WEB BASED
APPLICATION SPECIFIC
INSTALLATION INSTRUCTIONS

Header, Jamb and Sill Liners

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F-Channel Installation

Proper installation of replacement windows requires that if the old opening (with or without the old frame) be sealed in such a way that any of the degradation or irregularities in the old frame are covered and the new installation is adequately integrated with the water management system of the wall.

In order to accomplish this, it is also important that whatever is done to the old opening melds with the new window to prevent water, moisture and air infiltration while allowing the opening to "breathe", avoiding the trapping of condensation in the old cavity.

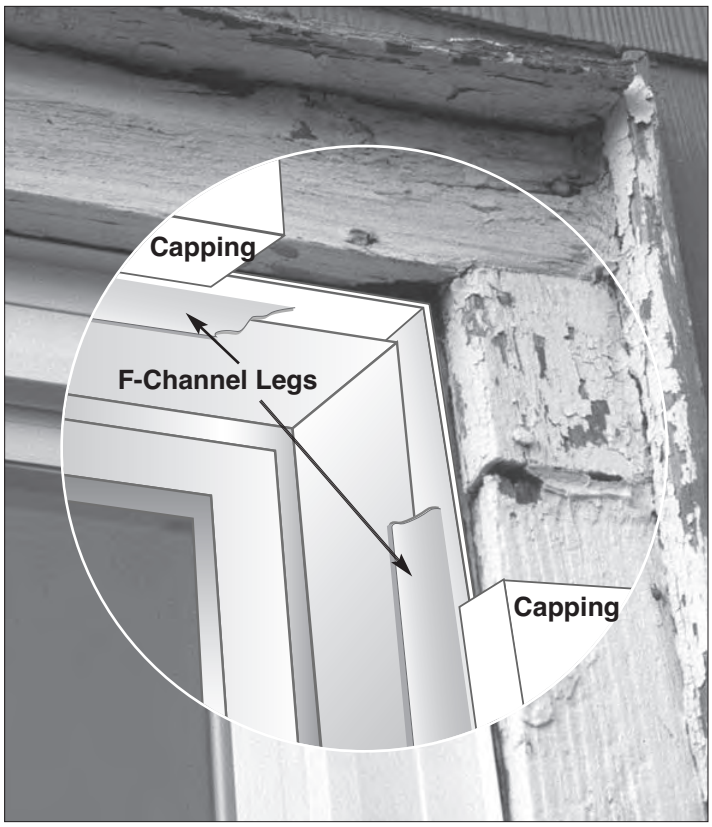
When removing the old window, whether it is the old sash of a double hung, or the removal of a fin-mounted sliding window, or even an embedded steel casement window. often the opening needs some modification to cover where the old window parts were, and/or to adequately prepare the opening for a properly installed new window.

A perfect alternative installation method involves an extruded piece called an "F-Channel". This extruded piece has two "legs" which fit precisely over the frame of the new vinyl window, and the width of the F-Channel extends past the second leg to cover the full 3-1/2" opening, as shown in the diagrams.

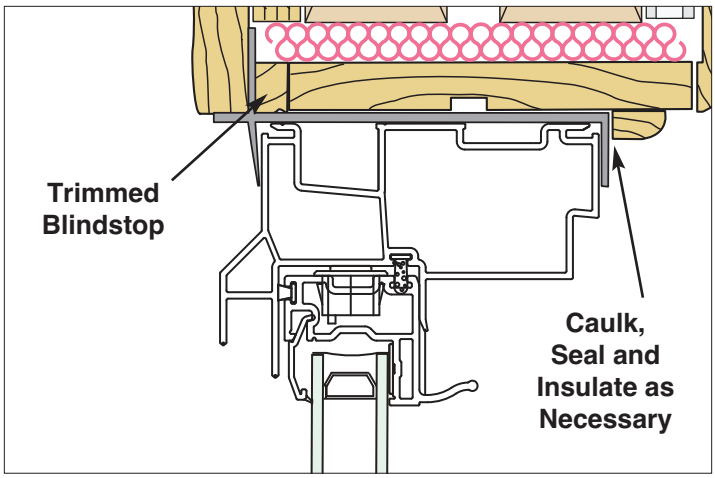
For sash replacement, the two sash and parting stops are removed. The exterior blind stop is cut off as in an "outside-in installation (described elsewhere in this book). The F-Channel is affixed to the old opening on the sides and top and the new window is "snapped-in" the channels from the outside. While the fit should be fine, if there is extra play, the window can be centered and anchored to the F-Channels using pop rivets.

