

PantoRouter®

TECH TIPS

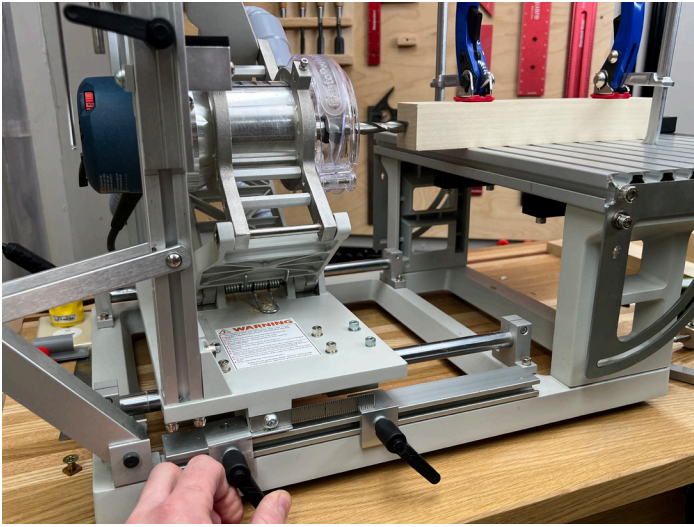
Castle Joints on the PantoRouter®



Castle Joints are a great exposed joinery option where a two rails meet at a 90 degree angle with a leg. They are often used on table bases and beds to add a decorative detail and provide a strong joint where multiple piece meet. The components can be glued together for a strong permanent joint or this could be a knock-down joint with optional wedges, hardware, or dowels to lock it into place.

Begin by installing the Slot Mortise Template Set on the Template Holder and use the Thickness Gauge to center the template height to the leg workpiece.



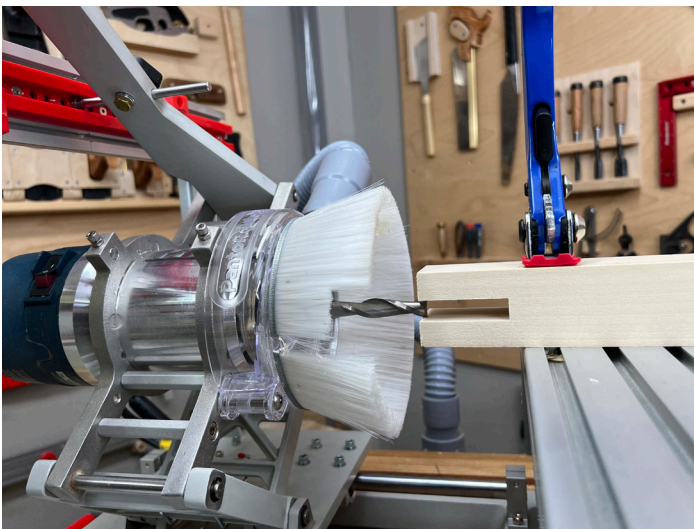


Locate the leg workpiece roughly at the center point of the table, it does not have to be precisely centered since the bit will exit the workpiece on either side of the leg when the mortises are cut. Then set the Centering Scale Fence and clamp the leg down. Use the swing stop to locate the workpiece overhanging the front of the table repeatedly.

