



Woodsmith **PLANS**

SECTIONAL ENTERTAINMENT CENTER



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This contemporary project was built with pocket hole joinery that required some clever cover-ups.



It's easy to see how practical this project is. The top is a large, solid wood panel that will hold a fairly good-sized TV, and inside there's plenty of storage space for all of your home entertainment components. Even the back has been carefully designed to provide room for organizing cables.

Plus, there are also smaller side cabinets that can be built and set next to the main TV cabinet, as shown in the inset photo. Or to give the components a little more

protection, you can build a pair of inset, glass-paneled doors (page 8).

But it's what you *can't* see that I'm really excited about. That's because this project was built almost exclusively with pocket hole screws, refer to the detail on the next page.

The problem is, since this project is an "open" design, I didn't want to have any pocket holes showing. This meant coming up with a few creative solutions for covering them up. As you can see, the final result was worth it — not a pocket hole in sight.

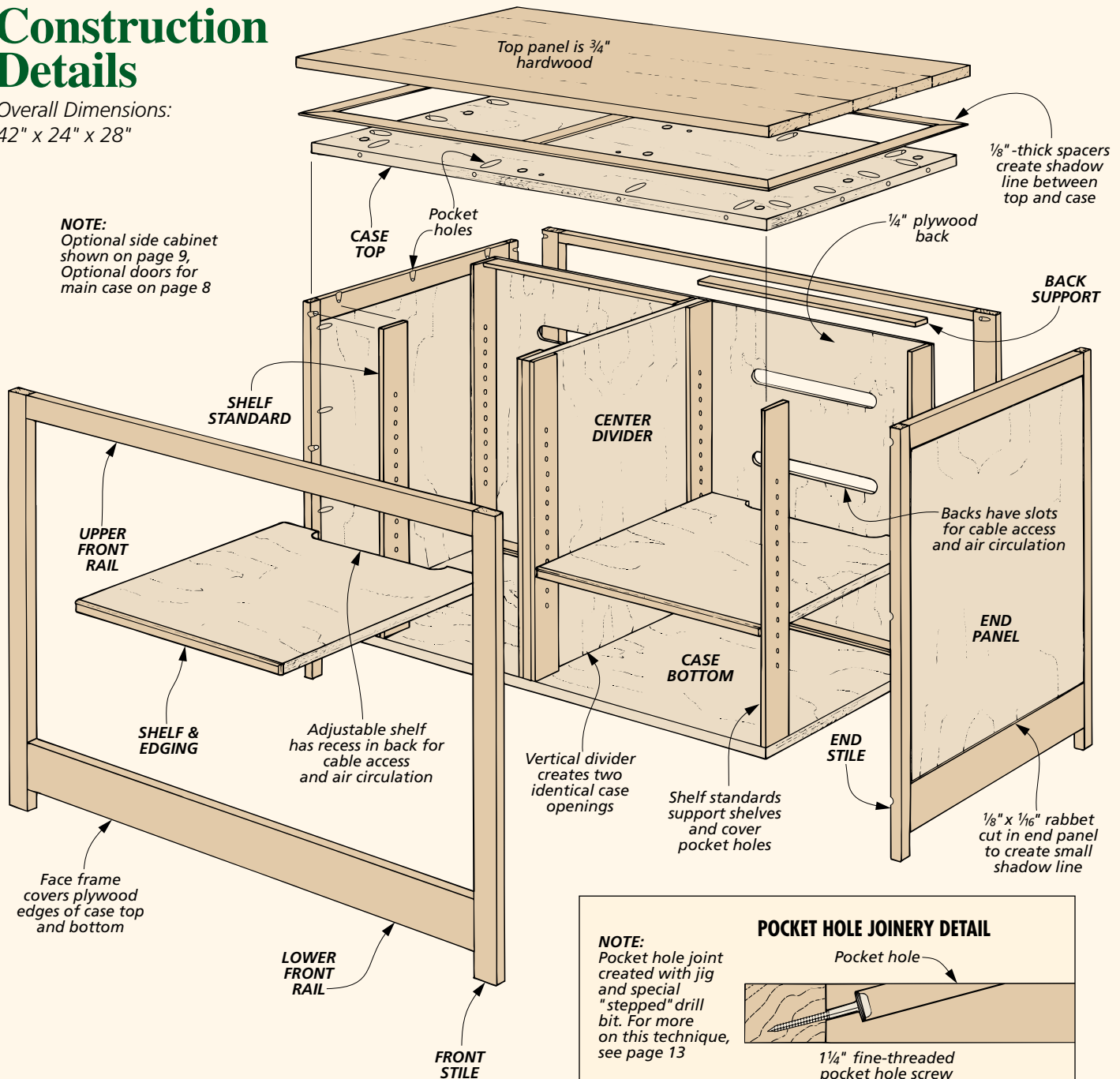


▲ Build a set of matching side cabinets that can be set right next to the main TV case or that can "stand alone." To see this side cabinet in a different light, turn to page 9.

Construction Details

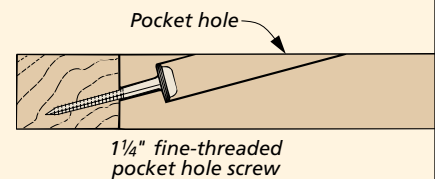
Overall Dimensions:
42" x 24" x 28"

NOTE:
Optional side cabinet
shown on page 9,
Optional doors for
main case on page 8



POCKET HOLE JOINERY DETAIL

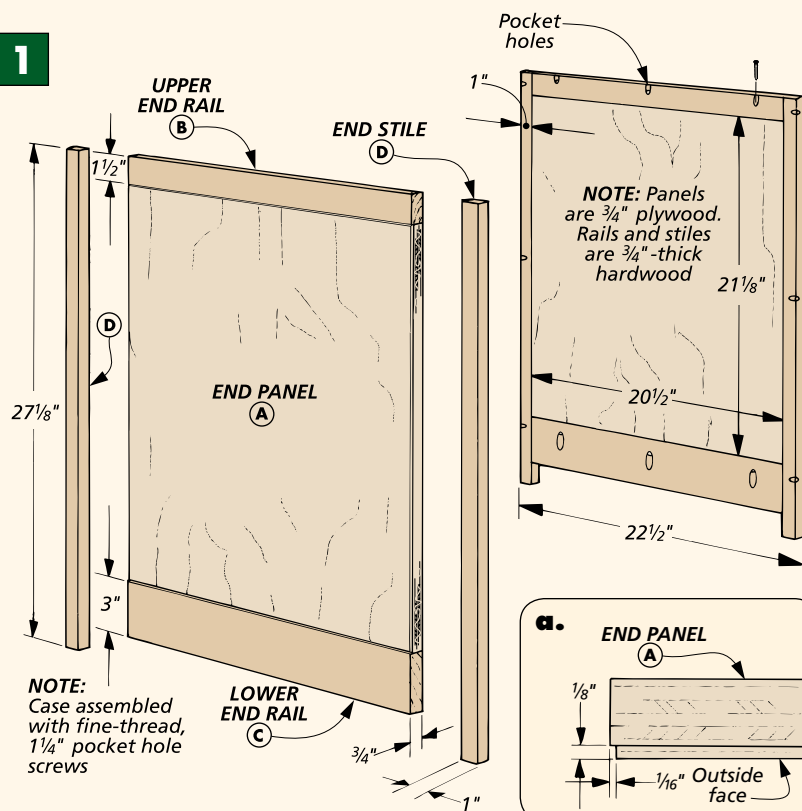
NOTE:
Pocket hole joint
created with jig
and special
"stepped" drill
bit. For more
on this technique,
see page 13



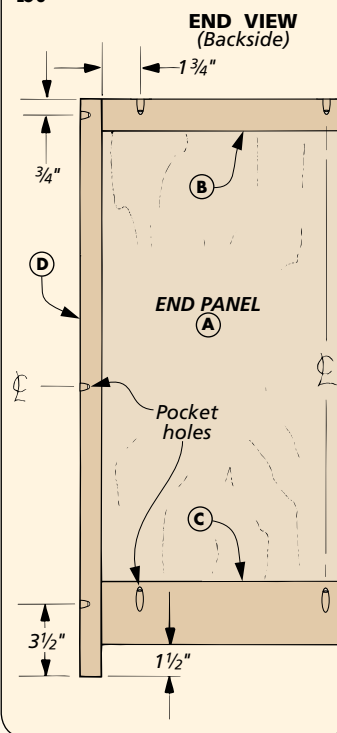
MATERIALS

- | | | | | |
|--------------------------------|----------------------------|------------------------------|----------------------------|---|
| A End Panels (2) | 3/4 ply. - 20 1/2 x 21 1/8 | L Lower Back Rail (1) | 3/4 x 6 - 38 1/2 | • (1 pkg.) #8 x 1 1/4" Pocket Hole Screws |
| B Upr. End Rails (2) | 3/4 x 1 1/2 - 20 1/2 | M Shelf Standards (8) | 3/8 x 2 1/2 - 21 7/8 | • (6) #8 x 2" Fh Woodscrews |
| C Lwr. End Rails (2) | 3/4 x 3 - 20 1/2 | N Back Supports (4) | 3/8 x 1 1/2 - 19 1/8 | • (16) Spoon-Style Shelf Supports |
| D End Stiles (4) | 3/4 x 1 - 27 1/8 | O Back Panels (2) | 1/4 ply. - 20 1/4 x 21 7/8 | • (9) #8 x 1 1/4" Rh Woodscrews |
| E Case Top/Btm. (2) | 3/4 ply. - 22 1/2 x 40 1/2 | P Shelves (4) | 3/4 ply. - 19 x 19 | • (9) #8 Flat Washers |
| F Center Divider (1) | 3/4 ply. - 19 1/4 x 21 7/8 | Q Shelf Edging (4) | 3/4 x 1/4 - 19 | • (2) 1/8" Glass (15 7/8" x 17 11/16")* |
| G Divider Edging (1) | 3/4 x 1/4 - 21 7/8 | R Top Spacers | 1/8 x 1 1/2 - 180 rgh. | • (1 pkg.) 1/2"-long Brads* |
| H Front/Back Stiles (4) | 3/4 x 1 3/4 - 27 1/8 | S Top Panel (1) | 3/4 x 24 - 42 | • (2 pr.) 2" x 1 9/16" Nickel Hinges* |
| I Upper Front Rail (1) | 3/4 x 1 1/2 - 38 1/2 | T Door Stiles (4)* | 3/4 x 2 - 21 | • (2) 96mm Stainless-Steel Pulls* |
| J Lower Front Rail (1) | 3/4 x 3 - 38 1/2 | U Door Rails (4)* | 3/4 x 2 - 15 15/16 | • (2) Magnetic Catches & Strikes* |
| K Upper Back Rail (1) | 3/4 x 3/4 - 38 1/2 | V Glass Stop* | 1/4 x 1/4 - 140 rgh. | * Required for the optional doors |

1



b.



Case Construction

▲ A small rabbet is all it takes to add an interesting shadow line to a frame and panel assembly.