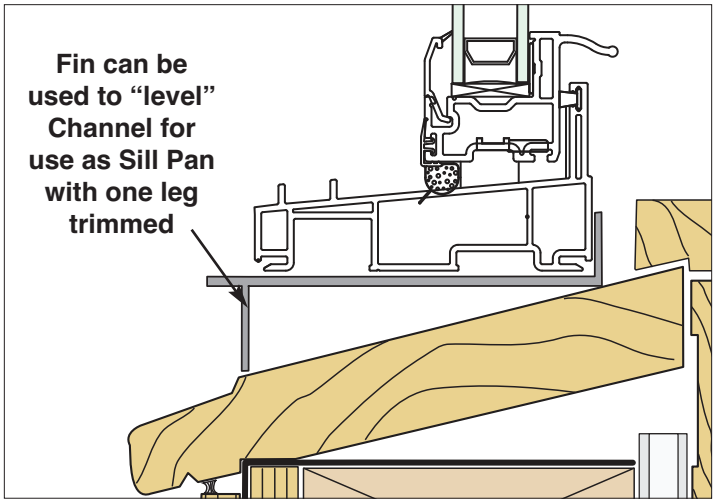
If the "F"Channel is made with a "Nailing Fin", it can be slipped up under old siding, and with the "F" Channel turned upside down, and one leg trimmed off, the "fin" can be modified to create a level "sill" while providing a functional sill pan for drainage.

Perhaps the best part of this method of installation is that the capping can be placed over the extended portion of the F-Channel as shown. This protects the installation from water penetration without excessive caulking, allowing the opening to breathe. This is important as warm moist air on the interior migrates towards the outside during colder exterior temperatures, and can condense on the colder outer surfaces



F-Channel Installation can be very effective where the old opening is degraded.





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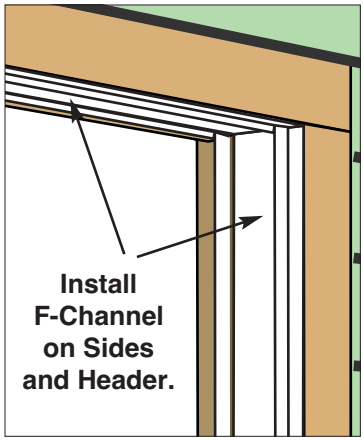
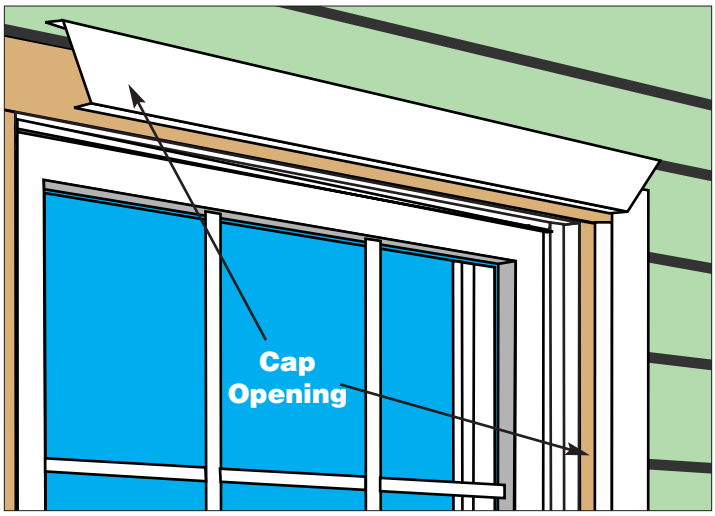
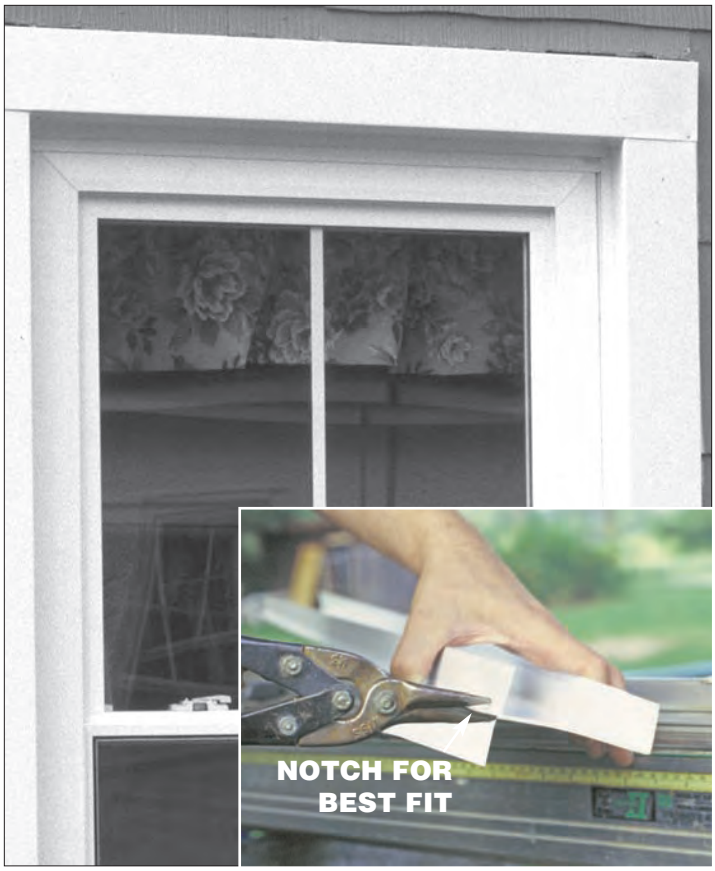
Old Steel Window in Brick Opening

