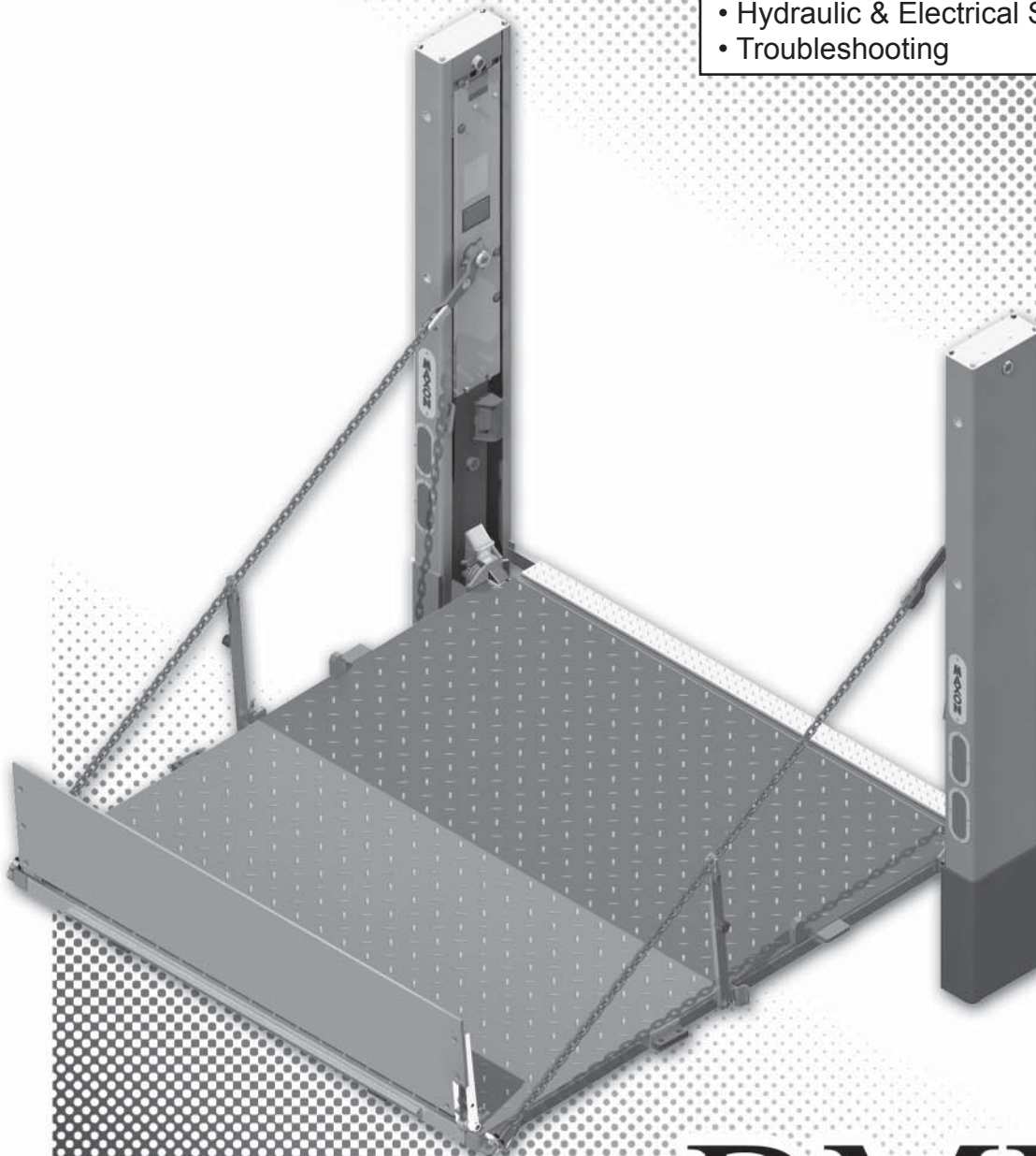


M-00-26
REV. H
FEBRUARY 2010

Maintenance Manual Contains:

- Warranty Information
- Warnings
- Service Time Chart
- Periodic Maintenance Checklist
- Service and Maintenance Instructions
- Decals
- Hydraulic & Electrical System Diagrams
- Troubleshooting



MAXON[®]
LIFT CORP.

BMR-A

MAINTENANCE MANUAL



11921 Slauson Ave.
Santa Fe Springs, CA. 90670

CUSTOMER SERVICE:

TELEPHONE (562) 464-0099 TOLL FREE (800) 227-4116

FAX: (888) 771-7713

NOTE: For latest version of all Manuals (and replacements), download the
Manuals from Maxon's website at www.maxonlift.com.

WARRANTY/ RMA POLICY & PROCEDURE

LIFTGATE WARRANTY

Type of Warranty: Full Parts and Labor

Term of Warranty: Standard Liftgates - 2 years from ship date or 6,000 cycles
Premium Liftgates - 2 years from ship date or 10,000 cycles

This warranty shall not apply unless the product is installed, operated and maintained in accordance with MAXON Lift's specifications as set forth in MAXON Lift's Installation, Operation and Maintenance manuals. This warranty does not cover normal wear, maintenance or adjustments, damage or malfunction caused by improper handling, installation, abuse, misuse, negligence, or carelessness of operation. In addition, this warranty does not cover equipment that has had unauthorized modifications or alterations made to the product.

MAXON agrees to replace any components which are found to be defective during the first 2 years of service, and will reimburse for labor based on MAXON's Liftgate Warranty Flat Rate Schedule. (Copy of the Flat Rate is available at www.maxonlift.com.)

All warranty repairs must be performed by an authorized MAXON warranty facility. For any repairs that may exceed \$500, including parts and labor, MAXON's Technical Service Department must be notified and an "Authorization Number" obtained.

All claims for warranty must be received within 30 Days of the repair date, and include the following information:

1. Liftgate Model Number and Serial Number
2. The End User must be referenced on the claim
3. Detailed Description of Problem
4. Corrective Action Taken, and Date of Repair
5. Parts used for Repair, Including MAXON Part Number(s)
6. MAXON R.M.A. # and/or Authorization # if applicable (see below)
7. Person contacted at MAXON if applicable
8. Claim must show detailed information i.e. Labor rate and hours of work performed

Warranty claims can also be placed online at www.maxonlift.com. Online claims will be given priority processing.

All claims for warranty will be denied if paperwork has not been received or claim submitted via Maxon website for processing by MAXON's Warranty Department within 30 days of repair date.

All components may be subject to return for inspection, prior to the claim being processed. MAXON products may not be returned without prior written approval from MAXON's Technical Service Department. Returns must be accompanied by a copy of the original invoice or reference with original invoice number and are subject to a credit deduction to cover handling charges and any necessary reconditioning costs. **Unauthorized returns will be refused and will become the responsibility of the returnee.**

Any goods being returned to MAXON Lift must be pre-approved for return, and have the R.M.A. number written on the outside of the package in plain view, and returned freight prepaid. All returns are subject to a 15% handling charge if not accompanied by a detailed packing list. Returned parts are subject to no credit and returned back to the customer. Defective parts requested for return must be returned within 30 days of the claim date for consideration to:

MAXON Lift Corp.
10321 Greenleaf Ave., Santa Fe Springs, CA 90670
Attn: RMA# _____

MAXON's warranty policy does not include the reimbursement for travel time, towing, vehicle rental, service calls, oil, batteries or loss of income due to downtime. Fabrication or use of non Maxon parts, which are available from MAXON, are also not covered.

MAXON's Flat Rate Labor Schedule takes into consideration the time required for diagnosis of a problem.

All Liftgates returned are subject to inspection and a 15% restocking fee. Any returned Liftgates or components that have been installed or not returned in new condition will be subject to an additional reworking charge, which will be based upon the labor and material cost required to return the Liftgate or component to new condition.

PURCHASE PART WARRANTY

Term of Warranty: 1 Year from Date of Purchase.

Type of Warranty: Part replacement only. MAXON will guarantee all returned genuine MAXON replacement parts upon receipt and inspection of parts and original invoice.

All warranty replacements parts will be sent out via ground freight. If a rush shipment is requested, all freight charges will be billed to the requesting party.

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Comply with the following **WARNINGS** and **SAFETY INSTRUCTIONS** while maintaining Liftgates. See Operation Manual for operating safety requirements.

WARNING

- Do not stand, or allow obstructions, under the platform when lowering the Liftgate. **Be sure your feet are clear of the Liftgate.**
- Keep fingers, hands, arms, legs, and feet clear of moving Liftgate parts (and platform edges) when operating the Liftgate.
- Correctly stow platform when not in use. Extended platforms could create a hazard for people and vehicles passing by.
- **Disconnect Liftgate power cable from battery** before repairing or servicing Liftgate.
- If it is necessary to stand on the platform while maintaining the Liftgate, keep your feet and any objects clear of the inboard edge of the platform. Your feet or objects on the platform can become trapped between the platform and the Liftgate extension plate.
- Recommended practices for welding on steel parts are contained in the current **AWS (American Welding Society) D1.1 Structural Welding Code - Steel**. Damage to Liftgate and/or vehicle, and personal injury could result from welds that are done incorrectly.
- Recommended practices for welding on aluminum parts are contained in the current **AWS (American Welding Society) D2.1 Structural Welding Code - Aluminum**. Damage to Liftgate and/or vehicle, and personal injury could result from welds that are done incorrectly.

SAFETY INSTRUCTIONS

- Read and understand the instructions in this **Maintenance Manual** before performing maintenance on the Liftgate.
- Before operating the Liftgate, read and understand the operating instructions in **Operation Manual**.
- Comply with all **WARNING** and instruction decals attached to the Liftgate.
- Keep decals clean and legible. If decals are illegible or missing, replace them. Free replacement decals are available from **Maxon Customer Service**.
- Consider the safety and location of bystanders and location of nearby objects when operating the Liftgate. Stand to one side of the platform while operating the Liftgate
- Do not allow untrained persons to operate the Liftgate.
- Wear appropriate safety equipment such as protective eyeglasses, faceshield and clothing while performing maintenance on the Liftgate and handling the battery. Debris from drilling and contact with battery acid may injure unprotected eyes and skin.
- Be careful working by an automotive type battery. Make sure the work area is well ventilated and there are no flames or sparks near the battery. Never lay objects on the battery that can short the terminals together. If battery acid gets in your eyes, immediately seek first aid. If acid gets on your skin, immediately wash it off with soap and water.

MAXON[®]

11921 Slauson Ave. Santa Fe Springs, CA. 90670 (800) 227-4116 FAX (888) 771-7713

- If an emergency situation arises (vehicle or Liftgate) while operating the Liftgate, release the control switch to stop the Liftgate.
- A correctly installed Liftgate operates smoothly and reasonably quiet. The only noticeable noise during operation comes from the power unit while the platform is raised. Listen for scraping, grating and binding noises and correct the problem before continuing to operate Liftgate.
- Use only **Maxon Authorized Parts** for replacement parts. Provide Liftgate model and serial number information with your parts order. Order replacement parts from:

MAXON LIFT CORP. Customer Service
11921 Slauson Ave., Santa Fe Springs, CA 90670

Online: www.maxonlift.com

Express Parts Ordering: Phone (800) 227-4116 ext. 4345

Email: Ask your Customer Service representative

PERIODIC MAINTENANCE DECAL - WELDING CAUTION

CAUTION

Comply with welding CAUTION decals on Liftgate runners.

NOTE: See following pages to find the other decals on Liftgate.

! CAUTION !

When performing any electrical welding operations to the structure of this Lift, be careful to connect the ground lead to the Liftgate component being welded (e.g. runner assembly, column assembly, platform assembly), and as close to the area being welded as possible.

Because the separate assemblies on the BMR series Lifts are insulated by self-lubricated bearings, failure to do so will cause severe damage to electrical components and metal parts.

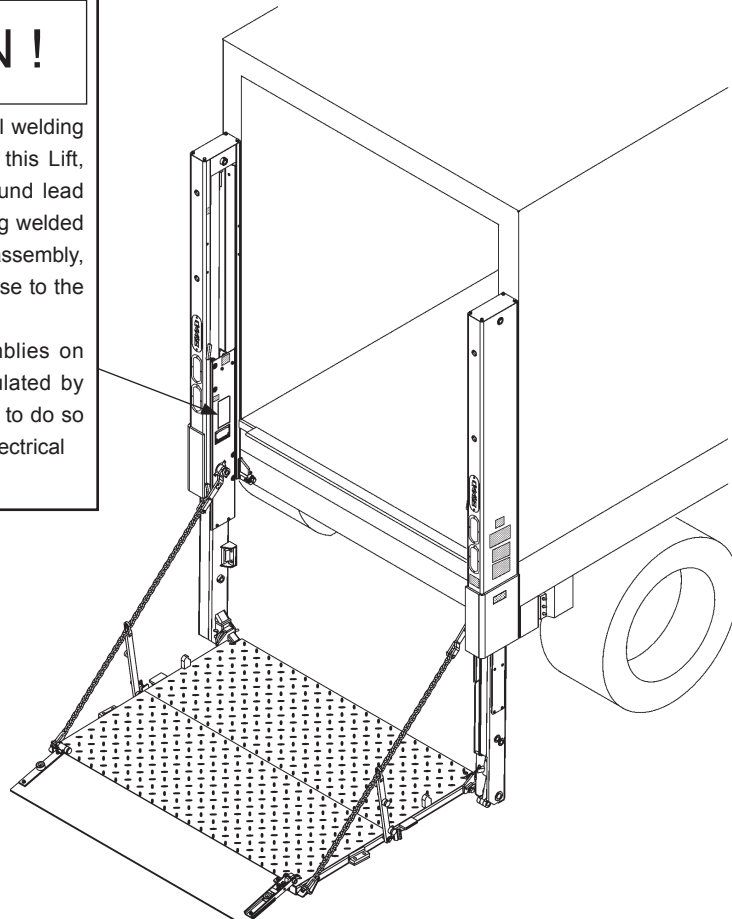


FIG. 8-1

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PERIODIC MAINTENANCE DECALS



CAUTION DECAL (2 PLACES)
P/N 266508-01

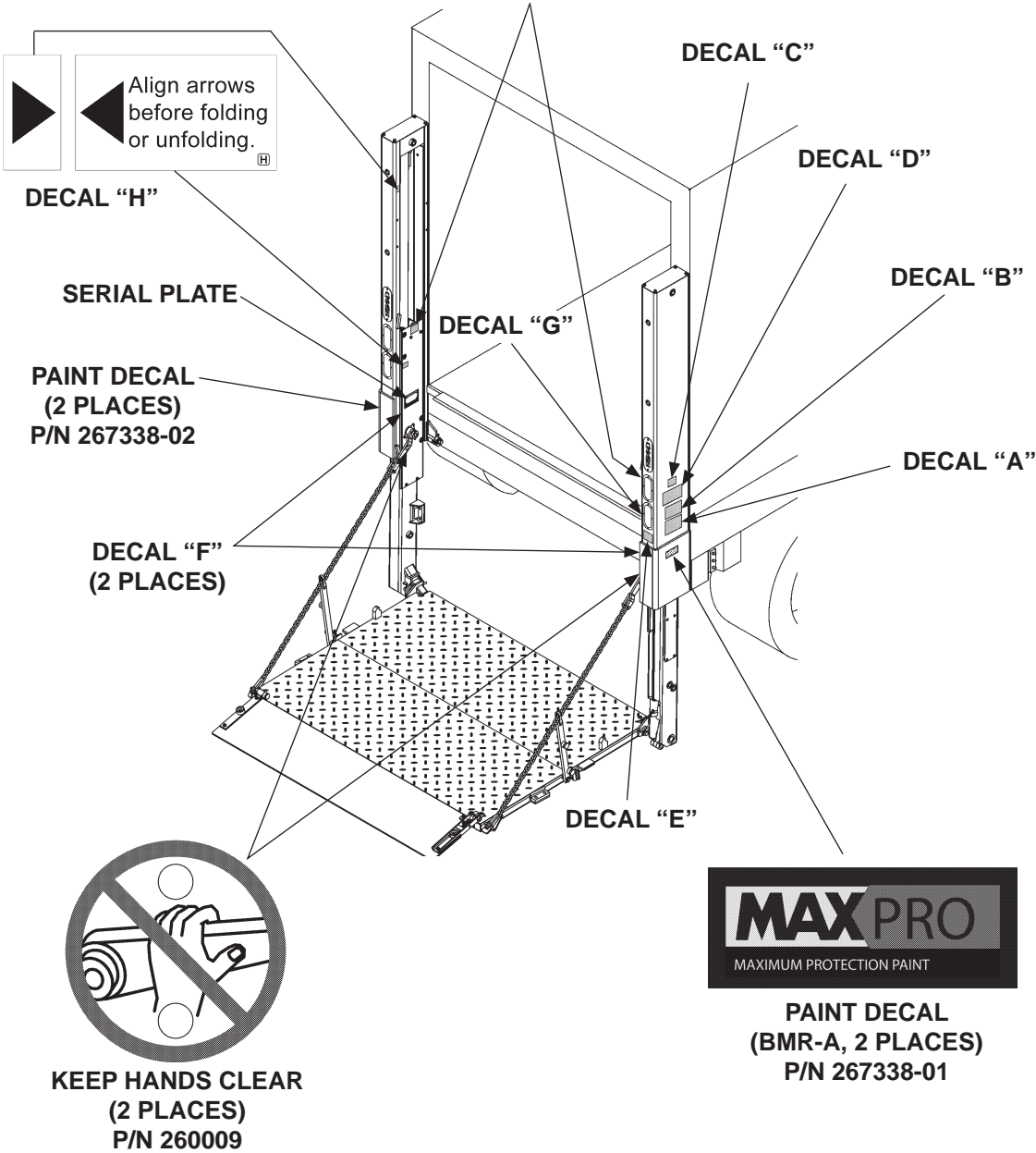
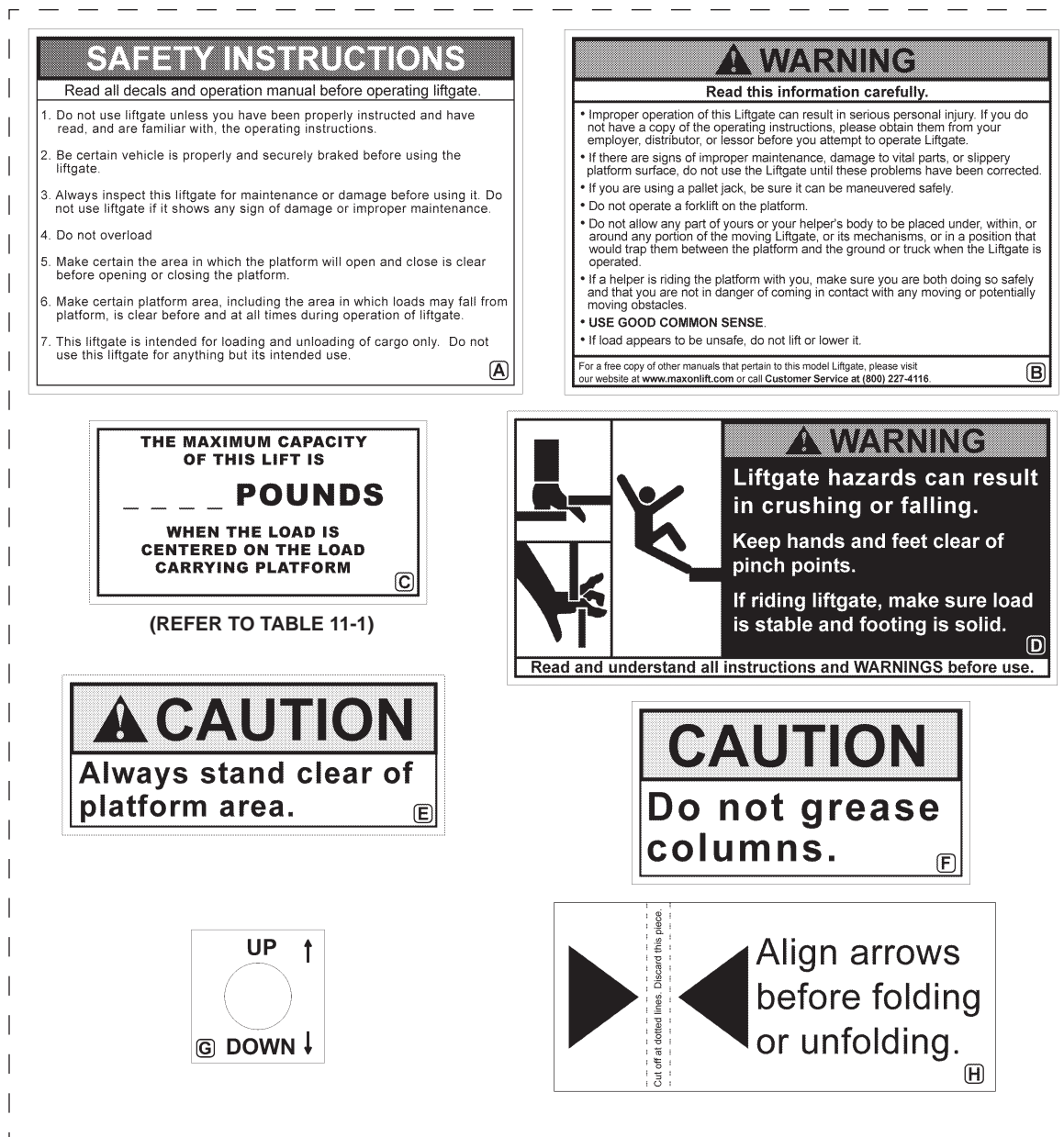


FIG. 10-1



DECAL SHEET
FIG. 11-1

Model	DECAL SHEET P/N	DECAL "C"
BMRA-35	268309-01	3500 POUNDS
BMRA-44	268309-02	4400 POUNDS
BMRA-55	268309-03	5500 POUNDS
BMRA-66	268309-04	6600 POUNDS

DECAL SHEET PART NUMBERS
TABLE 11-1

FIG. 11-1

PERIODIC MAINTENANCE

MAXON BMR-A LIFTGATE

PREVENTATIVE MAINTENANCE CHECKLIST

PM Interval: 3 Months

Date: ____ / ____ / ____

Equipment: _____

W/O # _____

Location: _____

Mechanic: _____

Serial # _____

Model # _____

Check Appropriate Box. " ☐ "

MAXON 1 st , 2 nd and 3 rd Quarter Liftgate PM Procedures				
Satisfactory	Repair Required	Corrected	1	Verify if the Quarterly or Annual PM is due by checking the PM sticker on the roadside Liftgate column
Satisfactory	Repair Required	Corrected	2	Check for oil leaks at: cylinders, fittings, hoses, valves, oil filter and fittings inside of pump box
Satisfactory	Repair Required	Corrected	3	Check for damage: bent ramps, platform, column, runners and hydraulic tubes
Satisfactory	Repair Required	Corrected	4	Check for loose or missing nuts, bolts, covers, roll pins, screws and pins
Satisfactory	Repair Required	Corrected	5	Check for cracked welds at: columns, runners, platform, chain arms, pump box and door frame
Satisfactory	Repair Required	Corrected	6	Check platform lowering speed: Range is 15-25 seconds. Check "D" valves for proper operation
Satisfactory	Repair Required	Corrected	7	Check platform pins and couplers. Check roller assemblies
Satisfactory	Repair Required	Corrected	8	Check platform raising speed: Range is 20-40 seconds
Satisfactory	Repair Required	Corrected	9	Check open and close speed: Range is 4-7 seconds in either direction. Adjust if necessary
Satisfactory	Repair Required	Corrected	10	Check switches, circuit breaker and wiring connections at the gate as well as inside pump box. Also check ground straps
Satisfactory	Repair Required	Corrected	11	Check the gear pump for unusual noise. i.e. squealing or extreme RPM output
Satisfactory	Repair Required	Corrected	12	Checking Oil Level: gravity down with the Liftgate open and on the ground the sight glass should be at half level. Power down open Liftgate and raise to bed height the sight glass should be at half level. Check for contamination, change if needed
Satisfactory	Repair Required	Corrected	13	Check batteries: load test, corrosion, cables, hold downs and water level
Satisfactory	Repair Required	Corrected	14	Dual pump units: Please switch the selector switch to opposite assembly at each PM
Satisfactory	Repair Required	Corrected	15	Check chains for twisting
Satisfactory	Repair Required	Corrected	16	Check operation of cart stop ramps
Satisfactory	Repair Required	Corrected	17	Check all charging and ground cable connections
Satisfactory	Repair Required	Corrected	18	Complete a new PM sticker and install it on the roadside column of the Liftgate. The next PM date is 3 months from the completed PM date. Indicate on the PM sticker if 1 st , 2 nd , 3 rd or 4 th PM

MAXON 4 th Liftgate PM. Note: Includes steps 1-18				
Satisfactory	Repair Required	Corrected	19	Replace spin on filter in pump box. Change hydraulic fluid
Satisfactory	Repair Required	Corrected	20	Inspect wear on slide pads. See if shimming is required

For more detailed information, please refer to the product maintenance manuals. Use only genuine Maxon replacement parts for all repairs.

TABLE 12-1

PERIODIC MAINTENANCE CHECKLIST

WARNING

Never operate the Liftgate with parts loose or missing.

NOTE: Photocopy the PM CHECKLIST on the preceding page to help keep track of periodic maintenance on the Liftgate. Keep completed form with maintenance records.

Annually

Change spin-on oil filter. Visually check the entire Liftgate for excessively worn parts and broken welds, especially the hinge pins. See **Parts Manual** for replacement parts. Also, do the **Semi-annual** and **Quarterly Maintenance** checks.

Semi-annually

Visually check the platform hinge pins for excessive wear and broken welds. See **Parts Manual** for replacement parts. Also, do the **Quarterly Maintenance** checks.

Quarterly

Check the hydraulic fluid level in the pump reservoir. Refer to the **CHECKING HYDRAULIC FLUID** procedure in the **PERIODIC MAINTENANCE** section.

- If hydraulic fluid appears contaminated, refer to the **CHANGING HYDRAULIC FLUID** procedure on following page.
- Keep track of the grade of hydraulic fluid in the pump reservoir. Never mix two different grades of fluid.
- Check hoses and fittings for chaffing and fluid leaks. Replace if necessary.
- Check electrical wiring for chaffing and make sure wiring connections are tight and free of corrosion. **MAXON** recommends using dielectric grease on all electrical connections.
- Check that all **WARNING** and **instruction decals** are in place and legible.
- Check that all roll pins are in place and protrude evenly from both sides of hinge pin collar. Replace roll pins if necessary.
- Check each end of the two platform chains to make sure they are fastened properly.
- Check for worn out links on each of the two platform chains.
- Grease zerkl fittings on two lower pivot points.

CAUTION

Damaged cylinder seals and contaminated hydraulic fluid can result from painting the polished portion of the cylinder rod. To prevent damage, protect the exposed polished portion of the cylinder rod while painting.

- Check for rust and oily surfaces on Liftgate. If there is rust or oil on the Liftgate, clean it off. Touch up the paint where bare metal is showing.

PERIODIC MAINTENANCE CHECKING HYDRAULIC FLUID

CAUTION

Keep dirt, water and other contaminants from entering the hydraulic system. Before opening the hydraulic fluid reservoir filler cap, drain plug and hydraulic lines, clean up contaminants that can get in the openings. Also, protect the openings from accidental contamination.

NOTE: Exxon Univis HVI-13 hydraulic fluid is recommended for operating temperatures of **-40 to +120° F**. Refer to decal in pump box. The **ISO-15** fluids in **TABLE 15-1** may be used if the recommended fluids are unavailable. If necessary, the **ISO-32** fluids in **TABLE 15-2** may be used where ordinary seasonal temperatures are near **+100° F** or higher.

