10 Easy-to-Build Plywood Projects

Ten shop projects — ten sheets of plywood. These rock-solid essentials take just a couple hours to build and will help you make the most of the space in your shop.

Step-Stool **Tool Tote**

As much as I enjoy woodworking in my shop, I find that I spend almost as much time working on projects around the house. And because that usually involves carrying tools to where I'm working, it's nice to have something to carry them in. That's where these tool totes come in. Each tote is open on one side to make it easy to load and unload your tools. And a narrow cleat along the front edge of the opening prevents small items from falling out.

Not only does the tote hold an armful of tools, but it's just the right height for sawing the end off a board. In fact, you can make a pair of them to use as mini-sawhorses. And when you want to take a break, the tote makes a great little stool.

The tool totes are so small that you only need half a sheet of ¾" plywood to build a pair of them (see cutting diagram below). To build the tool totes, start by cutting the ends to size, as shown in Figure 1. The "feet" can then be cut out on the ends using a band saw or a jig saw.

After you've finished making the end pieces, you can set them aside while you cut out the bottom, back, and front cleat of the tote. There's nothing out of the ordinary here — I simply cut the pieces out according to the cutting diagram shown below.

ASSEMBLY. The tool totes are assembled with yellow glue and screws. To make sure everything was lined up accurately, I dry clamped all the pieces together first and then drilled the pilot holes for the screws. Then I removed the clamps, glued the pieces together, and added the screws. I started by screwing the bottom and back together, and then added the front cleat.

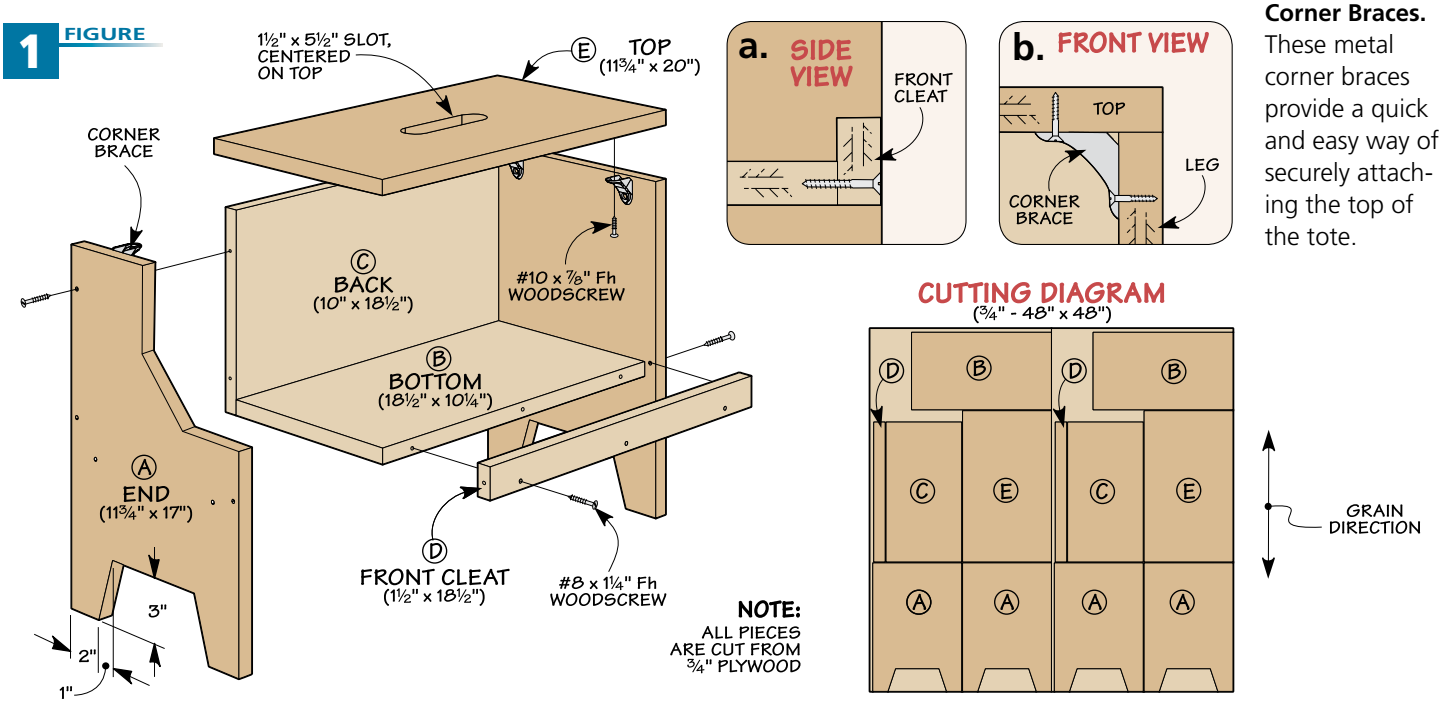
The bottom/back assembly gets sandwiched between the two end pieces. Again, I used screws and glue to attach the ends.

TOP. The last piece to add is the top. The top also doubles as the "handle" for the tool tote, like you see in the photo above. So after cutting this piece to size, you'll need to cut out an opening in the center. I made this slot by simply drilling a starter hole at each end point of the opening and removing the waste in between with a jig saw. Then for a more comfortable grip, I eased the edges by sanding them lightly.

To attach the top, I used some metal corner braces (see photo in margin). These are just screwed to the inside faces of the end pieces and then to the underside of the top, as you can see in Figure 1b.

Corner Braces. These metal corner braces provide a quick and easy way of securely attaching the top of the tote.

FIGURE 1



Roll-Around **Cutoff Bin**

Dealing with short cut-off pieces of lumber is a problem that just about every woodworker has to face. No matter how neat you try to stack the cutoffs, it doesn't take long for a small pile to turn into a mountain. And this makes it almost impossible to sort through the cutoffs to find a piece that you can use.

Which is exactly why you need a storage bin like the one you see here. It's fairly small, so it doesn't take up much space. But it holds a lot of cutoffs. And dividers inside the bin allow you to sort the cutoffs, making it easier to find the one piece you're looking for.

CONSTRUCTION. To build the cutoff bin, start by cutting the front, back, and bottom pieces to size (see the cutting diagram below). After cutting out these pieces, you can glue and screw them together. The bottom is trapped between the front and back to create a U-shaped assembly. But when you're doing this, make sure that the ends of the pieces remain flush.

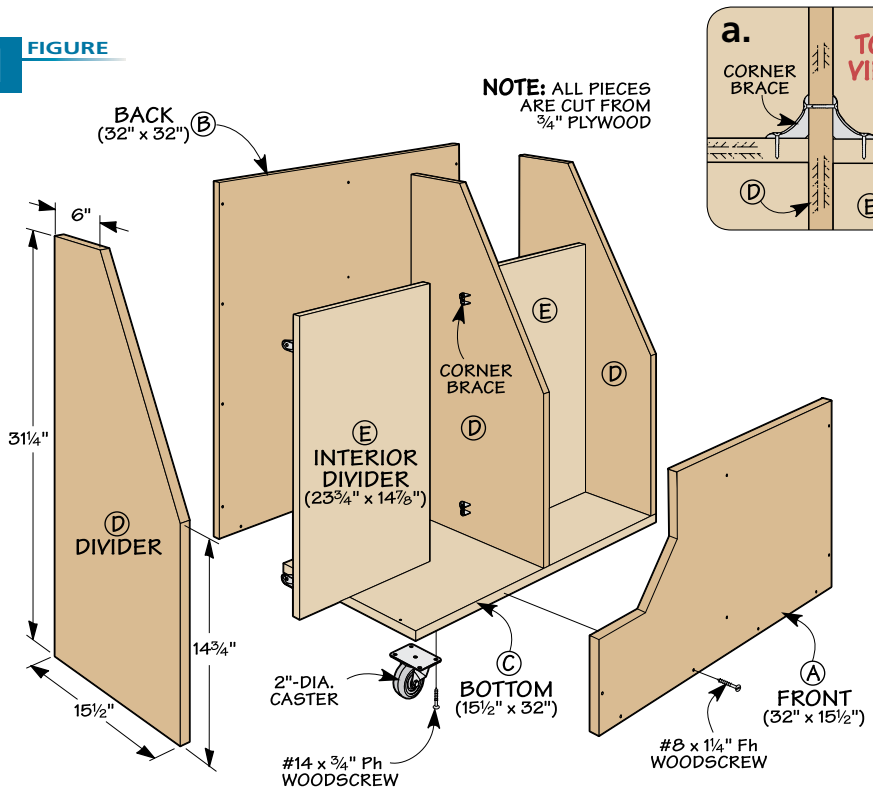
DIVIDERS. The next step is to add the dividers. These three pieces are all identical. They're cut to fit in between the front and back of the bin. After cutting the pieces to size and cutting the taper on the front edge of each piece, the two end dividers can be glued and screwed in place so that they're flush with the ends of the front, back, and bottom of the bin. The center divider separates the space inside the bin into two equal sections. It's centered between the two ends and then glued and screwed in place.

