Installation Instructions

Receiving
Handling
Storage
Installation

Fixed Windows
Dual Action Tilt + Turn Windows
Dual Action Tilt + Turn Doors
Terrace Swing Doors

Version 1.0.9

innotech
windows + doors

Contents

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1 Before you start

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.**

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** or contact your Innotech representative.

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

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.

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

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.

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 For retrofit installations

Buildings and homes constructed prior to 1990 may contain lead-based paints. Removing, repairing or disturbing this paint during window or door replacement can cause serious health risks. For more information on proper management of lead-based paint, go to www.epa.gov/lead or https://www.canada.ca/en/health-canada/services/home-safety/lead-based-paint.html.

It is your responsibility to safely and responsibly recycle or dispose old windows and doors that are removed during retrofit installations. Disposing of old building materials, including windows and doors, into landfills should only be considered if recycling is not offered in your local area. Contact your local recycling management company for additional information.

1.6 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.

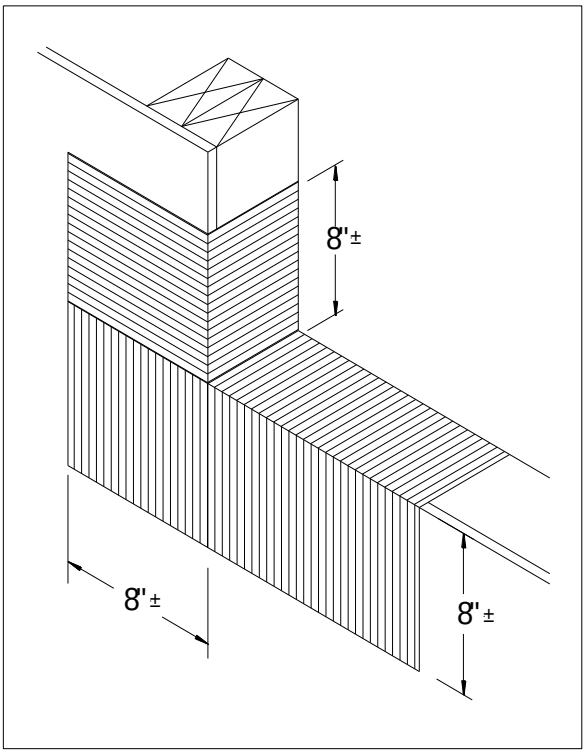
1.7 Second Plane of Protection

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 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.

To achieve an effective second plane of protection with Innotech products Innotech recommends three important measures:

1. **Create a sill pan flashing with end dams at each rough opening** using flexible flashing, liquid applied flashing, or other suitable materials. The sill flashing must divert water from the rough opening to face of the water management plane on the exterior side of the wall.



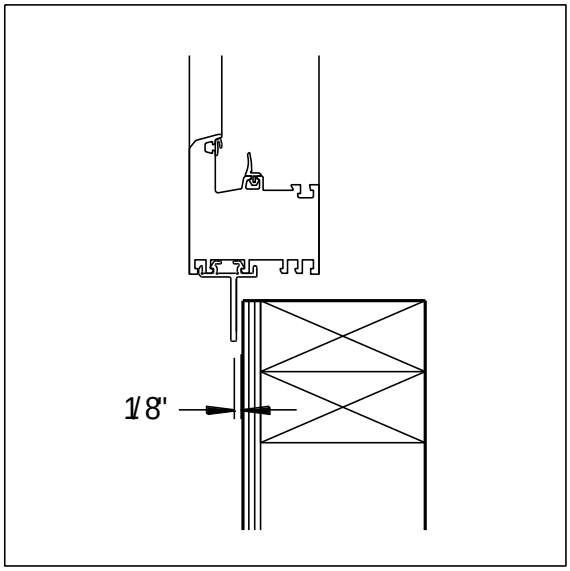
WARNING!

NEVER seal the bottom flange of a window/door frame to the wall.

NEVER seal the outside of the window/door sill to the wall in a way that would prevent water from draining from the inside to the outside at the sill.

2. **Ensure water can drain freely to the exterior at the sill of the window/door.** This can be done by ensuring there is a **minimum 1/8" (3 mm) water drainage gap** between the flange and the drain plane at the rough opening sill.

   Shim bottom flange away from wall to allow water drainage. Use shims to space the flange from the wall a minimum of 1/8" (3 mm).

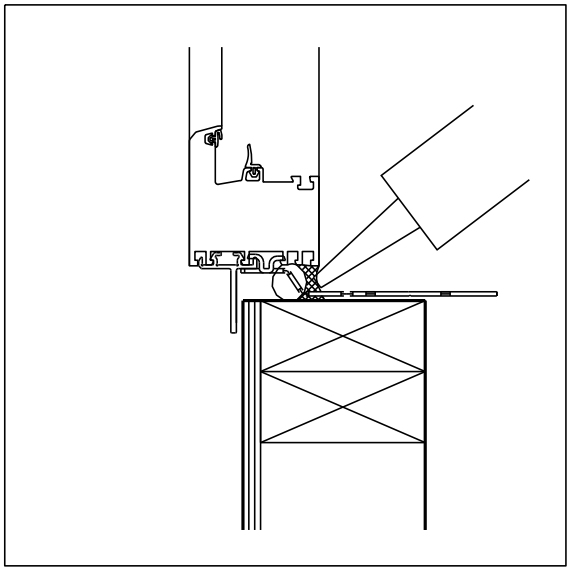


Tip

Sealant must first be applied to anchor bottoms as they are installed.

Sealant must be applied between and over strap anchors and tooled well to ensure there is good adhesion and no gaps.

3. **Apply backer rod and sealant on all four sides of each window and door.** Apply the foam rod behind or between the Innotech strap anchors and then apply sealant between the edge of the window/door frame and the rough opening **on all four sides**. Tool the joint to ensure there is good adhesion and no gaps in the sealant that would allow air or water into the building.



1.8 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.

1.9 Clearances and rough opening tolerances

Caution

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

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 1/2" (12 mm)**
- **Maximum clearance 5/8" (16 mm)**

1.10 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 ± 3/8" (10 mm).

1.11 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.

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.

Sometimes rough openings or wall conditions need to be corrected in order to achieve a satisfactory installation. **If you see any rough openings that are 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 1/2" (13 mm) and no larger than 5/8" (16 mm) clearance between the top of the frame and the top of the rough opening.

1.12 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 color 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 6.1 *Compatible sealants* on page 48.

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

1.13 Protecting Innotech products

Please review this section carefully. You are responsible for damage to the products from the time they are delivered until they are installed and turned over to the owner.

1.13.1 Protecting installed products

Protect windows and doors from all construction damage. Do not block sashes in the open position with lumber or other materials.

Keep sills of operable windows and doors free of dust, dirt and construction debris. Ensure gaskets are not damaged or dislodged. Ensure drain slots are not blocked.

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

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 acid solution comes in contact with windows or doors, immediately wash all surfaces with clean water.

Do not use metal scrapers, paint thinners, chemical solvents or abrasive cleaners to clean any part of the glass or framing on Innotech products during or after construction.

1.13.2 Protective tapes and protective films

WARNING!

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

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 vinyl** 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. 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.

1.13.3 Final Cleaning and Commissioning

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.

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

1.14 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	24", 48" and 72" levels. Long levels are more accurate and allow you to also check the straightness of walls and window/door products. 72" level needed for tall windows and doors.
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 	Minimum two vacuum cups are recommended for handling large heavy windows and doors. See heading 3.3.5 *Use vacuum cups to carry frames with glass* on page 15.
3, 4, 5 and 8 mm Hex key or combination Hex-socket tool (4 mm Hex key, 11 mm socket wrench)	Required for hardware adjustments such as clearance and locking tightness adjustments.

2.2 Materials required

WARNING!

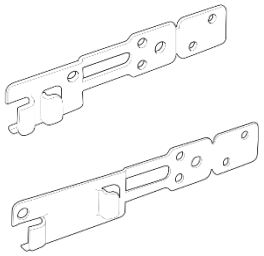
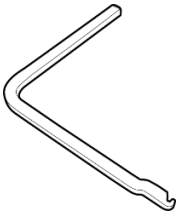
Treated wood products can be corrosive to many commonly used fasteners.

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

Fasteners for Innotech Strap Anchors (one per anchor)	Wood substrates: #10-13 x 1-1/2" Pan head screws. Steel studs: #10-13 x 3/4" pan head screws. Concrete: 1/4" x 1-1/4" Kwik Con II 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 and non-swelling 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 1.7 *Second Plane of Protection* on page 5.

2.3 Materials supplied by Innotech

Strap anchors 	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.
Drain caps 	Drain caps are shipped loose with every order.
Hex keys 	Tilt + Turn windows and doors: 4 mm
	Outswing doors: 3, 4, and 5 mm
Assembly key 	The assembly key is used to remove the pin from the top hinge of Tilt + Turn Windows and Tilt + Turn Doors. It can also be used as a temporary handle to open and close Tilt + Turn Windows and Tilt + Turn Doors.
Handles and keys	Handles and screws are in pre-packaged plastic bags. Keys supplied for doors that have key lock cylinders.

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.

3.2 Safely unloading products from window and door steel racks

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.

Innotech products are delivered on steel racks and secured with ratchet straps (tie-downs).

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 on level surface to attain safe lean angle

To prevent steel rack from tipping, place steel rack on a level surface. Due to varying product weight, surface conditions and steel rack conditions, it may be necessary to use small wooden shims (about 1-1 ½" thick) to attain a safe lean angle.

To begin, place the steel rack on a level and even surface. If surface is not level, place wooden shims under the front legs of the steel rack to 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.

