

Chapter 18. Interior Doors

18.1 SWINGING DOORS

18.2 SLIDING DOORS

18.3 BIFOLD DOORS

Tools needed by volunteers:

Hammer
Nail apron
Tape measure
Square
Pencil

Materials needed:

Casing material
Doors
Paslode 1¼” finish nails
Paslode 2½” finish nails
3” Brass screws
2” Flathead screws
Tapered cedar shims
¼” Underlayment spacers (typically 3”x5”)
Wood putty

Tools and equipment needed:

Extension cords
Chop saw
Paslode nailers
Drill driver
Utility knife
Sheetrock rasp
6’ Level
Nail set

Personal Protection Equipment:

Safety glasses (required)

Reference Materials:

House Plan

Safety First! Review the Safety Checklist before performing tasks in this chapter.

18.1. SWINGING DOORS

18.1.1. Door & Rough Opening Preparation

1. Before removing packaging and shipping parts, check door and frame for damage. If damaged, notify Construction Supervisor or Site Leader.
2. Verify correct door and size. Verify proper door swing according to the House Plan.
3. The following Steps 4 and 5 are designed to reduce the difference between the width of the door frame and the width of the rough opening at the hinge locations to $\frac{3}{8}$ " or less. Doing so helps to
 - Center the door in the rough opening;
 - Avoid trying to install spacers and/or thick shims once the door is in place; and,
 - Equalize the overlap of the interior trim.
4. Mark the location of the hinges on the hinge side Jack stud. Using a 6' level, check if the Jack stud is plumb.
 - a. If PLUMB, measure the width of the door frame at the head jamb and the width of the rough opening at the top and bottom hinge locations. If the difference between the door frame and the rough opening at both locations is less than $\frac{5}{8}$ " proceed to Step 5 below. Otherwise,
 - i. Nail (with 2½" Paslode nails) an equal number of $\frac{1}{4}$ " spacers to the hinge side Jack stud at the top and bottom hinge locations until the difference is less than $\frac{5}{8}$ " at both locations.
 - ii. Place the level against the top and bottom spacers/shims and install spacers and/or shims at the middle hinge area until flush with the level.
 - iii. Proceed to Step 5 below.
 - b. If NOT PLUMB, measure the width of the door frame at the head jamb and the width of the rough opening at the top and bottom hinge locations.
 - i. If the difference between the head jamb and the rough opening at either location is more than $\frac{5}{8}$ ", nail (with 2½" Paslode nails) the appropriate number of $\frac{1}{4}$ " spacers and/or shims to the top and/or bottom hinge locations of the hinge side Jack stud until the width of the door frame is less than $\frac{5}{8}$ " at both locations.
 - ii. Place the 6' level against the spacers. If not plumb, shim top or bottom hinge areas until it is plumb and then install spacers and/or shims at the middle hinge area until flush with the level.

5. Add one or two layers of ¼” spacers and/or shims to the strike side stud at the top and bottom hinge locations until the differences in opening width at the top and bottom hinge locations is less than ⅜”. Place the 6’ level against the spacers and then install spacers and/or shims at the middle hinge area until flush with the level.

18.1.2. Position and Temporarily Secure Door in Opening

1. Set door into the rough opening, tight to the hinge side Jack stud. If in a carpeted area (see the House Plan), insert a piece of ⅜” scrap floor trim under each side jamb; otherwise, set the jambs directly on the finished flooring.
2. Center the hinge side jamb between both wall surfaces.
3. Temporarily secure the door in the rough opening by installing shims at the very top of the strike jamb (even with the head jamb). Wedge (do NOT nail) these shims in TIGHTLY (they can be adjusted later).

NOTE: This process is designed to apply horizontal pressure to hold the top of the hinge jamb tight against the hinge side Jack stud. The top of the door may rub on the strike jamb at this stage but this is normal and will be corrected later.

