TOOL REVIEW!
8 Miter Saw Stands

NEW SECTION! Well-Built Home

WORKBENCH™

WOODWORKING TO IMPROVE YOUR HOME

October 2002

REVIVE YOUR HOME FIRESIDE RETREAT

SPACE-SAVING KITCHEN ISLAND

BEST-EVER SAWHORSES

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How To Buy Smart

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Nº 273

AUGUST HOME PUBLISHING COMPANY

EDITOR'S NOTES

I've been using the same old sawhorses for years. They're beat up, and they're heavy and awkward to store. Even so, they're still sturdy enough to get the job done. So I just continue lugging them around from one building project to the next.

Of course, I could build a new pair of sawhorses. But it's one of those projects that always seems to get put on the back burner. Recently though, something happened to change that.

A NEW BREED. It happened when Chris Fitch, one of our project designers here at *Workbench*, showed me a pair of sawhorses he'd just built.

What intrigued me about these sawhorses were the legs. They were splayed out like those on a traditional sawhorse. But they weren't your typical 2x4 legs. Instead, they were made of metal tubing. To be more exact, lengths of thin-wall, electrical conduit.

"So what's with the metal tubes?" I asked. Chris answered by tipping one of the sawhorses on end, removing all four legs, and then snapping them into the metal clips underneath.

Before I could say a word about this nifty storage system, Chris set the "legless" sawhorse on the floor and stepped up onto its thick, wood top. Thanks to the wide footprint of the sawhorse, it proved to be a rock-solid stepstool.

Next, he proceeded to show me the handy storage tray built into the body of the sawhorse — just the ticket for keeping a circular saw, tape measure, or speed square at arm's reach.

By the time he'd grabbed the handholds in the top and demonstrated that the sawhorse could be used as a tool tote, I was convinced. It was time to put my old nags out to pasture and build a pair of these new sawhorses.

Well, the sawhorses have worked out great. In fact, I'm so impressed by the versatility of these new sawhorses that we've featured them as a project in this issue, beginning on page 42.

NEW DEPARTMENT. Speaking of new, we're starting a new department in this issue called *The Well-Built Home.* It's all about the various "systems" of a home — like the windows, wall framing, or roofing — and how they're *supposed* to function. Understanding how they work will make it easier to tackle a home improvement project that involves one of these systems. Or, if you plan to hire a contractor, to at least know which questions to ask.

Tim

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Questions & Answers

A brush with naturally tapered bristles (top) that are also "flagged" (middle) at the ends holds more finish. These types of bristles also provide a smooth, even finish. Blunt ends (bottom) usually are a sign of a lower-quality brush.

Choose Wisely, Not All Brushes are Created Equal

Q *Do bristle brushes produce a better finish than the disposable foam brushes? If so, how do you know whether you're getting a good bristle brush?*

Sammy Hanson
Fort Wayne, IN

A I prefer a bristle brush over a foam brush for two reasons. First, it holds more finish and is less likely to drip. And second, a high-quality bristle brush allows the finish to flow out smoothly and evenly with few brush marks.

So, what makes for a high-quality bristle brush? Two things: the type of bristles and the shape of the tips.

NATURAL BRISTLES. My first choice when applying a finish such as varnish or shellac is to use a *natural-bristle* brush. Typically made of hog hairs from China, the best brushes have long, tapered bristles that flex gradually to deliver a smooth, even finish.

The tips of a natural-bristle brush should feel soft and supple when you fan them across the palm of your hand. This usually means the bristles are tapered or, better yet, "flagged" at the ends.

With flagged tips, each bristle actually has several ends — sort of like split ends in human hair *(see margin at left)*. A brush with a natural taper and flagged tips puts more bristles in contact with the wood for spreading a smooth, even finish.

The downside to natural bristles is they get soft and limp in water — kind of like a "bad hair" day. This makes it difficult to control the amount of finish being applied. So for water-based finishes, I switch to synthetic bristles.

SYNTHETIC BRISTLES. Typically made of plastic, *synthetic-bristle* brushes absorb little water and won't deform during use.

The better-quality synthetic brushes have a mix of nylon and polyester bristles that are tapered, split, and combined in several lengths to form a slim tip. This tip spreads finish smoothly and evenly.

Although originally designed for use with water-based products, some synthetic brushes (often $15-$20) can be used when applying oil-based finishes, too.

Tips for Using Double-Sided Tape

Q *When routing multiple pieces, I usually attach a template to the workpiece with carpet tape. But sometimes the template shifts, ruining the workpiece. Any suggestions?*

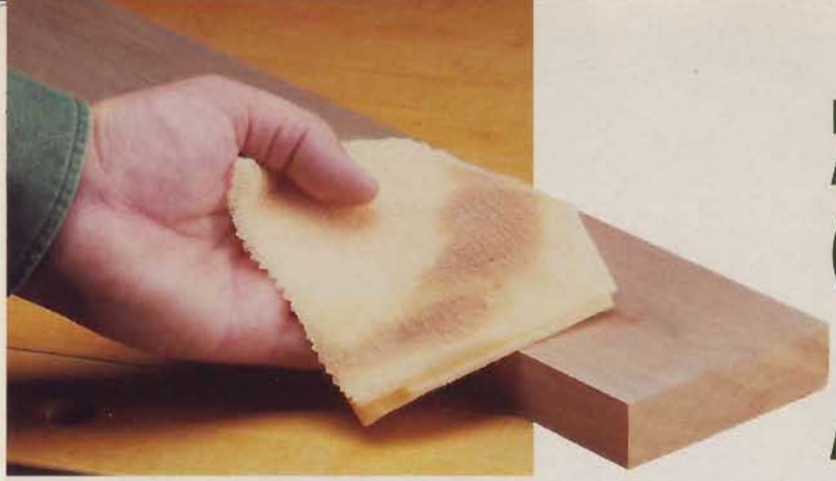
Garrett Lazarres
Minneapolis, MN

A The kind of double-sided tape you use makes a big difference when routing with a template. We use cloth carpet tape in the *Workbench* shop because it has a strong bond, comes apart easily, and cleans up quickly.

Two other kinds of carpet tape you'll run across are plastic tape and moisture-resistant fiberglass tape. Although both of these tapes provide a strong bond, plastic tape doesn't adhere as well to rough surfaces as cloth tape. And fiberglass tape, which is designed mainly for outdoor use, tends to tear out wood fibers when you separate the workpieces.

MORE TAPE TIPS. For most projects, two or three 1"-square pieces of tape are all you need. For large templates, you can crisscross the tape in an "X" across the center, too. After you've taped the pieces together, it's important to apply pressure to create a strong bond. I usually tap the parts a few times with a rubber mallet. You can also clamp the tape joints for a few seconds, then remove the clamps before you rout the pattern.

So what do you do if the tape holds *too* well? Flow lacquer thinner down the joint between the two pieces to dissolve the adhesive. Then coax the pieces apart with a putty knife.



Homemade Tack Cloth Recipe: A Little Dust Off the Top, Please

Q *I go through quite a few tack cloths to remove dust before finishing. Is there an easy way to make my own?*

Beth Prost
Tulsa, OK

A I've been making my own tack cloths for years with nothing more than mineral spirits and varnish. Start by wetting a piece of cheesecloth with the mineral spirits. (You can get cheesecloth at most woodworking stores or mail-order it from several woodworking catalogs).

Next, wring out the cheesecloth and drip a few drops of varnish on it. Work the varnish into the cheesecloth until the cloth is sticky enough to pick up dust *(see Photo above)*. It shouldn't, however, be so sticky that it leaves a residue when wiped across the wood. Use a piece of scrap stock to test.

I usually make several cloths at once, then store them in an airtight, resealable plastic bag to keep them from hardening.

You Have QUESTIONS... We Have ANSWERS!

Looking for basic helpful hints or good common-sense solutions to everyday woodworking and home improvement problems? If so, send us your best questions. We're happy to share the tips, tricks, and great woodworking ideas we've collected over the years.

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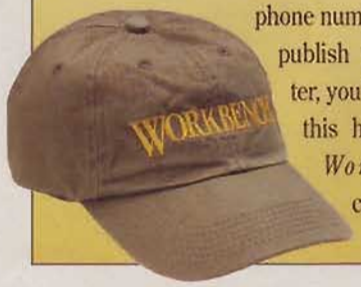


Say Good-Bye to Ugly Blotches

► **Unconditioned stained pine**

► **Conditioned stained pine**

Q *Whenever I stain a pine project, I end up with a blotchy finish. What can I do to avoid this problem?*

Elton Watson
Oxford, MS

A Pine is often left natural or is painted because it can be stubborn to stain. The reason is because the pores of the wood alternate from large, open pores to small, dense ones. These variations naturally affect how deeply a stain is absorbed into the wood. And most of the time, the result is ugly blotches. The same can be said for cherry or maple, which have similar pore patterns.

To minimize blotching, treat the wood first with a conditioner (some products are called stain controllers). Conditioners work by pre-filling the open pores so they won't absorb excessive amounts of stain. This allows the stain to penetrate and color more evenly.

To get the best results with a stain conditioner, apply it like an ordinary coat of oil finish. Brush or wipe the conditioner on liberally until all parts of the wood are wet. Let the conditioner soak in and keep applying it until there are no more dry spots. Then wipe off all of the excess liquid from the workpiece.

The type of stain you're applying and which conditioner you're using will affect how long you should wait before staining. Some conditioners (and stain controllers) will say: Apply the stain *as soon as possible* while the wood is still a little wet. Within 30 minutes is often recommended to get an even color. Others recommend letting the conditioner cure fully before you sand and stain. The key is to follow the manufacturer's instructions carefully.

Restore Hardware the Not-So-Hard Way

Q *What is the best way to clean and restore old brass hardware without harming the finish?*

Sandy Alvedorian
Via the Internet

A The easiest way to remove built-up paint and "gunk" from brass is to let the hardware soak overnight in some paint stripper. The stripper won't hurt brass, but it will eat through your skin. So be sure to wear heavy-duty gloves when working with paint strippers. The next day rinse off the pieces to neutralize the stripper, then polish them with whatever polish you prefer.

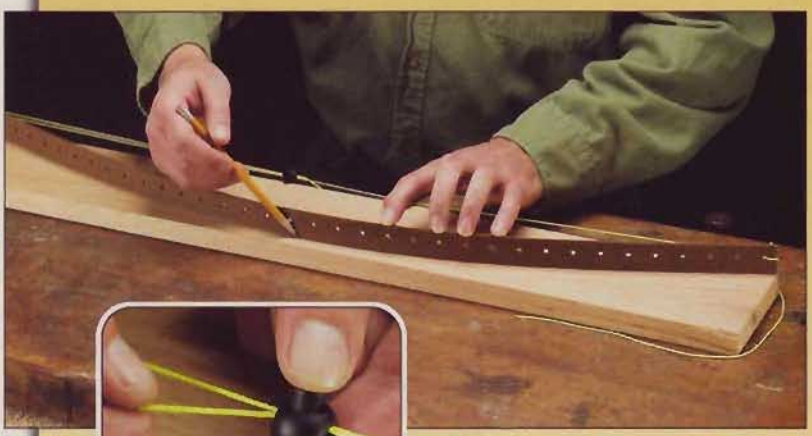
After stripping and polishing, wash the hardware in hot, soapy water to remove any residue left from polishing. Be sure to wear gloves again to keep the salts in your skin from contaminating the brass.

I spray the hardware with a light coat of lacquer next to bring out the shine and protect against oxidation. To do this, first heat the brass (a hair dryer works great) to about 5° warmer than the room temperature. This prevents condensation from forming as you spray the lacquer.

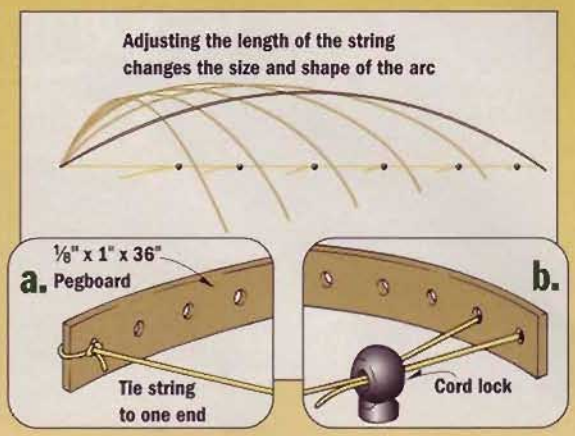
Once the lacquer cures fully (about three days), seal it with car wax to prevent the brass from discoloring.

Tips & Techniques

FEATURED TIP



▲ **An inexpensive cord lock allows you to easily adjust the shape of the arc.**



Adjustable Shop-Made Arc

Trying to bend a long, flexible strips and trace an arc at the same time can be tricky. To make it easier, I made an adjustable arc that "locks" into any curved shape I want. The arc is made of a piece of ⅛" pegboard, a nylon string, and a cord lock that I bought at a fabric store.

First, cut the nylon string twice the length of the pegboard strip and tie it to one end *(Detail a)*. Next, slip the string through the cord lock, then loop it through two holes in the opposite end of the strip *(Detail b)*. Finish up by feeding the string back through the cord lock *(Inset Photo)*.

To adjust the arc, simply move the "looped" end of the string into a different set of holes in the pegboard strip *(see above)*.

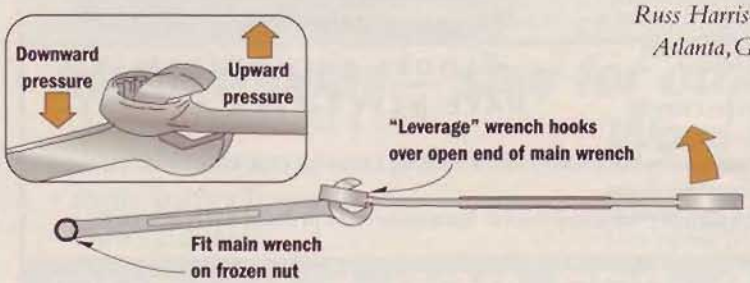
Frank Sand
Lincoln, NE

Get a Little Leverage

Whenever I have to free up a frozen nut, I hook two wrenches together to gain extra leverage *(see below)*.

The trick is safely interlocking the two wrenches. To do this, focus on the box ends of both wrenches. Fit the box end of the main wrench on the nut. Now hook the box end of the "leverage" wrench over the open end of the main wrench *(see Detail)*. Once the wrenches are hooked together tightly, exert pressure until the nut breaks free.

Russ Harrison
Atlanta, GA



TOOLS FOR TIPS!

SHARE YOUR TIPS, JIGS & IDEAS

Do you have an original shop or home improvement tip to share with other *Workbench* readers? Just write down your tip and mail it to:

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Please include your name, address, and daytime phone number. Or if you prefer, email us at:
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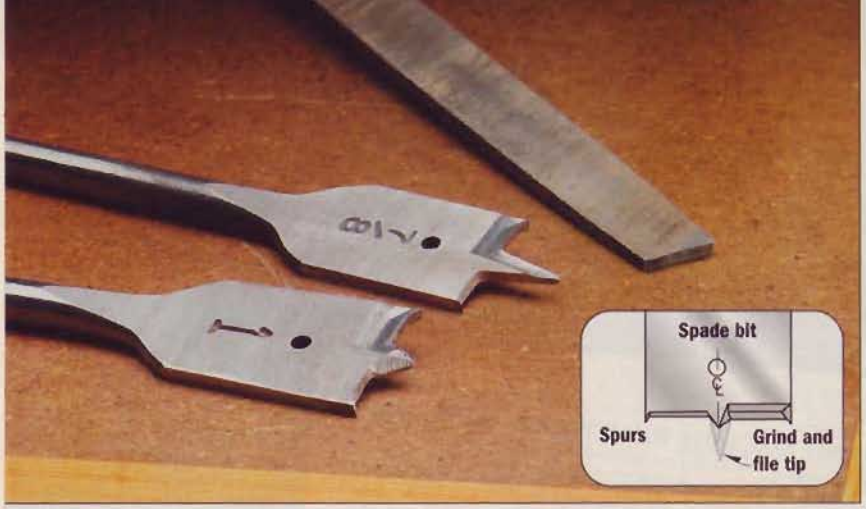
CRAFTSMAN 75th ANNIVERSARY

This issue's Featured Tip winner receives this Craftsman 13-inch Benchtop Planer!



Spade Bit Modification

Occasionally, I need to drill a large, shallow hole. The job normally calls for a Forstner bit. The problem is these bits can be a little pricey. So, I converted an inexpensive spade bit into a shop-made version of a Forstner bit by grinding down the long tip *(see Photo at left)*.

To do this, you'll need a spade bit with "spurs" on the outer edge. The spurs will give you a clean hole.

Start by removing the bulk of the material off the tip using your grinder. Then "dress" the tip with a file, *(detail, left)*. Keep the new tip aligned with the center hole in the body of the bit for accurate holes. It's best to use the modified bit in a drill press to prevent the bit from wandering.

Mark Walker
St. Paul, MN

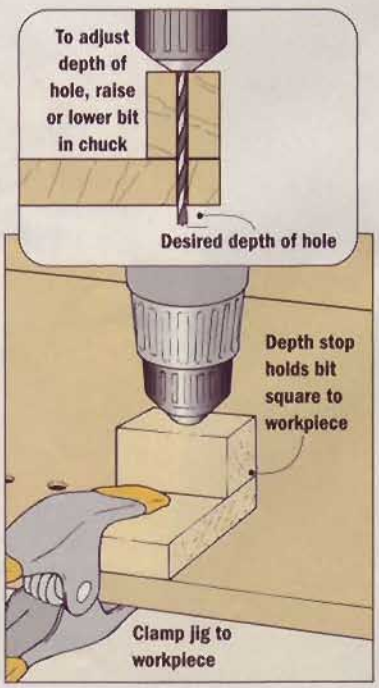
Drill Depth Stop

Rather than use manufactured stop collars, I make a simple version in my shop that helps keep the bit square to the board I'm drilling into.

I made my stop from two pieces of wood glued together *(see below)*. Then I drill a hole for the size bit needed at the drill press.

To set the depth, place the bit loosely in the drill and slide the stop over the bit. With the stop resting against the chuck, set the depth of the bit and tighten it *(Detail below)*.

Charles Diebel
Incline Village, NV



Flush-Trim Router Jig

Whenever I apply edgebanding to a plywood case, I use a router with a flush-trim bit to trim the edgebanding.

Because the edge of the plywood is quite narrow, there's always a danger that the router may tip, causing the flush-trim bit to gouge the edgebanding.

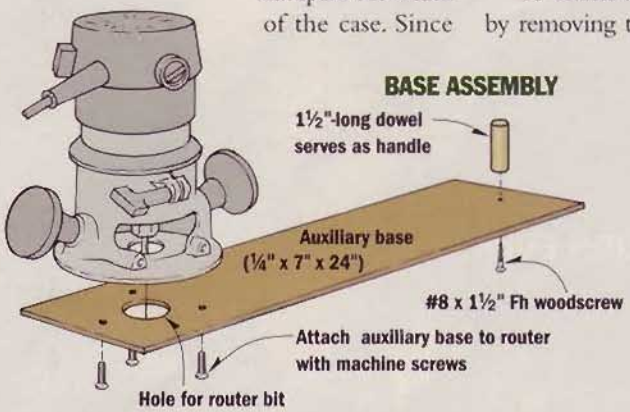
I solved this problem by making a long auxiliary base for my router that spans the width of the case. Since the base rests on at least two edges at all times, it makes routing the edgebanding much easier *(Fig. 1)*.

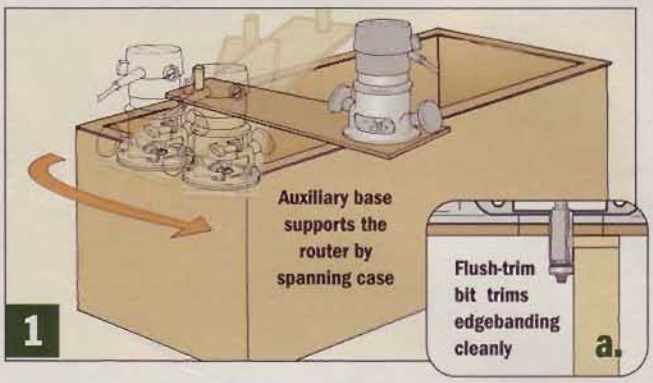
The width of the 1/4" hardboard base is slightly larger than the router base. (I made mine 7".) As for the length, 24" gave me more than enough for this project *(Base Assembly)*. At the opposite end of the base, I attached a wood dowel for a handle.

To attach the auxiliary base, I started by removing the plastic base that comes with the router. (I used this base to transfer the hole locations to the new base.) After drilling countersunk holes in the new base, I attached it to the router.

With the new base on, I put a flush-trim bit in my router and went about trimming the edgebanding *(Fig. 1)*. After using the jig a few times, you'll get a feel for guiding the router around.

Don Pearson
Boulder, CO





Craftsman-Style Fireside Retreat

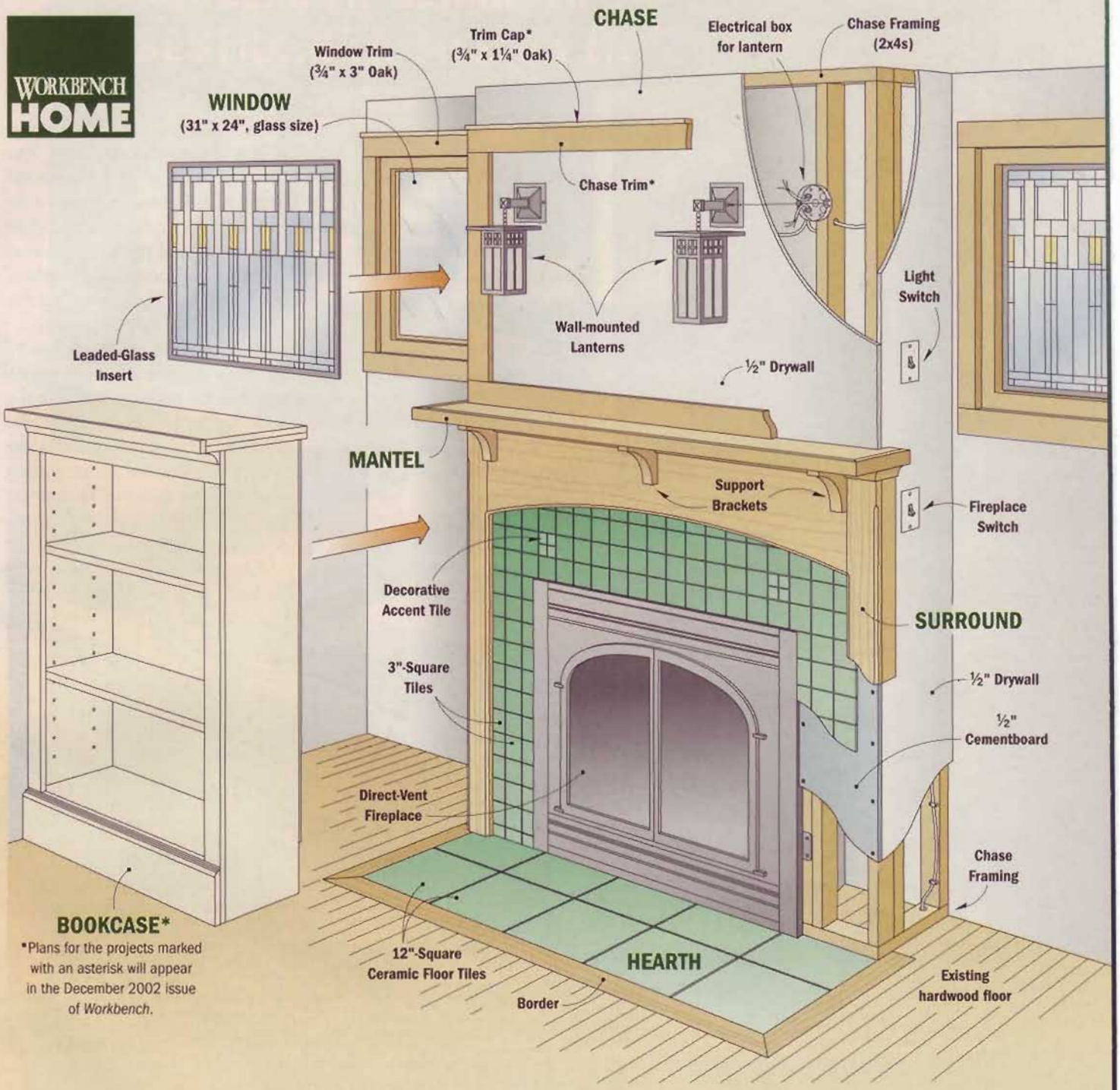
▲ We transformed this ordinary living room into the warm, inviting retreat shown above — one project at a time.

It's pretty obvious, right? A living room is meant to be *lived* in. But to be honest, some living rooms just don't have that warm, inviting feel that makes you want to sit for awhile, read a good book, and relax.

That was the case for the living room shown in the *Before* photo at left. It looked alright, but it lacked a focal point that would really make a statement. So we decided to add one.

Our solution was to create a warm, inviting, fireside retreat that reflected the Craftsman style of the house. To accomplish that, we added a pair of leaded glass windows, a direct-vent fireplace with a tile hearth, an oak mantel and surround, and two built-in bookcases.

LEADED GLASS WINDOWS. The first big improvement was to replace the tall window with two leaded glass windows. This is easier than it sounds. The windows are installed as separate



*Plans for the projects marked with an asterisk will appear in the December 2002 issue of *Workbench*.

units. Then a special leaded-glass insert is "clipped" into the window frame. (Sources for these windows, inserts, and the other items used in this project are listed on page 26.)

GAS FIREPLACE. The windows are like bookends for the centerpiece of the room — a gas-fired, direct-vent fireplace. As its name implies, the fireplace vents directly out the wall, which means there's no need for a chimney. This makes installing the fireplace a very "do-able" project.

CERAMIC TILE. The fireplace sits on a hearth made of 12"-square ceramic tiles. Smaller tiles (3"-square) cover the lower part of a floor-to-ceiling chase that's built around the fireplace. Even if you don't build this project, be sure to check out our simple technique for making a four-piece, decorative accent using the small tiles *(page 23)*.

OAK MANTEL. To complete the installation, we added a mantel and a fireplace "surround," both made of quartersawn red oak. Thanks to an extremely simple design, both projects can be easily modified to fit any fireplace.

BOOKCASES. Finally, the fireplace is flanked by two built-in bookcases. Plans for these bookcases, and also the oak wall trim, will appear in the next issue of *Workbench*.

▲ This attractive and efficient gas-fired fireplace is a "zero-clearance" unit, so it can be installed next to a wall without being a fire hazard.

HEARTH & FIREPLACE

The heart of this project is a gas-fired, direct-vent fireplace that sits on a ceramic tile hearth.

The fireplace I installed is manufactured by the Heat-n-Glo company. This particular unit is only 16" deep, so unlike deeper units, it doesn't "invade" the living room.

Besides its compact size, it features a sealed firebox that uses outside air for combustion. In other words, it doesn't draw warm air from the room. This results is an extremely energy-efficient unit.

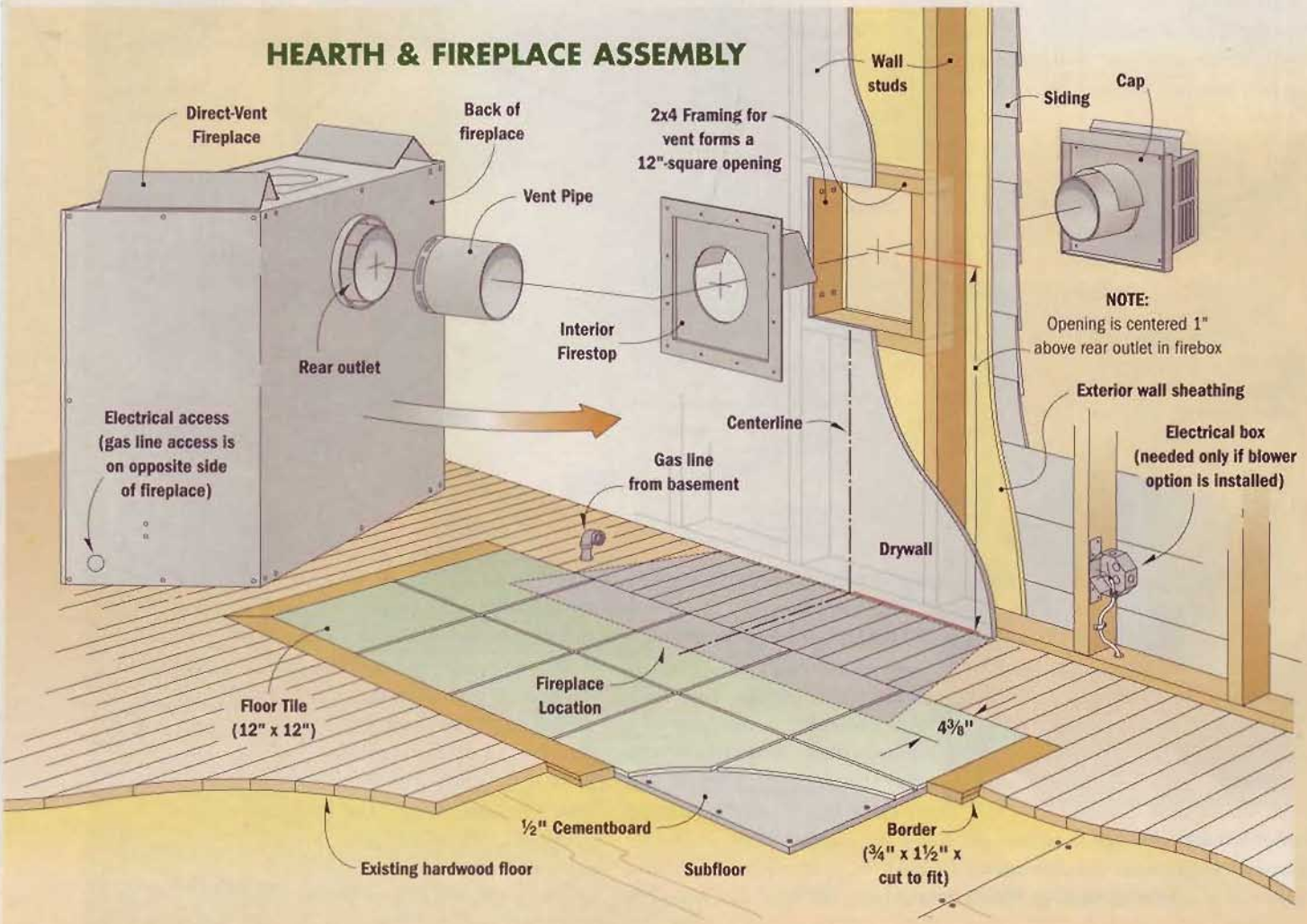
PLANNING

Before installing the fireplace, there's some preliminary planning that needs to be taken care of.

