

MV207 Egress Upgrade – 3 Latch

MATERIALS:

1 x AR0031337 MV207 Egress Upgrade Kit – LH 3 Latch

TOOLS:

1 x Prop Bar (Optional, only needed if keeping window in bus)
1 x 5/32" Hex Wrench
1 x Flathead Screwdriver
1 x Blade Scraper
1 x Wire Cutter Pliers
1 x #2 Phillips Screwdriver
1 x Needle Nose Pliers
1 x Drill Driver
1 x 760UV Sealant
1 x Isopropyl Alcohol
1 x Paper towel or cleaning rag
1 x 6" Caliper
1 x Tape Measure
1 x Marking Pen
1 x Masking Tape Roll
1 x Clamp
1 x #30 Drill Bit
1 x 17/64" Drill Bit
1 x Silicone Lubricant Spray Can
1 x Tack hammer or Ball Peen Hammer
1 x 8-32 Rivet Nut Installation Tool
1 x Deburring Tool
1 x 3/32" Hex Wrench

PROCEDURE:

Note: It is recommended to remove the mainframe assembly and lay it glass down on a table or bench to allow for easier access to the egress system while performing the upgrade. This is not a necessity but will make removal and installation of the new egress system much more accessible. If the mainframe assembly will be kept in the window, skip steps “Removing the Mainframe Assembly from the Bus” and “Reinstalling the Mainframe Assembly into the Bus”. Instead, use the prop bar to hold the mainframe assembly open while performing the upgrade.

Removing the Mainframe Assembly from the Bus

1. Pull the emergency release handle located on the jamb of the window and push open the mainframe assembly. See Figure 1.

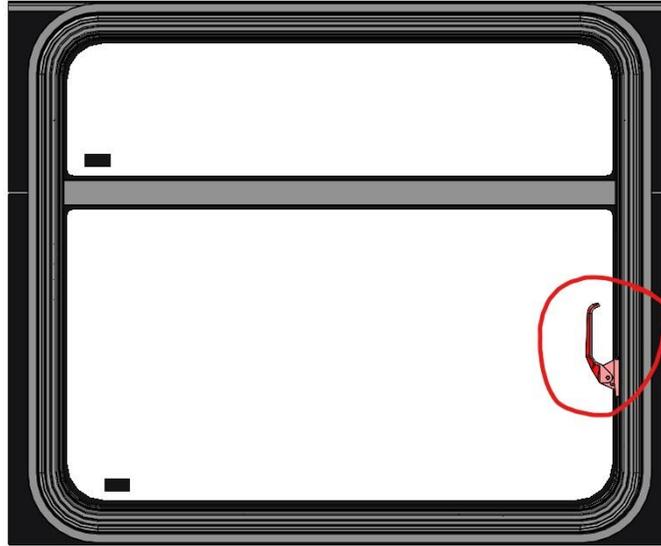


Figure 1: Egress handle circled in red.

2. Open the mainframe assembly enough to allow access to the hinge retaining screws that are screwed into the female hinge on both sides of the window. These will be visible from the underside of the hinge. See Figures 2a and 2b.



Figure 2a: Mainframe open to expose hinge retention screws.



Figure 2b: Hinge retention screw circled in red.

3. Remove the hinge retaining screws using the 5/32" hex wrench.
CAUTION: Once the hinge retaining screws have been removed, the male hinge on the mainframe assembly can be disengaged from the female hinge and allow the mainframe to be separated from the subframe if the mainframe assembly is opened a full 90 degrees from the closed position.
4. Remove the mainframe assembly from the subframe by rotating it outward to 90 degrees from resting position and slide it towards the bus body. Be sure to support the mainframe as its weight drops free from the subframe. See Figures 3a and 3b.



Figure 3a: Mainframe open to 90 degrees.

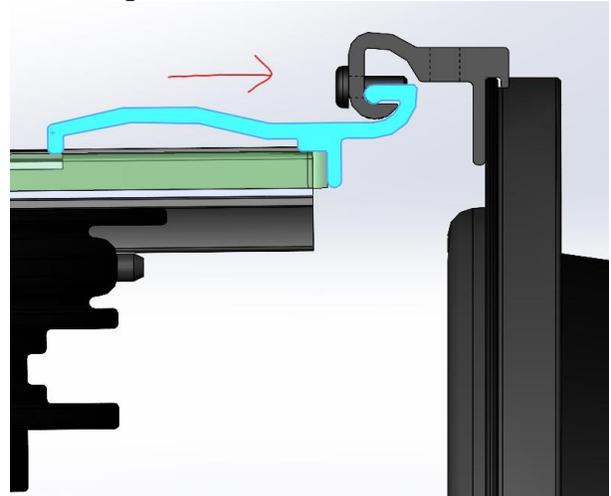


Figure 3b: Slide the mainframe assembly in the direction of the red arrow to separate it from the subframe.

