



This guide contains procedures for common user serviceable repair tasks found on wood casement and awning windows. If a condition arises that is not covered in this guide, please contact us for professional help. This product guide covers our current JELD-WEN windows as well as our historical products with the following names: Pozzi, Caradco, Wenco and Norco. For help identifying your window model, refer to your product purchase paperwork or call us for additional help.

Do-It-Yourself

Technician



## INTRODUCTION

Casement windows consist of one sash that opens and closes like a door (options also include multiple sashes such as a fixed sash mullered to an operating sash). Awning windows open from the bottom and hinge at the top. An insect screen is mounted on the interior side of operating sashes.

### CONTACT US

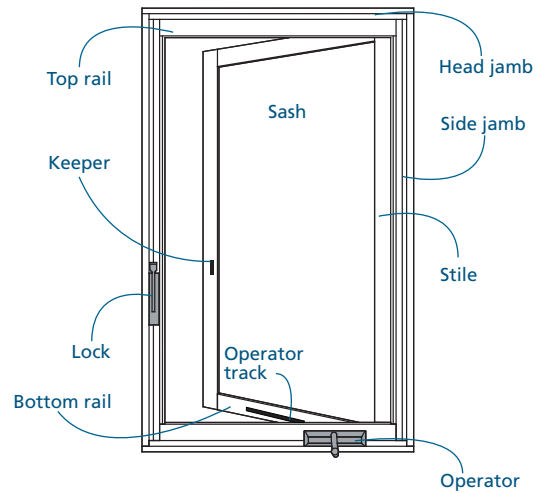
For questions, feel free to contact us by phone or email:

- Phone: 1-(800)-JELD-WEN/1-(800)-535-3936
- Email: customerserviceagents@jeld-wen.com

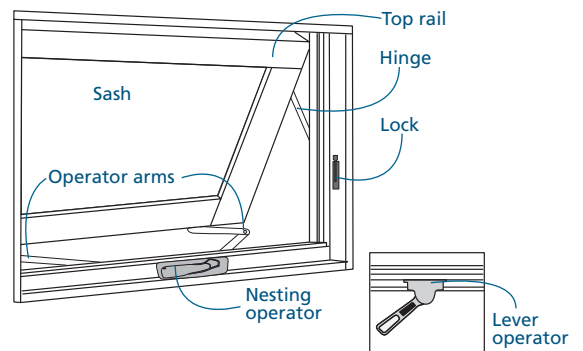
### TABLE OF CONTENTS

|   |    |
|---|----|
| Precautions and Safety .....                  | 2  |
| Needed Materials & Tools.....                 | 2  |
| Basic Operation & Optional Window Parts ..... | 2  |
| Sash Removal & Installation .....             | 3  |
| Hardware Replacement & Adjustment             |    |
| Screw Hole Repair .....                       | 5  |
| Hardware Alignment .....                      | 5  |
| Operator Removal & Installation .....         | 5  |
| Casement Operator Track Replacement .....     | 5  |
| Awning Guide Bar Replacement .....            | 6  |
| Hinge Replacement.....                        | 6  |
| Casement Sash Adjustment .....                | 6  |
| Hinge Adjustment.....                         | 6  |
| Push-Out Casement Adjustment .....            | 7  |
| Single-Point Lock Replacement.....            | 7  |
| Multi-Point Lock Replacement.....             | 8  |
| French Casement Hardware Replacement .....    | 9  |
| Stile/Rail Replacement .....                  | 10 |
| Cladding Replacement.....                     | 10 |
| Proper Window Installation .....              | 11 |
| Troubleshooting Operational Problems .....    | 12 |
| Glossary.....                                 | 14 |

### CASEMENT WINDOW ANATOMY



### AWNING WINDOW ANATOMY



The advice offered herein can be done by a homeowner with some mechanical aptitude. If you are unsure, it is recommended that you hire a trained service provider such as a competent and licensed construction contractor or building professional. JELD-WEN disclaims any and all liability associated with the use and/or provision of these instructions. Any reliance upon the information or advice is at the risk of the party so relying. The information contained herein may be changed from time to time without notification.

## PRECAUTIONS & SAFETY

- Follow all manufacturers' instructions and labels.
- Use proper and safe equipment and precautions if servicing the exterior side of windows above ground level.
- Window insect screens are not security devices and will not prevent children, other people, or pets from falling through.
- Use extra care when driving screws near glass unit to avoid breakage.
- Use sharp tools with care to avoid damage to wood surfaces.
- Use caution when tightening screws to avoid stripping the screw holes.
- Sashes may be very heavy and removal can be awkward and could cause physical injury or product damage; we recommend the help of a second person.
- Beware of oil causing slippery surfaces.

## NEEDED TOOLS & MATERIALS

### NEEDED TOOLS

**Note!** Each tool is not required for every task.

- Tape measure
- Level
- Flat head screwdriver
- Phillips head screwdriver
- Allen wrenches
- Pencil
- Prying tool
- Utility knife
- Hammer
- Power drill with bits
- Saw (for chamfer)
- Rubber mallet
- Stiff, smooth tipped putty knife
- Scissors

### NEEDED MATERIALS

- String
- Tape
- Silicone sealant for stationary sash installation
- Wood block for stile/rail replacement
- Wooden toothpicks or dowels for screw hole repair
- Wood glue
- Fine sandpaper
- Finishing supplies
- Replacement parts

## BASIC OPERATION & OPTIONAL WINDOW PARTS

### LOCK/UNLOCK

The casement/awning window lock is either located on the side jamb opposite the operator handle or on the sill. There are two basic types of locks, the single-point (large windows may have more than one single-point lock), and multi-point. These locks may be cam locks or concealed locks. Single-point locks only lock at one location. Multi-point locks simultaneously lock at multiple points along the jamb. Use the same locking/unlocking procedures for each type except on French casements.

#### Standard Casement/Awning

- To unlock, lift lock latch all the way up.
- To lock, press lock latch all the way down.

#### French Casement

- To unlock, turn locking handle all the way to the left.
- To lock, turn locking handle all the way to the right.

### HANDING

- From the exterior, the hinge handing is determined by the side of the window the hinge is on. When ordering, provide handing information, if necessary.
- Casement windows may have left or right-handed operators.
- If lock is on left (view from the interior), operator is left-handed. If lock is on right, operator is right-handed. A French casement has both a right and a left-handed operator.
- Awning components can also be either right or left handed.

### OPEN/CLOSE

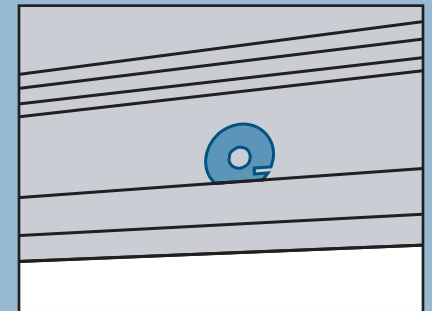
- Left-handed operators open by cranking handle counterclockwise and close by cranking handle clockwise.
- Right-handed operators open by cranking handle clockwise and close by cranking handle counterclockwise.
- Some awning windows have a lever operator. To open window, move lever to the right. To close window, move lever to the left.

### ENERGY PANEL REMOVAL & INSTALLATION (IF APPLICABLE)

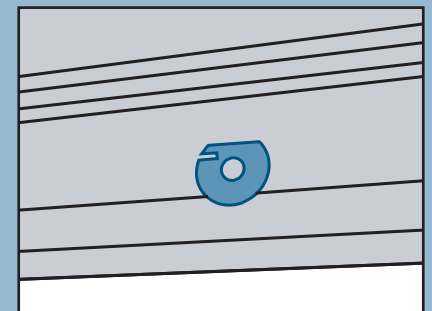
An energy panel is an aluminum-framed single piece of glass designed to mount on the exterior of a window to increase thermal performance. An energy panel can easily be removed for cleaning by turning the panel clips.

If an energy panel clip loosens and won't hold position, the screw hole may be stripped. If so, refer to Screw Hole Repair in "HARDWARE REPLACEMENT."

Energy Panel Open



Energy Panel Closed



SASH REMOVAL & INSTALLATION

**NEW (REPLACEMENT) SASH INSPECTION & PREPARATION**

1. Inspect sash for proper size and type, and for any damage; do not install if damaged.
2. Paint and/or finish new sash upon delivery and let dry completely before installing hardware.
3. Remove hardware (lock, keeper, and handle) from old sash and transfer to new sash.

**Note!** All hardware must be installed on new sash in exact positions as on the old sash. If necessary, measure and mark all hardware positions on new sash. Reuse existing screws or replace with an exact replacement. Incorrect screws can cause damage.

