

JOINERY Stub Tenon & Groove

The stub tenon and groove joint is quick and easy to cut. And the entire joint can be made on the table saw.

It's made by first cutting a groove on one edge of each stile (the vertical pieces) and rail (the horizontal pieces). These grooves hold a center panel and short, "stub" tenons cut on the ends of just the rails.

The depth of the groove (and the length of the tenon) can vary depending on the type of panel you plan on using. A 1/4"-deep groove works fine with a plywood panel. But if the panel is solid wood, you should use a 3/8"-deep groove. Why the difference?

It has to do with how the frame is assembled. I glue a plywood panel into the groove so it becomes a part of the joint. That way I can get away with a shorter tenon. But a solid panel can't be glued. It has to "float" to allow for wood movement. So deeper grooves (and longer tenons) increase the gluing area.

But there's more to consider than just the depth of the grooves. The grooves and tenons should also be centered on the thickness of the workpieces. And the workpieces should all be the same thickness. This way, there will only be two setups: one for the grooves, and another for the tenons.



GROOVES

The first step is to cut the grooves centered on the frame pieces.

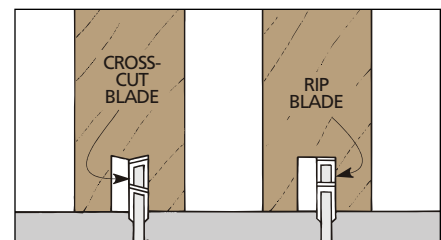
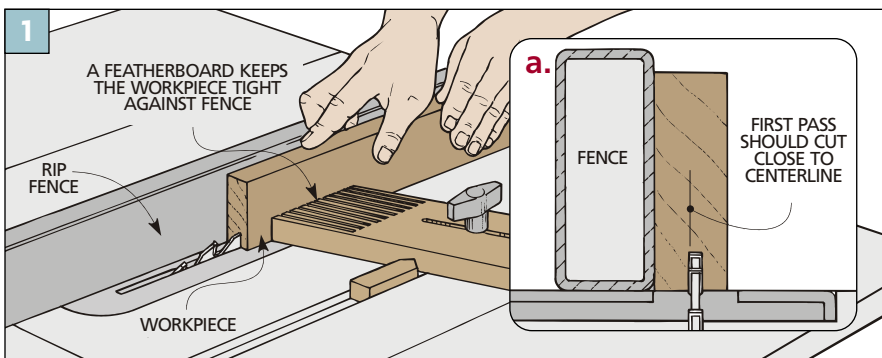
When cutting a groove for a solid panel, I usually make its width 1/3 the thickness of the stock. For example: a 1/4"-wide groove in 3/4"-thick stock. But for a plywood panel, I cut the groove to match the thickness of the plywood.

Cutting the groove so it's centered on the edge of a frame piece is easy. Simply adjust the rip fence on your table saw so the blade cuts close to the center

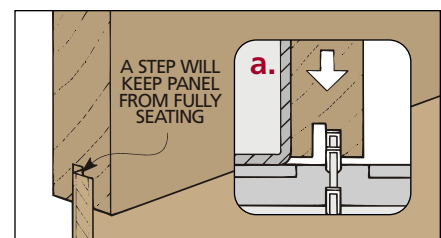
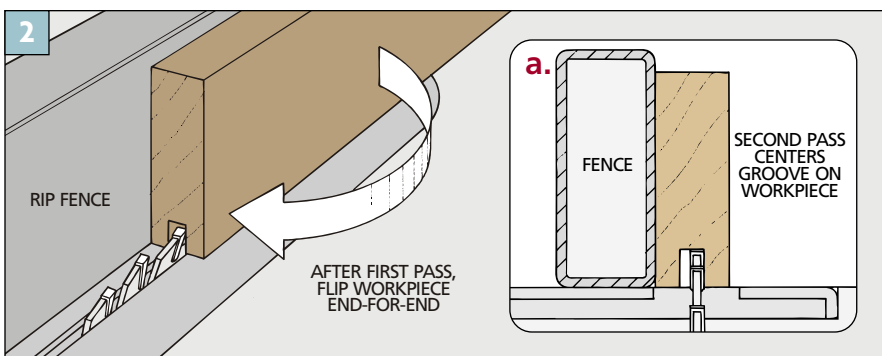
(Fig. 1). You don't need it to be perfect — here's why.

After making your first pass, just flip the board end-for-end and make a second cut (Fig. 2). Now even if your blade isn't centered, the groove will be.

To adjust the width of the groove, nudge the rip fence and make another cut. Remember, you're cutting stock from both sides of the workpiece. So make small adjustments and sneak up on the final width of the groove.



Blade Choices. A rip blade is a good choice for cutting the grooves in the rails and stiles. The flat-topped teeth produce a flat-bottomed groove.



Downward Pressure. Hold the workpiece firmly against the table as you make the cut to prevent a "stepped" bottom in the groove.

STUB TENONS

Once the grooves are complete, the second step is to cut tenons on the ends of the rails. A single blade will work. But it takes several passes to remove the waste. And it leaves small ridges that make fitting the tenon difficult.

That's why I like using a dado blade. It cuts each side of the tenon cleanly and it does it in a single pass.

