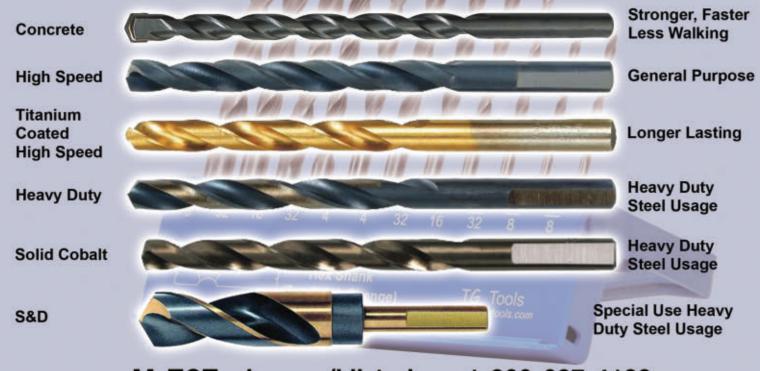




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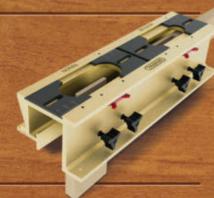




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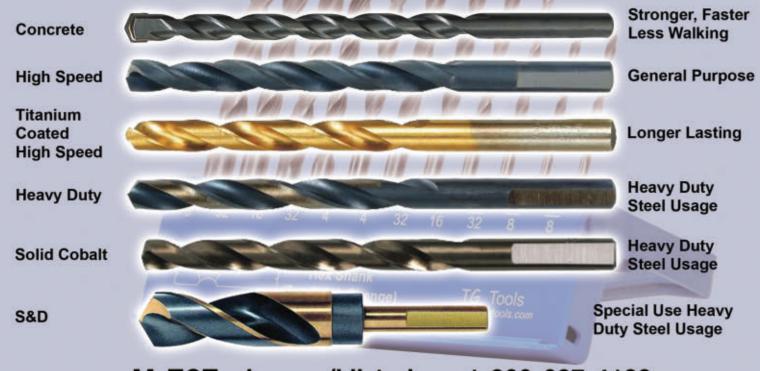
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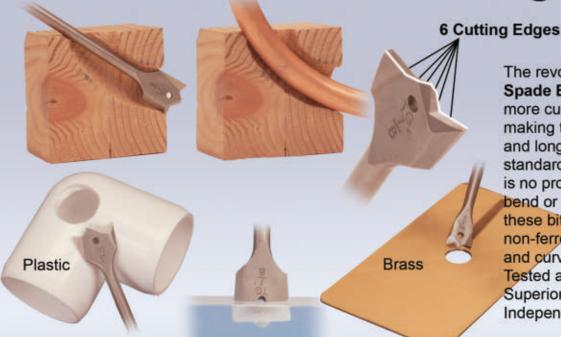
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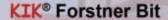
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#### FEATURES

From Pillar to Post Repair a Rotted Structural Porch Column

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**46** New Additions

Stone-walled 56 Installing Mortarless Stone Veneer

#### **EVERY ISSUE**

- From the Editor
- **Advertisers Index**

#### COLUMNS

- 8 Q & A
- 12 **Tool School** Finding Moisture in Materials
- 22 **Do-It-Yourself**

Fix a Sagging Fence Gate

## DEPARTMENTS

64 **Project Next** 

Install Mirror Bypass Doors

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# From The Editor-In-Chief

elcome to the June issue of *Extreme How-To*, which is chock-full of new tool coverage and cool home-improvement stories. From porch post repair to fixing a sagging fence gate, we've got you covered with detailed tips and in-depth instruction.

But we're more than just a print magazine. Use your computer or tablet to explore the digital version of our magazine, where static pages come to life with pop-up videos and hyperlinks to your favorite tool manufacturers and suppliers. Visit extremehowtomag.com to check it out.

And, anytime you're preparing a new home project, first research the topic at our official home page, www.extremehowto.com. You'll find archives of hundreds of free *EHT* stories that focus on jobs both inside and outside the home, complete with professional advice and detailed step-by-step photos to walk you through your next project. Our website offers videos, sweepstakes and additional content you won't find anywhere else.

Plus, I run the show at blog.extremehowto.com, where you should stop and say hello between magazine issues. We have the occasional guest contributor, but it's usually me posting quick tips, product reviews, and small jobs I do around the house that we didn't have room to fit in the print magazine.



We've also got new ideas for the future. If all goes as planned we'll introduce our first book in the not-too-distant future, a DIY Home Manual, to serve as a handy how-to guide for the burgeoning home enthusiast.

Thanks for reading, and we hope to see you online.





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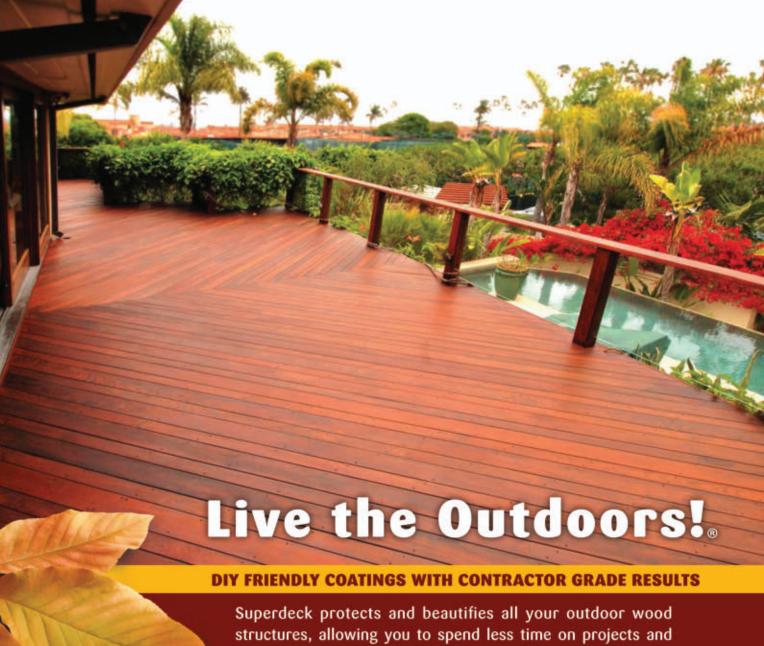
• Antimicrobial copper alloys are the only solid metal "touch surface" materials registered by the U.S. • Environmental Protection Agency to continuously kill more than 99.9 percent of bacteria associated



with the most common hospital infections (MRSA, Staphylococcus aureus, E. coli, etc.). This is why a growing number of hospitals and restaurants are increasingly using copper hardware for frequently touched surfaces such as doorknobs, pulls and handles. Brass and bronze are also antimicrobial copper alloys. Learn more at antimicrobialcopper.com.

• How do I clean artificial stone in my house?

 First, protect the areas around the stone with a drop cloth. Fill two buckets halfway with warm water. Add a little mild dishwashing detergent to one of the buckets. Start at the top and work downward in small areas at a time, using a scrub brush and the soapy water to wash the stone clean. Then, use a damp towel soaked in the clean water to rinse the suds off the stones. You'll need several towels to replace them as they get too dirty. If possible, open doors and windows in the room to ventilate the area, which will help the stone to dry.



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and for fire-retardant materials. Treated wood should not, however, be used for countertops or where it may become a component of food. In fact, the Food and Drug Administration does not recommend using any wood for kitchen countertops or foodcutting boards because knife cuts may allow food particles to become entrapped, creating an unsanitary environment.

• Should I use concrete
• to set a fence post?

.....

 Concrete will certainly work to set a fence post, but you should rest the end of the post first on a bed of crushed gravel to allow drainage at the bottom of the post before you add the concrete. As the post expands and contracts it will loosen from the surrounding concrete and allow water to seep inside. Therefore, the post will need a drainage path so it doesn't sit in standing water. The problem with concrete is that if vou ever need to replace the post, you'll have to deal with the heavy hardened mass buried at its base. An alternative to concrete is to use firmly compacted gravel around the buried post base, which allows ample drainage and is easier to remove if the post ever needs replacing. **EHT** 



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## **Finding Moisture in Materials**

An inexpensive, easy-to-use moisture meter is a valuable tool that every woodworker and DIY homeowner needs to have.



By Michael Morris

ver build something in your shop and have the wood warp or split later on? Or paint exterior siding or interior drywall, then watch the paint peel and flake afterward? Or install flooring materials, only to see your handiwork buckle and heave?

These situations vary widely, but the failures they represent all share the same underlying cause: moisture content in the materials being worked on. Professional woodworkers and building contractors know how to avoid this problem, and DIY'ers should take note. Before any carpentry, painting, drywall, concrete, or other

construction or finishing project, first test the materials with a moisture meter.

Some amount of water is everpresent in wood and most other materials used in construction even when those materials seem adequately dry upon close inspection. And that embedded moisture is forever seeking to find a balance with the moisture in the environment around it.

