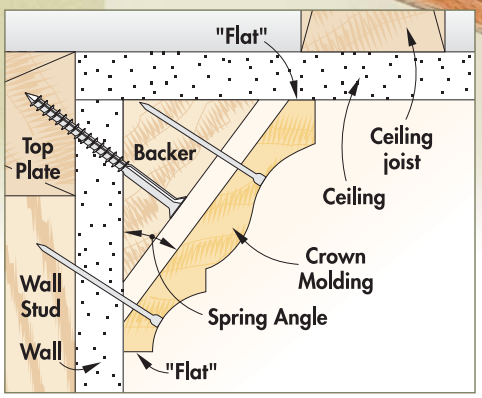
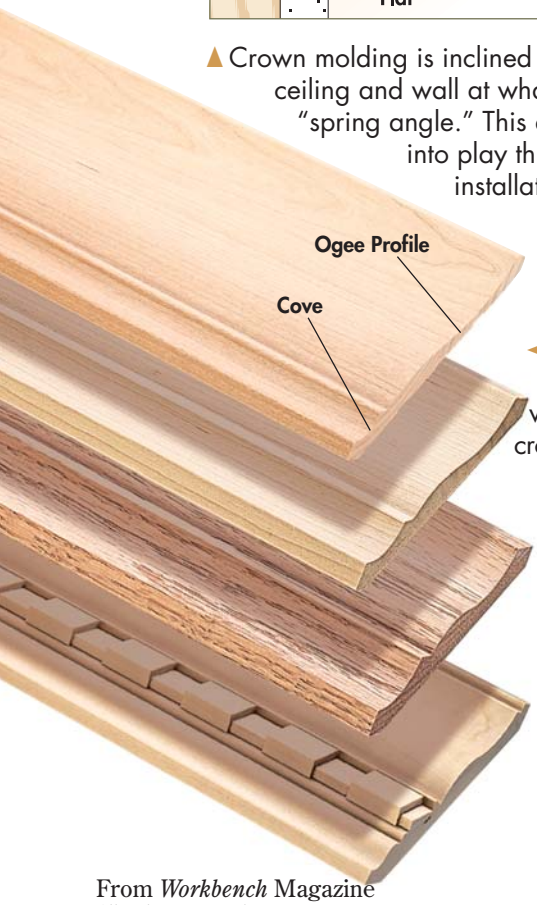
install Crown MOLDING *like a pro!*



▲ Crown molding is inclined between the ceiling and wall at what's called its "spring angle." This angle comes into play throughout the installation process.



◄ Regardless of width or wood species, crown molding often has an ogee profile near the top edge and a cove at the bottom.

Here's everything you need to know to get perfect-fitting crown molding — whether you're trimming out a room or a bookcase.

As any seasoned carpenter will tell you, installing crown molding is anything but a routine task. Unlike most moldings, which are attached flat to the wall, crown molding rests at an angle between the ceiling and wall. Because it "leans" at an angle, working with crown molding requires cutting compound angles, which can be a tricky operation. To complicate matters even more, walls and ceilings are seldom flat, square, and plumb.

In spite of these obstacles, it *is* possible to get great results when installing crown molding. Like most carpentry jobs, it just takes a little know-how.

Crown Molding Close-Up

If you haven't purchased crown molding before, it's worth taking a few minutes to familiarize yourself with some of the basics.

Which Side Is Up? — All crown molding has a decorative profile milled into the face of the molding. At first, it may not be obvious which side faces up toward the ceiling. An easy way to determine this is to look at the end of the molding *(Photo, left)*. Typically, an ogee profile (a double curve in the shape of an elongated 'S') is closest to the ceiling, while the smaller profile (often a cove) is at the bottom.

Size — In addition to a variety of profiles, crown molding also has a wide range of sizes. The most common width ($3\frac{5}{8}$") is readily available at most home centers. At some lumberyards and millwork shops, $4\frac{1}{2}$", $5\frac{1}{4}$", $6\frac{5}{8}$", and even wider moldings are available.