The parts of this entertainment center are fairly typical for case construction. At each end there are frame and panel assemblies, and these are connected with top and bottom panels. Then to create the two openings, a vertical center divider will be added.

What's unique here is that almost the entire case is built using a pocket hole jig and screws. The nice thing is that all the pieces are butt jointed together, so there aren't any dadoes, grooves, or other joints to cut. On the other hand, I found

that this lack of traditional joinery meant that I needed a few "helpers" when it was time to assemble the case. But more on that later.

END PANELS. As with many cases, the first thing to work on are the end assemblies (Fig. 1). But with pocket screws, the sequence is a bit different. Instead of starting with the frames, I cut the 3/4" plywood *end panels* (A) to size first.

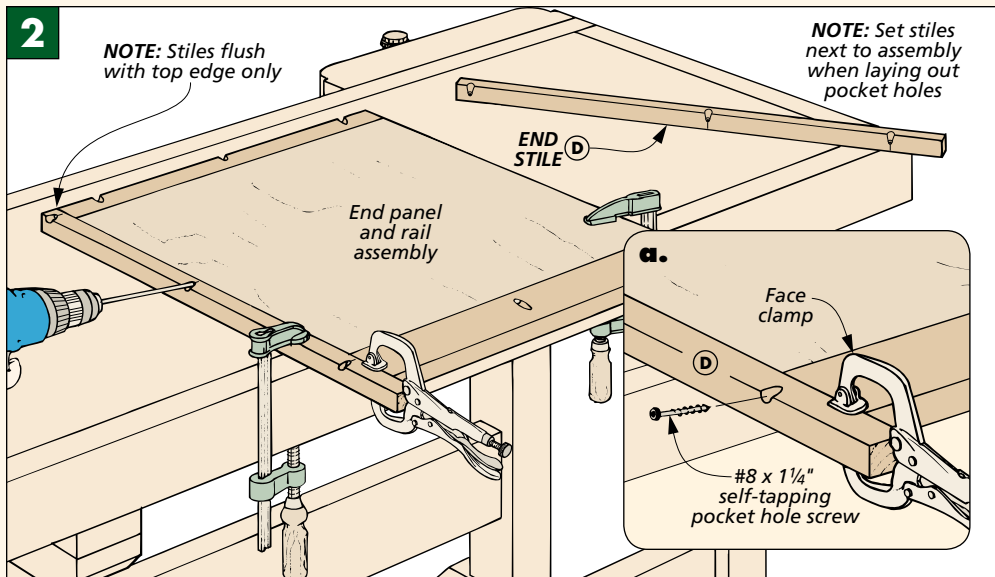
When frame and panel pieces are the same thickness (as they will be here), it's pretty tough to get them

flush all the way around the panel. I sidestepped the problem by creating a shadow line that accents the panel and hides the joint lines, as shown in the margin photo at left. This is easy to do — just cut a tiny rabbet around each panel (Fig. 1a).

RAILS & STILES. With the rabbets cut on the panels, the rails and stiles can be added to create the frame around the panel (Fig. 1). I started with the *upper* (B) and *lower end rails* (C) since they're cut to length to match the width of this panel.

When attaching the rails to the panels, the pocket holes could have been drilled in either the panels or the rails. As you can see in Fig. 1, I drilled them in the rails. This meant that the holes in the upper rails were drilled partially into their edges, but this method is better because these holes will end up neatly hidden by the top and bottom panels later on.

I should note two things here before going on. One is that while in most situations the locations of the pocket holes aren't critical, I've included them here because there are so many screws used to build this project (Fig. 1b). This way, you'll be sure to avoid drilling into a neighboring pocket hole (or screw).

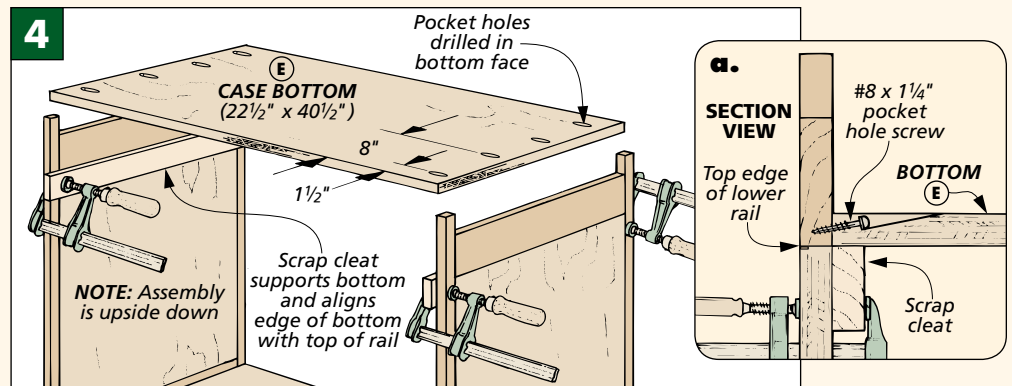
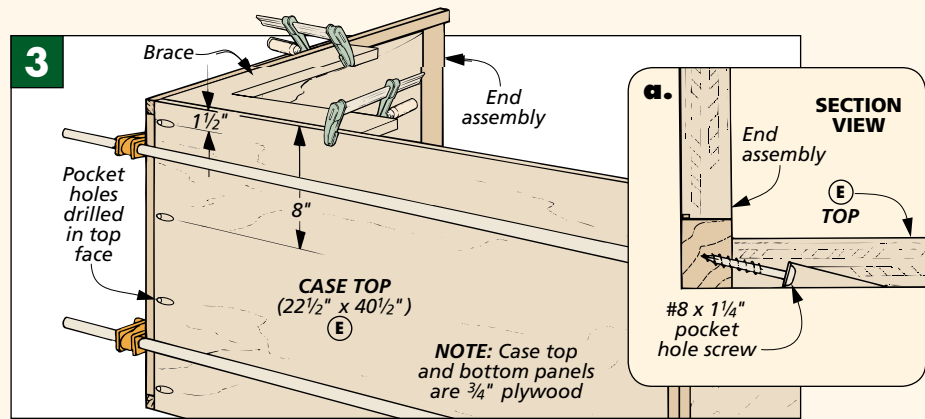


The other thing to note has to do with the use of glue. Technically, the screws should provide plenty of holding power. But to play it safe, it would be a good idea to apply glue too. However, you'll want to use the glue sparingly so you don't have a lot of excess to clean up.

To complete the frames, the two *end stiles* (D) are ready to be added (Fig. 2). These pieces are sized to extend below the lower rail to create short legs. It sounds simple enough, but with the stiles offset, they're not identical — the pieces are actually mirrored images of each other. So to drill the pocket holes in the right place, it's best to lay the stiles next to the assembly and mark the edges that you'll be drilling into.

TOP & BOTTOM. Now that the end assemblies are complete, they can be connected with the *case top* and *bottom* (E), as shown Figs. 3 and 4. These $\frac{3}{4}$ " plywood panels are identical, and once they've been cut to size, they're ready to be screwed to the end assemblies.

I started with the case top. After drilling the pocket holes in each end of the panel, it's screwed flush with the top edges of the end assemblies. But holding this long panel square to the ends while you're driving in the screws takes more than two hands. So I made a couple L-shaped braces to help hold the assembly square while it was being screwed



together, as shown in Fig. 3. (Here, it's okay to screw into the top face of the panel — it'll get covered with a hardwood top panel later.)

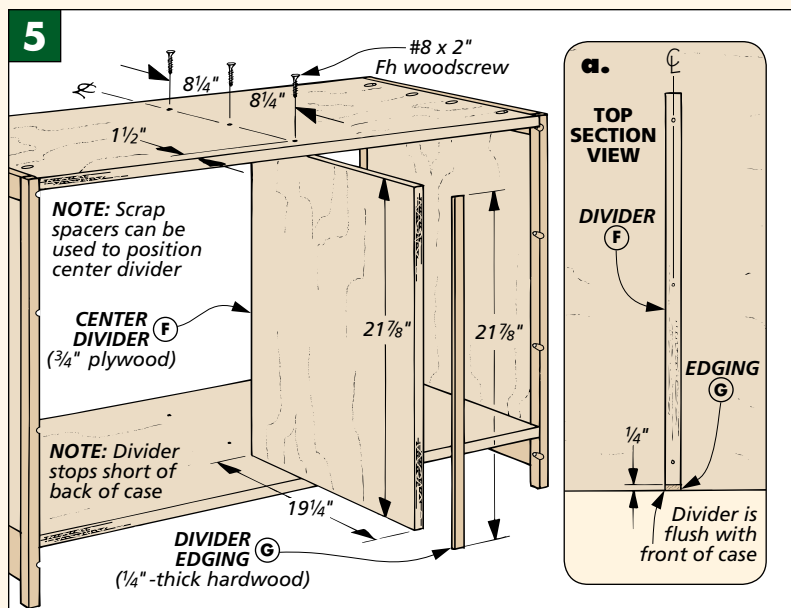
When attaching the case bottom, you'll need to flip the assembly over, as shown in Fig. 4. The idea here is to position the upper face of this panel even with the top edge of the lower end rail, as indicated in Fig. 4a. There's nothing tricky about this. All you need to do is clamp a

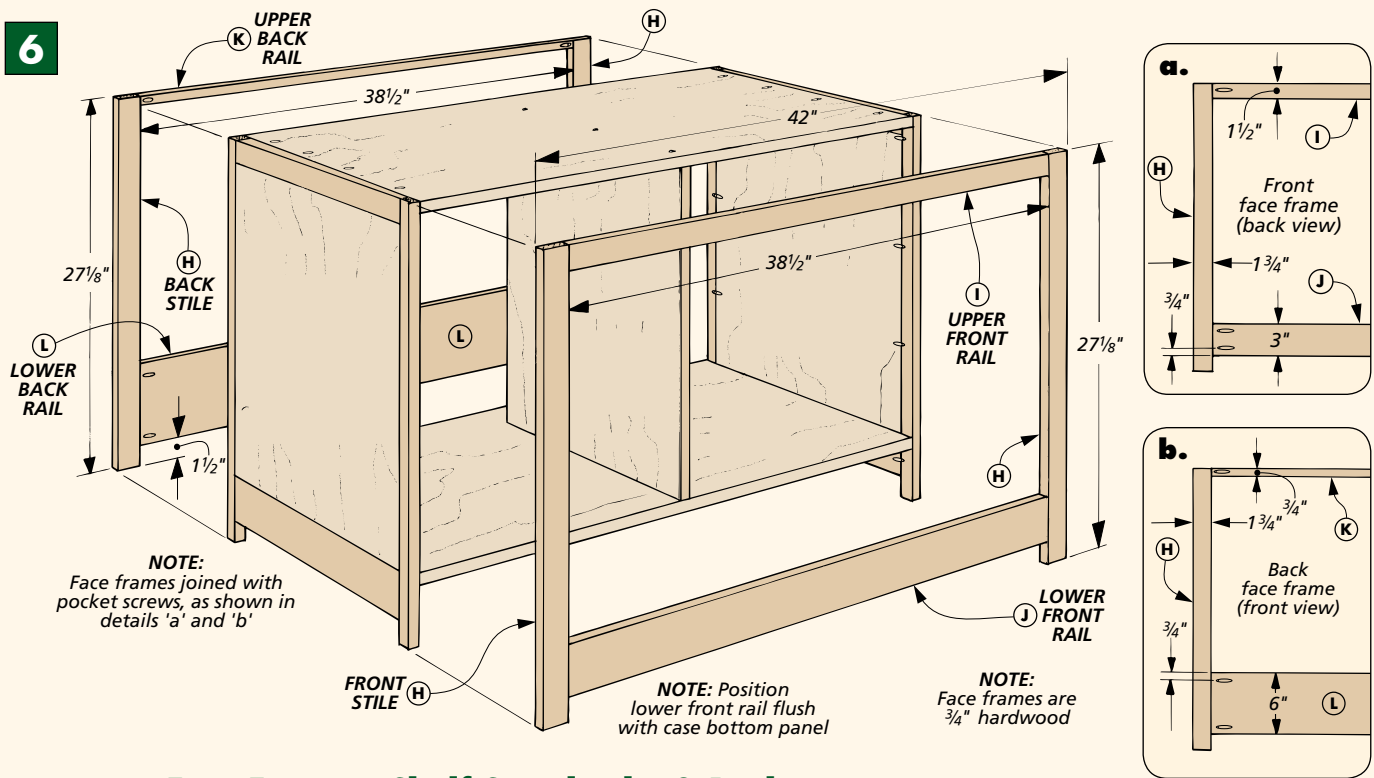
scrap cleat across each end and let the cleat support the panel while you screw it in place.

