Hanging A Door From Scratch

by Tom O'Brien

With a router, a hinge template, and a few other specialized tools, custom doors are almost as easy to fit as prehungs

One of the classic tests that distinguish a skilled carpenter from a wannabe is the ability to hang a door the old-fashioned way: assemble a jamb set, fit the door blank, mortise the hinges, and put all the pieces together.

Hanging a door from scratch is way more time-consuming than installing a prehung, but it's an extremely flexible process. If I need to hang a door in a hurry and can't wait for the lumberyard to order a particular prehung, it's a safe bet that the jamb material and door blank I need are in stock.

More often, if I'm remodeling an older home and need to fit a door to a nonstandard rough opening — or if I want to recycle a salvaged door panel — the solution is to build a custom-sized jamb set and trim the door to fit.

Assembling a Jamb Set

Years ago, before prehung doors became as popular as they are now, you could buy ready-to-assemble jamb packages for popular door sizes that simply needed to be nailed together. These days, the suppliers in my area keep only 7-foot lengths in stock, so even a standard door frame has to be cut to size.

If I'm fitting the jamb to an existing door blank, I measure the door and add 3/16 inch to the width and about 1/2 inch to the height. These measurements represent the inside dimensions of the jamb.

For strength — as well as appearance — I rabbet the tops of the side jambs to receive the head jamb (see Figure 1, page 2). It's possible to use a trim saw and a chisel to plow out the rabbets, but a router does the job faster and better.

Before cutting the head to length,

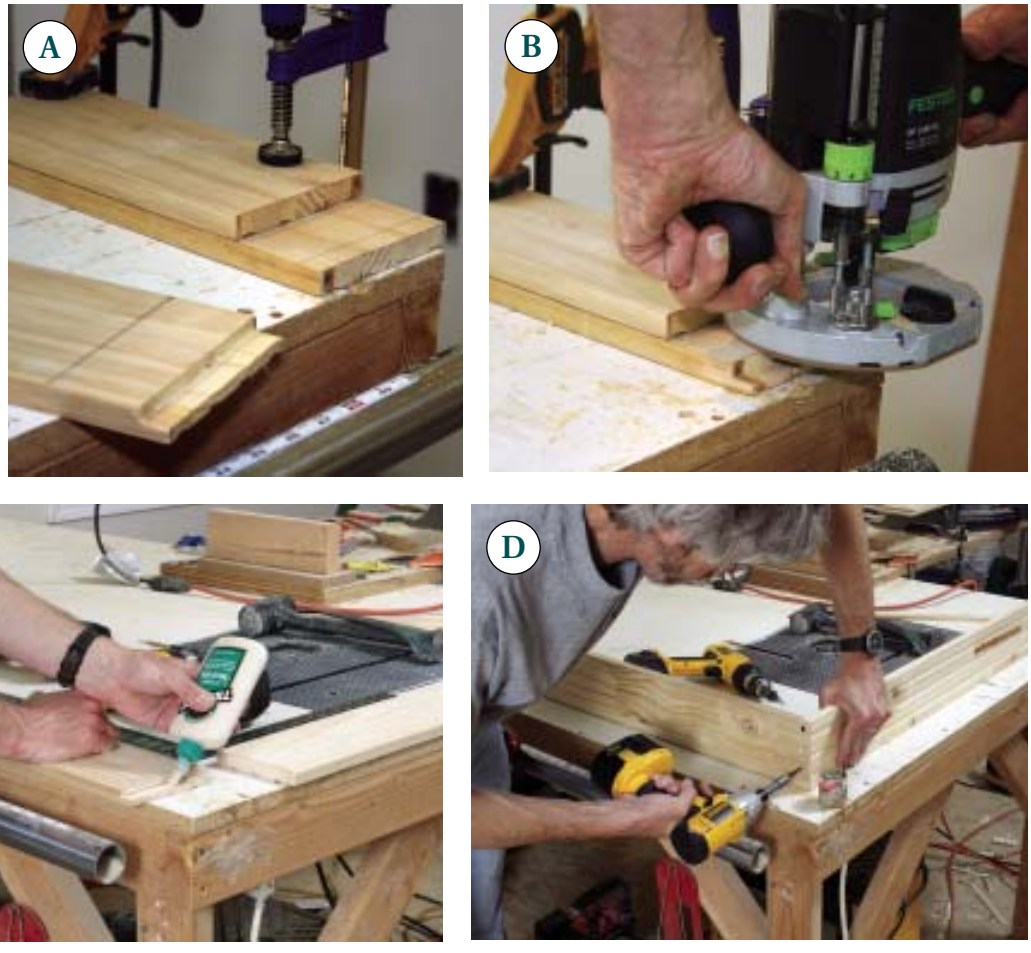

Figure 1. A square-cut scrap of jamb stock (A) acts as a straightedge for routing a 1/4-inch-deep rabbet into the top end of each side jamb (B). Carpenter's glue (C) and 2-inch screws (D) ensure that the jambs stick together for the long haul. To prevent splitting the narrow jamb material, all of the screws are countersunk.

remember to add 1/2 inch to account for the 1/4-inch depth of each rabbet.

