



IN-WALL SLIDE-OUT
REPAIR KIT MANUAL
FOR KEYSTONE & DUTCHMEN PRODUCTS

L I P P E R T
C O M P O N E N T STM

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Safety Information



Failure to act in accordance with the following may result in death, serious injury, coach or property damage.

The IN-WALL™ Slide-out System is intended for the sole purpose of extending and retracting the slide-out room. Its function should not be used for any purpose or reason other than to actuate the slide-out room. To use the system for any reason other than what it is designed for may result in death, serious injury or damage to the coach.

Before actuating the system, please keep these things in mind:

1. The unit should be parked on solid and level ground and the area around the unit clear of obstructions that may cause damage when the slide-out room is being repaired.
2. Be sure all persons are clear of the coach prior to the slide-out room maintenance.
3. Keep hands and other body parts away from slide-out mechanisms during actuation.

Introduction

This document will aid in determining whether it is necessary for the assembly to be repaired or replaced entirely.

Standard Repair Kit Includes:

Upper Gear Rack
Lower Gear Rack
V-Roller
Snap Ring
Shoe
Foam Wear Plug
Flat Back Rack Plug

NOT INCLUDED in Kit:

Coupler
Lower Bearing Block
Upper Bearing Block
Metal/Plastic Rivets
Spur Gear (300:1/ 500:1/Hex)

If the repair necessitates it, replacement bearing blocks, spur gears and couplers can be ordered separately.

NOTE: See pages 14-15 for more details and part numbers.

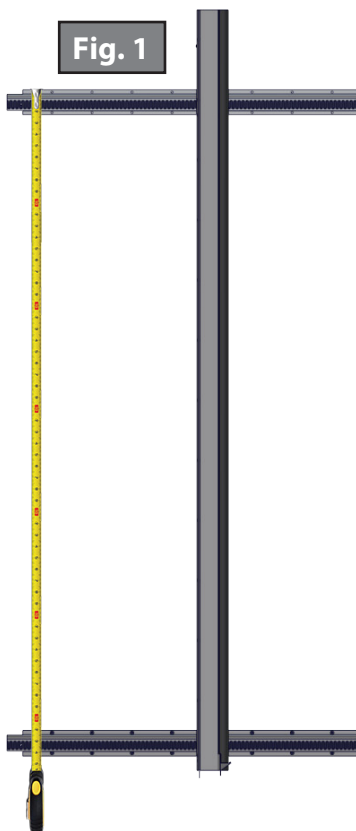
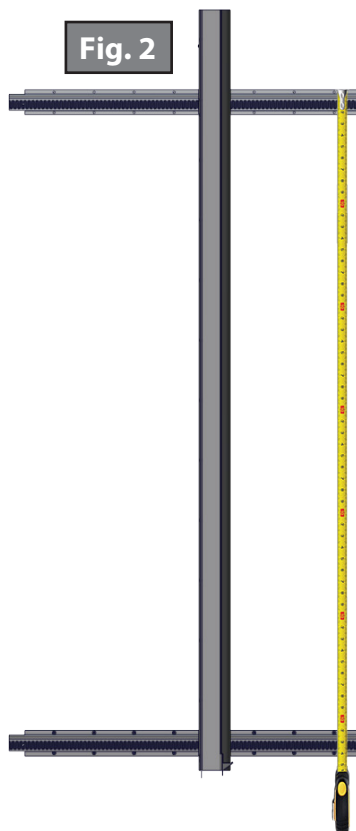
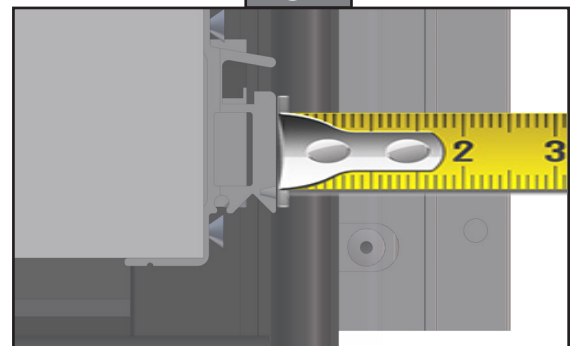
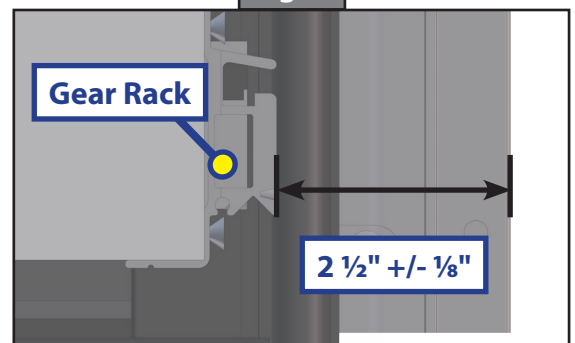
Preliminary Visual Inspection

Prior to conducting any repair or replacement, it is imperative to ensure that the problem with the slide-out is properly diagnosed and that the issue will be corrected with a repair or replacement. Proper diagnosis of the issue includes ruling out a slide-out obstruction, a slide-out seal issue, or a slide-out measurement that is outside of suggested parameters. Prior to slide-out repair or replacement, be sure to check the following:

1. Check assembly and slide room for any type of obstruction that may have caused the initial concern.
2. Inspect the wiper seals for tearing or other damage.
3. Make sure that the wiper seals are not being pulled into the gear rack causing binding.
4. Check that the interior and exterior bulb seals are compressing properly when the slide-out is extended or retracted.
5. It is recommended that measurements be taken to make sure the slide-out is parallel and that the H-Column is square. Make sure the measurements are taken from the same location on both sides (Figs. 1 and 2). Variance could be up to $\pm 1/8"$.
6. Measure from the outside edge of the column to the face of the gear rack (Figs. 3 and 4).

NOTE: LCI prefers to have these measurements submitted in picture format to assure proper guidance is given.

NOTE: Slide box T-molding has been removed from (Figs. 3 and 4) for clarity.