New Vinyl Window Installed with F-Channel





Finished Installation using F-Channel.



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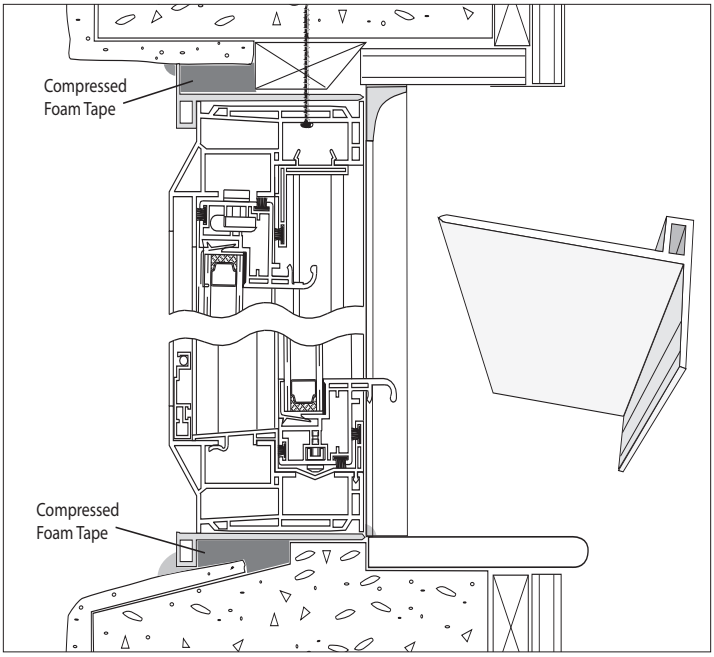
Jamb, Head and Sill Liner Replacement Installation



Before You Start

As with all installations, it bears repeating: successful installation starts with a proper rough opening. If it is out-of-square, mis-measured, or otherwise not acceptable, it can cause as many installation related problems as any other reason. It is imperative that the installing technician or surveyor determine 4 critical things before any installation starts:

1. Is the Opening the Proper Size? Most manufacturers have a tolerance for the difference between the window size and the rough opening size. AWDI Standards allow no more 1/4" on the width and 1/2" to 3/4" on the height to accommodate the sill pan and sill shimming. Too small, and the window/door may have to be forced into the opening distorting it, and too much difference will make it hard to shim and mount securely.

2. Is the Opening Plumb and Square? Precision window and door products depend on the plumb and square of the installation to allow easy operation while maintaining weatherseal integrity. Small differences in plumb and square may be accommodated with proper shimming, but be sure there's room to do so. Equal, or nearly equal (less than 1/8" difference is recommended) diagonals are the easiest way to determine squareness of the opening.

3. Is the Sill Level? A 32" sill can be 1/8" out of level and still meet code. An 1/8" difference at one side or the other can throw the who unit out of square. If the 1/8" is in the middle, it can deform the sill over time and effect proper operation and closure.

4. Has the Opening been Framed Properly? The final installation job is no better than the way the opening has been prepared to accept the new window with properly sized and mounted pressure treated wood 1X material to give adequate support to the new window.

Basic Installation Requirements

While a proper opening and proper sequential steps will enable the technician to install effectively, successful installations require skills in Shimming and Caulking and Sealing and Maintaining Water and Air barrier integrity of the wall unit itself.

Shimming: All shimming is done with plastic, stackable, non-tapered shims. Take care to not make them too tight, or too loose, but just right. Shimming should be done between the frame and the opening, behind each mounting hardware position.

In addition, shimming should be done under the sill pane to make sure it is level, be careful not to tilt it to the back of the opening to maintain its ability to redirect any water accumulation towards the outside. When installing wood windows, the jambs often extend below the sill. If the window is resting on the sill pan and water collects in the pan, wicking can occur, eventually causing rot or degradation of the wood jamb.

