FLAT-SCREEN TV CABINET

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Televisions have changed a lot over the years. So it’s only natural that the cabinets and stands that house them have also changed. The sleek, low-profile design of this TV cabinet fits right in with the flat-panel televisions. Your television will look right at home sitting on top or mounted on the wall behind the cabinet.

If you look at the photo, you’ll see it’s wide enough to handle most large flat-screen televisions. And down below, there’s no lack of space for all your electronic equipment. Behind the lattice doors, there are adjustable shelves. The large drawer adds even more storage for your expanding DVD or Blu-ray collection.

As nice as it looks, what you’ll really appreciate is how easy it is to build. It’s a simple plywood case trimmed out with a solid wood top, face frame, and base. And the lattice doors finish it off for a great look in any room.
CONSTRUCTION DETAILS

OVERALL DIMENSIONS:
75”W x 20”D x 28”H

Center sections provide easy access to electronic components

Solid wood base is attached to case with cleats

Pocket hole joinery makes a strong base assembly

Euro-style cabinet hinges mount on spacer blocks

Large drawer uses rabbet joinery for fast construction

Dado joints and screws secure partitions in case assembly

Solid wood top supports heavy loads

Plywood back has cutouts for wiring and ventilation

Tongue and dado joints make a strong case assembly

Different thickness of rails and stiles creates an offset joint

For an attractive option, you can build doors with frosted glass panels. Check out the video available at Woodsmith.com.
The place to start building the cabinet is the case. The main panels are all cut from cabinet-grade plywood. (I used white ash.) Simple joinery keeps everything square and easy to assemble.

**BUILDING THE BOX.** I started by cutting the top, bottom, and side pieces to size. After that’s done, it’s time to get out the router to start on the dadoes and rabbets for the joinery.

**DADOES.** The top and bottom will get dadoes on their inside faces to house the vertical partitions, as you can see in the drawing above. To make sure that the top and bottom dadoes lined up, I clamped both pieces side-by-side, laid out the dadoes, and then routed them with a straight bit.

The top piece had an additional dado to house the center partition. So you’ll want to rout this dado while you’ve got things set up.

**TONGUES & DADOES.** Now you can switch to a rabbeting bit and cut the tongues on the ends of the case top and bottom, as shown in detail ‘a’ above. While you’re at it, rout a rabbet on the back edge of the side pieces for the back panel. Then change over to a straight bit to rout the matching dadoes in the two sides. Just be sure to locate the bottom dado so that you can add the filler strip (detail ‘b’ above).

**HOLES.** Before gluing up the case, you can take some time to drill the holes in the top and bottom pieces that will be used for attaching the partition assembly (drawing at left). You’ll also need to drill holes in the sides for shelf pins (lower drawing, page 4). Once that’s done, you can glue up the top, bottom, and two sides and then start to work on the internal partitions.
**PARTITION ASSEMBLY.** There’s nothing too tricky about making the partitions. The main drawing on page 3 shows how it’s all assembled.

The two taller, vertical pieces are cut to fit between the dadoes of the case top and bottom. A horizontal divider fits in dadoes on the two vertical pieces. And there’s a center, vertical partition that divides the upper space.

**PARTITIONS.** I started by cutting the two long, vertical partitions to size. The goal was to get a snug fit in the dadoes of the case.

The next thing to do is cut the dadoes that will house the horizontal divider. Then you can slide the vertical pieces into the case and cut the horizontal divider to fit. The last step is to cut a centered dado on the horizontal divider to hold the short, center partition.

**SHELF PIN HOLES.** Before fastening the partition pieces in the case, it’s a good idea to drill all of the holes for the shelf pins (drawing below). The trick is laying out the holes on the proper face of the workpiece. All of the holes are stopped holes except for those in the short, vertical partition. These holes can be drilled all the way through.

Finally, you can glue the partition pieces into the case and fasten them in place with screws. Now is when you’ll want to make sure everything is square before you move on to adding the face frame.

**FACE FRAME.** The face frame shown above is pretty straightforward. What’s nice is you don’t have to pre-assemble the entire frame and then try to make it fit. Each piece is cut to fit and glued in place separately.

