



# Dead-on Double Tenons with a Router

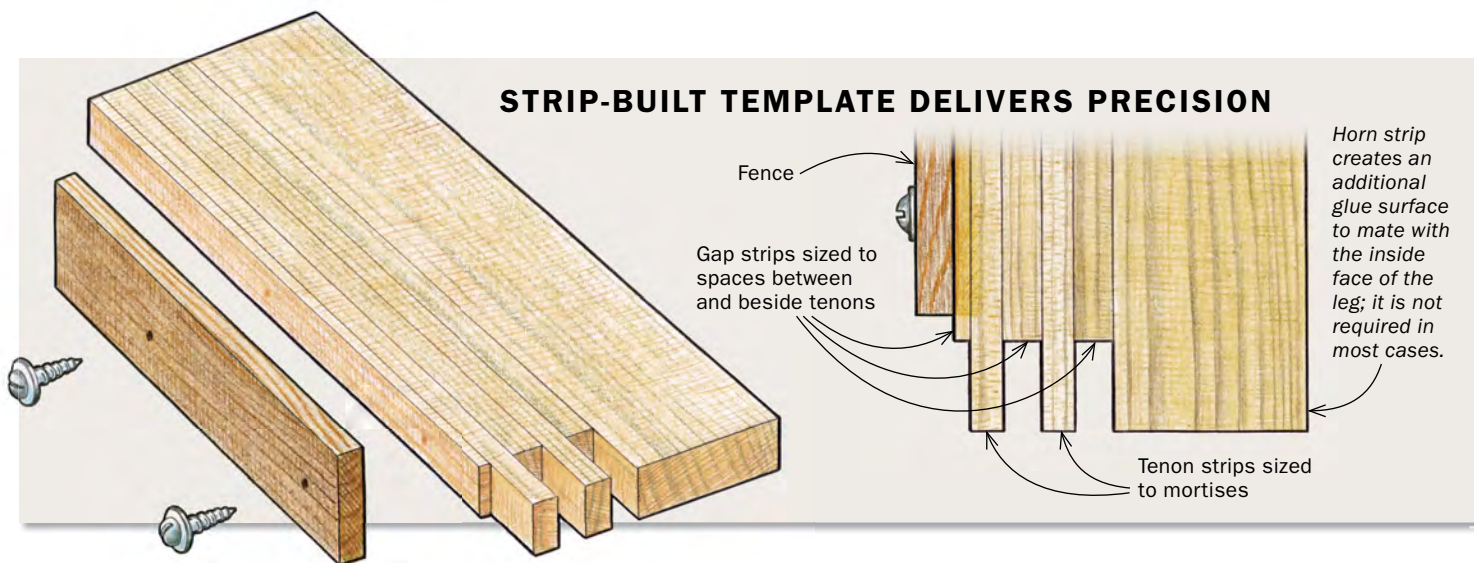
Simple template  
offers accuracy and  
repeatability

**BY MIKE KORSAK**

On a recent chest of drawers with very long drawer dividers, I used double tenons to join the dividers to the legs for extra strength. One of the challenges of cutting double tenons is dialing in the multiple setups. The tenons must not only fit their respective mortises snugly but also be spaced apart just the right amount. So the cuts that define the four wide tenon cheeks must be very precise. I could have cut the tenons on the tablesaw or bandsaw, but to guarantee uniformity and to simplify working with such long parts, I decided to cut them with a router and a special template. I made the router template by milling a



## STRIP-BUILT TEMPLATE DELIVERS PRECISION



### Sizing the strips



**With double tenons, consistent mortise spacing is key.** Korsak cuts one mortise of each pair, then shifts the mortiser's fence to cut all the second mortises.



**Fit strips to the mortises.** After machine milling the first two poplar strips slightly over thickness, Korsak fine-tunes their fit to the mortises with a block plane.

