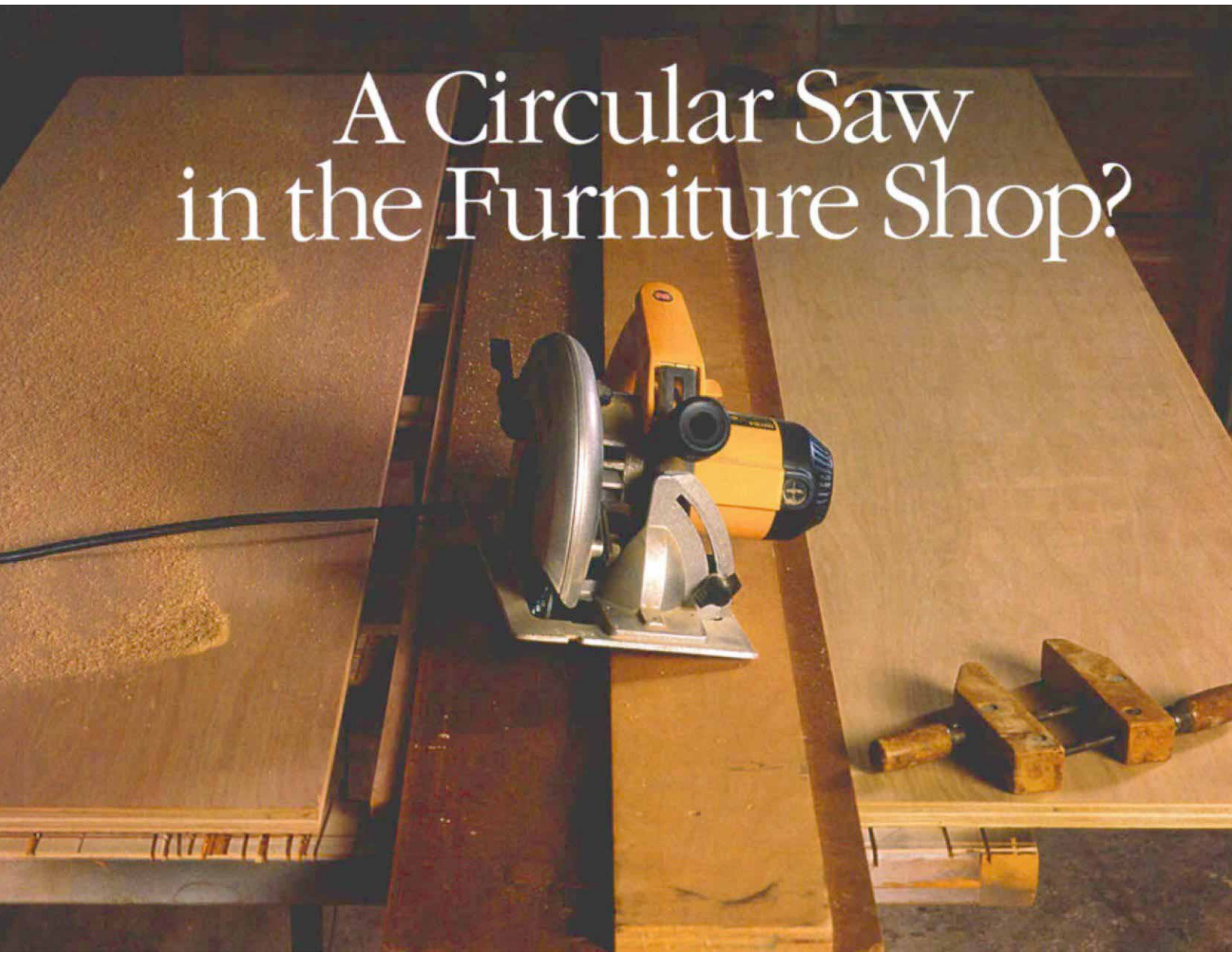
A Circular Saw in the Furniture Shop?



For cutting sheet goods in tight quarters, this carpenter's tool, used with a sacrificial table and dedicated cutting guides, produces joint-quality cuts with ease

BY GARY WILLIAMS

Contractors couldn't live without the portable circular saw, but we of the warm, dry furniture shop tend to leave it on the same shelf as the chainsaw. Great for building a deck but far too crude for quartersawn oak. Necessity has a way of teaching us humility, however.

I've been a sometimes-professional woodworker for nearly 30 years, but somehow I have never managed to attain the supremely well-equipped shop. I work alone in a no-frills, two-car garage that I share with a washer, a dryer, a water heater and a black Labrador. My machines are on the small side, and I lack the space for large permanent outfeed and side extension tables for my tablesaw. Perhaps you can relate. Under these conditions, cutting a full sheet of plywood can be a very challenging operation. Even if you have your shop set up to handle sheet goods with ease, perhaps you've run into similar difficulties cutting plywood and lumber accurately on job sites and installations. The solution?

