WEB BASED
APPLICATION SPECIFIC
INSTALLATION INSTRUCTIONS

Installing Hinged Windows

Although all possible measures have been taken to insure the accuracy of the material presented,
WIXSYS, and the author are not liable and do not assume any liability in case
of misinterpretation of directions, misapplication, improper installation, or typographical error.

Installing Casement and Awning Windows

Casement and Awning type windows are the most energy efficient operable windows available. They allow the least amount of air infiltration when closed, allow the most ventilation when opened, and can even allow ventilation during rain without letting water in. Because the screens are inside mounted, they stay cleaner, and are more easily removed and cleaned. And for extreme climates, glass storm panels can be mounted in the interior screen tracks. This is an inexpensive and effective way to get the added advantages of triple glazing.

Security is improved with Casement and Awning windows. The roto -operators allow the window to be partially opened and resist additional forced opening. Egress (the code-required ability to exit sleeping areas during emergencies) is also improved. Opening the Casement/Awning type window creates an immediate clear emergency exit which is twice the area of a fully opened double-hung or slider.

Maintenance and cleaning is somewhat simpler with Casement/Awning type windows because the exterior of the glass can be cleaned from inside the house without tilting or removing the sash. Because the sash just presses against the frame when closed, and then is released when opened, there is no wear and tear on the weather-stripping which prolongs the effectiveness of the weather-tight seal .

Large Casement Windows, with the extreme weight of insulated glass panels, can be cumbersome. Care should be taken to avoid overly large units. The cantilevered weight can warp and deform the sash and hinge mechanisms causing the window to be out-of-square. If this occurs, the window will be harder to close, and may not seal as tightly.

Vinyl Casements and Awnings are usually manufactured with fusion-welded frame and sash corners. The added strength resists deformation under load to keep the unit operating properly for the life of the window.

Installation is Simple

Vinyl Casement and Awning Windows can be installed like other vinyl replacement windows. They will fit into old wood double hung frames after the sash has been removed. They will fit into most all openings prepared for standard double hung vinyl replacement windows-even if these openings are prepared from old openings that contained aluminum or steel windows.

Contents © 2004-14 Do not reproduce without permission

As with any replacement, accurate measurement is the most important requirement to assure weathertight and trouble-free installation. Look over the instructions for measurement for the type of window that will be replaced and carefully measure and order the appropriate casement or awning window. Make note of any factory cut-backs and consider whether it is advisable to order exact sized or opening sized windows.

There are three important considerations regarding Awning and Casement windows that make them different to install than double-hungs or sliders:

1. **Casement and Awning windows do not use a head expander.**
2. **There may not be pre-drilled mounting holes in the window's side frames for screws to anchor the window to the jambs**
3. **There is no sloped sill or drainage accommodations**

These conditions do not prevent easy installation but they are conditions which change the basic way Casement and Awning windows are installed.

