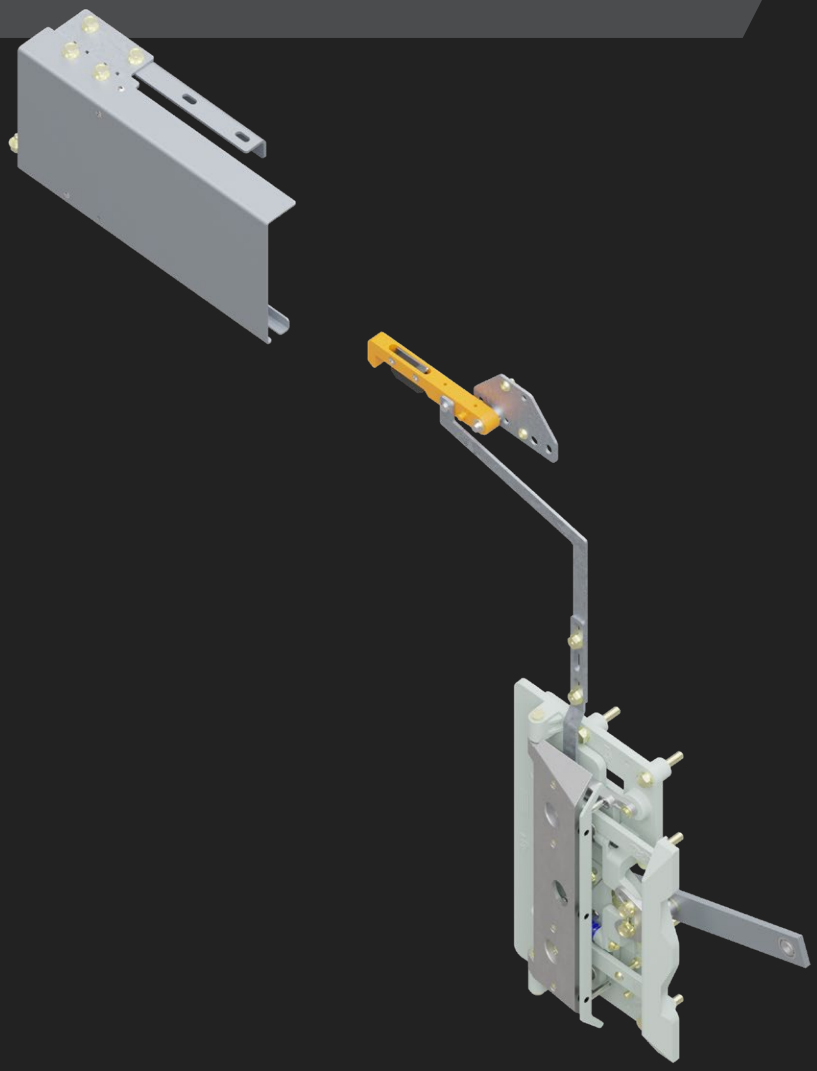
LWL Clutch and Interlock



INSTALLATION GUIDE

LWL CLUTCH AND INTERLOCK
INSTALLATION MANUAL

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1. INTRODUCTION

The LWL clutch and interlock are designed to work with the MOVFR II door operator 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, MOVFE, swing door, or LRC applications.

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)
#8-32 UNC	2.5
#10-32 UNF	4.6
1/4-20 UNC	6.3
5/16-18 UNC	13
3/8-16 UNC	23

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.**

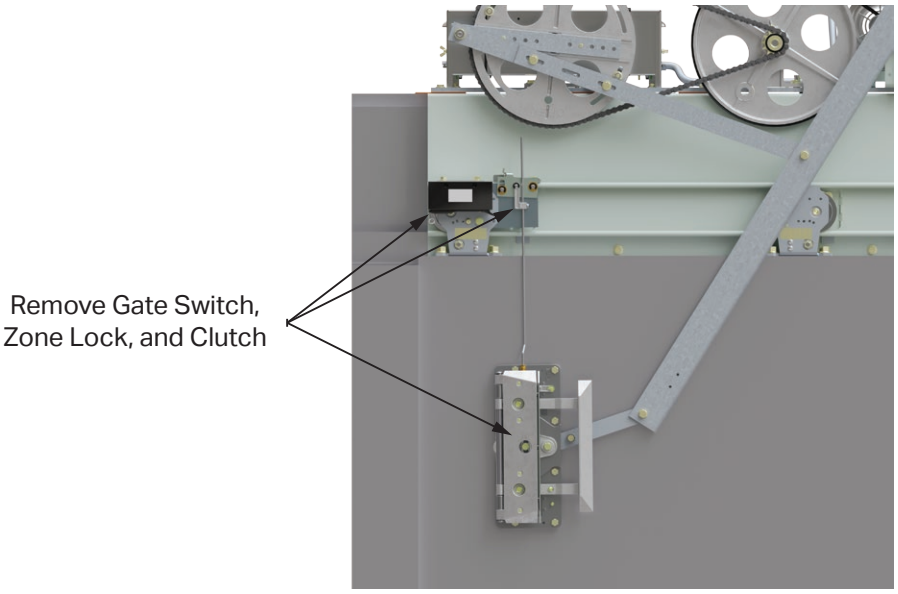

Figure 1: Remove Existing Equipment (SS, 2S, and 3S)

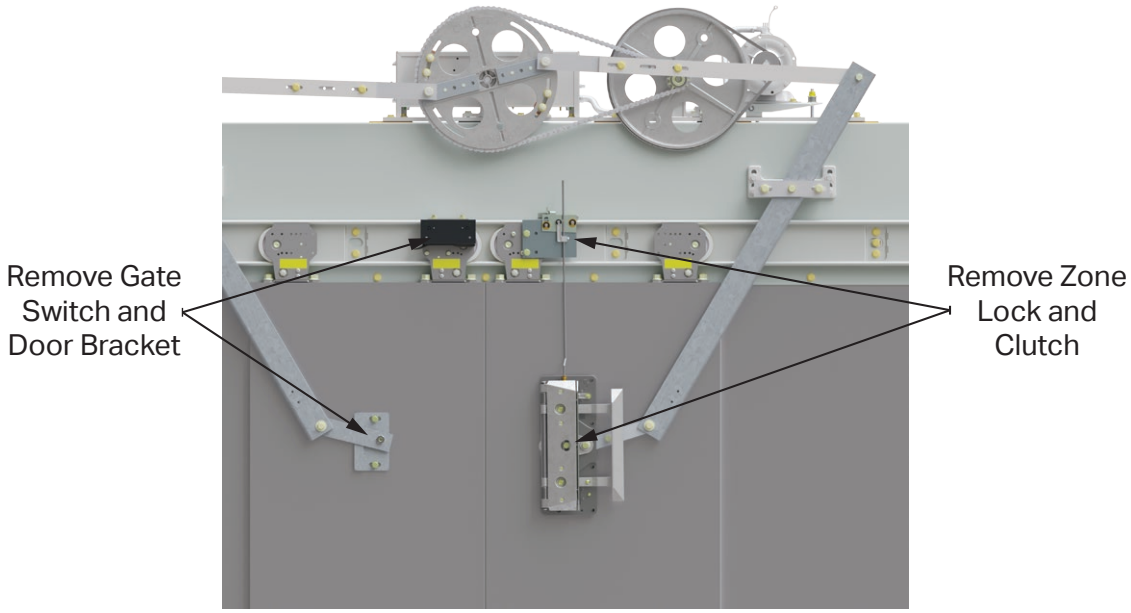

Figure 2: Remove Existing Equipment (CP and 2SCP)

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**.

