PantoRouter®

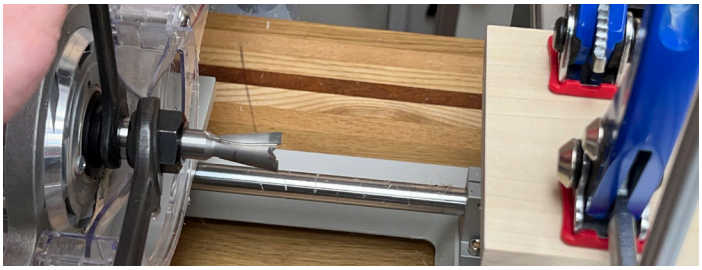
TECH TIPS

Clamping Cauls and Clean Cuts for Dovetails

Dovetails can add strength as well as an appealing design element to a project but they can also add a layer of complexity to get clean tear-out free joints and get them glued together with no gaps. These are a few easy tricks and techniques we like to implement to make the process a bit easier.

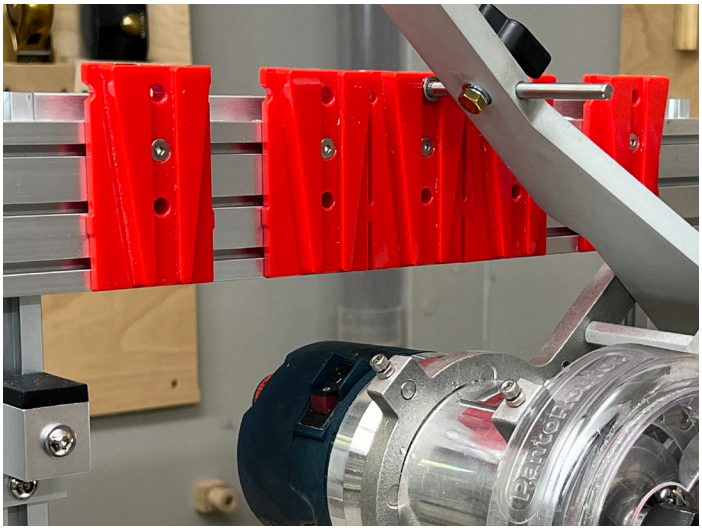
Clamping Cauls without measuring or marking. When gluing up a dovetailed box or drawer, it can be tricky to get clamping pressure exactly where you need it, this technique allows you to make clamping cauls with the exact size and spacing that you need without a lot of extra work.

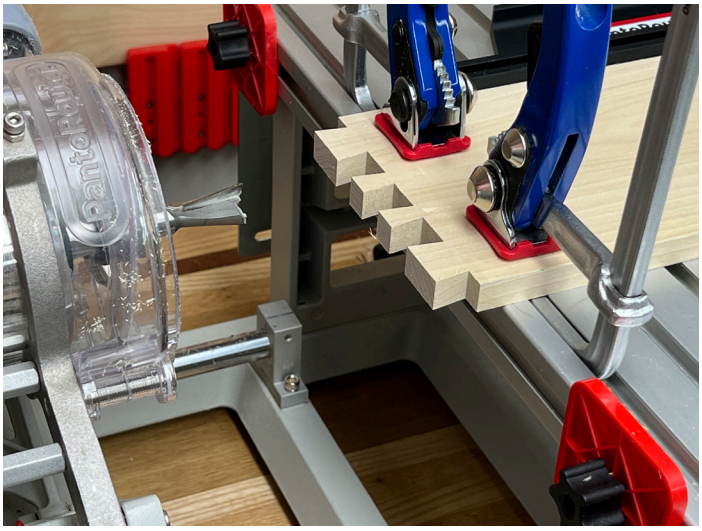
Once you are done cutting all of the tails and pins for a project, leave the templates set up on the template holder and leave the Centering Scale Fence in place.



