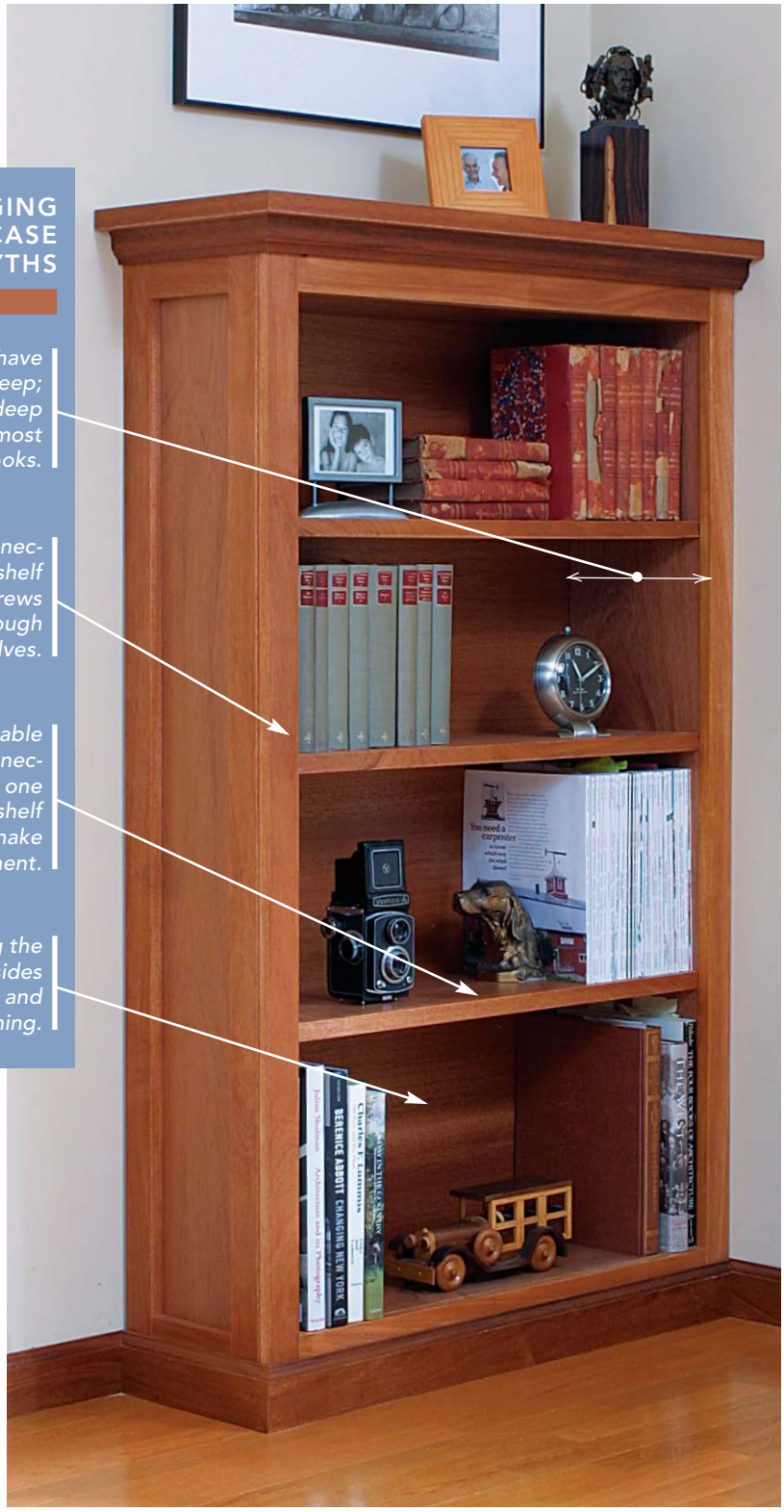
A Bookcase That Breaks the Rules



BY GARY M. KATZ

I remember the first bookcase I ever built. I didn't want to spend too much money on material, so I used AC fir plywood and had to sand the stuff until my hands hurt. I wanted the case to last forever, so I dadoed all the shelves into the sides—a time-consuming job, especially when my ¾-in. router bit was a little too wide for the ¾-in. plywood shelves.

I attached the face frame one piece at a time, which meant the joints weren't fastened together tightly, which was okay. But I made the shelves the same depth as the sides, so when I installed the nosing on the shelves, the face frame spread apart. Then, after all that, I had to finish the thing.

Since that first attempt and during my 30-plus years of finish carpentry, I've built a lot of bookcases—not just for clients, but for myself as well. Over that time I have learned a lot of valuable lessons about bookcase design and construction. I have some tips and methods as well as some misconceptions (photo left) about building a better bookcase faster and easier (drawing facing page).