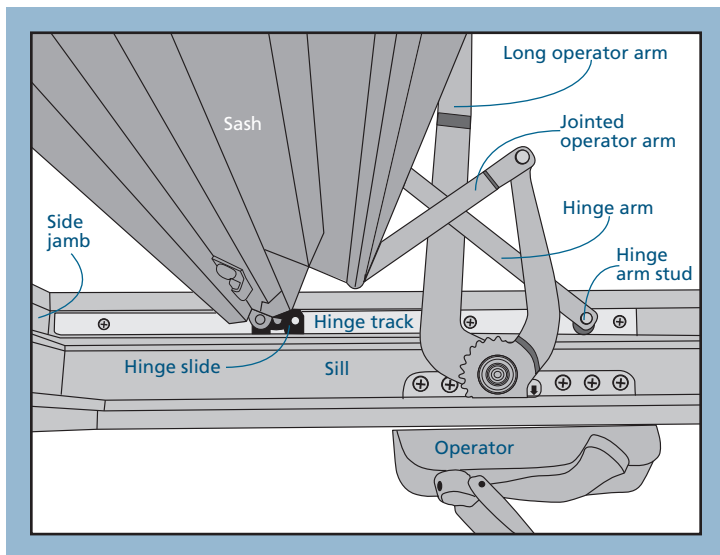
4. Determine hardware locations on new sash; pay close attention to lock and keeper alignment position.
5. Pre-drill screw holes for hardware with 1/16" drill bit.
6. Install hardware (previously removed from old sash) onto new sash.

**CASEMENT SASH**

There are two types of casement sashes; operating and stationary. An operating sash opens from one side on hinges. French casements will have two operating sashes—an active and passive. Handing is determined by the hinge location as viewed from the exterior. A stationary sash is fastened into the window frame and does not open. For replacement of a stationary sash, call us for assistance.

**REMOVAL**

**Note!** Sash removal can be awkward and could cause physical injury or product damage. Use extra caution once the sash is disengaged from the hardware and is unsupported.

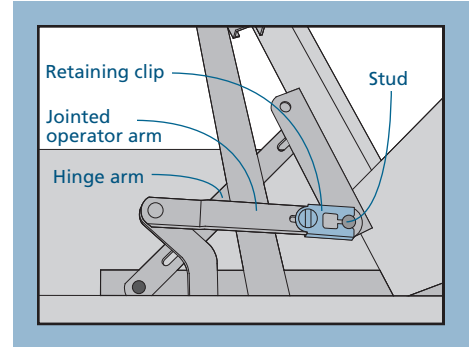


1. Remove insect screen from window (if present).
2. Unlock and open sash at least half way.
3. Disconnect operator from sash as follows:

**Note!** Windows may have a dual-arm operator (shown) or a single-arm operator. To remove a single-arm operator, skip the instructions for Jointed Operator Arm and begin with Long Operator Arm.

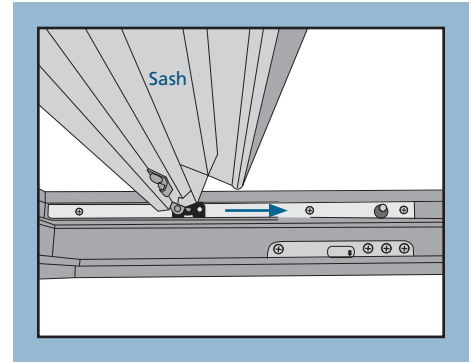
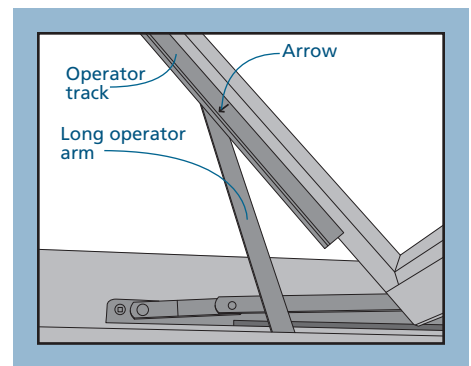
**Jointed Operator Arm**

1. If the jointed operator arm has a retaining clip, pull the clip off of the stud on the sash, if not, begin with step 2.
2. Depress the jointed operator arm at the sash with a flat head screwdriver and remove from the stud.



**Long Operator Arm**

1. Position the end of the long operator arm to line up with the arrow on the operator track.
2. Depress operator arm with a flat head screwdriver and disengage from the sash.
3. Push sash fully open.
4. Crank operator to the closed position to move arms out of the way.
5. Securely grip the sash. A second person may be needed.
6. If the hinge arm has a retaining clip, pull the clip off of the hinge arm stud on the frame. If not, pry hinge arm off of stud with a flat head screwdriver.
7. Pry hinge arm off of the hinge track stud at bottom, then top of window. At this point, hinge arms should be loose. Securely hold the sash to keep it from falling.
8. Slide sash toward the center of window to disengage from both upper and lower hinge tracks.
9. Slightly tilt sash and remove.



SASH REMOVAL & INSTALLATION - CONTINUED

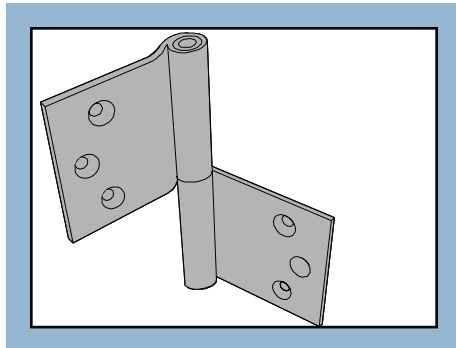
**BUTT-HINGED SASH:**

**REMOVAL**

1. Detach operator arm.
2. Lift sash up to disengage butt hinges and remove.

**INSTALLATION**

1. Firmly grip sash.
2. Lift sash and reengage hinges.
3. Re-attach operator.



**STATIONARY CASEMENT SASH**

Stationary sashes changed over time and may be fastened differently depending on window model. Please contact us for more information if unsure about which type you have.

A stationary sash does not have operating hardware and is fixed in the frame with screws or screws and brackets. These brackets attach to the frame and sash on the interior and are hidden by the sash stops.

There are usually two or more fastener locations on each side jamb and on the sill holding the sash in place. Depending on the size of the window, the fastener locations are 6"-12" from the corners and spaced every 12"-18" in between. Install the new fasteners in the same locations as the old ones.

**REMOVAL**

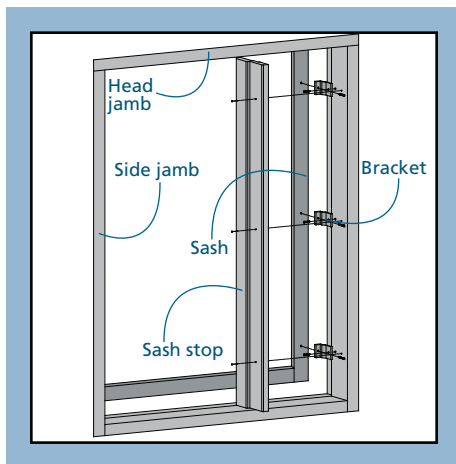
1. With a utility knife, carefully score the interior sash stops at the side jambs and sill where they meet the sash and frame.
2. Gently pry up the sash stops with a putty knife or small pry bar to expose the brackets. Be careful not to damage the wood.

**Note!** For these next steps, once the brackets are removed, the sash will fall if not supported.

3. Remove the screws holding the brackets to the sash from the side jambs and sill (the brackets may be left on the frame).
4. Remove the sash. If stuck, gently tap around the perimeter of the sash to remove it from the frame.

**INSTALLATION**

1. Follow new sash preparation instructions at the beginning of this section.
2. Carefully place the new sash in the frame. If the old sash had setting blocks attached around the perimeter of the sash, remove these and install them on the replacement sash. If no setting blocks are present, take a pry bar and lift up on the bottom of the sash to center it in the opening as it is fastened.
3. Reattach the brackets in the same locations as on the previous sash.
4. Reattach the stops and nail to the frame with new finishing nails.
5. Refinish the stops, as necessary.



**AWNING SASH**

**REMOVAL**

1. Remove insect screen if present and unlock and open sash at least half way.

For scissor operator arms: open keeper lock(s) and then lift operator arms off sash hooks.

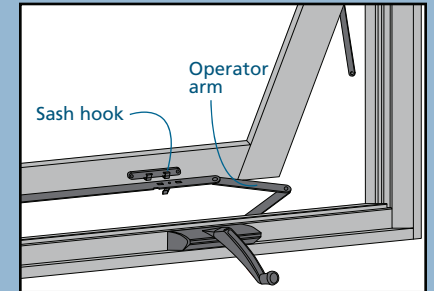
For guide bar operator arms:

1. Pull back retainer clips on operator arms.
2. Lift operator arms from shoe studs. The shoes are not fixed to the guide bar and will fall out if the sash tilts to the side.
3. Crank operator arms to closed position.
4. Disengage hinges from both sides as follows:
5. Firmly grip sash and pry hinge arm from stud on frame with flat blade screwdriver on both sides.
6. Slide sash down to disengage hinge slides from hinge tracks and remove.