If the wood you use for furniture or flooring has a higher moisture content than its ambient surroundings, it will eventually dry to a near-compatible level; when the difference is extreme, it can cause General's easy-to-use MMD4E moisture meter offers a good balance between cost and features. This pin-type unit has a large digital display, built-in memory selection for common woods and various building materials, such as concrete block, and a moisture-content measurement range of 5 to 50 percent for wood and 1.5 to 33 percent for other materials.

the wood to shrink and crack as that moisture dissipates. Moisture migrating out of materials also causes paint and other surface finishes to fail, just as moisture emanating out of subflooring can invade the finished flooring laid on top of it, causing the wood to swell and buckle.

Moisture meters are a standard go-to test and measurement tool in many industries, from material handling and storage to gardening and woodworking. As the pros know, "If you can't measure it, you can't manage it." Fortunately, these instruments are also readily available in hardware and home stores at very affordable prices. And they're easy to use—simply hold one against the material you need to test and you'll know instantly whether that material is ready to work or finish, or if it needs to be in an environment where its moisture content can gradually reach equilibrium with its surroundings.

#### **TWO TYPES**

For the average user, there are two basic types of moisture



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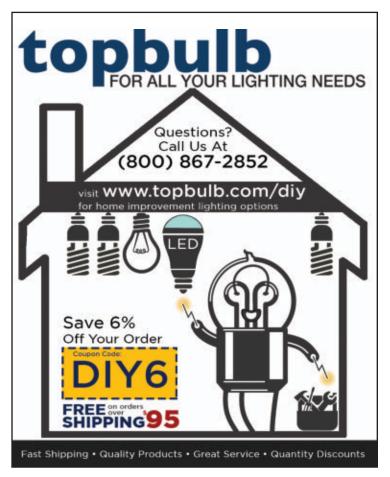
#### TOOL SCHOOL

meters to choose between. Pintype meters have sharp, needlelike pins that are designed to be stuck directly into the wood or material to be tested. Their built-in or wire-connected pins measure electrical resistance, which is affected by the moisture content in the material. Pinless, non-penetrating meters have electrode plates or knobs that are simply placed in contact with the material surface and generate an electrical field to measure relative moisture content. Both types of meters will get the job done, but each type of measurement requires some interpretation by the user.

For example, because different materials have different densities and moisture-retaining properties, many inexpensive meters produce only a measurement code number



The MMD950 from General is a professional-grade meter that can detect moisture up to four inches below a material's surface by means of a non-penetrating spherical contact knob, or be used conventionally for near-surface measurements using remote pin probes connected via a 46-inch plug-in cable. Information is displayed simultaneously on both a large digital readout and tri-color LED bar graph. This unit comes complete with two pairs of replaceable pins, a 9V battery and a protective hard-shell carrying case.





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that users must match to the specific gravity of the material. For woodworking purposes, a specific gravity reference list for common wood species may be provided by the meter manufacturer or is obtainable from various resources, such as the U.S.D.A.'s Forest Products Laboratory. More full-featured

meters often provide a direct readout that identifies the material or wood species along with its specific gravity and additional descriptive information.

The two basic meter types also differ in the way they measure moisture content. Pin-type meters measure moisture at or just below a material's surface, but because their pins must penetrate—and potentially mar—the surface they are less desirable for testing finished goods. Pinless meters, on the other hand, can



Restoration contractors, facility maintenance managers, HVAC technicians and other professional contractors will appreciate the full range of features available in General Tools & Instruments' top-of-the-line RHMG700DL (Data Logging) thermo-hygrometer with built-in moisture meter. This compact, high-precision unit measures 13 parameters—from relative and absolute moisture levels to dew point, wet-bulb temperature, and atmospheric or vapor pressure—and is capable of logging up to 8,000 data points and storing/retrieving up to 20 pairs of readings. An optional thermocouple probe is available for measuring surface and condensation moisture.



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- Standard kit includes 12 oak wood stair treads, a landing, a complete handrail, and all necessary hardware and connectors.
- Diameters available include a 5 ft. 3 in. model and a 4 ft. 3 in. model.
- The height range for the standard kit is adjustable from 8 ft. 3 in. to 10 ft. 2 7/8 in. and with additional components, can be installed to a maximum height of 11 ft. 9 5/16 in.
- Powder coat finished painted in either Hi-Gloss Black or Hi-Gloss White.
- Can be installed in a clockwise or counterclockwise rotation.
- · Stair treads and landing are made of solid Oak wood with a natural stain and a polyurethane protective coating.
- Balcony rail kits are available in matching color and horizontal baluster and railing design.
- Handrail is manufactured from an aluminum core surrounded by a soft PVC cover to allow the handrail to be curved at the time of installation to accommodate the radius of the staircase.
- Rise between stair treads is adjustable from 8 3/8 in. to 9 1/4 in.
- Interior installation only.
- A complete installation guide is included in all kits and an installation video is available upon request.
- Homeowner should consult with local building department concerning building codes prior to purchase.



#### TOOL SCHOOL



detect moisture up to four inches beneath a surface and are useful for determining moisture content without damaging the material, such as in wallboard behind a tiled surface, or for comparing the relative moisture of two different woods that are to be glued or jointed. However, pinless meters do not measure the actual amount of moisture in a material but only compare the moisture in the

The General RHMG700DL includes pins to measure direct electrical resistance as well as a non-penetrating electrode plate on the back for relative moisture readings.

material to the moisture content in other areas or ambient surroundings.

General Tools & Instruments offers an extensive variety of pin and pinless meters, as well as meters that can do both penetrating and non-penetrating measurements. According to Kevin Basso, General's chief engineer, the choice usually depends on the application or need at hand.

"Users may prefer the pinless, non-penetrating moisture meters on finished areas such as fine flooring or wall paneling," Basso says, "because it won't harm or damage the surface being inspected. In checking areas using this method, a meter could indicate an increasing relative moisture trend and you'd be able to identify a suspect area and determine if further testing and inspection is required."

Moisture meters are especially necessary for woodworking because wood is extremely susceptible to moisture fluctuation. Fresh-cut logs may have up to 80 percent moisture content, while kiln-dried lumber may be as low as 6 percent. Construction lumber grade-stamped "S-dry" is required to have a moisture content of less than 19 percent. And the air-dried lumber stacked in your woodshop may contain anywhere from 12 to 20 percent water volume.

Knowing when wood is ready to be worked or finished often determines a project's success or failure, and not just in furniture-making. Framing carpenters building with wet wood can expect callbacks to replace buckled plywood, warped studs and popped drywall nails. Flooring installers who fail to acclimate their materials to the relative humidity of a room risk problems such as cupping, crowning and ruined finishes.

Wood finishes ranging from penetrating oils (tung, linseed,



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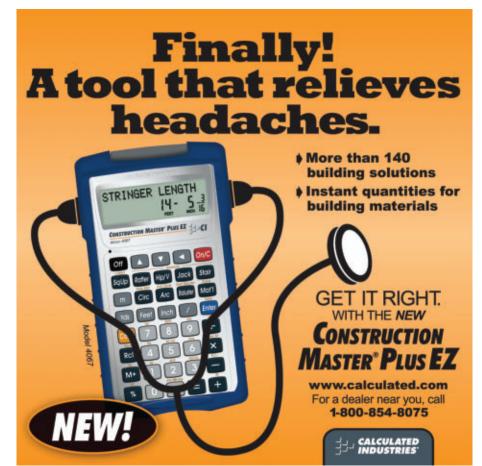
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General's MMD8P is a precision moisture meter especially useful for woodworkers. Pre-loaded with species-specific information on 48 common wood types, its digital memory records and stores up 99 separate data inputs for convenient reference. A high-visibility (OLED) dot-matrix screen, multiple display options, and ambient temperature compensation combine to make this unit a top choice for the shop.



etc.) to surface sealers (alkyds and polyurethanes) help to protect wood from natural cycles of absorption and drying, but only if they are applied after the wood has reached a state of equilibrium moisture content, or EMC in industry terms. It's important to note that while finishes can help to slow the rate of moisture exchange, they will not prevent it entirely. Also, some wood species, like white pine and ash, are simply more prone to moisture-related shrinkage and swelling, while others, like teak and mahogany from moist tropical environments. contain natural oils that defend against this damage.

Finally, moisture meters do more than determine when wood and other materials are ready to be worked. They can also enable you to modulate the rate materials dry to prevent rapid shrinkage that leads to checking and splitting, and help when you design or plan a project to allow for dimensional movement due to anticipated changes in relative humidity.

