One of the first portable power tools often purchased is a circular saw. It’s also one of the most versatile. Whether you’re cutting a 2x4, breaking down a sheet of plywood, or building a project around the house, a circular saw definitely gets a workout.

But in spite of that, a circular saw often gets shortchanged. Typically, it has a reputation as a tool used only for rough carpentry work. That’s too bad really. Especially since all it takes to convert a circular saw into a precision tool is to make a few jigs.

Five Jigs – Now I’m not talking about complicated, time-consuming jigs. Take the five jigs shown in the next few pages for instance. Each of these jigs can be knocked out in a half hour (or less). As for material, a few scrap pieces is all it takes. But most important, each jig makes it easy to produce a straight, accurate cut.

Blade Selection – While these jigs definitely improve accuracy, it’s the saw blade that determines the quality of cut. To end up with a smooth, clean cut, the key is to select a blade that’s best suited to the job at hand, as shown in the blue-colored box below.

The Basics – With a good blade, you’ll be on your way to making a smooth cut. But to ensure a safe, controlled cut, it’s worth taking a minute to review the basics shown below.

Which Blade?

Combination ►
For general purpose work like ripping and crosscutting lumber or man-made materials, select a carbide-tipped combination saw blade.

Ripping ►
With fewer teeth that “lean” forward, this rip blade makes fast cuts with the grain. An anti-stick coating prevents the blade from gumming up.

Crosscutting ►
Lots of small, knife-like teeth produce a glass-smooth surface when cutting across the grain with this all-steel (no carbide) saw blade.

Plywood ►
To make crisp, clean cuts in plywood, this steel blade has two hundred, razor sharp teeth. A rim that’s thinner than the “hub” prevents binding.

Specialty ►
Carbide-tipped teeth, an anti-stick coating, and S-shaped heat vents make this special-purpose blade ideal for cutting pressure-treated lumber.

Blade Selection – While these jigs definitely improve accuracy, it’s the saw blade that determines the quality of cut. To end up with a smooth, clean cut, the key is to select a blade that’s best suited to the job at hand, as shown in the blue-colored box below.

The Basics – With a good blade, you’ll be on your way to making a smooth cut. But to ensure a safe, controlled cut, it’s worth taking a minute to review the basics shown below.

6 Tips for Troublefree Cuts

1. Set Up Supports. Support the board so the waste will fall free. (See drawing below.) Then clamp the work with the “good” side face down.

2. Adjust Depth of Cut. To clear dust from the kerf, adjust the depth of cut so the gullets in the blade extend past the bottom of the board.

3. Think Safety. Be sure to wear eye and ear protection. Also, loop the power cord over your shoulder to avoid accidentally cutting it.

4. Get a Grip. To make a controlled cut, grasp the saw with both hands and set the wide part of the metal base on the workpiece — not the cutoff.

5. Stand to the Side. Always stand to the side of the saw (not behind it). This way, you’ll be safely out of the way if the blade binds or kicks back.

6. Maintain Speed. Move your whole body forward to maintain a steady cutting speed. Don’t force the saw blade or overextend your reach.

ShopNotes.com
### 1. Crosscut Guide

One of the jigs I use frequently is the simple crosscut guide shown in the two photos below. It provides a quick, accurate way to make a 45° miter or 90° crosscut — without any guesswork. Just mark the board, position the jig on the line, and make the cut.

**Base** – The base of this crosscut guide is made from a 12"-wide piece of 1/4" hardboard. As for length, it’s best to start with an extra-long piece. (I made mine 30" long.) Note: Later, the waste is trimmed off each end to form two reference edges that are used to align the jig to a layout line on the workpiece.

**Fences** – The next step is to add two hardwood fences that are used to guide the saw, one for 90° crosscuts and the other for 45° miters. After trimming the ends of the 45° fence at an angle, carefully position both fences and then glue them in place.

**Cleats** – Finally, to square the jig to the edge of the board, glue two hardwood cleats to the bottom of the base. Then trim the waste off each end to create the reference edges.

![45° Miter](Image)

▲ **45° Miter.** To make precision 45° miters, align the angled end of the crosscut guide with the layout mark. Then run the base of the saw against the fence as you make a cut.

![90° Crosscut](Image)

▲ **90° Crosscut.** Simply turn the guide around and align the opposite end to make a 90° crosscut. To square the jig, make sure the cleat is tight against the workpiece.

### 2. Cutoff Saddle

Working with thick lumber (like a 4x4 post) presents a challenge. Even with the saw set for the maximum depth of cut, the blade still won’t cut all the way through.

