III. S-SERIES TRANSIT MAINTENANCE AND REPAIR

Regular maintenance of the RICON S-Series Transit Use Wheelchair Lift will help optimize its performance and reduce the need for repairs. This chapter contains cleaning and lubrication instructions, maintenance schedule, troubleshooting section, and maintenance diagrams.

⚠ CAUTION

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

A. LUBRICATION

⚠ CAUTION

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

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

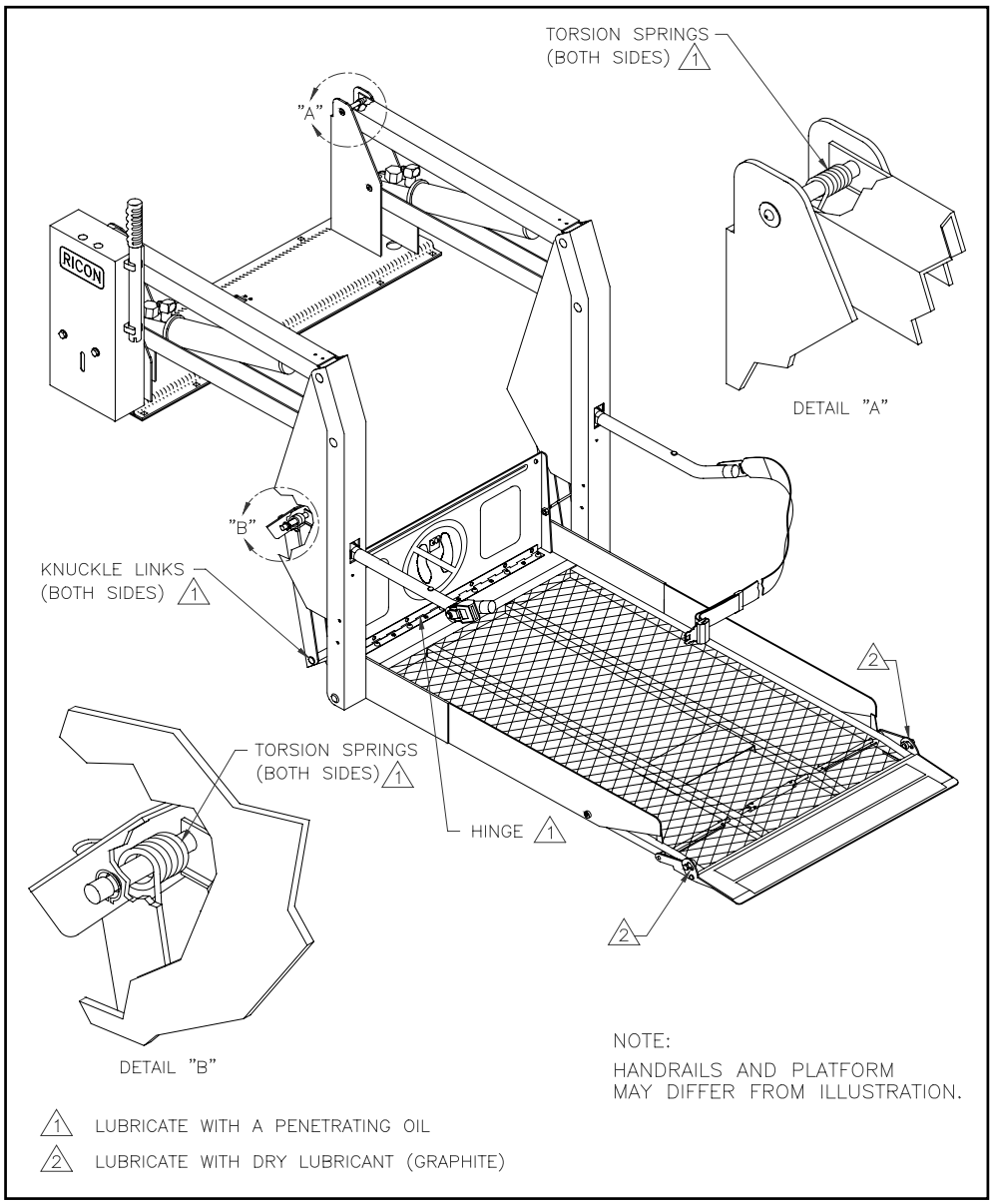


FIGURE 3-1: LIFT LUBRICATION POINTS

B. CLEANING

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

C. MAINTENANCE SCHEDULE

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

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	▪ Listen for any abnormal noises as lift operates (i.e., grinding or binding noises). ▪ Inspect underside of vehicle to verify nothing is out of the ordinary.
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	Verify that all lift decals are affixed properly, clearly visible and legible. Replace if necessary.
Handrails	Verify that all handrail fasteners are properly tightened.
Lift Mountings and Support Points	▪ Verify that all lift mounting and support points are in proper order and free from damage. ▪ Verify that all mounting bolts are sufficiently tight.
Main Lifting Pivots	Verify all travelling frame pins are installed properly, free from damage and locked in position.
Platform and Platform Attachment Points	Verify platform operates properly during lift functions without obstruction(s).
Inner Rollstop	▪ Verify that inner rollstop operates properly during lift functions without obstruction(s). ▪ Verify that inner rollstop deploys fully as platform stops at proper vehicle floor level.
Platform Rollstop	Verify 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 tank to overflow when platform is lowered.