#### SELECTION

When choosing a moisture meter, key features to look for include:

- Multi-function units that offer options such as pin or pinless measurement in the same unit, auto-calibration, and displays that show moisture content as a percentage or relative value simultaneously.
- Separate settings for various materials such as softwoods and hardwoods, drywall and masonry.
   This can improve a unit's accuracy and make using it more convenient.
- A wide range of applications. Some woodworking meters are calibrated to nominal wood thicknesses, such as 1/4-inch, 3/4-inch, or greater. While this can help to increase a meter's accuracy, it limits the unit's usefulness to specific applications. Also, some units only provide specific gravity ratings of the most common wood species but not for more exotic species.
- Temperature and humidity compensation. This is helpful when testing lumber or materials like finished flooring that are moved from one environment to another, such as from a drying kiln to an ambient humidity area, or from outdoors to indoors. Some meters measure and display ambient temperature and relative humidity (RH) along with moisture level measurement.
- Data analysis and storage of frequently used information, such as moisture measurement records, comparisons of different wood species tested, and ambient moisture parameters at the time of testing. **EHT**

The MMD7NP moisture meter from General Tools & Instruments is a value-priced unit with a number of high-value features, such as automatic calibration and individual settings for drywall, masonry, softwood and hardwood. Pinless, non-penetrating operation reliably detects moisture underneath finished surfaces, making this unit ideal for contractors and building inspectors as well as homeowners and woodworkers. A large (2" diagonal) backlit LCD screen and tri-color bar graph make readouts easy to see in any lighting situation.





## Fix a Sagging Fence Gate

Metal brackets make everything square again.



By Matt Weber

ooden fence gates are notorious for getting out of whack. The wood's inherent instability during temperature changes coupled with the heavy weight of the gate can stress the wood connections as well as the metal hardware, causing the gate to warp, sag and eventually require replacement.

Replacement was required for the worn-out gate shown in this project. The original Z-braced gate had adopted a potato chip shape, broken loose from its hinges and would not completely close at the top or bottom. The backyard dog was now attempting to squeeze through the gap and make a break for the wide blue yonder. We used a metal hardware kit to rebuild the gate, and here's how it went.

#### STEP BY STEP

We picked up a Homax Easy Gate No-sag Gate Kit at our local Lowe's. The kit includes two hinged brackets, two non-hinged brackets and 36 mounting screws. The kit is designed to fit a gate 25 to 72 inches wide. We built the gate from pressure-treated 2x4 lumber and 1x6 fence boards.



The original gate, which followed the grade of the lawn, had warped to the point it would no longer work.



The stresses on the gate caused it to tear away from the hinges, and large gaps had opened at the top and bottom.



The first step was disassembling the old gate. After checking with a hand level we determined that the old gate posts were still plumb, and only the gate itself had deteriorated.

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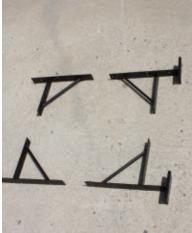


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#### **DO IT YOURSELF**







A quick read of the tape measure told us out gate dimensions. We designed the new gate with a 1/2-in. expansion gap between posts so the gate can easily swing open and close, and the gate-bolt would easily connect with the latch.

Next, we oriented the gate hardware on a large flat surface as it would be configured for the gate door. It's important that the hinges are on the correct left or right side of the gate opening for which way the gate will swing. We cut and installed the 2x4 framing members so they fit squarely into the metal brackets. The side rails fit flush between the upper and lower rails.





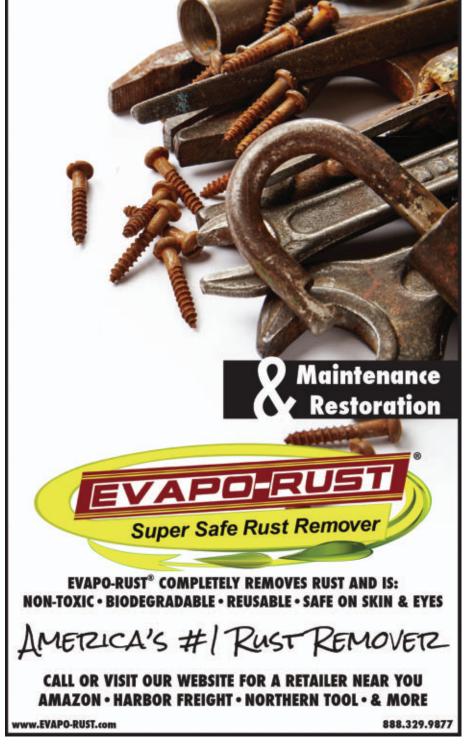


at www.greenbaydecking.com or call (877) 804-0137

#### **DO IT YOURSELF**

All fastener holes were predrilled with a 1/8-in. bit to prevent splitting the wood. The pan-head mounting screws install through the pre-punched holes in the brackets and into the 2x4 frame.

It helps to have an assistant hold the square gate frame in place while you level and plumb it on the fence post.









Predrill and install the mounting screws through the hinged brackets into the support post or blocking of the fence (depending on its construction).



Once the frame is secured to the fence, check its swing for smooth unobstructed performance and make any necessary adjustments.



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#### **DO IT YOURSELF**

This particular fence was built on a slope, and the fence boards closely followed the grade of the land. Since the gate boards would need to follow suit, I ran a string from the top of one existing fence board to the top of the board on the opposite side of the gate. The string served as an elevation guide as we installed the gate boards.







Using quality decking screws, we fastened the boards to the gate frame using two screws at each 2x4 location. Once the boards were secure, we installed horizontal 2x4 cross-member in the center of the frame and screwed it to the boards to prevent deflection in the 1x material.



Shown is the completed repair with the gate closed. The next step is to pressure-wash the fence and stain all the wood to match. **EHT** 



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## **History of Channellock Inc.**



t has been said that tools are the bridge between man and machine. But many people might not have thought about the history of tools. In prehistoric times, the first tools were simple rocks or sticks, or what scientists refer to as "simple machines." Over time, tools have become more complex, made from various materials and crafted for specific jobs. From early caves to modern garages, hand tools are still important and there are some manufacturers who have been making tools for some time.

One company that has been manufacturing quality hand tools for more than 129 years

is Channellock Inc., in Meadville, Pennsylvania. While professionals and serious DIY'ers are familiar with the company's Americanmade pliers with the signature blue grip, they may not know that it hasn't always been known as CHANNELLOCK®.

CHANNELLOCK® was once known as the Champion-DeArment Tool Co. Before that, it was the Champion Tool Co. Even further back, it was simply a lone blacksmith who strived to design a better set of farrier's tools at the Champion Bolt Clipper Company.

At 33 years old, George B. DeArment, the great-great grand-father of current president and

COO Jon DeArment began the company by designing, testing and hand-forging hoof parers and nippers. According to history, he did this because he couldn't find any for sale that worked as well as he wanted them to. After developing a set of tools that he believed were superior to anything else available, he spent the winter of 1885 building up inventory of these new tools. In the spring of 1886, after the heavy rains had stopped and the roads were firm enough to allow a heavily laden wagon to pass, he loaded up his tools and hit the road.

DeArment family legend says he traveled from town to town

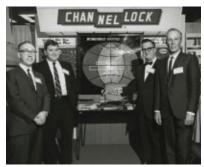


selling farrier's tools until the entire inventory was gone, then sold his horse and wagon and took the railroad back home to Evansburg, Pennsylvania, which is now called Conneaut Lake.

DeArment grew his business over the next five years until 1891, when he started using the name of The Champion Tool Company. The company's reputation for quality tools spread quickly. In fact, in August 1902, DeArment received an order for a set of Champion farrier's tools from King Edward VII of England.

By the 1920s, the company was facing two major challenges. The first was that the market for farrier's tools was dramatically shrinking. The second was that the company name not only reflected aging technology, but it was not very distinctive. Using the name "Champion" for a company had become common and did not set it apart from other businesses. George DeArment's sons, Howard and Almon, decided the best course of action would be to expand the product line by adding pliers and change the company name to Champion-DeArment Tool Co.

In 1933, Champion-DeArment Tool Co. developed a brand new tool that eventually led to the current company name. The company's chief engineer, Howard Manning, developed the tongue and groove plier, which, at the time, was a completely new concept for adjustable pliers. The company patented the plier and branded it CHANNELLOCK®. By 1964, the name CHANNELLOCK® had become so widely known that Champion-DeArment Tool Co. made the decision to change its name





one final time to Channellock Inc.

Today, Channellock Inc. is run by

the fifth generation of the DeArment family. The company is based out of two facilities, equaling a total of 230,000 square feet, in Meadville, Pennsylvania, with nearly 400 full-time associates. The company manufactures more than 120 different sizes and types of pliers and hand tools. All CHANNELLOCK® pliers are still "fiercely made in Meadville, Pennsylvania, USA," as they often say. Channellock Inc. has more than

4,000 U.S. wholesale and retail customers and ships to customers in

45 countries.

The history of Channellock Inc. is more than a story of tool innovation. It is an American success story about a business that began over 129 years ago in a small town in Pennsylvania that eventually would become, with the help of American workers, a household name around the world.



# FROM PILLAR TO STORY TO STORY TO STORY THE PILLAR THE

By Rob Robillard

hat do anthills and porch columns have in common? The answer should be nothing, but we know better...