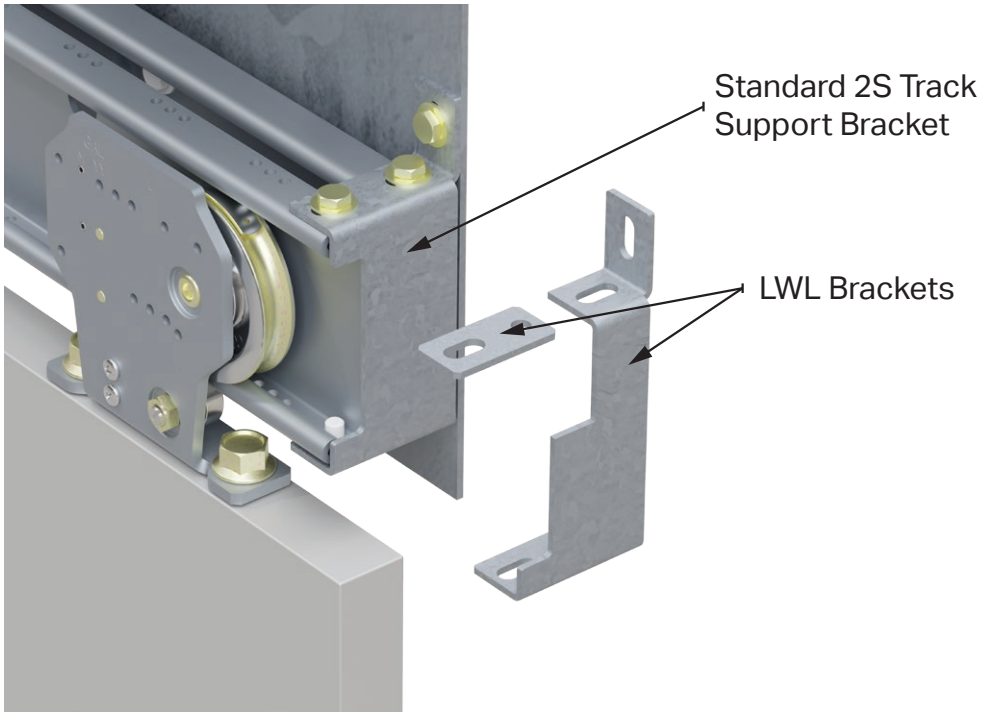

Figure 3: 2S Track Support Bracket Replacement

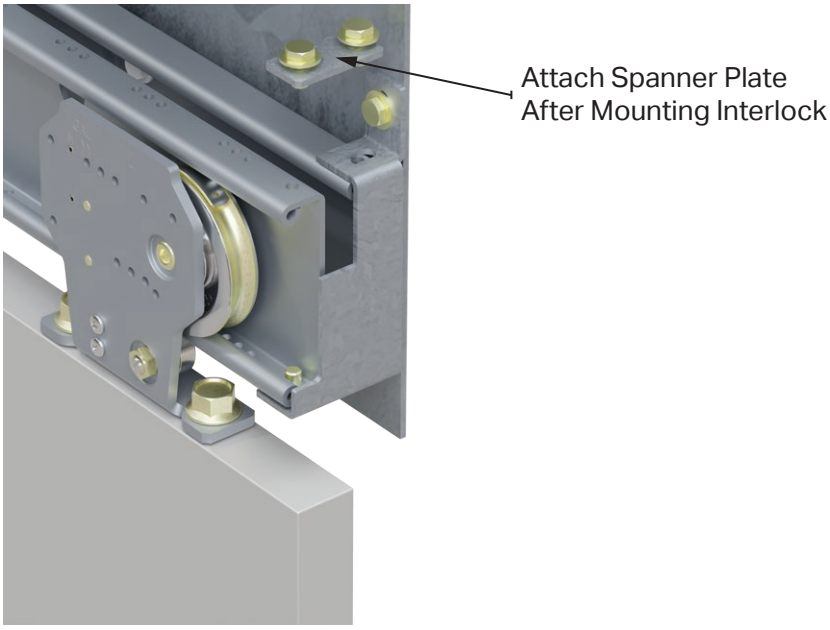

Figure 4: 2S Bracket Mounted Less Interlock

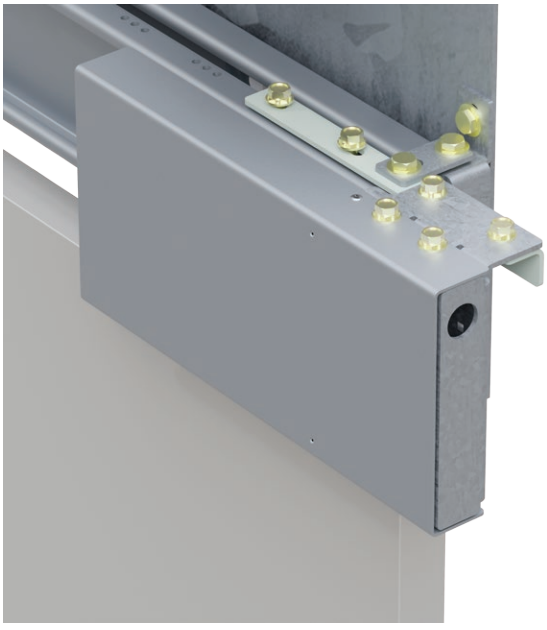

Figure 5: 2S Bracket Mounted With Interlock

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.

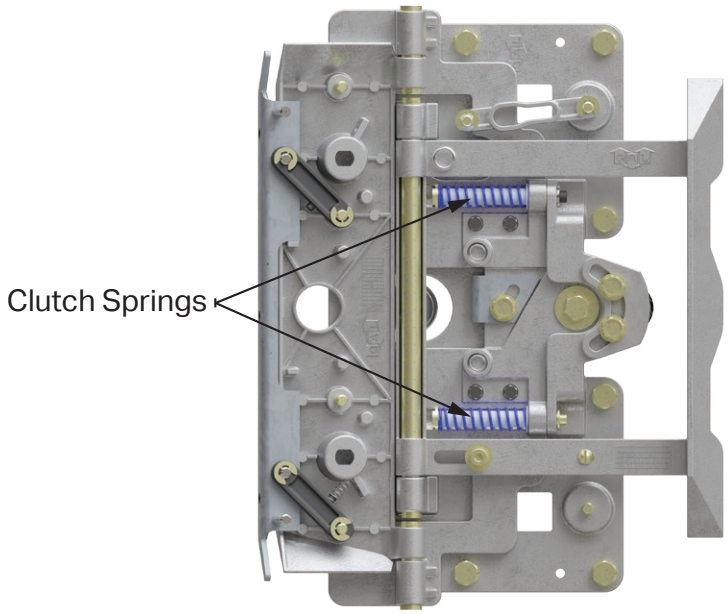

Figure 6: Side-Opening Clutch Springs

2. ***Per GAL templates the car door lap should be spaced out from 1 1/4" to 3/4" to match the hatch door lap.*** There should be no car door overtravel. The leading edges of the car door and hatch door should always be parallel.
3. Mount the clutch to the door and space appropriately using provided hardware and spacers, as shown in **Figure 7**.

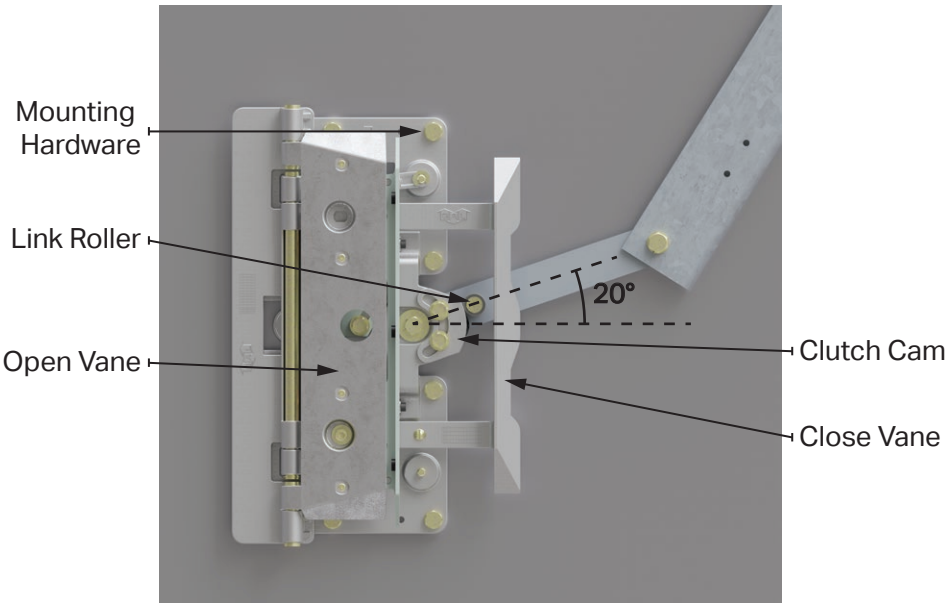

Figure 7: Mounting Clutch and Initial Adjustment

4. 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 8.**
5. With the car door closed, adjust the drive arm, using R and Q dimensions in **Figure 8**, so the clutch link is at ~20° above horizontal.
6. Open the car door and make sure the clutch link does not bottom out against the clutch when the drive arm is vertical.

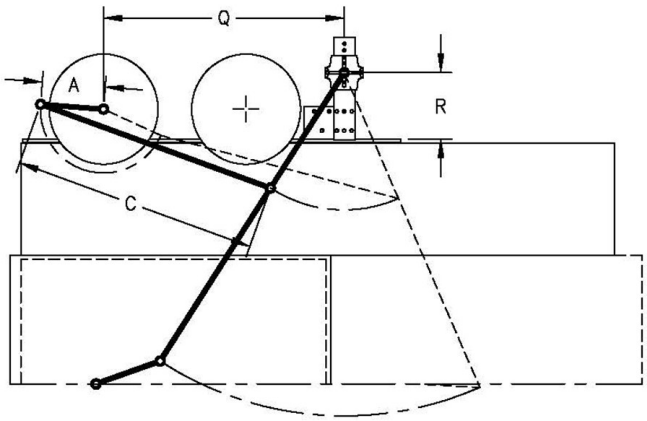

Figure 8: SS Operator Setup

7. 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 9.**

Figure 9: Clutch Cam Adjustment

8. 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 10**)

9. 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.
10. 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 10**)

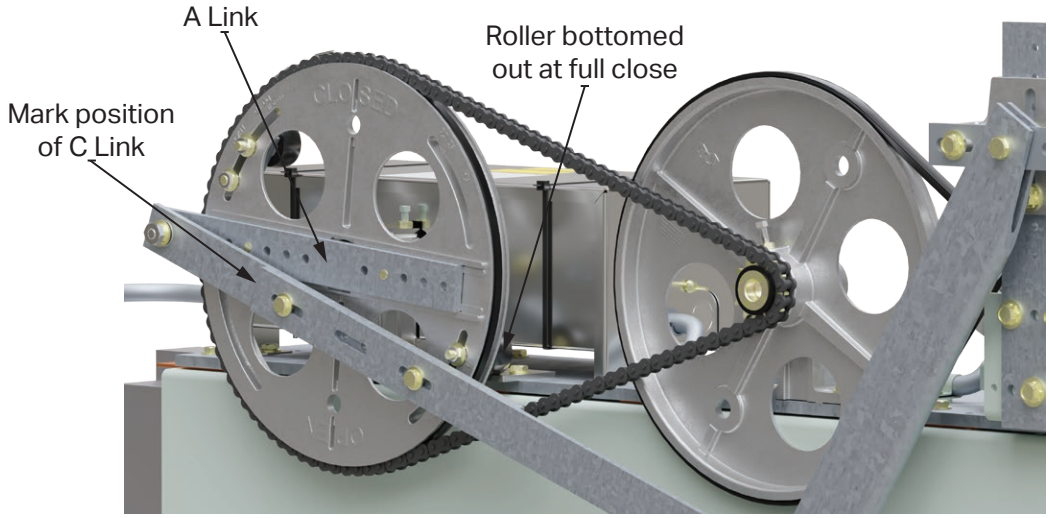

Figure 10: Mark C Link

11. Manually cycle the car door to ensure proper adjustment.
12. Set the Adjustment Plate position by following the steps below:
    i. With the car door closed and the clutch fully expanded, hold the Close Vane in the retracted position (bottomed out against the Clutch Link). See **Figures 11 and 12**.

