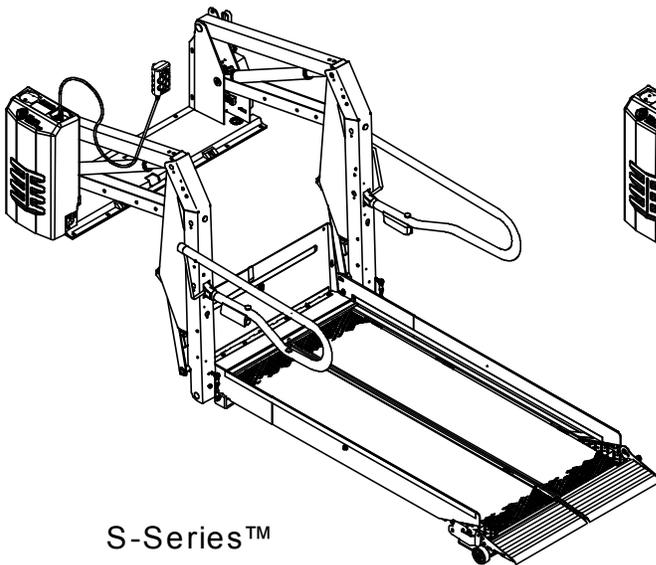




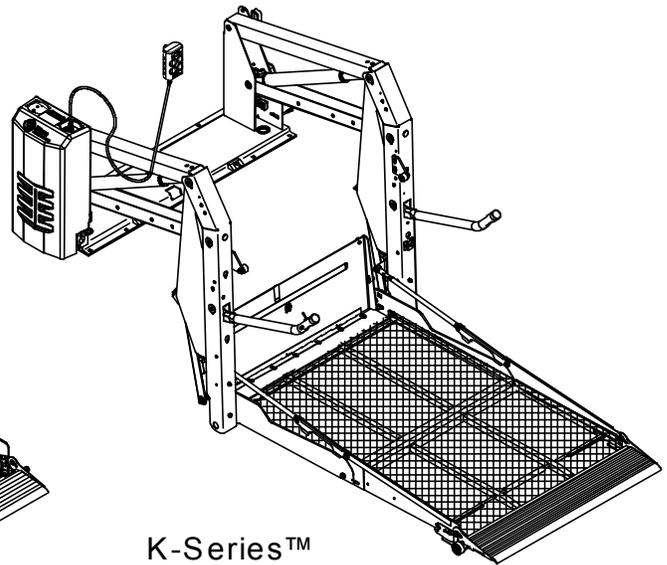
**Ricon**®

*A Wabtec company*

**S-SERIES™  
AND K-SERIES™  
EXPORT USE WHEELCHAIR  
AND STANDEE LIFT**



S-Series™



K-Series™

*-Print-*

**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).

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

## REVISION RECORD

REV	PAGES	DESCRIPTION OF CHANGE	ECO
32DSKE02.B.1	4-6	Illustration update to add item 7.	600025
	4-7	Parts List update to add item 7.	
	4-12 4-13	Illustration update to add items 3, 4 & 5.	
	4-14	Parts List update to add items 2, 2A, 3, 3A, 4, 4A, 5, 5A.	
	4-18	Illustration update to add items 21 & 22.	
	4-19	Parts List update to add items 21 & 22.	
	4-20	Illustration update to add items 24, 25 & 26.	
	4-21	Parts List update to add items 24, 25 & 26.	
	4-22	Illustration update to add items 22 & 23.	
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## I. INTRODUCTION

The Ricon S-Series™ and K-Series™ Export Use Wheelchair and Standee lifts provide wheelchair access to personal use vehicles. The patented movement on both models provides smooth, safe entry and exit and easily lifts up to 363 kilograms (800 pounds). The platforms on both S- and K-Series Export Use Wheelchair lifts have a rated load capacity of 363 kilograms (800 pounds).

The S-Series Export Wheelchair lift has two platform options. One platform option splits and folds into the vehicle when stowed and the other platform option is a solid, one-piece platform that is raised and folded into the vehicle when stowed. The K-Series platform splits horizontally to reduce overall lift height when stowed. This results in a less obstructed view, either into or out of the vehicle. The mechanical linkages provide smooth movement to both non-skid platforms where the wheelchair and occupant are situated during the “Up” and “Down” lift motions.

S- and K-Series Export Use Wheelchair lifts contain an electro-hydraulic pump with a built-in manual back-up pump and an emergency release. If the lift loses power, it can be raised or lowered manually.

Trained personnel operate the lift by using a control pendant. The control pendant is used to unfold the platform out from the vehicle (deploy). The passenger boards the non-skid platform and an operator lowers the platform to the ground. After the passenger departs, the platform is stowed back into the vehicle.

This manual contains warranty information, safety precautions, optional configurations, operating and maintenance instructions that apply to both Ricon S- and K-Series Export Use wheelchair lifts. It is important to user safety that the lift operator be completely familiar with the operating instructions. Once the lift is installed, it is very important that the lift be properly maintained by following the Ricon recommended maintenance and inspection instructions provided in Chapter III.

### A. RICON PRODUCT SUPPORT

If you have questions about this manual, or additional copies are needed, please contact Ricon Product Support at one of the following locations:

**Vapor Ricon Europe Ltd.**  
**Littlemoss Business Park**  
**Littlemoss Road**  
**Droylsden**  
**Manchester, M43 7EF .....+44 (0) 161 3016000**  
**World Wide Website .....www.RiconCorp.com**

## B. RICON PRODUCT WARRANTY



### RICON CORPORATION FIVE-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 due to 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 a period of two years from the date of purchase. A Vapor Ricon Europe rate schedule determines parts covered and labor allowed.
- Repair or replace lift powertrain parts only for a period of five years from date of purchase. A complete list of parts covered can be obtained from Vapor Ricon Europe product support.

**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 repairs.

**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 that this product be inspected by an authorized Vapor Ricon Europe dealer or qualified service technician at least once every six months or sooner if necessary. Any required maintenance should be performed at that time.



#### WARNING

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

**This warranty is void if:**

- The product has been installed or maintained by someone other than an authorized Vapor Ricon Europe dealer or qualified service technician.
- The product has been modified or altered in any respect from its original design without written authorization by Vapor Ricon Europe or Ricon Corporation.

*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 applicable 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 20 days after installation of this Ricon product for the warranty to be valid. The warranty is not transferable.*

**The warranty gives specific legal rights, and there may be other rights that vary from state to state.**

### C. SHIPMENT INFORMATION

- When the product is received, unpack the product and check for freight damage. Claims for any damage should be made to the carrier immediately.
- Verify that the installation kit contains all items listed on the enclosed 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 the warranty.

**NOTE:** The Sales or Service personnel must review the Warranty and this Operator Manual with the user to be certain that they understand how to safely operate the product. Instruct the user to follow the operating instructions without exception.

### D. GENERAL SAFETY PRECAUTIONS

The following general safety precautions apply to both S-Series and K-Series Export Use wheelchair lifts and must be followed during installation, operation, and maintenance:

- Under no circumstances should installation, maintenance, repair, and adjustments be attempted without the immediate presence of a person capable of rendering aid.
- An injury, no matter how slight, should always be attended. Always administer first aid or seek medical attention immediately.
- Protective eyeshields and appropriate clothing should be worn at all times.
- To avoid injury, always exercise caution when operating and be certain that hands, feet, legs, and clothing are not in the path of product movement.
- Batteries contain acid that can burn. If acid comes in contact with skin, flush affected area with water and wash with soap immediately.
- Always work in a properly ventilated area. Do not smoke or use an open flame near a battery.
- Do not lay anything metallic on top of a battery.
- Check under vehicle before drilling to avoid drilling into frame, subframe members, wiring, hydraulic lines, brake fluid lines, fuel lines, fuel tank, etc.
- Read and thoroughly understand the operating instructions before attempting to operate.
- Inspect the product before each use. If an unsafe condition is noted, such as unusual noises or movements, do not use lift until the problem is corrected.
- Never load or stand on the platform until installation is complete. Upon completion of installation, test load the lift to 100% of its rated load capacity.
- Stand clear of doors and platform and keep others clear during operation.
- The product requires regular periodic maintenance. Inspections are recommended at the intervals prescribed in chapter three. The product must be maintained at the highest level of performance.

### E. S-SERIES™ EXPORT USE MAJOR LIFT COMPONENTS

The references used throughout this manual are illustrated in **Figure 1-1** and defined in the **Table 1-1**. Refer to **Chapter IV** "Parts Diagrams and Lists" for more details.

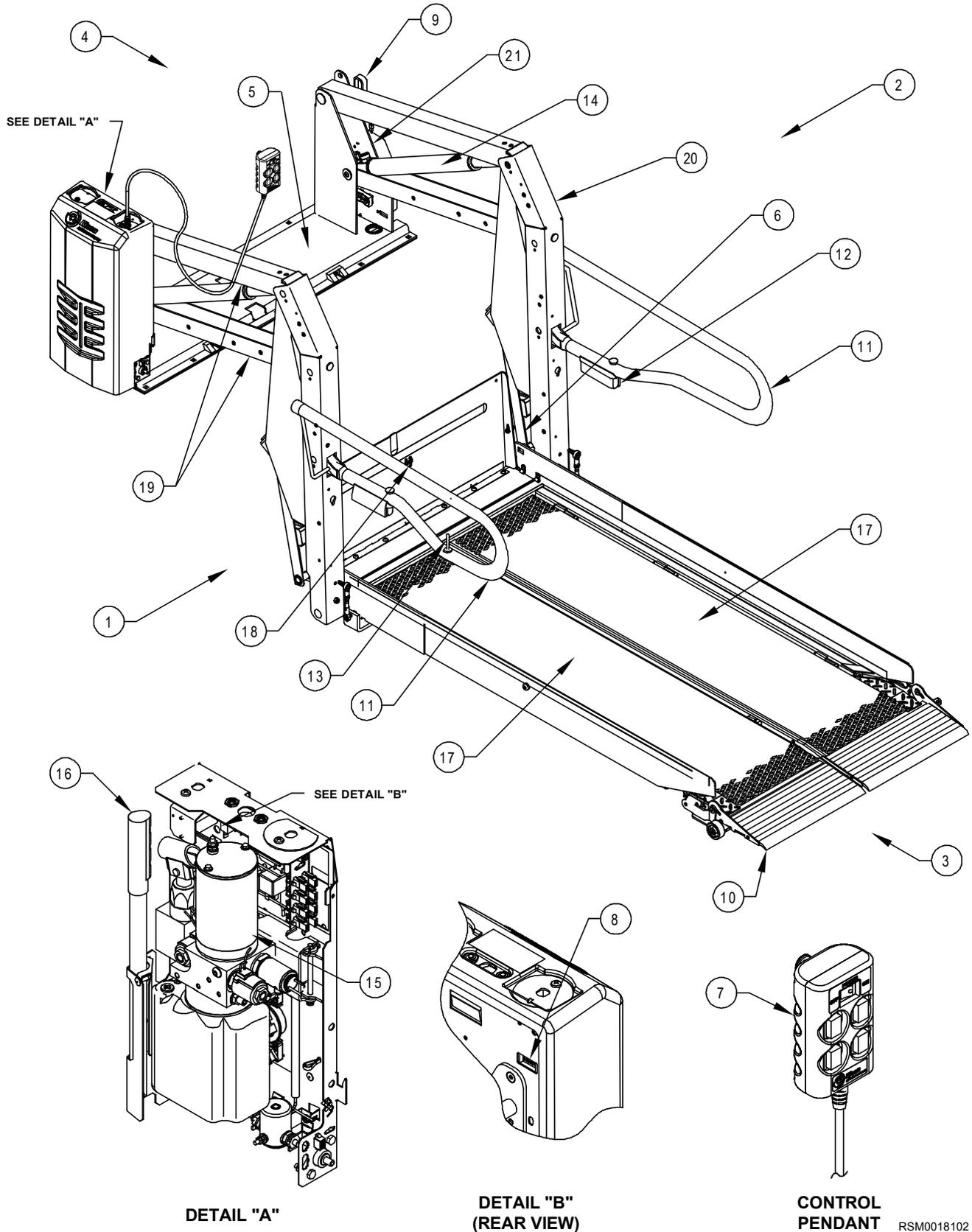


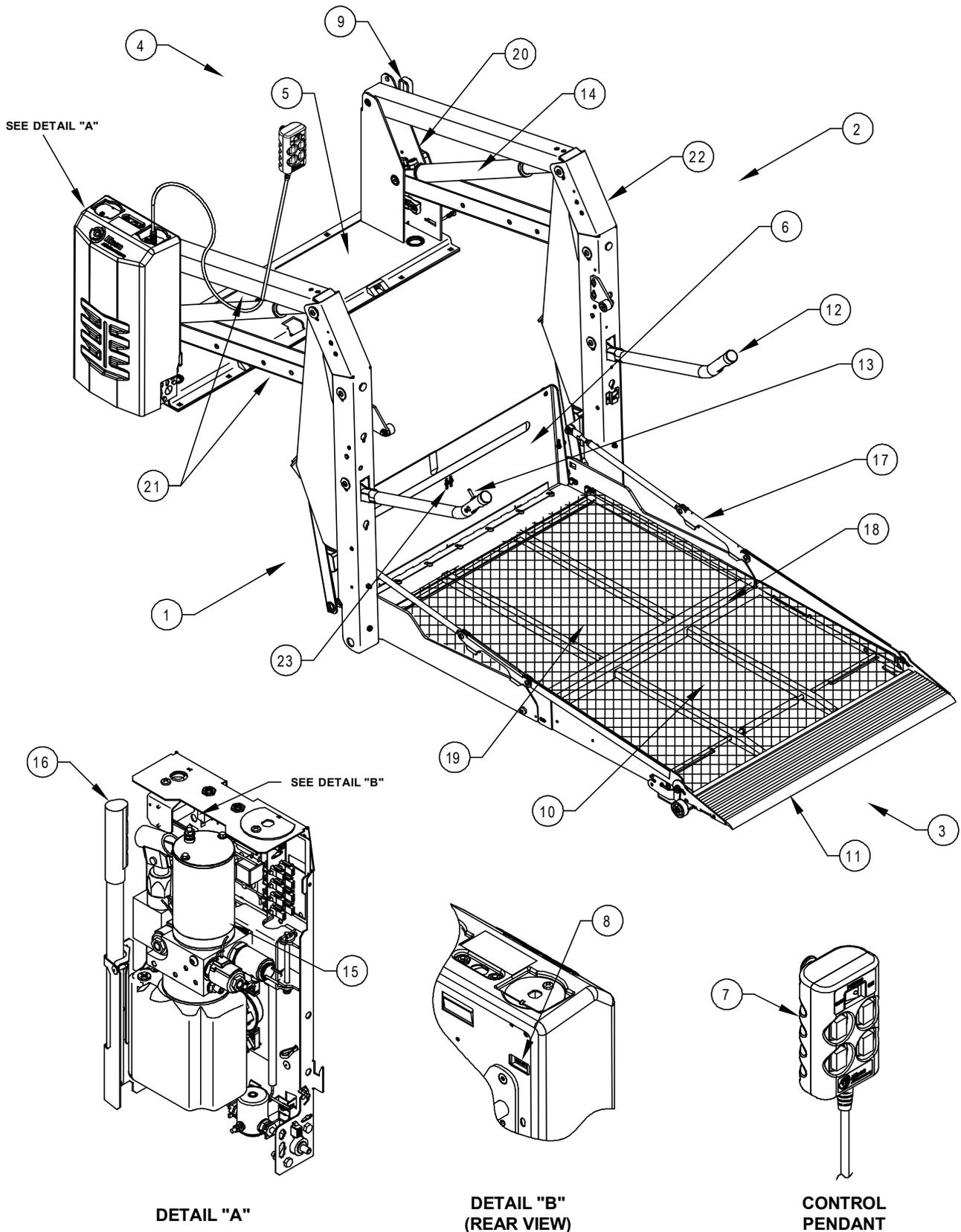
FIGURE 1-1: S-SERIES EXPORT USE WHEELCHAIR LIFT MAJOR COMPONENTS

**TABLE 1-1: S-SERIES EXPORT USE MAJOR COMPONENT TERM DEFINITIONS**

REF	NAME	DESCRIPTION
1, 2, 3, 4	Left, Right, Front, Rear	Position references when the lift is viewed from outside of the vehicle.
5	Baseplate	Bolts to vehicle floor; provides secure foundation for lift structure.
6	Bridgeplate (inboard rollstop)	Plate that bridges gap between platform and baseplate when platform is at floor level. Also acts as a rear rollstop when platform is in motion.
7	Control pendant	Hand-held device used to control platform motions.
8	Cycle counter	Visible at top rear of housing, it records number of times platform has moved from floor to ground and back to floor.
9	Emergency release (Option)	Enables emergency release mechanism that opens manual release valve (located on hydraulic pump), disengages stow-lock latch (located on baseplate) then allows platform to lower to ground level.
10	Front rollstop	Front barrier prevents wheelchair from inadvertently rolling off of platform during platform movement.
11	Handrail	(left and right) Provides handhold for standing passenger.
12	Handrail light (Option)	(left and right) Directs light onto platform surface.
13	Remote Switch	Remote controlled UP and DOWN switch.
14	Hydraulic cylinder	(left and right) Telescoping single-acting cylinders convert hydraulic pressure into platform lifting and folding force.
15	Hydraulic power unit	Contains hydraulic pump driven by electric motor that produces pressure to raise and fold platform, and a pressure release valve to unfold and lower it.
16	Manual back-up pump handle	(located inside housing of hydraulic unit) Used to operate manual back-up pump.
17	Platform Sections	(left and right) Component of lift where the wheelchair and occupant are situated during "UP" and "DOWN" lift motions.
18	Stow-Lock catch	Engages latch located on bottom of bridgeplate when platform is fully stowed.
19	Top and bottom arms	(left and right) Upper and lower links that connect vertical arms to baseplate.
20	Vertical arms	(left and right) Connects platform to top and bottom arms.
21	Serial number	Location of lift serial decal.
<b>END OF TABLE</b>		

**F. K-SERIES™ EXPORT USE MAJOR COMPONENTS**

The terms used throughout this manual are illustrated in **Figure 1-2** and defined in **Table 1-2**. Refer to the parts diagrams and lists in **Chapter IV** for more details.



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**FIGURE 1-2: K-SERIES EXPORT USE WHEELCHAIR LIFT MAJOR COMPONENTS**

**TABLE 1-2: K-SERIES EXPORT USE MAJOR COMPONENT TERM DEFINITIONS**

REF	NAME	DESCRIPTION
1, 2, 3, 4	Left, Right, Front, Rear	Position references when the lift is viewed from outside of the vehicle.
5	Baseplate	Bolts to vehicle floor; provides secure foundation for lift structure.
6	Bridgeplate (inboard rollstop)	Plate that bridges gap between platform and baseplate when platform is at floor level. Also acts as a rear rollstop when platform is in motion.
7	Control pendant	Hand-held device used to control platform motions.
8	Cycle counter	Visible at top rear of housing, it records number of times platform has moved from floor to ground and back to floor.
9	Emergency release (Option)	Enables emergency release mechanism that opens manual release valve (located on hydraulic pump), disengages stow-lock latch (located on baseplate) then allows platform to lower to ground level.
10	Front platform section	Front portion of platform that unfolds during deploy and folds during stow.
11	Front rollstop	Front barrier prevents wheelchair from inadvertently rolling off of platform during platform movement.
12	Handrail	(left and right) Provides handhold for standing passenger.
13	Remote Switch	Remote controlled UP and DOWN switch.
14	Hydraulic cylinder	(left and right) Telescoping single-acting cylinders convert hydraulic pressure into platform lifting and folding force.
15	Hydraulic power unit	Contains hydraulic pump driven by electric motor that produces pressure to raise and fold platform, and a pressure release valve to unfold and lower it.
16	Manual back-up pump handle	(located inside housing of hydraulic unit) Used to operate manual back-up pump.
17	Platform folding linkage	(left and right) Links that cause front platform section to unfold as it deploys or fold as it stows.
18	Platform hinges	Three hinges provide connection between front and rear platform sections.
19	Rear platform section	Rear portion of platform that is folded by linkage located within the vertical arms.
20	Serial number	Location of lift serial decal.
21	Top and bottom arms	(left and right) Upper and lower links that connect vertical arms to baseplate.
22	Vertical arms	(left and right) Connects platform to top and bottom arms.
23	Stow-Lock catch	Engages latch located on bottom of bridgeplate when platform is fully stowed.

**END OF TABLE**

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## II. INSTALLATION

This chapter contains instructions for installing the RICON S-Series™ and K-Series™ Export Use wheelchair lift into most private use vehicles, although custom installations are also possible in other types of vehicles. Due to the wide range of lift applications, specific information for every possible application is not available. The following general procedures will apply to most installations. Contact Ricon Product Support for instruction concerning installations not covered. To install lift, refer to following sections and perform procedures carefully and in the order that they are presented. Be certain that installation instructions are followed exactly and do not eliminate any steps or modify product.

**NOTE:** Please review carefully the installation instructions (32ii427e) that are supplied with this lift before beginning the following procedures. Where these procedures conflict, the installation instructions take precedence.

### A. GENERAL MECHANICAL INSTALLATION

#### 1. LIFT LOCATION

The installation surface must be flat and level. It is recommended that lift be installed on a 13mm (1/2 in.), minimum, high-grade plywood sub-floor. However, this additional installation height may not be acceptable in cases where overhead clearance is limited.

Refer to Figure 2-1.

**NOTE:** Check for proper travel clearance through doorway.

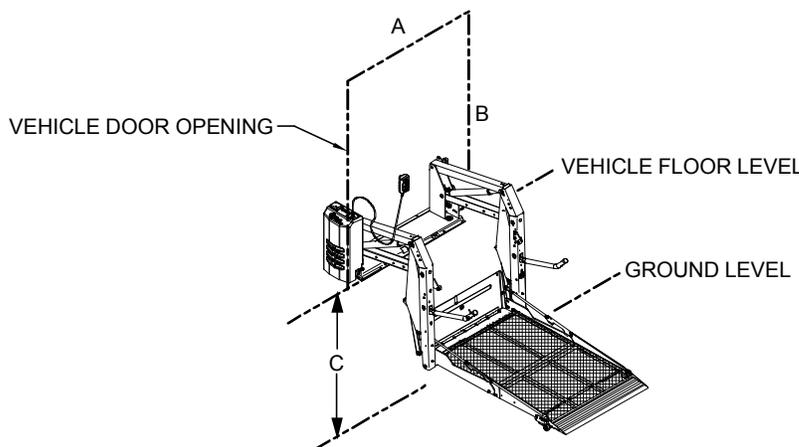
- With doors fully open, place/position lift in vehicle doorway as close as possible to door, with lift's baseplate assembly parallel to side of vehicle.
- Allow a distance of 19mm (3/4 in.), if possible, between door and the part of lift closest to it. Adjust lift left and right-side locations to accommodate subframe members.
- Verify proper clearance of door frame, passenger seats, and outer edge of vehicle floor and possible interference with wires, fluid lines, subframe members, etc.

#### 2. VEHICLE STRUCTURAL REQUIREMENTS

The following figures and text provide installation guidelines for the RICON S-Series and K-Series Export Use wheelchair lift into most vehicles.

- VEHICLE DOOR OPENING DIMENSIONAL REQUIREMENTS** in millimeters and [inches].

MODEL	A (Width)	B (Height)	C (Floor-To-Ground)
S1231	1029 [40.5]	1118 [44.0]	787 [31.0]
S2005	1080 [42.5]	1397 [55.0]	1067 [42.0]
S2030	1029 [40.5]	1397 [55.0]	1067 [42.0]
S2034	1029 [40.5]	1778 [70.0]	1067 [42.0]
K1200	1029 [40.5]	978 [38.5]	787 [31.0]
K2003	1029 [40.5]	1397 [55.0]	940 [37.0]
K2005	1080 [42.5]	1397 [55.0]	940 [37.0]
K2010	1130 [44.5]	1397 [55.0]	940 [37.0]



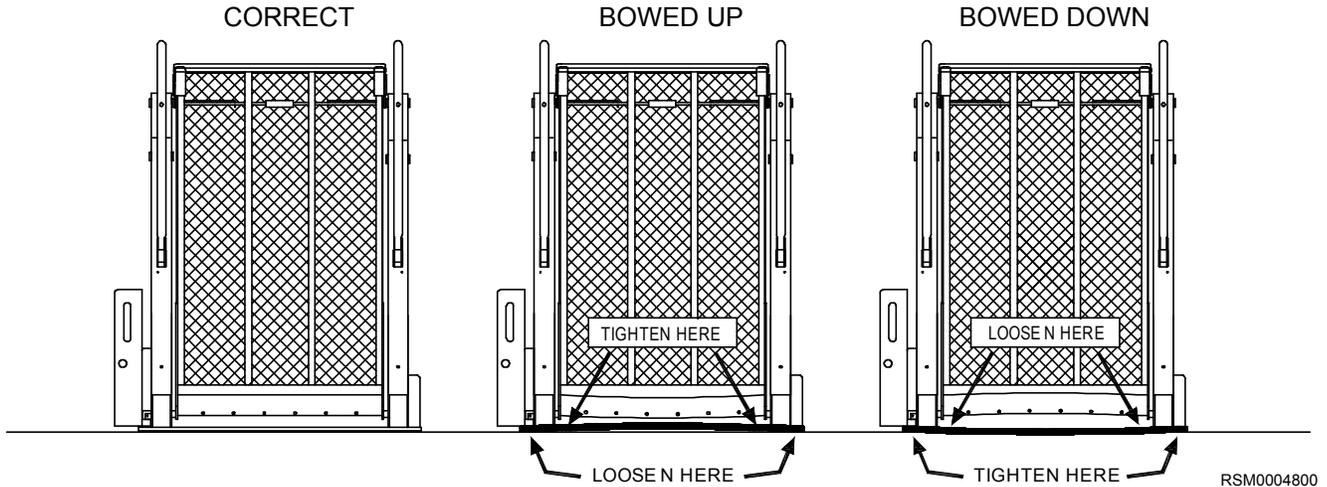
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FIGURE 2-1: DOOR OPENING REQUIREMENTS

### 3. LIFT INSTALLATION GUIDELINES

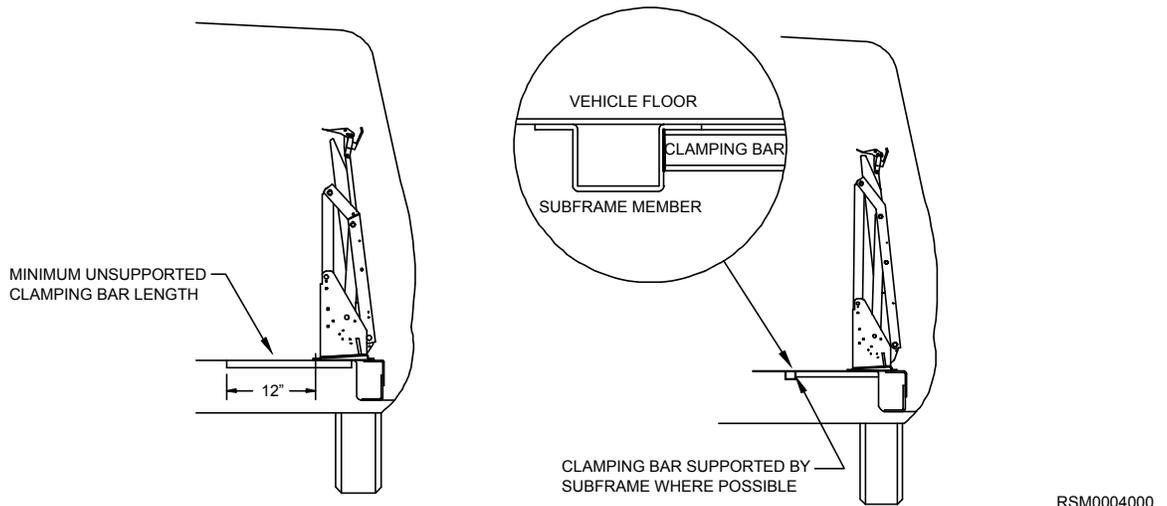
The lift mounting is a very important step. Improper mounting or fastening of baseplate can adversely affect lift performance. Although fastening details may vary from one vehicle to the next, these general principles apply:

- ◆ Be certain that all mounting bolts are properly installed and tightened. Bolts used to fasten baseplate assembly to vehicle floor must have a minimum strength rating of SAE Grade 5 and torque to 40 N-m (28 ft. lbs.), dry. Recognize that the most important bolts are those along the rear of lift, since these bolts retain the majority of the load.
- ◆ Refer to **Figures 2-2 and 2-6**. Improper torque sequence of baseplate bolts may result in a warped or bowed baseplate, which can cause platform to move erratically.



