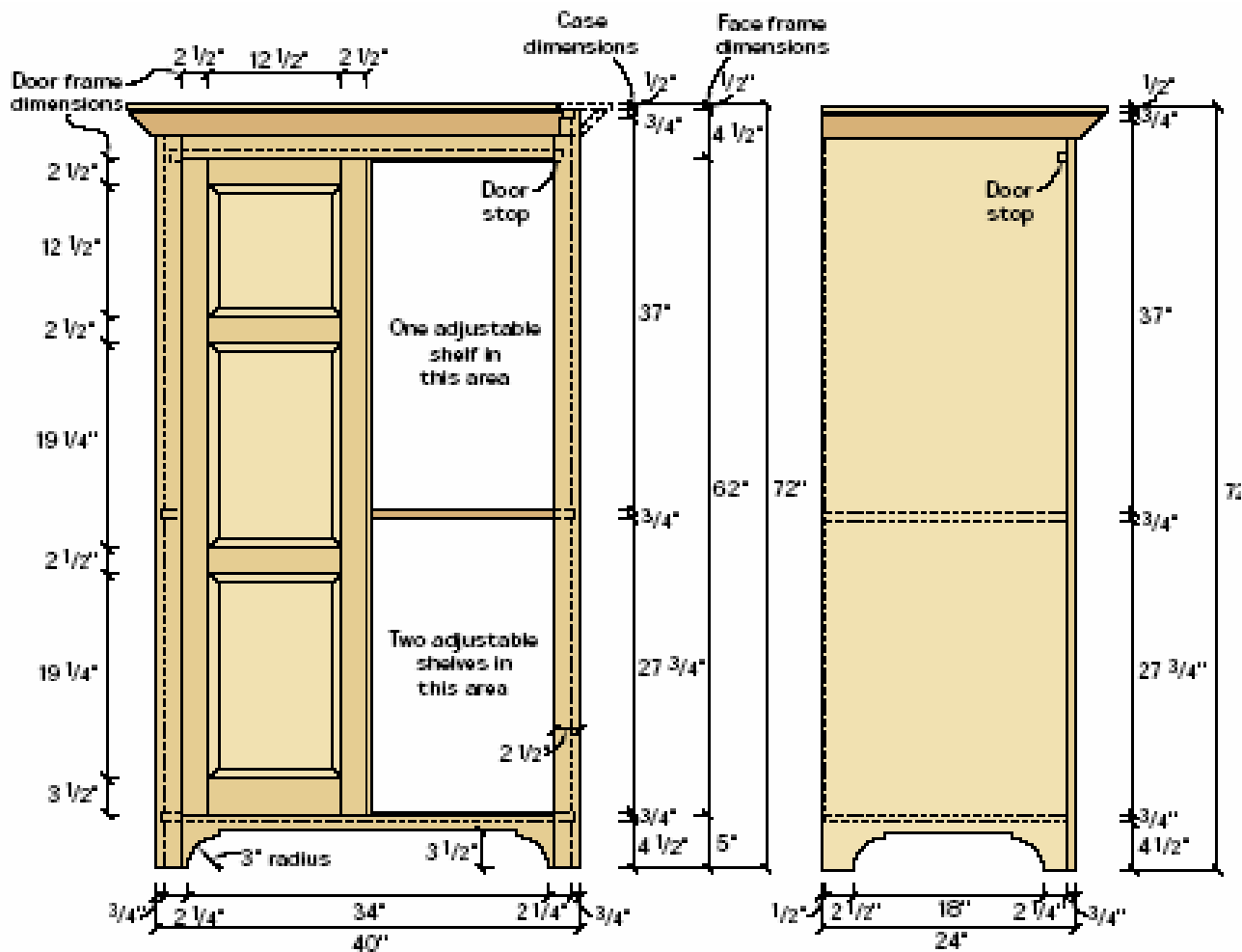


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TRADITIONAL ENTERTAINMENT CENTER





