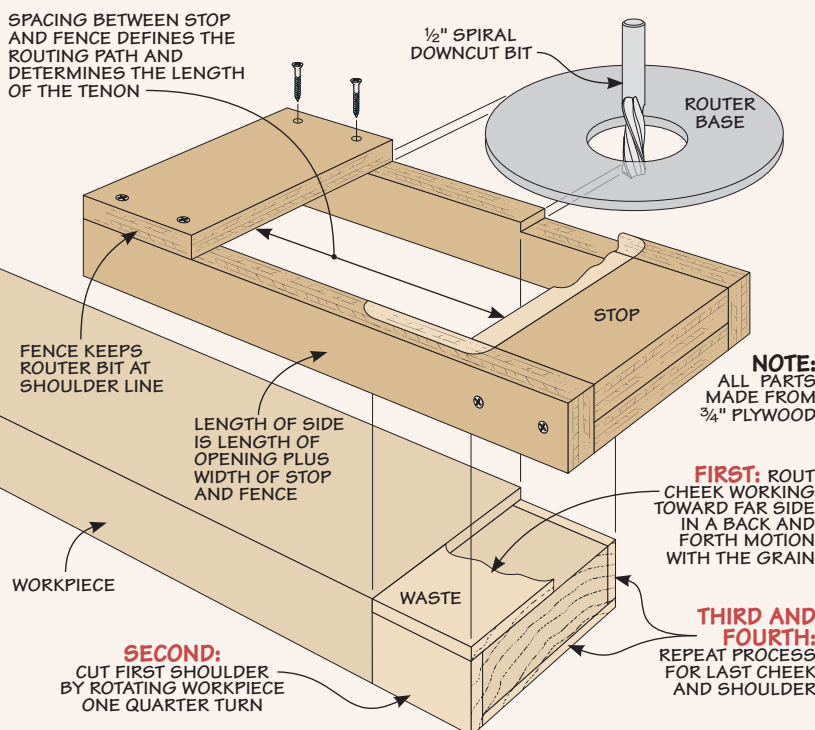


# HANDS-ON Technique

## routing a **Perfect Tenon**

A handy, shop-made jig makes it easy to cut a smooth, clean tenon with a hand-held router.



For most projects, I like to cut tenons on a table saw. But there are times when that's not the best option. For example, cutting a tenon on a long workpiece can be difficult on a table saw. That's because balancing a long piece off the side of the saw can cause it to tip and the tenon ends up being inaccurate.

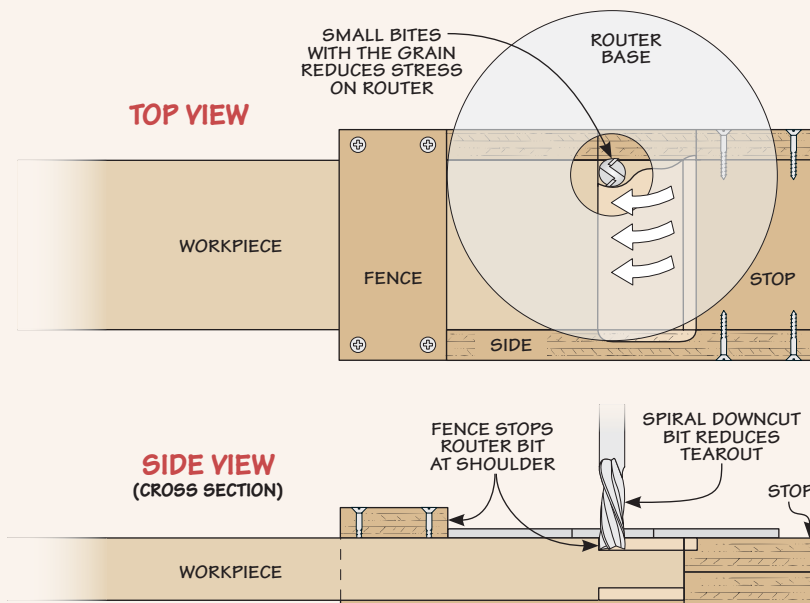
So, when I need to cut a tenon on a long workpiece, I turn to a hand-held router and a simple jig, like you see above. This method works great for table aprons, bed rails, or any long workpiece.

**Benefits.** Using this technique has several advantages. Clamping the workpiece to a workbench keeps it stable. And moving a small router across the workpiece is much easier than trying to balance and move a large workpiece on a small saw table. Plus, the router forms smooth cheeks and sharp shoulders (inset photo).

### MAKING THE JIG

To keep things simple, I build the jig to suit the project at hand. If you look at the drawing at left, you'll

# A Perfect Tenon: Step-by-Step



see it's just a fence, stop, and two sides made from  $\frac{3}{4}$ " plywood. The jig is assembled to fit snug around the workpiece to make routing the tenon more accurate.

**Sizing the Jig.** There are several things to keep in mind as you size the jig. Of course, the length of the tenon is key. But the size of the baseplate on your router and the size of the router bit you're using are also factors. And speaking of the bit, I use a  $\frac{1}{2}$ " spiral downcut bit. It cuts clean shoulders on the tenon without tearout.

**Fence.** To locate the fence, measure the distance from the outside edge of the router bit to the edge of the baseplate. Then add that measurement to the length of the tenon. This will be the distance between the fence and stop.

**Sides.** With this measurement in mind, you can add that to the width of the fence and stop to determine the length of the sides.

**Stop.** The stop is attached to the end of the jig so it registers against the end of the workpiece. So after gluing up the two layers, you can attach it to the sides. Finally, you can fasten the fence in place.

## USING THE JIG

Once the jig is built, cutting the tenon is easy. The box at right helps you through the process. But before you start, clamp the workpiece securely to the bench.

Then clamp the jig to the face of the workpiece, as shown in the top photo at right. Set your router against the fence of the jig and verify the inside edge of the bit lines up with the shoulder mark of the tenon before you start routing.

**First Cheek.** You'll start by routing one cheek of the tenon. For the best results, you'll want to rout in several shallow passes. Each cut should be about  $\frac{1}{4}$ " deep. If you're using a fixed-base router, you'll rout all four sides of the tenon before adjusting the depth. This makes it easy to sneak up on the final size of the tenon.

**Shoulder Cut.** With one tenon cheek routed, turn the workpiece a quarter turn to work on the shoulder. You'll need to clamp the jig in place once again, but there's one thing to note. In order to support the cut to minimize tearout, clamp the jig so the router bit cuts into the side of the jig at the back of the cut. You can see what I mean in the bottom photo at right.

**Opposite Cheek.** Now you can rotate the workpiece another quarter turn to rout the opposite cheek. Finally, you can rotate the workpiece once more and cut the last shoulder to complete the tenon.

This technique is surprisingly simple, and the jig is easy to build. I think you'll find it will save time when you're working with large workpieces in the shop. 🛠️



▲ **Secure Clamping.** After clamping the workpiece to the workbench, securely clamp the jig to the workpiece to keep it in position.



▲ **Rout With the Grain.** To start the cut, route down one side of the tenon. Then continue removing the waste, routing with the grain.



▲ **Shoulder Pass.** Rout back and forth with the grain until you reach the fence. Then make a final pass along the fence.



▲ **Completing the Tenon.** For each additional edge, rotate the workpiece and clamp the jig in place to prevent tearout at the end of the cut.