TYROL WINDOW INSTALLATION GUIDELINES

OVERVIEW

Wall systems designed to manage water or that have been upgraded to manage water are important for a trouble free installation. Site conditions, building designs, building materials and construction methods vary from project to project. Determining the proper installation is the responsibility of you, your architect or construction professional. Installation will require a minimum of two (2) or more people depending on the size/weight of the windows, size of the project and schedule.

I. RECEIVING & HANDLING

INSPECTION:

Customer should conduct a thorough inspection of the window products after receiving them. Windows should be inspected for proper type, operability, shipping damage, and size. All damages or freight claims must be submitted in writing within 5 business days of receipt to: service@thinkalpen.com. Follow these steps when inspecting new window products:

- Thoroughly inspect the windows, note that some products contain items that are not to be removed until after the windows are installed properly.
- Check for proper size and location prior to the start of installation.

STORAGE AND HANDLING:

Windows should be properly stored when installation will not take place immediately. The following recommendations will help you store and protect the products until installation can begin:

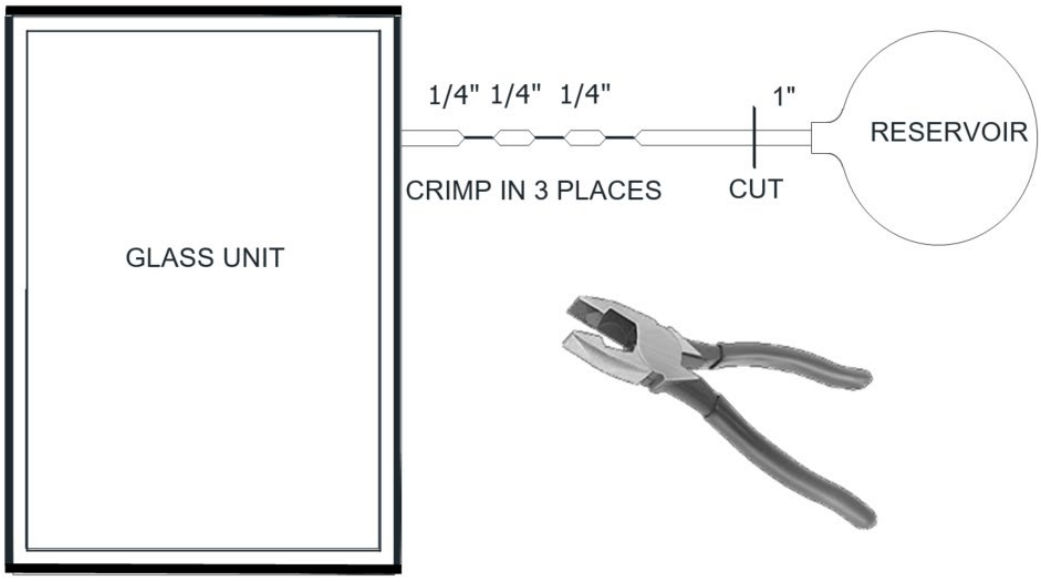
- Windows shall be transported in an upright position with all manufacturers' packaging in place.
- Do not rack, twist, drag or pull window frames.
- All windows shall be stored in the upright position as close to 90 degrees as possible and placed on their sills.
- If packaging is removed, store with non-abrasive separators between frames.
- Handle units with glass cups as much as possible. Use appropriate manpower when lifting large units.
- Windows shall be stored out of the weather in a clean, dry, low traffic area, away from direct sun light, extreme temperatures and extreme temperature changes. Do not leave wrapped windows exposed to sunlight or heat.

EQUALIZATION PROCESS AND RESERVOIR REMOVAL INSTRUCTIONS:

1. Once units have arrived at the jobsite, allow them to acclimate to their openings/jobsite conditions for a minimum of 24 hours if possible. Larger units may take up to 72 hours.

2. Once acclimated, the capillary tube requires crimping in three places, and reservoir removal. Crimping should be performed between 12PM and 3 PM, or when the temperature is at the expected seasonal average. Ensure the glass panes are flat before crimping.

3. Crimp (hard enough to collapse or flatten the tube) the capillary tube ¼" from the edge of glass/glazing bead, again at ¼", and again at another ¼". Use the flat jaws of a pair of pliers (shown).



4. Cut the tube 1" from the end. Remove the reservoir and then dip the cut end in a sealant that adheres to steel. Let sealant dry.

