

Installation Instructions

**Receiving
Handling
Storage
Installation**

**Fixed Windows
Tilt + Turn Windows
Tilt + Turn Doors
Terrace Swing Doors
Entry Doors**

Version 1.10.0



Contents

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Product details and specifications are subject to change without notice.

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1 Before you start

Caution

Failure to follow the following instructions or provide proper care and maintenance may void the product warranty. For the most recent version of these instructions, visit www.innotech-windows.com/resources or contact your Innotech representative.

WARNING!

Warranty does not cover damage to products.

Permanent fasteners penetrating window/door flanges after installation can result in damage to windows and doors.

Exterior cladding that restricts differential movement between the cladding and the window/door frames can result in damage to windows and doors.

Videos

Innotech has several how-to videos that provide additional information for the successful installation and maintenance of our products. Visit innotech-windows.com/videos to watch the videos.

1.1 Innotech products - different by design

You are receiving high quality windows and doors that have unique operating features. The instructions for handling, storing, and installing these products may be different from other window and door products you have installed. **Please read these instructions carefully before you begin installation.**

1.2 Shop drawings

If you have received Innotech shop drawings, refer to them for **specific installation instructions** that may differ from this document. Shop drawings contain important information about the products such as the spacing and type of anchoring method to be used.

1.3 Exterior finishes and Innotech products

The mounting flanges on Innotech products are not nailing flanges. They must not be used to anchor the windows/doors to the wall structure. **Fasteners penetrating the flanges can cause operating problems and product damage that is not covered by warranty. No permanent fasteners are to penetrate window/door flanges after window/door installation. Builder shall notify all trades of this requirement.**

Exterior cladding must not impose loads on window/door frames or restrict thermal movement. **Exterior cladding details must allow for differential movement between the cladding and the window/door frames.**

As these requirements may differ from local construction practice, Innotech strongly recommends that builder and building designer review exterior finishing details and coordinate the work of trades to ensure that fasteners used to attach exterior finishes and flashings do not penetrate Innotech mounting flanges and to ensure that cladding details allow for differential movement between the cladding and the window/door frames.

1.4 Building codes

Innotech builds quality products designed according to information provided by the purchaser. It is the responsibility of the owner, architect or builder to select and install products in compliance with all applicable laws, regulations and building codes.

1.5 Building interface detailing

These instructions show you how to place, shim and anchor the windows and doors to the building. They do not show you how to apply all the sealants, flashings, or barrier membranes required for a code compliant and weather-sealed installation as these requirements vary from one jurisdiction to another. Before installation consult the **authority having jurisdiction** (architect, building envelope consultant, local building department or building inspector) about requirements for weather-tight installation, including use of flashings, sealants and barrier membranes.

1.6 Second Plane of Protection

In a window or door installation the exterior sealants and barrier membranes create the first plane of protection against water penetration. Some building codes require windows to be installed with a **Second Plane of Protection** to prevent water that penetrates the first plane of protection from entering the wall or the building interior.

Innotech agrees with the consensus of most building envelope professionals that the most effective way to provide a second plane of protection is to **create a drained sill pan (impermeable membranes or flashing with end dams) under the window/door and to seal the interior plane of the window or door frame to the rough opening on all four sides** to prevent the passage of air and wind driven water.

There are several best practice methods applied by industry to achieve an effective second plane of protection. Consult with the authority having jurisdiction for the optimal method for your specific project.

1.7 Key installation principle

Innotech products must be installed plumb, level and square to operate properly. The installer must install them this way even if openings are not square, and walls are not straight or plumb.

1.8 Clearances and rough opening tolerances

To allow for small defects in the size, level and squareness of the rough opening, Innotech recommends the following clearances between the window/door frame and the rough opening:

- **Minimum clearance 3/8" (10 mm)**
- **Maximum clearance 3/4" (19 mm)**

1.9 Interstorey deflection

The structure above all window and door openings must be designed to limit deflection due to dead loads and live loads.

The maximum allowable deflection of the structure above or below the Innotech window or door is $\pm 3/8"$ (10 mm).

1.10 Rough opening condition

Inspect all rough openings to see if they are square, have a level sill, and plumb (vertical) jambs. Use a long level vertically to see if the outside face of the wall is straight and plumb at window and door jambs.

If a rough opening is out-of-square, adjust the thickness of the support shims to make sure that you install the window or door frame in a square, level and plumb way, even if the rough opening is not. If the outside face of a wall is bowed or leaning, install the window to be vertical.

Sometimes rough openings or wall conditions need to be corrected to achieve a satisfactory installation. **If you see any rough openings that are**

Caution

Damage to Innotech products caused by inadequate clearances or building structure deformations is not covered by warranty.

WARNING!

Inspect the rough openings and notify the general contractor or the responsible party of rough opening defects BEFORE you start installation.

In many jurisdictions start of installation work indicates acceptance of existing conditions.

Installer will be responsible for operating problems arising from improper installation.

not acceptable for window or door installation, notify the general contractor or the party responsible for the construction. Explain to the general contractor that a satisfactory rough opening must allow you to install the frame level, square, straight in every direction and plumb, and must provide a minimum of 3/8" (10 mm) and no larger than 3/4" (19 mm) clearance between the top of the frame and the top of the rough opening.

1.11 Compatibility of materials

Sealants, adhesives, adhesive tapes and barrier membranes used with Innotech windows and doors must be **compatible and safe for use with rigid PVC and Innotech painted and laminated colour finishes**. Installer or authority having jurisdiction is responsible to select compatible materials. The Innotech warranty does not cover damage to Innotech products or surrounding materials arising from the use of incompatible or unsuitable products.

For information about sealants known by Innotech to be compatible with Innotech finishes, see heading 7.1 - Compatible sealants on page 68

If you are not sure what the finishes are on the Innotech products you are installing, contact your Innotech representative.

1.12 Protecting Innotech products

You are responsible for damage to the products from the time they are delivered until they are installed and turned over to the owner.

1.12.1 Protecting installed products

Protect windows and doors from all construction damage and do not block sashes open with materials. Keep sills clean and free of dust and debris, and ensure gaskets and drainage remain intact. Protect units from welding, grinding, concrete, mortar, stucco, paint, and other harmful materials.

Protect installed windows and doors from acid solutions used to wash masonry. These solutions are corrosive and will damage window and door framing, glass, hardware, and flashings.

If contact with acid occurs, rinse immediately with clean water. Do not use metal scrapers, solvents, or abrasive cleaners.

1.12.2 Protective tapes and protective films

Vinyl window and door frames *may have* protective plastic TAPE applied to interior and exterior surfaces to protect them during manufacturing and handling. Glass surfaces *may have* protective FILM applied to interior and exterior surfaces. *Protective tapes and films may not be present on some products for specific technical reasons.*

- Protective TAPE on EXTERIOR frame surfaces must be removed as soon as products are installed.
- Protective FILM on EXTERIOR glass surfaces must be removed within twelve months of installation. Protective TAPE left on exterior vinyl surfaces can begin to fuse to the product surface from warm temperatures and exposure to the sun.

WARNING!

Risk of Static Discharge. Removal of protective film can cause sparks of static electricity and can ignite combustible liquids used

TIP

If the protective film is removed, make sure not to remove the glass sticker that indicates the product ID and location of the glass.

Failure to remove the protective plastic tape at the time the frames are installed may cause the tape to bond to the frame and may permanently damage the frame finish.

Protective FILM must be removed very carefully in the presence of flammable and explosive chemicals and gases. Removal of protective film can cause **sparks of static electricity** and can ignite combustible liquids used nearby.

To reduce potential for creating sparks do one or more of the following:

- Mist the surface of the film with a light water spray.
- Remove film slowly.
- Touch film to glass surface often while you are removing it.

1.12.3 Final Cleaning and Commissioning

After installation, clean and commission windows and doors following the Innotech instructions supplied with the contract/purchase documents. Visit www.innotech-windows.com/resources for complete care and maintenance instructions.

Carefully read Innotech cleaning and maintenance instructions before attempting final cleaning of products after installation.

Innotech products must only be cleaned with a mild soap solution, non-abrasive rags or sponges, and rinsed with clean water.

- Do not use metal scrapers to remove substances from frames or glass.
- Do not use abrasive cleaners.
- Do not use any kind of chemical solvent on any surfaces of the product.
- Do not use lubricants containing silicone or graphite. Use of such products may permanently damage the hardware and product finishes.

WARNING!

Metal scrapers, chemical solvents and acidic masonry cleaning solutions will permanently damage window and door finishes. Damage from inappropriate cleaning methods is not covered under warranty.

1.13 Notice of field testing and validity of field test results

Innotech will honor performance guarantees made in writing but insist that our product performance must be verified in a fair and responsible manner.

Field testing for water penetration is ONLY valid if the test unit(s) is correctly installed, free of construction damage, cleaned of construction debris, and adjusted to operate properly. **Innotech SHALL BE NOTIFIED in advance of such tests and be given adequate opportunity to inspect products to be tested if Innotech so chooses.**

INNOTECH SHALL NOT BE BOUND BY THE RESULTS OF TESTS PERFORMED BY UNCERTIFIED OR UNQUALIFIED TEST AGENTS, BY TESTS THAT ARE NOT FULLY DOCUMENTED ACCORDING TO THE REFERENCED TEST SPECIFICATIONS OR BY TESTS CARRIED OUT WITHOUT PROVISION OF ADEQUATE ADVANCE NOTICE.

2 Materials and tools required

2.1 Tools required

Spirit levels	Use 24", 48", and 72" levels. Longer levels improve accuracy; use 72" for tall units.
Framing hammer	
Flat pry bar	
Screw gun	
Screw drivers	
Tape measure	
Caulking gun	
Wrench	Small adjustable crescent OR 11 mm box/crescent wrench (may be needed for certain hardware adjustments)
Vacuum cups	Use at least two vacuum cups for large, heavy windows and doors. See heading 3.3.4 - Use vacuum cups to carry frames with glass on page 12
Hex keys: 3, 4, 5, 8 mm (or combo: 4 mm hex + 11 mm socket).	Required for adjusting hardware (clearance and locking tightness).

2.2 Materials required

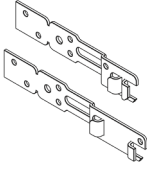

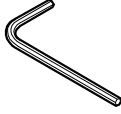
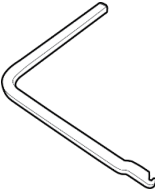
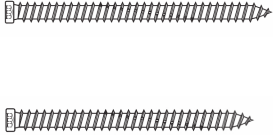
Fasteners for Innotech Strap Anchors (one per anchor)	Wood substrates: #8-13 x 1-1/2" Pan head screws. Steel studs: #8-13 x 3/4" pan head screws. Concrete: 3/16" x 1-1/4" or greater, Tapcon or equal. All fasteners to be corrosion resistant and selected for compatibility with the substrate.
Sealants and membranes	Sealants and barrier membranes for air and water seal at perimeter joints shall be compatible with rigid PVC, with building substrates, and with one another.
Sill support shims	Plastic or other non-deteriorating, non-swelling, and non-compressible window support shims, min. 1-1/4" x 1-1/2". Suitable shims may be purchased from Innotech in various thicknesses.
Shim blocks	Synthetic, plastic, or treated plywood shim blocks to be used at window and door jambs where indicated.
Caulking and backer rod	Compatible sealant for second plane of protection at interior perimeter of each window and door. See heading 1.6-Second Plane of Protection on 5

2.3 Materials supplied by Innotech

WARNING!

Treated wood products can be corrosive to many commonly used fasteners.

Installer or authority having jurisdiction is responsible for selecting fasteners that are compatible with the substrates into which they are fastened.

<p>Strap anchors</p> 	<p>Strap anchors are shipped loose with every order. The anchors are in one or more cardboard boxes and are identified on the packing slip. Make sure you have all the anchors you need before you start installing windows/doors.</p>
<p>Drainage caps</p> 	<p>Drainage caps are shipped loose with every order.</p>
<p>Hex keys</p> 	<p>Tilt + Turn windows and doors: 4 mm</p> <p>Outswing doors: 3, 4, and 5 mm</p>
<p>Assembly key</p> 	<p>The assembly key is used to remove the pin from the top hinge of Tilt + Turn Windows and Tilt + Turn Doors.</p> <p>It can also be used as a temporary handle to open and close Tilt + Turn Windows and Tilt + Turn Doors.</p>
	<p>Screw 7.5x102 AMO III Type 2 (head 8.0mm) with AW30 (Torx), for window/door installation</p> <p>Screw 7.5x80 AMO III Type 2 (head 8.0mm) with AW30 (Torx), for window/door installation</p>
<p>Handles and keys</p>	<p>Handles and screws are in pre-packaged plastic bags. Keys supplied for doors that have key lock cylinders.</p>

3 Receiving, handling and storage

3.1 Receiving and inspection

Carefully inspect the windows and doors at the time you receive them. Any visible defects of glass or framing must be reported to the Innotech dealer within 24 hours of receiving them.

Inspect products again before you install them to make sure they have not been damaged on the jobsite. Report any jobsite related damages to your Innotech representative to determine if product can be safely installed.

3.2 Safely unloading products from window and door steel racks

Innotech products are either delivered on steel racks and secured with ratchet straps (tie-downs), or in wooden crates secured by wood blocking.

Windows and doors may have shifted during transportation. Always use extreme caution when unloading products from steel racks.

To mitigate potential accidents, always evaluate and take precaution of surface, steel rack and product conditions before starting to unload.

3.2.1.1 Place steel racks or wooden crates on level surface to attain safe lean angle

To prevent tipping, place rack/crate on a level surface. Due to varying product weight, surface conditions and rack/crate conditions, it may be necessary to use small wooden shims (about 1-1 1/2" thick) to attain a safe lean angle.

To begin, place the rack/crate on a level and even surface. If surface is not level, place wooden shims under the front legs of the steel rack to *slightly* distribute the weight of the product to the back. Do not exceed safe lean angle as this may cause the steel rack to tip backwards.

3.2.1.2 Carefully remove ratchet straps

Steel racks are loaded with largest and heaviest product(s) at the back. Unload front product(s) first. While unloading front product(s), back product(s) must remain secured to the rack.

With at least two or more people, carefully remove the ratchet straps one at a time, starting with the most forward ratchet strap. Depending on the size of the product(s), at least one person should hold the product(s) while the other slowly loosens and removes the ratchet strap. Only remove the ratchet strap if necessary; when possible, leave ratchet strap secured to the back product(s) while unloading the front product(s).

Never remove all ratchet straps at once. Never leave product unsecured or unattended on the steel rack.

WARNING!

Use extreme caution when handling and unloading products from window and door steel racks.

Always unload steel racks with at least two people.

Never leave product unsecured or unattended on steel racks.

TIP

To avoid injury, always ensure the product(s) at the back remains secured to the steel rack with a ratchet strap.

To do this, carefully loosen the ratchet strap and lift it over one product at a time. This allows you to re-secure the next product(s) at the back of the rack, while safely unloading the front product(s).

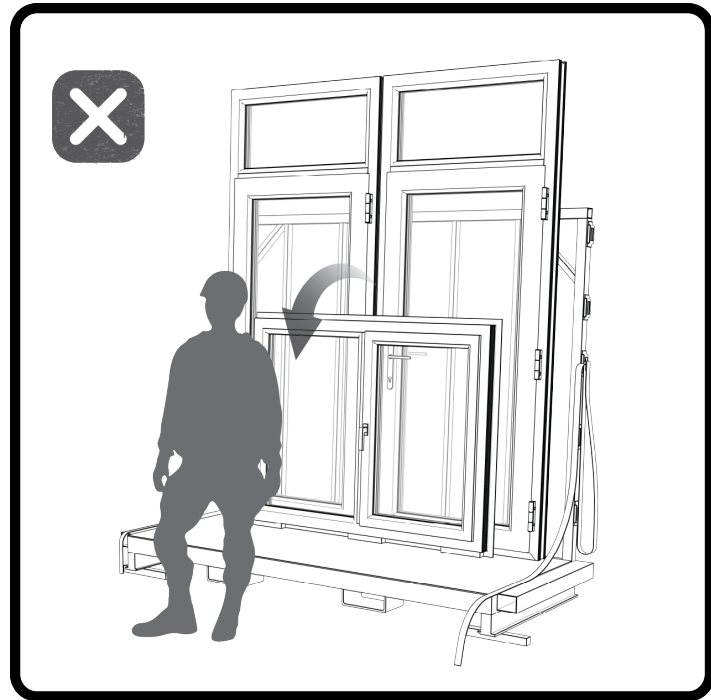


Figure 1 - Keep product secured, never remove all straps or leave it unattended.



Figure 2 - With two+ people, remove straps one at a time, starting from the front.

3.3 Handling and moving products

Handle windows and doors carefully. Mishandling frames can cause cracks and can separate screwed connections. Cracked, bent, and damaged frames are signs that the products have not been handled correctly – damage due to mishandling is not covered by warranty.

3.3.1 Safe handling practices

The installer is responsible for safe handling of heavy windows and doors, for selecting appropriate handling equipment, and for the safety of the installation crew. The guidelines that follow are provided to help the installer to follow practices that will prevent damage to the products due to mishandling.

Innotech products are heavy. Always use at least two people to carry them. Do not drop these products. Use slow and gentle movements.

3.3.2 Carry products vertically

Windows and doors are delivered in a vertical position and resting on one edge that has support blocks attached. Make sure windows and doors are vertical when you move them and when you put them down. Lift frames gently.

Avoid the following handling practices:

- Do not carry Innotech products tilted at a sharp angle or in a horizontal position for an extended period or without proper support.
- Do not lay Innotech products flat on any surface for an extended period or without proper support.
- Never lift units by the top framing member.
- Do not attempt to bend, twist or distort frames to go around corners or other barriers.

3.3.3 Carrying frames with no glass

Frames with no glass can be heavy. Always carry frames by supporting the frame weight from the bottom near the corners or by grasping vertical members. Lift frames gently.

Avoid the following handling practices:

- Never lift units by the top framing member.
- Never lift units by a horizontal framing member.
- When lifting frames with vertical mullions, support the joints between mullions and the horizontal framing members, if you lift the frames by the ends only.

3.3.4 Use vacuum cups to carry frames with glass

Most installers consider vacuum cups to be the safest way to carry heavy glass and window/door units with glass.

TIP

Vacuum cups such as **Wood's Powr-Grip**® can make handling of smooth sided heavy objects easier and safer.

For more information see www.powrgrip.com.



WARNING!

When using vacuum cups do not place cups on joint seams of plastic film.

Always use vacuum cups according to manufacturer's directions.

Be mindful when removing plastic film as it can cause static discharge that can ignite flammable materials.

Innotech windows and doors may have the glass surfaces covered with protective plastic film. When using vacuum cups remove the film before applying vacuum cups. Refer to heading 1.12.2 for instructions on how to safely remove the protective plastic film.

3.3.4.1 Carrying glazed units (frames with glass)

Carry frames by supporting the frame weight from the bottom at quarter points or use vacuum cups.

When using vacuum cups, place cups at quarter points from either end of unit. For glass surfaces with protective plastic film, remove the protective film before using vacuum cups.

3.3.4.2 Carrying partially glazed units

Use vacuum cups to lift the part of the frame with glass. Support the unglazed part of the frame, especially the joints between mullions and the bottom frame, to prevent cracking of frame joints.

3.3.5 Always support frames on shipping blocks

Products with a flange have shipping blocks on the bottom. Make sure windows and doors are always supported on the blocks.

3.4 Storing Innotech products

Store windows and doors indoors. You must protect them from rain, wind, direct sunlight, and temperature extremes. You must ensure they are well ventilated, and that heat cannot be trapped under protective coverings.

Store window and door units on an edge that has support blocks attached, and always on a flat, level surface. The horizontal distance from the base of the unit to the wall must not be greater than 25 cm (10 inches). Frames may lean against each other, always at the same angle, but never more than seven frames deep.

Do not stack windows and doors against each other without soft protective material between them. Use the foam blocks that keep frames separate during shipping (or similar resilient material) to separate frames from each other. Allow gaps between frames for ventilation.

Protect stored windows and doors from welding splatter, grinding sparks, concrete, mortar, stucco, paint and other harmful construction materials.

Do not cover stored windows and doors with transparent poly, use opaque or white poly. This will prevent excessive heat build-up that could damage products.




COLD WEATHER CAUTION	WARM WEATHER CAUTION
Cold weather makes products brittle. When handling or installing at temperatures below 5° C (40° F), avoid any impact to frame, sash or glazing bead. Even small impacts can crack frames under these conditions.	Very warm temperatures and/or exposure to direct sunlight can damage window and door products stacked against one another. Heat trapped between surfaces and reflected by glass coatings can lead to permanent damage of frames, finishes, and glass.

3.5 Removing sashes before installation

Before installing operable windows and doors it is often helpful to remove the sashes to make the products easier to handle. Before removing sashes you need to install the handles or use a temporary handle (such as the assembly key) that will let you operate the hardware. You should also know that there are several possible operating modes.

3.5.1 Hardware operating modes

Innotech window and door products may have several modes of operation. Dual action sashes have labels showing operating mode located on the handle side of the sash.

Operating mode →	Handles down	Handles to side	Handles up
Product type			
Terrace Swing Door	Lock	Swing open	---
Tilt + Turn (Turn before Tilt)	Lock	Swing open	Tilt in
Tilt before Turn (TBT)	Lock	Tilt in	Swing open
Tilt Only	Lock	---	Tilt in

3.5.2 How to install window and door handles

Window and door handles are shipped loose. Each new handle is in a plastic bag with two installation screws.

Note. To avoid damage to handles during construction, you may use only one handle or the assembly key to operate all of the windows and doors during installation. In this case, you would not have to install the handle with screws.

Tip

The square end of the assembly key can be used as a temporary handle to operate the windows and doors. This ensures your handles are not damaged during construction.

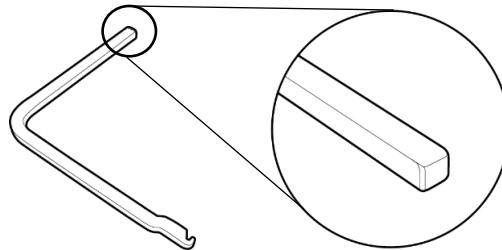


Figure 3 - Assembly key

Follow the steps below to install the handles.