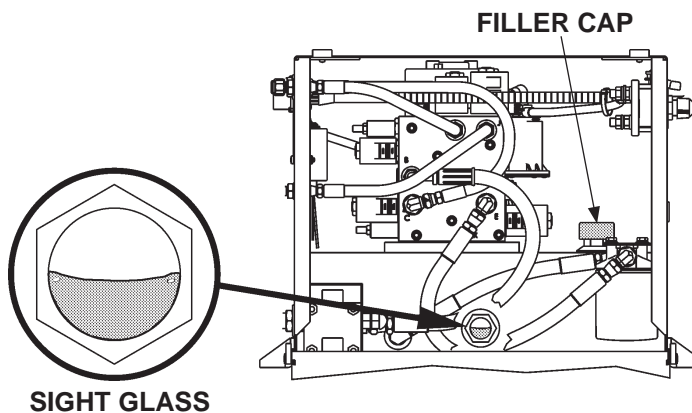
NOTE: If the hydraulic fluid in the reservoir is contaminated, do the **CHANGING HYDRAULIC FLUID** procedure in this section.

1. Stow the platform in the up position. Refer to **Operation Manual** for instructions.
2. Open the pump box cover to gain access to sight glass and filler cap (**FIG. 14-1**).

NOTE: Information for checking hydraulic fluid level is also shown on a decal inside the pump box cover.

3. Check the hydraulic fluid level in sight glass (**FIG. 14-1**). Hydraulic fluid level should be at the center of sight glass. If fluid is below the center, add fluid to the reservoir as follows. Remove filler cap (**FIG. 14-1**). Add the correct grade of hydraulic fluid to reservoir until the level is at the center of the sight glass (**FIG. 14-1**).

4. Reinstall filler cap (**FIG. 14-1**) and close the pump box cover.



CHECKING HYDRAULIC FLUID LEVEL
FIG. 14-1

ISO 32 HYDRAULIC OIL	
RECOMMENDED BRANDS	PART NUMBER
AMSOIL	AWH-05
CHEVRON	HIPERSYN 32
KENDALL	GOLDEN MV
SHELL	TELLUS T-32
EXXON	UNIVIS N-32
MOBIL	DTE-13M, DTE-24, HYDRAULIC OIL-13

TABLE 15-1

ISO 15 OR MIL-H-5606 HYDRAULIC OIL	
RECOMMENDED BRANDS	PART NUMBER
AMSOIL	AWF-05
CHEVRON	FLUID A, AW-MV-15
KENDALL	GLACIAL BLU
SHELL	TELLUS T-15
EXXON	UNIVIS HVI-13
MOBIL	DTE-11M
ROSEMEAD	THS FLUID 17111

TABLE 15-2

PERIODIC MAINTENANCE

CHANGING HYDRAULIC FLUID

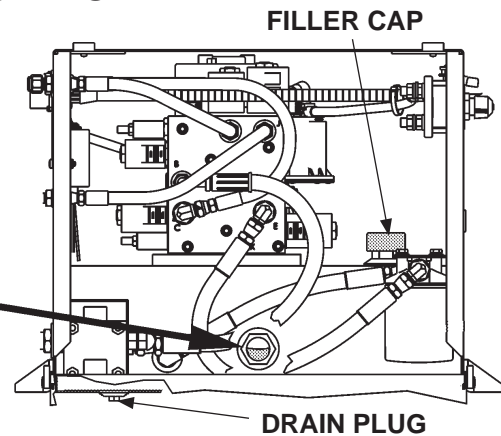
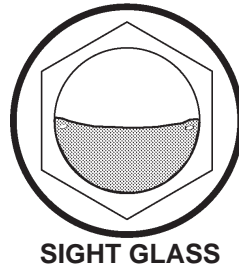
CAUTION

Keep dirt, water and other contaminants from entering the hydraulic system. Before opening the hydraulic fluid reservoir filler cap, drain plug and hydraulic lines, clean up contaminants that can get in the openings. Also, protect the openings from accidental contamination.

NOTE: Exxon Univis HVI-13 hydraulic fluid is recommended for operating temperatures of **-40 to +120° F**. Refer to decal in pump box. The **ISO-15** fluids in **TABLE 15-1** may be used if the recommended fluids are unavailable. If necessary, the **ISO-32** fluids in **TABLE 15-2** may be used where ordinary seasonal temperatures are near **+100° F** or higher.

GRAVITY DOWN LIFTGATES

1. Place empty 5 gallon bucket under drain plug.
2. Open and lower platform. Remove the drain plug (**FIG. 16-1**). Drain hydraulic fluid from system. Reinstall drain plug.
3. Remove filler cap (**FIG. 16-1**). Refill reservoir until hydraulic fluid level is at the center of sight glass (**FIG. 16-1**).
4. Reinstall filler cap (**FIG. 16-2**).

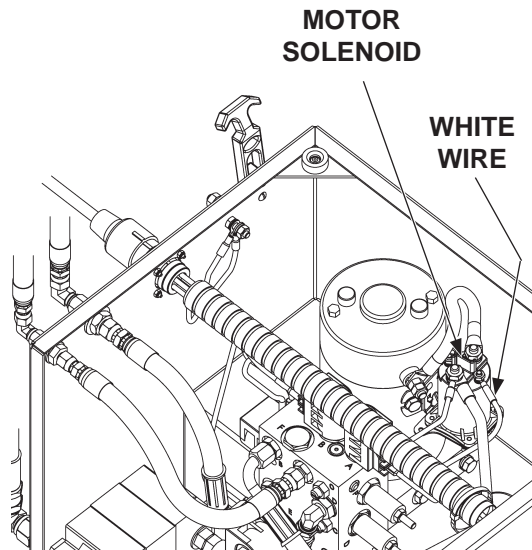


SINGLE PUMP BOX

FIG. 16-1

POWER DOWN LIFTGATES

1. Place empty 5 gallon bucket under drain plug.
2. Open and raise platform to vehicle bed height. Remove the drain plug (**FIG. 16-1**).
3. Disconnect the white wire (**FIG. 16-2**) from motor solenoid. Lower the platform while draining hydraulic fluid from system. Reinstall drain plug. Reconnect the white wire to motor solenoid.
4. Remove filler cap (**FIG. 16-1**). Refill reservoir until hydraulic fluid level is at the center of sight glass (**FIG. 16-1**).
5. Raise platform to vehicle bed height. Check hydraulic fluid again and, if needed, add more hydraulic fluid until level is at the center of sight glass (**FIG. 16-1**).
6. Reinstall filler cap (**FIG. 16-1**).



SINGLE PD PUMP BOX

FIG. 16-2

BLEEDING HYDRAULIC SYSTEM

NOTE: Perform this procedure at a place where Liftgate platform can be lowered to lowest point of travel. Get a helper to operate Liftgate control switch.

1. Use **UP/DOWN** toggle switch to lower the opened platform to the ground.
2. Loosen, but do not disconnect, the cylinder line fitting from the pressure compensated flow control valve (**FIG. 17-1**) on top of both cylinders.

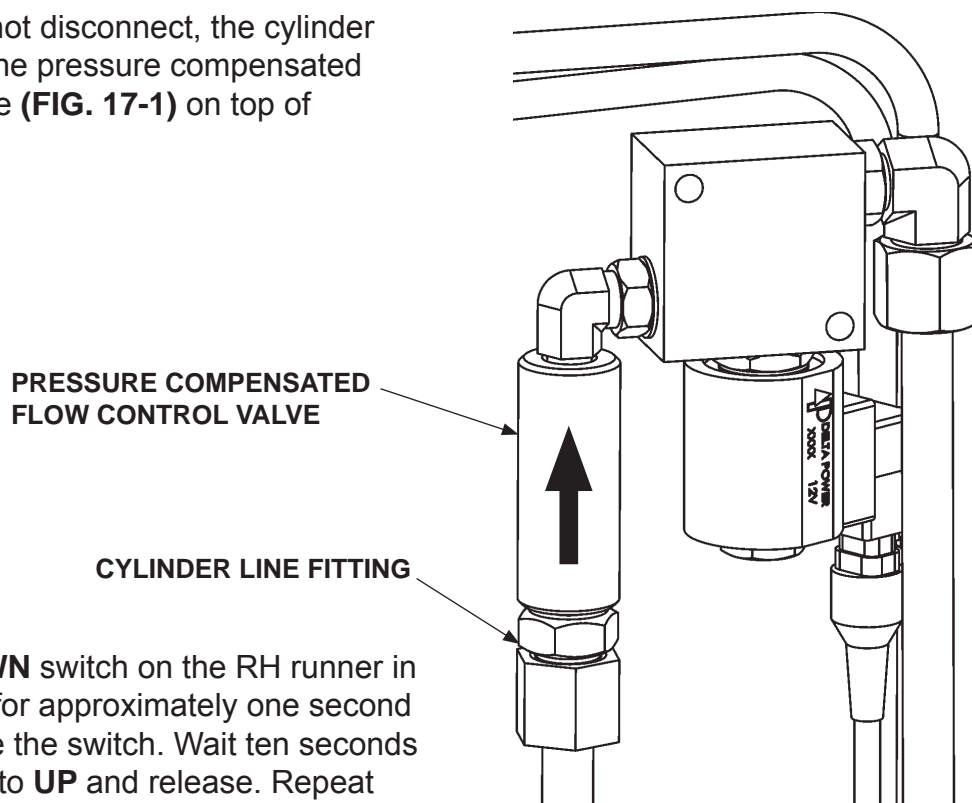


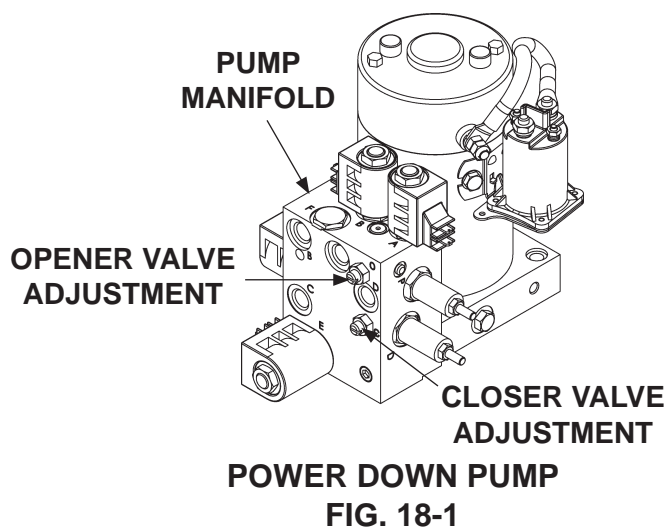
FIG. 17-1

3. Set the **UP/DOWN** switch on the RH runner in the **UP** position for approximately one second and then release the switch. Wait ten seconds and then switch to **UP** and release. Repeat this step until there is no air bubbling from the loosened line fittings.
4. Tighten cylinder line fitting to pressure compensated flow control valve (**FIG. 17-1**).
5. Use **UP/DOWN** toggle switch to raise and lower the platform to make sure the Liftgate operates correctly.

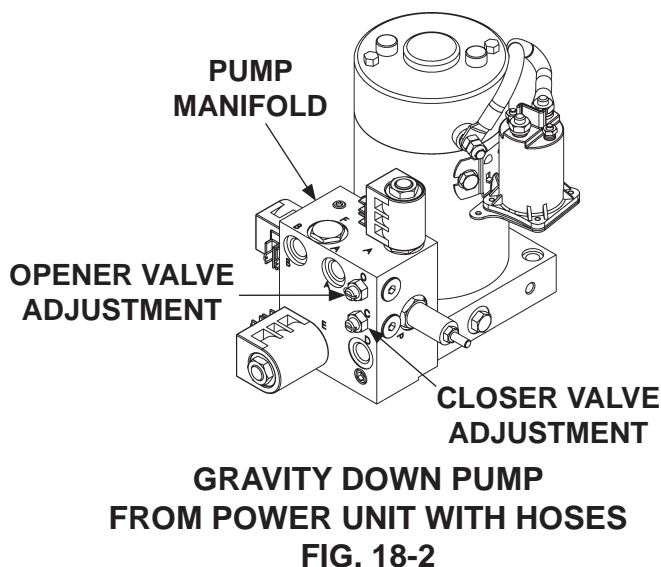
PERIODIC MAINTENANCE

PLATFORM FOLDING AND UNFOLDING SPEED ADJUSTMENT

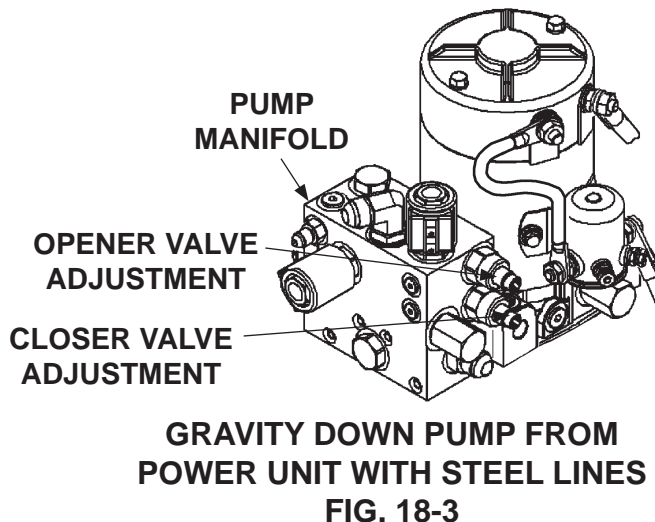
1. The speed settings for the closing cylinder are regulated by the pressure relief needle valves located on the pump manifold (**FIGS. 18-1, 18-2, and 18-3**). One valve is marked "O" (open platform) and the other is marked "C" (close platform).



2. To decrease platform opening speed, turn opener valve adjustment clockwise (**FIGS. 18-1, 18-2, and 18-3**). To increase platform opening speed, turn opener valve adjustment counter-clockwise (**FIGS. 18-1, 18-2, and 18-3**).



3. To increase platform closing speed, turn closer valve adjustment clockwise (**FIGS. 18-1, 18-2, and 18-3**). To decrease platform closing speed, turn closer valve adjustment counter-clockwise (**FIGS. 18-1, 18-2, and 18-3**).



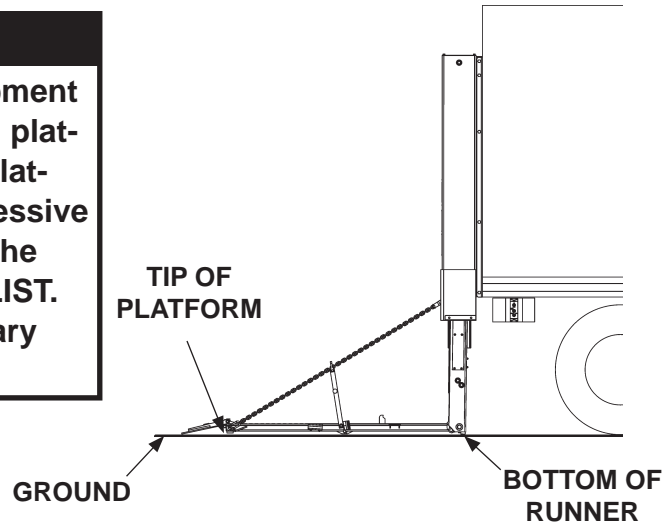
ADJUSTMENT

PLATFORM CHAIN ADJUSTMENT

⚠ WARNING

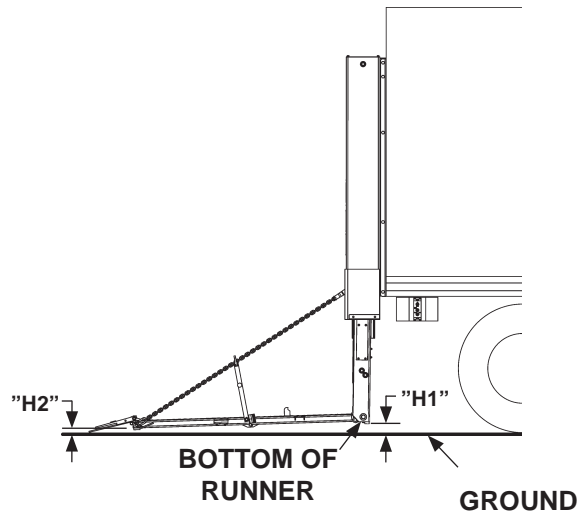
Personal injury and damaged equipment could result if chains separate from platform under load. Never adjust the platform chains to compensate for excessive wear. Refer to chain inspection on the PERIODIC MAINTENANCE CHECKLIST. Adjustment should only be necessary when new chains are installed.

1. Lower the platform to ground level. Check if tip of the flipover and bottom of the runners touch the ground at the same time (**FIG. 19-1**).



TIP AND RUNNER TOUCHING GROUND
FIG. 19-1

2. If the bottom of the runners are off the ground, measure the distance “H1” (**FIG. 19-2**) from the ground to the bottom of the runners.
 - Adjustment is not required if distance “H1” is 1” or less.
 - If distance “H1” is more than 1”, refer to the steps that follow to adjust the platform chains.



RUNNERS NOT TOUCHING
FIG. 19-2

3. Refer to measured distance “H1” at the runners and **TABLE 19-1**. Note the method(s) that will be required to raise the tip of platform (or retention ramp) the expected distance.

MEASURED “H1” (AT RUNNER)	ADJUSTMENT METHODS (● REQUIRED FOR EXPECTED RISE AT TIP)			EXPECTED RISE “H2” (AT TIP)
	ADJUST U-BOLT (RAISES TIP 0” TO 1-1/4”)	REMOVE 1 LINK OF BOTH CHAINS (RAISES TIP 1-1/2”)	REMOVE 2 LINKS OF BOTH CHAIN (RAISES TIP 3”)	
1” - 2-1/4”	●	-	-	0” - 1-1/4”
2-1/2” - 3-3/4”	●	●		1-1/2” - 2-3/4”
4”	●	●	●	3” - 4”

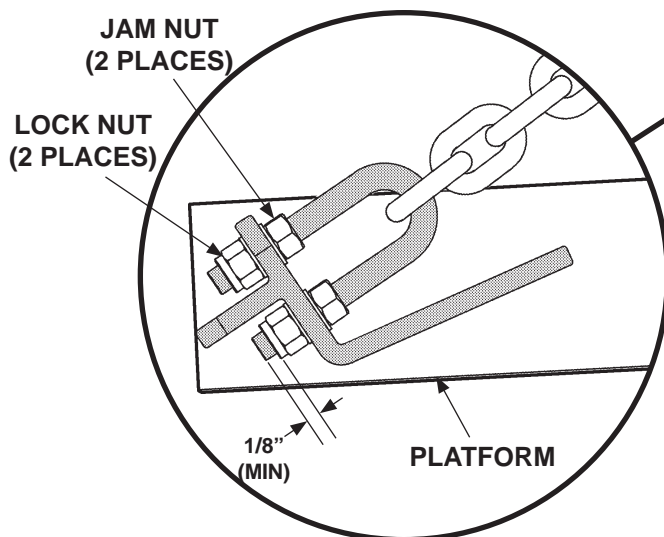
TABLE 19-1

PLATFORM CHAIN ADJUSTMENT - Continued

⚠ WARNING

Personal injury and damaged equipment could result if chains separate from platform under load. Ensure each leg of u-bolts extends minimum of 1/8" from lock nut. When adjustment is complete, ensure jam nuts are tightened securely.

4. To adjust with the u-bolt, do the following. If necessary, raise platform enough to gain access to the adjusting nuts on both u-bolts. Next, loosen the jam nuts on both u-bolts (**FIG. 20-1B**). Alternately and equally tighten the lock nuts on each u-bolt (**FIGS. 20-1B and 20-1C**). Then, measure distance "H2" at the tip of the platform (**FIG. 20-1A**). When distance "H2" is equal to distance "H1" (+0" / -1"), or u-bolt is at maximum adjustment (**FIG. 20-1C**), securely tighten jam nuts on both u-bolts.



**U-BOLT AT MINIMUM LIMIT
(RH SIDE SHOWN)
FIG. 20-1B**

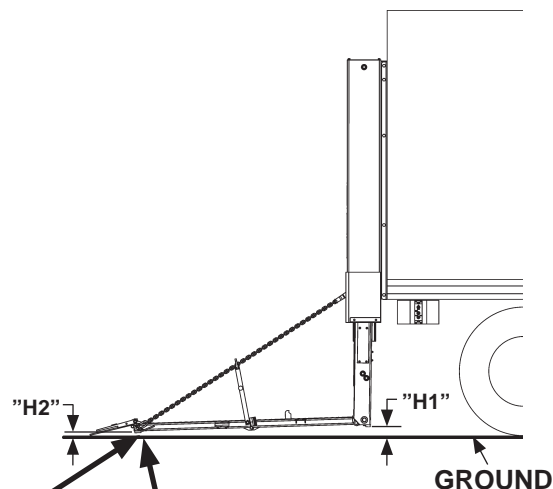
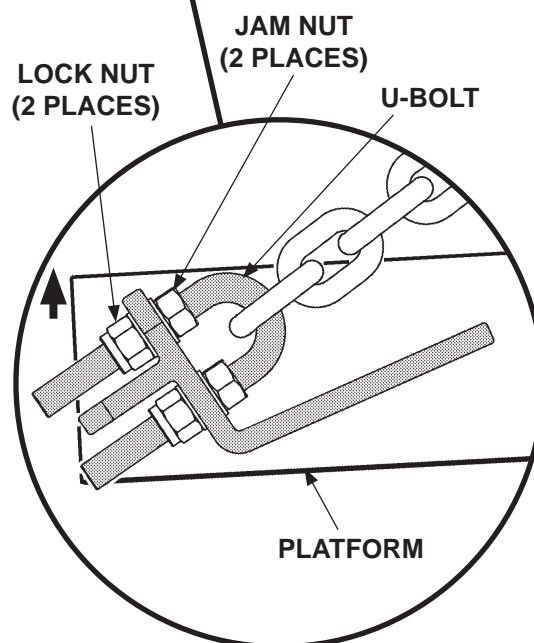


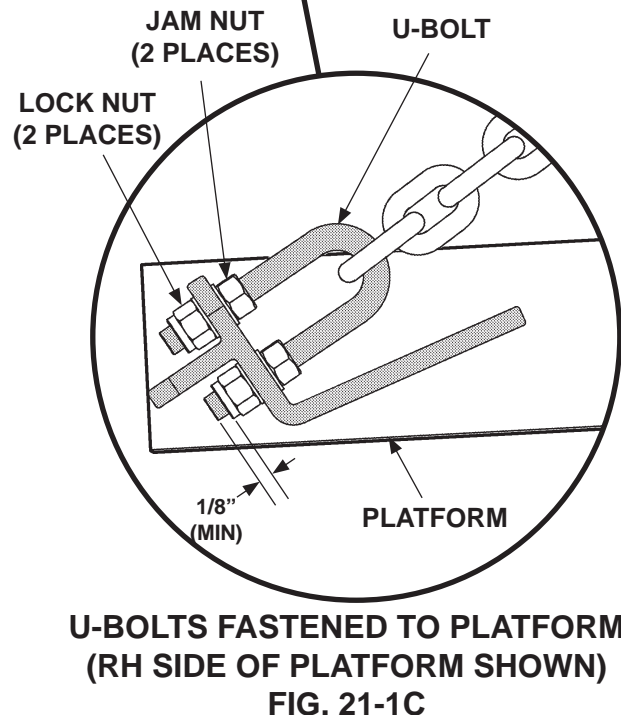
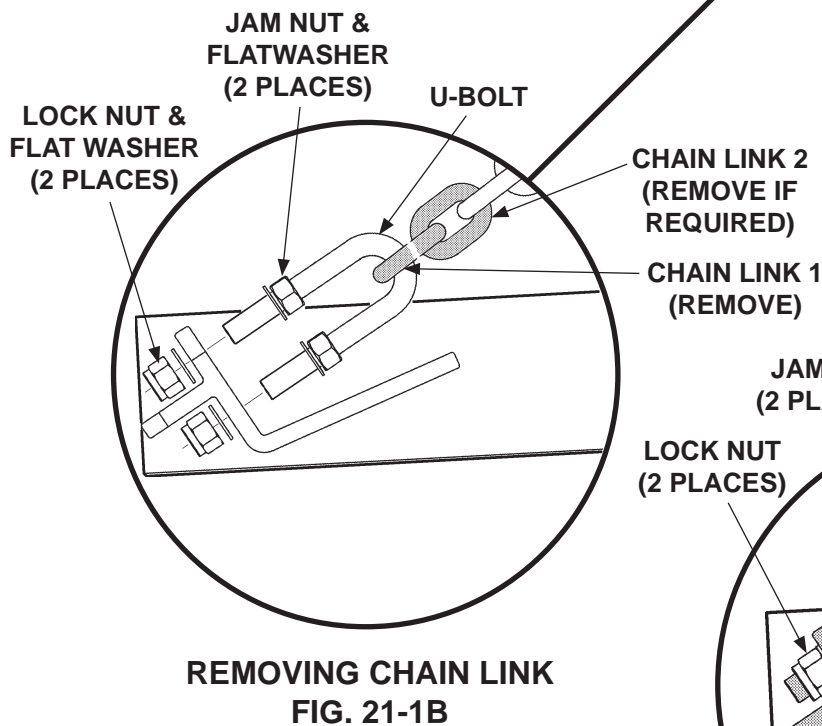
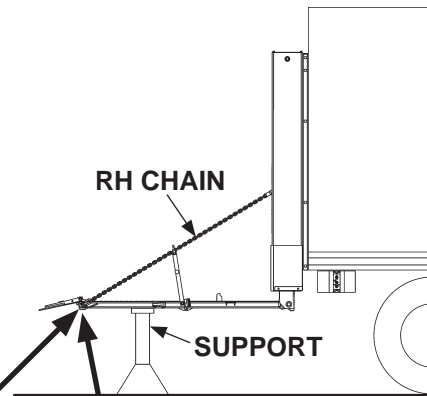
FIG. 20-1A



**U-BOLT ADJUSTED TO MAXIMUM
LIMIT (RH SIDE SHOWN)
FIG. 20-1C**

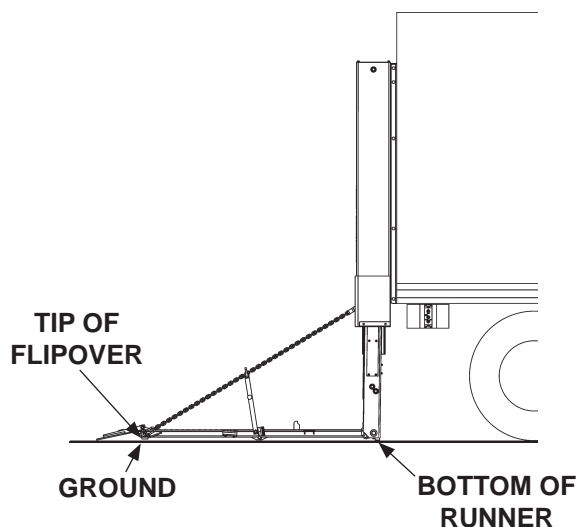
NOTE: Remove links from platform chains only if required. Skip instruction 5 if u-bolts raised tip of the platform (or retention ramp) to correct height.

5. To remove links from each platform chain, do the following. Raise platform to a comfortable work height (**FIG. 21-1A**). Support the bottom of platform to remove tension from LH and RH chains. Next, unfasten both u-bolts from platform (**FIG. 21-1B**). Remove a 1 or 2 links (as required) from both chains. Then, fasten u-bolts to platform as shown in (**FIG. 21-1C**). Tighten jam nuts securely.



PLATFORM CHAIN ADJUSTMENT - Continued

6. Raise platform enough to remove supports. Then, lower platform to the ground (**FIG. 22-1**). Tip of flipover and runners should touch the ground at the same time as shown in **FIG. 22-1**. If necessary, repeat instructions 3 through 5 until tip of platform and runners touch ground at the same time.



TIP AND RUNNER TOUCHING GROUND
FIG. 22-1

REPLACING PARTS CLOSING CYLINDER REPLACEMENT

1. **UNFOLD** the platform. Lower the platform (**DOWN**) to comfortable height for work. Upper pin must be lower than the bottom of the column (see **FIG. 23-1**).
2. Disconnect the hydraulic hose from lower end of cylinder (**FIG. 23-2**). Plug hose to prevent spills.
3. Remove the lower roll pin from inside coupling (**FIG. 23-2**) and then remove lower pin.
4. Remove the upper roll pin (**FIG. 23-2**) from the runner and then remove the upper pin.
5. Remove cylinder from runner (**FIG. 23-2**).
6. Place replacement cylinder in the correct position as shown in **FIG. 23-2**.
7. Install upper pin (**FIG. 23-2**) and roll pin in upper end of cylinder and runner.
8. Install lower pin (**FIG. 23-2**) and roll pin in lower end of cylinder and inside coupling.
9. Reconnect hydraulic hose to cylinder (**FIG. 23-2**).

