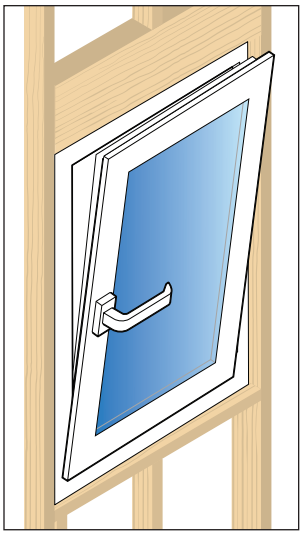
WEB BASED
APPLICATION SPECIFIC
INSTALLATION INSTRUCTIONS

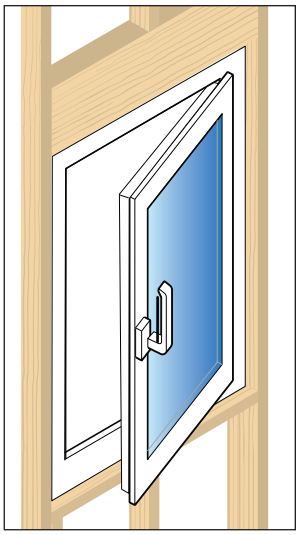
Tilt ‘n Turn Window Fold ‘n Slide Door

Installing Tilt ‘n Turn Windows

Tilt ‘n Turn windows provide two open positions: the tilt position provides draft-free ventilation and worry free rain protection. In the turn position, tilt and turn windows act like casement windows, swinging their full glass area open. These windows have dual hardware to allow them to pivot in from the top using bottom hinge system, or swing from the side using a jamb hinge setup. The control is obtained using the handle which when turned one way will allow the tilt, and turned the other will allow the in-swing.

The complete hardware system of a Tilt ‘n Turn window is necessarily complex and precision requiring tight tolerances between the operating sash and the frame to engage the hardware and maintain weather tightness. In addition, because they open to the inside, the tolerances and the locking precision is critical because the inward air pressure from wind is forcing against the closure rather than aiding it as would be the case in an outswing casement or awning window. Precision is necessary for proper weather seal.





5 Critical Requirements for Proper Installation

1. Plumb, Level, Square, and Planar
Because of the multiple locations of operating hardware (hinge, lock, tilt, roll, etc.) each opening critically needs to be plumb (precisely vertical), Level, Square (right angles at each corner), Planar (perfectly flush and not contorted at all). Any deviances might impact the proper operation. It is more critical than with any other type of window.

2. Properly supported
Use of Capture blocks. Due to the weight, and offset sash, neoprene or plastic capture blocks (support blocks, sized to fit within the window or door frame) are to be used under the sill and at key hinge points at jambs - all near the fasten point. We recommend proper shimming and pre-shimming using air bag shims for proper adjustment prior to fastening, rather than hammering Proper shimming and support will allow the unit to “float” in the opening to preserve operational tolerances.

3. Wood surround for Installation
All openings shall be rough framing or an applied wood surround for solid support and anchoring. Replacement will need to be full frame removal of the old window, and if that removal cannot get the opening down to the rough opening framing, a wood buck is prescribed.

4. Weather Sealing of the opening needs to be done prior to window placement or mounting.
All flashing and weather sealing of the opening will be done prior to the window install. Then the unit will be properly sealed (backer rod, foam, sealant, etc.) to the opening ands against the weather.

5. Fastening using Mounting Clips
Use of mounting clips is recommended rather than through the frame anchors to accommodate the most opening variances, and to discourage anchors which can distort the frame when over-tightened.

1. Plumb, Level and Square

Proper Measurement and alignment of the opening is critical to proper install and operation

Plumb – Out of plumb can render locks inoperable at worst, and difficult to operate at best.

Level -Out of level sills will distort the frame to an out-of-square situation. This will make it nearly impossible for the sash, which will be square at the corners, to nest properly, lock properly, and seal out window and moisture properly.

Square -Determine square by measuring the corner diagonals (upper left to lower right, and lower left to upper right). Record both dimensions. The difference between them is the out of square condition. More than 1/8" may require re-sizing the new window.

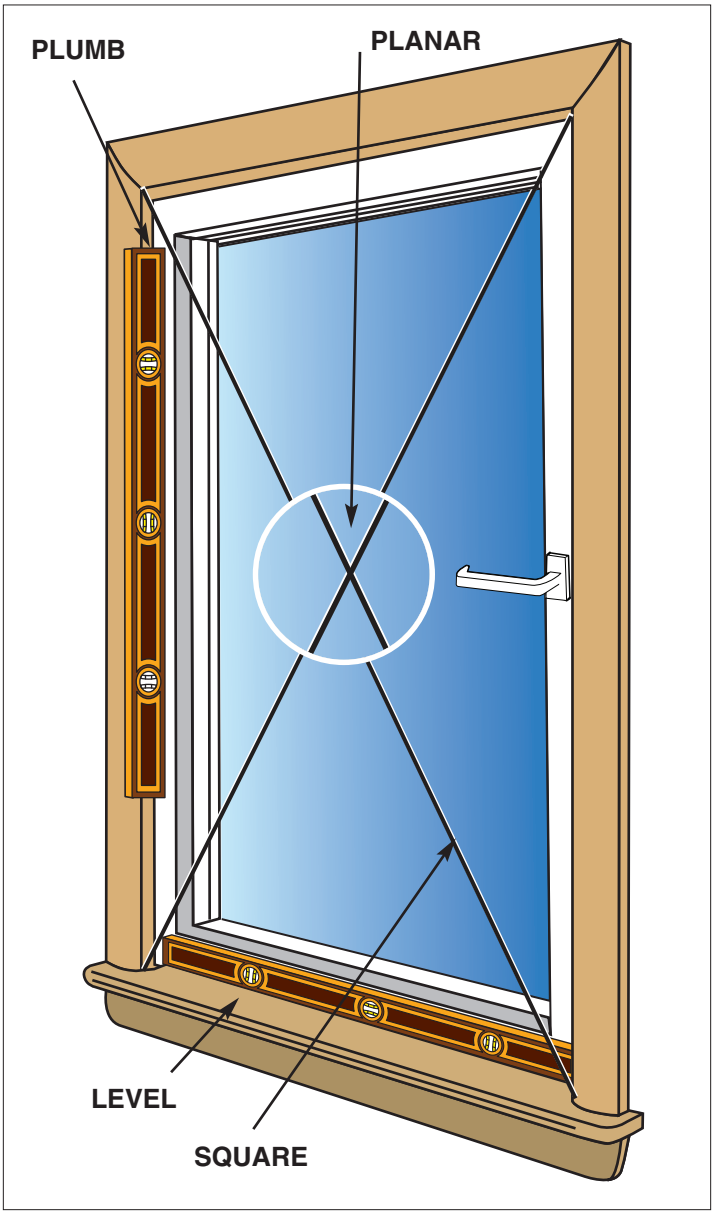
Planar – Planar is measured by temporarily anchoring a string diagonally from upper corner to opposite lower corner. The strings will touch in the center where they cross — or they will not. Reverse the strings. They should lightly touch either way. If not, this condition will indicate that one of the upper corners of the window is not flat in plane to the opposite lower corner. This will render the new window contorted in installation.