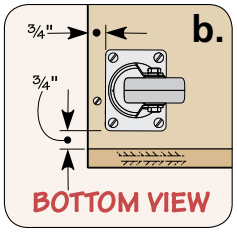
INTERIOR DIVIDERS. The last pieces to make are the two interior dividers. These pieces help to separate long and short cutoffs by dividing the bin into smaller compartments. The interior dividers are centered between the front and the back of the bin. After cutting them to size, they're attached with corner braces, as shown in Figure 1a.

Most of the time, this cutoff bin will probably just sit in a corner of your shop. But you may want to move it occasionally to clean behind it. The only problem is that once it's loaded up with lumber, moving it is no simple task. So, I screwed some casters to the bottom corners, as you see in Figure 1b. (I use two fixed casters and two swivel casters.)

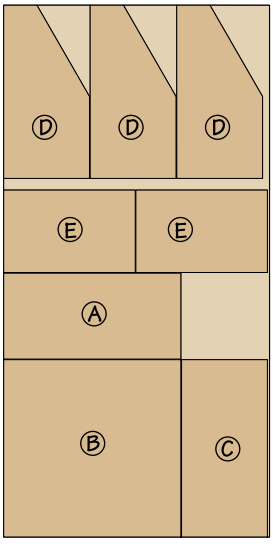
Casters. To make the cutoff bin easier to move around, I added casters to the bottom.

1 FIGURE





CUTTING DIAGRAM



Plywood **Workbench**

This workbench is just the right size for working on small projects. It can be set against the back wall of the garage without taking up too much space. And it has some storage room below the top for your tools. Even if you already have a full-size workbench in your shop, this bench makes a great "backup."

JOINERY. Like the other plywood projects, there isn't any complicated joinery on this bench. It's put together with screws and butt joints. But the trick is to assemble everything in a specific order and cut the parts to fit as you go along.

I started by cutting out the ends and back of the bench, like you see in Figure 1. Then I used a jig saw to cut away the waste and create the "feet" on the bottom of the two ends. I also drilled shelf pin holes in the right end piece.

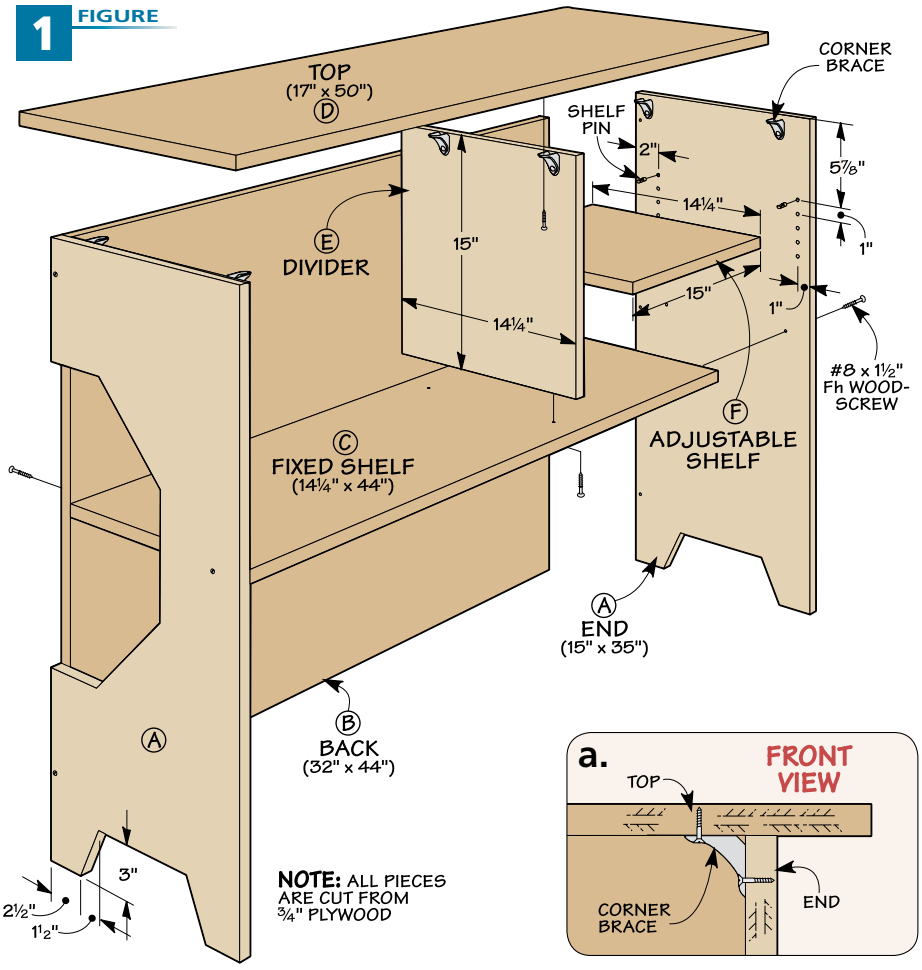
Shelf Pins. The adjustable shelf is supported by spoon-style shelf pins.

After screwing the ends to the back, you can cut the fixed shelf to fit between the ends. Once you've positioned this piece between the ends, you can screw it in place.

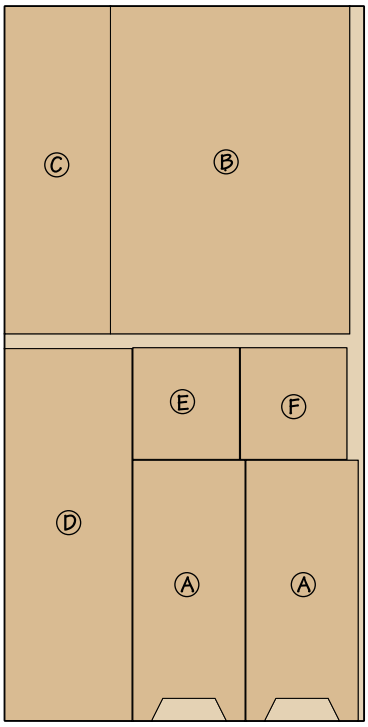
TOP. The top is cut to size and attached to the ends with corner braces (Figure 1a). Then you can cut the divider to fit between the top and the fixed shelf. Before attaching the divider, however, you'll want to drill some shelf pin holes to match the ones in the end of the bench. Then you can screw the divider to the fixed shelf and attach it to the top of the bench with a couple of corner braces.

Finally, I cut an adjustable shelf to fit in the space between the divider and the end of the bench.

1 FIGURE



CUTTING DIAGRAM



Modular **Wall Cabinet**

This wall cabinet project is actually two cabinets — one with a door and one without. You can stack them or hang them side by side on the wall.

CASES. The cases of the two wall cabinets are identical except for their depth. One of the cabinets is ¾" shallower than the other, to allow for the thickness of the door.

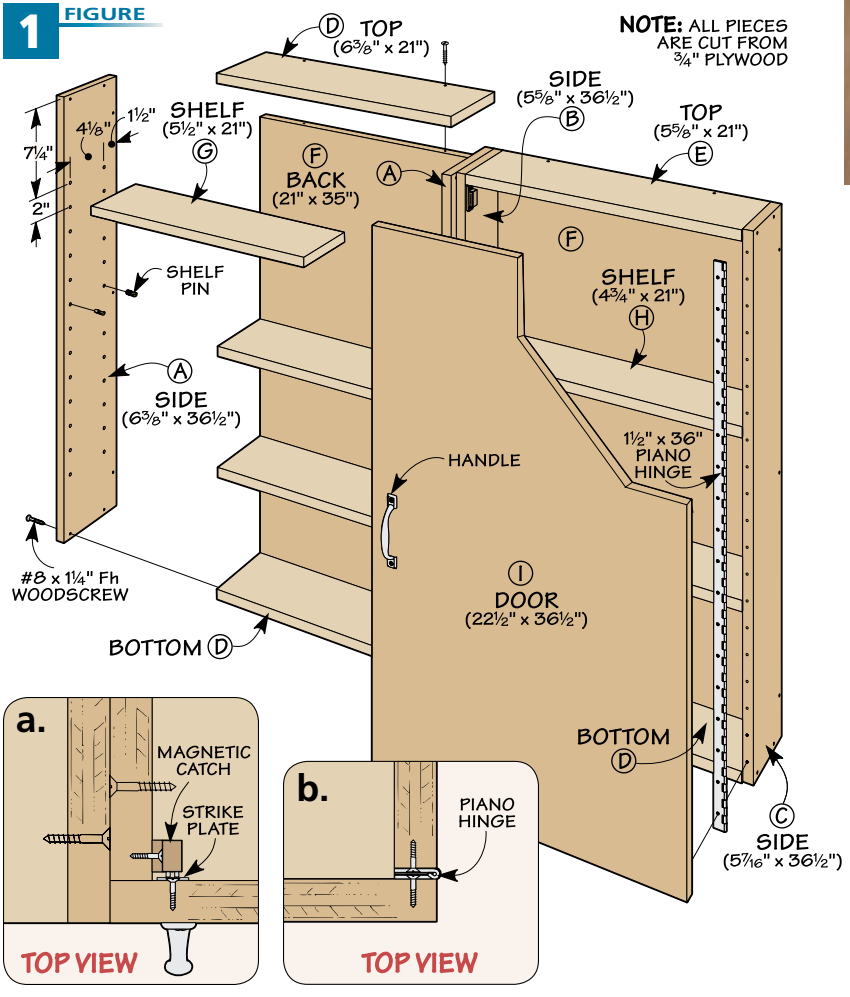
You can start by cutting all the sides, tops and bottoms, and backs to size, as shown in Figure 1 below. When it comes to cutting the sides, you'll notice that the cabinet with the door has one side that's 3/16" narrower than the other. This is to allow for the door hinge that will be added later.