**FIGURE 2-2: VAN CLAMPING BAR ARRANGEMENT**

- ◆ Refer to **Figure 2-3**. On van installations, clamping bars are used to help evenly distribute floor loading and should only be cut if needed to clear a subframe member. A subframe member must be used to support clamping bar.



**FIGURE 2-3: VAN CLAMPING BAR ARRANGEMENT**

### 4. LIFT INSTALLATION INTO VANS

This is a general procedure for installing Ricon lifts into full size vans.

- a. Refer to **Figure 2-4**. Use four 25mm (1 in.) x 9.25mm (3/8 in.) bolts, 9mm (3/8 in.) washers, 9mm (3/8 in.) lock washers, and 9mm (3/8 in.) hex nuts to assemble two bracket assembly kits.

**NOTE:** The top bracket must overlap bottom bracket, and both slots must face outward.

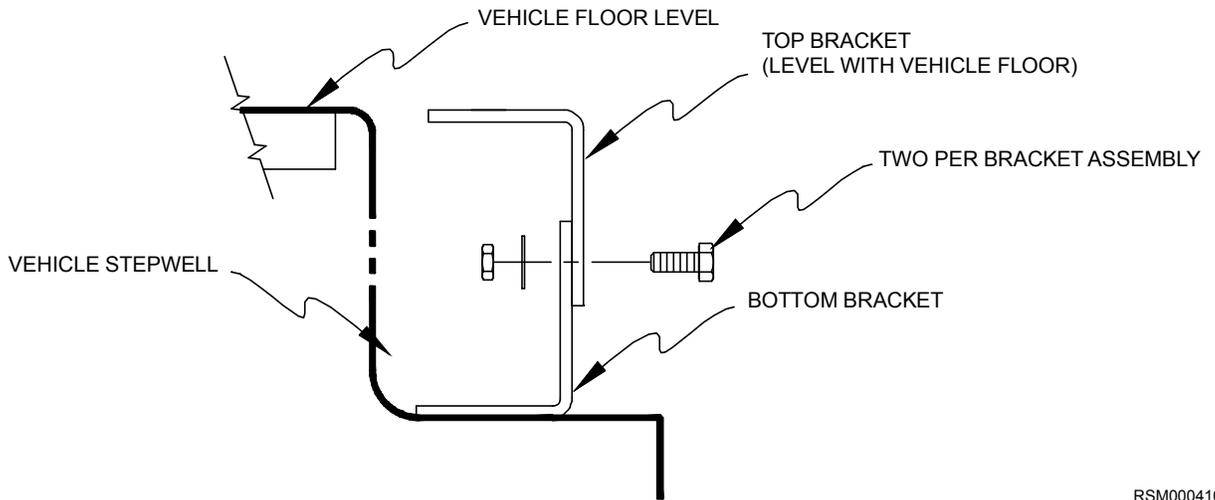


FIGURE 2-4: STEPWELL BRACKET

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- b. Position brackets on stepwell and adjust height of both bracket assemblies so that top bracket is level with vehicle floor. Tighten bracket assembly bolts.
- c. Verify that lift is fully folded (stowed) with handrails folded tight against vertical arms. If necessary, use manual pump.

<b>WARNING</b>
<p>LIFT WEIGHT IS APPROXIMATELY 154-179 KG (340 - 395 LBS.). USE EXTREME CARE WHEN POSITIONING BECAUSE STEPWELL BRACKETS MAY TIP. THIS PROCEDURE MUST NOT BE ATTEMPTED BY ONE PERSON.</p>

- d. Refer to **Figure 2-5**. With doors fully open, position lift in vehicle doorway so that back of lift is supported by vehicle floor, and front of lift is supported by both bracket assemblies.

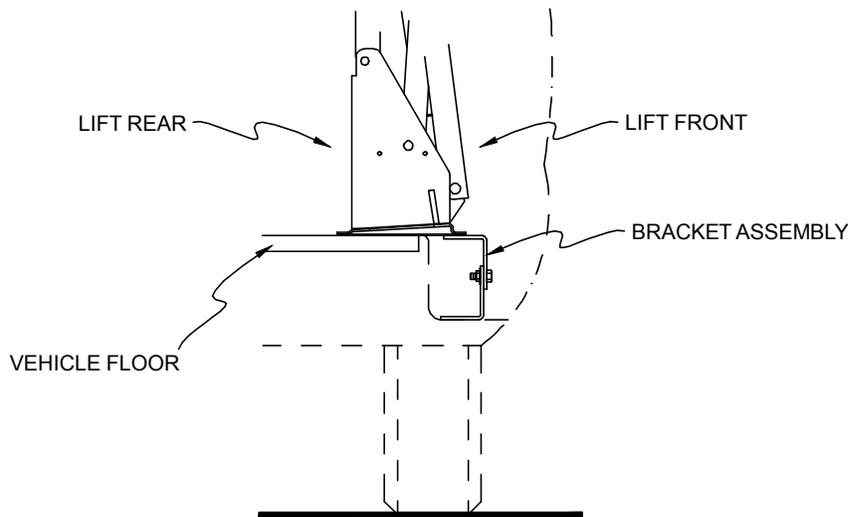


FIGURE 2-5: BRACKET ASSEMBLY

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- e. Fasten Baseplate to vehicle floor:

**NOTE:** If Ricon power door operators are used, install them first. They may influence location of lift.

- Be certain baseplate is flush against vehicle floor. The baseplate may be slightly offset in door opening to provide proper clearance for passenger seats.
- Before drilling, verify that lift position does not interfere with closing of vehicle doors or operation of passenger seats.
- If this lift is being installed in a van with sliding doors, omit the bolts in baseplate holes 7 and 8.

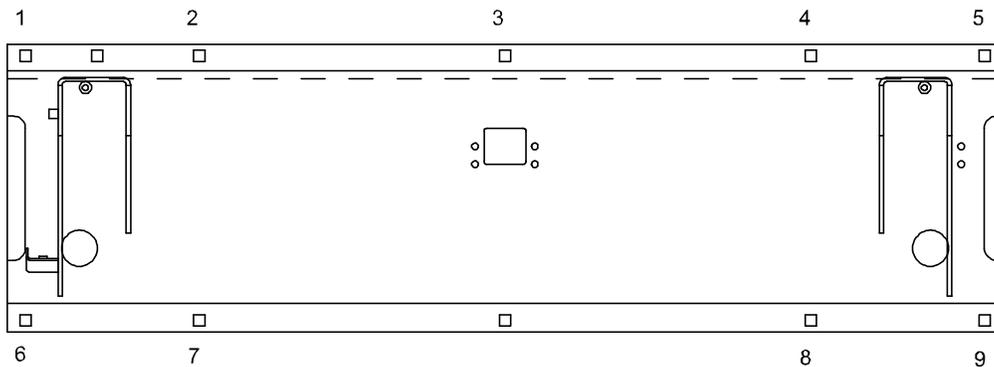
f. Mark and Drill Holes:

**CAUTION**  
Before drilling holes, verify that underlying wires and tubing will not be damaged.

- 1) Refer to **Figure 2-6**. Mark and drill five 10mm (25/64 in.) baseplate mounting holes (1, 2, 3, 4, and 5) through vehicle floor.

**CAUTION**  
Whenever possible, the maximum of ten bolts should be utilized to maintain vehicle integrity and lift performance. It is the vehicle converter's responsibility to maintain vehicle integrity and lift performance should an impact occur.

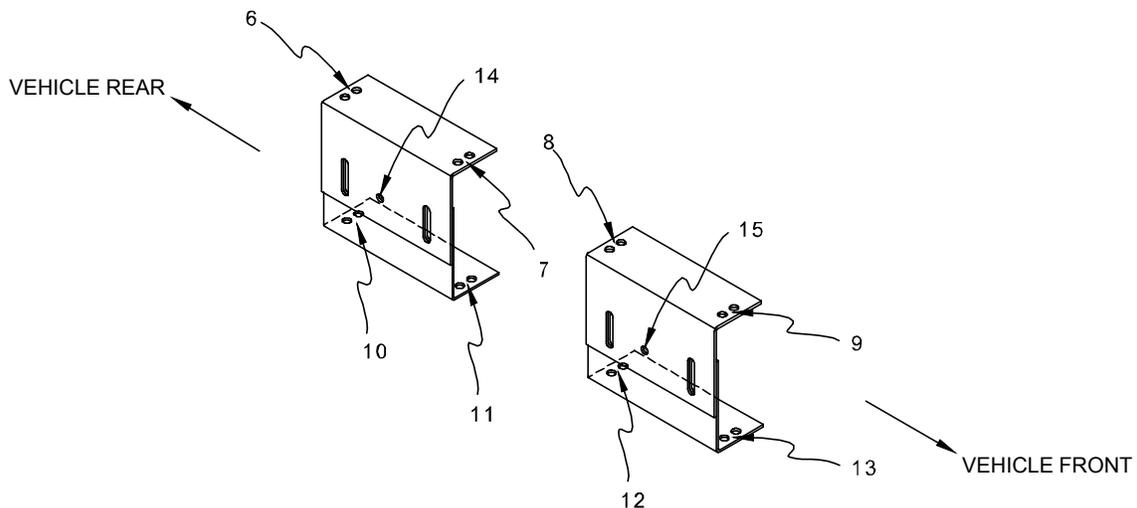
- 2) Place five 203mm (8 in.) x 9mm (3/8 in.) carriage bolts into holes to secure position.



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**FIGURE 2-6: VAN BASEPLATE HOLES**

- 3) Refer to **Figure 2-7**. Match and align top holes of stepwell brackets 6, 7, 8, and 9, with baseplate holes 6, 7, 8, and 9. Mark lower stepwell bracket holes 10, 11, 12, and 13 onto vehicle step.
- 4) Remove five carriage bolts installed in step 2). Carefully push lift into vehicle interior.
- 5) Drill 6mm (1/4 in.) dia holes through marked locations 10, 11, 12, and 13.



RSM0004400

**FIGURE 2-7: STEPWELL BRACKET HOLE LOCATIONS**

g. Fasten Bracket Assemblies and Lift:

- 1) Use 38mm (1-1/2 in.) x 8mm (5/16 in.) sheet metal screws with 8mm (5/16 in.) lock washers to secure lower brackets to vehicle step holes 10 through 13.

**NOTE:** If the screw in position 13 interferes with proper door operation, do not install.

- 2) Reposition lift and verify that surface beneath lift is free of obstacles.

- 3) Insert five 203mm (8 in.) x 9mm (3/8 in.) carriage bolts through mounting holes at rear of baseplate assembly, and insert four 138mm (1-1/2 in.) x 9mm (3/8 in.) carriage bolts through baseplate and bracket assemblies. Place 9mm (3/8 in.) washers, lock washers, and nuts under bracket assemblies, and hand-tighten nuts.
- 4) Before tightening carriage bolts, verify that lift is level with vehicle floor. Adjust bracket assembly bolts if necessary.
- 5) Tilting lift towards inside of van may hinder its initial unfolding. Install lift with its baseplate assembly as level as possible. Tightening carriage bolts requires special care to keep baseplate assembly from warping when secured to vehicle floor. If baseplate assembly warps, the vertical arms will not be parallel. Make corrections by shimming at appropriate locations. To help prevent warping, tighten the eight carriage bolts (six on van with sliding door) to 40 N-m (28 ft. lbs.) in the appropriate sequence:

VANS WITH SWING DOORS ..... 3, 1, 2, 4, 5, 6, 7, 8, 9

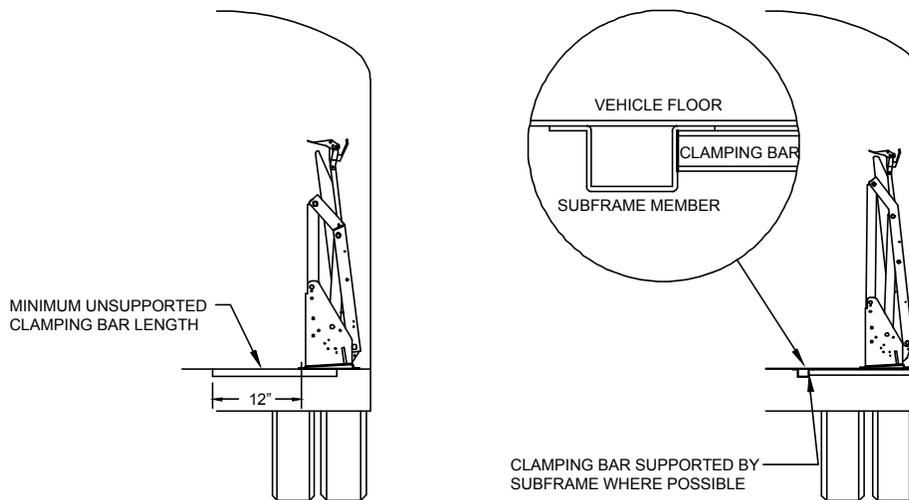
VANS WITH SLIDING DOORS ..... 3, 1, 2, 4, 5, 6, 9

**NOTE:** Vertical arms must be parallel for proper operation. Adjust bolts as required. Best results are obtained when lift is mounted on plywood. Shims, although best avoided, may be used if required.

- 6) Make certain that holes 14 and 15 on the front of each bracket assembly are drilled through, and 8mm (5/16 in.) bolts are inserted to lock position of bracket assemblies.

**5. LIFT INSTALLATION INTO BUSES**

Refer to **Figure 2-8**. Clamping bars are used on most bus installations to help distribute floor loading, and should only be cut if needed to clear a subframe member. A subframe member should be used to support clamping bar.

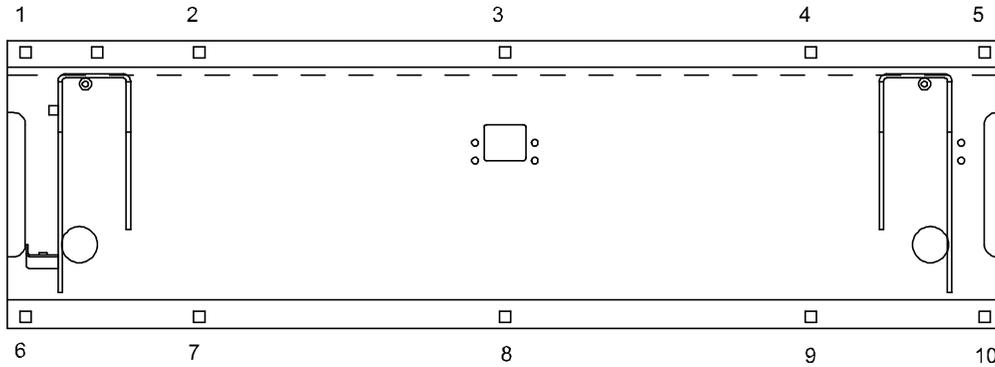


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**FIGURE 2-8: BUS CLAMPING BAR ARRANGEMENT**

<b style="font-size: 1.2em; margin-left: 10px;">WARNING</b>
<p>LIFT WEIGHT IS APPROXIMATELY 154-179 KG (340 - 395 LBS.). TAKE EXTREME CARE WHEN POSITIONING BECAUSE STEPWELL BRACKETS MAY TIP. THIS PROCEDURE MUST NOT BE ATTEMPTED BY ONE PERSON.</p>

- a. Open doors fully and position lift so that it is centered in vehicle doorway. Close doors and move lift outward until it clears doors by a minimum of 13mm (1/2 in.). The baseplate must be parallel to side of bus. Open manual pump release valve (CCW) and allow folded platform to fully settle against latch on baseplate. Verify that interference is not present between lift and doors. Reposition lift, if necessary. Close pump release valve; do not over tighten valve.
- b. Refer to **Figure 2-9**. Mark and drill ten 10mm (25/64 in.) baseplate mounting holes (1 thru 10) through vehicle floor.



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**FIGURE 2-9: BUS BASEPLATE HOLES**

 <b>CAUTION</b>
Before drilling holes, verify that underlying wires and tubing will not be damaged.

c. Fasten Lift:

- 1) Insert ten 101mm (4 in.) x 9mm (3/8 in.) carriage bolts through baseplate and vehicle floor.
- 2) Refer to **Figure 2-9**. Install five clamping bars on bolts underneath vehicle floor (across baseplate), i.e., from 1 to 6, 2 to 7, etc, and secure lift to vehicle floor with 9mm (3/8 in.) washers, lock washers and hex-nuts.
- 3) Use care when tightening carriage screws to prevent baseplate warpage. If baseplate assembly warps, vertical arms will not be parallel. Make corrections by shimming at appropriate locations. To help prevent warping, torque the eight carriage bolts to 40 N-m (28 ft. lbs.) in the following sequence:

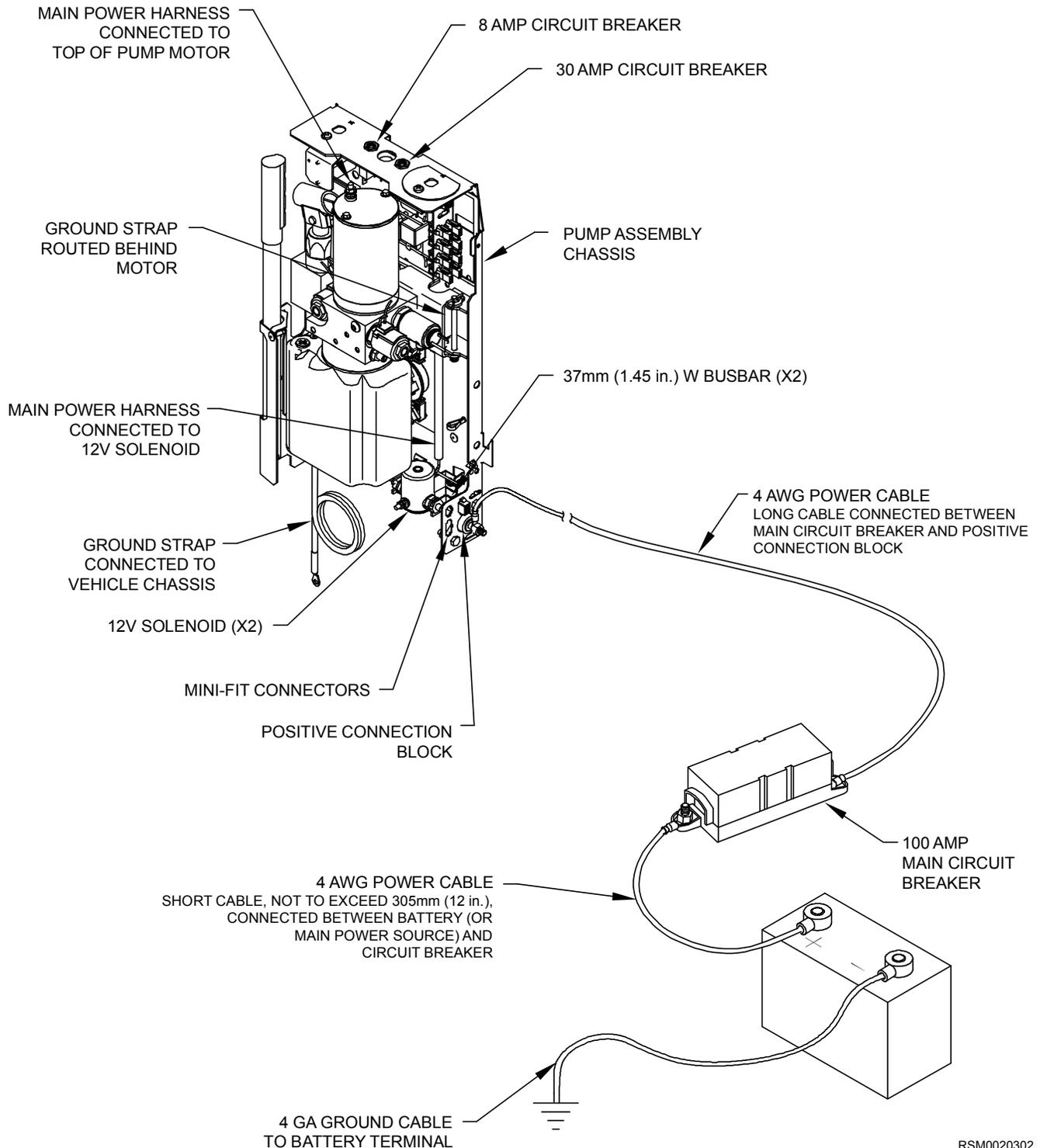
**3, 8, 2, 4, 7, 9, 1, 5, 6, 10**

**NOTE:** Vertical arms must be parallel for proper operation. Adjust bolts as required. Best results are obtained when lift is mounted on plywood. Shims, although best avoided, may be used if required.

**B. ELECTRICAL INSTALLATION**

**CAUTION**

- Do not route any wire while it is connected to the battery.
- Route wires clear of moving parts, brake lines, and the exhaust system. Secure to the vehicle.
- When routing an electrical wire through vehicle floor or walls, use a grommet to protect wires from chafing.
- Check underside of vehicle before drilling to avoid damage to fuel lines, vent lines, brake lines, or wiring.



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**FIGURE 2-10: ELECTRICAL INSTALLATION DIAGRAM**

**1. INSTALL MAIN CIRCUIT BREAKER**

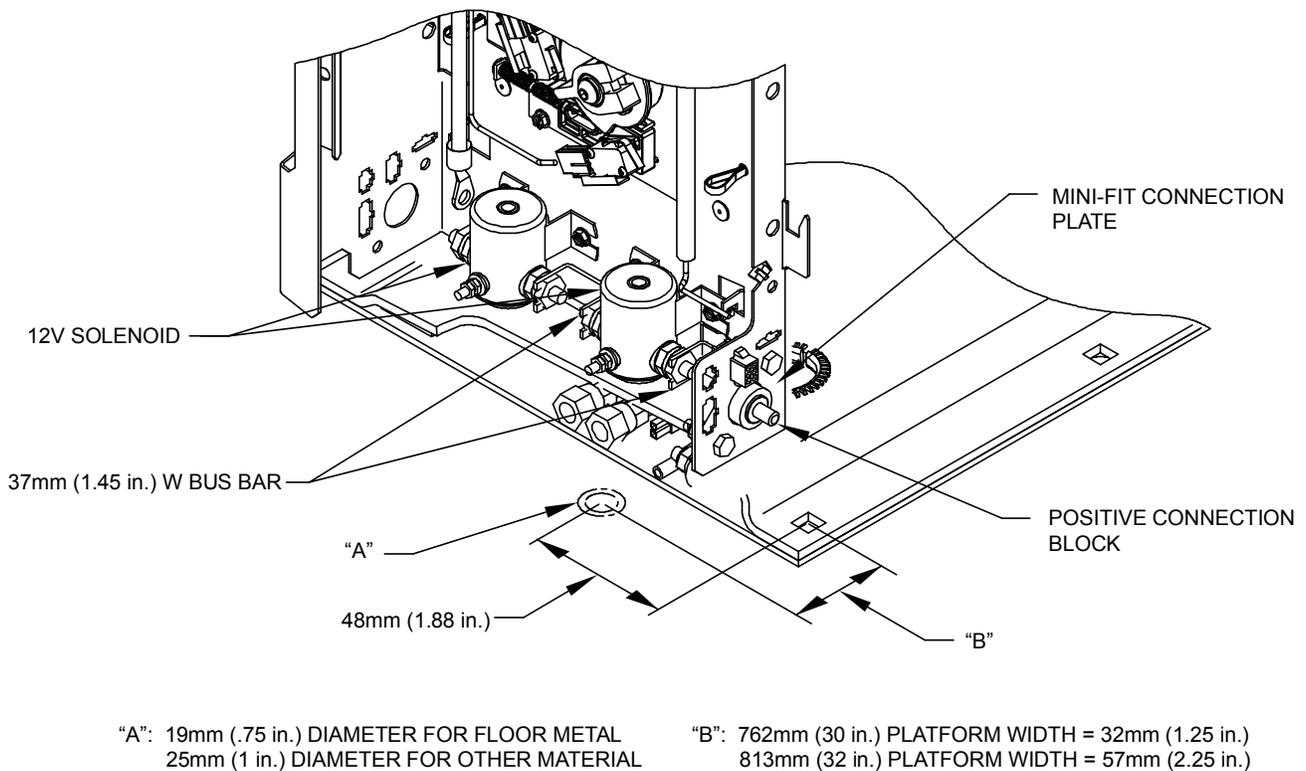
- a. Disconnect battery.
- b. Mount main circuit breaker inside engine compartment within 305mm (12 inches) of battery (to minimize length of unprotected cable). Avoid installing near a heat source.

**2. ROUTE AND CONNECT MAIN POWER CABLE**

<b>⚠ CAUTION</b>
Check under-side of vehicle before drilling to avoid damage to fuel lines, vent lines, brake lines, or wiring.

**NOTE:** For applications where power cable is to pass through sheet metal, drill a 19mm (3/4 in.) hole and use wire clamp provided. For applications where cable is to pass through plywood, drill a 25mm (1 in.) hole and use black plastic grommet provided.

- a. Refer to **Figure 2-11**. Drill a hole through the vehicle floor near the positive connection block (stud on the side of the pump chassis that is attached to the main bus bar) so power cable can be connected. Drill hole where the installed pump cover will cover it.



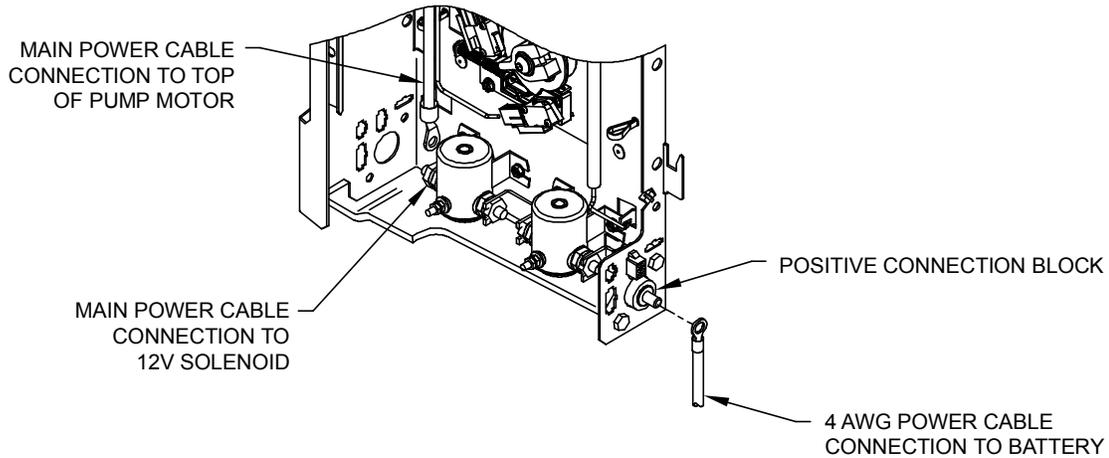
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**FIGURE 2-11: POWER CABLE ACCESS HOLE**

- b. Install supplied heavy ring terminals to each end of the short 305mm (12 in.) long 4 AWG power cable. Install one ring terminal, only, to one end of long power cable. Use an appropriate crimp tool (such as Ricon hammer tool, part of Kit (P/N 01243).
- c. Connect ring terminal end of long 4 AWG power cable to 100A main circuit breaker, then route power cable underneath vehicle floor and up through hole in floor.
- d. Tie power cable to vehicle chassis, using cable ties. Avoid pinch points, exhaust system, moving parts, and brake lines. Verify that power cable is secure.

<b>⚠ CAUTION</b>
Be sure that there is no interference with any parts that could damage power cable or other wires in any way.

- e. Refer to **Figure 2-12**. Cut excess wire from long cable, install heavy ring terminal, and then connect to positive connection block. Verify that red wire from main circuit breaker (if applicable) is connected to positive connection block.



