

Horizontal Sliding Windows



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Installation Guidelines for Horizontal Sliding Windows

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Installation Guideline Disclaimer

This document contains general installation guidelines for Graham Architectural products and does not address each particular condition or installation. Shop drawing installation details may vary from these Guidelines as these Guidelines do not address each particular condition so any variances should be addressed by the design professional. These Guidelines do not address the structural adequacy on any installation and such should be addressed by a design professional. Anchorage to existing or proposed wall conditions are not addressed in this document. Sealant compatibilities and application details should be reviewed by the sealant manufacturers. This document does not address the interface between the window system and the buildings weather barrier system and should be reviewed by the waterproofing consultant. It is generally recommended that insulation be installed in all voids created in the installation of a thermally improved system, but the application of insulation in wet areas needs to be addressed by the design professional and the particular type of insulation may need to be specified.

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These instructions include the installation and initial adjustment instructions of the Horizontal Sliding Windows. Read these instructions before starting any installation.

Receiving, Handling, and Storage

The proper receiving, handling and storage of windows is critical to the performance of the products throughout their service life. Abuse of the products during these processes will affect their operation and appearance. Even if the effects are not immediately noticed, they could surface later in the life of the product. The following are precautions that need to be followed.

Receiving: Prior to receiving the shipment of the windows, ensure that there is an adequate location to receive the windows and enough manpower and equipment to off load the products.

- Depending on the glass configuration and the size of the windows, the windows may be extremely heavy. A loading dock or glass manipulator may be needed to offload the windows without damaging them. Contact Graham Architectural to determine the weight of any windows that are over 40 square feet.
- Most trucking companies allow a 3 hour off-loading time, and will charge a detention fee if the truck is not off-loaded within that time period. That should be considered when determining the location where the truck will be off-loaded and how much manpower will be needed to complete the process.
- Ensure that the storage location is close to the off-loading area. The product storage area must meet the requirements listed in the “Storage” section below.

Handling: HANDLE CAREFULLY – DO NOT DROP.

- It's recommended to use a glass manipulator for large or heavy units. Ensure that there is enough manpower to lift and maneuver the windows. Use glass cups when possible. Only use material handling equipment that will not damage the finish of the products.
- Be careful handling windows with pre-loaded sash. Make sure pre-loaded sash are fully locked prior to moving windows. Never have fingers or hands inside the operating area of a sash.
- Do not use any of the hardware or grids for lifting or manipulating the window. Glazed products must always be transported vertically.
- Do not allow the rollers to be rolled on the ground or floor. Do not get dirt in the rollers.

Storage:

- Stack vertically and on their sills with adequate separation so window parts (including hardware) will not rub together, including any protruding hardware such as handles. All products should be stored on top of wood blocking to protect the finish and weather-strip. Blocking will also be needed between the frame and any object that can damage the window or door frame.

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Receiving, Handling, and Storage (continued)

- The storage location for any finished products must be cordoned off to prevent damage from other trades, such as moving equipment.
- Ensure that the products cannot be blown over by the wind and limited to stacking of five (5) units before alternate support is given. If the windows are going to be stored for a short period of time (less than 1 month), they can be leaned at a 15° – 20° angle from vertical, with blocking to prevent them from rubbing/deforming. If they are going to be stored for an extended period of time, they will need stacked vertically (<3° from vertical) with strapping to prevent them from being blown over by the wind.
- Protect windows completely from moisture and dirt prior to installation. It is important that all windows that are not installed, are protected from direct contact with rain, snow, or ice so as to protect the finish and glazing of the product. If water gets into and is retained in the glazing pocket, it will cause the edge seal of the insulating glass to fail.
- Storing the windows in the building is preferred, as long as they are not in a high traffic area. If stored in a trailer, or under clear plastic, there must be adequate ventilation to prevent the temperature of the products from exceeding 110° F (43.3° C). Temperatures exceeding this threshold can damage the sealants in the insulating glass. Heat build can also cause stress fractures in the glass. If storing outside, the products must be covered in a manner that will prevent water from getting into the products, while allowing ventilation to prevent excessive temperature or humidity build-up.
- Construction debris and dirt within the frame will affect the operation of the window. Protect all products from paint, weld spatter, construction debris, cement, plaster, terrazzo, and other construction materials, which include, but are not limited to, alkali-based materials or caustic cleaners. This must be removed immediately to prevent damage to the finish of the aluminum or to the clarity of the glass.
- If the windows have been wrapped in a transparent plastic protective wrap, this wrap cannot be on the product for more than 90 days from the date of manufacturing, otherwise, it will be very difficult to remove protective wrap from the window finish.
- Prior to applying sealants, the surfaces must be cleaned and prepared as directed by the sealant manufacturer.

CAUTION – Windows are not to be used as ladders, scaffolds, or supports. Installed window openings are not to be used as construction entrances, unless adequate protection to the window sill and jambs is provided. Damage to any products from any construction activity will void the product warranty for the products in question.

