

Strong, No Clamp-Up Corner Joints



Tablesawn miters for case work are assembled using clear packing tape

BY STEVE LATTA

A good part of my early woodworking career was spent making cheap, lacquered medium-density fiberboard (MDF) furniture. My co-workers and I called it curb furniture because of its inevitable resting place. Despite the lack of inspiration or style, working in that shop taught me a valuable skill: how to make

foolproof mitered corner joints. All case work was done this way because we had to hide the ugly edges of MDF, which telegraph through paint.

Eleven years and three shops later, I now spend my days building reproduction 18th-century American furniture. Although this job calls for a lot of traditional joinery—dovetail and

TABLESAW TECHNIQUE IS KEY TO PERFECT MITERS

mortise and tenon—the mitering technique used to join slabs of MDF has a place here, too. It works on solid stock and is handsome and durable.

When mitering large stock on a tablesaw, most woodworkers use a traditional rip-cut method: One edge of the workpiece rides along the rip fence, and the other edge is mitered by the tilted blade.

There are problems with this method. Many tablesaws have a limited capacity between the fence and blade. Also, tilting your blade throws off the reading on the rip-fence scale. Safety is a concern, too. When mitering a wide piece, it's nerve-racking to try to keep your eyes on the fence and sawblade at the same time. At the very least, stock cut this way is prone to minor imperfections unless you own a sliding-table attachment.

With my method, you first rip and crosscut all stock to finished dimensions, with square edges. Next cut any internal grooves or slots your project may require. Miterers are cut with the blade buried in scrap stock clamped onto the rip fence. I should stress that although I've found this method to be perfectly safe, it's unconventional. My auxiliary fence and hold-down *minimize* the chance of the offcut kicking back. But you should always stand to the left of the blade, just in case. Most of the time, the offcut just rattles around harmlessly between the blade and fence until the next piece of stock pushes it through. Alternatively, shut off the saw, and between cuts, move the offcut out of the way after the blade stops spinning. Also, buy or make a zero-clearance throat-plate insert for your tablesaw (*FWW* #126, p. 77) for added safety.

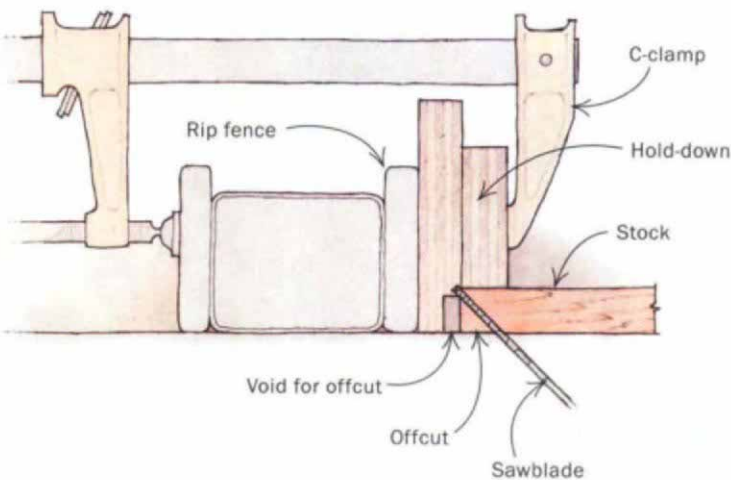
Make the auxiliary fence, and adjust the blade

There are two parts to my auxiliary fence setup, and both can



Miter all sides of the stock. The miter cuts are made by pushing dimensioned stock along an auxiliary fence fitted with a hold-down covering the blade and a recess for the offcut. The blade is partly buried in the auxiliary fence.

TABLESAW JIG FOR CUTTING MITERS



be made of $\frac{3}{4}$ -in. stock, solid wood or sheet goods. First cut a piece of scrap about 3 in. wide and roughly the length of your rip fence. Then cut a rabbet, about $\frac{1}{4}$ in. deep, into this piece. Start with a rabbet about $\frac{1}{16}$ in. narrower than the thickness of the stock being mitered, and make sure that's enough room for the offcut. The offcut

must be able to float freely in this space until the next cut pushes it through or until the saw coasts to a stop.

Cut another piece of scrap, about $1\frac{1}{2}$ in. to 2 in. wide by 12 in. to 16 in. long for the hold-down. Clamp both pieces to the rip fence. Place a workpiece under the hold-down when making adjustments. Stock should

A safety warning:

This method of cutting miters leaves room for the offcut to drift away from the blade, but it doesn't guarantee against potentially dangerous kickback. Never try to pull the offcut through when the saw is running. Do not stand directly behind the blade when working. Have a way to turn off the tablesaw without putting yourself in the kickback zone. And wait for the blade to come to a complete stop before removing the offcut. —S.L.



How much to cut. The miter should not reduce the width of the workpiece, which is cut to finished dimensions first.



Uses for mitered case work

These mitered corner joints are surprisingly strong, and they have many applications. They are appropriate for everything from basic boxes and bookshelves to fine furniture. You can use hardwoods or sheet goods or a combination as long as you avoid large areas of cross-grain with solid stock.

slide through with only the slightest trace of resistance.

The relationship between the fence and blade is critical for precise, safe cuts. Adjust the blade (tilted at 45°) and rip fence until the blade's teeth are aimed directly at, but not touching, the outside corner of the rabbet. Then turn on the saw, and slowly raise the blade into the auxiliary fence, only about 1/8 in. The outside face of the blade, where it enters the auxiliary fence, should be as high as the stock being cut is thick. That way, when cutting the miter, the outside dimensions of the stock remain constant. Cut a piece of scrap from the same batch of stock to check your settings (see the bottom photo on p. 63).

