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# COMPLETE WINDOW ASSEMBLY REMOVAL AND INSTALLATION



<b>Product:</b>	 <b>STORM-TITE</b> FLUSH WINDOW SERIES	
<b>Models &amp; Styles:</b>	MV200: Tip-In over Fixed Egress MV201: Tip-In over Fixed Non-Egress MV214: Tip-In over Fixed Non-Egress (Non-Serviceable)	
	MV202: Full Fixed Egress MV203: Full Fixed Non-Egress MV217: Full Fixed Non-Egress (Non-Serviceable)	
	MV204: Full Slider Egress MV209: Full Slider Non-Egress MV216: Full Slider Non-Egress (Non-Serviceable)	
	MV205: Fixed over Slider Non-Egress	
	MV207: Fixed over Fixed Egress MV208: Fixed over Fixed Non-Egress MV215: Fixed over Fixed Non-Egress (Non-Serviceable)	
	MV213: Dual Slider Egress MV222: Dual Slider Non-Egress	

This document provides step-by-step instructions on the proper procedure to install AROW's Storm-Tite Flush Window Series.

**WARNING:** It is important to follow the instructions outlined in this document in order to avoid the following problems caused by improper installations:

- Damage to window frame and/or clamping
- Difficulty fitting the clamping to the window
- Poor clamping joint fit or joint overlaps instead of creating a clean butt joint
- Gaps between the clamping and the window
- Clamping bends near the mounting screws
- Twisting of the window frame and functional window issues such as latching of the tip in latch

For a video of this procedure, please visit our website [www.arowglobal.com](http://www.arowglobal.com).

# COMPLETE WINDOW ASSEMBLY REMOVAL AND INSTALLATION



MODELS – MV: 200 – 205, 207 – 209, 213 – 217, 222

## TOOLS REQUIRED:

- Butyl sealant
- Screws
- Cordless drill
- Plastic pry
- Rubber shims

## PREPARING THE EXTERIOR SURFACE

1. Prior to installation, check the window openings and look for any obstructions on the exterior surface. The driver's window should also be checked to ensure the front bus mask isn't interfering with the window frame or window glazing.
2. Check the position of the exterior body panels around the window opening. Make sure that the edge of the body panel is properly aligned with the window opening tubes, ensuring optimal window seal performance.

**WARNING: Obstructions and/or deformations anywhere behind the glass area greater than 0.125 in. are not acceptable and may prevent egress windows from closing or could cause serious damage to the window.**

**Obstructions include, but are not limited to:**

- Welds
- Overlapping panel seams
- Excess amounts of sealant
- The exterior drip rail

3. Prepare the structural window opening by sealing all exterior body panel joints with a 0.25 in. bead of butyl sealant extending 1 in. on each side of the joint as shown in **Figure 1**.

## PLACING THE WINDOW INTO OPENING

1. Prepare the window for installation by removing the white foam packaging blocks from the bottom of the window frame. Then remove the clamping and check the window seal to ensure it hasn't moved from its factory installed position.

**NOTE: Make sure to keep each clamping with the window it came with.**

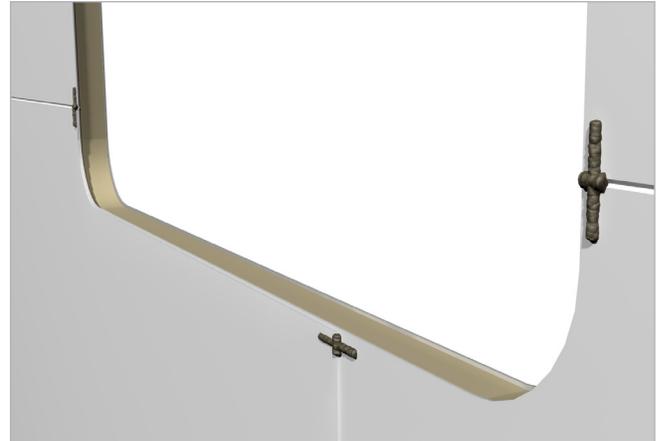


Figure 1 - Butyl sealant on body panel joints.

- Place the window into the structural opening by setting the bottom of the window onto the structure and tilting the top of the window against the bus body.

