, including 90-, 45-, 30and 0-degree vials with oversized view ports that can be seen on all sides simultaneously. The level's V-groove edge allows it to straddle almost any pipe up to 10 inches in diameter, and four large rareearth magnets provide exceptional holding power to ferrous metals. You can enhance the G3 with the addition of the Ultra Mag Laser Base. It broadcasts a Class Il pinpoint laser beam that is three-axis aligned to be accurate up to a 1/4-in. over 100 feet. Just like the G3 level, it features the V-groove system and rare-earth



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magnets that let you set the Laser Base on almost any pipe. At only 8-1/2 inches, this laser/level combo easily fits inside most toolboxes.

ROTARY LASERS

Rotary lasers offer 360-degree detection by spinning a projected laser around the jobsite in a dead-level pattern. For commercial-grade construction, rotary laser levels are considered indispensable for foundation leveling and grading work. For builders and remodelers, rotary lasers are ideal for framing a building, installing electrical outlets, adding a chair rail, or hanging a drop ceiling. The 360-degree elevation site line can guide your project whether you're digging down or building up.



The CheckPoint Ultra-Mag G3 torpedo level with Ultra Mag Laser Base broadcasts a Class II pinpoint laser beam that is accurate up to a 1/4" over 100'.





GREEN LASER TECHNOLOGY

Green lasers are now gaining ground in a market ruled by red. 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.

So, why aren't all lasers green? The color of a laser is determined by its diode, and red diodes are simpler and less expensive to manufacture. Green laser levels have been around for years for commercial industry, but only on very expensive laser tools (\$3,000 and above). In 2005, Johnson Level developed a green laser level with a more affordable price. This technology may still be beyond the price range of many DIY'ers, but expect to see more advances in green laser technology in the future. EHT



Rotary lasers offer 360-degree detection by spinning a projected level laser line around the jobsite. Green lasers, as shown on this rotary laser from Johnson Level, are 400 percent brighter than a traditional red laser for better visibility in low-light conditions.





Fix a Leaky Shower Faucet



By Matt Weber

hen a tub or shower faucet leaks, don't scowl at the spout. That's like blaming the messenger for bad news. The trouble lies behind the handles, which turn valves that govern the flow of water to the spout. It's important to fix these valves as soon as possible because, aside from the irritating drip-drip-drip, a leaky shower faucet can waste a small pond of water every day. The repair is fairly simple, but you'll need a special set of deep-socket wrenches to get the job done. Don't fret over the price, though. The wrenches are available at most hardware stores, and Harbor Freight sells a set for only \$9.99—compare that to the cost of plumber.

STEP-BY-STEP REPAIR

First and foremost, shut off the water supply to the faucet before disassembling the handles.

Modern compression faucets generally have rubber seat washers that seal water from the spout, and the washers can deteriorate over time resulting



Cut off the water supply to the shower.

Don't blame the showerhead for a leaky spout. The problem originates in the valves behind the shower handles.



Pry the decorative cap off the handles.

Remove the handle's retaining nut and pull the handle off the valve stem.



in a leak. To get to the washers, you must remove the handles which are usually fastened with a threaded retaining nut hidden behind a decorative cap.

Begin by prying off the cap with a screwdriver. (In some cases these caps are threaded.) Then unscrew the nut to pull off the handle.

Next, remove the escutcheon. Escutcheons are often held with a retaining nut, but if not then the escutcheon is threaded over the valve stems. If this is the case,





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unscrew the entire escutcheon as one piece. If it won't release, check to see if it's caulked to the wall, and cut the caulk. A strap wrench may help encourage a stubborn one to turn.



Remove the escutcheon. The one shown had internal threads and simply unscrewed for removal.



The bonnet nut that holds the stem in place is recessed behind the wall requiring a special wrench.

Bath and shower faucets have the valves mounted deeply behind the wall. A box-end wrench won't usually reach the bonnet nuts that hold them in place, and a standard socket won't work because the center stem interferes with its



A deep-socket shower valve wrench will fit over the protruding valve stem and reach the bonnet nut for removal.

reach—thus the need for a special deep socket.

Thread the socket over the stem and secure it tightly over the bonnet nut. Unscrew and remove. Pull the stem from the wall to expose the seat washer and screw.





Shown here is the valve stem completely removed.

Remove the worn seat washer and replace with a new one, coating it with heat-proof faucet grease. Make sure to use the correct size and shape of seat washer and press it firmly into the stem's retainer. If the stem is in good

shape, you're ready to reassemble the shower handles and test your faucet.

In some cases, the metal stems may be worn out and require replacement. The valve stems in our project were corroded and pitted around the washer's retainer, contributing to the leak problem. We replaced both stems entirely, which ran roughly \$12.50 each at the hardware store. They slip right into the pipes just like



In this case, not only was the rubber washer deteriorated, but the metal retainer surrounding it was corroded and pitted. We decided to replace the stems completely.





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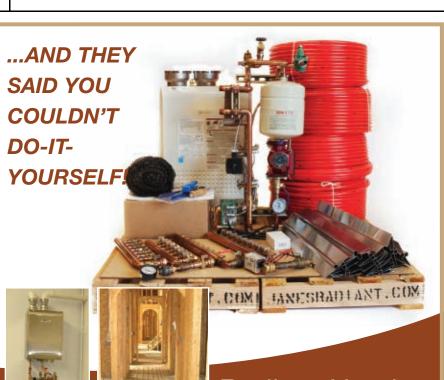
Look for the Drill Doctor at Sears, The Home Depot, Lowes, Northern Tool, Amazon.com, and wherever you buy your tools.

DO IT YOURSELF

the old ones that we pulled out. (Be sure to use the faucet grease.)

Note: When purchasing the stems, take notice of the stem's model numbers which are typically

labeled with either H or C, indicating hot or cold. These indications determine the direction of handle rotation. You will need one of each and be sure to keep them straight during installation.



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In some cases only the washers will require replacement. The washers are held onto the end of the stem with a small screw.



Coat the washer with heat-proof faucet grease and reinstall the stem



If you have a leak at the threaded junction of the plumbing spout and shower head, wrap the threads with one layer of thread-seal tape. Be sure to wrap in a clockwise direction so the showerhead doesn't peel off the tape when you screw it back on.



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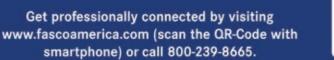
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HANDY TOOLS FOR THE DIY PLUMBER

Shower Valve Socket Wrench Set. A shower-valve set provides the super-deep wrenches needed to remove tub and shower valves. The Pittsburgh set available at Harbor Freight is made of zincplated steel and comes with a chrome-plated turning bar. The wrenches are each double-sided, accommodating the 10 standard







sizes of plumbing fasteners to make virtually any residential shower or bath valve repair. (www.harborfreight.com)

Strap Wrench. A strap wrench wraps a rubber strap snugly around objects of any shape to tighten or loosen them without damaging the surface. They're great tools for a wide range of jobs, from unscrewing stuck plumbing fixtures to removing slippery oil filters. The two-sided Pittsburgh Rubber Strap Wrench Set contains two wrenches, large and small. The large wrench has a 24-by-3/4-in. strap and grips items up to 6-in. diameter. The smaller wrench has a 20-by-1/2-in. strap and grips items up to 4-in. diameter. (www.hardborfreight.com)





