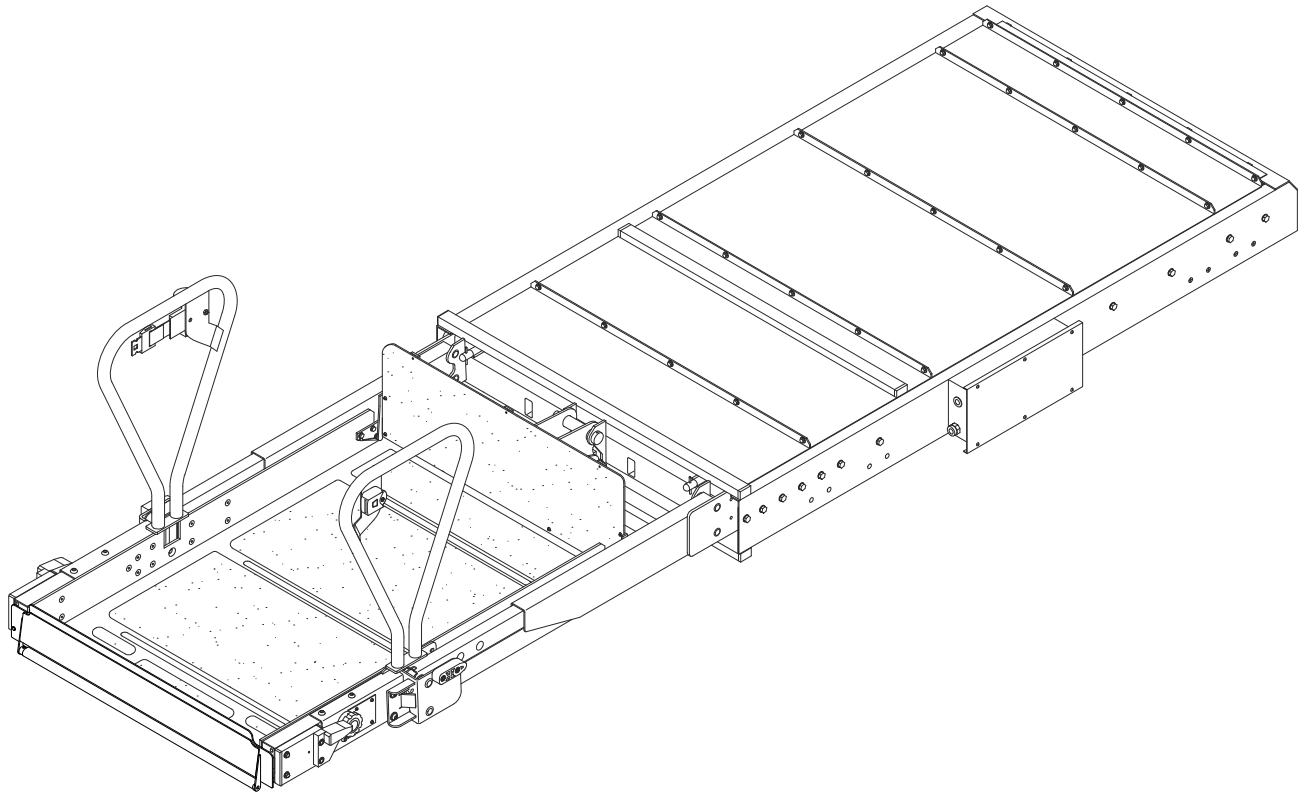




***Wabtec Bus Solutions***

# **MIRAGE<sup>®</sup> F9TF/F9TH DOT - PUBLIC USE LIFT**



## **SERVICE MANUAL**

This Ricon service manual is for use by qualified service technicians and is not intended for use by non-professionals (do-it-yourselfers). The manual provides essential instructions and reference information, which supports qualified technicians in the correct installation and maintenance of Ricon products.

Qualified service technicians have the training and knowledge to perform maintenance work properly and safely. For the location of a qualified service technician in your area, call Ricon Product Support at 1-800-322-2884 or visit our website at [www.riconcorp.com](http://www.riconcorp.com).

“DOT – Public Use Lift” verifies that this platform lift meets the public use lift requirements of FMVSS no. 403. This lift may be installed on all vehicles appropriate for the size and weight of the lift, but must be installed on buses, school buses, and multi-purpose passenger vehicles other than motor homes with a gross vehicle weight rating (GVWR) that exceeds 10,000 lbs (4,536 kg).

Customer Name: \_\_\_\_\_  
Installing Dealer: \_\_\_\_\_  
Date Installed: \_\_\_\_\_  
Serial Number: \_\_\_\_\_



## REVISION RECORD

REV	PAGES	DESCRIPTION OF CHANGE	ECO
32DF9TF16.J	Cover	Update version of manual and release date.	RIC91852
	ALL	Update to header and footer throughout to include new release date and new version of manual.	
	2-5	Update Section D.2 Platform Vertical Travel Limit Adjustment	
	2-5	Section D.2, add step 2.d & 2.f, 2.g, 2.h, 2.j	
	3-1	Added Note: Maintenance should be performed every 6 months in cases where the lift would otherwise go longer without service.	

**NOTE:** Determine whether revisions made to this manual will impact the F9T Equipment Installation Verification (EIV) checklist (32EIVF9T). Revise the EIV, as necessary.

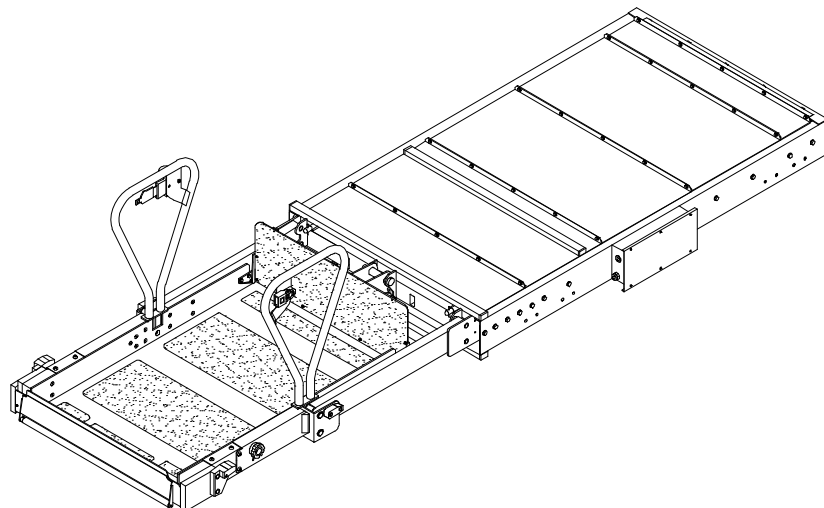
<u>Chapter</u>	<u>Page</u>
<b>I. F9TF/F9TH INTRODUCTION .....</b>	<b>1-1</b>
A. PRODUCT SUPPORT .....	1-1
B. WARRANTY INFORMATION .....	1-2
C. SHIPMENT INFORMATION .....	1-3
D. GENERAL SAFETY PRECAUTIONS .....	1-3
E. MAJOR LIFT COMPONENTS .....	1-4
<b>II. F9TF/F9TH INSTALLATION .....</b>	<b>2-1</b>
A. MECHANICAL .....	2-1
1. LIFT POSITIONING NOTES .....	2-1
2. LIFT MOUNTING NOTES .....	2-1
3. HYDRAULIC POWER UNIT .....	2-2
B. ELECTRICAL .....	2-3
C. SAFETY INTERLOCKS .....	2-3
D. FINAL ADJUSTMENTS .....	2-4
1. HYDRAULIC BLEEDING .....	2-4
2. PLATFORM VERTICAL TRAVEL LIMIT ADJUSTMENT .....	2-5
3. BRIDGEPLATE ACTUATOR ROD ADJUSTMENT .....	2-5
4. BRIDGEPLATE LOAD SENSING SWITCH .....	2-7
5. PLATFORM STOW AND INTERMEDIATE HEIGHT ADJUSTMENTS .....	2-11
6. ANTI-STOW PRESSURE SWITCH ADJUSTMENT .....	2-15
7. ROLLSTOP ADJUSTMENT .....	2-15
8. THRESHOLD WARNING SYSTEM (TWS) ADJUSTMENT .....	2-15
E. VERIFY INSTALLATION .....	2-15
F. CUSTOMER ORIENTATION .....	2-15
<b>III. F9TF/F9TH MAINTENANCE .....</b>	<b>3-1</b>
A. MAINTENANCE SCHEDULE .....	3-1
1. MAINTENANCE FREQUENCY CHARTS .....	3-1
2. MAINTENANCE CHECKLIST .....	3-4
B. TROUBLESHOOTING CHART .....	3-7
C. HYDRAULIC SYSTEM DIAGRAM .....	3-11
D. ELECTRICAL WIRING DIAGRAM .....	3-12
1. DIAGRAM LEGENDS .....	3-12
2. WIRING DIAGRAM .....	3-13
<b>IV. F9TF/F9TH MAJOR COMPONENT SERVICE .....</b>	<b>4-1</b>
A. GENERAL SAFETY PRECAUTIONS .....	4-1
B. LIFT ACCESS FOR SERVICE .....	4-2
C. TRAVELLING FRAME AND ROLLSTOP SERVICE .....	4-2
1. ROLLSTOP MAINTENANCE .....	4-3
2. BRIDGEPLATE MAINTENANCE .....	4-15
3. CARRIAGE MAINTENANCE .....	4-17
4. PLATFORM REMOVAL .....	4-18
5. LIFTING FRAME REMOVAL .....	4-20
6. CARRIAGE REMOVAL .....	4-20

ChapterPage

D. DEPLOYMENT SYSTEM .....	4-23
1. IN/OUT MOTOR AND GEARBOX .....	4-23
2. DRIVE CHAINS .....	4-24
3. TORQUE LIMITING CLUTCH .....	4-26
4. INTERMEDIATE SHAFT AND FINAL DRIVESHAFT .....	4-28
5. MANUAL PLATFORM RELEASE MECHANISM .....	4-29
6. STOW-LOCK ADJUSTMENT .....	4-31
E. HYDRAULIC POWER SYSTEM .....	4-33
1. SYSTEM FLUID RENEWAL .....	4-33
2. ELECTRIC PUMP MOTOR .....	4-33
3. HYDRAULIC CYLINDER .....	4-34
4. PRESSURE SWITCH ADJUSTMENT .....	4-36
5. HYDRAULIC HOSE AND MAIN ELECTRICAL HARNESS .....	4-36
F. ELECTRICAL CONTROLS .....	4-37
1. GENERAL LIMIT SWITCH REPLACEMENT .....	4-37
2. ELECTRONIC CONTROLLER REPLACEMENT .....	4-37
3. HYDRAULIC HOSE AND MAIN ELECTRICAL HARNESS .....	4-38
4. CONTACT SWITCH REPLACEMENT .....	4-38
5. CONTACT SWITCH ADJUSTMENT .....	4-39
<b>V. F9TF/F9TH SPARE PARTS .....</b>	<b>5-1</b>
<b>VI. APPENDIX .....</b>	<b>6-1</b>
1. LIFT SPECIFICATIONS .....	6-1
2. INSTALLATION INSTRUCTION 32II354E – INSTALLATION REQUIREMENTS .....	6-2
3. INSTALLATION INSTRUCTION 32II482E – LIFT CLUTCH ADJUSTMENT .....	6-9

## I. F9TF/F9TH INTRODUCTION

**S**afe and easy access to motorcoaches is provided by the Ricon Mirage® F9TF and F9TH DOT Public Use wheelchair and standee lift. The Mirage® F9TF/F9TH is a dedicated entry model, which is intended for installation in a vehicle baggage compartment, or similar location.



An electric motor driven hydraulic pump provides a maximum platform lifting capacity of 660 pounds (300 kilograms) for Mirage® Model F9TF and 800 pounds (363 kilograms) for Mirage® Model F9TH. A trained attendant or the vehicle operator operates it. For a boarding passenger, the operator uses control switches to withdraw the wheelchair lift platform from the vehicle (deploy) and lower it to ground level. The passenger restraint belt is unfastened to allow the passenger to be placed on the center of the wheelchair lift platform. The operator inserts the belt latch into the buckle and listens for a “click”. Then the operator will “tug” on the belt to ensure that the passenger restraint belt is securely fastened before the passenger boards the platform. The lift platform with a centered passenger is then safely raised to vehicle floor height. After the passenger enters the vehicle, the operator lowers the platform, unhooks the restraint belt, lowers the handrails, then retracts the lift back into the vehicle (stow). For an exiting passenger, the operator withdraws the platform from the vehicle (deploy). The operator inserts the belt latch into the buckle and listens for a “click”. Then the operator will “tug” on the belt to ensure that the passenger restraint belt is securely fastened. The operator then raises the platform to vehicle floor height. The passenger is placed on the center of the wheelchair lift platform and then safely lowered to the ground. The passenger restraint belt is unfastened to allow the passenger to exit and depart from the wheelchair lift platform. The operator returns the platform to the stowed position in the vehicle.

One individual can manually operate the lift when normal power is not present. A manual release mechanism is provided to ease the task of pulling the platform out of its enclosure. The hydraulic pump assembly includes a manually operated back-up pump to raise the platform and a pressure release valve to lower it. The front platform rollstop, normally power-operated, has a manual override knob for back-up use.

### A. PRODUCT SUPPORT

This manual contains general installation instructions, a maintenance chapter, a repair chapter, and a spare parts chapter. If you have questions about this manual, or need additional copies, please contact Ricon Product Support at one of the following locations:

#### Ricon Corporation

1135 Aviation Place

San Fernando, CA 91340 ..... (818) 267-3000

Outside (818) Area Code ..... (800) 322-2884

Website..... [www.riconcorp.com](http://www.riconcorp.com)

#### Vapor Ricon Europe Ltd.

Meadow Lane

Loughborough, Leicestershire

LE 1HS, United Kingdom ..... (800) 322-2884

Website ..... [www.riconuk.com](http://www.riconuk.com)



**B. WARRANTY INFORMATION****RICON-FAIVELEY MIRAGE® F9TF/F9TH DOT PUBLIC USE WHEELCHAIR LIFT  
~ TWO-YEAR LIMITED WARRANTY ~**

**Ricon Corporation (Ricon)** warrants to the original purchaser of this product that Ricon will repair or replace, at its option, any part that fails because of defective material or workmanship as follows:

- Repair or replace parts for a period of two years from the date of purchase. A complete list of parts covered by this warranty can be obtained from Ricon Product Support.
- Labor costs for specified parts replaced under this warranty for a period of two years from the date put into service. A Ricon rate schedule determines parts covered and labor allowed.

***If you need to return a product:***

Return this product to Ricon, following the Ricon RMA procedure. Please give as much advance notice as possible and allow a reasonable amount of time for repair.

***This warranty does not cover:***

Malfunction or damage to product parts caused by: accident, misuse, lack of proper maintenance, neglect, improper adjustment, modification, alteration, the mechanical condition of the vehicle, road hazards, overloading, failure to follow operating instructions, or acts of nature (i.e., weather, lightning, flood).

**NOTE:** Ricon recommends this product be inspected by a Ricon dealer or qualified service technician at least once every six months, or sooner if necessary. Required maintenance should be performed at that time.

**WARNING**

THIS PRODUCT HAS BEEN DESIGNED AND MANUFACTURED TO EXACT SPECIFICATIONS.  
— MODIFICATION OF THIS PRODUCT CAN BE DANGEROUS —

***This Warranty is void If:***

- The product is not installed and maintained by a Ricon dealer or qualified service technician.
- The product is modified or altered in any respect from its original design without written authorization by Ricon.

Ricon disclaims liability for any personal injury or property damage that results from operation of a Ricon product that has been modified from the original Ricon design. No person or company is authorized to change the design of this Ricon product without written authorization by Ricon.

Ricon's obligation under this warranty is exclusively limited to the repair or exchange of parts that fail within the warranty period.

Ricon assumes no responsibility for expenses or damages, including incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply.

Important: The warranty registration card must be completed and returned to Ricon within twenty days after installation of this Ricon product for the warranty to be valid. The warranty is not transferable.

The warranty gives specific legal rights. There may be other rights that vary in each state.



### C. SHIPMENT INFORMATION

Verify that lift installation kit, if supplied, contains all items listed on kit packing list. Please report any missing items immediately to Ricon Product Support. The warranty and owner registration cards must be completed and returned to Ricon within 20 days to validate warranty.

Sales or Service Personnel must review the Warranty and the Operator Manual with the user to confirm that they know how to safely operate the product. Instruct the user to follow operating instructions without exception.

### D. GENERAL SAFETY PRECAUTIONS

Follow the general safety precautions during installation, operation, service, and maintenance:

- Do not attempt maintenance, repairs, or adjustments without the presence of a person capable of rendering aid.
- Take notice of all injuries, regardless of how slight. Administer first aid or seek medical attention immediately.
- Wear protective eye shields and appropriate clothing at all times.
- Work in a properly ventilated area. Do not smoke or use an open flame near the battery.
- Exercise caution when operating lift to avoid injury. Be certain that hands, feet, legs, and clothing are not in the path of the platform as it moves.
- Be cautious when using metallic (conductive) tools near the battery or heavy gauge wires.
- If battery acid contacts skin, wash area immediately with soap and water.
- Check under the vehicle before drilling or cutting to avoid damage to the frame, subframe members, wiring, hydraulic lines, etc.
- Thoroughly understand the operating instructions before attempting to operate lift.
- Inspect lift before each use. Do not operate lift if an unsafe condition is present, or if there are unusual noises or movements.
- Keep others clear during lift operation.

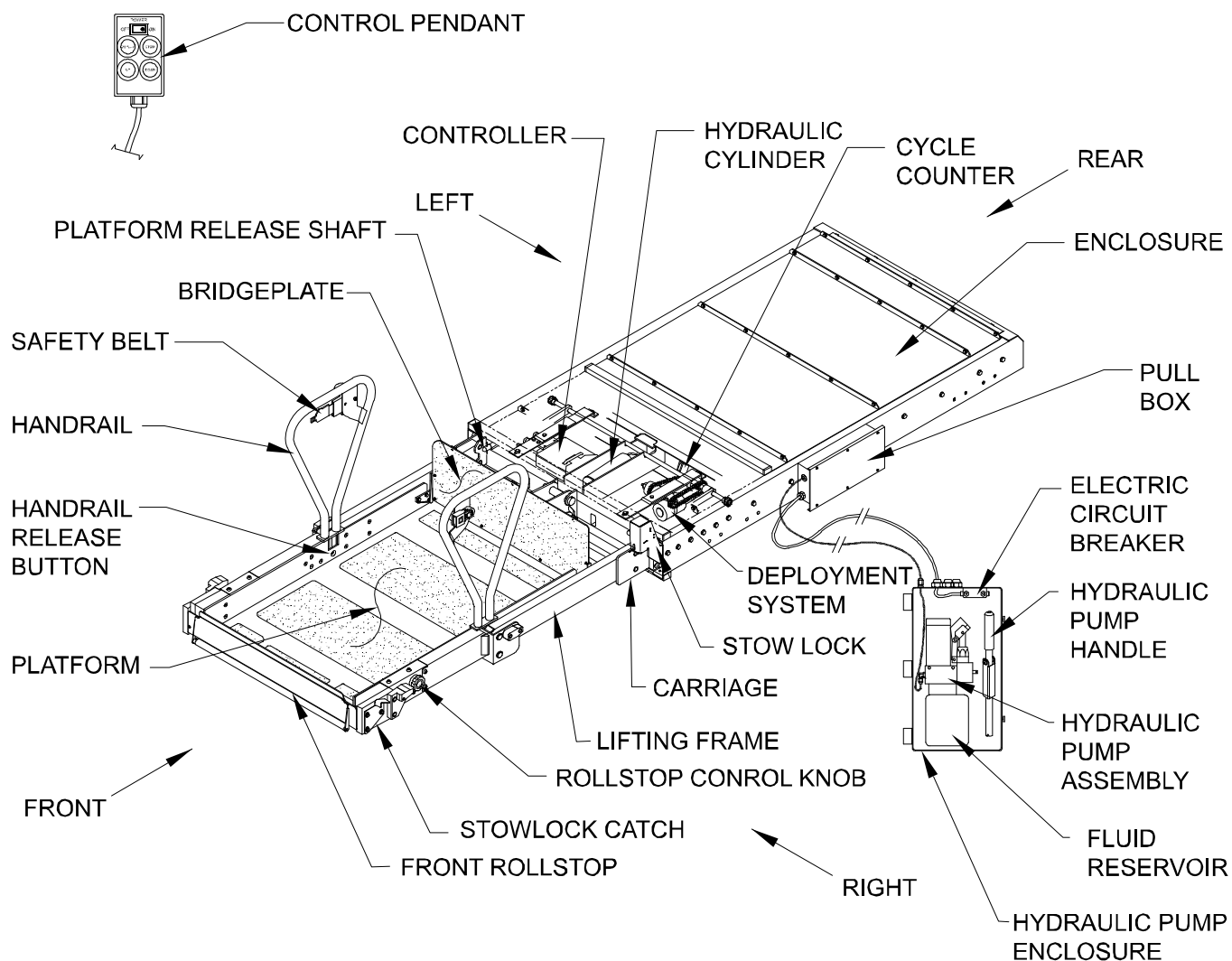
Maintain the lift at its highest level of performance by doing the required maintenance. Ricon recommends a thorough inspection every six months.





## E. MAJOR LIFT COMPONENTS

Major components of the Mirage® F9TF/F9TH Public Use Wheelchair and Standee Lift are in **Figure 1-1**. A description of each component is in **Table 1-1**.



RSM0073900

**FIGURE 1-1: LIFT COMPONENTS FOR F9TF/F9TH MODEL**

**TABLE 1-1: LIFT COMPONENTS FOR F9TF/F9TH MODEL**

NAME	DESCRIPTION
Left, Right, Front, Rear	Reference points from outside vehicle looking inward at lift.
Bridgeplate	Plate bridges gap between platform and vehicle floor when platform is at floor level. Acts as barrier during up and down platform motions to prevent wheelchair from rolling off rear of platform.
Carriage	Part of traveling frame that is mounted on rollers; moves on rails located inside enclosure. Supports lifting frame and platform.
Controller	Receives electrical input signals from pendant and lift sensors and sends control signals to lift electrical and hydraulic components.
Control pendant	Hand-held device used to control platform motions.
Cycle counter	Located on rear frame of carriage. Visible when platform is fully deployed. It records number of times platform has moved from floor to ground and back to floor.
Deployment system	Located within carriage. Employs an electric gear-motor to propel platform out of enclosure, or pull it back into enclosure.
Electric circuit breakers	Prevent over-current damage to lift electrical components. Not used to protect hydraulic pump motor.
Enclosure	Travelling frame housing; rigidly attached to vehicle chassis.
Fluid reservoir	Contains hydraulic fluid used by hydraulic system.
Folding handrail	(left and right) Provides platform occupant with a stable handhold.
Front rollstop	Front barrier prevents wheelchair from inadvertently rolling off the platform during platform movement.
Handrail release button	(left and right) Locks handrail in vertical position. Push inward to release handrail.
Hydraulic pump assembly	Electro-hydraulic unit provides hydraulic pressure used to raise platform. Also mounts components for manual operation.
Hydraulic pump enclosure	Contains lift hydraulic and electrical control components. Also houses manual backup pump handle.
Lifting frame	Upper and lower arms are hinged at front of carriage and at center of platform; raised by single hydraulic cylinder anchored to carriage.
Platform	Curbed area where passenger resides while being raised to vehicle or lowered to ground.
Platform release shaft	(left and right) Used when electric power is not available to lift. Releases platform from enclosure to facilitate manual deployment. Actuated by engaging and rotating either shaft.
Pull box	Houses electrical termination points to lift, and a hydraulic line disconnect point. Also accepts input harness from control pendant.
Pump handle	Used to manually operate hydraulic backup pump and pressure release valve when electrical power is not available. Also used to rotate platform release shafts.
Rollstop control knob	Provides manual control of rollstop if electrical power is not available.
Safety belt	Safety restraint belt that spans between handrails to help confine passenger to platform area.
Travelling frame	(not shown as unit) Assembly comprised of carriage, lifting frame, and platform.
TWS module	Detects presence of a passenger near open doorway when lift is deployed.
END OF TABLE	

This page intentionally left blank.



## II. F9TF/F9TH INSTALLATION

The RICON Mirage® F9TF/F9TH Public Use Wheelchair and Standee lift is contained in an enclosure that can be mounted in several possible vehicle locations. Specific information for every possible installation is not provided here due to the wide range of applications.

- The following general procedures apply to most installations.
- Contact Ricon Product Support for information on installations that are not covered.
- Installation is carried out in four steps:
  1. Mechanical
  2. Electrical
  3. Final adjustments
  4. Installation verification



### WARNING

- WEAR PROTECTIVE CLOTHING AND EYE PROTECTION AT ALL TIMES. BATTERIES CONTAIN ACID THAT CAN BURN. IF ACID COMES INTO CONTACT WITH SKIN, IMMEDIATELY FLUSH AFFECTED AREA WITH WATER AND WASH WITH SOAP.
- ALWAYS WORK IN A PROPERLY VENTILATED AREA. DO NOT SMOKE OR USE AN OPEN FLAME IN THE VICINITY OF THE BATTERY.
- DO NOT LAY ANYTHING METALLIC ON TOP OF THE BATTERY.

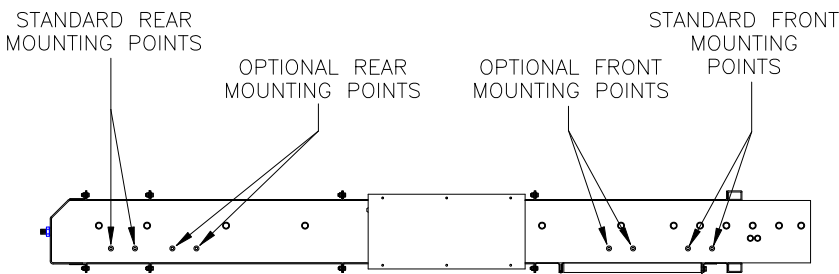
### A. MECHANICAL

#### 1. LIFT POSITIONING NOTES:

Select a location within the vehicle to install lift. The exact mounting position is determined by the motion path of the platform, relative to the ground and the interior floor of the vehicle. The lift must move without obstruction through its range of travel.

#### 2. LIFT MOUNTING NOTES:

- Refer to **Figure 2-1**. The mounted weight of lift is received at eight standard attachment points (four on each side of the enclosure). There is a 5/16-18 threaded insert at each point.



**FIGURE 2-1: LIFT MOUNTING POINTS**

- Mounting brackets for attachment of lift are not supplied, since lift mounting varies from one application to another. The mounting method must meet the load requirements in **Table 2-1**.

TABLE 2-1: LOAD CAPACITY REQUIREMENTS FOR LIFT MOUNTING BRACKETS		
Loading Direction	Front Supports (total capacity for left and right support points)	Rear Supports (total capacity for left and right support points)
Vertical	4500 lbs. (2041 kg)	3500 lbs.(1588 kg)
Longitudinal (perpendicular to drive axle)	3000 lbs. (1361 kg)	3000 lbs.(1361 kg)
Lateral (parallel to drive axle)	1500 lbs.(680 kg)	1500 lbs.(680 kg)
END OF TABLE		



**CAUTION**

It is important that fasteners used for lift mounting do not protrude into the lift interior. Fasteners that are too long can interfere with movement of carriage.

- Threaded fasteners for mounting lift are 5/16-18 and must be grade 5, or higher. Their length must provide at least 5/16" and no more than 7/16" of thread engagement with threaded inserts.
- If adjustment slots are added to mounting brackets, they must be horizontal. Horizontal slots, rather than vertical, will prevent the lift slipping downward if the hardware loosens.
- Vertical adjustment must be accomplished by placing shims between the mounting brackets and vehicle frame. Maximum shim thickness is 1/8" (3 mm).
- Use at least two mounting points at each corner of the enclosure to support lift.
- The top four corners of the enclosure must be in the same plane, +/- 1/8" (3 mm). Shim, as required.
- Mounting brackets must be painted or treated to protect against rust and corrosion.

### 3. HYDRAULIC POWER UNIT

#### a. Hydraulic Power Unit Mounting Notes

- The hydraulic power unit must be located so that the operator has a clear view of the platform while operating the manual back-up system.
- The load capacity of brackets used to mount hydraulic power unit must meet the criteria in **Table 2-2**:

<b>TABLE 2-2: LOAD CAPACITY REQUIREMENTS FOR HYDRAULIC POWER UNIT MOUNTING BRACKETS</b>	
<b>LOAD DIRECTION</b>	<b>BRACKET CAPACITY</b>
Vertical	125 lbs.(57 kg)
Longitudinal (perpendicular to drive axles)	200 lbs.(91 kg)
Lateral (parallel to drive axles)	100 lbs.(45 kg)
<b>END OF TABLE</b>	

- Meeting these criteria assures that the pump mounting will withstand normal loads occurring during transit and also during manual pump use.
- Be certain the pick-up tube is oriented properly when the pump assembly is horizontally mounted. Also, be certain the breather plug is oriented properly (requires elbow fitting).

#### b. Power Unit to Pull Box Connection

- 1) Connect main hydraulic hose to hydraulic power unit, if not already done.
- 2) Operate manual backup pump until hydraulic fluid flows out open end of hose.
- 3) Connect open end of hose to hydraulic fitting located on side of pull-box.
- 4) Deploy platform and lower to ground.

**CAUTION**

Check and add hydraulic fluid when platform is at **ground** level. Adding fluid with platform raised will cause oil reservoir to overflow when it is lowered.

- 5) Remove temporary plug on top of hydraulic pump reservoir. Verify that hydraulic fluid in reservoir is at **FULL** level. Add Texaco 01554 Aircraft Hydraulic Oil, or equivalent U.S. MIL Spec H5606G fluid, if necessary. Replace temporary plug with supplied breather plug.
- 6) Refer to Final Adjustments section in this chapter for hydraulic bleeding procedure.



## B. ELECTRICAL

Electrical installation is similar for both 12 and 24 VDC electrical systems, whether they are insulated return or chassis return. Use the following procedure to connect power to the lift.

**NOTE:** A dedicated, insulated 4 AWG return (ground) wire is strongly recommended. In either case, be certain all connections are clean and secure.



### CAUTION

Check vehicle before drilling. Do not drill into factory wiring, hydraulic lines, fuel lines, fuel tank, etc.

1. Mount a circuit breaker (50 Amp for 24V application and 90 Amp for 12V) within 12" (30 cm) of battery.
2. Cut one 3/4" (19.5 mm) hole through the vehicle floor or wall to gain access to underside of vehicle. Locate hole adjacent to hydraulic pump unit. Deburr the hole and install rubber grommet.
3. Crimp a 5/16" ring terminal to the end of four gauge, red power cable, then fasten to power cut-off solenoid (located near hydraulic pump unit). Insert other end of red wire through grommet.



### CAUTION

When routing power cable, avoid hazards such as drive-shafts, moving suspension parts, exhaust system, etc.

4. Route cable along vehicle frame, etc, to circuit breaker location. Make sure cable does not interfere with moving parts or contact anything hot. Secure with cable ties every 18" (45 cm).
5. Cut red wire to an appropriate length for reaching the circuit breaker. Save the discarded wire.
6. Crimp a 1/4" ring terminal to end of red wire, then fasten to circuit breaker AUX terminal.
7. Cut a 12" (30 cm) length of wire from the previously saved heavy red wire, and crimp a 1/4" ring terminal to both ends.
8. Fasten one end of wire to circuit breaker BAT terminal.
9. Fasten other end of wire to positive battery terminal.
10. Connect supplied harness between terminal strip in hydraulic pump enclosure and terminal strip in pull box. Connect harness to pendant (or to pendant extension). Refer to electrical diagrams in **Chapter III**.

## C. SAFETY INTERLOCKS



### WARNING

- THE LIFT CONTROLS MUST BE DISABLED ANYTIME THE VEHICLE IS **NOT** SAFELY PARKED. VERIFY THAT LIFT OPERATION CONFORMS TO ADA CODE 49 CFR.
- INSTALLATION OF SAFETY INTERLOCKS FOR COMPLIANCE WITH ADA REQUIREMENTS IS THE RESPONSIBILITY OF THE INSTALLER.

Refer to wiring diagrams in **Chapter III**. A voltage that is sourced from vehicle (12 or 24 VDC) is applied to terminal five of the pump enclosure terminal strip TS1 **WHEN VEHICLE IS SAFELY PARKED**. This complies with ADA and FMVSS 404 interlock requirements.



## D. FINAL ADJUSTMENTS

This section contains procedures that might be needed after lift is installed in vehicle. It is not a requirement to perform all procedures after lift installation, only those that are necessary. Additional adjustment procedures that would normally be needed after maintenance or repair are detailed in **Chapter IV**.



### WARNING

FAILURE TO PROPERLY ADJUST EQUIPMENT MAY RESULT IN UNSAFE OPERATING CONDITIONS FOR THE LIFT USER.

### 1. HYDRAULIC BLEEDING

The fluid in the hydraulic system will contain air after installation of lift into vehicle. It may also contain air as a result of doing maintenance or repairs. The trapped air must be removed by "bleeding" the hydraulic system.

Two methods are possible. The first is a traditional procedure that requires opening the hydraulic system. The second procedure is quicker and easier because it does not require any disassembly. However, the second procedure will not remove air as thoroughly as the first.

#### a. Typical Bleeding Procedure

**NOTE:** The following procedure should be performed by two people, and may spill hydraulic fluid.

- 1) Fully deploy lift.
- 2) Raise platform to floor height, and support.



### WARNING

THE SERVICE ACCESS PANEL IS HINGED ALONG THE REAR EDGE AND SHOULD BE HELD UP WHILE REMOVING THE RETAINING SCREWS AT THE FRONT EDGE. THIS WILL PREVENT PANEL FROM FALLING AND CAUSING INJURY OR DAMAGE.

- 3) To gain access to underside of lift, hold service access panel up, remove the two retaining screws and lock-nuts near front edge of panel, and then lower panel.
- 4) Disconnect positive battery cable in vehicle battery compartment.
- 5) Locate air bleeder valve on topside of hydraulic cylinder (cylinder located in carriage). Access to this valve is through a hole in the rear carriage frame channel.
- 6) Remove platform support.



### WARNING

THE FOLLOWING STEP OPENS THE HYDRAULIC BLEEDER VALVE AND WILL ALLOW THE PLATFORM TO SLOWLY DROP.

**NOTE:** The next step will spill hydraulic fluid; have dry rags on hand.

- 7) Open bleeder valve slightly. Let air and hydraulic fluid escape from cylinder.
- 8) Close air bleeder valve.
- 9) Manually lower platform to ground.



### CAUTION

Check and add hydraulic fluid when platform is at **ground** level. Adding fluid with platform raised will cause oil reservoir to overflow when it is lowered.

- 10) Remove plug on the top of hydraulic pump tank (reservoir). Make sure that hydraulic fluid in tank is at FULL level. Add only Texaco 01554 Aircraft Hydraulic Oil, or equivalent U.S. MIL Spec H5606G fluid and reinstall plug.
- 11) Repeat previous five steps until fluid coming out of bleeder valve is free of air.
- 12) Verify that air bleeder valve is fully closed.
- 13) Hold service access panel up, remove two retaining screws and lock nuts at front edge of panel, and then lower panel.
- 14) Connect positive battery cable at vehicle battery compartment.
- 15) Remove platform support and stow platform.



### b. Alternate Bleeding Procedure

- 1) Connect hydraulic hose to fitting on pump box, if not already connected.
- 2) Use manual pump to fill hose; fluid should flow from open end.
- 3) Connect open end of hose to fitting on pull box.
- 4) Verify that top of enclosure is about 40" (102 cm) above ground, and that enclosure is level.
- 5) Deploy platform and lower until maximum down travel is obtained.
- 6) Raise platform to floor level.
- 7) Repeat above cycle ten times.

## 2. PLATFORM VERTICAL TRAVEL LIMIT ADJUSTMENT



### CAUTION

The following procedure measures and sets the platform height at floor level. Adjustments to platform height are made at a lower height to reduce loading on the hydraulic cylinder piston. Do not attempt to rotate hydraulic cylinder piston rod if excessive resistance is felt. Determine cause of resistance, and correct before rotating piston rod.



### CAUTION

The following procedure should be performed without any weight on the platform.

**NOTE:** This procedure should be used to adjust vertical travel limit errors of less than 1" (25 mm). Errors greater than 1" (25 mm) must be adjusted by supporting platform, removing keeper plates (2 ea), and rotating the trunnion.

- a. Raise platform until hydraulic cylinder is fully extended.
- b. Measure the angle of the deployed bridgeplate when it contacts the vehicle floor. The bridgeplate must deploy to an angle of 7° or less below vertical.
 

**NOTE:** The amount of error and whether platform needs to be raised or lowered. Continue this procedure, if adjustment is necessary.
- c. Lower the platform to a height about one foot below floor level, and support it.
- d. Open pressure release valve on pump assembly.
- e. Loosen jam nut on hydraulic cylinder piston rod.
- f. Close pressure release valve on pump assembly.
- g. Rotate piston rod to raise or lower platform the required amount; rotate Clockwise (CW) to raise platform and Counter-Clockwise (CCW) to lower. Do not rotate piston rod more than ¼-turn without checking result.
- h. Return platform to floor height (fully extend hydraulic cylinder) and re-measure the distance between floor and platform. If readjustment is necessary, repeat steps c) through f).
- j. Tighten jam nut.

**NOTE:** Re-program the Stow Intermediate Height, if lift is installed in baggage bay, and Upward Travel Setting (UTS) if an adjustment was made. Refer to the Platform Height Programming section in this chapter.

## 3. BRIDGEPLATE ACTUATOR ROD ADJUSTMENT

Two actuator rods control Bridgeplate deployment. The length of the rods, control the angle of the bridgeplate relative to the platform. Adjust actuator rods so bridgeplate is fully unfolded when platform arrives at floor height.





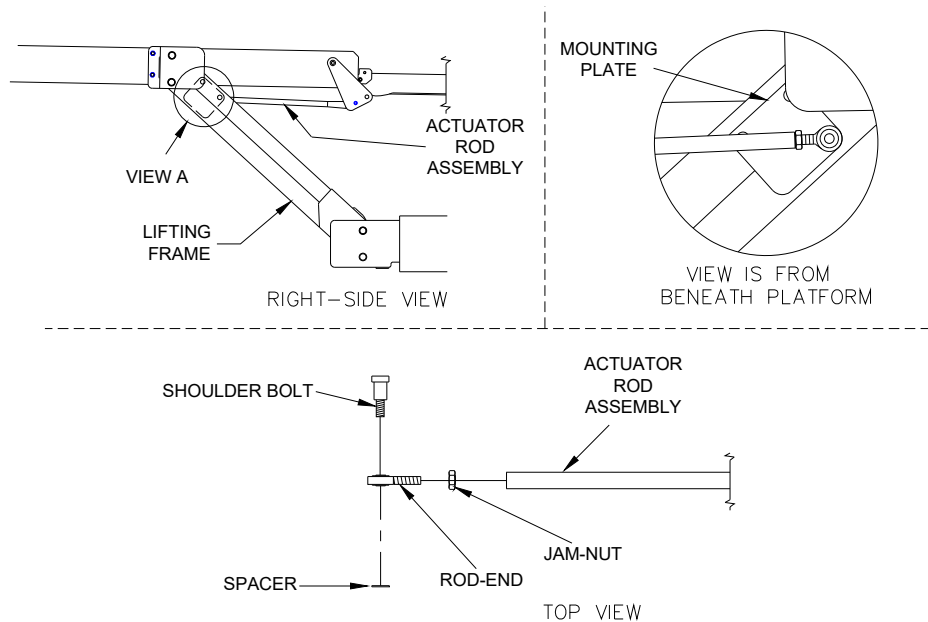


**WARNING**

INCORRECT DEPLOYMENT OF BRIDGEPLATE CAN CREATE A DANGEROUS CONDITION FOR LIFT USER AND MAY CAUSE DAMAGE TO THE BRIDGE PLATE OR PLATFORM. VERIFY THAT THE BRIDGEPLATE IS ADJUSTED CORRECTLY.

- a. Deploy platform using control pendant (DEPLOY).
- b. Raise platform to floor height and support it.
- c. Remove power from the lift controls
- d. Refer to **Figure 2-2**. Locate rod-end portion of actuator rod assembly at right side of platform (between junction of lifting frame and platform). Loosen rod-end jam-nut.

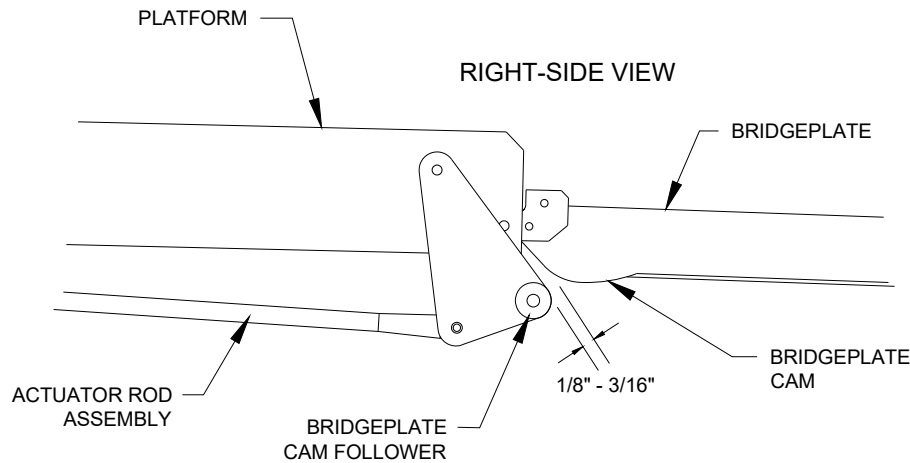
**NOTE:** The actuator rod-ends are left-hand threaded. Turning one clockwise will lengthen actuator rod, and counter-clockwise will shorten it; lengthening actuator rod will delay unfolding of bridgeplate and shortening speeds up unfolding.



**FIGURE 2-2: BRIDGEPLATE ACTUATOR ROD ASSEMBLY**

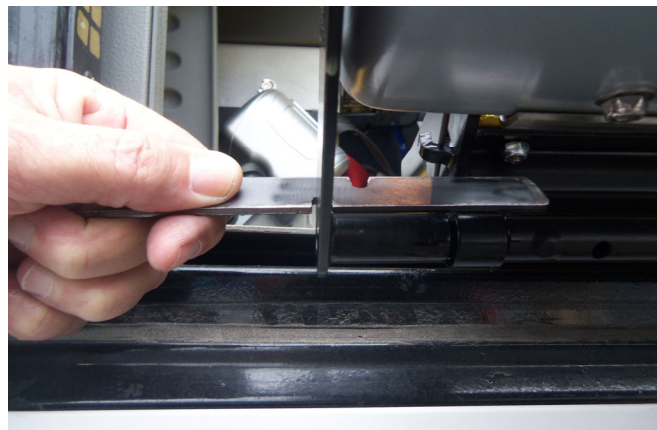
- e. Remove the shoulder bolt that fastens the actuator rod-end to mounting plate (on traveling frame); catch spacer as it falls.
- f. Locate rod-end portion of actuator rod assembly at left side of platform (between the junction of the traveling frame and platform). Loosen rod-end jam-nut.
- g. Remove shoulder bolt that fastens actuator rod-end to mounting plate (on traveling frame); catch spacer as it falls. Lower bridgeplate to floor by hand.
- h. Refer to **Figure 2-3**. Turn left-side rod-end to achieve a clearance of 1/8" to 3/16" (3mm to 5 mm) between bridgeplate cam and bridgeplate cam follower when shoulder bolt and spacer are installed. Tighten shoulder bolt, then tighten rod-end jam-nut.





**FIGURE 2-3: BRIDGEPLATE ADJUSTMENT**

**NOTE:** (F9TF-DE019, F9TH-DE035) Must achieve a clearance of 3/4" (19 mm) between Bridgeplate CAM and Bridgeplate CAM Follower. Use Bridgeplate Height Gauge Tool P/N (56279). Refer to Figure 2-4.



**FIGURE 2-4: BRIDGEPLATE HEIGHT GAUGE TOOL SHOWN FOR CONFIG F9TF-DE019, F9TH-DE035**

- i. Verify that bridgeplate is resting flat against floor. Adjust right-side rod-end so that shoulder bolt can be installed without altering bridgeplate position. Install spacer and shoulder bolt, and then tighten rod-end jam-nut.
- j. Reconnect positive battery cable at vehicle battery compartment.
- k. Remove platform support and operate lift to verify that bridgeplate deploys correctly. Readjust actuator rod assemblies, if necessary.

#### 4. BRIDGEPLATE LOAD SENSING SWITCH

The bridgeplate on the Ricon Mirage® DOT Public Use lifts is fitted with an interlock that prevents movement of the lift from the vehicle floor level if the bridgeplate is occupied. The interlock is accomplished through the use of a spring supported plate and an adjustable limit switch mounted inside the bridgeplate frame. For adjustment of the actuating system follow the procedure for Bridgeplate Actuator Rod Adjustment (Chapter II, Section D.3.a thru Section D.3.k).

- a. Verify proper operation of the Floating Plate.

**NOTE:** Key to the bridgeplate occupancy sensing system is the spring loaded, floating plate. The floating plate must move freely on its support so that the underlying switch can properly sense the plate position.

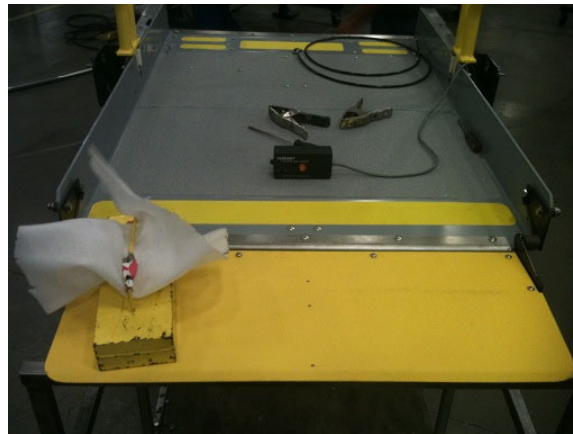
- 1) Refer to **Figure 2-5**. Gap between pre-assembled frame weldment and bridgeplate (Kit 53048) should be between 0.040" – 0.100" (1 – 2.5 mm) wide.

**FIGURE 2-5. BRIDGEPLATE GAP**

- 2) Verify proper operation of the bridgeplate occupancy sensor switch.

**NOTE:** In the event the bridgeplate system fails to detect the 25 lbs. (11 kg) test weight, check the following.

- i.) Ensure that the plate moves freely and has the appropriate gap.
  - ii.) Once the plate has been verified to move freely, proceed with switch adjustment procedure.
- b. Refer to **Figure 2-6**. Perform Load Test by placing 25 lbs. (11 kg) of weight on the left side of bridgeplate. Verify that the platform does not move when DOWN button is pressed.

**FIGURE 2-6. 25 LBS. (11 KG) LOAD TEST (LEFT SIDE)**

- 1) Refer to **Figure 2-7**. Perform Load Test by placing 25 lbs. (11 kg) of weight on the center of bridgeplate. Verify that the platform does not move when DOWN button is pressed.

**FIGURE 2-7. 25 LB. (11 KG) LOAD TEST (CENTER SIDE)**

- 2) Refer to **Figure 2-8**. Perform Load Test by placing 25 lbs. (11 kg) of weight on the right side of bridgeplate. Verify that the platform does not move when DOWN button is pressed.

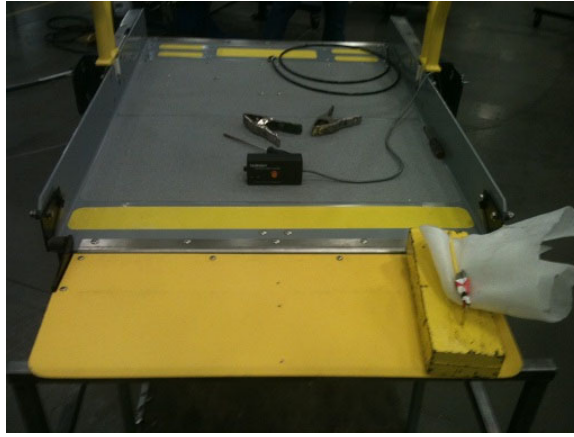


FIGURE 2-8. 25 LB. (11 KG) LOAD TEST (RIGHT SIDE)

c. Adjust the bridgeplate occupancy sensor switch.

- 1) Refer to **Figure 2-9**. Fold bridgeplate by unhooking left hand and right hand bridgeplate torsion springs.



FIGURE 2-9. UNHOOK BRIDGEPLATE SPRING

- 2) Refer to **Figure 2-10**. Fold bridgeplate onto platform to perform adjustment.

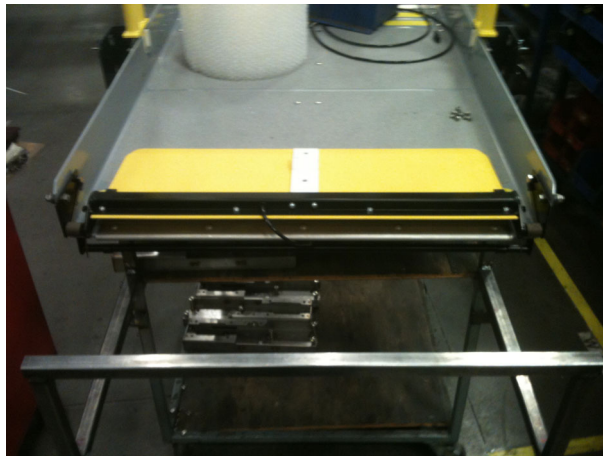


FIGURE 2-10. BRIDGEPLATE IN CLOSED POSITION

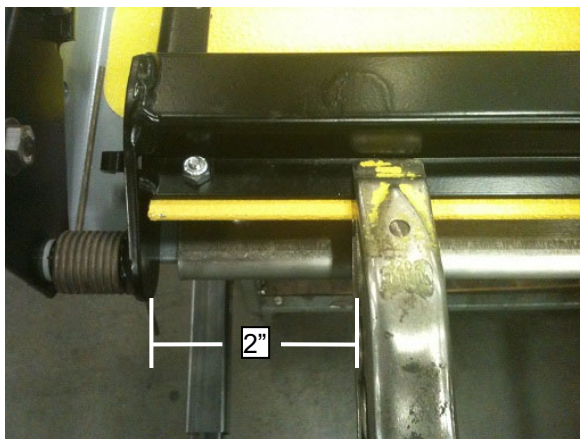
- 3) Audible confirmation of bridgeplate must be verified by pressing between bridgeplate frame and platform weldment and listen for a “click”.

**NOTE:** When DOWN button is pressed on pendant with no obstruction on bridgeplate the platform should move downward which indicates that platform is working properly. No adjustment necessary.

**NOTE:** When DOWN button is pressed on pendant with no obstruction on bridgeplate but platform does not move downward, adjustment of the bridgeplate switch is necessary. Refer to steps 1) and/or 2).

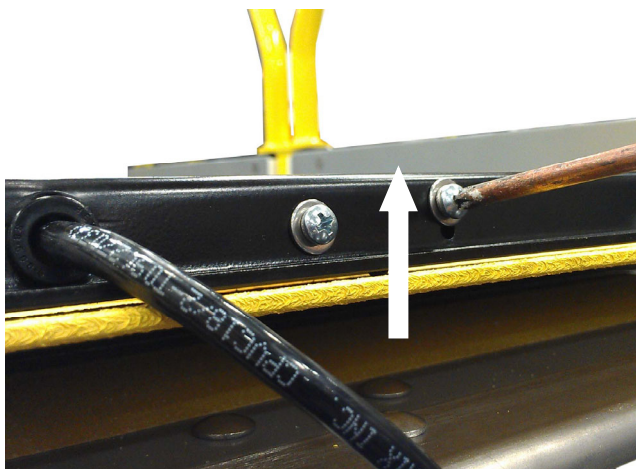


- i.) Press between bridgeplate frame and platform weldment, listen for “click”. If a “click” sound is heard, this indicates that the bridgeplate switch is activated. Platform will not move. Minor adjustment of the bridgeplate switch is necessary.
- ii.) Press between bridgeplate frame and platform weldment. If no “click” is heard, this indicates that the bridgeplate switch is already activated. Platform will not move. Adjustment of the bridgeplate switch is necessary.



**FIGURE 2-11. PLACE CLAMP 2" (5 CM) FROM LH SIDE OF BRIDGEPLATE**

- 4) Refer to **Figure 2-11**. Place a clamp 2" (5 cm) from left side of bridgeplate frame.
- 5) Refer to **Figure 2-12**. Make adjustment by loosening the adjustable screw by shifting screw to top of slot then tighten the adjustable screw to secure position. This will reset the position of the bridgeplate switch so that it is not activated.



**FIGURE 2-12. BRIDGEPLATE SWITCH RESET**

- 6) Refer to **Figure 2-12**. Slightly tighten screw then shift screw slowly, downward for adjustment.
- 7) Refer to **Figure 2-13**. Shift screw slowly downward until a “click” can be heard. Reposition screw just before “click” sound which indicates bridgeplate switch is activated.

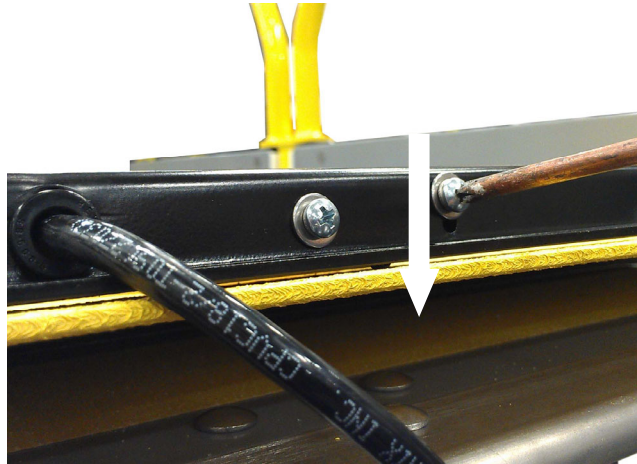


FIGURE 2-13. BRIDGEPLATE SWITCH ADJUSTMENT

- 8) Reattach bridgeplate spring onto left-hand and right-hand side of bridgeplate.

## 5. PLATFORM HEIGHT PROGRAMMING

The height of platform prior to being pulled into the enclosure is referred to as “stow height”. When this height is properly set, the platform will easily enter enclosure without hanging-up. The stow height is factory set and normally does not require resetting after lift installation, except when major lift disassembly is done. However, if the vertical travel limit has been adjusted, then stow height must be reprogrammed.

Most dedicated entry models have an additional platform position referred to as “intermediate height”. This height is generally a few inches below floor height, and is also factory-set. The height may be reprogrammed for specific applications, or after major repair work. Some dedicated entry models move the platform from the ground directly to floor height, without an intermediate stop.