When selecting crown molding, the idea is to make it proportional to the size and height of the room. For example, $3\frac{5}{8}$" or $4\frac{1}{2}$" molding is

appropriate for an average-sized room (about 150-200 square feet) with an eight-foot ceiling. But you'd want to use wider molding in a large room with a higher ceiling.

Spring Angle — Regardless of its width, crown molding is milled so it sits against the wall and ceiling of the room along two narrow edges or "flats" *(Inset Illustration, page 1)*. With these flats fitting tightly against those surfaces, the molding is tilted at an angle called its *spring angle*. You'll need to take this angle into account when cutting crown molding and when making the backers that fit into the opening behind the molding (more on that later).

Planning the Job

As with any job, some careful planning up front will go a long way toward preventing problems from cropping up later.

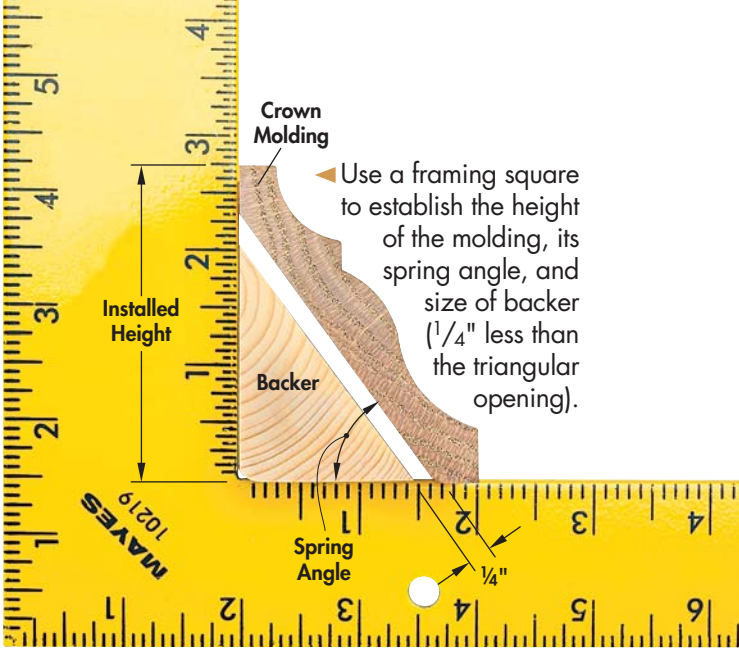
Locate Wall Studs & Joists — For starters, I mark the locations of the wall studs and ceiling joists with blue (or purple) painter's tape. This type of tape isn't as sticky as regular masking tape, so it can be easily removed without damaging the paint once you've finished the job.

Layout Lines — The next step is to mark lines on the tape indicating the location of the *bottom* edge of the crown molding. These lines will make it easy to position the molding during installation.

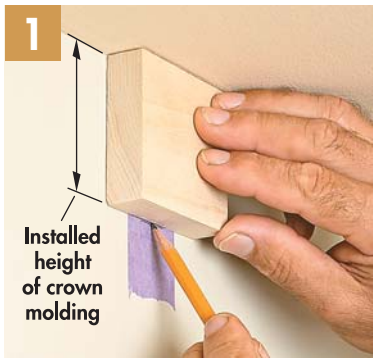
To determine the location of the lines, you'll need to know the "height" of the crown molding once it's installed. An easy way to do that is to use a framing square and a scrap piece of molding *(Photo, right)*. Just measure the distance from the corner of the square to the bottom edge of the molding. Then, cut a block to match that distance, and use it as a gauge when marking the layout lines *(Fig. 1)*.

Backers — There's one situation you'll run up against that needs special attention. If the ceiling joists run parallel to a wall, there won't be anything to nail the top of the molding to along the wall. Installing short backers (about 12" long) will provide a solid mounting surface.

Backers are triangular lengths of 2x stock that fit into the opening behind the molding. Here again, use a framing square and scrap molding to determine the size of the opening *(Photo, above)*. Keep in mind that you don't want the backers to fit tightly against the molding. Leaving a 1/4" gap provides clearance that allows you to adjust the fit of the molding. Once you determine the correct size, tilt the table saw blade to match the spring angle, and rip a 12"-long bevel in a 2x4 *(Fig. 2)*. Stop the saw, then crosscut the backer to length.