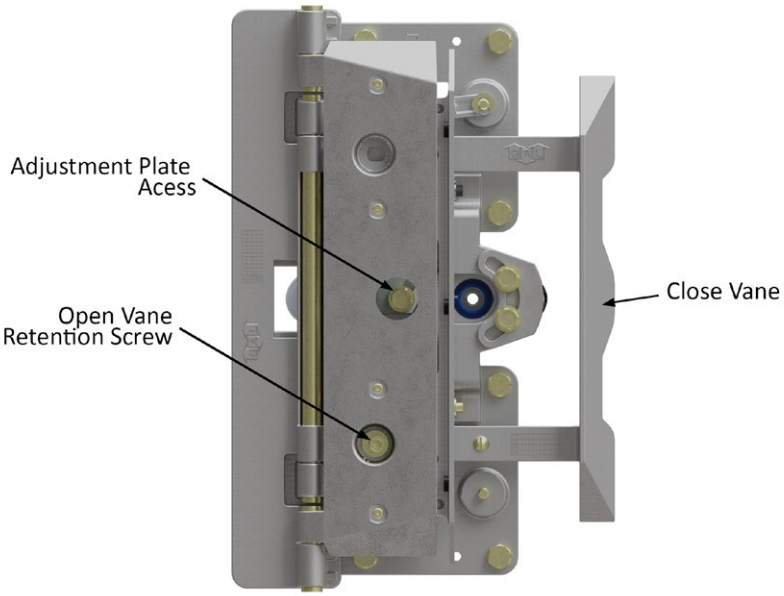

Figure 11: Components for setting the Adjustment Plate.

ii. Access the Adjustment Plate screw through the hole in the Open Vane (indicated above in **Figure 11**) and loosen the screw. With the Close Vane still pinned against the Clutch Link, set the Adjustment Plate so that it is in contact with the Nylon Roller.
iii. Let go of the Close Vane. The vane should remain in the retracted position, held in place by the Adjustment Plate as it contacts the Nylon Roller. Depicted in **Figure 12**.

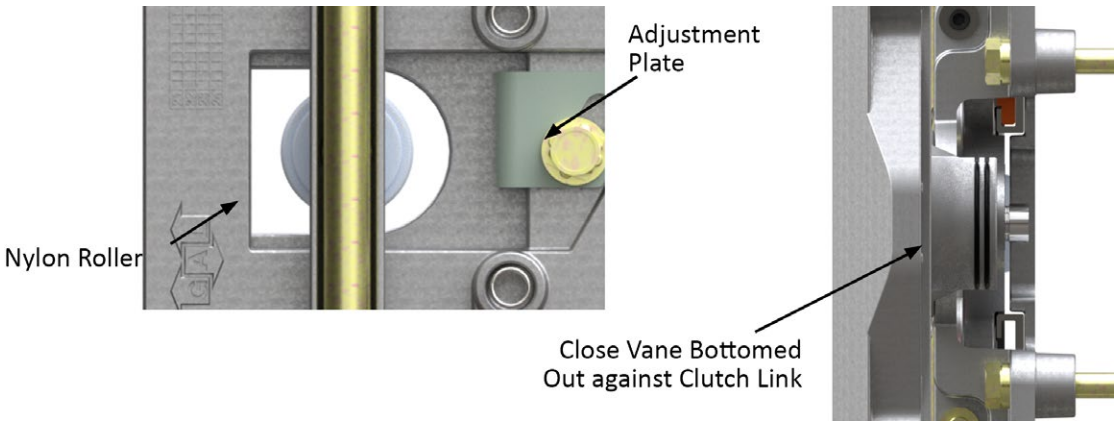

Figure 12: Retracting Vane Adjustment

Note: If adjustment is difficult and more access is needed, see the Adjustment Plate Troubleshooting Section on the next page.

13. Cycle the doors and watch the retraction of the Close Vane with the door closed and clutch fully expanded.

ADJUSTMENT PLATE TROUBLESHOOTING:

1. If you are having difficulty setting the correct position, it may be necessary to open the Open Vane to access the plate. Unscrew the Open Vane Retention Screw (indicated in Figure 11), to allow the Open Vane to swing open.

Note: Use care when opening the vane. The springs on the Open Vane are pressed onto posts and should not fall off, but they may loosen during shipping.

2. Follow the instructions outlined in Step 12 of Section 3.3.
3. After setting the Adjustment Plate in the desired spot, carefully close the Open Vane, ensuring that the ends of the Open Vane Springs are seated in the embossed circles on the clutch. See **Figure 13**.

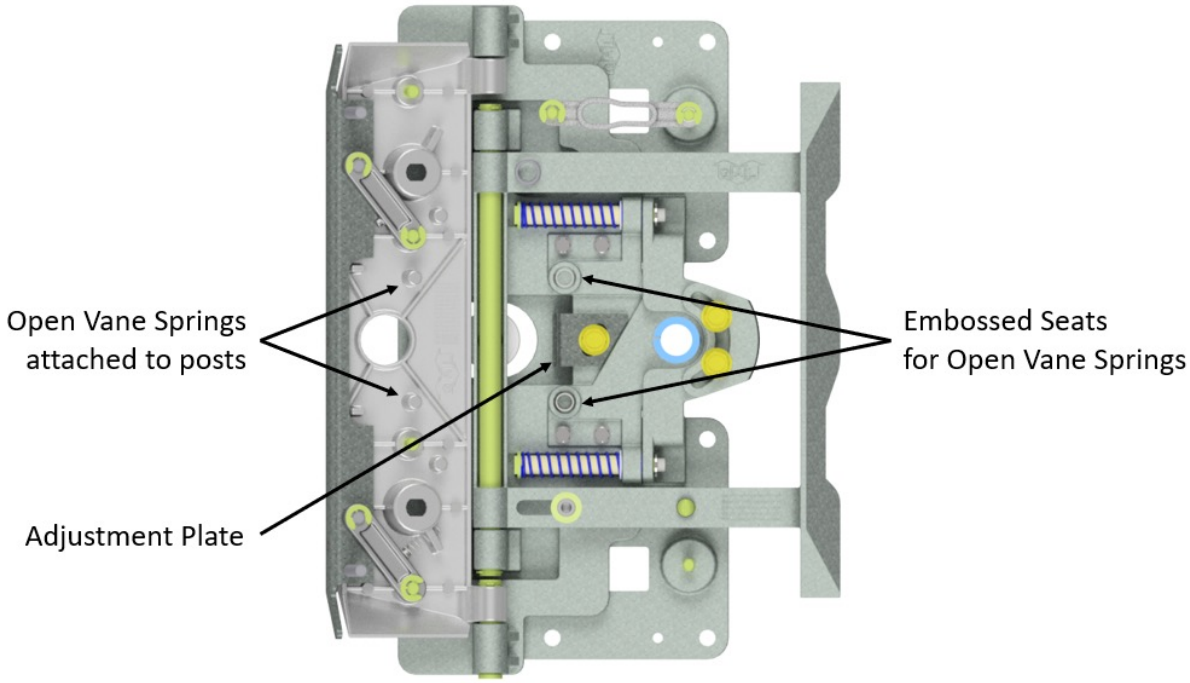

Figure 13: The LWL Clutch with the Open Vane flipped open.

4. Re-thread the Retention Screw to secure the Open Vane to the Clutch. Set the height of the Open Vane with the retaining screw. The height should be roughly the same as the Close Vane in its upright position.

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 13**) are **RED**. If they are **BLUE**, please contact GAL for assistance.

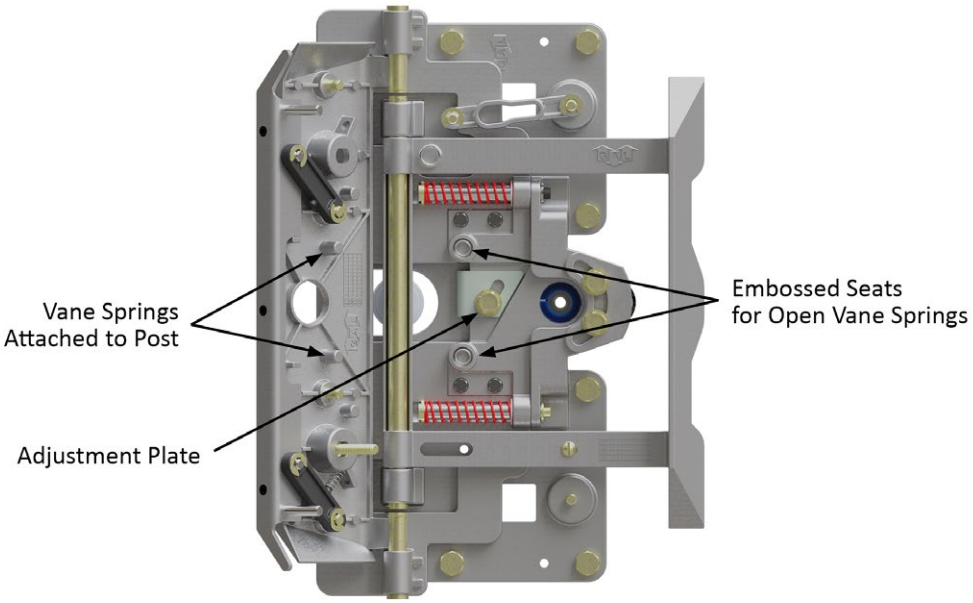

Figure 13: Center-Parting Clutch Springs

2. Before installing the LWL clutch and door bracket the center-stop must be installed and setup 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 14**.