FIREPLACE LOCATION. The first decision is where to locate the fireplace. I decided to center it on the wall. So I marked a centerline on the wall and the floor to use as references for locating the fireplace, the hearth, and the opening for the vent *(Hearth & Fireplace Assembly)*.

Just a quick note about the vent opening. Be sure to check what's opposite the opening, *outside* of the wall. You'll want to consider the distance between the vent and any nearby windows, walls, or shrubs. Consult your fireplace manual for minimum clearances. Also, don't forget to check local building codes.

One final thing to take care of is to have the gas line installed that



feeds the fireplace. This is a job that's best left to a professional. Just be sure that the gas line is located *inside* the chase that will be built around the fireplace.

HEARTH

The fireplace sits on a ceramic tile hearth that's surrounded on three sides by a solid oak border. As tile jobs go, the hearth is a fairly small project — just ten 12"-square ceramic floor tiles, as shown in the *Hearth Construction* illustration.

UNDERLAYMENT. To ensure a long-lasting installation, it's important to have a solid underlayment for the tile. For this hearth, I used $\frac{1}{2}$" cementboard. This is an extremely stable material that resists movement and moisture, making it ideal for any floor tile installation.

RECESSED OPENING. For this job, I wanted the surface of the tile hearth to end up flush with the existing hardwood floor. This meant cutting a recessed opening into the floor for the cementboard, surrounding wood border, and the tile.

After laying out the opening, I used a circular saw to cut through the hardwood floor *(Fig. 1)*. Notice that the depth of cut is adjusted to just barely graze the subfloor underneath *(Fig. 1a)*. This way, it leaves the subfloor essentially intact.

Also, don't worry if this cut isn't straight and true. Once the wood border around the opening is installed, you'll end up with a perfectly straight joint line (more about how that's done later).

BORDER. The border is made of $\frac{3}{4}$"-thick hardwood strips that are mitered to fit at the corners of the floor opening. Since this opening is rough cut, the trick is getting a tight-fitting joint where the border strips meet the floor.

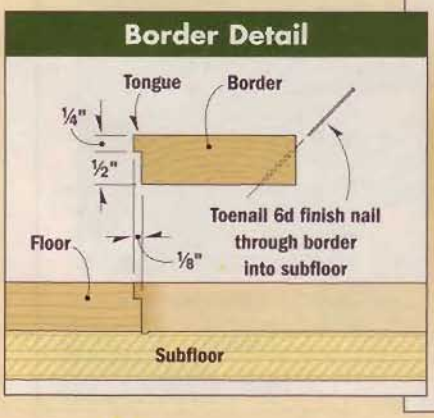
To accomplish that, there's a small tongue on the outer edge of each border piece *(Border Detail)*. The tongue fits into a shallow rabbet that's cut in the rough edge of the floor. This creates a joint line that virtually "disappears" when you install the border pieces.

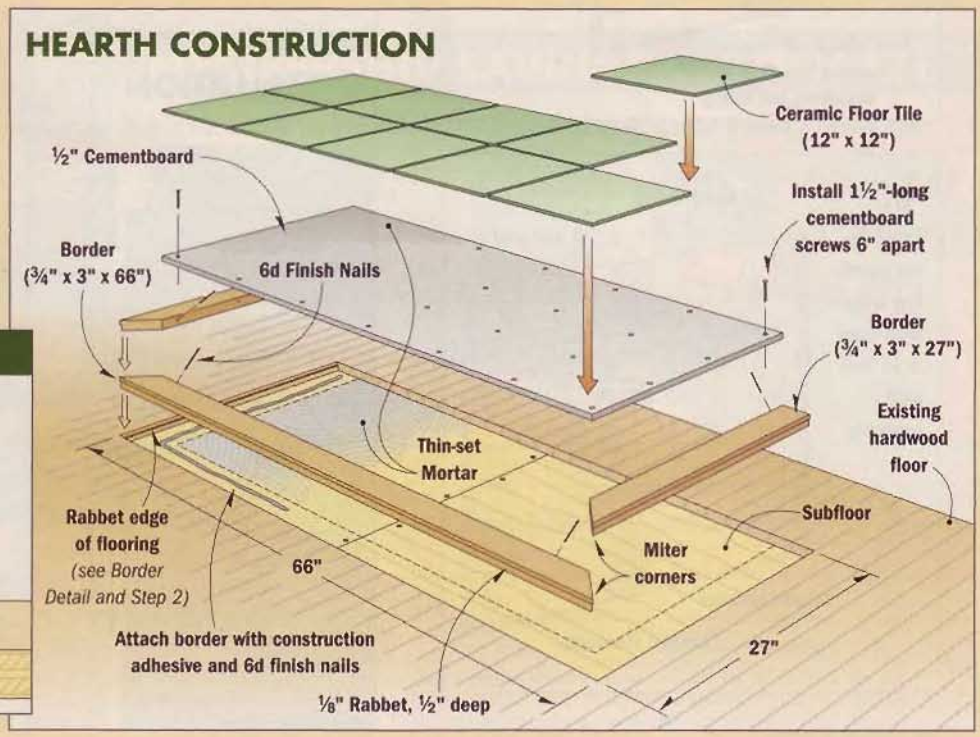
All that's needed to cut the rabbet in the floor is a handheld router that's guided by a straightedge *(Fig. 2)*. Once that's accomplished, rout the rabbet in each border piece to form the tongue. Then miter the border pieces to length and install them using construction adhesive and finish nails.

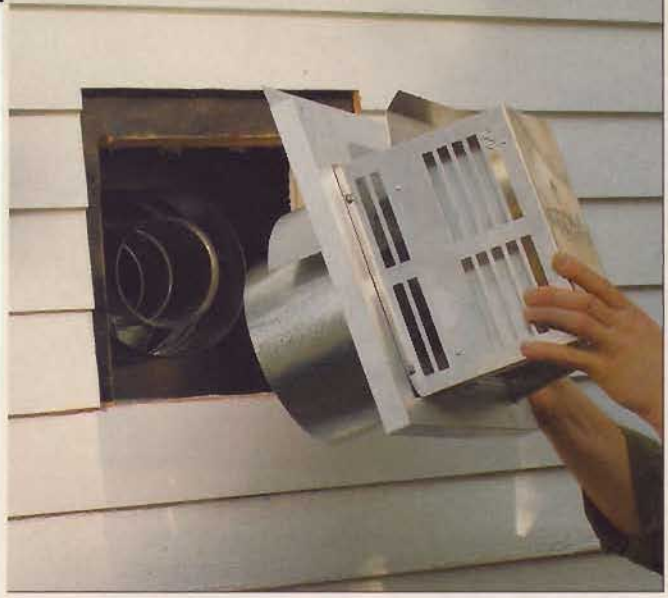
TILE INSTALLATION. With the trim strips in place, it's time for the fun part — installing the tiles. The ceramic floor tiles I used are applied to a cementboard underlayment that's screwed to the subfloor. Note: To walk you through the process of laying tiles, we've included a separate article on page 28.

▲ To cut the opening for the hearth, I used a circular saw with a special nail-cutting blade. Masking tape makes it easy to see layout lines.

▲ Using a straightedge to guide the router, cut a rabbet in the floor. A shallow cut keeps the bit safely above any nails.







▲ To create a weatherproof fit, slip the top lip of the vent cap under the siding. After screwing it in place, caulk around the vent unit.

VENT OPENING

After completing the hearth, the next step is to make the opening for the fireplace vent.

The vent pipe passes through a 12"-square opening. It's centered on the fireplace, 1" *above* the center of the rear outlet on the fireplace, as shown on page 18.

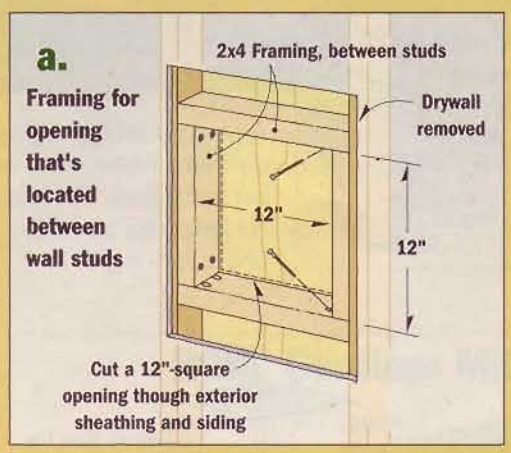
After laying out the opening and removing the drywall, frame the opening with 2x4's. Depending on the location of the wall studs, use one of the framing methods shown below in *Framing Options*.

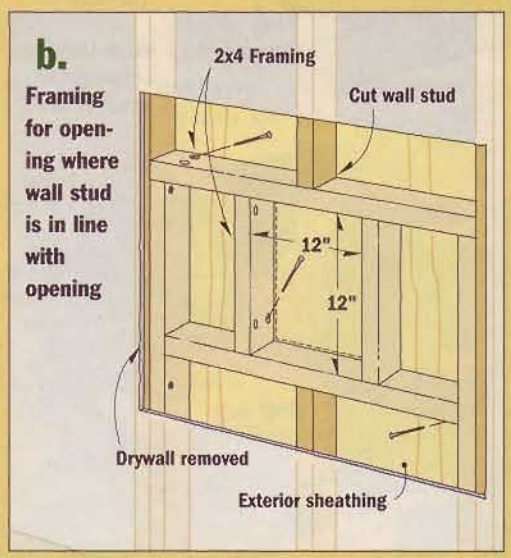
To complete the opening, you'll need to cut through the exterior sheathing and siding. A reciprocating saw comes in handy here. To make a controlled cut, it's best to use the 2x4 framing as a guide for the blade.

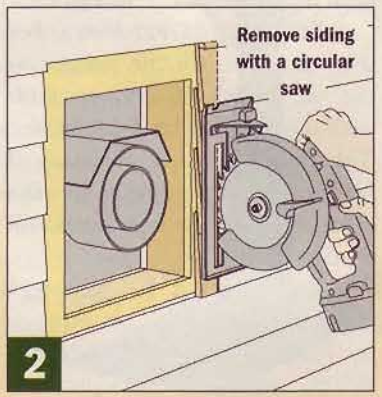
TRIM SIDING. To make the vent cap sit flat against the sheathing, you'll have to trim the siding. I used the vent cap as a template to mark the siding *(Fig. 1)* and then trimmed it with a circular saw *(Fig. 2.)*

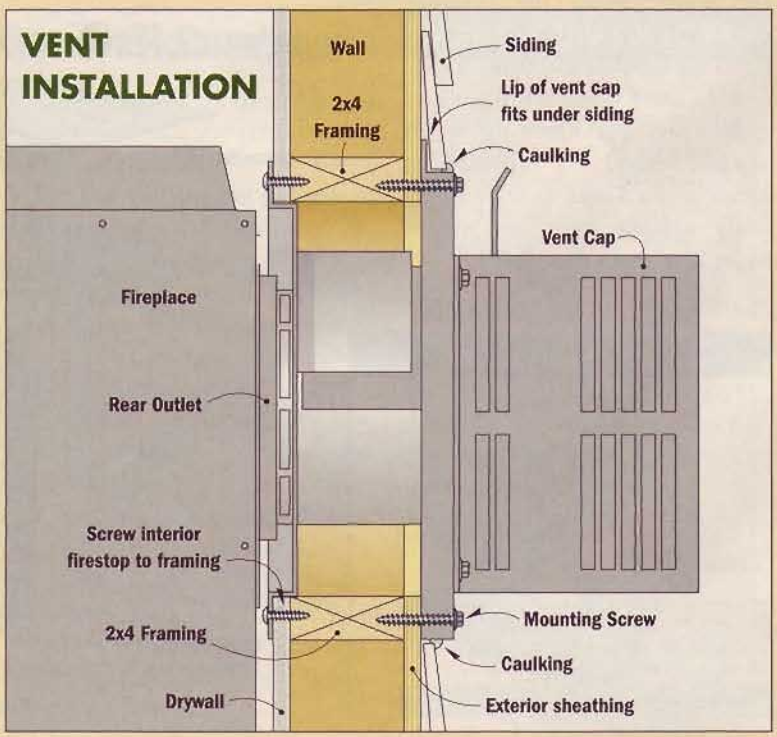
INSTALL FIREPLACE. Now it's just a matter of installing the fireplace and connecting the vent. The *Vent Installation* illustration below shows the completed hook-up. Notice how the lip of the vent cap fits under the siding to produce a weatherproof installation. Be sure to apply high-temperature sealant (included with the unit) when connecting the pipe to the fireplace.

FRAMING OPTIONS









a chase for your fireplace

This fireplace is surrounded by a floor-to-ceiling, built-in enclosure called a chase *(Chase Construction View)*. The chase is constructed of 2x dimension lumber and then covered with cementboard and drywall. I used cementboard where I planned to install ceramic tile. But covering the entire chase with drywall would also work fine.

BUILD THE WALLS

The first step is to frame two end walls and a front wall for the chase. The *Framing Detail* below shows the dimensions for the 41"-wide fireplace I used, but they can be easily changed to suit your application.

Just a couple of notes here. Plan the wall framing so the front wall sits directly *behind* the mounting tabs on the fireplace *(Installation Detail)*. Screwing the tabs to the wall studs will secure the fireplace.

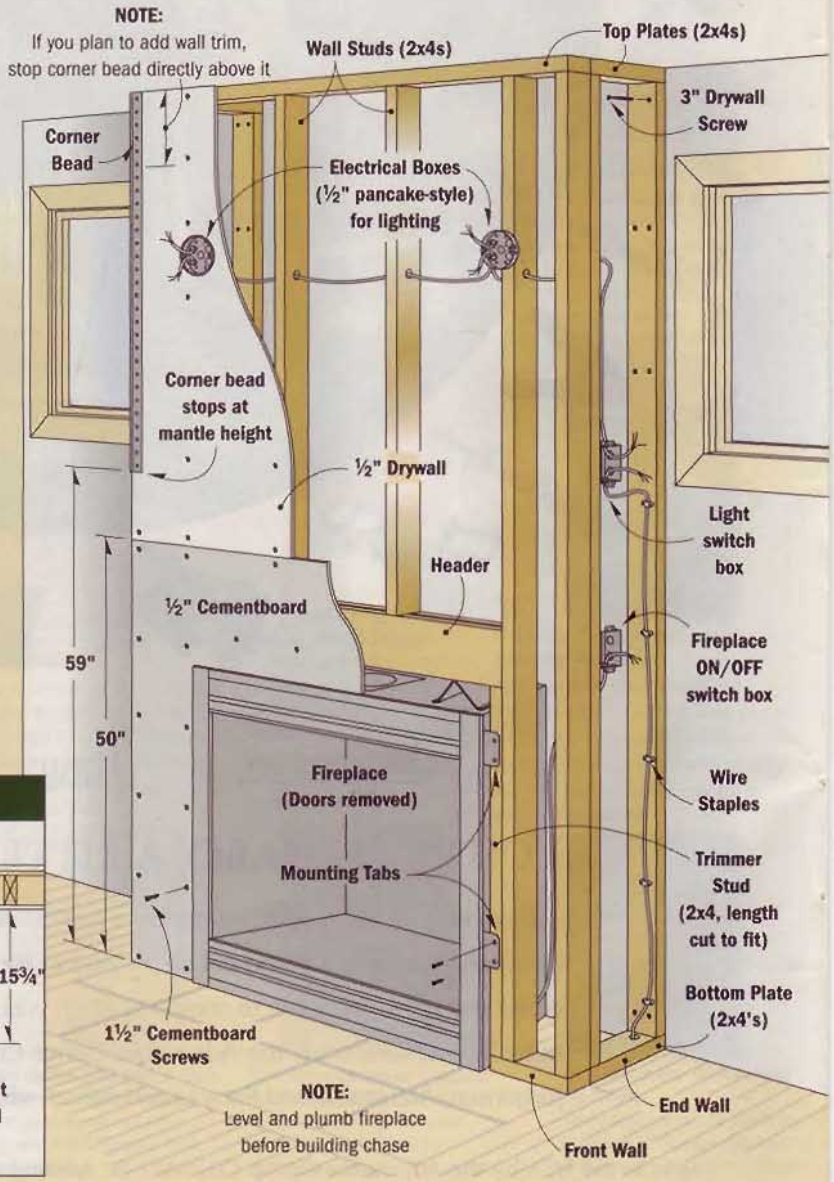
Also, notice that the header in the front wall sits on a pair of metal standoffs attached to the fireplace. These standoffs ensure proper clearance above the fireplace.

GAS CONNECTION. Before enclosing the walls, you'll need to have the gas line connected to the fireplace. The unit I installed had a flex-pipe and valve already attached, which connect to the gas pipe.

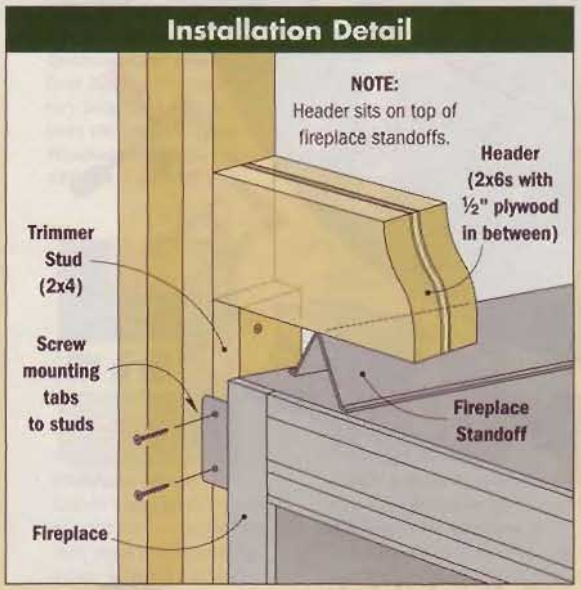
ELECTRICAL. All the electrical work for the remodeling project also has to be roughed in at this point. The fireplace comes with a special switch, *not* connected to the household wiring, that turns the unit on and off and controls the flame. I mounted this switch to the end wall of the chase. Also, the wiring for a blower (if your unit has one) has to be installed now.

In addition to the fireplace hook-ups, I planned to install two wall lanterns above the mantel.

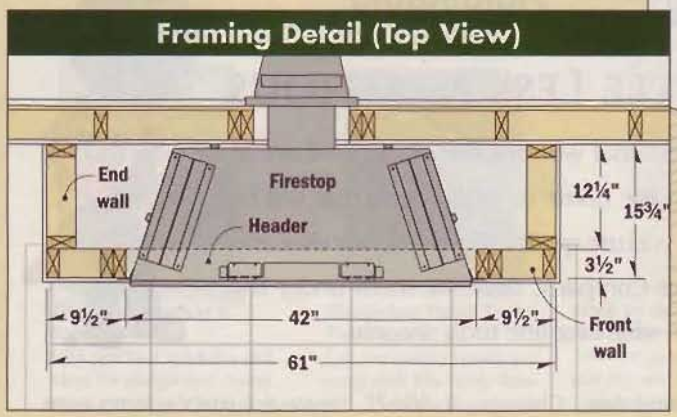
CHASE CONSTRUCTION VIEW



Installation Detail



Framing Detail (Top View)



They're wired into shallow (1/2") "pancake-style" boxes. Here again, I'd recommend hiring an electrician for all the electrical work.

ENCLOSE THE WALLS. Once the installation has been approved by a building inspector, you can "button up" the walls. To provide an underlayment for the tile, I screwed cementboard to the front wall. The rest of the chase is covered with drywall, and the corners are finished with corner bead.

One thing to be aware of is the length of the corner bead. As it's shown here, it extends down to where the top of the mantel will be. If you plan to add oak trim above the mantel, as on page 17, cut the corner bead shorter. Otherwise, the trim pieces won't lie flat.

TIME FOR TILE

Traditionally, fireplaces were surrounded by non-combustible material. There's no need to do that with this direct-vent fireplace. But to create a more elegant look, I decided to apply ceramic tile to the front of the chase.

SHEET TILES. To speed up the installation, I used 3" tiles that are held together on 12"-square sheets of plastic webbing. Small dabs of glue between the tiles keep them from falling off the sheet.

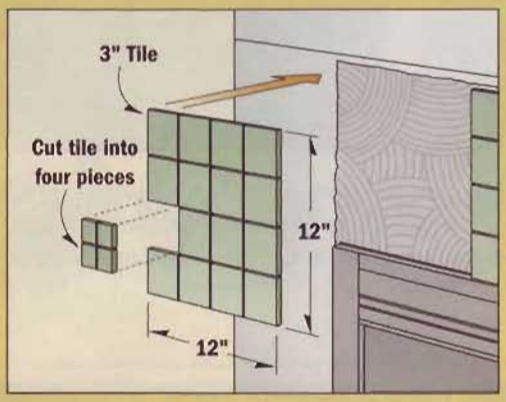
INSTALL TILES. With tiles in hand, you're ready to begin. The step-by-step sequence I used to lay out and apply the tiles is shown below. After the adhesive cures (about 24 hours), remove the glue between the tiles with a utility knife. Then grout the joints with a sanded grout. (Once again, refer to page 28 for some tips and techniques for installing tile.)

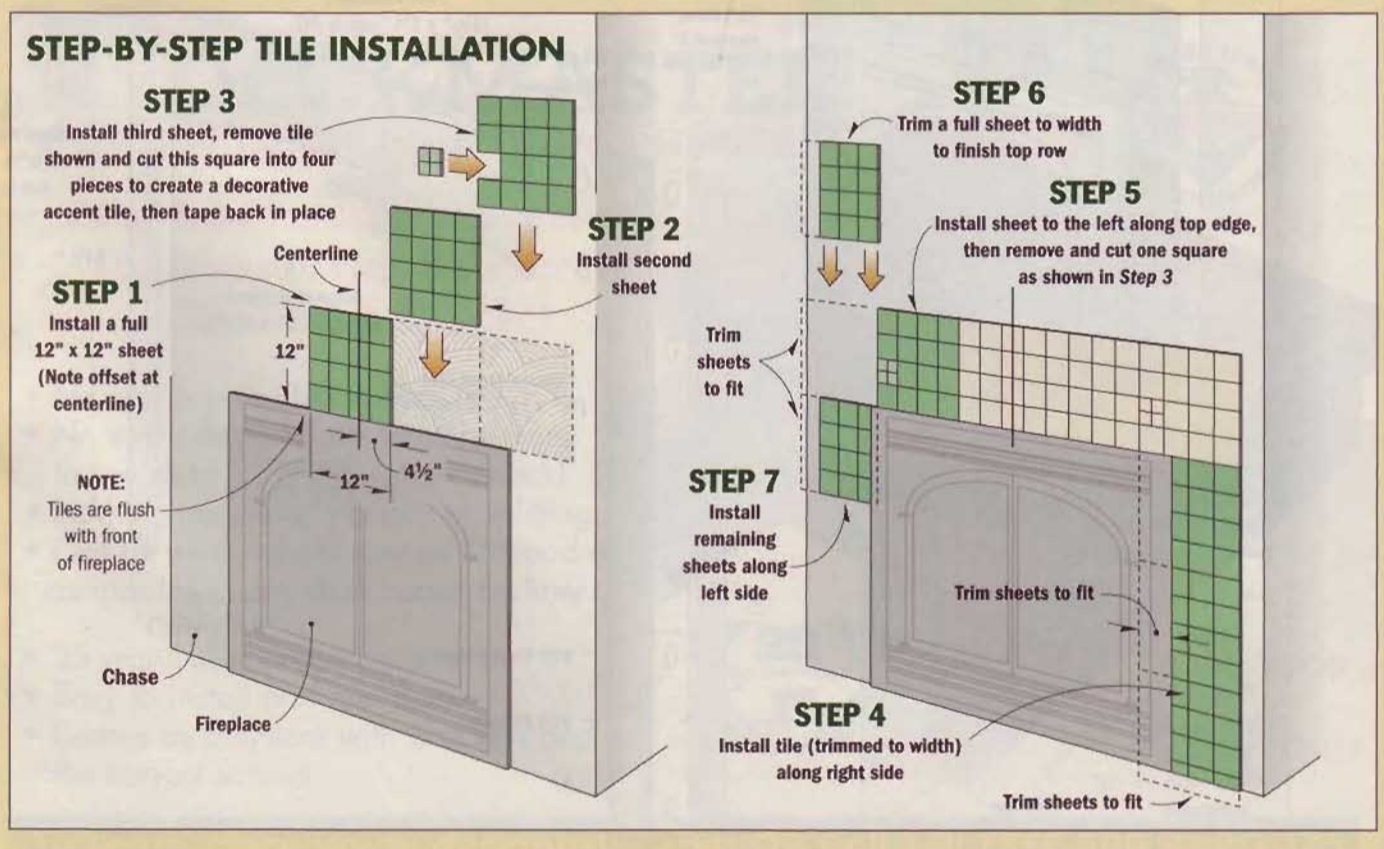
ACCENT TILES. One of the interesting things about this installation is the two accent tiles near the upper corners of the fireplace. This accent tile is made by using one of the 3" tiles from the sheet.

To do this, remove one tile from the sheet and cut it into four equal pieces, as shown at right. After you've installed all the sheets of tile (and before grouting) tape the four tiles back in place. Then grout the joints to highlight the small tiles.

DECORATIVE ACCENT TILES

▲ A "wet wheel" tile saw makes quick work of cutting the 3" tile into four pieces. Be sure to keep your fingers back.





▲ This quartersawn red oak surround is installed as a single unit. Its simple design makes it easy to add the surround to a new or existing fireplace.

FIREPLACE SURROUND

It's called a *fireplace* surround. But to be more accurate, this oak surround actually wraps around the *chase*, covering the unfinished edges of the tile. It also supports the oak mantel.

As you can see in the illustration below, the fireplace surround consists of a curved front rail and two tall, L-shaped stile assemblies. A set of three curved brackets support the mantel, and pre-made cove moldings complete the package.

STILE ASSEMBLIES

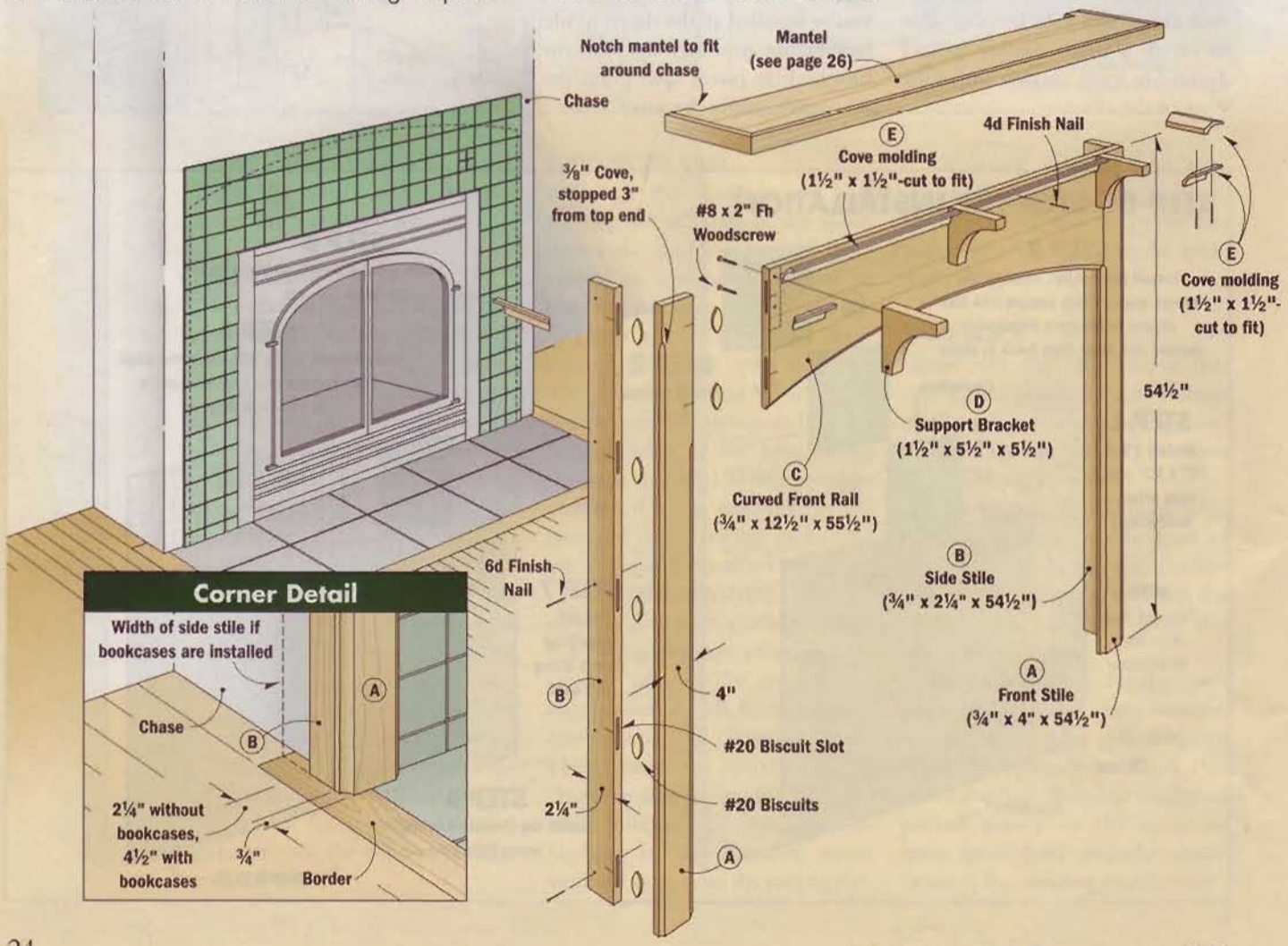
The first step is to make the two stile assemblies. Each assembly consists of a $^3/_4$"-thick front (A) and side stile (B) assembled with biscuits.

