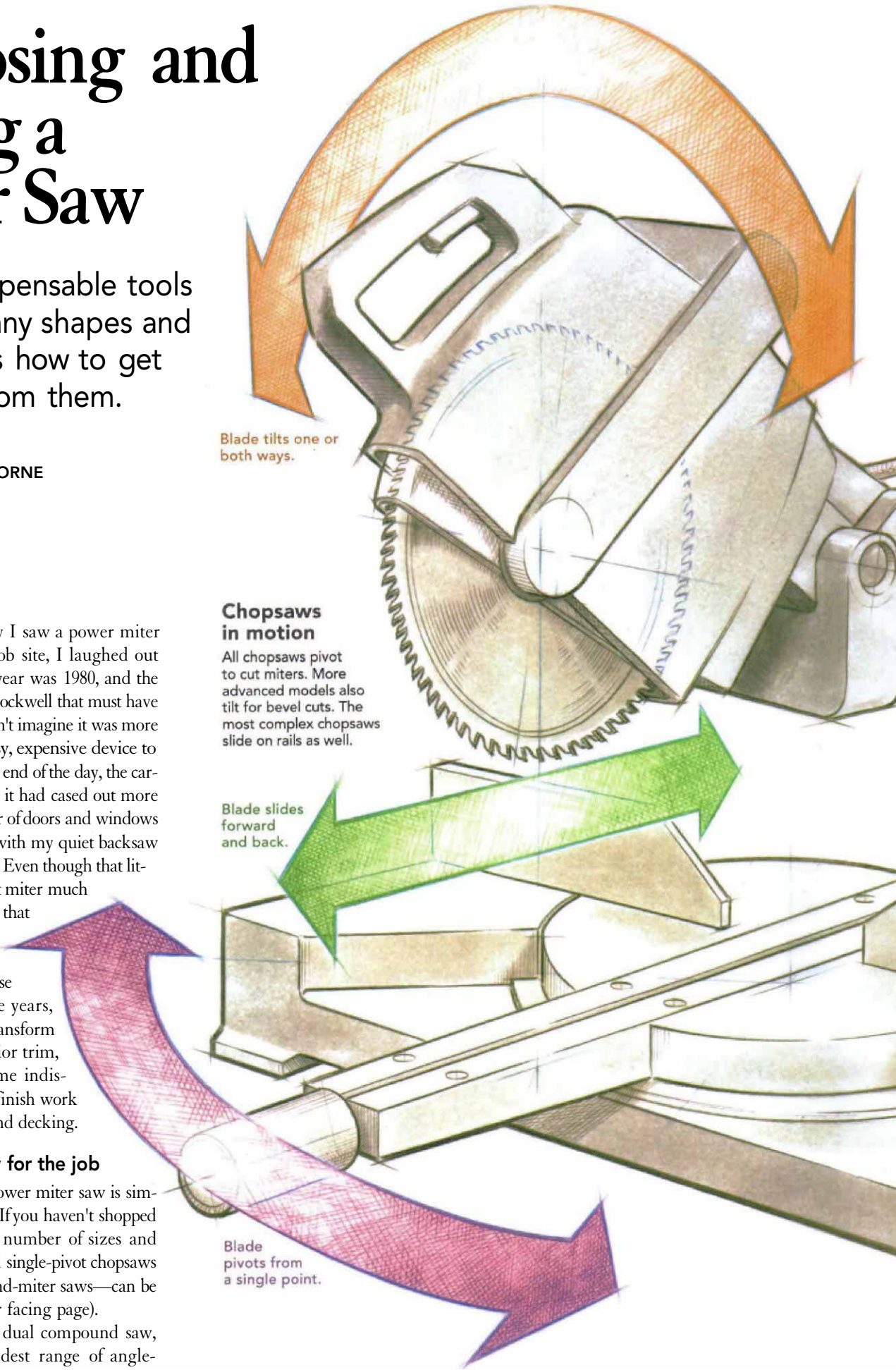
Choosing and Using a Miter Saw

These indispensable tools come in many shapes and sizes; here's how to get the most from them.

BY CLAYTON DEKORNE



The first day I saw a power miter saw on a job site, I laughed out loud. The year was 1980, and the saw was a stout little Rockwell that must have weighed 50 lb. I couldn't imagine it was more than just another noisy, expensive device to lug around. But by the end of the day, the carpenter who'd brought it had cased out more than twice the number of doors and windows than I had managed with my quiet backsaw and wooden miter box. Even though that little power saw couldn't miter much more than a 1x4, from that day forward it was a must-have tool. Little did I realize that as these tools evolved over the years, they would not only transform the way we cut interior trim, but they'd also become indispensable for exterior finish work as well as for siding and decking.

