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This bookcase project has a free video component that will walk you step-by-step through the construction process. Before you begin building, watch the video to familiarize yourself with the steps and tools involved in building it. www.woodworkersjournal.com/bookcase

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Triton Bookcase

Build this Arts & Crafts-inspired oak bookcase from standard sized home center lumber.

MAKING SIDE SUBASSEMBLIES

1. Gather three 8-ft. 1x2s and four 8-ft. 1x4s of red oak from a home center or lumberyard. Make sure the stock is as straight and flat as possible. And while you are at the store, buy a 2 x 4 ft. piece of 3/4" red oak plywood for the shelves.

2. Crosscut four legs to length from 1x4s, according to the *Material List* on page 4. Notice in the first photo that we are using a simple crosscut jig, in order to make clean, straight crosscuts with a circular saw. You can find a separate *Material List* and technical drawing for this Crosscutting Jig on page 4 of these downloadable plans.

3. (Photo) Crosscut four side rails to length from another 1x4.

4. Measure 3" up from the bottoms of the legs to mark the location of the bottom edge of the bottom rails. Mark 1" in from this edge along the bottom end of the legs, then connect the marks to draw layout lines for the angled "feet" on the bottoms of the legs.

5. Cut the angled feet to shape. Make these cuts with either a circular saw guided against a straightedge, or using a jigsaw or handsaw. Then angle-cut the top front corners of the front legs at a 45° angle, starting 1 3/4" from both edges of the top outside corners.

6. Set and clamp pairs of legs and rails together, with the rails positioned between the legs so the top rail is flush with the tops of the legs and the bottom rail's bottom edge aligns with the angled intersection of the feet. Carefully measure between the rails to determine the final length of the side stiles.

7. Crosscut four side stiles to final length, from 1x2s.

8. Mark the ends of the rails and the inside edges of the legs for dowel joints. Plan for two dowels per joint. Position these dowels 1 1/4" apart, 1/2" down from the top edge of the top rail and 3/8" down from the top edge of the bottom rail. With this placement, the dowels will stay clear of the dados you will mill later for the shelves.

9. (Photo) Mark the inside facing edges of the rails for the side stile dowel joints. Here, the stiles will attach to the rails with a single 5/16"-dia. dowel at each end. Position these dowels 1 3/4" in from the ends of the rails, and center each of them on the stiles.

10. (2 Photos) Mark all of the side assembly parts to keep their orientation clear. Now bore 5/16" dowel holes in the legs, rails and stiles, at your marked locations. Drill each of the dowel holes slightly deeper than half the length of your dowel pins so they will fit in the joints without bottoming out in the holes, which could prevent the joints from closing properly.

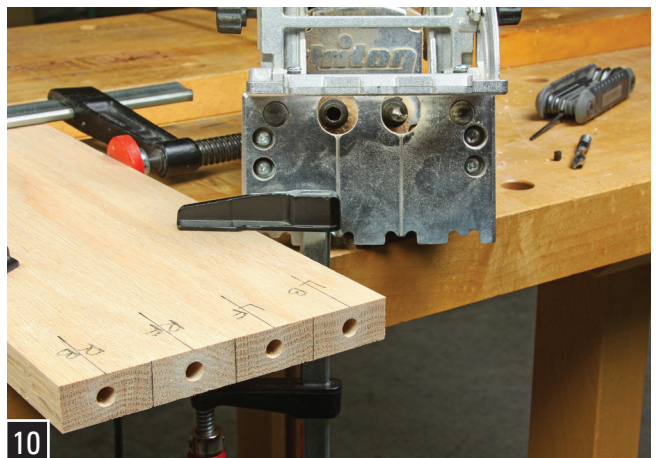
11. Sand the inside edges of the legs, rails and stiles up to 180-grit, while the part surfaces are still easy to access.



Step 3: Crosscut four side rails to length from a 1x4. This crosscutting jig (see page 4) makes the task easier to do accurately with a circular saw.



Step 9: Mark the side assemblies for single dowels that connect the stiles and rails. Center the dowel joints on the stiles.



