



Innovation in Mobility

*S-Series*

*Transit Use (ADA) TM*

# ***Wheelchair and Standee Lift***

Service Manual

05/16/01

**32DSS02.A**

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U.S. Patent Nos: 4,534,450; 5,308,215; 5,445,488; 5,605,431; 5,944,473;

Australia Patent Nos: 661127; 687066;

Canadian Patent Nos: 1,245,603; 2,168,761

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Printed in the  
United States of America

32DSS02.A

1-1

**This RICON product must be installed and serviced by RICON authorized service technicians.**

**The authorized service technicians must refer to this manual for installation instructions.**

**Service technicians who perform service must refer to the Operator manual (32DSSS01) for operating instructions.**

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

## REVISION RECORD

REV	PAGES	DESCRIPTION OF CHANGE	ECR / ECO
32DSS00.M	4-3, 4	Added a third hydraulic spool assy to dwg ssx00001(ref #13-3 and 14-3)	2898/4250
	4-15	Part number 25382 is being replaced with 17901.	3166
	4-17, 18	Deleted pins 14322 and VT-PI-44, plus ring 14-31-075; added note **** for pin kit 16679.	4487
	3-3, 5	Changed hydraulic oil to Texaco 01554.	3215
	4-3, 4	Added Harness V2-SH-006, decal 32-10-154, and poppet valve V2-SH-177	None/
	3-9, 10	Wiring diagrams redrawn to show second motor solenoid.	3343/
32DSS02.A 05/16/01	All	New release, in two-book format	3669/4732
<b>END OF LIST</b>			

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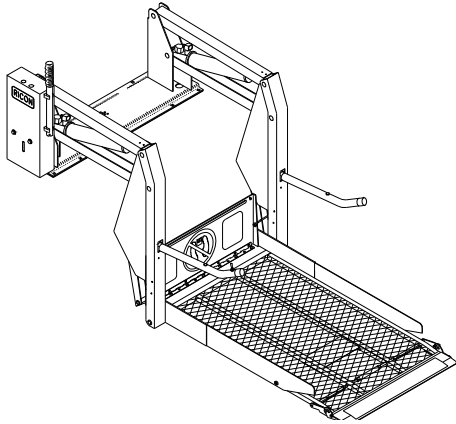
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# I. S-SERIES TRANSIT (ADA) INTRODUCTION

The RICON S-Series Transit Use (ADA) Wheelchair and Standee Lift provides wheelchair access to transit vehicles. The patented movement provides smooth, safe entry and exit. The lift easily lifts up to 800 pounds (364 kilograms). It is designed to be operated by a trained attendant. The lift contains a powerful electro-hydraulic pump that includes a built-in manual backup pump. If the lift loses electrical power, it can still be raised and/or lowered manually.



By using the lift control switches, the lift is unfolded out from the vehicle (deployed). The user boards the large non-skid platform and the operator uses the control switches to gently lower the platform to the ground. After the user departs, the platform is raised and folded into the vehicle (stowed).

This manual contains installation instructions; maintenance and repair instructions; troubleshooting guide; parts and diagram lists. It is important to user safety that the lift operators 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 cleaning, lubrication, and inspection instructions.

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

**Ricon Corporation  
7900 Nelson Road**

Panorama City, Ca 91402 .....(818) 267-3000

**Outside (818) Area Code.....**

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

Ricon U.K. Ltd.

**Littlemoss Business Park, Littlemoss Road  
Droylsden, Manchester  
United Kingdom, M43 7EF .....**

## RICON S-SERIES TRANSIT (ADA)

### 5-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 of a period of one year from date of purchase.
- Labor costs for specified parts replace under this warranty for a period of one year from date of purchase. A Ricon rate schedule determines the parts covered and labor allowed.
- Repair or replace lift power train parts for a period of five years from date of purchase. A list of parts covered can be obtained from Ricon Product Support.

*If You Need to Return a Product:* Return this product to Ricon. 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, etc.).

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



#### **WARNING!**

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

***This Warranty is Void if:***

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

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

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



## A. SHIPMENT INFORMATION

- When the product is received, unpack it and check for freight damage. Claims for any damage should be made to freight carrier immediately.
- Be sure installation kit contains all items listed on kit packing list. **Please report any missing items immediately to Ricon Product Support.** The warranty and owner registration cards must be completed and returned to Ricon within 20 days for the warranty to be valid.

### *NOTE*

The Sales/Service Personnel must review Warranty and Operator Manual with user to be certain that they understand safe operation of product. Instruct user to follow operating instructions without exception.

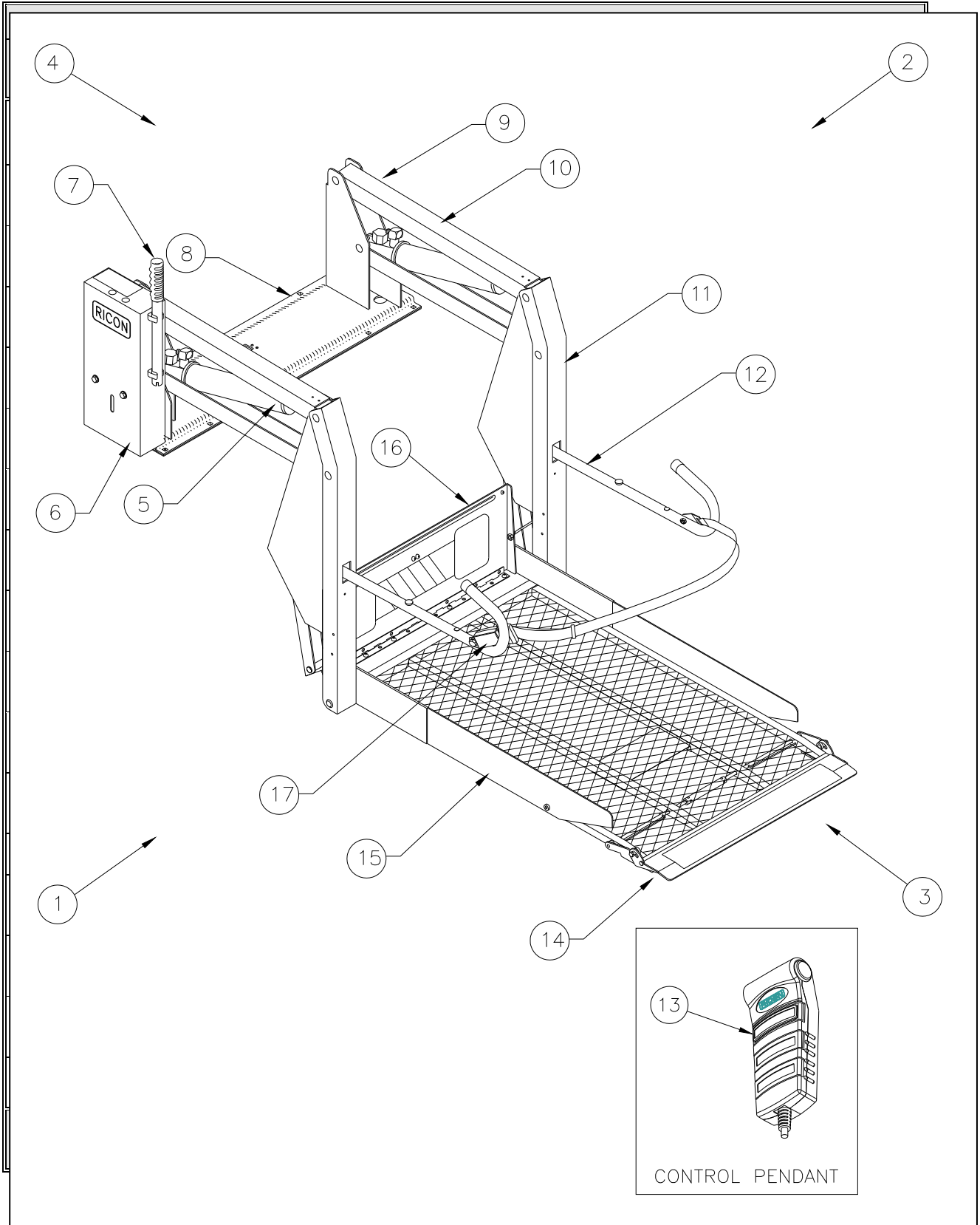
## B. GENERAL SAFETY PRECAUTIONS

The following general safety precautions must be followed during installation, operation, service, 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 eye shields 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 on top of a battery.
- Check under vehicle before drilling so as not to drill into frame, subframe members, wiring, hydraulic lines, fuel lines, fuel tank, etc.
- Read and thoroughly understand operating instructions before attempting to operate.
- Inspect product before each use. If an unsafe condition, unusual noises or movements exist, do not use it until problem is corrected.
- Never load or stand on platform until installation is complete. Upon completion of installation, always test load lift to 125% of its rated load capacity.
- Stand clear of doors and platform and keep others clear during operation.
- The product requires regular periodic maintenance. A thorough inspection is recommended at least once every six months. The product must always be maintained at highest level of performance.

### C. MAJOR LIFT COMPONENTS

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



**FIGURE 1-1: TRANSIT USE (ADA) WHEELCHAIR AND STANDEE LIFT**

## II. S-SERIES TRANSIT (ADA) INSTALLATION

This chapter contains instructions for installing the RICON S-Series (ADA) Transit Use Wheelchair and Standee Lift into most vans and buses, although custom installations are also possible in other types of vehicles. Due to the wide range of applications for lift, specific information for every possible application is not available. The following general procedures will apply to most installations. Contact Ricon Product Support for instruction on 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.

### D. MECHANICAL INSTALLATION

#### 1. LIFT LOCATION

The installation surface must be flat and level. It is recommended that lift be installed on a ½", minimum, high-grade plywood sub-floor. However, this additional installation height may not be acceptable in cases where overhead clearance is limited.

**NOTE:** Be certain to check for proper travel clearance through doorway.

- With door(s) fully open, place/position lift in vehicle doorway as close as possible to door, with lift's baseplate assembly parallel to side of vehicle.
- Be sure to allow a distance of ¾", if possible, between door and the part of lift closest to it. Adjust lift's 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. LIFT INSTALLATION GUIDELINES

The mounting of lift is a very important step. Lift performance can be greatly affected by improper mounting and/or fastening of lift. Although fastening details may vary from one vehicle to the next, some general principles always apply:

- Be certain that all mounting bolts are properly installed and tightened. Bolts used to fasten baseplate assembly to vehicle floor should be equivalent to or greater than a strength rating of SAE Grade 5 and torqued to 28 ft. lbs., dry. Always remember that the most important bolts are those at rear of lift, since these bolts retain most of load.
- Refer to Figure 2-1. Improper fastening sequence or torquing of bolts may result in a warped or buckled baseplate and, therefore, cause lift to operate unevenly.

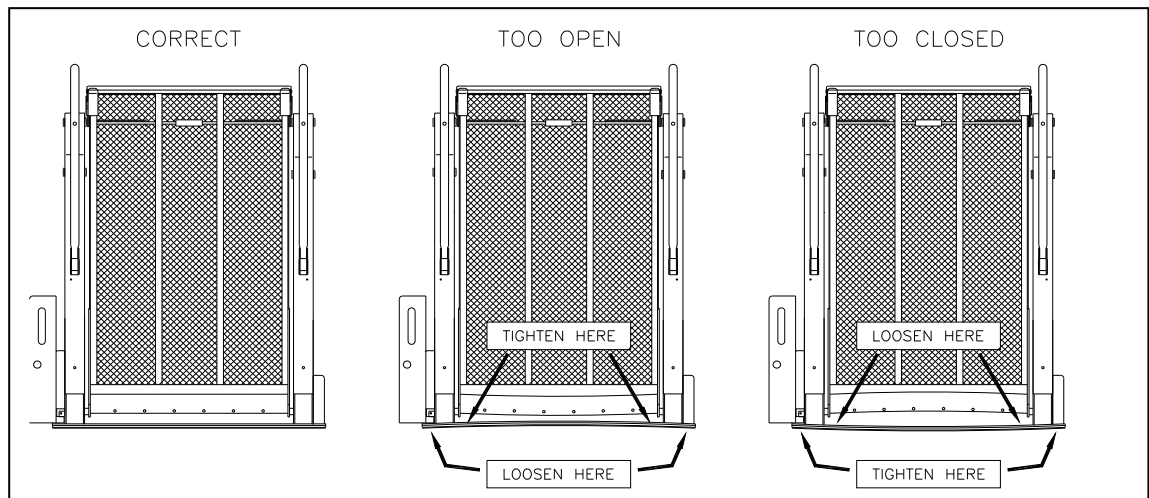
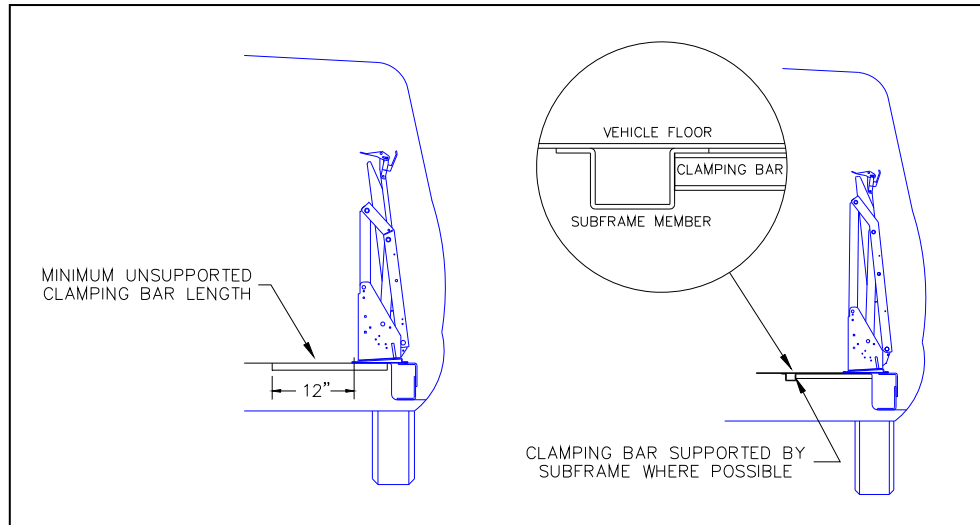


FIGURE 2-1: PLATFORM MOUNTING

- Refer to **Figure 2-2**. On Ford van installations, clamping bars should be used 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.

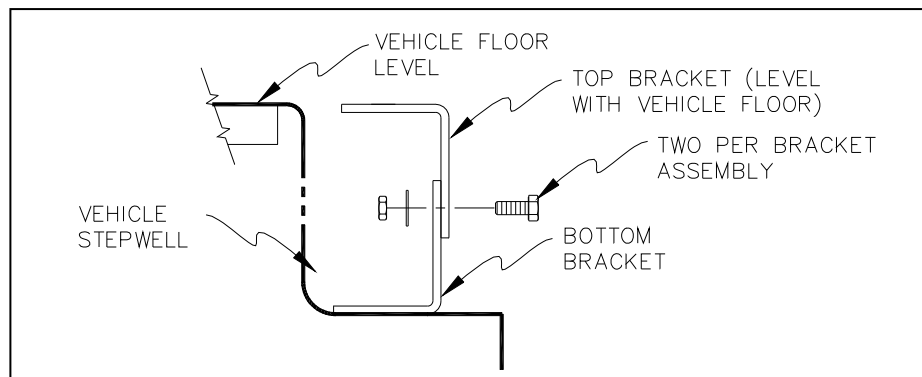


**FIGURE 2-2: FORD VAN CLAMPING BAR ARRANGEMENT**

### 3. LIFT INSTALLATION INTO VANS


Refer to **Figure 2-3**. Using four 1" x 3/8" bolts, 3/8" washers, 3/8" lock washers and 3/8" hex nuts, assemble two bracket assembly kits.

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

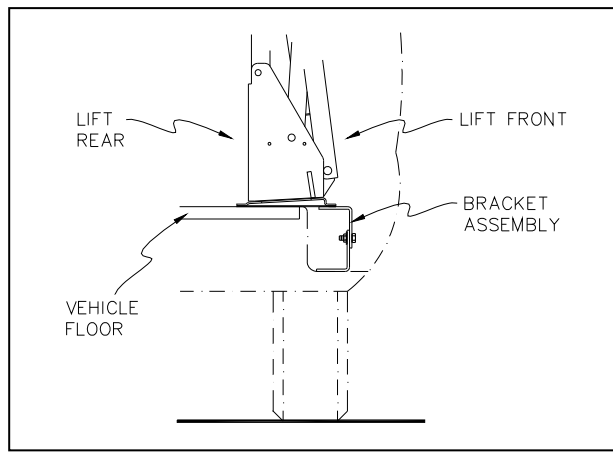


**FIGURE 2-3: STEPWELL BRACKET**

- Position and adjust height of both bracket assemblies so that top bracket is level with vehicle floor. Tighten bracket assembly bolts.
- Be certain that lift is fully closed with handrails folded tight against vertical arms. If necessary, use manual pump.

 <b>WARNING</b>
<p>LIFT WEIGHT IS APPROXIMATELY 350-375 LBS. TAKE EXTREME CARE WHEN POSITIONING, BRACKETS MAY TIP. DO NOT POSITION ALONE. THIS PROCEDURE SHOULD NOT BE ATTEMPTED BY ONE PERSON.</p>

- Refer to **Figure 2-4**. With door(s) fully open, position lift in vehicle doorway so that back is supported by vehicle floor and front is supported by both bracket assemblies.



**FIGURE 2-4: BRACKET ASSEMBLY**

g. Adjust Base Assembly:

**NOTE:** If Ricon Power Door Operators are used, install them first. They may influence location of lift.

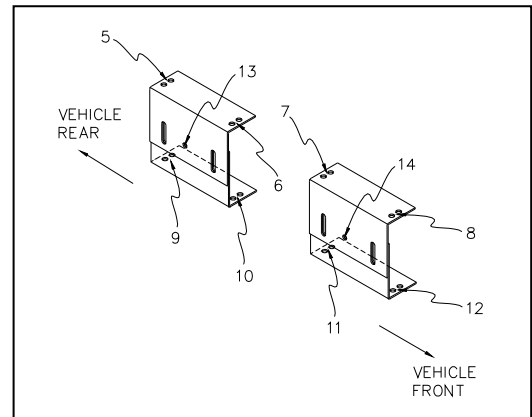
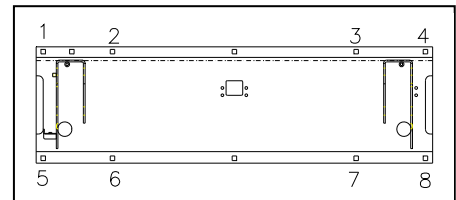
- 1) Be certain baseplate assembly is parallel with vehicle floor. The baseplate assembly may be slightly offset in door opening to provide proper clearance for passenger seats.
- 2) Before drilling, be certain that lift's position does not interfere with closing of vehicle door(s) as well as clear all passenger seats.

h. Mark/Drill Holes:

**NOTE:** Before drilling holes, be sure that no underlying wires or tubes are in the way.

Refer to **Figure 2-5**. Mark/drill four 25/64" baseplate assembly mounting holes (1, 2, 3 and 4) through vehicle floor. (On Dodge and GM vans, you must drill through vehicle floor and subframe.)

- 3) Place four 8" x 3/8" carriage bolts (4" x 3/8" bolts on Ford vans) into holes to secure position.
- 4) Refer to **Figure 2-6**. Align the top bracket holes 5, 6, 7, and 8 with baseplate assembly holes 5, 6, 7, and 8. Mark bracket assembly mounting holes 9, 10, 11, and 12 onto vehicle step.
- 5) Remove carriage bolts installed in step 2. and carefully push lift back into vehicle interior.
- 6) Drill 1/4" holes through marked locations 9, 10, 11, and 12.



**FIGURE 2-6: TOP BRACKET HOLES**

i. Fasten Bracket Assemblies/Lift:

Using 1-1/2" x 5/16" sheet metal screws with 5/16" lock washers, secure lower brackets to vehicle step holes 9 through 12.

**NOTE:** If screw in position 12 interferes with proper door operation, do not install.

- 7) Reposition lift ensuring that surface beneath lift is free of obstacles.
- 8) Reinsert four 8" x 3/8" carriage bolts through mounting holes at rear of baseplate assembly, and insert four 1-1/2" x 3/8" carriage bolts through baseplate and bracket assemblies. Place 3/8" washers, lock washers, and nuts under bracket assemblies, and finger tighten nuts.

**NOTE:** On Dodge and GM vans, place four 4" x 4" plates, 3/8" washers, lock washers and hex nuts on 8" x 3/8" carriage bolts under van and finger tighten. On Ford models, reinforce vehicle floor with clamping bars. They are to be bolted in positions 1, 2, 3 and 4 and run across width of baseplate towards center of van.

9) Before tightening carriage bolts, verify that lift is level with vehicle floor. Adjust bracket assembly bolts if necessary.

**NOTE:** Tilting lift towards inside of van may hinder its initial unfolding. Install lift with its baseplate assembly as level as possible.

10) 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. Corrections can be made by shimming at appropriate locations. To help prevent warping, tighten the eight carriage bolts (six on Dodge van with sliding door) to 28 ft. lbs. in the following sequence:

**DODGE WITH SWING DOORS, ALL FORD AND GM VANS: 2, 3, 6, 7, 1, 4, 5, 8**

**DODGE WITH SLIDING DOORS: 2, 3, 5, 8, 1, 4**

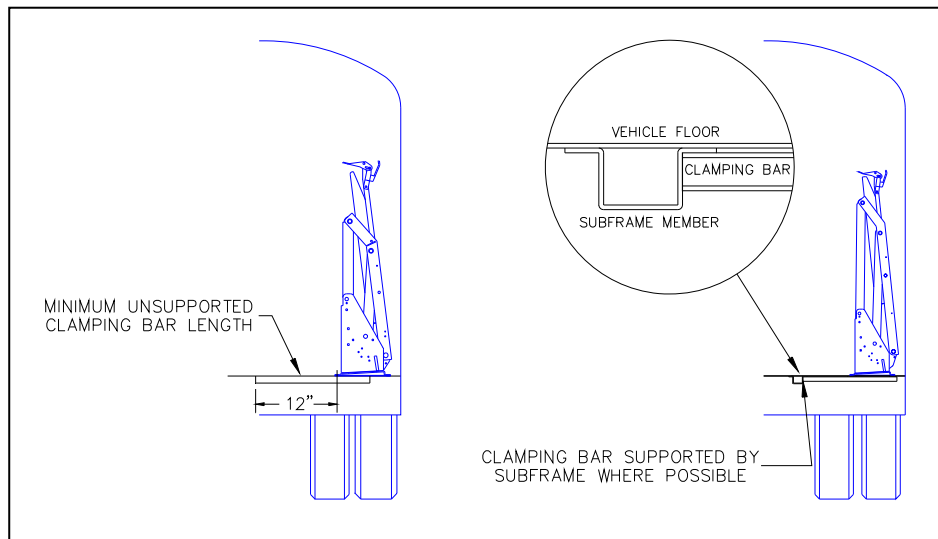
**NOTE:** Vertical Arms must be parallel for proper operation. Adjust bolts as required. Best results are obtained when lift is mounted on plywood. Shims, although best avoided, may be used if required.

