

Fast, Accurate Hinge Mortises



The key is to build
a routing template
around the hinge itself

BY MICHAEL PEKOVICH

There are a lot of ways to go about cutting a hinge mortise. One option that I didn't use for a long time was a routing template. I never knew what hinge I would use for a project, and it didn't seem worth it to make a new template for each time. Second, I assumed templates would be a pain to make. And last, I doubted their accuracy. However, teaching had a way of changing my view. In trying to figure out a way to get a class through the process of hanging a door at the end of a long week, I decided to give router templates a look. It turns out that making a template is fast and a good fit is just about automatic. The key is to build the template around the hinge itself. From there, a short



ROUT AND SQUARE FOR A PERFECT FIT

At the heart of the system is a pattern bit that allows you to create a template sized to the hinge, eliminating the need for measuring or guesswork. Simply clamp the template in place, rout the mortise, and finish up by squaring the corners with a chisel.



pattern bit makes quick work of the mortising, leaving just the rounded inside corners to take care of with a chisel. It's important to use a good quality hinge (which you should do anyway) because the sizes are more consistent from hinge to hinge, which makes for a more consistent fit. I've had good luck with hinges from Horton Brasses, Brusso, and Whitechapel Ltd.

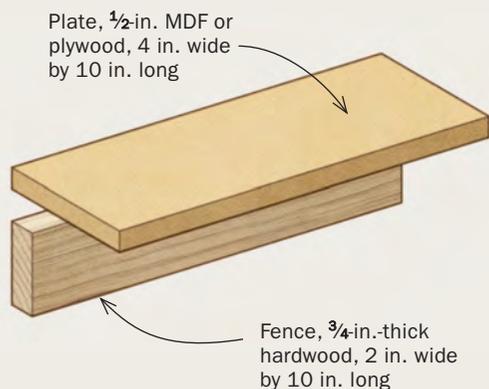
This technique is so fast and accurate, I no longer use it just for teaching. I've been putting it to use in my own shop as well.

Start by making the template

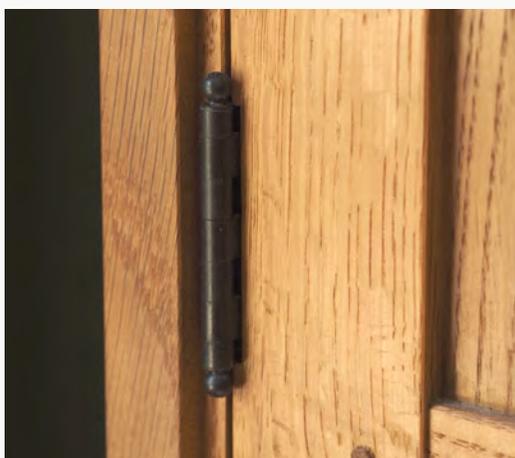
The hinge mortising jig consists of two parts, an MDF plate that supports the router, and a solid-wood fence that gets clamped to the workpiece. The plate is notched to create a recess for routing, and cutting that notch is the most critical step. The pattern bit I'll use to rout the mortise simplifies the task. Its bearing exactly matches the diameter of the cutter. Be careful when buying a bit because not all brands have this feature. I've had good luck with a 1/4-in.-long pattern bit from Whiteside, model 3000. With this type of bit, you can cut the notch in the template precisely to the hinge dimensions; you don't have to account for any offset between bearing and bit. (This offset issue can also arise if you use a router equipped with a guide bushing.)

I'll begin with a hinge template designed to cut one mortise at a time. Later I'll show you how to speed the process by making a jig to cut both mortises at once. First you'll establish the ends of the template notch with a pair of deep cuts at the table saw. The spacing of the cuts will determine the fit of the final mortise, so take a minute to get it right. Start by tracing the hinge onto the plate. The depth of the notch will need to account for the thickness of the fence as well as the width of the hinge. Align the fence to the edge of the plate and set the hinge against the fence. With a sharp pencil, mark along each end of the hinge. Also make a

