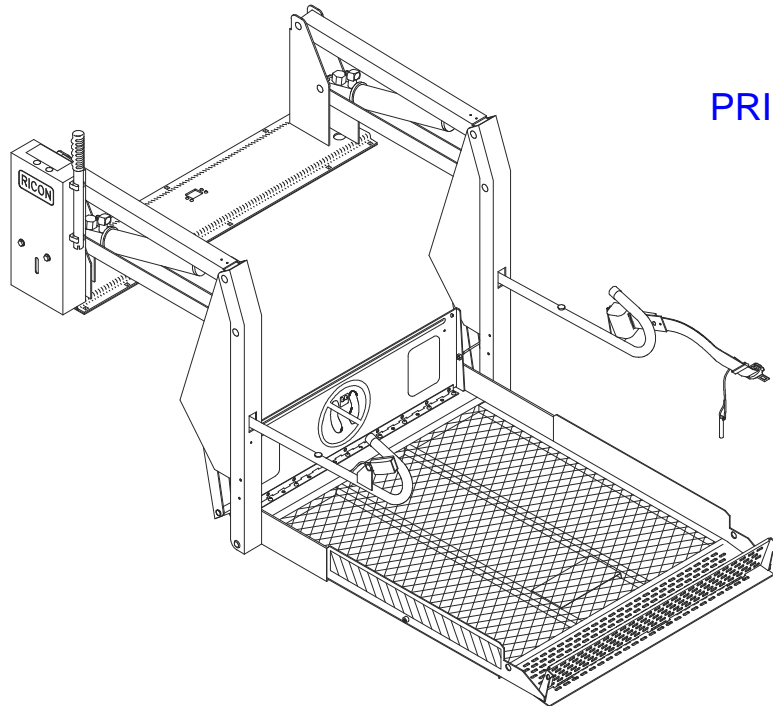




INNOVATION IN MOBILITY™

S-Series™
ADA Transit Use
Wheelchair and Standee Lift
with Manual Rollstop



PRINT

Service Manual

06/04/04

32DSSM02.C

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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
Other U.S. and foreign patents pending
Printed in the United States of America

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 Ricon authorized service technician in your area, call Ricon Product Support at 1-800-322-2884.

Customer Name: _____
Installing Dealer: _____
Date Installed: _____
Serial Number: _____

REVISION RECORD

| REV | PAGES | DESCRIPTION OF CHANGE | ECR / ECO |
|--------------------|------------|--|-----------|
| 32DSSM02. C | 2-9 | Updated fig 2-13 to show 2 nd solenoid configuration. | |
| | 4-3 | Updated Pump configuration to include 2 nd solenoid. | |
| | 4-16, 4-17 | Replaced items 8 & 26 (VT-BU-41 & 28200) with kit 28775 | FPR |
| | 4-17 | Replaced several single items with bags of ten. | N/A |
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| | 4-13 | Made changes to items 4, 4-1, 5-1, -2, -3, -4, 7. Added items 7-12 | " |
| | 4-15 | Made changes to items 4, 5, 19, 20, 23, 27, 29, 30, 33-1 & -2, 34. | " |
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| | 4-19 | Made changes to items 1-1, 1-2, 1-3, 2-1, 2-3, 9, 16, 20-1 & -2, 21, 22-1, -2, -3, -4, 24, 25, 28. | " |
| | 4-20 | Made changes to items 29, 32, 34, 36, 52-1, 56, 58, 59, 62, 80-82-2, 83-2, 85, 86-1 & -2, 87-1, 87-3, 89-1, 89-2, 90, 100, 104, 106. | " |
| | 4-21 | Made change to item 1. | " |
| | 4-23 | Made changes to items 1, 2, 5, 8, 10, 13, 14, 16. Deleted items 11 & 15 | " |
| END OF LIST | | | |

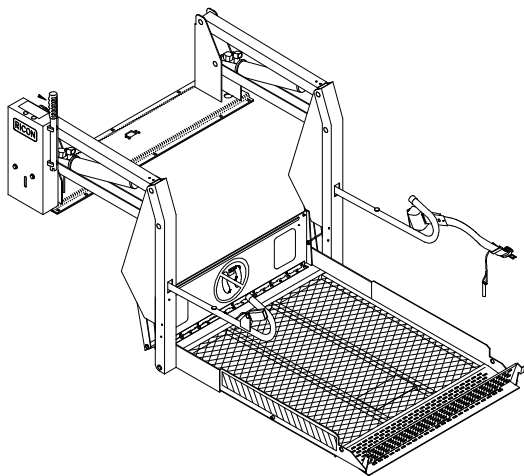
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I. S-SERIES ADA TRANSIT USE INTRODUCTION

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



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

This manual contains installation instructions, maintenance and repair instructions, troubleshooting guide, parts and diagram lists. It is important to user safety that 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 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 (800) 322-2884
World Wide Website www.riconcorp.com

Ricon U.K. Ltd.
Littlemoss Business Park, Littlemoss Road
Droylsden, Manchester
United Kingdom, M43 7EF (+44) 161 301 6000

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

- C Malfunction or damage to product parts caused by accident, misuse, lack of proper maintenance, neglect, improper adjustment, modification, alteration, the mechanical condition of 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 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:

- C The product has been installed or maintained by someone other than a Ricon authorized service technician.
- C 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 repair or exchange of parts that fail within 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 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 warranty to be valid.

NOTE

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

B. GENERAL SAFETY PRECAUTIONS

The following general safety precautions must be followed during installation, operation, and maintenance:

- Under no circumstances should installation, maintenance, repair, and adjustments be attempted without 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 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

Installation references for lift are illustrated in **Figure 1-1** and defined in **Table 1-1**. Refer to Chapter IV, "Parts Diagrams and Lists" for more details.

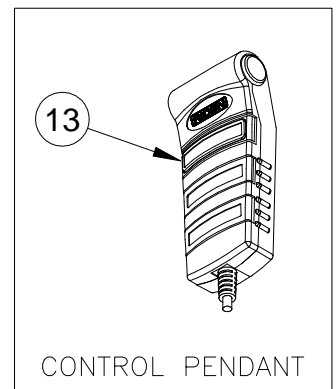
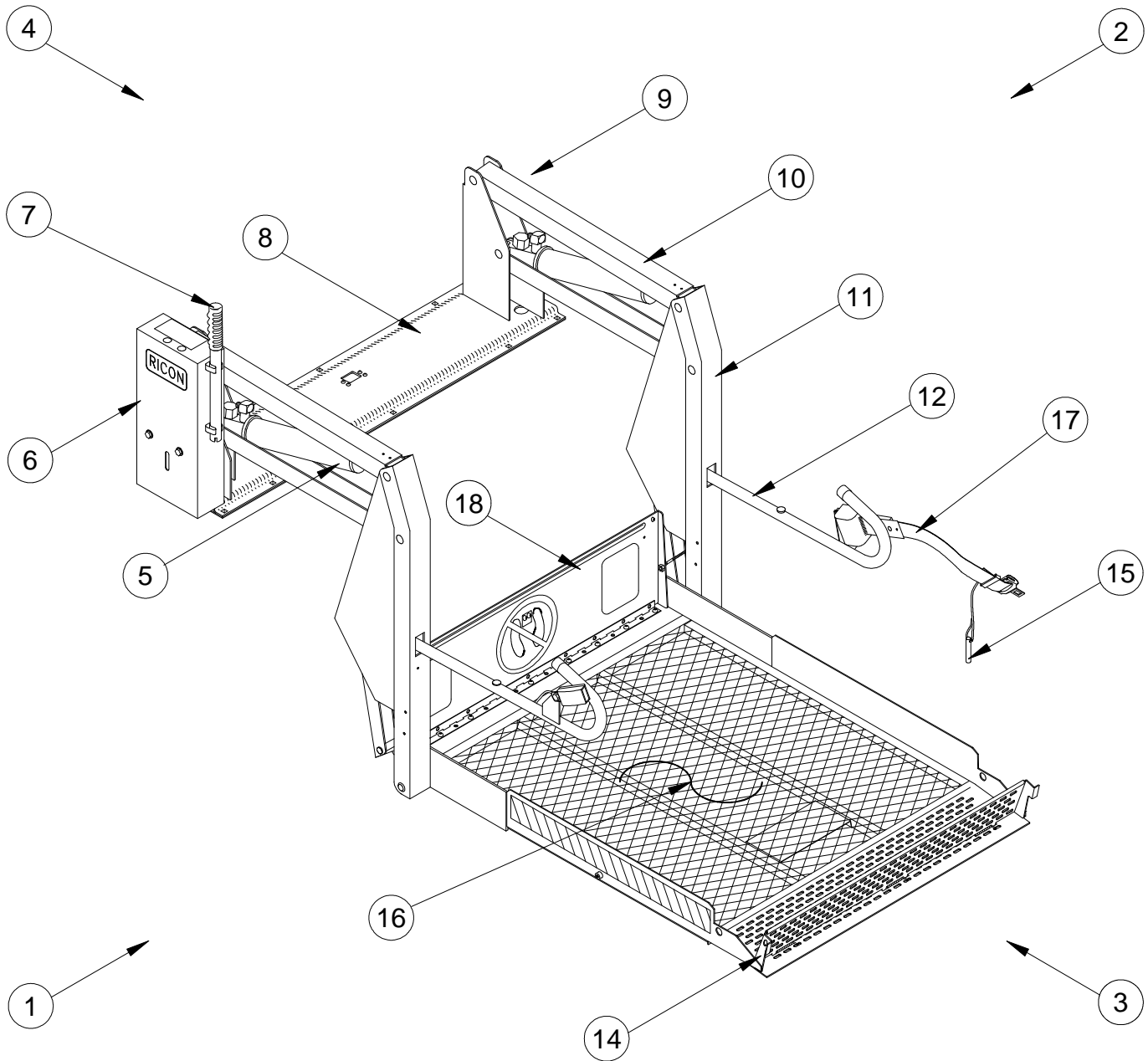


FIGURE 1-1: ADA TRANSIT USE WHEELCHAIR AND STANDEE LIFT WITH MANUAL ROLLSTOP

TABLE 1-1: S-SERIES LIFT TERMINOLOGY

| REF | NAME | DESCRIPTION |
|---------------------|--------------------------------------|---|
| 1 | Left | Lift references when installation is viewed from outside of vehicle. |
| 2 | Right | |
| 3 | Front | |
| 4 | Rear | |
| 5 | Hydraulic cylinders (left and right) | Telescoping cylinders convert hydraulic pressure into platform lifting force. |
| 6 | Hydraulic power unit | Contains electric motor driven pump that produces hydraulic pressure to raise and fold lift, and a pressure release valve to unfold and lower it. |
| 7 | Manual backup pump handle | Used to operate manual back up-pump when electrical power is not functional. |
| 8 | Baseplate assembly | Assembly that bolts securely to vehicle floor. |
| 9 | Serial number | Location of lift serial number decal. |
| 10 | Top and bottom arms (left and right) | Upper and lower parallel links connect vertical arms to base assembly. |
| 11 | Vertical arms (left and right) | Connects platform to top and bottom arms. |
| 12 | Handrails (left and right) | Provide a hand-hold for platform occupant. |
| 13 | Control pendant | Hand-held device used to control lift operating functions. |
| 14 | Platform rollstop | Front barrier prevents wheelchair from slowly or inadvertently rolling off of platform during lift operation. |
| 15 | Platform rollstop lock pin | Pin that retains platform rollstop in "open" position, allowing lift passenger to enter or exit platform. |
| 16 | Platform | Area of lift where wheelchair and occupant are situated during "Up" and "Down" motions. |
| 17 | Occupant restraint belt | Electrically interlocked safety belt that is intended to prevent acceleration of wheelchair from platform. Lift will not operate unless belt is properly buckled. |
| 18 | Bridgeplate (inboard rollstop) | Plate that bridges gap between platform and vehicle when platform is at floor height. Acts as barrier to confine wheelchair to platform during "Up" and "Down" motions. |
| END OF TABLE | | |

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II. S-SERIES ADA TRANSIT INSTALLATION

This chapter contains instructions for installing the RICON S-Series ADA Transit Use Wheelchair and Standee Lift with Manual Rollstop 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 about 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.

A. 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 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.
- Be sure to allow a distance of 3/4", if possible, between door and 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 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 cause lift to operate unevenly.

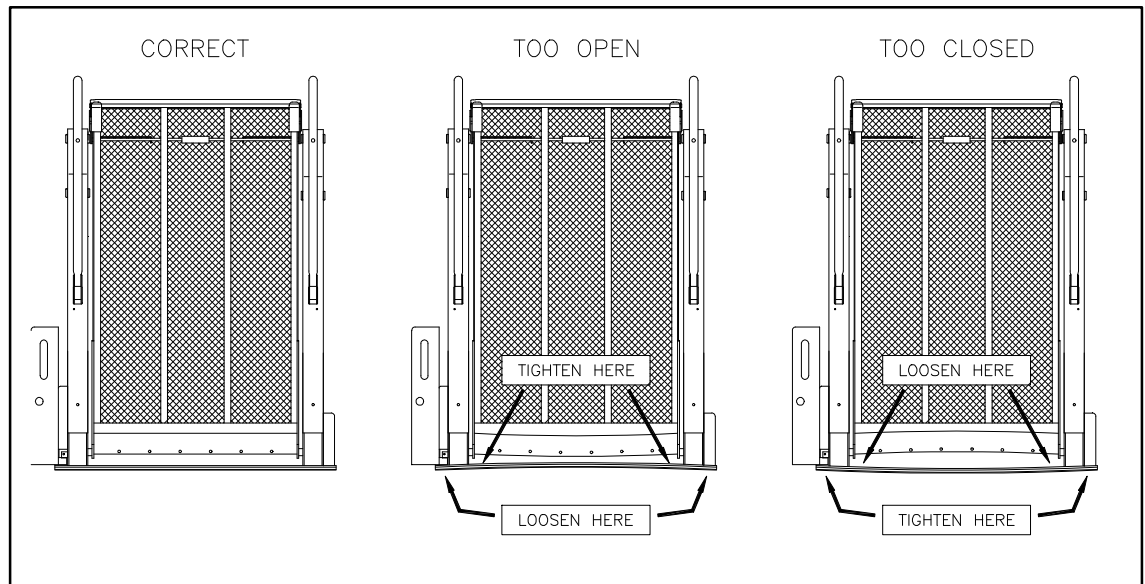


FIGURE 2-1: PLATFORM MOUNTING

c 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.

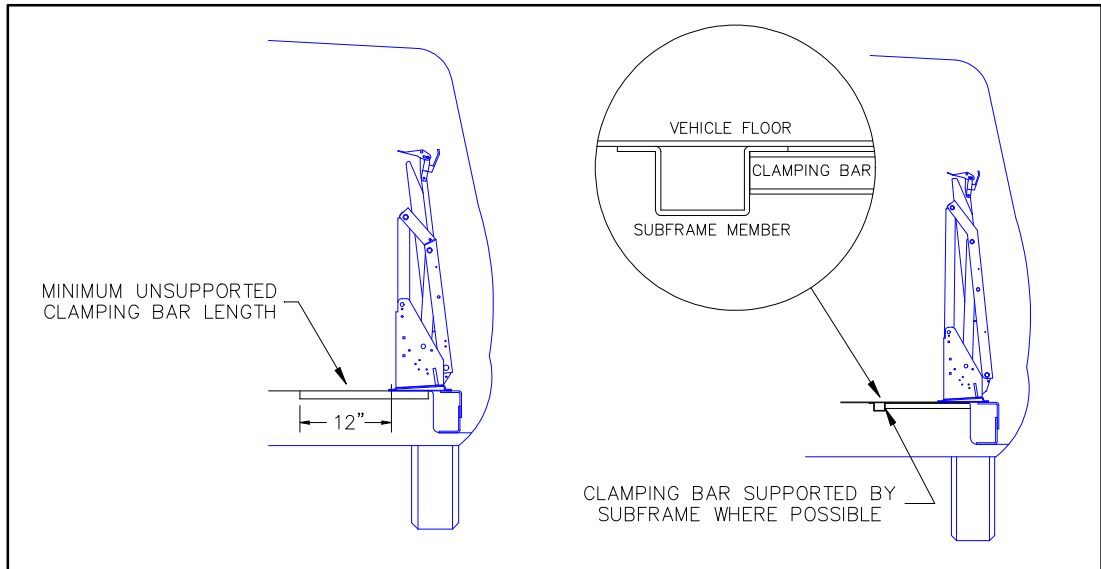


FIGURE 2-2: FORD VAN CLAMPING BAR

3. LIFT INSTALLATION INTO VANS

- a. 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.

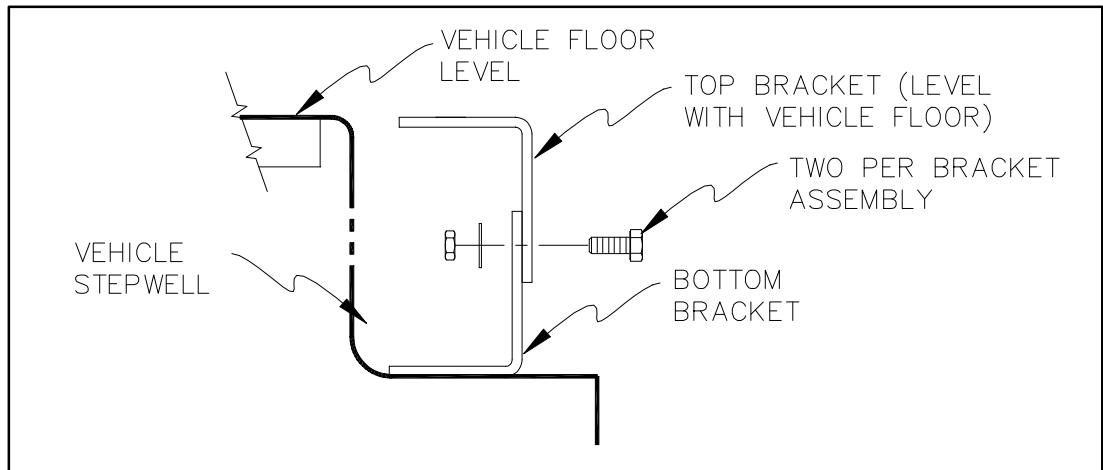


FIGURE 2-3: STEPWELL BRACKET

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

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



WARNING

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.

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

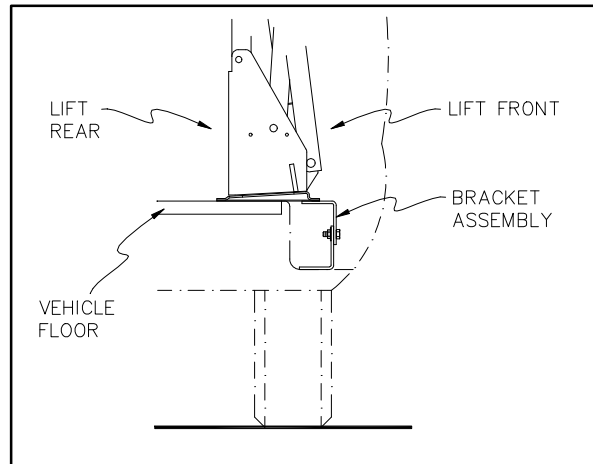


FIGURE 2-4: BRACKET ASSEMBLY

- e. Adjust Base Assembly:

NOTE: Install Ricon power door operators first, if used. 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 position does not interfere with closing of vehicle doors, and clears all passenger seats.

- f. Mark/Drill Holes:

NOTE: Before drilling holes, be sure that underlying wires or tubes are not in the way.

- 1) 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 sub-frame).
- 2) Place four 8" x 3/8" carriage bolts (4" x 3/8" bolts on Ford vans) into holes to secure position.

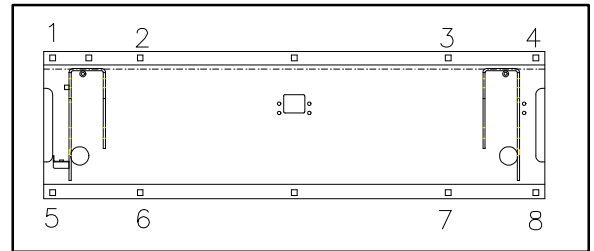


FIGURE 2-5: VAN BASEPLATE HOLES

Refer to **Figure 2-6**. Match and align both 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.