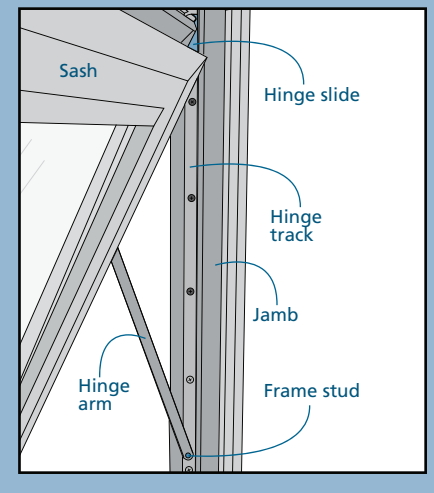
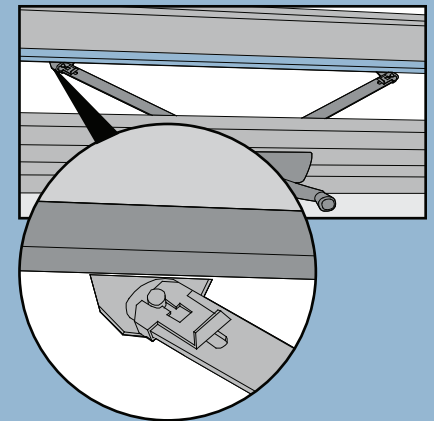
**INSTALLATION**

1. Firmly grip sash.
2. Engage hinge slides into both sides at the same time.
3. Slide sash upward toward the top.
4. Reattach hinge arms to hinge studs.
5. Position operator arm partially open.
6. Attach operator arm to hooks or shoe studs; engage retainer clips and close keeper locks (if applicable).
7. Test for proper operator attachment by cranking the operator open and closed.
8. Replace the insect screen (if present) and verify the lock operates properly.

**Scissor Arm Operator**



**Guide Bar Operator**



## HARDWARE REPLACEMENT & ADJUSTMENT

### SCREW HOLE REPAIR

1. Cut wooden toothpicks or appropriate sized wood dowel to fit screw hole just below wood surface.
2. Fill screw hole with wood glue.
3. Insert toothpicks or dowel; let dry.
4. Fill to surface with wood putty; let dry.
5. Sand smooth and refinish; let dry.
6. Drill new pilot hole.

### HARDWARE ALIGNMENT

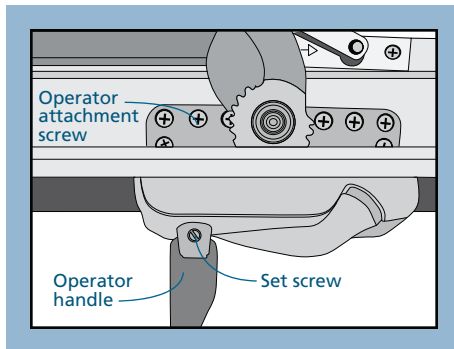
Misalignment can happen if screws have become stripped and cannot be tightened. This alignment will create new screw holes.

1. Remove hardware.
2. Repair screw holes according to the procedure above.
3. Mark new screw holes as follows:
  - Lay hardware in position and hold in place.
  - If replacing a lock, turn latch to lock position to engage keeper.
  - Mark new screw locations through screw holes.
  - Remove hardware and set aside.
4. Drill pilot holes with 1/16" drill bit at new marked screw hole positions no deeper than screw length.
5. Install hardware.
6. Test operation; if not operating properly, call us for assistance.

### OPERATOR REPLACEMENT - REMOVE HANDLE

Not all operators are removable. Call us for recommendations. A lever operator handle is not removable. If you have a lever operator, remove screen, open window 45°, then begin with "REMOVE OPERATOR."

1. Remove insect screen (if present).
2. Open the window half way.
  - If there is a small set screw on the side of the handle, use a small flat head screwdriver to loosen it to allow removal of the handle.

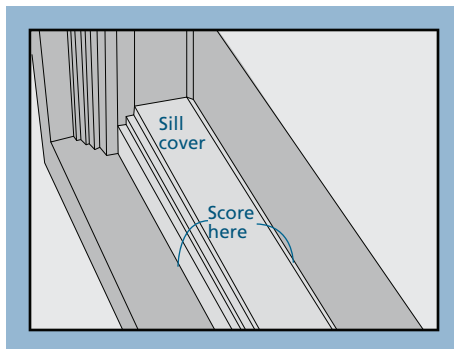


- If there is no set screw, the handle is attached with a spring clip and can be removed simply by pulling it off with a slight tug.
3. Remove the handle.

### OPERATOR REPLACEMENT

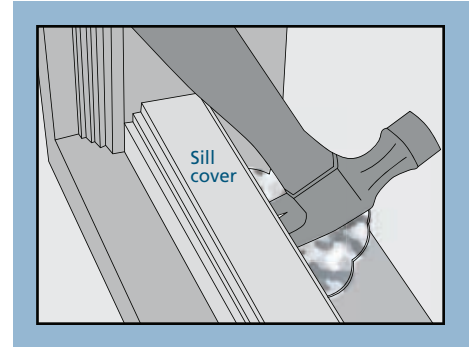
#### REMOVAL

1. Carefully score along bottom and side edges of wood sill cover.
2. Some wood sill covers are secured with screws. If screws are present remove them.



**Note!** To avoid damage, place a cloth between the wood and the prying tool.

3. On exterior side, carefully pry the wood sill cover up and away from sill with large putty knife or claw portion of a hammer.
4. Remove filler blocks (if present) from underneath the sill cover and note their exact location for reinstallation.
5. Detach operator arm(s). Follow the steps in the Sash Removal and Installation section).
6. Remove the screws or nails holding the operator to the sill.
7. Remove the operator to the interior.



#### INSTALLATION

1. Install new operator in same location as the old operator. If securing with screws, do not over-tighten.
2. Reattach operator arm(s).
3. Replace handle and check window operation; if window operates properly, proceed with following steps; if not, remove and reinstall operator.
4. Replace filler blocks to exact locations if previously removed.
5. Replace wood sill cover to original position. Secure into place with original screws or brad nails.
6. Touch up with paint or finish as necessary and allow to dry thoroughly.
7. Replace removable plastic operator cover if present.
8. Replace screen
9. Reattach operator handle and verify operation.

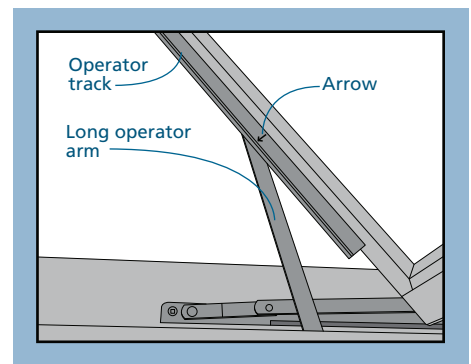
### CASEMENT OPERATOR TRACK REPLACEMENT

#### REMOVAL

1. Open sash at least half way.
2. Detach long operator arm.
3. Locate and remove screws from track and remove.

#### INSTALLATION

1. Align operator track to existing screw holes; replace and tighten screws.
2. Reattach long operator arm.
3. Close and open window to check operation.



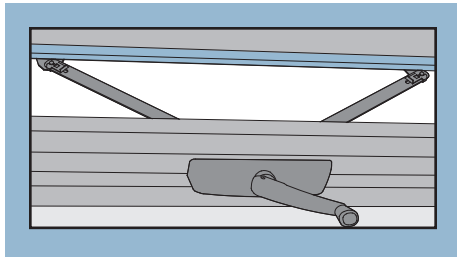


**HARDWARE REPLACEMENT & ADJUSTMENT - CONTINUED**

**AWNING GUIDE BAR REPLACEMENT (IF APPLICABLE)**

**REMOVAL**

1. Remove sash.
2. Detach operator arms as described in sash removal and installation.
3. Locate and remove screws from guide bar with screwdriver and remove.



**INSTALLATION**

1. Align guide bar to existing screw holes; replace and tighten screws.
2. Reinstall sash.
3. Reattach operator arms.
4. Check window operation.

**HINGE REPLACEMENT - ALL WINDOWS**

There are three types of hinges available for casement windows: a standard casement hinge, an egress casement hinge or a butt hinge. An egress hinge allows a casement window to open wide enough to meet emergency exit requirements. Casements with this type of hinge have slots on the hinge arm (unlike regular hinges) and, when open, have little space between the hinged side of the sash and the window frame. When ordering a new hinge, specify egress if needed.