Columns add charm, personality and beauty to walkways, decks, landings and porches. Many of the homes where I live have beautifully turned wood columns as structural posts for porches. Unfortunately, because the posts are situated along the exterior perimeter of the porch, the wood is exposed to winddriven rain and roof runoff or splash-up, resulting in rot at the base. Porch column rot is pretty common along the base and eventually becomes a home for carpenter ants.

As a renovation contractor I see carpenter ants in just about every home I work on, mostly around damp wood as a result of water intrusion or lack of proper maintenance. When you consider that there are 1.5 million ants on the planet for every person, it's easy to understand why I see so many ants.

If you have a rotted structural porch post, you can either replace the column or repair it; on this project, we chose the latter.

#### SUPPORT ALL STRUCTURAL REPAIRS

When a column supports a roof or structure it is considered structural. Prior to replacement or major repair you should take steps to temporary provide structural support to the area around the post needing repairs or replacement.

Although some minor repairs for porch column rot can be done in place, when the rot is extensive enough, the best way to perform these repairs is on a workbench.

I often use 2x6 lumber as temporary porch post supports. I make a "T-shaped" jacking or shoring post. The "T", formed from two board, keeps the support surface rigid, preventing each board from bending on their flats. I install 3-in. nails every 12 inches to secure the two boards together.

I use a small 10-ton hydraulic jack to raise the shoring post and overhead structure approximately 1/8 inch. This assists in getting a reciprocating blade to cut the fasteners away and remove the post. It also assists later when inserting the replacement or repaired post.

Once the structure is jacked up, I install a second temporary support post to take the stress off the jack, and to provide additional support at the new height. This



# FROM PILLAR TO POST





A T-shaped shoring post is used in conjunction with a hydraulic jack to lift the overhead structure.

Protect the overhead structure with blocking to distribute the pressure.

second support post can be T-shaped or simply two 2x6's doubled together and fastened every 16 inches with two 3-in. 12d nails.

# REPAIRING ROT VS. REPLACEMENT

Many times it's simply easier and less expensive to replace the porch post as opposed to repair it. In our situation we have three identical posts, and the replacement posts at the store looked vastly different—not close enough to pass muster.

Take the weight off the jack with an additional temporary support post (doubled 2x6), then cut loose the post at the top and bottom with a reciprocating saw and remove.

The decision to repair this post became a better option.

We assessed the post and determined that if we cut higher than the rot, in the middle, we would create a "stepped-key"

effect, essentially making our post repair a stronger connection and also avoiding the creation of a weakened "hinge" point at the repair.

#### **OUT WITH THE OLD**

Using a reciprocating saw and multi-tool we cut out all of the nails fastened through the post at the top, bottom and railing connections. The next step was to remove the porch column rot, and that is when the ants came scurrying out!

We used a circular saw to make all the long cuts and finished all cross-cuts with a multi-tool. We made these cuts on a workbench, because the better working conditions usually result in better looking cuts and results.

#### REPLACEMENT MATERIAL

I like to use mahogany or cedar for my rot replacement material; you see cedar in these pictures.

We rough-sized our stock on the table saw, leaving it long, and glued it together with epoxy and clamps. We allowed it to dry overnight and the next morning we used a thickness planer to thin down the glue-up and achieve a snug fit in our post cut-out. We







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# FROM PILLAR TO POST



The wood of the post was severely rotted and damaged by ants.



To avoid a weak hinge point where the new wood is spliced into the old, the post was cut above the rot to allow room for an interlocking stepped, keyed joint.

The notched cuts were started with a circular saw and completed with a multi-tool.



then dry-fitted the repair and then glued and clamped the repair piece into the post.

#### TWO-PART EPOXY

In situations like this we like to use a product called West System epoxy to bond the repair materials. This epoxy is a versatile two-part, marine-grade epoxy that bonds and coats fiberglass, wood, metal, fabrics and other composite materials to provide superior strength and moisture resistance.

Two-step bonding, or structural adhesion, is the preferred method for most situations because it promotes maximum epoxy penetration into the bonding surface and prevents resin-starved joints. We work the epoxy into the wood surfaces with a throwaway bristle brush.

Note: Before mixing epoxy, check all parts to be bonded for proper fit and surface preparation. Also, gather all the clamps and tools necessary for the operation. Apply a neat resin/hardener mixture to the surfaces to be joined, following





When the rot was removed, the ants came scurrying out. Note the hole in the center of the column that will accept the keyed repair piece.



The column was cut squarely through both sides to accept the new repair piece.



The repair piece is cut from new cedar to fit flush into the post and interlock with the center hole.



The joining surfaces are coated with epoxy.



Use enough epoxy that a small amount will squeeze out when joined.



Clamp the joint securely along its length.



# FROM PILLAR TO POST

the manufacturer's instructions. Use a disposable brush, foam roller or a putty knife to spread the hardener mixture evenly over the surface. Apply enough of the

mixture so that a small amount will squeeze out when the surfaces are joined together with a force equivalent to a firm hand grip.

Clamp the components. Attach



Additional cedar blocking was epoxied and clamped onto the keyed piece to extend and strengthen the post base.

clamps as necessary to hold the components in place. Use just enough clamping pressure to squeeze a small amount of the epoxy mixture from the joint. Avoid using too much clamping pressure, which can squeeze all of the epoxy mixture out of the joint.

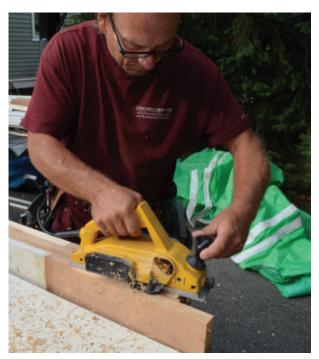
#### **CLAMPING**

Once epoxy was applied, we used bar clamps to secure the joint. Remove or shape excess adhesive that squeezes out of the post cut-out as soon as the joint is clamped, and allow the repair to sit overnight.

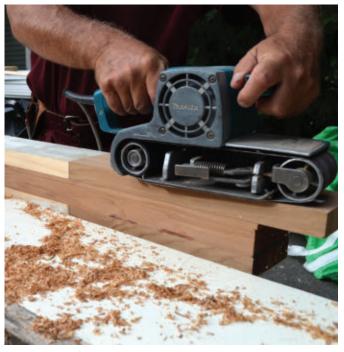
The next morning we used a power planer and a belt sander to take down the high spots on the glue-up. Once the repair and post were at the same plane and smooth, we cut the post to size.











The joint is fine-tuned with a belt sander.



# **FROM** TO POST

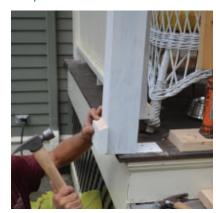
The repair and post were then finish-sanded with an orbital sander and 120-grit, and all edges were primed, as well as the end grain.

Back at the porch we traced the post base out on the mahogany

decking and used a multi tool to cut out the decking. We then filled this cut-out area with a PVC shim patch. This prevents the new structural post from sitting directly on top of the decking,



The porch decking is cut out and a PVC shim is installed beneath the post location.



Lift the overhead structure slightly with the jack and install the repaired post.

# **IN-PLACE POST RFPAIR**

Minor rot repairs can be made with the post in place, such as this "Dutchman Patch" in which the damaged wood is notched out of the post with a multi-tool, and replacement pieces are epoxied into the repair.



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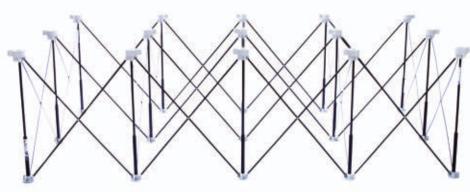
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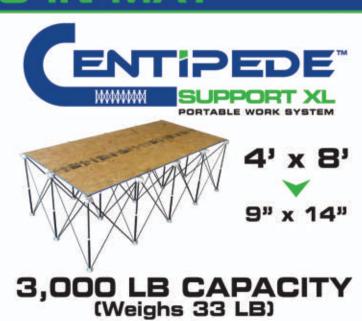




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# FROM PILLAR TO POST

which would cause problems later if the deck boards need to be replaced. The PVC is planed to sit just below the deck surface and hides the post seam for a nice, finished look.

# INSTALLATION OF REPAIRED POST

The post is then repositioned back in place and plumbed. We countersunk screws into the base and top of post. These screw loca-

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The post is fastened with countersunk screws at the top and bottom. The job is complete when all holes are filled and new paint is applied.

tions can be filled with wood plugs, epoxy filler or wood-filler (Bondo).

With the post fastened to the header, deck and railing, we then removed the temporary support post and slowly lowered the hydraulic jack.

Two coats of quality paint finish the repair. **EHT** 

Editor's Note: Robert Robillard is a remodeling contractor based in Concord, MA. He is also the editor of a www.AConcordCarpenter.com.



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# ADDITIONS FOR YOUR TOOK BOX

ome people's idea of shopping is a trip to the department store. Extreme How-To readers prefer the hardware store. Here's a roundup of some cool tools to add to your wish list.