5. Place the mainframe assembly on a clean flat surface with the glass down to allow optimal access to the egress system.
NOTE: Laying a barrier down, such as cardboard, over the flat surface before placing the mainframe assembly on it can help prevent scratches from getting on the glass.

Removing the Old Egress System

1. Begin removing the old egress system from the mainframe assembly by using the blade scraper to remove the sealant covering the split pins along the sill of the mainframe. See Figures 4a and 4b.



Figure 4a: Blade scraper removing sealant.



Figure 4b: Sealant removed.

2. Use the flathead screwdriver to pry out the locator blocks along the sill of the mainframe. See Figures 5a and 5b.



Figure 5a: Flat head screwdriver wedged in the side of the locator block.



Figure 5b: Locator block pried out of ER track.

3. Once the locator blocks are removed, use the wire cutter pliers to remove the split pins. Grip the side of the split pin that is closest to the glass with the wire cutter pliers. Be sure that the cutting side of the pliers is closest to the glass and contacting the mainframe as shown in Figures 6a and 6b.



Figure 6a: Pliers gripping split pin.

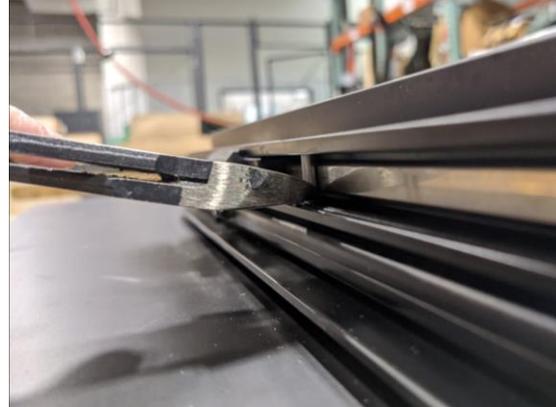


Figure 6b: Bottom of pliers contacting mainframe.

4. Squeeze the pliers tightly and rock the plier handle towards the glass to slide the split pin up a small amount as shown in Figures 7a and 7b.

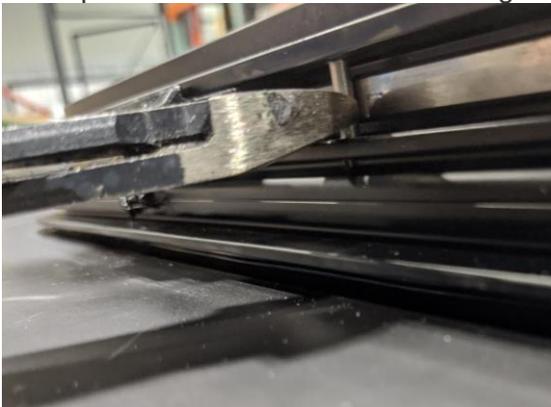


Figure 7a: Pliers rocked, sliding split pin up.

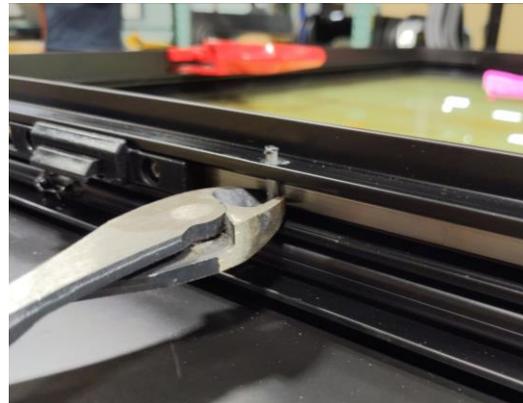


Figure 7b: Split pin slid up.

5. Continue this process of sliding the split pin out until it can be gripped from the interior of the frame. Then reposition the pliers and repeat the same motions until the split pin is removed as shown in Figures 8a and 8b. Do this for all the split pins along the sill of the mainframe.



Figure 8a: Split pin gripped from interior of frame.