The Upward Travel Setting (UTS) is a maximum vertical travel setting in the controller used to determine proper actuation height of the Threshold Warning system (TWS). When the UTS is properly set, the TWS should become active when the lift platform is one inch or greater below the vehicle floor level and portions of the passenger or mobility aid are within the threshold area of the vehicle entry. The UTS should be programmed any time the platform vertical travel limit is adjusted.

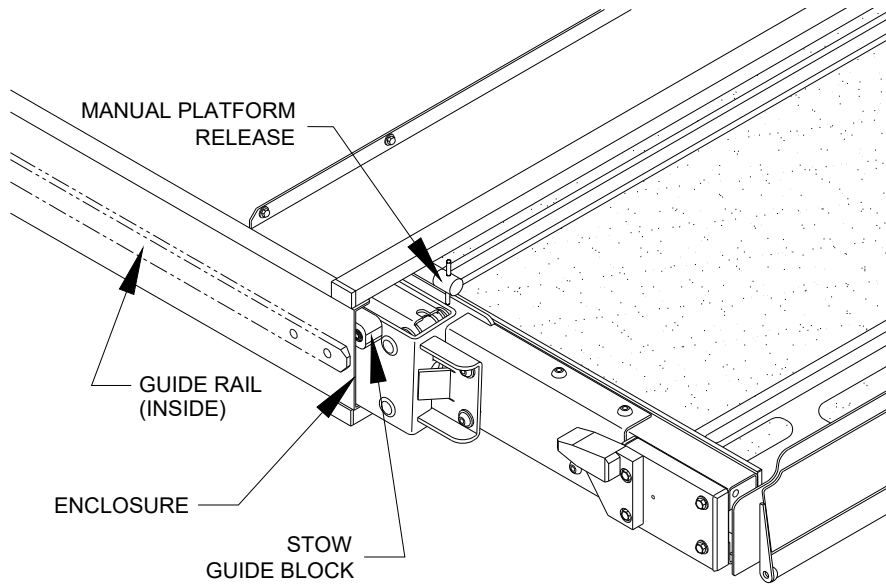
An optional programming switch kit is available to program the stow and intermediate heights into the controller memory. It is Ricon (P/N 17885).

**NOTE:** The Stow Intermediate Height and Upward Travel Setting (UTS) values are stored indefinitely in the controller memory. Programming the controller will clear the present value and store a new value.

### a. To Program Stow Height:

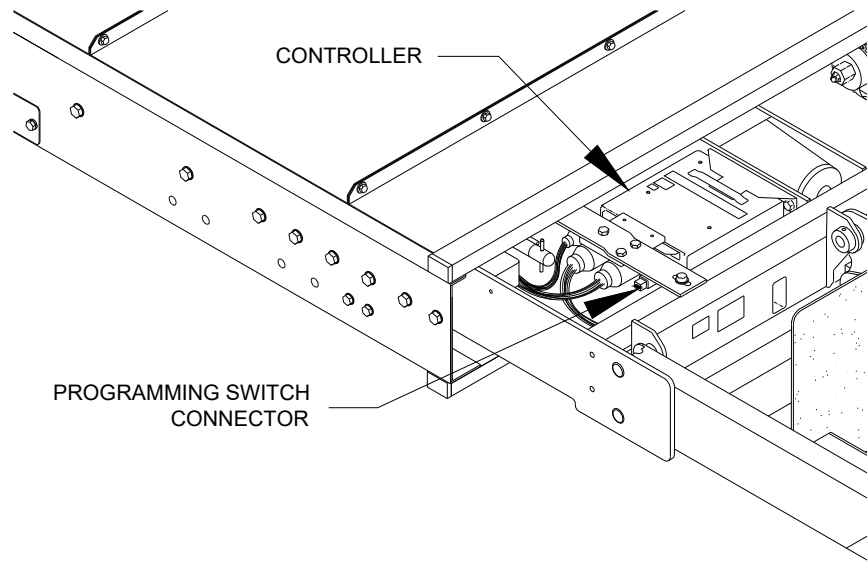
- 1) Deploy platform.
- 2) Use manual back-up pump in combination with manual pressure release valve to position top the surface of the platform lifting arms at the same height as the top surface of carriage. This alignment assures that platform can be pushed into enclosure without difficulty.

- 3) Refer to **Figure 2-14**. Release manual platform lock and then hand-push platform into enclosure. Stop pushing when front face of white stow guide block (tear-drop shaped plastic block) is adjacent to front edge of enclosure. The stow guide block will be visible from front of lift.



**FIGURE 2-14: STOW GUIDE BLOCK ALIGNMENT**

- 4) Lower platform by opening manual pressure release valve (located on pump assembly), and let stow guide blocks (left side and right side) settle on guide rails. Close valve.
- 5) Raise platform with manual back-up pump so that both left and right side stow guide blocks are approximately 1/32" (0.8 mm) above guide rails.
- 6) Hand-pull platform completely out of enclosure; the platform must lock in place to assure accurate data entry. Check lock by attempting to push platform into enclosure; it must not move.
- 7) Refer to **Figure 2-15**. The mating connector for the programming switch is attached to the underside of the controller bracket. The connector is protected with a removable plug. Connect programming switch to connector.



**FIGURE 2-15: PROGRAMMING SWITCH CONNECTOR**

- 8) Press the DEPLOY button three times (DEPLOY button is in the upper left corner of control pendant). Press the programming switch button for approximately ten seconds to program stow height. Disconnect programming switch and replace plug.

**NOTE:** The programming switch is enabled for a period of 5 minutes after the DEPLOY button is pressed three times. The programming mode is ended when any other button is used during this period.

**NOTE:** The following two steps might lower the platform to a point slightly below the programmed stow height, which is acceptable.

- 9) Use pendant to raise platform at least one foot above stow height.
- 10) Stow platform from this raised position and stop its movement when platform has entered enclosure approximately six inches.

**NOTE:** The following two steps might raise platform to a point slightly above the programmed stow height, which is acceptable.

- 11) Use pendant to deploy platform and lower it at least one foot below stow height.
- 12) Stow platform from this lowered position and stop its movement when platform has entered enclosure approximately six inches.
- 13) Repeat steps nine and ten.

**b. Program the Intermediate Height** (Dedicated Entry model, only)



**CAUTION**

Ricon recommends that stow height be programmed before intermediate height.

**NOTE:** This procedure may require use of manual back-up pump to raise platform because the UP button (on pendant) may be disabled. The DOWN button can be used to lower platform.

- 1) Use pendant to deploy platform.

**NOTE:** The platform must be fully deployed before controller can accept an intermediate height value.

- 2) Raise platform to height preferred for intermediate position; this height must be at least two feet above stow height.

**NOTE:** (F9TF-DE019,.F9TH-DE035) Raise platform height up until the top of the 11" (28 cm) bridgeplate is approximately 4" (10 cm) under wheelchair lift bus door. Use Bridgeplate Height Gauge Tool P/N (56279).

- 3) Refer to **Figure 2-15**. The mating connector for the optional programming switch is attached to the underside of the controller bracket. The connector is protected with a removable plug. Connect programming switch to connector.
- 4) Press the DEPLOY button three times (DEPLOY button is in the upper left corner of control pendant). Press the programming switch button for approximately ten seconds to program intermediate height. Disconnect programming switch and replace plug.

**NOTE:** After the DEPLOY button is pressed three times, there is a time period of 5 minutes during which the programming switch is enabled. Programming will be disabled if any other button is used during this period.

- 5) Verify that programmed intermediate position is correct by stowing platform, then deploying and raising it to intermediate height.

**NOTE:** It is acceptable for the intermediate position to vary +/- 1/2" (13 mm) from the programmed height.

**c. Program the Upward Travel Setting**

- 1) Use pendant to raise the platform to its vertical travel limit.
- 2) Press the DEPLOY button three times (DEPLOY button is in the upper left corner of control pendant). Press the Up button on the Pendant for approximately fifteen seconds to program the UTS.

**NOTE:** After the DEPLOY button is pressed three times, there is a period of 5 minutes, during which the programming mode is enabled.

**NOTE:** Some units may run the pump during programming while others may run the pump only after programming is complete. Both of which are normal and dependent on the controller P/N used.





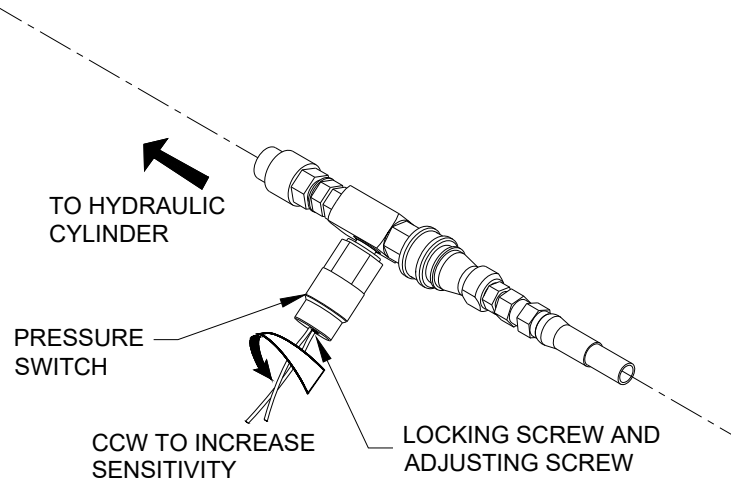
- 3) Verify that programmed UTS position is correct by lowering the platform approximately 1.5" from vehicle floor level. Stand in the threshold area and verify the TWS warning light flashes and buzzer sounds off.

## 6. ANTI-STOW PRESSURE SWITCH ADJUSTMENT

An adjustable, pressure sensing, electrical switch is installed in the hydraulic line that is connected to the hydraulic cylinder. The switch will detect the presence of a 50 lb. (23 kg) load, on the deployed platform. Correct adjustment of anti-stow switch inhibits horizontal movement of loaded platform, providing an element of safety for lift users.

### CHECK:

- a. Refer to **Figure 2-16**. The pressure switch adjusting screw is located at the top of the body, between the two lead wires. If available on your configuration, there may be a locking setscrew above the adjusting screw, which must be removed to carry out pressure switch adjustments.



**FIGURE 2-16: ANTI-STOW PRESSURE SWITCH**

- b. Apply power to lift and deploy platform.
- c. Lower platform to ground, and place a 50 lb. (23 kg) weight in center of platform.
- d. Press STOW button until platform reaches STOW height. Platform should stop at stow height and not enter enclosure. Proceed to next step if platform attempts to enter enclosure.

### ADJUST:

- e. Remove locking setscrew (requires hex key) and turn adjusting screw 1/8-turn CCW to increase sensitivity. Repeat above steps until the 50 lb. (23 kg) weight inhibits stowing of platform. Repeat test from floor height; platform should stop at stow height and not enter enclosure.
- f. Remove test weight and then check platform stow function from ground height and from floor height. Platform should stow properly from either level. Replace locking setscrew.

**NOTE:** The platform must be fully deployed before controller can accept an intermediate height value.

Normal platform operation may not occur if pressure switch adjustment is too sensitive (inhibits stow function when a weight that is significantly less than 50 lb. (23 kg) is present). Turn adjusting screw CW to decrease sensitivity. Also, erratic platform movement may occur if setting of pressure switch is marginal. Correct this by turning adjusting screw 1/16-turn in appropriate direction.

- g. To ensure pressure switch setting is not too sensitive, lower platform to ground, and place a 15 lb. (7 kg) weight in center of platform.
- h. Press STOW button until platform reaches STOW height. Platform should attempt to enter enclosure. Proceed to next step if platform stops at stow height and does not enter enclosure.
- i. Turn adjusting screw 1/16-turn CW to decrease sensitivity. Repeat steps h and i until the 15 lb. (7 kg) weight no longer inhibits stow function. Repeat test from floor height.
- j. Repeat steps c and d to verify final setting of pressure switch.

- k. Replace locking setscrew, if applicable.

**NOTE:** The platform must be fully deployed before controller can accept an intermediate height value.

Normal platform operation may not occur if pressure switch adjustment is too sensitive (inhibits stow function when a weight that is significantly less than 50 lb. (23 kg) is present). Turn adjusting screw CW to decrease sensitivity.

## 7. ROLLSTOP ADJUSTMENT

Correct operation of the outer rollstop is essential to user safety. The rollstop is adjusted at the factory and should not require further adjustment after delivery and installation. Rollstop adjustment is not affected by the configuration of the installation. If there is any doubt about the rollstop operation, refer to "Rollstop Maintenance" in the "Travelling Frame" section of Chapter IV.

## 8. THRESHOLD WARNING SYSTEM (TWS) ADJUSTMENT

Refer to Appendix for Installation Instruction 32ii354e (also supplied with lift) for procedures related to adjustment of the TWS module. There are three sections presented in this document. The first section adjusts where the acoustic beam is pointed, the second tests the accuracy of the adjustment, and the third provides a procedure for adjusting the timing of the sensors.

Adjustment of the sensor timing is done at the factory and should not need to be repeated in the field. Readjustment should only be considered if the sensor aiming could not be adjusted to ignore the wheelchair in the aisle, a seat, and the platform during its normal movement.

## E. VERIFY INSTALLATION

Lifts that are installed for the first time in a new application, or installations carried out by technicians with limited experience, must be checked by a representative of Ricon Applications Engineering. The check is based on the items listed on Ricon document 32EIVF9T (Equipment Installation Verification checklist for F9T).

- Be certain there is no interference with operation of lift by interior or exterior components.
- The lift is designed to carry the weight of a wheelchair and its passenger. The vehicle structure must be adequate to support all loads produced during lift operation, as well as forces incurred by the motion of vehicle during transit.



### CAUTION

- Do not operate lift during load test. the load test is intended to test lift installation mounting points, not lifting capacity. Remove test weight immediately after test.
  - When test weight is placed on platform, the vehicle suspension will compress and vehicle will lean. If weighted platform touches ground, remove weight, raise platform, and retest.
- The installed lift must be test loaded to 125% of its rated 660 pound (300 kilograms) load capacity (Model F9TF) and 800 pound (363 kilograms) load capacity (Model F9TH) to verify integrity of installation. Position platform 2"-6" (5-15 cm) above ground and place 825 pounds (374 kg) (Model F9TF) or 1,000 pounds (454 kg) (Model F9TH) in center of platform. Inspect lift-mounting points. REMOVE TEST WEIGHT.
  - Run lift through several complete cycles to verify proper operation.

## F. CUSTOMER ORIENTATION

### IMPORTANT

#### ~ Customer Orientation ~

Ricon Sales or Service personnel must review the Warranty and the Operator Manual with the customer to confirm that they understand the safe operation of the lift. Instruct customer to follow operating instructions without exception.

The installing service technician must attach the F9TF/F9TH series normal operating and manual operating instructions decals to vehicle in a location clearly visible to operator. Attach parking restriction decals to vehicle, if provided with lift.



This page intentionally left blank.



### III. F9TF/F9TH MAINTENANCE

**R**egular maintenance of the Ricon Mirage® F9TF and F9TH DOT Public Use wheelchair and standee lift is essential for optimum performance, and will reduce the need for repairs. This chapter contains a maintenance schedule, plus electrical and hydraulic diagrams.



#### CAUTION

This Ricon product is highly specialized. Maintenance and repair work must be performed by a Ricon dealer or qualified service technician, using Ricon replacement parts.



#### WARNING

MODIFYING OR FAILING TO PROPERLY MAINTAIN THIS PRODUCT WILL VOID THE WARRANTY AND MAY RESULT IN UNSAFE OPERATING CONDITIONS.

#### A. MAINTENANCE SCHEDULE

Climate (weather), frequency of use, and lift age (vehicle mileage) combine to determine the regularity of lift maintenance.

Ricon recommends carrying out the inspection items listed in the Maintenance Checklist. Maintenance should be done at the interval prescribed on the appropriate Maintenance Frequency Chart.

**NOTE:** Maintenance should be performed every 6 months in cases where the lift would otherwise go longer without service.

Select the Maintenance Frequency Chart that contains the combination of lift usage (low, normal, high) and climate type (mild, average, severe) that applies to your vehicle. Do maintenance at the cycle interval above your vehicle type (stepwell or dedicated entry). The lift cycle counter is mounted inside the carriage, on the rear frame member, just to the right of the hydraulic cylinder (refer to Figure 1-1 in **Chapter I**). The counter advances each time the platform moves through a complete cycle, which consists of the platform moving from the vehicle floor to the ground and back to the floor.

- A stepwell model lift is installed in the bottom step riser; most of the lift is exposed to the weather.
- A dedicated entry model lift is installed within a compartment; the lift is sheltered from the weather.
- Refer to the Maintenance Checklist in this chapter. Copy the checklist for routine use.

#### 1. MAINTENANCE FREQUENCY CHARTS

##### Low Usage in Mild and Average Climates:

1200 cycles	1800 cycles
Stepwell (exposed to environment)	Dedicated Entry (protected from environment)
Low usage (0 - 180 cycles per month)	Low usage (0 - 180 cycles per month)
Mild & average climates (little or no snow)	Mild & average climates (little or no snow)



**Low to Normal Usage in Mild to Average Climates:**

1000 cycles	1300 cycles
<b>Stepwell</b> (exposed to environment)	<b>Dedicated Entry</b> (protected from environment)
Normal usage (180 – 360 cycles per month)	Normal usage (180 – 360 cycles per month)
Mild and average climates (little or no snow)	Mild and average climates (little or no snow)

**Low, Average, and High Usage in Severe Climate:**

300 cycles	400 cycles
<b>Stepwell</b> (exposed to environment)	<b>Dedicated Entry</b> (protected from environment)
Low, normal, and high usage (0 – 360+ cycles per month)	Low, normal, and high usage (0 – 360+ cycles per month)
Severe climate (medium to heavy snow or marine exposure)	Severe climate (medium to heavy snow or marine exposure)

**High Usage in Mild Climate:**

750 cycles	1000 cycles
<b>Stepwell</b> (exposed to environment)	<b>Dedicated Entry</b> (protected from environment)
High usage (360+ cycles per month)	High usage (360+ cycles per month)
Mild climate (little or no snow)	Mild climate (little or no snow)

**High Usage in Average Climate:**

600 cycles	800 cycles
Stepwell (exposed to environment)	Dedicated Entry (protected from environment)
High usage (360+ cycles per month)	High usage (360+ cycles per month)
Average climate (light snow)	Average climate (light snow)





Initial boxes as appropriate →		OK	Requires repair	Repair at next service	Repair before returning to service
<b>Safety issue</b>	Raise platform; verify that outboard roll stop is closed and locked by pulling against it. Verify that bridgeplate is up.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Safety issue</b>	Raise platform to floor level; verify that bridgeplate remains up during transition from ground to floor, and that it overlaps floor 1"– 2" (2.5 – 5 cm).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Safety issue</b>	Verify that TWS operates properly. Lower platform about two inches and then stand on vehicle floor near doorway; light must flash and buzzer must sound.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Safety issue</b>	Stow platform from floor level. Platform must stow completely, without binding. Verify that vehicle transmission, parking brake, etc. are enabled by interlock system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Rotate manual platform release and pull platform out <u>completely</u> . Platform must lock in place (cannot be pushed back in). Rotate manual release and push platform in <u>completely</u> . Platform must lock in place (cannot be pulled out).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Check all decals. Decals should be readable and attached securely.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Check cylinder, hydraulic lines, and connections for leaks.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Clean carriage assembly with Zep I.D. Red degreaser.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Remove excess grease.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Inspect primary and secondary drive chains. Adjust, if needed. Lube with Zep PLS lubricating spray.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Check hydraulic cylinder for leaks; spray trunnion and center pivot pin with Zep PLS lubricating spray.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Spray eight pins on lifting frame with Zep PLS lubricating spray.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Remove rollstop covers from both sides of platform; clean rollstop pivot points with Zep I.D. Red degreaser. Replace covers.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>





Initial boxes as appropriate →	OK	Requires repair	Repair at next service	Repair before returning to service
Inspect the guide block underneath the Bridgeplate for wear. Verify the guide block has not been worn down to the metal Bridgeplate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NOTES:	Print name: _____ Signature: _____			



## B. TROUBLESHOOTING CHART

Reference is made in the troubleshooting chart to connector pins located on harness connectors and components. Refer to the Wheelchair Lift Electrical Wiring Diagram in Figures 3-1 and 3-2 for identification and location of these components and connectors.


**NOTE:** Figures referenced in the troubleshooting chart are located either in this chapter or other chapters in this manual.

**NOTE:** Verify that the 24 VDC power supplied to the wheelchair lift by the vehicle is present, and is capable of supplying sufficient electrical current. Also, verify that vehicle interlock requirements are met.

**TABLE 3-1: WHEELCHAIR AND STANDEE LIFT TROUBLESHOOTING CHART**

SYMPTOM	PROBABLE CAUSE	TESTS AND CHECKS	CORRECTIVE ACTION
Platform does not deploy.	24 VDC power is not available to lift.	Check for 24 VDC at 50A circuit breaker.	Switch lift power on (at dashboard).
	Lift 50A circuit breaker is tripped.	Check for 24 VDC at power cut-off solenoid.	Reset breaker.
	24 VDC power is not present in lift.	Check for 24 VDC at 30A circuit breaker (in pump box).	If voltage is not present, replace power cut-off solenoid.
		1. Check for 24 VDC at pin 7 of P2. 2. Check 10A fuse at pin 1 of P2.	Replace 10A fuse, if bad.
	Lift 30A circuit breaker is tripped.	Check for 24 VDC at pin 1 of TS1 (in pump box).	Reset breaker if voltage is not present.
	Main harness connector to controller is loose.		Verify secure connection of P2 to controller.
	Carriage/platform harness connector to controller is loose.		Verify secure connection of P5 to controller.
	Obstruction in enclosure.	Look inside enclosure for foreign objects and check for twisting of main harness.	Remove obstruction; check for related damage.
	Deploy button failure (on control pendant).	Verify 24 VDC at pin 7 of P1.	If voltage is not present, check current path back to controller.
		Verify 24 VDC at pin 6 of P1 with Deploy button pressed.	If voltage is not present, replace Deploy button (section F-1 of <b>Chapter IV</b> ).
	TWS PCB failure.	Verify 24 VDC at terminals 3 and 14 of TS2 when Deploy button is pressed.	If either voltage is not present, replace TWS PCB (located in pullbox).
	Controller failure.	Verify 24 VDC at pins 3 and 18 of P2 when Deploy button is pressed.	If both voltages are present, replace controller.
		Verify 24 VDC across pins 10 and 15 of P5 when Deploy button is pressed.	If voltage is not present, replace controller.
	In/Out motor failure.	Check for 24 VDC across In/Out motor (moves carriage) with Deploy button pressed.	If voltage is present, replace In/Out motor.
Platform does not lower.	Platform not fully deployed.	Check for 24 VDC at pin 5 of P5.	Press Deploy button on control pendant. If 24 VDC is still not present, check or replace "Deployed Indicator" switch.


**TABLE 3-1: WHEELCHAIR AND STANDEE LIFT TROUBLESHOOTING CHART**

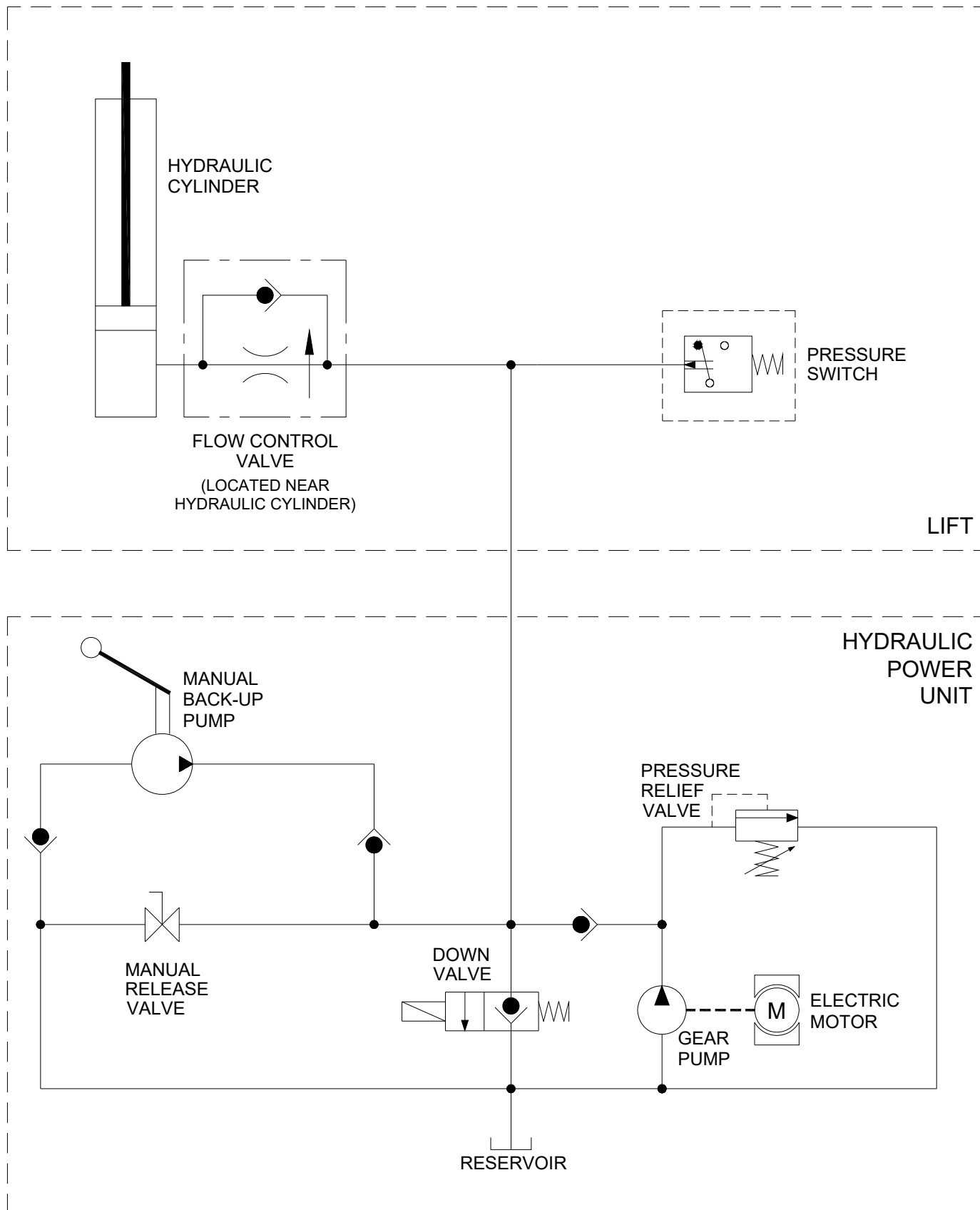
SYMPTOM	PROBABLE CAUSE	TESTS AND CHECKS	CORRECTIVE ACTION
	Hydraulic quick-disconnect hose fitting to cylinder is not secure.		Verify that quick-disconnect connector is fully engaged.
	Down valve failure (part of hydraulic pump assembly).	Check for 24 VDC at pin 4 of TS1 when Down button is pressed. Check for ground on other side of down valve.	If voltage is present, replace down valve.
	Down button (on control pendant) failure.	Verify 24 VDC at pin 7 of P1.	If voltage is not present, check current path back to controller.
		Check for 24 VDC at pin 4 of P1.	If voltage is not present, replace Down button (section F-1 of <b>Chapter IV</b> ).
	TWS PCB failure.	Verify 24 VDC at terminal 14 of TS2 when Down button is pressed.	If voltage is not present, replace TWS PCB (located in pullbox).
	Bridgeplate switch	Check for 24 VDC at pin 18 of P2 with Down button pressed.	If voltage is not present, check Bridgeplate switch and circuit. Replace switch, if necessary.
	Controller failure.	Check for 24 VDC at pin 18 of P2 with Down button pressed.	If voltage is not present, replace controller.
	Debris in hydraulic system.	Open manual release valve.	If platform lowers with valve open, flush hydraulic system.
Platform does not lower manually.	Hydraulic quick-disconnect hose fitting to cylinder is loose.		Verify that quick-disconnect connector is fully engaged.
	Debris in flow control valve (located at cylinder).	Open manual release valve.	If platform lowers with valve open, flush hydraulic system.
	<div style="text-align: center;">  <b>CAUTION</b> </div> Verify that 24 VDC power to lift is OFF before opening this hydraulic line. Support platform if deployed.		
	Manual pressure release valve failure.	Loosen fitting on the hydraulic line connected to pump assembly.	If platform lowers, replace release valve.
Rollstop doesn't open when platform contacts ground.	Obstruction of rollstop release latch.	Raise platform and actuate latch manually.	If latch does not move, remove left rollstop cover ( <b>Figure 3-3</b> in <b>Chapter IV</b> ) and inspect for debris.
	Rollstop "Ground Contact" switch not actuating.	Check for 24 VDC at pin 14 of P5 with platform on ground.	Verify switch adjustment; readjust as necessary (section C.1.b of <b>Chapter IV</b> ).
	Connector for rollstop switches is loose.		Verify secure connection of P6 to J6. Connectors are behind right rollstop cover ( <b>Figure 3-3</b> in <b>Chapter IV</b> ).
	Connector for rollstop motor is loose.		Verify secure connection of P7 to J7. Connector is behind right rollstop cover ( <b>Figure 3-3</b> in <b>Chapter IV</b> ).
	Carriage-platform harness connector on controller is loose.		Verify secure connection of P5 to controller.

**TABLE 3-1: WHEELCHAIR AND STANDEE LIFT TROUBLESHOOTING CHART**

SYMPTOM	PROBABLE CAUSE	TESTS AND CHECKS	CORRECTIVE ACTION
	Rollstop "Ground Contact" switch failure.	Check for 24 VDC at pin 14 of P5 with platform on ground.	If voltage is not present, replace switch (section F-1 of <b>Chapter IV</b> ).
	Controller failure.	Check for 24 VDC across pins 1 and 7 of P5 with platform on ground.	If voltage is not present, replace controller.
	Rollstop motor failure.	Check for 24 VDC between pins A and B of J7 with platform on ground.	If voltage is present, replace rollstop motor ( <b>Figure 3-4</b> in <b>Chapter IV</b> ).
	Rollstop adjustable link is misadjusted.	Look for a gap between the closed rollstop and the bumper it contacts.	If any gap is seen, verify adjustment ( <b>Figure 3-6</b> in <b>Chapter IV</b> ).
Platform rises, but then lowers when "Up" button is released.	Hydraulic manual release valve is open.	Look for fluid returning to pump reservoir.	Close manual release valve; do not over-tighten!
	Down valve is actuated.	Check for 24 VDC at terminal 4 of TS1 (located in pump enclosure).	If voltage is present, replace controller.
	Down valve failure.	Verify that 24 VDC is not on terminal 4 of TS1 (located in pump enclosure). Verify that fluid is returning to reservoir.	If voltage is not present and fluid is returning, replace down valve.
	Debris in hydraulic system.	Look for fluid returning to pump reservoir after button is released.	If fluid is seen, flush hydraulic system.
Rollstop does not close when "Up" button is pressed.	"Deployed" indicator switch misadjusted.	Check for 24 VDC at pin 5 of P5.	If voltage is not present, verify adjustment (switch is located at right rear of carriage, with its plunger protruding through right side).
	Connector for rollstop switches is loose.		Verify secure connection of P6 and J6 (connector is behind left rollstop cover; <b>Figure 3-3</b> in <b>Chapter IV</b> ).
	Up button (on control pendant) failure.	Verify 24 VDC at pin 7 of P1.	If voltage is not present, check current path back to controller.
		Check for 24 VDC at pin 3 of P1 with "Up" button pressed.	If voltage is not present, replace button (section F-1 of <b>Chapter III</b> ).
	"Rollstop Closed" switch failure.	Check for 24 VDC at pin 13 of P5.	If voltage is not present, replace switch (section F-1 of <b>Chapter IV</b> ).
	Rollstop motor failure.	Check for 24 VDC between pins A and B of J7.	If voltage is present, replace rollstop motor.
Platform does not stow when Stow button is pressed.	A load of 50 lbs (23 kg), or greater, is on platform.	Check for presence of an object on platform.	Remove object.
	Main harness connector on controller is loose.		Verify secure connection of P2 to controller.
	Carriage-platform harness connector on controller is loose.		Verify secure connection of P5 to controller.
	Stow button failure (on control pendant).	Verify 24 VDC at pin 2 of P2 when Stow button is pressed.	If voltage is not present, check current path back to controller.

**TABLE 3-1: WHEELCHAIR AND STANDEE LIFT TROUBLESHOOTING CHART**

SYMPTOM	PROBABLE CAUSE	TESTS AND CHECKS	CORRECTIVE ACTION
		Check for 24 VDC at pin 2 of P1 with Stow button pressed.	If voltage is not present, replace Stow button (section F-1 of <b>Chapter IV</b> ).
	In/Out motor failure.	Check for 24 VDC across In/Out motor when Stow button is pressed.	If voltage is present, replace In/Out motor.
	Controller failure.	Check for 24 VDC at pin 2 of P2 with Stow button pressed.	If voltage is present, replace controller.
		Check for 0 VDC across pins 13 and 14 of P3 when there is no load present on platform.	If a voltage is present, replace platform load pressure sensing switch.
Manual backup pump does not raise platform.	Hydraulic manual release valve is not closed.		Close manual release valve; do not over-tighten.
	<div style="text-align: center;">  <b>CAUTION</b>  Verify 24 VDC power to lift is off before opening this hydraulic line. Support platform if deployed. </div>		
	Manual backup pump failure.	Loosen the fitting on hydraulic line that is connected to pump assembly, and then operate backup pump.	If fluid does not flow, replace manual backup pump.
	Hydraulic hose or fitting leak.	Check for an oil accumulation in bottom of enclosure, or in pump box.	Tighten hydraulic fittings or replace hydraulic hose.
	Down valve is leaking.	Look for fluid returning to reservoir when backup pump is operated.	Remove down valve, check for internal debris or damage, and clean or replace.
<b>END OF TABLE</b>			

**C. HYDRAULIC SYSTEM DIAGRAM****FIGURE 3-1: F9TF/F9TH HYDRAULIC SYSTEM**

## D. ELECTRICAL WIRING DIAGRAM

### 1. DIAGRAM LEGENDS

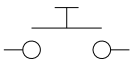
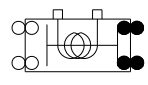
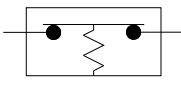

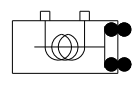
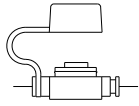

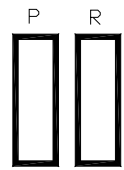
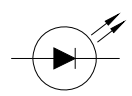
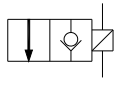
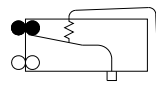


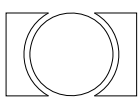
#### a. Color codes used on diagram

TABLE 3-2: WIRE COLOR CODES			
LETTER	COLOR	LETTER	COLOR
BLK	Black	RED	Red
BLU	Blue	VIO	Violet
BRN	Brown	GRY	Gray
GRN	Green	WHT	White
ORG	Orange	YEL	Yellow
END OF TABLE			

#### b. Electrical signal codes used on diagram

24V	24VDC controller output to switches
BIT 0	Word logic signal to vehicle
BIT 1	Word logic signal to vehicle
CS	Stow switch #2 normally open
CS=	Stow switch #2 common
CTR	Signal from counter to controller
DC	Door closed signal from vehicle
DEPLOY	Signal from control pendant to controller
DO	Door open signal from vehicle
DOWN	Signal from control pendant to controller
DPYD	Deploy switch input to controller
DWNVLV	Down valve solenoid actuation signal
GND	Electrical ground (common)
I/O M I	IN/OUT motor in - power to IN/OUT motor (stows platform when positive)
I/O M O	IN/OUT motor out - power to the IN/OUT motor (deploys platform when positive)
KEY 0	Multiplex pendant signal to controller
KEY 1	Multiplex pendant signal to controller
POT –	Hydraulic cylinder potentiometer ground
POT +	Hydraulic cylinder potentiometer positive
POT =	Hydraulic cylinder potentiometer wiper
POWER	Pendant power
PUP	Pump motor solenoid actuation signal
RSMC	Power to rollstop motor - closes rollstop when positive
RSTPC	Rollstop closed signal to controller
RSMO	Power to rollstop motor - opens rollstop when positive
RSTPO	Rollstop opened signal to controller
STOW	Signal from control pendant to controller
STWD	Stow switch input to controller
TWS I/F	Threshold Warning System interface signal to vehicle
UP	Signal from control pendant to controller
+VDC 30A	30A supply voltage to controller

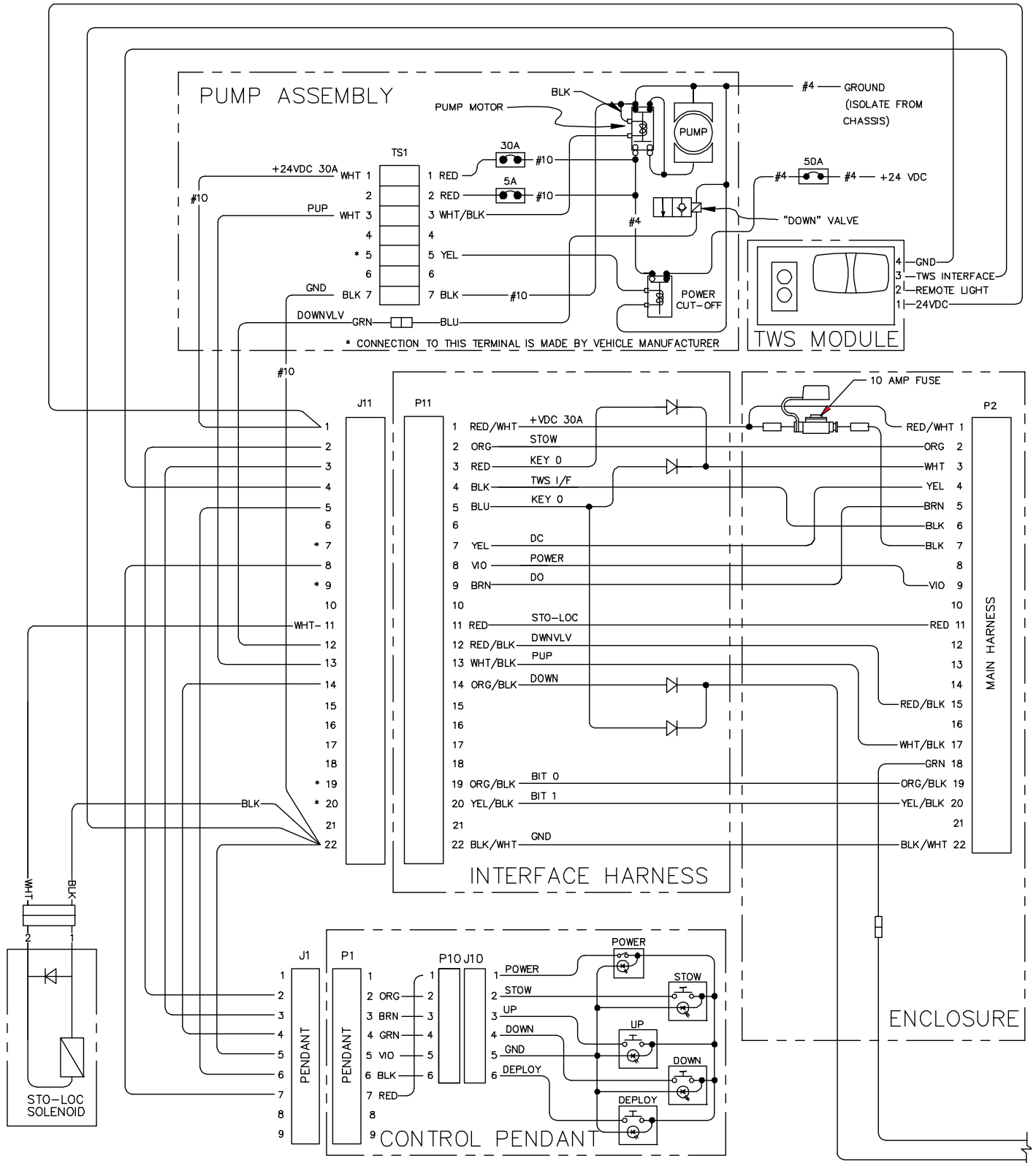
## c. Electrical Symbols used on diagram

 <p><b>MOMENTARY PUSH-BUTTON SWITCH</b></p>	 <p><b>CONTACTOR- DOUBLE POLE</b></p>	 <p><b>PRESSURE SENSOR SWITCH</b></p>
 <p><b>CIRCUIT BREAKER</b></p>	 <p><b>CONTACTOR- SINGLE POLE</b></p>	 <p><b>FUSE HOLDER</b></p>
 <p><b>RESISTOR</b></p>	 <p><b>HARNESS CONNECTOR</b></p>	<p><b>SWITCH CONTACTS:</b></p> <ul style="list-style-type: none"> <li>□ - COMMON</li> <li>● - NORMALLY CLOSED</li> <li>○ - NORMALLY OPEN</li> </ul>
 <p><b>LED</b></p>	 <p><b>HYDRAULIC VALVE</b></p>	 <p><b>SPDT LIMIT SWITCH</b></p>
 <p><b>CRIMP SPLICE</b></p>	 <p><b>SPADE CONNECTOR</b></p>	 <p><b>ELECTRIC MOTOR</b></p>

## 2. WIRING DIAGRAM

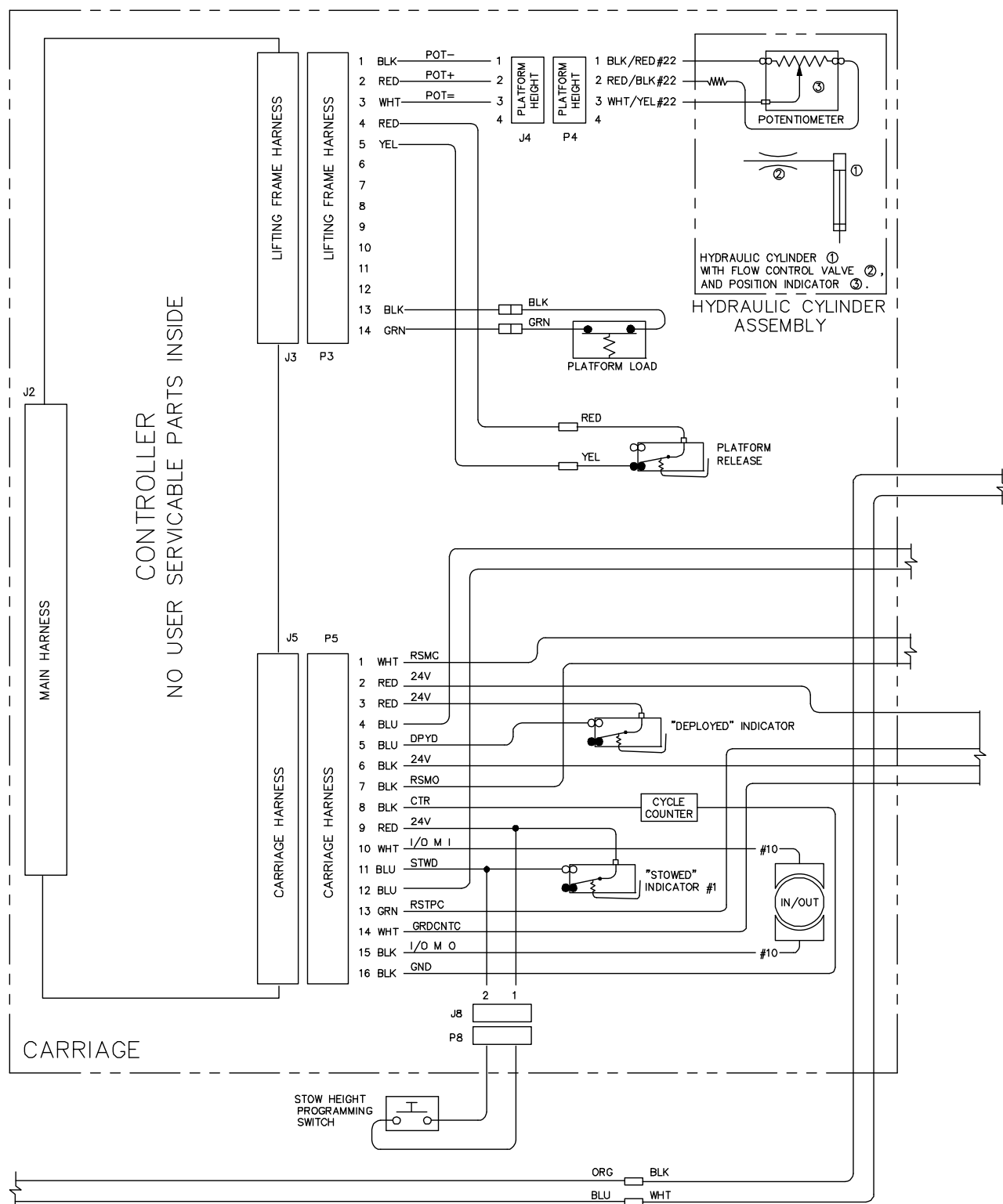
Refer to **Figure 3-2** and **Figure 3-3** on the following pages for the electrical schematic. Figure 3-2 is sectioned across 3 pages and Figure 3-3 is divided across 2 pages.





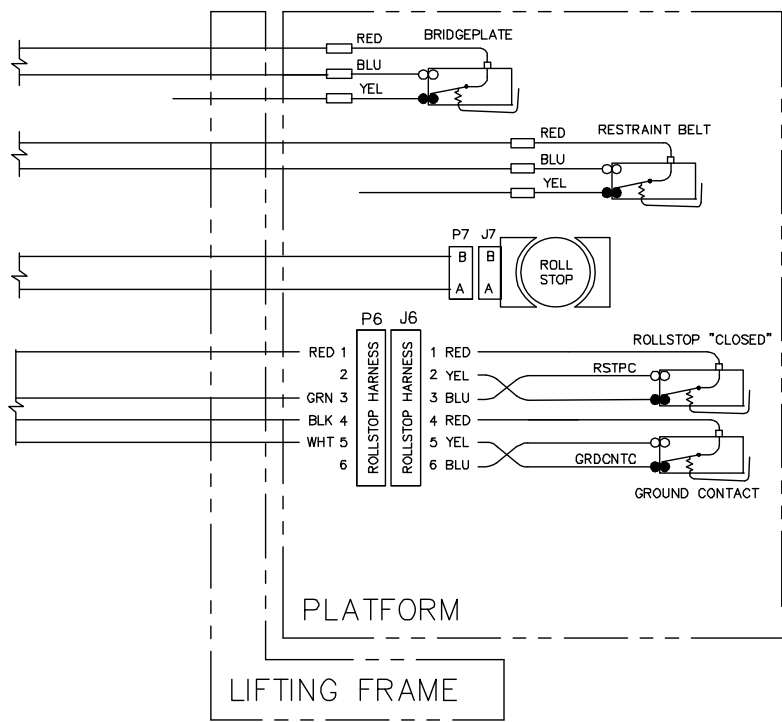
RSM0074000

FIGURE 3-2: F9TF/F9TH DEDICATED ENTRY (W/O PULLBOX) ELECTRICAL DIAGRAM—SHEET 1 OF 3



RSM0074100

FIGURE 3-2: F9TF/F9TH DEDICATED ENTRY (W/O PULLBOX) ELECTRICAL DIAGRAM—SHEET 2 OF 3

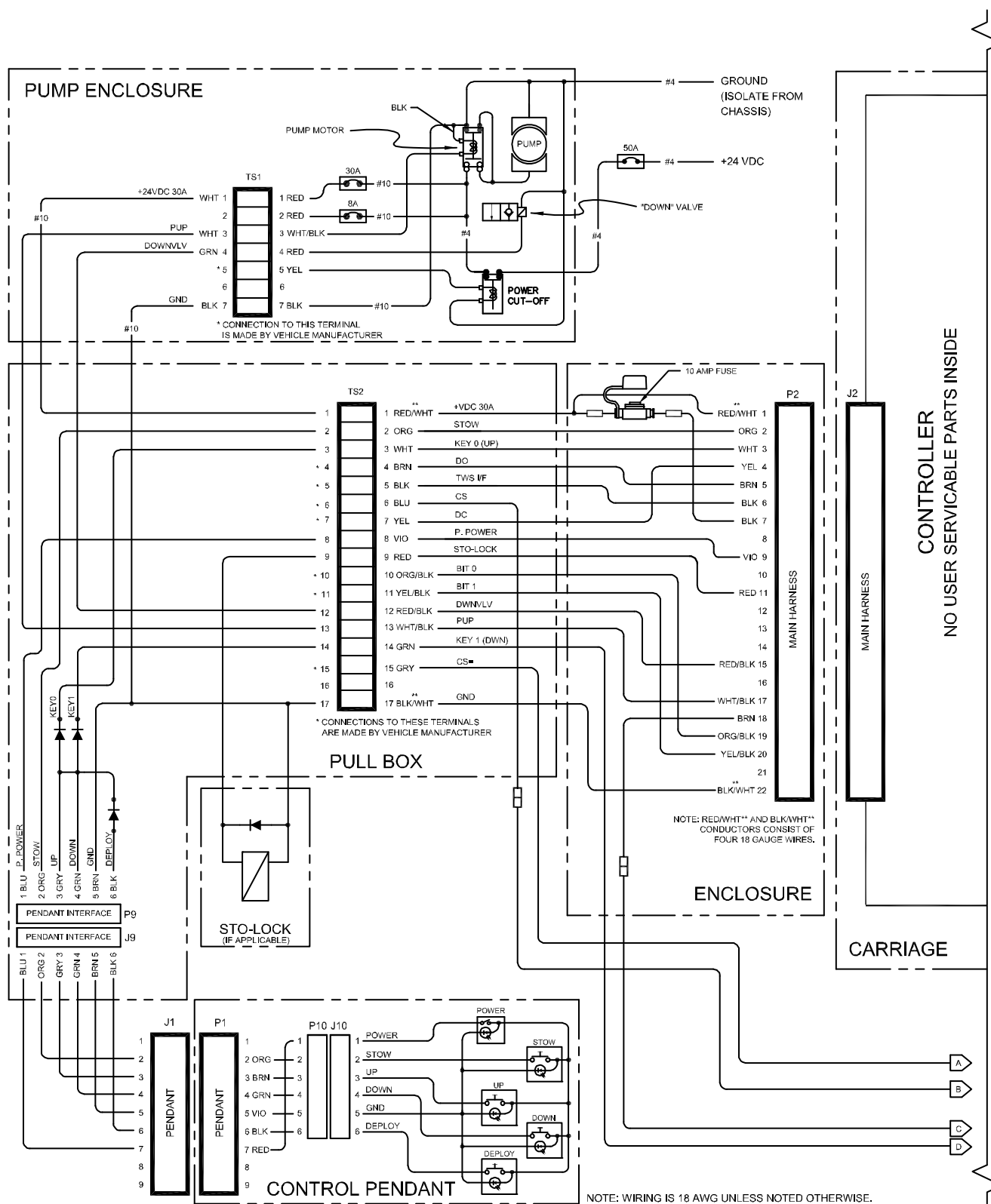


RSM0074200

FIGURE 3-2: F9TF DEDICATED ENTRY (WITH PULLBOX) ELECTRICAL DIAGRAM—SHEET 3 OF 3

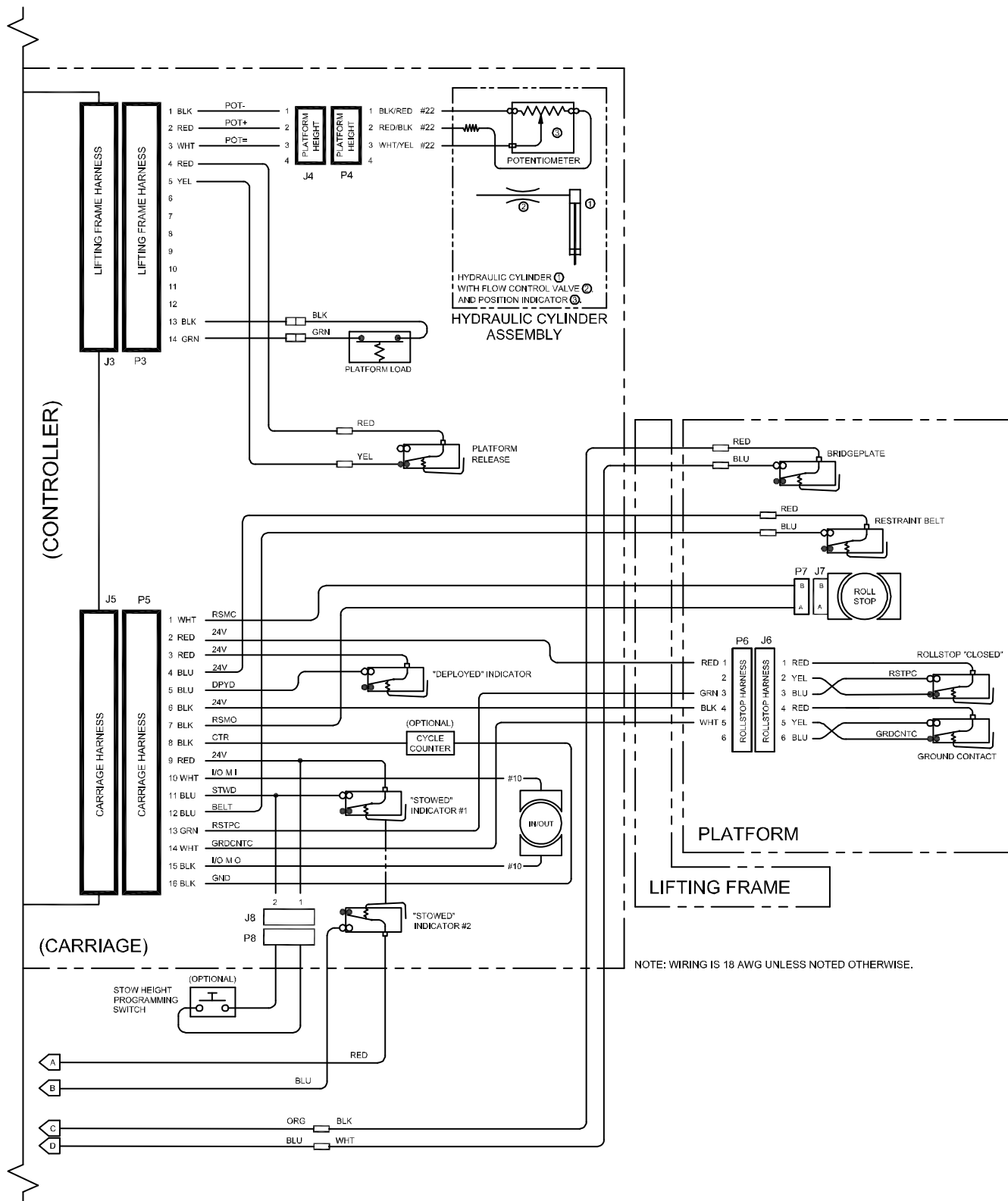
This page intentionally left blank.