## CHANNELLOCK LINEMAN'S PLIERS

Channellock's 369 High-Leverage
Lineman's Plier has a new design that
places the rivet closer to the head, which
gives the jaws greater leverage for cutting the
thickest gauge wiring. For tackling any kind of
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has knife-and-anvil, laser-heat-treated cutting edges and
the company's trademark Code Blue comfort grip handles.

Channellock also offers a version of the Lineman's Plier with a new fish-tape puller. When routing wires or cable through a wall, this specialty plier has an innovative channel that runs from the tip of the jaws out the rear of the tool, providing clearance and better grip for the tape hook. Visit www.channellock.com.



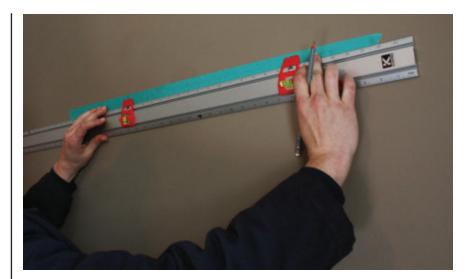




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The Kapro Set & Match is a patented set-and-match ruler that features two easy-to-read leveling vials (both horizontal and vertical) that slide and lock in place. It's a great tool for DIY measuring and marking projects, such as setting and aligning shelves, cabinets, mirrors, stencils and wallpaper. Use it to mark/cut long lines on walls, wood, drywall and cardboard. The beveled edge of the ruler lies flush against the wall for exceptional visibility and accuracy when placing a pencil to mark the measurement, which is a huge help for precisely hanging framed photos and artwork. Choose from three lengths; 24, 32, 40 and 48 inches. Visit www.kapro.com.

# STONEBREAKER PRO GLOVE LINE

Safety on the job site is imperative, and the most prevalent injuries involve the hands. Many pros don't wear gloves because they don't properly fit, aren't designed for the multiple tasks presented each day, or fear they will get in the way of them performing their jobs. Every pair of StoneBreaker gloves is constructed of the highest-quality materials, from the leather to the thread, which provide better

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solutions (lengths, angles, quantities, etc.) for common rafters, hip/valley rafters, jack rafters and stairs. Other built-in solutions include: Square-Ups, Areas and Volumes; Circular; Arcs; Rake Walls; Arch Studs: Balusters (Cap Wall and Open Wall), Elliptical Arches; Crown Molding; Compound Angles; Polygons; and Spacing. The CMP EZ makes a valuable addition to any builder's or serious do-it-yourselfer's toolbox and comes with a rugged shock-, dust- and moistureresistant Armadillo Gear case. Visit www.calculated.com/XPS15.



#### **TWEAKER**

The Tweaker, from Mayhew Steel Products is a specialized two-pronged pry bar used to tweak or adjust bent or warped lumber, and adjust studs, joists or rafters. It features a powder-coated finish, a cushion-grip handle and a nail-puller, and can also be used in demolition for wedging, stripping and wrecking. Visit www.mayhew.com.

# HYDE SPRAY SHIELD CARDBOARD CLIP

This high-impact polystyrene clip holds cardboard or other sheet goods to shield surroundings from overspray while painting. The clip design enables the user to cut the cardboard into custom shapes and sizes, when the job involves angles, curves or irregular shapes

that don't fit a standard paint shield. The Spray Shield Clip includes an 18-in. Acme threaded hardwood handle, and Hyde's patented PivotNeck system adjusts the shield to any angle. Visit www.hydetools.com.

## IRWIN VISE-GRIP MAX LEVERAGE DIAGONAL CUTTING PLIERS

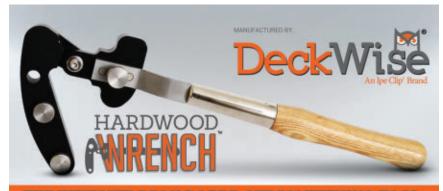
Manufactured for electricians and general construction users, Irwin's 1902413 Max Leverage Diagonal Pliers feature PowerSlot Technology, providing up to twice the cutting power with half the effort. The induction-hardened cutting edges cut through ACSR,



nails, screws and even piano wire. The three-zone comfort grips are contoured for optimal cushion and control, while the handles are equipped with integrated hooks designed to attach to a lanyard for safer elevated working conditions and easier retrieval. The Max Leverage Diagonal Cutting Pliers are available in 7- and 8-in. versions and come with a lifetime guarantee. Visit www.irwin.com.







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The Hardwood Wrench deckboard straightening tool easily cam locks into place to hold deck boards straight while fasteners are being installed for true "one-man installation." With a pushing force of around 1,100 lbs., the DeckWise Hardwood Wrench gives you up to 8x more bending power than other deck-board straightening tools. It works with single or double joists up to 3-1/2-in. wide and all types of decking, including pre-grooved or standard lumber, composites and PVC. The handle and joist pins have been redesigned, giving builders the ability to straighten deck boards from both left or right hand direction, which is useful when you need to straighten a board on the outside of your deck frame. The handle and pins can be flipped, reversed and expanded to work on any crooked board you come across. The new knurled knobs can even be used to grip and straighten house siding. Visit www.deckwise.com.

#### **VAMPLIERS PRO**

VamPLIERS Pro have uniquely designed and patented concave jaws. The vertical and horizontal serrations inside the jaws make it possible to grab onto a small stripped/rusted/corroded screw or rounded nut for extraction. VamPLIERS Pro will work on

screws that have special, tamperproof or unique heads, such as a Torx screw. Made of high-quality carbon steel, they have a smooth varnished finish and utilize an environmentally friendly elastomer for ergonomic grips. VamPLIERS are great for professionals and DIY'ers to achieve the perfect "bite" around the screw's head. Visit www.vampiretools.com.



# WOODRIVER HAND PLANES

Woodcraft has added three planes to its private label WoodRiver line; the No. 1 Bench Hand Plane V3, plus the No. 91 Small and No. 93 Large Shoulder Planes. The new No. 1 Bench Hand Plane, 5-3/4 in, long and 1-1/2 in. wide, is patterned after the smallest of the Stanley bench planes that was manufactured for 70 years prior to World War II. This rare and highly collectable plane was originally sold to handle small smoothing jobs, sometimes in tight places, but is now often used in the palm of the hand like a block plane. It features heavy stressrelieved, ductile iron casting, a fully machined adjustable frog, and a high-carbon steel blade.

The No. 91 Small and No. 93
Large Shoulder Planes join the No.
92 Medium Shoulder Plane to complete the set. Based on Edward
Preston and Sons designs, these planes have a major new feature, an adjustable toe to control the throat opening and minimize tearout of end grain. The plane bodies are Cr40 stress-relieved ductile steel, machined square and flat, and blades are high-carbon tool steel hardened to HRC60-64.
Visit www.woodcraft.com.







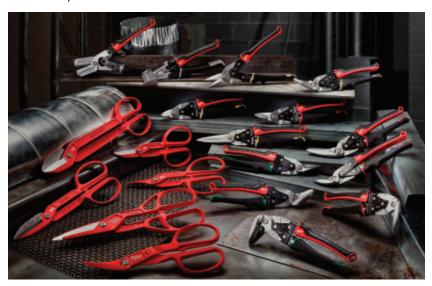
## MILWAUKEE METALWORKING SOLUTIONS

Milwaukee Tool introduces six new Tinner Snip models that include the industry's first Compound-Offset tinner snip, a 3-in. Speed Seamer, and a 5-Blade HVAC Crimper for HVAC ductwork. The six new Tinner Snips are divided into three types the industry's first Compound-Offset Tinner, Classic Tinners and Lightweight Tinners—all of which come with 40-percent larger handle loops that are much easier to use with commonly worn gloves. The Compound-Offset Tinner Snips use a compound mechanism that amplifies the tool's force to cut tough metal material—such as metal lathe-with less effort.

The 3-in. Speed Seamer features a forged metal head and

comfortable over-molded handles, and includes 3/8-in. and 1-in. markings on the head to quickly measure the most common folds in HVAC ductwork. The 5-Blade HVAC Crimper features reinforced

crimper ribs, which provide greater blade stability for up to twice the tool life. Both tools are designed to be comfortable for overhand and underhand use. Visit www.milwaukeetool.com.









and a magnetic bottom attaches to ferrous surfaces. Light out-put: main 250 lumens, body 190 lumens. Visit www.gripontools.net.

# INDEXING DECK WRECKER

The newest product in Mayhew's line of deconstruction tools is the indexing Deck Wrecker #41105. The geared head allows you to index the angle of the tool to get the right fit for the job at hand. Hot-forged from high-quality alloy steel, the indexing Deck Wrecker is designed with a nail puller on the back and a striking plate within the jaws, forcing the nail puller to catch the

nail head and remove the nail. The inside jaw width of 2-1/16 in. and an outside jaw width of 3-5/16in. allows you to remove decking with minimal damage to the boards and joists. An overall length of 33 inches provides for extra leverage while keeping the tool lightweight and easy to use. It is the perfect companion to Mayhew's full size Deck Wrecker #41104. Visit www.mayhew.com.