It is recommended that a single plastic shim be placed on the extended jamb bottom to lift it off the sill pan and away from any possible accumulated water.

Caulking and Sealing: The best sealant is silicone-based or urethane-based to be sure that it adheres to the two materials being sealed. Joints greater than 1/8" to 1/4" should contain backer rod to maintain the bond during expected expansion and contraction of the materials. All mounting holes should be caulked over, and the top edge of the sill pan be sealed before the adhesive backed flashing is placed over the pan and it's mounting nail head.

Air and Moisture Barrier Integrity: When any cuts are made in applied building paper or wrap, these cuts should be fixed and sealed in a shingle lap fashion to maintain the air and water protection they were designed for.

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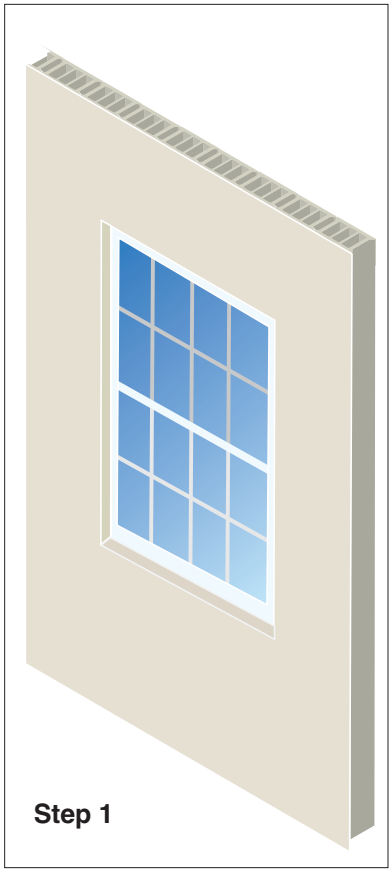
Step 1:
Identify what kind of window is to be replaced. Determine where the mounting screws are located.

Most windows were anchored through the frame (jambs, header and probably the sill) through a support buck which was anchored to the block or concrete wall.

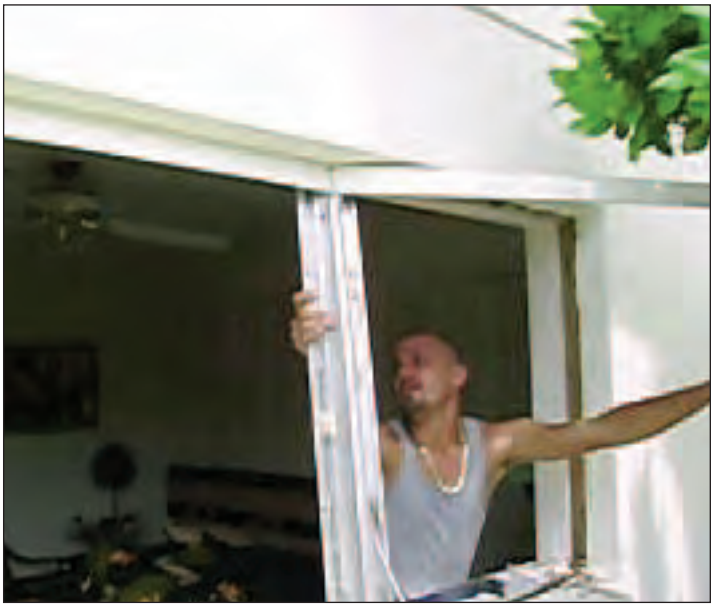


Step 1

Step 2:
Remover the old window. You may have to remove the operable sash (vertical if single hung or double hung, horizontal sash if the old window is a slider, or the multiple crank out panels of an old jalousie window.

The removed window will leave a channel where the support buck is/was, as shown below.

Step 2



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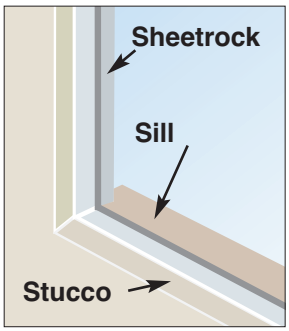
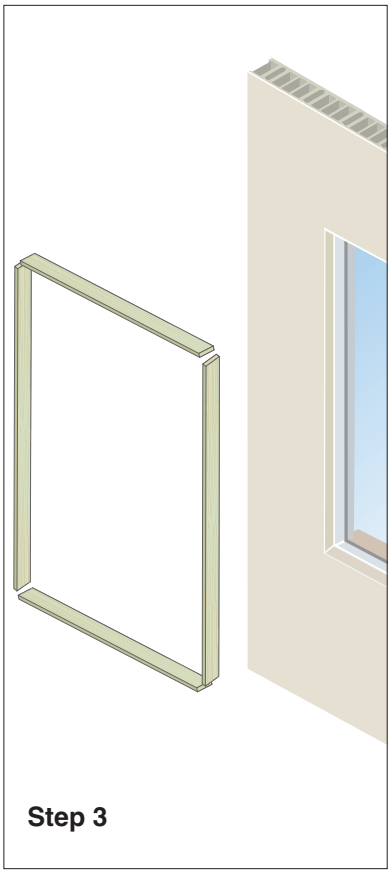
Step 3:
Using pressure treated 1X lumber which is the approximate width of the channel revealed by the removal of the old window, fasten the new buck material on all four sides.





