HOW-TO BOOKLET #3059
PATIO DOORS

TOOL & MATERIAL CHECKLIST

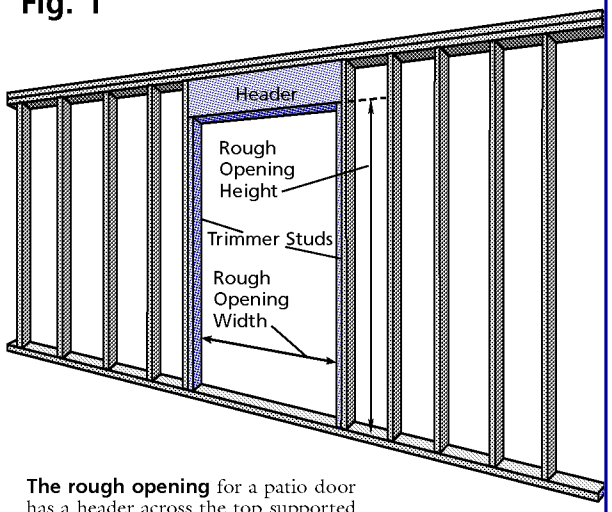
- ❑ Tape Measure
- ❑ Hammer
- ❑ Screwdriver
- ❑ Level
- ❑ Straightedge
- ❑ Carpenter's Square
- ❑ Pry Bar
- ❑ Drywall Saw
- ❑ Drill
- ❑ Safety Goggles
- ❑ Circular Saw/Reciprocating Saw
- ❑ Wood Shims
- ❑ 16d and 8d nails
- ❑ Chalkline/Chalk

Read This Entire How-To Booklet for Specific Tools and Materials Not Noted in the Basics Listed Above.

Patio doors (commonly called sliding glass doors) can make a wonderful addition to nearly any room because they let in so much light. You must use caution with this project, as you will be altering the house framing. Be aware that weatherproofing is essential for patio doors. Also, the units are quite heavy, so line up some help for the installation.

Wall studs support ceiling and roof structures. Some studs may have to be removed to make way for wide patio doors. Build a temporary 2X4 wall from floor to ceiling about two feet inside the proposed door opening. This will support the ceiling and roof while you remove the existing studs and install the new patio door framing header and studs.

Fig. 1



The rough opening for a patio door has a header across the top supported by trimmer studs attached to full studs.

WORK SITE PREPARATION

Turn power off at the circuit breaker which serves all electrical receptacles and light switches on the wall into which the new patio door will be installed. If you believe plumbing pipes are located inside the wall, turn water off at the main shut-off valve.

Remove baseboard molding, any ceiling or wall trim, shelves, and pictures from the wall. Take down pictures and other objects hanging from adjacent walls, as installation activities may cause them to fall. Tape a sheet of plastic over the floor to protect it from sawdust and debris. Have safety goggles and dust masks available for you and your helpers.

CONVENTIONAL WOOD FRAMING

The most common type of house construction consists of many pieces of lumber—studs, headers, rafters, joists—that are nailed together in a rigid framework. This framework, or framing, is the skeleton of a house. There are two types of framing techniques: platform and balloon framing. (This booklet does not address timber frame and masonry construction houses. Their walls have different load-bearing characteristics.)

For the past several decades, platform framing has been the most common type of house framing. The floor structure forms a "platform" upon which the walls are framed. Balloon framing is rarely used today, but you may encounter it in older houses. It consists of long pieces of lumber that reach from the foundation to the roof.

Nailed to the exterior of the framing is sheathing. Sheathing consists of plywood or some other wood panel product. Siding is then attached over the sheathing.

Inside the framing, walls are finished with either plaster and lath, wood or wood-product paneling, or drywall. This booklet assumes the walls are finished with drywall using paper tape seams and joint compound.