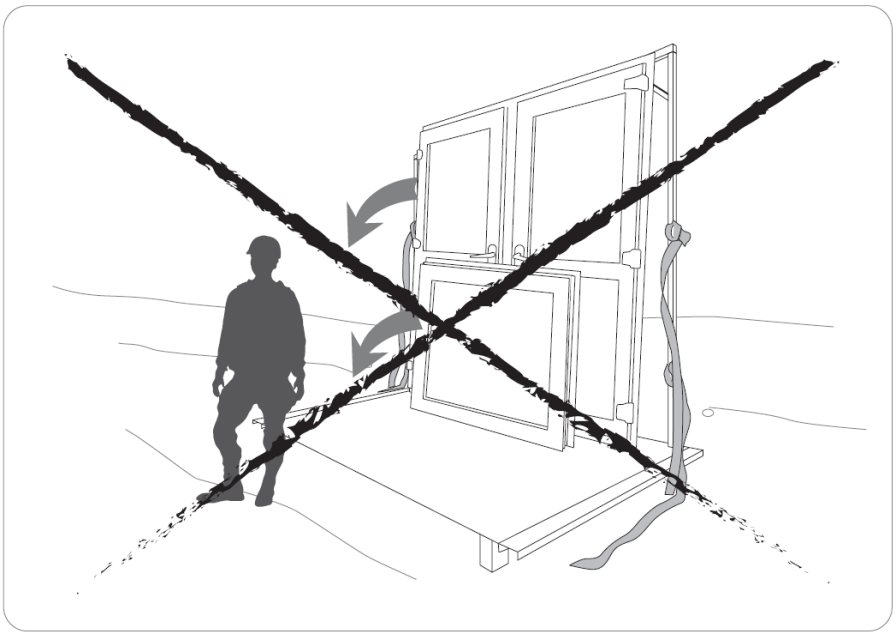
With at least two or more people, carefully remove the ratchet straps one at a time, starting with the most forward ratchet strap. Depending on the size of the product(s), at least one person should hold the product(s) while the other slowly loosens and removes the ratchet strap. Only remove the ratchet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

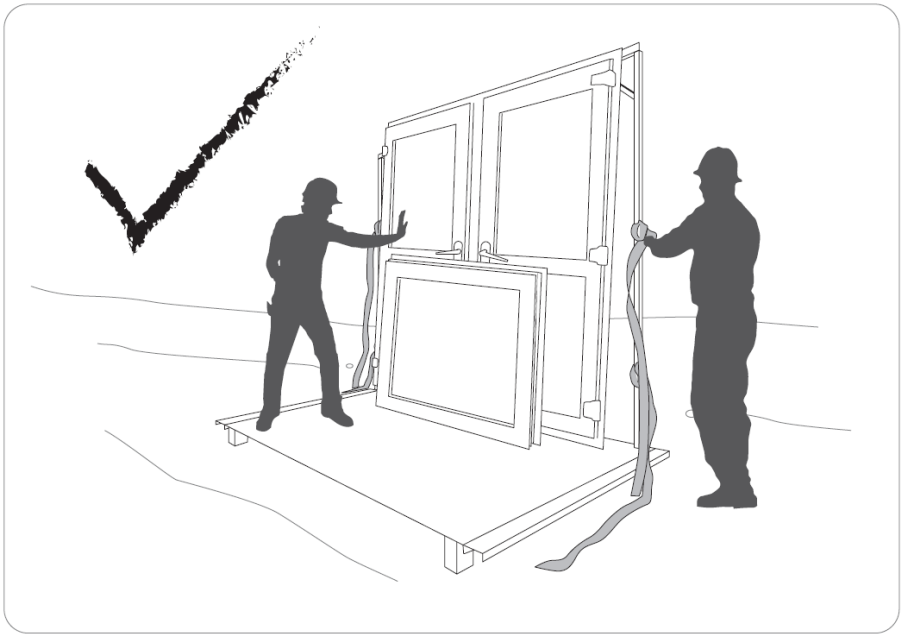
Never remove all ratchet straps at once. Never leave product unsecured or unattended on the steel rack.

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).





3.3 Handling and moving products

Handle these windows and doors carefully. The installer is responsible for damage to the products during handling and installation. 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.

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.

3.3.2 Use two or more people to carry frames

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

3.3.3 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:

- Never carry Innotech products tilted at a sharp angle or in a horizontal position.
- Never lay Innotech products flat on any surface.
- Never lift units by the top framing member.
- Do not bend frames to go around a corner.

3.3.4 Carrying frames with no glass

Frames with no glass can be heavy. Always carry frames by supporting the frame weight from the bottom or by grasping vertical members near the quarter points. 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, you will crack the frames.

3.3.5 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.

Innotech windows and doors may have the glass surfaces covered with protective plastic film. Vacuum cups can be used safely with glass that has protective film.

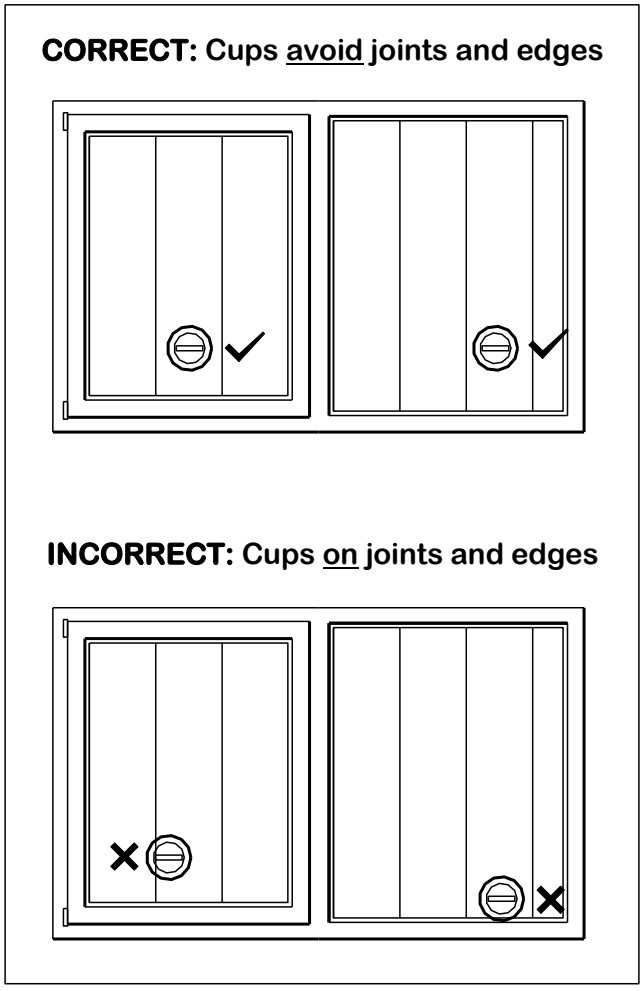
When using vacuum cups do not place cups on joint seams of plastic film. If plastic film is loose or peeling, or if you believe it is not safe to use vacuum cups on film surface, remove the film before applying vacuum cups.

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.**

Figure 1: Placement of cups on glass with protective film



WARNING!

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

Always use vacuum cups according to manufacturer's directions.

Removing plastic film can cause static discharge that can ignite flammable materials.

3.3.5.1 Carrying glazed units (frames with glass)

Carry frames by supporting the frame weight from the bottom at quarter points or use vacuum cups. When carrying glazed frames without vacuum cups follow the guidelines under heading 3.3.4 *Carrying frames with no glass* on page 15.

When using vacuum cups, place cups at quarter points from either end of unit. For glass surfaces with protective plastic film, do not place cups on overlapping layers of film or on the joint between film and glass. See Figure 1 on page 16.

3.3.5.2 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.

3.3.6 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 that 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.

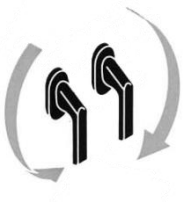
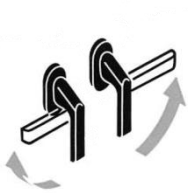
COLD WEATHER CAUTION	**WARM WEATHER CAUTION**
Cold weather makes products brittle. When handling or installing at temperatures below 5° C (40° F), avoid any impact to frames, sash or glazing bead. Even small impacts can crack frames under these conditions.	Very warm temperatures and/or exposure to direct 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

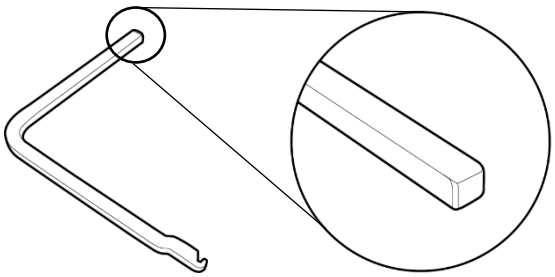
3.5.2 How to install window and door handles

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

Note. Handles can become damaged during construction. If you choose 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.



Follow the steps below to install the handles.

1. Pull the top and bottom edges of the handle face plate towards you and rotate to one side.

2. Insert handle shaft into the center hole with the handle pointing downwards then fasten it with the provided screws.

   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.;

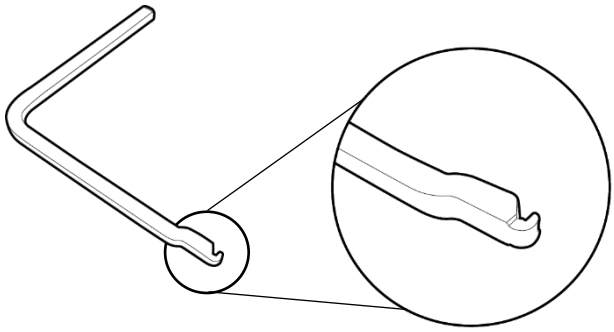
3. Rotate the handle faceplate to cover the screws.

3.5.3 How to remove Tilt + Turn sashes from frames

These steps apply to both Tilt + Turn windows and Tilt + Turn doors. This procedure requires two people.