Filling In the Support Buck:
Old windows were often installed with minimal blocking. The wood mounted to the block/concrete which was used as the substrate to mount the old windows was often scrap or non-continuous buck material.

Remove all and install pressure treated (boron is best) 1X material to fill the gap and make a smooth transition to the interior wall board for the uPVC blind-stop/buck liner.

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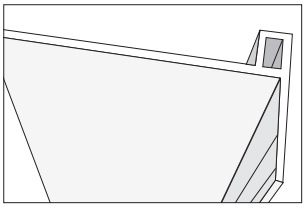
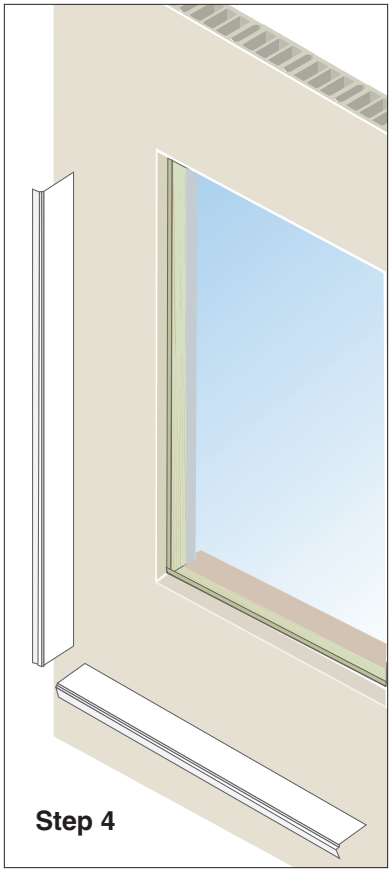
Step 4:
Cut the proper size of the uPVC Buck liners to go over the installed pressure treated buck in the opening.

Trim the sill piece to eliminate the stop and allow a tapered drainage away from the opening.

Buck Liner to surround Opening





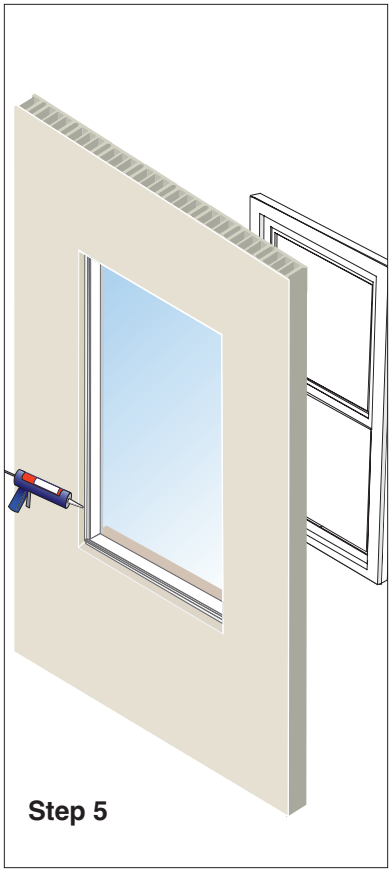
Step 4

Step 5:
Caulk the back of the stop in preparation of mounting the window.

Place window unit into opening from inside the house, pressing the outer edge of the window against the uPVC liner's raised stop to make a firm contact with the sealant.

Using a framing square, plumb and square the window/door carefully. Remove operable sash if necessary. Shim with plastic, flat, stackable shims. Never use tapered wood shims.

Using fasteners, anchor window through frame into the jambs on both sides.