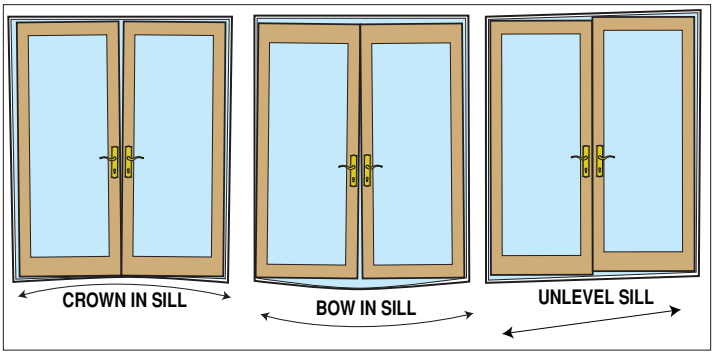
Crown – This condition is where the center between the jambs is higher than at the edges of the opening. Placing a window or door on a crowned sill can cause the interlocks to not meet properly; the panels to not slide properly on a sliding window or door, or will impede the proper operation of a hinged door or window. Use the support blocks to level the support.

Bow – The opposite of Crown, a Bow will be a low spot between the jambs. As with a crown, a depression can cause the sill of the window or door to deflect and impede proper operation and sealing/locking. The sill support must be level.

Trapezoid – While most openings have equal widths and equal heights down and across the opening, occasional an opening can be wider at the top, or wider at the bottom. A trapezoidal effect can require a change in the width and/or height of the specified window or door.

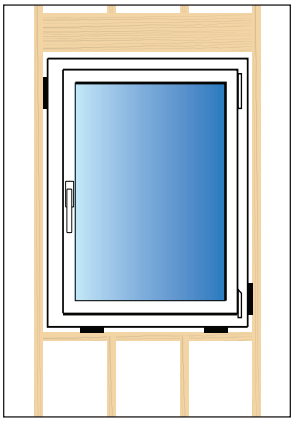
Bottom line- The new Tilt/Turn or Tilt and Slide product must be allowed to operate without being distorted to fit the opening in any manner. If you are using a wood buck, effort should be made to make the buck (wood surround) perfectly Square. plumb and level. Take this work into consideration when ordering the size of the window or door to allow product undercut for support and shimming. This will then allow the new product top be installed and work properly.



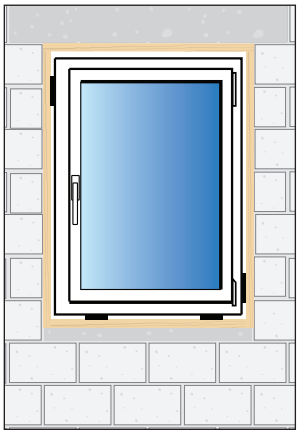


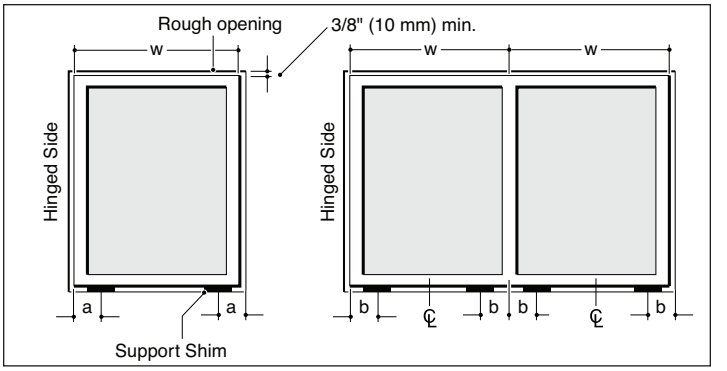
2. Proper Size and Support

The window needs to “float” in the opening rather than being anchored to the frame flush. Capture Blocks (neoprene or plastic blocks can be purchased at major glazing supply companies) are placed approximately 1/4 of the width in from each side. An additional support is anchored at the hinge side behind each hinge, and one support is placed on the opposite side of the top hinge, as shown.



The rough opening shall have 3/8” to 5/8” installation gap on all sides. This is larger than normally would be allotted, but both the support blocks and the shims need to be accommodated. If the opening is not square, this gap dimension will allow the new window to be properly leveled and squared.