4. Check the reveal between the top of the door and the head jamb at the left and right corners of the door. If necessary, shim under the strike jamb or hinge jamb until these reveals are equal.
5. Verify that the bottom of the hinge jamb is still centered between wall surfaces, add appropriate spacers/shims at the bottom of the jamb, and temporarily secure it with one 2½” Paslode nail just above the spacers/shims. Do the same for the strike side jamb. (This will help to hold the bottom of the side jambs in place for the remainder of the installation but can still be moved if necessary.)
6. Recheck that the hinge side is still plumb (set level on hinges or hinge plates).

18.1.3. Permanently Secure Door

1. With the door held tight to the hinge side Jack stud and still centered between both wall surfaces, secure the hinge side jamb with one 2½” Paslode nail at the top and middle hinges.
2. Check that the hinge side of the door is still plumb. Adjust shims as needed.
3. At the top door hinge, replace the screw closest to the doorstop with a #8 3” construction screw (brass colored). Make sure the screw is driven into the Jack stud. This screw ensures the door does not sag over time.

NOTE: Tightness of the 3” brass screw in the top hinge can affect the reveals at either end of the head jamb. Tighten or loosen the screw and/or adjust shims as needed.

4. Recheck that the reveals remain equal at both ends of the head jamb. Adjust the strike side jamb up or down as needed.
5. Check complete door operation and verify that contact between the door and the doorstop is consistent (no gaps or light visible) along the head jamb and the strike jamb. It may be necessary to adjust one or both side jambs from the centered position (a maximum of 1/8” past or shy of the wall surface). Confirm that latch and strike are aligned.
6. Check the reveal on the top and the bottom of the hinge jamb. If necessary, adjust the shims against the head jamb until the top hinge jamb reveal matches the reveal just below the top hinge. If necessary, shim the bottom of the hinge jamb to match the reveal at the top. Shim as needed and secure with a 2 1/2” Paslode nail on one side of the doorstop.

NOTE: Adjusting the reveal at the top of the hinge jamb will affect the reveal at the top of the strike jamb. Check to be sure the reveal at the top of the strike jamb is 1/8” or greater. If not, it may be necessary to “split the difference.”

7. Check the reveal at the top and the bottom of the strike jamb. If necessary, adjust and shim at the bottom of the strike jamb until there is a consistent reveal at both locations.
8. While keeping consistent reveals top to bottom, install all remaining shims (nailing with 2 1/2” Paslode nails on the same side of the doorstop) in the following strike side locations: across from the top and bottom hinges and above the door latch location.
9. Install shims in the center of the head jamb, adjusting for a consistent reveal across the jamb. Secure the jamb with a 2 1/2” Paslode nail on one side of the doorstop.
10. Recheck the complete door operation, making sure that contact with the doorstop is consistent (no gaps) along the head jamb and the strike jamb and that all reveals are consistent. Adjust as needed by:
 - lightly tapping on a scrap piece of 2x4 placed on the edge of the jambs to ensure proper contact with the doorstop (no more than 1/8” past or short of the plaster); or,
 - tapping the doorstop with 2x4 scrap or a 1/4” spacer (moving the doorstop less than 1/8”); or,
 - removing the doorstop, closing the door, and re-installing the doorstop against the door (a last resort option).

11. To ensure consistent reveals along the side jambs, install additional shims on the hinge side, about halfway between the hinges and at similar locations on the strike side. This should result in six sets of shims on each side jamb. Secure the jambs with 2½” Paslode nails on one side of the doorstop.
12. Finish securing the door on all three jambs at each shim location by putting a 2½” Paslode nail into the jamb along the opposite side of the doorstop.
13. Conduct a final verification of the complete door operation - uniform contact with the doorstop and all reveals are consistent. Adjust as needed.
14. Set and putty all nail holes.