**WARNING: While moving the window into position, ensure that the window seal does not catch the edge of the structural opening. This could displace the seal and cause a water leak.**

**WARNING: Make sure that when the window is placed on top of the structural opening, the rubber shim on the support pad at the bottom of the window does not get knocked off.**

### ALIGNING THE WINDOW

- To align the windows have a technician on the outside of the bus checking for alignment while a second technician makes adjustments by adding or removing shims under the window support pads from the inside of the bus. Refer to **Figure 2**.

**WARNING: When positioning the window, do not shim or pry on any part of the frame except at the support pad locations or within 6 in. of the frame corner. Max allowable distance between the window frame and top structural tube is 3/16 in. Shim up as needed.**

- Adjust the vertical gap between the window glazing's to achieve the nominal designed alignment specified by the window manufacturer.

The acceptable vertical and width tolerance is +/- 1/16 in. as shown in **Figure 3**.

- After the horizontal and vertical alignment is achieved, complete the installation of the clampings. Orient the clamping so the joint is at the top of the window.

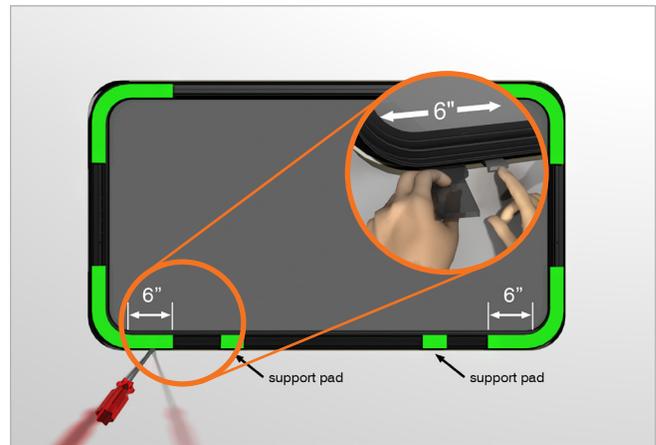


Figure 2 - Adding shims under window support pads.

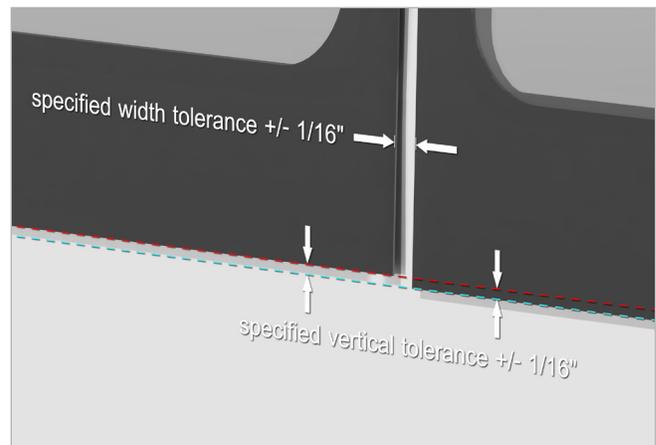


Figure 3 - Vertical and width tolerance.

4. Place the clamping against the window assembly and align the top right-hand corner prior to installing the clamping screws.
5. The recommended screw for clamping installation is a number 10 x 1" Stainless Steel with #8 torx head self-drilling screw, tightened to 45 inch/pounds. Refer to **Figure 5** for the correct screw installation sequence.

**NOTE: Install all screws only 3/4 tight initially, following the sequence provided.**

- a. **Install screws 1 thru 4**
- b. **Install screws 5 and 6**
- c. **Install screws 7 and 8, at the clamping joint, to ensure a tight fit at the joint.**
- d. **Install remaining screws along the TOP of the window (9, 10 and then 11).**
- e. **Install remaining screws along the sides of the window (12), starting at the top and working down.**
- f. **Install the remaining screws along the bottom of the window**

6. After all screws have been installed, tighten screws to 45 in/lbs., starting at the top joint (7 & 8), alternating sides of the joint along the perimeter of the window.
7. As the seals of the window compress and permanently set, this value will decrease.

