

MITERED HALF LAP

A mitered frame looks great, but often needs to be reinforced to create a strong joint. Here's a half-lap hybrid that's both attractive and strong.

Mitered frames simply look great. That's because the end grain is hidden "inside" the joint. The problem is that the end grain doesn't make a good glue joint. The miters (and therefore the frames) are only as strong as the glue that holds them together.

One solution I like to use for this problem is a mitered half lap. From the front and sides, it looks just like a miter, as you can see in the margin drawing on the opposite page. (A little end grain is visible on the top and bottom.) But with lots of face-grain glue surface, the joint has the strength of a half lap.

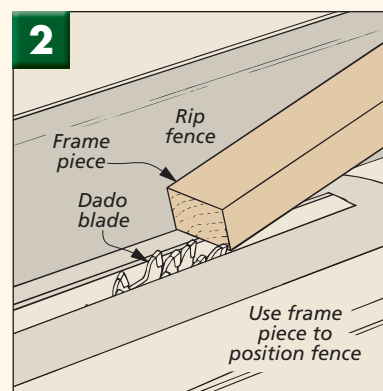
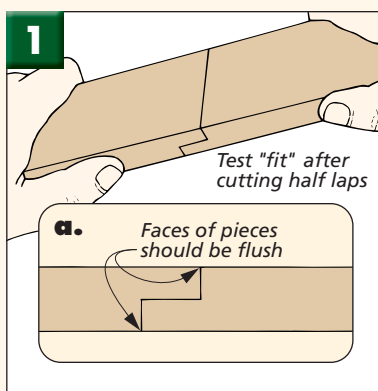
A mitered half lap does require a little more work than your typical miter joint. And that's because the rails and stiles are cut *differently* (unlike the typical procedure for a miter or a half-lap joint).

I like to start with the rails. (They're the horizontal pieces of the frame, while the stiles run vertically.) This way, the end grain shows up on the top (and bottom) of the frame (see the drawing on the opposite page). But you could easily switch the procedure so the end grain ends up on each side of the frame.

Regardless of which pieces you start with, the first thing to do is cut them all to finished size. (Be sure to cut several test pieces the same thickness and width as the workpieces.) Fortunately, the lengths of the rails and stiles are as straightforward as it gets — they both match the finished size of the frame.

Cutting the rails

To cut the mitered half lap on the rails, there are two steps to complete. First, a standard half lap is cut across its ends. Then the half lap is mitered. But



before you begin, it's a good idea to label the good (outside) face of each piece. This way, you'll be able to keep everything organized as you work.

HALF-LAP SETUP. Like any half lap, the dado blade needs to be raised to *half* the thickness of the workpiece. To do this, I lay out a centerline mark on the edge of a piece and then raise the blade up to this mark. Then to make sure the setting is

correct, I check it on a pair of test pieces by making a single pass across one end of each piece and then slipping them together (Fig. 1).

After slipping the pieces together, check to see that the faces are flush. If they're not, you'll need to tweak the height of the blade and make another pass on each piece.

Once the height of the blade is set, the next step is to set the rip

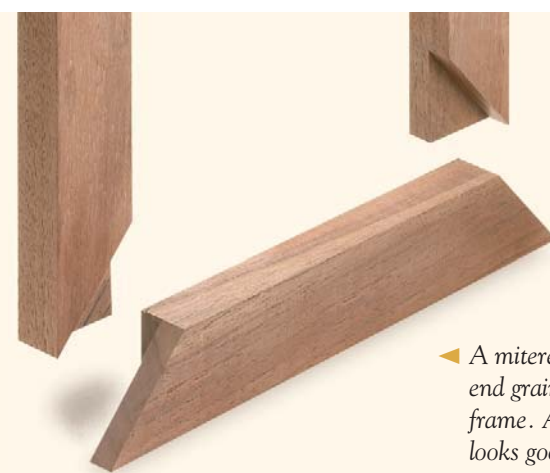
fence. Positioning the rip fence accurately ensures the half lap will end up the same width as the frame pieces, as in Fig. 2. Here again, I like to make a test cut to check the setup.