Casement hinges are located at the top and bottom of the sash and allow the window to open and close. Handing is determined by the hinge location as viewed from the exterior. Hinges are either left or right-handed. If a window has left-handed operation, the bottom hinge will be a left-handed hinge, and the top hinge will be a right-handed hinge. For a window with a butt hinge, a left-handed window will have a left-handed egress hinge and a right-handed window will have a right-handed butt hinge.

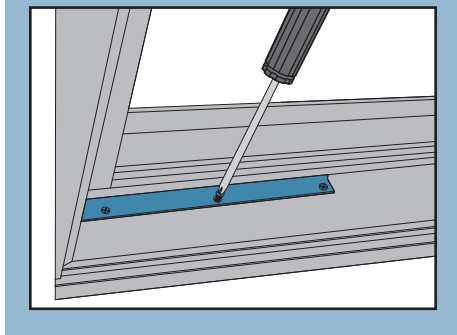
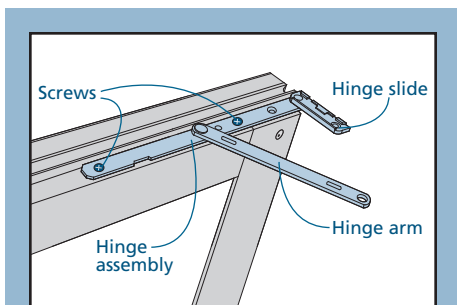
Awning hinges are located on each side.

**Note!** Before beginning replacement, compare replacement hinge to the existing hinge to make sure it is the correct type and handing.

1. Remove sash.
2. Remove old hinge:
  - Fold operator/hinge arm(s) out of the way.

**Note!** Some windows do not have a hinge track. Instead, the hinge is secured directly to the sill and head and uses the cladding as a track.

- Unscrew and remove hinge track.
- Unscrew and remove hinge assembly.



3. Install the hinge track and the new hinge assembly. Do not over tighten screws and strip screw holes.
4. Reinstall sash and check operation.

For butt hinge,

**Note!** When removing hinge, notice position of each piece for reassembly. The flat piece goes on the frame, and the "dented" piece goes on the sash.

1. Remove sash.
2. Unscrew and remove hinge.
3. Install flat hinge on frame and dented hinge on sash in same place as old hinge.
4. Reinstall sash.

**CASEMENT SASH ADJUSTMENT**

**OPERATOR ARM ADJUSTMENT**

If a sash is not opening properly, the operator arm may have disengaged from the sash. A quick fix is to reengage the operator, but if the operator consistently disconnects from the sash, adjustment may be necessary.

Adjust operator arm as follows:

1. Detach long operator arm.
2. Grip arm with both hands, thumbs in the middle, slightly bend outer end up no more than necessary (1/8" max).
3. Reattach long operator arm.
4. Check window operation.

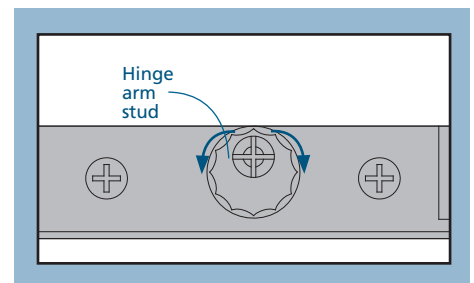
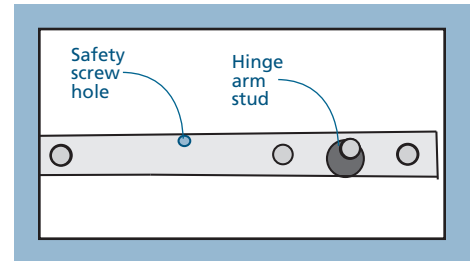
**HINGE ADJUSTMENT**

Hinge adjustment may be necessary if the sash is dragging, does not fit square or flush inside the frame or is not closing or locking properly. Most factory installed hinge tracks are not adjustable. Call our service department for help or to order an adjustable concealed casement hinge track from us or your dealer. To install, remove old hinge tracks at head and sill and replace with concealed casement hinge tracks. Install the #7 x 5/8" flat head screw into the safety screw hole on the top hinge. Once installed, you can adjust the position of the sash slightly in either direction by rotating the position of the hinge stud. Both top and bottom hinge tracks are adjustable, and adjustments are made without removing the sash. There are two types of adjustable hinges. One style will have a phillips head screw that is visible on the top of the hinge arm stud. The other style is adjusted between the hinge arm and the stud with an adjustment tool or a 3/8" wrench.

**IF a phillips head screw is visible:**

**Note!** Make sure safety screw is installed on top hinge.

1. Open window until the two screws on either side of stud are visible.
2. Pry hinge arm off hinge stud with a flat head screwdriver.



**HARDWARE REPLACEMENT & ADJUSTMENT - CONTINUED**

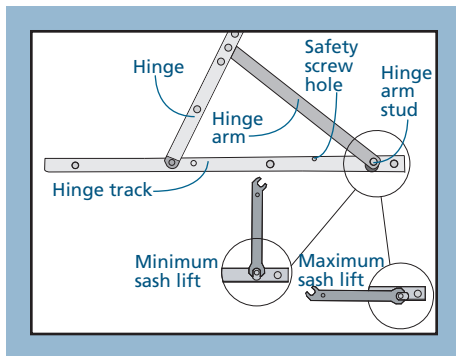
**HINGE ADJUSTMENT - CONTINUED**

- Loosen the two track screws on either side of adjustable stud with three turns.
- Insert a flat head screwdriver between hinge track and sill, lifting the track 1/8" above sill.
- Use a Phillips screwdriver to rotate stud to adjust sash.
- Remove flat head screwdriver.
- Retighten screws on both sides of stud.
- Snap hinge arm back onto adjustable stud.

If a phillips head screw is NOT visible:

Awnings up to 36" in height, may have adjustable hinges. Awnings taller than 36" have non-adjustable hinges. If you have a non-adjustable hinge and your sash needs adjustment, proceed to step.

The hinge arm stud, underneath the hinge arm, can be shifted with either a 3/8" open-end wrench, or an adjustment wrench (available from our service department).



- Open the window completely.
- If using an adjustment wrench, it will fit between the hinge arm and hinge track and is not necessary to remove the hinge arm from the stud.
- If using a 3/8" open-end wrench, gently pry the hinge arm from hinge arm stud with a flat head screwdriver.
- Adjust hinge arm stud:
  - to raise the outer edge of the casement sash, turn the stud away from the lock side of the window (to raise an awning sash, move the stud to a more vertical position)
  - to lower the outer edge of the casement sash, turn the stud toward the lock side of the window (to lower an awning sash, move the stud to a more horizontal position)
- Maximum sash adjustment is reached when the flat sides of the stud are parallel to the hinge track. Turning the stud beyond parallel will not increase sash correction.
- Close and open the sash to test adjustment. If outer edge of the sash needs further lifting or lowering, adjust the opposite hinge in the other direction to achieve a proper fit.

**Casements Only:**

If sash needs additional lift adjustment:

Adjust hinge track stud of top hinge by turning wrench toward lock side of window (opposite direction from lower hinge).

If sash needs additional lowering adjustment:

Adjust hinge track stud of top hinge by turning it away from lock side of window.

If more adjustment is needed:

Install a sash lift button (available through your dealer) as follows:

- Open window fully to expose sash lift button hole in hinge track.
- Insert button into sash lift button hole in hinge track. This will "lift" the sash when closed.
- If sash does not operate properly after trying these adjustments, call us for assistance.

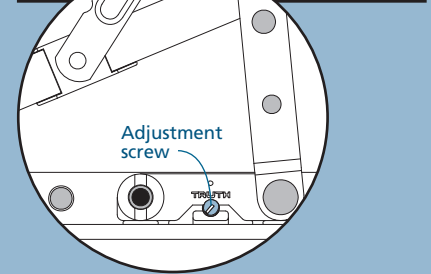
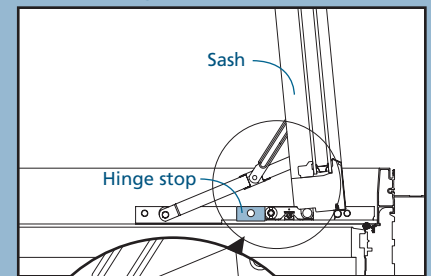
**PUSH-OUT CASEMENT ADJUSTMENT**

Friction may need to be loosened before removing sash and always reset friction after reinstalling.