ROUGH OPENING FOR PATIO DOORS

Carefully read the installation instructions that came with your patio doors. They include recommended rough opening dimensions. "Rough opening" refers to the inside dimensions between the side (trimmer) studs and also between the floor and the bottom of the header. This opening will be slightly larger than the patio door frame. The extra space provides room for shims to level and plumb the horizontal and vertical patio door frame members (**Fig. 1**).

Marking the Rough Opening. The interior wall is marked and opened up first and rough framing completed before exterior wall material is cut away. On the interior side of the wall, use a stud finder to locate a stud closest to one of the sides of the proposed new patio door opening. This will give you an existing stud to work from.

1. At floor level, use a drywall saw to cut a hole in the drywall on the rough opening side of the stud. Wear safety goggles.
2. According to installation instructions, measure the width of the rough opening from the inside face of the stud. Use a carpenter's pencil to mark the opposite side at floor level.
3. Cut another hole in the drywall about 7 feet directly above the first hole and against the same existing stud.
4. Mark the opposite side of the opening at the 7-foot level and snap a chalk line across the top level.
5. Snap a chalk line connecting the upper and lower rough opening width marks from floor to ceiling.

Cutting Interior Drywall. Use a drywall saw to cut drywall along the existing wall stud from the ceiling mark to the floor. Wear goggles and a dust mask.

1. Cut through one side of the rough opening along the vertical marked line. Use short strokes with the drywall saw to avoid cutting through electrical wires. To ensure against cutting into wires, use a hammer to knock out sections of drywall next to electrical outlets located in the rough opening space. This will show you where wires run.

   If you use a power saw to cut through drywall, set the blade depth to no more than 5/8 inch.
2. Make the cut along the chalk line on the opposite side of the opening. Then cut the horizontal rough opening line.
3. Use a hammer and a pry bar to remove drywall from rough opening. Dispose of drywall debris.
4. Pull out any insulation. Move electrical wire/boxes away from the rough opening area as necessary. If you are not familiar with electrical wiring, have a licensed electrician complete the work. The same applies for plumbing.

A temporary wall must be set up before the existing wall studs can be cut away to make room for the new patio door rough opening. The temporary wall must extend from the floor to the ceiling and cover an area slightly wider than the proposed rough opening. Erect this temporary wall about 2 feet in from the patio door wall. It will support the ceiling and roof while the old studs are removed and the new header and trimmer studs are installed.

Cutting Out Old Studs. With the temporary wall frame in place, use a metal cutting blade on a reciprocating saw, saber saw, or hacksaw to cut through nails at the top and bottom of studs. Use a pry bar to pull studs away.

Installing New Studs. Headers must butt against full studs on each end of the header. Rough opening width is measured between trimmer studs. Therefore, the width between the two full studs must be 3 inches greater than the actual rough opening width to account for the 1½-inch width of each trimmer stud.

1. Determine the exact space you want the patio door to be placed. Mark each side of the bottom plate of the wall to the rough opening dimension. (Do not locate a patio door any closer than 1 foot from any corner. Corner framing is critical to structural stability.)
2. Install full studs 1½ inches away from the marks. This will leave room for the trimmer studs. Be sure studs are plumb.
3. Toenail the studs at the top and bottom.

Header Requirements. Local building departments have charts which explain required header size for specific rough opening spans. Header thickness must equal wall stud width. Remember that lumber's nominal dimensions are not the same as its actual dimensions. For example, a 2x4 actually measures 1½ X 3½ inches, and a 2x6 is

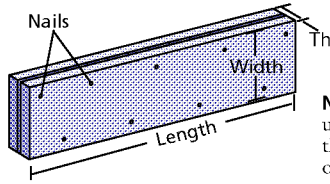


Fig. 2

Nail the header together using 16d nails. The header thickness matches the width of the wall studs.

actually 1½ X 5½ inches. Check with your local building department, but most codes require an 8-inch-wide header for a 6-foot opening and a 10-inch-wide header in an 8-foot opening. You can make headers for 2x4 walls by sandwiching a piece of 1/2-inch plywood between two 2-by boards. Spike the header together with 16d nails. For 2x6 walls, sandwich a section of 1/2-inch

plywood between a length of 2-by lumber and a matching length of 4-by lumber (**Fig. 2**).

