

BY DAVE HOLBROOK

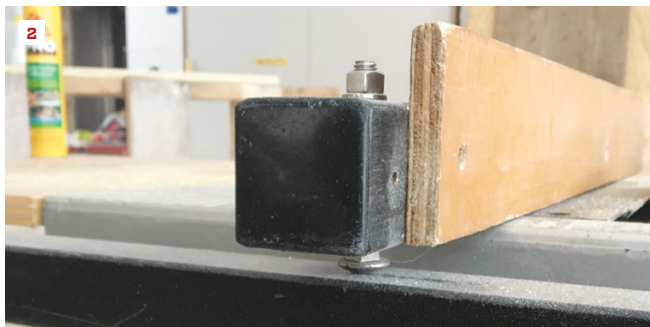
## Jobsite Table Saw Basics

**After four decades of carpentry**, I'm a little vague on when I first used a table saw, a tool most builders now regard as indispensable on the jobsite. I currently use a six-year-old Makita suspended in a Rousseau stand, which provides a smooth-acting T-fence with a 26-inch rip capacity. The saw and stand were given to me, and I've made some tweaks to the setup, including a power switch convenient to my left hand **(1)**, and a support at the far end of the fence that makes it glide effortlessly on the rails **(2)**. Ease of use is vital to safe use, which is where I want to start this discussion.

**Safety first.** A portable saw is by definition lightweight, typically around 60 to 70 pounds. Unlike a heavier shop saw, it doesn't have the mass to remain stationary during use. Some portable saws come with integral, pop-up stands that provide the necessary stability.

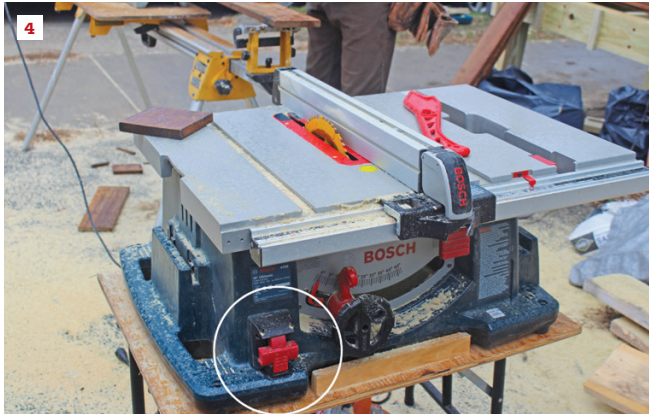
Other models require, at minimum, clamping or screwing to a solid, level, and immobile surface. Setup should be in a spot with ample room in front of and behind the saw for the longest pieces you'll be cutting. Keep the area around the saw free of cutoffs and other debris. Keep shirtsleeves, long hair, jewelry, and any other loose items away from the tool's reach. And, despite its name, try not to use the saw as a table for other tools, stock, cutoffs, and other items. The only thing that should remain in easy reach is a push stick **(3)**, used to guide the material past the blade.

Manufacturers provide standard safety features with their saws, including lockout power switches and paddle cutoffs **(4)**, electronic blade brakes, blade guards, splitters or riving knives **(5)**, and anti-kickback pawls. These are all good, sensible features. However, not

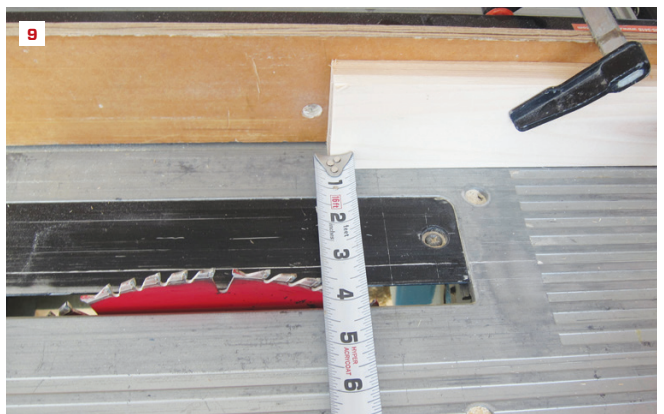
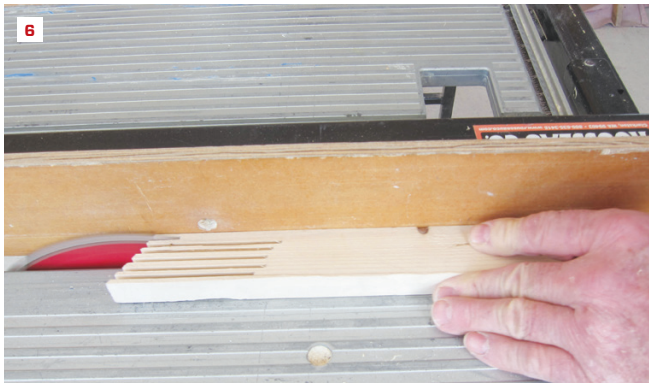


The right-handed author modified his saw, adding a left-hand cutoff switch to his saw as an ergonomic preference. The electronic blade brake, however, is integral to the factory switch **(1)**. A carriage bolt head added to the outbound end of the fence allows it to glide on the rail friction-free **(2)**. Commonly provided as standard safety equipment, a push stick is also easily custom-made and is an indispensable accessory to table saw use **(3)**.