1. Partially open the sash. 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.

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

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

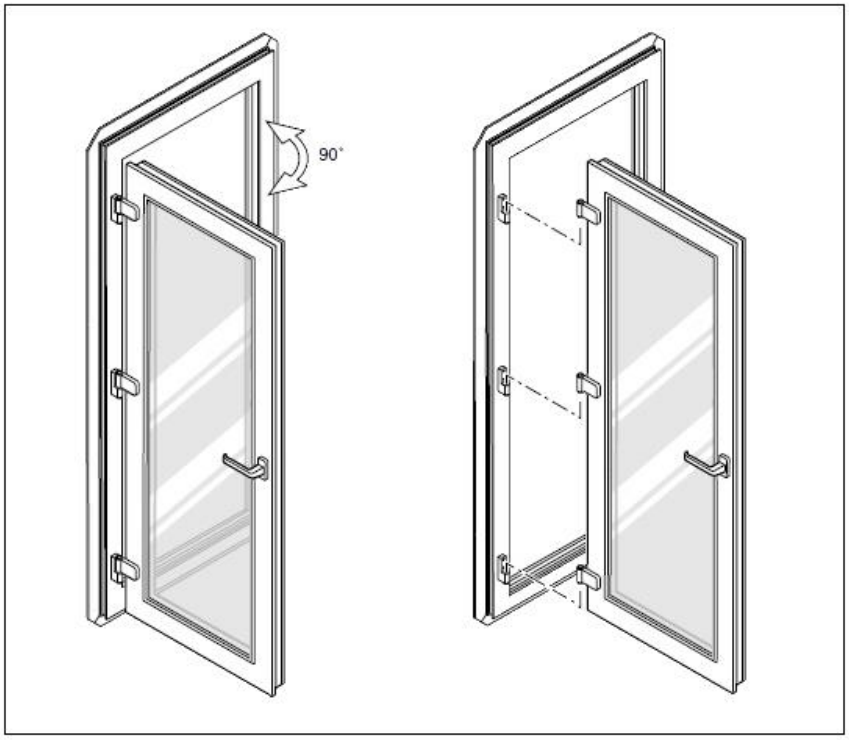
7. Push the upper hinge pin from below until it "clicks" in place. Put the hinge cap back on the hinge so it does not get lost.

3.5.4 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.

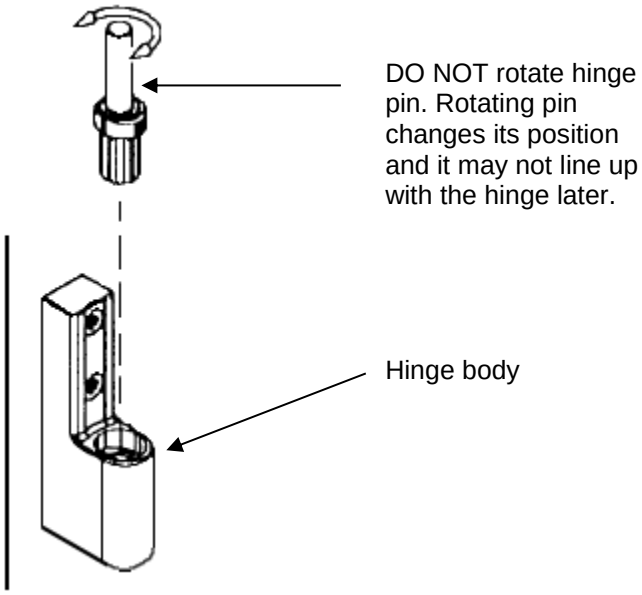
1. Open the sash 90 degrees.
2. Lift the sash vertically and in line with the hinge pins. Be careful that the hinge pins do not come out of the hinge bodies on the frames.



3. Put the sash in a safe place, on support blocks, on a clean and dry surface.

4. If hinge pins were accidentally removed, put them back in the hinge bodies on the frame in exactly the same hinge body and orientation they were in. If the hinge pin is rotated in its socket, it may not line up with the hinge when you later put the door sash back onto the frame.

If there is an alignment mark on the hinge pin and hinge body, use it to align the hinge in the factory position.



4 Installing windows and side hinged doors

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

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.

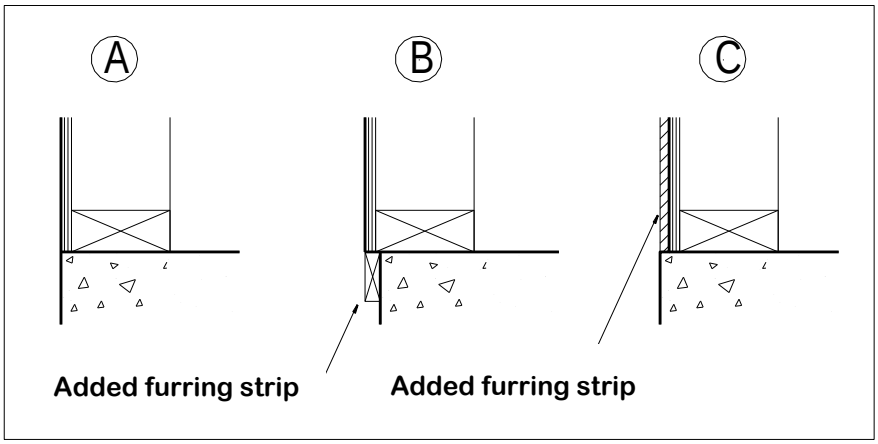
Ensure the rough opening is enlarged to allow a minimum clearance of 1/2" (13 mm) at the head.

Measure the frame and the rough opening to see if the window/door can be installed with the required **clearances: minimum 1/2" (13 mm), maximum 5/8" (16 mm)**.

4.1.3 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 2). 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 2). If the concrete extends past the face of the sheathing (Detail C in Figure 2) 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 4.1.4 *Leaning or uneven walls* on page 24.

Figure 2: Position of wall at concrete floor



4.1.4 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 2: *Position of wall at concrete floor* on page 24.

4.1.5 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.

4.2 Prepare frames for installation

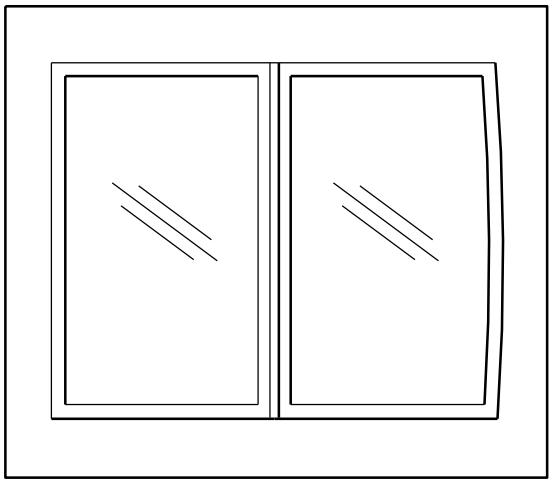
4.2.1 Remove wooden shipping blocks

Remove the wooden shipping blocks that are attached to the flange (flanged windows/doors only).

4.2.2 Straighten bowed frames

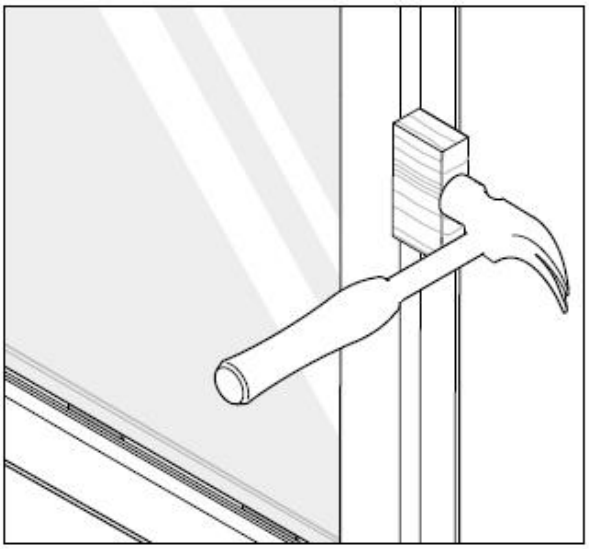
Sometimes a frame member may become bowed by actions such as dragging it by the edge of the frame. See Figure 3: *Bowed frame* for an example.

Figure 3: Bowed frame



The frame may be straightened by tapping it back into place with a wooden block and a hammer as shown in Figure 4: *How to straighten a bowed frame* on page 26.

Figure 4: How to straighten a bowed frame



4.2.3 Locate and mark anchor positions around frames

First locate anchors with reference to frame corners and mullions:

- Corner anchors. Locate anchors on both sides of each frame corner at 6" from the corner.
- Mullion anchors. Locate anchors on both sides of each vertical and horizontal mullion at 6" from the mullion centerline.
- Intermediate anchors. Locate 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 that will be indicated on the Innotech shop drawings.

See Figure 5 on page 27 and Figure 6 on page 27 for diagrams showing anchor spacing.