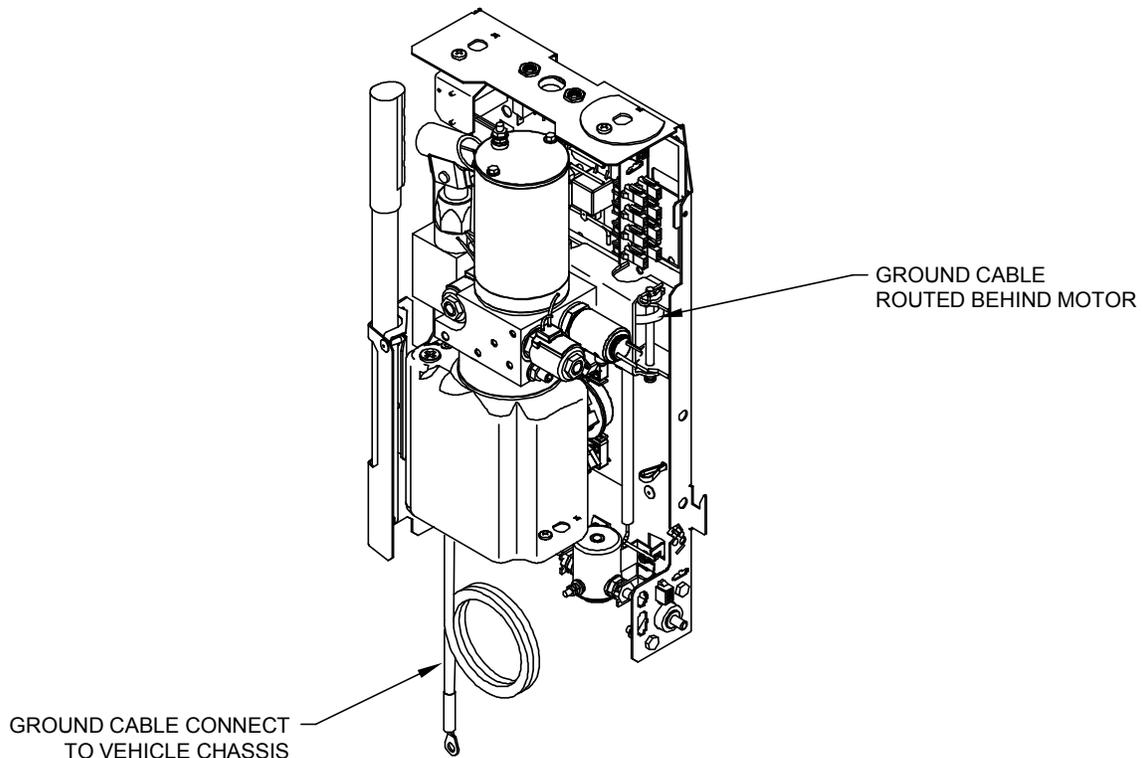
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**FIGURE 2-12: CABLE ROUTING**

- f. Connect 305mm (12 in.) cable, with ring terminals, from positive battery terminal to main circuit breaker terminal.

**3. GROUND CONNECTIONS**

- a. Refer to **Figure 2-13**. Locate 4GA ground cable that is pre-installed then install ground cable to vehicle chassis. Avoid pinch points, exhaust system, moving parts, and brake lines. Verify that ground cable is secure.



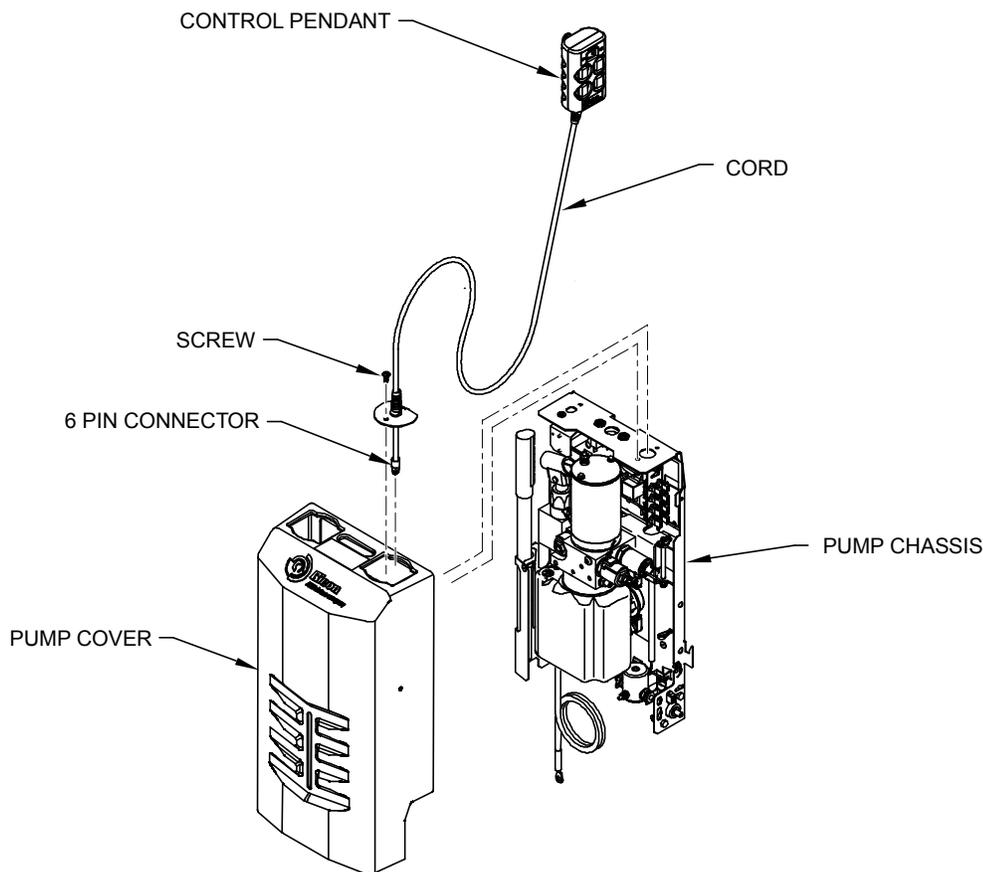
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**FIGURE 2-13: GROUND CABLE**

- b. Refer to **Figure 2-13**. Ensure other wires that are fastened with the ground cable are secure and remain connected after installation.
- c. **12 VDC Systems**  
 12 VDC powered lifts are chassis grounded and do not require a separate ground cable connection to battery. However, if the common side of the lift electrical system is connected to chassis with a cable, the cable must be attached in a manner that provides a reliable electrical connection. If ground cable is attached to an existing ground circuit, the circuit must be capable of conducting an additional 100 amps.
- d. **24 VDC Systems**
  - 1) Ricon recommends that a dedicated ground cable be used in 24 VDC installations. A 4GA cable, or heavier, must be used.
  - 2) Refer to **Figure 2-10**. The ground cable is connected from the negative stud (-) on pump motor to the negative battery terminal.

**4. CONTROL PENDANT**

- a. Refer to **Figure 2-14**. Remove pump cover to gain access to chassis assembly then insert six-pin connector with cord through pump cover and chassis assembly openings.
- b. Slide pump cover back onto pump assembly chassis.



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**FIGURE 2-14: CONTROL PENDANT**

- c. Refer to **Figure 2-14**. Install screw to secure control pendant bracket to pump assembly chassis.

<b>CAUTION</b>
Be sure that harness does not interfere with any moving parts, or binds against any parts, or is pinched in any way.

**5. INSTALLATION OF INTERLOCK DEVICE**

An interlock device can be installed to prevent operation of the lift or vehicle when it is not safe to do so. **The interlock supplied by the installing Ricon dealer is not a Ricon product.**

If interlock option is installed, the S and K-Series lifts provides an electrical interlock signal to the vehicle that prevents movement of the vehicle unless the platform is fully stowed. The interlock control also supplies power to the lift only when the vehicle parking brake is set and the transmission is in PARK.

Some interlock devices lock vehicle transmission in PARK (or neutral) when lift is deployed, or do not allow lift to be deployed unless vehicle transmission is in PARK (or neutral) and emergency brake is set. Other devices will stall vehicle engine if lift is deployed and emergency brake is released or transmission is shifted from PARK (or neutral). There may be other types of interlock devices that disable lift or vehicle to prevent unsafe lift operation.

Ricon is not aware of all available interlock products. For this reason it is very important that interlock products be properly installed so that they do not interfere with safe operation or create any other hazards.

**NOTE:** A 30 amp circuit breaker is located within the lift as a circuit protection device. The circuit interface used by the installer must be capable of carrying an additional 30 amps of continuous current.

The installer must verify that none of the original equipment circuit breakers, fuses, or solenoids are bypassed, removed, or altered. Be sure that no wires are left frayed or hanging loose after installation of an interlock device. If you have any questions about proper installation of interlock devices, please contact our Product Support Department.

 <b>WARNING</b>
DO NOT OPERATE LIFT UNLESS YOU ARE CERTAIN THAT THE INTEGRITY OF LIFT ELECTRICAL CIRCUITS HAS BEEN MAINTAINED.

 <b>CAUTION</b>
Wiring attached directly to the positive battery terminal is not protected against short circuits and must be kept to a length of 305mm (12 in.) or less. The wiring must be routed in a manner that prevents pinching or abrasion by vehicle parts. The power source wire for the interlock circuit must be connected to a protected supply such as a dedicated accessory on an existing fuse panel.

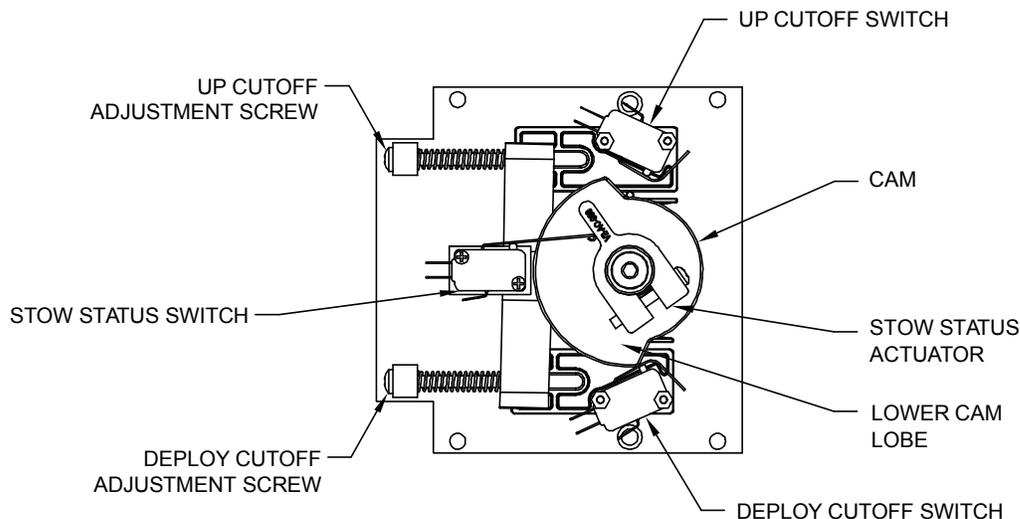
## C. FINAL ADJUSTMENTS

### 1. LIMIT SWITCH ADJUSTMENT

Refer to **Figures 2-15 and 2-16** with the following procedure.

**NOTE:** To avoid operational “dead-spots”, adjust DEPLOY CUTOFF SWITCH before UP CUTOFF SWITCH.

**NOTE:** When loosening adjustment screws, apply enough pressure to screw to move block instead of screw. (The block might stick if insufficient pressure is applied to screw.)



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**FIGURE 2-15: LIMIT SWITCH ADJUSTMENT DIAGRAM**

- a. Fully DEPLOY platform.
- b. Adjust UP CUTOFF ADJUSTMENT SCREW and DEPLOY CUTOFF ADJUSTMENT SCREW 6-8 turns **counterclockwise** (CCW) and then push screws FORWARD.
- c. Cycle platform to STOW then DEPLOY.
- d. When in DEPLOY position, platform should stop at an angle and NOT even with vehicle floor. If not, turn DEPLOY CUTOFF ADJUSTMENT SCREW an additional 2-3 turns **counterclockwise** (CCW), push screw forward, STOW then DEPLOY platform, then repeat this step.
- e. Cycle platform to UP position.
- f. When in UP position, platform should stop short of vehicle floor level. If not, turn UP CUTOFF ADJUSTMENT SCREW an additional 2-3 turns **counterclockwise** (CCW), push screw forward, cycle platform DOWN then UP, then repeat this step.
- g. Cycle platform to STOW then DEPLOY.
- h. Push and hold control pendant DEPLOY switch. Slowly turn DEPLOY CUTOFF ADJUSTMENT SCREW **clockwise** (CW) until platform “jogs” down to vehicle floor level. Make sure that clearance between knuckle actuator saddle and parallel arm is 3mm (1/8 in.) minimum (distance may be 13mm (1/2 in.) maximum and unequal from left or right arm), stop turning screw and release DEPLOY switch.
- i. Position platform DOWN to ground level then UP until it stops.
- j. Push and hold control pendant UP switch. Slowly turn UP CUTOFF ADJUSTMENT SCREW **clockwise** (CW) until platform “jogs” up to vehicle floor level. Make sure that clearance between knuckle actuator saddle and parallel arm is 3mm (1/8 in.) minimum (distance may be 13mm (1/2 in.) maximum and unequal from left or right arm), stop turning screw and release UP switch.

**NOTE:** If lift does not operate after 1-2 full turns of adjustment screw, cycle platform UP and DOWN (The UP CUTOFF SWITCH is less sensitive than DEPLOY CUTOFF SWITCH.)

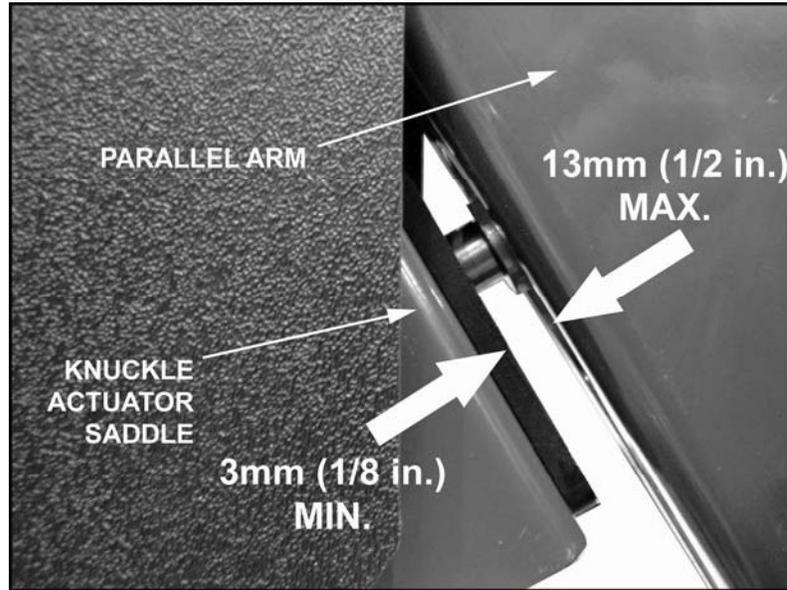


FIGURE 2-16: LIMIT SWITCH ADJUSTMENT CLEARANCE

- k. Cycle platform through all functions (DEPLOY, DOWN, UP, and STOW) to verify correct adjustment. Refer to **Table 2-1** if necessary.

TABLE 2-1: LIMIT SWITCH ADJUSTMENT CHART			
COMPONENT	SYMPTOM	CORRECTIVE ACTION	ADJUSTMENT PROCEDURE
Fold cutoff actuator	Lift does not fold tightly.	Rotate CAM (CCW).	With lift fully folded (handrails should be folded tight against vertical arms), rotate actuator so that it barely trips fold cutoff switch.
	Pump runs continuously.	Rotate actuator (CW).	Test lift. Pump should cutoff when lift is folded tight.
Up cutoff adjustment screw	Lift stops low.	Adjust screw (CW).	Adjust up cutoff switch so that lift stops just before first knuckle actuator saddle or roller touches underside of lower parallel arm. (Saddle or roller should be about 3mm (1/8 in.) from lower parallel arm.)
	Lift stops high.	Adjust screw (CCW).	
Deploy cutoff adjustment screw	Lift stops low.	Adjust screw (CCW).	Adjust deploy limit switch so that lift stops just below "Up" cutoff described in above step. This will give the necessary overlap to avoid "dead" spots.
	Lift stops high.	Adjust screw (CW).	
END OF TABLE			

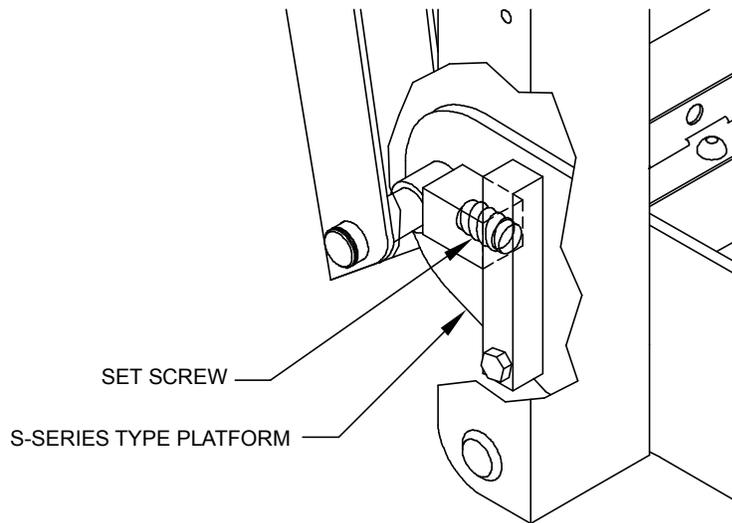
**2. PLATFORM TILT ADJUSTMENT**

Correct platform tilt adjustment is crucial for proper platform rollstop operation, but cannot be adjusted at factory. Factors such as vehicle floor height, lift tilt angle and stiffness of vehicle springs will vary installation geometry.

- a. Deploy and lower lift platform to a position halfway between vehicle floor level and ground level.
- b. Refer to **Figure 2-17**. Adjust left and right platform set screws until platform is level at zero (0) degrees. Turn setscrews clockwise to angle front-end of platform upward, or counter-clockwise to angle downward.

**NOTE:** At ground level, the distance between heel of platform and ground should be 19mm (3/4 in.) to 25mm (1 in.). This distance should be measured at initial point of rollstop full deployment.

**NOTE:** Adjust setscrews on both sides of platform simultaneously and evenly to ensure proper leveling of platform.



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**FIGURE 2-17: S/K-SERIES PLATFORM SET SCREWS**

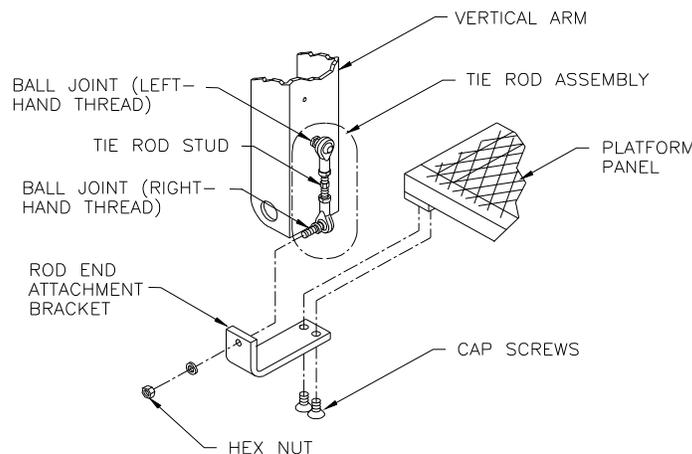
- c. Repeat steps a and b as required to achieve proper rollstop operation.

**3. SPLIT PLATFORM TIE ROD ASSEMBLY INSTALLATION AND ADJUSTMENT**

<b>CAUTION</b>
Stowing platform without tie rod assemblies installed will cause severe damage to platform. Do not attempt to stow platform before tie rod assemblies are installed and adjusted.

All S-Series split platform model lifts are equipped with tie rod assemblies, which open the platform panels as lift is stowed. Correct adjustment of these tie rods is needed to prevent tie rod breakage.

- a. Lower platform below vehicle floor level.
- b. Refer to **Figure 2-18**. Assemble rod end attachment brackets to left and right tie rod assemblies at right-hand ball joint.



**Figure 2-18: S/K-SERIES PLATFORM SET SCREWS**

**NOTE:** Correct positioning of ball joint on inside of rod end attachment bracket.

- c. Assemble rod end attachment brackets to corresponding platform panels using screws and Loc-TITE blue.

 <b>CAUTION</b>
Do not lengthen tie rod stud to point where panel will lift off its tab support (at center of lift fork).

- d. Adjust left tie rod assembly. Adjust tie rod stud until nearly all of link free-play is out by lengthening rod.

**NOTE:** The left platform panel should be adjusted first so that it is slightly higher than right platform panel. This will ensure proper insertion of left panel joining pin through hole in right platform panel.

- e. Raise platform to point just before panel joining and adjust right tie rod assembly for proper joining.
- f. Lower platform below vehicle floor level.

**NOTE:** There must be no tension or compression on tie rod assemblies when platform is at, or below, the vehicle floor level.

- g. Stow and deploy lift several times to ensure both platform panels join correctly. Readjust, if necessary, and then tighten lock nuts against ball joints to secure adjustment.

**4. K-SERIES PLATFORM FOLDING LINKAGE ADJUSTMENT**

For K-Series with split platforms, the front portion of the platform is connected to the rear portion with a hinge. The front portion is folded with linkages located at the right and left sides of the platform. The length of the linkage might require adjustment after installation of the lift or after disassembly of the platform.

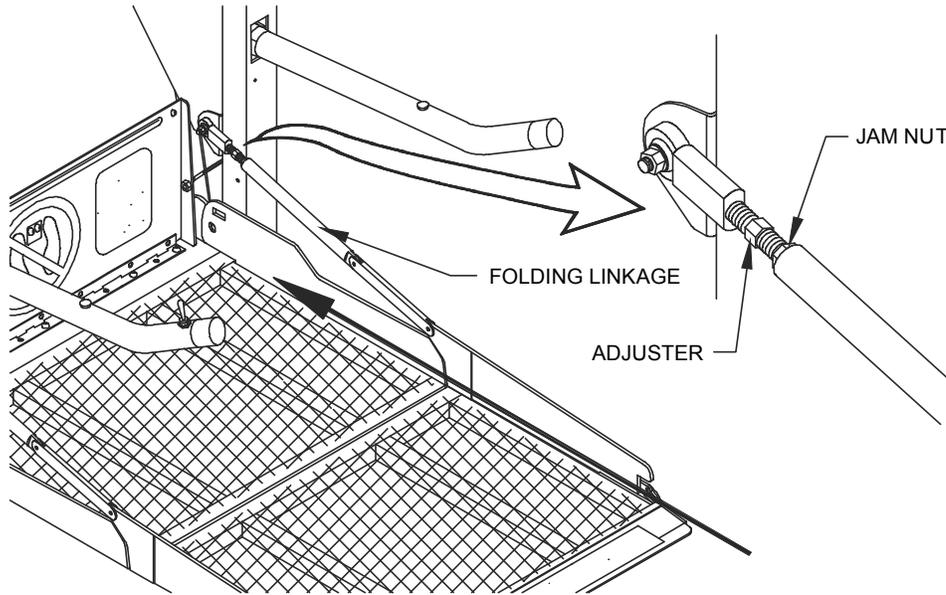
**NOTE:** Perform the PLATFORM TILT ADJUSTMENT procedure before adjusting the linkage.

- a. Deploy and lower the platform to a position about halfway between floor level and ground level.
- b. Refer to **Figure 2-19**. Inspect the gaps on both sides of the platform folding joints. The gaps must be uniform. If the gaps are not uniform, adjustment is required.



**FIGURE 2-19: S/K-SERIES PLATFORM SET SCREWS**

- c. Refer to **Figure 2-20**. Loosen the jam nuts (right and left sides) and use the adjusters to set the length of the linkages so that the front and rear portions are in the same plane; the two surfaces of the platform portions must be flat without any apparent folding along the hinge.



**FIGURE 2-20: ADJUSTMENT HARDWARE FOR PLATFORM FOLDING LINKAGE**

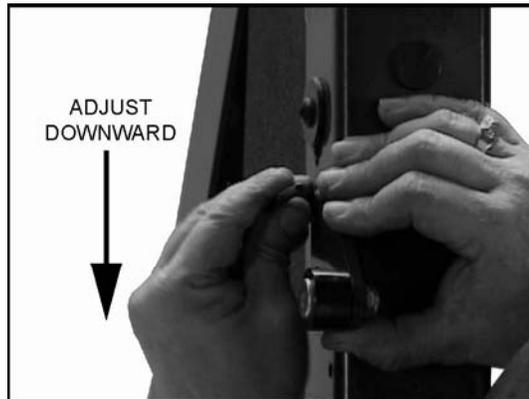
- d. Verify that the tension of both linkages is the same by sighting along the outer edge of the platform (arrow in figure). Tighten jam nuts.
- e. Lower platform until it settles on the ground. Verify that a slight amount of slack is present in both linkages. If either linkage is under tension, repeat steps a and b.

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**5. K-SERIES OUTER ROLLSTOP BARRIER ADJUSTMENT**

**NOTE:** This procedure is done to tighten the outer rollstop barrier by adjusting the universal platform folding brackets that are attached to the vertical arms on a K-Series lift.

- a. Fully stow the platform and check to see if there is movement of the outer rollstop barrier. If there is sufficient movement, deploy the platform to floor level.
- b. Refer to **Figures 2-21**. Turn the screws to loosen the folding bracket. Slightly move the bracket down to add pre-load on the platform link assembly.



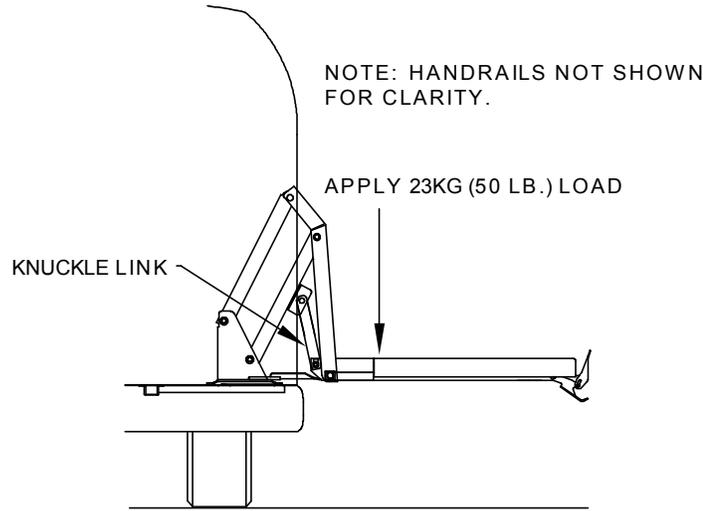
**FIGURE 2-21: PLATFORM FOLDING BRACKET**

- c. Tighten the screws then repeat for the opposite folding bracket.
- d. Stow the platform and verify that the outer rollstop barrier securely folds and locks with no movement.

**6. PLATFORM PRESSURE SWITCH CHECK AND ADJUSTMENT**

Correct adjustment of this pressure switch is required to prevent platform from folding into vehicle when there is a load of 23kg (50 lbs.), or more, on the platform.

- a. Refer to **Figure 2-22**. Deploy and lower platform to floor level.



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FIGURE 2-22: PRESSURE SWITCH TEST AT FLOOR LEVEL

**NOTE:** Weight must be 23kg (50 lbs.) and placed 152mm (6 inches) from rear edge of platform mesh as shown in Figure 2-23.