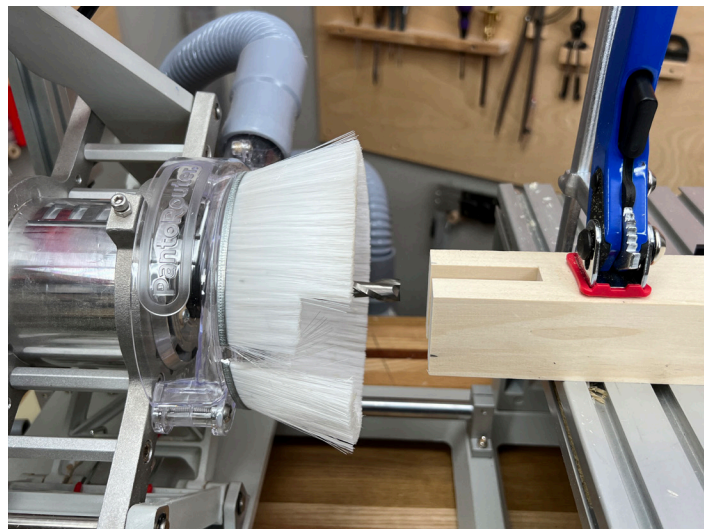
For this example, we are using a 1/2" bit for the mortises but a larger or smaller bit could be utilized to fit the scale of the workpieces and desired finished joint. With the guide bearing in the center slot of the mortise, touch the bit to the end of the workpiece and lock the back depth stop.



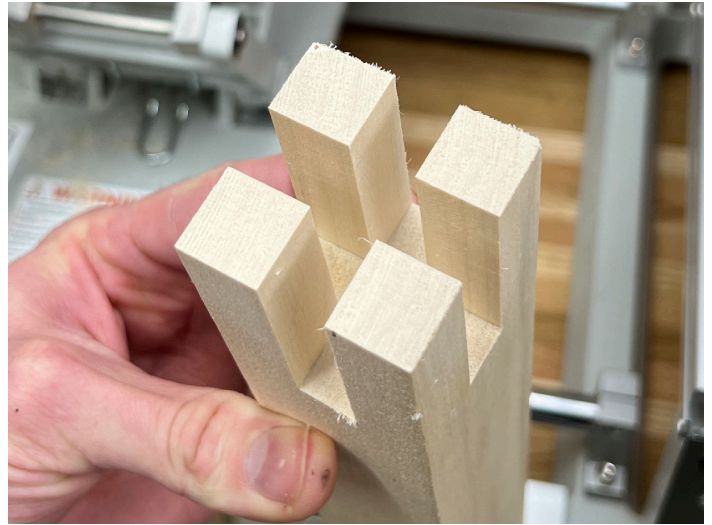
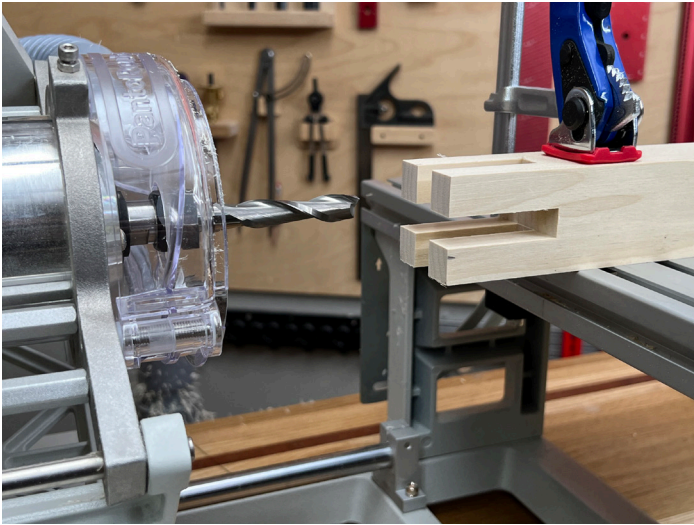
Use one of the rail workpieces or an off-cut as a representative sample to set the depth of cut. Lock the front depth stop then loosen the back depth stop and slide it back and out of the way.



With the Slot Mortise Template stops set so the bit can completely clear either side of the workpiece, cut the first mortise in the end of the leg by incrementally plunging in while moving the router across the template taking small passes at a time. .

