

Knife Hinges on the Router Table

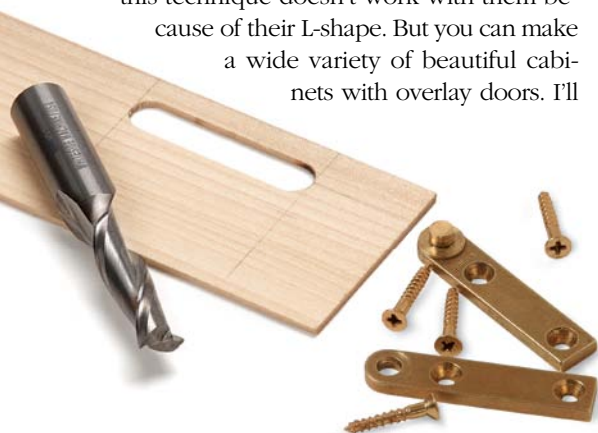
Clever template
ensures matching
mortises

BY DOUG STOWE

I like knife hinges for cabinet doors because they're practically invisible, so they don't detract from the beauty of the piece. They also work smoothly and wear well over time. But there's a downside. The cabinet mortises for the hinges must be cut before the cabinet is glued together, and knife hinges require precise installation. The mortises must be sized perfectly and located exactly to prevent binding.

Traditionally, mortises for knife hinges have been cut with a chisel or plunge router. The chisel is a tedious choice; a plunge router is tough to balance on the edge of a door. I have a better way, using a simple template and a router table.

My method works only for straight knife hinges, which are used with overlay doors. Offset knife hinges are for inset doors, and this technique doesn't work with them because of their L-shape. But you can make a wide variety of beautiful cabinets with overlay doors. I'll

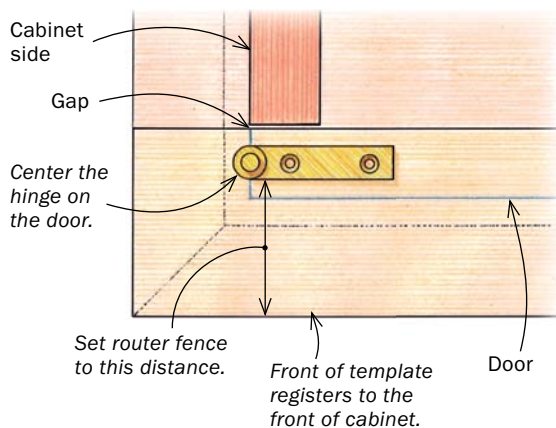
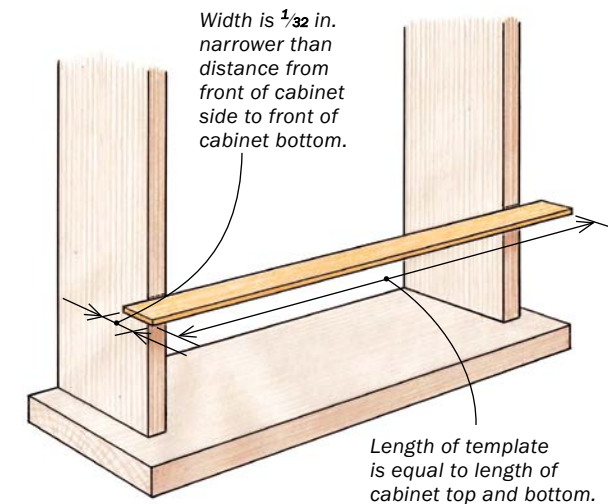


A template is the key to fast, accurate mortises

The template is used to set up the router table for all of the hinge mortises—in both case and doors.

SIZE THE TEMPLATE FROM THE CASE

Cut the template stock to the same length as the case bottom. Then, to create the necessary gap between the door and case sides, rip it slightly narrower than the setback of the sides.



Set up the router table. Use the measurement you made earlier to set the distance between the fence and the bit (the front of the template will ride the fence). Then line up the left end of the slot with the left side of the bit and clamp a stop block at the end of the template. Set the bit slightly higher than the thickness of the template.



Locate the hinge on the template. Place the template flush with the front edge and ends of the cabinet. Then set the door in place, with the $\frac{1}{32}$ -in. gap behind it. Center the hinge on the thickness of the door and measure the distance to the front edge of the template (above). Then slide the hinge sideways into its true position, and mark the ends of the slot needed in the template (right).