May I suggest the humble circular saw. Cutting lumber and plywood with a handheld circular saw is nothing new. You've probably done it before, with varying degrees of success. You get that 4x8 sheet up on the sawhorses, mark your cut line, rig up some

kind of straightedge and cut. Trouble is, in the instant before the cut is complete, gravity happens, and you are presented with an entirely new challenge. Now you have two pieces that either want to collapse in the middle or fall off the end. Meanwhile, the scrap you used as a straightedge bowed a little during the cut; and it wasn't quite long enough to begin with, so the last few inches of the cut were done freehand. And as to the cut produced by that blade you last used to cut creosote-soaked fence posts...

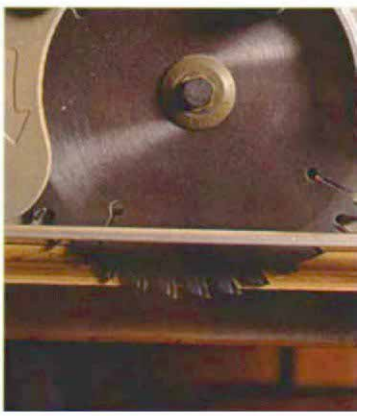
I've developed methods of tuning the saw, supporting the workpiece and guiding the cut that combine to make slicing up sheet goods and unwieldy planks of solid wood with a circular saw so simple and the results so clean that I don't even daydream about the big shop and the behemoth tablesaw anymore.

Tuning the saw

To make joint-quality cuts with a circular saw, start with a good saw and a good blade and keep them well tuned.

Parallel base and blade. *Use a dial indicator to check that the blade is parallel to the edge of the saw base. Adjust the base to correct any error.*

Square is essential. *Use a machinist's square to get the blade at 90°. A flat base like this one makes it easier to check for square and more likely that the cut will be square, too.*



Don't worry about what's below. *Set the depth of cut so that a full tooth of the blade extends below the workpiece. You'll be cutting right into the surface of the sacrificial table.*

You must tune the saw

If you're going to make joint-quality cuts with a circular saw, there are rules:

Rule No. 1: Start with a good saw, one that can be properly adjusted and that has good bearings to prevent the blade from wobbling.

Rule No. 2: Install the best 40-tooth carbide blade that you can find.

Rule No. 3: Always check the blade tilt with a machinist's square before starting a job.

Rule No. 4: Make sure the blade is exactly parallel to the edge of the saw's base. Use a dial indicator if you can. If you can't adjust the base, see Rule No. 1.

Use a cutting table to support the work

The backbone of my system is a sacrificial cutting table with folding legs. Picture that unwieldy sheet of plywood lying serenely on a dedicated cutting table, waiting to be operated on like a patient in surgery. When each cut has been completed, both halves of the sheet will still be lying there, awaiting further disposition. Nothing caves in or falls off the end. Each cut makes a shallow kerf in the table, and when you've chewed up one table, you simply make another (for me, a matter of a couple of years). The table is cheap, easy to build and lightweight, and you can store it in a narrow space when you're not using it. The table's open-grid format serves three purposes: It keeps the table light; it keeps it clean (sawdust falls through, and you can't pile junk on it); and it allows a clamp to be used anywhere on the table surface.

It doesn't take a 4-ft. by 8-ft table to handle a full sheet of plywood. I build mine a little under 3 ft. by 7 ft, This size is comfortable to work on and easy to store. If you have to cut a foot or less off one end of the sheet, you can slide it over so that the far end hangs over a foot or two. Same thing with width. As long as there is enough table to support more than half of the piece, it's not going to fall off.

There are various ways to assemble the grid. If you have a regular workbench large enough to lay out all of the pieces on, you can use a couple of bar clamps to snug the assembly together while you insert screws. Alternately, you can lay the pieces out on the floor and use a wall to give you something to push against while driving the screws. I use fir 2x2s for the long rails and 2x4s for the crosspieces. I drive 3-in. drywall screws to connect them, and I drill clearance holes only for the screws at the ends of the long rails, where there is some danger of splitting the wood. If you work on the floor, you can assume the grid won't be perfectly flat, but that's okay. As long as it's not far out of flat, it should perform well.

You can place your tabletop on sawhorses for use, or just put it on a bench or table, but I'd recommend fitting it with folding legs. Folding banquet table legs, available in many woodworking catalogs, are fairly inexpensive and add a tremendous amount of convenience.

To get a heavy sheet of plywood or medium-density fiberboard (MDF) up on the table, there's a simple way to save your back (see the photos on p. 72). Place a couple of wood scraps on the floor and tilt the table down so that the edge of the tabletop rests on them. This gives you room to get your fingers underneath. Then set the plywood on edge on the blocks as well. Lean the plywood against the tabletop, reach underneath and tilt up the table and sheet together.

Make dedicated cutting guides

The difficulty in using a straightedge with a circular saw is that you have to offset the straightedge from the cut line to account for the

Photos: Jonathan Binzen

Setting up the table

A boon to the small shop, a folding cutting table can be stored in a space several inches wide and can be set up in about a minute. To load a sheet of plywood, tip the table onto a pair of scrap wood spacers. Lift the ply onto the spacers, and lift the ply and the table together.

width of the saw's base. My first approach to simplifying this process was to rip a strip of Masonite the exact width of this offset. I would lay this spacer down next to the cut line and then snug my straightedge up to the spacer. It didn't take long to figure out that it would be more convenient to attach a Masonite spacer to the bottom of the straightedge.

