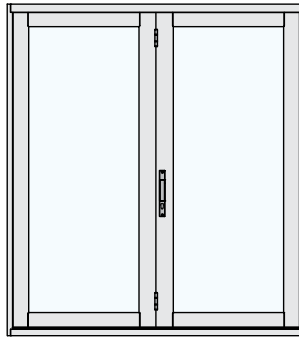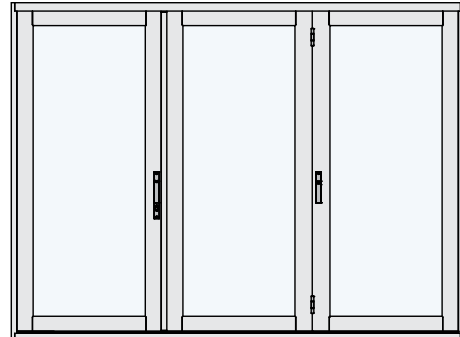# JELD·WEN®

Thank you for selecting JELD-WEN products. Attached are JELD-WEN's recommended installation instructions for Smooth-Pro™ F-4500 Fiberglass Folding Wall System. Read these instructions thoroughly before beginning. They are designed to work in most existing applications, however; existing conditions may require the use of alternative methods to these instructions. If changes are needed, they are made at the installer's risk. For installations other than indicated in these instructions, contact a building professional. JELD-WEN does not endorse the installation of our products into a barrier-type install system unless a sill pan is present, incorporated with through-wall flashing and can drain to the exterior (along with other "required" components). Failure to do so may result in the denial of any warranty claims. To adequately protect your wall system, please refer to "Appropriate Protection for Exterior Doors" for information on protection requirements at www.jeld-wen.com. Areas such as Florida and the Texas TDI region have different anchoring requirements based on product certification. For information on specific products, visit www.floridabuilding.org or www.tdi.texas.gov and follow the anchoring schedule given in the drawings for the product instead of the anchoring schedule in this document.

Configurations

2-Slab Folding

2+1 Folding

⚠CAUTION

A minimum of 3-people will be needed to install and safely move wall system units.

IMPORTANT INFORMATION | TABLE OF CONTENTS | GLOSSARY

JELD-WEN does not endorse the installation of our products into a barrier-type install system unless a sill pan is present, incorporated with through-wall flashing and can drain to the exterior (along with other "required" components). Failure to do so may result in the denial of any warranty claims.

PLEASE NOTE: Installations, where the sill is higher than 35 feet above ground level or into a wall condition not specifically addressed in these instructions, must be designed by an architect or structural engineer. Failure to properly finish or install square, level and plumb and on a flat surface (without peaks and valleys) could result in denial of warranty claims for operational or performance problems.

NOTE TO INSTALLER: Provide a copy of these instructions to the building owner. By installing this product, you acknowledge the terms and conditions of the limited warranty as part of the terms of the sale.

Table of Contents

NOTICE

JELD-WEN advises against product installation in high interior water exposure environments such as showers, steam rooms and enclosed pool areas. These areas are beyond the tested/certified design intent if the window and any related warranty claims could be denied on that basis.

Glossary

Backer Rod (backing material)
A material (foam rod) placed into a joint primarily to control the depth and shape of the sealant. Also serves as a bond breaker.

Buck
A code-compliant framework built into a door or window opening in a concrete or masonry wall to which the door or window frame is secured.

Continuous Air Seal
A continuous seal put into the air gap area around the interior side of the fenestration perimeter to restrict infiltration or ex-filtration of air past the fenestration product.

Pilot Hole
A pre-drilled hole that is no larger than the body of the screw (minus the threads).

Rough Opening (R.O.)
The opening in a wall into which a window or door is to be installed.

Self-Adhered Flashing
Flexible-facing materials coated completely or partially on at least one side with an adhesive material and which do not depend on mechanical fasteners for attachment. They are used to bridge the joint (gap) between fenestration framing members and the adjacent water-resistive barriers or sealed drainage plane material. The purpose of flashing is to drain water away from the fenestration product to the exterior.

Please allow sufficient time to properly prepare the rough opening, install the door, and ensure its proper operation.

SAFETY AND HANDLING

Safety

- Read and fully understand **ALL** manufacturer's instructions before beginning. Failure to follow proper installation and finishing instructions may result in the denial of warranty claims for operational or performance problems.
- **DO NOT** work alone. **Three or more people are required**. Use safe lifting techniques.
- Use caution when handling glass. Broken or cracked glass can cause serious injury.
- Wear protective gear (e.g., safety glasses, gloves, ear protection, etc.).
- Operate hand/power tools safely and follow the manufacturer's operating instructions.
- Use caution when working at elevated heights.
- If disturbing existing paint, take proper precautions if lead paint is suspected (commonly used before 1979). Your regional EPA (www.epa.gov/lead) or Consumer Product Safety Commission offices provide information regarding regulations and lead protection.

⚠ WARNING

Drilling, sawing, sanding or machining wood products can expose you to wood dust, a substance known to the State of California to cause cancer. Avoid inhaling wood dust or use a dust mask or other safeguards for personal protection. For more information, go to www.P65Warnings.ca.gov/wood.

Materials and Wall System Handling

- Heed material manufacturer's handling and application instructions.
- The support buck must remain attached until the wall system is in front of the opening. The buck protects the sill and supports the frame corner fasteners.
- Protect adhesive surfaces from dirt, moisture, direct sunlight and folding over onto themselves.
- Handle in a vertical position; **DO NOT** drag on the floor.
- **DO NOT** put stress on joints, corners or frames.
- Store the wall system in a dry, leaning position to allow air circulation; **DO NOT** stack horizontally.
- Ensure the storage area is dry, well-ventilated and **protected from exposure to direct sunlight**.
- Only install into vertical walls when conditions and sheathing are dry.

IF INJURY OCCURS, IMMEDIATELY SEEK MEDICAL ATTENTION!

MATERIALS AND TOOLS

JELD-WEN exterior window and door products should be installed in accordance with JELD-WEN's recommended installation and flashing directions, which are shipped with the products or can be found on our website: www.jeld-wen.com. **NOTE:** When using flashing, spray adhesive/primer, sealant and foam products, we recommend using the same manufacturer and verifying compatibility. It is the End User's responsibility to determine if dissimilar materials are compatible with the substrates in the application.