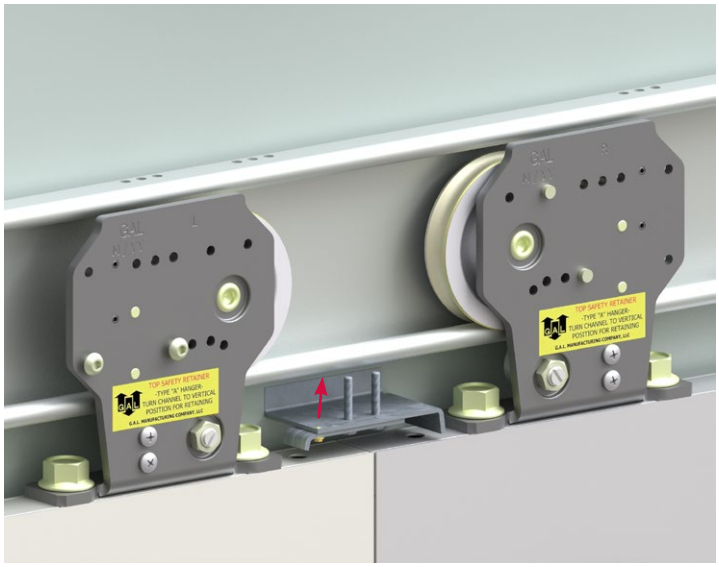

Figure 14: Center-stop Bottom Piece

4. Attach the top piece and thread on the nuts as shown in **Figure 15**. Leave the nuts loose so the center-stop can still be positioned on the track.

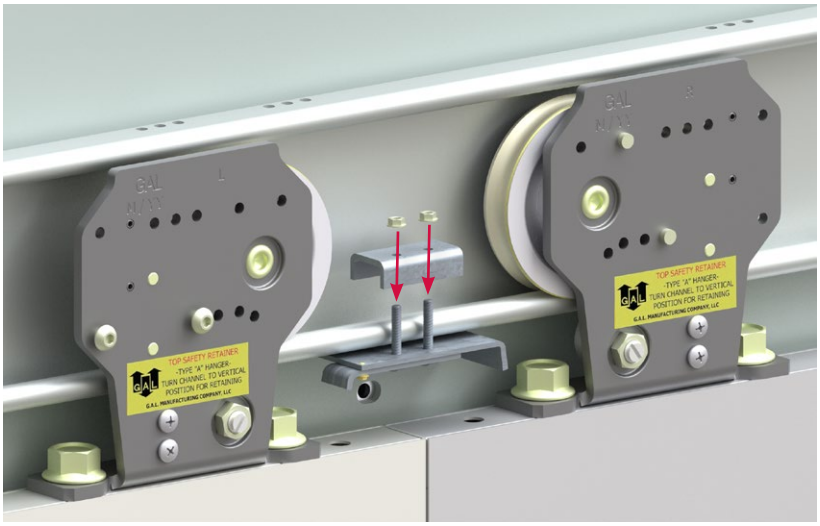

Figure 15: Center-stop Top Piece

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 16**, to lock the center-stop in place.

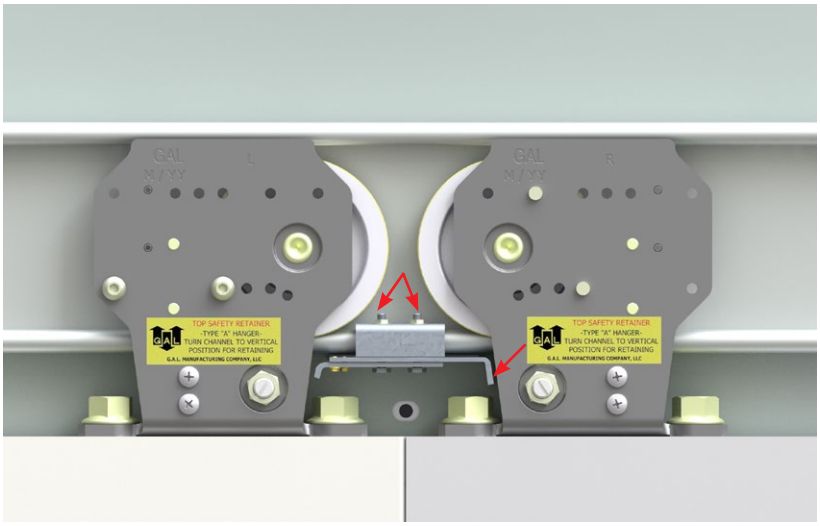

Figure 16: Set Right Side of Stop

6. Loosen the bottom nuts and slide the left stop up against the left sheave as shown in **Figure 17**. Ensure that the front edges of the bottom pieces are flush when the bottom nuts are tightened down as shown in **Figure 18**.

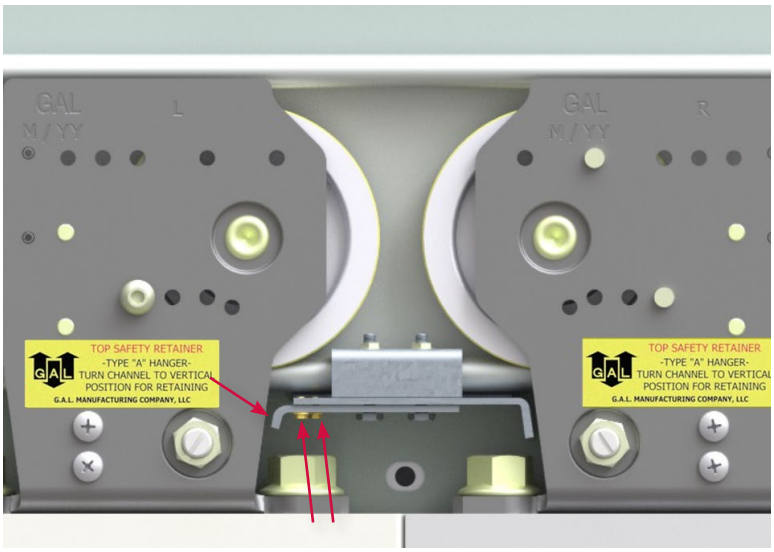

Figure 17: Set Left Side of Stop

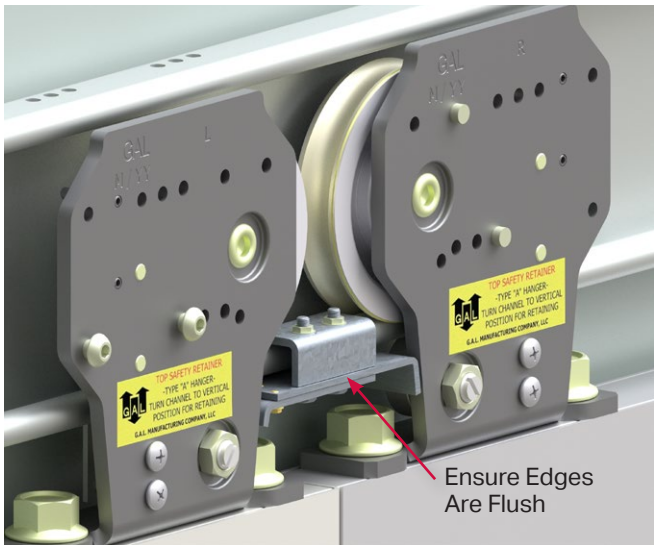

Figure 18: Front Edge of Center-stop

7. Mount clutch and door bracket to the car doors using provided hardware as seen below in **Figure 19**.

Figure 19: 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 20**.
9. With the car doors closed at centerline, adjust the R and J dimensions shown in **Figure 20** so the clutch and door bracket links are at ~20° above horizontal.

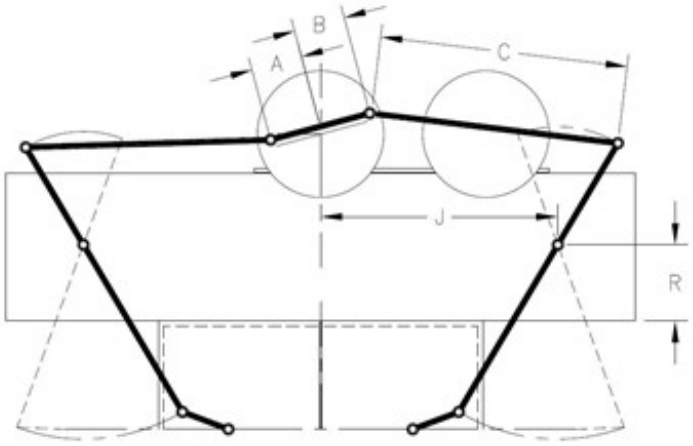

Figure 20: CP Operator Setup

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 9** in Section 3.3.
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 21**)
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 21**)

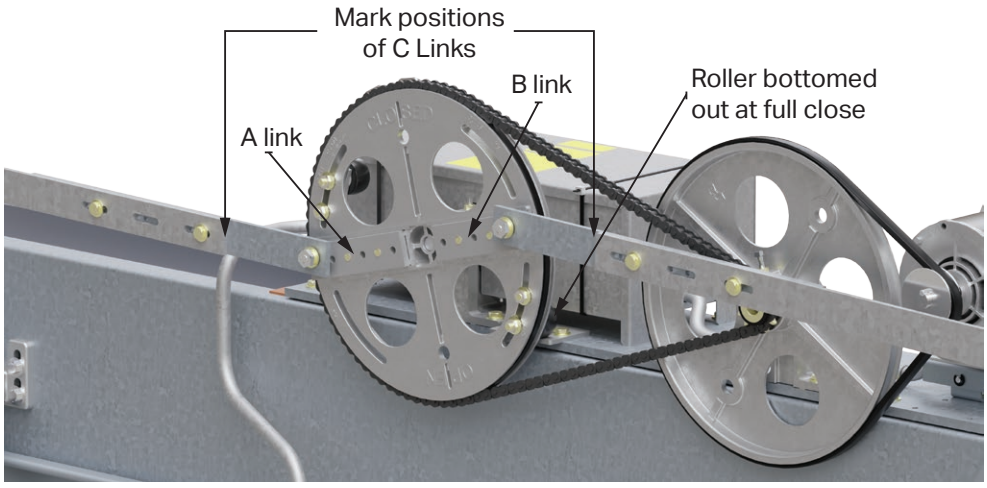

Figure 21: Mark C Links

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 11**.