DIVIDER. To divide the case into two equal openings, the next piece to make is the *center divider* (F). When cutting this panel to size, note that it won't end up as deep (wide) as the top and bottom panels. As you can see in Fig. 5a, it is flush with the front of the case and stops a few inches short in back. (This space will be used to create a little trough or pocket for the cables.)

Before the plywood divider can be screwed into the case, it needs a piece of *edging* (G) to cover the plies in the front. I made this thin strip quickly and safely by ripping a $\frac{1}{4}$ "-wide strip from an oversized piece of $\frac{3}{4}$ "-thick hardwood.

The center divider is the only case piece that isn't attached with pocket hole screws. Instead, it's simply screwed to the top and bottom panels, flush with the front edges (Fig. 5a). But this panel isn't much easier to hold in place than the top and bottom panels were, so you may want to clamp some cleats to the case for support — similar to what you did with the bottom panel.





Face Frames, Shelf Standards, & Backs

Now that the main case has been assembled, it's time to add a pair of face frames, some shelf standards, and a couple of back panels.

FACE FRAMES. I started with the face frames that cover the plywood edges of the case at the front and back (Fig. 6). Typically, I'd just add a face frame to the front of a case. But the back frame here will create a shallow trough or pocket for the cables.

These two frames aren't identical though. While the *stiles* (H) are

the same, the *lower back rail* (L) is wider than the *lower front rail* (J). And to allow the back panels to fit through the opening later on, the *upper back rail* (K) is narrower than the *upper front rail* (I).

Once the face frame pieces are cut to size, they're simply screwed together. This is where pocket hole joinery really shines. These frames are quick and easy to assemble. The only thing to give extra attention to is the position of the lower front rail. You want it to end up flush with the top face of the case bottom.

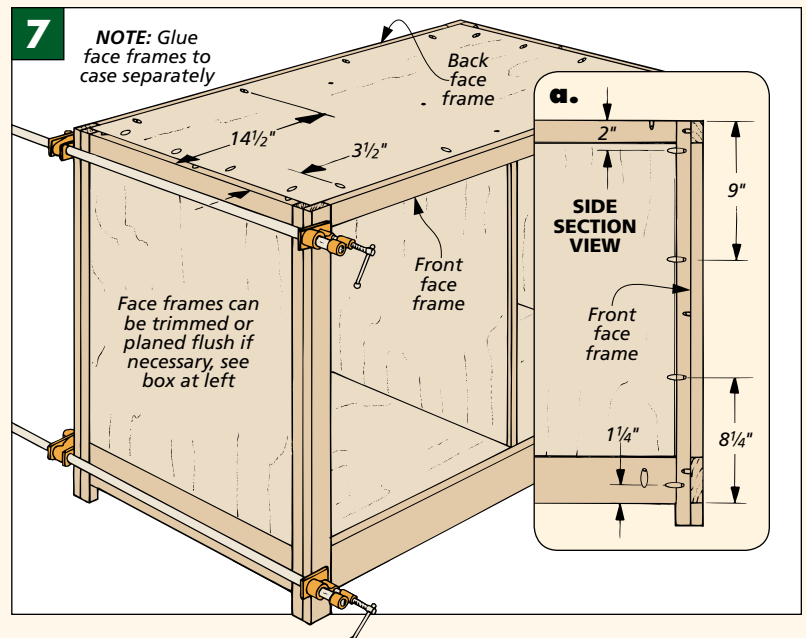
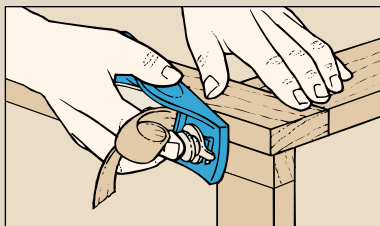
So I set each stile against the case and marked the position of the bottom panel. These marks can then be used to position the lower front rail.

When the face frames are assembled, they're ready to be screwed to the case (Fig. 7). Don't worry if the frames and case don't end up perfectly flush all the way around. You can always do a little trimming later, as shown in the box at left.

SHELF STANDARDS. With the face frames in place, you can make the *shelf standards* (M) next (Fig. 8). These 3/8"-thick pieces have a series

FLUSH FACE FRAMES

When gluing a face frame to a large case, it's nearly impossible to get the edges completely flush. So I usually plan to do a little "touch-up." Most times, I'll use my block plane, setting it to take very fine shavings, see drawing. Or if there's a only slight shoulder, I'll sand it flush, using a sanding block to prevent rounding the edges.



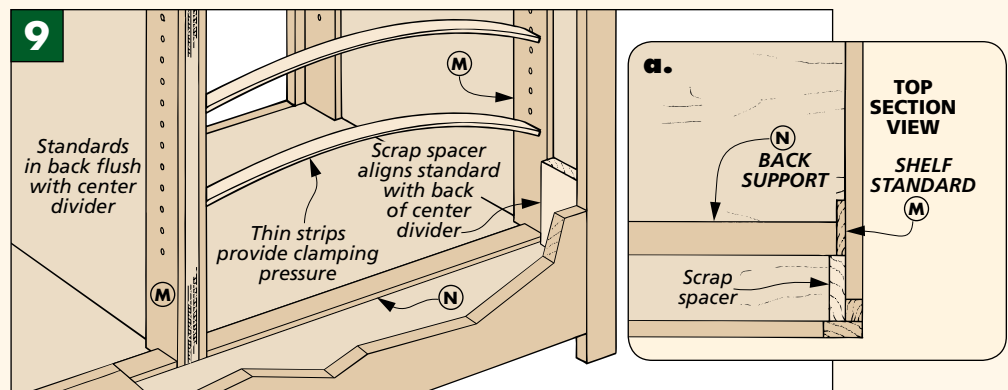
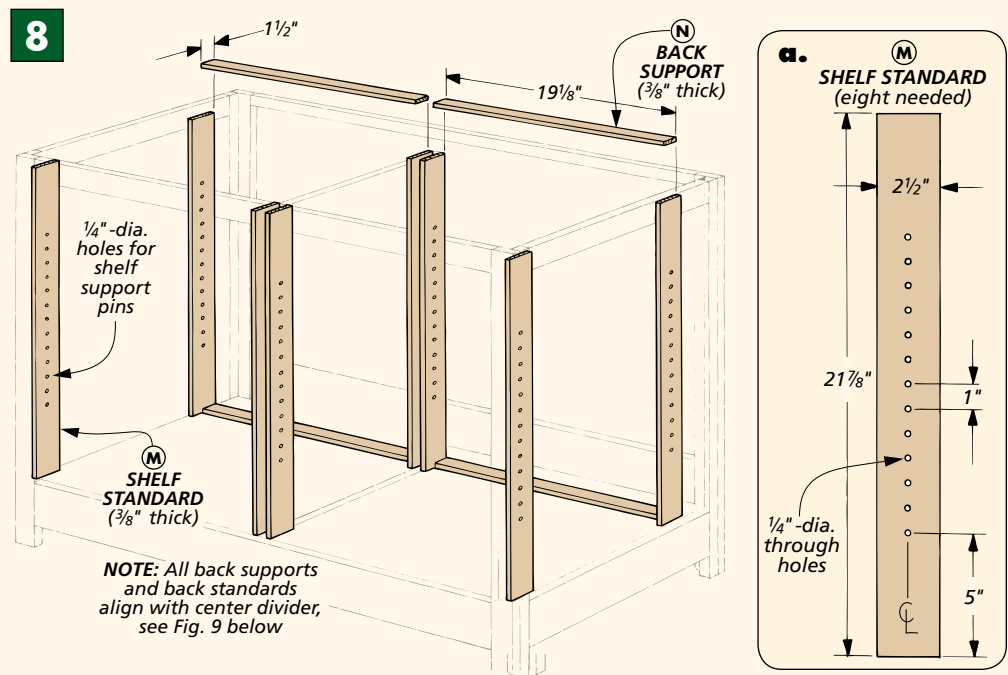
of holes for holding spoon-style shelf pins. But they do more than just support the shelves. These standards also cover the most visible pocket holes inside the case.

The shelf standards at the front of the case can simply be glued and clamped to the sides and center divider. The standards glued flush with the back of the center divider are also easy enough to install.

The trick is the back standards at the ends — they also need to align with the back of the divider. This is easy to do with a couple of scrap spacers. But then they're inset too far for clamps to reach them. So to hold them, I cut some thin, flexible strips and wedged them between the standards while the glue dried, as you can see in Fig. 9.

BACK SUPPORTS. While the glue on the standards was drying, I cut four $\frac{3}{8}$ "-thick *back supports* (N) to fit between the standards at the top and bottom of the case (Fig. 8). And since they're flush with the back edges of the standards, I used the same spacers and flexible strips when gluing them in place.