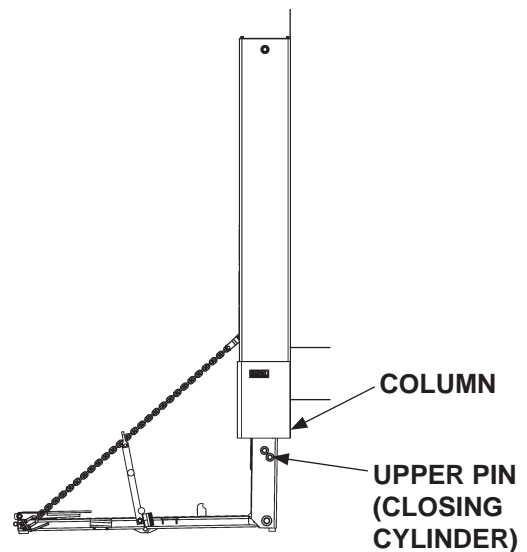


FIG. 23-1

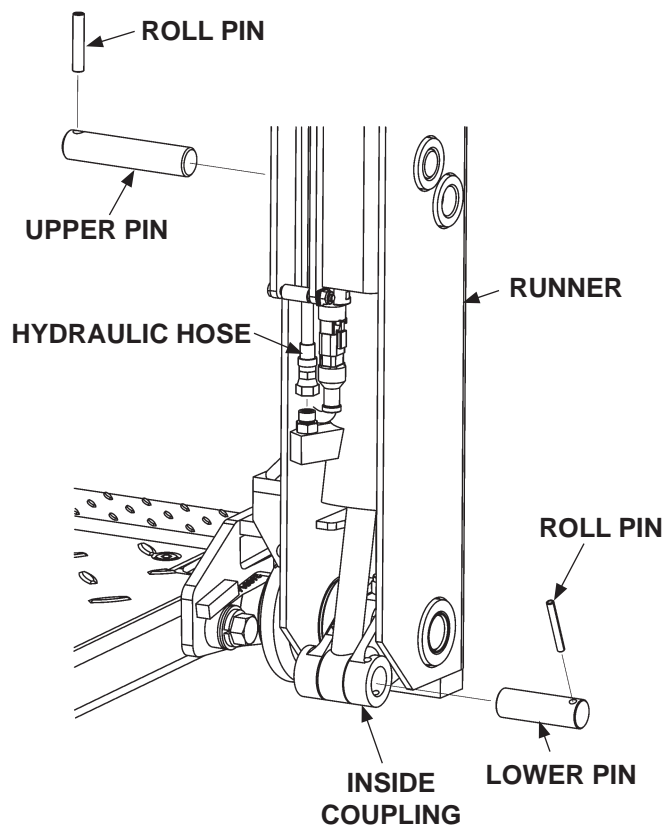


FIG. 23-2

REPLACING PARTS LIFTING CYLINDER REPLACEMENT

⚠ WARNING

Use floor jack and jack stands to support platform while performing this procedure.

CAUTION

Keep dirt, water and other contaminants from entering the hydraulic system. Before opening the hydraulic fluid reservoir filler cap, drain plug and hydraulic lines, clean up contaminants that can get in the openings. Also, protect the openings from accidental contamination.

NOTE: Refer to **Operation Manual** for instructions to operate Liftgate.

1. Raise the open platform about 20" above the ground. Then, place jack stands under the platform (**FIG. 24-1**) for support. Measure and record the distance between the centers of upper and lower cylinder pins. Keep measurement for reference when installing new cylinder.

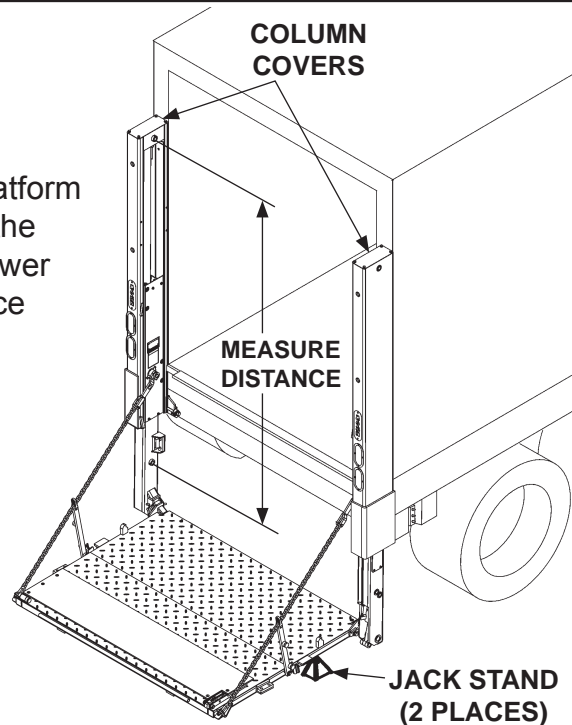


FIG. 24-1

2. Remove cover from the top of the column (**FIG. 24-1**). Put empty 3 gallon container under column for hydraulic fluid.
3. Loosen and disengage nut #1 (**FIG. 24-2**) from elbow on top of cylinder. Remove elbow from cylinder (**FIG. 24-2**). Keep elbow to reinstall on new cylinder. Loosen and disengage nut #2 from bottom of flow control valve.

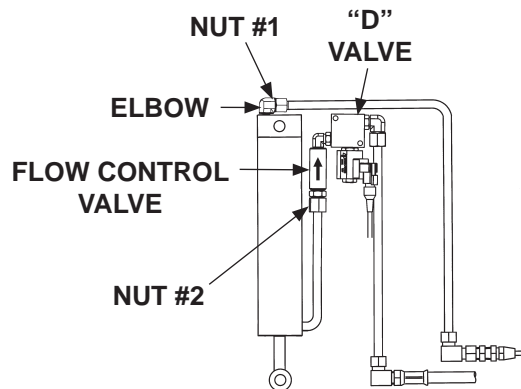


FIG. 24-2

4. Remove lower roll pin & lower pin from lifting cylinder (**FIG. 25-1**). Then, clamp large, curved vise grip pliers around the cylinder just above the top of the runner as shown in **FIG. 25-1**.

5. Remove upper roll pin & upper pin from cylinder (**FIG. 25-2**). Lift cylinder about 4" above top of column.

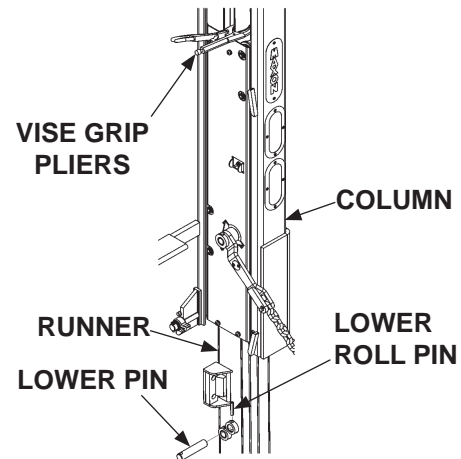
6. Remove cylinder from column as follows. Attach a chain hoist or equivalent lifting device to support the upper end of cylinder (**FIG. 25-2**). Remove vise grip pliers from cylinder. Hoist the cylinder until it clears the top of column. Then lower cylinder to the ground.

! CAUTION

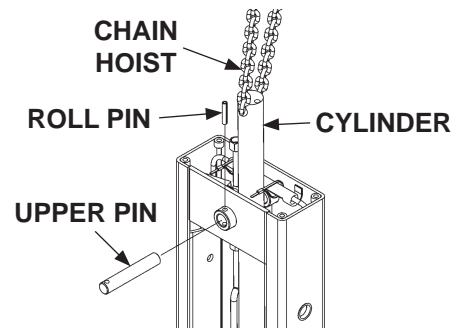
Move old cylinder out of the way to prevent possible trip hazard.

7. Remove plastic plugs from line fittings on new cylinder. Then fasten a long clean extension hose, with #8 face seal connector, to lifting line as shown in **FIG. 25-3**.

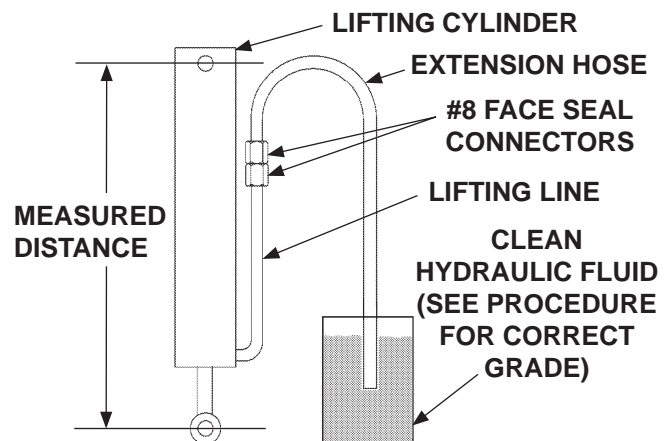
8. Fully extend cylinder rod. Then place open end of hose in gallon container of clean hydraulic fluid. Next, push cylinder rod into cylinder until distance measured between butt-end and rod-end pin bores, is the same as distance recorded in **Step 1**. Replace plastic plug on top of cylinder housing.



**SECURING CYLINDER
FIG. 25-1**



**REMOVING CYLINDER
FIG. 25-2**

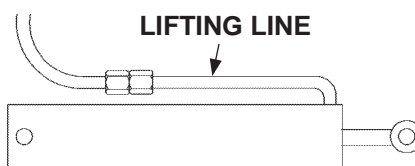


**PREPARING NEW CYLINDER
FOR INSTALLATION
FIG. 25-3**

REPLACING PARTS

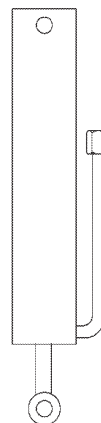
LIFTING CYLINDER REPLACEMENT - Continued

9. To help remove air from rod end of housing, position cylinder on its side with the lifting line on top (**FIG. 26-1**). Then slowly return cylinder to vertical position (**FIG. 22-3**).



CYLINDER POSITIONED ON SIDE
FIG. 26-1

10. Remove extension hose and plug the lifting line (**FIG. 26-1**).



CYLINDER WITH HOSE REMOVED
FIG. 26-2

NOTE: Before installing a new cylinder, get a helper. Have the helper look through square inspection hole on back of runner while cylinder is lowered. The helper can inform installer when rod end of cylinder is lined up with lower pin.

NOTE: To install cylinder correctly, make sure hydraulic lines on cylinder are facing the vehicle body.

11. To install new Lifting cylinder, reverse **Steps 6, 5, 4, 3, and 2**.
12. Raise platform enough to remove jack stands (**FIG. 26-3**). Then lower platform all the way. Pressurize hydraulic system by pushing control switch to **UP** position. Release switch when platform is raised to bed height.

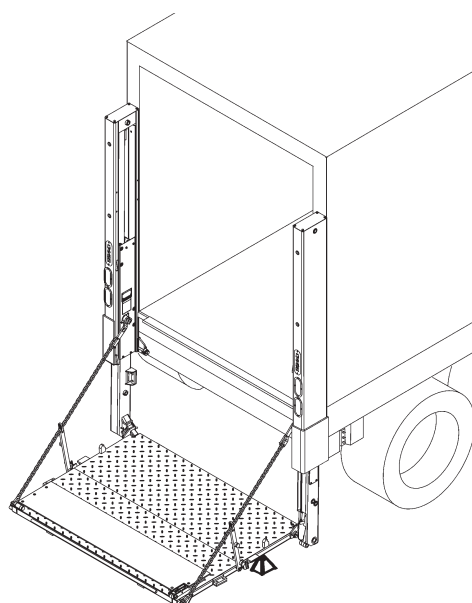


FIG. 26-3

13. If necessary, do the **BLEEDING HYDRAULIC FLUID** procedure in this manual.

RUNNER REPLACEMENT

NOTE: Refer to **Operation Manual** for instructions to operate Liftgate.

1. Use control box to lower the platform **(DOWN)** to approximately 12" above the ground. Support platform with 2 jack stands (**FIG. 27-1**). Make sure ramp edge is 4" higher than inboard edge of platform.

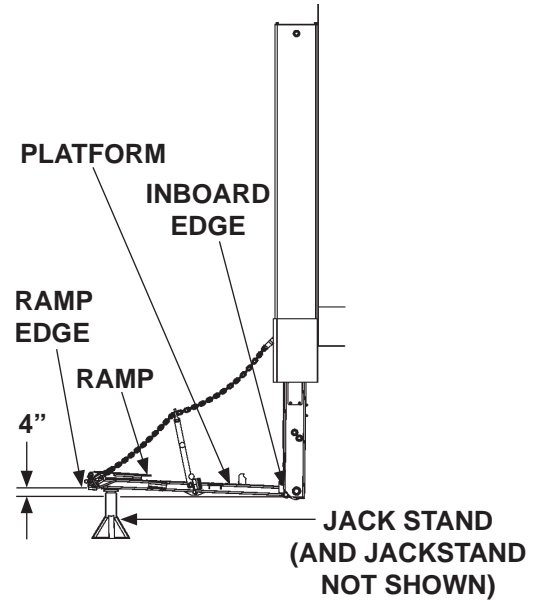


FIG. 27-1

2. Unbolt pin collar from RH runner to remove chain arm (**FIG 27-2**). Then, unbolt and remove cover from runner. Repeat for LH chain arm and LH runner.

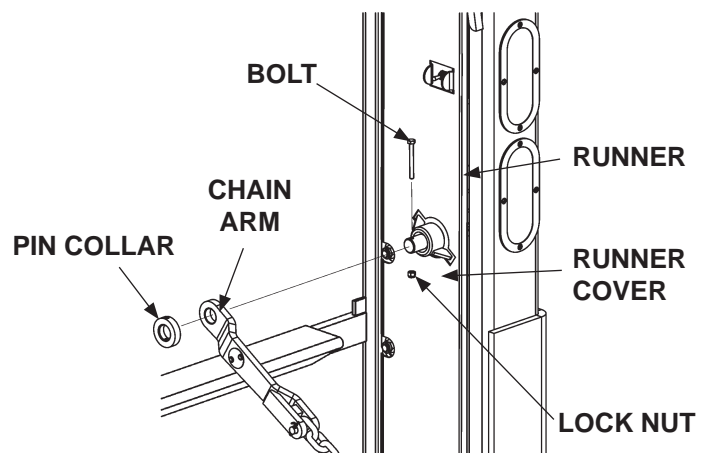


FIG. 27-2

REPLACING PARTS RUNNER REPLACEMENT - Continued

3. Raise the platform (**UP**) slightly and place 2 more jack stands near the inboard edge (**FIG. 28-1**).

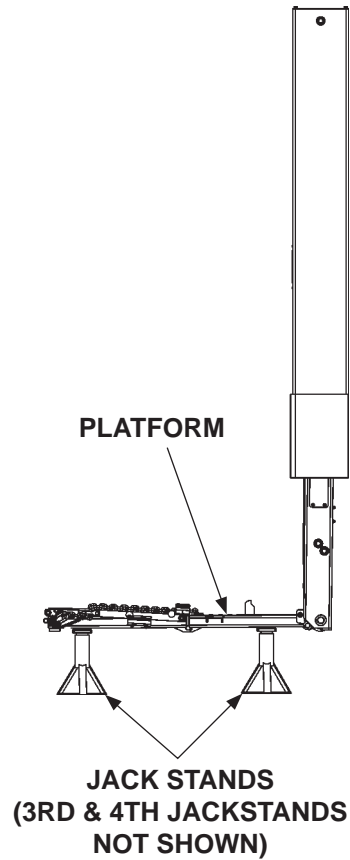


FIG. 28-1

4. Unbolt platform and connector bar from pin at the RH runner (**FIG. 28-2**). Then, remove pin. Repeat for LH runner.

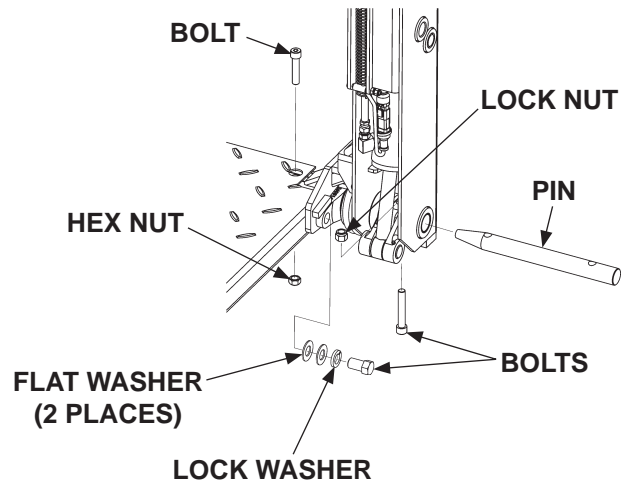


FIG. 28-2

5. Use a forklift or equivalent lifting device to move the platform approximately 6" towards the front of the vehicle to clear the platform away from the attaching points on the runners (**FIG. 29-1**). When platform is clear of the runners, raise the runners (**UP**) a few inches. Then, move platform away from liftgate and the back of the vehicle.

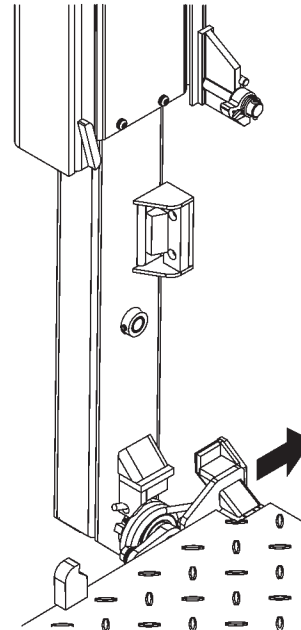


FIG. 29-1

6. Use the control box to lower runners (**DOWN**) to the ground.

NOTE: If replacing LH runner, skip steps 7, 8, and 9.

7. Do the opening/closing cylinder removal steps in the **OPENING/CLOSING CYLINDER REPLACEMENT** procedure in this manual.
8. Disconnect runner switch cable from flexible cable near bottom of runner as shown in **FIG. 29-2**. Then, unfasten runner switch cable clamp from runner by removing lock nut (**FIG. 29-2**). Remove clamp from cable connector.
9. Pull spring guard, flexible cable, and twin hydraulic hoses away from the channel at bottom of runner (**FIG. 29-2**).

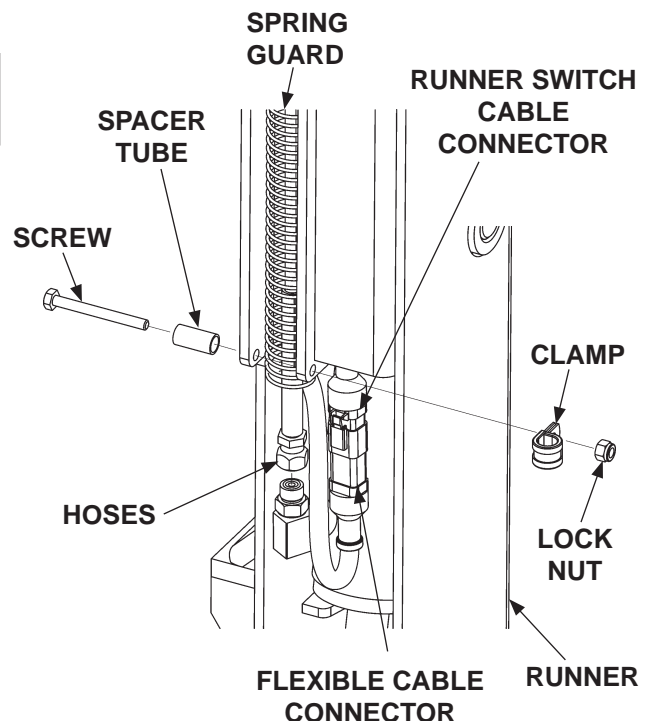
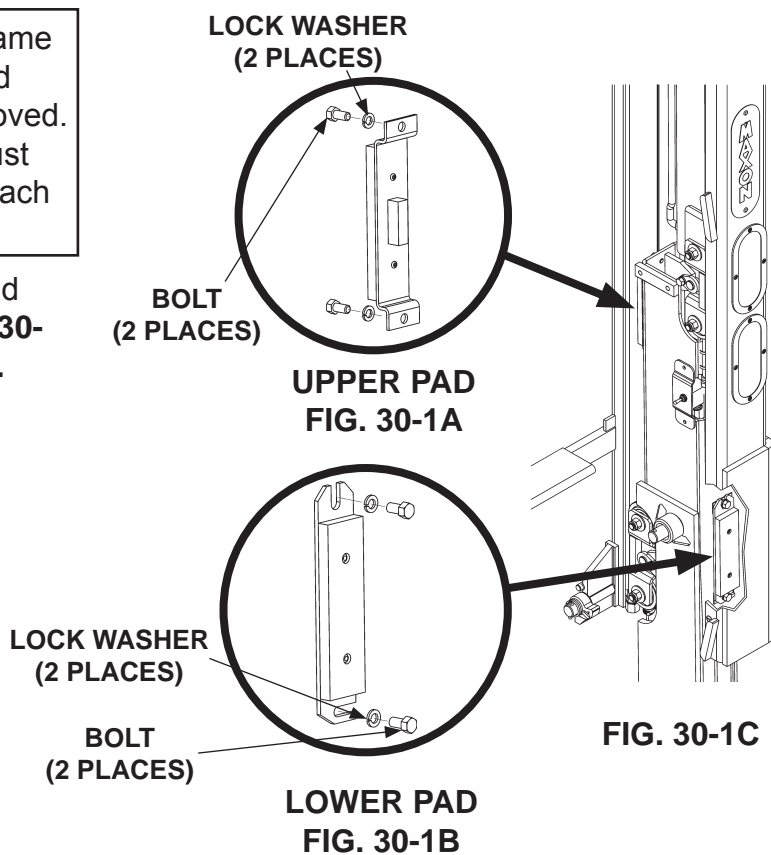


FIG. 29-2

REPLACING PARTS RUNNER REPLACEMENT - Continued

NOTE: Keep shims in the same position on each pad when pads are removed. The same shims must be reinstalled with each pad.

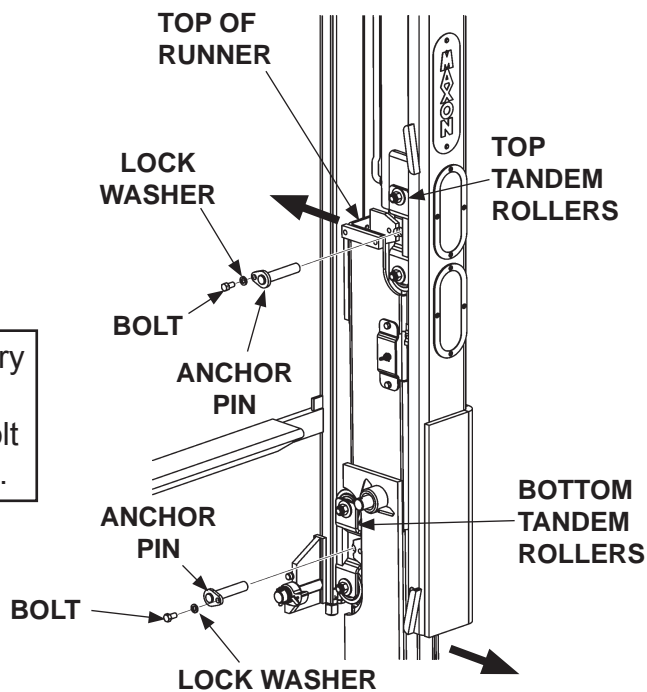
10. Unbolt the upper and lower pad assemblies and shims (**FIGS. 30-1A & 30-1B**) from runner (**FIG. 30-1C**).



11. Unbolt the anchor pin from the tandem roller at the top of runner (**FIG. 30-2**). Next, move top of runner toward vehicle body for enough clearance to remove tandem rollers. Then, remove the tandem rollers (**FIG. 30-2**).

NOTE: If more clearance is necessary to remove the tandem rollers at the bottom of runner, unbolt roller bracket from the rollers.

12. For the tandem rollers at the bottom of runner, unbolt the anchor pin (**FIG. 30-2**). Next, move bottom of runner away from vehicle body for enough clearance to remove tandem rollers. Then, remove the tandem rollers (**FIG. 30-2**).



13. Disconnect lifting hydraulic line from flow control valve near top of lifting cylinder. Hold cylinder firmly and remove roll pin and upper pin (**FIG. 31-1**).

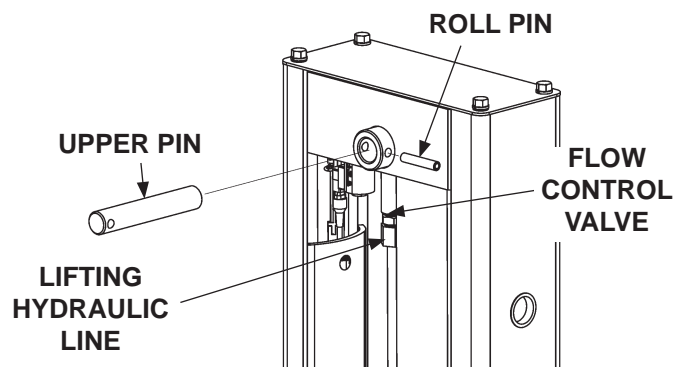


FIG. 31-1

14. Lower cylinder slowly a few inches to gain access to hydraulic line connector. Plug the lifting line to prevent cylinder from compressing.