The next step is to drill some holes in the sides for the shelf pins that will be used to support the shelves. I did this on the drill press. After you've finished drilling all the shelf pin holes, you can assemble the two cases. The sides, top, and bottom are all wrapped around the back panels and then glued and screwed together.

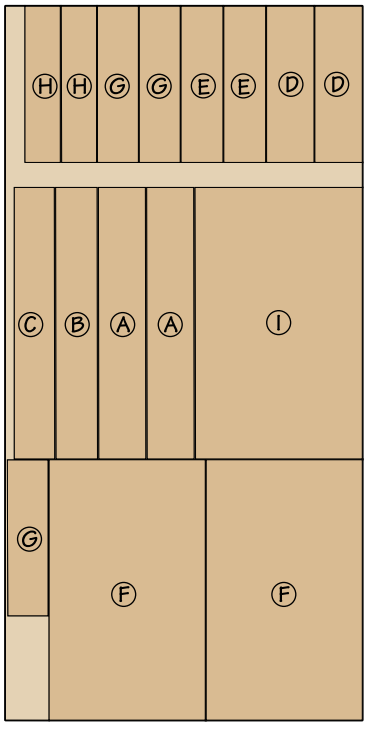
With the cases assembled, you can cut some adjustable shelves to fit inside them. There are three shelves for the open cabinet and two for the cabinet with the door.

DOOR. At this point, the open cabinet is done. To complete the other cabinet, all you need is a door. The door is just a piece of plywood cut to fit over the front of the case. It's attached with a piano hinge. Then to help keep the door closed, I added a couple magnetic catches — one at the top of the cabinet and one at the bottom. Finally, I mounted a handle to the front of the door.

1 FIGURE



CUTTING DIAGRAM



Door Hardware. A window sash pull makes a low-cost, yet practical door handle. And a pair of magnetic catches ensures that the door stays shut until you're ready to open it.

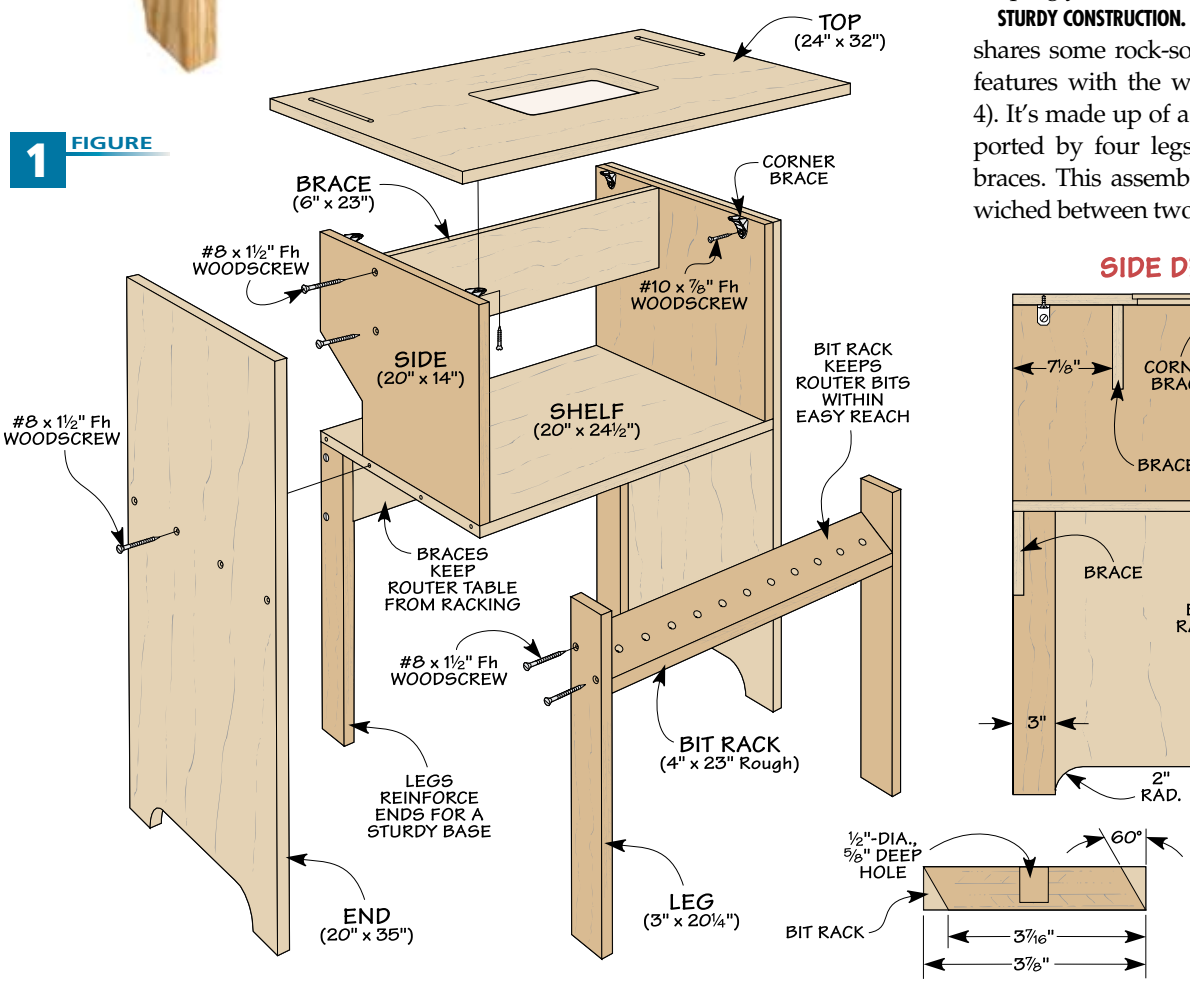
Bit Rack. With an angled bit rack, you can quickly see and pick out the one you're looking for.

Router Table

It's easy to see why this router table is such a shop workhorse. For starters, there's the simple, rugged construction. This means you won't spend much time building it. Then there's the large top and fence that are capable of handling just about any project. Finally, there's a rack for keeping your bits within easy reach.

STURDY CONSTRUCTION. The router table shares some rock-solid construction features with the workbench (page 4). It's made up of a center box supported by four legs, and a pair of braces. This assembly is then sandwiched between two end panels.

1 FIGURE

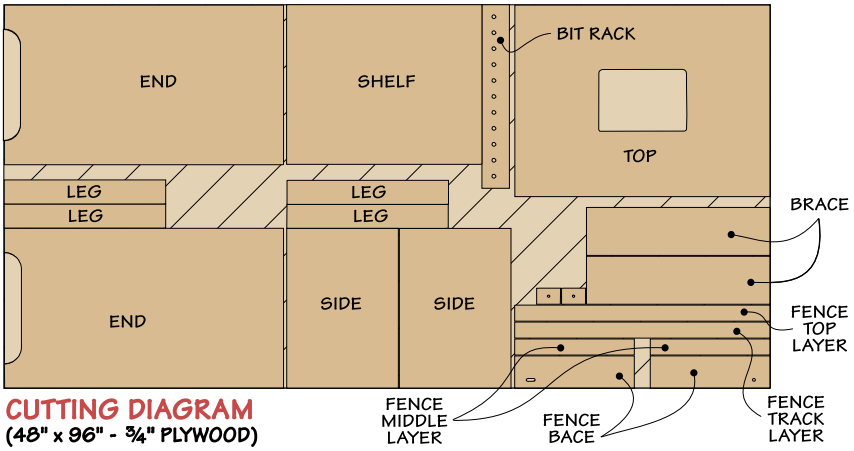


CASE. The center box consists of a shelf and two sides. A brace is screwed to the sides of the box near the top. The brace serves two purposes. First, it prevents the router table from racking. Second, it supports the tabletop and keeps it from sagging, as shown in the side detail on the previous page.

A second brace is located just under the box at the back of the table. It's screwed to two legs that serve to beef up the end panels that are added later. At the front of the table, another pair of legs are added. But instead of a brace, I screwed an angled bit rack between them, as shown in the detail on the bottom right of the previous page. Not only does it help strengthen the table, but it keeps router bits close at hand.

Now, the end panels can be cut, glued, and screwed to the center assembly. Like the workbench, a cutout at the bottom of the end panels forms the feet that give the router table a firm stance.

THE BIG TOP. With the base complete, I turned to the top — which is where all the work takes place. Basically, it's just a large panel that's cut to shape. But there are a couple important details I want to mention.



