

BUILDING A BOOKCASE

High-end furniture projects are great to dream about. But unless you have a well-equipped shop and some serious woodworking experience to draw on, it can be difficult to turn the dream into a reality.

Not every piece of furniture needs to be a museum showpiece, though. Often a simple design does the job just as well and the experience gained in completing it goes a long way toward making the next project even better.

Our pine bookcase, for example, features simple construction and it's designed to be built with basic woodworking tools. Yet, the finished project is a worthy and useful addition to any room of the house. While it's meant to rest on the floor, you can convert the bookcase to a wall-mounted storage unit by leaving off the baseboard. You can secure the cabinet to the wall by screwing through the cabinet cleats into the wall studs.

We made the case out of materials available at most building-supply dealers and lumberyards, including 1/2 x 3/4-in. parting strip, 1 x 2, 1 x 4 and 1 x 10 common pine and 1/4-in.-thick lauan plywood. Assembly is quick and easy with glue and nails, and when you're done with construction you have the option of a painted or clear finish.

As for basic tools, you'll need a portable circular saw, hammer, block plane, combination square, tape measure, metal rule, two clamps, nail set and putty knife. Other supplies include glue, nails, sandpaper, wood filler and varnish or paint and shellac.

The specifications that follow will produce a bookcase with overall dimensions of 10 3/4 in.



deep x 34 in. wide x 48 in. tall. While the depth of the case is directly tied to the 1 x 10 stock, you can vary the height, width and shelf spacing to suit your needs. Keep in mind, though, that extending the width of the cabinet may require the addition of central shelf supports.

Cutting the Parts

For precise crosscuts, first make a simple, self-aligning T-guide for your circular saw. Cut a piece of 1/2-in. plywood to 2 1/2 x 24 in. and glue and screw it to a roughly 12-in.-long piece of 1 x 4 pine that will serve as the crossbar of the T. Center the plywood strip along the 1 x 4 and make sure the pieces are perfectly square to each other.

Butt the crossbar of the T-guide against the edge of a piece of scrap lumber, tack the guide in place and make a cut through the 1 x 4 with your saw base guided by the plywood strip. Then, trim the 1 x 4 on the opposite side in the same way. Now, the ends of the 1 x 4 can be aligned with layout lines on the stock for precise cut positioning.

Begin construction by using a tape measure to mark the length of a side panel on 1 x 10 stock, and lay out the cut line with a square (**Fig. 1**). The side panels on our bookcase are 48 in. long.

Place the T-guide against the edge of the stock and align its trimmed end with the cut line. Tack the guide in place and use your circular saw to make the cut (**Fig. 2**).

To support your work during the cuts, use 2 x 4s spanning two saw-horses for a temporary bench and clamp your work in place. Set your circular saw cutting depth so the blade cuts about 1/8 in. into the 2 x 4s.

After both sides are cut to length, lay out and cut the five shelves to length to suit the width of your bookcase. Our shelf length is 31 in.

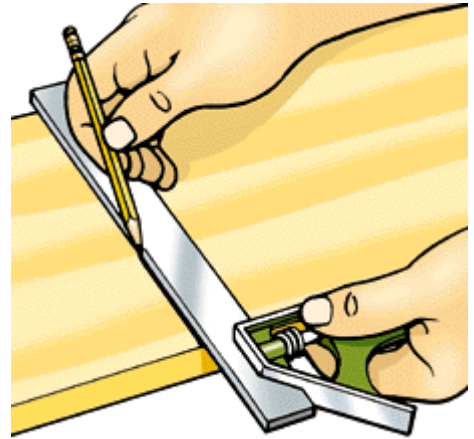


Fig. 1 Mark the lengths of the bookcase side panels on 1 x 10 lumber and use a square to lay out the crosscut lines.

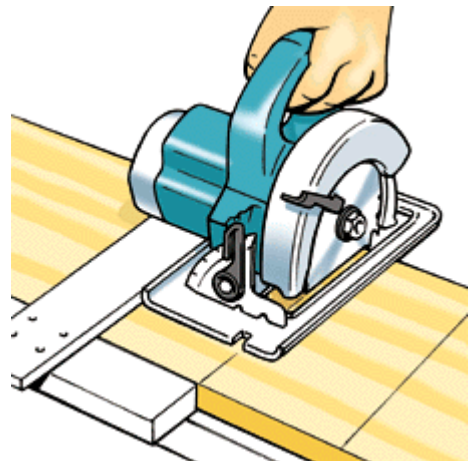


Fig. 2 With a T-guide cut to match your saw, align the end of guide with crosscut line. Tack guide to the work and then make the cut.

