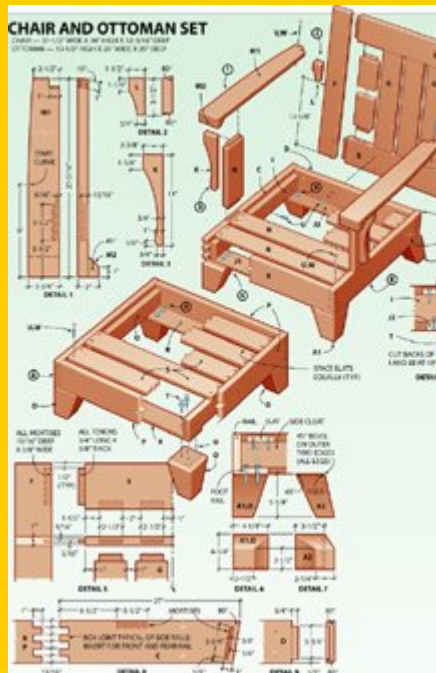


Build A Cedar Chair And Ottoman



If you've ever dreamed of extending the comfort of your living room to your deck, patio or yard, our porch chair-and-ottoman combination is a great place to start making that dream a reality. We've built the set out of solid red cedar--a wood that's great for outdoor structures because it's highly resistant to rot. And, the visual theme is simple and robust, so the pieces are as easy to build as they are to look at. Both pieces are based on a finger-jointed box frame mounted on stout legs.

While we chose cedar for this project, several other woods would work just as well. Teak, mahogany, redwood and cypress are all good weather-resistant options, but they'll cost more than the cedar. Although we had an upholsterer make custom cushions for our chair and ottoman, replacement cushions are often available at outlets that sell lawn furniture.



MATERIALS LIST--CHAIR AND OTTOMAN

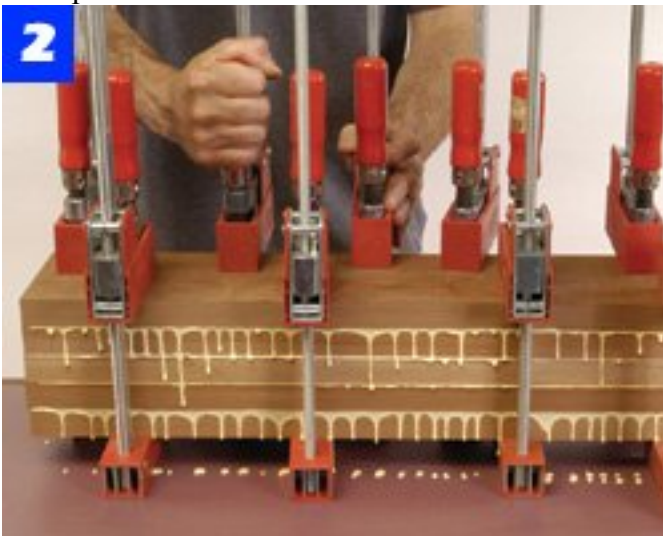
Key	No.	Size and description (use)
A1	2	4-1/4 x 4-1/4 x 5-1/4" cedar (chair leg)
A2	2	4-1/4 x 4-3/4 x 5-1/2" cedar (chair leg)
B	1	1 x 4-7/8 x 26" cedar (seat rail)
C	2	1 x 4-7/8 x 27" cedar (seat rail)
D	1	1 x 4-7/8 x 25-1/2" cedar (seat rail)
E	2	1 x 5 x 20-1/2" cedar (back rail)
F	2	1 x 3-1/2 x 29-1/4" cedar (back stile)
G	4	1 x 3-1/2 x 20-3/4" cedar (back slat)
H	2	1 x 4-1/2 x 13-1/2" cedar (arm post)
I	2	1 x 3-1/8 x 24-13/16" cedar (cleat)
J1	1	3/4 x 3-1/2 x 24" cedar (foot rail)
J2	1	3/4 x 2-3/4 x 24" cedar (foot rail)
K	2	1 x 2-3/8 x 11" cedar (bracket)
L	2	1 x 1-1/2 x 3-11/16" (arm block)
M1	2	1 x 3-3/4 x 27-5/16" cedar (arm)
M2	2	1 x 2 x 3-3/4" cedar (arm lip)
N	5	3/4 x 3-1/2 x 24" cedar (slat)
O	4	4-1/4 x 4-1/4 x 5-1/4" cedar (leg)
P	4	1 x 4-7/8 x 26" cedar (rail)
Q	2	1 x 3-1/8 x 24" cedar (cleat)
R	2	3/4 x 3-1/4 x 24" cedar (foot rail)
S	5	3/4 x 3-1/2 x 24" cedar (slat)
T	14	1/4 x 2" lagscrew and washer
U	as reqd.	1-1/2" No. 8 fh woodscrew
V	2	2" No. 8 fh woodscrew
W	as reqd.	3/8"-dia. wooden plug
Misc.: 120-, 150-, 220-grit sandpaper; Titebond II, water-resistant glue; Sikkens Cetol 1, cedar, exterior finish.		