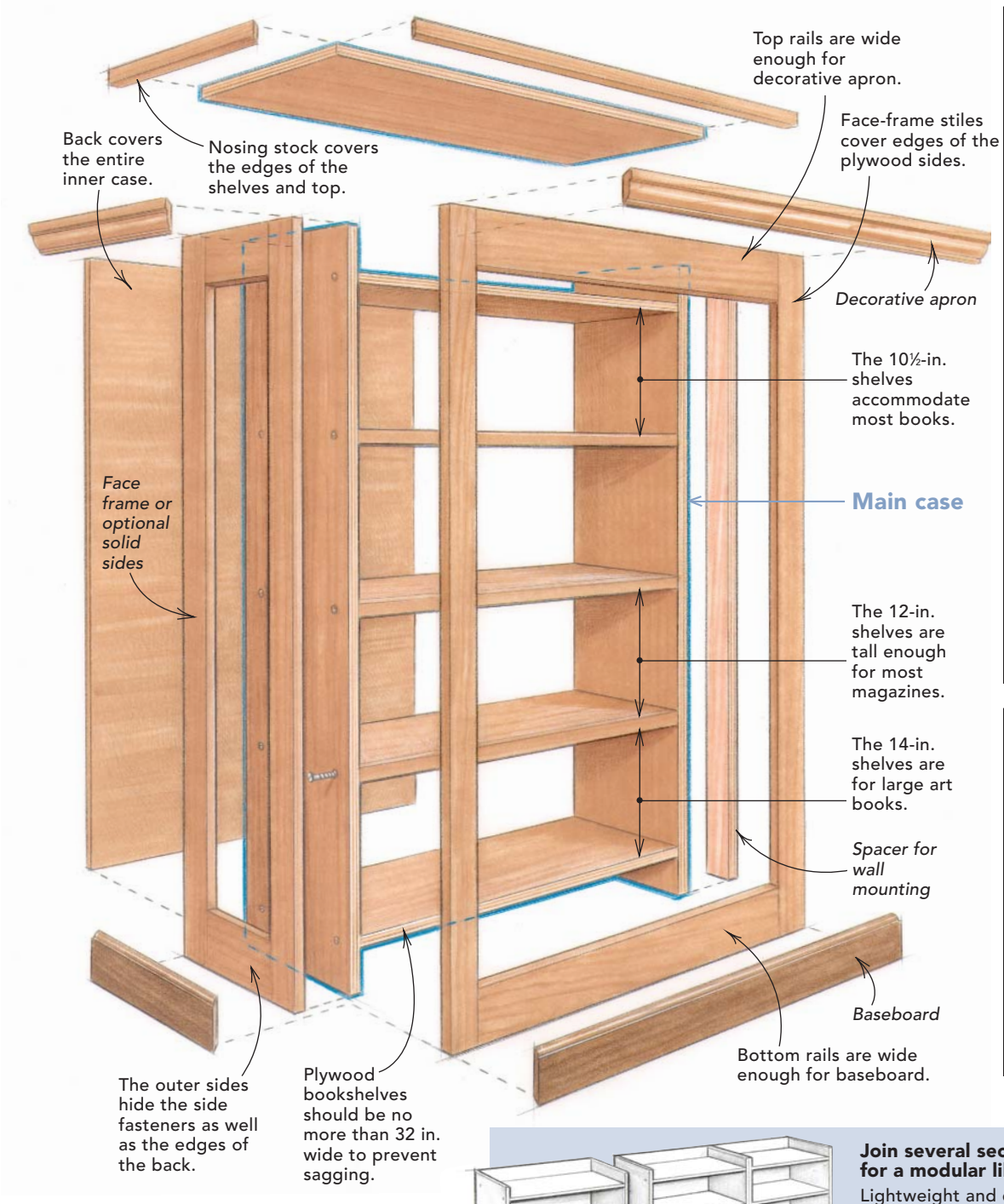
Use readily available materials

I've built bookcases from many different materials, from ¾-in. fir plywood to 2x12s. On occasion I've also used ¾-in. veneered MDF-core (medium-density fiberboard) sheet goods, but I've found that plywood is stronger, spans farther and holds screws better than MDF. So I usually choose ¾-in. hardwood-veneer plywood for stain-grade work or ¾-in. birch-veneer plywood for paint-grade work.

I make stiles, rails and nosings from solid stock to hide the edge grain of the plywood sides and shelves. I prefer poplar for paint-grade bookcases, and for stain-grade work, I use hardwood that matches the plywood veneer, in this case Honduras mahogany.

