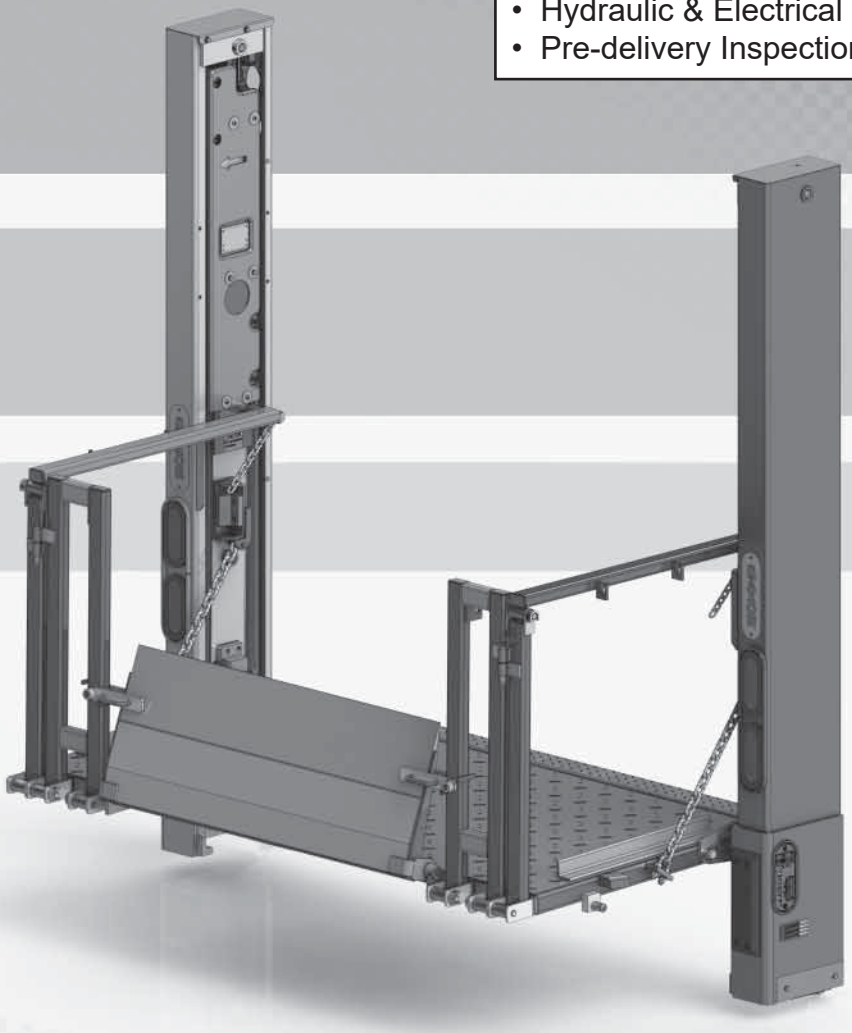
M-16-13
REV. J
JUNE 2024

Installation Manual Contains:

- Warnings & Safety Instructions
- Requirements - Body Strength & Installed Liftgate
- Liftgate Installation Components
- Liftgate Component Installation Instructions
- Hydraulic Fluid Filling Instructions
- Decals
- Hydraulic & Electrical System Diagrams
- Pre-delivery Inspection Form



MAXON®
LIFT CORP.

To find maintenance & parts information for your **BMR-CS Liftgate**, go to **www.maxonlift.com**. Click the **PRODUCTS, COLUMNLIFT** & **BMR-CS** buttons. Open the **Maintenance Manual** in the **PRODUCT DOCUMENTATION** window. For parts, click on the **PARTS PORTAL**, **COLUMNLIFT** & **BMR-CS** buttons.

BMR-CS

INSTALLATION MANUAL

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SUMMARY OF CHANGES: M-16-13, REVISION J

PAGE	DESCRIPTION OF CHANGE
COVER	Updated REV. and date of release.
7	Added Maxon/Liftgate installers responsibility NOTICE.
13	Channel guard is shown being used as a lower support for shipping and to install liftgate. After lower supports are removed, guard should be used to protect hoses and electrical cables of the pump extension kits.
14	Updated part numbers for pump box installation (extension) kits.
15	Added pump kits for 24V electrical system.
21, 29, 30, 33-35, 37-39	Illustrations show channel guard used as an installation support.
22	Added CAUTION and NOTE about removing protective film from mild steel channels before painting.
22, 26, 27, 30, 31, 34, 46, 79	Added note to grind galvanized surface material from areas to be welded.
23	Vertical dimension for positioning RH mounting plate changed from 70-3/8” to 70-1/2”.
40	Added instruction to remove channel guard along with lower support fixtures.
49	Added Note to use channel guard from **Step 5**, along with channel guard kits, to protect hydraulic hoses and electrical cables.
55, 97, 99	The 8-pin twist lock connector on interconnect harness was replaced with 8-pin Deutsch connector.
90	Deleted all of STEP 20 for attaching yellow alignment tape. Yellow alignment tape on left column is replaced with yellow marker plate riveted on at the factory.
91	Updated operation decal to latest version
102	Added inspection on Pre-Delivery Inspection Form to check that electrical cable connections are tight, secure, and protected from corrosion.

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

⚠ WARNING

Installing and maintaining a liftgate can expose you to chemicals, including lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm. To minimize exposure, install and maintain liftgate in a well-ventilated area and wear **proper Personal protective equipment (PPE)**. For more information go to **www.P65Warnings.ca.gov**.

⚠ 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.**
- **Make sure vehicle battery power is disconnected** while installing Liftgate. Connect vehicle battery power to the Liftgate only when installation is complete or as required in the installation instructions.
- **Remove all rings, watches and jewelry before doing any electrical work.**
- If it is necessary to stand on the platform while operating 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.
- Never perform unauthorized modifications on the Liftgate. Modifications may result in early failure of the Liftgate and may create hazards for Liftgate operators and maintainers.
- 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 can result from welds that are done incorrectly.
- Recommended practices for welding galvanized steel are contained in the current **AWS (American Welding Society) D19.0 Welding Zinc-Coated Steel**. Damage to Liftgate and/or vehicle, and personal injury can result from welds that are done incorrectly.

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SAFETY INSTRUCTIONS

- Read and understand the instructions in this **Installation Manual** before installing 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 or children 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.
- 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 and lowered. Listen for scraping, grating and binding noises and correct the problem before continuing to operate Liftgate.

NOTICE

- Maxon Lift is responsible for the instructions to correctly install **MAXON** Liftgates on trucks and trailers only.
- Liftgate installers, not Maxon Lift, are responsible for reviewing and complying with all applicable Federal, State, and Local regulations pertaining to the trailer or truck.

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VEHICLE REQUIREMENTS

NOTE: Installer is responsible for ensuring vehicle meets Federal, State, and Local standards and regulations.

BODY STRENGTH

⚠ WARNING

Consult vehicle body manufacturer for vehicle body strength data. Make sure the forces created by the Liftgate are within the limits prescribed by the vehicle body manufacturer.

NOTE: Maximum operating bed height for body is **56" (Unloaded)**. Minimum bed height is **platform depth plus 5" (Loaded)**. Do not install this Liftgate on vehicle bodies equipped with swing open doors.

The BMR-CS is a body-mounted Liftgate that puts forces on the side walls of truck and trailer bodies **(FIG. 8-1)**. For correct installation, truck and trailer bodies must be strong enough to withstand the tension, compression and shear forces shown in **FIG. 8-1**. Use **TABLES 9-1 and 9-2** on the following page to determine the forces that apply to the type of platform, size of platform, and load capacity of your Liftgate.

X= Tension on each sidewall

Y= Compression on each sidewall

Z= Shear on each sidewall

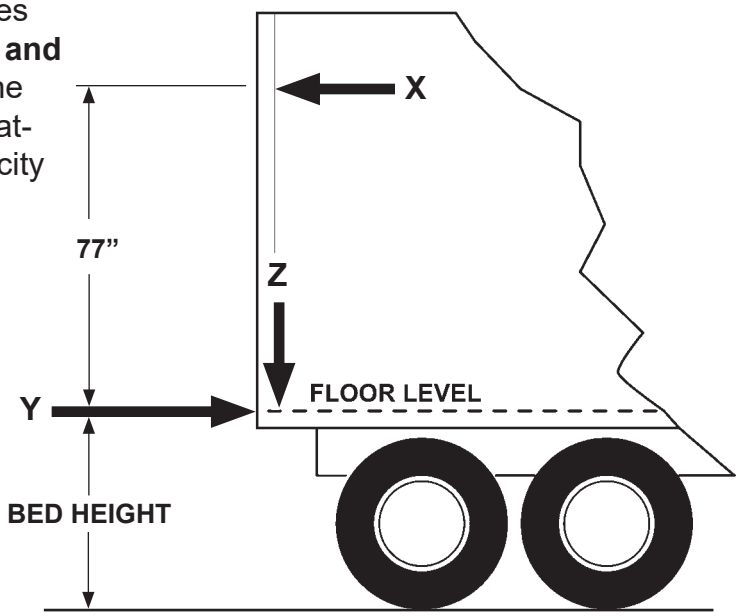

FIG. 8-1

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VEHICLE REQUIREMENTS - Continued
BODY STRENGTH - Continued

MODEL CAPACITY	P/F SIZE	(X)(Y) LBS.	(Z) LBS.
BMR-CS35 3500 LBS. (GALVANIZED PLATFORM)	36” & 42”	1043	3786
BMR-CS44 4400 LBS. (GLAVANIZED PLATFORM)	36” & 42”	1262	4461

TABLE 9-1

MODEL CAPACITY	P/F SIZE	(X)(Y) LBS.	(Z) LBS.
BMR-CS35 3500 LBS. (ALUMINUM STD & KNURLED PLATFORM)	36” & 42”	964	3510
BMR-CS44 4400 LBS. (ALUMINUM STD & KNURLED PLATFORM)	36” & 42”	1183	4185

TABLE 9-2

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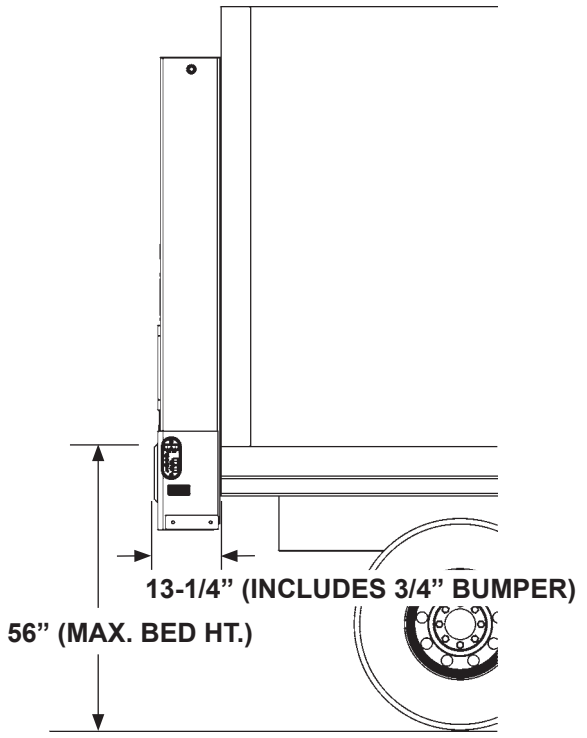
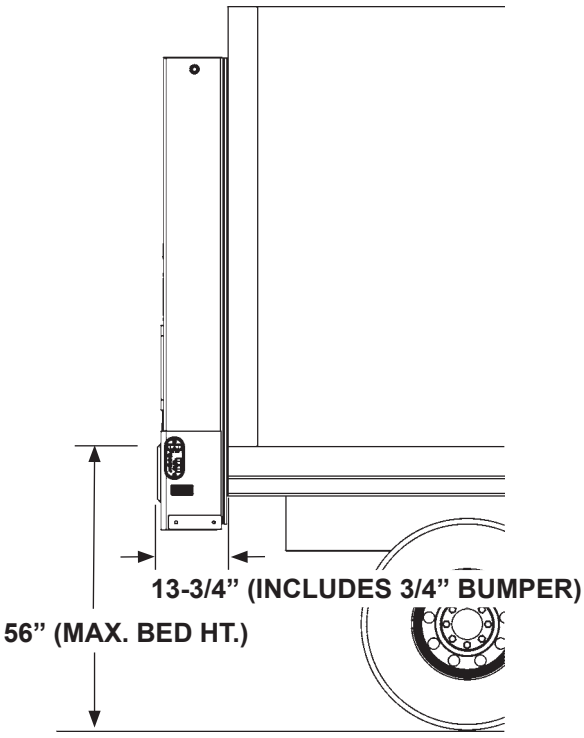
VEHICLE REQUIREMENTS - Continued

CLEARANCE DIMENSIONS

NOTE: Maximum bed height is 56” (unloaded).
Minimum bed height (loaded) varies with type and size of platform.
Refer to **FIGS. 10-1** and **10-2**.



WELD-ON LIFTGATE
FIG. 10-1



BOLT-ON LIFTGATE
FIG. 10-2

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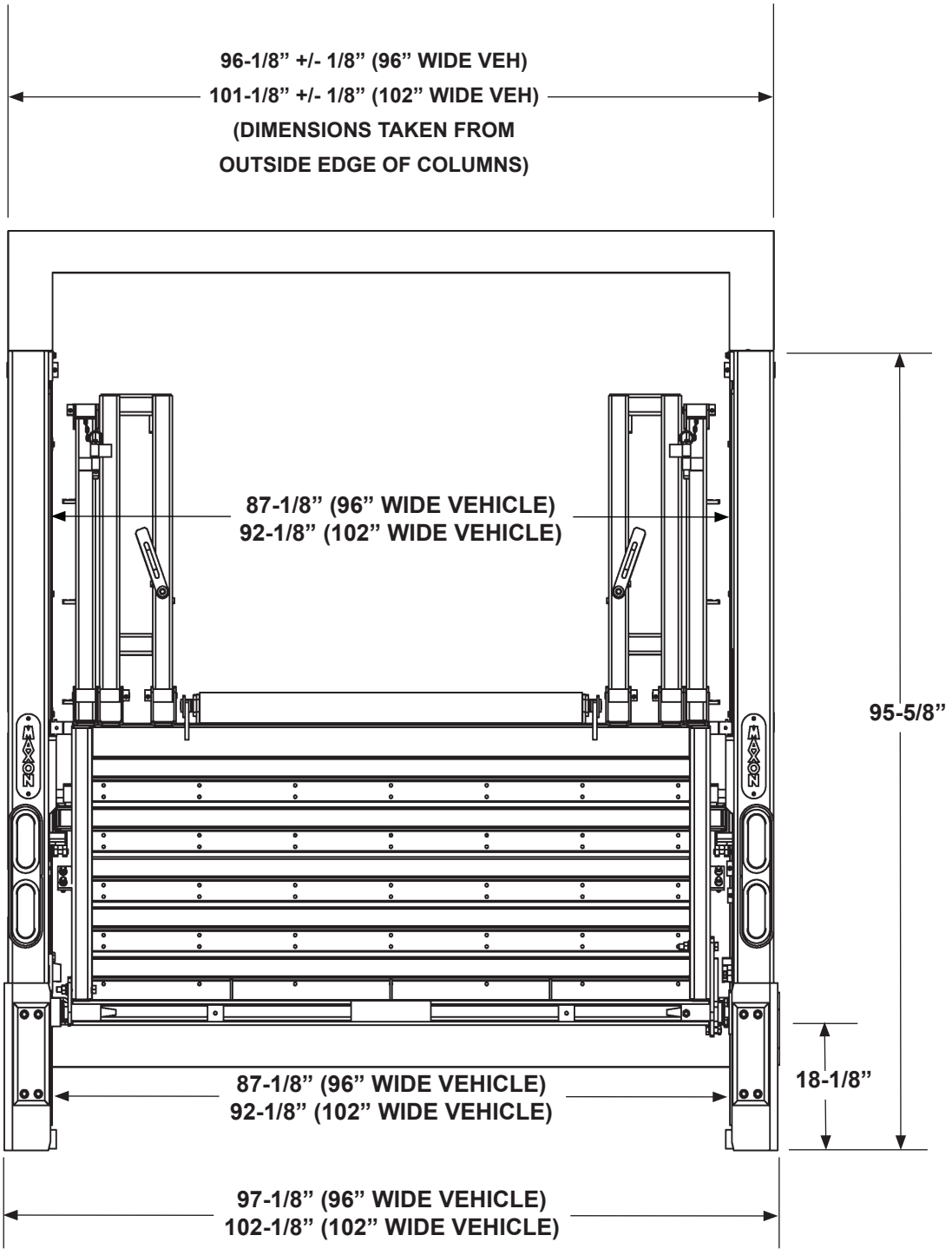
VEHICLE REQUIREMENTS - Continued
CLEARANCE DIMENSIONS - Continued



CLEARANCE DIMENSIONS
FIG. 11-1

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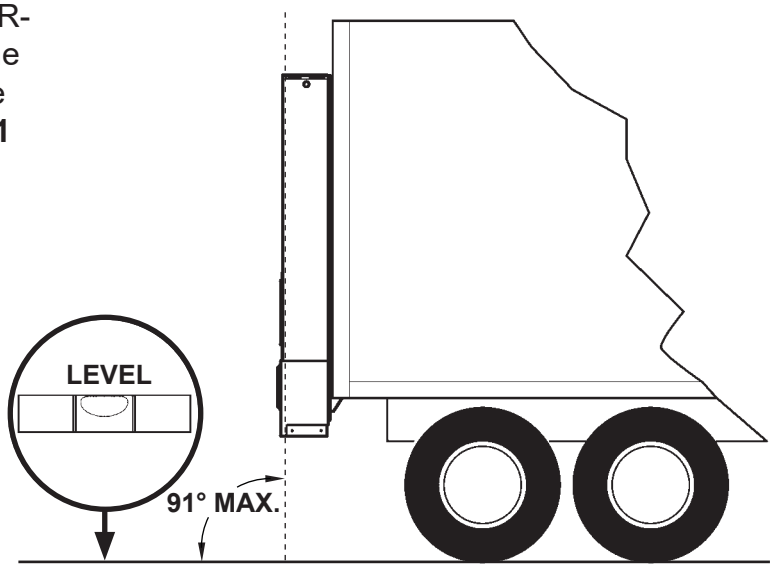
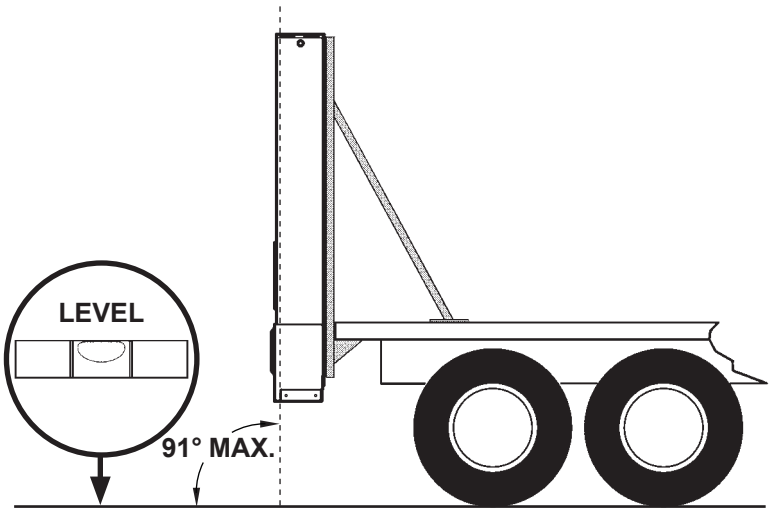
VEHICLE REQUIREMENTS - Continued
INSTALLED LIFTGATE

NOTE: If Liftgate columns exceed a 91 degree angle from level ground when installed on body, or if columns cannot be mounted flush against rear of vehicle, a steel filler may be used to bridge gap between vehicle body and Liftgate columns. Make sure the added materials and welds meet the **BODY STRENGTH** requirements shown on the previous pages.

With the vehicle parked on level ground, the columns of the BMR-CS must be perpendicular to the ground (vertical) for the Liftgate to operate correctly **(FIGS. 12-1 and 12-2)**.



LIFTGATE INSTALLED ON VAN BODY (COLUMNS SHOWN PERPENDICULAR TO LEVEL GROUND)
FIG. 12-1



LIFTGATE INSTALLED ON FLAT BED (COLUMNS & SUPPORTS SHOWN PERPENDICULAR TO LEVEL GROUND)
FIG. 12-2

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LIFTGATE INSTALLATION COMPONENTS

Each BMR-CS Liftgate includes items shown in **FIG. 13-1**.

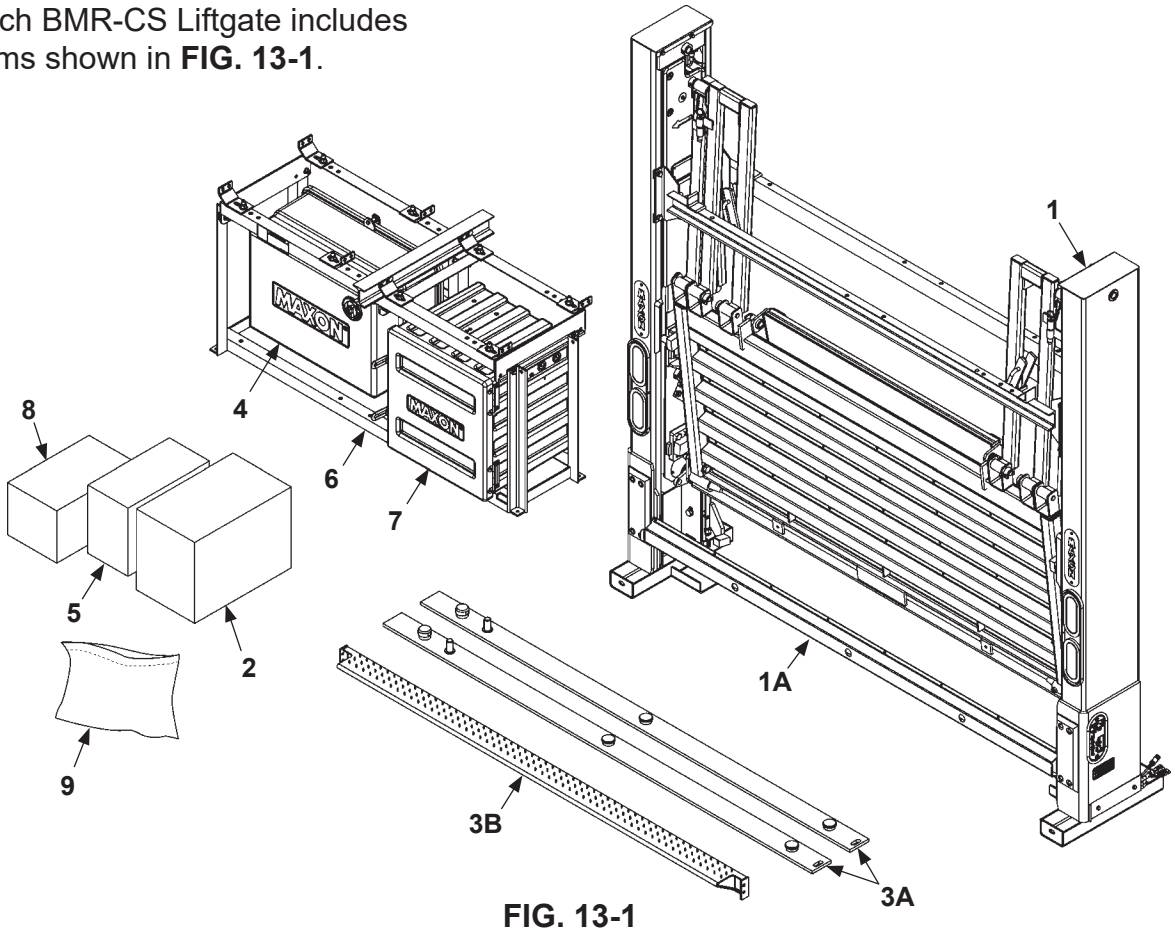

FIG. 13-1

	DESCRIPTION
1	BMR-CS Liftgate
1A	Channel guard used as a lower support for shipping and installation. After removal, it should be used with pump extension kit to protect hydraulic lines and electric cables.
2	Hardware parts bag, mounting bracket parts bag, hydraulic lines & fittings, wiring harness, power cable, molded switch control box
3A	Mounting plates (bolt-on installation kit)
3B	Extension plate (bolt-on installation kit)
4	Pump box assembly
5	Pump installation kit (3', 10', 15', 20', or 28')
6	Frame for pump box with optional battery box is shown. A shorter frame is also available for mounting single pump box or an optional battery box.
7	Battery box (optional)
8	Optional equipment
9	Installation and operation manuals.

TABLE 13-1

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COMPONENTS

NOTE: Make sure you have components and parts before you start installing Liftgate. Compare parts in the part box and each kit box with packing list enclosed in each box. If parts and components are missing or incorrect, call:

Maxon Customer Service
Call (800) 227-4116 or
Send e-mail to cservice@maxonlift.com

BMR-CS MODEL	KIT, MANUALS	BOLT-ON INSTALLATION KIT, STAINLESS STEEL	BOLT-ON INSTALLATION KIT, STEEL	BOLT-ON INSTALLATION KIT, STEEL (BLACK)
ALL	**296912-01**	**288875-111** (96" WIDE VEHICLE) **288875-112** (102"WIDEVEHICLE) **288875-111-150** (96" WIDE VEHICLE) **288875-112-150** (102"WIDEVEHICLE)	**288875-101** (96" WIDE VEHICLE) **288875-102** (102" WIDE VEHICLE)	**288875-131** (96" WIDE VEHICLE) **288875-132** (102" WIDE VEHICLE) **288875-131-150** (96" WIDE VEHICLE) **288875-132-150** (102" WIDE VEHICLE)

TABLE 14-1

BMR-CS MODEL	PART BOX	3 FT PUMP BOX INSTALL KIT	10 FT PUMP BOX INSTALL KIT	15 FT PUMP BOX INSTALL KIT	20 FT PUMP BOX INSTALL KIT	28 FT PUMP BOX INSTALL KIT
BMR-CS35 PD BMR-CS44 PD	**296805-02** (WELD-ON) **296805-12** (BOLT-ON) **296805-12-150** (BOLT-ON)	**212320-11**	**212320-12**	**212320-13**	**212320-14**	**212320-15**
BMR-CS35 GD BMR-CS44 GD	**296805-01** (WELD-ON) **296805-11** (BOLT-ON) **296805-11-150** (BOLT-ON)	**212320-01**	**212320-02**	**212320-03**	**212320-04**	**212320-05**

TABLE 14-2

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COMPONENTS - Continued

BMR-CS MODEL	OPTIONS					
	SINGLE PUMP ASSY	SECOND PUMP KIT	HYDRAULIC OIL UNIVIS HVI-13	FRAME, PUMP OR BATTERY BOXES	HEADER KIT (ADJUST-ABLE)	HEADER KIT (RECESSED DOME LAMP)
BMR-CS35 GD BMR-CS44 GD	**211310-12** **211310-24**	**296445-12** **296445-24**	**284098-01**	**288180-11G** SINGLE FRAME (GALVANIZED) **287980-11G** DUAL FRAME 2 BATT BOX (GALVANIZED) **288810-11G** DUAL FRAME 3 BATT BOX (GALVANIZED	**289190-02** (GALVIZED)	**289188-11** (GALVANIZED, 96" WIDE VEHICLE) **289188-12** (GALVANIZED, 102" WIDE VEHICLE)
BMR-CS35 PD BMR-CS44 PD	**211300-12** **211300-24**					

TABLE 15-1

BMR-CS MODEL	OPTIONS				
	DOME LAMP RECESSED MOUNT	DOME TIMER SWITCH	AUXILIARY CONTROL	HAND HELD CONTROL	CYCLE COUNTER
BMR-CS35 GD BMR-CS44 GD	**906589-01-100** (ONLY FOR HEADER KITS WITHRECESSED MOUNTS FOR DOME LAMPS)	**295880-01** 3' REACH **295880-02** 20' REACH	**297080-11**	**296169-01**	**289537-01**
BMR-CS35 PD BMR-CS44 PD			**297080-12**		

TABLE 15-2

COMPONENTS - Continued

BMR-CS MODEL		OPTIONS			
	POWER & GROUND CABLES	CONSPICUITY (REFLECTIVE) TAPE	PUMP PRESSURE GAUGE	STREET SIDE CONTROL KIT	CAB CUTOFF SWITCH (TRUCK ONLY)
BMR-CS35 GD BMR-CS44 GD	**295263-01** BASIC INSTALLATION **295263-11** EXTENDED INSTALLATION	**295261-01**	**295895-01**	**297080-01**	**297077-01**
BMR-CS35 PD BMR-CS44 PD				**297080-02**	

TABLE 16-1

BMR-CS MODEL	BATTERY BOX & CHARGING OPTIONS			
	BATTERY BOX (BATTERIES NOT INCLUDED)	BATTERY 12V, 1150 CCA, BCI GROUP 31	BATTERY BOX MOUNTING FRAME	TRUCK CHARGE LINE
BMR-CS35 BMR-CS44	**269560-01** 2 BATTERIES **289988-01** 2 BATTERIES (INCLUDES DC-DC CONVERTER) **269950-01** 3 BATTERIES **289988-02** BATTERIES (INCLUDES DC-DC CONVERTER)	**907086**	**287990-01G** SINGLE GALVANIZED FRAME FOR 2 BATTERIES **287929-01G** SINGLE GALVANIZED FRAME FOR 3 BATTERIES	**280290**

TABLE 16-2

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COMPONENTS - Continued

BMR-CS MODEL	BATTERY BOX & CHARGING OPTIONS		
	2/0 AWG CABLE TRUCK CHARGE LINE	TRAILER CHARGE LINE FOR USE WITHOUT TRAIL CHARGER	TRACTOR CHARGE LINE FOR USE WITH OR WITHOUT TRAIL CHARGER
BMR-CS35 BMR-CS44	**285860-01**	**280275-01** SINGLE POLE **280275-02** DUAL POLE **280275-06** SINGLE/DUAL POLE FOR NOSE BOX **280275-08** 1/0 AWG DUAL POLE WITH SINGLE NOSE BOX	**280275-03** SINGLE POLE **280275-04** DUAL POLE **280275-05** SINGLE & DUAL POLE

TABLE 17-1

BMR-CS MODEL	DIRECT TRAIL CHARGER OPTIONS			
	DIRECT WITH DUAL POLE CONNECTIONS	DIRECT, DUAL COMBINATION CONNECTIONS	DIRECT, 7-WAY CONNECTIONS	DIRECT, REFRIGERATED OR STRAIGHT TRUCK CONNECTIONS
BMR-CS35 BMR-CS44	**295219-01 (DIRECT-01)**	**295220-01 (DIRECT-02)**	**295211-01 (DIRECT-03)**	**295972-01 (DIRECT-04)**

TABLE 17-2

BMR-CS MODEL	SELECT TRAIL CHARGER OPTIONS			
	SELECT WITH REFRIGERATED & DUAL POLE CONNECTIONS	SELECT WITH DUAL POLE & 7-WAY CONNECTIONS	SELECT WITH DUAL COMBINATION & 7-WAY CONNECTIONS	SELECT WITH DUAL COMBINATION, REFRIGERATED & 7-WAY CONNECTIONS
BMR-CS35 BMR-CS44	**295210-01 (SELECT-21)**	**295217-01 (SELECT-24)**	**295218-01 (SELECT-25)**	**296170-01 (SELECT-32)**

TABLE 17-3

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COMPONENTS - Continued

BMR-CS MODEL	MISCELLANEOUS OPTIONS			
	200 AMP CIRCUIT BREAKER KIT	150 AMP CIRCUIT BREAKER KIT	BATTERY BOX LOCK KIT (SINGLE FRAME)	BATTERY BOX LOCK KIT (DUAL FRAME)
BMR-CS35 BMR-CS44	**296504-200** (WITHOUT BATTERY BOX)	**296504-150** (FOR TRUCK APPLICATION & AUXILIARY BATTERY)	**295245-02G** (BATTERY BOX INSTALLED IN SINGLE FRAME)	**295245-01G** (BATTERY BOX INSTALLED IN DUAL FRAME WITH PUMP BOX)

TABLE 18-1

BMR-CS MODEL	MISCELLANEOUS OPTIONS		
	DIRECT / SELECT BYPASS	MANUAL HOLDER	BATTERY STATE OF CHARGE INDICATOR
BMR-CS35 BMR-CS44	**295221-01** (BYPASSES TRAIL CHARGER OR DISCONNECTS BATTERIES FROM CHARGING SYSTEM)	**286328-01** (INSTALLS IN BATTERY BOX)	**908171-01-100** (INSTALLS ON BATTERY BOX)

TABLE 18-2

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STEP 1 - PREPARE VEHICLE IF REQUIRED

NOTE: Perform the following step for flatbed vehicle body only. **If vehicle body is not a flatbed, skip this step.**

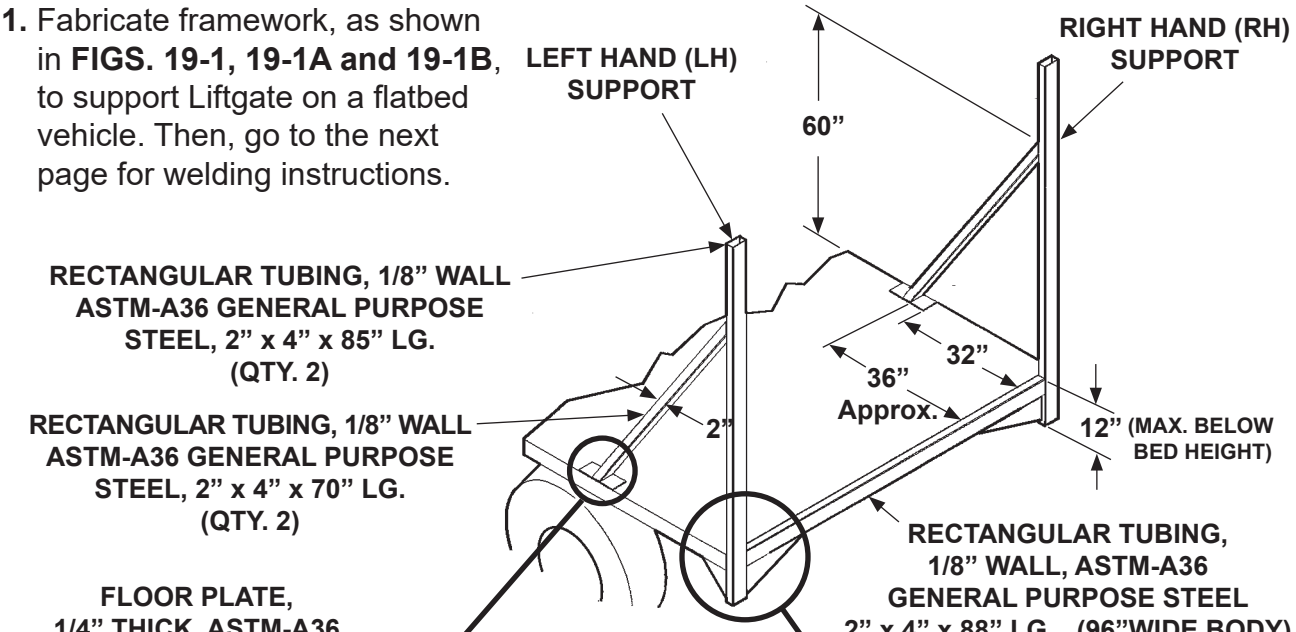
NOTE: LH and RH supports must be perpendicular to level ground. **See VEHICLE REQUIREMENTS, INSTALLED LIFTGATE.**

NOTE: Materials for support framework are not provided with Liftgate.

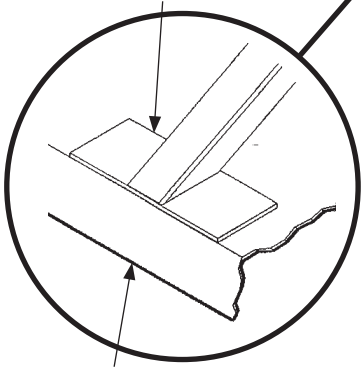
⚠ WARNING

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 can result from welds that are done incorrectly.

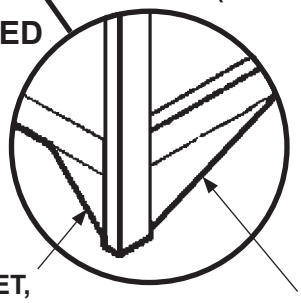
1. Fabricate framework, as shown in **FIGS. 19-1, 19-1A and 19-1B**, to support Liftgate on a flatbed vehicle. Then, go to the next page for welding instructions.



LIFTGATE SUPPORT FRAMEWORK FOR FLATBED
FIG. 19-1



POSITIONING FLOOR PLATE
FIG. 19-1A



POSITIONING GUSSETS
FIG. 19-1B

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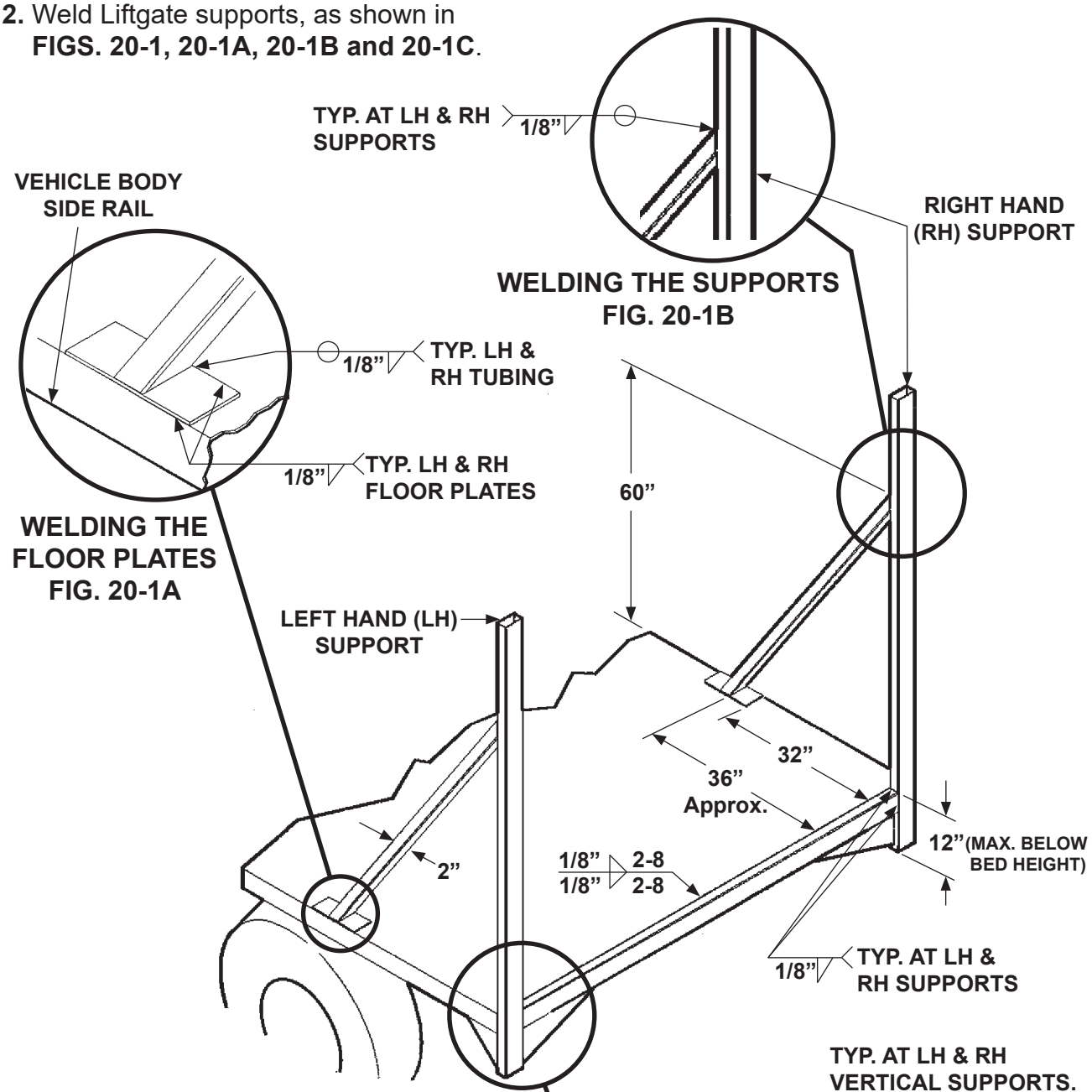
STEP 1 - PREPARE VEHICLE IF REQUIRED - Continued

2. Weld Liftgate supports, as shown in **FIGS. 20-1, 20-1A, 20-1B and 20-1C**.



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STEP 2 - CHOOSE METHOD OF INSTALLATION

CAUTION

Uneven mounting surfaces on a vehicle body can adversely affect smooth operation of the liftgate. Before installing liftgate by any of the following methods, check flatness of the mounting surfaces on the rear door frame as shown in FIGS. 24-1, 28-1 and 32-1. Failure to comply can quickly damage moving parts and disable the liftgate.