Making the template



THE HINGE TYPE DETERMINES THE MORTISE DEPTH



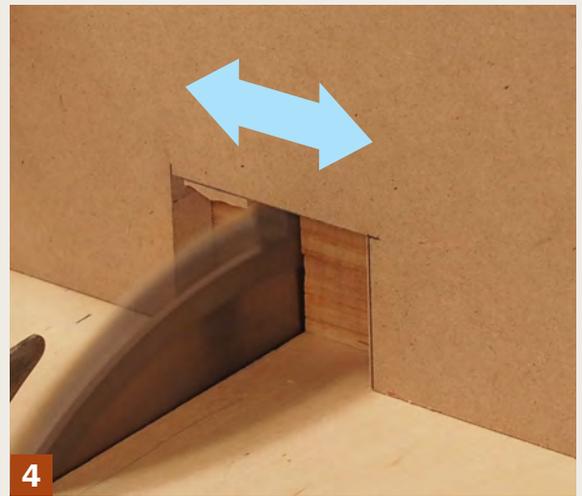
On a ball-tip hinge, the entire barrel should be proud of the surface. This provides clearance for the hinge tips.



On a butt hinge with flat ends, recess half of the barrel below the surface for a cleaner look.



To create the routing template, start by marking the length of the hinge on the plate (1). The notch needs to account for the thickness of the fence as well, so butt the plate and fence against a vertical surface when marking. Then mark the depth of the notch. For a normal butt hinge, mark at the center of the barrel. On a ball-tip hinge, shown here, mark at the inside edge of the barrel. Then cut the side walls of the notch at the tablesaw, sneaking up on a snug fit. Clamp a pair of stops to the crosscut sled fence, adding a pan-head screw to one block to act as a micro-adjust (2). Set the blocks to cut inside of the pencil lines. Cut the ends of the notch (3), and then bandsaw out most of the waste. Do the final trimming to the depth line with a side-to-side skim cut at the tablesaw (4). After this step, the notch should be too narrow for the hinge (5). Adjust the screw stop to dial in the fit (6). The hinge should slip snugly into the finished notch (7). The final task is to glue and pin the plate to the fence (8). Keep the edge of the plate flush with the fence when attaching it to ensure a hinge mortise of the proper width.

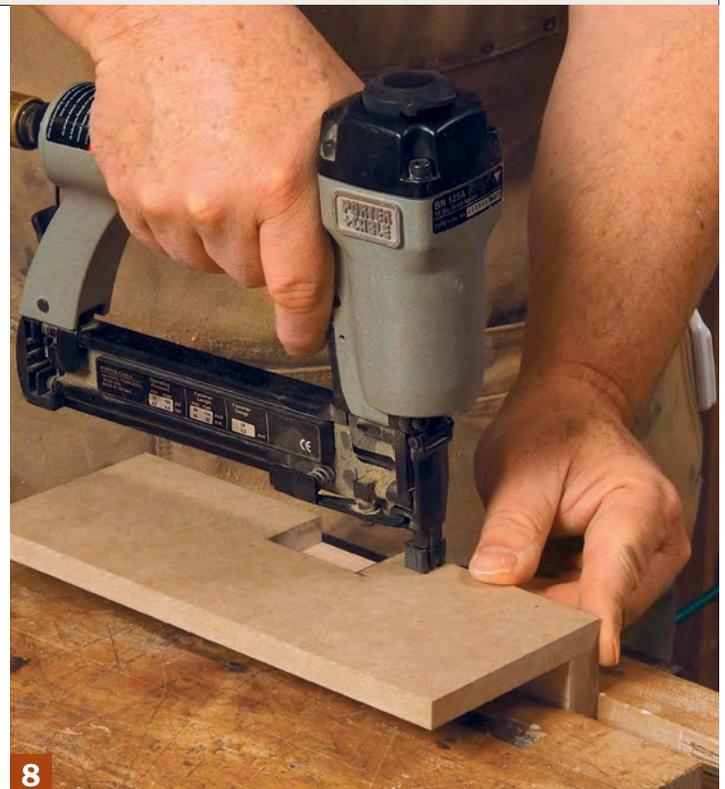


mark to indicate how deep the notch should be. The type of hinge you use will determine this dimension. For a standard butt hinge, a rule of thumb is to cut a hinge mortise so that half of the barrel is inset into the door. For a ball-tip hinge, inset the hinge to the edge of the barrel to leave clearance for the ball tips at the ends.