-OR-

Locate an 8° dovetail bit with a larger diameter than the bit used to cut the joinery for your project. In this example, we cut our dovetails using the standard 1/2" diameter dovetail bit supplied with the PantoRouter®, so we will use an 11/16" dovetail bit for the clamping caul. If you don't have a larger 8° dovetail bit, a straight bit also works well for this application (see photo above), or you can use a 6mm guide bearing shaft on the two interior walls in the center slot of the template rather than the 10mm bearing to make a wider cut.

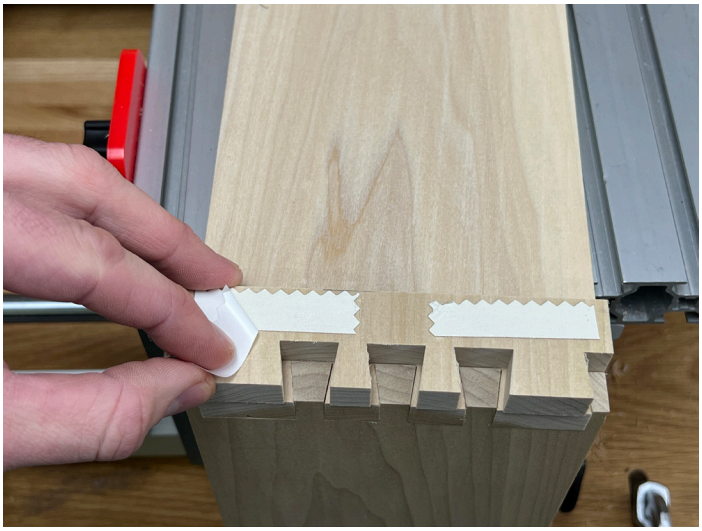




On a scrap piece of wood roughly the same dimensions as your workpiece, set the depth of cut to be 1/16”-1/8” deeper than the previously cut tails. Using the same template setup, cut the tails on the scrap piece using the center slot of the dovetail templates just as before with the only difference being the larger bit. One caul is needed for each corner, cut the tails off the end of the board leaving about an inch of material behind them and repeat this process until you have the necessary quantity.

Check your work by setting the clamping caul on top of a dry-fit assembled joint. The clamping caul tails should be smaller than the original tails cut in the workpiece.

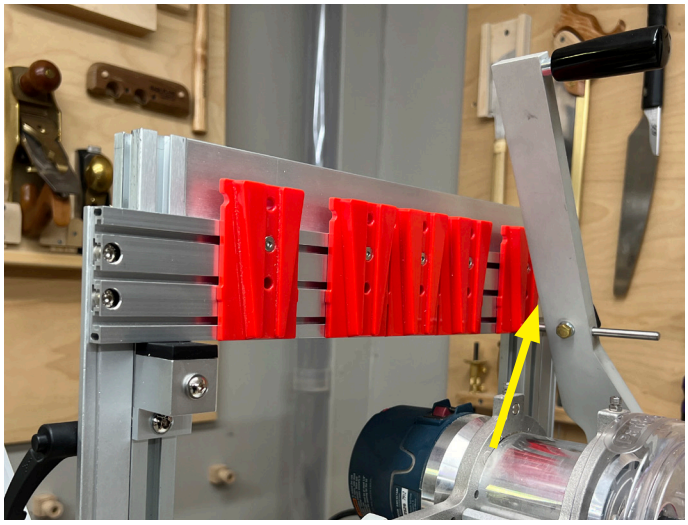
A couple of small pieces of double-sided tape allows the caul to stay in place while assembling and clamping the box together.