The best chopsaw for the job

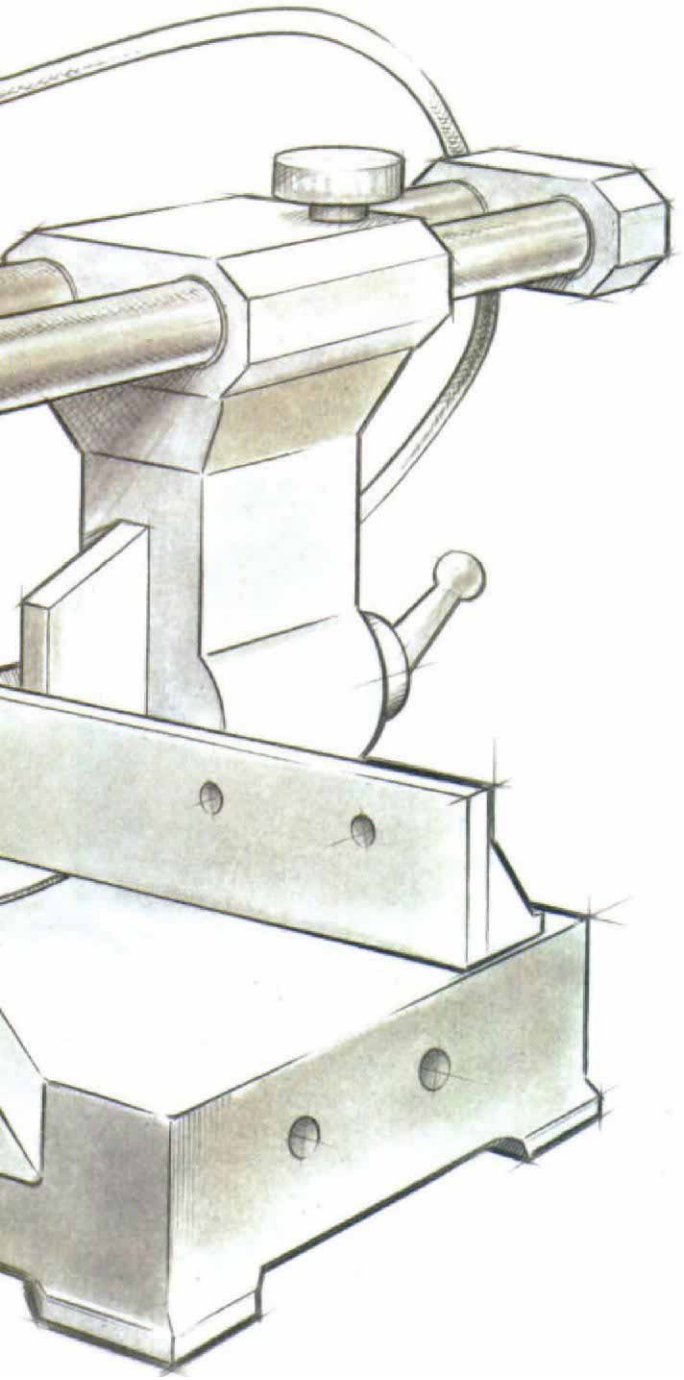
On most job sites, a power miter saw is simply called a chopsaw. If you haven't shopped for one recently, the number of sizes and styles—from standard single-pivot chopsaws through dual compound-miter saws—can be mindboggling (sidebar facing page).

On the face of it, a dual compound saw, which offers the widest range of angle-

Drawing: Dan Thornton

CHOPSAW SPECIES CONTINUE TO EVOLVE

Although the choices may seem bewildering, today's chopsaws are available in four basic styles—standard, compound, sliding compound and dual compound—with blade-diameter sizes that range from 8½ in. to 15 in.



STANDARD CHOPSAW

This saw pivots from a single point with the blade always cutting square to the table. Typically, this saw is used to cut miters across the width of a board by swinging the saw table to the left or to the right. In this case, the face of the board lies flat on the saw table with the edge tight against the fence. A standard chopsaw also can cut a bevel with the board on edge and with one face held against the fence.