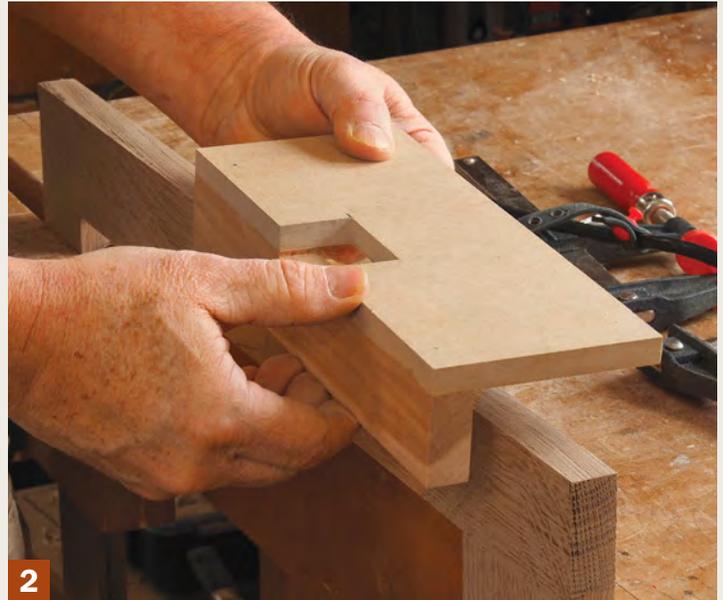
To cut the notch, clamp a pair of stop blocks to a crosscut sled. Drive a pan-head screw into the end of one stop to allow for fine adjustments without the need to unclamp a block. Set the stops to cut a notch slightly narrower than you need. After cutting the ends of the notch, head to the bandsaw to remove most of the waste. To get to final depth, head back to the tablesaw. Place the plate between the stops and slide it back and forth, advancing the sled slowly as you do so. Once the notch is cut, set the hinge in place to check the fit. Ideally the hinge doesn't quite fit at this point. To widen the notch, drive the screw stop in slightly and make another cut. It may take a couple of tries, but when the hinge just slips into the notch, you're set. Now attach the fence to the plate. I use glue and 18-gauge brad nails to hold it in place.

Putting the jig to use

If you've been careful to this point, then the rest of the process goes quickly and easily. The first step is to set the bit depth. I use a trim router. It has plenty of power to handle the task, and



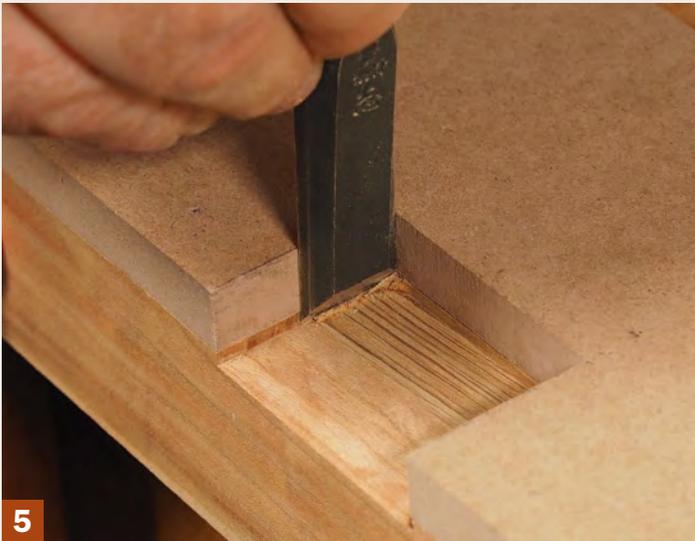
Routing a hinge mortise



the smaller, lighter body is easy to maneuver. To aid in stability, I replaced the small circular base with an oversize plate of Plexiglas. Set the bit depth and rout the mortise following the steps in the photos. The first time you use the jig, you'll rout a notch into the fence as well as the workpiece. On future jobs, you can use the depth of the notch in the fence as a guide for setting the bit depth.

Once the routing is complete, leave the jig clamped in place and use it as a guide for chiseling the corners of the mortise square.