Blind Stop Installation

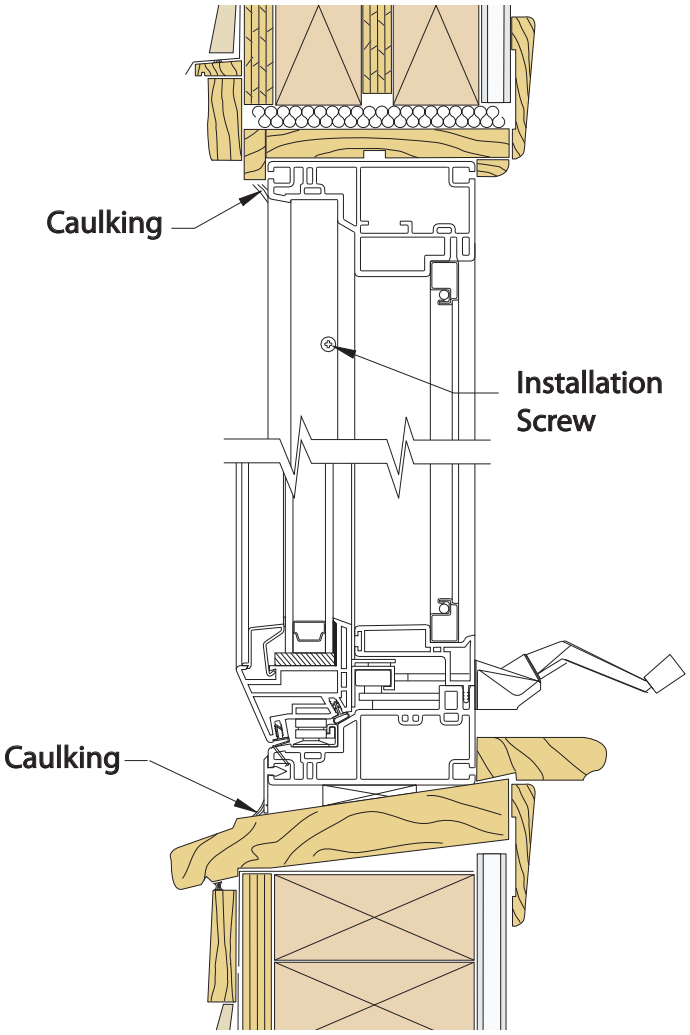
Conventional installation for replacement windows calls for "Blindstop" installation where the new window is installed in the opening against the blindstop, the window is screw-anchored to the sides of the opening, and the interior stops are re-applied.

Because the Awning and Casement window styles operate with a "swing-out" mechanism, a head expander would get in the way of the swing-out sash and spoil the appearance of the window. This condition requires some fundamental changes in the installation procedure. It is necessary to measure accurately and order carefully.

Remember, there is no head expander to take up the extra space in the opening. Normally Double Hung and Slider replacement windows are factory 'under-cut' 3/4-inch to 1-inch less than the opening height. This is done to accommodate the height of the stool (1/2") the new window must fit over as it is placed in the opening. Casements and Awnings still must be placed over the stool and set down on the sill. But, because there is no head expander supplied, the window will be routinely undercut at the factory approximately 1/4" less than the measured opening height. This causes the set-in process to become very snug and difficult.

Careful measurement is extremely important so that the Casement or Awning factory manufactured height is *at least1/4" smaller than the opening height, but no more than 3/8" smaller!* If the height of the Casement/Awning window is smaller than 1/4" less than the opening height, it will not fit. If it is more than 3/8" less, the window will not fit the opening well enough to adequately seal out drafts and moisture.

Therefore it becomes necessary to measure the height of the opening in three places: **once at each side, and once in the middle.**



Provide the smallest of these three dimensions accurately to the nearest 1/16-inch.

Measurement of the width is handled the same as double-hung or sliders..

Installation of the casement or awning window can proceed exactly as with a double-hung. In fact, substitution of casements or awning windows for a removed double-hung or slider can add a new architectural design look to any house.

Contents © 2004-14 Do not reproduce without permission

Since they install basically the same, the final installation will look great and perform under most every circumstance.

1. Remove the old double-hung or slider the same as discussed in the basic installation chapter.

2. Remove any trace of sash cords, pulleys or balances so that there is a clean opening.

3. It is still advisable to use a “sill angle” to support the bottom of the Casement/Awning window. The sill must be supported if the window is being installed in an opening with a sloped sill. As long as the sill angle is mounted to the sill, 1/8-inch to 1/4-inch in from the inner edge of the blindstop, it will allow the Casement or Awning Window to rest on it and, when caulked, it will effectively block out air and moisture penetration.

4. Caulk the inner edge of the blindstop on the sides and top, and insert the Casement or Awning Window.

5. The window should be carefully shimmed to maintain level. **It is important to apply the shims under the bottom corners of the window only.** This will avoid bowing the frame which might interfere with the operation of the window. Shims should be minimal thickness,and non-tapered.