Needed Materials

- 3/16" masonry screws (such as Tapcon®) for sill installation onto concrete. Screws must penetrate at least 1 1/2" into the substrate.
- Non-compressible or non-water degradable shims.
- Sill Pan: A pan flashing system (as defined in **ASTM E2112**) is **required** at the sill prior to window/door product installation. A sill pan should have a positive slope, **must be** installed onto the sill of the R.O. in a water-resistive manner and tied into the drainage plane of the building envelope. For sill pans without a positive slope, place a 3/16"-1/4" tall plastic shim 2" from each corner and no more than 8" on-center in between (excludes Canada and potentially large door systems). If an aftermarket sill pan (i.e., SureSill™) is preferred, then we suggest the Manufacturer's instructions be followed.
- Sealant: An exterior grade sealant (e.g., OSI® QUAD® Max or equivalent) is recommended for installation practices. Check with sealant manufacturer for color-match and paintability.
- Backer rod 1/8" larger than the widest portion of the gap (used in conjunction with sealant bead).

- Polyurethane Low-Expansion Window and Door Foam: A low-expansion, polyurethane window and door foam (e.g., OSI® QUAD® Foam or equivalent) is recommended for installation practices. Avoid using moderate to high-expansion foam products as operational issues or damage may occur.
- Spray adhesive/primer for self-adhered flashing. Such as Loctite® 300 or equivalent. Follow the manufacturer's instructions for application methods.
- Drip cap if required because of door location and exposure. Doors with an adequate overhang (see our Appropriate Protection document (JGI030) at www.jeld-wen.com) may not need a drip cap. In addition to sill pans, SureSill™ also offers types of head flashing.

FOR INSTALLATIONS INTO A BUCK:
- Liquid-Applied Flashing (e.g., Protecto Wrap LWM 200 or OSI® QUAD® Flash).

FOR INSTALLATIONS INTO BRICK VENEER:
- Rigid Flashing.

Provided Materials
- #10 x 2 1/2" flat-head screws (through-frame installation).

Needed Tools

- Tape measure
- J-roller
- Caulking gun
- Vacuum for removing debris from sill track
- Drill and Impact driver with bits
- Utility knife
- Levels (3' and 6' recommended)
- Screwdrivers: #2 phillips head, #3 phillips head and a small flat-head screwdriver (3/32")

- 6" Drill bit extension - #2 phillips or #2 square
- 14 mm open-end wrench (slab adjustment only)
- Step ladder (2)
- Bar clamps
- Wood block (for slab support)

1   INSPECT PRODUCT

NOTICE

If slabs need to be removed prior to installation, reference Section 9: Slab Removal and Installation

Remove Packaging

- If there is a protective film on the glass, **DO NOT** remove it until installation and construction are complete.
- **DO NOT** remove the support buck attached to the frame. The support buck should remain attached until the door unit is in front of the rough opening and is ready to be installed. In addition to protecting the sill, the buck reduces the stress placed on the corners of the frame.

Inspect Door

- Cosmetic damage and/or shipping damage.
- Manufacturing abnormalities (e.g., warp, bow, squareness).
- Correct product (size, color, grid pattern, handing, glazing, energy-efficiency requirements, etc.).

- Product squareness (diagonal measurements not more than 1/4" different).
- Frame or slab damage.

If any of the above conditions represent a concern, or if you expect environmental conditions to exceed the door's performance rating, **DO NOT** install the door. Contact your dealer or distributor for recommendations.
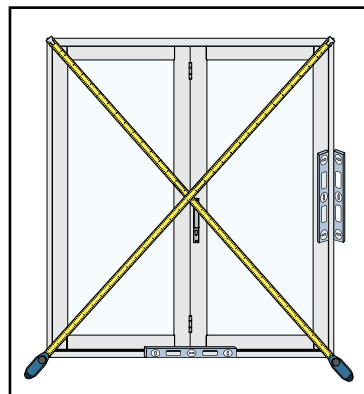
2   INSPECT ROUGH OPENING (R.O.)

⚠CAUTION

The use of a sill pan and other barriers will decrease the rough opening height clearance. Adjust the opening dimensions accordingly.

Rough Opening Requirements

- Verify the width and height of the rough opening is 1/2" larger than the wall system width and height.

- Verify the rough opening is square. The (A) and (B) measurements should be the same. Suggested deviation from square is no more than 1/4".

- Verify the rough opening is level and plumb (C, D and E). Suggested deviation is no more than 1/4".

- The rough opening sill should not be crowned or sagged (D), but rather level or sloped (positive slope) to the exterior.

- The exterior face of the rough opening should be in a single plane (E) with less than 1/8" twist from corner to corner.

- Minimum double studs (king and jack/trimmer) should be used to support the header at all rough openings.

Verify Square, Level and Plumb
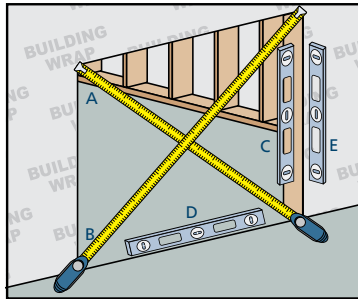
For Retrofit Installations

Verify the rough opening framing is structurally sound. Contact your local waste management entities for proper disposal or recycling of products being removed.

This installation guide only addresses masonry/block wall, sheathed wall, open-stud construction and brick veneer construction. Exterior foam installation should be treated as detailed within the "Fully Sheathed Wall Construction" with the door frame not protruding past the structural framing.