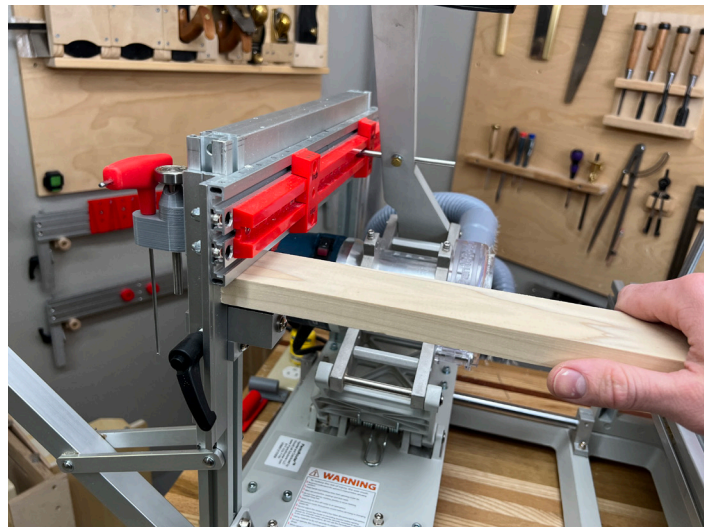


Once the mortise is cut to full depth, rotate the leg 90 degrees, use the swing stop to locate the workpiece in the same location overhanging the table or repeat the previous step of using the rail to set the depth of cut. clamp the leg workpiece down.



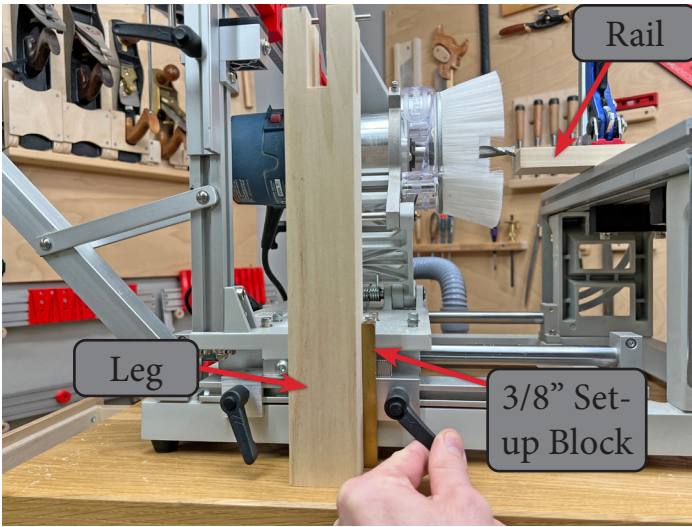
Cut the second mortise in the end of the leg. Light passes help keep the corners clean and free of tear-out where the mortises intersect. Repeat this process on all of the legs before moving on to the rails.

Use the Thickness Gauge to center the template on the rail workpiece.