1. Insert the handle shaft into the center hole of the frame with the handle pointing downward (locked position).
2. Rotate the handle 90 degree to the open position.
3. While the handle is in the open position, rotate the handle faceplate aside to expose the screw holes. **(Pull the top and bottom edges of the handle face plate towards you and rotate to one side.)**
4. Secure the handle by fastening the provided screws.
5. Rotate the handle faceplate back to its original position to cover the screws.

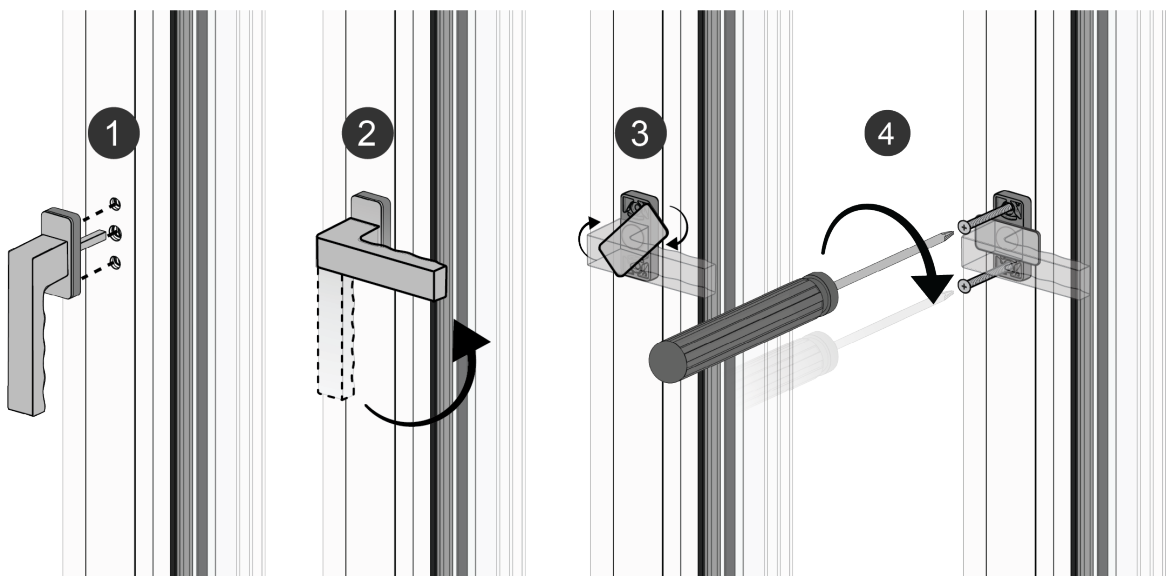


Figure 4 - Fastening the Handle to the Unit

Note. Make sure sash is in the locked position before installing handle pointing down, or you will find it is not in the right position when you open the sash.

3.5.3 How to Remove Sashes from window and door

3.5.3.1 How to remove Tilt + Turn sashes from frames with barrel hinges

These steps apply to both Tilt + Turn Windows and Tilt + Turn Doors. This procedure requires two people.

1. Partially open the sash in the turn position. If you do not partially open the sash, you will not be able to remove the hinge cover.
2. Starting with the top hinge, grasp the top and bottom edges of the upper hinge cover and pull them towards you. Remove the hinge cover.
3. Once the hinge cover is removed, insert the hook end of the assembly tool into the bottom of the hinge.
4. With a gentle tug, pull the assembly key down to remove the pin from the hinge. The hinge on the sash will then detach from the frame.

WARNING!

The sash is heavy! DO NOT try to remove the sash by yourself. Innotech recommends a crew of at least two people for this procedure.

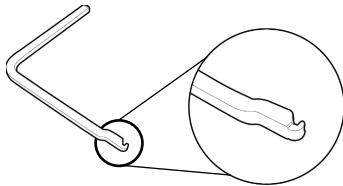


Figure 5 - Assembly Tool with Hook End

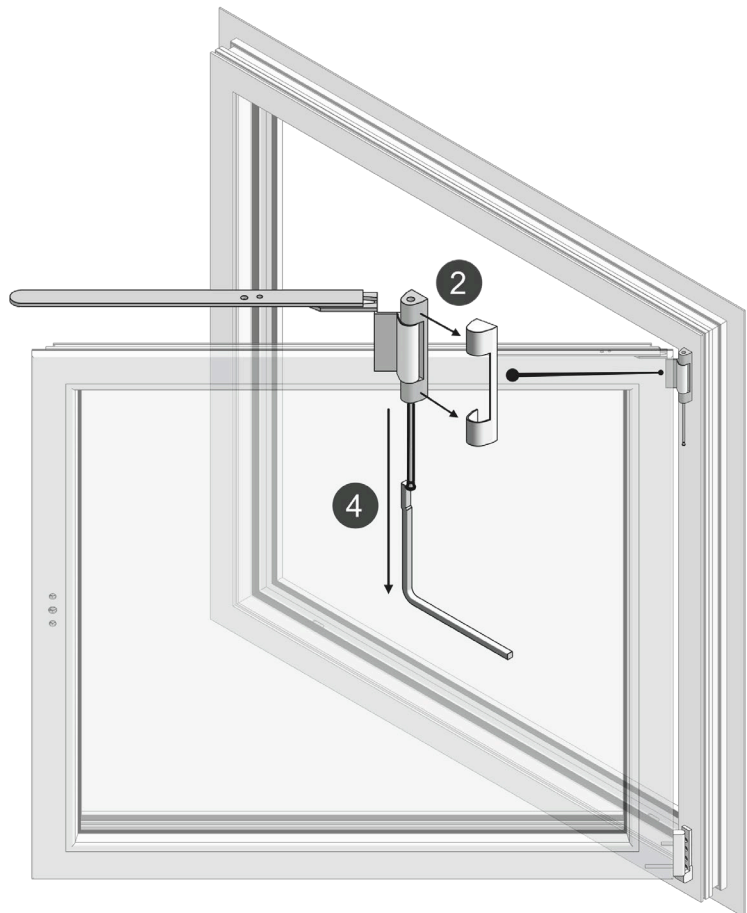


Figure 6 - Hinge Pin Removal

5. Tilt sash towards you slightly then lift it off the lower hinge pin.

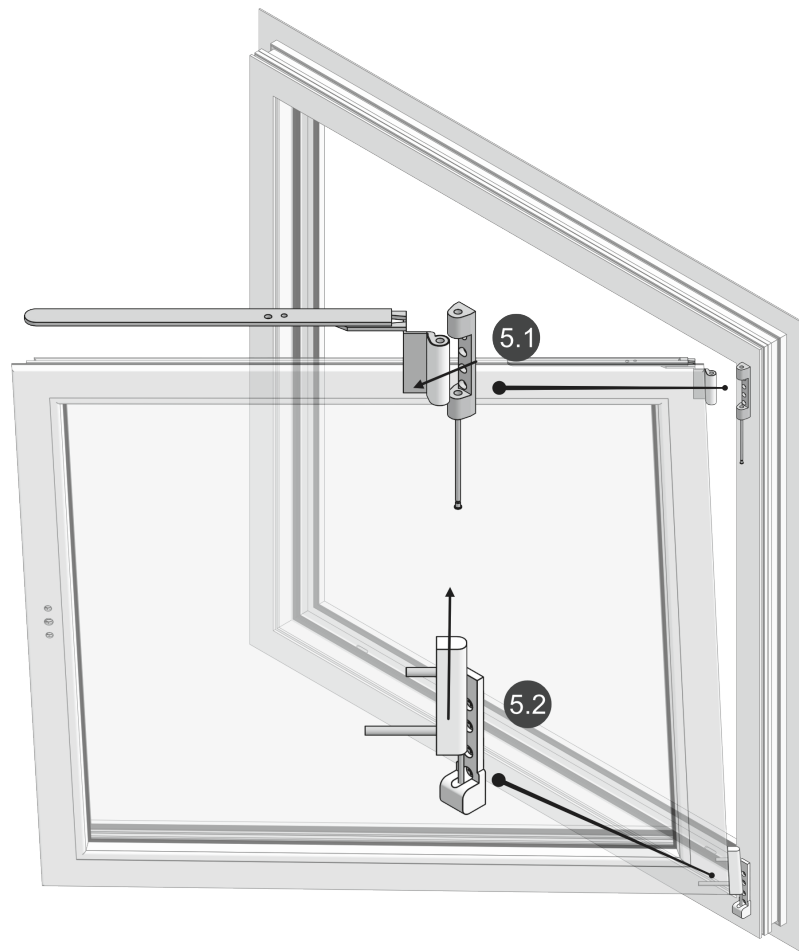


Figure 7 - Sash Removal from Lower Hinge

6. Put the sash in a safe place, on support blocks, on a clean and dry surface, at a safe lean against a wall. Make sure dirt and sand do not enter the lower hinge hole while the sash is stored in this way.

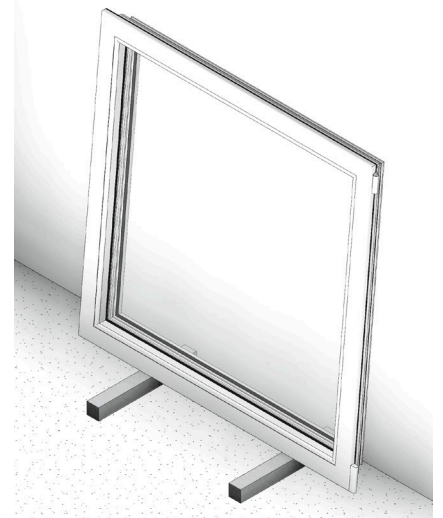


Figure 8 - Sash Placement on Support Blocks

7. Push the upper hinge pin from below until it "clicks" in place. Put the hinge cap back on the hinges to avoid damage or misplacing them.

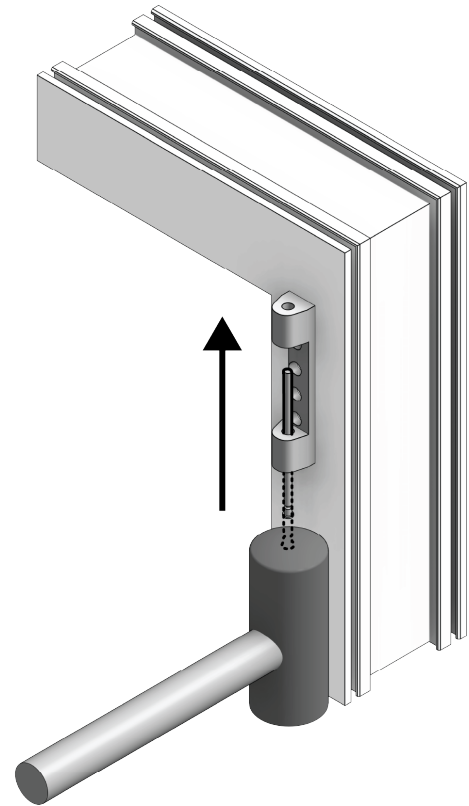


Figure 9 - Upper Hinge Pin Clicked into Place

3.5.3.2 How to remove Tilt + Turn sashes from frames with concealed hinges

1. Open the window to the turn position to access the stay arm at the head of the window.

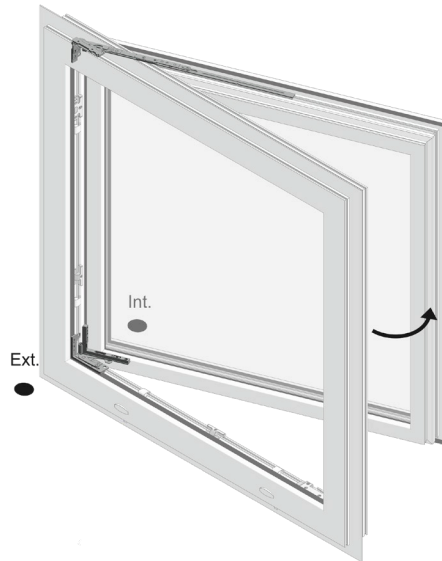


Figure 10 - Opening Window to Access Stay Arm

2. With two people, unlock the stay arm by turning the connector tab towards the frame. (Easier to rotate with a flathead screwdriver)

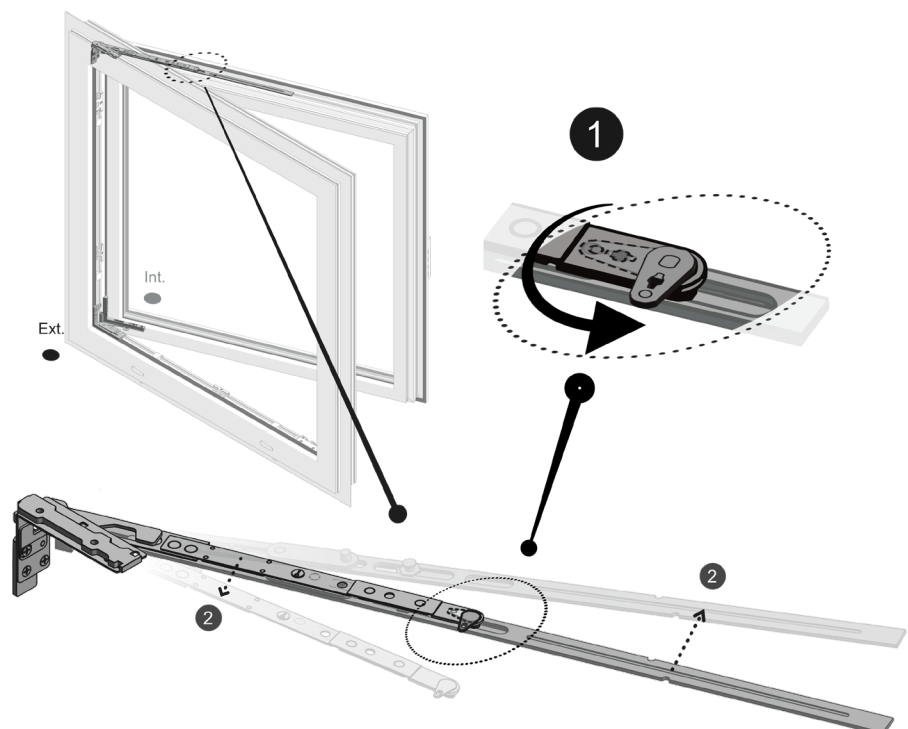


Figure 11 - Releasing the Stay Arm

3. Gently disengage the stay arm from the pin.

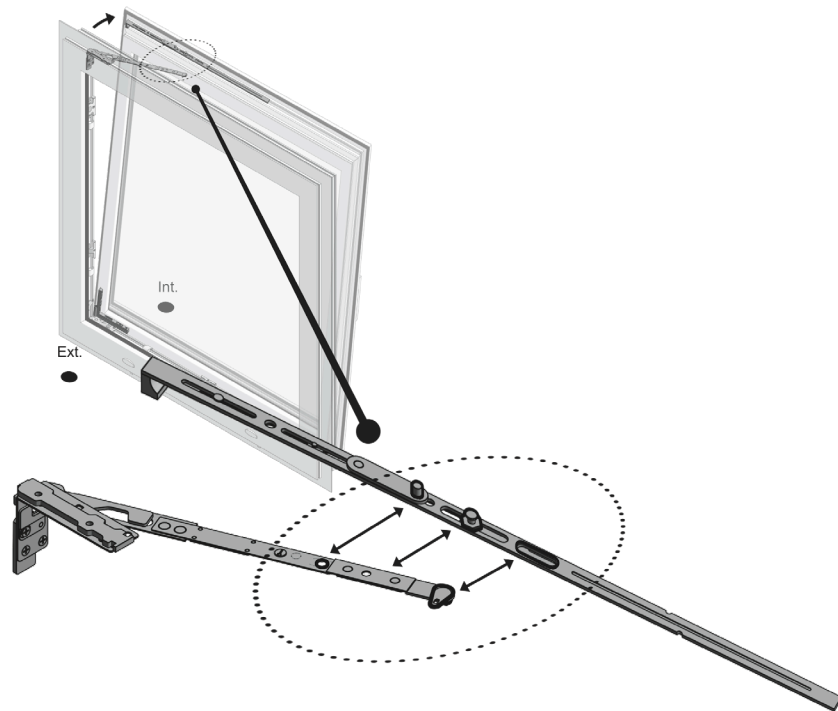


Figure 12 - Stay Arm Disengagement

4. Close the sash as much as possible and lift the sash from the bottom hinge.

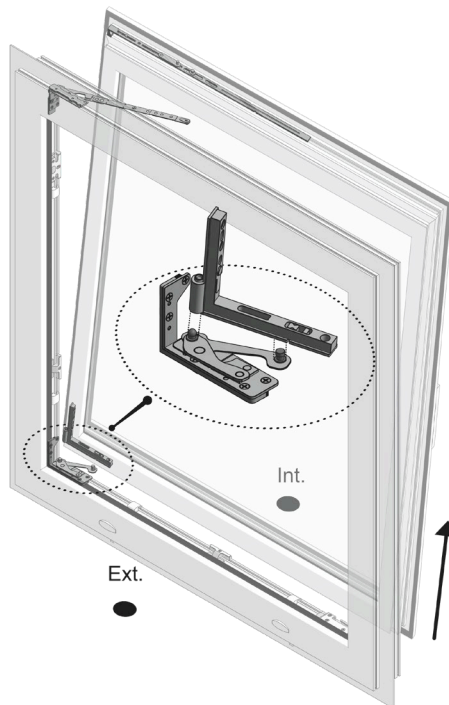


Figure 13 - Sash Removal from Lower Hinge

5. Put the sash in a safe place, on support blocks, on a clean and dry surface. Make sure dirt and debris do not enter the lower hinge hole while the sash is stored in this way.

3.5.3.3 How to remove side hinged doors from frames

This procedure requires at least two people. Glazed door sashes are heavy. Innotech recommends using vacuum cups to lift door sashes. Because sashes are often heavier than the frames, take care not to drop or damage the frame when removing the sash.

Follow the steps below to remove side hinged door sashes.

1. Remove all the hinge covers (there are three covers on each hinge).
2. Open the sash 90 degrees

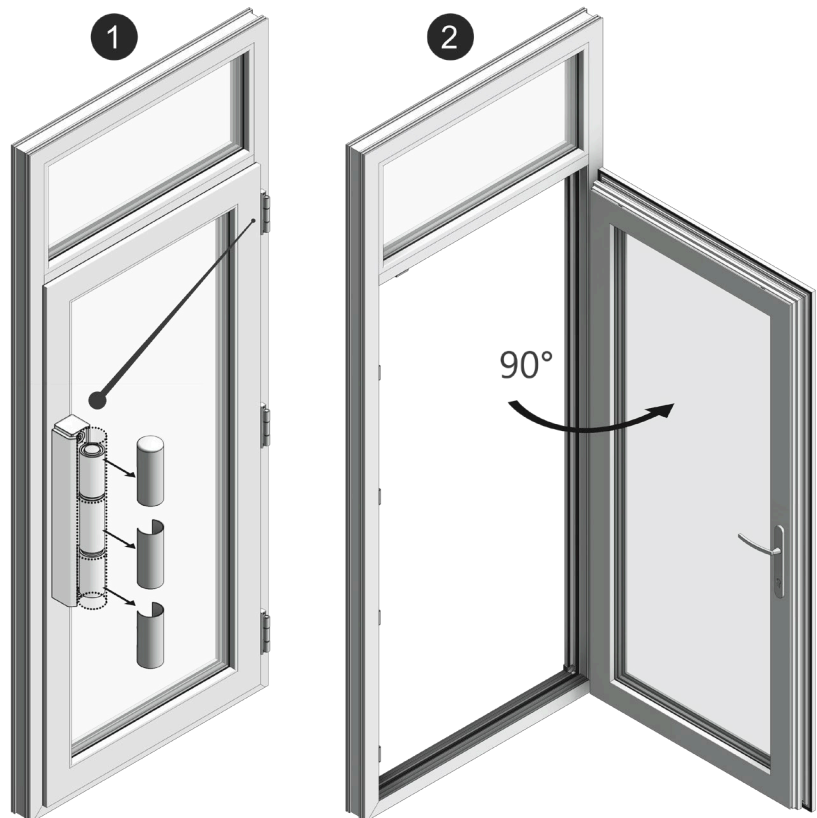


Figure 14 - Removing Hinge Covers and Opening Sash to 90°

3. Remove the set bolt from all hinges; this will unlock the pin (do not lose the set bolts).
4. Using a 4mm allen key, remove vertical adjustment bolts from underneath each hinge (do not lose the adjustment bolts).

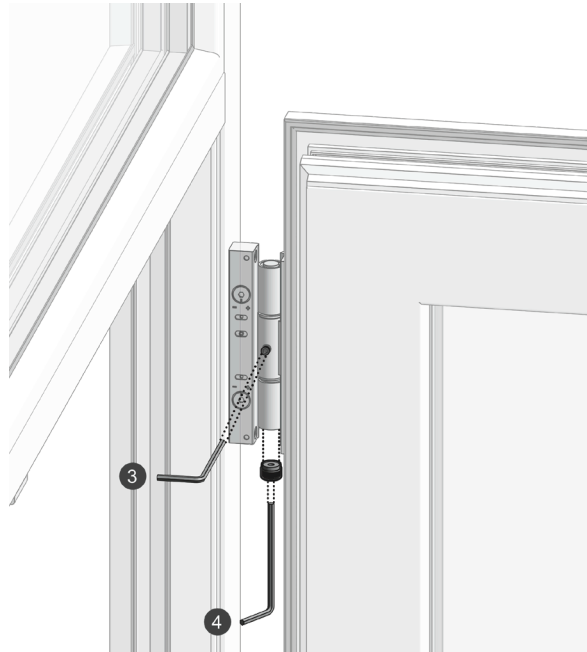


Figure 15 - Removing Hinge Adjustment Bolts

5. Remove the hinge pins from each hinge. Make sure someone is holding the door sash while someone holds the frame. Slightly lift the sash to remove the hinge pins.