**Fit a strip to the gap.** With the two tenon strips fitted, plane a strip to slide snugly between them.

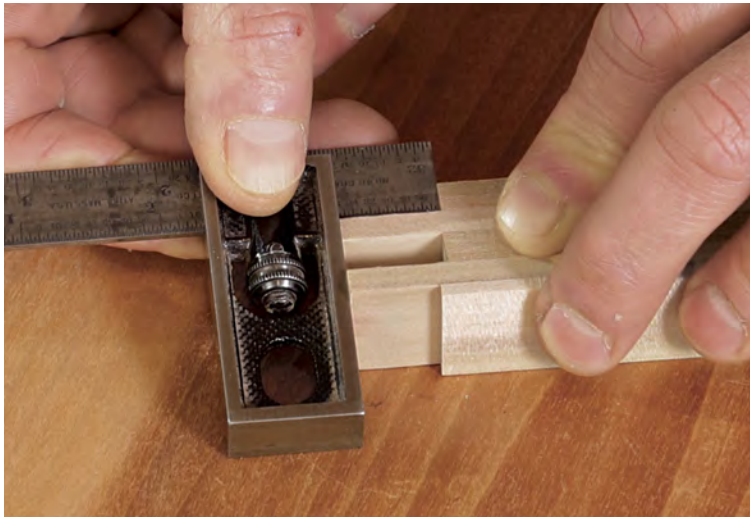


**Size a strip to the inside edge.** Using a flat scrap to extend the inside face of the leg, Korsak fits another strip to the gap.

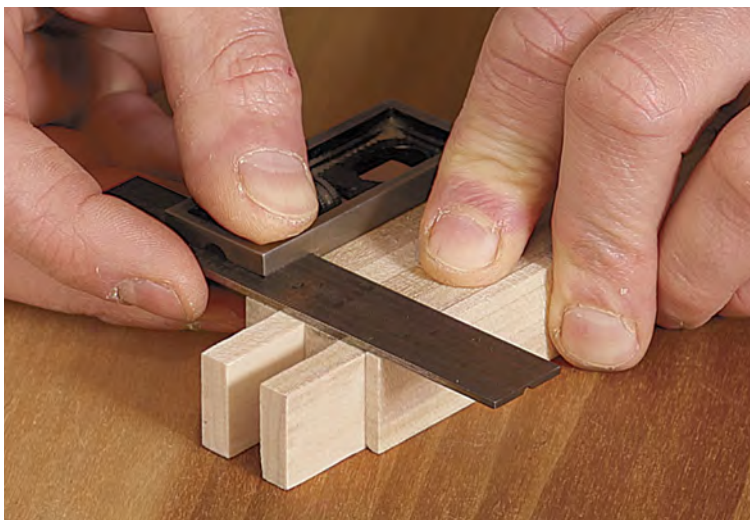


# Glued-up strips make a smart template

**Set the tenon length.** Korsak uses an adjustable square to control the length of the tenons.



**Square the shoulders.** Next, the square ensures that the ends of the shoulder strips are aligned.



**Square the end.** Be sure the ends of the tenons are aligned as well. On his template Korsak adds a wide strip to the inside because his dividers wrap the inside face of the leg.



**Strike a square line.** A precise pencil line will allow Korsak to register the strips accurately during the glue-up.

series of strips to fit the mortises and the spaces between them, and then laminating the strips.

## Cut the mortises first

I started by chopping the double mortises in the cabinet's legs using a hollow-chisel mortiser. The leg blanks were still square and the inside faces of each leg were my reference surfaces. Once the first mortises were cut on all four legs, I adjusted the mortiser's fence to cut the second mortise in each pair. This ensured that the spaces between the paired mortises would be the same for each set.