11) Make certain that holes 13 and 14 on front of each bracket assembly are drilled through and 5/16" bolts are inserted to lock position of bracket assemblies.

#### 4. LIFT INSTALLATION INTO BUSES

 <b>WARNING!</b>
<b>DO NOT INSTALL THE S-SERIES WHEELCHAIR LIFT DESIGNED FOR PERSONAL USE IN MASS TRANSIT VEHICLES OR BUSES. CONTACT RICON PRODUCT SUPPORT FOR THE PROPER MODEL OF S-SERIES LIFT FOR YOUR APPLICATION.</b>

Refer to **Figure 2-7**. Since clamping bars are used on most bus installations, they 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.



**FIGURE 2-7: BUS CLAMPING BAR ARRANGEMENT**

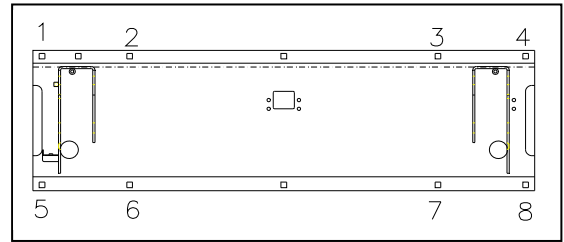
With doors fully open, position lift in vehicle doorway as close as possible to door with lift baseplate parallel to side of the bus.

- j. Refer to **Figure 2-8**. Mark/drill eight 25/64" baseplate assembly mounting holes (1 thru 8) through vehicle floor.

**NOTE:** Before drilling any holes, be sure that no underlying wires or tubes are in the way.

- k. Fasten Lift:

Insert eight 4" x 3/8" carriage bolts through baseplate and vehicle floor.



**FIGURE 2-8: BUS BASE PLATE HOLES**

- 12) Install support tubes (4 ea.) to bolts underneath vehicle floor across baseplate, i.e., from 1 to 5, 2 to 6, etc., and secure lift to vehicle floor with 3/8" washers, lock washers and hex-nuts.
- 13) Tightening carriage bolts requires special care to keep baseplate assembly from warping when secured to vehicle floor. If baseplate assembly warps, vertical arms will not be parallel. Corrections can be made by shimming at appropriate locations. To help prevent warping, tighten the eight carriage bolts to 28 ft. lbs. in following sequence:

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

**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.

## E. ELECTRICAL INSTALLATION

### CAUTION

- NEVER ROUTE A LIVE WIRE. BE CERTAIN THAT BATTERY IS DISCONNECTED.
- ALWAYS ROUTE ELECTRICAL WIRE CLEAR OF ANY MOVING PARTS, BRAKE LINES, AND EXHAUST SYSTEMS. ATTACH SECURELY.
- WHEN ROUTING ELECTRICAL WIRE THROUGH VEHICLE FLOOR OR WALLS, USE A SUITABLE GROMMET TO PROTECT WIRES FROM CHAFFING.
- IF DRILLING IS NECESSARY, BE SURE TO CHECK UNDERSIDE OF VEHICLE BEFORE DRILLING SO AS NOT TO DAMAGE ANY FUEL LINES, VENT LINES, BRAKE LINES OR WIRES.
- USE SUPPLIED GROMMET AROUND DRILLED HOLE TO PROTECT CABLE FROM CHAFFING.

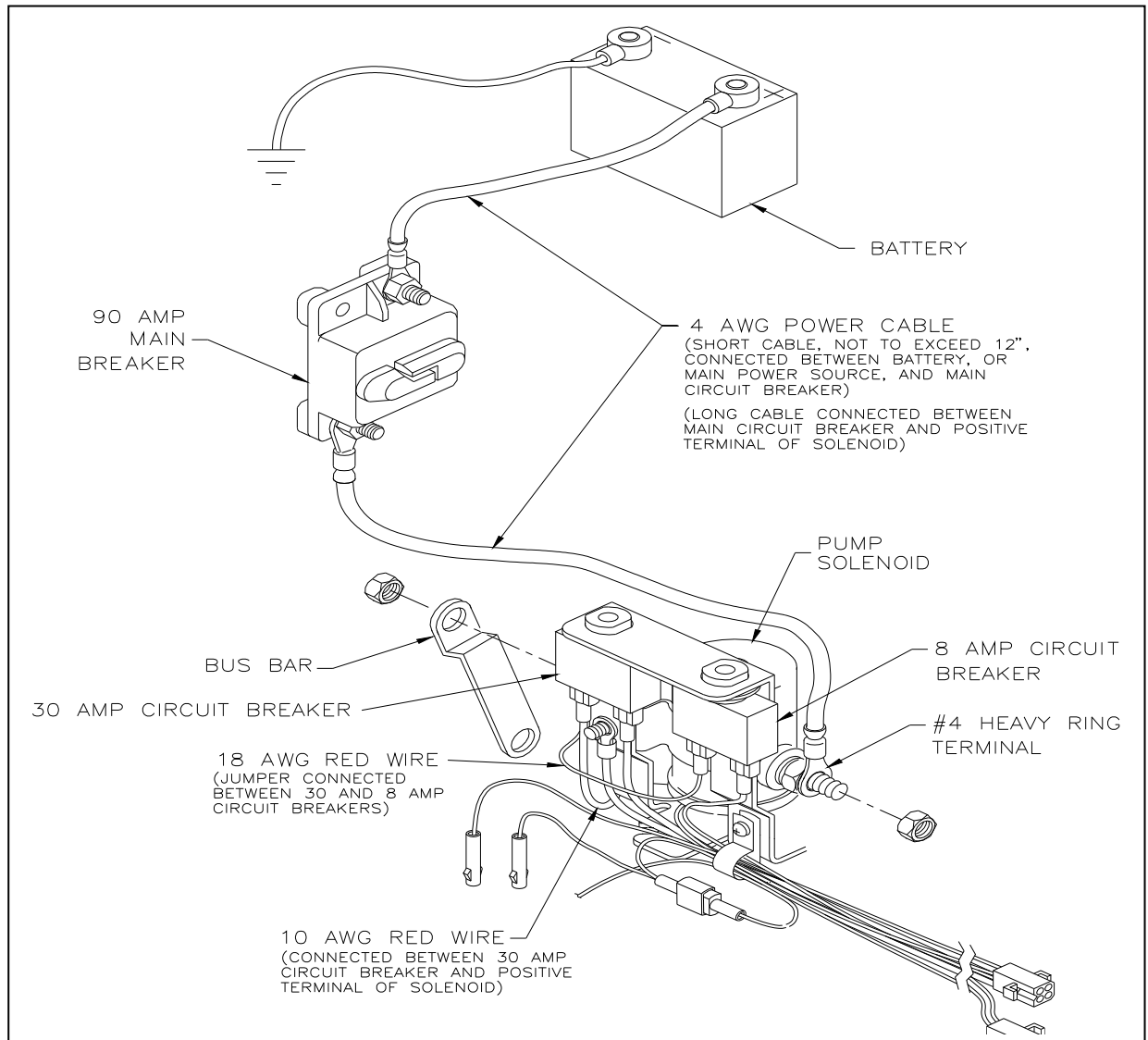


FIGURE 2-9: ELECTRICAL INSTALLATION DIAGRAM

### 1. INSTALL MAIN CIRCUIT BREAKER

Disconnect battery. Avoid heat sources.

- I. Mount main circuit breaker inside engine compartment as near to battery as possible (within 10-12 inches) to minimize amount of unprotected cable.



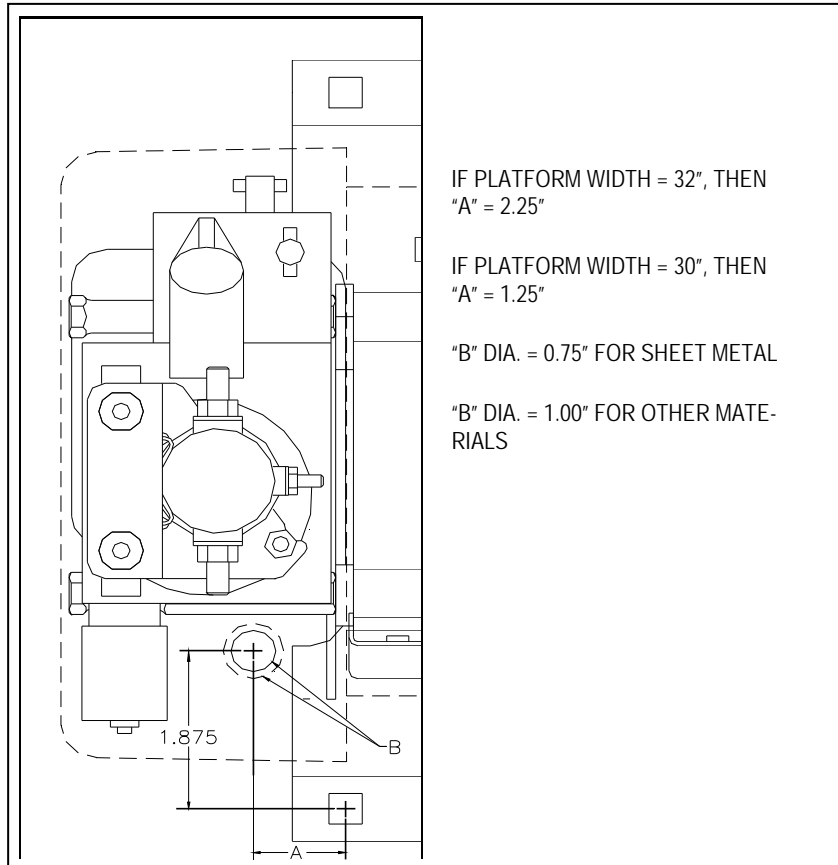
## 2. ROUTE/CONNECT MAIN POWER CABLE

### CAUTION

IF DRILLING IS NECESSARY, CHECK UNDER-SIDE OF VEHICLE BEFORE DRILLING SO AS NOT TO DAMAGE ANY FUEL LINES, VENT LINES, BRAKE LINES OR WIRES.

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

Refer to **Figure 2-10**. Locate and drill a hole through vehicle floor near or under pump cover so power cable may reach positive pole of solenoid, the side opposite to where the solenoid is connected to the pump motor. The hole should be drilled so that it will be hidden by pump cover.



**FIGURE 2-10: POWER CABLE ACCESS HOLE**

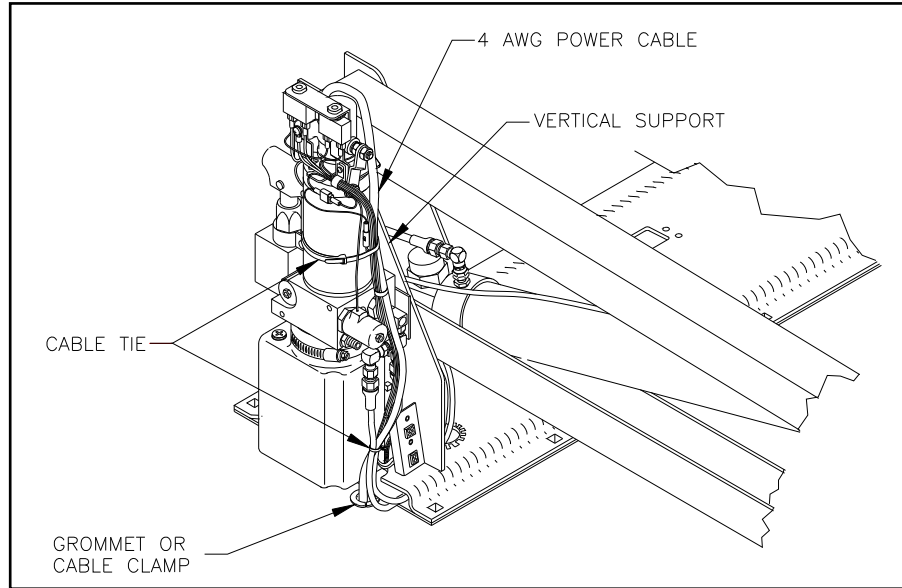
**NOTE:** An 8 amp circuit breaker is provided for lift as a circuit protection device. Whatever circuit interface is supplied by the OEM, it should be capable of carrying 8 amps of continuous current.

- m. Install ring terminals (supplied) to each end of short power cable (12" long), and one ring terminal to one end, and one end only, of long power cable using an appropriate crimp tool (such as Ricon P.N. 26553).
- n. Connect end of the long 4 AWG power cable (with ring terminal) to main circuit breaker, then route power cable underneath vehicle floor and up through hole in the floor.
- o. Be certain that power cable is secure. Bind power cable to pump assembly harness and to pump motor using cable ties. Avoid pinch points, exhaust system, any moving parts and brake lines.

### CAUTION

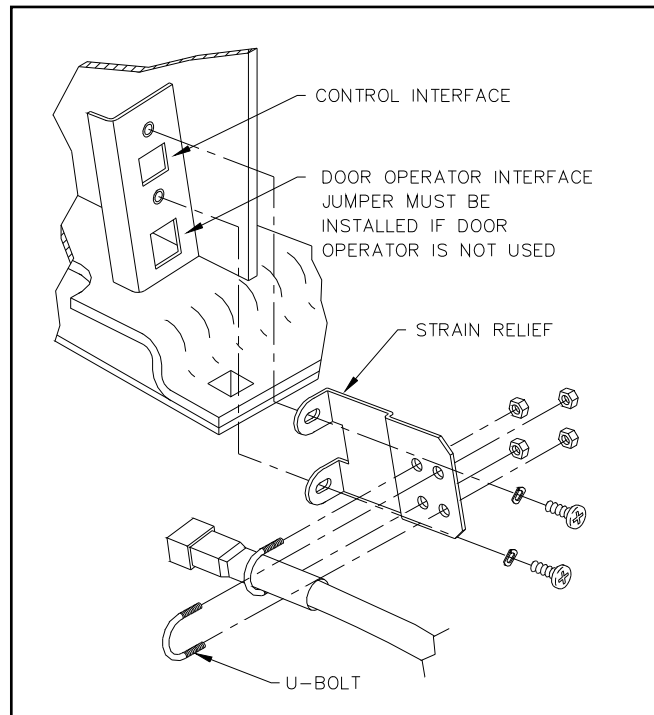
BE SURE THAT THERE IS NO INTERFERENCE WITH ANY PARTS THAT COULD DAMAGE POWER CABLE OR OTHER WIRES IN ANY WAY.

- p. Refer to **Figure 2-11**. Cut any excess wire from long cable, install remaining heavy ring terminal to unterminated end of long cable, and connect it to live side of solenoid. Be certain that red wire from main circuit breaker (if applicable) is connected to positive solenoid pole.



**FIGURE 2-11: CABLE ROUTING**

- q. Refer to **Figure 2-12**. Connect appropriate RICON lift control interface to lift and secure control cable to vehicle floor with supplied cable clamp.



**FIGURE 2-12: STRAIN RELIEF KIT**

**NOTE:** For applications where a hand-held control pendant is used, it is essential that strain relief be installed.

<b>CAUTION</b>
<p>BE SURE THAT HARNESS DOES NOT INTERFERE WITH ANY MOVING PARTS, OR BINDS AGAINST ANY PART, OR IS PINCHED IN ANY WAY.</p>

- r. Connect short (12") cable from battery's positive terminal to main breaker terminal closest to battery.
- s. Install wall portion of pendant dovetail clip in an appropriate location.

### 3. GROUNDING INSTRUCTIONS

- a. 12VDC Systems

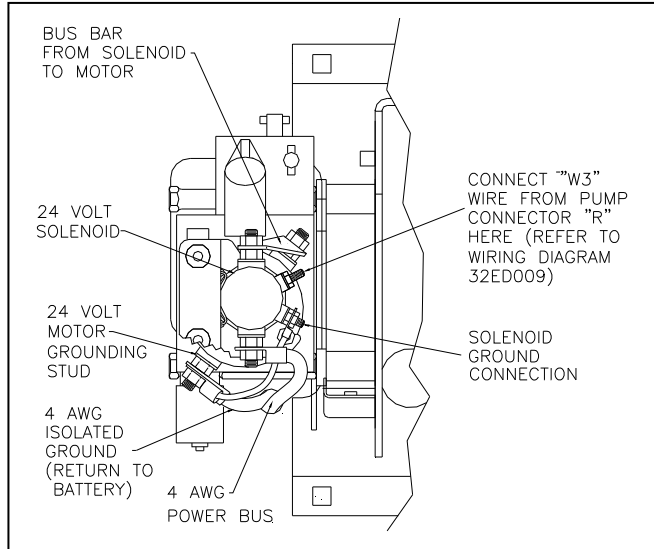
12VDC-powered lifts are chassis grounded and do not require a separate ground cable leading back to battery.

b. 24VDC Systems

The vast majority of 24VDC installations require an isolated ground return to battery. To assure proper operation of lift, an isolated ground of 4 AWG or heavier cable must be installed.

14) Refer to **Figure 2-13**. The ground cable should be routed from grounding stud on pump motor to an appropriate location.

NOTE: If vehicle's system is chassis grounded, a grounding strap may be attached to a bare metal chassis surface; if not,



**FIGURE 2-13: 24VDC WIRING**

grounding strap must be attached to a ground circuit capable of carrying 90 amps leading back to battery's negative terminal.

#### 4. INSTALLATION OF UNSUPPORTED INTERLOCK DEVICES

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

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

Because these devices are non-Ricon products, Ricon is not aware of all that are available. For this reason it is **very important** that interlock device be properly installed, such that it does not interfere with safe operation of lift or create an electrical or fire hazard.

The installer should always be certain that none of original equipment electrical circuit breakers, fuses, or solenoids are bypassed, removed, or altered. Be sure that no wires are left frayed or hanging loose after installation of the interlock device. If you have **any** questions about proper installation of these interlock devices, please contact our Product Support Department immediately. **DO NOT OPERATE LIFT UNLESS YOU ARE CERTAIN THAT INTEGRITY OF LIFT'S ELECTRICAL CIRCUITS, AS DESIGNED, HAS BEEN MAINTAINED.**

 <b>CAUTION</b>
WIRING ATTACHED DIRECTLY TO A BATTERY'S POSITIVE TERMINAL IS NOT PROTECTED AGAINST SHORT CIRCUITS. WIRING ATTACHED DIRECTLY TO A BATTERY MUST BE KEPT AS SHORT AS POSSIBLE (12" OR LESS) AND MUST BE ROUTED SO THAT THERE IS NO RISK OF PINCHING. WIRES FOR INTERLOCK CIRCUIT SHOULD BE ROUTED FROM AN APPROPRIATELY PROTECTED POWER SOURCE SUCH AS A DEDICATED ACCESSORY ON AN EXISTING FUSE PANEL.

Ricon recommends using one of three possible installation methods:

##### Interlock Method #1

Refer to **Figure 2-14**. This method interrupts power to the lift hand control pendant. It does not require additional circuit protection, but does require a modification to lift harness.

Disconnect battery.

- 15) Remove piggyback spade connector wire from OUTPUT side of 8 amp circuit breaker (refer to decal on circuit breaker).

**NOTE:** The OUTPUT side of breaker must be used to avoid possibility of an electrical short.

- 16) Connect female spade connector of interlock circuit provided by installer to OUTPUT side of 8 amp breaker using 16 AWG or larger wire.

**NOTE:** All connectors provided on interlock circuit must be a fully insulated type.

- 17) Cut piggyback connector from light assembly and female spade connector from signal power wire. Strip both wires about 1/2" being careful not to nick conductor. Crimp both wires in a single 1/4" fully insulated female spade connector designed for use on 14-16 AWG wire.
- 18) Connect male spade connector of interlock circuit to female spade connector added to harness in above step.
- 19) Dress wires in such a way as to not allow rubbing or chafing of insulation, and so there is no strain at any terminals or body of light.

##### c. Interlock Method #2

Refer to **Figure 2-15**. This method interrupts power between lift 8 amp breaker and vehicle battery. It requires circuit protection to be provided by installer.

Disconnect battery.

- 20) The cable leading to applicable circuit protection from battery must be at least 16 AWG or larger, and must not exceed 12" in length.
- 21) Connect INPUT side of interlock circuit to OUTPUT side of circuit protector using 16 AWG or larger wire.

- 22) If an optional 30 amp circuit breaker has been installed next to 8 amp breaker, **completely remove** 18 AWG wire connecting INPUT sides of 30 amp and 8 amp circuit breakers. To do this, the spade connector must be removed from 8 amp INPUT and 18 AWG wire must be cut as close as possible to 30 amp INPUT connector, since it is crimped to that connector along with a 10 AWG wire.
- 23) Connect OUTPUT side of interlock circuit to INPUT side of lift's 8 amp circuit breaker using 16 AWG or larger wire.
- 24) Re-connect battery.

d. **Interlock Method #3**

Refer to **Figure 2-16**. This method interrupts power between interlock solenoid and battery. This cuts all power to lift. It requires circuit protection to be supplied by installer.

Disconnect battery.

- 25) Disconnect 4 AWG power cable from main breaker at pump solenoid.
- 26) Connect cable to one of terminal posts of interlock solenoid.
- 27) Connect other terminal post of interlock solenoid to empty terminal post of pump solenoid using 4 AWG wire.
- 28) Connect circuit protector provided by installer (should be 8 amp, maximum) to main power cable coming from battery (which should be disconnected at this time) using wire at least 16 AWG or larger, not to exceed 12" in length. Be sure that wiring cannot pinch or chafe.
- 29) Connect OUTPUT side of circuit protector to INPUT side of interlock circuit provided by installer using 16 AWG or larger wire.
- 30) Connect OUTPUT side of interlock circuit to coil terminal of solenoid using 16 AWG or larger wire.
- 31) Be sure that interlock solenoid is properly grounded. If a separate grounding post is provided, connect a 16 AWG wire from ground post to a suitable chassis ground. If coil is grounded through body of solenoid, be sure that solenoid is mounted to a suitable chassis ground.
- 32) Reconnect the battery.