5. Tuck the capillary tube under/behind the glazing bead using a plastic putty knife, or tape to the edge of the IGU for "Glass Only" products.
6. Please reference "Breather Tube Tucking Instructions" or call your Sales Representative for more information.

I. SELECT AAMA INSTALLATION METHOD

Each project is different. The most frequently used method on new construction, with weather resistant barrier and fin is the AAMA A1 Method. Other Methods are mentioned in the text that follows, but the primary description in this document is the A1 Method.

AAMA INSTALLATION METHOD SELECTOR	A	A1	B	B1
Weather Barrier Applied (First) Prior to Window		✓		✓
Sill Flashing Applied Prior to Window Installation	✓	✓	✓	✓
Jamb Flashing Applied to Opening (Before) Window			✓	✓
Window Set In Place (With Sealant on Back of Flange)	✓	✓	✓	✓
Jamb Flashing Applied w/ Sealant (After) Window	✓	✓		
Head Flashing Applied After Window Installation	✓	✓	✓	✓
Weather Barrier Applied (After) Window	✓		✓	

A = Flashing applied *after* the window
B = Flashing applied *before* the window

1= WRB applied *before* window

II. PREPARE ROUGH OPENING

A. GENERAL INFORMATION

1. BUILDING CODES:

The owners, architects, and/or builders are expressly responsible for complying with any and all applicable laws, regulations, and building codes when selecting and installing Alpen products.

2. BUILDING ENVELOPE:

Walls, floors, roofs, fenestrations, and doors fall under the purview of the owner, architect, and builder (or specialized consultant) for design and construction. However, attaching Alpen-brand window/door assemblies to the envelope in a manner that maintains the stability of water/vapor/air barriers is contractually guaranteed by other entities.

B. CHECK ROUGH OPENING

1. ROUGH OPENING DIMENSIONS

Rough opening must be minimum 3/8” taller and 3/8” wider than window frame size.

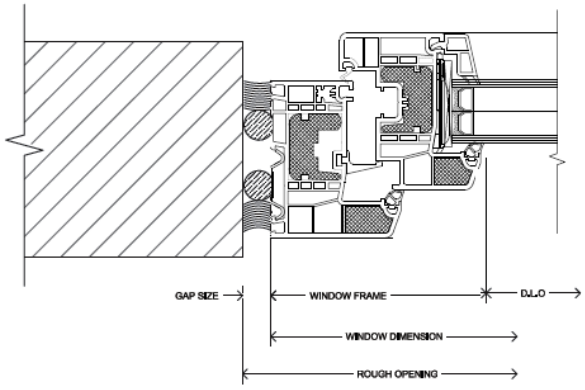
MINIMUM REQUIRED CLEARANCE - TILT-TURN WINDOWS

EACH SIDE:

	SILL	HEAD	JAMB 1	JAMB 2
Minimum:	3/8"	3/8"	3/8"	3/8"
Maximum:	1/2"	1/2"	1/2"	1/2"

OVERALL:

	VERTICAL	HORIZONTAL
Minimum:	3/4"	3/4"
Maximum:	1"	1"



Color	Frame Length		
	(Up to 39-1/4")	(39-1/4" to 78-3/4")	(78-3/4" to 118-1/4")
Light Coloring	3/8"	3/8"	1/2"
Dark Coloring	3/8"	1/2"	3/4"

2. CHECK PLUMB, LEVEL, SQUARE

Check that rough opening is plumb, level, square, and in plane. (**This is vital to proper functioning of the unit!)**

The rough openings must be square with level sills and plumb jambs. Check the outside wall-face to confirm that it is straight and plumb.

If you find any rough opening that does not meet the proper conditions, adjust the thickness of the shim blocks until you have achieved square, level, and plumb conditions prior to installing the window or door frame.

If, for any reason, these conditions cannot be met, it is highly advisable that you notify the general contractor or other responsible party and receive written authorization before framing in openings that do not meet the proper standards.

3. ENSURE OPENING IS CLEAN & FREE OF DEBRIS

Verify sill is level and free of debris and that the sill of the rough opening must be solid and level.

C. APPLY FLASHING

Alpen recommends following ASTME E 2112-01 and AAMA Installation Masters guidelines for sealing and flashing exterior windows and doors. Create a proper seal between the window and the rough opening structure.