Note: Copies of these instructions can be downloaded from

www.grahamwindows.com/architectural-resources/technical-information/

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General Installation Instructions

A. Upon delivery carefully check that all windows have been received undamaged. If any of the windows have been damaged, immediately notify your Graham Representative.

B. The sill will need adequate support. The sill must be level in accordance with Table #1.

C. All work should start from established benchmarks and column center lines established by the architectural drawings and the general contractor.

D. The sequence of installation should be coordinated with the job superintendent, so delays are prevented.

E. Do not drill or fasten through the window sill.

F. Be aware of allowable edge distance requirements for the fasteners into the substrate, especially when the substrate is masonry. Refer to the fastener manufacturer's instruction for proper usage.

G. Seal the exterior in accordance with the shop drawings.

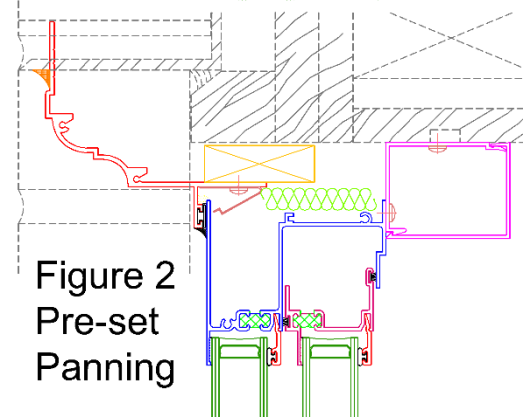
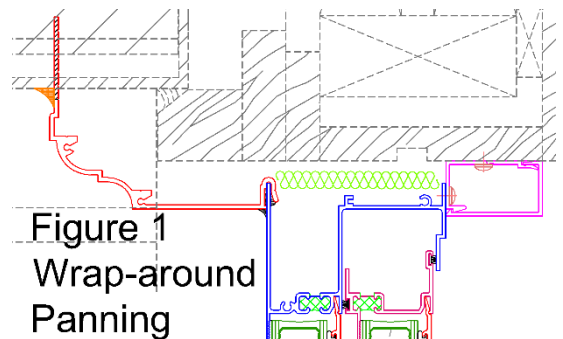
H. Insulate between the window frame and the rough opening (or receptor, if used).

I. If the windows are to be installed using panning, refer to the Graham Installation Guidelines for the type of panning being used.

www.grahamwindows.com/architectural-resources/technical-information/

Note: Panning cannot support the weight of a window.

Table #1	Installation Tolerances (+/- Target)		
	Inches/ foot	Inches Maximum	Method of Measurement
Level (Horizontal Measurement)	1/32"	1/8"	Measure sill using level
Plumb (Vertical Measurement)	1/32"	1/8"	Measure jambs using level or plumb bob
True (In Plane Measurement)	1/32"	1/8"	Attach strings across corners. Measure where they cross
Extrusion Straightness	1/64"	1/16"	Measure with straight edge.
Square (Diagonal Measurement)	N/A	1/16"*** 1/8"***	Measure diagonal corners (Difference/2)
* Openings up to 20 sq. ft. **Openings 20 sq. ft. and over			