Shaker Entertainment Center			
No.	Item	Dimensions T W L	Material
2	Face frame stiles	3/4" x 29 1/2" x 71 1/2"	Maple
1	Face frame top rail*	3/4" x 4 1/2" x 37"	Maple
1	Face frame bottom rail*	3/4" x 5" x 37"	Maple
3	Door stiles	3/4" x 2 1/2" x 62"	Maple
1	Door stile	3/4" x 3" x 62"	Maple
6	Door rails*	3/4" x 3 1/2" x 14 1/2"	Maple
2	Door bottom rails	3/4" x 3 1/2" x 14 1/2"	Maple
2	Door panels	5/8" x 13" x 13"	Maple
4	Door panels	5/8" x 13" x 19 3/4"	Maple
2	Cabinet sides	3/4" x 23 1/4" x 71 1/2"	Maple
3	Fixed shelves	3/4" x 22 1/4" x 39"	Maple
3	Adjustable shelves	3/4" x 22 1/4" x 38 1/4"	Maple
1	Back	1/2" x 39 1/2" x 71 1/2"	Maple
1	Door stop	3/4" x 3/8" x 37"	Maple
1	Crown moulding	3/4" x 3 3/4" x 96"	Maple
1	Crown cap	1/2" x 3 1/2" x 96"	Maple
6	Hinges, Lee Valley #00H52.03, \$2.30 each, 800-871-8158 or www.leevalley.com		

*Measurement includes 1"-long tenon on both ends

As cabinet construction goes, this is about as basic as it gets, and it still offers old-world joinery, styling and strength. The entire piece is solid lumber, using a face-frame front and a shiplapped back. The raised-panel

doors are held together with mortise-and-tenon joinery, and the crown moulding is all simple cuts on the table saw and jointer.

I start construction on face-frame cabinets by making the face frame first. All the other pieces will be sized to fit the frame, so it just makes sense to begin there. Also, the width of the face frame's stiles are 1/16" wider than shown in the drawing. This will allow you to trim them flush to the case after assembly.

There are a number of ways to fasten a face frame together, but when I'm making a piece of furniture that has the potential to be moved every so often I prefer the strongest joint I can think of — mortise and tenon. That's because if it's moving it's racking. While a strong back will help keep the cabinet from racking, the face frame does most of the work. In addition, if the piece is a reproduction, like the one here, it's appropriate to use a mortise-and-tenon frame.

I prefer to cut the tenons on the ends of the rails first, then use the tenons to lay out the mortises on the stiles. Set up your table saw to cut the 3/8" x 1"-long tenons, centered on both ends of the top and bottom rails. Then set up your mortiser to cut the mating mortises, setting your depth to 11/16" to avoid having the tenon bottom out in the mortise.

Once the mortises and tenons are cut, assemble the frame by putting glue in the mortises. Don't overdo it; glue can keep the tenon from seating properly in the mortise. After the glue is dry, I pin the joints using 3/8"-square stock.

Three-Panel Doors

Since I'm already set up for making mortise-and-tenon joints, I go ahead and make the doors next. The doors are basic frame-and-panel construction using raised panels with an 8° bevel on the front face. Determine the size of the doors by making them exactly the size of the opening in the face frame. We'll trim them to fit later.

Before cutting the joints for the doors I make the groove in the rails and stiles for the raised panels. These grooves are 3/8" x 3/8" and are centered on the inside edge of each piece, with both edges of the center rails receiving a groove. After the grooves are run, start making the tenons on each end of the rails. Make the tenons and mortises the same size as you used for the face frame. Because the panel groove was run through the ends of each stile, the tenons on the top and bottom rails need to be haunched (the tenon shoulder is left wider to fill the notch left by the groove).

Next mark the locations for the mortises at the locations shown in the diagrams, and cut the mortises in the stiles.

The panels themselves are cut to size allowing 1/2" extra in both height and width to fit into the grooves in the door frame. With the panels sized, set your table saw blade to an 8° angle. Then set the rip fence to bevel the faces of the panels. The distance between the fence and blade should be set so that the bevel is about 3/8" thick, 1/4" in from each edge.

When the door pieces are ready, assemble the doors, again being careful not to use too much glue on the joints. Clamp up the doors and determine if the doors are square by measuring corner to corner. The distance should be the same in both directions. If not, adjust the door by tightening a clamp diagonally across the longer length. When everything is square, tighten the clamps and set the doors aside for the glue to cure.