NOTE: MAXON recommends pre-installing the extension plate and mounting plates on the vehicle body before installing the Liftgate.

NOTE: In METHOD 1, the extension plate and mounting plates come separate as part of the bolt-on installation kit.

Three methods for mounting a BMR-CS Liftgate on a vehicle body are covered in this manual.

METHOD 1 - Column mounting plates and extension plate can be welded to vehicle body before bolting on the Liftgate **(FIG. 21-1)**. Refer to the **PRE-INSTALL MOUNTING PLATES AND EXTENSION PLATE ON VEHICLE** instructions in **STEP 3**.

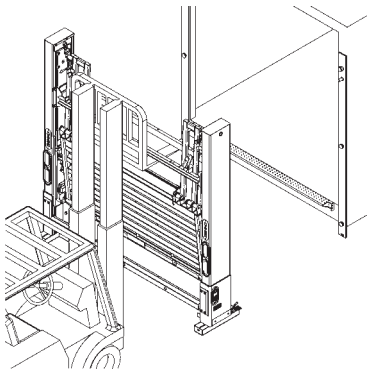

FIG. 21-1

METHOD 2 - Column mounting plates and extension plate are assembled to Liftgate at factory **(FIG. 21-2)**. Refer to the **WELD BOLT-ON LIFTGATE TO BODY** instructions in **STEP 3**.

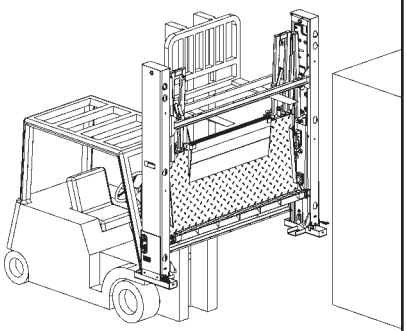

FIG. 21-2

METHOD 3 - Liftgate equipped with extension plate can be welded to vehicle body **(FIG. 21-3)**. Refer to the **WELD LIFTGATE TO BODY** instructions in **STEP 3**.

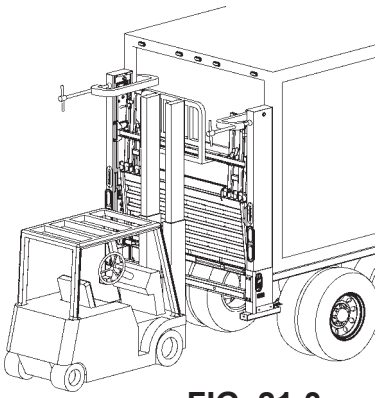

FIG. 21-3

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STEP 3 - POSITION LIFTGATE

METHOD 1 - PRE-INSTALL MOUNTING PLATES AND EXTENSION PLATE ON VEHICLE

⚠ WARNING

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 can result from welds that are done incorrectly.

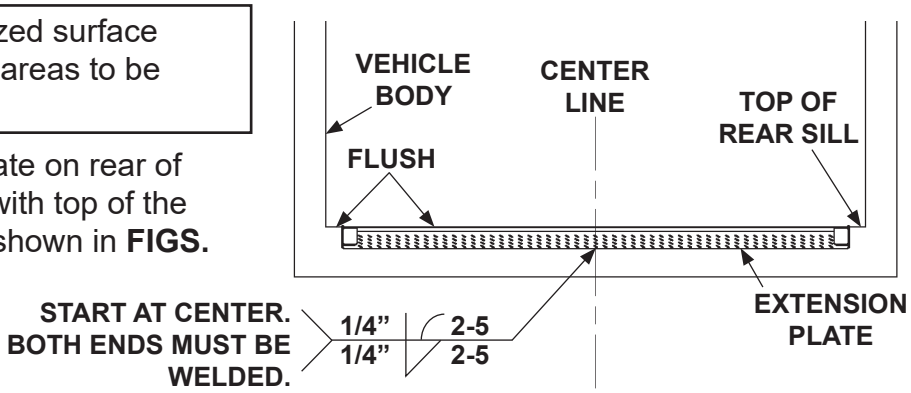
CAUTION

Some mild steel Liftgate mounting channels and extension plates are coated with a protective film and shipped unpainted. The film, if not removed for painting, can cause paint to separate from surface. Use hot soapy water and rinse water to remove the protective film before painting.

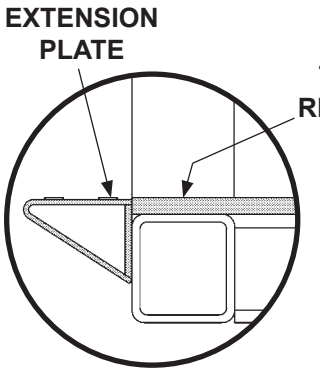
NOTE: Before installing the mounting plates and extension plate, use hot soapy water and rinse water to remove the protective film from these parts.

NOTE: Grind galvanized surface material from areas to be welded.

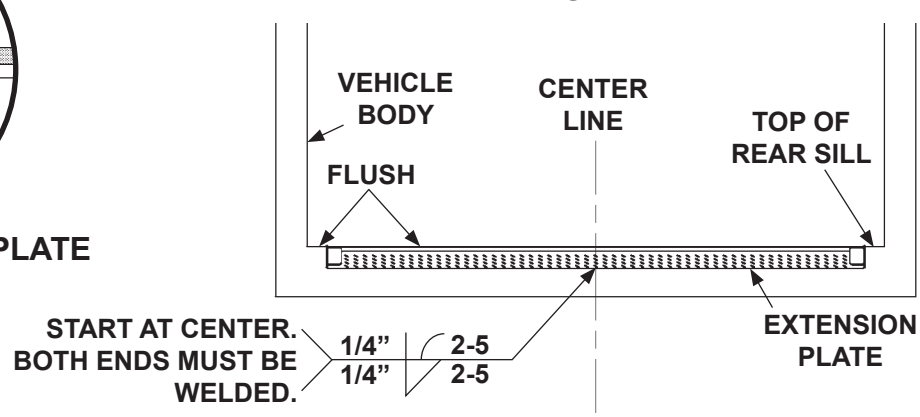
1. Center the extension plate on rear of vehicle body and flush with top of the rear sill. Then, weld as shown in **FIGS. 22-1, 22-2 and 22-3**.



CENTERING EXTENSION PLATE ON 96" WIDE VEHICLE BODY FIG. 22-1



FLUSH EXTENSION PLATE FIG. 22-3

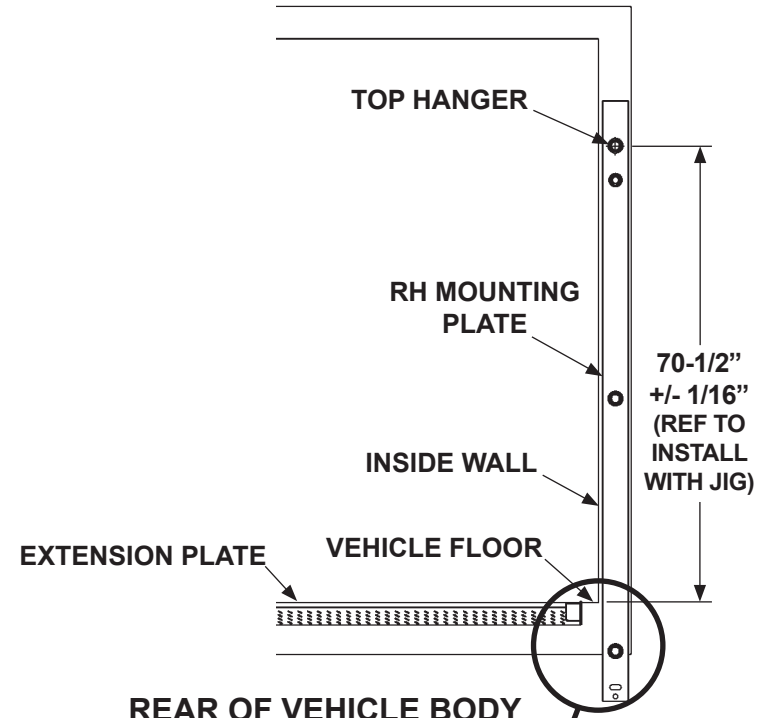


CENTERING EXTENSION PLATE ON 102" WIDE VEHICLE BODY FIG. 22-2

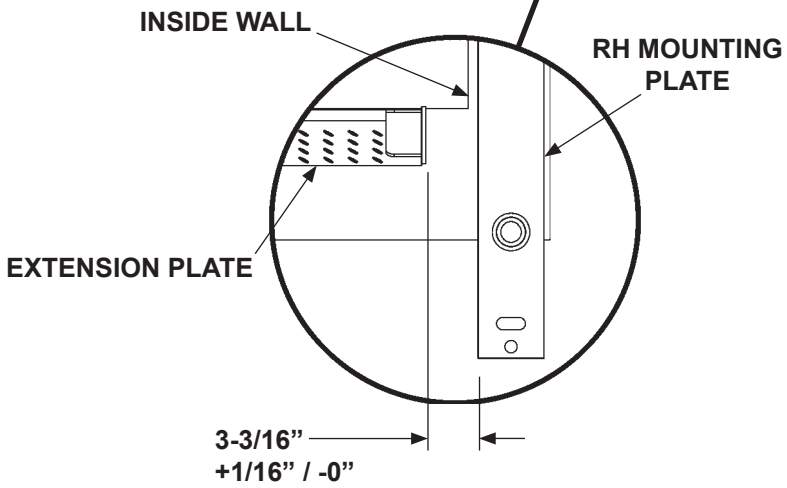
STEP 3 - POSITION LIFTGATE - Continued
METHOD 1 - PRE-INSTALL MOUNTING PLATES AND EXTENSION PLATE ON VEHICLE - Continued

NOTE: Distance between extension plate and RH mounting plate is measured from the inside edge of mounting plate as shown in illustration.

2. Position RH mounting plate as shown in **FIGS. 23-1 and 23-1A**.



REAR OF VEHICLE BODY
FIG. 23-1



RH MOUNTING PLATE
FIG. 23-1A

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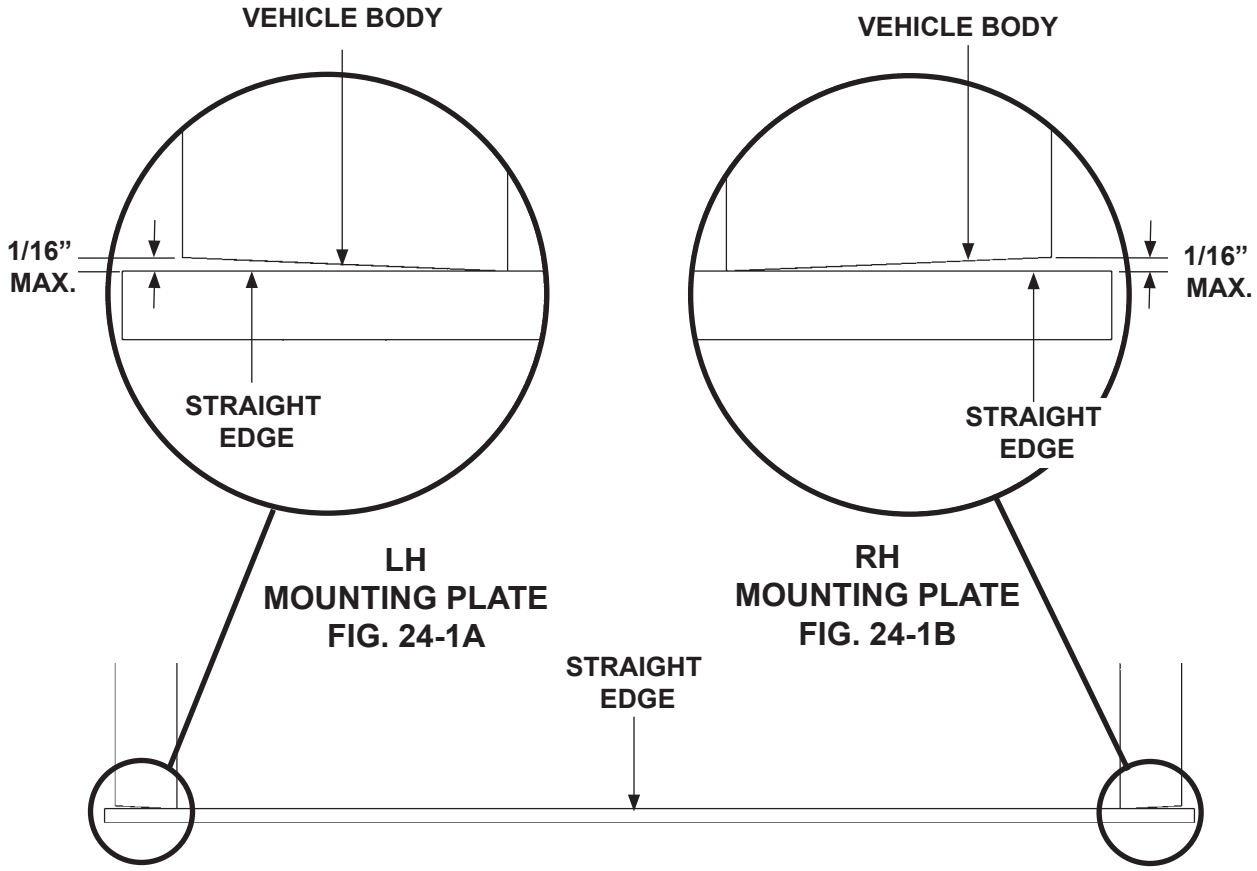
STEP 3 - POSITION LIFTGATE - Continued

METHOD 1 - PRE-INSTALL MOUNTING PLATES AND EXTENSION PLATE ON VEHICLE - Continued

3. Place a straight edge across LH and RH mounting plates **(FIG. 24-1).** Ensure that any gap between the mounting plates and straight edge **(FIGS.24-1A and 24-1B)** are less than 1/16" maximum.



TOP VIEW MOUNTING PLATES FIG. 24-1

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STEP 3 - POSITION LIFTGATE - Continued

METHOD 1 - PRE-INSTALL MOUNTING PLATES AND EXTENSION PLATE ON VEHICLE - Continued

NOTE: Before welding mounting plates to vertical posts on vehicle body, check to make sure LH and RH mounting plates are positioned within dimensions shown in **FIGS. 25-1A** and **25-1B**.

4. Position LH mounting plate on vehicle body as shown in **FIGS. 25-1, 25-1A, and 25-1B**.

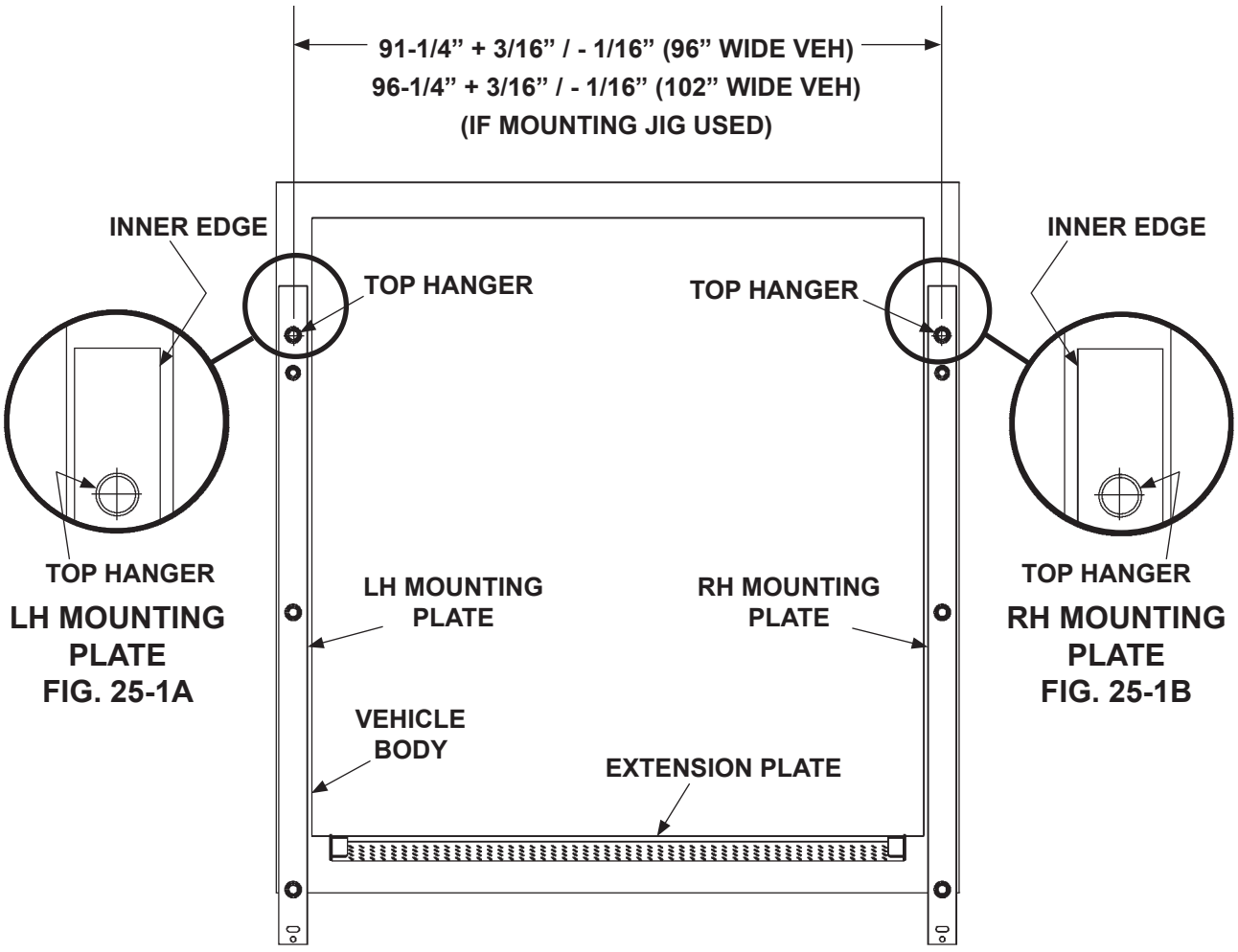

FIG. 25-1

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STEP 3 - POSITION LIFTGATE - Continued

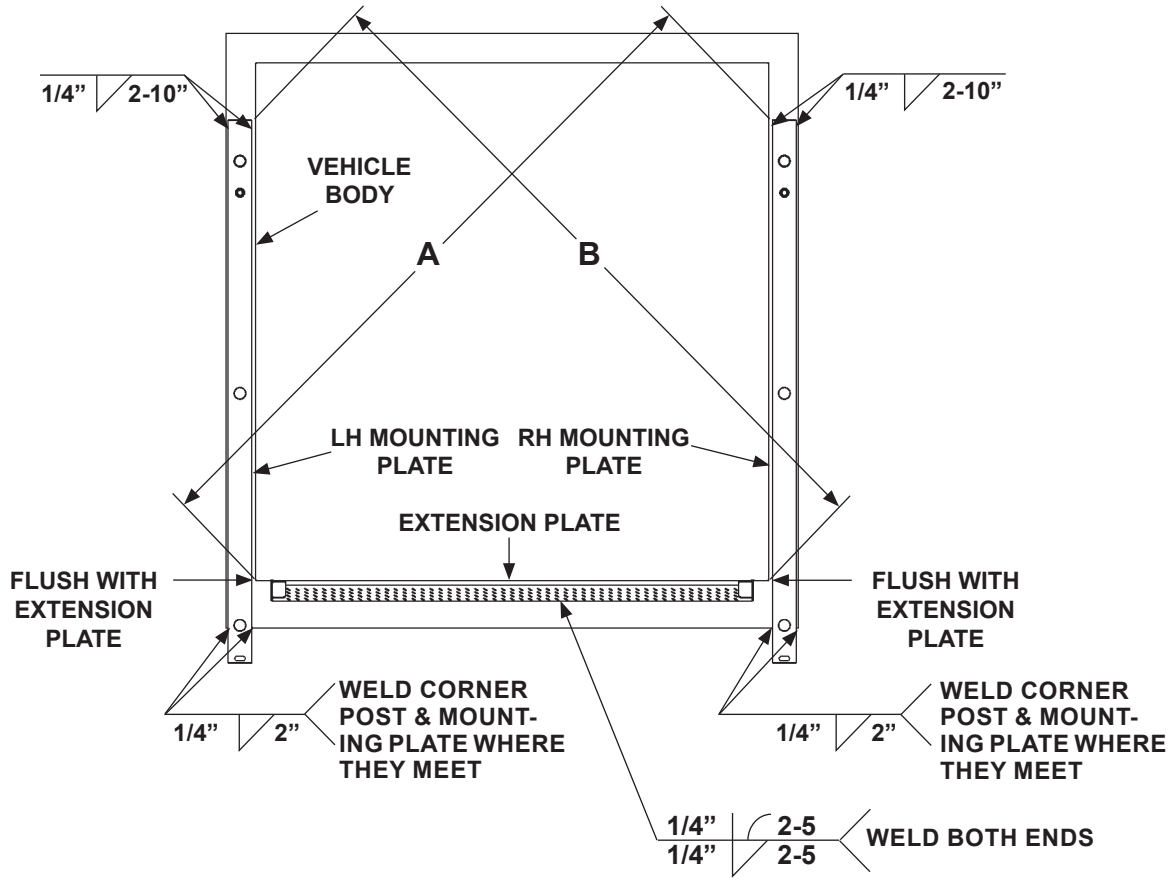
METHOD 1 - PRE-INSTALL MOUNTING PLATES AND EXTENSION PLATE ON VEHICLE - Continued

NOTE: Before welding mounting plates to vehicle frame, check squareness to make sure mounting plates are perpendicular to extension plate.

NOTE: Grind galvanized surface material from areas to be welded.

5. Check to make sure mounting plates are square and perpendicular to the extension plate by measuring dimensions **A** and **B** as shown in **FIG. 26-1.** Squareness is acceptable when dimensions **A** and **B** are within 1/8" of each other.

6. Weld RH mounting plate onto vehicle body **(FIG. 26-1)**, then weld LH mounting plate onto vehicle body.



REAR OF VEHICLE BODY
FIG. 26-1

GO TO STEP 4: BOLT LIFTGATE TO VEHICLE

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STEP 3 - POSITION LIFTGATE - Continued
METHOD 2 - WELD BOLT-ON LIFTGATE TO BODY

⚠ WARNING

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, can result from welds that are done incorrectly.

CAUTION

Comply with welding CAUTION decal on the LH column.

NOTE: Grind galvanized surface material from areas to be welded.

NOTE: Angle stock is not supplied. Angle steel (2” X 2” x 10”), steel flat (1/2” X 2” X 10”) or square steel tubing (2” X 2” x 10”) can be used.

1. Weld 2 pieces of 10” X 2” angle stock to the top surface of the extension plate near the RH column as shown in **FIGS. 27-1 and 27-1A.** The angle stock helps keep extension plate flush with top of vehicle bed while installing Liftgate. Repeat for LH column.

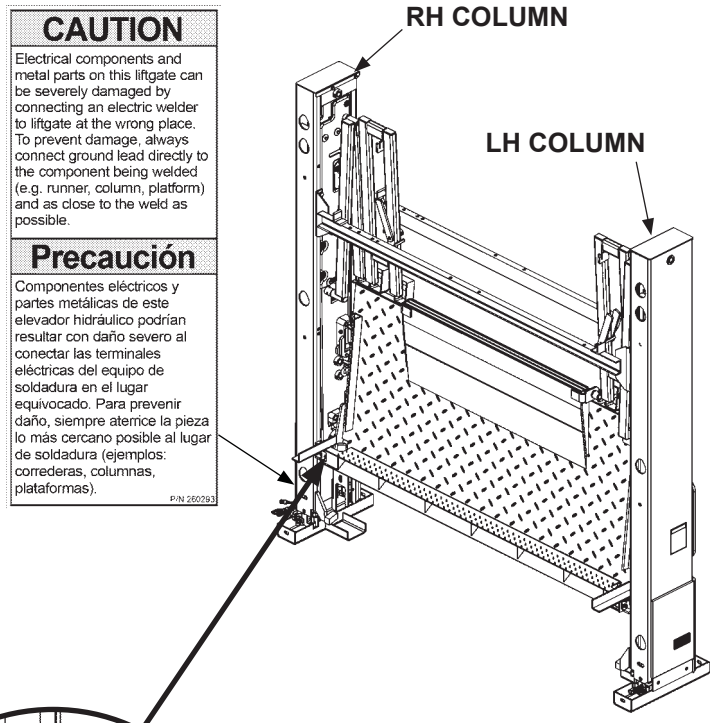

FIG. 27-1

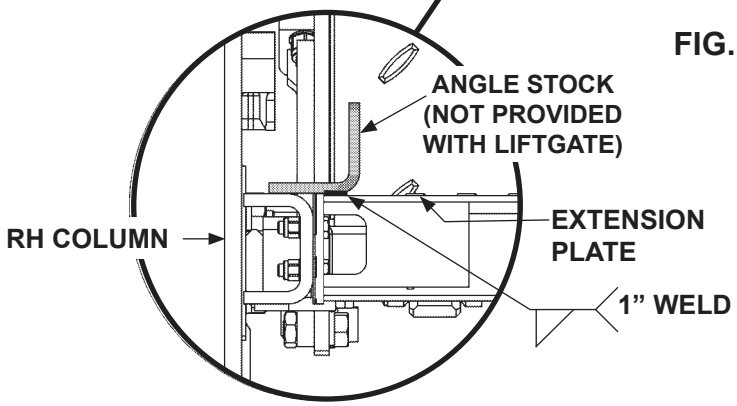

FIG. 27-1A

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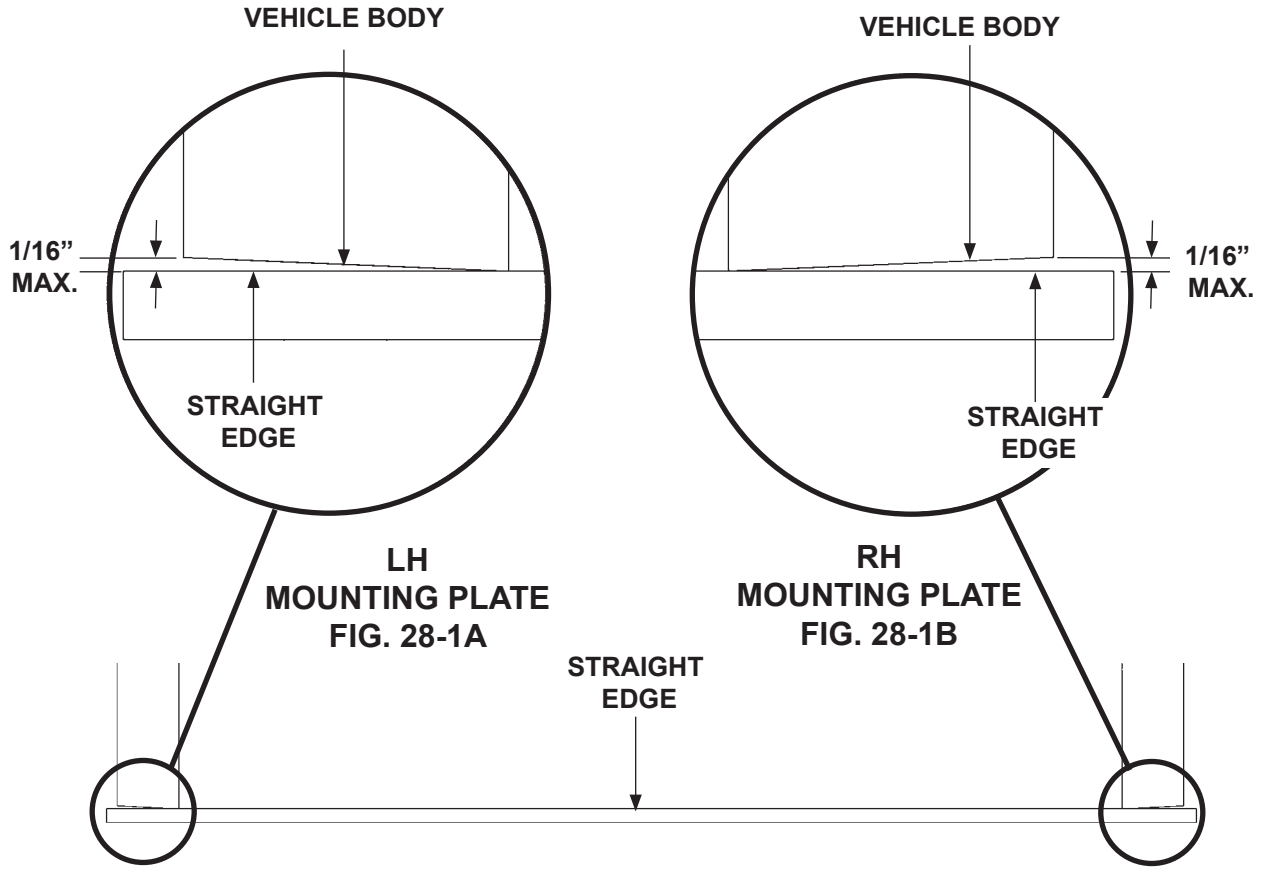
STEP 3 - POSITION LIFTGATE - Continued
METHOD 2 - WELD BOLT-ON LIFTGATE TO BODY - Continued

2. Place a straight edge across LH and RH mounting plates **(FIG. 28-1).** Ensure that any gap between the mounting plates and straight edge **(FIGS. 28-1A and 28-1B)** are less than 1/16” maximum.

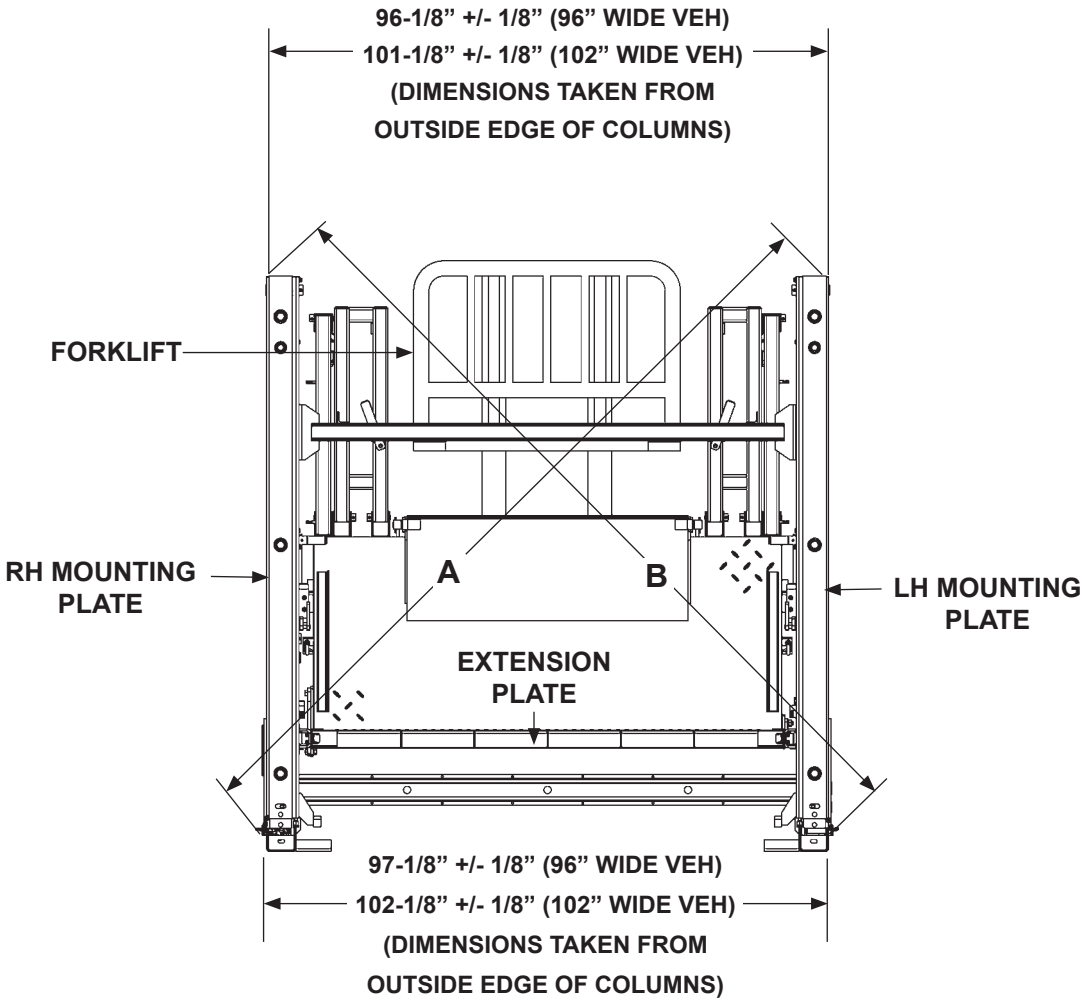


TOP VIEW MOUNTING PLATES
FIG. 28-1

STEP 3 - POSITION LIFTGATE - Continued
METHOD 2 - WELD BOLT-ON LIFTGATE TO BODY - Continued

NOTE: Before welding Liftgate to vehicle frame, check squareness to make sure columns are perpendicular to extension plate.

3. Check to make sure RH and LH columns are square and perpendicular to the extension plate by measuring dimensions at the top and bottom of the columns**,** and dimensions **A** and **B**, as shown in **FIG. 29-1.** Squareness is acceptable when dimensions **A** and **B** are within 1/4" of each other, and top and bottom column dimensions are as shown in **FIG. 29-1.**



CHECKING IF COLUMNS ARE SQUARE
(REAR OF LIFTGATE SHOWN)
FIG. 29-1

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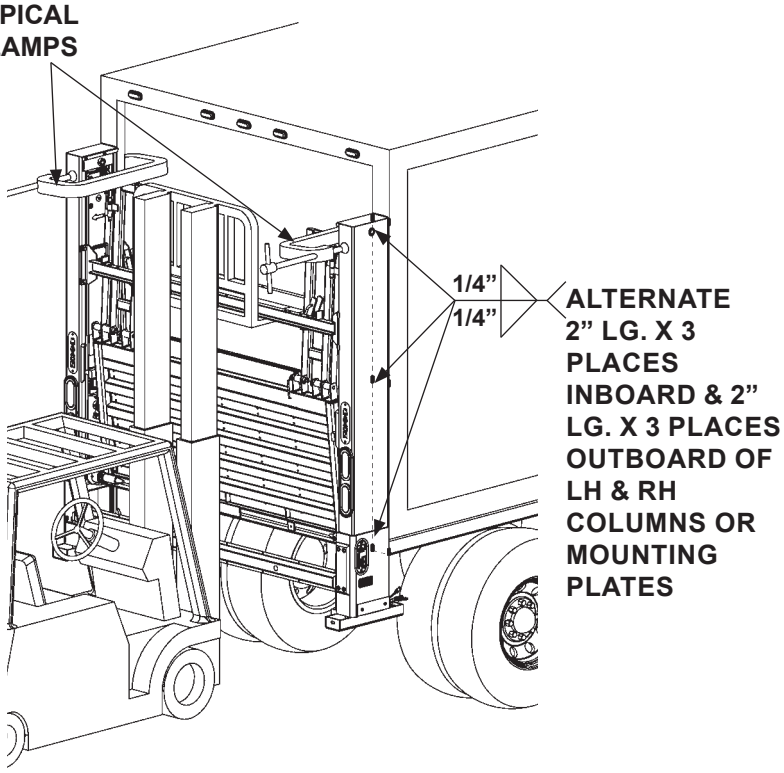
STEP 3 - POSITION LIFTGATE - Continued

METHOD 2 - WELD BOLT-ON LIFTGATE TO BODY - Continued

4. Use overhead hoist or fork lift to center Liftgate against the vehicle **(FIG. 30-1)**. Let angle stock, welded to extension plate, rest on the top surface of the vehicle bed.

5. Clamp top of each column to vehicle body to prevent gap **(FIG. 30-1)**.



WELDING LIFTGATE TO VEHICLE
FIG. 30-1

CAUTION

To prevent damage to Liftgate:
- **Connect welder ground to vehicle body.**
- **Protect hydraulic hoses and electrical cables with flame-resistant cover.**

NOTE: Grind galvanized surface material from areas to be welded.

6. Weld the RH and LH columns to vehicle body as shown in **FIG. 30-1**.

7. Remove clamp from each of the columns. Then, move fork-lift away from work area.

8. Check to make sure RH and LH columns are square and perpendicular to the extension plate **(FIG. 29-1)**.

GO TO STEP 5: REMOVE CHANNEL GUARD & LOWER SUPPORT FIXTURES

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STEP 3 - POSITION LIFTGATE - Continued
METHOD 3 - WELD LIFTGATE TO BODY

⚠ WARNING

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, can result from welds that are done incorrectly.

NOTE: Before welding extension plate to vehicle body, make sure:
- Inboard edge of extension plate is flush with the top of sill on vehicle body.
- Top surface of extension plate is level with the ground.

CAUTION

Comply with welding CAUTION decals on the LH & RH runners.

NOTE: Angle stock is not supplied. Angle steel (2” X 2” x 10”), steel flat (1/2” X 2” X 10”) or square steel tubing (2” X 2” x 10”) can be used.

NOTE: Grind galvanized surface material from areas to be welded.

1. Weld 2 pieces of 10” X 2” angle stock to the top surface of the extension plate near the RH column as shown in **FIGS. 31-1 and 31-1A.** The angle stock helps keep extension plate flush with top of vehicle bed while installing Liftgate. Repeat for LH column.