Figure 5: Typical anchor spacing—composite (one piece) frames

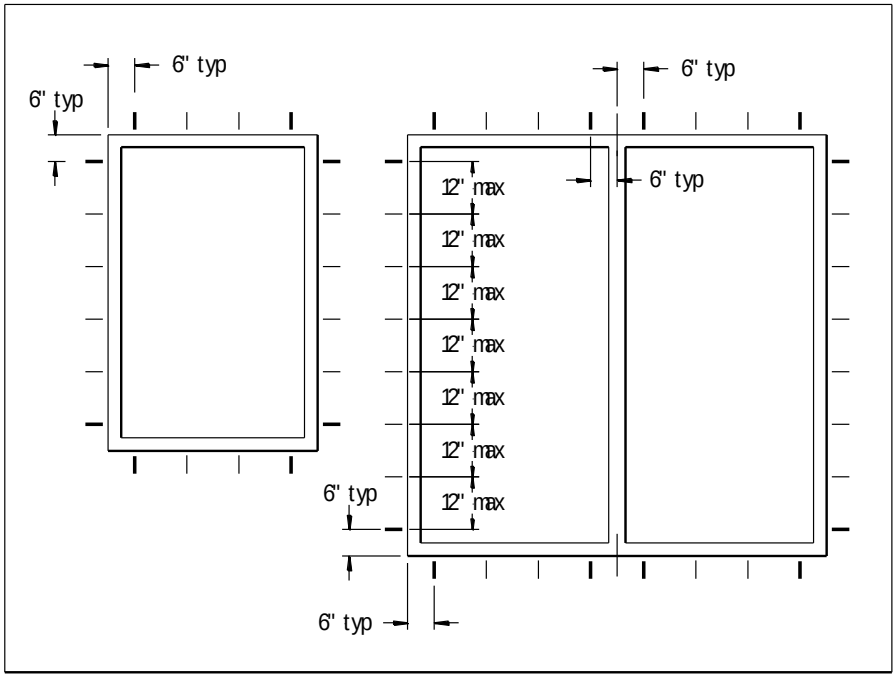
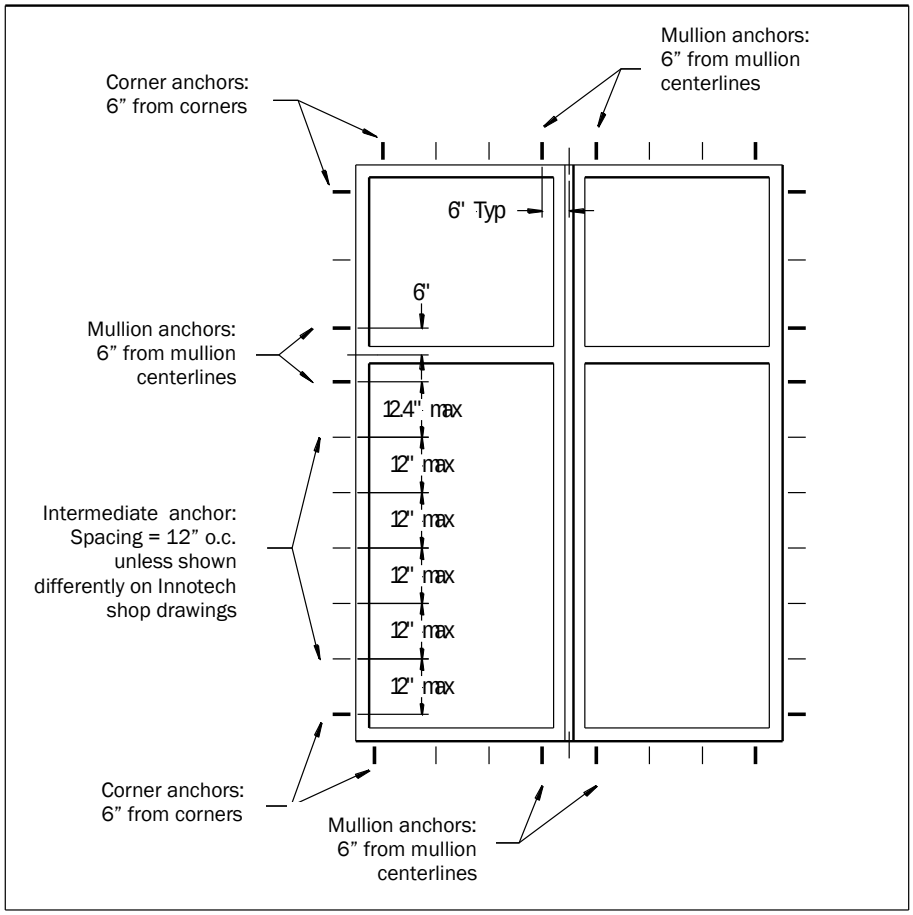


Figure 6: Typical anchor spacing—combination (coupled) frames



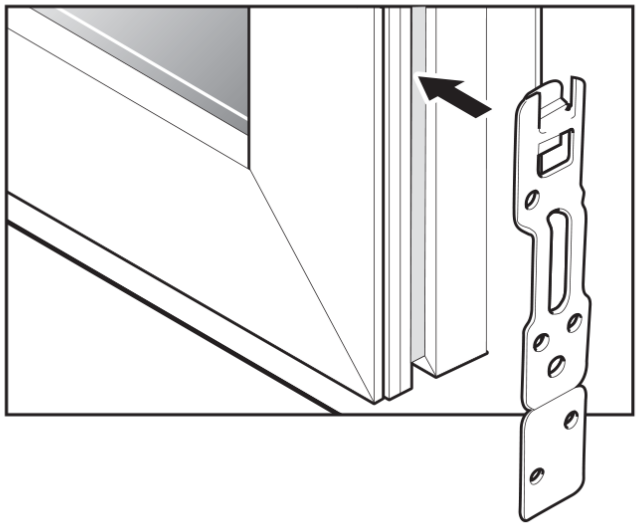
4.2.4 Install anchors

Install anchors at spacing shown in Figure 5 and Figure 6 or as indicated on Innotech shop drawings. If no shop drawings are provided, follow anchor spacing shown.

For additional instructions on how to install the strap anchors for both products with or without a flange, see the *Strap Anchor Installation Instructions* available on our website or contact your Innotech representative.

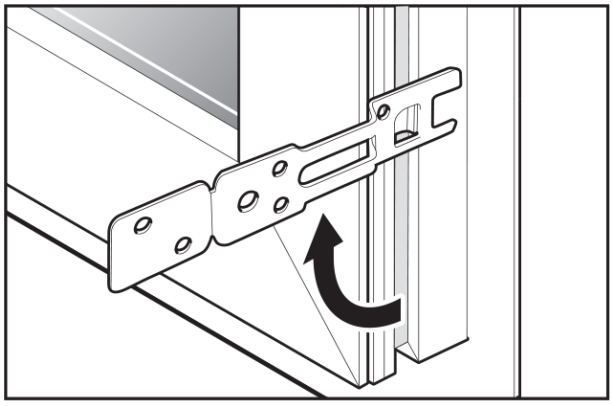
4.2.4.1 Place the anchor into the groove.

With the indoor side of the window/door facing you, place the prongs of the anchor into the wide groove on the edge of the frame. The picture shows the anchor placed on the right side of the window/door.



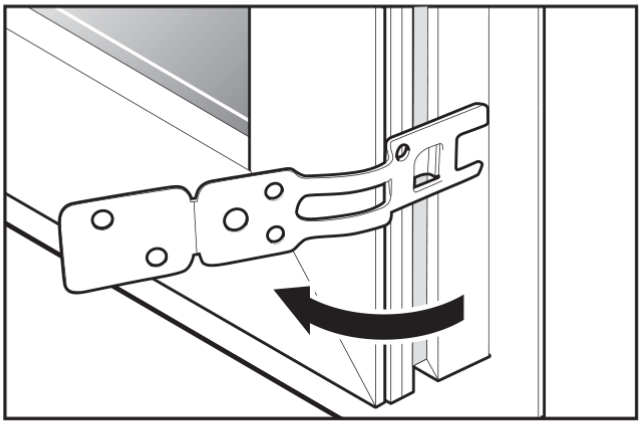
4.2.4.2 Turn the anchor clockwise 90˚

Place the anchor in the groove so it can be turned clockwise. You cannot turn the anchors counter-clockwise.



4.2.4.3 Bend the anchor 45˚ towards the center of the window/door.

Once the strap anchors are installed around the perimeter of the frame, gently bend each anchor towards the centre of the frame. DO NOT over-bend the anchors; this may cause problems with the installation later.



4.3 Put frames in openings

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

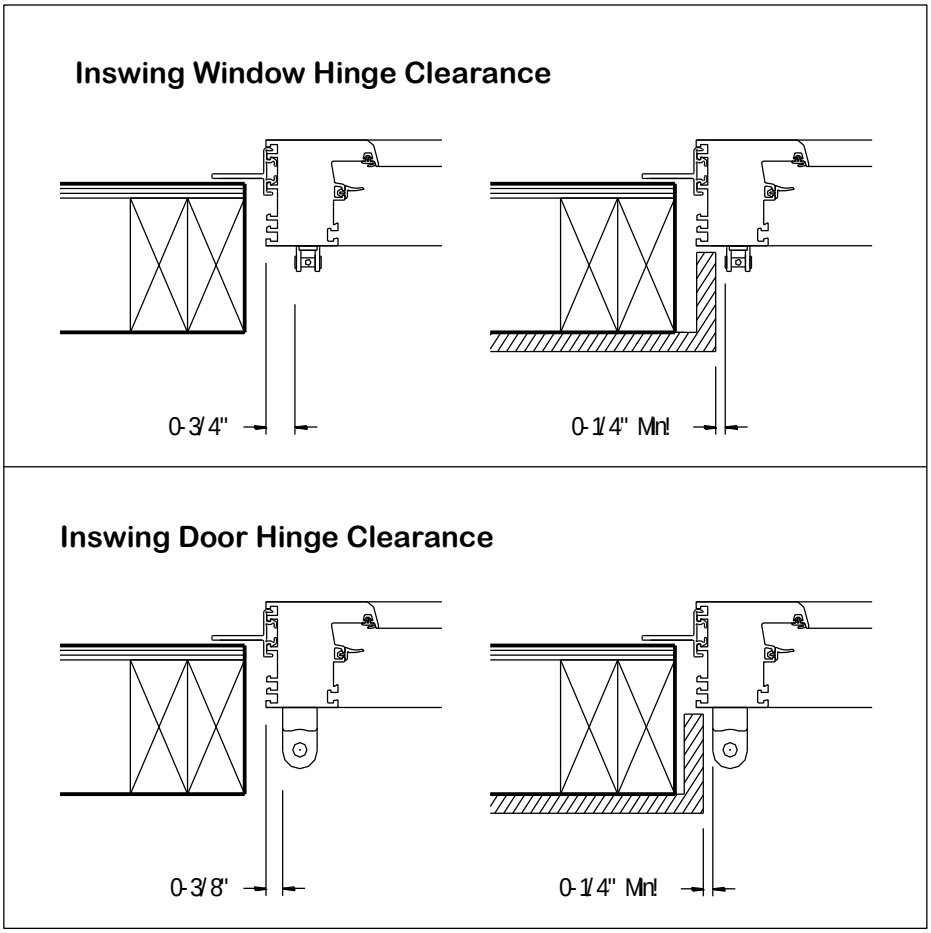
4.3.1 Fixed windows

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

4.3.2 Frames with hinges

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". See Figure 7.