When the doors are ready, take them to your saw and cut a 3/8" x 1/2" rabbet on the two interior edges to form a shiplap joint to keep the dust out. Then head to the jointer and trim them to size, allowing a 1/16" gap all the way around the doors. When fitting the doors, run the top and bottom of the doors over the jointer first, as the end grain on the ends of the stiles may tear out. By running the long grain edges last, you should be able to clean up any tear-out on the stiles.

With the doors fit, go ahead and mount the doors in the face frame. I used 2½" non-mortise butt hinges (see schedule). They look good, are easy to attach and are adjustable. When the doors are attached, take them off again to make it easier to glue up the cabinet.

Cabinet: Dadoes and Nails

You're now ready to make the cabinet itself. All the cabinet pieces are made of solid lumber on this piece to keep it reproduction quality. The center shelf, top and bottom are fit into ¼"-deep by ¾"-wide dadoes in the sides. Use the diagrams to locate the dadoes. The sides of the cabinet have 3/8" x 1/2" rabbets run on the inside edges for the back. Cut the dadoes, then glue and nail the top, bottom and center shelf between the sides.

After assembling the case, lay it on its back and glue and clamp the face frame to the cabinet. Check for square, and make sure the overhang on the sides is even. When the glue is dry, I simply remove the clamps and use a flush-cutting router bit to trim the face frame flush to the sides. I used a ½" hardwood beaded shiplap back for this piece. The number of back slats is up to you. They can be random widths, or they can all be the same. I cut a ¼" x ½" rabbet on the slat sides, then add a ¼" bead on one edge using a beading bit in my router table. Don't attach the back yet, as it'll only make finishing more difficult. Set the pieces aside for now.

Shaker furniture is known for its lack of ornamentation, but the Shakers still had a sense of style. Style for this cabinet requires a crown moulding. Cut the moulding pieces to the sizes given in the materials list. Set your table saw blade to a 45° angle and bevel one long edge of the moulding piece. Then move to your jointer, adjust the fence to 45° and run the sharp bevel edge of the moulding over the jointer to leave ¼" flat on the moulding's edge. Repeat the entire process on the opposite edge.

Fit and cut the crown pieces to length, then glue and nail them to the case. On the side pieces I only glue the first 8" of the moulding and attach the back end with a screw through a slotted hole in the case. This allows the sides of the case to move during humidity changes without tearing the crown moulding off. I use small triangular glue blocks behind the crown moulding to support the crown. Next cut the ½" cap pieces to length, mitering them to overhang the crown by ¼", then attach them to the case as well.

A Simple Base

You're almost done. To give the case a base (and to make it sit on an uneven floor without rocking) I used a jigsaw to cut out a pattern on the bottom of the face frame and the sides of the piece, essentially leaving legs. Drill the holes for the shelf pins. Then cut slots for ventilation in the back pieces, and holes through the shelves to pass wires.

The next to last step was finishing. I used a coat of dark oak stain over the entire piece and then applied three coats of semi-gloss spray lacquer.

All that's left is the hardware. You can use whatever you find attractive. I used a couple of turned pulls and added a stop rail behind the doors (at the top of the cabinet). A couple of bullet catches and I was ready to deliver it to the customer. Of course it'll take them another two days to get all the equipment hooked up and arranged the way they want it



When you trim the doors to size, make sure you support the door adequately and start with the top and bottom edges. That way any tear-out on the end grain will be removed when you run the long-grain edges over the jointer.



After the face frame is glued to the cabinet, it's a simple step to walk around the case with a flush-cutting bit in your router to trim the frame flush to the cabinet. A little sanding and you're ready to move on.



To bevel the crown pieces, first bevel cut one edge (shown) with the table saw blade set at 45°. Then move to your jointer (also set at 45°) and put a ¼" flat at a right angle to your first bevel.



Head back to the saw to cut the second bevel. As you'll see in the photo, by cutting the return bevel on the first edge you've provided a bearing surface for the rip fence, rather than let the bevel slip under the fence, messing up the cut.



With one last pass on the joiner you're ready to start hanging the crown.

To make sure the crown moulding is flush to the top of the cabinet, I temporarily screw two scrap strips to the top of the cabinet while I align the front piece. When the front piece is attached, it's fairly easy to carry the height orientation around to the sides. Then simply remove the strips.



The last step on the crown is to attach the cap to the crown and cabinet. Notice the glue blocks behind the crown moulding to support the crown and add stability.