The size of the stiles will vary depending upon your installation. Here are some guidelines that will help you determine their size.

WIDTH. To determine the width, the idea is to rip the front stile to width so it overlaps the tile by $^3/_4$". (My front stile is 4" wide.)

As for the side stile, the width depends on whether you plan to build the bookcases. If so, rip the stile $4^1/_2$" wide so it will fit against the front of the bookcase *(Corner Detail)*. If not, a narrower stile looks better. As you can see in the *Surround Assembly* illustration below *(and Photo at left)*, I ripped the side stile $2^1/_4$" wide.

SURROUND ASSEMBLY



LENGTH. The length of the stiles also has to do with the tile installation on the surround. Here again, the curved rail on the surround has to cover the top edges of the tiles. To accomplish that, I crosscut the stiles 54½" long. This allowed the rail to overlap the tile about 1½" at the center of the arc.

BISCUIT JOINTS. After cutting the stiles to size, you can turn your attention to the biscuit joints. As you can see, I cut the slots for the biscuits in the *edge* of the side stile and the back *face* of the front stile. Once the slots are cut, insert the biscuits and dry clamp the stiles to check the fit of the joints.

The dry-assembled stiles make it easy to determine the length of the curved front rail. To do that, temporarily attach them to the chase and measure the distance between the front stiles.

CURVED FRONT RAIL

In addition to its stunning quarter-sawn red oak, the fireplace surround is highlighted by the graceful curve on the front rail.

Like the stiles, the rail is made from ¾"-thick stock. It's 12" wide, which means you'll need to edge-glue two narrow boards together to get a wide enough rail.

LAY OUT ARC. After cutting the rail to final size, it's time to lay out the arc *(Curved Front Rail)*. To draw a smooth, consistent arc, I used a simple idea for a drawing jig that was sent in by one of our readers. *(See page 10.)*

Now it's just a matter of cutting and shaping the arc. A jig saw makes quick work of this job. Then sand the edge smooth using a drum sander chucked in the drill press.

The next step is to join the rail to the front stiles. Here again, it's assembled with biscuits. Notice the location of the bottom slot (3" up instead of 2" like the top). This prevents the blade on the plate joiner from cutting through the curved edge of the rail.

After cutting the slots, go ahead and glue the curved rail and front stiles together. But don't add the side stiles yet. The next step is easier if you're working on a flat assembly.

ROUT COVES. To create a decorative profile, rout a cove around the inside edges of the surround *(Figs. 1 and 1a)*. Using the same setup, rout another cove on the outside edge of the front stile, stopping it 3" shy of the top.

FINAL GLUE-UP. Now you can complete the assembly by gluing on the side stiles.

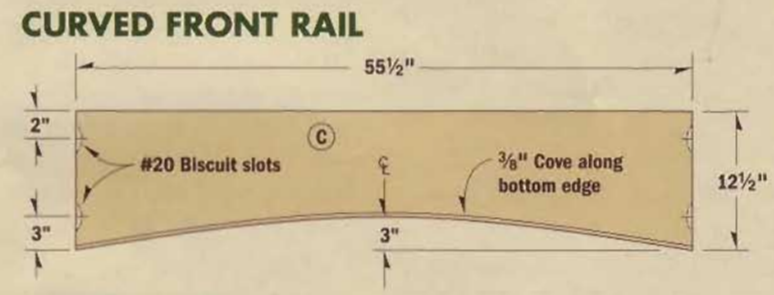
BRACKETS & MOLDING

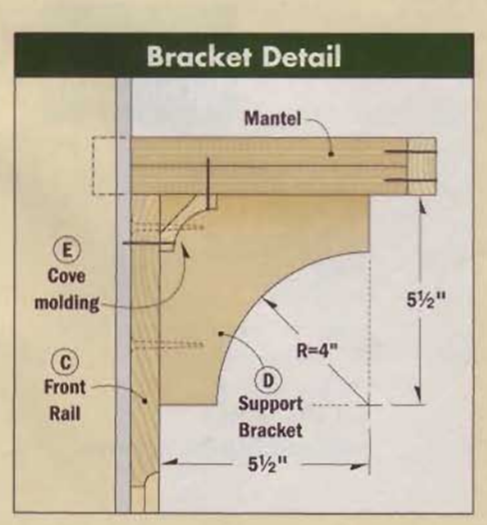
All that's left on the surround is to add the curved support brackets and some cove molding.

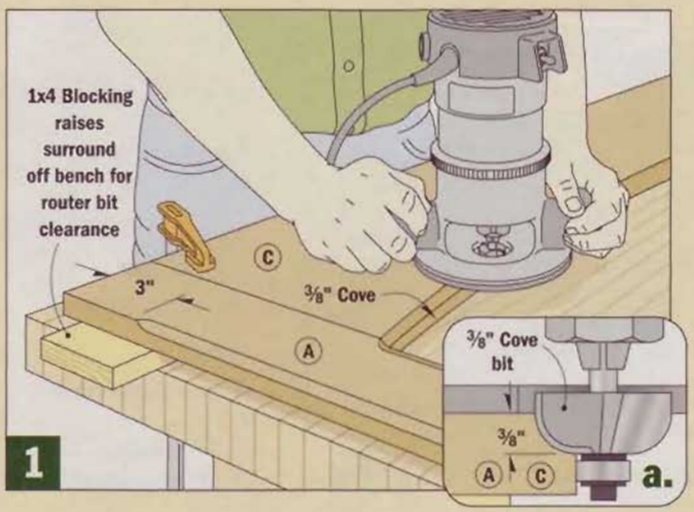
SUPPORT BRACKETS. Like their name implies, the support brackets (D) hold up the mantel. The brackets are made of 1½"-thick oak. (Or, you can also glue up two pieces of ¾"-thick stock.) After laying out each bracket *(Bracket Detail)*, cut it to shape using a jig saw and sand the edge smooth.

DECORATIVE MOLDINGS. The next step is to add strips of cove molding (E) to the top edge of the surround. These pre-made strips are cut to length to fit between the brackets and fastened with finish nails. Two short pieces of molding, mitered to fit around the corners, complete the job.

INSTALL SURROUND. All that's left is to install the surround, as shown in the photo on page 24. Start by positioning it around the chase. Then, after checking the fit, pre-drill holes and nail through the side stiles to secure the surround.







▲ The fireplace surround is capped with a thick oak mantel. It's held in place with construction adhesive so there aren't any visible fasteners.

top it off with a mantel

For the crowning touch on the fireplace surround, I capped it with a thick oak mantel.

The mantel consists of two layers of $^3/_4$" plywood wrapped with wood edging *(Mantel Construction)*. A long notch in the back edge of this panel fits around the chase.

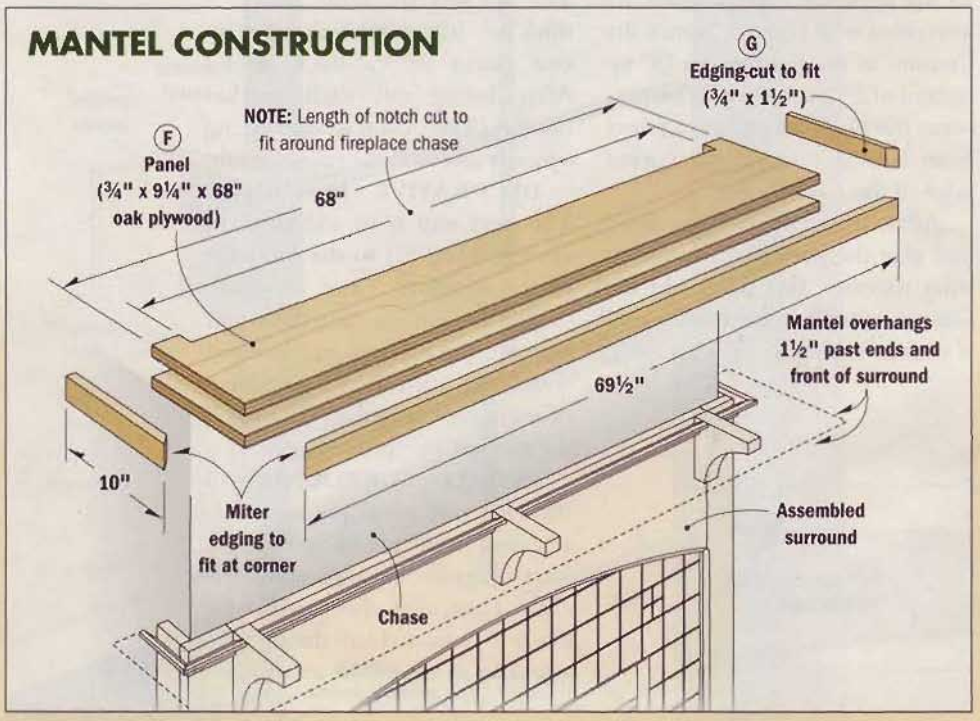
Note that the mantel is designed to overhang the surround by $1^1/_2$" all the way around, *with* the edging attached. Since the edging is $^3/_4$"-thick, this means the plywood panels (F) will be $^3/_4$" wider and $1^1/_2$" longer than the surround (with the brackets and molding attached). Of course, both measurements represent the *final* size of the panels. You'll want to cut them oversize first. Then, after gluing them together on a *flat* surface, rip and crosscut them to final size.

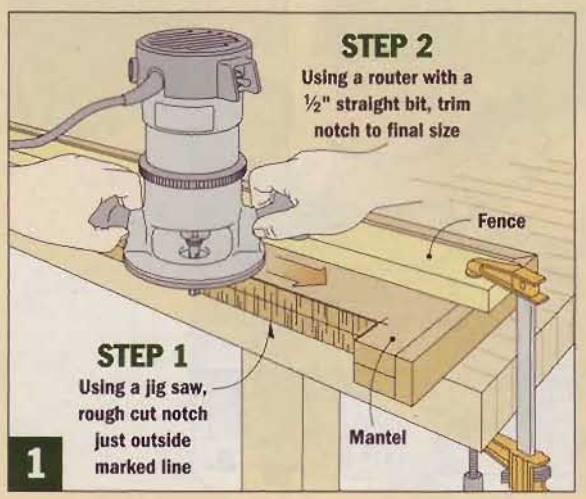
EDGING. The next step is to cover the exposed plies of the panel with edging (G). These edging strips are simply mitered to fit and glued in place.

NOTCH BACK EDGE. Now you can lay out and cut the notch in the back edge. It needs to be deep enough that the "ears" formed when cutting the notch end up flush with the back edge of the side stile. To determine the *length* of the notch, center the mantel on the surround, mark lines at the corners of the chase, and then cut the notch, as shown in *Fig. 1*.

INSTALL MANTEL. When installing the mantel, there's no need for fasteners. It's attached with construction adhesive applied to the top edge of the surround and to the support brackets *(see photo above)*.

WHAT'S IN STORE? Well, that wraps up this part of our fireside retreat. We'll show you how to make the built-in bookcases and add the solid oak trim in the next issue of *Workbench*.





buyer's guide

WORKBENCH HOME

Fireplace

Heat-N-Glo
• Direct-Vent Fireplace
(Model SL-750TR-C)
888-743-2887
www.heatnglow.com

Lighting

Arroyo Craftsman
• Wall Lanterns (GB-9LSAC-BZ)
510-655-6503
www.craftsmanhome.com

Windows

Andersen
• AW31 Awning Windows
As an option, leaded window inserts called Art Glass Panels are available. Ask for Frank Lloyd Wright Colonade Art Glass Panels.
651-264-5150
www.andersenwindows.com

Tile Basics

There's no need need to hire a pro to lay ceramic tile. Following these simple guidelines will ensure an attractive, long-lasting tile installation.

Tile Supplies

One of the secrets to a successful tile installation is to use the right adhesive, grout, and sealer.

ADHESIVES. There are two groups of adhesives: *mastics* for wall applications and *thin-set mortars* for tiling floors. Note: Thin-set mortars can also be used on walls, as we did on the fireplace chase.

To add flexibility and bonding strength, use a latex additive. Some flexible mortars have latex already added.

GROUT. After applying the tiles, the joints are filled with grout. Use *non-sanded grout* to fill joints $^1/_8$" or narrower. *Sanded grout* is used for joints wider than $^1/_8$" and most often on floors.

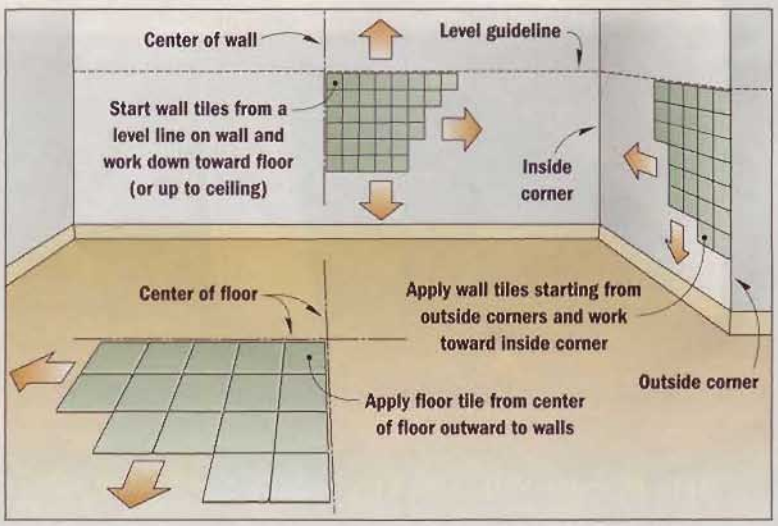
SEALER. Sealing the grout lines prevents mildew and discoloration. TILE TIP: When working with porous (unglazed) tiles, apply sealer to the tiles *before* grouting. This will prevent the grout from staining the tile.

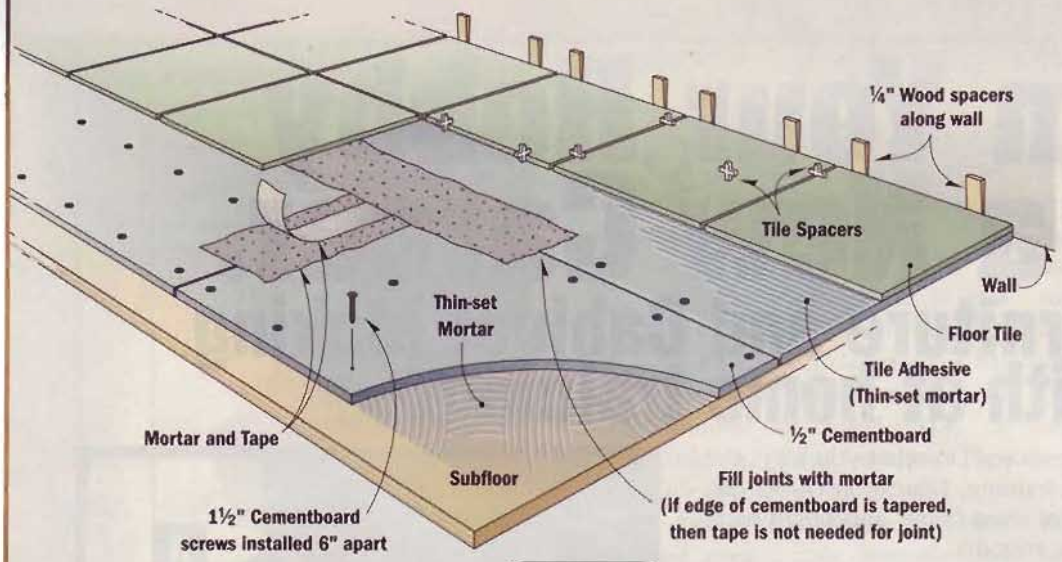
The two tiling projects featured in our Craftsman-style fireside retreat (page 16) are fairly small in scale. But the basic steps required to produce an attractive, long-lasting installation are the same as *any* tile project, regardless of size.

LAY OUT GUIDELINES

One of the secrets to a professional-looking job is to lay out guidelines to ensure proper alignment of the tiles. For most jobs, perpendicular centerlines work best, as shown below. To avoid ending up with a skinny tile at the end of a course, lay out a test row of tiles, *without* adhesive, to see how wide the last tile will be. You may need to shift the guideline one way or the other the width of a half tile.

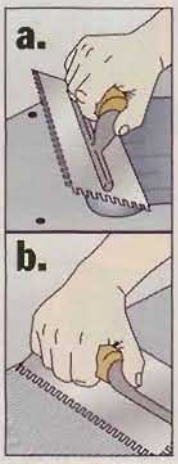
The illustration below shows several typical situations, but just a note about *outside* corners. They're best handled by starting at the corner and working to the inside corner. If the tiles wrap around the corner, don't forget to allow for the thickness of the tile on the adjacent wall.





▲ Use thin-set mortar to "glue" the ½" cementboard to the subfloor. Then fasten it with special cementboard screws installed 6" apart.

▲ After filling the seams with thin-set mortar, embed fiberglass mesh tape in the "mud." Then spread a thin layer of mortar over the tape.



▲ To apply the adhesive, push it across the surface using the smooth edge of a trowel *(Fig. a)*. Then use the notched edge to create furrows *(Fig. b)*.

▲ To ensure a good bond, press each tile into a bed of thin-set mortar, using a slight twisting motion. Plastic spacers keep tile aligned.

▲ After the adhesive sets, the next step is to fill the joint lines with grout. Use a special rubber float to press the grout firmly into the joint.

▲ Let the grout sit for 10-15 minutes. Then wipe off the excess with a sponge, rinsing often. Make final passes parallel to the joint line.

▲ Tiles can be cut to size with a "wet" saw. Some softer wall tiles can be cut by scoring and breaking, or cut with a rotary tool.

SURFACE PREPARATION

Surface preparation isn't the most exciting part of a tile installation. But it *is* one of the most important. To prevent the grout lines (or the tiles themselves) from cracking, a solid underlayment is a must.

UNDERLAYMENT. The most stable underlayment for floor tiles is ½" cementboard, as shown at left. Cementboard is secured to the subfloor with thin-set mortar and screws *(Figs. 1 and 2)*.

LAYING THE TILES

Before laying the tiles, be sure to have the right adhesive, grout, and sealer on hand. *(Refer to page 28.)*

APPLY ADHESIVE. The tile is adhered with either mastic or thin-set mortar. Regardless of the type of adhesive, it's applied with a notched trowel, see margin. Be sure to follow the manufacturer's recommendations on the correct size notches.

Begin spreading the adhesive at the intersection of the two perpendicular guidelines. Don't cover too large an area (about 2' x 2' is about right). Press the first tile in place with a slight twisting motion. As you add more tiles, use plastic spacers to keep them aligned *(Fig. 3)*.

GROUT. After the adhesive cures (about 2 days), fill the joint lines with grout *(Fig. 4)*. Remove the excess with a damp sponge, working diagonally across the joint lines to avoid pulling out the grout. Then make the final passes parallel to the joint lines *(Fig. 5)*. The remaining grout will form a hazy film that's removed by rubbing the tile with a soft, dry cloth.

APPLY SEALER. The cured grout needs protection from moisture and dirt, which cause mold or mildew. That comes from brushing a sealer into the grouted joints. Try to avoid getting sealer on the tile, and wipe off the excess immediately.

CUTTING TILE. One final note. For some installations (like our fireplace chase), you'll need to cut the tiles. For best results, I recommend renting a "wet" saw, as shown in *Fig. 6*.

Kitchen Island Cart

Need an extra worksurface in your kitchen to prepare meals? Wish you had more storage? This recipe for a roll-around workcenter blends all the right ingredients.

A kitchen with a large "island" for preparing meals and for storing cookware makes a lot of sense — *if* there's enough room. But what can you do if space is limited? One solution is to build a compact, *roll-around* workcenter.

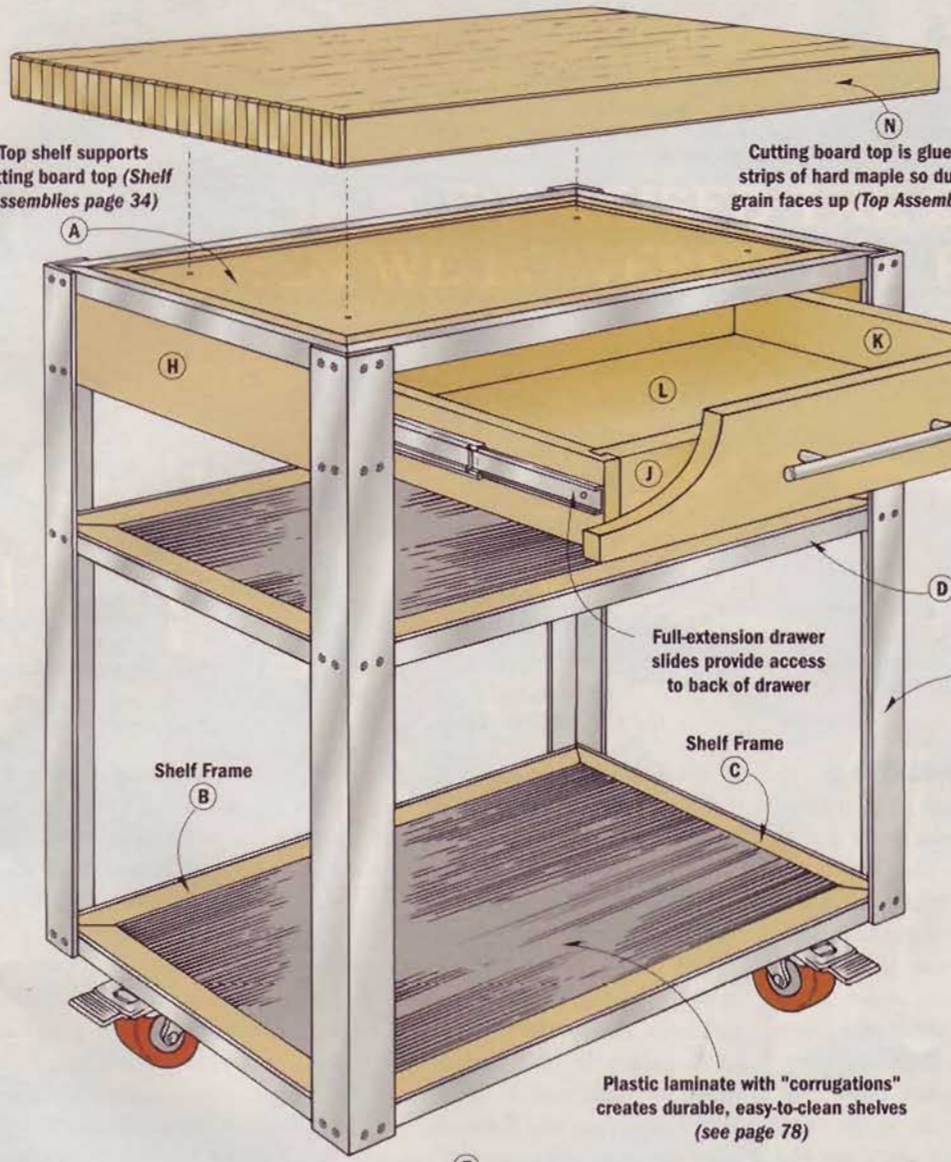
Take this shop-made, kitchen island cart for example. It occupies less than 6 square feet of space, yet this mobile unit offers many of the same advantages as a built-in island.

CUTTING BOARD TOP. For starters, there's a large cutting board top that provides a handy worksurface for preparing meals. The top is made from strips of 3/4"-thick hard maple glued face to face. This means that the cutting surface is formed by the more durable *edge grain* of the strips — just what's needed to stand up to sharp knives and cooking utensils.

STORAGE. But there's more to this cart than a "beefy" worksurface. It also

KITCHEN CART CONSTRUCTION VIEW

Overall Dimensions:
32½" W x 22½" D x 35" T



provides plenty of storage for appliances and accessories.

As you can see, the cart is designed with an open, metal base that supports two large shelves. And a shallow drawer keeps knives and other small items right at hand.

METAL BASE. Okay, it sounds great. And I like the clean, contemporary look of the cart. But isn't it difficult to build a *metal* base? Not at all. In fact, you'll be amazed at how easy it actually is. That's because the base consists of four identical legs made of aluminum angle. (You'll find aluminum angle at most home centers.)

To make one leg, all you have to do is cut the aluminum angle to length on the table saw. Make three more cuts and — aside from drilling a few holes — the base is complete. Note: To ensure good results, be sure to check out our tips for working with aluminum angle on pages 76 and 77.

ONLINE Extras

- Cutting Diagram for Kitchen Cart
- Cutting Tongue and Dado Joints
- Food-Safe Finish Recipe

WorkbenchMagazine.com

MATERIALS LIST

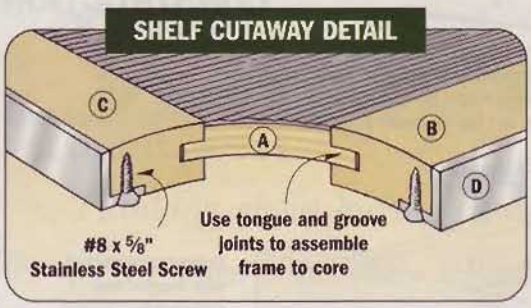
A	(3) Shelf Cores (plywood)	½" x 17¾" x 27¾"
B	(6) Shelf Frame Frts. & Backs (maple)	¾" x 1½" x 30"
C	(6) Shelf Frame Sides (maple)	¾" x 1½" x 20"
D	(12) Shelf Edging (⅛" alum. angle)	¾" x ¾" – 27 lin. ft. rgh.
E	(4) Legs (⅛" alum. angle)	2" x 2" – 10 lin. ft. rgh.
F	(4) Spacer Blocks (plywood)	¼" x 2¾" x 3¾"
G	(1) Back Rail (maple)	¾" x 4" x 30"
H	(2) Side Rails (maple)	¾" x 4" x 19¼"
I	(2) Mounting Cleats (maple)*	1⅛" x 2⅝" x 19¼"
J	(2) Drawer Front & Back (maple)	½" x 3½" x 25"
K	(2) Drawer Sides (maple)	½" x 3½" x 18½"
L	(1) Drawer Bottom (plywood)	½" x 18" x 25"
M	(1) False Front (maple)	¾" x 3 15/16" x 26⅜"
N	(1) Cutting Board Top (maple)	2" x 22½" x 32½"

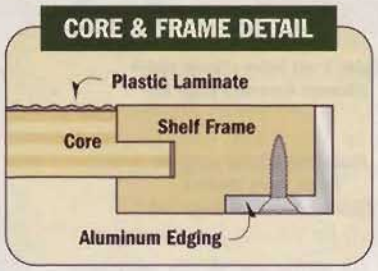
* Glued up from four ¾" blanks and planed to 1⅛" thick

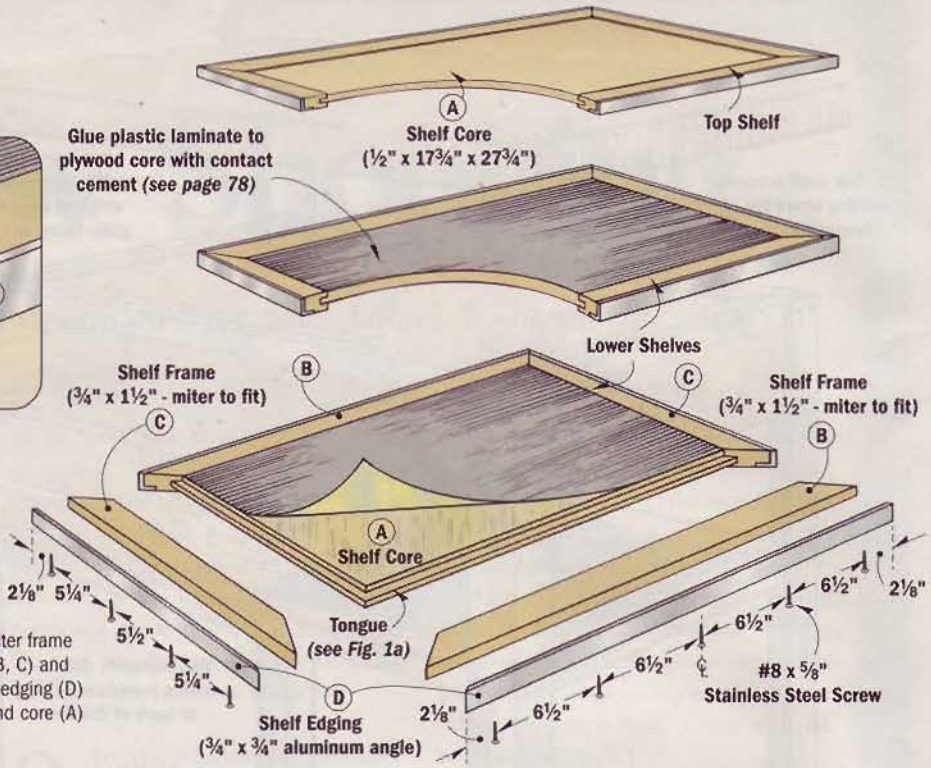
HARDWARE & SUPPLIES

- (2) Formica "Corrugated" Plastic Laminate - cut 17" x 27"
- (2) 18" Full-Extension Drawer Slides w/Screws
- (4) 3" Double-Locking Swivel Casters
- (94) #8 x ⅝" Stainless Steel Screws
- (24) #8 x 1" Stainless Steel Screws
- (14) #8 x 1½" Fh Woodscrews
- (21) #8 x 1" Fh Woodscrews
- (16) #10 x 1" Ph Sheet Metal Screws w/¼" Washers
- (2) #8 x 1½" Ph Sheet Metal Screws w/¼" Washers
- 8¾" Bar Pull (Pearl Nickel Finish) w/Screws

SHELF ASSEMBLIES







NOTE: Miter frame pieces (B, C) and aluminum edging (D) to fit around core (A)

▲ **A large hole in a hardboard router base provides clearance for a rabbet bit.**

START WITH THE SHELVES

I began work on the cart by making three shelves. The two lower shelves provide storage, while the upper shelf supports the cutting board top.

All three shelves start out as 1/2"-thick plywood core pieces. To strengthen the shelves and to cover the plywood edges, these core pieces are wrapped with a hardwood frame and pieces of aluminum angle.

Now, take a look at the *Shelf Assemblies* above and you'll see one thing that's different about these shelves. The two lower shelves are covered with plastic laminate so they're easy to clean. The top shelf doesn't need laminate because it's covered by the cutting board top.