- 3) Remove carriage bolts installed in step 2, and carefully push lift back into vehicle interior.
- 4) Drill 1/4" holes through marked locations 9, 10, 11 and 12.

- g. Fasten Bracket Assemblies/Lift:

- 1) 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.

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

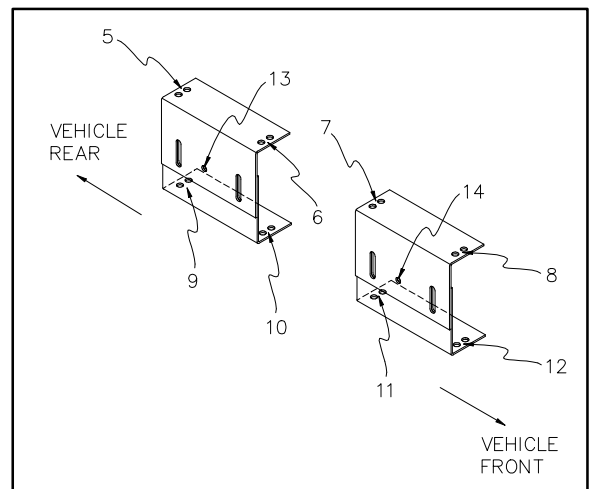


FIGURE 2-6: TOP BRACKET HOLE LOCATIONS

- 3) 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.

- 4) 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.

- 5) 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 eight carriage bolts (six on Dodge van with sliding door) to 28 ft. lbs. in 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.

- 6) 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

| |
|---|
| ! WARNING |
| THE S-SERIES PERSONAL USE WHEELCHAIR LIFT MUST NOT BE INSTALLED INTO MASS TRANSIT VEHICLES/BUSES. CONTACT RICON PRODUCT SUPPORT FOR PROPER MODEL OF S-SERIES LIFT |

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).

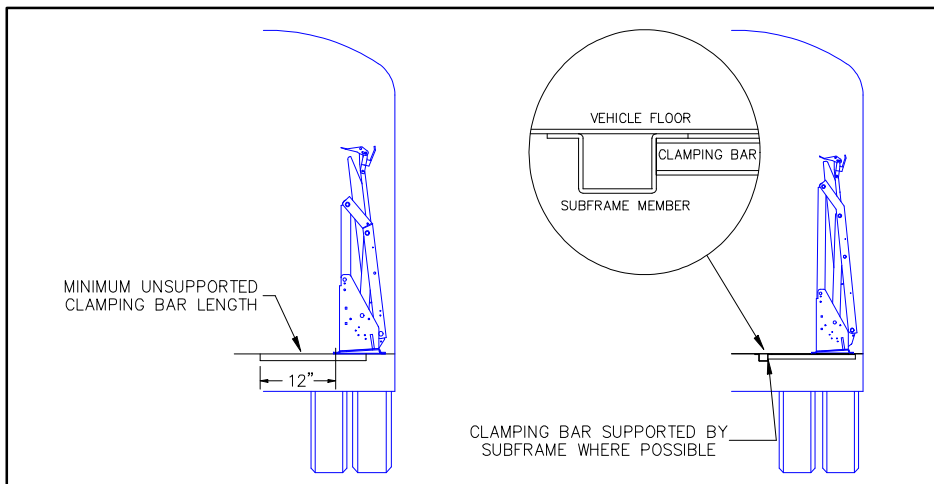


FIGURE 2-7: BUS CLAMPING BAR

| |
|--|
| ! WARNING |
| 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. |

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

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

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

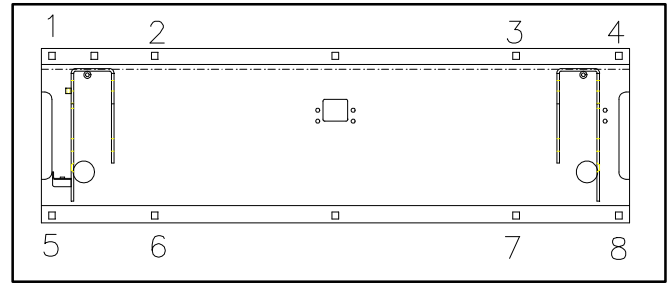


FIGURE 2-8: BUS BASEPLATE HOLES

- c. Fasten Lift:

- 1) Insert eight 4" x 3/8" carriage bolts through baseplate and vehicle floor.
- 2) 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.
- 3) 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 to 28 ft. lbs. in the 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.

B. ELECTRICAL INSTALLATION

CAUTION

- Do not route a 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 wires.

1. INSTALL MAIN CIRCUIT BREAKER

- a. Disconnect battery.
- b. Mount main circuit breaker inside engine compartment near battery. Mount within 12 inches to minimize amount of unprotected cable. Avoid installing near heat sources.

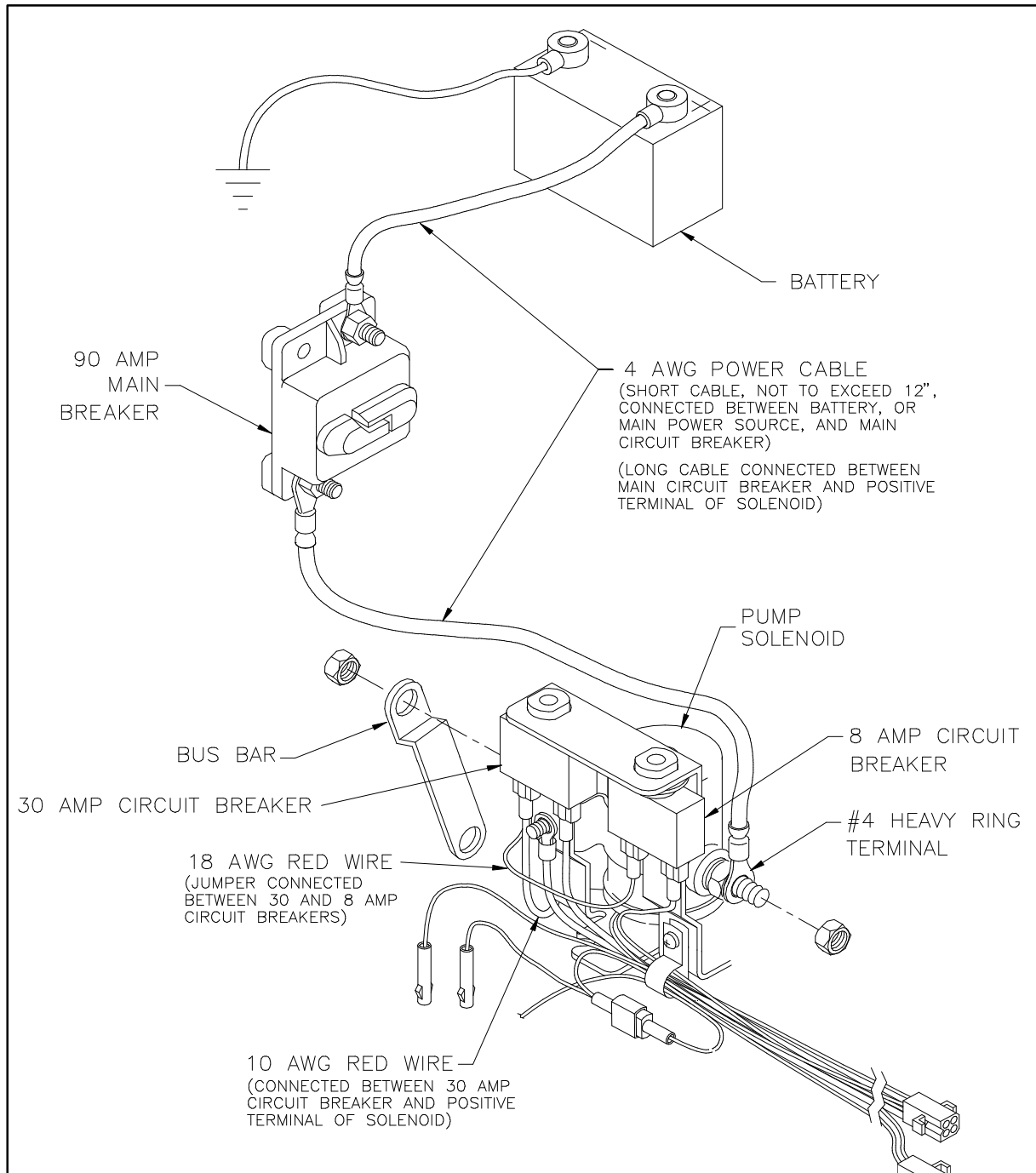


FIGURE 2-9: ELECTRICAL INSTALLATION DIAGRAM

2. ROUTE AND CONNECT MAIN POWER CABLE

CAUTION

Check under-side of vehicle before drilling to avoid damage to 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.

- a. 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 solenoid is connected to pump motor. The hole should be drilled so that it will be hidden by pump cover.

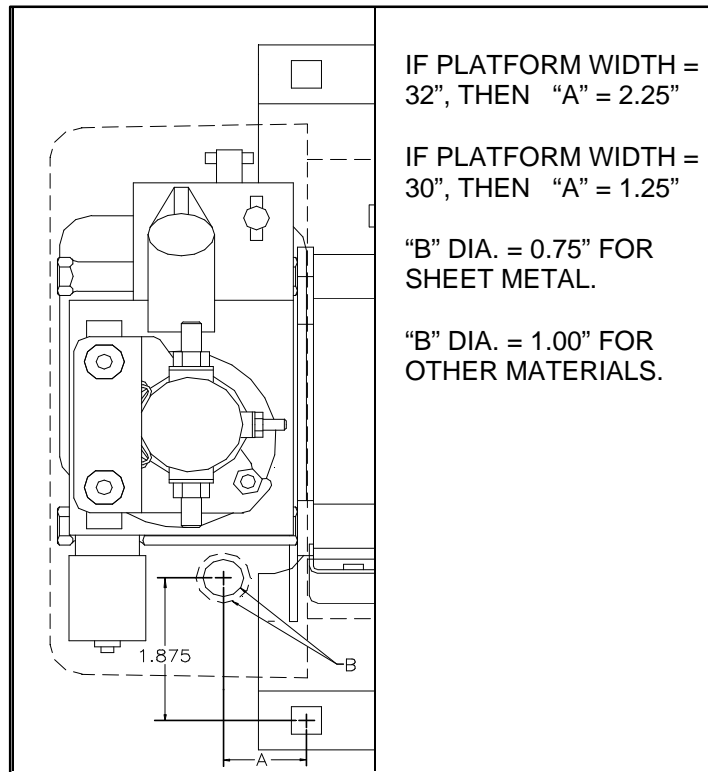


FIGURE 2-10: POWER CABLE ACCESS HOLE

NOTE: An 8-amp circuit breaker is provided for lift protection. The circuit interface supplied by the OEM must be capable of carrying 8 amps of continuous current.

- b. 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).
- c. Connect end of long 4 AWG power cable (with ring terminal) to main circuit breaker, then route power cable underneath vehicle floor and up through hole in floor.
- d. 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.

- e. 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.

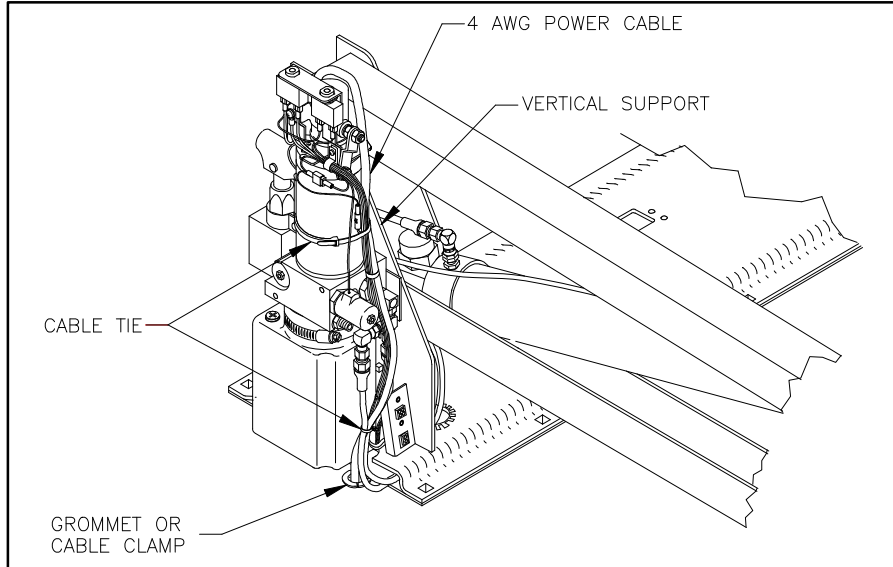


FIGURE 2-11: CABLE ROUTING

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

NOTE: It is essential to use a strain relief on the hand-held control pendant.

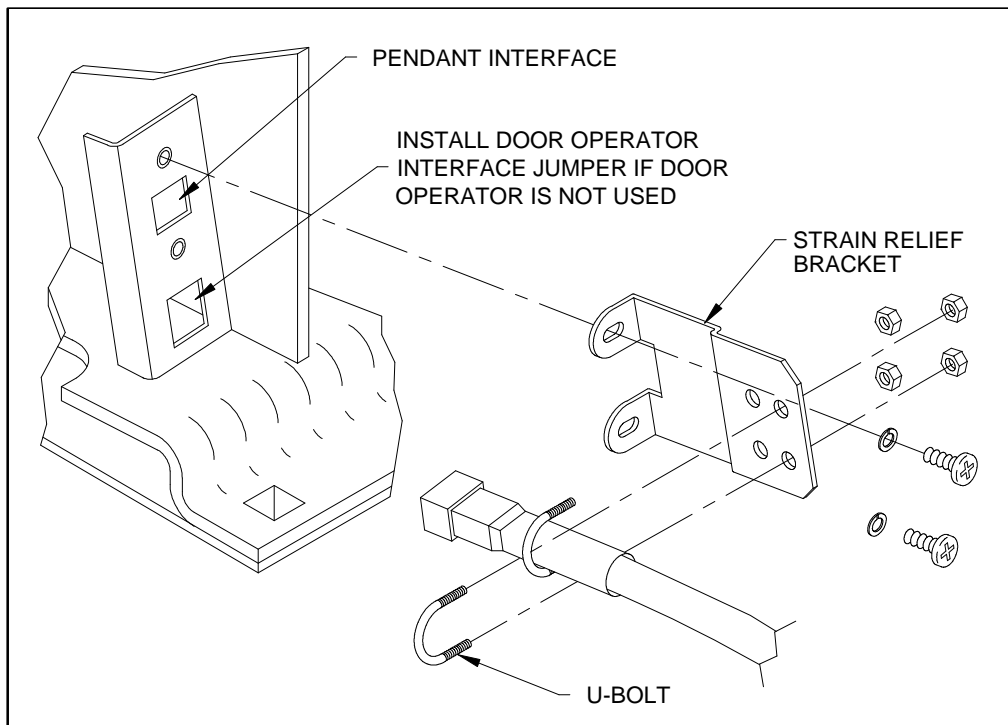


FIGURE 2-12: STRAIN RELIEF KIT

⚠ CAUTION

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

- g. Connect a 12" cable from battery positive terminal to main breaker terminal closest to battery.
 h. Install wall portion of pendant dovetail clip in an appropriate location.

3. GROUND CONNECTIONS

a. 12VDC Systems

12VDC powered lifts can be chassis grounded and therefore do not require a separate ground cable connection to battery.

NOTE: If lift electrical system is grounded to chassis, the ground cable must be attached in a manner that provides a reliable electrical connection. If cable is attached to an existing ground circuit, the circuit must be capable of conducting an additional 90 amps to the negative battery terminal.

b. 24VDC Systems

- 1) Ricon recommends that a dedicated ground cable be used in 24VDC installations. A 4GA cable, or heavier, must be used.
- 2) Refer to **Figure 2-13**. The ground cable is routed from the negative stud (-) on pump motor to the negative battery terminal.

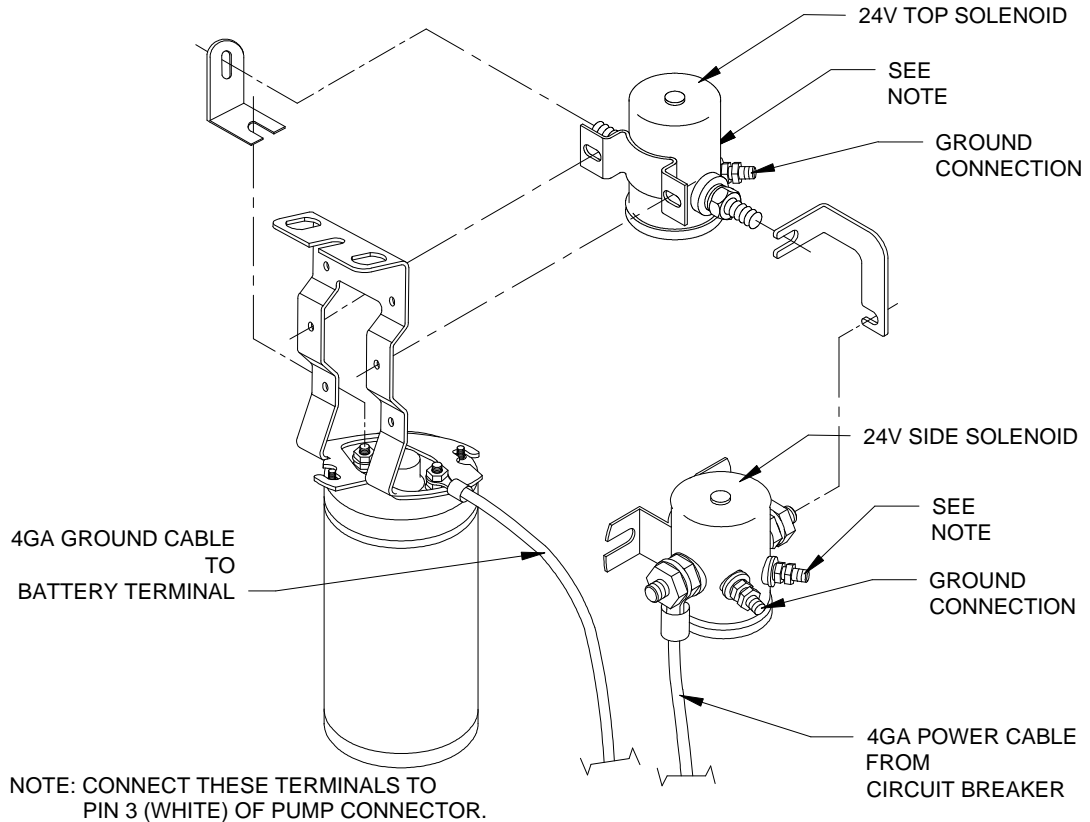


FIGURE 2-13: 24VDC DUAL SOLENOID WIRING

4. INSTALLATION OF UNSUPPORTED INTERLOCK DEVICES

An interlock device may be installed 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 interlock device. If you have **any** questions about proper installation of these interlock devices, please contact our Service Department immediately. **DO NOT OPERATE LIFT UNLESS YOU ARE CERTAIN THAT INTEGRITY OF LIFT'S ELECTRICAL CIRCUITS, AS DESIGNED, HAS BEEN MAINTAINED.**



CAUTION

Wiring attached directly to a battery 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:

a. Interlock Method #1–Signal interrupt, feed from lift

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

- 1) Disconnect battery.
- 2) 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.

- 3) 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.

- 4) Cut piggyback connector from light assembly and female spade connector from signal power wire. Strip both wires about ½" being careful not to nick conductor. Crimp both wires in a single ¼" fully insulated female spade connector designed for use on 14-16 AWG wire.
- 5) Connect male spade connector of interlock circuit to female spade connector added to harness in above step.
- 6) 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.

b. Interlock Method #2–Signal interrupt, feed from vehicle

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

- 1) Disconnect battery.
- 2) The cable leading to applicable circuit protection from battery must be at least 16 AWG or larger, and must not exceed 12" in length.
- 3) Connect INPUT side of interlock circuit to OUTPUT side of circuit protector using 16 AWG or larger wire.
- 4) 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.