RSM0074001

**FIGURE 3-3: F9TF DEDICATED ENTRY (WITH PULLBOX) ELECTRICAL DIAGRAM—SHEET 1 OF 2**



RSM0074101

FIGURE 3-3: F9TF DEDICATED ENTRY (WITH PULLBOX) ELECTRICAL DIAGRAM—SHEET 2 OF 2

This page intentionally left blank.

## IV. F9TF/F9TH MAJOR COMPONENT SERVICE

**T**his chapter provides instructions for major system repairs, system adjustments, and parts replacement on the RICON Mirage® F9TF/F9TH Series Public Use wheelchair and standee lift.

- Maintain the lift at its highest level of performance by doing the required maintenance. Ricon recommends a thorough inspection every six months.
- A specific repair task might not require completion of all listed steps in a procedure.
- Additional component illustrations are available in Spare Parts, **Chapter V**.

### A. GENERAL SAFETY PRECAUTIONS



#### WARNING

THIS RICON PRODUCT IS HIGHLY SPECIALIZED. A RICON DEALER OR QUALIFIED SERVICE TECHNICIAN MUST PERFORM MAINTENANCE AND REPAIRS USING RICON REPLACEMENT PARTS. MODIFYING OR NOT PROPERLY MAINTAINING THIS PRODUCT WILL VOID THE WARRANTY, AND MAY RESULT IN UNSAFE OPERATING CONDITIONS.

The following general safety precautions must be followed during service and maintenance:

- Do not attempt maintenance, repairs, or adjustments without the presence of a person capable of rendering first-aid.
- Take notice of all injuries, regardless of how slight. Administer first aid or seek medical attention immediately.
- Wear protective eye shields and appropriate clothing at all times.
- Work in a properly ventilated area. Do not smoke or use an open flame near the battery.
- Exercise caution when operating lift to avoid injury. Be certain that hands, feet, legs, and clothing are not in path of the platform as it moves.
- Be cautious when using metallic (conductive) tools near the battery or heavy gauge wires.
- If battery acid contacts skin, wash area immediately with soap and water.
- Check under vehicle before drilling or cutting to avoid damage to the frame, subframe members, wiring, hydraulic lines, etc.
- Thoroughly understand the operating instructions before attempting to operate lift.
- Keep others clear during lift operation.



#### WARNING

- WEAR PROTECTIVE CLOTHING AND EYE PROTECTION AT ALL TIMES. BATTERIES CONTAIN ACID THAT CAN BURN. IF ACID COMES INTO CONTACT WITH SKIN, IMMEDIATELY FLUSH AFFECTED AREA WITH WATER AND WASH WITH SOAP.
- WORK IN A PROPERLY VENTILATED AREA. DO NOT SMOKE OR USE AN OPEN FLAME IN THE VICINITY OF BATTERY.
- DO NOT LAY ANYTHING METALLIC ON TOP OF BATTERY.



#### WARNING

THE SERVICE ACCESS PANEL IS HINGED ALONG THE REAR EDGE AND SHOULD BE HELD UP WHILE REMOVING THE RETAINING SCREWS AT THE FRONT EDGE. THIS WILL PREVENT PANEL FROM FALLING AND CAUSING INJURY OR DAMAGE.



## B. LIFT ACCESS FOR SERVICE

Access to internal lift components is from beneath the enclosure. A hinged access panel is located on the bottom of the enclosure, near the front.

1. Deploy platform using control pendant (DEPLOY) and support.
2. Disconnect positive battery cable at vehicle battery compartment.
3. Refer to **Figure 4-1**. The service access panel pivots on a hinge along its rear edge. Remove the two retaining screws and lock-nuts at front edge of panel, and lower panel as shown.

**NOTE:** Top Service Access Panel is accessible for applications that cannot be accessed from bottom of enclosure.

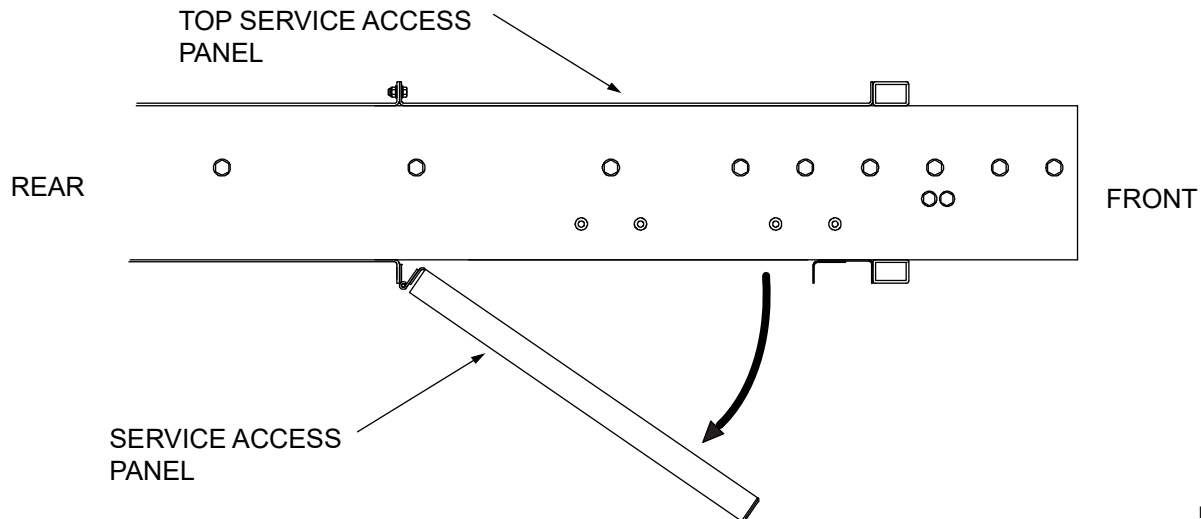


FIGURE 4-1: SERVICE ACCESS PANEL - OPEN

RSM0066600

## C. TRAVELLING FRAME AND ROLLSTOP

Refer to **Figure 4-2**. The carriage, lifting frame, and platform are referred to as a “travelling frame” when assembled together.

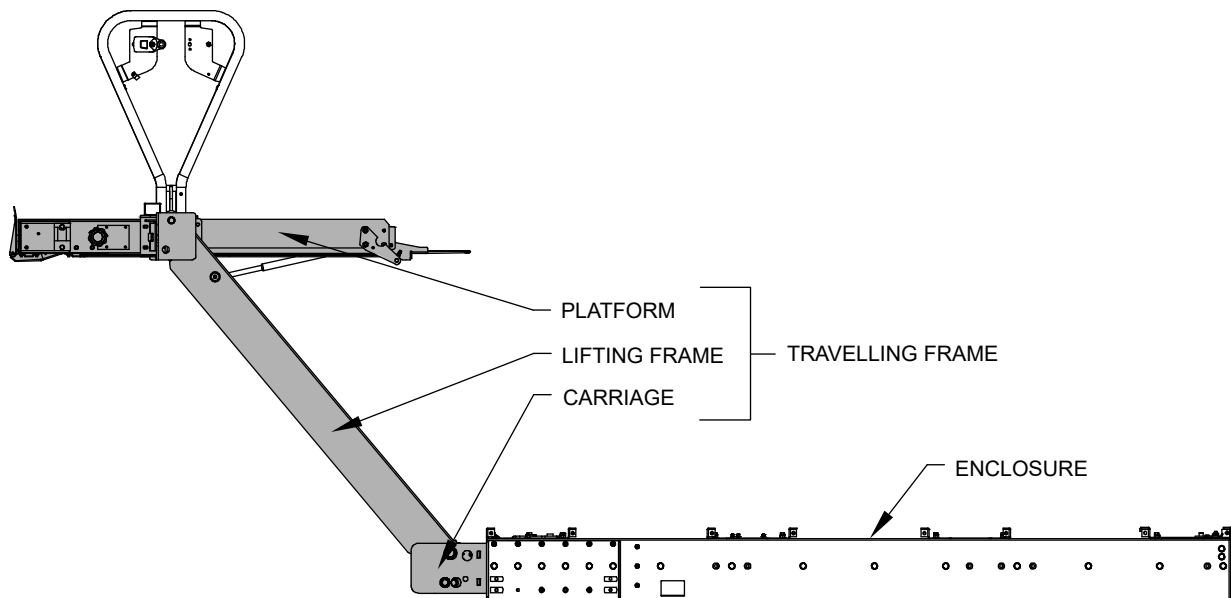


FIGURE 4-2: TRAVELLING FRAME

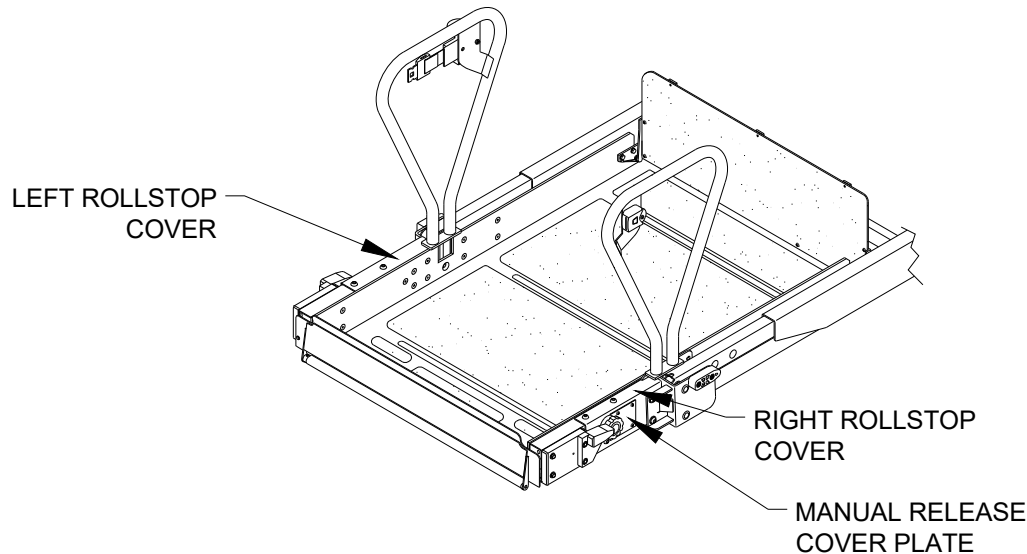
RSM0033100

## 1. ROLLSTOP MAINTENANCE

### a. Rollstop Lubrication

- 1) Deploy platform using control pendant (DEPLOY) and then support.
- 2) Disconnect positive battery cable at vehicle battery compartment.

Refer to **Figure 4-3**. Gain access to the right Rollstop cover and manual release cover plate attached with (four screws) by first removing the white guide block and yellow cover.



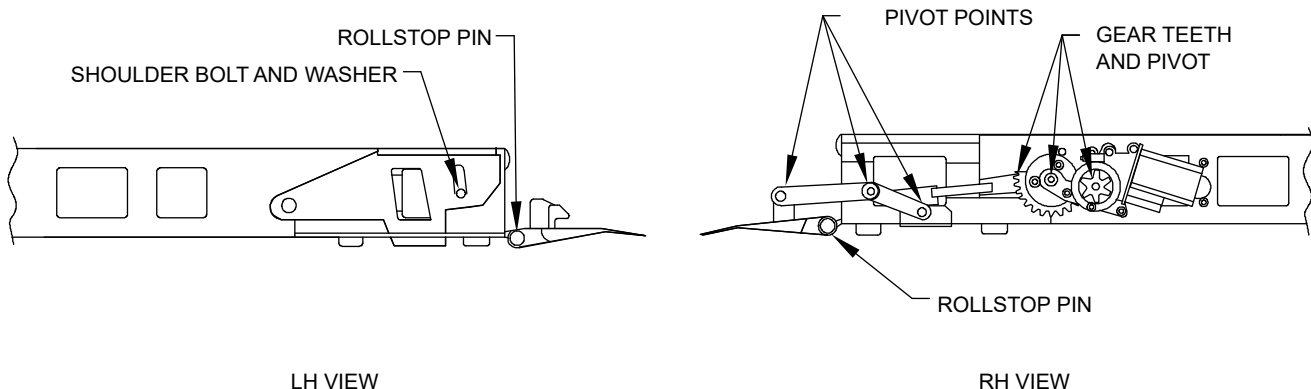
**FIGURE 4-3: ACCESS COVERS FOR ROLLSTOP MECHANISM**



### CAUTION

The manual Rollstop control knob is made from a brittle material. Handle accordingly.

- 3) Use a 1/8" punch to remove retaining pin from manual Rollstop control knob. Remove control knob.
- 4) Remove left and right Rollstop covers (five screws and washers, each side).
- 5) Refer to **Figure 4-4**. Lubricate Rollstop pivot points and gears (both sides of platform) using light grease (ZEP PLS, p/n 497C, Curtisol® Red Grease P/N 88167, or equivalent). Wipe off excess grease.



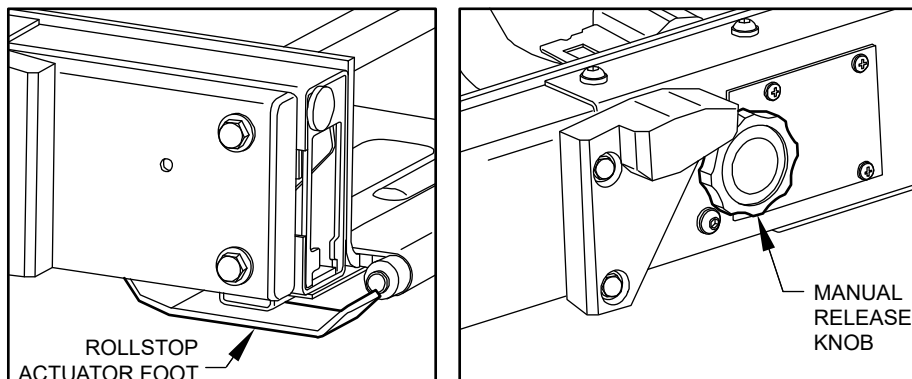
**FIGURE 4-4: ROLLSTOP LUBRICATION POINTS**

- 6) Re-install right Rollstop actuator bracket and left Rollstop release bracket.
- 7) Re-install right and left Rollstop covers.
- 8) Re-install manual Rollstop control knob.
- 9) Reconnect positive battery cable at vehicle battery compartment.

RSM0033301

**b. Rollstop “Closed” Position Adjustment, Jam Nut**

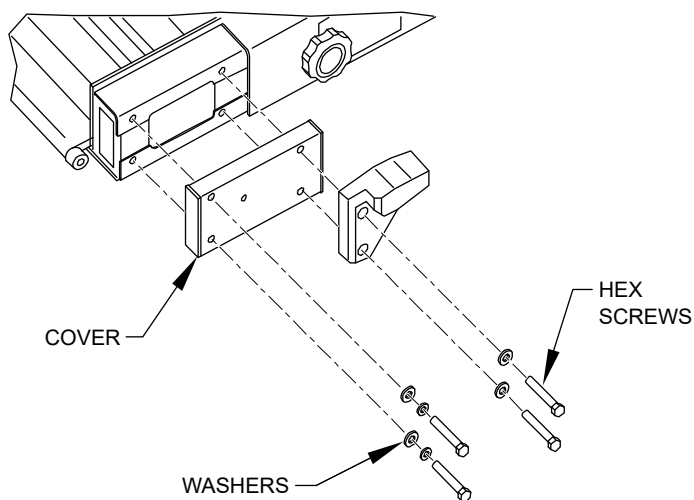
- 1) Use the bus power [if lift is installed] to get lift to ideal working height. Stop the lift and use the pendant to switch the lift to off mode. Place a positive stop under the lift to prevent it from falling in case bus power is lost, or a hydraulic leak occurs.
- 2) Put the lift in manual mode by raising Rollstop Actuator Foot and pulling the Manual Release Knob.



RSM0083100

**FIGURE 4-5: ROLLSTOP ACTUATOR FOOT (ROLLSTOP NOT SHOWN FOR CLARITY) AND MANUAL RELEASE KNOB**

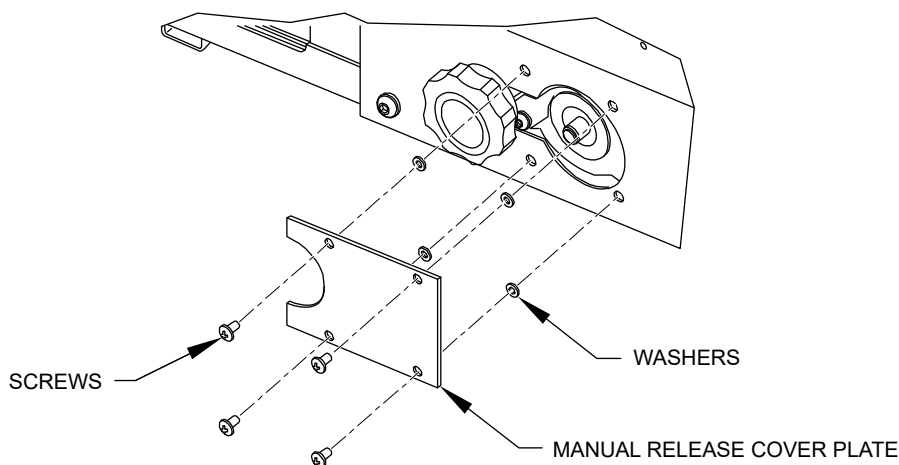
- 3) Remove right Rollstop Cover (four 5/16"-18 hex screws and washers), as seen in **Figure 4-6**. Use a 1/2" socket to remove the four bolts. Always keep all the disassembled parts.



RSM0083200

**FIGURE 4-6: COVERS, BOLTS, AND WASHERS FOR ROLLSTOP LINKAGE SYSTEM**

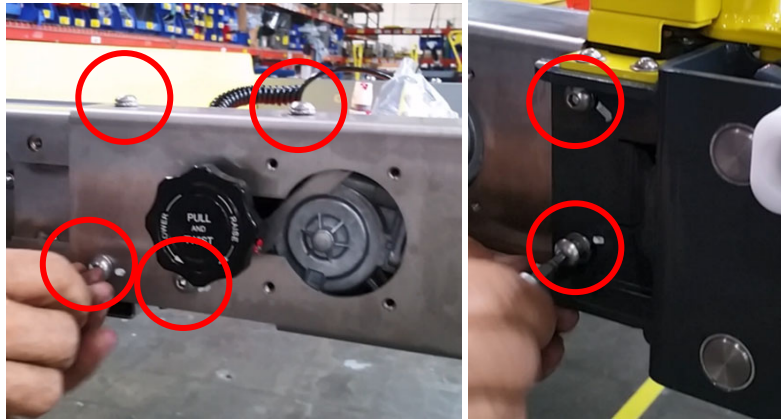
- 4) Remove the manual release cover plate seen in **Figure 4-7**. There will be four Philips head screws.



RSM0083300

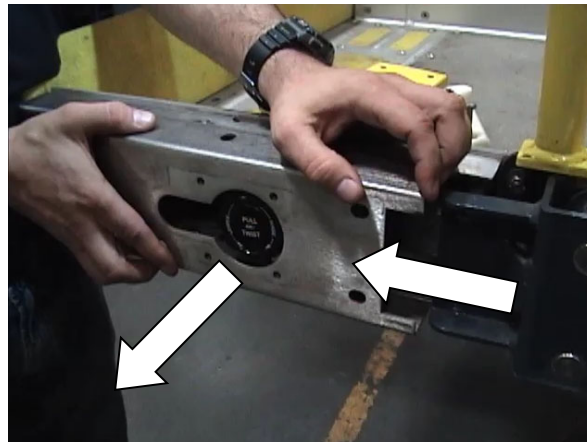
**FIGURE 4-7: MANUAL RELEASE COVER PLATE, SCREWS, AND WASHERS**

- 5) Gain access to the rollstop linkage system by removing the main cover as shown in **Figure 4-8**. There are six 5/16"-18 button head screws that are to be removed with a 3/16" Allen key.



**FIGURE 4-8: RIGHTHAND ROLLSTOP MAIN COVER BOLT LOCATIONS**

- 6) Refer to **Figure 4-9**. Remove RH Rollstop Cover by sliding cover forward to match hole with Manual Release Knob then carefully detach from platform.



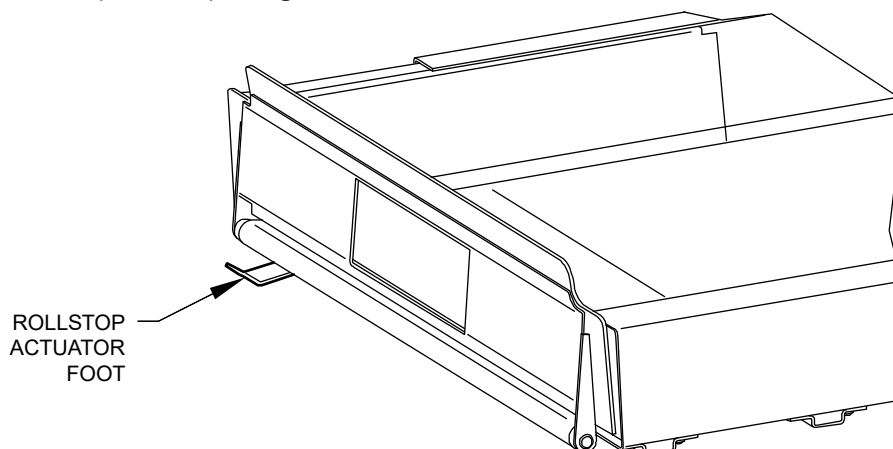
**FIGURE 4-9: RH ROLLSTOP COVER DISASSEMBLY**



### CAUTION

The Manual Rollstop Control Knob is made from a brittle material. Handle accordingly.

- 7) Manually stow and close Rollstop. Rollstop Actuator Foot must be raised to avoid damage to the components, per **Figure 4-10**.

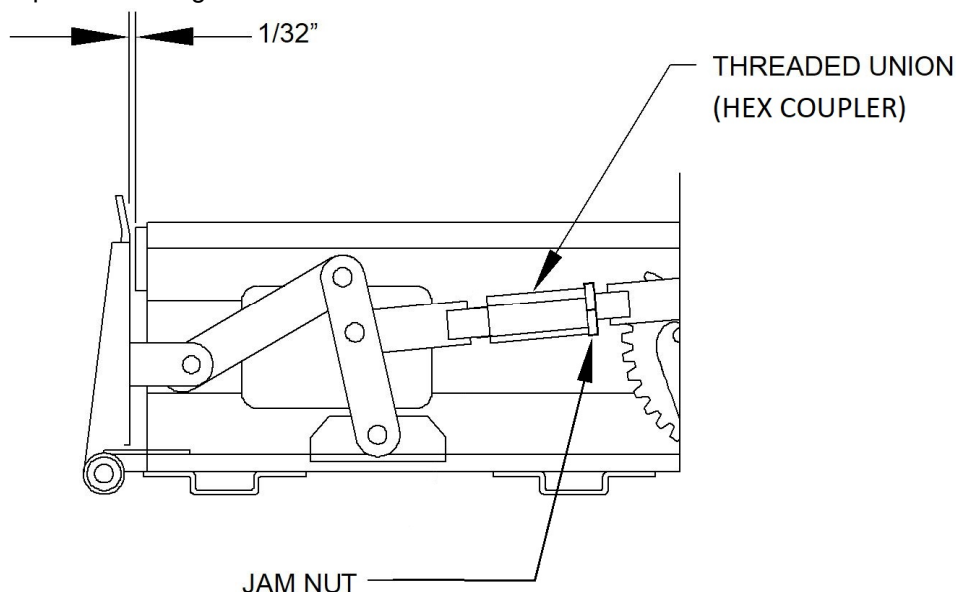


RSM0083400

**FIGURE 4-10: ROLLSTOP IS CLOSED, IE. OUTER BARRIER IS RAISED**

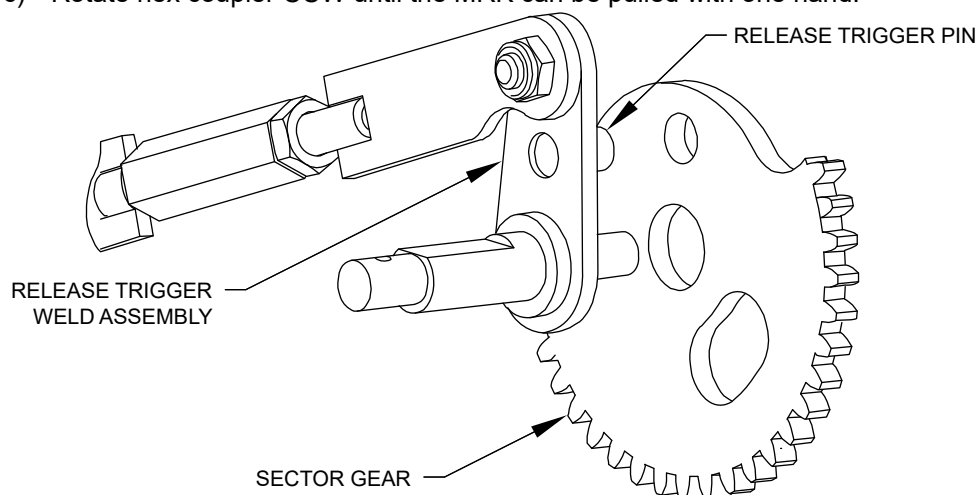
- 8) Refer to **Figure 4-11**. Use two 1/2" open-end wrenches to loosen the jam nut and adjust the link length by turning the center section (hex coupler), so that Rollstop closes to within 1/32" (0.8 mm) of rubber bumper (that Rollstop contacts). Follow Steps 8a – 8g for a thorough guideline on adjusting the hex coupler.

Note: When viewed from Rollstop, rotating the hex coupler CW shortens the link, and turning the hex coupler CCW lengthens the link.



**FIGURE 4-11A: CLOSED ROLLSTOP ADJUSTMENT**

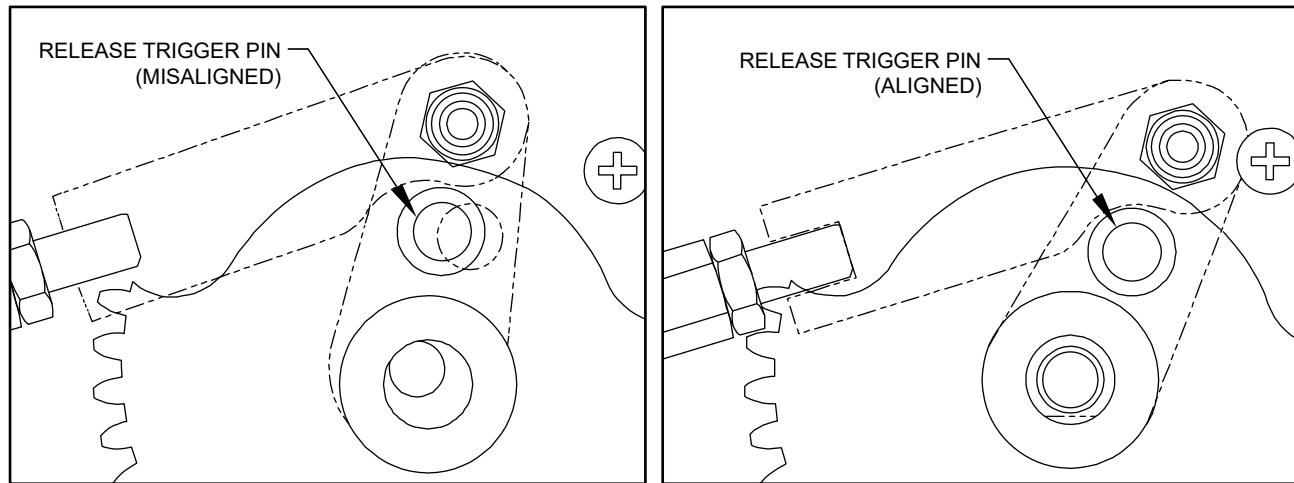
- a) Loosen jam nut by rotating it CW (when viewed from Rollstop) until it reaches the end of it's travel.
- b) Rotate hex coupler CW until the MRK cannot be pulled.
- c) Rotate hex coupler CCW until the MRK can be pulled with one hand.



RSM0083800

**FIGURE 4-11B: THE RELEASE TRIGGER PIN IS PART IN THE RELEASE TRIGGER WELD ASSEMBLY. WHEN THE MRK IS PULLED OUT TO PUT THE LIFT IN MANUAL MODE. THE PIN IS PULLED OUT OF THE UPPER HOLE IN THE SECTOR GEAR.**

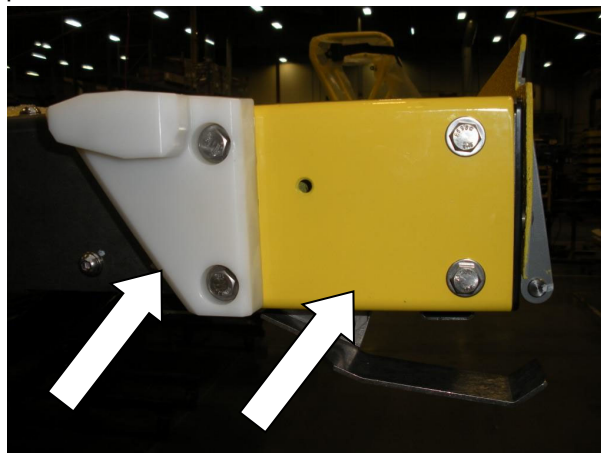
- d) Refer to Figure 4-11B. Let go of MRK and observe if the release trigger pin RIUV-PF-879 in the release trigger weld assembly RIUV-PF-889 is aligned with the hole in sector gear RI61366, as shown in Figure 4-12.
  - i. If the pin and hole are aligned, continue to step 8e.
  - ii. If the pin and hoe are misaligned, rotate hex coupler CCW until the two components are aligned: the MRK will "sink" in towards the lift.



RSM0083900

**FIGURE 4-12: ON THE LEFT, THE RELEASE TRIGGER PIN RIUV-PF-879 IS MISALIGNED WITH THE HOLE IN SECTOR GEAR RI61366. ON THE RIGHT, THE PIN AND HOLE ARE ALIGNED.**

- e) Rotate the hex coupler CW 1/8 to 1/4 of a turn.
  - f) Pull and then let go of MRK. The MRK should still be able to be pulled with one hand and the release trigger pin should be slightly misaligned with the hole in the sector gear, similar to the lefthand image of Figure 4-12. Repeat steps 8e-8f as necessary to have the two parts slightly misaligned.
  - g) Now when the MRK is pulled and released, it will not come back in all the way to align the release trigger pin with the hole in the sector gear. A push with one hand is required for the MRK to be pushed back in, for the left to properly be in automatic mode.
    - i. If the MRK cannot be pushed back in, the hex coupler was rotated too far CW: rotate the hex coupler CCW as necessary.
  - 2) Tighten jam nut by rotating it CCW with one 1/12" open-end wrench, while maintaining the position of the hex coupler with the other 1/2" open-end wrench.
  - 3) Manually open and close Rollstop to test its function. Adjustment can be done by loosening the jam nut and turning the hex coupler if Rollstop doesn't sit upright OR the manual release knob does not engage OR the manual release knob engages but is too tight to be pulled.
  - 4) Once adjustment is completed, apply Loctite 24221 to the jam nut threads. With jam nut flush against the center section, torque jam nut to 125 in-lb (14 N-m). Leave torque markings on the jam nut and hex coupler.
  - 5) Reassemble the RH rollstop covers and screws. Torque the 5/16"-18 bolts to 128.0-138.0 in-lb.
- c. Rollstop "Closed" Switch Adjustment, Plunger**
- 1) If it is not already deployed, deploy platform using control pendant (DEPLOY), and then support. Turn power off.
  - 2) Refer to **Figure 4-13**. Remove four 5/16"-18 bolts that attach Left-Hand (LH) Guide Block and LH Platform Rollstop Switch Cover.



**FIGURE 4-13: LH GUIDE BLOCK AND LH PLATFORM ROLLSTOP SWITCH COVER, FOUR 5/16"-18 BOLTS**

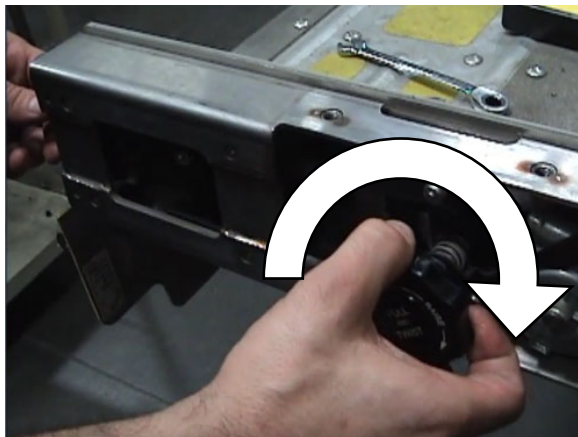


- 3) Open Rollstop manually by raising Rollstop Actuator Foot, then pulling and turning the Manual Release Knob CCW.
- 4) Refer to **Figure 4-14**. Remove Rollstop retaining bolt and nut to detach Rollstop from Actuating Linkage Assembly. Detaching Rollstop from Actuating Linkage Assembly is done to facilitate adjustment of Rollstop. Rollstop should hang freely from hinge.



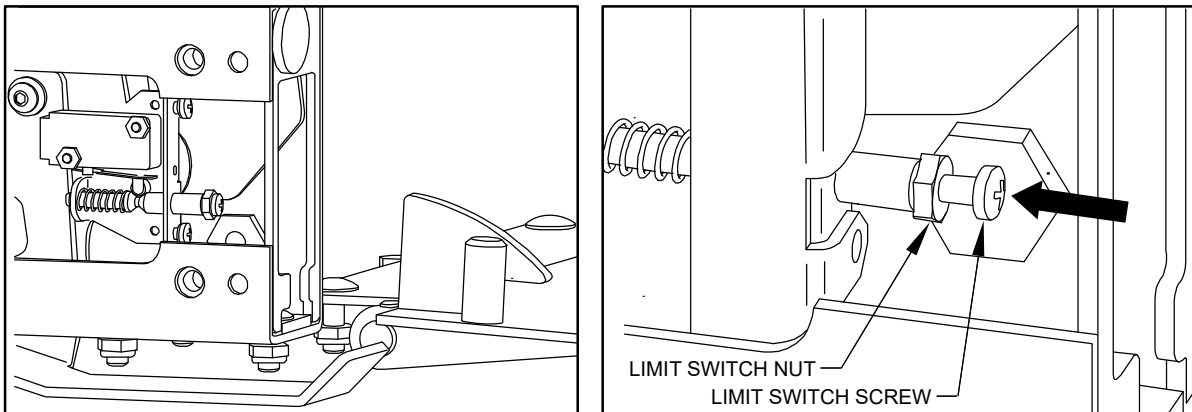
**FIGURE 4-14: DETACHING ACTUATING LINKAGE ASSEMBLY FROM ROLLSTOP**

- 5) Refer to **Figure 4-15**. Rotate Manual Release Knob CW to return Rollstop mechanism to the locked position. Returning Rollstop mechanism to locked position also moves Actuating Linkage out of the way for Rollstop adjustment.



**FIGURE 4-15: TURN MANUAL RELEASE KNOB CW TO LOCKED POSITION**

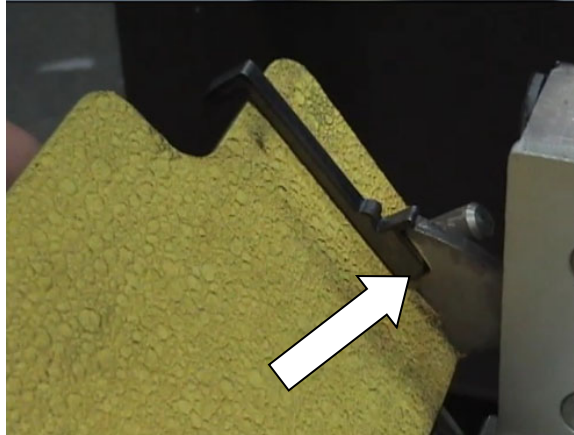
- 6) Refer to **Figure 4-16A**. Open Rollstop then loosen limit switch nut and turn limit switch screw all the way in so that the screw, nut, and washer sits flush with each other and the end of the plunger.



RSM0083500

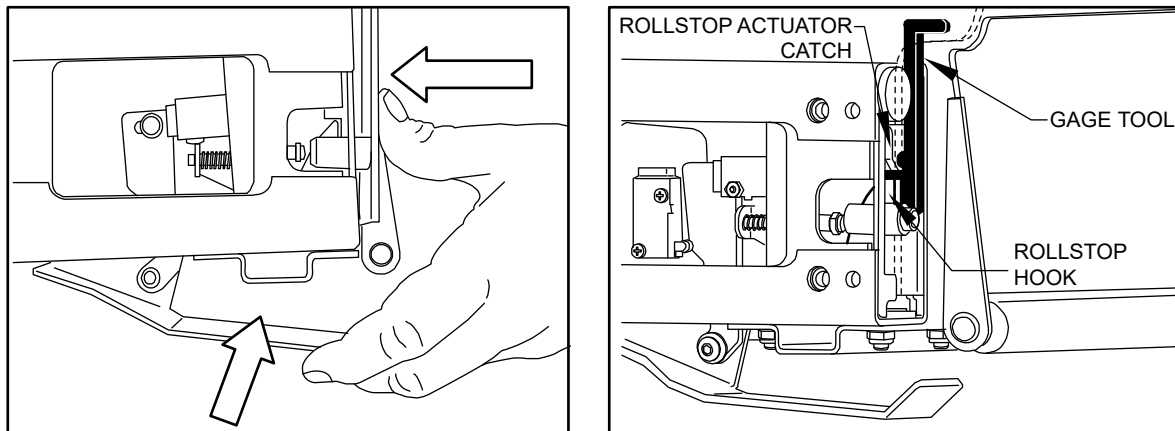
**FIGURE 4-16A: TIGHTEN LIMIT SWITCH SCREW ALL THE WAY IN (GAGE TOOL NOT SHOWN)**

- 7) Refer to **Figure 4-16A**. Place Rollstop Adjustment Gage Tool (P/N 55273) into engagement hook [aka Rollstop Hook] of Rollstop. Ensure that Rollstop Adjustment Gage Tool bottom is properly situated in engagement hook of Rollstop.



**FIGURE 4-16B: ROLLSTOP ADJUSTMENT GAGE TOOL (P/N 55273) IS MATED WITH ROLLSTOP HOOK**

- 8) Refer to **Figure 4-16C**. Manually raise Rollstop Actuator Foot and close Rollstop so that Rollstop Adjustment Gage Tool clears Rollstop Actuator Catch. The Gage Tool is highlighted in black in the image on the right and Rollstop Plate is shown as transparent, for clarity.



RSM0083600

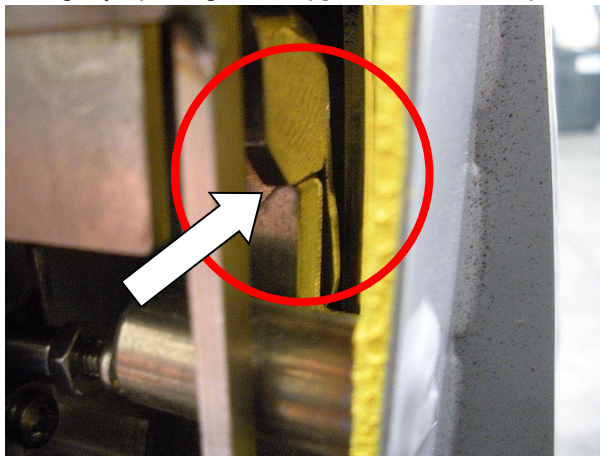
**FIGURE 4-16C: WHEN ORIENTED AS SHOWN, ONE OF THE WALLS OF ROLLSTOP ADJUSTMENT GAGE TOOL WILL BE BETWEEN ROLLSTOP HOOK AND ROLLSTOP ACTUATOR CATCH**

- 9) Open Rollstop. Loosen limit switch nut and then rotate limit switch screw 1/4 turn CCW. Hand tighten limit switch nut.
- 10) Close Rollstop by again manually raising Rollstop Actuator Foot and bringing outer barrier up so that Rollstop Adjustment Gage Tool clears Rollstop Actuator Catch. While closing Rollstop, listen for a faint “click” from Rollstop Closed Switch, which signals a change in switch state.  
 Note: Ensure the “click” is from the correct Rollstop “Closed” Switch, and not the Rollstop “Open” Switch that is of importance in the next procedure “Rollstop ‘Open’ Switch Adjustment, Actuator Cam”
  - a) If “click” is heard, move on to the next step.
  - b) If no “click” is heard, repeat the previous steps 9-10 until a “click” is heard from Rollstop Closed Switch. The limit switch screw will continue to come out until that “click” is heard.
- 11) Re-tighten limit switch nut and torque to 9.0-12.0 in-lb. (Open Rollstop if necessary.)
- 12) Open Rollstop and remove Rollstop Adjustment Gage Tool.
- 13) Close Rollstop and turn power on to enable wheelchair lift.
- 14) With lift deployed and Rollstop closed, pull outward on Rollstop and press UP button. The wheelchair lift platform should move up without stopping.



Note: If the wheelchair lift does not move up, then repeat steps 9-10, bringing the limit switch screw further out.

- 15) Release the UP button and let go of Rollstop. Lower wheelchair lift platform to stow level.
- 16) Refer to **Figure 4-17**. Place Rollstop Actuator Catch on top of Rollstop Hook [by raising Rollstop Actuator Foot and slightly opening Rollstop] and hold Rollstop in this position.



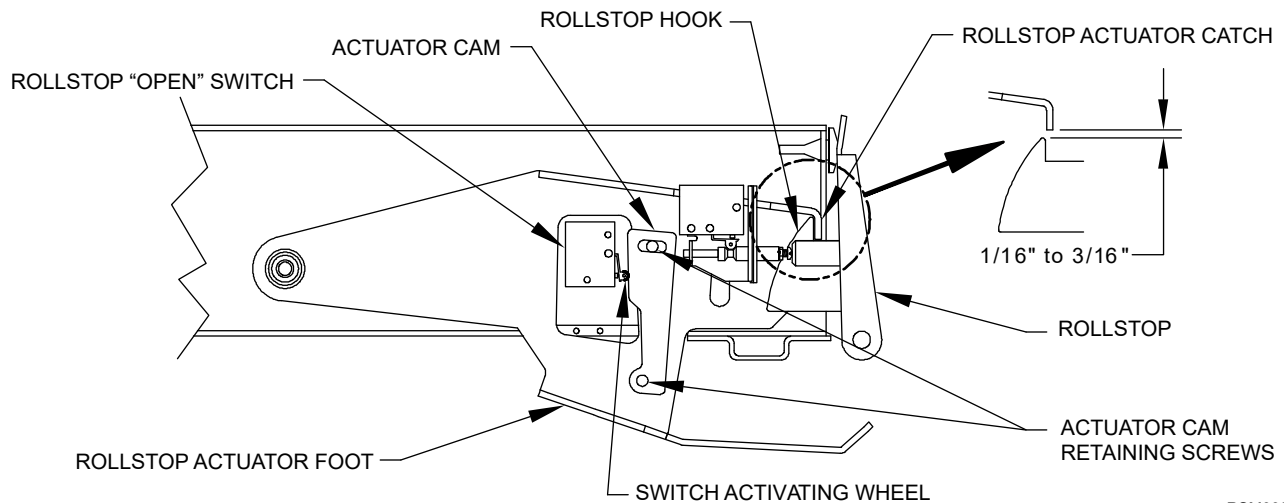
**FIGURE 4-17: ROLLSTOP ACTUATOR CATCH ON TOP OF ROLLSTOP HOOK**

- 17) Press UP button. The wheelchair lift platform should not move.
- 18) Release UP button, then close Rollstop.
- 19) Refer to **Figure 4-18**. Verify operation of the system by placing Rollstop Adjustment Gage Tool between Rollstop and platform channel, with wheelchair lift platform above ground level. Such blockage should prevent Rollstop “Closed” Switch from changing state which will prevent wheelchair lift platform from rising.



**FIGURE 4-18: IN THIS ORIENTATION, GAGE TOOL (P/N 55273) WILL PREVENT LIFT FROM RISING**

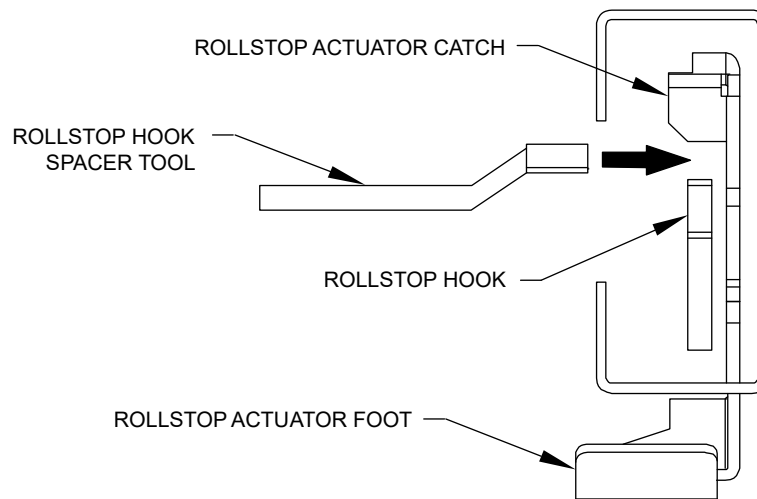
- 20) Once this switch adjustment has been verified, manually pull and rotate Manual Release Knob CCW to open Rollstop.
  - 21) Re-install Rollstop retaining bolt and nut from Step 4; refer to Figure 4-14. Torque to 71.0-80.0 in-lb.
  - 22) Pull and rotate Manual Release Knob CW and manually close Rollstop.
- d. Rollstop “Open” Switch Adjustment, Actuator Cam Plate**
- 1) Deploy platform using control pendant (Deploy), and then support.
  - 2) Refer to **Figure 4-3** and **Figure 4-13**. Remove left Rollstop Cover (four 5/16”-18 hex screws and washers) if they are not removed already.
  - 3) Refer to **Figure 4-19**. Loosen actuator cam retaining screws (two #10-24 BHS), and pivot actuator cam away from switch activating wheel (roller).



RSM0033401

**FIGURE 4-19: ROLLSTOP ACTUATION COMPONENTS**

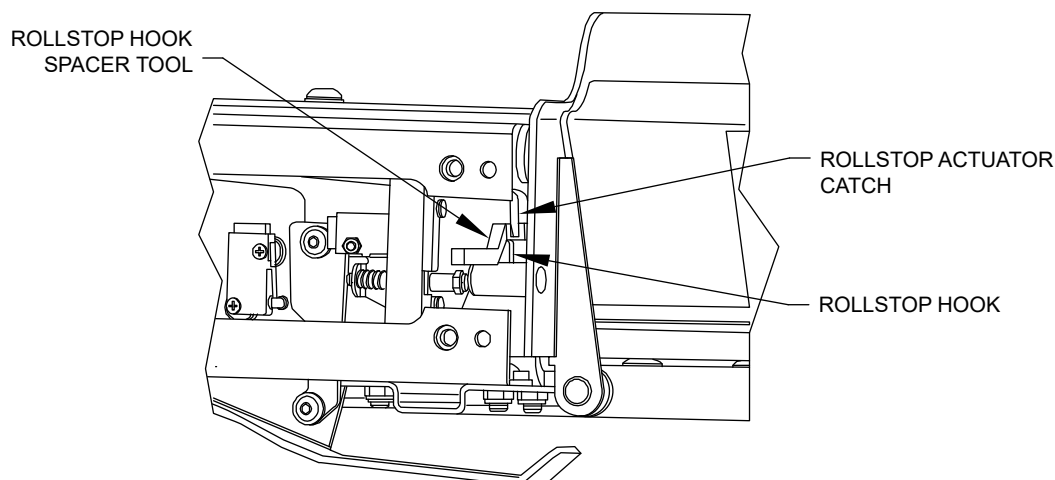
- 4) Manually open Rollstop by raising Rollstop Actuator Foot, then pulling and turning the Manual Release Knob CCW. With Rollstop Actuator Foot raised, close Rollstop then insert Rollstop Hook Spacer Tool (P/N 68353) so that it is below Rollstop Actuator Catch, as seen in **Figure 4-20A**.



RSM0082900

**FIGURE 4-20A: INSERT ROLLSTOP HOOK SPACER TOOL (P/N 68353) BELOW ROLLSTOP ACTUATOR CATCH, ABOVE ROLLSTOP HOOK (ROLLSTOP PLATES AND OTHER COMPONENTS HIDDEN FOR CLARITY)**

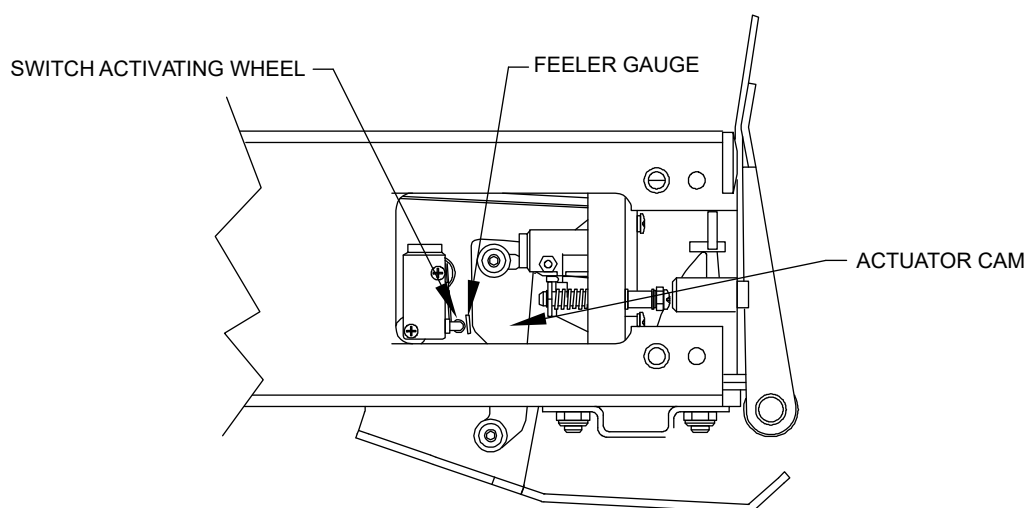
- 5) When Rollstop Hook Spacer Tool is fully mated with Rollstop Actuator Catch, slowly lower Rollstop Hook Spacer Tool (Rollstop Actuator Foot will also lower) so that it can rest on top of Rollstop Hook, as seen in **Figure 4-20B**. Confirm Rollstop Hook Spacer Tool is pushed all the way inwards and maintains a gap of 1/16" to 3/16" between Rollstop Actuator Catch and Rollstop Hook, as previously shown in **Figure 4-19**.



RSM0082602

**FIGURE 4-20B: ROLLSTOP HOOK SPACER TOOL MUST BE BETWEEN ROLLSTOP ACTUATOR CATCH AND ROLLSTOP HOOK**

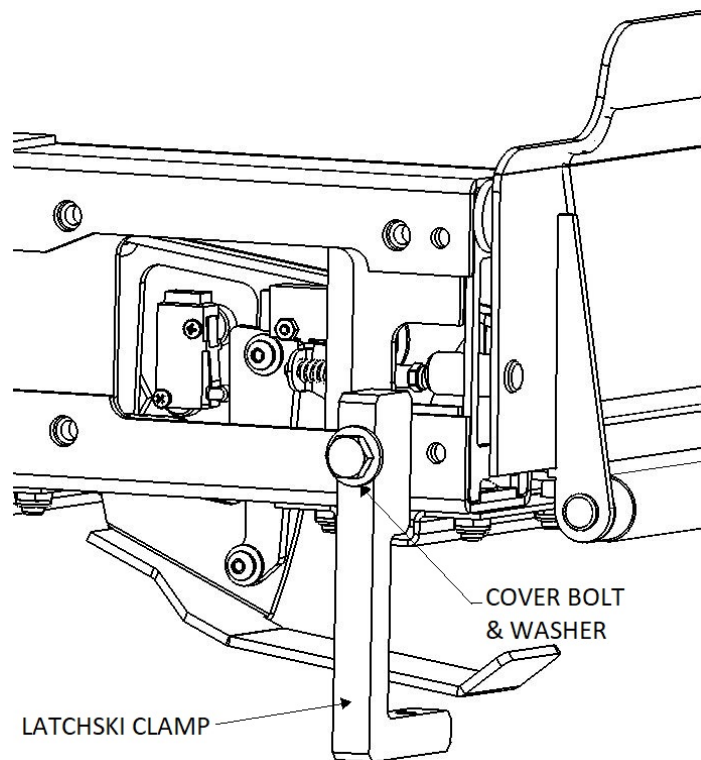
- 6) Insert 1.8 mm (0.071") Feeler Gauge between Switch Activating Wheel and Actuator Cam as seen in **Figure 4-21**. Pivot Actuator Cam towards Switch Activating Wheel so that it is fully depressing the switch to its overtravel limits, with Feeler Gauge in between the two. Tighten cam retaining screws to 20.0-26.0 in-lb.



RSM0082800

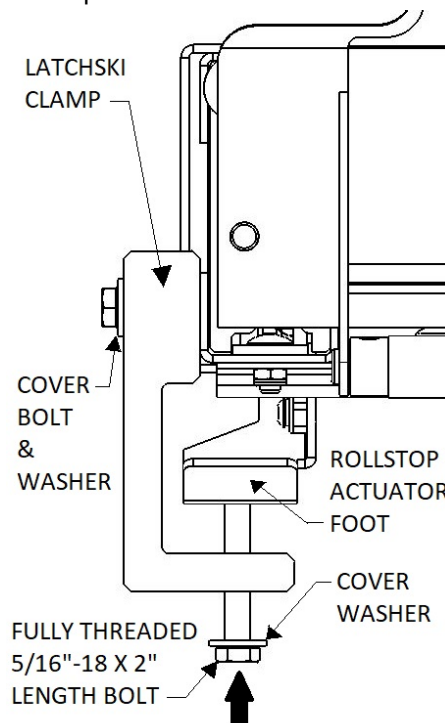
**FIGURE 4-21: PLACE 1.8 MM FEELER GAUGE IN BETWEEN SWITCH ACTIVATING WHEEL AND ACTUATOR CAM**

- 7) First, remove Feeler Gauge: Actuator Cam should now be making contact with Switch Activating Wheel. Then remove Rollstop Hook Spacer Tool by manually raising Rollstop Actuator Foot and pulling out Rollstop Hook Spacer Tool.
- 8) Insert Latchski Clamp (P/N 68398) oriented as shown in **Figure 4-22A**, utilizing one of the 5/16"-18 hex screws and washers previously used on LH Rollstop Cover. Torque to 128.0-138.0 in-lb.