Rip the four lower shelves to $8 \frac{7}{8}$ in. wide to allow for the thickness of the case back. Clamp each shelf to the sawhorses and tack a straight strip to the work to guide your circular saw (**Fig. 3**).



Fig. 3 Use a straight strip as a guide when ripping stock for the four lower shelves to $8 \frac{7}{8}$ in. The top shelf remains a full 1 x 10.

Next, cut the 10 shelf-support cleats from lengths of $\frac{1}{2}$ x $\frac{3}{4}$ -in. parting strip. Use a handsaw to cut the pieces slightly oversize, then gang the pieces together with masking tape. Mark the cut lines and use your circular saw and T-guide to cut the cleats to $8 \frac{7}{8}$ in. long (**Fig. 4**).

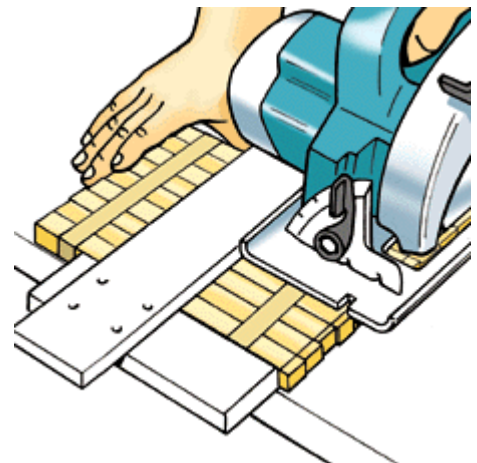


Fig. 4 After cutting shelf cleats oversize, gang them together with tape, mark the cut lines and trim with a T-guide and circular saw.

Because we varied the spaces between the shelves, the vertical back cleat lengths vary. Rough cut and mark the back cleats in pairs. From the top down, the lengths are 8, 9, $9 \frac{1}{2}$ and $11 \frac{1}{4}$ in. When cutting the back cleats with the T-guide, first gang them together so all the marks on one side align. After the cut, untape the cleats and reposition them so the marks on the opposite side are aligned for the next cut.

Assembly

First mark the shelf cleat locations. Hook your tape measure to the top edge of a side panel, extend the tape and place marks at the following dimensions: $\frac{3}{4}$, $10 \frac{1}{4}$, $20 \frac{3}{4}$, $31 \frac{3}{4}$ and $44 \frac{1}{2}$ in. These marks indicate the top edges of the shelf cleats. Transfer the marks to the other panel. Lay both side pieces edge to edge with the marks on the outer edges and use a rule or straightedge to extend the shelf locations across both panels at once (**Fig. 5**).



Fig. 5 Butt sides together with shelf-location marks on outer edges. Use a straightedge to extend the shelf marks

Use 2d nails and glue to attach the shelf cleats to the sides. Position the cleats so they're flush with

the front edges of the sides. Then, attach the vertical back cleats, leaving a 3/4-in. gap at the bottom of each back cleat for a shelf (**Fig. 6**). The gaps will help to keep the shelves aligned during assembly. Align the back cleats with the back ends of the shelf cleats to provide the 3/8-in. recess for the back panel.

across work.



Fig. 6 Nail and glue shelf cleats and back cleats to the side panels. Note that cleats are recessed 3/8 in. from back edge of sides.

To join the sides and shelves, first lay a side panel on a few 2 x 4s placed on the floor. With a helper assisting, stand the shelves in position and lay the opposite side on the shelf ends. Start a pair of 6d finishing nails at each shelf location so the points just penetrate the shelves. Lift the side off and apply glue to the endgrain of the shelves. Let the glue soak in for a few minutes, then apply a second coat. Follow with a coat of glue on the sides and cleats. Replace the panel using the nail points to align the shelves. Then drive the nails (**Fig. 7**) and set them below the surface.



Fig. 7 Secure one side to the shelves with glue and 6d finishing nails. Then flip the assembly over and attach the other side. Set all nails.

After the first side is attached, grasp the sides at one end while your helper grasps the opposite end and flip the assembly over. Secure the remaining side and check that the case is square. If necessary, tack a diagonal brace across the back to hold it while the glue sets. When the glue is dry cut a piece of parting strip to fit between the two top cleats and under the top shelf. This piece will be set 3/8 in. in front of the top shelf rear edge to provide room for the back panel. Glue and nail this long cleat to the shelf.