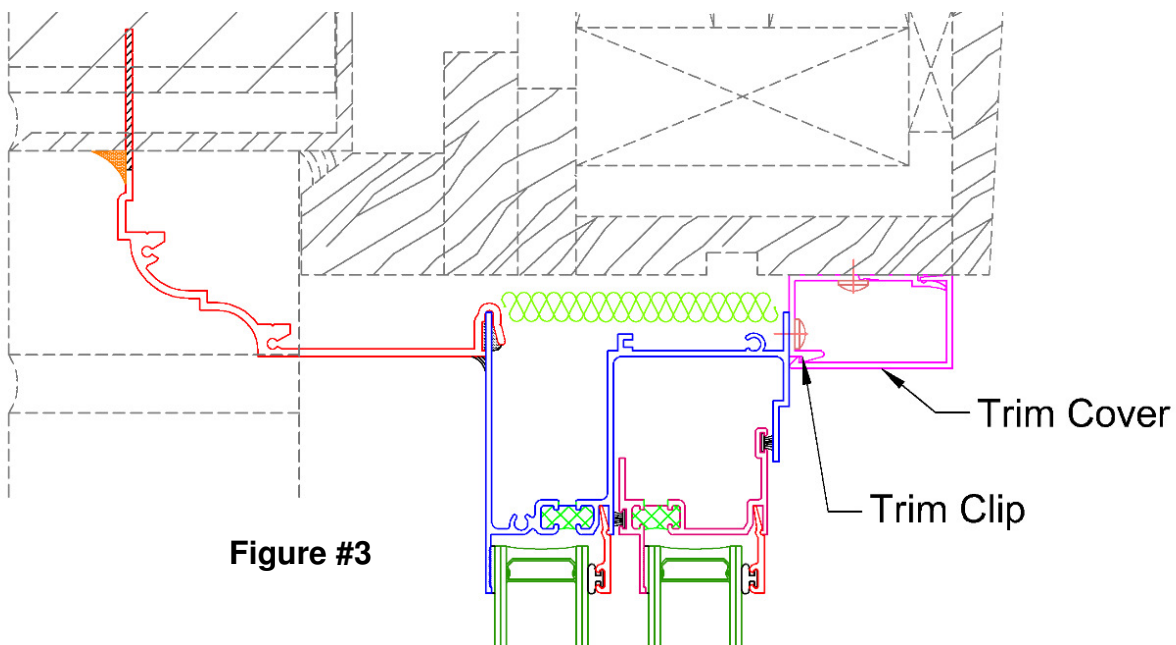


Horizontal Sliding Windows

Window Installation

Trim and Clip Installation

- A. If trim and clip are used, trim clips can be full length or 3" long sections. If sections are used, they will need to be lined up in order for the trim cover to snap in place.
- B. The trim clip to window fastener must be a minimum of #8 x 1/2" screw, or heavier as required to meet project design loads. The trim clip must be attached to the rough opening before attaching it to the window. The trim clip to rough opening fastener is dictated by the substrate. Graham Architectural recommends that the fastener is greater than, or equal to, that of the fastener used at the clip to window (as required to meet project design loads).
- C. The fastening schedule will generally be determined by a structural engineer. If a fastening schedule has not been specified, Graham Architectural recommends applying fasteners a maximum of 9 inches from each corner, and then a maximum of 18 inches apart. (Note: Recommended fastening does not apply to projects that have blast mitigation or hurricane requirements)
- D. When installing trim clip fasteners, make sure not to twist the frame. Additional shims and fasteners will be needed at the mid-span of the head to prevent the head from sagging.
- E. The head, jamb and (if used) the sill trim covers are field cut to size. Snap trim covers on using a rubber mallet, or a block of wood with a hammer. Be careful not to dent or scratch the finish on the trim cover when installing it.
- F. The window must be level, plumb and square in accordance with Table 1 shown on the previous page.