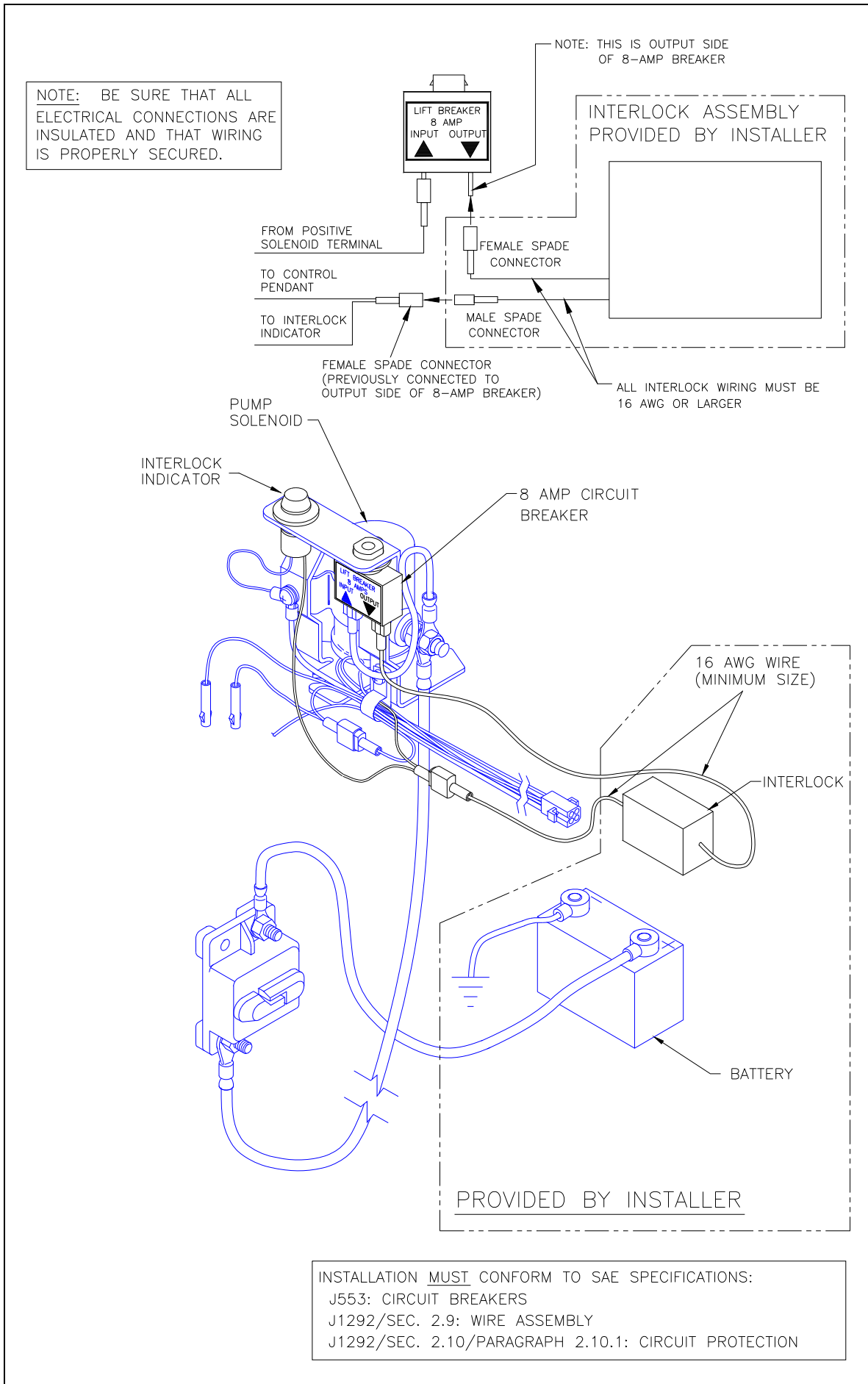
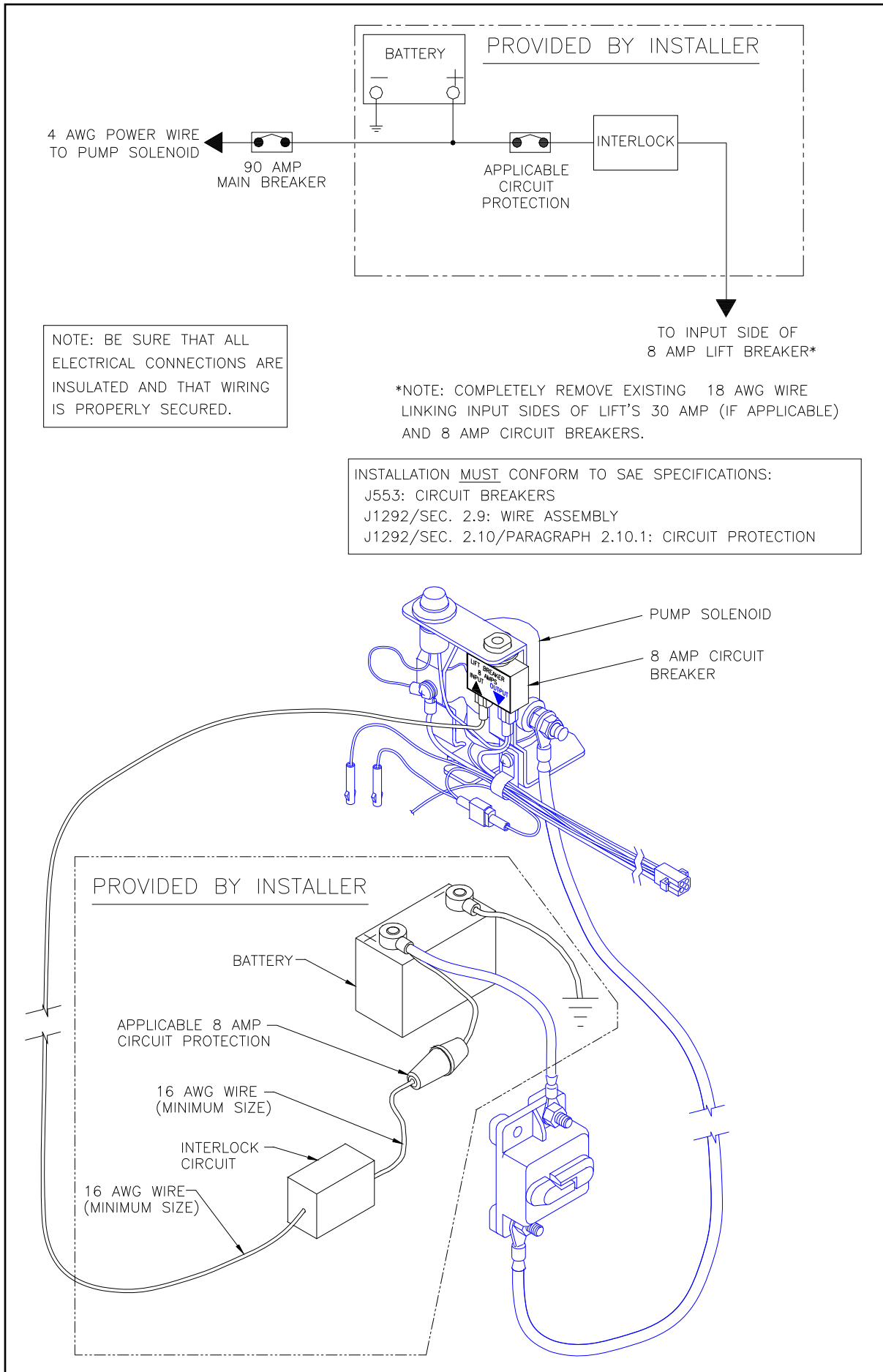


FIGURE 2-14: INTERLOCK METHOD #1

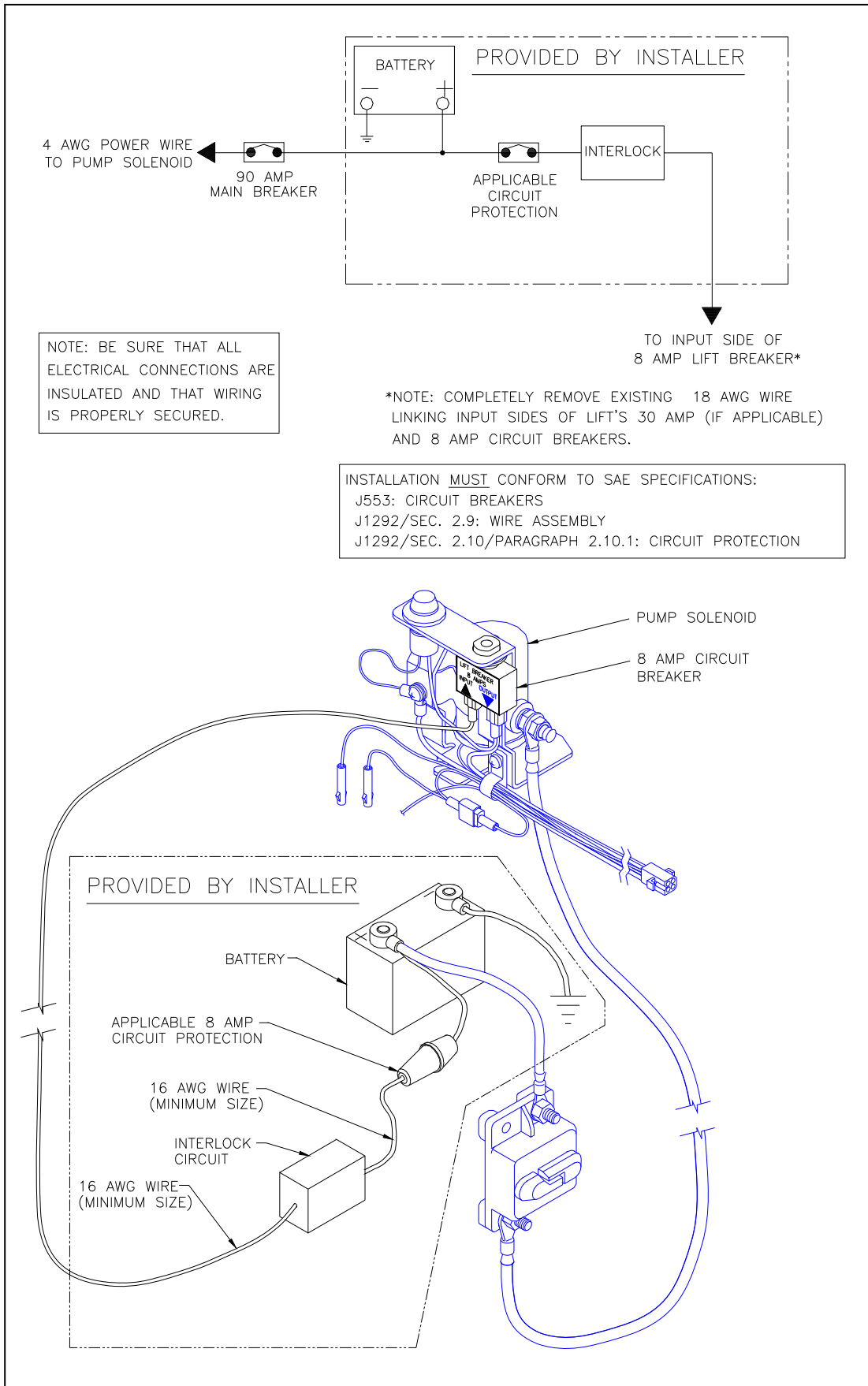


**FIGURE 2-15: INTERLOCK METHOD#2**

32DSS02.A







**FIGURE 2-16: INTERLOCK METHOD #3**

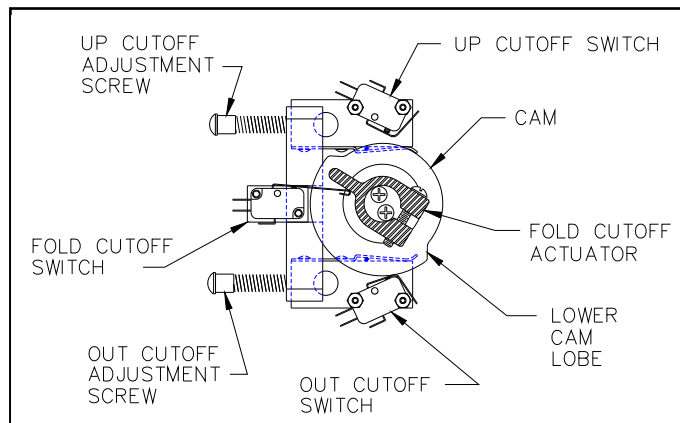
## F. FINAL ADJUSTMENTS

### 1. LIMIT SWITCH ADJUSTMENT

For lift limit switch adjustment, refer to **Figures 2-17, 2-18**, and the following procedure. Contact Ricon Product Support for assistance, if needed.

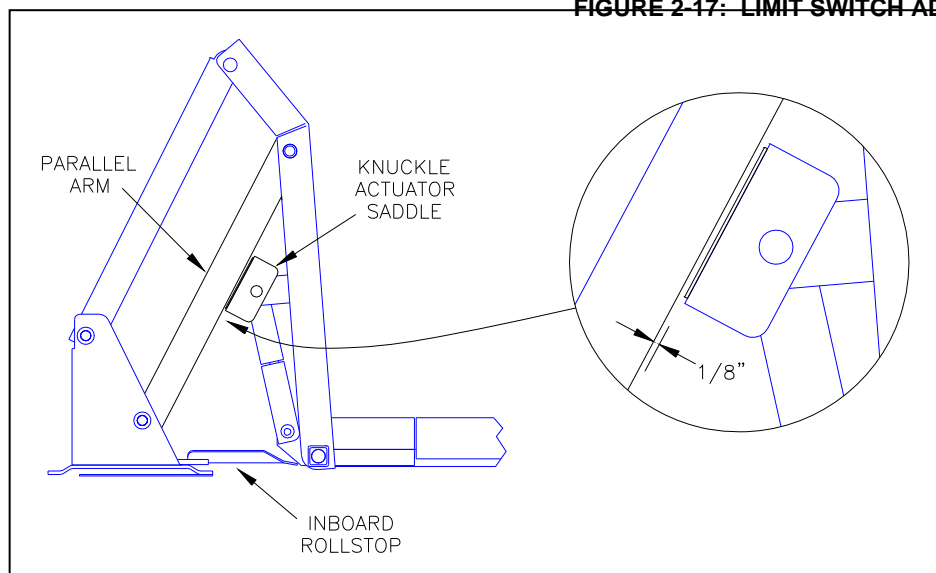
**NOTE:** To avoid operational "dead-spots", always adjust OUT CUTOFF SWITCH *before* UP CUTOFF SWITCH.

**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).



Fully DEPLOY platform.

**FIGURE 2-17: LIMIT SWITCH ADJUSTMENT DIAGRAM**



**FIGURE 2-18: LIMIT SWITCH ADJUSTMENT CLEARANCE**

- t. Adjust UP CUTOFF ADJUSTMENT SCREW and OUT CUTOFF ADJUSTMENT SCREW 6-8 turns **counter-clockwise** and then push screws **FORWARD**.
- u. Cycle platform to **STOW** then **DEPLOY**.
- v. When in **DEPLOY** position, platform should stop at an angle and **NOT** even with vehicle floor. If not, turn OUT CUTOFF ADJUSTMENT SCREW an additional 2-3 turns **counter-clockwise**, push screw forward, **STOW** then **DEPLOY** platform, then repeat this step.
- w. Cycle platform to **UP** position.
- x. When in **UP** position, platform should stop short of vehicle floor level. If not, turn UP CUTOFF ADJUSTMENT SCREW an additional 2-3 turns **counter-clockwise**, push screw forward, cycle platform **DOWN** then **UP**, then repeat this step.
- y. Cycle platform to **STOW** then **DEPLOY**.
- z. Push and hold control pendant **DEPLOY** switch. Slowly turn OUT CUTOFF ADJUSTMENT SCREW **clockwise** until platform "jogs" down to vehicle floor level. Make sure that clearance between knuckle actuator saddle and parallel arm is 1/8" minimum (distance may be 1/2" maximum and unequal from left or right arm), stop turning screw and release **DEPLOY** switch.
- aa. Position platform **DOWN** to ground level then **UP** until it stops.

- bb. Push and hold control pendant UP switch. Slowly turn UP CUTOFF ADJUSTMENT SCREW **clockwise** until platform "jogs" up to vehicle floor level. Make sure that clearance between knuckle actuator saddle and parallel arm is 1/8" minimum (distance may be 1/2" 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 OUT CUTOFF SWITCH.)

- cc. 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 collar counter-clockwise.	With lift fully folded (handrails should be folded tight against vertical arms), rotate actuator so that fold cutoff leg barely trips fold cutoff switch.
	Pump runs continuously.	Rotate collar clockwise.	Test lift. Pump should cutoff when lift is folded tight.
Up Cutoff Adjustment Screw	Lift stops low.	Adjust screw clockwise.	Adjust up cutoff switch so that lift stops just before the first knuckle actuator saddle or roller touches underside of lower parallel arm. (Saddle or roller should be about 1/8" from lower parallel arm.)
	Lift stops high.	Adjust screw counter-clockwise.	
Out Cutoff Adjustment Screw	Lift stops low.	Adjust screw counter-clockwise.	Adjust lower limit switch so that lift stops just below the "Up" cutoff described in above step. This will give the necessary overlap to avoid "dead" spots.
	Lift stops high.	Adjust screw clockwise.	
<b>END OF TABLE</b>			

## 2. ROLLSTOP (PLATFORM TILT) ADJUSTMENT

The 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.

Deploy and lower the lift platform to a position halfway between vehicle floor level and ground level.

- dd. Refer to **Figure 2-19**. Adjust left/right platform set-screws until platform is level at zero degrees. Turn set-screws clockwise to angle front-end of platform upward, or counter-clockwise to angle downward.

- ◆ At ground level, the distance between heel of platform and ground should be  $\frac{3}{4}$ " to 1". This distance should be measured at initial point of rollstop full deployment.

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

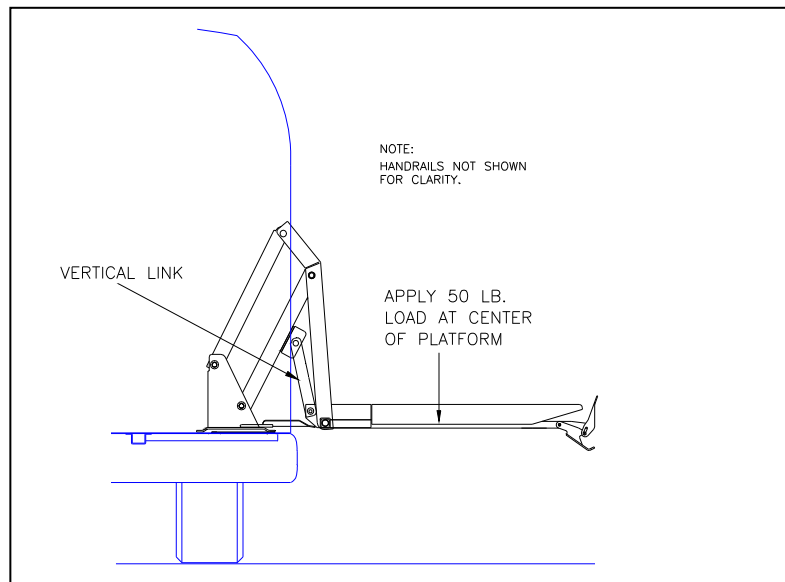
- ee. Repeat steps a and b as required to achieve proper rollstop operation.

## 3. PLATFORM PRESSURE SWITCH CHECK AND ADJUSTMENT

(serial no.'s 104,000 to present)

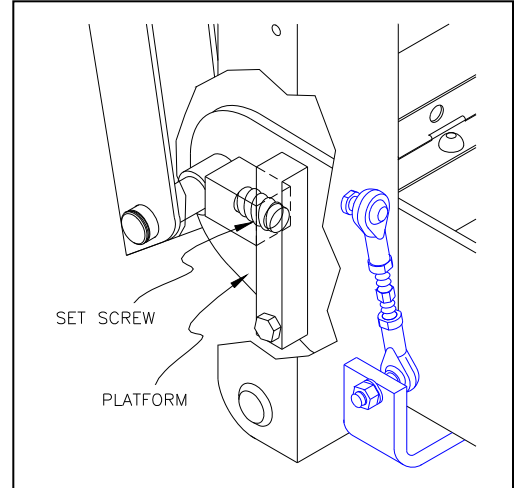
Correct adjustment of this pressure switch is required to prevent platform from folding into vehicle when there is a load of 50 lbs., or more, on the platform.

Refer to **Figure 2-20**. Deploy and lower platform to ground. Place a 50 lb. load in center of platform and then raise platform to floor level. Press and hold STOW switch.



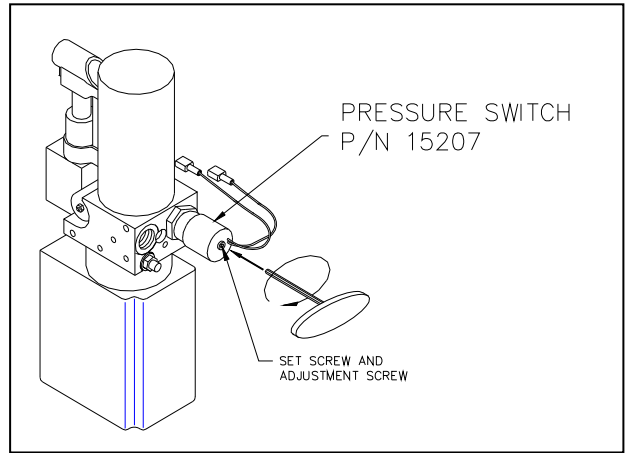
**FIGURE 2-20: PRESSURE SWITCH TEST AT FLOOR LEVEL**

- ff. Pressure switch is correctly set if pump motor shuts off, preventing further movement of platform. There should not be excessive on/off clicking of pump motor that would indicate switch is set marginally. Proceed to next step if pump motor does not shut off.



**FIGURE 2-19: PLATFORM SET-SCREWS**

- gg. Refer to **Figure 2-21**. Remove the 1/4-20 x 1.00" locking set-screw (with hex recess) from end of pressure switch to gain access to adjustment screw. Save screw for reinstallation.
- hh. Insert a 1/8" hex wrench into pressure switch and engage adjustment screw inside. Turn screw 1/8 turn clockwise, and then repeat 50 lb. load check described above. Repeat adjustment, as necessary, to achieve correct setting.
- ii. Reinstall set-screw and tighten against adjustment screw.



**FIGURE 2-21: HYDRAULIC PUMP WITH PRESSURE SWITCH**

**4. PLATFORM LOAD SENSOR SWITCH ADJUSTMENT**

(serial no.'s 0 - 103,999)

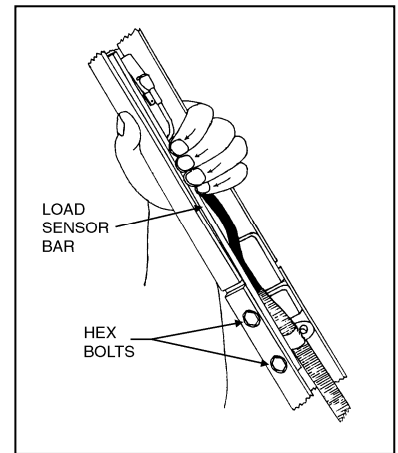
This procedure provides for setting platform load sensor switch to prevent lift from folding past vehicle floor level when a load of 50-lbs is on center of platform.

Refer to **Figure 2-22**. Place your left hand around knuckle vertical link assembly as shown; link is located on left side of lift.