CUT HALF LAPS. Now you're ready to cut the half laps on the rails. For these cuts, the good face should be facing *up*. Note: To prevent chipout along the back of each rail, I added an auxiliary fence to my miter gauge. Cutting the half lap is just a matter of making multiple passes over the dado blade (Figs. 3 and 3a).

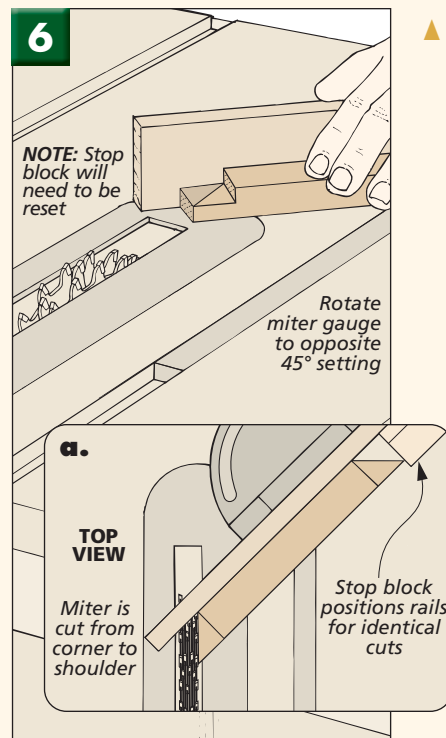
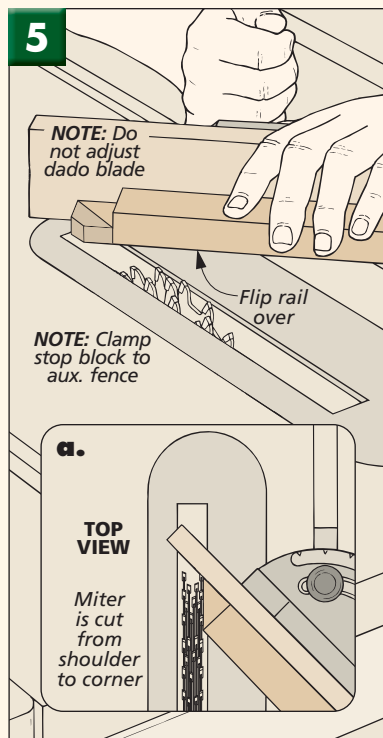
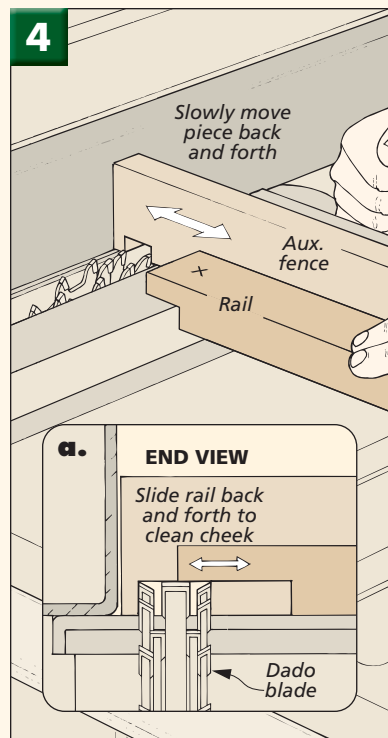
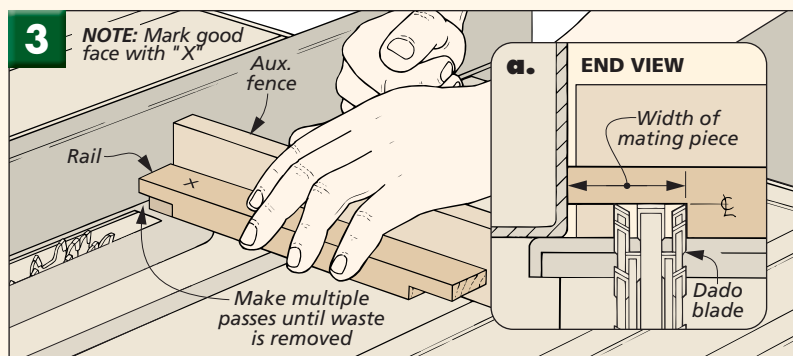
Note: Since a dado blade often leaves ridges on the cheek of the half lap, I like to clean up the face by sliding the workpiece back and forth across the blade while slowly pushing the piece forward. You can see this on the rail piece shown in Figs. 4 and 4a.

