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EDITOR'S NOTES

A comfortable place to sit. It's the one essential requirement of a chair. Granted, it has to be sturdy, and you want it to look good. But above all, a chair must pass the "sit test."

Earning a passing grade means the seat doesn't dig into the backs of your knees, the back tilts at a relaxing angle, and, if the chair has armrests, they're at a comfortable height.

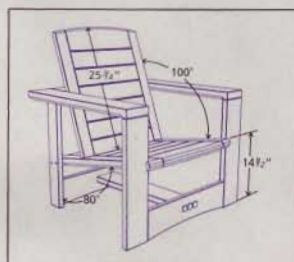
A quick sit determines all those things if you're buying a chair. It's a different story, though, if you're designing and building a chair.

Take the outdoor lounge chairs featured in this issue, for instance. As with all *Workbench* projects, they were designed using a specialized computer-aided-design (CAD) software. With this high-tech system, project parts are created, sized, extruded (given a three-dimensional likeness), and then assembled just like you would an actual project (*Illustration*, below). The project can then be rotated, turned upside down, exploded apart, and reassembled.

It's remarkable software, to say the least, yet in the case of the chairs, it still couldn't guarantee comfort. The only way to do that was to build a prototype.

As you can see in the *Photo* at lower left, the prototype was nothing fancy — just scrap pieces of material screwed and clamped together. And though it was fairly crude, the prototype provided us with the perfect opportunity to give the chair a try, sit for a spell, and then weigh in on that most crucial comfort index.

That done, it was easy to reposition the seat as needed, change the angle of the back, or trim off the legs. Once we arrived at the "perfect" prototype (most comfortable to most people), we finalized the chair design. The result of all this is a casual, comfortable chair that is indeed perfect for summer lounging (*Photo*, below right). Plans for building a set of these chairs and two companion tables begin on page 42.



Tim



"A good set of outdoor furniture should have three qualities: style, comfort, & durability. At the same time, we wanted ours to be simple enough that anybody could build it."

easy weekend projects



Outdoor Furniture

This stylish set of furniture captures the essence of casual outdoor living.

Made of cedar and assembled with steel dowels, the chairs and companion tables are built to last.

42

Pathway Lanterns

Light up your landscape with easy-to-build lanterns. With a one-of-a-kind design, these low-voltage lights will highlight your yard — night or day!

54

Mosaic Tile-Top Table

Craft a simple table from a half sheet of plywood. Then decorate the top with bits and pieces of ceramic tile.

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stylish home makeovers



Bath Makeover

Discover seven inspiring ideas you can use to transform an outdated bath into a spa-like retreat — all for less than \$450.

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Tile with Style

Don't tear out tile if its color doesn't match your decor. Save time and money by accenting it with paint.

38

Elegant Rain Chains

Why settle for downspouts when you can install a rain chain instead? It only takes a few years, yet you'll enjoy its whimsical look and melodic sound for years.

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ONLINE

WorkbenchMagazine.com

Get even more information about the projects and articles in this issue:

- Builder's Plans, Cutting Diagrams & Materials List: Furniture for Outdoor Living (Patio chairs and two companion tables)
- Slide Shows: Painting Ceramic Tile, Thinning Paint for Spray Guns
- Free Online Article: Roofing Basics

home storage solutions



94

Garage Gear Rack

An up-close look at Yakima's "Ground Control" system, an innovative storage rack for bikes, canoes, and other outdoor recreational gear.

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Storage Sheds

Here are a few helpful pointers on what to look for when buying or building a storage shed. Plus, how to best situate it in your yard.

50

Storage on a Roll!

Turn castoff pieces of furniture into handy home storage. Add casters and bring organization right where you need it most.

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tool & product close-ups



72

Low-Voltage Lighting

Lights add a whole new dimension to your yard. Learn how to set up a low-voltage system and create dramatic lighting effects.

60

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Spray painting systems are fast, efficient, and easy to use. But which one should you buy? This guide makes it easy to choose.

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WORKBENCH UNCOVERS NEW TRENDS AT THE

International Builders Show

Come along as the *Workbench* staff joins builders and remodelers from around the world for a glimpse into the future of home building.

The world's biggest home center opened on February 6, 2007, in Orlando, Florida. It had a 1.6 million square-foot showroom, seminars where hundreds at a time could learn about the latest trends, and it even had furnished model homes built in the parking lot. Over 100,000 people came to shop

in the four days it was open. And though this super home center closed on February 9, it was a huge success.

This "home center" was actually the International Builders Show, the National Association of Homebuilders' (NAHB) annual showcase of the latest trends, tools, and products for the home. The *Workbench* staff attends every year to gain insight into what's hot in homes. Here



What will the home of the future be like? Like this one, says the NAHB. Built in an established Orlando neighborhood, it's luxurious, spacious, high-tech, and super energy-efficient.



Want to see what baby-boomers, gen-Xers, or nuclear families want in new homes? No problem. There were four fully-furnished theme homes in the Builders Show parking lot.

are a few of our favorite trends from the show:

Green Is Good—The idea of environmentally responsible building has gone mainstream with super-efficient appliances, tightly sealed windows and doors, soy-based insulation, and even solar hot water heating.

Multi-use Is a Must—For years, homes grew larger as we added a separate room for each activity. Now homes are being downsized (a part of the green movement), and each room is designed for multiple duties. Guest rooms are offices; kitchens have laundry appliances; and "multi-activity" rooms serve as everything from home theaters to craft areas.

A Garage Is Great—In line with this multi-use idea, the lowly garage is now considered an extension of the home. Storage systems abound, as do floor



Can an old home be high-tech? This one was redone with futuristic features.

coverings, appliances, and high-style garage doors.

Disaster Is Bad—And we've seen quite a few in the past several years. The result is that new doors and windows are being built to resist wind, water, and flying objects.

37 Acres of exhibit space, almost all inside, at the International Builders Show

11.5 Miles of aisles that connected the exhibits



WHEN SELECTING CABINETS AND FLOORING

Mix to Match

Among the many choices you have to make when planning a building or remodeling project, selecting cabinets and flooring are two of the biggest. These items are expensive and, at least for the foreseeable future, permanent. So you need to make sure that the cabinets go well with items like the flooring and moldings.

Many people feel that the best approach is to make all these items match exactly in color. But the result of this can be that

nothing looks good. Instead, everything just blends together into a nondescript mass of color.

A better solution, according to a free booklet called *American Hardwoods by Design*, is to mix it up by using different wood species and varied tones.

This booklet, produced by the American Hardwood Information Center, features great ideas, photos, and insights from eight interior designers. For example, to make your kitchen brighter, install a light-toned floor. To

highlight your cabinets, make them lighter, and install a dark-toned floor.

The booklet also provides more information about hardwoods in general and the environmental benefits of using them in your home.

Designers usually charge handsomely for their insights, but this booklet brings them to you for free.

For your free copy, go to HardwoodInfo.com and click on "Write and Request." While you're there, be sure to check out the wealth of other information available on the site. 

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THE RIGHT WAY TO

Repair a Broken Window Pane

Q: I need to replace a broken window. It's just a standard single-pane window, so I know this isn't a tough fix. But I want to do it right. Do you have any tips for replacing a window pane properly?

Brad Hemmingsen
Denver, CO

A: Replacing single-pane glass isn't difficult. But there are a few simple techniques that will ensure the glass is sealed well and that the new glazing stays in place for the long haul.

Before you start, gather your tools and supplies. For tools you'll need a utility knife, putty knife, gloves for handling the broken glass, pliers, sandpaper, and a paint brush. You may want a heat gun to soften the old glazing compound. Supplies include exterior primer, glazing points for attaching the glass, glazing compound, and new glass.

Replacing the glass is easier if you can remove the sash and lay it flat. But you can work on it in place if necessary.

To size the glass correctly, measure the height and width of the opening, and then subtract $\frac{1}{8}$ " from each dimension. That gives a little clearance for fitting the glass into place.

The next step is removing the old broken glass. Wear gloves to protect your hands from the sharp edges.

Now use a utility knife to dig out the old glazing. Be careful not to gouge the wood. If the old glazing is hard, you can soften it with a heat gun. Use pliers to remove the glazing points that held the old glass.

Next, sand the area to ensure a clean, smooth surface. Then brush a coat of primer on the exposed wood.

Before setting the glass into the opening, you need to create a seal by putting a thin coat of glazing compound on the stop that the glass rests against. An easy way is to roll glazing putty into a $\frac{1}{8}$ "-diameter "rope." Lay this on the glass stop, and then flatten it by hand. Now press the glass carefully into the compound

Replacing a broken pane of glass is easy. Just be sure to prepare the opening properly and then lay in the new glazing with care to make the job last.

(Fig. 1), and secure it with glazing points every 4" to 6".

Next, push glazing compound into place around the perimeter of the glass (Fig. 2). Neatness doesn't count. You'll smooth the glazing in the next step.

Use a putty knife or glazier's tool to smooth the putty and remove excess compound (Fig. 3). Then reinstall the sash. Let the compound cure (which takes up to two weeks) before you paint.



1] After priming, lay a thin bead of glazing compound on the glass stop, and then gently press the glass into the compound.



2] Secure the glass with glazing points. Then overfill the perimeter with glazing compound and press it into place.



3] Pull a putty knife or glazier's tool along the compound to compress and smooth it into a consistent, beveled bead.



GOT QUESTIONS? WE HAVE ANSWERS!

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Email: Ask@workbenchmag.com

Forums: forums.woodnet.net

Mail: Ask Workbench, 2200 Grand Ave., Des Moines, IA 50312

TILE SPACING DETERMINES

Proper Grout Type

Q: I'm getting ready to lay a tile floor, and I'm not sure if I should use "sanded" or "unsanded" grout. What's the difference between them, and how do I know which to use?

Marcia Fellows
Iowa City, IA

A: The difference between these two types of grout is simple: Sanded grout has sand blended into the mixture, while unsanded grout doesn't.

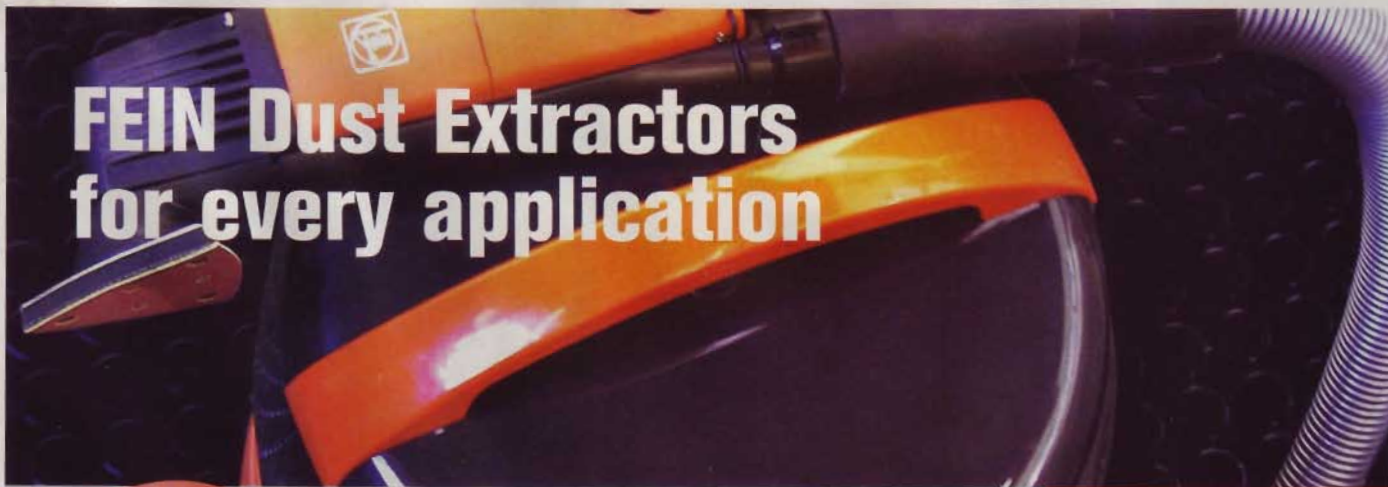
As a general rule, sanded grout is used in joints wider than $\frac{1}{8}$ ". The sand serves two purposes. First, it acts as a filler to help prevent the grout from shrinking as it dries. Second, the sand makes the grout in the joint more resistant to abrasion caused by foot traffic.

The grout in joints that are $\frac{1}{8}$ " wide or less isn't subjected to much abrasion or wear, so unsanded grout is used in these joints. Plus, it's easier to press unsanded grout into the narrow spaces between the tiles.

The final key to success in any tile job is choosing the right grout. Joints wider than $\frac{1}{8}$ " require sanded grout to resist shrinkage and wear. Use unsanded grout on joints $\frac{1}{8}$ "-wide or narrower (*Inset*).



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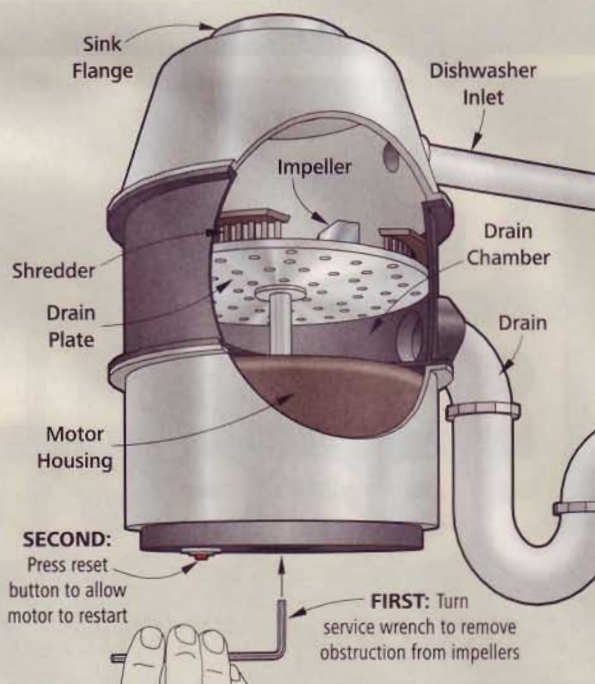
Q: My garbage disposal jammed and then shut off completely. Now it doesn't even turn on. Can it be repaired?

Angela Adams
Boise, ID

A: Garbage disposals are equipped with an overload feature. It shuts off the power to prevent the motor from burning up if it gets jammed. To get the disposal working, you need to clear whatever is caught between the impellers and shredder (Illustration, right) and then reset the overload switch.

To fix the disposal, start by unplugging the power cord. Now turn the motor by hand using the service wrench that fits into the bottom of the unit. Turn the wrench back and forth until you free the obstruction. Use a flashlight to look into the disposal. If necessary, use tongs—never your hand—to remove the obstruction.

With the jam cleared, press the reset button. Make sure the switch is off, plug the disposal back in, and then turn it on. If it jams again, repeat these procedures.



To remove a jam from your garbage disposal, use the service wrench that came with it. If your wrench is missing, you can get a replacement at an appliance store.

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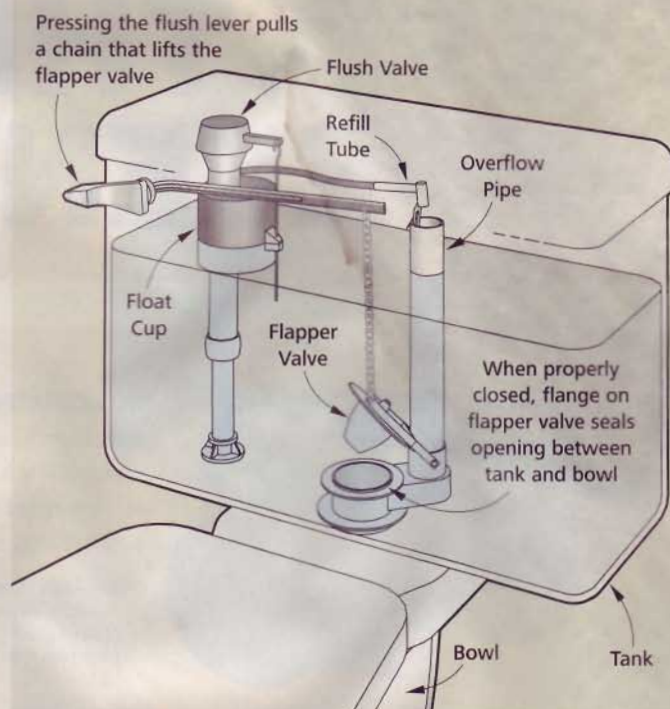
Toilet Repair

Q: My toilet continues to run after I flush it. If I jiggle the handle, it stops, but sometimes I hear it run briefly even a half hour or more later. Is this something I can repair myself?

Kim Johnson
Tempe, AZ

A: The toilet keeps running because the flapper valve isn't closing properly. This valve is simply a stopper that covers the opening between the tank and bowl (Illustration). When you push the flush lever, a chain lifts the flapper, allowing water to flow into the bowl. As the water level falls, the flapper falls over the opening, and water pressure holds it closed. Eventually, the flapper gets worn, preventing it from forming a good seal.

To replace the flapper, first shut off the water supply and flush the toilet to drain the tank. Pop the flapper off its pivot, and unhook the chain. Take the flapper with you to the store to make sure you get the right replacement. Then install the new one by reversing the removal procedures.





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Miter saw stands, for all their capacity, stability, and versatility, often lack mobility. To solve that problem on his own miter saw stand, Bob Kelland, from St. John's Newfoundland, Canada, built a simple mobile base to hold the legs of the stand (Photo).

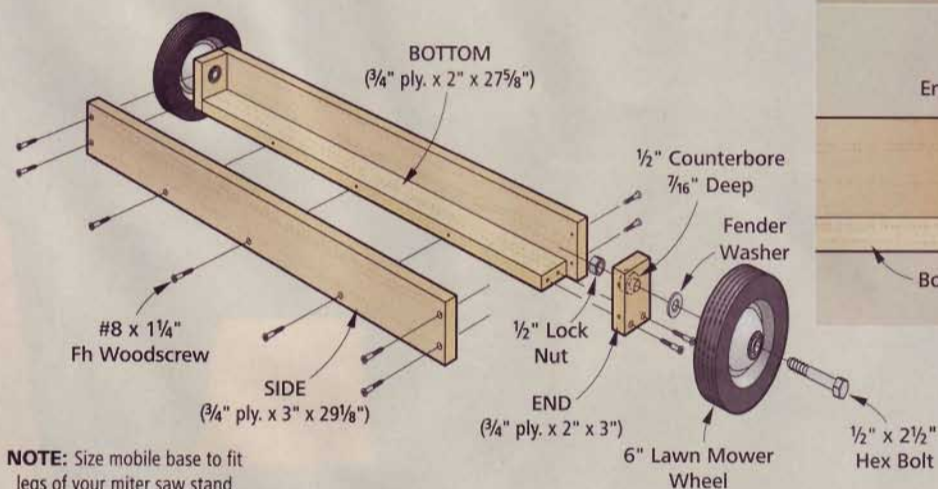
The base is just a plywood box with a wheel on each end. Locate the wheels so the base is raised just enough to provide adequate clearance off the floor.

Hex bolts, secured with lock nuts, serve as axles. The nuts sit in a counterbore drilled in each end piece. That way they won't interfere with the stand's legs. To move the saw, just lift up the end opposite the base and roll the stand like a wheelbarrow.

Because the base isn't permanently attached, the stand can be removed easily for storage.

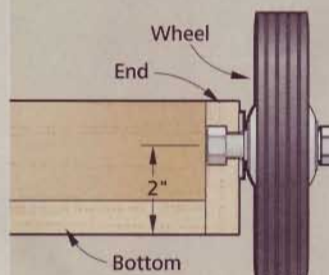


BASE ASSEMBLY VIEW



NOTE: Size mobile base to fit legs of your miter saw stand

WHEEL DETAIL



BEST TIP WINNER!

For this issue's winning tip, Bob Kelland wins a Ryobi Portable 10" Table Saw (BTS21) —A \$249 VALUE!

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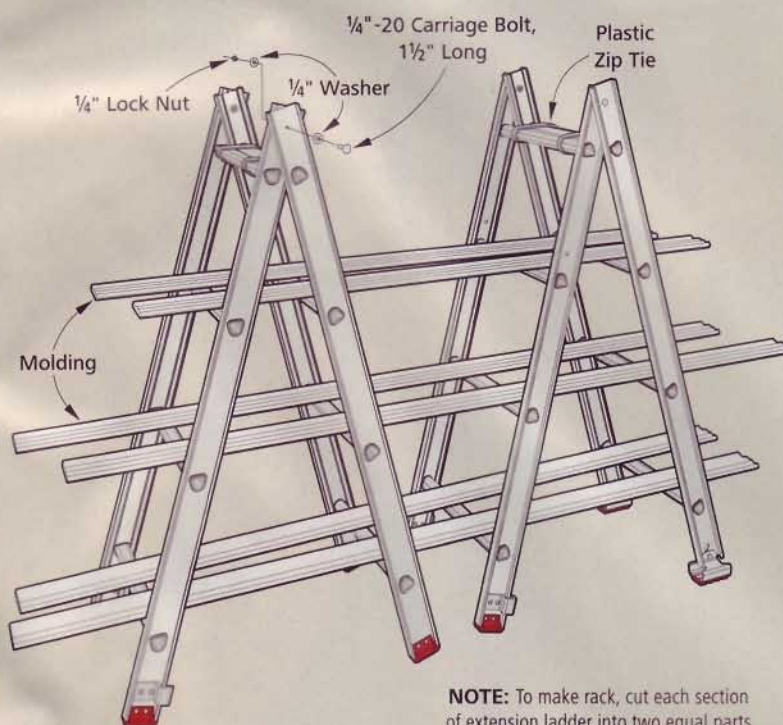
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STORE MATERIAL WITH A Ladder Rack

Rather than taking his worn-out extension ladder to the dump, Bob Kelland from St. John's, Newfoundland, Canada turned it into a multi-purpose rack. The rungs provide a handy place to store freshly painted moldings while they dry. It can also be used on a jobsite for temporary lumber storage.

To make the rack, cut both sections of an extension ladder into two equal lengths. Make sure the rungs align, and then drill holes and bolt the pieces together to form a couple of A-frame stands. Tie each A-frame together around the top rungs with zip ties to provide additional stability. The rack can be disassembled and stored when not in use.



NOTE: To make rack, cut each section of extension ladder into two equal parts

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GLUE CRADLE

When gluing up lots of parts, you want the glue handy to eliminate waiting while it runs down into the bottle tip. Gary McClure from Harlan, Iowa made a cradle to hold the bottle upside down. The hole keeps the glue bottle from falling over.

REUSE SEALANT WITH A Foam Straw

Polyurethane foam sealants are handy except when you are left with a half-used can. That's because the applicator cannot be reused after sealant has dried inside it. Gene Hellums from Anchorage, Alaska, has a tip on how to save that leftover sealant for another day.

After using the supplied applicator on a project, twist it off and discard it. Do not clean out the nozzle. Let the sealant dry completely.

To use the sealant on another project, clean out the nozzle by twisting a drill bit by hand into the dried foam and gently pulling out the "plug." Then attach a drinking straw to the nozzle. The straw can be taped on to secure it. Or, if it is the right size, it can be simply pressed on. Using a bendable straw lets you aim the foam into hard-to-reach openings.



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BRUSH SAVER

Allowing a paint brush to rest on its bristles while soaking can ruin the brush. To avoid this, Tom Barker from Lincoln, Nebraska, has a solution—suspend the brush in the container. Simply clamp scrap wood pieces onto the ferrule and set them on top of the container. If you need to adjust the brush height, just reposition the scraps.



MAKE YOUR OWN HANDS-FREE

Sander Stopper

Waiting for a random orbit sander to completely stop can be a nuisance. Joseph Scharle from Holly Springs, North Carolina, made this sander stopper from scrap material. Just screw a 3-pound coffee-can lid loosely to a plywood base. Make the hole in the lid slightly bigger than the screw so the lid moves freely as the sander slows to a stop. Before assembling, wax the mating sides of the lid and base. Non-skid tape on the bottom of the base prevents it from sliding around.

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TAKING LUMBER FROM

Thick To Thin

Turn thick boards into custom thin stock with just a table saw, handsaw, and a few simple techniques.

Two projects in this issue require parts made of thin cedar lumber. The outdoor furniture (page 42) calls for decorative cedar caps that are $\frac{1}{4}$ " thick, and the lanterns (page 54) use $\frac{1}{2}$ "-thick cedar for a couple of parts. But you can't find cedar that thin on the store shelf. So, short of owning a thickness planer, how do you make thin stock?

The answer is by using a table saw to resaw your own custom-thickness stock out of thicker boards. But before you begin, there are a few things you need to know about resawing.

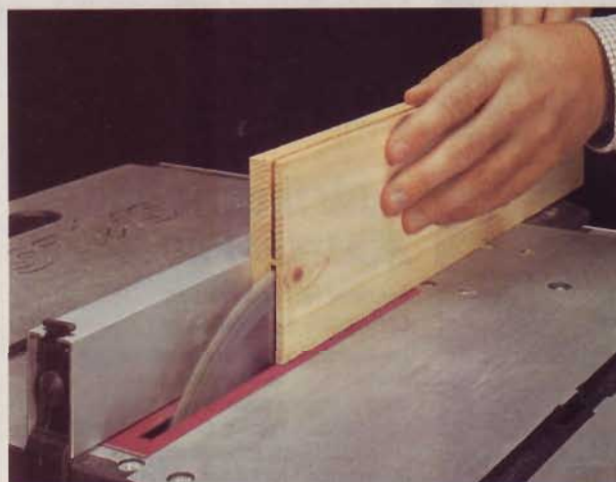
First, the board you're cutting sits on edge instead of on its face. So you need to keep it pushed firmly against the saw's rip fence for a consistent cut.