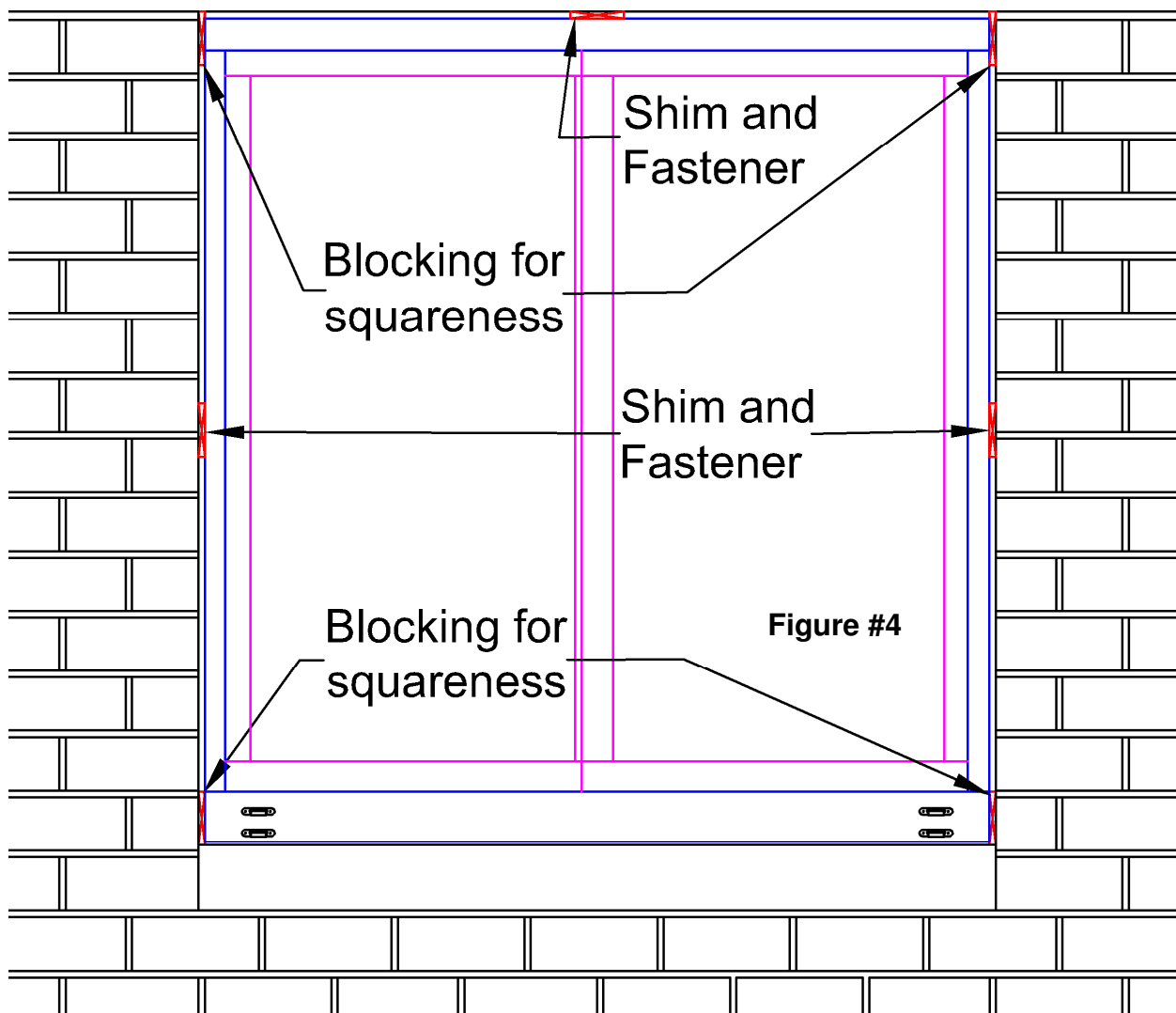


Horizontal Sliding Windows

Window Installation

Receptor Installation

- A. If the windows are to be installed in a receptor system, refer to the Graham Installation Guidelines for Receptor Systems for more detailed instructions.
www.grahamwindows.com/architectural-resources/technical-information/
- B. The window will need blocking in the jambs to ensure the window is square (See Figure #4). In some cases, shims and fasteners will be needed to prevent the head from sagging. Shims and fasteners will also be needed at the mid-point of the jambs to make sure the jamb stiles seat properly into the jambs. If the jamb length exceeds 48", additional blocking will be needed. The jamb blocking spacing shall not exceed 24".

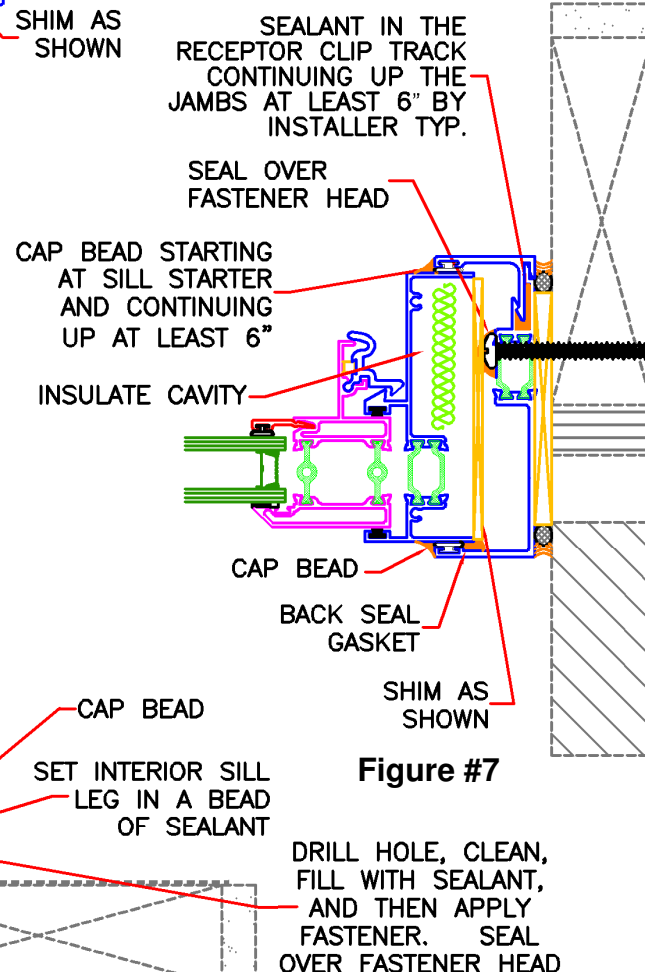
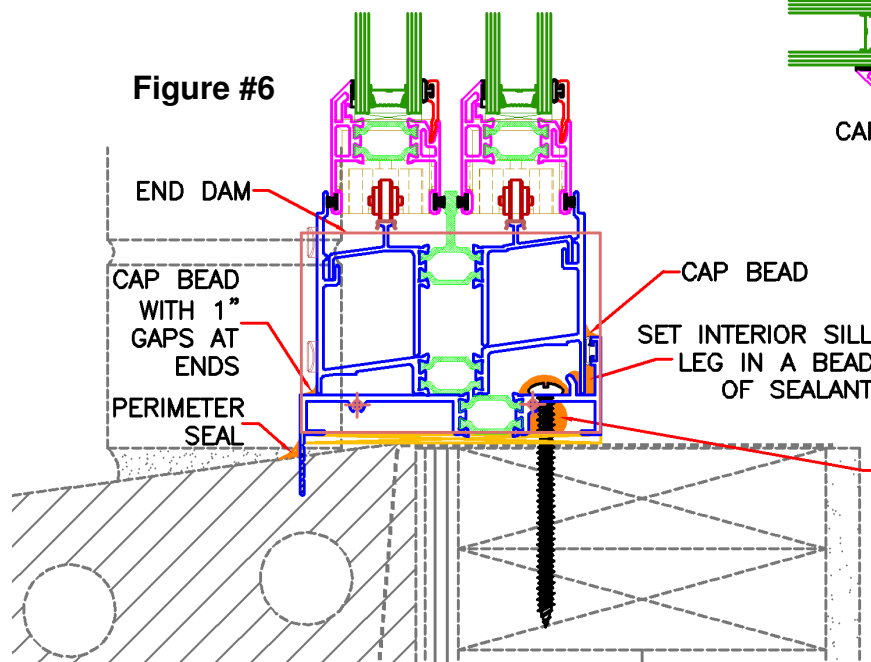
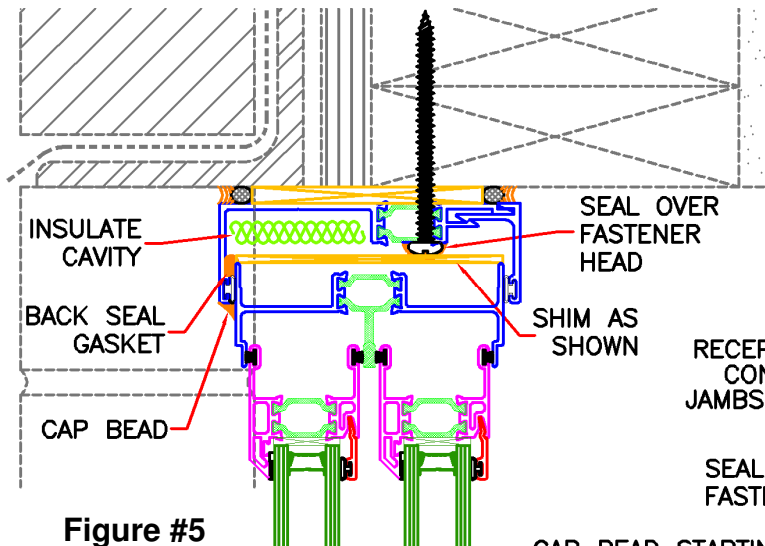