WHEN WEATHER RESISTANT BARRIER IS IN PLACE: (See drawings below)

1. Score with modified "I" pattern or upside-down "Y". See Fig 7a

2. Then fold the WRB to the interior and tape See Fig 7b

3. Cut building wrap at the head – outside to corner of the opening in a 45 degree cut on both sides of the opening. Length of cut is about 12-3/4" diagonal measurement. Straight dimensions from the head and jambs should be 9". See Fig 7c

4. Fold up WRB flap at head and temporarily fold and tape flap. See Fig 7d

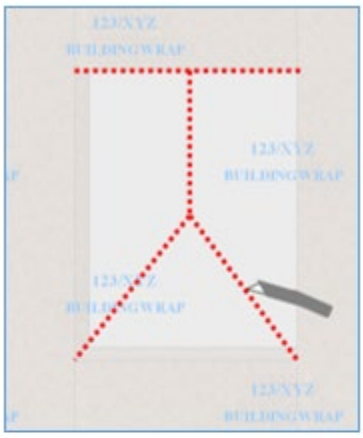


Fig 7a

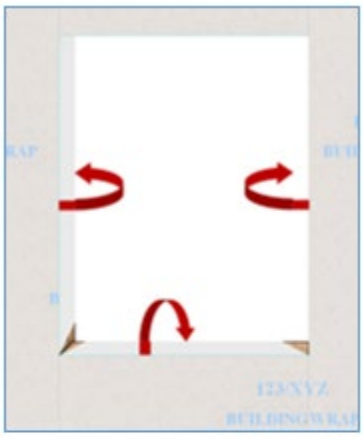


Fig 7b

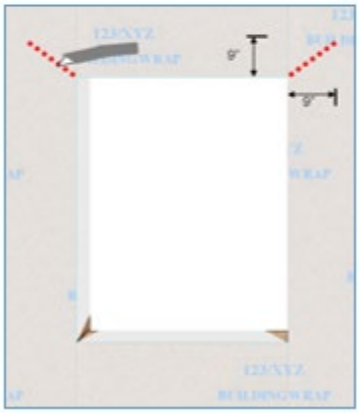


Fig 7c

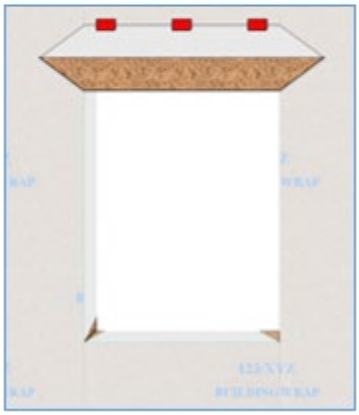
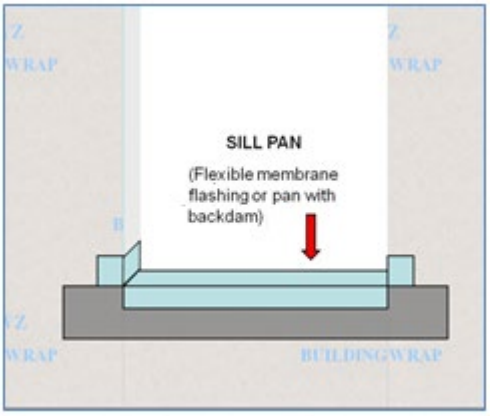


Fig 7d

D. SILL FLASHING & DRAINAGE:

1. FLASHING



Cut sill flashing "apron" for the front of the opening using 9" self-adhering flashing. (Size = R.O. + 18".)

Place a bead of sealant at the exterior front corners of the sill where building wrap and apron flashing meet. Tool sealant before installing sill flashing or pan flashing.

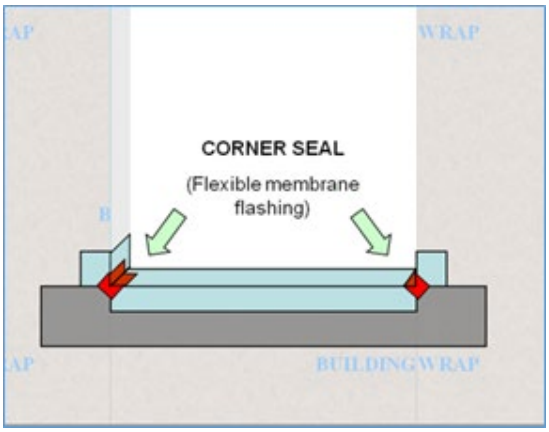
If this is an A or B method without the building wrap in place, attach the top of the "apron" flashing, but leave the lower portion of the flashing loose so the building wrap or paper can be slid under the flexible flashing. Then both can be securely attached, but in weather board fashion.

