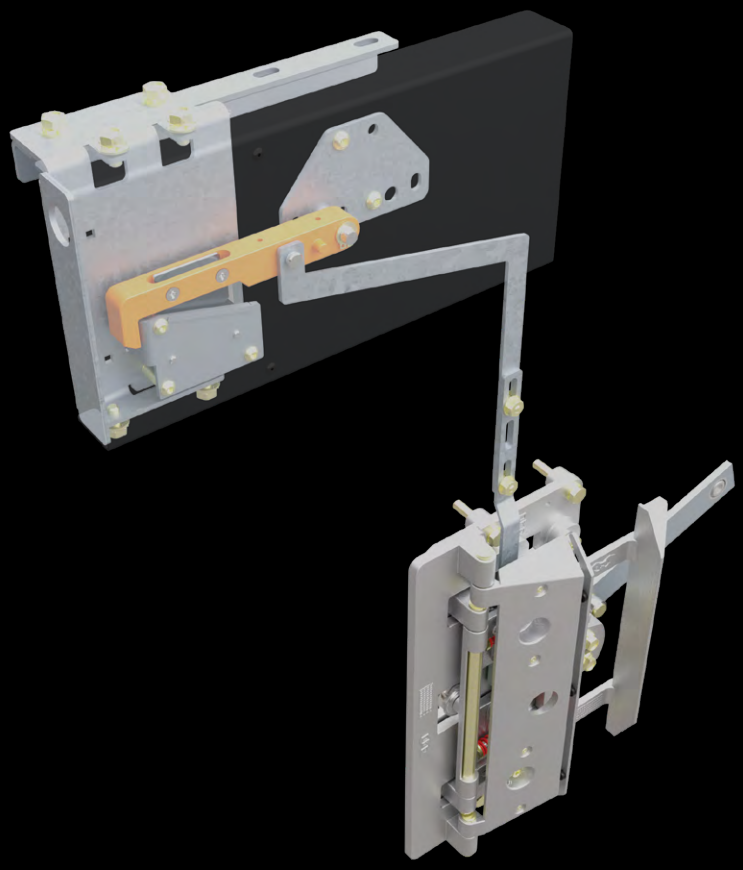
LWL Clutch and Interlock



INSTALLATION MANUAL

DOC-0152N

REV D

04/2025

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CONTENTS

1. INTRODUCTION

The LWL clutch and car door interlock are designed to work with the MOVFR-II and MOVFE-HH door operators using a drive arm. The interlock replaces the zone lock and gate switch used with the LWZ-2 clutch. The LWL is not designed to work with cable clutches, round elevators, swing door, or LRC applications.

IMPORTANT
All equipment must be installed, adjusted, tested, and maintained to comply with all Federal, State, and Local code.

2. REQUIRED TOOLS FOR INSTALLATION

- 7/16" Wrench
- 1/2" Wrench
- 9/16" Wrench
- 11/16" Wrench
- Flathead Screwdriver
- #1 Phillips Screwdriver
- 1/8" Allen Key
- 5/32" Allen Key

3. GENERAL INSTALLATION AND SETUP

3.1. BOLTS & TORQUES

During installation of the LWL clutch and interlock please use the torque specifications listed below.

BOLT/SCREW TYPE	RECOMMENDED TORQUE FT/LBS (Nm)
#8-32 UNC	2.5 ft/lbs (3.4 Nm)
#10-32 UNF	4.6 ft/lbs (6.2 Nm)
1/4-20 UNC	6.3 ft/lbs (8.5 Nm)
5/16-18 UNC	13.0 ft/lbs (17.6 Nm)
3/8-16 UNC	23.0 ft/lbs (31.2 Nm)

3.2. EXISTING COMPONENT REMOVAL

1. If installing the LWL clutch and interlock as part of a modernization, the existing clutch, door bracket (for CP and 2SCP), gate switch, and zone lock must be removed. See **Figures 1 and 2.**

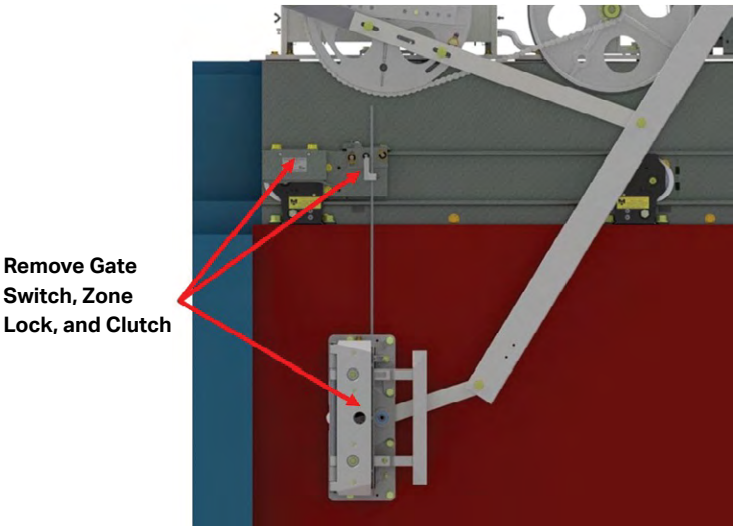

Figure 1: Remove Existing Equipment (SS, 2S, and 3S)

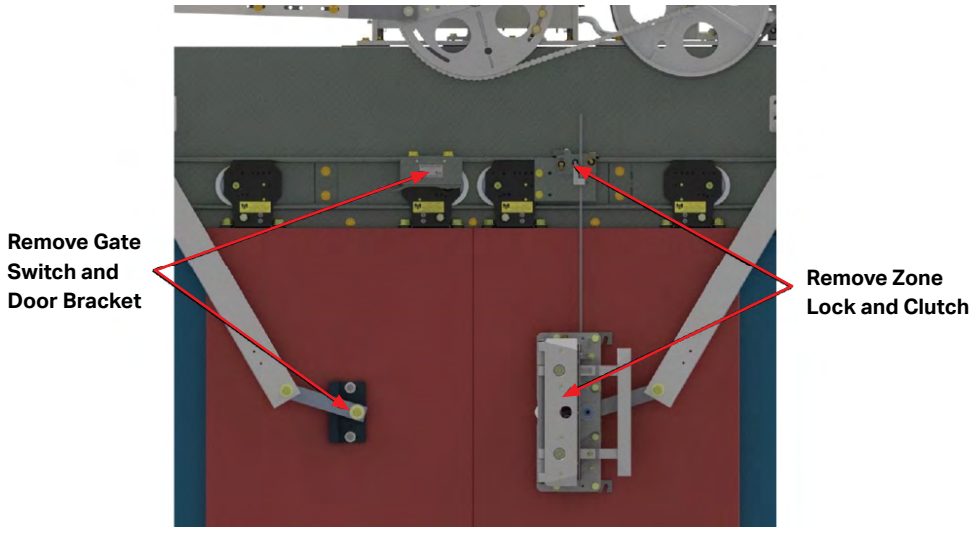

Figure 2: Remove Existing Equipment (CP and 2SCP)

2. Do not remove hatch door equipment. The LWL clutch is compatible with standard GAL MOH rollers. Adjustment of MOH rollers may be necessary after installing the LWL clutch.
3. If installing a 2S or 3S side-opening interlock, the standard track support bracket on the daylight end of the track must be replaced with the LWL bracket, as shown in **Figures 3, 4, and 5.**

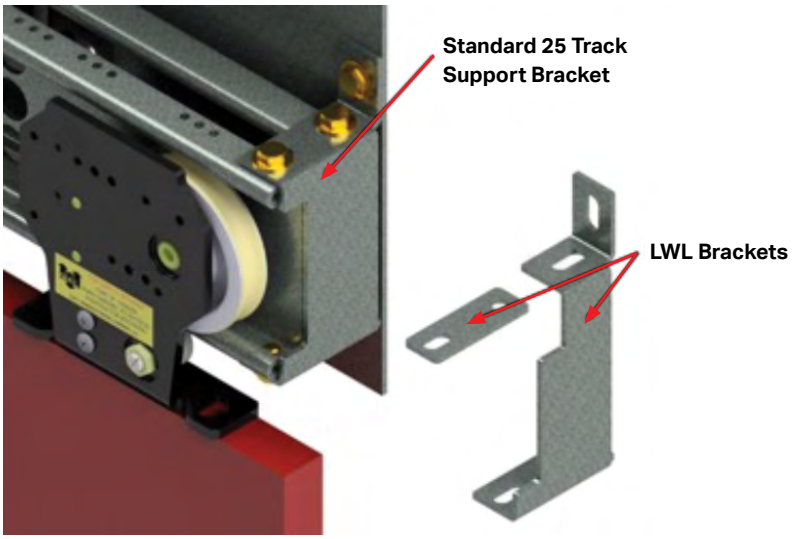

Figure 3: 2S Track Support Bracket Replacement

Figure 4: 2S Bracket Mounted Less Interlock

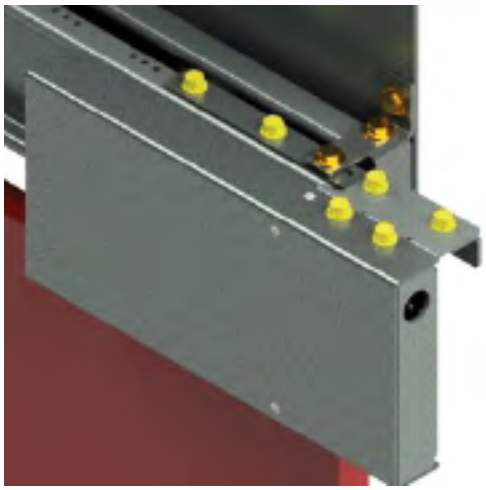

Figure 5: 2S Bracket Mounted with Interlock

3.3 SIDE-OPENING CLUTCH INSTALLATION AND OPERATOR ADJUSTMENT (SS, 2S, AND 3S)

1. If installing a clutch on a side-opening car door, ensure that the clutch springs (see **Figure 6**) are BLUE. If they are RED, please contact GAL for assistance.

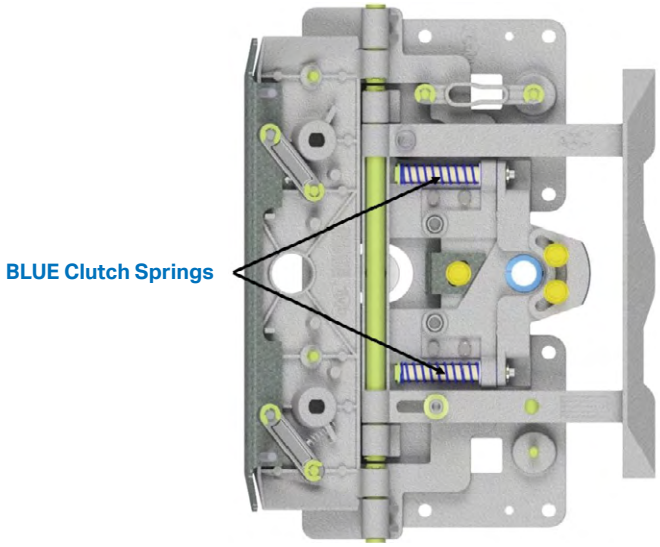

Figure 6: Side-Opening Clutch Springs

2. Per GAL templates, the car door lap should be spaced out from 1 1/4" (32mm) to 3/4" (19mm) to match the hatch door lap. Follow Steps 3-7 to space out the car door lap.
3. Before mounting the LWL clutch, the top and bottom end stops must be installed
4. For SS openings, attach the top end stop to the bottom hole closest to the end of the track, as shown in **Figure 7**.