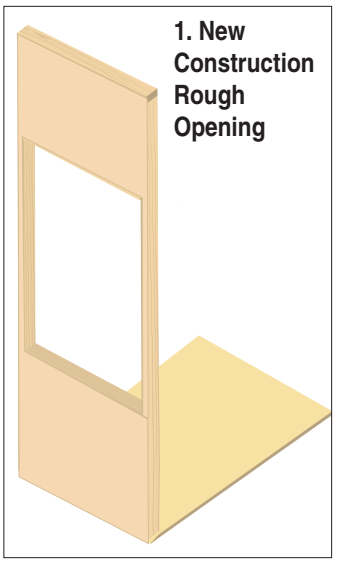
Care needs to be taken with shimming. Do not drive shims between the window or door frame and the opening framing. It can distort the window or door unit interfering with proper operation. Air bag shims are the best. They temporarily center the unit in the opening without stress until the anchor clips are installed. Shims can be inserted, if necessary after. Once the airbag shims are removed, use of expanding foam spray or tape will properly fill and seal the gaps.

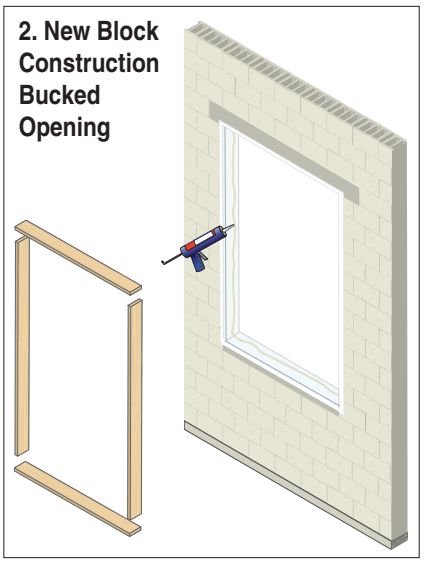
3. Wood Surround For Mounting

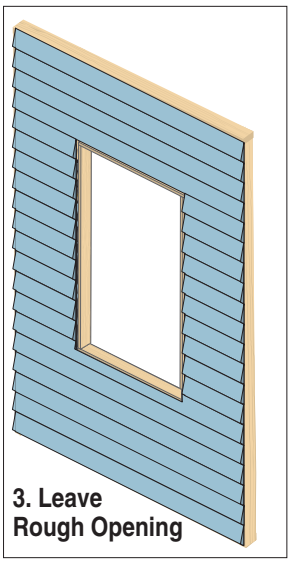
While Tilt and Turn products can be mounted directly to masonry openings, it is not the desireable method because of the difficulty in weather sealing. Most all applications will require a wood mounting surface. For replacement, the old window should be removed down to the rough framing. If that is not possible, then a wood surround (buck), a minimum of 5/4 x 4, needs to be installed on all four sides.

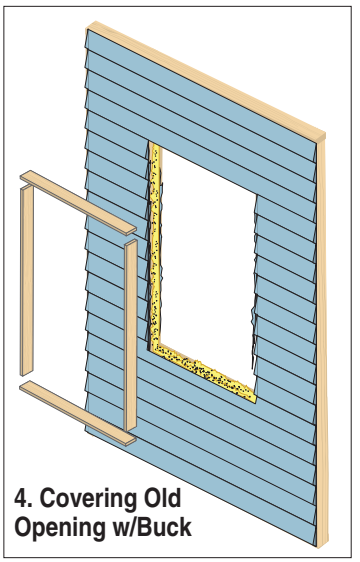
For new construction, the exposed rough framing will suffice. If the opening is a concrete block wall, then a 2 x 6 wood buck should be installed on all 4 sides. There are four conditions for most installations: New Wood Frame Construction; New Masonry/Block Construction; Full Removal Replacement down to the wood framing; and Full Removal with New Wood Surround.

Creating Wood Mounting Framing









4. Prior Weather Sealing

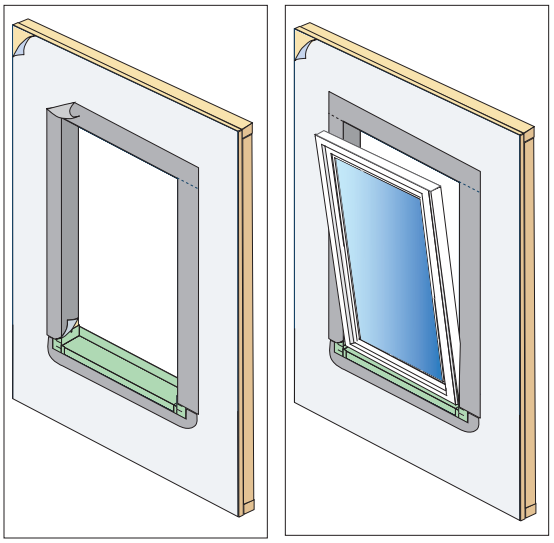
All Flashing should be done prior to mounting the new window. Install proper flashing on all four sides wrapping the header and jambs and sill. The sill flashing should be in a sill pan fashion with side and back dams to direct water to the outside.

The recommended method of flashing the sill would be with slow expansion foam like HannoBand, Tremco, etc. The foam should be placed on the sill with cut-outs for the capture blocks as shown.

The slow expansion foam can be used on the jambs and head and can be installed prior to installing the window into the opening, or placed in the gap once the window is set in place. It should be placed into the gap along the header and jambs from the outside to accommodate the jamb clips. The foam tape can be left exposed to the elements or if recessed sufficiently, can serve as backer rod for exterior application of sealant.