For optimum window seal performance, the clamping screws should have a torque value of no less than 35 in. lbs. We recommend rechecking the torque of the clamping screws prior to water testing.

8. After the egress windows are installed into their final position and the clamping is secured, hinge open the egress portion and remove and discard the shipping blocks as shown in **Figure 6**.

To ensure egress windows remain latched in the closed position open the frame assembly to approx. 45° and quickly release – the momentum should be enough to latch the windows.

9. Now that all the windows are installed check the exterior flush condition of the windows, the acceptable tolerance for flushness is +/- 0.13 in.

If the windows are not flush you may need to add shims behind the glazing and within 0.5 in. of the edge to achieve alignment, as shown in **Figure 7**.

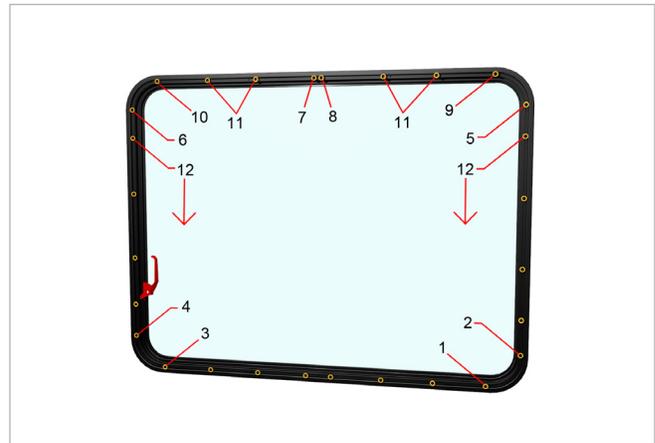


Figure 5 - Sequence for tightening clamping screws.

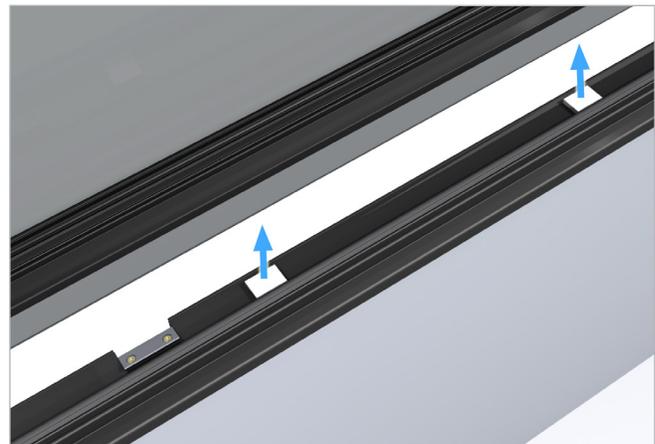


Figure 6 - Removal of shipping blocks.



Figure 7 - Placing of shim behind glazing to improve alignment.

# WINDOW FRAME ASSEMBLY REMOVAL AND INSTALLATION



<b>Product:</b>	 <b>STORM-TITE</b> FLUSH WINDOW SERIES	
<b>Models &amp; Styles:</b>	MV200: Tip-In over Fixed Egress MV201: Tip-In over Fixed Non-Egress	
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<p>This document provides step-by-step instructions on the proper procedure to remove and install the window assembly on AROW's Storm-Tite Flush Window Series.</p> <p>For a video of this procedure, please visit our website <a href="http://www.arowglobal.com">www.arowglobal.com</a>.</p>		

# WINDOW FRAME ASSEMBLY REMOVAL AND INSTALLATION

MODELS – MV: 200 – 205, 207 – 209, 213, 222

## TOOLS REQUIRED:

- 5/32 in. Allen wrench
- 5/64 in. Allen wrench
- 3 ft. Prop rod
- Phillips screwdriver or drill
- Dry film lubricant
- Dolphin sealant

## REMOVING THE WINDOW ASSEMBLY FROM THE SUBFRAME ASSEMBLY

### NON-EGRESS WINDOW

1. From the inside of the bus, remove the six (6) screws that attach the mainframe to the sub-frame as shown in **Figure 1**, and prop the window open with 3 ft. prop rod.