Figure 8b: Split pin slid up.

6. With the split pins removed, the ER bar can be disconnected from the ER handle. Slide the ER bar towards the egress handle a small amount to take pressure off the cable connecting the two together. See Figure 9.



Figure 9: ER bar slid towards ER handle creating slack in ER cable.

7. Use the #2 Phillips screwdriver to remove the screw holding the ER cable to the ER bar. Make sure to keep holding the ER bar after the screw is removed to prevent the ER bar from flinging outwards.
8. With the screw removed, guide the ER bar out of the ER track of the mainframe and set it down as shown in Figure 10.



Figure 10: ER bar removed from ER track.

9. Use the needle nose pliers to assist in removing the ER bar from the ER spring. It may be necessary to bend the hook of the spring outwards slightly to remove the ER bar. See Figures 11a and 11b.



Figure 11a: Hold the ER bar and pull the spring hook with the pliers.



Figure 11b: Pull the hook open with the pliers and slide the ER bar out.

10. Clean out any dirt and grime from the exposed egress track using isopropyl alcohol and either a rag or paper towel. Removal of the old egress system is now complete.

Drilling Additional Split Pin Holes

1. Add two additional split pin holes to the mainframe to add support to the replacement ER bar. Figure 12 shows the horizontal dimensions that need to be marked on either side of the original split pin holes.

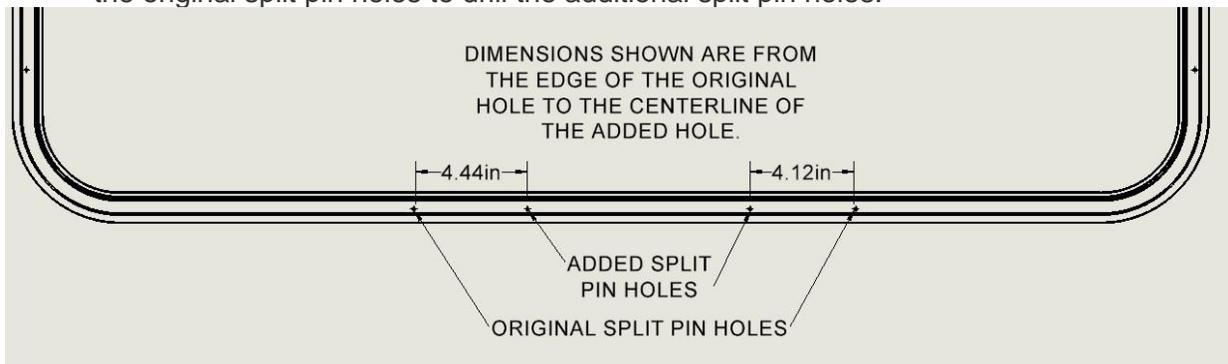


Figure 12: Dimensions for additional split pin holes.

- 2. Use the caliper to mark the horizontal locations for the additional split pin holes. Hook one jaw of the caliper on the edge of the original split pin hole and extend the caliper to the necessary dimension. Use the screw lock on the caliper to prevent the dimension from changing while scoring the new location. See Figures 13a and 13b.