Be sure all your stock is the same thickness

Because the auxiliary fence is rabbeted, your stock is riding on only a small portion of the fence. Be sure all the stock is the same thickness. Remember: Sheets of plywood may vary in thickness, so measure all your stock before beginning.

When you're ready to miter, keep your body to the left of the blade, out of the path of potential harm (see the top photo on p. 63). It's also a good idea to



Tape the outside seams of the case. Position the panels of the case flush with each other, and pull them tight with strips of clear packing tape. Then spread tape along each joint.

- **Matching grain:** You can match grain between a case side and the face frame if the stock is cut from the same board.
- **Speaker cabinets:** Leave one face open, and cover the exposed edges with strips of hardwood or iron-on edge-banding.

- **Plant stands:** Miter all six sides for a strong box, and finish it with something durable such as lacquer or urethane.
- **Bookcases:** Before joining the cases, drill holes for shelf pins. Or cut dados or biscuit slots to hold fixed shelves. —S.L.

have an on/off switch you can reach without having to step into the kickback zone. Most of the time, cutoffs will just rattle and float back. Offcuts can be pushed through the blade with successive passes of stock. Or turn off the saw between cuts, and when the blade stops spinning, remove the offcut.

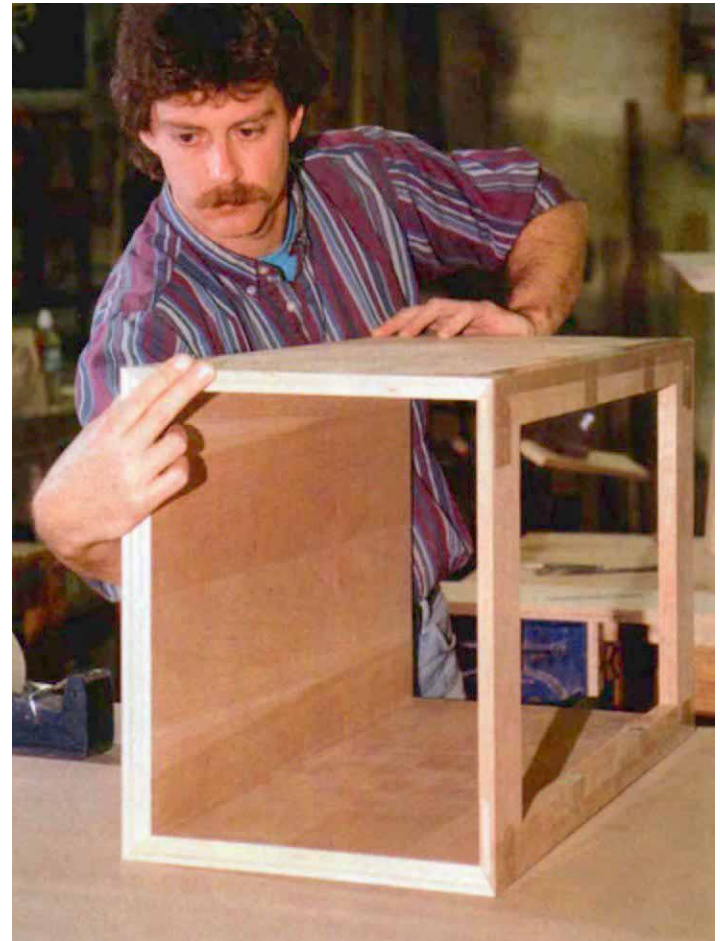
With this method, I've mitered components as large as 36 in. by 84 in. and as small as 12 in. Don't

spline just jams up. Several years ago, while employed at the curb-furniture shop, I realized a strong, spline-free miter would make my job easier.

The idea of abandoning splines was heresy. Nonetheless, I found a few willing heretics, and we conspired to build and test a spline-free cube about 18 in. sq. After gluing it up and letting it cure, we proceeded to abuse it. We repeatedly pitched it off a plywood rack to the concrete floor below, a distance of about 12 ft. We beat it with hammers. We stood on it. The cube remained intact; its corners were blunted, but the joints held fast.

For a strong mitered corner, you need perfectly flat mating surfaces, a tight clamp-up and a lot of yellow glue. Glue-up will be messy, but you don't want to starve the joint, especially with glue-hungry plywood. Solid stock requires less glue.

After mitering the stock, lay it down on a large workbench. A sheet of MDF or plywood makes a good work surface. Arrange the four sides in sequence, outside face up, and tape the panels together along the seams, using clear packing tape (see the bottom photo on the facing page). The tape acts as a hinge when you fold the four sides into a box. Then flip the case over, and mask off the inside corners. Make sure you don't tape the miter. The tape keeps the glue squeeze-out off the wood. If you're building a plant stand or something where the insides



Make sure the corners are flush. Last, tape the top and bottom pieces in place.



After flipping the case over, spread glue on the exposed miters. Then fold the case into a box, and tape the fourth corner.

put anything against your rip fence that's less than a foot long.

Forget about splines; miters go together with glue

I was taught that miters require slots for reinforcing splines, and that's how I built them for many years. Inserting a long spline into a long groove that is tacky with rapidly drying glue can give you fits. Sometimes the

won't be seen, skip this step.

Run a generous bead of glue along all the mitered surfaces, and spread it out with a brush. When I'm using plywood, I add a second coating of glue. Then fold the box into shape, and tape the last corner (see the photo above). Finish up by gluing and taping the top and bottom pieces. If your miters are all 45°, the box will align itself per-

fectly square. Let the glue set for about an hour or so, then rip off the tape, and scrape off any remaining squeeze-out using a cabinet scraper. When the glue has cured, burnish the sharp corners of the box using the wooden handle of a chisel, then sand lightly. □

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