In most home construction, the header is 6 feet, 10½ inches from the subfloor. Position the header to this height between the new, full studs and follow this procedure:

1. Use spare 2x4 boards to prop up the ends of the header.
2. Toenail header to full studs at the ends and into the top plate (**Fig. 3**).
3. If you can, nail through full studs into the header ends.
4. Cut the trimmer studs to fit snugly between the bottom plate and the header.
5. Nail trimmer studs to the full studs with 16d nails (**Fig. 4**).
6. Cut the existing bottom plate flush to the subfloor on the inside face of the trimmer studs and pry it away from the rough opening.

NOTE: If the rough opening is greater than 6 feet, install two trimmer studs on each side of the opening for extra header support. Plan for these doubled trimmer studs by placing regular full studs 3 inches away from rough opening width marks. This will compensate for the added widthof the trimmers. In addition, the header must be 3 inches longer so its ends will reach the full studs for toenailing.

REMOVING EXTERIOR SIDING

Inspect exterior siding at the rough opening site to ensure it is free of telephone wires, television cables, or other obstacles. Plan a means to protect plants and shrubs from siding that falls away after being cut off.

Siding can be cut from inside the house by drilling large pilot holes at the corners to make room for a reciprocating saw blade. Use the bottom of the header and the sides of the trimmer studs as a cutting guide for the reciprocating saw.

It may be easier to cut exterior siding from the outside with a power circular saw. Follow this procedure:

1. From inside the house, drill pilot holes at each corner of the rough opening.
2. On the outside, use a chalkline from hole to hole to mark the outline of the rough opening.
3. Use a circular saw to cut out the exterior sheathing and siding.
4. For houses with beveled siding, the circular saw base bumps into edges when cutting vertically. To solve this, nail a board in line with the chalk lines to serve as a guide (**Fig. 5**). Set the blade depth to account for the board, siding, and sheathing. Guide the saw while sliding it up the board.

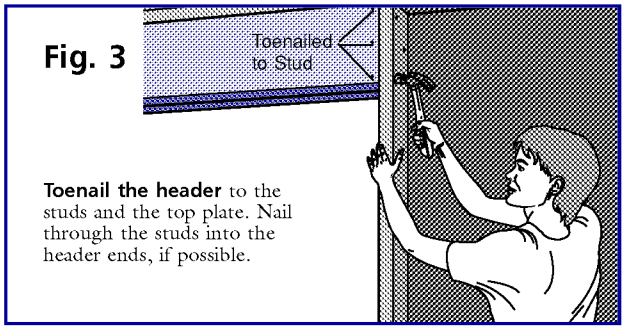
It is very important to follow the manufacturer's installation instructions for your specific patio door. Those with nailing flanges will require exterior siding to be cut about 1½ inches wider than the rough opening. This necessitates a second shallow cut around the rough opening to remove siding. Nailing flange areas are later covered with wood trim.