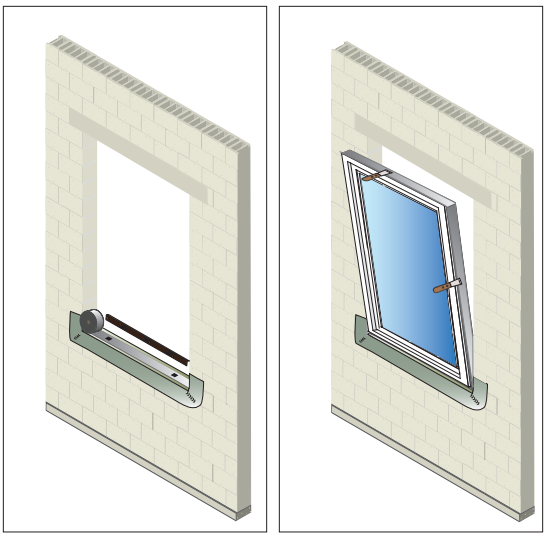
New Construction

Wood Framing needs to be properly flashed and with a sill pan prior to mounting the windows.



Masonry

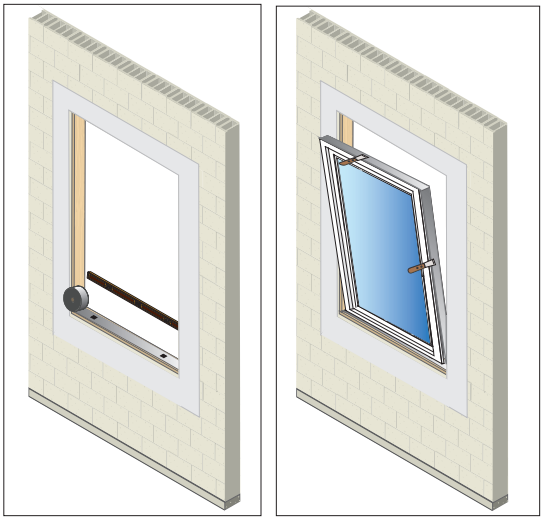
Concrete Block Wall needs to be sealed, with proper sill drainage before the windows are mounted.



Choosing to use spray foam will require accurate application of foam beads in the header, jamb and sill gaps and backer rod on both the interior and exterior. The sill gap needs to allow two places for proper drainage to the exterior.

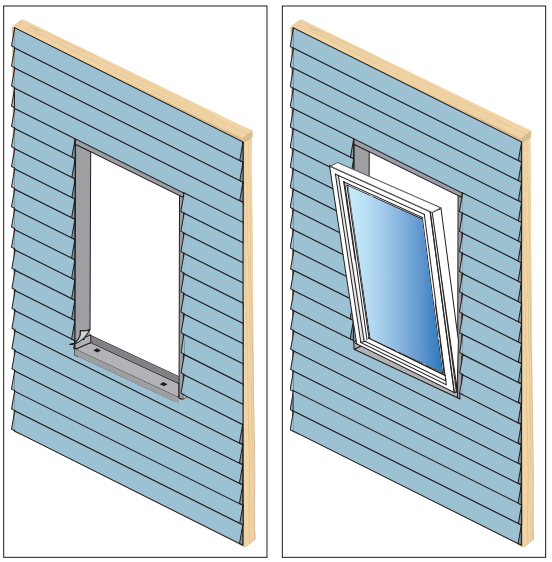
Masonry w/ Wood Buck

Use a Wood Surround in a Masonry Opening, properly sealed with flashing tape and/or foam sealing tape.



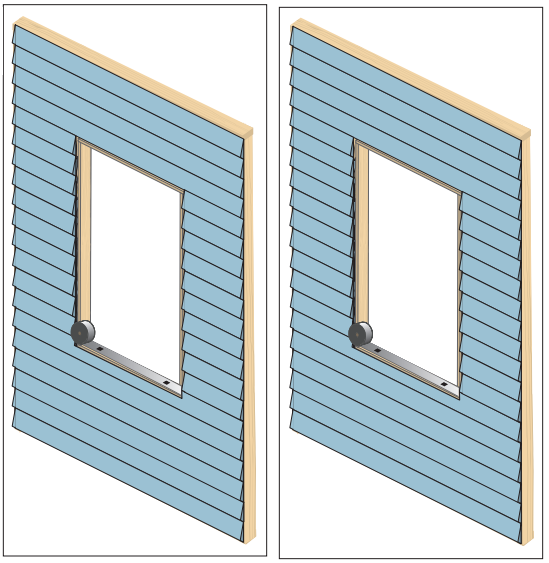
Wood Frame Replacement

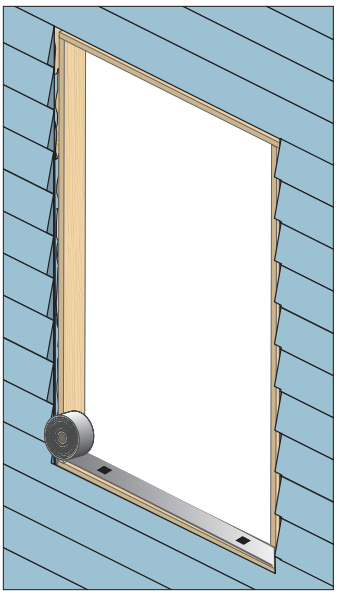
Properly flash the opening. Wrap the header and jambs with flashing tape and use slow expansion foam sealing tape along the bottom or a sill pan.