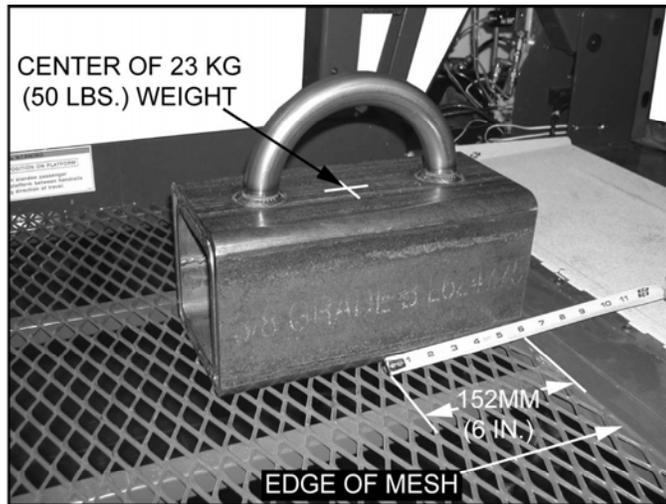


FIGURE 2-23: 23 KG (50 LBS.) WEIGHT PLACEMENT ON PLATFORM

- b. Place a 152mm (6 in.) x 152mm (6 in.) x 305mm (12 in.), 23kg (50 lbs.) load on the rear, center portion of platform then stow platform by pressing and holding the STOW switch.
- c. Refer to **Figure 2-24**. If an alternate weight is to be used, the center of the weight must be 152mm (6 in.) from the rear edge of the platform mesh.

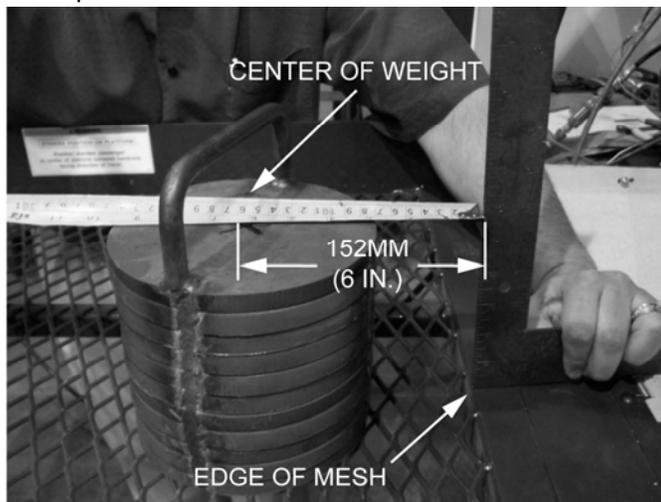
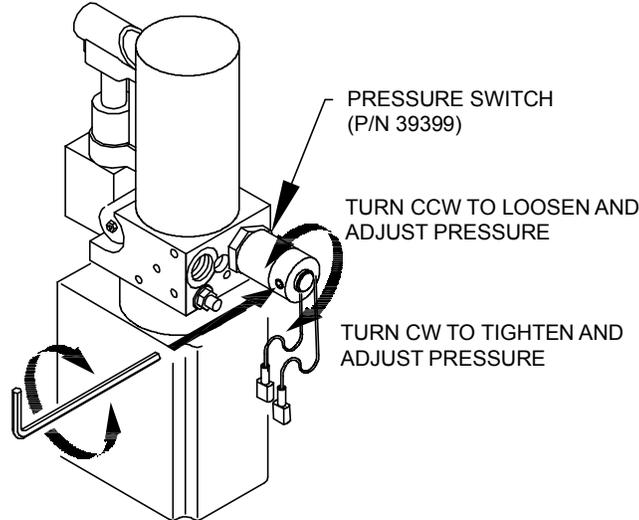


FIGURE 2-24: ALTERNATE 23KG (50 LB.) WEIGHT

- d. The pressure switch is correctly set if pump motor shuts off when attempting to stow the lift, preventing inward movement of the platform.
- e. The pressure switch is not correctly set if pump motor does NOT shut off and there is inward movement of the platform. Adjustment of the pressure switch will be required.

**NOTE:** If adjustment is necessary then pressure switch must be adjusted as shown in **FIGURE 2-24**.

- f. Refer to **Figure 2-25**. Loosen the locking set screws from the hydraulic pressure switch, using a 2mm (5/64 in.) hex wrench to allow adjustment of the hydraulic pressure switch.



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**FIGURE 2-25: PRESSURE SWITCH ADJUSTMENT (P/N 39399)**

- g. Turn the hydraulic pressure switch enclosure 1/8 of a turn **counterclockwise** (CCW), by hand to reduce the pressure.

**NOTE:** Turn the hydraulic pressure switch enclosure **clockwise** (CW) to increase pressure and **counterclockwise** (CCW) to decrease pressure, by hand.

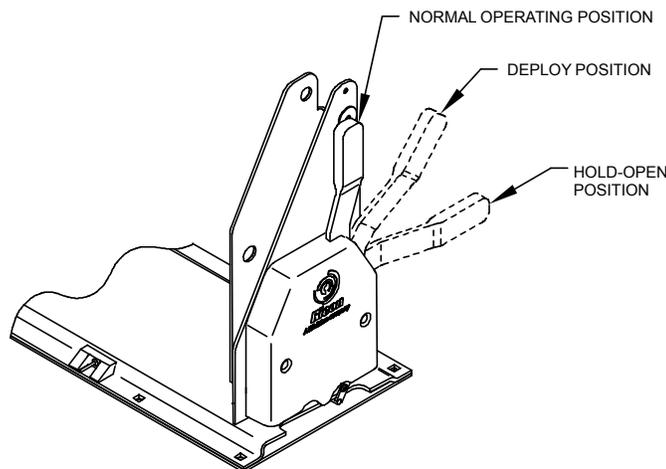
- h. Stow platform and observe if the motor shuts off.
- i. If the motor does not shut off, turn the hydraulic pressure switch enclosure 1/8 of a turn **counterclockwise** (CCW), by hand to reduce the pressure.

**NOTE:** The lift should NOT stow or have inward movement with the weight on the platform.

- j. Repeat pressure switch adjustment as necessary to achieve correct setting.
- k. Tighten the locking set screw when the correct pressure setting is achieved.

**7. EMERGENCY RELEASE CABLE ADJUSTMENT**

Refer to **Figure 2-26**. Units equipped with an Emergency Release option, either on the left or right hand side, allow the operator to deploy and lower platform to ground manually. If the emergency release cable requires adjustment, follow the instructions below to add tension to cable.



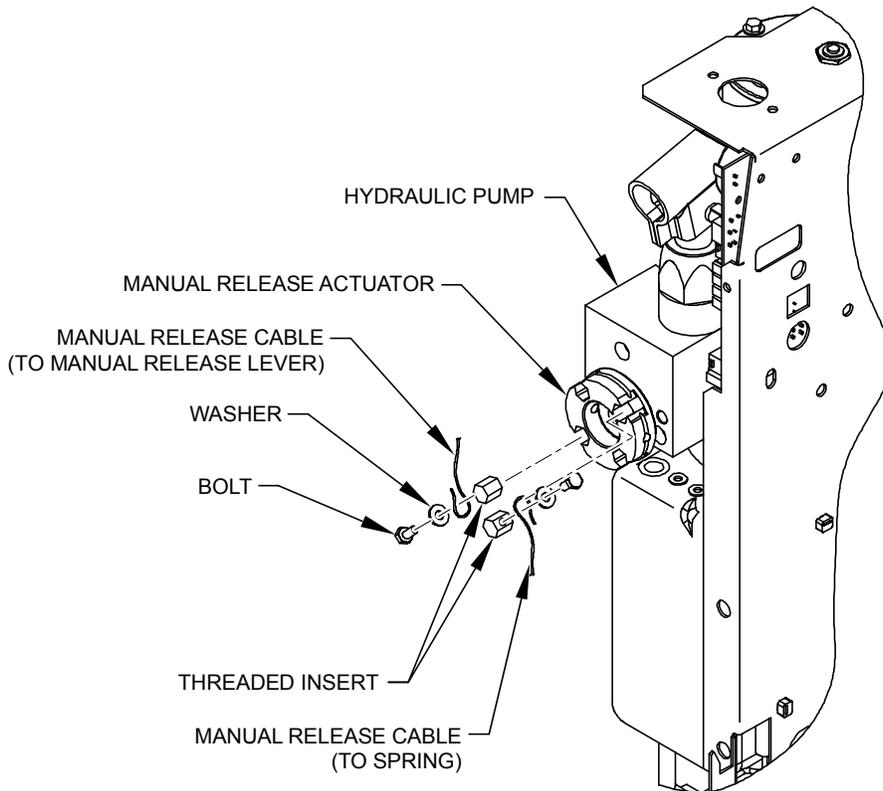
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**FIGURE 2-26: EMERGENCY RELEASE KIT**

- a. Deploy and lower platform completely to ground level.
- b. Remove pump cover to access release valve.
- c. Locate spring and detach from short actuator cable, using pliers.

**NOTE:** Detaching cable spring will remove tension on emergency release cable. Turning release valve counter-clockwise will loosen any tension left on the emergency release cable and allow bolt to be loosened then removed.

- d. **Refer to Figure 2-27.** Loosen the bolt that attaches cable to manual release actuator.



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**FIGURE 2-27: MANUAL RELEASE ACTUATOR**

- e. Remove threaded insert from manual release actuator.
- f. Adjust cable in increments of 3mm (1/8 in.) to 6mm (1/4 in.).

**⚠ CAUTION**

Do not add more tension to cable than is required. Adding too much tension to cable will affect the operation of the manual release valve and cause the valve to remain in open position. Manual release valve in open position will cause platform to deploy and lower to ground or can cause lift to not stow completely.

- g. Secure cable to required tension then re-insert manual release threaded insert into manual release actuator.
- h. Tighten bolt and ensure that cable is securely fastened with cable located within the groove of manual release actuator.
- i. Ensure tension on cable does not open manual release valve.
- j. Use pliers and refasten spring to short actuator cable.
- k. Raise and completely stow platform.
- l. **Refer to Figure 2-26.** Test Emergency Release by placing emergency release lever in “Deploy” position. Platform should deploy and remain at vehicle floor level.
- m. Place Emergency Release lever in “Hold-Open” position. Platform should completely deploy to ground level.
- n. Ensure that platform completely stows when placed in stowed position.

## D. VERIFY INSTALLATION

- Be certain that no vehicle components interfere with operation of lift.
- The lift is designed to carry the weight of a wheelchair and its passenger. The vehicle structure must be capable of supporting all loads produced during lift operation as well as those forces caused by motion of vehicle when it is driven.



### CAUTION

- Do not operate lift when test weight is on platform. This load test is designed to test the lift **mounting method**, not the lift capacity. Remove test weight immediately after check.
  - Vehicle suspension will compress and vehicle will lean when test weight is placed on platform. If weighted platform contacts ground, remove weight, raise platform, and retest.
- Any maintenance and adjustments performed by installers and technicians must comply with European Standards as referenced in the Inspection Record Handbook (EN 1756-2, Annex F) that is supplied with each wheelchair lift document package.

### III. S/K-SERIES EXPORT USE MAINTENANCE AND REPAIR

Regular maintenance of the RICON S-Series™ and K-Series™ Export Use wheelchair lift will help optimize its performance and reduce the need for repairs. This chapter contains cleaning and lubrication instructions, maintenance schedule, troubleshooting section, and maintenance diagrams.

**⚠ CAUTION**

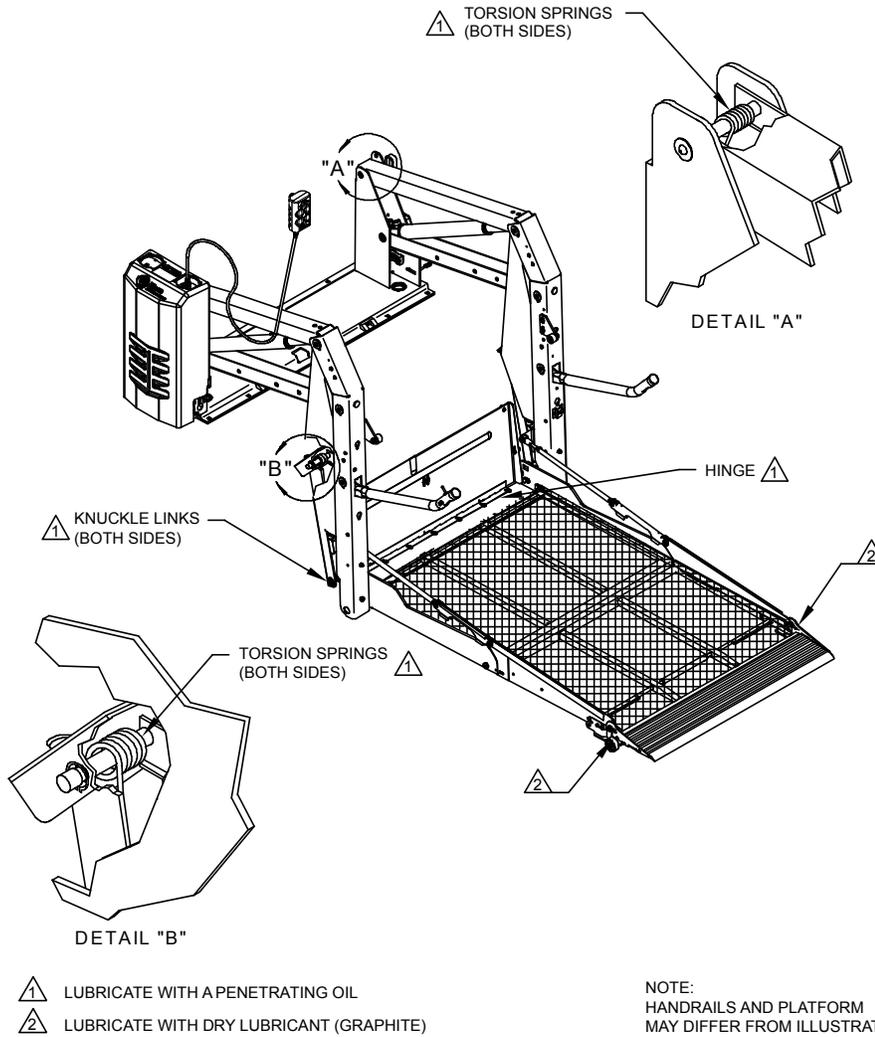
This Ricon product is highly specialized. Maintenance and repairs must be performed by an authorized Vapro Ricon dealer or qualified service technician using Ricon replacement parts. Modifying or failing to properly maintain this product will void warranty and may result in unsafe operating conditions.

#### A. LUBRICATION

**⚠ CAUTION**

Do not lubricate motor or other electrical components. Lubrication of electrical components may create unintentional short circuits.

Lubrication should be performed at least every six months, or sooner depending on usage. Refer to **Figure 3-1** and the following Maintenance Schedule. Lubricate lift at points specified.



**FIGURE 3-1: LIFT LUBRICATION POINTS**

#### B. CLEANING

Regular cleaning with mild soap (i.e. dish soap, car wash liquid) and drying thoroughly will protect lift painted surfaces. Cleaning is especially important in areas where roads are salted in winter. Make sure that lift pivot points remain clear and clean prior to lubrication.

**C. MAINTENANCE SCHEDULE**

Under normal operating conditions, maintenance inspections are required at least every six months (1750 cycles) and a thorough inspection should be performed at service intervals referenced in **Table 3-1**. Service should be increased under conditions of heavier use (more than 10 cycles per day).

<b>TABLE 3-1: MAINTENANCE SCHEDULE</b>	
<b>SERVICE POINT</b>	<b>ACTION TO PERFORM</b>
<b>10 CYCLES</b>	
Overall condition	Listen for abnormal noises as lift operates (i.e. grinding or binding noises.)
Control pendant	Verify that control pendant is undamaged and cable connector is tight.
Threshold warning system	Verify that system properly detects objects in threshold area and actuates the audible alarm.
Bridgeplate load sensor	Verify that sensor inhibits downward movement of platform when a weight is present on lowered bridgeplate.
<b>150 CYCLES</b>	
Electrical wiring	Inspect electrical wiring for frayed wires, loose connectors, etc.
Vehicle interlock	Place vehicle in non-interlock mode and verify that lift does not operate.
Decals	Verify that lift decals are properly affixed, clearly visible, and legible. Replace, if necessary.
Armrests	Verify that armrest fasteners are properly tightened.
Lift mounting points	<ul style="list-style-type: none"> <li>▪ Verify that vehicle mounting and support points are undamaged.</li> <li>▪ Verify that mounting bolts are sufficiently tight and free of corrosion.</li> </ul>
Main lifting pivots	Verify that link pins on arms are properly installed, free from damage, and locked in position.
Platform pivot points	Verify that platform moves freely, without binding, and does not wobble.
Bridgeplate	<ul style="list-style-type: none"> <li>▪ Verify that bridgeplate operates without binding during lift functions.</li> <li>▪ Verify that bridgeplate deploys fully when platform stops at floor level.</li> <li>▪ Verify bridgeplate rests flat against baseplate.</li> </ul>
Front rollstop	<ul style="list-style-type: none"> <li>▪ Verify that rollstop is opened completely when platform is at ground level.</li> <li>▪ Verify that rollstop closes and locks when platform leaves ground.</li> </ul>
 <b>CAUTION</b>	
Hydraulic power unit	<p>Check and add fluid when platform is at ground level. Fluid that is added when platform is raised will overflow when platform is lowered.</p> <ul style="list-style-type: none"> <li>▪ Verify that pump hydraulic fluid level is at FULL mark when platform is at ground level. Add Texaco 01554 Aircraft Hydraulic Oil or equivalent U.S. mil spec H5606G fluid.</li> <li>▪ Verify there are no hydraulic fluid leaks.</li> <li>▪ Verify that manual backup pump operates properly.</li> </ul>
<b>1800 CYCLES</b>	
Cleaning and lubrication	<ol style="list-style-type: none"> <li>1. Clean lift with mild soap and water and wipe dry. Prevent rust by coating all surfaces with a light weight oil. Remove excess oil.</li> <li>2. Spray penetrating oil (Curtisol® Red Grease 88167 or WD-40®) where specified following directions on container. Remove excess grease from surrounding areas.</li> <li>3. Verify that the manual release valve is securely tightened.</li> </ol>
 <b>CAUTION</b>	
A Vapor Ricon authorized dealer must perform the following safety check.	
<b>3600 CYCLES</b>	
Hydraulic cylinder, hoses and fittings	<ul style="list-style-type: none"> <li>▪ Check hydraulic cylinder for evidence of leaks.</li> <li>▪ Inspect hydraulic hoses for damage.</li> <li>▪ Verify that all fittings are tight.</li> </ul>
<b>END OF TABLE</b>	

**D. TROUBLESHOOTING**

The troubleshooting guides are designed to provide logical starting points to locate general problems that could occur with lift. However, not all possible problems or combinations of problems are listed. For troubleshooting lift, refer to **Tables 3-2**. The guide do not incorporate routine safety precautions or preliminary procedures and assume that vehicle battery is fully charged and battery terminals/connectors are clean and tight.

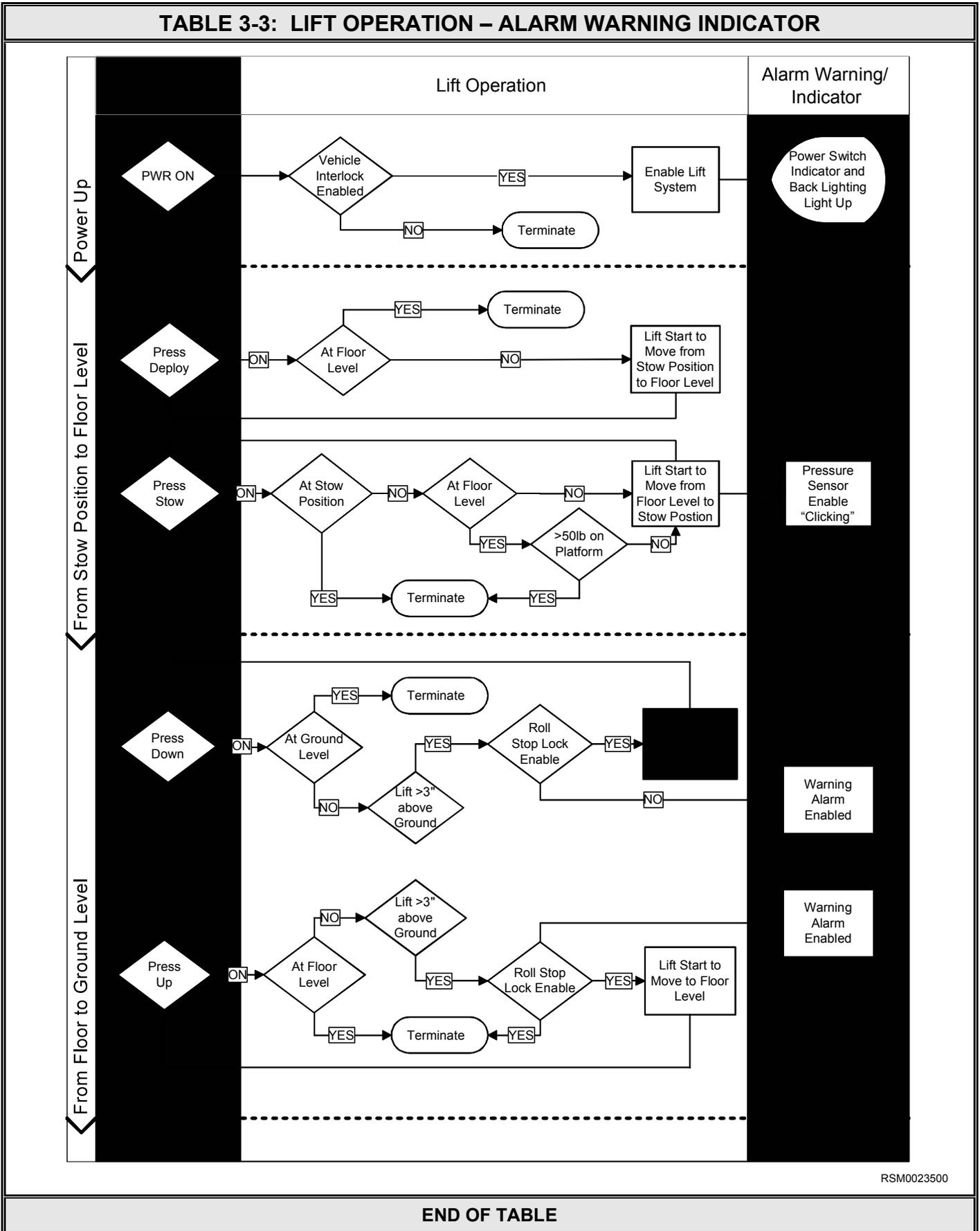
 <b>WARNING</b>
THE TROUBLESHOOTING GUIDES DO NOT INCORPORATE ROUTINE SAFETY PRECAUTIONS OR PRELIMINARY PROCEDURES. DURING THE RICON WARRANTY PERIOD A TRAINED, VAPOR RICON AUTHORIZED DEALER OR QUALIFIED SERVICE TECHNICIAN MUST PERFORM TROUBLESHOOTING. AFTER THE WARRANTY PERIOD, IT IS RECOMMENDED THAT TROUBLESHOOTING BE CONTINUED BY A QUALIFIED SERVICE TECHNICIAN.

**1. LIFT TROUBLESHOOTING**

<b>TABLE 3-2: TROUBLESHOOTING LIFT OPERATION</b>			
<b>SYMPTOM</b>	<b>POSSIBLE CAUSE</b>	<b>REMEDY</b>	
Hydraulic fluid leaks	Loose hydraulic fitting.	Make sure fitting is PROPERLY tightened.	
	Hydraulic component defective.	Discontinue use of lift. Have repairs made by an authorized Vapor Ricon dealer.	
Rollstop does not open	Obstruction of rollstop release latch.	Raise lift and remove obstruction.	
Lift functions	Abnormal Operation.	Obstruction in lifting frame.	Remove obstruction and check for any damage
		Backup pump manual release valve OPEN.	Turn manual release valve CLOCKWISE until slightly snug.
		Hydraulic fluid may be low.	While platform is at GROUND LEVEL, be certain that pump hydraulic fluid level is maintained at required FULL level. Add only Texaco 01554 Aircraft Hydraulic Oil or equivalent U.S. mil spec H5606G fluid.
		Air may be trapped in hydraulic system.	Purge hydraulic system by operating lift through its maximum range of travel for at least four complete cycles. (For vehicles that do not use full travel of lift, the maximum range of travel is accomplished by raising vehicle on a service hoist or ramp.)
	No Operation.	Control system circuit breaker tripped.	Reset circuit breaker.
		Backup pump manual release valve OPEN.	Turn manual release valve CLOCKWISE until slightly snug.
		Hydraulic hose or fitting leak.	Contact an authorized Vapor Ricon dealer for repair.
		Hydraulic fluid may be low.	While platform is at GROUND LEVEL, be certain that pump hydraulic fluid level is maintained at required FULL level. Add only Texaco 01554 Aircraft Hydraulic Oil or equivalent U.S. mil spec H5606G fluid.
		Air can be trapped in hydraulic system.	Purge hydraulic system by operating lift through its maximum range of travel for at least four complete cycles. (For vehicles that do not use full travel of lift, the maximum range of travel is accomplished by raising vehicle on a service hoist or ramp.)
<b>END OF TABLE</b>			

2. LIFT TROUBLESHOOTING – ALARM WARNING INDICATOR

TABLE 3-3: LIFT OPERATION – ALARM WARNING INDICATOR

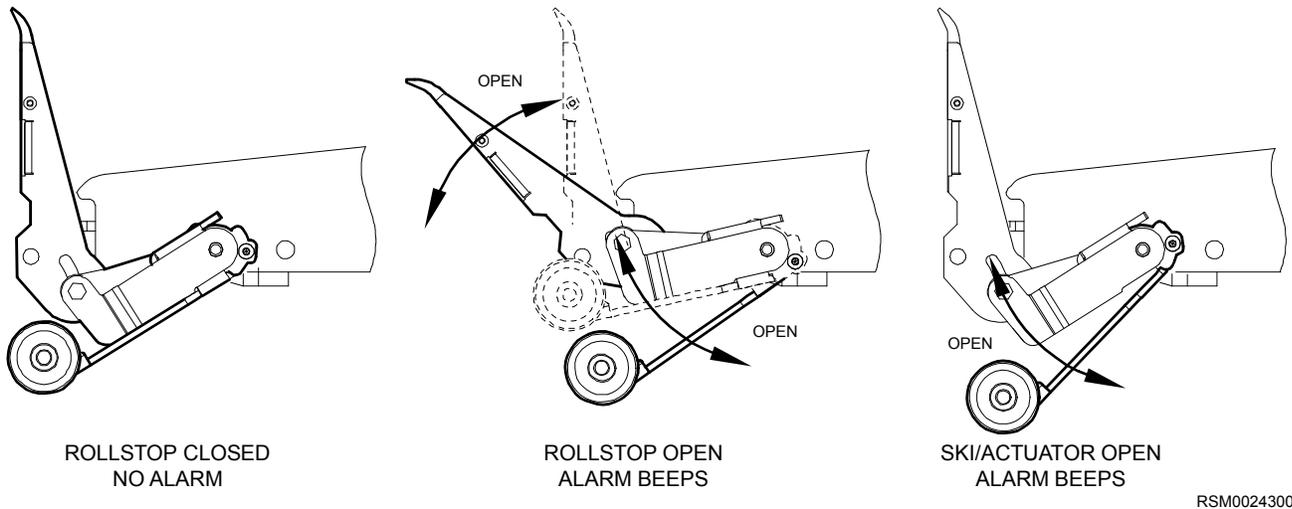


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END OF TABLE

Refer to **Figure 3-2**. The S-Series and K-Series wheelchair lift incorporates an audible safety alarm warning system which is activated when one of the ski actuators is not operating correctly or if the ski is separated from the actuator. Each actuator employs a microswitch that is attached to each rollstop ski and sends a signal to the audible alarm if the rollstop ski and actuator are not operating properly. If rollstop ski and actuator are in good working order, alarm will not beep and lift will stow or deploy properly. If rollstop ski and actuator are separated, alarm will beep and may prevent platform from deploying or raising which indicates that one or both rollstop ski switches requires adjustment or maintenance. Rollstop ski or actuator will require maintenance if a microswitch fails or if rollstop ski or actuators are not operating correctly, which may cause continuous beeping. Contact a Vapor Ricon authorized dealer or qualified service technician for repair.