Masonry/Block Wall Construction

This installation assumes that a framework of studs (often called a buck) has already been properly fastened to the concrete/masonry wall in a weatherproof manner.
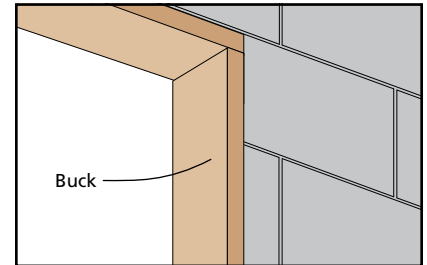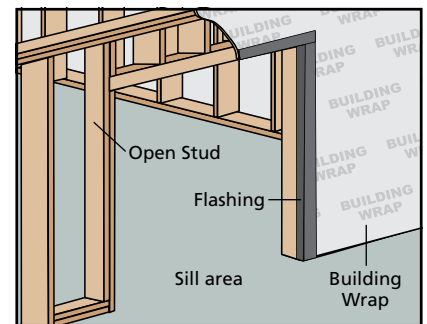

Fully Sheathed Wall Construction

Sheathing is applied to the exterior of the wall framing. The wall system will be mounted into the rough opening in a weatherproof manner.
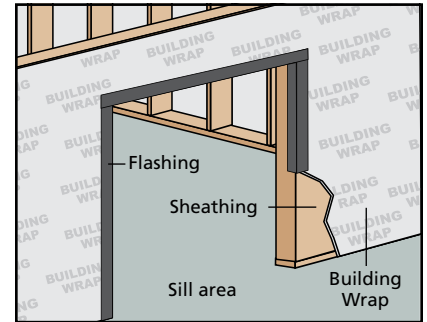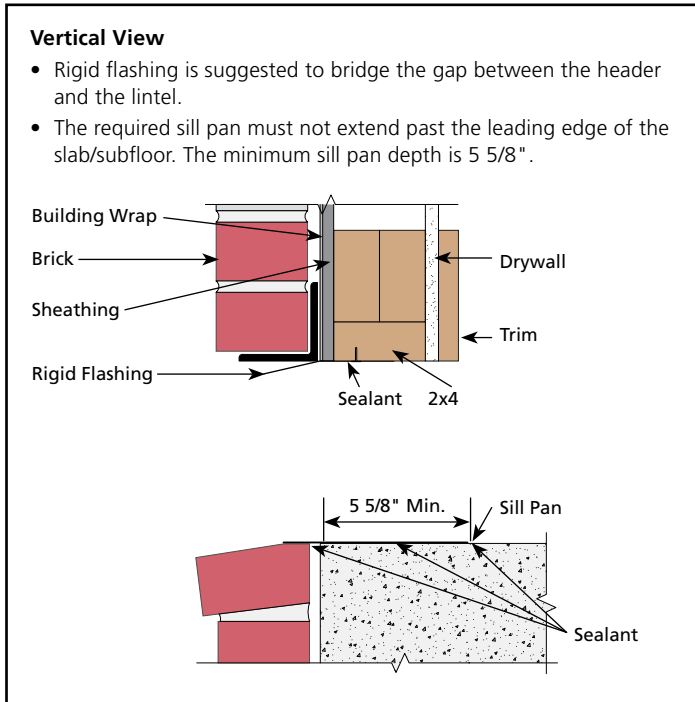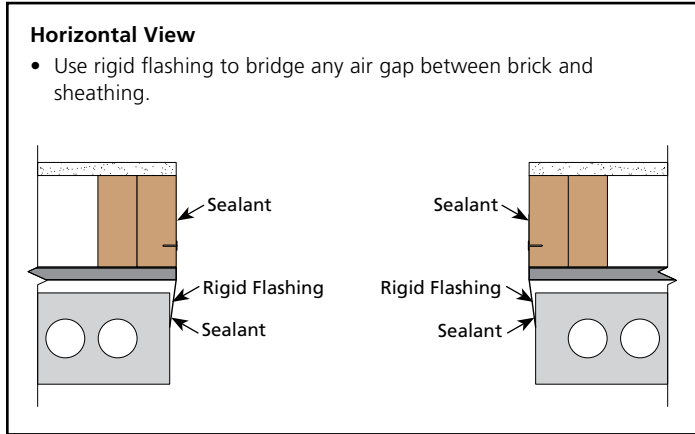

Open-Stud Construction

Sheathing is absent and building wrap is applied atop the wall framing. The wall system will be mounted into the rough opening in a weatherproof manner.
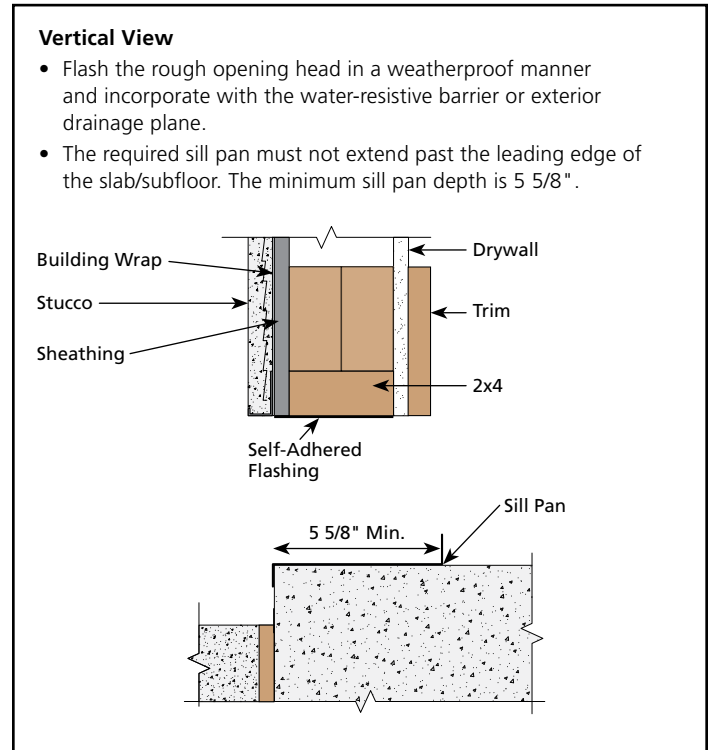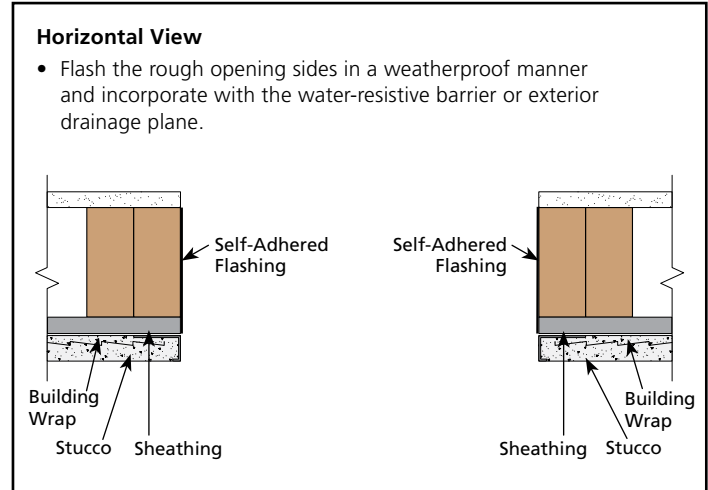
3 ADDITIONAL CONSIDERATIONS - PREP AND FLASHING