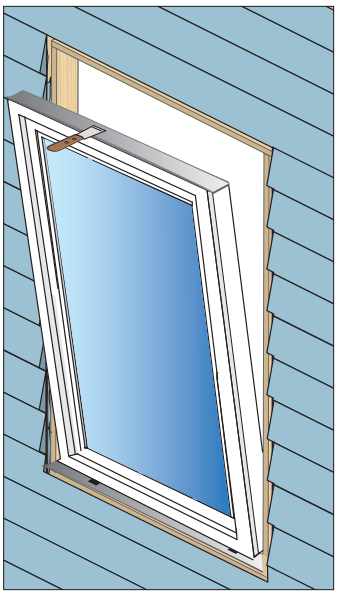


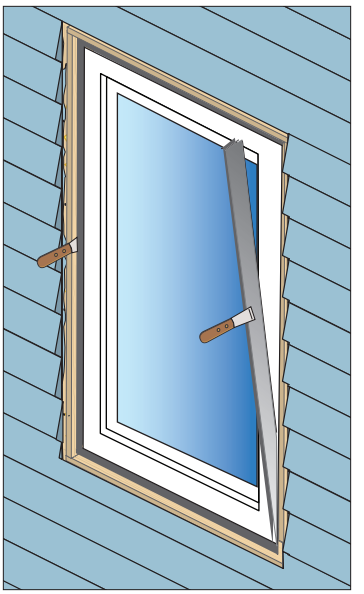
Wood Buck

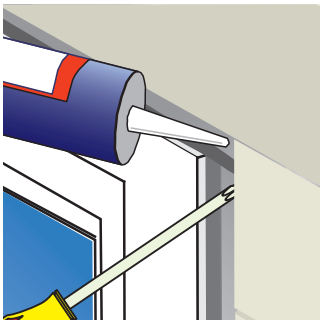
Similar to Frame replacement, place a wood buck in the opening to cover the left-in-place remnants of the old window.





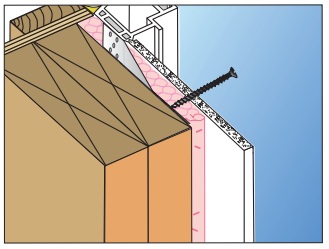


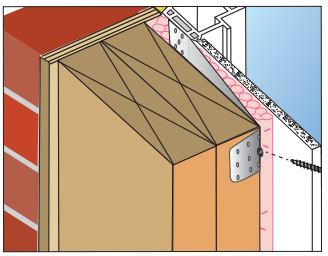




If you're using slow expansion foam sealing tape, place the support blocks along the sill (masonry or wood openings) and cut out the shape from the foam and place the foam along the sill. Set the window in the opening, and using a putty knife, place the header and jamb foam tape into the opening making sure the sticky side adheres to the window frame. To prevent leaking at the corners, use sealant to fill any voids

5. Fastening with Clips

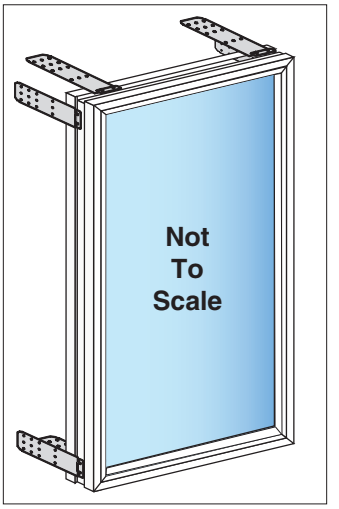


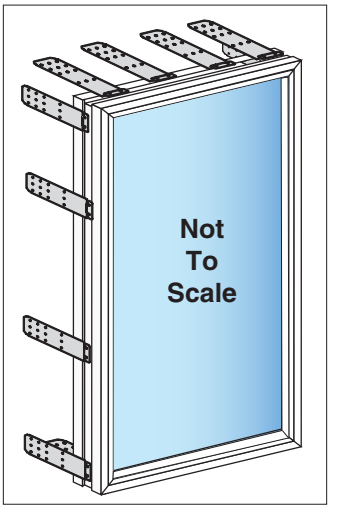


Clips are attached to the window unit being rotated into place within a groove designed to accept the clip. The clip, depending on the length may be face anchored to the rough opening with one #8 x 1-1/4" sheet metal screw into face of the wood buck.

If the clip is longer so it projects out beyond the wood buck or rough opening, then it can be bent to be flush with the interior surface of the buck or rough opening. Use two #8 x 1-3/4" flat head sheet metal Screws.

Determine the spacing between clips along each long side. The same spacing used in the window's design pressure lab testing of the unit should be used for installation. Start with a distance from corner of no less than 8" and not greater than 16" o.c.





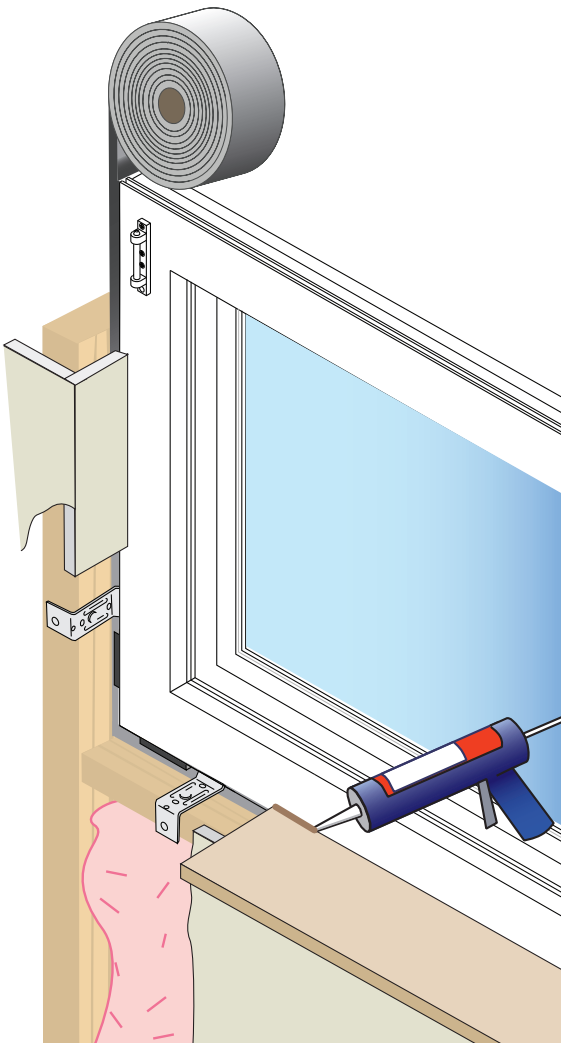
IMPORTANT-
Avoid using an odd number of brackets. Human nature wants to put one in the center. Even if 4 brackets might be figure to be one extra for your install, they will produce a better result than 3 7in most cases.

