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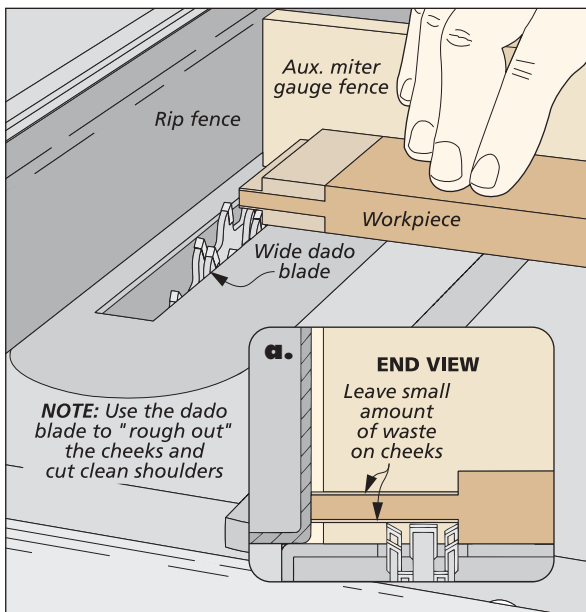
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# 5 STEPS TO Perfect-Fitting Tenons

Learn to fit your tenons like the pros. We'll let you in on our simple, shop-proven technique.



## Cheeks & Shoulders

For me, a perfect-fitting tenon starts with a dado blade on the table saw. Here you're going to establish the long shoulders and waste away most of the material on the cheeks.

As shown in the drawing at left, a miter gauge with an auxiliary fence backs up the workpiece and the rip fence is used as a stop to define the final length of the tenon.

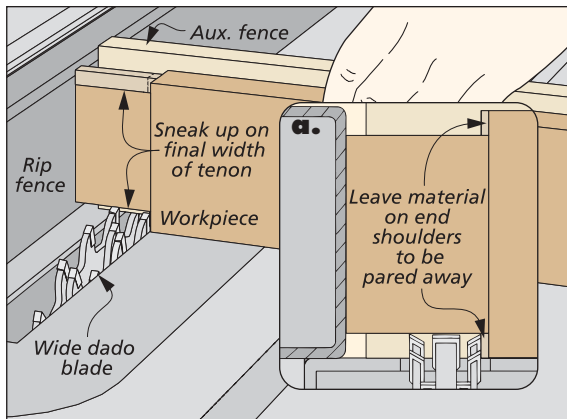
With the blade set slightly low, make your first cuts at the end of the tenon. Check the rough thickness and then work back toward the shoulder. The final pass along the shoulder should be very light. At this point, the tenon will be cut to length, but still just a hair thick.



▲ In the first step, the cheeks of the tenon are roughed to a thickness that just begins to fit the mortise.

## 2 The End Shoulders

Step two starts at the table saw and ends with a little hand work. Here is where you'll cut the tenon to final width and establish the two end shoulders. The drawing below shows how to proceed.



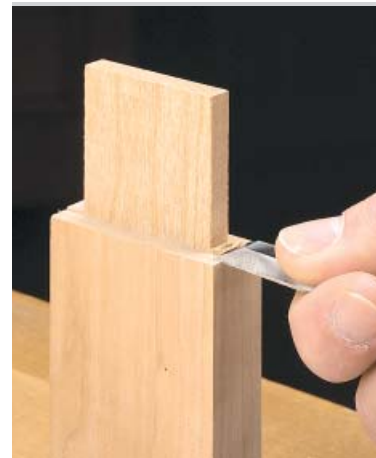
Use the same rip fence setup you used to cut the cheeks of the tenon. Begin by setting the dado blade slightly low so you can sneak up on the width of the tenon. Now with the workpiece on edge, start to waste

away the material at both ends of the tenon. Check the progress as you go, gradually raising the blade.

