

Choosing and Using a

COMPOUND-MITER SAW

This type of saw has a greater height capacity, which is useful when cutting tall moldings (see photos, facing page).

SLIDING COMPOUND-MITER SAW

The sliding feature extends the saw's crosscutting capacity and makes this saw well-suited for cutting wide boards.

COMPOUND OR SLIDING COMPOUND?

A compound-miter saw (CMS) blade moves in three directions: up and down in a chopping motion; about 45° left and right to cut miters; and leaning left (single bevel) or left and right (double bevel) to make compound cuts. A sliding compound-miter saw (SCMS) does all of the above, but the blade and motor assembly also can slide back and forth on one or two tubes to enable crosscutting wide boards.

Miter Saw

BY GARY M. KATZ

Find the right saw for your work, then add a few helpful jigs and tricks

A good friend called a few weeks ago from a local tool store. He was looking to buy a miter saw, but was confused by the range of options and couldn't make a decision. More than a dozen tool companies make miter saws, each with three to five models, and the various saws range in price from \$100 to \$900. Before you go shopping for a new miter saw, ask yourself one important question: What am I going to use it for?

This article covers the two main types of saw, explores the most common uses for miter saws, and explains which saw best fits each use.

Choosing a saw: cutting wide boards vs. tall molding

Twenty-five years ago, miter saws were called chop saws because that's all they did: miter material with a chopping motion while having the ability to swing left and right. Today, nearly all models fall into one of two categories: compound-miter saws (CMS) or sliding compound-miter saws (SCMS).

Two of the main uses for miter saws are crosscutting boards and mitering molding. Unfortunately, there is no one type of saw that works best for both types of cut. Because of their inherent design, sliding compound-miter saws can cut wide boards but



TWO WAYS TO CUT CROWN MOLDING

"In position." The most accurate way to cut molding is to lean it against the saw's fence (upside-down and at its installed angle) and simply set the saw's miter gauge at 45°.



"On the flat." If your saw does not have the capacity to cut wide molding in position, you must lay the molding on the saw's table, and then make a compound-angle cut employing both the miter gauge and the less-accurate bevel gauge.

What size do you need?

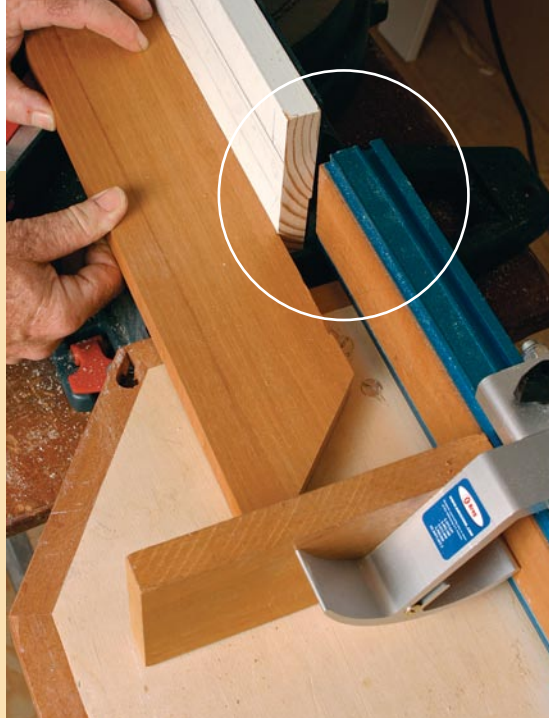
Miter-saw blades vary from 8½ in. to 15 in. For many years, I preferred using a 15-in. chop saw because it could cut 7-in. molding leaning against the fence. New designs mean many 12-in. saws now exceed this capacity while they cost and weigh less. The 8½-in. saws more than offset this advantage with very little cutting capacity, so I recommend you confine your search to 10-in. and 12-in. compound-miter saws and sliding compound-miter saws.