Quick-release Pipe Cutter. Pipe cutters can be used to cut copper tubing sizes 3/16 to 1-1/4 inch. The tool cuts pipe with a sharp wheel; just keep tightening its cutting depth with the handle's knob as you rotate it around a pipe until you cut through the pipe wall. Pipe cutters create a smooth, even cut that is ready to form a joint. The Ridgid pipe cutter shown has a quick-release handle for fast adjustments without all the twisting and turning. It also includes a replacement wheel stored inside the handle. This type of plumbing tool cuts all types of copper pipe including L, M and K copper. (www.ridgid.com)

Faucet & Sink Installer. The Ridgid Faucet and Sink Installer (Model No. 2006) hit the market roughly four years ago, and over the years it's become the *EHT* staff's go-to tool for those underthe-sink plumbing jobs that require a number of different wrenches. This multipurpose device can fasten and remove plastic basin nuts, supply line nuts, plus 7/8- and 1-in. hex nuts. It also features two aluminum inserts; one for turning

valve-stop handles, and one for holding strainer baskets in place. The tool's multi-functionality eliminates many of those back-cracking trips between the toolbox and your temporary home beneath the sink. The tool's oblong design also makes it ideal for hard-to-reach applications where clearance for a standard wrench handle is restricted. Highly recommended for the DIY plumber as well as the pro. (www.ridgid.com)

Sani Seal Toilet Gasket. For toilet installation, the Sani Seal toilet gasket eliminates the mess and guesswork of traditional wax gaskets. It has a unique shape that holds flange bolts upright and keeps the gasket in place for a quick, clean and easy toilet placement. The Sani Seal provides a 100-percent seal on all flanges, from cast iron or 4-in. PVC to less than 3 inches. It even works on flanges with inside shelves and off-set outlets. Visit www.sanisealgasket.com.





Installing Wainscot in a Powder Bath

By Larry Walton

You know the place. It's the little room where your wife tells you not to use the good towels that match the decor. It's the one that gets checked before the guests arrive. The powder room, sometimes called the guest bath or half bath, usually contains no bath at all. Located on the first floor or convenient to the living areas, it can be a good candidate for an update.

Wainscot can make a nice change to this room, transforming it into a diminutive oasis of tranquility for a momentary respite from the... You see where a little paneling can take you?

There are few areas in the house where trades can collide like in a bathroom, which can have a big build list in a small area. Trying to figure out the best sequence to schedule carpenters, plumbers, electricians, tile setters, painters and others can be a challenge for a general contractor. Often compromises must be made to get the job done.

The same project for a homeowner can be much easier to schedule, since you will wear the tool belt (or coveralls) of each of these trades. You can even mix and match partial installations typically done by different trades as the project comes together. For example, you can remove a toilet, do the work that needs to be done under and behind it, then reinstall it before the rest of the room is completed. A real plumber would want to come back to set all of the finish fixtures at once, which could leave you without a pot to... well, you get the idea.





We recently tracked a small powder room remodeling project where the work was done by general contractor and jack-of-all-trades Brian Monroe, who had the flexibility to get it done much like a homeowner project. As you will see in the wainscot project, the sequence of different tasks can be quite fluid on this type of job.

Pushing ahead to get one part done quickly can get in the way of other necessary tasks if you don't give thought to the order of operations and how things will tie together. It might be fun to jump right into wainscot paneling, but it can leave you scratching your head on how to transition to the vanity countertop or how to install baseboard that now protrudes past the face of the casing.

STEP BY STEP

As handy as an indoor toilet can be, it's best to get it out of the way for a wainscot installation. Monroe shuts off and disconnects the water, flushes, removes water from the bowl, disconnects the floor bolts, cuts the caulk, loosens and lifts.

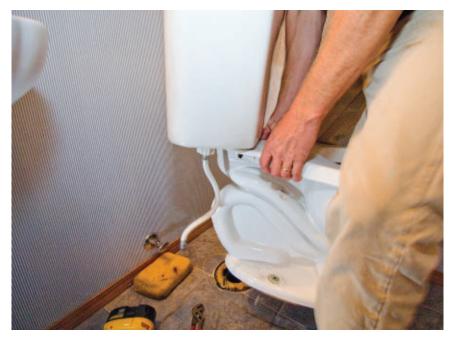


After removing the toilet, trim, outlet covers and pedestal sink, Monroe marked a level line around the room at an elevation he knew would be below the chair rail.

He used a utility knife to cut the wallpaper along the line. Notice that he did not bother to use a straight edge for this step. This is the cover-up principle in operation. Because the wainscot and chair rail will cover it up, there's no need to waste time making a perfectly straight line on the wallpaper cut.



Before installing the panels, Monroe installed the baseboard. The sequence for this operation depends on the baseboard design and the look you want. In this case, the panels were thin enough that they could rest on the baseboard. This created a more desirable reveal (visible area) on the baseboard tops and eliminated an awkward caulk bead where the flutes of the baseboard.























To determine the wainscot elevation, Monroe brought in the new vanity and sink and put them in position. Using the actual fixtures can help eliminate measuring mistakes. He used a short piece of chair rail to test the look compared to the vanity. Would it look best to hold it a couple of inches above the sink or below? In the end, he decided to use the chair rail much like a backsplash.



After cutting the panels to a height that would fall about the middle of the chair rail, Monroe started installing the panels on the powder room walls. There are a number of things that can dictate the sequence for installing paneling like this, including stud locations, placing joints where they are hidden, and making adjustments such as scribing on smaller pieces that are easier to handle.





With the two larger panels already in place, Monroe can easily handle this smaller piece to fit it just right into the corner. Since it's best to sneak up on scribe adjustments by taking off a little material, testing it and taking off a little more, working with small pieces makes this process easier and quicker.





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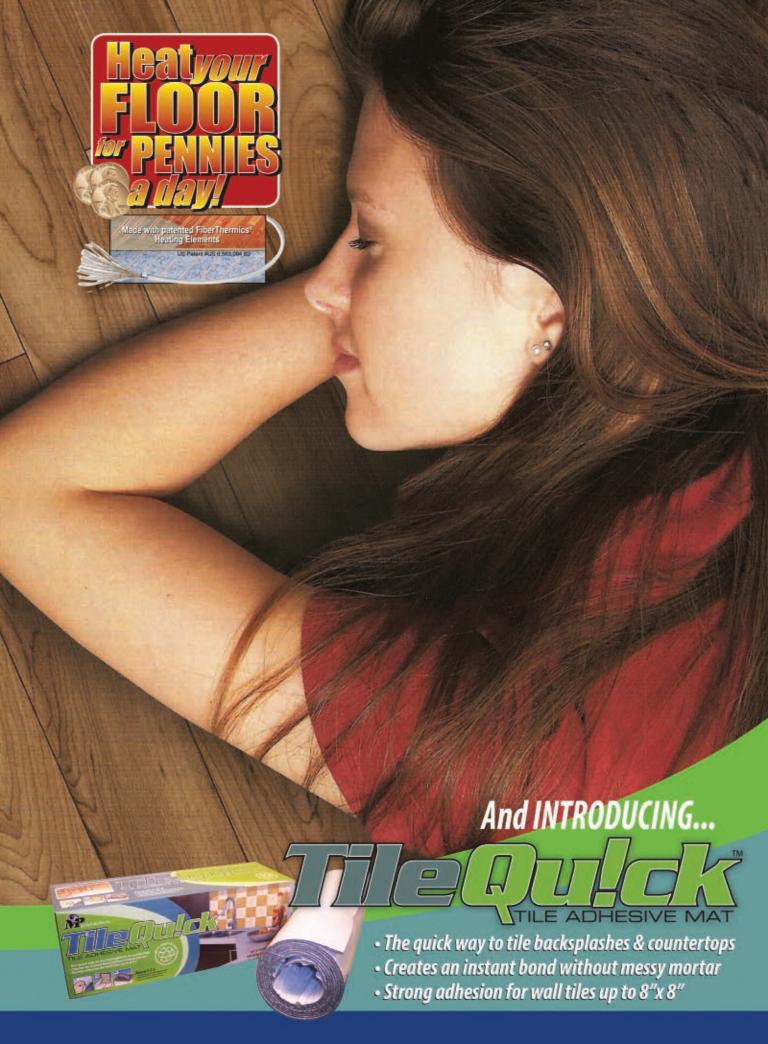
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You can make adjustments to MDF paneling using a variety of tools such as saws, files, sanders, grinders and power planers.