## CHANNELLOCK 440 12" STRAIGHT JAW TONGUE & GROOVE PLIER

The Channellock 440 12-in. Straight Jaw Tongue & Groove Plier is the tool every home and garage needs. This plier is engineered down to the smallest detail and is built in Meadville, Pennsylvania, USA, to last with a





PermaLock fastener to eliminate nut and bolt failure, patented reinforcing edge to minimize stress breakage and right angle, laser heat-treated teeth to provide a better, longer lasting grip. It's versatile, strong and durable enough to pass down to your kids. Visit www.channellock.com.

Innovation Rules





DeWalt offers new specialty handsaws for general construction, including the DWHT20216 Double Edge Pull Saw. The new saw has a flexible blade for easy flush cuts and fine finish teeth on one side for precision cuts.



The bi-material handle is ergonomically designed for user comfort, and the saw comes with a limited lifetime warranty. The DWHT20216 is ideal for cutting dowels, drywall, shims, trim, framing, folding and cross cuts. DeWalt also offers a new single-edge pull saw and a flushcut reversing backsaw. Visit www.dewalt.com. EHT

starrett.com



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- Flexible design with one fixed shelf (7-1/2"D) and three adjustable shelves (6-5/8"D).
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#### Invisi Door Includes pivot hinges, instructions

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34-7/8°W x 78-7/8"H overall face frame dimensions, 8" overall depth

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32" Opening

30-7/8"W x 78-7/8" H overall face frame dimensions, 8" overall depth

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Add doors to turn the lower bookcase into a cabinet.

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#### Trim Molding Kit (2) - 3-1/2" x 84" x 3/4", (1) - 3-1/2" x 48" x 3/4"

ID.TK.CH Cherry \$109.00 ID.TK.MA Maple 100.00 ID.TK.RO Red Oak 98.00



In stock

ready to ship

# STONE-WALLED

#### **By Matt Weber**

Stone veneer that installs without the mess the mess of mortar is rapidly growing in popularity among DIY'ers. Rather than mixing batch after batch of mortar and troweling it over a mesh-covered wall, mortarless veneer is simply installed with screws and a power screwdriver.

My wife and I wanted to spruce up our finished basement and decided a stone accent wall would add a sense of rustic warmth to the living space. We selected a mortarless artificial stone system called ClipStone from Environmental Stoneworks. Here's how we used used the veneer to dramatically upgrade the décor of the basement.

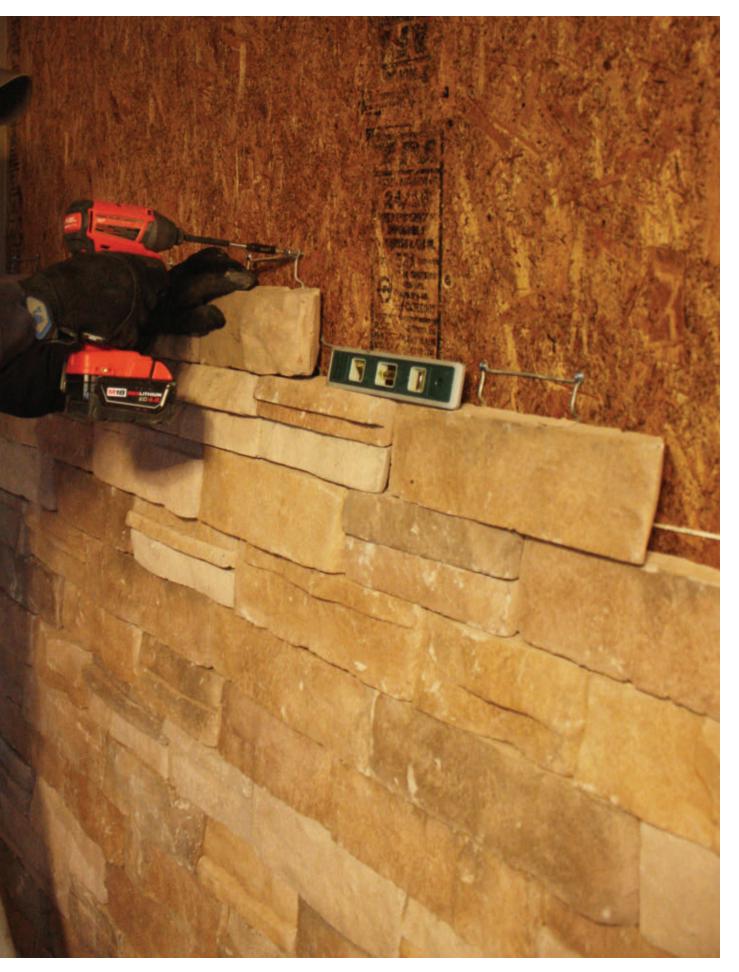
## PROJECT PREP

A number of mortarless veneer systems are available from a variety of manufacturers, and installation methods vary. The ClipStone product utilizes wire hooks molded into the back of the stone, and the hooks are attached to the wall with pan-head screws—two per stone.

First step in the project is to determine your house wall is adequately constructed to support the new stone, which is notably heavy. ClipStone is designed for installation over 7/16-in. or greater OSB or plywood sheathing attached to wood or metal studs.

Our basement walls were covered in thin wall paneling, which was an inadequate substrate. Therefore, to prepare for the stone I, removed all the trim-work and installed 7/16-in. OSB panels over the wall using screws and construction adhesive.

Installing
Mortarless
Stone
Veneer



# STONE-WALLED



Whether or not you need to add wall panels, you'll still need to remove the wall trim for installation. If you're using a smoothfaced stone, such as brick, it might be wise to keep the trim intact for reinstallation after the veneer is installed. In our case, however, we were using ClipStone's Ledgestone product, which has a variegated cleft face, which gives it a very naturalistic appearance but also results in an uneven wall surface that doesn't easily match crown or base molding. We decided to leave the trim off this project.

Follow your manufacturer's guidelines for estimating the amount of product you should order. It's usually a good idea to order 5 to 10 percent extra material for waste due to cutting or breakage.

Our particular project was about as simple as it gets—a straight interior wall with no corners to deal with. Accessory pieces are available, however, for outside corners, outlet boxes and light fixtures, plus the company offers a decorative sill for windows or a wainscoting cap.

Note: For exterior installations, you'll need to cover the OSB or plywood with two layers of breathable moisture barrier fastened with staples. Make sure all edges are proplerly flashed.

# STEP BY STEP INSTALLATION

Starter strips are available from the manufacturer, but I felt they were unnecessary for this simple interior job.

I began installation of the veneer at the lower left-hand

First step was to remove all molding and trim.



Installation requires a substrate of 7/16" or greater OSB or plywood.

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# STONE-WALLED

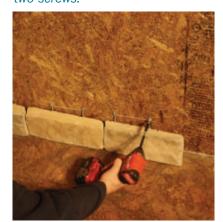
corner. I used a pair of pliers to bend the lower clips even with the bottom of the stone, placed onto the floor and checked it with a torpedo level. To attach the stone, simply push the stone back and downward and drive screws into the exposed eyelets. The stone should be snug when gently pulling on it.



I bent the lower hooks out of the way to install the first stone.



Each stone installs with two screws.



Complete the first row.



Stagger joints from row to row. Some stones are half the height of others and require two stones to be stacked together.

Fasteners should be 1 to 1-1/2-in. long with washer-type heads that pinch the wire to the wall. I used 1-1/4-in. wood lath screws for this project.

Repeat the procedure to complete the first row, cutting the final stone to fit. Cuts can be made to the stone with a chop saw or a grinder with a diamond-grit blade.

Each stone should have two points of attachment. If necessary, cut from the left and right of the clips to make this happen. If this isn't possible with the cut stone, then use a quality construction adhesive to glue the stone surfaces together. (Use a polyurethanebased construction adhesive for exterior projects).

The following rows install in much the same way, but instead and bending the lower clips, they fit behind the stone of the lower row and interlock for a more secure installation with a consistent standoff from the wall. Remember to stagger the joints between stones



Check each stone for level.

from row to row, as with any masonry installation. Check each stone for level installation.

Because the Ledgestone is intended to look like a naturally occurring material, the stones have slight irregularities in size and shape that can complicate keeping the rows level while also spacing the individual units closely and evenly. My suggestion is to frequently take a step back and assess your progress. If you run into complications from a stone that's slightly too large, set it as side for the first stone on the next row, and install similarly sized stones next to it. For the most part installation is a straightforward process, but it pays to keep an eye on your stone size and to make minor corrections along the way.

Outlet stones are available for installation around electrical boxes. You'll also need to install an extension ring around the outlet box to bring it out flush with the stone.