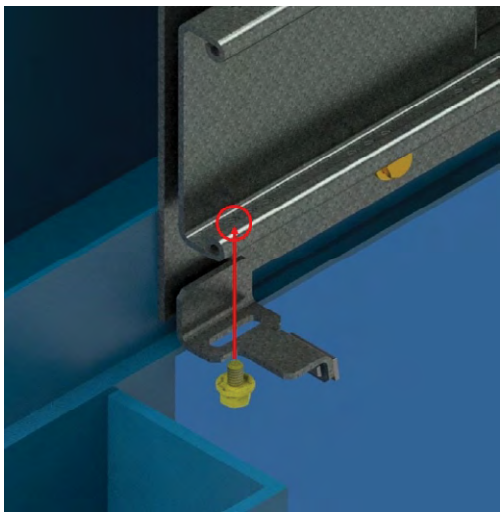

Figure 7: Top SS End Stop

5. For 2S openings, attach the top end stop to the bottom hole closest to the end of the outer track, as shown in **Figure 8**.

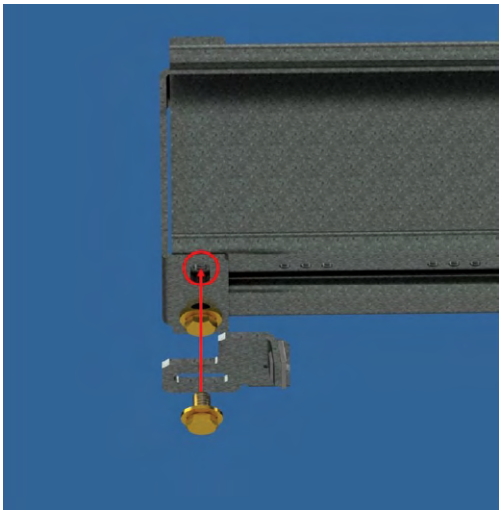

Figure 8: Top 2S End Stop

6. Close the car door so that it over-travels the end of the track by 3/4", as shown in **Figure 9**. This should match the over-travel of the hatch door. Lock the end stop in place with the bolt.

Figure 9: Set the Over Travel of the Car Door

7. Install the bottom end stop in the door sill. If the sill has a T-slot, use the provided nut and bolt to secure the stop, as shown in **Figure 10**. If the sill has straight slots, then the stop must be secured using another method to be determined by the installer.

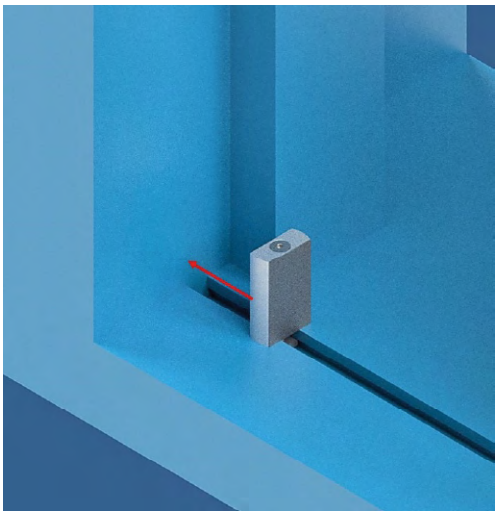

Figure 10: Bottom End Stop

8. Mount the clutch to the door and space appropriately using provided hardware and spacers, as shown in **Figure 11**.

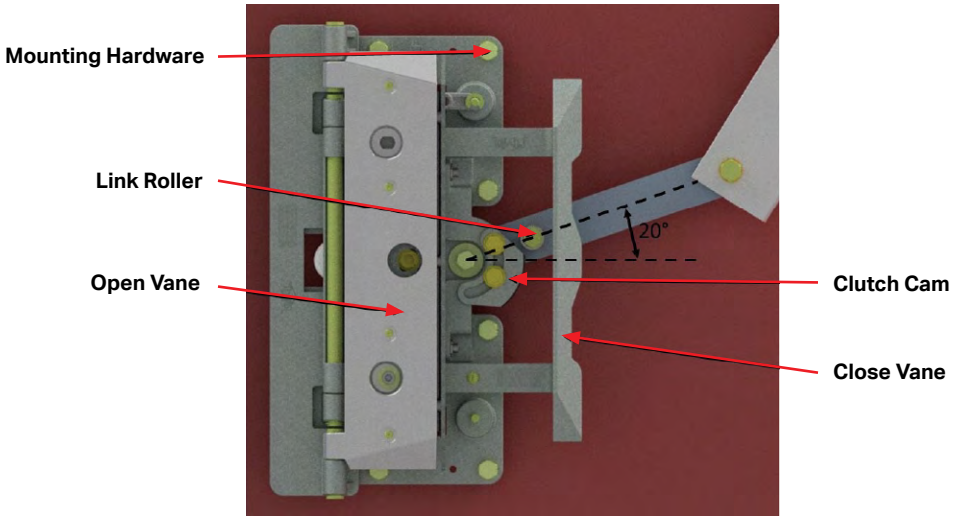

Figure 11: Mounting Clutch and Initial Adjustment

9. Use the Operator Data Tables available at www.gal.com/products/door-equipment/operators/ for a starting point of the A, C, Q, and R dimensions, as shown in **Figure 12**.
10. With the car door closed, adjust the drive arm, using R and Q dimensions in **Figure 12**, so the clutch link is at ~20° above horizontal.
11. Open the car door and make sure the clutch link does not bottom out against the clutch when the drive arm is vertical.

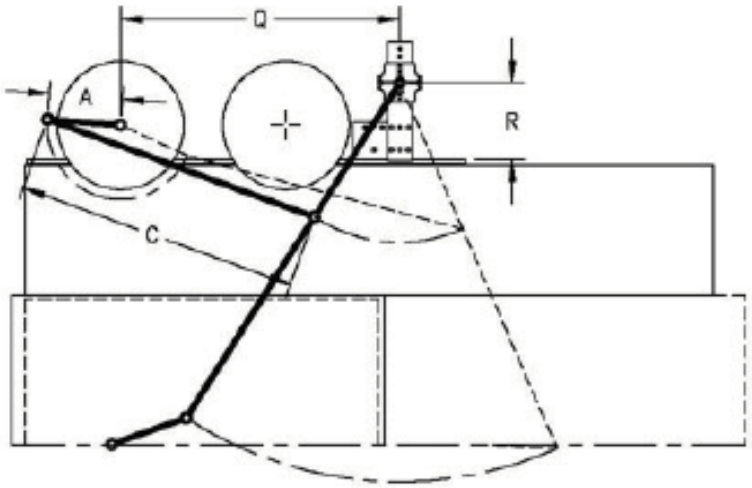

Figure 12: SS Operator Setup

12. Close the car door and adjust the clutch cam so the link roller can pass over the cam when the springs are compressed, as shown in **Figure 13**.

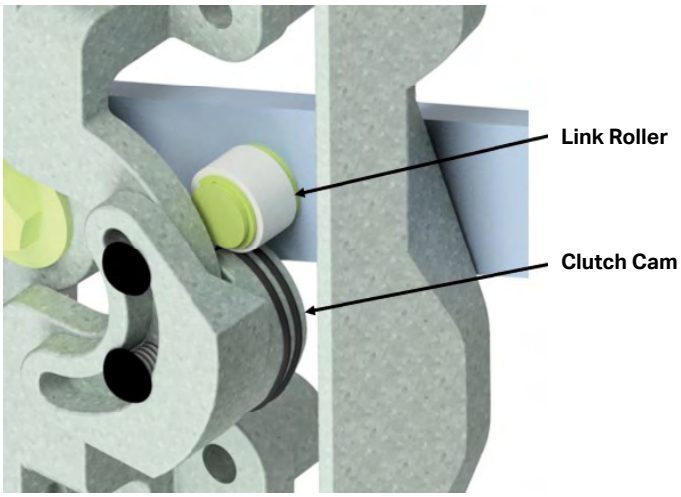

Figure 13: Clutch Cam Adjustment

13. Adjust the C-link so the clutch springs will fully compress when the operator drive wheel bumper is bottomed out. Mark C-link position. (See **Figure 14**)
14. Open the car door and adjust the C-link so the car door is aligned with the return jamb. Mark C-link position and adjust C-link halfway between the marks.
15. Fully close the car door and adjust the A-link so the clutch springs will fully compress when the operator drive wheel bumper is bottomed out. (See **Figure 14**)

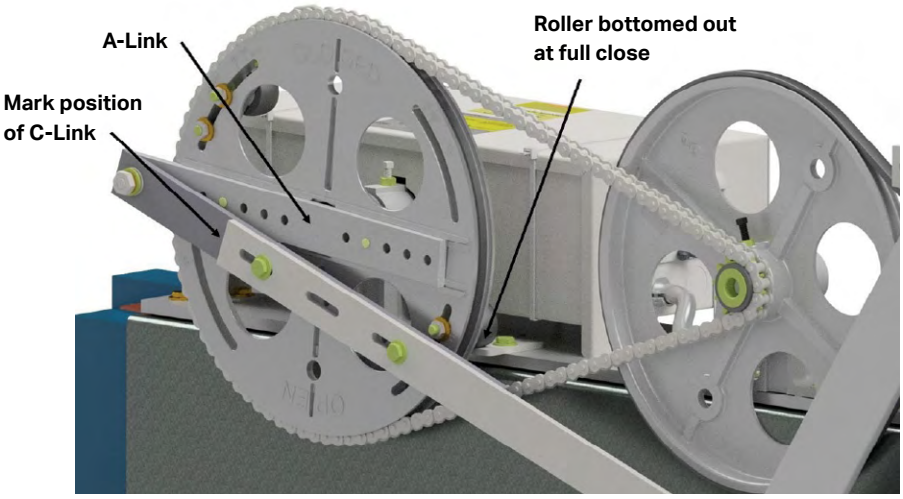

Figure 14: Mark C Link

16. Manually cycle the car door to ensure proper adjustment.
17. With the car door fully closed, adjust the close vane adjustment plate so that the close vane is fully retracted, as shown in **Figure 15**.