Adding the Fascia

To fit the 1 x 2 fascia over the case front edges, first mark the stock for crosscutting. Make the vertical pieces 48 in. long to match the sides and mark the horizontal members at 29 1/2 in. Rough

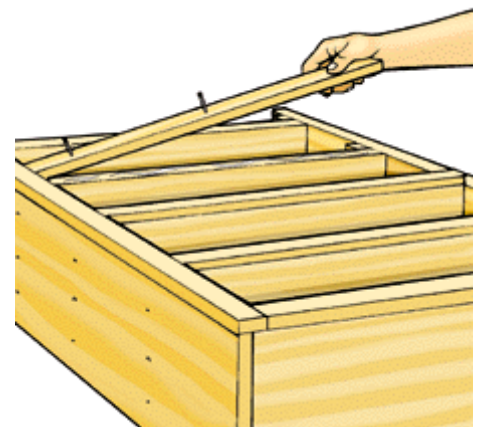


Fig. 8 Attach the 1 x 2 strips to the case starting with a vertical member. Then, add

cut the pieces to length and use the T-guide and circular saw to trim them squarely to exact size.

the horizontal pieces and the other vertical.

Apply glue to one of the vertical members and nail it to the case so its edge is flush with the side. Then, add each horizontal member with glue and nails, keeping the top edges flush with the shelf tops (**Fig. 8**). Finally, add the remaining vertical member with nails and glue.

Use 1 x 4 stock for the front and two side baseboard pieces. Cut the length of each side piece to 10 in. long and glue and nail the parts in place. Then, cut the front baseboard piece to 34 in. long and secure it so its ends are flush with the side pieces.

After the glue has dried, use a block plane to trim a chamfer around the top edge of the baseboard. Plane the side pieces first, working from front to back to avoid splitting the corners of the front piece. Then, plane the front piece to match. It helps to lean the plane against the case to maintain a uniform angle (**Fig. 9**).

The final component is the case back. Lay out the cut lines on 1/4-in.-thick lauan plywood. Tack a straight strip to the panel to serve as a guide for your circular saw and cut the stock to size (**Fig. 10**). Attach the back panels to the case with glue and 1-in. finishing nails.

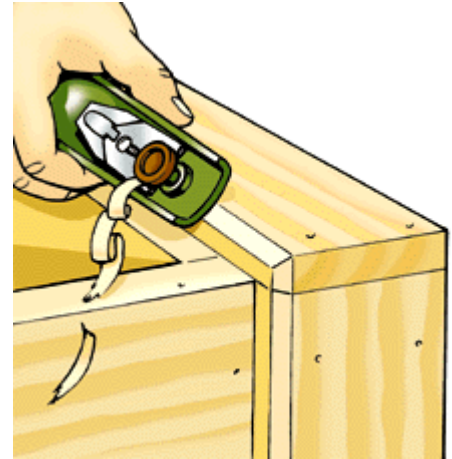


Fig. 9 Use a block plane to shape the chamfers on the baseboard. Rest the plane against the case to maintain a uniform angle.

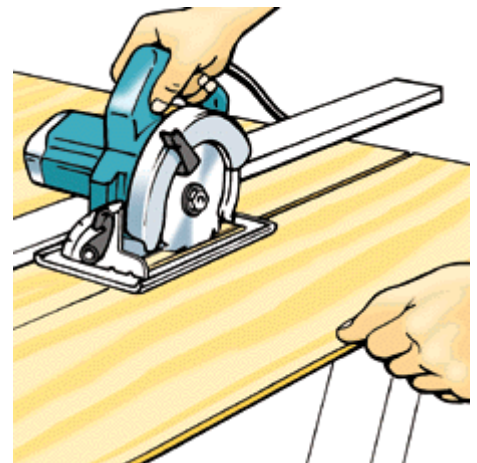


Fig. 10 Cut the 1/4-in.-thick back panel to size with a circular saw. Use a straight strip as a guide when making the cuts.

Finishing

First make sure all the nails are set below the surface. Use a putty knife to fill the nail holes with wood filler and let the compound dry (**Fig. 11**).

Sand the entire bookcase with 120- followed by 220-grit sandpaper. Then, use a sanding block and 220-grit paper to slightly ease all corners. Thoroughly dust off the case with a tack rag.

If you plan to paint your bookcase, first apply two coats of shellac over each knot to prevent the knots from bleeding through the final paint job (**Fig. 12**).

Then, prime and paint the bookcase according to the manufacturer's instructions.



Fig. 11 Use a nail set to drive all nails below the surface. Then apply wood filler over the nailheads with a putty knife.



Fig. 12 Apply shellac to any knots before painting. This will seal the knots and prevent sap from bleeding through.