2. BACK DAM

Flexible Flashing with membrane - placed and cut as sill pan. **Make sure to allow for back dam and create positive drain to the exterior.** 6" side legs are recommended on flashing. (Metal pans can be used, but conduct cold to the interior of the building unless you insulate at the back dam.)

*Refer to **AAMA Installation Masters Training Manual Addendum dated August 2007** for back dam height based project performance requirements. The Building Science Corporation has suggestions for creating positive drain and back dams.*

3. CORNER SEAL



Cut and place small pieces of flexible flashing in the corners for a redundant corner seal. Be sure to make it as smooth as possible and avoid any wrinkles.

III. SELECT YOUR INSTALLATION TECHNIQUE

These techniques are general guidelines only, and may not be appropriate for all performance requirements. Alpen recommends three installation types:

ANCHOR BRACKET METHOD

Installation bracket installation uses anchor brackets. Oversize and/or heavy assemblies or installations into applications with high design loads may require use of through-frame fasteners to reinforce connections.

1. Installation brackets may be factory applied or installed in the field. No additional fasteners are required to hold the bracket onto the frame.
2. Brackets are to be placed 4” from the corners and 20-24” o.c. thereafter. Brackets are to be placed around the entire perimeter of the window.
3. Shims are required on either side of each anchor bracket to prevent frame from bowing.

SCREW THROUGH FRAME METHOD

Through-frame anchoring can be used to fully secure the frame to the opening without the use of anchor brackets. This method is not recommended for fixed units.

Although anchor brackets are not required with this approach, Alpen recommends applying 2-3 anchor brackets to the top and bottom of jambs that can be used to temporarily secure frame to opening while window is checked for plumb, level, square and shims and support blocks are applied.

1. When using the thru-frame anchoring approach, 3/8” pilot holes will be pre-drilled through frame and steel reinforcement for a tapcon or wood screw to be used to fasten the door frame into the opening.
2. Holes will be drilled 4” from the corners and 12-14” o.c at frame head and jambs
3. Shims are required to be placed at the same locations as the fasteners to prevent bowing of the frame. Additional shims are required at the sill where the aluminum sill is fastened to the vinyl jamb.

NAILING FIN METHOD

Nailing fin method uses factory-applied nailing fin to secure the window to the rough opening without the need for anchor brackets or through-frame anchoring. Units requiring the nailing fin method come pre-fitted with nailing fin around the perimeter.

IV. PLACE SUPPORT BLOCKS AND SHIMS

A. PLACE SUPPORT BLOCKS

Support blocks transfer dynamic loads such as slamming the window shut. These are rigid, non-compressible shims, and are important for longevity of unit operation.