PLYWOOD CORES. To make the shelves, start by cutting three 1/2"-thick plywood core (A) pieces to size. Then set one piece aside for the top shelf. Now, using contact cement, glue oversized pieces of plastic laminate to the other two core pieces. For tips on working with plastic laminates, see page 78.

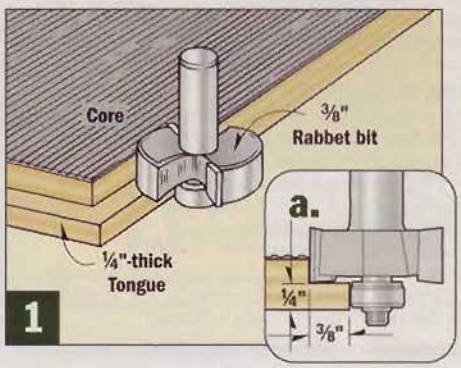
Just a note about the plastic laminate I used. For a more contemporary look, it's a special laminate with small ridges in the surface that resemble corrugated cardboard. When applying the laminate, pay close attention to aligning the ridges parallel with the long edges of the core pieces, as shown on page 78.

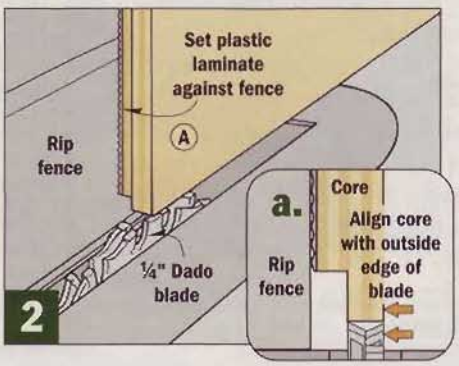
ADD THE FRAME. After trimming the laminate flush with the edges of the core pieces, the next step is to add a mitered frame. It consists of 3/4"-thick hardwood strips attached to the plywood core pieces with tongue and groove joints *(Shelf Cutaway Detail)*. This type of joint makes it easy to align the frame with the core pieces. Plus, it provides plenty of glue surface for a strong joint.

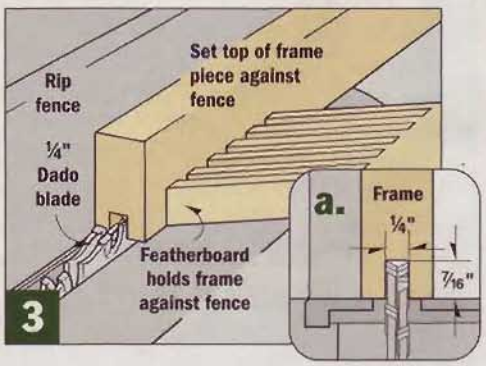
Start by cutting the frame pieces (B, C) extra long. This allows extra material for cutting the mitered corners. I also cut a couple extra frame pieces for making test cuts.

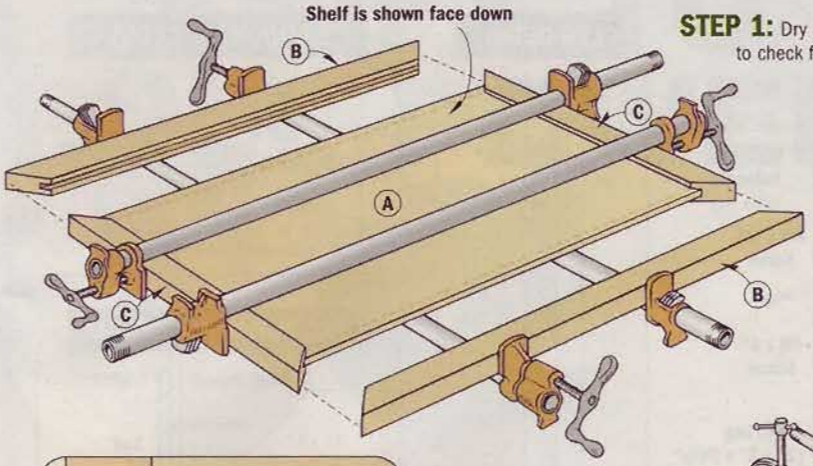
Before you actually cut the joinery, take a look at the *Core & Frame Detail* above. It shows what you're shooting for — a frame that's perfectly flush with the top surface of the laminate. This is easy to do if you use a cut-to-fit technique.

MAKE THE TONGUES. The first step is to make the tongues. This is done by routing a 3/8" rabbet along all four edges of the core. I used a handheld router and a rabbet bit





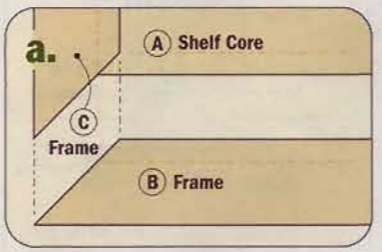




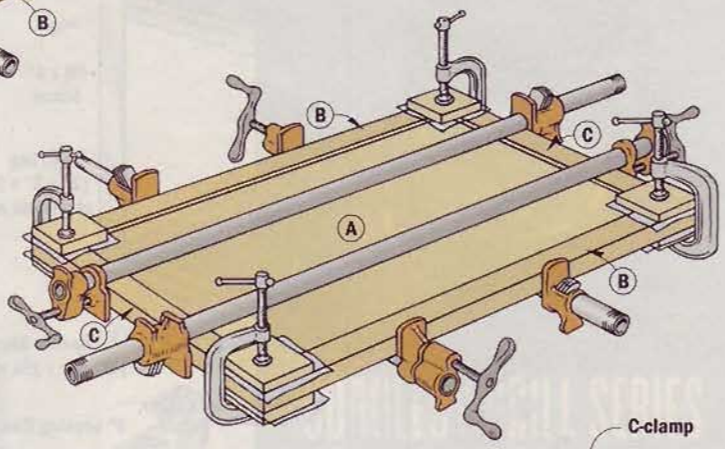
STEP 1: Dry assemble frame pieces to check fit of miter joints

STEP 2: Remove one set of clamps, apply glue to edges of frame pieces (B) and core (A), then clamp frame pieces in place

STEP 4: Use clamping blocks to keep corners flat (wax paper prevents blocks from sticking)



STEP 3: Remove the second set of clamps, apply glue to edges and ends of frame pieces (C) and core (A), reposition the pieces, and draw tight with clamps



(Fig. 1). This required making a special base for my router to accommodate the large diameter of the bit *(Margin Photo on page 34).*

The idea is to set the depth of the rabbet bit to leave a $^1/_4$"-thick tongue. Now rout the tongues.

CUT THE GROOVES. After completing the tongues, the next step is to cut the grooves in the frame pieces. A table saw that's set up with a $^1/_4$" dado blade makes quick work of this.

What's really important here is to locate the grooves so once the frame is attached it ends up flush with the top surface of the plastic laminate. To accomplish this, use one of the core pieces to position the rip fence, as shown in *Figures 2 and 2a.* Be sure to position the laminated face of the core against the fence.

With the fence set, make test cuts in a scrap piece to check the fit. The goal is a friction fit (not too tight) between the tongue and test groove.

Now it's time to cut the grooves in the frame pieces. Make sure to mark the top of each frame piece and place it against the rip fence when you make the cut *(Fig. 3).* You'll also want to cut the groove about $^1/_{16}$" deeper to allow for glue squeeze-out *(Fig. 3a).*

MITER THE ENDS. Once the grooves are done, all that's left before assembling the shelves is to miter both ends of each frame piece. Then dry clamp the frame around the plywood core pieces to check the fit of the mitered corners.

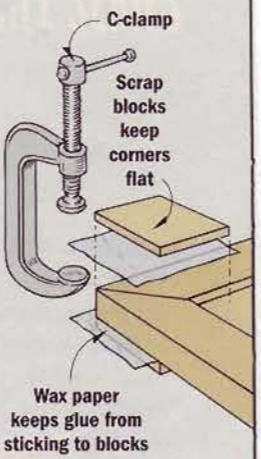
GLUE-UP. Getting a good fit *without* glue is one thing. But when it comes to the actual glue-up, keeping the pieces from slipping out of alignment when you tighten the clamps is another story.

To keep the pieces aligned, I used the simple trick shown above. The idea is to use two clamped-up pieces to align the other two pieces as they're being glued up. And to keep the mitered corners of the frame pieces from shifting, I clamped small blocks across each joint line *(see margin at right).*

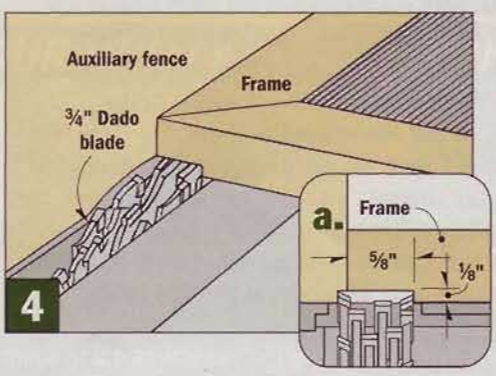
ADD ALUMINUM EDGING. There's just one more thing needed to complete the shelves. To create a decorative accent around the edges, the shelves are wrapped in aluminum angle. This edging (D) sits in a shallow rabbet cut in the bottom edges of the shelf *(Figs. 4 and 4a.).*

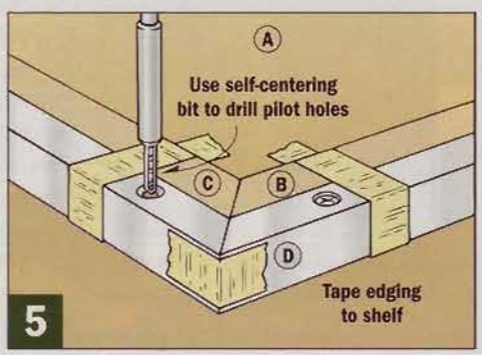
After cutting the rabbets, it's time to miter the edging to length before attaching it to the shelf. To create tight-fitting miter joints, I used the table saw and a miter gauge for cutting the miters. You'll find a handy tip on how to make a clean cut on page 76.

Before attaching the edging, you'll need to drill countersunk shank holes for the mounting screws. Then tape the edging in place, drill pilot holes for the screws, and attach the edging *(Fig. 5).*

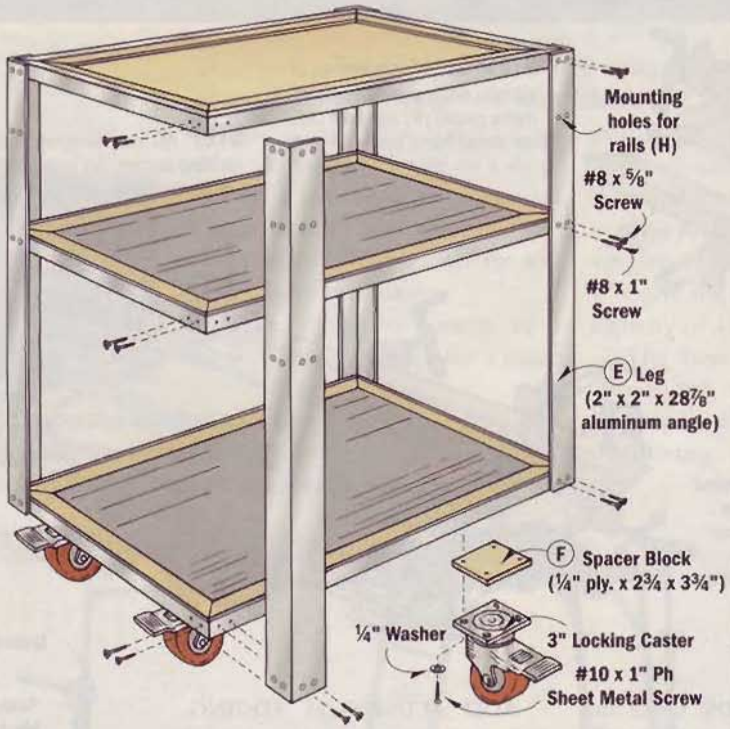


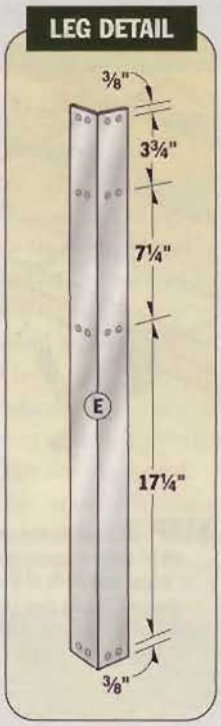
▲ To keep frame pieces from shifting up or down during glue-up, apply clamping pressure over each mitered corner.

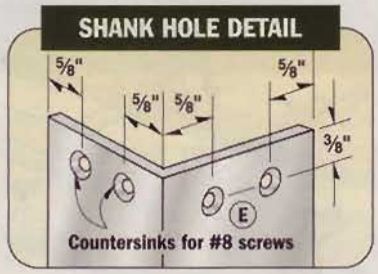


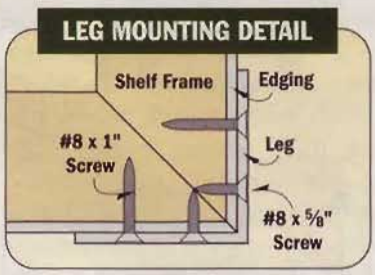


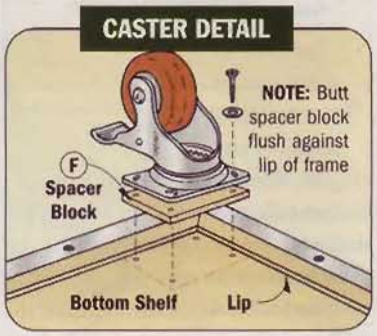
BASE ASSEMBLY











▲ **Stainless steel screws (available at hardware stores and home centers) complement the aluminum angle of the legs.**

BUILD THE BASE

The open, metal base of the cart is formed by fastening four legs made of aluminum angle to the shelves with stainless steel screws *(see Margin Photo)*. These metal legs contribute to the contemporary look of this project. But beyond appearance, the legs have a couple more benefits. Namely, they're incredibly sturdy and easy to make.

CUT LEGS TO SIZE. Like the edging on the shelves, the legs are simply cut to length on the table saw. To make a smooth, controlled cut, attach the same fence to the miter gauge that you used for the edging *(see page 76)*. As before, knock any burrs off the edges with a file or sandpaper.

MOUNTING HOLES. Once the edges are smoothed, the next step is to lay out the locations of the mounting holes for the screws used to attach the legs to the shelves. You'll need to lay out eight holes on both sides of each leg *(Leg Detail)*. Six of these holes are used to attach the legs to the shelves. The other two holes (the second set from the top) will be used when fastening the legs to the rails that will be added later.

Tip: Pencil doesn't show up well on the aluminum. To make the layout lines for the holes more visible, use a fine-tip permanent marker.

Now it's just a matter of drilling a countersunk shank hole at each location *(Shank Hole Detail)*. Make sure to set the depth stop on the drill press so the screw heads will sit flush with the face of the leg *(Leg Mounting Detail)*.

Next, to give the aluminum a "brushed" metal look, I sanded each leg (and the aluminum edging) with a random-orbit sander (220-grit paper). Sanding the legs also removes any rough edges or tool marks left from drilling. Finally, spray on a light coat of lacquer to keep off fingerprints and dirt.

ASSEMBLE THE BASE

The next step is to assemble the base by fastening the legs to the shelves. All you need for this is a

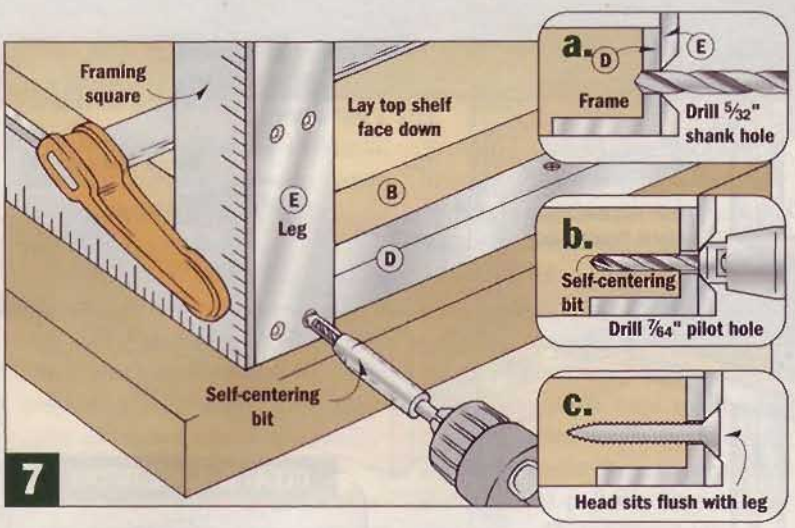
TWO-WAY LOCKING CASTERS

▲ **A toothed mechanism lets you lock the swivel base of the caster.**

These aren't your run-of-the-mill casters. For starters, both the swivel and the large wheels ride on ball bearings for smooth rolling and turning.

Also, unlike other casters that only lock the wheel, these casters feature a double brake system. As you can see in the photo, tiny teeth lock the swivel base when you press the lever down. This means the kitchen cart won't roll *or* accidentally swivel when you're working at it.

SOURCE: Two-way locking casters (item #141051) are available from Woodcraft at 800-225-1153.



flat worksurface (I used my benchtop) and a couple of clamps.

To prevent the base from racking, it's best to assemble these pieces one leg — and one shelf — at a time. That way you can also make sure each leg is square to the shelf in both directions before drilling the pilot holes for the screws in the shelves.

TOP SHELF. To get started, lay the top shelf face down on the worksurface. Then fit the first leg around one corner and lightly clamp a framing square against it *(Fig. 7 and Top Shelf)*. Tap the leg into position, checking it for square. Then tighten the clamp.

Now you're ready to install the screws. One thing to keep in mind is the screws have to penetrate *two* layers of aluminum (leg and edging) before entering the wood frame. So start by drilling a shank hole through the aluminum edging, using the holes in the legs as a guide *(Fig. 7a)*. Then come back with a self-centering bit and drill pilot holes into the frame *(Fig. 7b)*. Finally, drive in the screws so the heads sit flush with the surface of the leg *(Fig. 7c)*.

At this point, remove the clamp, position it on the other side of the leg, and add the remaining two screws. Once you have the first leg secured from both sides, repeat the entire clamping sequence to attach the other three legs.

MIDDLE SHELF. The remaining two shelves are attached to the legs in a similar fashion, with a couple of exceptions. You'll need a way to keep the middle shelf spaced equally and parallel with the top shelf while attaching the legs. I used a spacer block in each corner to support the shelf *(Middle Shelf)*. Now secure the shelf to the legs just like before.

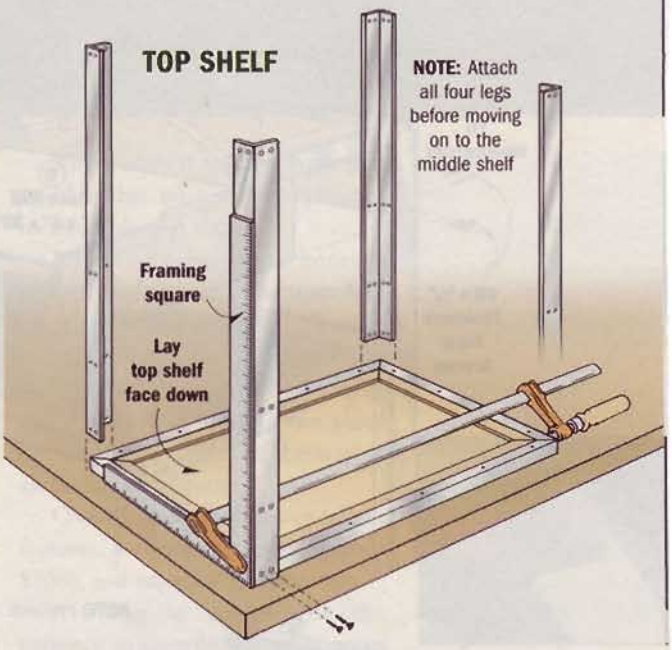
BOTTOM SHELF. Finally, to add the bottom shelf, remove the spacers and turn the cart upright. Then position the shelf flush with the bottom of the legs and install the screws *(Bottom Shelf)*.

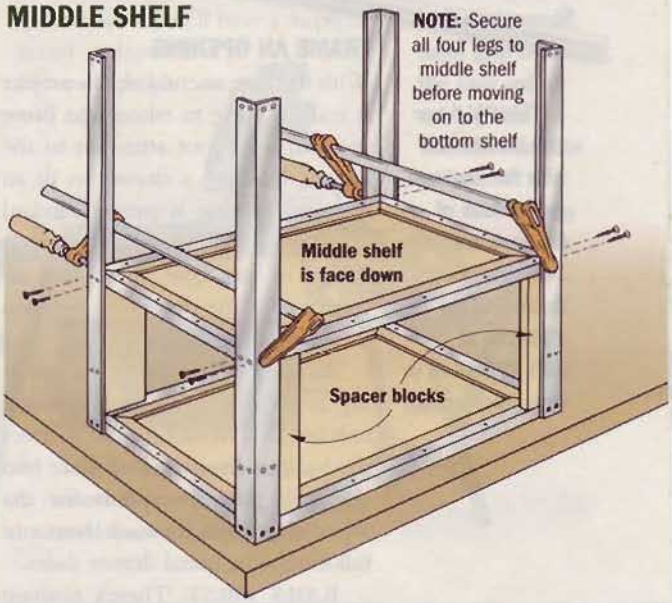
MAKE THE CART MOBILE

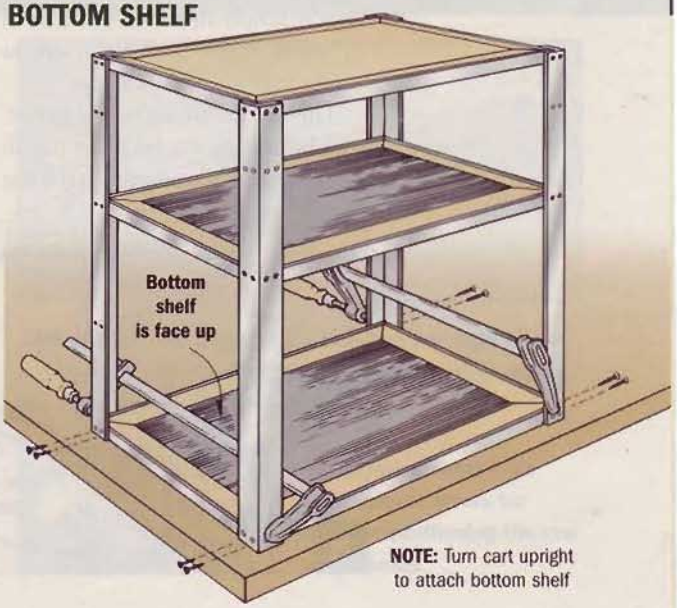
One of the neatest things about this kitchen island cart is its versatility: rock-solid one minute, mobile the next. A pair of heavy-duty, 3" swivel casters on the corners of the base make this possible. To learn more about these, take a look at the *Two-Way Locking Casters* sidebar on page 36.

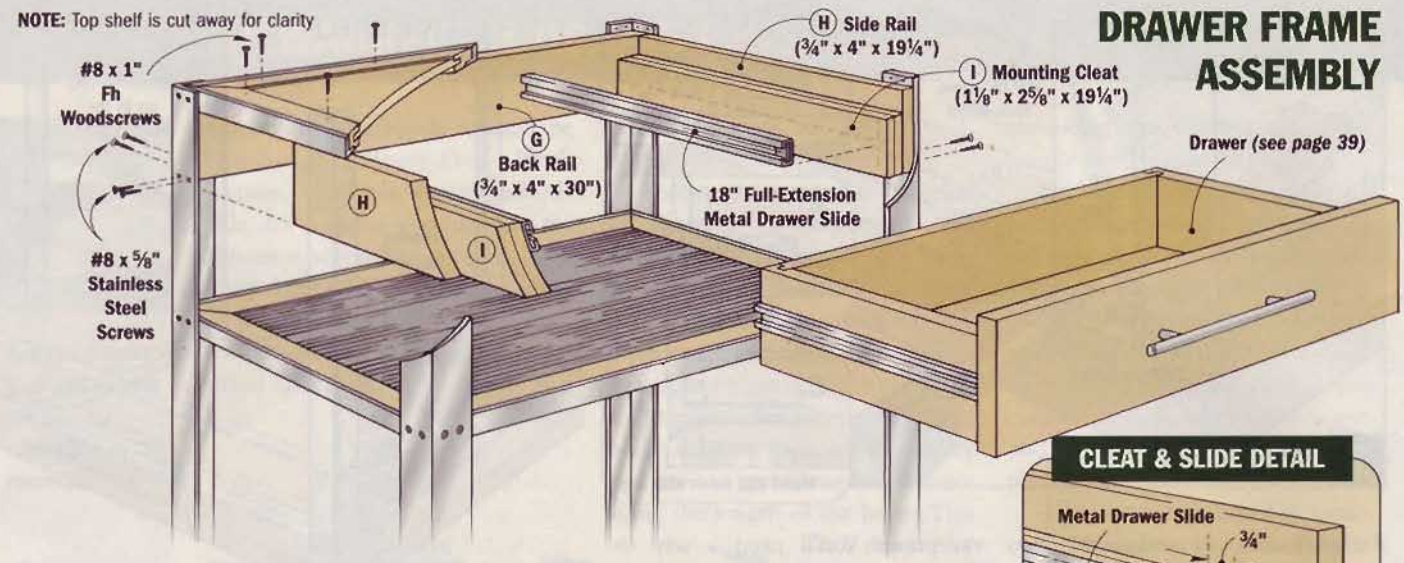
There's nothing tricky about installing the casters. Just make sure you position them close enough to the edge so you can press the locking levers with your foot — but not so close that they stick out and bump into things. If you take a look at the *Caster Detail* on page 36, you'll see how to position the casters.

You'll also notice there's a 1/4"-thick plywood block between the base of each caster and the bottom shelf. The purpose of these spacer blocks (F) is to allow the casters to sit low enough so they swivel freely without hitting the lip of the frame that extends below the shelf.





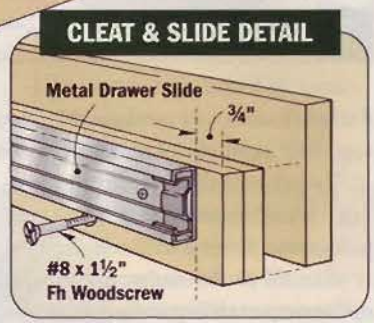




DRAWER FRAME ASSEMBLY

NOTE: Prefinish rails and cleats before assembly

▲ This 8¾" bar pull blends well with the contemporary look of the cart. It's available from Rockler (item #36428) at 800-279-4441 or www.Rockler.com



FRAME AN OPENING

With the base assembled, this project is really starting to take shape. Now you can turn your attention to the drawer. Building a drawer to fit an existing opening is pretty standard construction. But with the open design of this base, there isn't an opening for the drawer — yet. You have to make one.

As you can see above, the opening is formed by three hardwood rails and two cleats. One rail encloses the back of the cart. The other two side rails provide support for the wood cleats that are used to mount full-extension, metal drawer slides.

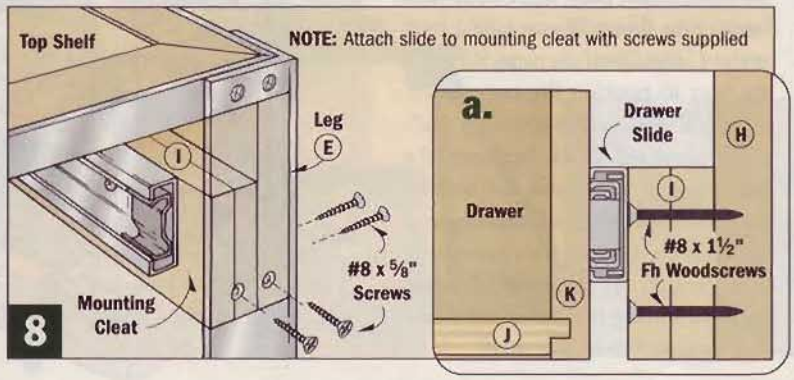
RAILS FIRST. There's nothing complicated about making the rails. They're simply ripped to width from ¾"-thick maple and then cut to length to fit between the legs.

The rails are added one at a time. Start by cutting the back rail (G) to size. Then butt it underneath the top shelf and attach it to the legs and shelf with screws. Now, cut the side rails (H) to fit between the front legs and the back rail and attach them.

ADD MOUNTING CLEATS. In order for the drawer to open and close correctly, the side rails must be "built out" to provide clearance for the metal drawer slides. To accomplish this, I added a pair of mounting cleats (I) that fit flush with the legs, as shown in *Figure 8*.

Each cleat is glued up from two pieces of ¾"-thick hardwood. After planing the cleats to the appropriate thickness (1⅛"), clamp them flush with the bottom edges of the side rails. Then screw them to the rails *and* the legs *(Figs. 8 and 8a)*.

DRAWER SLIDES. The metal drawer slides I used can be separated into two halves. One half attaches to the mounting cleat; the mating half goes on the side of the drawer. For now, separate the halves and attach the part that mounts to the cleat. To allow room for a false front, set the slide back ¾" from the front of the cleat *(Cleat & Slide Detail)*.