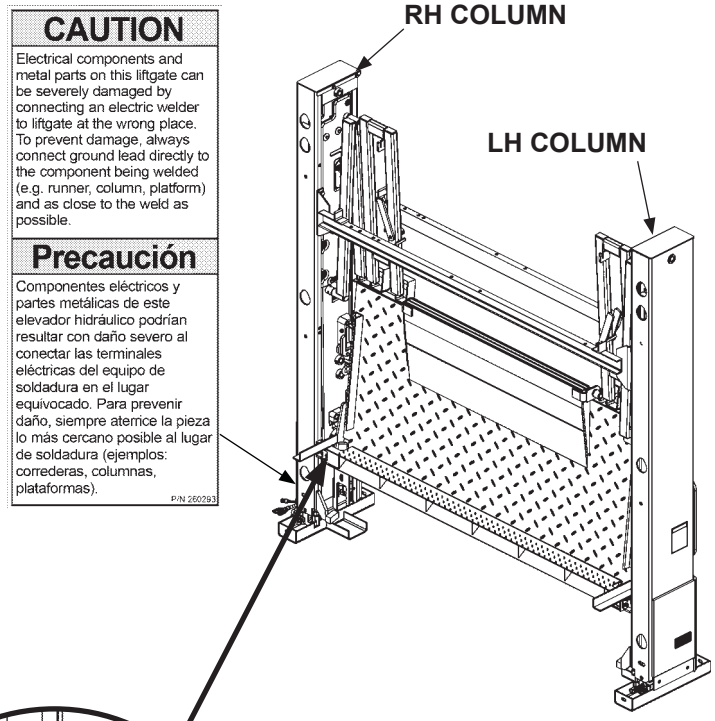

FIG. 31-1

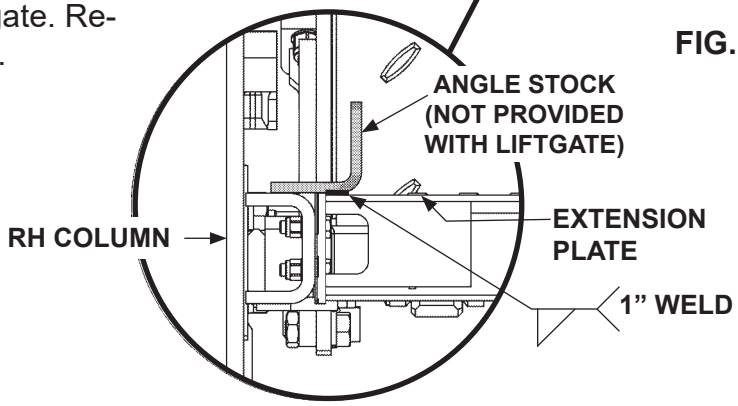

FIG. 31-1A

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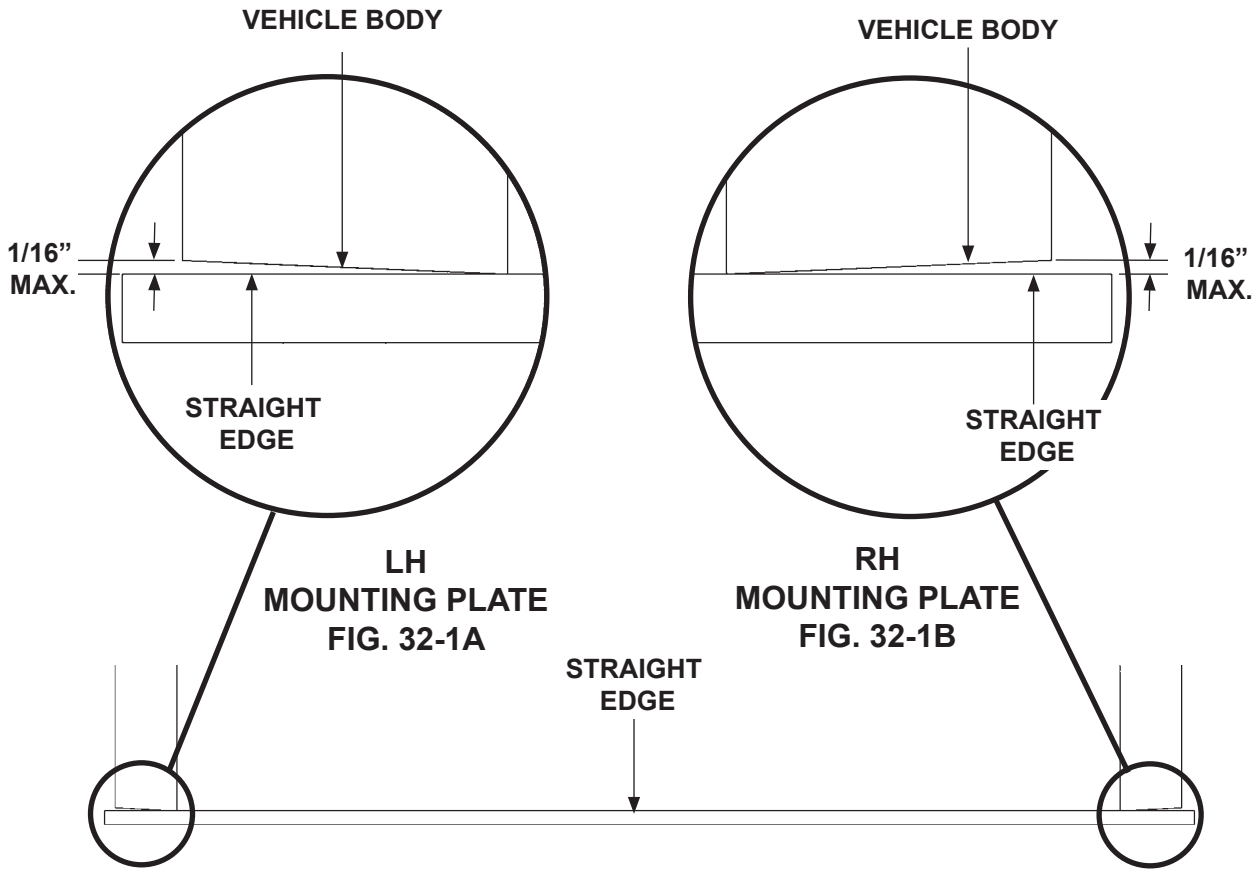
STEP 3 - POSITION LIFTGATE - Continued
METHOD 3 - WELD LIFTGATE TO BODY - Continued

2. Place a straight edge across LH and RH mounting plates **(FIG. 32-1).** Ensure that any gap between the mounting plates and straight edge **(FIGS. 32-1A and 32-1B)** are less than 1/16” maximum.



TOP VIEW MOUNTING PLATES
FIG. 32-1

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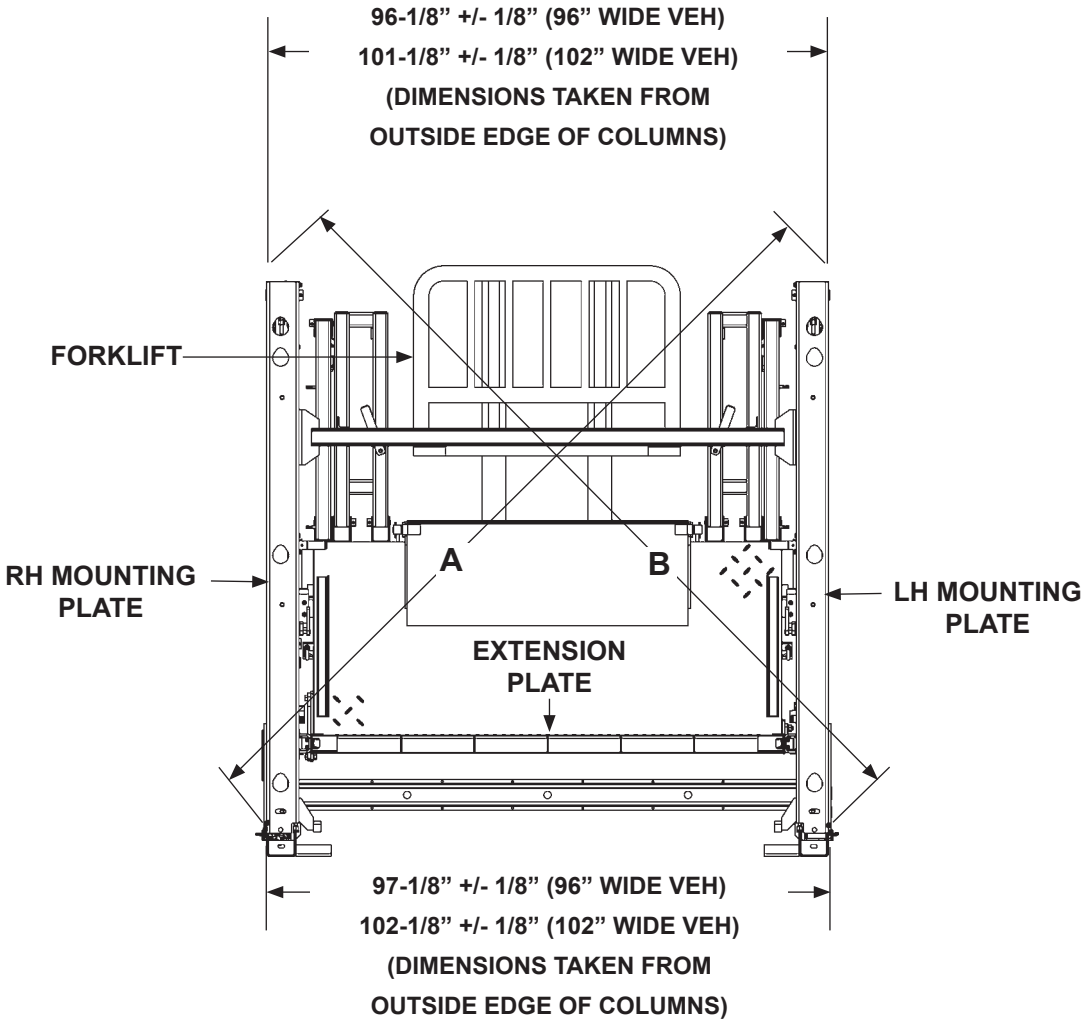
STEP 3 - POSITION LIFTGATE - Continued
METHOD 3 - WELD LIFTGATE TO BODY - Continued

NOTE: Before welding Liftgate to vehicle frame, check squareness to make sure columns are perpendicular to extension plate.

3. Check to make sure RH and LH columns are square and perpendicular to the extension plate by measuring dimensions at the top and bottom of the columns**,** and dimensions **A** and **B**, as shown in **FIG. 33-1.** Squareness is acceptable when dimensions **A** and **B** are within 1/4” of each other, and top and bottom column dimensions are as shown in **FIG. 33-1.**



CHECKING IF COLUMNS ARE SQUARE
(REAR OF LIFTGATE SHOWN)
FIG. 33-1

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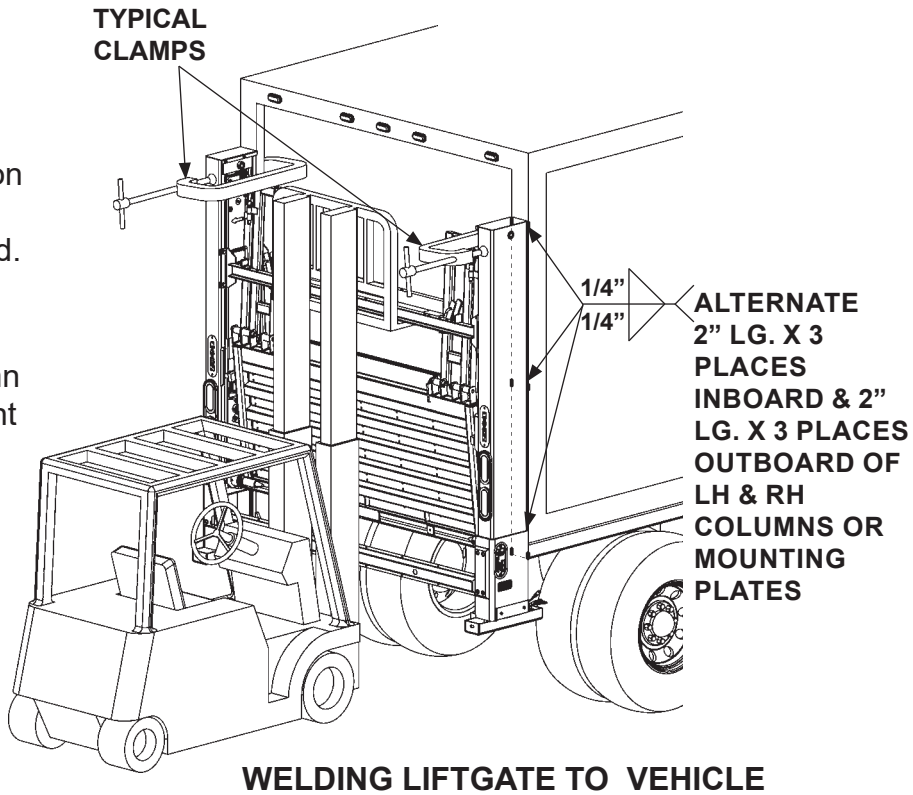
STEP 3 - POSITION LIFTGATE - Continued
METHOD 3 - WELD LIFTGATE TO BODY - Continued

4. Use overhead hoist or forklift to center Liftgate against the vehicle **(FIG. 34-1)**. Let angle stock, welded to extension plate, rest on the top surface of the vehicle bed.

5. Clamp top of each column to vehicle body to prevent gap **(FIG. 34-1)**.



WELDING LIFTGATE TO VEHICLE
FIG. 34-1

CAUTION

To prevent damage to Liftgate:
- **Connect welder ground to vehicle body.**
- **Protect hydraulic hoses and electrical cables with flame-resistant cover.**

NOTE: Grind galvanized surface material from areas to be welded.

6. Weld the RH and LH columns to vehicle body as shown in **FIG. 34-1**.

7. Remove clamp from each of the columns. Then, move forklift away from work area.

8. Check to make sure RH and LH columns are square and perpendicular to the extension plate **(FIG. 33-1)**.

GO TO STEP 5: REMOVE CHANNEL GUARD & LOWER SUPPORT FIXTURES

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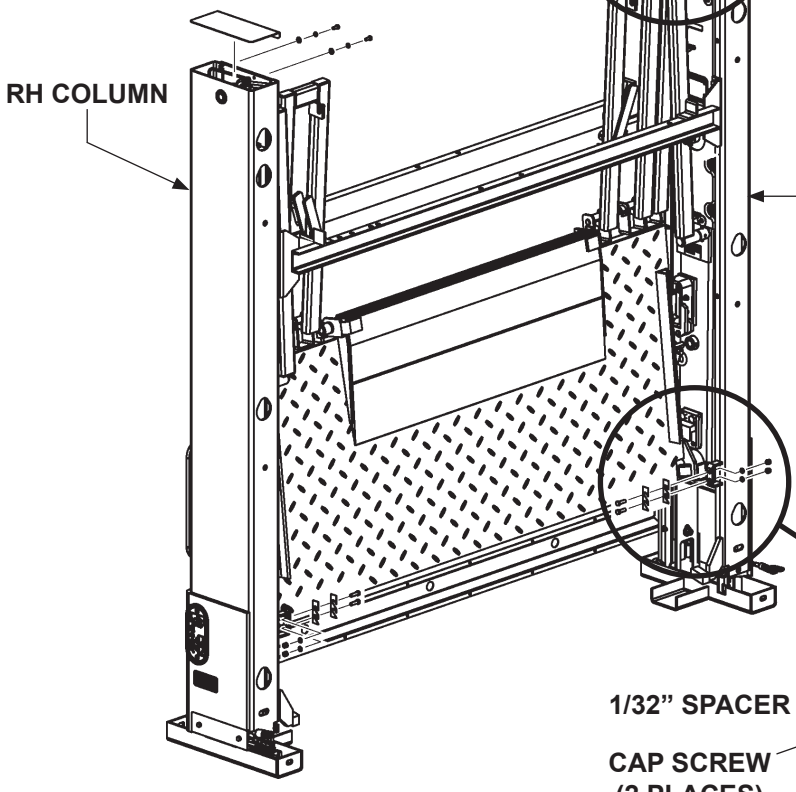
STEP 4 - BOLT LIFTGATE TO VEHICLE

METHOD 1 - PRE-INSTALLED MOUNTING PLATES & EXTENSION PLATE ON VEHICLE

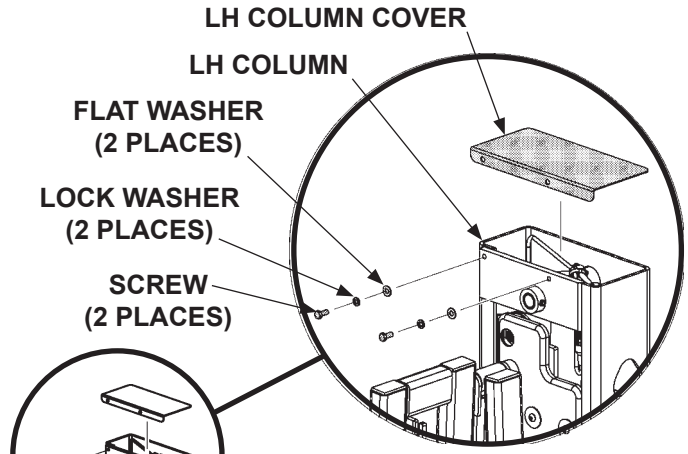
NOTE: Save all hardware to re-attach column cover and extension plate.

1. Remove screws, lock washers, flat washers and top column cover from LH column **(FIGS. 35-1 and 35-1A)**. Repeat for RH top column cover.

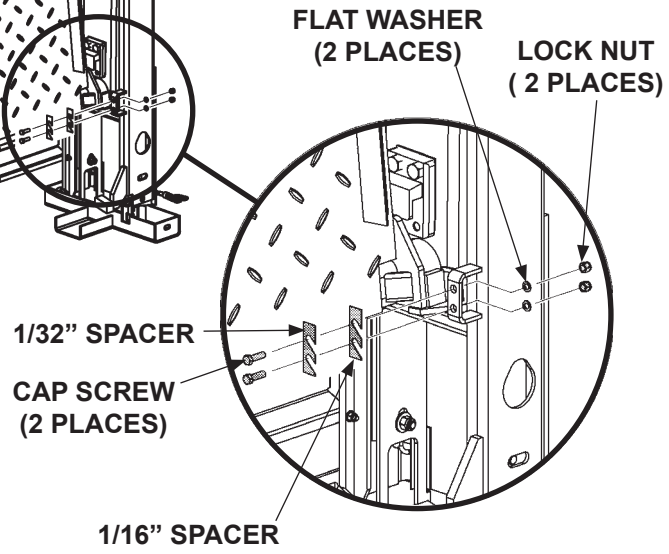
2. Remove (2) cap screws, flat washers, locknuts and spacers from LH column and extension plate **(FIGS. 35-1 and 35-1B)**. Repeat for RH column and extension plate.



REAR VIEW OF LIFTGATE
FIG. 35-1



REMOVING LH TOP COVER HARDWARE
FIG. 35-1A



REMOVING LH EXTENSION PLATE HARDWARE
FIG. 35-1B

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STEP 4 - BOLT LIFTGATE TO VEHICLE - Continued
METHOD 1 - PRE-INSTALLED MOUNTING PLATES & EXTENSION PLATE ON VEHICLE - Continued

NOTE: If the rear of the vehicle & Liftgate mounting plates are galvanized, make sure:
- Bolts are removed from top hanger
- Bolt & cover are removed from hanger lock

3. Check if the Liftgate mounting plates and rear of vehicle are galvanized **(FIG. 36-1)**. If galvanized, remove 2 bolts from top hanger on the RH mounting plate **(FIG. 36-1A)**. Then, remove screw and cover from hanger lock **(FIG. 36-1A)**. Repeat for LH mounting plate.

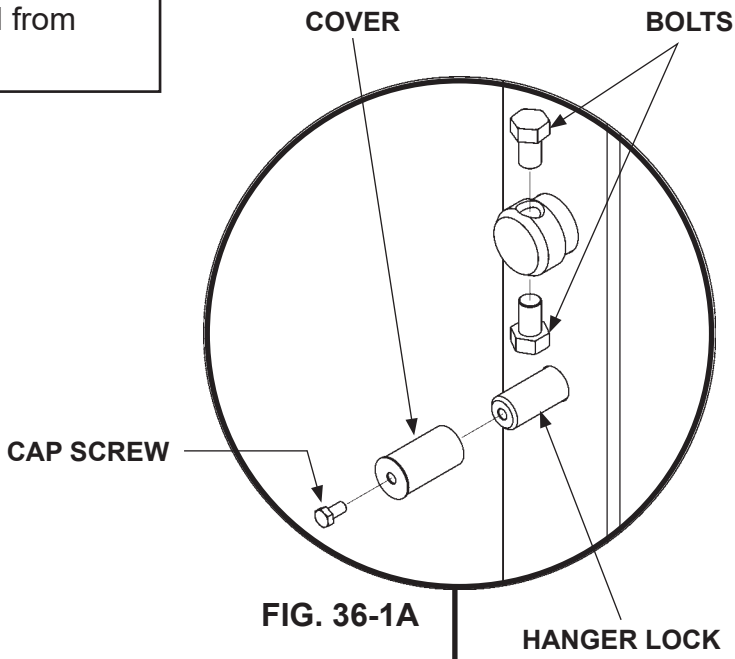
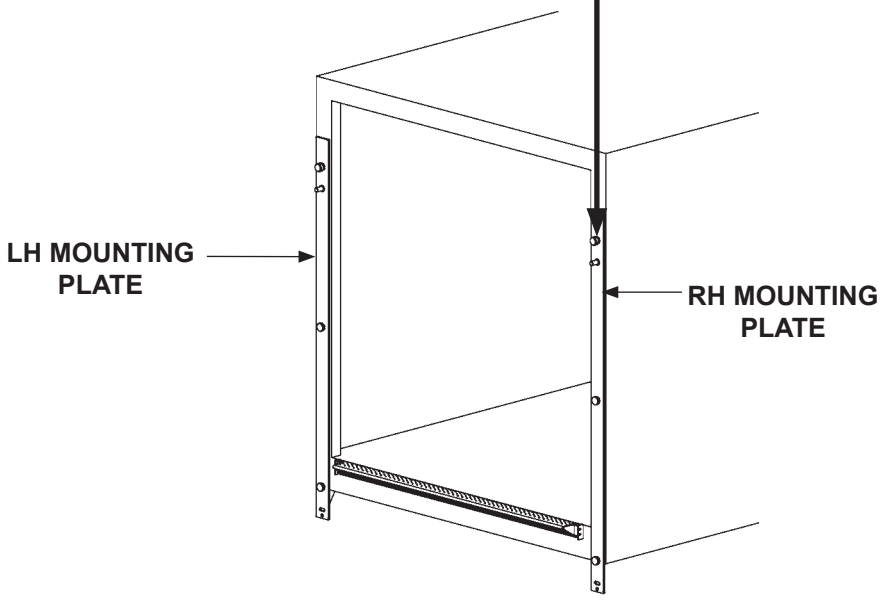


FIG. 36-1A



LIFTGATE MOUNTING PLATES
FIG. 36-1

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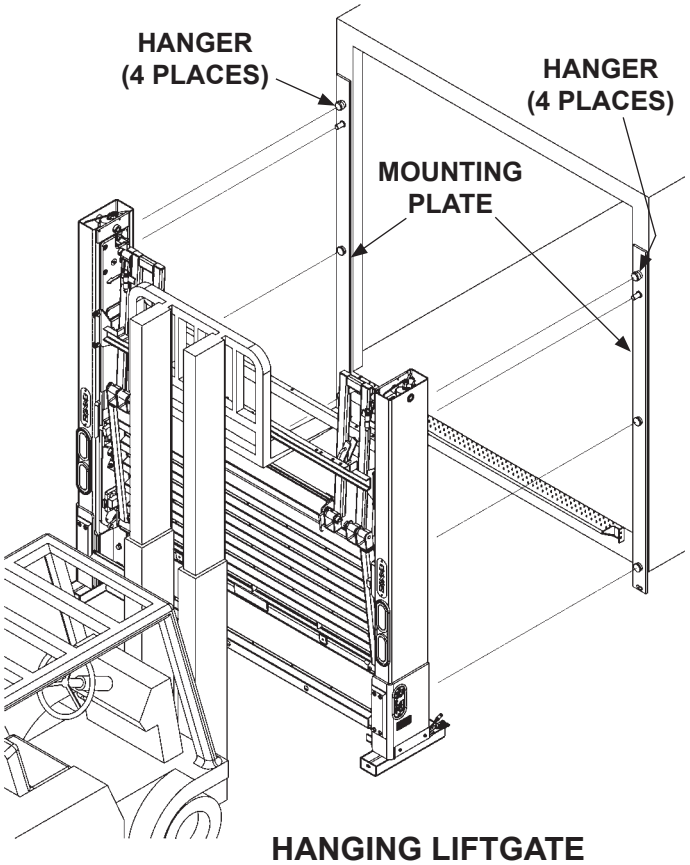
STEP 4 - BOLT LIFTGATE TO VEHICLE - Continued

METHOD 1 - PRE-INSTALL MOUNTING PLATES AND EXTENSION PLATE ON VEHICLE - Continued

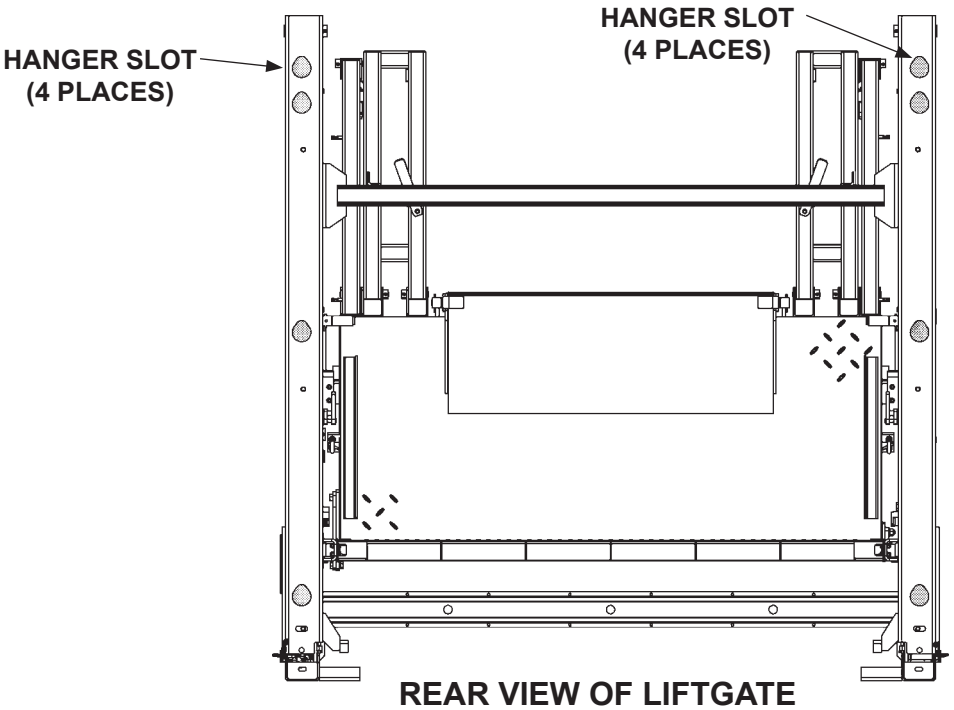
⚠ WARNING

Tighten top hanger bolts on the columns while the Liftgate is supported by forklift. Loose hanger bolts could allow the Liftgate to disengage from the hangers and fall off the vehicle when platform is lowered to the ground. Serious personal injury and equipment damage could result.

4. Hang liftgate on the mounting plates by inserting hangers into hanger slots **(FIGS. 37-1 and 37-2)**.



HANGING LIFTGATE
FIG. 37-1



REAR VIEW OF LIFTGATE
FIG. 37-2

STEP 4 - BOLT LIFTGATE TO VEHICLE - Continued
METHOD 1 - PRE-INSTALL MOUNTING PLATES AND EXTENSION PLATE ON VEHICLE - Continued

5. Slightly loosen support channel cap screws on the LH column **(FIGS. 38-1 and 38-1A)** to allow column slots to sit on top hangers and mounting pins **(FIG. 38-1B)**. Repeat for RH column.

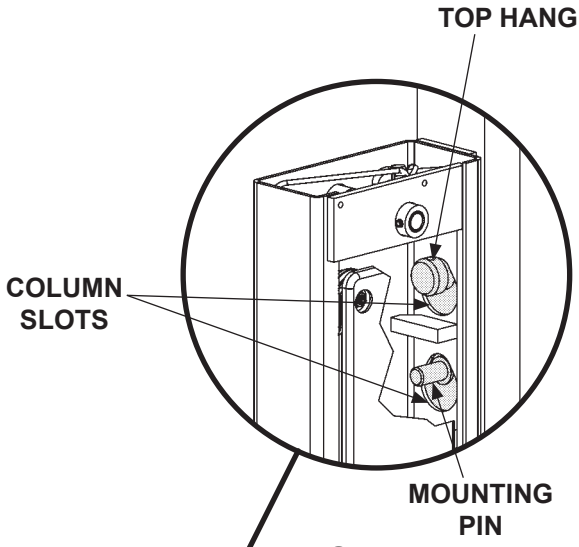
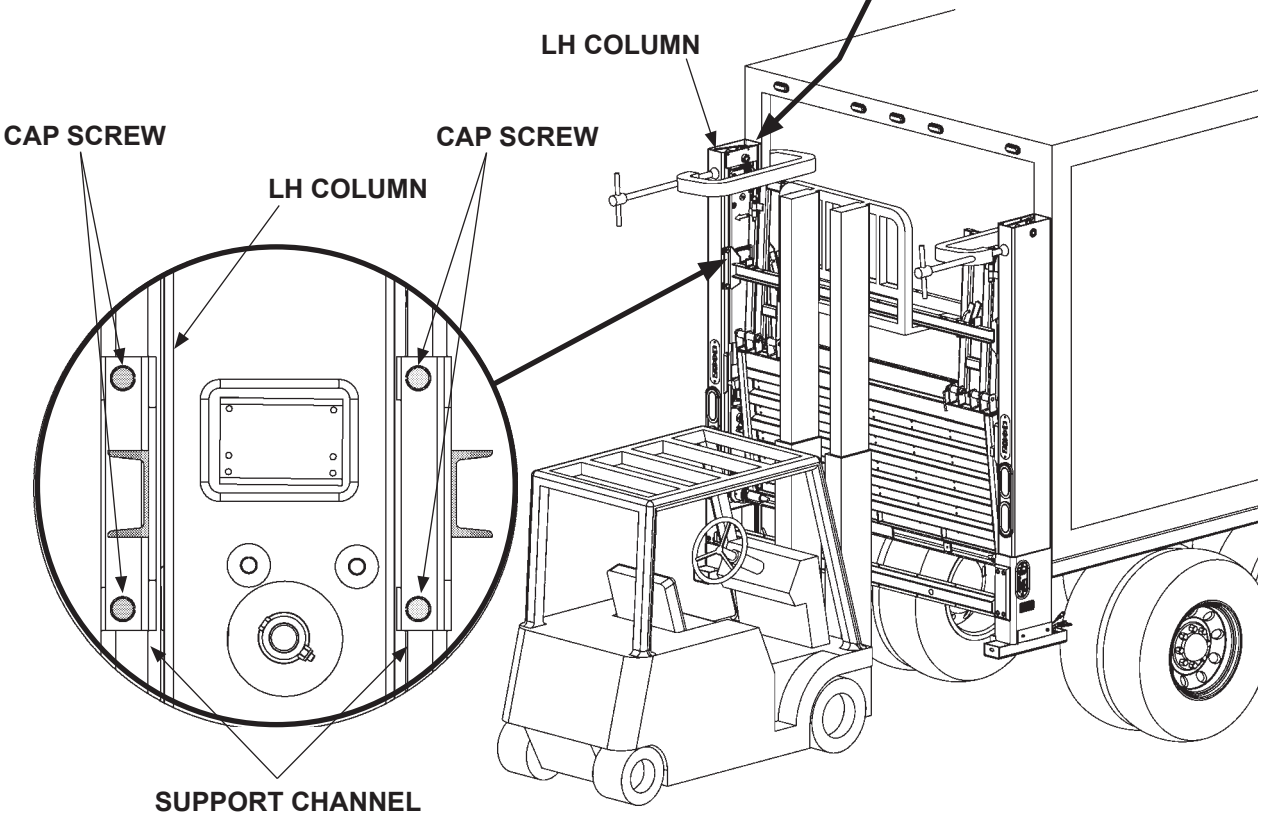


FIG. 38-1B



LOOSENING LH SUPPORT CHANNELS FIG. 38-1A

FIG. 38-1

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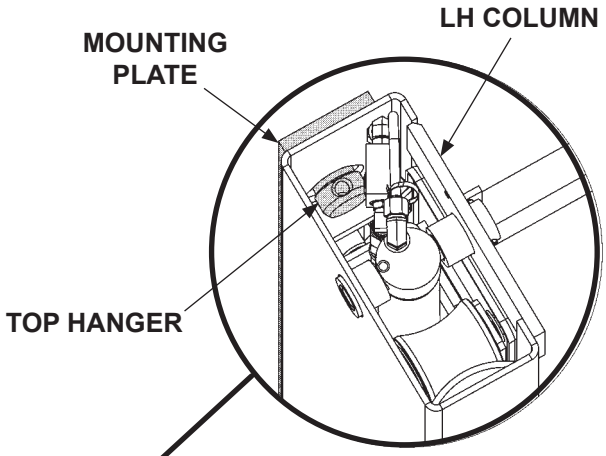
STEP 4 - BOLT LIFTGATE TO VEHICLE - Continued
METHOD 1 - PRE-INSTALL MOUNTING PLATES AND EXTENSION PLATE ON VEHICLE - Continued

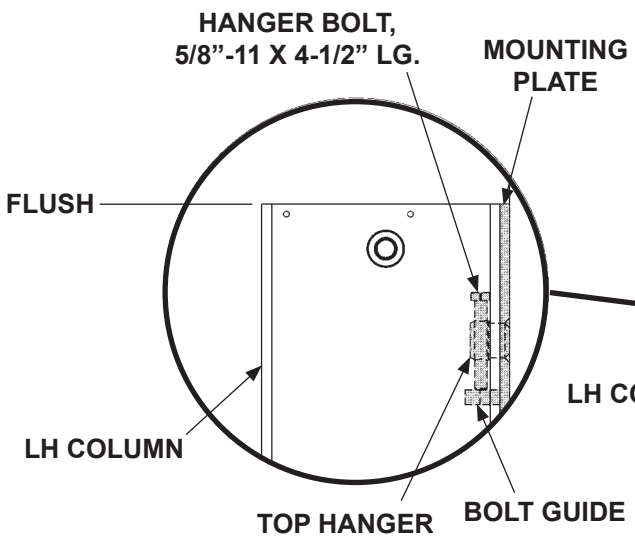
6. Get (2) hanger bolts from parts bag. Then look down into the top of LH column **(FIGS. 39-1 and 39-1A)** and locate top hanger.

7. Insert (1) hanger bolt through top hanger in LH column **(FIGS. 39-1 and 39-1B)** and tighten against bolt guide until mounting plate is flush with column. Repeat for RH column.

8. Remove forklift.



LOCATING LH TOP HANGER
FIG. 39-1A



INSERTING CAP SCREW INTO LH TOP HANGER
FIG. 39-1B

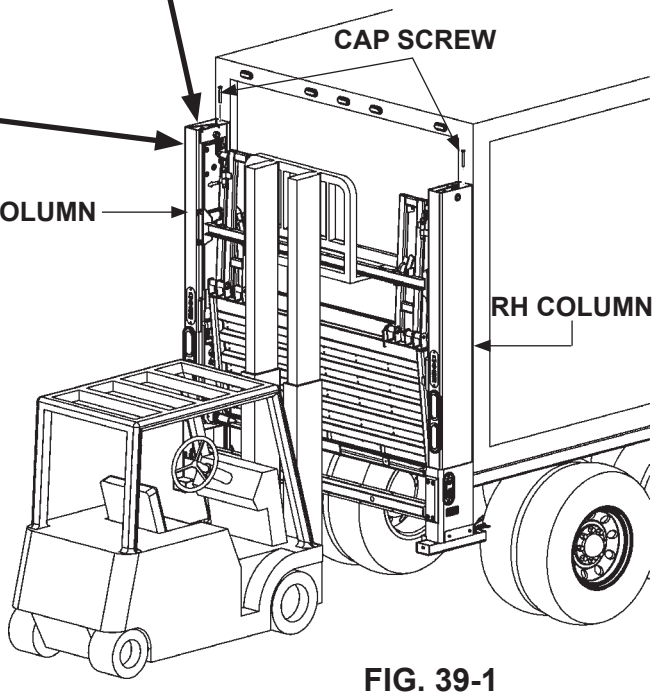


FIG. 39-1

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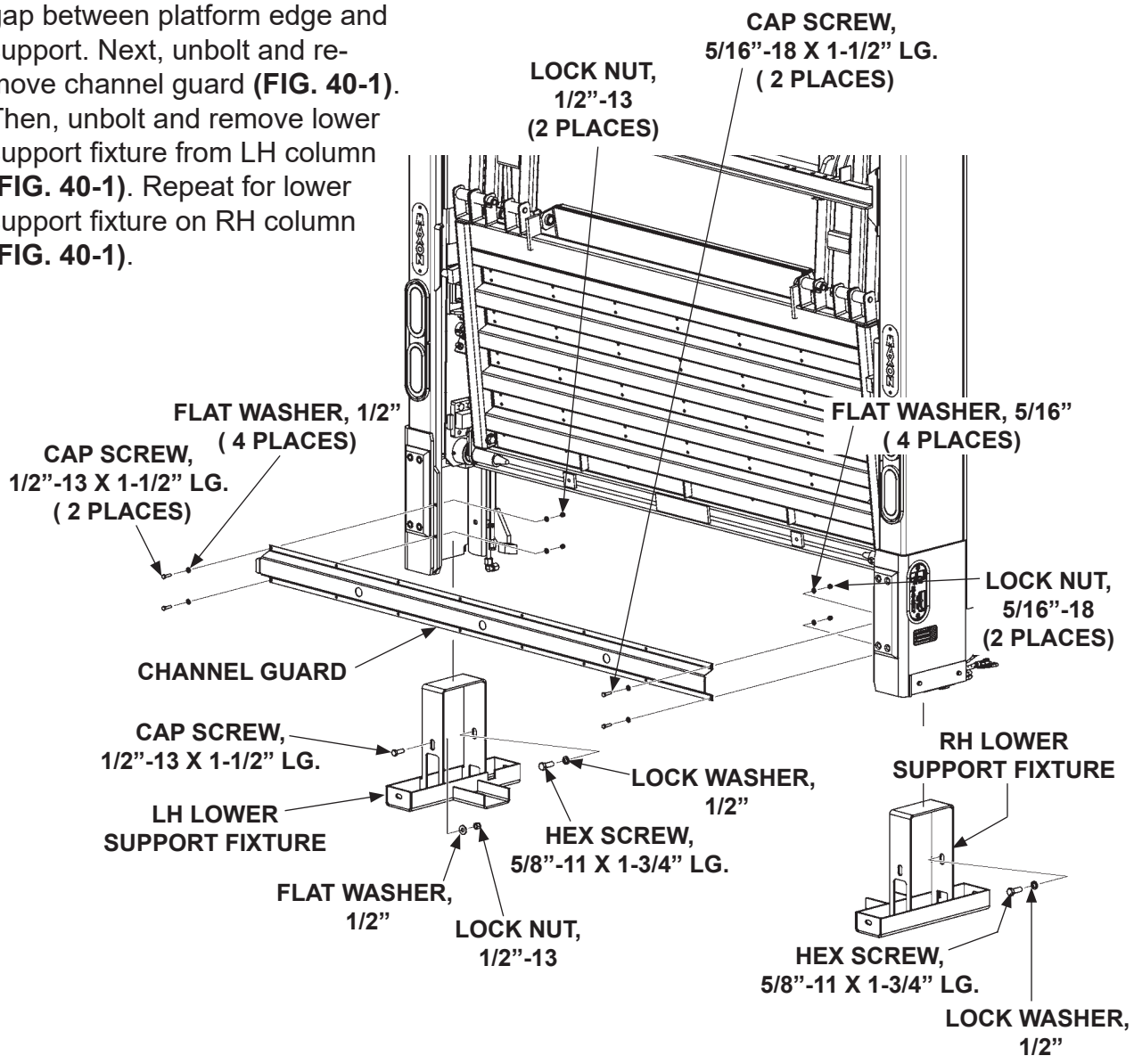
STEP 5 - REMOVE CHANNEL GUARD & LOWER SUPPORT FIXTURES

⚠ CAUTION

Hydraulic cylinders may lose pressure during storage and transport. With loss of pressure runners could move downward when support fixtures are removed. To prevent possible injury and equipment damage, place supports below folded edge of platform section with 1" gap between platform edge and support.

NOTE: Use short wrenches for unbolting lower support fixtures.