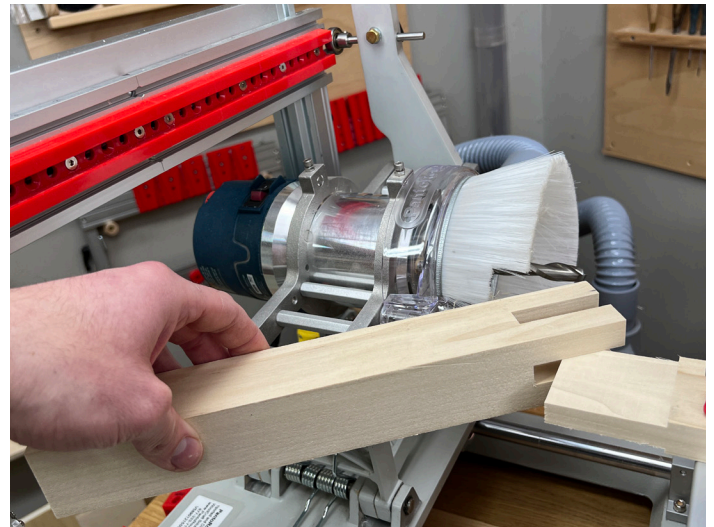
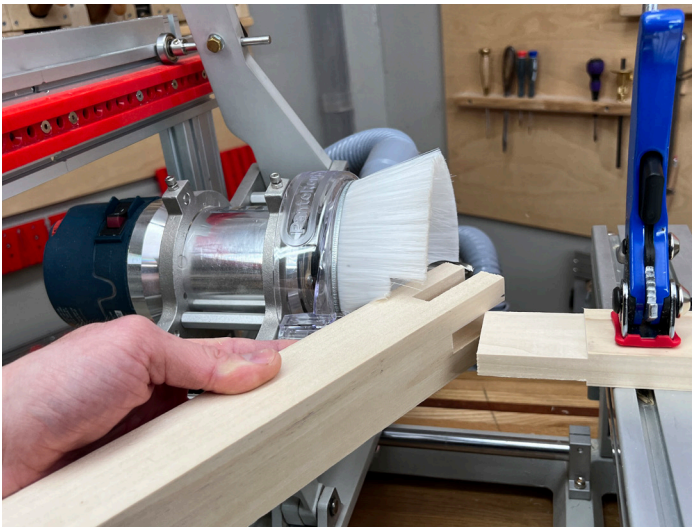


Using the same bit and guide bearing combinations as the standard mortise and tenon templates, for the 1/2" tenon switch to a 22mm guide bearing. Use the outside of the Slot Mortise Template to cut the tenons, starting at the top of the taper.



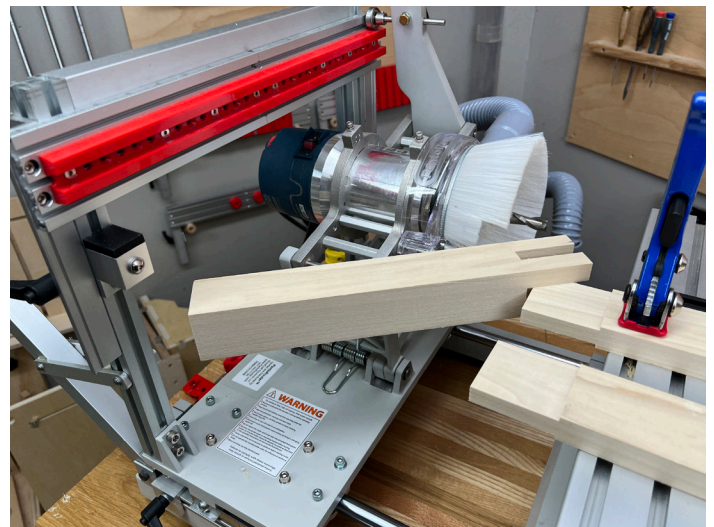


Touch the bit to the end of the rail workpiece clamped to the table and set the back depth stop. Use the leg the workpiece to set the depth of cut. In this example, we chose to have the rails protrude past the face of the legs $3/8$ " as a decorative detail so a $3/8$ " setup block was placed next to the leg to set the front depth stop. The rails could be made flush with face of the leg by only using the leg to set the depth of cut without the spacer block.