BUILD A DRAWER

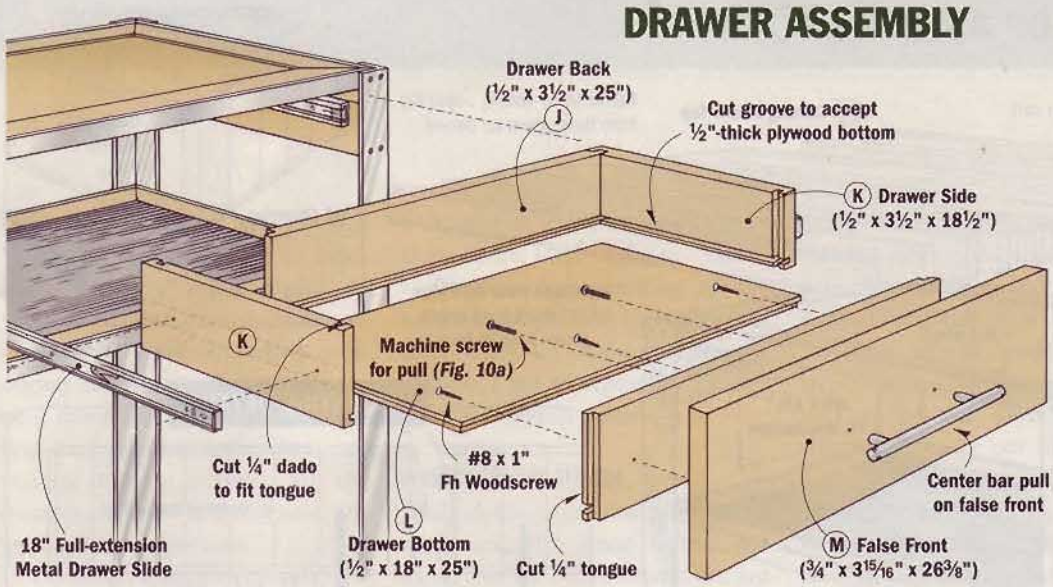
Now it's time to build the drawer to fit inside the opening. The drawer starts out as an open box assembled with tongue and dado joints *(Drawer Assembly)*. Then a false front is attached to the drawer box.

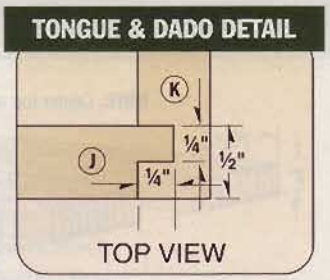
DRAWER SIZE. There are several things to consider when determining the size of the drawer. First, the slides I used required a ½" clearance on each side. So the drawer is 25½" wide — 1" narrower than the opening.

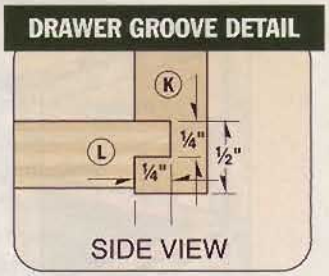
As for depth, it's 18½" deep, which provides plenty of clearance inside the opening. Finally, the drawer (without the false front attached) is 3½" tall.

With that in mind, you can get started on the front/back (J) and sides (K). All of these pieces are made of ½"-thick maple. Begin by planing the stock to thickness, and then rip the pieces to 3½" wide. Before cutting them to length though, be sure to take the tongue and dado joints into account.

DRAWER ASSEMBLY







JOINERY. The tongues are formed by cutting rabbets in the ends of the front and back pieces. Then to keep the drawer from pulling apart, these tongues "lock" into dadoes cut in the sides *(Tongue & Dado Detail)*. Note: For information on cutting tongue and dado joints, check out our on-line extras: www.WorkbenchMagazine.com

Before assembling the drawer, you'll need to cut a groove in each piece for a ½" plywood bottom (L) *(Drawer Groove Detail)*.

While you still have easy access, now is also a good time to drill mounting holes in the drawer for the screws that will be used to attach the false front *(Drawer Assembly)*.

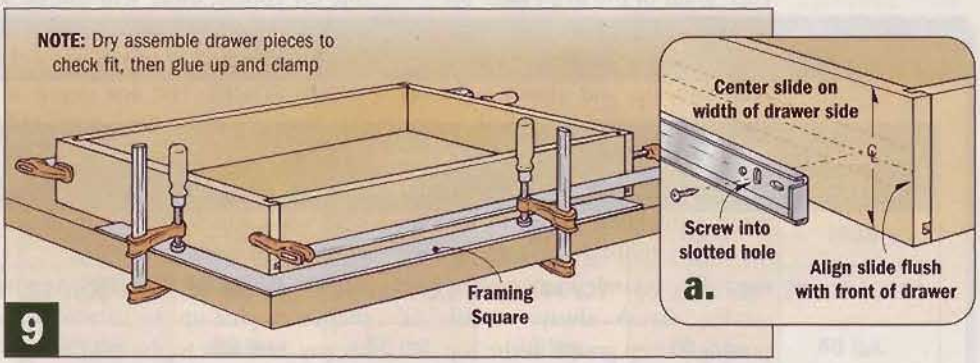
ASSEMBLE THE DRAWER. The next step is to assemble the drawer. The key here is to make sure the drawer remains square and flat during glue-up. A simple way to do this is to clamp a framing square to the benchtop. Then butt one corner of the drawer into the square as you tighten the clamps *(Fig. 9)*.

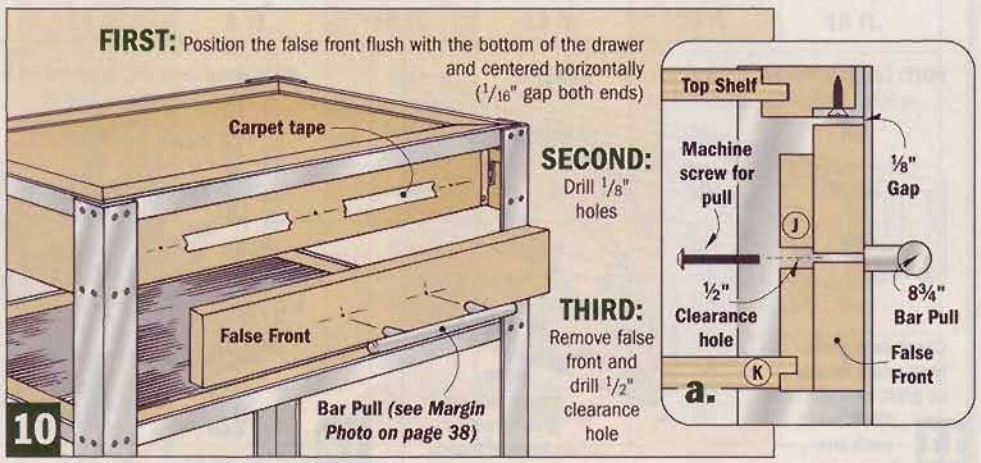
Once the drawer is assembled, attach the other halves of the drawer slides, as shown in *Figure 9a*. Just be sure to screw into the slotted holes in case you need to adjust the slides.

FALSE FRONT. Now it's time to add the false front (M). This is a ¾"-thick piece of hardwood that attaches to the front of the drawer with screws *(Drawer Assembly)*. The false front is sized to allow a 1/16" gap on both ends and an ⅛" gap on top.

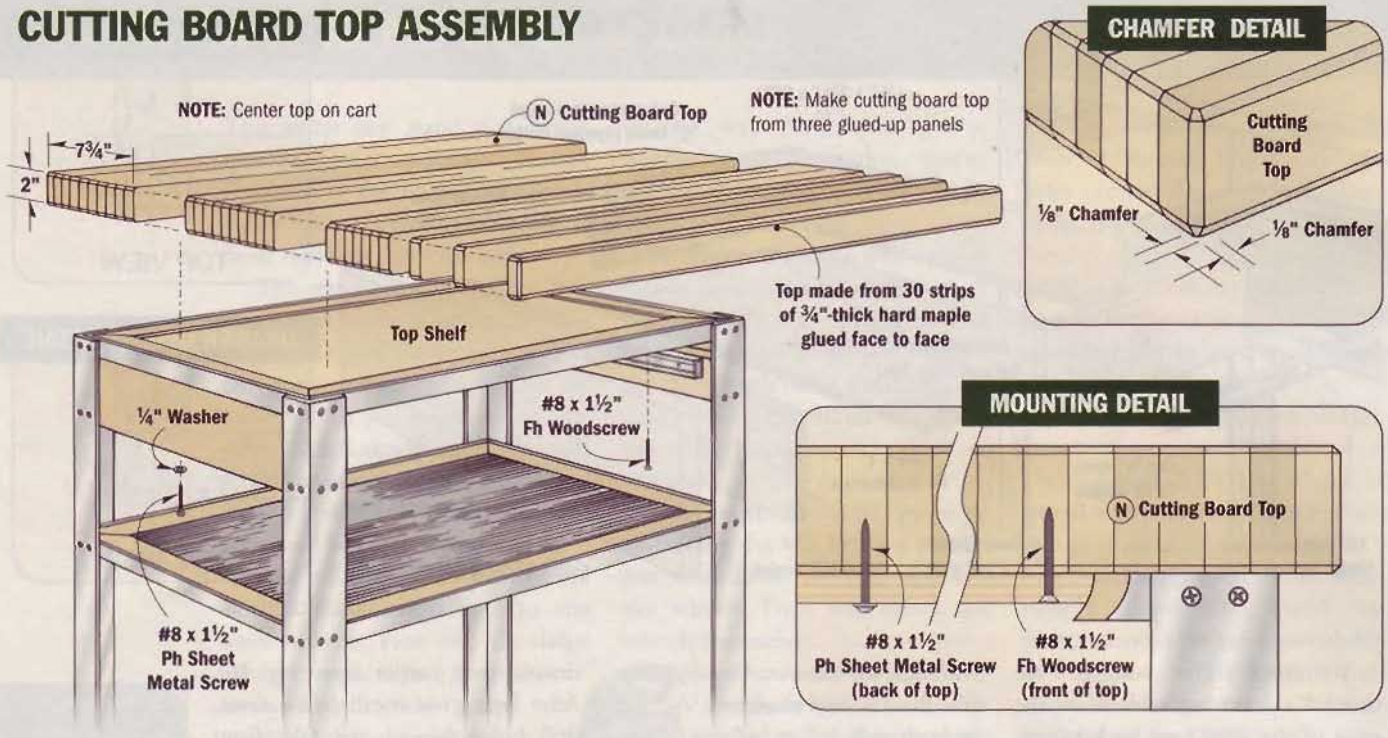
ADD A PULL. Once the false front is cut, the next step is to attach a bar pull *(see Margin Photo on page 38)*. An easy way to locate the holes for the pull's mounting screws is to position the false front on the drawer with carpet tape *(Fig. 10)*. After laying out the hole locations, drill holes through the false front from the outside of the drawer.

Then remove the false front and drill clearance holes through the drawer front. Finally, permanently attach the false front *(Drawer Assembly)* and pull *(Fig. 10a)*.





CUTTING BOARD TOP ASSEMBLY



CUTTING BOARD TOP

The top of this kitchen cart is a large cutting board. It consists of a number of solid wood strips (30 to be exact) glued face to face, as shown above. This way, the more durable edge grain of the strips faces up.

Gluing up a bunch of strips like this presents a challenge. The strips will shift up and down a bit as clamping pressure is applied, forming a series of small ridges.

Since the top is 22½" wide, using a thickness planer to remove the ridges probably isn't an option. And if you sand them with a belt sander, there's always a risk of putting a deep gouge in the top.

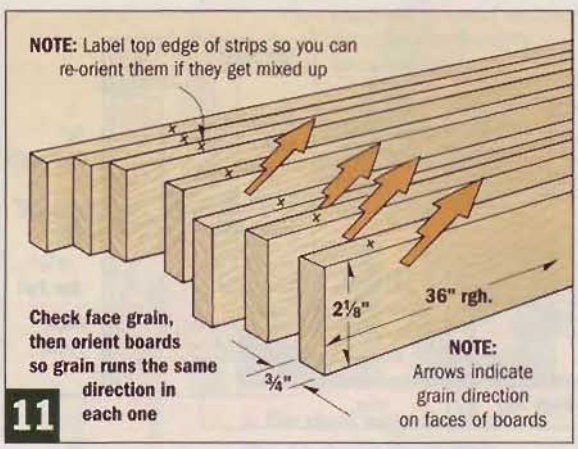
DIVIDE & CONQUER. My solution was to first glue up three smaller panels that were narrow enough to run through the planer. These narrow panels are then glued together to form the wide top. Of course, there will still be a few small ridges to sand, but that is a fairly manageable job.

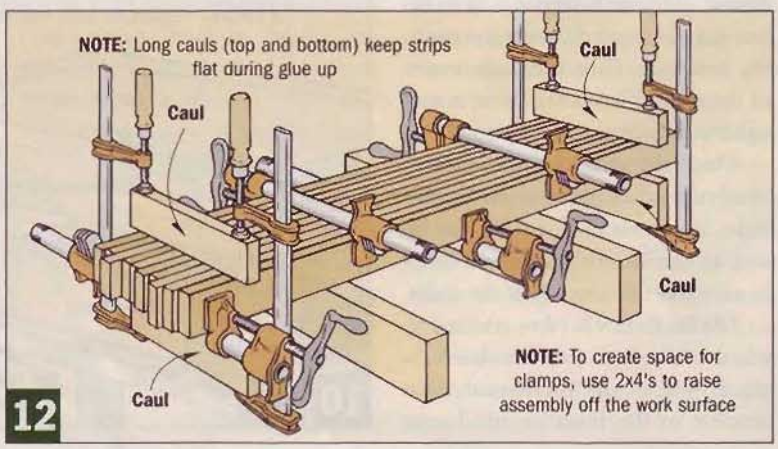
RIP STRIPS. The first step is to rip 30 extra-long strips to width from ¾"-thick maple. I wanted a 2"-thick top, so I ripped the strips 2⅛" wide, which gave me room for planing and sanding *(Fig. 11)*.

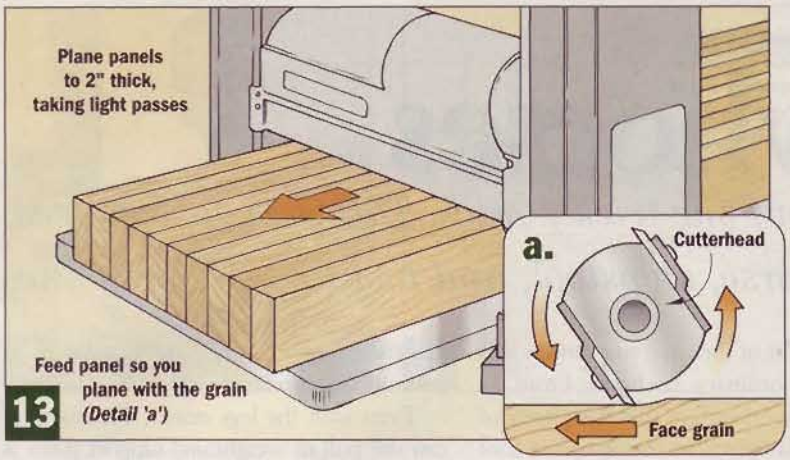
GRAIN ORIENTATION. As you prepare to glue up the narrow panels, pay attention to the grain orientation of the strips. To avoid chipout when planing the panels, be sure to orient each strip so the grain runs in the same direction *(Fig. 11)*.

To "read" the grain, look at the face of each strip. The idea is to orient the strips so the grain lines run off the top edge in the same direction *(shown by the orange arrows in Fig. 11)*. It's also a good idea to mark the top edges of the strips, just in case they get mixed up as you work.

GLUE-UP. Now it's time to glue up the narrow panels. This can get hectic, so be sure to have all the pipe clamps and glue you're going to need on hand. I used *Titebond II* to glue up the panels.







To distribute pressure evenly, the idea is to position the clamps in an over-and-under arrangement, about 6" apart *(Fig. 12)*.

I'd also recommend having a few scrap pieces of wood on hand to use as cauls. These cauls will be used to keep the strips at the ends of the panels aligned during glue-up (more about that later). Just be sure to wax the cauls to prevent glue from adhering to them.

Now, to glue up each panel, brush glue on the mating faces of all the strips. Apply clamping pressure slowly, starting at the center and working your way out. Then clamp the cauls across the top and bottom of the panel.

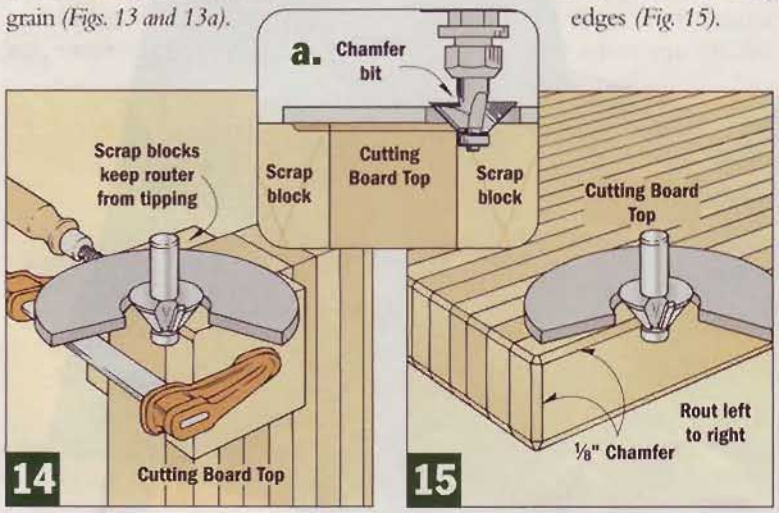
PLANE TO THICKNESS. At this point, you're ready to plane the panels smooth. Adjust the planer for a *very* light cut ($^1/_{32}$"). Then, after checking the grain direction, feed each panel through the planer so it's cutting *with* the grain *(Figs. 13 and 13a)*.

GLUE UP TOP. Once the panels are planed to final thickness (2"), the next step is to glue all three of them together to form the cutting board top. These panels are larger (and heavier), but the basic procedure is the same. Only here, you'll need longer cauls to extend across the width of the panel.

SAND & TRIM TO LENGTH. After gluing up the three panels, you'll probably end up with some small ridges at the joint lines. Sand these smooth with a random orbit sander and 100-grit sandpaper.

Next, you'll want to trim the top to length. If you turn to page 74, you'll find a simple technique for doing this on the table saw.

CHAMFERS. To ease the sharp edges, I routed an $^1/_8$" chamfer on the corners. Notice how scrap blocks clamped to the top prevent the router from tipping and chipping the corners *(Fig. 14)*. Now chamfer the long edges *(Fig. 15)*.



FOOD-SAFE FINISH

The main reason you finish any project is to protect the wood. But with this cart that comes in contact with food, it's also important to use a food-safe finish. For a homemade food-safe finish recipe, visit our on-line extras: www.WorkbenchMagazine.com

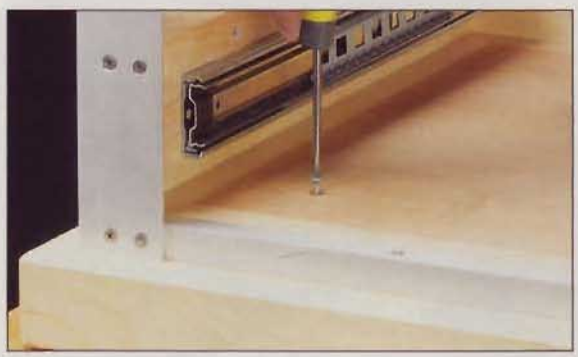
One of my favorite food-safe finishes is Behlen's Salad Bowl Finish (available from Woodcraft, item #08P15, 800-225-1153). Before applying the finish, sand the top smooth using a progression of finer grits (up to 320 grit). Then wipe on a thin, uniform coat of finish with a lint-free cloth. Allow six hours drying time before recoating. Two coats should be plenty. Wait 72 hours before using the cart.

Plan on renewing the finish with an additional coat or two about twice a year.

ATTACH TOP. After applying a finish *(see sidebar above)*, the final step is to attach the cutting board top.

Since the top is solid wood, it will expand and contract with changes in humidity. To allow for this wood movement, the front edge of the top is fixed. The back of the top, however, is allowed to "float" by using oversize ($^1/_4$") screw holes *(Mounting Detail)*.

You'll need to remove the middle shelf to make room for attaching the top, as explained below. Once the top is in place, reattach the shelf and you're ready to roll.



▲ **After predrilling all the holes (back two oversize), center the cart on the top and attach it with screws.**

WORKBENCH®

KITCHEN ISLAND CART

Issue 273 Volume 58 Number 5 Sept/Oct 2002

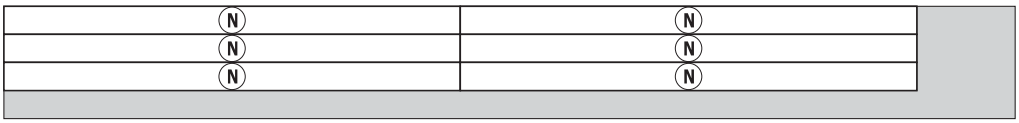
MATERIALS LIST

A	(3) Shelf Cores (plywood)	1/2" x 17 3/4" x 27 3/4"
B	(6) Shelf Frame Frts. & Backs (maple)	3/4" x 1 1/2" x 30"
C	(6) Shelf Frame Sides (maple)	3/4" x 1 1/2" x 20"
D	(12) Shelf Edging (1/8" alum. angle)	3/4" x 3/4" – 27 lin. ft. rgh.
E	(4) Legs (1/8" alum. angle)	2" x 2" – 10 lin. ft. rgh.
F	(4) Spacer Blocks (plywood)	1/4" x 2 3/4" x 3 3/4"
G	(1) Back Rail (maple)	3/4" x 4" x 30"
H	(2) Side Rails (maple)	3/4" x 4" x 19 1/4"
I	(4) Mounting Cleats (maple)	3/4" x 2 5/8" x 19 1/4"
J	(2) Drawer Front & Back (maple)	1/2" x 3 1/2" x 25"
K	(2) Drawer Sides (maple)	1/2" x 3 1/2" x 18 1/2"
L	(1) Drawer Bottom (plywood)	1/2" x 18" x 25"
M	(1) False Front (maple)	3/4" x 3 15/16" x 26 3/8"
N	(1) Cutting Board Top (maple)	2" x 22 1/2" x 32 1/2"

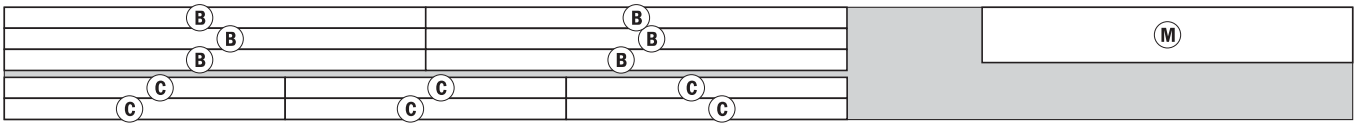
HARDWARE & SUPPLIES

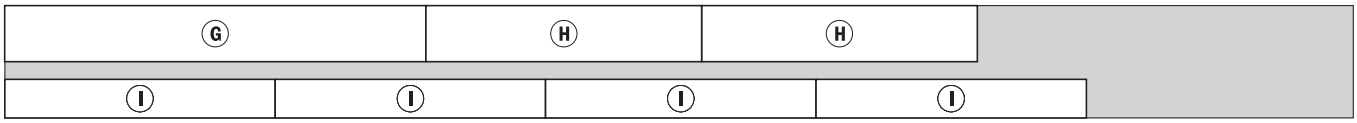
- (2) Formica "Corrugated" Plastic Laminate - cut 17" x 27"
- (2) 18" Full-Extension Drawer Slides w/Screws
- (4) 3" Double-Locking Swivel Casters
- (94) #8 x 5/8" Stainless Steel Screws
- (24) #8 x 1" Stainless Steel Screws
- (14) #8 x 1 1/2" Fh Woodscrews
- (21) #8 x 1" Fh Woodscrews
- (16) #10 x 1" Ph Sheet Metal Screws w/1/4" Washers
- (2) #8 x 1 1/2" Ph Sheet Metal Screws w/1/4" Washers
- 8 3/4" Bar Pull (Pearl Nickel Finish) w/Screws

CUTTING DIAGRAM

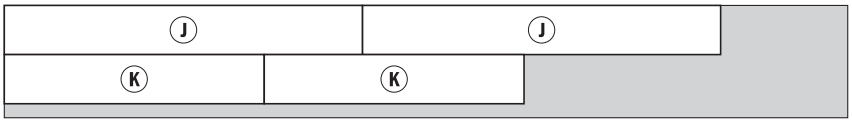


3/4" x 8" x 72" (Qty: 5)





3/4" x 8" x 96" (Qty: 2)



1/2" x 8" x 60" (Qty: 1)

WORKBENCH®

KITCHEN ISLAND CART

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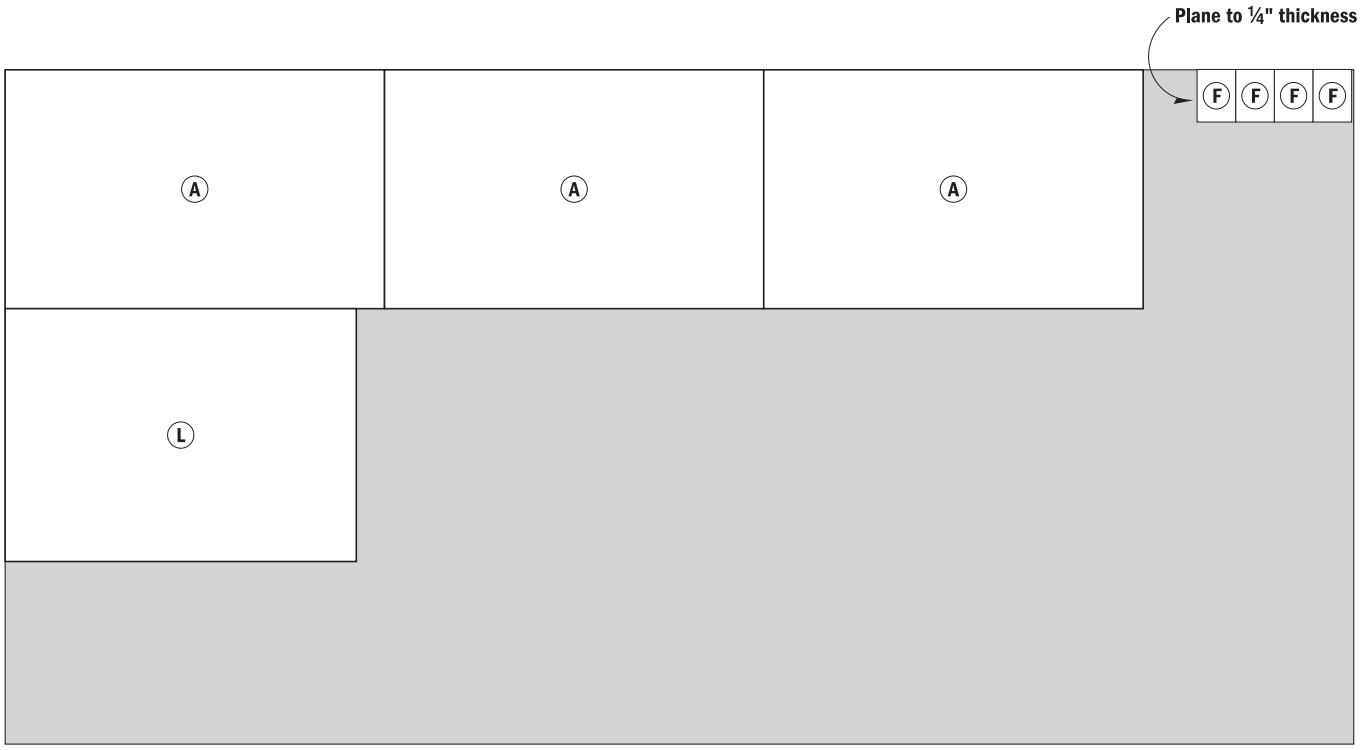


½" Plywood - 48" x 96" (Qty: 1)

Three-in-one Sawhorses

Forget about one-trick ponies. This sure-footed steed is a sawhorse, stepstool, and tool tote — all in one.

Right out of the gate, you can see this is no ordinary sawhorse. From its large worksurface that has plenty of room for clamping, to the spacious tool storage tray underneath, this is one versatile sawhorse.

And take a look at those metal legs. They're strong as a Clydesdale when locked into the sawhorse. But when it's time to saddle up and ride into the sunset, the legs can be removed for easy storage *(Inset Photo)*. And you'll be surprised how easy they are to make from common electrical conduit.

Even with the legs stored, this sawhorse can still pull its weight *and* support yours as a stepstool *(Photo A, page 43)*. And with a handhold cut right into the top, leading this pony from one place to another is a simple one-handed operation *(Photo B)*.

Best of all, you can build a whole stable of these sawhorses in just a weekend's work. All that's required are some common materials, a few basic tools, and a bit of horse sense.