- 5) Connect OUTPUT side of interlock circuit to INPUT side of lift's 8 amp circuit breaker using 16 AWG or larger wire.
- 6) Re-connect battery.

c. Interlock Method #3–Power interrupt

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.

- 1) Disconnect battery.
- 2) Disconnect 4 AWG power cable from main breaker at pump solenoid.
- 3) Connect cable to one of terminal posts of interlock solenoid.
- 4) Connect other terminal post of interlock solenoid to empty terminal post of pump solenoid using 4 AWG wire.
- 5) 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.
- 6) Connect OUTPUT side of circuit protector to INPUT side of interlock circuit provided by installer using 16 AWG or larger wire.
- 7) Connect OUTPUT side of interlock circuit to coil terminal of solenoid using 16 AWG or larger wire.
- 8) 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.
- 9) Reconnect battery.

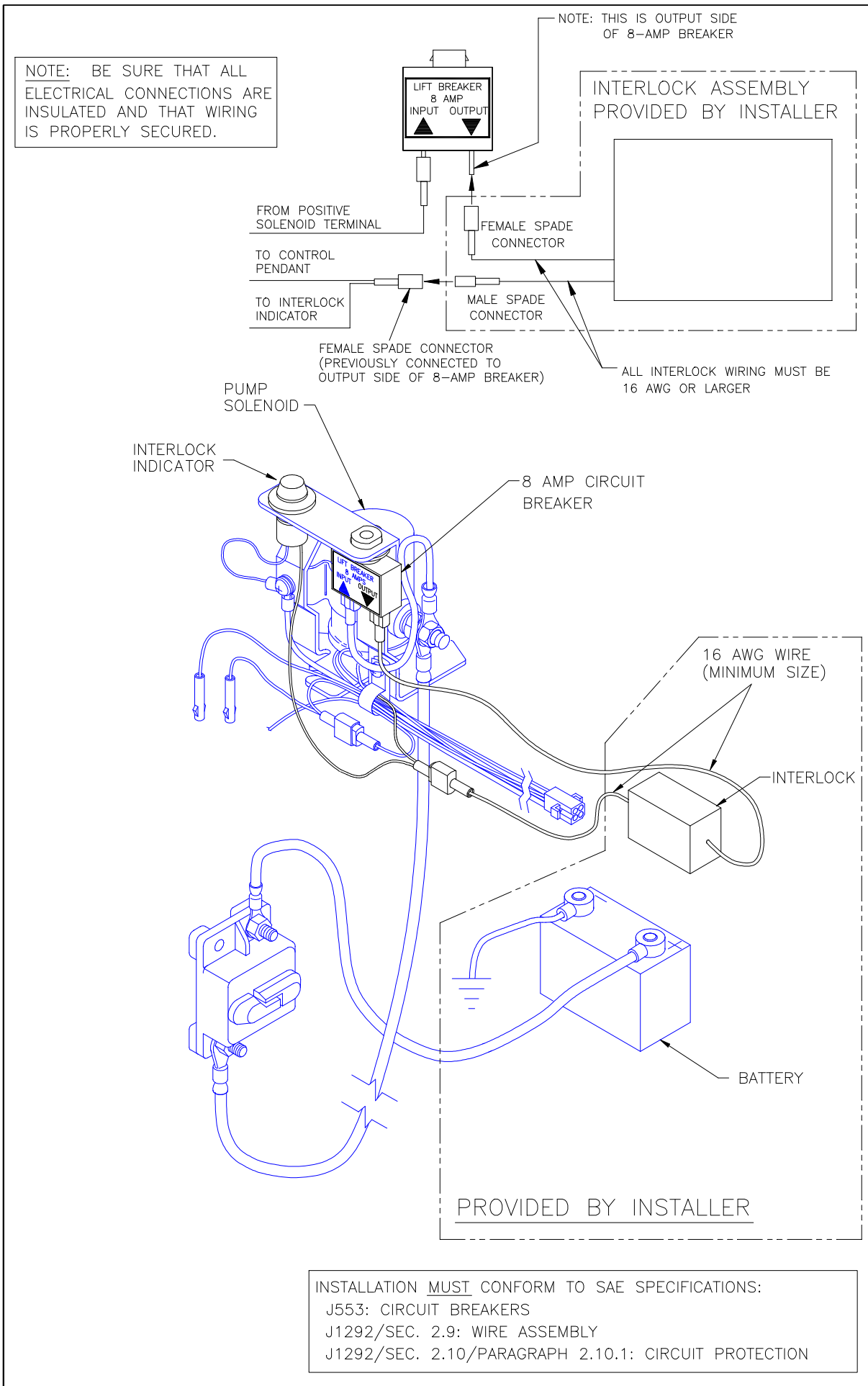


FIGURE 2-14: INTERLOCK METHOD #1

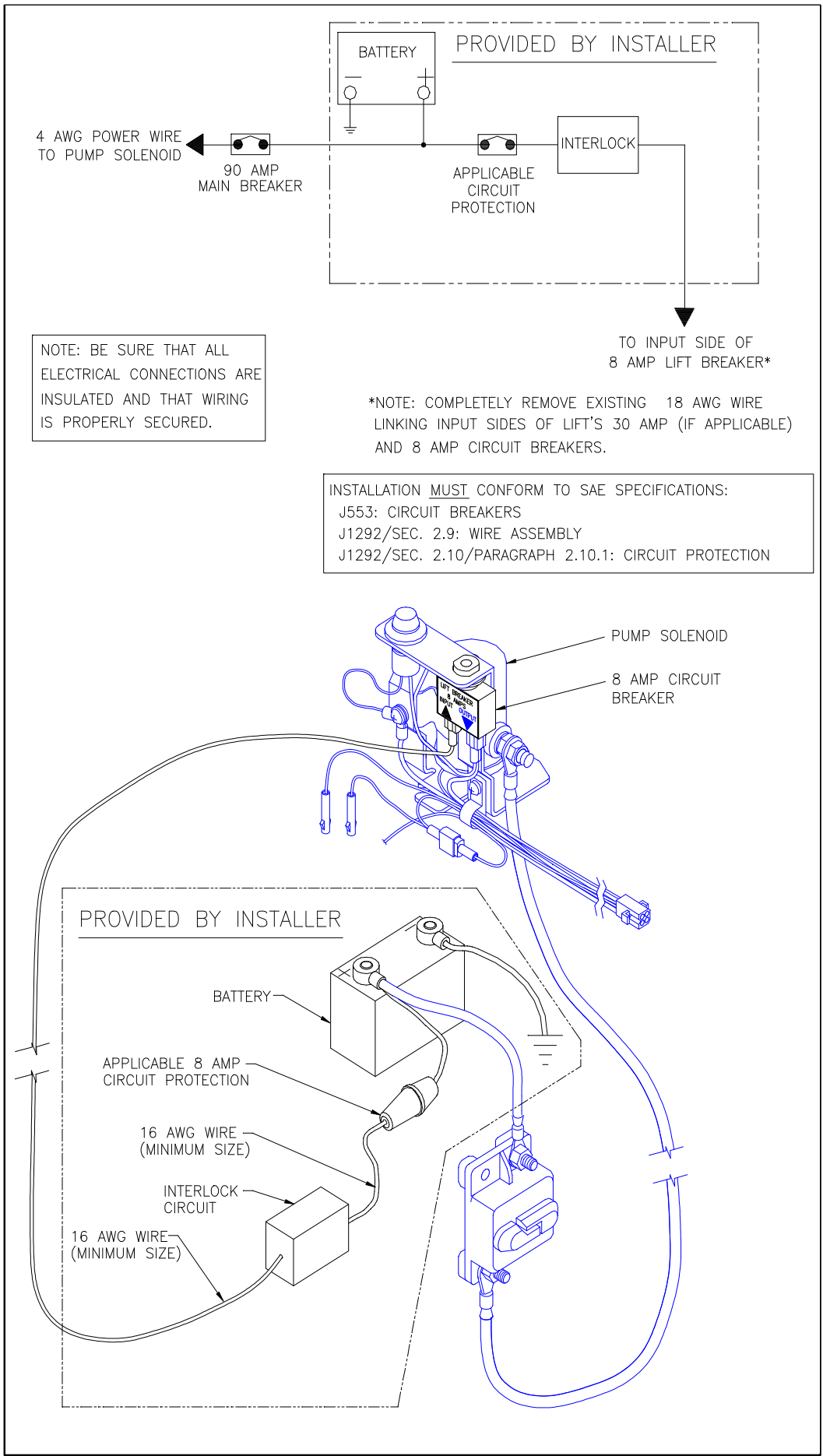


FIGURE 2-15: INTERLOCK METHOD #2

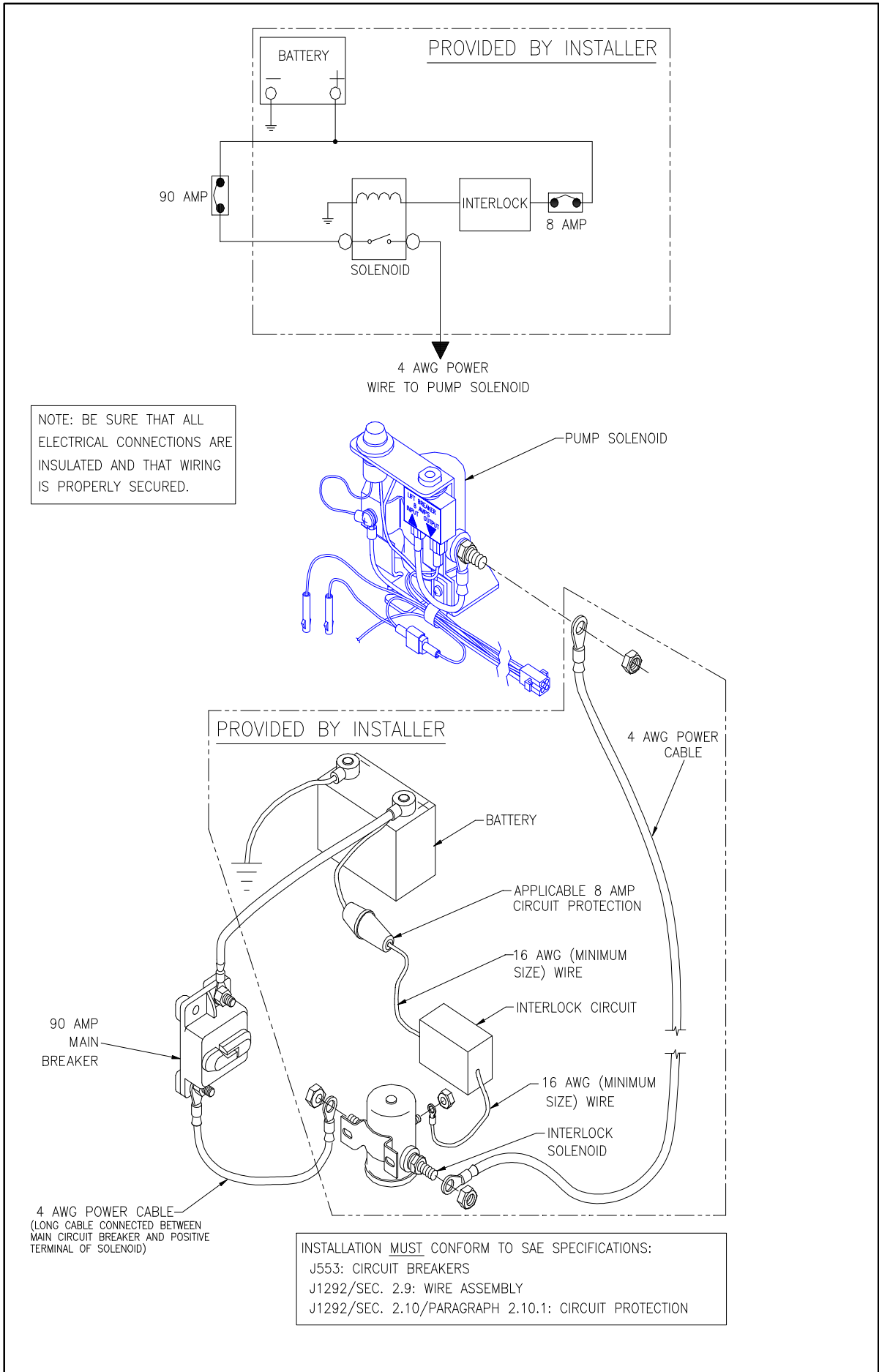


FIGURE 2-16: INTERLOCK METHOD #3

C. FINAL ADJUSTMENTS

1. LIMIT SWITCH ADJUSTMENT

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

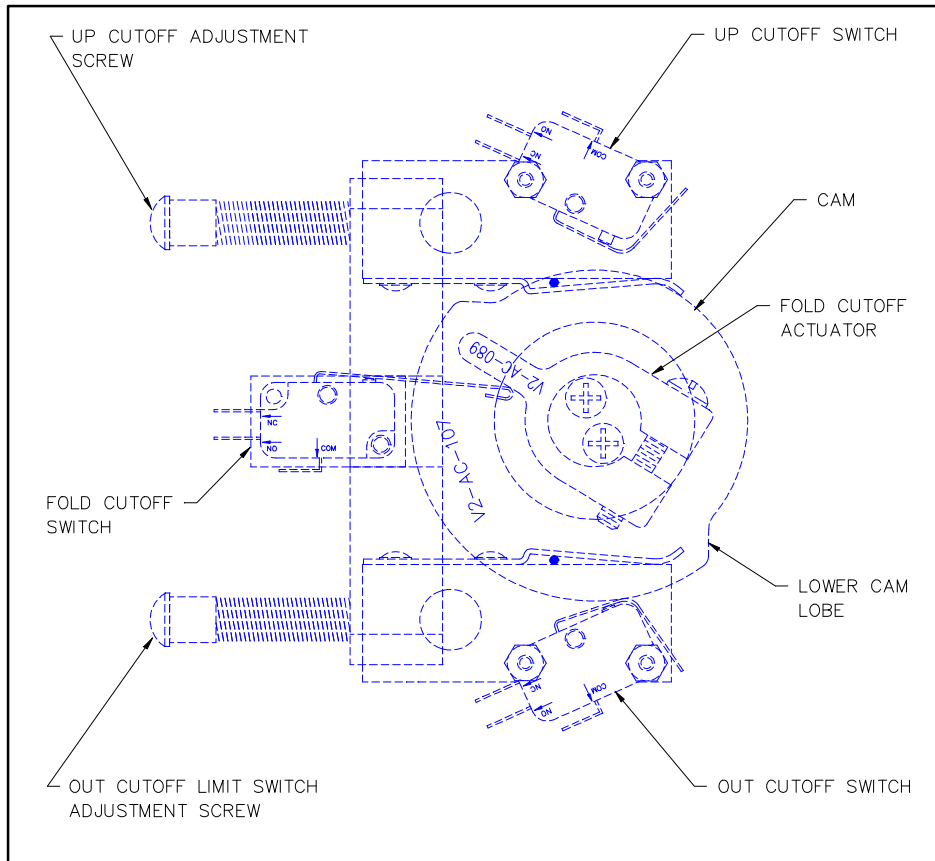


FIGURE 2-17: LIMIT SWITCH ADJUSTMENT DIAGRAM

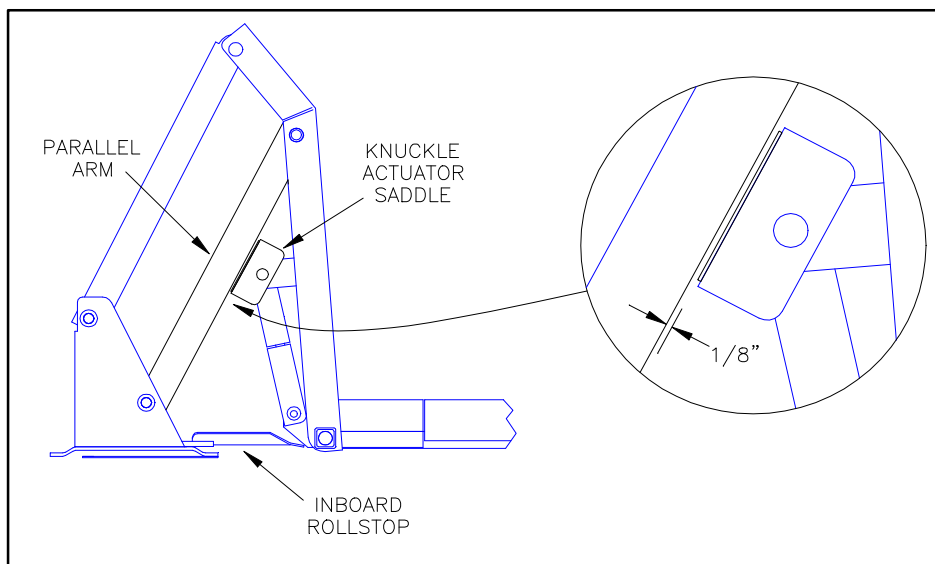


FIGURE 2-18: LIMIT SWITCH ADJUSTMENT CLEARANCE

NOTE: To avoid operating “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.

- a. Fully DEPLOY platform.
- b. Adjust UP CUTOFF ADJUSTMENT SCREW and OUT CUTOFF ADJUSTMENT SCREW 6-8 turns **counter-clockwise** 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 OUT CUTOFF ADJUSTMENT SCREW an additional 2-3 turns **counter-clockwise**, 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 **counter-clockwise**, 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 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.
- 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** 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.)

- 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 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 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 "Up" cutoff described in above step. This will give necessary overlap to avoid "dead" spots. |
| | Lift stops high. | Adjust screw clockwise. | |
| END OF TABLE | | | |

2. ROLLSTOP ADJUSTMENT (PLATFORM TILT)

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 may vary installation geometry greatly.

- a. Deploy and lower lift platform to a position halfway between vehicle floor level and ground.
- b. Refer to **Figure 2-19**. Adjust left/right platform set screws until platform is level at zero (0) degrees. Turn set screws clockwise to angle front-end of platform upward, or counter-clockwise to angle front-end of platform downward.
 - ◆ At ground level, the distance between heel of platform and ground should be $3/4$ "–1". This distance should be measured at initial point of rollstop full deployment.

NOTE: Be sure to adjust set screws on both sides of platform simultaneously and evenly for proper leveling of platform.

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

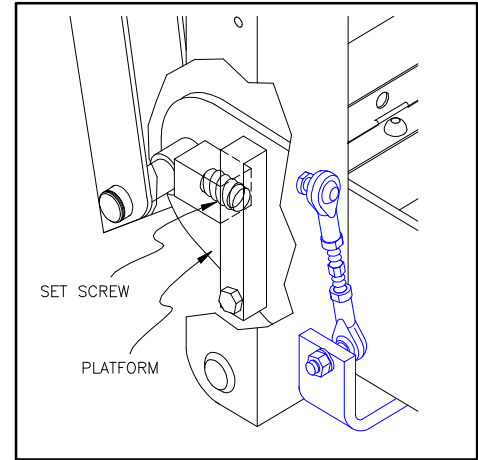


FIGURE 2-19: PLATFORM SET SCREWS

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. This is a passenger safety feature.

- a. 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.

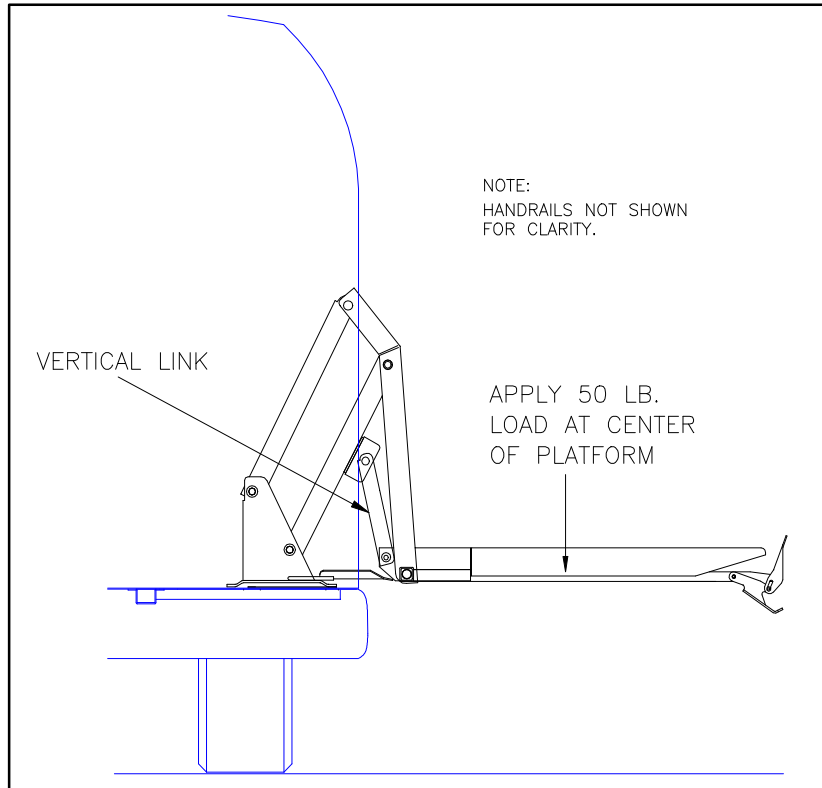


FIGURE 2-20: PRESSURE SWITCH TEST AT FLOOR LEVEL

- b. 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.