I started with the two end stiles, making sure they were flush on the outside edges, top, and bottom. Then you can cut the two long horizontal rails to fit between the stiles and glue them in place. Next, I trimmed out the vertical partitions, followed by the piece that covers the horizontal divider. Finally, you can add the shorter, vertical piece to the center partition. Next, you’ll turn your attention to the base.
With the case complete, you can begin working on the base. As you can see below, the base is made up of 7/8”-thick mitered corner assemblies connected by 3/4”-thick rails. This creates a relieved, or offset joint. The top edge of the base is rabbeted to form a reveal — or shadow line — between the base and case, as shown in detail 'b' below.

Pocket hole screws join the rails to the corner blocks. You’ll use splined miter joints to make the corners. And that’s a good place to start.

**CORNER BLOCKS.** The four corner blocks are identical. The grain runs vertically and a splined miter joint connects the two pieces. I found it easier to bevel the edge of a couple of long blanks and then cut the groove for the spline on the blanks.

**SPLINED MITERS.** The box at the bottom of page 6 shows how I cut the slot for the splines using a standard blade with a 1/8” kerf. Since the joint won’t show, I used a hardboard spline (detail ‘c’ below). You can cut the corner blocks to final length, then glue up the pairs using the splines. Finally, you can rout the shallow rabbet on the top, outside edge of the blocks.

**RAILS.** Because pocket hole screws join the rails to the corner blocks, you can simply cut the rails to length. To get the exact length of the rails, I set the corner blocks on the case so that the outside faces were flush with the case. Then it was a simple task to measure between them for the length of the rails. I went ahead and routed the rabbeted reveal on the top edge of the rails before moving on.

Once that’s all done, you can fasten the rails to the corner blocks with pocket hole screws, keeping the back faces flush with one another (detail ‘d’). A 1/8”-thick spacer helps with clamping and alignment. Now you can add the cleats.

**CLEATS.** You can see below that the cleats are nothing more than hardwood strips fastened to the inside of the base. The top of the cleat is flush with the top of the base.

The length of the cleats and locations of the screws aren’t critical, but the drawings below give you some guidelines. After the cleats are fastened to the base, you can attach the base to the case (detail ‘b’).
The bulk of the work on the case is done. All you need to do now is add the shelves and the top.

**Shelves.** The drawing above shows the four adjustable shelves. They’re simple to make. All you need to do is cut some plywood panels to size and glue hardwood edging onto the front edge of each one.

I cut the edging just a little wide to slightly extend past the edges of the plywood. After the glue was dry, I used a hand plane to trim the edging flush to the plywood. You could also use a router with a flush trim bit or a sanding block. Just be careful that you don’t sand through the thin veneer of the plywood.

**Glued-up top.** Now you’re ready to move on to the top. It’s glued-up from 1”-thick stock. Since it’s the “crown” of the project, I took some extra time to sort through the lumber stack to get the best pieces. You’re looking for a good color and grain match between the boards. The goal is to make your glue lines as inconspicuous as possible.

**Section work.** If you have access to a thickness planer, you can glue up the top in two sections, run each section through the planer, then glue up the two sections. This will help get a flat, smooth top.

Once you’ve got the entire top glued-up, you can work on smoothing it. Careful use of a belt sander can make quick work of flattening it. Then you can follow up with a random orbit sander or sanding block, working your way through finer and finer grits.

**Trimming.** This top is heavy, so it would be awkward to trim the ends square on the table saw. Instead, I used a straightedge with a circular saw, as shown in the box below.

After you’ve cut the ends square, you can sand them smooth with a sanding block. And while you’re at it, you can slightly ease all the edges of the top to soften sharp corners.

**Attach the top.** Now you can fasten the top through the oversized holes in the case. This will allow the top to move with changes in humidity. Next, you’ll start on the doors and then add the drawer.
The thing that grabs your attention right off the bat on this project is the lattice door panels. The lattice is really a series of half-lap joints in strips of wood that are glued together to form a panel.

This panel fits into a groove in the rails and stiles of the door frame. But before you can work on the lattice panel, you need to make the door frames. They’re made up of 7⁄8”-thick stock for the stiles and 3⁄4”-thick stock for the rails, as shown in detail ‘a’ above. And since the joinery is a stub tenon and groove, the groove in the stiles need to be slightly offset from the center.