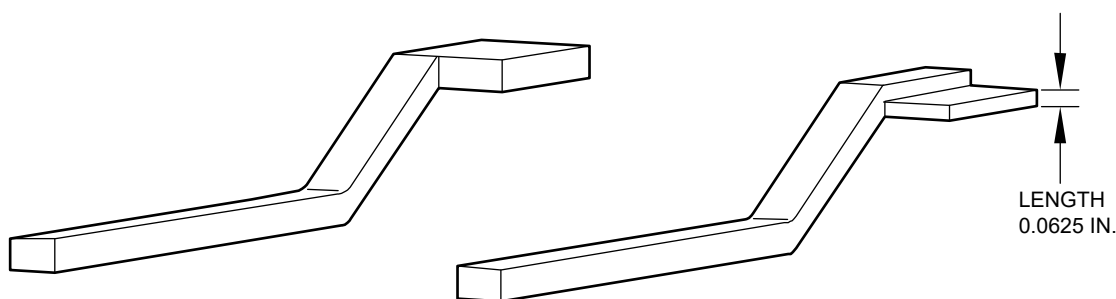
**FIGURE 4-22A: INSERT LATCHSKI CLAMP (P/N 68398) WITH ONE COVER BOLT AND ONE COVER WASHER**

- 9) Insert a fully threaded 5/16"-18 x 2" long stainless steel tap bolt and one of the cover washers through the threaded hole on the bottom of Latchski Clamp, as seen in **Figure 4-22B**. The threaded portion of the bolt will contact Rollstop Actuator Foot and raise it.



**FIGURE 4-22B: ONE COVER WASHER AND A FULLY THREADED 5/16"-18 X 2" LENGTH BOLT ARE SCREWED IN FROM BOTTOM**

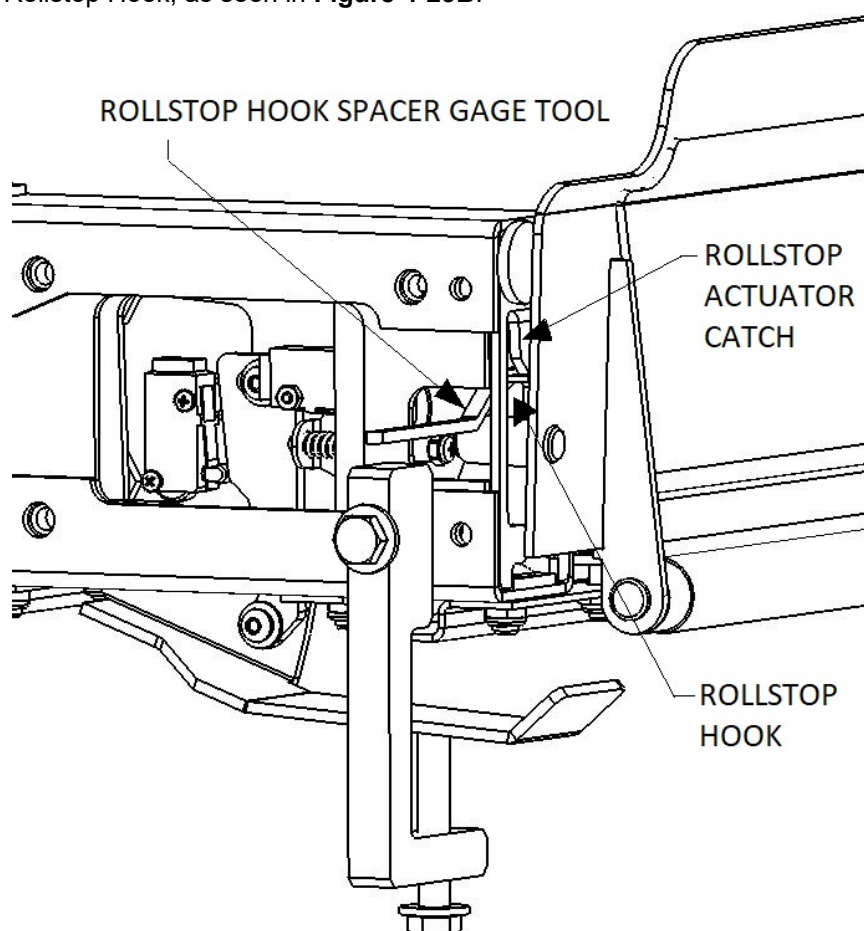
- 10) While slowly hand-tightening the fully threaded 5/16"-18 bolt [raising Rollstop Actuator Foot], listen to when Rollstop Open Switch activates: a faint "click" will be heard from the Rollstop Open Switch.
- 11) When Switch activates, stop rotating the fully threaded 5/16"-18 bolt to hold Rollstop Actuator Foot at this exact position.



RSM0083700

**FIGURE 4-23A: ON THE LEFT IS THE 1/8" ROLLSTOP HOOK SPACER GAGE TOOL (P/N 68354). ON THE RIGHT IS THE 1/16" ROLLSTOP HOOK SPACER GAGE TOOL (P/N 68354-01)**

- 12) Refer to **Figure 4-23A**. There are two Rollstop Hook Spacer Gage Tools: one with a thickness of 1/8" (P/N 68354) and one with a cut for a thickness of 1/16" (P/N 68354-01). With Rollstop slightly opened, attempt to place the 1/16" Rollstop Hook Spacer Gage in between Rollstop Actuator Catch and Rollstop Hook, as seen in **Figure 4-23B**.



**FIGURE 4-23B: ONE AT A TIME, INSERT ROLLSTOP HOOK SPACER GAGE TOOLS IN BETWEEN ROLLSTOP HOOK AND ROLLSTOP ACTUATOR CATCH, IF POSSIBLE.**

- 13) Remove the 1/16" Rollstop Hook Spacer Gage then attempt to place the 1/8" Rollstop Hook Spacer Gage in between Rollstop Actuator Catch and Rollstop Hook.
- If 1/16" Rollstop Hook Spacer Gage fits in the gap between Rollstop Hook and Rollstop Actuator Catch AND 1/8" Rollstop Hook Spacer Gage does NOT fit that gap, then no further adjustment is needed. Remove Gage Tools and Latchski Clamp.
  - If neither of the Rollstop Hook Spacer Gages fit in the gap between Rollstop Hook and Rollstop Actuator Catch, then the gap between Rollstop Hook and Rollstop Actuator Catch is too small or nonexistent. Remove Gage Tools and Latchski Clamp, then repeat steps 3-13, decreasing the thickness of Feeler Gauge in step 6.



- c) If 1/8" Rollstop Hook Spacer Gage fits in the gap between Rollstop Hook and Rollstop Actuator Catch, then the gap between Rollstop Hook and Rollstop Actuator Catch is too large. Remove Gage Tools and Latchski Clamp, then repeat steps 3-13, increasing the thickness of Feeler Gauge in step 6.
- 14) Re- install left Rollstop cover. The partially threaded 5/16"-18 hex screws are torqued to 128.0-138.0 in-lb.
- 15) Cycle the lift to verify proper function. Ensure MRK can still be pulled with one hand and does not bind. If MRK is too tight, repeat the "Rollstop 'Closed' Position Adjustment, Jam Nut" procedure.

#### e. Lift Functional Testing

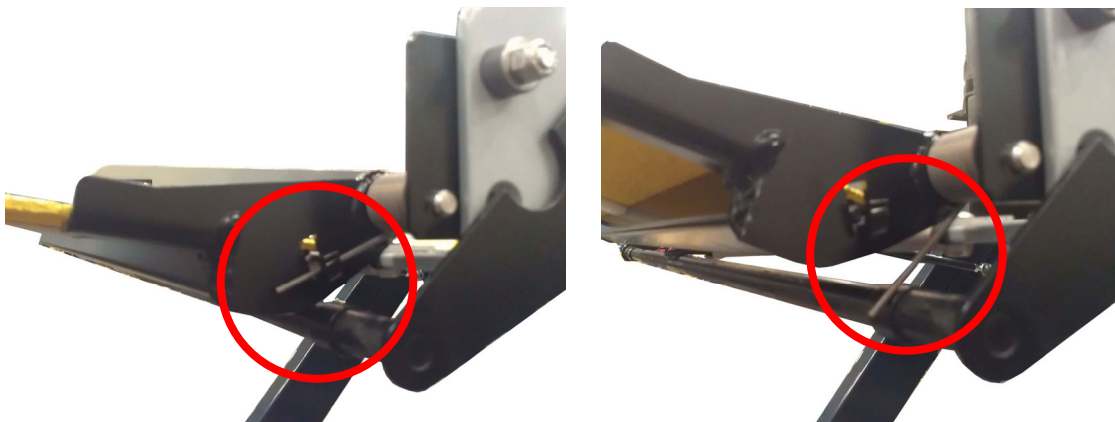
- 1) Pull MRK to confirm that it can be pulled with one hand and does not bind.
- 2) Lift Rollstop Actuator Foot and lower rollstop fully. If MRK is too tight, repeat section 1b (Rollstop "Closed" Position Adjustment, Jam Nut).
- 3) Lift rollstop back into closed position and ensure that MRK can be pushed back in and fully engaged with one hand. If MRK is too tight, repeat section 1b (Rollstop "Closed" Position Adjustment, Jam Nut).
- 4) Turn lift on by turning power switch on pendant to 'On' position.
- 5) Remove supporting device.
- 6) Stow lift.
- 7) Deploy lift.
- 8) Raise platform to bus floor.
- 9) Lower platform to ground.
- 10) Raise platform until rollstop closes. Rollstop should close without bouncing repeatedly or falling open. If rollstop bounces repeatedly or falls open, repeat section 1b (Rollstop "Closed" Position Adjustment, Jam Nut).
- 11) Raise platform to stow height.
- 12) Stow lift.
- 13) Close and secure the wheelchair lift compartment door.

## 2. BRIDGEPLATE MAINTENANCE

The bridgeplate on the Ricon Mirage® DOT Public Use lifts is fitted with an interlock that prevents movement of the lift from the vehicle floor level if the bridgeplate is occupied. The interlock is accomplished through the use of a spring supported plate and an adjustable limit switch mounted inside the bridgeplate frame.

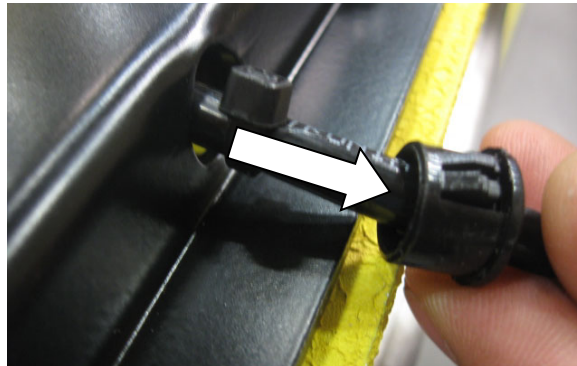
#### a. Bridgeplate Removal/Installation

- 1) Deploy the lift platform and raise it to a comfortable working height then remove power to the lift controls
- 2) Refer to **Figure 4-24A** and **4-24B**. Detach LH and RH bridgeplate torsion springs.

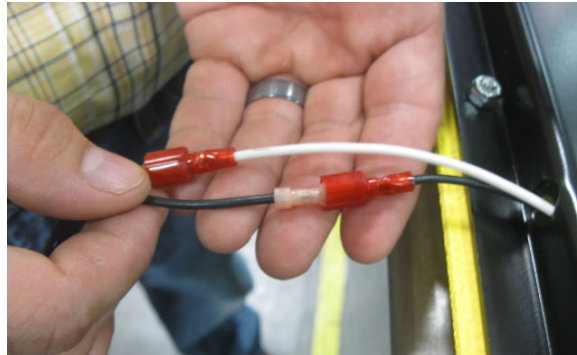


**FIGURE 4-24A AND 4-24B. DETACH LH AND RH BRIDGEPLATE TORSION SPRINGS**

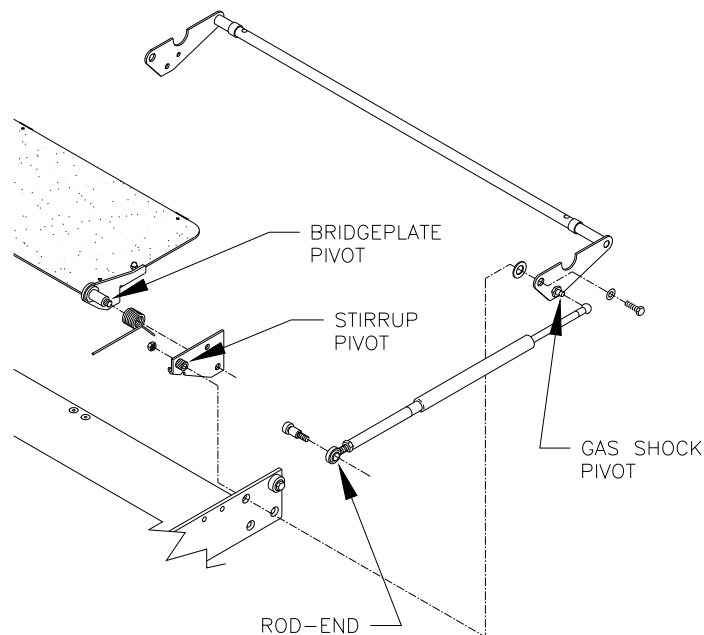
- 3) Refer to **Figure 4-25**. Detach and retain grommet from bridgeplate frame.

**FIGURE 4-25. DETACH GROMMET**

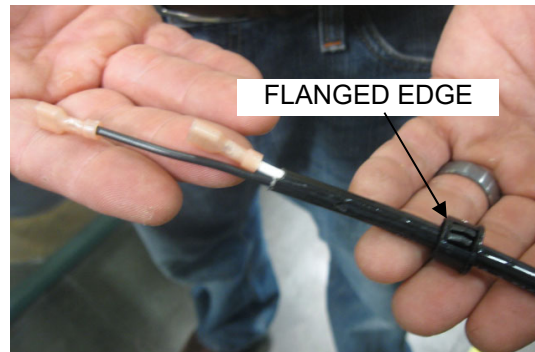
- 4) Refer to **Figure 4-26**. Disconnect the Bridgeplate Switch connectors (white and black wires).

**FIGURE 4-26. DISCONNECT BRIDGEPLATE SWITCH CONNECTORS**

- 5) Refer to **Figure 4-27**. Loosen the hardware on left side of Rollstop Bridgeplate to detach Actuator Rod and Stirrup assembly from platform.
- Loosen and retain bolt from rod end that of Gas Shock that is attached to Rollstop Bridgeplate Actuator.
  - Loosen and retain bolt, washer, and nut from Rollstop Bridgeplate Actuator.
  - Detach spring from Stirrup Pivot to release tension to Rollstop Bridgeplate.
  - Detach Stirrup Pivot plate then detach Rollstop Bridgeplate.

**FIGURE 4-27: ACTUATOR ROD AND STIRRUP HARDWARE ASSEMBLY**

- 6) Reattach bridgeplate in the reverse order of the above referenced step 5).
- 7) Refer to **Figure 4-28**. Ensure grommet is attached to existing bridgeplate switch cable.



**FIGURE 4-28. DISCONNECT BRIDGEPLATE SWITCH CONNECTORS**

- 8) Connect bridgeplate switch connectors to bridgeplate kit connectors
- 9) Push wire and connectors into bridgeplate frame.
- 10) Reinstall grommet into bridgeplate frame.
- 11) Refer to **Figure 4-24B**. Re-attach bridgeplate torsion springs on left and right side of bridgeplate.
- 12) Refer to **Figure 4-27**. Re-attach actuator rod assembly onto stirrup.
- 13) Return power to the lift then cycle lift a few times to ensure lift is properly working.

**b. Bridgeplate Lubrication**

- 1) Deploy platform using control pendant (DEPLOY) and support.
- 2) Remove power from the lift controls. Refer to **Figure 4-29**. Lubricate the points indicated in the figure with light grease (ZEP PLS, P/N 497C, Curtisol® Red Grease P/N 88167, or equivalent). Wipe off excess grease. Repeat for other side of bridgeplate.
- 3) Replace power to the lift controls

**c. Bridgeplate Actuator Rod Adjustment**

Deployment of the bridgeplate is controlled by a mechanical linkage affixed to the back of the platform and the lifting frame. The linkage consists of two rods attached on either side of the platform that pull on the bridgeplate stirrup as the platform moves upward toward the vehicle floor. Refer to the Bridgeplate Actuator Rod Adjustment section in **Chapter II** for adjustment procedure.

**3. CARRIAGE MAINTENANCE**

Refer to **Figure 4-30**. There are two large carriage rollers on each side of the carriage, and four small guide rollers on the top. These rollers require lubrication on a periodic basis, dependant upon usage and climate. Refer to the appropriate Mechanic Maintenance Checklist in the Maintenance chapter (**Chapter III**).

The large side rollers carry the weight of the travelling frame. They have grease fittings and must be lubricated with Aeroshell #22, or equivalent.

The guide rollers can be lubricated by spraying a light grease (ZEP PLS P/N 497C, Curtisol® Red Grease P/N 88167, or equivalent) into the interior of the roller.



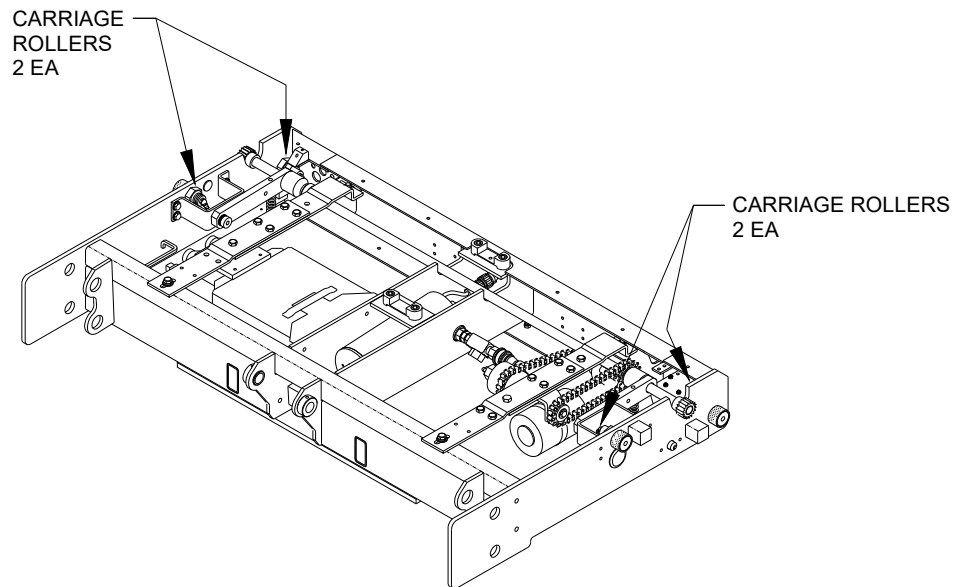


FIGURE 4-29: CARRIAGE ROLLER LUBRICATION

#### 4. PLATFORM REMOVAL

Refer to end of this section for re-installation notes.

- a. Deploy platform using control pendant (DEPLOY).
- b. Refer to **Figure 4-30**. Remove lifting frame and lower arm set screws at left and right sides of platform.

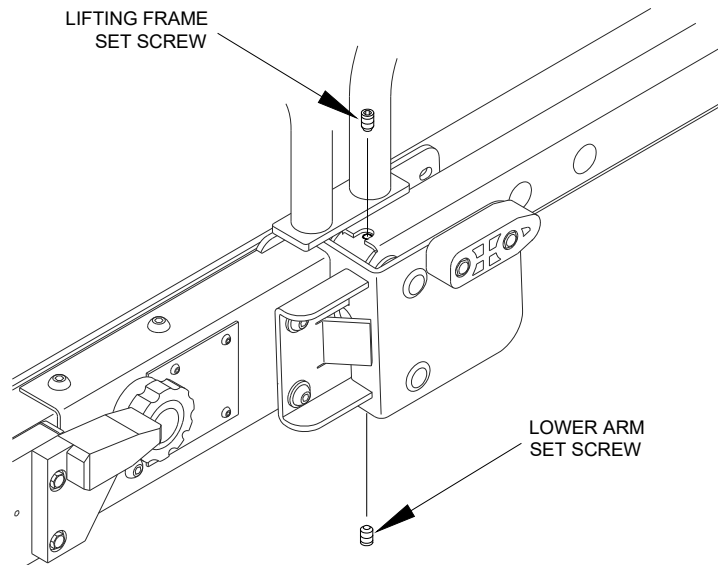


FIGURE 4-30: LIFTING FRAME AND LOWER ARM SET SCREWS

- c. Raise platform to vehicle floor height using control pendant (UP), and then support.
- d. Disconnect positive battery cable at vehicle battery compartment.
- e. Refer to **Figure 4-31**. View A-A is from beneath platform. Locate RH actuator rod assembly (RH side of platform, at top of lifting frame). Loosen rod-end jam-nut.

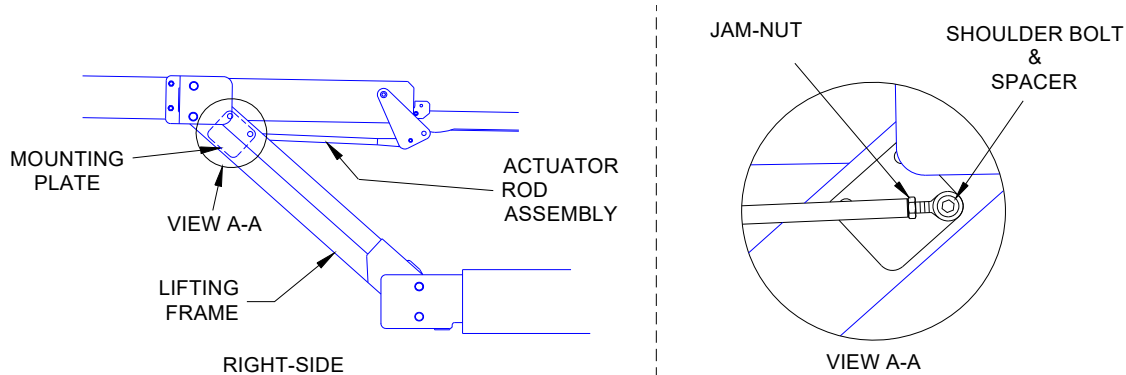


FIGURE 4-31: BRIDGEPLATE ACTUATOR ROD REMOVAL

- f. Remove shoulder bolt fastening actuator rod-end to mounting plate on lifting frame; catch spacer as it falls.
- g. Repeat for LH actuator rod assembly.
- h. Fold bridgeplate onto lift platform, and rotate actuator arms parallel to platform. Secure bridgeplate and actuator arms to platform with cable ties.
- i. Remove right and left Rollstop side covers (four screws and washers) and spacers.
- j. Disconnect electrical harnesses at both sides of platform (Rollstop switch harness at left; Rollstop motor harness at right). Cut black and white leads to bridgeplate switch; cut leads adjacent to factory-crimped butt splices. Remove cable ties that hold harnesses in place. Remove connectors from harnesses.

**NOTE:** Record connector pin position for each wire. This data will be used for platform re-installation; refer to wiring diagrams in **Chapter III**. Crimp bridgeplate switch leads to harness with new butt splices when re-installing.

**CAUTION**

- Double-check platform support before removing lower mounting pins. The platform will be free to rotate after pins are removed.
- Do not damage outside surface of pins during removal. A pin should be replaced if its outer surface is pitted or grooved after removal.

- k. Refer to **Figure 4-32**. Remove bottom platform mounting pins from platform mounting brackets, and drop lower parallel arms (lower arms can be tied to upper arms for convenience).

**NOTE:** The platform mounting pins are removed by placing a small pry bar between the outside of platform and inner end of pin. Push pin outward until it is flush with bracket, and then grasp other end of pin and pull it out.

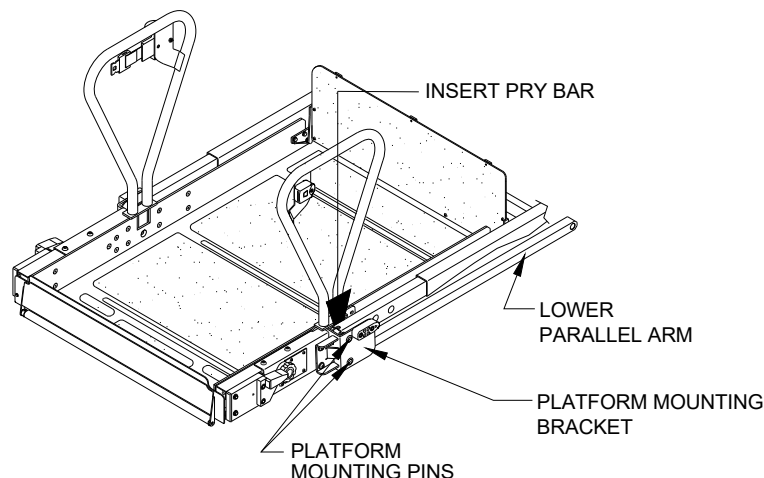


FIGURE 4-32: PLATFORM SEPARATION FROM LIFTING FRAME

- l. Pass free end of electrical harnesses through platform mounting brackets.
- m. Remove upper pins from platform mounting brackets. Remove pins in same manner as lower pins.
- n. Remove platform from lifting frame.

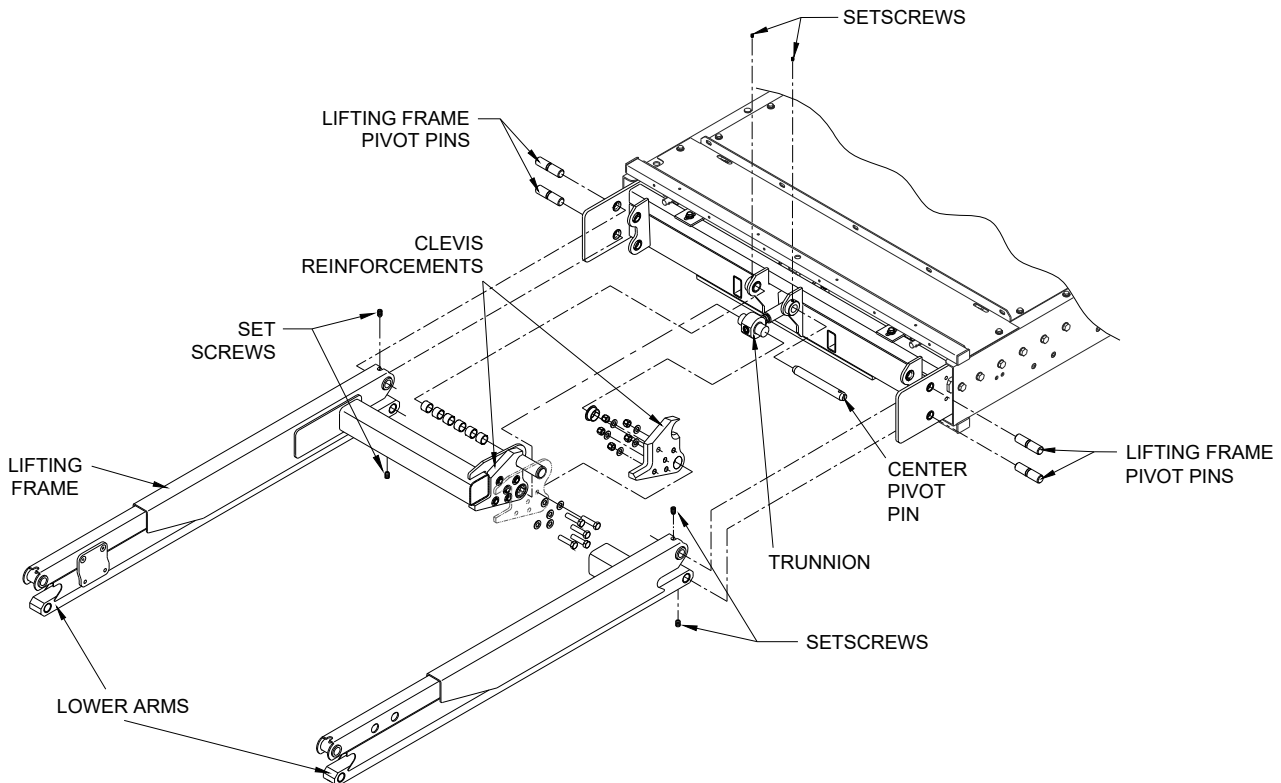
**o. Platform re-installation:**

Perform re-installation by reversing removal steps, with the following considerations. Verify that platform mounting bracket holes and lifting frame holes are properly aligned, and then drive mounting pins in place using a soft, heavy hammer. Use a thread locker (such as loc-TITE® blue or omniFIT® blue) when re-installing setscrews.

**5. LIFTING FRAME REMOVAL**

Refer to end of this section for re-installation notes.

- a. Refer to the Platform Removal section and remove platform.
- b. Raise lifting frame as far as possible with manual backup pump (figure does not show frame raised).
- c. Refer to **Figure 4-33**. Remove four setscrews securing lifting frame pivot pins. Remove two setscrews securing center pivot pin.



**FIGURE 4-33: LIFTING FRAME COMPONENTS**



**CAUTION**

Do not damage outside surface of pins during removal. A pin should be replaced if its outer surface is pitted or grooved after removal.

- d. Remove two lower lifting frame pivot pins from carriage with a small punch. Remove lower arms.
- e. Remove five screws and nuts from each clevis reinforcement and pivot reinforcements downward. Slide each reinforcement off of trunnion.
- f. Have an assistant raise lifting frame as high as possible.
- g. Remove two upper lifting frame pivot pins and center pivot pin (note that center pivot pin passes through six bushings) from carriage with a small punch and pull lifting frame away from carriage.
- h. **Lifting frame re-installation:**  
Perform re-installation by reversing removal steps, with the following considerations. Verify that carriage holes and lifting frame holes are properly aligned, and then drive mounting pins in place using a soft, heavy hammer. Use a thread locker (such as loc-TITE® blue or omniFIT® blue) when installing new setscrews.

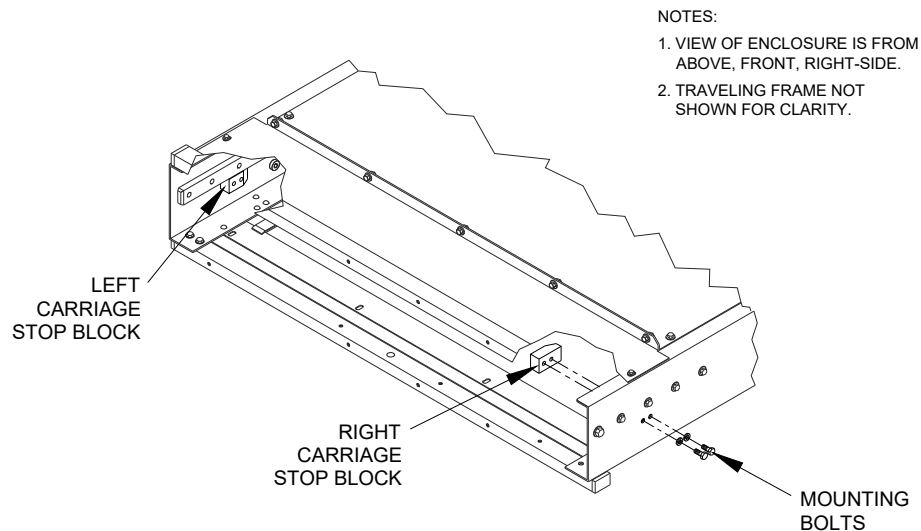
**6. CARRIAGE REMOVAL**

The following procedure describes removal of carriage after platform and lifting frame have been removed.

The carriage, lifting frame, and platform are referred to as a “travelling frame”, when assembled together (Refer to **Figure 4-2**). The travelling frame can be removed from enclosure as a unit. Be prepared to handle the combined weight of the carriage, lifting frame, and platform when removing and installing.

Refer to end of this section for re-installation notes.

- a. Deploy platform using control pendant (DEPLOY).
- b. Refer to Platform Removal section and remove platform.
- c. Refer to Lifting Frame Removal section and remove lifting frame.
- d. Verify that positive battery cable is disconnected. Lower access panel by following Lift Service Access instructions at beginning of this chapter.
- e. Refer to **Figure 4-34**. The carriage stop block mounting bolts are accessible from under vehicle or from the front of enclosure. Remove bolts and both stop blocks.



**FIGURE 4-34: CARRIAGE STOP BLOCK LOCATIONS**

- f. Refer to **Figure 4-35**. Verify that platform release shafts are in the engaged position (rotated in the direction opposite to what is indicated on adjacent decal). Deflect final driveshaft downward to disengage its pinion gears from gear rack. Use nylon tie-wraps, or similar, to hold driveshaft disengaged.
- g. Remove two nuts fastening hose retaining clamp (located at bottom, rear-center of carriage).  
**NOTE:** The following step will spill hydraulic fluid; have dry rags on hand.
- h. Disconnect hydraulic hose from quick-disconnect.
- i. Disconnect main electrical harness connector from electronic controller.
- j. Position a support stand in front of enclosure to place carriage on.

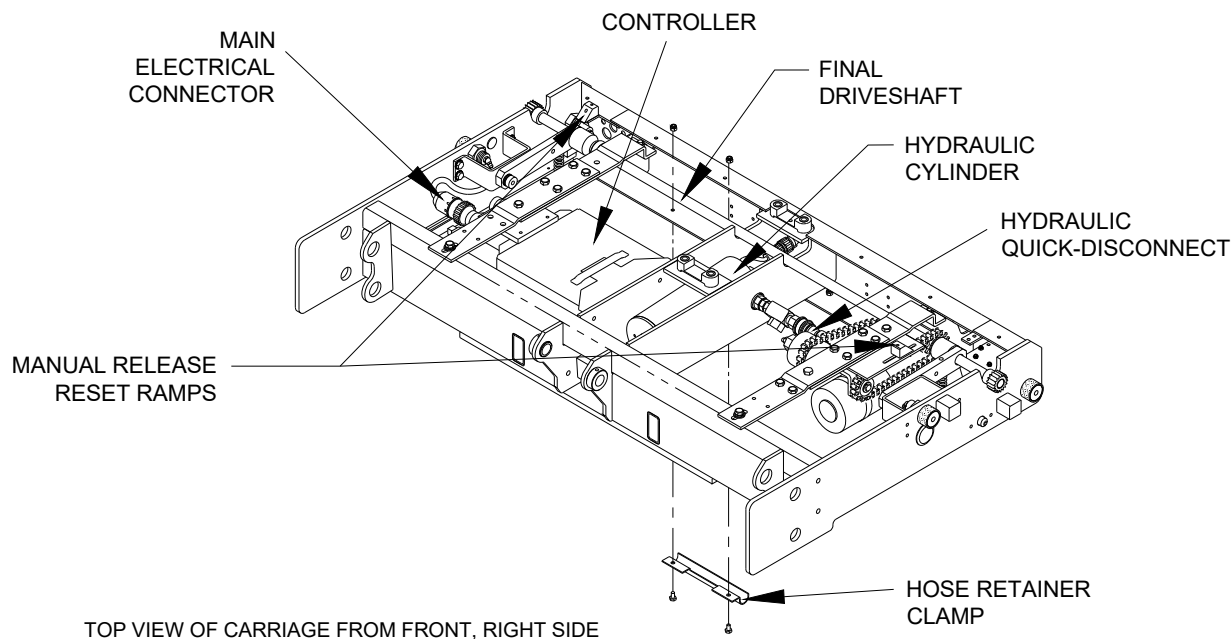


FIGURE 4-35: CARRIAGE COMPONENTS

**WARNING**

THE CARRIAGE ASSEMBLY IS HEAVY AND REQUIRES TWO PEOPLE TO REMOVE.

- k. Pull carriage out of enclosure, supporting each side, and place on support stand.

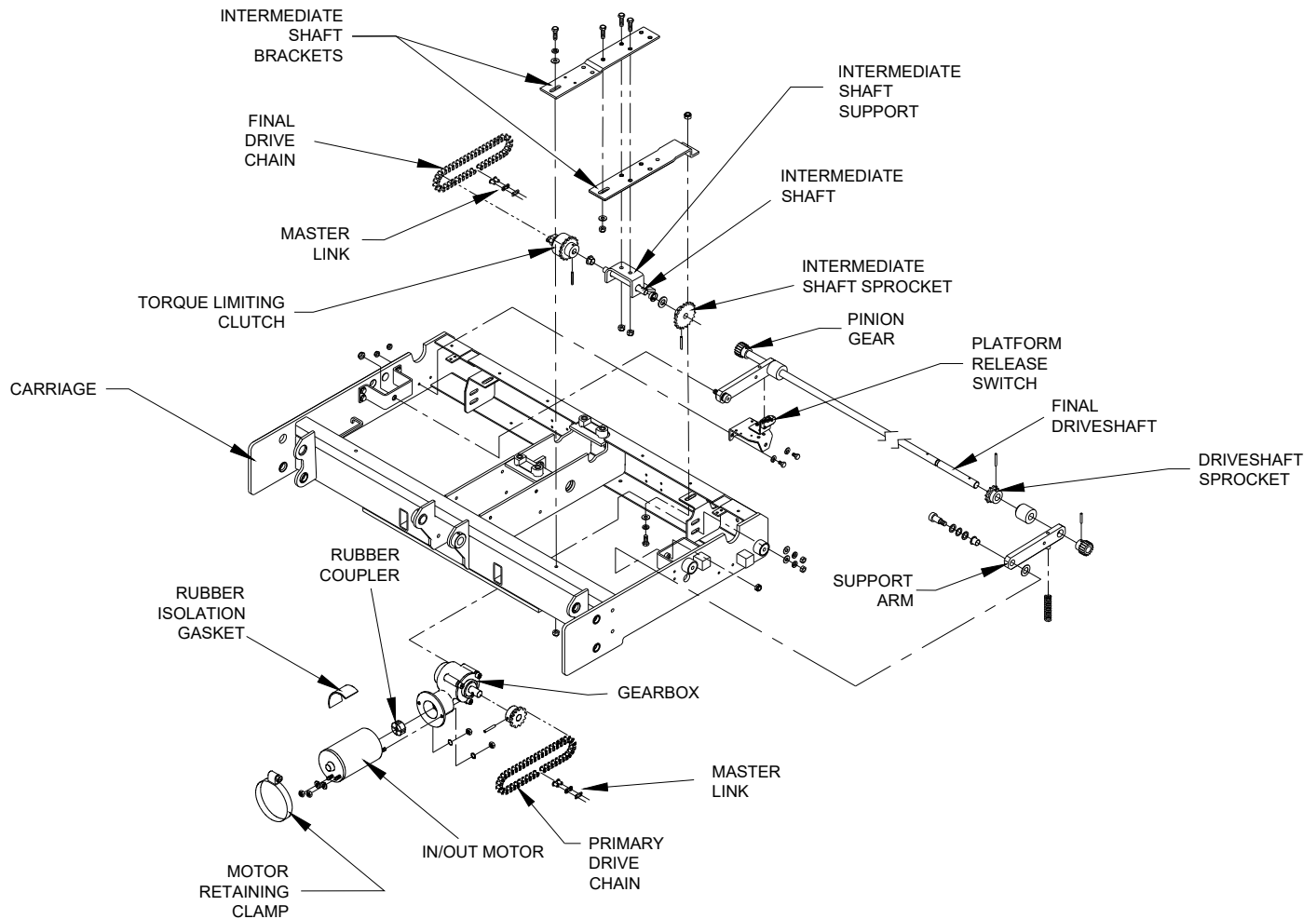
**NOTE:** Care is required while extracting carriage to avoid damage. Watch for possible points of interference, such as the pins on the release shafts catching on the release reset ramps.

**l. Carriage Re-installation:**

Perform re-installation by reversing removal steps with the following considerations. Pull hydraulic hose and electrical harness down through service access opening before inserting carriage into enclosure. Route hose and cable back into installed carriage in their original positions.

## D. DEPLOYMENT SYSTEM

Refer to **Figure 4-36**. The deployment system propels the traveling frame (carriage, lifting frame, and platform) out of enclosure, or pulls it back in. This section describes major deployment system components, including how they operate, how to remove and replace them, and how to perform adjustments.



**FIGURE 4-36: DEPLOYMENT SYSTEM COMPONENTS**

### 1. IN/OUT MOTOR AND GEARBOX

The in/out motor drives the deployment system. The motor receives electric power from the on-board electronic controller; voltage polarity determines the direction of motor rotation (which determines whether platform is deployed or stowed). The motor drives the gearbox, reducing the motor speed and increasing torque. The gearbox drives the primary drive chain.

#### a. In/Out Motor and Gearbox Removal

- 1) Deploy platform using control pendant (DEPLOY).
- 2) Lower access panel by following Lift Service Access instructions at beginning of this chapter.
- 3) Position primary drive chain master-link at bottom-center of its travel by moving carriage in or out of enclosure.
- 4) Support platform.
- 5) Disconnect positive battery cable at vehicle battery compartment.
- 6) Refer to **Figure 4-36**. Loosen two nuts fastening the gearbox to carriage.
- 7) Label motor electrical leads, and then disconnect.
- 8) Remove motor retaining clamp.
- 9) Slide gearmotor assembly toward platform.
- 10) Remove primary drive chain master link; remove chain.
- 11) Remove two nuts and washers fastening gearbox to carriage; support gearmotor assembly.
- 12) Remove rubber isolation gasket from gearmotor and remove gearmotor assembly from carriage.

- 13) Remove nuts and washers fastening motor to gearbox.
- 14) Separate motor from gearbox; do not damage or lose rubber coupler.

**NOTE:** Refer to next section for re-installation.

#### b. In/Out Motor and Gearbox Installation

- 1) Refer to **Figure 4-36**. Slide rubber coupler onto gearbox input shaft.
- 2) Insert motor output shaft into coupler, and then align motor and gear box:
  - Hold motor with electrical connections pointed at you, and positioned at 5 o'clock.
  - Hold gearbox with its output housing up.
  - Align motor studs with holes in gearbox flange and assemble.
- 3) Install star-washers and nuts on motor studs.
- 4) Place gearmotor assembly in carriage with gearbox studs inserted in mounting tab slots.
- 5) Install lock washers and nuts on gear box studs. Do not tighten.
- 6) Install motor retaining clamp and vibration isolation gasket; the clamp fits over tab on gearmotor support bracket. Do not tighten clamp.
- 7) Refer to PRIMARY DRIVE CHAIN INSTALLATION section. Install primary drive chain.
- 8) Reconnect two motor electrical leads.
- 9) Raise service access panel, and install two retaining screws and lock-nuts at front edge of panel.
- 10) Reconnect positive battery cable at vehicle battery compartment.

## 2. DRIVE CHAINS

The drive chains transfer power from gearmotor to final driveshaft. Power is transferred through primary drive chain to torque limiting clutch (mounted on an intermediate shaft), and then to secondary drive chain.

#### a. Drive Chain Removal

##### ▪ Final Drive Chain

- 1) Deploy platform using control pendant (DEPLOY).
- 2) Raise platform to a comfortable working height and support.
- 3) To gain access to underside of the lift, hold service access panel up, remove two retaining screws and lock-nuts from front edge of panel, and lower panel.
- 4) Refer to **Figure 4-36**. Position master link at bottom-center of its travel by moving carriage assembly forward or backward (use the DEPLOY and STOW functions).
- 5) Disconnect positive battery cable at vehicle battery compartment.
- 6) Loosen two nuts fastening gearbox to the carriage.
- 7) Loosen two screws fastening intermediate shaft mounting bracket to carriage. The front screw is accessible from top of lift, and rear screw is accessible through service hatch (use an open end wrench above intermediate shaft mounting bracket to hold nut).
- 8) Move gearmotor assembly toward driveshaft to slacken chain; a small pry bar can be inserted between motor and front of carriage for leverage.

**NOTE:** Do not force the gearmotor. Loosen two nuts further, or loosen motor retaining clamp to obtain more movement.

- 9) Remove master link and final drive chain.

##### ▪ Primary Drive Chain

- 10) Fully deploy lift.
- 11) Raise platform to a comfortable working height and support.
- 12) To gain access to underside of lift, hold service access panel up, remove two retaining screws and lock-nuts from front edge of panel, and lower panel.
- 13) Refer to **Figure 4-36**. Position master link at bottom-center of its travel by moving carriage assembly forward or backward (use the DEPLOY and STOW functions).
- 14) Disconnect positive battery cable at vehicle battery compartment.
- 15) Loosen motor retaining clamp that fastens gearmotor to gearmotor support.
- 16) Loosen two nuts fastening gearbox to carriage.
- 17) Move gearmotor assembly toward driveshaft to slacken chain. A small pry bar may be inserted between motor and front of carriage to gain leverage.

**NOTE:** Do not force the gearmotor. Further loosen two nuts, or loosen motor retaining clamp to obtain more movement.



18) Remove primary drive chain master link and primary drive chain.

## b. Drive Chain Installation

### ▪ Final Drive Chain

- 1) Refer to **Figure 4-37**. Verify the two screws fastening the intermediate shaft mounting bracket to carriage are loose.
- 2) Install final drive chain around sprocket on final driveshaft, and around sprocket on intermediate shaft. Install master link.
- 3) Refer to Final Drive Chain Adjustment section and adjust final drive chain.

### ▪ Primary Drive Chain

- 4) Refer to **Figure 4-37**. Loosen motor retaining clamp that fastens the gearmotor to gearmotor support.
- 5) Loosen nuts fastening gearbox to carriage.
- 6) Refer to **Figure 4-37**. Install primary drive chain around sprocket on gearbox output shaft, and around clutch sprocket. Install master link.
- 7) Refer to Primary Drive Chain Adjustment section and adjust primary drive chain.

## c. Drive Chain Adjustment

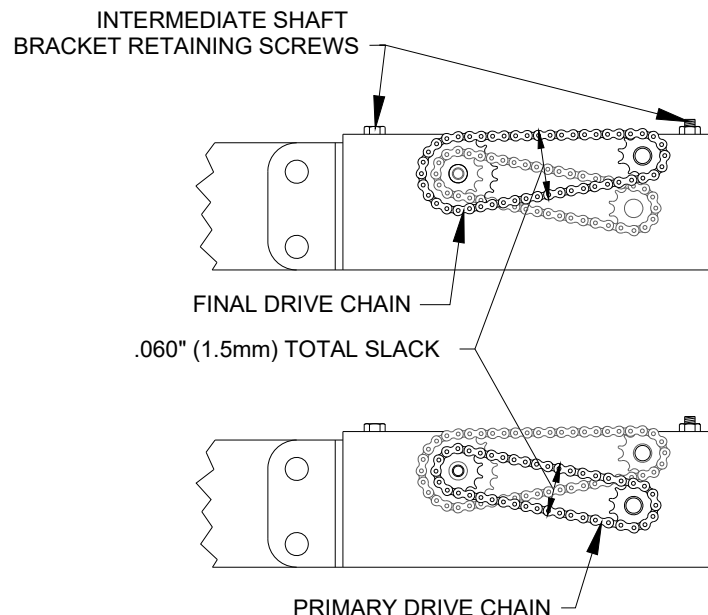
**NOTE:** Adjust final drive chain first when adjusting both drive chains. The primary drive chain adjustment is dependent on setting of final drive chain.

### ▪ Final Drive Chain

- 1) Refer to LIFT SERVICE ACCESS section to deploy platform and open service access panel.

**NOTE:** (F9TF-DE019, F9TH-DE035) It may be necessary to access the carriage assembly from the top due to proximity to bottom of baggage bay. If present, remove the sub-floor panel above the wheelchair lift then remove the first access panel of the wheelchair lift enclosure. Refer to **Appendix** for Installation Instruction 32ii482e.

- 2) Refer to **Figure 4-37**. Loosen screws fastening intermediate shaft bracket to carriage. The front screw is accessible from top of lift and rear screw is accessible through service hatch (use an open-end wrench above intermediate shaft mounting bracket to hold nut).



**FIGURE 4-37: DRIVE CHAIN SLACK ADJUSTMENT**

- 3) Refer to **Figure 4-37**. Loosen the two nuts fastening gearmotor assembly to carriage.
- 4) Verify that motor retaining clamp (fastens gearmotor to gearmotor support) is tight.
- 5) Move gearmotor assembly toward driveshaft to slacken chain; a small pry bar may be inserted between motor and front of carriage for leverage.

**NOTE:** **DO NOT FORCE THE GEARMOTOR.** Loosen the two gearmotor nuts further or loosen motor retaining clamp, to obtain more movement.

- 6) Refer to **Figure 4-37**. Adjust chain tension to achieve .030" (0.8 mm) slack on lower span.



- 7) Tighten screws fastening intermediate shaft bracket to carriage.
- 8) Refer to PRIMARY DRIVE CHAIN ADJUSTMENT, if adjusting both chains. Otherwise, continue.
- 9) Raise service access panel, and install two retaining screws and lock-nuts at front edge of panel.
- 10) Reconnect positive battery cable at vehicle battery compartment.

▪ **Primary Drive Chain**

- 11) Refer to LIFT SERVICE ACCESS section to deploy platform and open service access panel.  
**NOTE:** (F9TF-DE019, F9TH-DE035) It may be necessary to access the carriage assembly from the top due to proximity to bottom of baggage bay. If present, remove the sub-floor panel above the wheelchair lift then remove the first access panel of the wheelchair lift enclosure. Refer to **Appendix** for Installation Instruction 32ii482e.
- 12) Refer to **Figure 4-36**. Loosen motor retaining clamp.
- 13) Loosen two nuts fastening gearbox to carriage.
- 14) Move gearmotor assembly toward driveshaft to slacken chain; a small pry bar may be inserted between motor and front of carriage for leverage.  
**NOTE: DO NOT FORCE THE GEARMOTOR.** Loosen the two gearmotor nuts further or loosen motor retaining clamp, to obtain more movement.
- 15) Refer to **Figure 4-36**. Adjust chain tension to achieve .030" (0.8 mm) slack on upper span.
- 16) Tighten nuts fastening gearmotor to carriage.
- 17) Tighten motor retaining clamp.
- 18) Raise service access panel, and install two retaining screws and lock-nuts at front edge of panel.
- 19) Reconnect positive battery cable at vehicle battery compartment.

### 3. TORQUE LIMITING CLUTCH

The torque limiting clutch prevents stalling of deployment motor when traveling frame reaches either end of its movement. It also disengages deployment motor if traveling frame contacts a foreign object. The torque limiting clutch makes a loud clicking sound when it slips.

**CHECK:**

To VERIFY if the wheelchair lift will stop and hear if the clutch slips, disconnect the stow-lock solenoid and press the deploy function on the wheelchair pendant to have the wheelchair lift stop against the stow-lock pin. (Y/N) Then Press the STOW function on the wheelchair pendant and reconnect the Stow Lock Solenoid.

**NOTE:** It might be necessary to straighten the carriage by pushing lightly from one side to the other.

**a. Torque Limiting Clutch Removal**

- 1) Refer to LIFT SERVICE ACCESS section to deploy platform and open service access panel.  
**NOTE:** (F9TF-DE019, F9TH-DE035) It may be necessary to access the carriage assembly from the top due to proximity to bottom of baggage bay. If present, remove the sub-floor panel above the wheelchair lift then remove the first access panel of the wheelchair lift enclosure. Refer to **Appendix** for Installation Instruction 32ii482e.
- 2) Refer to IN/OUT MOTOR AND GEARBOX section and remove gearmotor assembly.
- 3) Refer to DRIVE CHAIN REMOVAL section and remove both drive chains.
- 4) Refer to **Figure 4-38**. Remove screws fastening intermediate shaft bracket to carriage.
- 5) Slide intermediate shaft bracket toward driveshaft, and drop front end of bracket down inside carriage.
- 6) Remove intermediate shaft bracket (with intermediate shaft assembly) from carriage by sliding it forward and twisting (to clear carriage).
- 7) Place intermediate shaft bracket on a workbench, flat side down.
- 8) Remove roll pin that fastens clutch assembly to intermediate shaft.
- 9) Twist and slide clutch assembly off intermediate shaft.

## b. Torque Limiting Clutch Installation

**NOTE:** Perform torque limiting clutch removal described in previous section if a clutch is present.

- 1) Refer to **Figure 4-37**. Slide clutch assembly onto intermediate shaft (mounted to intermediate shaft support), being sure that bushings are installed in support and washer is in place on shaft. Twisting clutch assembly relative to driveshaft will ease installation. Align roll-pin hole in clutch hub with hole on shaft.
- 2) Drive new roll pin into clutch and intermediate shaft.
- 3) Place intermediate shaft brackets, with intermediate shaft assembly, into carriage by inserting assembly up into carriage. This will require twisting bracket assembly (relative to carriage) and inserting rear of bracket over rear of carriage first. Then place front of bracket over front of carriage, and slide assembly forward. Refer to **Figure 4-37** and verify that bracket orientation matches illustration.
- 4) Install screws and lock washers fastening intermediate shaft bracket to carriage.
- 5) Refer to In/Out Motor and Gearbox Installation section to re-install gearmotor assembly.
- 6) Refer to Drive Chain Installation and Adjustment sections and install and adjust both drive chains.
- 7) Refer to Setting Torque Limiting Clutch section and adjust clutch breakaway point.

## c. Torque Limiting Clutch Check and Adjustment

The clutch is set at the factory. Re-adjustment is typically required after 500 lift cycles. To provide smooth platform movement:

- The clutch **must not disengage** before platform reaches the end of its stow or deploy travel.
- The clutch **must disengage** when platform reaches the end of its travel.

### CHECK:

- 1) Refer to LIFT SERVICE ACCESS section to deploy platform and open service access panel.

**NOTE:** (F9TF-DE019, F9TH-DE035) It may be necessary to access the carriage assembly from the top due to proximity to bottom of baggage bay. If present, remove the sub-floor panel above the wheelchair lift then remove the first access panel of the wheelchair lift enclosure. Refer to **Appendix** for Installation Instruction 32ii482e.

- 2) Release lift by engaging the manual release handle CCW.
- 3) Refer to FINAL DRIVE CHAIN REMOVAL section only to loosen final drive chain.
- 4) Measure clutch breakaway torque with a torque wrench that will retain a maximum reading (Sturdevant Adjustable Interchangeable Head, Clicker Type TQ wrench P/N 810770 with 22mm Open Crow Foot End P/N 819951, or equivalent).
- 5) Refer to **Figure 4-37**. Engage final drive chain sprocket (mounted on intermediate shaft) with torque wrench.
- 6) Rotate intermediate shaft until clutch slips. Maximum torque occurs at point where clutch **first begins to slip**. Breakaway must occur between 24-28 ft·lbs. (33-38 N·m).