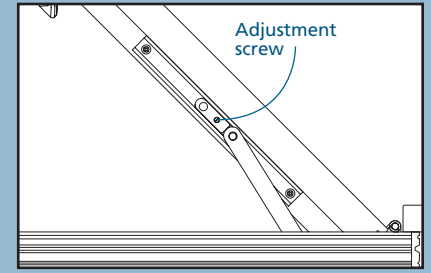
Turn the friction adjustment screw to achieve desired tension clockwise to tighten and increase friction, or counterclockwise to loosen and decrease friction.

If the hinge stop is removed, make sure to reinstall it after installing sash

**Concealed Hinge**



**Butt Hinge**



**SINGLE - POINT LOCK & KEEPER REPLACEMENT**

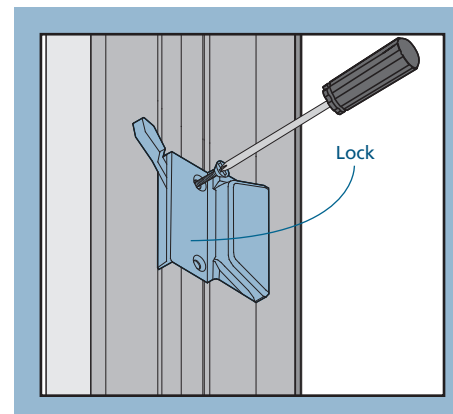
**LOCK REMOVAL**

- Unlock and open window approximately 4".
- Unscrew and remove lock.

**Note!** A 42" or smaller casement window may have one lock. Larger windows may have multiple locks on the same side. Awning windows will have a lock on both sides.

**LOCK INSTALLATION**

- Slide replacement lock into existing groove.
- Replace screws.
- Close and lock window.

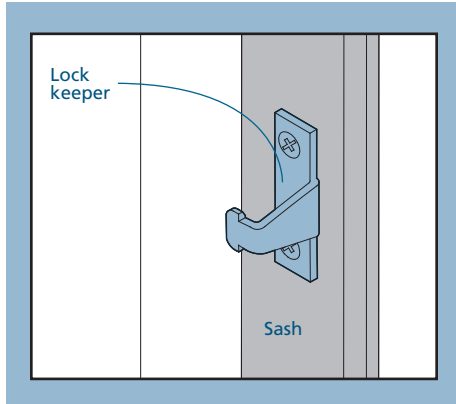


**SINGLE-POINT LOCK & KEEPER REPLACEMENT - CONTINUED**

**KEEPER REPLACEMENT**

Replacement keepers may look different than the original. Always install the new keeper in the same place and facing the same direction as the old keeper.

1. Open sash to expose keepers.
2. Remove screws and keeper.
3. Install new keeper on sash in the same location and direction as the old keeper (open side of keeper should face sash edge).
4. Check lock operation.



**MULTI - POINT LOCK REPLACEMENT - CASEMENT WINDOWS ONLY**

**LOCK REMOVAL**

1. Remove the screen.
2. Open the window half way.
3. Pull off handle and remove lock cover plate and set aside.
4. Score (with utility knife) and remove wood operator cover, head screen stop, and side screen stop on lock side by gently prying with large putty knife.

**Note!** A lock bar has one to three locking points depending on window size.

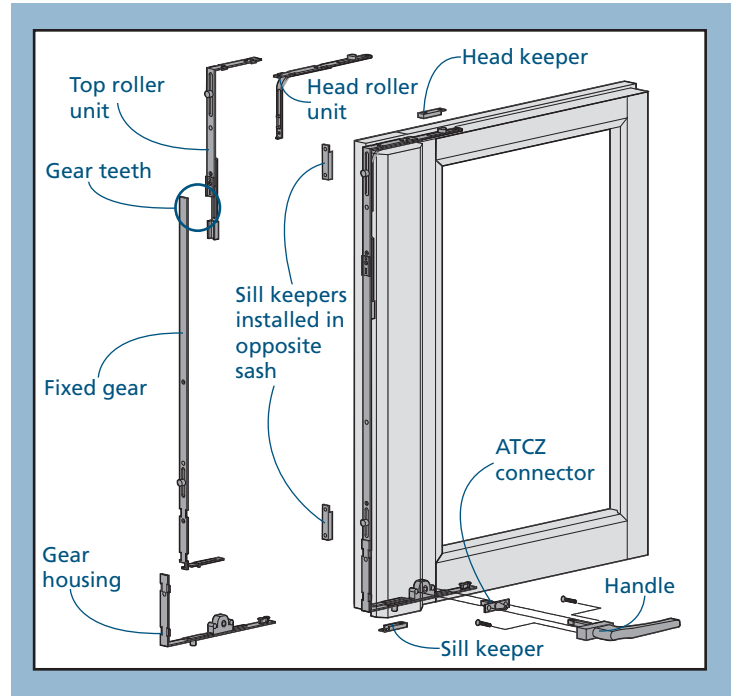
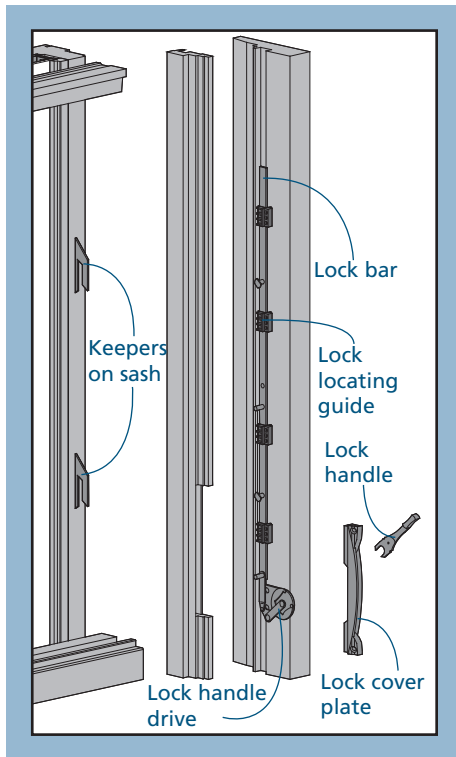
5. Unscrew and remove lock handle drive, locating guides and lock bar.

**LOCK INSTALLATION**

1. Position lock bar and guides on frame in exact previous lock bar position and install screws through guides.
2. Position lock handle drive and install screws.
3. Replace screen stops and wood operator cover trim with existing nails and nail holes (carefully tap into place with hammer).
4. Touch-up with paint or finish if necessary.
5. Replace lock cover plate and reattach handle.
6. Test operation, if not operating properly, call us for assistance.

**KEEPER REPLACEMENT**

1. Remove the screen.
2. Open the window half way.
3. Locate the lock keepers on the sash edge. The number of keepers varies depending on the size of the unit.
4. Unscrew and remove the keeper(s).
5. Replace the new keeper(s) in the exact position as the old one, using the same screws. Do not over tighten screws and strip holes.



**FRENCH CASEMENT MULTI-POINT LOCK REPLACEMENT**

Perform servicing for French casement lock on the exterior.

**REMOVAL**

1. Note exact part locations before disassembly
2. Unlock and open sash to expose lock.
3. Remove parts from bottom to top as follows:
4. Remove handle for easier access to screws.
5. Unscrew and remove gear connector located on sash interior as shown.
6. Unscrew and remove gear housing on side and under sash.
7. Disengage fixed gear teeth from top roller unit gear teeth; remove fixed gear.
8. Unscrew and remove top roller unit.
9. Unscrew and remove head roller unit.

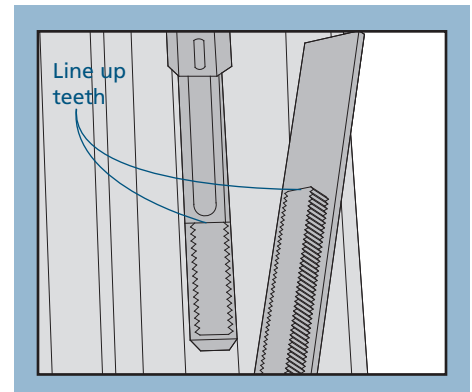
**INSTALLATION**

1. Install parts from top to bottom as follows:
2. Position head roller unit; replace and tighten screws.
3. Position top roller unit; replace and tighten screws.
4. Engage fixed gear teeth into top roller unit gear teeth.

**Note!** Top teeth of fixed gear should line up with top teeth of top roller unit and slide bolts should be in up position.

5. Position gear housing; replace and tighten screws on side and bottom of sash.

**Note!** At this point the bottom slide bolt (locking point that slides into the keeper) should be positioned away from the hinge side of the sash and the top slide bolt should be positioned toward the hinge side of the sash.