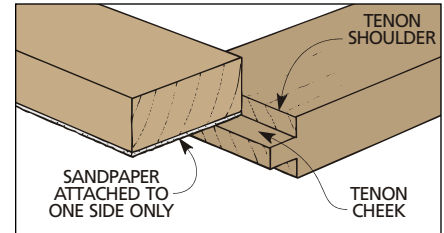
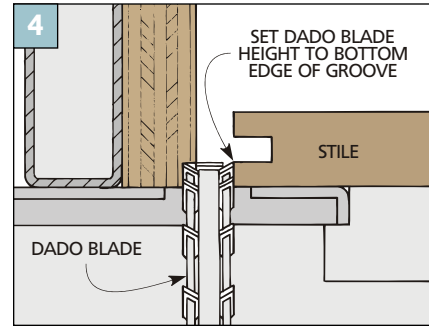
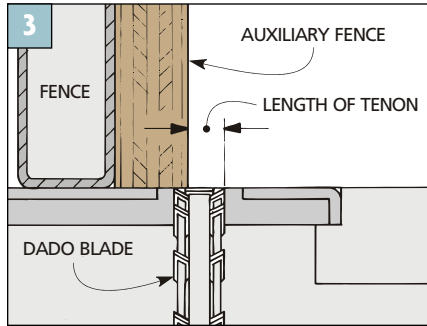
To use a dado blade, first bury it in an auxiliary fence (*Fig. 3*). Then adjust the fence to set the length of the tenon.

Now set the height of the blade to establish the thickness of the tenon. A quick way to get close is to set the blade flush with the bottom edge of the groove on a stile (*Fig. 4*).

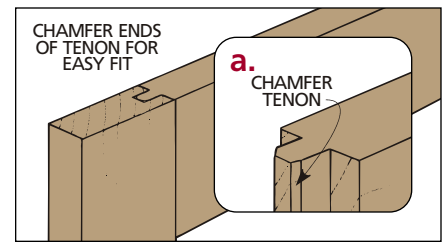
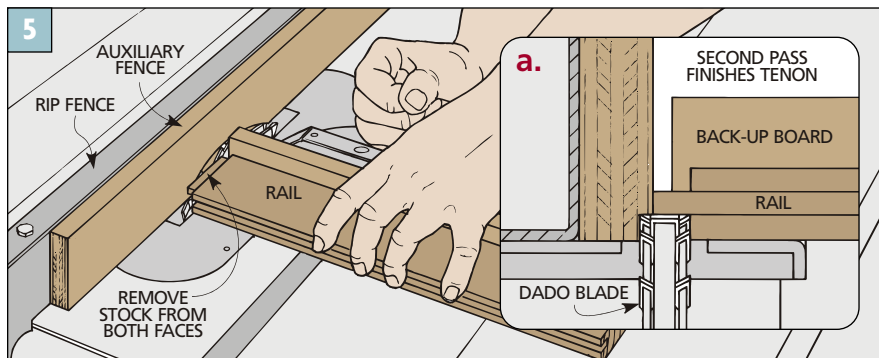
To center the tenon on the work-

piece, equal amounts are cut from each side of the rail (*Figs. 5 and 5a*). Make your cuts on a test piece first, then check for a snug fit in the groove.

If needed, adjust the height of the blade a little and make another practice cut. When the tenon fits tight in the groove, you're ready to cut all the tenons on the rail pieces.



Sand the Cheek. Sand the tenon cheek to get a snug fit in the groove. Stay clear of the shoulder to keep it sharp.



Chamfer Tenon. Small chamfers on the ends make it easier to fit a tenon into a groove during assembly. It also provides some space for excess glue.

ASSEMBLY

It's a good idea to dry-assemble the stiles, rails, and center panel to make sure everything fits together tight.

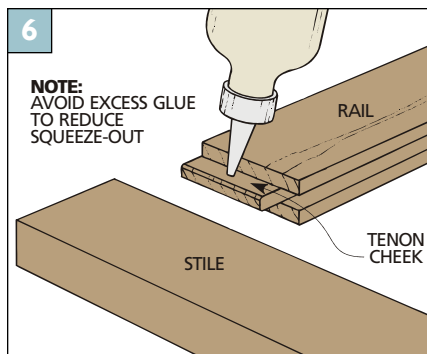
Now is also a good time to sand the face of the center panel and the inside edges of the stiles and rails. These areas can be difficult to sand once the

frame has been assembled.

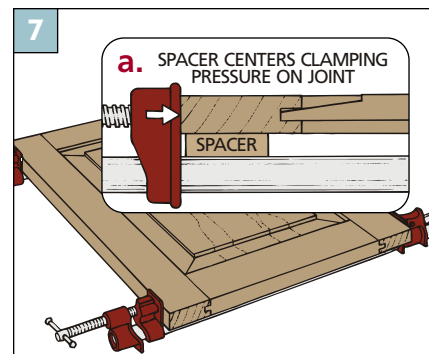
To assemble a frame with a solid panel, apply a thin bead of glue on each tenon cheek only (*Fig. 6*). Then clamp the pieces together (*Fig. 7*). A spacer under the door will keep clamping pressure centered on the frame.

One brad driven in the top rail will keep a solid panel centered. Plywood panels can be glued in place (*Fig. 8*).

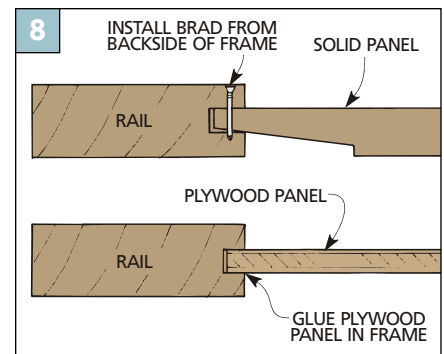
Finally, check that the frame is flat and square. If the assembly isn't flat, try loosening the clamps a little. If it isn't square, try repositioning the clamps.



Gluing Up. A thin bead of glue spread evenly on each cheek of the tenon is all that's needed when gluing up the joint.



Clamping Pressure. Putting a spacer under the workpiece aligns the joint with the clamp jaw for even pressure.



Securing Panel. A solid panel floats in the frame. Use a brad to keep it centered. A plywood panel can be glued in.