At the final top row, you can cut the stone as needed to fit beneath the ceiling. Try to keep two eyelets



Cut the stones using a chop saw or a grinder with a diamond-grit blade.



Outlet stones and other accessories are available for installation.



# STONE-WALLED

on the stone for installation. If this isn't possible, glue the stone to the wall with heavy-duty construction adhesive.

It doesn't happen often with me, but I got lucky with this installation. The full height of the top row was able to cap off the wall with minimal cutting.

The result was a substantial improvement to our finish basement, which went from the look of a kid's playroom to "man cave" with the new installation of the stone accent wall. **EHT** 

For more information on ClipStone and mortarless stone veneer, visit www.myclipstone.com.

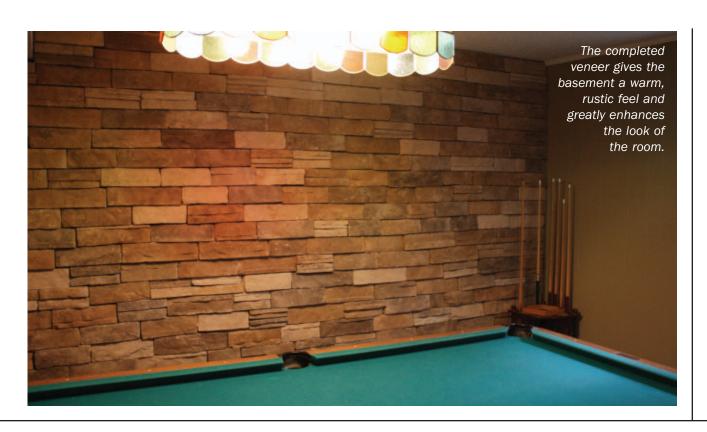


The rear of these stones show how the wire clips interlock on the rear of the veneer.

To fasten the stones I used 1-1/4" wood lath screws that have washer-type heads. I used construction adhesive to help install the final top row of the project.











# **Double Bypass**

Make a room look bigger while providing full-length mirror bypass doors.



**By Larry Walton** 

ur habit of occasionally changing houses means that I have been through the ritual of finding a good location for a full length mirror a number of times. One of us doesn't just throw on a t-shirt, jeans and skater shoes every day, so apparently checking out the ensemble for clashing colors, misaligned buttons and accessories is a thing. My thing is making sure my wife has a mirror to view herself head to toe because I cannot be trusted

to call a timeout when she intends to head out the door in violation of some fashion rule.

A good way to be in compliance with the full length mirror rule is to install a set of mirror bypass doors. Not only do these doors function as full length mirrors, they can also make a room look larger.

Another advantage of this product is that it can fit into a wide range of openings as long the header is not too low or the opening too wide. The doors have quite a range of elevation adjustment and, because they overlap, there is a good deal of leeway for how much they overlap each other when the doors are closed.

Although these doors give the installer a lot of flexibility for opening size, there is an ideal setup that looks best, provides maximum access to the closet when open, and rolls the smoothest when operating the doors. Whenever possible, we try to get the opening to this ideal. Of course, when framing a new opening you can get it spot on. If you have much experience with home improvement projects, you've discovered that things are rarely ideal and you often have to figure out how to make it work.

We'll take a look at some of the ways to make mirrored bypass doors work in some of the situations you may have inherited, but first let's see how to set these doors up when starting with new construction.

#### FOR NEW CONSTRUCTION

Most of these door kits are intended for 4-, 5- or 6-ft. openings in a house that has 6-ft., 8-in. high doors. Start with getting the right kit: 4, 5 or 6 feet. With someone to help, open the kit somewhere you can keep the doors protected while the rest of the process is completed. (This may be in your garage or a bedroom where there is wall space and where kids won't be playing.)

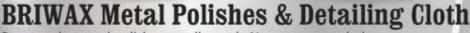
Get out the floor track and put it on the floor. Stand a door with the wheels in the floor track. Have your helper steady the door while you take some measurements. Look at the clearance from the From the Makers of

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# **PROJECT NEXT**

bottom of the door to the floor track. You want about 1/2 inch, but it may have been shipped with much more than that. Adjust the screws to get the door to that 1/2-in. gap.

With your helper still steadying the door on the floor track, gently set the header valance over the door and rest it on top.

Hook your tape under the floor track and measure to the top of the header valance. Add 1/2-in. to get your finished header height. This measurement will need to be adjusted to allow for your flooring. If it will be hardwood, simply subtract the thickness of the hardwood, because the floor track will be mounted right onto the hardwood.

If the flooring will be carpet or tile, you will need to put a strip of plywood under the floor track to get it to the right elevation. It's often best to take the floor track to where you can compare to the desired flooring. Make sure your floor track elevation takes into account the tile substrate or carpet pad along with the finished material.

Lean the doors against a wall with one overlapping the other about one inch. Have a look at that amount of overlap. Look good? Measure the width of the combined over-lapped doors. This is the horizontal measurement of your finished door opening.

One common change in width occurs when you want to change from bifold doors to bypass doors. Because the bypass doors overlap, you may need to add some material to the inside of the opening to get the doors to overlap.

#### **TIPS & TRICKS**

Installing bypass mirrors is not difficult but there are some tips that can make the doors function and look much better.





We always get the door kit early in the process. Reviewing instructions can be helpful, but actually handling the doors and tracks is often the best way to go, because following the instructions for door openings can end with a big gap under the doors (and the doors barely in the upper guide track). The goal is to determine the optimal door adjustment height, header valance height and amount of door overlap. We put the floor track down as close as we can to where it will eventually live. It can overlap the opening inside the closet for this initial test, since it won't yet be cut to length. We put one of doors in the floor track with the lower adjustments at close-tominimal extension beyond the bottom of the door. We then settle the upper track down over the door.



After positioning the upper track with the right amount of door inside, we marked the top of the upper track to show where the bottom of the finished header should be. Make sure you have some room for adjustment in the floor track guides. The idea is to make the doors look good with minimal gap at the bottom and nearly maximum penetration into the upper track with some room for adjustment.



In our project we started with an opening that did not have a header. We used the top of the upper track mark to determine how much framing to add while allowing for drywall.



We framed in the header then wrapped it in drywall.



We installed corner bead before applying drywall compound and texture.



In order to make our doors overlap each other properly, we added a 3/4-in. vertical trim board ripped to the width of the header. This narrowed the opening enough to make 1 inch of door overlap when the doors were closed.



We measured the width of the opening at the bottom and cut the floor track to fit between the trim boards. A miter saw with carbide teeth makes a very clean cut on the aluminum track. Key words: carbide, aluminum.





SCAN TO WATCH VIDEO

patrick8742@yahoo.com

5306 Business Parkway

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# **PROJECT NEXT**



We installed the floor track along the transition between the vinyl and carpet.



We also cut the upper track with a carbide finish blade and installed it so the doors would be plumb in the opening. We had to take into account that the wheels are located behind the doors at the bottom, while the doors center in each of the upper tracks.

Installation began with the rear door.

All of the door adjustments were made with the screws at the bottom of the doors. Each side of each door must be adjusted up or down to get the doors to align with the sides of the opening.







There isn't really any adjustment at the top, but you can see how the sides and header must be square to each other to look even at the top. There is also an advantage to having the doors deeper into the upper track so the frame of the door is not visible, which hides any out-of-parallel issues.



When both doors are open you have access to less than half of the closed at a time, which is why keeping the overlap to the minimum one inch is a good idea.

# **BRUTAL BACKSIDE**

Although you may like what you see when you look at the front of these doors, some of the makers don't put much effort into making the backs look good. For this reason, I don't recommend they be used for walk-in closets or any other location where someone can actually hang out in the space behind the doors. Also, note that the mirror on the back door reflects a portion of the overlapping front door, so arrange them accordingly with the gap obscured when doors are closed by putting the front door on the side from which the closet will most likely be viewed.



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# THEIR DOOR



- Composite bottom rails with wood exposed on the bottom of door allowing for moisture penetration
- 2 Shallow embossed skin resembling steel doors, reducing curb appeal
- Limited length wood stiles allow moisture to enter creating future maintenance issues
- (4) Average wood lock block of 12"
- (5) Wood frame material will crack or rot over time



**Wood Frame** 









#### **PROJECT NEXT**



This pair of doors (left) are closed the wrong way. You want the outside door to be parked on the side where the gap between doors will be hidden. Family members may not cooperate with this idea, but you can try.

This closet is done and ready to be loaded. Notice that the painters accentuated the vertical trim board that made the opening the right size. **EHT** 



#### FLOOR TRACK

Unlike traditional bypass doors, which hang from the upper track, this type of door rides on wheels at the floor track. This means the bottom track must be on reasonably solid footing—flat, straight and not too squishy. When we are setting up for these doors for carpet on both sides, we install a 1/2-in. thick strip of plywood to support the floor track. This strip is ripped to the width of the floor track and carefully fastened into the position determined by testing the doors. We write instructions on the strip for the carpet installers to carpet up to (but not over) the strip on both sides.