- c. 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.

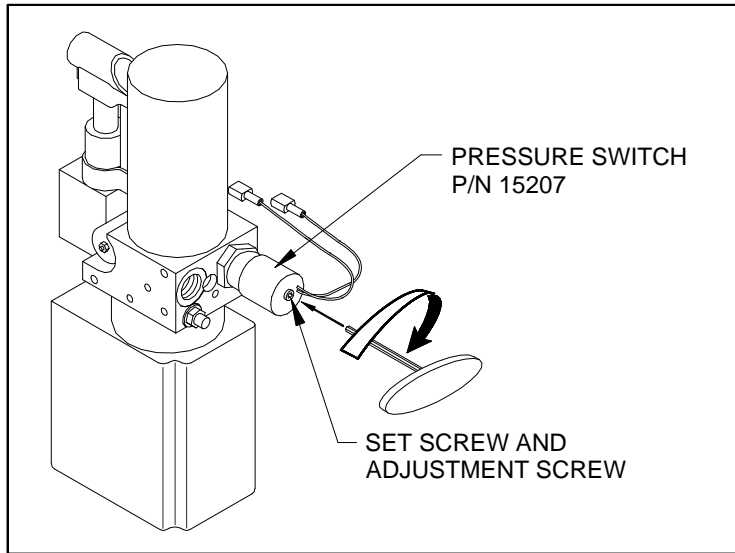


FIGURE 2-21: HYDRAULIC PUMP WITH PRESSURE SWITCH

- d. 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.
- e. Reinstall set screw and tighten against adjustment screw.

4. PLATFORM LOAD SENSOR SWITCH ADJUSTMENT

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

This procedure sets platform load sensor switch to prevent lift from folding past vehicle floor level when a 50 lb load is on platform. This is also a passenger safety feature.

- a. Refer to **Figure 2-22**. Place your left hand around knuckle vertical link assembly as shown; link is located on left side of lift.
- b. Loosen two hex-bolts shown.
- c. Exert a light downward pressure through your left-hand fingers onto load sensor bar, and retighten hex-bolts.
- d. 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.

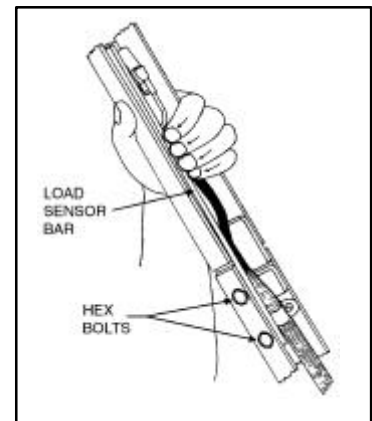



FIGURE 2-22: LOAD SENSOR ADJUSTMENT

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

- e. 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).

C. 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 integrity of lift mounting structure , not its lifting capacity. Remove test weight immediately after test. |
| Ⓒ 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. |

- The lift must be test loaded to 125% of its rated 800 pound load capacity to verify the installation integrity. Position lift platform 1" - 2" above ground, place **1,000** pounds in center of platform, and inspect lift mounting points. **REMOVE TEST WEIGHT.**
- Run lift through several complete cycles while confirming operation.

D. 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 2-24** on next page and be certain that all decals are located as shown and securely affixed.

| |
|---|
| NOTE |
| The installing service agent must affix Operating Instructions decal to vehicle in a location clearly visible to lift operator. |

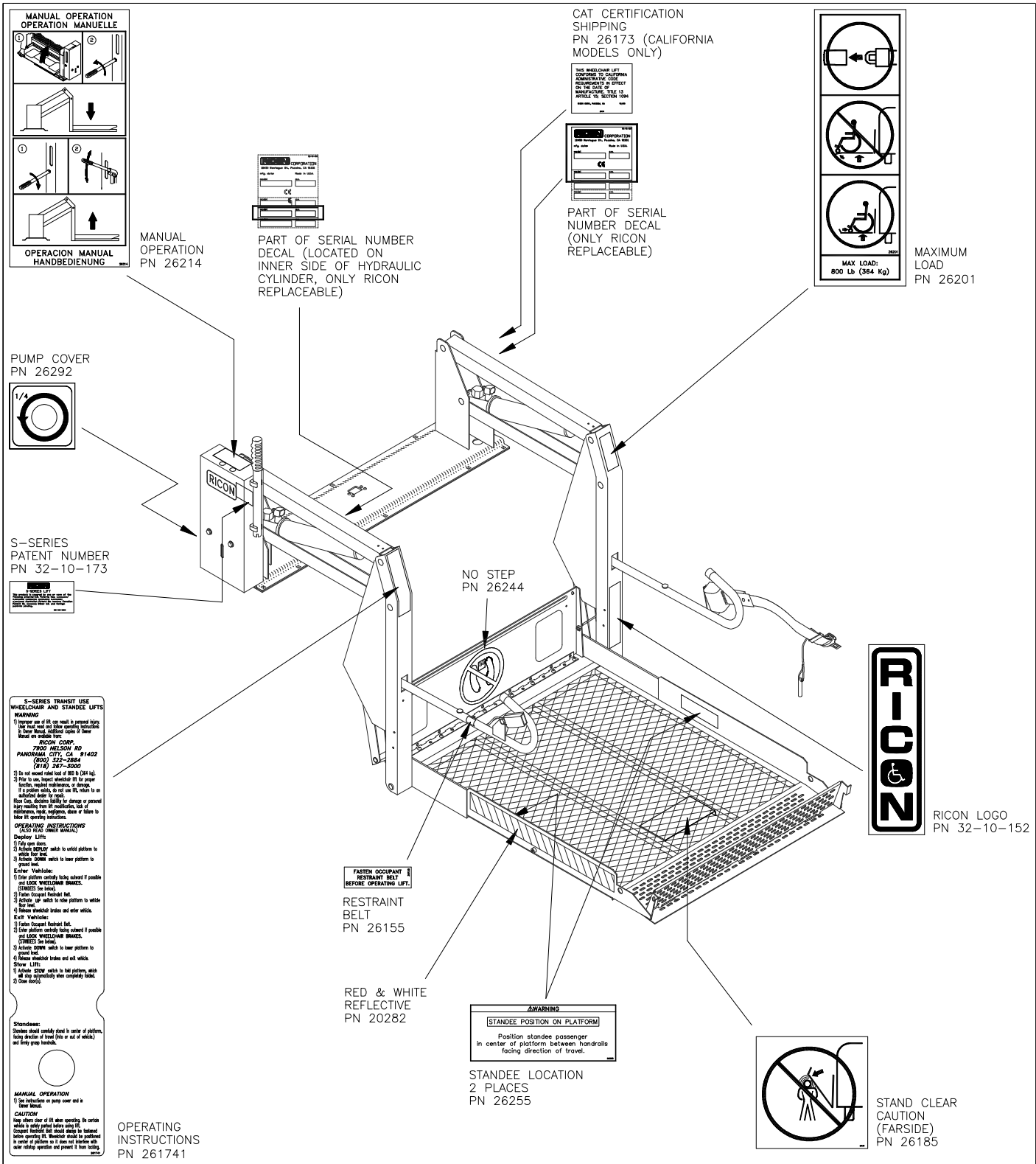



FIGURE 2-23: DECAL LOCATIONS AND PART NUMBERS

III. S-SERIES ADA TRANSIT MAINTENANCE AND REPAIR

Regular maintenance of the RICON S-Series ADA Transit Use Wheelchair and Standee Lift with Manual Rollstop will help to optimize its performance and reduce the need for repairs. This chapter contains lubrication and cleaning instructions, a maintenance schedule, 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. |

A. LUBRICATION

| |
|--|
|  CAUTION |
| Do not lubricate motor or other electrical components. Lubrication of electrical components may lead to circuit malfunction. |

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.

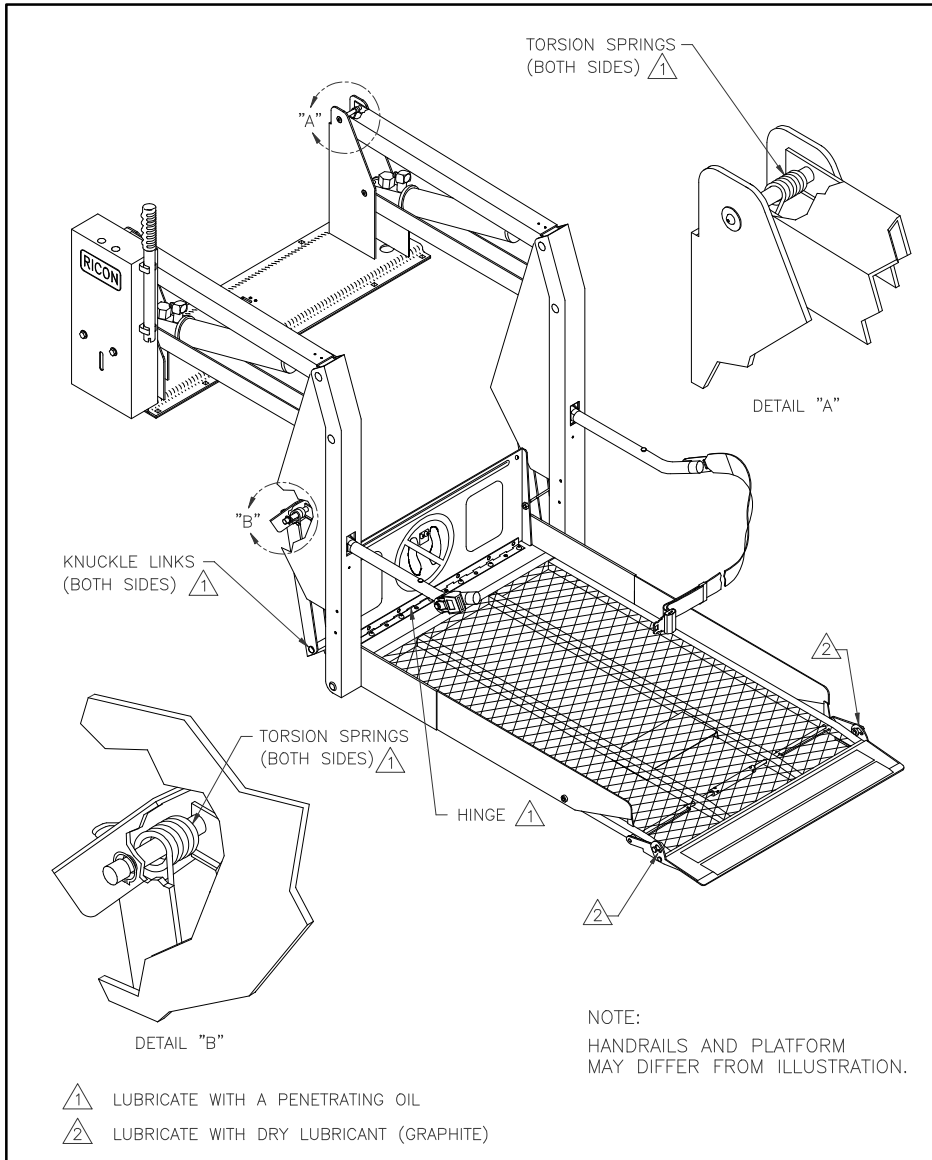



FIGURE 3-1: LIFT LUBRICATION POINTS


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 pivot points are free of water 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).

| TABLE 3-1: MAINTENANCE SCHEDULE | |
|---|---|
| SERVICE POINT | ACTION TO PERFORM |
| DAILY SAFETY CHECK | |
| 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. |
| TWO-WEEK SAFETY CHECK | |
| Overall Condition | <ol style="list-style-type: none"> 1. Listen for any abnormal noises as lift operates (i.e., grinding or binding noises). 2. Inspect underside of vehicle to be certain nothing is out of ordinary. |
| 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 Mounting and Support Points | <ol style="list-style-type: none"> 1. Be certain that all lift mounting and support points are in proper order and free from damage. 2. Be certain that all mounting bolts are sufficiently tight. |
| Main Lifting Pivots | Be certain all traveling frame pins are installed properly, free from damage and locked in position. |
| Platform and Platform Attachment Points | Be certain platform operates properly during lift functions without obstruction(s). |
| Inner Rollstop | <ol style="list-style-type: none"> 1. Be certain that inner rollstop operates properly during lift functions without obstruction(s). 2. Be certain that inner rollstop deploys fully as platform stops at the proper vehicle floor level. |
| Platform Rollstop | Be certain that rollstop operates properly without obstruction(s) when it contacts ground. |
| Hydraulic Power Unit |  CAUTION Do not add fluid until platform is lowered to ground level. Adding fluid while lift is stowed will cause the tank to overflow when platform is lowered. |
| | <ol style="list-style-type: none"> 1. Check for visible hydraulic fluid leakage. 2. Be certain backup pump manual release valve is lightly tightened. |

| SIX-MONTH SAFETY CHECK (or @ 1750 cycles of operation) | |
|--|--|
| Cleaning and Lubrication | <ol style="list-style-type: none"> 1. Clean lift with a mild soap and wipe dry. Rub down all surfaces with a light oil using a soft cloth to avoid rusting of material. Wipe clean any excess oil. 2. 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. |
| Hydraulic Power Unit | With platform at GROUND LEVEL, check that the level of pump hydraulic fluid is at required FULL mark. Add only Texaco 01554 Aircraft Hydraulic Oil or equivalent U.S. mil spec H5606G fluid. |
|  CAUTION This safety check must be performed by a Ricon authorized service technician. | |
| ANNUAL SAFETY CHECK (or @ 3500 cycles of operation) | |
| Hydraulic Cylinder, Hoses and Fittings | <ol style="list-style-type: none"> 1. Check Hydraulic Cylinder for evidence of leaks. 2. Inspect hydraulic hoses for damage. 3. Be certain that all fittings are tightly secured. |
| END OF TABLE | |

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** 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.

| |
|--|
|  WARNING |
| <p>THE TROUBLESHOOTING GUIDES DO NOT INCORPORATE ROUTINE SAFETY PRECAUTIONS OR PRELIMINARY PROCEDURES. DURING THE RICON WARRANTY PERIOD ONLY A TRAINED, RICON AUTHORIZED SERVICE TECHNICIAN MAY PERFORM TROUBLESHOOTING. AFTER THE WARRANTY PERIOD, IT IS RECOMMENDED THAT TROUBLESHOOTING BE CONTINUED BY A RICON AUTHORIZED SERVICE TECHNICIAN.</p> |

1. 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.

| TABLE 3-2: INTERLOCK INDICATOR GUIDE | |
|--|--|
| 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. |
| END OF TABLE | |

2. LIFT TROUBLESHOOTING

| TABLE 3-3: LIFT OPERATION | | | |
|----------------------------------|---------------------|---|--|
| SYMPTOM | | POSSIBLE CAUSE | REMEDY |
| Hydraulic fluid leaks | | Loose hydraulic fitting. | Make sure fitting is PROPERLY tightened. |
| | | Hydraulic component defective. | Discontinue use of lift until repairs are made by a Ricon authorized service technician. |
| 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 the 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 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.) |
| | | | |
| END OF TABLE | | | |

E. HYDRAULIC CIRCUIT DIAGRAM

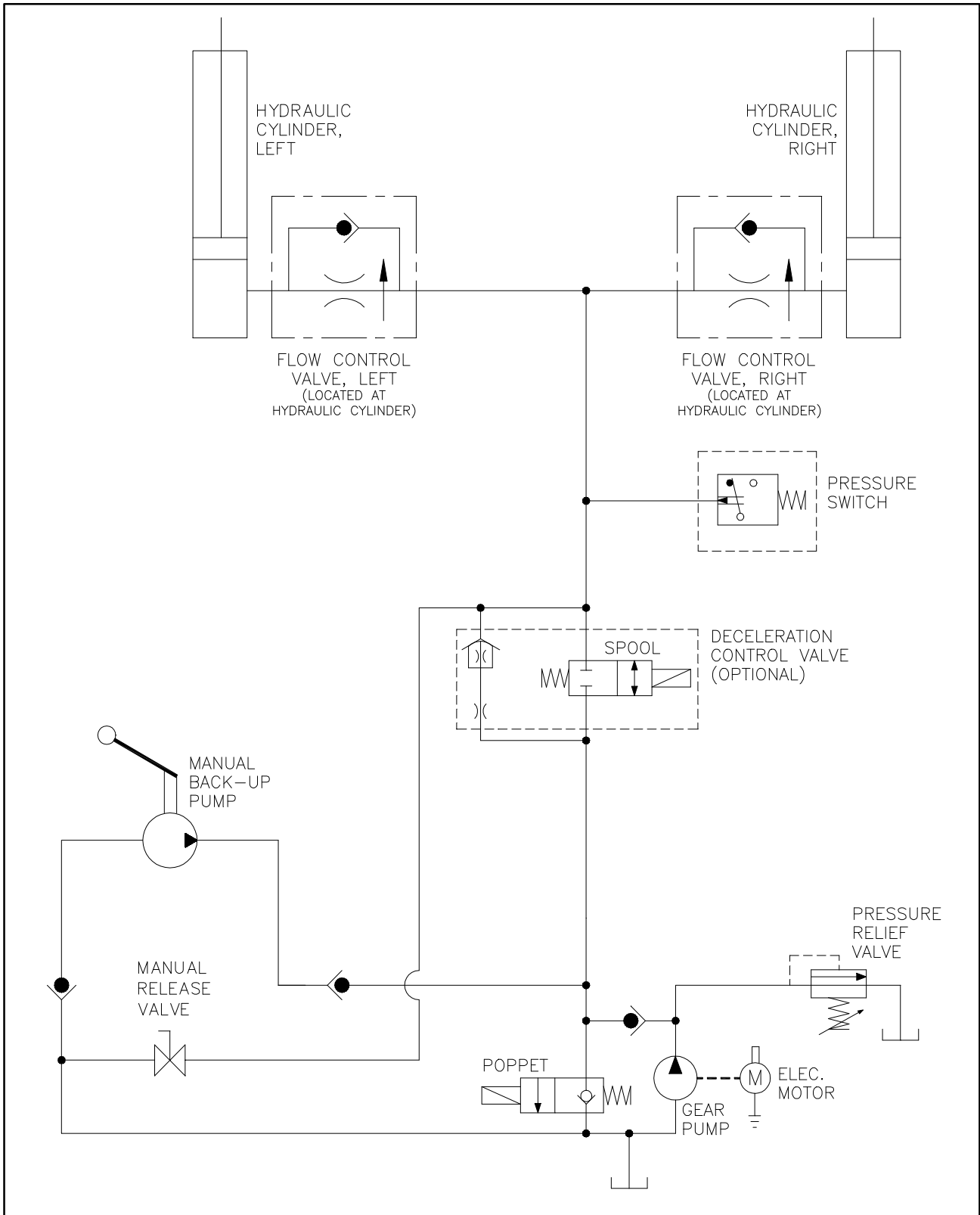


FIGURE 3-2: S-SERIES HYDRAULIC CIRCUIT

F. ELECTRICAL WIRING DIAGRAMS

1. DIAGRAM LEGEND

a. Wire Color Codes

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

b. Electrical Connectors Description

Refer to **Figure 3-3**. The standard electrical connectors used by Ricon are Molex .062" Series. These connectors have terminal numbers stamped onto rear; use these numbers and colors to identify all wires.