1. Place support blocks according to diagrams below:

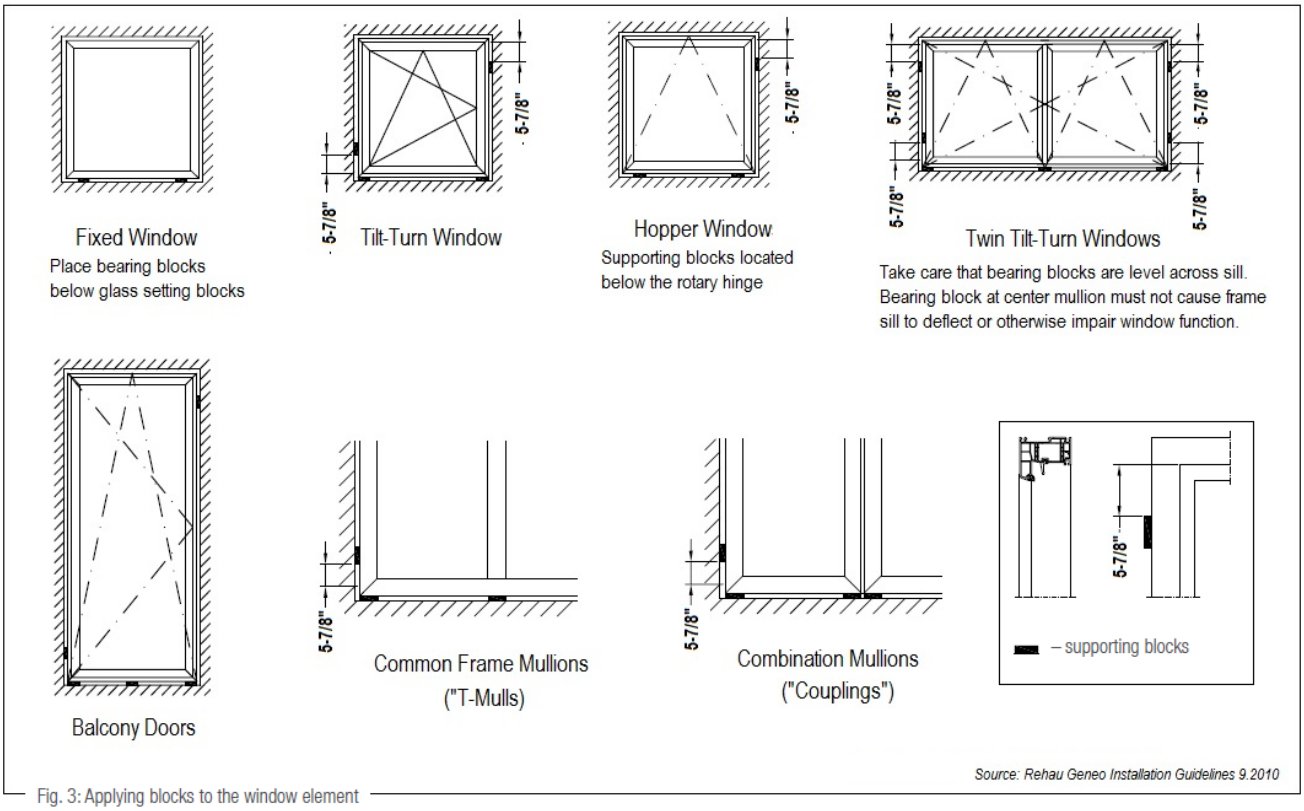
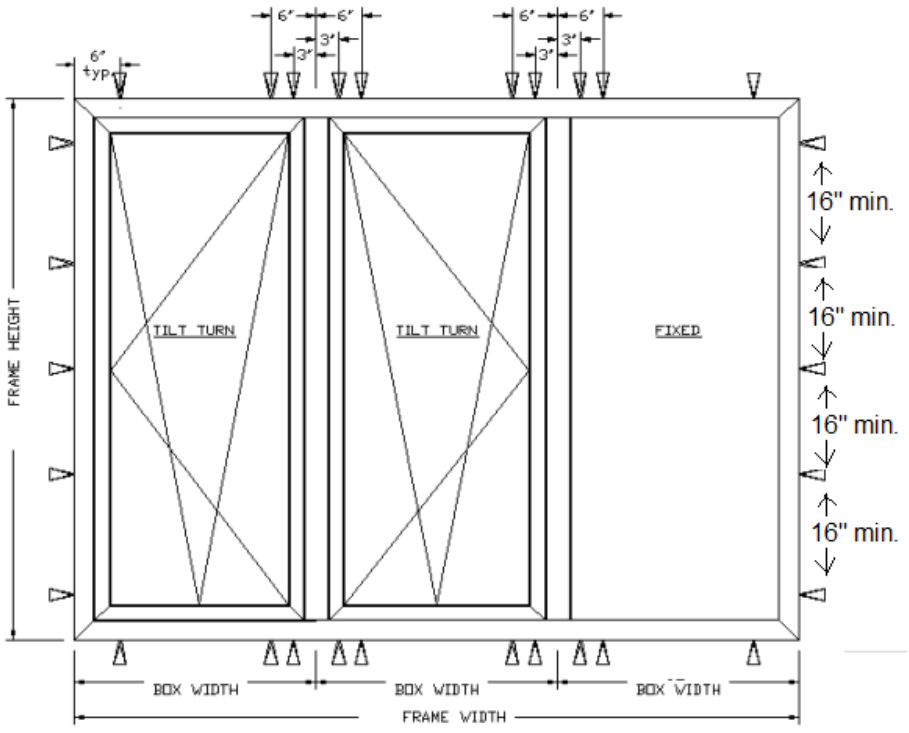