The bookcase back can be made from any ¼-in. sheet stock, but I opted for mahogany-

Handsome and affordable, these built-in bookshelves take less than a day with simple methods and no special tools





One sheet of plywood yields all the parts for the main case plus the optional outer sides.

SHOPPING LIST

One sheet: ¾-in. plywood (shelf, sides and top)

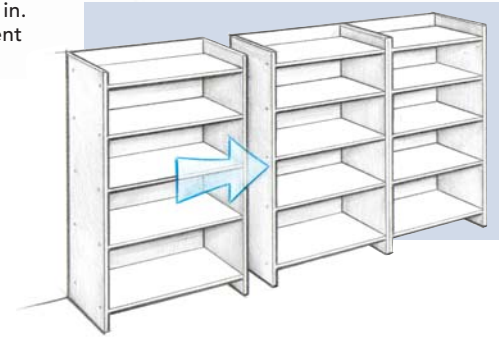
Half-sheet: ¼-in. plywood (back)

Four: ¾-in. by 2-in. by 60-in. stiles (face frames)

Two: ¾-in. by 4½-in. by 36-in. rails (face frame)

Five: ¾-in. by 1-in. by 36-in. nosings

One: 1-in. by 1¾-in. by 48-in. crown molding



Join several sections for a modular library

Lightweight and easy to carry, 32-in. wide units can be fastened together on site for larger-capacity bookcases.



Drawings: Bob La Pointe

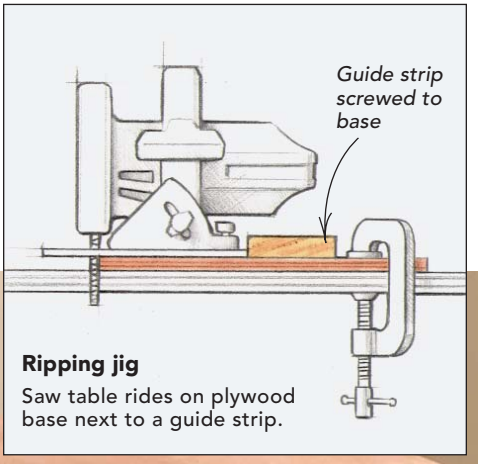




Turning the plywood into bookcase parts. *First, rip the sheet of plywood into lengthwise strips. A tablesaw makes these cuts straight and even (photo left). Next, a chopsaw makes quick work of cutting the strips to length for the shelves, sides and top (photo right).*

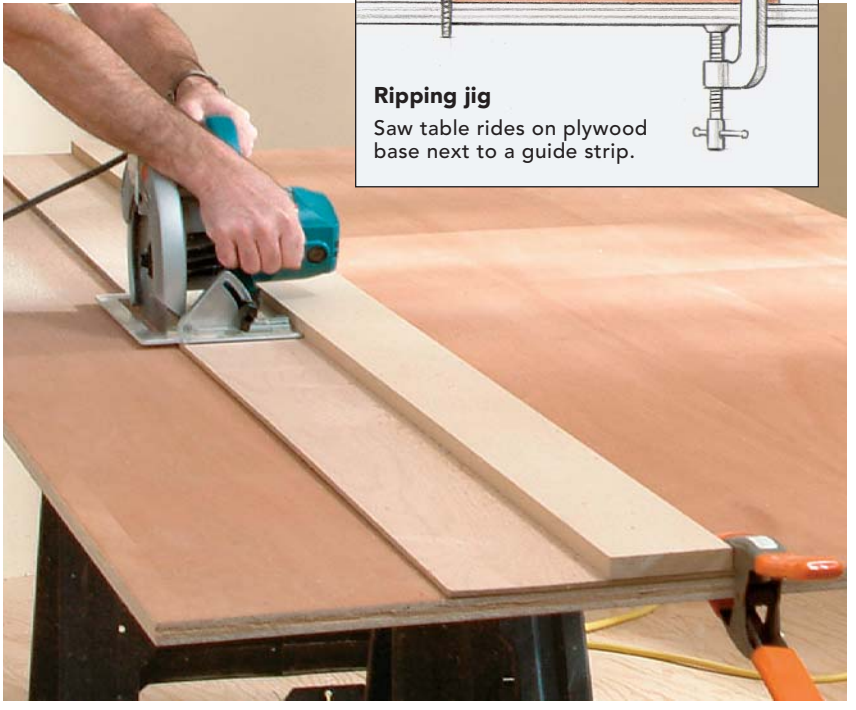
Cutting plywood without a tablesaw

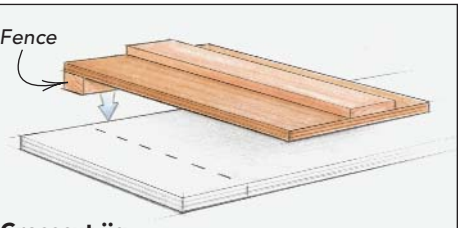
Two tricks for straight cuts. *Jigs can turn an ordinary circular saw into an accurate cutting tool. For rips, the saw table rides next to a guide strip (photo and drawing, right). For crosscuts, a fence squares the jig to the work to be cut (photo and drawing, far right).*