OFFSET GROOVE. If you look at detail ‘a,’ you’ll see what I mean about the offset groove in the stiles. It’s not hard to locate this groove if you cut the tenon on the rails first. The box below shows you how I did this with a 1⁄4” dado blade. It just takes some time to get everything set up right to get a snug fit.

Now is a good time to put the pieces for the door frames aside and turn your attention to the lattice panels. You need to have them in hand before gluing up the frames.

LATTICE PANELS. It’s not hard to cut all the pieces for the lattice panels. It’s a lot of repetitive work, but if you pay attention, it should go smoothly. The box on the next page shows you how I started with wide blanks, cut the notches for the lap joints, then ripped the pieces to width.

GLUING UP THE DOORS. Once the panels are complete, you can insert them in the door frames. But I didn’t glue the panels in place. I wanted them to be able to move with changes in humidity. Now you can go ahead and glue up the door frames, making sure they’re square.

MOUNTING THE DOORS. Before mounting the doors, you need to add some mounting blocks for the hinges. These hinge blocks need to be flush with the inside edge of the face frame, as shown in the drawing at the top of page 8.

How-To: Offset Tenon & Groove

Start with the Tenon. Use a 1⁄4”-wide dado blade to form the tenons on the rails. Flip the workpiece to center the tenon.

Locate the Groove. Position the rip fence for cutting the groove in the rails and stiles. The groove in the stiles will be offset.
Once the hinge blocks are glued in place, you can mount the hinges on the doors and set them in the opening. I used ¼”-thick spacers to help maintain a consistent reveal all the way around the door.

Next are the door stops. They’re just hardwood blocks glued in place behind the face frame. The drawing on the far right shows the location.

All that’s left to do now is add the door pulls. Then you can start on the drawer and back panel.

**How-To: Making a Lattice Panel**

The trick to making all the pieces for the lattice panels is to start with several wide blanks, as shown on the right. This way, you can cut the notches for the lap joints all at once and know they’ll all be lined up when you assemble the lattice. Then the strips can be ripped to width to fit the notches.

**Cutting Dadoes.** To start off, you’re really just cutting a series of dadoes in wide blanks. The trick is to lay them out accurately. I found it easier to mark the dado location on the edge of the blank. Then I could align the marks with the dado blade to cut the dadoes in a couple of passes.

**Setting Up the Cut.** I used a ¾” dado blade in my saw to cut all the joints for the lattice. But to get the right blade height, I used a scrap piece that was the same thickness as my blank. I adjusted the blade height to cut to the center of the thickness of the test piece.

**Start on the Ends.** To start things off, I cut the lap joints on the ends of the blanks first, using the rip fence as a guide. Then I flipped the blank end-for-end and made the same cut. Now you can move the fence to line up for the dadoes.

**Two Passes.** Looking at the drawings on the right, you can see how I aligned my layout marks with the dado blade. Then I used a spacer at the end of the blank against the rip fence to “nudge” the piece over to make the second cut. Lastly, you can rip the pieces to width.

**Align for the First Pass.** Use your layout lines to line up the dado blade to make the first pass for cutting the dado.

**Use a Spacer.** To make the 1”-wide dado, add a ¼” spacer against the rip fence to move the blank over, then make a second pass.

**Rip to Width.** Rip the workpieces to width from the blank. Aim for a snug fit in the corresponding pieces that make up the panel.
The last two things to do are build the drawer and make the back panel. The drawer fits in the lower, center opening in the case. It’s made with simple, rabbeted joints and finished off with a false front. You’ll build the drawer first, then install the metal slides.

**A SIMPLE BOX.** To start on the drawer, I cut the front, back, and two side pieces to final size. Then you can cut a rabbet on the ends of the front and back pieces (drawing below).

The next thing to do is cut a groove on the inside face of all four pieces to hold the drawer bottom. After cutting the ¼” plywood bottom to size, you can glue and screw the drawer box together, making sure that everything stays square.

**SPACERS.** There’s just one more thing you need to do before you can install the metal drawer slides in the case. I couldn’t mount the metal drawer slides directly onto the sides of the case because the face frame overhangs the drawer opening.

To get around this problem, I made spacers to fit on the sides of the opening, flush with the edge of the face frame (detail ‘d’ below). They allow the metal slides to open fully without being obstructed by the face frame. Once the spacers and slides are in place, you’re ready to work on the drawer false front.