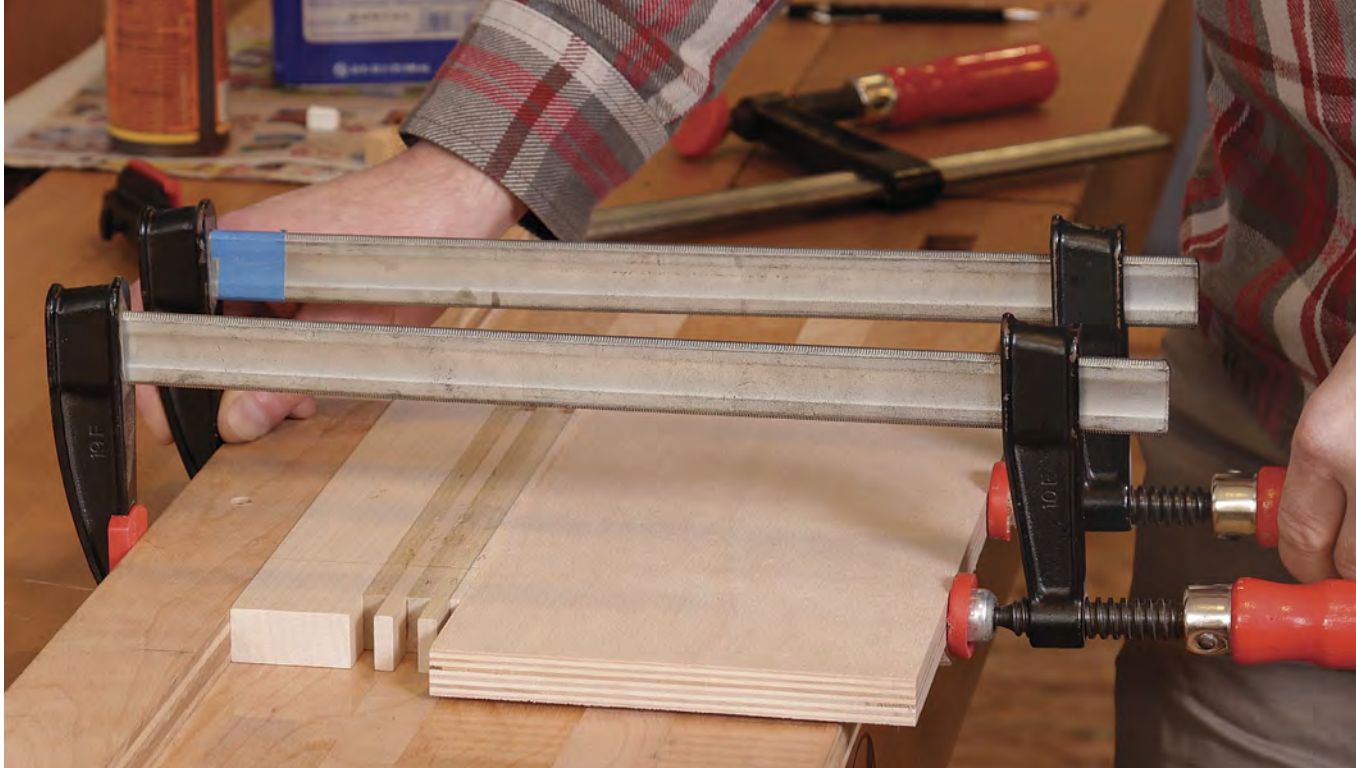
## Glue up strips to make the template

With all the mortises cut, I began making the router template: a glued-up stack of strips, each strip milled to fit exactly in one of the mortises or else in the space between or beside the double mortises. I machine-milled each strip slightly thicker than the corresponding space it was to fill, then brought the strips to an exact fit with a handplane.

First I fit the tenon strips. I worked them to final thickness one at a time with a block plane, using dial calipers to be sure I maintained consistent thickness along the length of the strip. I tested the strip's fit in its mortise as I worked.

Once I had both tenon strips fitted, I inserted them in their mortises and then planed a third strip to fit precisely between them. Then I planed two outside strips. A

**Squeeze those strips.** Korsak's simple plywood assembly station helps keep the strips in plane, and its fence acts as a clamping caul. Packing tape keeps the template from sticking to the plywood.



**Test the fit.** Once the glue cures, check to see that the template fits the mortises. All faces should contact but the fit should not be too tight.