Use a framing square to establish the height of the molding, its spring angle, and size of backer (1/4" less than the triangular opening).



A block that matches the installed height of the crown molding makes a handy gauge when laying out the location of the bottom edge of the molding.

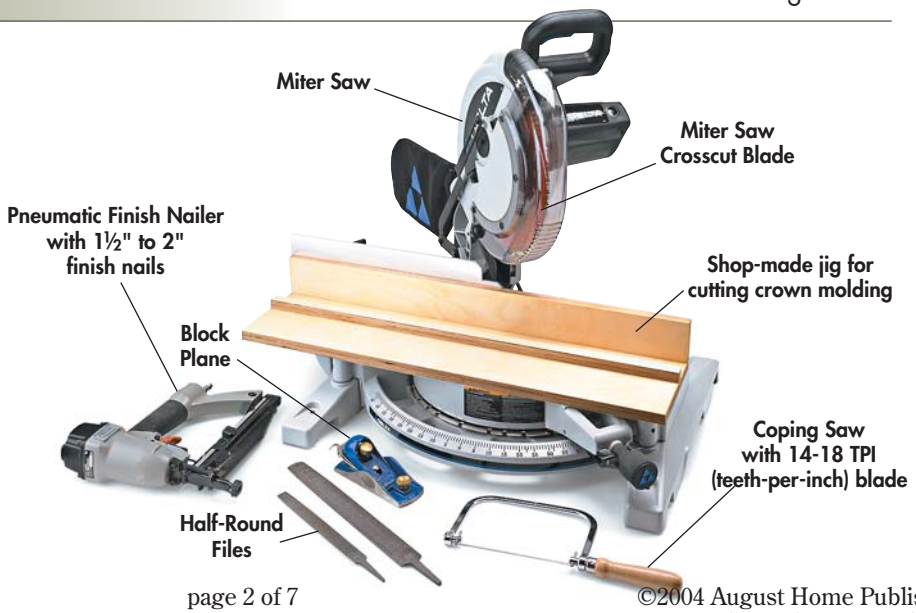
To make a backer, tilt the blade to match the molding's spring angle. Make a 12"-long bevel rip in a 2x4, turn off saw, then cut the backer to length.

TOOL ROUND-UP

Using the right tools for the job is half the battle when installing crown molding.

For starters, a miter saw with a good quality crosscut blade will ensure fast, accurate, glass-smooth cuts. (For this job, I used a Freud 12" Ultimate Cutoff Blade with 96 teeth.)

To create a coped joint on the inside corners, you'll need to round up a coping saw — with a *new* blade — and a half-round file. A block plane will help to refine the miter joints on the outside corners of the crown molding. Finally, an air nailer simplifies installation considerably.



tips & tricks for CUTTING CROWN

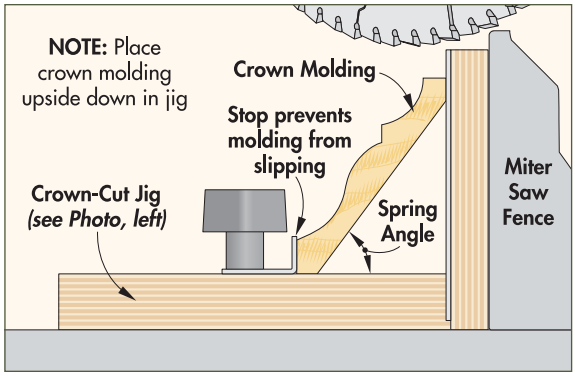
One of the easiest ways to cut crown molding is to position it at its *spring angle* on the miter saw. That is, with the workpiece tilted so it duplicates the angle of the molding between the ceiling and the wall.

The best way to do that is to use a jig that holds the molding at the correct angle and keeps it from slipping during the cut. This can be a manufactured jig *(Photo, left)*, or you can knock out your own shop-made version.