Photos by Eve Aspinwall and Dave Holbrook

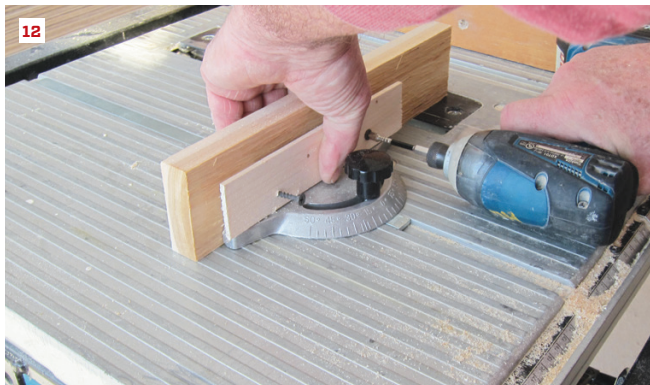


Power switches, shown here in a white circle, are deliberately configured to deter accidental activation while allowing quick, intuitive shutoff (4). A riving knife, aligned in the path of cut, holds the saw kerf open beyond the blade, helping to prevent pinching and kickback (5).



Feather boards are simple to make and provide a hands-free way to prevent stock from pulling away from the fence during rip-cutting (6). Clamped to the table, this feather-board combo maintains constant pressure against the fence for safer and more accurate cuts (7). When the saw is cross-cutting, the waste piece should be able to fall free of the blade (8). Here, an offset block attached to the fence ensures the waste can fall free beyond the cut. The cut is measured between blade and block (9).





The miter gauge must be calibrated exactly perpendicular to the fence and used to control all crosscutting (10). The repeatable-dimensioned workpiece is safely removed without binding against the fence (11). Here, the author attaches an auxiliary fence to the miter gauge. A backing piece of wood compensates for oversized screw holes through the gauge (12). A pre-cut kerf in the auxiliary fence provides a precise alignment reference for cuts of any angle. Clamping the workpiece to the gauge prevents it from slipping off the mark (13).

all survive experienced users, me included, who clear the deck of blade guards and splitters, considering them obstacles, rather than aids, in use. There is a serious trade-off in safety versus functionality, while there are valid reasons for removing some of these features. However, there's no truly safe substitute; exercising constant caution and respect for this flesh-eater is the only safe mode of operating it.

**Kickback.** If you've used a circular saw, you've undoubtedly had it kick in your hand during a cut. In essence, a table saw is a circular saw turned upside down, and instead of feeding the blade into wood, you feed wood into the blade. Wet or crooked lumber, poor technique, or a dull blade can all contribute to kicking your workpiece back at you with dangerous force. Poor technique includes performing "freehand" cuts, where you dispense with the control provided by a fence or miter gauge.

A riving knife (5) consists of a metal "shark fin" positioned in the saw kerf, its top edge slightly lower than the teeth. This feature helps prevent the cut from closing up and pinching the blade. When

ripping, never pull the workpiece backward (a pawl prevents this); always push the piece completely past the blade and switch the saw off.

**Setup.** A correctly set-up saw is going to provide the best performance and margin of safety. If you have to muscle stock through the blade, you and the material will suffer. Reduce friction and exposure by setting blade height no more than 1/8 inch greater than the material you're cutting. Always use a sharp blade and one specific to the task. For most cutting, I use a combination blade, which gives reasonably good results whether ripping or crosscutting. If I'm going to rip more than a board or two, I'll swap out the combo blade for a dedicated ripping blade. It provides noticeably easier cutting action and a better glue edge. Finish plywoods call for a blade designed to crosscut grain with minimal tear-out. These blades typically have 60 or more teeth, configured for extra-clean cutting. Note that if the wood comes out of the cut with burn marks, if smoke is pouring out of the cut, or if you find yourself pushing harder than when the blade was new, swap it out for a sharp one.