Second, if the stock is wider than about 2" (as with the 4"-wide lantern cap), you can't cut all the way through it in one pass. You'll need to make a pass on each edge.

Even then, you don't want to cut all the way through the board. The cutoff piece could pinch the blade and kick back. Instead, the idea is to cut almost all the way through using the table saw (Fig. 1), complete the cut with a handsaw (Fig. 2), and then smooth the surface (Fig. 3). 



Lumber isn't always available in the exact thickness you need. But you can make custom-thickness stock easily, such as this $\frac{1}{2}$ " and $\frac{1}{4}$ " stock that was resawn from a 1"-thick deck board.



1] Set the blade height $\frac{1}{16}$ " lower than half the width of the board. Pass the board over the blade, and then flip it and make a second pass. This leaves a $\frac{1}{8}$ " ridge of material in the middle.



2] Use a handsaw to cut through the ridge and separate the waste from the stock you want to keep. To prevent scarring up the stock, keep the saw blade against the waste side.



3] After cutting, clean up the ridge that's left behind. This can be done easily with 80- or 100-grit sandpaper wrapped around a flat sanding block made from a piece of scrap wood.

GET SMOOTH RESULTS WHEN

Spraying Paint

A perfect paint job—that's what you expect when using a High Volume, Low Pressure (HVLP) sprayer (see page 72). But getting perfect results isn't as simple as dumping paint into the sprayer and pulling the trigger.

This is especially true if you're using latex paint. These heavy-bodied paints are formulated for brushing or rolling. Making them "sprayable" requires two steps: thinning then conditioning.

First, you need to thin the paint with water so that the air can push the paint through the nozzle and "atomize" it into small particles. Then, you should add a paint conditioner (like Floetrol from Flood) to make those atomized particles "flow out" to a smooth surface.

Tools of the Trade—To thin and condition paint, you'll need a paint-measuring cup, a clean pail, and a drill-mounted paint mixer. Using them, you can measure and blend your ingredients precisely.

Also be sure to write down the amount of each ingredient you add. That way, once you achieve a mixture that sprays well and covers effectively, you'll be able to repeat it when you need to mix another batch.

Thin to Win—Now you can mix your paint. Sprayer manufacturers offer guidelines, but you'll still need to experiment. After testing several HVLP sprayers, though,

we came up with a formulation that should get you in the ballpark: Start with a quart of paint and add four ounces of water (Fig. 1) and an equal amount of paint conditioner (Fig. 2). Then blend them thoroughly (Fig. 3).

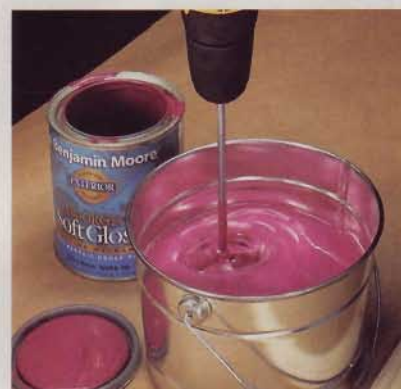
With your paint mixed, you need to test it to make sure your mixture is correct. Details for doing that are shown on page 29.



1] To thin latex paint for spraying, pour one quart of paint into a measuring pail. Then mix in four ounces of water.



2] Now measure four ounces of a paint conditioner, and add it to the mix. Conditioner helps make the paint cover evenly.



3] Use an inexpensive drill-mounted mixer to stir the paint thoroughly. Blend it for a minute or two at slow speed.

TEST THE PAINT AND SPRAYER

After mixing your paint, you need to do two things: check the paint's viscosity and spray a test panel.

Viscosity Test—Paint that's too thick may not flow through the nozzle of a paint sprayer. But paint that's too thin can flow through too quickly. To make sure the thickness is just right, you need to test its flow rate, or viscosity. The best way is with a viscosity cup.

Fill the cup to the brim with your mixed paint, and time how long it takes the cup to empty. Compare that to the recommendations of the sprayer manufacturer. If the paint flows too fast, thicken it with more paint. If it flows too slow, thin it with water. Then repeat the viscosity test.

Test Panel—Once you have the viscosity right, load the sprayer, and then spray a test panel. Hopefully, the paint will spray out like the *Just Right Photo* below.

But it's likely that the paint may come out too thick and blotchy (*Middle Photo*), or too runny (*Bottom Photo*). If the pattern looks like either of those two, you should first try adjusting the sprayer's paint flow and air mixture as described. Only remix the paint if adjusting the sprayer doesn't fix the problem.



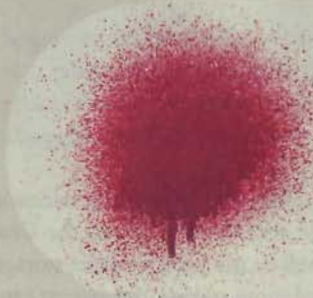
JUST RIGHT

When you have paint mixed to the proper viscosity and the sprayer adjustments correct, the paint should spray in a pattern that's smooth and even, with small, uniform dots and no clumps or drips.



CLUMPY & STRINGY

If the spray pattern looks like this, with the paint in inconsistent or stringy clumps, then you should start by increasing the paint flow on the sprayer. If that doesn't work, then thin the paint.



THIN & RUNNY

If the spray pattern looks like this, with runs and thin coverage, then try adjusting the sprayer to decrease the airflow. If the paint still runs, you'll need to thicken it by adding more paint.



You can do it. We can help.

Find the perfect door for any doorway. From great brands like Masonite, JELD-WEN, and our Home Depot® exclusives NUporte® and Feather River.® Come by the store and see all the possibilities open to you at The Home Depot.

Masonite Cheyenne Interior Door



NUporte Grand 5-Lite Closet Door





SUPER-VERSATILE STORAGE

Sports Gear Rack

If you're into outdoor sports, you know that recreational gear is bulky, awkward, and difficult to store. That means bikes, boats, skis, and other gear can quickly take over the entire garage. And although it's possible to get special hangers that hold individual items, there hasn't been one that holds everything—until now.

Yakima, a company that has made vehicle rack systems for years, has a new system that makes it easy to corral your gear. The system is called Ground Control, and it's unlike any garage storage system you've seen.

The heart of the system is a set of three oval-shaped rings made of durable aluminum tubing. The rings mount on tall, vertical supports that rest on adjustable feet. Upper mounting plates and center struts connect the supports securely to the wall.

This setup lets you mount a variety of handy accessories to hold your gear. It's these accessories that turn the Ground Control into what may well be the most versatile storage system around. If you need more storage, the system can be easily expanded, as shown on page 32.



1] SKI & SNOWBOARD RACK

For a house split between avid skiers and snowboarders, this \$35 accessory rack is the answer. It clips onto the oval rings and sports two adjustable arms that are sized to hold skis and snowboards at the same time.



2] HEAVY-DUTY SUPPORT ARMS

Anyone with a kayak, canoe, or cartop cargo box knows they chew up space. To hold these bulky items up and out of the way, simply mount these sturdy support arms (\$90) to the rings. Together, the arms support up to 100 pounds of equipment.



3] GEAR HOOKS

Heavy-duty S-shaped hooks fit over the aluminum rings to provide versatile storage for a variety of equipment. A four-pack of single hooks costs \$10; double hooks are \$16 per pack.



SINGLE BIKE HANGER

To save space on the rack, this simple bike hanger (\$20) hooks around the rim of the wheel. Unlike the double hanger however, (below), the bike sticks out into the garage.



4] MESH GEAR BAG

These sturdy bags (\$25) span between the vertical supports of the rack so you can store miscellaneous gear that won't fit anywhere else. Made of breathable mesh, the bags allow wet items to dry. Plus they let you see at a glance what's inside.



5] DOUBLE BIKE HANGER

Because of their size and shape, bikes are awkward to store. This hanger (\$45) has a couple of arms that hold two bikes in about the same amount of space that one would normally take up. Adjustable pads on the arms cradle the bike frames.

3 VERSATILE STORAGE CONFIGURATIONS

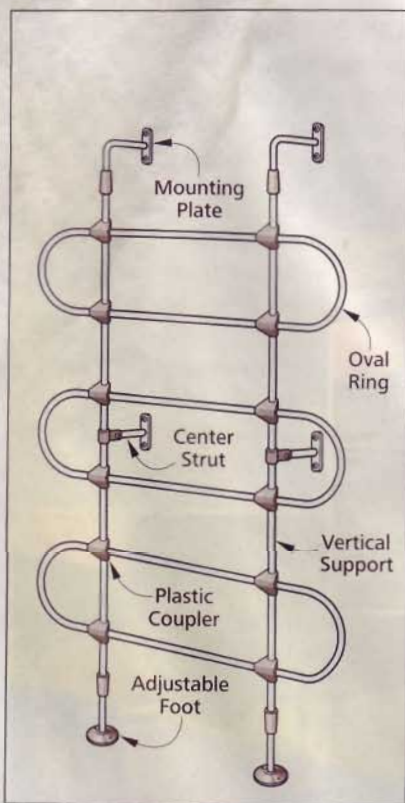
Whether you have a modest amount of sports equipment or you're a recreational gear hound, Yakima's Ground Control system has you covered.

Base Unit—The foundation of the system, called the Base Unit, comes with two vertical supports and three oval rings (Illustration, below left). The rings have a 5-ft. span, which offers enough room to store a small kayak, a couple of bikes, and plenty of other gear.

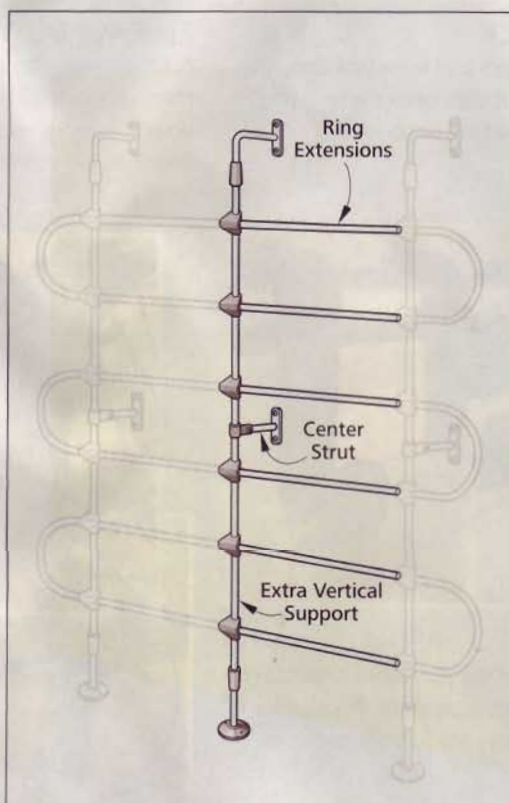
Extender Kit—If you want to store a longer boat or more bikes, though, you may want to pony up the extra

money for an extender kit that increases the width of the Base Unit. This kit consists of an additional vertical support, plus six extensions that plug into the oval rings of the Base Unit (Illustration, below center). This setup gets installed just as before. If necessary, you can add more extender kits, making the rack as wide as you want.

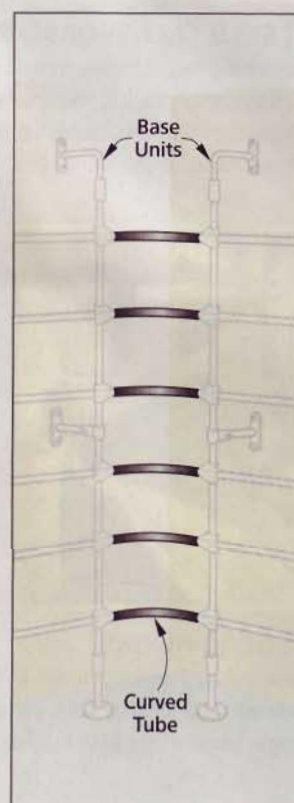
Corner Kit—Another kit lets you install the rack in a corner (Illustration, below right). This configuration requires two Base Units. They're connected with six curved tubes that fit into the ends of the rings on the Base Units, allowing the rack to "turn the corner."



BASE UNIT: Yakima's standard Ground Control kit measures 5-ft. wide by 8-ft. tall and sells for \$250.



EXTENDER KIT: For \$130 more, you can get an extender kit that increases the width of the Base Unit by 32".



CORNER KIT: The corner kit (\$60) connects two Base Units with curved tubes.

UNIVERSAL MOUNTING PLATE



The vertical supports of this rack are designed to be spaced 32" apart to make them easy to mount on a wall with standard 16" stud spacing.

If you want to mount the rack in a place where the supports don't align with the studs, you'll need to buy a special mounting plate (left). Simply attach the supports to the plate, position the rack, and drive screws through the appropriate slots in the plate to tie into the studs.

BUYER'S GUIDE

Yakima
888-925-4621
Yakima.com

REI
800-426-4840
REI.com

Eastern Mountain Sports
888-463-6367
EMS.com

ORS Racks Direct
800-894-7547
ORSRacksDirect.com

Rack Attack
888-399-7225
RackAttack.com

Rack 'N' Road
800-722-5872
RackNRoad.com

Nantahala Outdoor Center
888-905-7238
NOC.com

LL Bean
800-441-5713
LLBean.com

7 bath makeover

inspiring ideas

for under \$450

Anyone who has ever remodeled a bathroom knows it can be a time-consuming and expensive job. This is why many homeowners put off this daunting task until needed repairs demand attention.

With some savvy shopping and creative ideas, however, it's possible to revive a boring bathroom in just a few days—without breaking your budget.

The bath shown in the *Before Photo* is a perfect example. It didn't look bad—it just needed a few cosmetic updates for a more contemporary look. We decided to restyle the bath with fixtures, flooring, and a color

scheme that would give a modern, spa-like feel to the space.

For starters, we chose hues based on a neutral palette of beige and white, then we added warm blues and soft organic greens as accent colors.

Next, we purchased a number of off-the-shelf items from home centers and department stores that were surprisingly inexpensive and easy to install. See *The Plan* on page 37.

With the redesign plan nearly complete, we added a couple of custom features. First, to create visual interest, we painted a section of tile behind the pedestal sink. (Find out how on page 38.) Second, we made an artistic grouping of mirrors that's functional and fashionable (*Photo, below*).

The result is a bathroom facelift with a fresh new style—proof that a small investment in time and money can yield big dividends.



MIRROR TRIO

A trio of overlapping mirrors adds a distinctive look to this bath. To create a sense of depth, screw three plywood disks of different thicknesses ($\frac{1}{4}$ ", $\frac{1}{2}$ ", and $\frac{3}{4}$ " to the wall. Then use mirror tape, available at glass shops, to mount mirrors to the disks.





THE PLAN

① PAINT THE WALL

Cost: \$25

Time: 2 hours

Paint: *Benjamin Moore*
Blanched Almond (#1060),
BenjaminMoore.com

② INSTALL LIGHTS

Cost: \$75

Time: 4 hours

Lighting: *Hampton Bay*
(#383586), [Home Depot Stores](http://HomeDepot.com)

③ MOUNT MIRRORS

Cost: \$40

Time: 2 hours

Mirrors: Cut at local glass
shop (6", 10", and 18"
mirrors)

④ ADD PEDESTAL SINK

Cost: \$85

Time: 3 hours

Sink: *Aquasource Carlton*
(#25343, #68416) Lowes.com
Faucet: *American Standard*
(#2475), HomeDepot.com

⑤ PAINT WALL TILE

Cost: \$15

Time: One hour

Paints: *Delta PermEnamel*
paint for glass, ceramic, and
tile, Latte and Chocolate,
Michaels.com

⑥ LAY FLOOR TILE

Cost: \$127

Time: Two days

Tile: *Surface Source* 12"
Sahara Beige ceramic tile
(#188333), Lowes.com

⑦ ACCESSORIZE

Cost: \$79

Glass Shelf: *Style Collections*
(#242875), Lowes.com

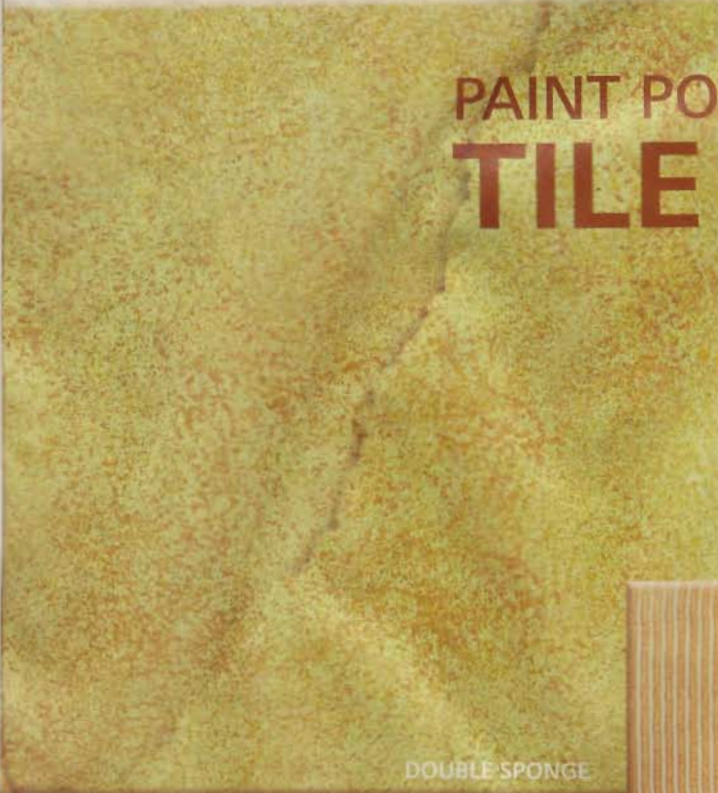
Towel Hooks: *Perfect Home*
(#475689), HomeDepot.com

Towels: *Casual Home*, Target.com
Bench: Target.com

TOTAL: \$446

PAINT POWER: **TILE WITH STYLE**

Bring fresh style to boring white tile and create a custom-designed look with a quick and easy color update. Specialty paint for glass and ceramic does the trick.



DOUBLE SPONGE



COMBED STRIPES



SINGLE SPONGE



COLOR WASH



SEA SPONGE

Typically, if you want to change the color of your ceramic tile, it would involve tearing out the old stuff, replacing the substrate, and installing new tile—a costly and time-consuming job at best. But you don't have to replace that tile to get a new look. You can paint it instead like we did for our bath makeover on page 36. All you need are some specialty paint products and a little time to complete a few easy steps.

The special paint for this type of application is tile and glass paint. It is translucent so the color of the tile shows through from underneath. This adds visual depth and interest yet preserves the luminous quality of the tile finish.

There are two types of paint for glass and tile, and it's important to choose the correct one. One type requires oven baking to cure the paint. It's designed for use on small items. The second type, which is better suited for large areas, is an air-dry formula that cures to a durable finish in 10 days. The air-dry paint is the type we used for this project. (See *Paints and Products below*.)

In addition to the paint, the process requires several companion products. Surface Conditioner is brushed on before painting, Diluant thins the paint, and Clear Gloss Glaze is applied as a final finish.

We painted white tile for our project, but there are many other possibilities. For instance, using a light color over dark tile creates contrast and drama. Also, coordinating colors of the same value look great on any tile color. And you don't have to paint a large area. A simple border or a few accent tiles adds big style fast.

We used plastic wrap to create a mottled design for our project. But any of the textures shown at left are also good choices. To test your ideas, paint a small area or an extra tile first. If you don't like it, wash it off and test again.

The step-by-step details for creating this amazing tile transformation begin on page 40.



EXPLORE VISUAL "TEXTURES"

To produce the dramatic effects on the tiles on page 38, we used these texturing techniques:

- **Double Sponge:** Sponge on two colors, one after the other, using a fine-texture sponge.
- **Combed Stripes:** Apply paint, then comb through it with a faux painting comb.
- **Single Sponge:** Use a fine-texture sponge and evenly apply a single color for overall coverage.
- **Color Wash:** Use a brush to apply two colors in a crisscross fashion.
- **Sea sponge:** Use a sea sponge with large open pores and apply two colors.

PAINTS & PRODUCTS

Air-Dry PermEnamel Paints:

Latte, Chocolate, and Olive

Air Dry PermEnamel Products:

Thinner Diluant, Surface Conditioner, and Clear Gloss Glaze

DeltaCrafts.com

800-423-4135



SIMPLE STEPS TO SUCCESS

Tile painting is fast and easy to do, but there are a few things to note before starting the project.

Preparation—For good paint adhesion and durability, preparation is very important. First, clean the tile thoroughly with a non-soapy detergent such as TSP (trisodium phosphate) and let it dry. Then, after masking off the area you want to paint, apply Surface Conditioner and let it dry before proceeding (Figs. 1 and 2).

Painting—The most important thing to keep in mind while painting is that you must work quickly. The paint sets up and becomes tacky fast. Only work on four to six tiles at a time, or as much area as you can paint and texture in about 90 seconds (Figs. 3-5).

Finishing—Allow the paint to dry overnight, then apply the Clear Gloss Glaze medium. The finish requires about 10 days to fully cure, so avoid using harsh cleaning products until then. Gentle wiping with a damp, soft cloth is okay.

second: apply paint & create the texture

3] To create the caramel color we used here, mix Latte plus Chocolate paints. To aid spreadability, add Diluant (the diluting agent) to the mixture in about a 1:4 ratio of Diluant to paint. Then, working on four to six tiles at a time, brush on the paint.



first: clean, then apply surface conditioner

1] Pour enough Surface Conditioner to cover the area you plan to paint into a disposable bowl so that you can easily load a 2"-wide household trim brush.



2] Brush on the Surface Conditioner and allow it to dry for about 30 minutes. The conditioner neutralizes oils and surface residue to aid in paint adhesion.



4] Immediately lay a piece of plastic wrap over the wet paint, pressing the wrap flat to the tile with the palms of your hands and letting it form a random pattern of creases and wrinkles. Do not rub or smooth it with your fingers.



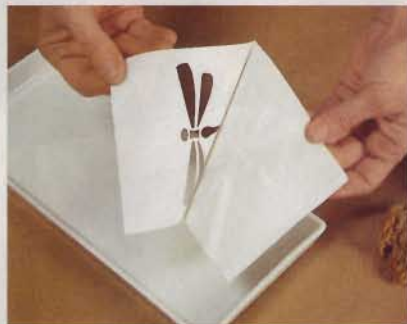
5] Now, quickly peel off the plastic wrap (Photo, far left). This process removes paint in some areas, letting the color of the tile show through. Heavier coverage remains in other areas. Again, without pausing, gather the plastic wrap into a loose wad and dab the wet paint lightly (left). This evens out spots where too little paint was removed and breaks up heavy areas by creating additional "wrinkles." Dab until the desired effect is achieved.

STENCIL ON STYLE

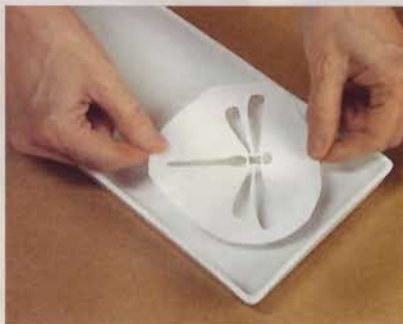
Another excellent way to add a designer look is to create custom accents by decorating porcelain bath accessories. The stylized dragonfly motif and sponged trimwork shown below are simple, fast, and impressive.

For the tray, we used a peel-and-stick stencil because it adheres well to slick surfaces. This seals the edges of the openings in the stencil and prevents paint from bleeding underneath. If you don't use a peel-and-stick stencil, you can use a regular stencil and adhere it using spray stencil adhesive.

To complete the decoration, we sponge-painted a lacy border on the tray and around the top of the soap dispenser. When the paint dries, a final glaze is applied. After curing for 10 days, the item can be cleaned by hand or in the dishwasher.



1] Apply Surface Conditioner and let it dry. Then carefully peel the backing off of the stencil.



2] Trim the stencil to fit the area and set it in place. Then rub firmly with your fingers to adhere the stencil.



3] Use a small natural sponge to fill in the stencil openings with paint. Use an up-and-down dabbing motion.



4] After the paint sets up (about a minute), but before it dries, remove the stencil. Then sponge on a border.



BUYER'S GUIDE

Peel & Stick Stencils:

Dragonfly

DeltaCrafts.com

800-423-4135

Bath Accessories:

Soap Pump (#570893)

Tray (#300470)

CrateandBarrel.com

800-967-6696

Other Tools and Supplies:

Non-soap detergent such as TSP

2" household trim brush

Plastic wrap

Disposable bowls

Plastic spoon for mixing paint

Painter's tape

Scissors

Small natural sponge





comfortable & casual **FURNITURE** *for outdoor living*

These chairs put the "set" in this outdoor "setting." Or is that "sit?" Either way, this is the place to be when the sun is shining and the breeze is blowing, and the chairs are a big part of that. They're comfortable, they're attractive, and they are incredibly durable.

And now you're thinking you won't be able to enjoy the chairs because you'll spend all summer building them. Not so. Get started now and in a couple weekends, you can have a whole set of chairs *and* the accompanying table. The materials are common, the techniques are easy to master, and the results are worth the effort.

Project plans for chairs begin on page 44. Plans for the table are available at WorkbenchMagazine.com.



Built to Last

Any furniture that sits outside is bound to take a beating. Weather is one factor. Moisture causes wood to rot, sun makes finishes flake off, and changes in humidity cause wood to expand and contract, eventually loosening the joints.