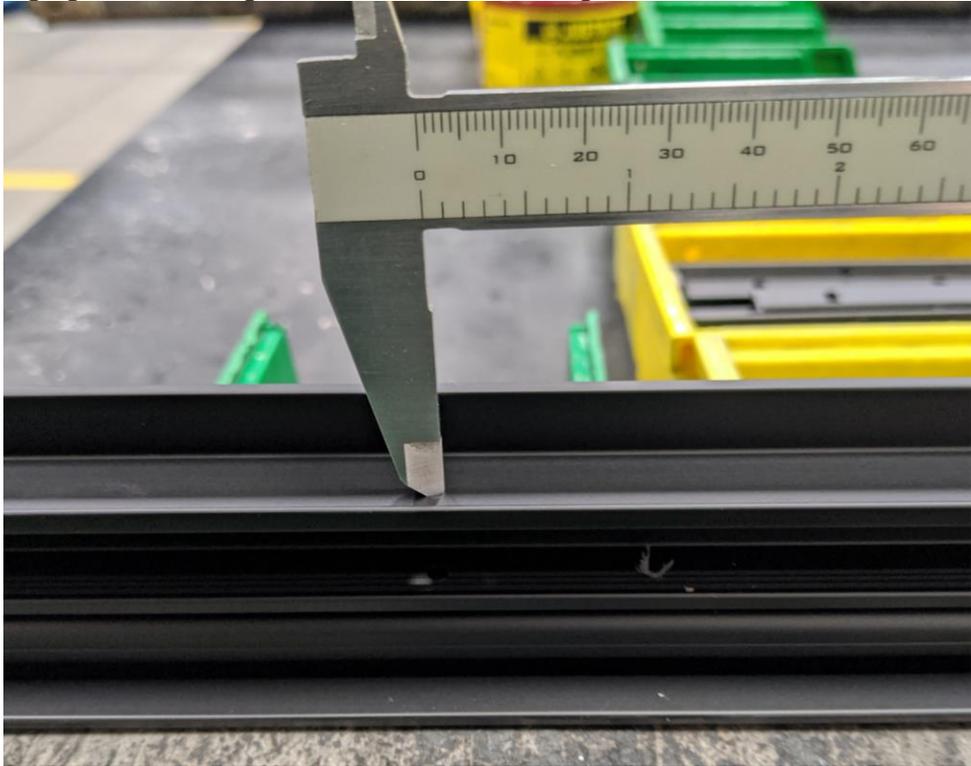


Figure 13a: Jaw hooked on original split pin hole.

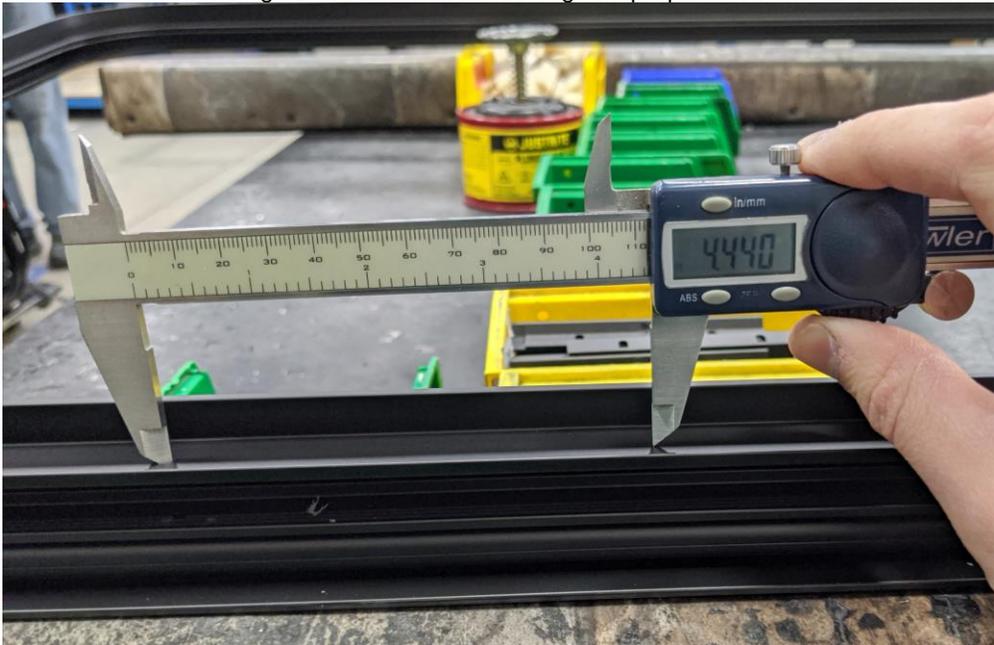


Figure 13b: Caliper extended to dimension for additional split pin.

3. Next, use the other jaw to score a small mark on the mainframe to mark where to align the drill jig for the next step. Repeat this for both sides using each sides respective dimension. See Figures 14a and 14b.



Figure 14a: Jaw used to score frame.

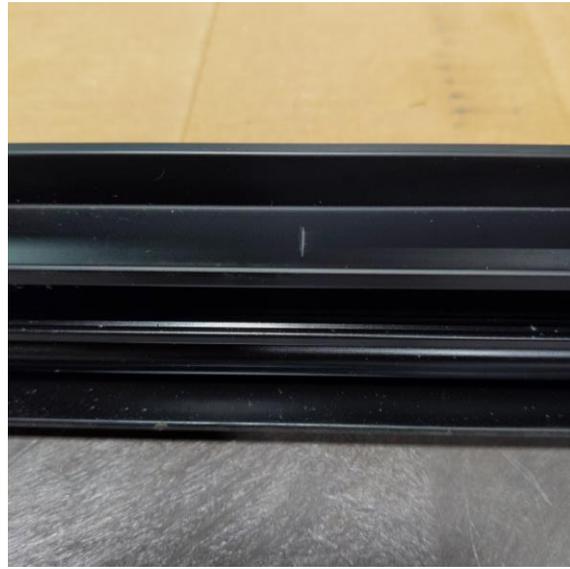


Figure 14b: Scored mark on the frame.