CUTTING DIAGRAM
(48" x 96" - ¾" PLYWOOD)

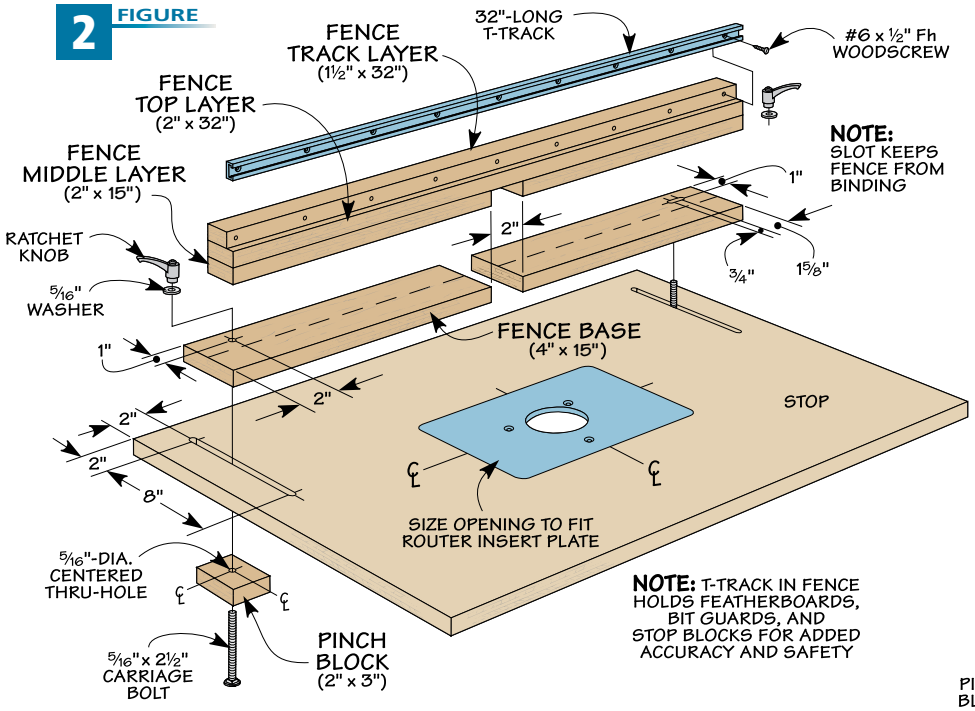
The first detail is a slot near each end of the table, as you see in Figure 2. The slots are used to adjust the fence and secure it to the table.

The other detail to note is the hole for a router insert plate. (You'll want to size the opening to fit your insert plate.) The hole is cut in two steps. First, cut a rough opening for the router to drop into. It should be slightly smaller than the size of the plate. Second, rout a rabbet around the edge of the hole that's sized to hold the insert plate flush with the top of the table. The top can then be attached to the base with metal corner braces, like you see in the side detail on the previous page.

SIMPLE FENCE. The final part of the router table is the fence. As you can see in the drawing below, this isn't your typical L-shaped fence. It's a solid beam built up from four layers of plywood. It's attached to the table with a pair of ratchet knobs, washers, carriage bolts, and pinch blocks. To prevent the fence from binding, I cut a short slot in one end of the fence base. This gives the fence a little wiggle room.

At the top of the fence, I added some T-track. This makes it easy to attach stop blocks, bit guards, and featherboards, like the ones you see in the main photo on the previous page.

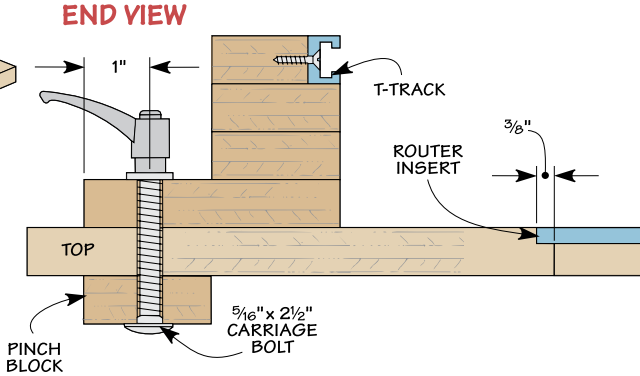
FIGURE 2



Hardware

- (20) #8 x 1½" Fh Woodscrews
- (4) Corner Braces w/Screws
- (1) Router Plate
- (2) Ratchet Knobs
- (2) 5/16" Washers
- (2) 5/16" x 2½" Carriage Bolts
- (1) 32" T-Track (w/Screws)

END VIEW



Multi-Tool **Stand**

There just never seems to be enough places to put tools, parts, or accessories. That's where this multi-tool stand comes in. For one, it has a large work area on top that's big enough for most benchtop tools, like the planer you see in the photo.

Second, there's an open shelf below the top to hold parts at the ready. And a drawer at the bottom holds often-used supplies and accessories right where you need them. Finally, a set of heavy-duty casters means the cart can go anywhere without getting hung up on chips or extension cords.

BUILDING THE CART. The stand consists of two sides supported on the bottom by a pair of shelves and a back panel that will house a drawer, as in detail 'b.' The upper shelf also serves as a second worksurface

The top of the stand is braced by supports to form a core that can stand up to anything. To this core, I added a top and bottom panel. The top is slightly bigger to give you a worksurface as large as possible. It's attached to the sides with metal corner braces, as shown in the drawing below and detail 'a.'

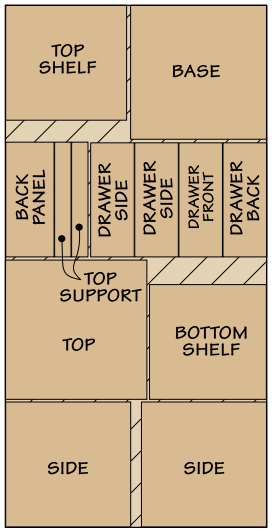
The base serves to support the stand and provide a place to attach the casters. It's glued and screwed to the lower shelf.

A BASIC DRAWER. I added a drawer to the bottom of the stand to hold frequently needed items. Since it's fully enclosed, the drawer keeps things clean and dust free.

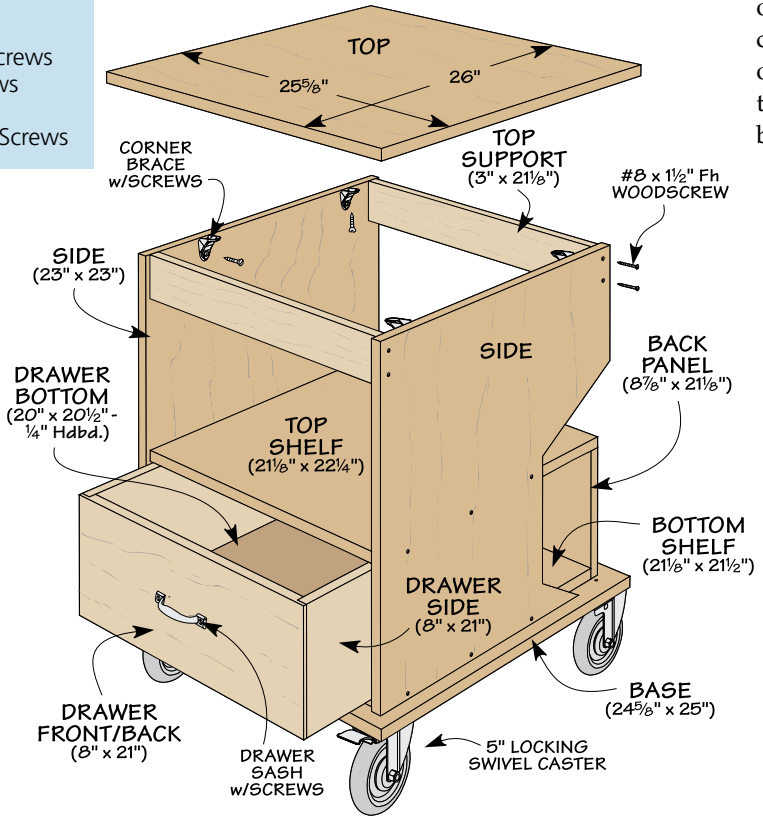
The drawer is built using simple rabbet joinery. It's sized to fit the opening below the shelf, as you can see in the drawings. To keep it operating smoothly, all you need to do is rub a little bit of wax on the bottom of the drawer sides.

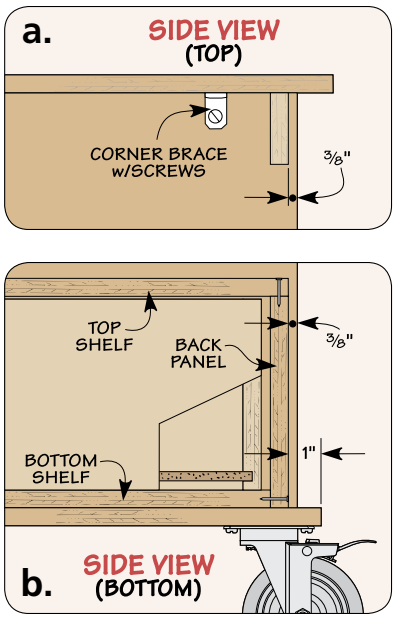
Hardware

- (32) #8 x 1½" Fh Woodscrews
- (4) Corner Braces w/Screws
- (1) Sash Pull w/Screws
- (4) 5" Locking Casters w/Screws



CUTTING DIAGRAM
48" x 96" - ¾" PLYWOOD
Also needed:
20" x 20½" - ¼" Hardboard
for DRAWER BOTTOM





Adjustable

Worksurface and Sawhorses

Mini-Scaffold. By placing the plank on one of the lower stretchers of the sawhorses, you can use it as a platform when you need to reach high spots.