18.1.4. Install Door Trim

1. Pre-cut door trim is provided for interior doors. Uncut trim is provided for exterior doors and must be field-cut to fit. Refer to the House Plan to see if the door is over carpeting or over a finished floor.
2. Check wall thickness vs. doorjamb thickness. If the wall is thicker, trim or scrape plaster with a utility knife or rasp so door trim will fit properly.
3. For exterior doors, miter-cut top pieces to extend about 3/16” past each corner of the door jamb. For all doors, cut side pieces to fit.
4. If the door is over a carpeted area, keep the trim off the floor with a piece of ¾” floor trim. If the door is over finished flooring, cut the trim to be tight to the floor.
5. Door trim **MUST** be tight to the jamb. Before nailing, hold the trim piece in place and check the inside edge. If it is tight the **ENTIRE** length, push the outside edge tight to the wall. If the inside edge stays tight to the jamb, proceed with nailing. If the trim rocks back and forth and the inside edge does not stay tight to the jamb, chip away or hammer the plaster until the trim is **TIGHT** against the jamb.
6. Most trim is delivered in separate pieces. If this is the case, start installation with the top mitered trim piece. Maintaining a 3/16” jamb-to-trim reveal below the top trim, center the piece between the side jams (so that the extensions past the inside corners of the side and head jambs are the same and consistent with the top jamb reveal).

NOTE: If trim is delivered preassembled (glued and screwed at the corners), be sure that jamb-to-trim reveals are consistent on three sides before nailing.

7. Using a 2½” Paslode finishing nail, attach one end of the top trim to the header, placing the nail about 2” from the end and one-third of the way down from the top edge. Repeat at the other end. Angle the nails slightly up to ensure hitting the header.

8. Install the side trim butted to the mitered top trim, maintaining a consistent reveal from top to bottom.
 - a. If the side trim is too long and the miter joint is good, turn the side trim upside down and mark where it meets the top edge of the top trim; cut the side trim to that length.
 - b. Test for proper length and for a tight miter joint. Trim either if needed.
 - c. Apply glue to the mitered joint and attach side trim using five 2½” Paslode finishing nails evenly spaced top to bottom (be sure the top and bottom nails are at least 2” away from the end and all are about one-third of the way from the outside edge of the trim). Angle the nails slightly outward to ensure hitting the Jack stud.
9. Finish securing the top trim by installing a 2½” Paslode finishing nail at the center, about one-third of the way down from the top edge.
10. Recheck that the entire length of the inside edge of each trim piece is tight to the jamb. If not, at any loose spots hold the inside edge tight to the jamb, angle a 2½” Paslode finishing nail from the center of the trim piece, away from the jamb into the Jack stud.

NOTE: Do not attempt to drive nails into the edge of the jamb (this is likely to split the trim). If necessary, pre-drill pilot holes through the trim piece only with a 2½” trim nail and hand nail with 1¼” trim nails.

11. Set nails as needed and fill with putty.
12. For exterior doors, follow the same procedure as for preassembled interior door trim.

18.1.5. Install Door Hardware

1. Install lockset, verify door lockset operation and adjust as needed. Lockset should operate easily and door should rest against entire doorstop and latch snugly with no play. If the door does not latch snugly, bend the tab inside the strike plate with a flat-blade screwdriver until it does. (In the worst case, the strike plate may have to be moved toward the door stop.)
2. For interior doors that will swing against a wall at 90°, install a door bumper where the door handle will hit the wall. To locate this spot, rub the center of the doorknob with a red crayon, press the doorknob against the wall, and turn the knob to mark the wall. Center the door bumper on this mark and install with the screw and anchor provided with the bumper (if not hitting a stud or blocking). If hitting a stud or blocking, simply anchor with the screw provided.

3. For both exterior doors and any interior doors that will not hit a wall at 90°, install hinge stop bumper - one in the middle hinge of interior doors and one in the top and bottom hinges of exterior doors