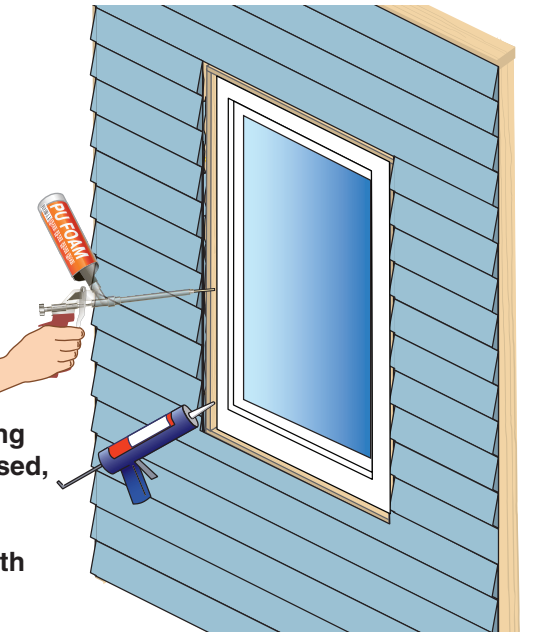
Start by pinning off the 4 corners only. Level plumb and square. Then work down the jamb and alternating sides. Test window operation after every set of clips are installed. This gets a consistent result and doesn't take much longer once it becomes routine.

For assemblies of several individual units mulled together, calculate clips and spacing for each individual unit and attach clips to the available outside perimeter sides. At the end of mulls, additional fastening might be required. Confirm with project engineer or architect or manufacturer.

6. Finishing and Trim

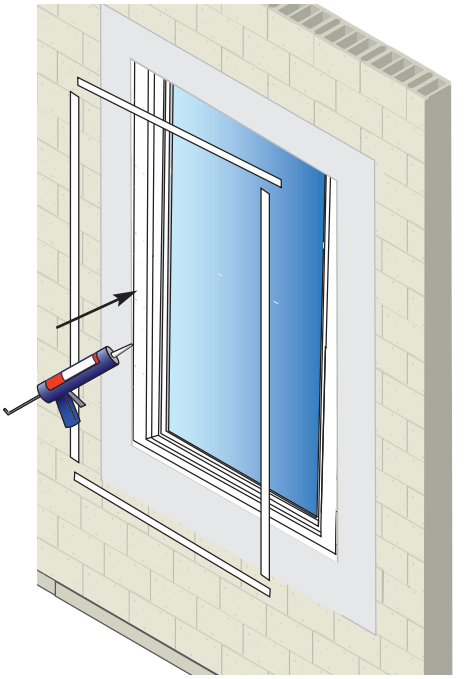
OPTION 1- Seal Inside with Low Expansion Spray Foam where Foam Sealing Tape is not used, and cover with Sealant if needed.





OPTION 2- If foam sealing tape is not used, fill gaps with Spray Foam and cover with Sealant.

OPTION 2- Seal Outside and Cover with Trim

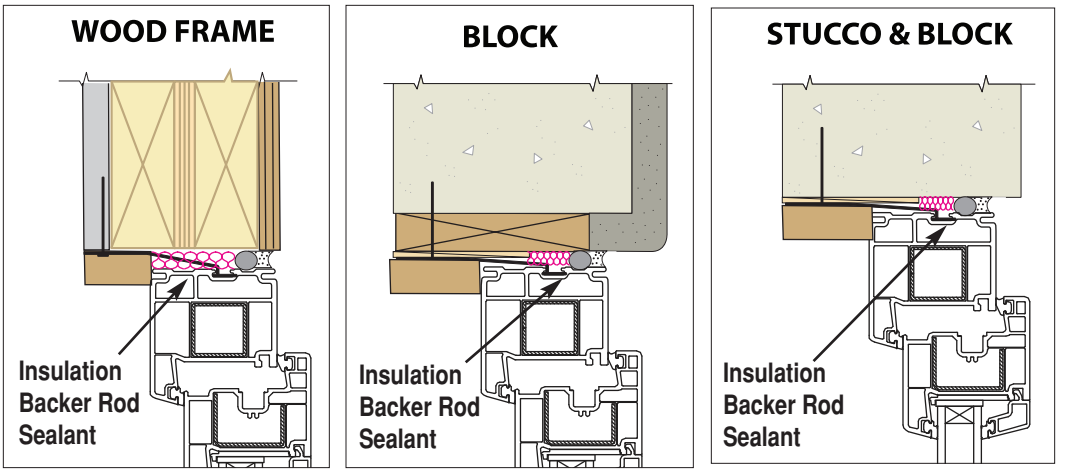


Do not cover more than 1/2" of the window frame on any side allowing clearance of 1/2" from all materials, operators and hinges, etc.