There are plenty of good reasons why every shop should have a pair of sawhorses. They provide a stable platform for cutting boards to length, they'll hold a full sheet of plywood for cutting out pieces, and they're lightweight and portable enough to use anywhere.

In addition to these traditional roles, this design also includes a strong worksurface (cut from the same sheet of plywood), to span the horses. And the extra-sturdy stretchers can be used like a small scaffold to hold the platform in position at different levels.

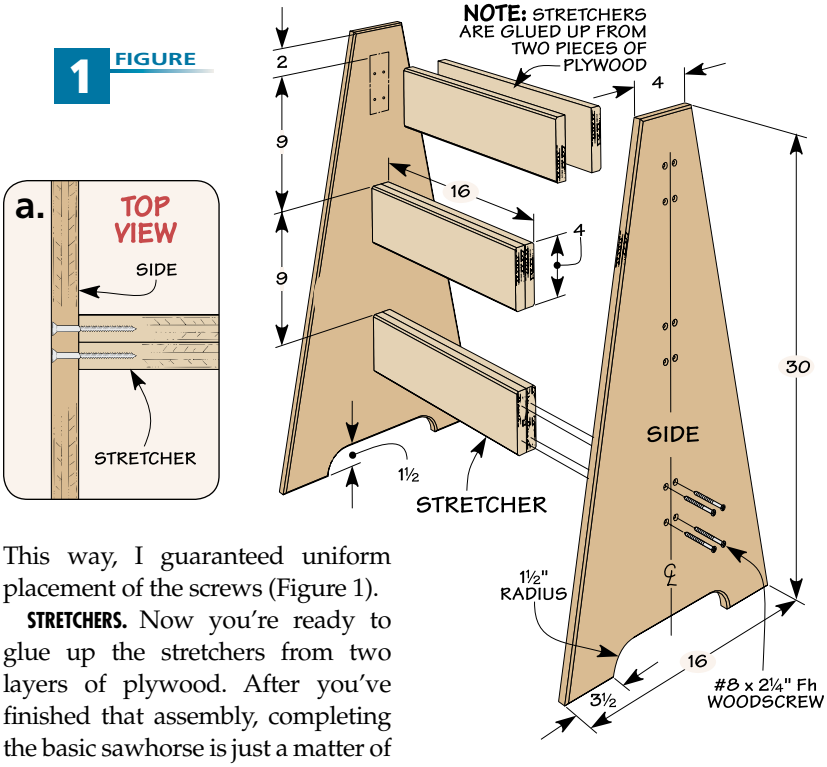
TAPERED SIDES. A good sawhorse should have strong, stable legs (or in this case, side pieces) to prevent it from tipping. So I began by laying out and cutting one of the sides. This way, I could use it as a template for the remaining three pieces.

To make the tapered cuts, I used a circular saw guided by a straightedge clamped in place. After making the round cutout at the bottom with a jig saw, I sanded the edges smooth. With one side complete, all you need to do is rough cut the other pieces and use a flush-trim bit in your router to make duplicate side pieces.

After cutting out and cleaning up the sides, I clamped each pair together and drilled pilot holes for the screws that hold the stretchers.

Without the Platform. The tall sides provide a handy place for a clamp when cutting a board to length.

1 FIGURE



This way, I guaranteed uniform placement of the screws (Figure 1).

STRETCHERS. Now you're ready to glue up the stretchers from two layers of plywood. After you've finished that assembly, completing the basic sawhorse is just a matter of attaching the stretchers to the sides with a few screws (Figure 1).

THE PLATFORM. The addition of a work platform that spans the sawhorses makes them even more useful around the shop. And the platform shown here is plenty strong. It's made by sandwiching a series of 1"-wide spacers between two pieces of plywood for extra strength. This arrangement makes the platform rigid enough to hold the heaviest loads without sagging (Figure 2).

Assembling the platform is pretty straightforward. All you need to do is attach the spacers to the underside of the top, and then fasten the bottom to the spacers. This way, you won't have screw-heads visible on the top.

The easiest way to do this is to place the top upside down on your workbench. Now lay out the spacers and predrill holes for the screws. Add glue and screws and you're halfway home.

The next step is to mark the location of the spacers on the bottom to make sure you make solid contact with the screws during the final assembly. Finally, glue and screw the bottom in place.

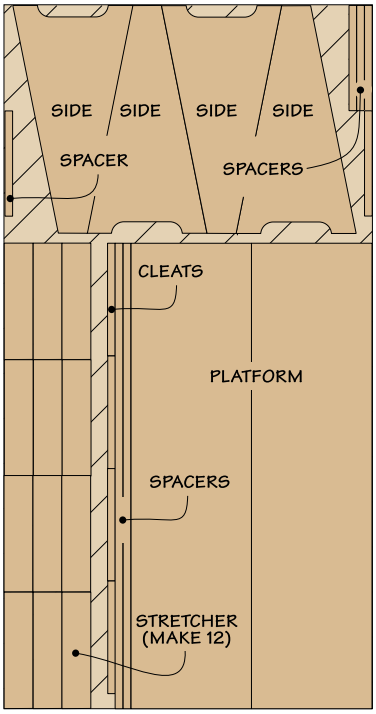
I finished up by adding cleats to the bottom of the platform to hold it securely on the stretchers. Then I chamfered the edges and added a coat of clear finish.

Hardware

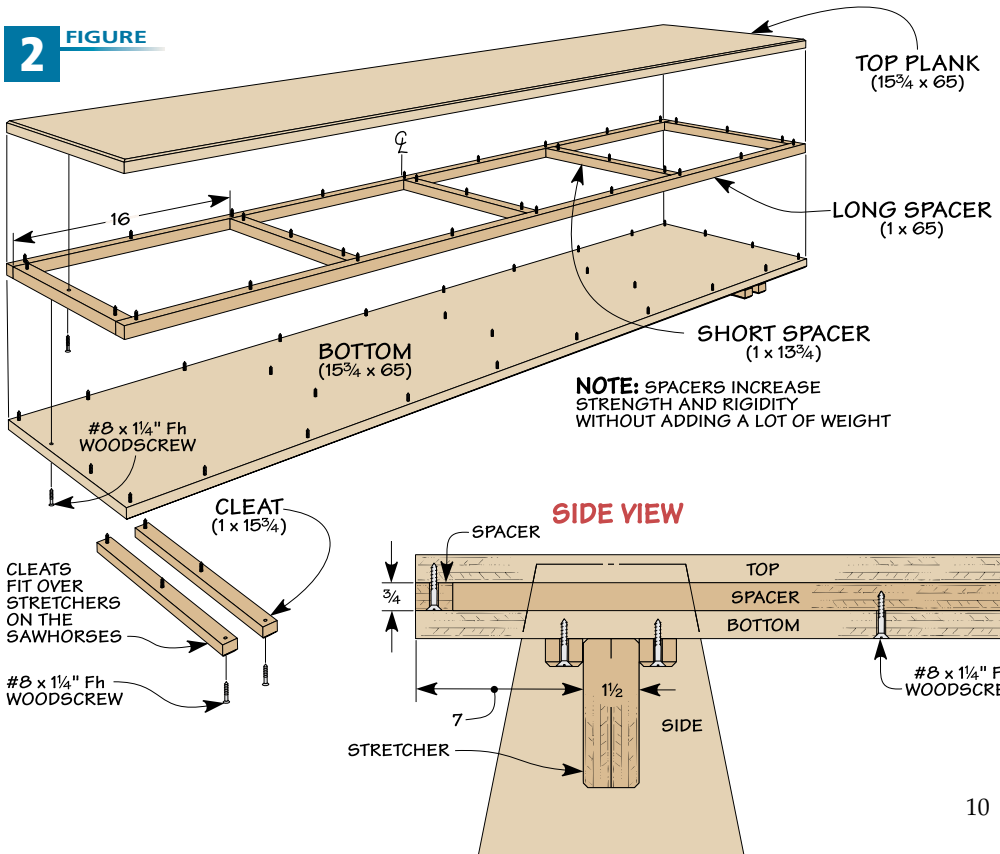
- (48) #8 x 1½" Fh Woodscrews
- (69) #8 x 2¼" Fh Woodscrews

CUTTING DIAGRAM

48" x 96" - ¾" PLYWOOD



2 FIGURE



Wall-Mounted Lumber Rack

One of the challenges in any shop is finding a good place to store the lumber for your woodworking projects. It's all too easy to stack boards on the floor or lean them against a wall. But that often leads to moisture damage and bowing.

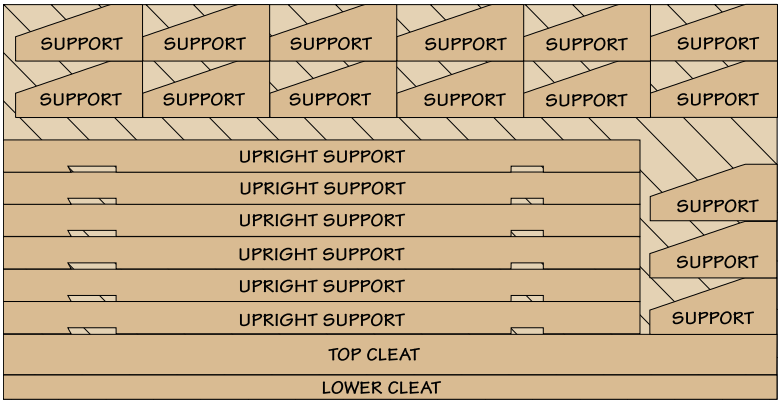
A better solution is to build a lumber rack like the one you see in the photo at left. It holds plenty of wood and, more importantly, keeps it all flat and dry.