MITER-SAW CUTTING CAPACITIES					
SAW SIZE AND TYPE	MAX. HEIGHT AT FENCE	CROSSCUTS AT 90°	CROSSCUTS AT 45°	45° BEVEL CUT	PRICE RANGE
10-in. compound-miter	4 in.	2 in. by 6 in.	2 in. by 4 in.	2 in. by 6 in.	\$100-\$200
12-in. compound-miter	6 in.	2½ in. by 8 in.	2¼ in. by 6 in.	2 in. by 8 in.	\$280-\$380
10-in. sliding compound-miter	3¾ in.	3⅝ in. by 12 in.	3 in. by 8 in.	2 in. by 12 in.	\$450-\$520
12-in. sliding compound-miter	4 in.	4½ in. by 12½ in.	4½ in. by 8½ in.	3 in. by 12 in.	\$550-\$650

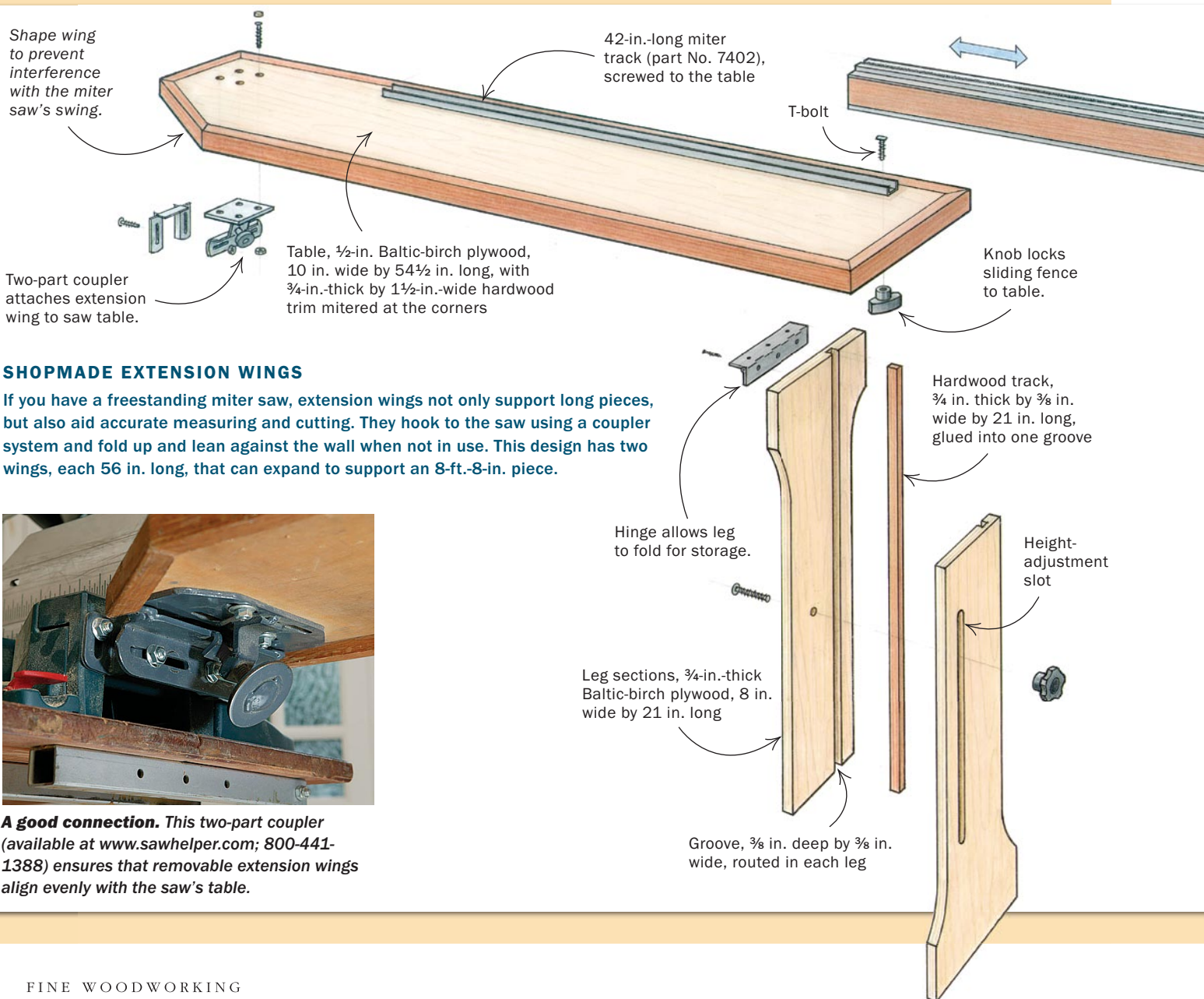
Add wings to your saw



Good cuts need good support. A pair of extension wings with stop blocks support long pieces and make for accurate cuts.