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.

Figure 22: Parameter 1

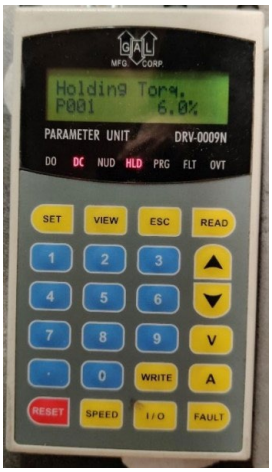

Figure 23: Holding Torque

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 close.
5. Flip the top toggle switch to CAM SETUP and ensure the DCL LED is still lit after the clutch collapses.

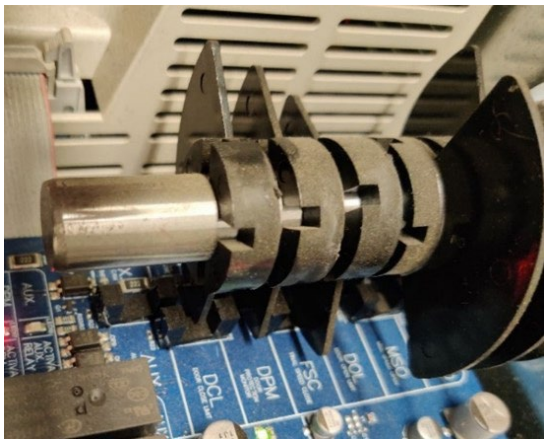

Figure 24: Optical Cams

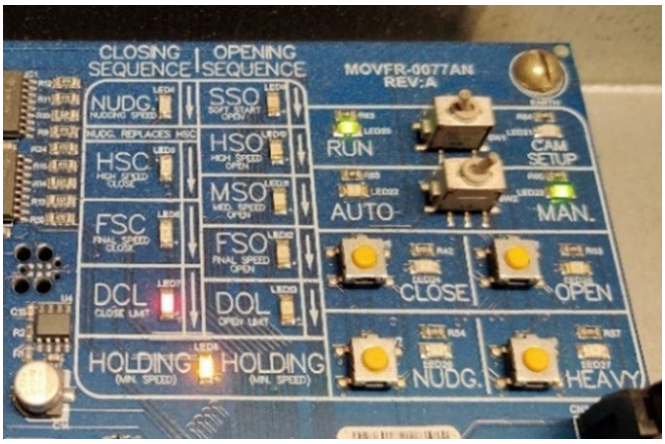

Figure 25: DCL LED

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

1. See **Figure 26** for side-opening interlock components.

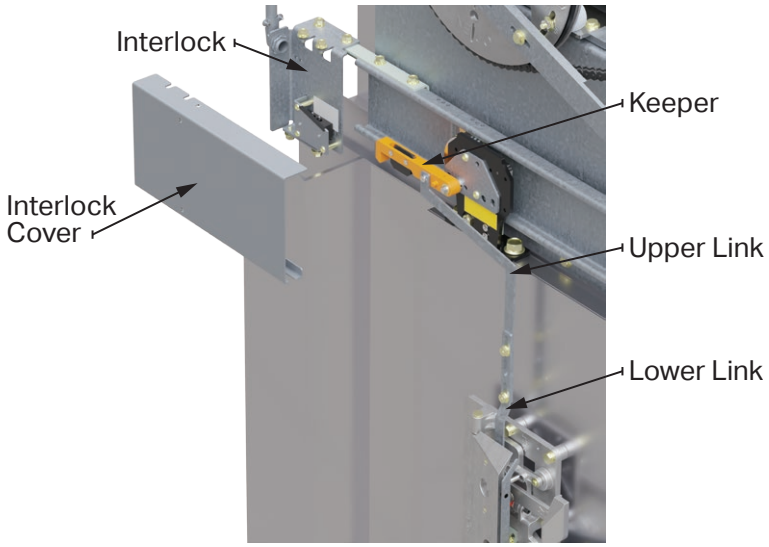

Figure 26: SS Interlock Components

2. Mount keeper to the leading sheave on the car door with provided button head screws, as shown in **Figure 27 and 28**.

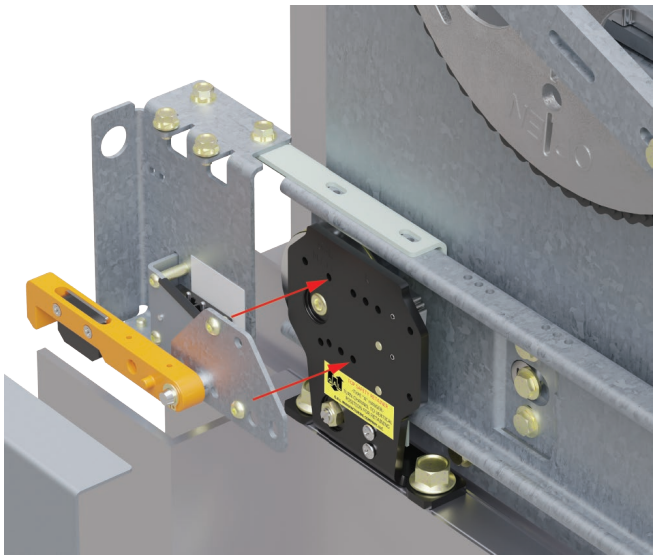

Figure 27: Keeper Mounting

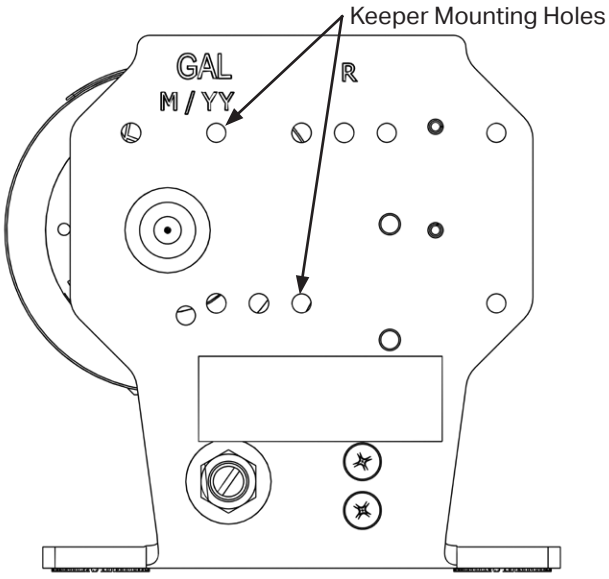

Figure 28: Mounting Holes

3. Attach keeper to the clutch with the upper and lower links as shown in **Figure 29**.

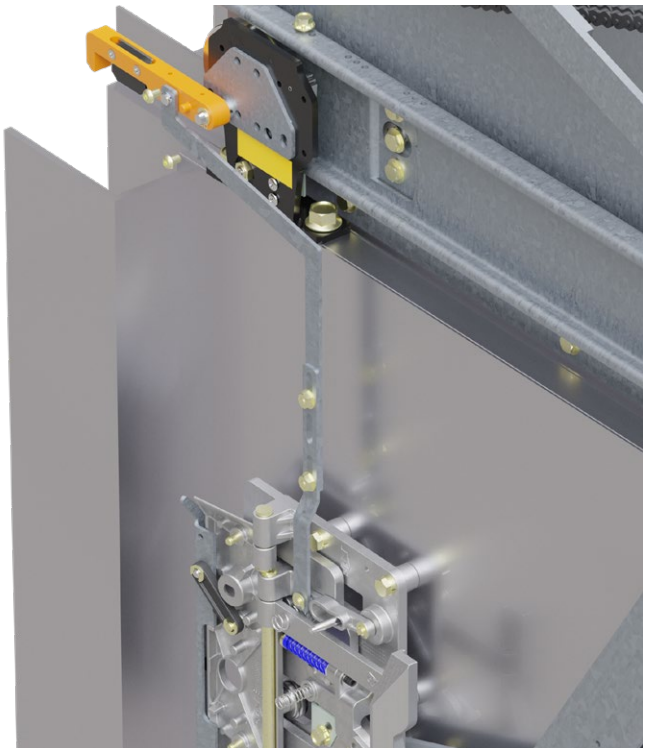

Figure 29: Lift Links

4. Remove cover from the interlock and mount the interlock to the track as shown in **Figure 30**.
5. 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 30**.

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.