But don't cut right up to the shoulders of the tenon. It's too likely that the blade will leave score marks or possibly chip the

long shoulders. As illustrated in detail 'a,' you want to leave a little material here to be carefully pared away later.

Once the width of the tenon is perfect, the work at the table saw is complete. The photo at right shows where to go from here. With the workpiece firmly clamped in the workbench vise you can pick up a sharp chisel to complete the work on the end shoulders. Several shallow slicing cuts will remove the remaining material easily and leave a clean, square shoulder.



▲ A sharp chisel will make a quick job of squaring the end shoulders. Shallow paring cuts will leave them clean.

## 3 A Custom Fit

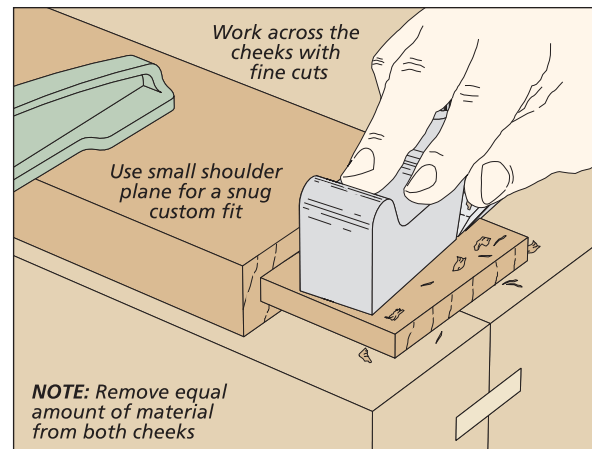
At this point the shoulders are cut around all four sides. The width is perfect but it's still a little "fat" through the thickness. So now it's time for a custom fit. You're going to carefully trim the cheeks of the tenon for a snug fit in its mortise. And for this job, my tool of choice is a small shoulder plane.

A shoulder plane gives you the handy combination of a fine cut with great control. You can work across the cheeks of the tenon without fear

of tearout (right drawing). So maintaining a flat surface is easy.

I start at the end of the tenon and then work back with light cuts. You want to remove the same amount of material from both sides of the tenon, so take a couple of passes on one side and then switch faces.

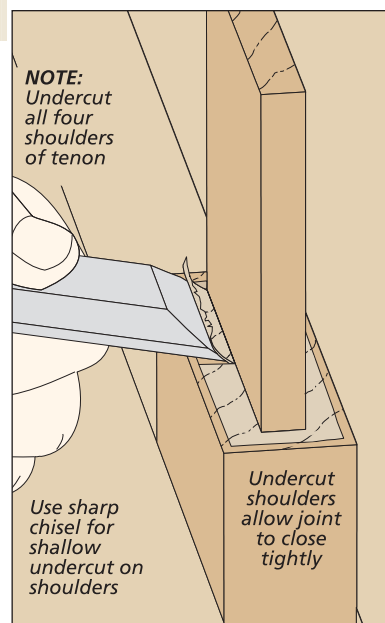
With just a little work, the tenon will begin to slide deeper into the mortise. If it takes more than firm pressure to seat the tenon, trim some more and test it again.



## 4 Undercut

Now your tenon is a perfect match with its mortise. But you also want the joint to look as good on the outside as it fits on the inside. So the next step involves a little fine tuning on the shoulders of the tenon.

You can quickly get the idea from the drawing at right. I use a sharp chisel to slightly undercut the shoulders of the tenon around all four sides. Start about 1/16" back from the face of the workpiece and use the same type of shallow paring cuts you used for the short shoulders of the tenon. You don't need to cut deeply. The small amount of relief you create will ensure that the joint closes tightly and looks seamless.



## 5 A Quick Chamfer

Now you have a mortise and tenon joint with a perfect look and fit. But one more simple step will make certain that this is still the case after the glue and the clamps are applied. The photo below gives you the idea. A small chamfer planed onto the ends of the tenons will allow it to slide smoothly into the mortise during assembly and provide a bit of relief space for glue. **W**