### ADJUST:

- 7) Refer to **Figure 4-38**. Do the following, if clutch adjustment is necessary:

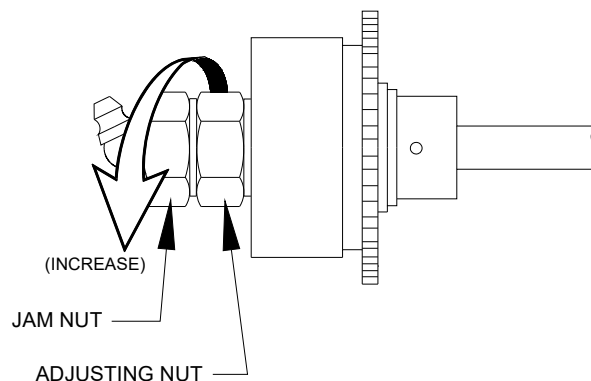


FIGURE 4-38: TORQUE LIMITING CLUTCH ADJUSTMENT

- 8) Loosen 15/16" jam nut.
- 9) Rotate adjusting nut CW to increase torque, or CCW to decrease torque. Adjust in small increments and check breakaway torque each time until desired torque is obtained.
- 10) Hold adjusting nut and tighten jam nut to 40-50 ft·lbs. (54-68 N·m).
- 11) Refer to Drive Chain Installation and Adjustment sections and install both drive chains.

#### 4. INTERMEDIATE SHAFT AND FINAL DRIVESHAFT

The intermediate shaft transfers power from primary drive chain to final drive chain. The final driveshaft transfers power from final drive chain to pinion gears. The pinion gears mesh with the gear track (attached to inside of enclosure).

##### a. Intermediate Shaft and Final Driveshaft Removal

###### INTERMEDIATE SHAFT

- 1) Refer to Torque Limiting Clutch Removal section and remove clutch assembly.
- 2) Refer to **Figure 4-37**. Slide intermediate shaft assembly out of intermediate shaft support.
- 3) Remove washer from shaft. Remove roll pin fastening intermediate shaft sprocket to intermediate shaft and remove sprocket.
- 4) Remove bushings from intermediate shaft support; replace, if necessary.

###### FINAL DRIVESHAFT

- 5) Refer to Carriage Removal section and remove carriage from enclosure.
- 6) Refer to Drive Chain Removal section and remove both drive chains.
- 7) Refer to **Figure 4-38**. Remove two screws fastening intermediate shaft bracket to carriage. Slide intermediate shaft bracket away from final driveshaft (to provide clearance for driveshaft removal).
- 8) Remove two shoulder bolts fastening driveshaft support arms to carriage.
- 9) Remove final driveshaft and support arms from carriage.
- 10) Remove roll pins fastening two pinion gears and one driveshaft sprocket to final driveshaft.
- 11) Twist and slide pinion gears, support arms, and sprocket off final driveshaft.
- 12) Slide spacers and collar off driveshaft.

##### b. Intermediate Shaft and Final Driveshaft Installation

###### INTERMEDIATE SHAFT

**NOTE:** Refer to Intermediate Shaft Removal section if an intermediate shaft is present.

- 1) Press new bushings into intermediate shaft support, if necessary. Bearing flange is on outside of support.
- 2) Slide intermediate shaft sprocket onto intermediate shaft. Align hole in sprocket hub with corresponding hole in intermediate shaft.
- 3) Drive new rollpin into sprocket hub and intermediate shaft.
- 4) Slide intermediate shaft assembly through bushings of intermediate shaft support. Refer to **Figure 4-38** and verify that orientation of intermediate shaft assembly matches illustration (sprocket is near outside of carriage).
- 5) Refer to Torque Limiting Clutch Installation section. Install and adjust clutch.
- 6) Refer to Carriage Installation section and install carriage into enclosure.

###### FINAL DRIVESHAFT

**NOTE:** Refer to Final Driveshaft Removal section if a final driveshaft is present.

- 7) Refer to **Figure 4-38**. Slide driveshaft sprocket onto driveshaft. Align roll pin-hole in sprocket hub with hole in driveshaft.
- 8) Drive new roll pin into sprocket hub and driveshaft.
- 9) Press new bushings into driveshaft support arms, if necessary. Bearing flange is on inside of support arms

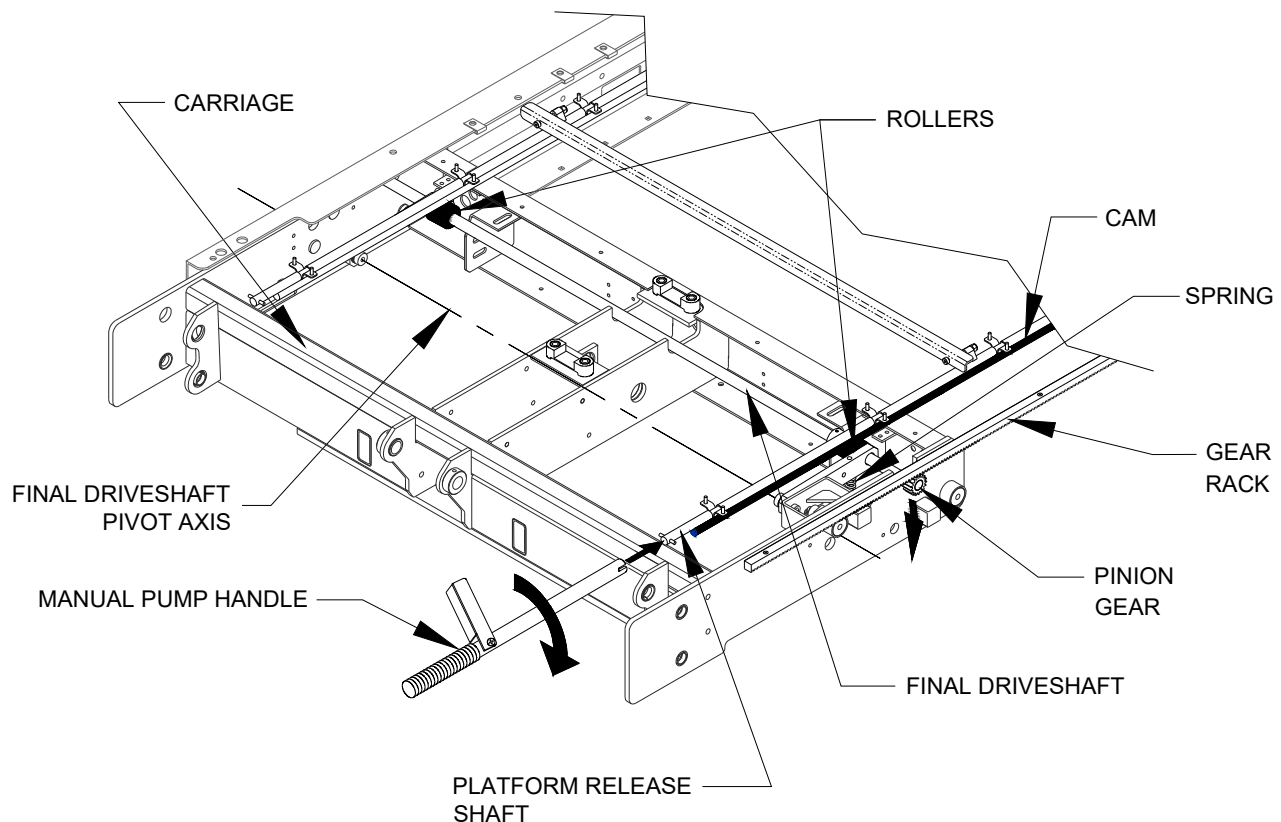
**NOTE:** Spring retaining pins on driveshaft support arms must point downward.

- 10) Slide collar, spacers, and driveshaft support arms onto driveshaft.
- 11) Slide pinion gears onto driveshaft. Align holes in gear hubs and collar with corresponding holes on driveshaft.
- 12) Drive new rollpins into gear hubs, collar, and driveshaft.

- 13) Position driveshaft assembly in carriage, and fasten support arms with two shoulder bolts and related hardware.
  - 14) Locate compression springs over spring retaining pins on carriage. Rotate support arms down onto springs. Verify that both ends of each spring are held by spring retaining pins.
  - 15) Locate intermediate shaft bracket (with intermediate shaft assembly) on top of carriage and install screws and lock washers. Tighten sufficiently to lock the washers.
  - 16) Refer to Drive Chain Installation section and install the primary and final drive chains.
  - 17) Refer to Carriage Removal section and install carriage into enclosure by reversing removal steps.
- Heed all warnings and precautions.

## 5. MANUAL PLATFORM RELEASE MECHANISM

Refer to **Figure 4-39**. The travelling frame (carriage, lifting frame, and platform) can be manually disengaged from the enclosure by rotating either platform release shaft. Each release shaft has an eccentric cam that bears against a roller on the driveshaft. Rotating a release shaft pushes the final driveshaft downward (against the force of an engagement spring), disengaging each driveshaft pinion gear from its gear rack (mounted to the inside of the enclosure). Once the deployment system is disengaged, the travelling frame can be moved by hand. The deployment system will automatically re-engage when the platform is moved to the opposite end of its travel (stow or deploy).



**FIGURE 4-39: PLATFORM RELEASE COMPONENTS**

### a. Reset Ramp Adjustment

Rotating a release shaft disengages the platform from the enclosure. The reset ramps re-engage the deployment system when the platform is moved to the opposite end of its travel. There are two reset ramps; each one is a small, white plastic block. One ramp re-engages platform when it is fully deployed, the other when platform is fully stowed. Both ramps are located at the top, rear of carriage, above the final driveshaft. The adjustment procedure is similar for both ramps.

#### CHECK:

- 1) Rotate either release shaft to disengage stowed platform and then pull platform out to the fully deployed position.

- 2) One of the reset ramps engages a pin on one release shaft and rotates the shaft about 90° when platform reaches full deployment. Verify that deployment system has re-engaged by attempting to push platform inward.
- 3) Rotate either release shaft to disengage platform, and then push platform to the fully stowed position.
- 4) The second reset ramp will engage a pin on the second release shaft and rotate that shaft about 90° when platform reaches the fully stowed position. Verify that deployment system has re-engaged by attempting to pull platform outward.

**ADJUST:**

If either ramp fails to rotate its release shaft properly, the ramp position must be re-adjusted. Loosen the two screws holding ramp in place and slide ramp towards pin about 1/8" (. Tighten screws and repeat appropriate test (stow or deploy) to verify that deployment system has re-engaged. Repeat adjustment, if necessary.

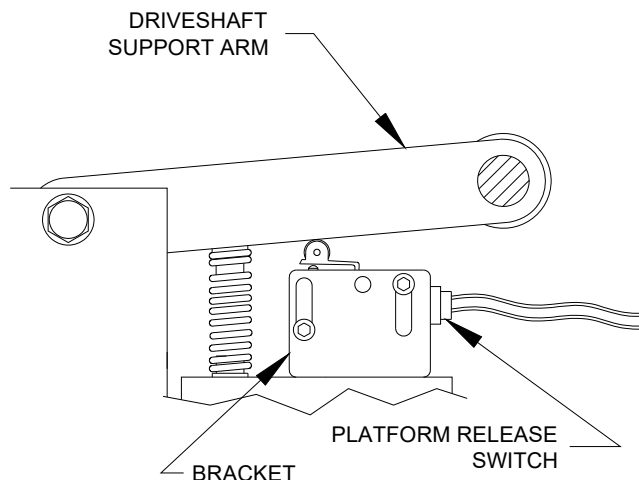
**b. Release Switch Adjustment**

A limit switch is mounted below one driveshaft support arm, and detects the position of the arm. It is adjusted to change states when the pinion gears disengage.

**NOTE:** Refer to Electrical Controls section if replacement of switch is necessary.

**CHECK:**

- 1) Refer to LIFT SERVICE ACCESS section to deploy platform and open service access panel.  
**NOTE:** (F9TF-DE019, F9TH-DE035) It may be necessary to access the carriage assembly from the top due to proximity to bottom of baggage bay. If present, remove the sub-floor panel above the wheelchair lift then remove the first access panel of the wheelchair lift enclosure. Refer to **Appendix** for Installation Instruction 32ii482e.
- 2) Rotate either release shaft 90° in the direction indicated on adjacent decal, using manual back-up pump handle. This disengages pinion gears from gear racks.
- 3) Refer to **Figures 4-36** and **4-40**. Listen to switch as release shaft is rotated. It should click faintly (change state) when the driveshaft support arm contacts the switch roller (as shown in figure). The change of state is also marked by the switch contact resistance becoming infinite (open) when measured at pins four and five of the lifting frame harness.



**FIGURE 4-40: PLATFORM RELEASE SWITCH SETTING**

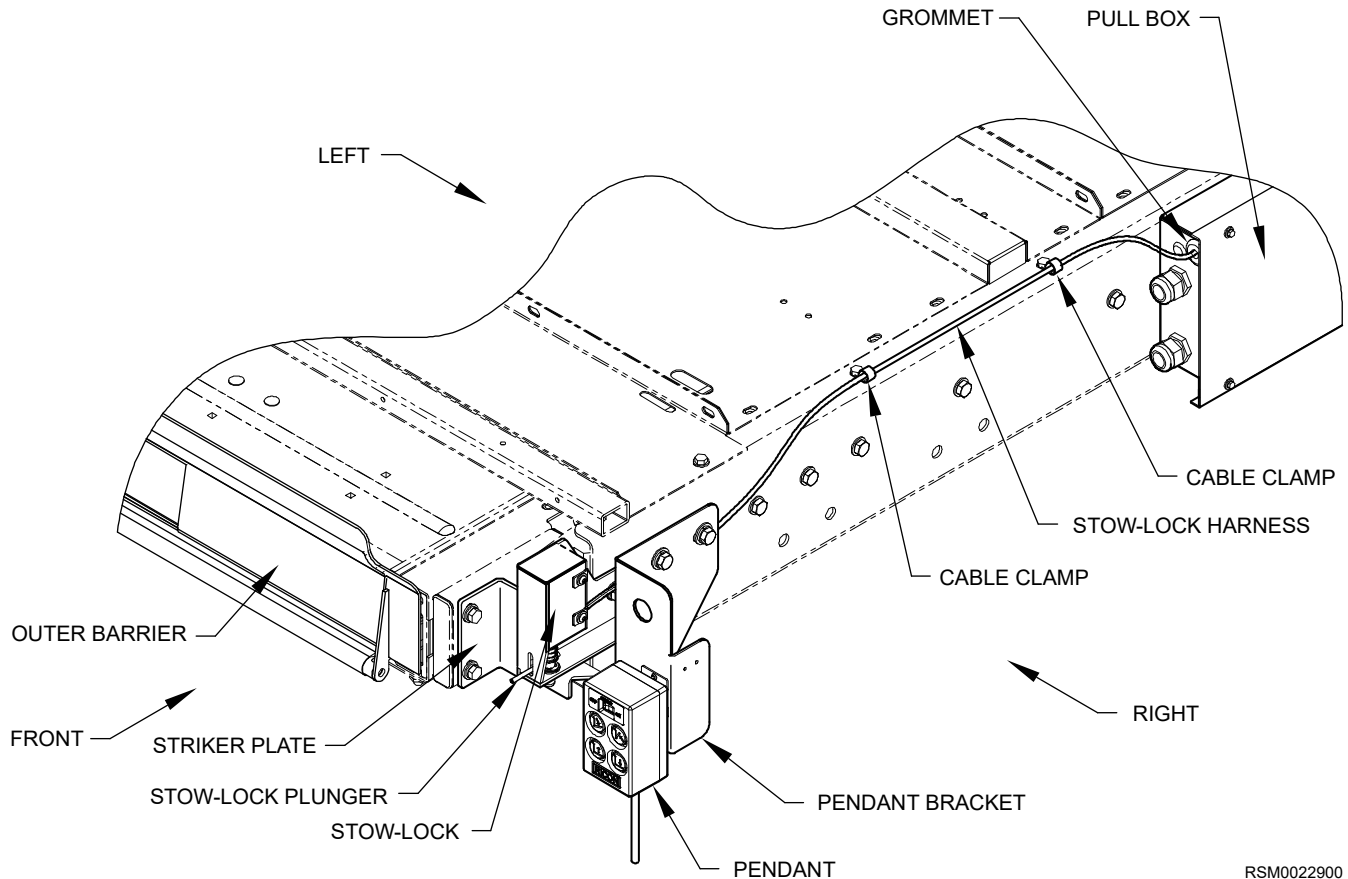
**ADJUST:**

- 4) Loosen switch retaining screws, and slide switch downward on its bracket until switch roller loses contact with arm. Slide switch upward until a faint click is heard (or resistance becomes infinite). Tighten screws.
- 5) Rotate release shaft to re-engage pinion gears. A faint click should be heard from switch as it changes state.  
**NOTE:** It is important to verify that switch states are different when gears are engaged and un-engaged.
- 6) Raise service access panel, and install two retaining screws and lock-nuts at front edge of panel.

## 6. STOW-LOCK ADJUSTMENT

This procedure is intended for wheelchair lifts configured with Stow-Lock Kit P/N 44909 shown in **Figure 4-41**. Contact a Ricon dealer or qualified service technician for Stow-Lock configurations that pertain to a particular vehicle.

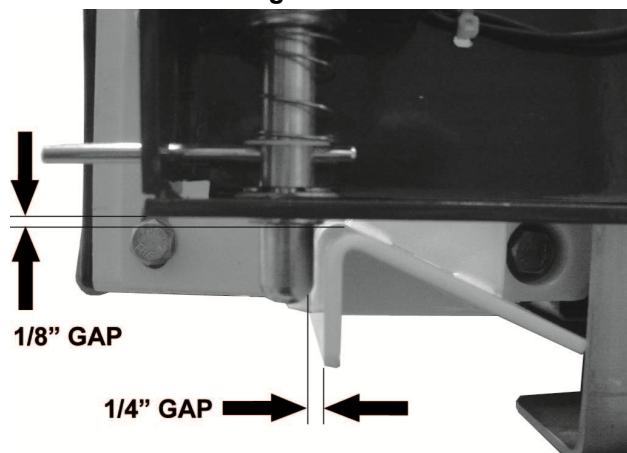
**NOTE:** Perform the pre-check procedure (Section D.3) to check if the lift will stop and possibly hear the clutch slip. If no clutch slippage occurs then proceed with Stow-Lock adjustment. If there is possible clutch slippage then perform procedure found in (Section D.3). Contact a Ricon Dealer or qualified service technician in case of any doubt.



RSM0022900

**FIGURE 4-41: STOW-LOCK**

- a. Adjust Stow-Lock to 1/8" (3 mm) gap at top of Striker Plate and 1/4" (6 mm) gap between Stow Lock and front edge of Striker Plate as shown in **Figure 4-42A**.



**FIGURE 4-42A: STRIKER PLATE/STOW-LOCK ADJUSTMENT**

**NOTE:** Verify gaps with tool P/N 55273 as shown in **Figure 4-42B** and **Figure 4-42C**.





FIGURE 4-42B: VERIFY GAPS WITH TOOL P/N 55273

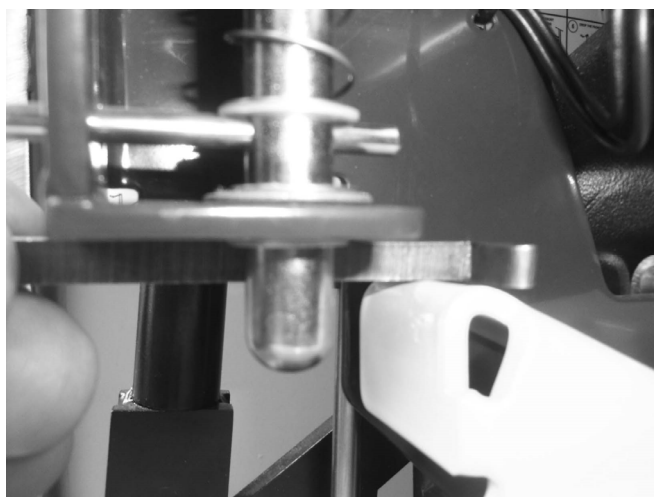
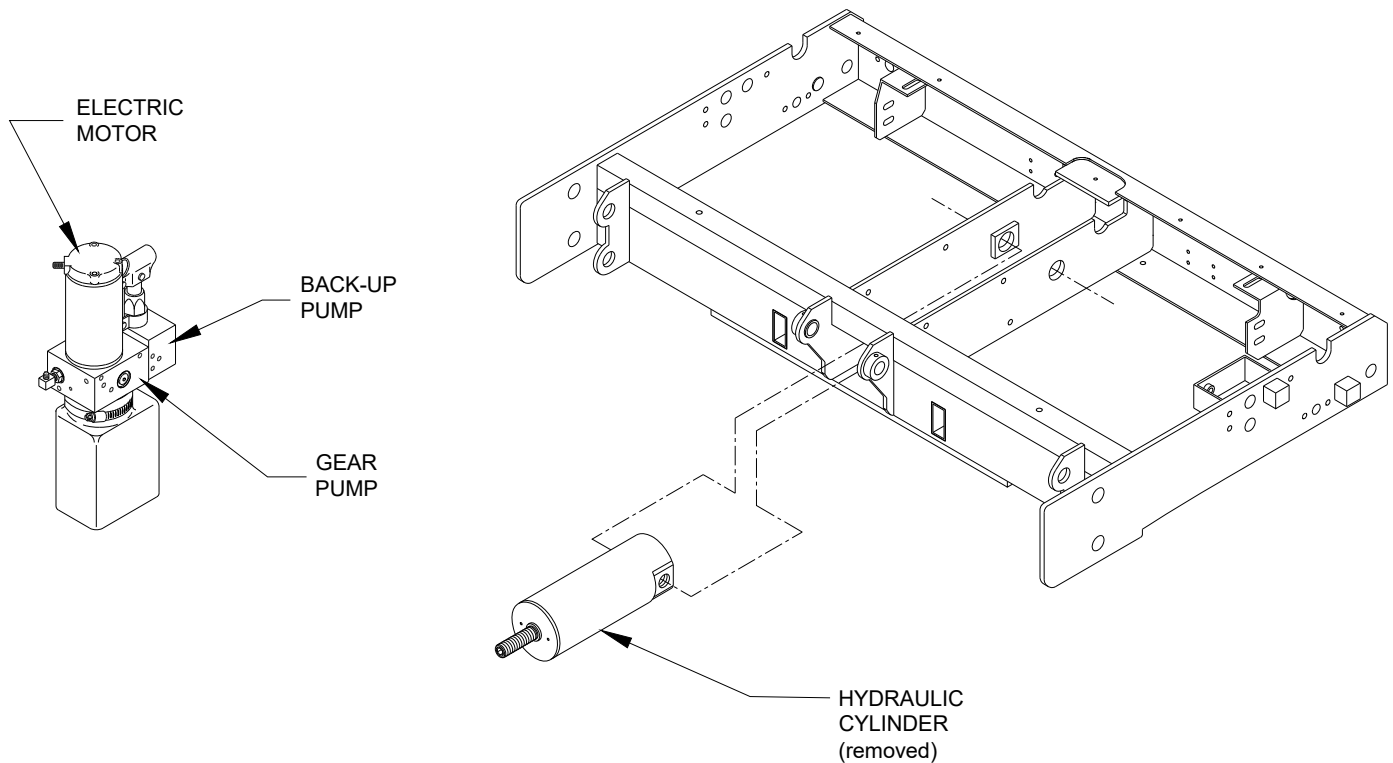


FIGURE 4-42C: VERIFY GAPS WITH TOOL P/N 55273

- b. Apply blue Loctite to screws then set torque wrench to 32-34 ft·lbs. (43-46 N·m) and tighten screws holding the Stow-Lock Assembly (P/N 44971) in place.
  - c. Apply blue Loctite to screws then set torque wrench to 14-16 ft·lbs. (19-22 N·m) and tighten screws holding the Striker Plate (P/N 44963) in place.
- NOTE:** Ensure the plunger clears Striker Plate when Stow-Lock is operated manually.
- d. Apply blue Loctite to screws then set torque wrench to 32-34 ft·lbs. (43-46 N·m) and tighten screws that attach Pendant Bracket onto Stow-Lock.

## E. HYDRAULIC POWER SYSTEM

Refer to **Figure 4-43**. The major components of hydraulic system are an electric motor, a gear pump, a hydraulic cylinder, control valves, and a manual back-up pump.



**FIGURE 4-43: HYDRAULIC SYSTEM COMPONENTS**

### 1. SYSTEM FLUID RENEWAL

- a. Deploy platform using control pendant (DEPLOY).
- b. Slowly open manual release valve (located on back-up pump) to release hydraulic pressure, and lower platform to ground.
- c. Loosen clamp fastening fluid reservoir to pump.
- d. Carefully pull reservoir from bottom of pump and empty into a proper waste fluid container.
- e. Re-install reservoir on pump and tighten clamp.
- f. Remove fill plug on the top of reservoir. Fill reservoir with Texaco 01554 Aircraft Hydraulic Oil or equivalent U.S. MIL Spec H5606G fluid.
- g. Close manual release valve.
- h. Raise platform up to floor level, and then lower down to ground level. Repeat cycle three times.
- i. Slowly open manual release valve to release hydraulic pressure.
- j. Repeat steps c. through h. and then proceed to step k.
- k. Close manual release valve.
- l. Refer to HYDRAULIC BLEEDING section in **Chapter II** and bleed system.

### 2. ELECTRIC PUMP MOTOR

#### a. Electric Pump Motor Removal

- 1) Deploy platform using control pendant (DEPLOY), and then support.
- 2) Disconnect positive battery cable at vehicle battery compartment.
- 3) Refer to **Figure 4-44**. Disconnect heavy electrical connection to pump.



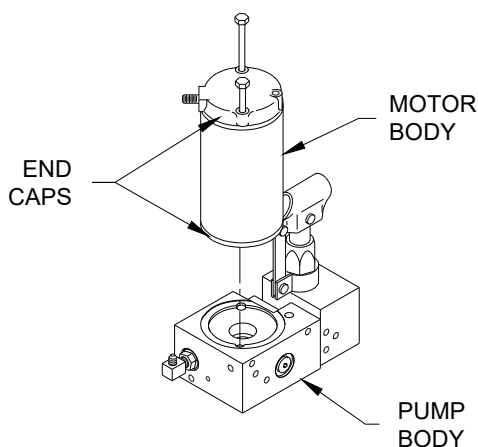


FIGURE 4-44: PUMP MOTOR ORIENTATION

- 4) Remove pump motor assembly from pump body by unthreading two long screws that pass through motor body; do not remove screws. Hold end caps against motor body when removing.

#### b. Electric Pump Motor Installation

**NOTE:** This procedure assumes that pump motor has been removed.

- 1) Inspect shaft seal in pump body for signs of leakage; replace, if necessary.
- 2) Refer to **Figure 4-44**. Locate pump motor assembly on pump body (hold motor assembly together).
- 3) Align screw holes in end caps, motor body, and pump body. Insert two long retaining screws and lightly tighten.
- 4) Connect a 12 or 24 VDC, as appropriate, power source to motor assembly. Connect positive lead to motor terminal and negative lead to pump body.
- 5) Carefully tighten retaining screws as motor spins (hold upper end cap). Do not over tighten screws.
- 6) Raise platform to floor level. Repeat steps 4) and 5) if pump motor is noisy.
- 7) Check all hydraulic connections for leaks, and correct as required.
- 8) If seal in pump body was replaced, refer to HYDRAULIC BLEEDING section in **Chapter II** and bleed system.

### 3. HYDRAULIC CYLINDER

#### a. Hydraulic Cylinder Removal

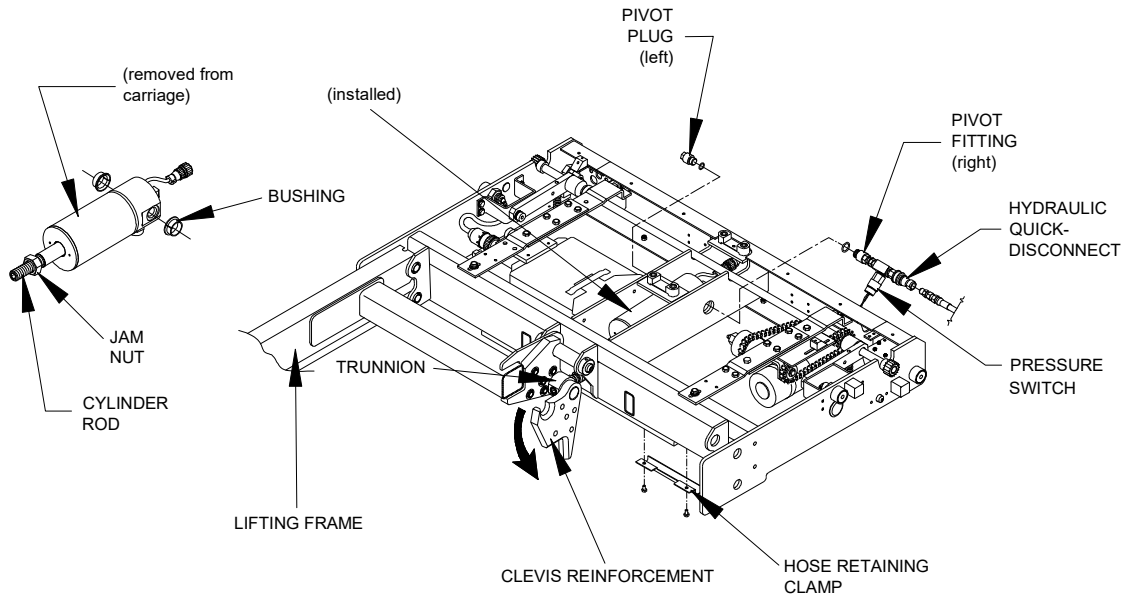
- 1) Deploy platform using control pendant (DEPLOY).
- 2) Raise platform to a comfortable working height and then support.
- 3) To gain access to underside of lift, hold service access panel up, remove two retaining screws and lock-nuts from front edge of panel and lower panel.
- 4) Disconnect positive battery cable at vehicle battery compartment.



#### WARNING

OPENING THE HYDRAULIC PUMP MANUAL RELEASE VALVE WILL ALLOW THE LIFT PLATFORM TO LOWER. STAND CLEAR AND CHECK FOR OBSTRUCTIONS TO PREVENT INJURY OR DAMAGE.

- 5) Open hydraulic pump manual release valve and leave open.
- NOTE:** The following step will spill hydraulic fluid; have dry rags on hand.
- 6) Refer to **Figure 4-45**. Disconnect hydraulic hose from quick-disconnect fitting; this could require removing hose retaining clamp.
  - 7) Disconnect electrical harness from cylinder. Protect exposed connectors on harness and cylinder.
  - 8) Remove pivot fitting from right side of cylinder. Remove pivot plug from left side of cylinder; this will release cylinder from carriage.



**FIGURE 4-45: HYDRAULIC CYLINDER AND RELATED COMPONENTS**

- 9) Remove the five sets of screws, washers, and nuts from both clevis reinforcements. Employ an assistant to raise the lifting frame as far as possible and then pivot each clevis reinforcement downward as shown. Remove clevis reinforcements and bushings from trunnion. Loosen jam nut (located behind trunnion) and remove trunnion.
- 10) Push cylinder assembly upward and towards the rear of the carriage to allow front of cylinder (piston) to drop down. Remove cylinder assembly through bottom of carriage. Remove two bushings from carriage frame.

#### b. Hydraulic Cylinder Installation

- 1) Refer to **Figure 4-45 and 4-46**. Assemble jam nut and trunnion onto hydraulic cylinder piston rod. Install two cylinder pivot bushings into carriage frame (with flanges towards center of frame).
- 2) Insert rear of hydraulic cylinder up into center of carriage, and push cylinder as far up and back as possible. Swing front of cylinder up into carriage.
- 3) Align cylinder ports with bushings, and install pivot plug through carriage frame bushing and into left side of cylinder.
- 4) Install pivot fitting (with hydraulic Quick-Disconnect) through carriage frame bushing and into right side of cylinder.
- 5) Connect hydraulic hose to Quick-Disconnect fitting. Fasten hose retaining clamp to carriage, if removed.
- 6) Verify that hydraulic pump manual release valve is closed. Thread jam nut and trunnion onto piston rod and then extend trunnion out as far as possible with manual backup pump.
- 7) Install two bushings on trunnion, and then install clevis reinforcements. Employ an assistant to raise the lifting frame as far as possible and then pivot each clevis reinforcement upward until its circular notch engages the short tube on the lifting frame. Fasten reinforcements to lifting frame with the five sets of screws, washers, and nuts.
- 8) Refer to HYDRAULIC BLEEDING section in **Chapter II** and bleed system.
- 9) Raise platform to maximum height possible using manual back-up pump. Compare this height to vehicle floor height and note whether platform needs to be raised or lowered.
- 10) Insert a 3/8" hex wrench, or 3/8" hex drive, into end of cylinder rod. Turn rod clockwise to raise platform, and counterclockwise to lower. Adjust to height needed for entry into vehicle. Tighten jam nut against trunnion.

**NOTE:** It could be necessary to lift platform **slightly** to make turning of cylinder rod easier.

- 11) Refer to Platform Stow Height Adjustment section in **Chapter II**, and program stow height. Program intermediate height, if necessary.

#### 4. PRESSURE SWITCH ADJUSTMENT

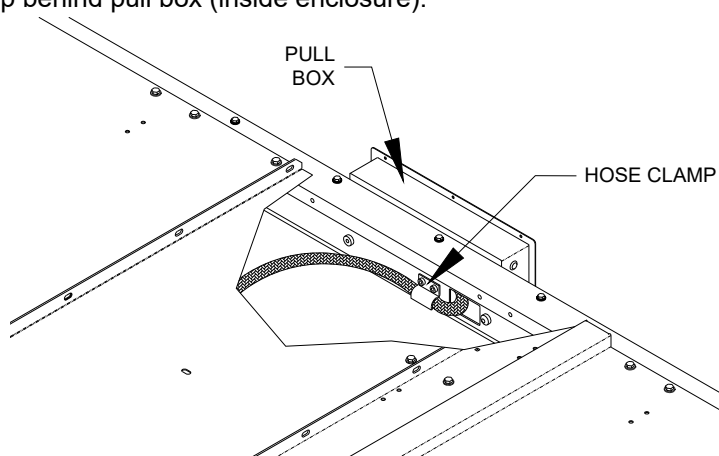
An adjustable, pressure sensing, electrical switch is installed in the hydraulic line connected to the hydraulic cylinder. The switch detects the presence of a load of 50 lbs. (23 kg) on the deployed platform. Correct adjustment of switch inhibits a loaded platform from stowing into vehicle, providing a safety factor for lift users. Refer to the Pressure Switch Adjustment section in **Chapter II** after doing major repair or replacement of components in the hydraulic system.

#### 5. HYDRAULIC HOSE AND MAIN ELECTRICAL HARNESS

A single flexible conduit, containing both a hydraulic hose and an electrical harness, is routed inside the enclosure. It is routed between the pull box and carriage. The hydraulic hose is part of a line that connects the hydraulic pump (located in pump box) to the hydraulic cylinder (platform lifting cylinder). The electrical harness provides power to the lift, and also carries pendant and hydraulic pump motor signals to the carriage-mounted electronic controller.

##### a. Hydraulic Hose and Main Electrical Harness Removal

- 1) Refer to CARRIAGE REMOVAL section and remove platform, lifting frame, and carriage.
- 2) Refer to **Figures 4-45** and **4-46**. Remove hose retaining clamp from bottom of carriage. Remove hose clamp behind pull box (inside enclosure).



**FIGURE 4-46: HOSE CLAMP AT PULL BOX**

**NOTE:** The following step will spill hydraulic fluid; have dry rags on hand.

- 3) Disconnect hydraulic hose from quick-disconnect fitting at lifting cylinder. Disconnect main electrical harness connector from electronic controller (mounted to carriage).
  - 4) Disconnect hydraulic hose from fitting inside pullbox. Disconnect main electrical harness from terminal strip inside pullbox. Make a note of wire colors and terminal numbers. Also, note the routing of conduit and how it is secured.
- b. Remove main electrical harness and hydraulic hose from enclosure (cut tie wraps, where necessary).  
Hydraulic Hose and Main Electrical Harness Installation

**NOTE:** This procedure assumes the conduit containing the main electrical harness and hydraulic hose has been removed.

- 1) Refer to CARRIAGE REMOVAL section and remove platform, lifting frame, and carriage, if present.
- 2) Route main electrical harness and hydraulic hose from enclosure pullbox to carriage.
- 3) Connect hydraulic hose to fitting inside pullbox. Connect main electrical harness to terminal strip inside pullbox.
- 4) Route conduit from pullbox to carriage.
- 5) Connect hydraulic hose to quick-disconnect fitting at lifting cylinder. Connect main electrical harness connector to electronic controller (mounted in carriage).
- 6) Position conduit so that it moves freely with carriage; it must not interfere with carriage movement. The conduit must lie flat against the bottom enclosure cover, and must not twist or loop as carriage moves in and out of enclosure. Secure conduit with tie wraps, where necessary.
- 7) Refer to **Figures 4-45** and **4-46**. Install hose retainer clamp on bottom of carriage. Install hose clamp behind pull box (inside enclosure).
- 8) Refer to end of Carriage Removal section for instructions to install carriage.
- 9) Refer to HYDRAULIC BLEEDING section in **Chapter II** and bleed system.

## F. ELECTRICAL CONTROLS

### 1. GENERAL LIMIT SWITCH REPLACEMENT

There are several limit switches installed in the platform and carriage. The switches are hard-wired to their harnesses at the factory, but can be replaced in the field. Replacement switches are supplied with three wire leads (pigtails). Use this procedure to wire a replacement switch into a harness.

- a. Disconnect positive battery cable at vehicle battery compartment.
- b. Note colors of wire leads on switch to be replaced (red lead and blue lead, red lead and yellow lead, etc). Cut leads close to switch body. Strip a ¼" (6 mm) of insulation off remaining leads.
- c. Cut wire leads on replacement switch to an appropriate length; cut leads long if unsure of exact length. Strip ends of wires ¼" (6 mm).
- d. Place a 1" (25 mm) length of ¼" (6 mm) shrinkable tubing around each switch wire if you are going to solder the new connections. Slide tubing away from end of wire.
- e. Connect each harness lead to appropriate lead on replacement switch. [Contact Ricon Product Support if replacement switch leads are a different color than switch being replaced.] The leads can be joined with crimp-on butt connectors, or soldered together.
- f. Verify integrity of each connection by attempting to pull it apart.
- g. Slide the shrinkable tubing over soldered connections and shrink with a heat gun.
- h. Cut unused switch lead close to switch body.
- i. Remove original switch from its bracket and mount replacement switch in its place.
- j. Refer to appropriate Switch Adjustment section in this chapter and set switch position.
- k. Reconnect positive battery cable at vehicle battery compartment.

### 2. ELECTRONIC CONTROLLER REPLACEMENT

The electronic circuitry inside the controller box receives command inputs from the pendant. It also monitors and controls all lift functions. There are no parts in controller that can be replaced in the field; the entire controller must be replaced if at fault. Verify that replacement controller is appropriate for the application being worked on.



#### CAUTION

The electronic controllers used in the various Ricon Mirage® models are visually similar and physically interchangeable. However, their programming and internal circuitry are different, and they must not be installed in a lift they were not designed for.

- a. Fully deploy lift.
- b. Refer to **Figure 4-36**. The controller is taken out of carriage from below on some models (through access hatch), but can be removed from above on others.
- c. To gain access to underside of lift, hold service access panel up, remove two retaining screws and lock-nuts from front edge of panel, and lower panel.
- d. Disconnect three harness connectors from controller.
- e. Remove two Phillips screws fastening connector-end of controller to its mounting bracket.
- f. Slide rear of controller off of rear bracket and remove controller from carriage.
- g. Position replacement controller inside carriage. Slide loop on top of housing onto rear mounting bracket tab.
- h. Re-install two Phillips screws.
- i. Connect three harness connectors to controller; tighten connectors securely.  
**NOTE:** Each connector is uniquely keyed, and cannot be intermixed. However, do not attempt to force a connector plug onto wrong receptacle.
- j. Raise service access panel, and install two retaining screws and lock-nuts at front edge of panel.
- k. Reconnect positive battery cable at vehicle battery compartment.



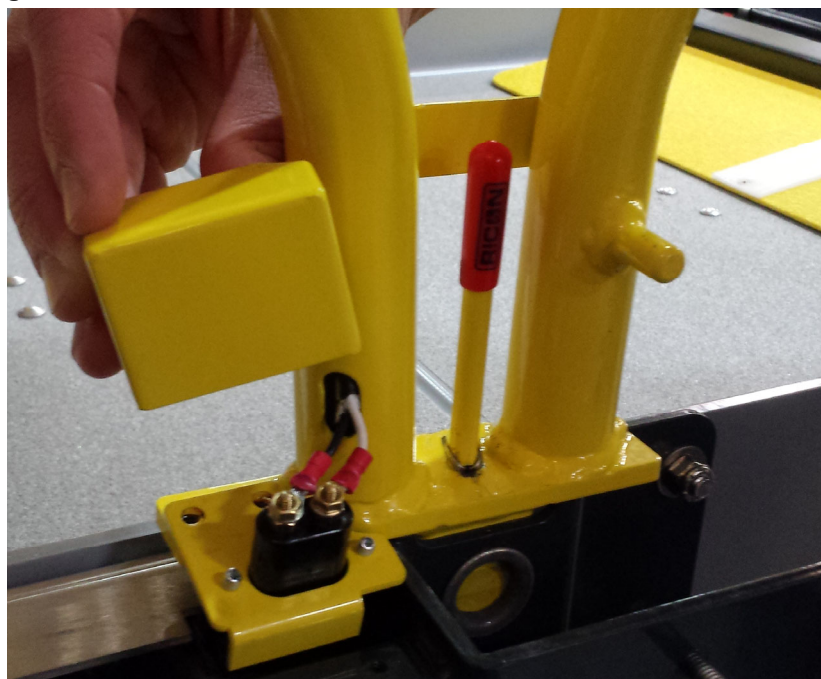
### 3. HYDRAULIC HOSE AND MAIN ELECTRICAL HARNESS

A single flexible conduit, containing both a hydraulic hose and an electrical harness, is routed inside the enclosure. It is routed between the pull box and carriage. The hydraulic hose is part of a line that connects the hydraulic pump (located in pump box) to the hydraulic cylinder (platform lifting cylinder). The electrical harness provides power to the lift, and also carries pendant and hydraulic pump motor signals to the carriage-mounted electronic controller. Refer to the Hydraulic Hose and Main Electrical Harness paragraph in the Hydraulic Power System section for removal and installation instructions.

### 4. CONTACT SWITCH REPLACEMENT

The Contact Switch activates or de-activates the Seat Belt Interlock. When the Seat Belt Interlock is activated the lift should not move up or down. Follow the Contact Switch procedure to replace contact switch.

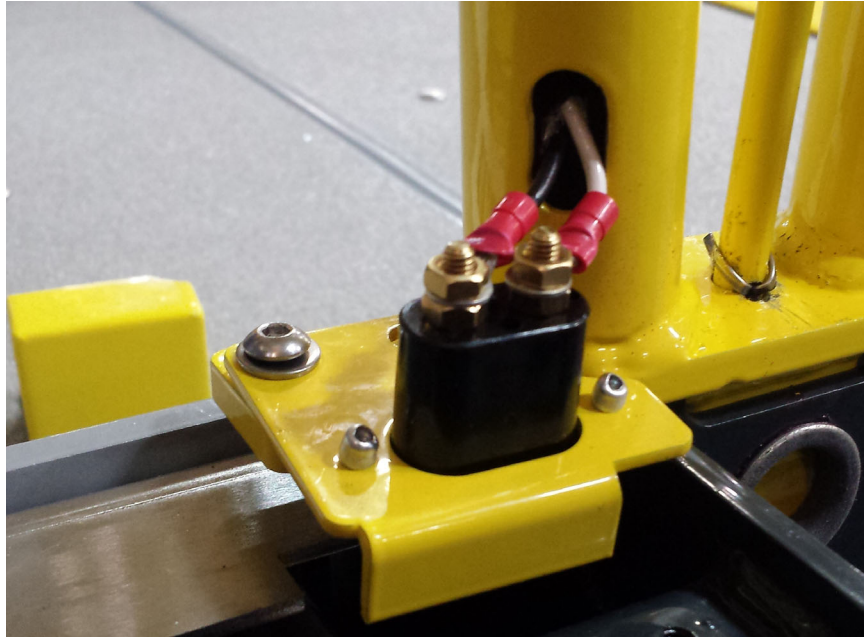
- a. Follow all safety practices before attempting to work on lift.
- b. Deploy lift to floor level and unfold handrails to access the Contact Switch.
- c. Remove power to lift.
- d. Refer to **Figure 4-48**. Remove Contact Switch Enclosure.



**FIGURE 4-48: CONTACT SWITCH ENCLOSURE**

- e. Remove Contact Switch Nuts. Retain nuts for installation.
- f. Replace Contact Switch with Kit, Contact Connector, Hand Rail Assembly, RH (P/N 46520).



**FIGURE 4-49: CONTACT SWITCH**

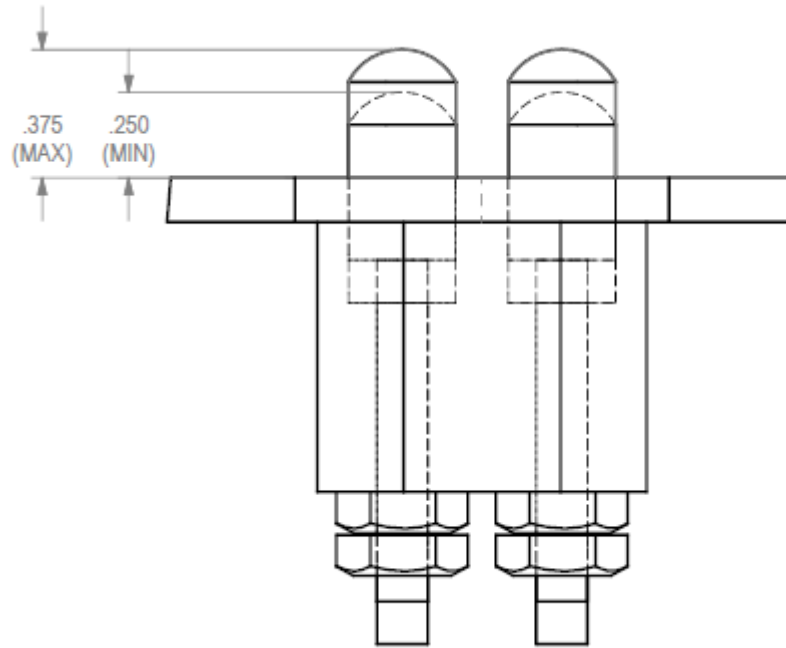
- g. Install nuts and secure Contact Switch.
- h. Replace Contact Switch Enclosure into handrail.
- i. Return power to lift.
- j. Test Seat Belt Interlock by pressing UP or DOWN function without seat belt in belt buckle. The lift should not move UP or DOWN with active seat belt interlock.
- k. Insert seat belt into seat belt buckle then press UP or DOWN. The lift should now move UP or DOWN.

**NOTE:** (F9TF-DE019, F9TH-DE035) It may be necessary to access the carriage assembly from the top due to proximity to bottom of baggage bay. If present, remove the sub-floor panel above the wheelchair lift then remove the first access panel of the wheelchair lift enclosure. Refer to **Appendix** for Installation Instruction 32ii482e.

## 5. CONTACT SWITCH ADJUSTMENT

The Contact Switch activates or de-activates the Seat Belt Interlock. When the Seat Belt Interlock is activated, the lift should not move up or down. Follow the Contact Switch procedure to adjust contact switch.

- a. Follow all safety practices before attempting to work on lift.
- b. Deploy lift to floor level and unfold handrails to access the Contact Switch.
- c. Remove power to lift.
- d. Refer to **Figure 4-48**. Remove Contact Switch Enclosure.
- e. Refer to **Figure 4-50**. Measure the protrusion of the brass plungers relative to the plastic housing.

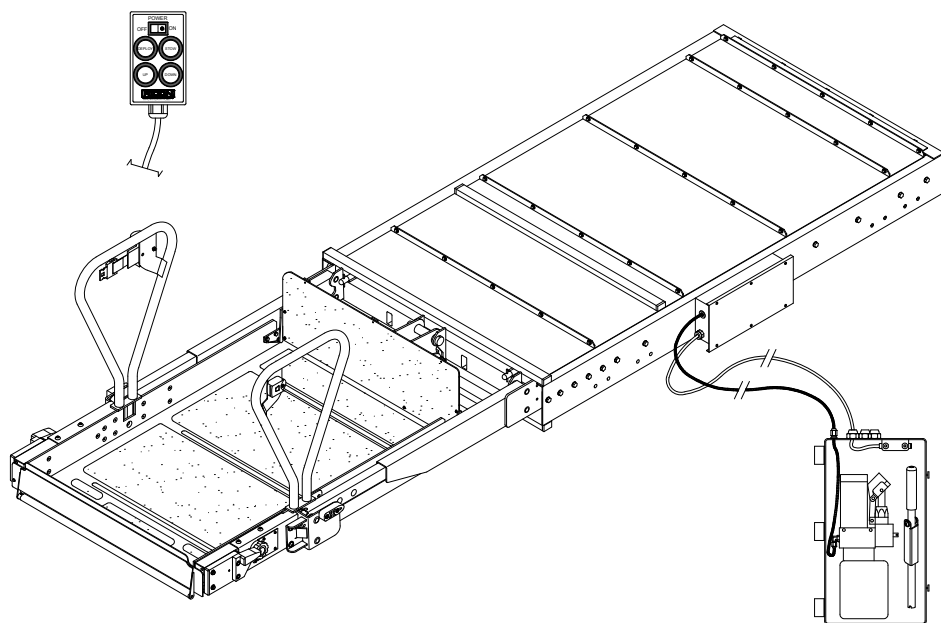
**FIGURE 4-50: CONTACT SWITCH ADJUSTMENT**

- f. If plunger is within the adjustment range, continue to step **i**, otherwise proceed to step **g**.
- g. If plunger is extended beyond 3/8" (9 mm), tighten Contact Switch Nuts by 1/2-turn and return to step **e**.
- h. If plunger is extended less than 1/4" (6 mm), loosen Contact Switch Nuts by 1/2-turn and return to step **e**.
- i. Replace Contact Switch with Kit, Contact Connector, Hand Rail Assembly, RH (P/N 46520).
- j. Install nuts and secure Contact Switch.
- k. Replace Contact Switch Enclosure into handrail.
- l. Return power to lift.
- m. Test Seat Belt Interlock by pressing UP or DOWN function without seat belt in belt buckle. The lift should not move UP or DOWN with active seat belt interlock.
- n. Insert seat belt into seat belt buckle then press UP or DOWN. The lift should now move UP or DOWN.

**NOTE:** (F9TF-DE019, F9TH-DE035) It may be necessary to access the carriage assembly from the top due to proximity to bottom of baggage bay. If present, remove the sub-floor panel above the wheelchair lift then remove the first access panel of the wheelchair lift enclosure. Refer to **Appendix** for Installation Instruction 32ii482e.

## V. MIRAGE® F9TF/F9TH SPARE PARTS

This chapter contains parts illustrations and parts lists for the RICON Mirage® F9TF/F9TH Public Use wheelchair lift. Each exploded view of a major lift assembly shows smaller assemblies, components, and kits referenced with numbers. The accompanying parts list has the part reference number, a part description, the quantity required for one major assembly, and the Ricon part number. Dimensions included in the parts descriptions are in inches, unless otherwise noted.



**NOTE:** To order a part – locate needed part on an exploded diagram, note its reference number, find this reference number on the associated parts list (following page), and order the part number in the far right column. Most kits contain a single part (plus hardware, if applicable). Therefore, you may need to order more than one kit if the part is used more than once on a major assembly.