- jj. Loosen two hex-bolts shown.
- kk. Exert a light downward pressure through your left-hand fingers onto load sensor bar, and retighten hex-bolts.
- ll. Refer to **Figure 2-20**. To verify proper load sensor switch operation, deploy and lower platform to ground. Place a 50 lb. load in center of platform and then raise platform to floor level. Press and hold STOW switch.

**NOTE:** If pump motor does not stall or clicks off/on excessively, loosen two hex bolts, push down further on load sensor bar, and re-tighten bolts.

- mm. Repeat above two steps as necessary until pump motor stalls (i.e., load sensor switch is activated, preventing lift platform from folding past vehicle floor level).



**FIGURE 2-22: LOAD SENSOR ADJUSTMENT**

## G. VERIFY INSTALLATION

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

### CAUTION

- DO NOT OPERATE LIFT ELECTRICALLY OR MANUALLY DURING LOAD TEST. THE LOAD TEST IS DESIGNED TO TEST INSTALLATION MOUNTING OF LIFT, NOT IT'S LIFTING CAPACITY. REMOVE TEST WEIGHT IMMEDIATELY AFTER TEST.
- WHEN TEST WEIGHT IS PLACED ON PLATFORM, THE VEHICLE SUSPENSION WILL COMPRESS AND VEHICLE WILL LEAN. IF WEIGHTED PLATFORM TOUCHES GROUND, REMOVE WEIGHT, RAISE PLATFORM, AND RETEST.

- The lift must be test loaded to 125% of its rated 800 pound load capacity to verify integrity of installation. Position lift platform 2" - 6" above the ground, place **1000** pounds in center of platform, and inspect lift mounting points. REMOVE TEST WEIGHT.
- Run lift through several complete cycles while checking for proper operation.

## H. CUSTOMER ORIENTATION

### IMPORTANT

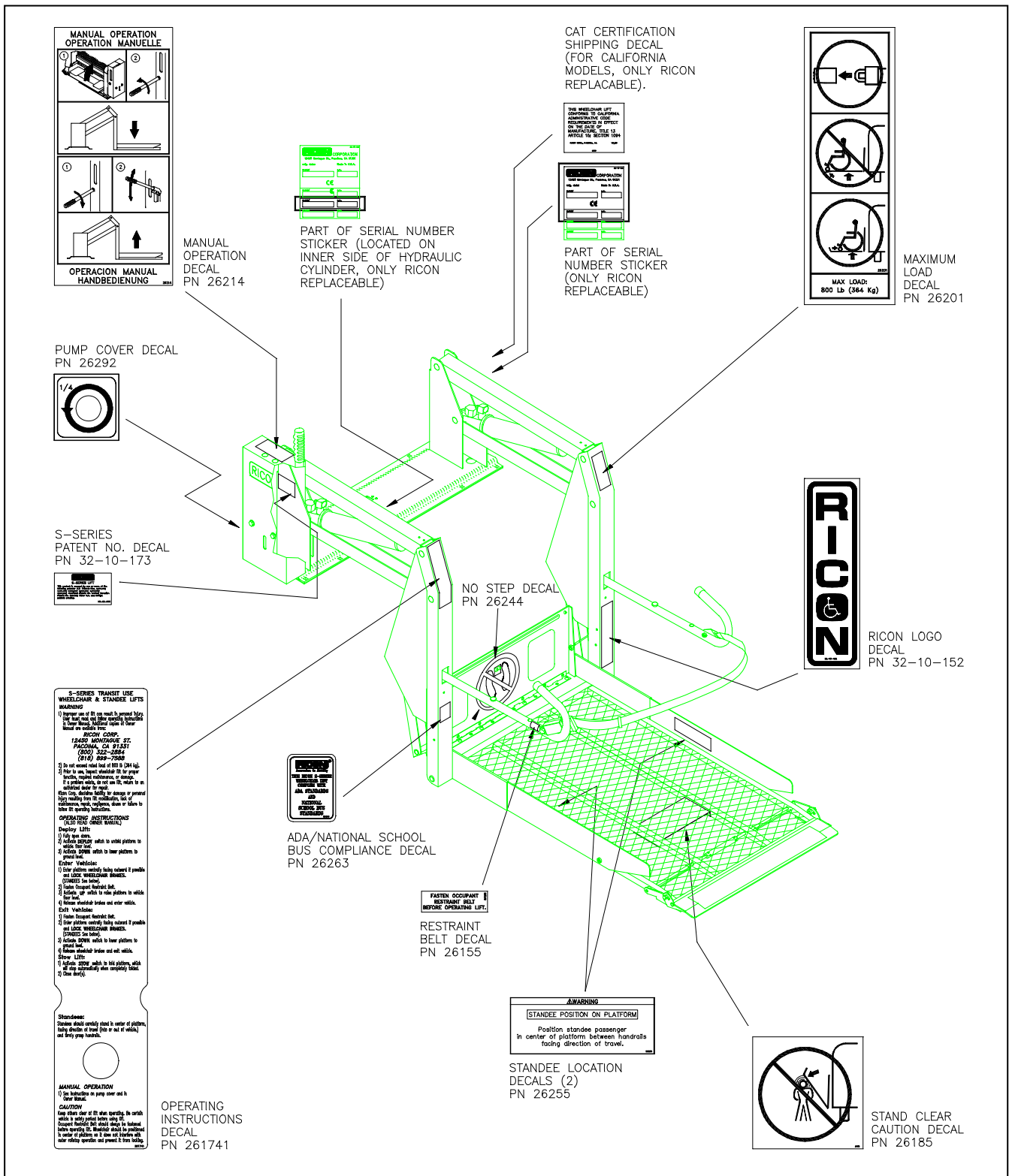
#### - Customer Orientation -

Ricon Sales/Service Personnel should review the warranty card and Operator manual with the customer to be certain they understand safe operation of the lift. The customer should be instructed to follow the operating instructions without exception.

- Refer to **Figure 2-23** on next page and be certain that all decals are properly located and affixed as shown.

### NOTE

The installing service technician must affix Operating Instructions decal to vehicle in a location clearly visible to lift operator.



**FIGURE 2-23: DECAL LOCATIONS AND PART NUMBERS**

### III. MAINTENANCE AND REPAIR

Regular maintenance of the RICON S-Series (ADA) Transit Use Wheelchair and Standee Lift is required to optimize its performance and reduce the need for repairs. This chapter contains lubrication and cleaning instructions, a maintenance schedule, a troubleshooting section, and maintenance diagrams.

**CAUTION**

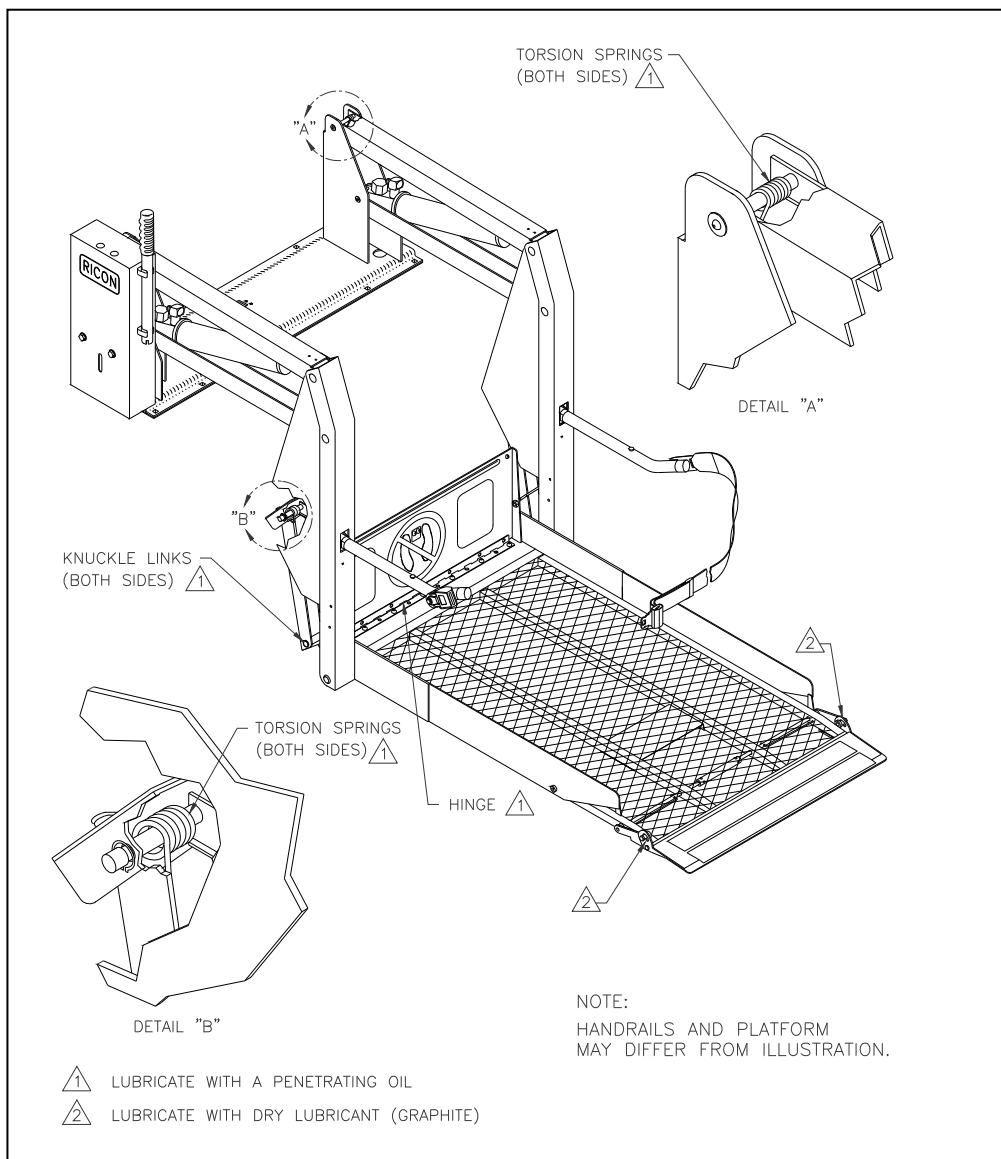
THIS RICON PRODUCT IS HIGHLY SPECIALIZED. MAINTENANCE AND REPAIRS MUST BE PERFORMED BY A RICON AUTHORIZED SERVICE TECHNICIAN USING RICON REPLACEMENT PARTS. MODIFYING OR FAILING TO PROPERLY MAINTAIN THIS PRODUCT WILL VOID WARRANTY AND MAY RESULT IN UNSAFE OPERATING CONDITIONS.

#### I. 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 following Maintenance Schedule. Lubricate lift at points specified.



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



**J. CLEANING**


Regular cleaning with mild soap (i.e. dish soap, car wash liquid) and thorough drying 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.


**K. MAINTENANCE**

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 heavy use (more than 10 cycles per day).

TABLE 3-1: MAINTENANCE SCHEDULE	
SERVICE POINT	ACTION TO PERFORM
<b>DAILY SAFETY CHECK</b>	
Overall Condition	Listen for any abnormal noises as lift operates (i.e., grinding or binding noises).
Control Pendant	Check that control pendant is not damaged and cable connectors are tight.
<b>TWO-WEEK SAFETY CHECK</b>	
Overall Condition	<p><b>Listen for any abnormal noises as lift operates (i.e., grinding or binding noises).</b></p> <p>Inspect underside of vehicle to be certain nothing is out of the ordinary.</p>
Control Pendant	Check that control pendant is not damaged and cable connectors are tight.
Electrical Wiring	Inspect electrical wiring for frayed wires, chaffed wires, loose connectors, etc.
Vehicle Interlock	Place vehicle in NON-INTERLOCK mode and attempt to operate lift.
Decals	Be certain that all lift decals are affixed properly, clearly visible and legible. Replace if necessary.
Handrails	Be certain that all handrail fasteners are properly tightened.
Lift Mountings and Support Points	<p><b>Be certain that all lift mounting and support points are in proper order and free from damage.</b></p> <p>Be certain that all mounting bolts are sufficiently tight.</p>
Main Lifting Pivots	Be certain traveling frame pins are installed properly, free from damage and locked in position.
Platform Attachment Points	Be certain platform operates properly during lift functions without obstruction.
Inner Rollstop	<p><b>Be certain that inner rollstop operates properly during lift functions without obstruction.</b></p> <p>Be certain that inner rollstop deploys fully as platform stops at proper vehicle floor level.</p>
Platform Rollstop	Be certain that rollstop operates properly without obstruction when it contacts ground.


TABLE 3-1: MAINTENANCE SCHEDULE

SERVICE POINT	ACTION TO PERFORM
Hydraulic Power Unit	<p data-bbox="513 193 659 226"><b>CAUTION</b></p> <p data-bbox="886 189 938 231"></p> <p data-bbox="513 239 1445 289">ADD FLUID WHEN PLATFORM IS AT GROUND LEVEL. ADDING FLUID WHEN PLATFORM IS RAISED CAUSES TANK TO OVERFLOW WHEN PLATFORM IS LOWERED.</p> <p data-bbox="513 310 1409 449"><b>. Check for visible hydraulic fluid leakage.</b></p> <p data-bbox="513 457 1045 485">Be certain backup pump manual release valve is lightly-snug.</p>

SIX-MONTH SAFETY CHECK (or @ 1750 cycles of operation)	
Handrails	Be certain that all handrail fasteners are properly tightened.
Cleaning and Lubrication	<p><b>• Clean lift with a mild soap and wipe dry. Rub down all surfaces with light oil, using a soft cloth to avoid rusting of material. Remove excess oil.</b></p> <p>Following labeled directions on container, spray lubricant (Curtisol® Red Grease No.88167 or WD-40®), lubricate lift as specified in Lift Lubrication Points diagram. Wipe any excess grease from surrounding areas.</p>
Hydraulic Power Unit	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.
<b>CAUTION</b>  <b>THIS SAFETY CHECK MUST BE PERFORMED BY A RICON AUTHORIZED SERVICE TECHNICIAN.</b>	
ANNUAL SAFETY CHECK (or @ 3500 cycles of operation)	
Hydraulic Cylinder, Hoses and Fittings	<p><b>• Check Hydraulic Cylinder for evidence of leaks.</b></p> <p>Inspect hydraulic hoses for damage. Be certain that all fittings are tightly secured.</p>
<b>END OF TABLE</b>	

## L. 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** and **3-3**. The guides 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>	
<p>THE TROUBLESHOOTING GUIDES DO NOT INCORPORATE ROUTINE SAFETY PRECAUTIONS OR PRELIMINARY PROCEDURES. DURING THE RICON WARRANTY PERIOD A TRAINED, RICON AUTHORIZED SERVICE TECHNICIAN MUST PERFORM TROUBLESHOOTING. AFTER THE WARRANTY PERIOD, IT IS RECOMMENDED THAT TROUBLESHOOTING CONTINUE TO BE PERFORMED BY A RICON AUTHORIZED SERVICE TECHNICIAN.</p>	

### 5. INTERLOCK INDICATOR DIAGNOSTICS

The purpose of a vehicle interlock system is to prevent operation of lift if an unsafe condition is present. When vehicle interlock systems are interfaced with lift circuitry, the interlock indicator shows whether or not interlock is operating properly. The light is interfaced with electrical system so that no matter which interlock system/method is used, the light will be ON when interlock allows electrical power to lift and OFF when interlock has disabled power to lift. When there is no interlock system installed, the light stays illuminated at all times.

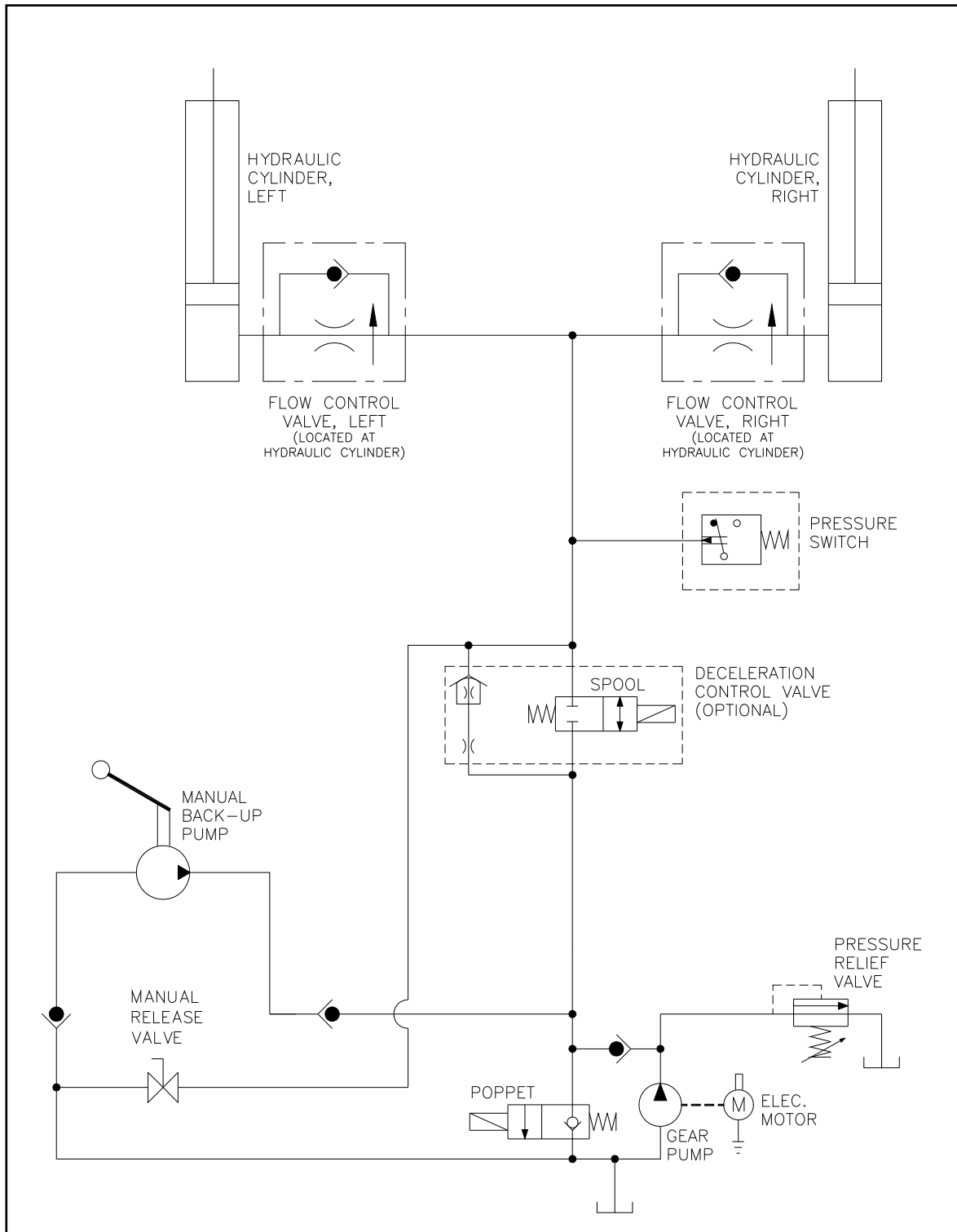
A light-assembly is installed in the position where door operator circuit breaker would normally be mounted on all lift assemblies **without** optional door operator. The light indicates power is supplied to signal portion of electrical system, and will aid in diagnosing electrical problems.

<b>TABLE 3-2: INTERLOCK INDICATOR TROUBLESHOOTING GUIDE</b>	
SYMPTOM	POSSIBLE CAUSE
Light is not lit; lift does not operate.	Control system circuit breaker is tripped. Interlock system is not allowing power to lift due to an unsafe condition or a faulty interlock.
Light is not lit; lift operates.	Light needs to be replaced.
Light is lit; lift works in an unsafe condition.	Interlock is not functioning.
Light is lit; lift does not operate.	There is a problem with electrical system, either with power or signal side. Both will have to be checked, but start with power side since it is less complicated.
<b>END OF TABLE</b>	

6. LIFT TROUBLESHOOTING

<b>TABLE 3-3: LIFT OPERATION TROUBLESHOOTING</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 until a Ricon authorized service technician makes repairs.	
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 lightly-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 lightly-snug.
		Hydraulic hose or fitting leak.	Contact an authorized Ricon service technician 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 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.)
<b>END OF TABLE</b>			

**M. HYDRAULIC CIRCUIT DIAGRAM**



**FIGURE 3-2: S-SERIES HYDRAULIC CIRCUIT**

## N. ELECTRICAL WIRING DIAGRAMS

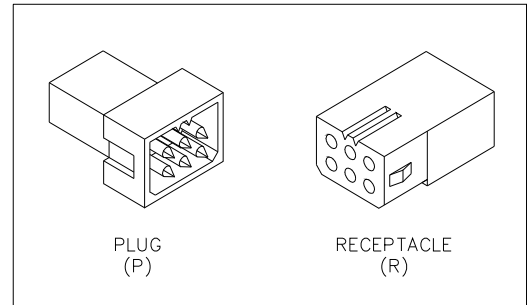
### 7. DIAGRAM LEGEND

#### e. Wire Color Codes

TABLE 3-4: WIRE COLOR CODES			
LETTER	COLOR	LETTER	COLOR
<i>BK</i>	<i>Black</i>	R	<i>Red</i>
<i>BL</i>	Blue	VI	Violet
<i>BR</i>	Brown	GY	Gray
<i>GN</i>	Green	W	White
<i>O</i>	Orange	Y	Yellow
<b>END OF TABLE</b>			

#### f. Electrical Connector Description

Refer to **Figure 3-3**. The standard electrical connectors used by Ricon are Molex® .062" Series. These connectors have terminal numbers on the back, use these numbers and colors to identify all wires.



**FIGURE 3-3: MOLEX CONNECTORS**

#### g. Ricon Diagram Labels

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 cutoff switch
DWN	Pump Down – Used by OUT and DWN
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

h. Electrical Symbols

Figure 3-4 shows symbols used in the electrical wiring diagrams.