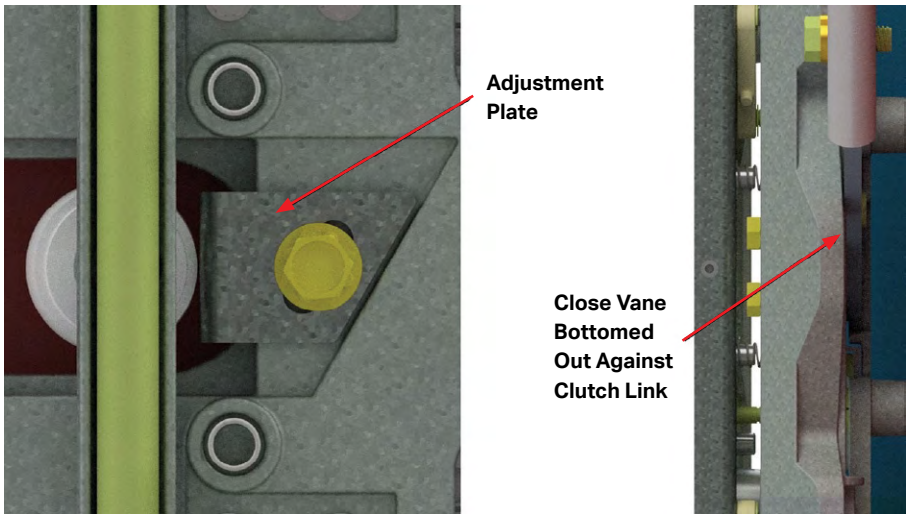

Figure 15: Retracting Vane Adjustment

3.4 CENTER-PARTING CLUTCH INSTALLATION AND OPERATOR ADJUSTMENT (CP AND 2SCP)

1. If installing a clutch on a center-parting car door, ensure that the clutch springs (see **Figure 16**) are RED. If they are BLUE, please contact GAL for assistance.

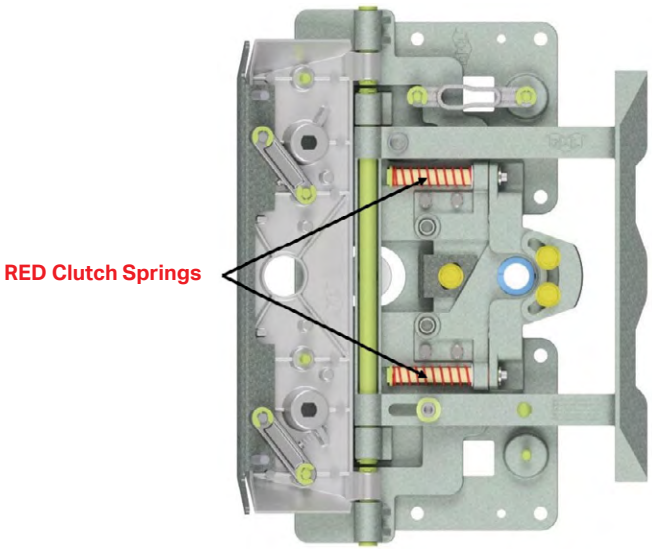

Figure 16: Center-Parting Clutch Springs

2. Before installing the LWL clutch and door bracket, the center-stop must be installed and set up on the car door track.
3. Hold the bottom piece of the center-stop against the bottom of the track in the center of the track as shown in **Figure 17**.

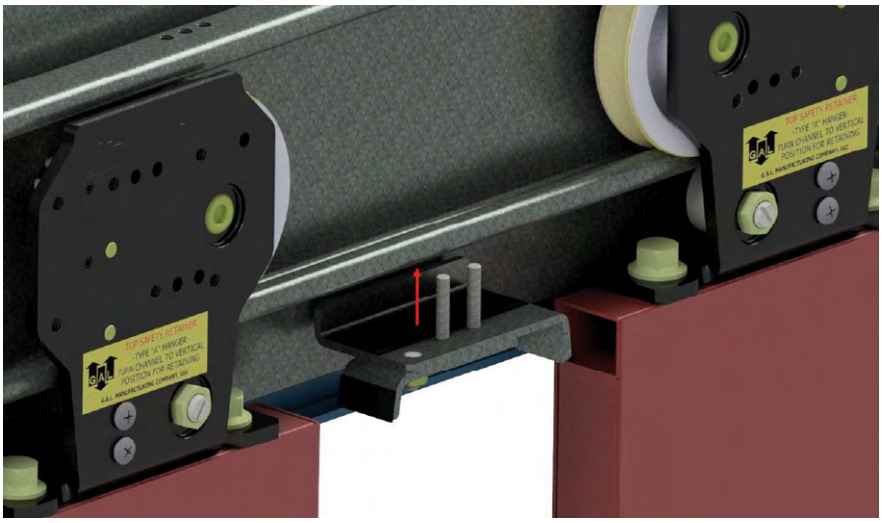

Figure 17: Center-stop Bottom Piece

4. Attach the top piece and thread on the nuts as shown in **Figure 18**. Leave the nuts loose so the center-stop can still be positioned on the track.

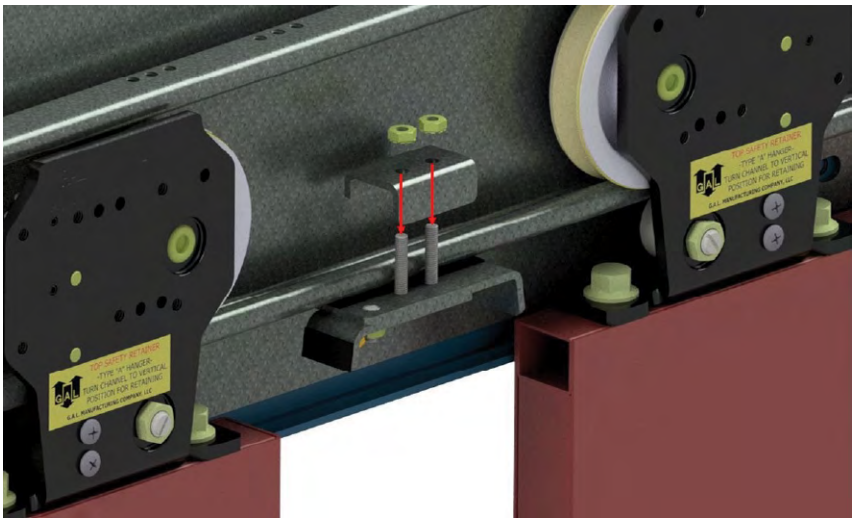

Figure 18: Center-stop Top Piece

5. Close the car doors and line them up with the centerline of the door opening. Push the center-stop against the right sheave and tighten the top nuts, shown in **Figure 19**, to lock the center-stop in place.

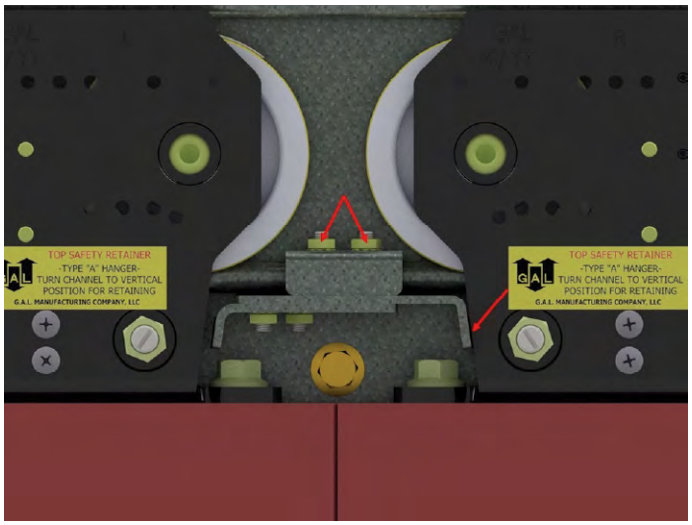

Figure 19: Set Right Side of Stop

6. Loosen the bottom nuts and slide the left stop up against the left sheave as shown in **Figure 20**. Ensure that the front edge of the bottom piece is flush when the bottom nuts are tightened down as shown in **Figure 21**.

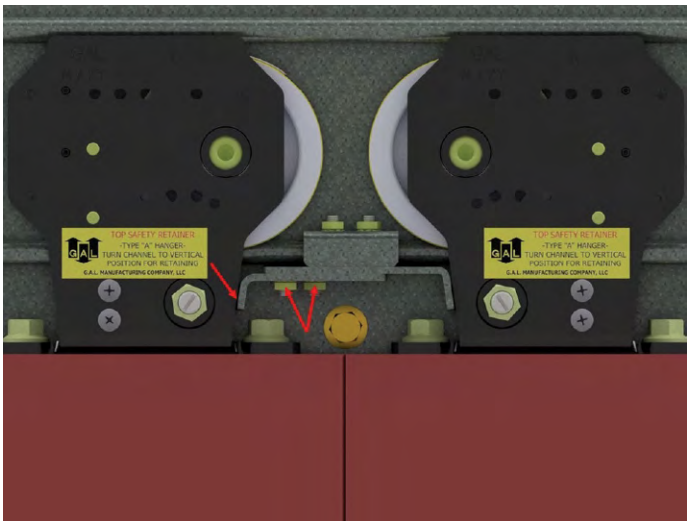

Figure 20: Set Left Side of Stop

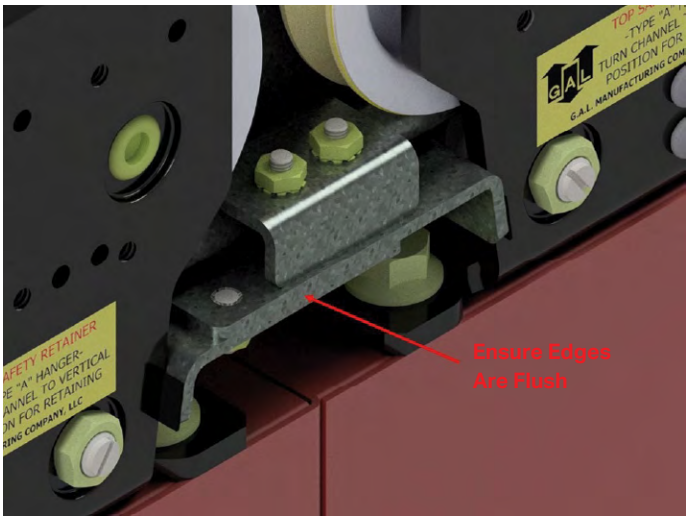

Figure 21: Front Edge of Center-stop

7. Mount the clutch and door bracket to the car doors using provided hardware as seen below in **Figure 22**.

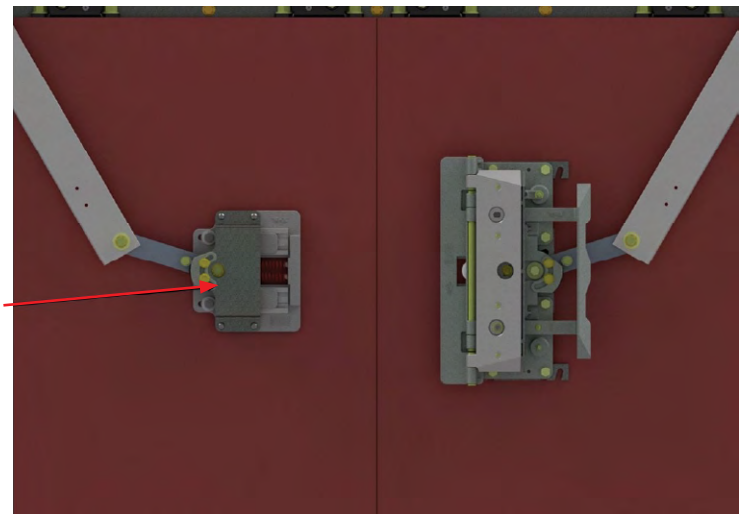

Figure 22: Mount CP Clutch and Door Bracket

8. Use the Operator Data Tables available at www.gal.com/products/door-equipment/operators/ for a starting point of the A, B, C, J, and R dimensions, as shown in **Figure 23**.
9. With the car doors closed at centerline, adjust the R and J dimensions shown in **Figure 23** so the clutch and door bracket links are at ~20° above horizontal.