Monroe applies some back bevel

here with his utility knife. A back bevel takes away more material from the non-face side of a panel, leaving less material to remove as the adjustment gets finer.

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In general it's preferable to connect panel sections on studs. If there is any doubt about the fasteners finding good grip in the framing, adding a little adhesive helps. Panel adhesive is formulated for this task, but a caulk with good adhesion can be substituted in a pinch.



Note how Monroe left out the baseboard on the wall that connects to the back of the vanity. He used a scrap of base as a spacer so the baseboard could be cut and fit to the vanity after it was installed.



If a panel joint falls on a wall opening, using the cut-out from the first panel can help make the layout for the second piece much easier.



No one will likely see the opening for plumbing inside the vanity, but making neat holes with a hole saw makes it a clean job just in case someone climbs in there.



Monroe worked toward the corner where the vanity cabinet would soon live. Placing joints in out-of-sight locations is a good strategy. Another good strategy is leaving the water supply stop valves in place and cutting around them. This not possible with a pedestal or wall-mounted sink, but given the opportunity inside a vanity cabinet this can be a real time-saver and allows you to keep the water to the house operational.





After painting the wall and the wainscot panels, Monroe installed the vanity cabinet and put the sink in place so he could determine the exact height of the chair rail. The design included furring

strips behind the top of the chair rail to bring it on plane with the face of the paneling.

After setting the elevation of the chair rail furring strips at the vanity sink, Monroe used a level and

finish nailer to install the furring strips around the room.

With the furring strips installed, chair rail installation is as easy as following the top edge of the furring strips. Monroe handled the





COVER-UP PRINCIPLE

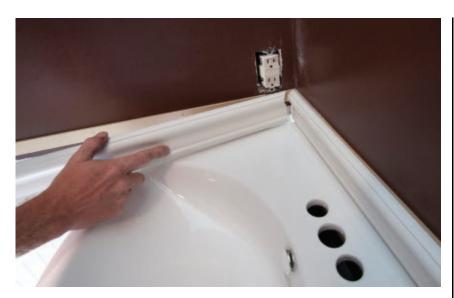
Watch for opportunities to save time and materials by skipping details on areas that will be covered up. Drywall finish is not a factor in areas that will be covered by paneling. Plumbing escutcheons can get a wide berth inside a cabinet where they are out of sight. The top edge of the wainscot panels don't have to match precisely because they will be covered with chair rail.



corner connections with a cope joint.

Although the cope joints will be caulked, it's a good idea to plan the copes so they face away from the door, which is the angle from which they will always be viewed. EHT





TOOLS AND MATERIALS

- · Medium density fiberboard (MDF) panels with bead design
- Panel adhesive
- · Chair rail molding
- · Chair rail furring strips
- · Coping saw
- · Jig saw

- Circular saw
- Table saw
- · Utility knife
- Compressor
- Nail guns
- · Stuff to smear paint



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FIREPLACE MANUEL INSTALLING A CUSTOM FIREPLACE

By Rob Robillard

n the finish carpentry world, fireplace mantels are often the aesthetic showpiece of a room. People use mantels to display family photos, treasured artworks, knickknacks and, more recently, flat screen televisions.

Sage Advice from a

Seasoned Carpenter

STOCK MANTEL OR CUSTOM MADE?

Many fireplaces built in today's homes are a standard size and easily accept a catalog-purchased mantel. These mantels usually come shipped in a box in three pieces. The three pieces are easily assembled with twist cam locks and a screwdriver. This mantel is then nailed to mounting boards that you fasten to the wall.

In some situations a catalog mantel will not fit. In these non-conforming situations special attention is needed. Custom mantels are generally more expensive. Many companies that make stock mantels will also modify their product and make you a custom-sized mantel based on the styles they offer. These mantels typically cost twice as much and take approximately 4 to 6 weeks to deliver.



Mantels come in many styles and sizes. Determine your design and cut the components to size for assembly.

When pursuing this option, your measurements must be absolutely accurate and communicated to the company just as accurately.

As a DIY'er, it's sometimes easier to custom-build your mantel so you can continually check yourself against the existing fireplace.

BUILDING A CUSTOM MANTEL

I was recently asked to build a custom fireplace mantel to cover up a painted brick fireplace with a wood top shelf. The existing fireplace brick was corbelled out to create a 6-in. shelf, and the wood shelf projected additional depth to that.

Many times my solution is to order a standard fireplace mantel from a manufacturer and simply install it.

In this case, unfortunately, a standard fireplace mantel would not fit. A few years ago the homeowners finished off the basement where this fireplace is located. At that time the contractor installed 2x4 walls and 1/2-in. wallboard along the perimeter basement

walls. This resulted in the walls that flank the fireplace sticking out 2 to 3 inches past the facing of the brick—an odd situation that required a custom-made mantel.

INSTALLING FIREPLACE FACING MATERIAL

Material immediately surrounding a fireplace must be non-combustible. Materials such as brick, tile, marble, granite and slate are all acceptable. Typically mortar or thin-set is used to install these materials to the face of the fireplace.

Prior to constructing the new mantel, we had a local granite shop install a slab of black granite for the hearth and a brick veneer wall. The result was a dramatic facelift.

IRC CODE

In the 2009 Edition of the IRC (International Residential Code) Section R1001.11 Exception 4: "Exposed combustible mantels or trim may be placed directly on the masonry fireplace front surrounding the fireplace opening providing

such combustible materials are not placed within 6 in. of a fire-place opening. Combustible materials within 12 in. of a fireplace opening shall not project more than 1/8 in. for each 1-in. distance from such opening."

Note that state and local building codes and ordinances can vary from the IRC or may use standards from older versions of the same code. Check your local building authority first when installing fireplace facing material. Ask about the mantel opening and hearth extensions in order to be compliant with local building codes on fireplace combustible materials.

MEASURING FOR THE MANTEL

In my situation, with the walls built out past the brick facing, there were many things to consider. The fireplace top also meant I had to deal with the brick corbelling along the top.

In my opinion, the best way to build a fireplace mantel is to use a story pole, take good measurements and snap a few pictures. A story pole is a length of narrow board, often a 1x2. It was used long before tape measures were available and was usually cut to the height of a floor or a "story." It



Once ripped, I ran the stock through the edge joiner and started working on the lengths.

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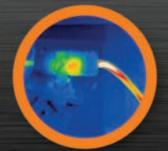
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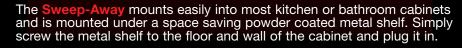


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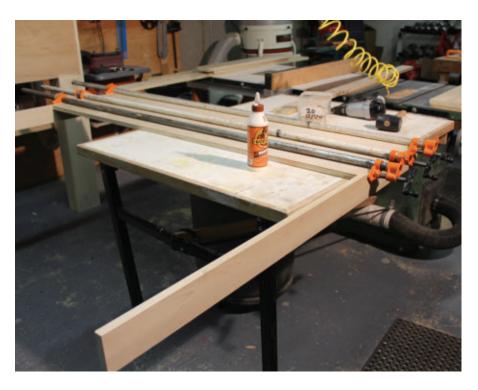
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is a layout tool for measuring, marking and transferring accurate measurements. It eliminates the tape measure and, once marked, can be used throughout the project to continually check your progress.