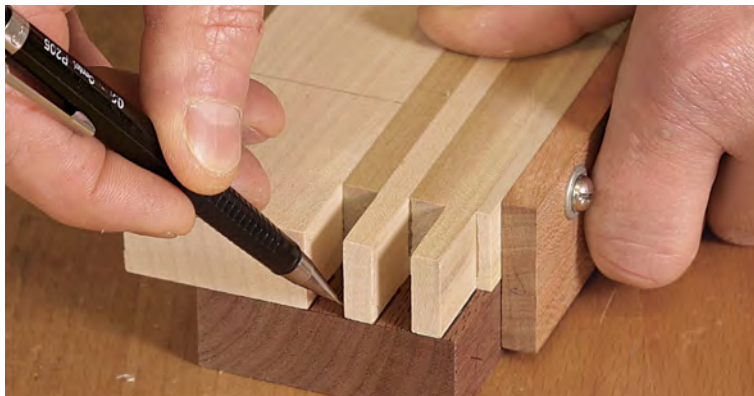
**Flatten with care.** Plane both faces of the template, working carefully to be sure the template's faces remain square to its edges.



**Affix a fence.** Korsak screws on a registration fence so it's flush to one face of the template and overhangs the other face.

# From template to twin tenons

**Mark the gaps.**  
To prepare for roughing out the tenons, trace the template onto the workpiece.



**Rough-sawn tenons.** At the bandsaw, cut out most of the waste between the tenons.



typical double tenon would require just these five strips; but I needed a sixth, because I had made these drawer dividers extrawide to include a horn that wraps inside of the leg and creates an additional glue surface there.

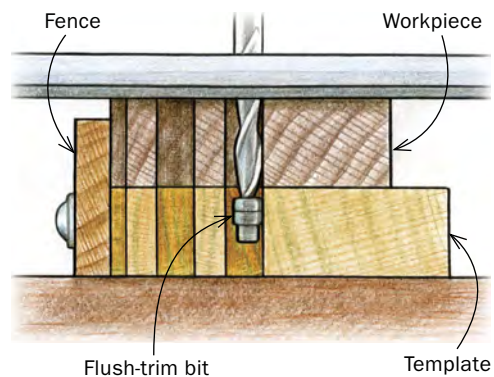
## Assemble the template

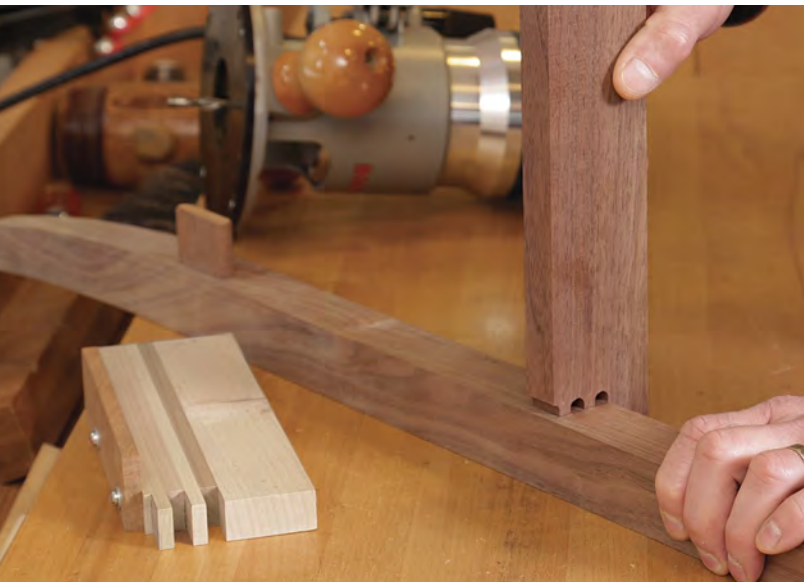
With the strips all made, I had established the thickness and the spacing of the tenons. To control the length of the tenons, I staggered the strips when I glued them up. Before applying glue, I established the tenon lengths with an adjustable square. Then I struck a square line across the pack of strips; this was my registration guide during assembly.