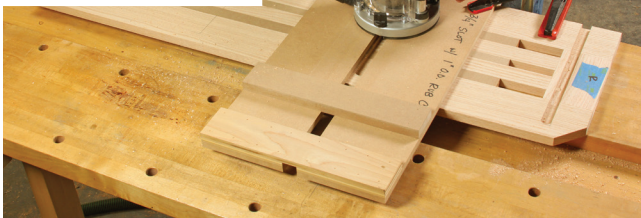
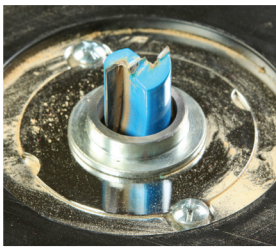
Step 10: Bore dowel holes at your layout lines in the legs, rails and stiles. When drilling holes in the ends of the narrow stiles, it's helpful to clamp all four together. One of two bits must be removed from the Triton Duo Dowel Jointer, shown here, to drill single holes in the stiles and rails.



Step 12: Glue and clamp the side assemblies together. Start with the rail and stile joints, then add the legs, working your way from the innermost joints outward.



Step 14: Cut the four shelves to size from a 2 x 4-ft. oak plywood "handy panel." Guide your circular saw with a clamped straightedge, or use a track if your saw has one, to ensure that these cuts are straight.



Step 17: One way to produce straight dados that are exactly 23/32" wide is to use a shop-made slotted jig to guide a handheld router. Here, a 1" outside-diameter guide collar (see inset) fits in the jig's 1"-wide slot to keep the machine tracking properly. An "undersized plywood" bit measuring 23/32" in diameter (see inset) should be used for this operation.

12. (Photo) Dry-fit the two side assemblies together, with dowels in place, to be sure the parts go together well. Then spread glue into the dowel holes and onto the mating surfaces of the joints for one side assembly. Insert the dowels, fit the parts together and clamp the side assembly so the joints close. Be sure to glue the stiles between the rails first, and then add the legs. Clean away any glue squeeze-out when the glue gets rubbery.

13. Repeat the process to glue up the second side assembly. When both side assemblies are dry, sand or scrape any misalignments between the joints flat. Then sand the side assemblies up to 180-grit.