Now I simply lay the Masonite base of a cutting guide right on the line, clamp the guide to the workpiece and cut. One bonus is that the saw glides smoothly across the Masonite instead of on my workpiece. And another is that the Masonite backs up the cut, minimizing splintering of the veneer in cross-grain cuts.

I keep several of these guides in the shop, in different sizes and configurations. Together with the circular saw and the cutting table, they make dissecting large panels a breeze. I recommend at least three different guides: an 8-ft. guide for cutting sheet goods in the long dimension, an easier-to-wield 4-ft. version for shorter cuts and a 90° guide for perfectly square cuts (see the photos on the facing page).

To make a guide, begin by cutting an 8-in.-wide strip of ¾-in.-thick plywood for the fence portion. Next, measure the saw's footprint—the distance from the blade to the edge of the base on the side under the motor. Then make the Masonite base. Its width is 8 in. plus the saw's footprint plus ½ in. or so extra, which will be trimmed off. The plywood for the fence should be of good quality—something with good inner plies, such as hardwood or marine plywood. The edge that the circular saw will be running against should be free of voids, if possible. For the Masonite base, tempered is best, ⅛ in. or ¼ in. thick.

To assemble a straight guide, lay the plywood fence, best-side down, on the table, and lay down the Masonite strip with the best side down on top of the plywood. Drill and countersink clearance holes in the Masonite, about every 6 in. along the length of the assembly. Clamp the two boards and screw them together, being careful to get the screws fully countersunk.

Your next move will be to trim the Masonite base. If you haven't bought a good sawblade yet, drop everything and do it now—your guide will be trimmed to match your exact saw and blade combination; you don't want to make a guide with one blade and use it with another. When you get back from the store and put your good carbide blade in the saw, check the blade for square and parallel according to those iron-clad rules on p. 71. Then clamp the guide to your cutting table and trim off the excess Masonite by running the saw down the length of the assembly. Now the guide is ready to go.

The key to making the right-angle cutting guide is getting an accurate 90°. I use a scrap piece of plywood as a form when I join the two legs of the guide. I use a factory corner (checking with a square to see that it is 90°) or cut one corner square.

Using a guide is a snap. The only thing to remember is that the guide is always placed on the good side of the cut marks—that is, on top of the piece you're going to be using—so that the saw kerf is in the waste.

Nonstandard cutting with the guides

Once you've used this cutting system for a while, you will no doubt see other applications for it. Here are several that have come up in my work since I first made these guides.

Straight-lining crooked boards—The 8-ft. guide offers an easy way to straighten the edge of a long, waney-edged plank. Use scraps the thickness of the workpiece to space the cutting guide off the table. Clamp the guide to the table. Then tuck the crooked edge of the board under the guide's Masonite base just far enough

Using the guides

Simple two-part cutting guides—with a Masonite base attached to a plywood fence—make it possible to get accurate cuts with minimal layout.

Long division. *The long, straight guide makes quick work of ripping a full sheet of plywood. When the cut has been made, the halves of the sheet stay put, supported by the cutting table.*

Four-foot guide for crosscuts. *The short, straight guide (near right) is used for intermediate rips and long crosscuts.*

Swift, square cuts. *The 90° guide (middle) makes perfectly square cuts 2 ft. long.*

The miter option. *To make mitered edges, assemble a guide with its base cut to 45° (far right). Align the angled layout line with the mitered edge of the base.*

that the waney edge disappears. Then clamp the plank to the table and rip.

Mitering—What if you need to rip a wide mitered edge to make a large box? All you need is another cutting guide. Make one with an oversized base, just as you did with the others, and then trim it with the sawblade set to 45°.

When you are ready to cut the miters on the workpiece, mark the cut on the edge of the piece with a 45° marking square and line up the beveled Masonite with the marks.

Waney edge, go away. *You can use the long guide to put a straight edge on a waney board. Block up the guide so that the workpiece just fits under it. Then nudge the waney edge of the workpiece under the guide's base. Clamp both guide and workpiece, and rip off the edge.*

Ripping skinny pieces—Narrow pieces are typically best cut on a tablesaw. But on site or on an installation, there may be times when you want to cut a piece narrower than the cutting guide. In these cases it's difficult to clamp the two together without the clamps interfering with the saw. The solution is to clamp the workpiece to the table, with the clamps in the waste, and hold the guide down with different clamps. As with the straight-lining, elevate the guide using scraps the same thickness as the workpiece, positioning them under the clamps. Slide the workpiece under the guide, line up the cut marks with the Masonite edge, and clamp the workpiece to the table. Then rip as usual. If you need to rip a number of skinny pieces to the same width, position the spacer blocks to serve also as stops, determining the width of the cut.

A cutting table and guides should make your life a little easier around the shop, especially if it's a small one. You may even find them helpful next time you go out in the cold to build a deck. □

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