**Fig. 2****Fig. 3****Fig. 4**

Assembly Removal Procedure

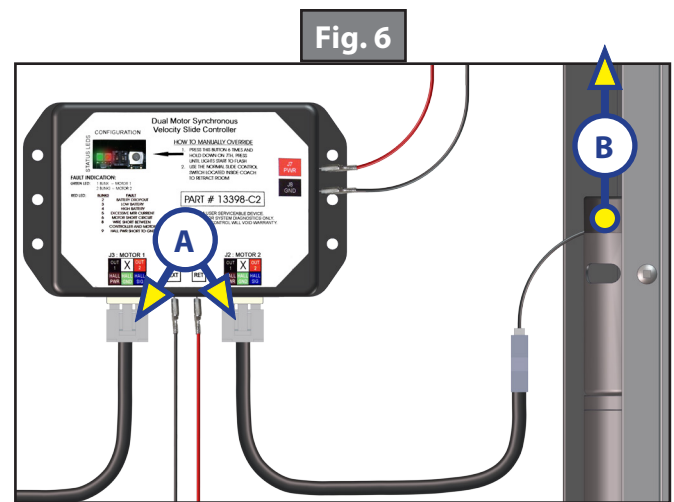
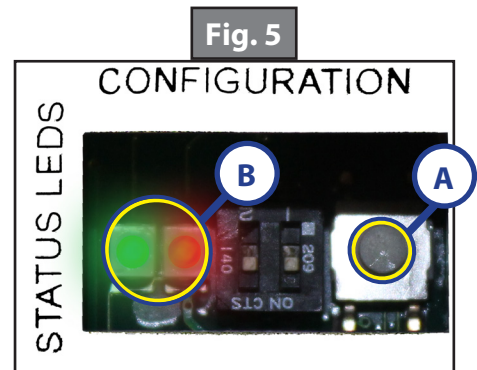
Tools Required

- Electric drill or cordless screw gun
- Rubber mallet
- 2x4 (length=gap between T-molding and side of unit-1/4")
- Razor knife
- Floor jack

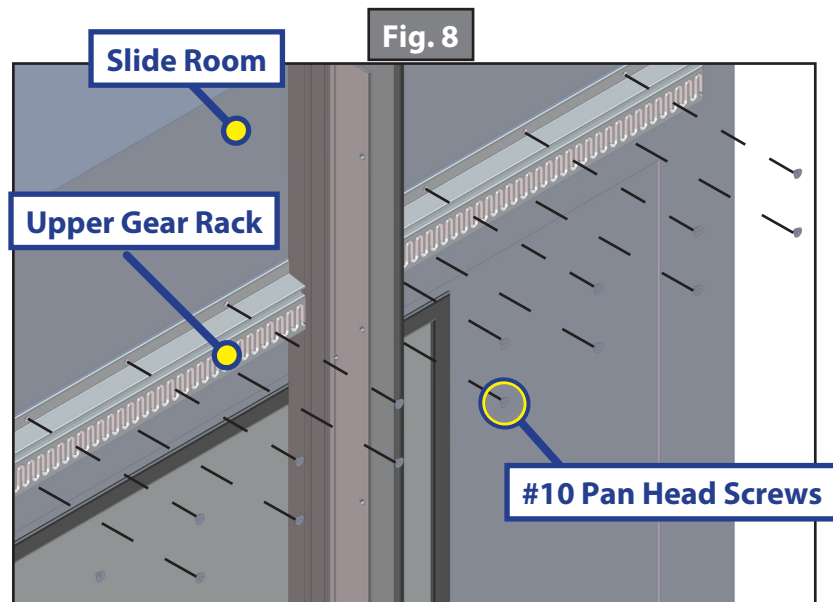
Procedure

NOTE: If the slide will not move by use of the switch it may be necessary to use one of the three methods (A, B, or C) described below:

- A.** Use electronic override mode on the IN-WALL™ controller.
 - I. Press the "mode button" 6 times quickly, press a 7th time and hold for approximately 5 seconds (Fig. 5A).
 - II. The red and green LED lights will begin to flash indicating system is in override mode (Fig. 5B).
 - III. Using the wall switch, press and hold the "IN" button until the unit comes completely in.
 - B.** Disconnect the motor harnesses from the IN-WALL™ controller to allow the slide room to be manually pushed into position (Fig. 6A).
 - C.** Disengage the motors to allow the slide room to be manually pushed into position (Fig. 6B).
1. Remove first 3 sets of screws in each rack on the interior side of slide room.
 2. Extend the slide room until about 8" of the room is left inside the unit.
 3. Support the slide room with a floor jack or other adequate support before continuing.
 4. Place the 2x4 block on top of the slide room (standing on its edge between the T-molding and side of the unit.)
 5. Reach inside the top of the slide column to disconnect the wiring harness from the motor.
 6. Using a razor knife, carefully cut the caulk bead along the edge of the slide column.
 7. Remove the screws from the slide column attaching it to the side wall of the unit.
 8. Create a jumper wire from an extra wiring harness: Cut a 3-foot length of the harness (with the motor wire connector attached) and strip the ends of the red and black wires (Fig. 7).
 9. Plug the jumper wire into the motor wire.
 10. Holding the black and red wires against the terminals of your cordless screw gun battery, determine which polarity actuates the motor in the retract direction. The slide column should slide away from the side of the unit.



11. Remove all screws from the gear racks (Fig. 8).

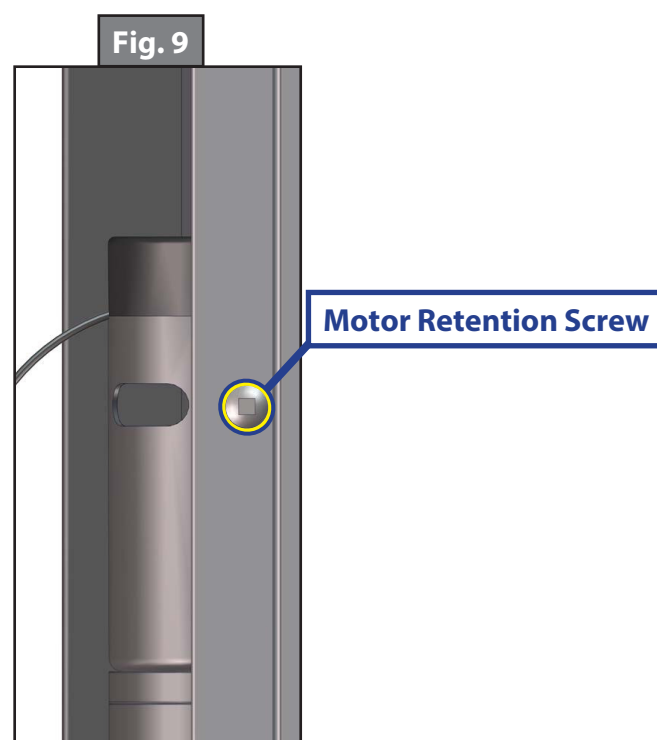


12. You may need to pry the gear racks away from the sides of the slide room with a flathead screwdriver or putty knife. Do this carefully so you don't damage the finish on the side of the slide room.
13. Carefully slide the ends of the gear racks past the bulb seal on the T-molding.
14. Pull the full system out and set aside.