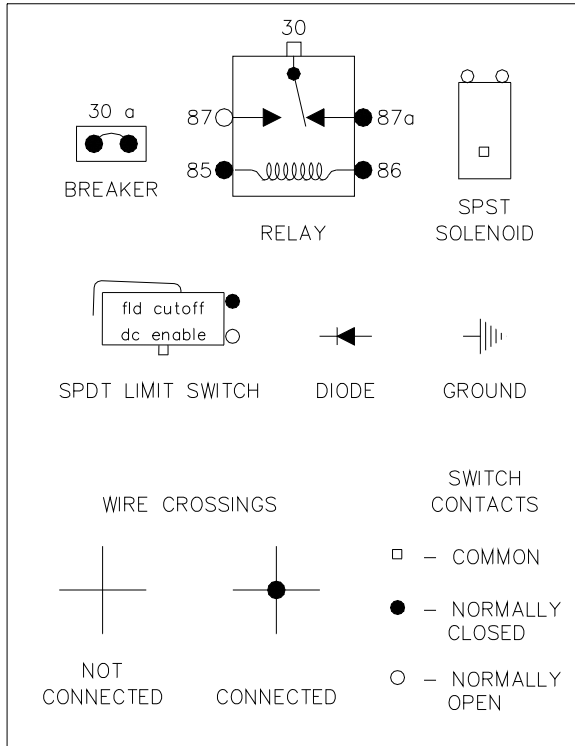


FIGURE 3-4: DIAGRAM SYMBOLS

8. S-SERIES LIMIT SWITCH STATES

Refer to Figure 3-5. The actuation diagram shows the state of all limit switches as the platform travels from stowed, to vehicle floor level, and then to ground level. The solid line segments represent current flow through the normally CLOSED switch contacts, and the open line segments represent current flow through the normally OPEN switch contacts. The heavy dashed lines show switch states when platform is beyond normal travel boundaries. This is useful in showing the operation of switches that change states at stowed or ground level positions. For proper operation of lift, the switch actuations must overlap as shown.

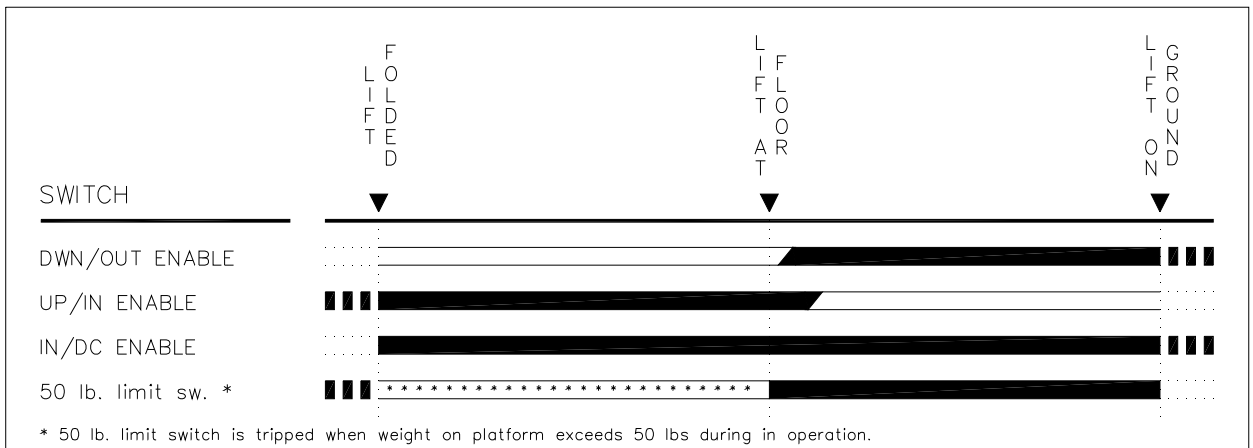


FIGURE 3-5: LIMIT SWITCH ACTUATION



9. WIRING DIAGRAMS

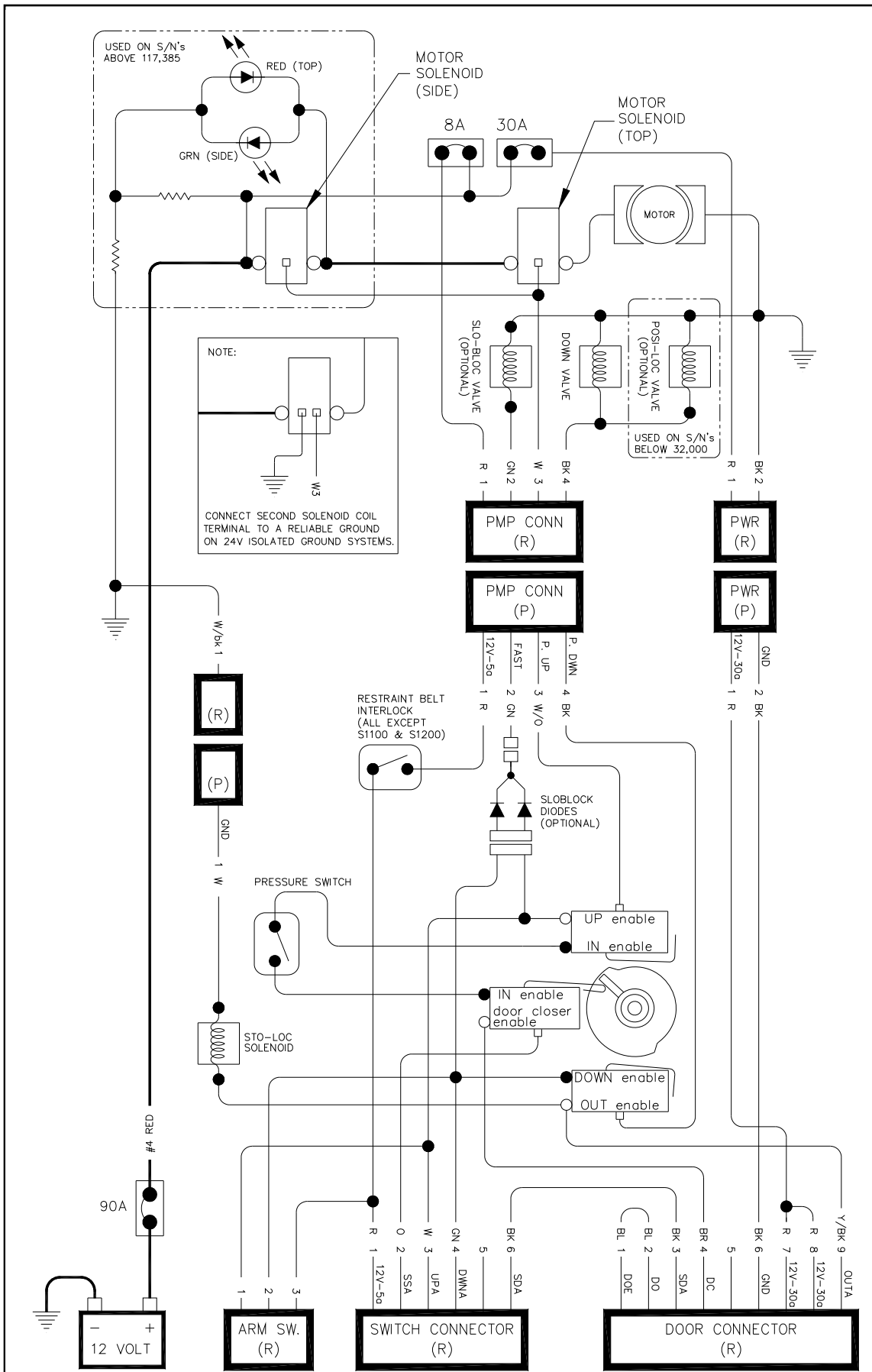


FIGURE 3-6: WIRING DIAGRAM FOR LIFT W/DOOR OPERATOR

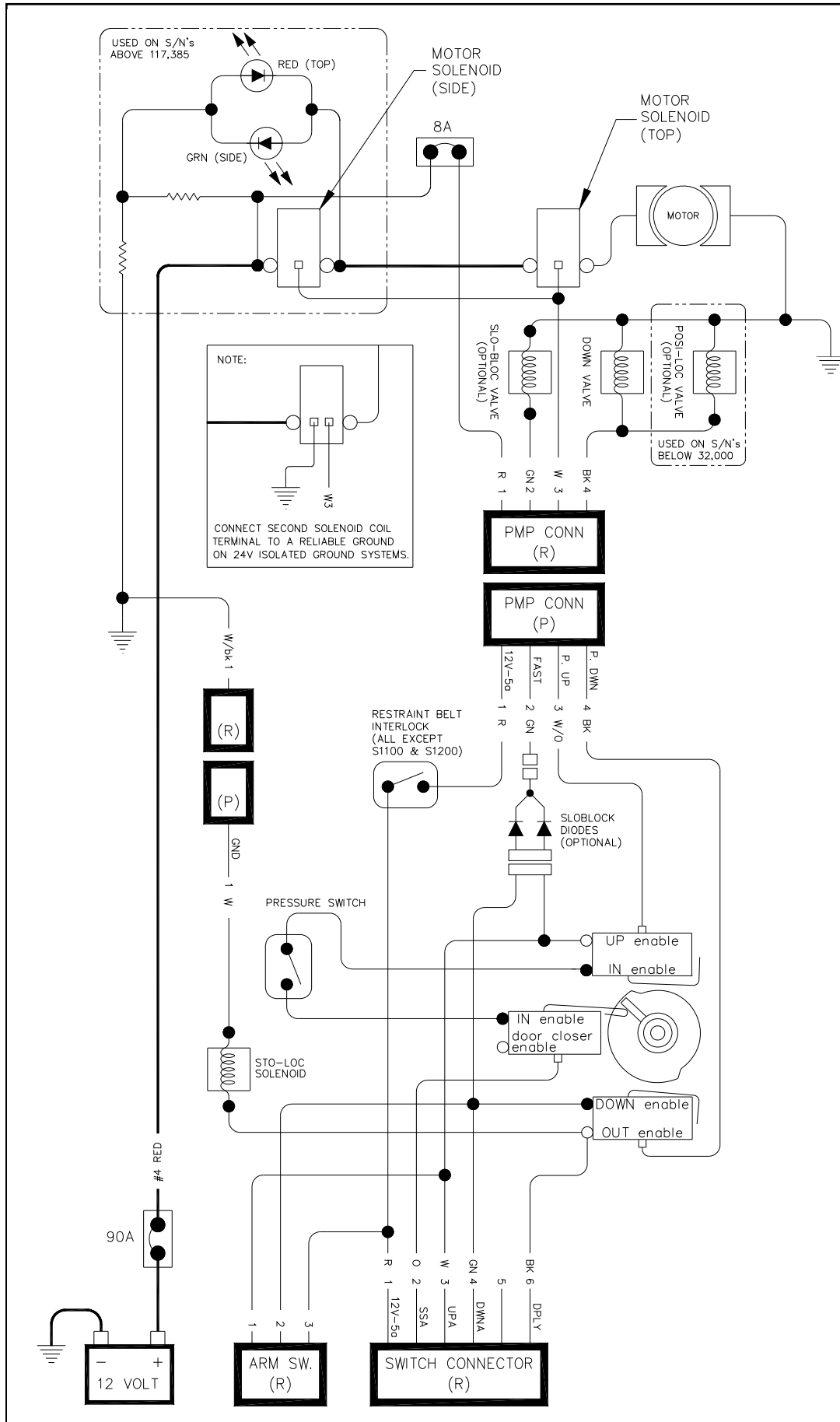
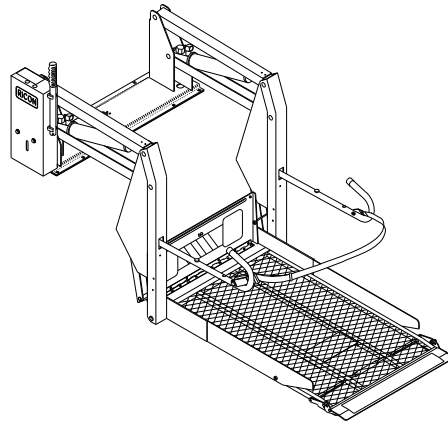


FIGURE 3-7: WIRING DIAGRAM FOR LIFT W/O DOOR OPERATOR

## IV. S-SERIES TRANSIT (ADA) PARTS DIAGRAMS AND LISTS

This chapter contains parts diagrams and parts lists for the RICON S-Series (ADA) Transit Use Wheelchair and Standee Lift. The exploded view of each major lift assembly shows individual components referenced by numbers. On each associated list is the reference number, a part description, the quantity used and the Ricon part number. For part numbers of lift decals, refer to the "Decal Locations and Part Numbers" figure in **Chapter II** of this manual.

### LIFT MODEL AND KIT NUMBERS



PRODUCT NUMBER	S2000-S10000000 (First listed model number.)
DOCUMENTATION KIT NUMBER	01073
PRODUCTION DECAL SET NUMBER	SXXXXLSXXXXXXXXX
SPARE DECAL KIT NUMBER	26016

#### PARTS DIAGRAM

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DATE: 03/08/00
DWG. SSX00001
REV. F

MONARCH HYDRAULIC POWER UNIT #1  
 SERIAL NO's. 31000-31999  
 SERIAL NO's. 35000 - PRESENT

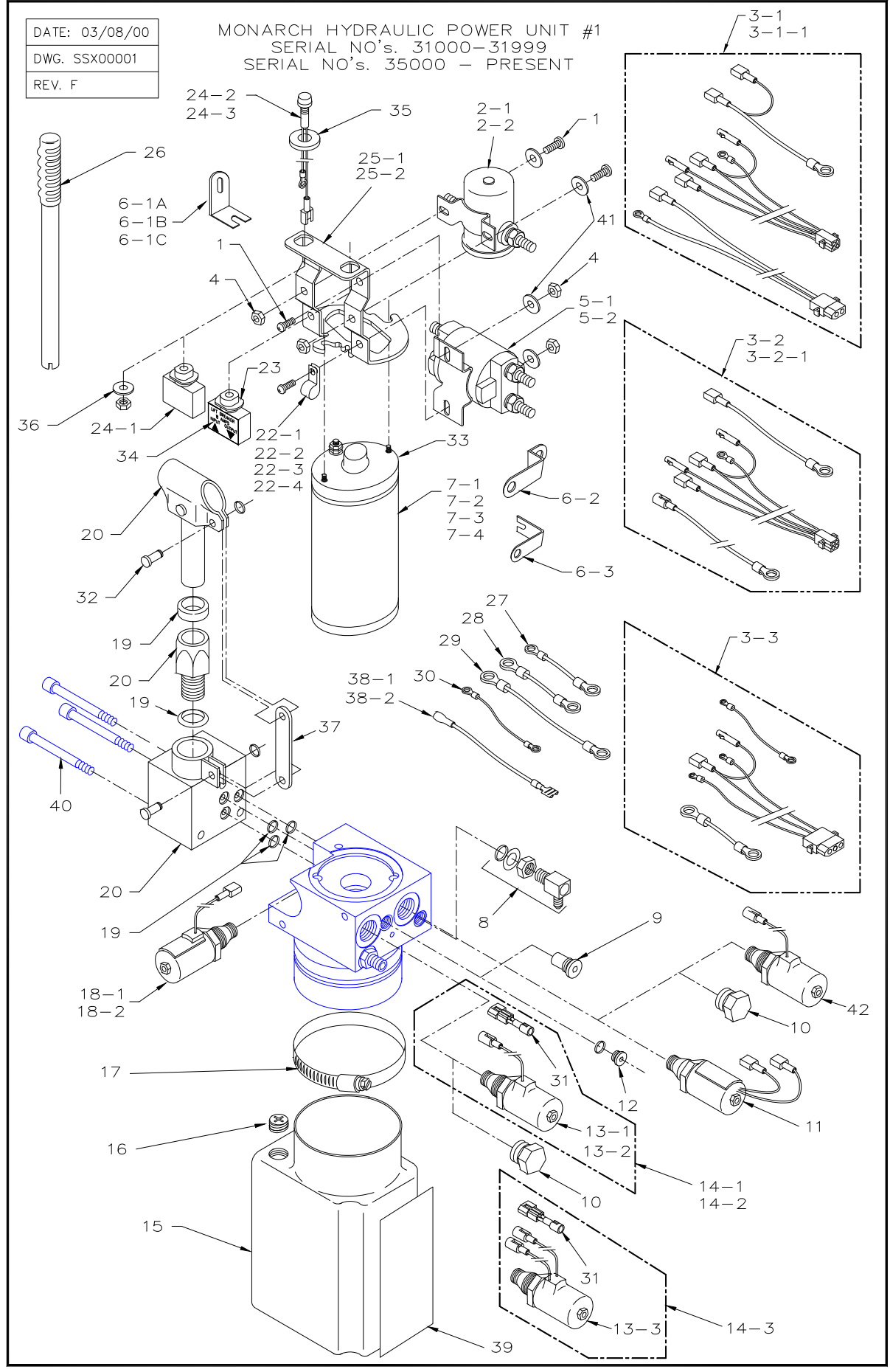


FIGURE 4-1: MONARCH HYDRAULIC POWER UNIT #1  
 32DSS02.A

**MONARCH HYDRAULIC POWER UNIT #1**

S-SERIES (ALL MODELS) WHEELCHAIR LIFT

SERIAL NO's. 31000 - 31999

**SERIAL NO's. 35000 - PRESENT**

REF.	DESCRIPTION		QTY.	PART NO.
1	MS,10-24 X ½ PHIL PAN, SELF THREAD		3	28111T
2-1	SOLENOID, SPST, 12V		1	26444
2-2	SOLENOID, SPST, 24V		1	26449
3-1	HARNESS, PUMP, w/DOOR INTERLOCK		1	V2-ES-100
3-1-1	HARNESS, PUMP, w/DOOR INTERLOCK, 24V		1	10069
3-2	HARNESS, PUMP, w/out DOOR INTERLOCK		1	V2-ES-150
3-2-1	HARNESS, PUMP, w/out DOOR INTERLOCK, 24V		1	10335
3-3	HARNESS, PUMP, w/3 PIN .093 MOLEX		1	V2-SH-006
4	NUT, HEX, 10-24NC (BAG OF TEN)		3	14489
5-1	SOLENOID, DPST, 12V		1	26447
5-2	SOLENOID, DPST, 24V		1	26450
6-1A	BUS BAR, MOTOR, SOLENOID (SP SOLENOID) (S.N's. 35000-52455)	1	V2-ES-030	
6-1B	BUS BAR, MOTOR, SOLENOID (SP SOLENOID) (S.N's. 52456-95999)	1	V2-ES-034	
6-1C	BUS BAR (SN 96000-)		1	10807
6-2	BUS BAR, MOTOR, SOLENOID (DP SOLENOID) (32000-95999)		1	UV-ES-040
6-3	BUS BAR (SN 96000-)		1	13087
7-1	MOTOR ASSY, 12V, 3", MONARCH PUMP		1	V2-SH-115
7-2	MOTOR ASSY, 24V, 3", MONARCH PUMP		1	V2-ES-116
7-3	MOTOR ASSY 12V ISKRA (SN 96000-)		1	14332
	MOTOR ASSY, W/BACKET, 12V ISKRA	1	14345	
7-4	MOTOR ASSY 24V ISKRA (SN 96000-)		1	14333
	MOTOR ASSY, W/BACKET, 24V ISKRA	1	14346	
8	FITTING, "L" 1/4" SAE O-RING BOSS, 1/4" JIC		1	V2-SH-011
9	DECELERATION VALVE, PARTS KIT		1	V2-SH-279
10	PLUG, 3/4-16 CAVITY, w/O-RING		2	V2-SH-001
11	SWITCH, HYDRAULIC PRESSURE		1	15207
12	PLUG WITH O-RING		1	V2-SH-182
13-1	HYD SPOOL VALVE ASSY., 12V DELTROL		1	V2-SH-175
13-2	HYD SPOOL VALVE ASSY., 24V DELTROL		1	V2-SH-176
13-3	HYD SPOOL VALVE ASSY., 24V DELTROL, 6.25"		1	17553
14-1	SPOOL VALVE KIT, 12V, ADA APPLICATIONS		1	01176
14-2	SPOOL VALVE KIT, 24V, ADA APPLICATIONS		1	01177
14-3	KIT, SPOOL, VALVE, 24V ADA APPLICATIONS		1	17732
15	RESERVOIR, RICON POWER UNIT, PLASTIC		1	V2-SH-108
16	PLUG, RESERVOIR, BREATHER FILLER		1	V2-SH-106
17	CLAMP HOSE		1	V2-SH-109
18-1	HYD. POPPET VALVE ASSY., 12V DELTROL		1	V2-SH-105
18-2	HYD. POPPET VALVE ASSY., 24V DELTROL		1	V2-SH-136
19	SEAL KIT, MANUAL BACK-UP PUMP		1	V2-SH-220
20	BACK-UP PUMP, MANUAL w/out HANDLE		1	V2-SH-210
21	BRACKET, TENSION LINK, MONARCH PUMP		1	V2-SH-149
22-1	CABLE CLAMP, 3/8", NYLON		1	25516
22-2	CABLE CLAMP, 3/16", NYLON		1	28-02-353
22-3	CABLE CLAMP, 5/16", NYLON		1	28-02-351
22-4	CABLE CLAMP, ½", NYLON		1	25533
23	CIRCUIT BREAKER, 8 AMP, WITH DECAL		1	V2-SH-005

REF.	DESCRIPTION		QTY.	PART NO.
24-1 *	CIRCUIT BREAKER, 30 AMP		1	26510
24-2 *	LIGHT-LIFT ARMED INDICATOR, 12V (S.N's. 61878-)	1	UL-ES-034	
24-3	LIGHT-LIFT ARMED INDICATOR, 24V (S.N.'s. 61878-)	1	V2-ES-016	
25-1	BRACKET, SOLENOID MOUNTING (32000-95999)	1	V2-SH-127	
25-2	BRACKET, SOLENOID ISKRA (SN 96000-)	1	10507	
26	HANDLE, MANUAL BACK-UP PUMP		1	V2-SH-111
27	JUMPER, DPDT SOLENOID		1	ELJ00121
28	JUMPER, DPDT SOLENOID w/ISOLATED GROUND	1	ELJ00122	
29	JUMPER, DPDT SOLENOID		1	ELJ02055
30	JUMPER, DPDT SOLENOID		1	ELJ03061
31	DIODE BLOCK ASSEMBLY		1	08232
32	PIN & RETAINING RING-BACKUP PUMP	2	V2-SH-017	
33-1	KIT, PUMP MOTOR BRUSH SET (SN 32000-95999)	1	V2-SH-115B	
33-2	KIT, BRUSH SET (SN 96000-)	1	14334	
34	DECAL, 8 AMP CIRCUIT BREAKER	1	26290	
35 *	LIFT ARMED INDICATOR LIGHT ADAPTER (S.N's.61878-)	1	UL-E5-034	
36 *	WASHER 7/16 FLAT (S.N's 61878-)(BAG OF TEN)	1	19716	
37	BRACKET, TENSION LINK, MONARCH PUMP	1	V2-SH-149	
38-1	JUMPER, SWITCH, PRESSURE, RH PUMP	1	15860	
38-2	JUMPER, SWITCH, PRESSURE, LH PUMP	1	15861	
39	DECAL, OIL LEVEL WARNING	1	32-10-154	
40	SCREW, SHC, 1/4-20X2		1	28490
41	WASHER, FLAT, .22x.50x.049	1	28271	
42	VALVE ASSY, POPPET, 12V		1	V2-SH-177