ADDING THE SHELVES

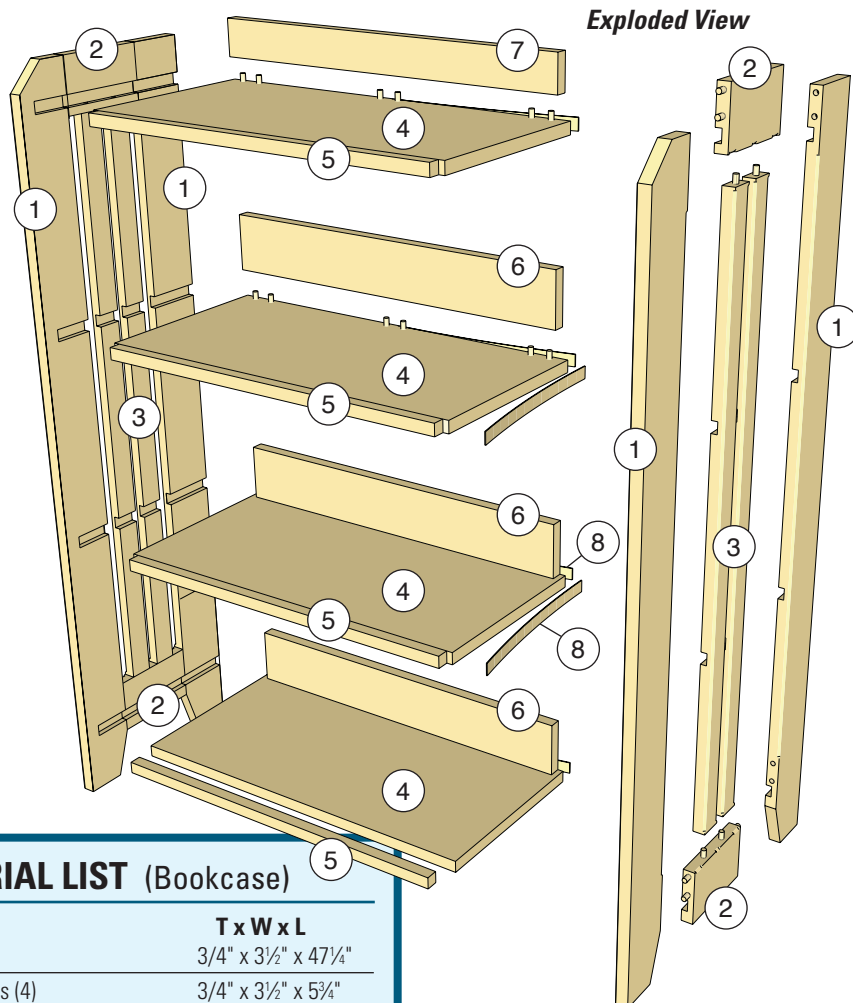
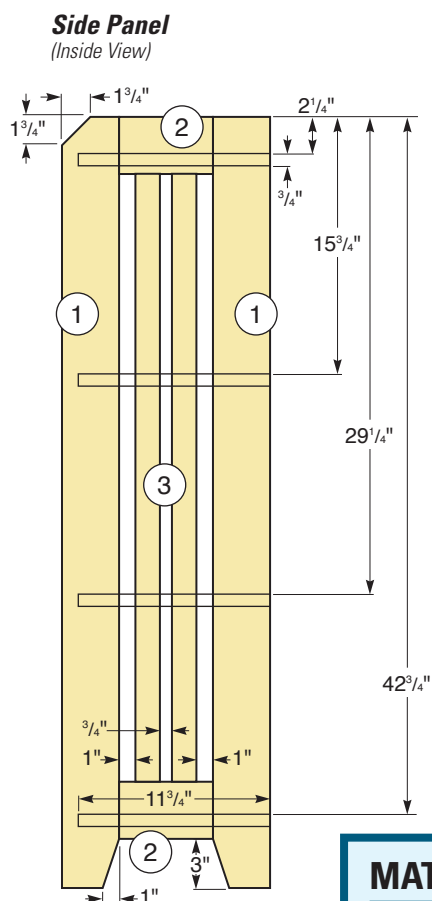
14. (Photo) Cut four shelves to size from 3/4" plywood, according to the *Material List* dimensions, next page. If you use a 2 x 4-ft. sheet, you'll be able to get all four shelves from one piece of plywood.

15. Lay both side assemblies flat with their back edges together, and mark the back legs for the four shelf dado locations. Marking them simultaneously helps to reduce measurement errors and misaligned shelves. Make two layout marks for each shelf, 3/4" apart, so you'll be sure to cut the dados between these lines.

16. The shelf dados must stop 1" from the front edges of the front legs. So, mark a termination line at the end of each dado location to be sure you'll stop these dado cuts correctly.

17. (Photo) Three-quarter-inch plywood is almost always 23/32" thick instead of a full 3/4". Measure your plywood thickness to be sure. You can buy an "underthickness" 23/32"-diameter straight bit for a router that will cut perfectly fitting dados for "3/4" plywood. We're using a simple slotted jig, made of scrap, to guide the router during dadoing. It has a 1"-wide slot to accommodate a 1" outside diameter guide collar, fixed to the router's base (see Photo). The jig's base squares it against the bookcase side assemblies. Align and clamp the jig carefully to cut each dado. Rout the dados in three successive passes each, deepening the cut by 1/8" with each pass. Their overall depth should be 3/8". *TIP: Slip thin scraps between the side stiles to fill the slots during dadoing. This will prevent the router bit from splintering the back edges of the stiles as it passes from one stile to the next.*

18. Carefully chisel the stopped ends of the dados square. Make sure the plywood shelves fit fully against these squared ends and, when installed, are still flush with the back edges of the bookcase sides.



