

master class

Quadrant hinges and a lock elevate any box

BY ADRIAN FERRAZZUTTI



Perhaps the fussiest aspect of making my contrasting veneer box (see pp. 56-63) is installing the quadrant hinges and, to a lesser extent, the lock. While you could eliminate the lock and substitute a nice pair of butt hinges with a positive stop, it's worth going the extra mile to make this box the best it can be. With their stop built in, quadrant hinges make any box look and function much better. A mortised-in lock and escutcheon create a true heirloom.

Quadrant hinges reward precise installation

The trickiest part is getting the hinges dialed into position so that the lid closes dead flush on all four sides. With a veneered box, there isn't much room to flush the lid to the body (or vice versa) without running the risk of exposing the core as the veneer gets too thin. For this reason, while you can install quadrant hinges by hand, I recommend Brusso's router template (model No. TJ-638), designed for their smaller quadrant hinges (model No. HD-638). The jig and hinges are available at www.brusso.com, where you'll also find comprehensive instructions. You'll also need a 1/2-in.-outside-dia. bushing guide and a 3/16-in.-dia. straight bit.

Use a laminate trimmer or a router to cut the hinge mortises, setting the bit depth to match the thickness of the hinge leaf. But before installing the hinges, check that the leaves align when closed; if they don't, grind or file them until they do. Otherwise, you'll have to fuss with modifying each mortise to

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Router template eases hinge installation



get the lid to fit flush. Once all four mortises are made, insert the hinges and check their fit, marking which leaf goes in what mortise. With an awl, mark the holes for the center screws only.

Drill for these screws and install the hinges using steel screws of the same size and thread as the brass ones supplied with the hinges. In this way you reduce the chance of snapping a brass screw. Close the lid, checking how it lines up with the body. If the stars are aligned, it will be spot on. If not, there are two things you can do: Locate the screws in the remaining holes off center in whatever direction you need to shift the lid; or, if necessary, grind away some of the leaves so they can be pulled forward in the mortise. Then remove the center screw and try it with the other screws in conjunction with grinding.

Once the lid is fitting well, outline the mortises for the stays with a pencil. Remove the hinges and excavate the mortises with a drill and chisel so that



No chisel work. Although you can cut the hinge mortises by hand, it is much quicker and more accurate to use a dedicated router template in conjunction with a straight bit and a bushing guide.

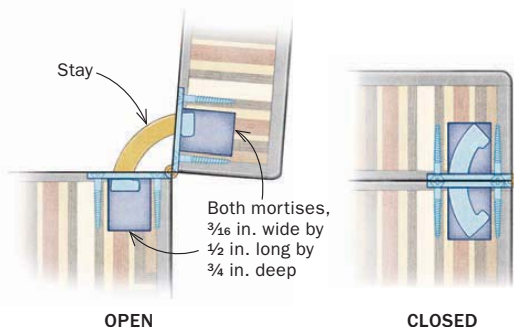


Directional drilling.

To ensure that the hinge is pulled into the mortise, use an awl to locate the screw hole slightly off center when attaching the first screw. Use a single steel screw at this point to avoid damaging the brass ones.

MAKE ROOM FOR THE STAY

Quadrant hinges have a stay that controls how far the lid of the box can open. When the lid is closed, the stays slide into mortises cut in the box sides and the lid.



OPEN

CLOSED



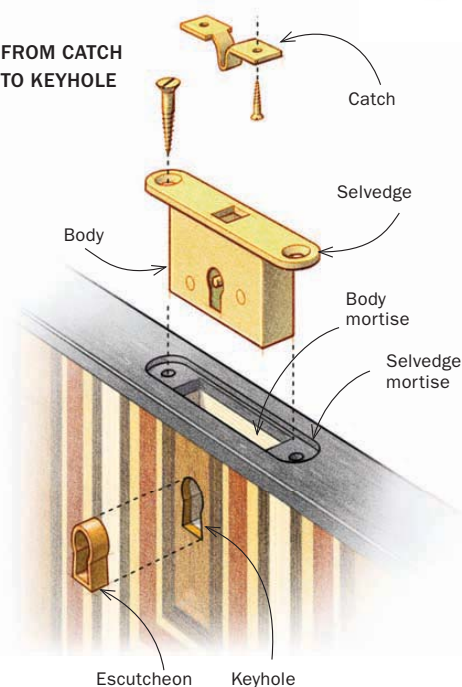
Mark and mortise. With the hinge in place, mark the location of the stay mortise. Remove most of the waste with a drill, then square up the sides with a chisel.

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Install the lock in 3 steps



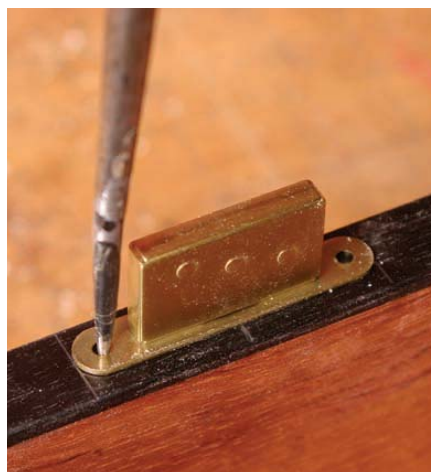
FROM CATCH
TO KEYHOLE



half the stay goes into the body and half into the lid. For the stays to drop in properly, the mortises have to extend almost to the screw holes, well beyond the traced outline. Install the hinges again, checking that the lid closes and the stays aren't hitting the mortises. If all is good, move on to installing the lock.