The rack consists of three vertical assemblies, with five lumber supports on each. These assemblies hang on cleats attached to studs in the wall of your shop. A short dowel placed in the cleats prevents the vertical assemblies from moving, as shown in the inset photo below.

START WITH THE SUPPORTS. The first step in building the rack is to cut out the lumber supports (Figure 1 on the following page). Then you can use a shop-built tapering jig to make the angled cut on the bottom of each piece. To find out more about this jig and how to make these cuts, take a look at the shop tip on the following page.

Alignment Pin. A short length of dowel in the cleats keeps the hanging vertical supports in position.

CUTTING DIAGRAM 48" x 96" - ¾" PLYWOOD



THE VERTICAL ASSEMBLIES. With the supports cut, the next step is to make the uprights. As you can see in Figure 1, the uprights have an angled notch that fits over the top cleat, and a square notch that provides clearance for the lower cleat.

It's important that the notches are positioned identically on all six uprights so the lumber supports hang at the same level. The easiest way to do this is to clamp them together and make layout marks. Then, remove the clamps and cut the pieces one at a time. A jig saw makes short work of these cuts.

Now attach the supports to the uprights with glue and screws.

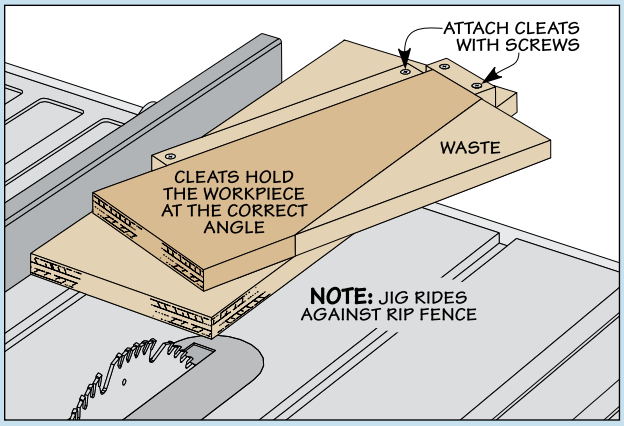
WALL CLEATS. As I mentioned, the vertical assembly hangs on wall-mounted cleats. The top cleat requires a beveled cut on the top edge to match the angled notch in the vertical assembly.

The next step is to drill holes for the dowels. It's important that they be spaced uniformly on both cleats so the vertical assemblies align.

MOUNT UP. The last step is to attach the cleats to one of the walls in your shop. Since the rack will be holding a lot of weight, you'll need to make sure the cleats are anchored securely. After identifying the screw locations, predrill holes and attach the cleats with lag screws.

Shop Tip: Taper Jig

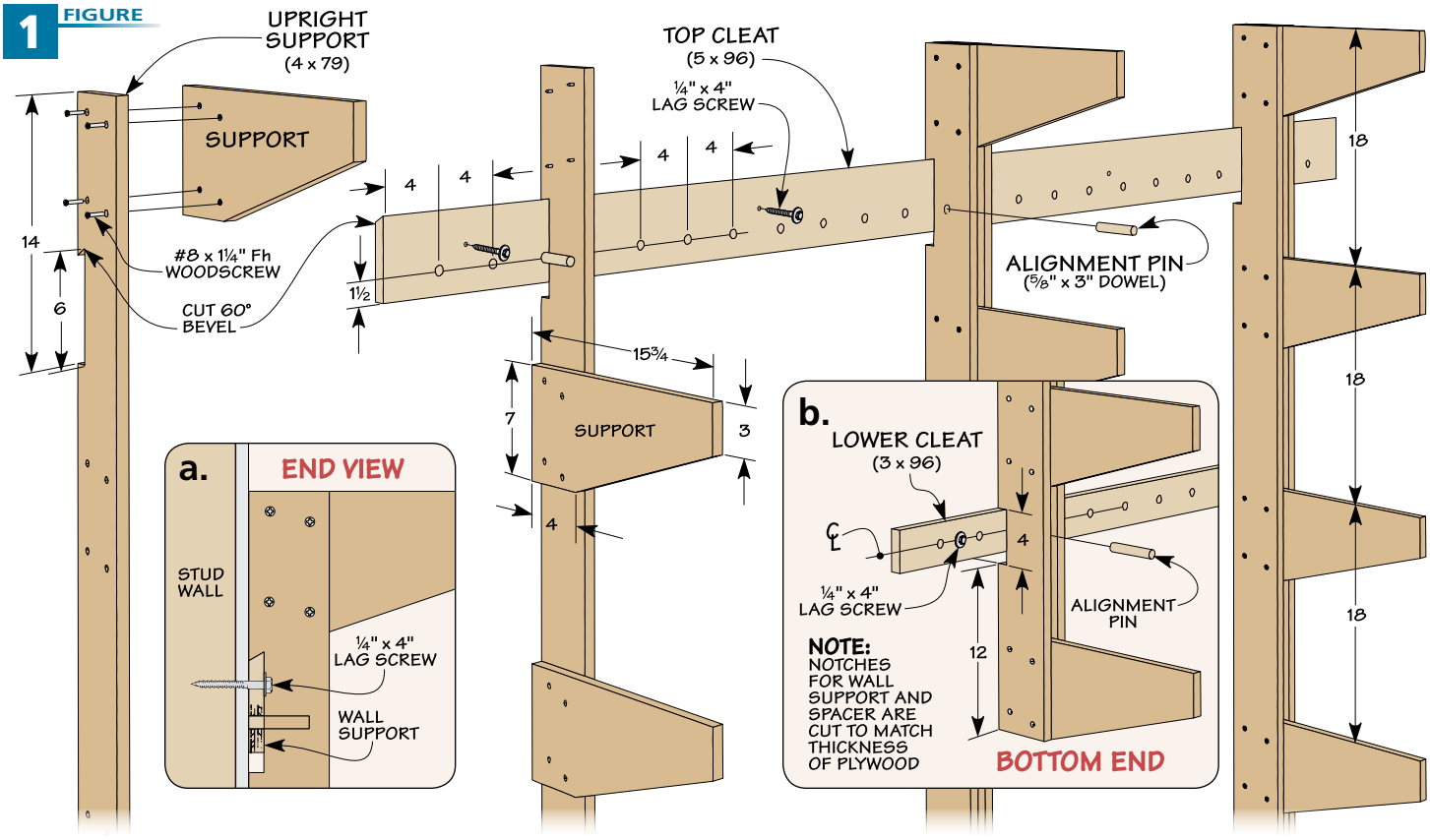
To make the angled cut on the lumber supports, I used the table saw and a simple tapering jig. As the drawing below shows, it's just a piece of plywood with a couple cleats to keep the workpiece in position. The plywood base rides along the rip fence, leaving a consistent cut every time.



Hardware

- (120) #8 x 1¼" Fh Woodscrews
- (8) 4" x ¼" Lag Screws
- (8) ¼" Washers
- (15) ⅝" x 3" Dowels

1 FIGURE



Roll-Around **Utility Cart**

A storage cabinet on wheels is one of the handiest things you can build to make working in your shop easier. It not only gives you a convenient place to store a wide range of items, but also allows you to keep them close at hand wherever you're working. And you'll appreciate the extra worksurface on top of the cart.

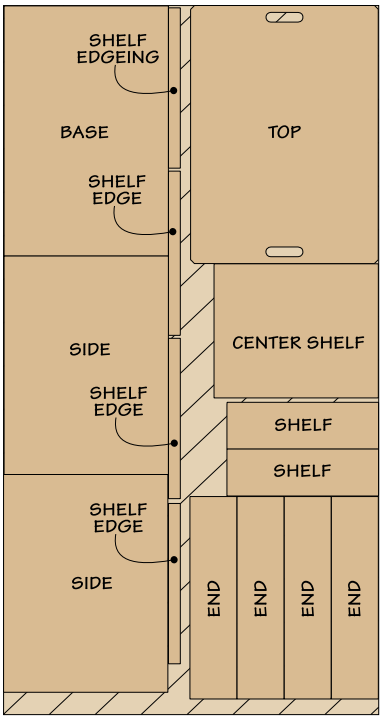
CONSTRUCTION. The construction of the cart is pretty straightforward. As you see in Figure 1, it's simply a pair of U-shaped end assemblies attached to the base and top. Each end assembly features an adjustable shelf for convenient storage.

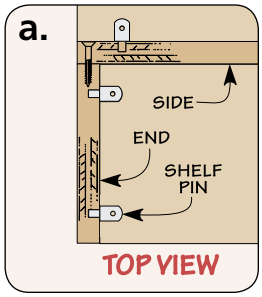
Each assembly is made up of two ends fastened to a side, with shelf pin holes drilled in all three parts. The holes drilled on the inside of the side pieces also allow you to place an adjustable shelf in the center storage compartment. This is a great place for larger items, like power tools and cases.