Place supports below folded edge of platform section with 1” gap between platform edge and support. Next, unbolt and remove channel guard **(FIG. 40-1)**. Then, unbolt and remove lower support fixture from LH column **(FIG. 40-1)**. Repeat for lower support fixture on RH column **(FIG. 40-1)**.



REMOVING CHANNEL GUARD & LOWER SUPPORT FIXTURES
FIG. 40-1

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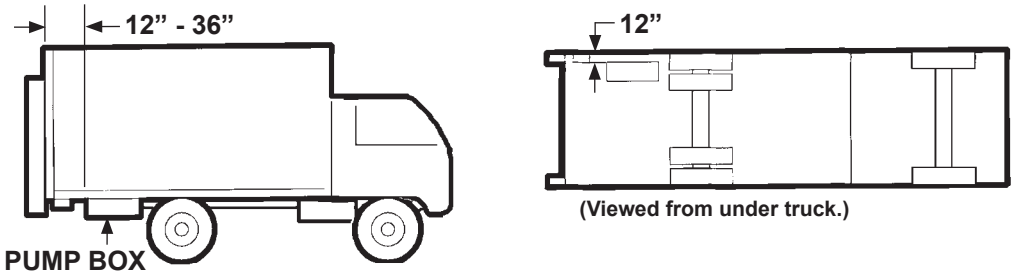
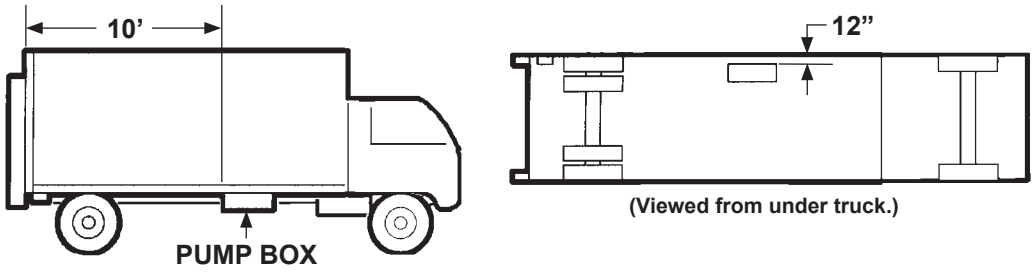
STEP 6 - POSITION PUMP BOX FRAME

NOTE: Make sure pump box is closer to Liftgate than battery box (if installed) and pump box cover opens toward curb-side of vehicle. Also, make sure hydraulic hoses are installed without straining hoses. Distance from pump box to Liftgate is limited by lengths of hydraulic hoses and wiring harness supplied with Liftgate.

Position pump box frame (or optional battery box) on the ground where it will be welded to vehicle body in the next step. Make sure pump box (and battery box if supplied) are securely bolted to the frame. Typical installations are shown in **FIGS. 41-1, 41-2, 42-1, 42-2 and 42-3**.



TYPICAL 3 FT. INSTALLATION
FIG. 41-1



TYPICAL 10 FT. INSTALLATION
FIG. 41-2

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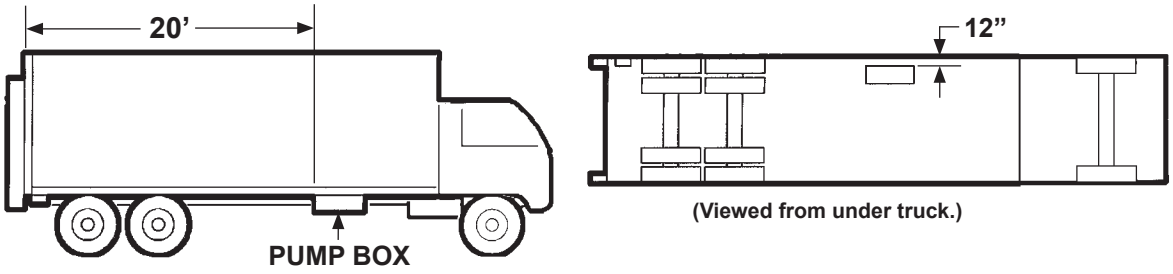
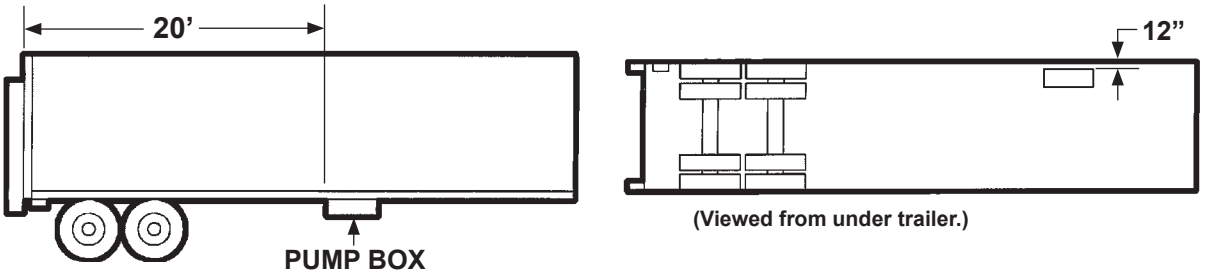
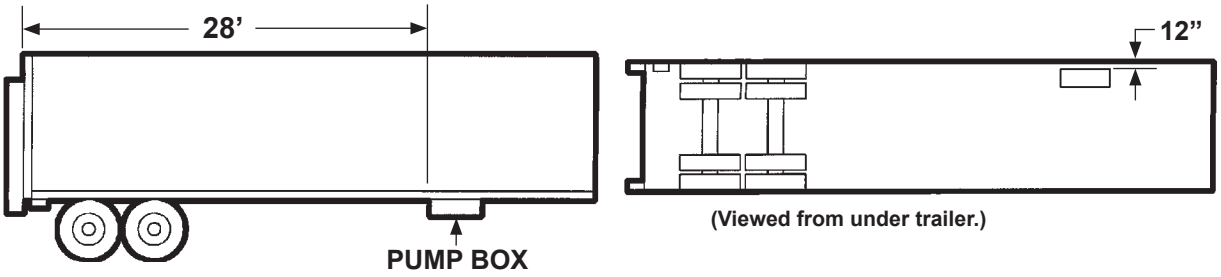
STEP 6 - POSITION PUMP BOX FRAME - Continued



TYPICAL 20 FT. INSTALLATION
FIG. 42-1



TYPICAL 20 FT. INSTALLATION
FIG. 42-2



TYPICAL 28 FT. INSTALLATION
FIG. 42-3

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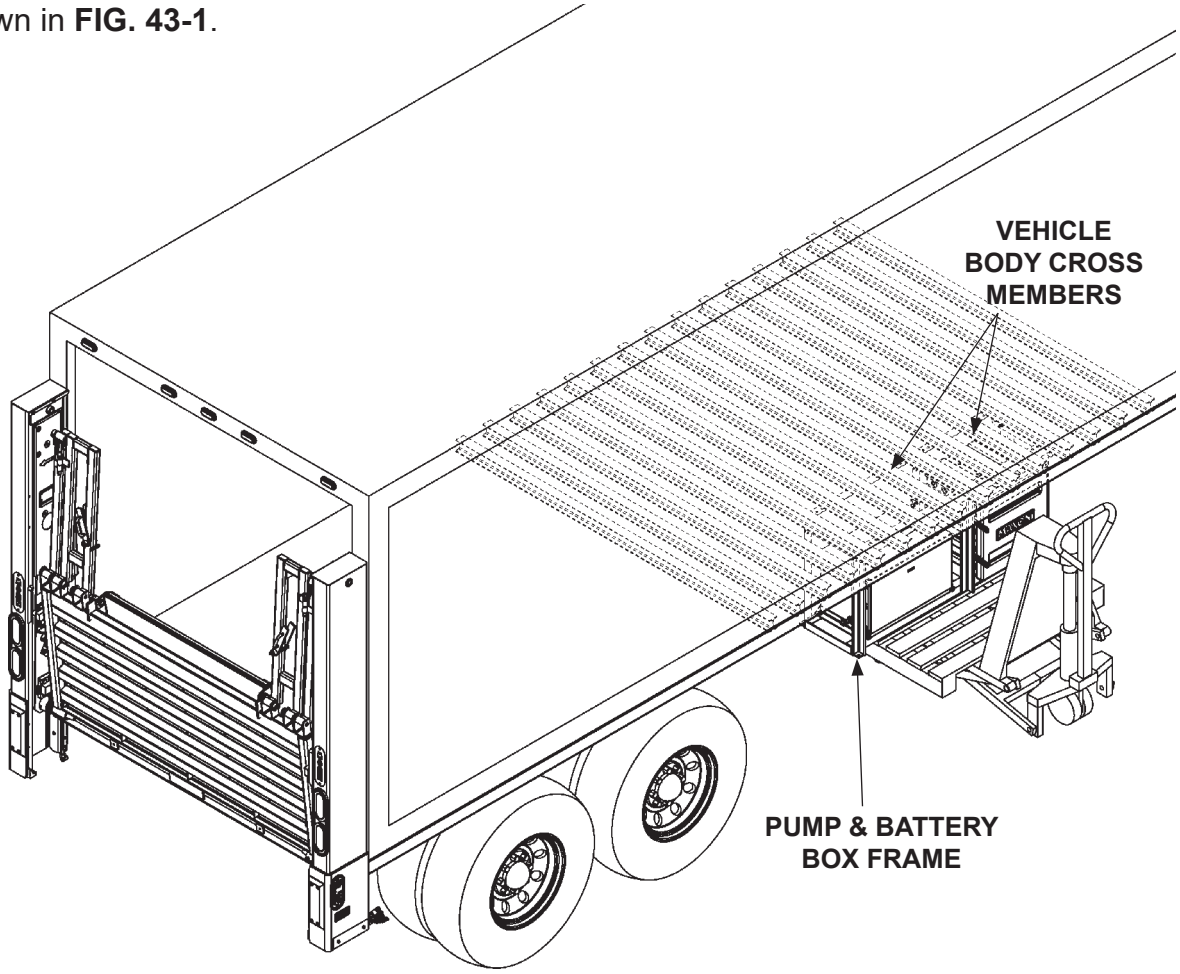
STEP 7 - ATTACH PUMP & BATTERY BOX FRAME TO VEHICLE

NOTE: There are 2 methods to mount pump and battery box frame to vehicle frame.
- Bolt pump and battery box frame to hanger brackets welded to vehicle frame.
- Weld pump and battery box frame to vehicle frame.

1. Use floor jack or equivalent lifting device to place pump and battery box frame in position on vehicle body cross members as shown in **FIG. 43-1**.



TRAILER WITH PUMP & BATTERY BOX FRAME
FIG. 43-1

NOTE: If pump and battery box frame is to be welded directly to cross members on vehicle body, skip **instructions 2 through 4**. Continue with **instruction 5**.

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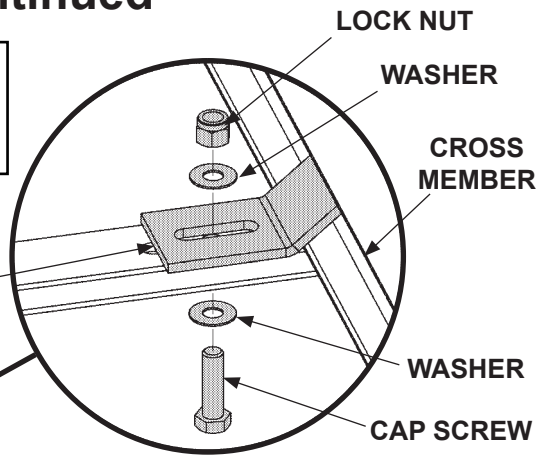
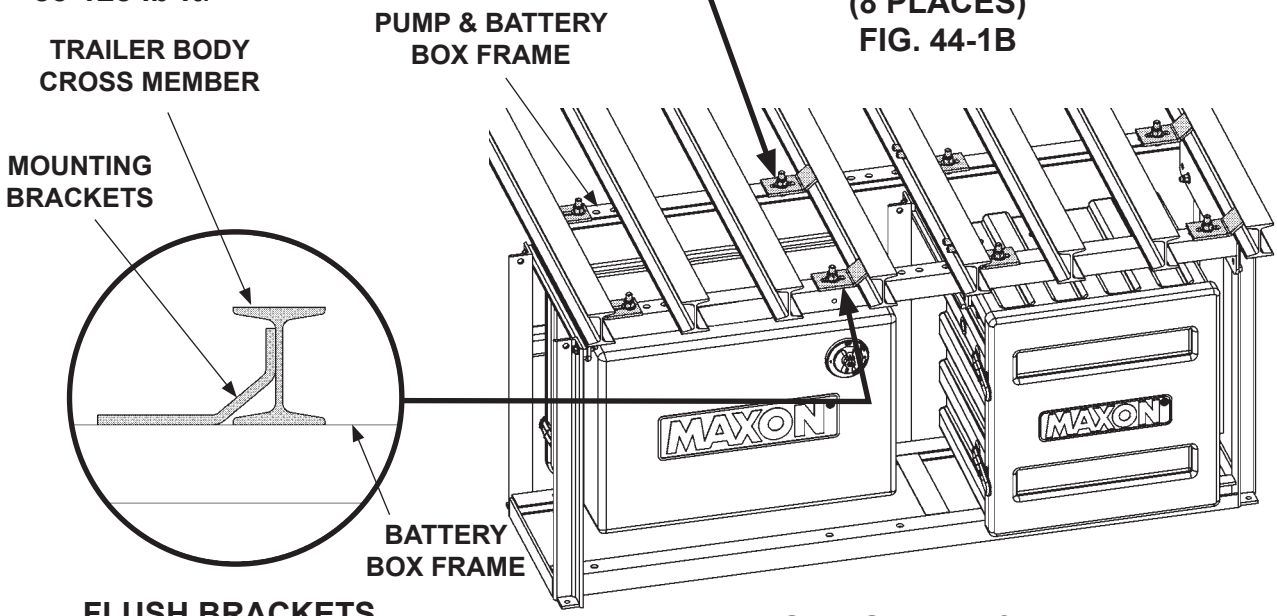
STEP 7 - ATTACH PUMP & BATTERY BOX FRAME TO VEHICLE - Continued

NOTE: Do **instructions 2 through 4** if hanger brackets are being used to mount pump and battery box frame on vehicle.

2. Select holes on top of battery box frame to align mounting brackets flush to cross members. Refer to **FIGS. 44-1 and 44-1A** for trailers and **FIG. 44-2** for trucks. Bolt mounting brackets to battery box frame as shown in **FIG. 44-1B**. Torque each bolt and lock nut to **85-128 lb-ft**.

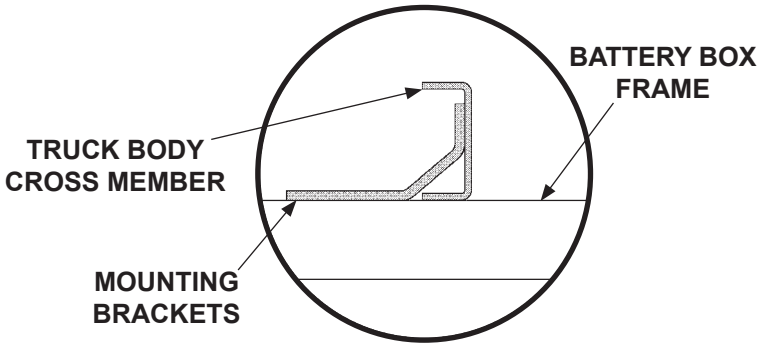


BOLTING BRACKETS (8 PLACES) FIG. 44-1B



FLUSH BRACKETS FOR TRAILERS (8 PLACES) FIG. 44-1A

ALIGNING PUMP & BATTERY BOX FRAME FIG. 44-1



FLUSH BRACKETS FOR TRUCKS (8 PLACES) FIG. 44-2

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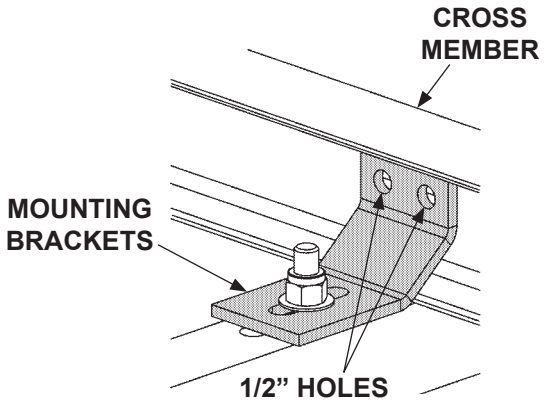
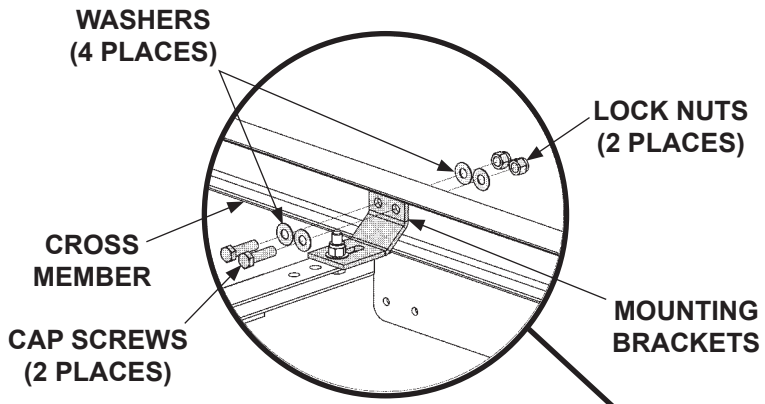
STEP 7 - ATTACH PUMP & BATTERY BOX FRAME TO VEHICLE - Continued

NOTE: If welding mounting brackets to cross members, skip **instruction 3**.

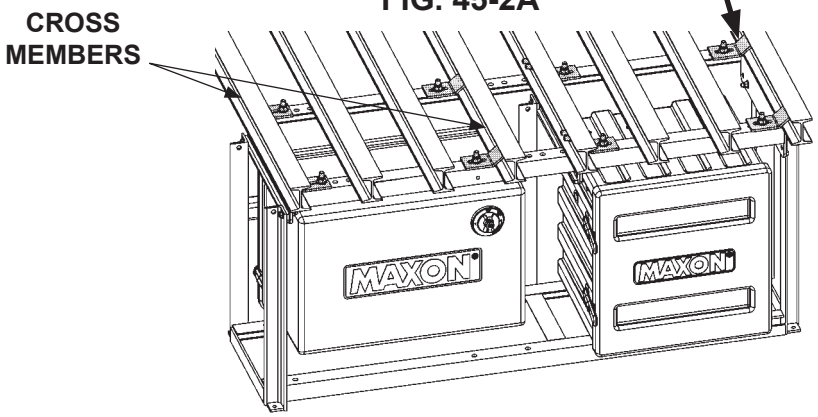
3. Using mounting brackets as a template mark and drill holes through cross members **(FIG. 45-1)**. Bolt mounting brackets to cross members as shown in **FIGS. 45-2 and 45-2A**. Torque bolts and lock nuts to **85-128 lb-ft**.



MARK AND DRILL
FIG. 45-1



BOLTING BRACKETS
(8 PLACES)
FIG. 45-2A



BOLTING PUMP & BATTERY BOX FRAME
FIG. 45-2

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STEP 7 - ATTACH PUMP & BATTERY BOX FRAME TO VEHICLE - Continued

⚠ WARNING

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 can result from welds that are done incorrectly.

CAUTION

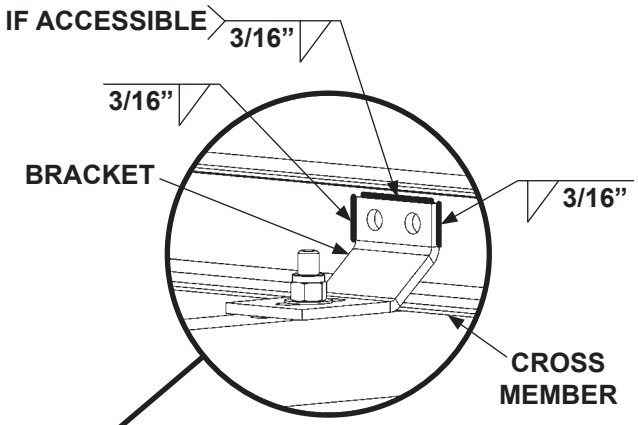
To prevent pump box components from being damaged by electric current from welding, connect welder grounding cable to the part being welded.

CAUTION

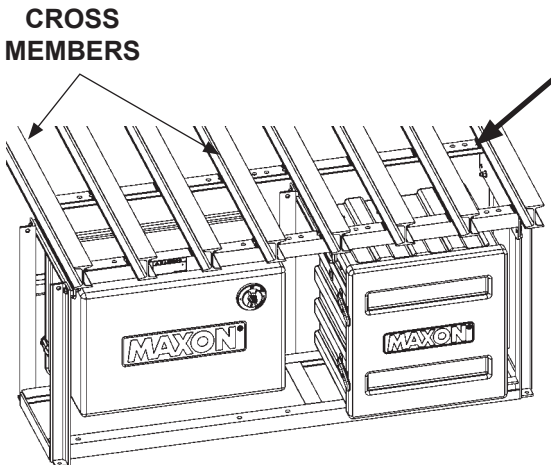
Cover pump box and optional battery box with flame-resistant covering before welding pump box frame to vehicle.

NOTE: Grind galvanized surface material from areas to be welded.

4. Weld each bracket to cross members as shown in **FIGS. 46-1 and 46-1A**. Weld top of bracket if accessible.



WELDING BRACKETS (8 PLACES) FIG. 46-1A



WELDING PUMP & BATTERY BOX FRAME FIG. 46-1

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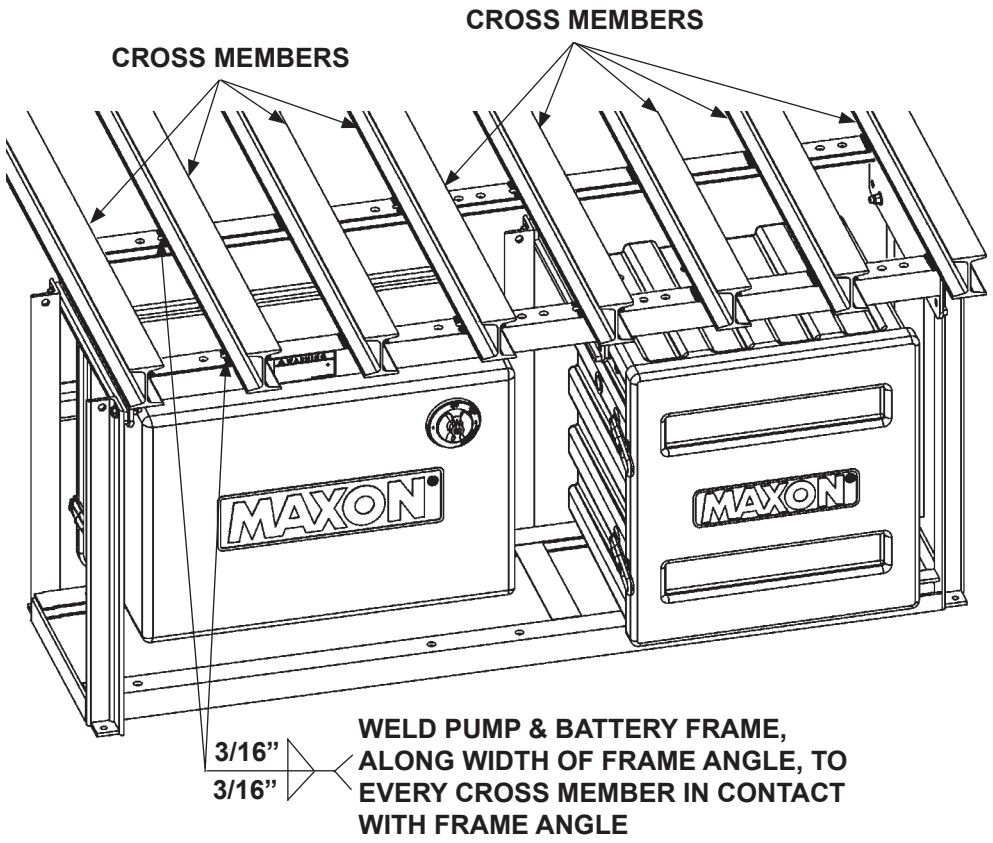
STEP 7 - ATTACH PUMP & BATTERY BOX FRAME TO VEHICLE - Continued

⚠ WARNING

Explosive hydrogen gas from charging batteries can accumulate in battery box if not vented from the box. To prevent hydrogen gas from accumulating, ensure the 3 ventilation holes in battery box are not plugged or covered.

NOTE: Any methods not shown in this section, for welding mounting brackets to cross members, must be approved by body or trailer manufacturer.

5. Position pump and battery box frame on vehicle frame cross members **(FIG. 47-1)**. Ensure vent holes on back of the battery box are not obstructed or covered **(FIG. 48-1)**. Weld pump and battery box frame to cross members as shown in **FIG. 47-1**.



ALIGNING PUMP & BATTERY BOX FRAME TO WELD ON CROSS MEMBERS FIG. 47-1

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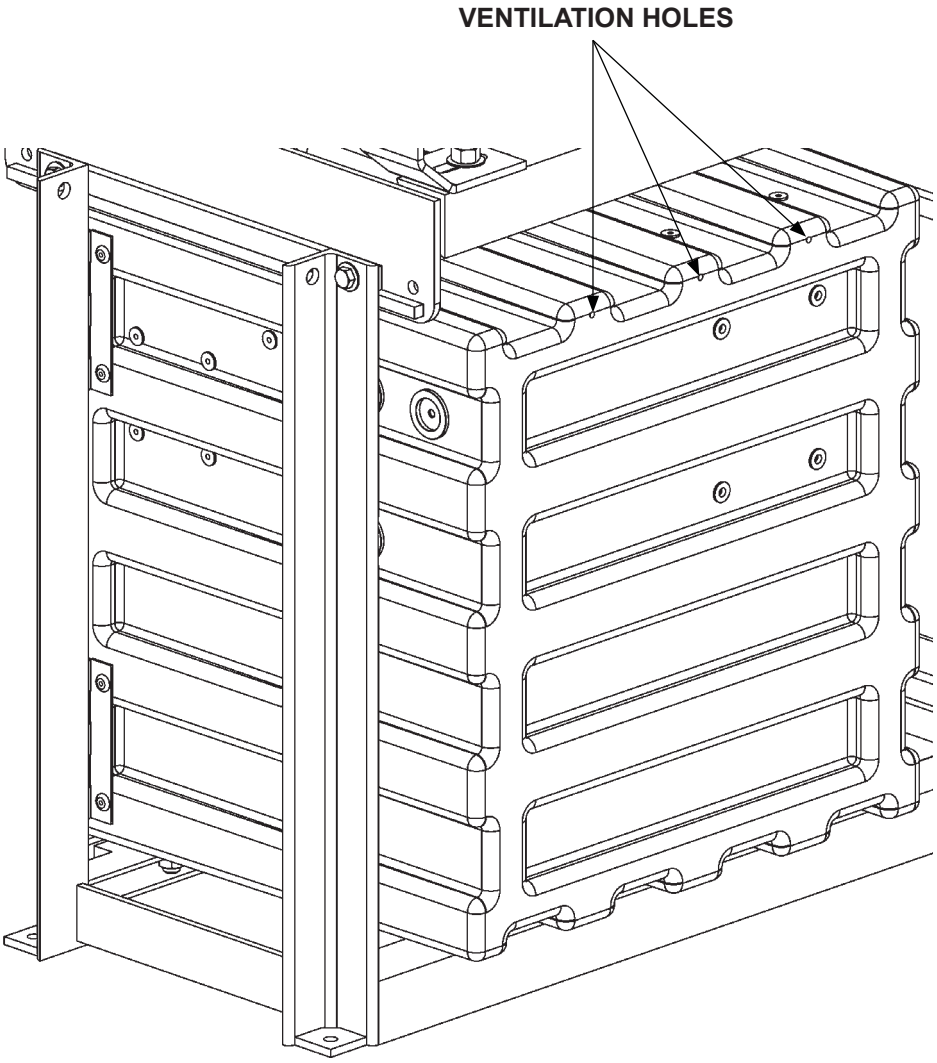
STEP 7 - ATTACH PUMP & BATTERY BOX FRAME TO VEHICLE - Continued



BATTERY BOX ASSEMBLY
(REAR VIEW SHOWN)
FIG. 48-1

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STEP 8 - RUN HYDRAULIC LINES & ELECTRIC CABLES

⚠ CAUTION

Always route hydraulic hoses and electrical wiring clear of moving parts, brake lines, sharp edges and exhaust systems. Avoid making sharp bends in hoses and wiring. Make sure that bends in the electrical wiring are 1" or more away from electrical connector. Attach securely. If drilling is necessary, first check behind the drilling surface so you do not damage any fuel lines, vent lines, brake lines or wires.

NOTE: The hydraulic cylinders in the Liftgate are filled with hydraulic fluid and bled at the factory. To keep air out of the hydraulic system, follow instructions carefully for installing hydraulic system components.

NOTE: The fold and unfold hydraulic hoses are identical hoses. To avoid confusion when running hoses through the channel, MAXON recommends taping both ends of one of the hoses for easy identification.

NOTE: Use channel guard from **Step 5** and other available kits to protect hydraulic hoses and electrical cables. Butt channel guards together and cut to length to fully protect the run of hoses and cables.

1. Get hydraulic hoses, hydraulic tee, channel guard (if required) and plastic ties from parts box and pump box installation kit. Run hydraulic hoses from LH and RH columns to pump box. Connect hydraulic hoses as shown in **FIG. 50-1** and **TABLES 51-1 and 51-2** for Gravity Down Liftgate or **FIG. 53-1** and **TABLES 54-1 and 54-2** for Power Down Liftgate.

2. Get interconnect harness from pump box installation kit. Run the interconnect harness from pump box to RH and LH columns as shown in **FIG. 53-1**.

3. If channel guard is required, bolt up one side of the channel **(FIGS. 50-1, 53-1 and 55-1)** to vehicle body. Leave bolts loose until all hydraulic hoses **(FIGS. 50-1 and 53-1)** and wiring harness **(FIG. 55-1)** are run through channel. After hoses and wiring harness are run, bolt up second side of channel and tighten all bolts and nuts. Use plastic ties to secure runs of hydraulic hoses and wiring harness that are outside of channel guard.

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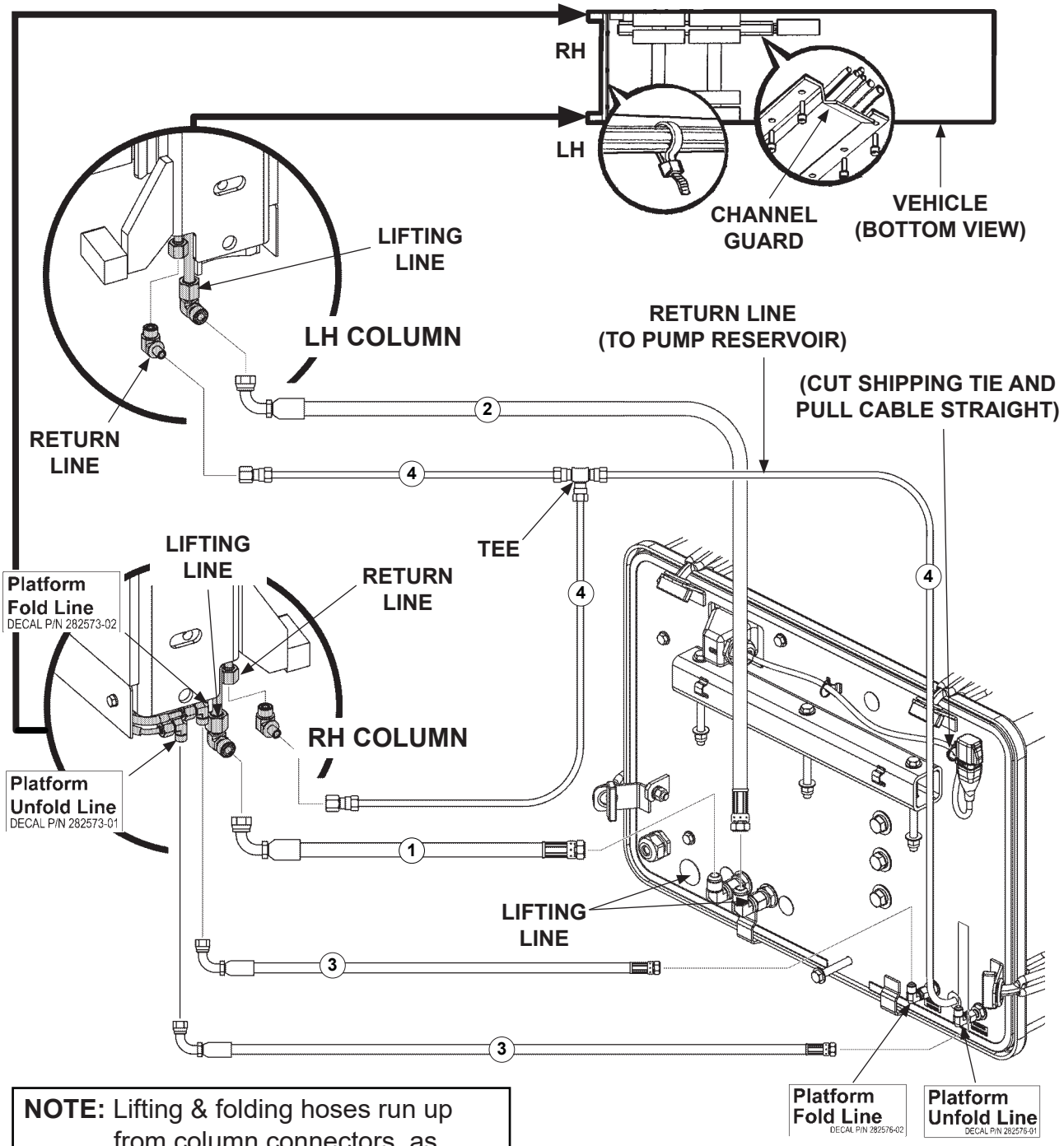
STEP 8 - RUN HYDRAULIC LINES & ELECTRIC CABLES - Continued

RUN GRAVITY DOWN HYDRAULIC LINES

NOTE: See **TABLES 51-1 and 51-2** for information on the numbered hoses in this illustration.

CAUTION

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



NOTE: Lifting & folding hoses run up from column connectors, as shown, to bottom of vehicle floor.

FIG. 50-1

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STEP 8 - RUN HYDRAULIC LINES & ELECTRIC CABLES - Continued

RUN GRAVITY DOWN HYDRAULIC LINES

NOTE: Each pump extension kit contains 2 hoses of the same length **(item 3)**. One hose is for the **Platform Fold Line** and the second hose is for the **Platform Unfold Line**. One hose has a yellow band on each connector to help connect the 2 hoses to the correct fittings. For example, connect hose with yellow bands to the **Fold Line** on the RH column and the **Fold Line** on the back of the pump box.

NOTE: For torque values for the hydraulic hose connectors, see **TABLES 52-1, 52-2 and 52-3**.

GRAVITY DOWN PUMP BOX INSTALLATION: REQUIRED HOSES & PLASTIC TUBING			
	3 FT.	**10 FT.**	**15 FT.**
1	HP 3/8” X 80” LG.	HP 3/8” X 196” LG.	HP 3/8” X 256” LG.
2	HP 3/8” X 158” LG.	HP 3/8” X 274” LG.	HP 3/8” X 334” LG.
3	HP 1/4” X 72” LG.	HP 1/4” X 188” LG.	HP 1/4” X 248” LG.
4	PLASTIC 3/8” OD X 84” LG.	PLASTIC 3/8” OD X 192” LG.	PLASTIC 3/8” OD X 264” LG.

TABLE 51-1

GRAVITY DOWN PUMP BOX INSTALLATION: REQUIRED HOSES & PLASTIC TUBING		
	20 FT.	**28 FT.**
1	HP 3/8” X 316” LG.	HP 3/8” X 412” LG.
2	HP 3/8” X 394” LG.	HP 3/8” X 490” LG.
3	HP 1/4” X 308” LG.	HP 1/4” X 404” LG.
4	PLASTIC 3/8” OD X 324” LG.	PLASTIC 3/8” OD X 420” LG.

TABLE 51-2

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STEP 8 - RUN HYDRAULIC LINES & ELECTRIC CABLES - Continued

TORQUE VALUES FOR HYDRAULIC CONNECTORS

SAE O-RING CONNECTORS

SIZE	TORQUE (LB-FT)	TORQUE (NEWTON-METER)
-4	13-15	17.6-20.3
-6	22-24	29.8-32.5
-8	40-43	54.2-58.3

TABLE 52-1

SAE 37 DEGREE FLARE CONNECTORS

SIZE	TORQUE (LB-FT)	TORQUE (NEWTON-METER)
-4	11-12	14.9-16.3
-6	18-20	24.4-27.1
-8	36-39	48.8-52.8

TABLE 52-2

O-RING FACE-SEAL CONNECTORS

SIZE	TORQUE (LB-FT)	TORQUE (NEWTON-METER)
-4	17-18	23-25.4
-6	25-27	33.9-37.3
-8	38-41	51.5-56.7

TABLE 52-3

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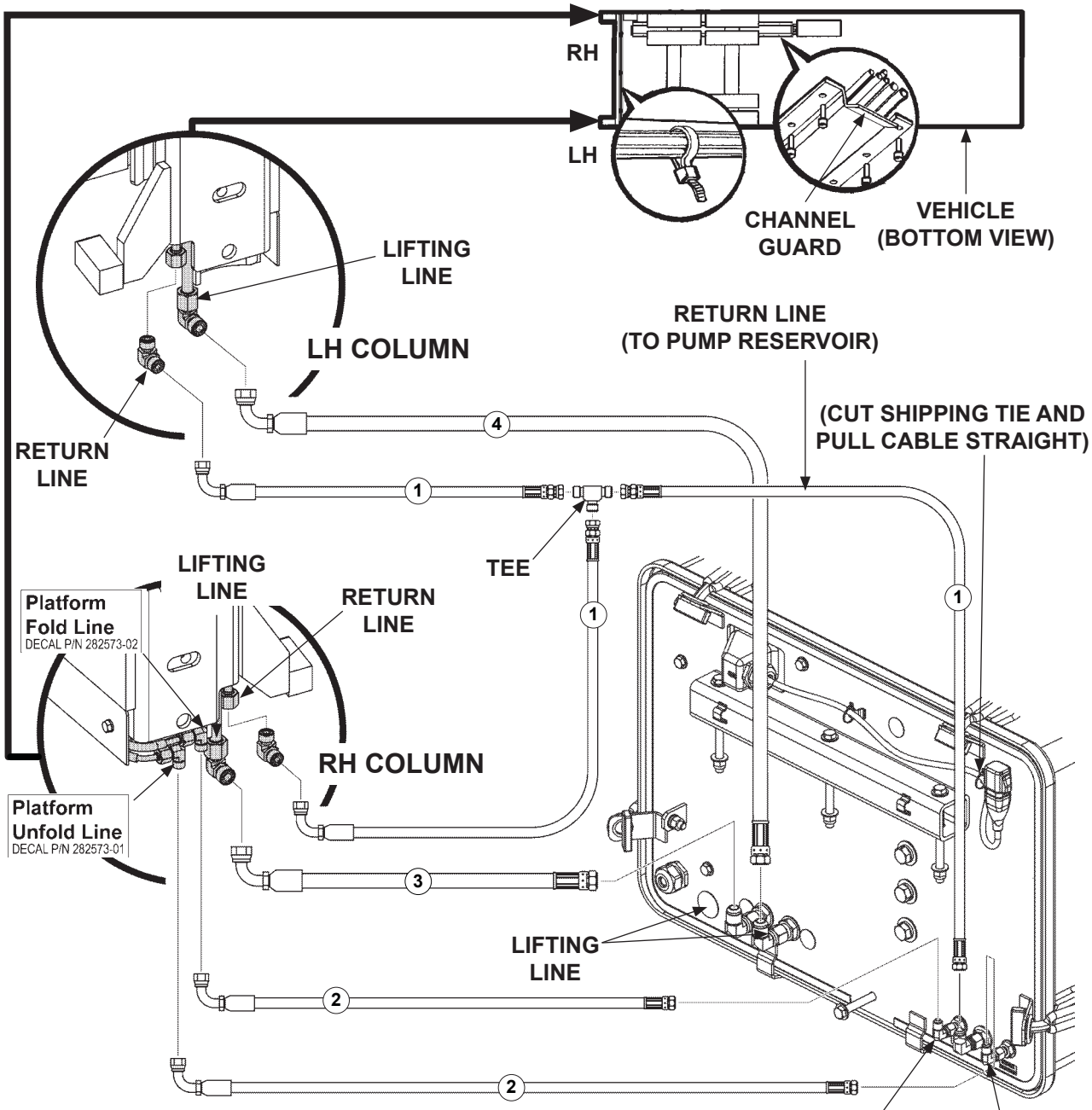
STEP 8 - RUN HYDRAULIC LINES & ELECTRIC CABLES - Continued

RUN POWER DOWN HYDRAULIC LINES



NOTE: Lifting and folding hoses run up from column connectors, as shown, to bottom of vehicle floor.

