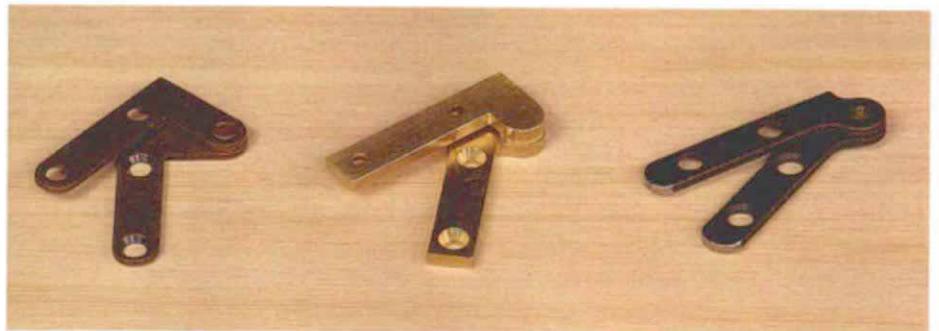


Good installation starts with a good fit. The author uses plastic laminate shims to set a narrow, reveal between the door and the carcass. Then he marks how much to trim off the door.



Knife hinges aren't created equal. The hinges on the left and right are stamped steel with a riveted pivot pin, making them nearly impossible to install accurately. In the center is a Brusso hinge, well-machined and much easier to install.

Installing Knife Hinges

*Careful layout and mortising
are keys to success*

by Gary Rogowski

Knife hinges are a sweet finale to a piece of cabinetry. They have a simple, subtle beauty. Just a small semicircle of brass is all that shows with the door closed, letting the lines of the furniture and the figure of the wood take center stage. Knife hinges also are tremendously strong and almost totally resistant to sagging, making them the hinges of choice wherever a narrow, consistent reveal around a door is important.

Knife hinges are strong because of the orientation of their leaves. Their leaves are mortised flush to the horizontal surfaces of the door and the carcass. The forces of gravity and leverage acting on the hinge put shearing forces on the screws. In other words, for the door to fall off its hinges, or even sag, the screws would have to shear, or the door frame or carcass would have to be destroyed. Not so with butt hinges, where gravity and leverage exert forces of tension on the screws. Over time, this causes the door to sag and tends to pull the screws out of their holes.

Despite their advantages, knife hinges have gotten a bad rap for being notoriously difficult to install. They are less forgiving of sloppiness, but with a little extra care in layout and mortising, knife hinges are no more difficult to install than butt hinges.

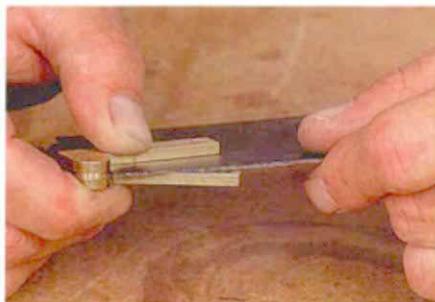
Don't buy inexpensive hinges

A number of different types and brands of knife hinges are available, but only one brand I know of is really worth considering. Avoid hinges that are made from stamped steel, have riveted pins (making them inseparable and, therefore, next to impossible to install accurately) or are finished poorly. The good ones are made by Larry and Faye Brusso and are available through many woodworking catalogs or directly from Larry and Faye Brusso Co. Inc. (4865 Highland Road, Suite J, Waterford, Mich. 48328; 810-674-8458).

Brusso hinges consist of two machined and polished brass leaves, each about 1/8 in. thick, countersunk for screws (see the bottom photo on the facing page). The leaves, which come apart, pivot on a short pin and are separated by a single washer. They come in many sizes, but there are just two basic types of knife hinges: straight and L-shaped.

The straight knife hinge is used in situations where the top and bottom of the carcass extend over the door frame, and the door frame covers the carcass sides.

The L-shaped knife hinge is used on full inset doors. The short leg of the hinge, into which the pivot pin is set, moves the pivot point away from the carcass so that



For a consistent reveal around a door, use shims the same thickness as the hinge washer. Many varieties of plastic laminate are the right thickness, but cardboard and other materials will often work as well.



To lay out the hinge mortise, start with a pencil. With a laminate shim between the carcass wall and the hinge, the author marks the end of the hinge leaf and the edge of the short leg of the "L." These reference lines set limits for a marking gauge, which is used next.



Marking-gauge line establishes front edge of mortise. Scratch a marking-gauge line from pencil mark to pencil mark. The marking gauge should be set for the distance from the center of the pivot pin to the outside edge of the hinge leaf's long leg. Try not to let the gauge wander along any sloping grain.



Use a knife to mark edge and end of mortise. Position the hinge leaf on the marking-gauge line, mark the end of the hinge leaf and the inside edge of the "L" with a knife, and then erase the pencil lines.

Now pencil in the back edge of mortise. This line is just a rough approximation to keep you safely within bounds when routing the hinge mortise. You'll mark the actual back edge of the hinge later with a knife.



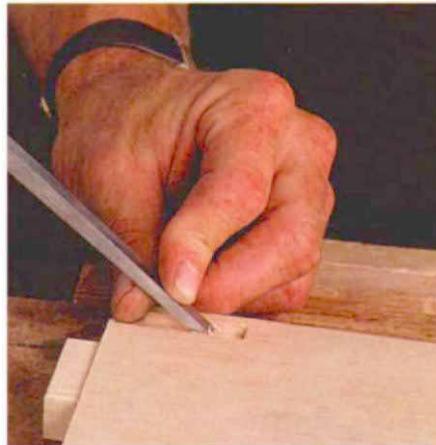
Router removes most of mortise quickly. The author uses a $\frac{3}{16}$ -in. bit set for the thickness of the hinge leaf. He stays well away from the pencil mark and knife marks that define the mortise.