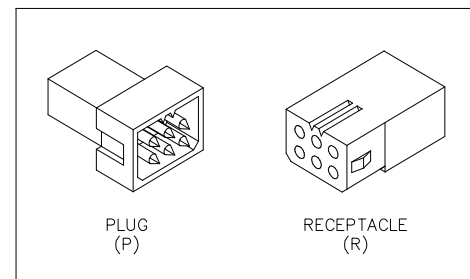


FIGURE 3-3: MOLEX CONNECTORS

c. 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 |

d. **Electrical Symbols**

Figure 3-4 shows symbols used on electrical wiring diagrams.

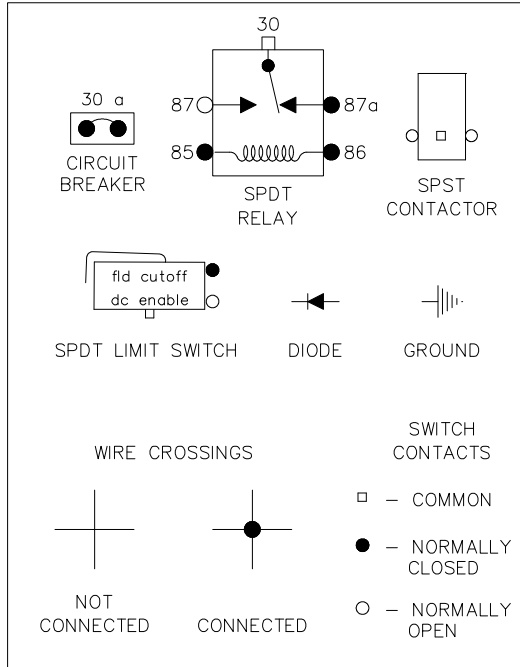


FIGURE 3-4: DIAGRAM SYMBOLS

2. **S-SERIES LIMIT SWITCH STATE DESCRIPTION**

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

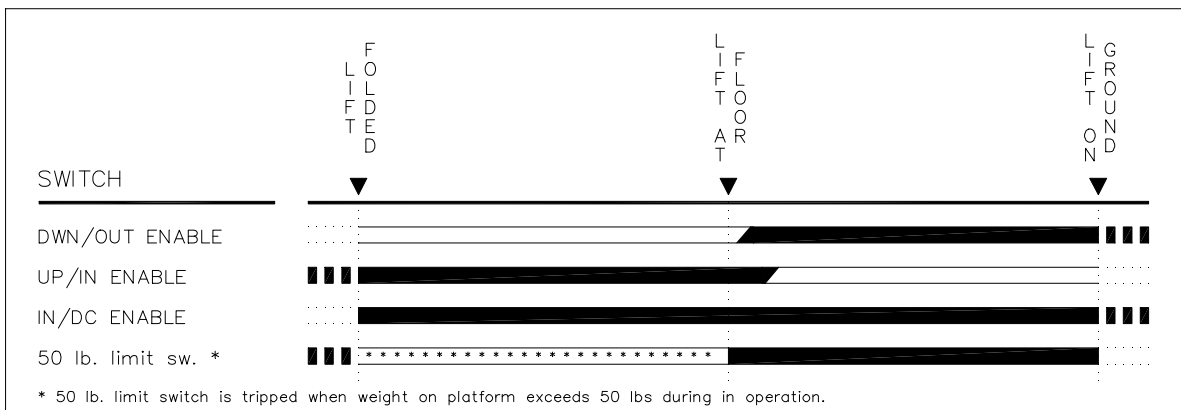
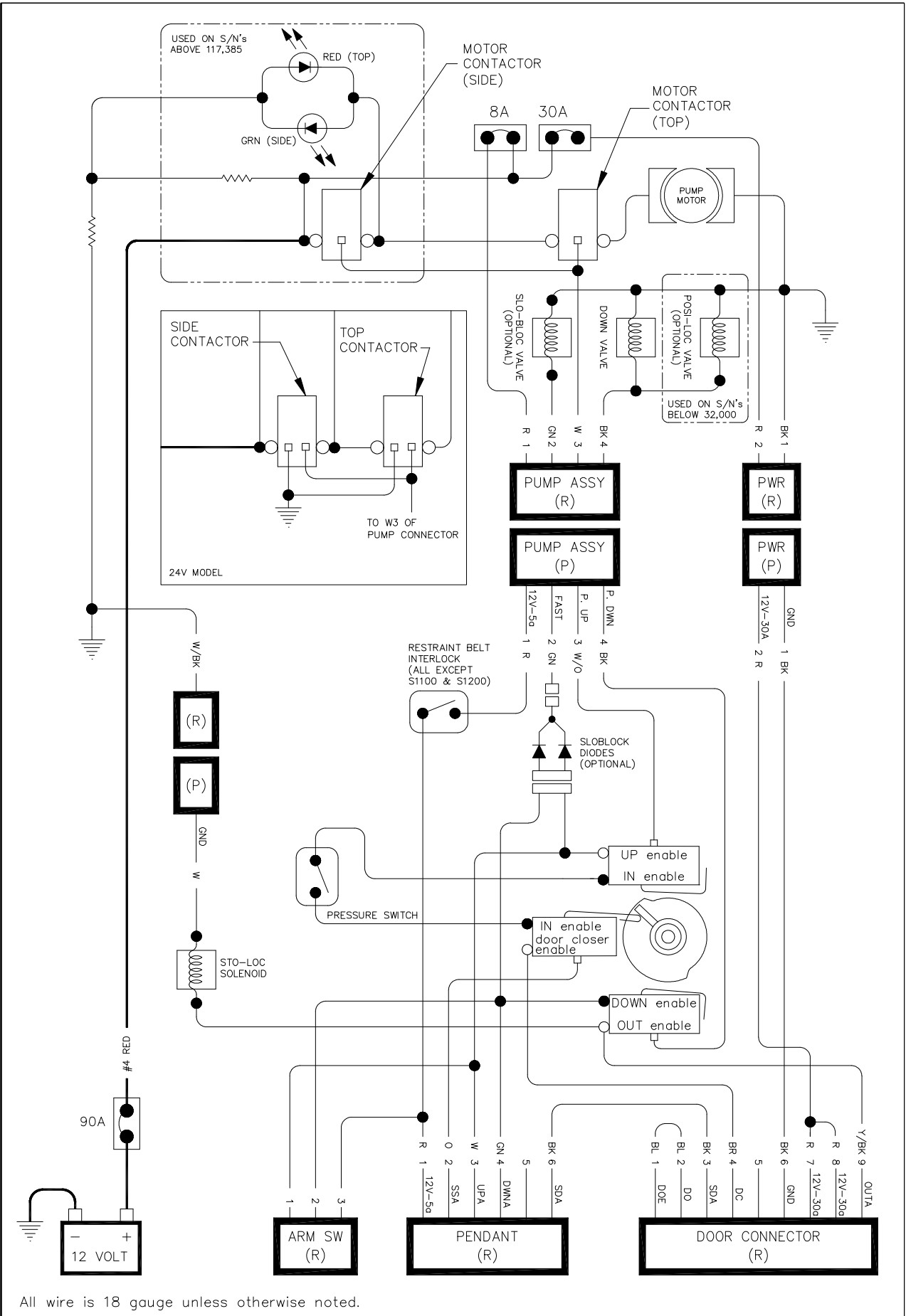


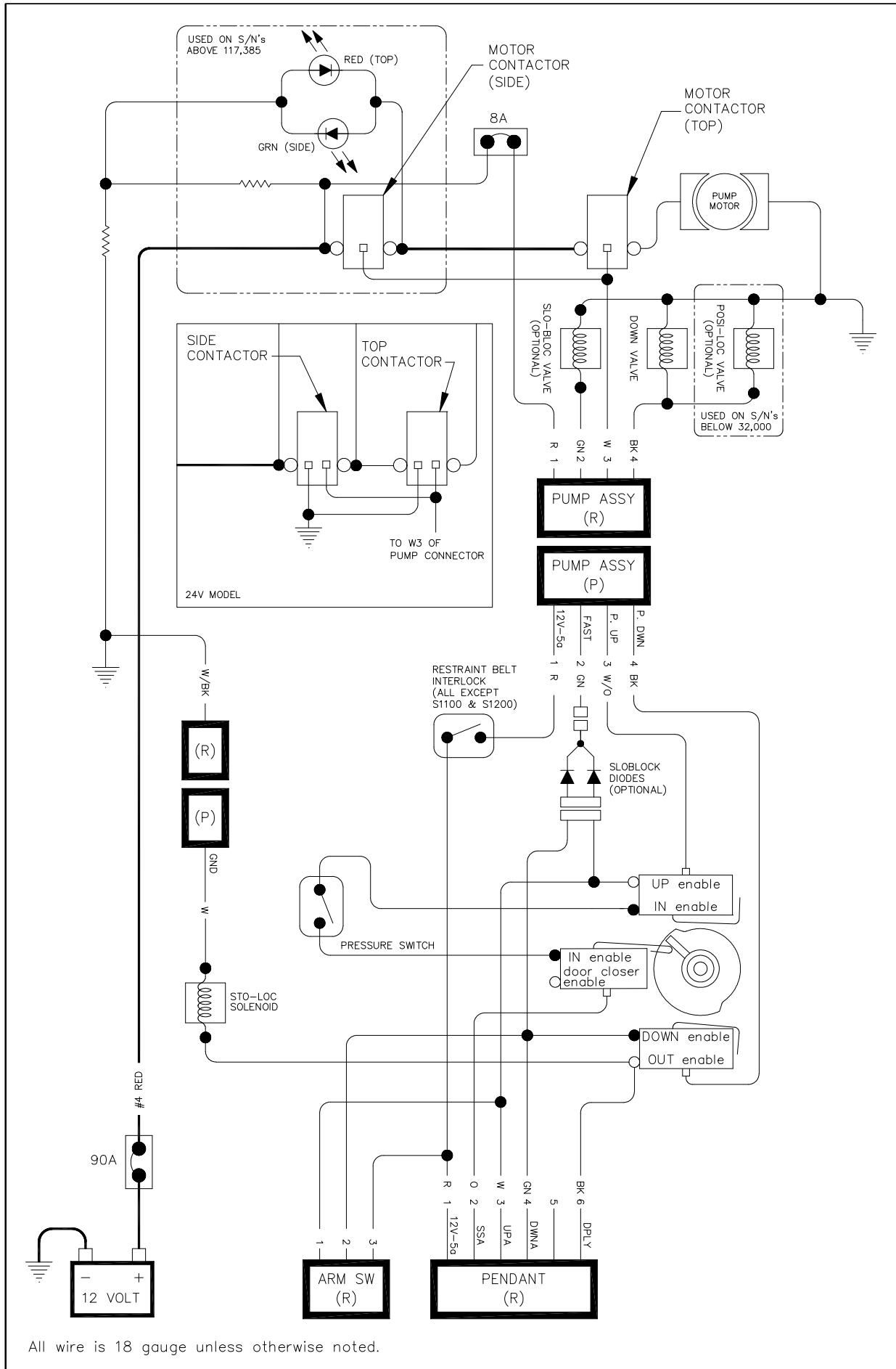
FIGURE 3-5: LIMIT SWITCH ACTUATION

3. WIRING DIAGRAMS



All wire is 18 gauge unless otherwise noted.

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

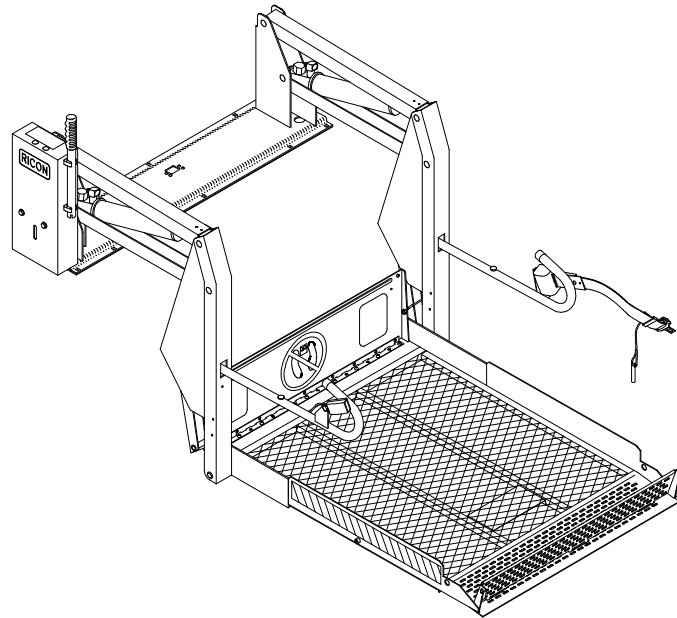


All wire is 18 gauge unless otherwise noted.

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

IV. S-SERIES ADA TRANSIT SPARE PARTS

This chapter contains parts diagrams and parts lists for the Ricon S-Series ADA Transit Use Wheelchair and Standee Lift with Manual Rollstop. The exploded view of each major lift assembly shows individual components referenced by numbers. The reference number is on each associated list, along with a part description, the quantity use, 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 | S2006-S12000000 and S5006-S12000000 |
| DOCUMENTATION KIT NUMBER | 01098 |
| PRODUCTION DECAL SET NUMBER | SXXXXLSXXXXXXXXX |
| SPARE DECAL KIT NUMBER | 26018 |

PARTS DIAGRAM

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DATE: 05/28/03

DWG. SSX00001

REV J

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

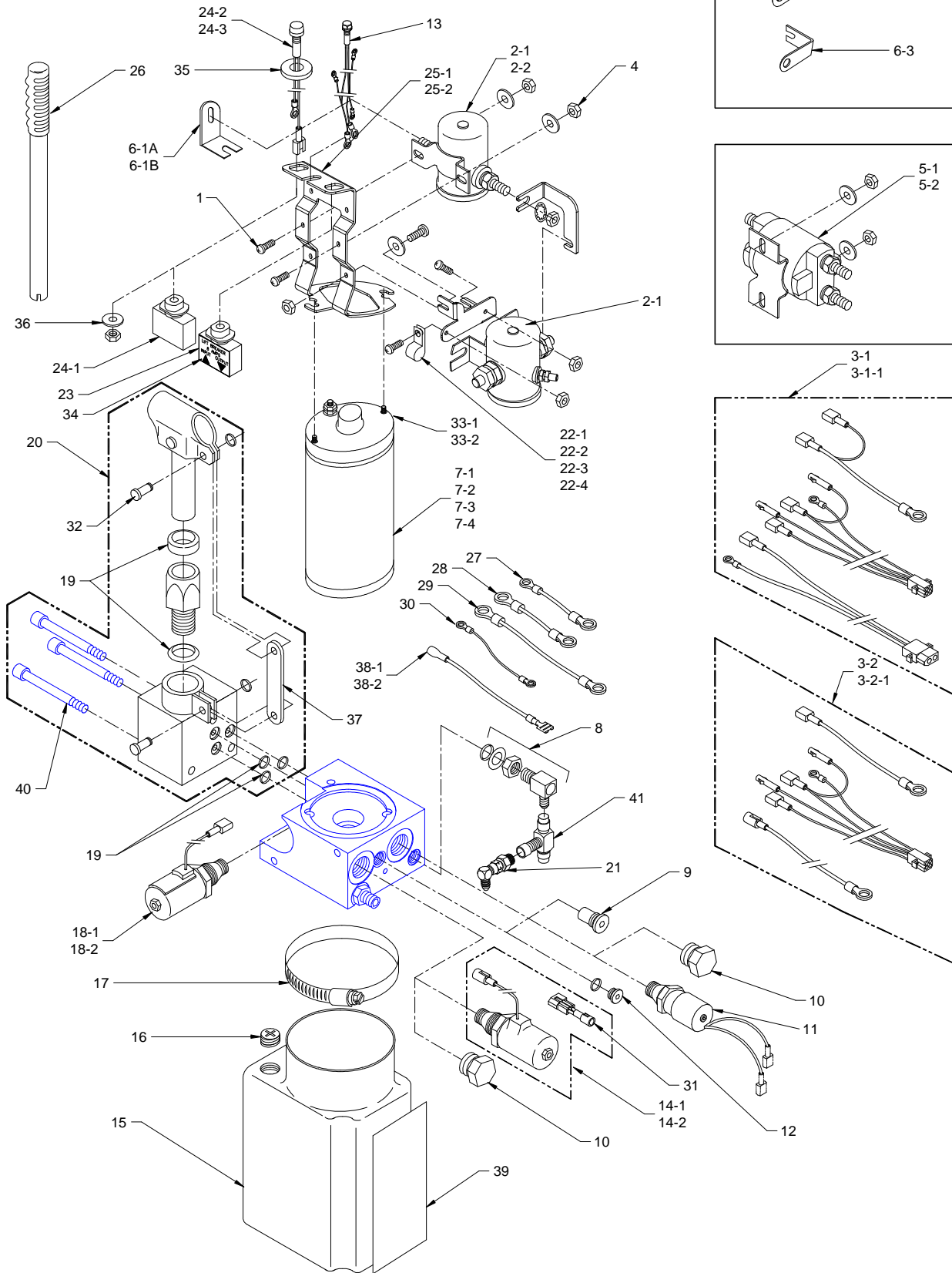


FIGURE 4-1: MONARCH HYDRAULIC POWER UNIT #1

**FIGURE 4-1: 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 | SCREW, PAN HEAD, 10-24 X ½, SELF THREAD | 3 | 28111T |
| 2-1 | SOLENOID, SPST, 12V | 1 | 19066 |
| 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 |
| 4 | NUT, NYLON INSERT, 10-24 (BAG OF TEN) | 3 | 13382 |
| 5-1 | SOLENOID, DPST, 12V | 1 | 20670 |
| 5-2 | SOLENOID, DPST, 24V | 1 | 26450 |
| 6-1A | BUS BAR, MOTOR, SOLENOID (SP SOLENOID) (S/N's 52456-95999) | 1 | V2-ES-034 |
| 6-1B | BUS BAR (S/N's 96000 - present) | 1 | 10807 |
| 6-2 | BUS BAR, MOTOR, SOLENOID (DP SOLENOID) (S/N's 32000-95999) | 1 | UV-ES-040 |
| 6-3 | BUS BAR (SN 96000 - present) | 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 (S/N's 96000 - present) | 1 | 14332 |
| | MOTOR ASSY, 12V, W/BRACKET, ISKRA | 1 | 14345 |
| 7-4 | MOTOR ASSY, 24V, ISKRA (S/N's 96000 - present) | 1 | 14333 |
| | MOTOR ASSY, 24V, W/BRACKET, ISKRA | 1 | 14346 |
| 8 | FITTING, "L", 1/4", SAE O-RING BOSS, 1/4" JIC | 1 | 18235 |
| 9 | DECELERATION VALVE | 1 | V2-SH-279 |
| 10 | PLUG, CAVITY, 3/4-16, w/O-RING | 2 | V2-SH-001 |
| 11 | SWITCH, HYDRAULIC PRESSURE | 1 | 15207 |
| 12 | PLUG, w/O-RING | 1 | V2-SH-182 |
| 13 | LIGHT ASSY, INDICATOR, 12V | 1 | 19067 |
| 14-1 | SPOOL VALVE KIT, 12V, ADA APPLICATIONS | 1 | 01176 |
| 14-2 | SPOOL VALVE KIT, 24V, ADA APPLICATIONS | 1 | 01177 |
| 15 | RESERVOIR, POWER UNIT, PLASTIC | 1 | V2-SH-108 |
| 16 | PLUG, BREATHER, RESERVOIR | 1 | V2-SH-106 |
| 17 | CLAMP, HOSE | 1 | V2-SH-109 |
| 18-1 | HYDRAULIC POPPET VALVE ASSY, 12V DELTROL | 1 | V2-SH-105 |
| 18-2 | HYDRAULIC 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 | FITTING, SNL, 1/4J, 1/4J, STL | 1 | VS-SH-06 |
| 22-1 | CABLE CLAMP, 3/8", NYLON | 1 | 25516 |
| 22-2 | CABLE CLAMP, 3/16", NYLON (BAG OF TEN) | 1 | 19798 |
| 22-3 | CABLE CLAMP, 5/16", NYLON (BAG OF TEN) | 1 | 19772 |
| 22-4 | CABLE CLAMP, ½", NYLON (BAG OF TEN) | 1 | 19774 |
| 23 | CIRCUIT BREAKER, 8 AMP, WITH DECAL | 1 | V2-SH-005 |
| 24-1 | CIRCUIT BREAKER, 30 AMP | 1 | 26510 |
| 24-2 | LIGHT, LIFT ARMED INDICATOR, 12V (S/N's 61878 - present) | 1 | UL-ES-034 |
| 24-3 | LIGHT, LIFT ARMED INDICATOR, 24V (S/N's 61878 - present) | 1 | V2-ES-016 |
| 25-1 | BRACKET, SOLENOID MOUNTING (32000 - 95999) | 1 | V2-SH-127 |
| 25-2 | BRACKET, SOLENOID ISKRA (SN 96000 - present) | 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 (located inside of motor) (SN 32000 - 95999) | 1 | V2-SH-115B |
| 33-2 | KIT, BRUSH SET (located inside of motor) (SN 96000 - present) | 1 | 14334 |
| 34 | DECAL, 8 AMP CIRCUIT BREAKER | 1 | 26290 |
| 35 | ADAPTER, .625 D-HOLE TO .484 ROUND | 1 | V2-ES-059 |
| 36 | WASHER, 7/16 FLAT (S/N's 61878 - present) (BAG OF TEN) | 1 | 19716 |

| REF. | DESCRIPTION | QTY. | PART NO. |
|------|--|------|-----------|
| 37 | BRACKET, TENSION LINK | 1 | V2-SH-149 |
| 38-1 | JUMPER, PRESSURE SWITCH, RH PUMP | 1 | 15860 |
| 38-2 | JUMPER, PRESSURE SWITCH, LH PUMP | 1 | 15861 |
| 39 | DECAL, OIL LEVEL WARNING | 1 | 32-10-154 |
| 40 | SCREW, HEX RECESS HEAD, 1/4-20X2 | 3 | 28490 |
| 41 | FITTING, SRT, 1/4J, STL | 1 | V2-SH-012 |
| 42** | KIT, RETROFIT, 2 ND SOLENOID, 12V | 1 | 19068 |
| 43** | KIT, RETROFIT, 2 ND SOLENOID, 24V | 1 | 19843 |
| 44** | HARNESS, EXT, RH PUMP | 1 | V2-ES-155 |