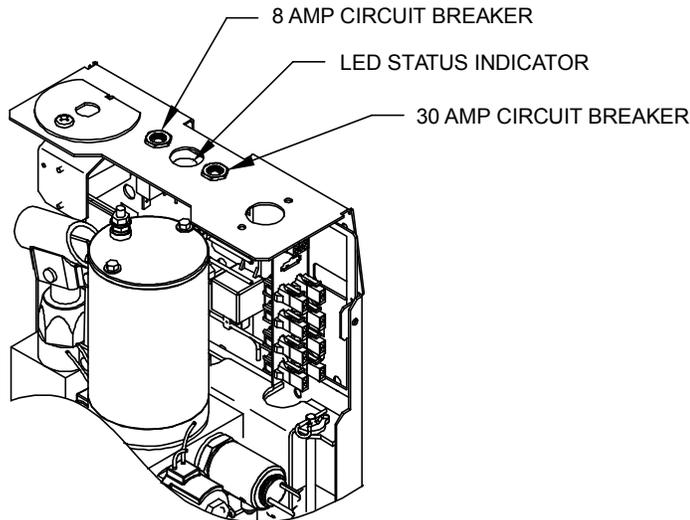
**NOTE:** Uneven ground may cause continuous beeping of audible safety alarm warning system and is utilized to indicate caution to passenger and attendant before proceeding to board or exit wheelchair lift platform.



**FIGURE 3-2: STATUS INDICATORS FOR PUMP SOLENOIDS**

**3. PUMP SOLENOID LED STATUS INDICATOR**

Refer to **Figure 3-3**. Two identical solenoids provide a margin of safety in the event that one of the solenoids fails with its contacts closed. A two-color status indicator LED is located between the 8A and 30A circuit breakers to monitor the condition of the two solenoids. The LED is normally off when the pump is not operating and becomes green when the pump operates. When the pump is not operating and the left solenoid has failed the LED will be red. The LED will be green when the right solenoid has failed.



**FIGURE 3-3: STATUS INDICATORS FOR PUMP SOLENOIDS**

#### 4. BRIDGEPLATE CABLE ASSEMBLY REPLACEMENT

The following steps provide instructions for replacing the bridgeplate (also known as inner rollstop or IRS) cable assembly. Refer to **Figure 3-4** on following page. Please follow these instructions carefully. Call Ricon Product Support if you need assistance.

- a. Study the routing of the cable before removing it.
- b. Deploy the lift platform to vehicle floor level. Be certain that bridgeplate is resting against baseplate assembly.
- c. Remove pinch point shields from the left and right vertical arm assemblies.
- d. Assemble and secure one end of an IRS cable to the IRS pulley mount block (#1; located inside the left vertical arm assembly) using a hex screw, bushing, and washer.
- e. Route the cable around the IRS pulley mount block bushing (#2). Verify that cable is routed between the bushing tab and the point where the cable makes contact with the bushing. Install washer and hex nut over bushing and cable assembly.
- f. Continue to route the cable around grooved bearings #3, #4, and #5.
- g. Route the cable down the length of the vertical arm assembly and around grooved bearing #6.
- h. Assemble and secure the end of the IRS cable to the left side of the bridgeplate (#7) using a hex screw, washer, bushing, and he nut. Be sure to install a hex nut on the inside of the inner rollstop.
- i. Repeat for right side.
- j. Reinstall pinch point shields removed in step 2.

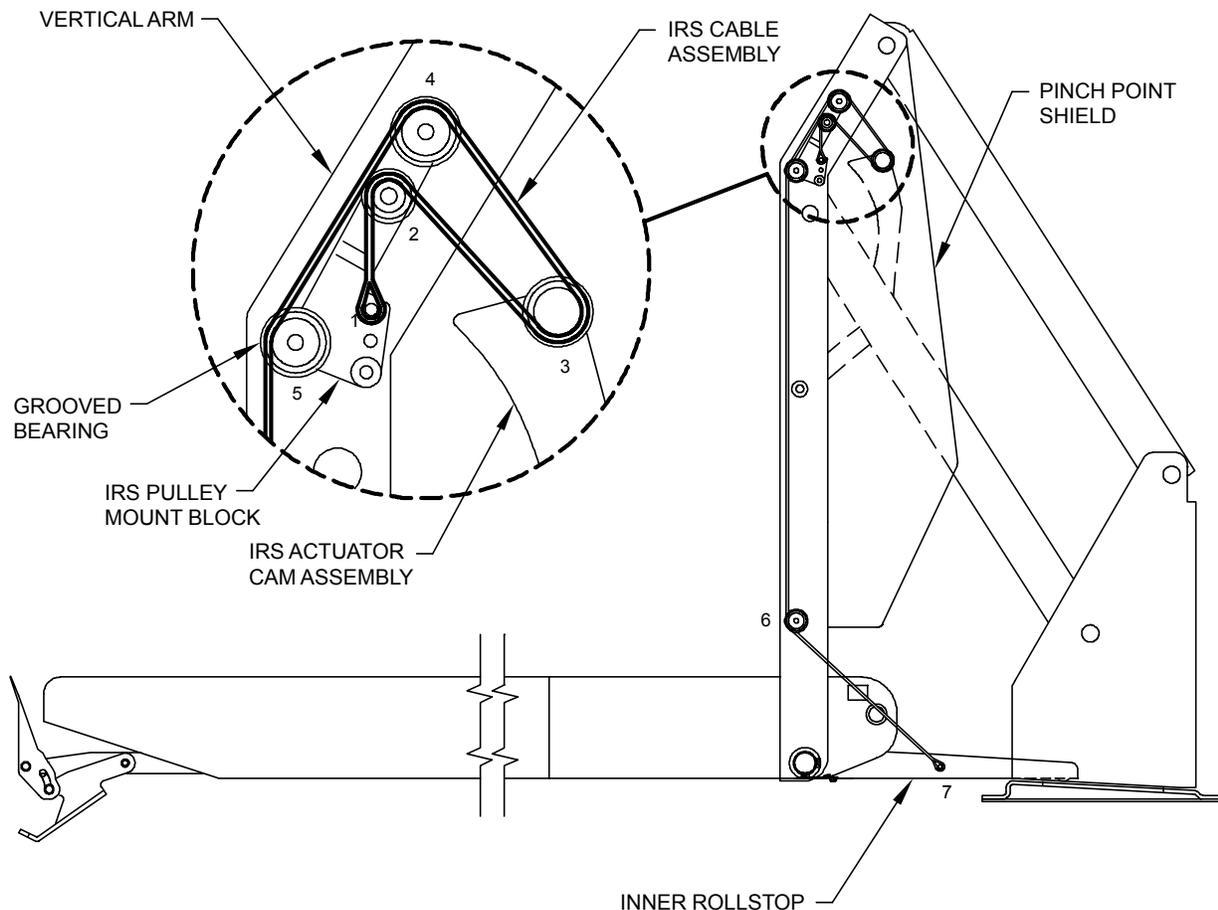
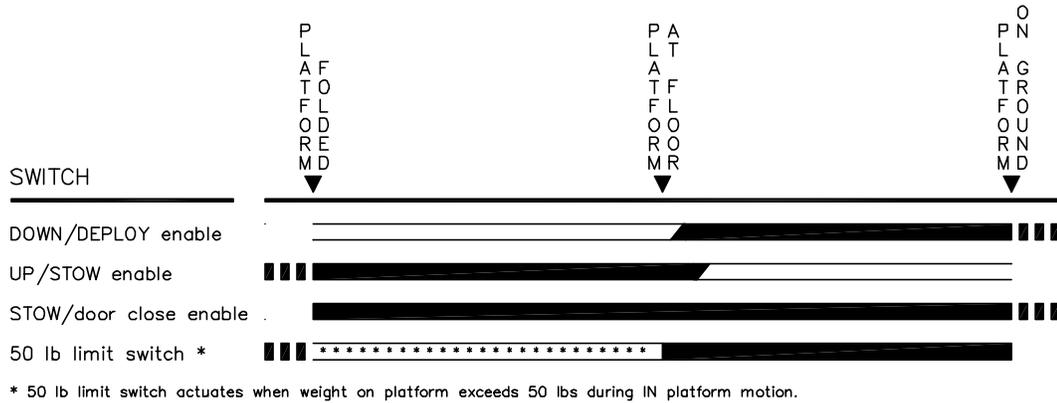


FIGURE 3-4: BRIDGEPLATE CABLE ROUTING

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**5. S/K-SERIES LIMIT SWITCH STATES**

Refer to **Figure 3-5**. The limit switch actuation diagram shows the state of all limit switches as the platform travels from fully stowed, to vehicle floor level, and to ground level. The solid (—) line indicates the normally CLOSED portion of switch is operational, while the two thin lines (==) indicate the normally OPEN portion of the switch is operational. The dotted lines (■ ■ ■) are used to show switch states beyond normal travel boundaries of the platform. This is useful to show the operation of switches that change state at folded or ground level positions. For proper operation of lift, the switch actuations must overlap as shown.



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**FIGURE 3-5: LIMIT SWITCH ACTUATION CHART**

**6. REAR SPRING REPLACEMENT**

**NOTE:** A well maintained and lubricated parallel arm spring will prolong the life of the spring. In the event that the spring will need to be replaced, proceed with rear spring replacement.

- a. Deploy platform to ground level onto a pallet for support and to maintain the parallel arms at a 90 degree angle perpendicular to the rear of the platform towers. The tine of the spring will load straight up and down when done so.
- b. Use a 5mm (3/16 in.) allen wrench to remove screw and lock washer from the pin.
- c. Refer to **Figures 3-6 and 3-7**. Attach pin alignment tool to pin. Replace pin with appropriate tool to hold parallel arm and rear spring in place.



**FIGURE 3-6: PIN WITH PIN ALIGNMENT TOOL**



**FIGURE 3-7: PIN WITH PIN ALIGNMENT TOOL**

- d. Refer to **Figure 3-8**. Carefully remove tool holding parallel arm and rear spring in place. Hold rear spring and parallel arm, then pull parallel arm up and remove rear spring.

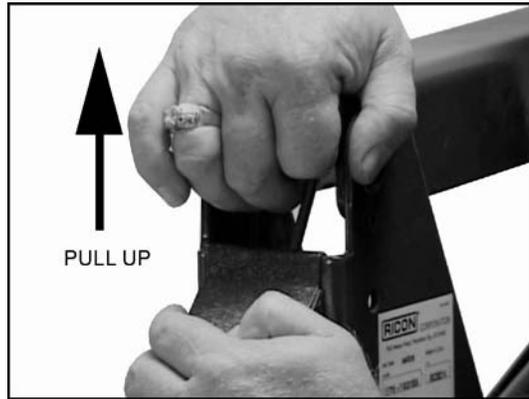


FIGURE 3-8: PIN WITH PIN ALIGNMENT TOOL

- e. Replace and install rear spring.
- f. Refer to **Figures 3-9**. Install a 51mm (2 in.) extension pin through parallel arm and rear spring.

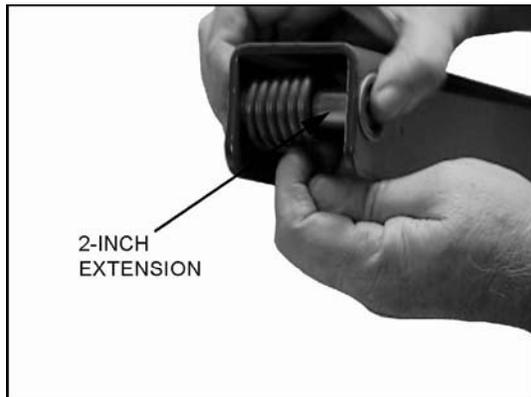


FIGURE 3-9: 2-INCH EXTENSION

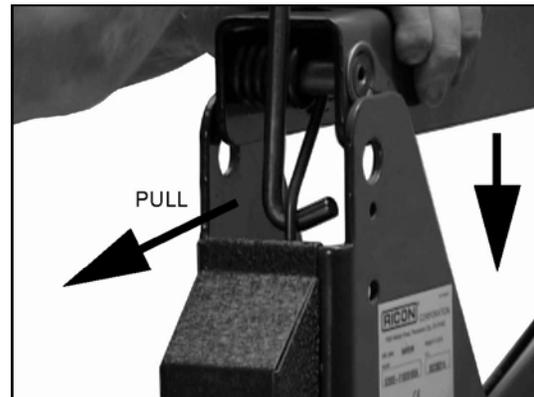


FIGURE 3-10: PLACE REAR SPRING

- g. Refer to **Figure 3-10**. Use appropriate tool to use as leverage to pull back tine of bent rear spring and place into baseplate tower.
- h. Replace 51 mm (2-Inch) extension with existing pin.
- i. Reinstall screw and lock washer.
- j. Repeat removal and installation for opposite parallel arm.

## 7. HYDRAULIC CYLINDER. GLAND NUT AND PISTON REPLACEMENT

- a. Lower lift to ground level.

**NOTE:** Lift must be lowered as far as possible to avoid personal injury and oil spillage when hydraulic components are dismantled.

- b. Fully open manual release valve.

**NOTE:** Important for allowing easy removal/insertion of ram into cylinder.

- c. Install hydraulic breather tube if available.

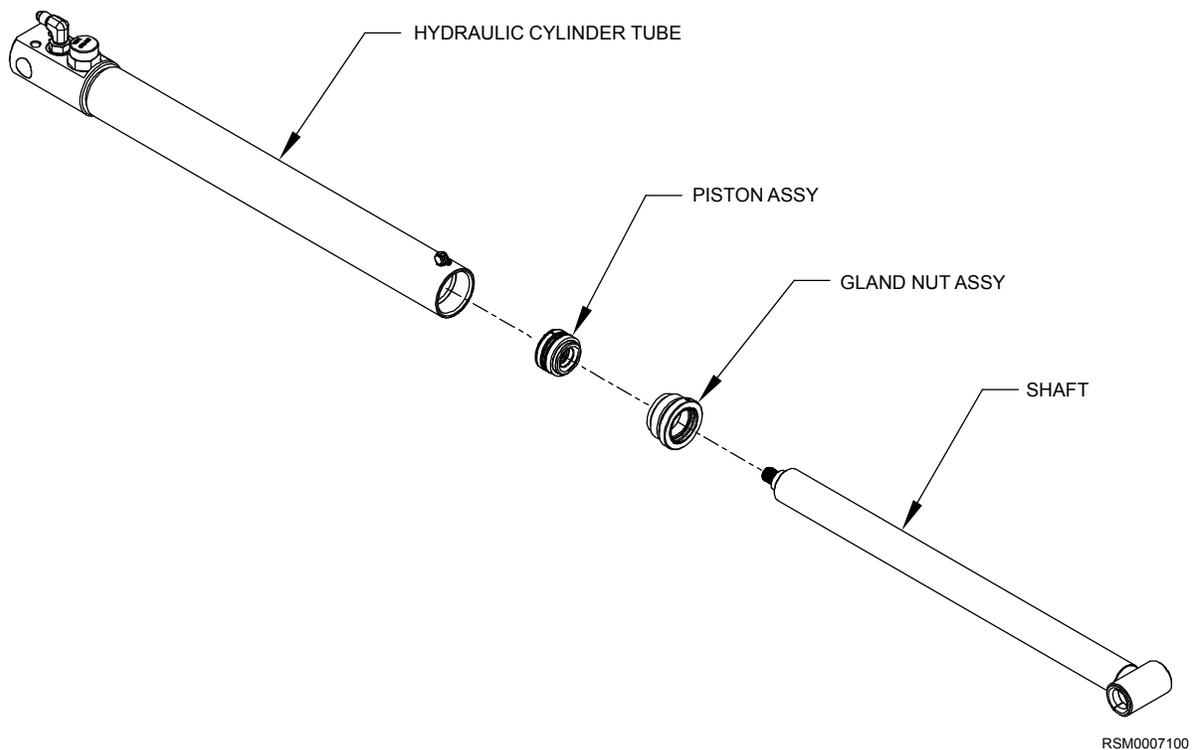
**NOTE:** The hydraulic breather tube may help in avoiding oil overflow from filler neck when reinstalling ram. An assistant may be required to check oil level in filler neck as ram is reinserted, if breather tube is not available.

- d. Loosen both hydraulic button head screws with 5mm (3/16 in.) hex wrench to loosen pin.
- e. Remove and retain cap screw with 4mm (5/32 in.) hex wrench.
- f. Drive rear pin out and retain. Use pin driver, pin is driven towards bushing side.
- g. Drive front pin out and retain.

**NOTE:** Hydraulic cylinder may be left in baseplate "U" tower for this and proceeding operations.

- k. Refer to **Figure 3-11**. Unscrew gland nut.
- l. Refer to **Figure 3-11**. Pull shaft out.

- m. Refer to **Figure 3-11**. Remove old piston using appropriate tool. Heat piston thread if required to soften the thread lock and remove piston.



**FIGURE 3-11: HYDRAULIC CYLINDER**

- n. Refer to **Figure 3-11**. Replace gland nut with the gland nut supplied in kit. Apply thin film of hydraulic fluid to the seals before installing.
- o. Thoroughly clean shaft and new piston threads.

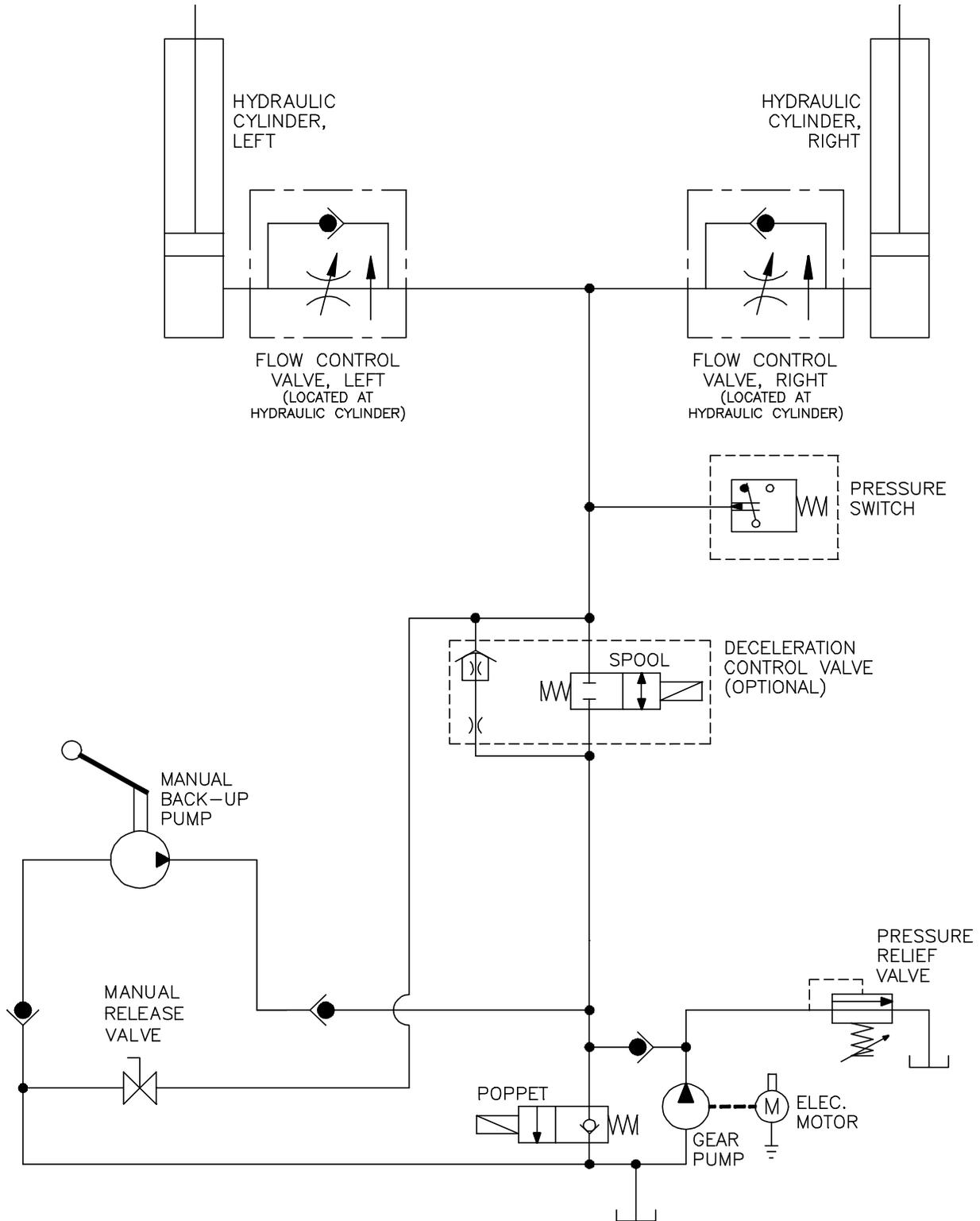
**NOTE:** If shaft threads were damaged by the thread locking punch, rethread with 13mm-508 (1/2 in.-20) die. Use a wire brush to remove all thread sealer from shaft threads. Blow clean. Always blow piston threads clean even if no dirt is visible.

- p. Refer to **Figure 3-11**. Install new piston supplied in kit. Apply medium strength thread lock (blue) on shaft threads and tighten securely.
- q. Refer to **Figure 3-11**. Reinsert shaft into cylinder. Apply thin film of hydraulic fluid to seals before installing. Use split cup tool to insert piston.

**NOTE:** Be extra careful not to damage piston seals.

- r. Firmly tighten gland nut. Apply medium strength thread lock (blue) on gland nut threads.
- s. Install front pin. Place set screw face down. Apply medium strength thread lock (blue) on cap screw. Tighten using 4mm (5/32 in.) hex wrench.
- t. Install rear spring using spring installation tools.
- u. Install rear pin. Insert pin from bushing side. Apply medium strength thread lock (blue) to button head screw. Tighten using 5mm (3/16 in.) hex wrench.

### E. HYDRAULIC CIRCUIT DIAGRAM



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FIGURE 3-12: S/K-SERIES HYDRAULIC CIRCUIT

**F. ELECTRICAL WIRING DIAGRAM**

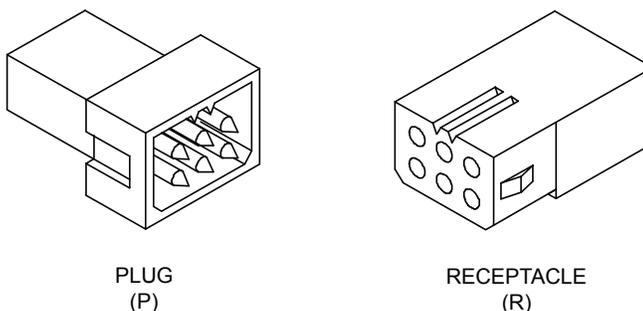
**1. DIAGRAM LEGEND**

**a. Wire Color Codes**

TABLE 3-4: WIRE COLOR CODES			
LETTER	COLOR	LETTER	COLOR
BLK	Black	RED	Red
BLU	Blue	VIO	Violet
BRN	Brown	GRY	Gray
GRN	<u>Green</u>	<u>WHT</u>	White
ORG	Orange	YEL	Yellow
<b>END OF TABLE</b>			

**b. Electrical Connector Description**

Refer to **Figure 3-13**. The standard electrical connectors used by Ricon are Molex .062" Series. These connectors have terminal numbers molded onto the back. Use these numbers and colors to identify all wires.



**FIGURE 3-13: MOLEX CONNECTORS**

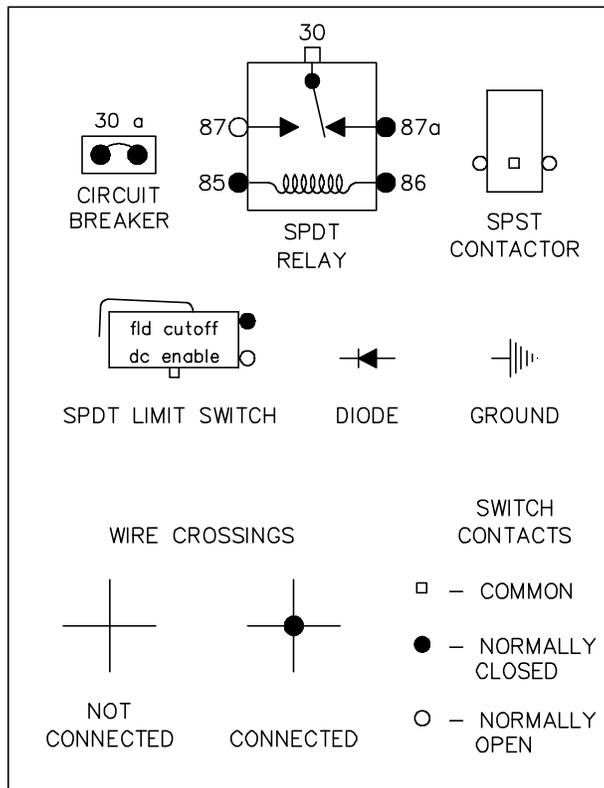
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**c. Diagram Labels**

TABLE 3-5: DIAGRAM LABELS		
Diagram Label	Definition	Command/Description
12V	12 Volts	Circuit current rating is also given
DC	Door Close	Direct Command
DO	Door Open	Direct Command
DOE	Door Open Enable	From Door Open Cut-off switch.
DWN	Pump Down	Used by OUT and DOWN
DWNA	Down Attempt	Must be enabled
FAST		Signal to speedup valve for UP and DOWN
GND	Ground	
OUTA	Out Attempt	Out must be enabled
SDA	System Deploy Attempt	DO followed by OUT
SSA	System Store Attempt	IN followed by DC
UP	Pump Up	Used by UP and IN
UPA	Up Attempt	Up must be enabled
<b>END OF TABLE</b>		

d. **Electrical Symbols**

Figure 3-14 shows standard symbols used in the electrical wiring diagram.



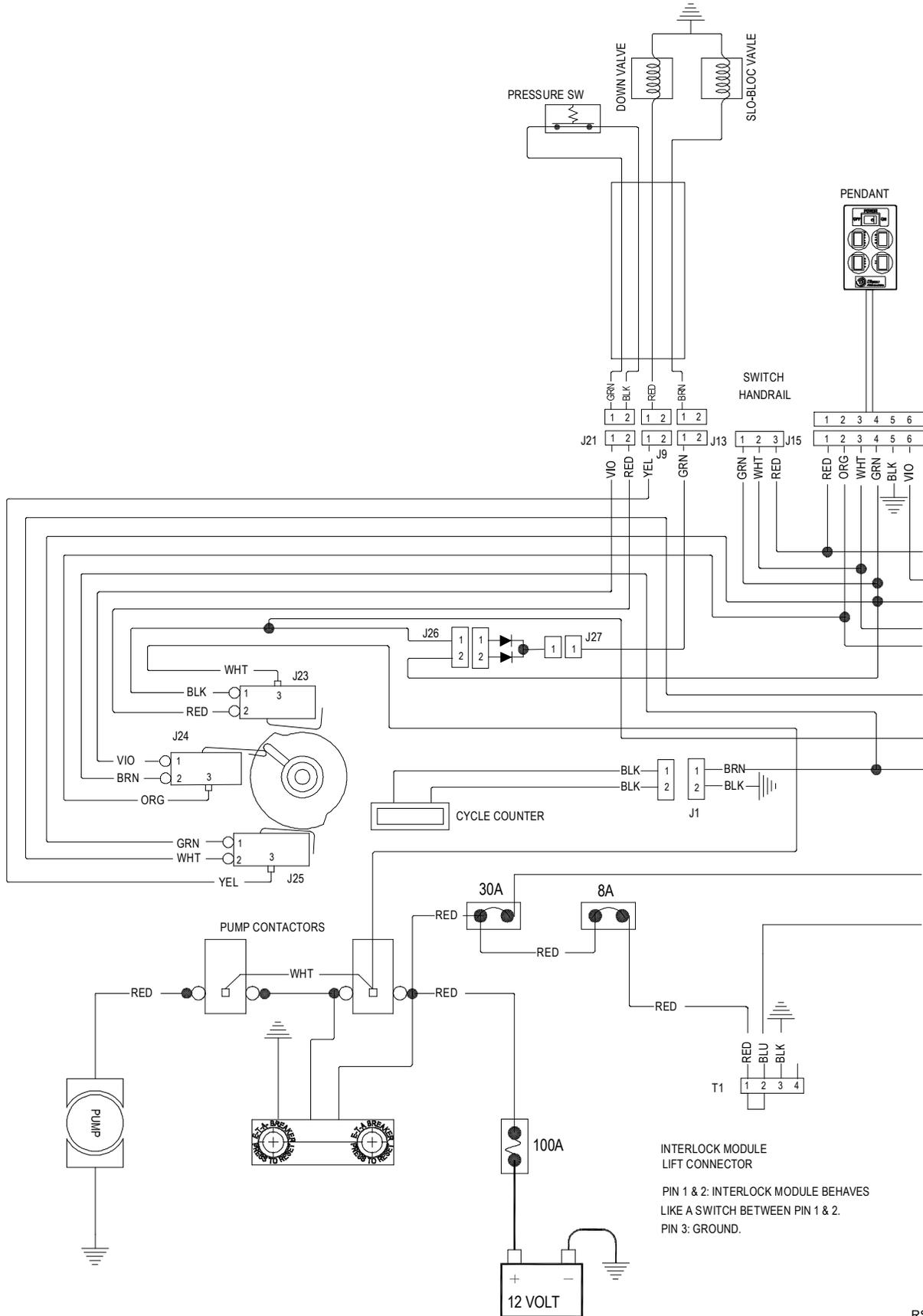
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**FIGURE 3-14: DIAGRAM SYMBOLS**

e. **WIRING DIAGRAM**

Refer to Figures 3-15-1 and 3-15-2 for the S/K-Series Export Use wiring diagram.