FIG. 53-1

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STEP 8 - RUN HYDRAULIC LINES & ELECTRIC CABLES - Continued

RUN HYDRAULIC LINES

NOTE: Each pump extension kit contains 2 hoses of the same length **(item 1)**. One hose is for the **Platform Fold Line** and the second hose is for the **Platform Unfold Line**. One hose has a yellow band on each connector to help connect the 2 hoses to the correct fittings. For example, connect hose with yellow bands to the **Fold Line** on the RH column and the **Fold Line** on the back of the pump box.

NOTE: See **TABLES 52-1, 52-2 and 52-3** for hydraulic fittings torque values.

POWER DOWN PUMP BOX INSTALLATION: REQUIRED HOSES			
	3 FT.	**10 FT.**	**15 FT.**
1	HP 1/4” X 50” LG.	HP 1/4” X 166” LG.	HP 1/4” X 226” LG.
2	HP 1/4” X 72” LG.	HP 1/4” X 188” LG.	HP 1/4” X 248” LG.
3	HP 3/8” X 80” LG.	HP 3/8” X 196” LG.	HP 3/8” X 256” LG.
4	HP 3/8” X 158” LG.	HP 3/8” X 274” LG.	HP 3/8” X 334” LG.

TABLE 54-1

POWER DOWN PUMP BOX INSTALLATION: REQUIRED HOSES		
	20 FT.	**28 FT.**
1	HP 1/4” X 286” LG.	HP 1/4” X 382” LG.
2	HP 1/4” X 308” LG.	HP 1/4” X 404” LG.
3	HP 3/8” X 316” LG.	HP 3/8” X 412” LG.
4	HP 3/8” X 394” LG.	HP 3/8” X 490” LG.

TABLE 54-2

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STEP 8 - RUN HYDRAULIC LINES & ELECTRIC CABLES - Continued

RUN ELECTRIC CABLES

NOTE: Liftgates with auxiliary or street-side controls have a tee assembly with three green connectors. Use the following procedure on all green connectors.

1. Locate GREEN connector at the base of RH column, that connects runner switch to interconnect harness **(FIG. 55-1)**.

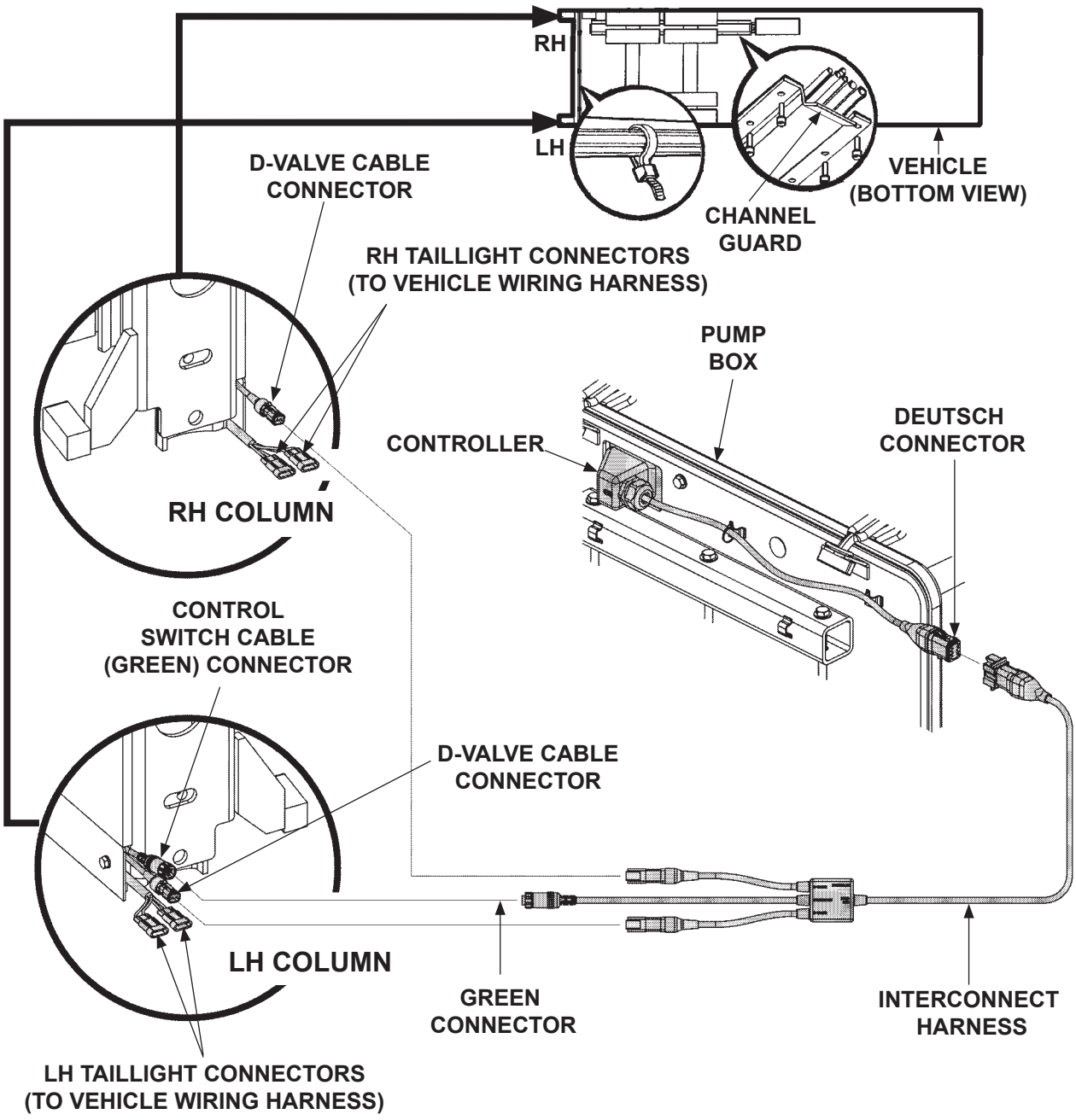

FIG. 55-1

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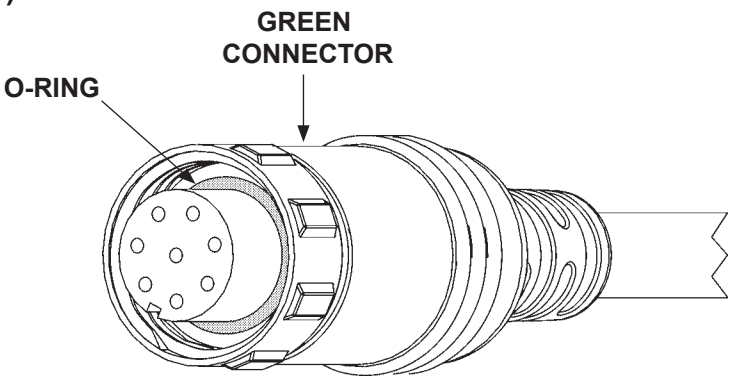
STEP 8 - RUN HYDRAULIC LINES & ELECTRIC CABLES - Continued

RUN ELECTRIC CABLES

2. Check that O-ring is in position and there is no dirt or debris on the O-ring or in the connector with sockets **(FIG. 56-1)**.



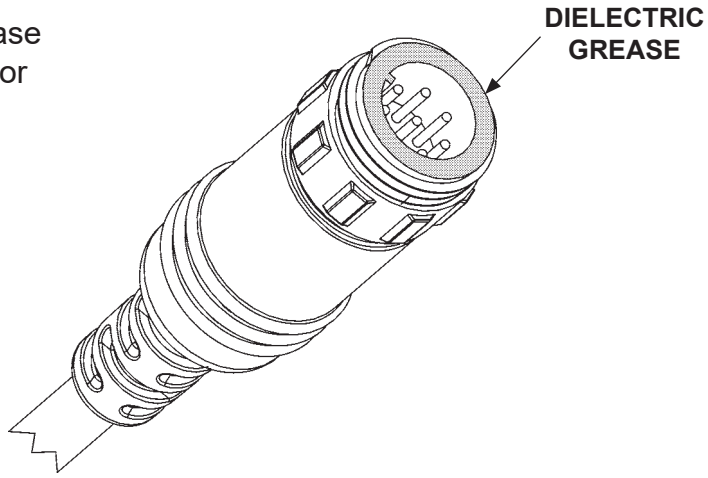
CHECKING CONNECTOR O-RING
FIG. 56-1

3. Slide a 2” long piece of 1” diameter heat shrink sleeving **(P/N 905189-04 in parts box)** over the connector.

CAUTION

Do **NOT** apply any dielectric grease to the pins or inside the connectors.

4. Apply a thin coating of dielectric grease around the outer face of the connector with pins, as shown in **FIG. 56-2**.



APPLYING DIELECTRIC GREASE TO CONNECTOR
FIG. 56-2

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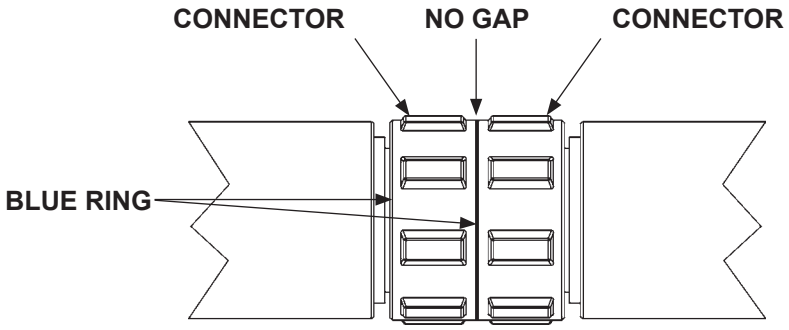
STEP 8 - RUN HYDRAULIC LINES & ELECTRIC CABLES - Continued

RUN ELECTRIC CABLES

5. Align the keyed connectors and push together. Tighten blue rings until fully seated with no gap between the connectors. Grip both ends of connector firmly by hand and tighten **(FIG. 57-1)**.



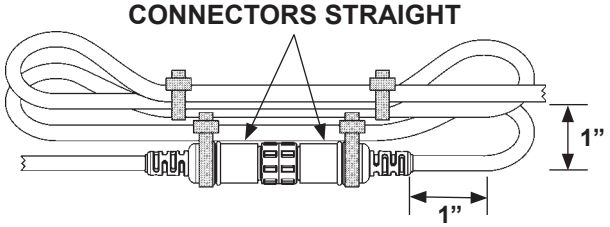
ALIGNING AND TIGHTENING CONNECTORS
FIG. 57-1

6. Center heat shrink sleeving over connection and apply heat until sleeving is fully sealed around the connectors.

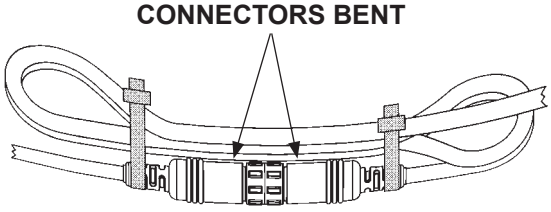
CAUTION

Bending connectors will result in damaged connectors. Tie connector housings to cable bundle to prevent damage.

7. Secure harness under trailer with plastic ties, as needed. Ensure cables exiting the connectors are stress-relieved. Cables should exit connector with 1” of straight cable before bending to maximum 1” radius **(FIG. 57-2)**.



CORRECT CABLE ALIGNMENT
FIG. 57-2



INCORRECT CABLE ALIGNMENT
FIG. 57-3

NOTE: Go to next page for more information about connecting and disconnecting twist-lock connectors.

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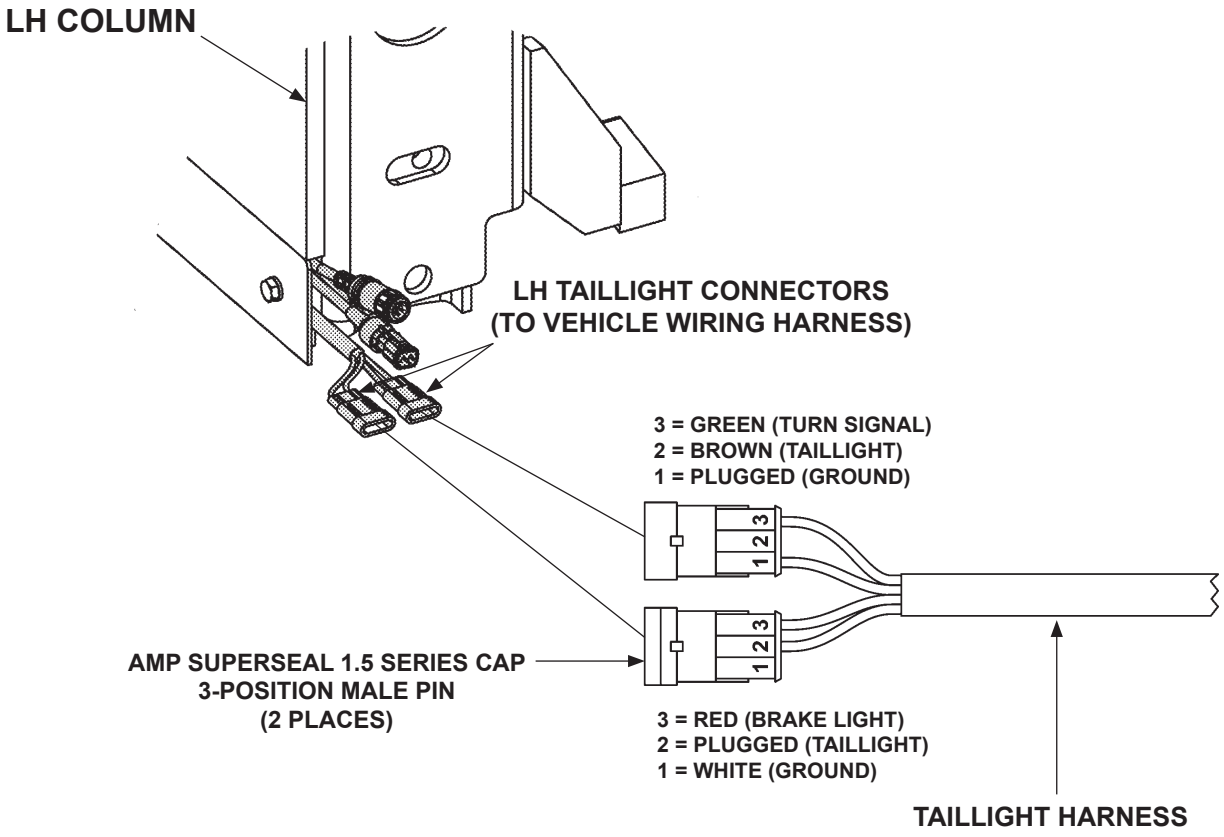
STEP 8 - RUN HYDRAULIC LINES & ELECTRIC CABLES - Continued

RUN ELECTRIC CABLES

8. Connect taillight harness to LH taillight connectors at bottom of LH column **(FIG. 58-1)**.

9. Repeat for RH column.



CONNECTING TAILIGHT HARNESS TO TAILIGHT CONNECTORS (LH COLUMN SHOWN)
FIG. 58-1

STEP 9 - GROUND PUMP TO VEHICLE FRAME

NOTE: Make sure the Liftgate power unit, all batteries on the vehicle for power unit, and taillights on Liftgate are connected correctly to a common ground.

1. Bolt ground cable to the ground stud on pump box **(FIG. 59-1)**.

NOTE: If there is an existing grounding point on truck frame, use it to connect ground cable and skip the step for drilling a hole.

2. Extend the ground cable to reach vehicle frame **(FIG. 59-1B)** without putting tension on cable (after connection). Connect to an existing grounding point if available.

3. If necessary, drill a 11/32” (0.343”) hole in vehicle frame for bolting the ground cable terminal lug **(FIG. 59-1B)**.

NOTE:
- Before connecting ground cable to frame, clean connection point on the frame down to bare metal.
- After connecting ground cable, **MAXON** recommends sealing the ground connection with galvanized coating for galvanized surfaces, or black paint for painted surfaces.

4. Bolt ground cable terminal lug **(FIG. 59-1A)** to vehicle frame as shown in **FIG. 59-1B**.

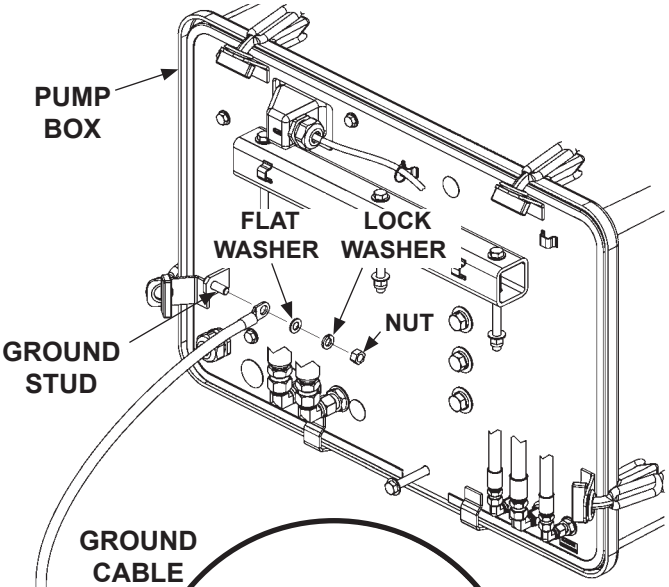


FIG. 59-1

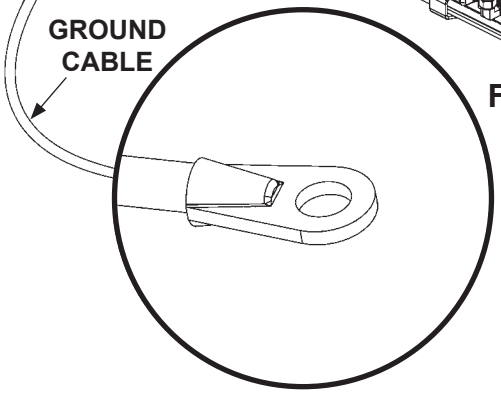


FIG. 59-1A

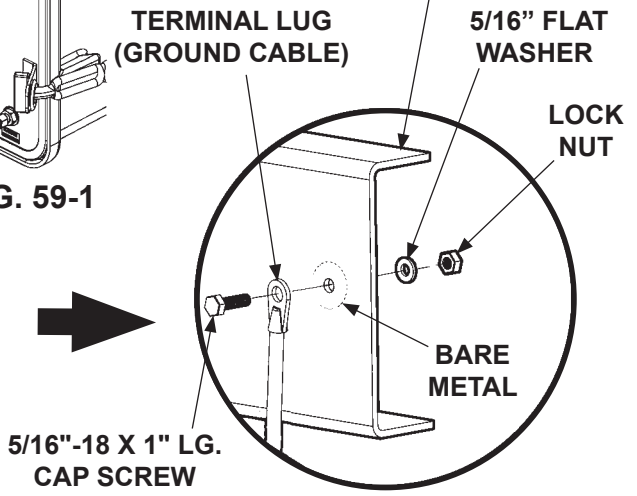


FIG. 59-1B

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STEP 10 - RUN CHARGE LINES

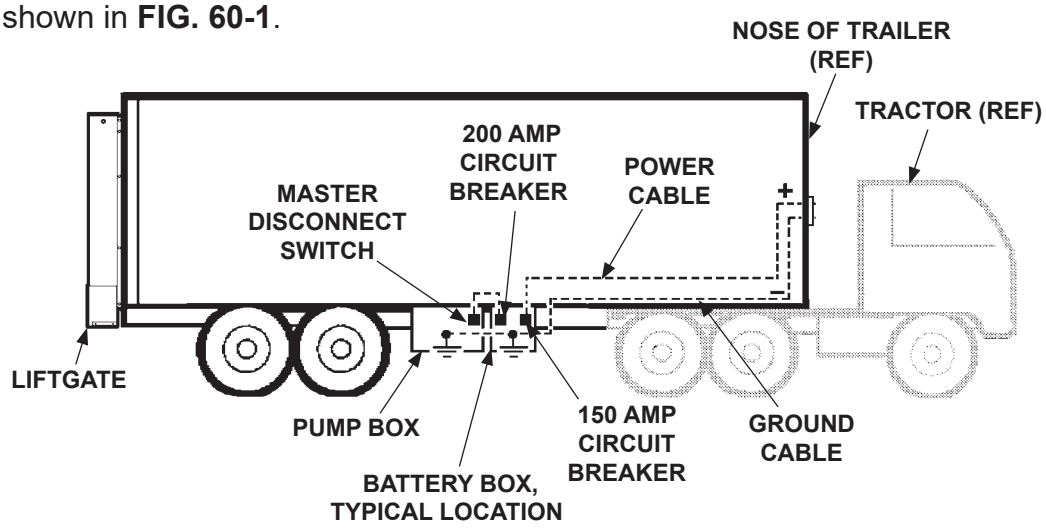
RECOMMENDED POWER CONFIGURATIONS

⚠ CAUTION

Never route an energized wire. Make sure battery is disconnected. Always route electrical wires clear of moving parts, brake lines, sharp edges and exhaust systems. Avoid making sharp bends in wiring. Attach securely. If drilling is necessary, first check behind the drilling surface so you do not damage any fuel lines, vent lines, brake lines or wires.

NOTE: Make sure the power unit for the Liftgate, and all batteries on the vehicle used as the power source, are connected correctly to a common chassis ground.

1. Liftgate, pump box, and battery box are typically installed on trailers as shown in **FIG. 60-1**.



RECOMMENDED LIFTGATE & BATTERY BOX INSTALLATION ON TRAILER
FIG. 60-1

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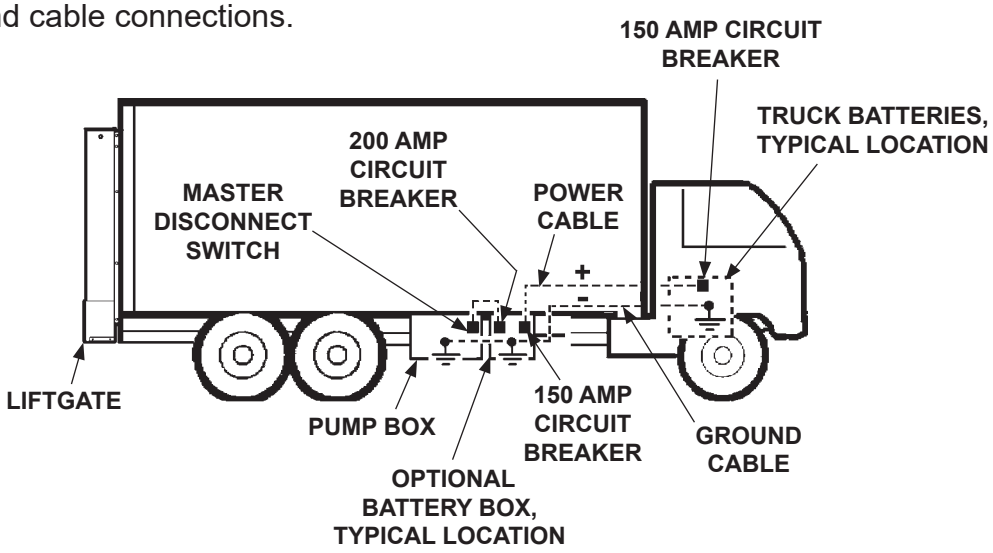
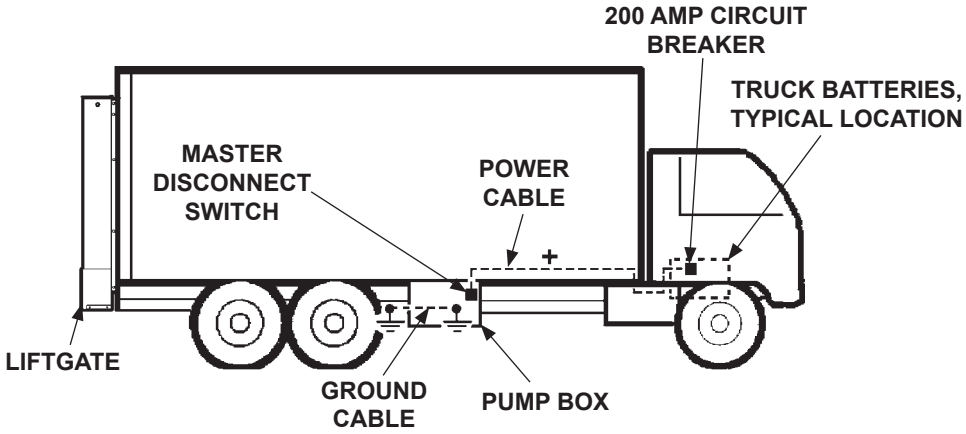
STEP 10 - RUN CHARGE LINES - Continued

2. Liftgate, pump box, and optional battery box are typically installed on trucks as shown in **FIG. 61-1 and FIG. 61-2**. See the following page for battery and cable connections.



RECOMMENDED LIFTGATE & BATTERY BOX INSTALLATION ON TRUCK
FIG. 61-1



RECOMMENDED LIFTGATE INSTALLATION WITHOUT OPTIONAL BATTERY BOX
FIG. 61-2

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STEP 10 - RUN CHARGE LINES - Continued

RUNNING CABLE FROM VEHICLE BATTERY

NOTE: Make sure cable is long enough to reach master disconnect switch on Liftgate pump box, or circuit breaker in optional battery box (if equipped), without putting strain on the cable. If equipped with fused cable, ensure the **fuse** end is by the vehicle battery.

1. Install charge line by running the line along vehicle frame as follows.

- Inside of truck frame **(FIG. 62-1)**
- Bottom of trailer frame

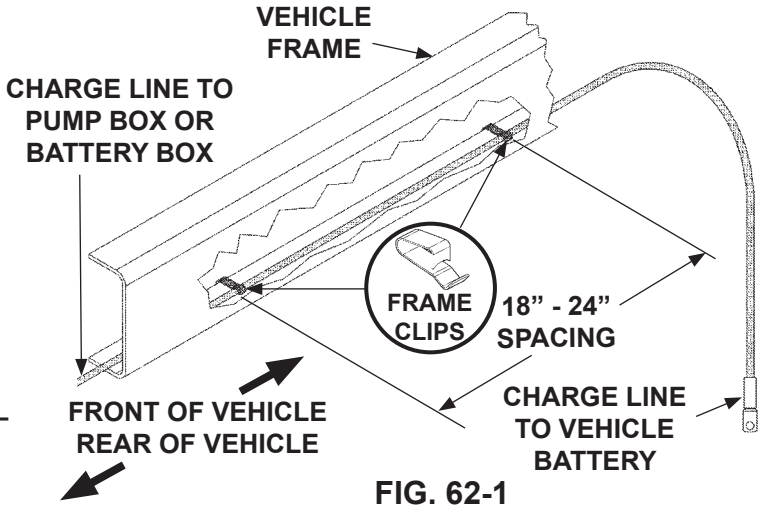

FIG. 62-1

2. Run the charge line from truck battery or nose of trailer to one of the following devices.

- Master disconnect switch on pump box **(FIG. 62-2)**
- The 150 amp circuit breaker in optional battery box **(FIG. 62-3)**

Use frame clips (Parts Box item) **(FIG. 62-1)** and plastic ties, as required from charge line kit, to secure cable to vehicle.

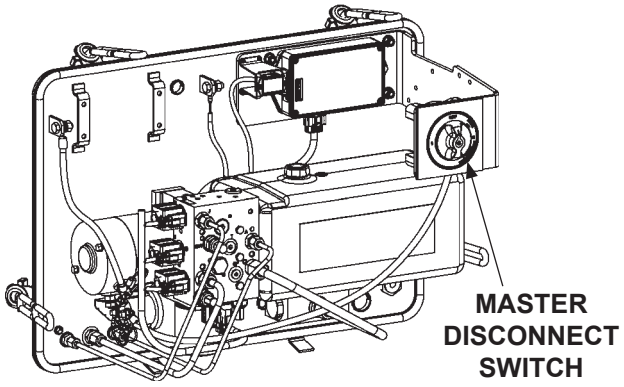

FIG. 62-2

3. If Liftgate comes with:

- Single Pole Tractor Charge Line Kit
- Single Pole Trailer Charge Line Kit
- Dual Pole Tractor Charge Line Kit
- Dual Pole Trailer Charge Line Kit

Install charge line according to **Instruction Sheet** contained in each kit.

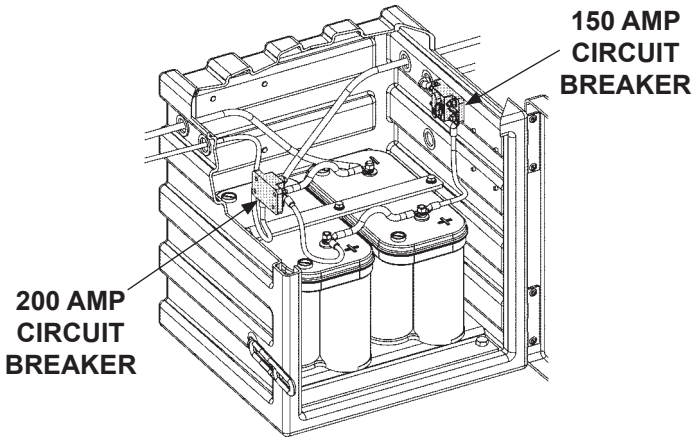

FIG. 62-3

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STEP 11 - CONNECT CHARGE LINES & BATTERIES

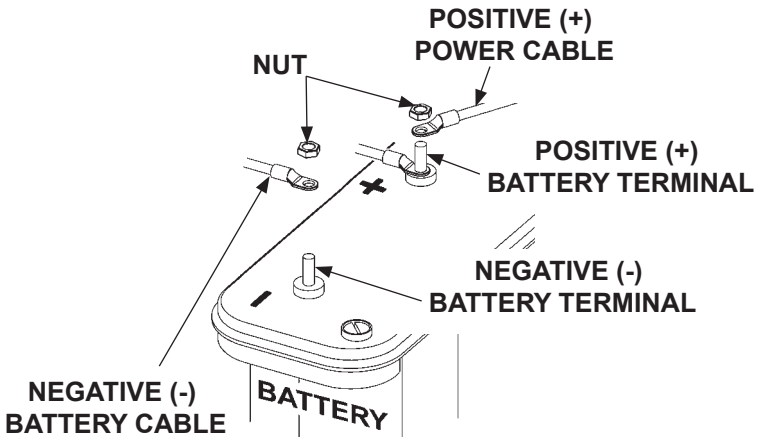
⚠ WARNING

Prevent injury and equipment damage. Before connecting charge lines or power cables, ensure negative (-) battery cable is disconnected at vehicle battery or battery box (if equipped). Ensure master disconnect switch is turned OFF on the pump box.

NOTE: Ensure batteries are fully charged before operating Liftgate & before delivery to customer.

1. Remove nut from negative **(-)** battery terminal. Disconnect negative **(-)** battery cable from vehicle battery **(FIG. 63-1)**. Start nut on the terminal.

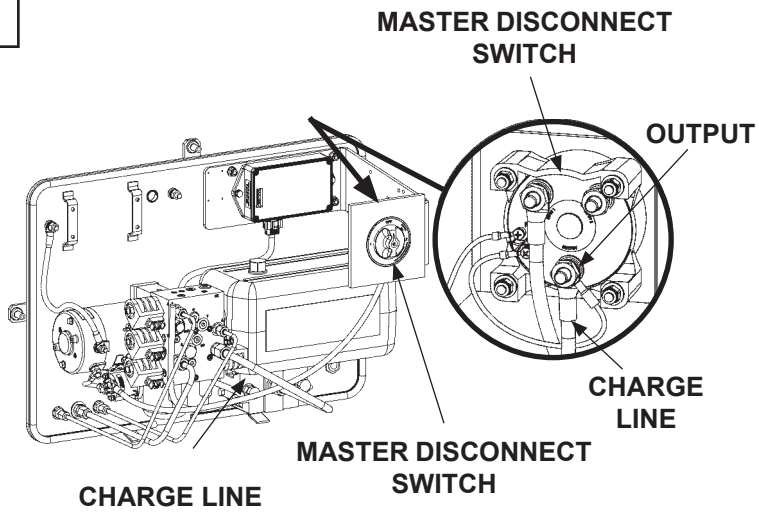
2. Remove nut from positive **(+)** battery terminal. Connect positive **(+)** power cable (charge line) to positive **(+)** battery terminal **(FIG. 63-1)**. Reinstall and tighten nut.



CONNECTING CHARGE LINE TO BATTERY
FIG. 63-1

NOTE: Skip instruction 3 below if connecting to optional battery box.

3. If **vehicle batteries** are used to power the Liftgate, do the following. At the pump box, remove nut from **OUTPUT** terminal on master disconnect switch **(FIG. 63-2)**. Connect positive **(+)** power cable (charge line) to **OUTPUT** terminal on master disconnect switch **(FIG. 63-2)**. Reinstall and tighten nut.



CONNECTING CHARGE LINE TO MASTER DISCONNECT SWITCH
FIG. 63-2

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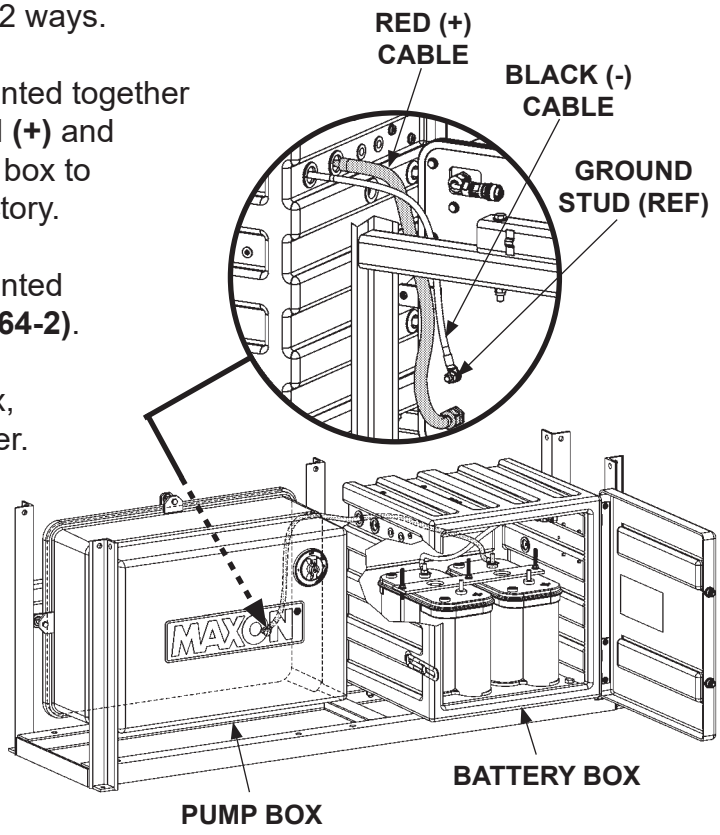
STEP 11 - CONNECT CHARGE LINES & BATTERIES - Continued

NOTE: Skip instruction 4 below if vehicle battery is connected to master disconnect switch on the pump box.

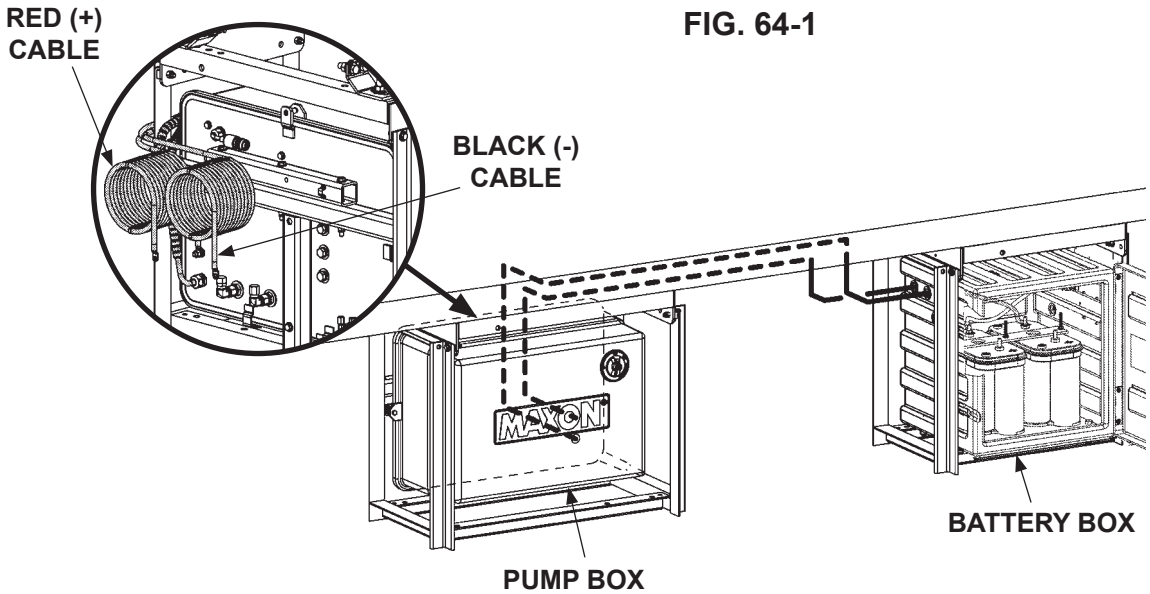
4. If optional battery box is installed for the Liftgate, the battery box is mounted in one of 2 ways.

- Pump box and battery box are mounted together in a dual frame **(FIG. 64-1)**. The red **(+)** and black **(-)** cables, connecting battery box to pump box, are connected at the factory.

- Pump box and battery box are mounted separately in 2 single frames **(FIG. 64-2)**. The red **(+)** and black **(-)** cables, connecting battery box to pump box, need to be connected by the installer. **Go to instruction 5**.