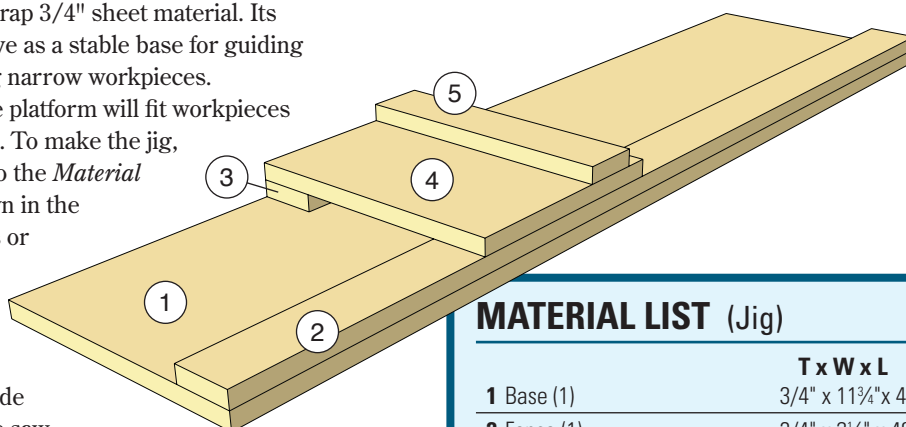
MATERIAL LIST (Bookcase)

	T x W x L
1 Legs (4)	3/4" x 3 1/2" x 47 1/4"
2 Side Rails (4)	3/4" x 3 1/2" x 5 3/4"
3 Side Stiles (4)	3/4" x 1 1/2" x 37 1/4"
4 Shelves (4)	3/4" x 11 3/4" x 23 3/4"
5 Front Trim (4)	3/4" x 3/4" x 23"
6 Lower Shelf Backs (3)	3/4" x 3 1/2" x 23"
7 Top Shelf Back (1)	3/4" x 2 1/4" x 23"
8 Veneer Edge Tape (1)	25' roll

CIRCULAR SAW CROSSCUTTING JIG

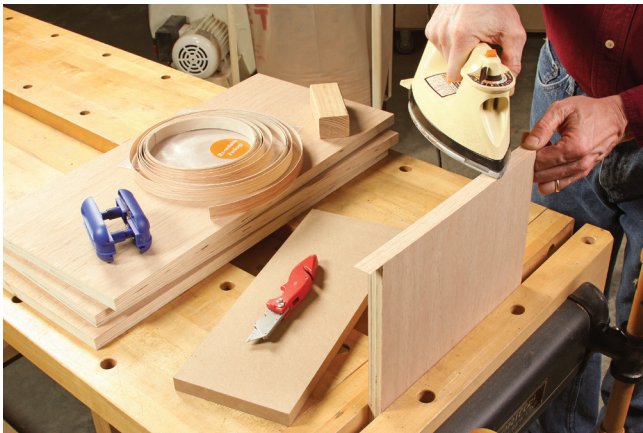
This useful jig can be made of scrap 3/4" sheet material. Its top platform and fixed fence serve as a stable base for guiding a circular saw when crosscutting narrow workpieces. The pass-through area under the platform will fit workpieces up to about 6 1/2" wide, for cutting. To make the jig, cut the parts to size, according to the *Material List*, and assemble them as shown in the drawing with glue and brad nails or screws. Position the platform assembly 12" from the end of the jig's base.

To customize this jig for your circular saw, extend the blade below the saw's base, and set the saw on the platform so the blade rests against the platform's edge. Hold the platform fence (piece 2) against the saw's base, and fasten it to the platform using the saw base as a "spacer."



MATERIAL LIST (Jig)

	T x W x L
1 Base (1)	3/4" x 11 3/4" x 48"
2 Fence (1)	3/4" x 2 1/2" x 48"
3 Spacer (1)	3/4" x 2 1/2" x 10"
4 Platform (1)	3/4" x 11 3/4" x 10"
5 Platform Fence (1)	3/4" x 2 1/2" x 11 3/4"



Step 19: Red oak veneer edge tape with a pre-applied adhesive will cover the plys on the ends of the two middle shelves and the backs of all four shelves. Heat the tape with a household iron to adhere it to the wood, then trim off the excess carefully.



Step 21: Create dowel joints between the shelves and shelf backs, using at least three dowels. The Triton Duo Dowel Jointer shown here drills pairs of holes spaced 1¼" apart.

19. (Photo) The ends of the two middle shelves will show their plywood cores between the side stiles unless you cover them up. One solution is to apply red oak veneer edge tape to the edges of these shelves to hide the edge plys. This tape often has a hot-melt adhesive pre-applied to the back so you can simply iron it in place with a household iron. While you're at it, apply a strip of edgebanding to the back edges of all four shelves, so the edge plys won't show up on the back of the bookcase. Carefully trim the edges and ends of the veneer tape flush with the shelves.