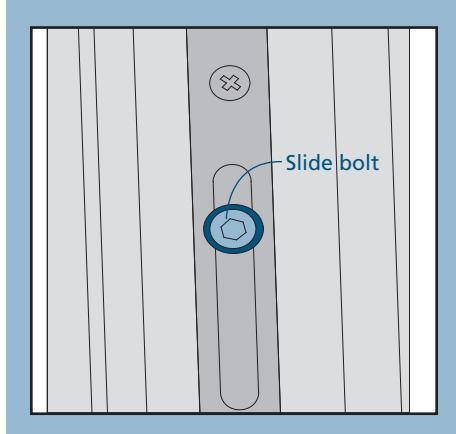
**FRENCH CASEMENT MULTI-POINT LOCK REPLACEMENT -CONTINUED**

6. Position gear connector at bottom interior side of sash; replace and tighten screws.
7. Close window and check lock for proper operation; in case of operational problems, try removing and reinstalling the lock system; if this doesn't work, call our service department for assistance.

**FRENCH CASEMENT LOCK ADJUSTMENT**

Adjustment may be necessary if slide bolts do not line up properly with the keepers. If properly adjusted, the slide bolts will snugly engage the keepers and provide a tight fit when the sash is locked.

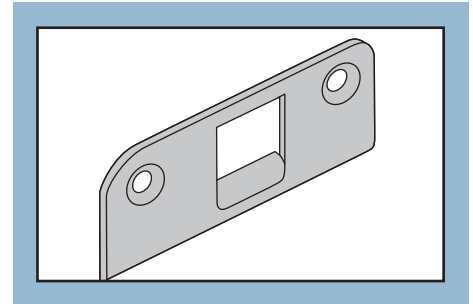
1. With 4mm Allen wrench, turn slide bolt slightly (1/4 turn) clockwise or counterclockwise at each locking point.
2. Test adjustment and readjust if necessary.



**SHOOT BOLT KEEPER REPLACEMENT**

The shoot bolt keeper is located in the header.

1. Remove screws and keeper.
2. Reinstall in same position.

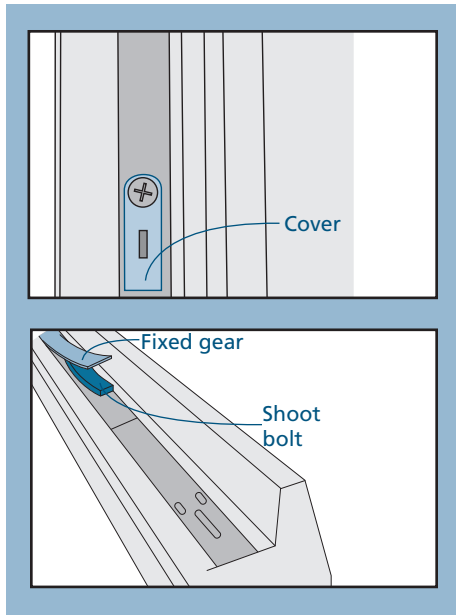


**SHOOT BOLT REPLACEMENT**

Some radius French casement windows have shoot bolts at the top of the locking mechanism that slide into a keeper in the header.

**REMOVAL**

1. Remove screws from shoot bolt and remove cover from bottom screw.
2. Pull fixed gear top away from sash to disengage teeth on fixed gear and shoot bolt.
3. While holding up fixed gear, slide shoot bolt out and remove.



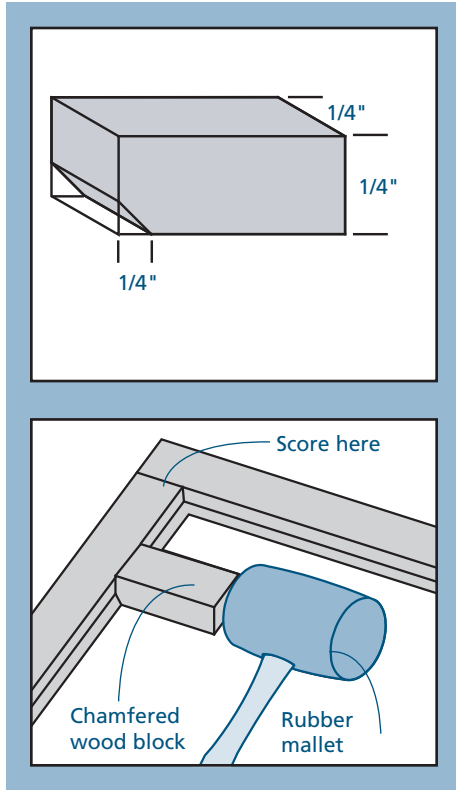
**INSTALLATION**

1. Position shoot bolt with top even with sash top.
2. Slide bottom of shoot bolt under top of fixed gear; engage teeth.
3. Replace cover on bottom screw; replace screws.
4. Replace screws to top of shoot bolt.
5. Close window and check operation; if not operating properly, remove and reinstall; if not successful, call us for assistance.

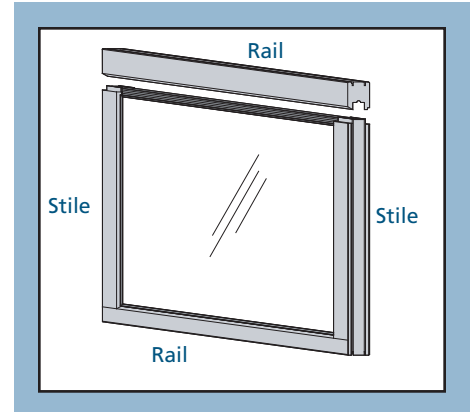
## STILE/RAIL REPLACEMENT

Stiles or rails may be replaced on boot-glazed windows only.

1. Prepare wood block with chamfer.
2. Remove sash.
3. Score painted seams between stiles and rails for clean break to avoid splintering.
4. Remove screws from sash corners. Set aside for reassembly. Remove hinges OK
5. Loosen stiles and rails by tapping with rubber mallet and chamfered wood block (lay chamfered portion over boot).
6. Completely remove stiles and rails from the glass with hands or tap with mallet.



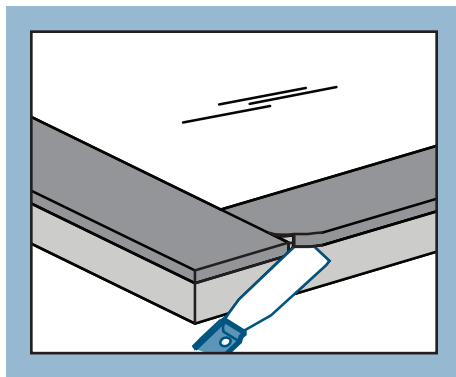
7. Prepare new stile/rail by drilling any necessary screw holes with 3/32" drill bit 1/4" shallower than screw lengths for screws and/or hardware (locate new screw locations by comparison to old sash), and transfer any hardware.
8. Reassemble sash with new stiles/rails. With the wood block, tuck the boot gasket around the interior and exterior tight against the stiles and rails.
9. Apply finish/paint and let completely dry before replacing sash.
10. Transfer hardware if needed.
11. Reinstall sash.



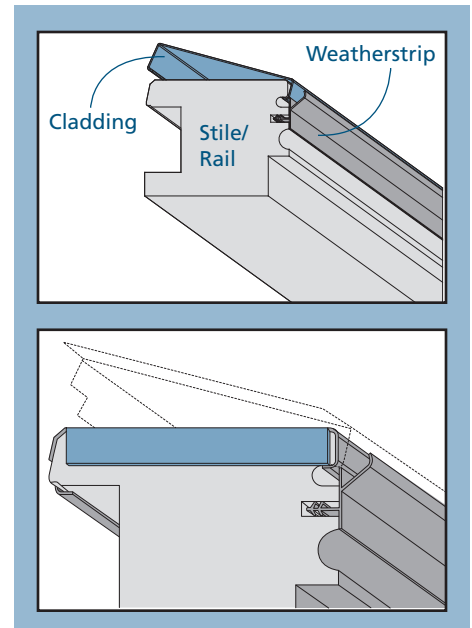
## CLADDING REPLACEMENT

Stile or rail cladding may be replaced on boot-glazed windows only.

1. Remove sash.
  2. Disassemble sash as in Stile/Rail Replacement.
- Note! Cladding may be secured with either staples or sealant.**
3. If secured with staples, pry off staples with stiff putty knife.
  4. If secured with sealant, pry cladding with stiff smooth tipped putty knife beginning at corner to loosen; do not scratch wood surfaces.
  5. Slide old cladding off (if necessary, pry edge with putty knife with care to avoid damage to wood surfaces).



6. Snap new cladding onto stile/rail with shorter side in the kerf on the weatherstrip side.
7. If necessary, tap the end down with a rubber mallet and secure with a small staple or 1" brad nail.
8. Prepare new stile/rail by drilling any necessary screw holes with 3/32" drill bit 1/4" shallower than screw lengths for screws and/or hardware (locate new screw locations by comparison to old sash), and transfer any hardware.
9. Reassemble sash.
10. Apply finish/paint and let completely dry before replacing sash.
11. Reinstall sash.