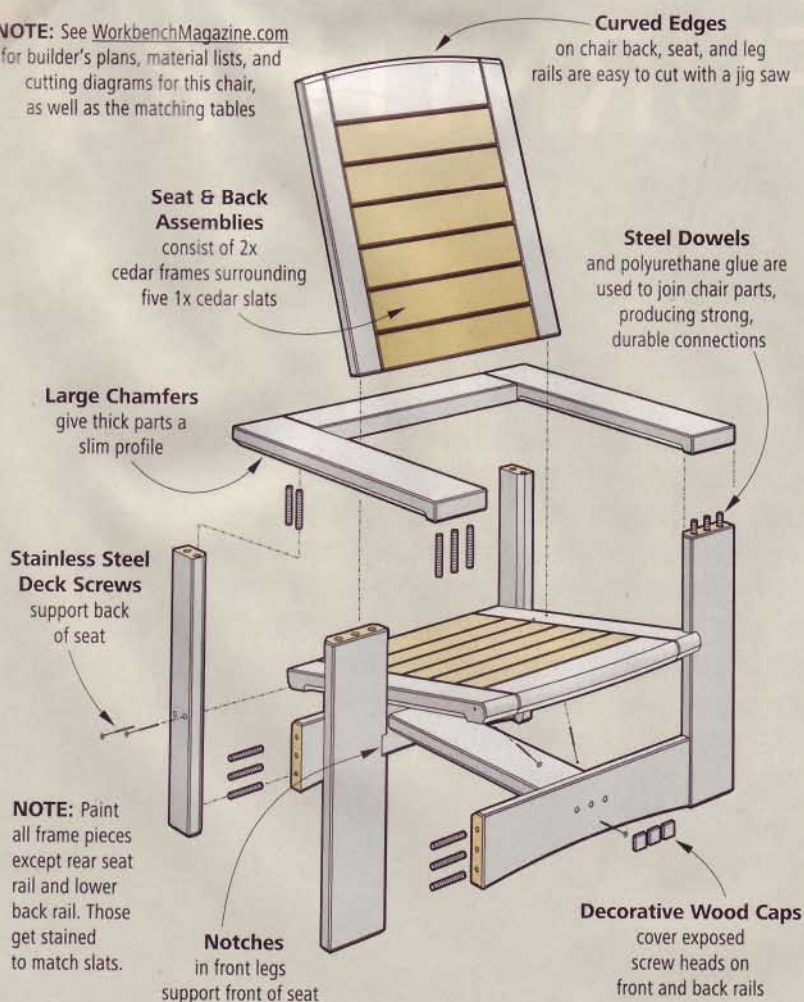
To minimize the effects of weather, we built the chairs and tables from cedar, which is naturally resistant to rot and insects. Cedar doesn't need a finish to maintain its protective qualities. (It weathers to an attractive silver-gray color if left unfinished.) But for appearance, we decided to paint the chair frames and apply a cedar deck stain to the slats.

Weather isn't the only thing that can damage outdoor furniture. Every time you sit down, it puts a strain on the joinery used to assemble the chair. Plus, chairs are constantly getting pushed and pulled around, which stresses the joinery.

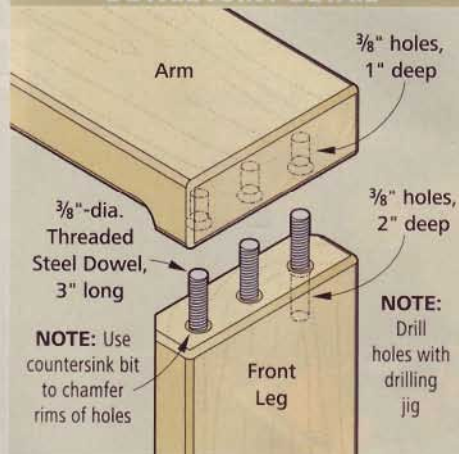
Steel Dowel Joints — To make these outdoor chairs sturdy and durable, we assembled them with *steel dowels* made from $\frac{3}{8}$ " threaded rod (see *Sidebar* on page 45). Steel

CONSTRUCTION DETAILS

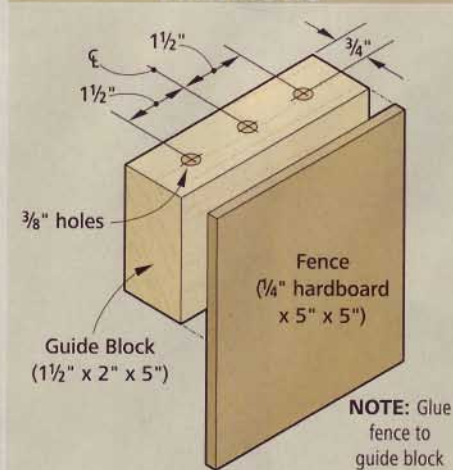
NOTE: See WorkbenchMagazine.com for builder's plans, material lists, and cutting diagrams for this chair, as well as the matching tables



DOWEL JOINT DETAIL



DRILLING JIG



dowels are stronger than wood ones, and the threads create a large glue surface that makes an incredibly strong joint.

Speaking of glue, it must be formulated to adhere dissimilar materials (steel and wood). We used polyurethane glue for that purpose. It's also waterproof, which guarantees a long-lasting connection.

Drilling Dowel Holes—As with a standard dowel joint, the steel dowels fit into holes drilled in the mating chair parts. For a proper fit, the holes in each piece must be accurately aligned. A two-part drilling jig (page 44) makes that a snap. Simply align the jig flush with the edges of the workpiece, clamp it in place, and drill the dowel holes. The jig ensures identically spaced holes. Plus, it locates all holes the same distance from either the face or end of a workpiece.

One thing to note is that the back legs are narrower than the other chair parts. Because of that, the ends are joined to the arms with two dowels instead of three (*Construction Details*). To drill holes for these dowels, clamp the drilling

jig flush with the back edge of each of these legs and then use the two guide holes closest to that edge.

There's one additional "wrinkle" when making the dowel joints for the back legs. For the leg-to-lower-rail joint, you'll need to drill dowel holes centered on the inside face of the legs ($1\frac{1}{2}$ " in from each edge). And for the leg-to-arm joint, the dowel holes in the arm are located $1\frac{1}{4}$ " in from the inside edge (see *Top View* on page 46). Since the jig is made to drill holes $\frac{3}{4}$ " in from the fence, it won't work as a drilling guide in either of these two instances. You *can* however use it to mark the locations of the holes. Then just drill those holes freehand.

Chamfer the Holes — Once you get all the dowel holes drilled, it's worth taking a minute to chamfer the rims of the holes. The chamfers, which are easy to make with a countersink bit, simplify inserting the dowels during assembly. Plus they have the added benefit of creating a small pocket for excess glue.

SUPER-STRONG, STEEL DOWEL JOINTS

Steel dowels are incredibly strong, but you won't find them at your local hardware store. One solution is to cut them from threaded rod (Fig. 1). Or, you can purchase 3"-long threaded rods at McMaster.com (Part No. 95475A636).

Even though they're steel, the dowels are only as strong as the glue that bonds them to the cedar. We used polyurethane glue for that (Fig. 3). This type of glue is activated by water, so mist all contact surfaces before applying the glue. Also, be sure to wipe off any glue squeezeout. It foams as it cures, and the hardened foam is difficult to remove.



1 To make the dowels, cut 3" lengths of threaded rod using a reciprocating saw with a metal-cutting blade.



2 Align and clamp the drilling guide to the chair part, and use the holes to guide the bit as you drill.



3 After dampening the joint, brush polyurethane glue on the dowels and insert them into the holes.



4 Now simply assemble the parts, clamp them together, and wipe off the excess glue.



Building the Chair Frames

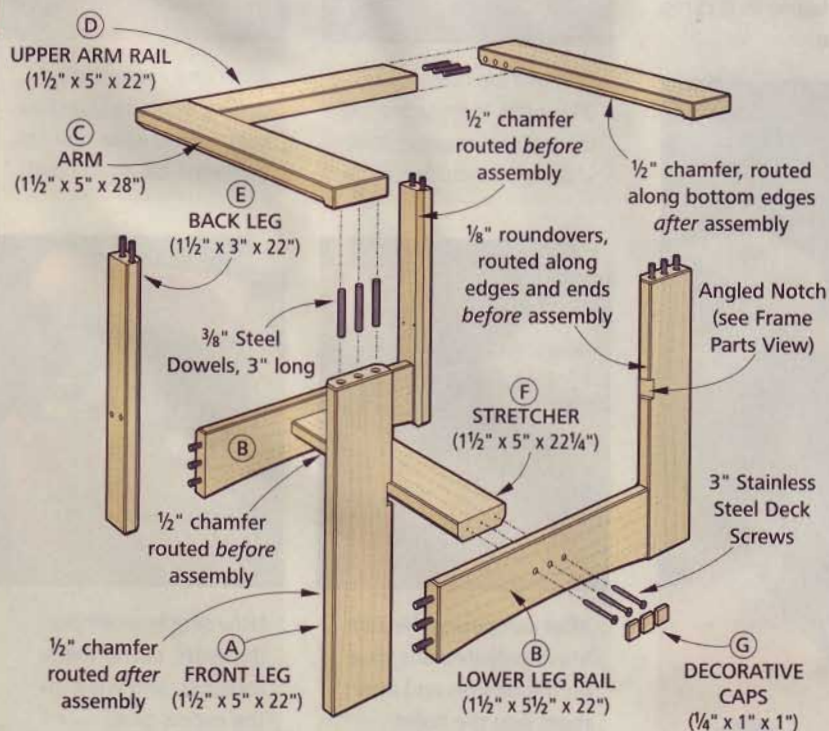
These chairs are designed with a large open frame that's made up of three U-shaped assemblies—one each for the front legs, back legs, and arms (*Frame Construction*). The leg assemblies are connected by a stretcher at the bottom and the arm assembly at top.

All three assemblies are built from 2x stock. That makes the chair sturdy, but it adds an interesting design challenge. How do you keep the chair from looking big and bulky? Our solution was to rout large chamfers on the frame pieces to make the chair *appear* thinner than it actually is.

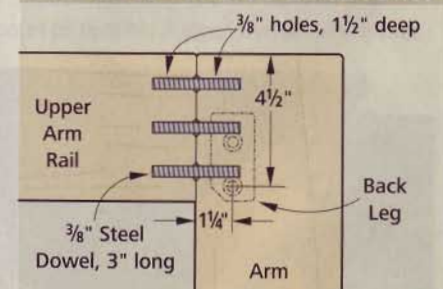
Some of those chamfers get routed before putting the U-shaped assemblies together, and some after. The construction sequence that follows will help you keep things straight.

- 1] Cut all the chair frame parts to length using a miter saw or table saw.
- 2] On the table saw, rip $\frac{1}{8}$ " strip off each piece to square up one edge.

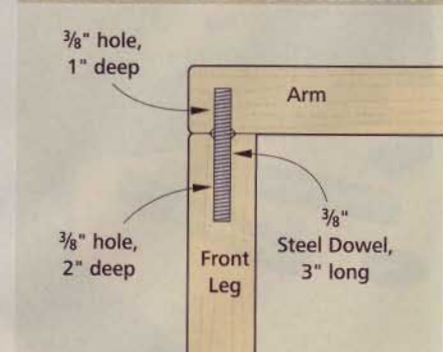
FRAME CONSTRUCTION



TOP VIEW - END TO EDGE JOINT



SIDE VIEW - END TO FACE JOINT





After laying out the notches that support the seat, cut the angled shoulders with a handsaw guided by a scrap block.



Using a sharp chisel and a mallet, chop out the waste material between the shoulders of the notch.



Pare the remaining waste material from the bottom of the notch to produce a smooth, flat-bottomed recess.

Then, with the squared-up edge riding against the fence, rip the frame parts to final width.

3] Draw an arc on the bottom edge of each lower leg rail using a flexible scrap piece as a guide. Cut the rails to shape with a jig saw and sand smooth.

4] Use a router equipped with a $\frac{1}{8}$ " round-over bit to round the edges and ends of all pieces. The rounded

profiles will create distinctive accent lines where two pieces come together.

5] To further shape the chair frame (and create that slim profile I mentioned earlier), some edges and ends will get routed again, with other sizes and types of router bits. For starters, rout $\frac{1}{2}$ " chamfers on the two bottom edges of the stretcher and on one edge only of the back legs.

6] Rout $\frac{1}{4}$ " chamfers on the bottom ends of each leg. These chamfers prevent the legs from splintering if the chair gets dragged across the patio.

7] To support the front of the seat, cut an angled notch in the inside edge of each front leg (Figs. 1-3, above).

8] Using a drill equipped with a $\frac{3}{8}$ " twist bit, drill holes for the steel dowel joints. See page 45 for a more detailed explanation of how to accurately drill these holes using a simple jig.

9] Now put the arm and leg assemblies together. Brush polyurethane glue on the threaded dowels, insert them into their respective holes, and clamp each assembly together overnight.

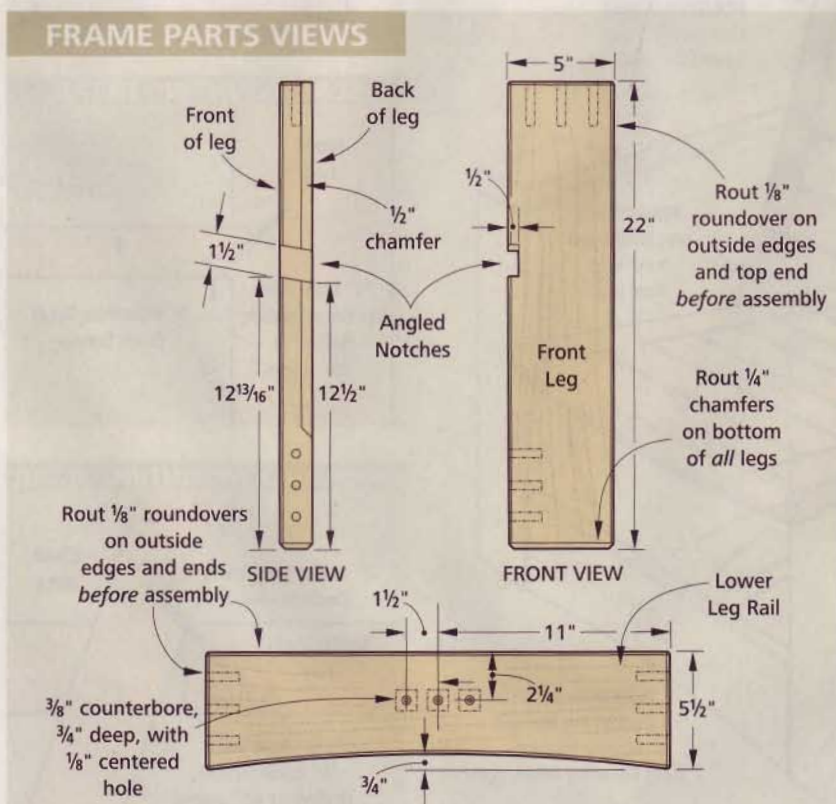
10] Glue and clamp arm assembly onto leg assemblies.

11] Rout $\frac{1}{2}$ " chamfers in the front leg assembly and the arm assembly to create a slimmer profile.

12] Clamp the stretcher between the two leg assemblies, drill pilot holes, and then secure it with screws.

13] Make the thin decorative wood caps that conceal the screw heads. (See page 26 for information on making thin stock). Glue and tape covers in place.

15] After sanding the chair frame, prime it with a stain-blocking primer to prevent oils in the cedar from bleeding through the paint. Then paint the chair frame with two coats of exterior latex paint.





Seat & Back Assemblies

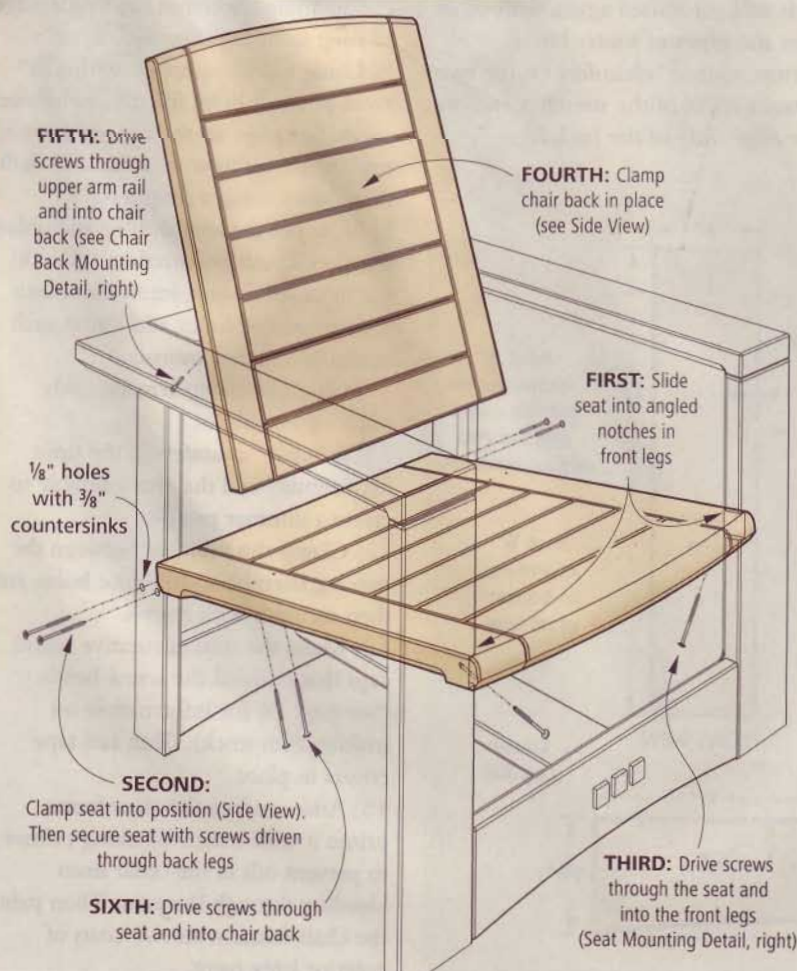
The construction of the seat and chair back should sound familiar. Each of these assemblies is a 2x cedar frame that surrounds 1x cedar slats. Here again, we used threaded steel dowels and polyurethane glue to assemble the frames. The slats get fastened to cleats which are attached to the frames. Construction details are as follows:

- 1] Cut the rails and sides of the seat and back frames to length from 2x cedar (*Seat & Back Assemblies*).
- 2] Square up each piece and then rip it to final width like you did with the parts for the chair frame.
- 3] Rout $\frac{1}{8}$ " roundovers on edges and ends of each piece. Here again, this will create accent lines at the joints when the chair and seat are assembled.

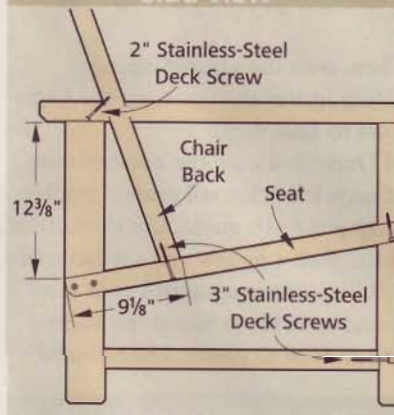
4] Drill holes for steel dowel joints in the rails and sides, as shown. Then assemble the seat and back frames with threaded steel dowels and polyurethane glue (*page 45*).

5] The back is designed to tilt back at a comfortable angle. This requires cutting a bevel on the bottom edge so it sits flat on the chair seat (*Side View, below*). Use a circular saw and a straightedge to do that. Tilt the base plate on the saw to 10° . Clamp the straightedge in place and use it to guide the saw as you trim the edge.

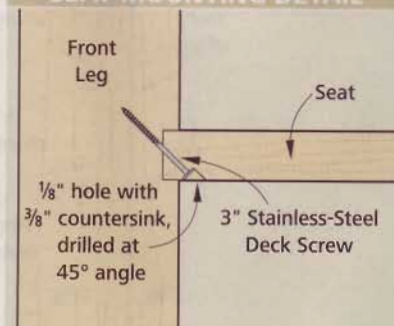
ASSEMBLING THE CHAIR



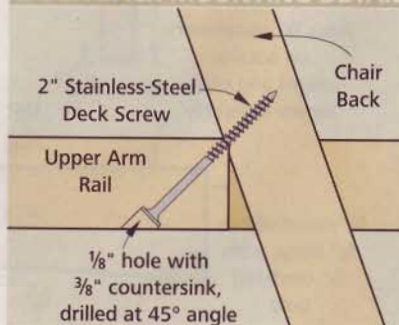
SIDE VIEW



SEAT MOUNTING DETAIL



CHAIR BACK MOUNTING DETAIL



6] Lay out and cut arcs on top edge of back and front edge of seat (*Arc Detail, below*). Sand the curved edges smooth.

7] In order to lay out a couple of stopped chamfers that get routed on the sides of the seat, test fit the seat in the chair frame. To do that, slide the seat into the notches and clamp it at the height shown in the *Side View* on page 48. Mark lines where the sides meet the front and back legs.

8] Using those marks as start and stop points, rout $\frac{1}{2}$ " chamfers on both sides of the seat (bottom edges only).

9] Continue sculpting the frames by routing $\frac{1}{2}$ " chamfers on the front and back of the seat assembly (bottom edges only) and on the sides and top of the back assembly (back edges only).

10] To keep the seat from digging into the back of your knees, rout a $\frac{1}{2}$ " roundover on the top front edge. For visual interest, rout a $\frac{1}{2}$ " roundover on top front edge of back frame.

11] Stain the lower back rail and rear seat rail. When the stain dries, mask them off and then prime and paint the seat and back frames.

12] Cut and install cleats used to mount the seat and back slats (*Cleat Detail*).

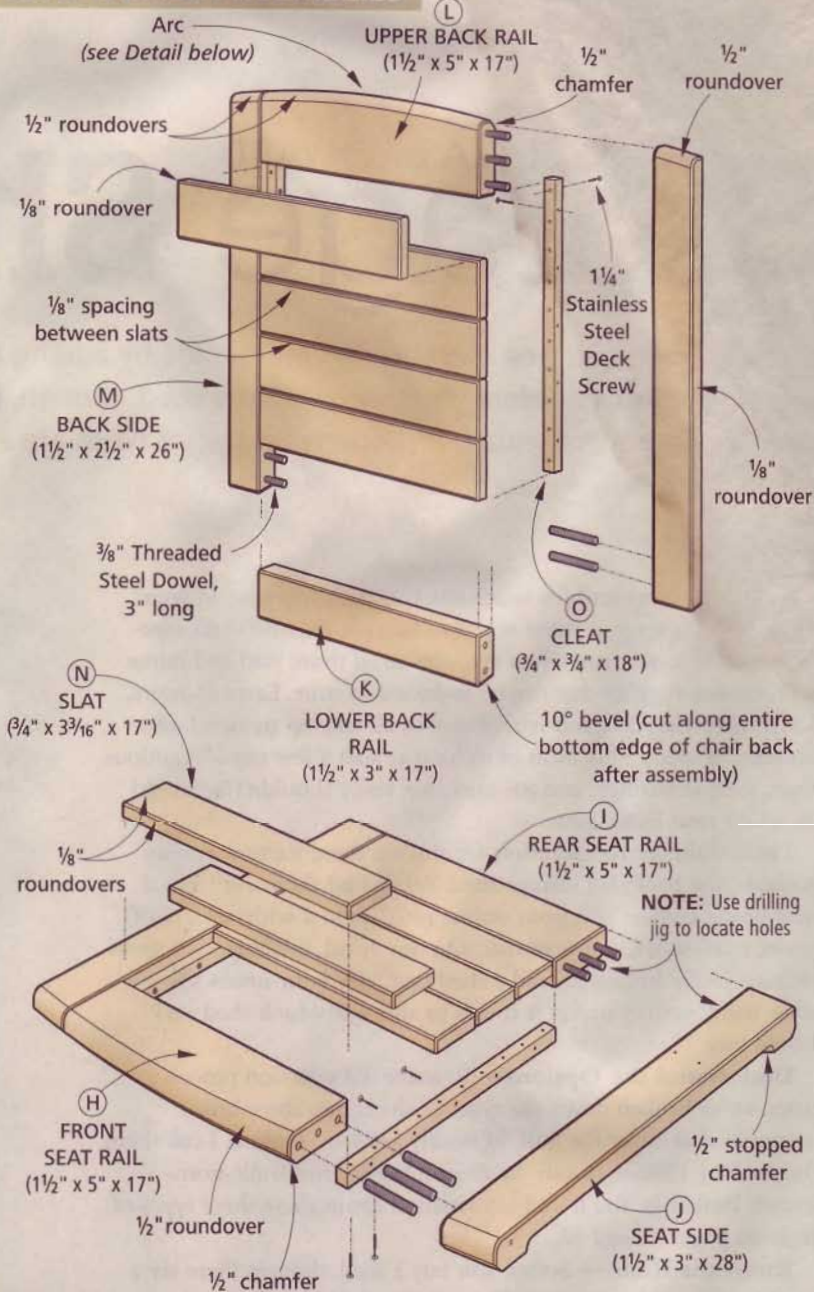
13] Cut slats to size. Then rout $\frac{1}{8}$ " roundovers on all edges and ends.

14] Sand and stain slats. Then screw the slats to the cleats, leaving a consistent gap between each one.