Figure 7: Minimum clearance between hinge and finish at jambs



4.4 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.

4.4.1 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 bend frames by forcing shims into place.**

Adjust the height of the shims to obtain a level sill, ensuring you have a **minimum 1/2" (13 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/door in the rough opening.

4.4.2 Place shims at jambs of operable windows and doors

Place lateral support shims at jambs where 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 and door sashes.

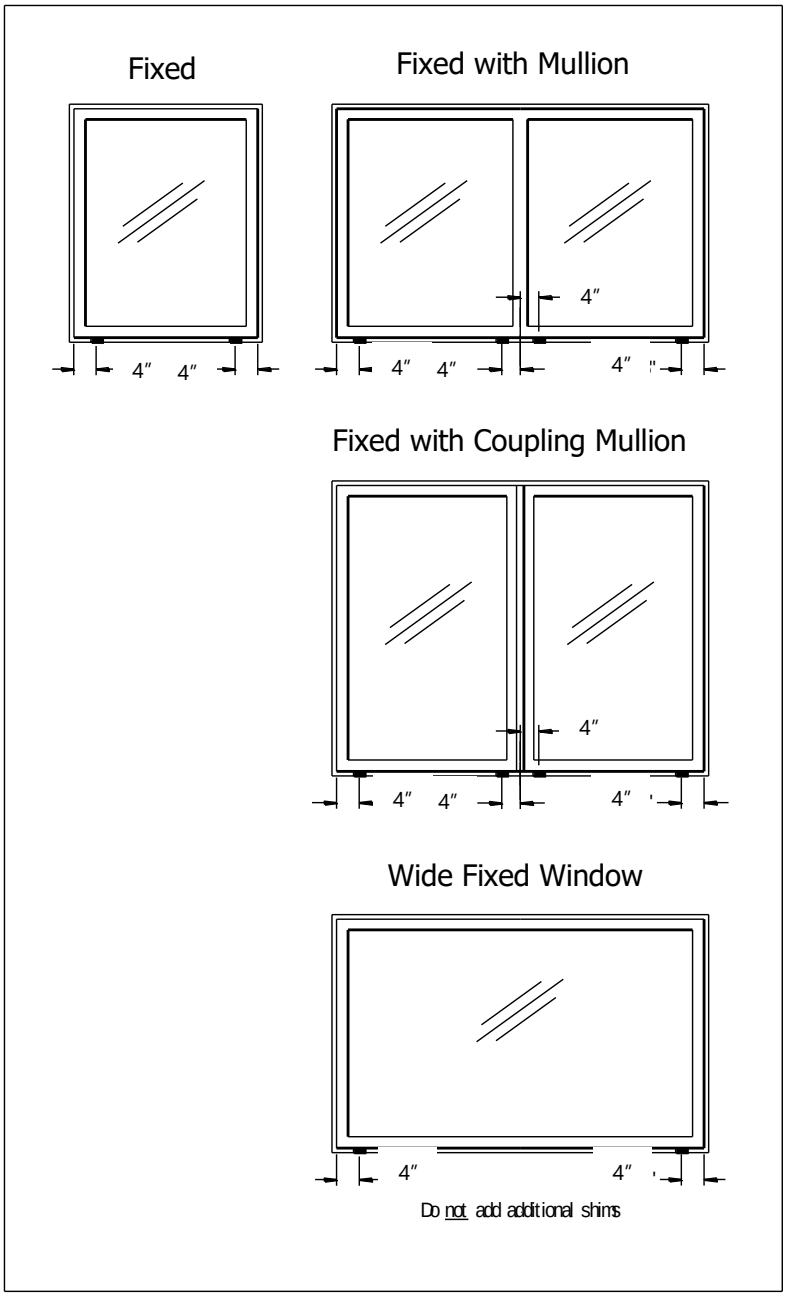
Jamb shims are also required at the midpoints of door jambs for greater security against break-in and to prevent operational problems due to building settlement.

4.4.3 Shim placement at Fixed windows

At Fixed (non-operable) windows place shims 4 inches in from each corner and 4 inches 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 8.

Figure 8: Shim Placement for Fixed Windows



TIP

You will not be able to place the jamb shims until you are ready to anchor the frames as described under heading 4.5.4 *Fasten anchors to rough opening* on page 38.

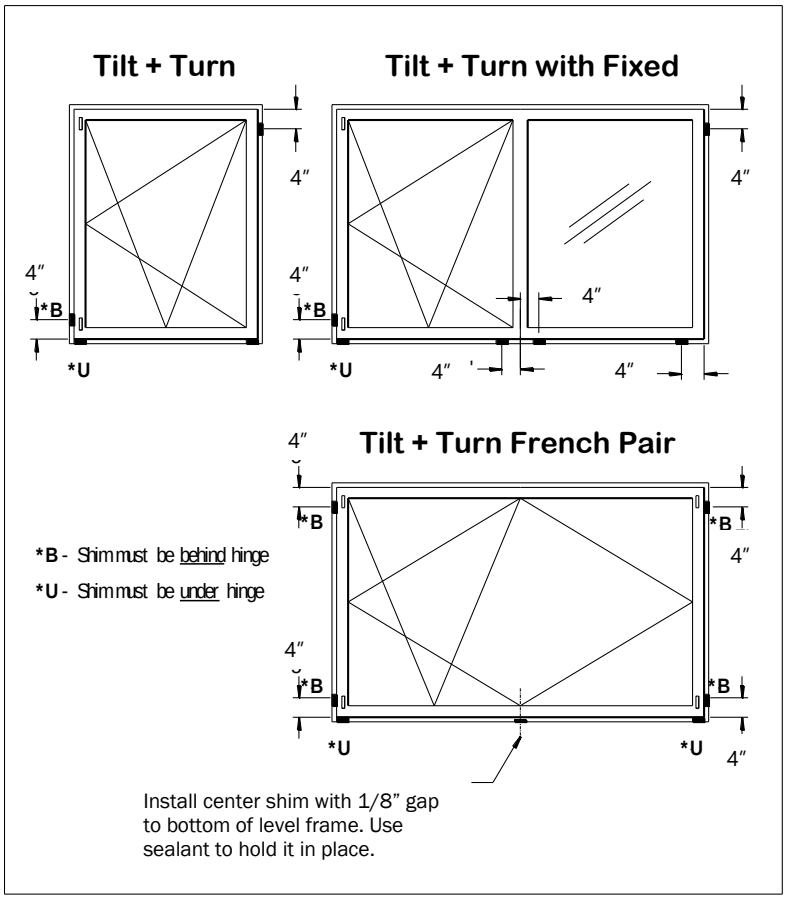
Use a dab of sealant to glue the jamb shims in place so they don't fall down later.

4.4.4 Shim placement at Tilt + Turn operable 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 where 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 9.

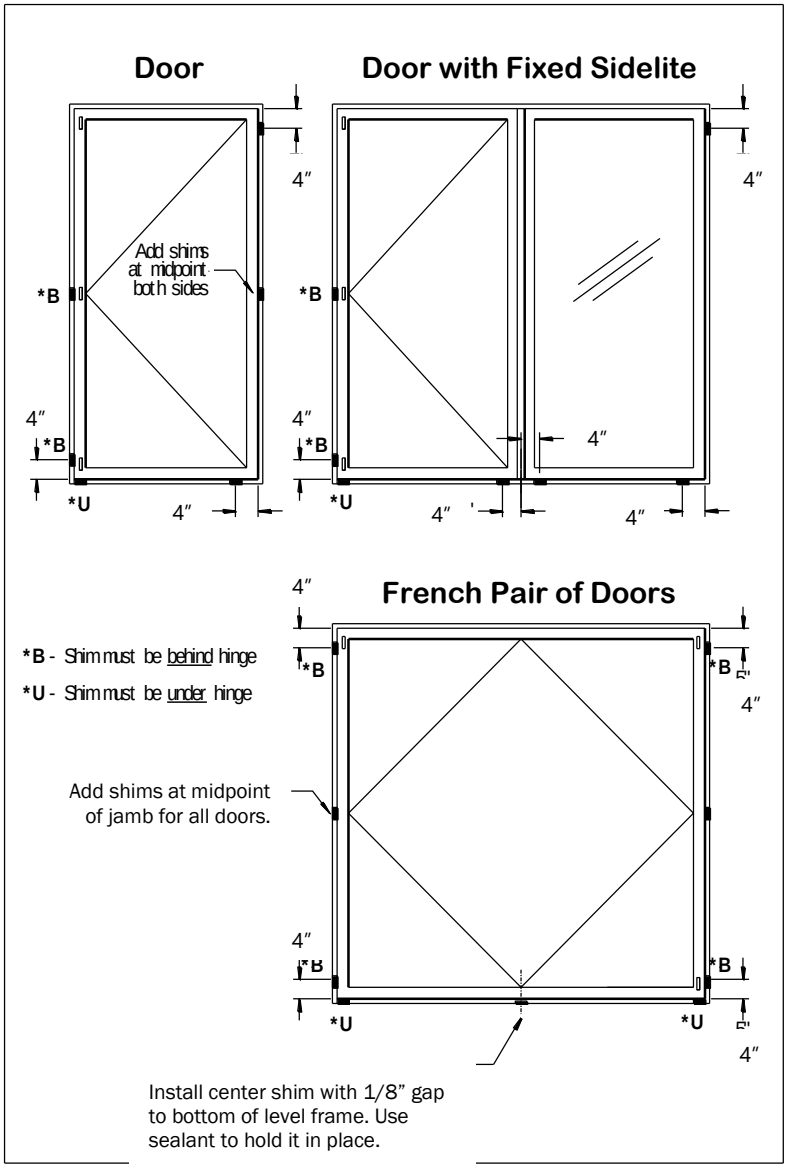
Figure 9: Shim Placement for Tilt + Turn Windows



4.4.5 Shim placement at 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 where 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 10.