CUT MITERS. Now that the half laps are cut on the rails, the second step is to miter the ends. The goal here is to remove the waste from the outside corner of the piece to the opposite shoulder of the half lap, as you can see in the photo above.

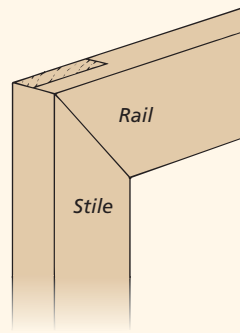
This is nothing more than a typical 45° miter — but the nice thing is you don't have to remove the dado blade to make the cut. Since the



▶ A mitered half lap “hides” the end grain along the sides of the frame. And the joint not only looks good, it's incredibly strong.



▲ Starting the mitered half laps on the rails places the end grain at the top and bottom of the frame.



A couple passes across the end of the stile is all it takes to complete a mitered half-lap joint.



Cutting the Stiles

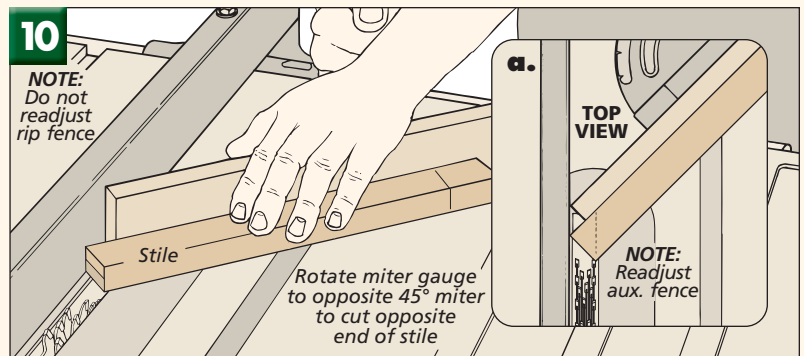
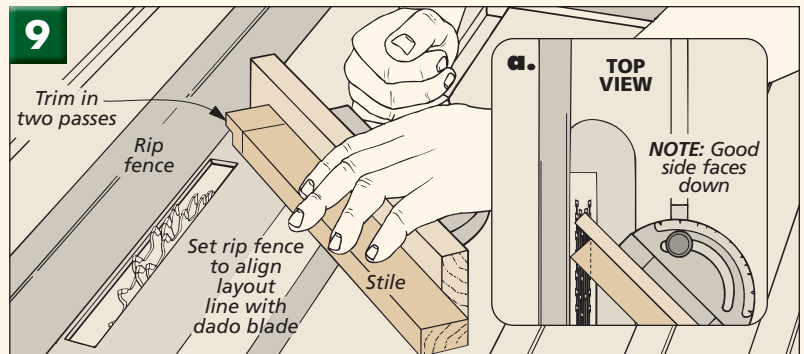
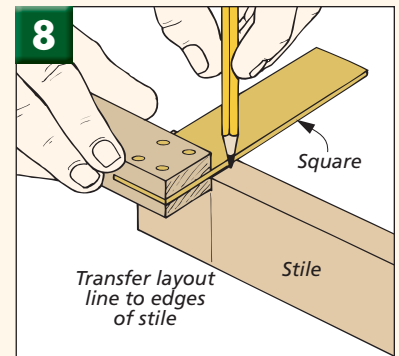
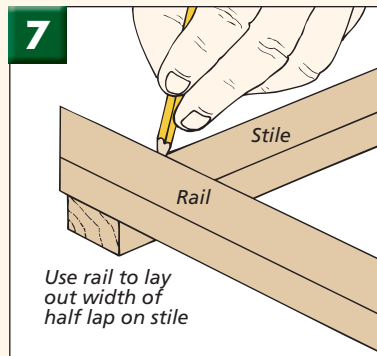
Now that the rails are complete, it's time to cut the mitered half laps on the stiles, like you see above. The nice thing about this is the stiles are less work than the rails.