Ripping jig

Saw table rides on plywood base next to a guide strip.





Crosscut jig

Fence screwed to bottom edge squares the jig to the work.



Photos this page: Dean Della Ventura

veneer plywood to match the rest of the material. By the way, MDF core is fine for the bookcase back.

I keep costs to a minimum by using plywood for the shelves and sides and solid stock for the stiles and rails. The materials for this 32-in. wide bookcase in Honduras mahogany (with the face-frame end panel) cost about $230 ("Shopping list," p. 65). Paint-grade materials would cost about half that amount. Considering that the bookcase took me less than a day, I figure it could be built, finished and installed for around $500.

Getting the most from material

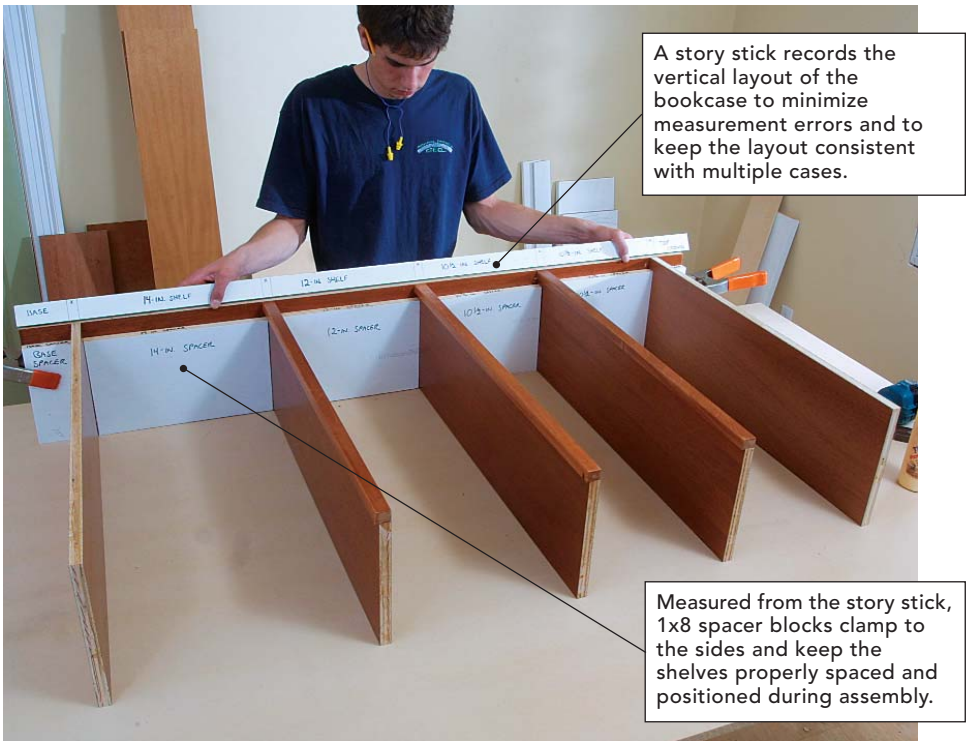
I can get the shelves and sides for a single 32-in. unit easily out of a single sheet of plywood (sidebar p. 65). I start by ripping the two finished outer sides (if both sides are exposed), and then the two narrower inner sides (photos facing page). (The outer sides are ¼ in. wider to cover the edges of the back.) I make the height of the bookcase around 60 in. so that the cutoff pieces from each of the sides can be used for shelves. Enough material should be left over for the top or for shelves on additional bookcases.

I cut the material for the back with the grain running horizontally. That way, I get the backs for two bookcases out of one sheet of material. When all the bookcase pieces have been cut, I put nosing on the shelf stock, and I prefinish everything with a couple of coats of polyurethane.