The fences are not aligned. The purpose of the fence on the extension wing is only to carry the stop block. The fence on the saw aligns the workpiece.



A good connection. This two-part coupler (available at www.sawhelper.com; 800-441-1388) ensures that removable extension wings align evenly with the saw's table.

lack the height-cutting capacity of similar-sized compound-miter saws (see chart, p. 61).

Two ways to miter molding—When cutting miters you can choose to cut “in position,” with the molding leaning against the saw’s fence, or “on the flat,” with the molding lying on the saw’s table. The latter becomes necessary if the molding is taller than the vertical cutting capacity of the saw—a situation that has become more common as tall baseboards and historically accurate crown moldings grow in popularity.

To cut a miter in position, lean the molding against the fence at its installed angle but upside down, and swing the saw to the correct angle using the miter gauge at the front of the saw. Most miter gauges have about a 12-in. radius, which means you can dial in an angle to ½° without difficulty. To cut a miter on the flat, you tilt the blade using the miter gauge and the bevel gauge on the back of the saw. However, bevel gauges have only a 3-in. or 4-in. radius, so dialing in a bevel angle isn’t nearly as accurate—you’re lucky to get within 1°.

Sliding compound-miter saws cost more and weigh more than compound-miter saws. They also have more moving parts and must



Choosing the right blade

Just as a premium iron can transform a cheap handplane, the right blade can transform a miter saw.

I like to have 96 teeth on a 12-in. blade and 80 on a 10-in. one. However, more teeth mean more strain on the motor, so to offset this I use thin-kerf blades. I use either alternate-top-bevel (ATB) blades or blades that combine ATB and flat-top teeth. Last, I prefer a hook angle of 0° to 5° to give the operator more control and to leave a smoother cut.

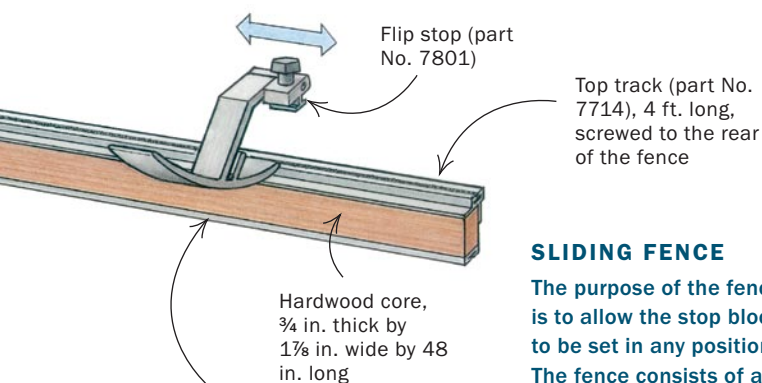
be treated with care. A good bump can throw one of these saws out of whack and spoil your carefully crafted joinery.

A good stand and extension wings are necessities

Even the most expensive miter saw is worthless without good support. One of the best locations is to build it into an existing bench, perhaps one already used for a radial-arm saw. This also allows you to build some kind of dust-collection booth, at least for a CMS. Commercial extension wings are available, but I made my own using commercial hardware (see diagram, left). For a freestanding location that can be stored when not in use, a torsion-box table can be mounted on a pair of sawhorses with extension wings attached to either side to support long pieces.

Cutting small parts precisely and safely

To cut small parts on a miter saw, I make a one-piece auxiliary fence and table jig. I align the left-hand end of the jig with the left-hand end of the existing fence, clamp the two together, and then make a cut with the blade angled at 45° to the right. I repeat



SLIDING FENCE

The purpose of the fence is to allow the stop block to be set in any position. The fence consists of a hardwood core with Kreg hardware available at www.kregtool.com; 800-447-8638.

Mini track (part No. 7506), 4 ft. long, screwed to the hardwood fence



Stop block for miters. The author screws a block of wood to the stop block to give mitered ends a larger surface to register against.