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INTERLOCK MODULE  
LIFT CONNECTOR  
PIN 1 & 2: INTERLOCK MODULE BEHAVES  
LIKE A SWITCH BETWEEN PIN 1 & 2.  
PIN 3: GROUND.

FIGURE 3-15-1: S/K-SERIES EXPORT USE WIRING DIAGRAM (SHEET 1 OF 2)

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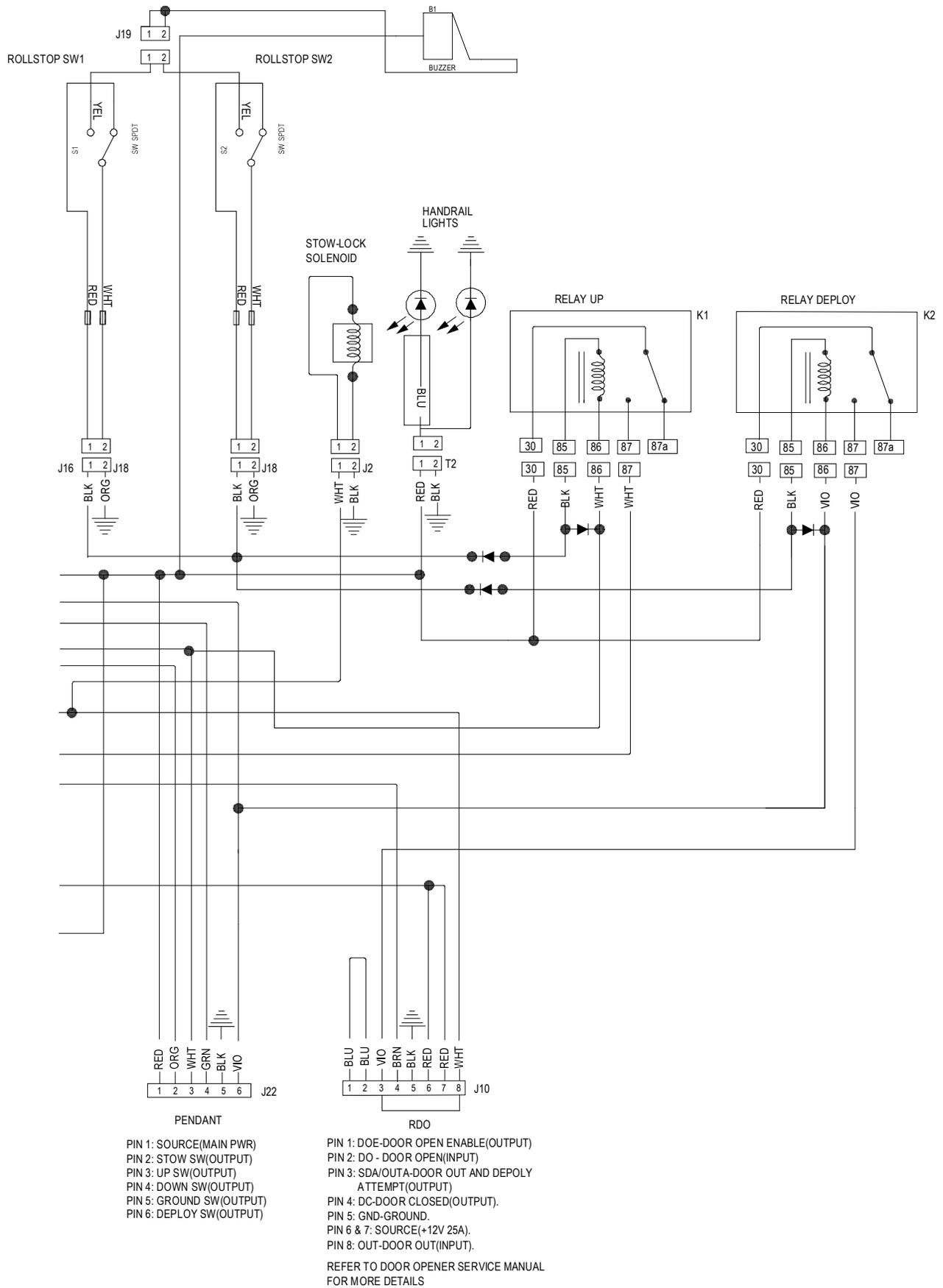


FIGURE 3-15-2: S/K-SERIES EXPORT USE WIRING DIAGRAM (SHEET 2 OF 2)

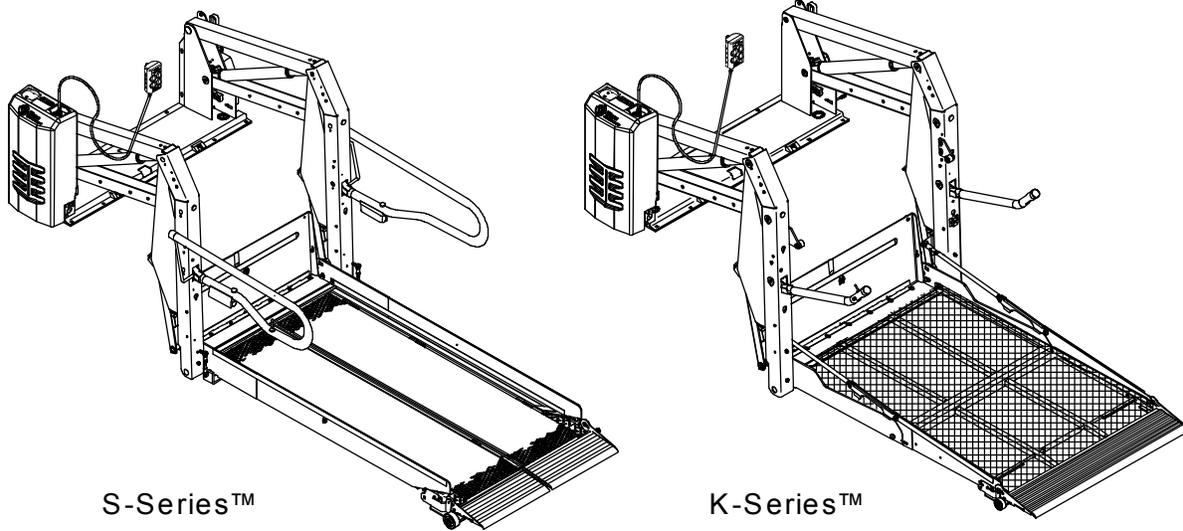
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### IV. S/K-SERIES EXPORT USE WHEELCHAIR LIFT SPARE PARTS

This chapter contains spare parts diagrams and lists for the RICON S-Series™ and K-Series™ Export Use wheelchair lifts. The part diagrams are exploded views of each major lift assembly, with individual parts and components referenced by numbers. Each accompanying parts list contains figure item numbers, part descriptions, quantities used, configurations and the Ricon part number. To order parts, locate part on an appropriate diagram and note the figure item number. Find the figure item number on the accompanying parts list and use the part number in the far right column. Note that parts identified with (REF) in the QTY column of the spare parts list are for reference purposes only and are not sold for spare parts. Refer to the DECAL LOCATIONS AND PART NUMBERS figure in **Chapter II** for decal part numbers.

**NOTE:** Most kits contain a single part (plus hardware). Therefore, you may need to order more than one kit if the part is used more than once on a major assembly.



LIFT MODEL AND KIT NUMBERS	
PRODUCT NUMBER	K1200X01300610E, S1231X01300610E (first model in number sequence)
DOCUMENTATION KIT NUMBER	42095
SPARE DECAL KIT NUMBER	(S-Series) 42097 (K-Series) 42098

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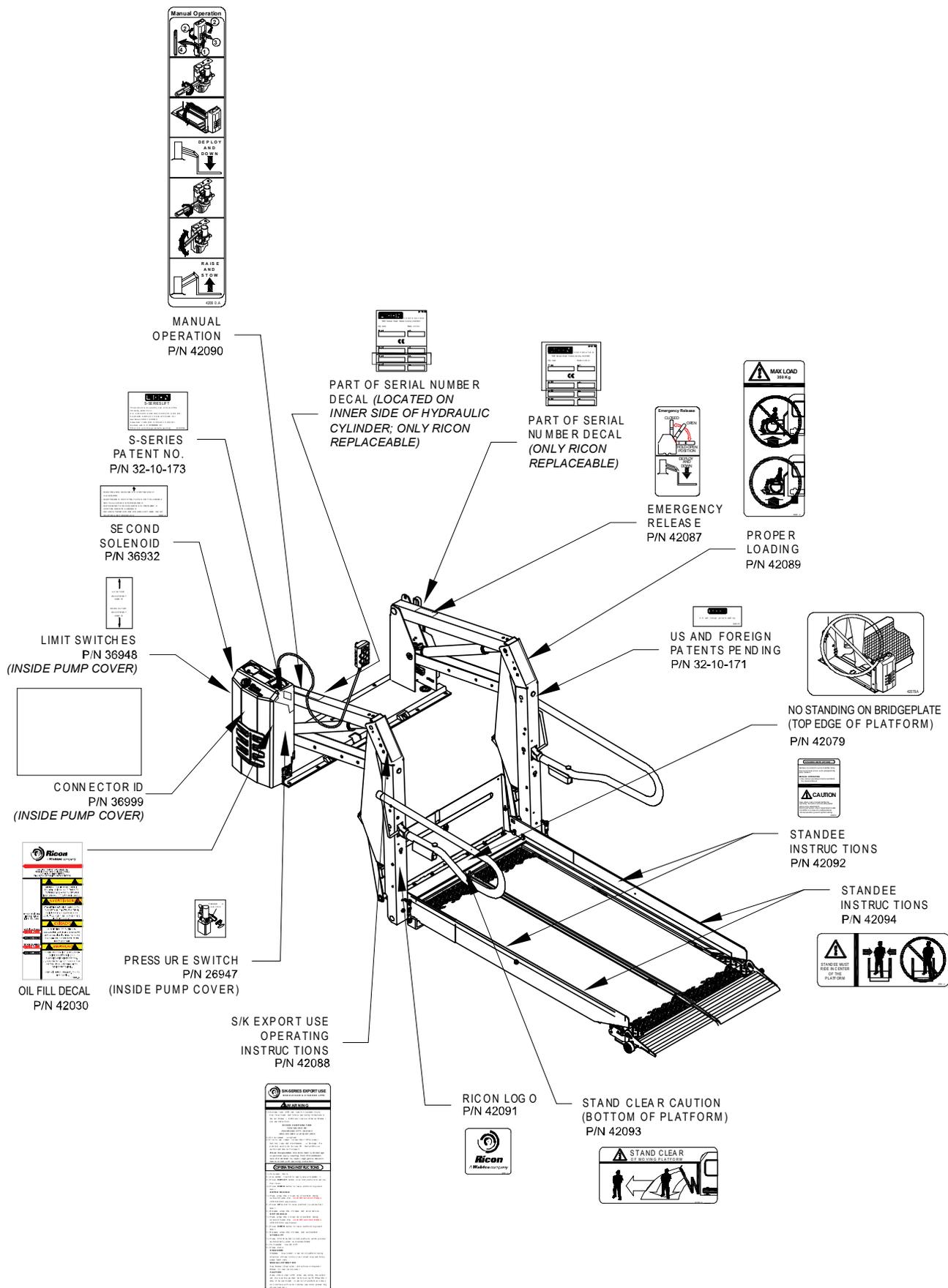


FIGURE 4-1: S-SERIES EXPORT USE DECALS

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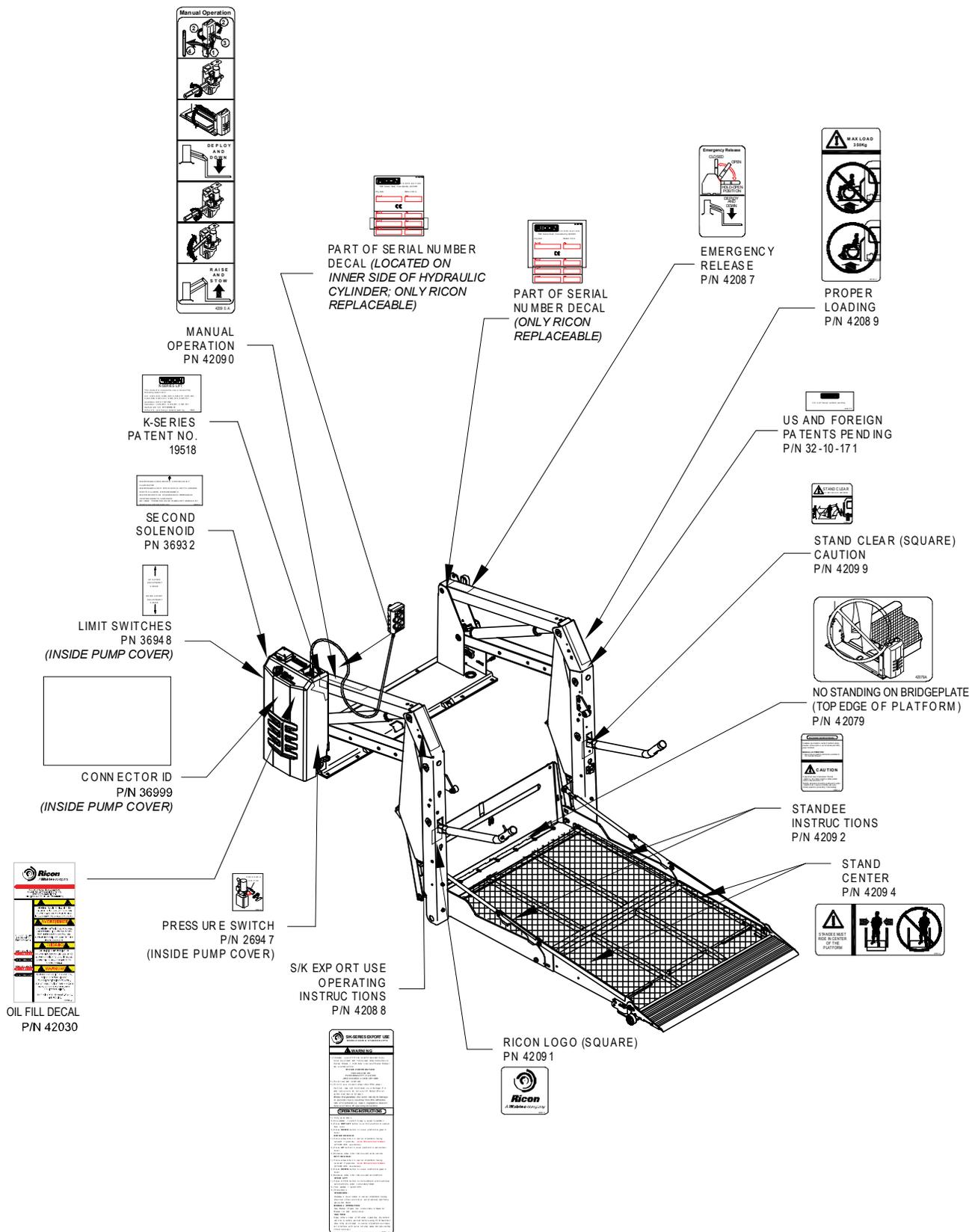
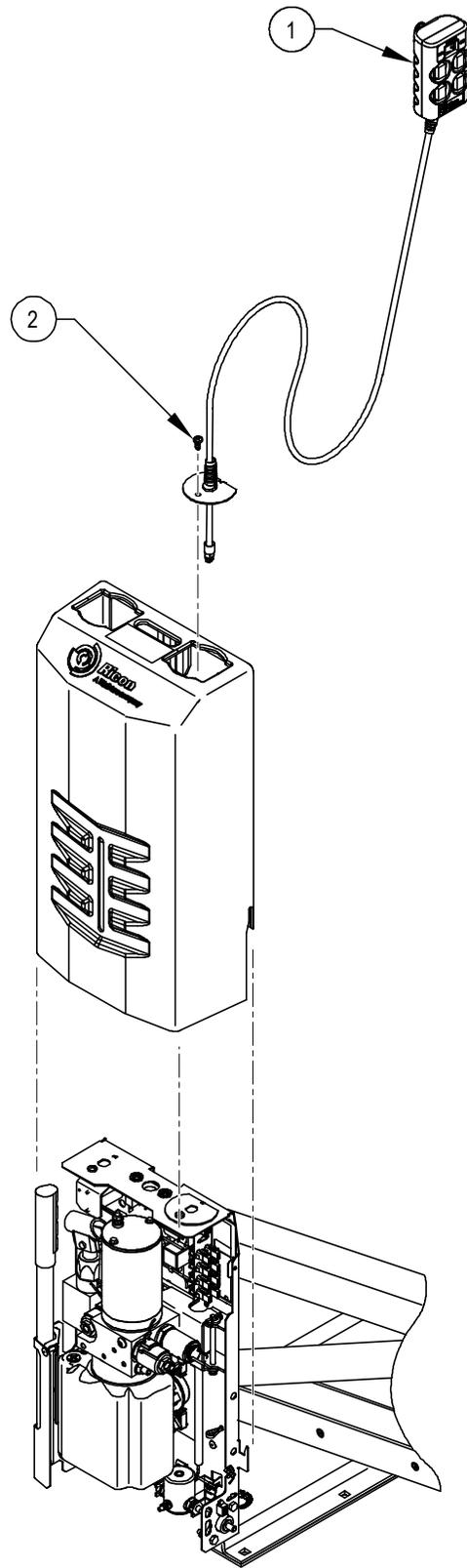


FIGURE 4-2: K-SERIES EXPORT USE DECALS

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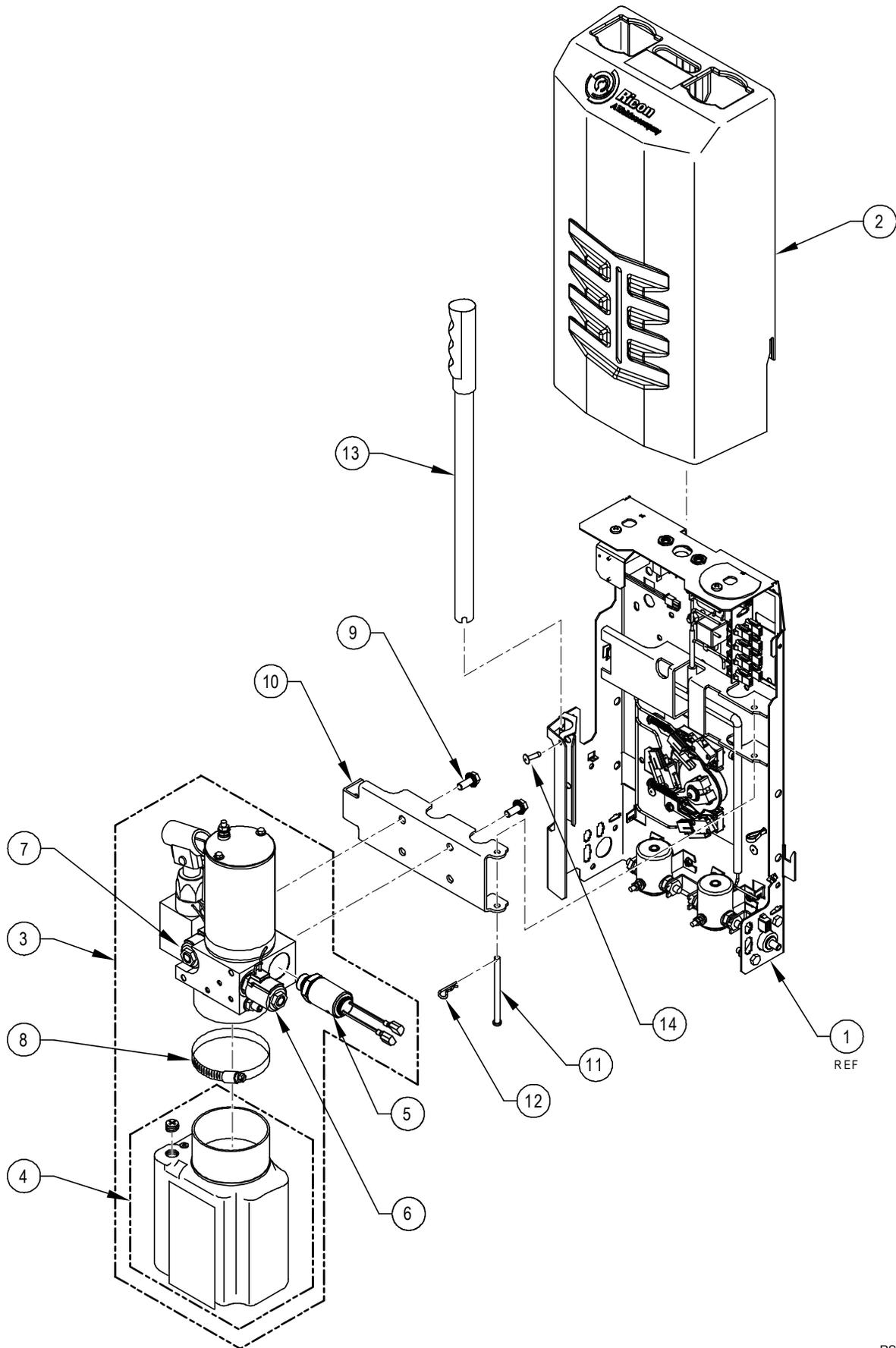
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FIGURE 4-3: S/K-SERIES PENDANT

FIGURE 4-3: S/K-SERIES PENDANT

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	PENDANT ASSY, .29COIL CORD, PUSH BUTTONS, RED ATTACHING PARTS	1		42993
2	SCREW,PHP, 1/4-20,TAP TITE,BLK ZINC	1		37787

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



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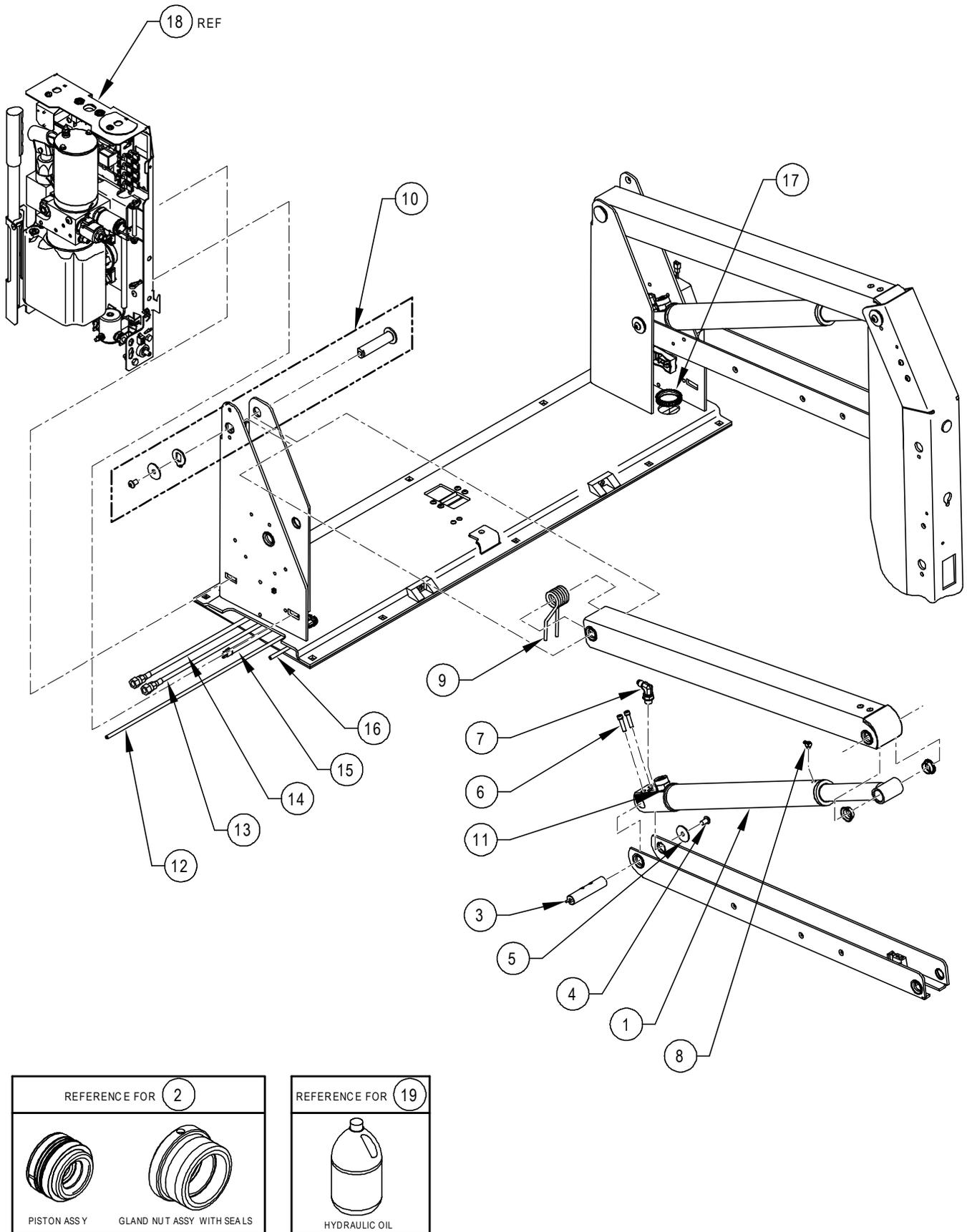
FIGURE 4-4: S/K-SERIES PUMP ASSY (LEFT HAND SIDE PUMP SHOWN)

**FIGURE 4-4: S/K-SERIES PUMP ASSY**

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	CHASSIS ASSY, 12V PUMP, EXPORT, LH	REF		44872
1A *	CHASSIS ASSY, 12V PUMP, EXPORT, RH	REF		44873
2	COVER, PUMP, 20.58-INCH TALL, LH	1		39906-1
2A *	COVER, PUMP, 20.58-INCH TALL, RH	1		39906-2
3	PUMP ASSY, 12V, MODULAR	1		PM212000008N
	ATTACHING PARTS			
4	RESERVOIR, PUMP, PLASTIC W/DECAL & PLUG	1		30938
5	KIT, PRESSURE SWITCH	1		42050
6	KIT, SPOOL VALVE, W/DCLR, 12V	1		01176
7	VALVE ASSY, POPPET, DELTROL, 12V	1		V2-SH-105
8	CLAMP, RESERVOIR	1		V2-SH-109
9	SCREW, FLANGED, 5/16-18 X .75L, ZINC	2		37703
10	HINGE, PUMP MOUNTING	1		39907
	ATTACHING PARTS			
11	PIN, CLEVIS, .250 OD X 3.50 L	1		42323
12	CLIP, HITCH PIN, #3 (1776)	1		25547
13	HANDLE ASSY,PUMP, MANUAL OPERATION	1		V2-SH-111
14	RIVET, POP, 3/16 X 3/8 A/S ##AD66BS (BAG OF 10)	1		15918