**FALSE FRONT.** The false front couldn’t be any simpler. It’s just a piece of hardwood sized to fit the opening. The only tricky part is getting it sized so that there’s an even ⅛” reveal all around. Then it’s just a matter of fastening it to the front of the drawer box.

To mount the false front, first put some double-sided tape on the front of the drawer box. Then you can take some time to carefully position the false drawer front in the opening. You’ll press firmly until the tape “grabs.” Once the false front is in position, fasten it in place with screws from the inside of the drawer.
The last piece you'll need to add is the back panel. This is made from 1/4" plywood.

The openings you see in the drawing at right provide access to all the cables for electronic components. But more importantly, they provide ventilation to prevent heat build-up. Shop Notebook on page 11 shows how I cut clean, smooth openings. Then I mounted the back panel to the case using wire brads around the edge (detail 'a').

After going over the entire project with some sandpaper, you can think about the finish.

FINISHING UP. I decided to use a "two-tone" finish for this project. I chose a dark stain for the top and base. A natural tung oil finish on the case contrasts with the dark stain and adds a nice, warm tone.

To make the task of applying the stain easier, I removed the top and base from the case before applying the stain to those pieces. The case, shelves, and drawer front were rubbed with a couple coats of tung oil. Then you can reassemble everything and apply a clear lacquer finish for a layer of protection.

Finally, you can move the cabinet into your favorite room to show it off to friends and family. After you install the shelves and all your electronic equipment, just sit back, relax, and enjoy the show.

### Materials, Supplies, & Cutting Diagram

| A | Case Top (1) | 3/4 ply. - 18 x 69 3/4 |
| B | Case Bottom (1) | 3/4 ply. - 18 x 69 3/4 |
| C | Case Sides (2) | 3/4 ply. - 18 x 22 3/4 |
| D | Vert. Partitions (2) | 3/4 ply. - 18 x 21 1/4 |
| E | Center Partition (1) | 3/4 ply. - 18 x 13 |
| F | Hor. Divider (1) | 3/4 ply. - 18 x 38 1/4 |
| G | Long Filler Strips (2) | 1/2 x 2 - 68 3/4 |
| H | Short Filler Strips (2) | 1/2 x 2 - 14 |
| I | End Face Frames (2) | 3/4 x 1 1/4 - 22 3/4 |
| J | Top/Bot. Face Fra. (2) | 3/4 x 1 1/4 - 67 3/4 |
| K | Ver. Face Frames (2) | 3/4 x 1 1/4 - 20 3/4 |
| L | Hor. Face Frame (1) | 3/4 x 1 1/4 - 36 3/4 |
| M | Center Face Frame (1) | 3/4 x 1 1/4 - 12 |
| N | Corner Block (8) | 1/2 x 3 3/8 - 4 1/8 |
| O | Long Base Rails (2) | 3/4 x 2 3/4 - 62 1/2 |
| P | Short Base Rails (2) | 3/4 x 2 3/4 - 11 1/2 |
| Q | Long Cleats (2) | 1 x 1 - 68 1/2 |
| R | Short Cleats (2) | 1 x 1 - 6 |
| S | Center Shelves (2) | 3/4 ply. - 17 x 18 1/4 |
| T | End Shelves (2) | 3/4 ply. - 17 x 14 1/2 |
| U | Center Shelf Edging (2) | 3/4 x 3/4 - 18 1/4 |
| V | End Shelf Edging (2) | 3/4 x 3/4 - 14 1/2 |
| W | Top (1) | 1 x 20 - 75 |
| X | Door Rails (4) | 3/4 x 2 1/2 - 10 |
| Y | Door Stiles (4) | 7/8 x 2 1/2 - 20 |
| Z | Vertical End Strips (4) | 1/4 x 1 1/2 - 16 |
| AA | Vertical Strips (6) | 1/4 x 1 - 16 |
| BB | Horizontal End Strips (4) | 1/4 x 1 1/2 - 10 |
| CC | Horizontal Strips (12) | 1/4 x 1 - 10 |
| DD | Hinge Blocks (4) | 1/2 x 3 1/4 - 4 |
| EE | Door Stops (2) | 3/4 x 1 1/4 - 2 1/2 |
| FF | Drawer Spacers (2) | 1/2 x 2 - 18 |
| GG | Drw. Front/Back (2) | 3/4 x 2 1/2 - 35 3/4 |
| HH | Drawer Sides (2) | 1/2 x 6 1/2 - 17 |
| II | Drawer Bottom (1) | 3/4 ply. - 17 x 35 3/4 |
| JJ | False Front (1) | 3/4 x 6 1/2 - 36 1/2 |
| KK | Back Panel (1) | 3/4 ply. - 22 3/4 x 69 3/4 |