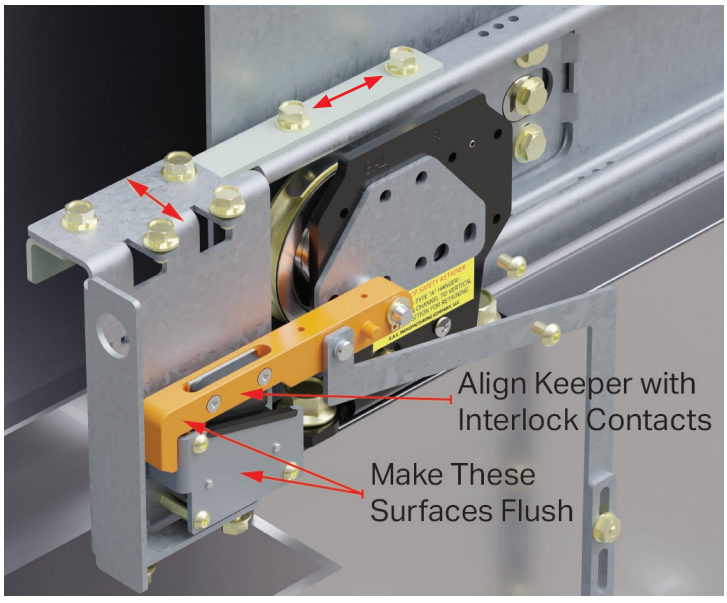

Figure 30: SS Interlock Mounting and Adjustment

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 31**, Section 3.6.

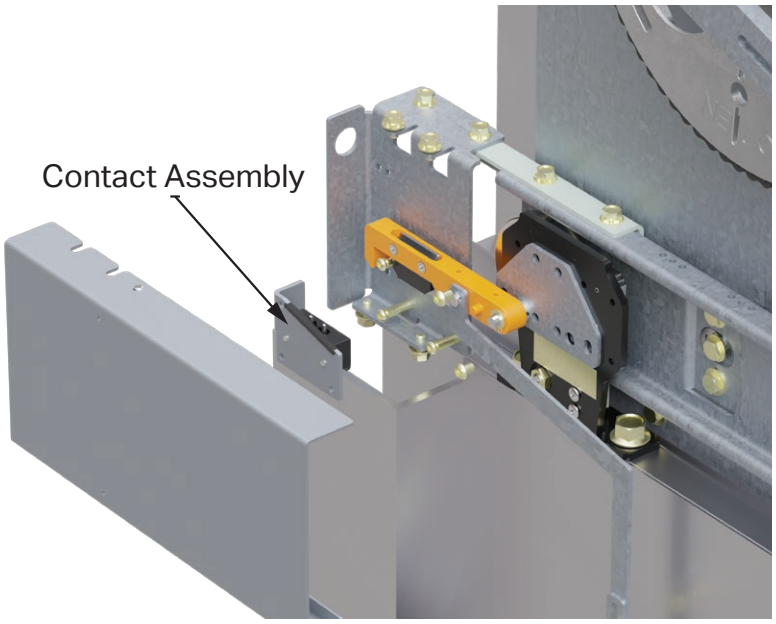

Figure 31: Contact Assembly

8. Wire the contact to the gate switch terminals on the operator. See **Figure 32**, Section 3.6.

Figure 32: Gate switch Terminals

9. Attach contact assembly and cover.
10. Cycle door manually to ensure proper adjustment.

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

1. See **Figure 33** for center-parting interlock components.

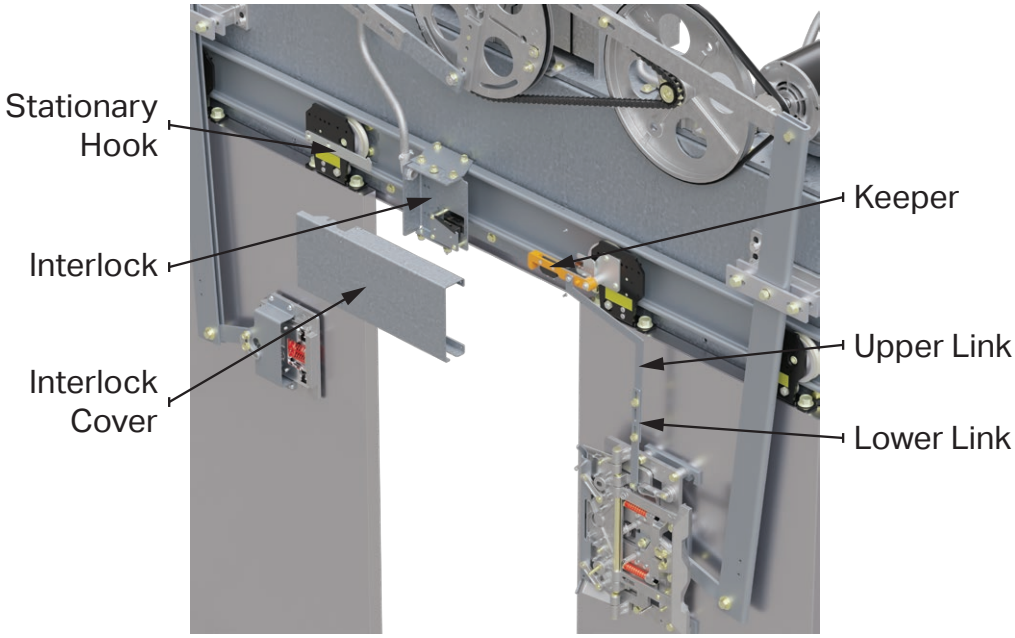

Figure 33: CP Interlock Components

2. Mount keeper and stationary hook to the leading sheaves on the car doors with provided button head screws, as shown in **Figures 34** and **35**.
3. Check the engagement of the stationary hook with the keeper. The hook should engage with the keeper just behind the cork bumpers. See **Figure 34**.