20. Dry-assemble and clamp the bookcase together with the

four shelves in their dadoes. Crosscut three lengths of 1x4 to serve as backs for the bottom three shelves. Be sure to measure off of the bookcase's actual inside span to determine the final length of these shelf backs, before crosscutting them to length. Rip a fourth strip of 1x4 to 2¼" wide, which serves as a narrower back for the top shelf. Crosscut it to length and test-fit it, too. Then dismantle the bookcase.

21. (Photo) Sand the faces of the shelf backs and shelves up to 180 grit. Now, lay out three pairs of dowel joints between the bottom edges of the shelf backs and the top faces of the shelves along their back edges. Drill these dowel holes. Be careful to adjust your dowel hole depths so as not to drill all the way through the shelves.

22. (Photo) Reassemble the bookcase to make sure the shelves and shelf backs fit properly together with the dowels



Step 22: With the bookcase dry-assembled, install the shelf backs on the shelves with the dowels in place to test the fit of these joints before gluing the parts together.

in place. If they do, glue and clamp these joints — but don't glue the shelves in their dadoes just yet.

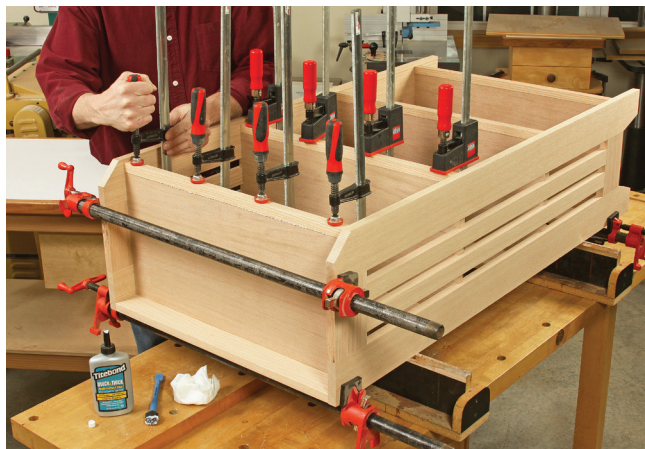
23. (Photo) The front edges of the shelves are covered by strips of solid oak trim, to add durability here. Cut strips of 1x2 to fit the shelves and, if possible, rip-cut them to 3/4" x 3/4". (Alternatively, if you don't have a table saw to make these narrow rip cuts, you can glue 1x2s to the shelves first, then rip the front trim to 3/4" with your circular saw after the glue dries.) Spread glue along the front edge of each shelf, and install its trim strip with the bookcase still dry-assembled. Hold the trim strips in position while the glue dries with clamps or strips of wide packing or painter's tape.

FINISHING UP

24. Take the bookcase apart and carefully plane or sand the front trim on the shelves flush with the shelf faces as needed, as well as to clean off any residual glue. Then ease the sharp edges around the side assemblies with a chamfering bit in a router. Keep these chamfers small, at just 1/16" or so, to add a subtle detail. Then cut a 1/8"-wide chamfer around the inside edges of the stiles and rails — it adds a nice shadow line here and makes the sides of the bookcase look less “cookie cut-out.” The router bit will leave the corners of these inner chamfers rounded. So, carefully chisel the corners square. Use the same larger chamfer on the front edges of the shelf trim.

25. Glue and clamp the bookcase together. Apply clamps to both the front and back of the bookcase at each shelf location, to be sure the shelves seat fully in their dadoes. You may also want to clamp the stiles where they attach to the middle two shelves; narrower, long bar clamps will fit between the stiles and pull these joints tight.

25. (Photo) Arts & Crafts-inspired bookcases of this sort will typically be stained a dark “Mission” brown or antique walnut color. Once you've colored the wood with the stain of your choice, apply three coats of your favorite clear finish to complete this project.



Step 23: Glue strips of solid oak to the front edges of the shelves. These act as shelf stiffeners, while also hiding the plywood's inner plies.



Step 24: Stain your bookcase a medium to dark brown if you prefer an Arts & Crafts look. Then apply three coats of your favorite clear finish.