** Item not shown.

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

DATE: 04/26/95

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REV. 002

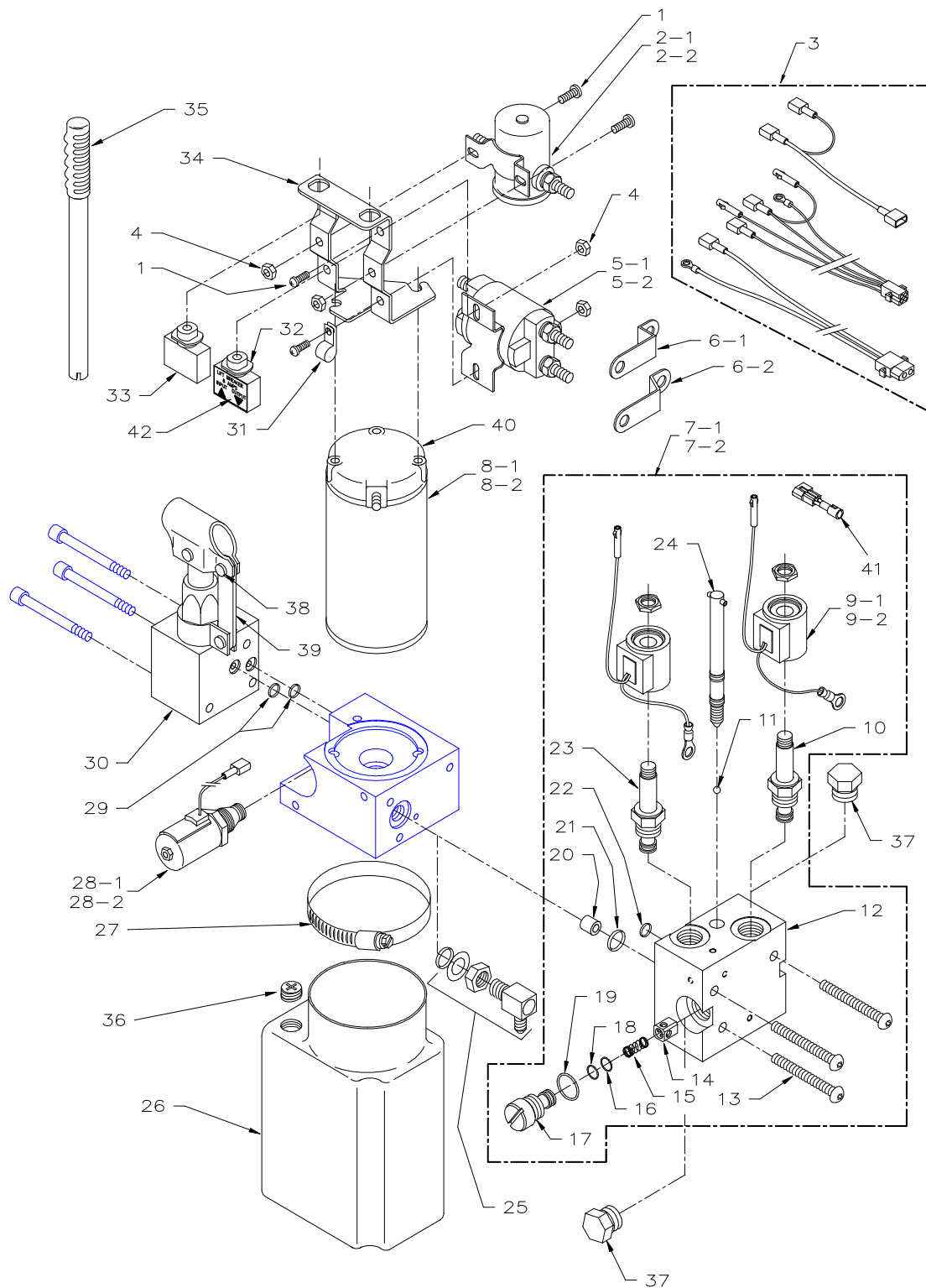
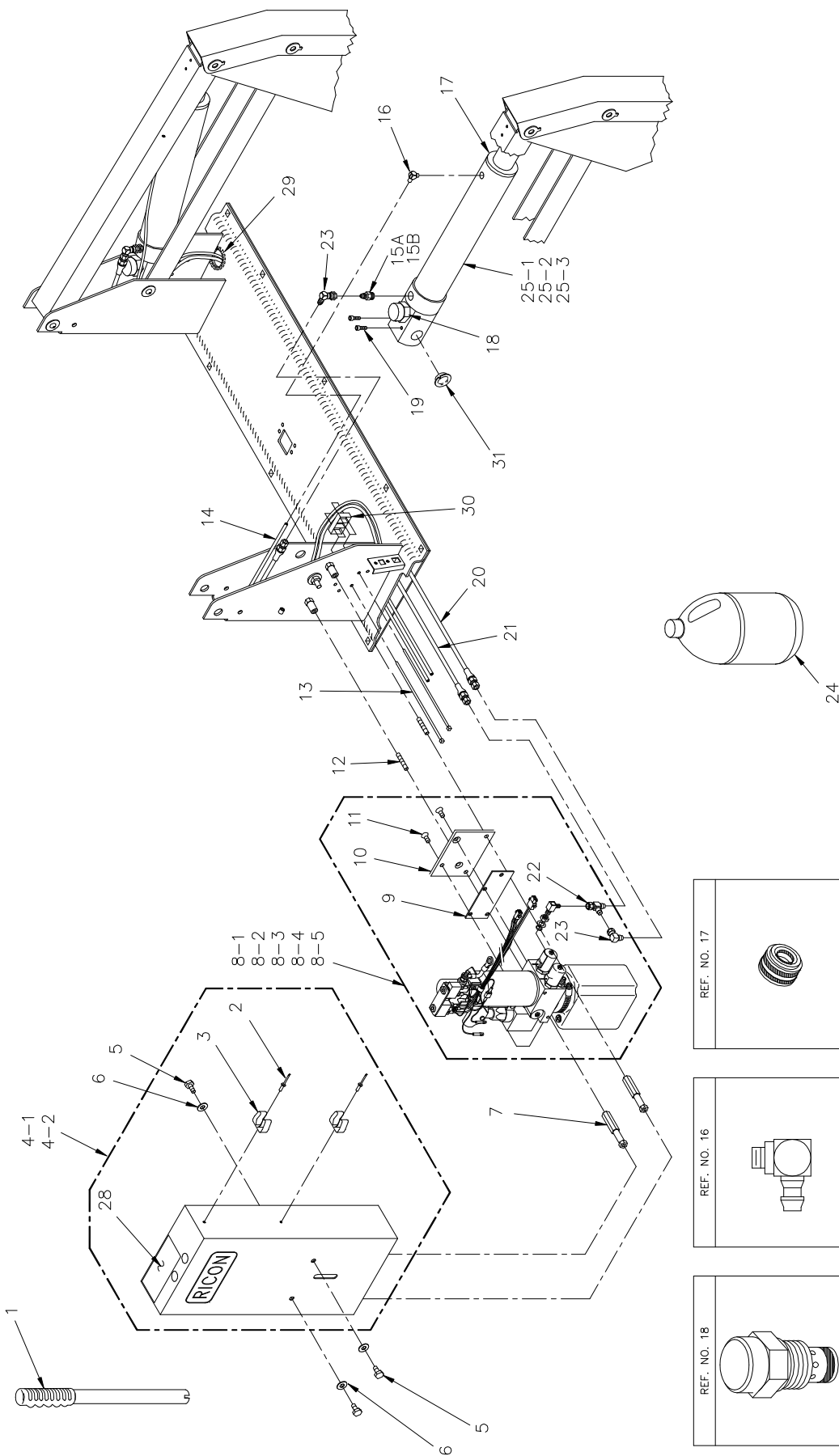


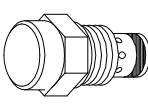
FIGURE 4-2: MONARCH HYDRAULIC POWER UNIT #2

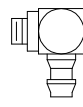
**FIGURE 4-2: MONARCH HYDRAULIC POWER UNIT #2
S-SERIES (ALL MODELS) WHEELCHAIR LIFT
SERIAL NO's. 32000 - 34999**


| REF | DESCRIPTION | QTY | PART NO |
|------|---|-----|------------|
| 1 | SCREW, PAN HEAD,10-24 X 1/2, SELF THREAD | 3 | 28111T |
| 2-1 | SOLENOID, SPST, 12V | 1 | 26444 |
| 2-2 | SOLENOID, SPST, 24V | 1 | 26449 |
| 3 | HARNESS, PUMP, COMMON, 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, HYDRAULIC COMBINATION BLOCK, 12V | 1 | 01149 |
| 7-2 | KIT, HYDRAULIC COMBINATION BLOCK, 24V | 1 | 01148 |
| 8-1 | MOTOR ASSY, 12V, 3", MONARCH PUMP | 1 | V2-SH-115 |
| 8-2 | MOTOR ASSY, 24V, 3", MONARCH PUMP | 1 | V2-SH-116 |
| 9-1 | VALVE COIL ASSY, 12V, HYDRAULIC | 2 | V2-SH-143A |
| 9-2 | VALVE COIL ASSY, 24V, HYDRAULIC | 2 | V2-SH-142A |
| 10 | VALVE, 2-WAY, NC SPOOL HYDRAULIC | 1 | V2-SH-145 |
| 11 | BALL BEARING, STEEL, 1/4" DIA. | 1 | V2-SH-144 |
| 12 | BLOCK, COMBINATION, POSI-LOC/SLO-BLOC | 1 | V2-SH-157 |
| 13 | SCREW, BUTTON HEAD, 5/16-18 X 2 1/4" | 3 | 282294 |
| 14 | POPPET, MOVABLE ORIFICE | 1 | V2-SH-152 |
| 15 | SPRING, COMP., .31 X .75, .02 WIRE | 1 | 25453 |
| 16 | O-RING, NITRILE, .36ID, .0 W | 1 | 24012 |
| 17 | CARTRIDGE, FIXED ORIFICE | 1 | V2-SH-150 |
| 18 | BACKER, NITRILE, .39ID, .053W | 1 | 24012B |
| 19 | O-RING, NITRILE, .64ID, .087W | 1 | 24908 |
| 20 | BUSHING, .28 ID X .47 OD X .44L | 1 | V2-SH-153 |
| 21 | O-RING, NITRILE, .609ID, .14W | 1 | 24208 |
| 22 | O-RING, NITRILE, .426ID, .07W | 1 | 24013 |
| 23 | VALVE, 2-WAY, NC POPPET | 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 | HYDRAULIC POPPET VALVE, 12V | 1 | V2-SH-105 |
| 28-2 | HYDRAULIC POPPET VALVE, 24V | 1 | V2-SH-136 |
| 29 | O-RING, NITRILE, .301ID, .07W | 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, BREATHER, RESERVOIR | 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 |

S-SERIES HYDRAULIC SYSTEM
 SERIAL NO's. 32000 - PRESENT



- 

REF. NO. 18
 FLOW CONTROL, PRESSURE COMPENSATED, FIXED RATE
- 

REF. NO. 16
 FITTING, "1" MALE 10-32 X 1/4 BARB
- 

REF. NO. 17
 KIT, HYDRAULIC CYLINDER REBUILD

FIGURE 4-3: S-SERIES HYDRAULIC SYSTEM

**FIGURE 4-3: 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", BLIND, STEEL, DOME | 2 | 14-30-408 |
| 3 | CLIP, BACKUP PUMP HANDLE, RETAINING | 2 | 25543 |
| 4 | COVER, PUMP, RH (S.N's. 31000-31999 & 35000-) | 1 | V2-CV-121 |
| 4-1 | COVER, PUMP, LH, MECH. ASSY. S-SERIES (S/N's 31000-31999 & 35000 - present) | 1 | V2-CV-220 |
| 4-2 | COVER, PUMP, (S/N's 6000 - 31000) | 1 | V2-CV-021 |
| 5 | SCREW, HEX HEAD, 5/16-18 X 0.625 (Bag of Ten) | 3 | 14495 |
| 6 | WASHER, FLAT, 5/16" (Bag of 10) | 3 | 13350 |
| 7 | HEX ROD, PUMP STANDOFF | 2 | V2-CV-015 |
| 8 | PUMP, NO-TOP, UV RES, 2KPSI | 1 | PM212002007 |
| 8 | PUMP, W/INTRLK & ANTI-DRIFT, 12V | 1 | PM212090110 |
| 8-1 | HYDRAULIC PUMP, 12V, w/COMMON BRACKET (SERIAL NO'S 31000 - 31999 & 35000 - present) | 1 | PM212090100 |
| 8-2 | HYDRAULIC PUMP, 24V, w/COMMON BRACKET (SERIAL NO'S 31000 - 31999 & 35000 - present) | 1 | PM224110100 |
| 8-3 | HYDRAULIC PUMP, 12V, w/COMMON BRACKET (SERIAL NO'S 32000 - 34999) | 1 | PM212090100 |
| 8-4 | HYDRAULIC PUMP, 24V, w/COMMON BRACKET (SERIAL NO'S 32000 - 34999) | 1 | PM224110100 |
| 8-5 | HYDRAULIC PUMP, COMMON BRKT, W/O INTLK, RH STD, DCL, 12V | 1 | PM212090308 |
| 9 | PLATE, PUMP, COVER MOUNT | 1 | V2-AC-71 |
| 10 | PLATE, PUMP MOUNTING | 1 | V2-AC-70 |
| 11 | SCREW, FLAT HEAD, 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, 1.5 DIA, BLACK, (BAG OF 10) | 2 | 25697 |
| 14 | TUBE, BLACK POLYURETHANE, 6MM/4MM (PER FOOT) | 9' | 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 - present) | 2 | 26591 |
| 16 | FITTING, "L", MALE 10-32X1/4 BARB | 2 | V2-SH-16 |
| 17 | KIT, CYLINDER REPAIR | 2 | V2-SH-56 |
| 18 | KIT, FLOW CONTROL, PRESSURE COMPENSATED, FIXED RATE (KIT OF 2) | 2 | 30968 |
| 19 | SCREW, HEX RECESS, 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 |
| 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-5606G | 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 | 8.5" | 26647 |
| 30 | SPACER, CABLE OR HOSE, PANDUIT | 2 | 25557 |
| 31 | BUSHING, 3/4"D X 3/8 | 4 | 25381 |

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

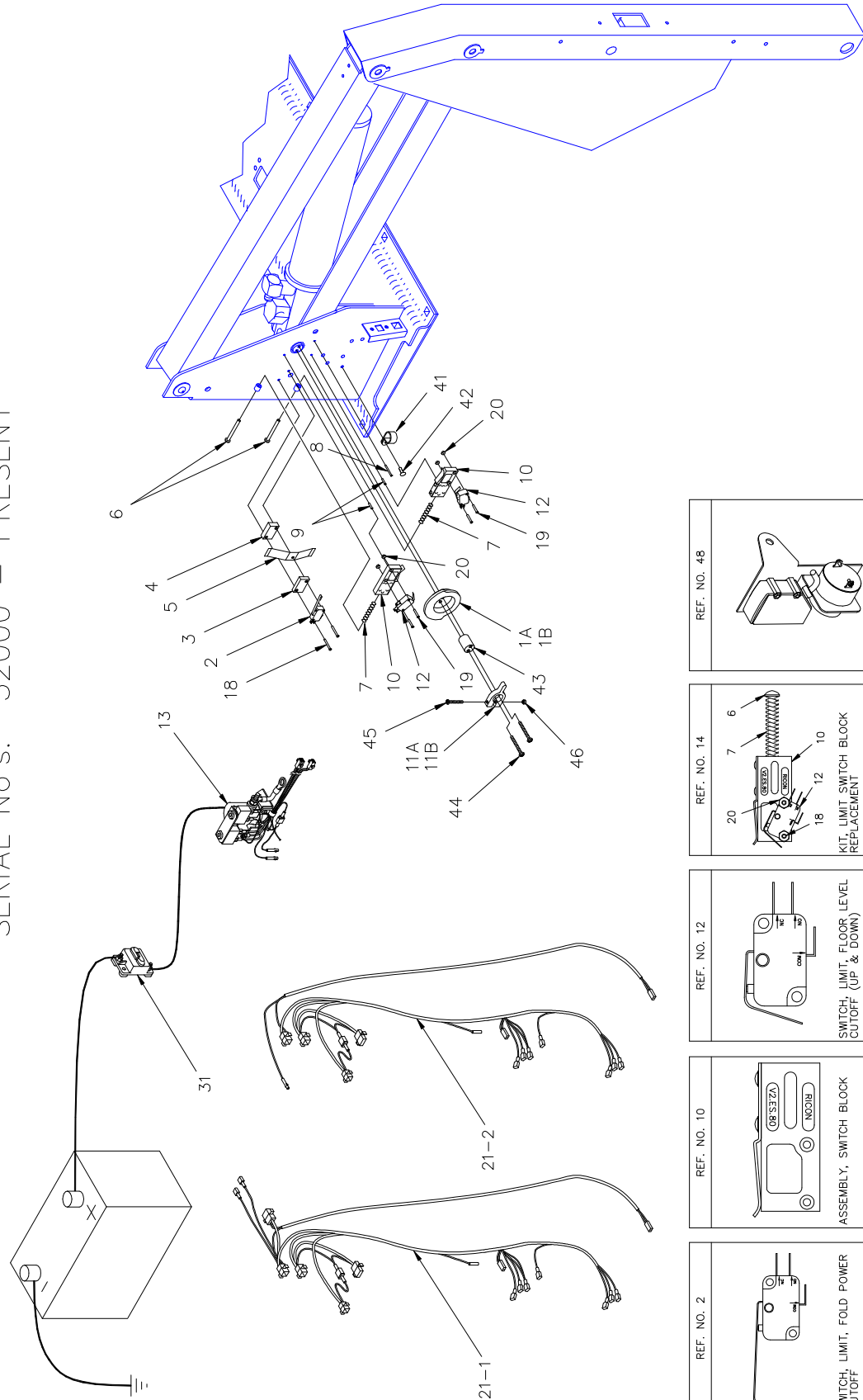


FIGURE 4-4: S-SERIES ELECTRICAL SYSTEM

**FIGURE 4-4: S-SERIES ELECTRICAL SYSTEM
(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 | V2-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 |
| 31 | KIT, CIRCUIT BREAKER, MAIN (90A) | 1 | 01010K |
| 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 |
| 48 | KIT, THRESHOLD WARNING DEVICE | 1 | 24300 |