NOTE: LCI recommends that inspection and repair of the assembly be done on a clear workbench to prevent further damage to the system.

15. If the motor is still in the column, remove at this time. The motor is held in place by a retention screw. It is typically located on the exterior side of the column, near the motor ventilation holes (Fig. 9). Removal of the retention screw will allow the motor to easily slide out of the column.
16. Remove the upper, middle (if applicable), and lower racks from the column by grasping the column in one hand and sliding the racks toward your body.

NOTE: All racks will move together. Take necessary precautions to prevent damage to the racks from a possible drop to the ground.



Replacement of Entire Assembly Required

Damages listed below will require the inspected side to be replaced with a completely new assembly.

- A.** Torque Shaft – Inspect the torque shaft for a bow or bend. Also inspect the torque shaft to assure that it has not dropped. Make sure the stakes in the top of the torque shaft (Fig. 10) are adequately keeping the shaft in place. If the torque shaft is found to be faulty, the inspected side should be replaced entirely.
- B.** Gibs – In the event that a gib is found to be broken or loose, the inspected side should be replaced entirely. This includes a broken, loose, or missing rivet.
- C.** Metal shavings near the spur gear – During inspection of the bearing block it is important to look for shavings around the spur gear (See locations outlined in Fig. 11A, B, C). This could indicate excessive wear around the torque shaft caused by the spur gear digging into the torque shaft.
- D.** “H” Column – In the rare event that the column has been damaged in any way, the inspected side should be replaced entirely.

NOTE: If replacing the entire assembly, skip to the Assembly Installation Procedure on page 12.

Fig. 10

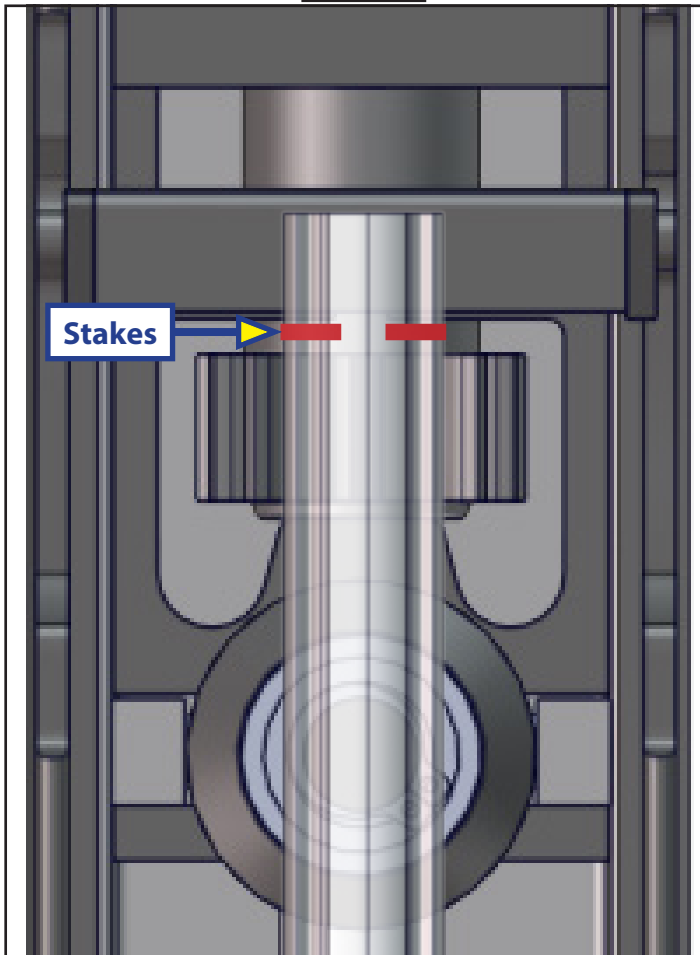
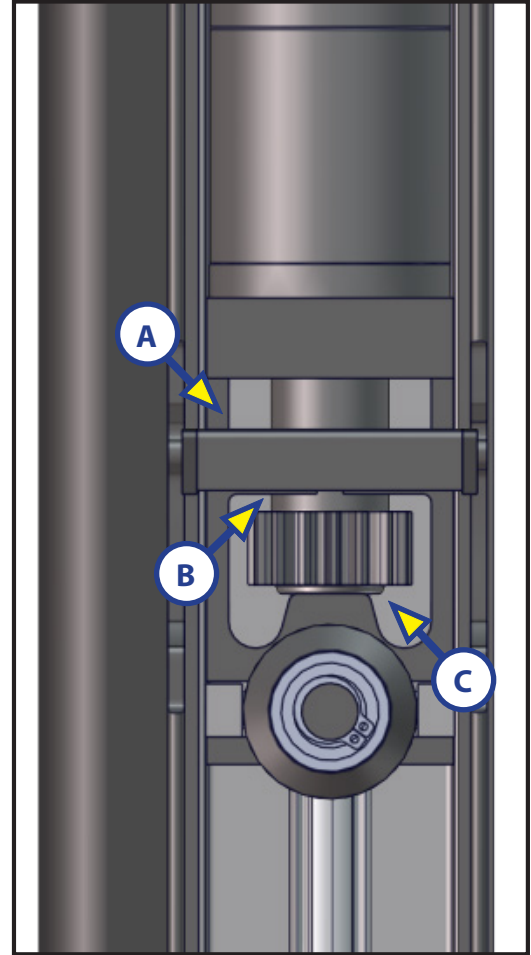


Fig. 11



IN-WALL™ Rack

Inspection

It will be important to begin with a general inspection of the gear rack to see if replacement is recommended.