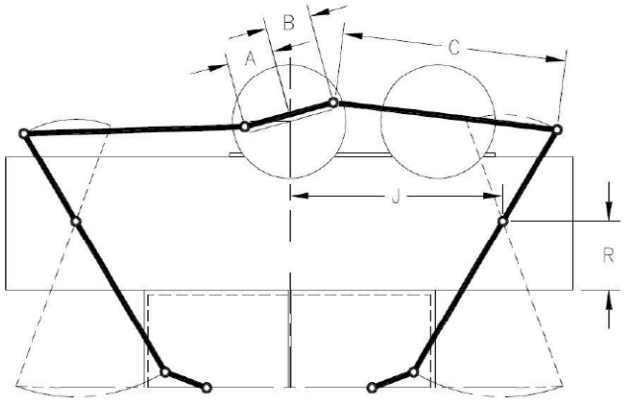

Figure 23: CP Operator Setup

10. Open the car doors and make sure the clutch and door bracket links do not bottom out when the drive arms are vertical.
11. Close the car doors and adjust the clutch and door bracket cams so the link rollers can pass over the cams when the springs are compressed, as shown in **Figure 13**.
12. Adjust the C-links so the clutch and door bracket springs will fully compress when the operator drive wheel bumper is bottomed out. Mark C-link positions. **(See Figure 24)**
13. Open the car doors and adjust the C-links so the car doors are aligned with the return jambs. Mark C-link positions and adjust C-links halfway between the marks.
14. Fully close the car door and adjust the A and B-links so the clutch and door bracket springs will fully compress when the operator drive wheel bumper is bottomed out. **(See Figure 24)**

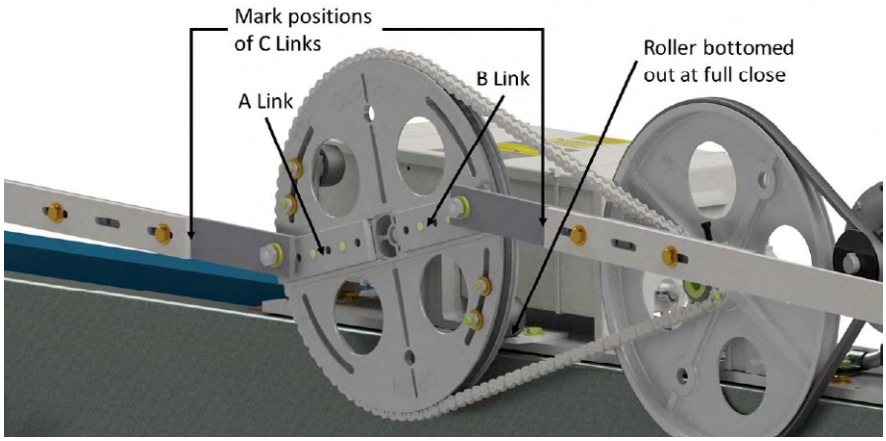

Figure 24: Mark C Links

15. Manually cycle the car doors to ensure proper adjustment.
16. With the car doors fully closed, adjust the close vane adjustment plate so that the close vane is fully retracted, as shown in **Figure 15**.

3.5. OPERATOR ADJUSTMENTS

1. After completing the mechanical adjustment of the LWL clutch the MOVFR operator must be adjusted.

3.5.1. HOLDING TORQUE ADJUSTMENT

1. The close holding torque (Pr# 1) must be increased using the Parameter Unit. Start at 5% and increase the torque by 0.5% increments until the clutch expands fully. Do not set the holding torque above 7%. This could cause the motor and/or drive to overheat.

3.5.2. OPTICAL CAM ADJUSTMENT

1. Set the toggle switches to CAM SETUP and MAN.
2. Manually close the car door(s) so they are against the door jamb for side-opening or each other for center-parting.
3. Adjust the DCL optical cam so the DCL LED is lit.
4. Flip the top toggle switch to RUN and let the operator fully compress the clutch.
5. Flip the top toggle switch to CAM SETUP and ensure the DCL LED is still lit after the clutch decompresses.

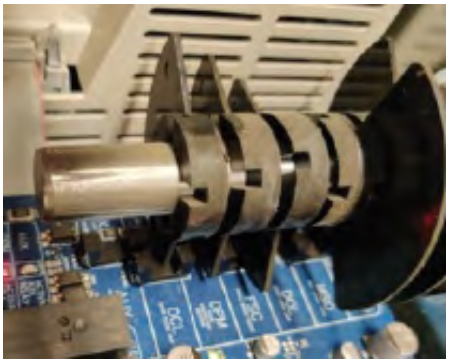

Figure 25: Optical Cams

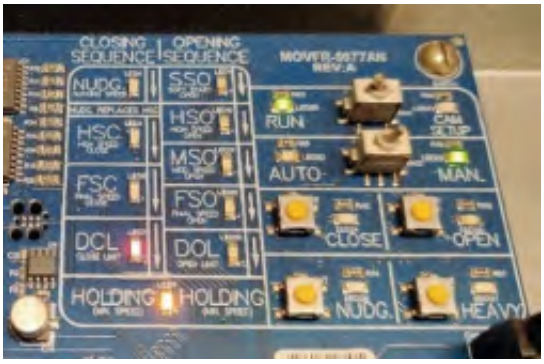

Figure 26: DCL LED

3.6. SIDE-OPENING INTERLOCK INSTALLATION (SS, 2S, AND 3S)

WARNING:
DO NOT CONNECT THE INTERLOCK TO POWER UNTIL ALL COMPONENTS (INTERLOCK AND KEEPER) ARE INSTALLED AND PROPERLY ADJUSTED.

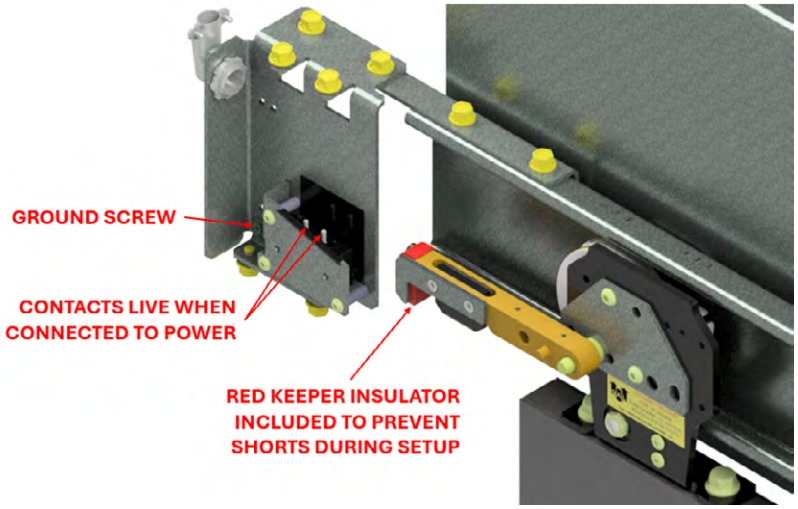

Figure 27: LWL Interlock electrical safety precautions

1. See **Figure 28** for side-opening interlock components.

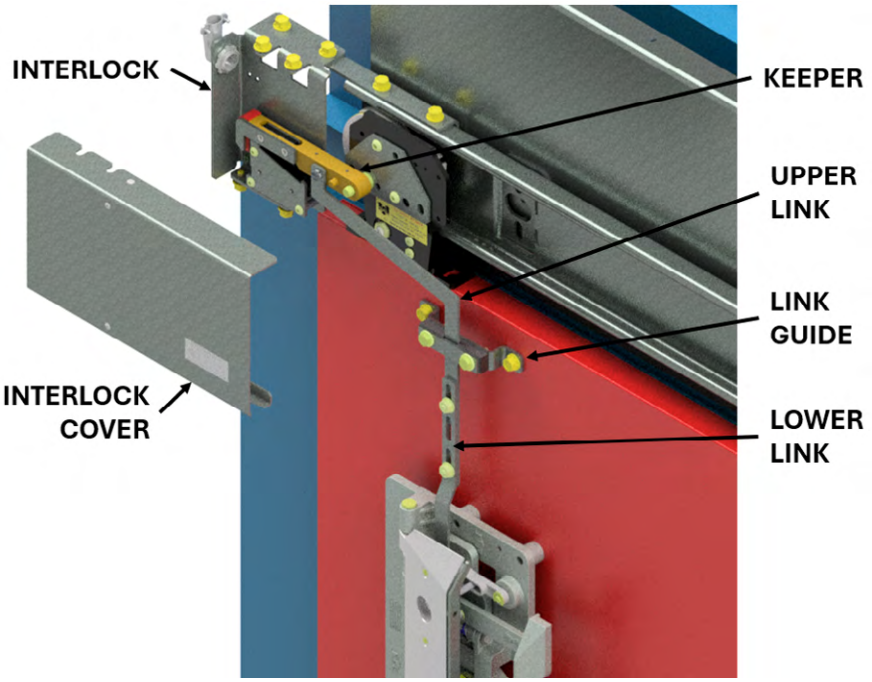

Figure 28: SS Interlock Components

2. Mount the Track Bracket as indicated below in **Figure 29**:

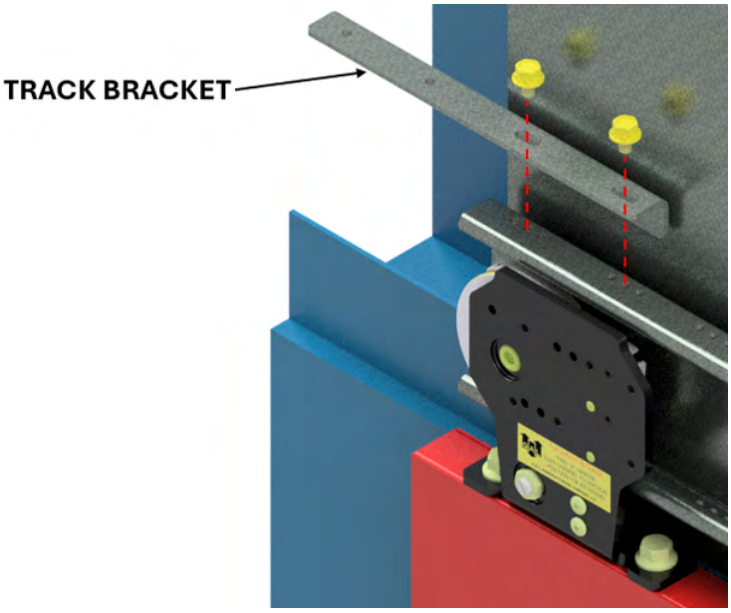

Figure 29: Track Bracket mounting position

3. Mount the Interlock to the Track Bracket.
   NOTE: Slots on each part allow for adjustment in the directions indicated in **Figure 30.**.