Paring chisel cleans up front edge of mortise. Be sure to take the mortise no farther than the knife mark.



Clean up roughness left by router along back edge. With a chisel, the author removes most of the waste remaining in the mortise. But take care to stay well away from the pencil line—the back edge still needs to be marked with a knife.



the door can swing clear of the carcass side without binding. Brusso also offers an L-shaped hinge (L-39) with an extra long short leg for use in cabinets where the door must clear a protruding corner post to open fully.

Accurate placement is key to success

Laying out the mortises for either type of knife hinge involves essentially the same steps. Layout is the most critical part of setting them. Installed correctly, knife hinges will hold a door true to the face of the carcass and establish a consistent reveal between the door and the carcass sides all the way around. The key to achieving both of these goals is accurate placement of the hinge leaves. This comes down to a precise hinge setback in both the carcass and door and shimming the door hinge against the carcass wall to set the reveal. The photos accompanying this article show how to do this and how to hang a cabinet door using a set of L-shaped knife hinges, the more commonly used type of knife hinges.

Hanging a door using knife hinges begins with making sure the dry-assembled carcass's face is flat and square. Before gluing up the carcass, lay out the two carcass hinge mortises, disassemble the carcass and then rout and pare the hinge mortises (see the photos at left and the top right photo on the facing page). Glue-up the carcass, and then let the glue dry, checking again to make sure the carcass is square across its opening. Plane or sand the face of the carcass flat.

Doors should fit snugly

The door should be built to fit snugly in the carcass opening. Trim the door, so it just fits in the opening with shims along the bottom rail and the hinge stile. The shims should be the same thickness as the washer that separates the two leaves of the hinge (leave the handle stile and top rail tight for now). At this point, I have mortises in the carcass and can cut the mortise in the bottom of the door. I lay it out and cut it in much the same way as I did in the carcass (see the second photo from the top on the facing page).

The next step is to put hinge leaves into their mortises. A friction fit should keep them in, but you can tape them in if you like. Put the door into the carcass opening with the bottom hinge connected. Check and mark the reveal again on the bottom, hinge-stile side and on the top, as necessary. Plane or sand the door's edge to get the reveal right on these three sides. Then lay out and mortise for the top door hinge.

Screw the carcass hinge leaves and the bottom door-hinge leaf into place, but be sure to drill and cut the threads first by screwing steel screws of the same size into the screw holes. This keeps the brass heads of the screws that come with the hinges from marring or stripping.

The final fitting of the door will be done with both hinges in place but left unscrewed. Hold the top door-hinge leaf on its mating leaf in the carcass while you set the door into the lower hinge pin. Slide the top of the door onto the door-hinge leaf (see the bottom photo on this page). Close the door, and check and mark the handle-stile reveal (see the top photo on p. 48). Open the door, slide it off, plane or sand the door's edge to get an even reveal all the way around and reinstall the door. The door-handle stile can be trimmed back at a slight angle to provide clearance for the door as it swings past the case.

What if it's not perfect?

All is not necessarily lost if the fit is less than perfect. Hinges that are too deep can be shimmed in the mortises. If the leaves aren't deep enough, then you can rout or pare the door mortises a little deeper. Case mortises are tougher to get to, but with a router plane or a swan-neck chisel, you can remove material from them as well.

If it's just a little bit off, a door that's not flush with its carcass can be planed or sanded to match the case. For more serious adjustments, you can shift a hinge mortise's location by gluing in carefully matched pieces of scrap and remortising. If it's just a screw that's out of place, you can usually drill out the holes, fill them with sections of dowel and redrill. □

Gary Rogowski designs and builds custom furniture and teaches woodworking at the Oregon School of Arts and Crafts in Portland, Ore.

Video: Installing knife hinges



Gary Rogowski takes you step by step through the installation of a set of knife hinges in this 27-minute video tape (VMS only) companion to "Installing Knife Hinges." To order the tape, contact The Taunton Press, Order #011044, P.O. Box 5506, Newtown, Conn. 06470, or you can call (203) 426-8171.



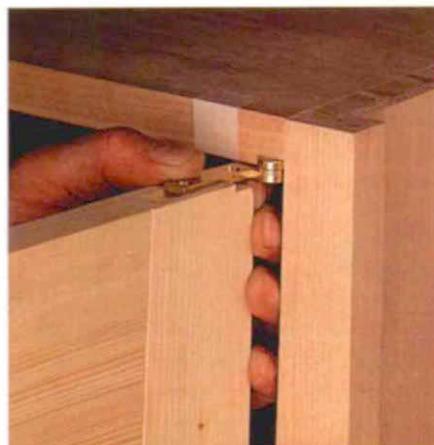
Mark back side with a knife. Tilt the hinge leaf into the mortise, and hold it tightly against the front wall of the mortise to mark the back edge. Then pare carefully to this knife line, checking frequently to see if the hinge leaf will fit. Once it fits, that mortise is done. The procedure is the same for all four mortises.



Cutting mortises in the door. A board clamped to door gives router a steady platform. Otherwise, routing the mortise in the bottom edge of the cabinet door would be a tippy proposition. Be sure to use clamp pads (here held in place with spring clamps) to avoid damage to the door.



Drill suited to a tight spot. A Yankee drill lets the author drill screw holes against the carcass's side. This would be impossible with a power drill or a corner brace. A piece of cardboard prevents the side of the carcass from being marred by the drill.



Now try the fit. For a final fit of the door, set the door in place. With the bottom hinge connected, slide the door onto the top hinge. Friction should hold the top carcass hinge leaf in place, but tape adds a measure of security.