Note: Figure is shown without the receptor for illustration purposes.

Horizontal Sliding Windows

Receptor Installation (Continued)

- C. The window must be level, plumb and square in accordance with Table 1 on Page 5.
- D. Insulation is recommended between the receptor and the head and jambs of the window. Insulation is not recommended in the sill area.



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Window Installation

Strap Anchor Installation

- A. Attach the strap anchors to the window frames at the required spacing with the screws provided. Some anchors twist into grooves on the frame (See Figure #8). If necessary, bend the strap anchors so they point to the interior of the opening.
- B. Apply shims at the sill to support the window frame. Make sure the sill will be level within the tolerances in Table #1.
- C. Position the window into the opening, making sure that the window is plumb and at the proper set-back from the exterior.
- D. Apply fasteners through the pre-drilled holes in the strap anchor. Apply shims, if needed to position the window properly.
- E. Shims and fasteners will also be needed at the mid-point of the jambs to make sure the jamb stiles seat properly into the jambs.
- F. Apply backer rod and seal the perimeter of the window frame (See Figure #8).

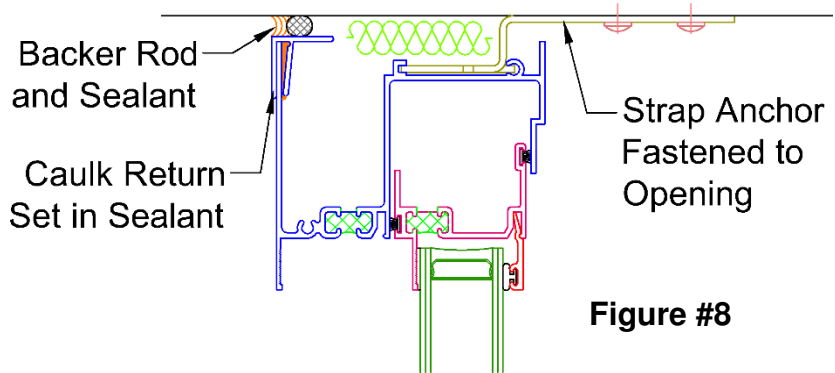


Figure #8

Frame Expander/ Caulk Return

In certain situations, a frame expander or a caulk return will need to be added to a window frame, panning leg, or receptor frame. The procedure for applying these products is listed below.