Common Brick Veneer Rough Opening – Rigid Flashing and Sill Pan Detail

Horizontal View

- Use rigid flashing to bridge any air gap between brick and sheathing.

Vertical View

- Rigid flashing is suggested to bridge the gap between the header and the lintel.
- The required sill pan must not extend past the leading edge of the slab/subfloor. The minimum sill pan depth is 5 5/8".

Typical Stud Framed Rough Opening – Flashing and Sill Pan Detail

Horizontal View

- Flash the rough opening sides in a weatherproof manner and incorporate with the water-resistive barrier or exterior drainage plane.

Vertical View

- Flash the rough opening head in a weatherproof manner and incorporate with the water-resistive barrier or exterior drainage plane.
- The required sill pan must not extend past the leading edge of the slab/subfloor. The minimum sill pan depth is 5 5/8".

4   INSTALL SILL PAN FLASHING SYSTEM

Landings

These instructions cover two wall system sill conditions: the **step-down landing** and the **continuous slab landing**. The installation methods vary slightly between landing types.
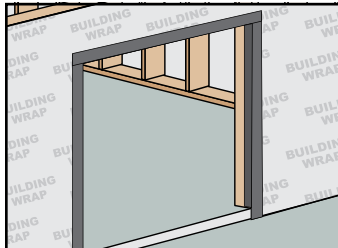

Step-Down Landing
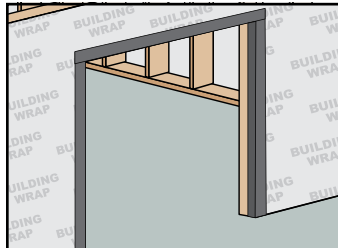
Continuous Slab Landing

Prepare Sill

1. A pan flashing system (as defined in **ASTM E2112**) is **required** at the sill prior to window/door product installation. Always allow water to drain out of the pan and onto the building wrap, drainage plane or to the exterior.

NOTE: Sill pans for step-down landings will have a folded-down edge in the front to accept the step-down landing.
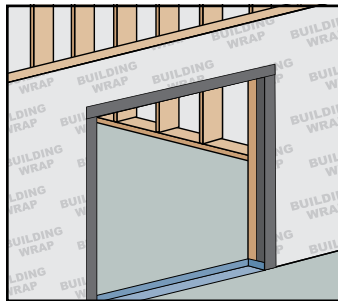
2. Apply a continuous bead of sealant to the interior of the upturned leg and end dams of the sill pan (if using a rigid sill pan).
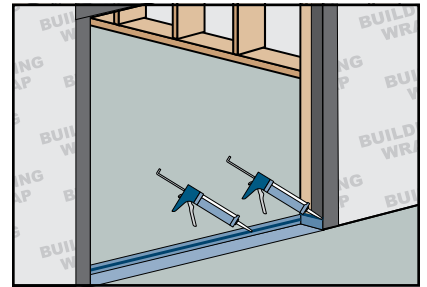
Shim the Sill

See **Product Installation Tolerance Table** for tolerances

1. Unless installing into a sill pan with a positive sloped draining system, shims should be aligned as defined by the label on the wall system or as stated below:

- Shims (1/4" maximum) should be placed near the exterior edge of the sill pan.
- Place one shim 2" from each side of the rough opening (if the rough opening is sized correctly, this should be approximately 1 1/2"- 2" from the corner of the wall system).
- Shims should be no more than 8" on-center.
- There should always be a drainage path to the exterior out of the sill pan.
- Shims can be held in place with sealant.
- Increased shim height may be needed or may interfere with bar/grill alignment of adjacent windows/doors.
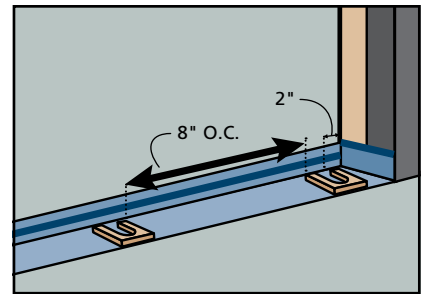
5 TEMPORARY FASTEN AND SHIM

⚠️CAUTION

To avoid injury, use at least 3-people to install. The wall system MUST be supported at all times!

1. Position the wall system in front of the rough opening. **NOTE:** Frames laid horizontally **must be** fully locked and protected before the support buck is removed.
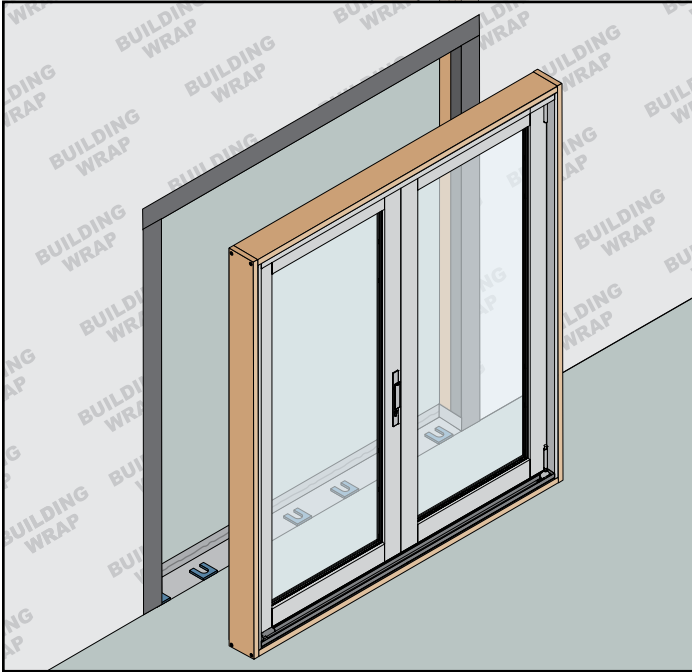
2. Remove the support buck from around the frame.
   NOTE: Fasteners may have been seated through the frame into the buck. Check the head jamb channel and sill channel for possible buck fasteners.
3. Tilt the wall system into the rough opening and support until **fully** fastened.