**Ensure prop rod is securely positioned as injury can result if it falls out** (continue to step 2 of Egress Window).

### EGRESS WINDOW

1. Activate the emergency release handle and open the egress mainframe. Support open with 3 ft. prop rod.

**Ensure prop rod is properly positioned as injury can result if it falls out.**

2. Remove the two (2) 10-24 UNC x 3/16 in. long socket head cap screws from the underside of the sub-frame with a 5/32 in. Allen wrench, as shown in **Figure 2**.
3. Before removing window assembly remove the center screw located at the top exterior of the window using a screwdriver or drill.
4. Remove the window assembly by rotating it a bit past 90°, then moving the assembly towards the inside of the window to disengage the hinge as seen in **Figure 3**.



Figure 1 - Remove mainframe retainer screws.



Figure 2 - Removal of long socket head cap screws.

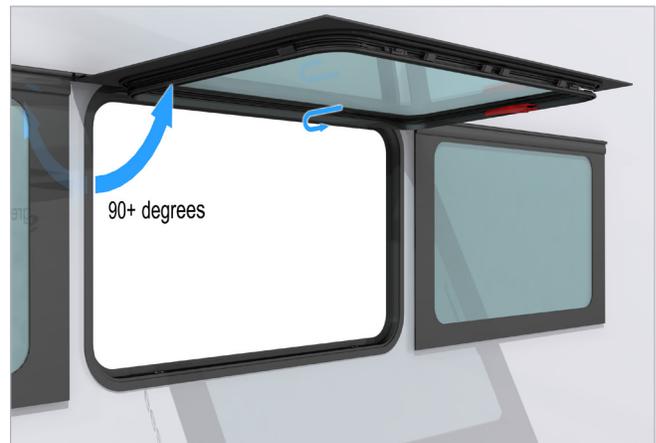


Figure 3 - Disengaging the hinge.

## MAINFRAME ASSEMBLY INSTALLATION

1. Supporting the window assembly from both sides, ensure the centering screw on the sub-frame aligns with the notch on the male.

Engage the two extrusions shown in **Figure 4**. If the assembly rotates down into place it is installed correctly.

**WARNING: Female hinge can be damaged if hinges are not properly engaged and an attempt is made to close the window.**

2. Push out the frame assembly to approximately 80° and secure in place with a prop rod. **Ensure prop rod is securely positioned as injury can result if it falls out.**
3. Install the two (2) 10-24 UNC x 3/16 in. long socket head cap screws into the underside of the sub-frame with a 5/64 in. Allen wrench. See **Figure 2** for a visual reference.

### NON-EGRESS WINDOW

4. With someone on the outside of the window pushing in, install the six (6) screws that were removed in step one of removal of window from sub-frame. See **Figure 1** for visual reference.

### EGRESS WINDOW

5. Check to see that the three emergency release strikes have a light coating of dry film lubricant (such as Spray & Slide by Royce) applied to the top surface, as seen in **Figure 5**.
6. Support the window from the bottom center; open the window to approximately 40° to 60° and release. The momentum is normally sufficient to cause the window to shut.



Figure 4 - Window hinge engagement

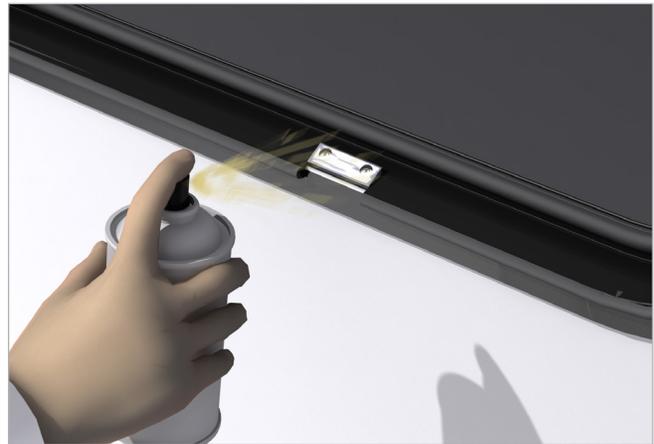


Figure 5 - Application of dry film lubricant on emergency release strikes.