I used the story pole to mark and locate all of the important measurements for the soon-tobe-built mantel. Make note of measurements such as depth, height, width, build-outs, recesses, etc. I use all four sides of the

A mantel is basically a hollow box with hollow legs. The components were joined with wood biscuits and glue then secured with a variety of clamps.





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story pole to record measurements and label each side appropriately.

MANTEL DIMENSIONS

Opening height: The opening height of the mantel is determined

by measuring the height of the fireplace facing material and subtracting 1/2 in. from that height to allow the mantel to overlap the facing material (granite).

Opening width: The mantel

Prior remodeling resulted in the walls sticking out 2 to 3" past the facing of the brick—an odd situation that required a custom-made mantel. The edges of the mantel legs were sized to accommodate this obstacle.



opening width is determined by measuring the width of the fireplace facing material and subtracting 1 inch (1/2 in. for each side).

Depth of Return: This measurement ensures that your new mantel will cover your protruding fireplace facing materials. Fireplaces have facings of brick, tile, marble, granite or slate. You want your mantel to be installed flush to the wall and to cover this facing material. Measure the distance this facing material sticks out from the wall. Add 1/4-in. to the thickness of the protruding facing materials when figuring your sides

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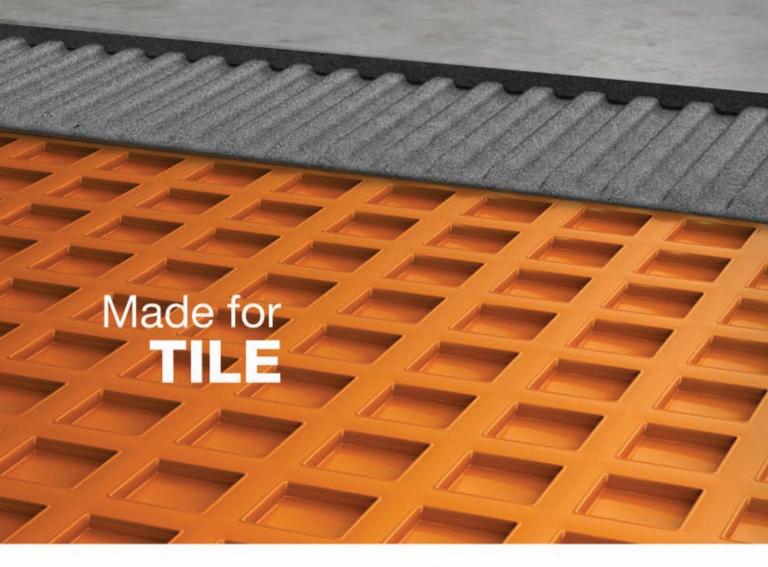


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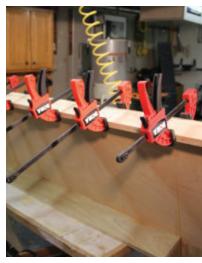


on the fireplace opening side to allow the mantel to completely cover the fireplace facing material. On this installation the brick corbelling protruded past my fireplace facing materials. I used the corbelling as my measurement.

Shelf width and depth: For my project the moldings that we were using determined the width. I

used a scrap piece of molding to determine the overall width of the molding returns, and then added for an overhang.

Make sure you have the room for the shelf length. Sometimes the shelf length can be limited due to limiting factors such as situations with flanking bookcases, windows or doors.



Once the main box is assembled, fill all seams with putty and sand the surface smooth.

















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This mantel was decorated with a variety of compound mouldings for a classic look.

CUT COMPONENTS TO SIZE

This mantel was going to be painted, so I used furniture-grade Birch plywood and solid poplar wood. I like poplar because it's reasonably priced, relatively knot-free and easy to work with.

I start by figuring out what widths I need for stock and rip all of the parts at one time. Once ripped, I then run everything through the edge joiner and start working on the lengths.

CONSTRUCTING THE MANTEL FRAME

A mantel is basically a hollow box with hollow legs. There is a top shelf, top face and two legs with sides. In this situation I needed my top face to cover the brick corbelling and overlap the granite facing.

The first measurement you need is the inside width X height of the mantel, and then the overall width and height. (Follow your local code for fireplace combustible clearances.)

I needed to make sure the mantel would cover all of the brick and fit tight to the wall. In my situation the outer leg-side edges were going to be shorter than the inside leg-side edges. This was because the plaster walls were protruding farther than the granite face.

Using the story pole to get my measurements, I began to assemble the mantel box. The large top face and then the two face legs get assembled first. To do this I used a biscuit jointer with biscuits and glue, which make these butt joints strong and easy to align.











Clamping the legs requires long pipe clamps. I have a limited amount of long pipe clamps, and in these situations I join two smaller pipes together with a pipe coupler.

TIP: When I need to clamp long parts together, I use a double-threaded union to join two clamps. I keep 3/4-in. diameter pipe clamps (2-, 3- and 5-ft.) in my shop and join them with the threaded union. This trick saves me from purchasing long clamps and then having to store them in my small shop.

Once on site I had to remove the old mantel shelf nailer. I cut it back with a recip saw and used a cold chisel and 3-lb. hammer to break off 3" of the top corbelled brick.











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The clamping process takes a while, and the glue's drying time slows the project. Once the face parts are clamped together I try to move onto something else. Otherwise, I have to walk away until the clamping process has dried.

On parts that were extremely wide, like the mantel's top face, or on areas where the edges will

be hidden, I use birch plywood. The plywood is more dimensionally stable and saves me from gluing narrow boards together to get a larger sized board.

Once dry, I rough-sand the glue joints and then add the outer and inner side panels. These are the sides that will fit tightly to the wall and the granite.

I purposely leave the inner panels narrower so they will not contact the granite surround. There is no need for this wood to be tight since I will later be adding a thin trim stock to this area. By leaving it shy of the granite, I ensure that it will not be in the way of getting the outer side trim boards to fit tight to the wall.

Add the outer and inner side panels using biscuits and glue. Very few nails are used. I sometimes use a brad nailer to hold boards in place until I can clamp them.

Assembling a mantel with tight seams and without nails requires a lot of clamps. The mantel side panels created a "U" shaped hollow leg. To keep these legs square and in place during clamping, I cut and inserted dry "clamp blocks" the exact width of the inside hollow. I removed these blocks when I removed the clamps.

After the mantel box was constructed, I then added a 6-in.



To fit the mantel tightly to the uneven wall, I had to scribe and plane off some of the wood at the back.



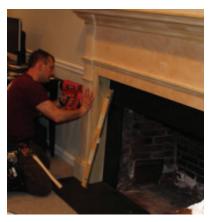
vertical board on top of each leg to give the legs depth as well as to provide some outside and inside miters for the molding. The plinth blocks were added on top of these boards at the floor level.

TIP: Remember that it's extremely important to continually refer to your story pole as you start assembling each part of the mantel.

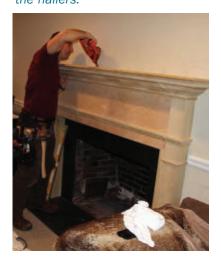
BUILDING THE MANTEL SHELF

I consider the next step to be the fun part.

The designer on this project gave me a photo of a fireplace mantel she liked. I placed the photo next to my favorite molding



I secured nailing boards to the wall, then drove finish nails through the mantel and into the nailers.



catalog and did my best to match the molding as close as possible.