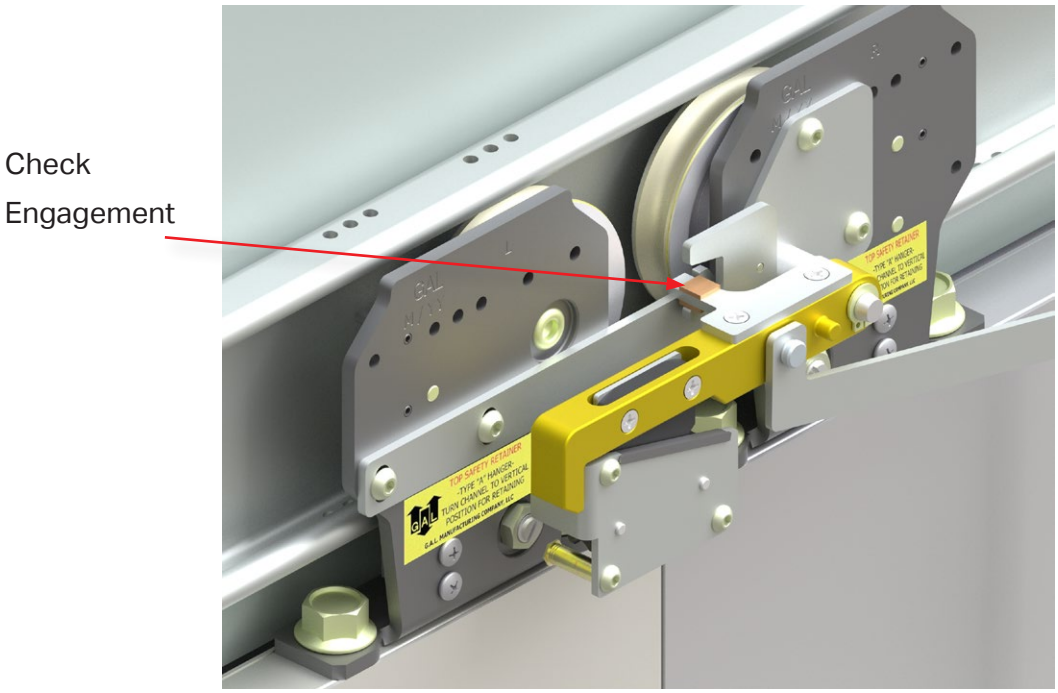

Figure 34: CP Keeper Mounting

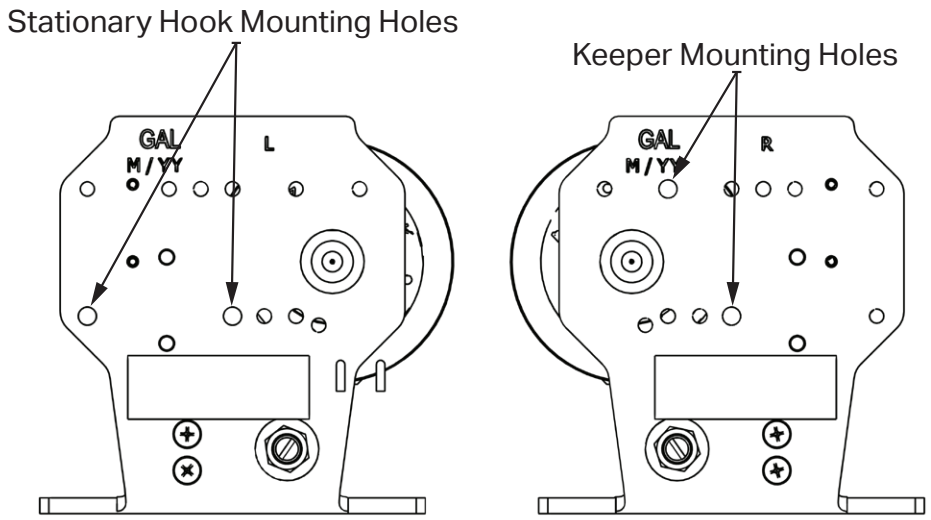

Figure 35: Mounting Holes

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

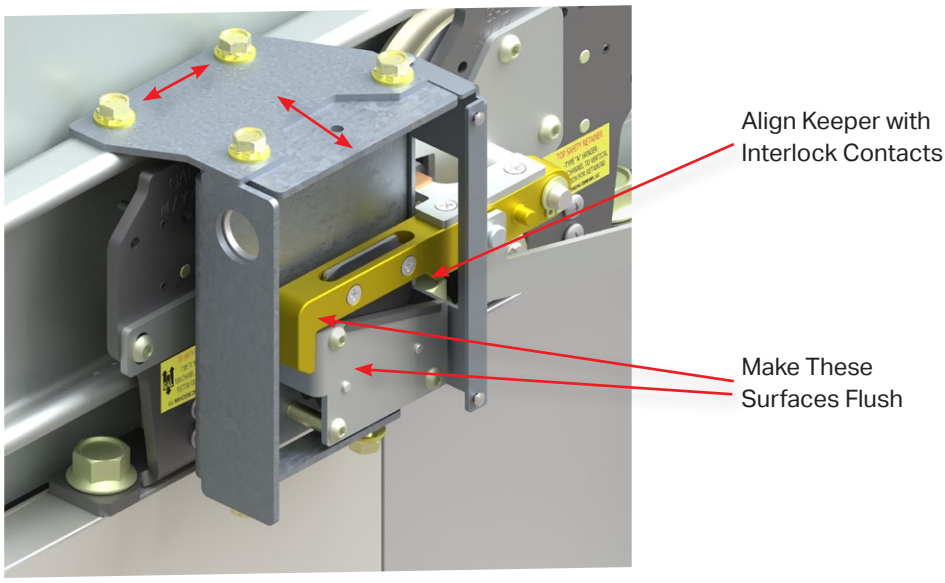

Figure 36: CP Interlock Mounting and Adjustment

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 25**.
8. Wire contacts to the gate switch terminals on the operator, as shown in **Figure 26**.
9. Attach contact assembly and cover.
10. Cycle door manually to ensure proper adjustment.

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 37**.

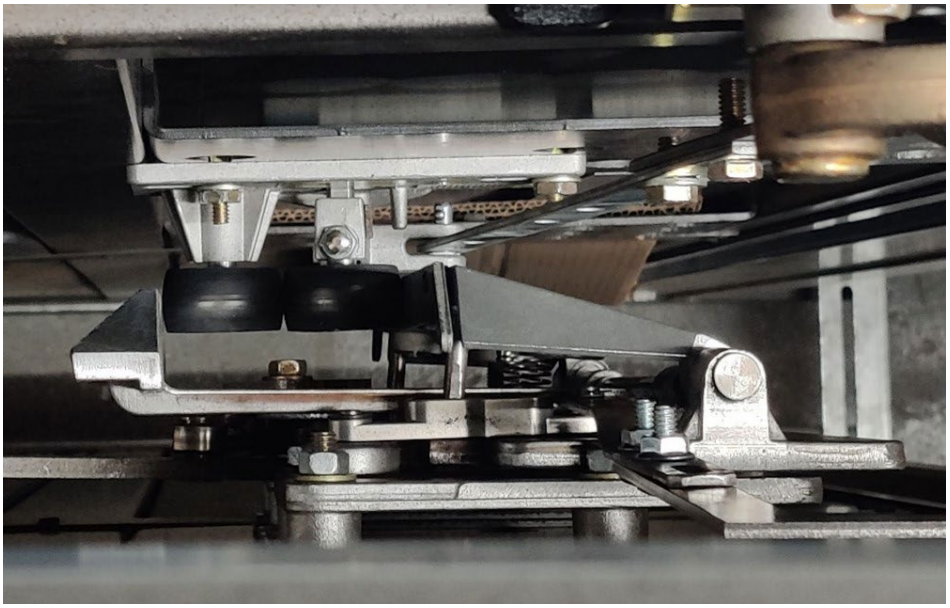

Figure 37: Doors Closed with Clutch Collapsed Around Roller Release

3. Once the clutch has fully expanded there should be a ~3/16" gap between the clutch sensing vane and the roller release. The close vane should be fully retracted from the roller release. See **Figure 38** below.

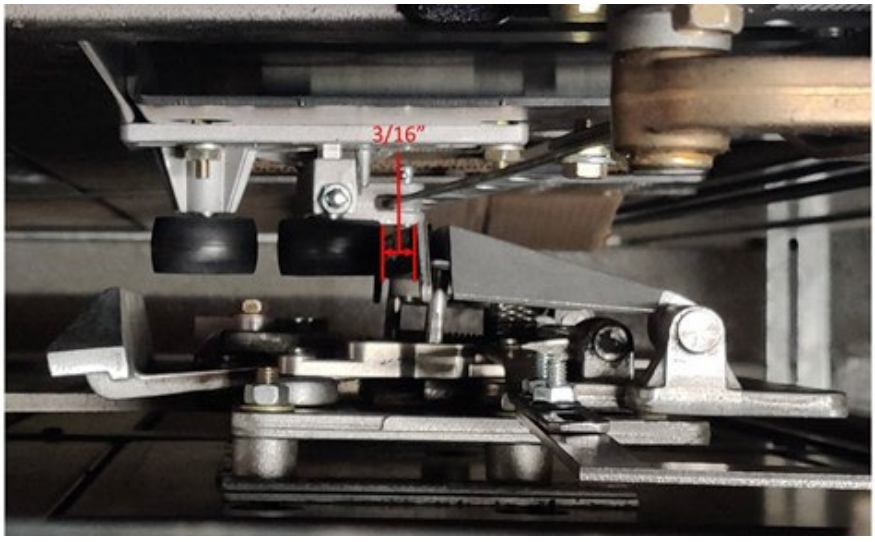

Figure 38: Doors Closed with Clutch Fully Expanded

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 (see **Figure 39**). These are dry running bearing 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

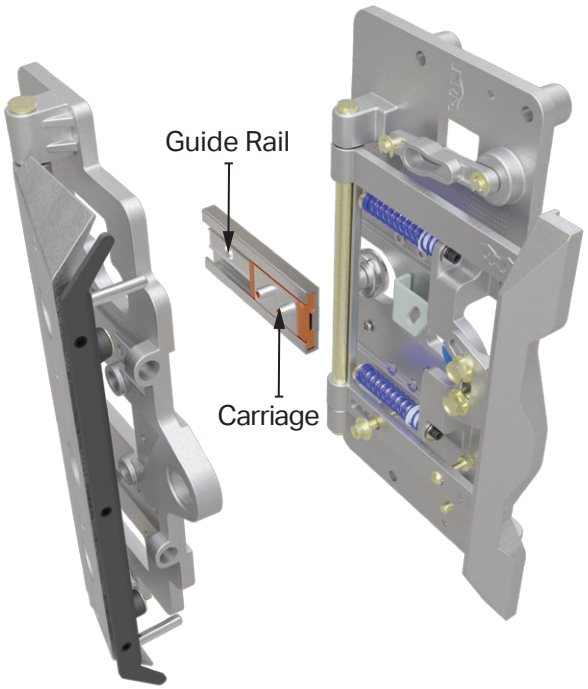

Figure 39: Linear Bearings

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 serviceable limit.

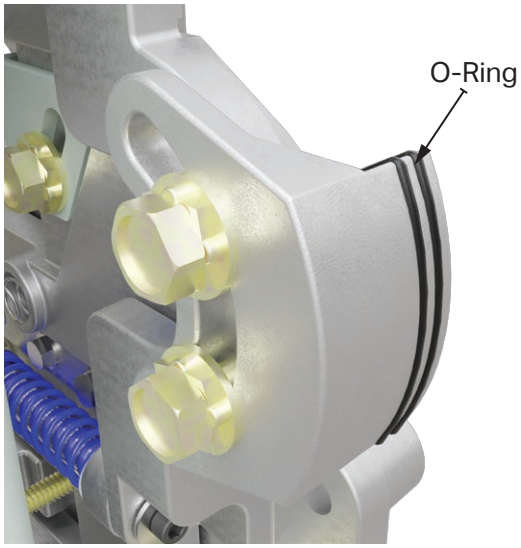

Figure 40: Cam O-Rings

4.3. LOCK ACTIVATING PIVOT

The lock activating pivot (see **Figure 41**) 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.

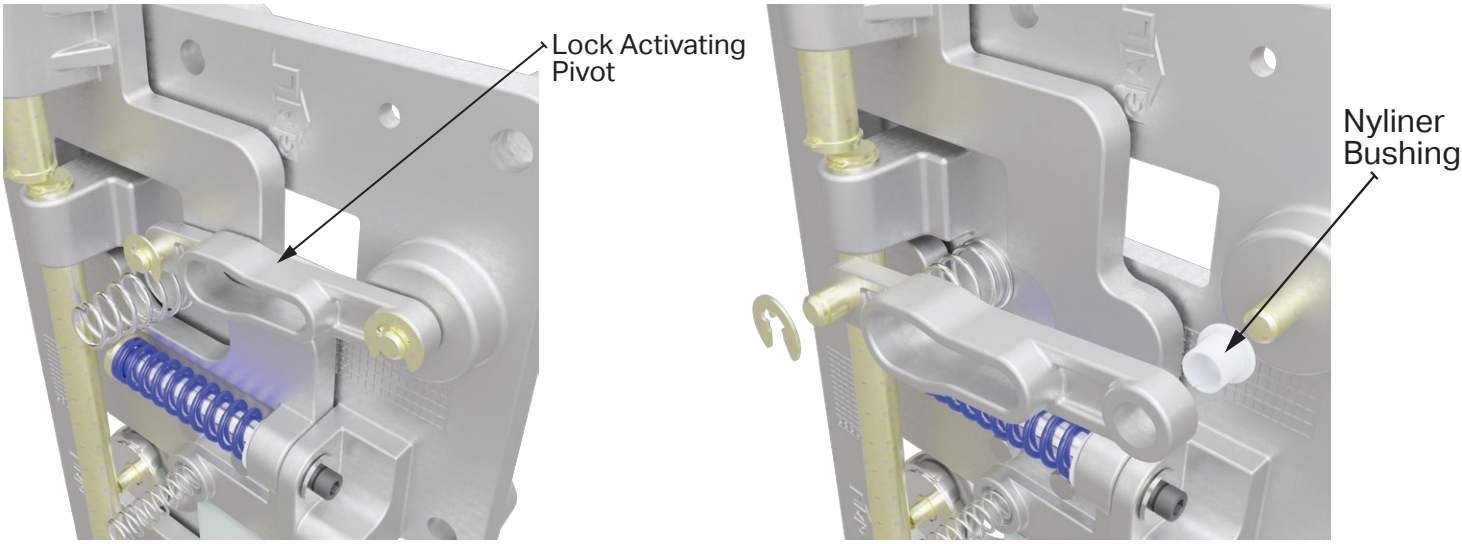

Figure 41: Lock Activating Pivot

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.