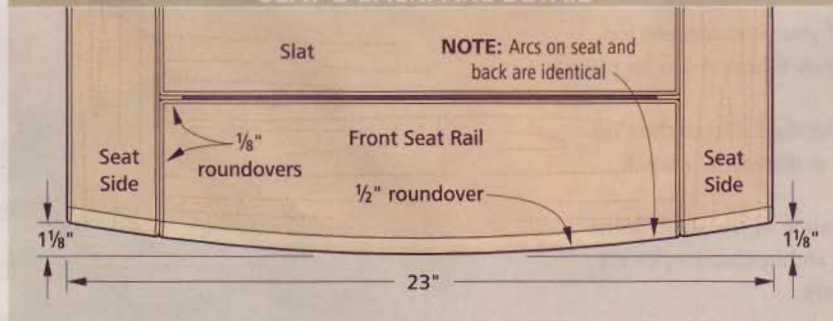
16] Install seat and back in chair frame (*Assembling the Chair, page 48*). ▀

—Written by Wyatt Myers, illustrated by Erich Lage, project design by James R. Downing

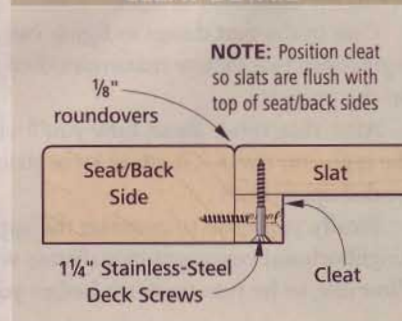
SEAT & BACK ASSEMBLIES



SEAT & BACK: ARC DETAIL



CLEAT DETAIL



MATERIALS LIST



MATERIAL LIST

Part		Qty	Size	Material
CHAIR				
A	FRONT LEGS	2	1½" x 5" x 22"	Cedar
B	FR. LOWERLEGRAL	1	1½" x 5½" x 22"	Cedar
B2	REARLWR. LEG RAL	1	1½" x 5½" x 23"	Cedar
C	ARMS	2	1½" x 5" x 28"	Cedar
D	UPPER ARM RAIL	1	1½" x 5" x 22"	Cedar
E	BACK LEGS	2	1½" x 3" x 22"	Cedar
F	STRETCHER	1	1½" x 5" x 22¼"	Cedar
G	DECORATIVE CAPS	3	¼" x 1" x 1"	Cedar
H	FRONT SEAT RAIL	1	1½" x 5" x 17"	Cedar
I	REAR SEAT RAIL	1	1½" x 5" x 17"	Cedar
J	SEAT SIDES	2	1½" x 3" x 28"	Cedar
K	LOWER BACK RAIL	1	1½" x 3" x 17"	Cedar
L	UPPER BACK RAIL	1	1½" x 5" x 17"	Cedar
M	BACK SIDES	2	1½" x 2½" x 26"	Cedar
N	SLATS	10	¾" x 3⅞" x 17"	Cedar
O	CLEATS	4	¾" x ¾" x 18"	Cedar
PATIO TABLE				
A	LEGS	4	1½" x 3½" x 13"	Cedar
B	END STRETCHERS	2	1½" x 3½" x 21"	Cedar
C	CENTERSTRETCHER	1	1½" x 3½" x 25"	Cedar

Part		Qty	Size	Material
D	TOP RAILS	2	1½" x 3½" x 28"	Cedar
E	TOP END RAILS	2	1½" x 5" x 21"	Cedar
F	SLATS	5	¾" x 3½" x 21"	Cedar
G	CLEATS	2	¾" x ¾" x 18"	Cedar
H	DECORATIVE CAPS	6	¼" x 1" x 1"	Cedar
TALL PATIO TABLE				
A	LEGS	4	1½" x 3½" x 17"	Cedar
B	END STRETCHERS	2	1½" x 3½" x 21"	Cedar
C	CENTER STRETCHER	1	1½" x 3½" x 25"	Cedar
D	TOP RAILS	2	1½" x 3½" x 28"	Cedar
E	TOP END RAILS	2	1½" x 5" x 21"	Cedar
F	SLATS	5	¾" x 3½" x 21"	Cedar
G	CLEATS	2	¾" x ¾" x 18"	Cedar
H	DECORATIVE CAPS	6	¼" x 1" x 1"	Cedar

HAR DWARE:

- ⅜" Steel Threaded Rods, 3" long (50 rods per chair; 28 rods per table - either cut to length, or #95475A636 at [McMaster.com](#))
- (28) 3" Stainless Steel Deck Screws
- (2) 2" Stainless Steel Deck Screws
- (90) 1¼" Stainless Steel Deck Screws

CORRECTIONS: In the June 2007 issue of Workbench, the Lower Leg Rails of the outdoor chair were shown as the same part (Part B). In reality, the Rear Lower Leg Rail is 1" longer than the Front Lower Leg Rail. The following Materials List, Cutting Diagram, and Builder's Plans are corrected to reflect this, with the Front Lower Leg Rail listed as Part B, and the Rear Lower Leg Rail listed as Part B2.

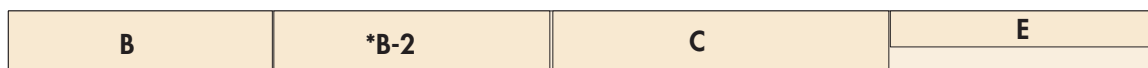
In addition, the slats should be 3 7/16" wide, not 3 3/16" wide as published. This change is also reflected in the above material.

CUTTING DIAGRAM

CHAIR



1 1/2" x 5 1/2" x 96" Cedar



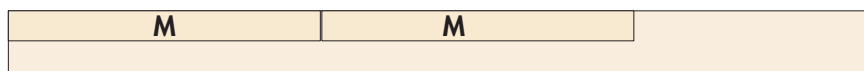
1 1/2" x 5 1/2" x 96" Cedar



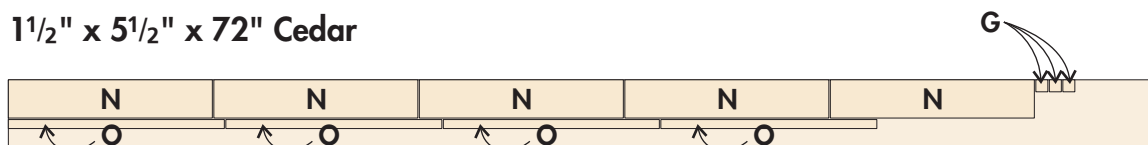
1 1/2" x 5 1/2" x 96" Cedar



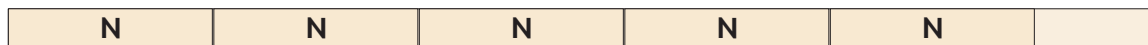
1 1/2" x 5 1/2" x 96" Cedar



1 1/2" x 5 1/2" x 72" Cedar



3/4" x 5 1/2" x 96" Cedar



3/4" x 3 1/2" x 96" Cedar

***Revised from plan shown in magazine.**

The back lower leg rail is 23" long, not 22".

CUTTING DIAGRAM

PATIO TABLE

A	A	A	A	B	B	
---	---	---	---	---	---	--

1½" x 3½" x 96" Cedar

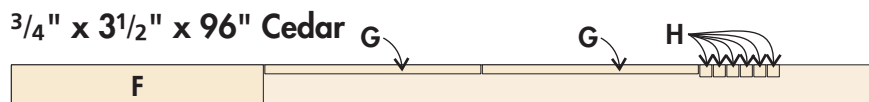
C	D	D	
---	---	---	--

1½" x 3½" x 96" Cedar

E	E	
---	---	--

1½" x 5½" x 48" Cedar

F	F	F	F	
---	---	---	---	--



¾" x 3½" x 72" Cedar

TALL PATIO TABLE

A	A	A	A	B	B	
---	---	---	---	---	---	--

1½" x 3½" x 120" Cedar

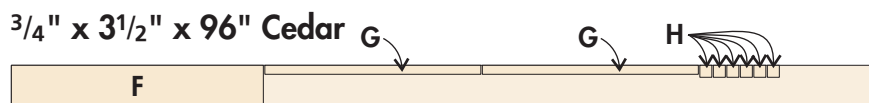
C	D	D	
---	---	---	--

1½" x 3½" x 96" Cedar

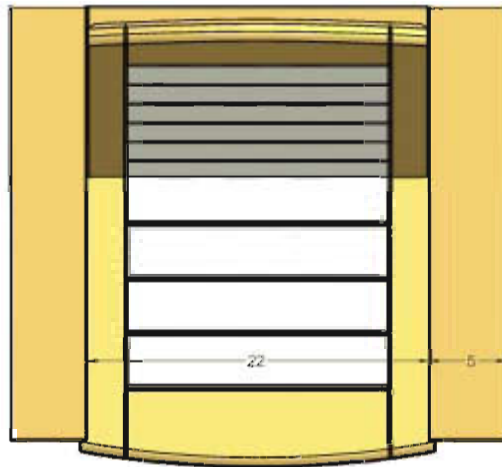
E	E	
---	---	--

1½" x 5½" x 48" Cedar

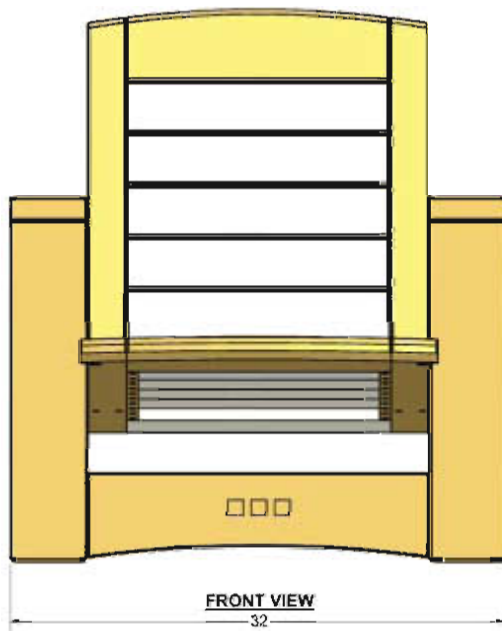
F	F	F	F	
---	---	---	---	--



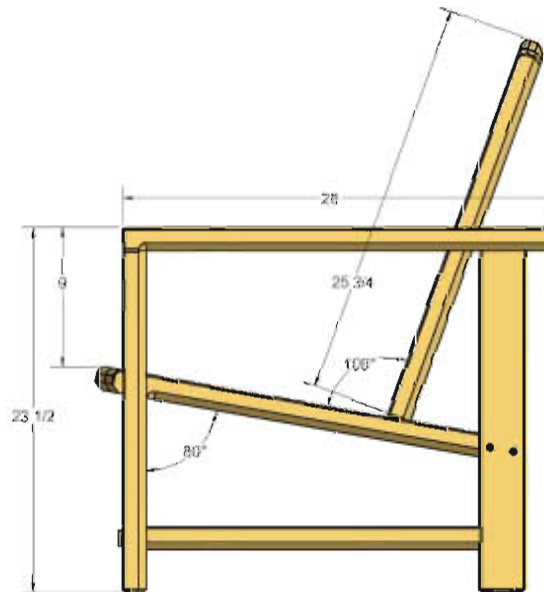
¾" x 3½" x 72" Cedar



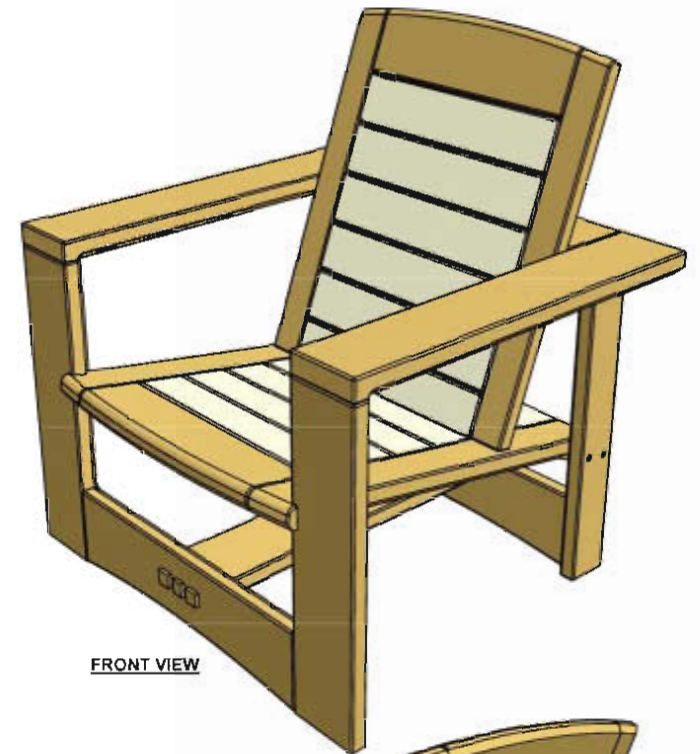
TOP VIEW



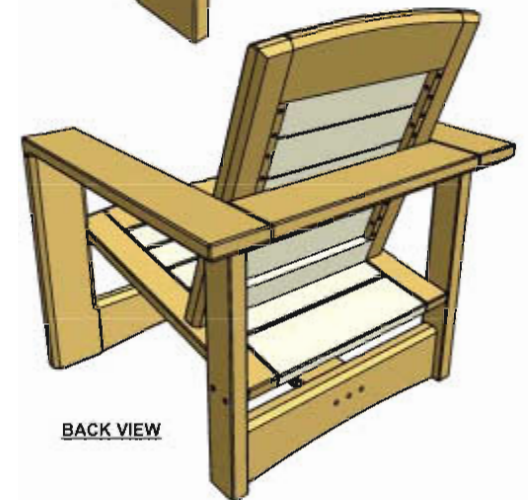
FRONT VIEW
32



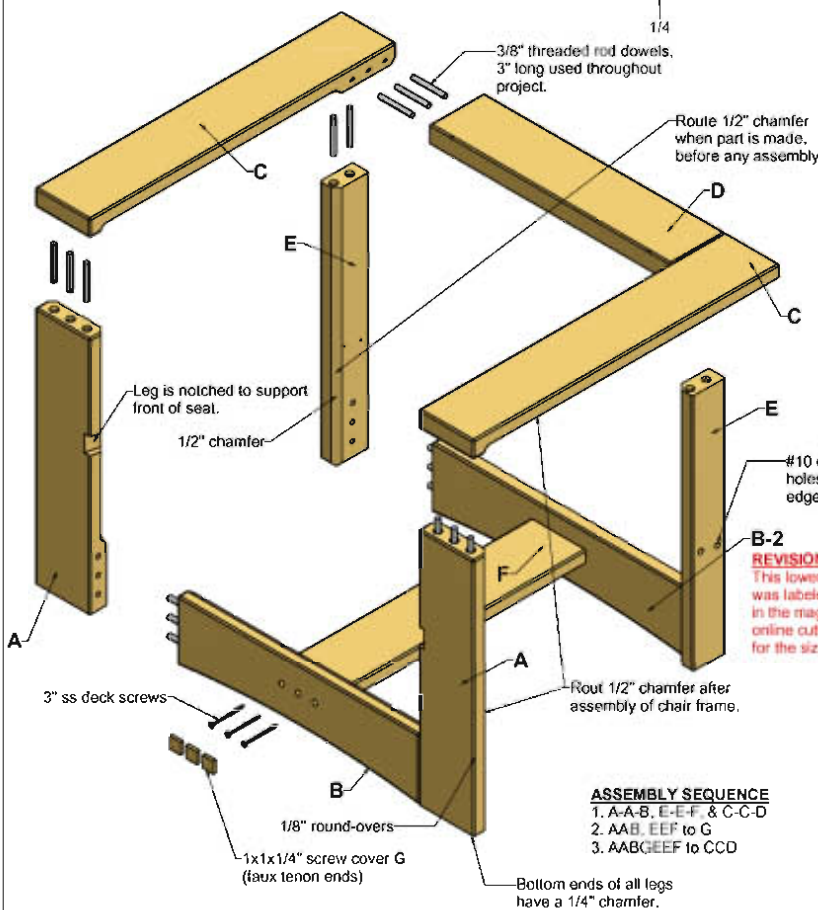
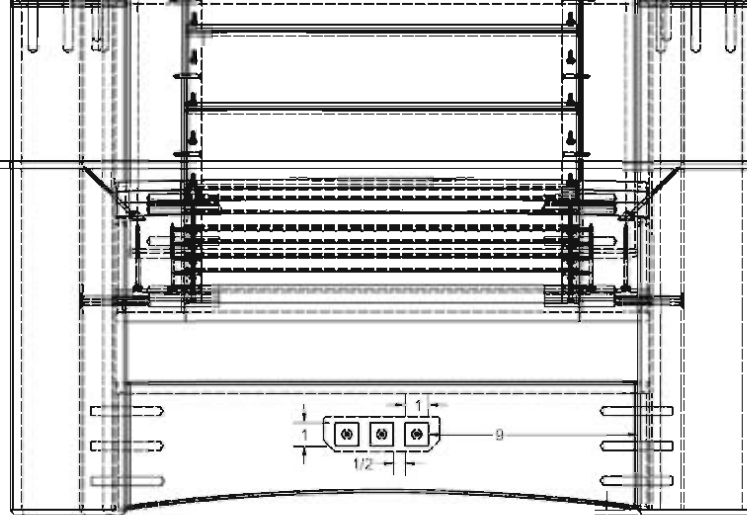
SIDE VIEW



FRONT VIEW

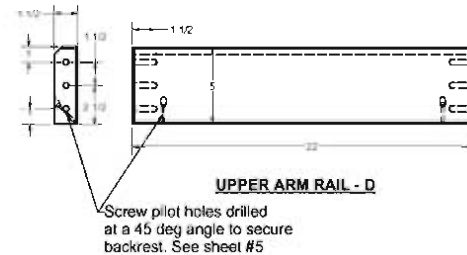


BACK VIEW



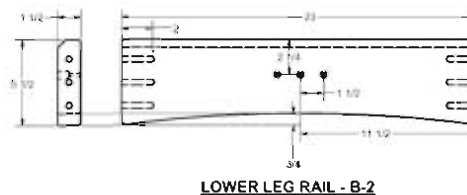
ASSEMBLY SEQUENCE
 1. A-A-B, E-E-F & C-C-D
 2. AAB, EEF to G
 3. AABGEF to CCD

Bottom ends of all legs have a 1/4" chamfer.

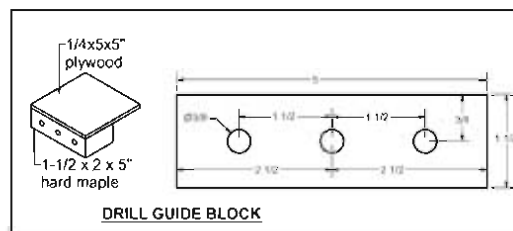


UPPER ARM RAIL - D

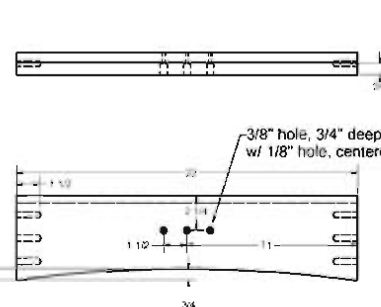
Screw pilot holes drilled at a 45 deg angle to secure backrest. See sheet #5



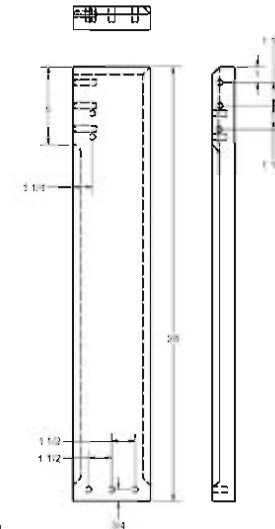
LOWER LEG RAIL - B-2



DRILL GUIDE BLOCK



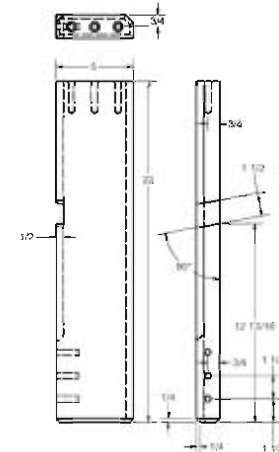
LOWER LEG RAIL - B



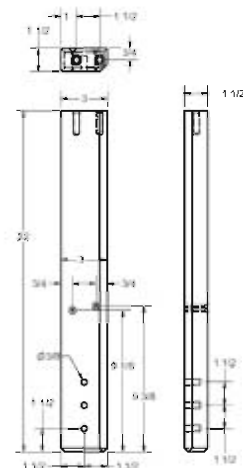
RIGHT ARMREST - C



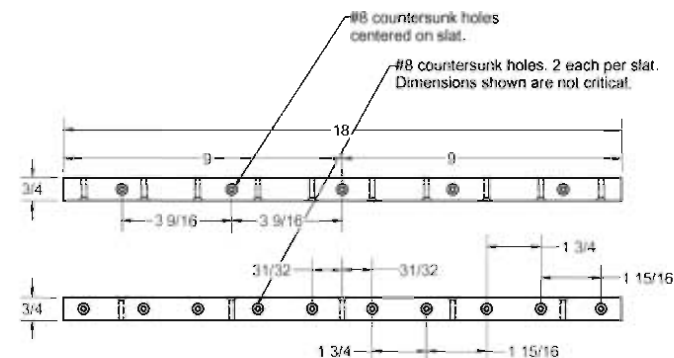
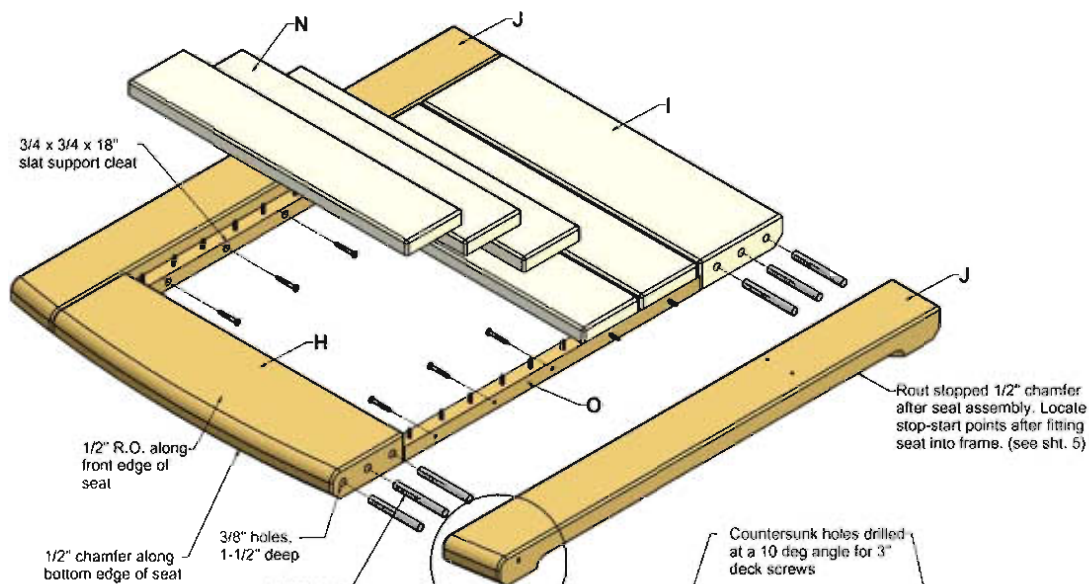
STRETCHER - F



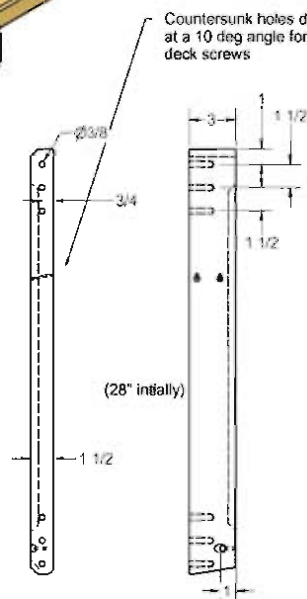
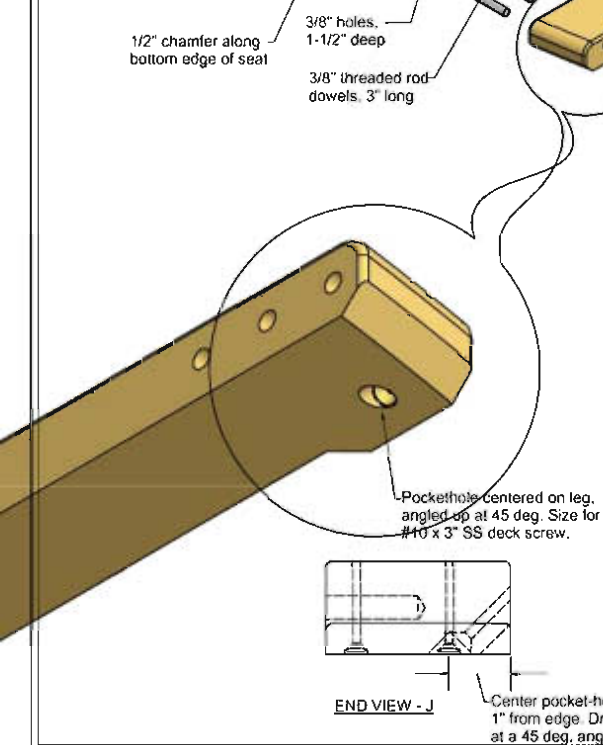
RIGHT FRONT LEG - A