A fence that isn't perfectly parallel to the saw blade will either



A sacrificial fence face allows it to be set flush alongside the blade for close and narrow cutting. The author hooks two fingers over the fence as a safety control, a consideration in determining its height (14). Material longer than about 3 feet calls for a stable outfeed support to resist gravity and loss of control over the feed (15). A basic push stick should never be far from reach and should always be replaced when worn (16). Because small and thin workpieces tend to ride up and chatter, a modified push stick with an extended hold-down surface is essential (17).

force the stock against the face of the blade, binding and burning it, or pull it away from the fence, ruining accuracy. Usually, the fix is a simple matter of adjusting the fence to lock down dead parallel with the miter grooves. Occasionally, the saw arbor itself is out of alignment with the table. In either case, consult your owner's manual for how to correct it.

**Feather boards.** Using a feather board, simple to make and use, improves precision when you're ripping (6, 7). Feather boards hold the stock firmly against the fence while preventing kickback.

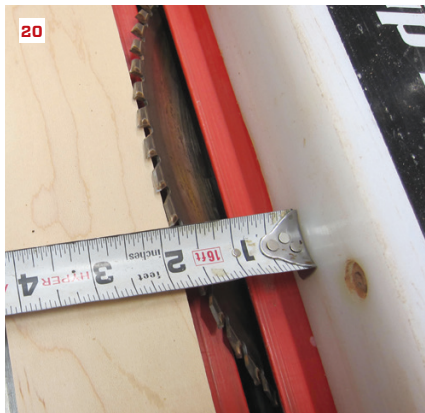
**Crosscuts.** I typically use a miter saw for crosscuts. On the table saw, use the miter gauge to guide the stock through the blade, letting the cutoff fall free on the far side of the blade (8). Because of the high risk of kickback, never crosscut material directly against the fence. However, the fence can still be used as a stop for repeat crosscuts to a fixed dimension. First clamp or screw a straight piece of 1-by lumber to your fence, with its far end at the start of the cut (9). Measure your

crosscut dimension between this board and the blade and lock the fence down. Use your miter gauge to push the material through the cut, held against the auxiliary board. The workpiece will fall free of the fence once cut (10, 11). Attaching an auxiliary fence to the miter gauge (12) allows you to make a reference kerf to align your cut against, useful for precise cuts at any angle (13).

**Push stick.** When pushing near the fence, I keep a couple of fingers hooked over the fence and push with my thumb, forefinger, and middle finger (14). For this reason, I don't like fences that are more than 3 inches high. When cutting long stock, use a stable outfeed support (15) to prevent the piece from dropping out of control. To complete the cut, grab your push stick and move the material beyond the blade. Push sticks come in all kinds of shapes, based somewhat on preference but also application. For larger stock and wider cuts, a simple stick with a notched end to engage the workpiece fits the bill (16).

When you're cutting small pieces, several considerations come





The wide gap in the throat plate allows the blade to tilt but leaves short, narrow workpieces without essential support (18). A zero-clearance throat plate is a common proprietary accessory—and is also easy to make—to provide solid support for narrow cuts (19). For bevel cuts, determine the entry point by moving the workpiece against the blade and measuring against a sawtooth flush with its surface (20). Bevel rips are best controlled by a feather board, as the angled cut tends to pull the material away from the blade, affecting accuracy (21). Uniform edge beveling can be performed by embedding the angled blade into the face of a sacrificial fence to the left of the blade, no feather board needed. Use a test piece to adjust the exposure (22).

into play. First, there's a tendency for the piece to ride up on the blade at the start, rather than parting around it, and to chatter once entered. In this case, I use a pusher made from 1/4-inch plywood (17). Its long edge holds the piece down against riding and chatter, with a shallow leg at the rear to hook the piece. Keeping it thin helps keep the pusher out of the blade.

Another issue when cutting small or narrow pieces is the lack of support under the piece because of the gap between the throat plate and the blade (18). On my saw, the gap is wide, and the design doesn't allow readily swapping in a custom zero-clearance plate (19). One option is to make narrow cuts in material that's longer, then crosscut the piece free using the miter gauge. Alternatively, you can feed the piece partway through its length, then flip it end for end to complete the cut. This provides constant support at the infeed end.

**Bevel rips.** Every portable saw I've owned has tilted to the left, away from the fence. Bevel cuts aren't much different from square

cuts to make. First, raise and set the blade angle. To set the fence to dimension, place the material to be cut alongside the blade and measure from the fence to a sawtooth nearest the surface (20). Set the blade slightly higher than the material. Bevel cutting can tend to pull the stock away from the fence, so use a feather board to hold the line (21). Start the cut feeding by hand and finish with a push stick.

To bevel an edge, fully lower the blade and move the fence close to its left side. Attach a sacrificial face to the fence. Power on and raise the tilted blade into the face (22). Run a test piece into the blade to check the desired exposure. Since you can't overcut the bevel, this method gives a uniform result and doesn't require a feather board.

A future article will discuss more of the countless jigs, attachments and methods that wring the most out of a jobsite table saw.

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