- (2) 32mm Door Pulls
- (2) 96mm Drawer Pulls
- (1 pr.) 16" Full-Ext. Drawer Slides
- (2 pr.) Full Inset Hinges
- (16) 1/4" Nickel Shelf Support Pins
- (16) #8 x 1 1/4" Pocket Hole Screws
- (6) #8 x 1 1/4" Fh Woodscrews
- (34) #8 x 1 1/2" Fh Woodscrews
- (18) #8 x 2" Fh Woodscrews
- (1 pkg.) 1/8" Wire Brads

Also Needed:
- Two - 48" x 96" Sheets of 3/4" White Ash plywood
- One - 48" x 96" Sheet of 1/4" White Ash plywood
Crisp, Clean Cutouts

The back of the TV cabinet project needs a cluster of four cutouts to provide cable access and ventilation. The drawings at right show how to make clean, accurate cutouts without spending too much time and effort.

**LAYOUT & CORNERS.** The first step is to lay out the four cutouts on the inside of the back panel, as shown in Figure 1. Next, I formed the rounded corners by using the layout to drill 1"-dia. holes with a Forstner bit (Figure 2). You’ll want to back up the panel to avoid splintering when you drill the holes.

**ROUGH CUT & SMOOTH.** The corner holes now allow you to use a jig saw to rough cut the openings. Stay about 1/4" to the inside of the layout lines (Figure 3).

Finally, to smooth the openings, I installed a pattern bit in my router. As shown in Figure 4, a straightedge attached to the panel with double-sided tape allows you to rout a clean edge between the corner holes.
Adding etched glass panels to the doors on the flat-screen TV cabinet is easier than you think. See the Online Video, “Etching Glass” at Woodsmith.com to see how simple it is to create a frosted look on glass. (I used the same pattern as the wood lattice for etching the glass.)

**CUT A RABBET.** To mount the glass panels in the doors, you’ll need to rout a rabbet in the back of the assembled door frame (Figure 1). It’s a cinch to do with a rabbeting bit. Once that’s done, you can square up the corners with a sharp chisel. Then you can turn your attention to the glass stop.

**GLASS STOP.** I made the glass stop by first routing a small chamfer on the edges of a long, wide blank. Then it’s just a matter of ripping the thin strips free on your table saw. Figure 2a gives the dimensions I used.

**MOUNTING THE GLASS.** Once you have the strips cut free of the blank, you can miter them to length for a tight fit in the frame. Then lay the glass panel in place into the rabbeted frame and attach the glass stop with a few wire brads.

**FASTENING THE STRIPS.** I used a nail driver to “push” the brads in place to hold the glass stop. You could also use a small hammer to gently tap the brads in place. It’s a good idea to predrill the stop to prevent it from splitting. Once that’s done, all that’s left to do is clean the glass thoroughly and attach the doors to the cabinet front.
Project Sources

This TV cabinet is large enough to support most flat-panel, wide-screen television sets and would make a great addition to an entertainment room.

You’ll find almost all of the materials needed to build the cabinet at your local lumberyard or woodworking store. But there are a few items you might need to order from mail-order suppliers before you begin the project.

Pocket screws were used to assemble the base of the cabinet. These screws can be found at almost any woodworking store. I used #7 x 1 1/4" fine-threaded screws (38502) from Rockler.

You’ll also need some hardware for the drawers and doors. I used Blum full inset, 120° self-closing hinges (00B15.24) to mount the doors. And installed a set of 32mm (01X43.22) and 96mm (01X43.24) pewter double bar door pulls for opening the drawers and cabinet doors. A pair of black 16" full-extension slides (02K36.16) was used to mount the large center drawer. All of this hardware was ordered from Lee Valley.