Step 5

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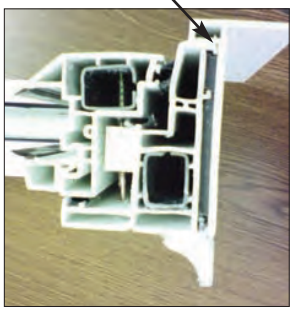
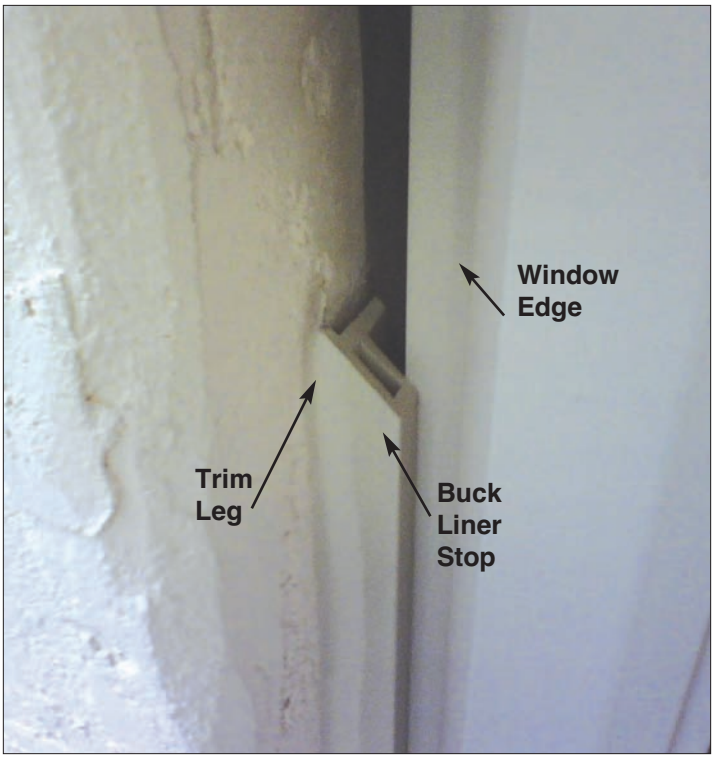
Step 6:
Caulk/Seal the interior edge of the new window with a small bead of sealant.

Press into place the curved molding to finish the joint between the interior edges of the new window and the wall board or sheetrock.

Buck Liner Against Window



Cut-a-way shows liner with window against exterior stop, and the trim leg sized to go over the exterior stucco and then be sealed with caulk



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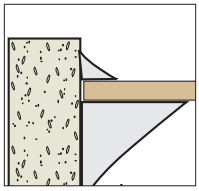
Picking the Proper Sealant

AWDI understands that the application of a sealant is as crucial as the choice of sealant. When a bead of sealant is applied to a joint there are severable factors to consider:

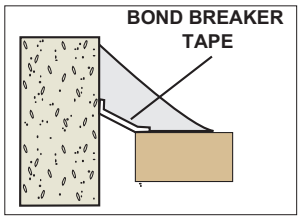
- Adhesion
- Flexibility
- Durability
- Compatibility
- Temp, Weather, Exposure)
- Aesthetics

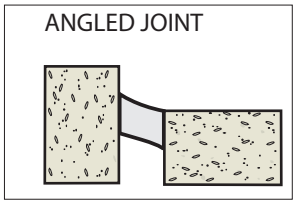
Within these three performance aspects there are countless combinations of applications, substrates and conditions a sealant is exposed to.

Bedding Joints:
For bedding joints, it is especially important that the sealant meet AAMA 800-802, and is of the right consistency and made up of 100% solids so it will not shrink after cure, unlike solvent and latex based sealants that shrink and create gaps after curing.

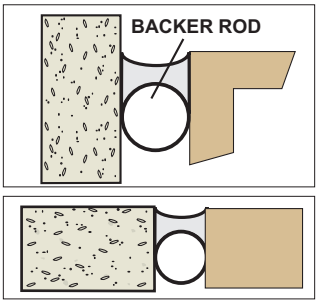


Fillet Joints:
A fillet joint is formed when two surfaces come together to form a right angle. The sealant used to join these two surfaces is triangular in shape. The sealant must adhere to the variety of substrates you're faced with. Without strong adhesion there is a high chance that the sealant will pull away from the substrate allowing for air and water infiltration.





Control Joints:
A control joint is formed when two similar or dissimilar materials meet or when substrates do not form a right angle. This joint will require both a backer rod and sealant for proper application. This joint can be as wide as 5/8 inch and be prone to extreme movement, a highly flexible sealant is necessary for a reliable seal with this application. In order to successfully install a window or door and effect a lasting weathertight seal, AWDI recommends an ASTM C920, Class 50 sealant such as premium DYNAFLEX® from DAP as a good representative to seal the exterior joints of windows and exterior finish materials. The best choice is a sealant that meets AAMA 800-802 to assure proper adhesion to the most common building materials and that is compatible with WRB and flashing tapes; and can be ued in a wide temperature range and wet surfaces.