# TIP-IN SASH ASSEMBLY REMOVAL AND INSTALLATION



<b>Product:</b>	 <b>STORM-TITE</b> FLUSH WINDOW SERIES	
<b>Models &amp; Styles:</b>	MV200: Tip-In over Fixed Egress MV201: Tip-In over Fixed Non-Egress MV214: Tip-In over Fixed Non-Egress (Non-Serviceable)	
<p>This document provides step-by-step instructions on the proper procedure to remove and install the tip-in sash assembly on AROW's Storm-Tite Flush Window Series.</p> <p>For a video of this procedure, please visit our website <a href="http://www.arowglobal.com">www.arowglobal.com</a>.</p>		

# TIP-IN SASH ASSEMBLY REMOVAL AND INSTALLATION



MODELS – MV: 200 – 201, 214

## TOOLS REQUIRED:

- 5/64 in. Allen wrench
- Phillips head screwdriver or drill

## REMOVING THE SASH ASSEMBLY

1. Using Allen wrench, remove the center sash lock screw from the sash strike as shown in **Figure 1**.
2. Loosen the four (4) 8-32 x 1 in. long flat head screws enough to remove the gas springs from the retainers as shown in **Figure 2**.
3. Close the sash again and remove the four (4) 8-32x 3/8 in. pan head screws from the sash stop, also shown in **Figure 2**.
4. Remove the sash and sash stop together as shown in **Figure 3**.
5. Rotate the sash stop down and out to remove it from the sash, shown in **Figure 4**.

## INSTALLING THE SASH ASSEMBLY

1. To install the sash stop in the sash assembly, align the centering screw in the sash with the notch in the sash stop. Make sure to position the hinge properly and then roll it into place.
2. Before replacing the sash assembly into the window frame it is recommended that you apply Dolphin sealant to seal the pan head screws into place.
3. Once the assembly is back in the window frame install the four (4) 8-32 x 3/8 in. pan head screws into the sash stop.
4. Insert the gas springs into the retainers and tighten down the 8-32 x 1 in. long flat head screws.
5. Test to ensure sash is working properly.



Figure 1 - Removal of center sash lock screw.



Figure 2 - Removal of gas springs from pan head screws.



Figure 3 - Removal of sash and sash stop.

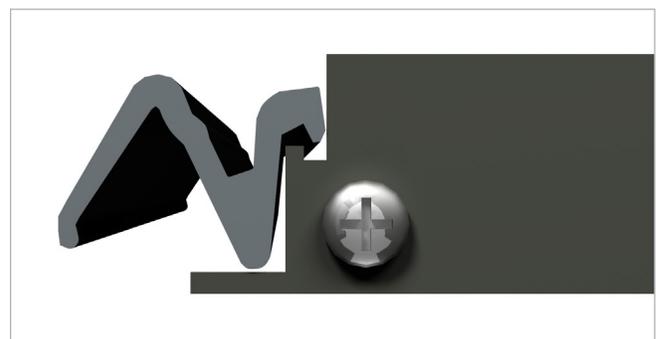


Figure 4 - Engagement of sash hinges.

# EGRESS WINDOW CLOSING



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<b>Models &amp; Styles:</b>	MV200: Tip-In over Fixed Egress	
	MV202: Full Fixed Egress	
	MV204: Full Slider Egress	
	MV207: Fixed over Fixed Egress	
	MV213: Dual Slider Egress	
This document provides step-by-step instructions on the proper procedure to close AROW's Egress Storm-Tite Flush windows.		

# EGRESS WINDOW CLOSING

MODELS – MV: 200, 202, 204, 207, 213



## TOOLS REQUIRED:

- Dry film lubricant

## CLOSING PROCEDURE

1. Check to see that the three (3) emergency release strikes and the frame locator blocks have a light coating of dry film lubricant (such as Spray & Slide by Royce, or T9 Boeshield) applied to their contact surfaces, as shown in **Figure 1**.

**NOTE: Avoid using a silicone lubricant.**

**NOTE: the window may have two (2) or three (3) egress strikes.**

2. Check to ensure the egress handle and mechanism is in its closed position; the egress handle should be in the upright position.