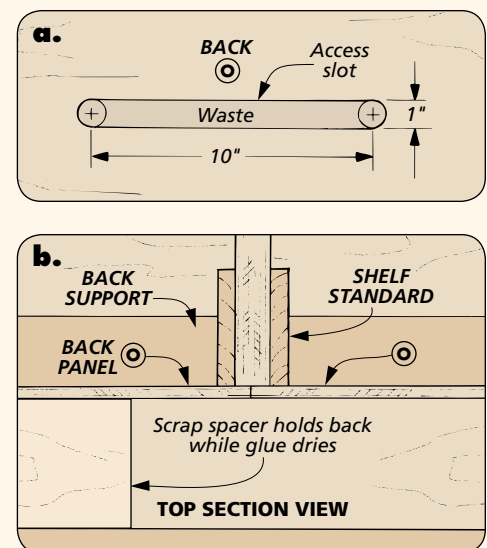
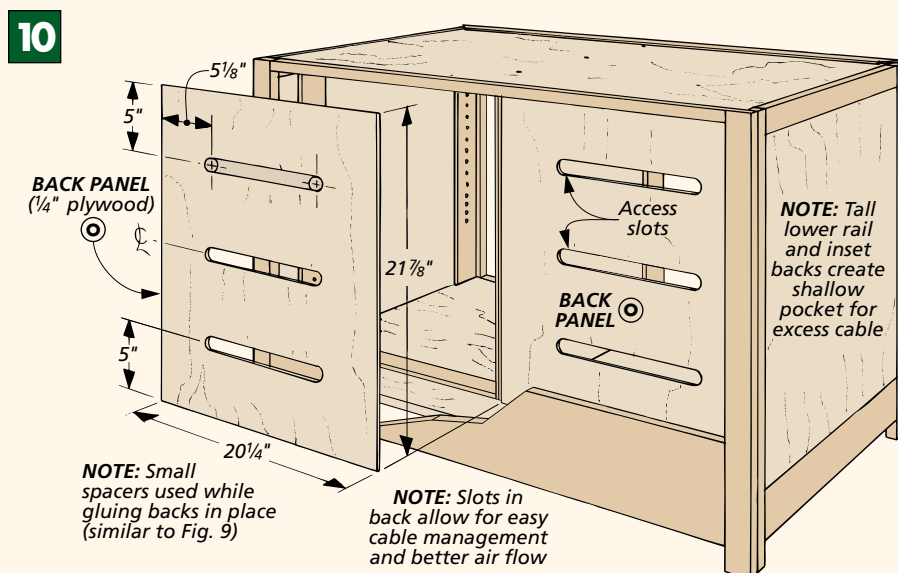
BACK PANELS. At this point, the $\frac{1}{4}$ " plywood *back panels* (O) can be cut to finished size to fit inside the case, as shown in Fig. 10. But before gluing these panels in place, I cut three access slots across the back of each (Fig. 10a). This will make it easier to feed the cables through when connecting the components, as well as let the air circulate freely. To make these slots, I first drilled a 1"-dia. hole at each end.



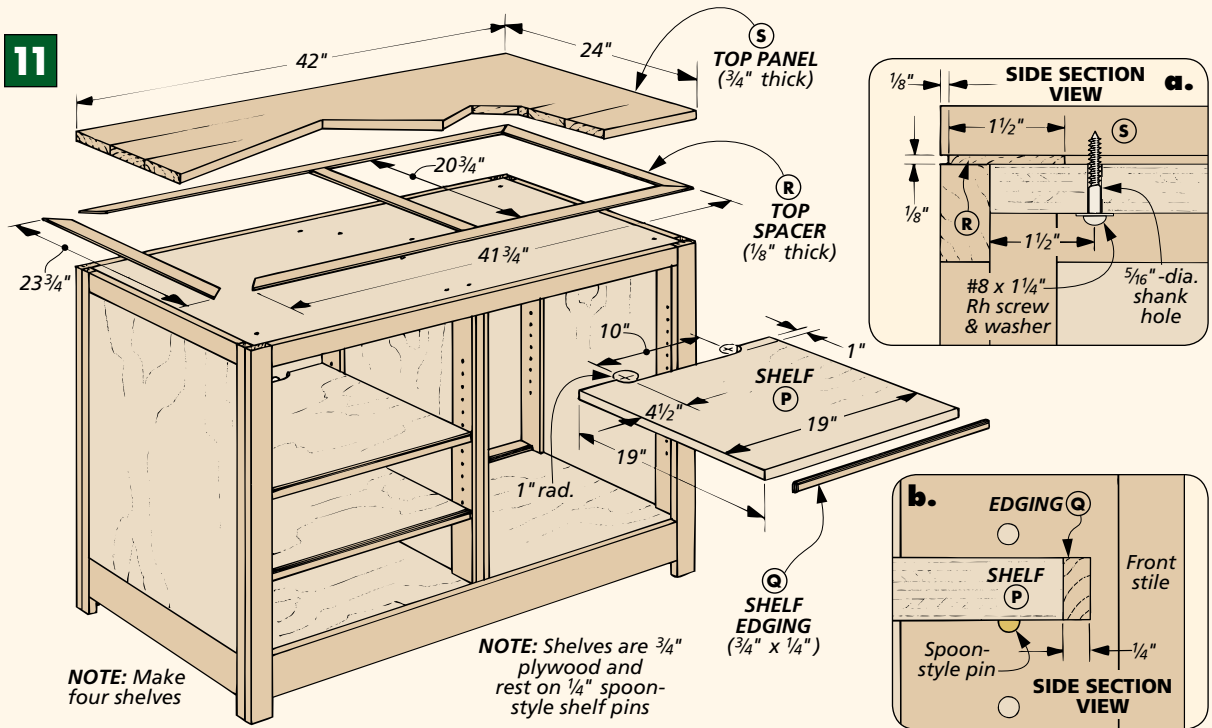
Then the waste between the holes can be removed with a jig saw, and the slots can be sanded smooth.

The back panels have to be angled to be slid in front of the back face frame (which is why there are two

back panels in the first place). And the back face frame also prevents you from being able to nail the panels in place. But a few scrap spacers will apply enough pressure to hold them while the glue dries (Fig. 10b).



11



▲ The decorative shadow line on the end assemblies is repeated under the top panel. This time, it's created with thin spacers.

Shelves & Top

The main case of the entertainment center is just about complete. All that's left is to add some adjustable shelves and a hardwood top with some thin spacers, as in Fig. 11 above.

SHELVES. The shelves (P) are 3/4" plywood panels with hardwood edging (Q) added to the front of each. (For the edging, I ripped a 1/4"-wide strip from 3/4"-thick hardwood.)

Then to make it easier to organize the cables (and let the air circulate), I used my jig saw to create a cut-out on the back of each shelf and sanded this profile smooth.

TOP PANEL & SPACERS. Now that the shelves are in place, the last area to work on is the top of the case. As you can see in Fig. 11, there are two layers here: A large panel that rests on a layer of thin spacers.

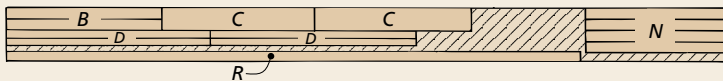
The actual top panel (S) is glued up from 3/4"-thick hardwood. And while the glue is drying on this panel, you can begin working on the second layer that's sandwiched between the top and the case (Fig. 11). It's a thin "frame" of top spacers (R) cut from stock that's been resawn or planed down to 1/8" thick.

The spacers are mitered to length so they set 1/8" back from the edges of the case, as shown in Fig. 11a. This creates a thin shadow line similar to the one on the end panels of the case. (See margin photo at left.) Also to help support the top panel, I added a spacer at the center.

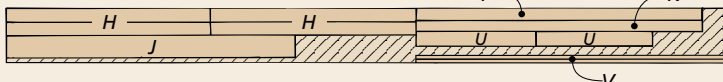
When the glue is dry, the case top can be cut to match the case and then screwed in place. I made the shank holes oversized so the top can expand and contract freely. (To find out how I finished the entertainment center, turn to page 12.) **W**

CUTTING DIAGRAM

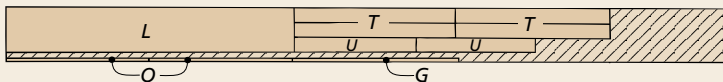
3/4" x 7 1/4" - 96" Hard Maple (4.8 Bd. Ft.)



3/4" x 7 1/4" - 96" Hard Maple (4.8 Bd. Ft.)



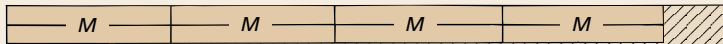
3/4" x 7 1/4" - 96" Hard Maple (4.8 Bd. Ft.)



3/4" x 7 1/4" - 96" Hard Maple (Two Boards @ 4.8 Bd. Ft. Each)

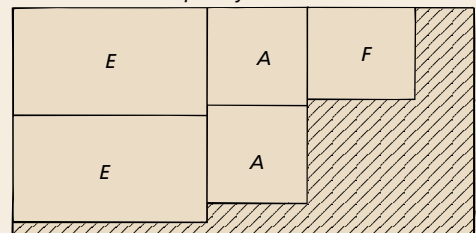


3/4" x 5 1/2" - 96" Hard Maple (3.7 Bd. Ft.)

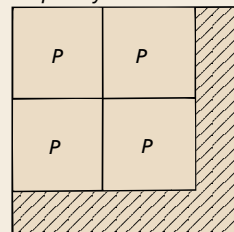


NOTE: Top spacers (R) and glass stop (V) must be resawn to get blanks needed.

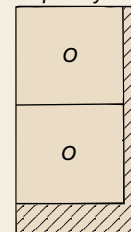
3/4" - 48" x 96" Maple Plywood



3/4" - 48" x 48" Maple Plywood



1/4" - 48" x 24" Maple Plywood



OPTIONAL DOORS

If you'd like to build a pair of inset doors for this entertainment center, you'll find they're just simple frames with glass panels, as shown in Fig. 1.

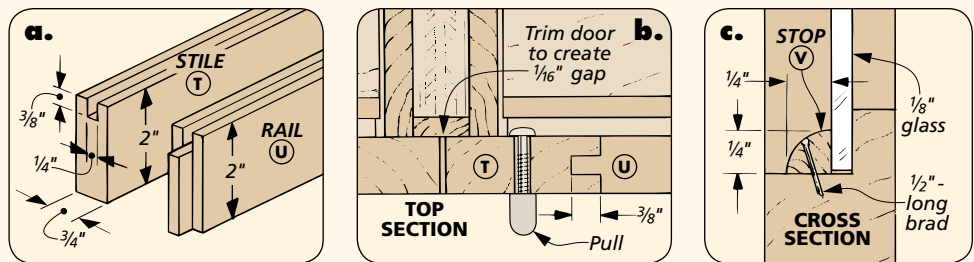
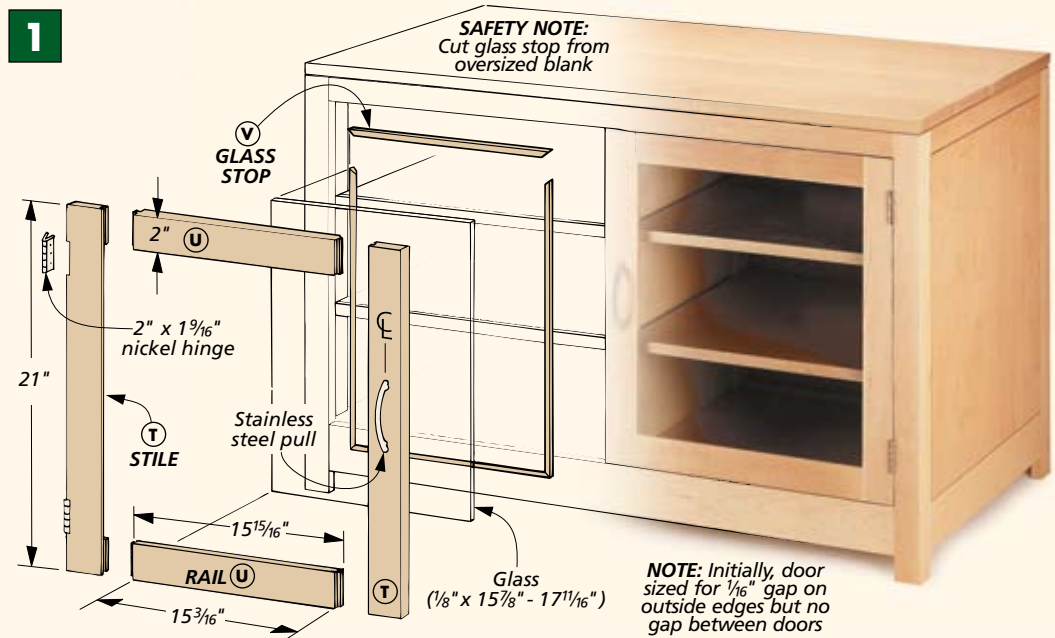
Like the face frames on the case, these doors could have been built quickly with pocket hole joinery. And, you could have bought hardwood plugs for making the pocket holes less visible.