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

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



RSM0017302

FIGURE 4-5: S/K-SERIES HYDRAULIC SYSTEM

**FIGURE 4-5: S/K-SERIES HYDRAULIC ASSY**

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	CYLINDER ASSY	2		VT-SH-105K
1A *	CYLINDER ASSY	2		VS-SH-105K
	ATTACHING PARTS			
2	KIT, CYLINDER REPAIR (PISTON AND GLAND NUT ASSY)	2		21829
3	PIN ASSY, PIVOT, CAM SIDE	REF		37780
4	SCREW, SHC, 1/4-20 X 1, BLK (BAG OF 10)	1		14491
5	WASHER, FDR, .31 X 1.25 SST BLK OXIDE (BAG OF 10)	1		15921
6	KIT, PIN, CAM, W/HDWR	1		42036
7	FITTING, STE, 1/4J/9/16-18STL	2		V2-SH-14
8	FITTING, "L", MALE, M5, BARB	2		V2-SH-16
9	SPRING, TOP ARM	2		V2-SP-97
10	KIT, PIN, LINK, ARM W/HARDWARE	2		16679
11	KIT, FLOW CONTROL, FIXED RATE .50 GPM, (KIT OF 2)	1		30968
12	TUBE, POLY, 6MM OD X 4MM ID, 5.0'	1		20229
13	HOSE ASSY, HYD, 74" X 1/4 JIC X 1/4 JIC	1		37716
14	HOSE ASSY, HYD, 36" X 1/4 JIC X 1/4 JIC	1		UV-SH-013
15	HARNESS, STOW-LOC SOLENOID EXTENSION	1		37333
16	TUBE, POLY, 6MM OD X 4MM ID, 8.0'	1		20228
17	GROMMET, CATERPILLAR, 3/16 X 12" LONG	2		26647
18	CHASSIS ASSY, 12V PUMP, EXPORT, LH	REF		44872
18A*	CHASSIS ASSY, 12V PUMP, EXPORT, RH	REF		44873
19	OIL, HYDRAULIC, TEXACO #15, MEETS MIL-H-5606G	1	GAL	20-16-051

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

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

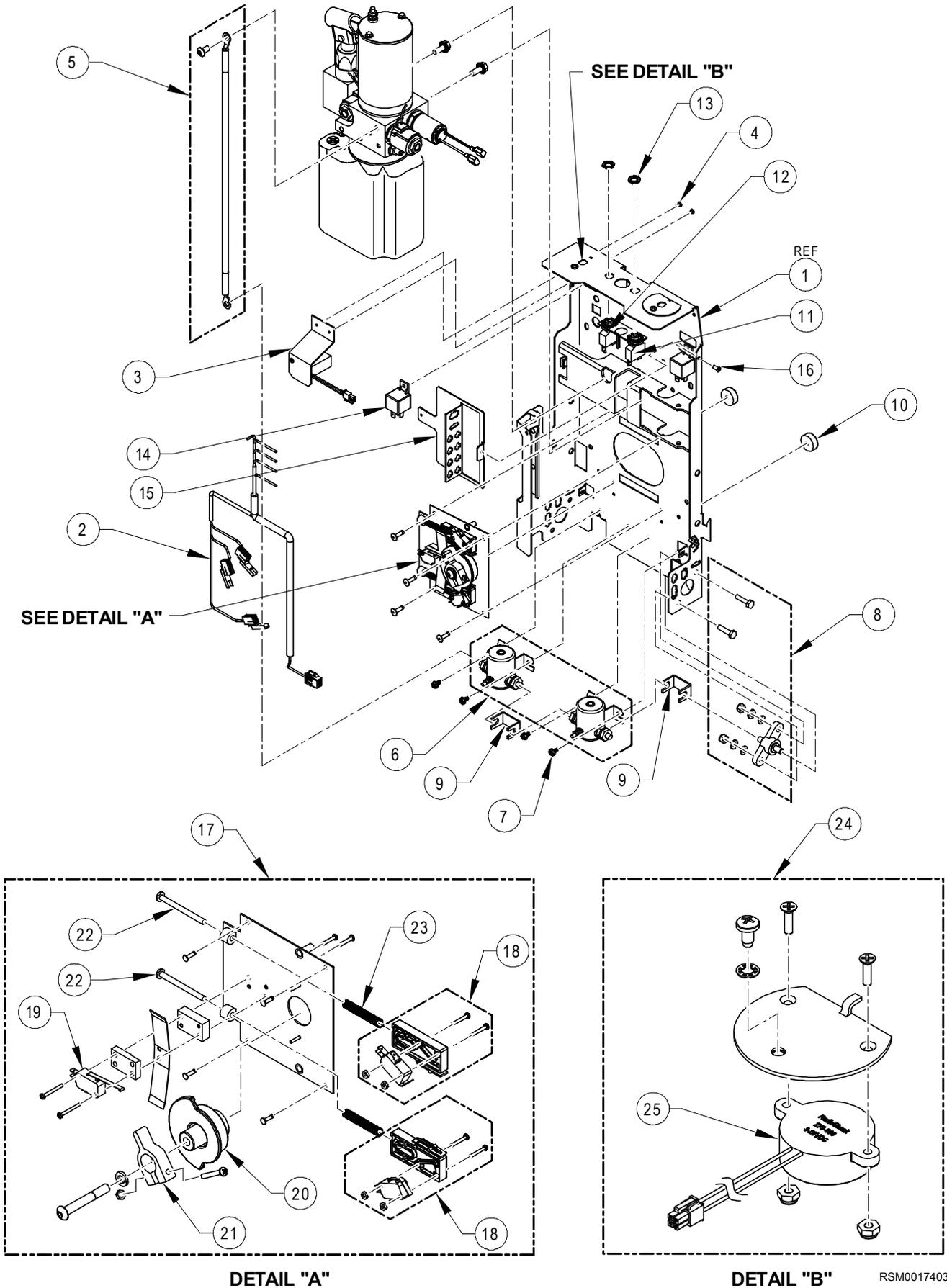


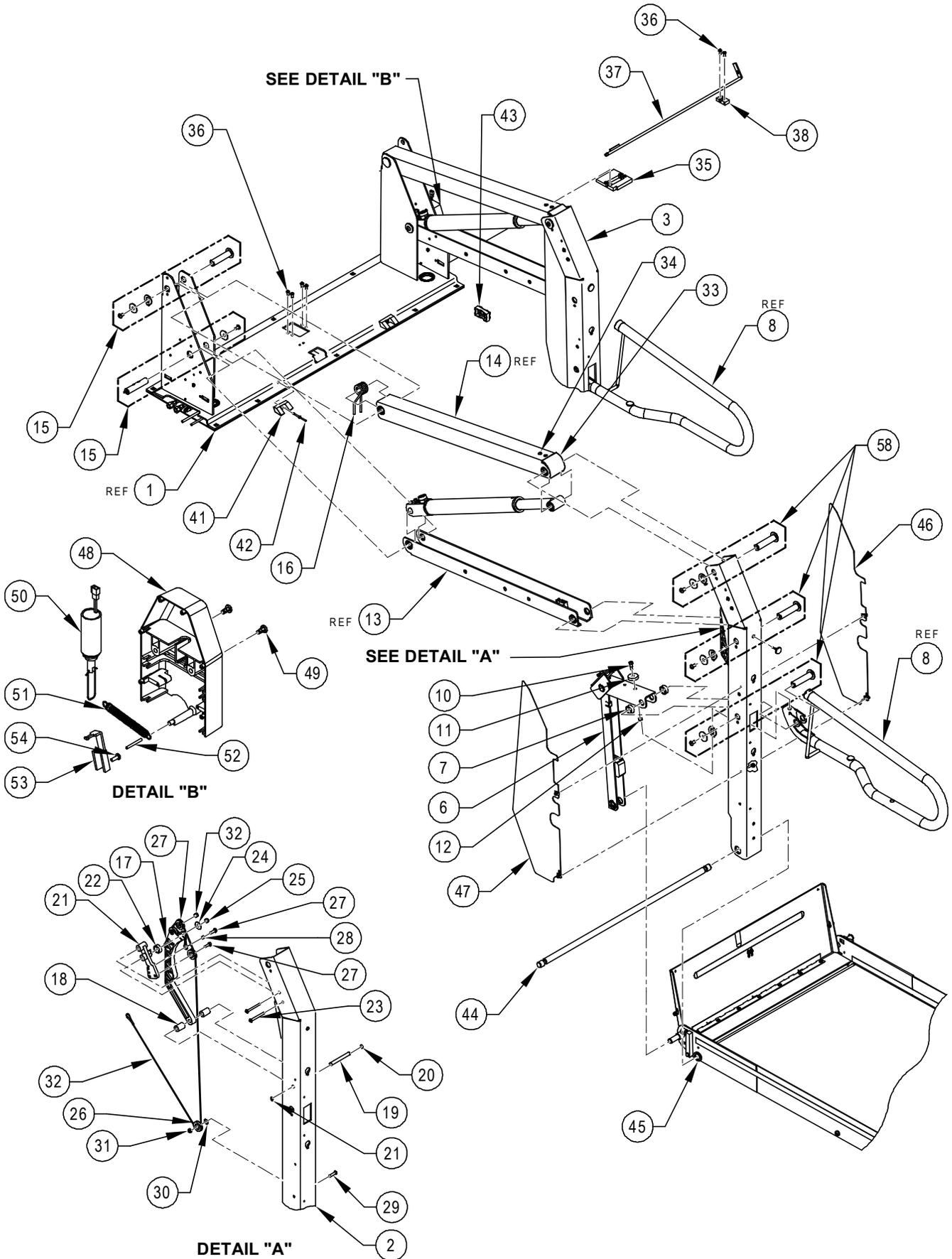
FIGURE 4-6: S/K-SERIES ELECTRICAL SYSTEM (LH PUMP CHASSIS SHOWN)

**FIGURE 4-6: S/K-SERIES ELECTRICAL ASSY**

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	BRACKET WLDT, PUMP CHASSIS	1		44978
2	HARNESS, PUMP CHASSIS, 12V	1		45219
3	COUNTER ASSY, 12V, MODULAR	1		38391
4	SCREW, PHP, 6-32 X 1/4, TYPE F, SST	REF		21953
5	KIT, GROUND STRAP, LONG	1		37388
6	KIT, SOLENOID, 12V, SGL POLE, SGL THROW	1		29297
7	SCREW, HEX, 10-24 X 3/8, QUICK-DRIVE	2		37702
8	KIT, BLOCK, POSITIVE CONNECTION, MODULAR	1		35454
9	BUSBAR, 1.45" W	2		37767
10	BUMPER, CHASSIS	2		44883
11	CIRCUIT BREAKER, 8AMP, RED	1		265108
12	CIRCUIT BREAKER, 30AMP, WHITE	1		26510
13	NUT, PANEL, 7/16-28 UNEF	2		37779
14	RELAY, 12V COIL 40A QUICK CONNECT	1		28-36-405
15	BRACKET, PUMP CHASSIS	1		42986
16	SCREW	1		21953
17	KIT, SWITCH ASSY, POSITION INPUT	1		44236
18	KIT, SWITCH BLOCK/MICROSWITCH W/HARDWARE	2		44237
19	SWITCH, LIMIT, UPPER/LOWER, (MODIFIED)	3		V2-ES-110
20	CAM, POSITION INPUT	1		45200
21	ACTUATOR, FOLD CUTOFF	1		V2-AC-089
22	SCREW, PHP, 10-24 X 2 1/4	2		10860
23	SPRING, ADJUSTABLE LIMIT SWITCH	2		V2-ES-93
24	KIT, BUZZER WITH BRACKET	1		44238
25	BUZZER ALARM, 90dB@30cm/12VDC	1		45209
26 *	100 AMP MEGA FUSE (LITTLEFUSE) (REF FIG 2-10)	1		70017
27 *	MEGA FUSE HOLDER (REF FIG 2-10)	1		70018

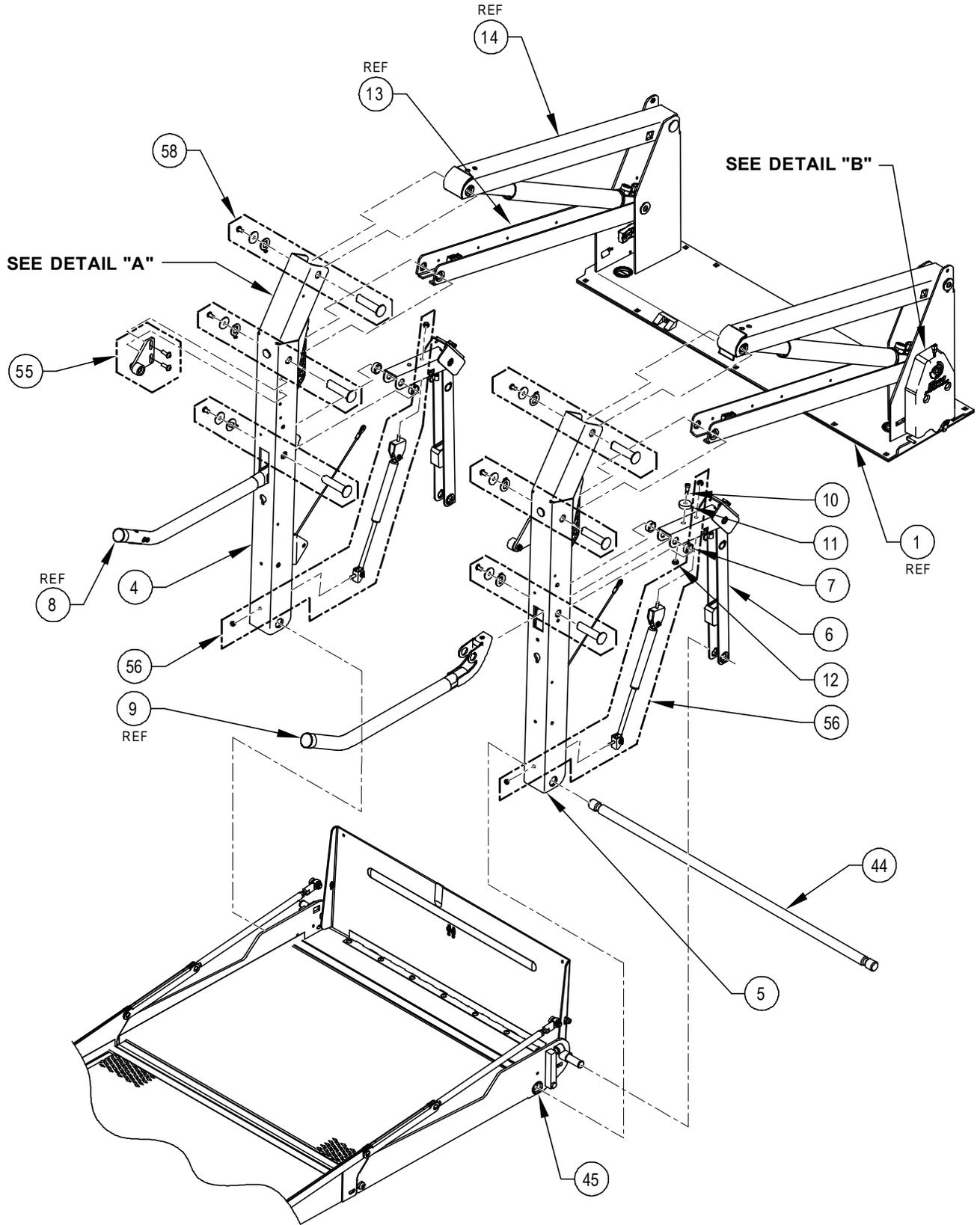
**NOTE:** (REF) in QTY column is for Referenced Parts Only and are not sold as spare parts.

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



RSM0017502

FIGURE 4-7.1: S-SERIES TRAVELING FRAME



RSM0017602

FIGURE 4-7.2: K-SERIES TRAVELING FRAME

FIGURE 4-7: S/K-SERIES TRAVELING FRAME ASSY

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	BASEPLATE WLDT, 30" PLATFORM, SILVER	REF	S1231	39933S
		REF	S2034	39933S
		REF	K1200	39933S
		REF	K2003	39933S
1A *	BASEPLATE WLDT, 32" PLATFORM, SILVER	REF	S2005	39934S
2	ARM ASSY, VERTICAL, LH, S12XX, SILVER			44279
2A *	ARM ASSY, VERTICAL, LH, S20XX, SILVER			44282
3	ARM ASSY, VERTICAL, RH, S12XX, SILVER			44278
3A*	ARM ASSY, VERTICAL, RH, S20XX, SILVER			44281
4	ARM ASSY, VERTICAL, LH, K12XX, SILVER			44283
4A*	ARM ASSY, VERTICAL, LH, K20XX, SILVER			44285
5	ARM ASSY, VERTICAL, RH, K12XX, SILVER			44284
5A*	ARM ASSY, VERTICAL, RH, K20XX, SILVER			44286
6	LINK, KNUCKLE, LONG, SILVER (15.19")	1		VS-AC-069S
7	SPACER	4		VT-BU-42
8	HANDRAIL ASSY, LH, OFFSET (SEE FIG. 4-11)	REF		42933
9	HANDRAIL ASSY, RH, OFFSET (SEE FIG. 4-11)	REF		42936
	ATTACHING PARTS			
10	SCREW, 5/16 X 3/8 SSS	2		28373
11	GROMMET, .30ID X 1.25OD X .312 (KIT OF 10)	1		23391
12	NUT, ESN, 1/4-20 THIN, SST (BAG OF 10)	1		13339
13	ARM ASSY, PARALLEL, LOWER (SILVER)	REF	S1231	VS-AC-252S
		REF	K1200	VS-AC-252S
13A *	ARM ASSY, PARALLEL, LOWER (SILVER)	REF	S2005	VT-AC-252S
		REF	S2034	VT-AC-252S
		REF	K2003	VT-AC-252S
		REF	K2005	VT-AC-252S
		REF	K2005	VT-AC-252S
14	TOP ARM ASSY, W/HARDWARE (SILVER)	REF	S1231	VS-AC-250S
		REF	K1200	VS-AC-250S
14A *	TOP ARM ASSY, W/HARDWARE (SILVER)	REF	S2005	VT-AC-250S
		REF	S2034	VT-AC-250S
		REF	K2003	VT-AC-250S
		REF	K2005	VT-AC-250S
		REF	K2005	VT-AC-250S
	ATTACHING PARTS			
15	ATTACHMENT SET, PARALLEL ARMS & CYLINDERS	1		42351
16	SPRING, TOP ARM	2		V2-SP-97
17	CAM ASSY, IRS ACTUATOR	2		V2-AC-190

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

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

**FIGURE 4-7: S/K-SERIES TRAVELING FRAME ASSY**

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
	ATTACHING PARTS			
18	KIT, IRS SPACER	2		01224
19	PIN, SNAP RING, .38D X 3.09L	2		VS-PI-09
20	SNAP RING 3/8" (BAG OF 10)	1		11795
21	BRACKET, PULLEY MOUNT, IRS	2		V2-AC-112
	ATTACHING PARTS			
22	BUMPER, IRS CAM ANTI-RATTLE	2		V2-BU-090
23	SCREW, BHS, 1/4-20 X 2 1/4, SST, BLK OXDE (BAG OF 10)	1		19720
24	WASHER, FDR, .281 X 1.00 X .065 (BAG OF 10)	1		25623
25	NUT, ESN, 1/4-20 (BAG OF 10)	1		15919
26	BEARING, GROOVED (SHEAVE)	6		VS-AH-06
	ATTACHING PARTS			
27	SCREW, HEX, 1/4-20 X 3/4 GR5 (BAG OF 10)	1		13308
28	BUSHING, STEEL, .25ID X .32OD X .19L	2		V2-BU-003
29	SCREW, BHS, 1/4-20 X 1 SST, BLK OXIDE (BAG OF 10)	1		19715
30	WASHER, FLT, .281 X .625 X .065 (BAG OF 10)	1		17504
31	NUT, ESN, 1/4-20 THIN, SST	2		283096
32	KIT, REPLACEMENT, CABLE ASSY, IRS	2	S1200	16093
		2	K1200	16093
32A *	KIT, REPLACEMENT, CABLE ASSY, IRS (2 CABLES PER KIT)	1	S2005	16094
		1	S2034	16094
		1	K2003	16094
		1	K2005	16094
33	CAP, END, UPPER PARALLEL ARM, PLASTIC	2		V2-AC-89
34	RIVET, POP, 3/16 X 5/8 STL SD68BS (BAG OF 10)	1		34519
35	BLOCK, SUPPORT, LOCK ROD	1		36587
36	SCREW, BHS, 1/4-20 X 1/2 BLK (BAG OF 10)	1		15985
37	LATCH WLDT, RELEASE, 30" PLATFORM	1	S1231	38435
		1	S2034	38435
		1	K1200	38435
		1	K2003	38435
37A *	LATCH WLDT, RELEASE, 32" PLATFORM	1	S2005	38436
		1	K2005	38436
37B *	LATCH WLDT, RELEASE, 34" PLATFORM	1	K2010	38437
38	BLOCK, MOUNT, BASE LATCH	1		V2-AC-001
39 *	KICKOUT SPRING WLDT (GREY)	1	S1231	V2-AC-100
		1	S2005	V2-AC-100
		1	S2034	V2-AC-100

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

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

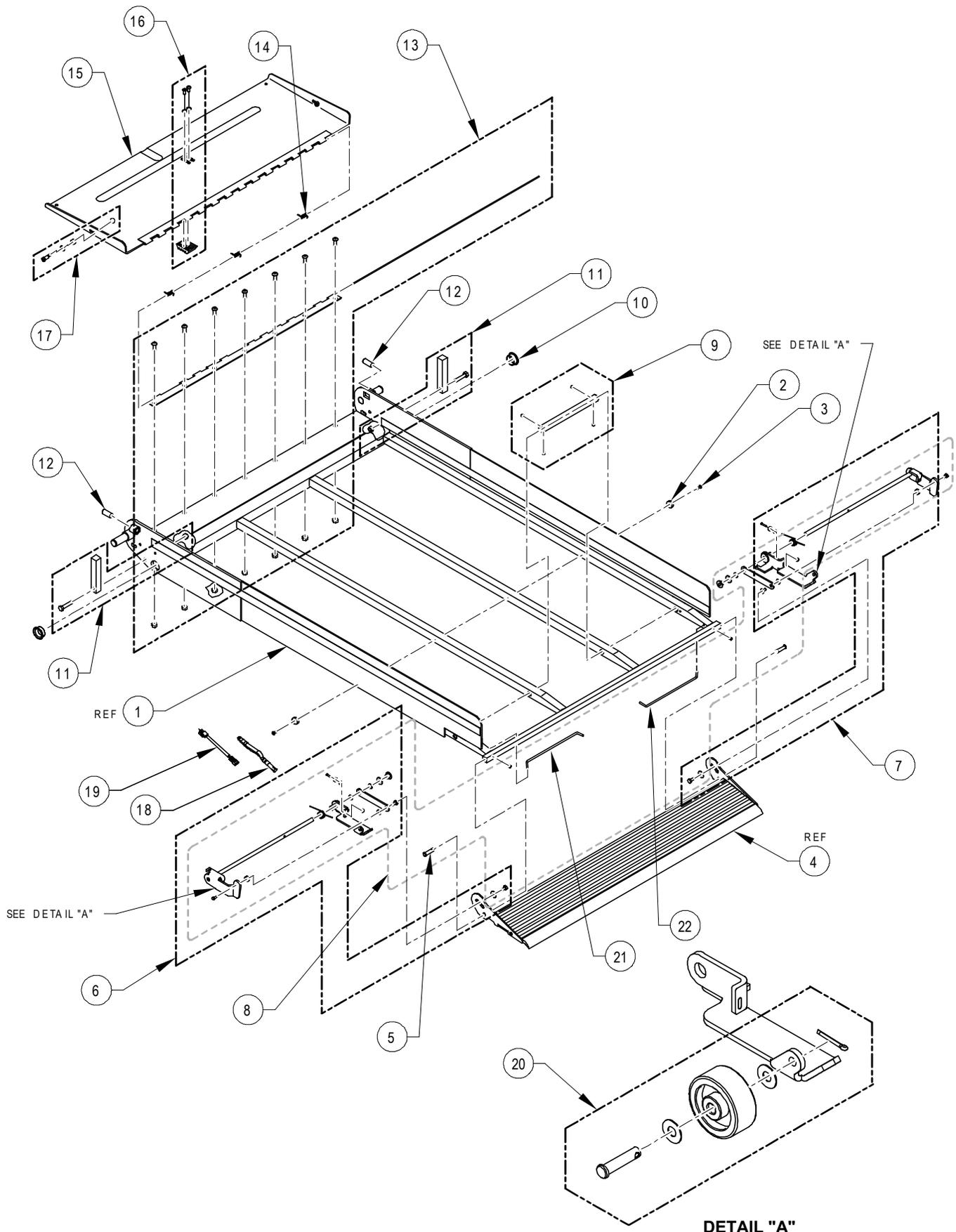
FIGURE 4-7: S/K-SERIES TRAVELING FRAME ASSY

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
40 *	GUIDE, SPRING	1	S1231	33662
		1	S2005	33662
		1	S2034	33662
41	GUIDE BLOCK, INNER ROLLSTOP ATTACHING PARTS	2		34343
42	RIVET, POP, 3/16 X 29/32 STL	REF		14-33-510
43	SPACER, CABLE OR HOSE, PANDUIT	2		25557
44	KIT, SHAFT, MAIN, 1.00 X 36.50L (PACKAGED)	1	S1231	34890
		1	S2034	34890
		1	K1200	34890
		1	K2003	34890
44A *	KIT, SHAFT, MAIN, 1.00 X 39.13L (PACKAGED)	1	S2005	34893
		1	K2005	34893
45	SHIM, PVC SPACER	2		V2-BU-091
46	KIT, PINCH PT SHIELD, W/HARDWARE, RH	1		29178
47	KIT, PINCH PT SHIELD, W/HARDWARE, LH	1		29162
48	COVER, STOWLOCK, MODULAR	1		36588
49	SCREW, PHP, 1/4-20, TAP TITE, BLK ZINC	1		37787
50	KIT, SOLENOID ASSY, 12V, W/CLIPSPRING	1		V2-ES-127
51	SPRING, STO-LOC RELEASE	1		V2-SP-093
52	ROLLPIN, 1/8 X 1 1/4	1		31648
53	HOOK, STOWLOCK	1		37707
54	SCREW, PHP, 10-24 X 1/2 TRS	1		28111T
55	KIT, BRKTS W/CAM FOLLOWER	1		31247
56	KIT, GAS SPRING ASSY, TRAVELING FRAME	1		19318
57 *	KIT, EMERGENCY RELEASE	1	S2005	42821
		1	S2034	42821
58	KIT, PIN, LINK, ARM W/HARDWARE	1		16679

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

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

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NOTE: S-SERIES PLATFORM SHOWN

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FIGURE 4-8: S -SERIES SOLID PLATFORM ASSEMBLY