4. Position the wall system frame so the bottom/sill portion of the wall system is centered within the opening. If using a rigid sill pan, ensure the back of the sill is in contact with the back dam of the sill pan.
5. Double-check the sill is level within the opening.
6. Adjust the top/head portion of the wall system frame from left to right until the frame is square within the opening (reference the **Product Installation Tolerance Table**).
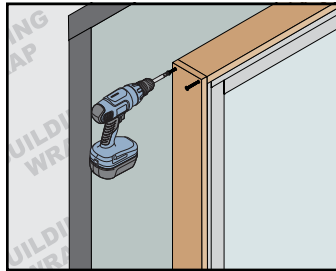
| Product Installation Tolerance Table	
Products must be installed in a manner that **Does Not** exceed the tolerance below	
Plumb	+/- 1/8 "
Level	+/- 1/8 "
Twist	+/- 1/8 "
Square	+/- 1/8 "

7. Evaluate the wall system position within the opening for plumb, level, square and twist.
8. Add additional shims as necessary to ensure proper support and alignment of the wall system frame. Larger wall systems may need additional shims. A shim is **required** at each fastening location to prevent frame deflection.
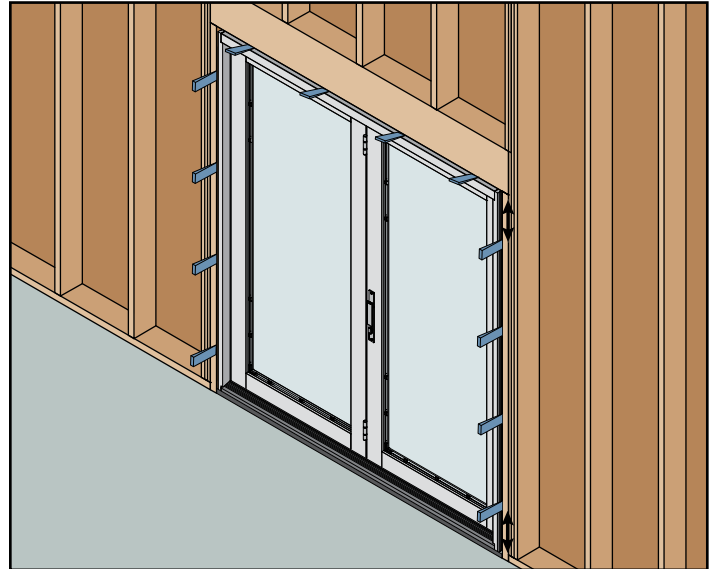
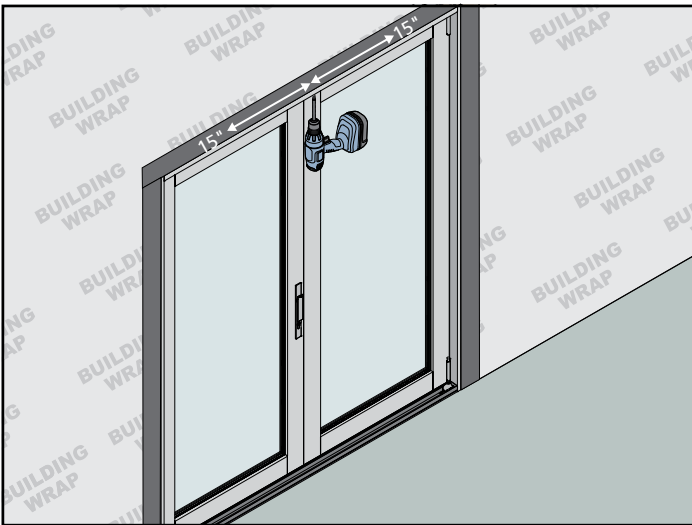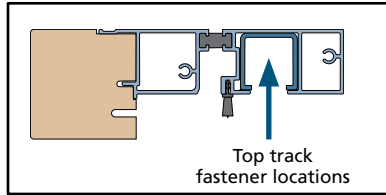9. Temporarily fasten through the pre-drilled hole in the head jamb 4" from each corner.
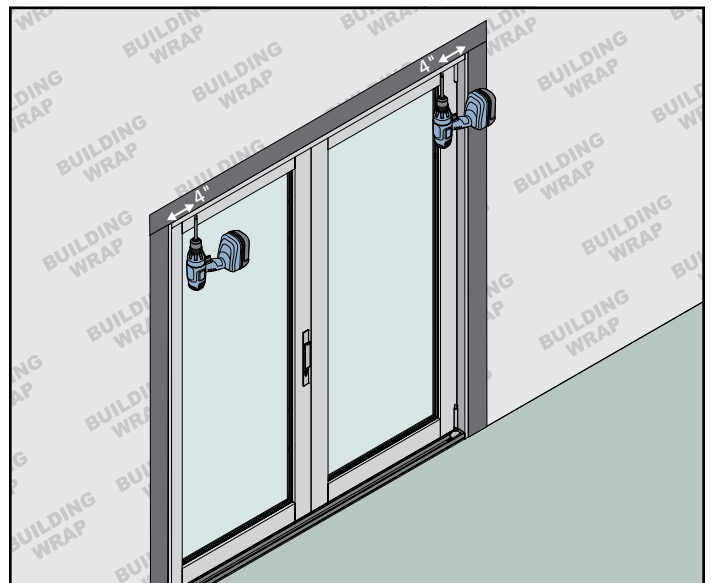
6 FASTEN PRODUCT (SIZE AND SPACING)

NOTICE

Embedment must be a minimum of 1 1/4" into the structural framing. Fastener (anchor) heads must be flush.