PUMP BOX & BATTERY BOX IN DUAL FRAME
FIG. 64-1



PUMP BOX & BATTERY BOX IN DUAL FRAME
FIG. 64-2

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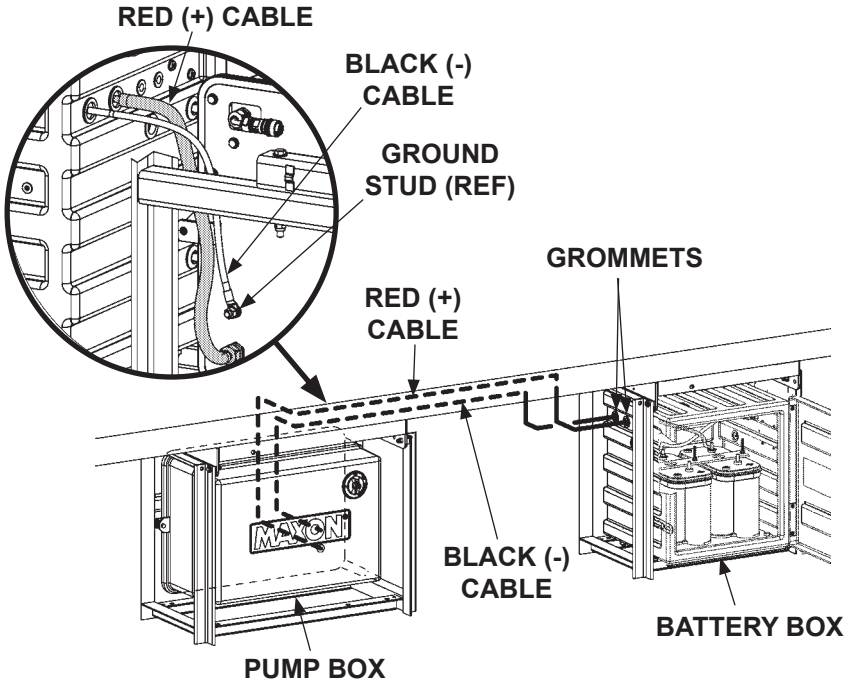
STEP 11 - CONNECT BATTERIES TO LIFTGATE - Cont'd

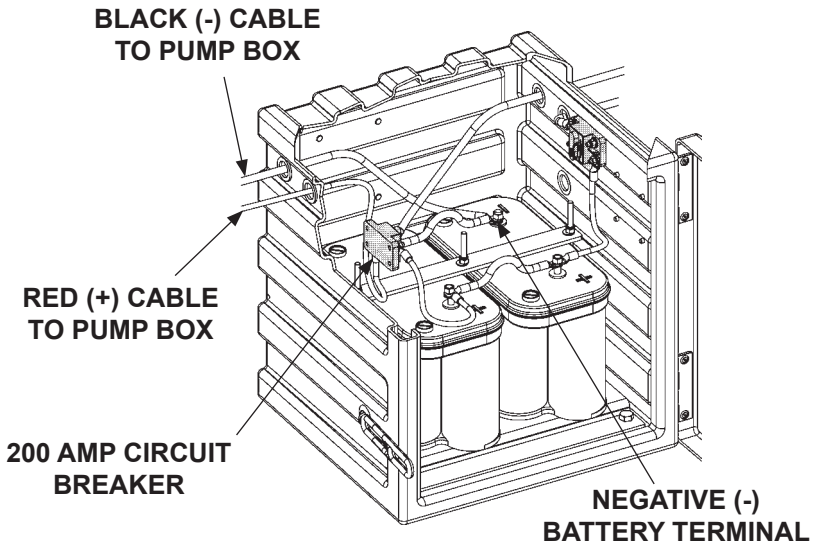
NOTE: The following instructions are only required if Liftgate is equipped with optional battery box, and the pump box and battery box are mounted in separate single frames. In the dual frame shown below, the power cable is connected between pump box and battery box at the factory.

5. Uncoil the red **(+)** cable from back of the pump box **(FIG. 65-1)**. Next, run cable along vehicle frame, through grommet on battery box, and to the 200 amp circuit breaker inside battery box **(FIG. 65-2)**.



PUMP BOX & BATTERY BOX IN SINGLE FRAMES
FIG. 65-1

6. Uncoil the black **(-)** cable from back of the pump box **(FIG. 65-1)**. Next, run cable along vehicle frame, through grommet on battery box, and to the negative **(-)** battery terminal inside battery box **(FIG. 65-2)**.



ELECTRICAL CONNECTIONS IN BATTERY BOX
FIG. 65-2

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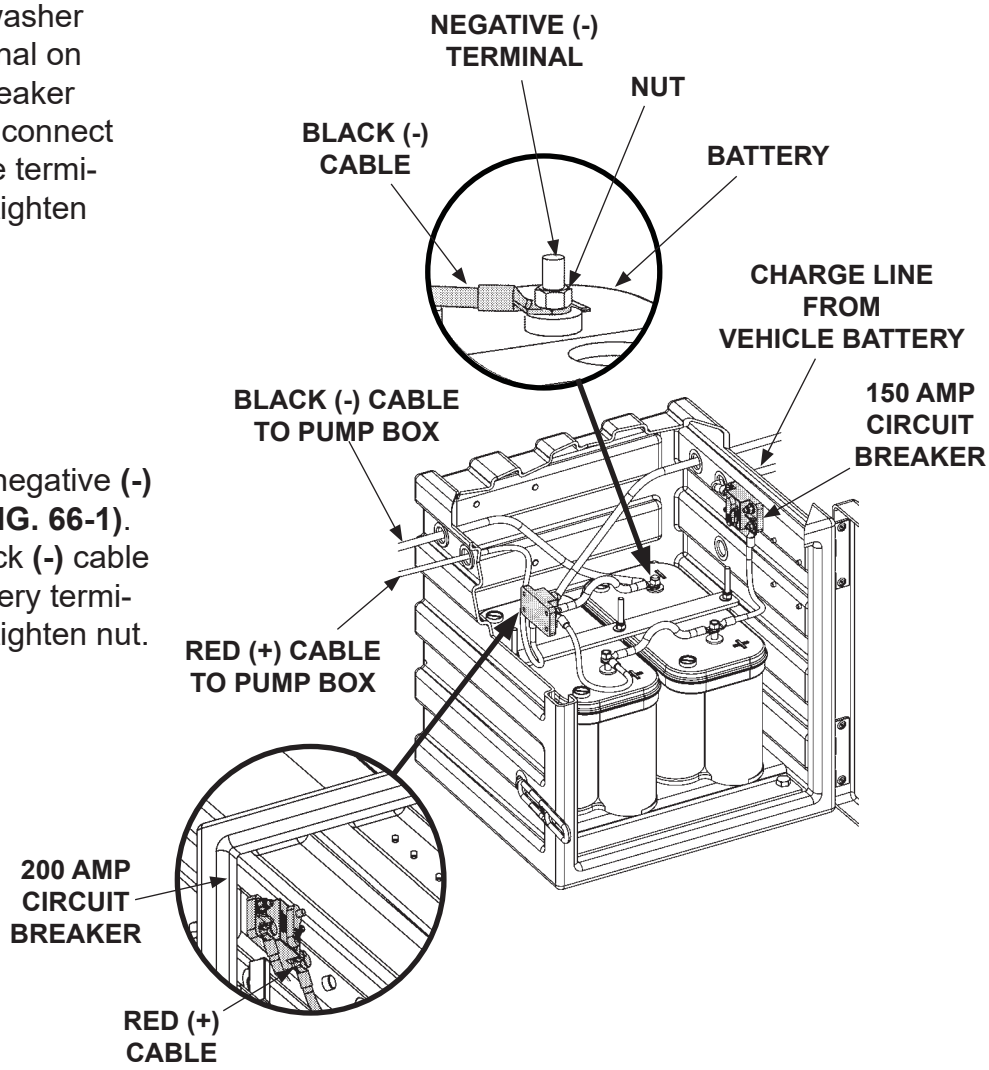
STEP 11 - CONNECT BATTERIES TO LIFTGATE - Cont'd

7. Remove nut and washer from unused terminal on **200 amp** circuit breaker **(FIG. 66-1)**. Then, connect red **(+)** cable to the terminal. Reinstall and tighten nut.

8. Remove nut from negative **(-)** battery terminal **(FIG. 66-1)**. Then, connect black **(-)** cable to negative **(-)** battery terminal. Reinstall and tighten nut.



CONNECTING RED & BLACK CABLES AND CHARGE LINE
FIG. 66-1

9. Remove nut and washer from unused terminal on **150 amp** circuit breaker **(FIG. 66-1)**. Then, connect charge line to the terminal. Reinstall and tighten nut.

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STEP 12 - PRESSURIZE HYDRAULIC SYSTEM

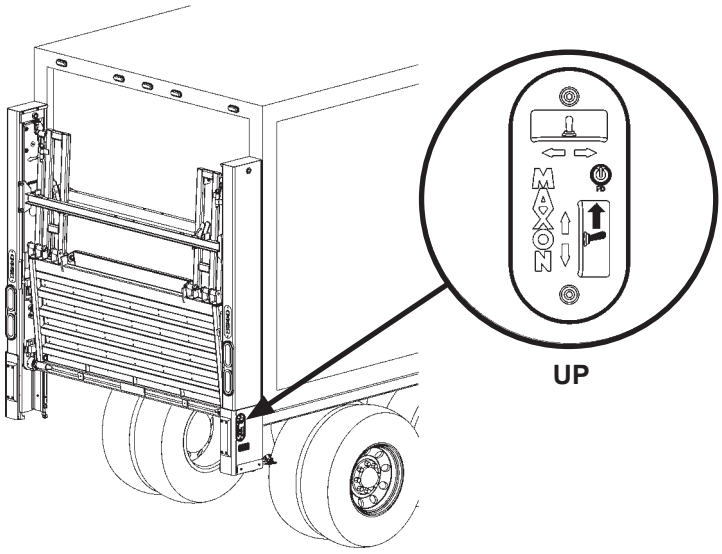
⚠ WARNING

To prevent injury and equipment damage, pressurize hydraulic system before removing lower support fixtures and operating Liftgate.

NOTE: Liftgate is shipped with **Exxon Univis HVI-13** hydraulic fluid in the hydraulic cylinders. Ensure oil level is at **FULL** line on reservoir. This fluid is suitable for operation in temperature range of **-40° F to +120° F**. If necessary, a different brand or higher viscosity hydraulic fluid may be used. Refer to the **CHANGING HYDRAULIC FLUID** procedure in the **BMR-CS Maintenance Manual**.

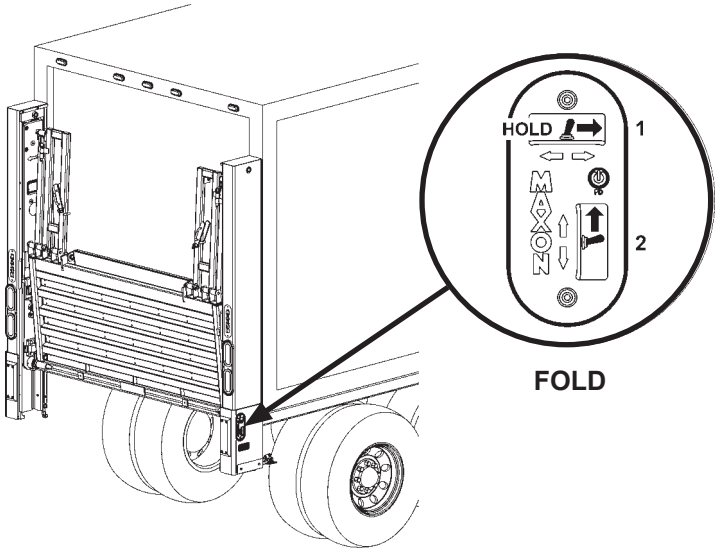
NOTE: Before operating liftgate, read and understand the operating instructions in the **Operation Manual**.

1. To pressurize lifting cylinders, set control box toggle switch to **UP** for 10-15 seconds as shown in **FIG. 67-1**.



PRESSURIZING LIFTING CYLINDERS
FIG. 67-1

2. To pressurize closing cylinder, set control box toggle switches to **FOLD** for 10-15 seconds as shown in **FIG. 67-2**.



PRESSURIZING CLOSING CYLINDER
FIG. 67-2

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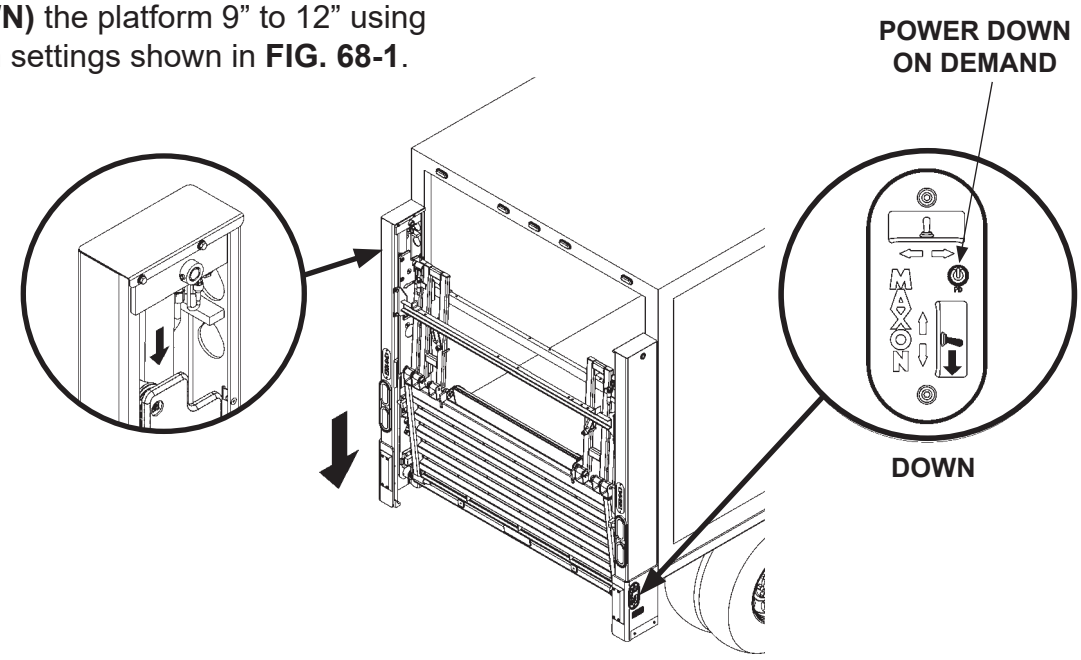
STEP 13 - OPTIMIZE HYDRAULIC FLUID LEVEL

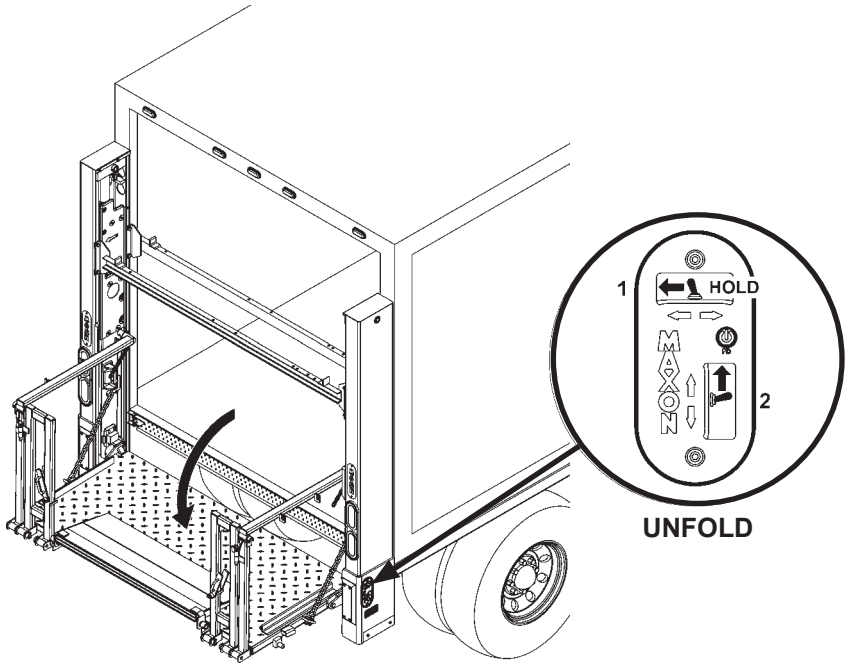
NOTE: If equipped, select **power down on demand** for optimizing hydraulic fluid level **(FIG. 68-1)**.

1. Lower **(DOWN)** the platform 9” to 12” using toggle switch settings shown in **FIG. 68-1**.



LOWERING PLATFORM
FIG. 68-1

2. Open **(UNFOLD)** the platform by setting toggle switches as shown in **FIG. 68-2**.



UNFOLDING PLATFORM
FIG. 68-2

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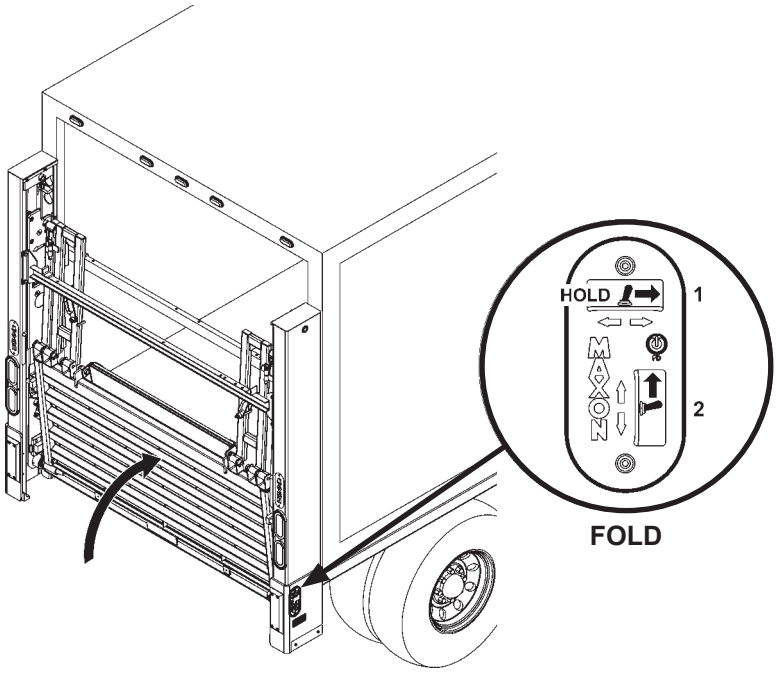
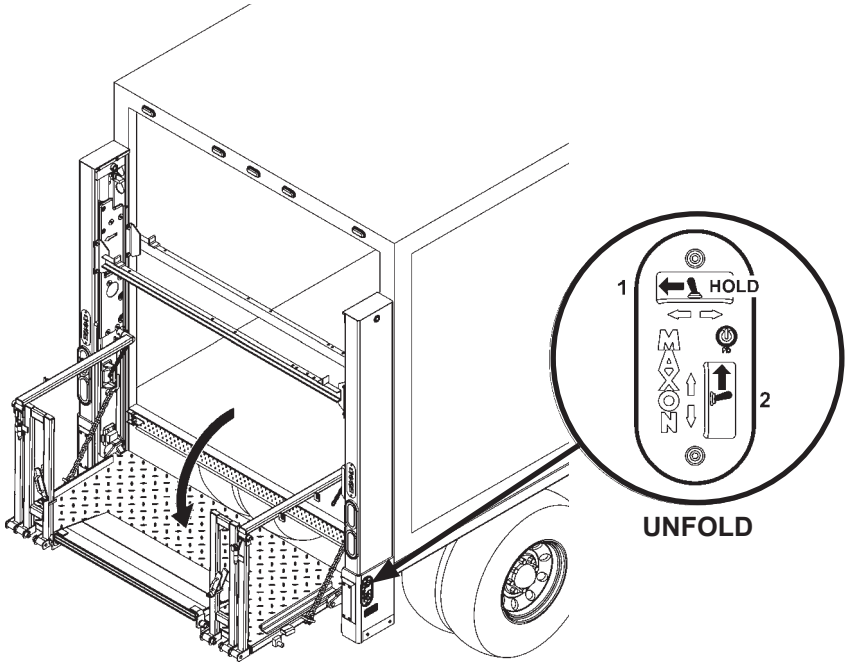
STEP 13 - OPTIMIZE HYDRAULIC FLUID LEVEL - Continued

3. Close **(FOLD)** the platform by setting toggle switches as shown in **FIG. 69-1**. Then, open **(UNFOLD)** the platform by setting toggle switches as shown in **FIG. 69-2**.



FOLDING PLATFORM
FIG. 69-1



UNFOLDING PLATFORM
FIG. 69-2

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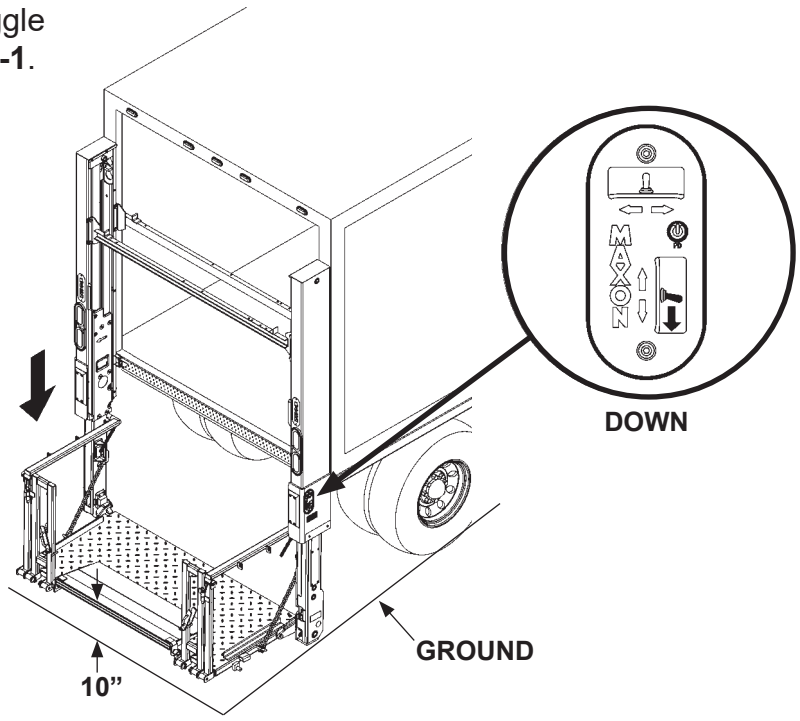
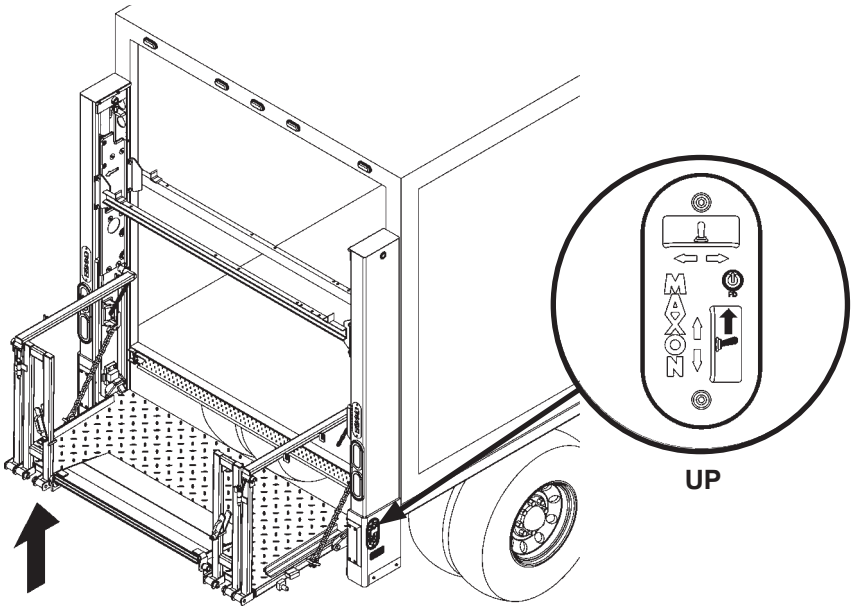
STEP 13 - OPTIMIZE HYDRAULIC FLUID LEVEL - Continued

4. Lower **(DOWN)** the platform to 10" above ground level using the toggle switch settings shown in **FIG. 70-1**.



LOWERING PLATFORM
FIG. 70-1

5. Raise **(UP)** the platform to about 6" below bed height using toggle switch setting shown in **FIG. 70-2**.



RAISING PLATFORM
FIG. 70-2

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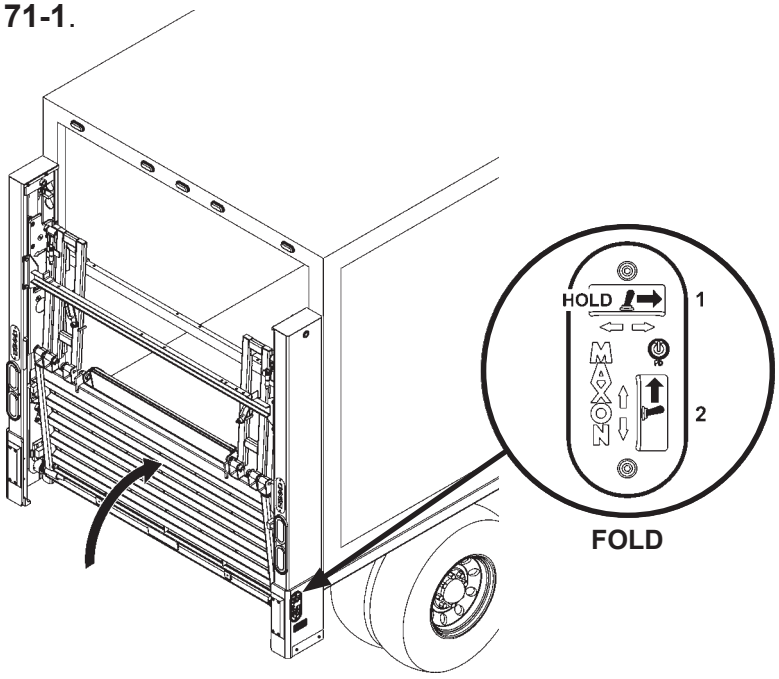
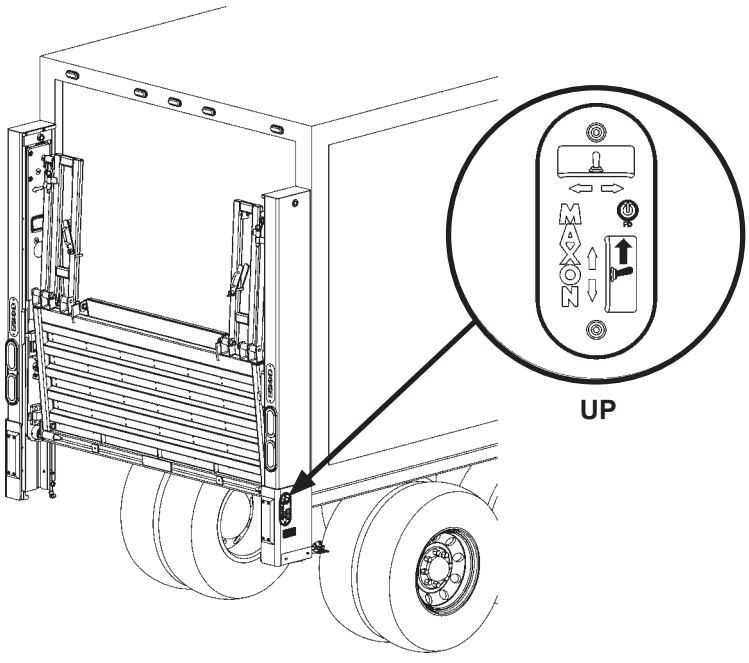
STEP 13 - OPTIMIZE HYDRAULIC FLUID LEVEL - Continued

6. Close **(FOLD)** the platform by setting toggle switches as shown in **FIG. 71-1**.



FOLDING PLATFORM
FIG. 71-1

7. Raise **(UP)** the runners to stow platform by setting toggle switches as shown in **FIG. 71-2**.



RAISING PLATFORM
FIG. 71-2

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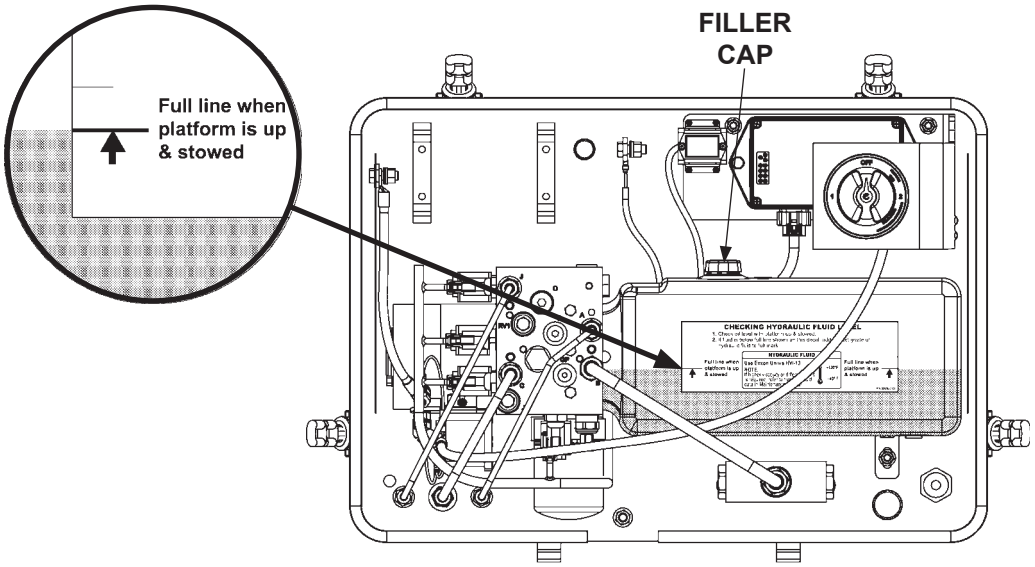
STEP 13 - OPTIMIZE HYDRAULIC FLUID LEVEL - Continued

NOTE: Information for checking hydraulic fluid level is shown on a decal on the pump reservoir.

8. Check if hydraulic fluid level is at the full line **(FIG. 72-1)**. If necessary, remove filler cap **(FIG. 72-1)** and add hydraulic fluid until level rises to the full line **(FIG. 72-1)**. Then, reinstall filler cap **(FIG. 72-1)**.



CHECKING HYDRAULIC FLUID LEVEL
FIG. 72-1

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STEP 14 - REMOVE UPPER SUPPORT FIXTURES

⚠ CAUTION

Upper support fixtures are heavy. To prevent injury to installer and damage to Liftgate, use forklift or hoist to hold support fixtures during removal.

1. Stow the platform as shown in **FIG. 73-1**.

2. Position forklift or hoist to hold upper support fixtures as shown in **FIG. 73-1**.

3. Unbolt the 2 upper support fixtures from the LH column **(FIGS. 73-1 and 73-1A)**. Repeat for RH column. Use forklift to remove upper support fixtures from work area.

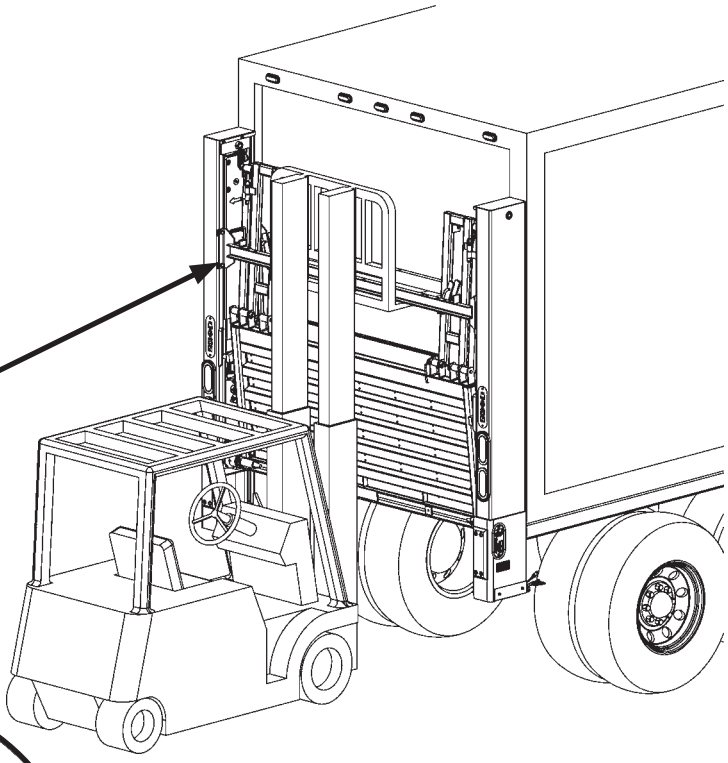

FIG. 73-1

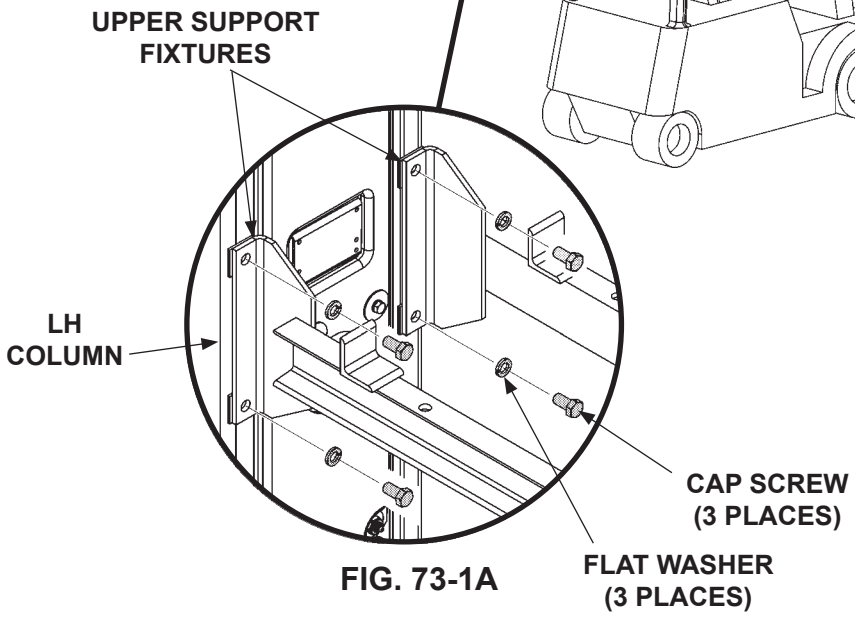

FIG. 73-1A

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STEP 15 - SECURING COLUMNS
METHOD 1 & METHOD 2

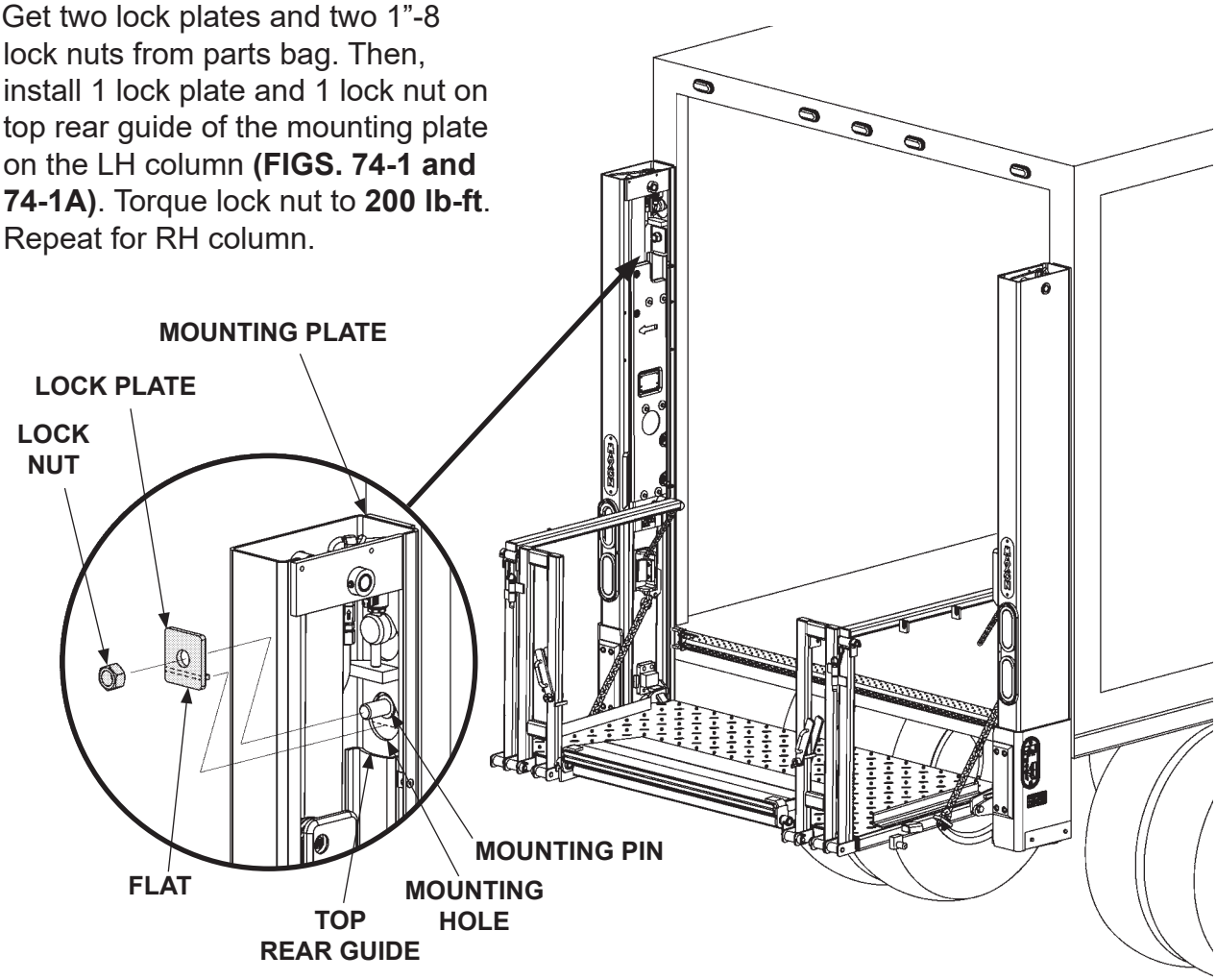
NOTE: Skip this step if using the **METHOD 3** weld-on version of installation with no mounting plates.

1. Slightly lower and open platform for access to mounting pin.

CAUTION

To prevent damage to hydraulic line, ensure flat on lock plate is seated in the mounting hole on the column before tightening lock nut on mounting pin.

2. Get two lock plates and two 1”-8 lock nuts from parts bag. Then, install 1 lock plate and 1 lock nut on top rear guide of the mounting plate on the LH column **(FIGS. 74-1 and 74-1A)**. Torque lock nut to **200 lb-ft**. Repeat for RH column.



INSTALLING LOCK PLATE (LH COLUMN SHOWN) FIG. 74-1A

FIG. 74-1

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STEP 15 - SECURING COLUMNS - Continued
METHOD 1 ONLY

NOTE: Skip **3 and 4 i**f using **METHOD 2 or METHOD 3** to install Liftgate on vehicle.

3. Tighten cap screw against bolt guide in LH column **(FIGS. 75-1 and 75-1A)**. Torque cap screw to **170 lb-ft**. Repeat for RH column.