Figure 10: Shim Placement at Doors



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 4 so you understand the whole installation process.

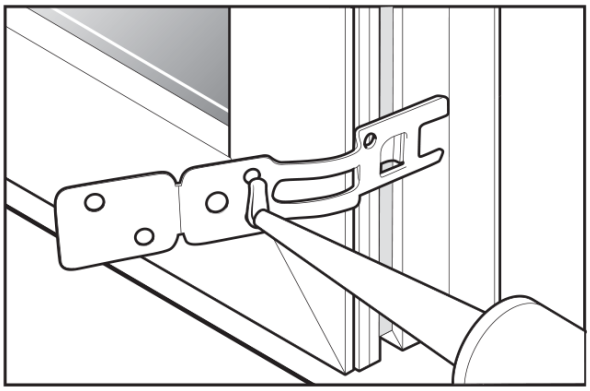
After you have loosely fastened the corner anchors to hold the frame plumb, and after you have shimmed the frame level, hang the sashes and close them. Use shims and anchors to make the frame square. The frame will be square when the meeting rails of the sashes are in line with one another at the head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

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

4.5 Seal and fasten anchors

4.5.1 Apply sealant to anchors

Apply sealant to the side of the anchor that will lie flat against the rough opening.



Apply sealant generously on the side of the anchor facing you, near to the edge where it bends. Ensure the sealant reaches 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 4.8 *Apply sealant for Second Plane of Protection* on page 42. If you use a different sealant it must be compatible with the sealant used for the second plane of protection.

> Note. This step is required to create an air and water barrier between the interior edge of the window/door frame and the rough opening to create a **second plane of protection**. For more information see heading 1.7 *Second Plane of Protection* on page 5.

4.5.2 Bend anchors towards window/door, then back to lie flat against the rough opening

WARNING!

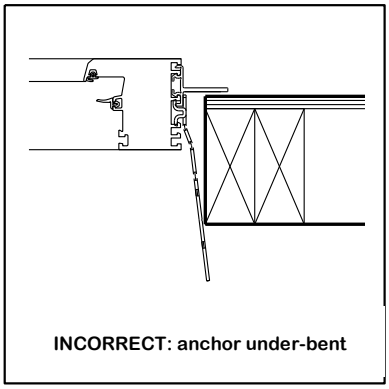
Under-bending or over-bending the anchors can result in deformed or twisted frames. Frames damaged in this way are not covered under warranty.

The anchors are designed to allow you to anchor the window/door securely for different gap widths. Adjusting the anchor to suit the gap is a two-step process: first you pre-bend the anchor towards the window/door, and then back against the side of the rough opening. **Your objective is to have the anchor lie flat against the side of the rough opening before you screw it in place.**

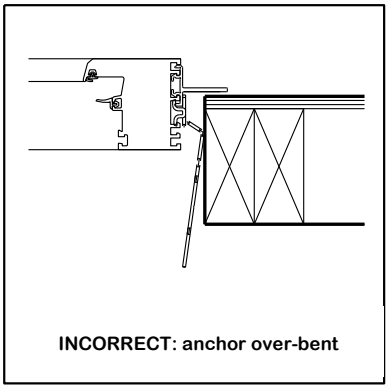
For narrower gaps you need to pre-bend the anchor less. For wider gaps you need to pre-bend the anchor more.

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,

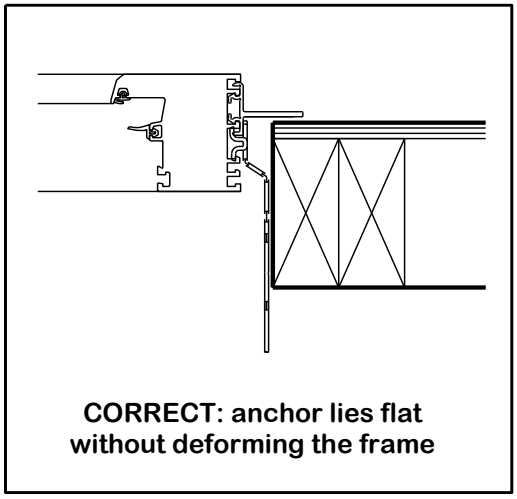
more than before. You will soon get a feel for how much you need to pre-bend the anchors for different sizes of gaps. **Take a few minutes to practice how much or how little you need to bend the anchor towards the window/door in order to have it flat against the rough opening when you bend it back.**



INCORRECT: anchor under-bent



INCORRECT: anchor over-bent



CORRECT: anchor lies flat without deforming the frame

To prevent wall finishing and window operation problems later, all the anchors must lie flat against the sides of the opening before they are screwed to the wall. If you don't bend the anchors to lie flat against the opening you will cause the frame to twist when you screw them in place.

TIP

Do not fasten the anchors in sequence. Start with the corners fastened loosely.

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

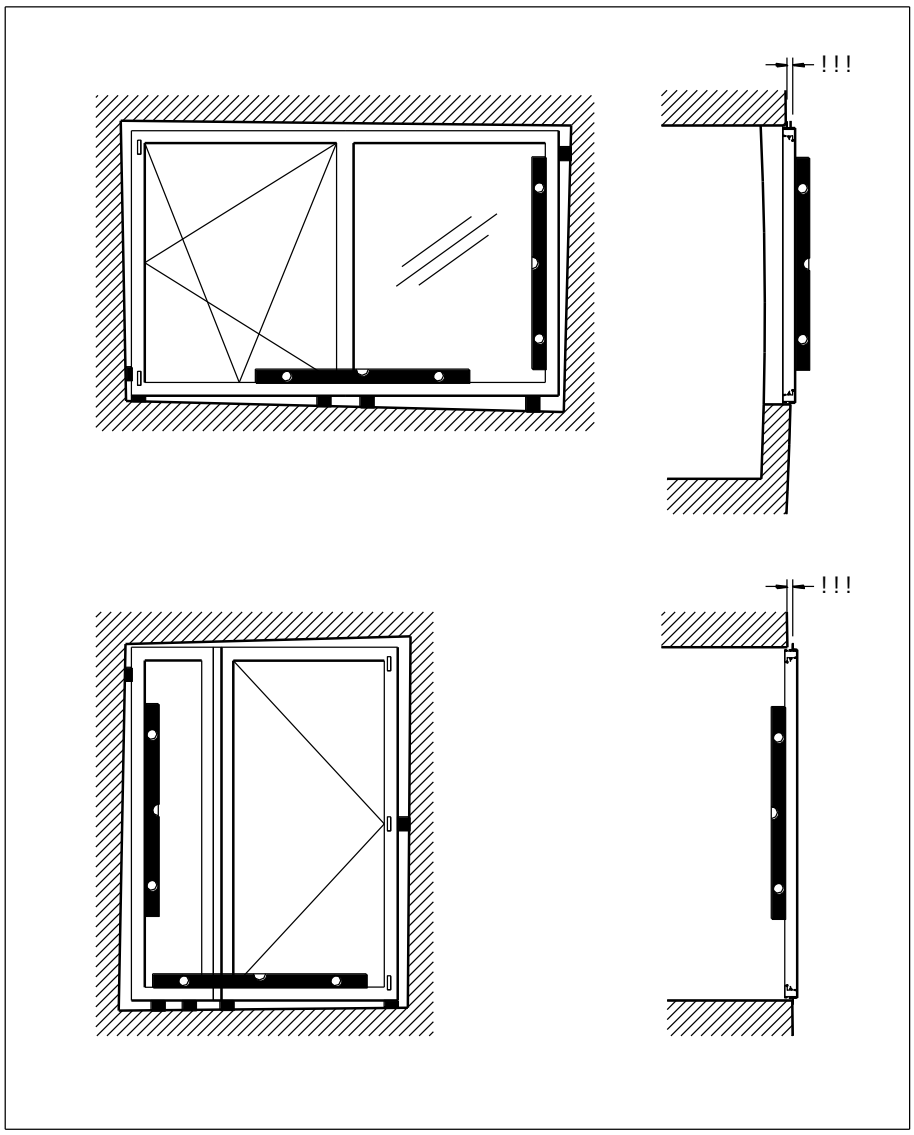
Finally, fasten intermediate anchors. If you alternate from side to side, top to bottom, you are less likely to deform or shift the position of the frame.

You can make minor adjustments to the frame position as you work using a pry bar between the frame and the rough opening.

4.5.3 Make sure frame is PLUMB, LEVEL AND SQUARE

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

Figure 11: Examples of frames installed to be PLUMB, LEVEL and SQUARE



4.5.4 Fasten anchors to rough opening

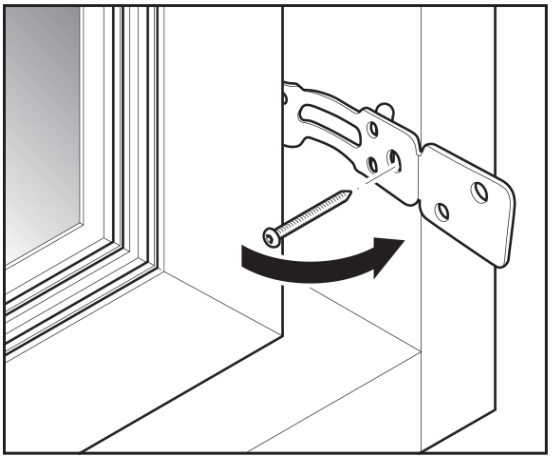
TIP

Start by fastening the corner anchors, then the mullion anchors (or anchors at midpoints of the frame if there are no mullions). Take care not to twist or deform the frame with the midpoint anchors.

Install jamb support shims as you go.