COMPOUND-MITER SAW

This saw can cut miters like a standard chopsaw, but the blade and motor assembly also can flop over to one side, allowing you to cut a bevel with the face of the board lying flat on the table. You also can cut a miter and a bevel at the same time—a compound miter—which is used for joining crown molding as well as for framing roofs and cutting stairs.

SLIDING COMPOUND-MITER SAW

This tool can cut miters, bevels and compound miters like a compound-miter saw. Instead of a fixed pivot point, however, the blade and motor assembly can slide forward and back on a rail. A sliding saw can cut significantly wider stock than a fixed-head saw.

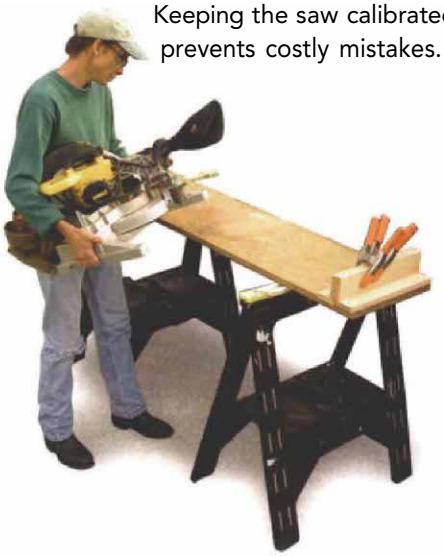
DUAL COMPOUND-MITER SAW

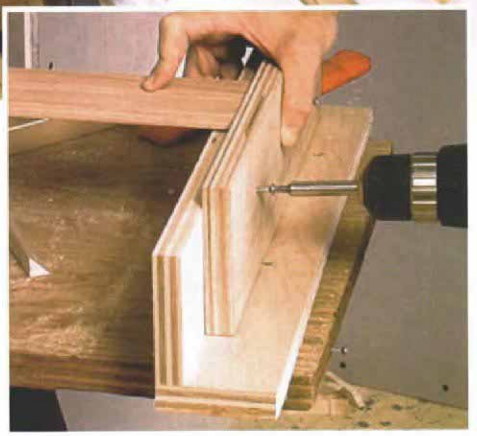
This saw functions exactly like a sliding compound-miter saw, except the blade and motor assembly can flop either to the left or to the right, allowing you to cut bevels and compound miters in either direction. The key advantage here is that you can cut a board with the miter and bevel oriented the same way it will be installed, which can save a lot of head scratching.

Photos this page: Scott Phillips

SET UP FOR SPEED AND ACCURACY

Although small moldings can be cut with the saw on the floor, precise work requires a dedicated cutting station. Keeping the saw calibrated prevents costly mistakes.





Scrap lumber forms an effective chopsaw stand. *A slab of plywood fastened over a pair* of sawhorses *supports a large miter saw. Plywood* L-brackets *ripped to the same height as the saw table serve as outfeed supports (top photo). A taller scrap of plywood fastened to the backside of an L-bracket makes a stop for multiple cuts (inset photo).*

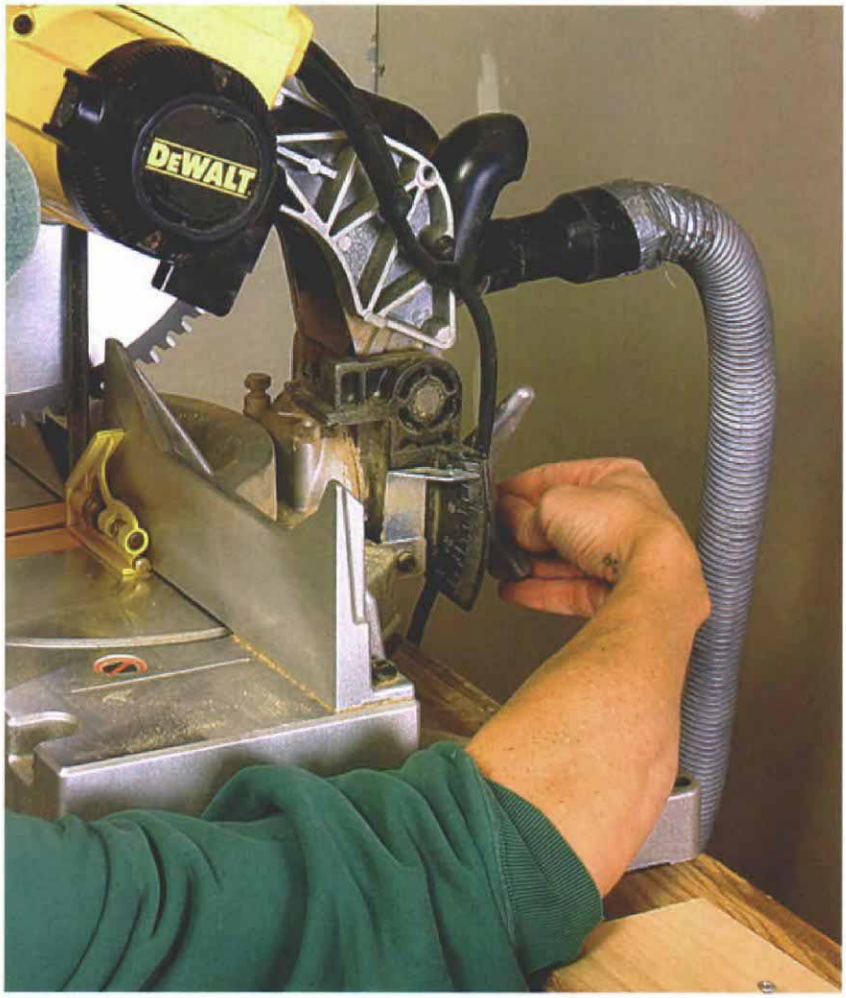
cutting options, would seem like the most versatile tool. However, all the bells and whistles come at a price. In addition to a purchase price that can reach upward of $800, these tools are extremely large. Most weigh in at around 60 lb., making them less convenient to set up and operate than simpler models. At the other end of the spectrum, for $150 or less, you can easily find a contractor-grade standard chopsaw that weighs only about 30 lb.