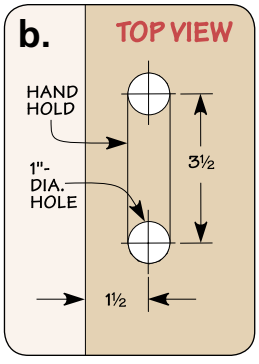
START WITH THE ENDS. I started by laying out the four ends and clearly marking the bottom edge of each. This way, you'll make sure the shelf pin holes are measured from the same reference edge. I used a simple, shop-built jig for drilling the holes. The box at the bottom of the following page has all the details.

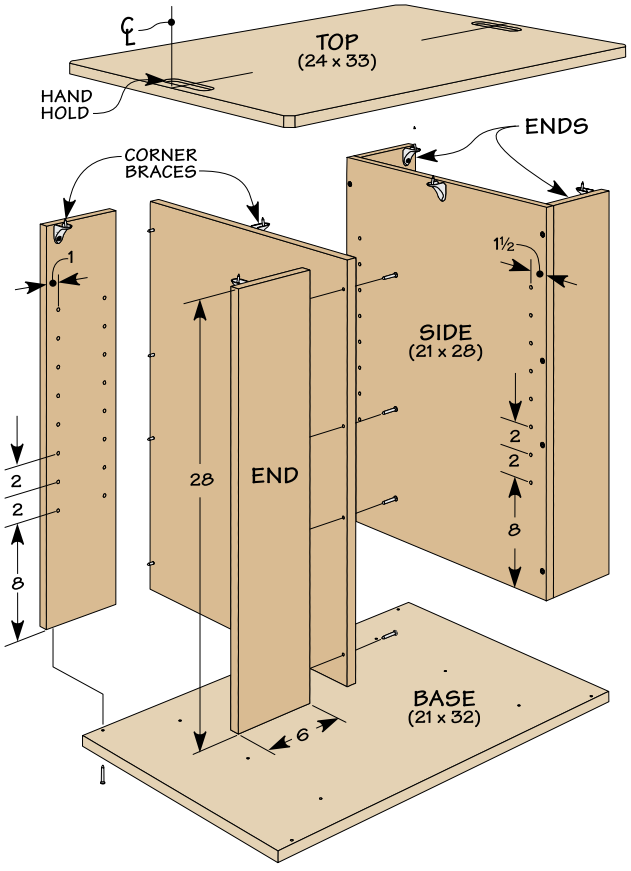
You can use the same technique to drill the shelf pin holes in the inside faces of the two sides. Then, all you need to do is attach the ends to the sides with a little glue and some screws.

1 FIGURE









THE TOP. Now that you've completed the end assemblies, you're almost ready to add the top. But before you do, you'll want to cut a couple of slots to use as hand holds. Then you can attach the end assemblies to the top using corner brackets and screws.

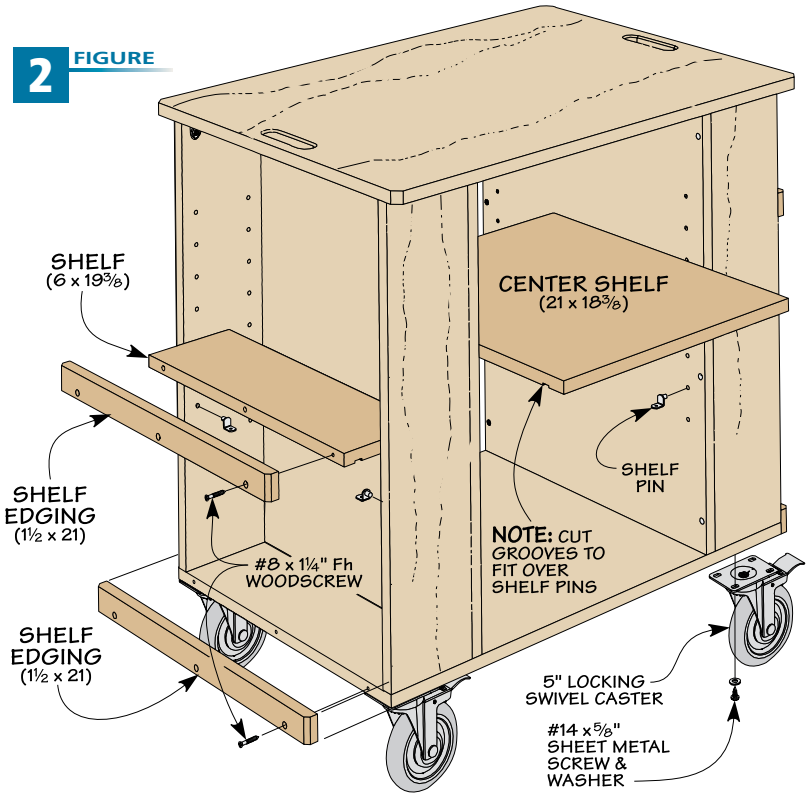
THE BASE. With the assembly resting on its top, you can add the base. I predrilled holes for screws, making sure to screw into both the sides and the ends.

As you can see in Figure 2, the base also acts as the lower shelf. To prevent things from falling out, it has edging on both ends. These pieces are attached with screws.

Now you can complete the main assembly by adding casters. I selected 5" locking swivel casters to make sure the cart would be able to handle the heavy loads, and so it would stay put when the casters are locked.

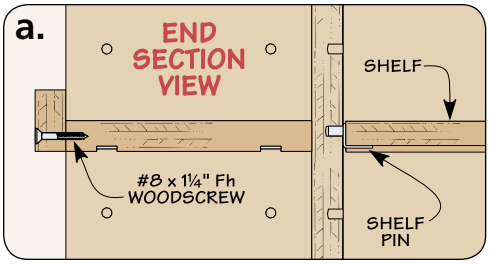
ADD THE SHELVES. Three adjustable shelves (one on each end and one in the center compartment) complete the cart. The center shelf doesn't require any further treatment. But you'll want to add a piece of edging to the end shelves — just like the one on the base.

2 FIGURE



Hardware

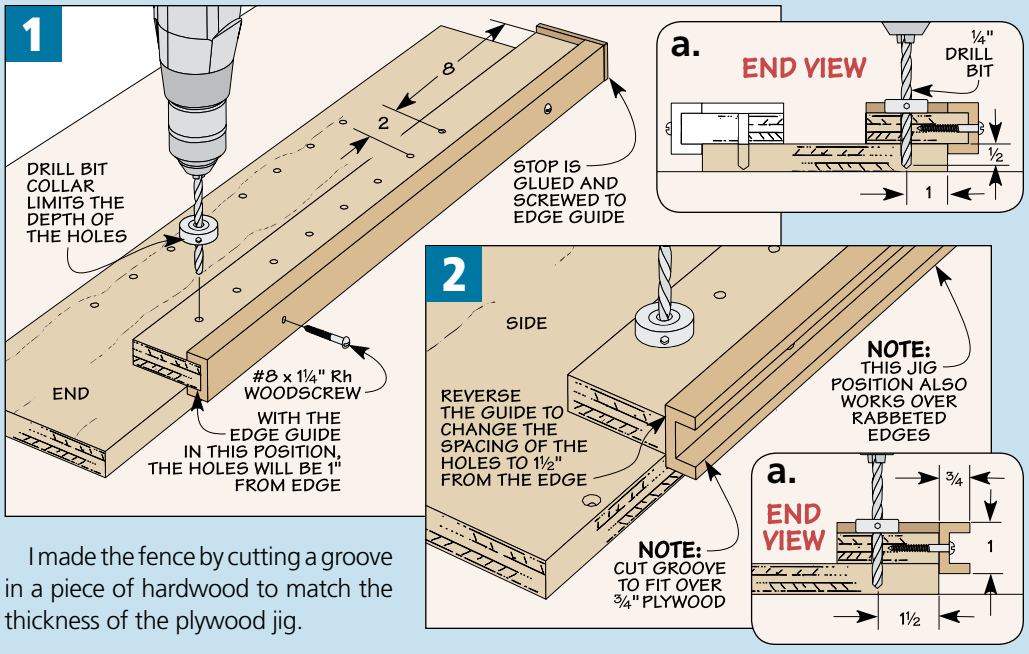
- (38) #8 x 1¼" Fh Woodscrews
- (12) #6 x ¾" Fh Woodscrews
- (16) #14 x ⅝" Sheet Metal Screws
- (4) 5" Locking Swivel Casters
- (12) ¼" Shelf Supports
- (6) ¾" Corner Braces



2-in-1 Shelf-Hole Drilling Jig

When you're faced with the task of drilling evenly spaced holes for shelf pins, the most sensible solution is to make a jig. After all, a jig ensures consistent spacing between the holes. And by registering against a reference edge, it also places the holes a uniform distance from the edge.

As you see in the drawings, this jig features an adjustable fence. It can be used to position holes either 1" or 1½" from the edge. This comes in handy when building the utility cart shown here or the storage cabinets on the following page. To change the spacing, all you need to do is remove a couple of screws, reverse the fence, and replace the screws.



I made the fence by cutting a groove in a piece of hardwood to match the thickness of the plywood jig.