S-SERIES PENDANT

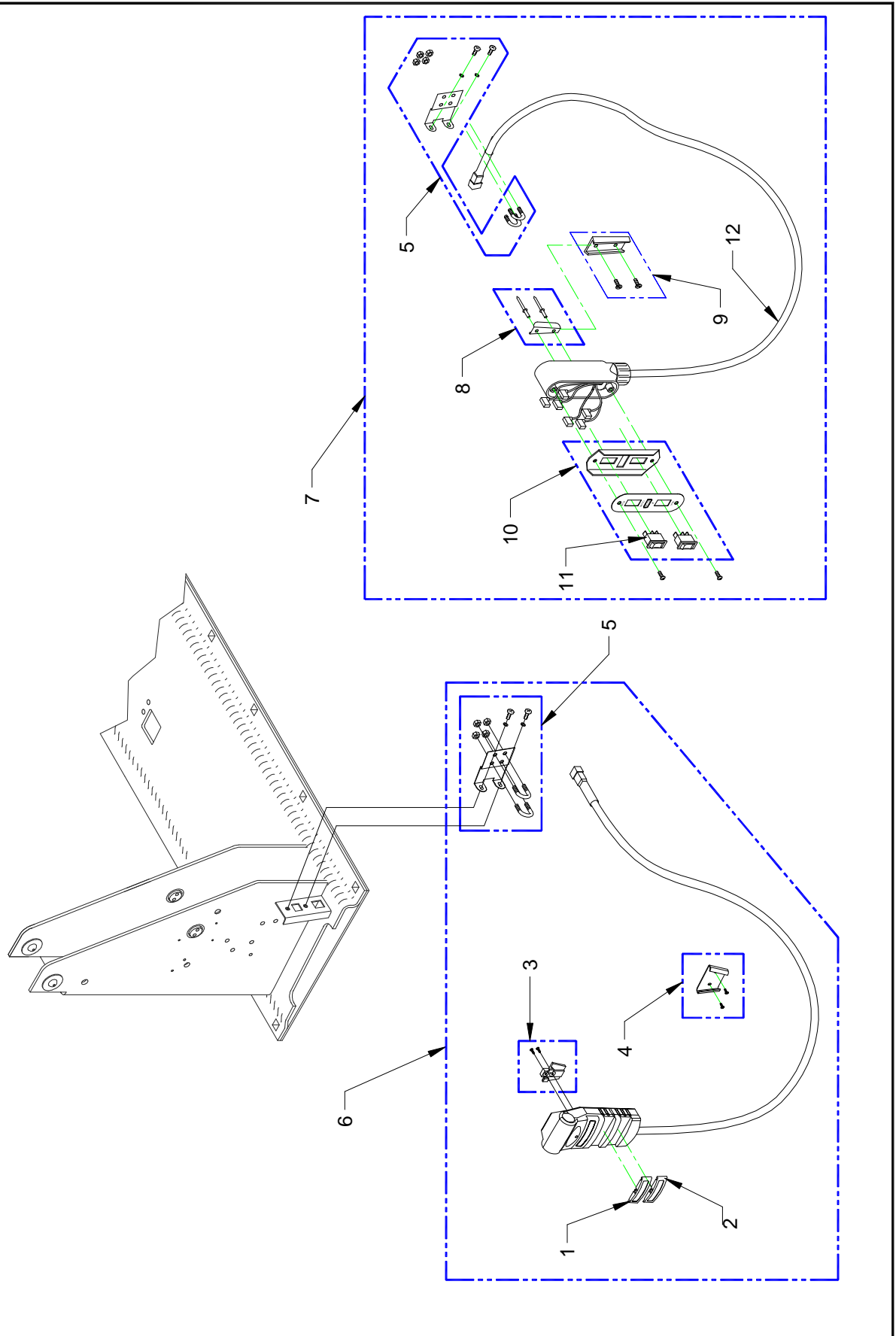


FIGURE 4-5: S-SERIES PENDANT

**FIGURE 4-5: 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 |
| 4 | KIT, WALL MOUNT, UNIVERSAL PENDANT | 1 | 14709 |
| 5 | KIT, CONTROL HARNESS STRAIN RELIEF, S-SERIES | 1 | 01007 |
| 6-1 | KIT, PENDANT, S-SERIES, 7 FT CORD | 1 | 14727 |
| 6-2 | KIT, PENDANT, S-SERIES, COILED CORD | 1 | 14728 |
| 6-3 | KIT, PENDANT, S-SERIES, 10 FT CORD | 1 | 14729 |
| 6-4 | KIT, PENDANT, S-SERIES, STEEL CORD | 1 | 14730 |
| 7 | KIT, PENDANT, OLD-STYLE (W/ROCKER SWITCH) | 1 | 01008 |
| 8 | KIT, CLIP, PENDANT, MALE W/RIVETS | 1 | 28781 |
| 9 | KIT, INSTL, PENDANT MTG CLIP | 1 | 01118 |
| 10 | FACEPLATE ASSY, PENDANT, SWITCH GD | 1 | V2-ES-035 |
| 11 | SWITCH, SP ROCKER, ON-OFF-ON BLK | 2 | 26455 |
| 12 | HARNESS REPLACEMENT, 7FT CORD (FOR 01008 ONLY-OLD STYLE PENDANT) | 1 | V2-ES-024 |

| |
|----------------|
| DATE: 02/04/99 |
| DWG. SSSM0005 |
| REV. 004 |

S-2006 SOLID PLATFORM
 SERIAL NO's. 43679 - PRESENT

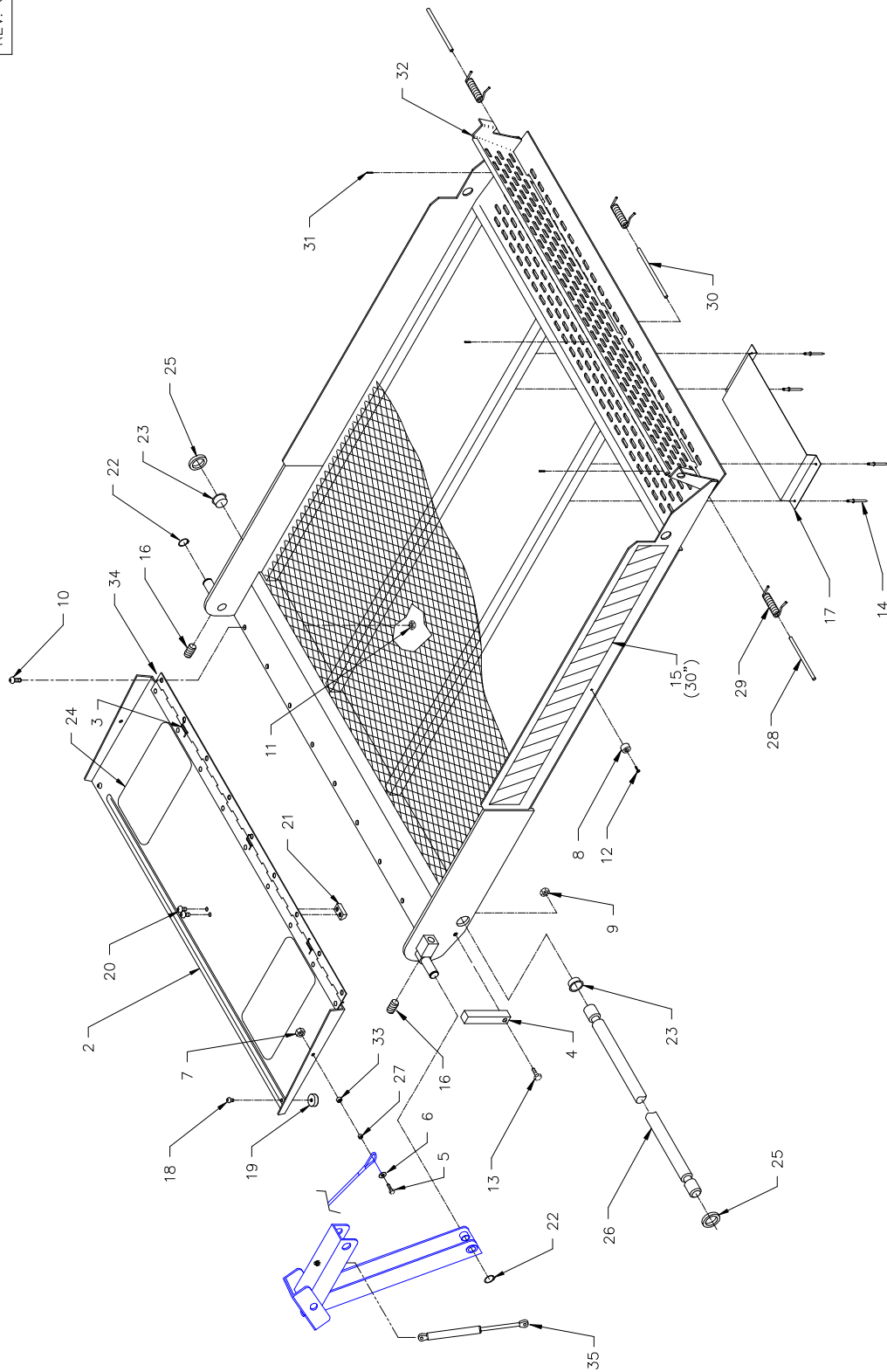


FIGURE 4-6: S-2006 SOLID PLATFORM

**FIGURE 4-6: S-2006 SOLID PLATFORM
SERIAL NO's. 43679 - PRESENT**

| REF | DESCRIPTION | QTY | PART NO |
|-----|---|-----|-----------|
| 1 * | PLATFORM, 39.5 X 48 SOLID, FINAL ASSY. | 1 | V2-PF-390 |
| 2 | INNER ROLLSTOP, 39.5 | 1 | V2-PF-143 |
| 3 | SPRING, BRIDGE PLATE | 3 | 25463 |
| 4 | BLOCK, PLATFORM LEVEL ADJUSTMENT | 2 | VT-AH-142 |
| 5 | BOLT, HEX HEAD, 1/4-20 X 5/8 (BAG OF 10) | 2 | 19755 |
| 6 | WASHER, 1/4 FLAT (BAG OF 10) | 2 | 17504 |
| 7 | NUT, HEX, 1/4-20, NYLON INSERT (Bag of Ten) | 2 | 15919 |
| 8 | BUMPER, UHMW PLASTIC, .75 D X .38 T | 2 | V2-AC-027 |
| 9 | NUT, NYLON INSERT, 5/16 (BAG OF 10) | 2 | 13349 |
| 10 | SCREW, BUTTON HEAD, 5/16-18 X 3/4", SST (BAG OF 10) | 9 | 15983 |
| 11 | NUT, HEX, 5/16-18, NYLON INSERT, SST (BAG OF 10) | 9 | 14415 |
| 12 | SCREW, PAN HEAD, TEK, 8 X 3/4" (BAG OF 10) | 2 | 15911 |
| 13 | SCREW, HEX HEAD, 5/16" X 1 (BAG OF 10) | 2 | 15953 |
| 14 | RIVET, 1/8 X 3/8", ALUMINUM (Bag of Ten) | 4 | 14490 |
| 15 | DECAL, 3.0X24, RED/WHITE DIAG | 2 | 20282 |
| 16 | SETSCREW, 1/2-20 X 1-1/4" (BAG OF TEN) | 2 | 19704 |
| 17 | PLATE, DECAL, 40" W/PLATFORM | 1 | V2-PF-054 |
| 18 | SCREW, BUTTON HEAD, 1/4-20 X 3/8 SST (BAG OF 10) | 2 | 13309 |
| 19 | GUIDE, 1.000 OD X 1/4-20 ID | 2 | UL-AC-034 |
| 20 | SCREW, BUTTON HEAD, 5/16-18 X 1/2 SST (BAG OF 10) | 2 | 14484 |
| 21 | CATCH, BASE LATCH | 1 | V2-AC-103 |
| 22 | RETAINING RING, 3/4" (BAG OF 10) | 2 | 11796 |
| 23 | BUSHING, 1"ID X 1/2" (KIT OF 10) | 2 | 19579 |
| 24 | SAFETY TREAD, 9.5 X 5.50, YELLOW | 2 | 25657 |
| 25 | SHIM, PVC | 2 | V2-BU-091 |
| 26 | SHAFT, PLATFORM MAIN, 1" X 46.75 | 1 | VT-PI-46 |
| 27 | BUSHING, STEEL, .25ID X .32OD X .19L | 2 | V2-BU-003 |
| 28 | PIN, HINGE .25 D X 4.75 L | 2 | R5-PI-505 |
| 29 | SPRING, TORSION, SST | 3 | R5-SP-505 |
| 30 | PIN, HINGE, .25 D X 5.53 L | 1 | V2-PI-093 |
| 31 | ROLL PIN, 3/32 X 1/2 (Bag of Ten) | 3 | 14496 |
| 32 | KIT, ROLLSTOP, ASSY W/SPRING | 1 | 14750 |
| 33 | SPACER, ROLLSTOP | 2 | UV-PF-839 |
| 34 | HINGE, BRIDGEPLATE | 1 | V2-PF-057 |