### SPECIAL PARTS

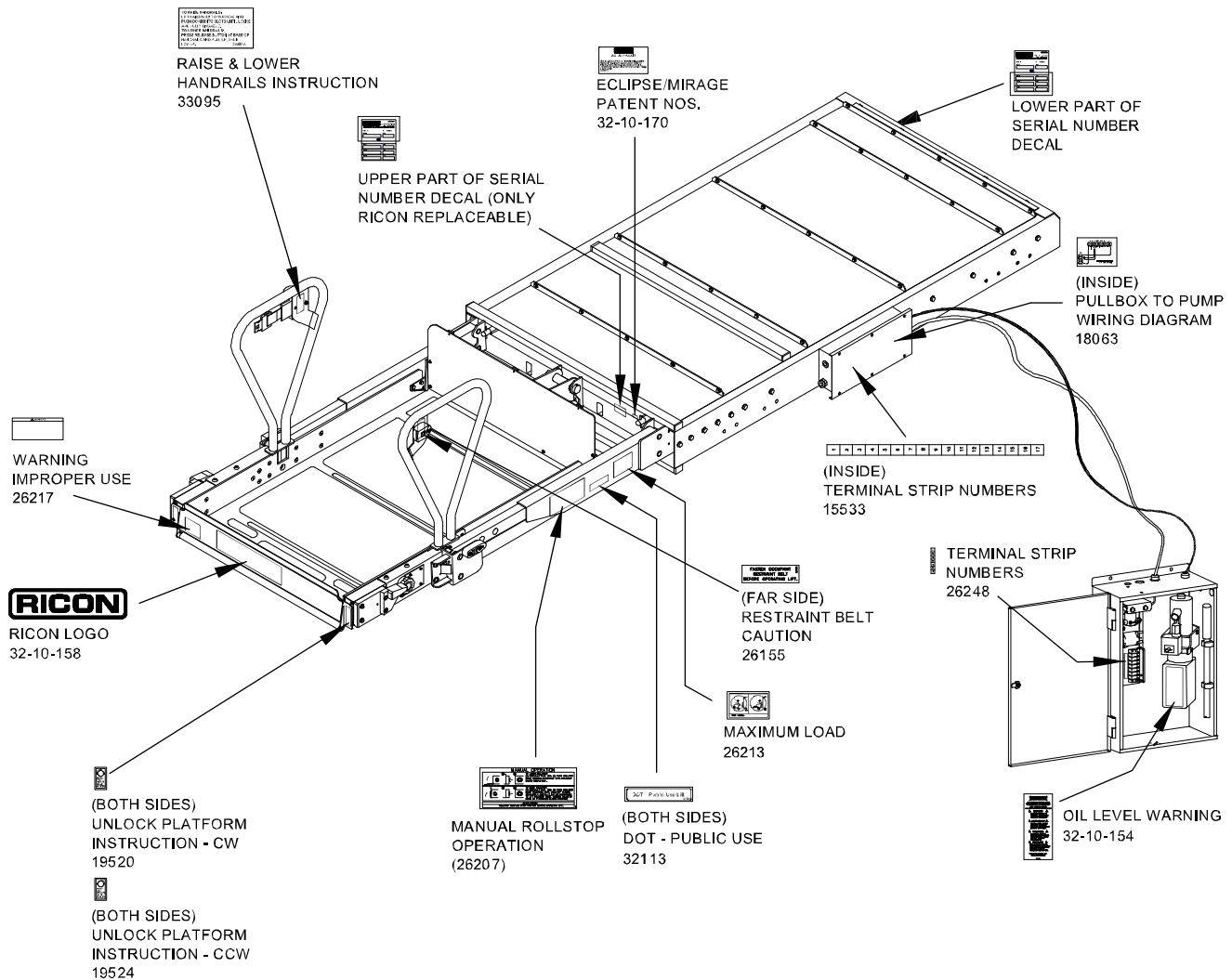
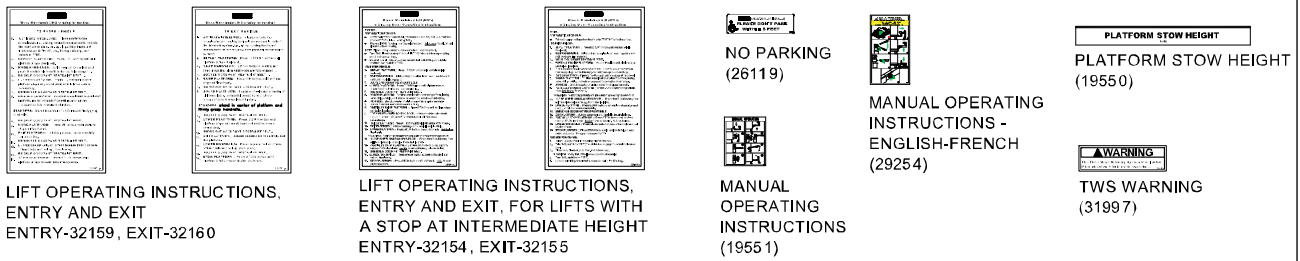
Controller Programming Switch ..... 17885

### PARTS DIAGRAMS ..... PAGE

FIGURE 5-1	F9TF SERIES DECALS - LOCATIONS AND PART NUMBERS.....	5-2
FIGURE 5-2	F9TH SERIES DECALS - LOCATIONS AND PART NUMBERS .....	5-2
FIGURE 5-3	F9TF/F9TH-SERIES PUMP BOX ASSEMBLY .....	5-4
FIGURE 5-4	F9TF/F9TH-SERIES LIFTING FRAME ASSEMBLY .....	5-8
FIGURE 5-5	F9TF/F9TH-SERIES ENCLOSURE ASSEMBLY .....	5-12
FIGURE 5-6	F9TF/F9TH-SERIES PLATFORM ASSEMBLY .....	5-20
FIGURE 5-7	F9TF/F9TH-SERIES PLATFORM ASSEMBLY - LEFT SIDE DETAIL .....	5-26
FIGURE 5-8	F9TF/F9TH-SERIES PLATFORM ASSEMBLY - RIGHT SIDE DETAIL.....	5-28
FIGURE 5-9	F9TF/F9TH-SERIES BRIDGEPLATE ASSEMBLY.....	5-30
FIGURE 5-10	F9TF/F9TH-SERIES CARRIAGE ASSEMBLY .....	5-34
FIGURE 5-11	F9TF/F9TH-SERIES PENDANT, COUNTER & TWS SYSTEM.....	5-40
FIGURE 5-12	F9TF/F9TH-SERIES STOW-LOCK ASSEMBLY .....	5-42



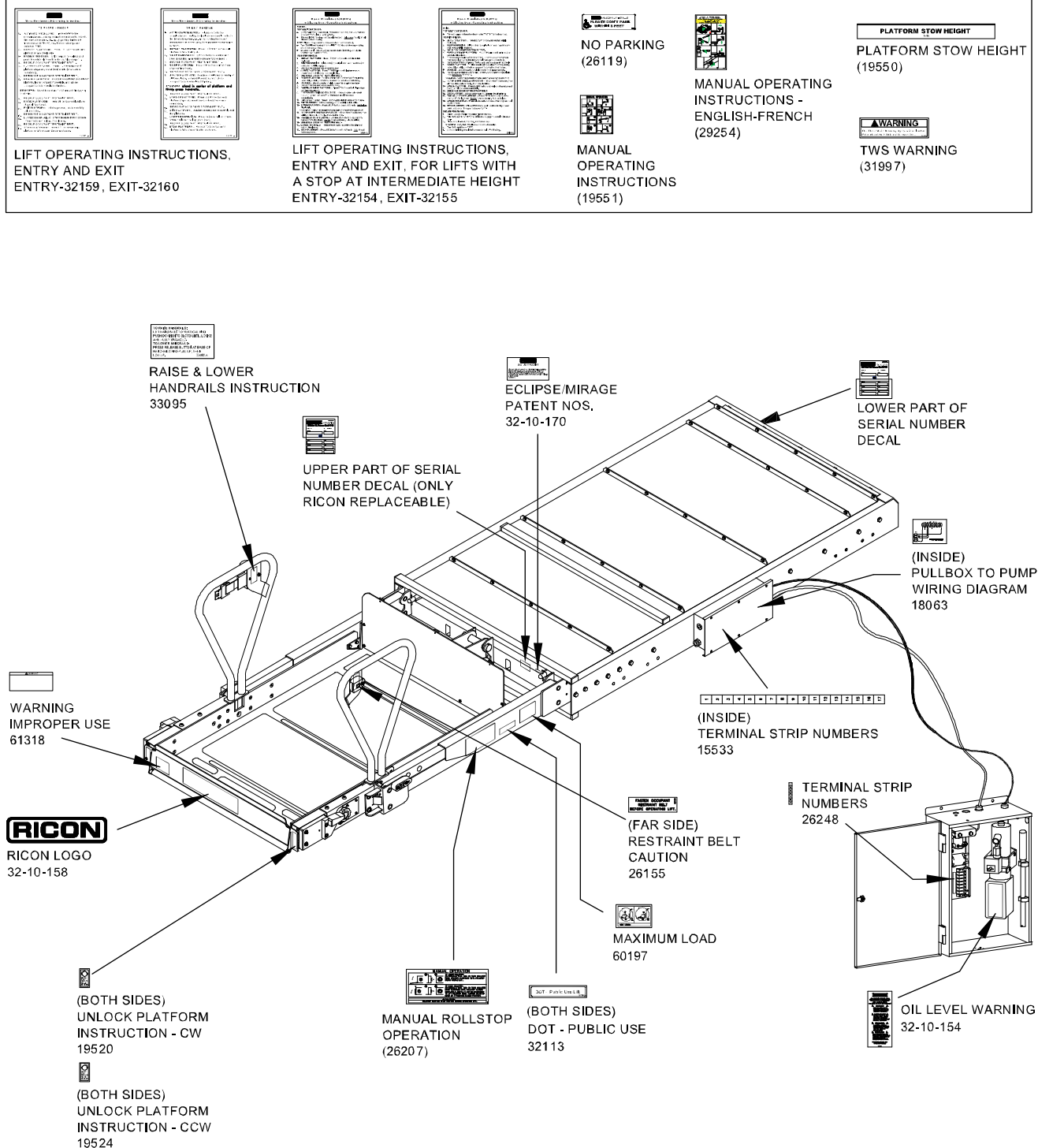
## DECALS AFFIXED TO VEHICLE



RSM0073500

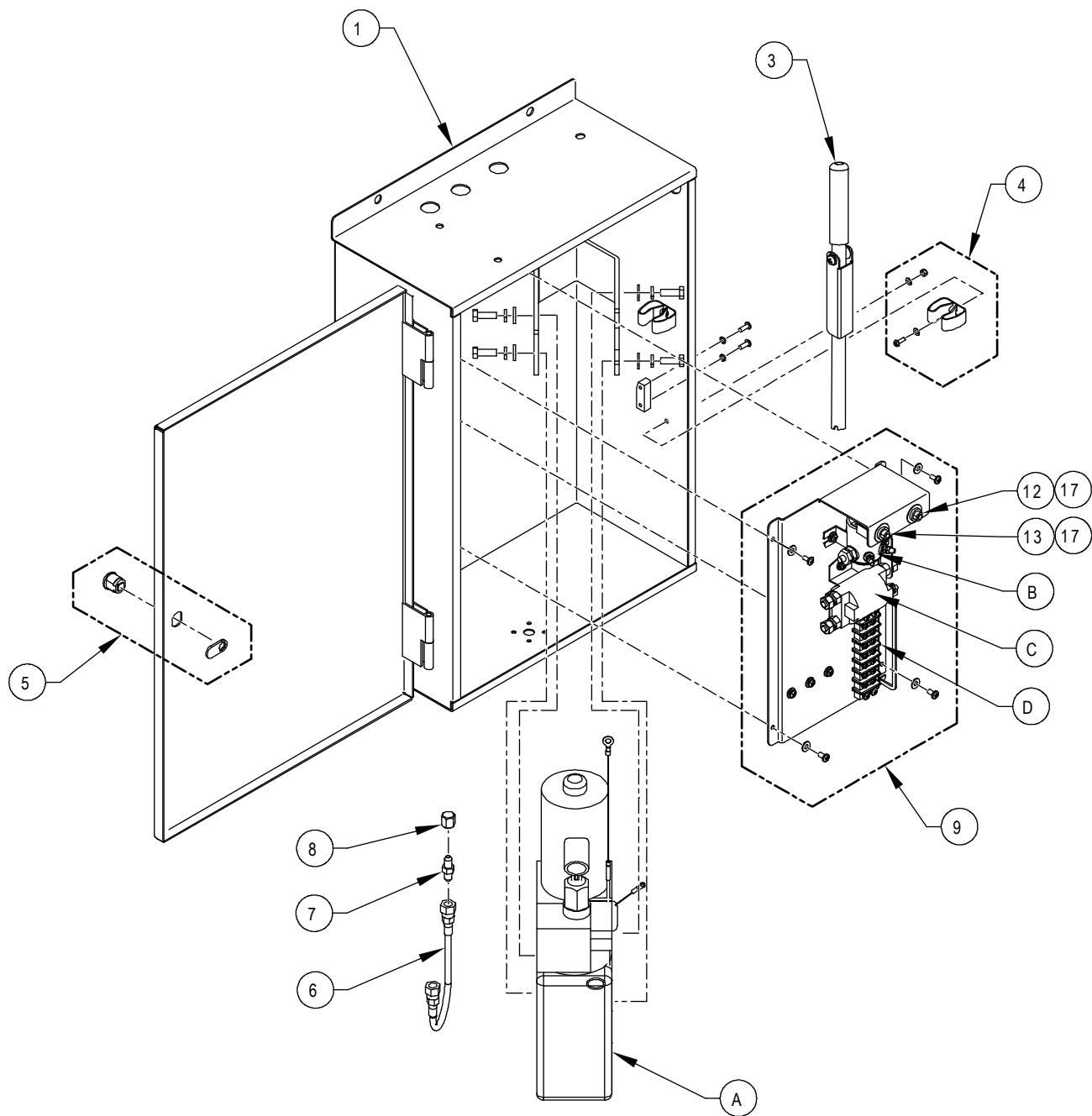
FIGURE 5-1: F9TF-SERIES DECALS - LOCATIONS AND PART NUMBERS

## DECALS AFFIXED TO VEHICLE



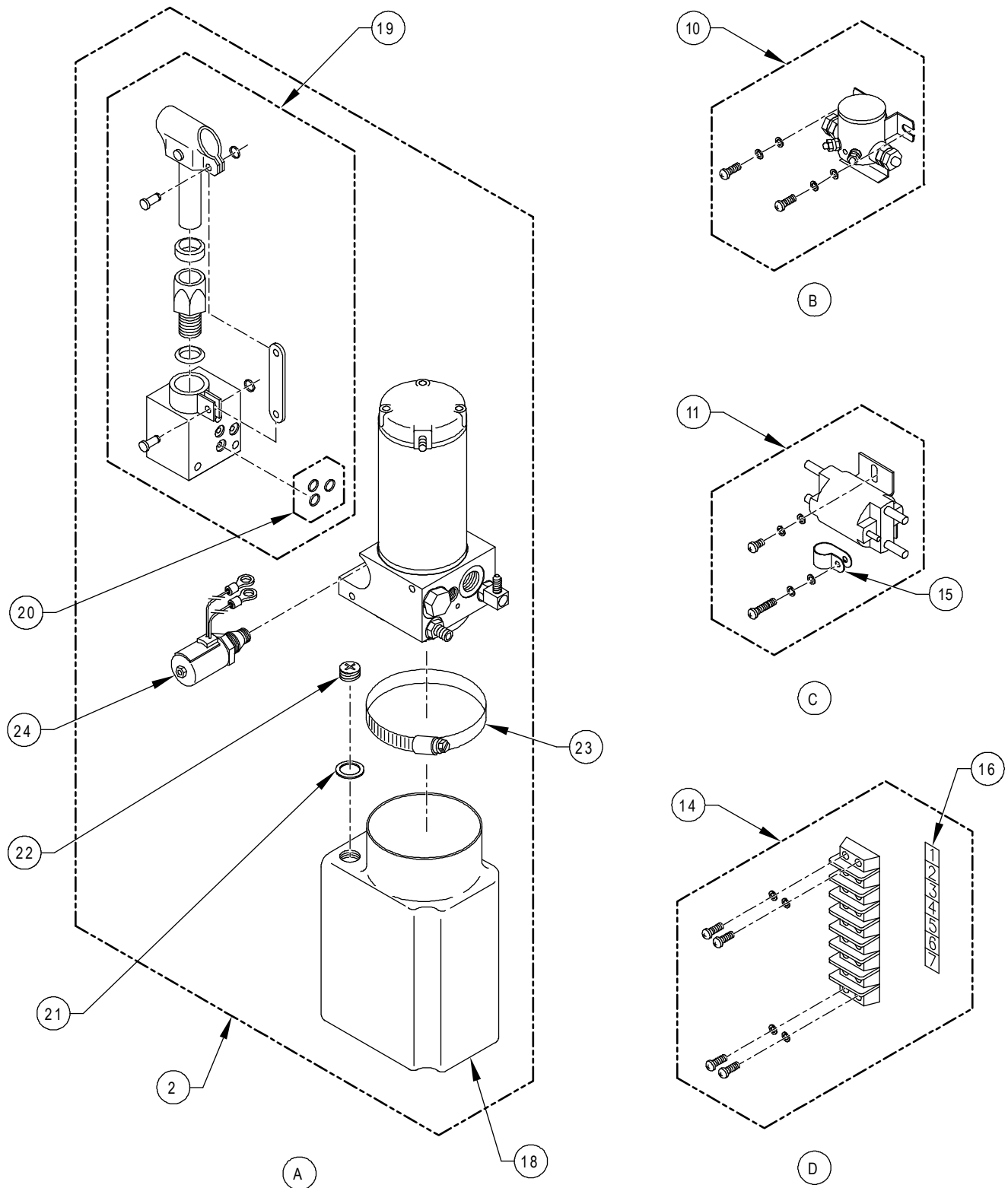
RSM0073600

FIGURE 5-2: F9TH-SERIES DECALS - LOCATIONS AND PART NUMBERS



RSM0048100

FIGURE 5-3: F9TF/F9TH-SERIES PUMP BOX ASSY (SHEET 1 OF 2)



RSM0048200

FIGURE 5-3: F9TF/F9TH-SERIES PUMP BOX ASSY (SHEET 2 OF 2)

FIGURE 5-3: F9TF/F9TH-SERIES PUMP BOX ASSY

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	PUMP ENCLOSURE W/COVER (19644 See Kit)	1	F9TF-DE001	19555
	PUMP ENCLOSURE W/COVER (19644 See Kit)	1	F9TF-DE002	19555
	PUMP ENCLOSURE W/COVER (19644 See Kit)	1	F9TF-DE009	19555
	PUMP ENCLOSURE W/COVER (19644 See Kit)	1	F9TF-DE015	19555
	PUMP ENCLOSURE W/COVER (19644 See Kit)	1	F9TF-DE020	19555
1A *	PUMP ENCLOSURE ASSY	1	F9TF-DE004	F9-0371
*	PUMP ENCLOSURE ASSY	1	F9TF-DE006	F9-0371
*	PUMP ENCLOSURE ASSY	1	F9TF-DE007	F9-0371
*	PUMP ENCLOSURE ASSY	1	F9TF-DE011	F9-0371
*	PUMP ENCLOSURE ASSY	1	F9TF-DE012	F9-0371
*	PUMP ENCLOSURE ASSY	1	F9TF-DE013	F9-0371
*	PUMP ENCLOSURE ASSY	1	F9TF-DE014	F9-0371
*	PUMP ENCLOSURE ASSY	1	F9TF-DE018	F9-0371
*	PUMP ENCLOSURE ASSY	1	F9TF-SG006	F9-0371
*	PUMP ENCLOSURE ASSY	1	F9TF-SG008	F9-0371
*	PUMP ENCLOSURE ASSY	1	F9TF-SG016	F9-0371
*	PUMP ENCLOSURE ASSY	1	F9TF-SG019	F9-0371
*	PUMP ENCLOSURE ASSY	1	F9TF-SG021	F9-0371
2	PUMP ASSY, 2K PSI, 24VDC	1	F9TF-DE001	PM224002007
	PUMP ASSY, 2K PSI, 24VDC	1	F9TF-DE002	PM224002007
	PUMP ASSY, 2K PSI, 24VDC	1	F9TF-DE009	PM224002007
	PUMP ASSY, 2K PSI, 24VDC	1	F9TF-DE015	PM224002007
	PUMP ASSY, 2K PSI, 24VDC	1	F9TF-DE020	PM224002007
2A *	PUMP ASSY, 2K PSI, 24VDC	1	F9TF-DE003	PM224003007
*	PUMP ASSY, 2K PSI, 24VDC	1	F9TF-DE011	PM224003007
*	PUMP ASSY, 2K PSI, 24VDC	1	F9TF-DE013	PM224003007
*	PUMP ASSY, 2K PSI, 24VDC	1	F9TF-DE018	PM224003007
*	PUMP ASSY, 2K PSI, 24VDC	1	F9TF-SG017	PM224003007
*	PUMP ASSY, 2K PSI, 24VDC	1	F9TF-SG019	PM224003007
2B *	PUMP ASSY, 2K PSI, 24VDC	1	F9TF-DE004	PM224162007
*	PUMP ASSY, 2K PSI, 24VDC	1	F9TF-DE019	PM224162007
*	PUMP ASSY, 2K PSI, 24VDC	1	F9TF-DE022	PM224162007
*	PUMP ASSY, 2K PSI, 24VDC	1	F9TF-SG003	PM224162007
*	PUMP ASSY, 2K PSI, 24VDC	1	F9TF-SG006	PM224162007
*	PUMP ASSY, 2K PSI, 24VDC	1	F9TH-DE035	PM224162007
2C *	PUMP ASSY , NO TOP, UV RES W/HORIZ, 2K PSI	1	F9TF-DE006	PM212003007
*	PUMP ASSY , NO TOP, UV RES W/HORIZ, 2K PSI	1	F9TF-DE007	PM212003007
*	PUMP ASSY , NO TOP, UV RES W/HORIZ, 2K PSI	1	F9TF-DE012	PM212003007
*	PUMP ASSY , NO TOP, UV RES W/HORIZ, 2K PSI	1	F9TF-DE014	PM212003007

**NOTE:** (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

**NOTE:** \* Item or configuration not shown.

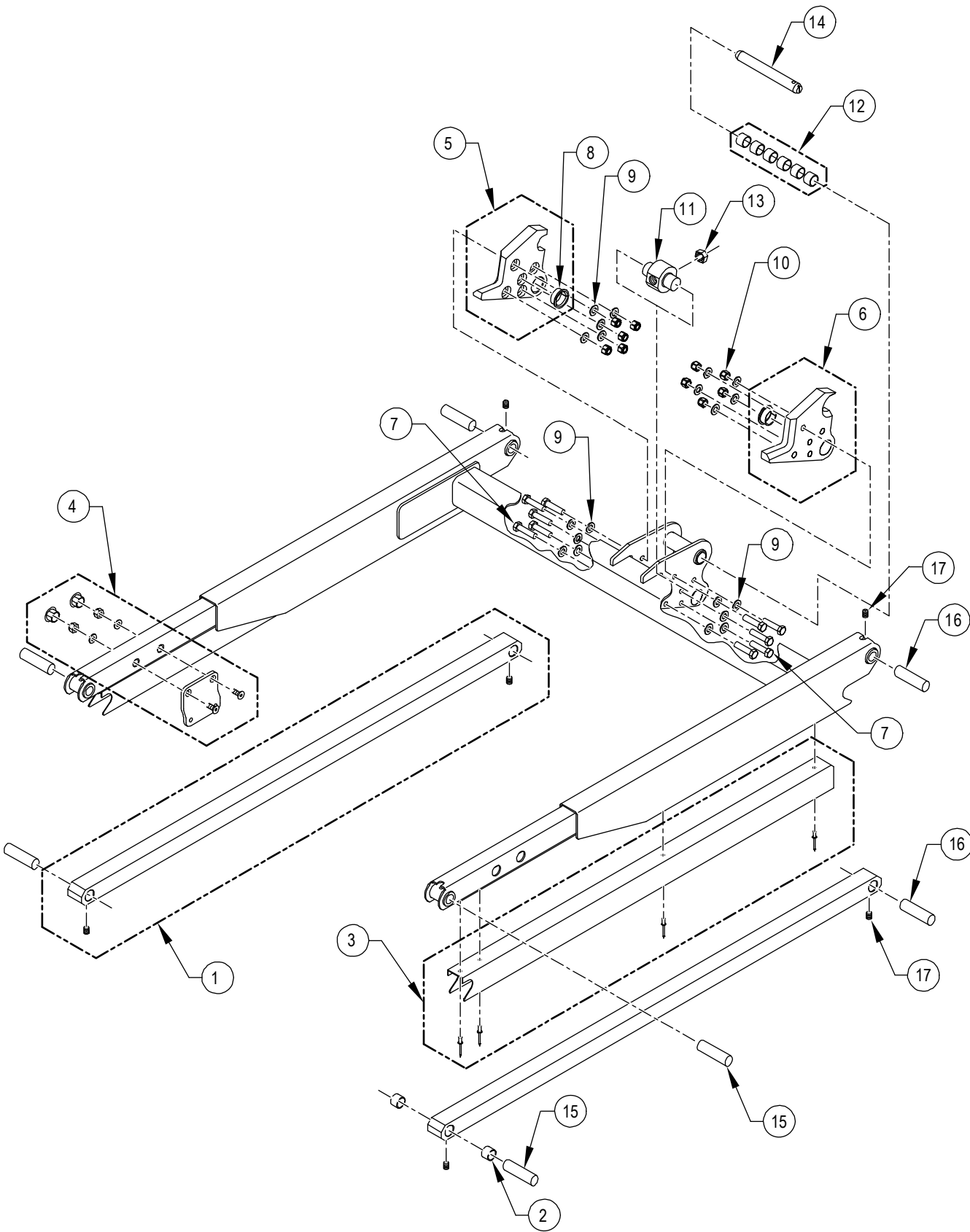


FIGURE 5-3: F9TF/F9TH-SERIES PUMP BOX ASSY (CONT'D)

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
2C *	PUMP ASSY, NO TOP, UV RES W/HORIZ, 2K PSI	1	F9TF-DE016	PM212003007
*	PUMP ASSY, NO TOP, UV RES W/HORIZ, 2K PSI	1	F9TF-DE017	PM212003007
*	PUMP ASSY, NO TOP, UV RES W/HORIZ, 2K PSI (Cont'd)	1	F9TF-SG001	PM212003007
*	PUMP ASSY, NO TOP, UV RES W/HORIZ, 2K PSI	1	F9TF-SG002	PM212003007
*	PUMP ASSY, NO TOP, UV RES W/HORIZ, 2K PSI	1	F9TF-SG007	PM212003007
*	PUMP ASSY, NO TOP, UV RES W/HORIZ, 2K PSI	1	F9TF-SG008	PM212003007
*	PUMP ASSY, NO TOP, UV RES W/HORIZ, 2K PSI	1	F9TF-SG009	PM212003007
*	PUMP ASSY, NO TOP, UV RES W/HORIZ, 2K PSI	1	F9TF-SG011	PM212003007
*	PUMP ASSY, NO TOP, UV RES W/HORIZ, 2K PSI	1	F9TF-SG012	PM212003007
*	PUMP ASSY, NO TOP, UV RES W/HORIZ, 2K PSI	1	F9TF-SG014	PM212003007
*	PUMP ASSY, NO TOP, UV RES W/HORIZ, 2K PSI	1	F9TF-SG016	PM212003007
*	PUMP ASSY, NO TOP, UV RES W/HORIZ, 2K PSI	1	F9TF-SG018	PM212003007
*	PUMP ASSY, NO TOP, UV RES W/HORIZ, 2K PSI	1	F9TF-SG020	PM212003007
*	PUMP ASSY, NO TOP, UV RES W/HORIZ, 2K PSI	1	F9TF-SG021	PM212003007
3	MANUAL BACK-UP PUMP HANDLE	1		20122
4	KIT, TOOL CLIP, PUMP HANDLE	1		01267
5	KIT, PUMP BOX LOCK, W/BLOCK	1		19556
6	HOSE ASSY, HYD, 11" X 1/4JIC X 1/4JIC	1		F9-0333
7	FITTING, BUN, 1/4J, 2.08L	1		V2-SH-981
8	CAP, FITTING, 1/4J, STL	1		V2-SH-13
9	KIT, SOLENOID PLATE ASSY, 24VDC, W/HDWR	1	F9TF MODELS	19677
	KIT, SOLENOID PLATE ASSY, 24VDC, W/HDWR	1	F9TH-DE035	61309
10	KIT, SOLENOID, 24VDC, SINGLE POLE, W/HDWR	1		20667
11	KIT, SOLENOID, 24VDC, DOUBLE POLE, W/HDWR	1		20669
12	CIRCUIT BREAKER, 8A	1		265108
13	CIRCUIT BREAKER, 30A	1		26510
14	KIT, TERMINAL STRIP	1		20666
15	CLAMP, NYLON, 3/8", BLACK, (BAG OF 10)	1		19773
16	DECAL, PUMP TERMINAL STRIP	1		26248
17	ADAPTER, .625, D-HOLE	2		V2-ES-059
18	RESERVOIR, HYDRAULIC POWER UNIT, PLASTIC	1		30938
19	BACK-UP PUMP ASSY, MANUAL W/O HANDLE	1		V2-SH-210
20	SEAL KIT, MANUAL BACK-UP PUMP	1		V2-SH-220
21	WASHER, RUBBER, 1"OD X 5/8"ID X 1/8"	1		21602
22	PLUG, BREATHER, RESERVOIR	1		10333
23	CLAMP, RESERVOIR	1		V2-SH-109
24	DOWN VALVE ASSY, 24VDC	1		V2-SH-136

**NOTE:** (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

**NOTE:** \* Item or configuration not shown.



RSM0047901

FIGURE 5-4: F9TF/F9TH-SERIES LIFTING FRAME ASSEMBLY



**FIGURE 5-4: F9TF/F9TH-SERIES LIFTING FRAME ASSY**

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	KIT, LOWER ARM, D.E., (43.0")	2	F9TF-DE001	19596
	KIT, LOWER ARM, D.E., (43.0")	2	F9TF-DE002	19596
	KIT, LOWER ARM, D.E., (43.0")	2	F9TF-DE003	19596
	KIT, LOWER ARM, D.E., (43.0")	2	F9TF-DE004	19596
	KIT, LOWER ARM, D.E., (43.0")	2	F9TF-DE006	19596
	KIT, LOWER ARM, D.E., (43.0")	2	F9TF-DE007	19596
	KIT, LOWER ARM, D.E., (43.0")	2	F9TF-DE009	19596
	KIT, LOWER ARM, D.E., (43.0")	2	F9TF-DE011	19596
	KIT, LOWER ARM, D.E., (43.0")	2	F9TF-DE014	19596
	KIT, LOWER ARM, D.E., (43.0")	2	F9TF-DE015	19596
	KIT, LOWER ARM, D.E., (43.0")	2	F9TF-DE016	19596
	KIT, LOWER ARM, D.E., (43.0")	2	F9TF-DE017	19596
	KIT, LOWER ARM, D.E., (43.0")	2	F9TF-DE018	19596
	KIT, LOWER ARM, D.E., (43.0")	2	F9TF-DE019	19596
	KIT, LOWER ARM, D.E., (43.0")	2	F9TF-DE020	19596
	KIT, LOWER ARM, D.E., (43.0")	2	F9TF-DE022	19596
1A *	KIT, LOWER ARM (30.313")	2	F9TF-DE012	20630
*	KIT, LOWER ARM (30.313")	2	F9TF-SG001	20630
*	KIT, LOWER ARM (30.313")	2	F9TF-SG007	20630
*	KIT, LOWER ARM (30.313")	2	F9TF-SG008	20630
*	KIT, LOWER ARM (30.313")	2	F9TF-SG009	20630
*	KIT, LOWER ARM (30.313")	2	F9TF-SG011	20630
*	KIT, LOWER ARM (30.313")	2	F9TF-SG014	20630
*	KIT, LOWER ARM (30.313")	2	F9TF-SG017	20630
*	KIT, LOWER ARM (30.313")	2	F9TF-SG020	20630
1B *	KIT, LOWER ARM, W/HARDWARE	2	F9TF-DE013	30944
*	KIT, LOWER ARM, W/HARDWARE	2	F9TF-SG002	30944
*	KIT, LOWER ARM, W/HARDWARE	2	F9TF-SG003	30944
*	KIT, LOWER ARM, W/HARDWARE	2	F9TF-SG006	30944
*	KIT, LOWER ARM, W/HARDWARE	2	F9TF-SG012	30944
*	KIT, LOWER ARM, W/HARDWARE	2	F9TF-SG016	30944
*	KIT, LOWER ARM, W/HARDWARE	2	F9TF-SG018	30944
*	KIT, LOWER ARM, W/HARDWARE	2	F9TF-SG019	30944
*	KIT, LOWER ARM, W/HARDWARE	2	F9TF-SG021	30944
2	BUSHING, .88OD X .75ID X .38	4		20261
3	KIT, COVER, LOWER ARM	2	F9TF MODELS	19598
	KIT, COVER, LOWER ARM	2	F9TH-DE035	61335

**NOTE:** (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

**NOTE:** \* Item or configuration not shown.

**FIGURE 5-4: F9TF-SERIES LIFTING FRAME ASSY (CONT'D)**

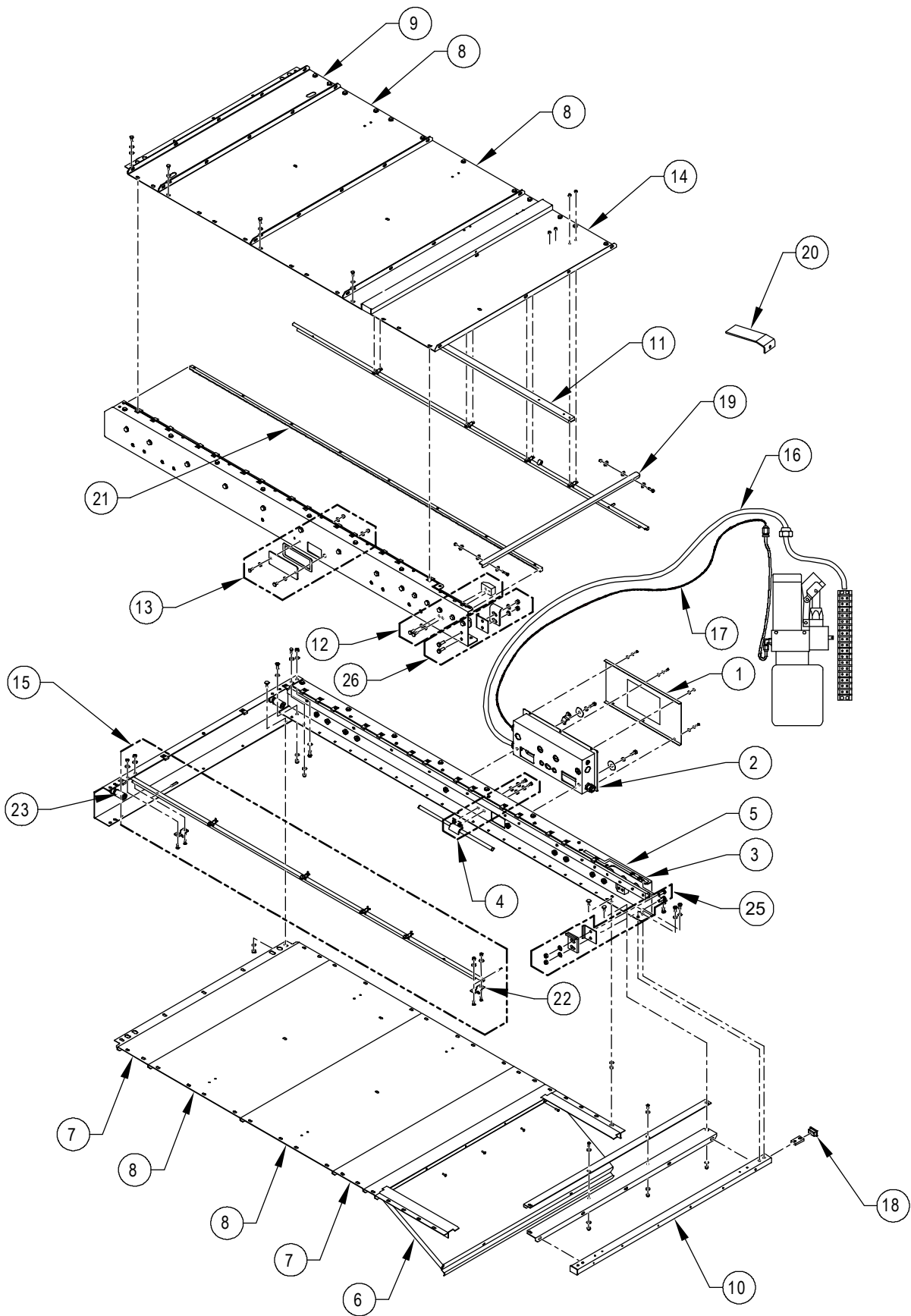
FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
4	KIT, PLATE, BRIDGEPLATE ACTUATOR	2	F9TF MODELS	19599
	KIT, PLATE, BRIDGEPLATE ACTUATOR	2	F9TH-DE035	61334
5	PLATE ASSEMBLY, CLEVIS REINFORCEMENT, LH	1	F9TF MODELS	19879
	PLATE ASSEMBLY, CLEVIS REINFORCEMENT, LH	2	F9TH-DE035	60133
6	PLATE ASSEMBLY, CLEVIS REINFORCEMENT, RH	1	F9TF MODELS	19880
	PLATE ASSEMBLY, CLEVIS REINFORCEMENT, RH	1	F9TH-DE035	60134
7	SCREW, HEX, 3/8-16 X 1 ½, SST, (BAG OF 10)	1		25606
8	BEARING, FLANGED, 1.00ID X .75W	2		27071
9	WASHER, FLAT, .40 X .75 X .06, SST, (BAG OF 10)	2		32184
10	NUT, ESN, 3/8-16, SST, (BAG OF 10)	1		25605
11	TRUNNION, SOLID PIN	1	F9TF MODELS	19870
	TRUNNION, SOLID PIN	1	F9TH-DE035	60183
12	KIT, BEARING, .75ID X .875OD X .63W	1		20600
13	NUT, JAM, 3/4-16	1		14-08-110
14	PIN, .75D X 6.0L	1	F9TF MODELS	F8-0041
	PIN, .75D X 6.9L	1	F9TH-DE035	60184
15	PIN, PIVOT, ARM	4		32954
16	PIN, PIVOT, LIFT FRAME, 2.890 L	4		F9-0089
17	SCREW, HSS, 5/16-18 (BAG OF 10)	1		19734

**NOTE:** (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

**NOTE:** \* Item or configuration not shown.

This page intentionally left blank.





RSM0075600

FIGURE 5-5: F9TF/F9TH-SERIES ENCLOSURE ASSEMBLY

FIGURE 5-5: F9TF/F9TH-SERIES ENCLOSURE ASSY

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	KIT, PULLBOX COVER, W/DECAL	1		19562
2	PULLBOX ASSY, W/TERM STRIP, HARN, FITTING, AND HDWR	1		33401
3	RAIL, GUIDE, CARRIAGE	2		F9-0101
4	KIT, HOSE CLAMP	1		19564
5	WEATHER STRIP, 1/8 X 1/2 X 100 FEET	1		06-06-107
6	KIT, SERVICE ACCESS PANEL, W/HDWR	1	F9TF MODELS	19565
	KIT, SERVICE ACCESS PANEL, W/HDWR	1	F9TH-DE035	61338
7	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-DE001	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-DE002	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-DE003	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-DE006	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-DE007	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-DE009	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-DE011	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-DE012	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-DE013	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-DE014	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-DE015	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-DE016	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-DE017	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-DE018	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-DE020	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-SG001	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-SG002	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-SG003	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-SG006	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-SG007	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-SG008	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-SG009	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-SG011	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-SG012	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-SG014	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-SG016	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-SG017	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-SG018	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-SG019	19570
	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-SG020	19570

**NOTE:** (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

**NOTE:** \* Item or configuration not shown.

**NOTE:** \*\* Some configurations require alternate applications. Refer to the configuration column to match the part number with the lift configuration installed in vehicle.

**FIGURE 5-5: F9TF/F9TH-SERIES ENCLOSURE ASSY (CONT'D)**

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
7	KIT, ENCLOSURE COVER, BOTTOM, W/HDWR	2	F9TF-SG021	19570
7A *	ENCLOSURE COVER, BOTTOM, 6.66"	REF	F9TF-DE004	29610
*	ENCLOSURE COVER, BOTTOM, 6.66"	REF	F9TF-DE019	29610
*	ENCLOSURE COVER, BOTTOM, 6.66"	REF	F9TF-DE022	29610
*	ENCLOSURE COVER, BOTTOM, 6.66"	REF	F9TH-DE035	60142
8	KIT, ENCLOSURE COVER, 19.98" W/HDWR,	4	F9TF MODELS	19566
	KIT, ENCLOSURE COVER, 19.98" W/HDWR,	4	F9TH-DE035	61339
9	KIT, ENCLOSURE COVER, 6.6" W/HDWR	1	F9TF MODELS	19571
	KIT, ENCLOSURE COVER, 6.6" W/HDWR	1	F9TH-DE035	61340
10	TUBE, FORWARD CROSSMEMBER	1	F9TF MODELS	30967
	TUBE, FORWARD CROSSMEMBER	1	F9TH-DE035	60141
11	RAIL, CARRIAGE GUIDE	1		F9-0142
12	KIT, STOP BLOCK	2		19567
13	KIT, BLOCK-OFF PLATE	1		19568
14	KIT, ENCLOSURE COVER, LINKAGE, W/HDWR	1	F9TF MODELS	19569
	KIT, ENCLOSURE COVER, LINKAGE, W/HDWR	1	F9TH-DE035	61341
15	KIT, PLATFORM RELEASE SHAFT	2	F9TF-DE001	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-DE002	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-DE003	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-DE006	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-DE007	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-DE009	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-DE011	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-DE012	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-DE013	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-DE014	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-DE015	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-DE016	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-DE017	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-DE018	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-DE019	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-DE020	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-SG001	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-SG002	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-SG003	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-SG006	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-SG007	20639

**NOTE:** (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

**NOTE:** \* Item or configuration not shown.

**NOTE:** \*\* Some configurations require alternate applications. Refer to the configuration column to match the part number with the lift configuration installed in vehicle.

FIGURE 5-5: F9TF/F9TH-SERIES ENCLOSURE ASSY (CONT'D)

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
15	KIT, PLATFORM RELEASE SHAFT	2	F9TF-SG008	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-SG009	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-SG011	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-SG012	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-SG014	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-SG016	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-SG017	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-SG018	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-SG019	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-SG020	20639
	KIT, PLATFORM RELEASE SHAFT	2	F9TF-SG021	20639
15A *	KIT, PLATFORM RELEASE SHAFT	2	F9TF-DE004	20640
*	KIT, PLATFORM RELEASE SHAFT	2	F9TF-DE019	20640
*	KIT, PLATFORM RELEASE SHAFT	2	F9TF-DE022	20640
16	HARNESS, PUMP TO PULLBOX, 12FT	1	F9TF-DE001	18070
	HARNESS, PUMP TO PULLBOX, 12FT	1	F9TF-DE002	18070
	HARNESS, PUMP TO PULLBOX, 12FT	1	F9TF-DE007	18070
	HARNESS, PUMP TO PULLBOX, 12FT	1	F9TF-DE009	18070
	HARNESS, PUMP TO PULLBOX, 12FT	1	F9TF-DE012	18070
	HARNESS, PUMP TO PULLBOX, 12FT	1	F9TF-DE013	18070
	HARNESS, PUMP TO PULLBOX, 12FT	1	F9TF-DE015	18070
	HARNESS, PUMP TO PULLBOX, 12FT	1	F9TF-DE016	18070
	HARNESS, PUMP TO PULLBOX, 12FT	1	F9TF-DE017	18070
	HARNESS, PUMP TO PULLBOX, 12FT	1	F9TF-SG001	18070
	HARNESS, PUMP TO PULLBOX, 12FT	1	F9TF-SG007	18070
	HARNESS, PUMP TO PULLBOX, 12FT	1	F9TF-SG008	18070
	HARNESS, PUMP TO PULLBOX, 12FT	1	F9TF-SG009	18070
	HARNESS, PUMP TO PULLBOX, 12FT	1	F9TF-SG012	18070
	HARNESS, PUMP TO PULLBOX, 12FT	1	F9TF-SG016	18070
	HARNESS, PUMP TO PULLBOX, 12FT	1	F9TF-SG017	18070
	HARNESS, PUMP TO PULLBOX, 12FT	1	F9TF-SG018	18070
	HARNESS, PUMP TO PULLBOX, 12FT	1	F9TF-SG021	18070
16A *	HARNESS, PUMP TO PULLBOX, 23FT	1	F9TF-DS001	19993
*	HARNESS, PUMP TO PULLBOX, 23FT	1	F9TF-SG002	19993
*	HARNESS, PUMP TO PULLBOX, 23FT	1	F9TF-SG003	19993
*	HARNESS, PUMP TO PULLBOX, 23FT	1	F9TF-SG006	19993
*	HARNESS, PUMP TO PULLBOX, 23FT	1	F9TF-SG019	19993

**NOTE:** (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

**NOTE:** \* Item or configuration not shown.

**NOTE:** \*\* Some configurations require alternate applications. Refer to the configuration column to match the part number with the lift configuration installed in vehicle.



**FIGURE 5-5: F9TF/F9TH-SERIES ENCLOSURE ASSY (CONT'D)**

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
16B *	HARNESS, PUMP TO PULLBOX, 23FT	1	F9TF-SG011	F9-EHR-17
*	HARNESS, PUMP TO PULLBOX, 23FT	1	F9TF-SG014	F9-EHR-17
*	HARNESS, PUMP TO PULLBOX, 23FT	1	F9TF-SG020	F9-EHR-17
16C *	HARNESS,STOW POSITION PROGRAMMING SW	1	F9TF-DE004	17884
*	HARNESS,STOW POSITION PROGRAMMING SW	1	F9TF-DE019	17884
*	HARNESS,STOW POSITION PROGRAMMING SW	1	F9TF-DE022	17884
17	HYDRAULIC HOSE ASSY, SYNDFLEX, 12'	1	F9TF-DE001	F9-HH-12
	HYDRAULIC HOSE ASSY, SYNDFLEX, 12'	1	F9TF-DE002	F9-HH-12
	HYDRAULIC HOSE ASSY, SYNDFLEX, 12'	1	F9TF-DE003	F9-HH-12
	HYDRAULIC HOSE ASSY, SYNDFLEX, 12'	1	F9TF-DE006	F9-HH-12
	HYDRAULIC HOSE ASSY, SYNDFLEX, 12'	1	F9TF-DE007	F9-HH-12
	HYDRAULIC HOSE ASSY, SYNDFLEX, 12'	1	F9TF-DE009	F9-HH-12
	HYDRAULIC HOSE ASSY, SYNDFLEX, 12'	1	F9TF-DE011	F9-HH-12
	HYDRAULIC HOSE ASSY, SYNDFLEX, 12'	1	F9TF-DE012	F9-HH-12
	HYDRAULIC HOSE ASSY, SYNDFLEX, 12'	1	F9TF-DE013	F9-HH-12
	HYDRAULIC HOSE ASSY, SYNDFLEX, 12'	1	F9TF-DE014	F9-HH-12
	HYDRAULIC HOSE ASSY, SYNDFLEX, 12'	1	F9TF-DE015	F9-HH-12
	HYDRAULIC HOSE ASSY, SYNDFLEX, 12'	1	F9TF-SG007	F9-HH-12
	HYDRAULIC HOSE ASSY, SYNDFLEX, 12'	1	F9TF-SG008	F9-HH-12
	HYDRAULIC HOSE ASSY, SYNDFLEX, 12'	1	F9TF-SG009	F9-HH-12
	HYDRAULIC HOSE ASSY, SYNDFLEX, 12'	1	F9TF-SG012	F9-HH-12
	HYDRAULIC HOSE ASSY, SYNDFLEX, 12'	1	F9TF-SG016	F9-HH-12
	HYDRAULIC HOSE ASSY, SYNDFLEX, 12'	1	F9TF-SG018	F9-HH-12
17A *	HYDRAULIC HOSE ASSY, 23'	1	F9TF-DS001	F9-HH-23
*	HYDRAULIC HOSE ASSY, 23'	1	F9TF-SG002	F9-HH-23
*	HYDRAULIC HOSE ASSY, 23'	1	F9TF-SG003	F9-HH-23
*	HYDRAULIC HOSE ASSY, 23'	1	F9TF-SG019	F9-HH-23
17B *	HYDRAULIC HOSE ASSY, SYNDFLEX, 13.75'	1	F9TF-DE004	28883
*	HYDRAULIC HOSE ASSY, SYNDFLEX, 13.75'	1	F9TF-DE019	28883
*	HYDRAULIC HOSE ASSY, SYNDFLEX, 13.75'	1	F9TF-DE022	28883
*	HYDRAULIC HOSE ASSY, SYNDFLEX, 13.75'	1	F9TF-SG003	28883
17C *	HYDRAULIC HOSE ASSY, SYNDFLEX, 6'	1	F9TF-DE016	F9-HH-06
*	HYDRAULIC HOSE ASSY, SYNDFLEX, 6'	1	F9TF-DE017	F9-HH-06
*	HYDRAULIC HOSE ASSY, SYNDFLEX, 6'	1	F9TF-DE018	F9-HH-06
17D *	HYDRAULIC HOSE ASSY, SYNDFLEX, 21'	1	F9TF-DE020	F9-HH-21
17E *	HYDRAULIC HOSE ASSY, SYNDFLEX, 17'	1	F9TF-SG006	F9-HH-17
*	HYDRAULIC HOSE ASSY, SYNDFLEX, 17'	1	F9TF-SG011	F9-HH-17
*	HYDRAULIC HOSE ASSY, SYNDFLEX, 17'	1	F9TF-SG014	F9-HH-17

**NOTE:** (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

**NOTE:** \* Item or configuration not shown.

**NOTE:** \*\* Some configurations require alternate applications. Refer to the configuration column to match the part number with the lift configuration installed in vehicle.

FIGURE 5-5: F9TF/F9TH-SERIES ENCLOSURE ASSY (CONT'D)

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
17E *	HYDRAULIC HOSE ASSY, SYNFLEX, 17'	1	F9TF-SG020	F9-HH-17
17F *	HYDRAULIC HOSE ASSY, SYNFLEX, 9'	1	F9TF-SG021	F9-HH-09
18	PLUG, RECTANGULAR, 1.0 X 1.5, NYLON, BLACK	4		25564
19	TIE BAR, PLATFORM RELEASE SHAFTS	1		19622
20	BRACKET, BRIDGEPLATE GUIDE	1	F9TF-DS001	19687
	BRACKET, BRIDGEPLATE GUIDE	1	F9TF-DE001	19687
	BRACKET, BRIDGEPLATE GUIDE	1	F9TF-DE002	19687
	BRACKET, BRIDGEPLATE GUIDE	1	F9TF-DE014	19687
	BRACKET, BRIDGEPLATE GUIDE	1	F9TF-DE015	19687
	BRACKET, BRIDGEPLATE GUIDE	1	F9TF-DE016	19687
	BRACKET, BRIDGEPLATE GUIDE	1	F9TF-DE020	19687
21	GEAR RACK	2		F9-0028
22	BRACKET, PLATFORM RELEASE SHAFT	4		19621
23	BUMPER, CARRIAGE STOP	2	F9TF-DE001	F9-0046
	BUMPER, CARRIAGE STOP	2	F9TF-DE002	F9-0046
	BUMPER, CARRIAGE STOP	2	F9TF-DE003	F9-0046
	BUMPER, CARRIAGE STOP	2	F9TF-DE006	F9-0046
	BUMPER, CARRIAGE STOP	2	F9TF-DE007	F9-0046
	BUMPER, CARRIAGE STOP	2	F9TF-DE009	F9-0046
	BUMPER, CARRIAGE STOP	2	F9TF-DE011	F9-0046
	BUMPER, CARRIAGE STOP	2	F9TF-DE014	F9-0046
	BUMPER, CARRIAGE STOP	2	F9TF-DE015	F9-0046
	BUMPER, CARRIAGE STOP	2	F9TF-DE016	F9-0046
	BUMPER, CARRIAGE STOP	2	F9TF-DE017	F9-0046
	BUMPER, CARRIAGE STOP	2	F9TF-DE018	F9-0046
	BUMPER, CARRIAGE STOP	2	F9TF-DE020	F9-0046
	BUMPER, CARRIAGE STOP	2	F9TF-SG006	F9-0046
	BUMPER, CARRIAGE STOP	2	F9TF-SG007	F9-0046
	BUMPER, CARRIAGE STOP	2	F9TF-SG008	F9-0046
	BUMPER, CARRIAGE STOP	2	F9TF-SG009	F9-0046
	BUMPER, CARRIAGE STOP	2	F9TF-SG011	F9-0046
	BUMPER, CARRIAGE STOP	2	F9TF-SG012	F9-0046
	BUMPER, CARRIAGE STOP	2	F9TF-SG014	F9-0046
23	BUMPER, CARRIAGE STOP	2	F9TF-SG018	F9-0046
	BUMPER, CARRIAGE STOP	2	F9TF-SG021	F9-0046
23A *	BUMPER, CARRIAGE STOP	2	F9TF-DS001	F9-0563
*	BUMPER, CARRIAGE STOP	2	F9TF-DE012	F9-0563
*	BUMPER, CARRIAGE STOP	2	F9TF-DE013	F9-0563

**NOTE:** (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

**NOTE:** \* Item or configuration not shown.

**NOTE:** \*\* Some configurations require alternate applications. Refer to the configuration column to match the part number with the lift configuration installed in vehicle.

**FIGURE 5-5: F9TF/F9TH-SERIES ENCLOSURE ASSY (CONT'D)**

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
23B *	BAR, CARRIAGE STOP	REF	F9TF-SG001	19499
*	BAR, CARRIAGE STOP	REF	F9TF-SG002	19499
*	BAR, CARRIAGE STOP	REF	F9TF-SG003	19499
*	BAR, CARRIAGE STOP	REF	F9TF-SG003	19499
*	BAR, CARRIAGE STOP	REF	F9TF-SG017	19499
*	BAR, CARRIAGE STOP	REF	F9TF-SG019	19499
*	BAR, CARRIAGE STOP	REF	F9TF-SG020	19499
23C *	KIT, STOP BLOCK, w/HDWR	1	F9TF-DE004	19567
*	KIT, STOP BLOCK, w/HDWR	1	F9TF-DE019	19567
*	KIT, STOP BLOCK, w/HDWR	1	F9TF-DE022	19567
24	STOW LOCK PARTS, MCI	1	F9TF-DE001	44998
	STOW LOCK PARTS, MCI	1	F9TF-DE002	44998
	STOW LOCK PARTS, MCI	1	F9TF-DE009	44998
	STOW LOCK PARTS, MCI	1	F9TF-DE015	44998
24A **	KIT, STOW LOCK W/SHIMS, REAR MOUNT	1	F9TF-DE003	19933
24B **	STOW LOCK PARTS, LH MOUNT, PREVOST	1	F9TF-DE019	55213
**	STOW LOCK PARTS, LH MOUNT, PREVOST	1	F9TF-DE022	55213
24C **	STOW LOCK PARTS, MCI	1	F9TF-DE020	48139
24D **	KIT, STOW LOCK W/SHIMS, REAR MOUNT	1	F9TF-DS001	20108
**	KIT, STOW LOCK W/SHIMS, REAR MOUNT	1	F9TF-SG001	20108
**	KIT, STOW LOCK W/SHIMS, REAR MOUNT	1	F9TF-SG002	20108
**	KIT, STOW LOCK W/SHIMS, REAR MOUNT	1	F9TF-SG016	20108
**	KIT, STOW LOCK W/SHIMS, REAR MOUNT	1	F9TF-SG020	20108
24E **	KIT, STOW LOCK W/SHIMS, SIDE MOUNT, RH	1	F9TF-SG003	37206
24F **	KIT, STOW LOCK, SW, FOLDING HANDRAILS	1	F9TF-SG006	35098
24G **	KIT, STOW LOCK	1	F9TF-SG007	33860
**	KIT, STOW LOCK	1	F9TF-SG008	33860
**	KIT, STOW LOCK	1	F9TF-SG009	33860
**	KIT, STOW LOCK	1	F9TF-SG012	33860
**	KIT, STOW LOCK	1	F9TF-SG018	33860
**	KIT, STOW LOCK	1	F9TF-SG021	33860
24H **	KIT, STOW LOCK	1	F9TF-SG011	19915
24J **	KIT, STOW LOCK	1	F9TF-SG014	20236
24K **	KIT, STOW LOCK W/SHIMS, REAR MOUNT, 24V	1	F9TF-DE013	29633
**	KIT, STOW LOCK W/SHIMS, REAR MOUNT, 24V	1	F9TF-SG017	29633
**	KIT, STOW LOCK W/SHIMS, REAR MOUNT, 24V	1	F9TF-SG019	29633
25	KIT, REINFORCEMENT, ENCLOSURE, RH	1	F9TH-DE035	61351
26	KIT, REINFORCEMENT, ENCLOSURE, LH	1	F9TH-DE035	61352

**NOTE:** (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

**NOTE:** \* Item or configuration not shown.

**NOTE:** \*\* Some configurations require alternate applications. Refer to the configuration column to match the part number with the lift configuration installed in vehicle.

This page intentionally left blank.