	▪ Check for visible hydraulic fluid leakage. ▪ Verify backup pump manual release valve is lightly-snug.
SIX-MONTH SAFETY CHECK (or @ 1750 cycles of operation):	
Handrails	Verify that all handrail fasteners are properly tightened.

TABLE 3-1: MAINTENANCE SCHEDULE	
SERVICE POINT	**ACTION TO PERFORM**
Cleaning and Lubrication	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 (Curti-sol® 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	While platform is at GROUND LEVEL, verify 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.
⚠ CAUTION This safety check must be performed by an authorized Ricon service technician**.**	
ANNUAL SAFETY CHECK (or @ 3500 cycles of operation):	
Hydraulic Cylinder, Hoses and Fittings	1. Check Hydraulic Cylinder for evidence of leaks. 2. Inspect hydraulic hoses for damage. 3. Verify 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

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 BE CONTINUED BY A RICON AUTHORIZED SERVICE TECHNICIAN.

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 TROUBLESHOOTING 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. PUMP SOLENOID LED STATUS INDICATOR

Refer to **Figure 3-2**. In April 2000 a second pump solenoid was installed next to the original pump solenoid. Two solenoids provides a margin of safety if one of the solenoids fails with its contacts closed. A status indicator LED is located between the 8A and 30A circuit breakers to monitor the condition of the two solenoids. The LED is normally off when the pump is not operating and becomes green when the pump operates. When the pump is not operating and the top solenoid has failed the LED will be red. The LED will be green when the side solenoid has failed.

A retrofit kit is available to add the second pump solenoid to lifts that have only a single solenoid. It is Ricon p/n 19068.