FRAME. But I didn't want the joinery to be visible at all, so I built the door frames with stub tenons and grooves (Figs. 1 and 1a). And when sizing the *door stiles* (T) and *rails* (U), I allowed for a $\frac{1}{16}$ " gap around the two doors, but no gap between them. (This makes the math a bit easier, and the edges of the center stiles are easy enough to trim later to quickly create an even $\frac{1}{16}$ " gap.)

With the stiles and rails cut to size, $\frac{3}{8}$ "-deep grooves need to be cut on the inside edges of the pieces (Fig. 1a). Then you can cut the stub tenons to fit into these grooves.

After the frames have been assembled, they're ready for the rabbet that will hold the glass (Fig. 1c). With the grooves already cut, there's not much material left to be removed, so the rabbet can be routed in a single pass (Fig. 2). But you'll still need to square up the corners with a chisel.

HINGE MORTISES. I planned to mount the doors on butt hinges. And to make installation easier, I cut the mortises in the door frames only, as indicated



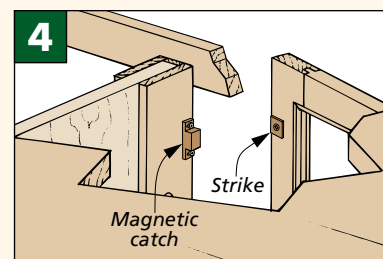
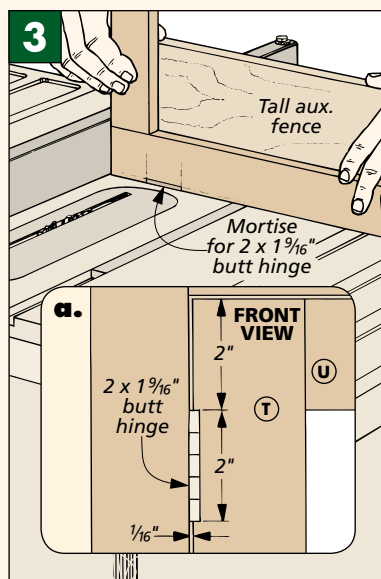
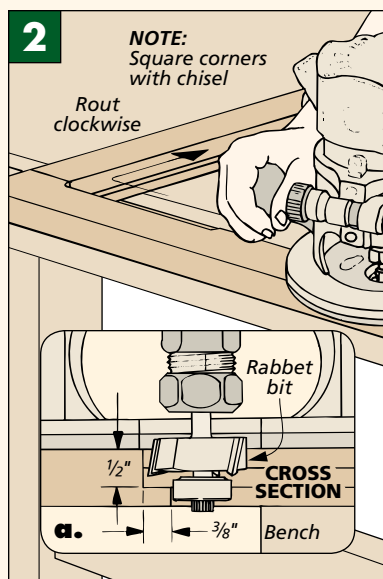
in Fig. 3a. (The hinges will be surface mounted to the case.) To do this, I used my table saw, attaching a tall auxiliary fence to the miter gauge to support the frame (Fig. 3).

GLASS. At this point, the doors are ready for the $\frac{1}{8}$ " glass panels. Quarter-round *glass stop* (V) will

hold the glass in place. (When making these tiny strips, it's best to start with oversized pieces to be safe.) Then they're mitered to length and nailed to the frame (Fig. 1c).

MOUNT DOORS. Now the doors are ready to be mounted to the case. With inset doors, the goal is to get an even gap around and between the doors. I like to concentrate on the gaps around the doors first. Then creating the gap between the doors is a simple matter of planing or sanding a little off each center stile.

HARDWARE. When the doors fit well, the last step is to add pulls to the doors and magnetic catches to the inside of the case (Figs. 1b and 4). **W**



SIDE CABINET

This side cabinet is the perfect “sidekick” to the entertainment center. Since its top panel is flush with the sides, the cabinet will nestle up tight on either side of the TV cabinet. And the small drawer and adjustable shelf offer quite a bit of additional space for storage.

But don't limit this cabinet to being just a component of the entertainment center. When set next to a bed or arm chair, as shown in the photos below, it also makes a great little nightstand or end table.

CONSTRUCTION NOTES. As you might expect, building this cabinet is similar to building the TV cabinet — only this one is even easier because the workpieces are smaller. However, there are some important differences to note. Instead of a vertical center divider, the side cabinet has a horizontal divider that creates a small drawer opening. Plus, the back is quite a bit different. It still has a face frame, but there's no plywood back to the cabinet and no pocket for excess cables.

END ASSEMBLIES. This small cabinet starts out just like the larger TV unit: by building two end assemblies, as shown in Fig. 1. First, the *end panel* (A) is cut to size, and the small rabbet that creates the shadow line is cut, refer to Figs. 1 and 1a on page 3.

Next, the *upper* (B) and *lower end rails* (C) are attached to the



panel with pocket hole screws. Again, I drilled the stepped holes for the screws in the rails (instead of the panel) so they'd end up being hidden later. Then the two *stiles* (D) can be cut to size and attached to the assembly. And as on the larger case before, you want to get these pocket holes in the right places, so when laying them out, it's best to set the stiles next to the assembly.

CONNECTING PANELS. With the stiles in place, the two end assemblies are complete and can be connected with the $\frac{3}{4}$ " plywood *top* (E) and *bottom* (E) panels (Fig. 1). Here's where the big difference between the two cabinets begins. Instead of a vertical center divider, these side cabinets have a horizontal *divider* (E) that will support the drawer.

The divider is identical to the top and bottom panels except for one thing. I drilled $\frac{3}{4}$ "-dia. access holes in each corner so I'd be able to screw the hardwood top panel to the case later on (Figs. 1b and 4a). And while I was at it, I drilled the oversized shank holes ($\frac{5}{16}$ ") in the top (E). (They're oversized so the hardwood top will be able to expand and contract with changes in humidity.)

When connecting the end assemblies with the plywood panels, I started with the top and bottom pieces. To do this, I used braces and cleats just as I did before with TV cabinet, refer to Figs. 3 and 4 on page 4.

Attaching the divider is similar to the bottom panel. It's positioned by



Nightstand or end table. This side cabinet doesn't have to be set next to the TV cabinet. It's the perfect size for a nightstand (left). And since the back looks as good as the front, it can be set out away from the wall as an end table (right).

a couple of cleats, but these scrap pieces can be cut to match the height of the opening between the top and divider ($4\frac{1}{4}"$), as shown in Fig. 2. Then with the case flipped upside down, the divider and cleats simply rest on the top panel.

FACE FRAMES. Now the front and back face frames ready to be added to the case, as shown in Fig. 3. The front face frame establishes the opening for the drawer, while the one in back merely cleans up the back side so you'll be able to set the cabinet out away from a wall.