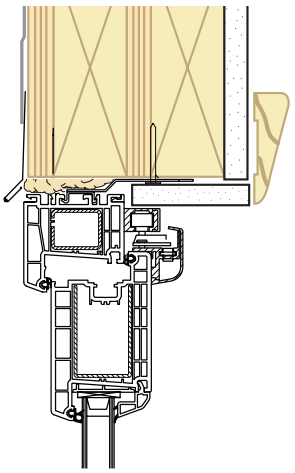
The clearance between the window frame and the rough opening to which the window is anchored should be between 3/8" minimum and 5/8" maximum.

If slow expansion foam tape is used on all 4 sides, no other sealant or insulation is necessary - on the inside or the outside. You may use sealant to finish the trim if you wish.

If no slow expansion foam tape is used on any side, sill, or header, then low pressure PU foam sealant can be injected between the window and the rough opening, and finished with backer rod and sealant as required.



Tilt and Sliding and Folding Doors



Exterior Doors

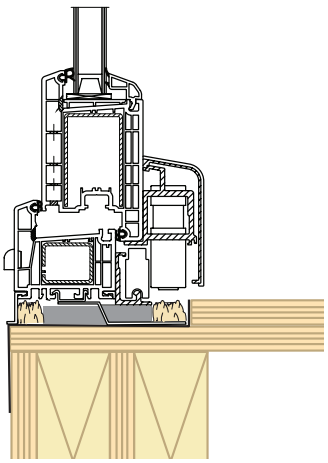
As with the Tilt n Turn window, a Fold n Slide or Tilt 'n Slide Door needs to be installed into a wood rough opening or an opening lined with a wood buck.

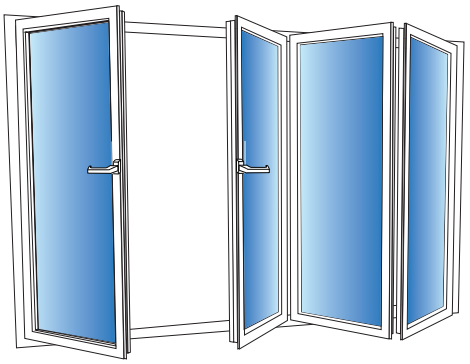
A full sill pan is required for the door as shown. Capture Blocks need to be placed under the door for support, and behind the any side that has a hinge, for support.

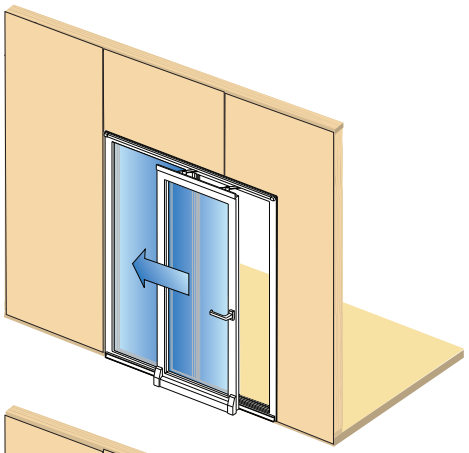
It is equally important to make the opening Plumb, Level, Square and check Planar condition. Because they are large doors, it becomes more important to check for Crown, Bow or uneven sill.

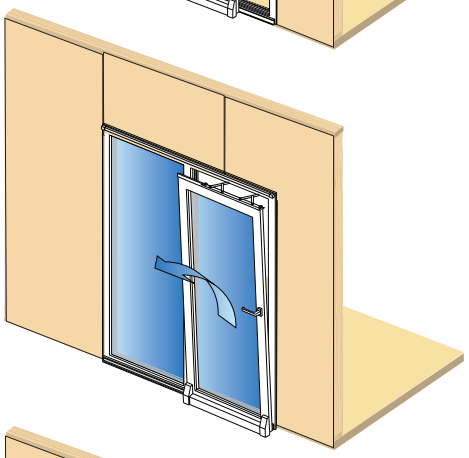
Slow expansion foam sealing tape works well with Door units because it offers insulation and blocks water intrusion while allowing drainage.

If expansion foam sealing tape is not used, then conventional flashing with a functioning sill pan will work. The bottom line is to prevent water from getting in, allow the water that condenses to drain out, and any remaining moisture to dry.