18.2. SLIDING DOORS

1. Before installing the door track, place two ¼"x6"x6" spacer blocks on the floor at the center of the opening (these will be nailed to the floor later). Measure from the blocks to the top of the opening.
 - a. If the measured distance is:
 - i. between 82¾" and 83¼" (the desired distance), proceed with Step 2 below.
 - ii. less than 82¾", remove one of the spacer blocks (at least one spacer block must be retained for proper door guide installation). If still less than 82¾", it will be necessary to trim the bottom of the doors in Step 13 below. Consult with the Construction Supervisor or Site Leader before proceeding.
 - iii. greater than 83¼", shim down the track until this measurement is within the desired range identified in Step 1.a.i above.
 - b. Note the number of spacer blocks retained above for Step 14 below.
2. Install the track 2" back from wall surface with the open side of the track facing the rear of the closet. Drill pilot holes and fasten the track with the 2" flathead screws supplied with the sliding door kit. If the 2" flathead screws have not been supplied, attach with 2" drywall screws without predrilling
3. Cut and install a ¾"x1¼" pine strip along the front of track so trim can be attached.
4. Identify front and rear door hangers (rear door hangers have a deeper offset).
5. Attach hangers so there is a 2" space between the edge of the hanger and the vertical edge of doors. Use the screws supplied with the sliding door kit. After hangers are installed, adjust hanger length (height) to maximize door height off the floor (for ease in installing).
6. Install the rear door first by tipping the door bottom at an angle out into the room and hooking the hanger wheels into the track.
7. As necessary, adjust the door hangers to get a uniform contact between the door edge and the wall furthest from the room entrance.

8. Repeat Steps 6 and 7 to install the front door panel, but align it to the wall closer to the room entrance. Adjust both doors as necessary to keep them at the same height.

NOTE: When the front doors are closed, the front door edge won't be seen when entering the room.

9. Install door pulls at the same height as interior doorknobs and centered 1½" in from the door edge. Determine the diameter and drill into the door with a ¾" Forstner bit. Tap pulls into holes.

NOTE: Be sure the doors are properly positioned so that the overlap hides the front door edge from view when entering the room. With the doors in this position, install the door pull on each door on the edge closest to the doorjamb or flush wall. If the closet doors are directly opposite the entry door, place the front door pull on the edge closest to the flush closet wall.

10. Measure the width of the door opening and cut a piece of floor trim that long. Using 1¼" Paslode nails (to prevent nails going into the track and interfering with door movement), attach the floor trim to the pine strip to hide the track.

11. If doors are being installed in a non-carpeted area, skip to Step 14 below.

12. Where carpeting is to be installed, nail the number of ¼"x6"x6" blocks determined in Step 1.b above to the floor at the center point of the doors. To find the center point of the doors:

- a. Measure the door opening and make a mark at the midpoint.
- b. Move the front door panel tight to the end of the Jack stud (non-flush) wall and manually adjust the panel in and out until the reveal between the door and the corner of the wall is uniform from top to bottom.
- c. Holding the door panel in place, slide the door guide under the door and mark the floor at the center of the guide (i.e., the center between the front and back of the guide).
- d. Center the blocking on these marks and nail with 1¼" Paslode nails.

NOTE: Be sure to place the sliding door guide and screws on the closet shelf for later installation after the carpeting has been installed.

13. Verify there is a sufficient gap underneath the bottoms of the sliding doors. For finished flooring (i.e., vinyl, wood, etc.), the gap should be ⅜"-5/8". For doors installed over future carpeting, the gap between the bottoms of the doors and the double layer of 6"x6" blocking should be ¾"-7/8". If the gap is insufficient, adjust the door hangers up or down and/or add or remove shims above the sliding door guide rail. As a last resort, cut the door down to increase the gap as needed.

14. At the final hanging of the doors (after the carpeting has been installed), install the sliding door guides so that the doors slide easily into the base trim openings. Verify that the doors contact the wall evenly when closed and that the reveal on the Jack stud (non-flush) wall is uniform.

18.3. BIFOLD DOORS

1. Install the track 1¼” back from the outer edge of the doorjamb. Fasten using 2” flathead screws.
2. Location of the pivot hole determines the direction the door will open.
3. Bottom pivot point locations must be plumb with top pivot points. The bottom pivot bracket may need to be shimmed up ½” to allow for carpet. Attached the bracket to the deck and doorjamb.
4. Door pulls should be installed at the same height as interior doorknobs and in the middle of the two inner panel fronts.
5. On 4-panel doors (two bi-fold doors opening in opposite directions), align the doors by moving the top or bottom pivot point.
6. Measure the width of the door opening, add 3” to that measurement, and cut a piece of baseboard that long. Place the bottom edge of the baseboard flush with the top edge of the door opening and centered so that 1½” of the baseboard extends horizontally beyond each door jamb. Using 2½” Paslode nails, attach the baseboard to the wall.
7. Set nails and putty.