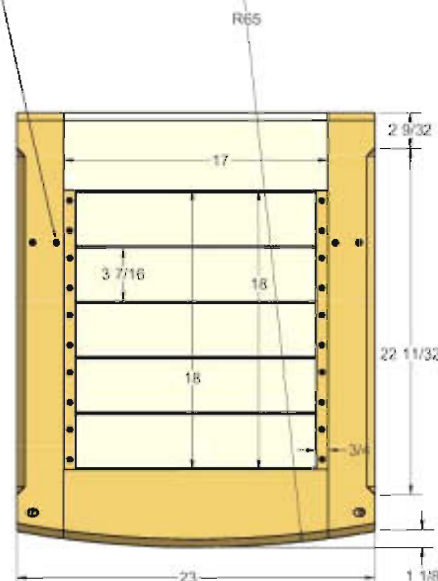
RIGHT BACK LEG - E



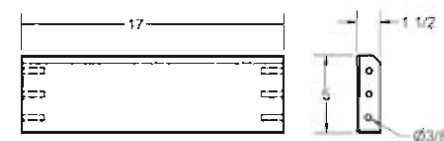
SEAT, BACKREST, & TABLETOP SLAT CLEATS - O



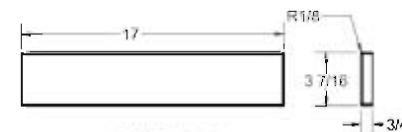
RIGHT SEAT SIDE - J



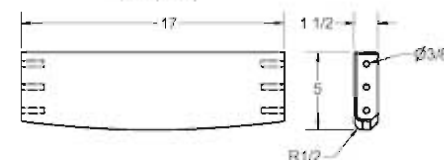
**SEAT ASSEMBLED
(bottom view)**



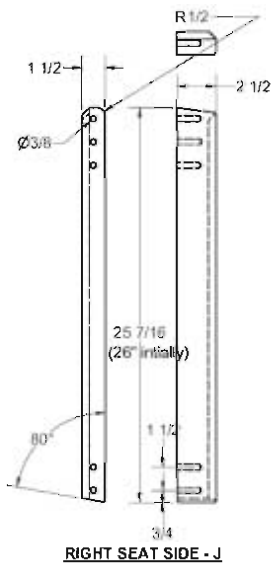
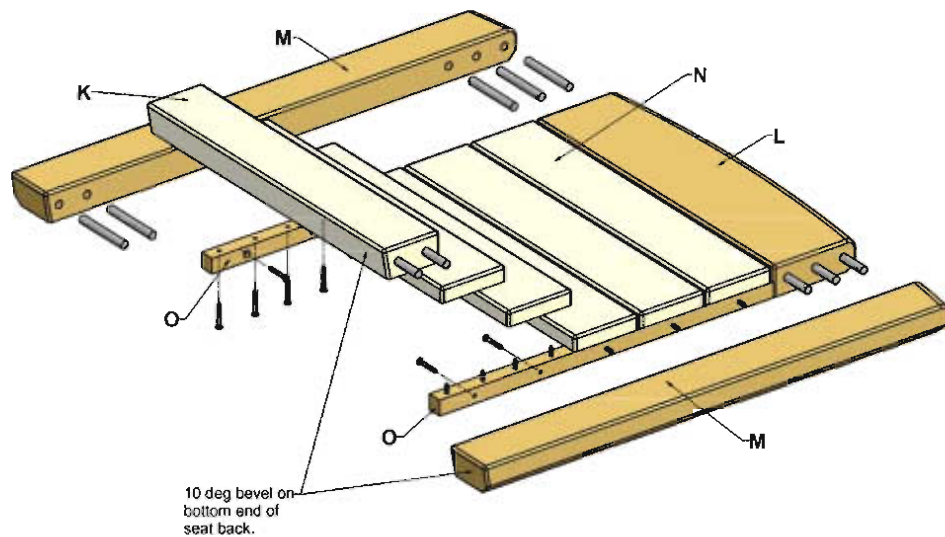
REAR SEAT RAIL - I



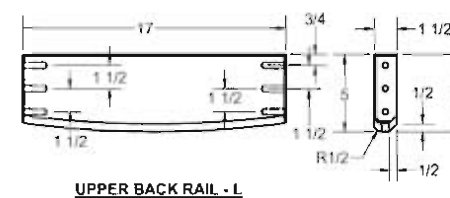
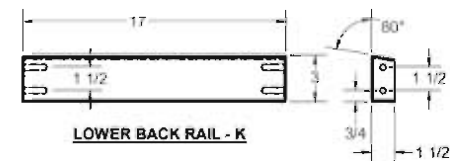
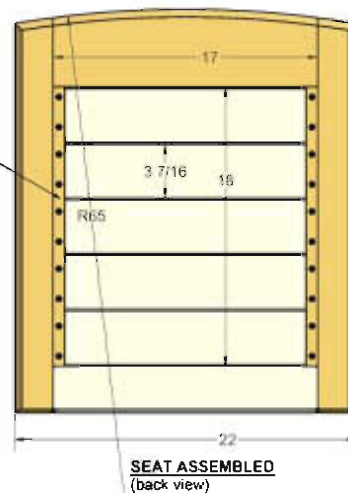
**SEAT SLAT - L
(5 required)**



FRONT SEAT RAIL - H



See drawing #3
for cleat details



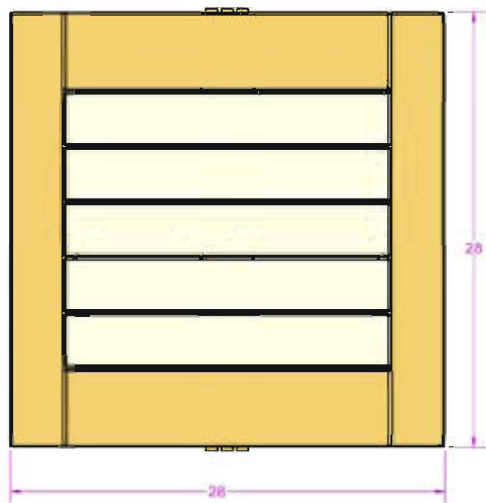
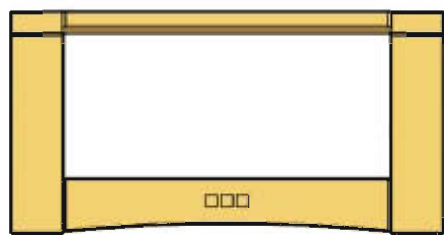
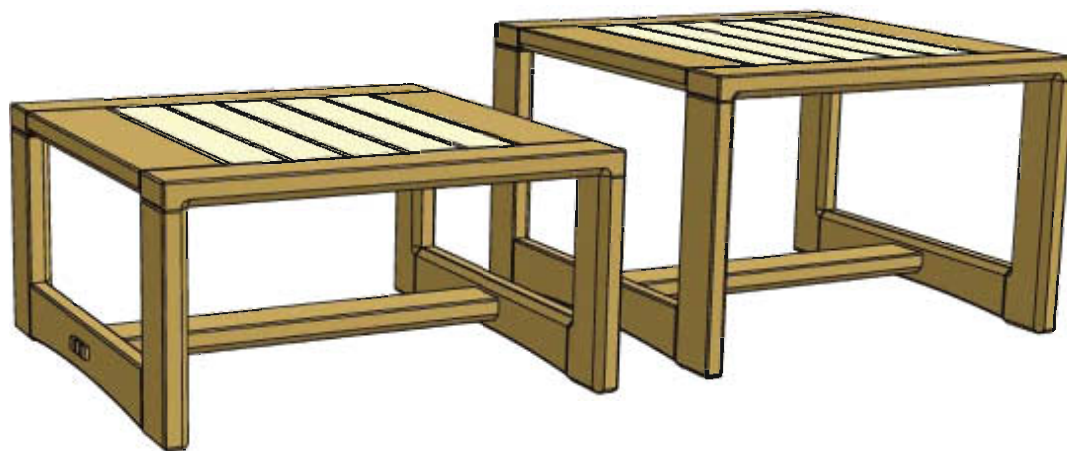


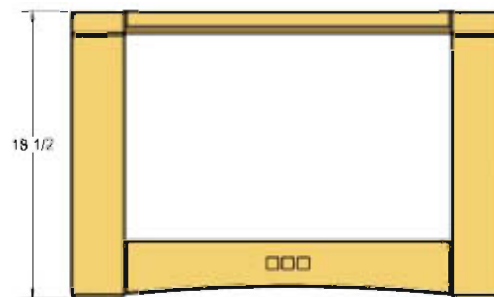
TABLE
TOP VIEW



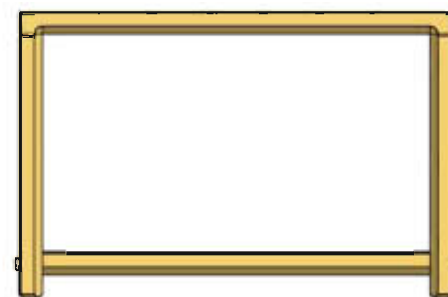
LOW TABLE
FRONT VIEW



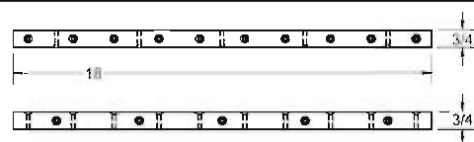
LOW TABLE
SIDE VIEW



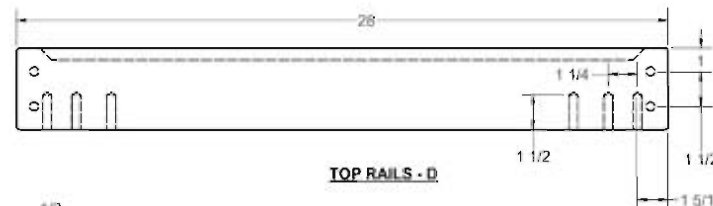
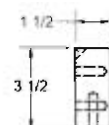
HIGH TABLE
FRONT VIEW



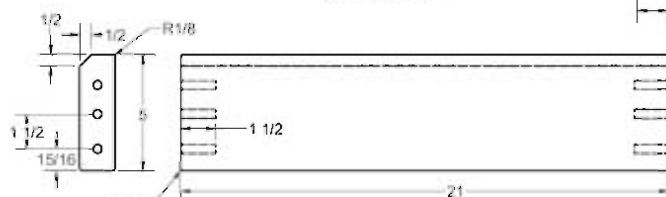
HIGH TABLE
SIDE VIEW



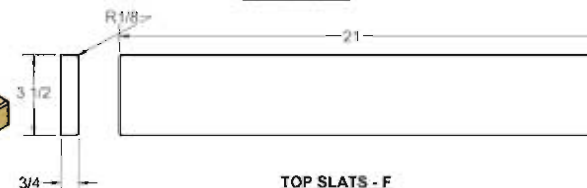
TOP SLAT CLEATS - G



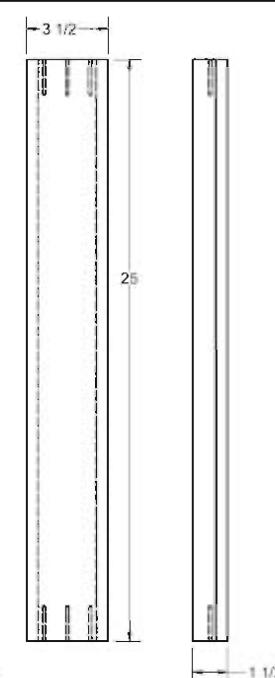
TOP RAILS - D



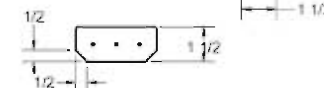
TOP RAILS - E



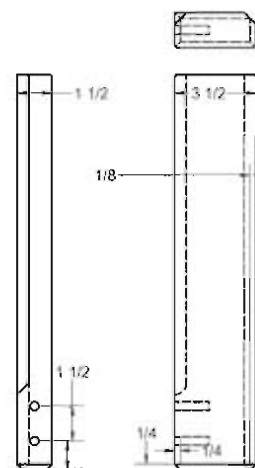
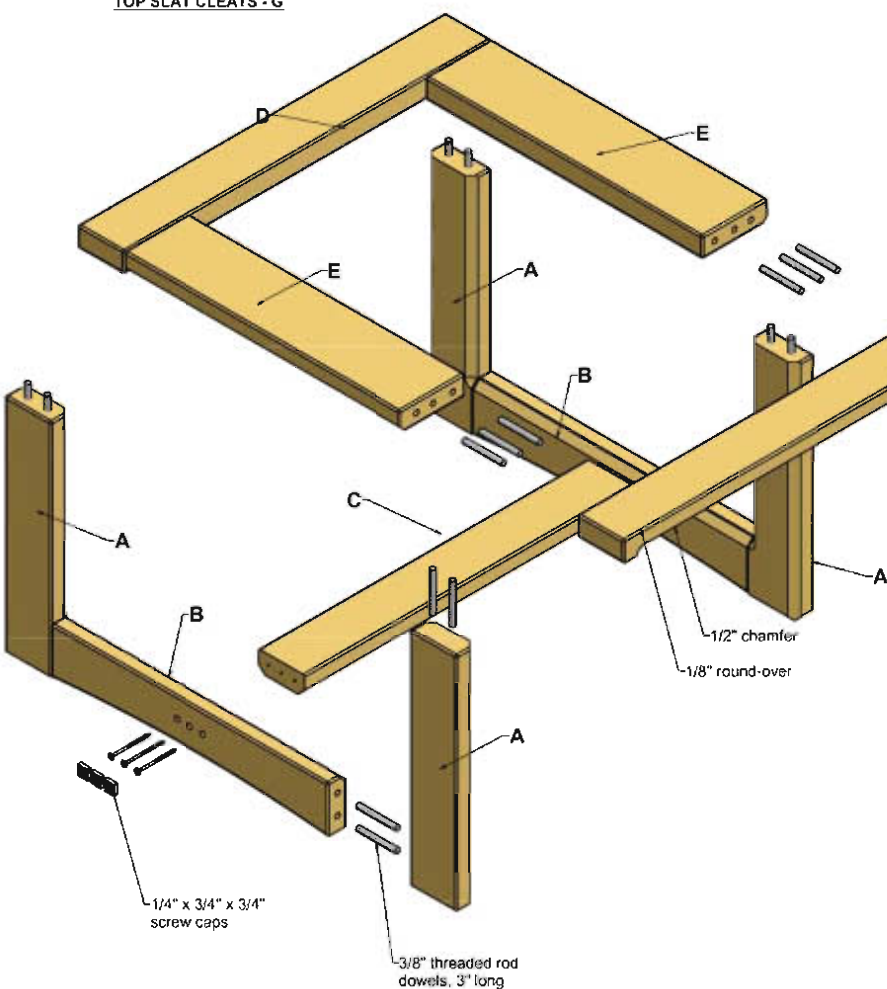
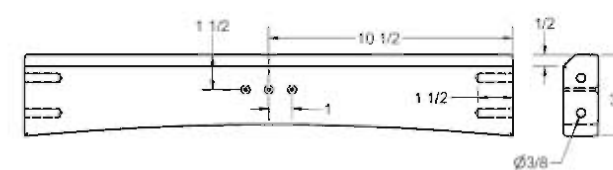
TOP SLATS - F



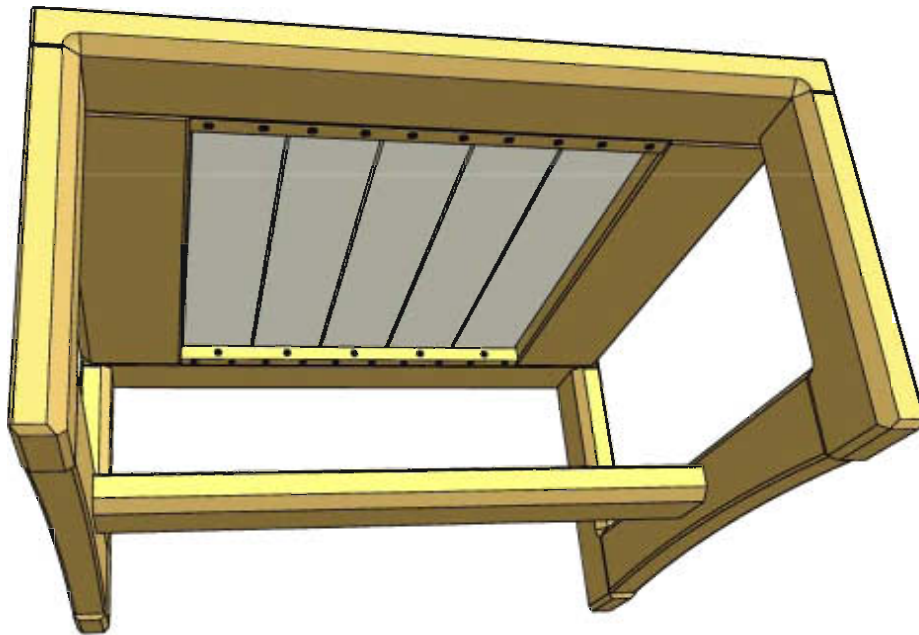
CENTER STRETCHER - C



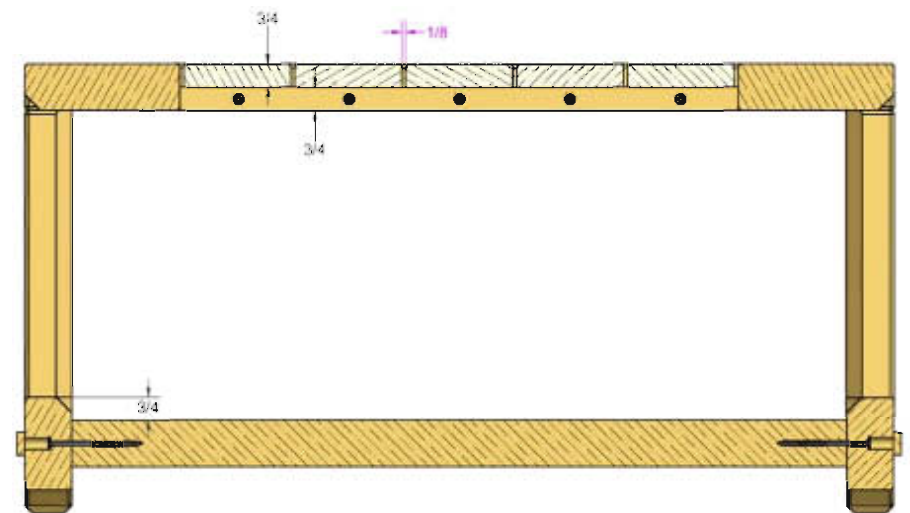
END STRETCHERS - B



LEGS - A



BOTTOM VIEW



SECTION VIEW

SELECTING A BACKYARD Storage Shed

Get organized and free up space in your garage by adding a storage shed in your yard. Before you buy or build a shed, though, it pays to understand how to situate it properly and what types are available.

No matter how much storage space you have in your garage, it never seems to be enough. And that's especially true when it comes to all those yard and home maintenance supplies that can be awkward to store. Lawn mowers, ladders, shovels, rakes, and wheelbarrows all take up tremendous amounts of space. Plus, most of us have at least a few semi-hazardous items, such as fertilizer and gas cans, that really shouldn't be stored anywhere near living areas.

Luckily, the perfect solution for storing these items is readily available: the backyard storage shed. You'll find them available at local home centers and from online retailers in a wide variety of prices, sizes, styles, and materials. On one hand, this variety is great because you're bound to find a shed that suits your needs. On the other hand, variety makes it tough to sort out which shed you should buy.

Understand the Options—To make the selection process easier, we've broken down the types of sheds into three broad categories that cover the bulk of readily available options. I call them Plug 'n' Play Plastics, Ready-to-Assemble Kits, and Built-from-Scratch Buildings. You'll find information about these three types of sheds on pages 51 and 52.

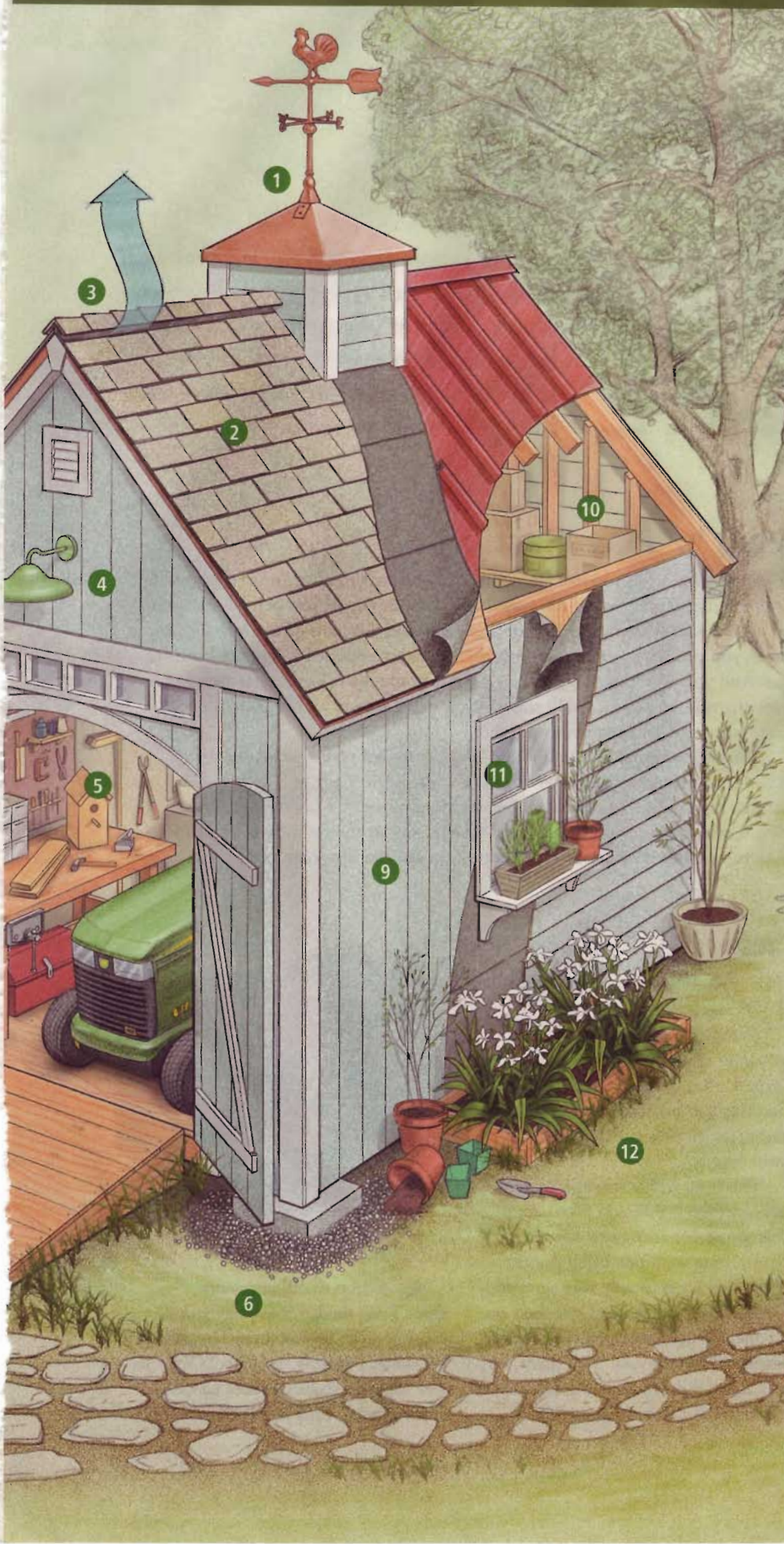
Know the Rules—Before you buy a shed, though, there are a number of considerations you'll need to weigh. Many are pointed out in the *Illustration* at right.

One of the first things to figure out is if your community has regulations that dictate maximum shed size or where it can be placed on the property.

After that, think about how you'll use the shed. Depending on the type you choose, it could serve strictly as storage, as a small workshop, or both.

Finally, you need to consider the appearance of the shed. Some neighborhood covenants may dictate what architectural styles are allowable, so be sure to check before you buy.





1] ACCESSORIES

Some shed manufacturers offer cupolas, weathervanes, and dormers that let you add style to an ordinary storage shed.

2] ROOFING

Many kit buildings leave the roofing to you, so you'll need to select the right type and know how to install it.

3] VENTILATION

A shed can get hot inside without airflow. Plus, if you'll be storing gas or lawn chemicals, ventilation is a must for safety.

4] LIGHTING AND ELECTRIC

To see in your shed after dark, battery or low-voltage lights are options. Elaborate lighting may require 120-volt wiring.

5] SMALL WORKSHOP

You can use a shed as a small workshop or potting area. Just be sure to allow enough space and decide if you need electricity to run power tools.

6] GROUNDWORK

Though sheds are designed to sit on top of the ground, you need to make sure the area is level and drains properly.

7] SETBACKS

In most areas, structures have to be located at least a certain distance (known as the setback) from property lines. Be sure to check for requirements.

8] ACCESSIBILITY

Locate the shed where it's accessible, and add ramps and wide doors in order to get large, heavy items, such as a riding mower, in and out easily.

9] SIDING MATERIALS

Covenants may demand that shed siding be similar to your home or at least painted to match. Make sure you know the rules.

10] STORAGE

To keep your shed organized, consider whether you can build in a loft or shelves.

11] WINDOWS

Windows allow natural light into the shed, but reduce security.

12] PLANTINGS

Make a shed part of your landscape by adding plantings and pathways around it.

Storage Shed Options

Now that you have a good overview of storage sheds, you can select which type is right for you from among the three most common types. They're shown below, along with the pros and cons you'll need to consider.



Plug 'n' Play Plastic

If you're looking to add storage without a lot of time and effort, then a molded plastic structure (*top left*) is the way to go. With this type, you get a floor, walls, roof, and doors that simply fit together with slots and tabs (*bottom left*). In most cases, you can put the structure together without tools in a couple of hours or less. And you won't need a building permit or extensive site preparation before erecting one. However, you'll still want to make sure that covenants allow a large plastic structure on your property.