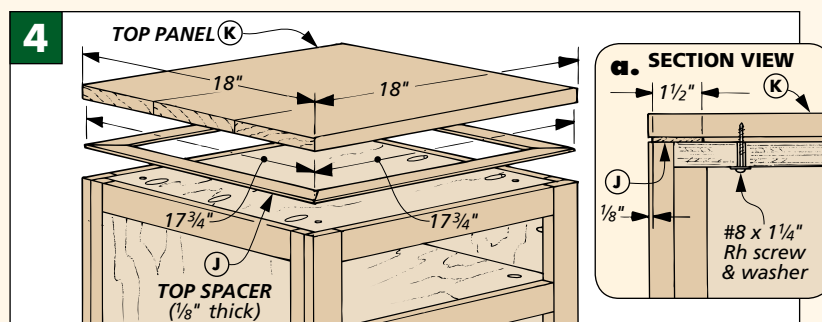
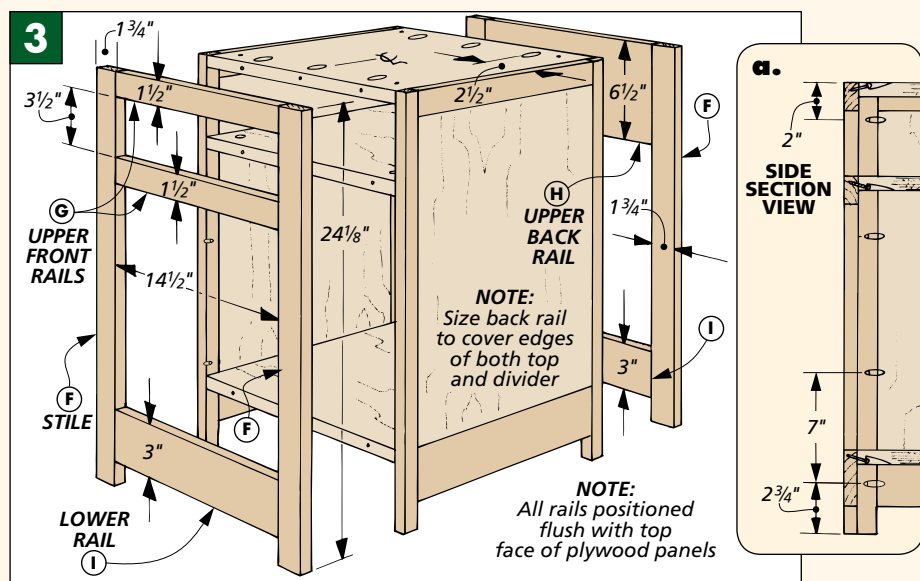
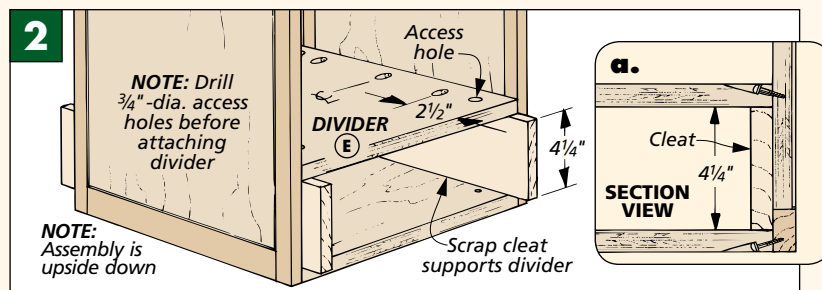
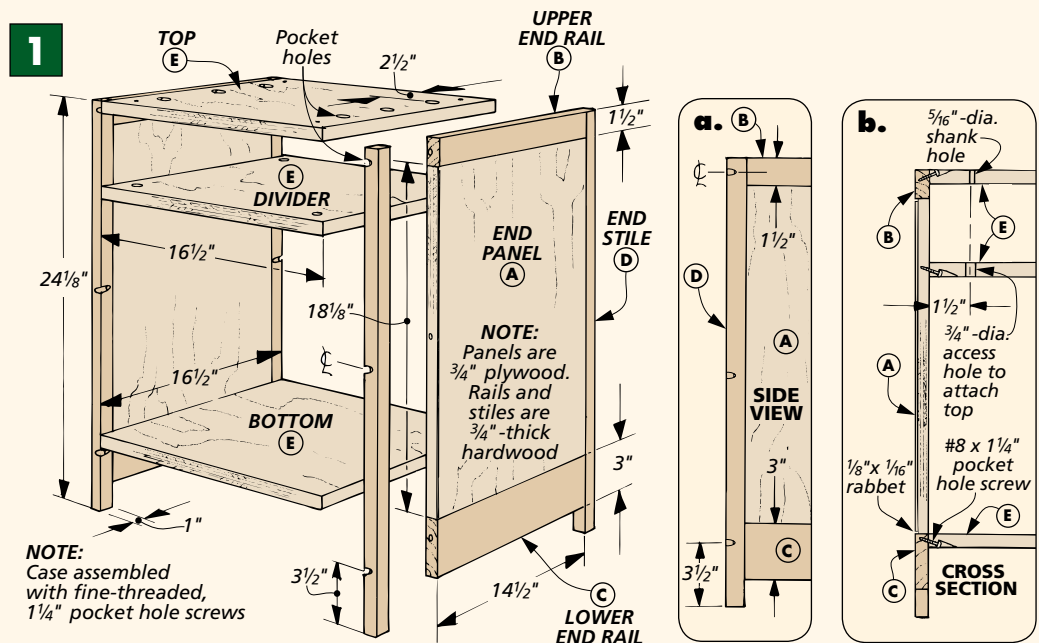
When cutting the face frame pieces to size, the four *front* and *back stiles* (F) are identical, as well as the *lower rails* (I). There are two narrow *upper front rails* (G) that create the drawer opening. And as for the *upper back rail* (H), it's $6\frac{1}{2}"$ wide and covers the entire back of the drawer opening.

Assembling the face frames here isn't much different than those made for the TV cabinet. Both lower rails should end up flush with the bottom panel, as shown in Fig. 3a. And there's the extra upper front rail that should also be flush with the divider. In both cases, you can set the stiles against the case and mark the location of the plywood panels.

TOP PANEL & SPACERS. After the face frames have been pocket-screwed to the front and back of the case, the next area to work on is the top of the cabinet. Like the TV cabinet, there are two layers here, as you can see in Fig. 4.

First, I glued up an oversized $\frac{3}{4}"$ -thick hardwood *top panel* (K). Then while the glue was drying, I worked on the *top spacers* (J). Again, these create the shadow line under the top panel, so you'll need to plane or resaw some stock down to $\frac{1}{8}"$ thick for these pieces. Then they're simply mitered to length so they set back $\frac{1}{8}"$ from the outside edge of the cabinet.

After the top spacers have been glued in place, the top panel can be cut to finished size and then screwed down to the cabinet. (You'll need a long screwdriver to be able to tighten the woodscrews.)



Drawer

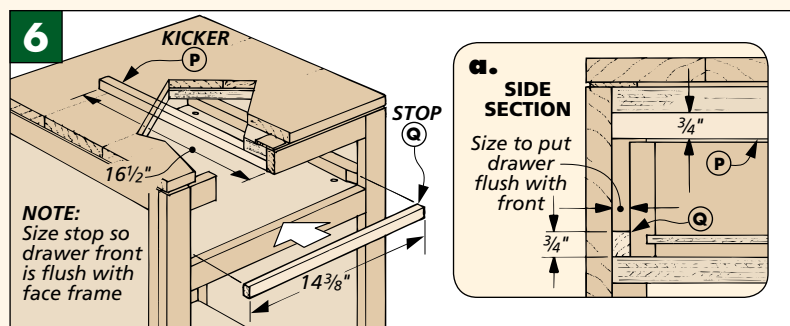
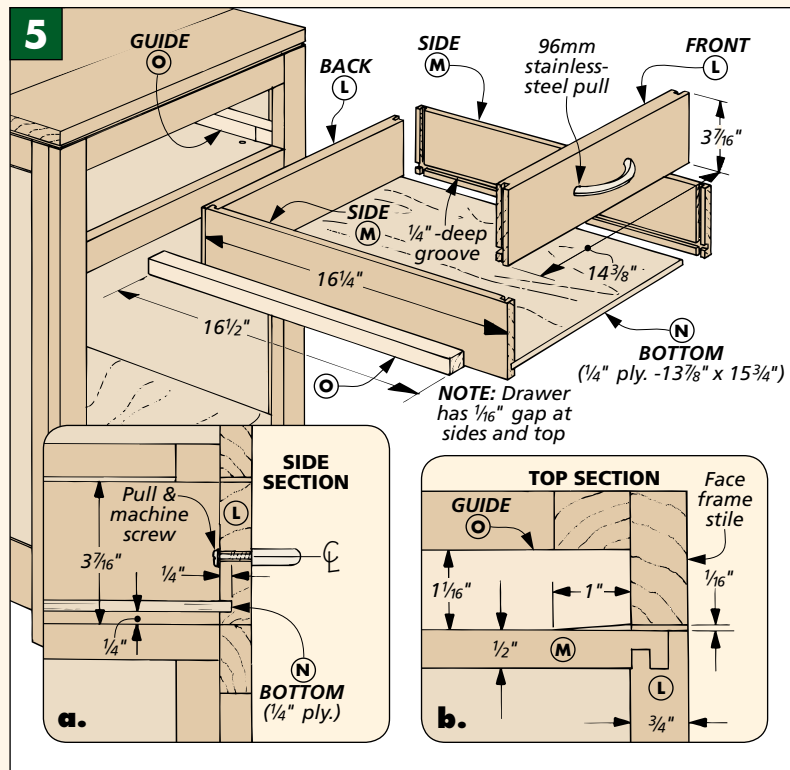
Now that the case for the side cabinet is complete, the next thing to work on is the small drawer that fits into the opening, as shown in Fig. 5.

CUT TO SIZE. When sizing the drawer pieces, I cut the *front* and *back* (L) so there would be a $\frac{1}{16}$ " gap at the sides and top. The *side* (M) pieces are resawn or planed down to $\frac{1}{2}$ " thick and are cut to length so the drawer ends up $\frac{1}{2}$ " short of the full depth of the cabinet. (Later a stop will be added so the drawer ends up flush with the front face.)

LOCKING RABBIT JOINT. To join the drawer pieces, I used a fairly simple locking rabbit joint, as described in the box below. However, if you own a router and a dovetail jig, the pieces are sized so that you could join them with half-blind dovetails.

BOTTOM. Before assembling the drawer pieces, you'll want to cut a groove near the bottom of each piece to hold a $\frac{1}{4}$ " plywood *drawer bottom* (N), as shown in Fig. 5a. Once the bottom is cut to size, the drawer can be glued together. Finally, the pull can be added to the front.

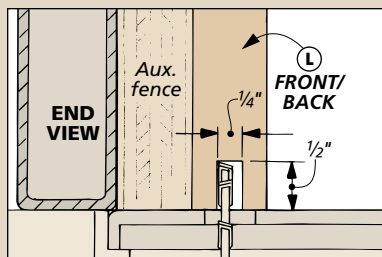
GUIDES, KICKER, & STOP. To guide the drawer in and out of the opening, there are a few more pieces to add. First, I glued *drawer guides* (O) along the sides of the cabinet. These are sized to stick past the face frame



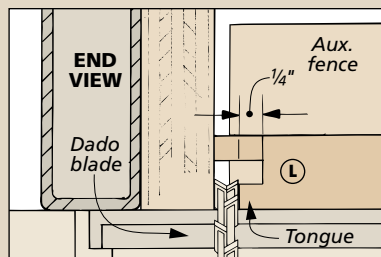
HOW TO MAKE LOCKING RABBETS

To build the drawers on the small cabinet, I used a locking rabbit joint, see photo. It's much stronger than a simple butt or rabbet joint, and it's not as difficult as cutting dovetails.

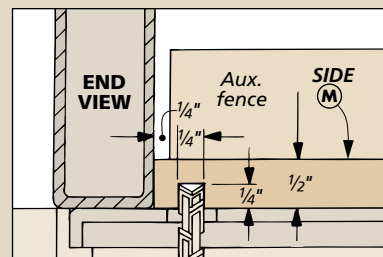
With a locking rabbit, a short tongue is cut on the front and back pieces, as in Steps 1 and 2. Then these tongues simply lock into dados cut in each side piece, see Step 3.



1 On the front and back pieces, cut a $\frac{1}{4}$ "-wide slot on each end. Raise the blade so the depth matches the thickness of the drawer sides ($\frac{1}{2}$ ").



2 The next step is to create a short tongue on the inside face of each front and back piece. Sneak up on the fence setting until the tongue is $\frac{1}{4}$ " long.



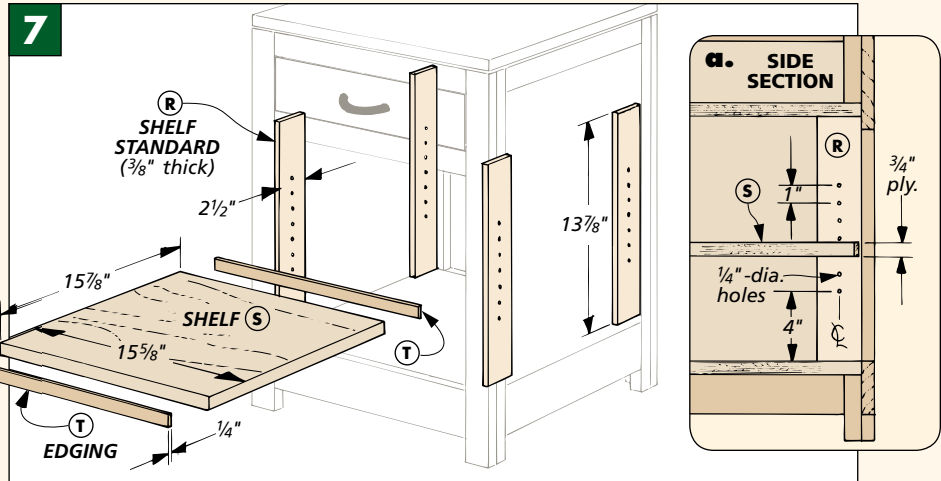
3 Finally to hold the tongue on the front and back pieces, cut $\frac{1}{4}$ " x $\frac{1}{4}$ " dados at the ends of each side piece. (Be sure to check the setup with a test piece.)

stiles $\frac{1}{16}$ ", as shown in Fig. 5b. (To make it easier to "feed" the drawer into the cabinet, I tapered the front 1" of each guide with sandpaper.)