Desired Properties

- No Shrinkage
- Locks out air and water infiltration to protect integrity of the seal
- Proven Wet Surface Application
- Ability to use the same sealant in warm and cold temperature situations to produce consistent results. 0F – 140F cold and warm weather application
- Strong Adhesion / All Surfaces Will stick to even the most difficult to bond building materials
- 5X stretch, 50% joint movement Long term durability assurance even with expansion and contraction of building materials
- 24 hour fast cure, paintable 1 HR. Fast cure to protect the building structure from outside forces and quick paintability saves time
- Achieves bubbling resistance faster to ensure optimal aesthetics
- 4,600 + Color Matches ensures perfect color match to all primary building materials
- Dirt & Dust Resistance ensures optimal visual appeal long after an installation
- UV Resistance
- Long term durability to compliment the durability of the building structure

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Spray Foam Insulation

While the term “Spray Foam” is often widely used in construction, there are two different types and each has its advantages and disadvantage.

Spray foam has been shunned by window installers and manufacturers over the years because foams, in the past, have either continued to expand after trim has been applied deforming the more pliable vinyl window frames, or because they have been over used to fill the gaps left when old windows are removed and the underlying rough opening has been exposed.

Make sure the foam you use has been tested in accordance with AAMA 812 and meets standard for low pressure development.

Most standards applying to window installation do not delineate between open cell foam and closed cell foam, the more popular “minimal expansion” foams are most frequently used and they are mostly closed cell. More confusing yet, is when foams are recommended, the compressed foam tape alternatives are called out to be open cell.

When it comes to Spray Foams, it helps to understand the differences.Open-cell spray foam (ocSPF) has a cell structure where the cells are filled with air. The open-cell structure renders soft, flexible foam, with a density of about 0.5-0.8 pounds per cubic foot (pcf).

The R-value per inch of open-cell foam typically ranges from R3.6 to R4.5 per inch. Unlike fiberglass and cellulose, the fine cell structure of ocSPF makes it air-impermeable at certain thicknesses. The air-impermeability of ocSPF qualifies it as an air-barrier material, dramatically reducing air leakage through the building envelope, significantly lowering the building’s heating and cooling costs. However, ocSPF, like fiberglass and cellulose insulations, is moisture-permeable, and may require the installation of a vapor retarder in colder climates.

Closed-cell spray foam (ccSPF) has a closed cell structure which yields rigid hard foam, with a density of 1.8-2.3 pound per cubic foot (pcf), and can provide structural enhancement in certain framed buildings. The smaller cells trap insulating gas from the curing, which has a lower thermal conductivity than still air, and increases the R-value to anywhere from R5.8 to R6.9 per inch.

Like ocSPF, ccSPF is also air impermeable at certain thicknesses and can qualify as an air-barrier material. The bigger benefit is that the closed-cell structure of ccSPF also makes it water-resistant, and is the only spray foam that can be used where contact with water is likely.

At a thickness of 1.5 inches, no additional vapor retarder is required for most applications.

Desired Properties

- Make sure the foam used has been tested in accordance with AAMA 812 and meets standard for low pressure development.
- Quick Setting Formulation: can be cut or trimmed in less than 1 hour
- Cold Temperature Application: can be applied in temperatures as low as 14F
- Insulation Value of R5: makes it an efficient method for stopping air and moisture infiltration
- Remains Flexible Once Cured: will not crack or dry out

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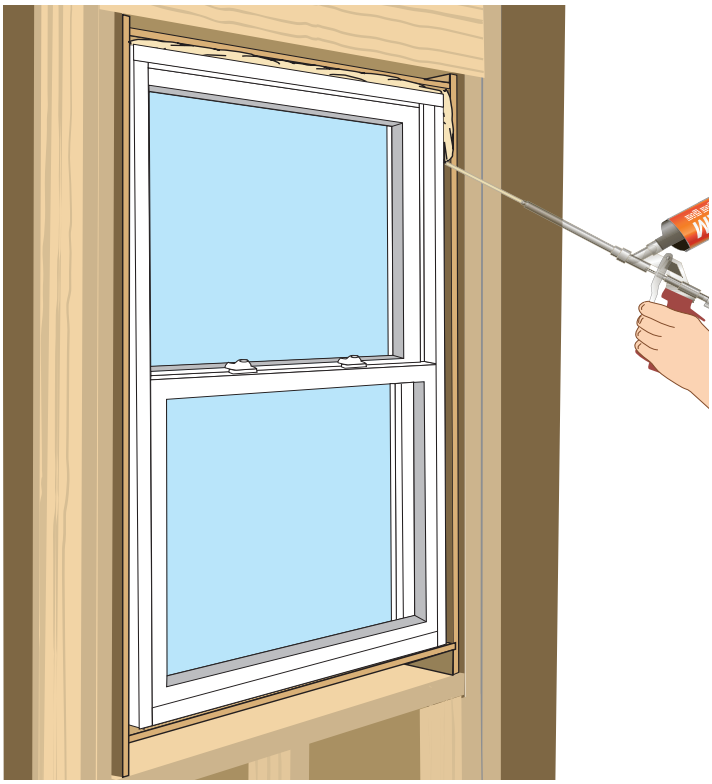


Using Spray Foam

For the best installation, it is necessary for the gap around the window or door to be sealed to block out air, water and vapor penetration. ccSPF can do that well if selected and used properly. Improper use can create water traps, impede drainage and exert excessive pressure to the window frame during expansion.