the mating surfaces (Photo 1) and apply clamps to pull the boards tight (Photo 2). Allow the glue to cure for at least an hour. Then, remove the clamps and scrape off the excess.

Use a sharp plane to even the edges of the stacks so they're square to the faces. Then, cut each stack into four 5-1/4-in.-long leg blanks on your band saw. Lay out the inner angled face on each blank, and cut each piece to the waste side of the line (Photo 3). Next, lay out the second inner angled face for each leg and make those cuts. Note that the rear chair legs are different than the front--they require a third angled cut on their rear face. Use a sharp plane to smooth and flatten the sawn surfaces. Cut the chamfers on the top edges of the outer leg faces with a block plane.



To make the laminated leg blanks, first use a roller to spread glue on 1-in.-thick x 5-in.-wide pieces of cedar.



Arrange the boards in stacks and apply clamps. When the glue is dry, plane the edges square and smooth.



After cutting 5-1/4-in.-long blocks from the laminated blanks, lay out the angled faces and cut to the line.

Cutting The Joints

First, rip and crosscut the stock for both the ottoman and chair rails. Note that the back ends of the chair side rails are cut at an 80° angle. Construct a jig to cut the box joints by first using your dado blade to cut a 13/16-in.-wide notch in a wooden auxiliary miter-gauge fence. Then, install a guide block in the notch and mount the fence on your miter gauge so it's 13/16 in. to the right of the blade.

To cut the box joints, first clamp one of the rails to the jig with its end on the saw table and its edge against the guide block (Photo 4). Pass the stock over the blade to cut the first notch. Move the stock so that the notch slips over the guide block, clamp and cut the second notch (Photo 5). Advance the piece one more time, placing the second notch over the block to register the third and final notch. Cut all the box-joint notches using this technique. Then, lay out the mortises in the back of the side rails, and rout them with a spiral up-cutting bit (Photo 6). Square the ends with a sharp chisel (Photo 7).

Cut the parts for the chair back and arm assemblies to size, and lay out the mortises for all the joints, including those for the arm posts in the chair side rails. Readjust the router edge guide and rout the mortises. It's easiest to make these cuts if you first clamp two pieces together with their ends staggered so that the router has a broader surface on which to ride. When the routing is done, square the ends of the mortises.

With the dado blade in the table saw, cut the tenon cheeks on the ends of the chair rear seat rail (Photo 8). Note that these tenons are unusual in that they're flush to the inside surface of the rail. Adjust the blade height to cut the tenon cheeks on the back-slat, back-rail and arm-post tenons. Then, cut the shoulders at the top and bottom edges of all the tenons. Switch to a regular blade, and cut the bevels along the top and bottom edges of the rear seat rail. Test fit all mortise-and-tenon joints.



Make a table saw jig for cutting the box joints. Hold the rail on end and against the jig stop to make the first cut.



To make the remaining box-joint cuts, shift the last sawn notch over the stop and pass the stock over the dado blade.



Rout the mortises in the chair side rails for the rear rail. Then, rout all mortises for the back assembly and arm posts.



Use a sharp chisel to square the mortise ends. Since cedar is so soft, hand pressure is sufficient to cut the wood.



Use a dado blade to cut the chair rear-rail tenons. Note that these tenons are flush with the inner rail face.

Assembly

Use a small brush to apply glue to the box joints on the ottoman rails (Photo 9). Assemble the rails and apply clamps to pull the joints tight. Compare opposite diagonal measurements to make sure that the frame is square. Then, apply glue and assemble the chair rear rail to the side rails, join the front box joints, clamp and check for square.