After buying the molding from a local mill shop I then began to make the mantel shelf.

For this shelf I used Birch plywood and then added a half-round Poplar nosing with mitered corners to the edges of the Birch plywood shelf. This gave me a nice radius



nearly flat.

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nosing and a stable, sturdy, deep Birch plywood top shelf.

This mantel has a large molding and a smaller sub molding, so I needed to make a sub shelf of plywood under the top shelf.

ADDING THE MOLDINGS

Once the rough shelf was attached I began attaching the moldings. Some of them needed to be built out to match other moldings, and this required adding strips of furring behind the molding. Anything that showed was made with Poplar and anything hidden was plywood.

I take time to sand the glue joints and fill any nail holes or imperfections. I attach all of the moldings with glue and brad nails, making sure to apply the glue to every contact edge of every joining piece of wood or molding. This will ensure a seamless, tight fit that will prevent movement as well as help hide the seams when painted.

The spacing of the lower smaller molding was determined by the designer, but we based it on onethird spacing of the larger space.

FILLING IMPERFECTIONS AND SEAMS

I used wood filler to fill all nail holes and then sanded them later. I also used a putty knife to add filler to every glue joint seam. This helps make the seams flush so they disappear when painted.

SANDING

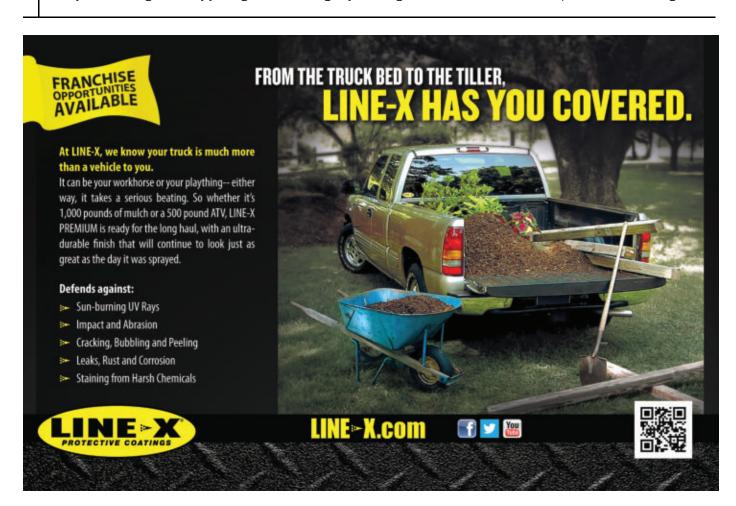
Sanding is a constant process, and I find myself doing it every time I remove clamps or just prior to adding any moldings. It's a lot easier to sand flat surfaces that it is to sand around moldings.

ADDING PLINTH BLOCKS AND BASE MOLDING

If I had my druthers I would have changed the baseboard trim and baseboard molding in the room so that it would match and wrap around the mantel plinth blocks. Nothing looks better than a room trim that dovetails with the centerpiece mantel. This particular job did not call for that, so I made my plinth blocks to return back into the mantel legs.

FINAL SANDING

I gave the mantel a final sanding with 150-grit sandpaper and checked for any imperfections, nicks, scratches, etc. The painter will be responsible for sanding



further and also for sanding between the primer and top finish coats.

INSTALLING THE MANTEL:

Once on site and ready to go, one of the first things I had to do was to remove the old wood shelf nailer. The nailer was a 2x6 or 2x8 that was installed between two wall studs and buried behind the wallboard.

I used a reciprocating saw to cut this slightly back from the wall's surface. We used a HEPA vacuum as we cut this board to keep the sawdust from flying all over the

After this was complete I used a cold chisel and 3-pound hammer to break off 3 inches of the top corbelled brick. This was necessary to allow the mantel box to

completely cover the bricks and fit tightly to the wall. (Place cardboard beneath your drop cloth to protect the hearth and floor from falling brick pieces.)

CUTTING THE EXISTING TRIM WORK

In this installation I needed to cut out portions of the wall's chairrail molding and baseboard molding so the mantel would fit flush to the wall.

I pushed the mantel up against these moldings, taking time to center the mantel over the fire-place granite. Note: Make sure that you have an equal amount of granite showing on both sides. Also make sure you are within your code for combustible setbacks.

Once centered, I marked the chair rail and baseboard moldings

with a utility knife and then used a multi-tool to make the cuts. I purposely made a slight back cut on the moldings to create less friction when sliding the mantel past them. The back cuts also allow me to make micro adjustments with a utility knife if necessary.

SCRIBING

When measuring for this mantel I checked the walls and hearth for plumb and level.

I decided to allow 1/4 in. for scribing to the walls as needed. I also made one leg slightly longer than the other to compensate for an out-of-level hearth. It turned out that I did not need to scribe to the wall but I did have to handplane some off the inner side trim edge that surrounded and covered the granite.





Note: when removing a large amount of wood to scribe to the wall, I use a jig saw to cut close to the scribe line and then a hand plane to get to the line. For small material removal when scribing I use a sharp block plane and create a slight back bevel when planing.



I installed thin trim pieces where the mantel meets the firebox.



INSTALL THE MOUNTING BOARD

When installing mantels I always bring extra material for mounting-board nailers and also for those *Oops!* situations. You never know when you might need to make an emergency repair or adjustment.

To secure the mantel to the wall, I installed two vertical layers of 3/4-in. plywood on both sides of the mantel legs. These nailers were attached to the wall studs with 2-1/2-in. screws.

On some situations I've had to install these mounting boards to the brick facing with Tapcon screws and construction adhesive.

TIP: If your mounting board falls on an area between studs, you can secure a block low at the floor level and fasten it to the wall's shoe plate. Then use molly bolts or toggle bolts and construction adhesive in the upper section.

The nailers fit into the mantel leg hollows and allowed me to install finish nails through the sides of the mantel. The top shelf did not require a nailer since we had cut back the old nailer.

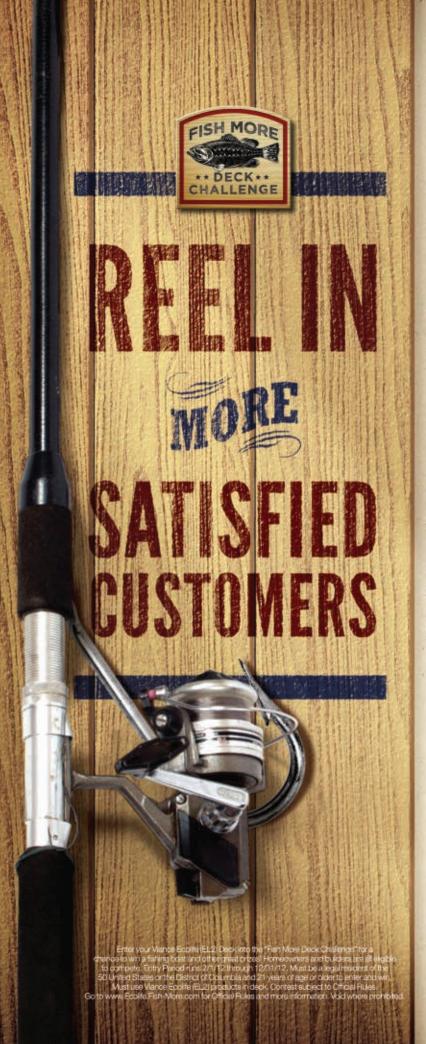
SECURING THE MANTEL TO THE WALL

I used finish nails to secure the mantel to the wall.