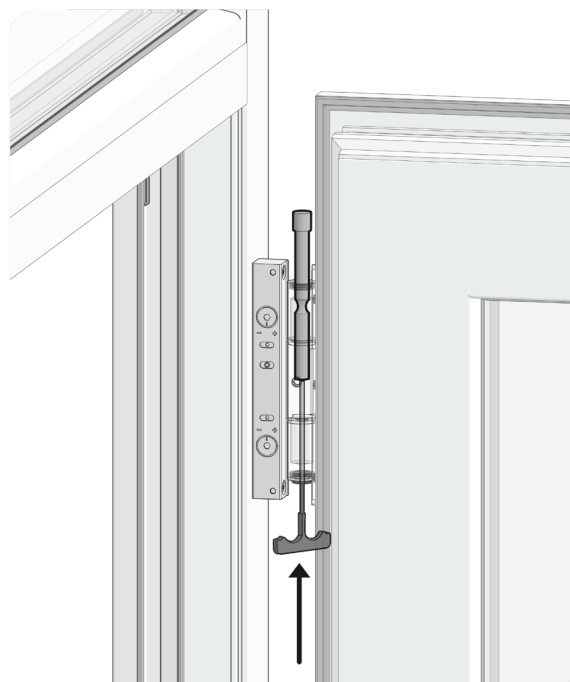


Figure 16 - Removing Door Hinge Pins

- Put the sash in a safe place, on support blocks, on a clean and dry surface at a safe lean against a wall.



Figure 17 - Storing the Sash on Support Blocks

4 Installing windows

4.1 Inspect rough openings

4.1.1 Building interface details

Before installing windows/doors make sure flashings and barrier membranes are installed according to the requirements of the authority having jurisdiction.

4.1.2 Clearances

Measure the frame and the rough opening to see if the window/door can be installed with the **required clearances: minimum 3/8" (10 mm), maximum 3/4" (19 mm)** at both jambs and the head.

4.1.3 Leaning or uneven walls

When the face of the wall is not plumb, straight, or even on all four sides of an opening, it may need to be corrected before windows/doors are installed.

Sometimes a wall is leaning in or out, is bowed, or is misaligned with the edge of the floor. Sometimes thick waterproofing membranes at door sills project 1/4" or more from the face of the wall. In these cases the face of the wall at all four sides of the opening are not in the same plane.

Because operable windows and doors must be installed plumb and straight to operate properly, they cannot follow a misaligned wall.

Innotech strap anchors allow the window/door to be installed plumb regardless of the wall condition. When the gap between the flange and the wall is significant, it is often helpful to ask the builder to fur out the exterior wall surface at the window/door to provide a flat and plumb surface for the flange and for barrier membranes as shown Figure 43 - Position of Wall at Concrete Floor on page 43.

4.2 Prepare frames for installation

4.2.1 Remove wooden shipping blocks

Remove the wooden shipping blocks that are attached to the flange (flanged windows only). The wooden blocks are attached to the flange with a #8 x 3/4" Quad Drive Wood Screw.

4.2.2 Straighten bowed frames

Sometimes a frame member may become slightly bowed by actions such as dragging it by the edge of the frame. See Figure 18 - Bowed Frame Condition (Illustration Exaggerated) on page 25.

Caution

Do not install window/door products if you cannot provide a minimum 1/2" (13 mm) clearance at the top of the window/door frame.

Ensure the rough opening is enlarged to allow a minimum clearance of 1/2" (13 mm) at the head.

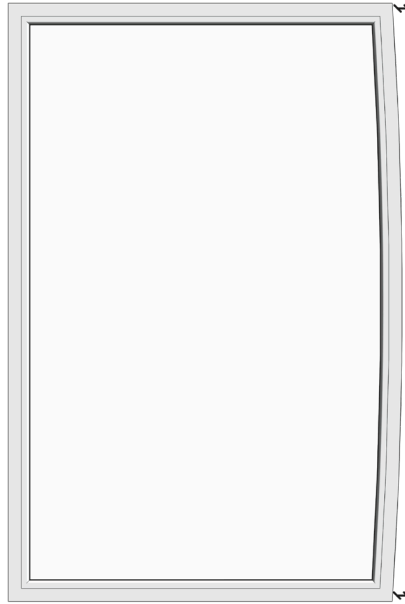


Figure 18 - Bowed Frame Condition (Illustration Exaggerated)

The frame may be straightened by gently tapping it back into place with a wooden block and a mallet.

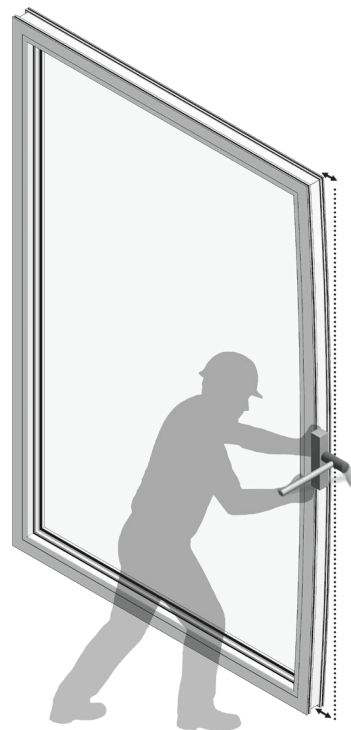


Figure 19 - Gently Tapping Frame Back into Alignment

4.2.3 Install the anchors

Innotech windows are installed using the anchoring method with strap anchors. If you have shop drawings, refer to the shop drawings for anchor placement. Otherwise, install the strap anchors as indicated:

First locate anchors from frame corners and mullions:

- **Corner anchors.** Install anchors on both sides of each frame corner at **6"** from the corner.
- **Mullion anchors.** Install anchors on both sides of each vertical and horizontal mullion at **6"** from the mullion centerline.
- **Intermediate anchors.** Install anchors at a maximum spacing of **12"** on center in between the corner and mullion anchors unless you have shop drawings that show a different spacing.

Note: When Innotech determines that intermediate anchor spacing can be greater than 12" on center, this will be indicated on the Innotech shop drawings.

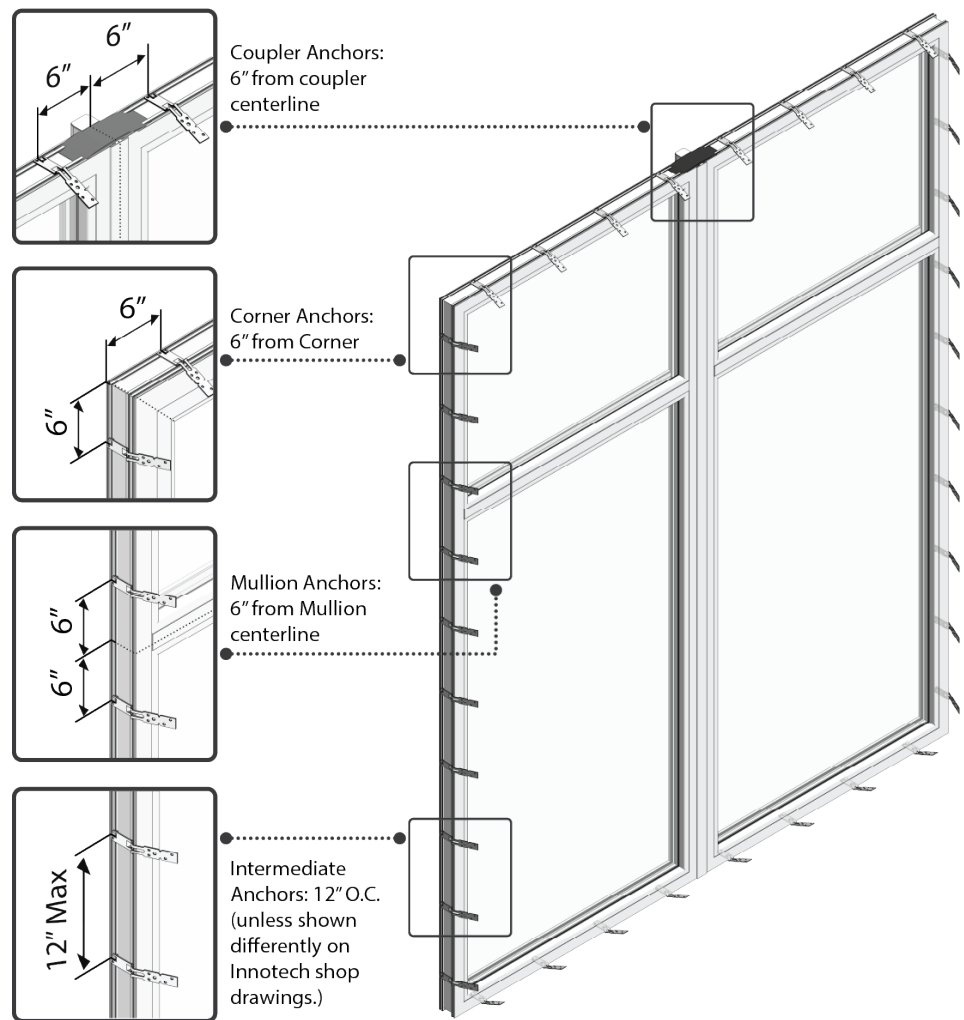


Figure 20 - Strap Anchor Locations (Example)

4.2.3.1 Place the anchor into the groove.

With the interior side of the window facing you, place the prongs of the anchor into the wide groove on the edge of the frame. The illustration shows the anchor placed on the right side of the window.



Figure 21 - Place the anchor into the groove.

4.2.3.2 Turn the anchor clockwise 90°

Place the anchor in the groove and turn clockwise. You cannot turn the anchors counter-clockwise.

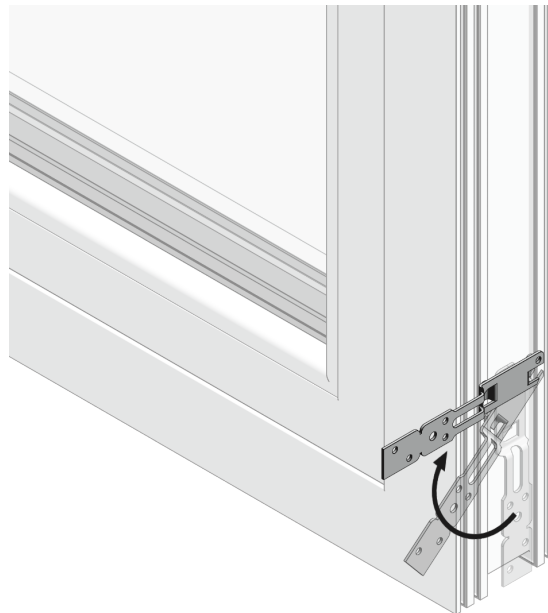


Figure 22 - Turn the anchor clockwise 90 degrees

4.2.3.3 Bend the anchor 45° towards the centre of the window.

Once the anchors are installed around the perimeter of the frame as indicated in Figure 22 on page 27, gently bend each anchor towards the centre of the frame. DO NOT over-bend the anchors; this may cause problems with the installation later.

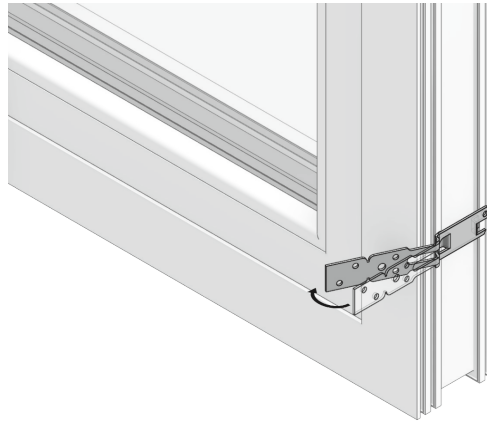


Figure 23 - Bending Strap Anchors Toward Frame Centre

4.3 Put frames in openings

Follow the handling instructions in this document and on the Innotech sticker that appears on each frame.

4.3.1 Fixed windows

Center the frame in the opening. Ensure frame is right side up.

4.3.2 Tilt + turn windows

For frames with hinges, make sure to position the frame in a way that will allow finish materials to clear the edge of hinge by at least 1/4". When jamb finish materials are thicker than 1/2" you may need to move the hinge side of the frame farther from the rough opening to allow finish materials to clear the edge of hinge by at least 1/4".

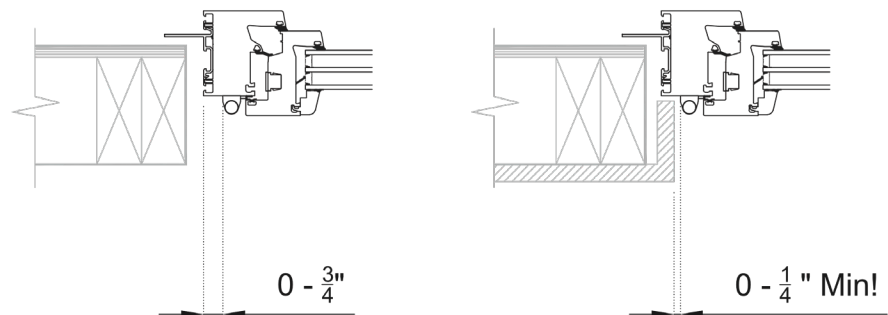
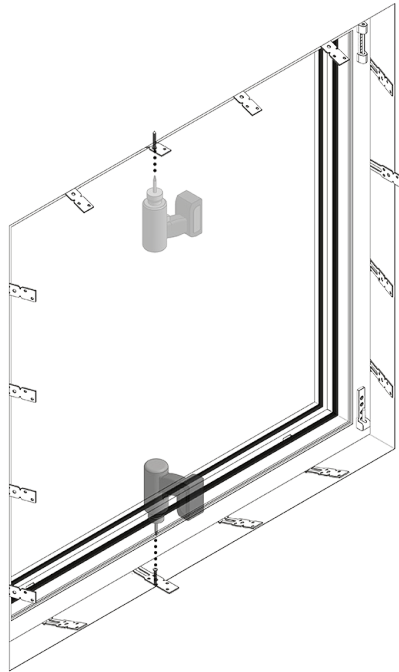


Figure 24 - Window Hinge Clearance

4.4 Initial Anchoring (Temporary Fastening)



Fasten two anchors to hold the unit in place. Do not fully tighten or secure all anchors at this stage, as the unit must remain adjustable for proper alignment in the following steps.

Figure 25 - Partially Fastening Anchors (Allow Adjustment)

WARNING!

Failure to shim the products according to these instructions will cause operating problems and may permanently damage the products.

NEVER place shims under strap anchors.

TIP

You will not be able to place the jamb shims until you are ready to anchor the frames as described under heading 4.4.6.

Use a dab of sealant to glue the jamb shims in place so they don't fall later.

4.5 Position sill and jamb support shims

4.5.1 Place shims under the frame

Place sill support shims under each frame where shown in the following diagrams. Adjust thickness of sill shims to ensure sill is level and straight. Do not damage frames by forcing shims into place.

Adjust the height of the shims to obtain a level sill, ensuring there is a **minimum 1/2" (12.7 mm) gap at the head.**

Minimum shim size: 2" x 1-1/2". Innotech recommends using stackable plastic shims of different thicknesses to achieve the correct placement of the window in the rough opening.

4.5.2 Place shims at jambs of operable windows

Place lateral support shims at jambs as shown in the following diagrams. Jamb shims are required near the tops of jambs opposite to the hinge side to prevent the frames from moving sideways from the weight of window sashes.

4.5.3 Shim placement for Fixed windows

For fixed (non-operable) windows place shims 7" from each corner and 7" from the center of each mullion to support the weight of the glass. These

positions align the shims with the glass supports inside the frame. To prevent bending of the sill you must place the shims within 1" of the positions shown in Figure 26.

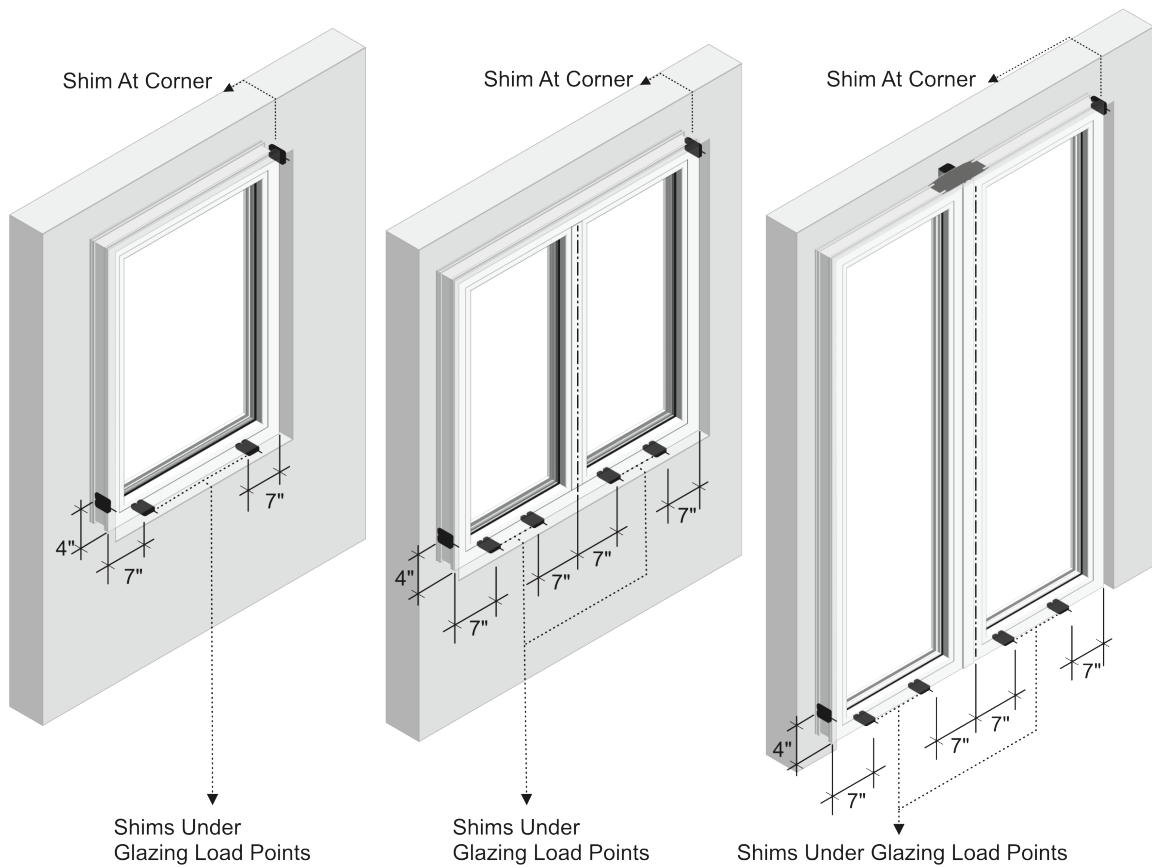


Figure 26 - Shim Placement for Fixed Windows

4.5.4 Shim placement for Tilt + Turn windows

For operable windows place shims under the vertical jambs to support the weight of the glass as transferred to the frame through the hinges. Then place shims as shown at the jambs to keep the frame from bending

sideways. To prevent bending of the sill and jambs you must place the shims within 1" of the positions shown in Figure 27 on page 31.

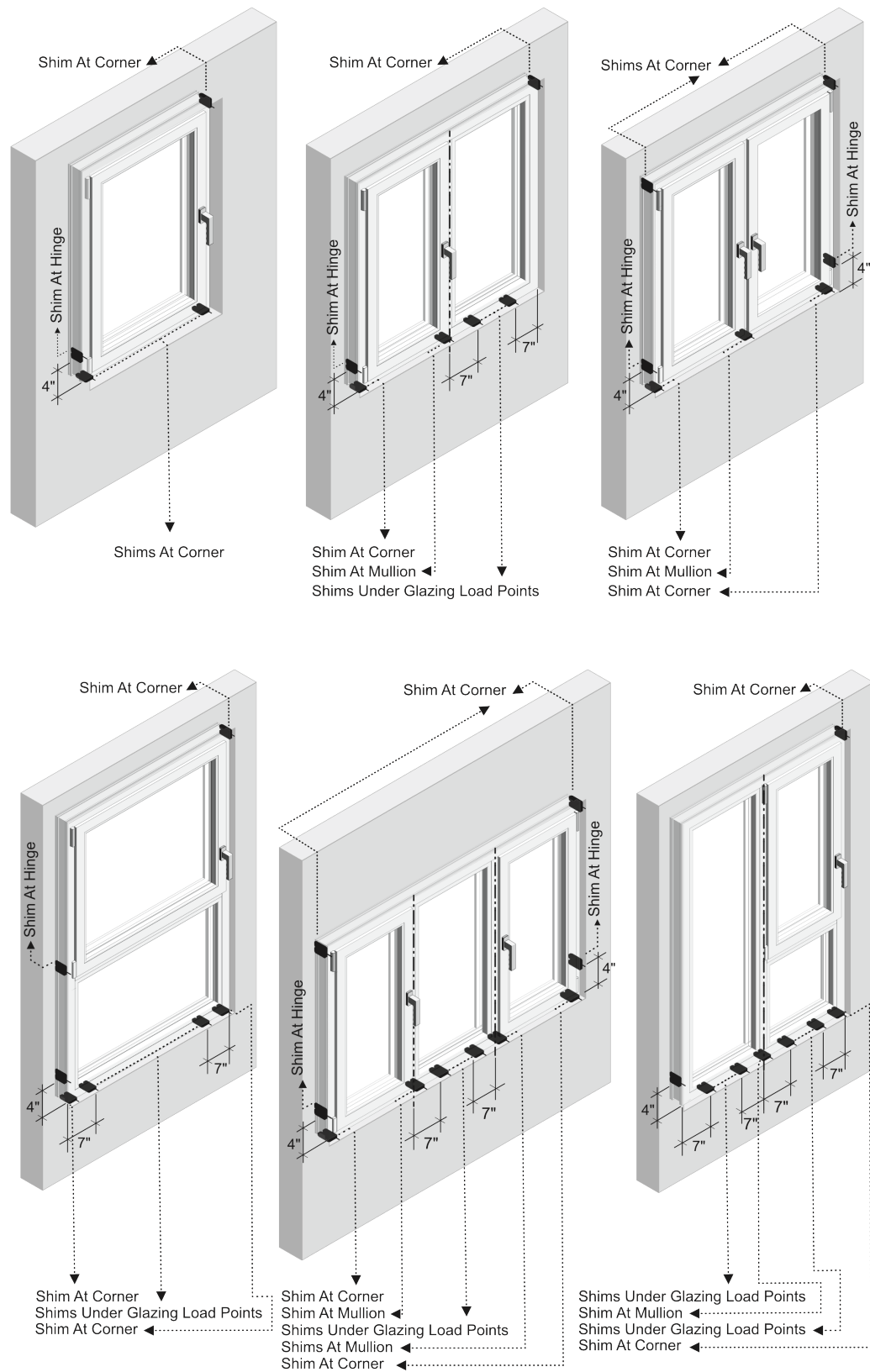


Figure 27 - Shim Placement for Tilt and Turn Windows

4.6 Seal and fasten anchors

Once the frames are correctly shimmed as noted for their product type and product configuration (fixed or operable, couplers or mullions), all anchors can be fastened to the rough opening.