Cut the support cleats to size, and screw them to the inside of the side rails of the chair and ottoman (Photo 10). Then, cut the foot rails to specified size. Note that the back foot rail on the chair has a 10° bevel on its back edge so that it fits tightly against the rear rail. Fasten the foot rails to the side cleats with galvanized deck screws (Photo 11).

Position the ottoman legs under the foot rails with their outside faces flush with the outer faces of the side rails. Bore pilot holes and fasten the legs with 1/4 x 2-in. lagscrews and washers (Photo 12). Fasten the chair legs in the same way.



Apply glue and assemble the ottoman rails. For the chair, first assemble the rear/side joints, then add the front rail.



Cut the support cleats to size, and attach them to the sides of the chair and ottoman with galvanized deck screws.



Screw the foot rails to the cleats. Note that the back edge of the rear chair foot rail is beveled to fit the back rail.



Fasten the feet by driving lagscrews through the foot rails. Bore pilot holes to avoid splitting the feet.

Spread glue in the chair back-rail mortises and on the slat tenons. Assemble the parts (Photo 13) and clamp. When the glue has set, apply glue to the rail/stile joints and add the stiles to the back. Finally, cut a 10° bevel along the bottom edge of the back. Clamp the chair back to the rear rail of the base, and fasten it with 1-1/4-in. galvanized deck screws (Photo 14). Spread glue on the side-rail/arm-post joints and install the posts (Photo 15). Clamp the parts and allow the glue to set.

Use the band saw to cut the front arm brackets, rear arm support blocks and arms to the specified shapes. Glue the support blocks to the sides of the chair back (Photo 16) and glue the brackets to the arm posts. Lay out the notch in the back end of each arm and make the cuts with a backsaw. Then, rout the mortises for the arm posts and square the ends. With either a miter saw or the table saw, cut two blocks with 45° ends for the built-up lip at the end of each arm. Glue these blocks to the arm so they're flush with the front edges (Photo 17). To install the arms, first bore screwholes for fastening the arms to the rear blocks with 2-in. No. 8 screws. Spread glue on the post tenons, along the top edges of the front brackets and in the arm mortises, then place the arms in position. Clamp the arm/post joints and install screws to fasten the arms to the rear support blocks.

Cut the ottoman and chair slats to size, and use a combination bit to bore screwholes and 3/8-in. counterbores for plugs that cover the screwheads. Arrange the slats on the side cleats with even spaces between them and drive the screws (Photo 18). Use a plug cutter in a drill press to make the 3/8-in.-dia. plugs. Use a small brush to spread glue in the holes and on the plugs, and insert a plug into each hole. When the glue sets, use a sharp chisel to pare the plugs flush (Photo 19).

Finishing

Prepare to finish the wood by first sanding all surfaces with 120- and 150-grit sandpaper, taking care to remove the sanding dust when changing grits. Then soften all sharp edges and corners with 150-grit sandpaper and a sanding block.

Because cedar is a rot-resistant wood, you can leave it unfinished if you wish. Without a protective finish, the wood will weather and turn a light gray color. Eventually, though, the weather will start to degrade the wood fibers and the surface will become rough. To

maintain a deep reddish brown color and smooth surface, we applied three coats of cedar Sikkens Cetol 1. Supplier information is available at www.nam.sikkens.com, or call 866-SIKKENS.

Use a good-quality bristle brush to apply a full coat of the finish to all surfaces, making sure that all endgrain areas are well coated. Allow the finish to dry overnight, then lightly sand the surface with 220-grit paper to eliminate any roughness. Remove the sanding dust and apply a second coat. Let the finish dry overnight, and apply the final coat, sanding lightly between coats if necessary. Allow the finish to cure for at least 72 hours before using the furniture.



Glue the chair back slats to the back rails. When the glue is dry, apply glue and add the back stiles.



Temporarily clamp the chair back to the base and fasten the parts with galvanized deck screws.



Spread glue in the side-rail mortises and on arm-post tenons. Join the parts and clamp to pull the joints tight.



Cut the rear arm support blocks to shape, then glue them to the outside edges of the chair back.



After cutting the arms to shape and routing the arm-post mortises, glue beveled blocks to the end of each.



Bore screwholes and 3/8-in. counterbores for plugs in the slats. Then, secure the slats with screws.



Use a drill press and plug cutter to make the plugs. Glue them over the screwheads and pare them flush.