Slide the hinge in place to check the fit. Ideally the fit should be snug end to end. If the hinge fits the jig, but is too tight for the mortise, it probably means that the bearing is slightly larger in diameter than the cutter. In this case, the bit will leave a thin lip of waste along the mortise walls. Simply pare the lip away while the



A trim router equipped with a pattern bit makes quick work of routing a mortise. To set the bit depth, place the template on the router base and rest the hinge on top of it. Raise the bit until it is slightly proud of the hinge (1). Then clamp the template in place (2). An oversize base makes it easier to keep the router flush against the plate when routing (3). Work side to side, taking shallow passes as you work toward the rear wall of the mortise. The bearing of the pattern bit runs along the walls of the notch, creating a mortise exactly the size of the hinge (4). Leave the routing template in place and use it as a guide when chiseling the corners square. Establish the vertical walls of the corners starting with the mortise ends and then paring the rear wall. (5). Then pare the bottom of the mortise flush (6). The hinge should fit tight side to side and flush against the back wall of the mortise (7). If there is any gap at the back wall, check the corners again for any waste you may have missed (see below).

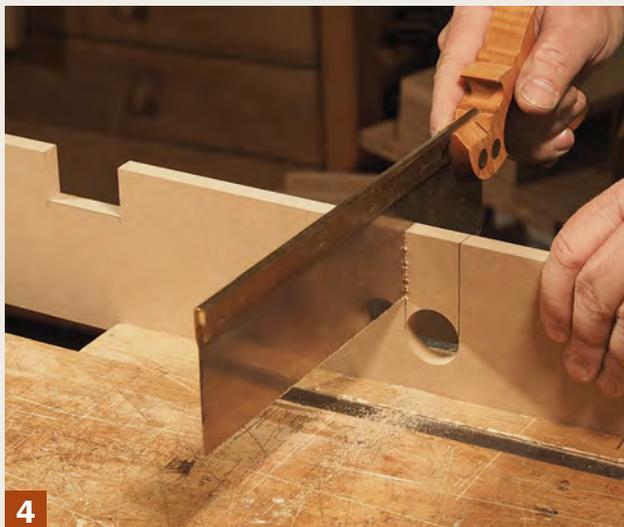


CHECK THE FIT

It's not uncommon to find that the hinge doesn't seat fully against the rear wall of the mortise. While it may not be apparent at first glance, the culprit is typically waste that hasn't been fully chiseled out from the corners. To remedy the situation, use a wide chisel, registering it against the routed portion of the rear wall, and pivot it down into the corner. Check the fit and repeat if necessary.



A two-hinge template



jig is still clamped in place. Once the hinge slips in place, check that it seats flush along the back wall and flat in the mortise. If it doesn't, the cause is usually waste. It doesn't take a lot to keep the hinge from seating, so don't overdo it when trying to remedy the situation. Go at it gently until the hinge fully seats.

Mortising for two hinges at once

While I started out using a single-mortise jig, there are some benefits to using a jig that allows you to rout both hinge mortises at once. The obvious advantage is that there is less setup to do, but it also helps to ensure accurate spacing. Routing one hinge mortise at a time requires you to reposition the jig after each mortise. If your positioning is slightly off, the hinge mortises won't be perfectly aligned between the case and door. This necessitates having to widen one of the hinge mortises to get both to seat. A jig that

cuts two mortises at once ensures consistent spacing between the hinge mortises in both the door and case.

Making the double jig doesn't take a great deal more time than the single hinge jig, but you will need to make custom jig for each project to match the door height. To make the jig, determine the mortise spacing from a full-size drawing or the door itself. I align the outer edges of the mortises with the inside edges of the door rails. From there I make the jig plate 6 in. longer than the spacing of the outer walls of the hinges. I set stops at the crosscut sled to cut a notch 3 in. from one end of the plate, then rotate the plate to cut the other notch. Once the notches are complete, the process is the same as for the single-mortise jig. □

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To make the plate for a two-hinge template, start with an over-length plate and mark the inside edges of the door frame (1). These will be the outside edges of the hinge mortises. Add a mark 3 in. from each hinge and trim the plate to final length (2). This will allow you to cut both notches with the same stop block settings at the tablesaw by rotating the plate end to end (3). On a longer template, I like to cut an access notch at the center which allows me to clamp the template in place at the center of the door as well (4). The first step when using the template is to rout the hinge mortises in the cabinet, or in this case, a hinge strip that will be added to the case afterward (5 & 6). To locate the hinge mortises in the door, trim it to final size and shim so that it is centered vertically in the case opening. Use a knife to mark the door at the ends of each hinge mortise (7). Technically you only need one mark to place the jig, but it's nice to have more than one in the event that one of the knife marks is off. Clamp the template to the door using the center notch to secure an extra clamp, and rout and chisel as before. (8 & 9).