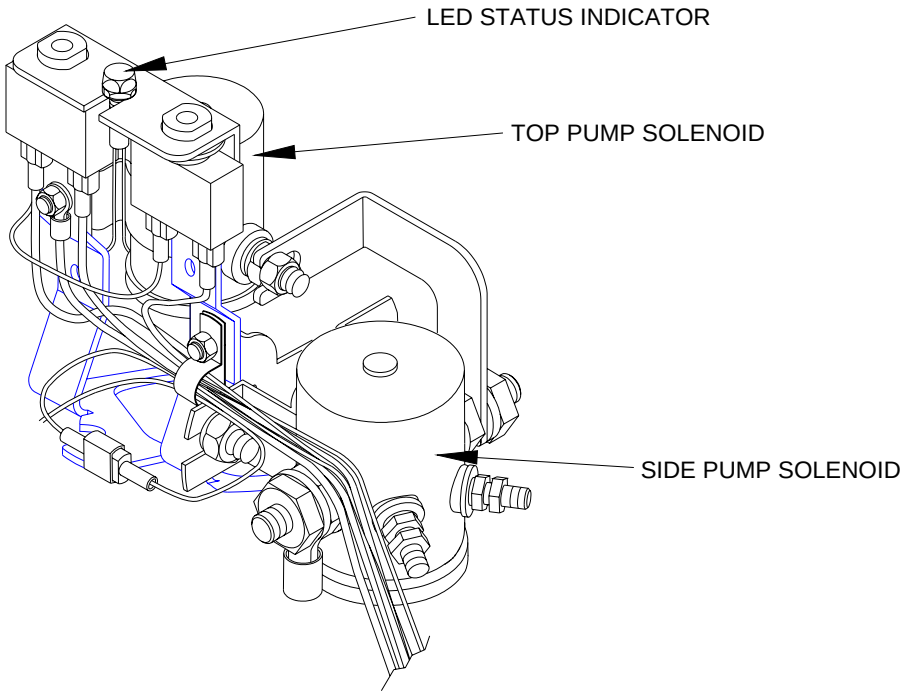


FIGURE 3-2: STATUS INDICATORS FOR PUMP SOLENOIDS

3. LIFT TROUBLESHOOTING

TABLE 3-3: LIFT OPERATION TROUBLESHOOTING			
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 an authorized Ricon service technician.
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, verify 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, verify 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