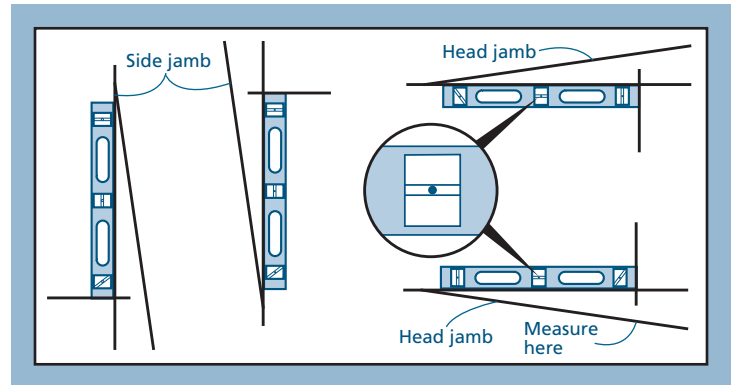
**PROPER WINDOW INSTALLATION**

- Proper installation is essential for keeping windows operating smoothly. If a window fails to operate properly, an inspection is necessary to determine if it was installed correctly.
- These inspection instructions apply to flat window types. Bow windows, bay windows, and unusual geometric-shaped windows are more complicated and should be inspected by a window professional.
- A contractor or installer can assist in determining the cause of a window being “out of specification” and possibly correct it. Window problems due to improper installation are usually not covered by the manufacturer’s warranty. For installation instructions, contact us or your supplier.
- The specifications and measurements referenced in this guide are taken from ASTM E2112 Standard Practice for Installation of Exterior Windows, Doors and Skylights.

**Note:** These instructions do not address inspection for proper “water tightness” or flashing. A “water tight” inspection requires removal of the exterior siding around the window. Seek professional assistance regarding this issue.

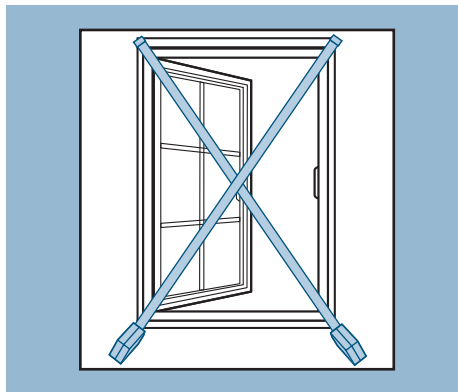
**LEVEL INDICATOR**

Accurate measurements are essential in determining level and plumb. Most carpenters' levels have several bubble level indicators, making it possible to measure all parts of the window. Examine the horizontal indicator. If the bubble is centered between the lines of the indicator, it is level. If the bubble is not exactly centered, measure how far “out of level” or “out of plumb” by maneuvering the end of the level until the bubble is exactly centered. Measure the farthest gap between the level and the surface. On a 2' level, the gap must not exceed 1/16", or on a 4' level (or longer), the gap must not exceed 1/8", or the surface is out of level/plumb.



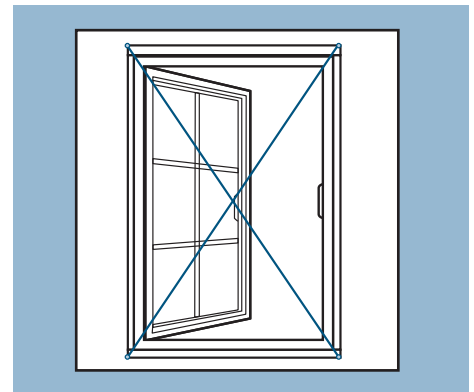
**SQUARE**

Measure frame/sash from top left to bottom right corner and from top right to bottom left corner. If measurements differ by 1/8" for windows up to 20 sq. ft. or 1/4" for windows larger than 20 sq.ft., unit is out-of-square.



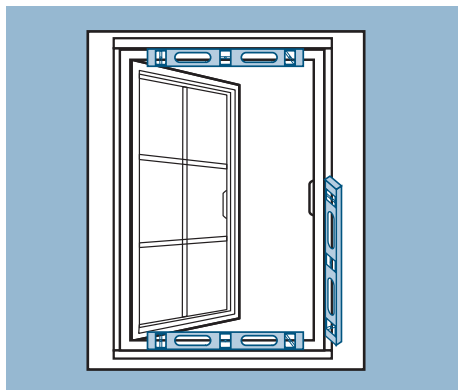
**FRAME TWISTS**

Attach two pieces of string to frame/sash, corner to corner. If there is a gap between strings at center point larger than 1/8" for windows up to 4' wide or high, or 3/16" for windows larger than 4' wide or high, the frame is not flat. Repeat by switching strings and re-measuring.



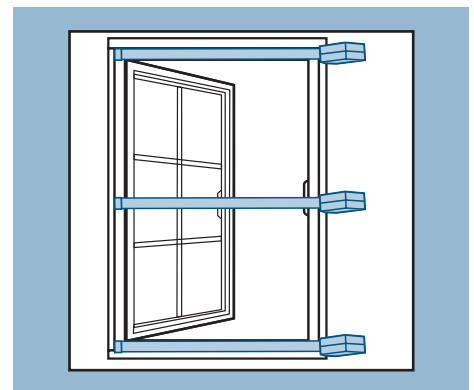
**LEVEL AND PLUMB**

For plumb, place level against each side jamb or use a plumb bob. For level, place level against head jamb and sill.



**PROPER SHIMMING**

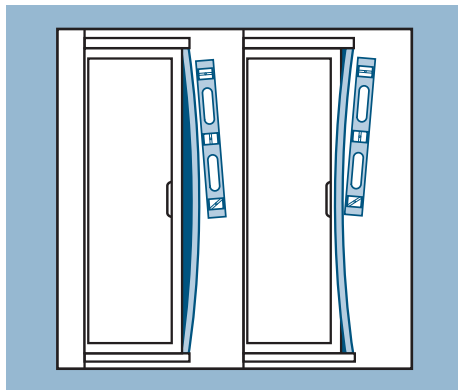
Measure width of frame at top, center, and bottom. If any two measurements differ more than 1/16", the frame is over or under shimmed. Repeat process and measure height of frame.



**PROPER WINDOW INSTALLATION - CONTINUED**

**STRAIGHT SIDE JAMBS**

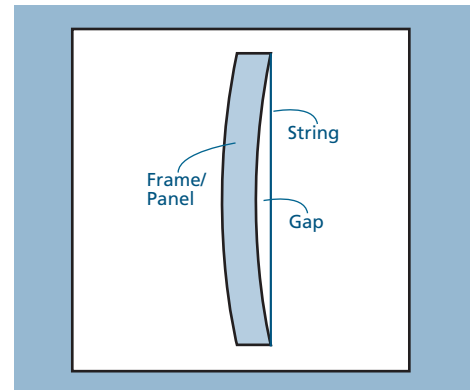
Place level against inside of side jamb. Look for gaps anywhere between level and side jamb. Repeat steps for other side jamb.



**FRAME/PANEL BOW**

Inspect interior and exterior frame jambs, or stiles/rails of panel (not glass) to determine if bowed.

1. Cut piece of string slightly longer than height of frame or panel.
2. Pull tightly and stretch string to upper and lower corners of jambs, or, stiles or rails of panel. Tape securely.



3. Look for gap between string and frame or panel. If gap measures more than 1/16" at any point, the panel is bowed.

**TROUBLESHOOTING OPERATIONAL PROBLEMS**

**Note!** Please check each possible cause, including verifying proper installation, before contacting us for assistance.