- Fully assembled platform with all items shown except numbers 25 and 26

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

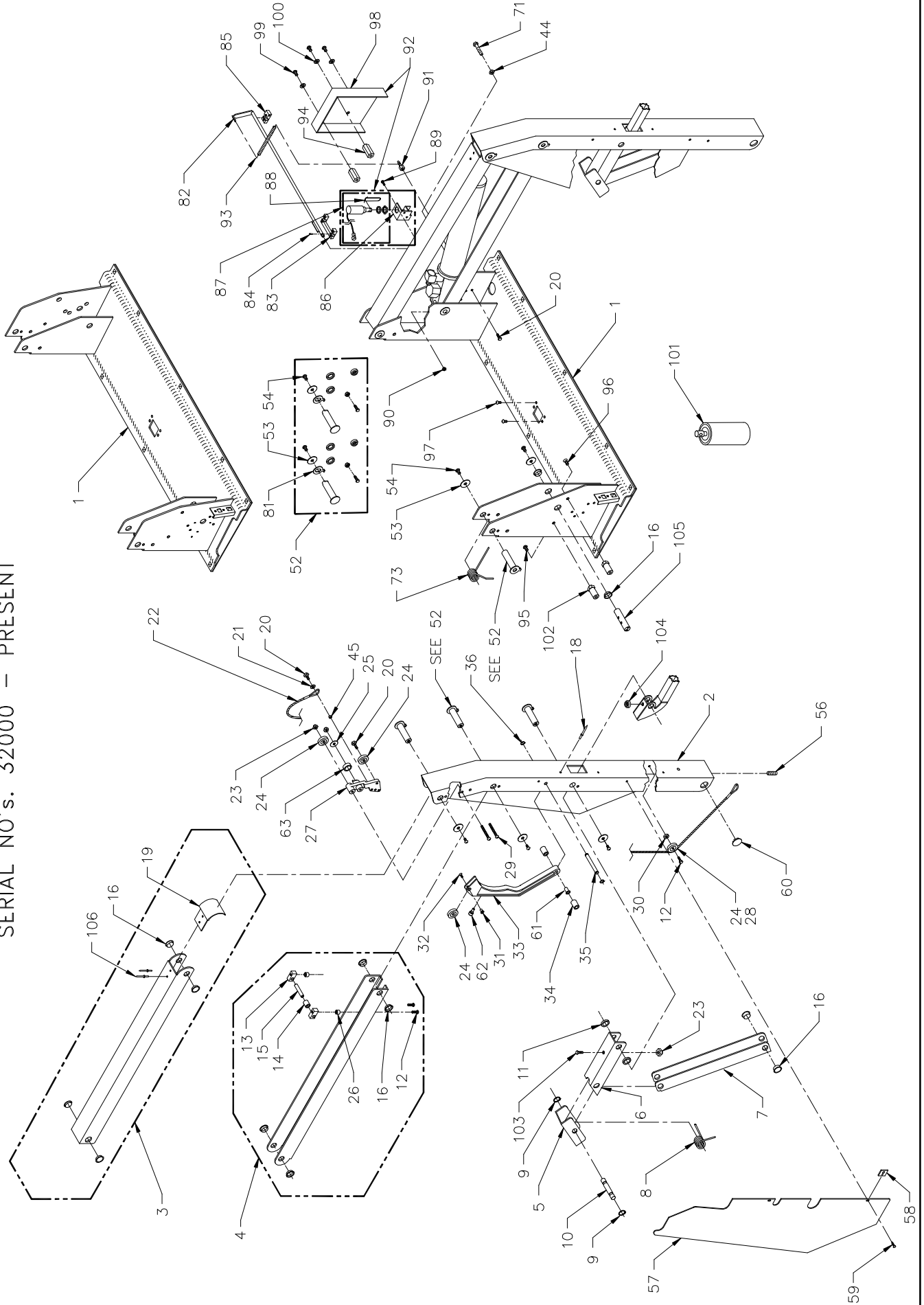


FIGURE 4-7: S-SERIES TRAVELING FRAME

32DSSM02 C

**FIGURE 4-7: S-SERIES TRAVELING FRAME
(ALL MODELS) WHEELCHAIR LIFT
SERIAL NO's. 32000 - PRESENT**

| REF | DESCRIPTION | QTY | PART NO |
|-------|--|------|-----------|
| 1-1 | BASEPLATE ASSY, 26", w/INTERLOCK, S1100 | 1 | 14450 |
| 1-2 | BASEPLATE ASSY, 30", w/o INTERLOCK | 1 | 14452 |
| | BASEPLATE ASSY, 30", w/INTERLOCK | 1 | 14453 |
| | BASEPLATE ASSY, 30", w/o INTERLOCK, RH | 1 | 14452R |
| | BASEPLATE ASSY, 30", w/INTERLOCK, S1100 | 1 | 14451 |
| 1-3 | BASEPLATE ASSY, 32", w/o INTERLOCK | 1 | 14454 |
| | BASEPLATE ASSY, 32", w/INTERLOCK | 1 | 14455 |
| | BASEPLATE ASSY, 32", w/o INTERLOCK, RH | 1 | 14454R |
| 2-1 | VERTICAL ARM ASSY, RH, S1200 | 2 | VS-AC-241 |
| | VERTICAL ARM ASSY, LH, S1200 | 2 | VS-AC-242 |
| 2-2 | VERTICAL ARM ASSY, S2000 | 2 | VT-AC-141 |
| | VERTICAL ARM ASSY, S5000 | 2 | V5-AC-141 |
| 2-3 | VERTICAL ARM ASSY, RH, S1100, (S/N's 32000-62043) | 2 | V1-AC-241 |
| | VERTICAL ARM ASSY, LH, S1100, (S/N's 62044 - present) | 2 | V1-AC-242 |
| 3-1 | TOP ARM ASSY, S1200 | 2 | VS-AC-250 |
| 3-2 | TOP ARM ASSY, S2000 | 2 | VT-AC-250 |
| 3-3 | TOP ARM ASSY, S5000 | 2 | V5-AC-250 |
| 4-1 | BOTTOM ARM ASSY, S1200 | 2 | VS-AC-252 |
| 4-2 | BOTTOM ARM ASSY, S2000 | 2 | VT-AC-252 |
| 4-3 | BOTTOM ARM ASSY, S5000 | 2 | V5-AC-252 |
| 5 | SADDLE ASSEMBLY | 2 | VT-AC-046 |
| 6 | LINK, KNUCKLE LEVER, UPPER 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 PLATFORM | 1 | V1-AC-058 |
| 7-5 * | LINK, VERTICAL KNUCKLE, S1100, ASSY W/LOAD SENSOR, SPLIT PLATFORM | 1 | V1-AC-158 |
| 7-6 | LINK, VERTICAL KNUCKLE, S1200, W/O LOAD SENSOR | 2 ** | VS-AC-069 |
| 7-7 | LINK, VERTICAL KNUCKLE, S2000, W/O LOAD SENSOR | 2 ** | VT-AC-069 |
| 7-8 | LINK, VERTICAL KNUCKLE, S5000, W/O LOAD SENSOR | 2 ** | V5-AC-069 |
| 7-9 | LINK, VERTICAL KNUCKLE, S1100, W/O LOAD SENSOR, SOLID PLATFORM | 2 ** | V1-AC-069 |
| 7-10 | LINK, VERTICAL KNUCKLE, S1100, W/O LOAD SENSOR, SOLID PLATFORM | 2 ** | V1-AC-071 |
| 8-1 | SPRING, KNUCKLE ACTUATOR (S/N's 31999 and below) | 2 | VT-SP-45 |
| 8-2 | SPRING, KUNCKLE ACTUATOR (S/N's 32000 - present) | 2 | VT-SP-42 |
| 9 | RETAINING RING, .75" EXT, BAG OF 10 | 1 | 11796 |
| 10 | PIN, SNAP RING, .75 OD X 2.145L | 2 | VT-PI-41 |
| 11 | SPACER, KNUCKLE LINK | 4 | VT-BU-42 |
| 12 | SCREW, BUTTON HEAD, 1/4-20 X 1", SST, BAG OF 10 | 1 | 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-PI-094 |
| 16 | BUSHING, FLANGED, .75ID, BAG OF 10 | 3 | 19576 |
| 18 | RIVET, BLIND, 3/16 X 1/2", AL, BAG OF 10 | 1 | 15918 |
| 19 | CAP, END, UPPER PARALLEL ARM | 2 | V2-AC-89 |
| 20-1 | SCREW, HEX HEAD, 1/4-20 x 3/4, GR5, BAG OF 10 | 4 | 13308 |
| 20-2 | SCREW, FLAT HEAD, 1/4-20 x 1/2, BAG OF 10 | 1 | 15928 |
| 21 | WASHER, FLAT, .63OD x .28ID x .065, BAG OF 10 | 2 | 17504 |
| 22-1 | CABLE ASSY, REPLACEMENT, BRIDGEPLATE, S1200, 49.50" | 2 | 16093 |
| 22-2 | CABLE ASSY, REPLACEMENT, BRIDGEPLATE, S2000, 52.50" | 2 | 16094 |
| 22-3 | CABLE ASSY, REPLACEMENT, BRIDGEPLATE, S5000, 55.50" | 2 | 16095 |
| 22-4 | CABLE ASSY, REPLACEMENT, BRIDGEPLATE, S1100, 45.00" | 2 | 13661 |
| 23 | NUT, HEX, 1/4-20, NYLON INSERT, BAG OF 10 | 2 | 15919 |
| 24 | BEARING, GROOVED | 8 | VS-AH-06 |
| 25 | WASHER, FENDER, 1.00OD x .28ID x .065, BAG OF 10 | 2 | 25623 |
| 26 | STAND-OFF, .38 LG, 1/4" ID X 1/2" OD | 4 | V2-AC-011 |
| 27 | BLOCK, PULLEY MOUNT, BRIDGEPLATE | 2 | V2-AC-112 |
| 28 | BEARING, GROOVED, 1" OD, .25 ID, S1100 only, (S/N's 62044 - present) | 2 | 25374 |

| REF | DESCRIPTION | QTY | PART NO |
|-------|--|-----|-----------|
| 29 | SCREW, BUTTON HEAD, 1/4-20 x 2 1/4, SST, BLK OXIDE, BAG OF 10 | 1 | 19720 |
| 30 | BUSHING, 5/8 OD X 3/16L | 2 | VS-AH-13 |
| 31 | T-NUT, FLAT HEAD, 10-24 X .25 OD X .44L | 2 | V2-AC-015 |
| 32 | SCREW, FLAT HEAD, 10-24 x 1/2, BAG OF 10 | 1 | 13303 |
| 33 | CAM ASSY, IRS ACTUATOR | 2 | V2-AC-190 |
| 34 | KIT, SPACER, RUBBER, BRIDGEPLATE CAM, KIT OF 4 | 1 | 01224 |
| 35 | PIN, SNAP RING, .38OD X 3.09 L | 2 | VS-PI-09 |
| 36 | RETAINING RING, .38ID, BAG OF 10 | 1 | 11795 |
| 45 | BUSHING, STEEL, 251D X 320D X .19L | 2 | V2-BU-003 |
| 51 | PIN, LINK ARM | 6 | 16679 |
| 52 | KIT, RETROFIT, PIN, LINK, ARM ASSY | 3 | 16679 |
| 53 | WASHER, FENDER, 5/16, SST, BAG OF 10 | 1 | 15921 |
| 54 | SCREW, BUTTON HEAD, 5/16-18 X 1/2 SST, BAG OF 10 | 1 | 14494 |
| 56 | SETSCREW, 3/8-16 x 3/8, CUP PT, BAG OF 10 | 1 | 11797 |
| 57-1 | KIT, PINCH POINT SHIELD, S1200/S2000 | 4 | 25722 |
| 57-2 | KIT, PINCH POINT SHIELD, S5000 | 4 | 25723 |
| 57-3 | KIT, PINCH POINT SHIELD, S1100 | 4 | 25721 |
| 58 | SPRING NUT, 10-24, U-TYPE, BAG OF 10 | 1 | 11799 |
| 59 | SCREW, PAN HEAD, 10-24 x 1/2, BAG OF 10 | 1 | 13304 |
| 60 | PLUG, HOLE, BLACK, NYLON, 1" LOW PROFILE (S/N's 52246 - present) | 2 | 25563 |
| 61 | BEARING, NYLINER, 3/8 ID 11/16 LONG (S/N's 56000 - present) | 2 | 25562 |
| 62 | BUMPER, BUTTON, BRIDGEPLATE CAM, BAG OF 10 | 1 | 19783 |
| 63 | BUMPER, BRIDGEPLATE CAM ANTI-RATTLE (S/N's 56000 - present) | 2 | V2-BU-090 |
| 71 | SCREW, HEX HEAD, 1/4-20 X 1-3/4, GR5 (BAG OF 10) | 1 | 25696 |
| 73 | SPRING, UPPER PARALLEL ARM | 2 | V2-SP-97 |
| 80 | SETSCREW, 5/16-18 x 1, CUP PT, BAG OF 10 | 1 | 15830 |
| 81 | WASHER, KEYED | 2 | 20258 |
| 82-1 | KIT, LATCH RELEASE, 30", w/BLOCKS & HDWR | 1 | 28768 |
| 82-2 | KIT, LATCH RELEASE, 26", w/BLOCKS & HDWR | 1 | 28767 |
| 83-1 | BLOCK, MOUNTING, BASE LATCH, (S/N's 32000 - 44719) | 2 | V2-AC-001 |
| 83-2 | BLOCK, CENTER MOUNTING, BASE LATCH (S/N's 44720 - present) | 1 | V2-AC-102 |
| 84 | DOWEL PIN, .094 DIA X .38 L, BAG OF 10 | 1 | 25615 |
| 85 | BLOCK, MOUNTING, BASE LATCH | 1 | V2-AC-001 |
| 86 | BRACKET, STOW LOCK SOLENOID (S/N's 50517 - present) | 1 | V2-AC-108 |
| 87-1 | SOLENOID ASSY, S-SERIES, 12V (S/N's 50517 - present) | 1 | V2-ES-127 |
| 87-2 | SOLENOID ASSY, S-SERIES, 24V (S/N's 50517 - present) | 1 | V2-ES-128 |
| 88 | CLIP, SPRING, BASE LATCH | 1 | V2-AC-009 |
| 89-1 | SCREW, PAN HEAD, 10-24 x 1/2, BAG OF 10 | 1 | 13304 |
| 89-2 | SCREW, FLAT HEAD, 10-24 x 1/2, SST, BAG OF 10 | 1 | 14426 |
| 90 | NUT, HEX, NYLON INSERT, 10-24, BAG OF 10 | 1 | 13382 |
| 91 | PIN, SPRING MOUNTING | 1 | V2-PI-095 |
| 92-1 | KIT, REPLACEMENT SOLENOID, 12V (S/N's 32000-50516) | 1 | 01238 |
| 92-2 | KIT, REPLACEMENT SOLENOID, 24V (S/N's 32000-50516) | 1 | 01239 |
| 93 | SPRING, DOOR HELPER, .380D X 3.5" | 1 | V2-SP-093 |
| 94 | BUSHING, LATCH COVER | 2 | V2-BU-080 |
| 95 | SCREW, HEX HEAD, 5/16-18 X 3/4", BAG OF 10 | 1 | 15901 |
| 96 | SCREW, FLAT HEAD, 5/16-18 X 3/4, BAG OF 10 | 1 | 14499 |
| 97 | SCREW, BUTTON HEAD, 1/4-20 X 1/2" SST, BAG OF 10 | 1 | 15902 |
| 98 | COVER, BASE LATCH (S.N's. 50517 - present) | 1 | V2-CV-123 |
| 99 | SCREW, HEX HEAD, 5/16-18 X 0.625, BAG OF 10 | 1 | 14495 |
| 100 | WASHER, FLAT, 69OD x .34ID x .065, BAG OF 10 | 1 | 13350 |
| 101 | TOUCH-UP PAINT, SPRAY, CHARCOAL | 1 | 25340 |
| 102 | BUSHING, E-COVER MOUNT | 2 | V2-BU-081 |
| 103 | SCREW, HEX HEAD, 1/4-20 X 1 GR5, BAG OF 10 | 1 | 14493 |
| 104 | GROMMET, .30ID x .88OD x .44, BAG OF 10 | 1 | 23391 |
| 105-1 | PIN, CONTROL CAM, (S/N's 62560 - present) | 1 | V2-PI-091 |
| 105-2 | KIT, CONTROL CAM, RETROFIT | 1 | 01287 |
| 106 | RIVET, BLIND, STEEL 3/16X5/8 | 4 | 14-30-410 |

* Items 7-1 through 7-5 are used on serial no.'s 103,999 and below.

** Item quantity is one each for s/n's 103,999 and below and quantity is two each for s/n's 104,000 and above.

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S-SERIES STANDEE HANDRAIL SERIAL NO's. 43679-PRESENT

ADA TRANSIT
W-MANUAL ROLLSTOP

05/27/04

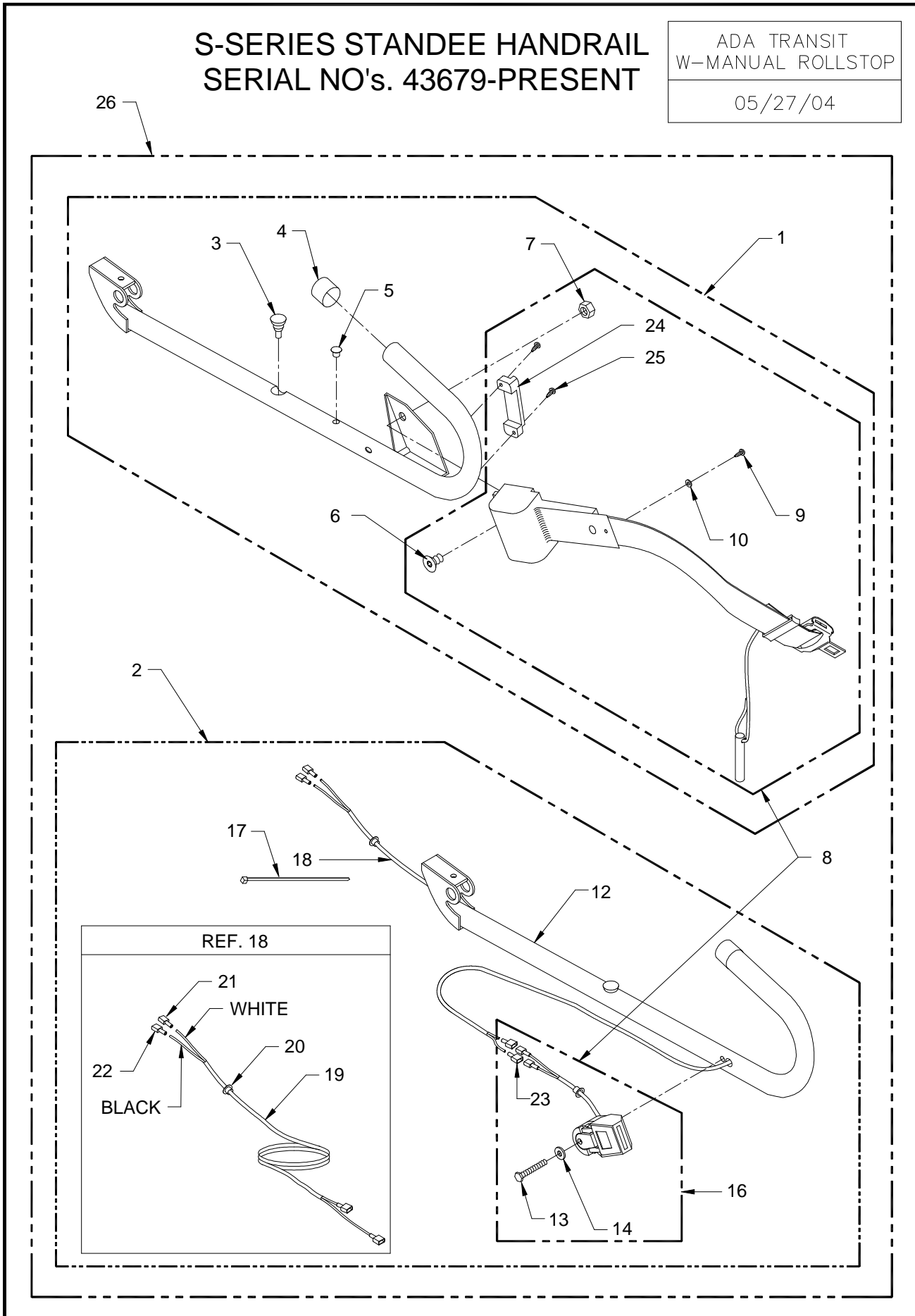


FIGURE 4-8: S-SERIES STANDEE HANDRAIL

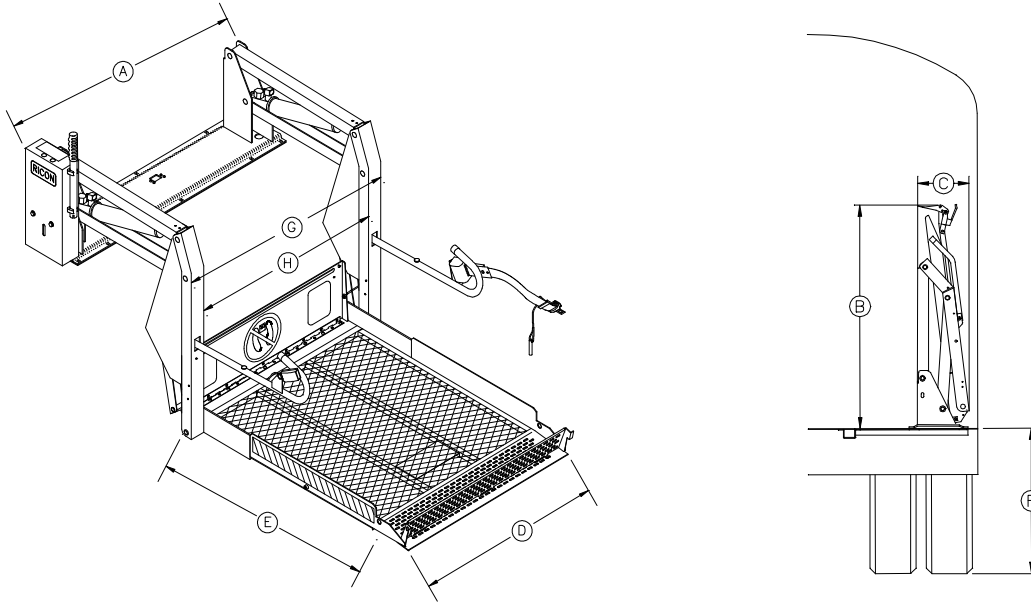
**FIGURE 4-8: S-SERIES STANDEE HANDRAIL
ADA TRANSIT USE WITH MANUAL ROLLSTOP
SERIAL NO's. 43679 - PRESENT**

| REF | DESCRIPTION | QTY | PART NO |
|------|--|-----|-----------|
| 1-1 | HANDRAIL ASSY, RH (S/N's 43679-55541) | 1 | V2-AC-038 |
| 1-2 | HANDRAIL ASSY, RH, S2006, ADA | 1 | 10809 |
| 1-3 | HANDRAIL ASSY, RH, S5006, ADA | 1 | 10813 |
| 2-1 | HANDRAIL ASSY, LH (S/N's 43679-55541) | 1 | V2-AC-039 |
| 2-2 | HANDRAIL ASSY, LH, S2006, ADA | 1 | 11712 |
| 2-3 | HANDRAIL ASSY, LH S5006 ADA | 1 | 11714 |
| 3 | BUMPER, RUBBER, BAG OF 10 | 2 | 20653 |
| 4 | CAP, ROUND | 2 | 25550 |
| 5 | HOLE PLUG, BLACK | 1 | V2-AC-91 |
| 6 | SCREW, FLAT HEAD, 7/16-14 x 1 | 1 | 282564 |
| 7 | NUT, NYLON INSERT, 7/16-14 | 1 | 283361 |
| 8-1 | KIT, RESTRAINT BELT ASSY, RETRACTABLE, 39" ADA | 1 | 19410 |
| 8-2 | KIT, RESTRAINT BELT ASSY, 34" ADA | 1 | 16092 |
| 9 | SCREW, SHEET METAL, PAN HEAD, #10 X 1/2 | 1 | 283895 |
| 10 | WASHER FLAT, #10, SST (BAG OF 10) | 1 | 14409 |
| 11 | DELETED | | |
| 12-1 | HANDRAIL ASSY, S2000 ADA, LH | 2 | VT-AC-84 |
| 12-2 | HANDRAIL ASSY, S5000 ADA, LH | 2 | V5-AC-84 |
| 13 | SCREW, HEX HEAD, 5/16-18 X 1, SST (BAG OF 10) | 2 | 19706 |
| 14 | WASHER, FLAT, .344 X .688X .065 (BAG OF 10) | 2 | 13350 |
| 15 | DELETED | | |
| 16-1 | KIT, BUCKLE ASSY W/SW & HDWR | 1 | 22017 |
| 17 | CABLE TIE, STD X 1.5 DIA BLACK (BAG OF 10) | 1 | 25697 |
| 18 | KIT, HARNESS BELT RESTRAINT | 1 | 01274 |
| 19 | DELETED | | |
| 20 | BUSHING, SNAP-IN | 1 | 28-26-077 |
| 21 | TERMINAL, SLIP, M, 14-16, FULLINSUL | 1 | 26369 |
| 22 | TERMINAL, SLIP, M, 14-16, FULLINSUL | 1 | 26368 |
| 23 | TERMINAL, SLIP, M, 18-22, FULLINSUL | 2 | 26352 |
| 24 | GUARD, RESTRAINT RETRACTOR | 1 | 10349 |
| 25 | SCREW, PAN HEAD, 10A X 3/4 | 2 | 28389 |
| 26-1 | SET, HANDRAILS, S2006, W-RETRACTOR | 1 | V2-AC-175 |
| 26-2 | SET, HANDRAILS, S5006, W-RETRACTOR | 1 | V5-AC-175 |

APPENDIX 1 LIFT SPECIFICATIONS

S-SERIES (ADA) TRANSIT USE WHEELCHAIR AND STANDEE LIFT WITH MANUAL ROLLSTOP

| | |
|---|--|
| Power electro-hydraulic Motor rating @ 12 volts DC 65 amp avg/cycle, 1250 psi @ 24 volts DC 32.5 amp avg/cycle, 1250 psi Hydraulic cylinders 2 ea, 1.5" dia, power-up/gravity-down | Rated load capacity 800 lbs Manual backup: up hand pump Manual backup: down pressure release valve Lift weight approx 350 - 380 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 |
| S2006-ADA | 54.5 | 58.25 | 14 | 39.5 | 48 | 42 | 47 | 40.5 |
| S5006-ADA | 54.5 | 58.50 | 14 | 39.5 | 48 | 48 | 47 | 40.5 |