Next, to keep the drawer from tipping as it's pulled out, I glued a *kicker* (P) under the top of the case (Fig. 6). Then I added a *stop* (Q) at the back of the case. You'll want to sneak up on the width of this piece so that when the drawer stops against it, the drawer's front face will be flush with the face frame.

SHELVES & STANDARDS. For this small cabinet, I saved the shelves for last (Fig. 7). To support these panels, four *shelf standards* (R) will need to be resawn or planed down to $\frac{3}{8}$ " thick. They're basically the same as the standards in the TV cabinet (just shorter), as shown in Fig. 7.

Finally, you can cut the *shelf* (S) to size from $\frac{3}{4}$ " plywood (Fig. 7). And since this cabinet is open in the back, I glued hardwood *edging* (T) to both the front and back edges of the shelf. **W**



FINISHING TOUCH

When deciding on the finish for the entertainment center, I chose not to stain the wood. For one thing, the light color of maple fits well with the project's contemporary style. It's also a good match to the color of the plywood. And maple can be

difficult to stain evenly anyway — it often ends up looking "blotchy."

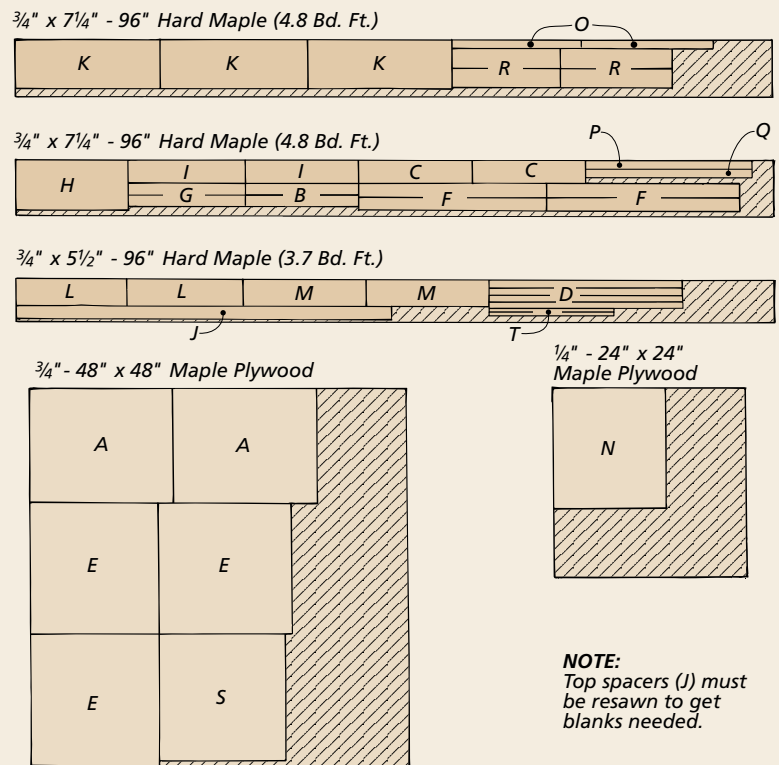
Instead, I sanded the project with 180-grit sandpaper and then applied several coats of a wipe-on polyurethane. But this would also be a great project for a water-based topcoat.

MATERIALS

A End Panels (2)	$\frac{3}{4}$ ply. - $14\frac{1}{2} \times 18\frac{1}{8}$
B Upper End Rails (2)	$\frac{3}{4} \times 1\frac{1}{2}$ - $14\frac{1}{2}$
C Lower End Rails (2)	$\frac{3}{4} \times 3$ - $14\frac{1}{2}$
D End Stiles (4)	$\frac{3}{4} \times 1$ - $24\frac{1}{8}$
E Top/Btm./Divider (3)	$\frac{3}{4}$ ply. - $16\frac{1}{2} \times 16\frac{1}{2}$
F Front/Back Stiles (4)	$\frac{3}{4} \times 1\frac{3}{4}$ - $24\frac{1}{8}$
G Upper Front Rails (2)	$\frac{3}{4} \times 1\frac{1}{2}$ - $14\frac{1}{2}$
H Upper Back Rail (1)	$\frac{3}{4} \times 6\frac{1}{2}$ - $14\frac{1}{2}$
I Front/Back Lower Rails (2)	$\frac{3}{4} \times 3$ - $14\frac{1}{2}$
J Top Spacers (1)	$\frac{1}{8} \times 1\frac{1}{2}$ - 90 rgh.
K Top Panel (1)	$\frac{3}{4} \times 18$ - 18
L Drawer Front/Back (2)	$\frac{3}{4} \times 3\frac{7}{16}$ - $14\frac{3}{8}$
M Drawer Sides (2)	$\frac{1}{2} \times 3\frac{7}{16}$ - $16\frac{1}{4}$
N Drawer Bottom (1)	$\frac{1}{4}$ ply. - $13\frac{7}{8} \times 15\frac{3}{4}$
O Drawer Guides (2)	$\frac{3}{4} \times 1\frac{1}{16}$ - $16\frac{1}{2}$
P Drawer Kicker (1)	$\frac{3}{4} \times \frac{3}{4}$ - $16\frac{1}{2}$
Q Drawer Stop (1)	$\frac{3}{4} \times \frac{1}{2}$ - $14\frac{3}{8}$
R Shelf Standards (4)	$\frac{3}{8} \times 2\frac{1}{2}$ - $13\frac{7}{8}$
S Shelf (1)	$\frac{3}{4}$ ply. - $15\frac{5}{8} \times 15\frac{5}{8}$
T Shelf Edging (2)	$\frac{3}{4} \times \frac{1}{4}$ - $15\frac{5}{8}$

- (1 pkg.) $\frac{1}{4}$ " Pocket Hole Screws
- (4) #8 x $1\frac{1}{4}$ " Rh Woodscrews
- (4) #8 Flat Washers
- (1) 96mm Stainless-Steel Pull
- (4) Spoon-Style Shelf Supports

CUTTING DIAGRAM



NOTE:
Top spacers (J) must be resawn to get blanks needed.

POCKET HOLE JOINERY

Drill it, clamp it, and drive it — you'll be impressed at how quickly a pocket hole joint can pull everything together.

Pocket hole joinery. When it comes to woodworking techniques, it doesn't get much simpler than this — basically just butt joints that are screwed together. But the screws aren't sunk "straight" through the workpieces like they normally would be. Instead, they're set at a slight angle (15°). This means the screw enters the *face* of one piece and "bites" into the *edge* of the mating piece, as indicated in the photo below.

BENEFITS. It doesn't take long to see the benefits to this. Since these are butt joints, cutting pieces to length requires almost no math. You don't have to add or subtract the lengths of any tenons or allow for the depths of dadoes, grooves, or rabbets. Just measure, mark, and cut.

Creating the joint is fast too. That's because there are just two steps. First you drill the holes. Then you screw the pieces together. The only clamping that may be required is to keep the pieces from shifting while you're driving the screws. And if you reinforce the joint with glue, there's no waiting for it to set. As soon as the screws are in place, you can move on to the next joint.

POCKET HOLE JIG. Sound simple enough? It is. But like any method of joinery, you need to have the right tools on hand in order to work quickly and efficiently. This means you have to have a pocket hole jig.



As you can see in the box on page 14, there are a number of pocket hole jigs available. But they all do exactly the same thing: guide the drill bit so it will drill a hole exactly 15° into the face of a workpiece, as in Fig. 1. That's all there is to it.

Note: The pocket hole jig shown in the photos here is the "Rocket" made by *Kreg Tool Company*.

DRILL BIT. But there's more to pocket hole joinery than just a jig. You'll also want to have the right drill bit. It makes the job much quicker and the pocket holes more consistent.

What's unique about this special bit is that it drills two holes at once. The part you see, the oval-shaped counterbore, holds the head of the

screw. It's just deep enough to put the head below the face of the workpiece. The second hole is for the shank of the screw to pass through.

Okay, you know *what* the bit does, but *how* does it drill both holes at the same time? Simple. The drill bit is "stepped" — the tip is a smaller diameter than the rest of the bit, see the margin photo on the next page. I prefer bits with square "steps" or shoulders (not tapered). This way, the screw head has something solid to stop against, with less chance it will try to drive in farther.

CONSISTENT DEPTH. Of course, the holes have to be drilled at a consistent depth in the first place. So you need to have a stop collar for the drill bit. (Not all come with them.) And to set this collar, you need to know *where* the hole should stop.

I like the shank hole to end up just short of the edge of the workpiece (Fig. 1a). Drilling through the end of the piece usually splinters the wood,

A simple jig, a special drill bit, and a self-tapping screw work together to quickly create a strong joint. ▼



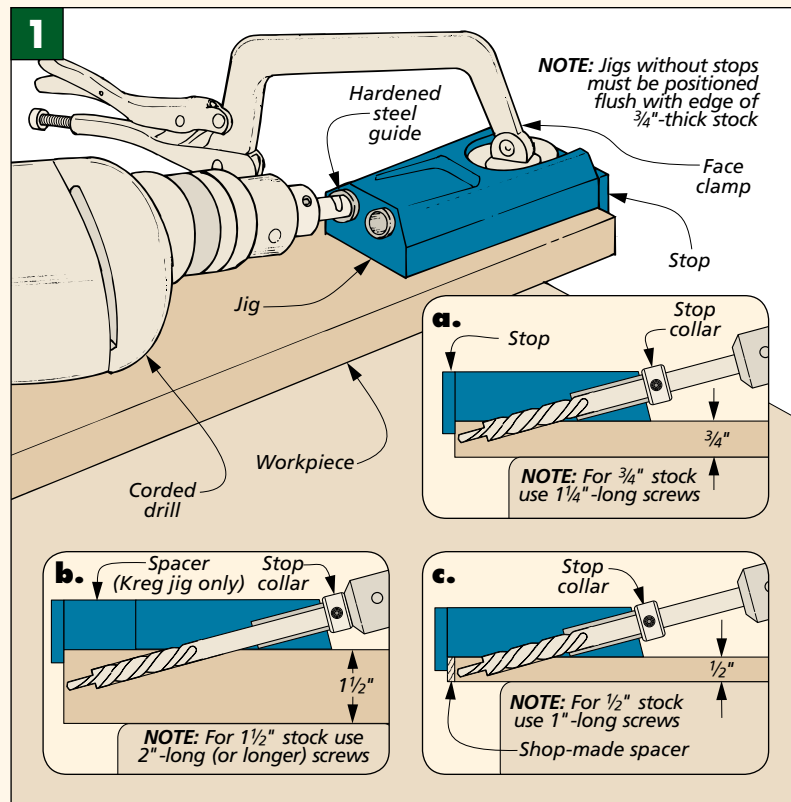
which may prevent the two pieces from fitting together tight.