Routing the rabbet. After scribing the thickness of the head jamb on the end of each side jamb, I make another pencil mark that represents the width of the router's base plate (measured from the inside edge of the bit) and clamp a straightedge at that point.

I make a test cut on a piece of scrap to verify that my measurements are accurate and that the router's depth setting is spot-on, then I rabbet all of the side jambs one after another.

I fasten the parts together with carpenter's glue and 2-inch drywall screws.

If the door stops are on the job at this time, I'll tack them in place using a method shown on the last page of this story.

Setting the Jambs

A solid-core door panel can weigh 100 pounds or more. To support this much weight, the jambs have to be securely fastened — but they must also rest solidly on the floor. Otherwise, over time, gravity and centrifugal force will take their toll.

I always check the floor with a level to determine whether one side of the rough opening is higher than the other (Figure 2, page 3). If the jambs will rest directly on a subfloor, I simply place a shim underneath the low side. If the jambs are set directly on top of a finished floor, as they were on the job shown in the photos, I scribe the high-side jamb and cut it to fit.

I roughly center the jamb in the opening, using a homemade spreader to keep the width at the bottom the same as at the top (Figure 3, page 3). I then slip a pair of shims behind the bottom hinge and pin the jamb by dri-

Figure 2. Before putting in the door jamb, the author checks the floor with a level to determine whether one side is higher than the other (A). Since this jamb is resting on top of finished flooring, the high side must be scribed (B) and trimmed, or the head jamb won't sit level. A fine-toothed Japanese pull saw is more accurate than a power saw and cuts almost as quickly (C).

Figure 3. After the jamb is placed inside the rough opening, a spreader keeps the bottom square with the top, while a straightedge ensures that the assembly stays in plane with the wall (A). With the jamb centered in the rough opening, the bottom hinge is shimmed and tacked, with nails driven beneath the shims to permit adjustment (B). Then the top hinge gets the same treatment (C). Note that although the author is using a prehung door jamb in this photo sequence, installation of a site-assembled jamb set is exactly the same.

ving a pair of 2½-inch nails underneath them.

I plumb the face of the jamb with a 6-foot level, then shim and pin the top hinge following the same procedure. I don't secure the latch-side jamb until after the door is completely hung.

Test Fitting the Door Blank

In the bad old days, a door blank was truly a "blank." Cut square on all four sides, it had to be trimmed — and the latch side beveled — on site to fit the opening. Still available, but often only by special order, this type of door is called "full and square."

These days, "prefit" door blanks are more common; they're beveled on both sides and slightly undersized, so a 3/0 door blank should fit perfectly inside a 3-foot jamb opening.

Before making any cuts, I like to prop each door blank inside the designated jamb, shim it tight against the head, and check the fit on all sides. If the jamb was installed without stops, I tack a short length of scrap to the head jamb to prevent the door from falling backward.

It's particularly important to make sure that the latch-side edge of the door is beveled, and that the bevel faces inward. To prevent a costly mistake, I put a mark on the

Figure 4. The author marks the top corner of the door (A) to designate both the hinge side and the edge that should get fully mortised. Before taking the door down for mortising, he scribes the bottom to fit the floor (B). Although they're expensive, specialized cutting tools like Festool's plunge-cut saw (C) and Porter-Cable's 9118 planer (D) make trimming and beveling edges error- and splinter-free. A simple door buck, assembled from scrap 2x4s, holds the door steady.

top corner of the door that reminds me where the hinges will go (Figure 4).

On those occasions when I'm installing a "full and square" door, I hold the latch side jamb tight against it; then I open my scribers to 3/16 inch and scribe the door. I keep an older Porter-Cable 9118 planer permanently — well, almost permanently — set on a 3-degree bevel, and I always work from the same side of the door, so it's a simple matter to put the right bevel in the right place.

Before I take the door out of the opening, I set my scribers to the proper width and mark the cut for the bottom of the door. In most cases, I like to see a 1/2-inch gap between the bottom of a door and the finish floor; I usually leave 1 inch of space beneath bathroom doors to allow for ventilation.