1. Apply a continuous bead of sealant in the “V” groove of the Frame expander/ Caulk return (See Figure #9).
2. Slide the expander onto the frame leg, pushing it into the sealant bead. The sealant bead should squeeze out around the frame leg. If it doesn't squeeze out, add more sealant (See Figure #10).
3. Firmly press the expander onto the frame leg. Clean up any squeeze out of the sealant on the exterior (See Figure #11).

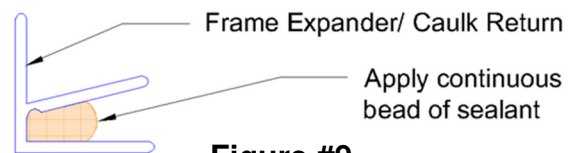


Figure #9

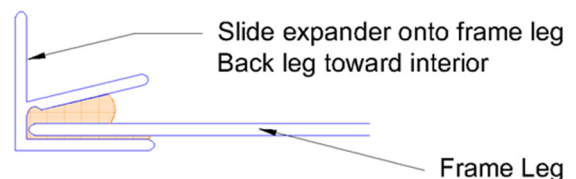


Figure #10

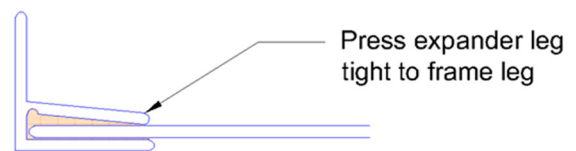
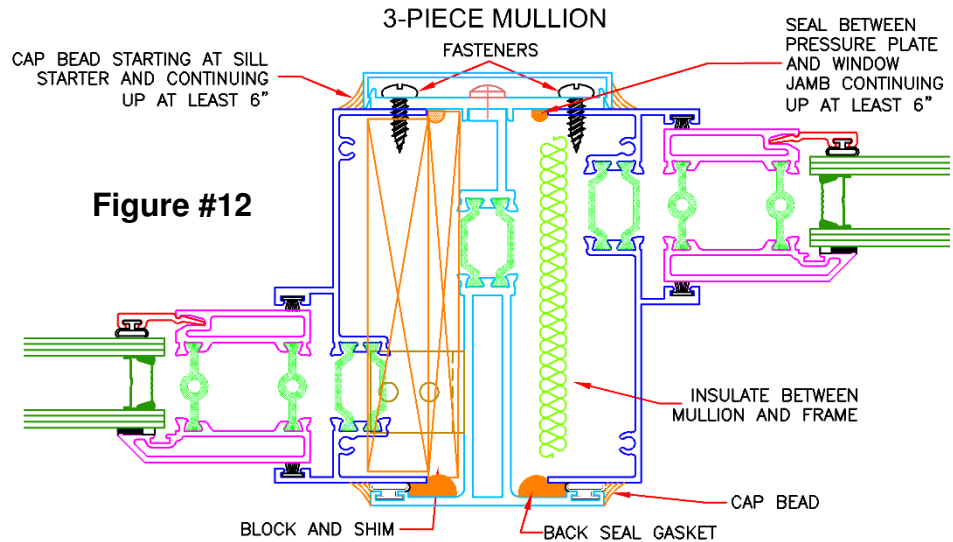


Figure #11

Horizontal Sliding Windows

Vertical Mullions

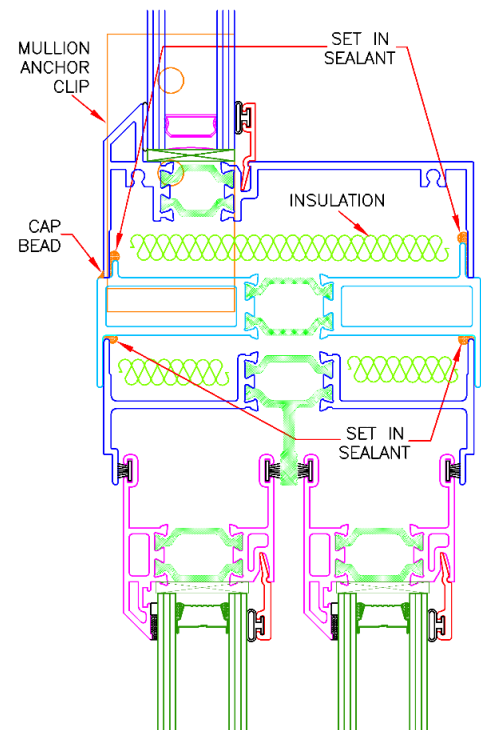
- A. Vertical 3-piece mullions will need attached to the head and sill of the rough opening with one or more mullion clips or angles. The mullion will need back-sealed to the window frames, and cap-sealing is recommended.