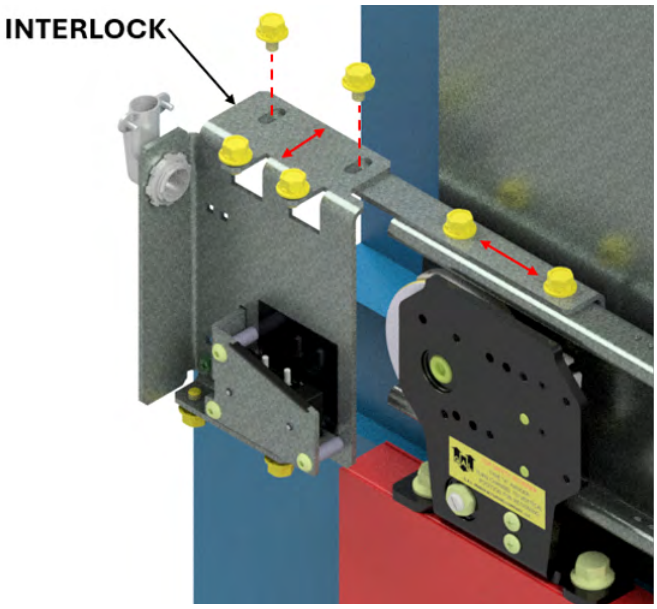

Figure 30: Interlock mounting and adjustment

DO NOT CONNECT THE INTERLOCK TO POWER AT THIS POINT

4. Mount keeper to the leading sheave on the car door with provided button head screws, as shown in **Figure 31 and 32**. A third mounting screw is included for your convenience.

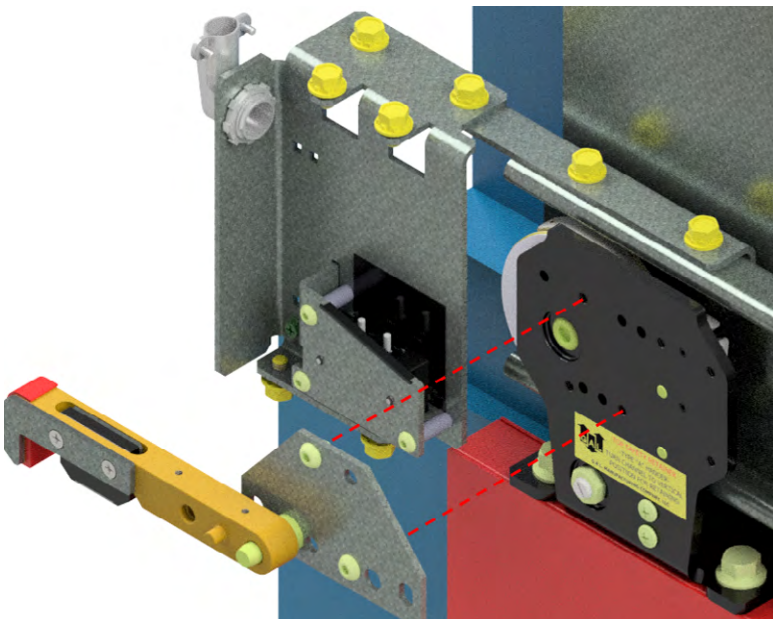

Figure 31: Keeper Mounting

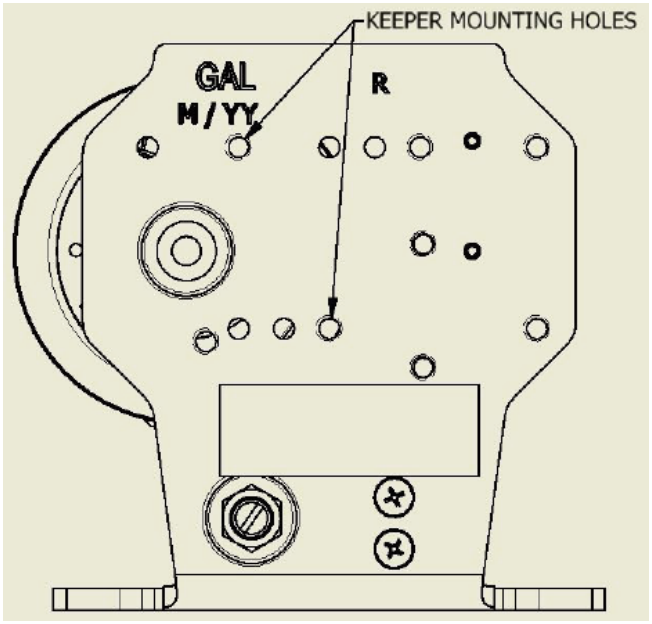

Figure 32: Mounting Holes

5. Attach the keeper to the clutch with the upper and lower links as shown in **Figure 33.**

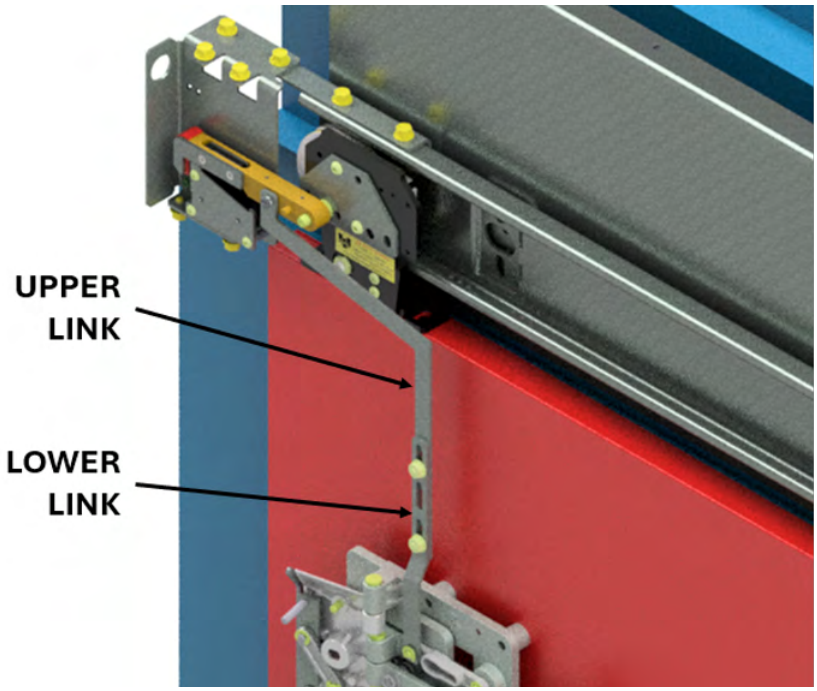

Figure 33: Lift Links

6. Mount the Link Guide Assembly to the door and run the link through the assembly. This will keep the link in a vertical position and prevent any side to side motion. Adhere the included black plastic to the cover plate to prevent the Upper Link from scraping against the cover plate.

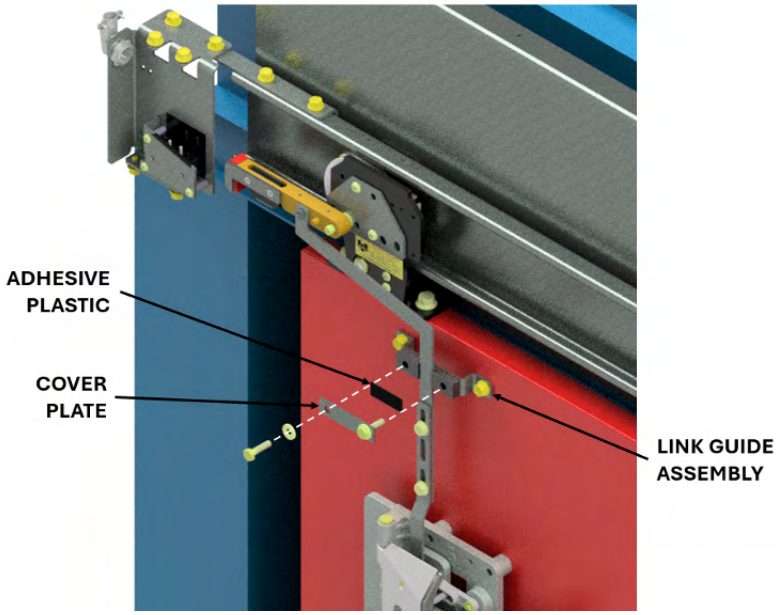

Figure 34: Link Guide Assembly

7. Place the Setup Insulator on the tip of the keeper as shown in **Figure 34.** This insulator prevents the keeper from shorting on the contacts while the interlock is being aligned.
It must be removed before the elevator is put into operation.

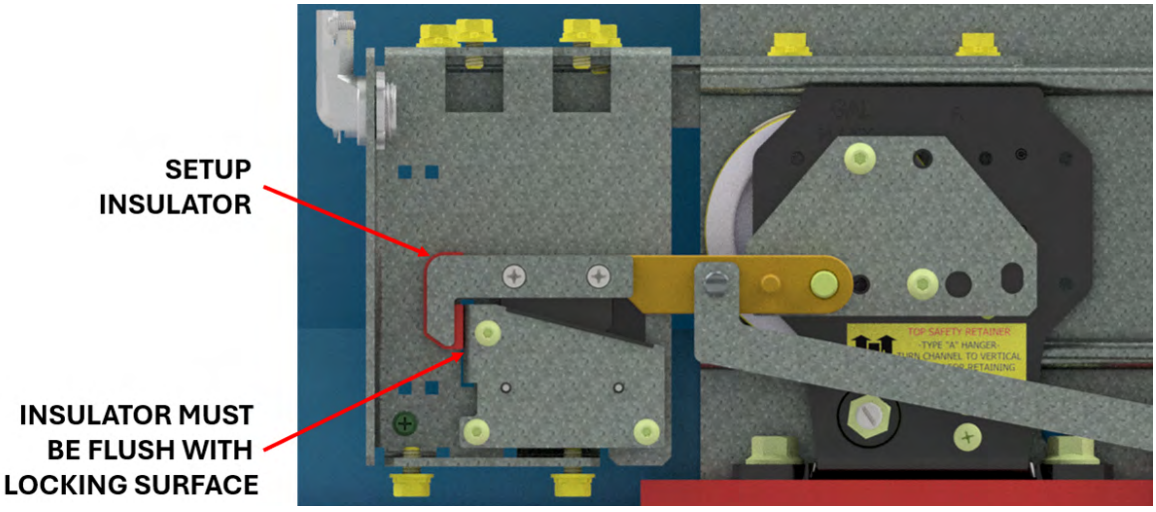

Figure 35: The Setup Insulator

8. Adjust interlock so the keeper is aligned with the contacts and the front face of the keeper is flush with the contact plate when the car door is closed, as shown in **Figure 36.**

> **IMPORTANT:**
> Before connecting the interlock to power, cycle the doors to ensure the keeper and interlock are properly aligned. The keeper must be able to slide up the ramp of the contact assembly.