Replacement

Below are the steps to replace an IN-WALL™ Gear Rack:

NOTE: If the gear rack being replaced has notches on both ends, the rack will need to be custom ordered. Contact LCI Parts at (574) 537-8900 for ordering assistance.

NOTE: You will notice that included in the IN-WALL™ Repair Kit is an upper and lower gear rack section that is longer than needed. In this case, a cut will be required to match the size of the original gear rack.

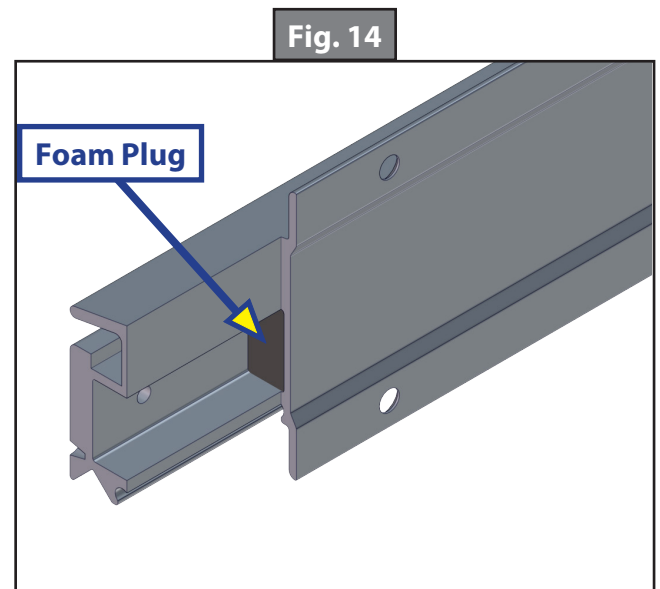
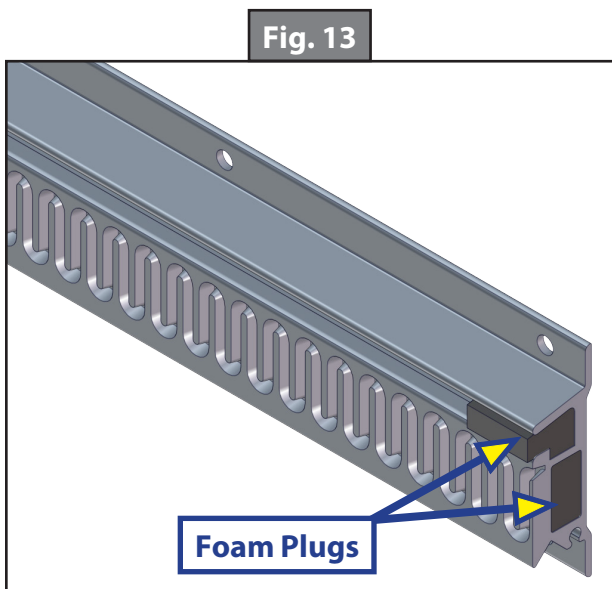
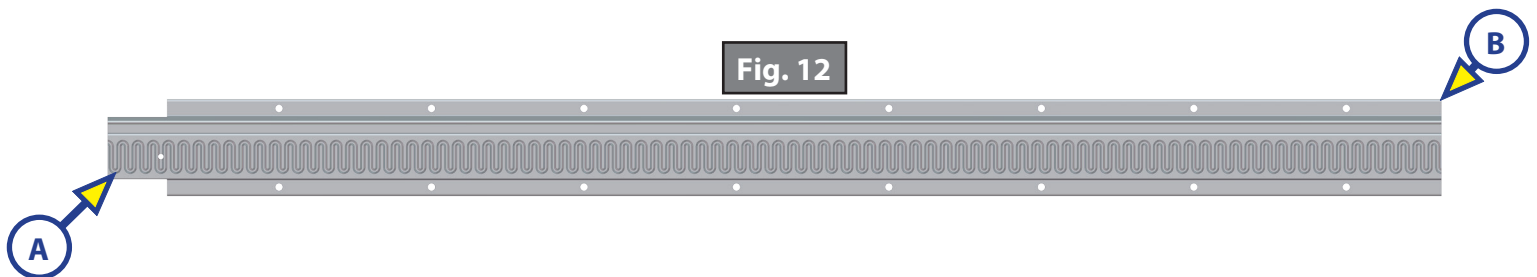
1. Measure the original gear rack. Index your measurement from the “notched” end (Fig. 12A) of the gear rack and document accordingly.
2. Transfer the measurement taken from the original gear rack onto the new gear rack.

NOTE: Remember to start your measurement from the “notched” end (Fig. 12A) of the gear rack to ensure proper end of the gear rack is cut.

3. Check measurement prior to cutting.
4. Make the cut to the non-notched end of the rack (Fig. 12B), preferably with a chop saw to prevent angled cut or “chewed” appearance.
5. De-burr the cut end with a fine file or emery paper.
6. Insert the corresponding foam plugs into each end of the rack to ensure that water infiltration is prevented prior to installation (Fig. 13 and Fig. 14).
7. Gear racks can now be installed back into the columns.

NOTE: Please refer to the **Re-timing Procedure** section of this manual on Page 11.

8. Assembly can now be installed back on the unit. See Assembly Installation Procedure on Page 12.



Shoe

Inspection

- A.** Damaged or missing shoe (if damage to corresponding foot on bearing block is present, replacement of bearing block (page 10) will be necessary).