| PROBLEM  | POSSIBLE CAUSES  | POSSIBLE SOLUTIONS   |
|--|--|--|
| Sash will not open                                   | Sash locked  | Make sure lock latch is in unlocked position, try again  |
|  | Sash is stuck, finished or painted shut to the frame or weatherstrip.                      | Tap around perimeter while turning handle.<br>If this does not solve the problem:<br>• Carefully score along paint line with utility knife.<br>After sash is loose, if necessary, clean weatherstrip with small amount denatured alcohol (do not use on fuzzy weatherstrip). |
|  | Obstructions   | Remove obstructions/shipping blocks  |
|  | Sash may need adjustment (sash drags on sill or does not fit square or flush in the frame) | Adjust operator arm, operator track, or install shim button.   |
|  | Sash damaged   | Repair or replace sash   |
|  | Lock damaged or broken   | Replace lock   |
|  | Keeper loose or damaged  | Tighten if loose, replace if damaged   |
|  | Weatherstrip loose or damaged  | Reattach If loose, replace if damaged  |
|  | Operator damaged   | Replace operator.  |
|  | Operator arm has disengaged from sash or needs adjustment                                  | Adjust operator arm.   |
| Crank operator teeth inside handle could be stripped | Replace operator handle.   |  |
| Improper installation                                | Inspect installation   |  |

| PROBLEM                                 | POSSIBLE CAUSES   | POSSIBLE SOLUTIONS   |
|---|---|--|
| Sash will not close                     | Sash locked   | Make sure lock latch is in unlocked position, try again  |
|   | Obstructions  | Remove obstructions/shipping blocks  |
|   | Hardware dirty and needs lubrication  | Clean and lubricate hardware.  |
|   | Operator arm loose  | Reattach operator arm.   |
|   | Sash may need adjustment  | Adjust sash.   |
|   | Weatherstrip loose or damaged   | Reattach If loose, replace if damaged.   |
|   | Hinge track screws loose or missing   | Hand-tighten screws if loose. Replace if missing.  |
|   | Hinge loose or damaged  | Hand-tighten screws if loose. Replace if damaged.  |
|   | Keeper loose or damaged   | Reattach If loose, replace if damaged  |
|   | Lock latch misaligned or damaged  | Adjust if misaligned, replace if damaged   |
| Improper installation                   | Inspect installation  |  |
| Sash binds or drags                     | Hinge track dirty   | Clean sill track then lubricate with silicone spray on cloth. Clean and lubricate hinge track.   |
|   | Obstructions  | Remove obstructions/shipping blocks  |
|   | Operator arm/hinge bent   | Disconnect and straighten.   |
|   | Sash may need adjustment (sash drags on sill or does not fit square or flush in the frame)  | Adjust operator arm, operator track, or install shim button.   |
|   | Weatherstrip loose or damaged   | Reattach if loose, replace if damaged.   |
|   | Hardware loose, misaligned or damaged   | Tighten loose hardware. Re-align if misaligned. Replace if damaged.  |
|   | Improper installation   | Inspect installation   |
| Sash will not lock properly             | Lock misaligned or damaged  | Realign if misaligned, replace if damaged  |
|   | Sash may need adjustment (sash drags on sill or does not fit square or flush in the frame)  | Adjust operator arm, hinge, or install shim button.  |
|   | Improper installation   | Inspect installation   |
| Sash appears crooked in frame           | Obstructions  | Remove obstructions/shipping blocks  |
|   | Sash may need adjustment  | Adjust operator arm, operator track, or install shim button.   |
|   | Improper installation   | Inspect installation   |
| The window surface fogs up              | <p>Condensation. See also our condensation document at: <a href="http://www.jeld-wen.com/_pdf/JGI012.pdf">http://www.jeld-wen.com/_pdf/JGI012.pdf</a></p>                     | <p>If condensation is on an interior surface:</p> <ul style="list-style-type: none"> <li>• Raise the average temperature of the house one or two degrees and do not block vents.</li> <li>• Vent all appliances to the outdoors and run exhaust fans.</li> <li>• Open window blinds for air circulation.</li> <li>• Turn humidifiers down as the temperature gets colder (unless used for medical purposes).</li> </ul> <p>If condensation is on an exterior surface:</p> <ul style="list-style-type: none"> <li>• Close window coverings to reduce cooling of the glass surface by air-conditioning.</li> <li>• Remove or trim shrubbery close to windows to promote air circulation.</li> </ul> <p>If condensation is between glass panes:</p> <ul style="list-style-type: none"> <li>• Seal failure. Replace either the insulating glass assembly or the entire sash. This determination should be made by a service representative.</li> </ul> |
| Water leaks through the window          | Weatherstrip damaged or missing   | Reattach If loose, replace if damaged.   |
|   | Sash may need adjustment  | Adjust operator arm, operator track, or install shim button.   |
|   | Sash damaged or loose at joints   | Replace sash.  |
| Metal cladding is dull (clad wood only) | Cladding is dirty or oxidized. See the product care and maintenance guide at <a href="http://www.jeld-wen.com/resources">www.jeld-wen.com/resources</a> for more information. | <ul style="list-style-type: none"> <li>• Rinse with water from bottom to top to bottom to prevent dirty run-down and streaking. If needed, use a soft bristle brush while rinsing.</li> <li>• Air or wipe dry with chamois or soft, lint-free, dry cloth.</li> <li>• Apply high quality, non-abrasive car wax to clad surface for protective finish (follow wax manufacturer's instructions).</li> </ul>   |



GLOSSARY

**Awning window**

A window with a sash that is hinged at the top and opens from the bottom

**Boot-glaze**

The method by which glass is set and sealed into a sash or window opening with a rubber-like beige or gray gasket ("boot")

**Butt hinge**

A hinge used in conjunction with certain casement windows to allow a wider opening to meet emergency exit requirements

**Casement window**

A casement window is hinged on either side so the sash opens outward, to the right or left, in a swinging motion. It provides maximum ventilation

**Cam lock**

A single-point locking mechanism that uses a "cam" action to lock and to pull the window sash against the frame forming a tight weather seal; large windows may have more than one cam lock

**Concealed hinge**

Hardware that connects the bottom and top rails of a casement or awning sash to the window frame and slides back and forth allowing the sash to open and close; bar hinges are composed of the hinge track and the bar assembly

**Crank operator**

A mechanism with a handle that turns in a circular pattern that opens and closes an awning window

**Direct-set**

The window's glass is secured directly into the window frame without the stiles and rails of a sash

**Dual-arm operator**

A window-opening mechanism that is composed of two arms; one pulls the sash while the other pushes; used on casement windows

**Egress hinge**

A hinge used in conjunction with certain casement windows to allow a wider opening to meet emergency exit requirements

**Glass stop**

The trim that holds the unit's glass assembly in place

**Guide bar operator**

A window-opening mechanism that has a track running along the interior bottom rail of an awning sash which allows the operating arms to slide as the window opens and closes

**Head stop**

A trim piece at the head of the window against the interior side of the sash

**Hinge**

A jointed or flexible device on which a door or window turns; handing is determined by the location on a casement as viewed from the outside

**Hinge track**

The part of a bar hinge that allows the pivot point of an awning or casement sash to slide as the window opens and closes

**Keeper**

A bracket utilized as a latching point for locking systems

**Kerf**

A groove that often holds weatherstrip

**Lever operator**

A window opening mechanism that has a handle that moves right and left to open and close an awning window

**Mulled unit**

Two or more window units structurally joined together

**Multi-point lock**

A locking system that has multiple locking points with the system's mechanism hidden behind the side screen stops. The locking points engage into keepers located on the sash

**Operator**

The hardware mechanism used to open and close a window, excluding the hinges

**Operator cover**

The cover at the bottom of an operating casement or awning window that covers the mechanical operator of the window

**Operator track**

The metal track at the bottom of the sash where the roller on the end of the operator arm slides to open and close the sash

**Pilot hole**

A drilled hole that is no larger than the body of the screw (minus the threads)

**Rail**

The horizontal members of a sash or patio door panel

**Reveal**

The space between the sash and the frame

**Riser**

The structural component fixed to the bottom of the stationary sash that rests on the window sill

**Roto operator**

A mechanism with a handle that turns in a circular pattern that opens and closes the sash

**Sash**

An assembly comprised of stiles (vertical pieces), rails (horizontal pieces) and the window's glass

**Sash lift button**

A "button" placed in the lower sash hinge that slightly lifts the sash as it closes

**Sash riser block**

A block placed in the sill track that slightly lifts the sash as it closes

**Sash stop**

A trim piece that holds the screen in place in an operating window and holds the sash in place in a stationary window

**Screen plunger**

A spring loaded pin in an insect screen that holds it in place

**Screen stop**

A trim piece that holds the screen in place

**Scissor-arm operator**

A window-opening mechanism with a scissor action that has one or two keepers

**Single-arm operator**

A window-opening mechanism composed of one solid arm that pushes the window open and pulls it closed

**Single-point lock**

A single-point locking mechanism that uses a "cam" action to lock and to pull the window sash against the frame forming a tight weather seal. Large windows may have more than one lock

**Spacer**

A component (usually metal) that separates the panes of glass to create the airspace in an insulating glass (IG) unit

**Stile**

The vertical members of a sash or patio door panel

**Stud bracket**

The hardware component fixed to the bottom of a casement sash to which the end of the short jointed arm of a dual operator is attached

**Weatherstrip**

A strip of material that covers the joint between two separate parts of a window and is used to prevent rain, snow, and cold air from entering

**Wet-glaze**

The method by which glass is set and sealed into a sash or window opening with a caulking compound usually clear in color (sealant)

**Wood operator cover trim**

A wood trim which conceals the operating hardware

**Wood sill cover**

A wood trim which conceals the operating hardware on the interior sill