- B. Mullion pressure plates (covers) should be back-sealed starting at the sill and continuing up at least 6". If needed, the pressure plates can be attached to the jambs with #10 x 1/2" screws (not supplied by Graham), a maximum of 9" from the ends and a maximum of 18" on center.

Horizontal (Stack) Mullions

- A. Insulation is recommended between the mullion and the window frame.
- B. Horizontal (stack) mullions need sealed to the frame of the window above and below. The exterior legs must be sealed, and Graham Architectural recommends that the interior legs are sealed.
- C. Mullion anchor clips may be required depending on the size of the window, and/or the design load requirements. Reference the project shop drawings or contact the Engineering Department of Graham Architectural to determine when mullions clips are needed for each type of stack mullion.
- D. If multiple stack mullions are used in an opening, clearance will be needed between the stack mullion and the window below to allow for movement. Contact the Engineering Department of Graham Architectural for stack mullion and clearance recommendations for each project.

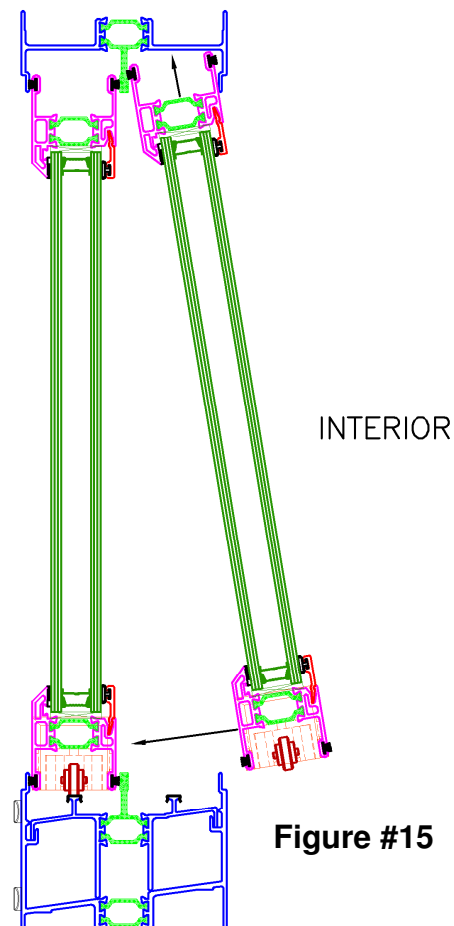
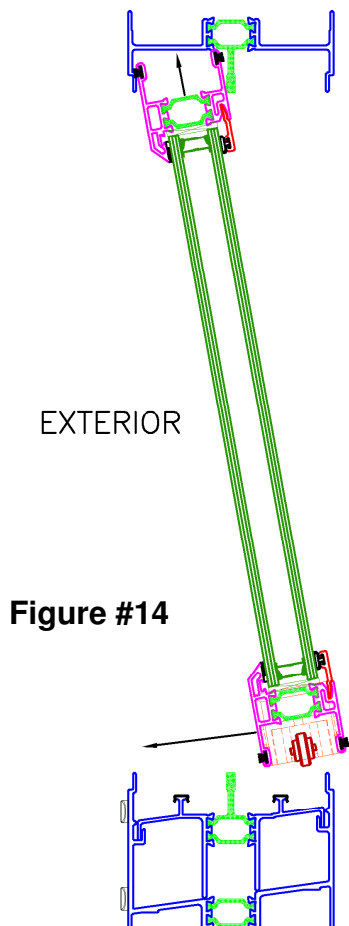


Horizontal Sliding Windows

Loading Sash

In certain cases, the sash are shipped separate from the frame. The following are the instructions for installing the sash. If anti-take-out blocks are not installed, they will need installed before the sash are installed.

- A. Before loading sash, take note of the anti-take-out blocks in the head. These will have to be avoided when loading the sash. In addition, make sure the stainless-steel roller track is in the sash track(s) of the sill.
- B. If the window is a dual sash slider, insert the exterior sash into the exterior sash track of the head, and then rotate the sash until the bottom of the sash can slide into the exterior sash track of the sill (See Figure #14). Do not drop sash into sill. Slide the sash to its location.
- C. Insert the interior sash into the interior sash track of the head, and then rotate the sash until the bottom of the sash can slide into the interior sash track of the sill (See Figure #15). Do not drop sash into sill. Once the sash are seated, check the sash for operation.
- D. Some windows have a bracket to fix the exterior sash, which would be installed at this time.