**HYDRAULIC LINE
CONNECTOR & ELBOW
(CAP ELBOW WHEN DISCONNECTED)**

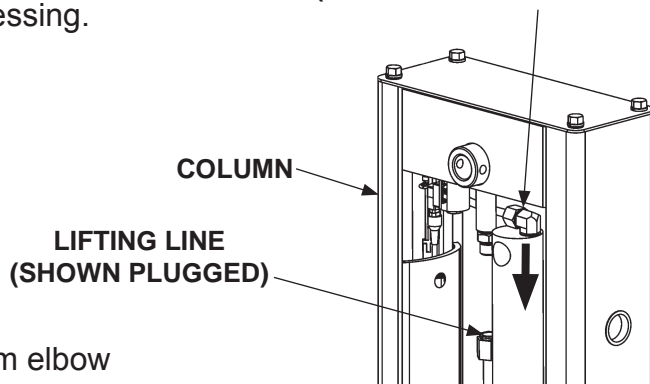


FIG. 31-2

15. Disconnect hydraulic line from elbow on top of cylinder (**FIG. 31-2**). Then cap the elbow.

REPLACING PARTS

RUNNER REPLACEMENT - Continued

16. Twist and walk runner out of column (**FIG. 32-1**). Then lay runner and cylinder on the ground.

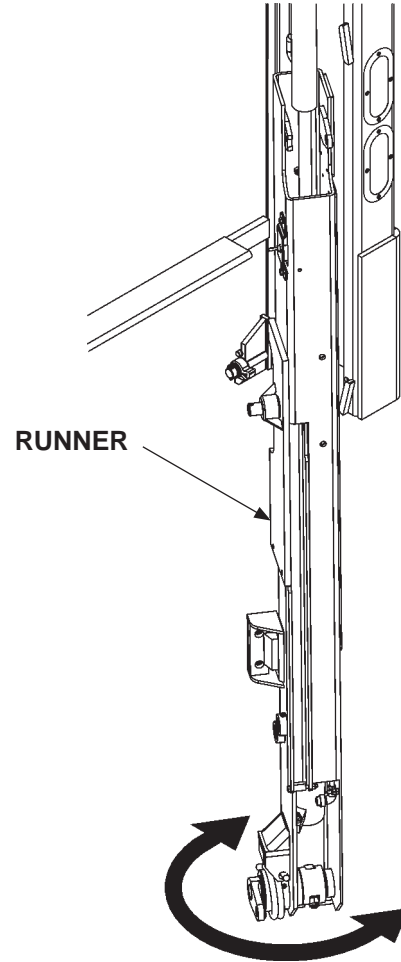


FIG. 32-1

CAUTION

**Prevent damage to cylinder rod.
Be careful removing cylinder from
runner.**

17. Remove roll pin and lower pin from runner (**FIG. 32-2**). Pull cylinder from runner.

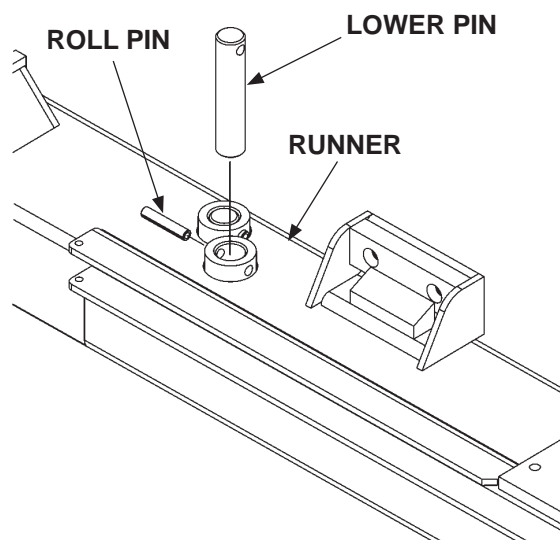
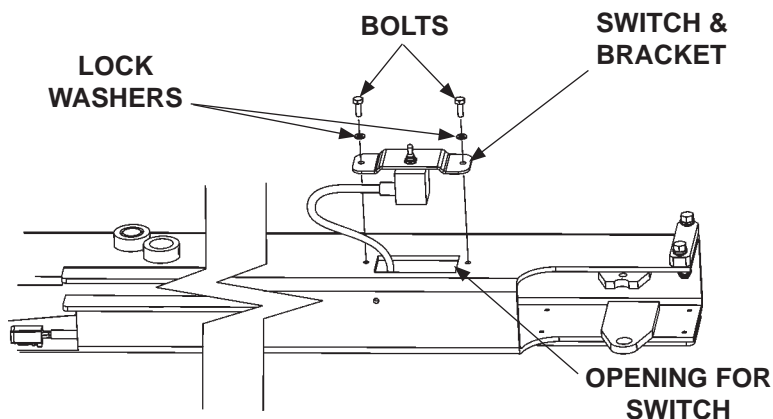


FIG. 32-2

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18. If RH runner is being replaced, unbolt switch mounting bracket as shown in **FIG. 33-1**. Pull switch, bracket, and cable from the runner.



REMOVING SWITCH FROM RH RUNNER
FIG. 33-1

CAUTION

Avoid making sharp bends in wiring.

19. If RH runner is being replaced, reinstall switch, bracket, and cable in runner as follows. Make a wire fish by feeding 8 feet of small gauge wire through switch opening in runner (**FIG. 33-1**). Pull wire through channel at lower end of runner. Leave enough wire at the switch opening to attach to switch cable, and enough wire to pull at the lower end of runner. Tie upper end of wire fish to switch cable connector. Pull connector and cable through runner until connector exits lower end of runner. Then, bolt switch mounting bracket to runner (**FIG. 33-1**).

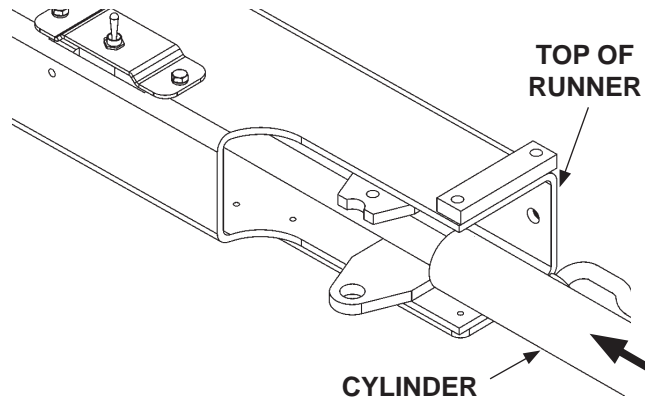
REPLACING PARTS

RUNNER REPLACEMENT - Continued

CAUTION

Prevent damage to cylinder rod.
Be careful inserting cylinder in
runner.

20. Slide rod end of lifting cylinder in top of runner (**FIG. 34-1**). Then reinstall lower pin and roll pin (**FIG. 34-2**).



INSERTING CYLINDER IN RUNNER
FIG. 34-1

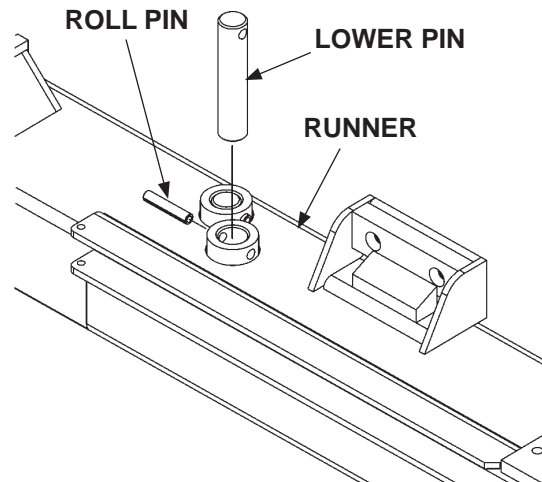


FIG. 34-2

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21. Stand the runner and cylinder upright. Twist and walk runner into column (**FIG. 35-1**).

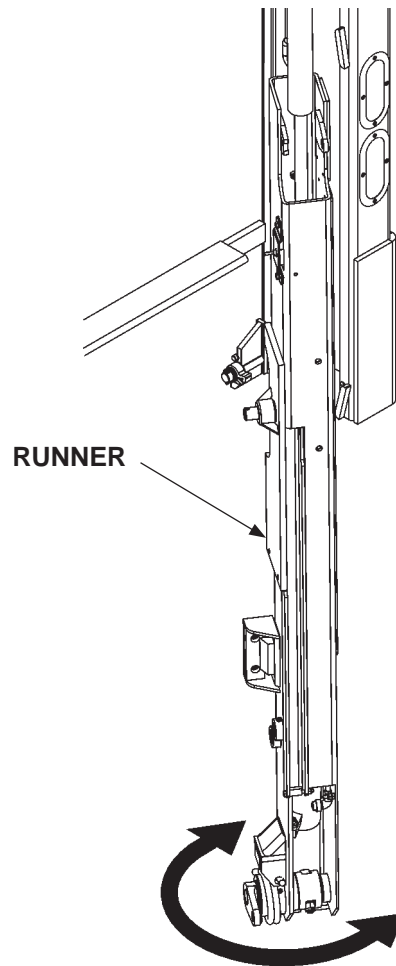


FIG. 35-1

22. Remove cap from elbow on top of cylinder (**FIG. 35-2**). Then re-connect power down line to elbow.

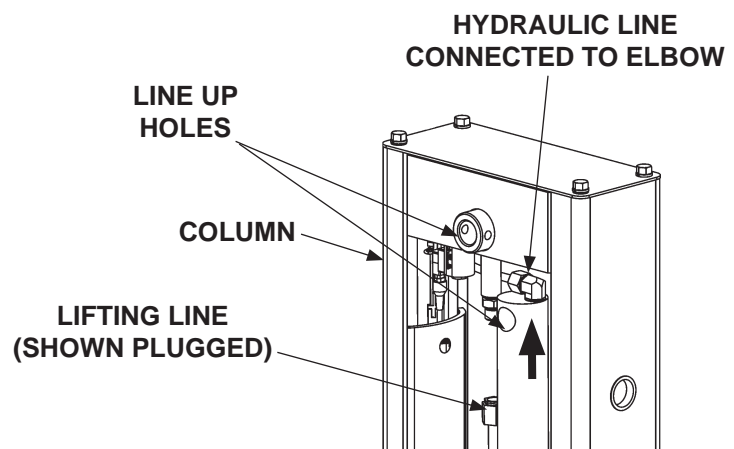


FIG. 35-2

23. Remove plug from lifting line (**FIG. 35-2**). Then, raise the cylinder to line up the holes on cylinder and column.

REPLACING PARTS RUNNER REPLACEMENT - Continued

24. Holding the cylinder firmly, reinstall upper pin and roll pin (**FIG. 36-1**). Then, reconnect lifting line to flow control valve (**FIG. 36-1**).

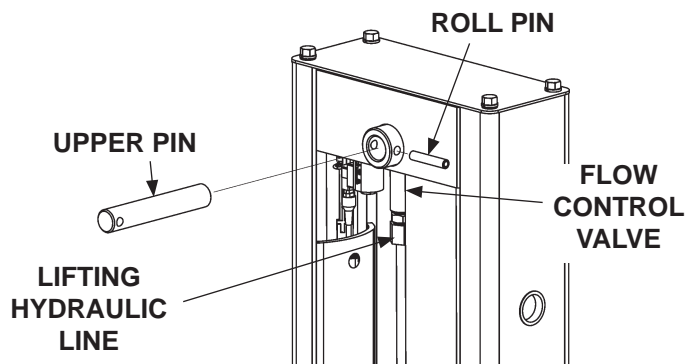


FIG. 36-1

NOTE: If roller bracket was unbolted from tandem rollers, reinstall bracket when tandem rollers are reinstalled at bottom of runner.

25. Reinstall tandem rollers at the bottom of runner as follows. Move bottom of runner away from vehicle body for enough clearance to insert tandem rollers (**FIG. 36-2**). Insert the tandem rollers in correct position. Then bolt anchor pin to runner (**FIG. 36-2**).

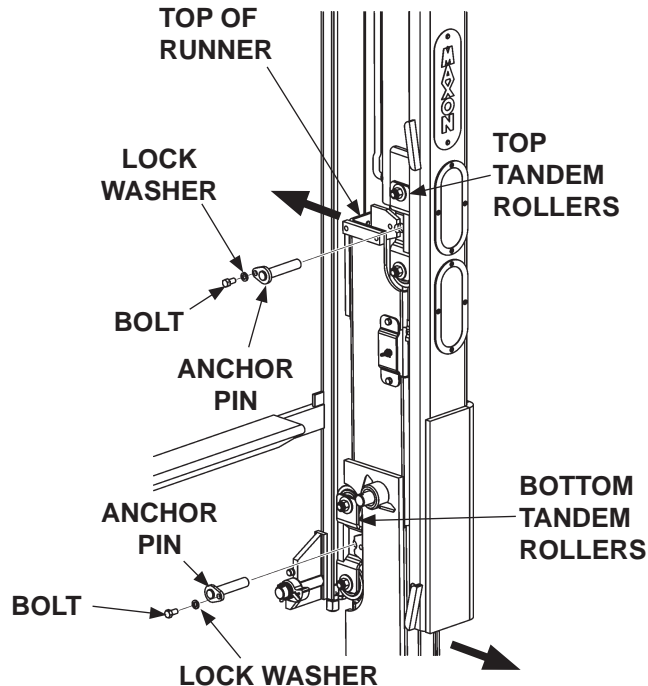
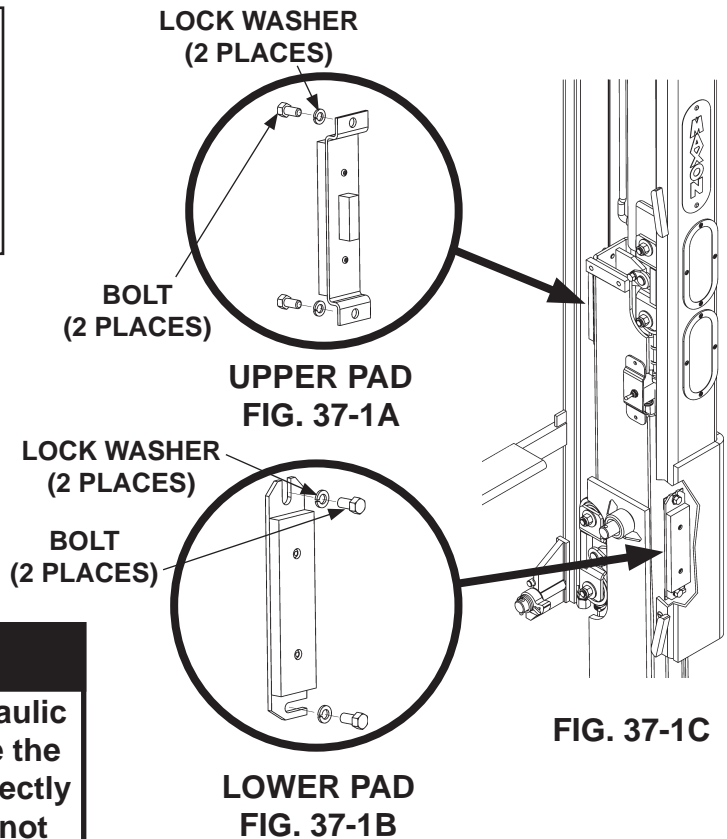


FIG. 36-2

26. To reinstall tandem rollers at top of runner, do the following. Move top of runner toward vehicle body for enough clearance to insert tandem rollers (**FIG. 36-2**). Insert the tandem rollers in correct position. Then bolt anchor pin to runner (**FIG. 36-2**).

NOTE: To reinstall the pads, use the same shim setup that was removed with the pads. Maintain .030" clearance between pad and guide in the column.

27. Bolt the upper and lower pads (FIGS. 37-1A & 37-1B) on the runner (FIG. 37-1C).



CAUTION

To prevent damage to twin hydraulic hoses and flexible cable, ensure the hoses and cable are routed correctly inside the spring guard and are not twisted. Cable must not be wrapped around the hydraulic hoses.

NOTE: If replacing LH runner, skip steps 28, 29, 30, & 31.

28. Place spring guard with flexible cable and twin hydraulic hoses, in channel at bottom of runner (FIG. 37-2).
29. Position spacer at the 3rd and 4th coils of the spring guard (FIG. 37-2). Then, screw the spacer to runner.

CAUTION

Avoid making sharp bends in wiring.

NOTE: MAXON recommends using dielectric grease on all electrical connections.

30. Reconnect runner switch cable to flexible cable at bottom of runner (FIG. 37-2). Use clamp and lock nut to fasten molded portion of connector to runner (FIG. 37-2).

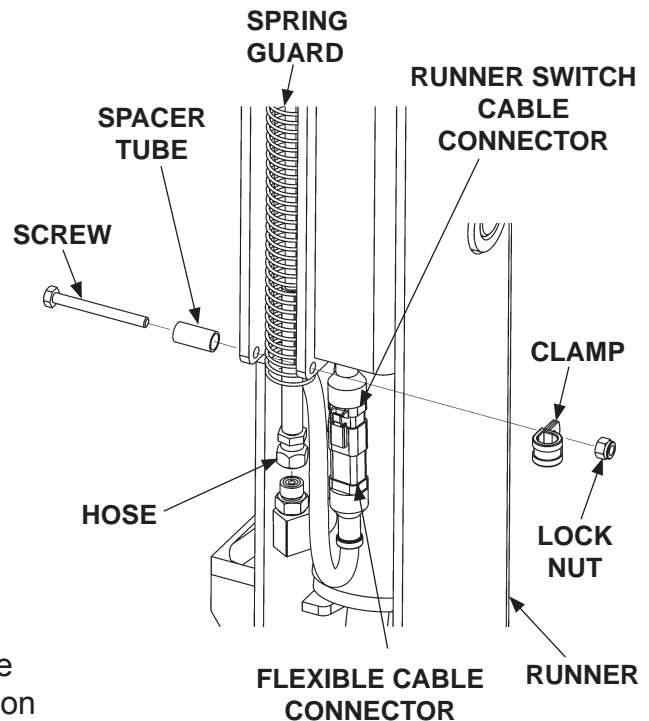


FIG. 37-2

REPLACING PARTS RUNNER REPLACEMENT - Continued

31. To reinstall opening/closing cylinder, do the opening/closing cylinder replacement steps in the **OPENING/CLOSING CYLINDER REPLACEMENT** procedure in this manual.

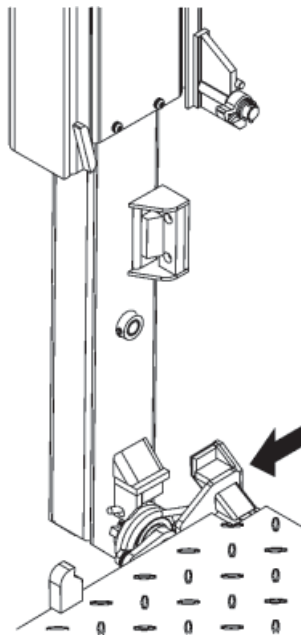


FIG. 38-1

32. Use a forklift or equivalent lifting device to lift platform and line it up with attaching points on the LH runner (**FIG. 38-1**) and RH runner.

33. Insert pin through runner, couplings and connector bar at the RH runner. Then, bolt platform and connector bar to pin (**FIG. 38-2**). Repeat for LH runner.

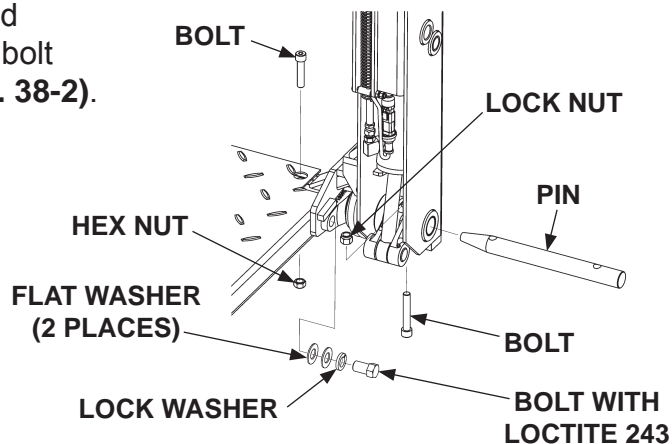


FIG. 38-2

34. Use control box to raise the platform **(UP)** slightly and remove 2 jack stands near the inboard edge (**FIG. 39-1**).

35. Use control box to lower **(DOWN)** platform on jack stands (**FIG. 39-1**) so inboard edge is 4" below ramp edge.

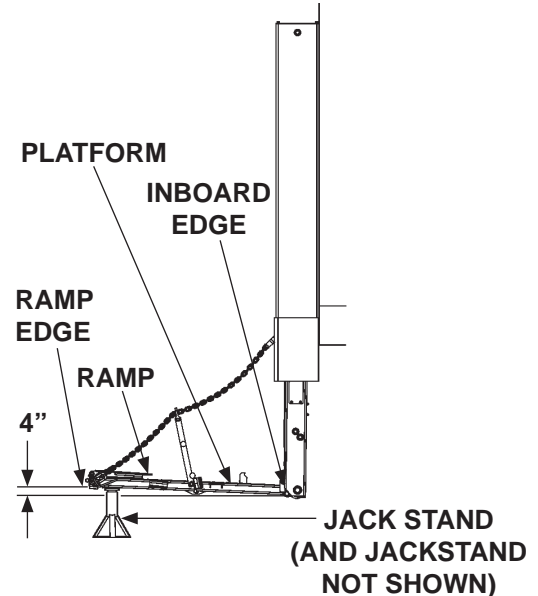


FIG. 39-1

NOTE: The runner cover, with the "ALIGN ARROWS" decal, is installed on the LH runner.

NOTE: If a new cover is being bolted on the LH runner, the serial plate must be transferred from old cover to new cover. Also, a new "ALIGN ARROWS" decal must be installed on the new cover.

36. Bolt the runner cover to RH runner (**FIG. 39-2**). Next, reattach chain arm to RH runner. Then, bolt on the pin collar to secure chain arm (**FIG. 39-2**). Repeat for LH runner.

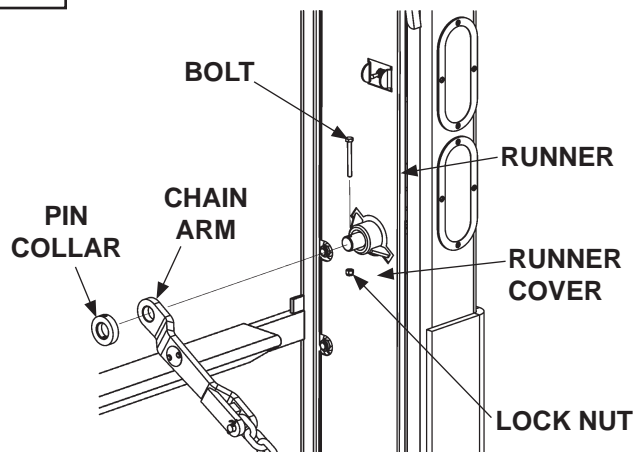
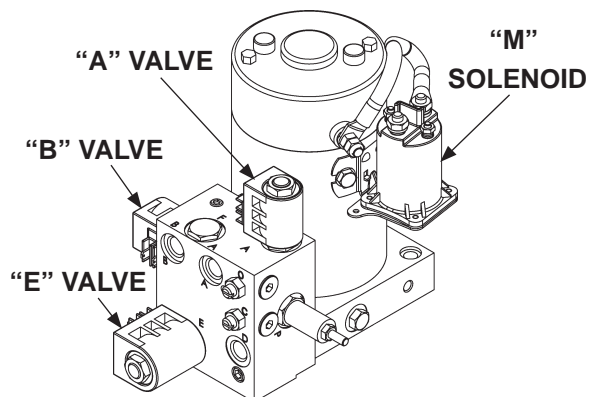


FIG. 39-2

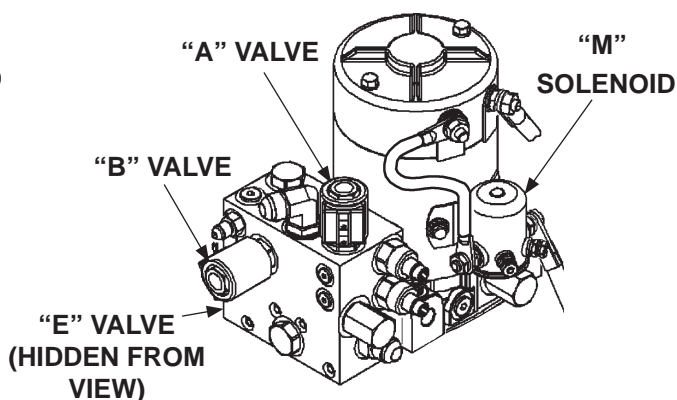
37. If necessary, do the **BLEEDING HYDRAULIC FLUID** procedure in this manual.

HYDRAULIC SYSTEM DIAGRAMS

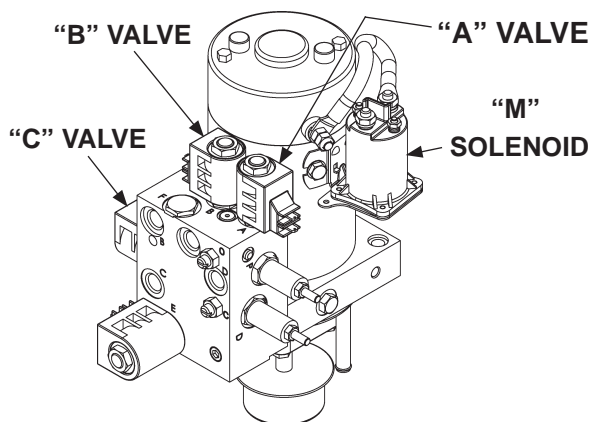
PUMP & MOTOR SOLENOID OPERATION



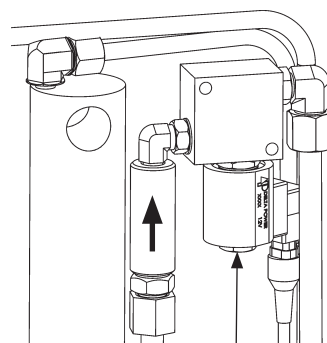
**GRAVITY DOWN PUMP/MOTOR
(POWER UNIT WITH HOSES)
FIG. 40-1**



**GRAVITY DOWN PUMP/MOTOR
(POWER UNIT WITH STEEL LINES)
FIG. 40-2**



**POWER DOWN PUMP/MOTOR
(POWER UNIT WITH HOSES)
FIG. 40-3**



**"D" VALVES (TOP OF EACH COLUMN)
FIG. 40-4**

SOLENOID OPERATION		
FUNCTION	SOLENOID ENERGIZED	ACTION
UP	M	Motor runs; Oil flows from "B" Port, thru Flow Divider, thru "D" Valves to Lift Cylinders.
DOWN	GRAVITY - B & D (FIGS. 40-1 or 40-2 & 40-4)	"B & D" Valves open, allowing oil to return from lift cylinders to the reservoir.
	POWER - M,B,C,& D (FIGS. 40-3 & 40-4)	Motor runs; "B,C,& D" valves open, allowing oil to return from lift cylinders to reservoir.
FOLD PLATFORM	M & E	Motor runs; "E" valve shifts, oil flows from port "A" to the folding cylinder.
UNFOLD PLATFORM	A	"A" valve opens, allowing oil to return from the folding cylinder to reservoir.

TABLE 40-1

HYDRAULIC SCHEMATIC, SINGLE PUMP GRAVITY DOWN

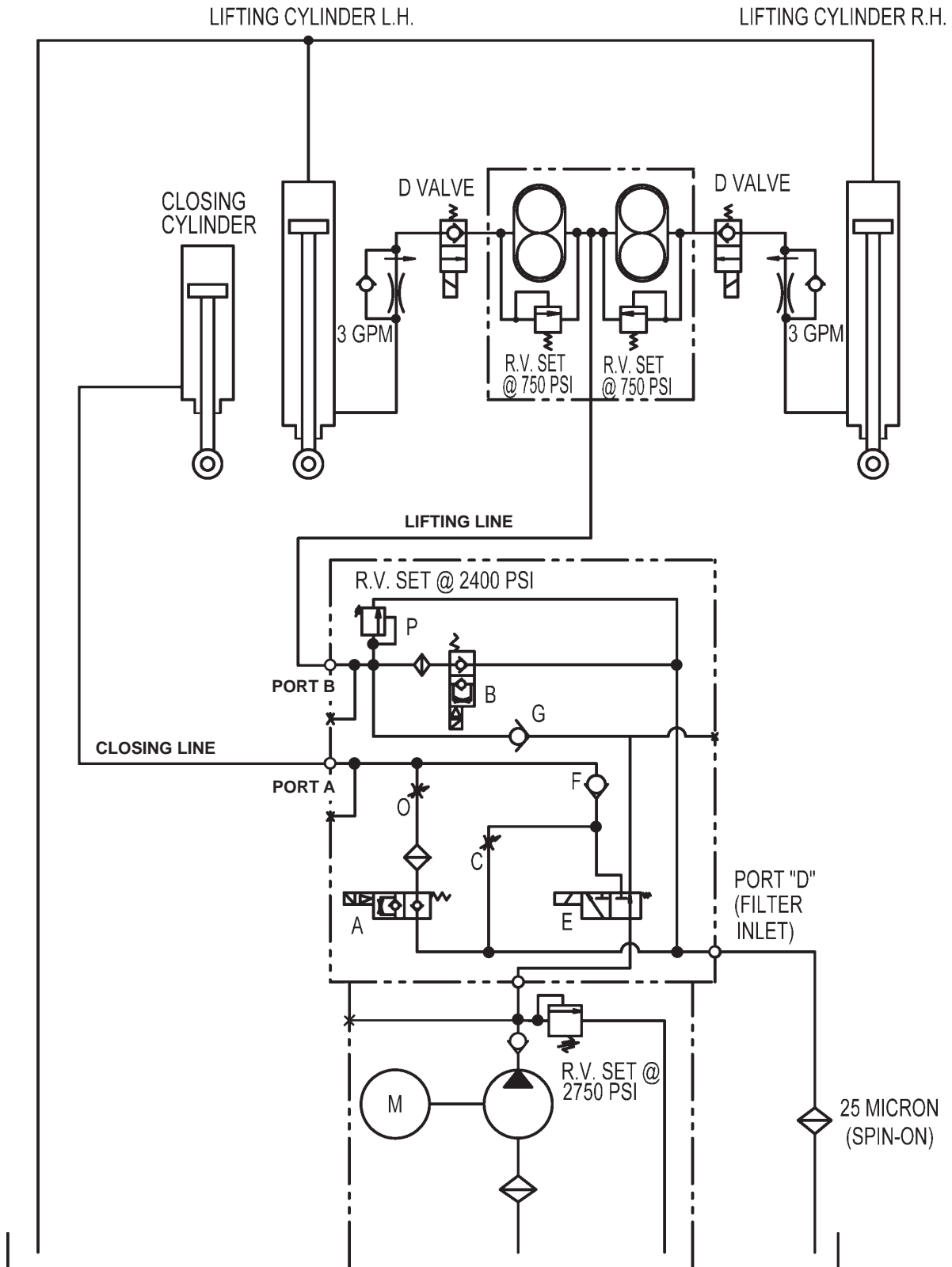


FIG. 41-1

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GRAVITY DOWN HYDRAULIC LINES IDENTIFICATION

NOTE: See **TABLE 43-1** for information on the numbered hoses in this illustration.