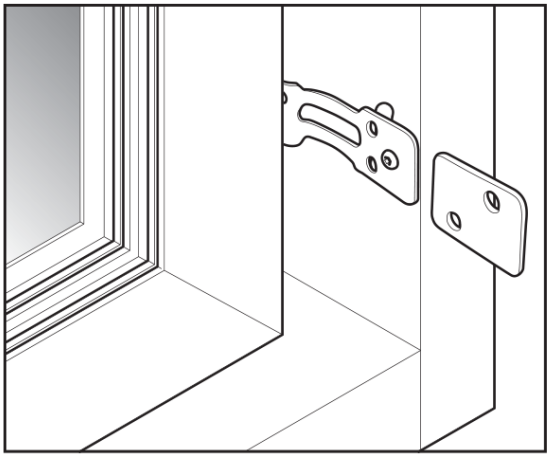
Then fasten the intermediate anchors.

Place the specified fasteners into the hole NEAREST TO THE WINDOW/DOOR FRAME to fasten the anchor to the rough opening.



4.5.5 Remove anchor tabs

In a 2 x 4 wall you will need to bend then break off the tabs where they extend past the inside face of the studs.



4.6 Hang sashes on frames

4.6.1 Tilt + Turn window and door sashes

1. Remove the upper hinge cover and push the hinge pin down as described under heading 3.5.3, *How to remove Tilt + Turn sashes from frames* on page 19.
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 the help of an assistant lift the sash, then set it down onto the lower hinge pin of the frame. Tilt the sash towards the frame carefully and align the top of the sash hinge with the slot in the hinge body on the frame as shown in the illustration.
5. As you tilt the sash into place, the shear 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.

4.6.2 Side hinged door sashes

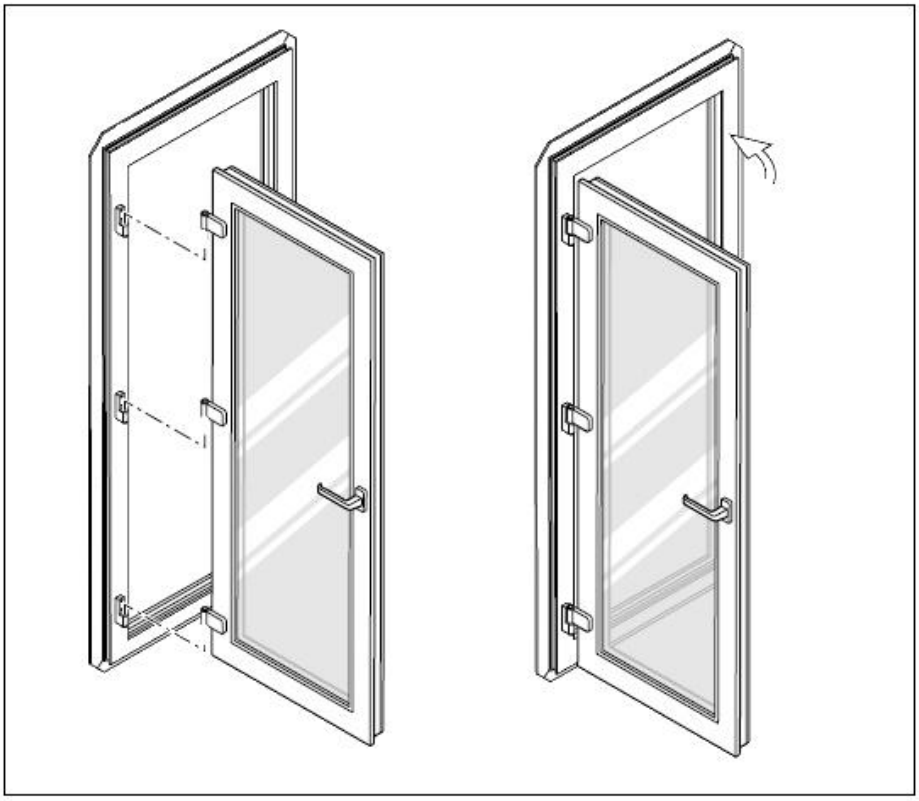
Caution

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.

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 Figure 12: *Hanging side hinged door sashes* on page 40.
4. Close the sash.

Figure 12: Hanging side hinged door sashes



4.7 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 handling or incorrect installation.

4.7.1 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 4.8 *Apply sealant for Second Plane of Protection* on page 42.

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*, Troubleshooting sash operation problems* on page 44.

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

4.7.2 Correct installation defects

4.7.2.1 Correcting twisted frames

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

If the frame is twisted away from the rough opening try to twist it into position. If that is not possible you may need to replace and rebend the anchor so it does not deform the frame.

4.7.2.2 Correcting bowed frames

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

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

4.7.2.3 Correcting out of square sashes

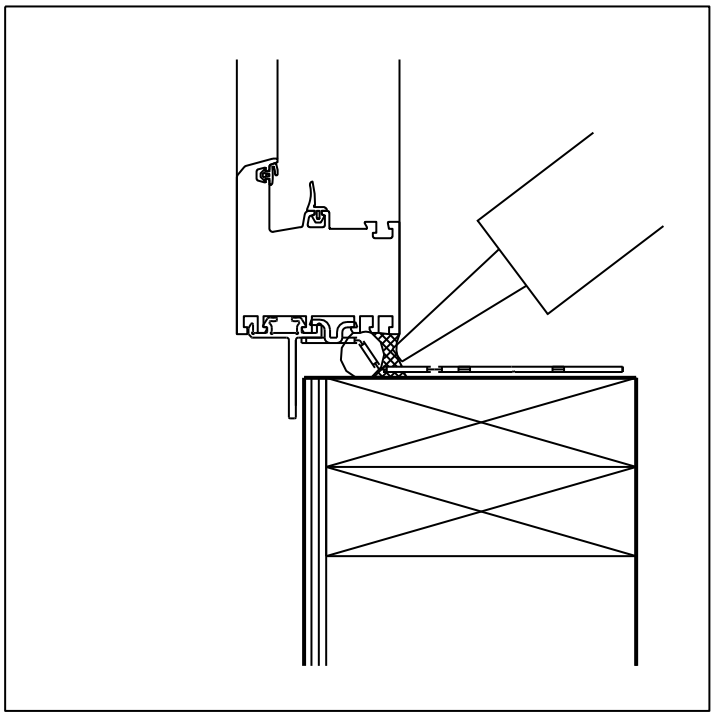
If a sash has become out of square or has become bowed and cannot be straightened as shown in Figure 4: *How to straighten a bowed frame* on page 25, the sash will have to be reglazed and reshimmed.

4.8 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.

The Second Plane of Protection (see heading 1.7 *Second Plane of Protection* on page 5) is a continuous air and water seal **on all four sides of each window and door**. 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 6.1 *Compatible sealants* on page 48.

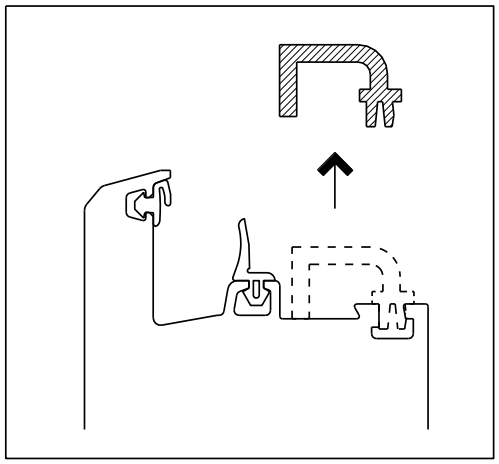
WARNING!

Use of incompatible sealants can result in failure of the second plane of protection and damage to adjacent surfaces.

1. Place backer rod between frame edge and rough opening.
2. Apply continuous bead of sealant between window and door frame edge and rough opening. **Tool sealant joint to obtain maximum adhesion between sealant and contact surfaces.**
3. Make sure **sealant is continuous around strap anchors** and with sealant previously applied under strap anchors.

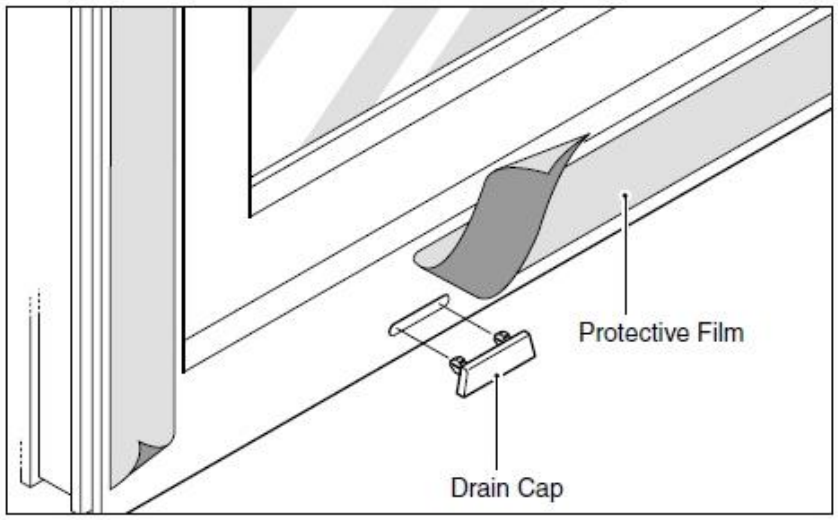
4.9 Remove sash spacer shims

Open each window and door sash and remove the red spacer shims from all sides of the opening.



4.10 Remove protective tapes, install wind caps

Remove protective tape from frames and install wind caps to drain slots on the exterior of all windows and doors.



5 Troubleshooting sash operation problems

Operating problems include sashes binding in one or more places, sashes that cannot be closed or locked, and excessive air leakage.