TIP

Sealing the anchors creates an air and water barrier between the interior edge of the window frame and the rough opening to create a second plane of protection.

4.6.1 Apply sealant to anchors

Apply a generous amount of sealant to each anchor near the edge where the anchor bends on the side that will lie flat against the rough opening.



Figure 28 - Apply Sealant to Anchors

Ensure the sealant spreads over the entire width of the anchor to maintain the continuity of the air barrier when the installation is finished. **Use the same sealant that will be used for the second plane of protection** as described in see heading 4.9 *Apply sealant for Second Plane of Protection*. If you use a different sealant it must be compatible with the sealant used for the second plane of protection.

4.6.2 Bend anchors in preparation for fastening

Once the sealant is applied to every anchor, each anchor must then be bent. The anchors are designed to securely anchor the window within rough openings with different clearances. **The objective is to have the anchor lie flat against the rough opening before it is fastened into place.**

Bending the anchor to suit the clearance between the frame and the rough opening is a two-step process: first pre-bend the anchor towards the window, and then second, back against the side of the rough opening.

For narrower clearances, pre-bend the anchor less. For wider clearances, pre-bend the anchor more.

WARNING!

Under-bending or over-bending the anchors can result in deformed or twisted frames. Frames damaged in this way are not covered under warranty.

TIP

It may be helpful to take a few minutes to practice how much to bend the anchors to get the right amount of bend for it to lie flat against the rough opening.

Start by pre-bending the anchor about 30 degrees from the face of the rough opening, then bend it back. If it does not lie flat, pre-bend it again, slightly more than before.

WARNING!

Anchors that do lie flat against the rough opening can cause damage to the products, result in operation problems, and/or complicate finishing work. Do not fasten any anchors that are not correctly bent.

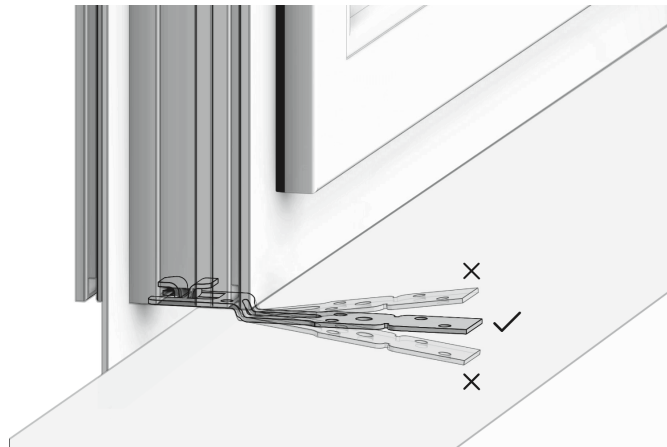


Figure 29 - Bending Strap Anchors to Fit Opening

4.6.3 Plumb, level and square the frame

Before fastening the anchors to the rough opening make sure frame is **plumb, level and square, even if wall is not plumb or straight.**

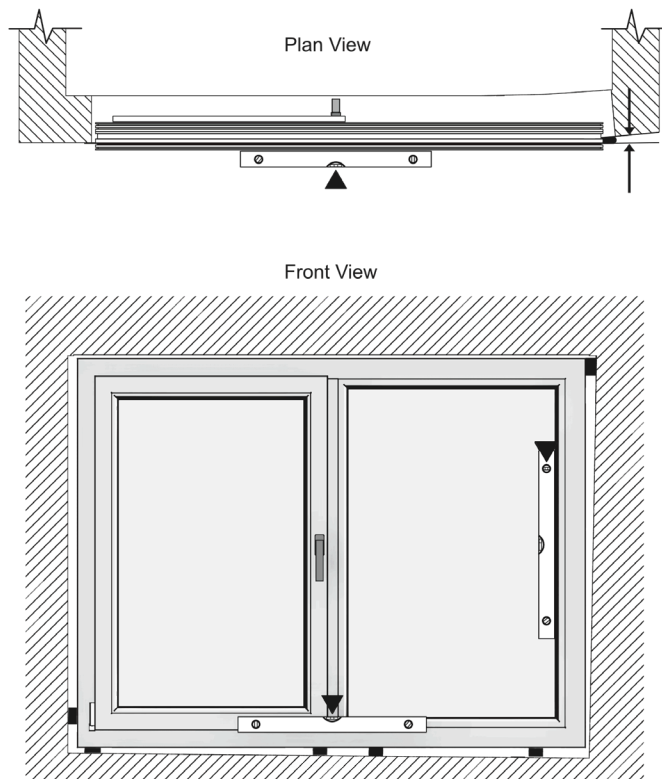


Figure 30 - Checking Frame for Plumb, Level, and Square

Caution

DO NOT FASTEN anchors to the rough opening unless the frames are **LEVEL, PLUMB** and **SQUARE**.

TIP

Do not fasten the anchors in a clockwise sequence. Start by loosely fastening each corner anchor.

Next fasten the anchors at the midpoints of the frame and/or at the mullions.

Finally, fasten the intermediate anchors. If you alternate from side to side, top to bottom, you are less likely to deform or shift the position of the frame.

Make minor adjustments to the frame position as the anchors are fastened by carefully using a pry bar between the frame and the rough opening.

4.6.4 Fasten anchors to rough opening

Place the fasteners (approximately 1"–1½" in length, based on the rough opening structure) into the centre hole of the anchor to fasten it to the rough opening. See Tip in left-hand column for sequencing order.

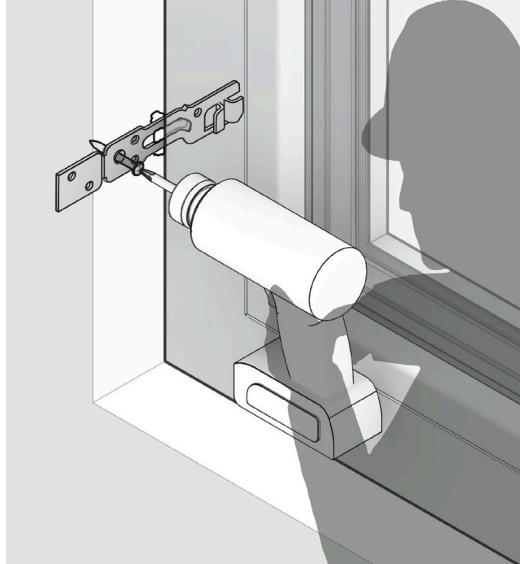


Figure 31 - Fasten Anchors to Rough Opening.

4.6.5 Remove anchor tabs

Once all the anchors are fastened, remove the anchor tabs by bending and breaking each tab that extends past the rough opening. For ease, use vice grips or pliers.

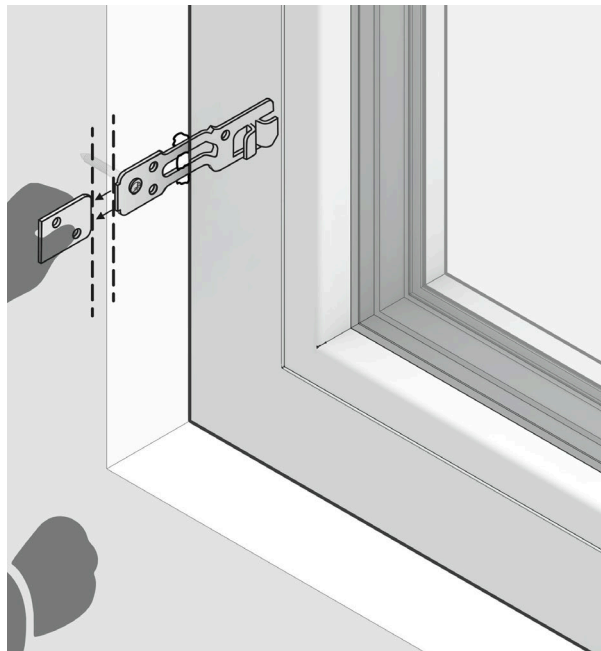


Figure 32 - Removing Anchor tabs

4.7 Hang sashes on frames

Once the frames are fastened to the rough openings and each frame is confirmed to be plumb, level and square, the sashes can be installed into the frames.

4.7.1 How to install Tilt + Turn sashes on frames with Barrel hinges

1. Remove the upper hinge cover and push the hinge pin down as described under heading 3.5.

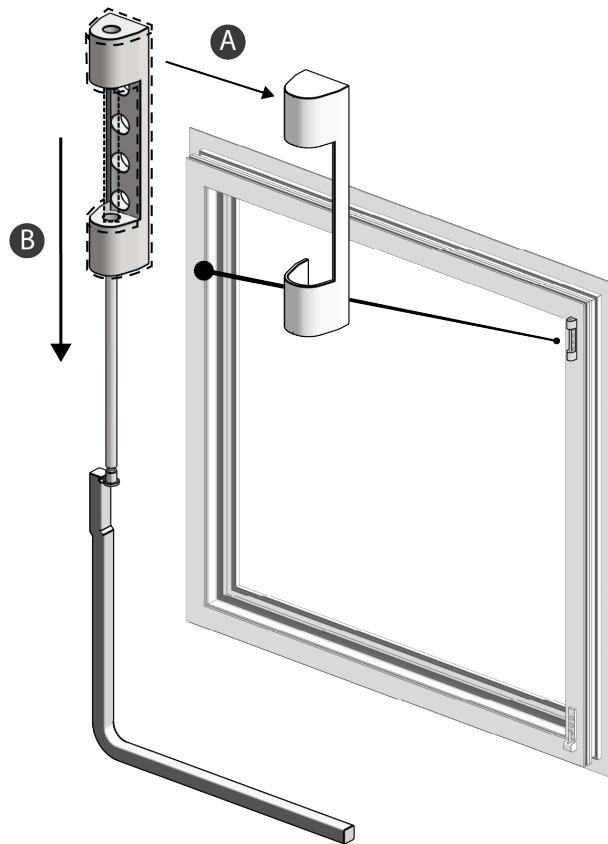


Figure 33 - Remove the cover(A) and push the hinge pin down (B)

2. Tilt the lower hinge pin towards you approximately 30 degrees.
3. Prepare the sash for installation:
 - a. Make sure there is no dirt in the lower hinge of the sash.
 - b. Make sure the handle is in the Turn position (as when sash is swung open to one side).
4. With two people, safely lift the sash then set it down onto the lower hinge pin of the frame. Slowly tilt the sash towards the frame and

align the top of the sash hinge with the slot in the hinge body on the frame as shown in the illustration.

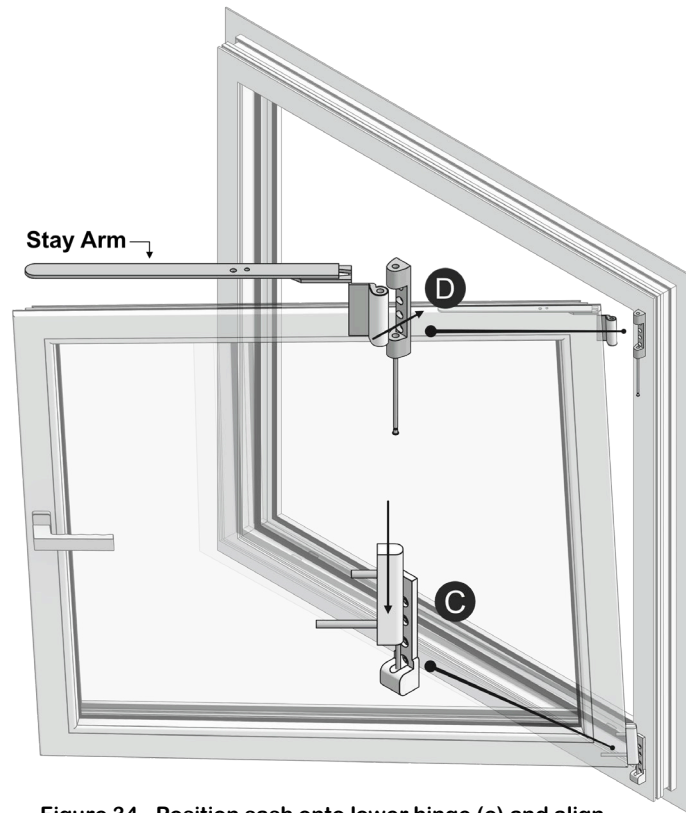


Figure 34 - Position sash onto lower hinge (c) and align with top hinge(d)

5. As you tilt the sash into place, the stay arm at the top of the sash may disengage. If this occurs, gently lift the arm upwards and move it parallel to the sash, then press it downwards until it "clicks" into place.
6. Push the upper hinge pin upwards until it "clicks" into place. The pin should easily click into place. **Tip:** align the sash to the frame so the sash hinge is flush with the frame hinge. Make sure that the hinge pin is all the way up until the bottom is in line with the frame hinge.
7. Replace the plastic upper hinge cover.
8. Close the sash.



Figure 35 - Pushing Hinge Pin Until It Clicks

4.7.2 How to install Tilt + Turn sashes on frames with concealed hinges

1. Ensure the bottom hinge is in the closed position (see illustration). Carefully lift the sash and place it into the frame. It will “snap” onto bottom hinge pins.

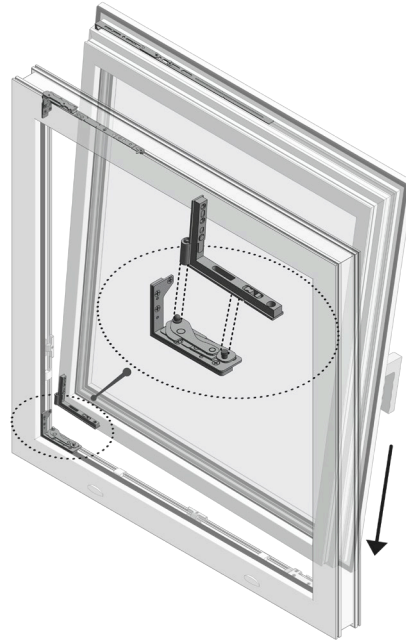


Figure 36 - Setting Sash onto Bottom Hinge Pins

2. While someone holds the sash in place, align the stay arm with the sash hardware. Slide the cam into the tilting mechanism, snap pin into the hole, and snap the locking plate into the track. Turn the locking plate counterclockwise to lock it in place.

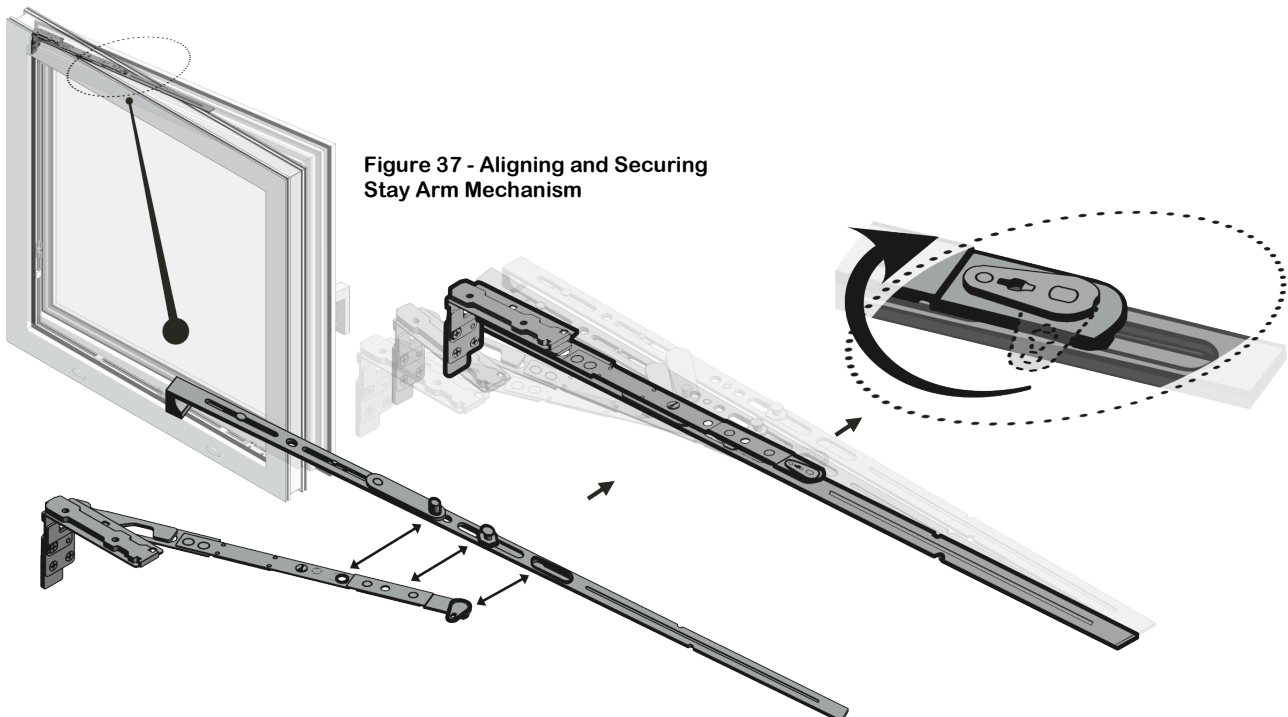


Figure 37 - Aligning and Securing Stay Arm Mechanism

4.8 Check sash operation

Innotech squares the sashes and aligns them with the hardware at the factory. Operating problems occur when the frame is not installed level, plumb and square, or when the frame or sash members are not straight because of mis-handling or incorrect installation.

4.8.1 Operate the sashes and locking hardware

Open and close the sash several times. If sashes operate freely without binding at any point; and if all hardware functions operate smoothly, continue to heading 4.9 *Apply sealant for Second Plane of Protection*.

If sashes do not operate properly or the hardware does not engage properly, the frames are not installed plumb, square and level, or the frames have become twisted during anchor installation. For help in diagnosing the cause of operating problems see heading 6 - Troubleshooting sash operation problems on page 60.

If the sash binds or strikes the frame at some point, or if the handle cannot be smoothly and/or fully rotated to lock the sash, there is a problem with the installation. **Do not proceed with applying interior sealants until the sash operating problems have been corrected.**

4.8.2 Correct installation defects

Before moving onto the second plane of protection, ensure all products easily operate; each window or door should open, close, lock and unlock without friction or force. Products that do not operate properly need to be corrected before moving onto the second plane of protection. The following is a list of common installation defects:

4.8.2.1 Correcting twisted frames

During fastening, it is possible that the frame may twist if the anchors were not installed properly.

If the frame is twisted *towards* the side of the rough opening, loosen the anchor screws and use a flat pry bar to straighten frame. Insert shims between the frame and rough opening and re-tighten the anchor screws.

If the frame is twisted *away* from the rough opening, try to twist it back into position. If that is not possible, it may be necessary to replace and rebend the anchor to prevent deforming the frame.

4.8.2.2 Correcting bowed frames

If the *interior face* of the frames is bowed, unscrew the anchors in the affected area, straighten the frame, and re-fasten the anchors.

If the outside edges of the frames are bowed, follow the same steps as for correcting twisted frames above.

4.8.2.3 Correcting out of square sashes

If a sash has become out of square or has become bowed and cannot be straightened as shown in Figure 19 - Gently Tapping Frame Back into Alignment on page 25, the sash may have to be reglazed and reshimmed. Visit www.innotech-windows.com/resources for glazing instructions.

4.9 Apply sealant for Second Plane of Protection

The Second Plane of Protection (see heading 1.6 *Second Plane of Protection*) is a continuous air and water seal **on all four sides of each Window**. It is the best possible protection against unwanted air and water leakage.

Use only sealant that is compatible with both window/door framing AND with rough opening materials. For a list of sealants that are compatible with Innotech finishes, See heading 7.1 Compatible sealants on page 68.

There are several best practice methods applied by industry to achieve an effective second plane of protection. Consult with the authority having jurisdiction for the optimal method for your specific project.

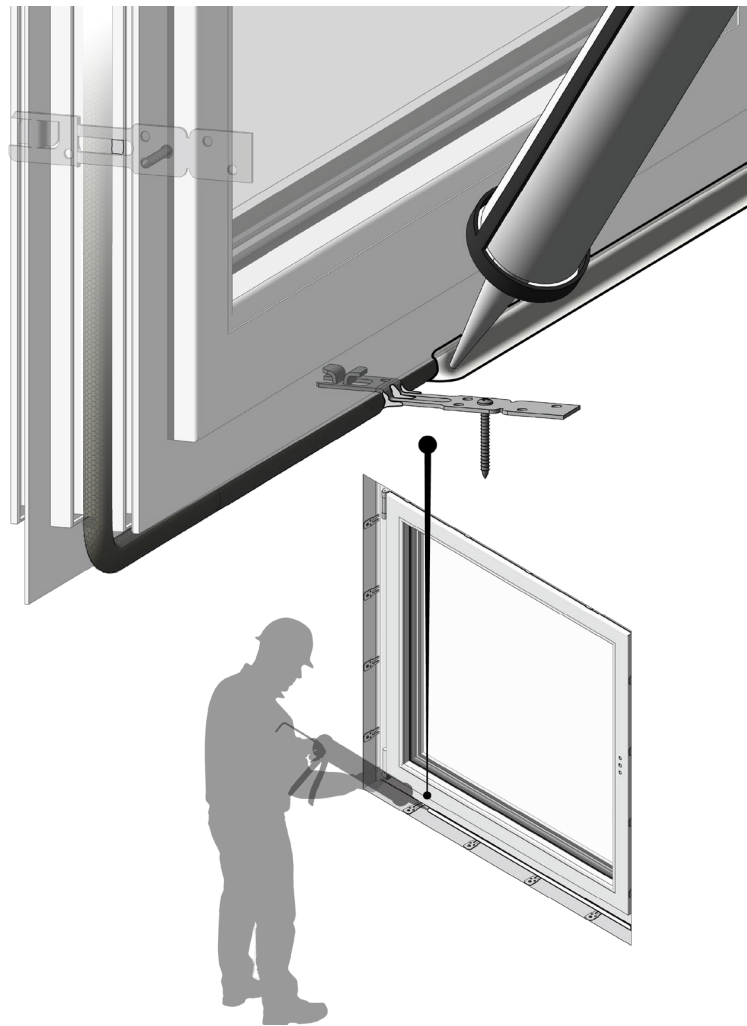


Figure 38 - Applying Sealant for Second Plane of Protection

4.10 Remove sash spacer shims

Open each window sash and remove the white shipping blocks from all sides of the opening. As shown in Figure 39 - Removing Shipping Blocks

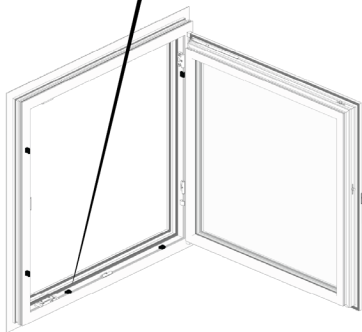
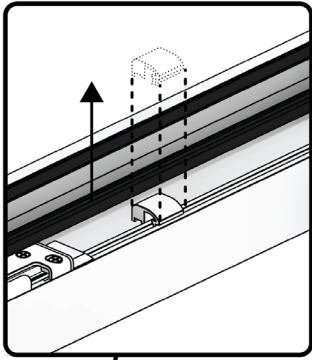


Figure 39 - Removing Shipping Blocks

4.11 Remove protective tapes, install wind caps

Remove protective tape from frames and install the wind (or drainage) caps over the drainage slots on the exterior of all windows and doors.