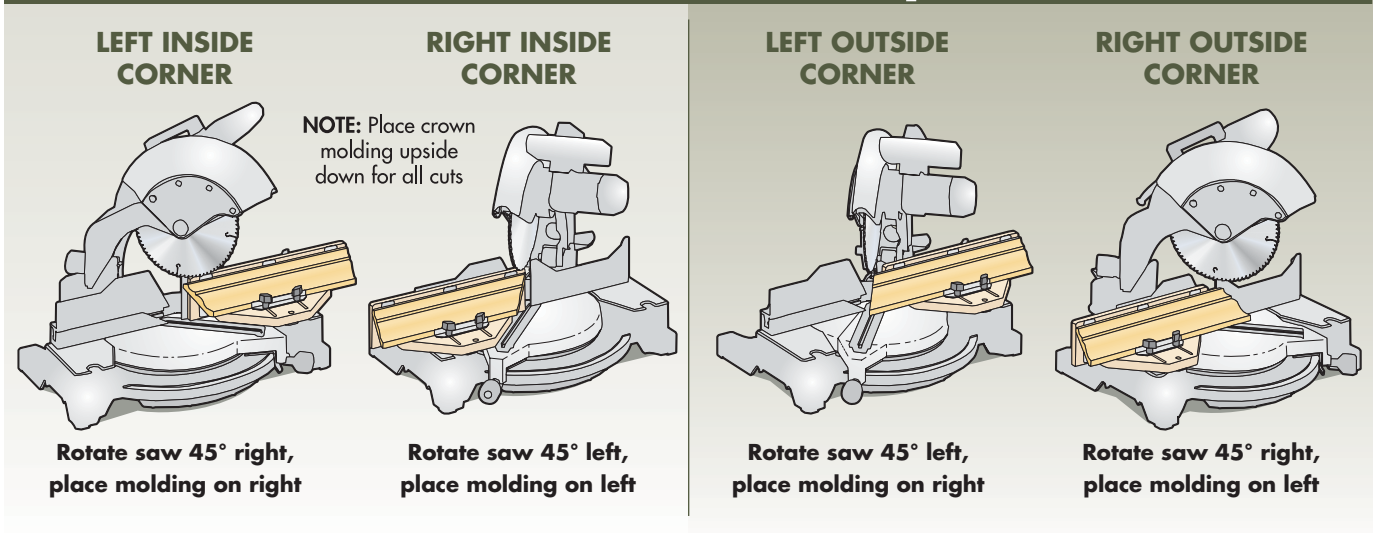
Upside Down — Either way, you'll need to place the molding in the jig so it's *upside down*. In other words, the top edge of the molding rests on the base of the jig, and the bottom edge sits against the fence. (Think of the base as the ceiling of the room and the fence as the wall.)

And Backward — Since the molding gets sawn upside down, it must also be placed in the jig *backwards*. The *Miter Saw Setup* Box below demonstrates this concept for cutting both inside and outside corners.

▲To make an inside corner joint, you first need to "reveal" the profile of the molding by cutting a 45° miter. Note that the molding is upside down and tilted at its spring angle. To prevent it from slipping, I use a jig manufactured by Bench Dog. **Source:** 800-786-8902 or visit BenchDog.com



Miter Saw Setup



Coping Inside Corners

More often than not, you'll be cutting an inside corner joint when working with crown molding. For an inside corner, I use a *coped joint*. With this type of joint, one molding is butted into the corner *(see Photo on page 5)*. The adjoining piece is cut, or coped, to fit against it.

Before coping the joint, you'll need a "map" of the decorative profile of the crown molding to use as a guide while making the cut. That map is easy to come by. You simply position the molding on the jig for either a left- or right-inside corner, and then cut a 45° miter on the end of the molding *(see Photo on page 3)*. The freshly cut edge provides a visual reference that you can follow as you make the cope cuts.

Note: It's a good idea to make the miter cut on an extra-long piece of molding (about 6" longer than needed should be fine). That way, if you make a mistake while coping, there will still be enough material to trim the end and try again.

Coping Saw Technique — Once the miter cut is made, it's time to cope the molding to fit against the adjoining piece *(see Figures 1 through 4 below)*. The whole idea here is to backcut the end of the molding, following the contour of the profile as closely as possible, and leaving a slightly "thick" edge *(Photo, right)*.