To my mind, the best all-around miter saw is a fixed-head, 12-in. compound-miter saw. This workhorse offers enough cutting capacity to cut thick framing material (up to a 4x6 straight, and a 4x4 or 2x6 at a 45° miter), as well as wide trim stock (up to 5/4x8 straight or beveled). Compared with sliding miter saws, the fixed-head variety weighs less and has fewer moving parts, which means less chance the saw will be knocked out of alignment as I'm hauling the saw from job to job.

That said, I think there is a strong argument for owning more than one chopsaw. In addition to the 12-in. compound saw, I use a 10-in. standard chopsaw when a project has a lot of narrow baseboard or casing. This saw is portable enough that I can move it easily around the house, cutting where I am installing and often working off the floor to save time and steps. I also have an 8½-in. sliding miter saw that I typically use in the shop, though I do bring it on the job when I have lots of wide trim to install. If I did more framing and decking work or if I always worked with a helper, I probably would spring for a much larger sliding compound or dual compound saw.

Sawhorses and scrap plywood create a stable chopsaw stand

When I need to use any large chopsaw, I set up a stable workbench. You could spend hundreds of dollars for a specialty chopsaw stand (*FHB* #99, pp. 44-49), but I've had excellent results using a 16-in. wide by 6-ft. long piece of 1⅛-in. plywood laid over the top of a pair of folding sawhorses (photos above). When I'm setting up to do precise trim work, I always fasten the saw to the bench; 2-in. bugle-head screws driven through each of the front feet provide enough holding power but still make it possible to move the saw quickly if necessary.



Squaring the cut. *With his combination square resting against the blade plate (not on a tooth), the author tweaks the bevel until the blade meets the square. After locking the blade, he tightens the vertical stop and then corrects the pointer on the bevel gauge.*

Cutlines not necessary. *Because a properly adjusted chopsaw always cuts square, a simple V-shaped mark is all that's needed to indicate the cutoff point.*

Essential parts of any chopsaw stand are the stock supports; my stock supports are two simple L-brackets that I attach to each end of the bench with spring clamps (photos facing page). I make the brackets out of scrap plywood, making sure that one leg of the L is the same height as the saw table.

Even with these stock supports, thin moldings can still bow; so it's important to get in the habit of pressing thin, flexible materials down against the saw table when cutting to straighten out any bow or flex that might alter the cut. Remember that the saw is set up to cut at angles in relation to its table and its fence, so make sure stock is perfectly aligned to both.

Whenever I have to make multiple cuts of the same length—say, for balusters or wainscoting—I create a stop by screwing a slightly taller scrap of wood to the backside of one of my stock supports (inset photo, facing page). Then I fasten the support to the bench top at the correct distance from the blade.

Adjust the gauges, not the saw

The accuracy of a new saw should always be checked before you start cutting. Most saws are fine right out of the box, but there's always a chance that the angle gauges might need fine-tuning. Over time, as the saw is knocked around, it also may become necessary to adjust the bevel stop or the fence. These adjustments are easily done by following the owner's manual.