Assembly requires no special tools

Story sticks can be helpful in just about every phase of home construction. They usually are made from a length of 1x material, and they're used to lay out and record all the pertinent measurements for a particular project. For a bookcase story stick, I mark the loca-

SITE-BUILT TOOLS ENSURE ACCURATE ASSEMBLY







Pinpoint the screws. *Once shelves are positioned, a line is drawn to center the fasteners (photo left). Shelf is held against spacer while screws are driven through predrilled holes (photo right).*

BACK ADDS STRENGTH AND SQUARES THE BOOKCASE

Plywood back completes the main case. *After glue is spread on the back edges of the shelves and sides, the back is carefully set in place (photo left), and one edge is attached. Diagonal measurements confirm that the bookcase is square (photo center), and the rest of the back is nailed off after guidelines are drawn (photo right).*







CONCEALED SCREWS ATTACH BOOKCASE





Spacer keeps trim consistent. *A 1x spacer is screwed to the side that goes against the wall (photo left), and shims make the bookcase level and plumb (photo right).*

Three places to hide screws



1. Drive screws through the sides into wall studs.



2. Drive angled screws through the top shelf into wall studs.



3. Drive angled screws through the side and into studs or sill plates.

tion of each shelf as well as the width of the top and bottom face-frame rails based on the trim details I plan to use.

I use the story stick to lay out temporary spacers that I cut to set the shelf positions exactly on both sides of the bookcase (top photo, p. 67). The story stick and spacers also can be used to make additional bookcases identical to the first if necessary.

I attach the shelves to the sides with 1⅝-in. drywall screws driven through predrilled holes. To avoid "shiners" (screws or nails that miss their mark), I trace a pencil line with a square at each shelf location before driving any fasteners. Before drilling and driving the screws, it helps to tack the shelves in place with 18-ga. brads.

Back squares the bookcase

I secure the back to the assembled case with glue and staples (bottom photos, p. 67), although small nails or screws work, too. Once the glue is spread, the back must be set carefully to keep the glue from oozing. If glue does squeeze out, it's easily cleaned off the prefinished pieces with a wet cloth.

I first attach the back along just one side. Although I cut the back square, I double-check by racking the case until the diagonal measurements are exactly the same. Again to avoid shiners, I use a straightedge to draw the shelf locations across the back before stapling it home.

Hidden fasteners hold bookcase to the wall

If the bookcase is going in a corner, I install a 1x spacer block on the end panel to keep the stile overhangs similar (photos left). Then I set the unit in position and shim it plumb.

One of the advantages of this bookcase system is that all the fasteners are hidden. The ¾-in. plywood sides have plenty of strength, so I drive a screw through the side that abuts the wall and into a wall-framing member. However, the ¼-in. plywood back isn't strong enough by itself to fasten to the wall. So I drive screws through angled holes in the top shelf. Another option would be to add a reinforcing cleat across the back of the top space. A third attachment point is through the side with a screw into either a stud or the bottom sill plate.

Face frame covers raw edges

The end panels go on next to hide all the fasteners in that side (photos facing page). The

TRIM HIDES THE ROUGH EDGES





Fancy finish. *To give the bookcase an Arts and Crafts look, a stile-and-rail frame covers the shelf screws (photo left). Screws secure it from the inside, and another preassembled frame hides its edges as well as the edges of the plywood (center photo).*



Baseboard completes the built-in look. *A nosing strip on the top hides the edge of factory-made crown molding, and a matching baseboard finishes the bottom (photo right).*

next step is installing the face frame, which covers the unfinished edges of the plywood. The face frame can be installed one piece at a time on the case, but I prefer to assemble the face frame using pocket screws (Kreg; 800-447-8638; www.kregtool.com). Pocket screws ensure tight-fitting and flush joinery. Then glue and a few 18-ga. brad nails are all that's necessary to secure the face frame to the carcase.

Next, I apply nosing to a piece of ¾-in. plywood for the top, and I glue and nail it in place. I like to put an apron under the edge of the top. A simple piece of 1x2 works well, but other moldings that are either made in a factory or made in my shop can be used to gussy up the design. □

Gary M. Katz is a carpenter and writer living in Reseda, California. He is the author of *The Doorhanger's Handbook* (The Taunton Press, 1998). Photos by Roe A. Osborn, except where noted.

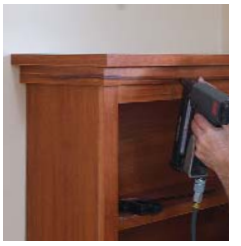
Simpler sides for a contemporary look



Plywood panels keep costs down

Minimal and clean-looking, side panels cut from the same sheet of plywood hide the screws that hold the shelves (photo left). The preassembled face frame goes on in one piece to cover the edges of the plywood (center photo).





Modest and modern. *A square-edge apron under the top adds a sleek, simple touch.*