The biggest limitation you'll find with a molded plastic structure is size. The Rubbermaid model at left is about as big as they get, at 5' x 6' x 4' tall. It's just big enough to hold a midsize riding mower or a standard push mower, plus shovels, rakes, and other tools if they're laid on the floor. Smaller plastic structures, from deck boxes to "outdoor closets," are also common.

Ready-to-Assemble Kits

If you need more space, and you have basic tools and construction skills, then a ready-to-assemble (RTA) shed may be just the ticket. You'll find these sheds made from molded vinyl or wood, and

they're available in sizes ranging from 6' x 6' up to 12' x 20' or larger.

Ready-to-assemble kits are available in a variety of styles. Home centers often stock a couple of basic versions and can order larger or more elaborate models and deliver them to your home.

The shed will arrive as a bunch of pre-assembled wall and roof panels that you erect and screw together. Most come with pre-hung doors. The floor kit is usually sold separately. Unless you plan to erect the shed on a concrete slab, you'll want the floor kit. You'll supply your own paint, and will have to do the roofing (see *Top It Off & Tie It Down* on page 53).



In addition to offering more space, RTA sheds—especially wood models—can be customized by adding windows, a dormer, or a cupola. You can also add lofts, shelves, or tool hangers to wood models using just screws or nails.



PHOTOS COURTESY OF RUBBERMAID CORPORATION, RUBBERMAID.COM

PHOTO COURTESY OF HANDY HOME PRODUCTS, HANDYHOME.COM

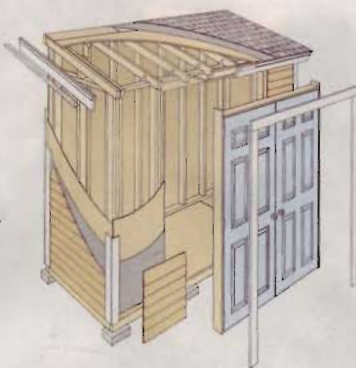
PHOTO COURTESY OF HANDY HOME PRODUCTS, HANDYHOME.COM

Built-from-Scratch Buildings

Even with the wide variety of RTA kits available, it's possible that you might not find a shed that exactly suits your needs or style. In that case, it's time to build a shed from scratch. You can design one yourself, or build one from any number of plans that are available to guide you. The one pictured at right, for example, is one of several we've built in previous issues of *Workbench*. You can find plans for them at PlansNow.com.

Of course, building a shed from scratch requires the most time, tools, and construction skills. But the payoff is that your options are limited only by your imagination and your abilities. You can customize the size, style, and interior amenities exactly as you want them.

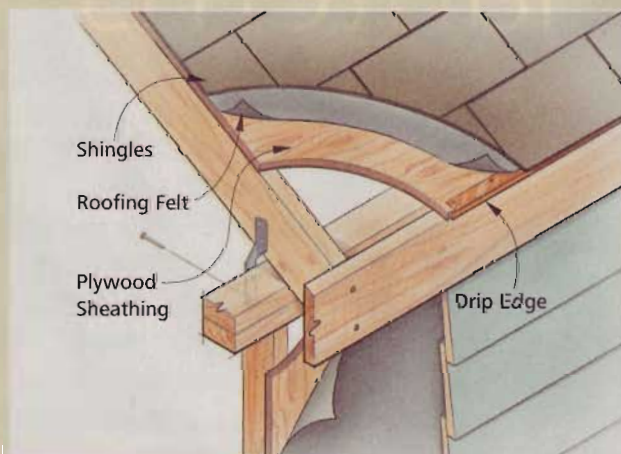
When building a shed from scratch, it's almost a sure bet that you'll have to get the plans approved and obtain a building permit. So be sure to check into local codes and permit requirements before you begin. 



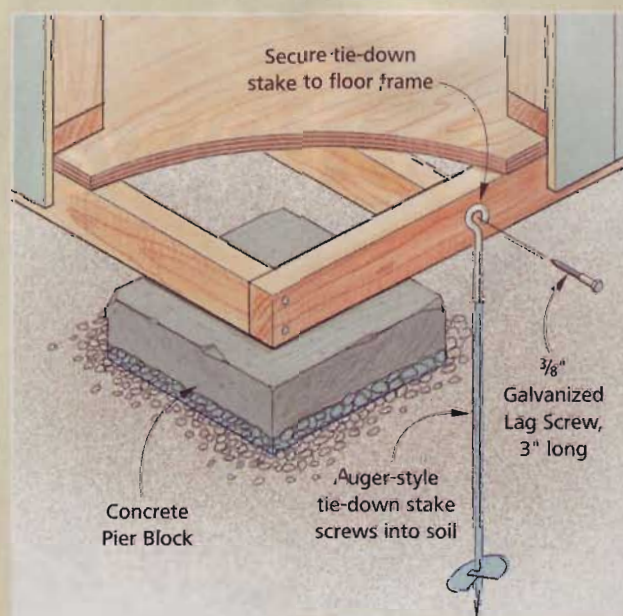
TOP IT OFF & TIE IT DOWN

A big selling point of RTA sheds is that most of the construction work is done for you, so all you need are basic tools and skills. Just assemble the panels, and the shed is enclosed.

To complete the shed, though, you'll have to put on a roof. While you might not consider roofing a basic skill, you'll be pleased to know that shingling a shed is about the easiest roofing project there is. The *Illustration* below shows the basics. To learn more about roofing, check out the free online article at WorkbenchMagazine.com.



You should also know that sheds are considered "portable" buildings, meaning they're not bolted to a foundation. So codes may require that you secure the shed with tie-down stakes (*below*) to prevent high winds from lifting it and making it truly portable. Stakes are available where sheds are sold.





elegant & enchanting pathway lanterns

You've worked hard to create a yard that's as individual as you are. So your landscape lighting should be just as unique. One sure-fire way to infuse your yard with personality is to build these one-of-a-kind low-voltage lanterns. Their cedar bodies and frosted, diffusers look great by day. And they cast a warm, inviting glow by night. We'll show you how to build a set for your yard using basic woodworking tools and skills.



BUILD THE LANTERN BODY

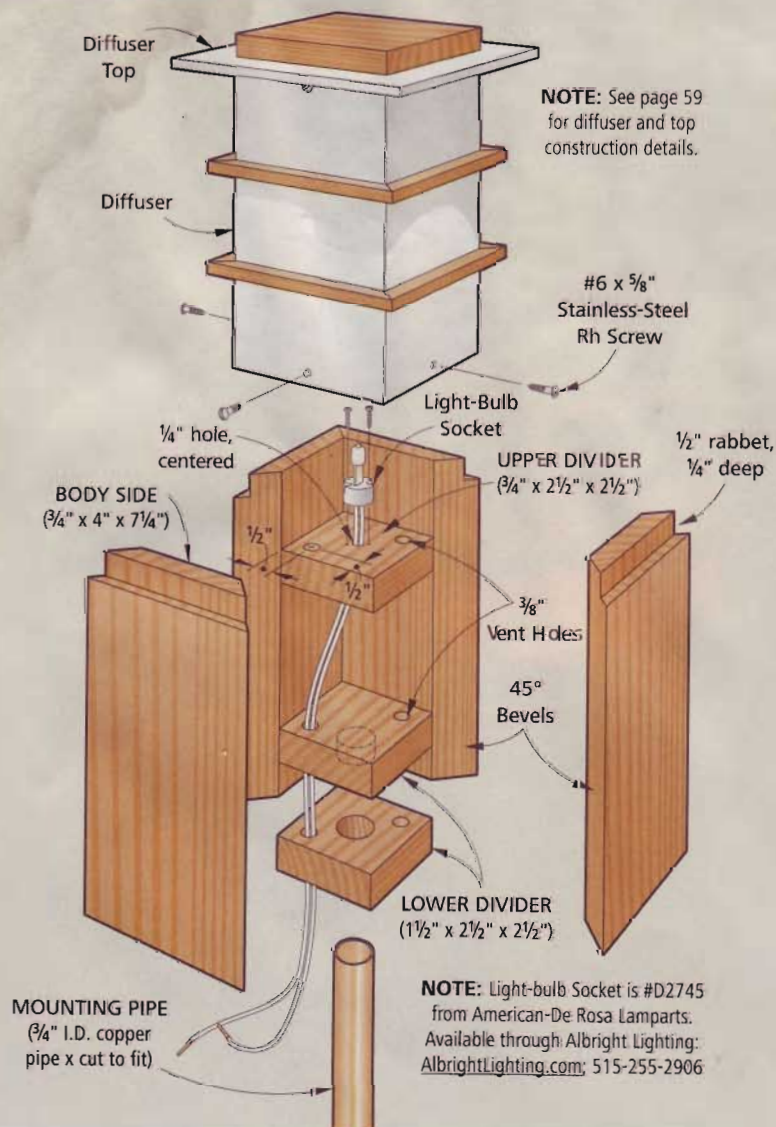
These lanterns are elegant and stylish, but that doesn't mean they're difficult to build. You can make a set with nothing more than a table saw and a router table—benchtop versions will work fine—plus a drill and a random-orbit sander.

Here, we'll walk you through the process of building one lantern. You're likely to build several at once, but that isn't much harder than building one. Just build them "assembly-line" style by performing the same operations on each identical part of every lantern before moving on. That way, you won't have to repeat measurements and tool setups.

A Closer Look—Take a look at the *Lantern Construction*, below, and you can see how the lantern goes together. The body has four sides cut from $\frac{3}{4}$ "-thick cedar. The edges of each of those sides are beveled at a 45° angle. That means there are no exposed edges, so the body looks as if it were cut from a solid block of wood. Yet this construction technique makes the bodies surprisingly simple to assemble.

Inside the body, a $\frac{3}{4}$ "-thick divider provides a mounting platform for the light-bulb socket (*Section View*). A $1\frac{1}{2}$ "-thick, two-piece lower divider encloses the body and serves as an attachment point for a copper mounting pipe.

LANTERN CONSTRUCTION



The light-bulb socket is a high-quality fitting available from lighting suppliers, such as the one listed in the *Construction View*. It gets connected to an ordinary low-voltage transformer you can purchase at a home center. (See page 60 to learn more about low-voltage systems.)

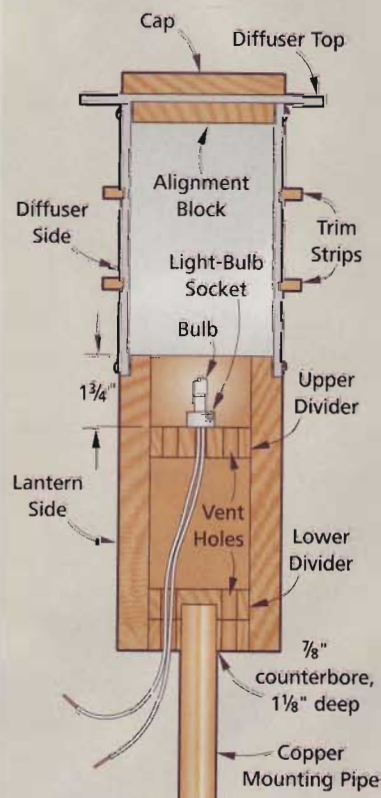
The diffuser that the bulb shines through is built almost like the body, with four beveled sides for a seamless look. But the diffuser is made from clear acrylic. A random-orbit sander produces the frosted appearance (page 58).

Even the trim strips and cap, cut from $\frac{1}{4}$ "-thick and $\frac{1}{2}$ "-thick stock, respectively, are easy to make thanks to the techniques shown on page 26 for "resawing" thick boards into thin ones.

Construction Details—Now that you're familiar with the project, you can get started building. Here's how it's done, step by step:

1 Because the lantern sides are fairly small (4" x $7\frac{1}{4}$ "), it's best to start with oversize blanks. I made two

SECTION VIEW



blanks that measure $\frac{3}{4}" \times 5" \times 16"$. Later, each blank will be cut in two, producing a total of four lantern sides.

2] Rabbet both ends of each blank to form a ledge for the diffuser to mount on. This is done on the router table, using the fence to establish the rabbet width, and the miter gauge to hold the blank square to the fence (*Fig. A*).

3] Next, these side blanks need to be bevel ripped to final width. This is done at the table saw with the blade tilted to 45° (*Fig. B*). Make sure that the rabbeted face of each blank faces up as you cut.

4] Now you can crosscut each long blank to create the lantern sides. Bring the blade back to 0° , and then crosscut each side blank to produce $7\frac{1}{4}"$ -long sides (*Fig. C*).

5] To make the dividers, first rip a piece of $\frac{3}{4}"$ -thick cedar $2\frac{1}{2}"$ wide. Then crosscut this piece to create three $2\frac{1}{2}"$ -square dividers.

6] The lower divider is twice as thick as the upper one. To make it, glue two of the square blocks together face to face,

making sure to keep the edges aligned. Use slow-setting waterproof epoxy.

7] Stack the dividers and drill $\frac{3}{8}"$ ventilation holes through them.

8] Drill a $\frac{1}{4}"$ hole through the center of the upper divider only for the bulb-socket wires to pass through.

9] Bore a counterbore in the lower divider to receive the mounting pipe.

10] Prepare the body for assembly by aligning the sides and using tape to "clamp" them together (*Fig. D*).

11] Feed the wires from the bulb socket through the center hole in the upper divider. Then screw the bulb socket in place. Run the wires through one of the vent holes in the lower divider. As you do this, make sure the counterbore in the lower divider faces outward.

12] Flip the taped-together assembly over, and then use epoxy to glue the dividers in place (*Fig. E*).

13] Spread epoxy on all the mating surfaces, and then tape the sides together (*Fig. F*). Let the epoxy cure before removing the tape.



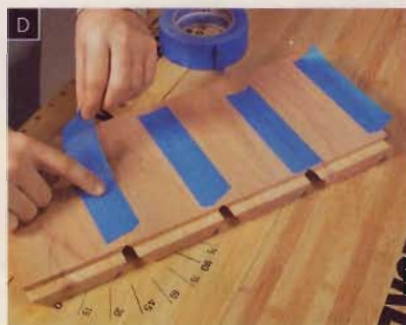
Set up a straight bit to cut a $\frac{1}{2}"$ -wide rabbet $\frac{1}{4}"$ deep. Rabbet one end of the blank, then flip it end-for-end and repeat.



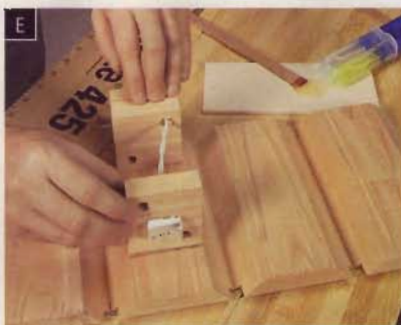
Bevel one edge of each blank. Then reset the rip fence, turn the blank, and bevel rip each one to its final 4" width.



Measure $7\frac{1}{4}"$ from each end of the blanks, and then crosscut each blank to create two lantern sides.



Set the lantern sides edge to edge, making sure their ends are flush. Then tape them together with wide masking tape.



Screw the bulb socket in place and rout the wires through the lower divider. Then epoxy the dividers to one side.



Spread epoxy on the divider edges and on the beveled edges of the sides. Fold the side closed and tape the last corner.





ADD THE DIFFUSER & TOP

The diffuser is what really makes this lantern unique. It's made from $\frac{1}{4}$ " acrylic plastic (commonly called Plexiglas) that gets a frosted finish. A top made of wood and acrylic caps it off, while the sides get wrapped with cedar trim strips (*Diffuser Construction*).

1] Just as with the body, start with oversize pieces. One 5" $\times$ 15" strip of acrylic makes two diffuser sides. Acrylic has a tendency to splinter when you cut it. To decrease that likelihood, I cut acrylic using an inexpensive 200-tooth steel blade made for cutting plywood.

2] To hold the trim strips, rout two grooves near each end of the blank. Use the router-table fence to position one groove $2\frac{1}{8}$ " from the end, the other $4\frac{3}{8}$ " from the end (*Fig. A*).

3] Sand the outside (grooved) face of each acrylic blank to produce a frosted finish (*Fig. B*).

4] Next, bevel rip the edges of the acrylic blank, just like you did with

the lantern sides (*Fig. C*). Tilt the saw blade to 45° degrees, and set the fence to bevel one edge of each blank (grooved face up). Then reset the fence, and bevel the other edge, cutting each blank to its final width of 4".

5] Measure in $6\frac{3}{4}$ " from the ends of each blank to mark the final length of the diffuser sides. Then reset the saw blade to 0° and crosscut both strips to create the diffuser sides (*Fig. D*).

6] Drill two mounting holes in each diffuser side for mounting screws that will be used to attach the diffuser to the top and to the lantern body.

7] That done, you can glue up the sides. There are several types of adhesive available for acrylic. The one I prefer is a solvent adhesive available in some hobby shops, or from Craftics.com. It's extremely thin so that it wicks into the joint between the pieces and essentially "welds" them together.

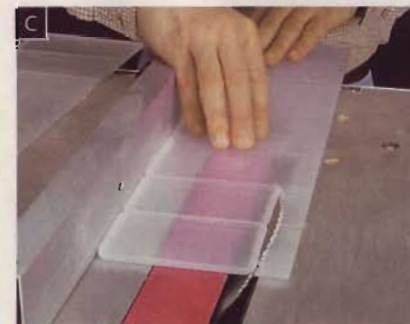
Start by taping the sides together in pairs. Glue one pair of sides



Raise a $\frac{1}{4}$ " straight bit $\frac{1}{16}$ " above the router table, and then rout two grooves near each end of the acrylic blank.



Sand the acrylic using a random-orbit sander equipped with 120-grit sandpaper. Keep sanding until the surface is uniform.



Bevel rip the acrylic using a slow, steady feed rate to prevent splintering. Clean up any "fuzz" with a utility knife.



Measure $6\frac{3}{4}$ " in from each end, and then crosscut the diffuser sides to length. Use a miter-gauge extension for support.



Tape two sides, and fold them to a 90° angle (the table saw fence works great). Then flow acrylic adhesive into the joint.



Join the two halves of the diffuser with tape. Flow adhesive onto the mating surfaces and fold the assembly together.

together, then the other (Fig. E). Then join the two halves (Fig. F). If the adhesive seeps onto the frosted faces, just sand them again after assembly.

8] The trim strips that wrap around the diffuser measure $\frac{1}{4}$ " thick. You can't buy cedar in that thickness, but you can make this stock yourself using the techniques on page 26. I just cut stock to $\frac{1}{2}$ " thick, and then ripped it into extra-long $\frac{1}{4}$ "-wide strips.

9] Miter the trim strips to length, and then use epoxy to secure them into the grooves in the diffuser.

10] Cut the diffuser cap and alignment block to size from cedar that's been resawn to $\frac{1}{2}$ " thick.

11] Cut a top from $\frac{1}{4}$ " acrylic, and frost the underside. Then drill holes for screws that will secure the cap and alignment block.

12] Sandwich the acrylic top between the cap and alignment block, drill pilot holes, and then assemble these pieces with screws and epoxy.

13] Fit the top assembly into place and use the holes in the diffuser to mark the location of the four mounting-screw holes on the alignment block. Remove the top and drill these holes. Then mount the top to the diffuser.

15] Before final assembly of the lantern, mask the acrylic parts of the diffuser, and then coat the cap, alignment block, trim strips, and lantern body with an exterior oil finish.

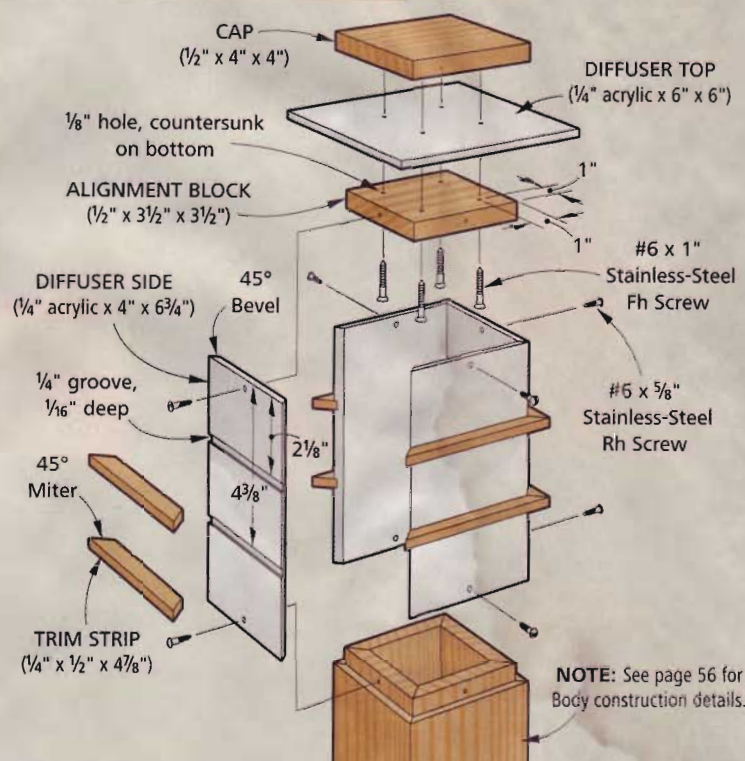
14] To assemble the lantern, first slip the diffuser onto the lantern body, and then mark and drill holes for the screws that secure it.

16] Cut a mounting pipe to length (about 12") from $\frac{3}{4}$ " I.D. copper pipe using a pipe cutter or hacksaw. Then secure the pipe into the counterbore in the lower divider using epoxy.

17] With the lantern done, all you have to do is pick its location and then connect it to the wire from your low-voltage transformer. See the article on page 60 for an overview of how to lay out and wire your system. ■

Written by David Stone, illustrated by Matt Scott, project designed by Mike Donovan

DIFFUSER CONSTRUCTION



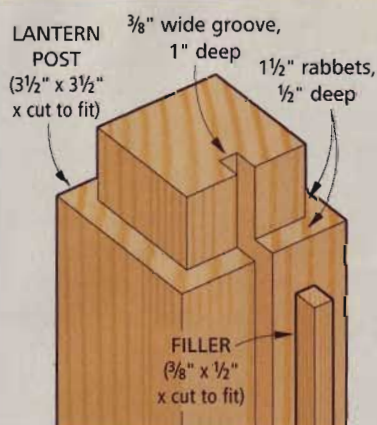
LANTERN OPTIONS

The design of this lanterns allows a couple of easy modifications.

First, you can easily change the appearance by just leaving the trim strips off the diffuser (Photo, right).

Second, you can mount the lantern on tall 4x4 cedar posts. To do that, rabbet the end of the post, and then cut a "chase" to hide the wiring (Tall Post Detail). Note: Don't install a lower divider in the lantern body for this option.

TALL POST DETAIL





LOW-VOLTAGE LANDSCAPE Lighting

Think outside of the “kit box” to create a low-voltage landscape lighting array that is unique, durable, expandable, and anything but “off-the-shelf.”

There is no simpler or more affordable way to illuminate your landscaping than with low-voltage lighting. The variety of fixtures that are available and the countless ways to arrange the lights offer almost infinite lighting options.

One of the most popular ways to install outdoor lighting is to purchase a kit that includes everything you need for a small array of lights, including the transformer, fixtures, wire, connectors, posts, and stakes. As popular as these kits are, however, they can sometimes be too limiting.

On the other hand, by combining individual components, you immediately gain design freedom, fixture options, control choices, expandability, and durability. Over the next few pages, we'll show you some of the key differences between kit and component installations, plus we'll offer a few tips for a professional-quality landscape-lighting system.

What's Low Voltage?—Before we get into the specifics of a low-voltage system, though, let's review what low-voltage lighting is and why it's such an attractive option for DIYers.

The mechanics of low-voltage lighting are simple. It all starts with a transformer that plugs into an electrical outlet. The transformer reduces the standard 120-volt household current into the much more DIY-friendly 12- to 15-volt range. Switching options, such as timers or motion sensors are also built into the transformer.

The low-voltage current then travels from the transformer along a cable, which is spliced into each individual light fixture. The fixtures themselves are typically anchored with a stake, though they can be mounted to walls, posts, trees, or any other structure you want to illuminate.

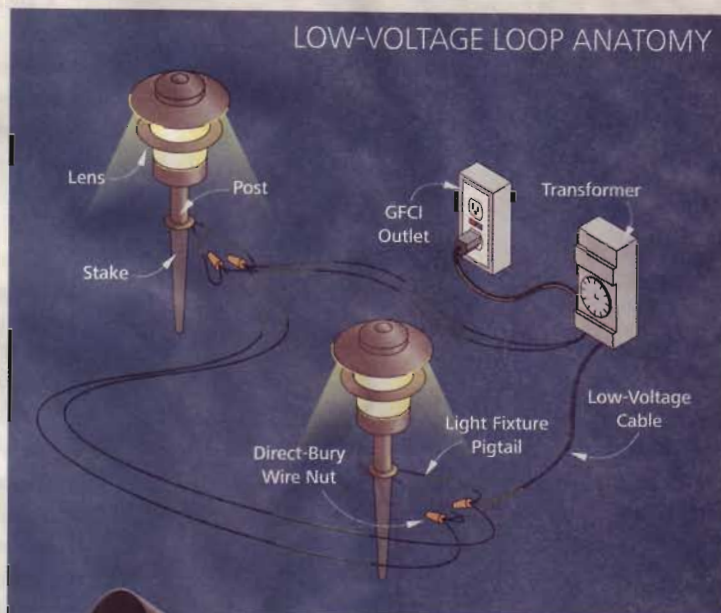
The advantages of low-voltage lights are many. First, working with 12 to 15 volts is much safer than 120 volts. Powering these lights is also more economical, about one-third less expensive, according to most estimates. Installation is also easier because the low-voltage cable doesn't require conduit. In fact, it isn't even required to bury the cable, although I do highly recommend it.