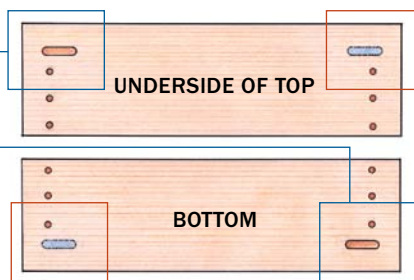
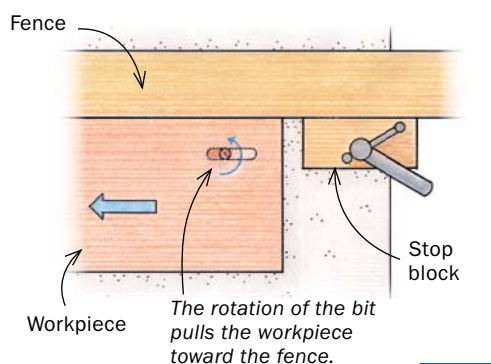
Rout the slot in the template. With the template against the stop block, lower it onto the spinning bit and then push it until you reach the right end of the slot. Turn off the router and hold the template in place until the bit stops.



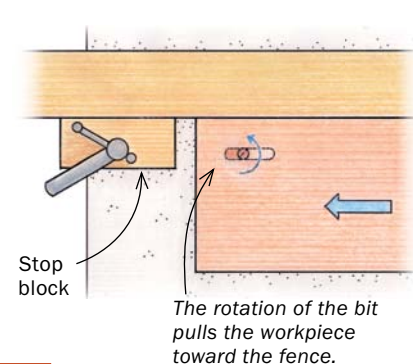
Route the cabinet in two steps

Route all of the mortises from right to left so that the bit's rotation keeps the workpiece against the fence. To accomplish this, you'll need two different setups on the router table.

The first setup routs mortises in opposite corners of the case.



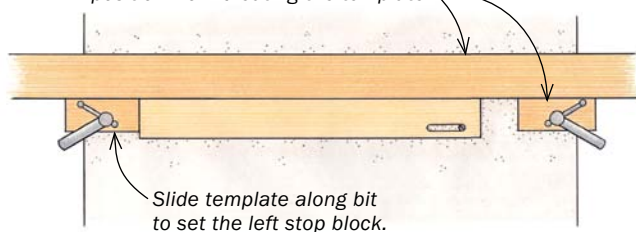
The second setup routs the last two mortises in the case.



1. ROUT THE FIRST PAIR OF MORTISES

Use the template to set the remaining stop block, and then mortise the case parts.

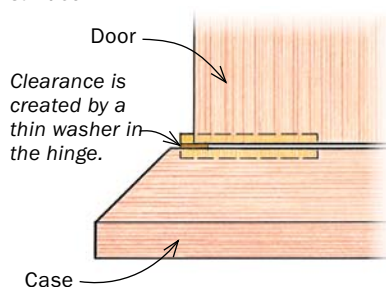
The fence and right stop block are already in position from creating the template.



Clamp on the second block. With the router off and the bit against the right end of the template mortise, clamp a stop block on the left end of the template.



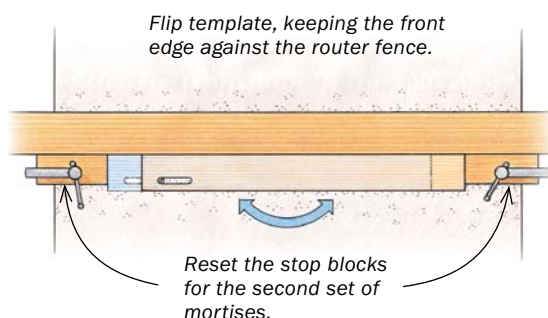
Reset the bit height. It should match the thickness of the hinge leaf exactly, so the leaf ends up flush with the surface.



Route the top and bottom. Start with the right end of the workpiece against the stop block. Then lower it onto the spinning bit—being careful to keep it against the fence—and slide it to the other stop block.

2. ROUT THE SECOND PAIR

Simply flip the template end for end and reset the stop blocks to complete the mortises in the top and bottom.



demonstrate on a cabinet with an overhanging top and bottom—a basic design that's flexible enough for many furniture styles. Give knife hinges and this technique a try on your next cabinet. You'll get perfect results.