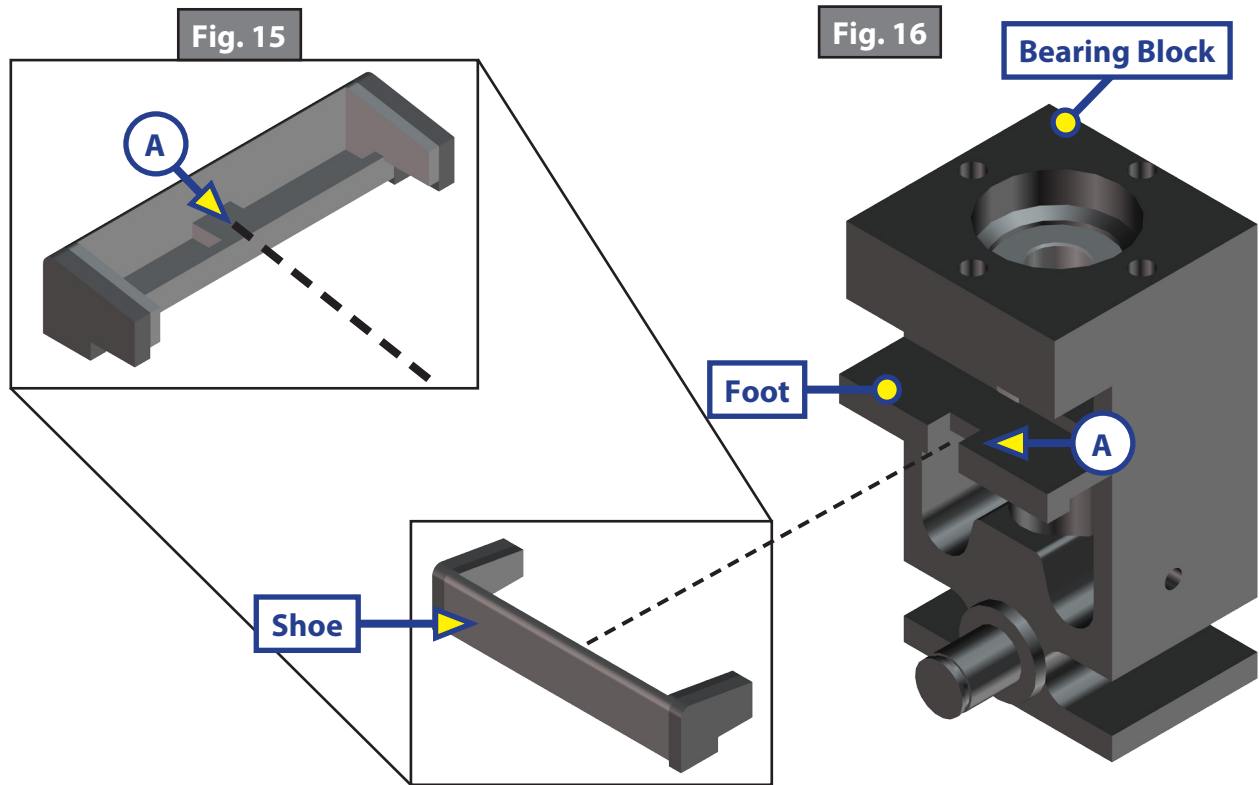
Replacement

Below are the steps to replace a shoe (Figs. 15 and 16):

1. With the racks removed from the assembly, the shoe replacement is snapped onto the bearing block foot. Align the notch located on foot (Fig. 16A) with the "rib" in the shoe (Fig. 15A) and press into place.
2. Gear racks can now be installed back into the columns.

NOTE: Please refer to the **Re-timing Procedure** section of this manual on Page 11.

3. If all other concerns have been addressed, the assembly can now be installed back onto the unit. See Assembly Installation Procedure on Page 12.



NOTE: On certain systems, the bearing block will not have a notch in it for the tab on the new shoe (Fig. 15A) to properly fit. If this is the case, remove the tab from the shoe with a rotary tool or a utility knife. Be careful not to cut into the body of the shoe.

V-Roller

Inspection

- A.** Damaged or missing v-roller: If damage to corresponding v-roller arm on bearing block is present, replacement of the bearing block (Page 10) will be necessary.
- B.** Stress cracks on or around the v-roller arm: If the v-roller arm is found to be cracked, bent or unable to accept a replacement roller bearing, replacement of the bearing block will be necessary.

NOTE: If damage is evident on either bearing block, **BOTH** the upper and lower bearing blocks **MUST** be replaced.

Replacement

Below are the steps to replace a v-roller (Fig. 17):

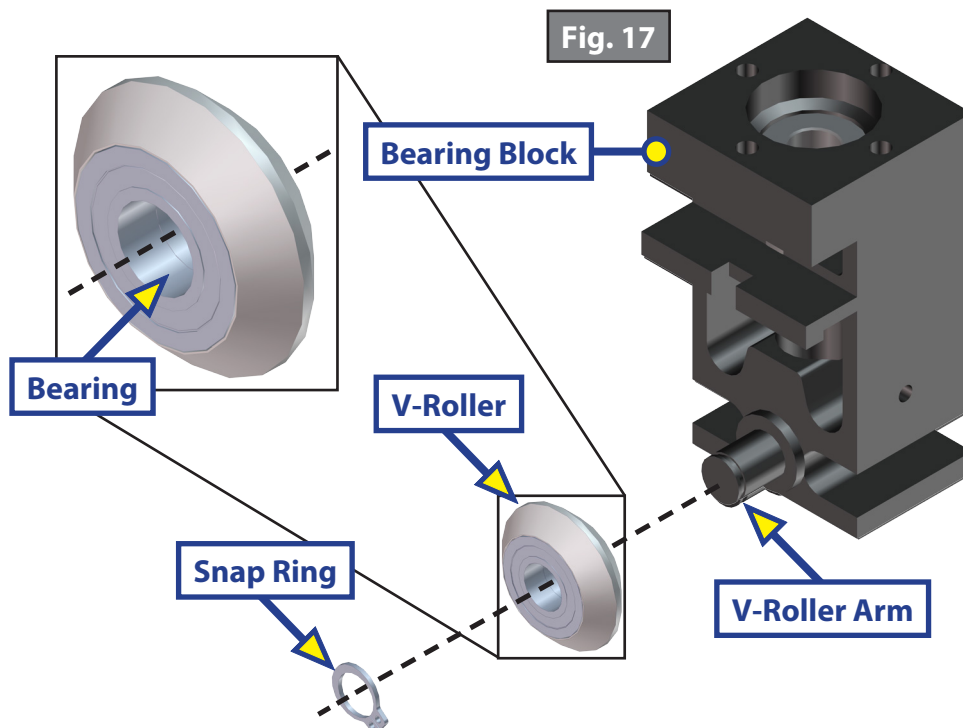
1. Remove the corresponding snap ring to allow for removal of damaged v-roller.
2. Inspect v-roller arm for damage. If v-roller arm is damaged, see **bearing block replacement** instructions on Page 10.
3. Slide new v-roller onto the v-roller arm.