6. Once the window is leveled with shims under the bottom corners as needed, then the top left or right corners can be shimmed to plumb and square the window. To shim easily, keep the sash closed and locked. This will square the window and allow it to be shimmed square in the frame.

7. Once the window is shimmed plumb and square, the supplied screws can be applied through the sides and top jambs.

8. The Interior stops can be re-applied and the window caulked as necessary. Mount the operating handle, and tighten the set screw.

9. The exterior of the opening (the brickmould casing and blindstop) can be re-painted to finish the exterior and make it weather tight. Make sure that beads of caulk are placed against the exterior of the sill, the sill angle, and where the window meets the blindstop.

Removing the Stool if Necessary

The stool rises about 1/2” above the sill. In order to install the window without removing the stool, the window might have to be made 3/4”-7/8” less than the measured height of the opening. That might present problems sealing the opening to the weather, and make the finished installation look odd.

If the properly sized window is too snug to fit over the stool, the window can be installed against the blindstops by removing the stool. The stool and Interior stops can be replaced with new ones, or the old ones re-applied after the window is installed. Clearance under the handle of the operator is sufficient to allow re-application of a stool.

“Outside In” Installation

If the height of the Casement/Awning Window type is too snug to properly place the window in the opening from inside the house without removing the stool, the window can be installed in the opening - “outside-in”.

This is technique that will require access to the opening from outside the house. Though the window can be passed out of the opening from the inside before it is set in place, the easier, and safer method is to set the window in place from the outside.

NOTE: Refer to "Outside-In Installation" Section in this book for specific instructions.

Installation in Openings Made from Steel or Aluminum Windows

For openings made when aluminum sliders or steel casement are removed, the installation of the vinyl Casement or Awning can be done from the inside.

Using the old window frame as stops, or applying new stops of furring or 1" x 1" stock, the new window can be mounted against these “stops”. Caulk the blindstops before installing.

The interior is trimmed with new casing and new interior stops. When the old opening is trimmed with casing and space permits, new interior stops are all that’s necessary to trim and seal the opening.

Contents © 2004-14 Do not reproduce without permission

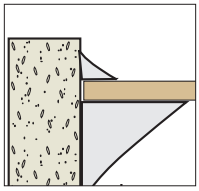
Picking the Proper Sealant

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:

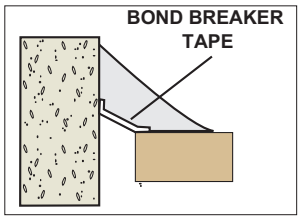
- Adhesion
- Flexibility
- Durability
- Compatibility
- Temp, Weather, Exposure)
- Aesthetics

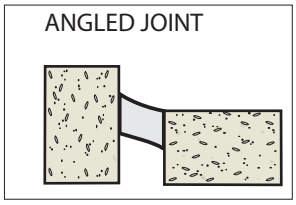
Within these three performance aspects there are countless combinations of applications, substrates and conditions a sealant is exposed to.

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.

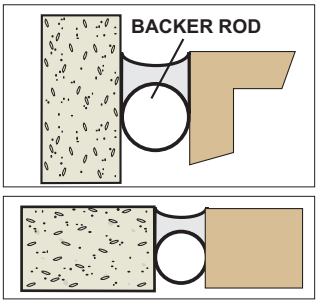


Fillet Joints:
A fillet joint is formed when two surfaces come together to form a right angle. The sealant used to join these two surfaces is triangular in shape. The sealant must adhere to the variety of substrates you're faced with. Without strong adhesion there is a high chance that the sealant will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

© 2014-18 AWDI, LLC Do not reproduce without permission

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.