MONARCH HYDRAULIC POWER UNIT #2  
 SERIAL NO's. 32000-34999

DATE: 04/26/95
DWG. SSX00002
REV. 002

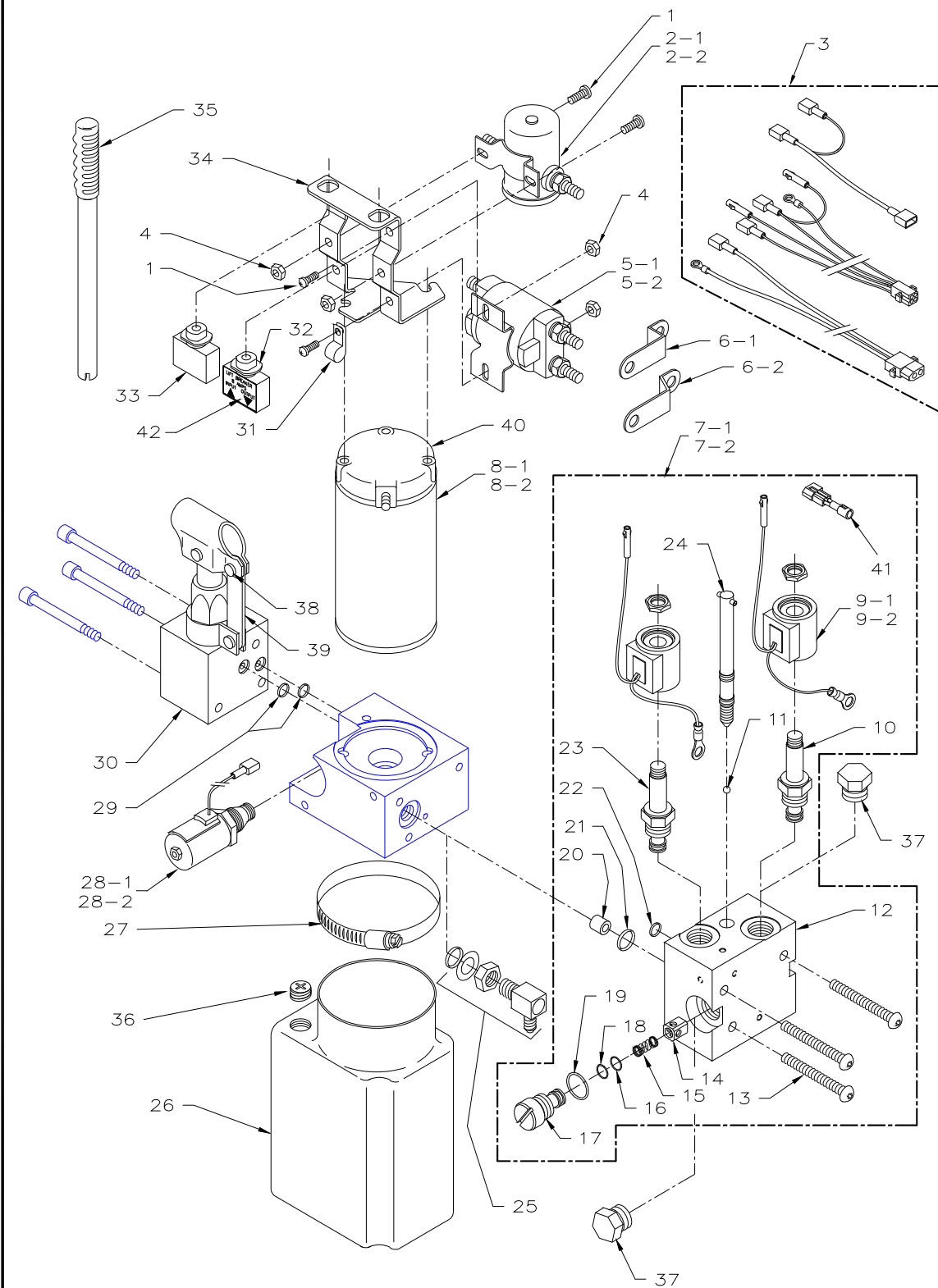


FIGURE 4-2: MONARCH HYDRAULIC POWER UNIT #2

32DSS02.A



**MONARCH HYDRAULIC POWER UNIT #2**  
**S-SERIES (ALL MODELS) WHEELCHAIR LIFT**  
**SERIAL NO's. 32000 - 34999**

REF	DESCRIPTION	QTY	PART NO.
1	MS,10-24 X 1/2 PHIL PAN, SELF THREAD	3	28111T
2-1	SOLENOID, SPST, 12V	1	26444
2-2	SOLENOID, SPST, 24V	1	26449
3	HARNESS, PUMP, COMMON TO S-SERIES/UV, 12V & 24V	1	V2-ES-100
4	NUT, HEX, 10-24 (Bag of Ten)	3	14489
5-1	SOLENOID, DPST, 12V	1	26447
5-2	SOLENOID, DPST, 24V	1	26450
6-1	MOTOR, SOLENOID BUS BAR (SP SOLENOID)	1	V2-ES-030
6-2	MOTOR, SOLENOID BUS BAR (DP SOLENOID)	1	UV-ES-040
7-1	KIT, HYD. COMBINATION BLOCK, S-SERIES 12V	1	01149
7-2	KIT, HYD. COMBINATION BLOCK, S-SERIES 24V	1	01148
8-1	ASSY, MOTOR, 12V, 3", MONARCH PUMP	1	V2-SH-115
8-2	ASSY, MOTOR, 24V, 3", MONARCH PUMP	1	V2-SH-116
9-1	ASSY, 12V VALVE COIL, HYD. FORCE	2	V2-SH-143A
9-2	ASSY, 24V VALVE COIL, HYD. FORCE	2	V2-SH-142A
10	VALVE, 2-WAY, NC SPOOL HYD. FORCE	1	V2-SH-145
11	STEEL BALL BEARING, 1/4" DIA.	1	V2-SH-144
12	BLOCK, COMBINATION, POSI-LOC/SLO-BLOC	1	V2-SH-157
13	SOCKET BUTTON, 5/16-18 X 2 1/4", BLACK	3	282294
14	POPPET, MOVABLE ORIFICE	1	V2-SH-152
15	SPRING, COMP., .31 X .75, 0.02 WIRE	1	25453
16	O-RING, NITRILE, .36410 ID, .070 WIDTH	1	24012
17	CARTRIDGE, FIXED ORIFICE	1	V2-SH-150
18	BACKER, NITRILE, .390 ID, .053 WIDTH	1	24012B
19	O-RING, NITRILE, .644 ID, .087 WIDTH	1	24908
20	BUSHING, .28 ID, .47 OD X .44	1	V2-SH-153
21	O-RING, NITRILE, .609 ID, .139 WIDTH	1	24208
22	O-RING, NITRILE, .426 ID, .070 WIDTH	1	24013
23	VALVE, 2-WAY NC POPPET, HYDRA-FORCE	1	V2-SH-138
24	ASSY, MANUAL RELEASE STEM	1	V2-SH-159
25	FITTING, "L" 1/4 JIC-9/16 STRAIGHT THREAD	1	V2-SH-14
26	RESERVOIR, RICON POWER UNIT, PLASTIC	1	V2-SH-108
27	CLAMP HOSE	1	V2-SH-109
28-1	ASSY, HYD. POPPET VALVE, 12V DELTROL	1	V2-SH-105
28-2	ASSY, HYD. POPPET VALVE, 24V DELTROL	1	V2-SH-136
29	O-RING, NITRILE, .301 ID, .070 WIDTH	2	24011
30	BACK-UP PUMP, MANUAL w/out HANDLE	1	V2-SH-110
31	CABLE CLAMP, 3/8"	1	25516
32	CIRCUIT BREAKER, 8 AMP, WITH DECAL	1	V2-SH-005
33	CIRCUIT BREAKER, 30 AMP	1	26510
34	BRACKET, SOLENOID MOUNTING	1	V2-SH-127
35	HANDLE, MANUAL BACK-UP PUMP	1	V2-SH-111
36	PLUG, RESERVOIR, BREATHER FILLER	1	V2-SH-106
37	PLUG, 3/4 CAVITY, W/THIN O-RING	2	V2-SH-132
38	PIN & RETAINING RING-BACKUP PUMP	2	V2-SH-017

39	BRACKET, TENSION LINK, MONARCH PUMP	1	V2-SH-149	
40	KIT, PUMP MOTOR BRUSH SET	1	V2-SH-115B	
41	DIODE BLOCK ASSEMBLY		1	08232
42	DECAL, 8 AMP CIRCUIT BREAKER	1	26290	

DATE: 05/20/99
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S-SERIES HYDRAULIC SYSTEM  
 SERIAL NO's. 32000 - PRESENT

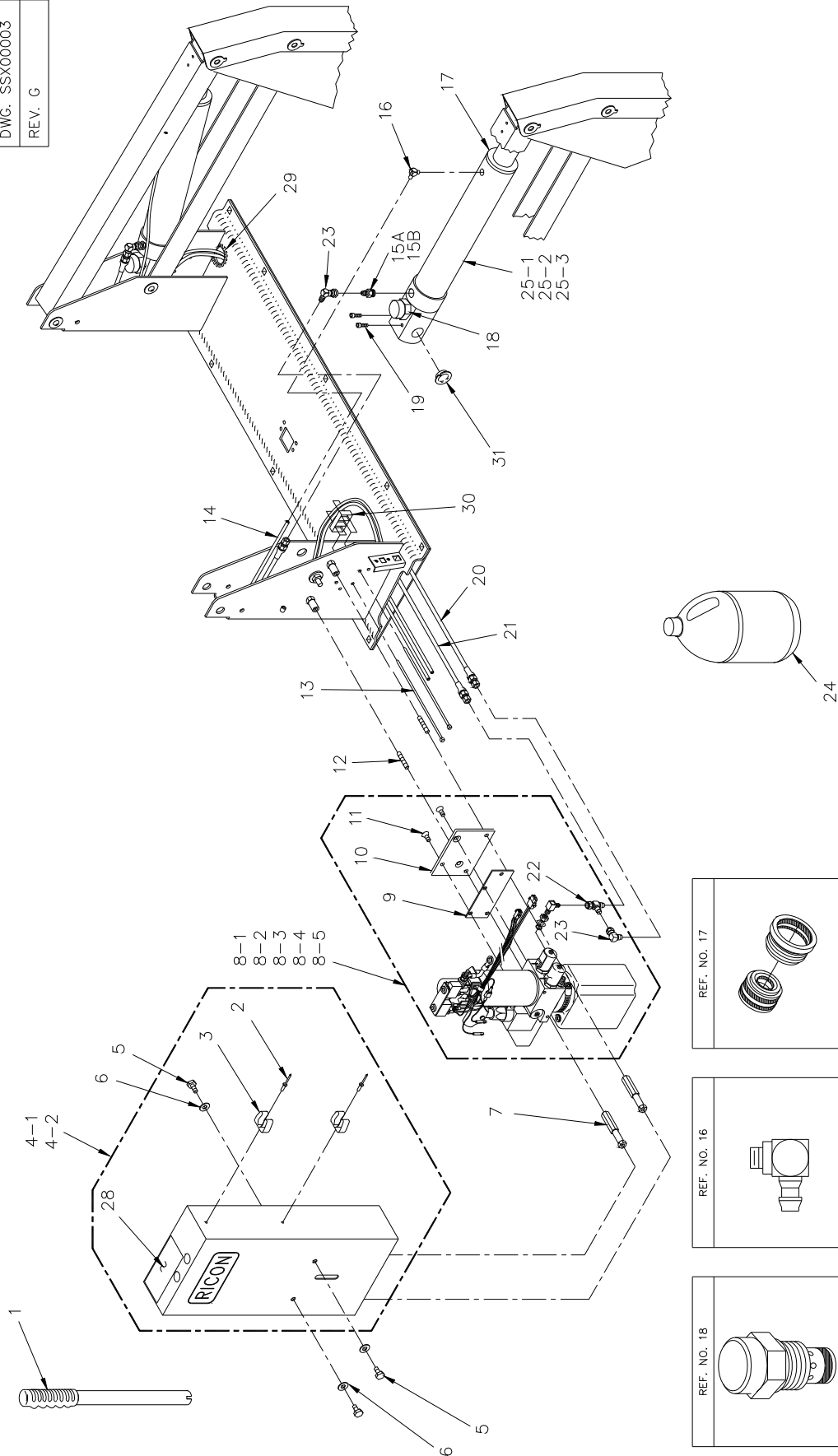


FIGURE 4-3: S-SERIES HYDRAULIC SYSTEM

HYDRAULIC SYSTEM  
S-SERIES (ALL MODELS) WHEELCHAIR LIFT  
SERIAL NO's. 32000 - PRESENT

REF	DESCRIPTION	QTY	PART NO.
1	HANDLE, MANUAL BACKUP PUMP	1	V2-SH-111
2	RIVET- 3/16 X 1/2"-SD64BS BLIND, STEEL, DOME	2	14-30-408
3	CLIP, BACKUP PUMP HANDLE, RETAINING	2	25543
4	COVER- PUMP R.H. MECH. ASSY. S-SERIES (S.N's. 31000-31999 & 35000-)	1	V2-CV-121
4-1	COVER- PUMP L.H. MECH. ASSY. S-SERIES (S.N's. 31000-31999 & 35000-)	1	V2-CV-220
4-2	COVER, PUMP, S-SERIES (S.N's. 32000-34999)	1	V2-CV-031
5	BOLT, HEX 5/16-18 X 0.625 (Bag of Ten)	3	14495
6	WASHER, 5/16" FLAT, SAE	3	28277
7	HEX ROD, PUMP STANDOFF	2	V2-CV-015
8	PUMP, NO TOP, UV RES, 2KPSI	1	PM212002007
8	PUMP, W/INTERLK&ANTI-DRIFT, 12V	1	PM212090110
8-1	S-SERIES PUMP, 12V w/COMMON BRACKET (SERIAL NO'S 31000 - 31999 & 35000 - )	1	PM212090100
8-2	S-SERIES PUMP, 24V w/COMMON BRACKET (SERIAL NO'S 31000 - 31999 & 35000 - )	1	PM224110100
8-3	S-SERIES PUMP, 12V w/COMMON BRACKET (SERIAL NO'S 32000 - 34999)	1	PM212090100
8-4	S-SERIES PUMP, 24V w/COMMON BRACKET (SERIAL NO'S 32000 - 34999)	1	PM224110100
9	PLATE, PUMP COVER MOUNT	1	V2-AC-71
10	PLATE, PUMP MOUNTING	1	V2-AC-70
11	SOCKET, FLAT, 5/16-18 X 3/4" (Bag of Ten)	2	14499
12	STUD, 5/16-18 X 1.75" (Bag of Ten)	2	14500
13	CABLE TIE, STD X 1.5 DIA, BLACK, SPECIAL	2	255201
14	TUBE, BLK POLYURETHANE, 6MM/4MM (PER FOOT)	9ft	22-02-230
15A	ADAPTOR, STRT 1/4 NPT MALE (S.N.'s. 32000-63999)	2	V2-SH-84
15B	ADAPTOR - # 6 SAE MALE - # 4 JIC MALE (S.N's. 64000-)	2	26591
16	FITTING, "L", MALE 10-32 - 1/4 BARB	2	V2-SH-16
17	KIT, CYLINDER REPAIR, S-SERIES GLAND & NUT	2	V2-SH-56
18	FLOW CONTROL, PRESSURE COMPENSATED, FIXED RATE	2	V2-SH-70
19	SOCKET CAP, 1/4 - 20 X 1 (Bag of Ten)	4	14491
20	HOSE ASSY., 61" X 1/4 JIC X 1/4 JIC	1	V2-SH-009
20-1	HOSE ASSY., 64" X 1/4 JIC X 1/4 JIC	1	16601
21	HOSE ASSY., 25" X 1/4 JIC X 1/4 JIC	1	V2-SH-008
22	FITTING, RUN TEE, 1/4 JIC M-M-F	1	V2-SH-012
23	FITTING, "L", 1/4 JIC M-F SWIVEL	3	VS-SH-06
24	OIL, AIRCRAFT HYDRAULIC, TEXACO #15, (1 GALLON) MEETS MIL SPEC MIL-H-5606E	1 GAL	20-16-051
25-1	CYLINDER ASSY., S-1200	2	VS-SH-105
25-2	CYLINDER ASSY., S-2000	2	VT-SH-105
25-3	CYLINDER ASSY., S-5000	2	V5-SH-105
28	DECAL, MANUAL OPERATION (TOP, w/CB)	1	26214
29	GROMMET, CATERPILLAR, 3/16	8.5in	26647
30	SPACER, CABLE OR HOSE, PANDUIT	2	25557
31	BUSHING, 12FDU06, 3/4"D X 3/8	4	25381

S-SERIES ELECTRICAL SYSTEM  
 SERIAL No's. 32000 - PRESENT

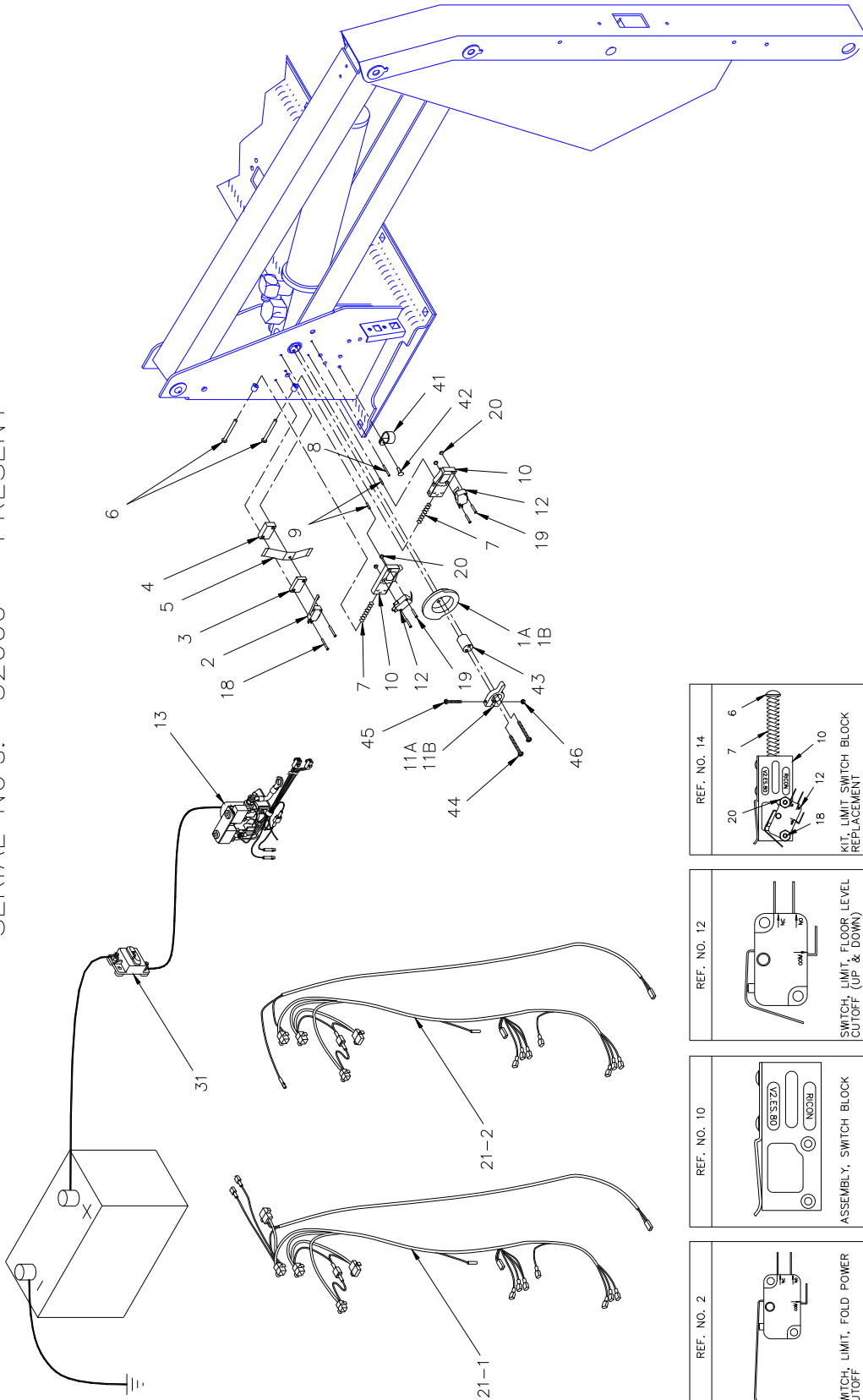


FIGURE 4-4: S-SERIES ELECTRICAL SYSTEM

**ELECTRICAL SYSTEM  
S-SERIES (ALL MODELS) WHEELCHAIR LIFT  
SERIAL NO's. 32000 - PRESENT**

REF	DESCRIPTION		QTY	PART NO.
1A	CAM, LIFT CONTROL w/SET SCREW (S.N's. 32000-62559)	1	V2-ES-99	
1B	CAM, LIFT CONTROL (S.N's. 62560-)		1	V2-AC-107
2	SWITCH, LIMIT, FOLD POWER CUTOFF		1	2-ES-111
3	BLOCK, FOLD CUTOFF SWITCH OFFSET, 1/4" THICK		1	V2-ES-78
4	BLOCK, FOLD CUTOFF SWITCH OFFSET, 3/8" THICK		1	V2-ES-79
5	SPRING, RETAINING, UPPER/LOWER SWITCH BLOCK		1	V2-ES-95
6	SCREW, PHILLIPS ROUND HEAD, 10-24 X 2" (ADJUSTING) (Bag of Ten)		2	14497
7	SPRING, COMPRESSION, .30 OD X 2.06		2	V2-ES-93
8	ROLL PIN, .94 X 1 (TIMING PIN) (Bag of Ten)		1	14498
9	ROLL PIN, .94 X .50 (SWITCH BLOCK MOUNT) (Bag of Ten)		2	14496
10	SWITCH BLOCK, ASSY., (UPPER & LOWER)		2	V2-ES-82
11A	ADJUSTING COLLAR, ASSY., FOLD POWER CUTOFF (S.N's. 32000-62559)		1	V2-BU-89
11B	ACTUATOR, FOLD CUTOFF (S.N's. 62560-)		1	V2-AC-089
12	SWITCH, LIMIT, FLOOR LEVEL POWER CUTOFF (UP & DOWN)		2	V2-ES-110
13	COMPONENTS, SOLENOID BRACKET (FOR REPLACEMENT PARTS, REFER TO HYDRAULIC POWER UNIT PARTS LIST DRAWING)	—	—	
14	KIT, LIMIT SWITCH BLOCK REPLACEMENT		2	V2-ES-61
18	SCREW, MACHINE, 4-40 X 1.25 PHIL PAN (Bag of Ten)		2	15908
19	SCREW, MACHINE, 4-40 X .75 PHIL PAN (Bag of Ten)		4	15909
20	NUT, HEX, 4-40 (Bag of Ten)		4	15903
21-1	HARNESS, MAIN ELECTRICAL, S-SERIES w/INTERLOCK		1	V2-ES-051
21-2	HARNESS, MAIN ELECTRICAL, S-SERIES w/out INTERLOCK		1	V2-ES-050
21-3	HARNESS, MAIN ELECTRICAL, 34"WIDE, w/out INTERLOCK		1	16628
31	CIRCUIT BREAKER, MAIN		1	01010
39	SPRING, EXTENSION (COVERING THE CORD ON V2-ES-25C)		2	25448
40	PLATE, PENDANT SWITCH GUARD, ASSY.		1	V2-ES-035
41	CLAMP, CABLE 11/16 (S.N's. 53168-)		1	255161
42	MS, 10-24 X 1/2 PHIL PAN		1	28111
43	PIN EXTENSION FOLD CUTOFF (S.N's. 62560-) (Bag of Ten)		1	15914
44	MS 10-24 X 1 3/4 PHIL PAN (S.N's. 62560-) (Bag of Ten)		2	15915
45	MS 8-32 X 1 1/4 PHIL PAN (S.N's. 62560-) (Bag of Ten)		1	15906
46	NUT-HEX 8-32 NYLON INSERT (S.N's. 62560-) (Bag of Ten)	1	15907	
*	COVER, ELEC SYSTEM		1	V2-CV-110

\* Used for left hand installation only.