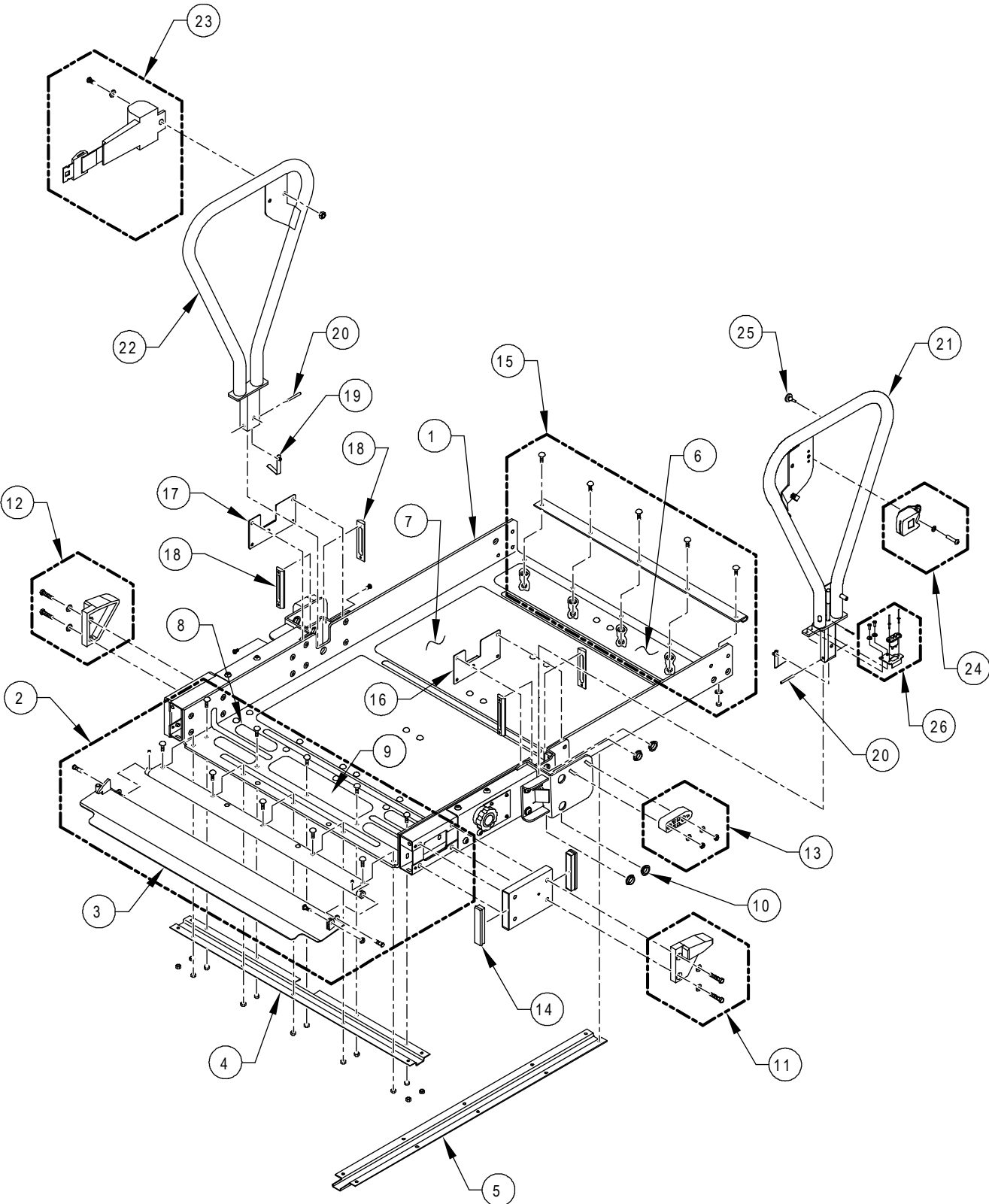


FIGURE 5-6: F9TF/F9TH-SERIES PLATFORM ASSEMBLY

RSM0048002

FIGURE 5-6: F9TF/F9TH-SERIES PLATFORM ASSY

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	PLATFORM, 32.25 X 47.00, PRS	REF	F9TF-DE001	32962
	PLATFORM, 32.25 X 47.00, PRS	REF	F9TF-DE002	32962
	PLATFORM, 32.25 X 47.00, PRS	REF	F9TF-DE004	32962
	PLATFORM, 32.25 X 47.00, PRS	REF	F9TF-DE006	32962
	PLATFORM, 32.25 X 47.00, PRS	REF	F9TF-DE007	32962
	PLATFORM, 32.25 X 47.00, PRS	REF	F9TF-DE009	32962
	PLATFORM, 32.25 X 47.00, PRS	REF	F9TF-DE011	32962
	PLATFORM, 32.25 X 47.00, PRS	REF	F9TF-DE013	32962
	PLATFORM, 32.25 X 47.00, PRS	REF	F9TF-DE014	32962
	PLATFORM, 32.25 X 47.00, PRS	REF	F9TF-DE015	32962
	PLATFORM, 32.25 X 47.00, PRS	REF	F9TF-DE016	32962
	PLATFORM, 32.25 X 47.00, PRS	REF	F9TF-DE017	32962
	PLATFORM, 32.25 X 47.00, PRS	REF	F9TF-DE018	32962
	PLATFORM, 32.25 X 47.00, PRS	REF	F9TF-DE019	32962
	PLATFORM, 32.25 X 47.00, PRS	REF	F9TF-DE020	32962
	PLATFORM, 32.25 X 47.00, PRS	REF	F9TF-DE022	32962
	PLATFORM, 32.25 X 47.00, PRS	REF	F9TF-SG002	32962
	PLATFORM, 32.25 X 47.00, PRS	REF	F9TF-SG003	32962
	PLATFORM, 32.25 X 47.00, PRS	REF	F9TF-SG006	32962
	PLATFORM, 32.25 X 47.00, PRS	REF	F9TF-SG012	32962
	PLATFORM, 32.25 X 47.00, PRS	REF	F9TF-SG016	32962
	PLATFORM, 32.25 X 47.00, PRS	REF	F9TF-SG018	32962
	PLATFORM, 32.25 X 47.00, PRS	REF	F9TF-SG019	32962
	PLATFORM, 32.25 X 47.00, PRS	REF	F9TF-SG021	32962
1A *	PLATFORM, 32.25 X 47.00, PRS, SW	REF	F9TF-DE012	33868
*	PLATFORM, 32.25 X 47.00, PRS, SW	REF	F9TF-SG001	33868
*	PLATFORM, 32.25 X 47.00, PRS, SW	REF	F9TF-SG007	33868
*	PLATFORM, 32.25 X 47.00, PRS, SW	REF	F9TF-SG008	33868
*	PLATFORM, 32.25 X 47.00, PRS, SW	REF	F9TF-SG009	33868
*	PLATFORM, 32.25 X 47.00, PRS, SW	REF	F9TF-SG011	33868
*	PLATFORM, 32.25 X 47.00, PRS, SW	REF	F9TF-SG014	33868
*	PLATFORM, 32.25 X 47.00, PRS, SW	REF	F9TF-SG017	33868
*	PLATFORM, 32.25 X 47.00, PRS, SW	REF	F9TF-SG020	33868
2	KIT, ROLLSTOP ASSEMBLY	1	F9TF-DE001	32168
	KIT, ROLLSTOP ASSEMBLY	1	F9TF-DE002	32168
	KIT, ROLLSTOP ASSEMBLY	1	F9TF-DE004	32168
	KIT, ROLLSTOP ASSEMBLY	1	F9TF-DE006	32168
	KIT, ROLLSTOP ASSEMBLY	1	F9TF-DE007	32168

**NOTE:** (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

**NOTE:** \* Item or configuration not shown.

**FIGURE 5-6: F9TF/F9TH-SERIES PLATFORM ASSY (CONT'D)**

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
2	KIT, ROLLSTOP ASSEMBLY	1	F9TF-DE009	32168
	KIT, ROLLSTOP ASSEMBLY	1	F9TF-DE011	32168
	KIT, ROLLSTOP ASSEMBLY	1	F9TF-DE013	32168
	KIT, ROLLSTOP ASSEMBLY	1	F9TF-DE014	32168
	KIT, ROLLSTOP ASSEMBLY	1	F9TF-DE015	32168
	KIT, ROLLSTOP ASSEMBLY	1	F9TF-DE016	32168
	KIT, ROLLSTOP ASSEMBLY	1	F9TF-DE017	32168
	KIT, ROLLSTOP ASSEMBLY	1	F9TF-DE018	32168
	KIT, ROLLSTOP ASSEMBLY	1	F9TF-DE019	32168
	KIT, ROLLSTOP ASSEMBLY	1	F9TF-DE020	32168
	KIT, ROLLSTOP ASSEMBLY	1	F9TF-DE022	32168
	KIT, ROLLSTOP ASSEMBLY	1	F9TF-SG002	32168
	KIT, ROLLSTOP ASSEMBLY	1	F9TF-SG003	32168
	KIT, ROLLSTOP ASSEMBLY	1	F9TF-SG006	32168
	KIT, ROLLSTOP ASSEMBLY	1	F9TF-SG012	32168
	KIT, ROLLSTOP ASSEMBLY	1	F9TF-SG016	32168
	KIT, ROLLSTOP ASSEMBLY	1	F9TF-SG018	32168
	KIT, ROLLSTOP ASSEMBLY	1	F9TF-SG019	32168
	KIT, ROLLSTOP ASSEMBLY	1	F9TF-SG021	32168
2A *	KIT, ROLLSTOP PRS, SW, W/HARDWARE	1	F9TF-DE012	20623
*	KIT, ROLLSTOP PRS, SW, W/HARDWARE	1	F9TF-SG007	20623
*	KIT, ROLLSTOP PRS, SW, W/HARDWARE	1	F9TF-SG008	20623
*	KIT, ROLLSTOP PRS, SW, W/HARDWARE	1	F9TF-SG009	20623
*	KIT, ROLLSTOP PRS, SW, W/HARDWARE	1	F9TF-SG014	20623
*	KIT, ROLLSTOP PRS, SW, W/HARDWARE	1	F9TF-SG020	20623
2B *	KIT, ROLLSTOP ASSY, SW 8"	1	F9TF-SG001	20648
*	KIT, ROLLSTOP ASSY, SW 8"	1	F9TF-SG011	20648
*	KIT, ROLLSTOP ASSY, SW 8"	1	F9TF-SG017	20648
3	ROLLSTOP, PAINTED	REF	F9TF-DE001	33091
	ROLLSTOP, PAINTED	REF	F9TF-DE002	33091
	ROLLSTOP, PAINTED	REF	F9TF-DE004	33091
	ROLLSTOP, PAINTED	REF	F9TF-DE006	33091
	ROLLSTOP, PAINTED	REF	F9TF-DE007	33091
	ROLLSTOP, PAINTED	REF	F9TF-DE009	33091
	ROLLSTOP, PAINTED	REF	F9TF-DE011	33091
	ROLLSTOP, PAINTED	REF	F9TF-DE013	33091
	ROLLSTOP, PAINTED	REF	F9TF-DE014	33091
	ROLLSTOP, PAINTED	REF	F9TF-DE015	33091

**NOTE:** (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

**NOTE:** \* Item or configuration not shown.



FIGURE 5-6: F9TF/F9TH-SERIES PLATFORM ASSY

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
3	ROLLSTOP, PAINTED	REF	F9TF-DE016	33091
	ROLLSTOP, PAINTED	REF	F9TF-DE017	33091
	ROLLSTOP, PAINTED	REF	F9TF-DE018	33091
	ROLLSTOP, PAINTED	REF	F9TF-DE020	33091
3A *	ROLLSTOP WLDT, PRS, PAINTED	REF	F9TF-DE012	33857
*	ROLLSTOP WLDT, PRS, PAINTED	REF	F9TF-DE019	33857
*	ROLLSTOP WLDT, PRS, PAINTED	REF	F9TF-DE022	33857
*	ROLLSTOP WLDT, PRS, PAINTED	REF	F9TF-SG002	33857
*	ROLLSTOP WLDT, PRS, PAINTED	REF	F9TF-SG003	33857
*	ROLLSTOP WLDT, PRS, PAINTED	REF	F9TF-SG006	33857
*	ROLLSTOP WLDT, PRS, PAINTED	REF	F9TF-SG007	33857
*	ROLLSTOP WLDT, PRS, PAINTED	REF	F9TF-SG008	33857
*	ROLLSTOP WLDT, PRS, PAINTED	REF	F9TF-SG009	33857
*	ROLLSTOP WLDT, PRS, PAINTED	REF	F9TF-SG012	33857
*	ROLLSTOP WLDT, PRS, PAINTED	REF	F9TF-SG014	33857
*	ROLLSTOP WLDT, PRS, PAINTED	REF	F9TF-SG016	33857
*	ROLLSTOP WLDT, PRS, PAINTED	REF	F9TF-SG018	33857
*	ROLLSTOP WLDT, PRS, PAINTED	REF	F9TF-SG019	33857
*	ROLLSTOP WLDT, PRS, PAINTED	REF	F9TF-SG020	33857
*	ROLLSTOP WLDT, PRS, PAINTED	REF	F9TF-SG021	33857
3B *	ROLLSTOP WLDT, PRS	REF	F9TF-SG001	19691
*	ROLLSTOP WLDT, PRS	REF	F9TF-SG011	19691
*	ROLLSTOP WLDT, PRS	REF	F9TF-SG017	19691
4	CHANNEL, HARNESS CONDUIT	1		33218
5	HARNESS CONDUIT, FRONT TO REAR	1		33217
6 **	SAFETREAD, 3.0 X 31.0, YELLOW	1		32987
7 **	SAFETREAD, 16.0 X 31.0, GRAY	1		32986
8 **	SAFETREAD, 12.75 X 3.0, YELLOW	1		25673
9 **	SAFETREAD, 5.5 X 1.5, YELLOW	4		25674
10	BEARING, FLANGED, $\frac{3}{4}$ ID X $\frac{1}{4}$ W, (BAG OF 10)	1		19576
11	KIT, PLATFORM GUIDE, FRONT, RH, W/HDWR	1		20624
12	KIT, PLATFORM GUIDE, FRONT, LH, W/HDWR	1		20608
13	KIT, PLATFORM GUIDE, STOW, W/HDWR	2		20625
14	CAP, RECTANGULAR, SNAP-IN	4		22519
15	KIT, STIFFENER, PLATFORM, REAR	1		20626
16	PLATE, PIN LOCK, RH	1		32947
17	PLATE, PIN LOCK, LH	1		32964

**NOTE:** (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

**NOTE:** \* Item or configuration not shown.

**NOTE:** \*\* Flooring is factory installed and may require additional parts for installation.

**FIGURE 5-6: F9TF/F9TH-SERIES PLATFORM ASSY (CONT'D)**

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
18	KIT, BLOCK HANDRAIL GUIDES, LH & RH (2 EACH PER KIT)	4		36255
19	BUTTON, HANDRAIL LOCK	2		33143
20	PIN, HANDRAIL PIVOT	2		32952
21	HANDRAIL, LEFT OR RIGHT	2	F9TF-DE001	36275
	HANDRAIL, LEFT OR RIGHT	2	F9TF-DE002	36275
	HANDRAIL, LEFT OR RIGHT	2	F9TF-DE003	36275
	HANDRAIL, LEFT OR RIGHT	2	F9TF-DE004	36275
	HANDRAIL, LEFT OR RIGHT	2	F9TF-DE006	36275
	HANDRAIL, LEFT OR RIGHT	2	F9TF-DE007	36275
	HANDRAIL, LEFT OR RIGHT	2	F9TF-DE011	36275
	HANDRAIL, LEFT OR RIGHT	2	F9TF-DE012	36275
	HANDRAIL, LEFT OR RIGHT	2	F9TF-DE013	36275
	HANDRAIL, LEFT OR RIGHT	2	F9TF-DE014	36275
	HANDRAIL, LEFT OR RIGHT	2	F9TF-DE016	36275
	HANDRAIL, LEFT OR RIGHT	2	F9TF-DE017	36275
	HANDRAIL, LEFT OR RIGHT	2	F9TF-DE018	36275
	HANDRAIL, LEFT OR RIGHT	2	F9TF-DS001	36275
21A *	HANDRAIL ASSY, LH, INTERLOCKED RESTRAINT	1	F9TF-DE009	35815
*	HANDRAIL ASSY, LH, INTERLOCKED RESTRAINT	1	F9TF-DE015	35815
*	HANDRAIL ASSY, LH, INTERLOCKED RESTRAINT	1	F9TF-DE019	35815
*	HANDRAIL ASSY, LH, INTERLOCKED RESTRAINT	1	F9TF-DE020	35815
*	HANDRAIL ASSY, LH, INTERLOCKED RESTRAINT	1	F9TF-DE022	35815
21B *	HANDRAIL ASSY, LH, FIXED	1	F9TF-SG001	35452
*	HANDRAIL ASSY, LH, FIXED	1	F9TF-SG002	35452
*	HANDRAIL ASSY, LH, FIXED	1	F9TF-SG007	35452
*	HANDRAIL ASSY, LH, FIXED	1	F9TF-SG008	35452
*	HANDRAIL ASSY, LH, FIXED	1	F9TF-SG009	35452
*	HANDRAIL ASSY, LH, FIXED	1	F9TF-SG011	35452
*	HANDRAIL ASSY, LH, FIXED	1	F9TF-SG012	35452
*	HANDRAIL ASSY, LH, FIXED	1	F9TF-SG016	35452
*	HANDRAIL ASSY, LH, FIXED	1	F9TF-SG017	35452
*	HANDRAIL ASSY, LH, FIXED	1	F9TF-SG018	35452
*	HANDRAIL ASSY, LH, FIXED	1	F9TF-SG019	35452
*	HANDRAIL ASSY, LH, FIXED	1	F9TF-SG020	35452
*	HANDRAIL ASSY, LH, FIXED	1	F9TF-SG021	35452
21C *	HANDRAILS, FIXED, FMVSS W/HARDWARE	1	F9TF-SG003	36698
21D *	HANDRAIL WLDT	REF	F9TF-SG006	42791

**NOTE:** (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

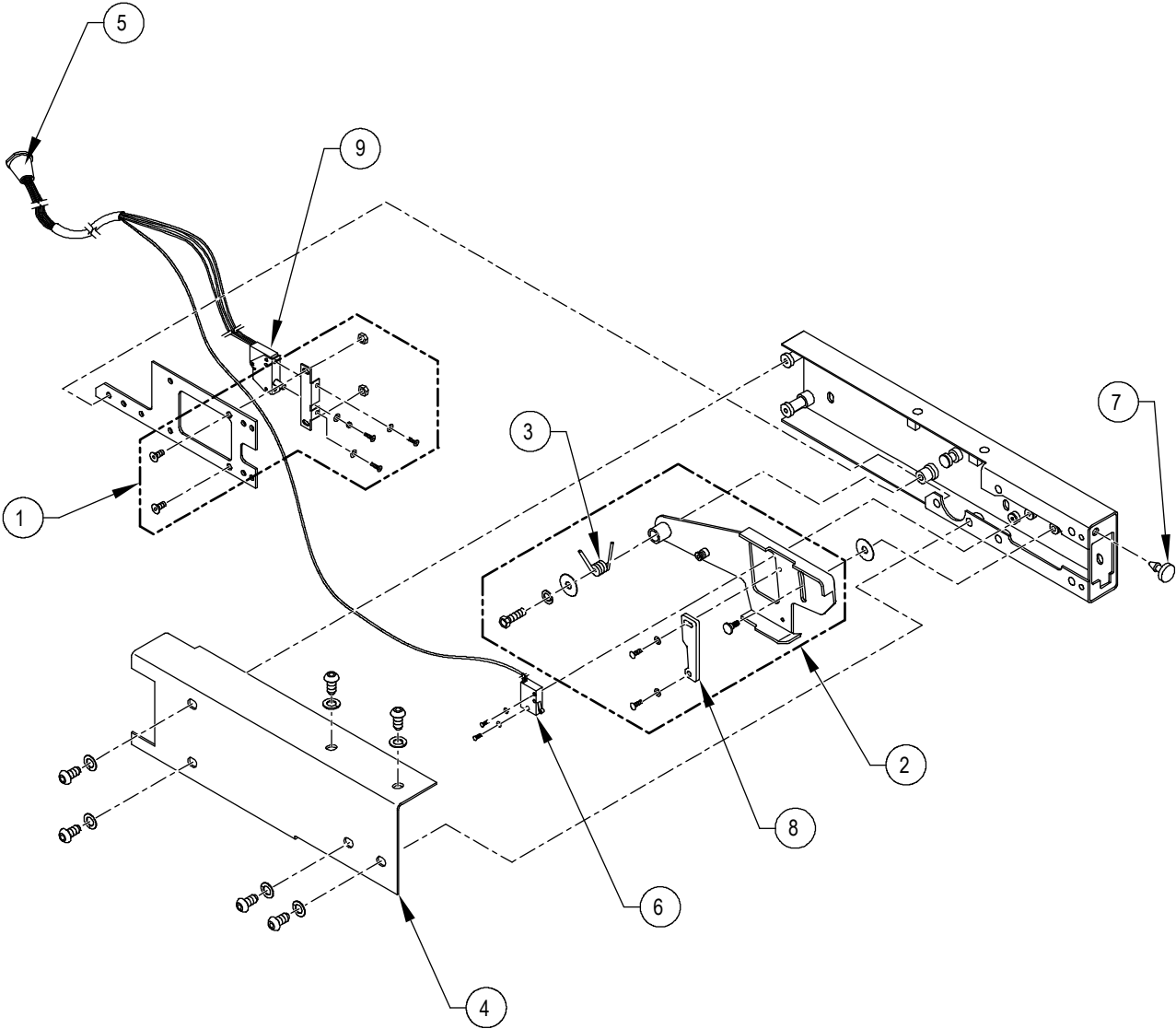
**NOTE:** \* Item or configuration not shown.

FIGURE 5-6: F9TF/F9TH-SERIES PLATFORM ASSY (CONT'D)

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
21D *	HANDRAIL WLDT	REF	F9TF-SG014	42791
22	HANDRAIL ASSY, RH, INTERLOCKED RESTRAINT	1	F9TF-DE009	35814
	HANDRAIL ASSY, RH, INTERLOCKED RESTRAINT	1	F9TF-DE015	35814
	HANDRAIL ASSY, RH, INTERLOCKED RESTRAINT	1	F9TF-DE019	35814
	HANDRAIL ASSY, RH, INTERLOCKED RESTRAINT	1	F9TF-DE020	35814
	HANDRAIL ASSY, RH, INTERLOCKED RESTRAINT	1	F9TF-DE022	35814
22A *	HANDRAIL ASSY, RH, FIXED	1	F9TF-SG001	35451
*	HANDRAIL ASSY, RH, FIXED	1	F9TF-SG002	35451
*	HANDRAIL ASSY, RH, FIXED	1	F9TF-SG007	35451
*	HANDRAIL ASSY, RH, FIXED	1	F9TF-SG008	35451
22A *	HANDRAIL ASSY, RH, FIXED	1	F9TF-SG009	35451
*	HANDRAIL ASSY, RH, FIXED	1	F9TF-SG011	35451
*	HANDRAIL ASSY, RH, FIXED	1	F9TF-SG012	35451
*	HANDRAIL ASSY, RH, FIXED	1	F9TF-SG016	35451
*	HANDRAIL ASSY, RH, FIXED	1	F9TF-SG017	35451
*	HANDRAIL ASSY, RH, FIXED	1	F9TF-SG018	35451
*	HANDRAIL ASSY, RH, FIXED	1	F9TF-SG019	35451
*	HANDRAIL ASSY, RH, FIXED	1	F9TF-SG020	35451
*	HANDRAIL ASSY, RH, FIXED	1	F9TF-SG021	35451
22B *	HANDRAILS, FIXED, FMVSS W/HARDWARE	1	F9TF-SG003	36698
22C *	HANDRAIL WLDT, FOLDING	REF	F9TF-SG006	34167
*	HANDRAIL WLDT, FOLDING	REF	F9TF-SG014	34167
23	KIT, SAFETY BELT W/RETRACTOR	1		32178
24	KIT, SAFETY BELT BUCKLE ASSEMBLY	1		32177
25	BUMPER, RUBBER, (BAG OF 10)	1		29815
26	KIT, CONTACT CONNECTOR, HAND RAIL ASSY, RH	1		46520

**NOTE:** (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

**NOTE:** \* Item or configuration not shown.



RSM0048501

FIGURE 5-7: F9TF/F9TH PLATFORM ASSEMBLY – LEFT SIDE DETAIL

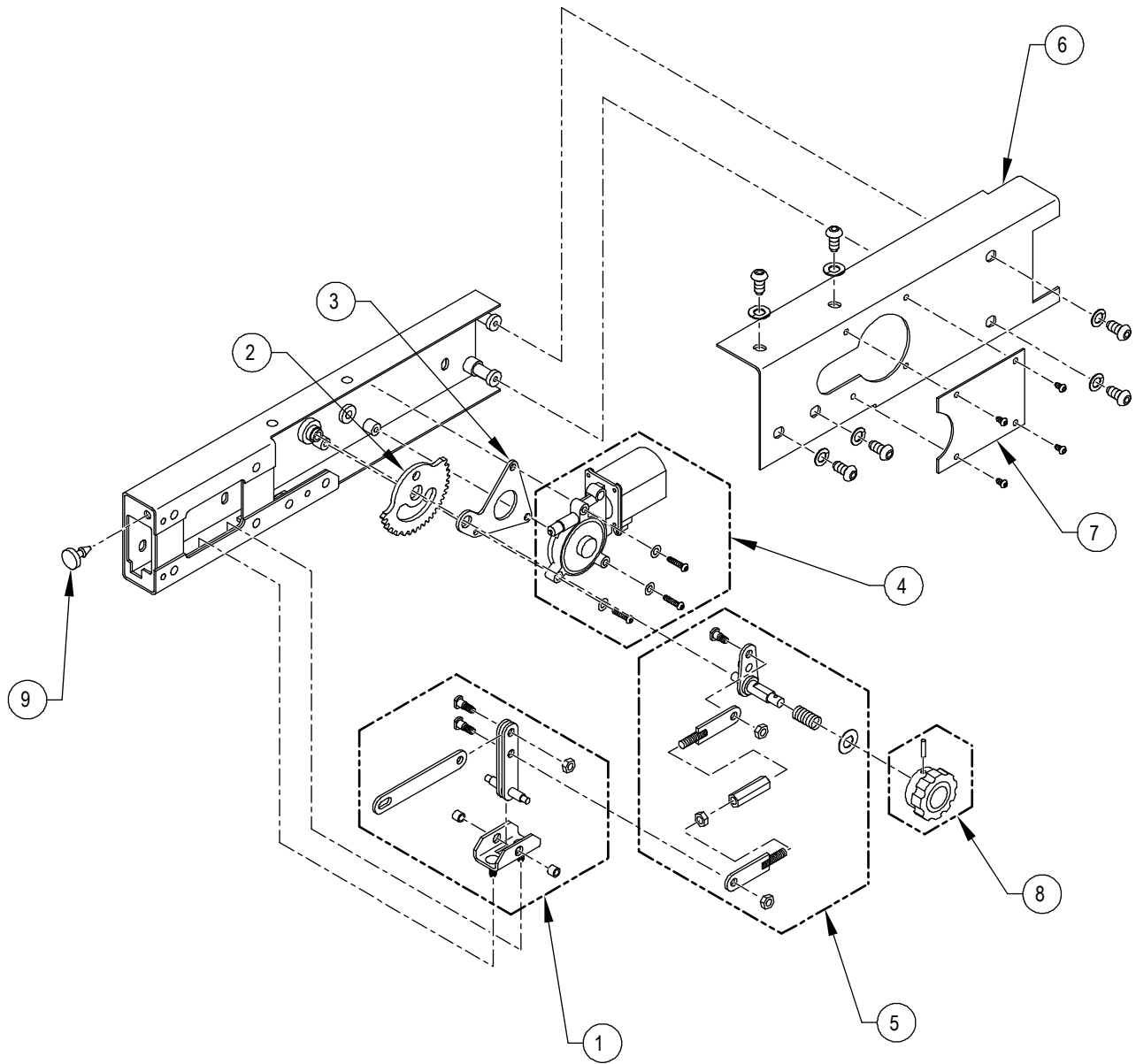
**FIGURE 5-7: F9TF/F9TH PLATFORM ASSEMBLY – LEFT SIDE DETAIL**

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	KIT, MOUNTING BRACKET, LIMIT SWITCH, W/HDWR	1		20605
2	KIT, ACTUATOR FOOT ASSY	1		20607
3	SPRING, ROLLSTOP ACTUATOR	1		UV-SP-002
4	COVER, ROLLSTOP, LH	1		32858
5	HARNESS, W/TWO ROLLSTOP SWITCHES	1		UV-ES-221
6	SWITCH, LIMIT, W/LEADS	1		264104
7	BUMPER, RUBBER (BAG OF 10)	1		20653
8	PLATE, ACTUATOR, SWITCH	1		UV-PF-918
9	SWITCH ASSY, PLNGR TAPPED (P/N 28677 INCLUDED)	1		15767

**NOTE:** (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

**NOTE:** \* Item or configuration not shown.





RSM0048600

FIGURE 5-8: F9TF/F9TH-SERIES POWER ROLLSTOP (PRS) ASSEMBLY (RIGHT SIDE)

**FIGURE 5-8: F9TF/F9TH PLATFORM ASSEMBLY – RIGHT SIDE DETAIL**

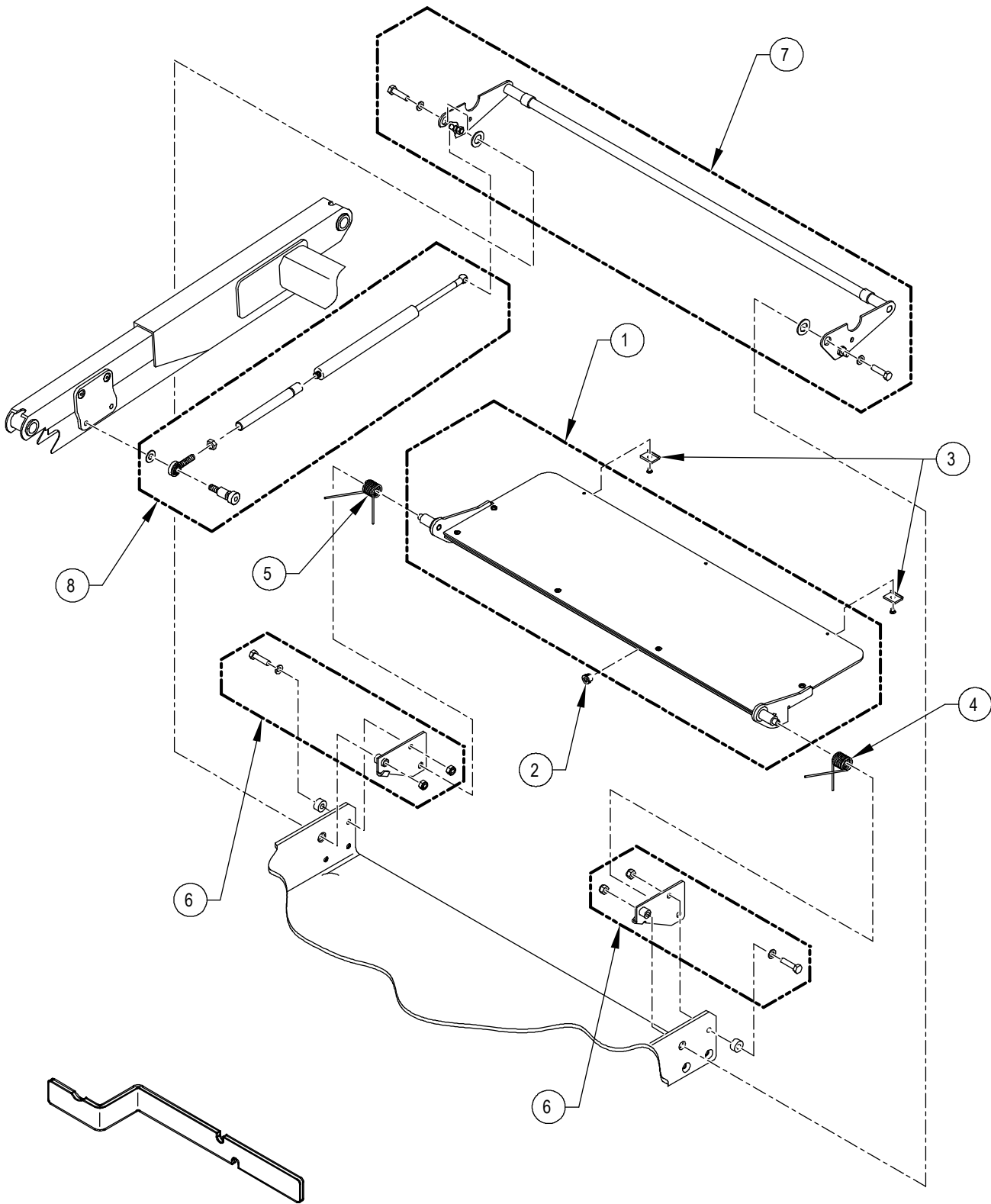
FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	KIT, ROLLSTOP LINKAGE	1		20609
2	KIT, ROLLSTOP GEAR	1		20610
3	KIT, GEAR MOTOR MTG PLATE	1		20611
4	GEAR MOTOR, 24V, W/HDWR	1		20612
5	KIT, GEAR LINKAGE	1		20613
6	COVER, ROLLSTOP, RH	1		32857
7	COVER PLATE, MANUAL RELEASE	1		32866
8	KIT, ROLLSTOP KNOB	1		20616
9	BUMPER, RUBBER (BAG OF 10)	1		20653

**NOTE:** (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

**NOTE:** \* Item or configuration not shown.







BRIDGEPLATE HEIGHT GAUGE  
TOOL (P/N 56279)

RSM0032504

FIGURE 5-9: F9TF/F9TH BRIDGEPLATE ASSEMBLY

FIGURE 5-9: F9TF/F9TH BRIDGEPLATE ASSY

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	BRIDGEPLATE ASSY, 9 " SPAN	1	F9TF-DE001	33230
	BRIDGEPLATE ASSY, 9 " SPAN	1	F9TF-DE002	33230
	BRIDGEPLATE ASSY, 9 " SPAN	1	F9TF-DE003	33230
	BRIDGEPLATE ASSY, 9 " SPAN	1	F9TF-DE004	33230
	BRIDGEPLATE ASSY, 9 " SPAN	1	F9TF-DE006	33230
	BRIDGEPLATE ASSY, 9 " SPAN	1	F9TF-DE007	33230
	BRIDGEPLATE ASSY, 9 " SPAN	1	F9TF-DE009	33230
	BRIDGEPLATE ASSY, 9 " SPAN	1	F9TF-DE011	33230
	BRIDGEPLATE ASSY, 9 " SPAN	1	F9TF-DE012	33230
	BRIDGEPLATE ASSY, 9 " SPAN	1	F9TF-DE013	33230
	BRIDGEPLATE ASSY, 9 " SPAN	1	F9TF-DE014	33230
	BRIDGEPLATE ASSY, 9 " SPAN	1	F9TF-DE017	33230
	BRIDGEPLATE ASSY, 9 " SPAN	1	F9TF-DE020	33230
	BRIDGEPLATE ASSY, 9 " SPAN	1	F9TF-DE022	33230
	BRIDGEPLATE ASSY, 9 " SPAN	1	F9TF-DS001	33230
1A *	BRIDGEPLATE ASSY, 11" SPAN (38482 Superseded)	1	F9TF-DE015	53071
*	BRIDGEPLATE ASSY, 11" SPAN (38482 Superseded)	1	F9TF-DE016	53071
1B *	BRIDGEPLATE ASSY, 15" L, FMVSS	REF	F9TF-DE018	46200
1C *	KIT, BRIDGEPLATE ASSY, 11" L, FMVSS (47459 Superseded)	1	F9TF-DE019	53070
1D *	BRIDGEPLATE ASSY, 23" SPAN, FIXED HRAILS, SW	1	F9TF-SG001	33244
*	BRIDGEPLATE ASSY, 23" SPAN, FIXED HRAILS, SW	1	F9TF-SG011	33244
*	BRIDGEPLATE ASSY, 23" SPAN, FIXED HRAILS, SW	1	F9TF-SG017	33244
*	BRIDGEPLATE ASSY, 23" SPAN, FIXED HRAILS, SW	1	F9TF-SG020	33244
1E *	BRIDGEPLATE ASSY, 26" L	REF	F9TF-SG002	33223
*	BRIDGEPLATE ASSY, 26" L	REF	F9TF-SG006	33223
*	BRIDGEPLATE ASSY, 26" L	REF	F9TF-SG007	33223
*	BRIDGEPLATE ASSY, 26" L	REF	F9TF-SG008	33223
*	BRIDGEPLATE ASSY, 26" L	REF	F9TF-SG009	33223
*	BRIDGEPLATE ASSY, 26" L	REF	F9TF-SG012	33223
*	BRIDGEPLATE ASSY, 26" L	REF	F9TF-SG014	33223
*	BRIDGEPLATE ASSY, 26" L	REF	F9TF-SG016	33223
*	BRIDGEPLATE ASSY, 26" L	REF	F9TF-SG018	33223
*	BRIDGEPLATE ASSY, 26" L	REF	F9TF-SG019	33223
*	BRIDGEPLATE ASSY, 26" L	REF	F9TF-SG021	33223
1F *	BRIDGEPLATE ASSY, 26" L	REF	F9TF-SG003	36682
2	BUSHING, SNAP-IN, 1/2"	1		28-26-075
3	KIT, SKID, BRIDGEPLATE (KIT OF 10)	1		20643
4	SPRING, BRIDGEPLATE RETURN, LH	1		UV-SP-010

**NOTE:** (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

**NOTE:** \* Item or configuration not shown.

**FIGURE 5-9: F9TF/F9TH BRIDGEPLATE ASSY (CONT'D)**

<b>FIG. ITEM</b>	<b>DESCRIPTION</b>	<b>QTY</b>	<b>CONFIG.</b>	<b>PART NO.</b>
5	SPRING, BRIDGEPLATE RETURN, RH	1		UV-SP-011
6	KIT, MOUNTING BRACKETS, LH AND RH	1		20665
7	KIT, STIRRUP ASSEMBLY	1		20651
8	KIT, ACTUATOR ROD ASSEMBLY, BRIDGEPLATE	2		32182
9	TOOL, GAUGE, HEIGHT, BRIDGEPLATE	1		56279

**NOTE:** (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

**NOTE:** \* Item or configuration not shown.

This page intentionally left blank.

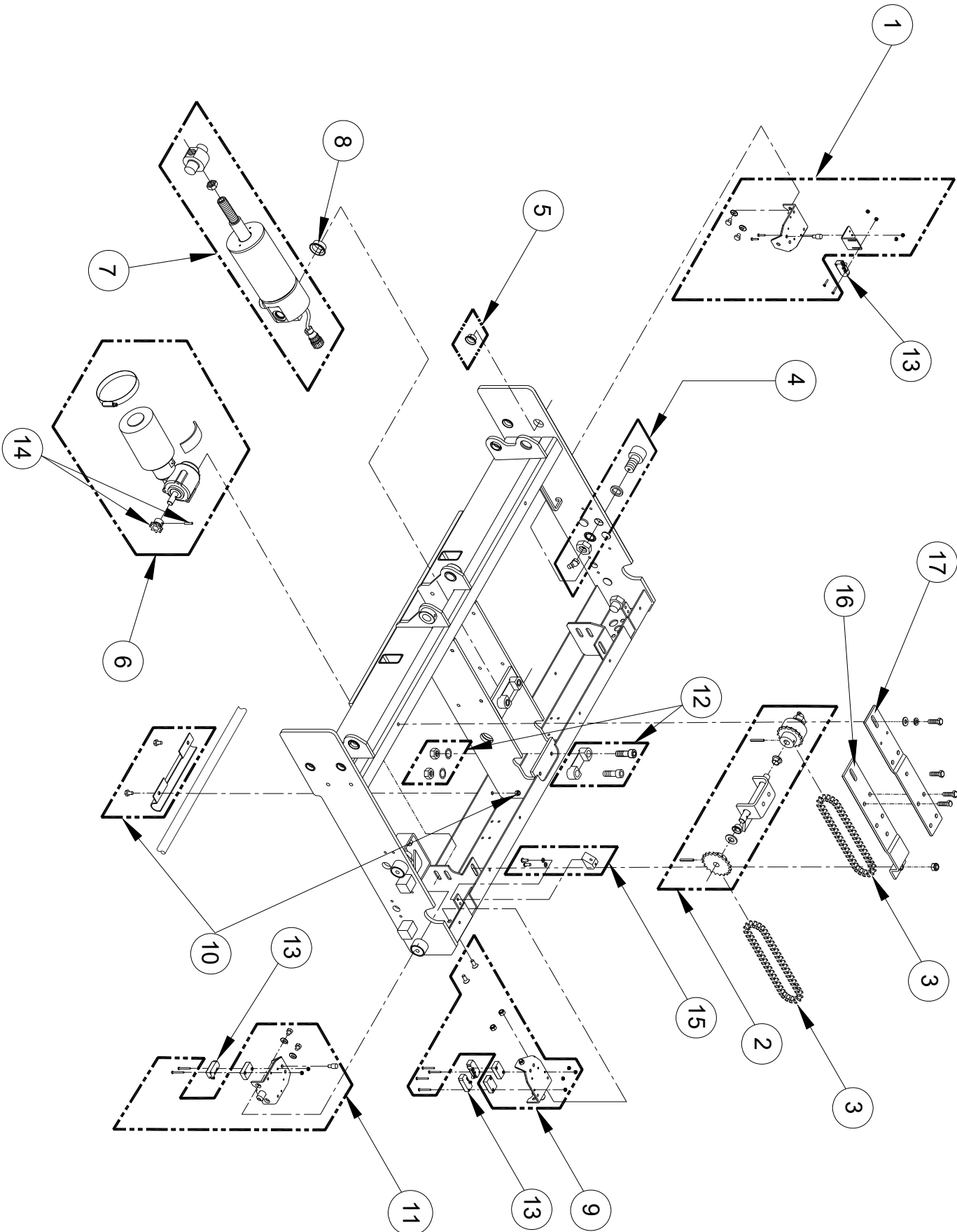


FIGURE 5-10: F9TF/F9TH-SERIES CARRIAGE ASSEMBLY (SHEET 1 OF 3)

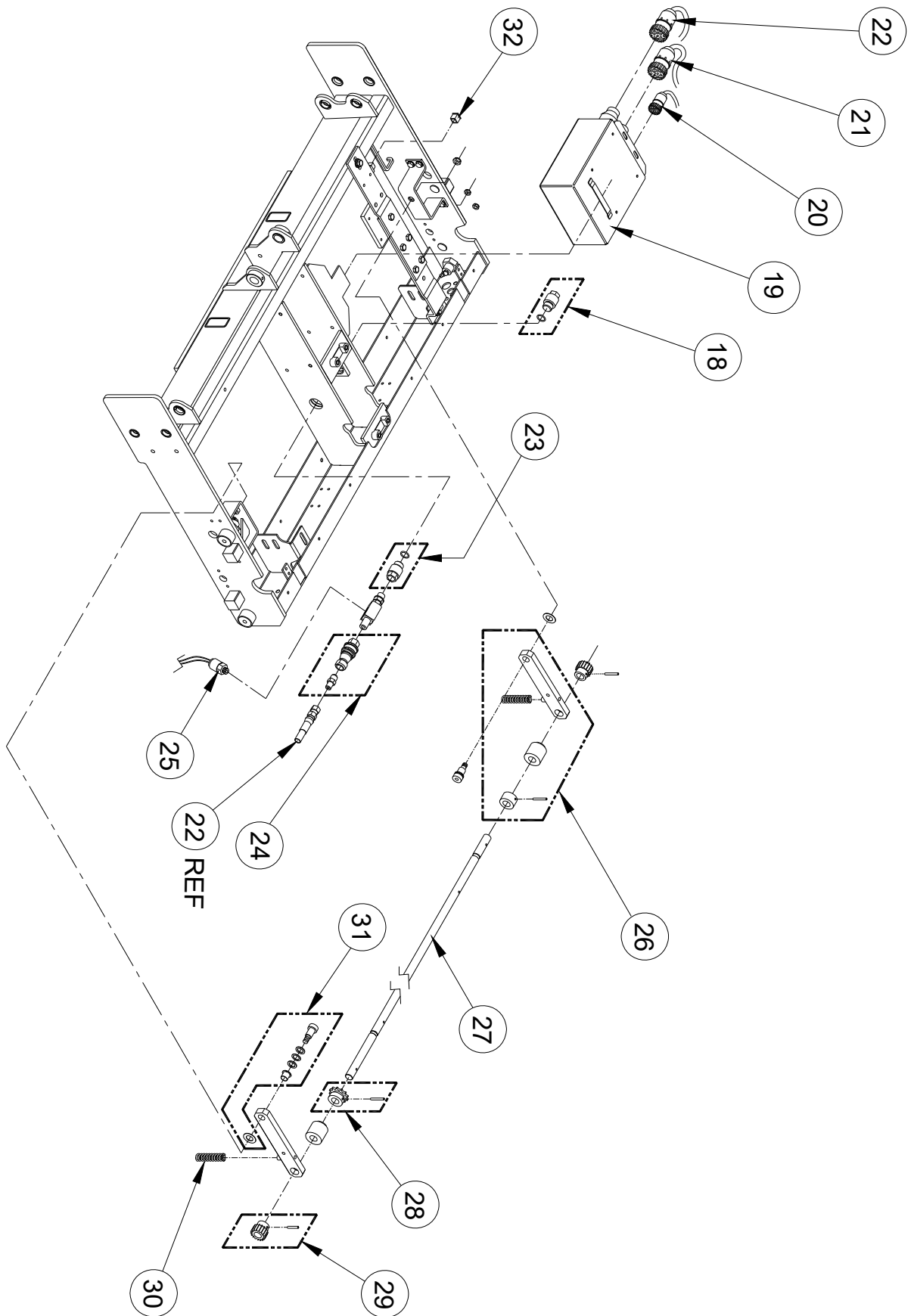
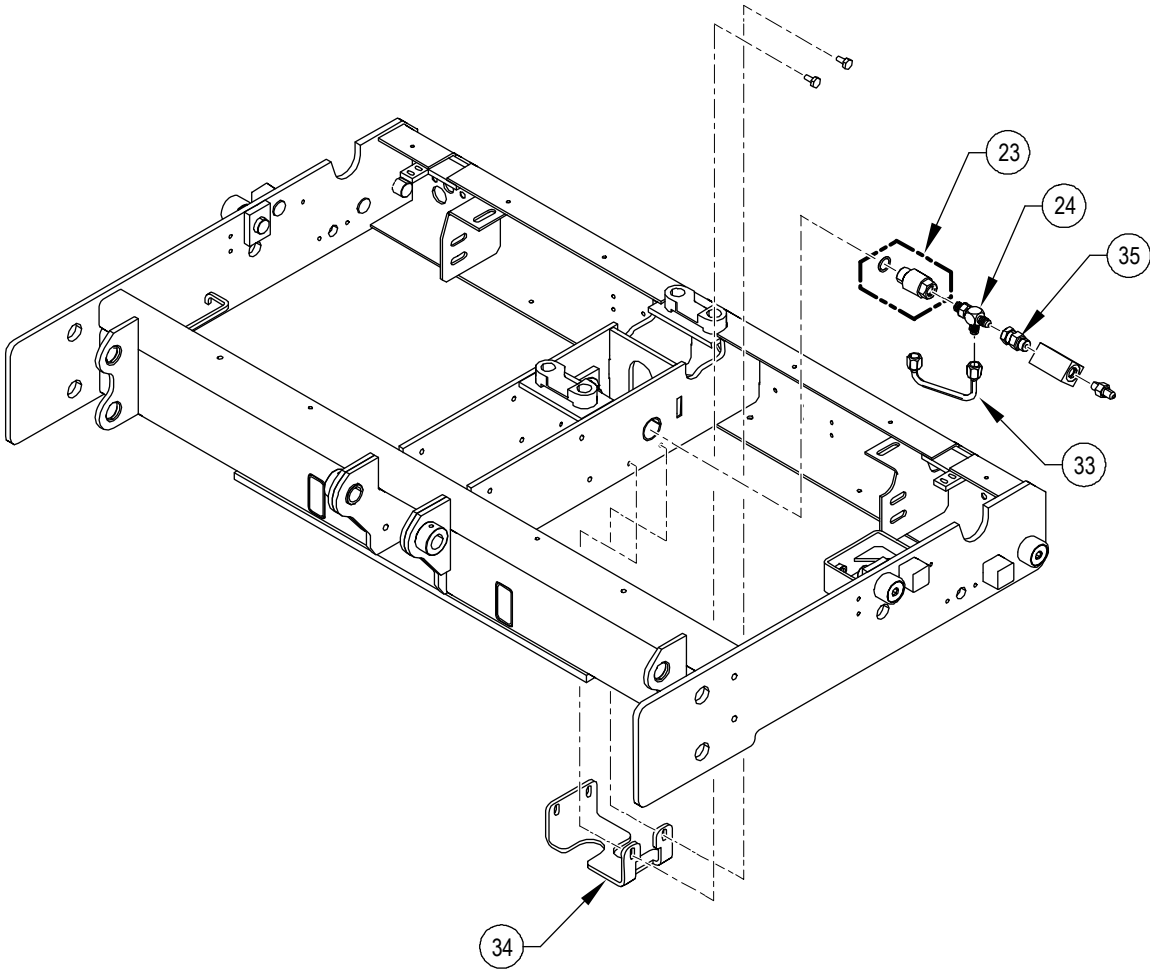


FIGURE 5-10: F9TF/F9TH-SERIES CARRIAGE ASSEMBLY (SHEET 2 OF 3)



RSM0074300

FIGURE 5-10: F9TH-SERIES CARRIAGE ASSEMBLY (SHEET 3 OF 3)



FIGURE 5-10: F9TF/F9TH-SERIES CARRIAGE ASSY

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	KIT, PLATFORM RELEASE SWITCH BRACKET	1		19572
2	KIT, INTERMEDIATE SHAFT ASSY	1	F9TF MODELS	19573
	KIT, INTERMEDIATE SHAFT ASSY	1	F9TH-DE035	61344
3	DRIVE CHAIN	2		19574
4	KIT, CARRIAGE ROLLER, 1 ¼ OD, W/GREASE FITTING	4		22029
5	FLANGED BEARING, ¾ ID, BAG OF 10	1		19576
6	KIT, GEAR MOTOR ASSY, 24V	1		19577
7	HYDRAULIC CYLINDER ASSEMBLY, W/TRUNNION & JAM NUT	1	F9TF MODELS	20178
	HYDRAULIC CYLINDER ASSEMBLY, W/TRUNNION & JAM NUT	1	F9TH-DE035	61342
8	FLANGED BEARING, 1" ID, BAG OF 10	1		19579
9	KIT, STOW SWITCH BRACKET	1		19580
10	KIT, HARNESS CLAMP	1	F9TF MODELS	19581
	KIT, HARNESS CLAMP	1	F9TH-DE035	61343
11	KIT, DEPLOY SWITCH BRACKET	1		19582
12	KIT, GUIDE BLOCKS, CARRIAGE	1		22517
13	SWITCH, LIMIT, W/LEADS	4		264104
14	KIT, SPROCKET, 8T	1		20656
15	KIT, MANUAL RELEASE RESET RAMP	2		20664
16	BRACKET, IDLER SHAFT, REAR	1	F9TF MODELS	F9-0123
	BRACKET, IDLER SHAFT, REAR	1	F9TH-DE035	60174
17	BRACKET, IDLER SHAFT, FRONT	1	F9TF MODELS	F9-0139
	BRACKET, IDLER SHAFT, FRONT	1	F9TH-DE035	60170
18	KIT, PIVOT CAP, HYDRAULIC CYLINDER	1	F9TF MODELS	20658
	KIT, PIVOT CAP, HYDRAULIC CYLINDER	1	F9TH-DE035	61345
19	ELECTRONIC CONTROLLER, 24V	1	F9TF-DE001	58702
	ELECTRONIC CONTROLLER, 24V	1	F9TF-DE009	58702
	ELECTRONIC CONTROLLER, 24V	1	F9TF-DE011	58702
	ELECTRONIC CONTROLLER, 24V	1	F9TF-DE019	58702
	ELECTRONIC CONTROLLER, 24V	1	F9TF-DE020	58702
	ELECTRONIC CONTROLLER, 24V	1	F9TF-DE021	58702
19A *	ELECTRONIC CONTROLLER, 24V	1	F9TF-DE002	58702
*	ELECTRONIC CONTROLLER, 24V	1	F9TF-DE003	58702
*	ELECTRONIC CONTROLLER, 24V	1	F9TF-DE004	58702
*	ELECTRONIC CONTROLLER, 24V	1	F9TF-DE018	58702
*	ELECTRONIC CONTROLLER, 24V	1	F9TF-DE022	58702
*	ELECTRONIC CONTROLLER, 24V	1	F9TF-DE038	66204
19B *	CONTROLLER BOX, 12V	1	F9TF-DS001	32721
*	CONTROLLER BOX, 12V	1	F9TF-DE003	32721
*	CONTROLLER BOX, 12V	1	F9TF-DE006	32721
*	CONTROLLER BOX, 12V	1	F9TF-DE007	32721

**NOTE:** (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

**NOTE:** \* Item or configuration not shown.

**FIGURE 5-10: F9TF-SERIES CARRIAGE ASSY (CONT'D)**

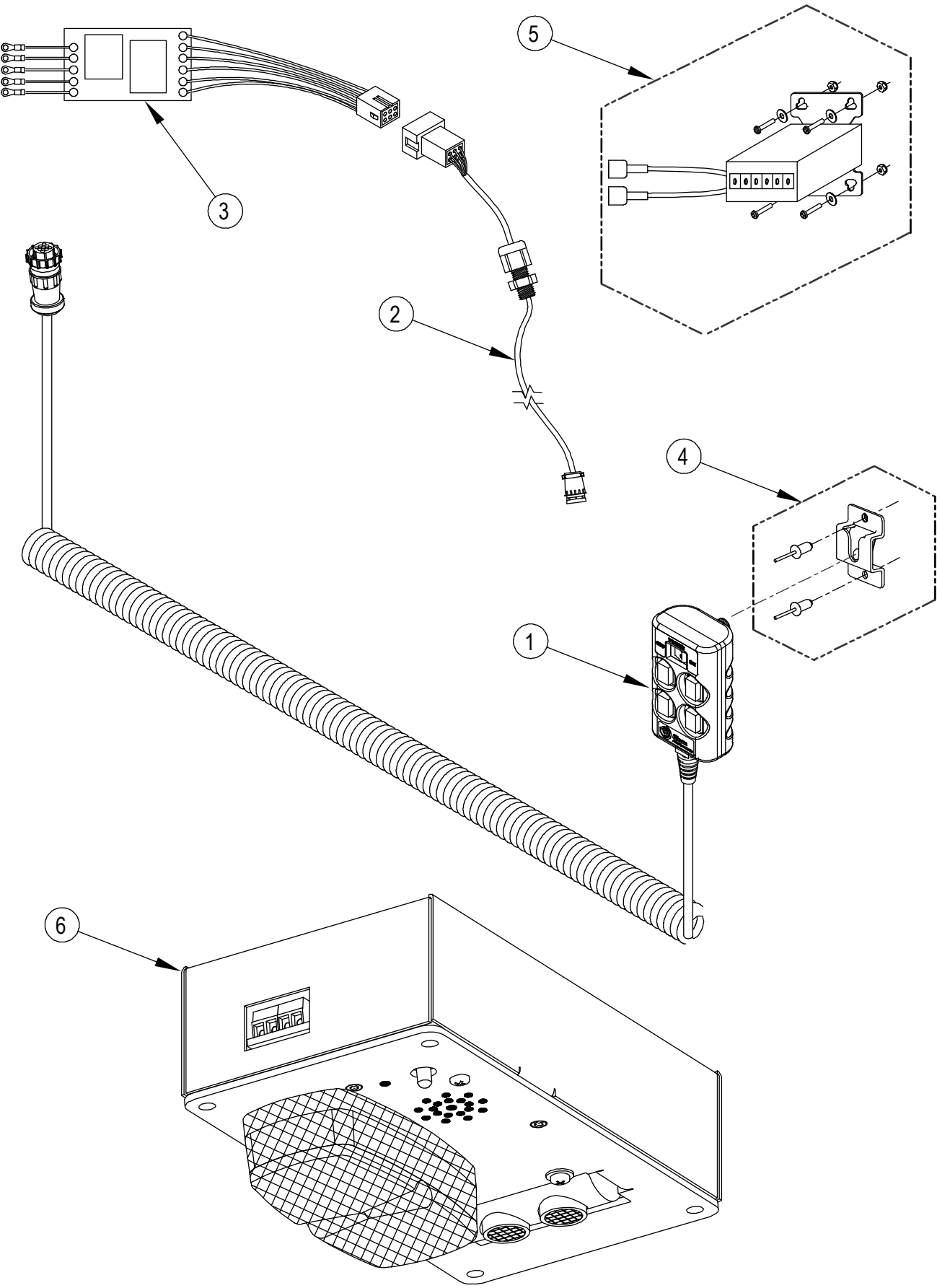
FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
19B *	CONTROLLER BOX, 12V	1	F9TF-DE012	32721
*	CONTROLLER BOX, 12V	1	F9TF-DE014	32721
*	CONTROLLER BOX, 12V	1	F9TF-DE016	32721
*	CONTROLLER BOX, 12V	1	F9TF-DE017	32721
*	CONTROLLER BOX, 12V	1	F9TF-SG002	32721
*	CONTROLLER BOX, 12V	1	F9TF-SG006	32721
*	CONTROLLER BOX, 12V	1	F9TF-SG007	32721
*	CONTROLLER BOX, 12V	1	F9TF-SG008	32721
*	CONTROLLER BOX, 12V	1	F9TF-SG009	32721
*	CONTROLLER BOX, 12V	1	F9TF-SG011	32721
*	CONTROLLER BOX, 12V	1	F9TF-SG012	32721
*	CONTROLLER BOX, 12V	1	F9TF-SG014	32721
*	CONTROLLER BOX, 12V	1	F9TF-SG016	32721
*	CONTROLLER BOX, 12V	1	F9TF-SG018	32721
*	CONTROLLER BOX, 12V	1	F9TF-SG020	32721
*	CONTROLLER BOX, 12V	1	F9TF-SG021	32721
20	HARNESS, ELECTRICAL, HYDRAULIC CYLINDER	1		17858
20A	PLUG, PROGRAMMING PORT, MIRAGE	1		65909
21	HARNESS, ELECTRICAL, CARRIAGE	1		32729
22	HARNESS, ELECTRICAL, MAIN, W/HYDRAULIC LINE	1		32730
*	HARNESS, ELECTRICAL, MAIN, W/HYDRAULIC LINE	1	F9TF-DE038	66242
22A	DIODE ASSY, MIRAGE	1	F9TF-DE038	65953
*	KIT, DIODE REPAIR, MIRAGE W/O POLL BOX	1		65954
23	KIT, PIVOT FITTING, HYDRAULIC CYLINDER	1	F9TF MODELS	32183
	KIT, PIVOT FITTING, HYDRAULIC CYLINDER	1	F9TH-DE035	61346
24	KIT, QUICK DISCONNECT FITTING	1	F9TF MODELS	19587
	KIT, QUICK DISCONNECT FITTING	1	F9TH-DE035	32813
25	KIT, PRESSURE SWITCH, W/ELECTRICAL TERMINALS	1		19982
26	KIT, DRIVESHAFT LINK ASSY	2		19593
27	DRIVESHAFT, FINAL	1		19594
28	KIT, SPROCKET, 12T	1		19595
29	KIT, PINION GEAR, 18T	2		19592
30	SPRING, COMPRESSION, .609OD X 2.53L	2		20123
31	KIT, BUSHING ASSY, DRIVESHAFT LINK	2		19584
32	DUST CAP, CONTROLLER PROGRAMMING CONNECTOR	1		25955
33	TUBE ASSY, RH HYDRAULIC CYLINDER CONNECTION, CAP END	1	F9TH-DE035	61306
34	BACKET, PROTECTION, TUBE, HYDRAULIC	1	F9TH-DE035	61313
35	FITTING, 1/4 ORB MALE X 1/4 JIC FEMALE, SAE-4	1	F9TH-DE035	60196

**NOTE:** (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

**NOTE:** \* Item or configuration not shown.

This page intentionally left blank.