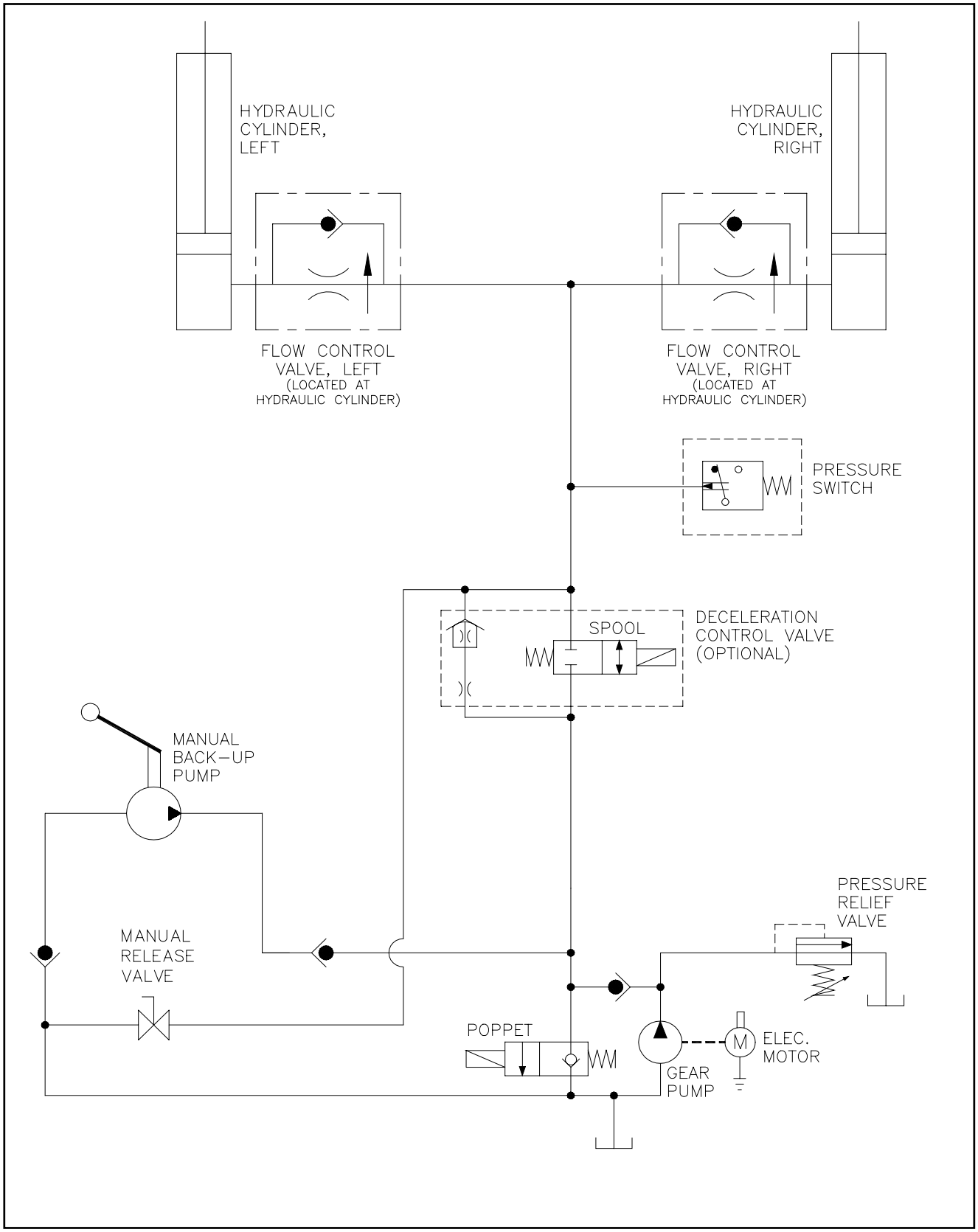


FIGURE 3-3: S-SERIES HYDRAULIC CIRCUIT

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 Connector Description

Refer to **Figure 3-4**. The standard electrical connectors used by Ricon are Molex .062" Series. These connectors have terminal numbers molded onto the back, use these numbers and colors to identify all wires.

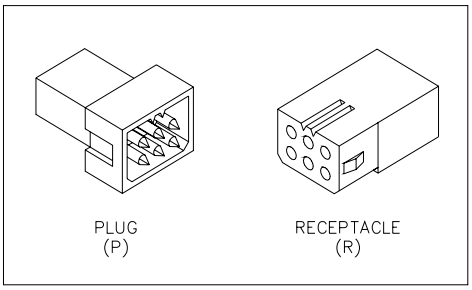


FIGURE 3-4: MOLEX CONNECTORS

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 3-5 shows standard symbols used in electrical wiring diagrams.

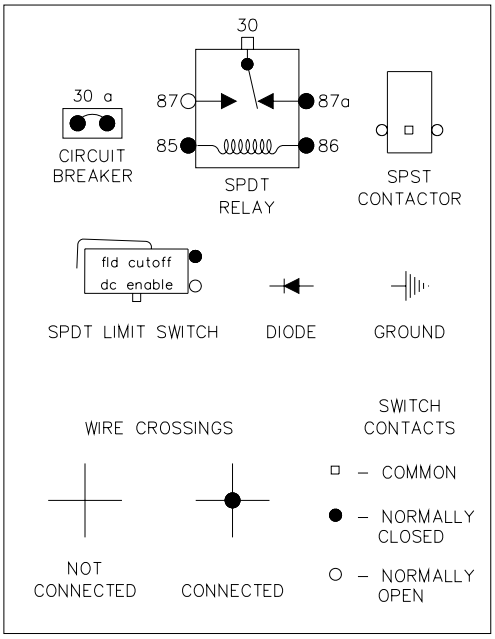


FIGURE 3-5: DIAGRAM SYMBOLS

2. S-SERIES LIMIT SWITCH STATES

Refer to **Figure 3-6**. 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 (=) indicates 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 the operation of switches which change states at folded or ground level positions. For proper operation of lift, the switch actuations must overlap as shown.