Fig. 3: Applying blocks to the window element

B. SET SHIMS

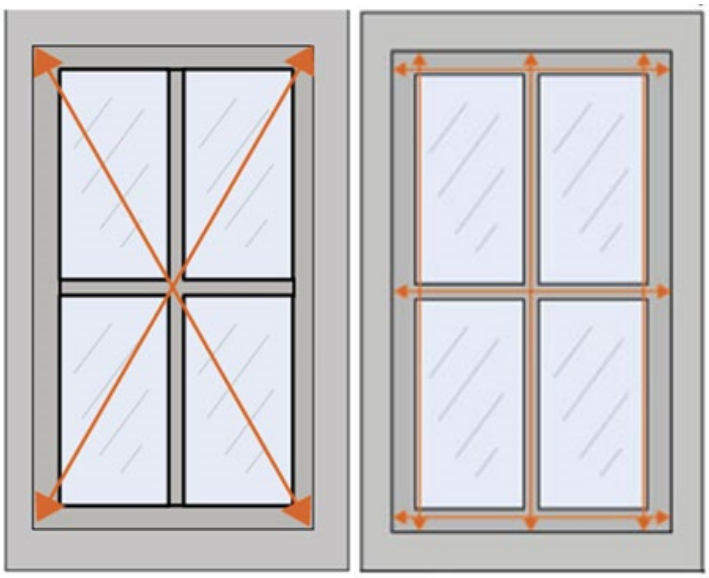
1. Place window on support blocks. Use shims and a hammer to temporarily hold window in place while proper shimming is applied.
2. Use 1/8” thick minimum non-compressible, impervious shims. Thicker shims may be required depending on window rough opening.
3. Shims must be flat, at least 1-1/2” wide and long enough to fully support the window frame. If using tapered shims, always use in pairs to create flat, level support. (Stackable plastic “U” shaped or “horse shoe” shims are recommended.)
4. Shims must be placed between the window unit and rough opening every 6-8” along the sill, within 6” of each corner, and on both sides of each mullion within 3” from the center of the mullion (as shown below).
5. Shims are also required on either side of every anchor bracket (if using anchor bracket installation) and at every screw fastener location (if using through frame installation). This ensures that the frame does not bow at the sealed mull joints.
6. Shims can be set in sealant to hold them in place. Ensure adequate and level support of window frame is achieved.



C. CHECK FOR SQUARE

1. Measure the distance from the upper left frame corner diagonally down to the lower right frame corner, then measure the other two corners. These measurements must be within 1/16” of each other.

2. The height of the frame at the center must be the same as the height at each end. Margins around window should be even at all sides.



V. SET WINDOW AND SECURE INTO OPENING

Follow Technique Selected For Your Installation

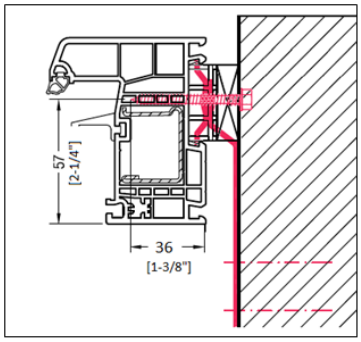
A. TECHNIQUE #1 – ANCHOR BRACKETS

APPLY ANCHOR BRACKETS

1. Anchor brackets are applied by placing bracket at desired location and tapping with rubber mallet until bracket 'snaps' into channel.

Heavy/Oversize Windows and Commercial or High Design Load Installations: Screw through each anchor bracket into frame to secure it to the window frame **See Figure 2**