Two Stacked Units. If the space in your shop is really tight, you can easily stack the storage units. All you need to do is add a couple of alignment pins.

Add a Worksurface. To create a worksurface, just put a little distance between the units and add a benchtop — like the platform from the sawhorses on page 9.

Compact **Storage Cabinets**

A common theme for all these projects has been adding storage space and worksurfaces to your shop. And the compact storage units shown in the photo at left are no exception. They provide a handy storage space with an adjustable shelf and a small drawer.

Each unit takes up just over a square foot of floor space, so you can place them just about anywhere. And since you can get two units out of one sheet of plywood, you can place them side by side or stack them.

I kept construction pretty simple. Dado joinery keeps things aligned, then glue and screws secure the joints. And by adding a solid back to the units, you guarantee they won't rack under a heavy load.

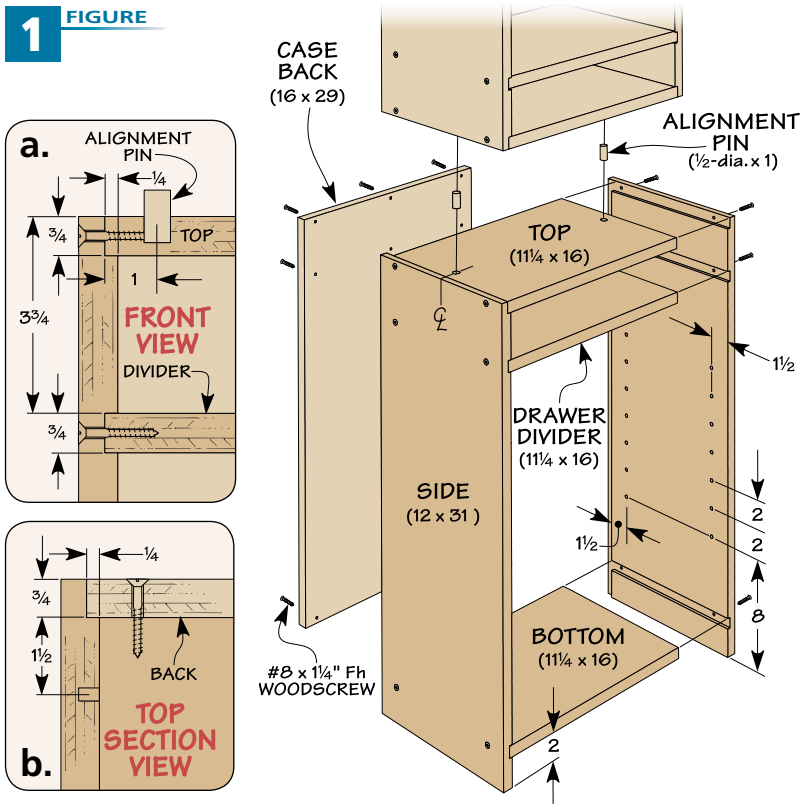
DADO THE SIDES. After cutting out the pieces, I set up the table saw with a dado blade adjusted to match the thickness of the plywood. Then all you need to do is cut the rabbet for the top and the dadoes for the drawer divider and bottom shelf, as shown in Figure 1.

The next step is to cut a rabbet for the back along the back edge of each side. You need to make two sets of mirror-image sides. So it's a good idea to mark the right and left pieces to avoid confusion as you make the cuts.

SHELF-PIN HOLES. The storage compartment has an adjustable shelf, so now is a good time to drill the holes for the pins. To do this, I used the same method and jig as described on page 14.

ASSEMBLY. With the holes drilled, you are ready to assemble the cabinet. Start by fastening the top, bottom, and drawer divider in position in the dadoes. An easy way to do this is to first glue the joints and clamp up the entire assembly. Then, after drilling countersunk holes, simply drive in the screws.

1 FIGURE



DRAWERS. A small drawer completes each cabinet. And like the case, it goes together quickly. The drawer sides simply fit into rabbets in the front and back.

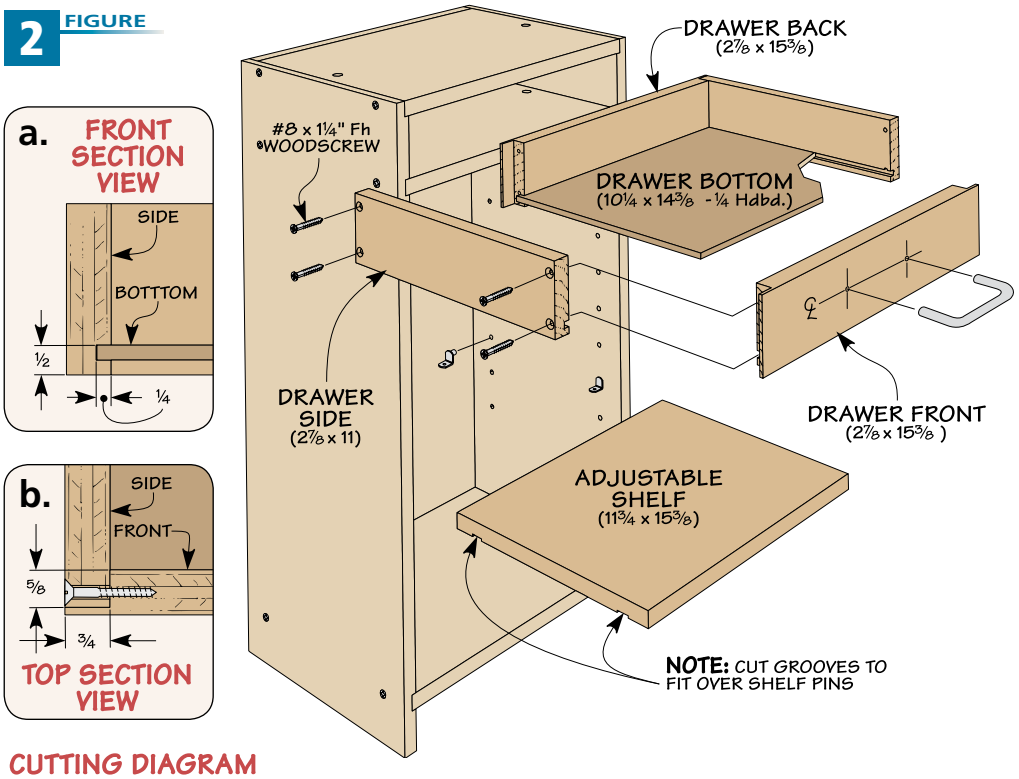
You can begin by heading to the table saw. Use a wide dado blade to cut the rabbets on each end. Then, adjust the width of the dado blade to cut the ¼" groove for the drawer bottom in the front, back, and sides. (I used ¼" hardboard for the bottoms.) To complete the assembly, just add glue and screws, as indicated in Figure 2. Then attach a handle or drawer pull. Finally, rub a little bit of wax on the bottom of the sides to keep the drawers moving smoothly.

ALIGNMENT PINS. As I pointed out earlier, to save floor space, you may want to stack the units. To keep them from shifting out of position, I added a couple of simple alignment pins. The alignment pins are just short pieces of dowel that fit into matching holes drilled in the case tops, as shown in Figure 2a.

Hardware

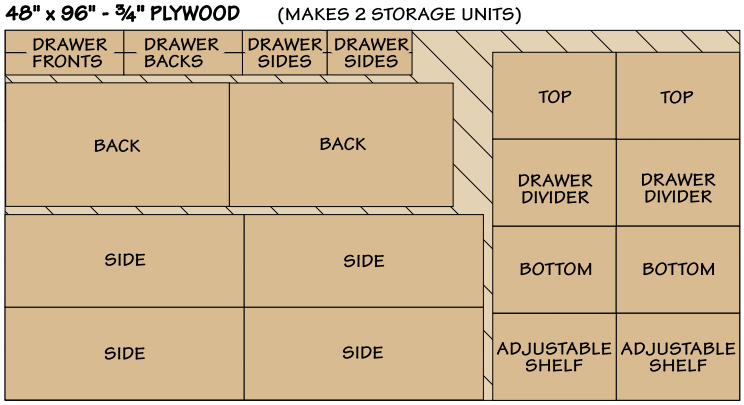
- (42) #8 x 1¼" Fh Woodscrews
- (4) #8 x ¾" Fh Woodscrews
- (2) Drawer Pulls
- (2) ½"-dia. x 1" Dowels
- (8) ¼" Shelf Support Pins

FIGURE 2



CUTTING DIAGRAM

48" x 96" - ¾" PLYWOOD (MAKES 2 STORAGE UNITS)



Cutting Plywood with a Circular Saw

All the plans in this series start by cutting out parts according to a cutting diagram. Now you could make many of these cuts at the table saw, but working with a full sheet of ¾" plywood, especially if you're by yourself, can be difficult. But there's an easier way.

I often use my circular saw for this kind of work. It's easier than trying to maneuver the plywood on the table saw, and it can be just as accurate if you follow a few simple guidelines.

To set up to make a cut, I clamp a straightedge guide to the sheet of plywood. This way, all I have to do is ride the edge of the saw along the guide to get a straight cut. Then, I place the plywood on a sheet of 2"-thick, rigid foam insulation, as you see in the photo at right. The foam insulation works great to support the full sheet of plywood, and I don't have to worry about cutting into the floor.