1. Fasten the head jamb through the pre-drilled hole locations using the provided installation fasteners. **NOTE:** A shim is **required** at each fastening location to prevent frame deflection.

Top track fastener locations

⚠ CAUTION

Fasteners through the sill will breach the sill pan flashing. Following the sealant application steps outlined below is imperative.

- Apply sealant to the threads of the fasteners. Apply additional sealant into and around the pre-drilled hole.
- Seat the fastener until the head is flush with the frame.
- Apply sealant to the fastener head, ensuring the head is sealed to the frame.
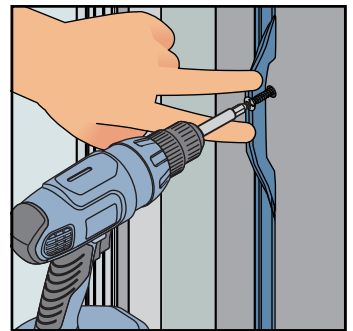

2. Apply sealant and fasten the sill through each pre-drilled hole location (located beneath the rubber sill track seal).
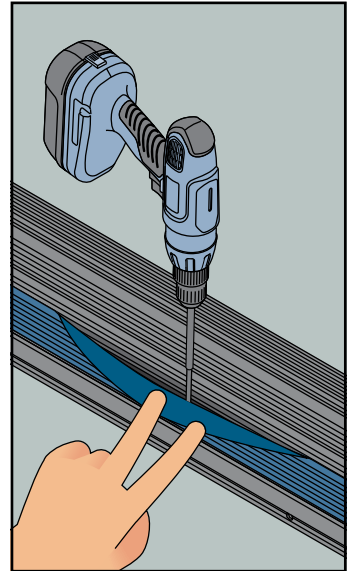
3. Unlock and open the slabs to gain access to the pre-drilled fastener locations behind the side jamb weatherstrip.
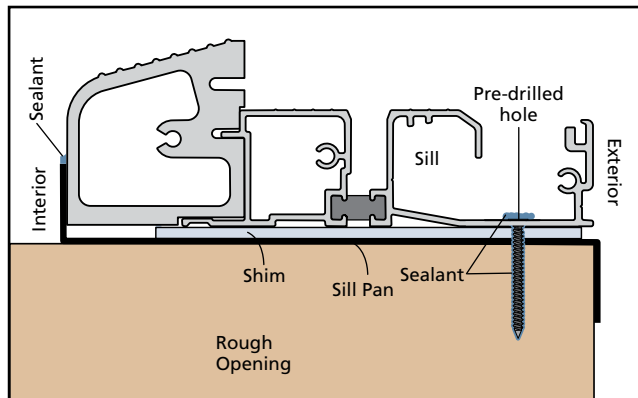
4. Fasten the side jamb at the pre-drilled locations. **NOTE: DO NOT** pinch or rip the weatherstrip on the side jambs.
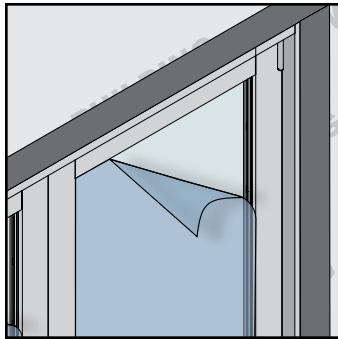
7   CREATE "INTERIOR" AIR SEAL

Continuous "Interior" Air Seal

NOTE: Shims may need to be cut back, so the interior air seal is "**continuous**" between the wall system frame and the rough opening.

Create a **required** continuous air seal on the interior by integrating the rough opening and the wall system frame with low-expansion polyurethane foam or backer rod and sealant. **NOTE:** If foam is used, 1/2" - 1" depth is prescribed. Backer rod can be used to control the depth.
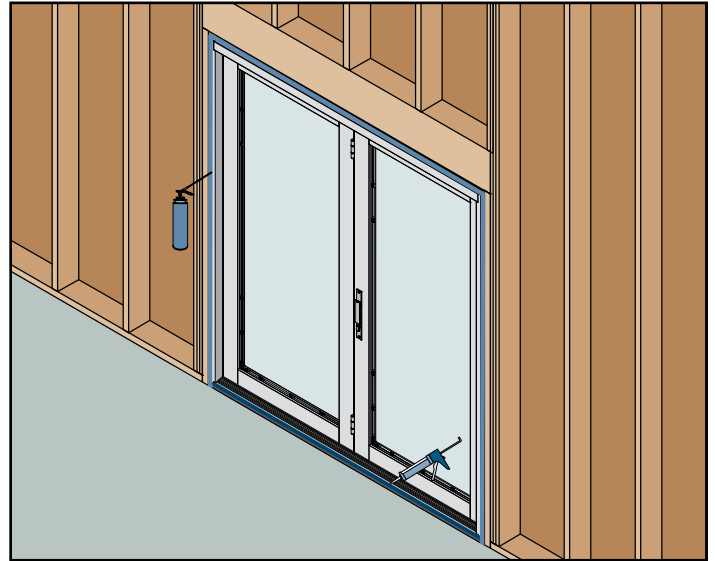
8   REMOVE PROTECTIVE FILM AND FINISHING