Make the template

As I mentioned, the mortises in the cabinet top and bottom must be routed before the cabinet is glued together. After you glue up the cabinet, you'll fit the doors to the opening and rout the hinge mortises in them.

That said, you use the template to set up the router table to rout the hinge mortises in both the cabinet and doors. It's a simple affair. One end has a slot routed into it that represents the hinge mortise. This template handles all the router-table setups. The front edge sets the fence for the cabinet; the back edge sets the fence for the door. And since it is the full length of the top and bottom of the cabinet, it also sets up the stop blocks for the mortise length.

After cutting the template to size, locate the hinge mortise on one end (see p. 71). Next, set up the router table. Use a spiral-cut straight bit with a diameter that matches the leaf's width. Set the bit height just above the template's thickness. Put the front edge of the template against the fence and adjust the fence so that the bit and mortise are aligned.

You'll need to lower the template onto the spinning bit, but first put a stop block on the right side of the bit to control the workpiece. Align the left end of the mortise (as laid out on the template) with the left side of the bit. Clamp the stop against the right end of the template. Turn on the router, put the trailing end of the template



Reset the stops. The critical step here is to make sure the bit's cutter is touching the very end of the mortise when you set the stops; otherwise, the mortises in the cabinet won't match each other.



Square up one end. Match the chisel's width to the mortise's width (left). Remember that only one end of the hinge leaf is square, so leave the other end of the mortise round (above). Do all four mortises in the case.

against the stop, and lower the template onto the bit. Push it through until the bit reaches the mortise's other end. Hold the template in place as you turn off the router and the bit stops. Clamp a second stop block against the left end of the template. Reset the bit's height to match the hinge leaf's thickness. You are now set up to rout the first two mortises (one in the top of the cabinet and the one in the bottom).

Route the top and bottom

Route the cabinet mortises the same way you routed the slot in the template, placing the trailing end of the workpiece against the right-hand stop block and lowering it

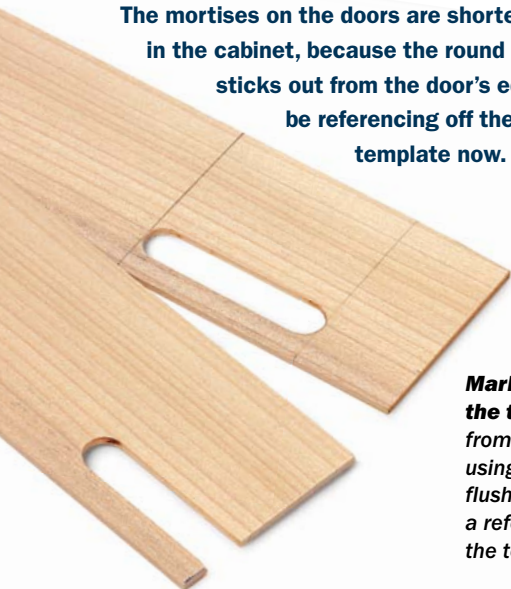
onto the bit. Push the workpiece through from right to left until it hits the other stop. Turn off the router and wait for the bit to stop before you remove the workpiece.

To rout the other two mortises, keep the fence in the same position, but relocate the stop blocks. Flip the template end for end so that the mortise is on the right end, and put it over the bit. Use the template to set the stop blocks. After they're clamped in place, rout the mortises.

Where necessary, square up the ends of the mortises with a chisel. Drill pilot holes for the screws, and then glue the cabinet together. Make and fit the doors to the opening. The gap at the top and bottom of

Trim the template for the doors

The mortises on the doors are shorter than the ones in the cabinet, because the round end of the hinge sticks out from the door's edge. Also, you'll be referencing off the back edge of the template now.



Mark the door's edge on the template. Work directly from the assembled cabinet, using the side, which will be flush with the door's edge, as a reference. Then crosscut the template at that mark.



Set the fence and add a stop. Use the back edge of the template to reset the fence. You'll be feeding the end of the door directly into the bit, so you need only one stop. This setup routs one mortise in each door.



Rout the mortise. Stowe uses a featherboard to keep the door tight against the fence.

the door is critical. It must be equal to the thickness of the washer on the hinge pin.