The way to get around this is to make two cuts, working from opposite sides of the post. The only problem is the kerfs don’t always line up. So you end up with a small ridge of material on the end of the post and a cut that’s not square.

**Saddle** – The solution is to clamp a U-shaped “saddle” to the post, as shown at right. This saddle serves as a guide for the base of the saw which makes it easy to produce a smooth, square cut. Just cut one side of the post, then flip it to the opposite side to make the second pass.

![Cutoff Saddle](Image)

▲ **Cutoff Saddle.** To ensure smooth, square cuts when working with thick lumber, this cutoff saddle guides the saw when making cuts from two opposite sides of the post.
3. Edge Guide

I know guys who can use a circular saw freehand to make a straight cut from one end of a board to the other. But to be honest, I need a guide that rides against the edge of a board to make a straight rip cut.

Although I've tried a number of metal edge guides, I've been a bit disappointed in them. Often the guide flexes, or it's too short. As a result, the saw blade tends to veer off or bind.

To solve these problems, I made the edge guide shown in the photo below. It makes it easy to rip a board up to 10" wide. This edge guide consists of two main parts: a base that serves as a mounting platform for the saw and an adjustable fence.

Base – If you look at the drawing at right, you can see that the base of the edge guide is a piece of 1/2" plywood with two grooves in the bottom. Later, these grooves accept keys that will help align the fence.

To make the fence adjustable, there's a long slot in the base. You'll also need to cut an opening for the saw blade and guard to fit through. (I cut it to match the opening in the metal base of the saw.)

Cleats – The saw base is held in place with a system of cleats. A couple of two-part cleats hold the front and back of the saw base. And two hardboard strips form cleats on the sides.

Just a note about the front and rear cleats. The lower part of each cleat is a scrap piece of wood that's thicknessed to match the height of the saw base (details 'a' and 'b'). This way, a wider strip of hardboard glued on top forms an overhanging lip for the metal base of the saw to slide under.

Although the front and side cleats are glued to the base of the edge guide, the rear cleat is removable. It's held in place with a threaded knob and T-nut. Just take this cleat off to slide the saw under the front cleat. To secure the saw, reinstall the rear cleat and tighten the knob.

Fence – After completing the base of the edge guide, you can add the fence. The nice thing about this fence is it's long and rigid — just what you need to plow a perfectly straight cut down the length of a board.

The fence starts out as a strip of 1/2" plywood. A couple of dadoes in the top of the fence hold a pair of hardboard keys. They fit into the grooves in the base which keeps the fence parallel to the saw blade as you move it back and forth.

After gluing in the keys, I glued a hardboard guide strip to the edge of the fence. It provides a wider (taller) surface to ride against the workpiece than the fence by itself.

Attach Fence – At this point, all that's left is to attach the fence. It's held in place by tightening a threaded knob that passes through the adjustment slot into a T-nut.
4. **Story Stick**

Need to cut a number of boards to identical length? A *story stick* like the one shown at right provides a fast, accurate way to cut multiple pieces to length — without having to measure and mark.

A story stick is a scrap piece of lumber (I use a 2x4) that matches the desired length of the pieces you plan to cut. As you can see in the drawing below, there’s a block screwed to one end of the story stick. In use, this block hooks over the workpiece, and the saw rides against the end of the story stick as you make a cut.

The important thing is the length of this block. The idea is to cut it to match the *offset* of the saw blade (the distance from the blade to the edge of the metal saw base). This way, every cut produces a board that’s identical in length to the story stick.

![Story Stick Diagram]

![Panel-Cutter Diagram]

5. **Panel-Cutter**

Here’s a handy jig to use when cutting a large panel (like a sheet of plywood) down to size. When used with a special plywood-cutting blade, this panel-cutter produces a smooth, finished cut with dead-on accuracy.

The panel-cutter consists of two parts: a hardboard base that serves as a platform for the saw and a wood fence that guides the saw. (See drawing below.)

Here again, a *reference edge* that indicates the path of the saw blade is used to align the jig. After positioning this edge on the layout line, the panel-cutter is clamped to the workpiece. Then, with the saw riding against the fence, the blade cuts precisely along the reference edge, as shown in the detail below.

Note: You may want to make two panel-cutters: a 48”-long jig for cross-cutting full sheets of material and a 96”-long version to use when ripping.

Either way, start by gluing the fence to an extra-wide base. Then with the base of the saw riding against the fence, trim off the waste to create the reference edge.

![Panel-Cutter Diagram]