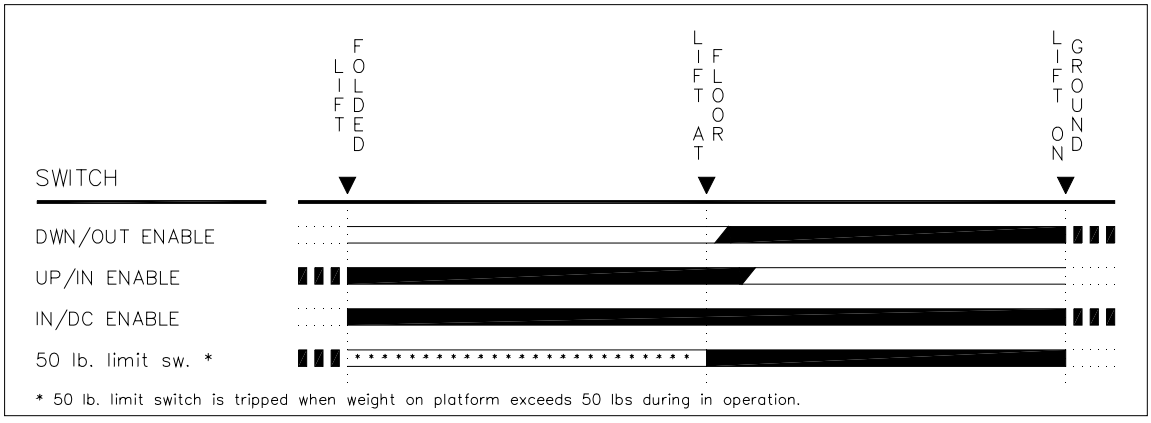
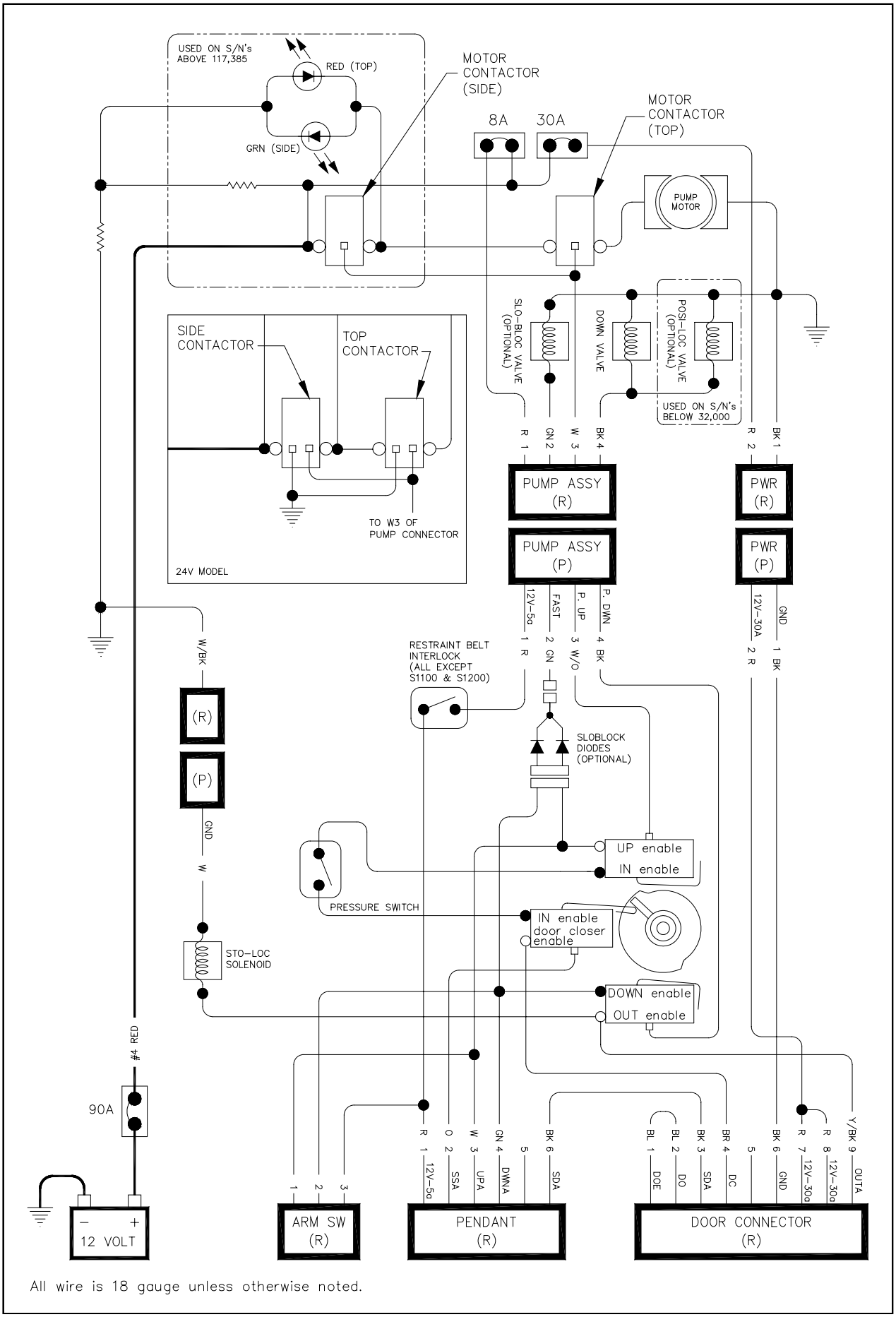


FIGURE 3-6: LIMIT SWITCH ACTUATION



All wire is 18 gauge unless otherwise noted.