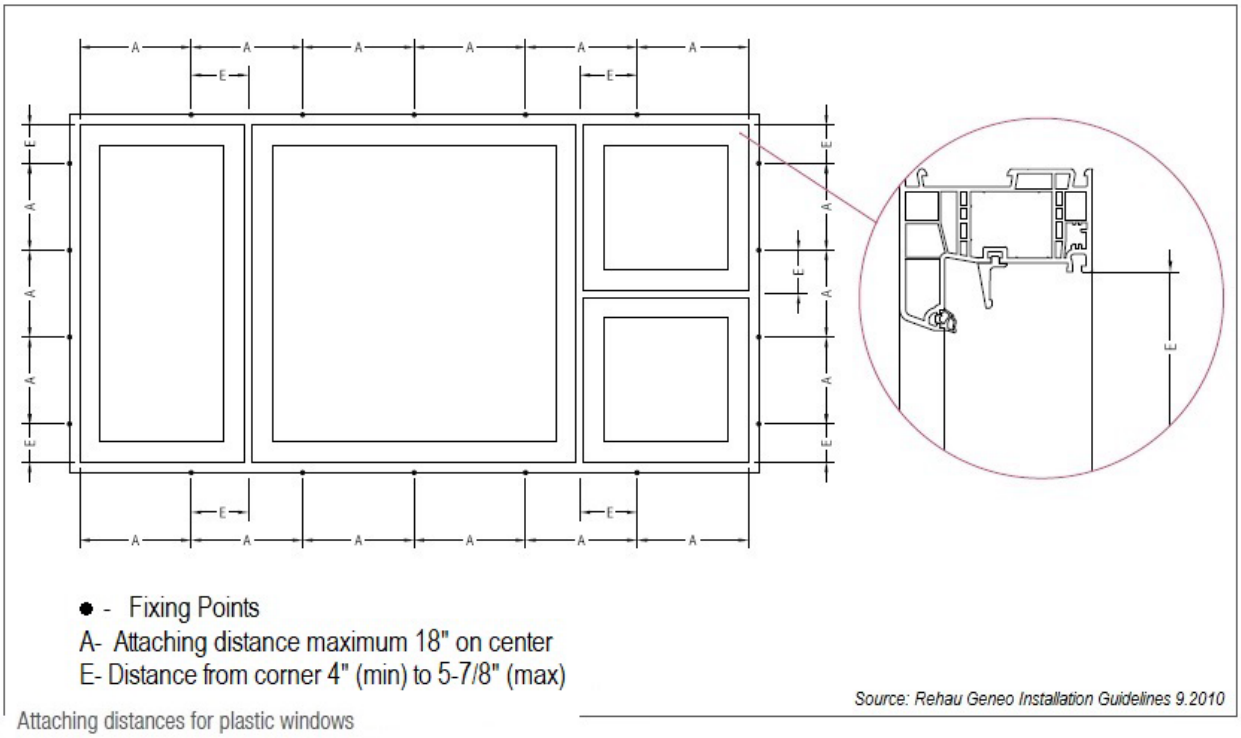
Figure 2 - How to fasten anchor bracket to frame for oversize/heavy assemblies and high design load installations



2. ANCHOR BRACKET SPACING

Anchor bracket should be 4" – 6" from each corner/mull, then 16" – 18" on center thereafter **see Fig. 3** ***Attaching Distances for Plastic Windows***.

Fig. 3



Attaching distances for plastic windows

B. TECHNIQUE #2 – THROUGH-FRAME ANCHORING

1. GLAZING AND OPERATION REQUIREMENTS:

When using through-frame anchoring method with **Fixed windows**, glazing must be removed prior to installation. On **Hopper** windows, the sash must be un-hinged to provide access to the frame. See Alpen Glazing Guidelines and Operation and Maintenance Guides for more information.

2. TEMPORARILY MEANS OF ATTACHMENT:

Alpen recommends use of a few anchor brackets located at mounting block locations to be applied to the frame prior to installation that can be used to temporarily secure the window into rough opening while shims and support blocks are applied and adjustments are made.

3. PILOT HOLES:

Through-frame anchoring requires **3/8" pilot holes** pre-drilled for a tapcon or wood screw. See **Figure 5** for location of pilot holes relative to frame profiles. Frames may be pre-drilled before window is installed, or after the unit is temporarily anchored in place with brackets.

4. FASTENER SELECTION:

Selection of fasteners is dependent on the masonry or framing system conditions. Always choose stainless steel or similar non-corrosive material.

1. For residential and low- to mid-rise commercial applications, the following sizes are commonly preferred:

    a) ½" x 2-1/2" tapcon

    b) #10 x 3-1/2" tapcon or wood screw

2. On large commercial projects where structural engineering calculations are provided, follow Engineer's requirements regarding fastner type and placement

5. HOLE PLUGS:

When all fasteners are installed apply silicone and insert the 3/8" plugs into each fastener location to seal out water.