Remember: Vapor barriers need to applied on the warm side of the opening. Double vapor barriers (one on the warm side and another on the cool side) encourage condensation between and will trap the resulting condensation. Also, window installation cavities (the space between the window frame and the rough opening, or left-in-place old window frame) need to "breathe" to the outside, and allow drainage of collected water to the outside.

Used wisely, ccSPF can be the best solution. AWDI recommends DAP® DRAFTSTOP 812 Window and Door foam. DAP® DRAFTSTOP 812 also achieves a thermal performance of R-5 per inch.

Application

DAP DRAFTSTOP Foam is applied using a Foam Applicator Gun. This foam and gun combination allows for more precise application than the straw grade foam alternative. This gun offers a rear valve used to control the size of bead applied into the openings. The valve also allows the life of the foam to be extended by closing the opening of the barrel for future use.

For even smaller openings, a detachable screw on top is included with the gun to be able to fill gaps as small as ¼" wide.

Important tips:

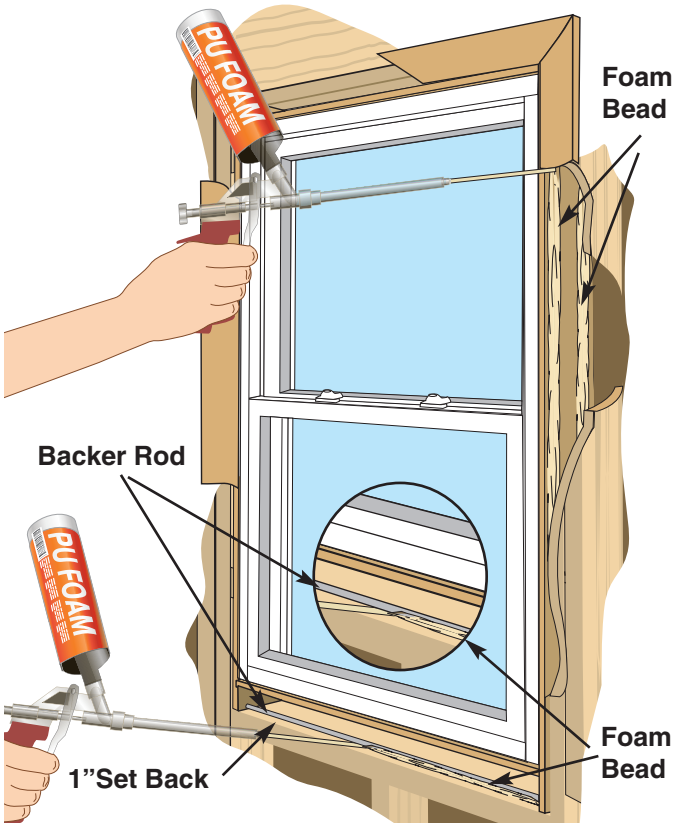
• Similar to the sealant gun, it is critical that you balance the movement of the foam gun or straw barrel and how you dispense the foam so that the foam makes contact with both the rough or existing window frame and replacement window frame.

• If the dispensed foam does not make contact with both the rough frame and the window frame, there won't be an adequate bond to seal out water and air.

• Industry Standards suggest application of 1 inch beads, separated by an equal space. Be careful not to create two vapor barriers - one at the exterior and one at the interior. Make sure there is the ability for the opening to breathe to the cold side for drying and drainage. Use backer rod about one inch in the sill as a stop to make a workable back dam

• When applying foam around the perimeter of the window or door, you must maintain a minimum depth of 1 inch. This depth is required to provide the correct thermal performance, to help improve energy savings, and to protect against condensation problems.

• When applying foam as a back dam to the gap between the window frame and the rough sill, do not allow the foam to extend to the exterior edge of the opening. Maintain a minimum of a 1 inch gap between the foam and the exterior edge of the rough sill. If foam fills this gap at the sill, any water from leakage will not be able to drain to the drainage plane or exterior cladding surface. Place backer rod the length of the sill, 1" from edge and use it as a back dam guide.



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