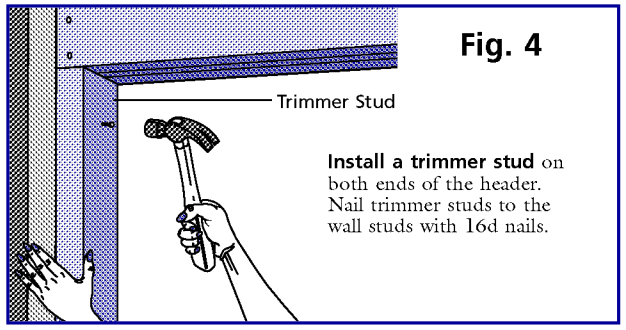
POSITIONING THE DOOR

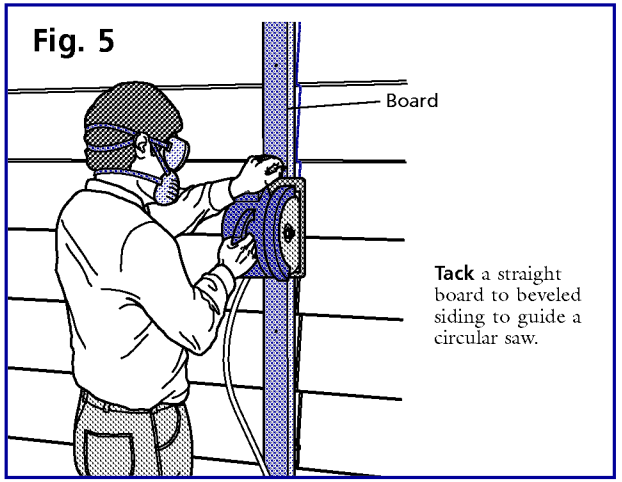
If the door frame is unassembled, follow assembly instructions provided by the manufacturer. Usually the door unit is placed into the rough opening from the outside of the house. To provide a tight seal between the door sill and the floor, run caulk across the underside of the sill before setting the unit into place. If the sill is to rest on concrete, use sill sealer insulation beneath it. In either case, make sure the sill is level and secured to the subfloor.

SECURING THE FRAME

For patio doors with nailing flanges, have a helper hold the side jamb plumb. Drive 8d nails through







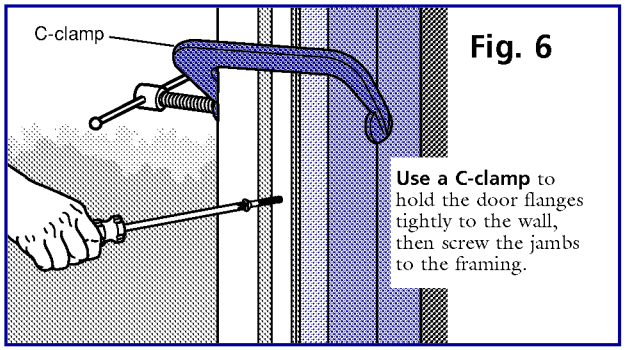


Fig. 6

Use a C-clamp to hold the door flanges tightly to the wall, then screw the jambs to the framing.

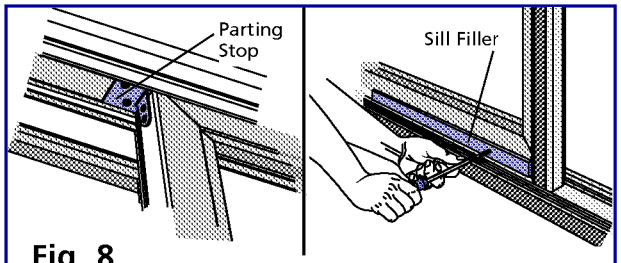


Fig. 8

To secure the fixed panel, attach the parting stop to the head jamb and the sill filler to the bottom rail of the door.

the side jamb nailing flange into the sheathing and trimmer stud. Do not nail through the nailing flange at the header. Instead, drive nails through sheathing and part way into the header above the nailing flange and then bend them over onto the flange. This way, should the header ever bow downward in the middle, pressure will not be forced directly onto the patio door frame through the nails and nailing flange.

Some patio door frames feature wide vinyl "flashing" flanges at the head and side jambs. These are not intended to be nailing flanges. To hold the frame in place after setting it in the rough opening, use C-clamps. C-clamps will also help to draw the flanges tight against the sheathing (**Fig. 6**).

Once the frame is sitting in the rough opening, check the jambs for plumb and double-check the sill for level. Usually the side jambs will have predrilled holes for the installation screws. Use wood shims between the jambs and the trimming studs at the predrilled holes and drive screws in place. Keep the jambs plumb as you progress.