For years I cut door bottoms the tedious, old-fashioned way, using a straightedge to guide a standard circular saw. Last winter I started using the Festool plunge-cut saw and guide-rail system. With this tool there's no need to measure for an offset — or to knife-cut the grain to prevent splintering. Instead, you just clamp the base on the cut line and the rest is gravy.

Like all Festool products, the saw is hideously expensive, but it's well worth the cost if you hang a lot of doors or need a first-rate dust-collection system.

Mortising Hinges

If I'm hanging just one door, I mortise the hinges freehand with a laminate trimmer and a chisel; for more than

one door, I use a full-size hinge template (Figure 5).

Manufactured hinge templates come in a variety of styles. Fixed units, such as those from Templaco (800/578-9677, www.templaco.com), are inexpensive and easy to set up, but you need a different one for each size hinge, and they take up valuable storage space.

I use a Bosch adjustable hinge template (877/267-2499, www.boschtools.com). It's a bit of a pain to set up but extremely versatile — and when I'm done, the whole contraption fits into a case that's not much bigger than a lunchbox.

After assembling the template and setting up the router, I practice on a 2x4 to make sure that the location of the hinges and depth-of-cut are correct. I secure the panel on its edge in a door buck, then fasten the template to the door using the pins provided.

To prevent chipping, I rout the top and bottom edges of the hinge mortise first; then I plow back and forth across the grain before making a final pass around the perimeter of the template to make sure the edges are crisp and smooth.

After the template is removed, a corner chisel makes quick work of the radius corners left behind by the router bit. I check the fit of each hinge, then use a self-centering Vix bit to drill for the screws. To allow wiggle room when hanging the door, I put only two screws in each hinge at this time and leave the screws loose.

The jamb gets mortised in place, following the same procedure as for the door (Figure 6, page 6). Then I separate the hinges, fasten the loose hinge leaves to the jamb, and go back for the door.

Hanging the Door

I set the door panel in front of the opening and lever the hinges into position (Figure 7, page 6) using a foot-operated board lifter that I bought from a drywall supplier (www.marshalltown.com). After the hinge pins are in place, I tighten the screws.

Now I'm ready to fasten the latch side jamb. With the door closed, I shim the jamb at the top and the bottom, making sure that the reveal is the same on the side as it is on the top of the door.

Then I open the door and pin the jamb by driving a pair of nails underneath each set of shims. I use a combination square as a straightedge to align the jambs with the drywall.

When I'm satisfied that the reveal is consistent and — most important — that the door swings freely, I nail through the shims to make sure they can't slip loose. The jamb also gets shimmed and nailed behind the latch.

Figure 5. Before setting the pins that fasten a hinge mortising template, the author makes sure that the stops underneath and at the top fit tightly against the door (A). To work with a template, he fits the router with a 1/2-inch mortising bit encircled by a 5/8-inch template guide (B). This setup leaves rounded corners that are easily squared up with a soft tap on a corner chisel (C). A self-centering Vix bit ensures that the hinge screws lay flat (D).

Figure 6. To cut the hinge mortises for the jamb, the author butts the template's end stop gauge tight to the head jamb, then makes sure before he sets the pins that the two thickness stops on either side of each hinge section are tight to the frame (above, left). He follows the same procedure for cutting the mortises as for cutting the door (above, right).

Figure 7. Although it's designed for drywall, a board lifter is an ideal tool for finessing a solid-core door onto its hinges. Unlike a pry bar, this tool has a built-in fulcrum as well as a stirrup, so you never need a third hand to reach down and reposition it.

Figure 8. When it's time for door stops, the author scribes a pencil line the same thickness as the door on the face of the jamb (above, left). To prevent the door from binding, he leaves the line showing, except for at the point where the strike plate will go (above, right).

Applying Stops

If I didn't tack on the stops when I assembled the jambs, I usually hold off until I'm set up to run casing and baseboards.

To lay out the stops, I mark a point on the face of the jamb that corresponds with the inner edge of the door, then scribe a line with a combination square (Figure 8). To prevent the door from binding (especially after it's been repainted a few times), I leave the pencil line showing everywhere except for the point where the strike plate will be located — usually 3 feet above the floor.

Until the lockset goes in, I pin the stops with just three or four brads each. Once I'm satisfied with the operation of the door — when I hear that subtle, reassuring thunk as it shuts smoothly, with no bounceback — I'll nail the stops home.

Formerly a carpenter in New Milford, Conn., ***Tom O'Brien*** *is now an associate editor at* JLC.