If applicable, remove any protective film immediately from all surfaces of the frame/slabs and within six months from any glass.
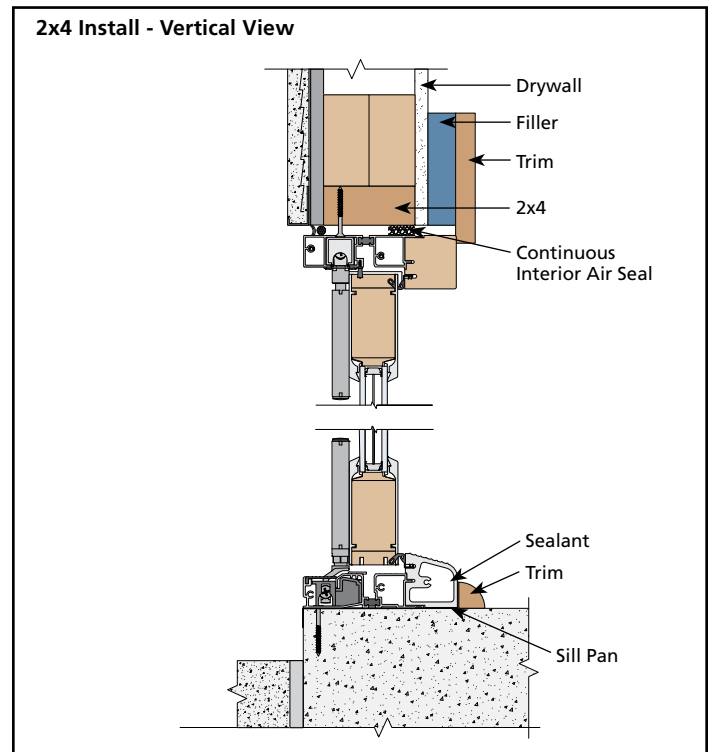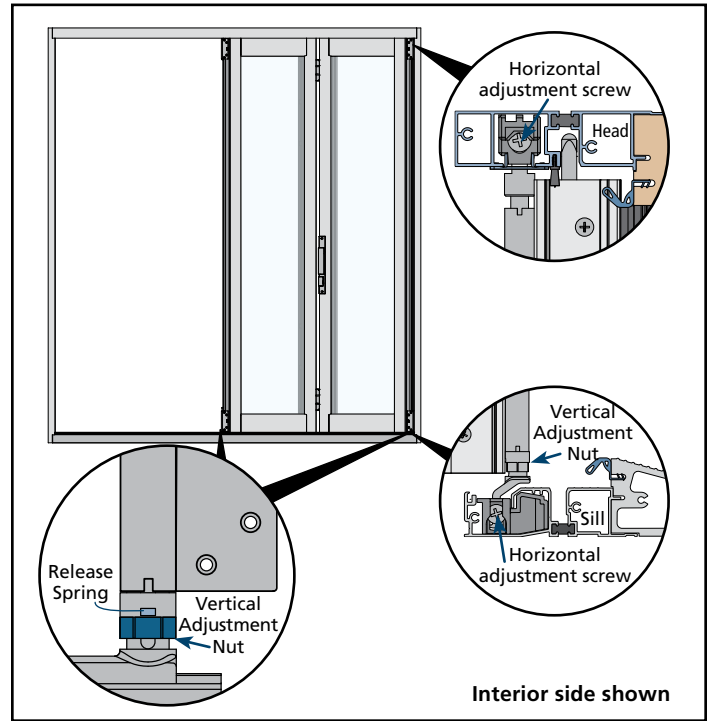

Interior Trim

• Due to the depth of the wall system (5 5/8"), a filler between the drywall and the interior trim will be needed. The width of the filler will depend on the interior wall conditions.

2x4 Install - Vertical View

- Drywall
- Filler
- Trim
- 2x4
- Continuous Interior Air Seal
- Sealant
- Trim
- Sill Pan

After Installation

• **Ensure weep holes/channels are clear of debris for proper water drainage. DO NOT seal weep holes/channels.**

• Leave an expansion/contraction gap of approximately 3/8" between the wall system frame and the final exterior wall surface (siding, stucco, etc.). For a finished look and additional protection, seal this gap on the sides with backer rod and sealant. If sealant is applied above the drip cap, ensure the sealant bead is discontinuous to allow for drainage.

• Protect recently installed wall systems from damage from plaster, paint, etc.

• Please reference **JMC004, Finishing and Refinishing Instructions for Interior and Exterior Door Slab and Systems** located on our website at jeld-wen.com.

• If installing a retractable screen, please reference **JII-90043, Installation Instructions for F-4500 Retractable Screen System** located on our website at jeld-wen.com.

8 REMOVE PROTECTIVE FILM AND FINISHING (CONTINUED)

Make Final Adjustments - If Necessary

1. The wall system may need adjusting once installed. Slide the slabs into the closed position and engage the handles to secure the slabs.

2. Upper and lower Wall Pivot Hinges adjust horizontally using a #3 Phillips head screwdriver. Clockwise rotations will move the slab away from the jamb; counterclockwise will move the slab toward the jamb. Adjust as necessary to achieve a consistent reveal across the opening.

3. Lower Wall Pivot Hinge and Directional Carrier Sets adjust vertically. Insert a flat-head screwdriver into the slot to release the spring and turn the collar with a 14 mm open-ended wrench. One rotation will provide approximately 1/16" adjustment. Rotation to the right will raise the slab and rotation to the left will lower the slab. Adjust as necessary to achieve a consistent reveal across the opening.

4. Open and close the wall system to check for alignment and smooth operation.

Horizontal adjustment screw
Head
Vertical Adjustment Nut
Sill
Horizontal adjustment screw
Release Spring
Vertical Adjustment Nut

Interior side shown
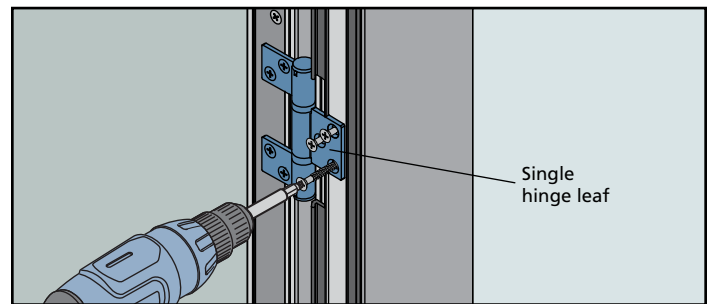
9 SLAB REMOVAL AND INSTALLATION

Slab Removal

⚠WARNING

Individual slabs are heavy. To avoid injury, use at least 3-people to remove. The slabs MUST be supported at all times.