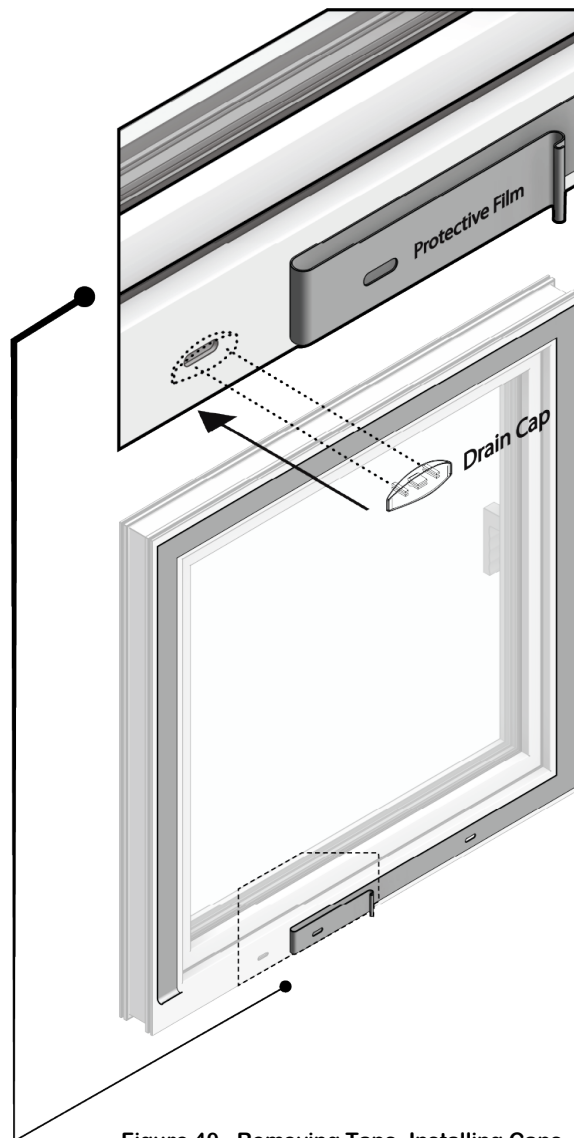


Figure 40 - Removing Taps, Installing Caps

4.12 How to glaze a fixed window

1. Remove all 4 beads. You will need a thin glazing tool to get in between the bead and the frame/panel. Use a mallet to wedge tool in.
2. Glazing shims are installed 7 inches from corner to the inside of the weeping holes.
3. Place the glass/panel in the opening. Centre and make sure the shims are properly in place.

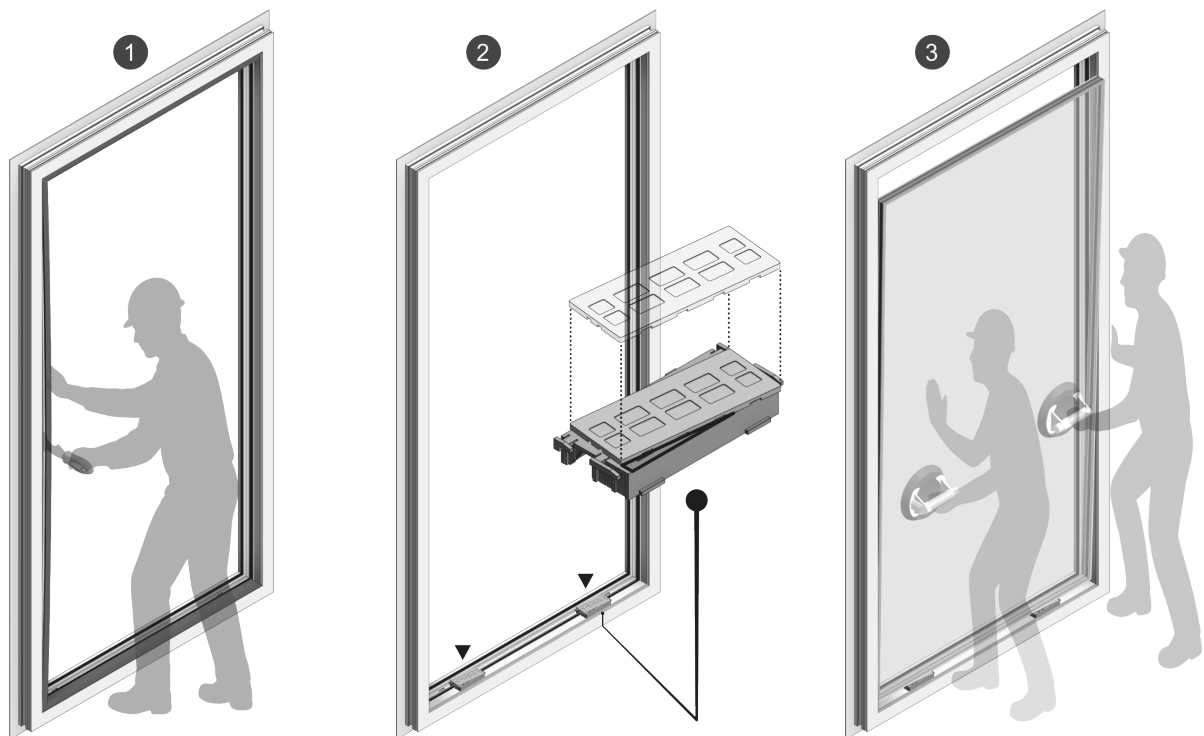


Figure 41 - Installing Glazing Beads, Shims, and Panel

4. Insert final 2 longest beads by positioning each end into the miter corners.
5. Now hammer in both corners.
6. Hammer the centres of both beads. Now make your way up hammering in the bead, then make your way down. Do this to both sides and you are done.

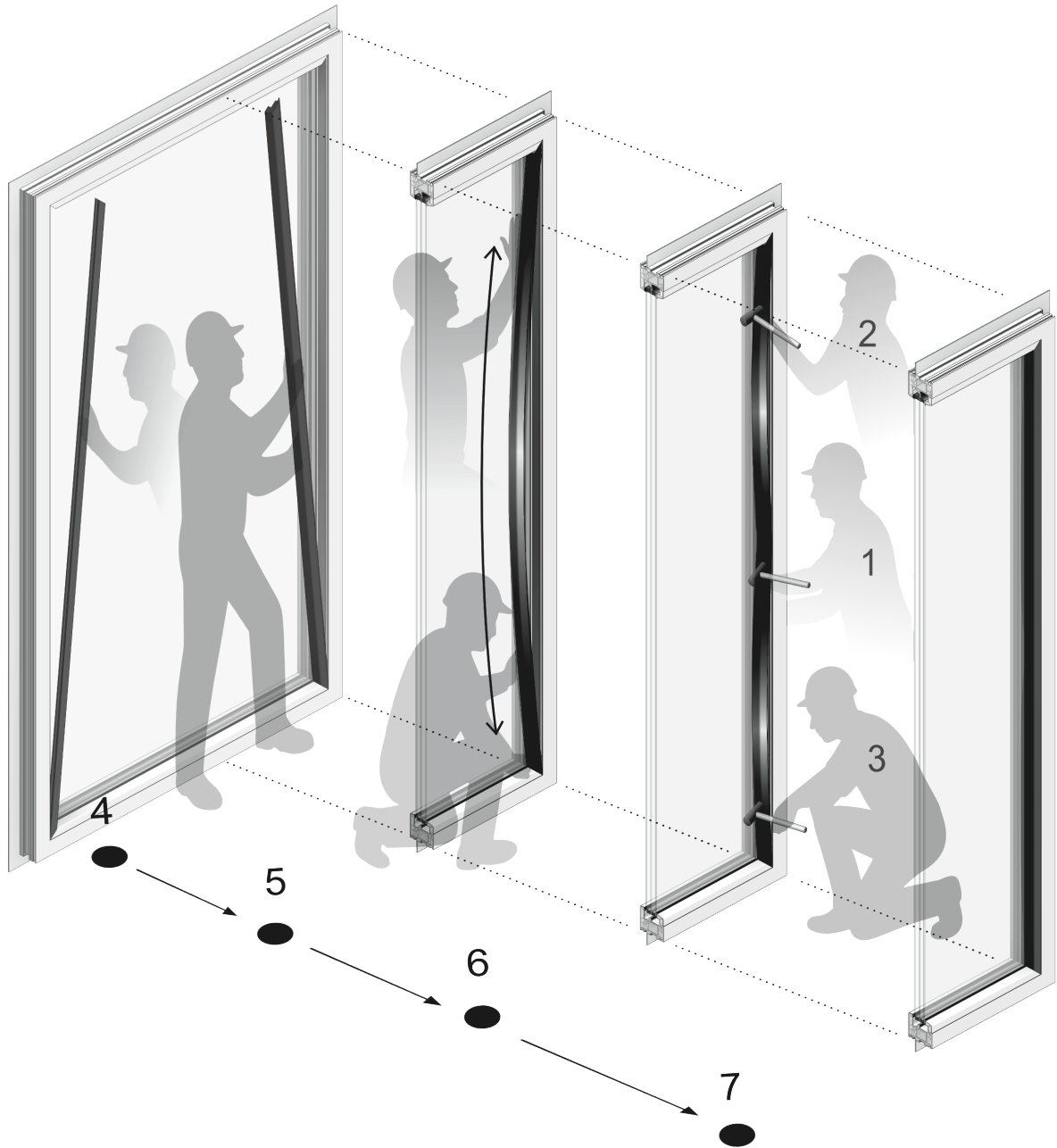


Figure 42 - Installing and Securing Final Glazing Beads

5 Installing doors

5.1 Inspect rough openings

5.1.1 Building interface details

Before installing doors make sure flashings and barrier membranes are installed according to the requirements of the authority having jurisdiction.

5.1.2 Clearances

Measure the frame and the rough opening to see if the door can be installed with the **required clearances: minimum 3/8" (10 mm), maximum 3/4" (19 mm)** at both jambs and the head.

5.1.3 Doors on concrete floors

When doors *with mounting flanges* are installed on concrete floors, check to make sure that the exterior face of the concrete is in line with the exterior face of the sheathing (see Detail A in Figure 43). If the concrete does not extend as far as the sheathing, have the builder add a treated furring strip to make the edge of the floor line up with the face of the sheathing (see Detail B in Figure 43). If the concrete extends past the face of the sheathing (Detail C in Figure 43) and the door has a flange at the bottom, the flange will have to be removed before the door is installed, or the frame will need to be shimmed away from the wall as described under heading 5.1.4 - Leaning or uneven walls on page 43.

Caution

Do not install window/door products if you cannot provide a minimum 1/2" (13 mm) clearance at the top of the window/door frame.

Ensure the rough opening is enlarged to allow a minimum clearance of 1/2" (13 mm) at the head.

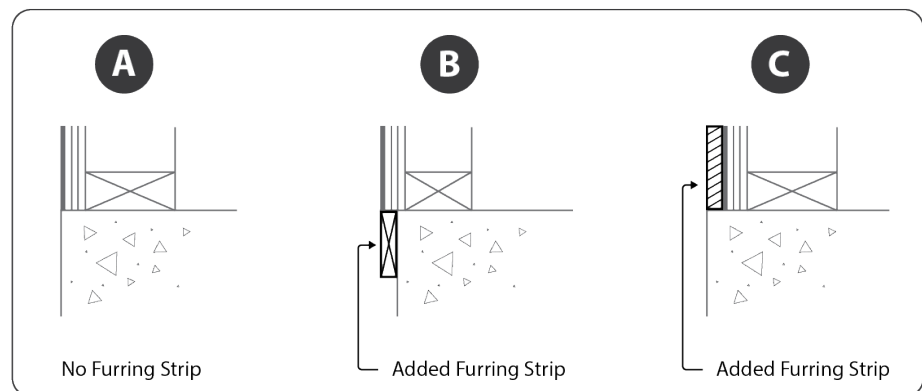


Figure 43 - Position of Wall at Concrete Floor

5.1.4 Leaning or uneven walls

When the face of the wall is not plumb, straight, or even on all four sides of an opening, it may need to be corrected before windows/doors are installed.

Sometimes a wall is leaning in or out, is bowed, or is misaligned with the edge of the floor. Sometimes thick waterproofing membranes at door sills project 1/4" or more from the face of the wall. In these cases, the face of the wall at all four sides of the opening are not in the same plane.

Because operable windows and doors must be installed plumb and straight to operate properly, they cannot follow a misaligned wall.

Innotech strap anchors allow the window/door to be installed plumb regardless of the wall condition. When the gap between the flange and the wall is significant, it is often helpful to ask the builder to fur out the exterior wall surface at the window/door to provide a flat and plumb surface for the flange and for barrier membranes as shown in Figure 43 - Position of Wall at Concrete Floor on page 43.

5.1.5 Floor finish clearance - inswing doors

Check floor finish thickness and make sure door sash will clear finished floor with a minimum 3/8" (10 mm) clearance gap at the head. Notify builder if the rough opening is too small.

5.2 Prepare frames for installation

5.2.1 Remove wooden shipping blocks

Remove the wooden shipping blocks that are attached to the flange (flanged doors only). The wooden blocks are attached to the flange with a #8 x 3/4" Quad Drive Wood Screw.

5.2.2 Straighten bowed frames

Sometimes a frame member may become slightly bowed by actions such as dragging it by the edge of the frame. See Figure 44 - Bowed Frame Condition (Illustration Exaggerated) for an example.

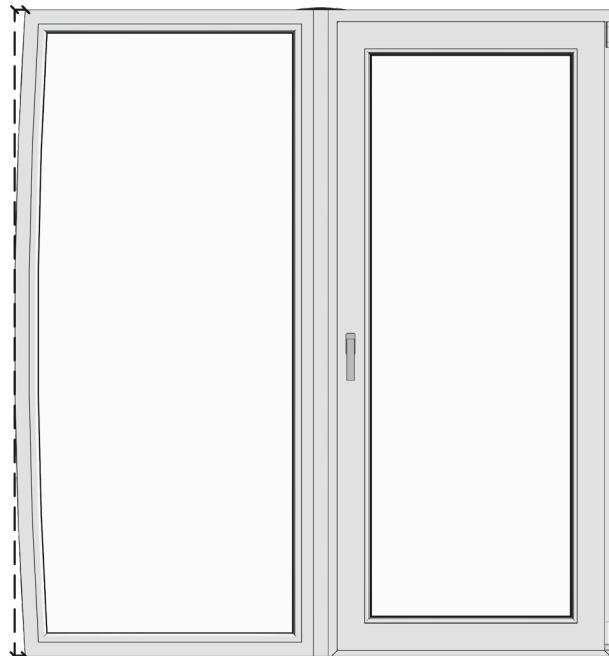


Figure 44 - Bowed Frame Condition (Illustration Exaggerated)

The frame may be straightened by gently tapping it back into place with a wooden block and a mallet.



Figure 45 - Tapping Frame Back into Alignment

5.2.3 Install the anchors

Innotech windows and side hinged doors are installed using the anchoring method with strap anchors. If you have shop drawings, refer to the shop drawings for anchor placement. Otherwise, install the strap anchors as indicated:

First locate anchors from frame corners and mullions:

- **Corner anchors.** Install anchors on both sides of each frame corner at **6"** from the corner.
- **Mullion anchors.** Install anchors on both sides of each vertical and horizontal mullion at **6"** from the mullion centerline.
- **Intermediate anchors.** Install anchors at a maximum spacing of **12"** on center in between the corner and mullion anchors unless you have shop drawings that show a different spacing.

Note: When Innotech determines that intermediate anchor spacing can be greater than **12"** on center, this will be indicated on the Innotech shop drawings.

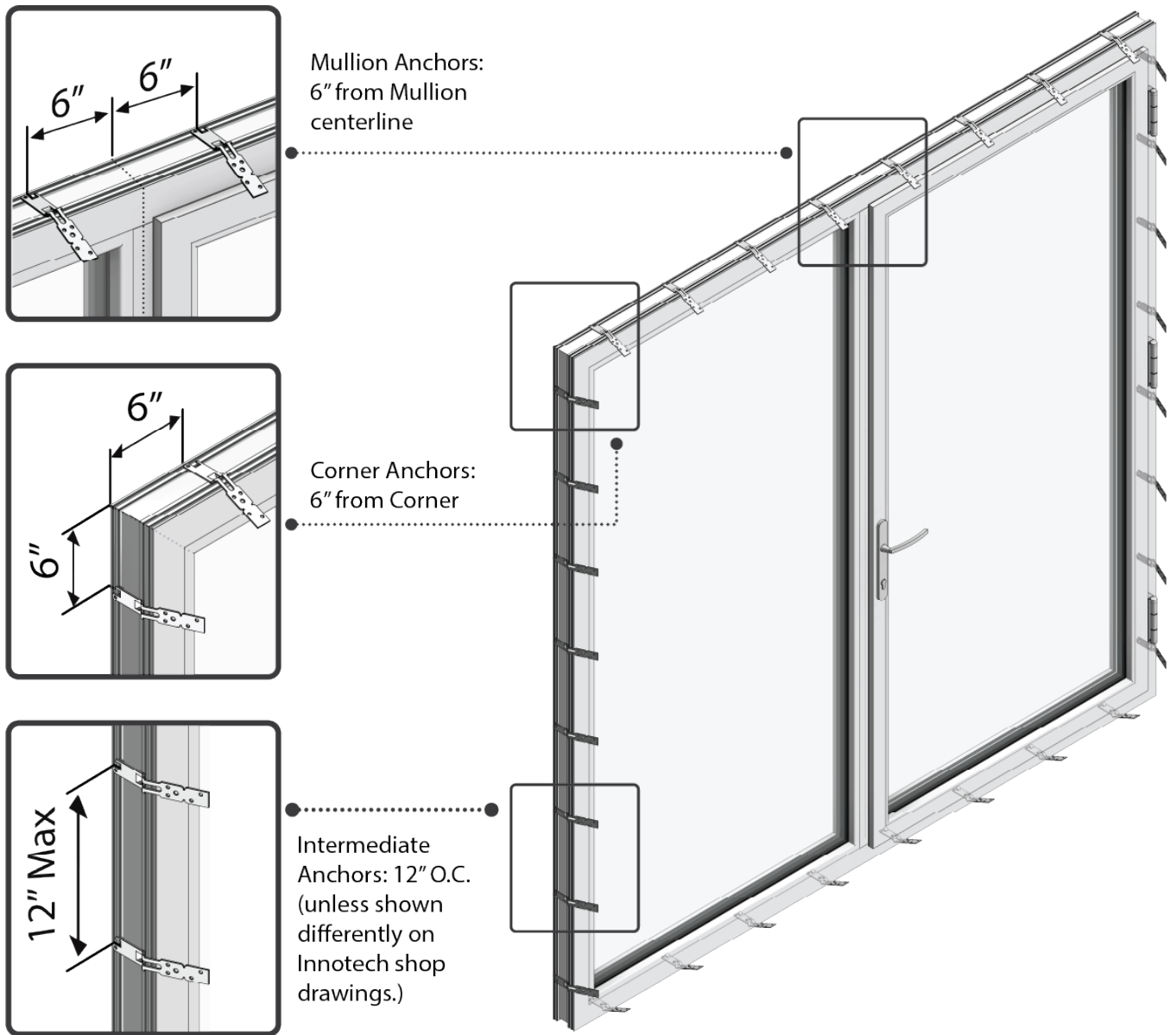


Figure 46 - Strap Anchor Locations (Example)

5.2.3.1 Place the anchor into the groove.

With the interior side of the door facing you, place the prongs of the anchor into the wide groove on the edge of the frame. The illustration shows the anchor placed on the right side of the door.



Figure 47 - Place the anchor into the groove.

5.2.3.2 Turn the anchor clockwise 90°

Place the anchor in the groove and turn clockwise. You cannot turn the anchors counter-clockwise.

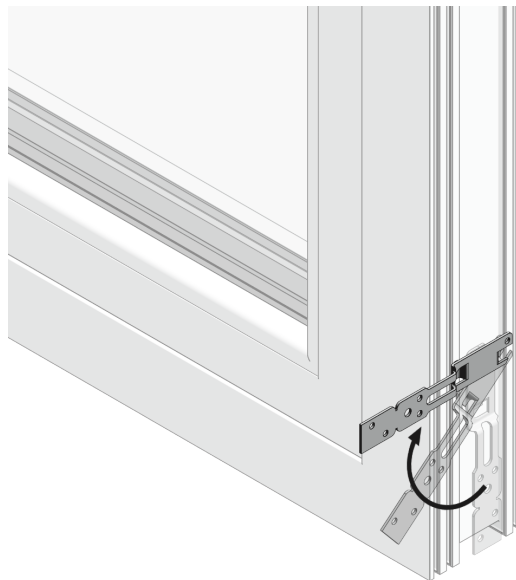


Figure 48 - Turn the anchor clockwise 90 degrees

5.2.3.3 Bend the anchor 45° towards the centre of the door.

Once the anchors are installed around the perimeter of the frame as indicated in Figure 48 on page 47, gently bend each anchor towards the centre of the frame. DO NOT over-bend the anchors; this may cause problems with the installation later.