For a chip-free cut, you'll want to mount the blade so the teeth point *away* from the handle of the saw. It also helps to make relief cuts, which allow the waste blocks to fall free *(Figures 1 and 3)*. Finally, no matter how carefully you cut, you'll probably still need to file the end of the molding for a perfect fit *(Fig. 4)*.

▲ When making a cope cut, tilt the saw to make a backcut, then follow the contour of the profile as closely as possible, leaving a slightly "thick" edge.

COPING WITH COPED CUTS

▲ The first step is to make a relief cut from the back of the molding to the transition line between the two decorative profiles.

▲ With the coping saw held at a steep angle, make a backcut along the cove profile, stopping at the relief cut.

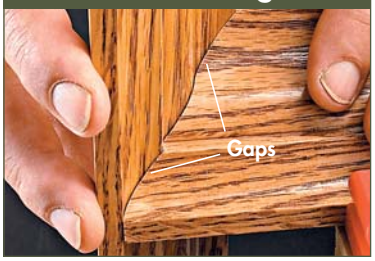
▲ Starting from the back of the molding, make a second relief cut up to the transition line where the ogee profile begins.

▲ After completing the cope cuts *(Main Photo, above)*, use a half-round file to refine the fit, working just up to the edge.

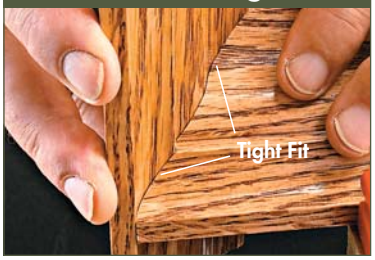
CHECKING THE FIT

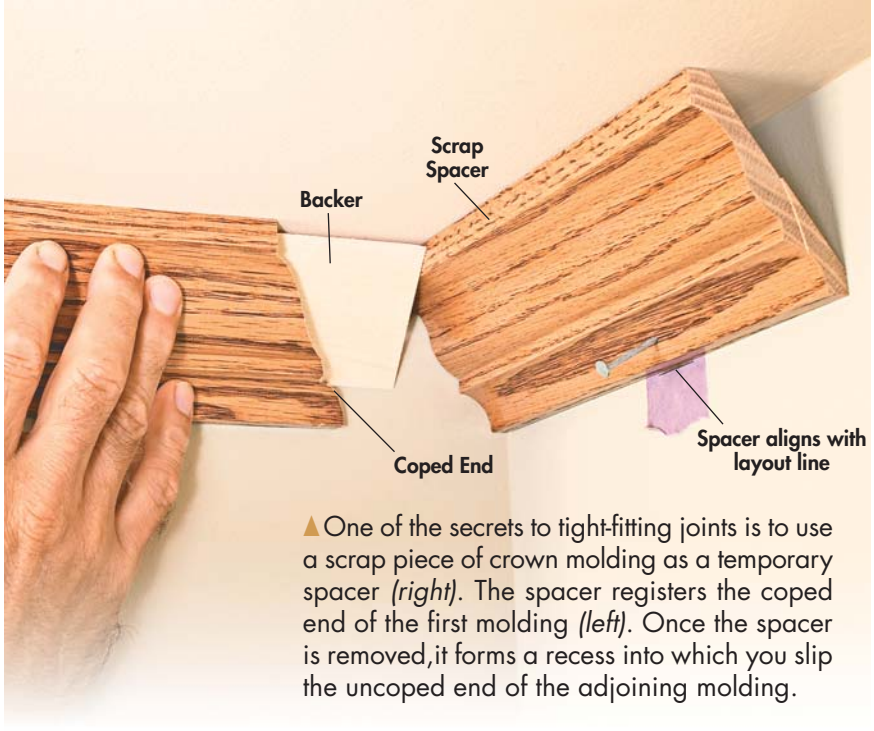
To check the fit, hold the coped end against a scrap piece of molding. Small gaps like those shown in the *Upper Photo* are easily remedied with a half-round file *(see Fig. 4 at left)*. Check your work frequently to achieve a tight-fitting joint *(Lower Photo)*.