I shot finish nails through the legs on both sides and hand nailed the top shelf. On the top shelf I predrilled and installed 16-penny finish nails at an angle (toe-nailed) through the shelf and into the nailer that I had cut flush with the wall.

TIP: Make sure to keep your mantel tight to the wall when nailing. If hand nailing you may want to drill pilot holes before nailing to prevent damaging the mantel when nailing into position.

When finished there were eight finish nails in each mantel leg (inner and outer sides) and six



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16-penny finish nails toe-nailed along the top shelf.

I filled and sanded all of the exposed finish nails.

INSTALLING THE INSIDE SCRIBE MOLDING

The inside scribe molding is used to cover the gap between the mantel legs and the fireplace facing material of brick, tile, marble, granite or slate.

In the shop I routed a 3/8-in. radius to the edge of a 3/4-by-6-in. wide board and then used my Delta thickness planer to bring the board's thickness down to just about 3/8-in. of an inch thick.

This molding board was installed along the inner edge

of the mantel opening and was scribed to fit tightly to the granite fireplace surround. The corners are mitered to allow a continuous 3/8-in. bead on all three sides of the mantel face.

I secured this scribed board with finish nails and then filled and sanded them.

FINAL SANDING AND CAULKING

I always fill my nail holes and sand them before walking away from a mantel project. Once done I dust and HEPA vacuum the project and then install caulking along the wall and shelf seams. This small step is important and helps make that mantel-to-wall connection

look perfect. The goal is for the finished mantel to look like it was always there! **EHT**

Editor's Note: Robert Robillard is editor of A Concord Carpenter. Visit www.aconcordcarpenter.com.



The top was fastened with finish nails toe-nailed into the old nailer.

NEW FIREPLACE OPTIONS



The 616 Gas Insert from Travis

The 616 Gas Insert showcases fire through 616 sq. in. of viewing area coupled with a big heat output. The look of a traditional hearth is achieved by having the ceramic glass go almost all the way to the bottom of the unit. Heat out is 39,000 to 14,835 BTU on natural gas, touting up to a 70 percent turndown ratio. This gas insert converts an existing masonry or metal fireplace into an efficient heater while preserving the charm of a traditional fireplace. The 616 comes fully loaded with fans, accent lights, 3-stage burner and Greensmart Remote. It offers the flexibility of three different media (traditional logs, Fyre-stones or Driftwood Fire Art) to appeal to a wide variety of homeowners. (www.fireplacex.com)

LUX Fireplace from Heat & Glo

Heat & Glo recently introduced the LUX "ultramodern" direct-vent gas fireplace. The LUX disguises powerful, high-efficiency performance behind a clean, artistic appearance. Instead of traditional logs and embers, colorful flames rise through colorful glass and sculpted stainless steel. A reflective black interior multiplies the fire and radiates the flames, while anti-reflective glass reduces glare by 89 percent and appears nearly invisible. (www.heatnglo.com)



Large Flush Wood Hybrid-Fyre

Travis industries' Large Flush Wood Hybrid-Fyre combines conventional wood combustion and catalytic technology for "ultra-green" burning technology. Primary combustion occurs in the firebox as secondary tubes re-burn the gases before they leave the firebox. Those same gases are then passed through the catalytic booster further reducing emissions. Because of this hybrid technology, virtually no smoke exits the appliance. The insert runs off of wood, the most inexpensive fuel as well as a renewable resource. The unit is capable of heating up to 2,500 sq feet, with up to a 10 hour burn time. (www.travisproducts.com)









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Choosing a Wood-burning Appliance



By Paul Williams

hen selecting your new stove you have several options. It's not just looks but also design, function, fuel and operation. Wood burning or now the politically correct expression, bio-mass burning, can also include wood pellets, corn and any numerous types of agriculture products. To start, we'll go over some common designs.

Inserts or Builder Boxes. These units will increase the efficiency of an older masonry fireplace or can provide the base for construction of a modern fireplace. Inserts will usually have doors and a blower system that greatly improves the operation and efficiency. They promote cleaner burning and use far less fuel than a traditional fireplace. Thereby saving money and

helping the environment. Builder boxes are found in new construction and can offer the flexibility of burning wood or installing gas logs.

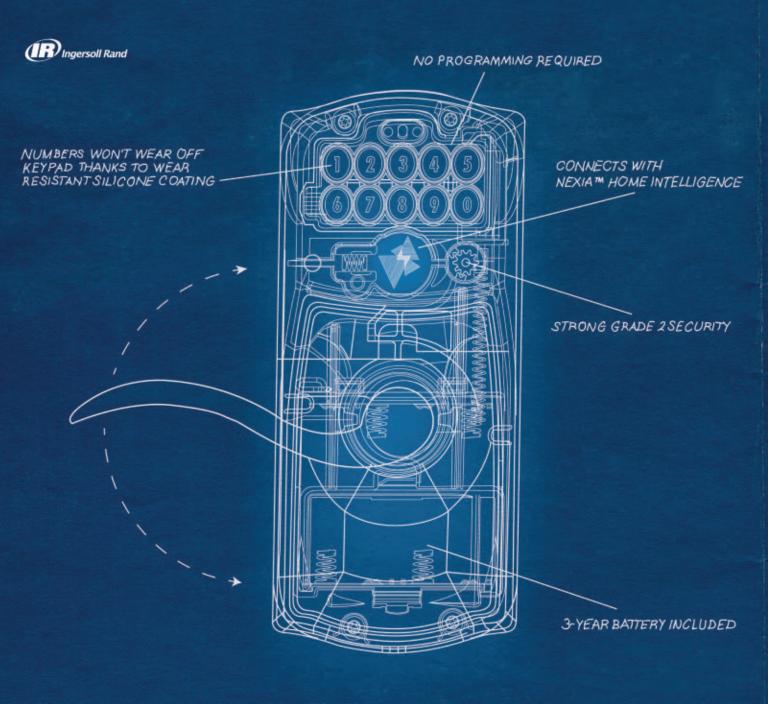
Circulating Stoves. These stoves are double-walled units with two layers of construction: the inner firebox, which is usually lined with firebrick and cast iron, and an outer shell, usually decorative steel that promotes circulating air around the firebox. These create a chimney effect by pulling the cooler air off the floor and often times they offer a blower option that enhances that effect. The major advantage of the "circulator" is that during operation the outer shell or cabinet does not get as hot as a traditional appliance. This makes it safer when used in hightraffic areas such as a game room or when small kids are around. The cooler cabinet provides a burn-free environment. Some models even offer the ability to use the inner firebox as a cooking surface, making it perfect for those times when you experience a power outage.

Radiant Stoves. This type of appliance is designed to use radiant energy as the primary source of heat. They are usually the more decorative variety and include glass fronts that create the ambience and focal point of a room. These stoves will often use all three forms of energy to heat the area—radiant, conduction and convection. Many will also offer a blower option to help distribution and reduce hot spots. Common construction can be welded steel, cast iron and even masonry.

Warm Air Furnaces. When looking for a whole house heating system, warm air furnaces provide the ability to add supplemental heating to your entire home. They connect and direct heat through ductwork. Just like a traditional central furnace, they will require both a hot air supply and cold air return. Often these are installed in conjunction



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with an existing central furnace. This provides thermostat convenience with even heat distribution and tremendous savings opportunity, especially when compared with today's volatile energy prices.

FEATURES TO LOOK FOR

First, check with your insurance company and local codes to see what is approved in your area.

Some areas may have restrictions on wood burning and some may restrict the type that can be used. For example, a certain emission limit may be required, or a specific certification.