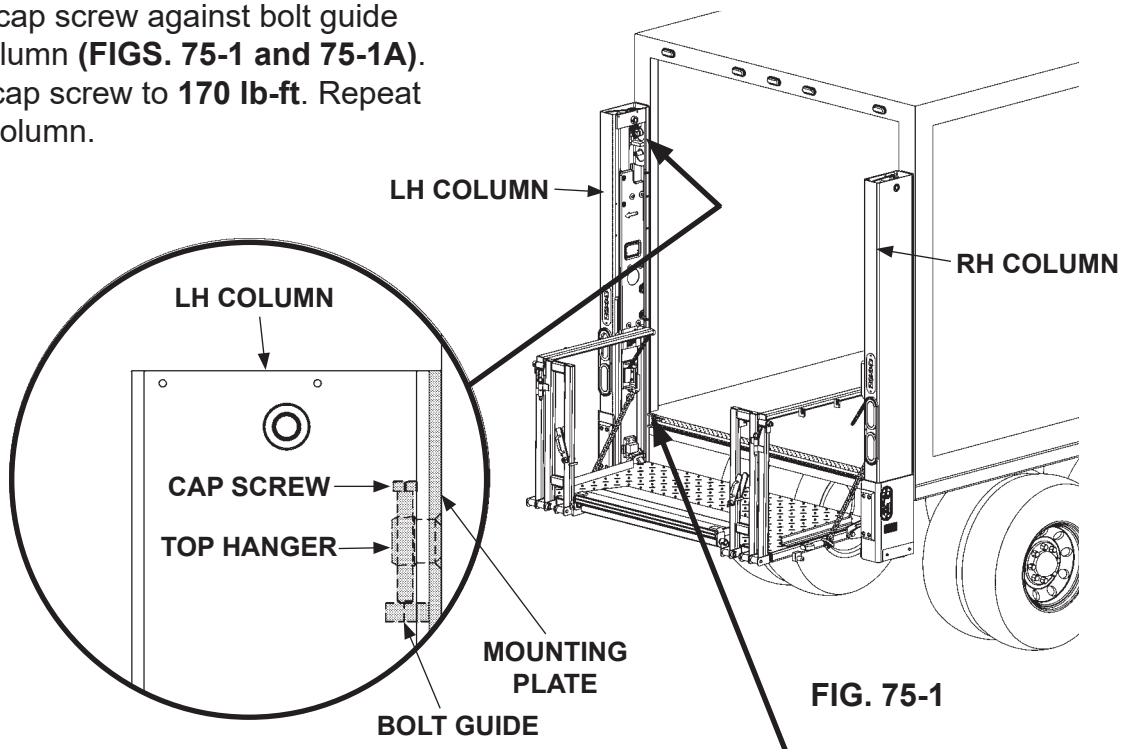
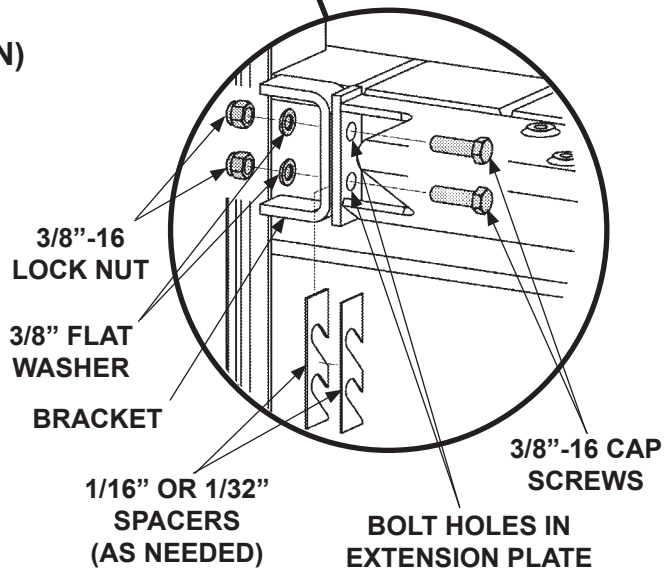


FIG. 75-1

TIGHTENING HANGER CAP SCREW (LH COLUMN SHOWN)
FIG. 75-1A



BOLTING EXTENSION PLATE, IF NEEDED (LH COLUMN SHOWN)
FIG. 75-1B

NOTE: For **METHOD 1**, bolting extension plate to LH and RH columns is not required. However, extension plate may be bolted to LH and RH columns, if needed, and if the bracket holes are aligned correctly.

4. If needed, fill gap between LH column bracket and extension plate with spacers **(FIGS. 75-1 and 75-1B)**. Then, bolt extension plate to column. Torque 3/8”-16 cap screws and lock nuts **35-52 lb-ft**. Repeat for RH column.

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STEP 15 - SECURING COLUMNS - Continued
METHOD 1 & METHOD 2

NOTE: Skip this step if using the **METHOD 3** weld-on version of installation with no mounting plates.

NOTE: MAXON recommends using the upper bolt hole **(FIG. 76-1A)** to attach mounting plate. However, if the upper hole will be covered by vehicle corner post, then use the lower bolt hole **(FIG. 76-1B)**.

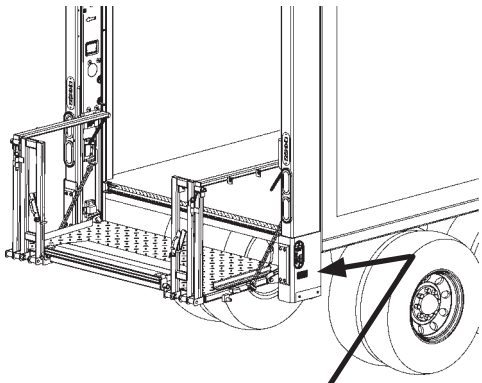
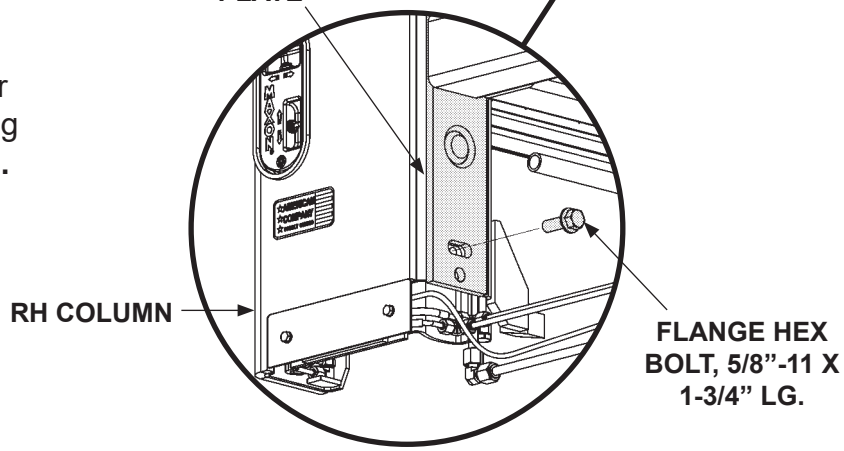


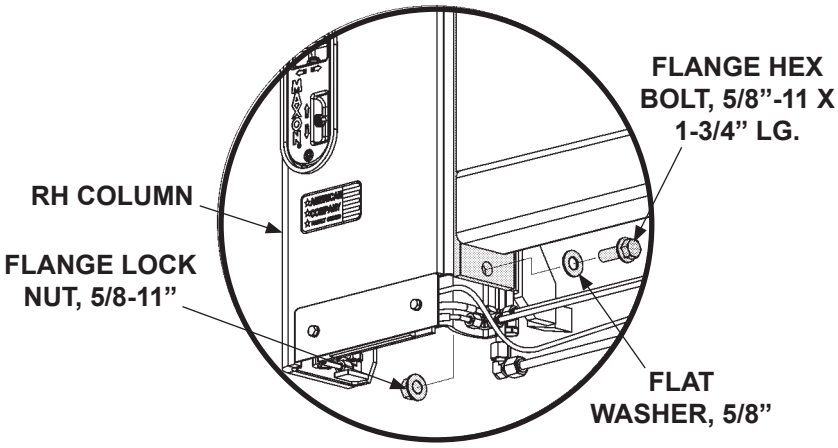
FIG. 76-1

5. Get (2) flange hex bolts, (2) flange lock nuts (if needed), and (2) flat washers (if needed) from parts bag. Then, install (1) bolt, (1) nut (if needed), and (1) flat washer (if needed) through mounting plate and RH column **(FIGS. 76-1, 76-1A and 76-1B)**. Repeat for LH column.



UPPER BOLT HOLE
FIG. 76-1A

6. Torque 5/8”-11 bolts to **170 lb-ft**. Repeat for LH column.



LOWER BOLT HOLE
FIG. 76-1B

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STEP 15 - SECURING COLUMNS - Continued
METHOD 1 & METHOD 2

NOTE: Skip this step if using the **METHOD 3** weld-on installation with no mounting plates.

7. Reinstall RH top column cover, screws, lock washers and flat washers **(FIGS. 77-1 and 77-1A)**. Tighten screws, then repeat for LH top column cover.

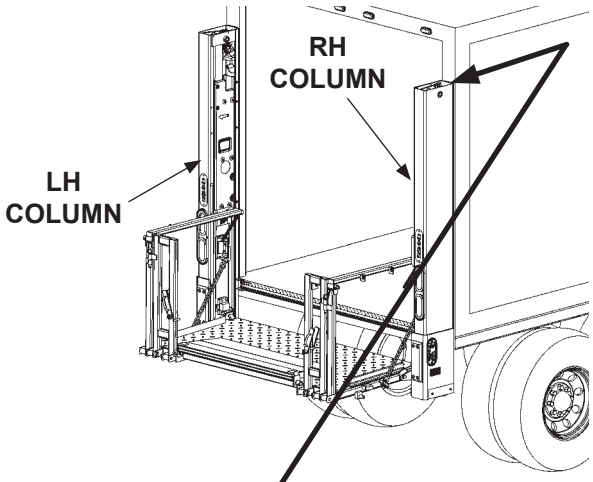
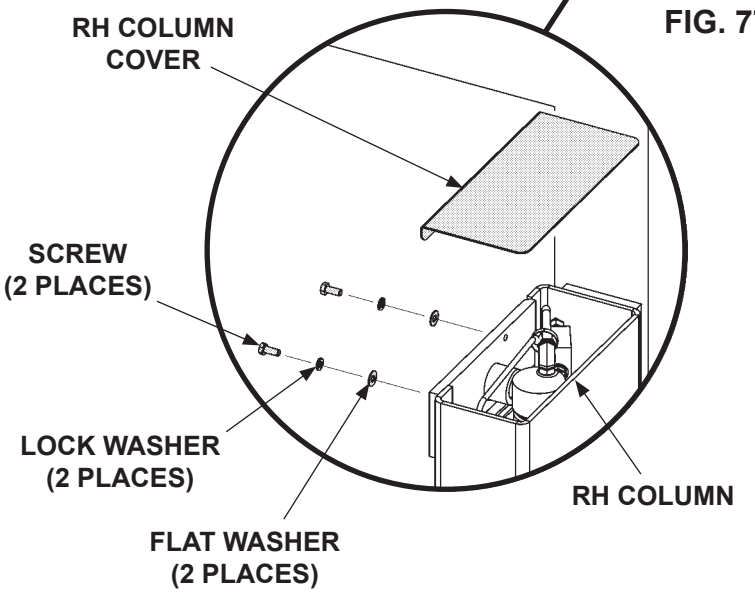


FIG. 77-1



REINSTALLING RH COLUMN COVER
FIG. 77-1A

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STEP 16 - FINISH WELDING LIFTGATE TO VEHICLE
METHOD 2 & METHOD 3 - WELD LIFTGATE TO BODY

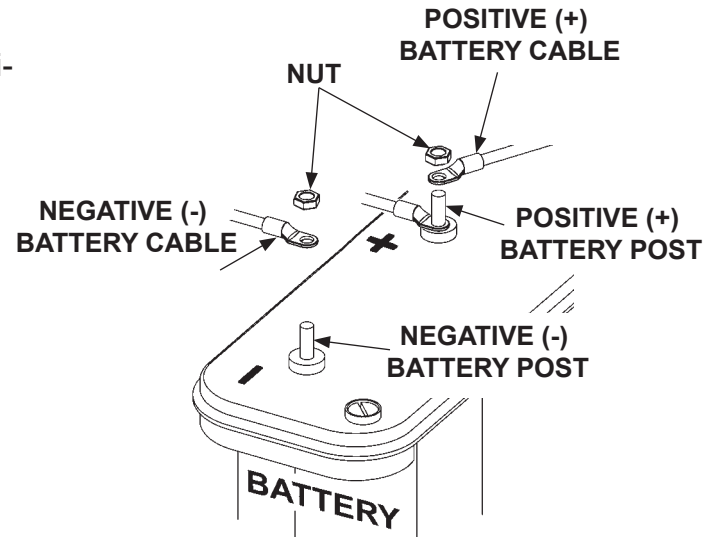
NOTE: Skip this step if using **METHOD 1** installation where mounting plates and extension plate are preinstalled on vehicle.

1. Check operation of Liftgate before final welding. See **BMR-CS Operation Manual**.

⚠ WARNING

To prevent accidental personal injury and equipment damage, disconnect (-) battery cable and (+) cable from battery.

2. Disconnect power to the pump by disconnecting negative **(-)** and positive **(+)** cables from battery **(FIG. 78-1)**. Reinstall nuts on negative **(-)** and positive **(+)** battery terminals.



DISCONNECTING BATTERY POWER
FIG. 78-1

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STEP 16 - FINISH WELDING LIFTGATE TO VEHICLE

METHOD 2 & METHOD 3 - WELD LIFTGATE TO BODY - Continued

⚠ WARNING

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 can result from welds that are done incorrectly.

NOTE: If Liftgate columns cannot be mounted flush against rear of vehicle, a filler such as tubing, channel, or plate stock may be used to bridge gap between vehicle body and Liftgate columns. Make sure the added materials and welds meet the **BODY STRENGTH REQUIREMENTS** indicated in this manual.

CAUTION

To prevent damage to Liftgate:
- **Connect welder ground to vehicle body.**
- **Protect hydraulic hoses and electrical cables with flame-resistant cover.**

NOTE: Grind galvanized surface material from areas to be welded.

3. Cover platform as shown in **FIG. 79-1**.

4. Weld the Liftgate RH and LH columns to vehicle body as shown in **FIG. 79-1**.

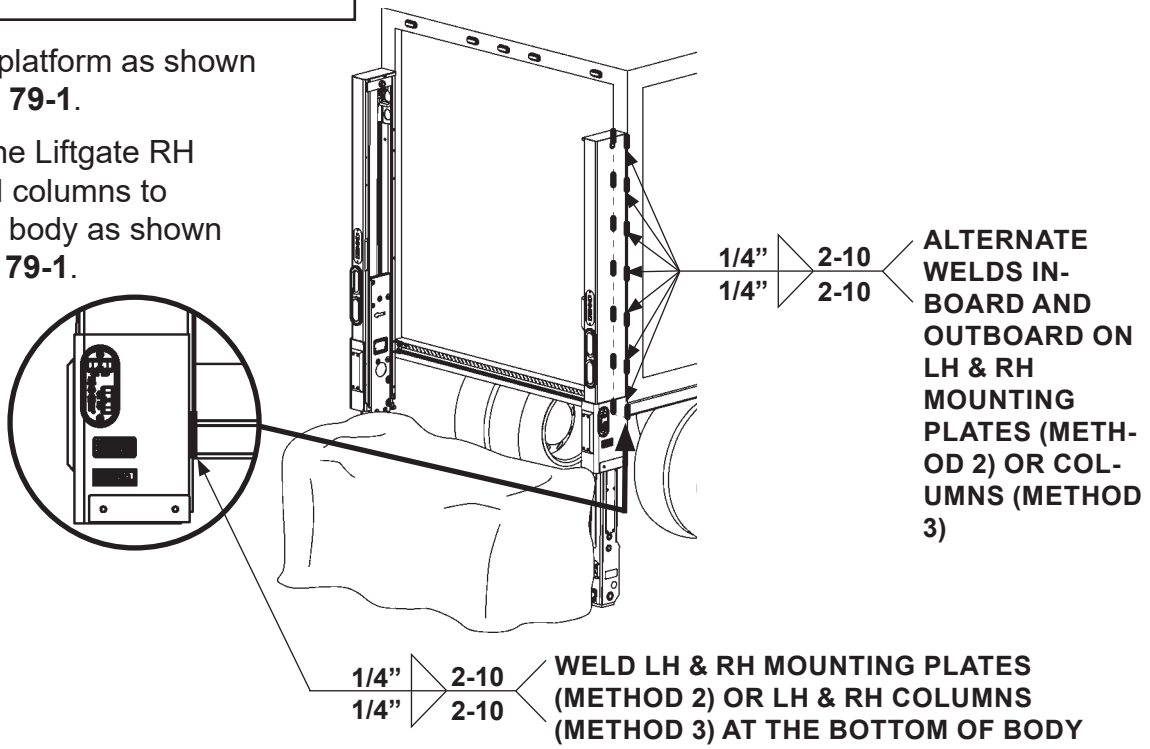

FIG. 79-1

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STEP 16 - FINISH WELDING LIFTGATE TO VEHICLE
METHOD 2 & METHOD 3 - WELD LIFTGATE TO BODY - Continued

CAUTION

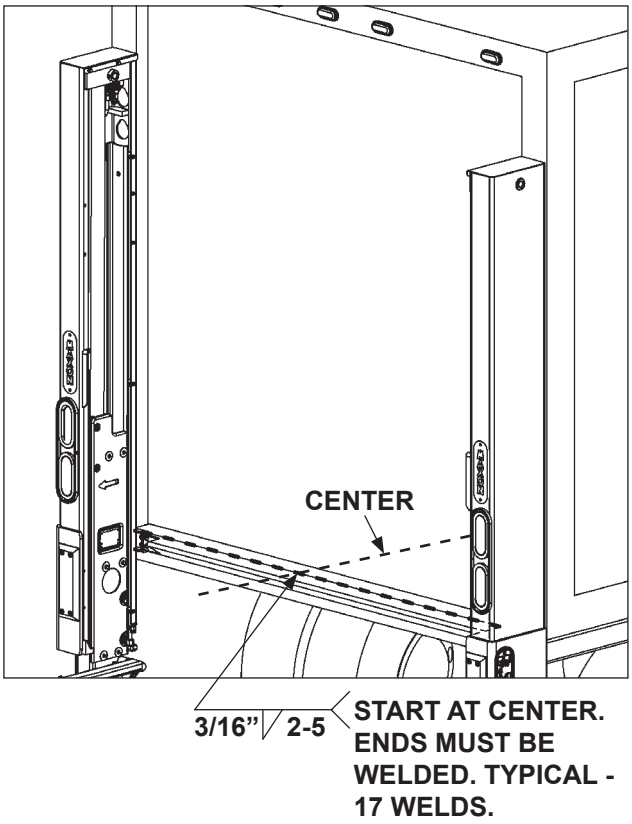
To prevent damage to Liftgate components, welder ground must be connected to Liftgate extension plate.

5. Make sure platform is at ground level to provide access to the extension plate.

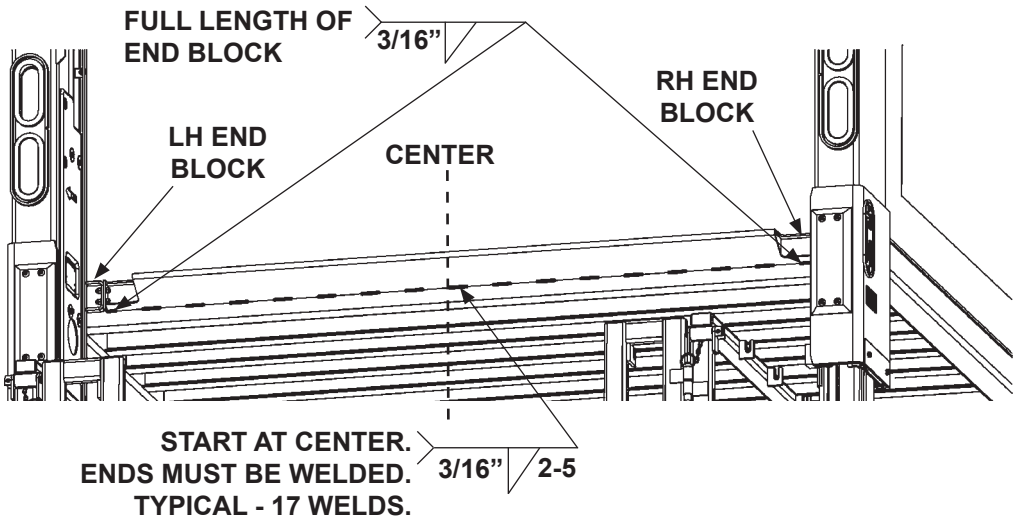
NOTE: After welding top of extension plate, if you see a gap between bottom of extension plate & vehicle body sill, fill the gap. To fill the gap, use A-36 General Purpose steel and the same welds shown in **FIG. 80-2**.

6. Weld the top and bottom surfaces of extension plate **(FIGS. 80-1 and 80-2)** to vehicle body sill with 2" long welds centered every 5"..

7. Weld entire length **(FIG. 80-2)** on the bottom of LH and RH end blocks.



WELDING TOP OF EXTENSION PLATE
FIG. 80-1



WELDING BOTTOM OF EXTENSION PLATE
FIG. 80-2

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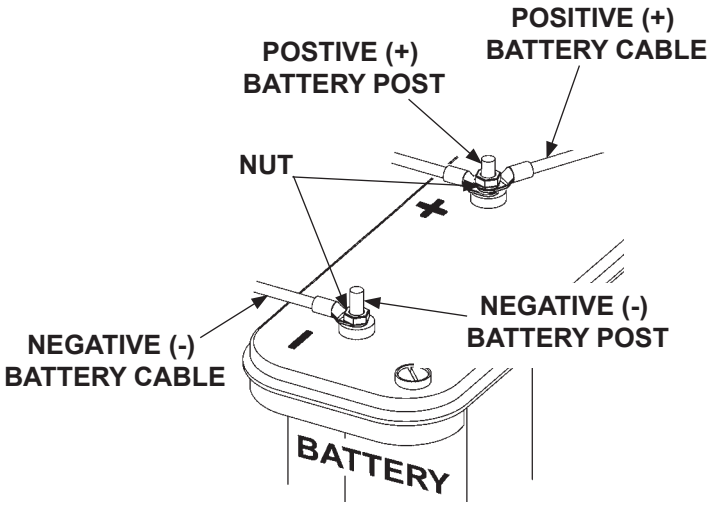
STEP 16 - FINISH WELDING LIFTGATE TO VEHICLE

METHOD 2 & METHOD 3 - WELD LIFTGATE TO BODY - Continued

8. Reconnect power to the pump by reconnecting positive **(+)** and negative **(-)** cables to battery **(FIG. 81-1)**. Reinstall and tighten nut when each battery cable is reconnected.



BATTERY POWER RECONNECTED
FIG. 81-1

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STEP 17 - CHECK CLEARANCE OF CONNECTOR BAR SIDE BRACKETS & STOP BLOCKS

1. To check for interference between platform connector bar side bracket and stop block **(FIG. 82-1A)**, lower columns to approximately 10” above the ground, then begin to unfold platform **(FIG. 82-1)**.

2. As platform is unfolding, check for interference from the connector bar side bracket as it slides into the stop block **(FIG. 82-1A)**.

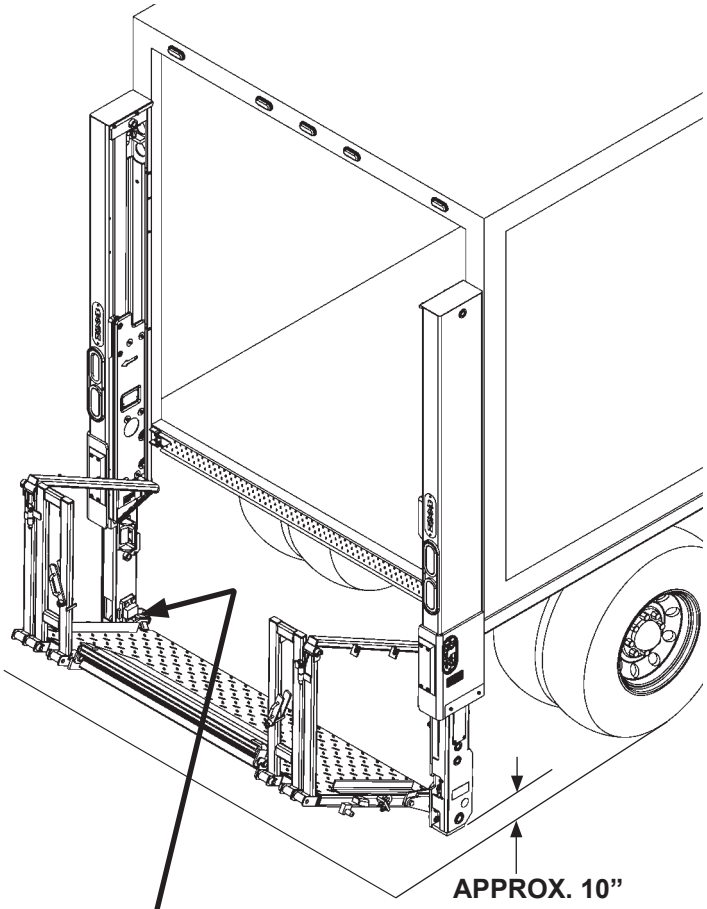
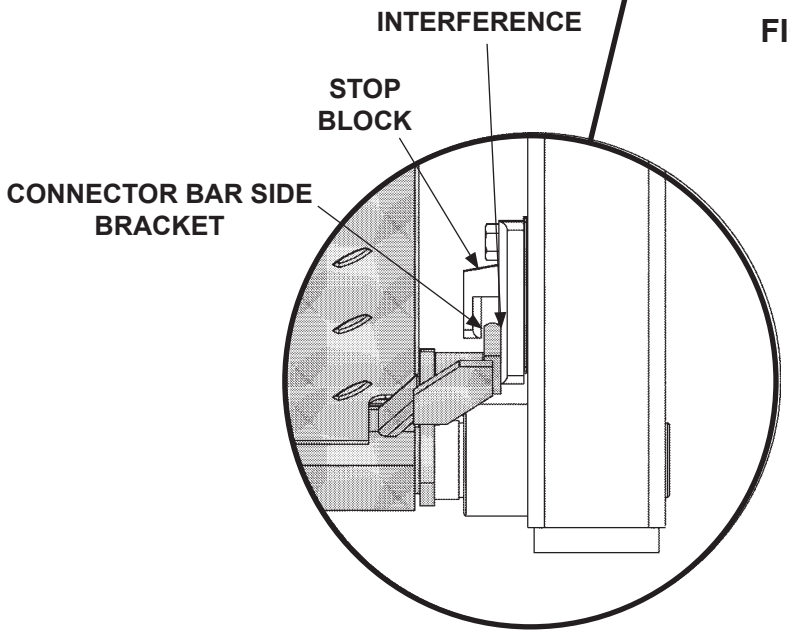


FIG. 82-1



REAR VIEW OF LH RUNNER
FIG. 82-1A

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STEP 17 - CHECK CLEARANCE OF CONNECTOR BAR SIDE BRACKETS & STOP BLOCKS - Continued

NOTE: Perform this step only if folding operation is not smooth or there is interference.

3. If LH side bracket fits too tight against either side of stop block, operation is not smooth, or if there is interference **(FIG. 83-1A)** adjust with spacers as shown in **FIG. 83-1A**.

4. To adjust stop block, make sure platform is lowered to the ground **(FIG. 83-1)**. Then, loosen (4) bolts **(FIGS. 83-1A and 83-1B)** and check gap **(FIG. 83-1A)**. Add or remove shims (parts box) to fill or lessen the gap, then retighten bolts **(FIGS. 83-1A and 83-1B)**.

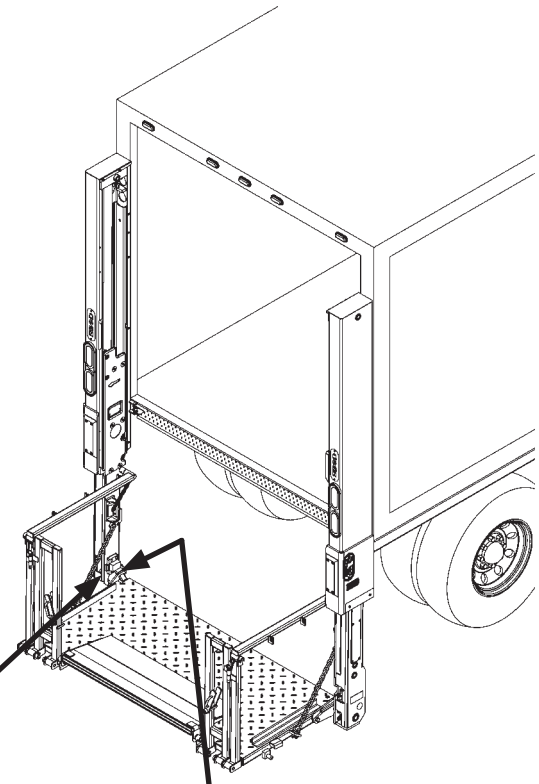
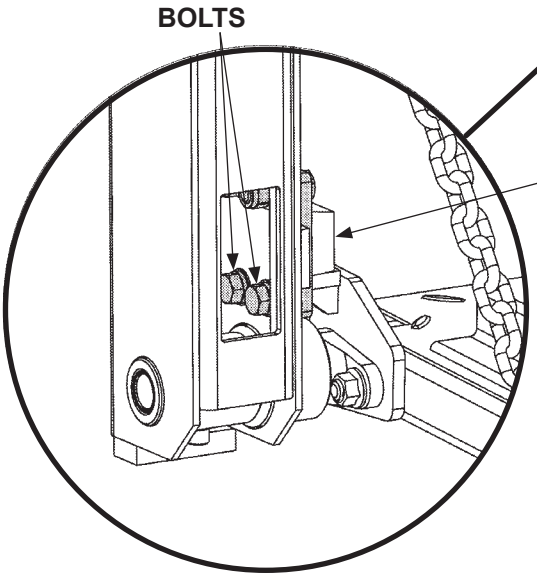
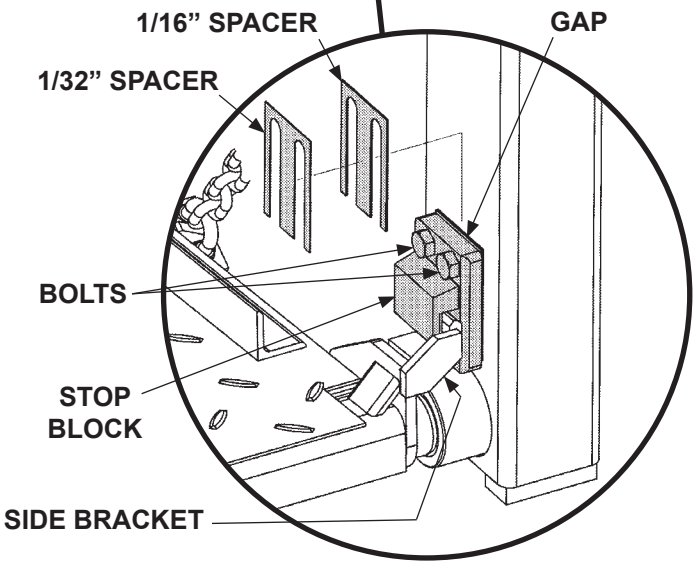


FIG. 83-1



FRONT VIEW OF LH RUNNER
FIG. 83-1B



REAR VIEW OF LH RUNNER
FIG. 83-1A

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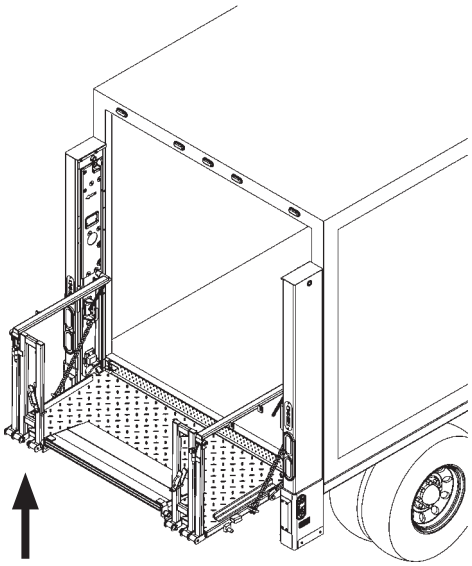
STEP 18 - CHECK CLEARANCE OF RUNNER PADS

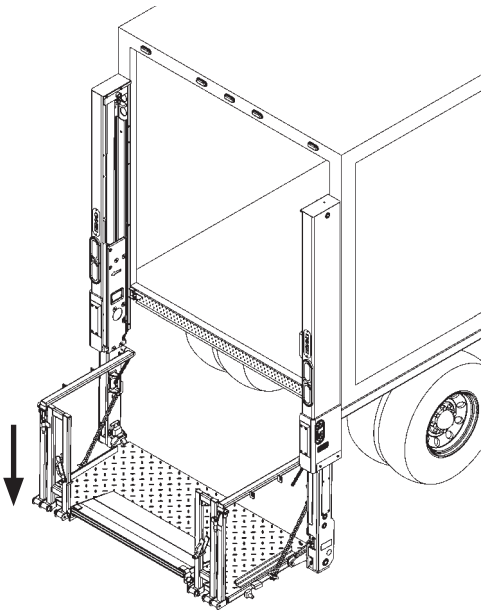
NOTE: Perform the following steps with no load on the platform.

1. Raise the platform to bed height **(FIG. 84-1)**. Then, lower the platform to the ground **(FIG. 84-2)**. Look for the following conditions:

- Platform lowers smoothly.
- Platform lowers evenly on both sides.
- Platform lowers in **8 to 20 seconds (BMR-CS35/BMR-CS44)**.



RAISING PLATFORM TO BED HEIGHT
FIG. 84-1



PLATFORM ON THE GROUND
FIG. 84-2

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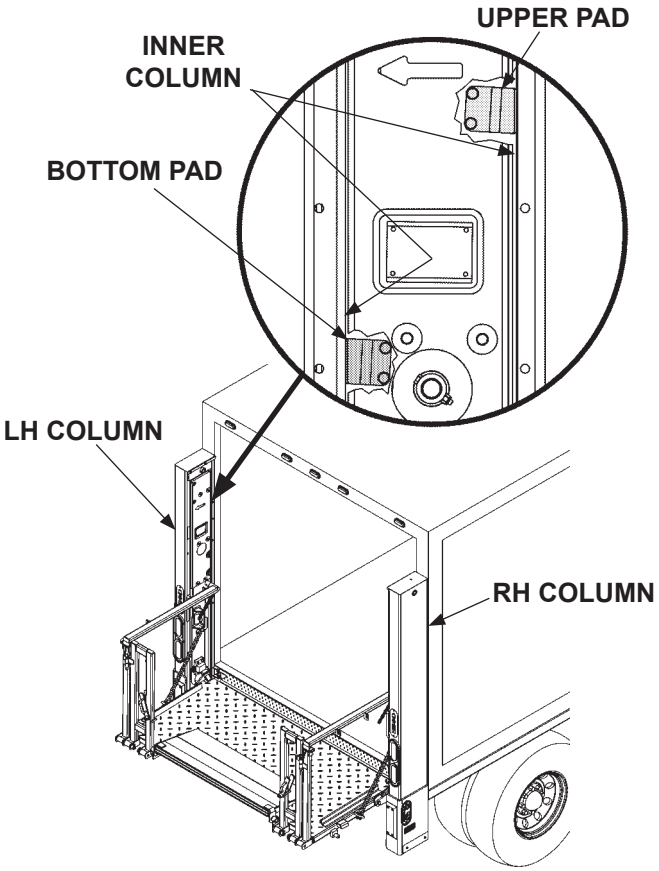
STEP 18 - CHECK CLEARANCE OF RUNNER PADS - Continued

2. Raise the platform to bed height **(FIG. 85-1)**. Check clearance of the runner pads as follows:

- Between upper runner pad and inner LH column.
- Between bottom runner pad and inner LH column.
- Between upper runner pad and inner RH column.
- Between bottom runner pad and inner RH column.

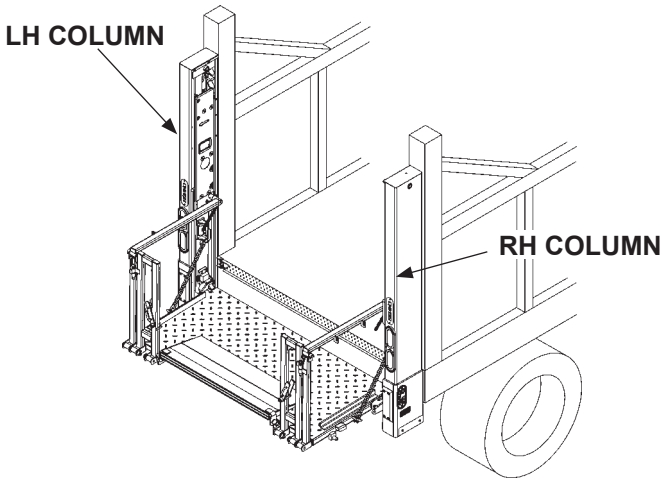
Sufficient clearance is equal to thickness of **2 business cards or .012" to .025"** measured with thickness gauge. Leaves of the thickness gauge should be 3" or longer to reach the runner pads.



CHECKING CLEARANCE OF RUNNER PADS WITH PLATFORM AT BED HEIGHT FIG. 85-1

3. Lower the platform half the distance to the ground **(FIG. 85-2)**. Repeat the clearance checks in **2**.

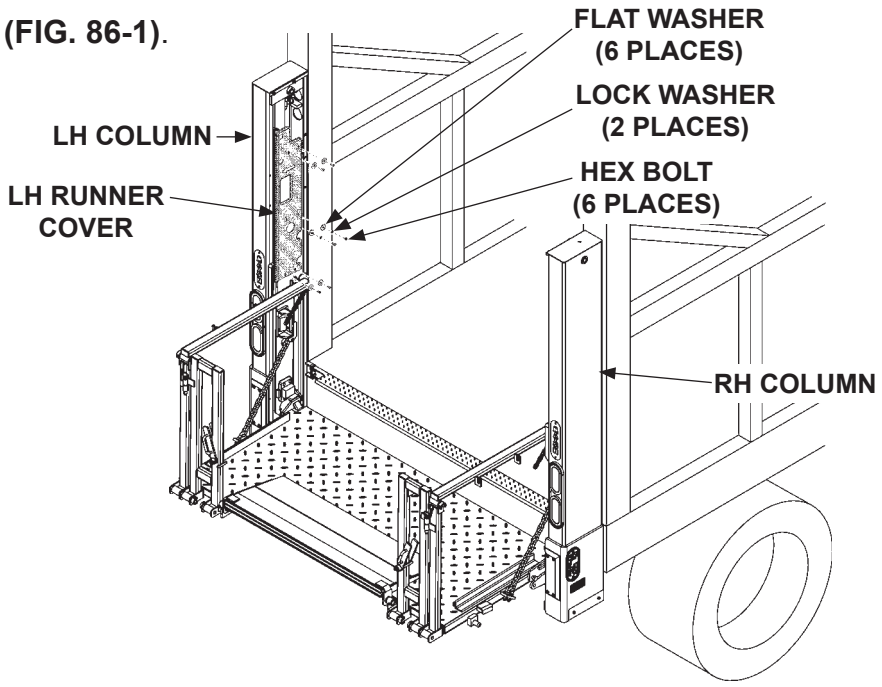
4. If there is no clearance or clearance is not sufficient, continue with adjustment procedure on the next page.



CHECKING CLEARANCE OF RUNNER PADS WITH PLATFORM BETWEEN BED HEIGHT & THE GROUND FIG. 85-2

STEP 18 - CHECK CLEARANCE OF RUNNER PADS - Continued

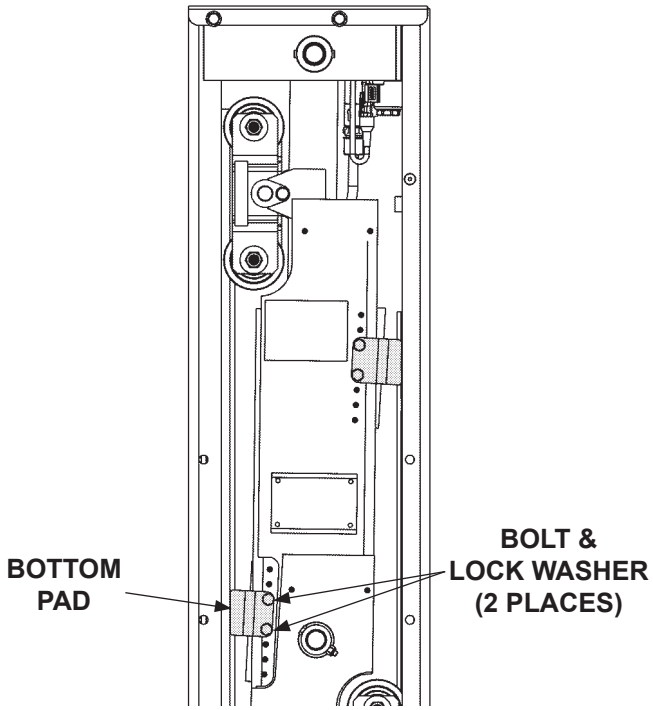
5. Remove LH runner cover **(FIG. 86-1)**.