Before Filing



After Filing





▲One of the secrets to tight-fitting joints is to use a scrap piece of crown molding as a temporary spacer *(right)*. The spacer registers the coped end of the first molding *(left)*. Once the spacer is removed, it forms a recess into which you slip the uncoped end of the adjoining molding.

the crowning touch

INSTALL MOLDING

Once you've mastered the techniques for making a coped joint, installing crown molding in a room with four inside corners isn't difficult. (I'll get to outside corners later.) Still, there are several things to consider.

Go Long — Take the length of the molding, for instance (measured from long tip of the coped end to long tip of the uncoped end). As a rule, cut the molding $^1/_8$" longer than the distance from one wall to the molding on the opposite wall. This extra length will allow you to "spring" the molding into place for a tight fit.

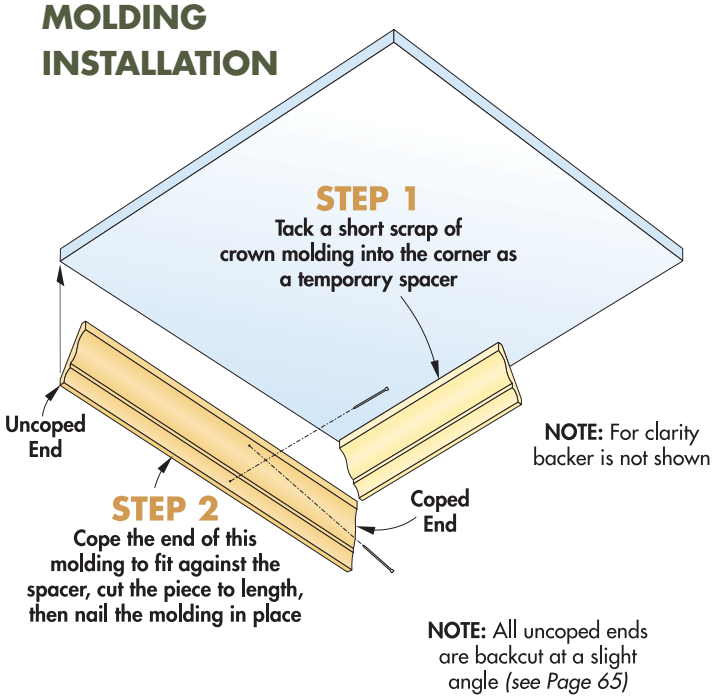
Backcut Uncoped End — Of course, when trimming the molding to length, you'll be working on the uncoped end. At first, it might seem like you'd want to cut this end square. But by backcutting the end slightly, you'll avoid any problems that may arise from square-cut ends *(see Sidebar on page 6)*.

"Pin" the Middle — Another thing to keep in mind is how the molding gets attached. It's fastened with finish nails driven through the top and bottom edges into the ceiling joist (or backer) and the wall studs *(refer to Illustration on page 1)*. When installing the nails, it's best to "pin" the molding in the middle first. This leaves both ends free so you can twist the molding slightly and adjust the fit of the joint as needed.

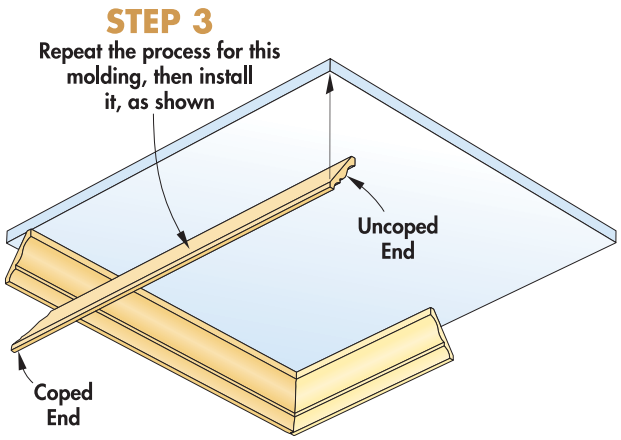
A Double-Cope Dilemma — When installing crown molding, many carpenters start with the longest wall in the room and square-cut both ends to fit that wall. The two adjoining pieces of molding are then coped on one end and square-cut on the other. This means the last piece of molding has to be coped on *both* ends.