RSM0055600

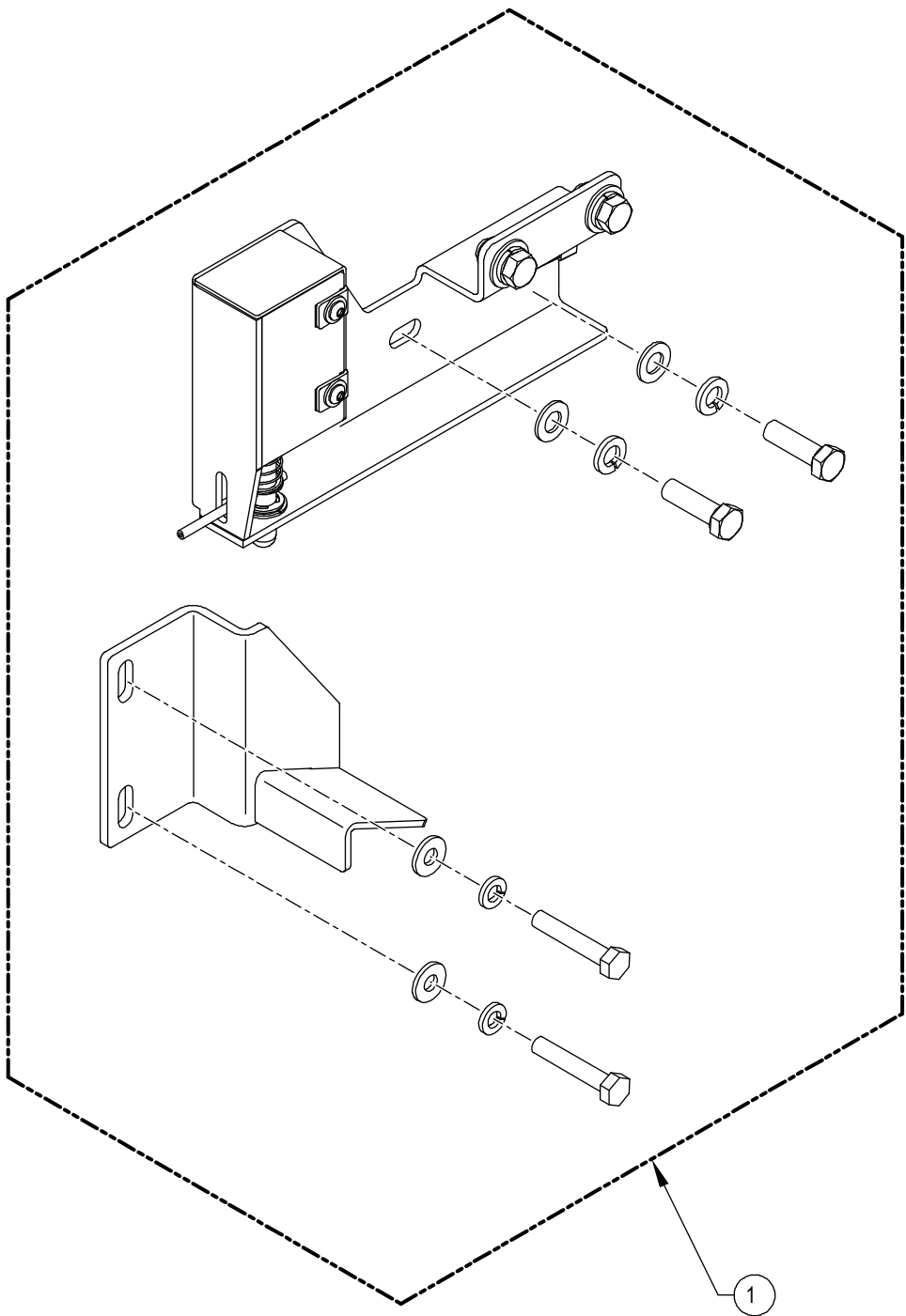
FIGURE 5-11: F9TF/F9TH-SERIES PENDANT, COUNTER & TWS ASSEMBLY

**FIGURE 5-11: F9TF/F9TH-SERIES PENDANT, COUNTER AND TWS ASSY**

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	KIT,PENDANT, COIL CORD, 9 PIN, FMVSS, BLK	1		44870
1A *	KIT,PENDANT ASSY,COIL,9PIN,FMVSS,IP67	1		62185
2	HARNESS, PENDANT EXT., PULLBOX TO PENDANT, W/CLIP	1		32713
3	HARNESS, TWS INTERFACE, W/PCB	1		32714
4	KIT, STORAGE BRACKET	1		33021
5	CYCLE COUNTER, W/HDWR	1		01276
6	THRESHOLD WARNING SYSTEM	1		32885

**NOTE:** (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

**NOTE:** \* Item or configuration not shown.



RSM0032701

FIGURE 5-12: F9TF/F9TH-SERIES STOW LOCK ASSEMBLY

FIGURE 5-12: F9TF/F9TH-SERIES STOW LOCK ASSY

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	KIT, STOW LOCK	1	F9TF-DE001	44909
	KIT, STOW LOCK	1	F9TF-DE002	44909
	KIT, STOW LOCK	1	F9TF-DE009	44909
	KIT, STOW LOCK	1	F9TF-DE021	44909
1A *	KIT, STOW LOCK W/SHIMS, REAR MOUNT	1	F9TF-DE003	19933
1B *	KIT, STOW LOCK W/SHIMS, REAR MOUNT, 24V	1	F9TF-DE013	29633
*	KIT, STOW LOCK W/SHIMS, REAR MOUNT, 24V	1	F9TF-SG017	29633
*	KIT, STOW LOCK W/SHIMS, REAR MOUNT, 24V	1	F9TF-SG019	29633
1C *	STOW LOCK PARTS	1	F9TF-DE019	48105
*	STOW LOCK PARTS	1	F9TH-DE035	61303
1D *	STOW LOCK PARTS, LH MOUNT	1	F9TF-DE022	55213
1E *	STOW LOCK PARTS	REF	F9TF-DE020	48139
1F *	KIT, STOW LOCK W/SHIMS, REAR MOUNT	1	F9TF-DS001	20108
*	KIT, STOW LOCK W/SHIMS, REAR MOUNT	1	F9TF-SG001	20108
*	KIT, STOW LOCK W/SHIMS, REAR MOUNT	1	F9TF-SG002	20108
*	KIT, STOW LOCK W/SHIMS, REAR MOUNT	1	F9TF-SG016	20108
*	KIT, STOW LOCK W/SHIMS, REAR MOUNT	1	F9TF-SG020	20108
1G *	KIT, STOW LOCK W/SHIMS, SIDE MOUNT, RH	REF	F9TF-SG003	37206
1H *	KIT, STOW LOCK, SW, FOLDING HANDRAILS	REF	F9TF-SG006	35098
1J *	KIT, STOW LOCK	REF	F9TF-SG007	33860
*	KIT, STOW LOCK	REF	F9TF-SG008	33860
*	KIT, STOW LOCK	REF	F9TF-SG009	33860
*	KIT, STOW LOCK	REF	F9TF-SG012	33860
*	KIT, STOW LOCK	REF	F9TF-SG018	33860
*	KIT, STOW LOCK	REF	F9TF-SG021	33860
1K *	KIT, STOW LOCK	1	F9TF-SG011	19915
1L *	KIT, STOW LOCK	REF	F9TF-SG014	20236

**NOTE:** (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

**NOTE:** \* Item or configuration not shown.



**NOTES:**

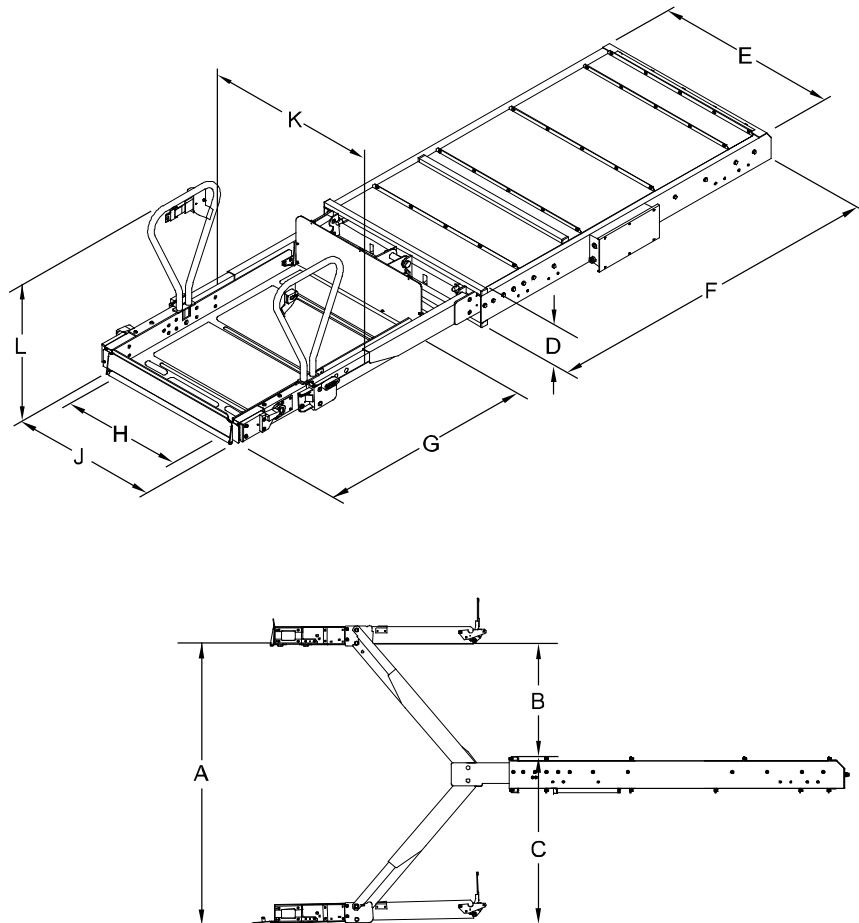


## VI. APPENDIX

## APPENDIX 1: PUBLIC USE LIFT SPECIFICATIONS

## MIRAGE® F9TF/F9TH PUBLIC USE LIFT SPECIFICATIONS

Power ..... electro-hydraulic (power-up/gravity-down)	Hydraulic cylinder ..... Ø3.0", single acting
Operating voltage range: 24 VDC ..... 21-27 VDC	Rated load capacity ..... 660 lbs. (300 kg) (Model F9TF)
Pump rating: @ 24 VDC ..... 1800 psi, 1250 Watts	..... 800 lbs. (363 kg) (Model F9TH)
	Manual backup - up ..... hand pump
	Manual backup - down ..... pressure release valve
	Lift weight (Model F9TF) ..... approx. 700 lbs. (318 kg)
	Lift weight (Model F9TH) ..... approx. 730 lbs. (330 kg)



RSM0080700

## DIMENSIONS – inches (mm)

	A <sup>1</sup>	B <sup>2</sup>	C	D <sup>3</sup>	E	F	G	H	J	K	L
Model	Floor to ground travel	Travel above max	Travel below max	Enclosure height	Enclosure width	Enclosure length	Usable platform length	Usable platform width	Clear entry width	Width traveling frame	Handrail height
F9TF-DE/DS F9TH-DE	60.0 (1676)	26.0 (660)	34.0 (864)	9.0 (229)	43.0 (1092)	81.0 (2057)	48.0 (1292)	32.0 (813)	31.75 (806)	41.4 (1052)	30.5 (775)

NOTE 1: Maximum available, requires vehicle specific engineering.

NOTE 2: Measured from the surface of the platform.

NOTE 3: Application dimension is inclusive bolt heads.

## APPENDIX 2: INSTALLATION INSTRUCTION 32II354E

**NOTE:** installation Instruction 32ii354e is found in Documentation Kit that is shipped with each lift.

**DOT-PUBLIC USE LIFT**  
**MODEL: F9TF-DE/DS-SERIES WHEELCHAIR LIFT(S)**  
**MANUFACTURER'S RATED LOAD FOR THESE LIFTS: 660 LBS (300 KG)**  
**MODEL: F9TH-DE-SERIES WHEELCHAIR LIFT(S)**  
**MANUFACTURER'S RATED LOAD FOR THESE LIFTS: 800 LBS (363 KG)**

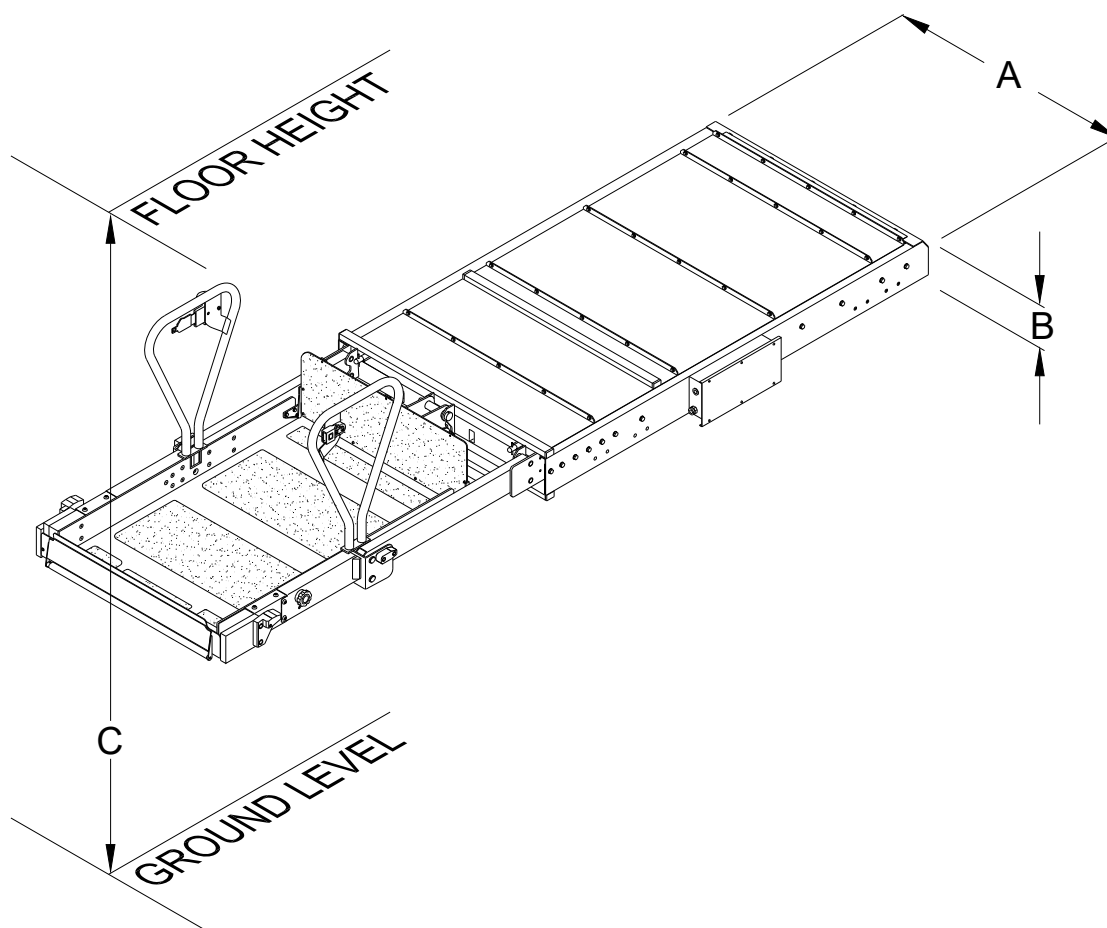
- Be certain these supplemental instructions are read and understood completely before installation is attempted. You should also refer to Service/Owner Manual for additional installation instructions and safety precautions.
- Public use vehicle manufacturers are responsible for complying with the lift lighting requirements in Federal Motor Vehicle safety Standard No. 404, Platform Lift Installations in Motor Vehicles (49 CFR 571.404).

### I. INSTALLATION REQUIREMENTS:

#### VEHICLE DOOR OPENING DIMENSIONAL REQUIREMENTS

Inches / [Millimeters]

43" W X 9" H [1092W X 229H]



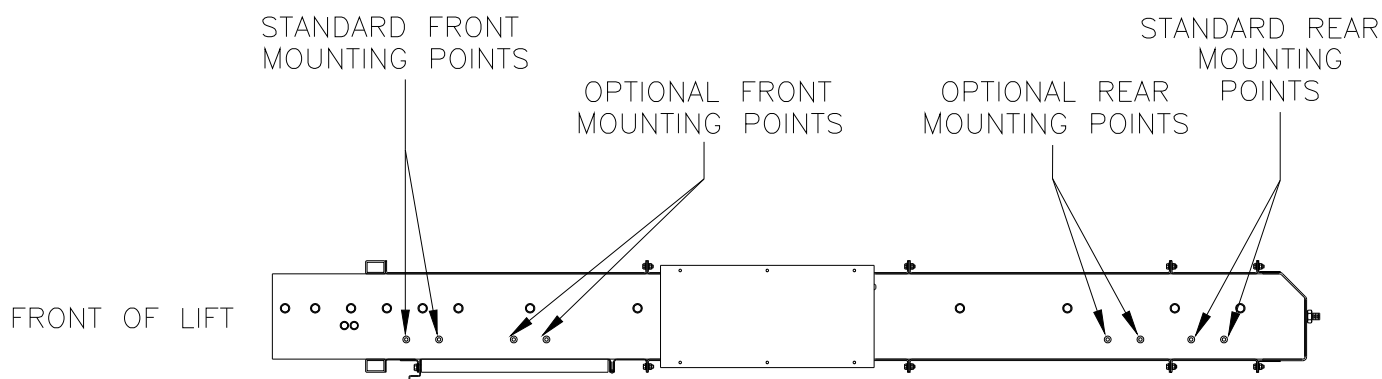
**FIGURE 1: LIFT DIMENSIONS**

MODEL	(A) ENCLOSURE WIDTH	(B) ENCLOSURE HEIGHT	(C) FLOOR HGHT TO GND LVL
F9TF-DE001	40 [1016]	4.3 [109]	26 [660]
F9TF-DE004	40 [1016]	4.3 [109]	40 [1016]
F9TF-DS001	40 [1016]	4.3 [109]	40 [1016]
F9TH-DE035	40 [1016]	4.3 [109]	40 [1016]

**NOTE:** The above data is presented as a method to easily compare different Ricon product, not as engineering dimensional data.

**VEHICLE MOUNTING REQUIREMENTS:** Rated Load: 800#    Standard Load: 660#    Standard Load Test: 1800#

- The mounted weight of lift is received at eight standard attachment points (four on each side of enclosure). There is a 5/16-18 threaded insert at each point.

**FIGURE 2: LIFT MOUNTING POINTS**

- Refer to **TABLE 1**. Mounting brackets for attachment of lift are not supplied, since lift mounting varies from one application to another. The mounting method must meet the load requirements in **Table 1**.

<b>TABLE 1: CAPACITY REQUIREMENTS FOR LIFT MOUNTING BRACKETS</b>		
<b>Loading Direction</b>	<b>Front Supports</b> (total capacity for left and right support points)	<b>Rear Supports</b> (total capacity for left and right support points)
Vertical	4500 lbs. (2041 kg)	3500 lbs. (1588 kg)
Longitudinal (perpendicular to drive axle)	3000 lbs. (1361 kg)	3000 lbs. (1361 kg)
Lateral (parallel to drive axle)	1500 lbs. (680 kg)	1500 lbs. (680 kg)
<b>END OF TABLE</b>		

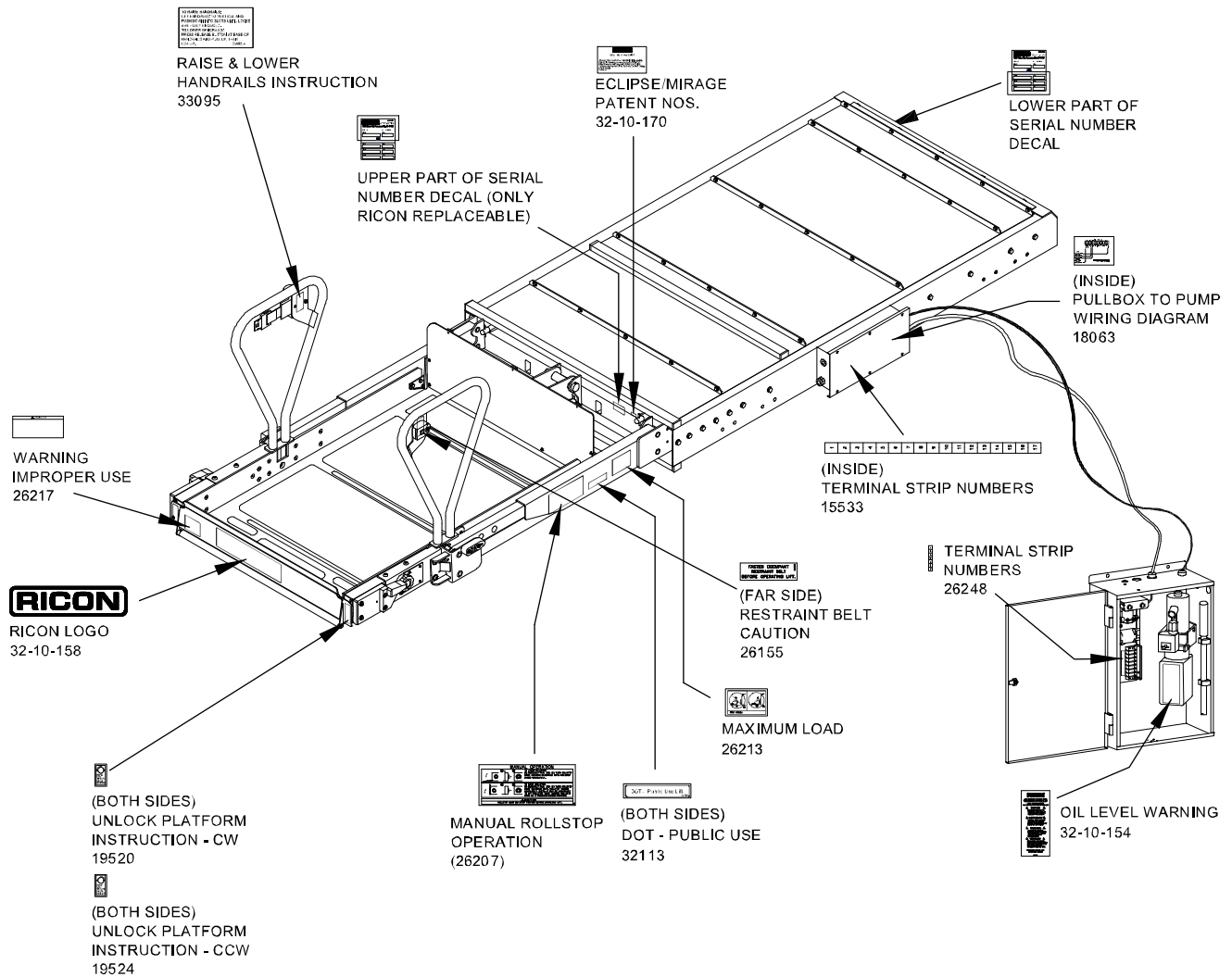
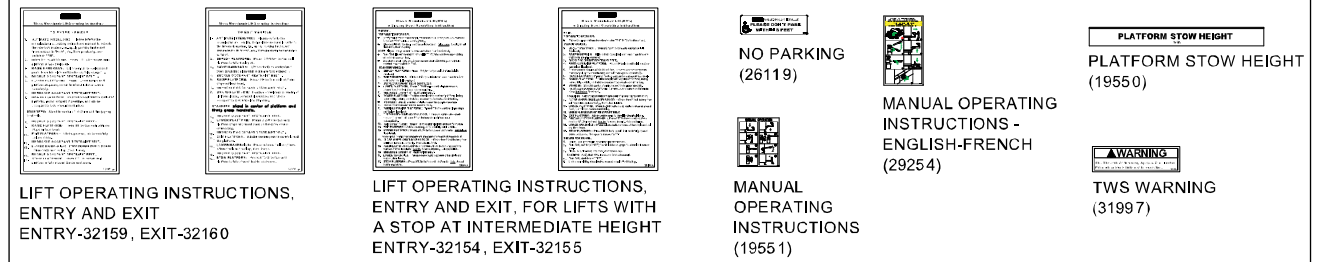
## II. OP CHECKLIST FOR VEHICLE MANUFACTURER: F9TF-DE/DS, F9TH-DE SERIES MODEL(S)

This checklist is intended to verify proper operation of a Ricon FMVSS 403 compliant Wheelchair Lift. All items must comply for the wheelchair lift to be considered FMVSS 403 compliant.

COMPLIANT	NON-COMPLIANT	CHECKLIST
		Wheelchair lift and vehicle properly interlocked (lift cannot be powered unless vehicle interlocks are activated and interlocks cannot be disengaged unless lift is fully stowed).
		Threshold Warning Device functioning properly (audible warning and visual warning for public use lifts is activated if threshold area is entered when platform is at least one inch below vehicle floor level).
		Main power switch enables and disables the lift control system.
		Control pendant illuminated when the lift is powered.
		Inboard rollstop does not raise from floor level with load (50 lbs. (23 kg) at center of barrier).
		Platform is unable to raise more than 3" (8 cm) above ground level when restraint belt is not engaged and outer barrier is not engaged (Dedicated Entry models with interlocked restraint belt only).
		Platform is unable to raise more than 3" (8 cm) above ground level when outer barrier is not engaged (Dedicated Entry models with non-interlocked restraint belt only).
		Platform is unable to raise more than 3" (8 cm) above ground level when outer barrier is not engaged (Step well models only).
		Platform lighting functional when lift is powered.
		Platform does not stow while occupied (minimum 50 lbs. (23 kg)).
		Manual back-up operation fully functional (see operations manual for directions).

### III. DECAL LOCATIONS: F9TF-DE/DS, F9TH-DE - SERIES MODEL(S)

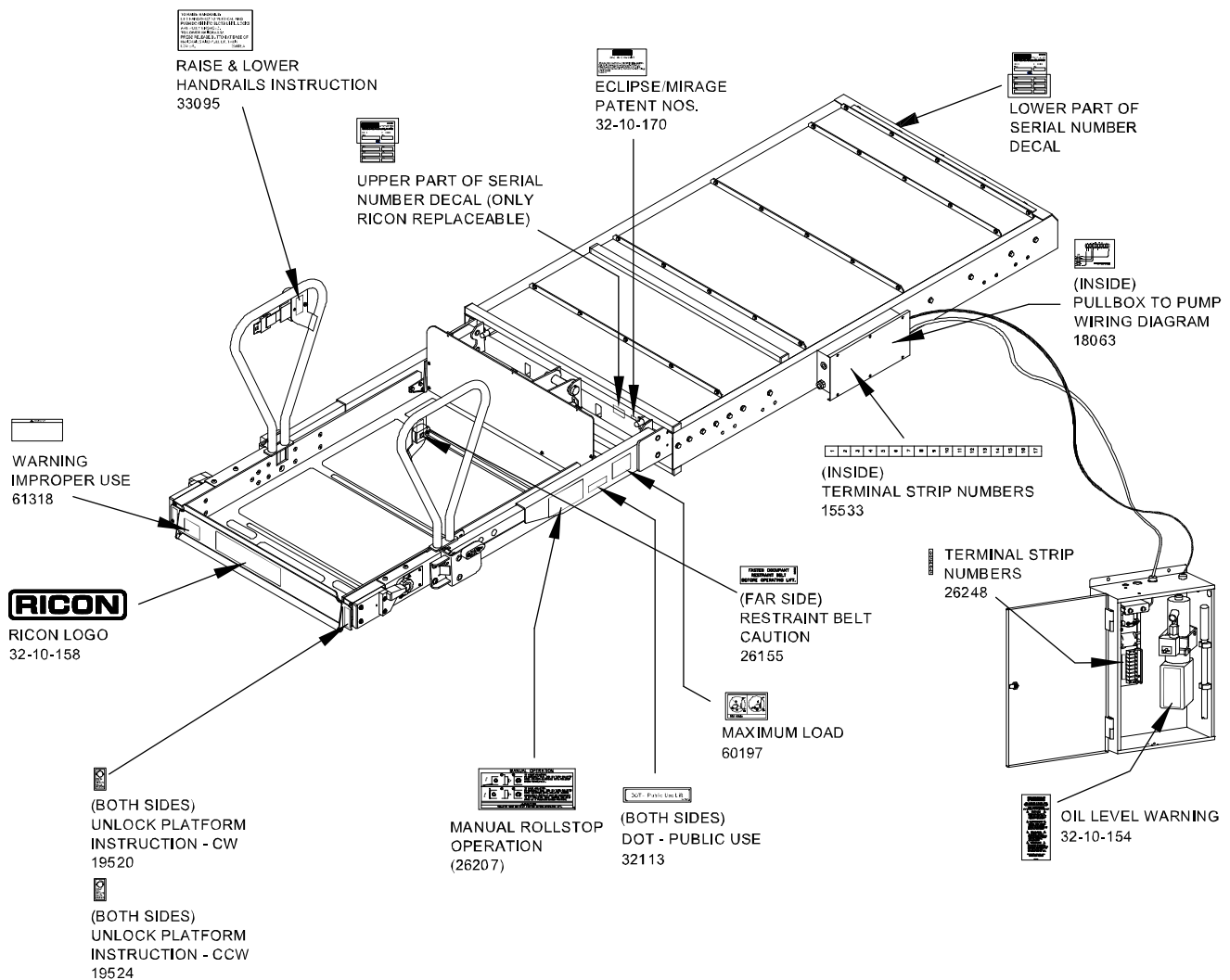
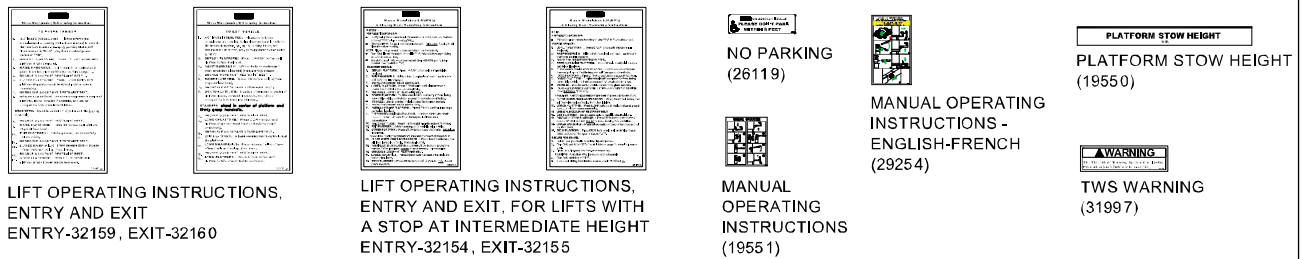
#### DECALS AFFIXED TO VEHICLE



RSM0073500

FIGURE 3: F9TF DECAL LOCATIONS AND PART NUMBERS

## DECALS AFFIXED TO VEHICLE



RSM0073600

FIGURE 4: F9TH DECAL LOCATIONS AND PART NUMBERS

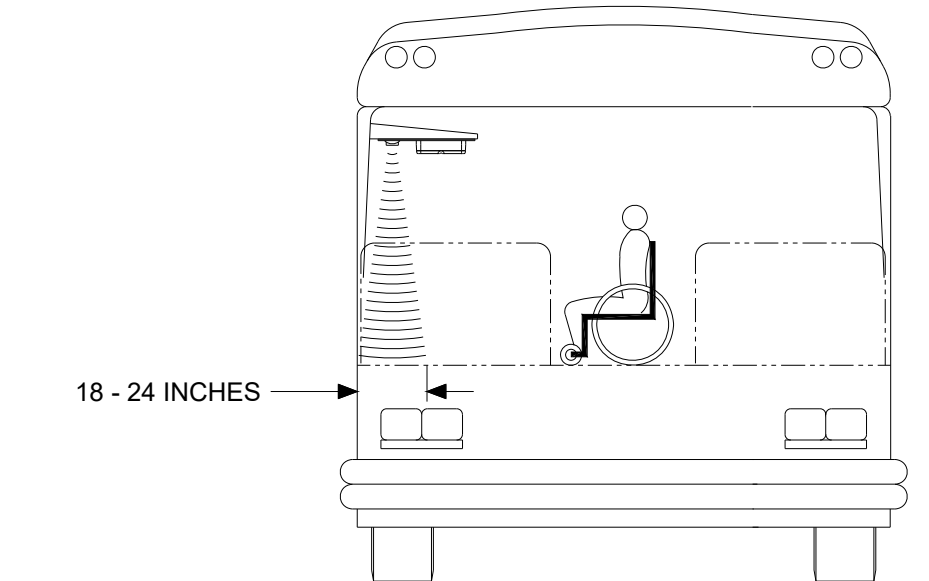
## IV. THRESHOLD WARNING SYSTEM ADJUSTMENT

There are three sections presented here. The first section adjusts where the acoustic beam is pointed, the second tests the accuracy of the adjustment, and the third provides a procedure for adjusting the timing of the sensors.

Adjustment of the sensor timing is done at the factory and should not need to be repeated in the field. Readjustment should only be considered if the sensor aiming could not be adjusted to ignore the wheelchair in the aisle, a seat and the platform during its normal movement.

### ADJUST AIMING OF ACOUSTIC SENSOR BEAM:

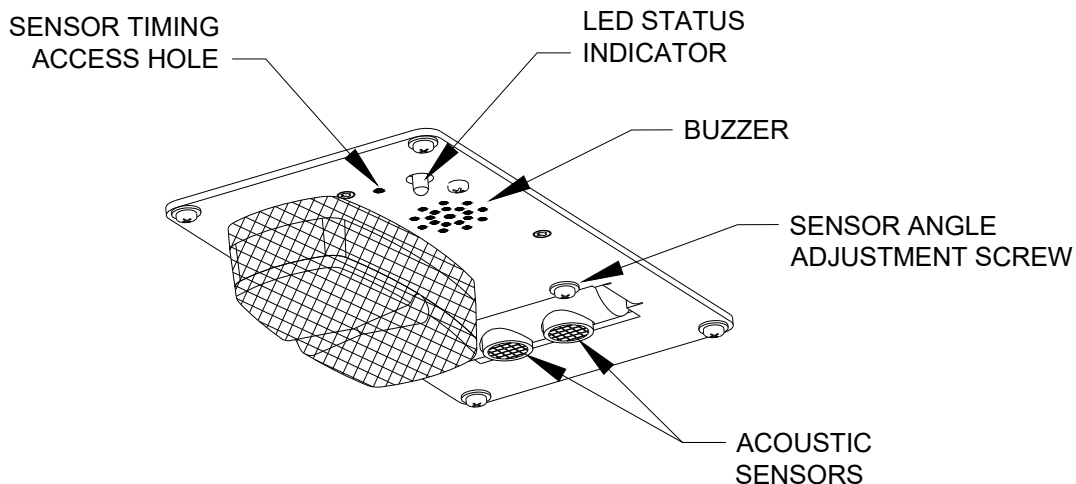
1. Refer to **FIGURE 5**. Place wheelchair with passenger in center aisle of bus, pointed at doorway where Threshold Warning System (TWS) is installed. The TWS should not detect a wheelchair and passenger when they are located this far from doorway.



**FIGURE 5: TWS AREA**

2. Turn power to lift on (LED on TWS module will light steady) and enable power to lift. If wheelchair and passenger are detected by acoustic sensors the LED will flash, the buzzer will sound, and the large red light will flash. If this occurs, it is necessary to adjust aiming of sensors.
3. Refer to **FIGURE 6**. Turn sensor angle adjustment screw clockwise to move direction of beam away from center aisle and towards doorway. Stop adjustment when LED ceases to flash.

**NOTE:** Only in rare instances will adjustment be needed in the counterclockwise direction.



**FIGURE 6: TWS MODULE DETAIL**

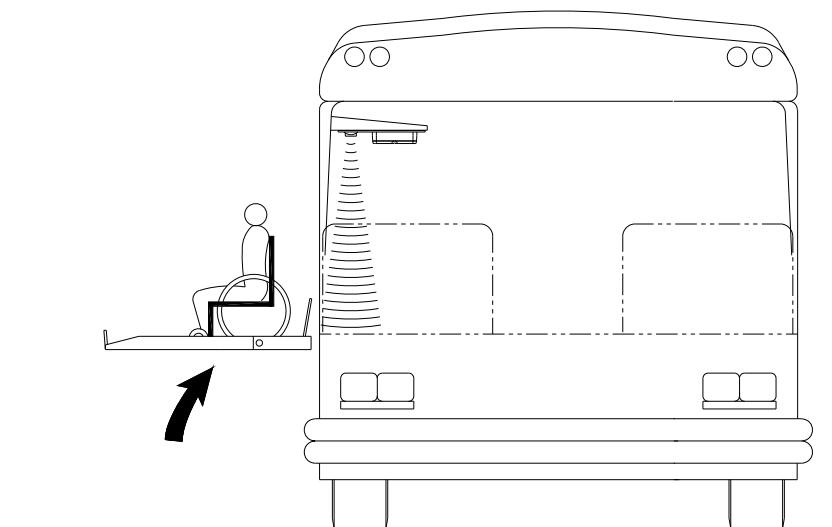


4. Move centerline of small front wheels of wheelchair (with passenger) to within 24 inches of doorway and repeat aiming procedure in previous step.

**TEST AIM OF ACOUSTIC SENSOR BEAM:**

1. Move wheelchair and passenger slowly towards doorway. TWS should detect wheelchair and passenger (LED will flash, the buzzer will sound, and the large red light will flash) when centerline of front wheels is between 18" (46 cm) and 24" (61 cm) from doorway.
2. Refer to **FIGURE 7**. Open vehicle door above lift. Lower platform to ground and place wheelchair and passenger at rear of platform. Bridgeplate (rear barrier) should be up. Raise platform to floor level. This normal platform motion with wheelchair and passenger aboard should not actuate TWS. If LED does flash (buzzer will also sound and large red light will flash), turn sensor adjustment screw slightly CCW.

**NOTE:** If an adjustment is made, repeat the previous step where wheelchair is between 18 and 24 inches from doorway.



**FIGURE 7: CHECKING NORMAL PLATFORM POSITION**

**ADJUST ACOUSTIC SENSOR TIMING:**

1. Support a flat sheet of cardboard, or similar material, directly beneath TWS module and at a distance of 4 1/2 feet (1.4 m) below module. Sheet must be facing sensors.

**NOTE:** Before proceeding, visually inspect sensors to verify that they are pointed directly at floor, or nearly, and are not pointed off at an extreme angle.

2. Refer to **FIGURE 6**. Note the sensor timing access hole. This hole provides access to a plunger actuated switch that sets the sensor timing. Insert a 1/16" (2 mm) diameter wire-like object into the access hole and press the plunger inward. The LED will flash momentarily while the module establishes the distance and then remain on steady. Release the plunger when the LED ceases to flash.

**NOTE:** It is important that objects, such as your body, tools, seats, etc., do not interfere with the beam while the adjustment is being made.

**APPENDIX 3: INSTALLATION INSTRUCTION 32II482E**

**INSTALLATION INSTRUCTIONS**  
**RICON MIRAGE® F9TF-DE019, F9TH-DE035 LIFT CLUTCH ADJUSTMENT**

- Be certain that these supplemental instructions are read and understood completely before installation is attempted. You should also refer to the Service/Owner Manual for additional installation instructions and safety precautions.
- Check contents of this kit and notify Ricon immediately of any missing parts. Claims for damages that have occurred during shipping must be made to the shipper.

**TABLE OF CONTENTS****PAGE**

I. INTRODUCTION.....	6-9
II. MIRAGE® F9TF-DE019, F9TH-DE035 ADJUSTMENT .....	6-10

- Under no circumstances is maintenance, repair, or adjustment of the product to be performed without the presence of an individual capable of giving aid.
- This lift is driven with hydraulic pressure generated by a hydraulic pump system. The fluid is highly pressurized and possibly very hot. Use extreme caution when doing maintenance and repairs. DO NOT disconnect hoses or fittings when lift is in motion.
- Give immediate attention to all injuries and administer first-aid, or seek medical attention, as necessary.
- Protective eye shields and clothing should be worn during maintenance, repair, and adjustment of the lift.
- Work in a properly ventilated area.
- Check for hidden obstructions before drilling and cutting. Avoid interference with wiring, fuel tank, fuel lines, hydraulic lines, subfloor members, etc.
- Read and understand all instructions before attempting to operate the product.
- Read and understand all instructions before attempting to perform maintenance, repairs, or adjustments to the product.
- Read and comply with warning labels attached to lift.
- Refer to S-Series Service Manual for part numbers of replacement parts mentioned here.

**I. INTRODUCTION**

The following instructions are intended to cover the adjustment of the Ricon F9TF-DE019, F9TH-DE035 Clutch Adjustment.

**NOTE:** Remove power to the lift prior to commencing adjustment.

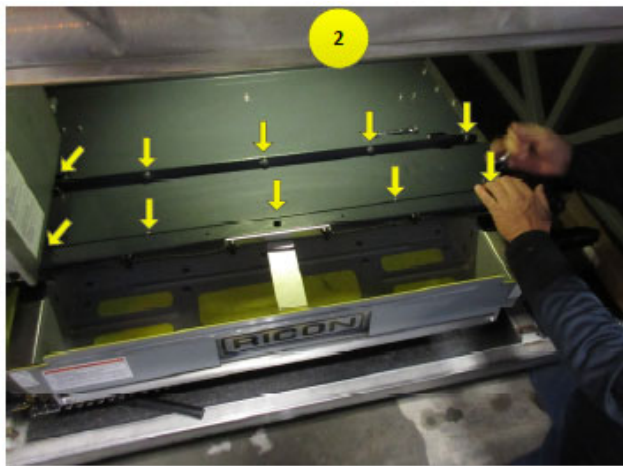
**A. TOOLS REQUIRED**

7/16" Socket Wrench  
 22mm Clawfoot Torque Wrench  
 15/16" Wrench (2X)

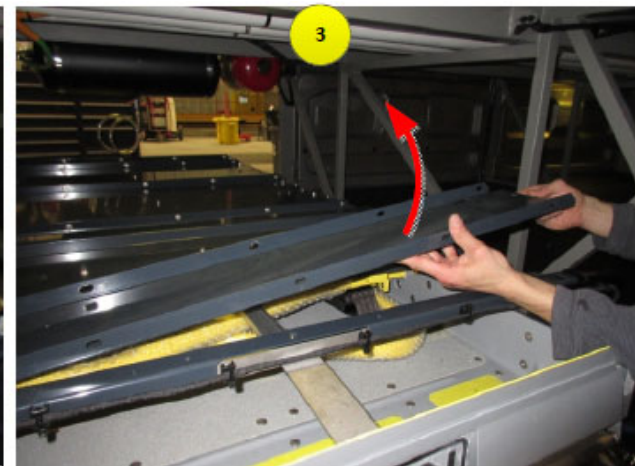
## II. MIRAGE® F9TF-DE019, F9TH-DE035 ADJUSTMENT



Power up lift, and electrically deploy lift to the outmost position. Turn off power to the lift once complete.



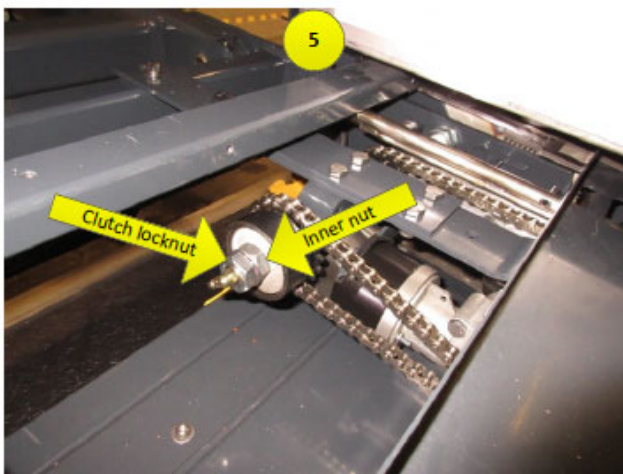
Remove the 10 pcs of 7/16" bolts holding the cover on top of the lift



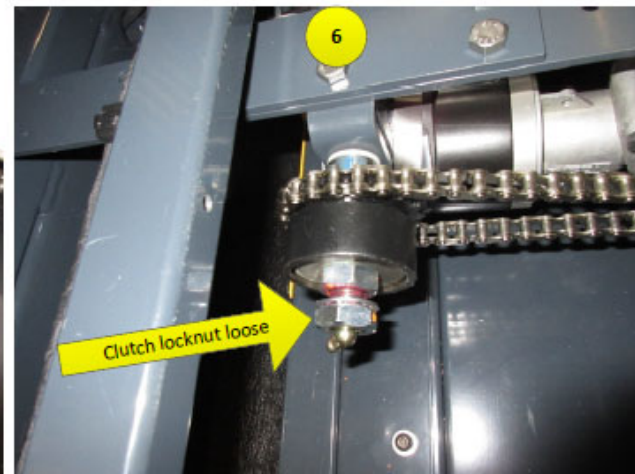
Carefully lift cover out of place, and store in a safe area.



Release lift by engaging the manual release handle counter clockwise

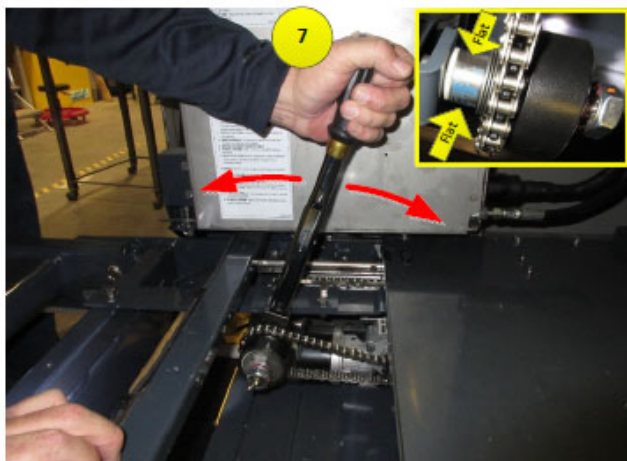


Loosen the 15/16" clutch locknut by holding inner nut, with 15/16" wrench. A 15/16" socket or wrench may be used to loosen outer nut.

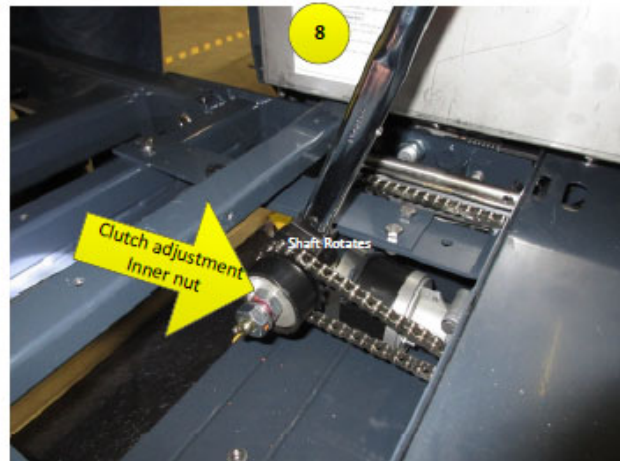


Locknut shown loose

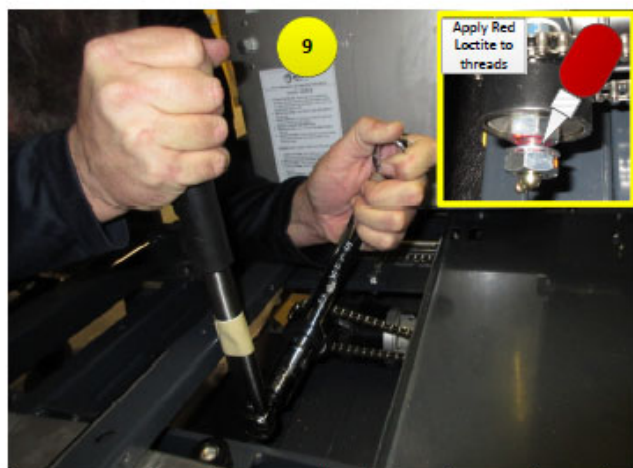




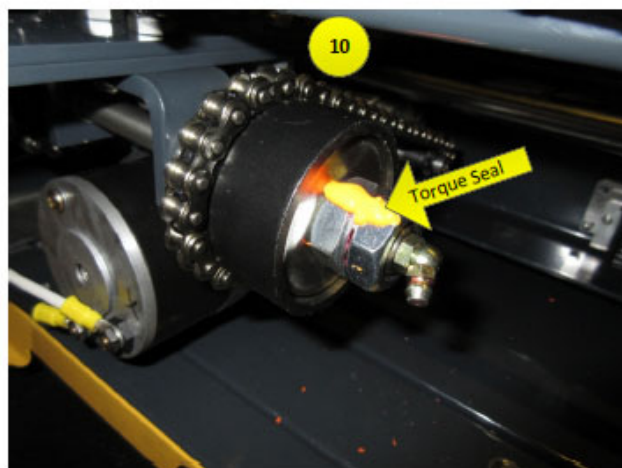
Using a 22mm clawfoot torque wrench (which can measure up to a max. of 30ft.lbs). The breakaway force must be between 24 and 28 ft.lbs



To adjust the torque setting on the clutch, either loosen(to reduce) or tighten (to increase) the inner nut against the clutch plate



Once proper adjustment has been obtained, apply RED permanent Loctite to threads and hold the inner nut with a wrench, and tighten the outside locknut with a torque wrench between 40 and 50 ft.lbs.



Apply torque seal across both nuts, once complete.



Engage lift by engaging the manual release handle, turn clockwise, and push lift in slightly. Install top cover, and cycle lift 3 times min, to check for proper operation. Check lift against stow lock and make sure it breaks away.

This page intentionally left blank.