CAUTION

Before connecting hoses, ensure face seal o-rings are in place.

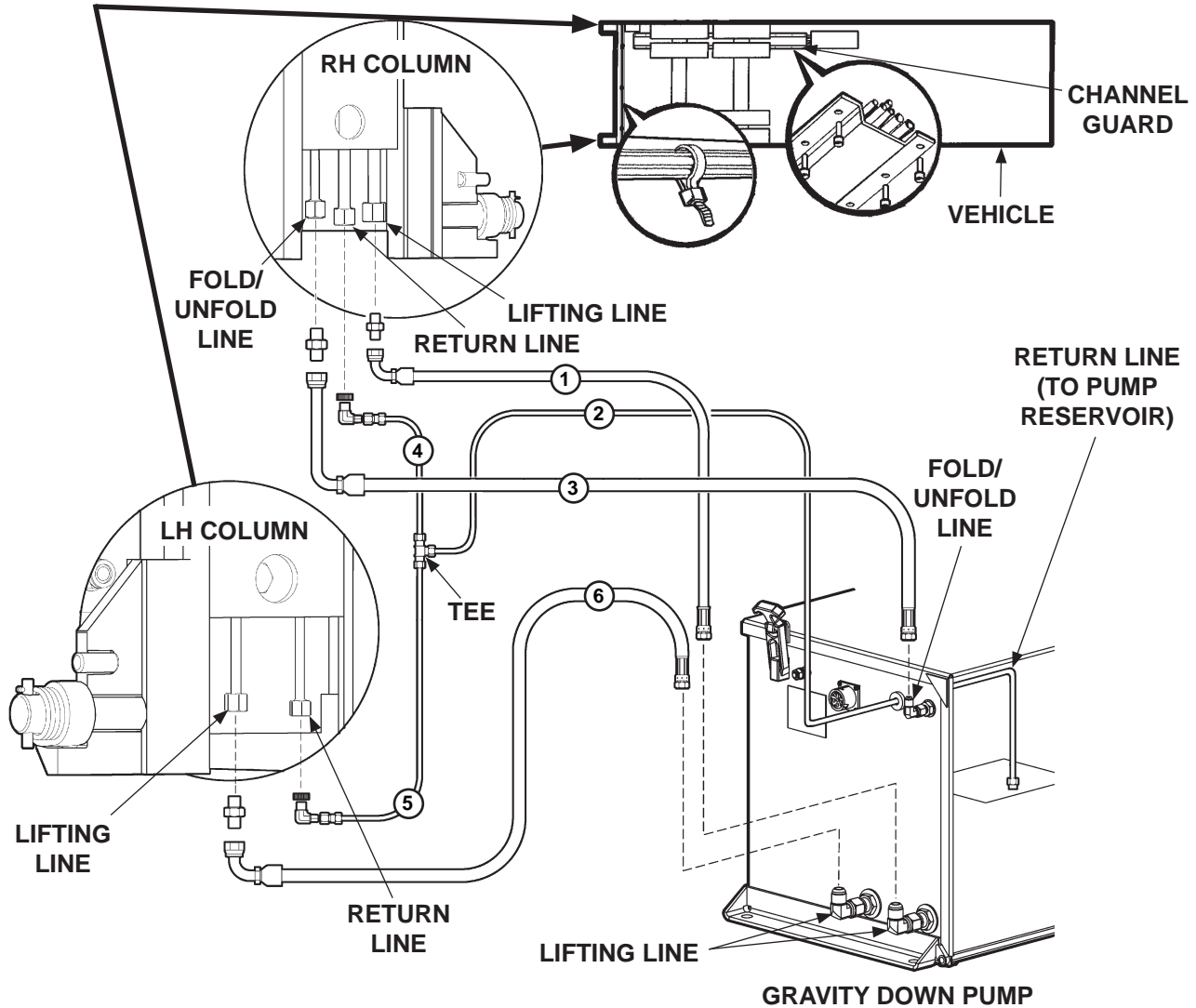


FIG. 43-1

GRAVITY DOWN PUMP BOX INSTALLATION: REQUIRED HOSES & PLASTIC TUBING			
	3 FT.	10 FT.	20 FT.
1	HP 3/8" X 64" LG.	HP 3/8" X 196" LG.	HP 3/8" X 316" LG.
2	PLASTIC 3/8" OD X 84" LG.	PLASTIC 3/8" OD X 192" LG.	PLASTIC 3/8" OD X 324" LG.
3	HP 1/4" X 56" LG.	HP 1/4" X 188" LG.	HP 1/4" X 308" LG.
4	PLASTIC 3/8" OD X 24" LG.		
5	PLASTIC 3/8" OD X 108" LG.		
6	HP 3/8" X 142" LG.	HP 3/8" X 274" LG.	HP 3/8" X 394" LG.

TABLE 43-1

HYDRAULIC SYSTEM DIAGRAMS

HYDRAULIC SCHEMATIC, SINGLE PUMP POWER DOWN

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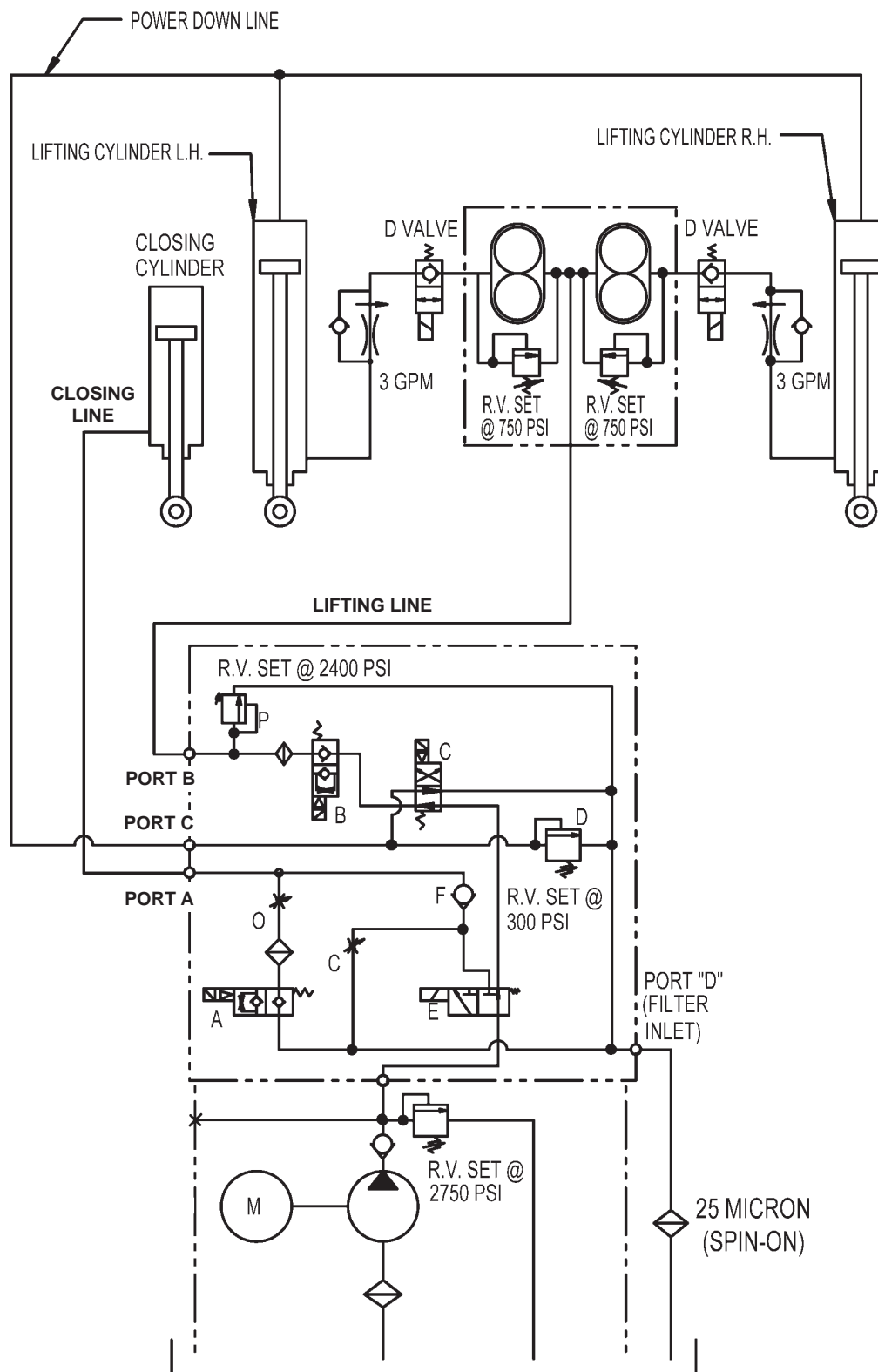


FIG. 44-1

HYDRAULIC SCHEMATIC, DUAL PUMP POWER DOWN

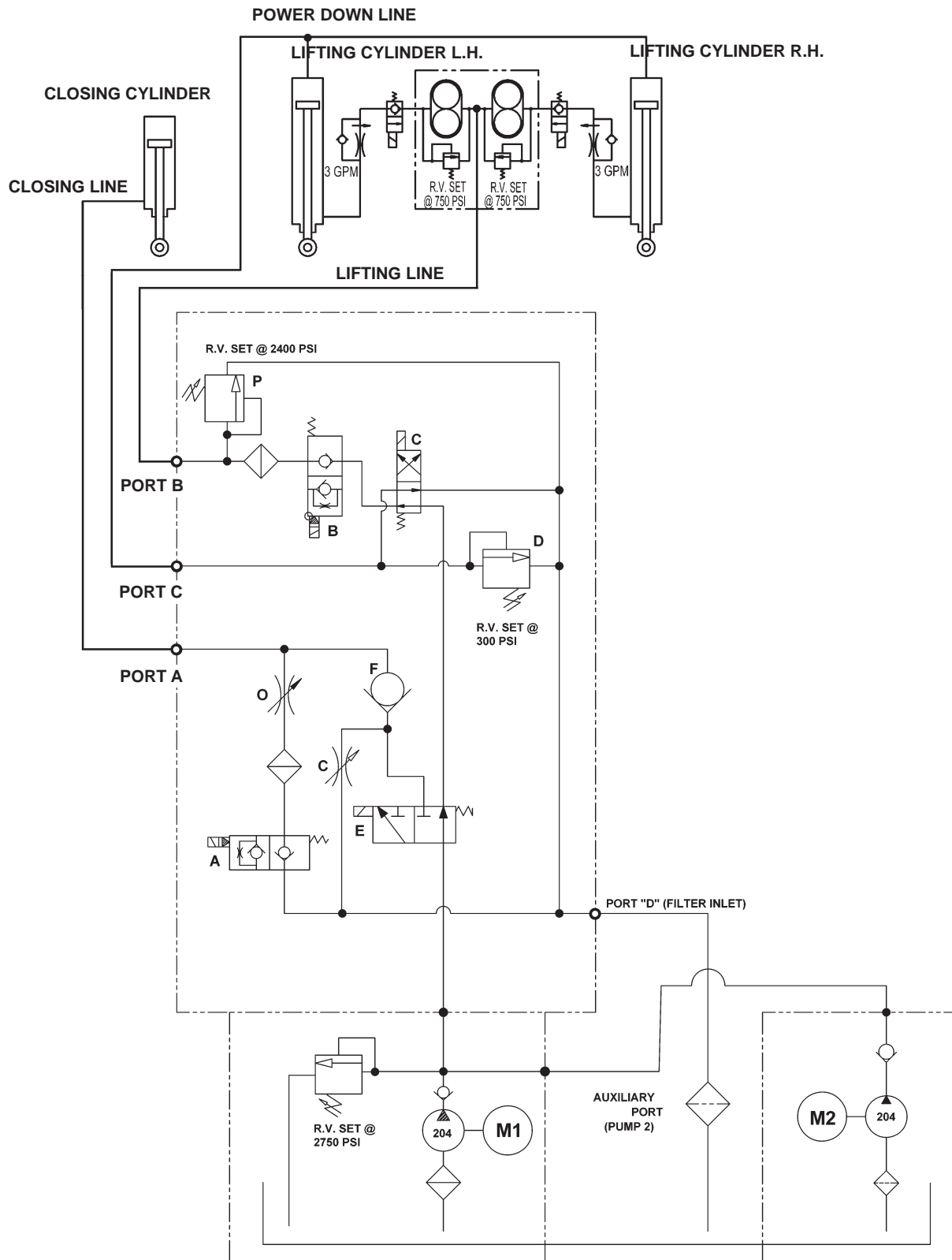


FIG. 45-1

HYDRAULIC SYSTEM DIAGRAMS

POWER DOWN HYDRAULIC LINES IDENTIFICATION

NOTE: See TABLE 46-1 for information on the numbered hoses in this illustration.

CAUTION

Before connecting hoses, ensure face seal o-rings are in place.

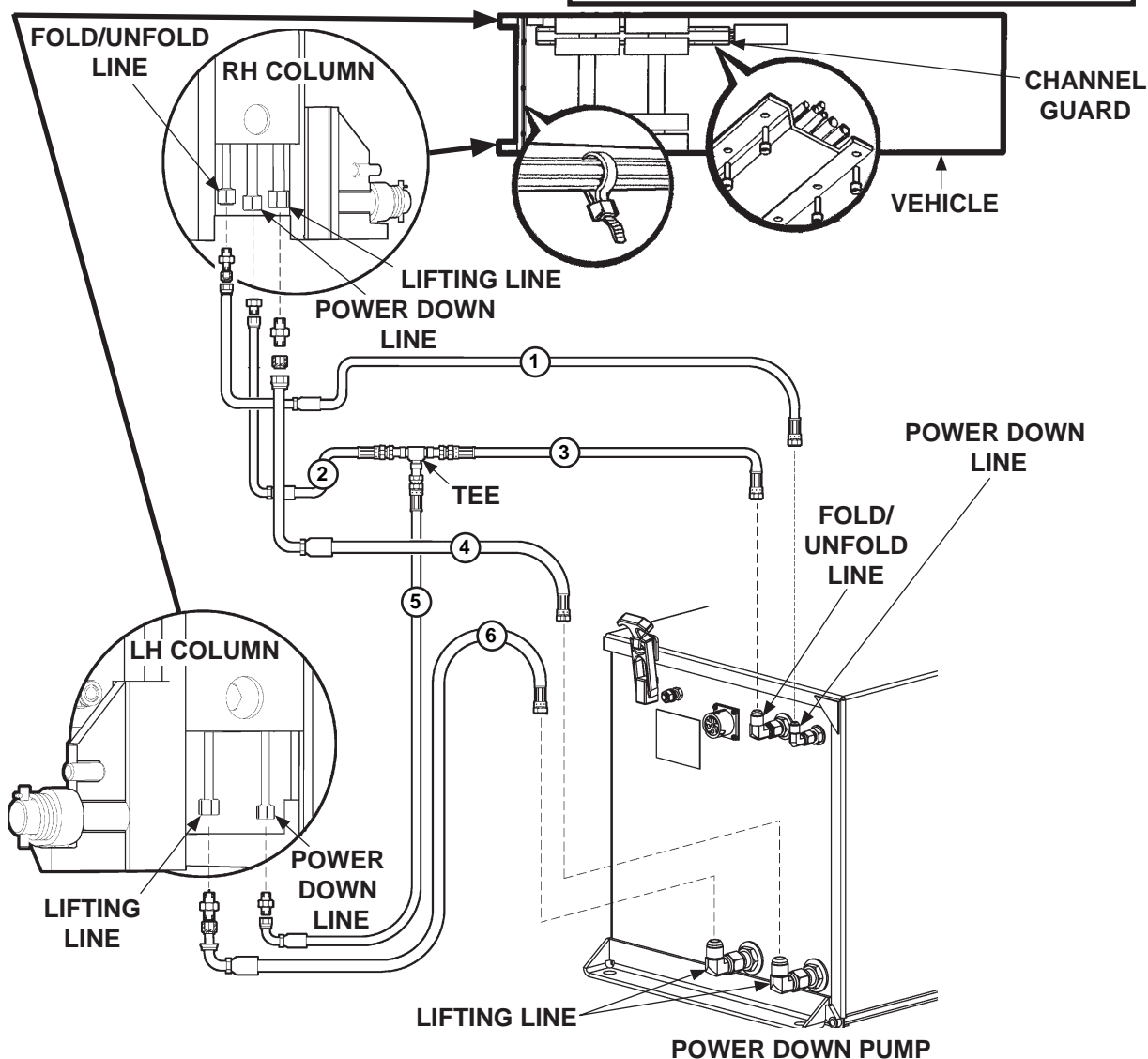


FIG. 46-1

POWER DOWN PUMP BOX INSTALLATION: REQUIRED HOSES			
	3 FT.	10 FT.	20 FT.
1	HP 1/4" X 56" LG.	HP 1/4" X 188" LG.	HP 1/4" X 308" LG.
2	HP 1/4" X 22" LG.		
3	HP 1/4" X 34" LG.	HP 1/4" X 166" LG.	HP 1/4" X 286" LG.
4	HP 3/8" X 64" LG.	HP 3/8" X 196" LG.	HP 3/8" X 316" LG.
5	HP 1/4" X 98" LG.		
6	HP 3/8" X 142" LG.	HP 3/8" X 274" LG.	HP 3/8" X 394" LG.

TABLE 46-1

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FIG. 48-1

DUAL PUMP BOX, GRAVITY DOWN

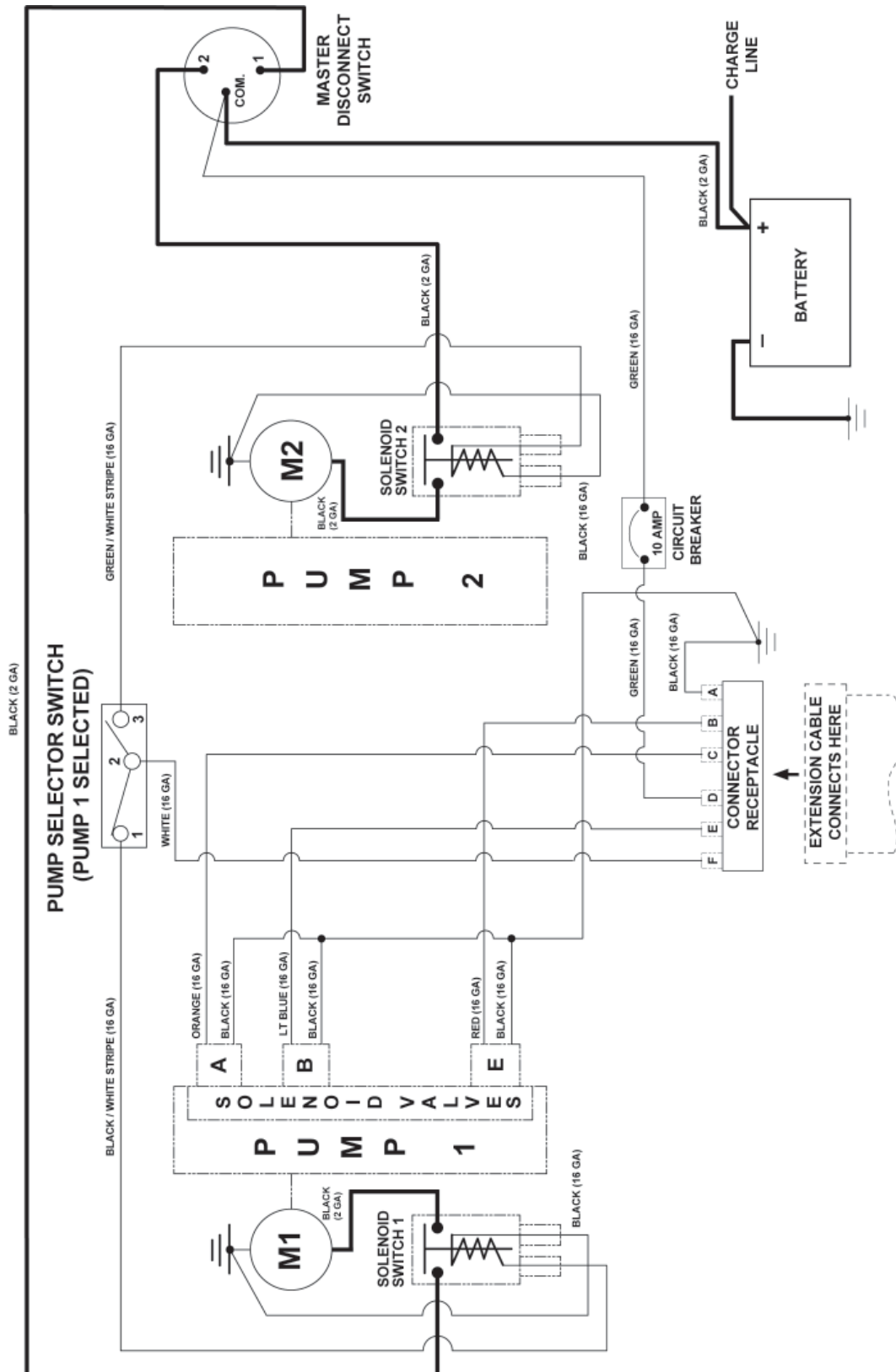


FIG. 49-1

ELECTRICAL SYSTEM DIAGRAMS

WIRING SCHEMATIC, POWER DOWN

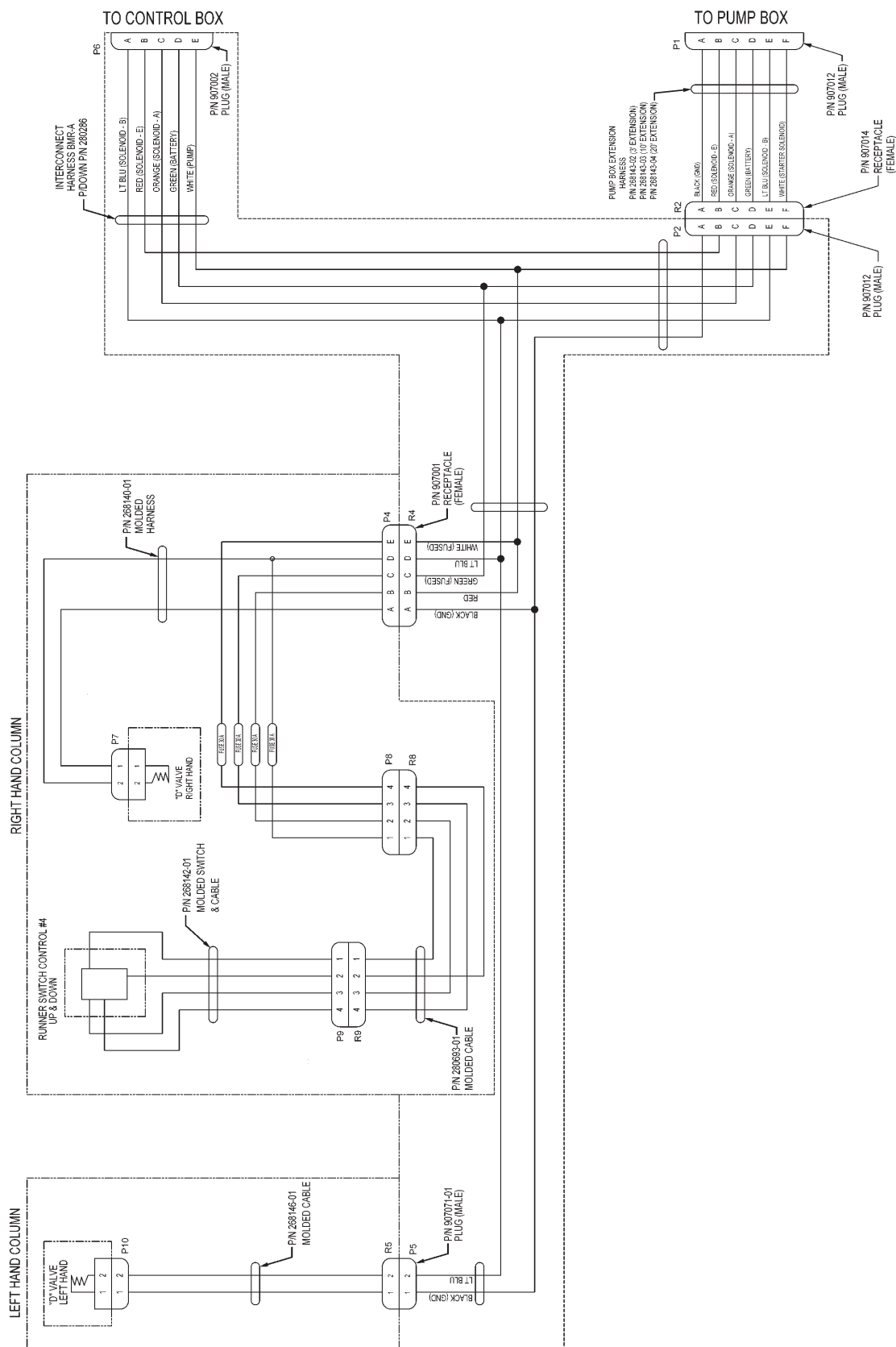


FIG. 50-1

SINGLE PUMP BOX, POWER DOWN

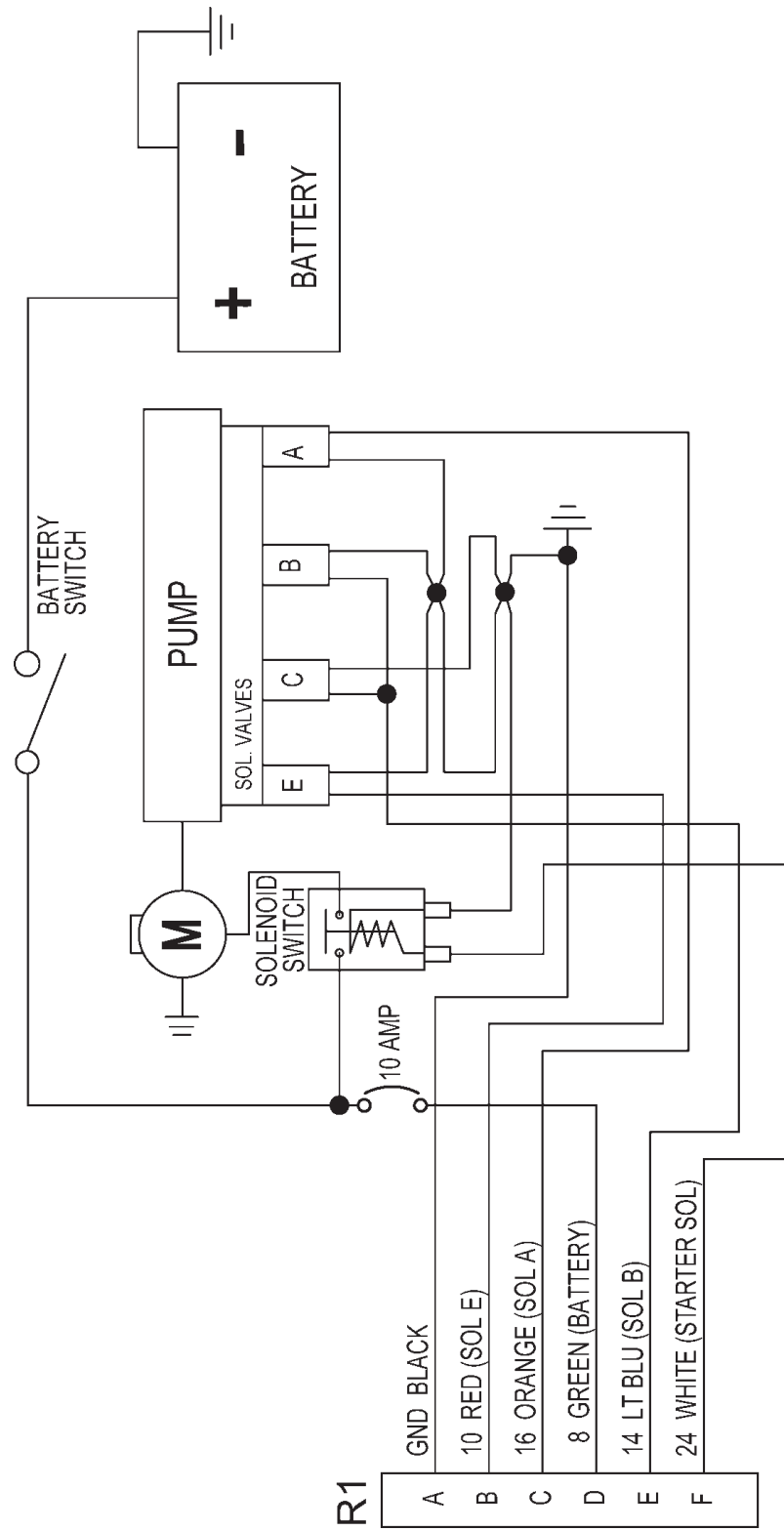


FIG. 51-1

ELECTRICAL SYSTEM DIAGRAMS
DUAL PUMP BOX, POWER DOWN

MAXON® 11921 Slauson Ave. Santa Fe Springs, CA. 90670 (800) 227-4116 FAX (888) 771-7713