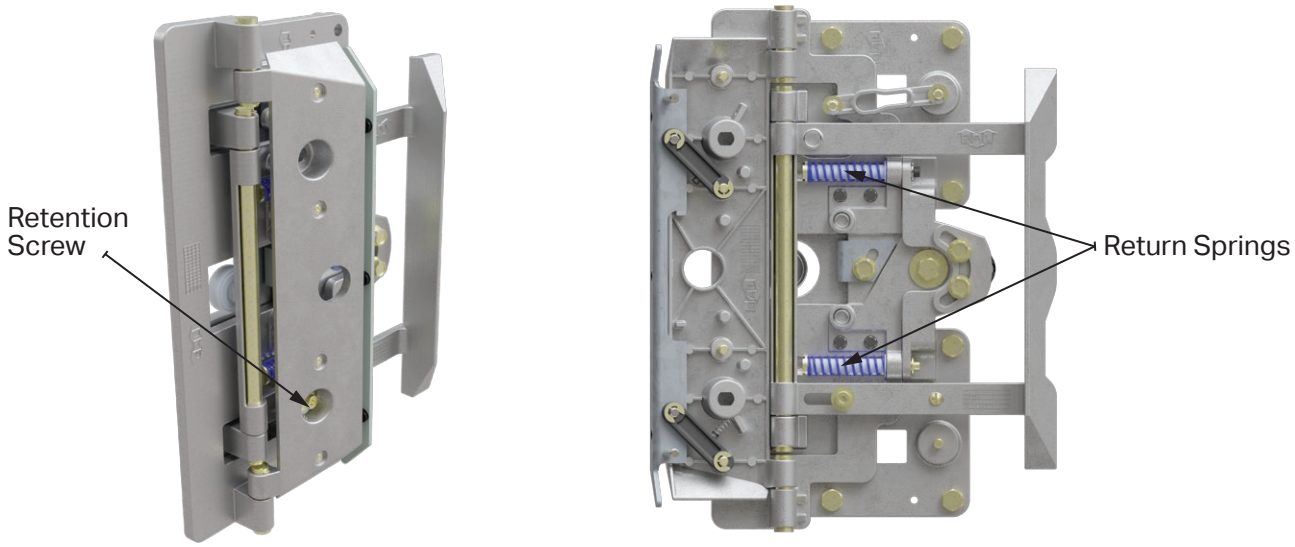

Figure 42: Retention Screw and Return Springs

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.

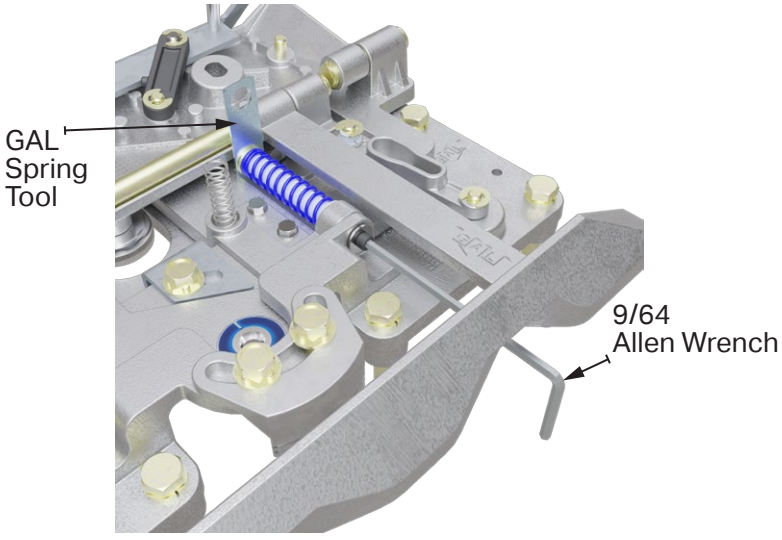

Figure 43: Remove Screw and Washer

4.4.3. REMOVE METAL TUBE USING NEEDLE-NOSE PLIERS.

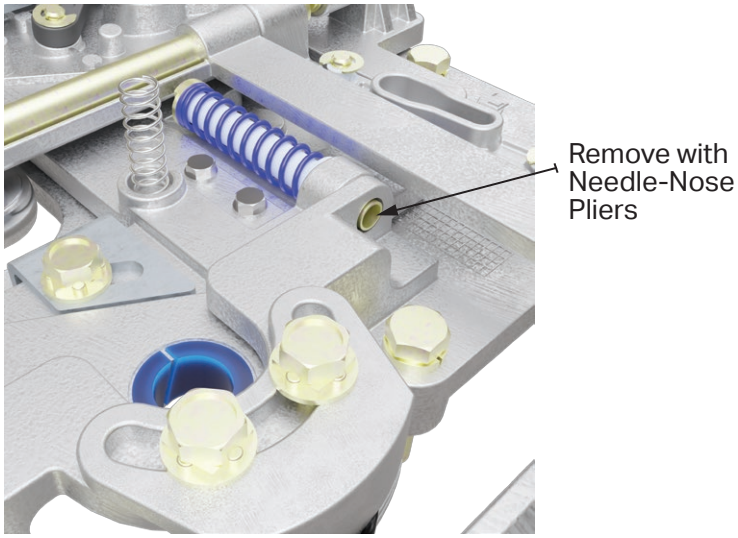

Figure 44: Remove Metal Tube

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.

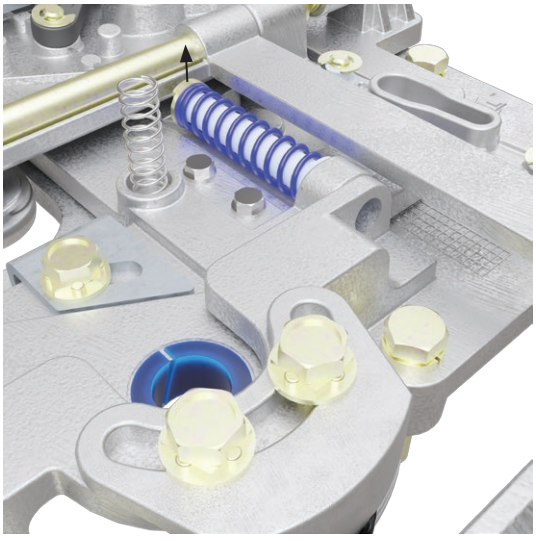

Figure 45: Remove Spring Assembly

4.4.5. REMOVE THE NYLINER BUSHING.

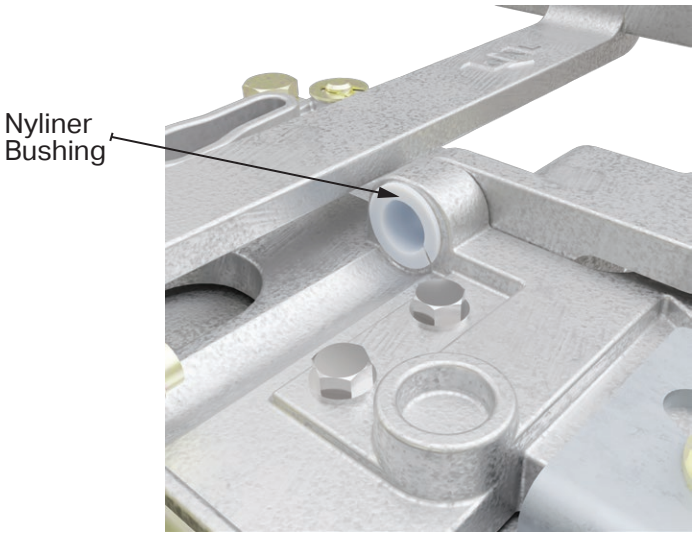

Figure 46: Nyliner Bushing

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.

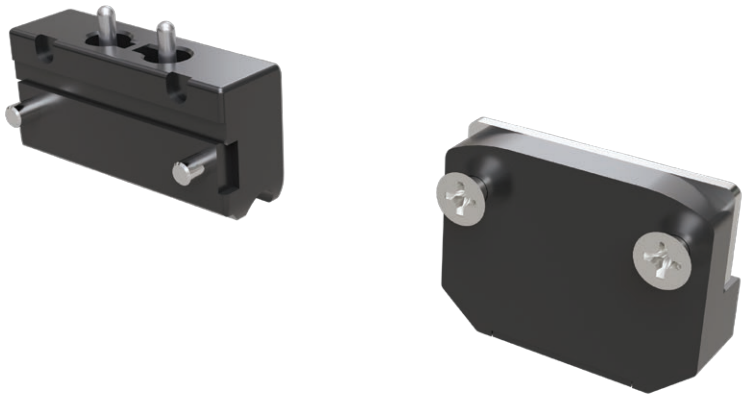

Figure 46: Contact and Bridge