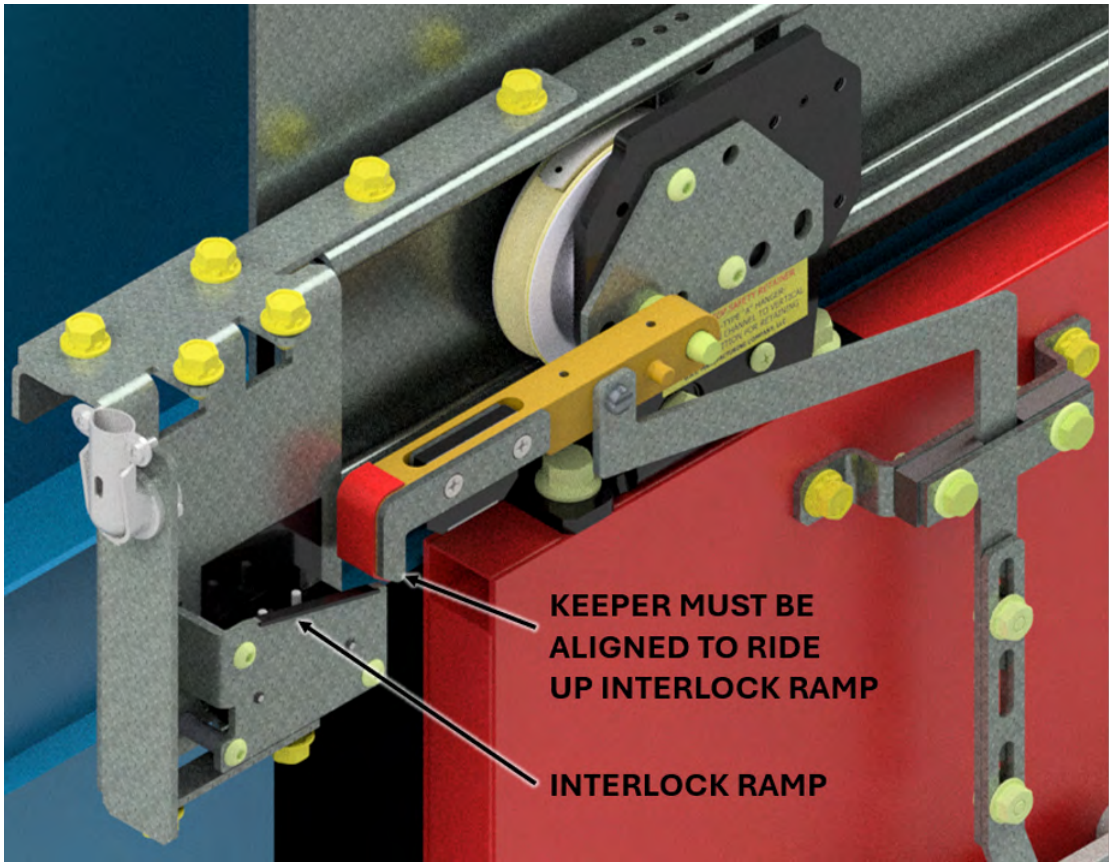

Figure 36: SS Interlock Mounting and Adjustment

NOTE: Under normal operation, the keeper should never come in contact with the ramp, as it will be in the raised position when entering/exiting the interlock. In the event that the keeper becomes de-coupled from the clutch, the keeper will fall to the lowered position and the ramp will ensure that the car door is able to close and lock.

9. With the interlock properly aligned, remove the Setup Insulator from the keeper. Manually open and close the doors to ensure the system is functioning as intended.

10. Remove the interlock cover and the contact assembly, as shown in **Figure 37.**

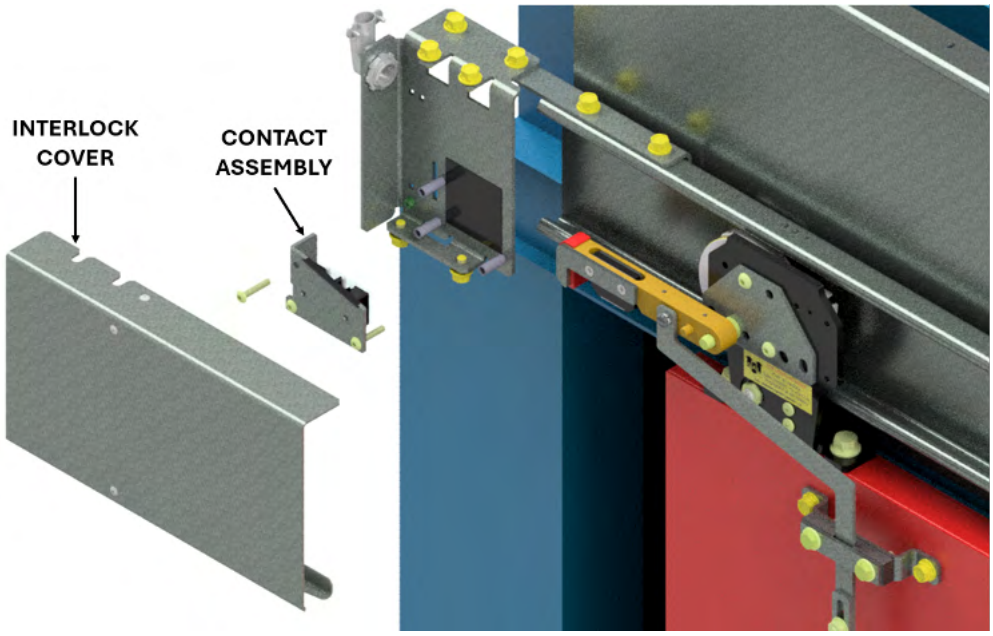

Figure 37: Contact Assembly

11. Wire the contacts to the gate switch terminals on the operator, as shown in **Figure 38. The interlock must be wired in accordance with local code.**

Figure 38: Gate switch Terminals

12. Attach contact assembly and cover.
13. Cycle door manually to ensure proper adjustment.

3.7. CENTER-PARTING INTERLOCK INSTALLATION (CP AND 2SCP)

1. See **Figure 39** for center-parting interlock components.

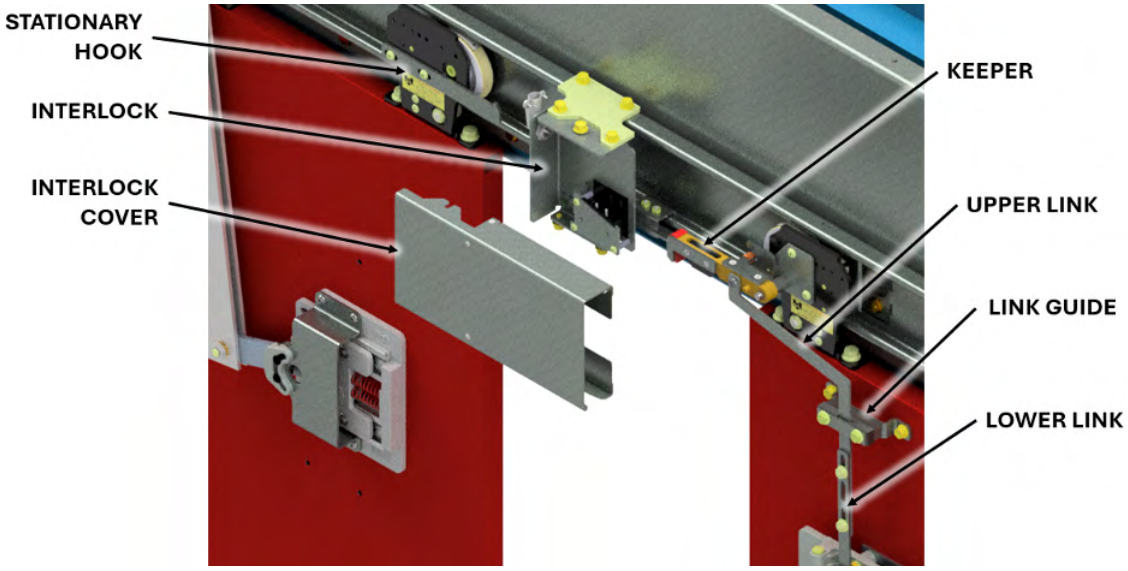

Figure 39: CP Interlock Components

2. Mount keeper and stationary hook to the leading sheaves on the car doors with provided button head screws, as shown in Figures **40 and 41**. Check the engagement of the stationary hook with the keeper. The hook should engage with the keeper just behind the cork bumpers.

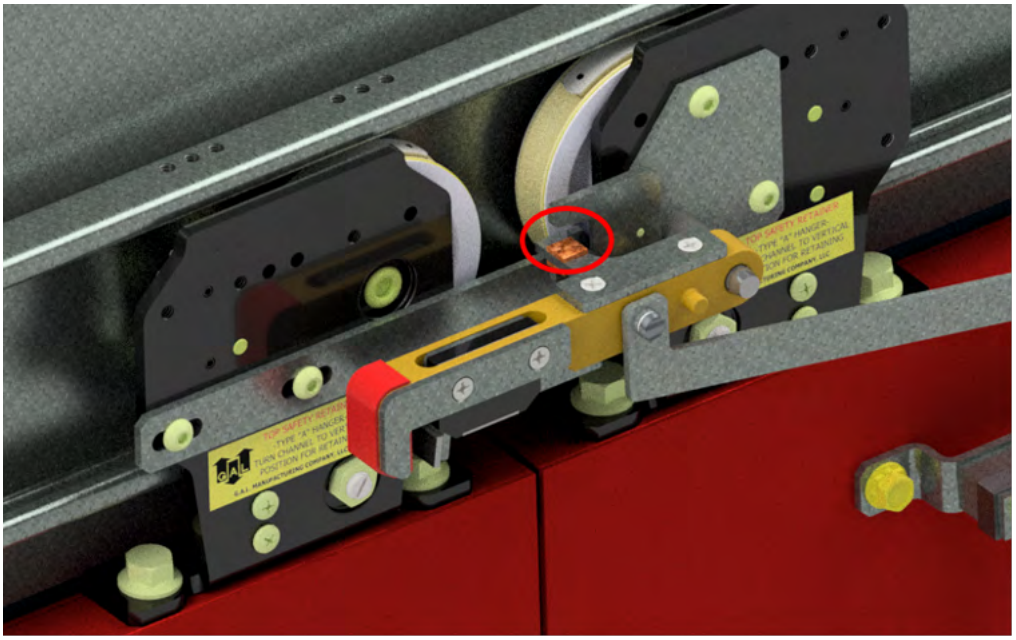

Figure 40: CP Keeper Mounting

3. Attach the keeper to the clutch with the upper and lower links, as shown in **Figure 39.**
4. If it is not already on, place the Setup Insulator on the keeper as shown in **Figure 35.**
5. Remove the cover from the interlock and mount the interlock to the track. Adjust interlock so the keeper is aligned with the contacts, as shown in **Figure 42** (and **Figure 36**).