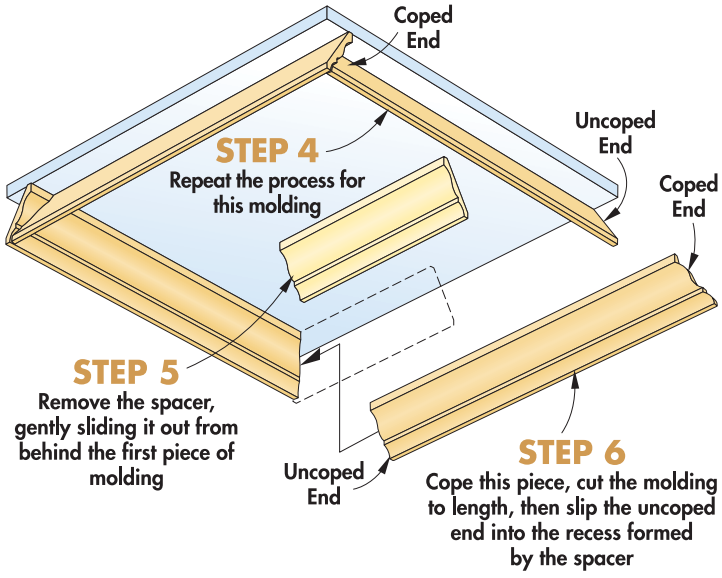
Now, coping one end of the molding isn't difficult. And neither is coping the second end for that matter. But

MOLDING INSTALLATION



NOTE: All uncoped ends are backcut at a slight angle *(see Page 65)*





keep in mind that while you're making that second coped cut, you have to trim the molding to final length at the same time. That complicates things considerably.

Use A Single-Cope Method — One solution is to use a method that involves coping only *one* end of each molding. This coped end fits against a spacer made from a scrap piece of crown molding that's temporarily tacked in place *(see Photo on page 5)*. The other (uncoped) end simply gets backcut as I explained before. For subsequent pieces, the process is the same — coping one end, then backcutting the uncoped end *(see Illustrations on page 5)*.

After working your way around the room, carefully remove the spacer. Then fit the uncoped end of the final piece into the recess that was formed by the spacer. The two pieces should fit together like a nut in a shell. If not, just give one piece or the other a slight twist until they fit just right, then nail them in place.

Splices for Long Runs

Ideally, every piece of molding would be long enough to span the length of the wall. In practice, you'll sometimes have to splice two (or more) pieces of molding together to make a single long molding.

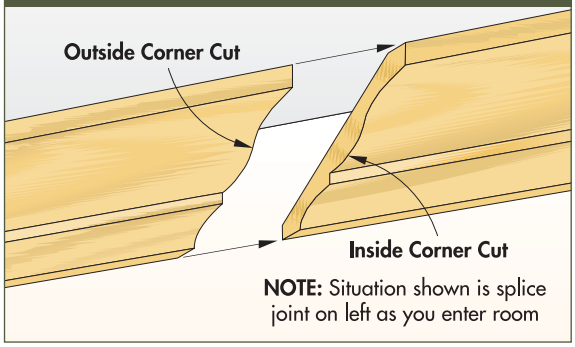
In a splice joint, a miter cut is made in each molding so the two pieces overlap. To accomplish that, it requires two types of cuts: an inside-corner cut on one piece and an outside-corner cut on the other. Here again, both cuts are made with the molding placed upside down in the miter saw jig and the saw set to 45°.

Splice joints won't always fit perfectly because of slight variations in the wall or the moldings. But paying attention to how the pieces overlap will help conceal the differences. In general, if you enter the room and the splice is on the left, use a left-over-right splice joint *(Splice Detail)*. If it's on the right, use a right-over-left joint.

Glue First, Then Install — To keep the joint properly aligned, glue the splice together before installing the molding. Since the glue surface is fairly small, I use a short length of backer to strengthen the joint *(Photo, above)*. Even with the backer glued on, though, the molding is still fairly fragile until it's installed, so handle it carefully.

▲ A short length of backer adds rigidity when gluing a splice joint together. Careful attention to the grain makes for a virtually seamless joint *(right)*.