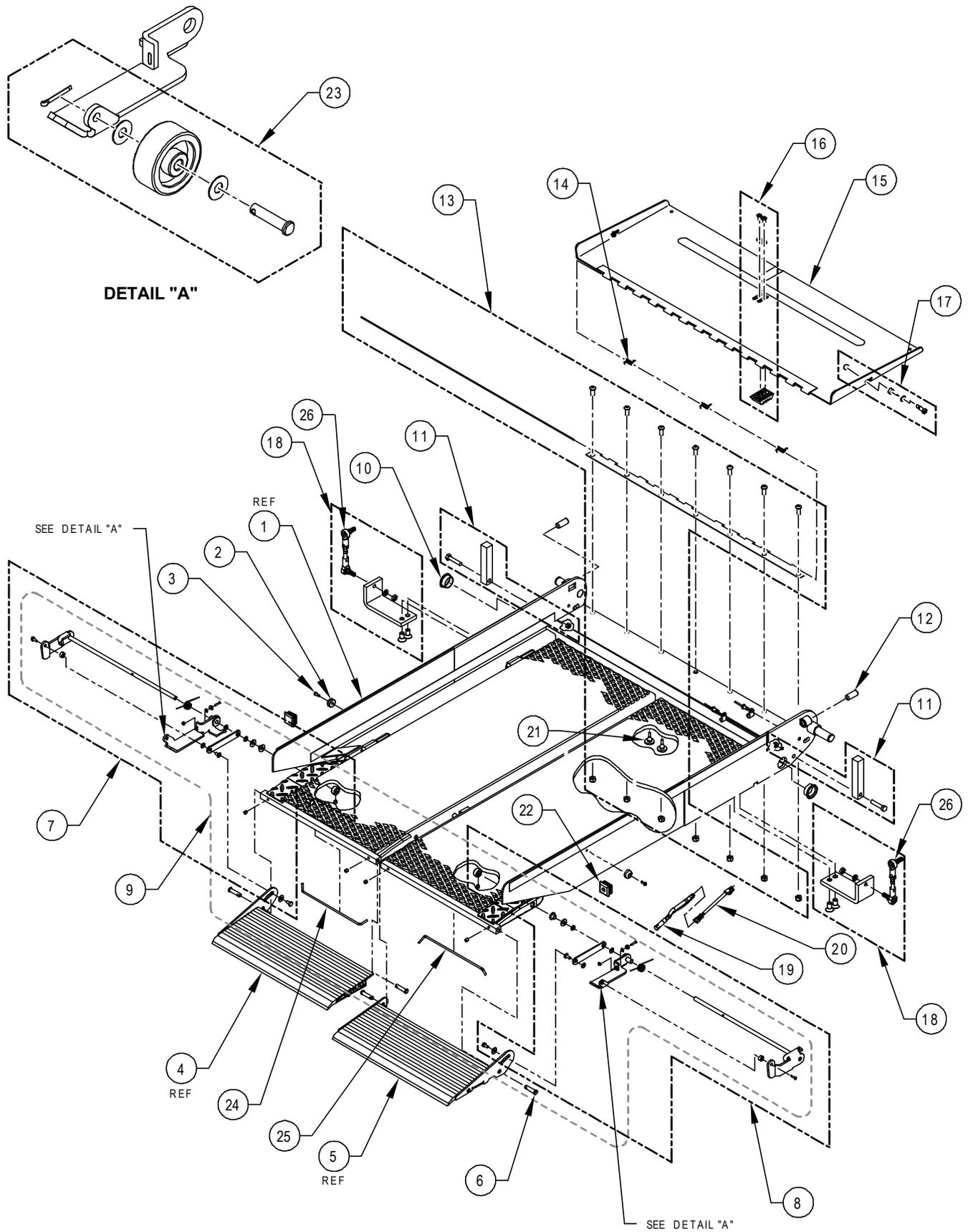
**FIGURE 4-8: S-SERIES SOLID PLATFORM ASSY**

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	PLATFORM WLDT, SOLID (32" X 51") SILVER	REF	S2005	V2-PH-089S
2	BUMPER, UHMW, .75D X .38T ATTACHING PARTS	2		V2-AC-027
3	SCREW, PHP, 8 TEK X 1/2 (BAG OF 10)	1		15961
4	ROLLSTOP ASSY, 6"H X 32"W ATTACHING PARTS	REF		39952
5	PIN, CLEVIS 5/16 X 1-1/4 (BAG OF 10)	1		19513
6	KIT, ACTUATOR WLDT, ROLLSTOP, LH	1		44211
7	KIT, ACTUATOR WLDT, ROLLSTOP, RH	1		44210
8	KIT, HARDWARE, ROLLSTOPS	1		110011
9	KIT, COLLAR ROLLSTOP ACTUATOR, 6.25", W/HARDWARE	1		28775
9A *	KIT, COLLAR ROLLSTOP ACTUATOR, 8.25", W/HARDWARE	1		28773
10	KIT, FLANGE BEARING 1"ID (BAG OF 10)	1		19579
11	BLOCK, GREY, PLATFORM LEVEL ADJ	2		VT-AH-142S
12	SCREW, HSS, 1/2-20 X 1 1/4 W/NYLOK (BAG OF 10)	1		19704
13	KIT, HINGE, PLATFORM W/HARDWARE	1		44212
14	SPRING, BRIDGEPLATE	3		25463
15	ROLLSTOP WLDT, INNER, 32" (YELLOW WRINKLE)	REF		32443
16	BLOCK, BASE LATCH, RATCHET	1		36576
17	KIT, SPACER, BRIDGEPLATE	2		42038
18	SENSOR ASSY, ROLLSTOP	2		32755
19	HARNESS, SKI SWITCH, EXTENSION	2		37340
20 **	KIT, SKI WHEEL, ROLLSTOP, EXPORT	2	S2005	42951
21	SPRING, TORSION (LH)	1		V2-SP-021
22	SPRING, TORSION (RH)	1		V2-SP-022

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

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

**NOTE:** \*\* Item optional.



NOTE: S-SERIES PLATFORM SHOWN

RSM0017802

FIGURE 4-9: S-SERIES SPLIT PLATFORM ASSEMBLY

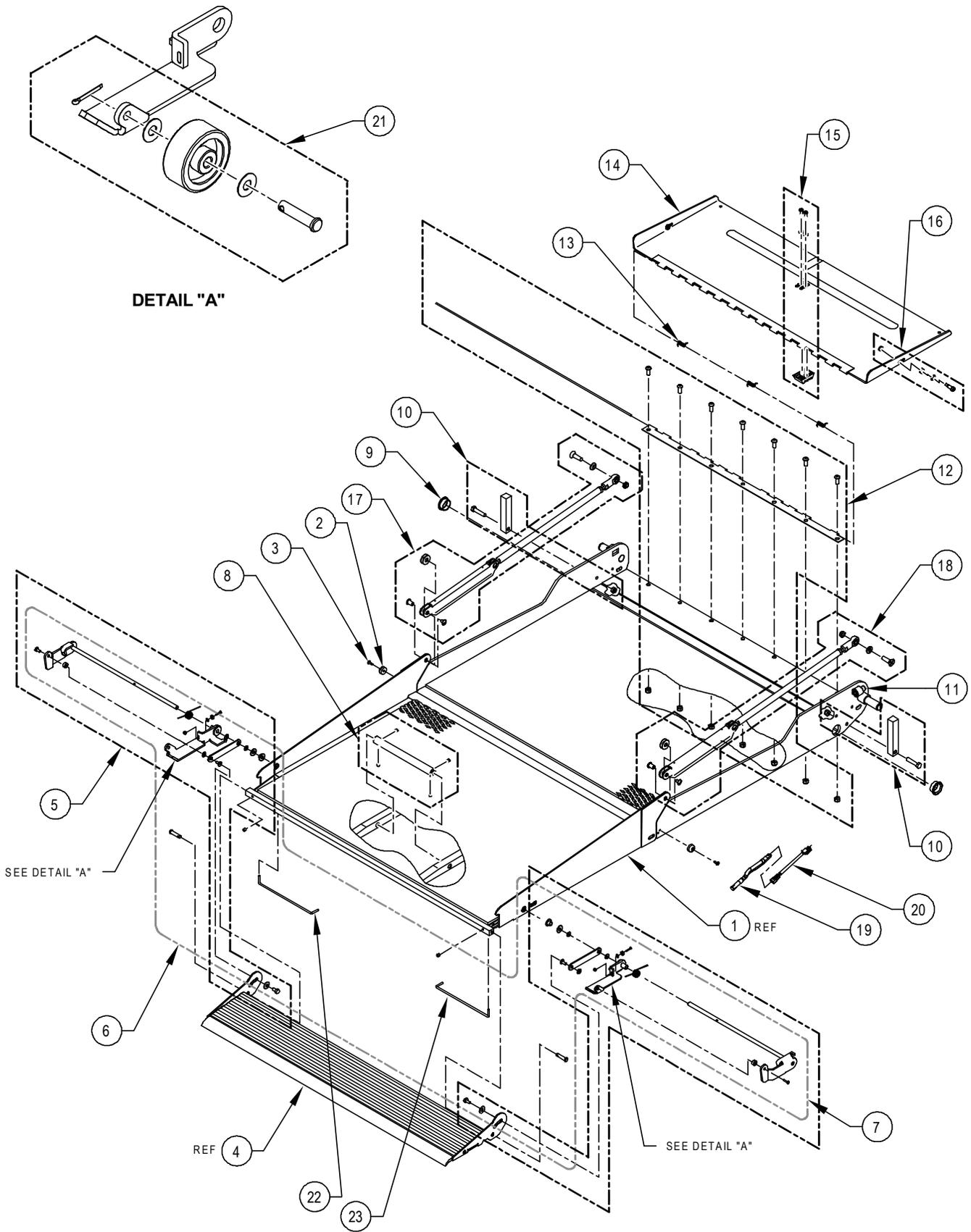
**FIGURE 4-9: S-SERIES SPLIT PLATFORM ASSY**

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	PLATFORM WLDT, SPLIT (30" X 42") SILVER	REF	S1231	V2-PH-080S
1A *	PLATFORM WLDT, SPLIT (30" X 63") SILVER	REF	S2034	V2-PF-083S
2	BUMPER, UHMW, .75D X .38T	2		V2-AC-027
	ATTACHING PARTS			
3	SCREW, PHP, 8 TEK X 1/2 (BAG OF 10)	1		15961
4	PLATE, ROLLSTOP, LH, YELLOW WRINKLE	REF	S1231	42388
5	PLATE, ROLLSTOP, RH, YELLOW WRINKLE	REF	S1231	42389
	ATTACHING PARTS			
6	PIN, CLEVIS 5/16 X 1-1/4 (BAG OF 10)	1		19513
7	KIT, ACTUATOR WLDT, ROLLSTOP, LH	1		44211
8	KIT, ACTUATOR WLDT, ROLLSTOP, RH	1		44210
9	KIT, HARDWARE, ROLLSTOPS	1		110011
10	KIT, FLANGE BEARING 1"ID (BAG OF 10)	1		19579
11	BLOCK, GREY, PLATFORM LEVEL ADJ	2		VT-AH-142S
12	SCREW, HSS, 1/2-20 X 1 1/4 W/NYLOK (BAG OF 10)	1		19704
13	KIT, HINGE, PLATFORM W/HARDWARE	1		44212
14	SPRING, BRIDGEPLATE	3		25463
15	ROLLSTOP WLDT, INNER, 30" PLATFORM	REF		32463
16	BLOCK, BASE LATCH, RATCHET	1		36576
17	KIT, SPACER, BRIDGEPLATE	2		42038
18	KIT, ATTACHMENT, RODEND, SILVER	2		44214
19	SENSOR ASSY, ROLLSTOP	2		32755
20	HARNESS, SKI SWITCH, EXTENSION	2		37340
21	BUMPER, RUBBER	2		V2-AC-86
22	PLUG, MODIFIED	2		32918
23 **	KIT, SKI WHEEL, ROLLSTOP, EXPORT	2	S1231	42951
		2	S2034	42951
24	SPRING, TORSION (LH)	1		V2-SP-021
25	SPRING, TORSION (RH)	1		V2-SP-022
26	TIE, ROD ASSY	2		42950

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

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

**NOTE:** \*\* Item optional.



NOTE: K-SERIES PLATFORM SHOWN

RSM0017902

FIGURE 4-10: K-SERIES PLATFORM ASSEMBLY

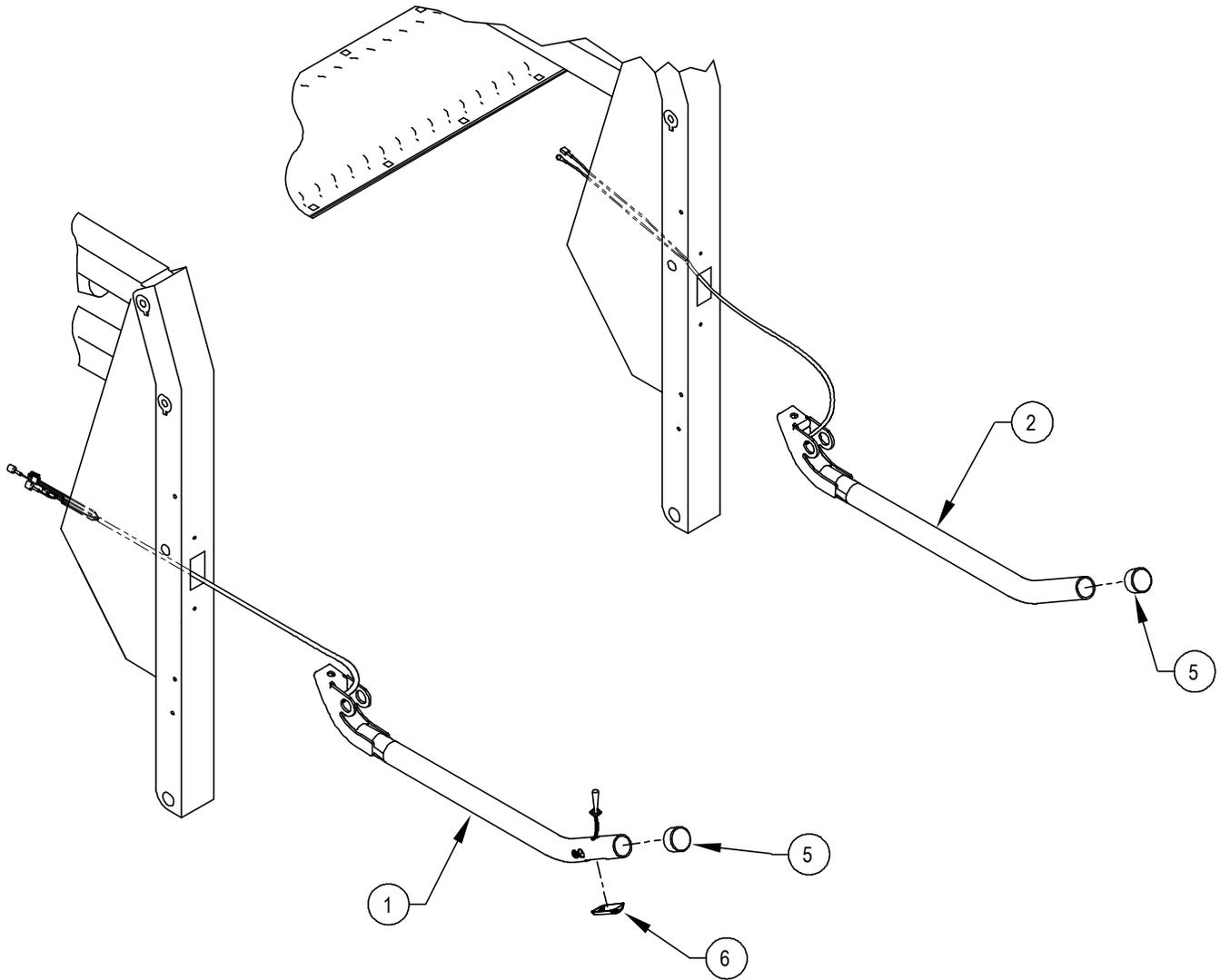
**FIGURE 4-10: K-SERIES PLATFORM ASSY**

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	PLATFORM WLDT, FLDG, 30" X 44" (SILVER)	REF	K1200	22500S
1A *	PLATFORM WLDT, FLDG, 30" X 51" (SILVER)	REF	K2003	22501S
1B *	PLATFORM WLDT, FLDG, 32" X 51" (SILVER)	REF	K2005	22502S
2	BUMPER, UHMW, .75D X .38T	2		V2-AC-027
	ATTACHING PARTS			
3	SCREW, PHP, 8 TEK X 1/2 (BAG OF 10)	1		15961
4	ROLLSTOP ASSY, 6"H X 30"W, MODULAR	REF	K1200	39951
		REF	K2003	39951
4A *	ROLLSTOP ASSY, 6"H X 32"W	REF	K2005	39952
	ATTACHING PARTS	1		V2-FL-93
5	KIT, ACTUATOR WLDT, ROLLSTOP, LH	1		44211
6	KIT, ACTUATOR WLDT, ROLLSTOP, RH	1		44210
7	KIT, HARDWARE, ROLLSTOPS	1		110011
8	KIT, COLLAR ROLLSTOP ACTUATOR, 6.25", W/HARDWARE	1		28775
8A *	KIT, COLLAR ROLLSTOP ACTUATOR, 8.25", W/HARDWARE	1		28773
9	KIT, FLANGE BEARING 1"ID (BAG OF 10)	1		19579
10	BLOCK, GREY, PLATFORM LEVEL ADJ	2		VT-AH-142S
11	SCREW, HSS, 1/2-20 X 1 1/4 W/NYLOK	2		14403
12	KIT, HINGE, PLATFORM W/HARDWARE	1		44212
13	SPRING, BRIDGEPLATE	3		25463
14	ROLLSTOP WLDT, INNER, 30" PLATFORM	REF	K1200	32463
		REF	K2003	
14A *	ROLLSTOP WLDT, INNER, 32" (YELLOW WRINKLE)	REF	K2005	32443
15	BLOCK, BASE LATCH, RATCHET	1		36576
16	KIT, SPACER, BRIDGEPLATE	2		42038
17	KIT, LINK ASSY 44", (LH) FRONT & REAR, YELLOW	1		44255
17A *	KIT, LINK ASSY 51", (LH) FRONT & REAR, YELLOW	1		44257
17B *	KIT, LINK ASSY 54", (LH) FRONT & REAR, YELLOW	1		44264
18	KIT, LINK ASSY 44", (RH) FRONT & REAR, YELLOW	1		44256
18A *	KIT, LINK ASSY 51", (RH) FRONT & REAR, YELLOW	1		44263
18B *	KIT, LINK ASSY 54", (RH) FRONT & REAR, YELLOW	1		44265
19	SENSOR ASSY, ROLLSTOP	2		32755
20	HARNESS, SKI SWITCH, EXTENSION	2		37340
21 **	KIT, SKI WHEEL, ROLLSTOP, EXPORT	2		42951
22	SPRING, TORSION (LH)	1		V2-SP-021
23	SPRING, TORSION (RH)	1		V2-SP-022

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

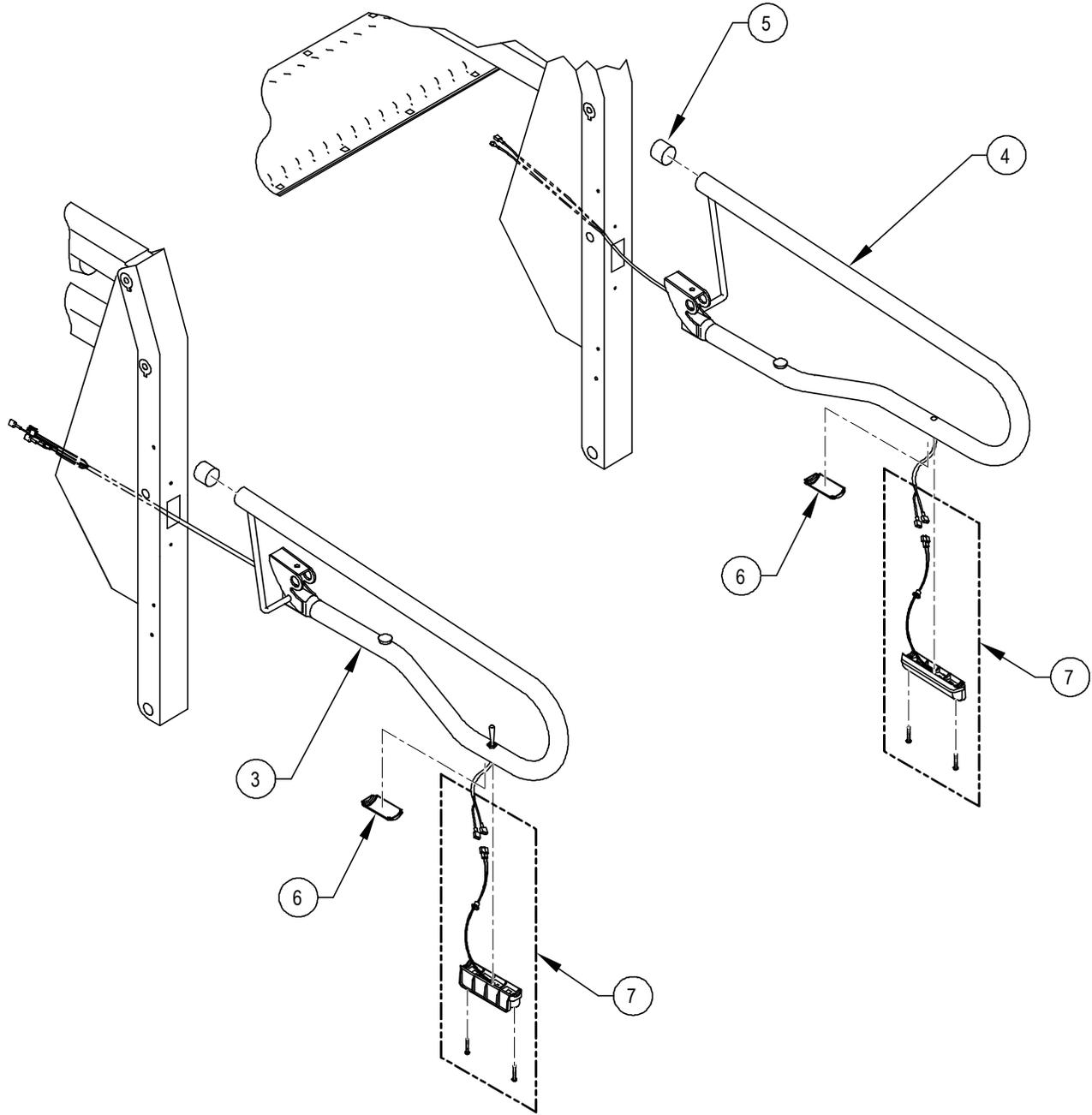
**NOTE:** \* Item or configuration not shown.

**NOTE:** \*\* Item optional.



RSM0023400

FIGURE 4-11.1: S-SERIES AND K-SERIES HANDRAIL OPTION



RSM0018000

FIGURE 4-11.2: S-SERIES AND K-SERIES HANDRAIL OPTION

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**FIGURE 4-11: S-SERIES AND K-SERIES HANDRAIL ASSY**

FIG. ITEM	DESCRIPTION	QTY	CONFIG.	PART NO.
1	HANDRAIL WLDT, LH	1	K1200	VT-AC-184
		1	S1200	VT-AC-184
		1	S1231	VT-AC-184
1A*	HANDRAIL WLDT; S5000 LH w/SWITCH	1	K2003	V5-AC-184
		1	K2005	V5-AC-184
		1	S2005	V5-AC-184
1B*	HANDRAIL WLDT, ARM SWITCH, LH	1	K2010	44813
2	HANDRAIL WLDT, RH	1	K1200	VT-AC-181
		1	S1200	VT-AC-181
		1	S1231	VT-AC-181
2A*	HANDRAIL WLDT, RH	1	K2003	V5-AC-181
		1	K2005	V5-AC-181
		1	S2005	V5-AC-181
2B*	HANDRAIL WLDT, RH	1	K2010	44815
3	HANDRAIL ASSY, LH, OFFSET	1	K1200	42933
		1	K2003	42933
		1	K2005	42933
		1	K2010	42933
		1	S1200	42933
		1	S1231	42933
		1	S2005	42933
		1	S2034	42933
		1	S2030	38363
		1	S2030	38361
4	HANDRAIL ASSY, RH, OFFSET	1	K1200	42936
		1	K2003	42936
		1	K2005	42936
		1	K2010	42936
		1	S1200	42936
		1	S1231	42936
		1	S2005	42936
		1	S2034	42936
		1	S2030	38361
		1	S2030	38361
5	PLUG, 0.50DIA. UP TO 0.13 MTL, BLK PLASTIC	2		V2-AC-91
6	COVER, HANDRAIL SWITCH	2		42573
7	KIT, HANDRAIL LIGHTS	1		44217

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

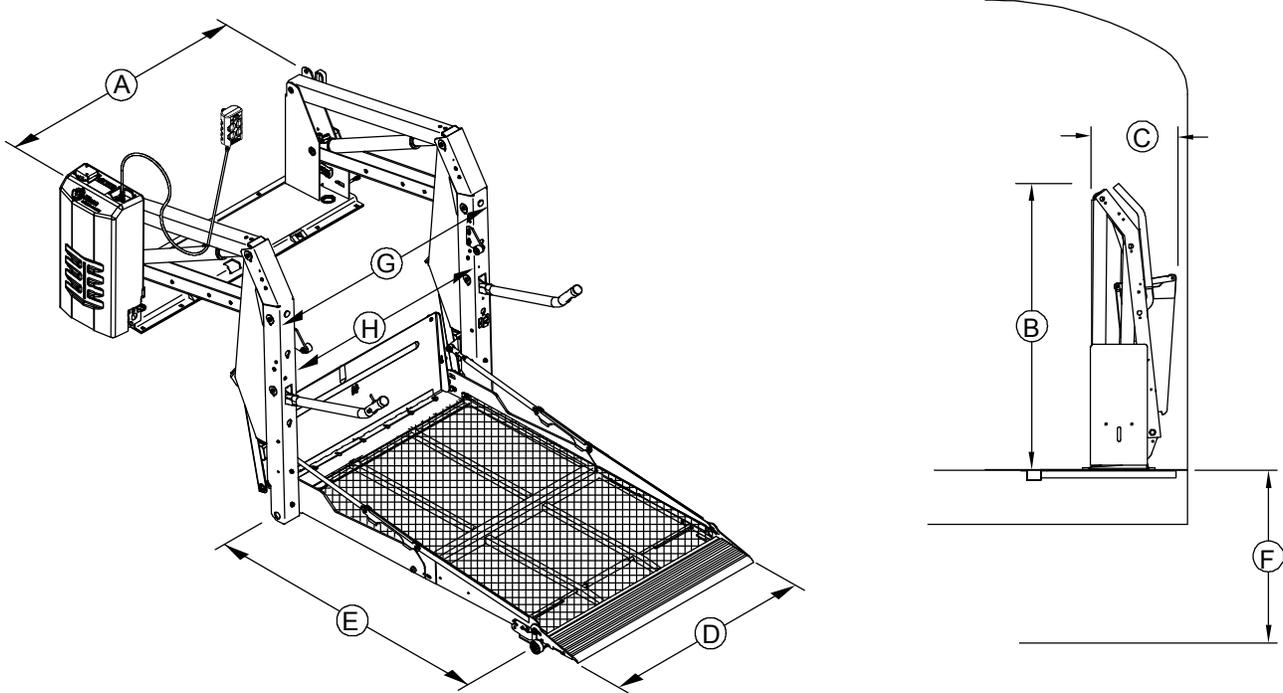
**NOTE:** \* Item or configuration not shown.

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APPENDIX

S/K-SERIES EXPORT USE WHEELCHAIR LIFT

Power .....electro-hydraulic	Rated load capacity, max ..... 363 kg (800 lbs)
Motor rating@12 volts DC ..... 65 amp avg/cycle, 1500 psi	Manual backup-up ..... hand pump
Motor rating@24 volts DC ..... 32.5 amp avg/cycle, 1500 psi	Manual backup-down..... pressure release valve
Hydraulic cylinders.....2ea, 1.5", power up – gravity down	Lift weight.....approx 154-179 kg (340 - 395 lbs)



RSM0022601

DIMENSIONS (millimeters/inches)

MODEL	A	B	C	D	E	F	G	H
	Stationary frame width	Height (folded)	Installation depth (folded)	Usable platform width	Usable platform length	Floor-to-ground travel	Traveling frame width	Clear entry width
S1231	1143 / 45	1118 / 44	546 / 21.5	762 / 30	1067 / 42	787 / 31	953 / 37.5	762 / 30
S2005	1194 / 47	1372 / 54	356 / 14	813 / 32	1295 / 51	1067 / 42	1028.7 / 40.5	813 / 32
S2030	1143 / 45	1397 / 55	546 / 21.5	762 / 30	1219 / 48	1067 / 42	953 / 37.5	787 / 31
S2034	1143 / 45	1778 / 70	546 / 21.5	762 / 30	1600 / 63	1067 / 42	953 / 37.5	762 / 30
K1200	1194 / 47	38.5 / 978	394 / 15.5	762 / 30	1118 / 44	711 / 28	953 / 37.5	737 / 29
K2003	1143 / 45	1397 / 55	432 / 17	762 / 30	1295 / 51	940 / 37	965 / 38	737 / 29
K2005	1194 / 47	1397 / 55	432 / 17	813 / 32	1295 / 51	940 / 37	1016 / 40	787 / 31
K2010	1245 / 49	1397 / 55	432 / 17	864 / 34	1372 / 54	940 / 37	1067 / 42	839 / 33

END OF TABLE

**NOTES:**