**NOTE: A damaged or faulty handle, broken spring, or broken cable could prevent the mechanism from returning to its closed position after the handle has been activated.**

3. Push the window so that it swings open to approximately 40° to 60° and quickly release; the momentum of the frame is normally sufficient to close the window.

This may need to be repeated up to five (5) times if the window is new or has not been operated for an extended period of time in order to seat the egress components.

4. If a new window, the frame locator blocks will have a self-adhesive rubber shim attached for installation purposes (shipping blocks) that must be removed, refer to **Figure 2**.

**WARNING: These shims must be removed after the window is installed or the window may not close and latch correctly.**

5. To ensure the window is fully closed press firmly against the glass above each strike, if the strike is engaged there will be minimal movement of the window. All emergency release strikes must be engaged for the window to be fully closed. If all strikes are not engaged, activate the egress handle to open the window and repeat the closing procedure.

If the window fails to close after following these instructions contact a service technician. Faulty egress latch components, frame sizing, or the window installation may be the cause and must be determined by a technician.



Figure 1 - Applying dry film lubricant to strikes.

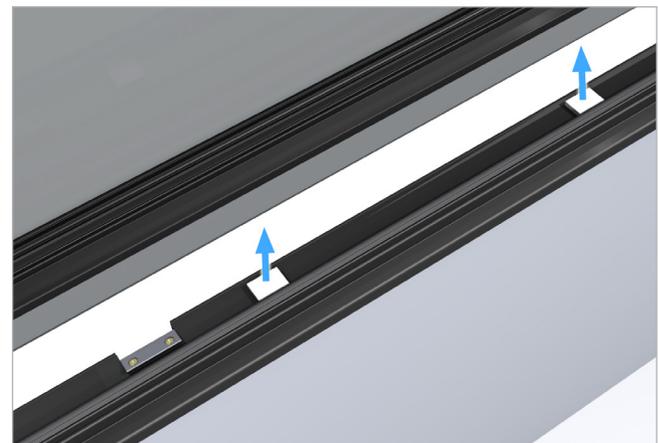


Figure 2 - Removal of shipping blocks.



Figure 3 - Ensure the window is fully closed

# REPLACING THE WATERSHED CHANNEL



<b>Product:</b>	 <b>STORM-TITE</b> FLUSH WINDOW SERIES	
<b>Models &amp; Styles:</b>	MV213: Dual Slider Egress MV222: Dual Slider Non-Egress	
This document provides step-by-step instructions on the proper procedure to replace the watershed channel on AROW's Storm-Tite Flush Window Series.		

# REPLACING THE WATERSHED CHANNEL

MODELS – MV: 213, 222



## TOOLS REQUIRED:

- Needle nose pliers
- Box cutters
- Phillips screwdriver

## REMOVAL OF TRANSOM INSERT AND SASH ASSEMBLY

1. On the interior of the window, remove Philips head screw, sash stop, and the two (2) washers from the transom insert as shown in **Figure 1**.

If the window also has a front sash stop on the Transom Insert, repeat step 1 for the exterior of the window.

2. Using pliers pull the flocked channel from the transom insert in the upper rear sash track. Refer to **Figure 2**.
3. Slide front and rear sash together, so they are completely in the sash tracks of the transom insert.
4. While bracing the sash assemblies in the frame, remove the four (4) Philips screws from the transom insert as shown in **Figure 3**.
5. Carefully tilt the transom insert and sash assemblies toward the interior of the bus until the sash assemblies can be lifted out of the bottom track. Refer to **Figure 4**.



Figure 1 - Removal of Philips head screw, sash stop & two (2) washers from transom insert.



Figure 2 - Pulling out the flocked channel from transom insert.



Figure 3 - Removal of four (4) Philips screws from transom



Figure 4 - Removal of transom insert and sash assembly.

## REMOVAL OF WATERSHED CHANNEL

1. Using a razor, cut the lower watershed free from the aluminum filler panel. Remove as much Simpson adhesive from the panel as possible. Refer to **Figure 5**.
2. After the Simpson has been removed, using pliers pull the watershed channel from the outer channel of the frame as shown in **Figure 6**.