To check the accuracy of a saw, I make a test cut on a wide, thick piece of lumber. Only a straight cut is necessary; I have never known the increments on miter and bevel scales to be inconsistent, only their position relative to the table, the fence or the blade, Any discrepancy is easy to spot by placing a square on the test cut.

If any settings are out of alignment, I use the square to correct them (photo above left). Making sure that the square is resting against the blade plate, not on a tooth, I adjust the saw until the blade aligns perfectly with the square. After locking the blade, I tighten the stops and fine-tune the gauges to match the new setting.

Some saw manufacturers still include an inferior steel blade as a standard feature on a chopsaw, but many tool makers have grown savvy and now provide a decent carbide blade. These blades are typically general-purpose blades, however, and often cause some fine tearout on the sides of a board facing the fence and the table. For a glass-smooth cut and no tearout on finish materials, I use an 80-tooth or 96-tooth (12 in. dia.) thick-kerf blade. Although a thin-kerf blade reportedly cuts faster and has vents and expansion slots to prevent the blade from warp-

MAKE SAFE AND ACCURATE CUTS

An oversize compound-miter saw makes it possible to cut the same angle two (or more) different ways: Sometimes the miter function is best, sometimes the bevel, and sometimes a simple jig is what's needed.

Vertical is better. *Although a compound-miter saw can cut a wider bevel with the board flat on the table, a vertical cut—with the board held upright against the fence—is faster, easier and more accurate.*

ing, I still believe that a good thick-kerf blade lasts longer.

Chopsaw cuts are fast and accurate

When marking a cut, I rarely draw a line all the way across the face of the board. It's much faster to indicate the cut-off point with a V-shaped mark I call a *carrot* (photo right, p. 57). Then, before I move my hands anywhere near the trigger, I drop the blade onto the board and sight along the blade, aligning it with the point of the carrot. For straight cuts, I mark the carrot about 1½ in. from the back edge of the board. That way, I can bring a tooth of the blade right down onto the carrot.

When I'm cutting miters for such things as casings, I prefer to cut the miter first, then measure to the square end. When I have to mark precisely for a miter, I always mark the short point of the miter on the edge of the board. I then use my combination square to trace a short 45° line from the edge, just enough for me to drop a tooth onto the line to find the cut quickly and accurately. The only time I'd ever draw lines all the way across a board would be if a series of cuts had to line up, such as if I were beveling the top of a 4x4 post.

Cutting too fast or erratically increases the chance for tearout as well as for injury. When I make a cut, I let the blade come up to speed before gently plunging in. Once I've cut all the way through the board, I release the trigger and let the blade slow to a stop before raising it up. In addition to helping me keep all my fingers, this practice prevents a small cutoff from being thrown far and wide when a fast-moving tooth catches it on the upswing. When I really need to keep track of the offcut—for example, when cutting a miter return for apron trim—I insert a piece of scrap wood between the molding and the fence (photo left, facing page).