Design & Light Fixture Options—So now that we are up to speed on low-voltage lighting in general, let's look more specifically at each part of the system.

We'll start with the light fixtures because this is where the design process begins. A complete, balanced lighting plan will require a large number of fixtures in a variety of styles. No single kit will offer this many fixtures or this variety. (Typically, you'll only get six to eight identical lights.)

On the other hand, by assembling your own custom lighting array, you can choose from almost unlimited fixtures within the five broad categories shown in the *Photos* at right.

Besides just selecting quantity and variety, there is also a matter of quality that comes by choosing component light fixtures. Keep in mind that kits are assembled to be convenient and attractively priced. So individual fixture quality is not a priority. Just compare *Photos A and B* on page 62. The kit light is all plastic (including the lens), snaps together, and has light-gauge wiring. By comparison, the component fixture is all metal with a durable finish and a glass lens. It comes pre-wired with 12-gauge wire, and all of the metal parts thread together. It isn't hard to imagine which of these lights is more durable.



WELL LIGHTS

Sink these into the ground around trees, shrubs, or other landscape features to create a glowing effect.

SPOT LIGHT

Directs light upward or downward at adjustable angles. Can be used to illuminate an area or highlight a feature.



PATHWAY LIGHTS

Defines the edges of sidewalks, driveways, and garden paths. Should also be used to draw attention to hazards.



DECK LIGHTS

Illuminate the edges of the deck, railing, and stairs. Hide the wiring under the deck or in wire chases in the rails.



UNDERWATER LIGHT

Creates a shimmering glow in the garden ponds and fountains that are so popular in today's landscapes.





Along with more control choices, larger transformers typically have more terminals which offer greater circuitry freedom.



LIGHT FIXTURE QUALITY

For about \$30, you can get a kit with six of the fixtures in *Photo A*, or just a single fixture like the one in *Photo B*. The kit seems like a bargain until the fixtures break or short out.

Control & Expandability—After deciding which fixtures to use and how many you'll need, the next step is to choose a transformer that provides an appropriate power level for your lights, as well as the control options you want. Of course, with a lighting kit, that decision is already made for you. You get a transformer that is only large enough to power the lights in the kit and offers only manual and timer-controlled switching (*Photo C*).

When selecting a transformer for your component system, you'll first need to determine your power needs. A good starting point is to keep the total wattage of your lights to about 70 percent of the transformer's output. So if you have an array of lights that totals 350 watts, a 500-watt transformer is ideal. It offers enough extra power to add lights in the future without overpowering the lights you begin with.

Once you know that, you can decide on control options. The transformer in *Photo D* offers multiple switching options, including manual, timer, photocells, motion, or some combination of those. And these are much more than mere convenience measures; they also enhance the safety, security, and efficiency that you gain with a low-voltage lighting system.

Installation Notes—Another area where component systems differ greatly from kits is in the installation details. Honestly, installing low-voltage lights isn't complicated in any case, but kits may have oversimplified the process by forcing you to string the lights together in what's known as a "series circuit" (see *Circuit Choices* on page 63).

The problem with a series circuit is that, although it is a foolproof installation, it often results in the lights at the end of the series being dimmer than those at the beginning because of voltage drop.

By contrast, when setting up a component system, you can decide for yourself which type of circuit best fits your application. In terms of balanced lighting, that will almost always be



SINGLE OR MULTIPLE SWITCHING OPTIONS

The simplest transformers have only a timer switch (*Photo C*). More sophisticated transformers, as shown in *Photo D*, allow you to choose from several switching options, and even allow you to combine options. Some transformers will even dim the lights rather than turn them off entirely.

a loop circuit. In this circuit, even the furthest light from the transformer will shine brightly because it is being fed power from both directions. But there are certainly instances when another circuit will be the right choice because of the size or shape of an array. The important thing here is that a component system gives you options.

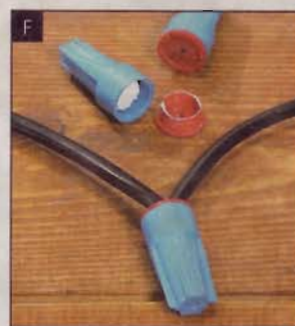
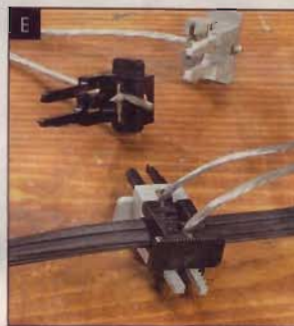
Another key point is the way each fixture is spliced into the circuit. Snap-together quick connectors like those shown in *Photo E* are typical in kits. They are certainly quick and don't require any tools, but they aren't terribly durable. Lights that flicker or won't illuminate because of failing quick connectors aren't uncommon.

A better solution is to use "direct-burial" connectors (*Photo F*). These silicone-filled wire nuts keep moisture away from the connection and can be buried in the ground.

You'll also want to carefully consider the number of lights on each circuit and their distance from the transformer. As you get further from the transformer, you either need to increase the size of wire feeding the circuit or decrease the number of lights spliced into it. In some cases, you may have to do both to ensure full and consistent illumination of the fixtures. Once again, this isn't really an issue with a kit as you'll receive just enough wire to work with the fixtures and transformer that are included.

Additional Resources—The guidelines we've provided here are enough to get you started toward a breathtaking low-voltage lighting array in your own yard. But we do encourage you to consider the following online resources to help you in your planning and installation.

Malibu Lighting. From kits to components, Malibu offers everything you'll need to light your landscape. They even have a free planning guide that you can pick up at Lowe's



BETTER CONNECTION, BETTER LONGEVITY

The snap-together clips on the left are common to kits and often short out within the first year. Silicone-filled wire nuts, on the other hand (right), will provide years of trouble-free service.

and other home centers. Or, for just a few bucks, you can buy a CD-Rom version of the guide for your computer. MalibuLighting.com

FX Luminaire. This maker of high-end light fixtures has an incredible website that is filled with valuable insight and information about installing a quality low-voltage lighting system. FXL.com

Nightscaping. According to this company's website, their founder (who is still active, by the way) actually invented low-voltage landscape lighting. And given the sheer volume of technical and design information available on this website, I have no trouble believing it. Check out the Technical and Contractor Support sections of the website for a wealth of useful information. Nightscaping.com

—Written by Bill Link, illustrated by Erich Lage

CIRCUIT CHOICES

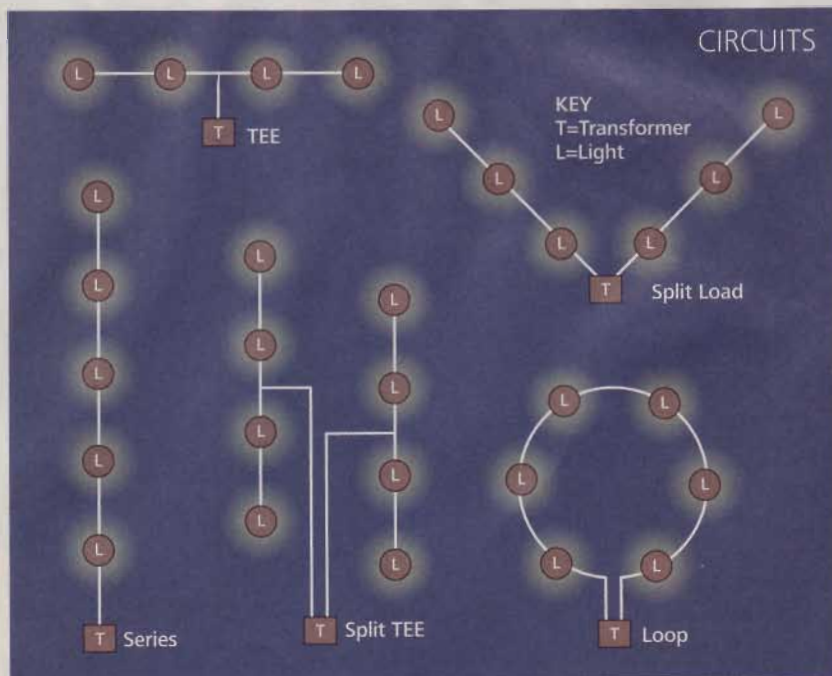
Series — The simplest, most common, but least efficient circuit. Lights at the end of the circuit will be dimmer than lights at the beginning.

Tee — Ensures a more even distribution of power throughout the circuit. Use no less than 10- or 12-gauge wire to form the Tee.

Split Tee — Allows relatively even power distribution on two legs.

Split Load — Create more consistent power by splitting the maximum distance/fixtures into two legs.

Loop — Allows uniform light output because furthest fixture is being fed from both directions. Requires special attention to ensure proper polarity at transformer connections. This is the circuit commonly used by professional installers and should be your first choice, as well.







DOWN WITH DOWNSPOUTS—ADD A

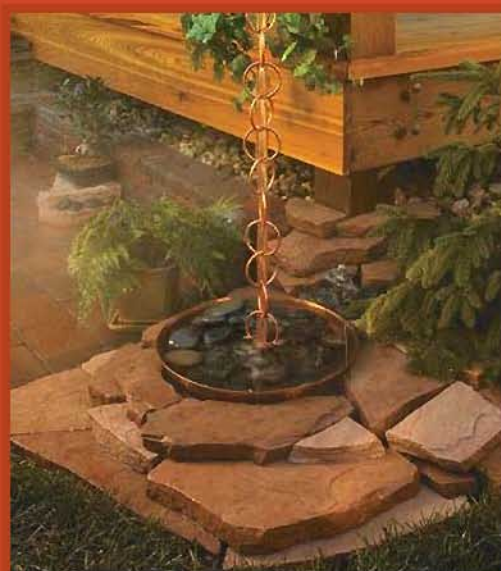
RAIN CHAIN

Replace ordinary downspouts with exotic rain chains and create a striking water feature at each corner of your home.



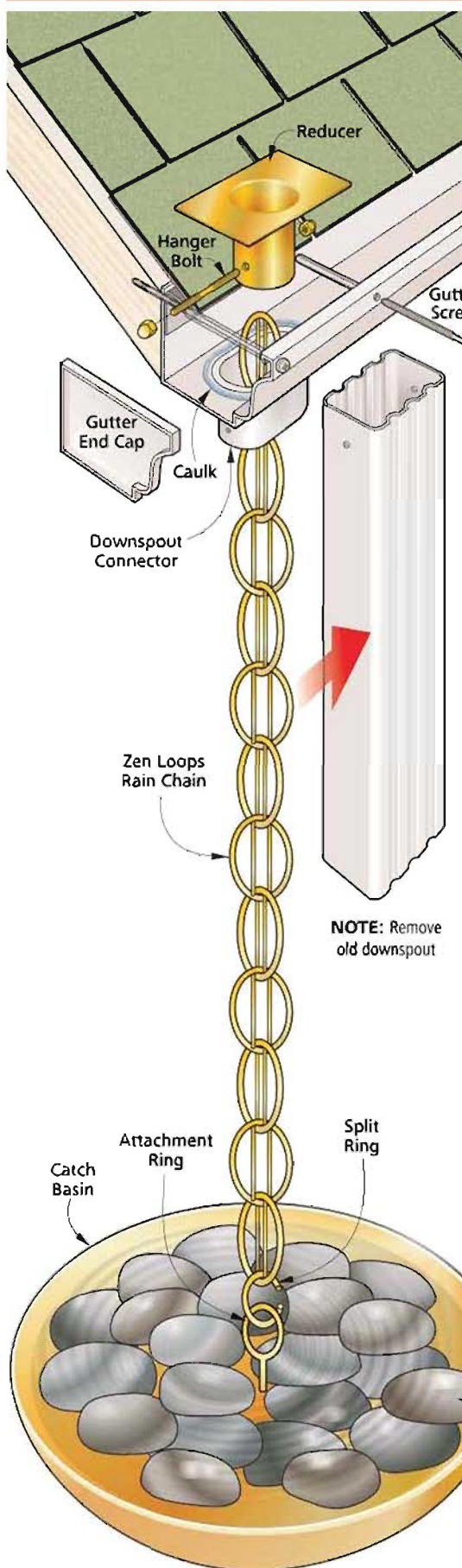
BEFORE

Traditional downspouts are a fine way to move water from the gutter to the ground, but they don't look very good.



AFTER

A rain chain not only does the job of moving water, but it also delights the senses with its great looks and a melodic waterfall when it rains.



Rain chains aren't well known in this part of the world. But in Japan, they've been used for hundreds of years to carry water off the roofs of buildings. And, as the *Photos* make clear, they're a much more elegant means of transmitting water from the gutter to the ground than conventional downspouts.

What the photos don't show however, is the melodic sound that the water makes as it runs down the chain, and these unique features are treasured as much for the auditory experience as the visual.

Of course, another important part of the beauty of rain chains is their simplicity: How simply they work and how simply they can be installed.

As the *Illustration*, left, makes clear, a rain chain completely replaces an ordinary downspout. The chain hangs from a hook or a bolt and extends down to the ground. When rainwater

empties out of the gutter, it adheres to the chain and passes from link to link until it reaches the ground. In most cases, a catch basin is positioned below the chain to control the dispersion of the water and to prevent erosion directly beneath the chain.

Choose Your Chain—The rain chain selected by our homeowner is called Zen Loops. It is just one of several "link" models available on RainChains.com. There are also "cup" style chains that convey the water by causing it to run from one cup to another. You can also choose from brass, copper, or aluminum chains to create precisely the look you want. Our chain is copper, and over time, it will develop a green patina.

Other Considerations—The two basic components of any rain-chain installation are a gutter attachment piece and the chain itself. Again, a catch basin to collect and disperse the water is optional.

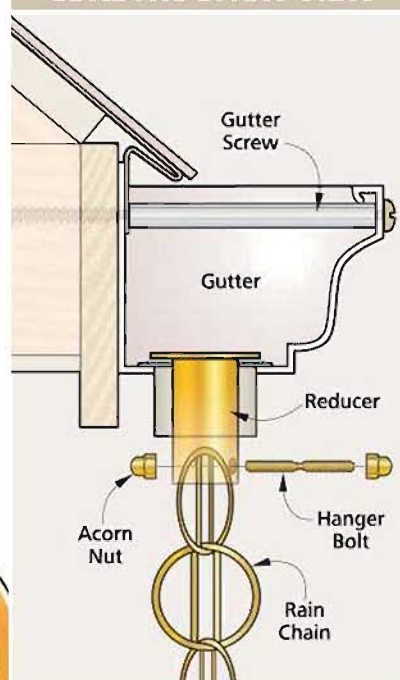
Most chains come with a simple attachment piece, nothing more than a bent rod, really. The rod spans the opening in the gutter and the chain hangs from that. The weight of the chain holds the rod in place.

For our installation, we purchased an optional kit that includes a copper reducer and chain hanger bolt. We opted for the accessory kit for a couple reasons. First, the reducer helps channel the water from the gutter and direct it onto the chain. Without the reducer, the water tends to fan out and overshoot the chain as it exits the gutter.

Secondly, the reducer comes with a sturdy hanger bolt for attaching the chain. We feel like this is a more secure way to assemble the whole thing. And for us, that extra measure of security is worth the price.

As for a catch basin, we chose a hammered copper dish with an attachment ring. The ring let us connect the chain to hold it steady in high winds. Some decorative stones in the bottom of the basin made the attachment all the more secure. The manufacturer says this isn't absolutely necessary, but we liked the idea of securing the chain at both ends.

CONSTRUCTION VIEW



Installation—Regardless of the type of chain you select, installation is essentially the same. The series of *Photos*, below, shows how quickly and easily the rain chain can be installed.

Here again, we went a little beyond what the manufacturer suggested and sealed the reducer inside the gutter with a bead of gutter-and-downspout caulk. This will keep water from getting underneath the reducer flange and missing the chain altogether.

We also added an extra gutter screw to strengthen the gutter (*Fig. 1*). This is to account for the extra weight of ice building up on the chain in winter. Otherwise, don't let ice concern you. An ice-covered chain actually looks quite striking, and it lets you enjoy the impact of your rain chain through all the seasons. 

—Written by Bill Link, illustrated by Kurt Schultz, project designed by James R. Downing



1] Apply a bead of caulk to seal the reducer. Bolster the gutter with an extra gutter screw near the opening.



2] Use a plumb bob (or a chalk box hung by its hook) to center the basin below the gutter opening.



3] Arrange the basin and stones as desired, then score the sod with a spade so you can remove it easily.



4] Remove the sod and grade the spot into a mild slope to direct rainwater away from the house.



5] Cover the bare spot with plastic sheeting and gravel to aid drainage. Arrange the stones on top of the gravel.



6] Place the basin on the stones and tip it slightly away from the house. Cut the chain to length and attach it to the ring.



mosaic magic

TILE-TOP Table

Turn the tables on plywood and ceramic tile and create a mosaic-top accent table that makes a unique addition to your covered porch or four-season room.

Tile *always* adds style to a project. But if you break the tiles into small pieces and then apply them in a mosaic pattern like we did on this small accent table, it creates a whole new look that's perfect for a sunroom or porch.

To make this mosaic design, we used inexpensive ceramic tiles. Soft greens, buttery yellows, and warm ivories created a fresh, casual look. And a sprinkling of dark-green tiles (as well as a few white tiles) provided just the right accents.

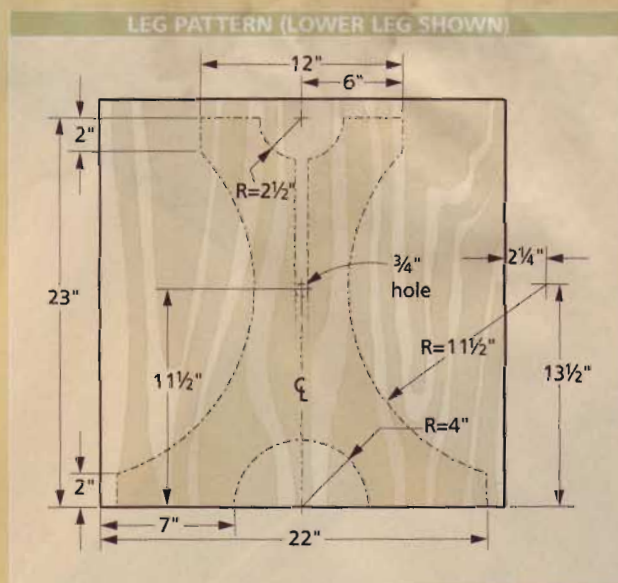
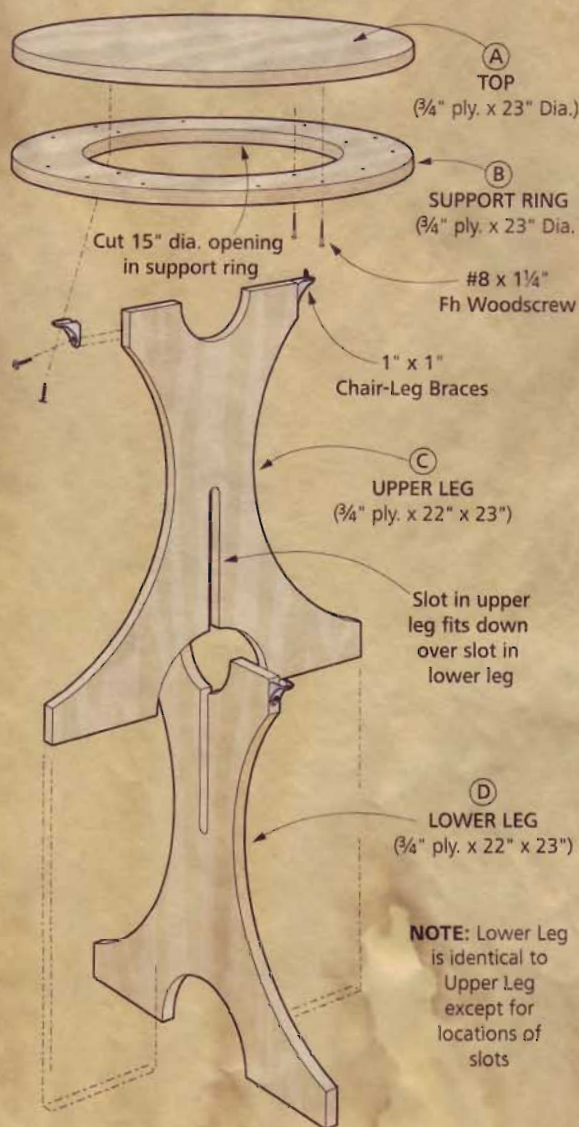
Before turning to the mosaic design (pages 68 and 69), you'll need to make the table. And that couldn't be simpler. It consists of a two-part top and a pair of curved legs—all made from a half-sheet of $\frac{3}{4}$ " exterior plywood.

Two-Disk Top—To give the table some visual weight (and to create a stable surface for the tile), the tabletop is made up of two disks (A and B). Note that the lower disk is ring-shaped. When the top is assembled, the circular opening in this disk forms a recess for mounting the legs.

To make the top, lay out the disks, cut them to shape, and sand the edges smooth. Now glue and screw the disks together. (We used water-resistant glue.) Then seal the top with shellac or wood sealer and set it aside to dry.

Interlocking Table Base—The table base is made up of two gracefully curved legs with interlocking slots that hold them together. Note that the slots are identical in size, but to get the legs to fit together, you'll need to locate a slot at the top of one leg and the bottom of the other.

With that in mind, lay out and cut the legs to shape (Pattern, right). Next, drill starter holes to define the ends of the slots. Then complete the slots with a jig saw. Finally, assemble the legs (no glue needed), paint as desired, and mount the tile top with chair-leg brackets and screws.



Mastering Mosaics

To create the mosaic tile design, you'll need two types of tile: standard "field" tiles and bullnose tiles (tiles with a rounded or "bullnose" edge).

You'll also need to round up a couple tile-cutting tools: a handheld tile cutting tool for straight cuts (see Figs. 1-3) and tile nippers to cut irregular shapes (Photo, left).

Begin with the Borders—The first step is to lay out two tile borders: one that covers the edge of the table and one that goes around the top. To create a finished look, use bullnose tiles. The bullnose profile is flush with the bottom of the table. On top, it should overhang the edge tiles.

Figures 1-3 below will step you through the process of cutting the border tiles. Size isn't critical. We cut



1] Using a combination square, measure $1\frac{1}{4}$ " from the bullnose edge and mark with a grease pencil. Hold the square on the marks and score a line with a tile tool.



5] To create the irregularly shaped pieces for the "field" of the mosaic design, place one tile at a time between the folds of a towel and break it with a hammer.

ours $\frac{3}{4}$ " wide and about $1\frac{1}{4}$ " long, which produced a pleasing appearance. And it leaves a $\frac{1}{4}$ " gap above the edge tiles, which will get filled with grout.

One thing you'll notice about the bullnose tiles is that the "non-bullnose" edges may be slightly glazed. (This happens in the manufacturing process.) These partially glazed edges won't blend well with cut (or broken) tiles. So trim a narrow piece off each tile to get rid of the glazed edge (Fig. 3).

After cutting and arranging all the border tiles, it's just a matter of gluing them in place (Fig. 4). We used a multipurpose contact adhesive and sealant called Household Goop.

Fill in the Field—Now you're ready to fill in the field. The idea is to work from the border toward the middle of the table, using an increas-

ingly random arrangement of tiles. The *Photo* on page 66 shows the result. Notice the green tiles next to the border tiles. Made up of squares and rectangles, it's a fairly orderly row. Moving inward though, the pattern gets more irregular.

With that in mind, begin breaking tiles into small pieces (Fig. 5), shape them as needed (Fig. 6), and glue them onto the table one by one (Fig. 7).

Apply the Grout—The last step is to grout the tile. For convenience, we used a pre-mixed sanded grout (white). It sets up fairly fast, so work in small areas, applying the grout with a grout float (Fig. 8).

Before the grout dries, wipe off the excess with a damp sponge. Then let it dry according to the manufacturer's instructions. There may still be a hazy

SUPPLIES:

- » (1) Half-Sheet of $\frac{3}{4}$ " Exterior Plywood
- » (16) #8 x $1\frac{1}{4}$ " Fh Woodscrews
- » Water-Resistant Wood glue
- » (2) 1" x 1" Chair-leg Braces
- » (30) 4" x 4" Bullnose Ceramic Tiles
- » (15) 4" x 4" Standard Ceramic Tiles
- » Contact Adhesive & Sealant
- » Pre-mixed Sanded Grout (White)
- » Shellac or Wood Sealer
- » Antique White, Satin-finish Latex Paint

TOOLS REQUIRED:

- Hammer
- Tile Nipper
- Grout Float
- Grease Pencil
- Tile Cutter
- Combination Square
- Grout Sponge

film, which is easy to buff out with a soft dry cloth. On a final note, the grout shrinks as it dries, so you might have to regrout some areas. 

— Written by Patricia Garrington, illustrated by Erich Lage, project designed by John Doyle



2] Holding the tile tool so that the rubber extensions straddle the scored line, break off the bullnose strip.



3] Score and break off a narrow piece on each end of the tile. Then score and break the strip into $\frac{3}{4}$ "-wide pieces.



4] Glue on edge tiles so the bullnose is even with the table bottom. On top, it's flush with the face of the edge tiles.



6] As you lay out the design for your tabletop, trim the broken tile pieces to fit using a pair of tile nippers.



7] After completing the layout, start at the outside edge and glue each tile piece in place one at a time.