4. Once the locations for the additional split pin holes have been marked, use drill jig AR0030101 to drill the holes in the mainframe. Place the drill jig in the egress track and align it so that the center of the hole is lined up to the mark made in the previous step.
5. Once aligned, use the clamp to clamp the jig in place for drilling. Be sure that the clamp is positioned to apply clamping force to the portion of the jig that rests in the egress track and not to the top portion that extends above the mainframe. If not clamped in this manner, the jig will be tilted, and the hole will be drilled at an angle instead of perpendicular to the mainframe. See Figures 15a and 15b.



Figure 15a: Drill jig clamped correctly.



Figure 15b: Drill jig clamped incorrectly.

6. Apply a piece of masking tape to the #30 drill bit 1.5" from its tip to use as a depth indicator for drilling the additional split pin holes. See Figure 16.



Figure 16: Drill bit taped for depth indication.

7. Use the taped #30 drill bit and the drill driver to drill the hole in the mainframe. Stop when the tape on the drill bit contacts the drill jig. See Figure 17.

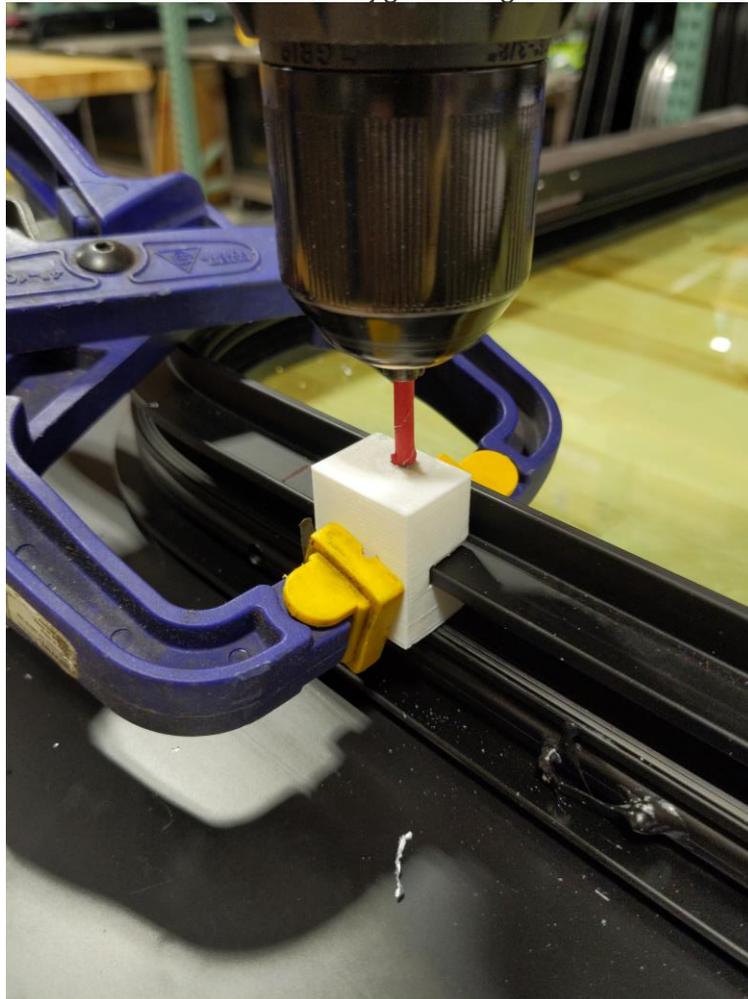


Figure 17: Additional split pin hole drilled to proper depth.

8. Repeat steps 4 through 7 for the second additional split pin hole. Be sure to reference Figure 12 and use the correct dimension for the split pin that is being drilled.
9. Clean out any metal shavings from the frame so that they don't interfere with the operation of the new ER bar assembly. Once both additional holes are drilled and cleaned, the frame is ready for the new egress system to be installed.