A simple jig makes it possible to cut well beyond 45°

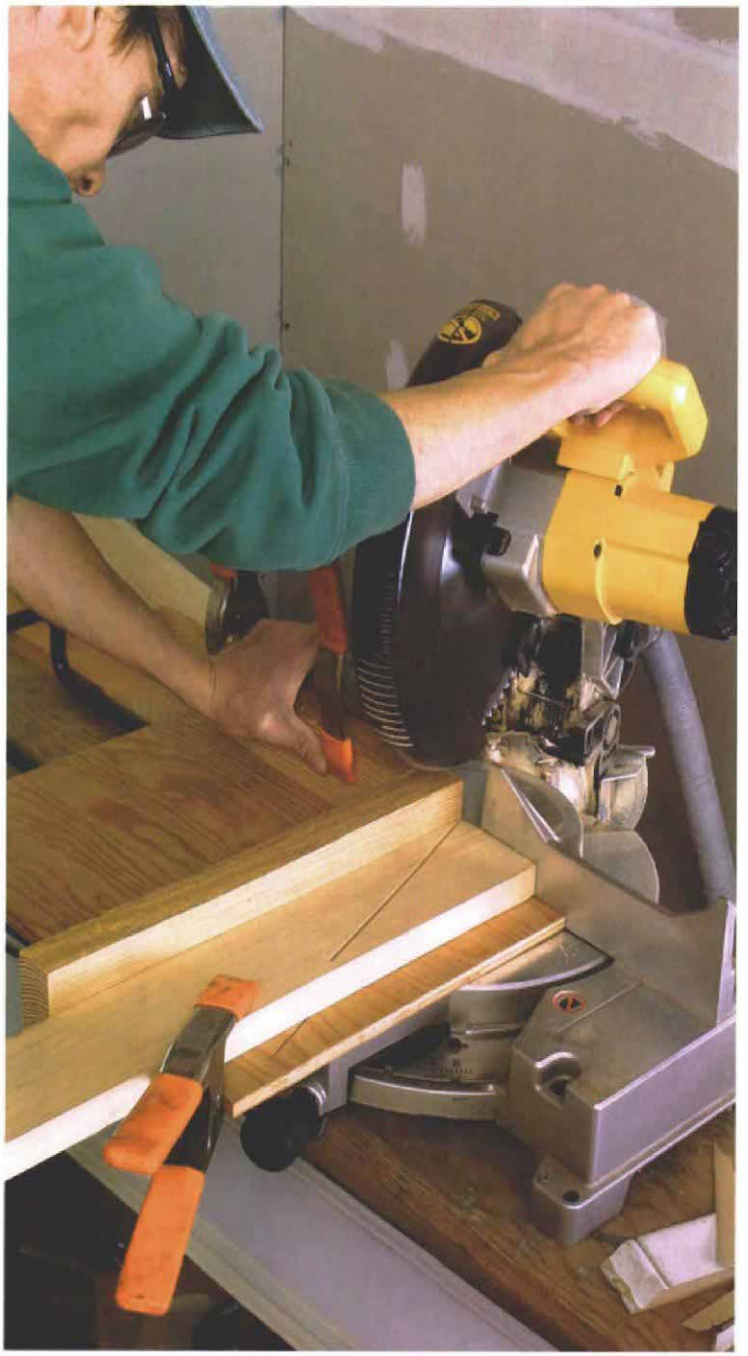
When changing angles on the miter table, I turn the knob to lock it down, even when using the detent settings. It's not necessary to tighten the knob a lot, nor is it necessary to unscrew it much to loosen it. There is a point on the thread where a half-turn locks the table securely and a half-turn in the other direction frees it. Find this point, then always lock and unlock. It won't take any more time,

Don't take safety for granted

Today's generation of chopsaws is not only more versatile than its predecessors, it's also much safer: Well-designed safety features such as retractable blade guards and automatic brakes reduce the opportunity for a spinning blade to strike a stray finger. Any power tool can be dangerous, however, especially if your attention wanders. Here are some basic habits of use that can prevent power-tool mishaps.

• Wear safety glasses. This rule may seem obvious, but I am always amazed when a novice carpenter says something like "But the saw's stationary" or "It has a blade guard" as a reason not to don safety glasses. Usually, the first strong kickback of a small cutoff dispels this rationale.

Many happy returns. *A piece of scrap wood placed between the molding and the fence ensures that small offcuts, such as mitered returns, don't become sucked into the blade and flung across the room.*



Cutting a steep angle. *With the chopsaw set at 30°, a homemade jig set square to the fence enables the saw to produce the complement of that angle: 60°.*

and it saves you the grief of unknowingly bumping the handle and then miscutting the angle, a mistake I've made more than once.

Most chopsaws have detents at common angles—0°, 22.5°, 31.62° (for crown molding) and 45°. These detents are useful, except when you have to cut a hair's width off the detent angle to fine-tune a cut. Most new saws have detent overrides, but even with the best design, you have to screw the knob tight to keep the latch from popping into the detent slot.

Over time, as the turntable wears, a bit of sloppiness can develop in the detent settings. If you have an older saw, it's a good idea to monitor the pointer and to use the knob to lock the table down to the exact angle.

Although most chopsaws allow you to cut a couple of degrees beyond 45°, in certain

Small cutoffs kicked out of the saw are dangerous to you and to others working nearby. Avoid these projectiles by letting go of the trigger at the bottom of the cut and waiting until the blade stops before bringing the blade back up.

• Keep track of your fingers. Always drop the blade onto the work before pulling the trigger so that you can see where the blade will cut. Notice not only where the blade aligns with the cut but also where your fingers are.

• Secure the saw, and support long material. The worst accident I have seen occurred when a carpenter was straining to hold a long 2x6 on the table and it slipped as he was bringing down the sawblade, severing a tendon in his arm.