Splice Detail

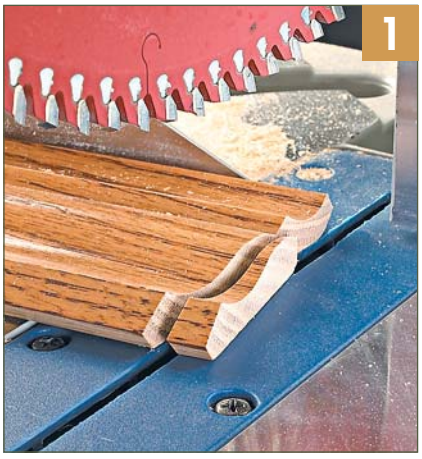


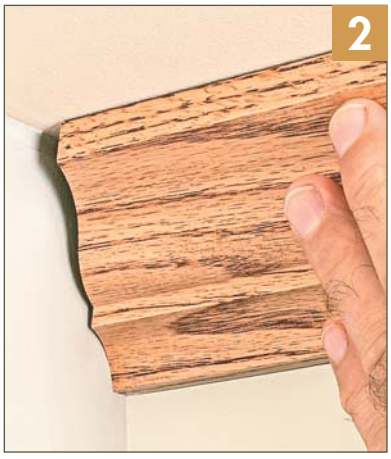
NOTE: Situation shown is splice joint on left as you enter room

BACKCUT FOR CLEARANCE

Typically, the drywall compound used to finish a wall produces a slightly rounded corner. As a result, the upper corner of the uncoped (square) end on a piece of crown molding often digs into the corner, damaging the drywall.

To provide clearance in the corner, I make a 10° backcut on the uncoped end *(Fig. 1)*. Start about $^1/_2$" in from the end, and leave the bottom edge of the molding intact. Of course, this creates a gap when you install the molding *(Fig. 2)*, but that's covered by the coped end of the adjoining piece.





get perfect-fitting OUTSIDE CORNERS

It's rare that an outside corner in a room is perfectly square. So in order to get a tight-fitting joint on an outside corner, the crown molding must be cut to match the *actual* angle of the corner. So how do you determine that angle?

Locate Upper Outside Corner — The first step is to locate a point on the ceiling where the upper outside corners of the two mating pieces will come together *(Photo, left)*. To do that, you'll need to lay out two intersecting lines on the ceiling, as shown in *Figure 1*.

Establish Miter Angle — The next step is to establish the actual miter angle for each piece of molding. As you can see in *Figure 2*, it's defined by marking the top and bottom edges on each molding.

Miter Moldings — At this point, you're ready to miter the ends of the moldings. As before, place each molding upside down and backward. Then rotate the saw 45° to either the right or left *(Miter Saw Setup, page 3)*.

So why go to the trouble of marking the actual miter angle on the molding and then setting the miter saw to 45°? Because it allows you to "sneak up" on the actual angle.

As you can see in the *Sidebar* below, the 45° miter cut, which is made 1/4" to the waste side of the layout lines, is just a starting point *(Fig. 3)*. Ideally, when you "eyeball" the cut end, it should be parallel to the lines, but chances are it won't be. If not, rotate the saw just a hair in the proper direction and make a second cut — also slightly wide of the marks *(Fig. 4)*.

Now compare that cut edge to the layout lines, checking that it's parallel. If not, try again. If it is parallel, make the final cut, "saving" the pencil line *(Fig. 5)*.

▲**Locate Upper Corner**
To locate the upper outside corner of two adjoining moldings, mark along the top edge of each piece, forming intersecting lines.

▲**Establish Miter Angle**
To establish the miter angle, mark the bottom edge of each molding where it meets the wall, and the top where it aligns with the crosshair.

SNEAKING UP FOR A TIGHT FIT

▲With the miter saw rotated to 45° (right or left) make a cut about 1/4" to the waste side of the layout lines.

▲Adjust the saw angle to make a cut parallel to the two marks. Cut to the waste side. Readjust saw if needed.

▲Now make the final cut, leaving the pencil lines intact. Use a block plane for final fitting *(Inset Photo)*.