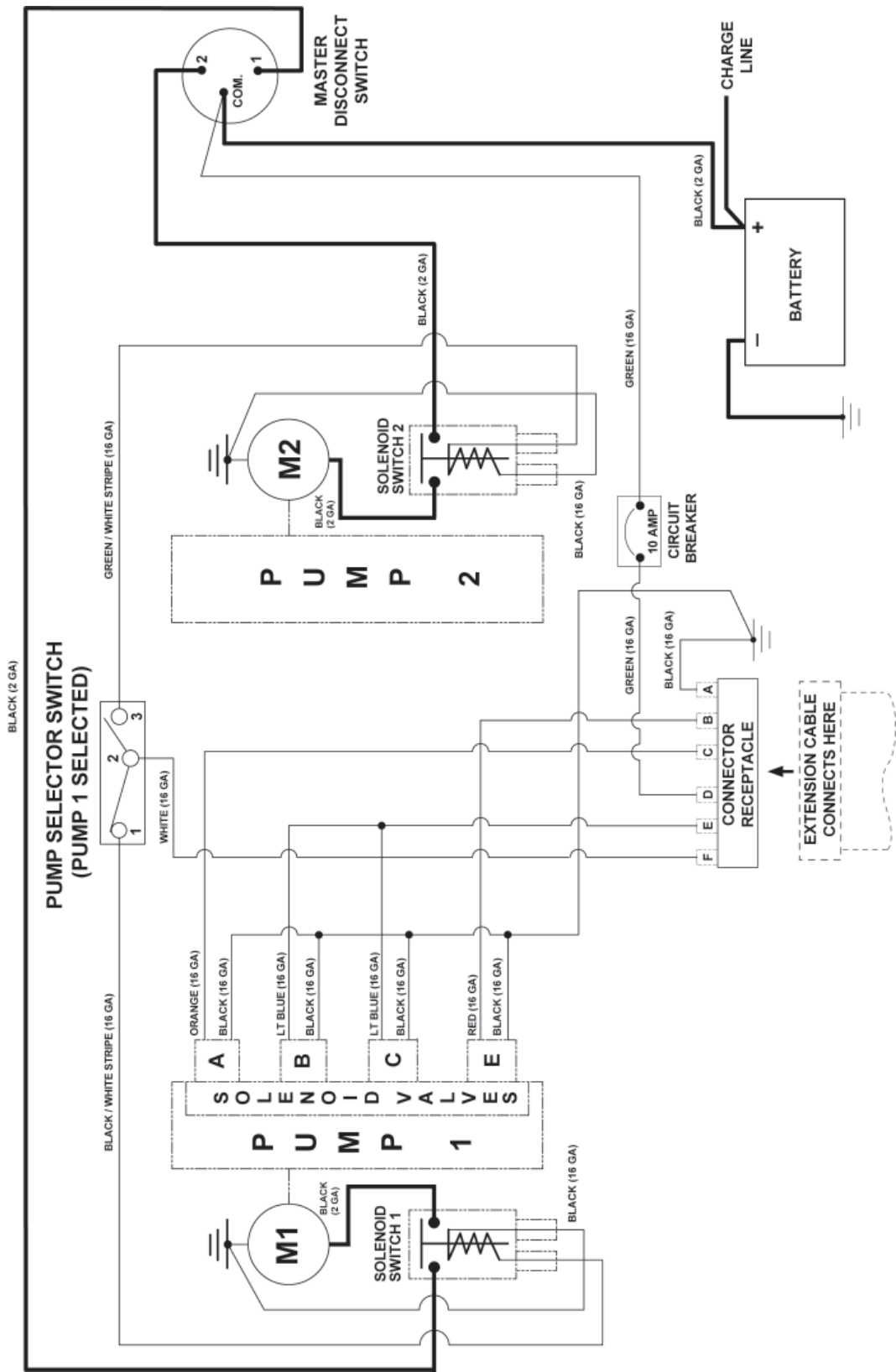
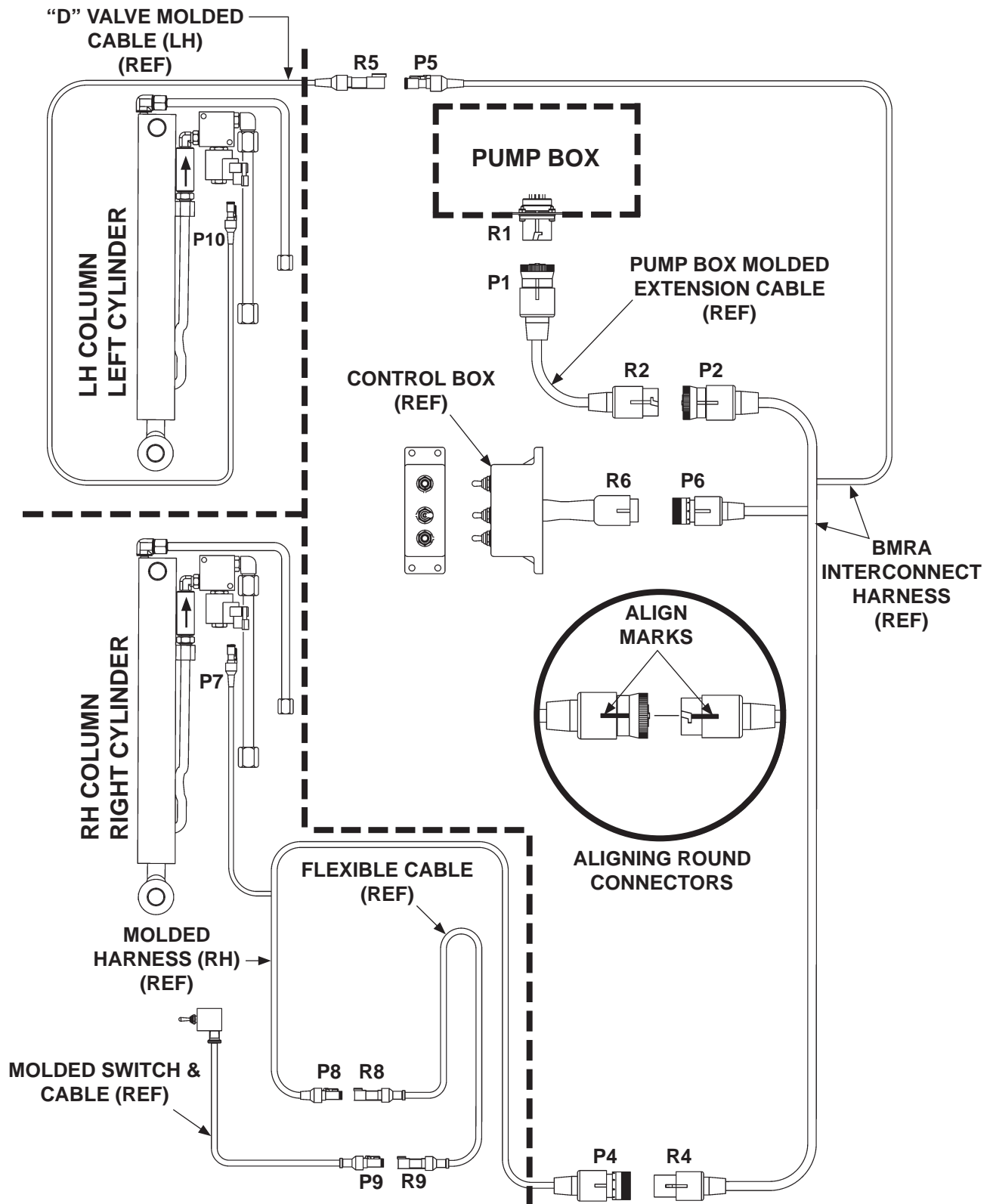


FIG. 52-1

WIRING HARNESS CONNECTOR IDENTIFICATION



NOTE: Connector references are not marked on parts.

FIG. 53-1

TROUBLESHOOTING

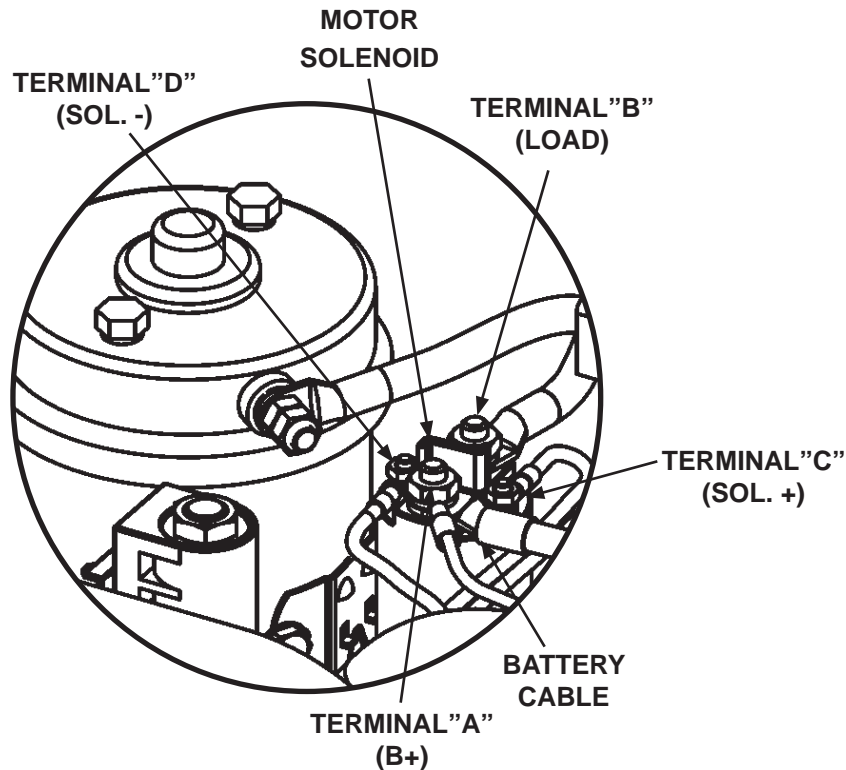
PLATFORM WILL NOT RAISE, MOTOR WILL NOT RUN

NOTE: For dual pump system, check secondary pump and motor first.

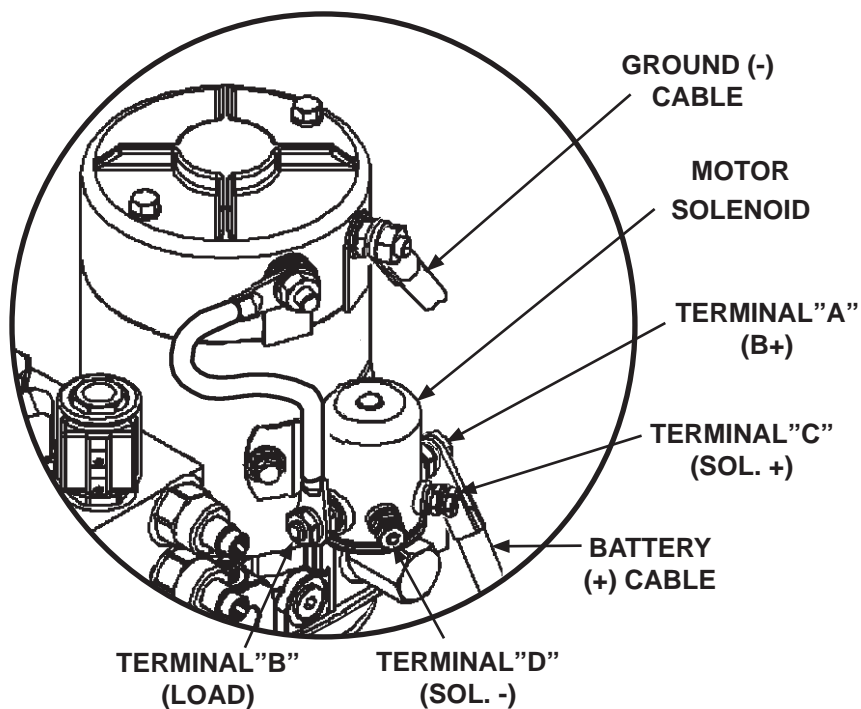
1. Check for 12.6 volts dc input to motor solenoid by using voltmeter between terminal A (**FIGS. 49-1 and 49-2**) and ground. If there is no power to the motor solenoid, make sure pump box master disconnect switch is **ON** and circuit breaker is set.
2. Find out if vehicle is equipped with optional battery box, truck charge line, tractor charge line, or trailer charge line. Check optional battery box cables and charge line cables for damage, dirty connections and loose connections. Replace damaged battery cables, clean dirty connections, and tighten loose connections.
3. Check if vehicle batteries and optional battery box batteries are fully charged. If required, fully charge batteries with a battery charger. Replace batteries that cannot be fully charged. If battery charger fully charges batteries, use vehicle manufacturer's specifications to check the vehicle battery charging system. Do not operate Liftgate if vehicle charging system needs repair.
4. Use a 6" long, 10 gauge insulated wire as a jumper to connect pump motor solenoid terminal A and terminal C. Check for 12.6 volts dc output from motor solenoid by using voltmeter between terminal B (**FIGS. 51-1 and 51-2**) and ground. If a low voltage or 0 volts is indicated on terminal B, replace motor solenoid. Also, check electrical load cable for damage, dirty connections, and loose connections. Replace cable if damaged, clean dirty connections, and tighten loose connections. Use multimeter and applicable schematics in this manual to check switch controls and interconnecting wiring.

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**TYPICAL MOTOR SOLENOID ELECTRICAL CONNECTIONS
(PUMP SHOWN IS FROM GRAVITY DOWN UNIT WITH HOSES)**
FIG. 55-1



**TYPICAL MOTOR SOLENOID ELECTRICAL CONNECTIONS
(PUMP SHOWN IS FROM GRAVITY DOWN UNIT WITH STEEL LINES)**
FIG. 55-2

TROUBLESHOOTING

PLATFORM WILL NOT PICK UP RATED CAPACITY

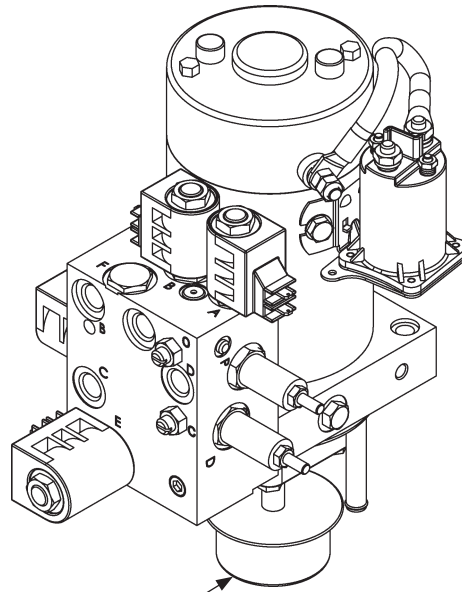
1. Check for unequal cylinder operation (lagging cylinder first).
 - **GRAVITY DOWN LIFTGATES:** Lower the platform to the ground. Disconnect the RETURN HOSE at the bottom of each column. Place a large container under cylinder to catch fluid. Set control box toggle switch to **UP** position to raise platform. Check if fluid is streaming from the fitting. A few drops of hydraulic fluid is okay; however, if fluid streams steadily from the fitting, replace piston seals.
 - **POWER DOWN LIFTGATES:** Raise the platform to bed height. Disconnect both bottom **POWER DOWN RETURN HOSES** at the “T” connector between pump box and bottom of each cylinder. (**Refer to POWER DOWN HYDRAULIC LINES IDENTIFICATION in this manual.**) Place a large container to catch fluid from both hoses. Set control box toggle switch to **UP** position to raise platform. Check if fluid is streaming from the hoses. A few drops of hydraulic fluid is okay; however, if fluid streams steadily from a hose, replace piston seals in the cylinder connected to that hose.
2. Check vehicle charge line cables for damage, dirty connections and loose connections. If Liftgate battery box is installed, check for damaged battery cables, dirty cable connections and loose cable connections in battery box. Replace damaged cables, clean dirty connections and tighten loose connections.
3. Check for bent parts on the Liftgate that could interfere with normal operation.

NOTE: Do the **BLEEDING HYDRAULIC SYSTEM** procedure in this manual with the following step.

4. Verify that relief valve pressure settings are correct. Refer to relief valve pressure setting procedure. If pressure settings can't be corrected or if pump runs hot and excessively noisy, replace pump.

NOTE: Do the **BLEEDING HYDRAULIC SYSTEM** procedure in this manual with the following step.

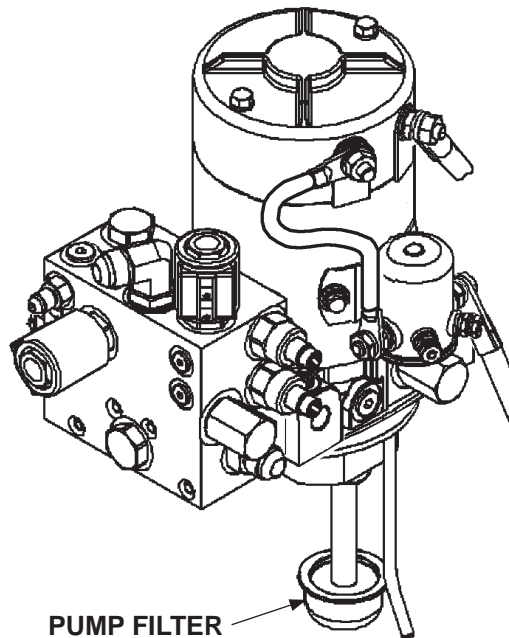
5. Remove pump assembly from reservoir (**FIGS. 53-1 and 53-2**). Check if pump filter is clogged. Clean clogged filter and flush contaminated fluid from reservoir. Replace spin-on filter in pump box. Reinstall pump/motor assembly.



PUMP FILTER

**TYPICAL PUMP REMOVED TO CHECK AND CLEAN FILTER
(PUMP SHOWN IS FROM POWER DOWN UNIT WITH HOSES)**

FIG. 57-1



PUMP FILTER

**TYPICAL PUMP REMOVED TO CHECK AND CLEAN FILTER
(PUMP SHOWN IS FROM GRAVITY DOWN UNIT WITH STEEL LINES)**

FIG. 57-2

TROUBLESHOOTING

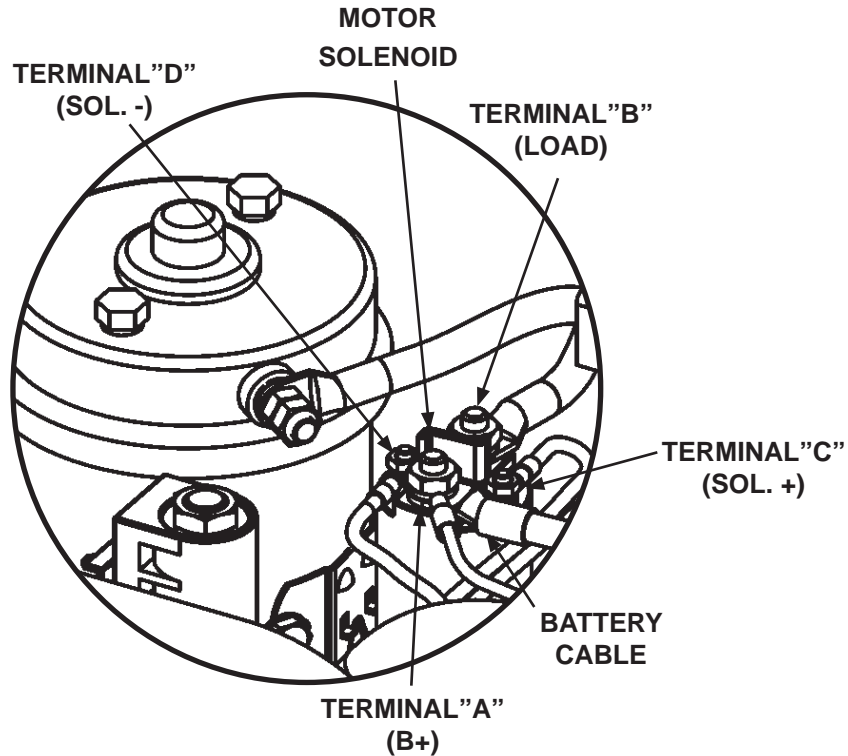
PLATFORM RAISES HALFWAY & STOPS

1. Check the hydraulic fluid level in the reservoir.

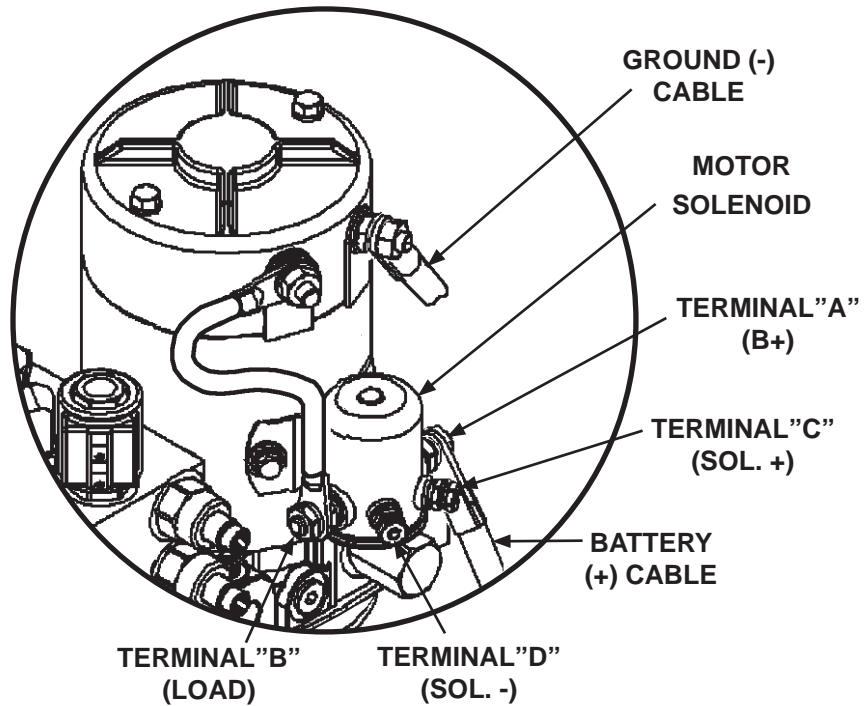
- **GRAVITY DOWN LIFTGATES:** Lower the platform to the ground. Clean dirt and fluid from top of reservoir in pump box. Fill the reservoir to correct level indicated on sight glass (pump box).
- **POWER DOWN LIFTGATES:** Raise the platform to bed height. Fill the reservoir to correct level indicated on sight glass (pump box).

NOTE: For dual pump system, check secondary pump and motor first.

2. Find out if vehicle is equipped with optional battery box, truck charge line, tractor charge line, or trailer charge line. Check optional battery box cables and charge line cables for damage, dirty connections and loose connections. Replace damaged battery cables, clean dirty connections, and tighten loose connections.
3. Check if vehicle batteries and optional battery box batteries are fully charged. If required, fully charge batteries with a battery charger. Replace batteries that cannot fully charge. If battery charger fully charges batteries, use vehicle manufacturer's specifications to check the vehicle battery charging system. Do not operate Liftgate if vehicle charging system needs repair.
4. Check pump motor solenoid (**FIGS. 55-1 and 55-2**) and electrical cable connections in pump box. Make sure electrical cable connections are clean and tight. Use a 6" long, 10 gauge insulated wire as a jumper between motor solenoid terminals "A" and "C" to activate solenoid. Replace solenoid if it fails to activate.



**TYPICAL MOTOR SOLENOID ELECTRICAL CONNECTIONS
(PUMP SHOWN IS FROM GRAVITY DOWN UNIT WITH HOSES)**
FIG. 59-1



**TYPICAL MOTOR SOLENOID ELECTRICAL CONNECTIONS
(PUMP SHOWN IS FROM GRAVITY DOWN UNIT WITH STEEL LINES)**
FIG. 59-2

TROUBLESHOOTING

PLATFORM RAISES HALFWAY & STOPS - Continued

5. Check for bent parts on the Liftgate that could interfere with normal operation.

NOTE: Do the **BLEEDING HYDRAULIC SYSTEM** procedure in this manual with the following step.

6. Remove assembled pump and motor from reservoir (**FIGS. 57-1 and 57-2**). Check if pump filter is clogged. Clean clogged filter and flush contaminated fluid from reservoir. Replace spin-on filter in pump box.

7. If pump runs hot and extremely noisy, replace it.

NOTE: Do the **BLEEDING HYDRAULIC SYSTEM** procedure in this manual with the following step.

8. Remove pressure compensation valve (**FIG. 60-1**) located at the top of each column. Check if the flow control valves are contaminated. Disassemble, try to move plunger with small screwdriver, and then clean each valve as shown in **FIG. 60-1**. Reinstall or replace each valve if necessary.