A lock and an escutcheon complete the box

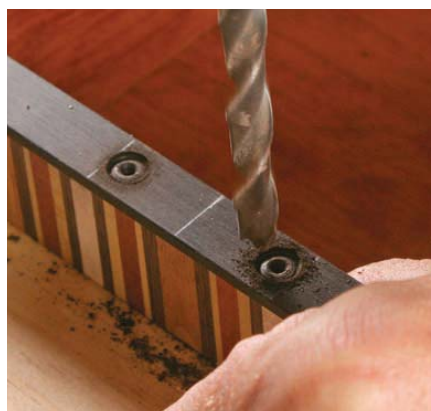
I had trouble finding a delicate lock suitable for a small box, but I eventually found one made by Viola sold at Lee Valley (www.leevalley.com; item No. 00F10.07). The lock has a tiny $\frac{5}{16}$ -in. by $1\frac{13}{16}$ -in. selvedge (the plate attached to the locking mechanism) that matches the width of the hinges.



STEP 1

INSET THE LOCK

Mark the screw holes. With the lock upside down, center it on the front of the box, and then mark and drill the screw holes.



Define the shallow mortise. Use a larger brad-point or Forstner bit to drill partway into the screw holes. This will create the two ends of the mortise for the lock's selvedge. Now you can scribe the edges of this shallow mortise and chop out the rest with a chisel.



Make the deep mortise. Drill and chop out a deeper mortise for the body of the lock, and then test the fit.

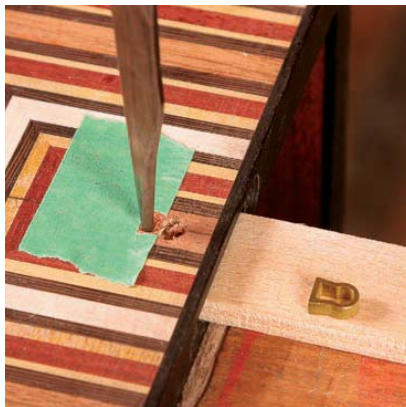
With the lock upside down, center it on the front of the box and mark the outline of the selvedge. There are various ways to mortise for the selvedge: I use a $\frac{5}{16}$ -in.-dia. four-fluted end mill bit in a horizontal mortiser. You could also use a router fitted with an edge guide, clamping a block of wood to the inside of the box flush with the top for support. Or use an awl to mark the two screw locations in the selvedge, and then use a $\frac{5}{16}$ -in.-dia. brad point or Forstner bit to drill the two ends of the mortise. You can then chop out the center using a chisel.

With the lock upside down, keep checking the fit until the selvedge drops in. The mortise should be slightly shallower than the thickness of the selvedge so that after the lock is

STEP 2 INSTALL THE ESCUTCHEON



Locate the key pin. Measure the distance from the top of the lock to the key pin and mark the location.



Cut the keyhole. After drilling a hole to locate the key pin, remove the lock, insert a scrap of wood to fill the lock mortise, and chisel a hole for the key and the escutcheon.



Install the escutcheon. Use a mixture of cyanoacrylate glue and sawdust to attach the escutcheon. File and sand it flush with the wood.

installed it can be sanded flush with the wood. Then create the 1/4-in.-wide mortise for the body of the lock using the same drilling and chopping method you used earlier. The mortise must come close to the screw holes so that the lock body drops in.

Now it's time to attach the escutcheon. You can use the oval plate that comes with the lock and is attached with a couple of brass pins, or you can use the type that is inserted into the side of the box, outlining the keyhole. I haven't found a source for these to fit very small locks, so I make mine out of solid brass. In either case, locate what you think is the center of the keyhole and drill a small hole through the front of the box. Insert the lock again and check if the pin in the lock is in line

with the hole in the box. If not, take a larger drill bit and force it to drill in the direction required to get the hole in line.

Continue to enlarge the hole until the metal key just fits and then attach the plate escutcheon, or continue to chisel away carefully for the inserted type of escutcheon. Glue the escutcheon in place using a mixture of cyanoacrylate ("Super") glue and sanding dust from the surrounding wood to fill any gaps. File and sand the escutcheon flush and move on to installing the catch.

It's a challenge to locate the catch or strike plate for a lock so that it lines up precisely with the lock, but I've found a foolproof method using tape (see photos below). Fit the catch, secure it with pins or screws, and test the lock. □

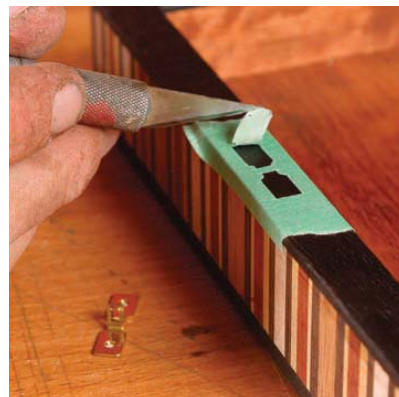
STEP 3 NEAT TRICK LOCATES THE CATCH



Use double-faced tape. With the catch locked into the body of the lock, apply two small pieces of double-faced tape to the back of the catch.



Stuck in the right place. Place some green tape on the lid and close it, pushing down onto the lock. Reopen it with the double-faced tape holding the catch in perfect position.



Locate the mortise. Cut around the catch with a sharp knife, severing the green tape. Remove the catch, peel away the cut tape, and mortise these areas.