NOTE: Be careful not to spread the snap ring open too far.

4. Replace the snap ring and inspect for proper seating.
5. Lube the v-roller bearings with CRC Power Lube with PTFE (Fig. 17 detail).
6. Gear racks can now be installed back into the columns.

NOTE: Please refer to the **Re-timing Procedure** section of this manual on Page 11.

7. If all other concerns have been addressed, the assembly can now be installed back onto the unit. See Assembly Installation Procedure on Page 12.



Bearing Block/Spur Gear

NOTE: The bearing blocks do not need to be removed if only the spur gears are being replaced.

Inspection

- A. Stress cracks on or around the bearing block foot or v-roller arm: If the bearing block foot is found to be cracked or bent, replacement of the bearing block will be necessary.
- B. Excessive damage to spur gear (teeth missing, etc).

Replacement

Below are the steps to replace a bearing block or a spur gear (Figs. 18, 19, 20):

1. If the bearing block shows any type of damage that indicates repeated contact with the gear rack, it **MUST** be completely removed from the drive assembly and replaced. If damage is evident on either bearing block, **BOTH** the upper and lower bearing blocks **MUST** be replaced.
2. Pull the torque shaft up and out from the top of the column, through both bearing blocks. Be careful not to drop the spur gears if they are not being replaced, as they will be loose in the assembly once the torque shaft is removed.

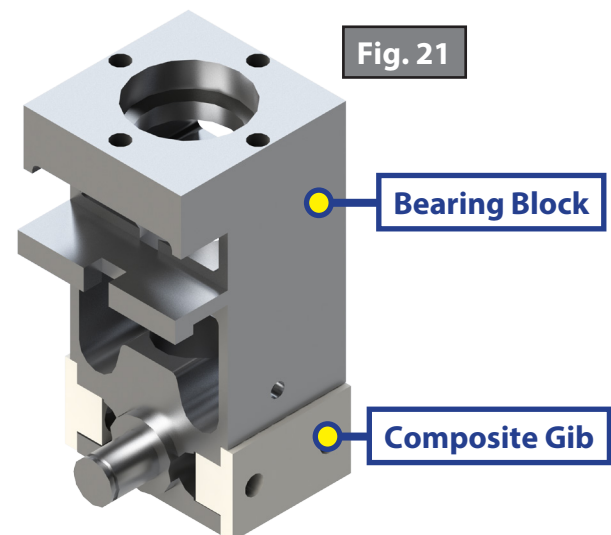
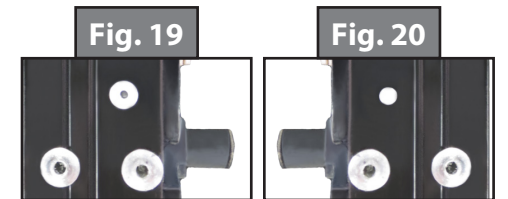
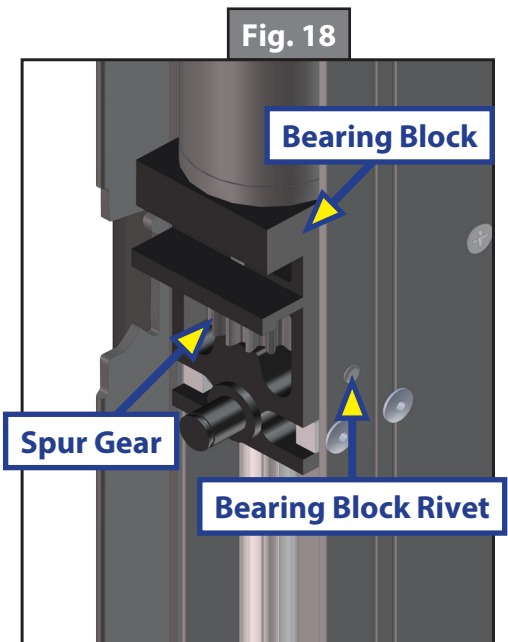
NOTE: If only replacing the spur gears, place the new spur gears into the bearing blocks and reinsert the torque shaft from the top of the column back through both bearing blocks and spur gears. Skip to step 6.

3. Remove the rivets that hold the bearing block in place. These rivets may be made out of aluminum (Fig. 19) or plastic (Fig. 20) depending on the side being replaced.
4. Install the replacement upper and lower bearing blocks and spur gears on the torque shaft and reinstall the torque shaft assembly into the column.
5. Install shoe and v-roller into the bearing block assembly after the column is reassembled.
6. Reinstall the gear racks.
7. Reinsert the coupler and motor into the upper bearing block.

NOTE: Please refer to the **Re-timing Procedure** section of this manual on page 11.

8. If all other concerns have been addressed, the assembly can now be installed back onto the unit. See Assembly Installation Procedure on page 12.

NOTE: Replacing the slide-out on a motorized coach may require replacement of a narrow bearing block and plastic composite gib (Fig. 21). If this is the case, please contact LCI for information.



Re-Timing Procedure

The top and bottom gear racks on each side of the IN-WALL™ Slide-out System are connected by a torque shaft that runs from the upper bearing block to the lower bearing block. The bearing blocks and torque shaft are mounted inside of the column. The column is fastened to the side wall opening of the unit. The timing of the system from top to bottom is considered to be adjustment free, as it is essentially locked in correct time. In the instance that the system is no longer in time, either the top or the bottom will extend farther than its opposite. The following procedure will help to properly address the concern:

NOTE: If the assembly is still on the slide room, refer to the Assembly Removal Procedure on page 4. If the assembly is already off the slide room for repair, start at step 1 below.

NOTE: The re-timing process is made easier by taking the system to a work bench.

1. Pull one of the gear racks to remove it from the bearing block.

NOTE: Both gear racks will move. Be sure when removing the gear racks that they do not fall to the floor or sustain any damage.

2. Finish pulling the second gear rack free if necessary.
3. When feeding the gear racks back in, start from the notched side. Gently start the gear racks into the bearing blocks evenly.
4. Once both gear racks are engaged, use a tape measure and measure from the column to the end of each gear rack. The measurement must be the same to ensure that the slide room will be timed correctly.
5. Apply pressure to one of the gear racks. This will cause both gear racks to move together. At this point, the gear racks will be back in time.