Or build it into your bench

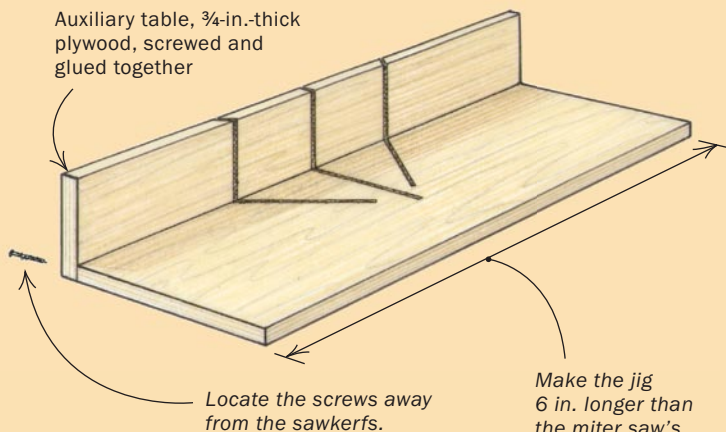


A built-in miter saw. Putting a miter saw into an existing bench provides support for long pieces and a dust-collection booth.

Cut small parts safely

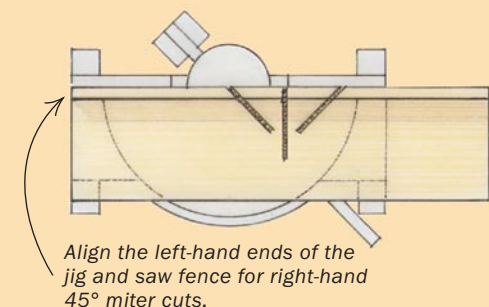
An auxiliary table and fence support small pieces. Aligning one end of the jig with the existing fence aligns the blade with the kerfs.

Auxiliary table, 3/4-in.-thick plywood, screwed and glued together

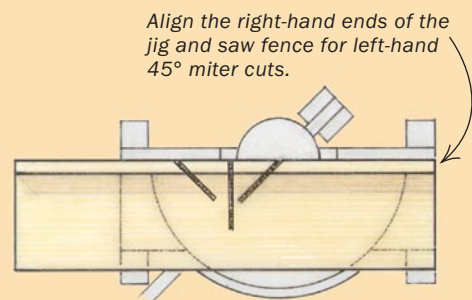


Locate the screws away from the sawkerfs.

Make the jig 6 in. longer than the miter saw's existing fence so that the kerfs don't overlap and cut away a section of the jig.



Align the left-hand ends of the jig and saw fence for right-hand 45° miter cuts.



Align the right-hand ends of the jig and saw fence for left-hand 45° miter cuts.

SAFETY TIP

Clamps replace fingers



When cutting a short piece, don't try to hold it. Instead, clamp it to the auxiliary fence.

the process aligning the right-hand ends and make a 45° cut to the left. Finally, I roughly center the jig and make a 90° cut between the two other cuts.

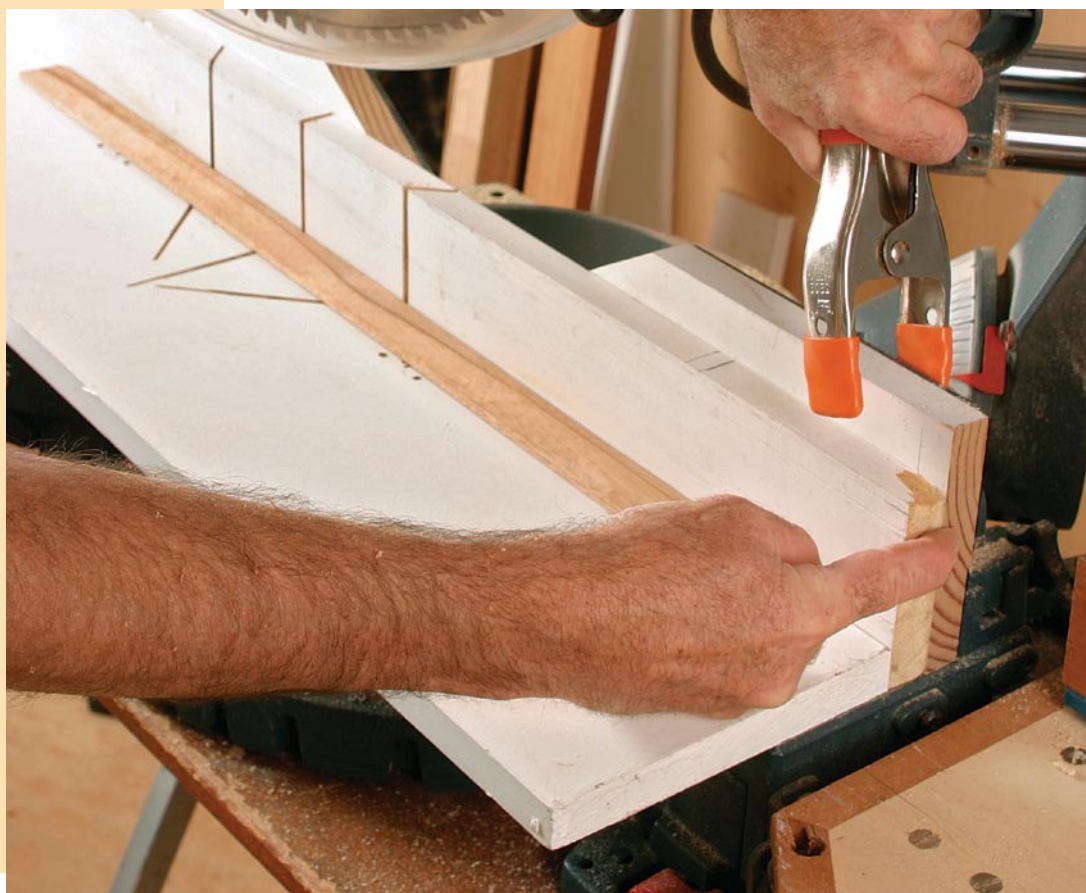
When cutting a miter, align the jig with the fence and align the pencil mark on the workpiece with the relevant sawkerf. The zero-clearance table and fence will support the piece and prevent tearout.