EPA Approval. These units are the most efficient, burn less fuel and save money. They will have high combustion efficiencies and promote clean burning with little to



The 2500 model from U.S. Stove has an air-wash feature that keeps the glass clean.

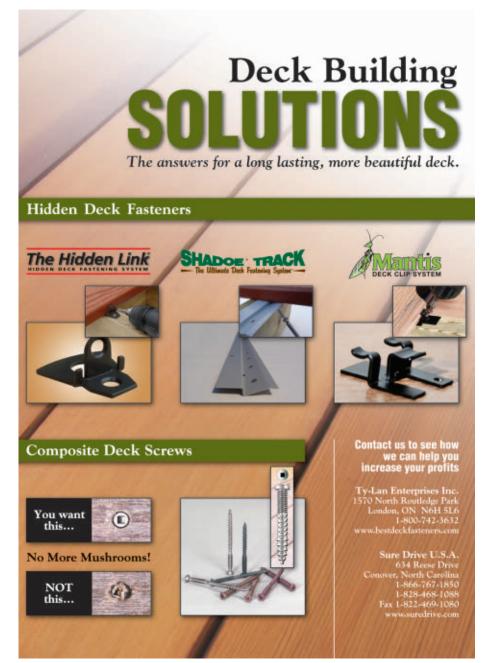
no visible smoke. Your neighbors will appreciate that.

Tax and Stove Change-out Incentives. Check your area for incentives that will aid in replacing older, dirtier stoves. These programs are becoming more popular and offer the biggest bang for the buck when cleaning the air. Today, modern stoves are available that burn 90 to 95 percent cleaner than older models.

Proper Sizing. Often, people select models that are much too large for their installation. If the



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MATERIAL MARKET

stove is too large it won't burn as cleanly or efficiently, and require more maintenance.

Customer Support. Make sure the company that manufacturers the product is reliable and can back their products with customer support. Communication through the dealer or directly with the



Inserts and builder boxes increase fireplace efficiency.

manufacturer can be invaluable when needed.

STOVE PLACEMENT

Stove placement is usually determined by location of an existing chimney flue or by the new chimney location. The ideal chimney location is the center of the home. Chimneys operate best when well insulated. The less exposed to the outside elements. the better. When attaching the appliance, a straighter connection is always better. Connection to the chimney is usually made with single-wall black stove pipe, and it should be the same size as the flue of the wood-burning stove. Never use long horizontal runs, and if a short run is required (less than 4 ft.) include a 1/4-in. rise for each foot from the stove to the

chimney. Make sure each section of stove pipe is sealed and that connection to the chimney is unobstructed.

Note: Masonry chimneys will often include cast iron cleanout doors. These have been found to be problematic and a source for leaks. This can cause drafting problems and increase maintenance. Make sure all gaskets are in good shape and properly sealed.

CLEARANCES

To reduce the possibility of fire, the National Fire Protection Association (NFPA) has recommended certain minimum clearances between wood stoves and combustible materials or furniture. However, today's modern appliances have been rigorously tested and all safety clearances will be





included in the owner's manual. Always follow the manufacturer's recommendations.

All floors under wood stoves (except concrete, masonry and approved non-combustible construction) must be protected from heat and coals that may fall out. This protection should extend under the stove and outward on all sides. Check the manual for specific requirements. **EHT**

Editor's Note: Paul Williams is national sales manager for U.S. Stove. For more information, visit www.usstove.com.

.....



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Winter Worthy

Making Machines Ready for the Long, Cold Winter



By Larry Walton

hose who attended the Olympic games in London may remember it differently, but we had a hot summer in the United States, which makes it hard to believe a cold winter is just around the corner.

Winter can be tough on a vehicle. Seemingly unlimited supplies of rain, fog and snow are matched with limited daylight hours, traction shortages and reduced visibility. Tire pressures drop, oil gets thick, salt accumulates and roads get slippery. We need our wipers to wipe, our lights to light and our antifreeze to function.

In short, most of us need to get our vehicles ready for winter. All of the regular maintenance procedures apply. General maintenance is very important when a disabled vehicle can be the beginnings of a survival adventure.

Make sure, therefore, that your oil changes, tire pressures, air filter, fuel filter and coolant levels are current. Depending on your mileage, you may be due for some of the longer term items such as injectors, plugs, igniters, shocks, transmission service and whatever else your owner's manual indicates for the current stage of your vehicle's life.

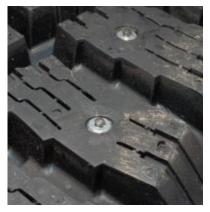
TRACTION

But winter adds some twists to the maintenance plot. Lower temperatures, for example, drop air pressure readings at a time when tire condition and traction are critical. In addition to making sure pressures and tread depths are in spec, consider switching to a true winter tire.

Dwellers of the North already know that studded tires are the way to go when conditions get really slippery. Last winter I tested a set of studded Nokian Hakkapeliitta LT tires, which have a well-deserved reputation as one of the best snow tires in the world. The tires preformed quite well on the packed snow and ice we encounter in the Pacific Northwest.

Studless snow tires, such as Bridgestone's Blizzak, are another option, especially for those who only occasionally see snow and ice. These DOT-approved snow tires are made of softer tread compounds and have lots of siping for added grip in ice and snow. Studless tires are better on dry pavement and are easier on the road surface than are studs.

Four-wheel drive also enhances traction and is great to have for



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most winter road conditions. Make sure all the drivers in the family understand the operation of the transfer case, hubs and switches. Provide the proper cautions about diff lockers, if your rig is so equipped. Test your four-wheel drive system ahead of time if it's rarely used.

Another traction option is tire chains. Be sure to find a set designed to work on your tires without causing tire damage. Any drivers in the family that may need to use the chains should have practice putting them on and properly adjusting chain tension.

GETTING STARTED

Batteries need more attention in winter. They don't like temperature extremes. When cold they can produce less power at the very time when the engine is harder to start. Diesels are particularly hard to start when cold. So make sure your battery is in good shape before winter sets in.

Also hard to start is any vehicle with a cracked block from frozen coolant. Check and/or change the engine coolant in your vehicle to make sure it has the proper antifreeze levels.

One of the reasons that engines are harder to start in cold temperatures is because oil gets thicker when temperature drops. You can counteract this tendency by using oil with lower viscosity grades. Check your owner's manual for the proper range to match the temperatures.

Diesel owners may want to consider switching to a synthetic motor oil such as Rotella T, which improves cold-weather performance while providing excellent high-temperature wear protection. Exceptional cold-weather flow properties really help with cold starts.



Using a lower viscosity grade of oil can help your engine start easier in cold weather.

WINTER EYES

Wiper blades have about a oneyear life expectancy. UV exposure, being frozen to the windshield and wiping off mud splatters all speed the degradation of the blades. An aftermarket frame and blade make for quick and easy installation. Rain-X Latitude, for example, can easily be installed on wiper arms with J-hook, side pins, bayonet or pin-and-holder connectors.

Don't forget the wiper fluid, which needs to be temperature rated to levels you expect to encounter in your travels.



De-icer windshield washer fluid is rated not only to remain liquid in the reservoir but also helps to remove light ice and frost while preventing refreezing.



Whether winter means more rain or snow, having new, properly functioning wiper blades can make a huge difference in winter driving visibility.

Seeing and being seen is greatly improved through the addition of auxiliary lights. We not only face rain and fog, but the days and nights are longer requiring us to drive more hours in the dark. Adding driving lights and fog lights to your vehicle can make a big difference to improve vision, reaction times and stopping distance.