1. Prior to removing the wall system from the pallet. Unlock and fully open the slabs to gain access to the hinges.

2. Use a putty knife to assist with the removal of the sweep weatherstripping from under each slab.

3. Support the slabs with a wood block spanning the length of both slabs and apply two bar clamps.

Bar clamps
Wood Block
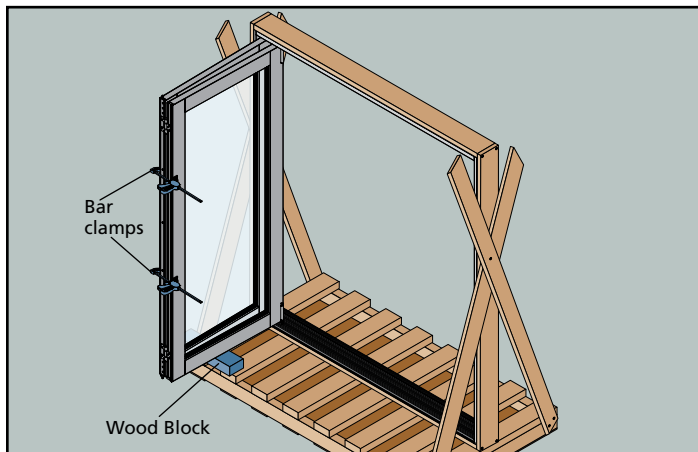
4. Remove the fasteners from the hinge leaf with 3 pre-drilled holes (single hinge leaf) from the top and bottom hinges. **NOTE:** The hinges will remain on the opposite slab.


Single hinge leaf

5. Move to the interior of the wall system and remove the astragal cover to expose the directional carrier fasteners.


Astragal cover
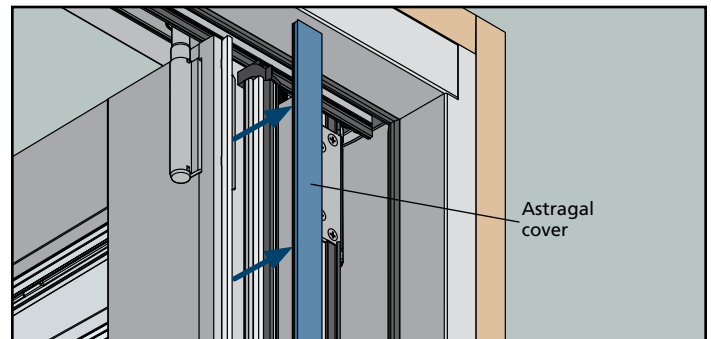
9   SLAB REMOVAL AND INSTALLATION (CONTINUED)

6. Remove the directional carrier fasteners and slide the directional carrier out from under the astragal.

Directional carrier screws

Directional carrier

Directional carrier
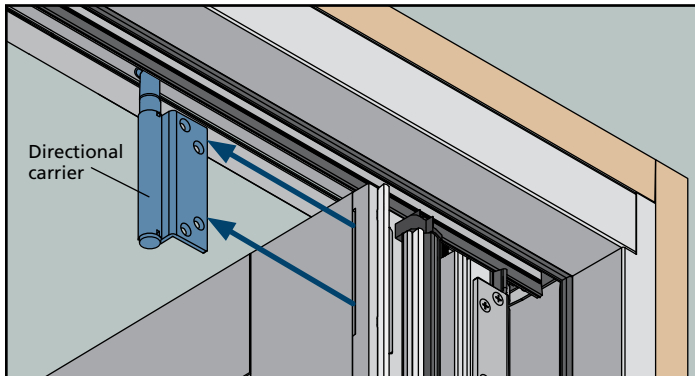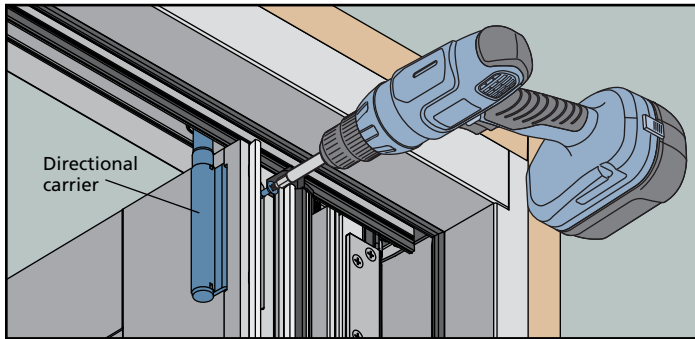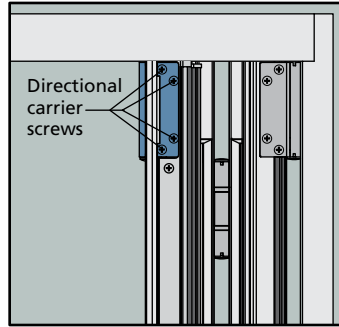
7. Repeat steps for the bottom directional carrier. **NOTE:** A small wooden wedge or pry par can be used to support the slab during the removal of the lower hinge.

8. Remove the bar clamps and set the slab aside in a safe location.

9. Locate the fastener locations on the upper and lower wall pivot hinges on the opposite slab and remove. **NOTE:** Support the pivot hinge leaf when removing the screws. The hinge leaf and the hinge post are two separate pieces.

Upper pivot slab hinge
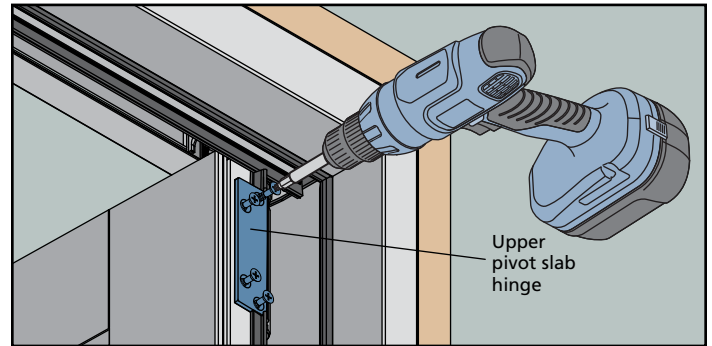
10. The slab will now be free from the hinges. Set aside in a safe location.

11. **For 2 + 1 Wall Systems ONLY**, repeat the process to remove the remaining slab.

Slab Installation

1. Follow the slab removal steps in reverse.

2. Tighten all screws till snug – **DO NOT** overtighten.

Please visit jeld-wen.com for warranty and care and maintenance information.

Thank you for choosing

JELD·WEN®