I try never to let my hand get closer to the blade than the end of the fence. When cutting short parts, instead of risking your fingers, add a thin additional fence to the jig and screw a toggle clamp to it. Clamp the workpiece and then position the jig as above. To prevent the small part from being flicked away by the blade after the cut is made, tape the section to the jig with masking tape before making the cut.

Clean cuts on wide boards and plywood

I'm often asked if it is possible to get a clean cut on a board when that board's width exceeds the crosscutting capacity of the sliding compound-miter saw. Another common problem is excessive tearout when crosscutting plywood. The photo sequence on the facing page shows the solution to both of these problems: You will need a good extension wing with an accurate stop on the fence.

Most cuts on the SCMS should be made by pulling out the blade, then lowering it onto the wood and making the cut on the push stroke so that the operator is counteracting the natural direction of the saw. In this case, draw the blade toward you across the



Cut to the line. With the jig aligned, the blade will follow the existing kerf. This allows you to place the workpiece precisely.

Cut wide boards cleanly



A scoring cut, then a full-depth cut. Make a shallow cut while pulling the blade toward you. The surface is cut by teeth entering the wood, not exiting it, thus avoiding tearout. After the saw has been pulled out to its limit during the scoring cut, push the handle down and then away from you to make a full-depth cut.



top of the workpiece as you cut, making a cut less than $\frac{1}{8}$ in. deep. The shallowness of this cut avoids the inherent danger in climb cutting. Because the cut is made when the tooth enters the top surface rather than when it exits, tearout is eliminated. When the saw is at its maximum extension, lower the blade and make a full-depth cut in the normal way.

Then turn the board over, placing the uncut edge against the fence and ensuring that the end of the board is again in contact with the stop block. Run another light scoring cut across the uncut section, lower the blade, and finish the cut. You will be left with an uninterrupted cut free of tearout on both surfaces.

Which saw is right for you?

If you are mostly going to make crosscuts, a 10-in. SCMS is the perfect choice. A 12-in. SCMS adds limited cross-cutting capacity at substantial extra cost. If you mostly want to miter small moldings and picture framing, a 10-in. CMS is ideal. For cutting miters and compound miters on larger moldings such as baseboard and crown up to 7 in., a 12-in. CMS is best. For moldings larger than 7 in., you'll need the SCMS.

You should consider a 12-in. SCMS if you want to cut both wide boards and medium-size molding: Most 10-in. SCMS models have a maximum vertical cutting capacity of about $3\frac{1}{2}$ in., while similar 12-in. saws will cut $4\frac{1}{2}$ in. One inch may not seem like a lot, but it can mean the difference between cutting crown molding standing up or lying flat, which translates into making simple miters or complex compound-angle cuts. □

Gary M. Katz is a contributing editor for Fine Homebuilding magazine. For more tips on using a miter saw, see Mastering the Miter Saw, a two-part DVD series available at www.GaryMKatz.com.



Complete the cut. After flipping the board and ensuring that it is against the stop block, score the uncut section of wood and then make a full-depth final cut.