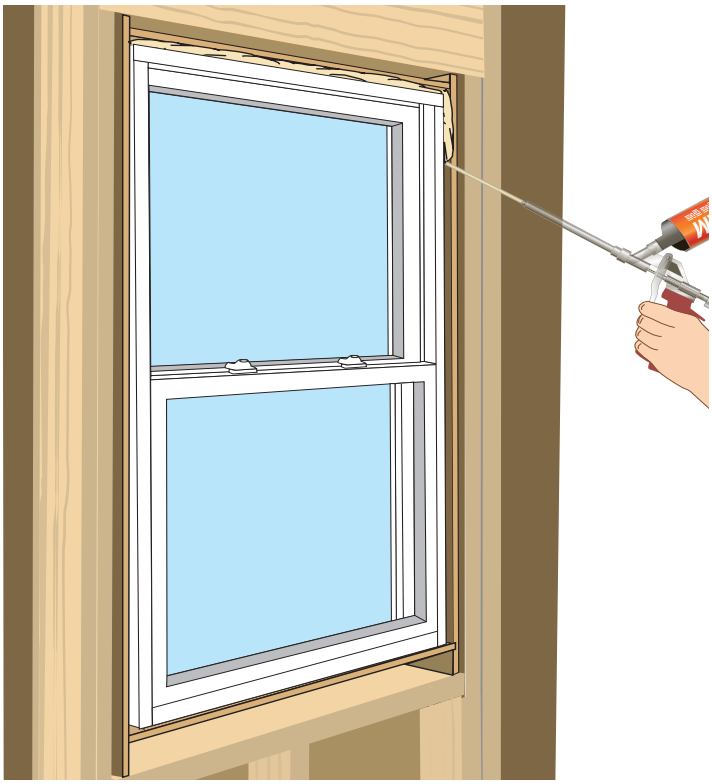
Like ocSPF, ccSPF is also air impermeable at certain thicknesses and can qualify as an air-barrier material. The bigger benefit is that the closed-cell structure of ccSPF also makes it water-resistant, and is the only spray foam that can be used where contact with water is likely.

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

© 2014-18 AWDI, LLC Do not reproduce without permission



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:

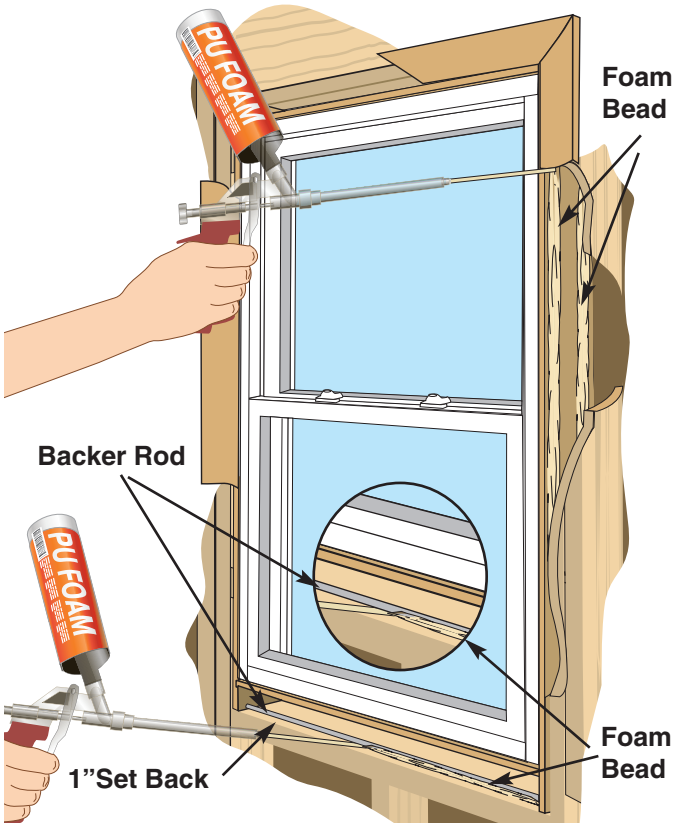
• Similar to the sealant gun, it is critical that you balance the movement of the foam gun or straw barrel and how you dispense the foam so that the foam makes contact with both the rough or existing window frame and replacement window frame.

• 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.



© 2014-18 AWDI, LLC Do not reproduce without permission