► **The removable legs store under the sawhorse.**

MATERIALS & HARDWARE

SAWHORSE

A (4) End Cap Panels (ply)	1/2" x 14 7/16" x 12"
B (4) Inner Leg Guides (hw)	3/4" x 1 11/16" x 9 13/16"
C (4) Outer Leg Guides (hw)	3/4" x 1 11/16" x 12 7/16"
D (2) Filler Blocks (hw)	1 3/16" x 2 1/2" x 7 13/16"
E (2) Tray Sides (hw)	3/4" x 4" x 35 1/8"
F (1) Tray Bottom (ply)	1/2" x 13 1/8" x 31 1/4"
G (1) Keeper Block (hw)	3/4" x 2" x 13 11/16"
H (1) Top (hw)	1 1/2" x 10 x 38"
I (4) Legs (electrical conduit)	1" x 30"

HARDWARE

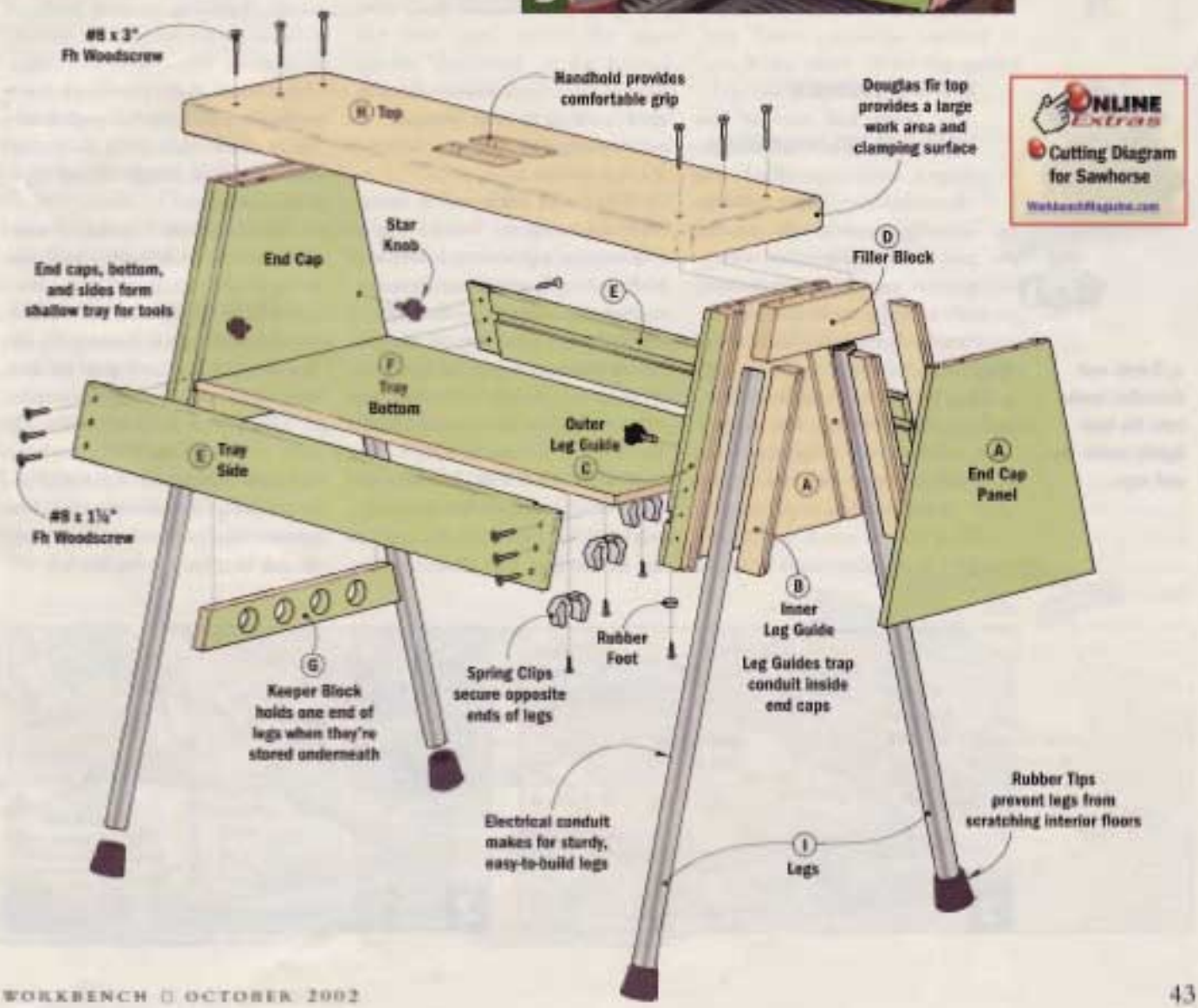
- (4) 5/16" T-nuts
- (4) 5/16" x 1" Star Knobs
- (4) Spring Clips with Screws
- (4) Rubber Leg Tips
- (6) #8 x 3" Fh Woodscrews
- (12) #8 x 1 1/4" Fh Woodscrews
- (4) Rubber Feet

◄ This sawhorse doubles as a handy stepstool. Its large, sturdy worksurface and no-slip feet create a stable platform while you work.

◄ With the legs tucked underneath, a shallow tray and built-in handhold turn these sawhorses into great tool totes.

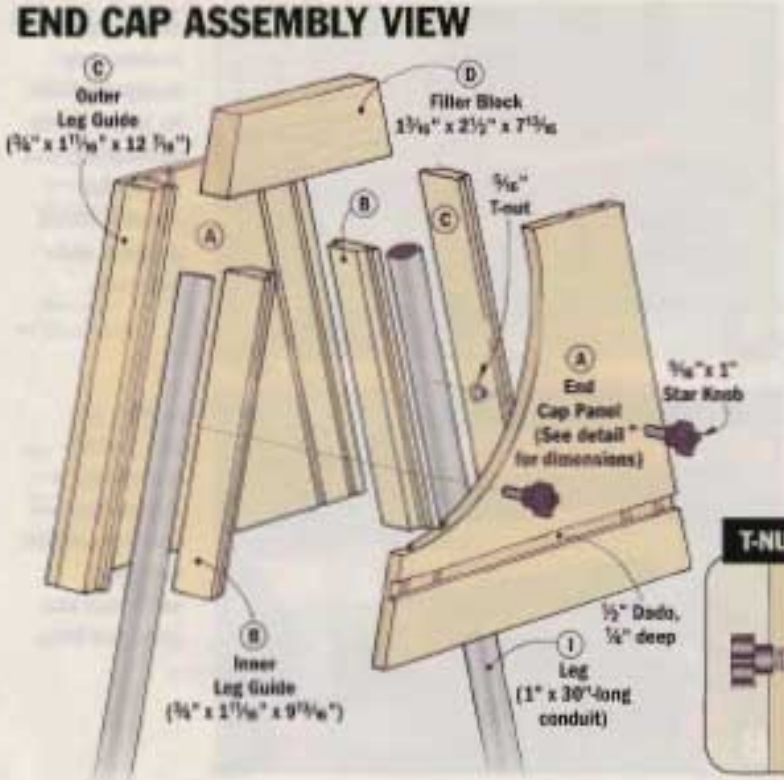
CONSTRUCTION VIEW

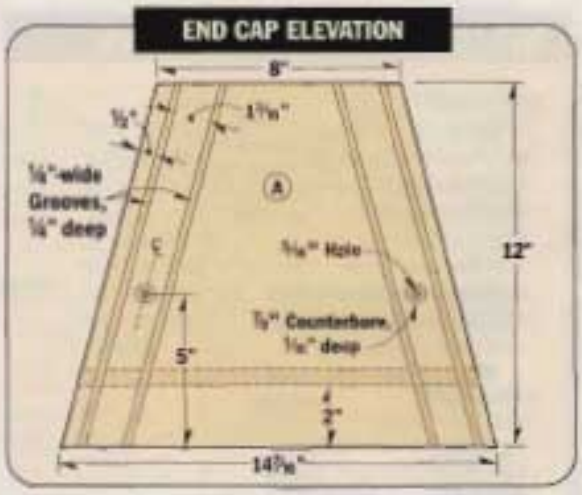
Overall Dimensions: 38"W x 23"D x 33 1/2"H

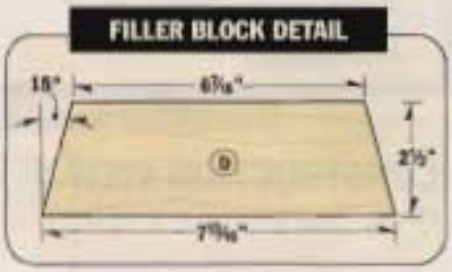


ONLINE Extras
Cutting Diagram for Sawhorse
WorkbenchMagazine.com

END CAP ASSEMBLY VIEW







▲ **T-nuts and threaded knobs hold the legs tightly inside the end caps.**

END CAP OVERVIEW

The heart and soul of this sawhorse is a pair of wedge-shaped end caps *(End Cap Assembly View)*. These end caps actually consist of several pieces that, once assembled, play an important part in every feature of the sawhorse.

First, each end cap has a set of four wood blocks inside it (leg guides) that form a couple of channels for the metal legs. For strength and stability, it's important that these channels are sized so the legs slide in without any slop.

With that in mind, you'll want to use the measurements provided here as guidelines and use the conduit itself as a true measure for establishing the distance between the leg guides.

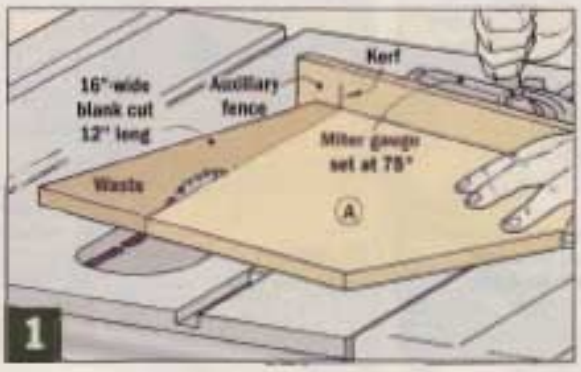
When the sawhorse is assembled, each leg is "locked" in its channel by tightening a threaded knob into a T-nut *(T-nut Detail)*.

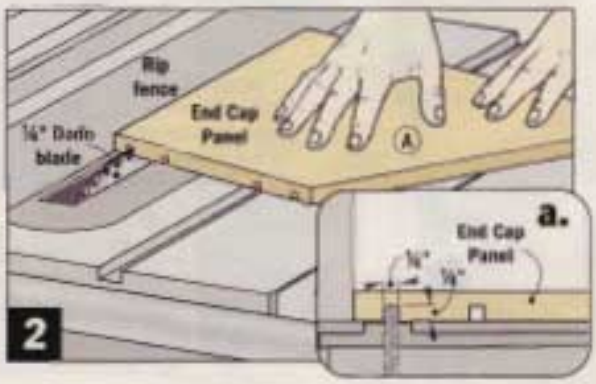
Another important function of the end caps is to support the plywood tray bottom of the sawhorse. This piece, along with the tray sides, form the storage area inside the body of the sawhorse.

END CAP PANELS. Each end cap is enclosed with two panels (A) made of ½" plywood. As you can see in the *End Cap Assembly View*, the sides of these panels are cut at an angle. I laid out the angled sides on an extra-wide (16") blank that's cut to a final length of 12" *(End Cap Elevation)*.

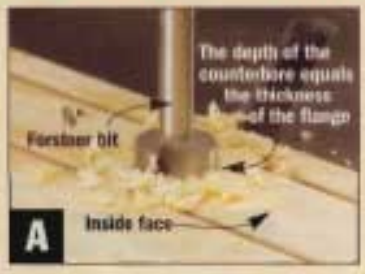
The best way I found to make the angled cuts is with a table saw using a miter gauge and an auxiliary fence *(Fig. 1)*. By making a kerf in the fence, and then aligning the layout lines on the blank with the kerf, cutting identical panels is a snap.

GROOVES FOR GUIDES. The next step is to cut four grooves in the inside face of each piece *(Fig. 2 and End Cap Elevation)*. These grooves accept the tongues that will be cut later on the leg guides.





T-NUT INSTALLATION



T-nuts in each end cap accept threaded knobs that tighten against the legs of the sawhorse and "lock" them in place.

The T-nuts have to be flush (or slightly below) the surface of the end cap panels. Otherwise, the legs will catch on the nuts when you slip them into the end caps.

So you'll need to drill a shallow counterbore for each T-nut *(Fig. A)*.

Next, to accept the barrel of the T-nut, drill a $^{5}/_{16}$" hole. Then flip the panel over and draw the T-nut into the plywood using a bolt, nut, and washer *(Fig. B)*. The washer prevents the wrench from marring the surface.

Since the T-nuts will be inaccessible once the end caps are assembled, I wanted to make sure they wouldn't loosen up over time. So I covered the outer rim of the flange on each T-nut with epoxy *(Fig. C)*. Note: Be careful not to let the epoxy run into the threads of the T-nut.

Now, to avoid getting the pieces mixed up, set the panels aside in pairs. Then take one panel from each pair and cut a dado in the *inside* face to hold the tray bottom *(End Cap Elevation)*.

Next, install the T-nuts in those same panels. The process for installing the T-nuts is explained in the *T-nut Installation* sidebar above.

LEG GUIDES & FILLER BLOCKS

At this point, the plywood panels should be sitting in pairs with the epoxy curing on the T-nuts. That means you're ready to make the leg guides and filler blocks.

LEG GUIDES. Notice that there are two different lengths of leg guides in each end cap. The reason for the different lengths is that the *outer* guides run the full height of the end caps, while the *inner* guides "dead-end" at the bottom of a filler block.

To make the leg guides (B and C), start with an extra-long blank of $^{3}/_{4}$"-thick stock that's ripped to width. Now, cut a rabbet in both edges of the blank to form the tongues that fit into the grooves in the end cap panels *(Figs. 3 and 3a)*.

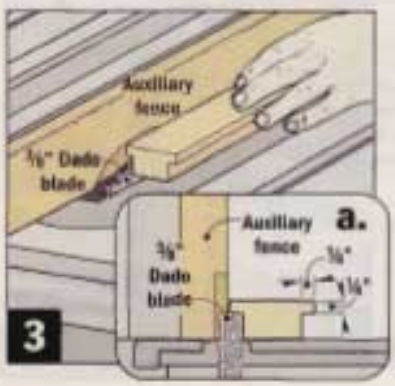
After the rabbets are cut, the next step is to cut the leg guides to length. Notice that the ends of each leg guide are beveled. I did this on the table saw with the blade tilted to 15° *(Figs. 4 and 4a)*.

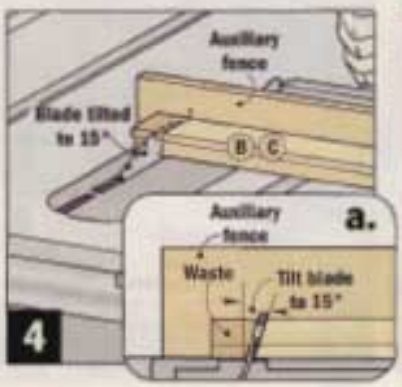
FILLER BLOCKS. The next step is to make a filler block (D) for each end cap. The filler blocks provide a mounting surface for the top, and they act as a stop for the legs. These pieces are mitered to match the angle of the leg guides *(Filler Block Detail)*.

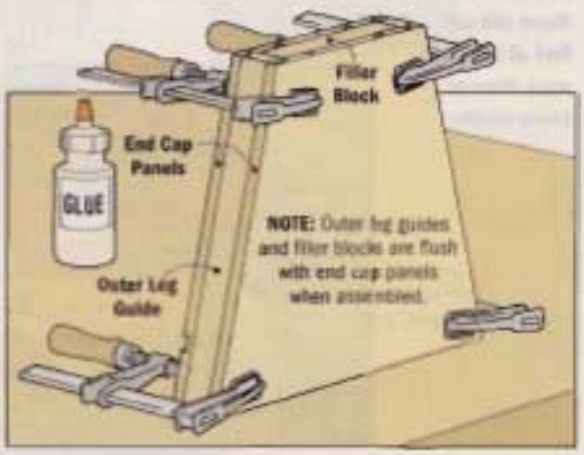
ASSEMBLING THE END CAPS

At this point, it's just a matter of gluing up the end caps.

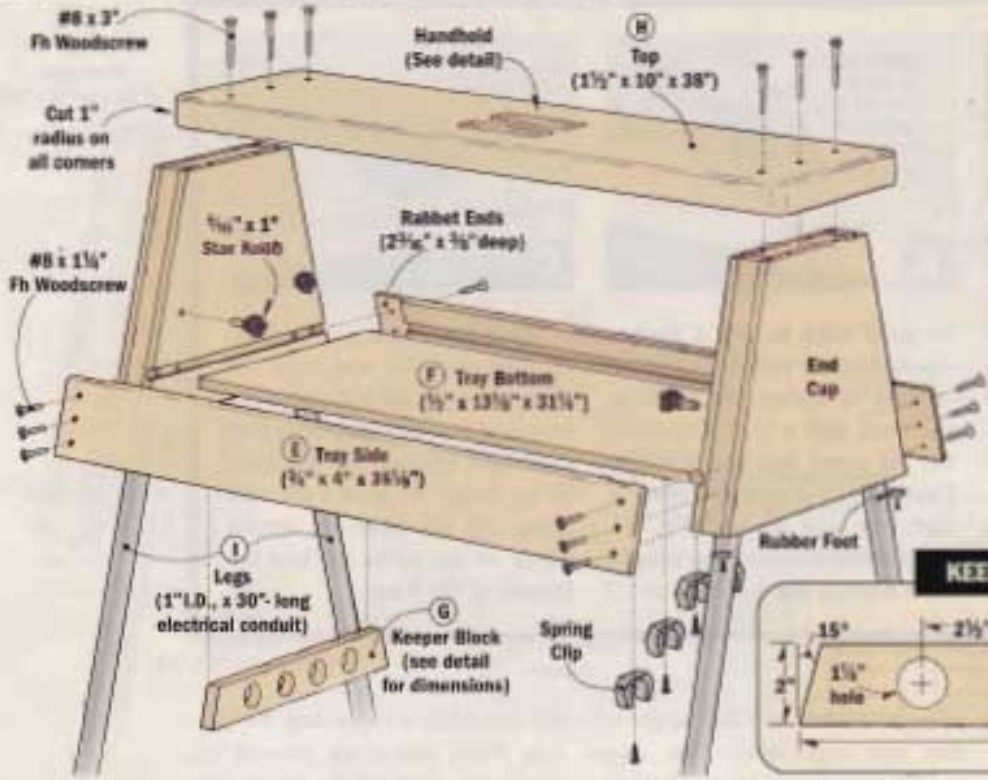
Start by gluing the outer leg guides (the long ones) into the outside grooves in one of the end cap panels. Next, glue and clamp the filler block between the guides. Now glue the short leg guides into the inside grooves in the end cap. Finally, glue the remaining end cap panel to the assembly. Clamp the entire assembly together while the glue dries, as shown below.

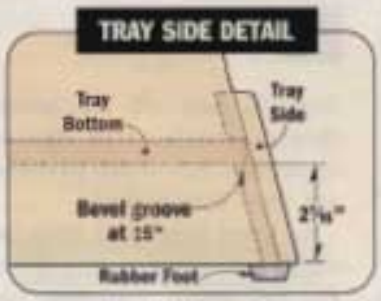


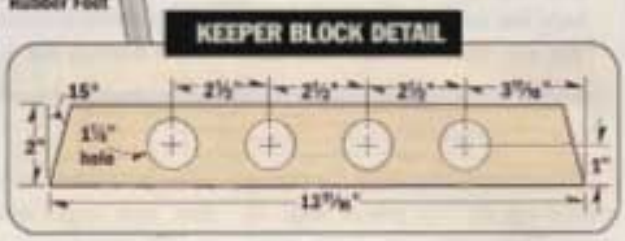




SAWHORSE BODY ASSEMBLY VIEW







▲ The electrical conduit, spring clips, rubber feet, and rubber tips used for the sawhorse are all items you can find at any hardware store or home center.

SAWHORSE BODY

Now that the end caps are assembled, you can get to work on the body of the sawhorse *(Sawhorse Body Assembly View)*. The body starts with the two end caps, a plywood tray bottom, and two solid-wood sides. These pieces form the tool tray in the sawhorse.

Then, mounted underneath the sawhorse is a keeper block (G) and spring clips for storing the legs.

The final piece of the sawhorse body is a solid-wood top that's cut from a 2x12. Besides being a wide, sturdy worksurface, this top also provides a handy clamping surface.

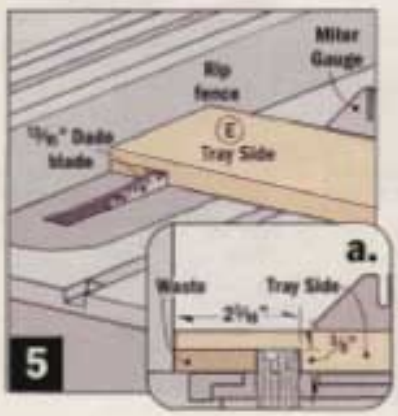
BUILDING THE BODY

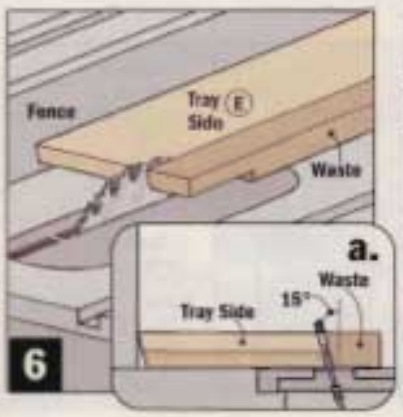
The place to begin working on the body is with the tray sides (E). These pieces are made from solid fir, and although they look pretty basic, there are several steps to making them.

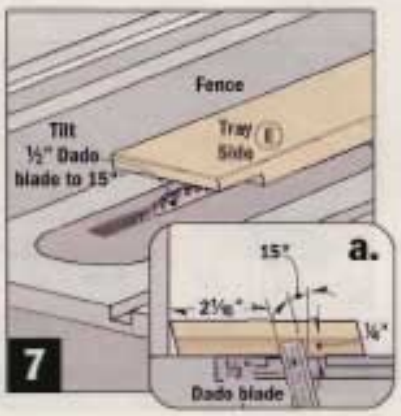
First, cut the pieces to length and rip them 6" wide. (You'll rip them to finished width later.) Next, cut a wide rabbet in the ends of each tray side to fit over the end caps *(Figs. 5 and 5a)*.

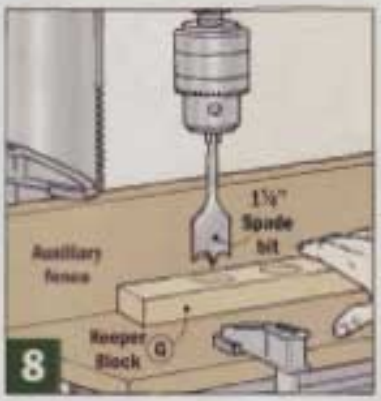
Now you can rip the tray sides to final width. But in order to match the angle of the end caps, these need to be *beveled* ripped. To do this, tilt the saw blade to 15° and rip one edge. Then turn the board edge-for-edge so it looks like the setup shown in *Figures 6 and 6a* and rip the other edge.

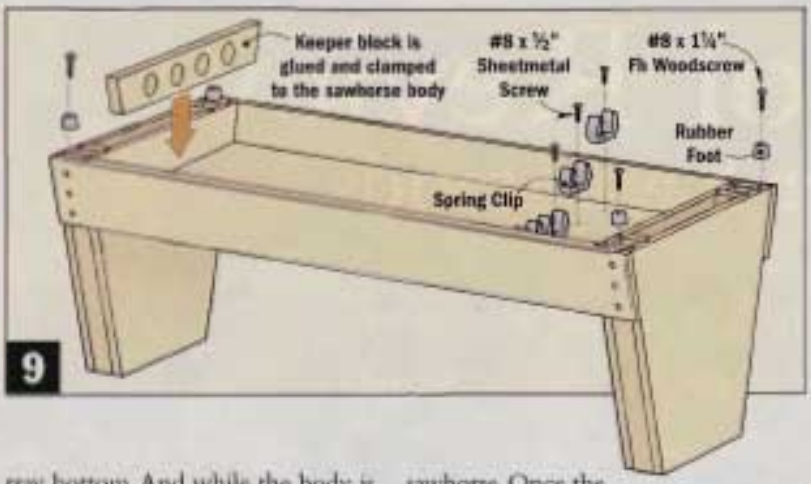
The final step in making the tray sides is to cut a groove in them to hold the tray bottom. This groove also needs to be cut at 15° to match the shape of the end caps. The only difference is this time you're making the cut with a dado blade *(Figs. 7 and 7a)*. This is an











unusual operation, but because the angle is so slight and the groove is so shallow, it's safe and easy to do.

The next piece of the body is the tray bottom (F). Cut this piece to size, again bevel ripping it at 15°.

Now you can assemble the pieces of the body. Start by gluing the tray bottom into the dado in the end caps. Then glue and screw the tray sides to the end caps.

LEG STORAGE

With the body assembled, it's easy to turn the space underneath the tray bottom into storage for the legs. All it takes is a shop-made keeper block (G) and a few ordinary spring clips.

The keeper block is a piece of ¾"-thick fir with holes drilled in it for the legs. To make the keeper block, rip it to width and miter it to length. Then drill four holes in the block for the legs *(Keeper Block Detail)*. Finally, glue and clamp the block to one of the end caps *(Fig. 9)*.

To support the other end of the legs, attach four spring clips to the tray bottom. And while the body is upside down, mount a rubber foot at each corner of the sawhorse. These rubber feet keep the sawhorse from scratching the floor when you use it as a stepstool, and they also make it slip-proof.

SADDLE YOUR SAWHORSE

The top of a sawhorse takes a beating. So I cut the top (H) from a Douglas fir 2x12 to make it sturdy. Then I attached it with woodscrews (no glue) so it's easy to replace when it gets beat up.

To make the sawhorse top, cut it to length and rip it to width. Then cut a 1" radius at each corner of the top with a jig saw.

The next step is to cut the handholds in the top *(Handhold Detail)*. Lay out the handholds on the board and drill starter holes. Then cut between the holes with a jig saw *(Fig. 10)*. Now file and sand the cutouts smooth and round over all the edges *(Fig. 11)*. Easing the edges this way keeps them from digging into your hand when you lift the sawhorse. Once the handhold is complete, attach the top to the sawhorse with woodscrews in counterbunk shank holes.

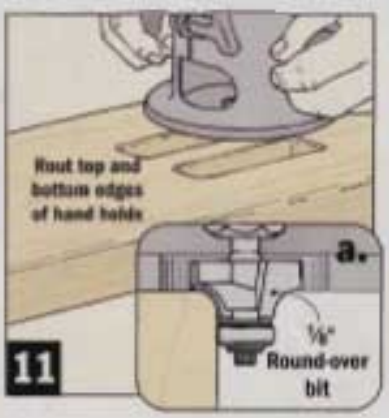
GET SOME LEGS UNDER IT

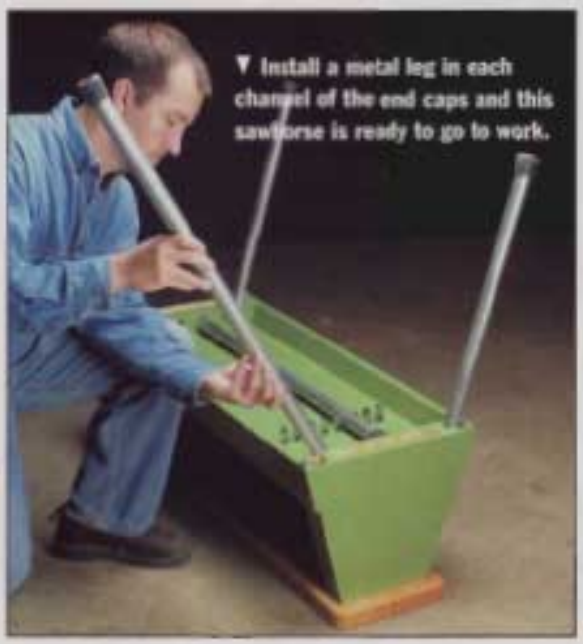
The metal legs (I) on this sawhorse (made from standard electrical conduit) are strong, but still lightweight and easy to store.

Making the legs is as simple as cutting them to length with a tube cutter *(Margin Photo)*. A hacksaw will also work, though you'll need to file the rough edges. Now shoe your sawhorse by sliding a rubber tip over the end of each metal leg.

Finally, slip the conduit legs into the end caps and tighten the star knobs to lock the legs in place. As a final touch, I applied a liberal coat of penetrating oil to the top for protection.

