

Technique

hand-cut Tenons

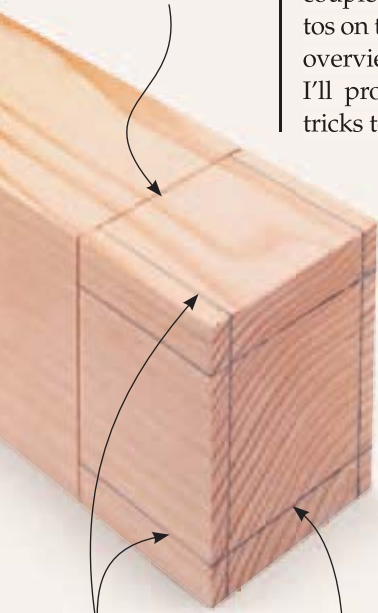
Here's an easy technique for building your hand tool skills and making tight-fitting joints.



■ When it comes to hand-cut joinery, most woodworkers think of dovetails. But there's another traditional joint that's less intimidating to master — tenons. Cutting tenons by hand builds skills like making accurate layouts and cutting straight and square.

The sawhorse project on page 34 provides a perfect opportunity for practice since there are only a couple of tenons to cut. The photos on these pages give you a good overview of the steps. In addition, I'll provide some other tips and tricks to get the best results.

Score shoulder line to guide saw and reduce tearout



Layout lines on all faces help guide saw cuts

Mark tenon size on end of workpiece

Layout. Cutting a tenon begins with an accurate layout. The layout serves as a road map for the saw cuts. It's a good idea to have the mortises complete before you get started. This way, you have a reference to lay out each tenon.

Thickness & Width. Begin by marking the thickness and width

of the tenon on the end of the workpiece (photos below). It's a good idea to lay out the marks so the tenon ends up just a hair larger than the mortise. This avoids the problem of ending up with a tenon that's too small. And it won't take much time to fine-tune the tenon for a perfect fit later on.



▲ **Thickness.** Line up the tenon piece with the edge of the completed mortise. Then mark the thickness of the tenon.



▲ **Width.** Rotate and turn the workpiece to mark the width on the other edge. Extend the marks across the end with a square.

Tenon Length. The next step is to mark the length of the tenon. Here I do things a little different. I like to use a cutting gauge (upper left photo on the opposite page). The scored line creates a starting point for the saw. This results in a cleaner line at the shoulder when the joint is assembled.

The final layout step is to carry the marks from the end of the workpiece across the faces and edges (upper right photo on the facing page).

Cut the Shoulders. With the layout complete, you can start cutting. And the tool for this job is a medium-sized back saw. The stiff back helps keep the blade traveling straight during the cut. Although you can buy an expensive, specialty saw, an inexpensive pull saw like the one shown here will do the job just fine.

The first cuts define the shoulders, as in the lower left photo. The scored lines make it easy to align the saw. Place the saw in the scored line and start cutting. Keep the saw level to avoid cutting past the layout lines. Stop when the saw teeth just contact the layout lines on the front and back.

Cheek Cuts. The next cuts will form the cheeks. It's best to cut these with the workpiece held securely in a vise. The key to great results is getting a good start.

The way I do this is shown in the main photo on the opposite page. By tilting the workpiece, I can use the layout lines on the end and face to cut straight *and* square.

Once the kerf is established, lower the front of the saw and cut parallel to the shoulder line. Bring the saw down in long, even strokes. As you approach the shoulder line, slow down and make a few light strokes until the waste piece just falls away. Repeat the process for the opposite tenon cheek.



▲ **Shoulders.** With a cutting gauge, score the shoulders to establish the tenon length.



▲ **Cheeks.** Transfer the marks on the end of the workpiece down each of the faces.



▲ **Shoulder Cuts.** Clamp the workpiece to the bench and cut all four shoulders.



▲ **Cheek Cuts.** Level the saw to complete the cheek cut. Take it slow to avoid over cutting.

After making two cuts, you'll need to re-mark the layout lines on the freshly cut faces. Then after two more cuts, the tenon is complete.

Now it's time for a test fit. Since the tenon was cut slightly oversize,

you'll need to do some fitting. Take a look at the box below for some tips. Your goal is a tenon that can be slipped into the mortise with hand pressure. 🛠️

▼ **Perfect Tenon.** Crisp shoulders and smooth cheeks ensure a strong joint that also looks great.

fine-tuning Tenons

It would be nice if the tenon fit snugly in the mortise right off the bat. And the more practice you get, the easier this is to do. But it's best to cut the tenon a little oversize. This way, all it takes is a some fine-tuning for the tenon to slip snugly in place.

The first thing to do is to compare the tenon to the mortise to see where the fit is too tight (first photo at right). From there, you can use a hardwood sanding block to touch up the faces, as in the second photo. Be sure to sand equally on both faces to keep the tenon centered on the workpiece.



Test Fit. Angle the tenon and compare it to the mortise to find out where the tenon needs more work.



▲ **Sanding Block.** A hardwood block with sandpaper on one face makes quick work of fine-tuning the fit of the tenon.