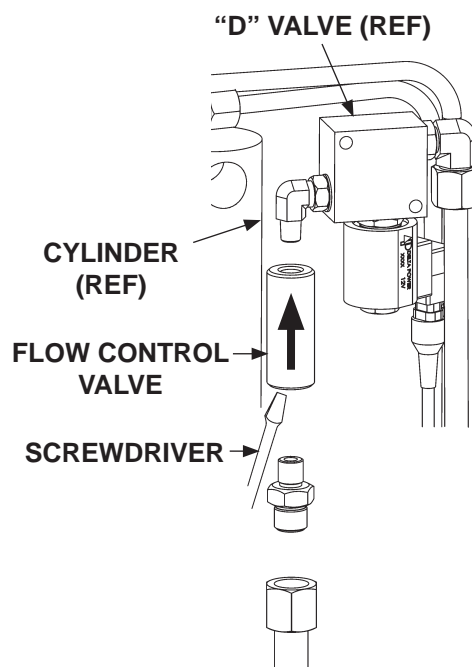
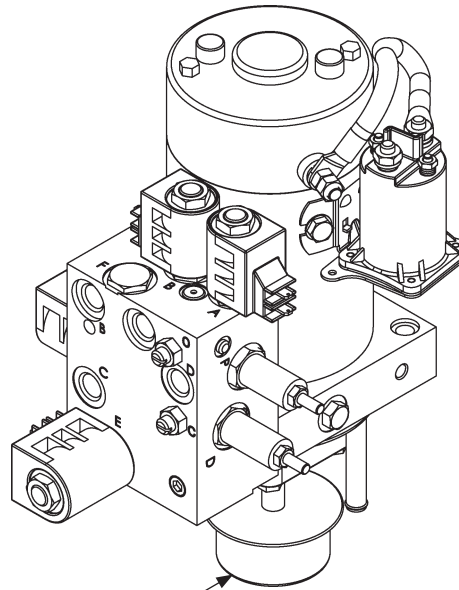


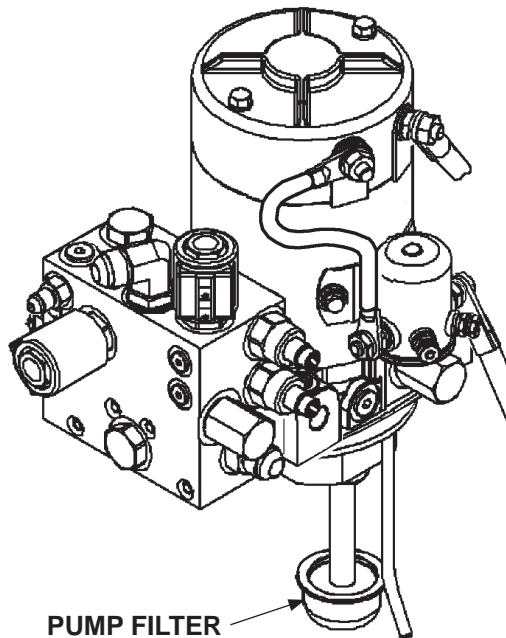
FIG. 60-1



PUMP FILTER

**TYPICAL PUMP REMOVED TO CHECK AND CLEAN FILTER
(PUMP SHOWN IS FROM POWER DOWN UNIT WITH HOSES)**

FIG. 61-1



PUMP FILTER

**TYPICAL PUMP REMOVED TO CHECK AND CLEAN FILTER
(PUMP SHOWN IS FROM GRAVITY DOWN UNIT WITH STEEL LINES)**

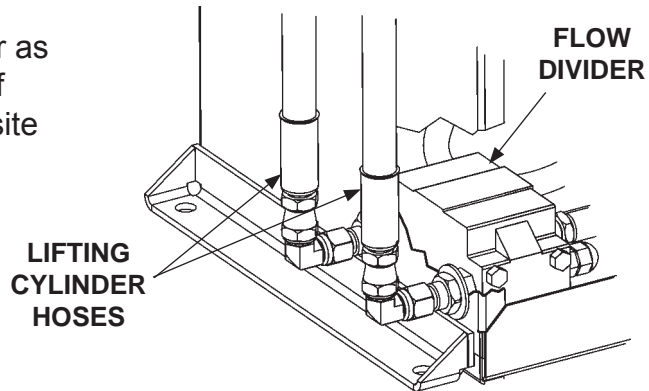
FIG. 61-2

TROUBLESHOOTING

PLATFORM RAISES AND LOWERS UNEVENLY

NOTE: Do the **BLEEDING HYDRAULIC SYSTEM** procedure in this manual with the following step.

1. Reverse the two 3/8" high pressure hose connections on output side of flow divider as shown in **FIG. 62-1**. Raise the platform. If the uneven platform position is the opposite of original symptom, replace flow divider.



**HOSE CONNECTIONS ON
FLOW DIVIDER
FIG. 62-1**

2. Check each Lifting hydraulic cylinder.

- **GRAVITY DOWN LIFTGATES:** Lower the platform to the ground. Disconnect the RETURN HOSE at the bottom of each column. Place a large container under cylinder to catch fluid. Set control box toggle switch to **UP** position to raise platform. Check if fluid is streaming from the fitting. A few drops of hydraulic fluid is okay; however, if fluid streams steadily from the fitting, replace piston seals.
- **POWER DOWN LIFTGATES:** Raise the platform to bed height. Disconnect both bottom **POWER DOWN RETURN HOSES** at the "T" connector between pump box and bottom of each cylinder. **(Refer to POWER DOWN HYDRAULIC LINES IDENTIFICATION in this manual.** Place a large container to catch fluid from both hoses. Set control box toggle switch to **UP** position to raise platform. Check if fluid is streaming from the hoses. A few drops of hydraulic fluid is okay; however, if fluid streams steadily from a hose, replace piston seals in the cylinder connected to that hose.

NOTE: Do the **BLEEDING HYDRAULIC SYSTEM** procedure in this manual with the following step.

3. Lower the platform to the ground and remove the pressure compensation valve (**FIG. 63-1**) located at the top of each column. Check if pressure compensation valves are contaminated. Disassemble, try to move plunger with small screwdriver, and then clean each valve if required (**FIG. 63-1**). Reinstall or replace each valve if necessary.

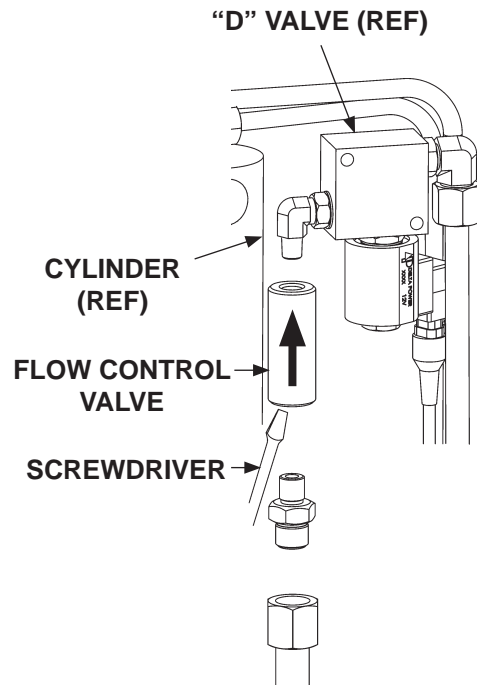


FIG. 63-1

4. Check for bent parts on the Liftgate that could interfere with normal operation.

TROUBLESHOOTING

PLATFORM WILL NOT FOLD

1. Check the hydraulic fluid level in the reservoir.

- **GRAVITY DOWN LIFTGATES:** Lower the platform to the ground. Clean dirt and fluid from top of reservoir in pump box. Fill the reservoir to correct level indicated on sight glass (pump box).
- **POWER DOWN LIFTGATES:** Raise the platform to bed height. Fill the reservoir to correct level indicated on sight glass (pump box).

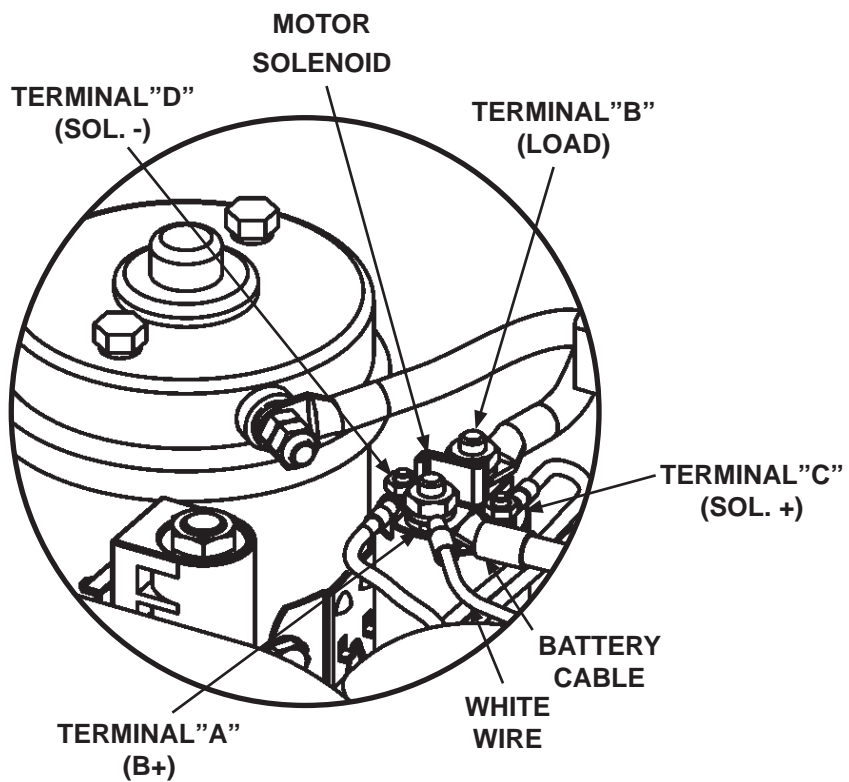
NOTE: For dual pump system, check secondary pump and motor first.

2. Check pump motor solenoid (**FIGS. 61-1 and 61-2**) in pump box and bus bar connections in pump box. Make sure bus bar connections are clean and tight. Use a 6" long, 10 gauge insulated wire as a jumper between motor solenoid terminals "C" and "A" to activate solenoid. Replace solenoid if it fails to activate.

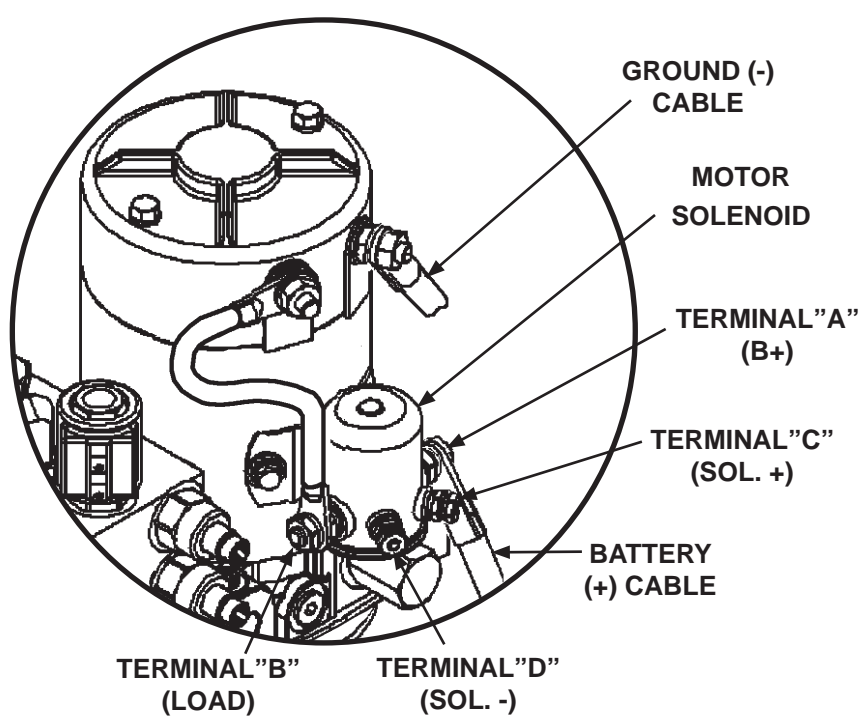
3. Verify that relief valve pressure settings are correct. Refer to **RELIEF VALVE PRESSURE SETTING** procedure in this manual. Also, make sure flow control valve (on pump) is open. Perform platform opening & closing speed adjustment procedure. If pressure settings can't be corrected, if platform opening and closing speed can't be adjusted or if pump runs hot and excessively noisy, replace pump.

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**TYPICAL MOTOR SOLENOID ELECTRICAL CONNECTIONS
(GRAVITY DOWN POWER UNIT WITH HOSES IS SHOWN)
FIG. 65-1**



**TYPICAL MOTOR SOLENOID ELECTRICAL CONNECTIONS
(GRAVITY DOWN POWER UNIT WITH STEEL LINES IS SHOWN)
FIG. 65-2**

TROUBLESHOOTING

PLATFORM WILL NOT FOLD - Continued

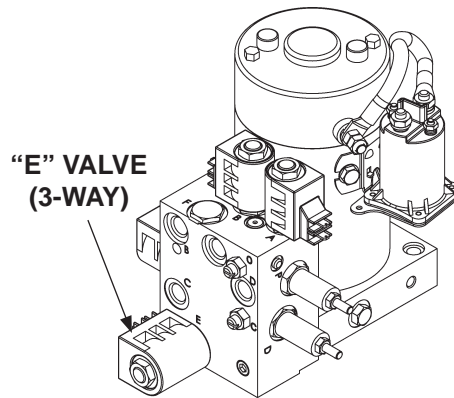
⚠ WARNING

Make sure Liftgate platform is open and resting on the ground before performing the following step.

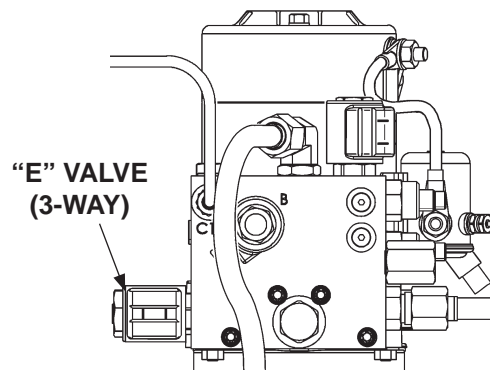
CAUTION

To prevent damage when installing valve cartridges & coils, torque valve cartridge nut to 30 lbs.-in. max.

4. The “E” solenoid valve (**FIGS. 66-1 and 66-2**) may be stuck in the “open” position. Remove the “E” solenoid valve (**FIG. 63-1**). Next, check the valve cartridge as follows. Push on the plunger in the valve by inserting small screwdriver in the open end (**FIG. 63-2**). If the plunger does not move with a smooth, spring-loaded action (approximately 1/8”) (**FIG. 63-2**), replace the valve cartridge.

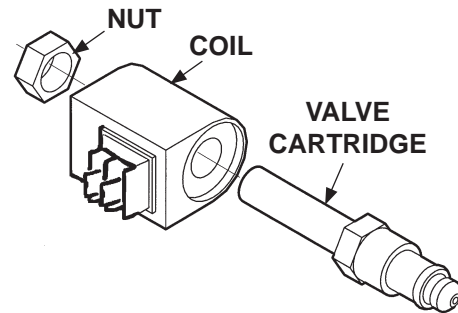


**TYPICAL SOLENOID VALVES
(PUMP IS SHOWN FROM POWER DOWN
UNIT WITH HOSES)
FIG. 66-1**

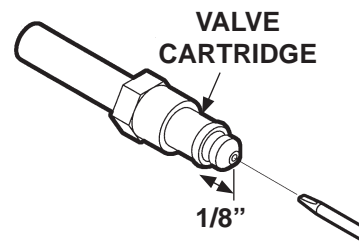


**TYPICAL SOLENOID VALVES
(PUMP IS SHOWN FROM GRAVITY DOWN
UNIT WITH STEEL LINES)
FIG. 66-2**

5. Reinstall "E" solenoid valve (**FIG. 67-1**) (if good) or a replacement. **Torque valve cartridge to 30 lbs.-ft. and hex nut to 30 lbs.-in.**



**TYPICAL SOLENOID VALVE
REMOVED & DISASSEMBLED
FIG. 67-1**



**CHECKING VALVE CARTRIDGE
FIG.67-2**

6. Check for bent parts on the Liftgate that could interfere with normal operation.
7. Check if hydraulic fluid is streaming from breather plug.

TROUBLESHOOTING PLATFORM WILL NOT UNFOLD

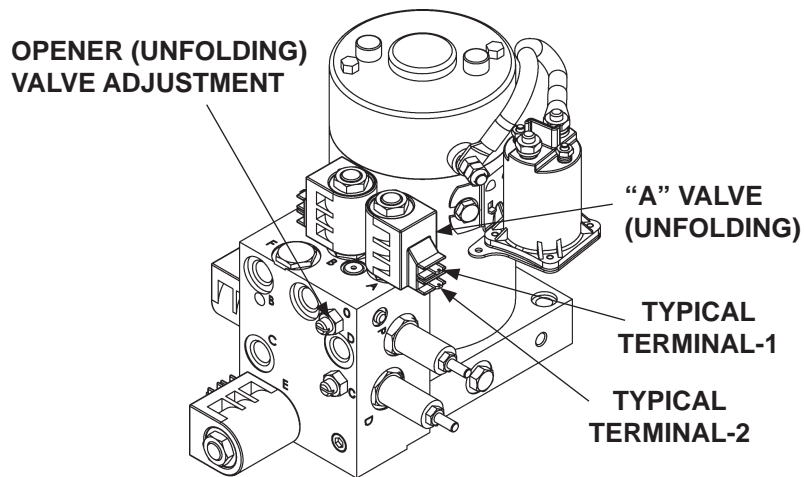
⚠ WARNING

Before doing the following procedure, set up guarded area around the platform to keep people from entering.

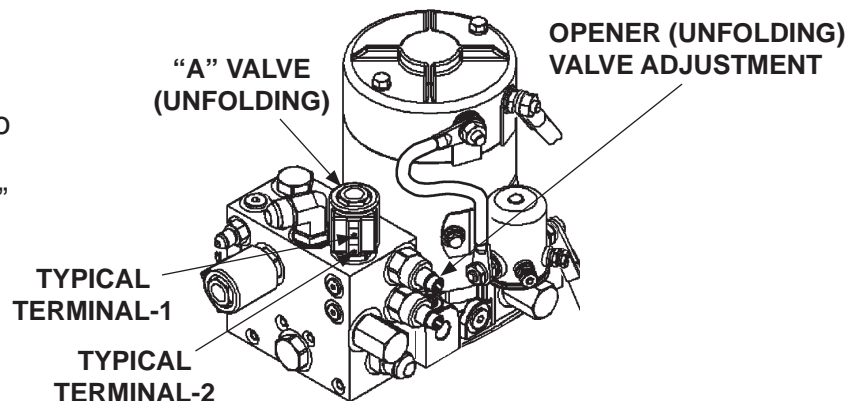
NOTE: For dual pump system, check secondary pump and motor first.

1. Flow of hydraulic fluid may be restricted. Turn opener (unfolding) valve adjustment (**FIGS. 68-1 and 68-2**) counter-clockwise to open the valve. If necessary, do the **PUMP ASSEMBLY PRESSURE SETTING** procedure in this section.
2. Check if the “A” valve (**FIGS. 68-1 and 68-2**) is energized. Connect voltmeter to terminal-1 and terminal-2 as shown in **FIGS. 68-1 and 68-2**. Activate the **UNFOLD** toggle switch and **FOLD/ UNFOLD** toggle switches. Correct indication is +11 to +12.6 volts dc. If indication is incorrect, check control switch and wiring to “A” valve (refer to **ELECTRICAL SYSTEM DIAGRAMS** section). Replace faulty wiring or control switch as required. If the voltmeter indicates +11 to +12.6 volts dc and “A” valve does not operate, replace “A” valve.

NOTE: Numbers for the electrical terminals are not stamped on the valve coil. Numbers shown in illustration are for reference only.



**TYPICAL VALVES & ELECTRICAL CONNECTIONS
(PUMP IS SHOWN FROM POWER DOWN
UNIT WITH HOSES)
FIG. 68-1**



**TYPICAL SOLENOID VALVES
(PUMP IS SHOWN FROM GRAVITY DOWN
UNIT WITH STEEL LINES)
FIG. 68-2**

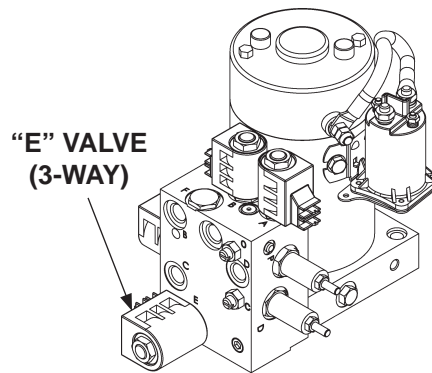
⚠ WARNING

Make sure Liftgate platform is open and resting on the ground before performing the following step.

CAUTION

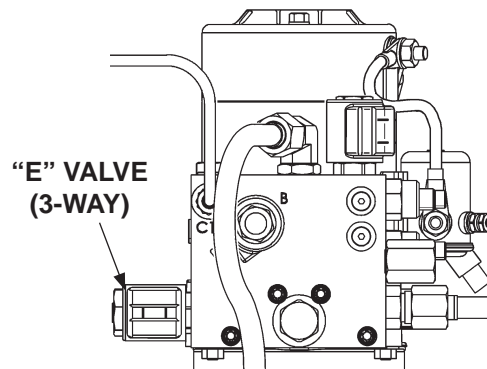
To prevent damage when installing valve cartridges & coils, torque valve cartridge nut to 30 lbs.-in. max.

3. The “E” solenoid valve (**FIGS. 69-1 and 69-2**) may be stuck in the “open” position. Remove the “E” solenoid valve (**FIG. 66-1**). Next, check the valve cartridge as follows. Push on the plunger in the valve by inserting small screwdriver in the open end (**FIG. 66-2**). If the plunger does not move with a smooth, spring-loaded action (approximately 1/8”) (**FIG. 66-2**), replace the valve cartridge.



**TYPICAL SOLENOID VALVES
(PUMP IS SHOWN FROM POWER DOWN
UNIT WITH HOSES)
FIG. 69-1**

4. Reinstall “E” solenoid valve (**FIG. 66-1**) (if good) or a replacement. **Torque valve cartridge to 30 lbs.-ft. and hex nut to 30 lbs.-in.**

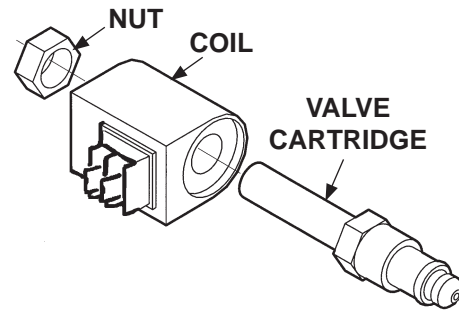


**TYPICAL SOLENOID VALVES
(PUMP IS SHOWN FROM GRAVITY DOWN
UNIT WITH STEEL LINES)
FIG. 69-2**

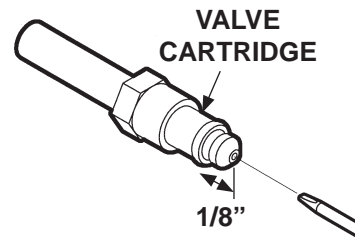
TROUBLESHOOTING

PLATFORM WILL NOT UNFOLD - Continued

5. Verify that relief valve pressure settings are correct. Refer to **RELIEF VALVE PRESSURE SETTING** procedure in this manual. Also, make sure opening flow control valve (in pump) is open. If correct pressure settings cannot be made or if pump runs hot with excessive noise, replace pump.
6. Check for damage and corrosion at platform pivot points. Steam clean corrosion from pivot points. Replace bushings at pivot points if required.
7. Check for bent and broken parts on the Liftgate that could interfere with normal operation. Look at columns, runners, tandem rollers and platform (bent pins).
8. Check for bent or weak platform torsion spring. Replace if necessary.



**TYPICAL SOLENOID VALVE
REMOVED & DISASSEMBLED
FIG. 70-1**



**CHECKING VALVE CARTRIDGE
FIG. 70-2**

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TROUBLESHOOTING

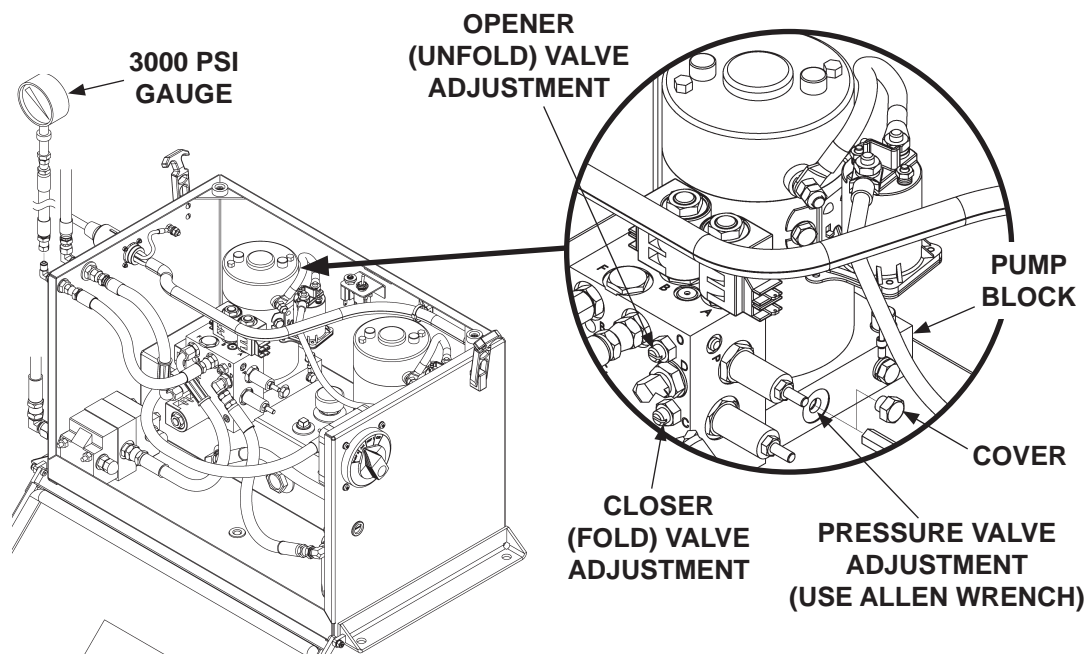
PUMP RELIEF VALVE PRESSURE SETTING

NOTE: The pump pressure is set at the factory; however, if adjustment is needed, use the following procedure.

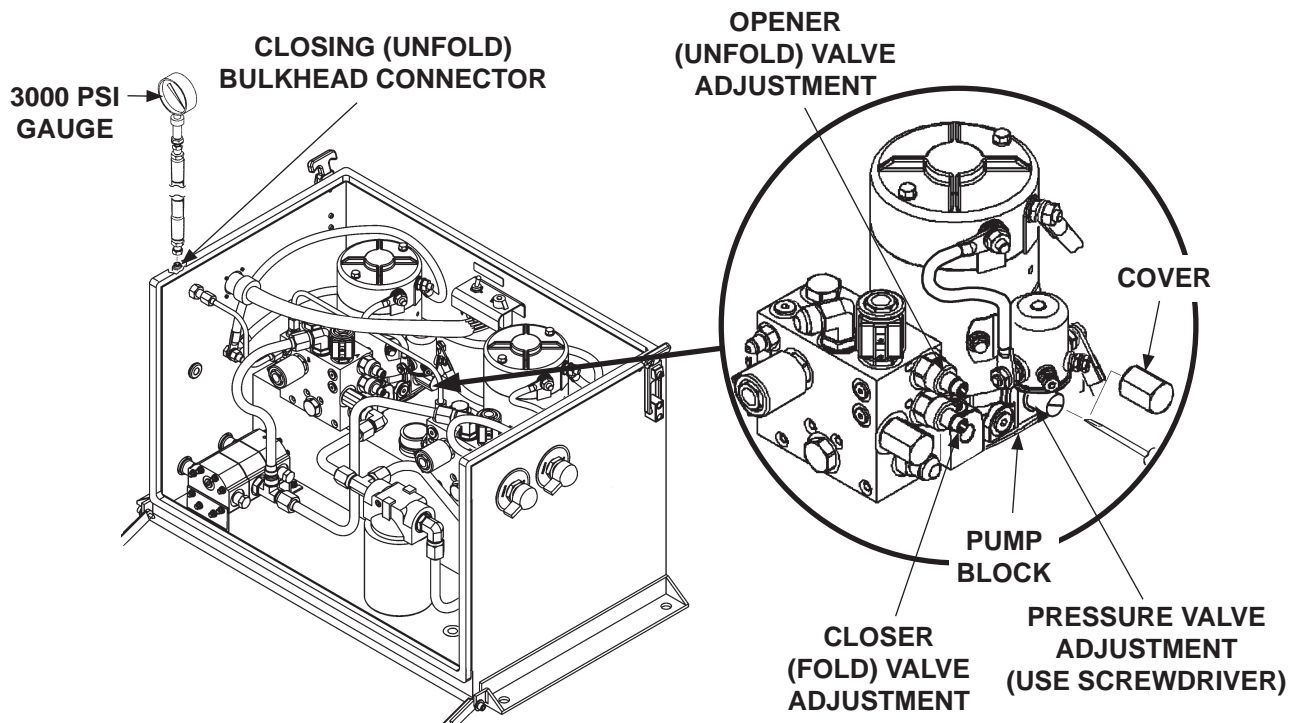
1. Open the platform. Turn closer valve adjustment **(FIGS. 69-1 and 69-2)** all the way clockwise. Disconnect hose from folding port bulkhead fitting and connect 0-3000 PSI gauge to hose **(FIGS. 69-1 and 69-2)**.
2. Remove cover (covering pump pressure relief valve) from pump block **(FIGS. 69-1 and 69-2)**. Set Liftgate control box to **FOLD**. Turn the pump pressure relief valve **(FIGS. 69-1 and 69-2)** to obtain proper pump pressure setting of **2750 PSI**. Reinstall cover.
3. If this is a dual pump system, do the following. Once pump 1 is set, select pump 2 with pump select switch **(FIGS. 69-1 and 69-2)**. Repeat **Steps 1 and 2** for pump 2.
4. Disconnect 0-3000 PSI gauge from hose **(FIGS. 69-1 and 69-2)** and reconnect hose to folding port bulkhead fitting.
5. Reset the closer valve adjustment **(FIGS. 69-1 and 69-2)** to obtain platform closing speed cycle of 4-6 seconds.