When reinstalling the system to the slide room, be sure to address the measurements specified in the Preliminary Visual Inspection section on page 3. If measurements are not within these specifications, make necessary adjustments to screw locations to remedy. Adding additional screws may be necessary in between the pre-drilled spots on the column. If the system is not replaced within those stated specifications, serious damage to the system may occur.

6. If the above procedure corrects the timing, repeat the same process on the opposite side of the slide, if necessary.

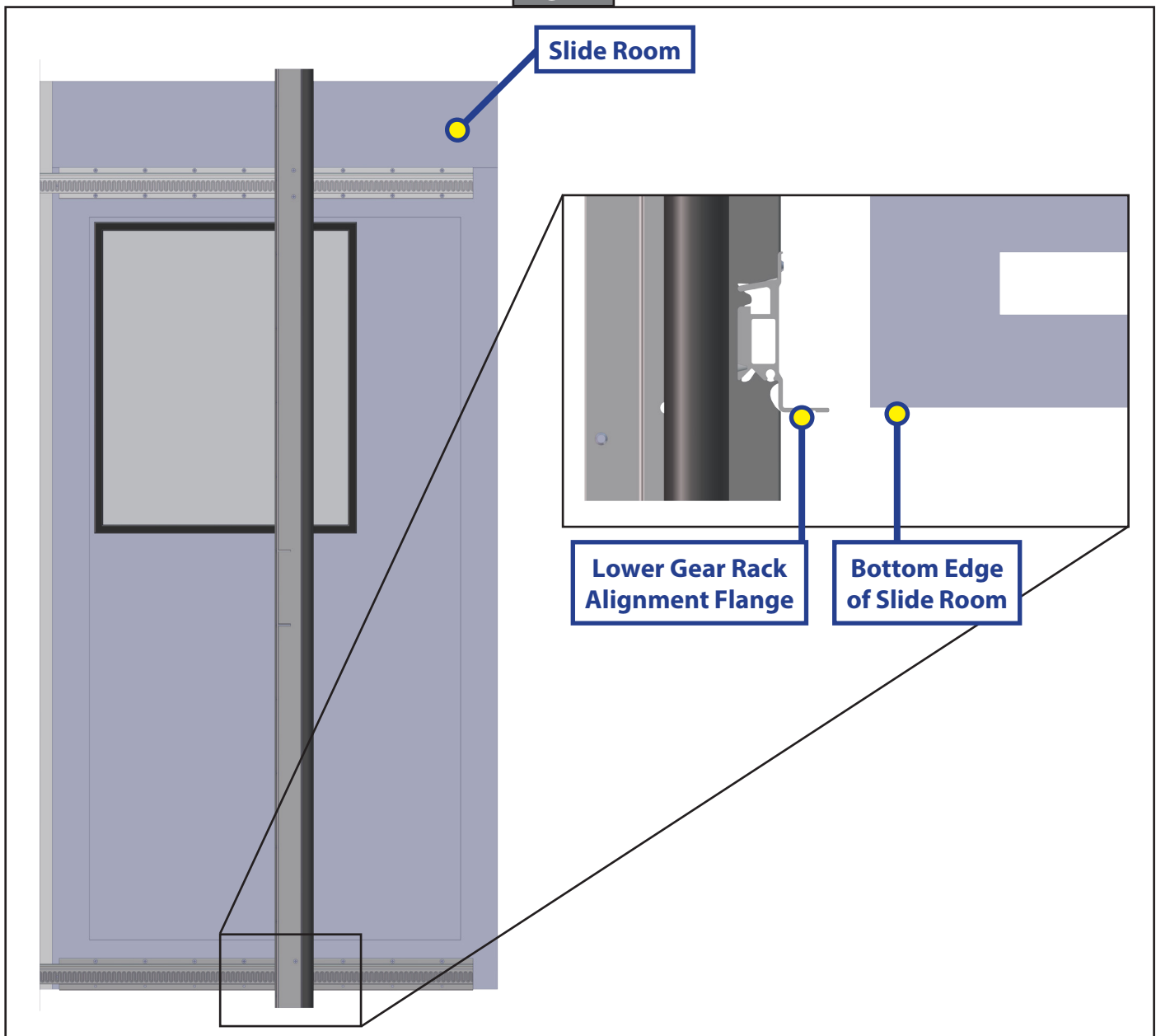
Assembly Installation Procedure

1. Prepare the slide room and side of the unit for the new install by cleaning the surfaces of any adhesive residue using a putty knife and a solvent, being careful not to damage the finishes on the unit.
2. Prepare the new system for installation: measure the distance (center to center) from one gear rack to the next gear rack along the slide column. Write these measurements down.
3. Apply OEM recommended sealant to the entire length of the H-column along the inside edge where it will contact the side face of the unit.

NOTE: If installing a new assembly, remove the shipping angles before continuing this procedure.

4. Gently slip the system through the opening between the slide room and the side wall opening. Tuck the gear racks inside the bulb seal attached to the T-molding.
5. Align the bottom lip (alignment flange) of the lower gear rack with the bottom edge of the slide room (Fig. 22).
6. Push the bottom gear rack tight against the bottom of the slide room and put a screw into each end of the gear rack.