8] Apply grout to a small area. Let it set for about 10 minutes, and then lightly sponge off the excess.

Paint sprayers

Speed, efficiency, and quality of finish are three good reasons to lay down the brush and pick up a paint sprayer. But successful spraying relies on matching the sprayer to the project.



Professional house painters, furniture builders, and even auto body guys would be lost without their spray-painting equipment. The speed that spray painting lends these occupations is obvious. But there's also an important measure of quality that comes from spray painting. First of all, there are no brush or roller marks to mar the paint job. Secondly, spray painting, when done properly, can apply paint much more consistently than a brush or roller. And the more irregular the surface is, the more profound those advantages become.

Fortunately, there are more choices than ever before for DIYers who want to take advantage of spray painting for their own projects. Those choices fall into the three broad categories listed below. Over the next few pages, we'll familiarize you with each of these groups. And on page 77, we've provided a chart to help you quickly match your project to the best paint sprayer for the job.

Three Sprayer Choices

There is no silver-bullet, one-size-fits-all paint sprayer. The size, complexity, and even location of your painting project (indoors or outdoors) will largely dictate which type of sprayer best matches your needs. Here's how the categories break down.



Handheld Airless Sprayers, nicknamed "buzz guns," are plentiful and affordable. And if you learn their capabilities and limitations, they can be valuable tools for the right painting project.



Floor-Mounted Airless Sprayers are kissing cousins to the powerful machines used by professional house painters. They are simple to use, but best saved for your largest projects.



HVLP (high-volume, low-pressure) sprayers are well known to furniture finishers and woodworkers, but they can be awesome paint sprayers, too, provided you'll take the time to learn the techniques.



Outdoor projects with irregular surfaces, like this fence, demonstrate the speed and convenience of a "buzz gun."

Paint Cup

Paint Flow Control



THE "BUZZ" ABOUT

Handheld Airless Sprayers

Handheld airless sprayers, or buzz guns as they are sometimes called because of the unpleasant noise they make, are the most common and familiar type of sprayers for the DIY set. After all, who hasn't at least heard of, if not actually used, a Wagner Power Painter?

Of course, Wagner isn't the only brand in this category. Campbell Hausfeld, HomeRight, and Black & Decker each offer their own models of buzz gun.

And while the various models differ dramatically in the details, there are common qualities that define this category: a piston pump that propels the paint, a small paint cup mounted underneath the motor, a simple valve and tip assembly, and very basic paint flow controls. A small piston pump

inside the body of these sprayers draws paint from the cup and forces it through the valve and tip. Three tiny openings in the valve separate the paint into tiny particles and send it spiraling through the tip in a fine mist. The shape of the tip determines the spray pattern. Some tips have adjustable patterns, though most require you to change tips to change the pattern.

Buzz guns operate somewhere in the range of 50- to 70-percent transfer efficiency. Which means that as much as 30 to 50 percent of the paint is being wasted.

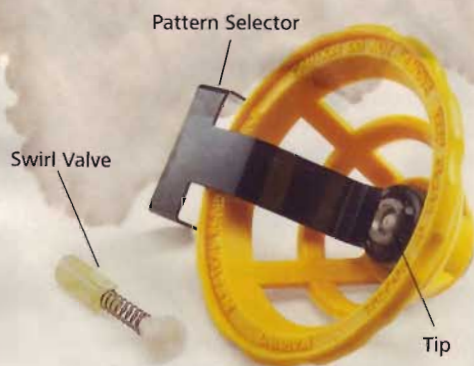
But then again, efficiency isn't the promise of these sprayers—speed is. And once you get the hang of using a buzz gun, it can certainly paint faster than a roller or a brush, even when you factor in cleanup time.

So what is there to "get the hang of?" According to the marketing, you just pour in the paint, point the gun, pull the trigger, and you're done before you know it.

Close, but not quite. One important truth that most buzz gun instruction manuals seem to gloss right over is thinning the paint. You will absolutely have to do this with today's thick latex paints. If you don't, you'll have spatters, inconsistent spray, or may not even get the gun to work at all.

Fortunately, it doesn't take much to thin latex paints just enough to work in these guns. Usually, 4 to 8 ounces of latex paint conditioner mixed into one quart of paint gives excellent results. For more in-depth discussion of thinning paint, see page 28.

Large Selection—One important thing this category has going for it is quantity. Wagner alone has at least nine different buzz-gun models. Campbell Hausfeld and HomeRight also offer multiple models. Prices in this group range from \$30 to \$130.



Interchangeable valves and tips add versatility to most buzz gun models.



Along with a suction kit for drawing paint directly from the can, this high-end model has a laser distance guide.

The least expensive models have motors rated for about four gallons per hour, come with only one paint cup, one tip, and only the basic paint flow control I mentioned earlier.

At the top of the price range, the sprayers can put out as much as seven gallons per hour, may have several paint supply options (including drawing it directly from the can), often have multiple tips, and have both paint flow and pump-speed control (*Photo, below*).

The Wagner models that offer both paint flow and pump-speed settings make it possible to dial in the spray to a much more controlled rate.

Nonetheless, limiting the use of buzz guns to outdoor projects is probably the best approach. They just aren't precise enough for painting indoors, not to mention the occasional spurt of paint that occurs for no apparent reason. Both of which explain the relatively low transfer efficiency of these sprayers.

But next time the dog house, patio furniture, or a shed needs painting, a buzz gun and a good set of ear plugs may be just the ticket.



Wagner's Wide Shot painter lets you adjust pump speed and paint flow to fine-tune the spray pattern to your particular painting project.



This rough siding would take all week-end to paint with a brush. An airless sprayer knocks it out in an afternoon.



AIRLESS POWER, Floor-mounted Sprayers

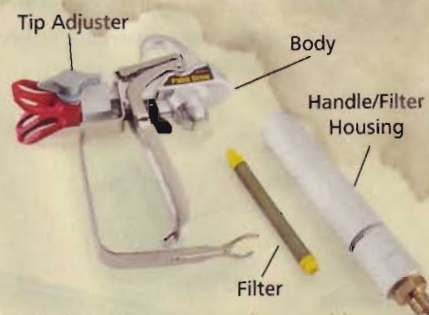
Airless sprayers (sometimes called "floor-mounted" airless sprayers to distinguish them from handheld buzz guns) are simplified, powered-down versions of the heavy-duty paint sprayers that professional painters have been using for years. At this time, only Campbell Hausfeld and Wagner offer consumer versions of these sprayers. And in technical terms, the two machines are really quite different.

Both sprayers use powerful internal pumps to crank out up to one-fifth of a gallon of full-thickness paint per minute with as much as 75-percent transfer efficiency. The Wagner Paint Crew holds up to two gallons in its onboard hopper, and the Campbell Hausfeld draws paint directly from a can or bucket. Honestly, if you're painting anything smaller than a garage or a house with a sprayer like this, then you might as well be hunting rabbits with a howitzer.

Cleaning up at the end of the job is a routine that will take you a few

attempts to become really efficient at, but once you get the hang of it, cleanup doesn't take any longer than rinsing out brushes and rollers.

The most important thing to know about these sprayers is that they are *exterior* painting tools. So they are great for your biggest projects. And for just under \$200, they can save you a ton of money over a professional painter, or a ton of time over a brush and roller.



A typical airless spray gun disassembles for easy cleaning. The filter can be rinsed and reused several times.



HVLP sprayers, which use a soft stream of turbine-generated warm air to propel the paint, deliver a super-fine mist that will easily coat even the most intricate surfaces.



PRECISION & EFFICIENCY DEFINE HVLP Painters

HVLP—or high-volume, low pressure—sprayers, are best known as staining and finishing tools. And they are perfectly designed to deliver the very thin, solvent-based stains and finishes used in furniture-making.

HVLP has not, however, gained the same popularity as a method for painting, which is too bad. Because for anyone who will take the time to learn how to use one, an HVLP sprayer is an incredibly versatile painting tool, capable of either applying paint to your most intricate woodworking projects or painting an entire room.

To understand what makes HVLP sprayers so capable, you need to first understand how they work. Unlike the airless sprayers that use pumps to drive the paint, these systems use air, generated by a turbine, to siphon paint from the cup. The paint and air mix at the air cap. The efficiency of this system comes from the fact that it's a large quantity (10 to 25 cubic feet per minute) of low-pressure air (2 to 10 pounds per square inch) propelling the paint.

So in other words, the air isn't being blasted out of the gun. It's

being lifted out of the cup, separated into a super-fine mist (atomized), and then carried along on a gentle stream of air until it lands on the project. This rather delicate process accounts for the remarkable 85- to 90-percent transfer efficiency that is the hallmark of HVLP.

It also gives you, the painter, an amazing amount of control because, at the very least, all HVLP guns allow you to adjust the air flow. Many guns also have adjustable paint flow and interchangeable needles and nozzles (*Photo, below*), so the ability to fine-tune the spray is almost infinite.

So why hasn't HVLP taken the painting world by storm? Well, that's due largely to the fact that paint, unlike most stains and finishes, requires a great deal of thinning to be able to flow past the very fine HVLP needles and nozzles. And it takes a bit of fussing to come up with the perfect thinning recipe. But once you've



Replaceable needles and nozzles allow you to adapt the gun to various materials.



found the right mix of paint, water, and conditioner to get great results from an HVLP system, the results are usually easy to duplicate—especially if you keep a journal of how much to thin various types and brands of paint.

Which HVLP?—The tools that I'm talking about in this article are consumer-grade, turbine-powered HVLP systems from Wagner, Campbell Hausfeld, and Earlex. All three models sell for less than \$200. Of course, these represent just one small corner of the HVLP universe, but they are the units that make the most sense for DIYers. They are certainly a better fit than HVLP systems that cost thousands

of dollars or require an enormous air compressor to drive them.

But don't let their affordability fool you. These are still incredibly precise painting tools. The Wagner is limited slightly by the fact that you can't change needles or adjust the airflow, but you can still achieve excellent results with this sprayer. The Campbell Hausfeld is the most versatile of the three simply because you can adjust air flow, paint flow, and change the needles. The Earlex, while lacking the airflow adjustment, is nearly as versatile as the Campbell Hausfeld machine.

Of course, all three of these sprayers have adjustable spray

patterns, which may be the most important adjustment anyway. By simply turning the air cap, you can select a vertical, horizontal, or circular spray pattern. You'll find yourself using this feature frequently as you move up, down, and around projects to get the best coverage.

Again, what all of this adds up to is an incredible amount of control. And once you learn the simple science of thinning paint, you may find that an HVLP sprayer is the tool you count on for all but your largest painting projects. 

—Written by Bill Link

	House Interior	Kitchen Cabinets	Coffee Table	Metal Furniture	Wicker	Lattice	Fence	Dog House	Shed	Garage	House Exterior
Handheld Airless (Buzz Gun)										IDEAL MATCH	
											
	POOR MATCH										
Floor-mount Airless											IDEAL MATCH
											
	POOR MATCH										
HVLP	IDEAL MATCH										
											
	POOR MATCH										

Tool Report

This bunch is portable, exchangeable, interchangeable, compact, precise, and affordable.

PORTABLE WORK CENTER — When Skil set out to design a portable workstation, they aimed to make one that's larger, more versatile, and still as portable as anything currently on the market. The result is the **X-Bench (1)**.

The base model features a large, 23" × 53" worksurface, a sacrificial cut channel so you can cut directly on the X-Bench without worrying about damage, and independently adjustable legs so you can adapt the X-Bench to irregular terrain. The entire unit collapses and folds in half to about the size of a large suitcase so you can carry it to the next project or store it easily.

A full complement of accessories is also available to expand the usefulness of the X-Bench. Those include universal insert plates that snap into the worksurface and accept various power tools that turn a portion of the workstation into a router table, sanding center, or scroll saw. A clamping kit and a tail vise are available to secure workpieces. And you can add storage to the X-Bench with a shelf and tool bag. The Skil X-Bench sells for around \$140. Individual accessories range from \$15 to \$30.

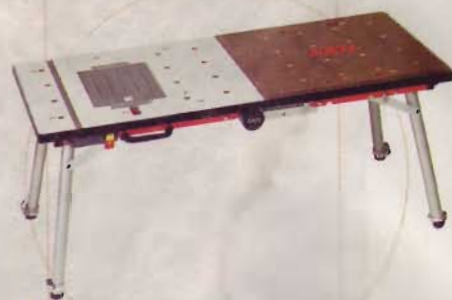
CO₂ TANK EXCHANGE — In the February issue of *Workbench*, we named the JacPac CO₂ Power System as one of the Top 10 Innovations for the year. And now, along with innovation, this system has convenience going for it. That's because Supplier Pipeline (the makers of JacPac) has teamed up with Lowe's and Blue Rhino to offer the **Kobalt Portable Compressed CO₂ Regulator (2)**. But in truth, it isn't the regulator that's the big news — this is just the JacPac regulator under the Kobalt name (Kobalt is a Lowe's house brand).

The real news is the role that Blue Rhino plays in this. You may recognize that name from their nationwide propane tank exchange program. And now they're bringing the same convenience to CO₂. So rather than having to take an empty CO₂ tank to a paintball or welding supplier for a refill, you simply take it into Lowe's and exchange it for a full tank.

To start using CO₂ to power your pneumatic tools, you can purchase a Kobalt regulator kit (which includes the regulator, 10-foot hose, and an empty 9-ounce tank) for about \$100. Tank exchange prices are approximately \$6 for a 9-ounce tank and \$9 for a 20-ounce tank. Additional tanks can also be purchased at Lowe's.

MILWAUKEE INTERCHANGE — Milwaukee Electric Tool recently extended its outstanding line of **BodyGrip Routers (3)** to include fixed- and plunge-base kits. The kits use the existing BodyGrip motors (1¾- and 2¼-hp models) which can be interchanged between a fixed and plunge base. Best of all, if you already own one of these routers, you can simply add the plunge base to complete your kit. The 1¾-hp router kit (5615-24) sells for about \$220, and the larger 2¼-hp model will cost about \$30 more.

COMPACT IMPACT — Impact drivers continue to be the "big" thing in cordless tools. Irony, since their popularity is fueled in part by their compact size relative to their



1 Skil
X-Bench



2 Kobalt
CO₂ Regulator



3 Milwaukee
Router Combo Kit



4 Bosch
Impactor

enormous power. And now Bosch has released "the world's smallest" impact driver, the **10.8-Volt Lithion Impactor (4)**. This is the latest addition to the growing line of 10.8-volt lithium-ion-powered tools that Bosch first rolled out last year. And this may be the best example of how lithium ion can be used to keep tools to a manageable size without sacrificing power or performance.

Just consider that this compact drill/driver weighs a little over two pounds, but still delivers 800 in.-lbs. of torque. By comparison, a conventional 18-volt drill from Bosch weighs almost 6 pounds and creates just 550 in.-lbs. of torque. The Impactor sells for approximately \$200 and comes with two batteries and a 30-minute charger.

SPEED ROCKER — While hanging drywall recently, I discovered CH Hanson's **Speed Rocker (5)**. This three-in-one tool was actually introduced about three years ago, but I hadn't given it much thought until this project came up. The Speed Rocker is a utility knife on one end, a keyhole saw on the other end, and it has a rasp built into the handle.

The real value of this knife is the ScorSlot near the utility-blade end of the knife. By hooking your tape measure in this slot, you can get a precise measurement from the edge of the workpiece to the blade. Once you get the hang of it, this is much quicker than measuring and laying out each cut and then using a straightedge.

The keyhole saw also came in handy for cutting out notches to fit around outlets and light switches. And the built-in rasp was great for "fine-tuning" those cutouts when I cut them a bit too snug.

The SpeedRocker sells for about \$25 at hardware stores and home centers.

5 CH Hanson Speed Rocker



Veritas® Right & Left Iron Edge-Trimming Planes



Edge-trimming planes are used for final trimming cuts on jointed boards to ensure smooth edges at exactly 90° to the face, and for working end grain. Although you will usually need only the model suited to your dominant hand, neither model is exclusively for left- or right-handed users, as the planes are in fact complementary. You could use both models when you need to accommodate grain running in opposite directions on the same board, but have only one true reference face, such as when working on a length of molding. With both models you can handle any grain direction.

Made in Canada, the planes are durable ductile iron, with a 12° bed angle and 30° blade skew. The 1/8" thick blades, available in A2 or O1 steel, are 1 1/4" wide to let you plane material up to 1" wide. Depth adjustment is fast and accurate via the thumb wheel, and set screws along the side prevent blade shifting. A wooden wedge can be fixed to the fence for cutting controlled bevels.

Until May 31, 2007, we are offering our new left-hand plane or a pair of planes (right and left, same type of blade steel) at introductory prices.

To request our free 264-page woodworking tools catalog, call or visit us online.

1-800-683-8170
www.leevalley.com

Lee Valley & veritas®

	Intro. Price	Reg. Price	A2	O1
RH Edge Plane	—	\$105.00	05P03.01	05P03.51
LH Edge Plane	\$ 89.00	\$105.00	05P03.61	05P03.71
Pair Edge Planes	\$178.00	\$195.00	05P03.81	05P03.82

Shipping and N.Y. sales tax extra.

CIRCLE-CUTTING CIRCULAR SAW BLADE — Despite the name, you'd never consider cutting a circle with a circular saw until now. But the new **Arcus Blade (6)** makes that unlikely proposition quite possible. This unique blade is slightly concave, so it allows the blade to cut arcs and circles as small as 30" in diameter. The design was actually inspired by the way a dinner plate spirals inward if you try to roll it on edge. You can read more about the blade and even see videos of it in action on the company's website. The blade fits most 7¼" circular saws and sells for about \$40 by itself, or with a trammel guide for about \$75.



6 Arcus
Circle-Cutting Blade

LASER UPGRADE — You can easily upgrade almost any size and brand of miter saw by simply adding an Irwin **Laser Guide (7)**. This laser cutline generator costs about \$30 and replaces the standard arbor bolt and washer on the saw. It's powered by onboard watch batteries, and is activated by the rotation of the blade.



7 Irwin
Laser Guide



DRIVES 4 SIZES OF NAILS WITH NO EFFORT

■ Comfortable
Ergonomic
Styling with
Cushioned
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www.arrowfastener.com Rev.1002

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800-827-3398

Arcus Blade
ArcusBlade.com
502-495-2959

Irwin Laser Guide
Irwin.com
800-464-7946

PANTREE

Cookware Organizer

In my house, the dinner bell often sounds like clanging pots and pans. That's because the pan I need is inevitably buried under at least two others, and fishing it out raises quite a ruckus.

But dinner time got a lot quieter after I installed a Pantree cookware organizer. This simple \$25 device does what so many other organizers fail to do: take advantage of the vertical space inside the cabinet. And by doing so, it turns a previously jumbled mess of pots and pans into a neatly divided stack.

The Pantree will fit standard base cabinets that are at least 15" wide. For more information or to order a Pantree, visit Pantree.com or call 800-646-0366.



Sized to fit into a standard cabinet, the Pantree can hold up to 14 pieces of cookware and four lids.



REPLACEABLE CAULK TIP

The rule of "use it or lose it" no longer applies to expensive caulks and adhesives. Now, even if that solvent-based caulk hardens in the tip after a single use, simply cut off the original tip and replace it with a Caulk Tip from Crawler Products.

A pack of five tips sells for around \$5, so it's an economical choice when working with expensive solvent-based products. I'm not sure I'd make the investment, though, for inexpensive latex caulk.

For more information, including where you can purchase Caulk Tips, call 314-205-1038 or visit CrawlerProducts.com.

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Product Information Number 296

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Product Information Number 243

EASY LIGHTING UPGRADE WITH

Invisible FlatWire

FlatWire mounts on the surface of the wall instead of behind it, which makes installing new light fixtures a snap.

Installing light fixtures where there weren't any previously just got easier. There's no longer any need to cut into the wall to run conventional wiring to the fixtures. Simply use a FlatWire Ready kit from Southwire Company.

The heart of this kit is the FlatWire. Just slightly thicker than paper, the

wire adheres directly to the wall. You can then hide the wire with drywall joint tape and compound, just like "mudding" the seam between two sheets of drywall. Then the wall can be textured and painted as normal, making the wire virtually invisible.

A typical FlatWire Ready kit includes two

These sconces are powered by FlatWire mounted to the surface of the wall.

low-voltage sconces, 25 feet of wire, the transformer, and all necessary connections for about \$200.

Visit FlatWireReady.com or call 770-832-4630 for more information.



New interior doors from Simpson highlight utility space rather than hide it.

UGLY CHORE, Attractive Door

Now that laundry rooms are considered part of the extended living space rather than just another hidden utility room, manufacturers are offering some appealing products to help integrate this space into the home.

One excellent example is from Simpson Door Company. This laundry door, which is distinguished by its frosted glass treated with an old-fashioned washtub and the word "Laundry," joins similar designs for the pantry, media room, and wine cellar.

The doors come standard in Douglas fir, western hemlock, American red oak, maple, and cherry. All standard door sizes are available.

Prices will vary based on size, wood species, and whether the door is prehung, but for an idea, I received a quote from a local dealer of \$850 for a 3'0" x 6'8" oak model.

For more information, call 800-952-4057 or visit SimpsonDoor.com.



GET STUCK ON GREEN

Henkel recently announced the launch of OSI Green Series adhesives and sealants. It's the first "green brand" in the category. The full line of products meets both energy efficiency and environmental impact standards, so there's no compromise in quality to achieve "green" status.

For specific products and applications in the Green Series, or to locate a dealer in your area, call 800-999-8920 or visit GreenSeries.com.

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*Evolution Internal Test Data

Product Information Number 237

MULCHING, BAGGING, SELF-CLEANING

Toro Recycler

It mulches, it bags, it cleans itself. Yep, you read that right, it cleans itself. No more tipping the mower back with one hand and blasting underneath the deck with a garden hose in the other hand. Just attach that hose to the integrated cleanout port in the

cutting deck and fire up the mower. The combination of water pressure and a whirling blade will remove the majority of grass caught on the underside of the deck.

But that's not the end of the impressive features available on the new Toro Recycler Mower. There's also the Personal Pace SelfPropel System, which matches your pace. And the Blade Override System stops the blade from turning but leaves the motor running when you release the handle. There's even a model with electric start. It almost makes mowing sound fun, doesn't it?

The Toro Recycler, model 20076, which includes all of the premium features, sells for about \$480. Visit Toro.com or call 800-544-5364 for more information.



At last, a mower that lets you set the pace, cleans itself, and has electric start

HIGH-DEFINITION

Laminate Countertop

Wilsonart has bridged the sizable gap between inexpensive laminate countertops and much pricier solid-surface materials with its "high-definition" line. WilsonartHD, as it's branded, is a laminate, but it outper-

forms conventional laminates in some important ways.

First, it goes beyond just print dimension (layers of colors) and actually has an intricate texture fused into its surface to help complete the illusion of the natural materials it emulates. Secondly, Wilsonart's high-pressure laminating technique eliminates the telltale black lines at bends (such as the chamfered edges). Again, this enhances the illusion of a single, solid piece.

WilsonartHD is a premium laminate, so prices can run as high as \$100 per linear foot. For more information, call 800-433-3222 or visit CounterTop.com.



With real texture and no lines at the beveled edge, WilsonartHD can almost pass for a solid-surface countertop at a fraction of the cost.

Storage on a Roll

Creating storage right where you need it is quick and easy. Repurpose furniture by making a few simple design changes. Then add casters, and you'll have stylish storage that's ready to roll.

BEFORE



IDEA SERVING CART

Convert a three-drawer chest purchased from a flea market into a functional farmhouse-style serving cart.

COST \$129

TIME One weekend

HOW To create a durable worksurface, replace the top with a pre-made butcher block slab. Add an open shelf by removing the top drawer from the chest and lining the opening with plywood. Next, install a set of bun feet and casters. Replace the drawer pulls with wooden knobs. To finish the cart, apply a coat of dark green paint first. Then sand the edges and raised areas for an antique look and wipe on a dark brown glaze. Finally, mount a couple of towel hooks.

SUPPLIES **Bun Feet:** 4" Bridle Bun Feet (#470), OsborneWood.com; **Butcher Block:** Blocktop.net; **Paint:** Herb Garden (#434), BenjaminMoore.com; **Hardware:** 1½" Swivel Casters, Wood Knobs, Towel Hooks





IDEA DRESSER DO-OVER

Increase bedroom storage and get extra mileage from a standard five-drawer dresser by using two drawers for under-bed storage and converting the leftover space to an open shelf.

COST \$80

TIME Approximately 4 hours

HOW Remove two dresser drawers, paint them inside and out, and install casters, so they can roll under the bed. To finish the open space in the dresser, remove the drawer guides and face rail, line the opening with beaded plywood, and install a shelf. Paint the outside of the dresser to coordinate with the room's color scheme, and give the beaded plywood a couple of coats of clear finish for a natural look.

SUPPLIES **Paint:** Hawaiian Breeze (#772) and Winter Ice (#866) BenjaminMoore.com; **Materials:** 3/16" Beaded Plywood; **Hardware:** 1 1/2" Swivel Casters; **Finish:** Oil-based Polyurethane





IDEA OFFICE ON THE GO

Store office supplies inside decorative chests to add storage in rooms that need to serve multiple purposes.

COST \$70 to \$80

TIME Approximately 1 hour

HOW Purchase a stack of three chests in your favorite style, making sure that casters can be conveniently installed. Mount casters on the bottoms of the large- and medium-size chests, and then install hanging file folders in these chests. Set up the smallest chest with an office supply organizer, and tuck notebooks and binders alongside them.

SUPPLIES **Hardware:** 1½" Swivel Casters;
Office Supplies: Hanging File Folders,
Office Supply Organizers