Installing the New ER Bar in the Mainframe Assembly

1. Spray the egress track along the sill of the window with silicone spray for lubrication.
2. Take the new ER bar assembly AR0030208 and connect the jogged end to the ER return spring. Bend the hook of the ER return spring around the ER bar once installed. See Figures 18a and 18b.



Figure 18a: Install spring hook into jogged end as shown.



Figure 18b: Bend spring hook closed.

3. Place ER bar screw AR0003222 on the tip of the #2 Phillips screwdriver and install the threads through the loop end of the ER cable. Hold the screwdriver, screw, and cable with one hand, using an index finger to keep the screw on the end of the screwdriver as shown in Figure 19.



Figure 19: Screw and ER cable held on screwdriver.

4. With the other hand, place the ER bar assembly into the ER track of the mainframe and slide it towards the ER handle with enough room to install the ER bar screw and hold it in place. See Figure 20.



Figure 20: ER bar held in place with enough room to install ER handle cable.

5. Screw the ER bar screw into the ER bar assembly loose enough that the ER cable can move freely. See Figures 21a and 21b.



Figure 21a: Installation of ER bar screw.



Figure 21b: Screw partially installed with ER cable loose.

6. Release pressure on the ER bar assembly and let the ER return spring pull the slack out of the system. See Figure 22.



Figure 22: ER cable without slack.

7. Fully tighten the ER bar screw.
8. Function test the ER system by pulling the ER handle a few times to ensure the ER bar assembly freely slides forward and returns to its original position.
9. Install 4 of locator block AR0019292 into the ER track along the sill of the window between the ER latches of the ER bar. The locator blocks press into the channel but can be tapped in with a tack or ball peen hammer if necessary. See Figure 23.



Figure 23: Locator blocks between ER latches.

- Center each block on one of the split pin holes that are between the ER latches. If the ER latch is too close to the split pin hole to allow the locator block to be centered on the split pin hole, position the locator block with an 1/8" gap between it and the ER latch as shown in Figure 24.



Figure 24: Offset locator block with gap between ER latch and block.

- Actuate the ER bar once the locator blocks have been placed to ensure that they clear the latch bodies.
- With the locator blocks centered on their respective split pin holes, take the #30 drill bit and the drill driver and drill through the locator blocks using the split pin holes as guides. Do not drill the split pin holes in the frame any deeper than they already are, just drill through the locator blocks to allow the split pins to be installed. See Figures 25a and 25b.

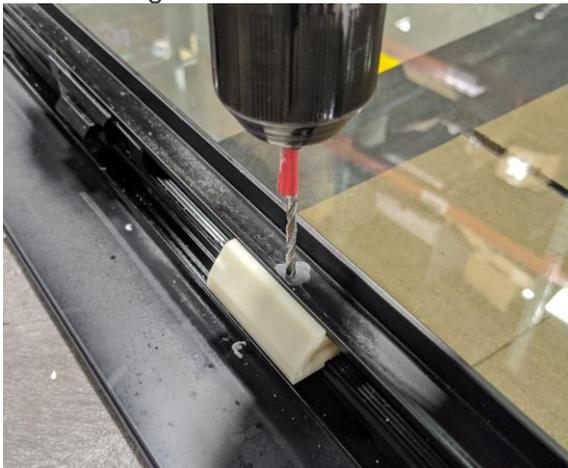


Figure 25a: Prior to drilling.

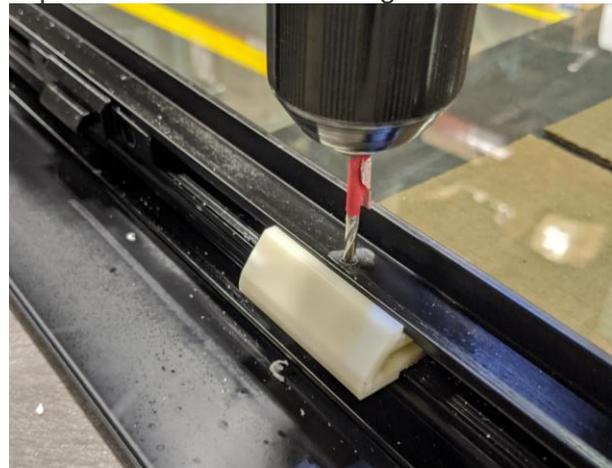


Figure 25b: After drilling.