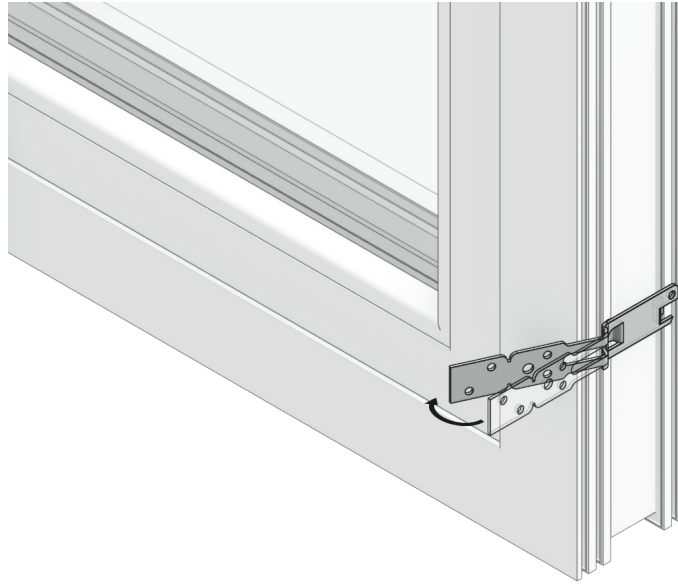


Figure 49 - Bending Strap Anchors Toward Frame Centre

5.3 Put frames in openings

Follow the handling instructions in this document and on the Innotech sticker that appears on each frame.

5.3.1 Side hinged doors

For frames with hinges, make sure to position the frame in a way that will allow finish materials to clear the edge of hinge by at least 1/4". When jamb finish materials are thicker than 1/2" you may need to move the hinge side of the frame farther from the rough opening to allow finish materials to clear the edge of hinge by at least 1/4".

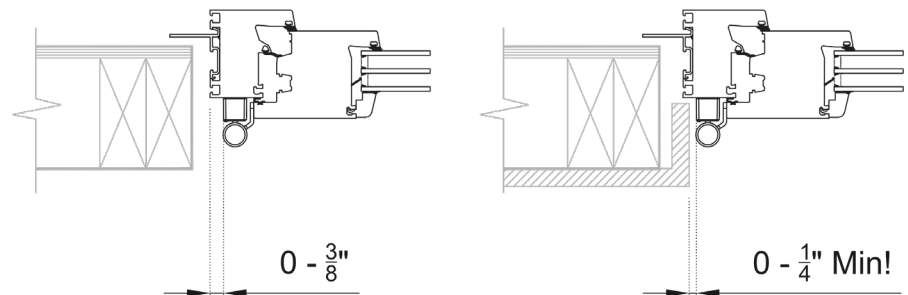
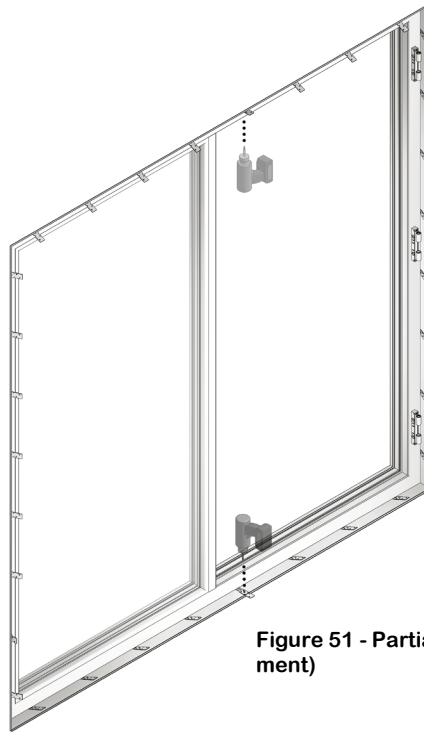


Figure 50 - Inswing Door Hinge Clearance

5.4 Initial Anchoring (Temporary Fastening)



Fasten two anchors to hold the unit in place. Do not fully tighten or secure all anchors at this stage, as the unit must remain adjustable for proper alignment in the following steps.

Figure 51 - Partially Fastening Anchors (Allow Adjustment)

5.5 Position sill and jamb support shims

WARNING!

Failure to shim the products according to these instructions will cause operating problems and may permanently damage the products.

NEVER place shims under strap anchors.

TIP

You will not be able to place the jamb shims until you are ready to anchor the frames as described under heading 4.4.6.

Use a dab of sealant to glue the jamb shims in place so they don't fall down later.

5.5.1 Place shims under the frame

Place sill support shims under each frame where shown in the following diagrams. Adjust thickness of sill shims to ensure sill is level and straight. Do not damage frames by forcing shims into place.

Adjust the height of the shims to obtain a level sill, ensuring there is a **minimum 1/2" (12.7 mm) gap at the head.**

Minimum shim size: 2" x 1-1/2". Innotech recommends using stackable plastic shims of different thicknesses to achieve the correct placement of the door in the rough opening.

5.5.2 Place shims at jambs of doors

Place lateral support shims at jambs as shown in the following diagrams. Jamb shims are required near the tops of jambs opposite to the hinge side to prevent the frames from moving sideways from the weight of door sashes.

Jamb shims are also required at the midpoints of door jambs to prevent operational problems due to building settlement.

5.5.3 Shim placement for doors

For doors place shims under the vertical jambs to support the weight of the glass as transferred to the frame through the hinges. Then place shims as shown at the jambs to keep the frame from bending sideways. To prevent bending of the sill and jambs you must place the shims within 1" of the positions shown in Figure 52.

TIP

For French door installations some installers find it easier to square the frame by hanging the door sashes before all the anchors are fastened.

If you wish to follow this method, first read through all the steps in Section 5 so you understand the whole installation process.

After you have loosely fastened the corner anchors to hold the frame plumb, and after you have shimmed the frame level, hang the sashes and close them. Use shims and anchors to make the frame square. The frame will be square when the meeting rails of the sashes are in line with one another at the head or sill.

Next fasten the corner anchors securely and then continue with the intermediate anchors. Finally glue the jamb shims in place.

5.6 Seal and fasten anchors

Once the frames are correctly shimmed as noted for their product type and product configuration (couplers or mullions), all anchors can be fastened to the rough opening.

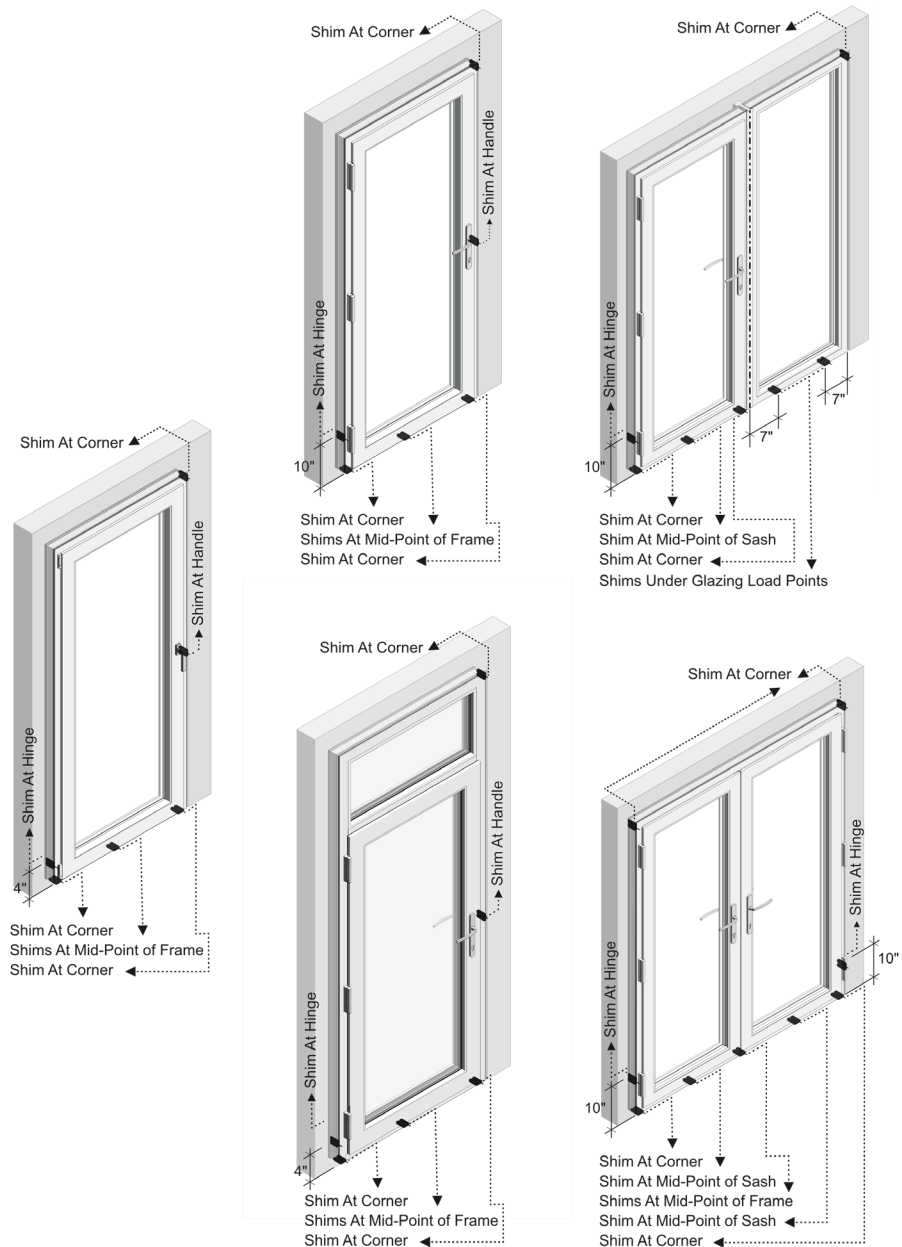


Figure 52 - Shime Placement at Doors

TIP

Sealing the anchors creates an air and water barrier between the interior edge of the door frame and the rough opening to create a second plane of protection.

5.6.1 Apply sealant to anchors

Apply a generous amount of sealant to each anchor near the edge where the anchor bends on the side that will lie flat against the rough opening.

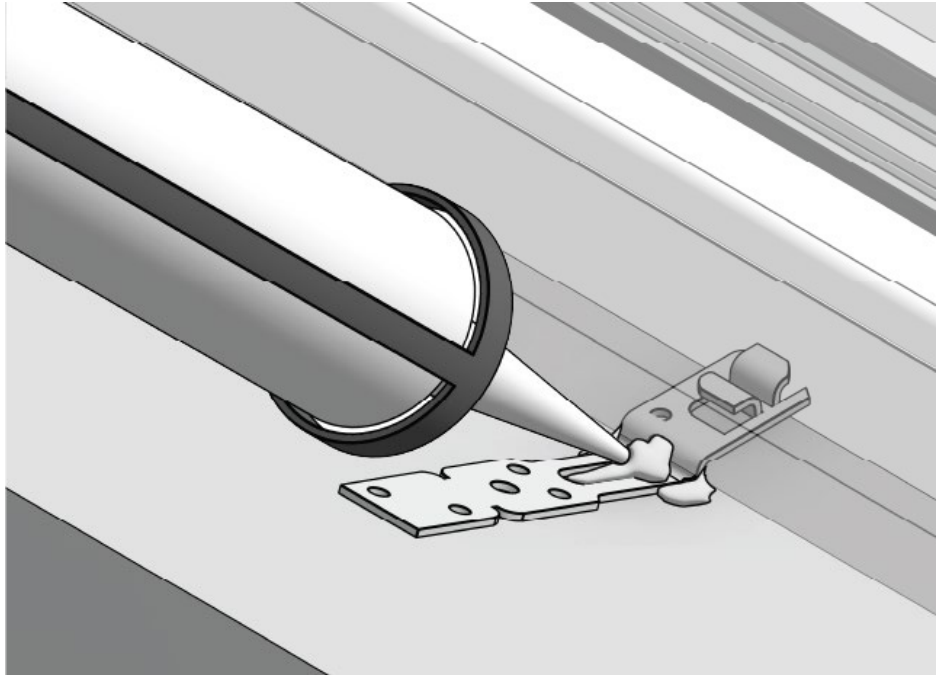


Figure 53 - Apply Sealant to Anchors

Ensure the sealant spreads over the entire width of the anchor to maintain the continuity of the air barrier when the installation is finished. **Use the same sealant that will be used for the second plane of protection** as described in see heading 4.9 *Apply sealant for Second Plane of Protection*. If you use a different sealant it must be compatible with the sealant used for the second plane of protection.

WARNING!

Under-bending or over-bending the anchors can result in deformed or twisted frames. Frames damaged in this way are not covered under warranty.

5.6.2 Bend anchors in preparation for fastening

Once the sealant is applied to every anchor, each anchor must then be bent. The anchors are designed to securely anchor the door within rough openings with different clearances. **The objective is to have the anchor lie flat against the rough opening before it is fastened into place.**

Bending the anchor to suit the clearance between the frame and the rough opening is a two-step process: first pre-bend the anchor towards the door, and then second, back against the side of the rough opening.

For narrower clearances, pre-bend the anchor less. For wider clearances, pre-bend the anchor more.

TIP

It may be helpful to take a few minutes to practice how much to bend the anchors to get the right amount of bend for it to lie flat against the rough opening.

WARNING!

Anchors that do lie flat against the rough opening can cause damage to the products, result in operation problems, and/or complicate finishing work. Do not fasten any anchors that are not correctly bent.

Start by pre-bending the anchor about 30 degrees from the face of the rough opening, then bend it back. If it does not lie flat, pre-bend it again, slightly more than before.

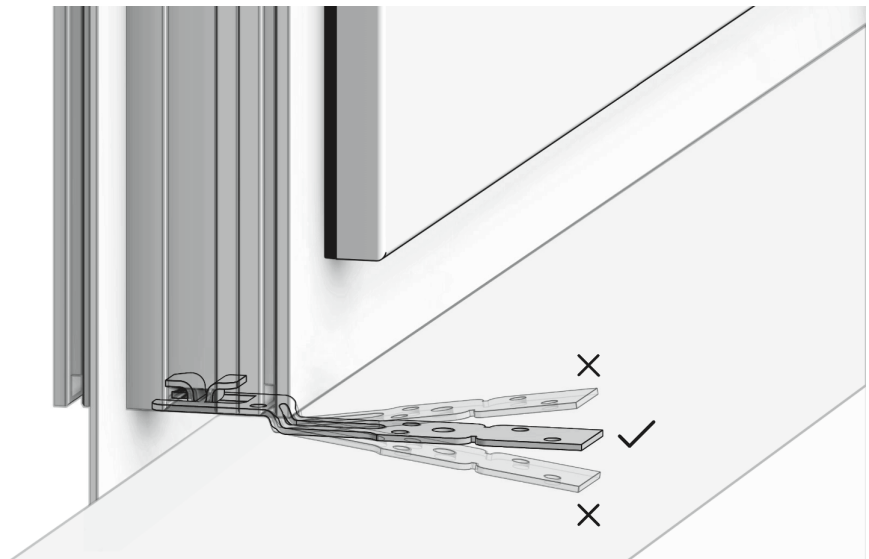


Figure 54 - Bending Strap Anchors to Fit Opening

Caution

DO NOT FASTEN anchors to the rough opening unless the frames are LEVEL, PLUMB and SQUARE.

5.6.3 Plumb, level and square the frame

Before fastening the anchors to the rough opening make sure frame is **plumb, level and square, even if wall is not plumb or straight.**

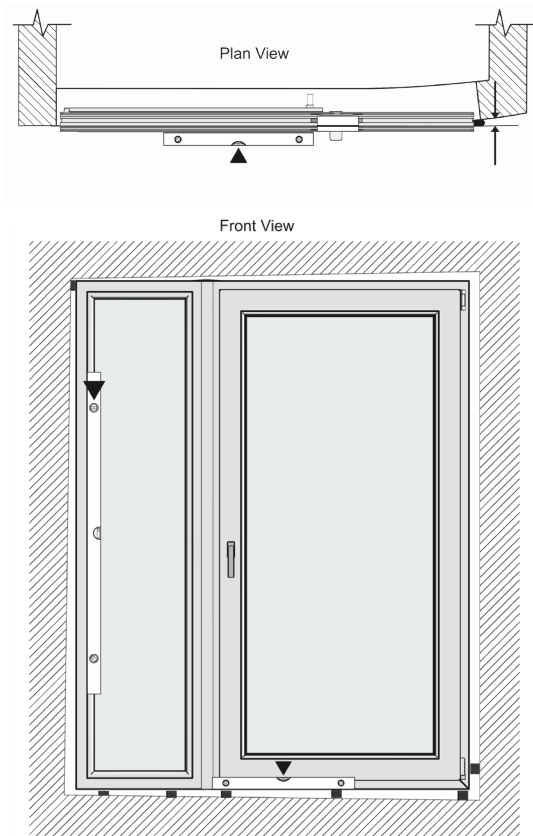


Figure 55 - Plumb, level and square the frame

TIP

Do not fasten the anchors in a clockwise sequence. Start by loosely fastening each corner anchor.

Next fasten the anchors at the midpoints of the frame and/or at the mullions.

Finally, fasten the intermediate anchors. If you alternate from side to side, top to bottom, you are less likely to deform or shift the position of the frame.

Make minor adjustments to the frame position as the anchors are fastened by carefully using a pry bar between the frame and the rough opening.

5.6.4 Fasten anchors to rough opening

Place the fasteners (approximately 1"-1½" in length, based on the rough opening structure) into the center hole of the anchor to fasten it to the rough opening. See Tip in left-hand column for sequencing order.

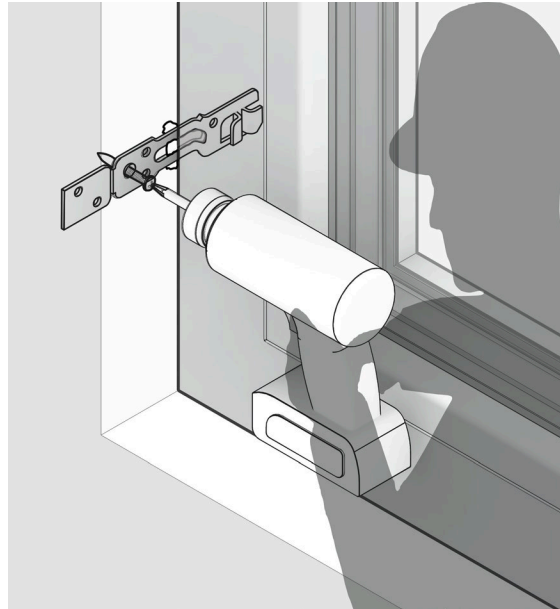


Figure 56 - Fasten Anchors to Rough Opening.

5.6.5 Remove anchor tabs

Once all the anchors are fastened, remove the anchor tabs by bending and breaking each tab that extends past the rough opening. For ease, use vice grips or pliers.

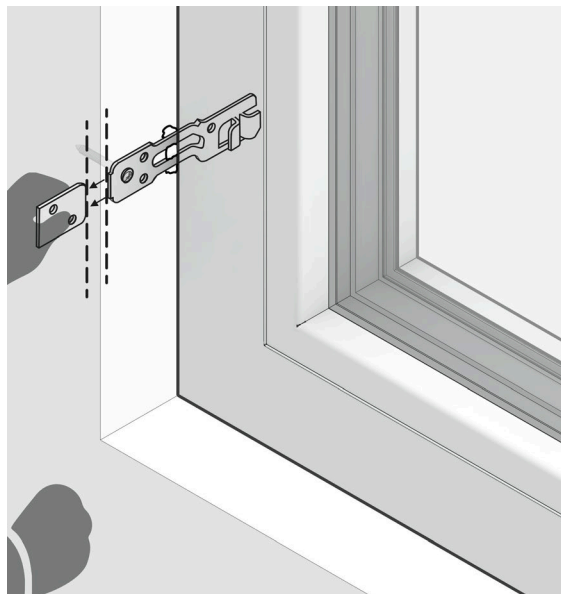


Figure 57 - Removing Anchor Tabs

5.7 Fastening door frames to rough opening

In addition to the anchoring method, doors are also fastened to the rough opening using supplied screws fastened through factory drilled holes.

The following outlines the fastening method for:

- 88PH+ Pro and 88TS Outswing Door
- 88PH+ Pro and 88TS Inswing Door
- 76TS Inswing Door with Flange
- 76TS Inswing Door without Flange
- 76TS Outswing Door without Flange

Before fastening the door to the rough opening, ensure the door is shimmed as required and is straight, level and plumb.

Using 2 screws (Screw 7.5x102 AMO III Type 2 (head 8.0mm) with AW30 (Torx), for door installation fasten through the two pre-drilled holes located above and below the top hinge. When you hit the RO you will get push back, reverse the drill and go in again.

WARNING!

Before fastening through the frame make sure door has been shimmed and is straight, level and plumb.