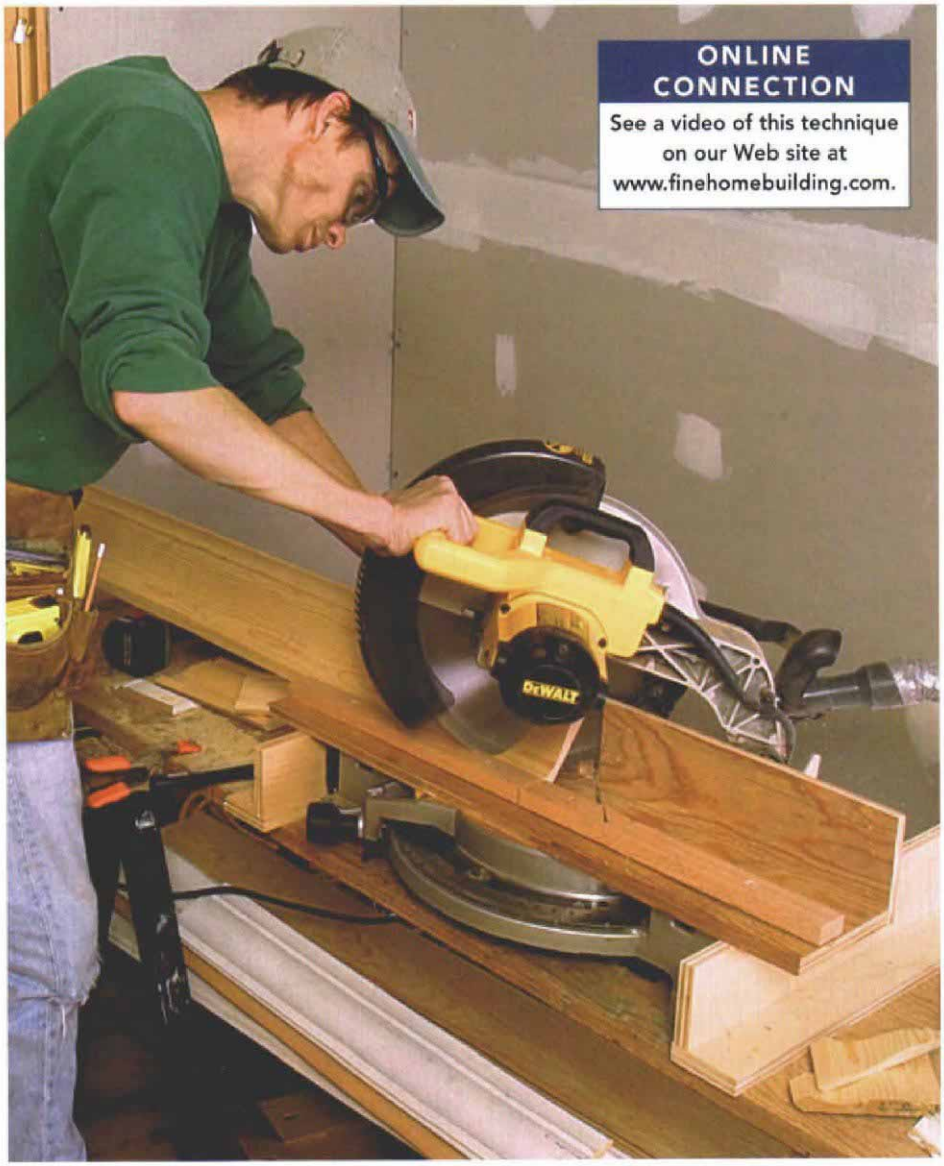
When both the saw and the material are supported, you don't have to perform contortions to hold a mark and cut accurately. If you're in doubt about the setup's security, clamp the material to the fence or bench top.

—C. D.

Try not to think too much. *Pattern blocks that indicate the correct orientation for inside and outside miters eliminate guesswork.*

EASE CUTTING CROWN UPRIGHT WITH A SIMPLE JIG

An auxiliary plywood table with a continuous stop applied to the front edge ensures that each piece of crown is held at the correct angle in relation to the blade.



cases—such as rake molding, for example—it's necessary to cut far beyond 45°. To get myself through these types of situations, I've built a simple box jig that effectively rotates the fence 90° to give me the complement of an angle (photo right, p. 59). In other words, if the miter table is set to 30°, the box jig then gives me the complement, or 60°. Because steep angles such as this one are very long, it's easier to make these cuts on a sliding miter saw. Nevertheless, a 12-in. fixed-head saw, such as the one in the photos, allows me to cut most of the way through the board; then I simply wipe the cobwebs off my handsaw and finish the cut.