## INSERTING NEW WATERSHED CHANNEL

1. Insert the new watershed channel in to the Frame sash channel, making sure the watershed tabs snap into the notches in the frame as in **Figure 7**.
2. Reapply Simpson Adhesive 7008 (or equivalent) to the outer fin of the watershed. **Allow 6 hours curing time before continuing to the next step.**
3. Replace sash assemblies, transom insert, and sash stops using the steps 1-6 in reverse.



Figure 5 - Simpson adhesive (blue line).

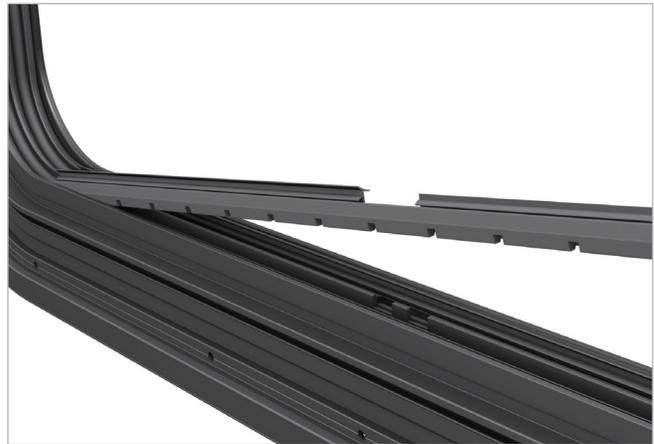


Figure 6 - Removal of watershed channel.

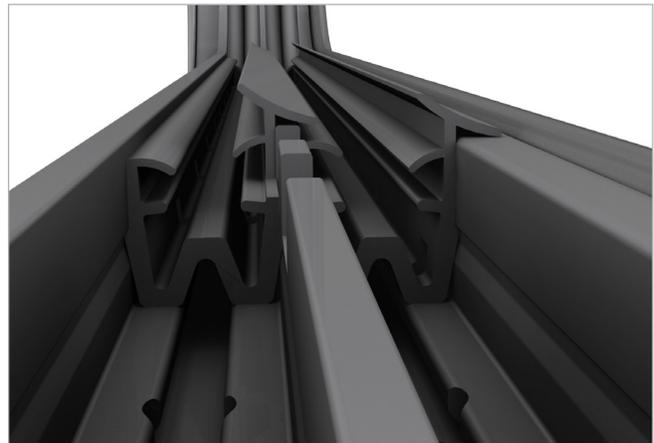


Figure 7 - Inserting new watershed channel.

# ACRYLIC GRAFFITI PROTECTION SHIELD REMOVAL AND INSTALLATION



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<b>Models &amp; Styles:</b>	MV200: Tip-In over Fixed Egress MV201: Tip-In over Fixed Non-Egress MV214: Tip-In over Fixed Non-Egress (Non-Serviceable)	
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	MV207: Fixed over Fixed Egress MV208: Fixed over Fixed Non-Egress MV215: Fixed over Fixed Non-Egress (Non-Serviceable)	
This document provides step-by-step instructions on the proper procedure to remove and install the optional acrylic shields on AROW's Storm-Tite Flush Window Series.		

# ACRYLIC GRAFFITI PROTECTION SHIELD REMOVAL AND INSTALLATION



MODELS – MV: 200 – 204, 207 – 208, 214 – 215, 217

## TOOLS REQUIRED:

- Two (2) suction cups
- Small amount of glass cleaner

## REMOVING THE PROTECTIVE ACRYLIC SHIELDS

1. Lubricate the glazing spline around the perimeter of the shield with glass cleaner.
2. Apply two suction cups on the shield, about one-third of the way in from both ends (**Figure 1**) and force the shield upward.
3. Bow the shield enough so that the bottom edge no longer engages with the frame.

Keep shield bowed, slide down and pull out of window as shown in **Figure 2**.

## INSTALLING THE PROTECTIVE ACRYLIC SHIELDS

1. Lubricate the spline with glass cleaner.
2. Wipe off any excess lubricant that may be on the glass and shield.
3. Apply suction cups to shield as described in step 2 of shield removal.
4. Bow the shield enough to get the sides of the shield installed as well as the top.
5. Force the shield upward and install the bottom edge of the shield.
6. Force the shield downward as far as it will go. Center the shield left to right and ensure that no edges of the shield can be seen sticking outside the glazing spline.