I glued up the template on a piece of plywood with a fence screwed to one edge. The fence acted as one caul and I used a second caul to distribute the clamping force. I applied packing tape to the piece of plywood to resist glue. I used polyurethane glue, since its longer open time meant I could adjust the strips before the glue started to set up.

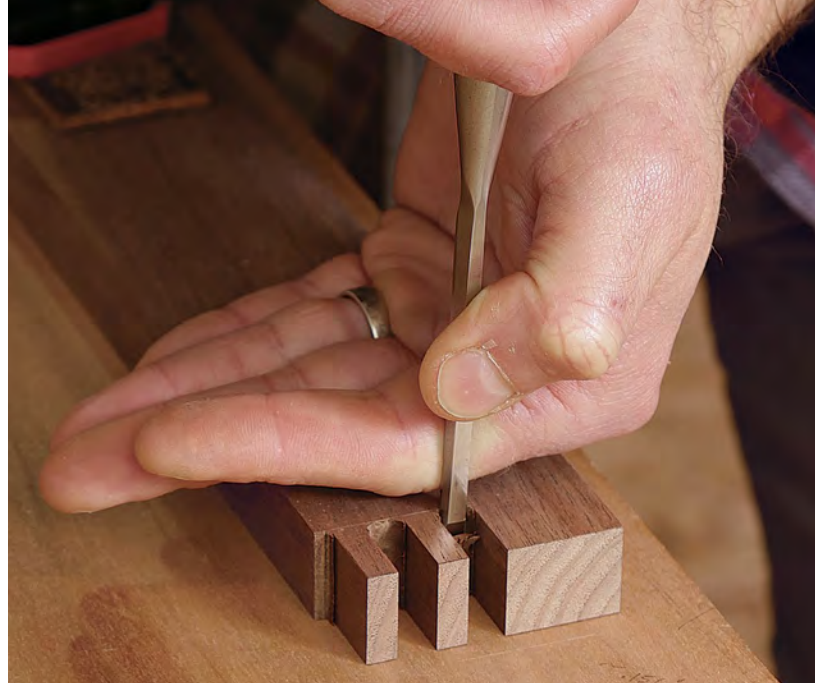
After the glue cured, I removed the clamps and tested the template's fit in each

**Flush-trim to the template.** Korsak clamps the workpiece to the template and the bench, then routs between the tenons with a 1/4-in.-dia. flush-trimming bit with a bottom bearing.





**Test the real tenons.** After routing, be sure the tenons and spaces all align nicely with the double mortises.



**Last task.** Square up the rounded corners of the router cuts, removing most of the waste before finishing with a last light paring pass right at the shoulder line.

set of mortises. I wanted the surfaces to be in contact, but I didn't want the fit to be too tight. Next, I planed the top and bottom faces of the template clean. The last step in making the template was to screw on a fence, which would register the template to the front edge of the workpiece.

### The template in use

Before putting the template to use with the router, I used it to trace out the tenons on each workpiece. Then I took the parts to the bandsaw and sawed out most of the waste between the tenons, leaving just a bit of material to remove with the router.

To do the routing, I put the template on my bench and clamped the workpiece on top. I used a 1/4-in.-dia. spiral upcut flush-trimming bit with a bottom bearing (Whiteside RFT 2100: whitesiderouterbits.com) to follow the profile of the template. After routing, I used a chisel to clean up the small rounded corners left between the tenons on the workpiece. I finished the cleanup by placing the tip of a chisel in the shoulder lines and tapping the chisel with a mallet to remove the last bit of waste.

After test-fitting all eight divider-to-leg joints, I was extremely pleased with the results. All of the joints were nice and snug, but not too tight. And there was no need for fitting or fiddling with the joints—they were ready for glue-up. □

*Mike Korsak makes custom furniture in Pittsburgh, Pa.*