Bevels should be cut on edge whenever possible

A compound-miter saw offers the option of chopping a bevel either with the board lying flat on the table or with it standing it against the fence. Although cutting on the flat affords a wider capacity (photo left, p. 58), it does so at the expense of speed and accuracy. Because the large miter scale on the saw table is significantly more accurate than the tiny bevel gauge on the blade head—and because the saw is easier to control upright—I prefer to cut bevels on edge (photo right, p. 58). Fortunately, a 12-in. compound saw lets me stand even 2x6s up against the fence and bevel them. When cutting a simple edge bevel, I make sure the face of the board is pressed tightly and evenly against the fence for a precise cut.

When I'm working with wide boards that demand flat-cutting a bevel, I make sure to lower the blade into the work in a smooth manner that doesn't cause the saw's mounting arm to flex and throw off the cut. When

I have to flat-cut a bevel that must be precise, I don't rely on the bevel gauge. To ensure accuracy, I set up the proper miter angle using the saw's miter scale; then I use a sliding bevel square to establish the proper bevel setting.

"Upside down and backward" still works best for crown

If there's one application that explains why compound-miter saws are so popular, it's their ability to cut crown molding flat on the table. Most saws even include detents for the miter and bevel settings that make this task possible. Unfortunately, those settings apply only to crowns with a 38° spring angle, the angle that the installed molding springs away from the wall. I work with a wide variety of crowns, each of which requires me to reset the miter and bevel settings on my saw if I were to cut it flat (sidebar right).

Unless I'm working with a wide crown that won't fit on the saw, I find that it's easier to cut crown the old-fashioned way: tipped between the table and the fence. This method can be confusing, however, because the molding must be placed upside down. In other words, the saw table represents the ceiling plane, and the fence represents the wall. Because the molding is upside down, the angle points in the opposite direction. Hence, carpenters often have to remind themselves to cut "upside down and backward." When I was just getting started, I wasted a lot of valuable material until I made myself a pair of pattern blocks—one for inside corners, one for outside—to make sure the molding was always in the right place before I cut it (photo bottom left, facing page).

Although crown can be hand-held while it's being cut, a simple stop strip on the table keeps the crown at the correct angle to ensure consistent miters. Some manufacturers offer accessories for this work, but I use an auxiliary table and stop strip I built from scrap ½-in. plywood (photo right, facing page). On some chopsaws, it's possible to attach a setup such as this one directly to the fence, but that's not an option with mine. Instead, I secure it by fastening a second pair of stock supports to the bench top on each side of the saw; then I screw the crown jig to the top of the stock supports. □

Clayton DeKorne, a carpenter in Burlington, VT, is the author of *Trim Carpentry and Built-ins* (The Taunton Press, fall 2002). Photos by Tom O'Brien, except where noted.

Compound saws cut crown flat

When cutting crown flat, the angles for the miter and bevel settings are not obvious. These angles vary depending on the spring angle, the angle at which the molding tilts when installed between wall and ceiling. To find the miter and bevel angles on the saw, I use the settings in the chart below.

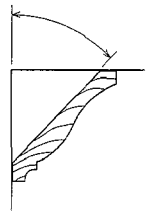
Unless you have a dual compound-miter saw, you also need to keep track of how you orient the molding in the saw. Sometimes the top edge of the molding will be against the fence, and at other times, the bottom edge will be against the fence. Below are some simple guidelines to follow, depending on the cut you are making.

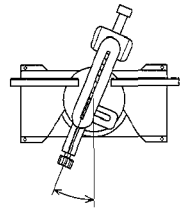
—C. D.

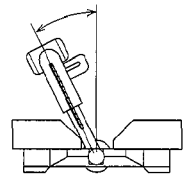
"On the flat" isn't as simple as it looks. *Even though it's physically easy to cut a piece of crown on the flat, getting the angles just right can be tricky.*

MITERED OUTSIDE CORNER		
Left-hand piece	=	Bottom edge against fence
Right-hand piece	=	Top edge against fence

COPED INSIDE CORNER		
Left-hand piece	=	Top edge against fence
Right-hand piece	=	Bottom edge against fence







Type of crown (spring angle)	Miter (angle on table)	Bevel (tilt of blade)
30°	27°	38°
35°	30.5°	35°
38°	31.5°	34°
40°	33°	33°
45°	35°	30°
52°	38°	26°