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DWG. 13538
REV. A

S-SERIES PENDANT  
 SERIAL No's. 96000 - PRESENT

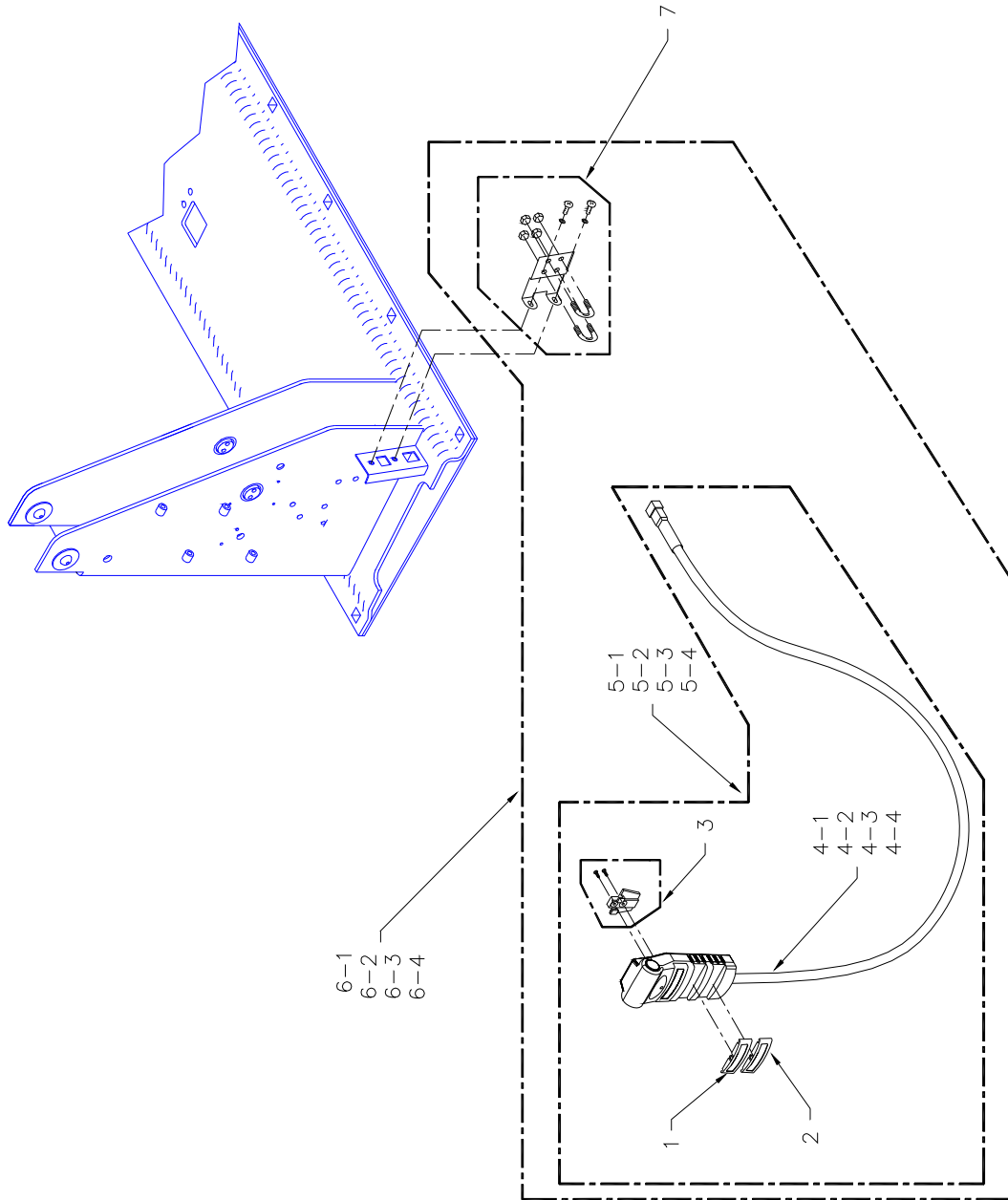


FIGURE 4-5: S-SERIES PENDANT

**S-SERIES PENDANT  
SERIAL NO'S. 96000-PRESENT**

REF.	DESCRIPTION	QTY.	PART NO.
1	SPARE PARTS, STOW/DEPLOY BUTTON S-SERIES	1	14731
2	SPARE PARTS, UP/DOWN BUTTON S-SERIES	1	14732
3	SPARE PARTS, V BRACKET, PLASTIC,	1	14733
5-1	PENDANT STANDARD	1	12848
5-2	PENDANT, STANDARD CONFIG, COIL CORD	1	14710
5-3	PENDANT, STANDARD CONFIG, 10 FT CORD	1	14711
5-4	PENDANT, STANDARD CONFIG, STEEL CORD	1	14712
6-1	KIT PENDANT, S-SERIES, 7 FT	1	14727
6-2	KIT PENDANT, S-SERIES, COIL	1	14728
6-3	KIT PENDANT, S-SERIES, 10 FT	1	14729
6-4	KIT PENDANT, S-SERIES, STEEL	1	14730
7	KIT, CTL HRNS STRAIN RELIEF ; S-SERIES	1	01007



DATE: 02/04/99
DWG. SSX00005
REV. 012

S-SERIES SOLID PLATFORM  
 SERIAL NO's. 32000 - PRESENT

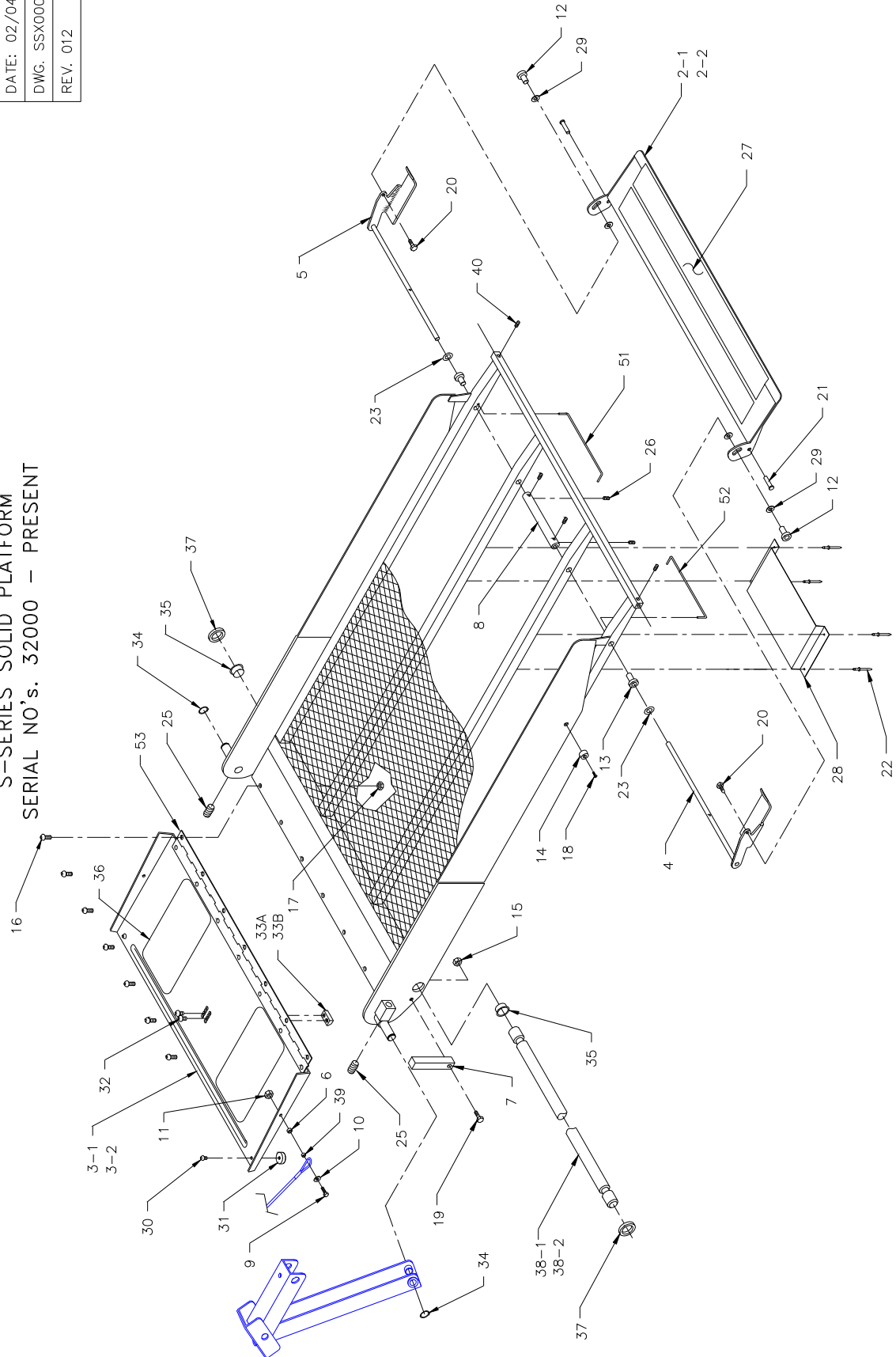


FIGURE 4-6: S-SERIES SOLID PLATFORM

32DSS02.A

SOLID PLATFORM  
S-SERIES (ALL MODELS) WHEELCHAIR LIFT  
**SERIAL NO's. 32000 - PRESENT**

REF.	DESCRIPTION	QTY.	PART NO.
1-1 *	PLATFORM, 30 X 44 SOLID, FINAL ASSY.	1	V2-PF-384
1-2 *	PLATFORM, 30 X 48 SOLID, FINAL ASSY.	1	V2-PF-385
1-3 *	PLATFORM, 30 X 51 SOLID, FINAL ASSY.	1	V2-PF-386
1-4 *	PLATFORM, 32 X 44 SOLID, FINAL ASSY.	1	V2-PF-387
1-5 *	PLATFORM, 32 X 48 SOLID, FINAL ASSY.	1	V2-PF-388
1-6 *	PLATFORM, 32 X 51 SOLID, FINAL ASSY.	1	V2-PF-389
1-7*	PLATFORM, 34 X 54 SOLID, FINAL ASSY.	1	16622
2-1	ROLLSTOP-6", MECH. ASSY., 30" WIDE PLATF	1	V2-PF-291
2-2	ROLLSTOP-6", MECH. ASSY., 32" WIDE PLATF	1	V2-PF-292
2-3	ROLLSTOP, ASSY, 6" X 34" WIDE, OUTBOARD	1	16626
3-1	INNER ROLLSTOP, 30"	1	V2-PF-141
3-2	INNER ROLLSTOP, 32"	1	V2-PF-142
3-3	ROLLSTOP, ASSY, 34" WIDE, INNER	1	16625
4	ROLLSTOP ACTUATOR, WELD ASSY. L.H.	1	V2-FL-95
5	ROLLSTOP ACTUATOR WELD ASSY. R.H.	1	V2-FL-94
6	SPACER, BRIDGE PLATE SPRING	2	UV-PF-839
7	STRIKER, PLATFORM ADJUSTING SCREW	1	VT-AH-42
8	COLLAR, ROLLSTOP ACTUATOR, CONNECTOR	1	VT-BU-41
8-1	COLLAR, ROLLSTOP ACTUATOR, 34" WIDE PLATFORM	1	16627
9	BOLT, HEX 1/4-20 X 7/8"	2	28180
10	WASHER 1/4 FLAT SAE	2	28273
11	NUT-HEX 1/4-20 NYLON INSERT (Bag of Ten)	2	15919
12	"T" NUT, STAINLESS	2	14485
13	BUSHING-BRONZE 0.392 ID	2	V2-BU-195
14	BUMPER, UHMW PLASTIC, 75 D X .38 T	2	V2-AC-027
15	NUT, HEX, 5/16	2	14-08-505
16	SOCKET BUTTON, 5/16-18 X 3/4", SST	7	28820
17	NUT-HEX, 5/16 - 18 NYLON INSERT, SST	7	283145
18	SCREW, SOCKET HD. TEK PAN, 8 X 3/4" (Bag of Ten)	2	15911
19	HEX BOLT, 5/16" X 1	2	14-02-116
20	CAP SCREW, HEX HEAD, 1/4-20 X 1/2"	2	28165
21	PIN, OUTER BARRIER	2	V2-FL-93
22	IVET, 1/8 X 3/8", ALUMINUM (Bag of Ten)	4	14490
23	WASHER, 3/8" SAE	2	14-18-006
24	DECAL-NO STEP, LEXAN S-SERIES	1	26244
25	SCREW, SOCKET SET, 1/2-20 X 1-1/4" (BAG OF TEN)	2	19704
26	SET SCREW, 1/4-20 X 1/4", CUP POINT	4	28200
27	SAFETY TREAD, 28.75 X 2, YELLOW	2	25660
28	PLATE, ALUMINUM, 5 X 9-3/4"	1	VT-PF-54
29	WASHER, NYLON, .318 ID X .751 OD X .031	4	28567
30	SOCKET BUTTON 1/4-20 X 3/8 SST	2	28181
31	GUIDE 1.000 OD X 1/4-20 ID	2	UL-AC-034
32	SOCKET BUTTON, 5/16-18 X 1/2 SST	2	28815
33A <sup>(1)</sup>	CATCH, BASE LATCH, (S/N 32000-44719)	1	V2-AC-002
33B	CATCH, BASE LATCH, (44720-)	1	V2-AC-103

34	RETAINING RING 3/4"	2	14-31-075
35	BUSHING 16 FDU 08, 1" D X 1/2"	2	17901
36	MATting, NON-SLIP, 9.50 X 5.50 YELLOW	2	25657
37	SHIM-PVC SPACER	2	V2-BU-091
38-1	SHAFT, PLATFORM MAIN, 1" X 37.25"	1	VT-PI-43
38-2	SHAFT, PLATFORM MAIN, 1" X 39.25"	1	VT-PI-49
38-3	SHAFT, MAIN 1.00 X 40.5 L	1	16607
39	BUSHING, STEEL, .25ID X .32OD X .19L	2	V2-BU-003
40	SET SCREW, 1/2-20 X 1/4", CONE POINT	2	282001
51	SPRING, TORSION-S-SERIES, L.H.	1	V2-SP-021
52	SPRING, TORSION-S-SERIES, R.H.	1	V2-SP-022
53	HINGE, BRIDGEPLATE	1	V2-PF-057

(1) This part is obsolete, use kit #010999.

\* Fully assembled platform with all items shown except numbers 37 and 38

S-SERIES TRAVELING FRAME  
 SERIAL NO's. 32000 - PRESENT

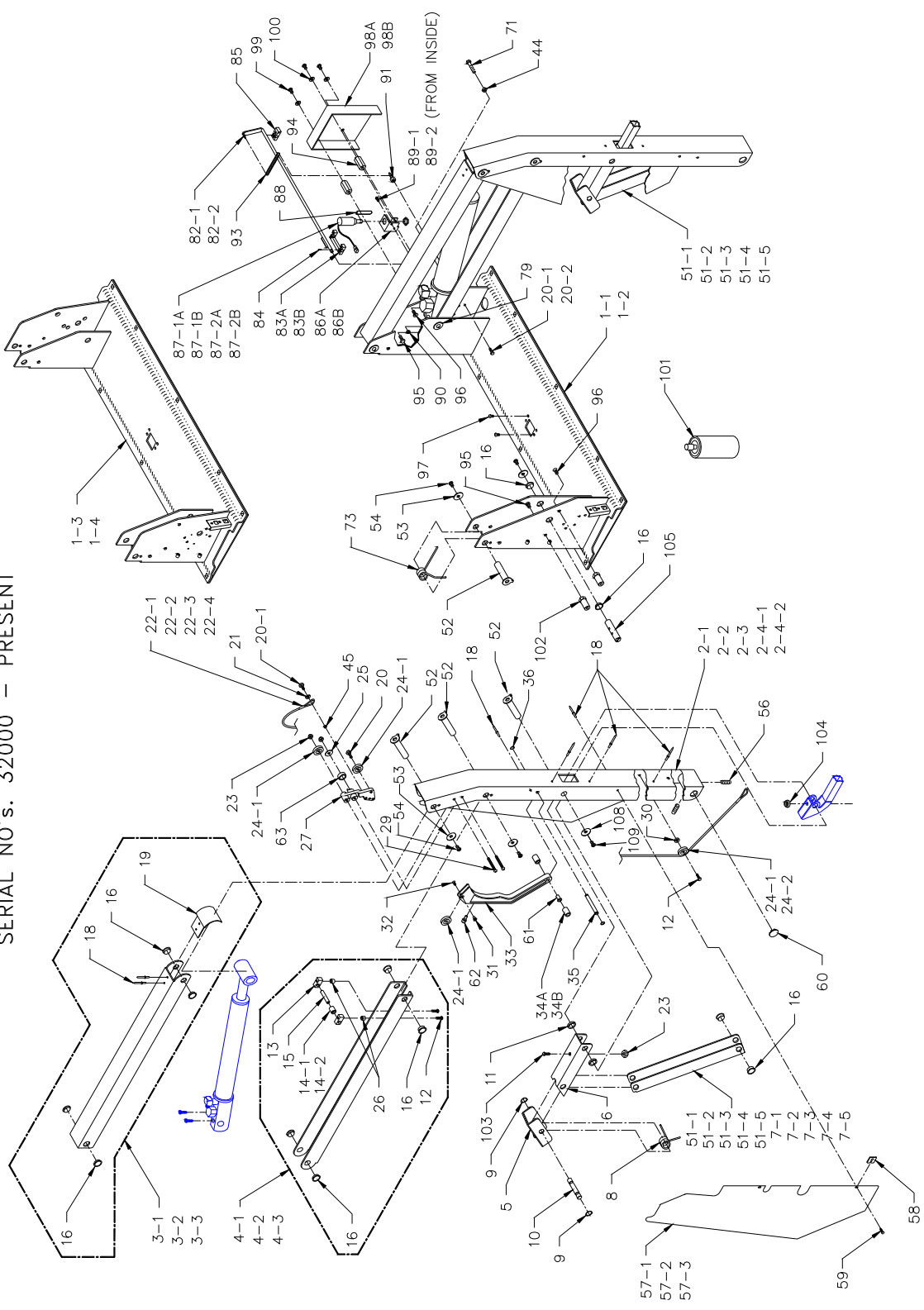


FIGURE 4-7: S-SERIES TRAVELING FRAME

**TRAVELING FRAME**  
**S-SERIES (ALL MODELS) WHEELCHAIR LIFT**  
**SERIAL NO's. 32000 - PRESENT**

REF.	DESCRIPTION		QTY.	PART NO.
1-1	30" WELD ASSY		1	V2-BA-044
1-2	32" WELD ASSY		1	V2-BA-045
1-3	30" WELD ASSY		1	V1-BA-044
1-4	26" WELD ASSY		1	V1-BA-045
2-1	VERTICAL ARM, S1200, WELD ASSY.		2	VS-AC-141
2-2 *	VERTICAL ARM, S2000, WELD ASSY.		2	VT-AC-141
2-3 *	VERTICAL ARM, S5000, WELD ASSY.		2	V5-AC-141
2-4-1	VERTICAL ARM, S1100, WELD ASSY (S.N's. 32000-62043)	2	V1-AC-141	
2-4-2	VERTICAL ARM, S1100, WELD ASSY (S.N's. 62044-)		2	V1-AC-142
3-1	TOP ARM, S1200, MECH. ASSY.		2	VS-AC-250
3-2 *	TOP ARM, S2000, MECH. ASSY.		2	VT-AC-250
3-3 *	TOP ARM, S5000, MECH. ASSY.		2	V5-AC-250
4-1	BOTTOM ARM, S1200, MECH. ASSY.		2	VS-AC-252
4-2 *	BOTTOM ARM, S2000, MECH. ASSY.		2	VT-AC-252
4-3 *	BOTTOM ARM, S5000, MECH. ASSY.		2	V5-AC-252
6	UPPER, LINK KNUCKLE LEVER, WELD ASSY.		2	VT-AC-070
7-1 **	LINK, VERTICAL KNUCKLE S1200, ASSY. W/LOAD SENSOR		1	VS-AC-058
7-2 **	LINK, VERTICAL KNUCKLE S2000, ASSY. W/LOAD SENSOR		1	VT-AC-058
7-3 **	LINK, VERTICAL KNUCKLE S5000, ASSY. W/LOAD SENSOR		1	V5-AC-058
7-4 **	LINK, VERTICAL KNUCKLE S1100, ASSY. W/LOAD SENSOR, SOLID	1	V1-AC-058	
7-5 **	LINK, VERTICAL KNUCKLE S1100, ASSY. W/LOAD SENSOR, SPLIT		1	V1-AC-158
8	SPRING, KNUCKLE ACTUATOR		2	VT-SP-42
9	RETAINING RING, 3/4"		4	14-31-075
10	PIN, SNAP RING, 0.75 OD X 2.145L		2	VT-P1-41
11	SPACER, KNUCKLE LINK		4	VT-BU-42
12	SOCKET BUTTON 1/4-20 X 1", SST(BAG OF TEN)		6	19715
13	RETAINER, CAM ROLLER		4	V2-AC-025
14-1	ROLLER, IRS CAM (S2000 & S5000)		2	V2-AC-124
14-2	ROLLER, IRS CAM (S1000 & S1200)		2	V2-AC-024
15	PIN, CAM ROLLER		2	V2-P1-094
16	BUSHING, 12FDU04 3/4 X 1/4"		24	25386
18	RIVET, 3/16 X 1/2" BLIND AL		10	15918
19	CAP, END, UPPER PARALLEL ARM		2	V2-AC-89
20-1	BOLT-HEX 1/4-20 X 3/4 GR5		4	28166
20-2	SOCKET FLAT, 1/4-20 X 1/2, S1100 (Bag of Ten)		1	15928
21	WASHER 1/4 FLAT SAE		2	28273
22-1	KIT, INSTL, IRS CBL ASSY REP; S1100		2	13661
22-2 *	KIT, INSTL, IRS CBL ASSY REP; S1200		2	16093
22-3 *	KIT, INTSL, IRS CBL ASSY REP; S2000		2	16094
22-4	KIT, INTSL, IRS CEL ASSY REP; S5000		2	16095
23	NUT-HEX 1/4 - 20 NYLON INSERT (Bag of Ten)		12	15919
24-1	GROOVED BEARING SR 342-161-DS		8	VS-AH-06
24-2	BEARING-1" OD GROOVED, 0.25 ID, S1100 (S.N's. 62044-)	2	25374	
25	WASHER 1/4 FENDER 1" OD		2	28275
26 *	STAND OFF, 0.375 LG, 1/4" ID X 1/2" OD		4	V2-AC-011
27	BLOCK, PULLEY MOUNT, IRS		2	V2-AC-112
29	SOCKET BUTTON HEAD, 1/4-20 X 2.25, SST		4	28810
30	BUSHING 5/8 OD X 3/16L		2	VS-AH-13