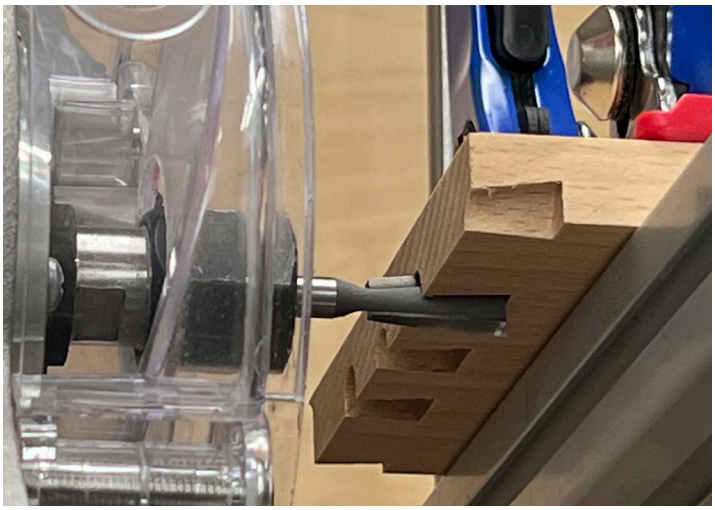


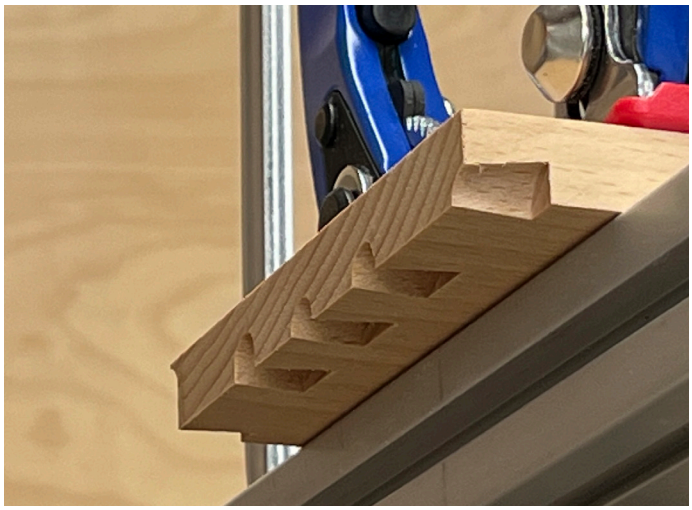
The caul allows clamping pressure to be applied exactly where its needed without interfering with the pins protruding though the tails board resulting in clean closed joints and beautiful through dovetails.

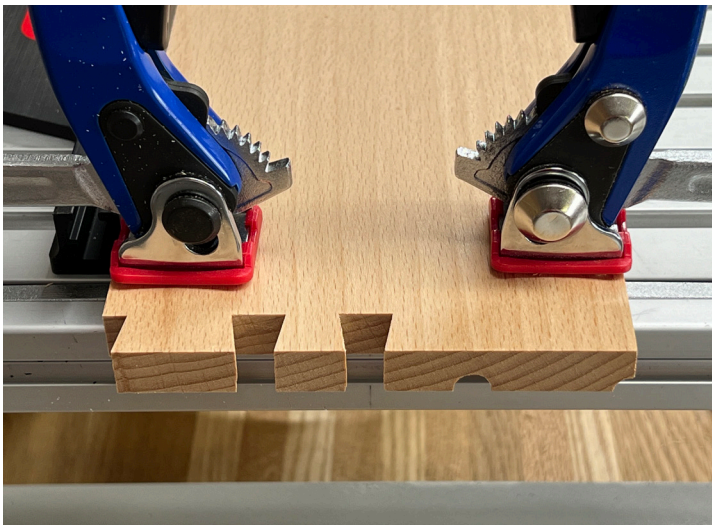
Tear-out free cuts. To minimize tear-out when cutting dovetails, start the cut on the underside of the workpiece and finish the cut from above. Slide the router all the way forward to the front depth stop. Start at the bottom of the template slot, lift the router to plunge up into the workpiece about half the bit diameter, then stop and guide the router back down and on to the next template. Once completed on all of the template sections, lower the router and slide it back making sure the router bit is completely disengaged from the workpiece.

Remember, the bit must be at full depth when making cuts with a dovetail bit from either the top or the bottom.