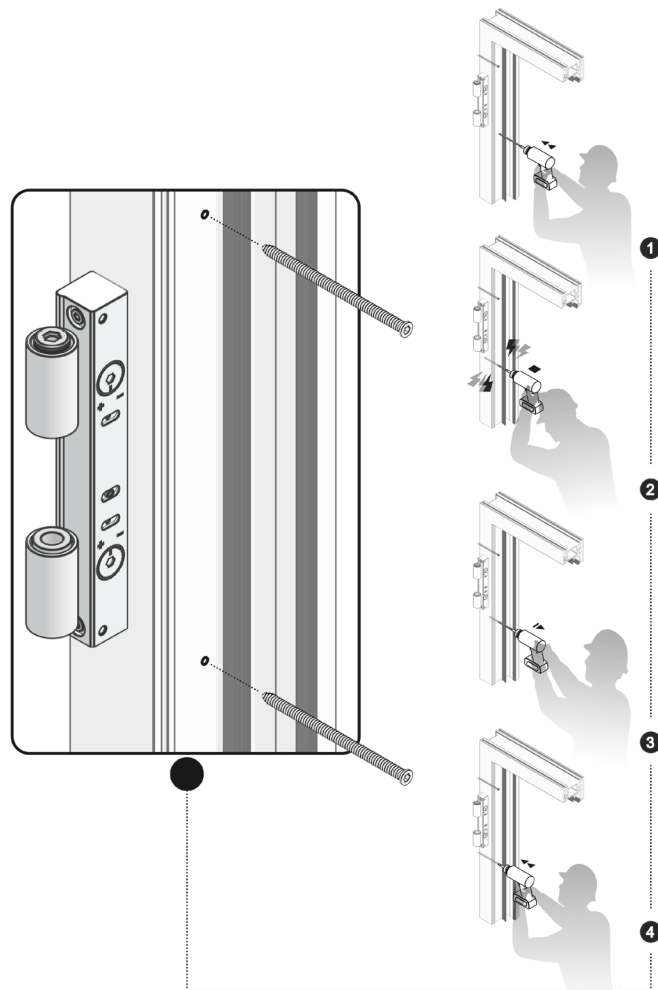


Figure 58 - Fastening Door (88TS Outswing) Frame to Rough Opening

The following outlines the fastening method for:

- 76TS Outswing Door with a Flange

Using four screws (approximately 1"-1½" in length, based on the rough opening structure) fasten through the two pre-drilled holes located above and below the top hinge.

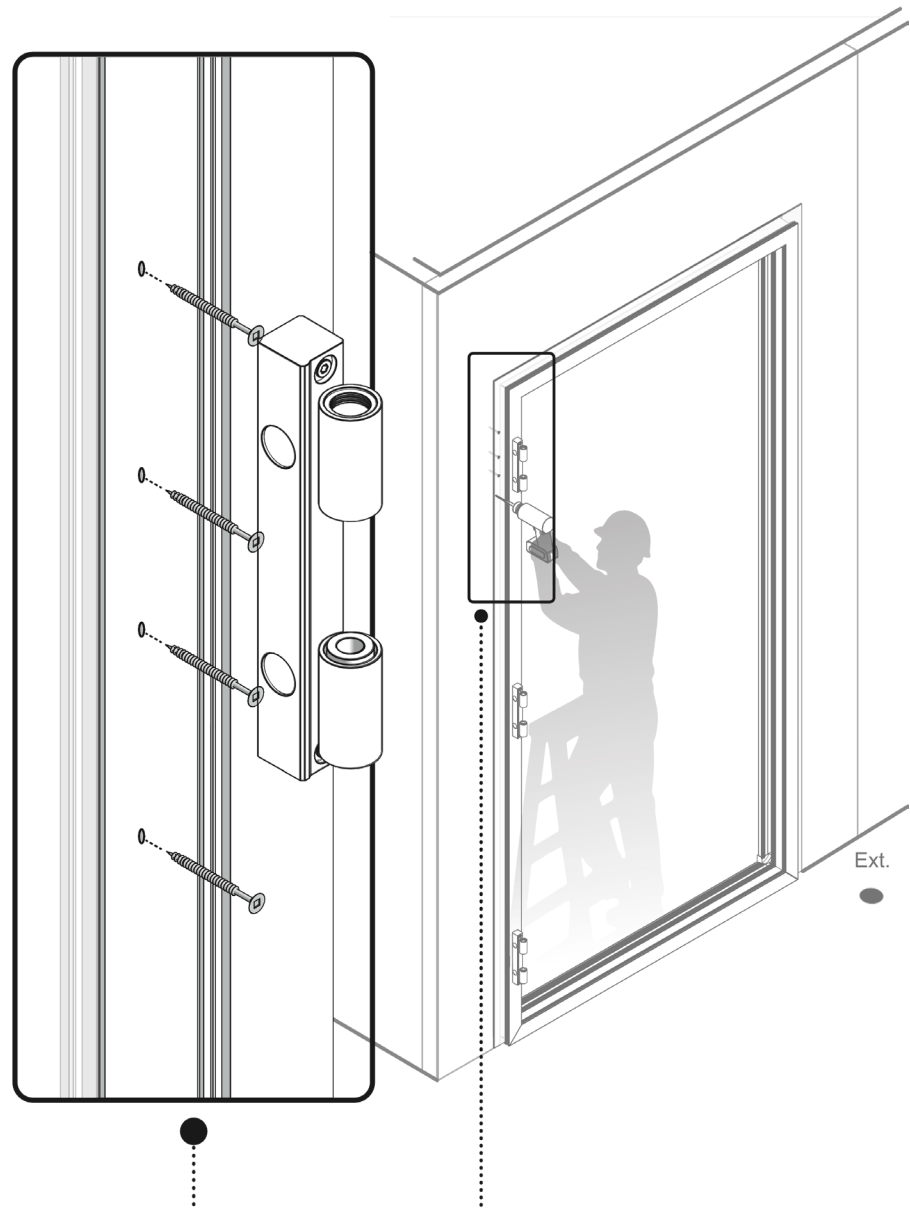


Figure 59 - Fastening Door (76TS Outswing) Frame to Rough Opening

5.8 Hang sashes on frames

Once the frames are fastened to the rough openings and each frame is confirmed to be plumb, level and square, the sashes can be installed into the frames.

5.8.1 How to install Tilt + Turn sashes on frames with Barrel hinges

For installation of Tilt & Turn sashes on frames with barrel hinges, refer to Section 4.7.1 - How to install Tilt + Turn sashes on frames with Barrel hinges on page 35. (the procedure is the same)

5.8.2 How to install Side hinged door sashes

1. Inspect the hinge pins on the door frame to make sure they are clean and free of construction debris.
2. Inspect the hinges on the sash to make sure there is no dirt or construction debris in the holes at the bottom.
3. Lift the sash vertically. Align the hinges of the sash with the hinge pins of the frame then lower the sash onto the hinges as shown in
4. Close the sash.

Caution

Inswing side hinged doors with no transom.

Hang these doors before interior finishes are installed. Once the interior finishing is in place at the head there will not be enough clearance to lift the door on or off its hinges.

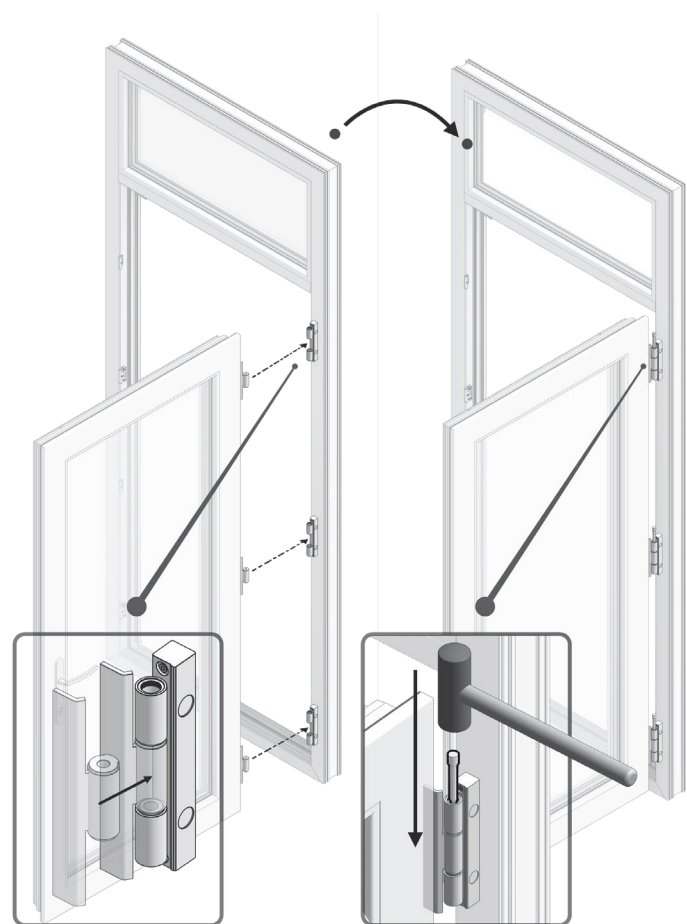


Figure 60 - Installing Side Hinged Door (with Transom) Sash

5.9 Check sash operation

Innotech squares the sashes and aligns them with the hardware at the factory. Operating problems occur when the frame is not installed level, plumb and square, or when the frame or sash members are not straight because of mis-handling or incorrect installation.

5.9.1 Operate the sashes and locking hardware

Open and close the sash several times. If sashes operate freely without binding at any point; and if all hardware functions operate smoothly, continue to heading 5.10 - Apply sealant for Second Plane of Protection on page 58.

If sashes do not operate properly or the hardware does not engage properly, the frames are not installed plumb, square and level, or the frames have become twisted during anchor installation. For help in diagnosing the cause of operating problems see heading 5.9 - Check sash operation on page 57.

If the sash binds or strikes the frame at some point, or if the handle cannot be smoothly and/or fully rotated to lock the sash, there is a problem with the installation. **Do not proceed with applying interior sealants until the sash operating problems have been corrected.**

5.9.2 Correct installation defects

Before moving onto the second plane of protection, ensure all products easily operate; each window or door should open, close, lock and unlock without friction or force. Products that do not operate properly need to be corrected before moving onto the second plane of protection. The following is a list of common installation defects:

5.9.2.1 Correcting twisted frames

During fastening, it is possible that the frame may twist if the anchors were not installed properly.

If the frame is twisted *towards* the side of the rough opening, loosen the anchor screws and use a flat pry bar to straighten frame. Insert shims between the frame and rough opening and re-tighten the anchor screws.

If the frame is twisted *away* from the rough opening, try to twist it back into position. If that is not possible, it may be necessary to replace and rebend the anchor to prevent deforming the frame.

5.9.2.2 Correcting bowed frames

If the *interior face* of the frames is bowed, unscrew the anchors in the affected area, straighten the frame, and re-fasten the anchors.

If the outside edges of the frames are bowed, follow the same steps as for correcting twisted frames above.

5.9.2.3 Correcting out of square sashes

If a sash has become out of square or has become bowed and cannot be straightened as shown in Figure 45 on page 45. the sash may have to be reglazed and reshimmed. Visit www.innotech-windows.com/resources for glazing instructions.

5.10 Apply sealant for Second Plane of Protection

WARNING!

Make sure sash operating problems are corrected before you apply sealant. Frame adjustment may not be possible after sealant has been applied.

Visit www.innotech-windows.com/resources for additional troubleshooting resources, contact your Product Representative or authorized Innotech Dealer, or contact our Service Department at service@innotech-windows.com.

The Second Plane of Protection (see heading 1.6 *Second Plane of Protection*) is a continuous air and water seal **on all four sides of each door**. It is the best possible protection against unwanted air and water leakage.

Use only sealant that is compatible with both door framing AND with rough opening materials. For a list of sealants that are compatible with Innotech finishes, see heading 1.6 - Second Plane of Protection on page 5. There are several best practice methods applied by industry to achieve an effective second plane of protection. Consult with the authority having jurisdiction for the optimal method for your specific project.

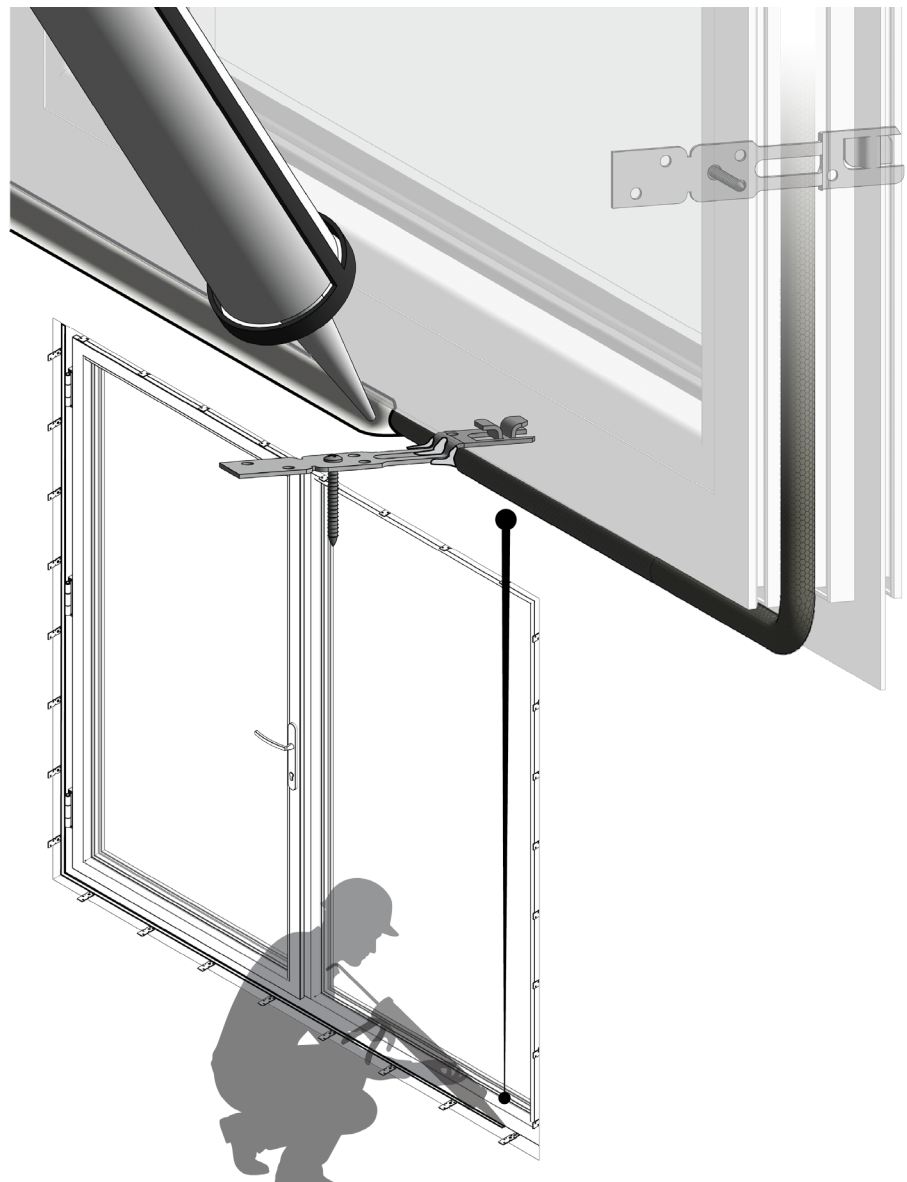


Figure 61 - Applying Sealant for Second Plane of Protection

5.11 Remove sash spacer shims

Open each door sash and remove the white shipping blocks from all sides of the opening. As shown in Figure 65 on page 59.

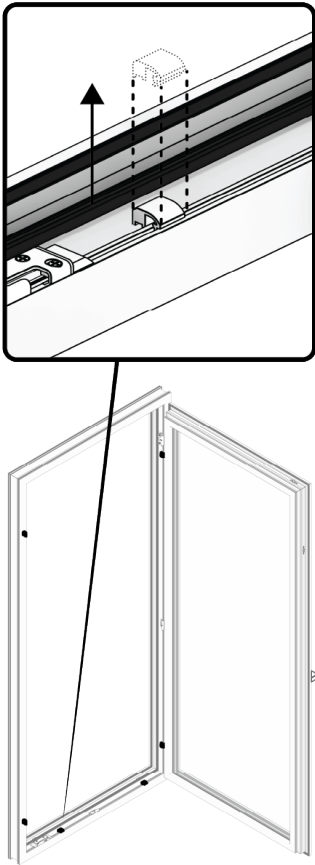
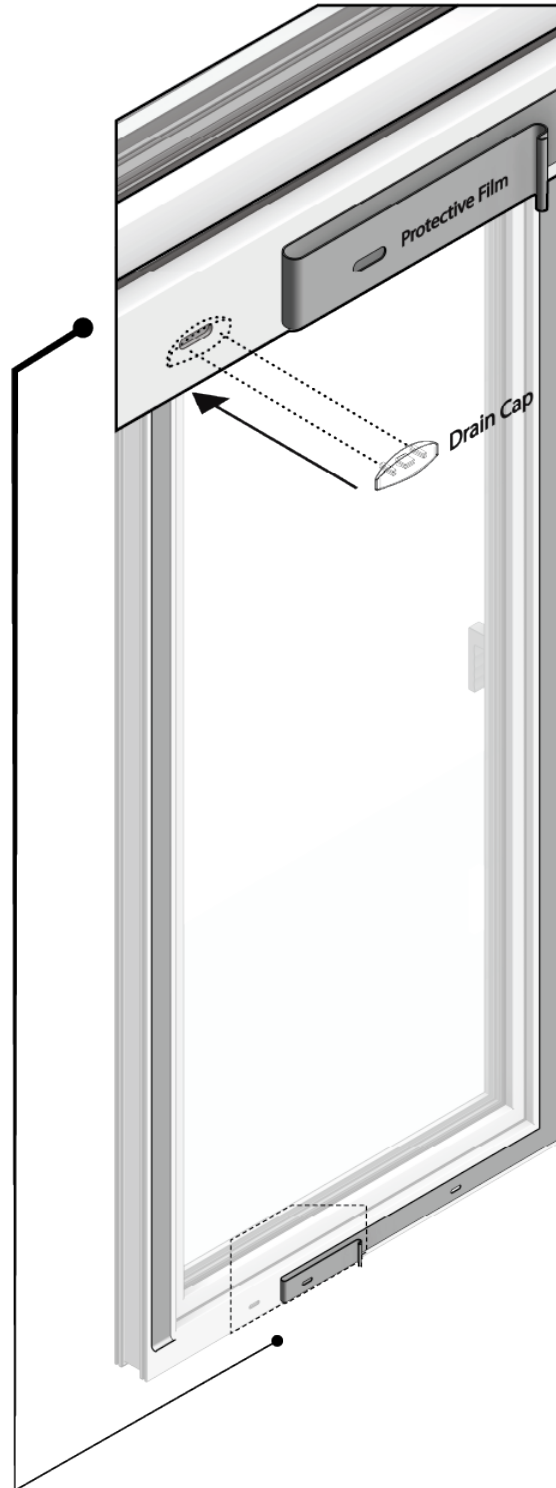


Figure 62 - Removing Shipping Blocks



5.12 Remove protective tapes, install wind caps

Remove protective tape from frames and install the wind (or drainage) caps over the drainage slots on the exterior of all windows and doors.

Figure 63 - Removing Taps, Installing Caps

6 Troubleshooting sash operation problems

Operating problems include the sash binding in one or more places, a sash that cannot be closed or locked, and/or excessive air leakage around the sash.

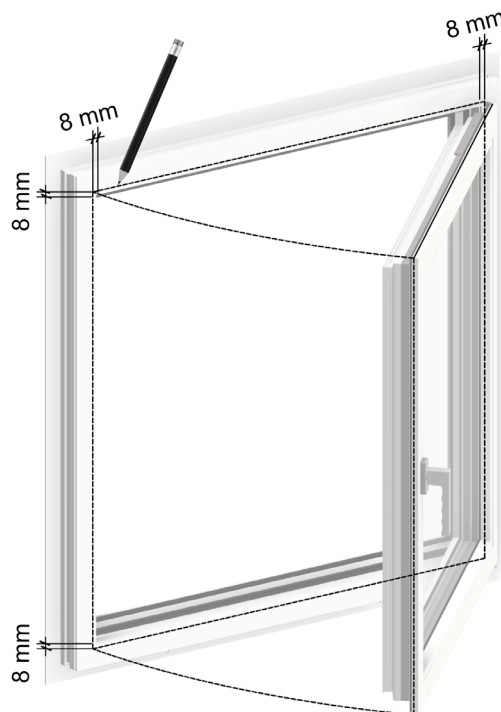
Operating problems may have several causes, including faulty installation, building settlement, deformations arising from mishandling, product damage or unusual environmental conditions. In most cases operating problems are due to deformations of the frame or sash that exceed hardware tolerances.

6.1 Diagnosing the cause of operating problems

Do not make any assumptions about the cause of the problem. **A common mistake is to start adjusting the hardware before the problem has been diagnosed.** This can add to existing problems and make the original problem harder to correct.

Follow all the troubleshooting steps before making any hardware adjustments. Use the checklist to determine whether the operating problem can be corrected by adjusting the hardware, the frame members, or the sash.

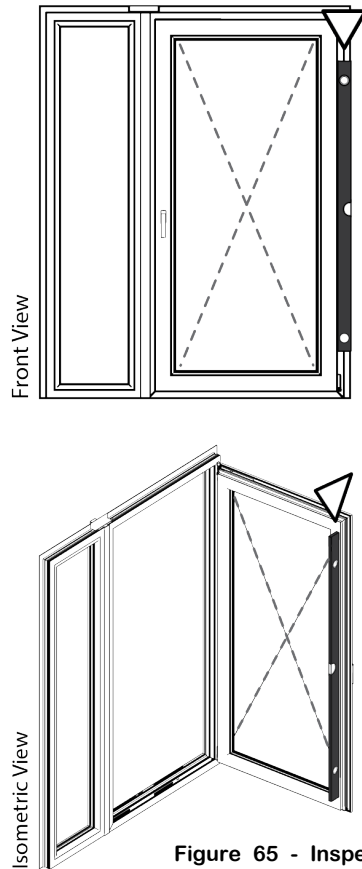
6.1.1 Sash overlap



Innotech windows and doors are designed for a **6.5–8 mm (1/4"–5/16")** overlap of sash to frame. Lightly trace the outline of the sash corners onto frame with a pencil (be careful not to damage frame finish).

If there is too little or too much overlap, the sash or the frame may be out of square.

Figure 64 - Inspecting and Adjusting Sash Overlap



6.1.2 Sash square, straightness or bow

Determine if the sash is square by measuring the two diagonals. An out of square sash can cause operating problems such as difficulty opening, closing and/or locking the window or door.

Use a long straight edge to determine if the vertical edges of the sash are straight. If edges are bowed, hardware may not easily or properly engage. If sashes are bowed towards the center of the glass, the glazing shims may have slipped.

Use a 6-foot straight edge on the face of the sash to determine if the top, middle and bottom are in line or bowed towards or away from the frame.

Figure 65 - Inspecting Sash for Square and Straightness

6.1.3 Frame plumb, level, square and bow

Use a long level to determine if frame and mullions are vertical when facing the window or door, and a shorter level to determine if the sill is level.