REF.	DESCRIPTION		QTY.	PART NO.
31	T-NUT, FLAT HEAD, 10-24 X .25 OD X .44L		2	V2-AC-015
32	MS 10-24 X 1/2 PHIL FLAT		2	28110
33	CAM ASSY, IRS ACTUATOR		2	V2-AC-190
34A	BUSHING, 0.675 OD X 0.407 ID X 0.97 (S.N's. 32000-46979) KIT #01224	4	V2-BU-079	
34B	SPACER, RUBBER, IRS CAM (S.N's. 46980-)		4	V2-BU-078
35	PIN, SNAP RING, .38 D X 3.09 L		2	VS-PI-09
36	RETAINING RING 3/8"		4	14-31-037
45	BUSHING, STEEL, 251D X .32OD X .19L		1	V2-BU-003
51-1	LINK, VERTICAL KNUCKLE S1200 WELD ASSY. W/O LOAD SENSOR	***	VS-AC-069	
51-2	LINK, VERTICAL KNUCKLE S2000 WELD ASSY. W/O LOAD SENSOR	***	VT-AC-069	
51-3	LINK, VERTICAL KNUCKLE S5000 WELD ASSY. W/O LOAD SENSOR	***	V5-AC-069	
51-4	LINK, VERTICAL KNUCKLE S1100 WELD ASSY. W/O LOAD SENSOR	***	V1-AC-069	
	SOLID PLATFORM			
51-5	LINK, VERTICAL KNUCKLE S1100 WELD ASSY. W/O LOAD SENSOR	***	V1-AC-071	
	SPLIT PLATFORM			
52 ****	PIN, LINK ARM, S-SERIES		6	14322
53	WASHER, FENDER 5/16, SST (Bag of Ten)		9	15921
54	SOCKET BUTTON, 5/16-18 X 1/2 SST (Bag of Ten)		9	14494
56	SCREW, SOCKET SET, 3/8-16 X 3/8" COP PT.		4	14-32-706
57-1	SHIELD, PINCH POINT, PVC PLASTIC S1200/S2000		4	V2-AC-057
57-2 *	SHIELD, PINCH POINT, PVC PLASTIC S5000		4	V5-AC-057
57-3	SHIELD, PINCH POINT, PVC PLASTIC S1100		4	V1-AC-057
58	NUT, SPRING, #10		8	14-50-402
59	SCREW, 10-24 X 1/2 PHIL PAN 8 28111			
60	PLUG, HOLE BLK. NYLON 1" LOW PROFILE (S.N's. 52246-)		2	25563
61	BEARING, NYLINER 3/8 ID 11/16 LONG (S.N's. 56000-)		2	25562
62	BUMPER, BUTTON IRS CAM (S.N's. 56000-)		2	25561
63	BUMPER, IRS CAM ANTI-RATTLE (S.N's. 56000-)		2	V2-BU-090
71	BOLT HEX 1/4-20 X 1-3/4 PL GR5		1	14-02-028
73	SPRING, UPPER PARALLEL ARM		2	V2-SP-97
79	PIN, CAM S-SERIES		1	V2-PI-097
80	SCREW, SET 5/16-18 X 1"		1	14-32-615
81	ADAPTOR, PIN CAM S-SERIES		1	V2-P1-096
82-1	WELD ASSY., LATCH RELEASE		1	V2-AC-006
82-2	WELD ASSY., LATCH RELEASE, S1100		1	V1-AC-006
82-3	LATCH RELEASE, WLDT, 34" PLATFORM		1	16620
83A	BLOCK, MOUNTING, BASE LATCH, (S.N's. 32000-44719) KIT #01099	2	V2-AC-001	
83B	BLOCK, CENTER MOUNTING, BASE LATCH (S.N's. 44720-)		1	V2-AC-102
84	DOWEL PIN, .094 DIA X .38 L		1	283485
85	BLOCK, MOUNTING, BASE LATCH		1	V2-AC-001
86A	BRACKET, PULL SOLENOID (S.N's. 32000-50516)		1	V2-AC-008
86B	BRACKET, PULL SOLENOID (S.N's. 50517-)		1	V2-AC-108
87-1A	SOLENOID, ASSY., S-SERIES, 12V (S.N's. 32000-50516) KIT #01238		1	V2-ES-027
87-1B	SOLENOID, ASSY., S-SERIES, 12V (S.N's. 50517-)		1	V2-ES-127
87-2A	SOLENOID, ASSY., S-SERIES, 24V (S.N's. 32000-50516) KIT #01239		1	V2-ES-028
87-2B	SOLENOID, ASSY., S-SERIES, 24V (S.N's. 50517-)		1	V2-ES-128
88	CLIP, SPRING, BASE LATCH		1	V2-AC-009
89-1	SCREW 10-24 X 1/2 PHIL PAN		2	28111
89-2	SOCKET FLAT 10-24 X 1/2 SST S1100		2	28137

REF.	DESCRIPTION	QTY.	PART NO.
90	NUT-HEX 10-24 NYLON INSERT	2	28305
91	PIN, SPRING MOUNTING	1	V2-P1-095
93	SPRING-DOOR HELPER .380D X 3.5"	1	V2-SP-093
94	BUSHING LATCH COVER	2	V2-BU-080
95	BOLT-HEX 5/16-18 X 3/4" (Bag of Ten)	2	15901
96	SOCKET, FLAT 5/16-18 X 3/4 (Bag of Ten)	2	14499
97	SOCKET BUTTON, 1/4-20 X 1/2" SST (Bag of Ten)	6	15902
98A	COVER, BASE LATCH (S.N's. 32000-50516)	1	V2-CV-122
98B	COVER, BASE LATCH (S.N's. 50517-)	1	V2-CV-123
99	BOLT HEX 5/16-18 X 0.625 (Bag of Ten)	3	14495
100	WASHER, 5/16" FLAT, SAE	3	28277
101	TOUCH-UP PAINT SPRAY, CHARCOAL	1	10-04-002
102	BUSHING, E-COVER MOUNT	2	V2-BU-081
103	BOLT-HEX 1/4-20 X 1 GR5 (Bag of Ten)	2	14493
104	GROMMET, 5/16" ID, 1/2 OD, 3/32"	2	26665
105	PIN-CONTROL CAM, S-SERIES (S.N's. 62560-)	1	V2-PI-091
106	RIVET-3/16-5/8 SD68BS BLIND, STEEL	4	14-30-410
107	WASHER, DOUBLED KEY HOLE	2	14719
108	WASHER, FENDER 5/16, SST (Bag of Ten)	2	15921
109	SOCKET, BUTTON, 5/16-18 X 1/2 SST (Bag of Ten)	2	14494

\* S2000/S5000 lifts are not available for personal use vans.

\*\* Item 7 is used on serial no.'s 103,999 and below.

\*\*\* Item 51 qty. is one ea. for serial no.'s 103,999 and below; qty. is two ea. for serial no.'s 104,000 and above.

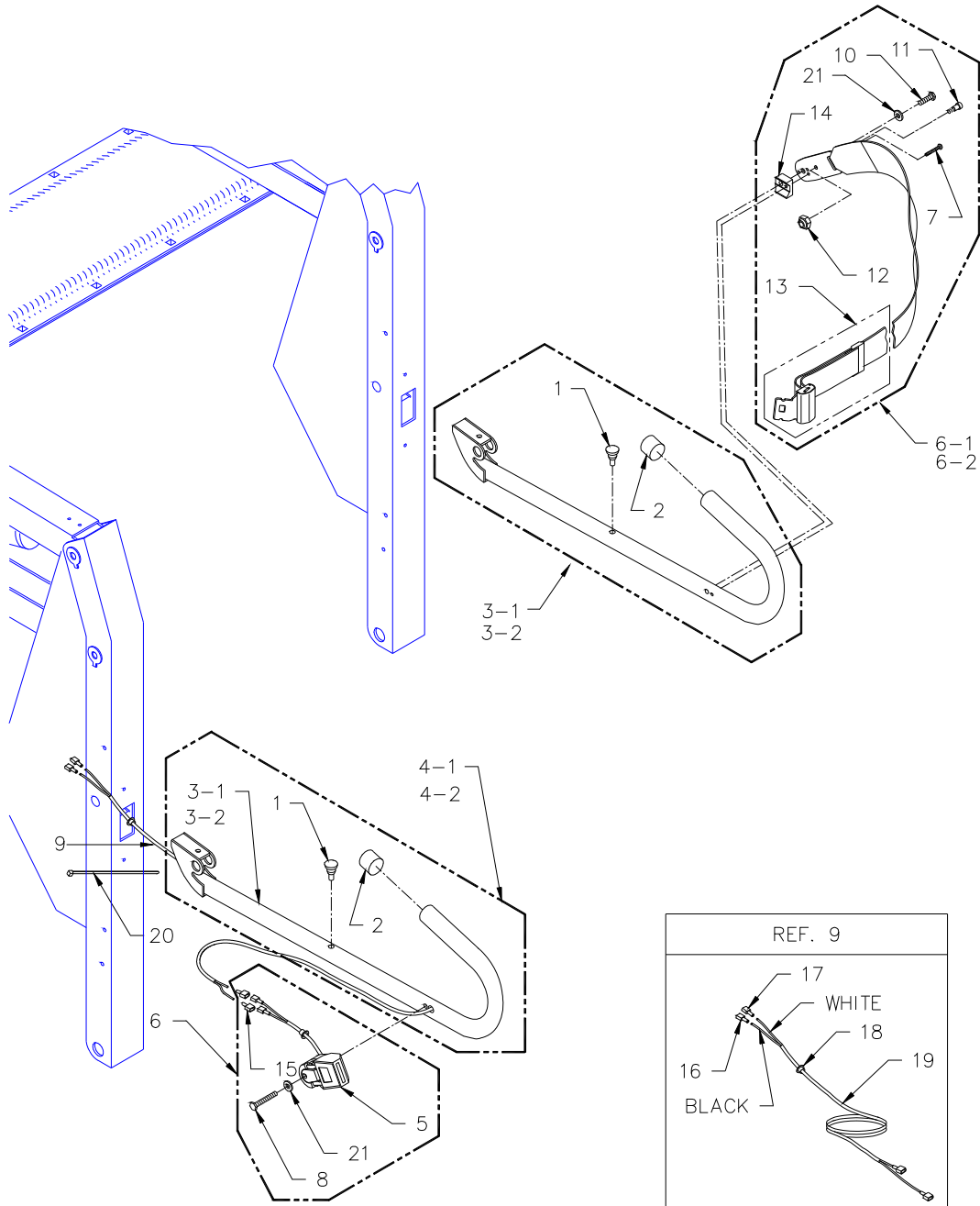
\*\*\*\* Use Pin Kit 16679 below serial number 106980





S-SERIES STANDEE HANDRAIL  
 STANDARD OPTION (SUPPL.)  
 SERIAL NO's. 32000 and HIGHER

DATE: 05/14/99
DWG. SSS00008
REV. G



**FIGURE 4-8: S-SERIES (ADA) TRANSIT STANDEE HANDRAIL  
 STANDARD OPTION (SUPPL.) SERIAL NO'S 32000 AND HIGHER**

**S-SERIES TRANSIT (ADA) STANDEE HANDRAIL  
STANDARD OPTION (SUPPL.)  
SERIAL NO's 32000 AND HIGHER**

REF	DESCRIPTION	QTY	PART NO.
1	BUMPER, RUBBER	2	V2-AC-86
2	CAP, ROUND, BLACK	2	25550
3-1	HANDRAIL-ASSY, S2000 ADA L.H.	2	VT-AC-84
3-2	HANDRAIL-ASSY, S5000 ADA L.H.	2	V5-AC-84
4-1	HANDRAIL-ASSY, S2000 ADA R.H.	2	VT-AC-85
4-2	HANDRAIL-ASSY, S5000 ADA R.H.	2	V5-AC-85
5	BUCKLE-ASSY W/SWITCH	1	12160
6-1	KIT, E-BELT INTERLOCK, 12VDC (S.N's. 61878-)	1	13054
6-2	KIT, RESTRAINT BELT, 34", ADA APPS, S-SERIES	1	16092
7	MS, 10-24 x 1-1/4, PHIL PAN	1	28115
8	BOLT-HEX 5/16-18 X 1.75 SST	2	282176
9*	KIT, HARNESS BELT RESTRAINT S-SERIES	1	01274
10	SCREW, HEX, 5/16 - 18 X 3/4 SST	1	282205
11	SCREW, 5/16 X 3/8 SSS	1	28373
12	NUT, ESN, 1/4 - 20 THIN, SST	1	283096
13	STRAP ASSY, ANGLED SLIDER	1	12150
14	SPACER, TRANSIT HANDRAIL	1	V2-AC-063
15	TERMINAL, SLP, M, 22 -18, FULINS	2	26352
16	TERMINAL, SLP, M, 16-14, FULINS	1	26368
17	TERMINAL, SLP, M, 16 - 14, FULINS	1	26369
18	BUSHING SNAP IN #315-711	1	28-26-077
19	HARNESS BELT RESTRAINT S-SERIES	1	VT-SB-73
20	CABLE TIE, STD X 1.5 DIA BLACK, SPECIAL	1	255201
21	WASHER FLT, .344 X .688 X .065	2	14-18-005

S-SERIES HANDRAIL  
 STANDARD OPTION (SUPPL.)  
 SERIAL NO's. 49648 and HIGHER

DATE: 05/14/99
DWG. SSS00008
REV. G

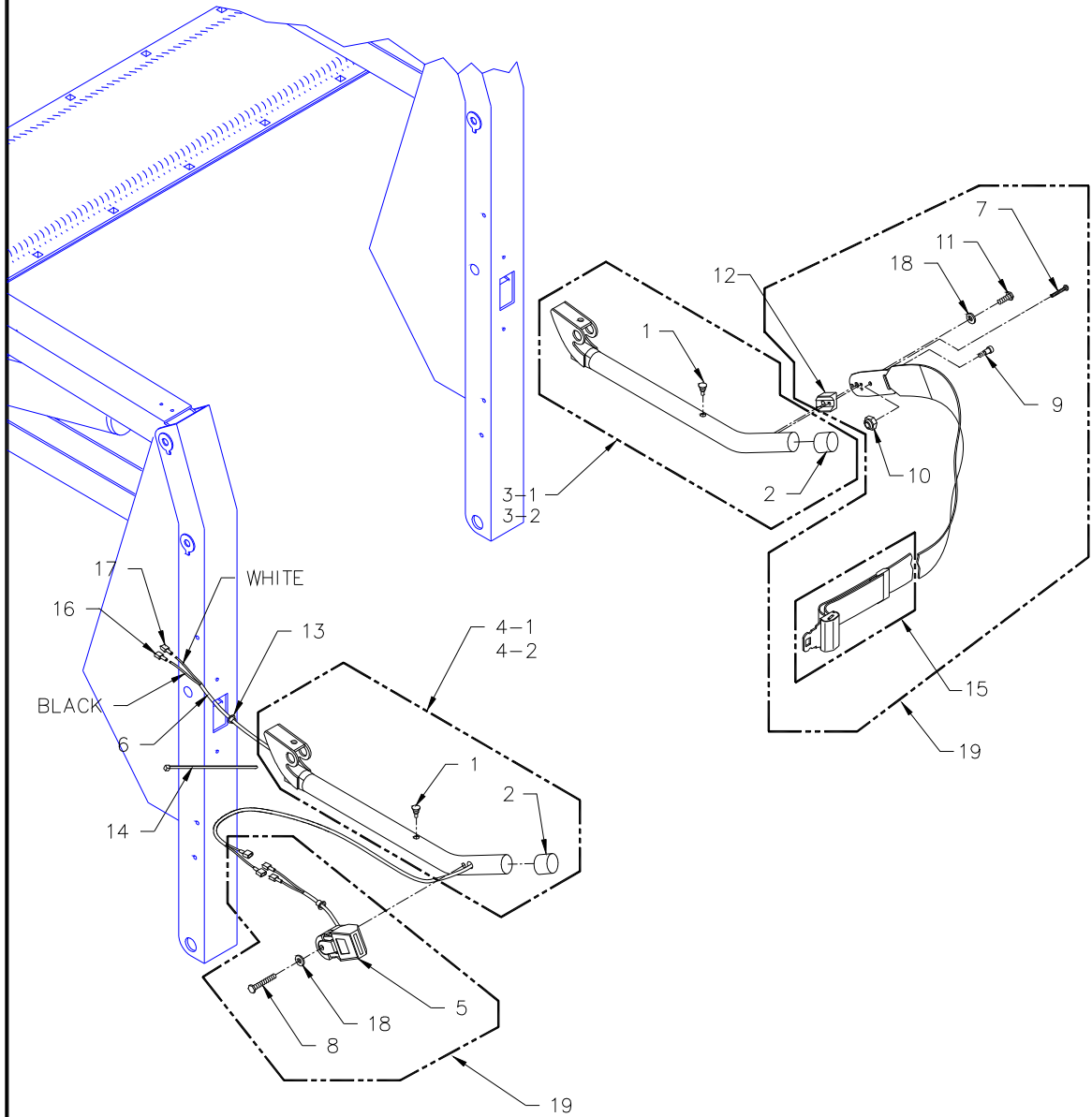


FIGURE 4-9: S-SERIES (ADA) TRANSIT HANDRAIL STANDARD OPTION (SUPPL.)  
 SERIAL NOS 49648 AND HIGHER

**S-SERIES HANDRAIL  
STANDARD OPTION (SUPPL.)  
SERIAL NO's 49648 AND HIGHER**

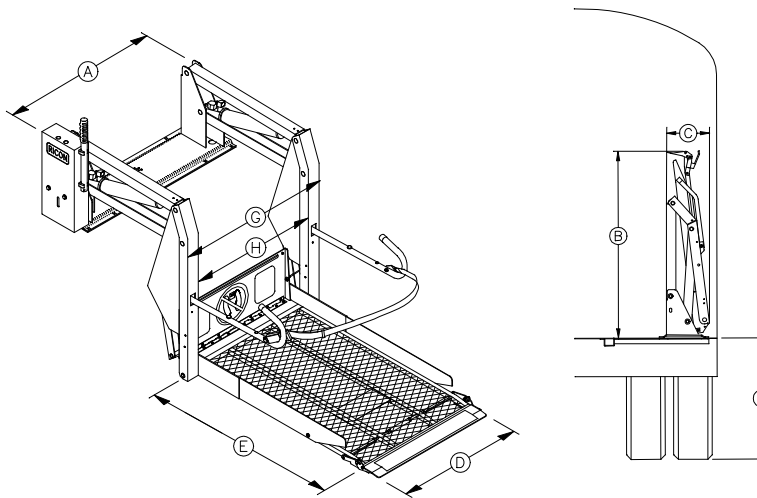
REF	DESCRIPTION	QTY	PART NO.
1	BUMPER, RUBBER	2	V2-AC-86
2	CAP, ROUND, BLACK	2	25550
3-1	HANDRAIL-ASSY, W/O SWITCH S2000 R.H.	1	VT-AC-281
3-2	HANDRAIL-ASSY, S5000 R.H.	1	V5-AC-281
4-1	HANDRAIL-ASSY, W/O SWITCH S2000 L.H.	1	VT-AC-282
4-2	HANDRAIL-ASSY, S5000 L.H.	1	V5-AC-282
5	BUCKLE-MECH. ASSY. W/SPACERS (S.N's. 61878-)	1	12160
6 *	HARNESS BELT RESTRAINT S-SERIES	1	VT-SB-73
7	SCREW, PHP, 10-24 X 1 1/4	1	28115
8	SCREW, HEX, 5/16-18 X 1 3/4 SST	2	282176
9	SCREW. 5/16, X 3/8 SSS	1	28373
10	NUT, ESN, 1/4 - 20 THIN, SST	1	283096
11	SCREW, HEX, 5/16 - 18 X 3/4 SST	1	282205
12	SPACER, TRANSIT HANDRAIL	1	V2-AC-063
13	BUSHING SNAP-IN #315-711	1	28-26-077
14	CABLE TIE, STD X 1.5 DIA BLACK, SPECIAL	1	255201
15	STRAP ASSY, STRAIGHT SLIDER	1	12151
16	TERMINAL SLP, M, 16 - 14, FULINS	1	26368
17	TERMINAL SLP, F, 16 - 14, FULINS	1	26369
18	WASHER FLT, .344 X .668 X .065	2	14-18-005
19	KIT, RESTRAINT BELT, TRANSIT	1	13055

\* Some crimping required to install these kits.

## APPENDIX 1

### LIFT SPECIFICATIONS

S-SERIES (ADA) TRANSIT USE WHEELCHAIR LIFT	
<b>Power</b> ..... electro-hydraulic Motor rating @ 12 volts DC ..... 65 amp avg/cycle, 1250 psi Motor rating @ 24 volts DC ..... 32.5 amp avg/cycle, 1250 psi Hydraulic cylinders ..... 2ea, 1.5", power-up/gravity-down	Rated load capacity..... 800 lbs Manual backup (up) ..... hand pump Manual backup (down).....pressure release valve Lift Weight.....approx 340 - 370 lbs



#### DIMENSIONS (inches)

	A	B	C	D	E	F	G	H
MODEL	Stationary frame width	Height (folded)	Installation depth (folded)	Usable platform width	Usable platform length	Floor-to-ground travel	Traveling frame width	Clear entry width
S2003-ADA	45	55.00	14	30	51	42	37.5	31
S2005-ADA	47	55.00	14	32	51	42	39.5	33
S2007-ADA	45	55.00	14	30	48	42	37.5	31
S2008-ADA	47	55.00	14	32	48	42	39.5	33
S2010-ADA	49	57.25	14	34	54	42	41.5	35
S5003-ADA	45	57.75	14	30	51	48	37.5	31
S5005-ADA	47	57.75	14	32	51	48	39.5	33
S5007-ADA	45	57.75	14	30	48	48	37.5	31
S5008-ADA	47	57.75	14	32	48	48	39.5	33
S5010-ADA	49	57.75	14	34	54	48	41.5	35