▲ **An ordinary tube cutter makes quick, clean cuts in the 1"-dia. conduit used to make the sawhorse legs.**





▼ **Install a metal leg in each channel of the end caps and this sawhorse is ready to go to work.**

WORKBENCH® SAWHORSE

Issue 273 Volume 58 Number 5 October 2002

MATERIALS LIST

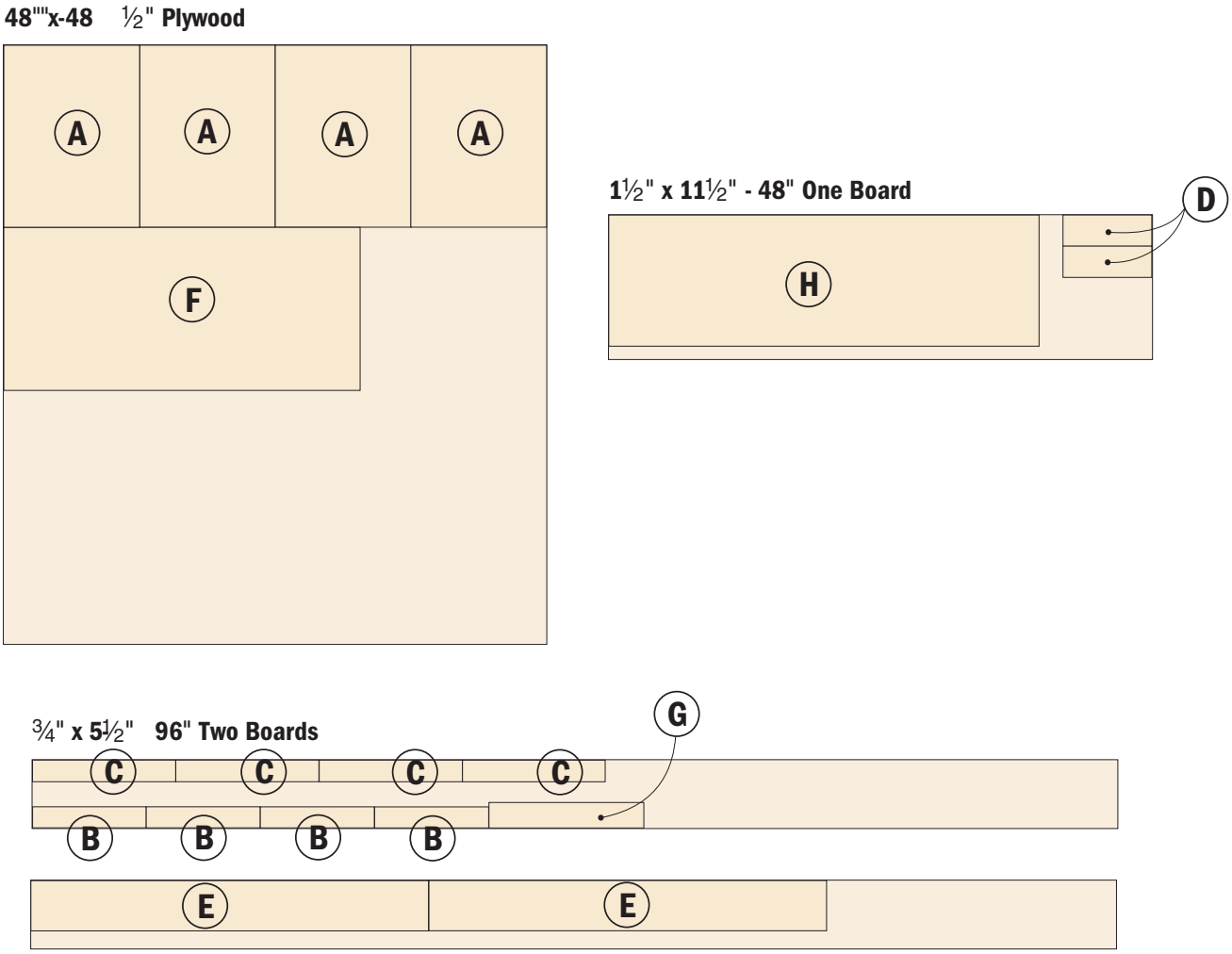
SAWHORSE

A (4) End Cap Panels (ply)	$\frac{1}{2}$" x $14\frac{7}{16}$" x 12"
B (4) Inner Leg Guides (fir)	$\frac{3}{4}$" x $1\frac{11}{16}$" x $9\frac{13}{16}$"
C (4) Outer Leg Guides (fir)	$\frac{3}{4}$" x $1\frac{11}{16}$" x $12\frac{7}{16}$"
D (2) Filler Blocks (fir)	$1\frac{3}{16}$" x $2\frac{1}{2}$" x $7\frac{13}{16}$"
E (2) Tray Sides (fir)	$\frac{3}{4}$" x 4" x $35\frac{1}{8}$"
F (1) Tray Bottom (ply)	$\frac{1}{2}$" x $13\frac{1}{8}$" x $31\frac{1}{4}$"
G (1) Keeper Block (fir)	$\frac{3}{4}$" x 2" x $13\frac{11}{16}$"
H (1) Top (fir)	$1\frac{1}{2}$" x 10 x 38"
I (4) Legs (electrical conduit)	1" x 30"

HARDWARE

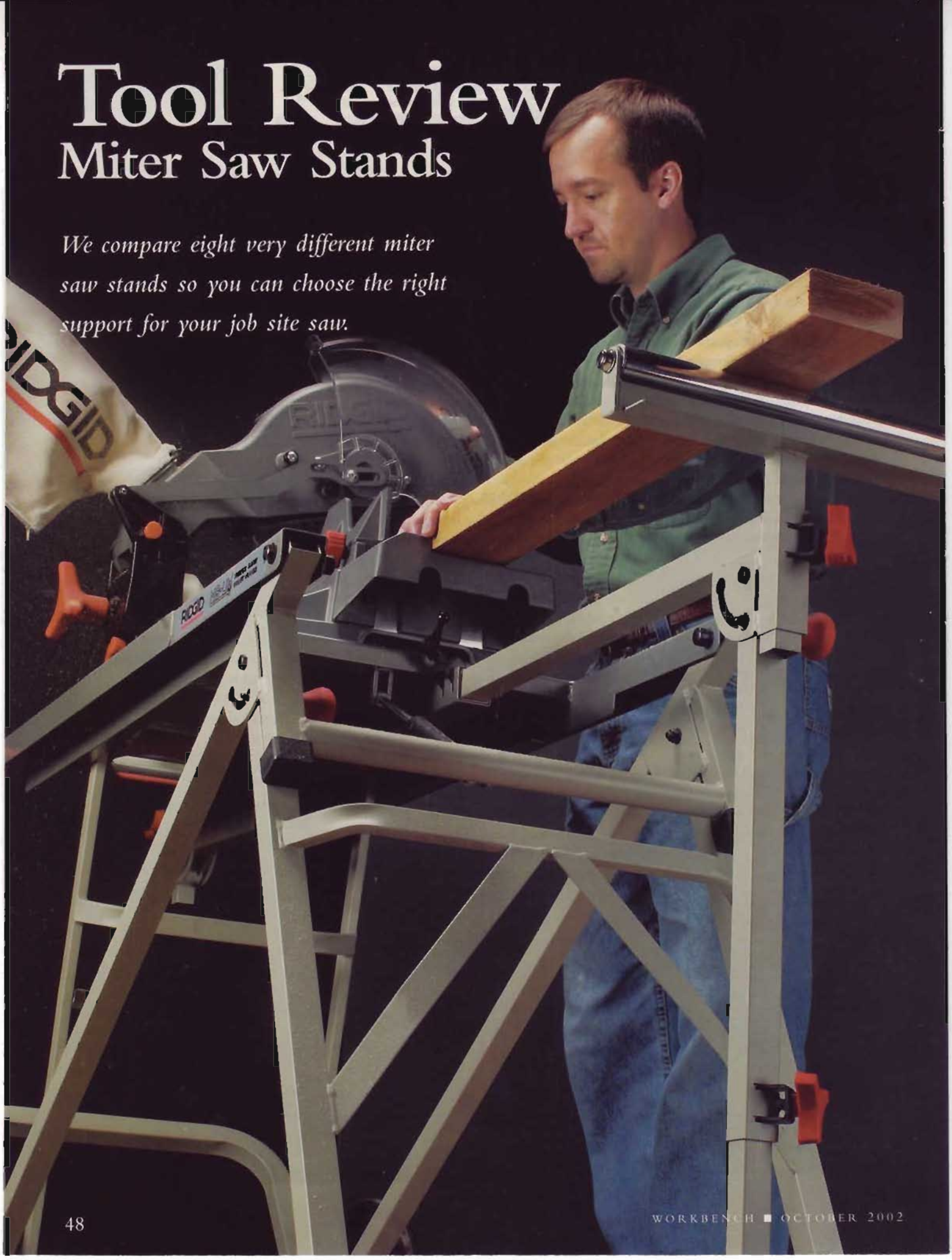
- (4) $\frac{5}{16}$" T-nuts
- (4) $\frac{5}{16}$" x 1" Star Knobs
- (4) Spring Clips with Screws
- (4) Rubber Leg Tips
- (6) #8 x 3" Fh Woodscrews
- (12) #8 x $1\frac{1}{4}$" Fh Woodscrews
- (4) Rubber Feet

CUTTING DIAGRAM



Tool Review
Miter Saw Stands

We compare eight very different miter saw stands so you can choose the right support for your job site saw.



Not too long ago, I built a wood privacy fence around my backyard. As you can imagine, my miter saw was one of the most important tools during this project. Between chopping fence posts to length, cutting dog ears on the cedar slats, and making support wedges for the framework, the old miter saw was getting quite a workout.

Because of its crucial role, the saw occupied a place of some esteem, directly in the center of the yard. No further from one section of fence than any other, but also not any closer.

The saw was planted firmly on the most stable sawhorse I own. Then, to brace the long boards I was cutting, I had four more sawhorses set up as stock supports — two on each side of the saw with several spacer blocks to raise them to the level of the saw table.

Needless to say, setting up the saw was a project in itself. And since a privacy fence isn't a one-day job, I got to repeat the process for three days in a row.

A BETTER SOLUTION

Well, despite the makeshift miter saw stand, the fence turned out great. But I'd barely driven the last screw when I got word we'd be doing a review of *real* miter saw stands. You know the kind I mean. They're built with sturdy metal frames that fold down so you can move them easily and they have features like built-in stock supports, stop blocks, and cord wraps. In other words, they're everything that a group of sawhorses is not. So, with my fence project fresh in my mind, I set out to evaluate these stands based on their stability, stock support, mobility, and extra features. The stands were also judged on their overall quality of construction and, of course, price.

One of the most interesting things that came out of this comparison is how very different these stands are from one another. Each manufacturer has its own idea of how to best accommodate a miter saw. To get an idea of the differences, take a look at the *Features Comparison Chart* below.

And because these stands are so different, we didn't try to choose a "one-size-fits-all, best-of-class" stand. Instead, we matched each stand to a particular scenario where it would serve best. Those recommendations can be found in the individual write-ups.

FEATURE COMPARISON CHART

Model/ Make	Ridgid MS-UV	Delta 50-155	DeWalt DW723	TracRac TracMaster	Milwaukee 48-08-0450	Rousseau HD2950	Trojan MS2000	StandRite 4024
Price	$199	$230	$230	$249	$170	$576*	$360	$205
Open Size	25"x96"x27"	35"x108"x29"	33"x150"x29"	34"x93"x32"	36"x114"x27"	36"x144"x27"	35"x156"x28"	39"x104"x15"
Weight w/o saw	78 lbs.	66 lbs.	35 lbs.	30 lbs.	56 lbs.	72 lbs.	60 lbs.	40 lbs.
Stock Support	8 ft.	9 ft.	16 ft.	8 ft.	10 ft.	12 ft.	13 ft.	10 ft.
Stop Blocks	No	Yes	Yes	Yes	No	Optional	No	No
Scale	No	No	No	No	No	Optional	No	No
Wheels	12"	13"	None	None	None	10"	10"	None
Cord Wrap	No	Yes	No	No	No	No	No	No
Hold-Down	No	Yes	No	No	No	No	No	No
Fence Extension	No	Yes	No	No	No	Optional	No	No
Table Extension	No	Yes	No	No	No	Optional	No	No

*Includes optional support wing and stop system. Base unit retails for $346.

RIDGID MS-UV Ridgid.com 800-474-3443

This miter saw stand is a brand new product from Ridgid, though considering the outstanding quality of this unit, you'd think they'd been building them for years.

This stand came out of the box 90 percent ready for work. All I had to do was attach the wheels, connect the stock supports, and mount the miter saw in pre-drilled holes. (For other than Ridgid saws, you'll need to drill mounting holes.) It took less than 15 minutes to assemble the stand and head to the job site.

And speaking of the job site, the Ridgid stand adapts well to any environment. First off, the large wheels make it easy to pull over rough terrain, curbs, stairs, or whatever else gets in the way. And once you've reached your destination, you've got a couple of choices of how to use the stand.

If you've got a few short pieces to cut, you can just set the stand flat on the ground. A short pair of legs on the end of the stand opposite the wheels holds the unit level. And when the stand is folded down, the stock support rollers are still usable.

For more involved projects, expanding the MS-UV is a breeze. Just fold down the legs opposite the wheels. Then fold down the wheels themselves.

A nice feature here is a hydraulic shock under the saw table that actually provides some lift assistance *(see photo in margin)*. The shock also helps prevent the stand from slamming closed when you fold the stand down.

When working with long boards, the stock supports can be extended out to an overall length of 8 feet.

When the work is done, the saw knocks down to roughly the size of a two-wheel dolly, and it can be stored vertically in a corner of the garage or shop.

Considering the ease of setup, rugged construction, useful features, adaptability, and portability of this stand, I can't imagine anyone who wouldn't be thrilled with it all for under $200.

▲ **A hydraulic shock attached to the frame of the Ridgid MS-UV lightens the load during setup.**

◀ **This stand moves easily and unfolds quickly into a sturdy unit with up to 8 feet of stock support.**

DEWALT DW723 DeWalt.com 800-433-9258

Here's a good miter saw stand for a *busy* DIY'er. Don't have time for assembly? There's very little required with the DeWalt miter saw stand. Plan on moving around your job site quite a bit? This 35-lb. unit is an easy one-handed carry thanks to the built-in handle *(see Photos at right)*. And when the work is done, remove the saw from the stand with the quick-release levers, fold the legs up under the stand, and you're ready to go.

Of course, in between the setting up and knocking down, you'll no doubt want to cut some lumber. That's when you'll appreciate the 16 feet of stock support offered by the extendable beams. Each support also has a flip-up stop that makes repetitive cuts quick and exact *(see Photo at left)*.

Another useful feature of this stand is that the saw can be positioned anywhere along the main beam. That's accomplished with quick-release mounts that attach to the base of the saw. By squeezing a lever on each of the mounts, you can slide the saw along the beam to reposition it or remove it from the stand altogether.

▲ **The stock supports double as stop blocks on the DeWalt.**

DELTA 50-155 DeltaWoodworking.com 800-438-2486

Delta's miter saw stand strikes an excellent balance between being loaded with features and still being collapsible and portable.

It has fully adjustable roller stock supports, an aluminum fence and table extension with a stop block, stock hold-down, on-board cord wrap with quick release, and large all-terrain wheels for maneuvering on rough job sites.

The stock supports are particularly impressive. They can be adjusted quickly for height by sliding the roller up or down and for length by hooking an arm in one of three different positions.

The aluminum table and fence extension, although small, is helpful for squaring workpieces to the saw. And an aluminum stop block comes in handy for making repetitive cuts.

Another thoughtful feature, which we found only on this stand, is a cord wrap. Considering that this stand is designed to be stored with the saw attached, it's nice to have a place to wrap the cord. Even better, you don't have to unwrap the cord when you're ready to use it. Simply rotate the retainer out of the way and pull the cord off for service *(see Photo below, right)*.

Even with all the features on this unit, the stand still folds down into a relatively compact size for transportation and storage. And when it's folded, moving the stand around is easy thanks to the large wheels and foam padded handle *(Margin Photo)*.

The trade-off for this ingenious stand is that it's a bit complicated to assemble and use.

It took me nearly three hours to unpack and assemble the unit. And once it was together, I suffered a couple of knocked shins and pinched fingers before I learned the intricacies of setting the stand up while staying out of the way of all the moving parts.

Overall, this stand has excellent features, a reasonable price (about $230), and superior construction.

As long as you've got the patience to assemble it and learn its mannerisms, you'll have a miter saw stand adaptable to any project you take on.

▲ A cushioned hand grip takes the pain out of moving this stand around the job site.

▲ It's hard to believe that all the features on the Delta stand can be condensed into such a small package.

▲ The roller supports adjust rapidly to hold all lengths of board.

▲ An on-board cord wrap stores the cord neatly and releases it instantly.

Because the saw can be repositioned anywhere along the beam, it allows more flexibility for tailoring the miter saw to a particular task. For instance, with the saw positioned all the way to the right end of the beam, the stand has over 12 feet of stock support to the left of the saw. Then you can position the right stock support and stop block for making repetitive cuts from a few inches in length to nearly 5-ft. long. With the saw centered on the beam, there's 8 feet of stock support on both sides of the saw.

Because of its simple but capable design, this stand became the fast favorite of our *Workbench* project coordinator.

He spends lots of time running between projects, tying up loose ends. The last thing he wants to do is waste time setting up tools to complete just a few details. He has reported that lifting this stand in and out of the truck is no problem, and the quick setup and knock-down lets him spend more time working and less time assembling.

The stand is competitively priced at around $230. And despite having fewer features than other stands in this price range, it's a good investment for the DIY'er on the move.

▲ The DeWalt's lightweight construction and built-in handle leave one hand free for carrying the miter saw as you move from place to place.

◀ The saw mounts have quick-release levers for rapidly repositioning the saw on the beam.

MILWAUKEE 48-08-0450 mil-electric-tool.com 262-781-3600

▲ **Hand cranks lock and unlock the saw for relocation or removal.**

There are three words to describe Milwaukee's Heavy-Duty Work Center — simple, rugged, affordable. It's a good combination for anyone who just wants to get some work done without being bothered by a lot of setup.

This stand is essentially a galvanized steel sawhorse with two cylindrical stock suports on each side of the saw.

The stock supports are designed to be set at a specific height and left alone. That should only be a problem if you plan on using more than one saw with the stand. The supports extend to give the stand a wingspan of just under 10 feet.

To make the most out of the stock support capacity, the miter saw can be positioned anywhere along the length of the beam. This is done by loosening the mounting brackets with a crank handle *(see Photo at left)*.

For storage, the saw comes off using the same crank handles. Then the legs of the stand fold underneath the body *(see Photo below)*.

The heavy-duty steel construction of this stand makes it a chore to move. Particularly when you consider you have to make a second trip for the saw or carry each piece with one hand.

This unit is best suited to someone who wants a rugged stand without paying much money ($170).

◄ **Although the Milwaukee is compact when folded, it's quite heavy. You may want to make a second trip to get the miter saw.**

TRACRAC TRACMASTER TracRac.com 800-501-1587

TracRac's TracMaster miter saw stand is a no-nonsense stand with just enough features to make it helpful for most cuts.

The TracMaster is a lightweight aluminum stand with a sliding saw mount made of MDF. The stand is supported by aluminum legs that are capped with rubber feet.

One of the legs telescopes to help level the stand on uneven ground *(see Photo below, left)*.

Setting this stand up or knocking it down is lightning fast thanks to push-button leg locks that release the legs to splay out and support the stand, or tuck underneath the main beam for storage.

The stand comes pre-assembled with a single stock support on the left-hand side. Instructions are included for mounting the support on the right side, if you choose. Also, an additional stock support is available as an option if you want supports on both sides of the saw. The stock support also has a flip-up work stop for making repetitive cuts.

With the stock support fully extended and the miter saw positioned at the opposite end of the beam, the stand has 8 feet of stock support capacity.

In general, this stand is light on features but heavy on convenience and portability. The price is a bit high (around $250), considering other, similarly priced stands have more features. But it's still a decent stand that will earn its keep.

► **An adjustable leg allows the TracMaster to adapt to uneven terrain.**

◄ **With the legs folded under and the saw removed, the TracMaster is compact and lightweight. It sets back up in just a few seconds.**

ROUSSEAU HD 2950 RousseauCo.com 800-535-3416

This stand, shown here with an optional support wing and stop system, is an all-inclusive stand that's definitely at home in a shop. But on a job site it becomes a bit much to move because of its massive size and elaborate set-up and knockdown procedures.

The basic stand consists of a fixed mounting surface for a miter saw that's supported by two folding legs. One leg sits on a pair of 10" pneumatic tires. These same legs have adjustable levelers for setting the stand up on uneven ground.

Also included in the base package are two roller work supports that give the stand an overall stock capacity of 12 feet.

The basic stand folds into an easy-to-roll, two-wheel cart that lets you leave the saw mounted.

Moving the stand becomes more difficult when you add the support wing and stop system, as we did. These options add quite a bit to the setup time and make moving the stand a pretty good workout *(see Photo below)*.

However, once the stand is in place and ready for action, these options pay off in usability.

For a job site saw, the basic stand is a decent, though pricey, choice ($346 before options). With the support wing and stop system added, this stand becomes a bit too cumbersome if you plan to move the saw frequently.

▲ **Dual scales and dual stop blocks make the Rousseau easily adaptable to a wide range of board lengths.**

◀ **The basic stand folds down, with the saw mounted, into a mobile cart. The support and stop options are a bit of a burden to move.**

TROJAN MS2000 TrojanTools.com 800-745-2120

The straightforward design and setup of the Trojan miter saw stand make it an appealing choice for a miter saw that needs to be truly mobile. A good application would be when you're moving from room to room installing molding, for example.

There are no extras on this unit. It delivers just what you need to make your cuts and move on — a steady platform, 13 feet of stock support, and a collapsible unit that rolls on pneumatic tires.

Strangely enough, they've priced this unit as though it were overflowing with extras ($360). So, in a nutshell, you have to pay more and get less if this is your choice.

◀ **A simple and compact design may not be enough to justify the high price of the Trojan.**

STAND-RITE 4024 Standrite.com 604-936-5878

Standrite's unique miter saw stand folds into a large suitcase-like configuration during downtime, and then deploys into a long stand with large stock support surfaces when the work begins.

While this stand is certainly capable, it didn't impress me for several reasons.

Setting the stand up is more difficult than most. Also, the saw needs to be shimmed to match the stock support height and the single leg underneath each stock support was a bit flimsy. Finally, there are no extra features.

Considering the price tag on this stand ($205), it's hard to recommend it.

▲ **Easy to carry, hard to set up, and expensive. Not the best choice.**

Window Shopping

Thinking about buying new windows for your home? Knowing the answers to the most commonly asked questions will save you time and money.

On a square-foot basis, windows are among the most valuable real estate in your home. That's why, when shopping for replacement windows, it's essential that you take the time to evaluate what you need — and what you want — from your new windows. Then you'll have to consider all the options available to decide how to best fill those needs and wants.

Right off the bat, one of the big decisions is whether to buy a *replacement* window, or a *window* replacement. I know, it sounds a bit confusing, but it's really pretty simple. To help clear things up, take a look at the sidebar shown below.

To help you with your "window shopping," we talked to industry experts to put together this article. The window pros told us that most of their customers' concerns could be boiled down to a few basic questions. We've presented those questions, along with the best professional answers we could find, over the next few pages.

Q. Are the windows at "window stores" better than those at homecenters?

A. The biggest difference isn't an issue of quality. It has more to do with the services that are available. A knowledgeable employee at a home center can answer questions about windows and even offer some guidance in matching the windows to your installation. But often that's where the involvement ends.

Also, the windows sold in home centers are largely meant to be installed in standard-size openings that require little or no modification. (Home centers will order custom windows, though.)

Homecenter windows are generally of good quality and can often be purchased at bargain prices. These are a good choice for an advanced DIY'er.

Manufacturer's window stores tend be more full-service. The employees at these stores are window specialists.

Continued on page 58

REPLACEMENT WINDOW OR WINDOW REPLACEMENT?

▲ Replacement Window

Photo Courtesy of Pella Corporation

▲ Window Replacement

The biggest difference between these two types of windows is how they're installed.

REPLACEMENT WINDOW. Also called an "insert" or "pocket" replacement, this type of window fits into the existing frame *(Photo A)*. This means there's no need to remove interior casing and there's very little work on the exterior.

A replacement window is ideal if you want to upgrade a window without changing its size or location.

WINDOW REPLACEMENT. If you want to enlarge the size of a window, or get a different style of window, you're looking at a window replacement *(Photo B)*.

A window replacement requires removing the existing window down to the rough framing to install the new window.

They will often come to your home and measure the openings to ensure the best possible fit for your installation. In fact, some of these stores *insist* on installing the windows for you. Although a more costly route, window stores are a sure way to get a quality window installation.

Q. Do I have to use the same style of window that's already in my house?

A. Not at all. There are lots of window styles to choose from. And each style has its own unique strengths and weaknesses.

▲ Double-hung Window

▲ Slider Window

▲ Awning Window

▲ Casement Window

Photos Courtesy of Marvin Windows

DOUBLE-HUNG. The traditional styling of these windows continues to make them a popular choice. They offer decent ventilation during warm months by lowering the top sash, allowing the hot air near the ceiling to escape.

Even so, double-hungs offer less total ventilation than more modern window styles. And the obstructed view caused by the sash frames is another thing to consider.

CASEMENT. Casement windows are the leading choice in new homes, for several reasons. First, is ease of operation. Simply crank the window open to the amount you want. When the weather changes, crank it closed.

Second, when opened all the way, a casement window has twice the "breeze" capacity of a double-hung window the same size. Finally, casement windows are more airtight than double hung style windows.

One limitation of casements is that they can't be installed anywhere a protruding sash might get in the way (next to a driveway, for instance).

AWNING. The big advantage of an awning window is that you can have it open during rainy weather with little chance of moisture getting in the house. These windows also offer excellent ventilation and an unobstructed view.

Here again, these windows should not be installed where a protruding sash might be a problem.

SLIDER. These windows have a couple of benefits. First, they don't "invade" other spaces like casements and awnings. Second, they offer more flexibility in configuration than other styles. (Such as having both sashes partially open).

However, sliders suffer from an obstructed view and less ventilation when compared to casement and awning style windows.

Finally, for a look at other important considerations when selecting a window style, see the sidebar below.

Continued on page 60

WHAT TO LOOK FOR IN A WINDOW

▲ **The cranking mechanism of any window should move smoothly in the full range of the window operation.**

▲ **When fully open, a casement window needs enough frame clearance to allow for exterior window cleaning.**

▲ **Try out the tilt-in features of double-hung windows. Smooth operation is the sign of a quality window.**

▲ **Wood windows offer the ultimate in finish flexibility. But of these three versions, they also require the most maintenance.**

▲ **Clad windows (aluminum or vinyl) are a good option if you're after a low maintenance exterior that's stronger than the best paint.**

▲ **Vinyl windows (extruded members) require no maintenance on either side of the window. Interior finishing options are limited, though.**

Q. What's the difference between a wood window, a "clad" window, and a solid vinyl window?

A. The short answer is that wood windows are just that — solid wood. A clad window has a wood core that's covered by an aluminum or vinyl skin, or "cladding." Vinyl windows are made of solid, extruded vinyl.

Again, these window types have their own unique strengths and weaknesses. Here's some information on each type.

WOOD WINDOWS. For ages, the main material used for window construction has been wood *(Photo A)*. Wood remains a worthwhile choice because it offers more control over the final look once the window is installed in your house.

The downside to wood windows is that, compared to more modern materials, they are high maintenance. Wood windows require an annual inspection for decay or other problems and generally require painting every few years.

CLAD WINDOWS. The core ingredient of a clad window is still wood *(Photo B)*. What sets this type of window apart is that the outside is skinned with a very durable covering. This "cladding" is either aluminum or vinyl.

Aluminum absorbs impact better than vinyl (aluminum may dent, but vinyl will break). Not that you're going to be knocking the sashes around, but there are some environments where this could be important. Aluminum is also available in a wider array of colors and tends to stand up to sunlight without fading.

Vinyl-clad windows also have some positive qualities. For instance, they tend to be slightly more energy-efficient than aluminum. And all the seams in the vinyl are "welded", so there's little chance for water to get past the cladding to the wood sash underneath.

VINYL WINDOWS. Among the "wood free" window choices, windows made of solid vinyl extrusions have a lead in the category *(Photo C)*.

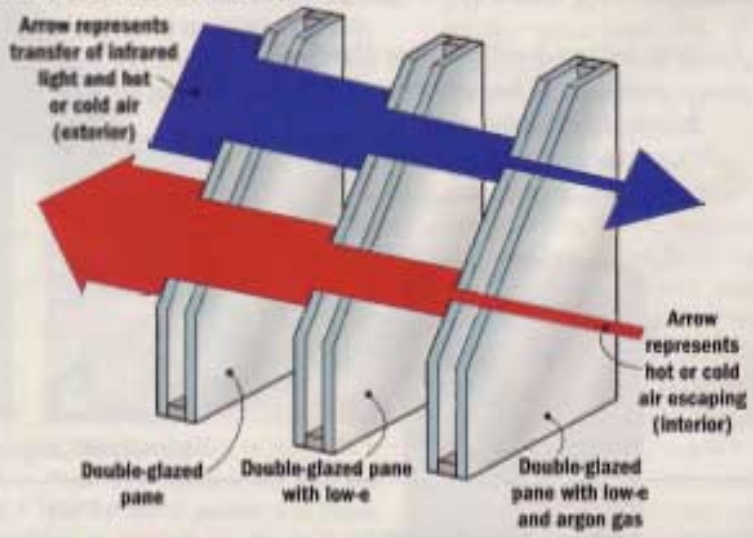
Solid vinyl windows are energy efficient and are virtually maintenance free, both inside and outside.

Q. When talking about window glass, I hear terms like "Low-e" and "Argon-filled." What do these terms mean and are they important?

A. Although these terms sound a bit like window jargon, you should definitely be listening for both to be included in the features

Continued on page 62

DOUBLE-GLAZING OPTIONS



of an efficient window. Both of these options are available in "double-glazed" windows. Double-glazed is window jargon for a window that has two-pieces of glass.

LOW-EMISSIVITY. Low-e means low emissivity. A Low-e coating is a virtually invisible metal coating on the inside faces of the glass. In short Low-e helps improve heating and cooling performance by reflecting interior conditions back into your home. Also, Low-e filters the infrared light that causes fading in interior decor *(Double-Glazing Options on page 60)*.

ARGON. Argon is a gas that's put between the panes of glass in a double-glazed window. This gas slows the transfer of heat or cold from outside better than a regular "dead-air" space.

As well as adding to energy efficiency, Low-e and argon have the added benefit of reducing condensation on window surfaces.

Q. Speaking of energy efficiency, I've heard that what qualifies as "energy efficient" changes depending on where you live?

A. That is absolutely correct. What makes for an energy-efficient window in Arizona wouldn't make the grade in Minnesota.

Unfortunately, the standards of window efficiency can be very confusing. But, you can take comfort that the people who sell windows are well aware of what fits best in your climate. (If they aren't, shop elsewhere.)

One of the references that window retailers use, and that's easy to understand, is the Energy Star label.

ENERGY STAR. The Energy Star label is a voluntary labeling program that covers all sorts of energy consuming products. The label for windows is a simple chart of the United States divided into three regions *(Energy Star map, above)*.

While the EPA administers the Energy Star program, the research and standards for the program come from the National Fenestration Rating Council (NFRC).

ENERGY STAR MAP

	U-FACTOR	SOLAR HEAT GAIN
NORTH (Blue)	.35 or Below	Up to 1
CENTRAL (Yellow)	.40 or Below	.55 or Below
SOUTH (Red)	.75 or Below	.40 or Below

The NFRC is a non-profit group of organizations involved with windows, such as window manufacturers, architects, and government agencies.

NFRC's primary mission is to measure, compare, and report the energy performance of windows, doors, and skylights *(NFRC Label)*.

A window is rated in four categories. The two categories that apply directly to residential windows are U-factor and Solar Heat Gain Coefficient (SHGC).

U-FACTOR. U-factor measures how well a product prevents heat from escaping. U-Factor ratings generally fall between 0.20 and 1.20. The lower the U-value, the greater a window's resistance to heat flow and the better its insulating value.

SHGC. The Solar Heat Gain Coefficient (SHGC) measures how well a product blocks heat caused by sunlight. SHGC is expressed as a number between 0 and 1. The lower the number, the less solar heat it transmits.

The chart below the energy star map gives you the numbers that are ideal for your area. Even so, windows approved for the same region can still vary greatly in quality, so it pays to make a thorough comparison before making your final decision.