- Blow out the plastic shavings once the locator blocks have been drilled out. Actuating the ER handle while blowing the shavings out can help clear all of the shavings out of the system.

14. Install 4 of split pin 0001110F into the split pin holes along the sill of the mainframe. Use the tack hammer or a ball peen hammer to tap them flush with the mainframe. See Figures 26a and 26b.



Figure 26a: Split pin prior to installation.



Figure 26b: Split pin installed flush to mainframe.

15. Function test the ER system by pulling the ER handle a few times to ensure the ER bar assembly freely slides forward and returns to its original position.
16. Clean the surface of the split pin and frame with isopropyl alcohol then cover all the newly installed split pins with 760UV sealant and let sit for 1 hour before reinstalling into the bus or fully closing the window. See Figure 27.

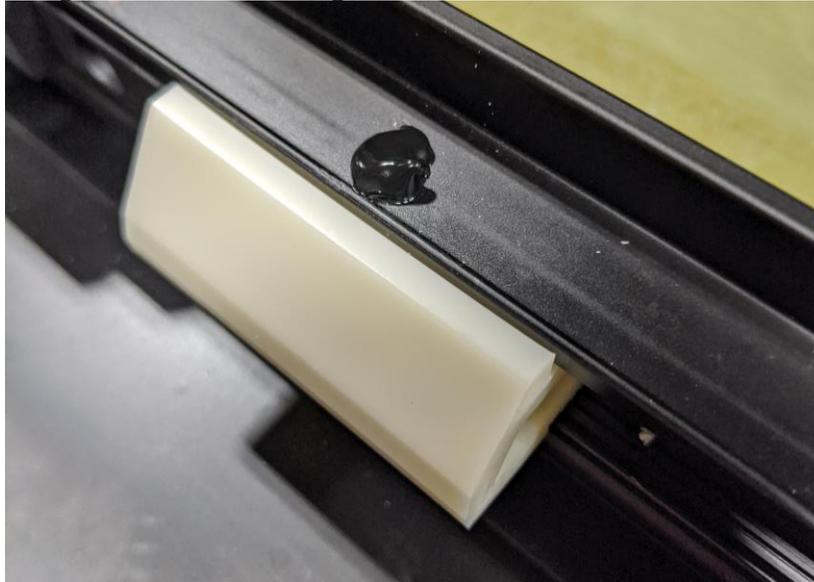


Figure 27: Sealant applied to split pin.

17. See Figure 28 for the complete updated ER bar in the mainframe assembly.



Figure 28: Upgraded ER bar.

18. Once the 760UV sealant has cured for 1 hour, spray each newly installed locator block with silicone spray for lubrication as shown in Figure 29. The new ER bar has now been fully installed and the mainframe assembly is ready to be reinstalled into the bus.



Figure 29: Silicone spray lubricant applied to locator block.

Drilling the Additional ER Strike Plate Holes

1. With the mainframe assembly removed or propped open, face the window from the outside of the bus and use the tape measure to mark the location of the additional ER strike hole. Measure 12-1/4" from the inside edge of the right ER strike and use the marking pen to mark the location on the subframe. See Figures 30a and 30b.



Figure 30a: Measuring off right strike.



Figure 30b: Mark on subframe.

2. Once the location for the additional ER strike has been marked, use drill jig AR0031338 to drill the holes in the subframe. Tilt the drill jig to be under the inner subframe seal and rotate it to sit down on the sill of the subframe, making sure that the inner seal doesn't interfere with the drill jig contacting the inner wall of the subframe extrusion. See Figures 31a and 31b.



Figure 31a: Drill jig tipped under inner subframe seal.



Figure 31b: Drill jig sitting on subframe sill.

3. Align the drill jig so that the mark that was made on the subframe in step 1 is centered in the right-side hole of the drill jig. See Figure 32.



Figure 32: Right-side hole of drill jig aligned to mark on subframe.

4. Once aligned, use the clamp to clamp the jig in place for drilling. Verify that the drill jig is fully seated on the subframe surface before drilling. See Figures 33a and 33b.



Figure 33a: Drill jig clamped in place.