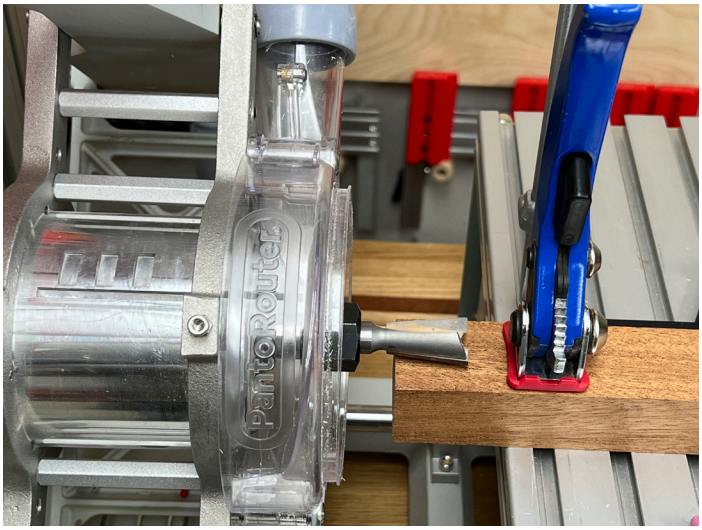


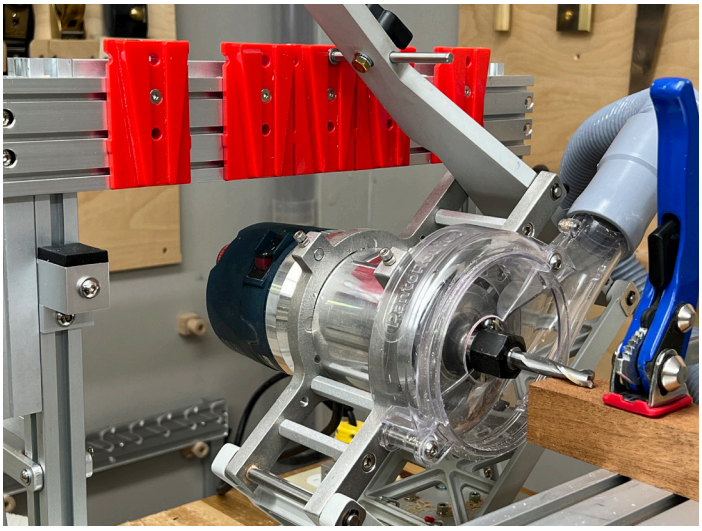


Complete the cut by sliding the router forward again and plunging down from the top of the template slot to remove the remainder of the material.

The resulting cut has virtually no tear out top or bottom.

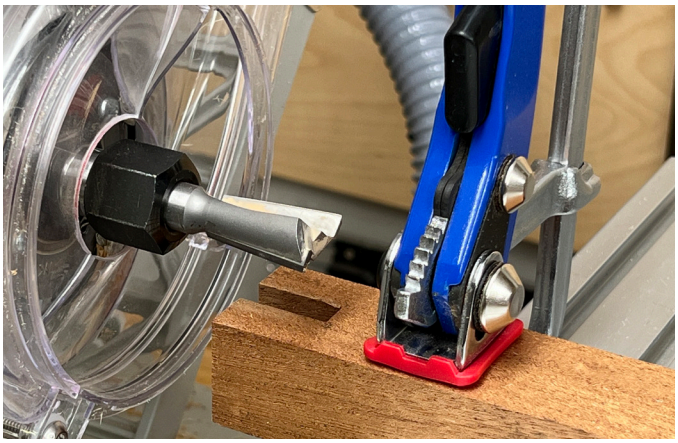
Cleaner cuts on large dovetails and dense woods. When working with dense woods or large router bits on the PantoRouter®, we like to take light passes and make incremental cuts to remove material. This reduces stress on the router bit and produces a cleaner and safer cut. Unfortunately, we do not have that luxury with dovetail bits due to their tapered geometry. We can reduce the feed rate by moving along the template slowly, but going too slow could result in burning.





Rather than attempting the cut in a single pass, install a straight bit in the router that is slightly smaller in diameter to the narrowest portion of the finished dovetail cut. In this example, we are using a 3/8” bit.

Set the depth about 1/16” under finished cut depth Slowly move the guide bearing up and down the center slot of the dovetail template as you plunge forward to incrementally remove material.



With the bulk of the material now removed, this large dovetail bit can easily make its way through the workpiece without burning or excessive stress on the bit.