POSITIONING THE PATIO DOORS

Some patio doors have two sliding panels, while others feature a sliding panel and a fixed panel.

Installing the Fixed Panel. Lift it into place between the outer head and sill channels. Push the panel against the side jamb, using wood blocks to wedge it into place. Be careful, too much pressure will crack the glass (**Fig. 7**).

To secure the fixed panel, adjust it until you can install the parting stop in the head jamb. At the sill, secure the panel by screwing into it through the stationary sill filler (**Fig. 8**).

Installing the Operating Panel. From inside, tip the top of the door panel into the head channel. Lift the panel up into the head channel and place the bottom on top of the sill. Be certain that the bottom is centered on top of the sill guide. Rollers at the bottom of the door panel must ride on top of the sill guide. To adjust the door:

1. Check the door by sliding it back and forth.
2. If it sticks, binds, or is not square with the frame, locate two adjustment sockets on the inside bottom rail of the panel and unscrew the caps.
3. Insert a screwdriver and turn to raise or lower the door.
4. Each socket adjusts its own roller to help you fine-tune the door panel alignment (**Fig. 9**).

Adjusting the Door Latch. The latch in the panel must engage the keeper bracket on the jamb. If it does not, turn the adjusting screw to move the latch in or out as necessary.

CAULKING AND SEALING THE DOOR

Before closing up the inside of the wall, fill in exposed framing cavities with insulation to seal any cracks between the wall framing and the door jambs. Caulk and weatherstrip around the door exterior (**Fig. 10**).

The job is completed by finishing the wall surface around the door interior.

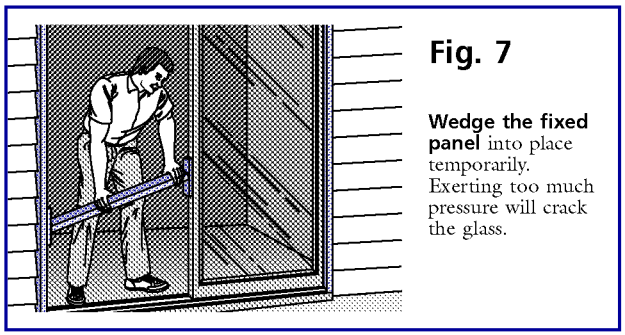


Fig. 7

Wedge the fixed panel into place temporarily. Exerting too much pressure will crack the glass.

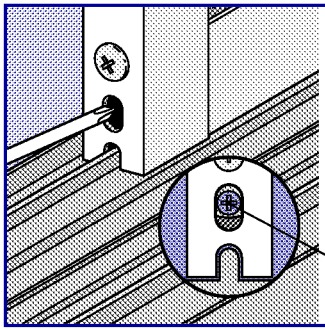


Fig. 9

To adjust the sliding door panel, raise or lower the door using the adjustment screws located at the bottom of the door.

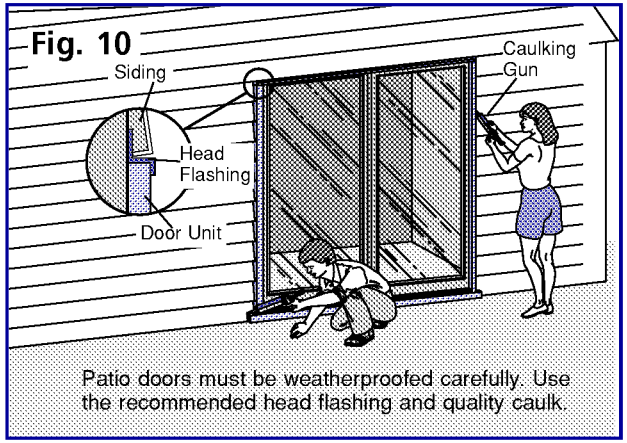


Fig. 10

Patio doors must be weatherproofed carefully. Use the recommended head flashing and quality caulk.