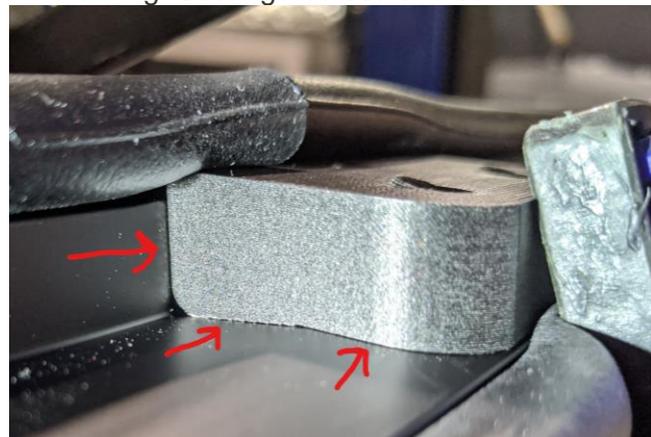


Figure 33b: Drill jig properly seated on the indicated edges.

5. Use the 17/64" drill bit and the drill driver to drill the ER strike holes in the subframe. Be sure that the drill jig doesn't shift between hole drilling operations as that could cause the holes to be misaligned. See Figure 34.



Figure 34: Drill aligned in drill jig.

6. Once the holes have been drilled, use the deburr tool to clean any burrs that were left from drilling so that the rivet nuts have a clean surface to mount to. See Figure 35.



Figure 35: Deburr holes after drilling.

7. Once both additional holes are drilled and cleaned, the frame is ready for the additional ER strike plate to be installed.

Installing the Additional ER Strike Plate in the Subframe Assembly

1. Use the rivet nut installation tool to install 1 of 0000870F into each of the new holes that were drilled in the subframe. See Figures 36a and 36b.



Figure 36a: Rivet nut installation tool.



Figure 36b: Rivet nuts properly installed.

2. With the rivet nuts installed, put a small bead of 760UV sealant around the rivet nut heads. Do NOT put any sealant into the rivet nuts. See Figure 37.



Figure 37: Sealant applied around rivet nut heads.

3. Take the ER strike plate 0004040C and install the two AR0020115 screws into the mounting holes of the strike plate. See Figure 38.

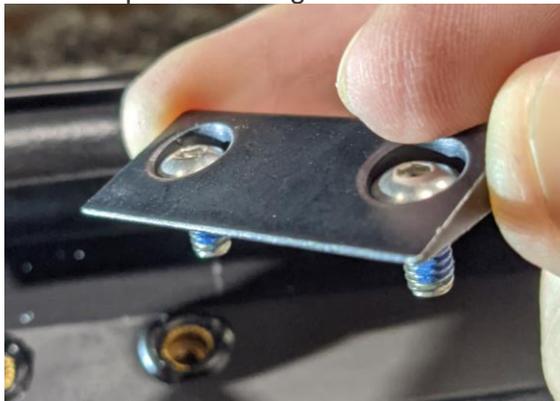


Figure 38: Screws installed in ER strike plate.

4. Align the ER strike plate and screws over the rivet nuts and drop the screws into the rivet nuts. Avoid getting any sealant on the screws as they drop in. See Figure 39.



Figure 39: Install screws into rivet nuts.

5. Use the 3/32" hex wrench to tighten the screws into the rivet nuts. Be careful not to cross-thread the screws into the rivet nuts.
NOTE: The screws have a Loctite patch applied to them that will prevent them from loosening.
6. Clean up any sealant that has squeezed out around the additional ER strike plate, especially along the interior edge where the ER plunger will latch and interface with the ER strike.
7. Use the blade scraper to remove a section of the outer subframe seal the width of the additional ER strike plate. It is ok if some adhesive residue is left behind once the seal is removed. The adhesive residue can be cleaned off using isopropyl alcohol if desired. See Figures 40a and 40b.



Figure 40a: Blade scraper cutting seal.



Figure 40b: Outer seal section fully removed.

8. The additional ER strike has now been fully installed. See Figure 41.



Figure 41: Subframe sill with additional strike fully installed.

Reinstalling the Mainframe Assembly into the Bus

1. Reinstall the mainframe assembly into the bus by reversing the steps listed in section “Removing the Mainframe Assembly from the Bus” above.
2. Once the mainframe hinge is hooked, and the hinge retention screws have been reinstalled, visually inspect the alignment of the egress latches to the egress strikes to ensure that they are in alignment with each other.
3. Close the mainframe by pushing it open to a 45-degree angle and letting it drop closed on the subframe. If the window does not fully latch, open it to a greater angle and repeat until the mainframe fully latches on the subframe. The mainframe assembly is now reinstalled into the bus.