Mortising the doors is just as easy

Before you can rout the mortises in the doors, you need to adjust the template. Put it in place on the assembled cabinet and mark where the outside face of the side hits the template. That's where the door will end, too. Cut the template at that mark. The mortise is now open on one end, just like it will be on the door.

When setting up the router-table fence for the top and bottom, you used the front edge of the template, which accounted for their overhang. For the door, you'll use the back edge of the template to set the fence, so the hinge ends up centered on the door with the correct gap between the door and

the cabinet sides. Put the mortise over the bit, with the back edge of the template facing the fence. Move the fence up to the template and clamp it in place.

Because the doors' hinge mortises are open on one side, you need only one stop block to rout each one. Start with the stop block on the left side of the bit. Set it by putting the closed end of the template's mortise against the right side of the bit. Clamp the stop against the open end. Rout the first two mortises (one in each door). To rout the second two mortises, set the stop block on the right side of the bit.

Square up one end of the mortise and drill pilot holes for the screws. □

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Move the stop for the next set of mortises. The stop goes on the right side. The door is dropped onto the bit, then pushed through it.

Online Extra

To see a video on installing offset knife hinges for inset doors, go to FineWoodworking.com/extras.

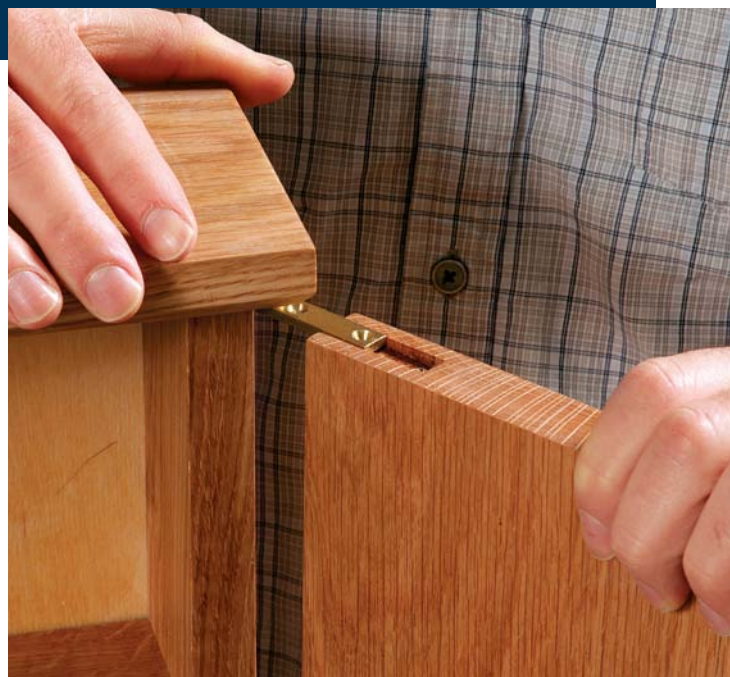


Hang the doors

Because the hinges are above and below the door, installing a door with knife hinges is a bit different from doing it with butt hinges: The door must be slid onto its hinge leaves.

Install the cabinet leaf first.

To keep from damaging the brass screws, drill pilot holes, wax the screws, and use a screwdriver, not a cordless tool.



Slide the door onto the hinges. The hinge leaves are put onto the hinge pin before they're attached to the door. If you attached them to the door first, you couldn't get them both on the pins.



If everything is flush, it's even simpler

Not everyone wants the top and bottom of a cabinet to overhang the sides and door. If you'd rather have them flush all around, the template technique is even easier. The template's width doesn't matter, because your setups are all referenced off the front edge and the fence never moves. Its length doesn't matter, either, because you'll only use one end of it to set up a single stop block.

After laying out the hinge's location on the template, set up the router table to cut the mortises. Once again you want to always be routing right to left, so the cutting force pulls the workpiece against the fence. That means you'll still need two setups. With the stop block on the left, you start with the door or cabinet part on the table, and simply slide it over to the stop block. With the stop block on the right, you'll start with the workpiece against the block, drop it carefully onto the spinning bit, and then rout.

Also like before, you should mortise the top and bottom first, then glue up the case and fit the door (or doors) before routing its mortises.



One stop block is all you need. But you'll need to set it up on both sides of the bit to cut all of the mortises.



Head for the block. For half of the mortises, you'll be able to simply rout into the open end of the mortise until you hit the block.



Drop and go. In order to rout the other mortises in the same direction, you'll need to start against the block, and then drop and go.