Check your owner's manual for a section on winter driving. Above all, be prepared. **EHT**

Window treatment products such as Rain-X fill the microscopic pores in the windshield to create a slick barrier that repels rain, sleet and snow. Rain drops bead up and blow away. Application of Rain-X is much like wax. Wipe it on, let it haze and buff off the excess.





PRODUCTS

SHOPBOT DESKTOP CNC TOOL

The ShopBot Desktop is a small-footprint CNC machine for hobbyists, educators, and small and mid-size business owners. It serves as a platform for all kinds of digital fabrication capabilities. Measuring just 3-by-3 ft., the affordable, home-sized ShopBot Desktop delivers power, precision and reliability on the order of ShopBot's full-size digital fabrication tools. Perform a wide range of workbench, prototyping and production projects in wood, plastic, foam, soft metals and more. Its platform design allows you to choose add-ons such as a drag knife, rotary indexing head and diamond engraving bit. Coming soon: 3D printing and laser printing capability. The ShopBot Desktop comes in either one of two

basic platforms: the Desktop Package with Router (Porter Cable 2-1/4-hp Router) or the Desktop Package with Industrial Spindle (HSD 1-hp spindle/VFD). Visit www.shopbottools.com.





NIAGARA BIMAX SHOWERHEAD

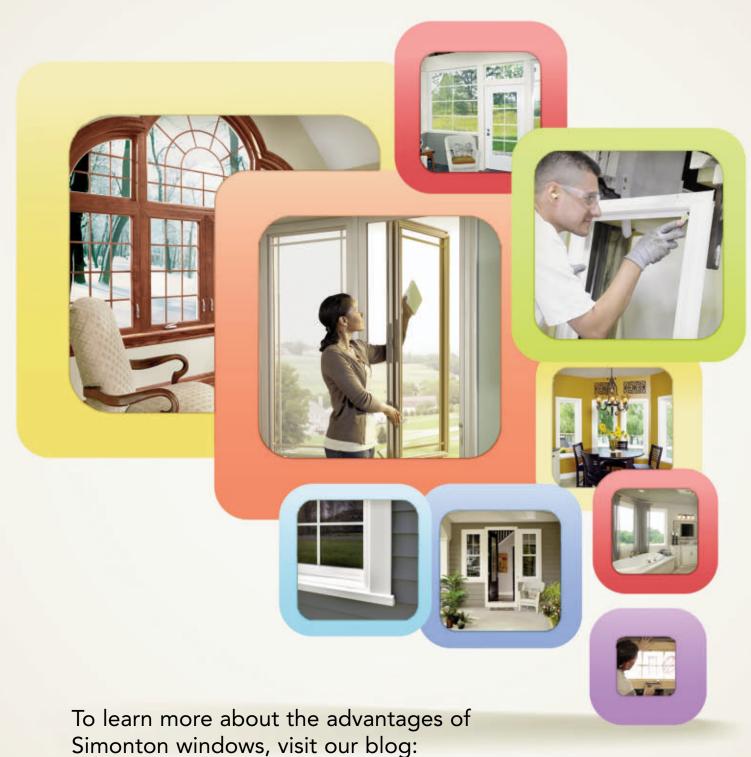
The Niagara high-efficiency, high-power BiMax Showerhead is a unique, two flow-rate showerhead, allowing you to match the flow rate to your task and save more while you shower. Choose from two pressure-compensated flow rate options: 1.0 and 1.5 gallon per minute. This enables you to instantly dial back the water flow to conserve water as you lather up, then increase the flow to rinse yourself clean. The patented non-removable pressure compensator provides a constant output of water regardless of pressure. Select the flow rate with an easy-to-grip turn dial. The showerhead has a corrosion-resistant ABS thermoplastic body and has a large swivel adjustment for directional control. The Niagara BiMax comes with a 10-year warranty. Visit www.niagaraconservation.com.

BUCKET BUDDY

Anyone who has ever worked on a roof knows the danger of tools and materials falling off or even worse, you or your crew falling off because of a tripping hazard. The Bucket Buddy patented rooftop platform system safely keeps all your tools and materials organized on the roof. It securely holds any standard five-gallon bucket and is constructed from high-grade steel and encased in powder coating for long-lasting durability. The Bucket Buddy easily adjusts for use on the roof peak or provides a level surface when used on the pitch. Put two Bucket Buddy HD's together for a level work scaffolding platform. Optional accessories include water cooler holder, roll dispenser and umbrella stand. Visit www.bucketbuddyllc.com.







simonton.extremehowto.com

PRODUCTS

RACOR SECUREHOLD

Most homeowners have a collection of long-handled tools, including brooms, two or three different shovels and rakes. Add a sledge hammer and ax, and you've got a lot of longhandled tools in need of safe storage in your garage or shed. The new Racor SecureHold storage solution is better than a traditonal hook and is the perfect solution to store long handled tools, offering safe storage that protects children, cars and other valuable items. SecureHold is made of rugged steel construction and comes in three different versions: A single tool holder, a double tool holder, and a triple tool holder. It also has a patented retention feature in which the tool handle passes through the steel "spring" opening and then sits in a deep V-groove that holds the tool securely. Both the spring opening and V-groove help prevent the tool from accidently being dislodged from the tool holder. Visit www.RacorStorageSolutions.com.



VALSPAR MAX ANTI-RUST

Valspar MAX Anti-Rust aerosol paint was independently tested against the competition using the industry's ASTM B117 process. After 240 hours of salt-fog exposure, Valspar MAX Anti-Rust was found to provide two times greater corrosion protection than the leading competitor's product. The cans feature a new twist-and-lock cap design, which makes spray painting easier, faster and cleaner. Valspar MAX Anti-Rust is a high-quality enamel for interior and exterior applications. It dries to a rust-resistant finish that withstands moisture, chemicals and abrasion. The fast-drying, smooth finish is excellent for use on vehicles, appliances, piping, wrought iron railings, mailboxes, etc. Visit www.valsparpaint.com.

SIMTEK FENCE

SimTek Fence provides a durable, attractive alternative to standard commercial or residential fencing. Made with proprietary Linear Low Density Polyethylene (LLDPE) and reinforced with galvanized steel, this sturdy commercial-strength fence offers the look and feel of stone and will stand up against the toughest abuse. When compared against vinyl fencing, SimTek walls have a much higher level of impact resistance. Unlike a typical fence, SimTek is also graffiti-resistant. Most paint applied to the walls can be easily removed with a citrusbased cleaner and pressure washer. Additionally, this fence is virtually maintenance-free, requiring no sanding or painting like other residential fencing often does. Visit www.simtekfence.com.



SPYDER PRODUCTS INTRODUCES DOUBLE-SIDED JIG SAW BLADE

Spyder Products' new Double-Sided Jigsaw Blade features durable, steel construction and allows for more extreme, clean cuts on a variety of surfaces. The innovative double-sided blade features cross-ground teeth that create a slimmer design, providing cleaner and more versatile cutting capabilities. Its unique, narrow shaft permits tight radius cuts and 90-degree turns. The double-sided blade comes in two forms: a woodworking blade and a multi-surface blade. The woodworking blade is perfect for use on all hardwood, softwood and wood-based products. With its longer teeth on both sides of the blade, users can turn the blade without limitations as it is cutting. The multi-surface blade is designed for use on laminates, fiberboard, plastics and softwood. The blade's smaller back teeth sand and clean for a smoother look. Visit www.spyderproducts.com.



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Make old and worn concrete look like new.









Little Giant Ladder Systems

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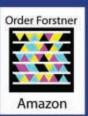














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