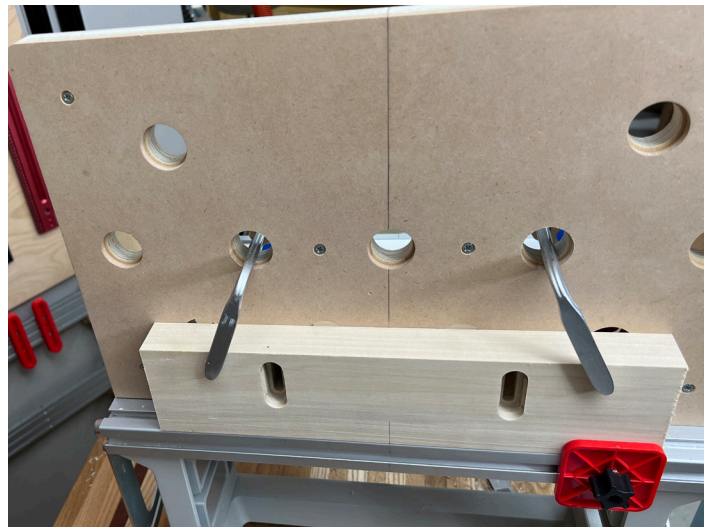
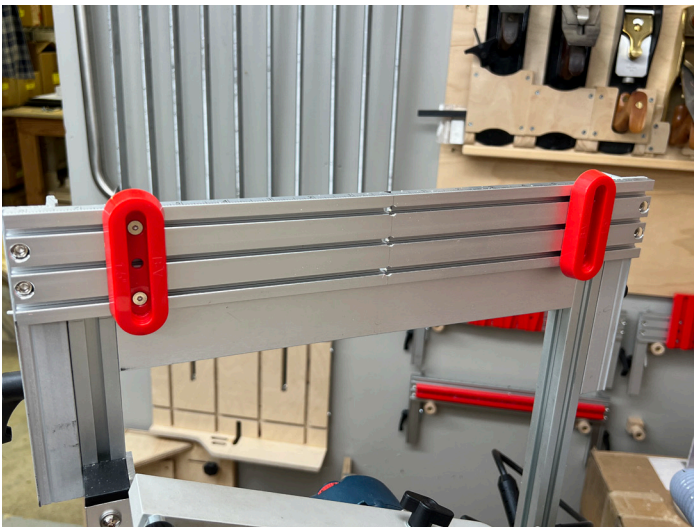
Cut the tenon on the end of the rail workpiece and use the mortise in the leg to test the fit. Use the outside taper on the template to dial in the desired fit depending on if it will be a glue joint or knock-down joint.

Once the desired fit is found, cut all of the rail tenons using the same guide bearing location.





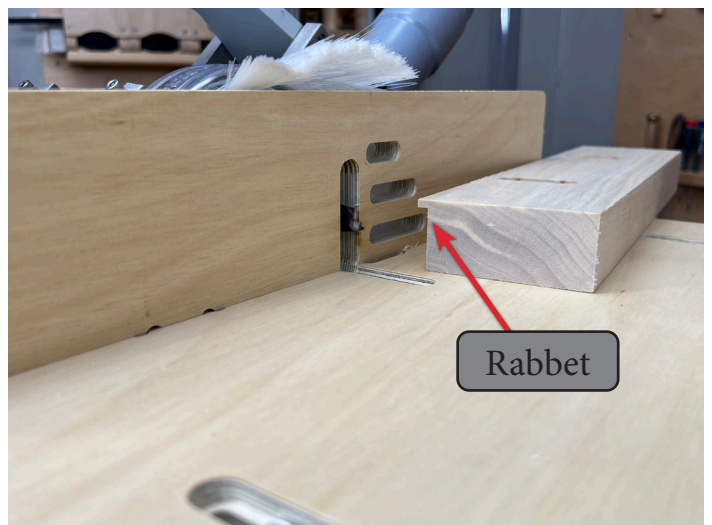
Next, the rails require a notch cut in each tenon to accommodate the intersecting tenon. Since the depth of cut needs to be at least 50% of the tenon height, we need some sort of sacrificial work holding piece on the front of the table to support the workpiece for this operation.