CORDED DRILL. When drilling the pocket holes, I like to use a corded, electric drill. It has more power and speed than a cordless drill, which is pretty helpful when drilling into hardwoods. Plus, you won't have to worry about running down the battery with repeated use.

WHICH WORKPIECE? As far as the drilling goes, that's about it. But there are a couple more things to mention. First, you need to decide which workpiece to drill the pocket in. I like to think of the screws as if they were tenons (or tongues, if I'm working with plywood panels). So the piece I'd normally cut the tenon on is usually the one that gets the pocket holes. Most times, this means the screw threads are cutting into edge or cross grain (which is much stronger than if the screws were being driven into end grain).

However, this isn't an unbreakable rule. On the entertainment center, I often drove the screws into the edge of a plywood panel rather than into the edge grain of the frame around it because I was able to hide the screws better.

STOCK THICKNESS. The other thing to mention is that pocket hole jigs are designed to work primarily with $\frac{3}{4}$ "-thick stock, as shown in Fig. 1a.



In other words, when the jig is aligned with the edge of the workpiece, the screw will come out roughly centered on the thickness of the stock.

However, the jig also can also be used to join $1\frac{1}{2}$ "-thick ("two-by") stock and $\frac{1}{2}$ "-thick stock (Figs. 1b and 1c). But you'll have to adjust

the position of the jig on the piece and reset the depth collar. There can be a bit of trial and error here. To check the setup, just run a screw through a test piece to see where it exits (and how far). Note: The Kreg jig shown here has an extra spacer for $1\frac{1}{2}$ "-thick stock.



▲ Like two drill bits in one, the bit used for pocket holes drills the counter-bore and shank hole in one quick step. The stop collar ensures consistent results.

PICKING A POCKET HOLE JIG

When you're ready to try pocket hole joinery, you won't have any trouble finding a jig. As you can see in the photo, there are many varieties available, and you'll find them just about everywhere. But when comparing the costs, make sure you know what you're getting — and what you're not.

JIG. When choosing a jig, I've found there is really just one essential requirement: hardened guides. (Most pocket hole jigs do have them, but not all.) And I found the positioning stop on the end of the Kreg "Rocket" and some of the other jigs to be helpful. As far as being able to adjust the width between guides, it's often just as easy to reposition the jig.

DRILL BIT. Finding the right drill bit is as important as finding the right jig. I liked bits with square shoulders (instead of tapered). Plus you'll need a stop collar for the bit.

OTHER ITEMS. Besides these two items, you'll also need a long power driver and some special screws. (See page 15 for more on this.) Plus, Kreg sells a face clamp that's pretty handy.



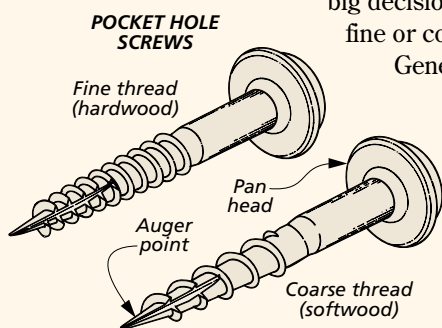
Assembly

As soon as the holes have been drilled, you're halfway to a strong pocket hole joint. The second step is to screw the workpieces together. This is just about as easy as it sounds, but again, there are some important differences from the way you're used to working with woodscrews.

SELF-TAPPING SCREWS. The first big difference is the screws that are used. Instead of regular woodscrews, pocket hole joinery uses self-tapping screws, as you can see in the margin drawing below. These have an auger point, which allows them to drive into the mating workpiece without splitting the wood.

Because these screws are self-tapping, you'll want to match the threads with the type of material you're using. But don't worry. The big decision is whether to choose fine or coarse threads.

Generally, the fine-threaded screws are for hardwoods, like oak, maple, and cherry. The threads have a shallow pitch so the screws drive in a bit slower than the coarse-threaded screws tend to. This way, these screws will be less likely to break when being driven into a hard piece of maple. (The shank of the screw is also thicker for this same reason.)



▲ Pocket hole screws aren't your typical woodworking screws. They're panhead-type screws that have self-tapping threads and an auger point.



Breaking screws is a little less of a concern for softwoods and plywood, so a coarse-threaded screw is more aggressive and drives in noticeably faster. However, with softer woods, like cedar, you need to watch that you don't drive the screws in too far. This is a real possibility — even with the square shoulder of the counterbore and the panhead on the screw.

DRILL WITH CLUTCH. The way to prevent driving the screws in too far is to use a drill with a clutch. (This time, I use a cordless drill.) You can play with the setting, but with softwoods, it's going to be fairly light.

If you don't have a drill with a clutch, you might want to drive the screws in most of the way and then finish them with a screwdriver.

LONG DRIVER. Besides a drill with a clutch, you will also need a long driver. (The pocket hole screws I used were square drive.) You can get by with a 3'-long driver (helpful when you need to get into a tight corner), but you'll find that a 6'-long driver is much easier to work with. It lets you drive the pocket screws in at the shallow 15° angle and still have enough clearance for the chuck of the drill.

ASSEMBLY. When you're ready to screw the two pieces together, the important thing is to make sure they're not going to shift during assembly. Remember, the shank hole is a smaller diameter than the threads of the screw, and it's not drilled completely through the first piece. So the two pieces will want to

ASSEMBLY PLATFORM FOR POCKET HOLE JOINERY

With pocket hole joinery, the key to a good assembly is to keep the pieces from shifting while the screws are being driven. For face frames and other flat assemblies, I came up with this plywood platform.

Two short fences position the workpieces 90° to each other. And to help keep the pieces from shifting while the screws are being driven, I placed strips of adhesive-backed sandpaper across the base.



pull apart slightly as the threads of the screw start to engage the mating piece, especially with the more aggressive, coarse-threaded screws. The screws will pull the joint back tight, but sometimes, the pieces will have shifted slightly so that there's a small shoulder between them.

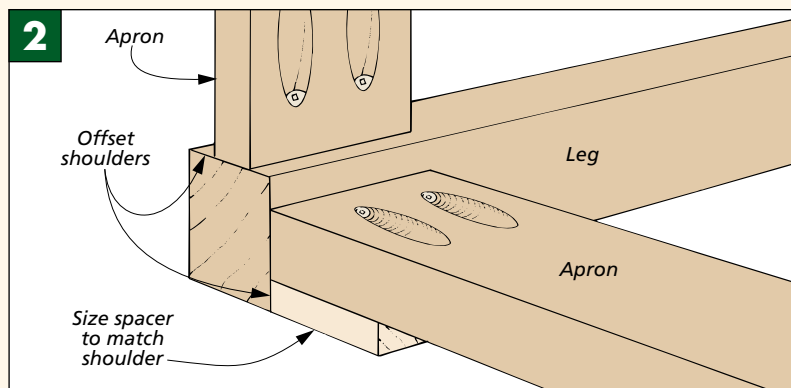
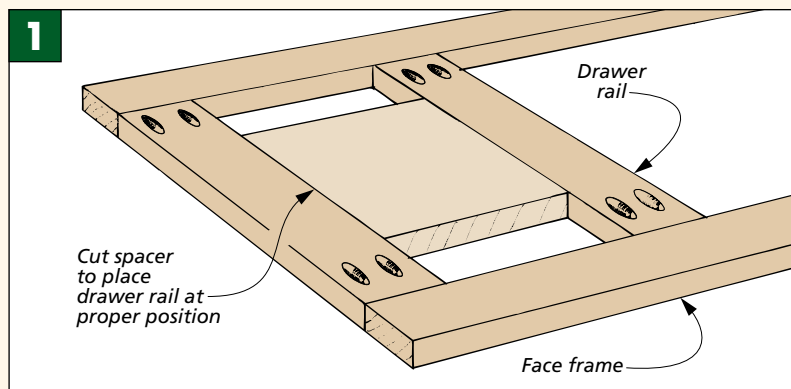
There are a couple of ways to prevent the workpieces from shifting. *Kreg* offers a face clamp that has a large, flat disc welded to one of the pads, refer to the main photo on page 13. This disc is positioned across the outside faces of the workpieces to hold them flush. It doesn't actually keep them from separating. Instead, it prevents the faces from shifting out of alignment, and in my experience, the screws always pulled the two pieces back tight with no shoulder.

The other way to hold the workpieces is simply to clamp them like you typically would if they were being assembled by some other method — only you won't need to leave the clamps on. Or for flat assemblies, like face frames, you can use the assembly platform shown in the box on page 15.

GLUE. By the way, whether or not you add glue to the joint is up to you. Even though the pocket screws are plenty strong, I generally think it's a good idea. Just go light on the glue so there's not a lot of cleanup.

ASSEMBLY TIPS

That's essentially all there is to assembling a pocket hole joint. But not all assemblies are so straightforward. There are plenty of situations when you could use a little help positioning a workpiece. However, it's really just a matter



of getting used to a new method of assembly with a different set of challenges than traditional gluing and clamping. And the solution is usually as easy as adding a scrap spacer or cleat.

DRAWER RAILS. Take a face frame with a drawer opening, for instance. Once the outside frame is assembled, I like to cut a scrap piece to match the height of the drawer opening, as you can see in Fig. 1. This spacer makes positioning the drawer rail quick and accurate — especially if you're building more than one face frame.

OFFSET SHOULDERS. Another time a spacer comes in handy is when you *don't* want the faces to end up flush. When building a table base, I usually like to set the aprons back from

the outside faces of the legs, as in Fig. 2. To create this shoulder with pocket hole joinery, all you need to do is slip a small spacer under the piece you want offset.

CASE CONSTRUCTION. Other times, you'll need to make cleats and corner braces, as I did on the entertainment center. (Refer to Figs. 3 and 4 on page 4.) However, since there are no rabbets or dados to position the workpieces, you have to be doubly sure they're square and aligned properly before you add the screws.

All in all, pocket hole joinery is pretty impressive. It's fast and strong, which is often exactly what I need. It won't replace traditional joinery in my shop, but the jig is a good tool to have on hand. **W**

PLUGGING A POCKET HOLE

Most of the time, a pocket hole is hidden inside a cabinet. Other times, you might hesitate to use this joinery because the oval-shaped holes would be visible. But there's a way to make these holes nearly disappear or "dress them up" by simply adding a

plug. As you can see in the photo, *Kreg* currently offers a variety of hardwood and plastic plugs made just for this purpose. Simply glue the plug into the hole. ("Instant" glue works well here.) And the wood plugs can be trimmed with a chisel or sanded flush.