For starters, instead of taking two steps like the rails, making the stiles is a one-step process. Plus, most of the set-up work is already complete — the height of the dado blade is set and the miter gauge is at 45°.

LAYOUT. Before making any cuts, take a little time to lay out the location of the miter cut on *one* of the pieces. This way, you can use it to complete the set-up work. To do this, simply lay one of the rails on top of the stile and transfer its width, as illustrated in Fig. 7. Then it's a simple matter to transfer the layout line around the edges of the piece, like you see in Fig. 8.

RIP FENCE. Now you're ready to cut the miter. Since the half lap isn't cut all the way through the workpiece, you don't have to worry about a waste piece kicking back at you. So you can use the rip fence as a "stop," as in Fig. 9. Positioning the fence is just a matter of "shaving" away a little at a time until you reach the layout line.

Although there isn't anything tricky about this procedure, the good



side of the workpiece must be facing down, as noted in Fig. 9a. And to avoid chipping out the "tip" of the half lap, it's best to remove the waste near the tip before making the final cut.

After cutting one end of each piece, you'll need to rotate the miter gauge to cut the opposite end, as you can see in Figs. 10 and 10a. And the rip fence? Don't worry about

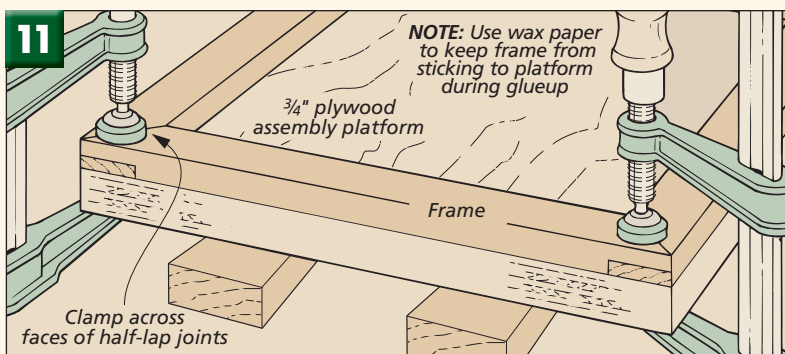
readjusting it. Even though the workpiece is oriented differently, the width of the cut is still the same.

ASSEMBLING THE FRAME

With the stiles cut, you're ready to assemble the frame. The nice thing is the assembly is more like a half-lap joint than a miter joint. As long as the miters are tight, all you need to worry about is clamping the faces together, as you can see in Fig. 11.

To keep things from slipping around, I used a plywood platform cut to match the size of the frame. (I put some spacers underneath to allow room for the clamps.)

A clamp at each corner is really all you should need. But if you're having trouble with the miters staying tight, you can use a clamp across the rails to help pull things together. **W**



PICTURE FRAME

Want to try your hand at making mitered half laps? This custom picture frame gives you the perfect opportunity.

Here's a frame you can have assembled in an evening. It requires only a few scraps, and you can customize its look or its size quite easily. But what I like best about this frame is that it's a perfect opportunity to try your hand at a miter joint that you may not be too familiar with: a mitered half lap.