> **IMPORTANT:**
> The keeper must be able to slide up the ramp of the contact assembly. Before connecting the interlock to power, cycle the doors to ensure the keeper and interlock are properly aligned.

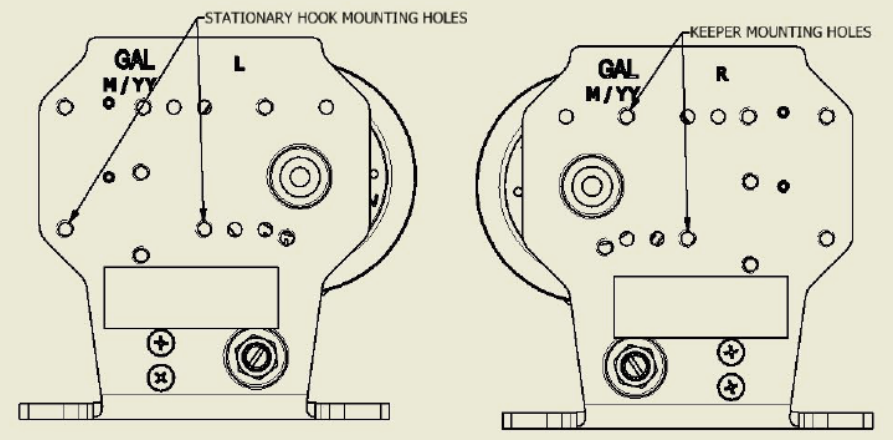

Figure 41: Mounting Holes

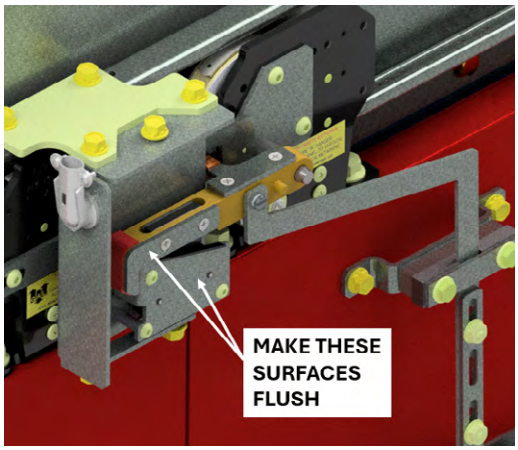

Figure 42: CP Interlock Mounting and Adjustment

6. Attach cover to the interlock and ensure there is no interference with the keeper.
7. Remove the cover and the contact assembly, as shown in **Figure 37.**
8. Wire the contacts to the gate switch terminals on the operator, as shown in **Figure 38.**
9. Attach contact assembly and cover.
10. Cycle door manually to ensure proper adjustment.
11. Remove the Setup Insulator from the keeper.

3.8. ADJUSTING HATCH EQUIPMENT

1. After installing the LWL clutch and interlock on the car door, the car must be run to each landing to ensure the roller release is properly adjusted.
2. When the doors are closed the clutch will still be collapsed around the roller release, as shown in **Figure 43**.

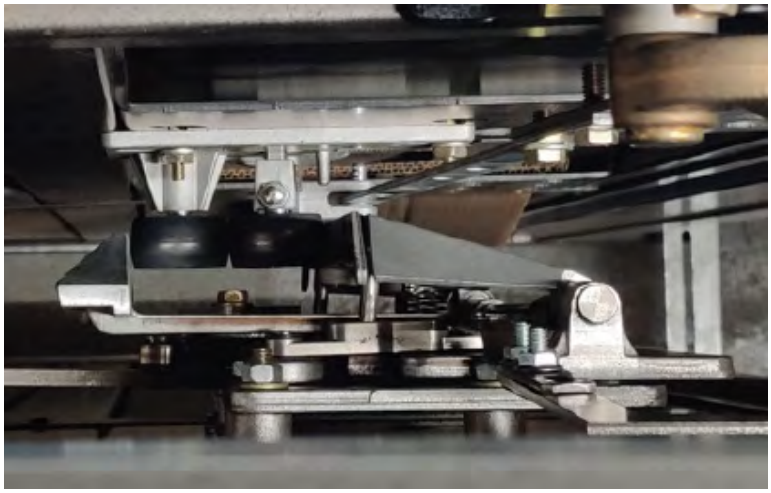

Figure 43: Doors Closed with Clutch Collapsed Around Roller Release

3. Once the clutch has fully expanded there should be a ~3/16" (5mm) gap between the clutch sensing vane and the roller release. The close vane should be fully retracted from the roller release. See **Figure 44**.

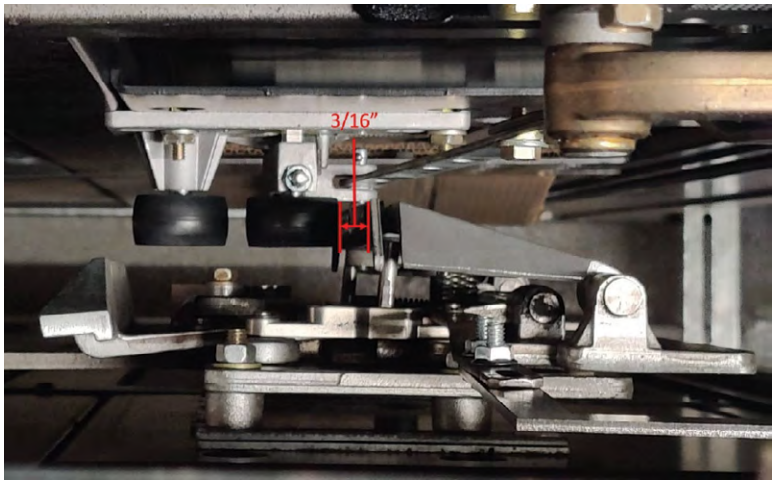

Figure 44: Doors Closed with Clutch Fully Expanded

4. Check the hatch keeper to ensure it is not raised too high and interfering with the hatch interlock.

4. MAINTENANCE

This section covers the maintenance procedures for the LWL clutch and interlock. Please contact GAL to order replacement parts. Replacement kit part numbers can be found in DOC-0153N.

4.1. LINEAR GUIDES

The LWL clutch is designed to disengage with the hatch door rollers by expanding. Linear bearings are used to achieve the required motion **(Figure 45)**. ***These are dry running bearings and require NO additional lubrication. DO NOT apply any lubrication to the linear bearings.*** GAL has tested the bearings thoroughly without seeing any noticeable wear. The bearings are NOT a field replaceable part of the clutch. If the bearings have worn out the entire clutch must be replaced.

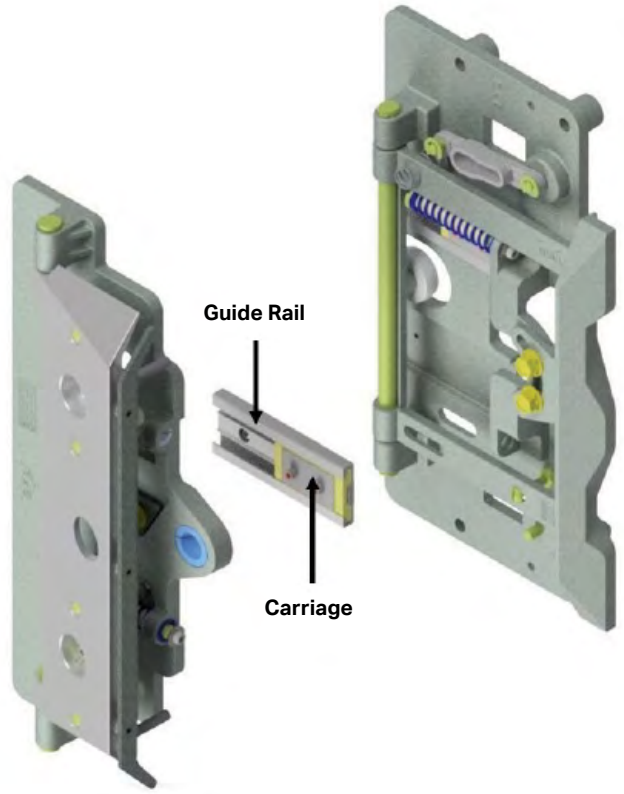

Figure 45: Linear Bearings

4.2. CAM O-RINGS

There are two o-rings on the clutch cam that provide a riding surface for the roller bearing on the clutch link. These o-rings should be replaced annually or if damaged beyond the serviceable limit.

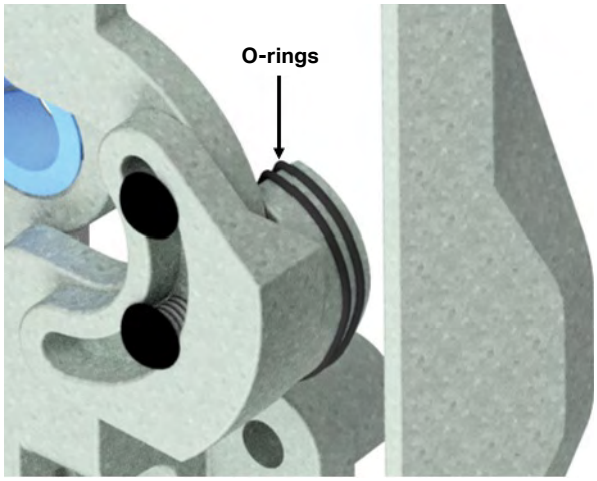

Figure 46: Cam O-Rings

4.3. LOCK ACTIVATING PIVOT

The lock activating pivot (see **Figure 47**) should be checked annually for excessive wear on the inside riding surface of the part, as well as the nyliner bushing. It should be replaced if necessary.

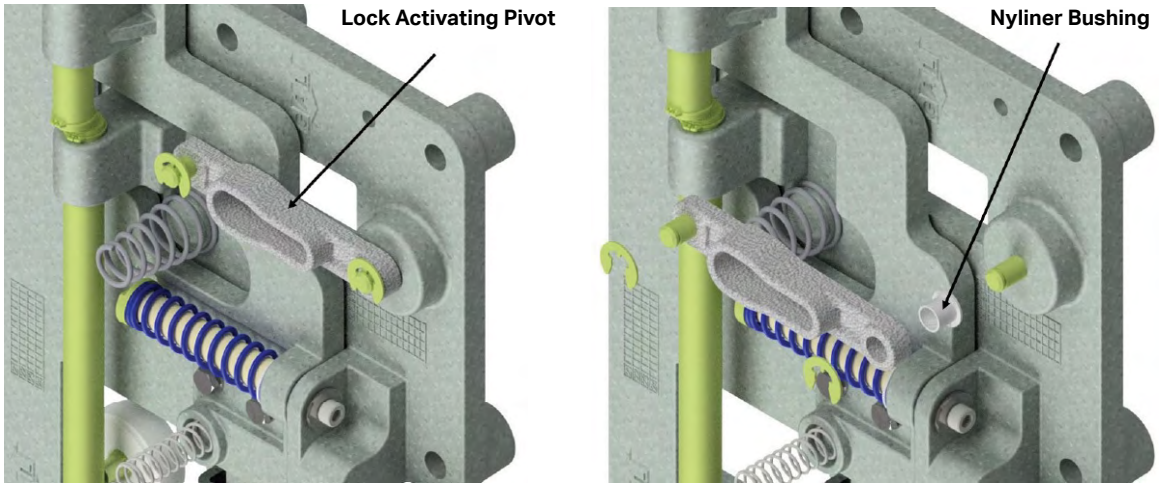

Figure 47: Lock Activating Pivot

4.4. RETURN SPRINGS

The LWL clutch uses two compression springs to ensure that the clutch will engage the hatch door rollers in the event of a power loss at a landing. SS, 2S, and 3S clutches use blue springs, while CP and 2SCP clutches use red springs. These springs will deteriorate over time and begin to squeak and creak when they are compressed. The springs should be inspected annually and replaced if necessary. See below for replacement instructions.