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**CONNECTING PRESSURE GAUGE -
(DUAL PUMP POWER DOWN UNIT WITH HOSES IS SHOWN)**
FIG. 73-1



**CONNECTING PRESSURE GAUGE -
(DUAL PUMP GRAVITY DOWN UNIT WITH STEEL LINES IS SHOWN)**
FIG. 73-2

TROUBLESHOOTING - GRAVITY DOWN PLATFORM WILL NOT RAISE, MOTOR RUNS

1. Check the hydraulic fluid level in the reservoir.

- **GRAVITY DOWN LIFTGATES:** Lower the platform to the ground. Clean dirt and fluid from top of reservoir in pump box. Fill the reservoir to correct level indicated on sight glass (pump box).
- **POWER DOWN LIFTGATES:** Raise the platform to bed height. Fill the reservoir to correct level indicated on sight glass (pump box).

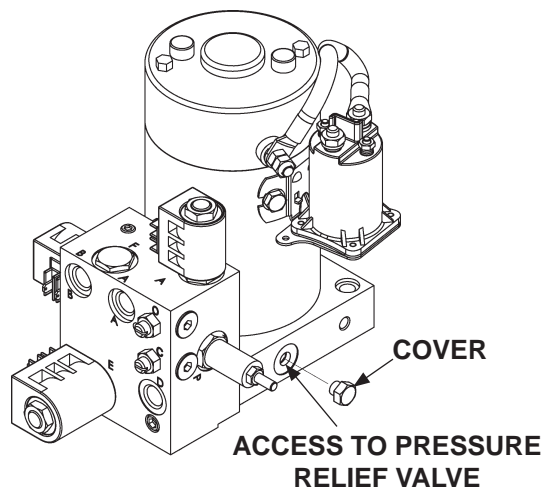
2. Check for bent parts on the Liftgate that could interfere with normal operation. Look at columns, runners, and tandem rollers.

⚠ WARNING

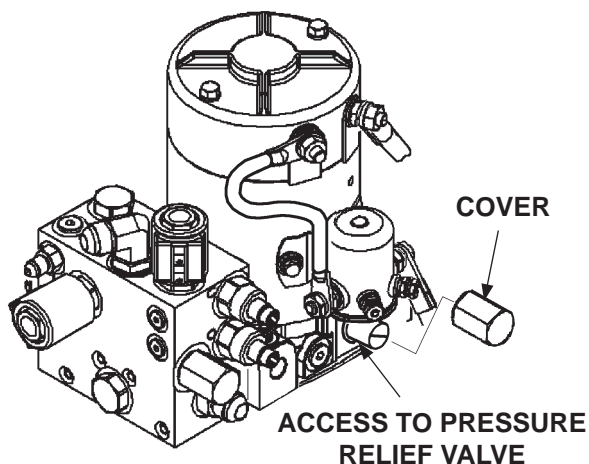
Make sure Liftgate platform is open and resting on the ground before performing the following step.

NOTE: For dual pump system, check secondary pump and motor first.

3. Check the high pressure relief valve (**FIGS. 74-1 and 74-2**) for contamination or defective operation. Lower the platform to the ground. Remove the relief valve. Clean or replace valve as required.



**CHECKING PRESSURE RELIEF VALVE
(GRAVITY DOWN PUMP IS SHOWN
FROM UNIT WITH HOSES)
FIG. 74-1**



**CHECKING PRESSURE RELIEF VALVE
(GRAVITY DOWN PUMP IS SHOWN
FROM UNIT WITH STEEL LINES)
FIG. 74-2**

4. Adjust relief valve operating pressure according to **PUMP RELIEF VALVE PRESSURE SETTING** procedure.

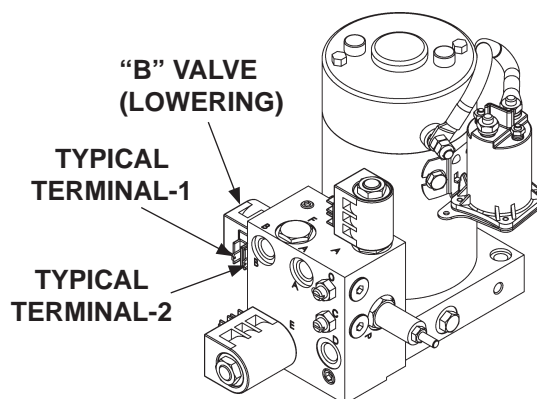
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TROUBLESHOOTING - GRAVITY DOWN PLATFORM WILL NOT LOWER

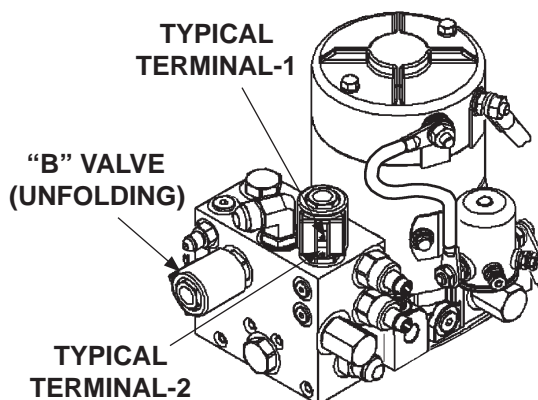
NOTE: For dual pump system, check secondary pump and motor first.

NOTE: Numbers for the electrical terminals shown in the illustration are not stamped on valve coil. Numbers shown are for reference only.

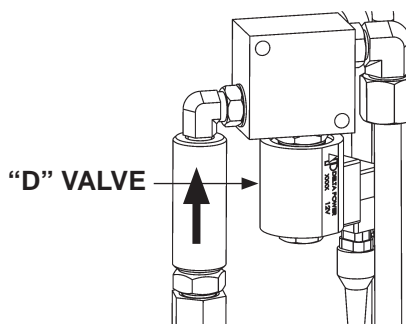
1. Try lowering platform (activate **DOWN** toggle switch). Only the motor solenoid and "B" valve (both located in the pump box) (**FIGS. 76-1 and 76-2**) and "D" valve (on top of LH and RH columns) (**FIG. 76-3**) should be energized while lowering platform. Connect voltmeter to terminal-1 and terminal-2 on each valve shown in **FIGS. 76-1 and 76-2**. Correct indication for "B" and "D" valves is +11 to +12.6 volts dc. If indications are incorrect, check control switch and wiring to that valve (refer to **ELECTRICAL SYSTEM DIAGRAMS** section). Replace faulty wiring or control switch as required.



**TYPICAL SOLENOID VALVES
(PUMP IS SHOWN FROM GRAVITY DOWN
UNIT WITH HOSES)
FIG. 76-1**



**TYPICAL SOLENOID VALVES
(PUMP IS SHOWN FROM GRAVITY DOWN
UNIT WITH STEEL LINES)
FIG. 76-2**



**"D" VALVE
FIG. 76-3**

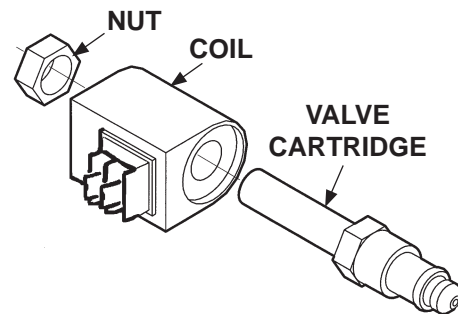
⚠ WARNING

Make sure Liftgate platform is open and resting on the ground before performing the following step.

CAUTION

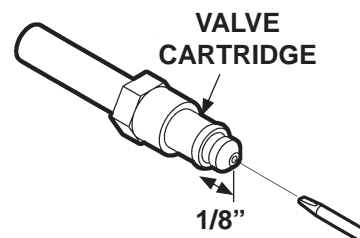
To prevent damage when installing valve cartridges & coils, torque valve cartridge nut to 30 lbs.-in. max.

2. The “D” solenoid valve (**FIG. 72-3**) may be stuck in the “open” position. Remove the “D” solenoid valve (**FIG. 77-1**). Next, check the valve cartridge as follows. Push on the plunger in the valve by inserting small screwdriver in the open end (**FIG. 77-2**). If the plunger does not move with a smooth, spring-loaded action (approximately 1/8”) (**FIG. 77-1**), replace the valve cartridge.



**TYPICAL SOLENOID VALVE
REMOVED & DISASSEMBLED
FIG. 77-1**

3. Reinstall “D” solenoid valve (if good) (**FIG. 77-1**) or a replacement. **Torque valve cartridge to 30 lbs.-ft. and hex nut to 30 lbs.-in.**



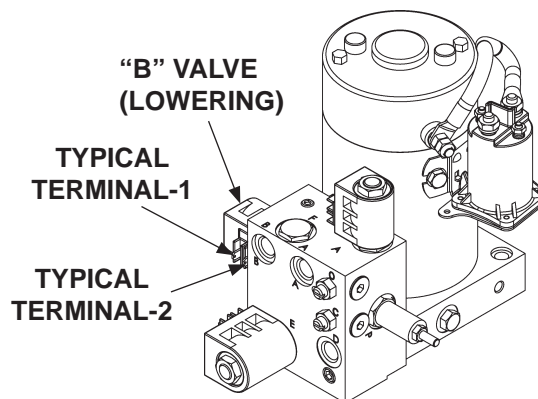
**CHECKING VALVE CARTRIDGE
FIG. 77-2**

TROUBLESHOOTING - GRAVITY DOWN PLATFORM LOWERS SLOWLY

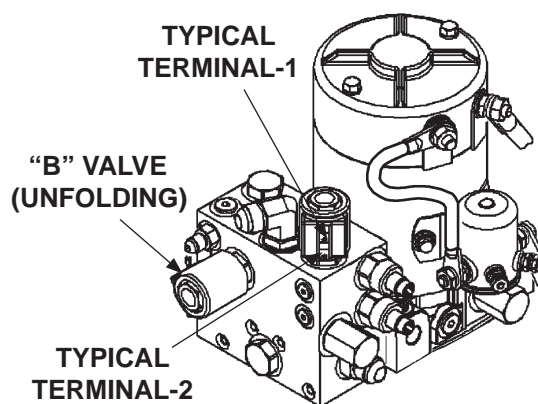
NOTE: For dual pump system, check secondary pump and motor first.

NOTE: Numbers for the electrical terminals shown in the illustration are not stamped on valve coil. Numbers shown are for reference only.

1. Check if the "B" solenoid valve coil (**FIGS. 78-1 and 78-2**) (located in the pump box) is getting power. Connect voltmeter to terminal-1 and terminal-2 of the coil. Activate the **DOWN** toggle switch. Correct indication is +11 to +12.6 volts dc. If the voltmeter does not indicate +11 to +12.6 volts dc, check control switch and wiring to "B" solenoid valve (refer to **ELECTRICAL SYSTEM DIAGRAMS** section). Replace faulty wiring or control switch as required. If the voltmeter indicates +11 to +12.6 volts dc and valve still does not operate, replace the valve.



**TYPICAL SOLENOID VALVES
(PUMP IS SHOWN FROM GRAVITY DOWN
UNIT WITH HOSES)
FIG. 78-1**



**TYPICAL SOLENOID VALVES
(PUMP IS SHOWN FROM GRAVITY DOWN
UNIT WITH STEEL LINES)
FIG. 78-2**

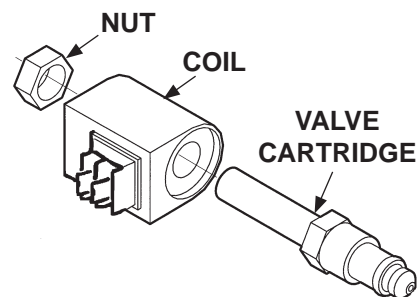
⚠ WARNING

Make sure Liftgate platform is open and resting on the ground before performing the following step.

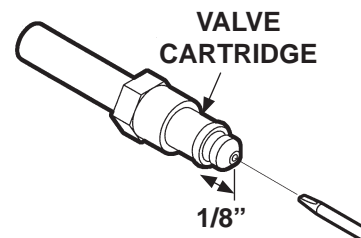
CAUTION

To prevent damage when installing valve cartridges & coils, torque valve cartridge nut to 30 lbs.-in. max.

2. The “B” solenoid valve (**FIGS. 74-1 and 74-2**) may be stuck in the “open” position. Remove the “B” solenoid valve (**FIG. 79-1**). Next, check the valve cartridge as follows. Push on the plunger in the valve by inserting small screwdriver in the open end (**FIG. 79-2**). If the plunger does not move with a smooth, spring-loaded action (approximately 1/8”), replace the valve cartridge.



**TYPICAL SOLENOID VALVE
REMOVED & DISASSEMBLED
FIG. 79-1**



**CHECKING VALVE CARTRIDGE
FIG. 79-2**

4. Check for bent and broken parts on the Liftgate that could interfere with normal operation.
5. Check both flow control valves. Refer to the flow control valve instructions in the procedure for **PLATFORM RAISES AND LOWERS UNEVENLY**.

TROUBLESHOOTING - POWER DOWN PLATFORM WILL NOT RAISE, MOTOR RUNS

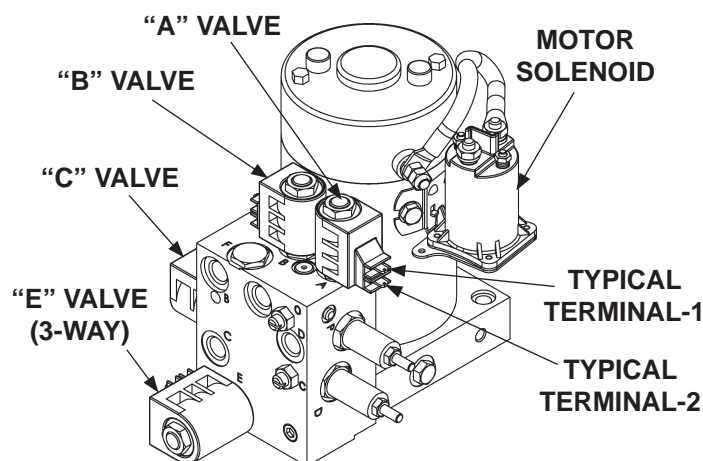
1. Check the hydraulic fluid level in the reservoir.

- **GRAVITY DOWN LIFTGATES:** Lower the platform to the ground. Clean dirt and fluid from top of reservoir in pump box. Fill the reservoir to correct level indicated on sight glass (pump box).
- **POWER DOWN LIFTGATES:** Raise the platform to bed height. Fill the reservoir to correct level indicated on sight glass (pump box).

NOTE: For dual pump system, check secondary pump and motor first.

NOTE: Numbers for the electrical terminals shown in the illustration are not stamped on valve coil. Numbers shown are for reference only.

2. Try raising platform (activate **UP** toggle switch). Only the motor solenoid (**FIG. 80-1**) should be energized while raising platform. The "A", "B", "C" and "E" solenoid valves (**FIG. 80-1**) (located in the pump box) should not be energized. Connect voltmeter to terminal-1 and terminal-2 on each valve shown in **FIG. 80-1**. Correct indication is 0 volts dc. If voltmeter indicates +11 to +12.6 volts dc for any of the valves, check control switch and wiring to the valve (refer to **ELECTRICAL SYSTEM DIAGRAMS** section). Replace faulty wiring or control switch as required.



**VALVES & ELECTRICAL CONNECTIONS
FOR POWER DOWN PUMP
FIG. 80-1**

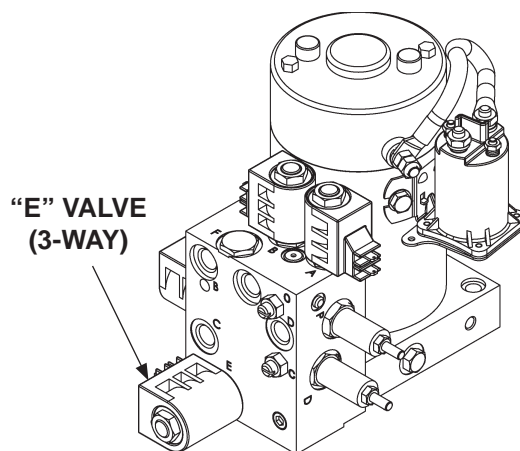
⚠ WARNING

Make sure Liftgate platform is open and resting on the ground before performing the following step.

CAUTION

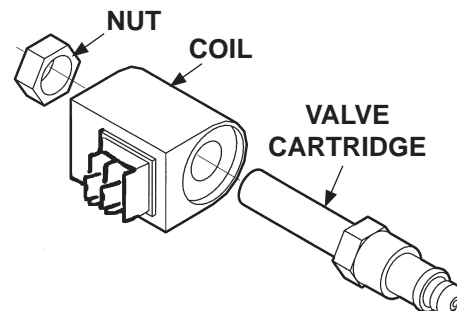
To prevent damage when installing valve cartridges & coils, torque valve cartridge nut to 30 lbs.-in. max.

3. The “E” solenoid valve (**FIG. 81-1**) may be stuck in the “open” position. Remove the “E” solenoid valve (**FIG. 81-2**). Next, check the valve cartridge as follows. Push on the plunger in the valve by inserting small screwdriver in the open end (**FIG. 81-3**). If the plunger does not move with a smooth, spring-loaded action (approximately 1/8”) (**FIG. 81-3**), replace the valve cartridge.

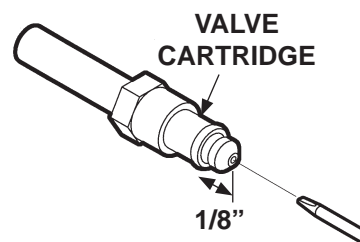


**POWER DOWN PUMP
FIG. 81-1**

4. Reinstall “E” solenoid valve (if good) (**FIG. 81-2**) or a replacement. **Torque valve cartridge to 30 lbs.-ft. and hex nut to 30 lbs.-in.**



**TYPICAL SOLENOID VALVE
REMOVED & DISASSEMBLED
FIG. 81-2**



**CHECKING VALVE CARTRIDGE
FIG. 81-3**

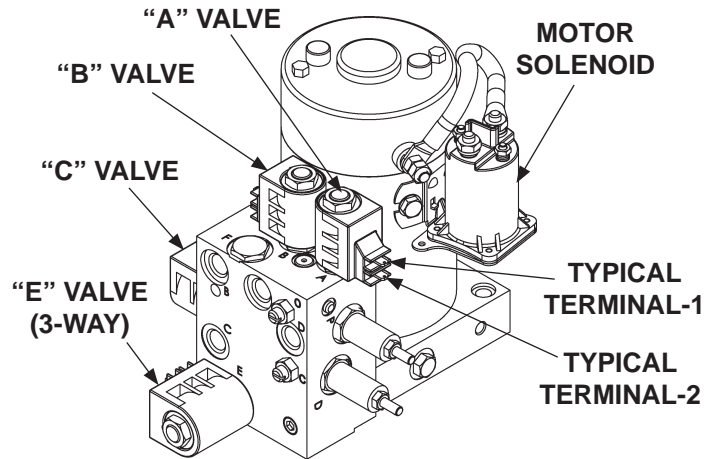
5. Check for bent and broken parts on the Liftgate that could interfere with normal operation.

TROUBLESHOOTING - POWER DOWN PLATFORM WILL NOT LOWER

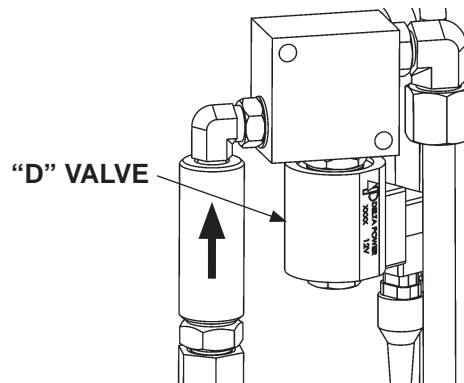
NOTE: For dual pump system, check secondary pump and motor first.

NOTE: Numbers for the electrical terminals shown in the illustration are not stamped on valve coil. Numbers shown are for reference only.

1. Try lowering platform (activate **DOWN** toggle switch). Only the motor solenoid, "B" solenoid valve and "C" solenoid valve (located in the pump box) (**FIG. 82-1**) and "D" solenoid valve (on top of LH and RH columns) (**FIG. 82-2**) should be energized while lowering platform. The "A" and "E" solenoid valves should not be energized. Connect voltmeter to terminal-1 and terminal-2 on each valve shown in **FIG. 82-1**. Correct indication for "A" and "E" solenoid valves is 0 volts dc. For "B", "C" and "D" solenoid valves correct indication is +11 to +12.6 volts dc. If any indications are incorrect, check control switch and wiring to that valve (refer to **ELECTRICAL SYSTEM DIAGRAMS** section). Replace faulty wiring or control switch as required.



**POWER DOWN PUMP
FIG. 82-1**



**"D" VALVE
FIG. 82-2**

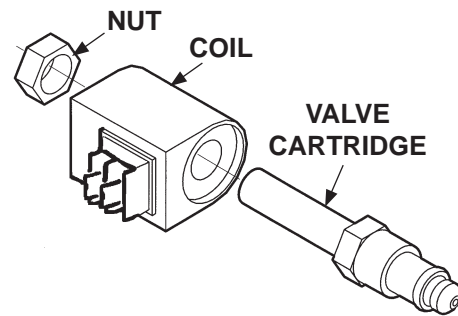
⚠ WARNING

Make sure Liftgate platform is open and resting on the ground before performing the following step.

CAUTION

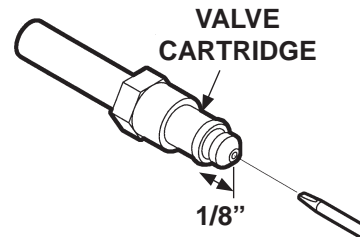
To prevent damage when installing valve cartridges & coils, torque valve cartridge nut to 30 lbs.-in. max.

- The “D” solenoid valve (**FIG. 78-2**) may be stuck in the “open” position. Remove the “D” solenoid valve (**FIG. 83-1**). Next, check the valve cartridge as follows. Push on the plunger in the valve by inserting small screwdriver in the open end (**FIG. 83-2**). If the plunger does not move with a smooth, spring-loaded action (approximately 1/8”) (**FIG. 83-1**), replace the valve cartridge.



**TYPICAL SOLENOID VALVE
REMOVED & DISASSEMBLED
FIG. 83-1**

- Reinstall “D” solenoid valve (if good) (**FIG. 83-1**) or a replacement. **Torque valve cartridge to 30 lbs.-ft. and hex nut to 30 lbs.-in.**



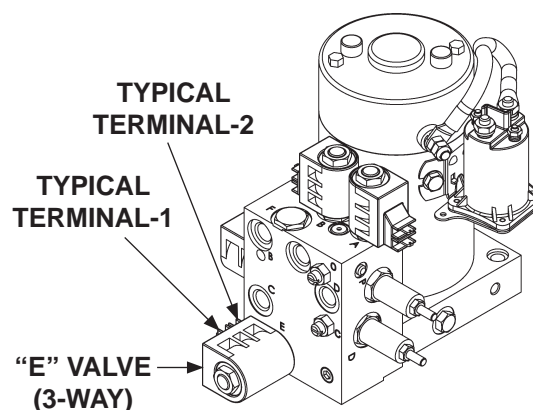
**CHECKING VALVE CARTRIDGE
FIG. 83-2**

TROUBLESHOOTING - POWER DOWN PLATFORM LOWERS SLOWLY

NOTE: For dual pump system, check secondary pump and motor first.

NOTE: Numbers for the electrical terminals shown in the illustration are not stamped on valve coil. Numbers shown are for reference only.

1. Try lowering platform (activate **DOWN** toggle switch). Make sure motor solenoid (located in the pump box) (**FIG. 84-1**) is energized and "E" solenoid valve is not energized while lowering platform. Connect voltmeter to terminal-1 and terminal-2 on "E" solenoid valve shown in **FIG. 84-1**. The correct indication on voltmeter is 0 volts dc when "E" valve is not energized. If the voltmeter indicates +11 to +12.6 volts dc, check control switch and wiring to that valve (refer to **ELECTRICAL SYSTEM DIAGRAMS** section). Replace faulty wiring or control switch as required.



**VALVES & ELECTRICAL CONNECTIONS
FOR POWER DOWN PUMP
FIG. 84-1**

⚠ WARNING

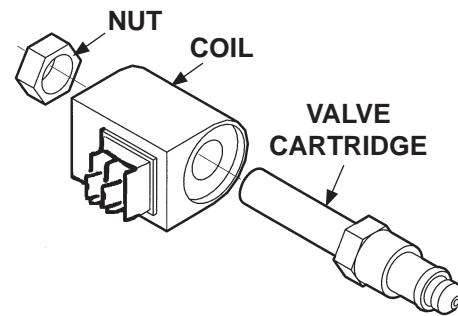
Make sure Liftgate platform is open and resting on the ground before performing the following step.

CAUTION

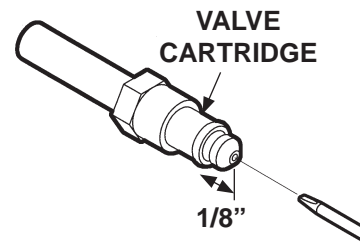
To prevent damage when installing valve cartridges & coils, torque valve cartridge nut to 30 lbs.-in. max.

2. The "E" solenoid valve (**FIG. 84-1**) may be stuck in the "open" position. Remove the "E" solenoid valve (**FIG. 81-1**). Next, check the valve cartridge as follows. Push on the plunger in the valve by inserting small screwdriver in the open end (**FIG. 81-2**). If the plunger does not move with a smooth, spring-loaded action (approximately 1/8") (**FIG. 81-2**), replace the valve cartridge.

3. Reinstall “E” solenoid valve (if good) (**FIG. 85-1**) or a replacement. **Torque valve cartridge to 30 lbs.-ft. and hex nut to 30 lbs.-in.**



**TYPICAL SOLENOID VALVE
REMOVED & DISASSEMBLED
FIG. 85-1**



**CHECKING VALVE CARTRIDGE
FIG. 85-2**

4. Check for bent and broken parts on the Liftgate that could interfere with normal operation.
5. Check both flow control valves. Refer to the flow control valve instructions in the procedure for **PLATFORM RAISES AND LOWERS UNEVENLY**.