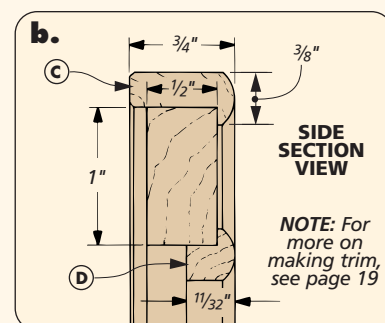
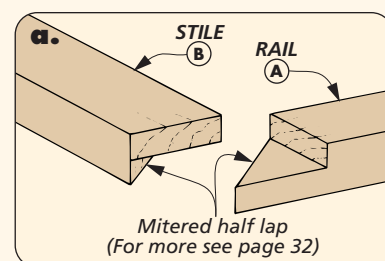
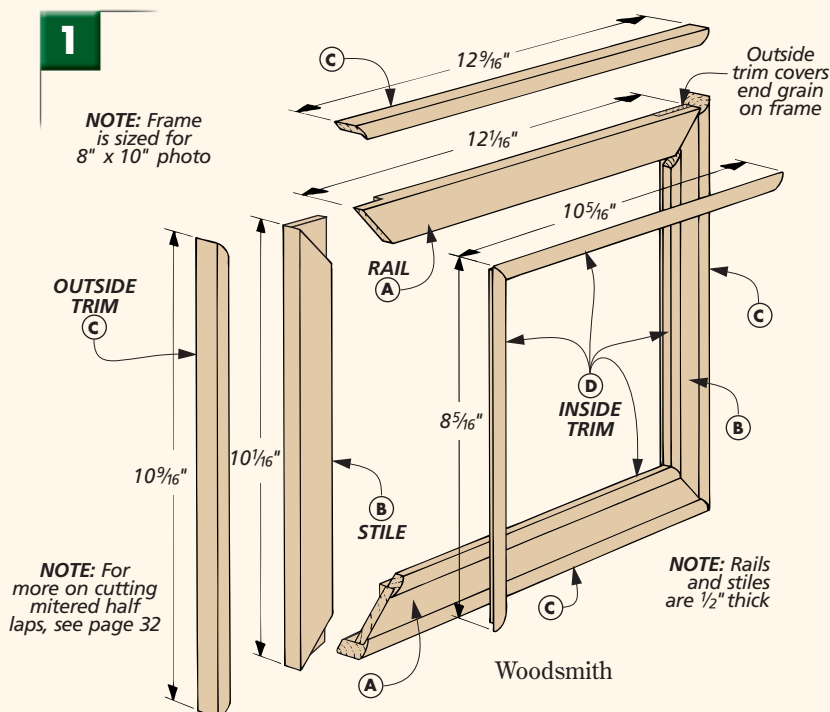
Why use a mitered half lap when a simple miter joint will do? The answer is strength. Mitered half laps will ensure that this picture frame will hold together for years, even if it should get dropped or knocked around a bit.



There's a simple elegance about this frame. If you take a look at Fig. 1, you'll see that the main section of the frame is made up of a pair of rails and stiles that are joined together with mitered half laps. Then the inner and outer edges are covered with some simple trim. To provide a little contrast between the main section of the frame and the trim, I used two different types

of wood (oak and mahogany). Or if you want even more contrast, take a look at some of the customized frame options shown in the box on the opposite page.

FRAME. To build the frame, start by cutting the *rails* (A) and *stiles* (B) to length. (I sized my frame to hold an 8" x 10" photo.) Then you can cut the mitered half-lap joints on the ends, just as you see in Fig. 1a. (For



more on making this joint, see the technique article on page 32.)