Use a long level on the face of the frame and mullions to determine if the frame members are leaning inwards or outwards at the top. Use a long straight edge on the face of the frame to determine if the top, middle and bottom are in line or bowed towards or away from the sash.

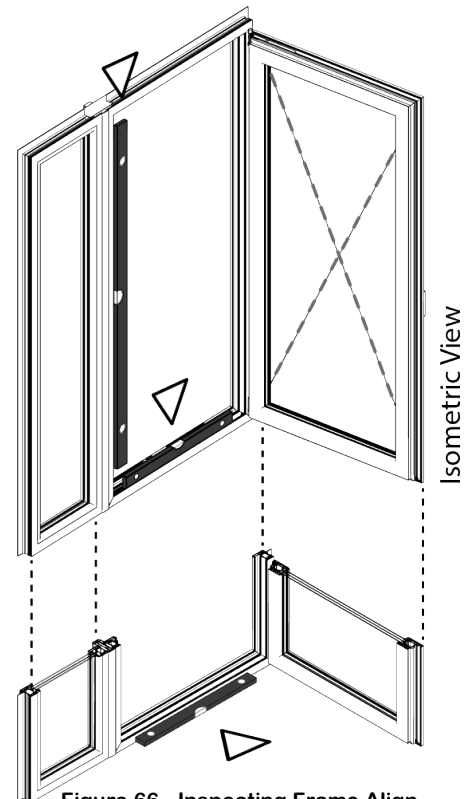


Figure 66 - Inspecting Frame Alignment and Straightness

6.1.4 Twisted frames

Incorrect bending of strap anchors can twist the frame and result in locking points that bind or don't engage. This is an installation problem that cannot be easily corrected after finishes are installed.

Use a straight edge to span between both jambs of an open sash to see if the jambs are twisted inwards (shown) or outwards.

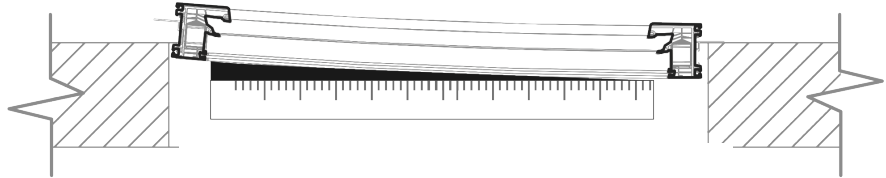


Figure 67 - Checking for Twisted Frames

6.1.5 Checking CAM to Keeper Clearance

The minimum distance between the cam and the keeper (striker or mushroom) should be 2-3 mm to ensure proper engagement and operation.

To verify this clearance in the field:

- Open the sash slightly (do not fully open it).
- Bring the cam close to the keeper without fully engaging it.
- Measure the gap between the cam and the keeper using a feeler gauge or similar measuring tool.

Maintaining this clearance is important to ensure smooth operation and proper locking performance.^a

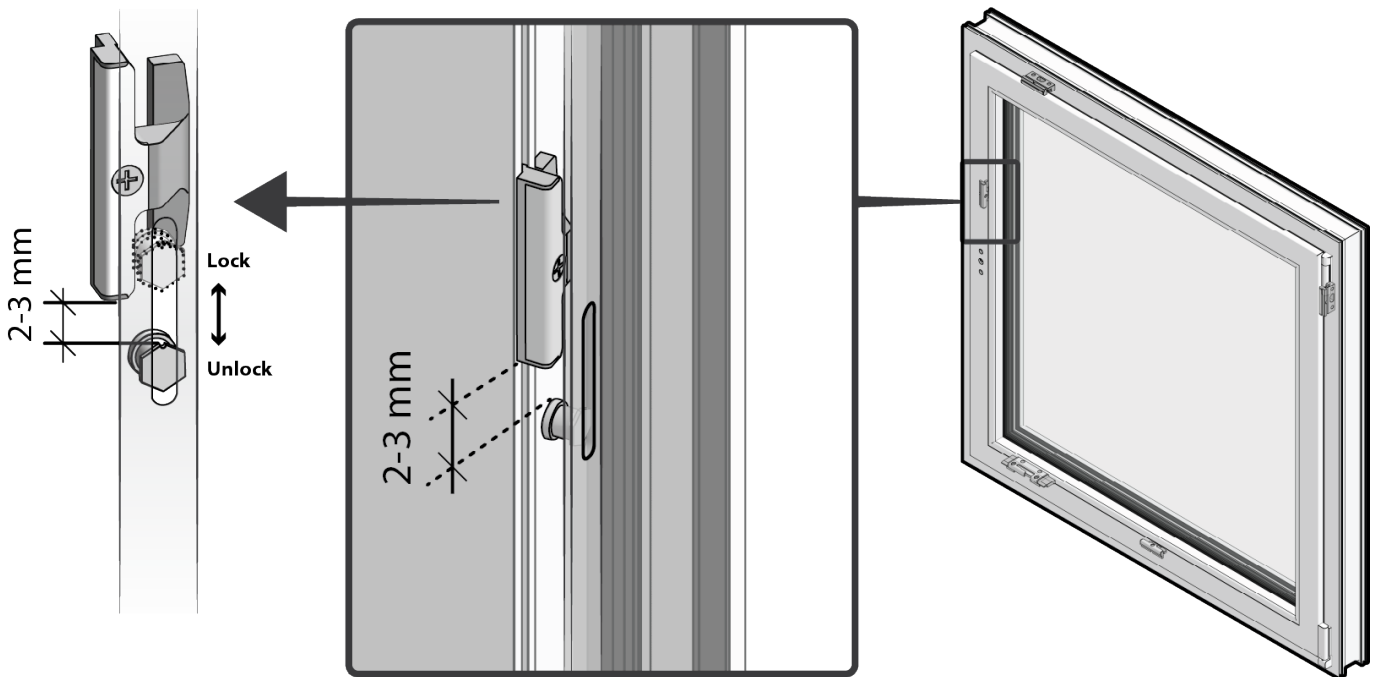


Figure 68 - Checking CAM to Keeper Clearance – Sash shown transparent and the distance is exaggerated for clearance.

6.2 Correcting frame and sash problems

If the frames are not plumb, level, square and straight, the frame installation must be corrected as described under heading 4.8 *Correct installation defects*.

If sashes are out of square or bowed, they must be deglazed, re-shimmed, and reglazed. See below for instructions.

If hardware binds or does not close properly, the frame installation must be corrected. In some cases such problems can be corrected with minor hardware adjustments.

Visit www.innotech-windows.com/resources or contact your Innotech representative or authorized Innotech dealer for information about hardware adjustment and reglazing.

6.3 On site coupling

1. Add caulking to the two inside edges of the coupler along its entire length.

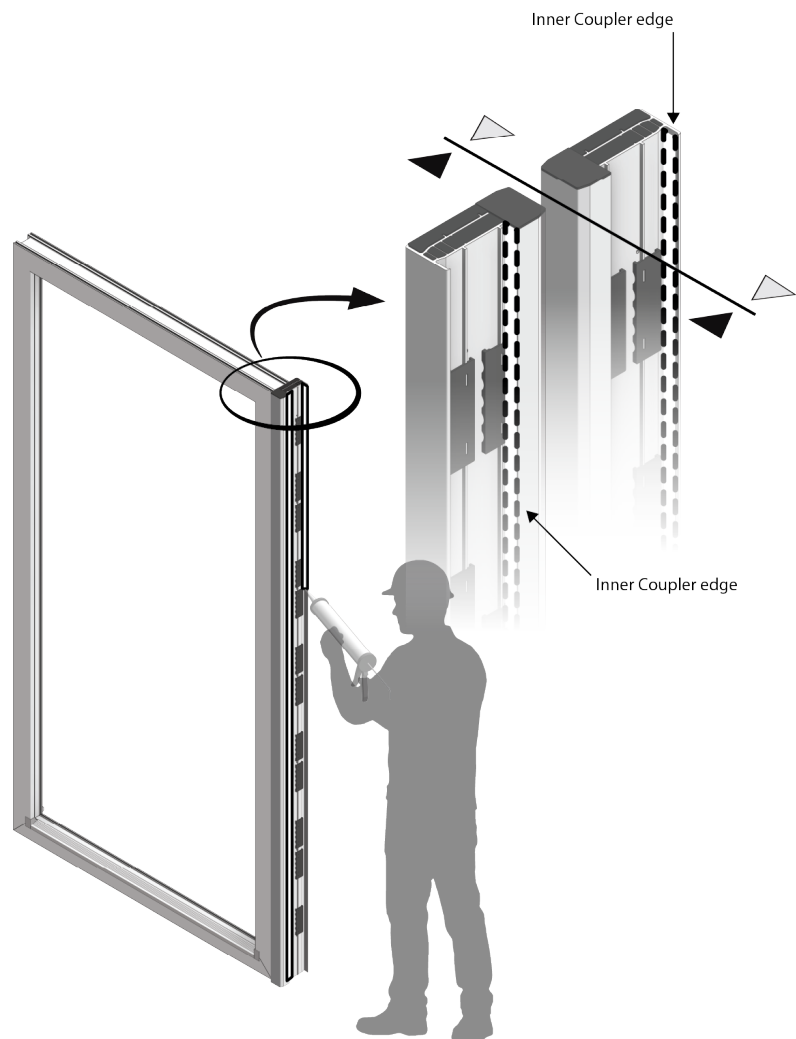


Figure 69 - Caulking Both Inside Edges of Coupler

2. Join the frame to the coupler. Ensure frame legs are sitting equally on all the shims along the coupler length.

Figure 70 - Frame Seating Evenly on Coupler Shims



3. Use clamps at the top, middle and bottom to compress the frame to the coupler. Make sure the compression is equal along the entire length of the coupler. Confirm compression by measuring the edge of coupler to edge of frame.



Figure 71 - Evenly Clamping Frame to Coupler

4. Screw the frame to the coupler in the pre-drilled holes using the provided fasteners.

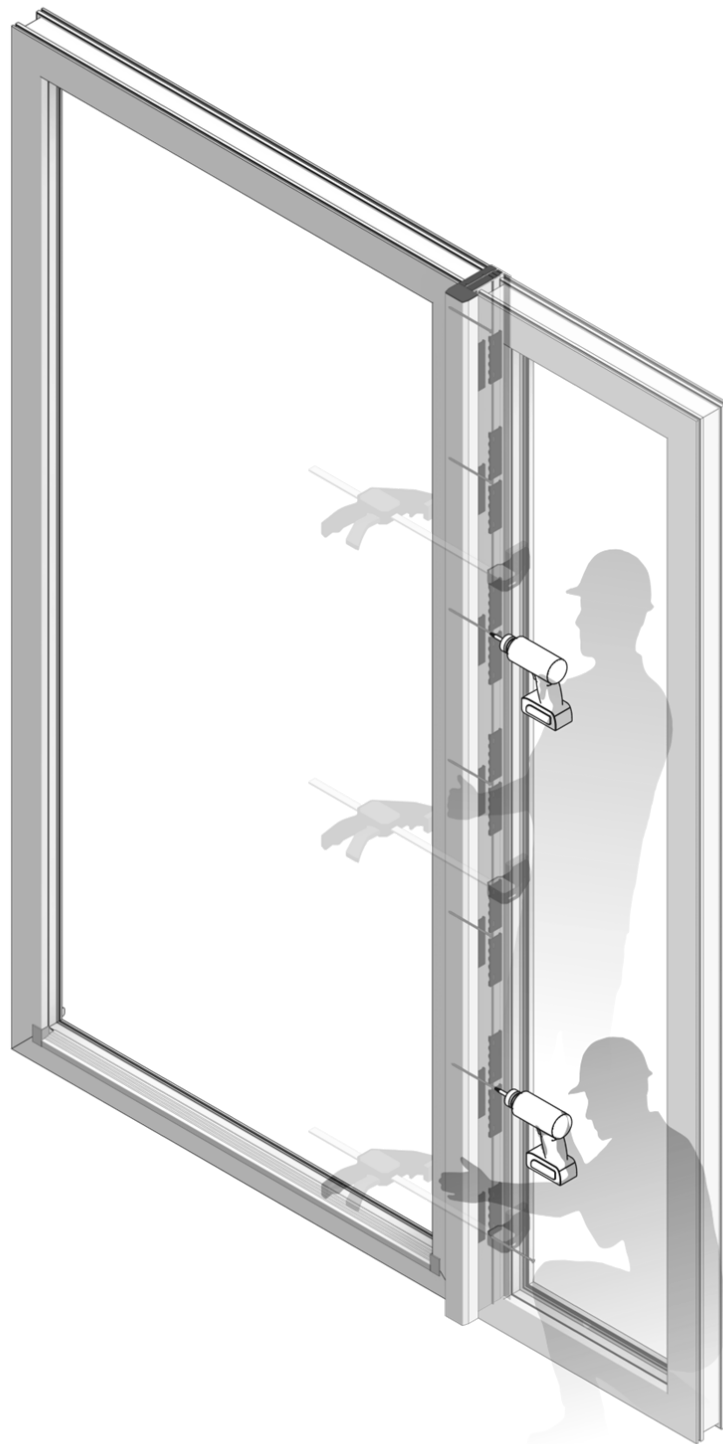


Figure 72 - Screwing Frame to Coupler at Pre-Drilled Holes

6.4 Hurricane tube anchor installation

1. Verify Anchor Brackets

Confirm that anchor brackets are already inserted in both ends of the hurricane tube and properly seated.

2. Fasten Anchors to Framing

Secure each anchor brackets to the structural framing using: 16 X #8 1-1/2" wood screws per anchor.

3. Check Alignment

Verify that the hurricane tube is straight, level, and properly positioned before fully tightening all fasteners.

4. Final Tightening

Tighten all screws securely, ensuring anchors are firmly attached without overdriving

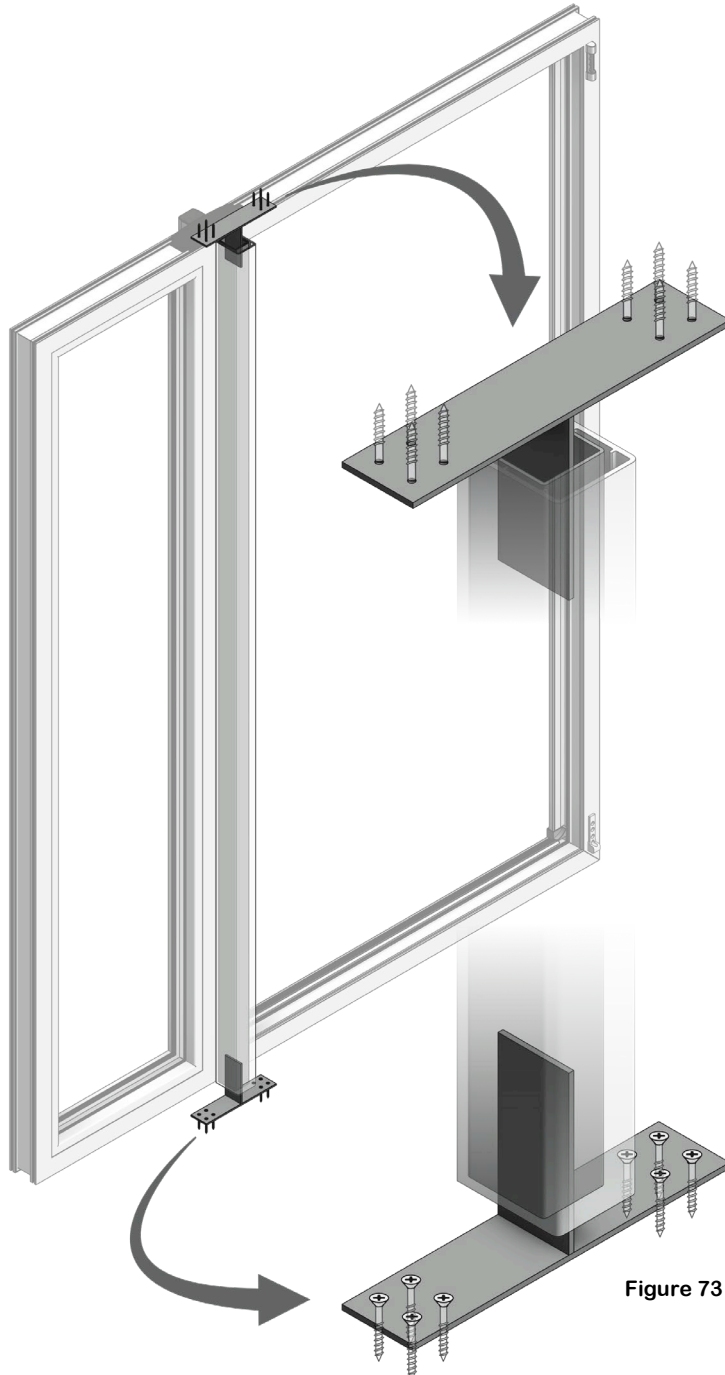


Figure 73 - Hurricane tube anchors

6.5 Sealant Bead at Horizontal Coupler

1. Apply continuous caulking bead (approx. 10 mm wide) along the entire length of the horizontal coupler, positioned at the corner where the frame meets the coupler.
2. Ensure the caulking runs continuously from end to end without any gaps
3. Wrap the caulking around the corners at both ends, ensuring all holes at the coupling ends are fully sealed.



Figure 74 - Sealant Bead at Horizontal Coupler

7 Reference

7.1 Compatible sealants

WARNING!

The Innotech warranty does not cover damage to Innotech products or surrounding materials arising from the use of incompatible or unsuitable products.

Innotech has determined the sealants in the table below are chemically compatible with the listed Innotech surface finishes. The table indicates the adhesion of the sealants can be used safely with Innotech products.

Note. If you are not sure what the finishes are on the Innotech products you are installing, contact your Innotech representative.

Installers or authorities having jurisdiction that wish to use other sealant products must arrange for their own compatibility and adhesion testing. The Innotech warranty does not cover damage to Innotech products or surrounding materials arising from the use of incompatible or unsuitable products.

Innotech makes no recommendations about the compatibility or suitability of the named sealants with other substrates. Installers or authorities having jurisdiction are responsible to determine whether the named products are suitable for use with adjoining materials.

Adhesive properties of compatible sealants

	White uPVC surfaces	Laminated foiled surfaces
Dow 795 Silicone	Very good	Good
Tremco Spectrem 2 Silicone	Very good	Good
Tremco Dymonic 100	Very good	Very good
Henry 925	Very good	<u>Untested</u>
Dow 995	Very good	Good
Sikaflex NP1	Good	Poor
Mulco Supra Elite	Very good	Very good
Chemlink Duralink 50	<u>Untested</u>	Poor

7.2 Definitions (Glossary)

The following terms are used in Innotech window and door publications. Many are common to all windows and doors. Definitions particular to Innotech are underlined.

Anchor. A device used to attach a window or door to the building structure.

Anchoring method. A method for structurally attaching a window or door to a building's structure. Innotech products may be installed using several anchoring methods. The most common are Strap Anchors and Sill Angles.

Brick molding. A style of molding commonly used between the edges of a window or door frame and the exterior finish.

Drainage cap. A cap that shields the drainage holes at the sill of a window or door frame from wind and flowing rainwater. Also called a **wind cap**.

Drywall return. A type of molding applied to the interior edges of a window or door frame to receive gypsum board.

Coupling or Coupling Mullion. A type of mullion that connects (couples) two separate frames.

Flange or Mounting Flange. A fin extending from the edge of a window or door to help the installer position it in the wall. The flange is not to be used for anchoring an Innotech window or door to the building structure.

Frame. The structural member that surrounds the window or door and retains glass. A frame has a head (top member), sill (horizontal bottom member) and jambs (vertical members on the left and right edges). A frame may also have mullions, vertical members that span from the head to the sill; and transoms, horizontal members that span between mullions or jambs.

Grid. A decorative bar that simulates the appearance of a muntin bar (narrow bar that separates panes of glass in single pane wooden windows). Innotech has three types of grids:

- **In-glass grids.** Aluminum bars in between the panes of glass in a sealed insulating glass unit.
- **On-glass grids.** PVC bars applied to both sides of the surface of the glass.
- **Combined In-glass/On-glass grids.** To simulate the appearance of true divided lites separated by muntins.

Head. The horizontal frame member at the top of the window or door.

Insulated panel. An opaque panel composed of rigid foam insulation bonded to thin sheets of aluminum or plastic. Panels are installed in window or door sashes in the same way as insulating glass.

Insulating glass, Insulating Glass Unit (IGU). A glass panel composed of two or more panes of glass assembled with spacers and sealants.

Jamb. Vertical members on the left and right edges of a window or door.

Lite or Light. An individual panel of glass in a window or door sash. A sash may have a single lite, or be subdivided into multiple lites.

Mullion. A vertical member that spans from the head to the sill.

Muntin. A vertical or horizontal bar that divides panes of glass in a wooden window sash. Innotech windows and doors use grids to simulate the appearance of muntins. Muntins are used to create divided lites, the effect produced when the lite in a sash is divided with decorative bars.

Rail. One of the two horizontal members that bound a sash: the top rail and the bottom rail.

Sill. The horizontal frame member at the top of the window or door.

Sash. The operable element of a window or door that is opened and closed. A sash is composed of top and bottom rails (horizontal members), as well as stiles (vertical members). The hinge stile is the stile with hinges and the lock stile has the handle.

Sash bar. A vertical or horizontal framing member that divides the glass in a sash into separate pieces of glass. Like a muntin, a sash bar divides lites of glass. A sash bar is wider than a muntin because it protects the edges of the insulating glass units. A sash bar is like a mullion or a transom in a sash.

Sill Angle. A 1-1/2" x 1-1/2" 18 GA galvanized steel angle used to attach the sill of a window or door to the building structure.

Stile. One of the two vertical members that support glass in a sash: the hinge stile and the lock stile.

Strap Anchor. Flat galvanized steel attachment clips designed to engage the edge of Innotech window and door frames. Strap Anchors are clipped to the window or door frame before it is placed in the rough opening and are attached to the building structure with screws.

Transom. A horizontal member that spans between mullions or jambs.

7.3 Additional resources

To help ensure a long service life, additional product installation, alarm contact installation, hardware adjustments, cleaning and maintenance instructions are available for your windows and doors. Visit [innotech-windows.com/resources](https://www.innotech-windows.com/resources) to watch important how-to videos and download these documents or contact our service department at 1.866.854.1122 Ext 4.

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