NFRC LABEL

WINDOW MANUFACTURERS

Andersen Windows
andersencorp.com
800-426-4261

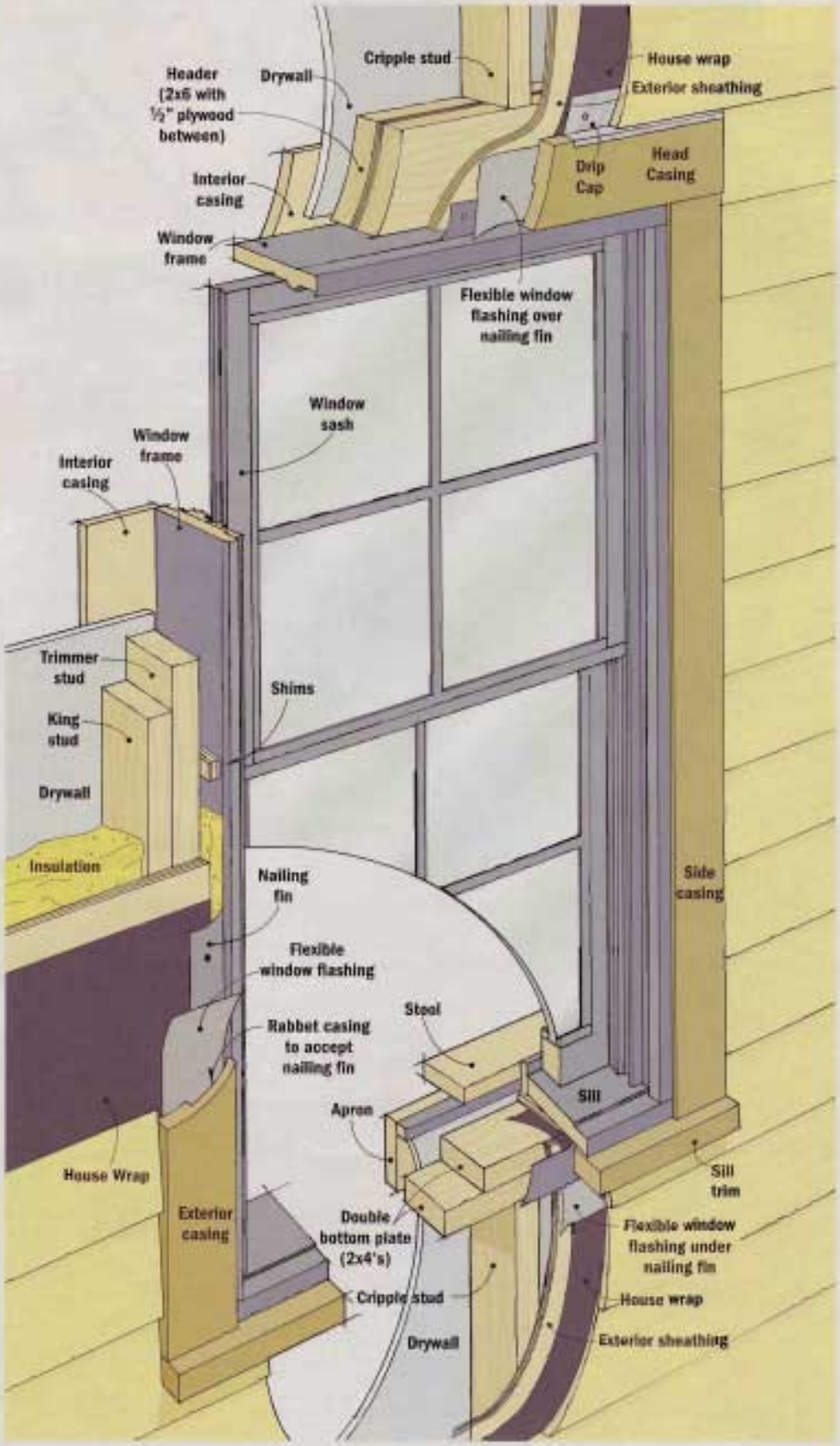
Marvin Windows
marvin.com
888-537-8266

Pella Windows
pella.com
800-547-3552

Simonton Windows
simonton.com
800-746-6686

Weather Shield Windows
weathershield.com
800-222-2995

Well-Built Home



Window Anatomy

As long as the windows in your home are doing their job — opening and closing with ease and providing a weather-proof barrier — you probably don't give them much thought.

But if a window fails, it gets your attention in a hurry. Many times you see only the problem — water puddling on the sill or a sash that sticks — but no obvious cause.

This happens because there is more to a window than meets the eye. To understand why a window isn't working like it should, it helps to know what a healthy, weather-tight window looks like.

To see that, you need to peel back the layers of your house to expose the unseen elements of a window that affect its performance *(Window Anatomy at left)*.

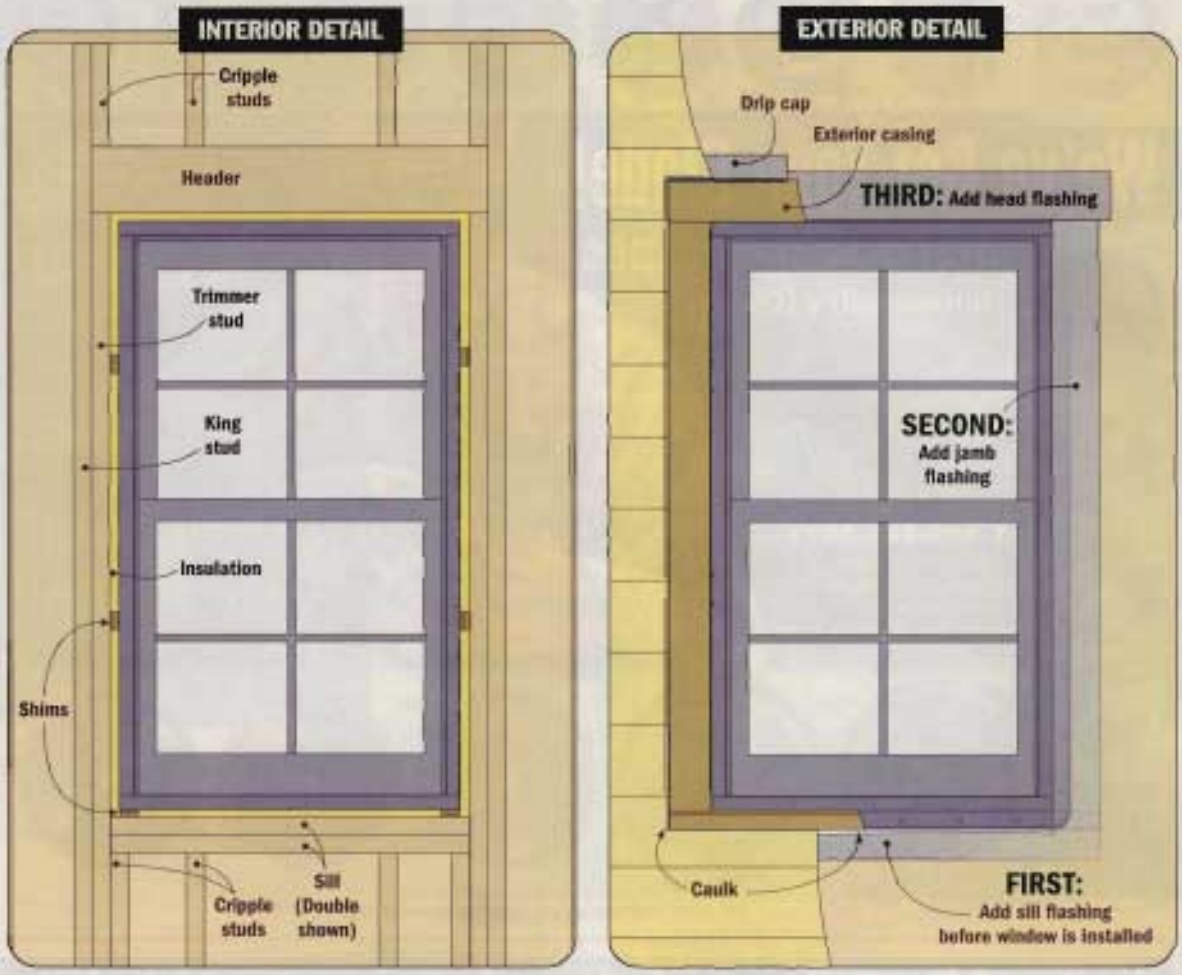
A FEW FRAMING FACTS

The window is installed in a rough opening formed by the framing of the house. The framing carries the weight of the house (roof, walls, and floors) down to the foundation. To ensure that the window operates properly, this weight, or "load," has to be detoured around the rough opening in the framing.

HEADER. That's where the header comes in. A header redistributes the load from above the opening, to the sides, and down a pair of trimmer studs to the foundation *(Interior Detail, page 66)*.

The trimmer studs need help carrying the load. So they're nailed to a king stud, which runs the full height of the wall. Tying the header, trimmer, and king stud together provides the strength that's needed to prevent the weight of the house from crushing the window.

The weight of the window also has to be supported. That's the job of the sill and the cripple studs. The sill, which consists of



either a single or double plate, directs the weight of the window down the cripple studs.

THE WINDOW

The window itself has three main components: sashes, frames, and nailing fins.

The sashes, or operating parts of the window, are contained in the window frame. This frame is secured inside the rough opening by nailing through the fins into the house framing.

The space between the window and the wall framing allows for fine-tuning a window so it's level and plumb. This is accomplished with shims.

SHIMS. To ensure that the sashes operate smoothly, shims are placed under the jambs (the vertical pieces of the window frame) on the sill. It's also important to shim between the window and the trimmer studs.

SUPPORTING CAST

Although the window and wall framing are the stars of the show, there's also a supporting cast that's critical to a window's ability to keep out moisture.

DRIP CAP. One often overlooked player is a metal drip cap. This piece of rigid flashing fits underneath the siding and covers the top edge of the head casing *(Window Anatomy)*. When properly installed, the drip cap prevents any moisture from driving in behind the siding and exterior casing.

FLEXIBLE FLASHING. The second line of defense against moisture is a thin, sticky tape called flexible window flashing. The first piece is installed over the sill, *before* the window is installed *(Exterior Detail)*. Then, once the window is in place, the side nailing fins are covered, followed by the top fin. Flashing in this manner wicks moisture away from the nailing fins.

Obviously, you want to keep this weatherproof membrane intact. So be careful not to pierce the nailing fins when adding the exterior casing.

SNUG SEALS

Water isn't the only culprit that can cause problems. Air leakage affects a window's energy performance. This can be cold *or* warm air — leaking in *or* out.

CAULKING. To seal these gaps, caulking is applied to the back of the nailing fin, before the window is installed. The seam between the exterior casing and the siding also needs to be caulked.

INSULATION. Finally, it's important that the space between the window frame and the wall framing is properly insulated. This calls for either fiberglass insulation packed loosely in the space, or spray foam that's specially manufactured for window installations.

WORKBENCH APPROVED Tools & Products

Ridgid's New Full-Featured 15" Drill Press

Ridgid's new 15" drill press (model DP1550) is loaded with features that are most welcome in any woodworking shop.

First, the drill press is ambidextrous, even if most woodworkers aren't. The three-spoke lever can be mounted on either side of the tool to match your dominant hand.

Second, a built-in light illuminates the table without having one of those flexible lights hanging off the side of the machine. A standard 60-watt bulb offered plenty of light when I used the drill press.

Another convenient feature is a storage tray mounted on the column with holes sized for the most common drill bits. There's also onboard storage for the chuck key.

The drill press is powered by a 1/2 hp induction motor, which provided plenty of power as I drilled large holes in hard maple, cherry, and oak. Even better, the 12-speed belt-drive system allows you to adjust the speed of the drill press between 250 to 3,100 RPM for drilling hardwood, softwood, plastic, or metal.

▲ **Ridgid created clamping space on the perimeter of the table by moving the support fins in from the edges.**

Another nice feature of this drill press is a cast-iron table that accommodates quick, easy clamping *(see Photo above)*. That's accomplished by positioning the support fins (which give a cast-iron table its strength) away from the outside edges of the table. This creates just enough of a "lip" for clamping.

The DP1550 drill press sells for under $400 at Home Depot stores and comes with Ridgid's lifetime warranty.

Ryobi Cordless Miter Saw/Drill Combo

Ryobi has just unveiled a "must-have" cordless combo kit for the serious DIY'er. This 18-volt kit includes an 8 1/4" compound miter saw, a 1/2" drill driver, and an unbelievably low price tag.

The miter saw weighs only 21 pounds, so this is a saw you can take to the work, instead of vice-versa.

The saw will crosscut dimension lumber up to a 2x6, but what it's really designed for is trim work. The saw is capable of making 45° compound cuts in stock as wide as 5 1/2" and cutting crown molding up to 4 5/8" wide.

The drill/driver features two levels for lining up the drill at 90°, a magnetic tray for holding screws and bits, a 24-position clutch, and a keyless chuck. The kit also comes with two batteries, a one-hour charger, and a case for the drill. The kit is available at Home Depot for under $200.

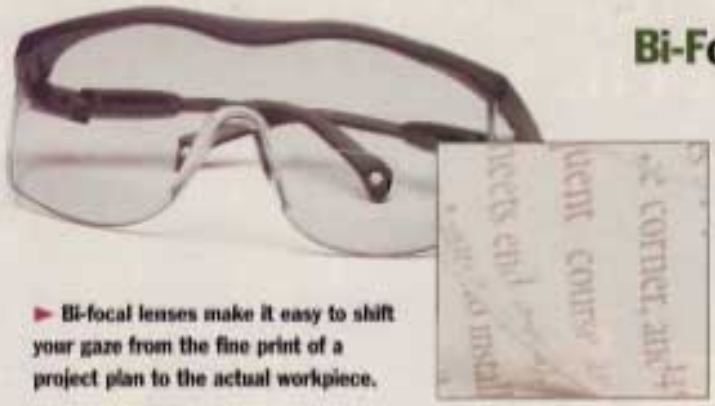
FEEDBACK AND FOLLOW-UP

We reviewed Lamello's C2 Classic plate joiner in the July/August issue of *Workbench*. The joiner impressed us as having the best fit and finish among the seven tools we tested. The C2 took second place based on its outstanding quality of construction, ease of use, and smooth operation.

Unfortunately, the price of the C2 was incorrectly listed as $599. The correct price for this plate joiner is $340.

www.Lamello.com
781-585-4364

Bi-Focal Safety Glasses



► **Bi-focal lenses make it easy to shift your gaze from the fine print of a project plan to the actual workpiece.**

Wizard Industries new Shop Specs have all the features of a quality pair of safety glasses — large, impact-resistant lenses, integrated side shields, and adjustable temples to tailor the fit. Plus, they have the added benefit of a magnifying lens. (Magnification ranges from +1.0 to +3.0.)

Shop Specs are available through several retailers and woodworking suppliers, or you can order direct from the company. Call 888-346-3826 or visit www.WizardDetectors.com to order the specs. Expect to pay between $19.95 and $24.95 per pair.

Tangle-free Cord Reel

The Wonder Winder Cord Reel from Green Leaf Inc. is the best way I've seen to tame a long extension cord.

The reel mounts on the wall and can store up to 150 feet of 16-ga. extension cord. My Wonder Winder has been successfully managing a 100-ft., 14-ga. extension cord for about six months now. Whenever I need the cord, I simply grab the end of it and start walking. The reel feeds the cord smoothly and flawlessly.

When the work is done, depress the tensioning lever and turn the handle to coil the cord into the hanging basket.

The Wonder Winder is available directly from the manufacturer, Green Leaf Inc., at www.grnleafinc.com or by calling 800-654-9808. One reel and two mounting brackets sell for $24.95.

▲ **The Wonder Winder will store 150 feet of 16-gauge cord, 100 feet of 14-gauge cord, or 75 feet of 12-gauge cord.**

In the Shop

Table Saw Technique — Crosscutting Wide Panels

One of the challenges in making the large cutting board top for the kitchen cart (page 42) was getting a clean, square cut when trimming it to length.

My usual methods just wouldn't work. The glued-up panel was too wide for a crosscut sled on the table saw. And crosscutting the 2"-thick hard maple panel with a circular saw and a guide would have left a rough cut.

The solution was to use the panel itself as a crosscut sled. To do this, I attached a runner to the panel that slides in the miter gauge slot. The runner guides the top through the blade, producing a clean, square cut.

MAKE A RUNNER. To make this work, the goal is to get a smooth, sliding fit between the runner and the miter gauge slot. If the runner is too tight, it will bind in the slot and keep the top from sliding freely across the table saw. Too loose, and it affects the accuracy of the cut.

With that in mind, rip a $^3/_4$"-thick strip of hardwood to width to fit the slot. As for length, it's best to cut the strip *longer* than the width of the panel so it extends an inch or so on both sides. This will make it easy to position the runner in the miter gauge slot.

ATTACH RUNNER. The next step is to attach the runner. This requires laying out *two* sets of lines: a pair of cut lines near the ends of the panel and two additional lines that will be used to position the runner.

It only takes a minute to lay out the cut lines. With the panel turned upside down, mark these lines $32^1/_2$" apart — the length of the cutting board top *(Fig. 1)*.

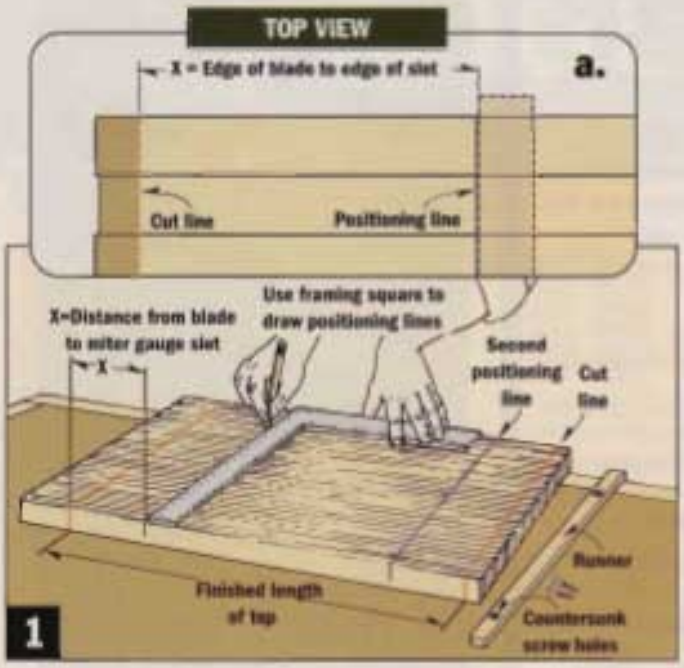
The next step is to mark the two lines used to position the runner. The idea here is simple. The runner should be located the same distance from the cut line as the saw blade is from the miter gauge slot *(Fig. 2a)*.

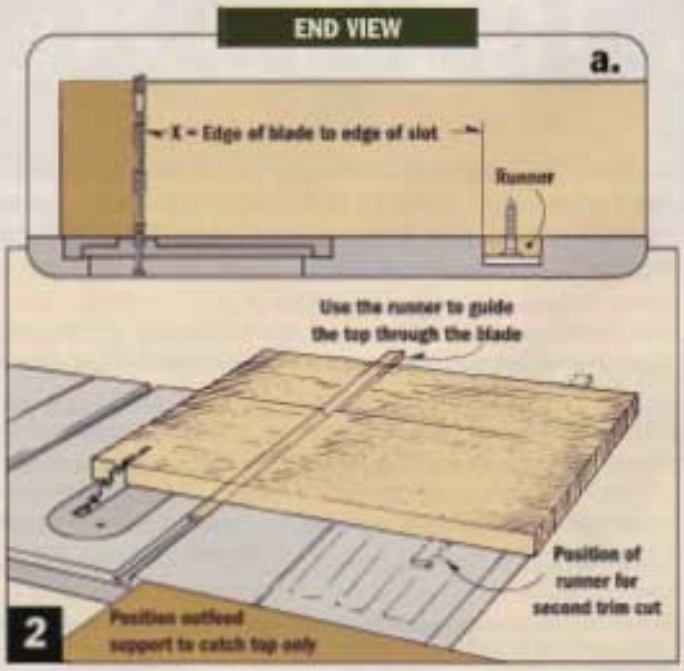
After measuring this distance on your saw, lay out the two "positioning" lines so they're square to the edge of the panel *(Fig. 1)*. Then align the runner with one of the lines and screw it in place. Don't worry about the screw holes. They won't show once the top is attached to the cart.

OUTFEED SUPPORT. There's one last thing to do before cutting the panel to size. That's to add an outfeed support to "catch" the panel when it comes off the table saw. Just be sure to locate the support so the runner won't hit it when it exits the miter gauge slot.

TRIM THE ENDS. Now you're ready to trim the ends of the panel. To do this, flip it over and fit the runner into the miter gauge slot. Then turn on the saw, and push the panel through the saw blade *(Fig. 2)*.

To trim the other end, remove the runner and reposition it on the second line. Then just repeat the process, using the same miter gauge slot.





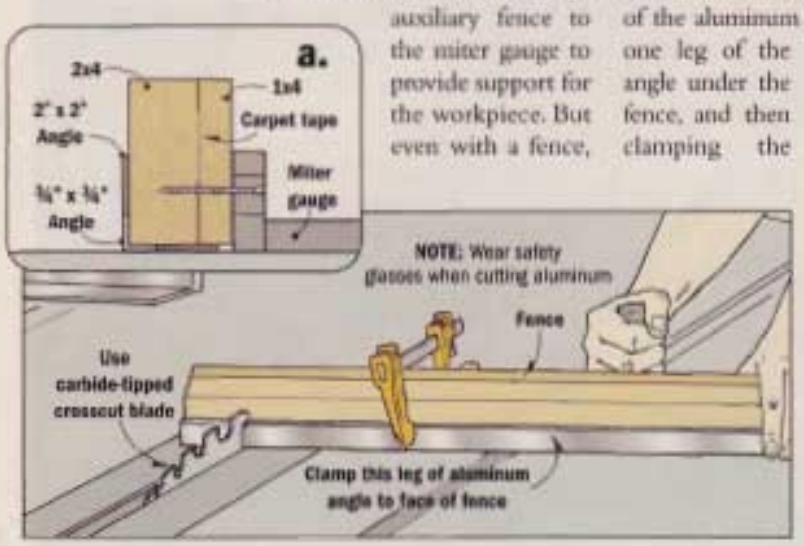
"Chatter-Free" Cuts in Aluminum

Using aluminum angle for the shelf edging and legs of the kitchen cart (page 32) creates a contemporary look. And since aluminum is fairly "soft," it can be cut on the table saw with a carbide-tipped saw blade. (I recommend a crosscut blade.)

As usual, it's best to attach an auxiliary fence to the miter gauge to provide support for the workpiece. But even with a fence, the light-gauge aluminum angle tends to *chatter* (vibrate up and down) during the cut.

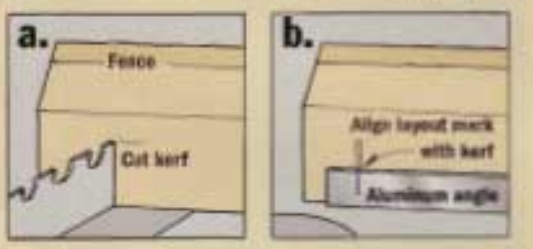
HOLD-DOWN. To prevent that, I mounted a thick fence to the miter gauge that acts as a hold-down *(Fig. 1a)*. Notice that the fence is $\frac{1}{8}$" *above* the saw table — the thickness of the aluminum angle. By slipping one leg of the angle under the fence, and then clamping the other leg to the face, it produces a smooth, chatter-free cut *(Fig. 1)*.

As I mentioned, the fence is quite thick. It's made up of two blocks: a 2x4 and a 1x4 screwed to the miter gauge. This way, it accomodates the 2" x 2" aluminum angle used for the legs, as well as the $\frac{3}{4}$" x $\frac{3}{4}$" angle that serves as the shelf edging.



SETUP TIP

To cut the miters accurately, start by rotating the miter gauge to 45° and cut a kerf in the fence *(Fig. a)*. Then align the layout mark on the workpiece with the kerf and make the cut (Fig. b).



A Better Bit for Drilling Countersinks

It's easy to drill the mounting holes in the aluminum angle used for the kitchen cart. All you need is a twist bit. The tricky part is drilling the countersinks for the screw heads.

To allow the screw head to seat fully, the countersink must be smooth and even — all the way around. That's not easy to accomplish with most of the countersink bits I've used. They tend to leave a rough, uneven surface. As a result, the screw head is likely to stick up above the surface of the metal, or sit crooked in the countersink.

SPECIAL BIT. That wasn't the factory-finished appearance I was after. So I purchased a bit manufactured by the Weldon company that's specially designed for drilling countersinks in metal *(photo at left)*.

As you can see, there's an angled hole through the middle of this bit. The point where the hole exits the side of the bit forms a single cutting edge. Since there's only one cutting edge, the bit makes a clean, shearing cut that removes a continuous curl instead of a bunch of chips, much like a hand plane. The result is an incredibly smooth countersink, as shown below.

SOURCES. Weldon countersink bits are available in a variety of sizes. For the kitchen cart, I used a bit that drills countersinks for #8 screws. It can be ordered either from Woodcraft (800-225-1153) or Lee Valley Tools (800-871-8158).

◄ The single cutting edge of a Weldon bit creates a clean countersink with a smooth surface.

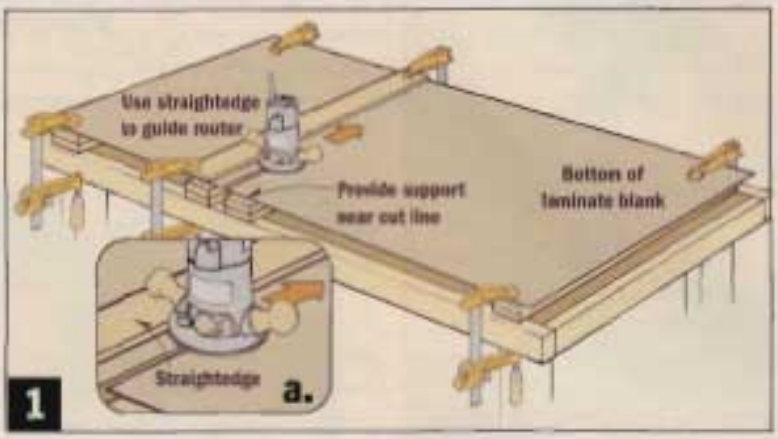
Working with Plastic Laminate

Plastic laminate creates a durable, easy-to-clean surface — just the ticket for the shelves of the kitchen cart featured on page 32. We used laminate with small "ribs" that look like corrugated cardboard, as shown here. The tips below will help you get great-looking results.

ROUT TO ROUGH SIZE

The first step is to cut the plastic laminate to rough size. As a rule, I allow at least ½" overlap all around the core piece, which in my case was ½" plywood. This way, there's little risk of misaligning the laminate on the core piece.

Since the sheet of plastic laminate I was working with was quite large (48" x 96"), it would have been awkward to cut it on the table saw. So I cut it to rough size using a handheld router equipped with a straight bit and guided by a long, wood straightedge, as shown in *Fig. 1*.



To provide clearance for the bit, lay the sheet of laminate on support blocks to raise it off the bench. It's important to support the laminate on each side of the cut, as well. Otherwise, the edge could chip or crack.

Note: I laid the sheet upside down to make it easy to see the layout line on the back.

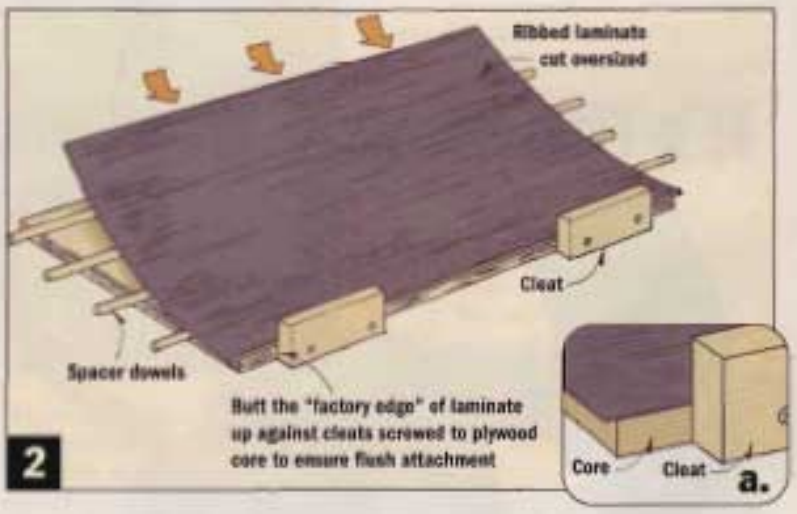
Before routing, check that the clamps are tight. You don't want the straightedge, or the laminate, to shift during the cut. Now turn on the router, set the base against the straightedge, and rout in a left-to-right direction.

▲ To get a clean, smooth edge when trimming the laminate, use a flush-trim bit and a handheld router.

ALIGNMENT TIP

The "corrugated" plastic laminate I used presented an interesting challenge when aligning it with the plywood core piece. The small ribs that ran the length of the sheet had to align with the long edges of the core piece. Otherwise, it would make the laminate look crooked.

Aligning the laminate would be easy except for one thing. The contact cement used to adhere the laminate to the core piece bonds instantly. This means that the laminate has to be perfectly aligned as you press it against the core piece.



The best way I found to accomplish that is to concentrate on aligning *one* edge only of the laminate with the core piece. The other three edges overlap the core piece as usual. (They'll be trimmed flush later.)

To ensure proper alignment, I screwed a couple of wood cleats to the core piece *(Fig. 2)*. The cleats stick up above the surface of the core. So by setting the "factory" edge of the laminate against the cleats, it automatically aligns it flush with the edge of the core piece.

Aside from the alignment issue, adhering the laminate to the core piece is the same as usual.

Start by brushing contact cement on the adjoining surfaces. Then let the cement "dry." You can tell when it's ready when the sheen changes from glossy to matte. It should also be slightly tacky to the touch.

Next, lay dowels across the core pieces to use as spacers. They raise the laminate above the core piece, which prevents it from bonding before it's properly positioned.

Now, simply butt the factory edge of the laminate against the cleats. Press that edge down tight so it bonds to the core piece. Then slowly remove the dowels (starting with the nearest one), applying pressure as you go.

Simply a Cut Above

A "master smith" knife craftsman makes his point by forging up to 640 layers of steel to create exotic Damascus blades.

Howard Clark's hand-crafted knives can slice through a hanging rope in a single swipe. But it's the patterns in the blades — a mysterious array of swirls, loops, and waves — that make his exotic-looking knives so intriguing.

To create a prized knife, Clark starts with Damascus steel — two or more metals pattern-welded together. The lost art of Damascus blade-making dates back to A.D. 100-200 in India.

He shapes this raw stock with a power hammer that delivers a 300-lb. whack. Annealing, or softening the steel by forging it up to 2,300°F, comes next.

Once the steel cools, it's stretched, folded, and again forged into as many as 640 alternating layers. Then the blade is tempered, or hardened, and quenched in a bucket of oil to cool quickly.

Shaping takes place at the grinders. Clark also smoothes the surface and defines the cutting edge on a belt sander, progressing from 50- to 400-grit.

Finally, he plunges the blade into an acid bath to accelerate oxidation. The temperature, length of exposure, and other "trade secrets" let Clark obtain infinitely varied patterns.

Decorative handles and sheaths made of natural materials complete each one-of-a-kind knife.