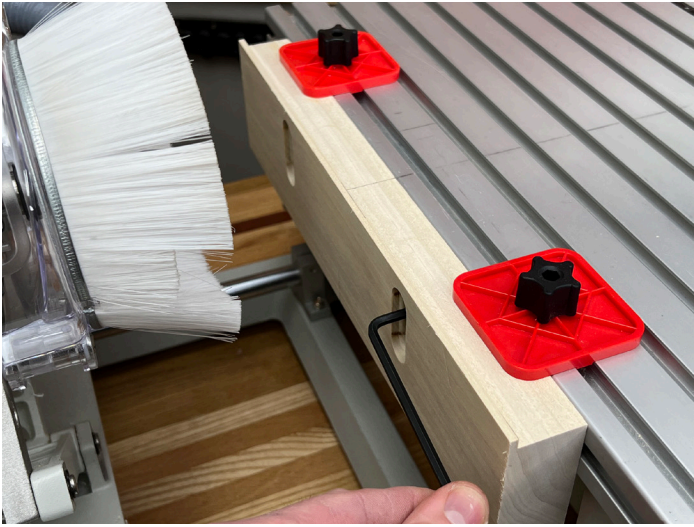


Using two B-V templates on the template holder, cut two vertical slots in a scrap piece of wood that is thicker than the necessary depth of cut for the tenon notch. Align the center of the scrap piece to the centerline of the table and hold it in place using the Vertical Clamping Jig,

Use the Auxiliary Table to cut a shallow rabbet in the top of the sacrificial front workpiece support.

Use the QR code below to view the Auxiliary Table and Vertical Clamping Jig page of the on-line store.





Use the Front Fence Stops overhanging the front edge of the table to position the workpiece support flush with the top table surface and secure it in place using T-Slot hardware from the PantoRouter® Hold-Down Hardware Pack.

Use the QR code below to find the Hardware pack page of the on-line store.

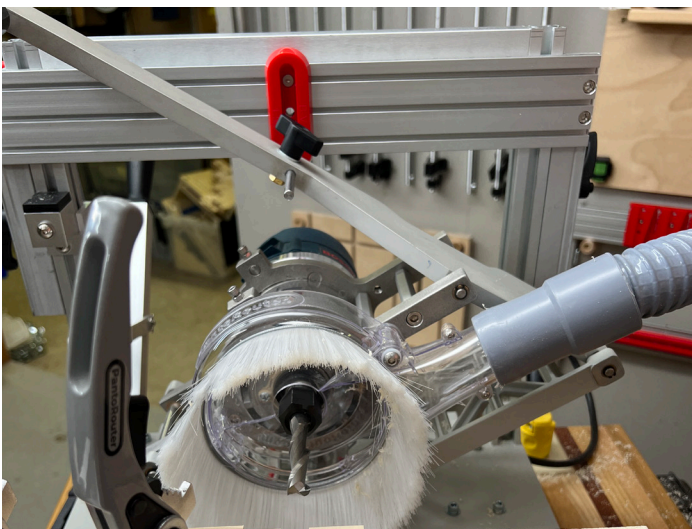


Dry-fit a rail in one of the leg mortises and use a marking knife to locate the location where the intersecting mortise lands on the tenon. Use a square to carry the scribe lines to the bottom edge of the tenon once the joint is disassembled.

Unplug the router. With the 1/2" bit in the router and a 6mm guide bearing shaft in the center hole of the Template Holder, locate the rail against the front edge of the rabbet on the workpiece support and align the scribe lines to the edges of the router bit. Clamp the rail in place.



The Auxiliary Fence can be placed against the Centering scale fence to reach far enough forward to register against the end of the rail for repeatable cuts.



Use the B-V template centered on the template holder and set the Template holder height so the router bit can clear the top and bottom of the tenon. The D-V template can be used for thicker workpieces. Set the depth of cut to be at least 50% of the tenon height and cut the 1/2" notch.



With notches cut on two rails, dry fit the rails and test the fit to confirm the notch is deep enough. The rails should be flush on the top and bottom.

The end of the tenons can be shaped if desired to change the look of the assembled joint.

There are numerous variations on this joint with different methods for cutting it on the PantoRouter®, show us your version of a castle joint by uploading photos of your project to the user project gallery.

Scan the QR code to fill out a submission form and see other PantoRouter® projects!