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

5.1 Diagnosing the cause of operating problems

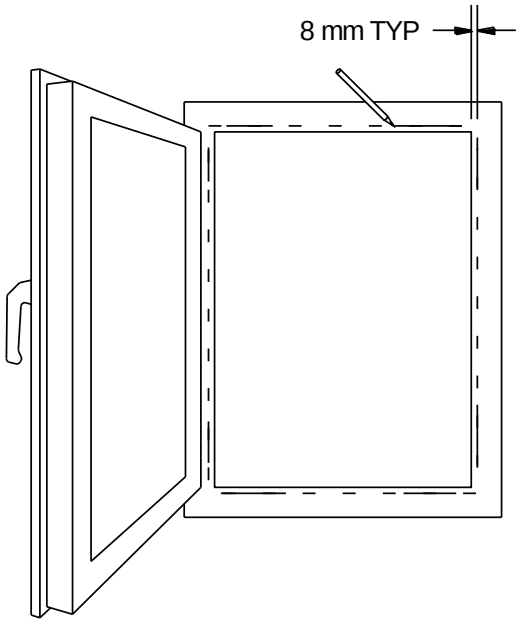
Do not make any assumptions about the cause of the problem. A common mistake is to start adjusting hardware before you have diagnosed the problem. This can add to existing problems and make them harder to correct.

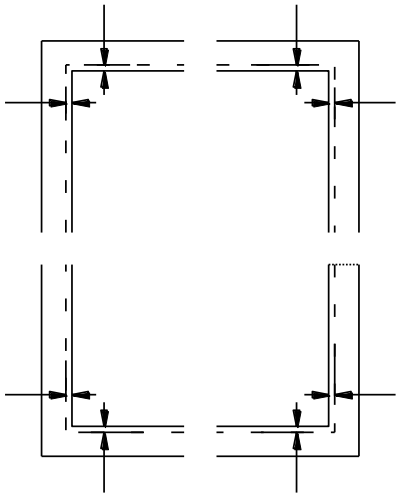
Follow all the troubleshooting steps before making any hardware adjustments. Use the checklist to determine whether the operating problem can be corrected by adjusting the hardware, the frame members, or the sash.

5.1.1 Sash overlap

Innotech windows and doors are designed for a **6.5–8 mm (1/4"–5/16")** overlap of sash to frame. Trace outline of sash corners onto frame with a pencil.

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



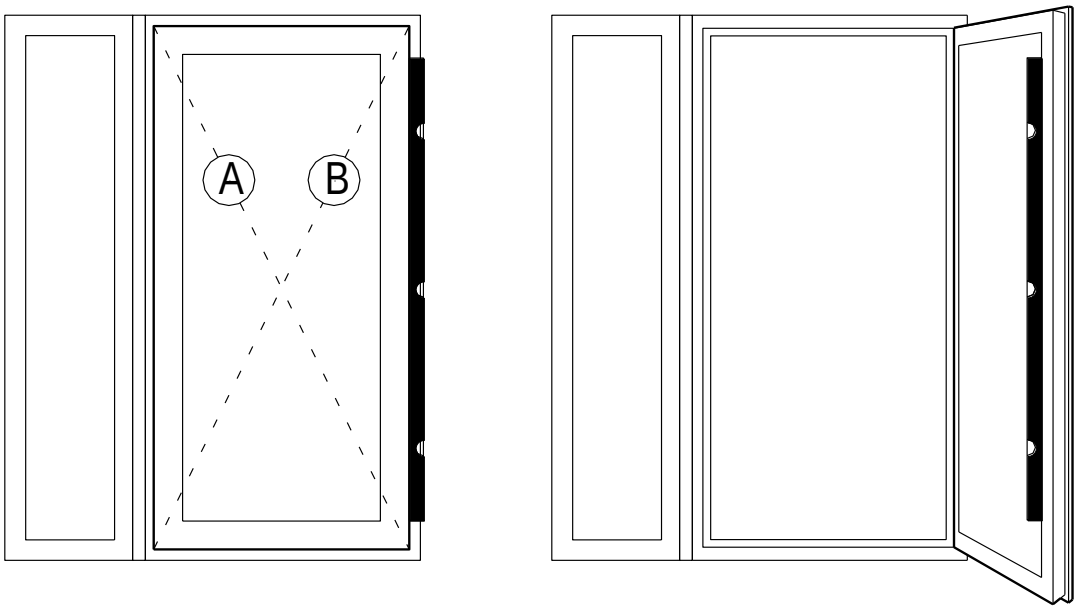


5.1.2 Sash square, straightness or bow

Determine if sash is square by measuring diagonals. An out of square sash can cause operating problems.

Use a 6 foot straight edge to determine if the vertical edges of the sash are straight when you are facing it. If edges are bowed, hardware may not 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.

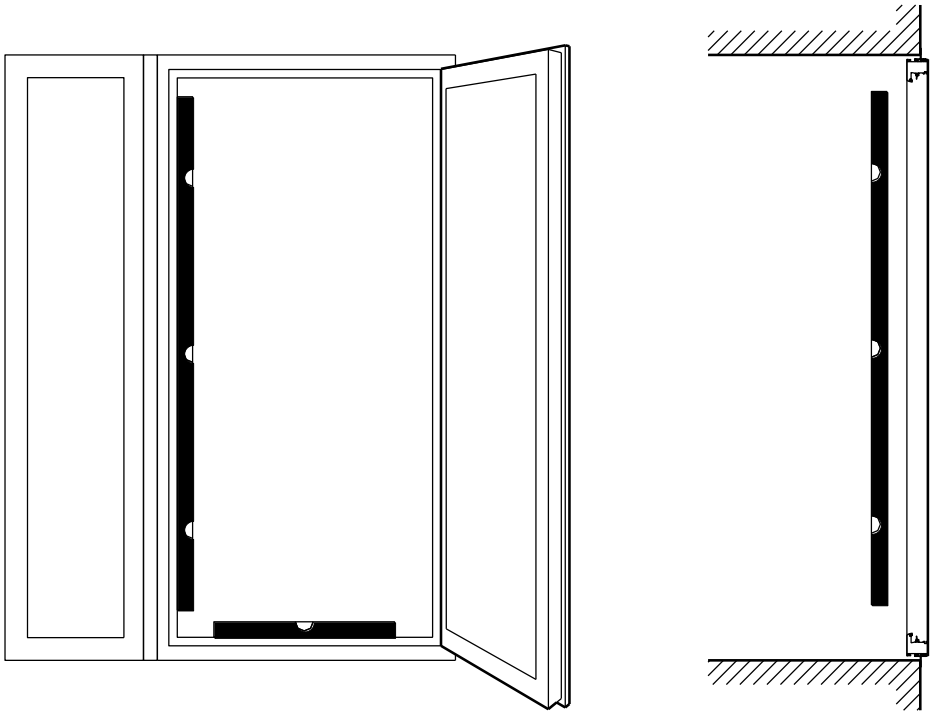


5.1.3 Frame plumb, level, square and bow

Use a 6 foot 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 6 foot 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 6

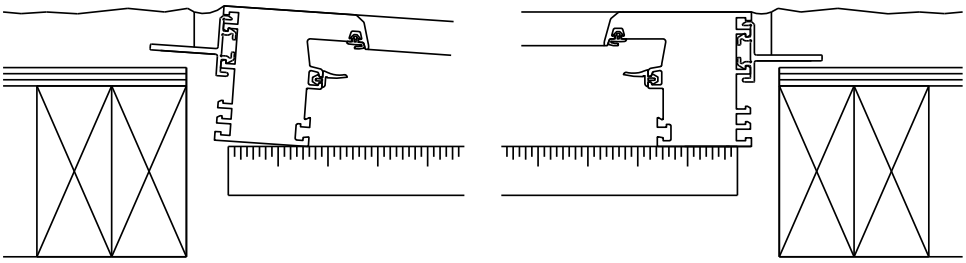
foot straight edge on the face of the frame to determine if the top, middle and bottom are in line or bowed towards or away from the sash.



5.1.4 Twisted frames

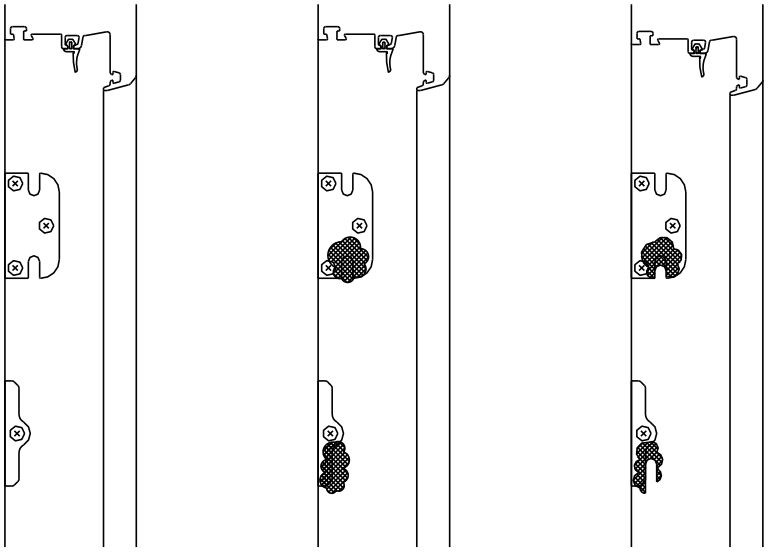
Incorrect bending of strap anchors can twist the frame, resulting in locking points that bind or don't engage. This is an installation problem that cannot be easily corrected after finishes are installed.

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



5.1.5 Locking points that don't engage

It can be difficult to know whether locking points are engaged properly, especially on the hinge side of a sash. Apply putty to the slots where locking points are supposed to engage, close the sash, and then operate handle. Open the sash to see how far the keepers have traveled.



5.2 Correcting frame and sash problems

If frames are not plumb, level, square and straight, the frame installation must be corrected as described under heading 4.7.2 *Correct installation defects* on page 41.

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

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.

Contact your Innotech representative for information about hardware adjustment and reglazing.

6 Reference

6.1 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 and Laminated (Foil) surfaces	**Painted surfaces**
Dow 795 Silicone	Very good	Very good
Tremco Spectrem 2 Silicone	Very good	Very good
Tremco Dymonic FC	Very good	Very good
Henry 925	Very good	Untested
Sikaflex AT	Very good	Untested
Sikaflex 552	Very good	Untested

6.2 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.

Drain 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.

6.3 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/videos to watch important how-to videos and innotech-windows.com/client-care to download these documents or contact our service department at 1.866.854.1122 Ext 4.

For more information on these quality products please contact:

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