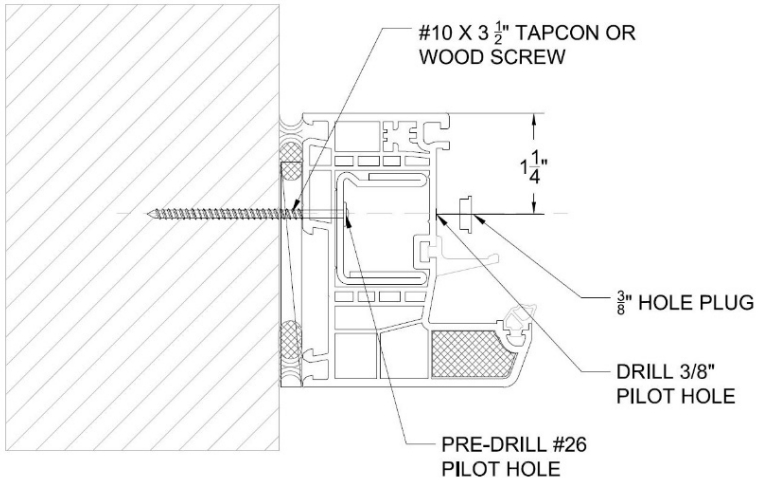


Figure 5 – Through-Frame Anchoring

C. TECHNIQUE #3 – NAILING FIN

1. Apply sealant to backside of nailing fin at head and jambs. **DO NOT APPLY SEALANT TO BACK OF FIN ALONG SILL**
2. Fasten the perimeter with coated or stainless steel screws 4” from corners and 6” – 8” on center thereafter.
3. Place clear silicone on the frame corners and seal corner miters of the installation fin.
4. Tool sealant and any squeeze-out on the fin once the window is fastened in place.
5. Seal and tool heads of all fasteners.

VI. POST-INSTALLATION PROCEDURES

A. FINAL CHECK FOR SQUARE

Measure the distance from the interior upper left frame corner diagonally down to the lower right frame corner, then measure the other two corners. These measurements must be within 1/16" (2mm) of each other.

In addition, the height of the frame at the center must be the same as the height at each end. The margins around the window should be even on all sides. Adjust the shims and screw tightness as necessary.

B. INSPECT FLASHING AND CONNECTIONS

1. Check drip cap is properly installed at the head.

2. Repair damaged flashings or water-resistive barriers to ensure the continuity between the water-resistive barrier and the new materials.

3. Ensure there is a minimum ¼" joint between the window frame and the final exterior wall surface (siding, stucco etc).

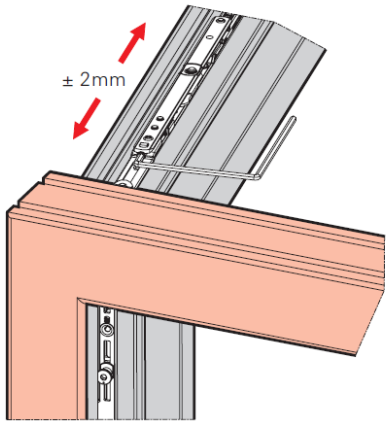
4. Install appropriate sized open-cell backer rod in joint between window frame and exterior wall surface and fill with sealant. Sealant should be discontinuous at sill to allow positive drainage from window opening to exterior. No tapes should be applied over nailing fin (if used) at sill.

C. SASH ADJUSTMENT

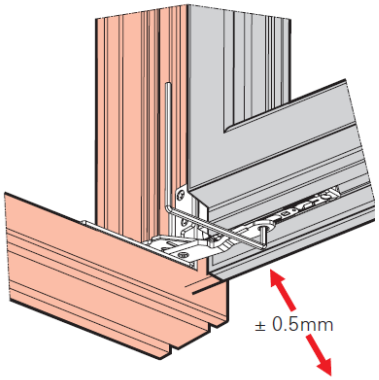
With the window now plumb, level, square, and secure within the rough opening, it is time to adjust the sash to ensure proper unit operation. The diagrams below illustrate the functionality of the hardware adjustment mechanisms for Tilt and Turn windows:

TILT TURN SASH ADJUSTMENT GUIDES:

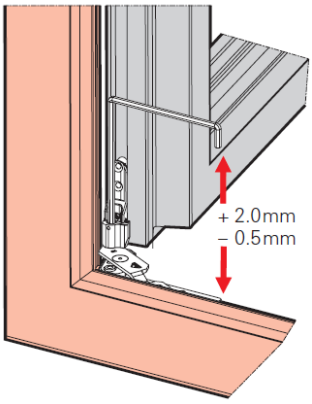
Lateral adjustment



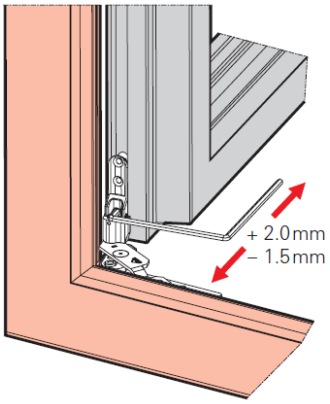
Gasket-compression adjustment



Height adjustment



Lateral adjustment



Gasket-compression adjustment