FIGURE 3-7: WIRING DIAGRAM FOR LIFT WITH DOOR OPERATOR

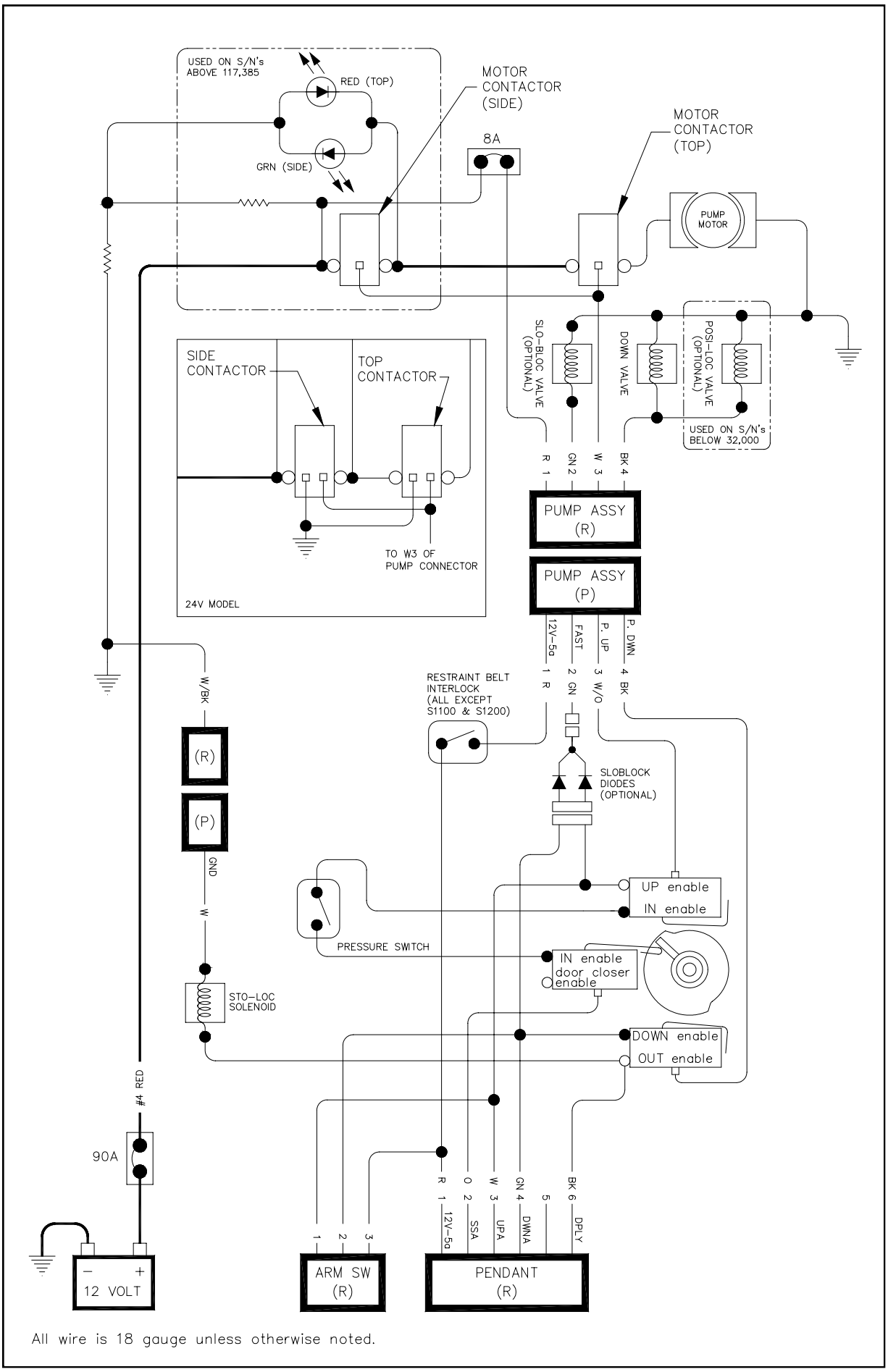


FIGURE 3-8: WIRING DIAGRAM FOR LIFT WITHOUT DOOR OPERATOR

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