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#### Less Smoke, More Power

Fine-tuning Engine Efficiency with Electronic Controls



By Tim Walton

he single biggest advance in fuel-injection technology has been electronic control systems. The introduction of computer management has improved engine efficiency and fuel economy while also adding more power and torque. Turbo-charged diesel engines have benefitted the most from these innovations. When combined with free-flowing intake and exhaust systems, fine-tuning for more power or fuel economy becomes a very viable goal for a turbo-charged diesel.

The factory tune is designed to meet specific power and emission goals. Specially designed around test setups, which rate the vehicle on a variety of benchmarks, these stock settings may not match your particular situation. Optimal tuning for your personal driving style can be achieved with an aftermarket

tuning system, which can unleash more power, give you better throttle response, or squeeze out more miles per tank of fuel.

Banks is a well-known electronic tuner company in the diesel market and for good reason. The Banks Six-Gun diesel tuner not only adds up to 155 horsepower and 385 lbft. of torque (with the recommended airflow improvements), but also features the company's CleanTune technology to provide all that power without the soot. Banks ActiveSafety technology monitors your engine and transmission with built-in safeguards. Plus, the iQ Dashboard PC always gives you custom tune-ability, and you can change power levels with a touch of the screen.

Here's how we installed the Banks Six-Gun Tuner on a Duramax.

#### STEP BY STEP INSTALLATION



Removing the passenger-side fender liner allows access to the exhaust manifold for installing the pyrometer, which adds extra safety to the programmer setup.



When drilling the access hole, use grease on the end of the drill bit to catch the metal shavings and reduce cleanup. Use a liberal amount of grease. Clean and reapply fresh grease to make sure it continues to catch shavings.



Using the grease leaves a clean hole without debris inside the exhaust manifold, which is ready to be tapped. Use the correct size of bit for the tap. Starting with smaller sizes and stepping up size can help by reducing drill torque and minimizing friction.



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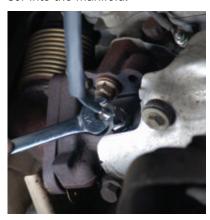
#### **EVERYTHING AUTO**



Make sure the tap is straight and square, which will affect the angle of the bung and sensor once installed. A socket adapter with an extension can be used in place of the conventional "T" wrench to get past obstructions.



Once you've tapped the hole and used a magnet to ensure you got all the metal shavings, insert the bung that will accept the sensor into the manifold.



The exhaust gas temperature (EGT) sensor tightens into the already inserted bung.



After routing the lead-wire for the EGT across the engine bay and safely down the engine to the EGT sensor, you can connect the wires. Be sure to put shrink-wrap over the wires first so you can seal them from the elements.



Run the mass air flow (MAF) harness adapter and put the stock plug into the Banks male plug. The Banks female connector plugs into the sensor.



Find the large engine plugs on the driver's side of the engine bay. Figure out which way will make the plugs sit close to the stock configuration and out of the way.



Connect the EGT lead-wire to the harness on this side of the engine bay, making sure to feed the shrink-wrap over the wiring prior to connecting.



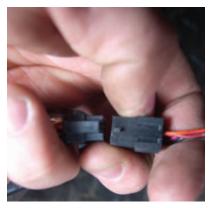
Use a heat gun to shrink the wrap onto the wires.



Secure the control unit of the Banks Six-Gun using the provided tape and hook-and-loop style fastener. Locate the rubber grommet in the driver's side firewall and feed the wiring harness through the firewall into the passenger compartment.



Remove the screws from the lower portion of the interior panel (near the parking brake and close to the center console) to access the under-dash area for fastening the wires and components.



Connect the Banks OBD II interface connector harness to the harness you ran through the firewall from the Power Tuner.

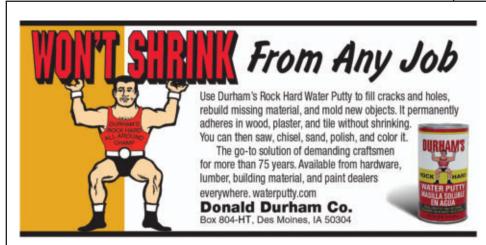


Plug the Banks OBD II interface into the OBD II port on the truck. This allows the unit to use and display a variety of parameters from the pickup's stock computer control unit.

Use the supplied cable ties to secure the Banks iQ Bridge Module and other wiring out of the way from damage or potential interference with your feet and pedals. Route the power connector for the IQ unit up the weather stripping edge of the dash to wherever you're going to mount the unit.

Find a good mounting spot that doesn't block your vision but allows you to easily see the gauges and settings the iQ has to offer. The functions of the iQ all work wirelessly so you only need the unit to be plugged in to power it. **EHT** 





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#### "EXPRESS YOURSELF" BY FEENEY

Feeney, Inc., manufacturer of CableRail brand stainless steel cable infill and the popular DesignRail aluminum railing system, is launching five new colors in the line of DesignRail aluminum railing colors. The new offering satisfies the popular demand for bold and bright colors in home and building products, giving homeowners and designers a vivid palette of dramatic hues in addition to more traditional colors such as black, bronze and white.

"Homeowners, architects and designers are looking for ways to personalize residential and work spaces. We have added a splash of brilliant color at the railing to give them the inspiration to enliven any indoor or outdoor living space," says Andrew Penny, vice president, marketing and advertising.

DesignRail by Feeney is a customized, component-based aluminum railing system. Customers can add in optional LED lighting and select from multiple mounting, top rail and infill options, including pickets, glass and



CableRail stainless steel cable infill. The "Express Yourself by Feeney" DesignRail line is currently available in five colors, including Orange You Sassy, Not A Mellow Yellow, Red Hot Red, Blazing Blue and Margarita Green. All DesignRail railings feature a durable AAMA-2604 powder-coated finish for superior color retention, impact resistance and weather protection. Visit www.feeneyinc.com.

# PRODUCTS

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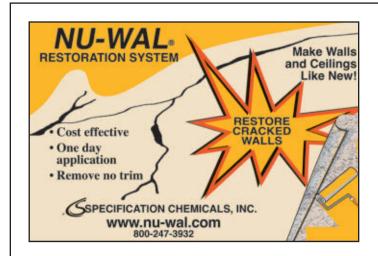


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Healthful Home40
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Ideal Stair Parts

Lumber Liquidators	5
Mayhew Steel Products, Inc	23
Maze Nails	19
Metal Ceiling Express	18
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Monkeyrack	52
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Paint Glider	62
Paint Piranha	67
Plastpro	69
Ready Seal	. 24
SafeRacks	70
Sakrete	80
Sashco	BO
Specification Chemicals, Inc	78
Stainable Primer	38
Starrett	54
TG Tools	2, 3
The Cornice Store	79
TimberTech	
Tjernlund Products, Inc	63
Top Bulb	. 14
Tub O' Towels	49
UGL	36
VamPLIERS	8
Western Timber Frame	
WM Coffman	11







# YOU'VE GOT A PROJECT.

# TENESTE ENT.



## FROM REPAIR TO ONE-OF-A-KIND MASONRY WORK, THERE'S A SAKRETE® SOLUTION FOR ALL YOUR CONCRETE PROJECTS.

SAKRETE® Flo-Coat Resurfacer is a highly flowable material that can be easily applied with a squeegee, making old concrete look like new again without the expense of replacement. The originator of pre-mixed bagged concrete, SAKRETE® has offered contractors and do-it-yourselfers innovative, readily available solutions longer than any other brand. Let us help you find the right product for your project. Visit us at sakrete.com or call 866-725-7383.





**DECK** 



**DECKED OUT** 





Every job can be transformed into something spectacular. However, only the stunning appearance of TimberTech's Earthwood Evolutions Legacy® Collection can turn a client into a really happy client. With a variety of colors to choose from, and the beautiful look of artisan hand-scraped hardwood with the low-maintenance ease of a quality capped composite, there really is an option for everyone. To see how our complete line of innovative decking, railing, lighting and fastening products can help you transform your business, visit www.timbertech.com

DECKING | RAILING | LIGHTING | FASTENING



# The Serious Fix for Concrete Cracks

# Sticks • Stretches • Stays



Slab® is the concrete crack repair sealant you've been waiting for. Textured to simulate concrete, Slab combines the durability, flexibility & adhesion you need for lasting concrete crack repairs.

> Visit www.sashco.com/slab for more information.









# DURABILITY you can drive on.



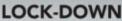
## Transform your garage in one weekend.

#### Step 1 CLEAN-N-ETCH



A 2-in-1 cleaner & etcher that prepares concrete for proper adhesion of garage floor paint.

## Step 2





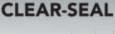
Concrete bonding primer that improves paint adhesion by 50%.

# Step 3 EPOXY-SEAL



Concrete and garage floor paint that is 3x stronger than other floor paints.

# Step 4





A protective sealer that adds a beautiful finish and extends the life of painted concrete.

**HOW TO TREAT CONCRETE®** 

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