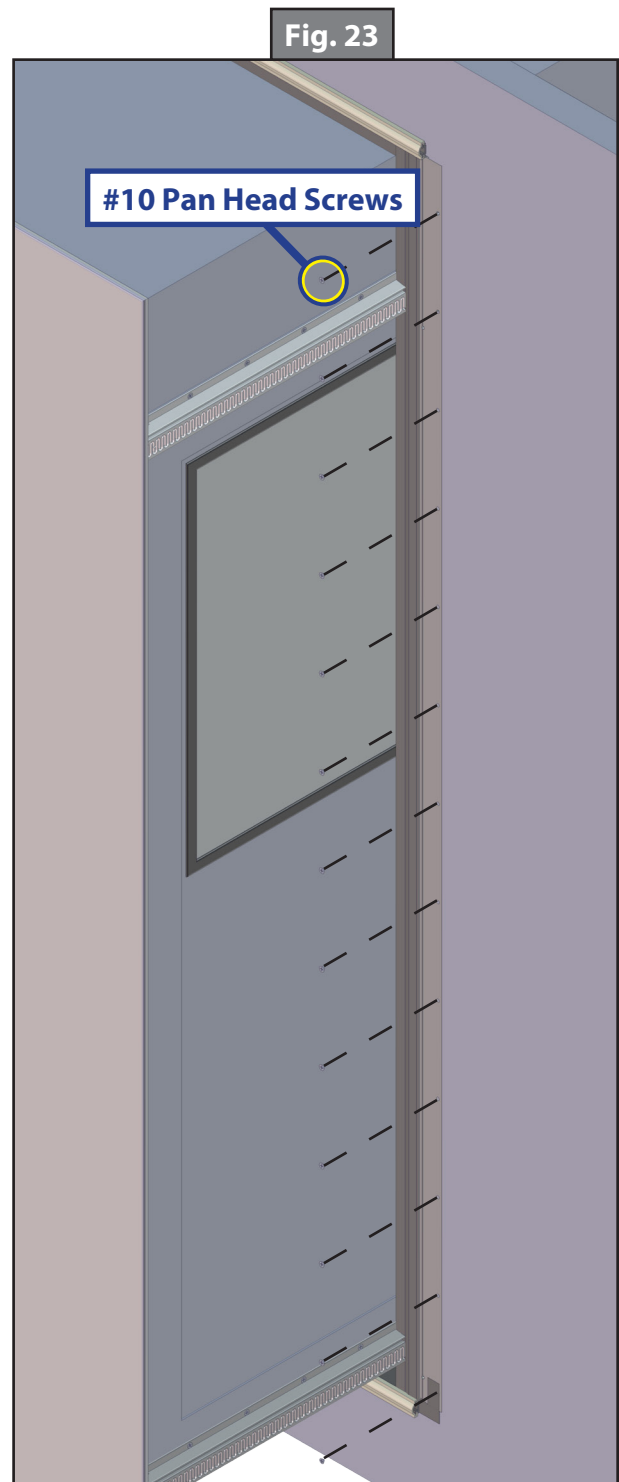
Fig. 22



7. Measure from the bottom gear rack (center to center) to the next gear rack and align that rack so that it matches the measurement you took off of the system during step 2 (Page 12). This will ensure that the racks are installed parallel and square. Put a screw in each end of the gear rack to hold it in place until you align all the gear racks.
8. Once you align and secure all the gear racks, put all the screws into the gear racks.
9. Attach the jumper wires to the motor in top of the slide column and then to the cordless screw gun battery. Actuate the motor to move the slide column in towards the coach. Stop the column when it is still a few inches away from the unit. Remove the jumper cable.
10. Make sure the motor cable is tucked into the top of the slide column.
11. Remove the 2x4 block.
12. Push the slide room in by hand until the slide column is flush with the side wall of the coach.
13. Screw the slide column into the side wall by placing a screw in the column by each rack and in the middle of the column to ensure the rack is straight, then fill in remaining screws (Fig. 23). Remove the floor jack.
14. From the inside of the coach, connect the wiring harness to the motor cable.
15. Repeat this process for the other side of the slide room (if required).
16. Once you have completed both sides of the slide room, synchronize the slide system motors (See procedure below).

Synchronizing The Slide-Out Motors

1. Fully extend the slide room using the switch. Keep the switch engaged until the motors shut down on their own.
2. Retract the room 1-2 inches.
3. Repeat steps 1 and 2 until both motors shut down at the same time. In many cases, two or three repetitions are necessary to re-sync the system.
4. Fully extend and then retract the room. Again, always let the motors shut down on their own before releasing the switch.



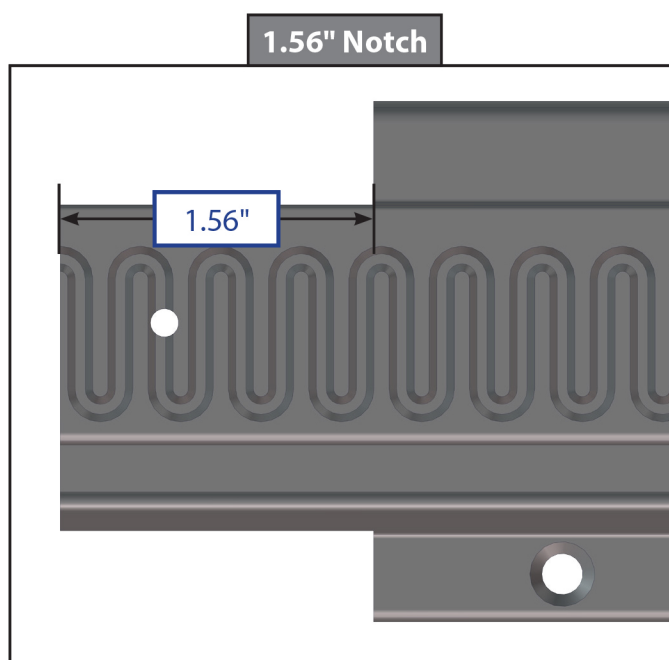
Repair Kits Part Numbers

Standard (W/ 1.56" Notch)

KRV	LCI #	Description
497487	366154	Clear Standard Fixed Repair Kit
497488	366156	Clear Standard Float Repair Kit
497489	366158	Clear Inverted Fixed Repair Kit
497490	366159	Clear Inverted Float Repair Kit
497491	366160	Clear Tripled Fixed Repair Kit
497492	366161	Clear Triple Float Repair Kit
527273	366212	Black Inverted Fixed Repair Kit
527274	366213	Black Inverted Float Repair Kit

****Dealer will cut rail to size**

****See below for the Bearing Block repair Kit**



Bearing Block Repair Kit

If the bearing blocks need to be replaced, a repair kit that includes one upper and one lower bearing block, four plastic rivets, and 2 aluminum rivets is available. Part numbers are on the table below.

NOTE: Triple Bearing Block kit will include one upper and two lower bearing blocks, 6 plastic rivets, and 3 aluminum rivets.

** Bearing Block Repair Kit Numbers		
KRV #	LCI #	Description
497493	379060	Standard Bearing Block Repair Kit
497494	379076	Inverted Bearing Block Repair Kit
497495	379077	Narrow Bearing Block w/ Composite Gibs Repair Kit
497496	379720	Triple Bearing Block Repair Kit