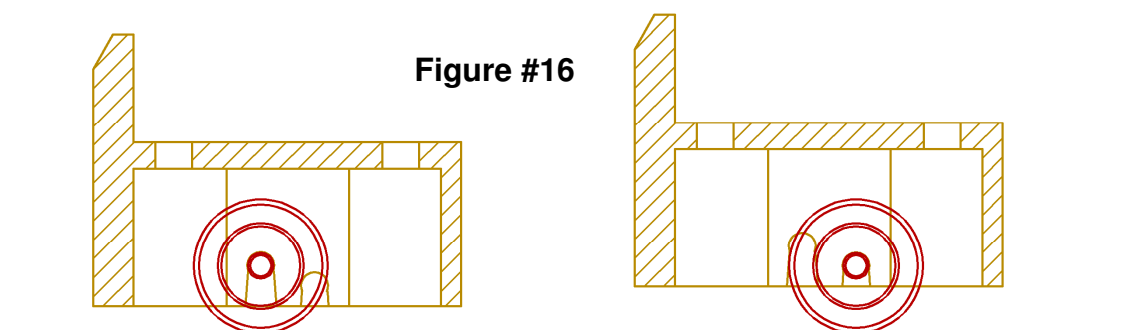


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Roller Adjustment

The sash position can be adjusted by moving the rollers. This can be completed as follows:

- A. Remove the sash by reversing the order of the sash installation on Page 11.
- B. Using a narrow flat blade screwdriver, insert blade under the wheel and gently pry wheel out of housing.
- C. Place wheel assembly in the other slot that is beside the slot from which wheel assembly was just removed (See Figure #16).



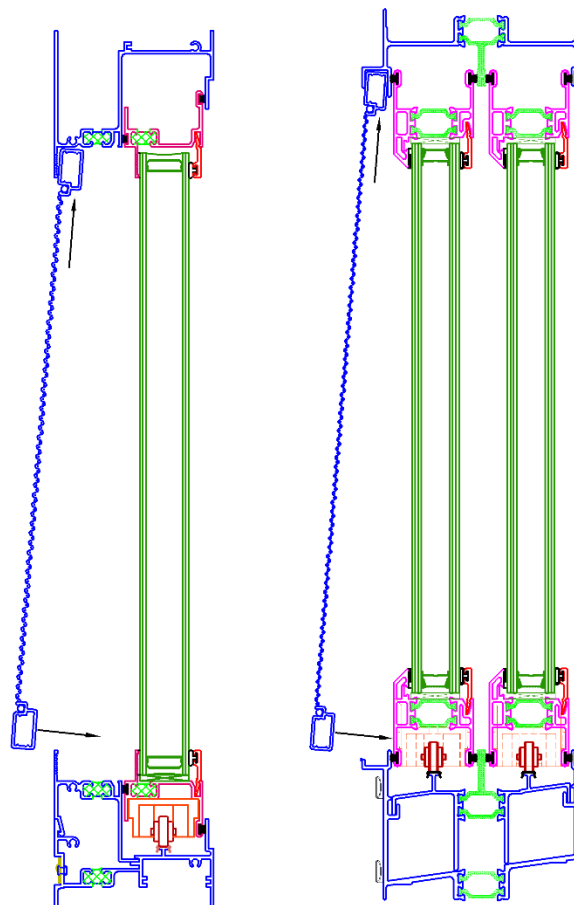
Screen Installation

The screen may have to be installed prior to the sash(s). The screens have pull tabs on the bottom rail.

Put the top rail of the screen into the top screen track and rotate the screen until the bottom rail can slide into the bottom screen track (See Figure #17). Once installed, check sliding screens for operation.

Security screens are usually attached at the factory; therefore, these instructions do not include the installation of those products.

Figure #17



Horizontal Sliding Windows

Cleaning/ Lubrication

- A. After a window has been exposed to the conditions at a construction site, the window will need inspected, cleaned, and should be lubricated.
- B. Inspect the window for damage and missing parts. Damage from the construction trades, including exposure to alkaline products (e.g., stucco and mortar), acidic cleaners, and weld splatter may require replacement of window parts or replacement of the entire window. The Graham warranty does not cover these types of damage.
- C. If there is construction dirt and debris in between the sash and the frame, a vacuum cleaner should be used to remove the larger debris. Then a mild detergent mixed with water can be used with a soft cloth or sponge to remove the dirt. The mixture will then need rinsed off with clean water. **DO NOT USE AGGRESSIVE ALKALINE, ACIDIC, OR ABRASIVE CLEANERS.**
- D. The interior and exterior can also be cleaned using a mild detergent mixed with water, or mild cleaning agents. Do not use aggressive organic solvents such as chlorine bleach, grease removers, or nail polish remover. **DO NOT USE AGGRESSIVE ALKALINE, ACIDIC, OR ABRASIVE CLEANERS.**
- E. Commercial glass cleaners can be used to clean the glass. Do not use abrasive cleaners to clean the glass. **DO NOT USE SHARP METAL OBJECTS (SUCH AS A RAZOR BLADE) TO SCRAPE THE GLASS.**
- F. Check the operation of the sash. If the operation is difficult, lubricate the rollers with a non-petroleum-based lubricant, such as spray silicone. The head and sill sash tracks can also be lubricated if necessary.