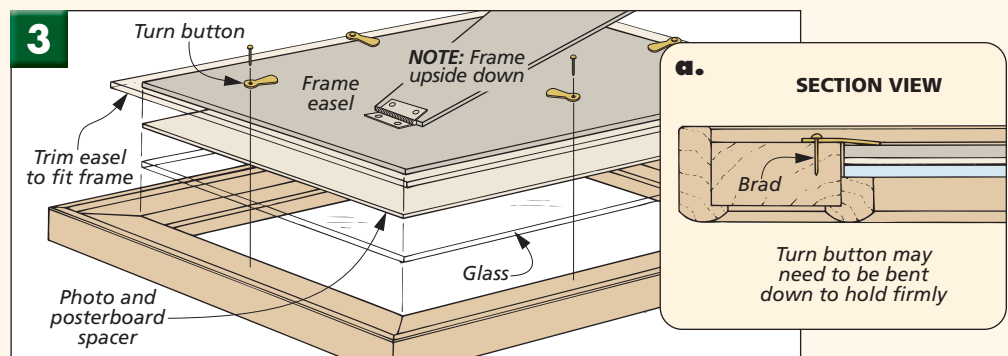
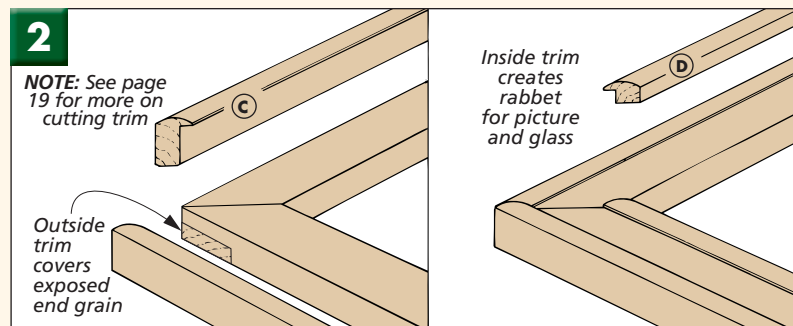
After you've cut all the mitered half-lap joints, you can glue the rails and stiles up into a frame. The important thing here is to make sure that the frame is glued up square. This will make things a lot easier when it comes to adding the trim later.

TRIM PIECES. I didn't add the trim just because it looked good. These pieces serve a couple of other purposes. The *outside trim* (C) covers the exposed end grain of the mitered half laps (Fig. 2). And the *inside trim* (D) creates a rabbeted opening to hold the glass, picture, and mat backing (Fig. 1b).

A router table and table saw are all you need to make the trim. (For more, see page 19.) The trim pieces can then be mitered and glued in place around the frame (Fig. 3a).

When it comes to mitering the trim pieces, there aren't really any secrets. It's just a matter of trial and error. But I found it easiest to work my way around the frame one piece at a time. This way you can test the fit of each corner.

EASEL BACK. With the frame complete, the last step is to add the photo-



graph (or picture). As you can see in Fig. 3, the photo gets sandwiched between a piece of glass and a posterboard mat. Then I added an "easel back." The easel back is nothing more than a piece of heavy posterboard mat with a hinged, necktie-shaped "leg" that props up the frame like a kickstand on a bicycle. Shop Note: If you buy an 8" x 10" easel

back, the leg will be too short and the frame will lean back too far. So instead, I purchased an 11" x 14" easel back and cut the mat down to fit in the opening. (Easel backs are available at art stores, or see page 35 for sources.)

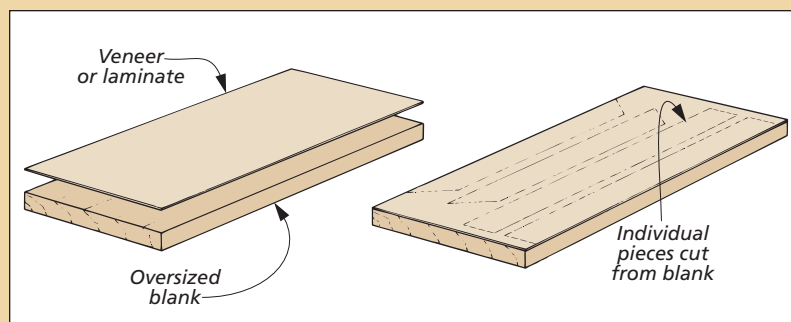
Finally, to hold everything in place, four brass turn buttons are added to the back of the frame (Fig. 3a). **W**

CUSTOMIZING YOUR FRAME

Aside from using different types of wood, you can dramatically change the look of the frame by using veneer or plastic laminate on the main section (see photo at right).

Instead of veneering the individual frame pieces, I started with a single, oversized blank, as shown in the drawing below. (I used

hardwood for the blank, but you could also use 1/2"-thick medium-density fiberboard.) After applying the veneer (or plastic laminate) to one side of the blank, the rails and stiles for the frame can be cut to size. Then the rest of the frame is built just like the one shown in the main article.



▲ To make the frame on the bottom, I used a walnut burl veneer on the main section surrounded by cherry trim. The frame on the top is made with plastic laminate and maple trim.