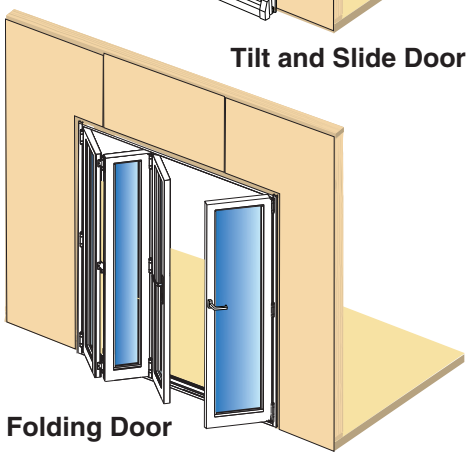




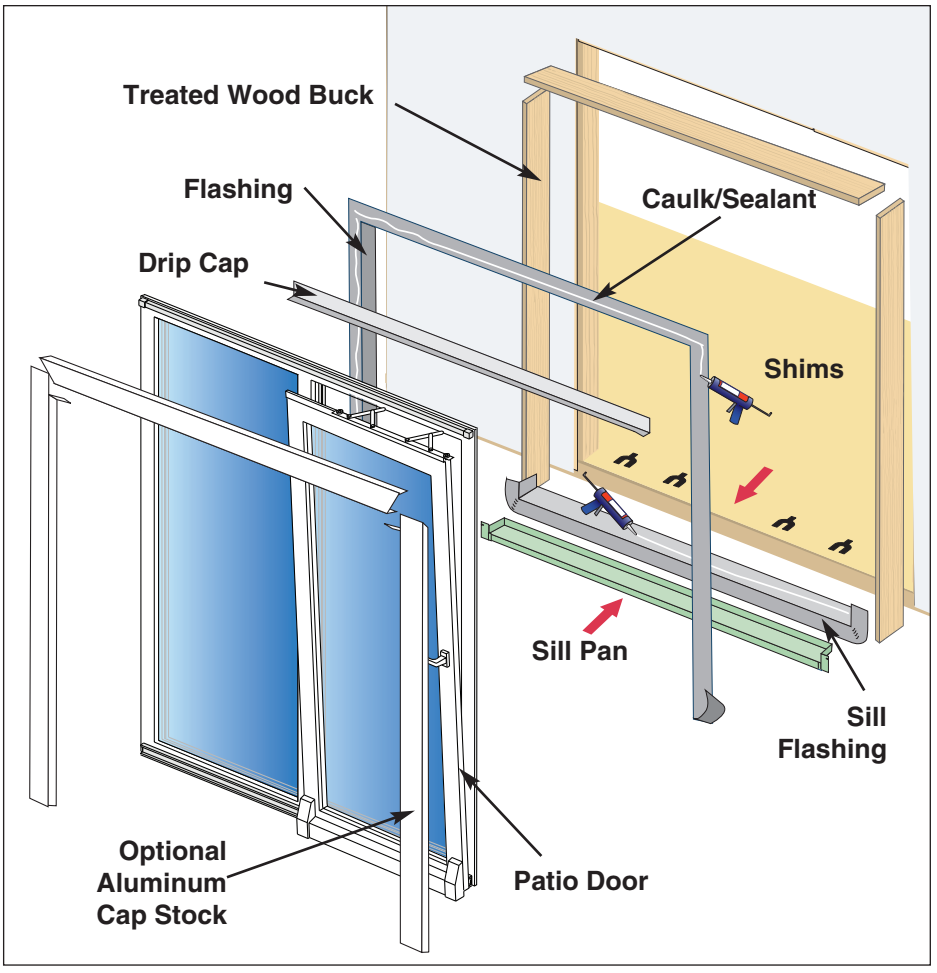




Tilt and Slide Door



Folding Door



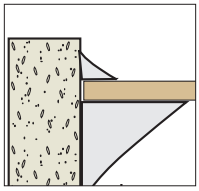
Picking the Proper Sealant

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:

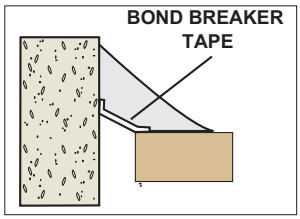
- Adhesion
- Flexibility
- Durability
- Compatibility
- Temp, Weather, Exposure)
- Aesthetics

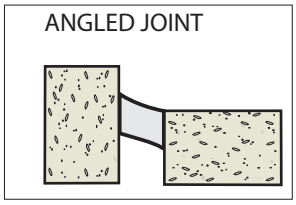
Within these three performance aspects there are countless combinations of applications, substrates and conditions a sealant is exposed to.

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.

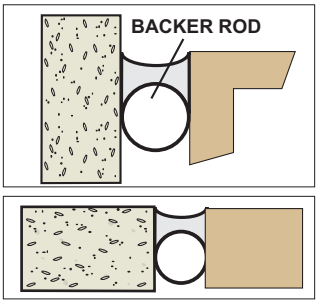


Fillet Joints:
A fillet joint is formed when two surfaces come together to form a right angle. The sealant used to join these two surfaces is triangular in shape. The sealant must adhere to the variety of substrates you're faced with. Without strong adhesion there is a high chance that the sealant will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

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.

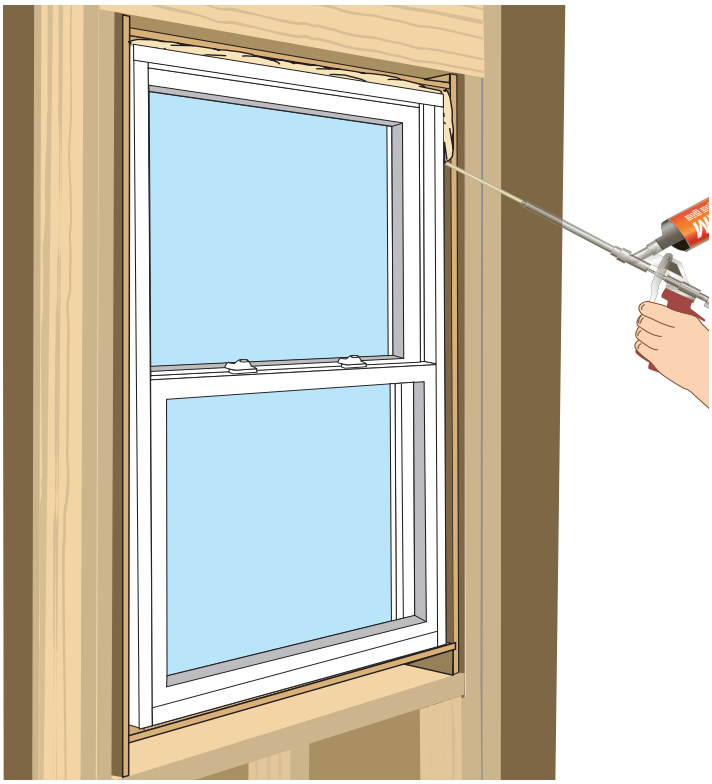
Closed-cell spray foam (ccSPF) has a closed cell structure which yields rigid hard foam, with a density of 1.8-2.3 pound per cubic foot (pcf), and can provide structural enhancement in certain framed buildings. The smaller cells trap insulating gas from the curing, which has a lower thermal conductivity 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



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.