4.4.1. Remove the retention screw and flip open the open vane of the clutch to expose the return springs.

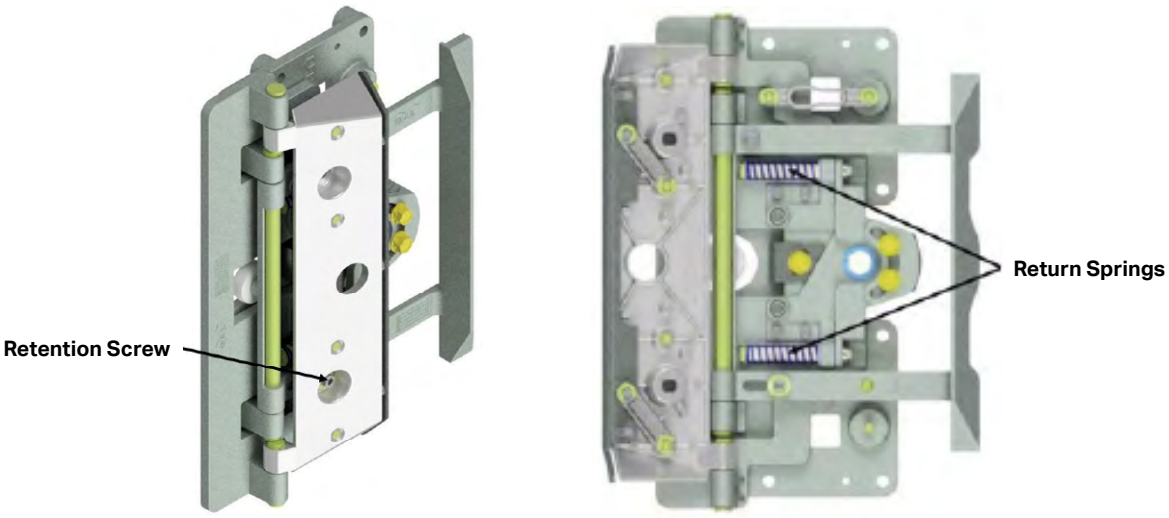

Figure 48: Retention Screw and Return Springs

4.4.2. Use a 9/64" allen wrench and the GAL Spring Tool (included with replacement kit) to remove the socket head screw and washer.

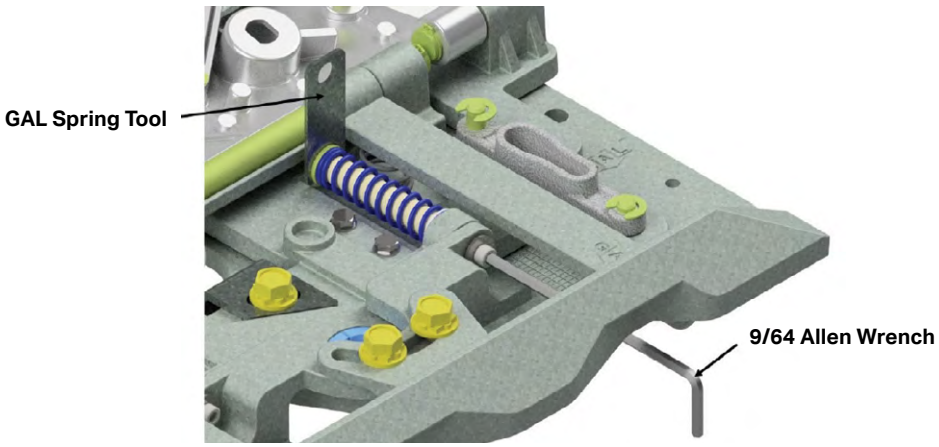

Figure 49: Remove Screw and Washer

4.4.3. Remove metal tube using needle-nose pliers.

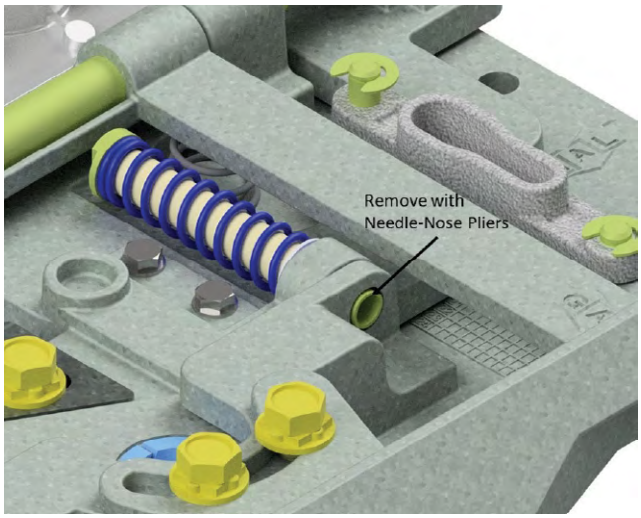

Figure 50: Remove Metal Tube

4.4.4. Lift up on the end of the spring assembly. The spring will still be under some compression so be careful when removing it.

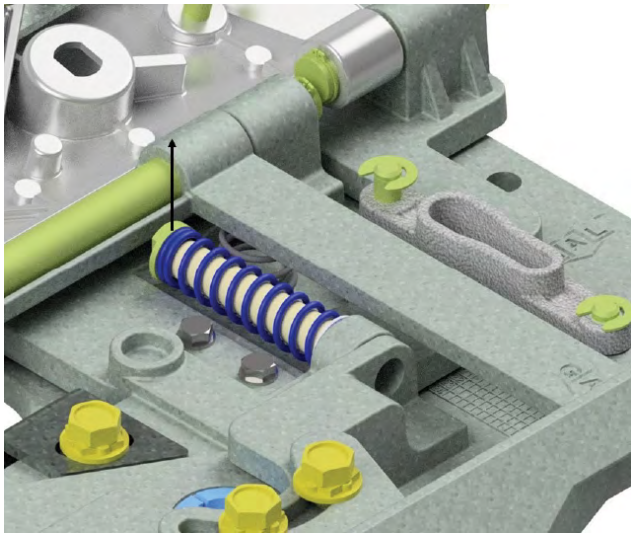

Figure 51: Remove Spring Assembly

4.4.5. Remove the nyliner bushing.

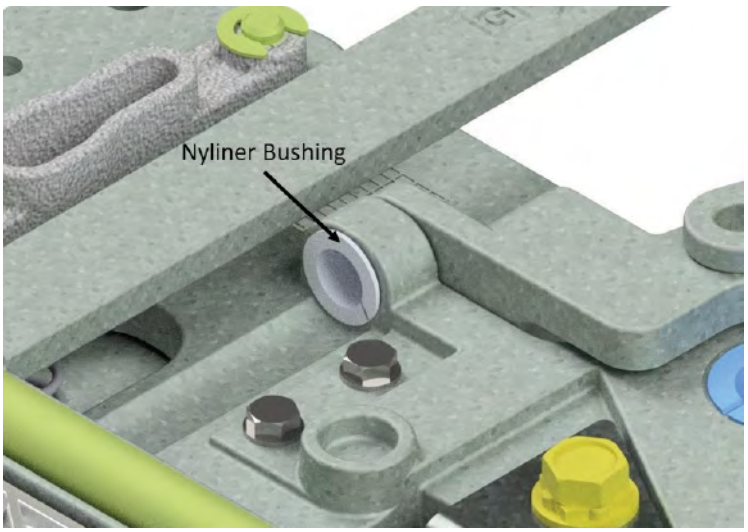

Figure 52: Nyliner Bushing

4.4.6. To install the new springs perform steps 4.4.1 to 4.4.5 in reverse.

4.5. INTERLOCK CONTACTS

Contacts should be checked annually for pitting, carbon build up, or excessive wear. Wipe the contact bridge with a clean cloth to remove any debris. If the contacts or bridge must be replaced, they must be replaced as a set.

Figure 53: Contact and Bridge

5. EMERGENCY UNLOCKING INSTRUCTIONS

In case of emergency, unlock the LWL Car Door Interlock by lifting up on the upper link. Apply the force upwards on the section of the link indicated by the red arrow below in **Figure 54**. This will raise the keeper and allow the car door to slide open.

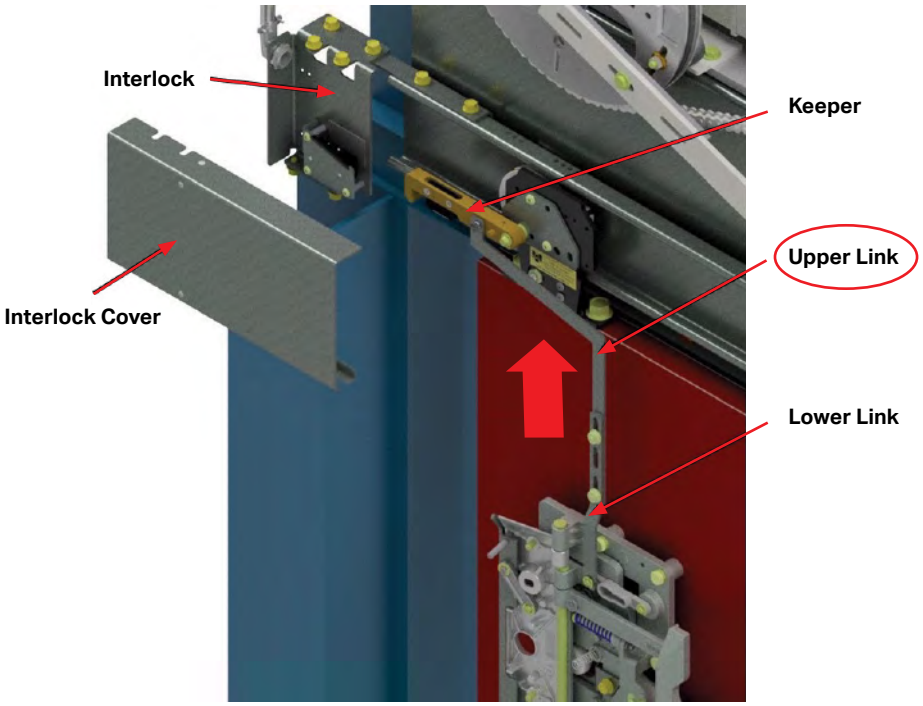

Figure 54: Lift up on the Upper Link to unlock the interlock

NOTES