## REMOVING AND INSTALLING NEW SHIELD RETIANER RUBBER (IF INCLUDED)

**NOTE: Retainer rubber should only be removed if damaged.**

7. At one of the corners, insert a small pick or screwdriver and remove from groove as shown in **Figure 3**.
8. Pull the rubber out around the perimeter of the window.
9. Installation is the reverse of removal.



Figure 1 - Placement of suction cups.



Figure 2 - Acrylic shield removal.



Figure 3 - Shield retainer rubber removal.

# EMERGENCY RELEASE SYSTEM MAINTENANCE



## EMERGENCY RELEASE SYSTEM MAINTENANCE (SPRING LOADED EMERGENCY RELEASE LATCHES)

<b>Product:</b>	 <b>STORM-TITE</b> FLUSH WINDOW SERIES	
<b>Models &amp; Styles:</b>	MV200: Tip-In over Fixed Egress	
	MV202: Full Fixed Egress	
	MV204: Full Slider Egress	
	MV207: Fixed over Fixed Egress	
	MV213: Dual Slider Egress	

This document provides step-by-step instructions on the proper procedure to clean and maintain the emergency release system (spring loaded emergency release latches) on AROW's Storm-Tite Flush Window Series.

For a video of this procedure, please visit our website [www.arowglobal.com](http://www.arowglobal.com).

# EMERGENCY RELEASE SYSTEM MAINTENANCE

MODELS – MV: 200, 202, 204, 207, 213



## TOOLS REQUIRED:

- Stiff bristle brush
- Air compressor
- Dry film lubricant

## MAINTENANCE PROCEDURE

1. Activate emergency release system by pulling the emergency release handle and pushing out on the window.
2. With a stiff bristle brush, loosen and remove excessive build-up (e.g., road salt, dirt, etc.) on the emergency release bar, latches, return spring, and strikes as shown in **Figure 1**.
3. Depress and hold the emergency release handle and brush the sections of the emergency release bar previously hidden by the frame locator blocks. Refer to **Figure 2** for location of hidden sections.
4. Blow out all of the loosened build-up off all emergency release system components and sub-frame with compressed air.
5. Activate the plastic plunger of the emergency release latches several times by hand. If the plunger does not move freely, lubricate plunger with a dry film lubricant (such as Spray & Slide by Royce, or T9 Boeshield). Repeat if necessary. Do not lubricate latches with grease.

**NOTE: Avoid using a silicone lubricant.**

6. Apply a light coating of dry film lubricant (such as Spray & Slide by Royce, or T9 Boeshield) to the top surface of the latch strikes as seen in **Figure 3**.

**NOTE: Avoid using a silicone lubricant.**

7. Depress and release the emergency release handle two or three times to ensure that the system is operating properly.
8. Close the window ensuring all latches are properly engaged.

**NOTE: The egress system should be maintained every 3 months or 10,000 miles, whichever comes first, to ensure consistent performance.**

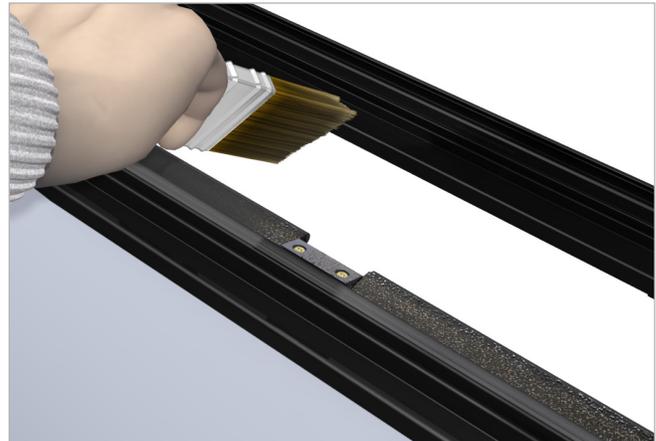


Figure 1 - Removal of build-up on strikes.



Figure 2 - Removal of build-up on emergency release bar.



Figure 3 - Application of dry film lubricant to latch strikes.