REMOVING RUNNER COVERS
FIG. 86-1

> **NOTE:** Keep spacer pad in place between column & runner after unbolting pad from runner.

6. Unbolt bottom spacer pad from LH runner **(FIG. 86-2)**. Keep bolts and lock washers to reinstall.



UNBOLTING PADS
(LH COLUMN & RUNNER SHOWN)
FIG. 86-2

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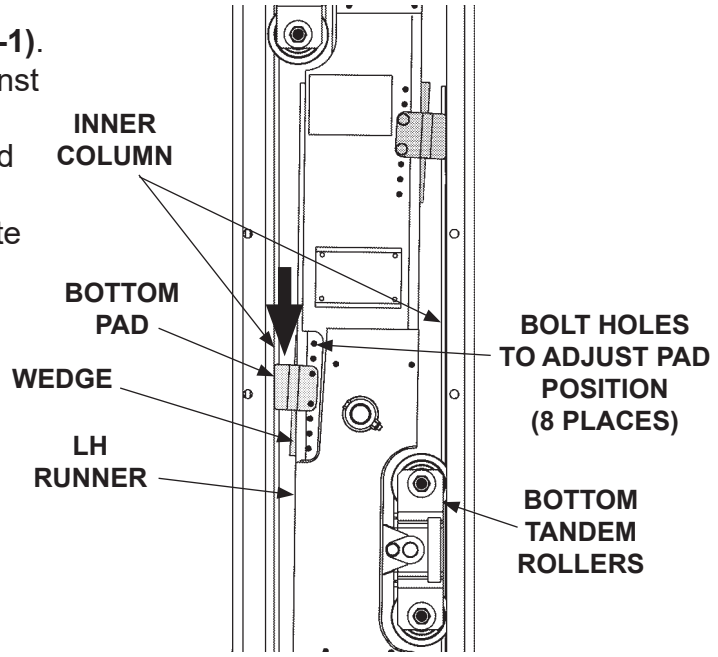
STEP 18 - CHECK CLEARANCE OF RUNNER PADS - Continued

7. Ensure the bottom tandem rollers are seated against inner column **(FIG. 87-1)**. Next, slide the bottom pad down against wedge until there is no clearance between inner column and bottom pad **(FIG. 87-1)**. Then, back off (slide up) bottom pad by 1 hole position to create clearance between pad and inner column.

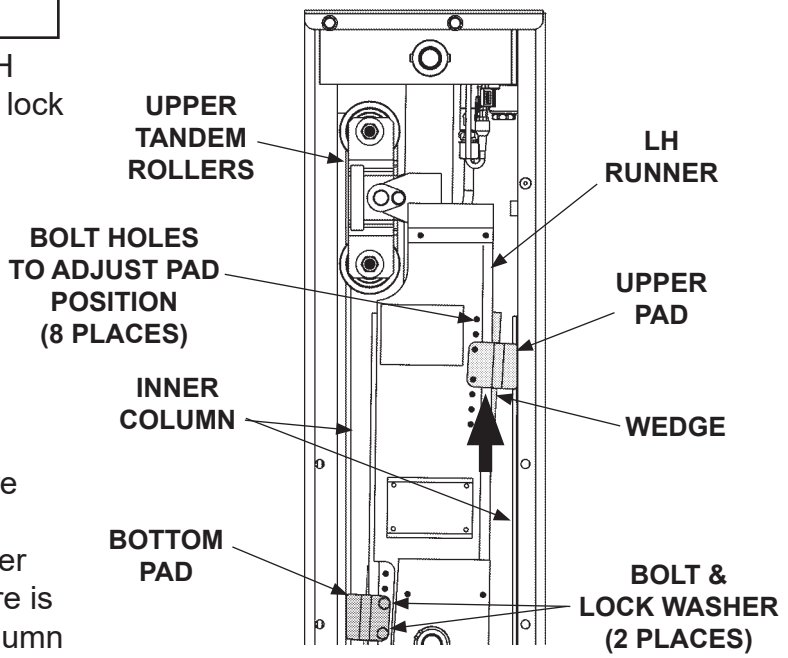
8. Bolt bottom pad to LH runner with 2 bolts and 2 lock washers **(FIG. 87-2)**. Torque the 2 bolts to **9-14 lb-ft**.



ADJUSTING LOWER PAD
FIG. 87-1

> **NOTE:** Keep spacer pad in place between column & runner after unbolting pad from runner.

9. Unbolt upper spacer pad from LH runner **(FIG. 87-2)**. Keep bolts & lock washers to reinstall.



BOLTING LOWER PAD & ADJUSTING UPPER PAD
FIG. 87-2

10. Ensure upper tandem rollers are seated against inner column **(FIG. 87-2)**. Next, slide the upper pad up against wedge until there is no clearance between inner column and upper pad **(FIG. 87-2)**. Then, back off (slide down) upper pad by 1 hole position to create clearance between upper pad and inner column.

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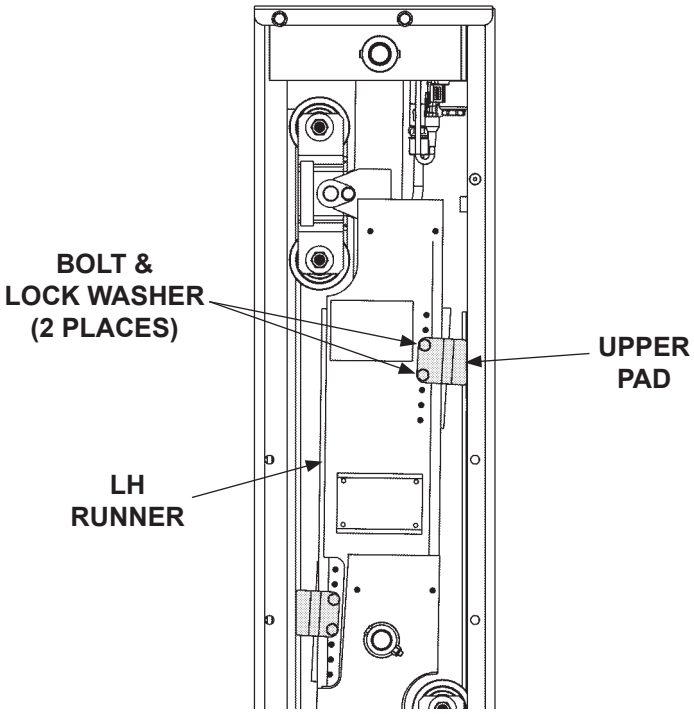
STEP 18 - CHECK CLEARANCE OF RUNNER PADS - Continued

11. Bolt upper pad to LH runner with 2 bolts and 2 lock washers **(FIG. 88-1)**. Torque the 2 bolts to **9-14 lb-ft**.

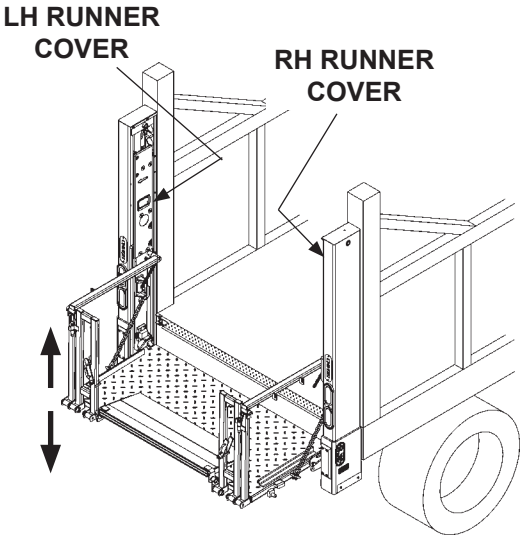


BOLTING UPPER PAD
FIG. 88-1

12. Repeat instructions 5 to 11 for RH column.

13. Raise the platform to bed height **(FIG. 88-2)**. Then, lower the platform to the ground **(FIG. 88-2)**. Look for the following conditions:

- Platform lowers smoothly.
- Platform lowers evenly on both sides.
- Platform lowers in **8 to 20 seconds (BMR-CS35/BMR-CS44)**.



CHECKING CLEARANCE OF RUNNER PADS WITH PLATFORM BETWEEN BED HEIGHT & THE GROUND
FIG. 88-2

14. When platform raises and lowers correctly, reinstall LH and RH runner covers **(FIG. 88-2)**. Torque 6 bolts on each runner cover to **9-14 lb.-ft**.

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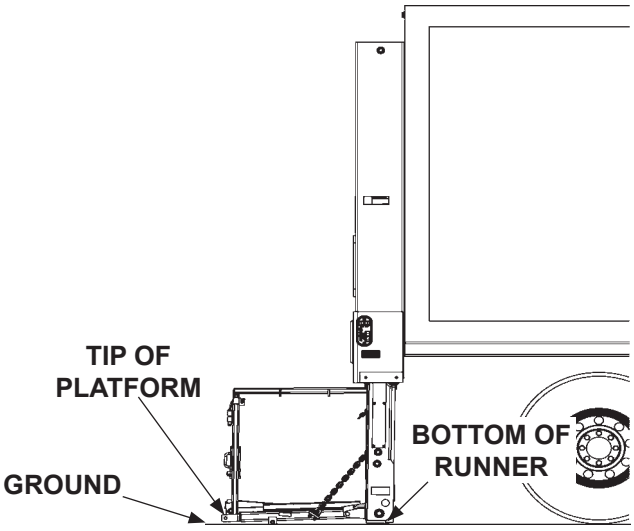
STEP 19 - PLATFORM CHAIN ADJUSTMENT

1. Lower the platform to ground level. Check if tip of the platform and bottom of the runners touch the ground at the same time **(FIG. 89-1)**.



TIP AND RUNNER TOUCHING GROUND
FIG. 89-1

2. If tip of platform touches first, tighten the u-bolt by loosening the hex nuts and turning the lock nuts clockwise **(FIG.89-2A)**. Retighten hex nuts. If more adjustment is required, remove one chain link until tip of the platform and bottom of the runners touch the ground at the same time **(FIG.89-2)**.

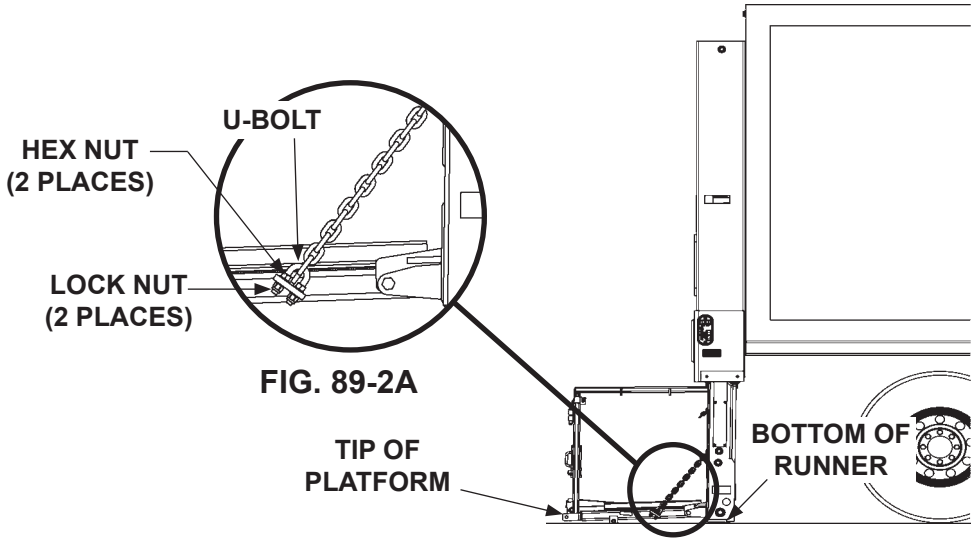


FIG. 89-2A

PLATFORM LOWERED TO GROUND
FIG. 89-2

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DECALS & PLATES

NOTE: Ensure there is no residue, dirt, or corrosion where decals are attached. If necessary, clean surface before attaching decals.

NOTE: Decals on the Liftgate are attached at the factory.

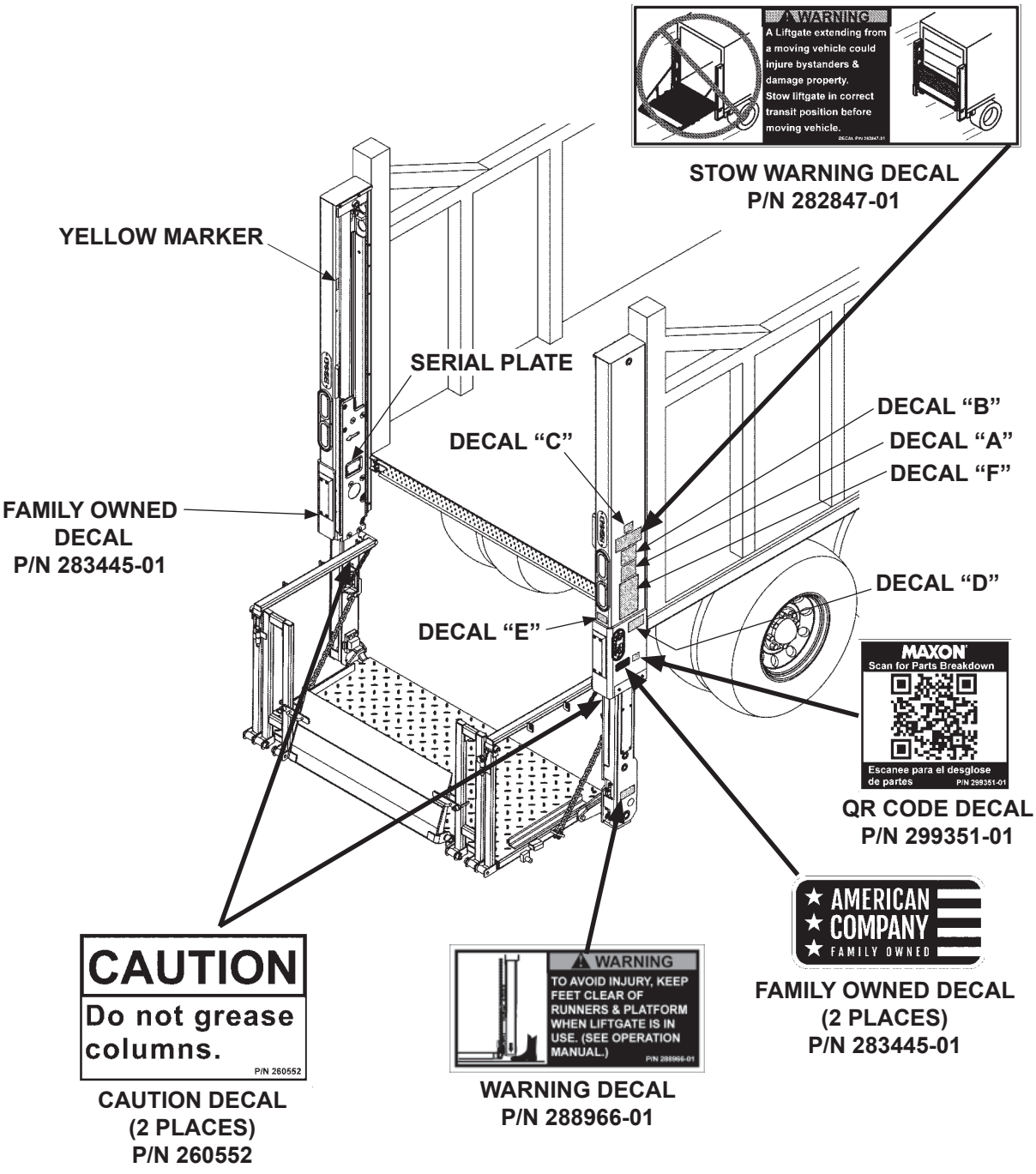

FIG. 90-1

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DECALS - Continued

⚠ WARNING

Read this information carefully.

- Improper operation of this Liftgate can result in serious personal injury. If you do not have a copy of the operating instructions, please obtain them from your employer, distributor, or lessor before you attempt to operate Liftgate.
- If there are signs of improper maintenance, damage to vital parts, or slippery platform surface, do not use the Liftgate until these problems have been corrected.
- If you are using a pallet jack, be sure it can be maneuvered safely.
- Do not operate a forklift on the platform.
- Do not allow any part of yours or your helper's body to be placed under, within, or around any portion of the moving Liftgate, or its mechanisms, or in a position that would trap them between the platform and the ground or truck when the Liftgate is operated.
- If a helper is riding the platform with you, make sure you are both doing so safely and that you are not in danger of coming in contact with any moving or potentially moving obstacles.
- **USE GOOD COMMON SENSE.**
- If load appears to be unsafe, do not lift or lower it.

For a free copy of other manuals that pertain to this model Liftgate, please visit our website at **www.maxonlift.com** or call **Customer Service at (800) 227-4116.** (B)

SAFETY INSTRUCTIONS

Read all decals and operation manual before operating liftgate.

1. Do not use liftgate unless you have been properly instructed and have read, and are familiar with, the operating instructions.
2. Be certain vehicle is properly and securely braked before using the liftgate.
3. Always inspect this liftgate for maintenance or damage before using it. Do not use liftgate if it shows any sign of damage or improper maintenance.
4. Do not overload
5. Make certain the area in which the platform will open and close is clear before opening or closing the platform.
6. Make certain platform area, including the area in which loads may fall from platform, is clear before and at all times during operation of liftgate.
7. This liftgate is intended for loading and unloading of cargo only. Do not use this liftgate for anything but its intended use.

(A)

THE MAXIMUM CAPACITY OF THIS LIFT IS

____ LB [____ KG]

WHEN THE LOAD IS CENTERED ON THE LOAD CARRYING PLATFORM

(C)

(REFER TO TABLE 91-1)

⚠ CAUTION

Always stand clear of platform area. (E)

⚠ WARNING

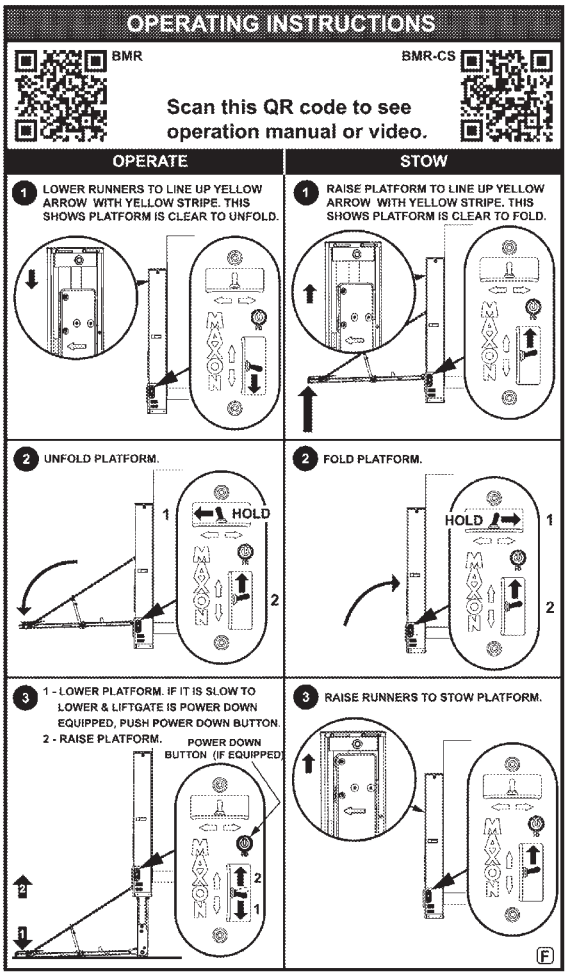
Liftgate hazards can result in crushing or falling.

Keep hands and feet clear of pinch points.

If riding liftgate, make sure load is stable and footing is solid.

(D)

Read and understand all instructions and WARNINGS before use.



DECAL SHEET
FIG. 91-1

MODEL	ORDER P/N	DECAL "C"
BMR-CS35	289163-01	3500 LBS. [1600 KG]
BMR-CS44	289163-02	4400 LBS. [2000 KG]

DECAL SHEET PART NUMBERS
TABLE 91-1

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TOUCH UP GALVANIZED FINISH

CAUTION

Damaged cylinder seals and contaminated hydraulic fluid can result from applying cold galvanized spray to the polished portion of the cylinder rod. To prevent damage, protect the exposed polished portion of the cylinder rod while spraying.

- If bare metal is exposed on galvanized portions of the Liftgate, touch up the galvanized finish. To maintain the protection provided by the original galvanized finish, **MAXON** recommends cold galvanize spray.

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HYDRAULIC SYSTEM DIAGRAMS
PUMP & MOTOR SOLENOID OPERATION - GRAVITY DOWN

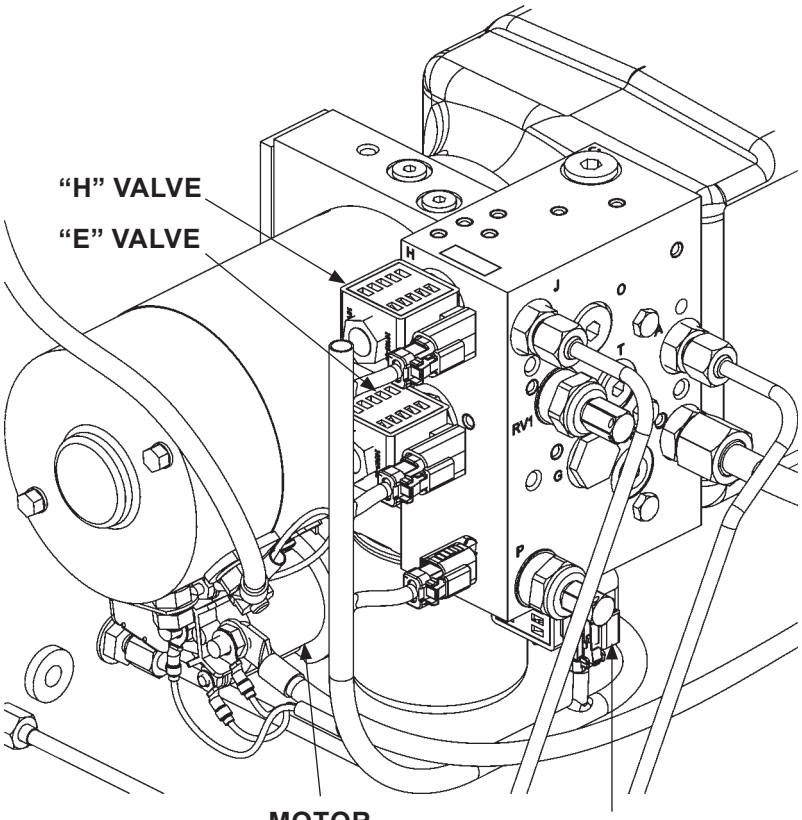
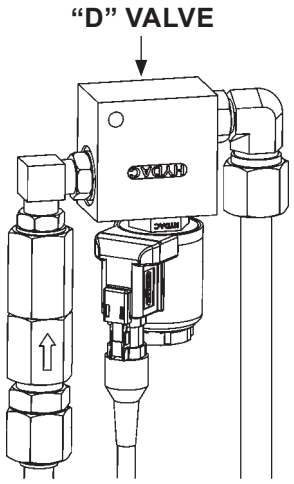


FIG. 93-1



"D" VALVES
(TOP OF EACH COLUMN)
FIG. 93-2

POWER UNIT MOTOR & SOLENOID OPERATION - GRAVITY DOWN								
LIFTGATE FUNCTION	PORT	SOLENOID OPERATION (✓ MEANS ENERGIZED)						
		SWITCH	RELAY	MOTOR	VALVE "B"	VALVE "D"	VALVE "E"	VALVE "H"
LIFT	B	"GD"	-	✓	-	-	-	-
LOWER	C		✓	-	✓	✓	-	-
OPEN	J		-	✓	-	-	✓	✓
CLOSE	A		-	✓	-	-	✓	-
REFER TO VALVES SHOWN ON HYDRAULIC SCHEMATIC								

TABLE 93-1

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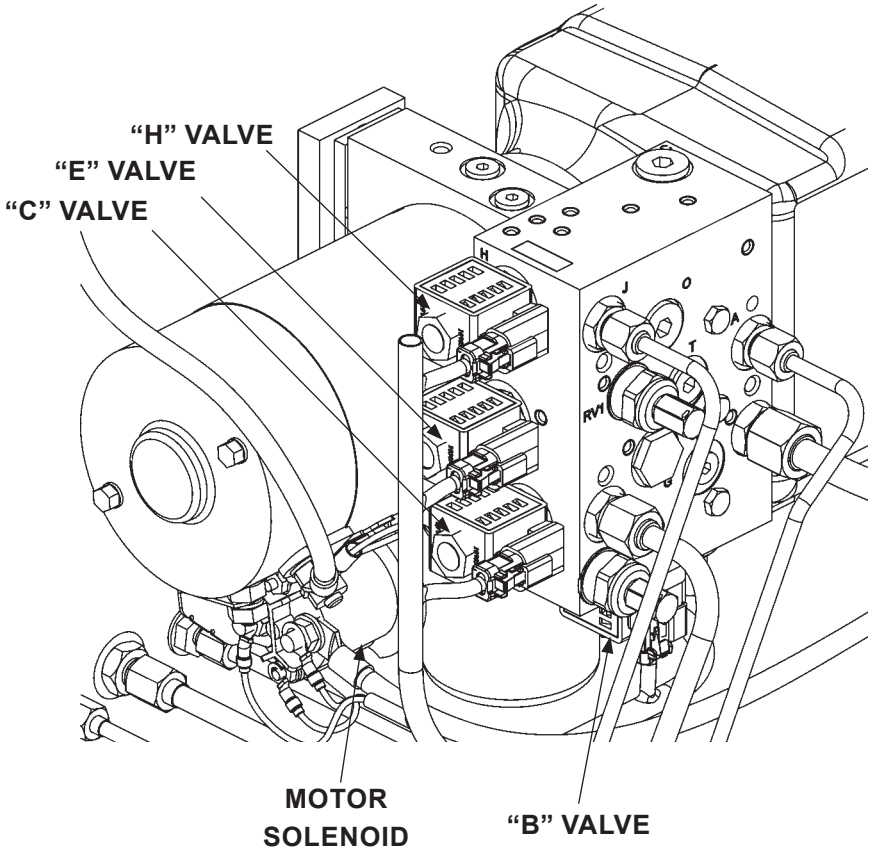
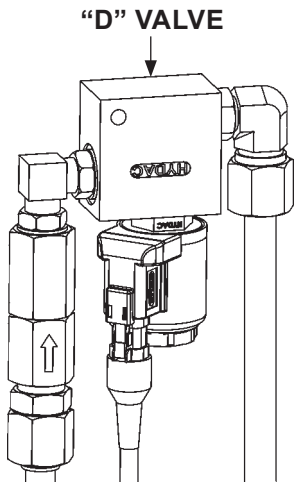
HYDRAULIC SYSTEM DIAGRAMS - Continued
PUMP & MOTOR SOLENOID OPERATION - POWER DOWN





"D" VALVES
(TOP OF EACH COLUMN)
FIG. 94-2

FIG. 94-1

POWER UNIT MOTOR & SOLENOID OPERATION - POWER DOWN									
LIFTGATE FUNCTION	PORT	SOLENOID OPERATION (✓ MEANS ENERGIZED)							
		SWITCH	RELAY	MOTOR	VALVE "B"	VALVE "C"	VALVE "D"	VALVE "E"	VALVE "H"
LIFT	B	"PD"	-	✓	-	-	-	-	-
LOWER	C		-	✓	✓	✓	✓	-	-
OPEN	J		-	✓	-	-	-	✓	✓
CLOSE	A		-	✓	-	-	-	✓	-
REFER TO VALVES SHOWN ON HYDRAULIC SCHEMATIC									

TABLE 94-1

HYDRAULIC SYSTEM DIAGRAMS
GRAVITY DOWN HYDRAULIC SCHEMATIC

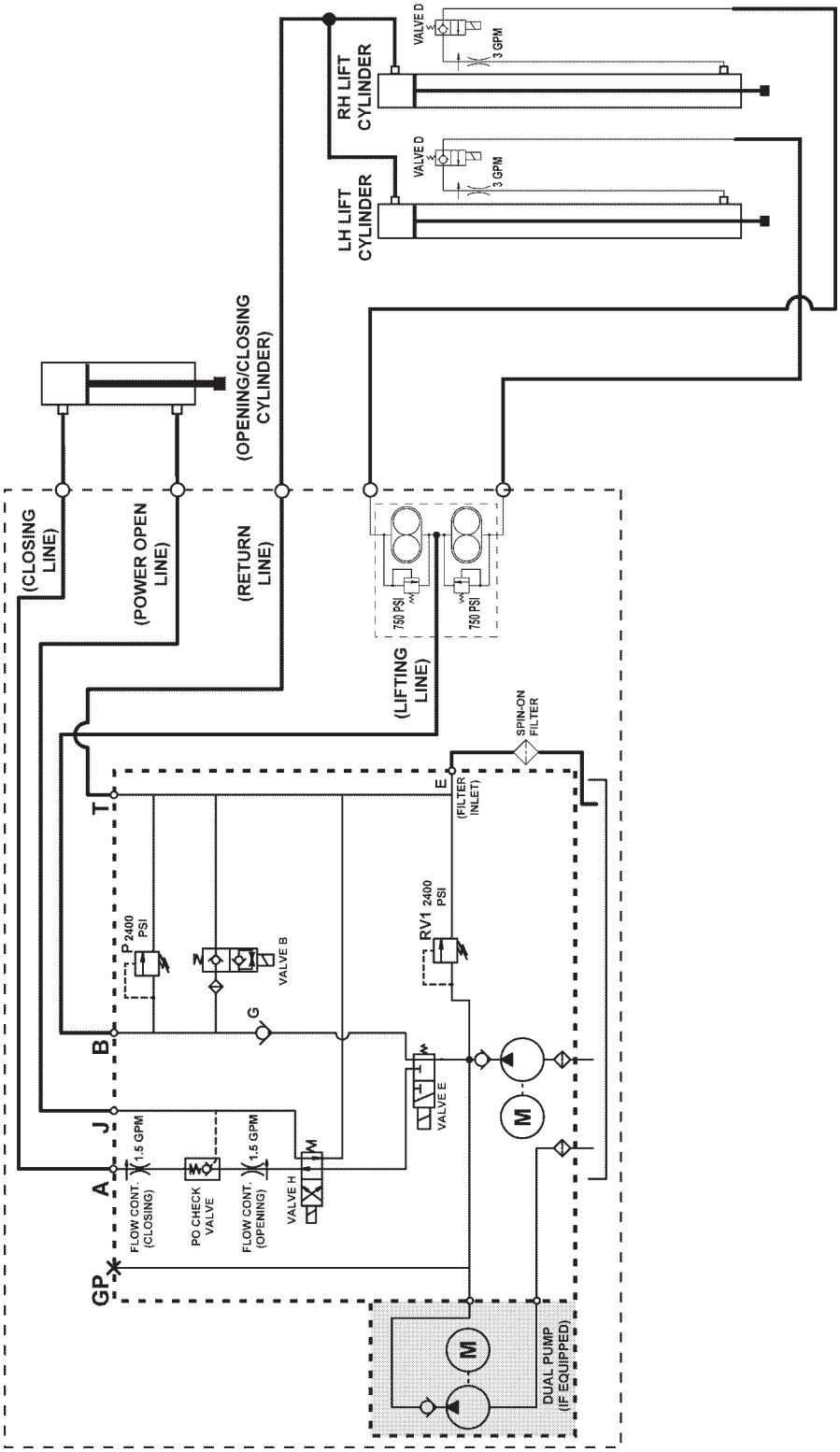


FIG. 95-1

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HYDRAULIC SYSTEM DIAGRAMS
POWER DOWN HYDRAULIC SCHEMATIC

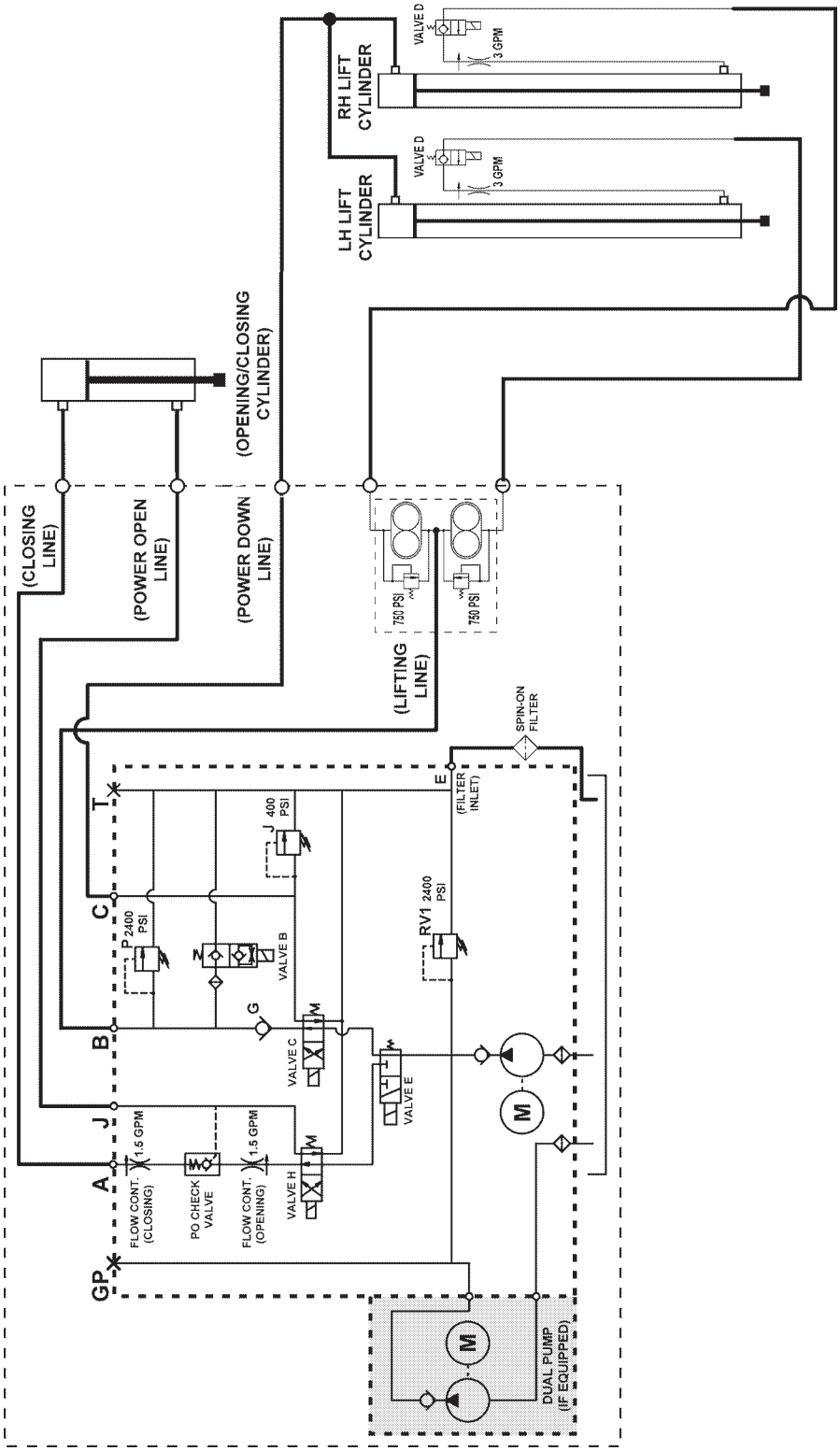
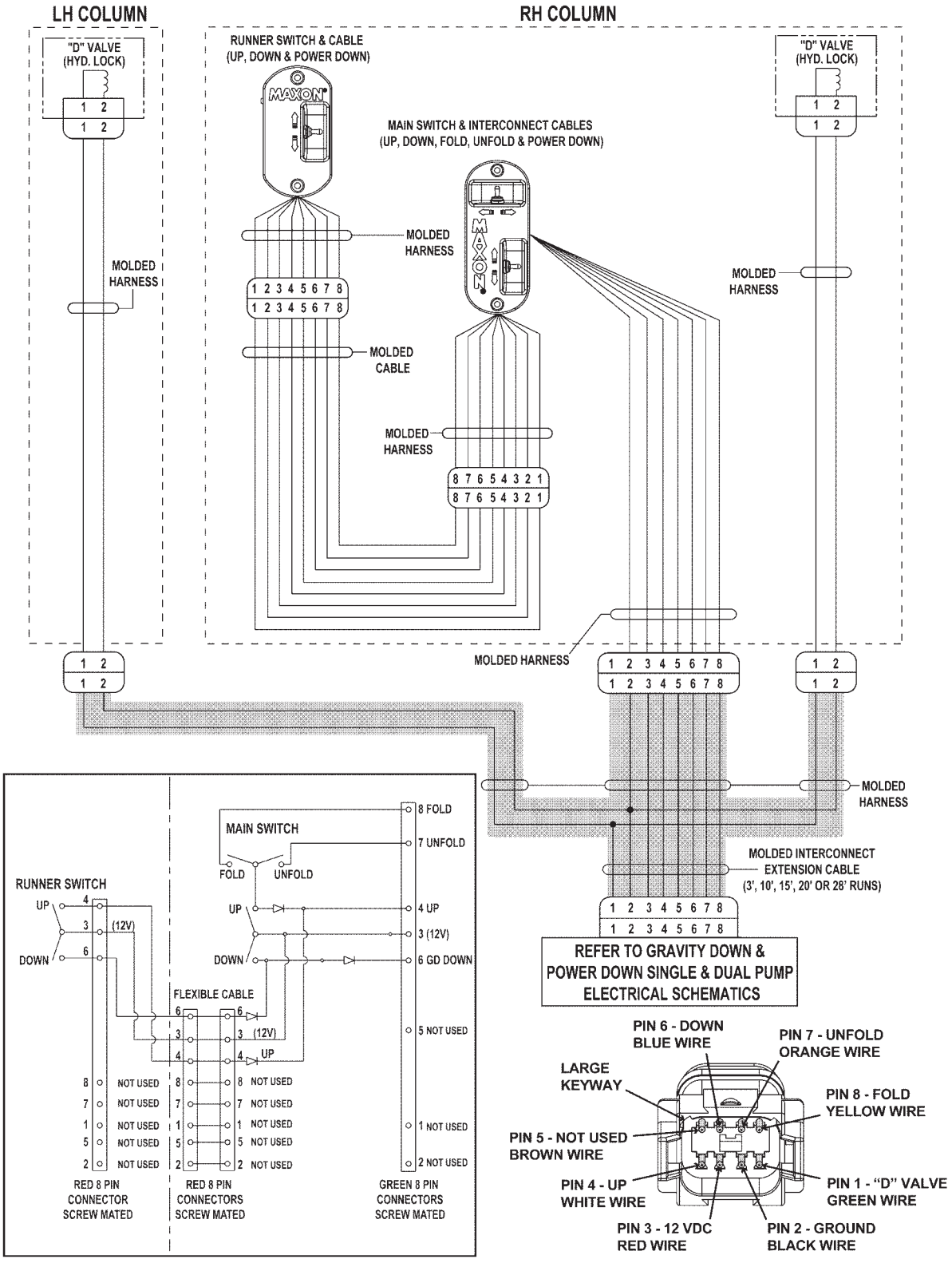


FIG. 96-1

ELECTRICAL SYSTEM DIAGRAMS
INTERCONNECTING ELECTRICAL SCHEMATIC - GRAVITY DOWN



GRAVITY DOWN MAIN & RUNNER SWITCH INTERNAL WIRING DIAGRAM

8-PIN MALE CONNECTOR

FIG. 97-1

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ELECTRICAL SYSTEM DIAGRAMS

GRAVITY DOWN SINGLE & DUAL PUMP ELECTRICAL SCHEMATIC

NOTE: Refer to **BMR-CS ELECTRICAL VALUES** page.

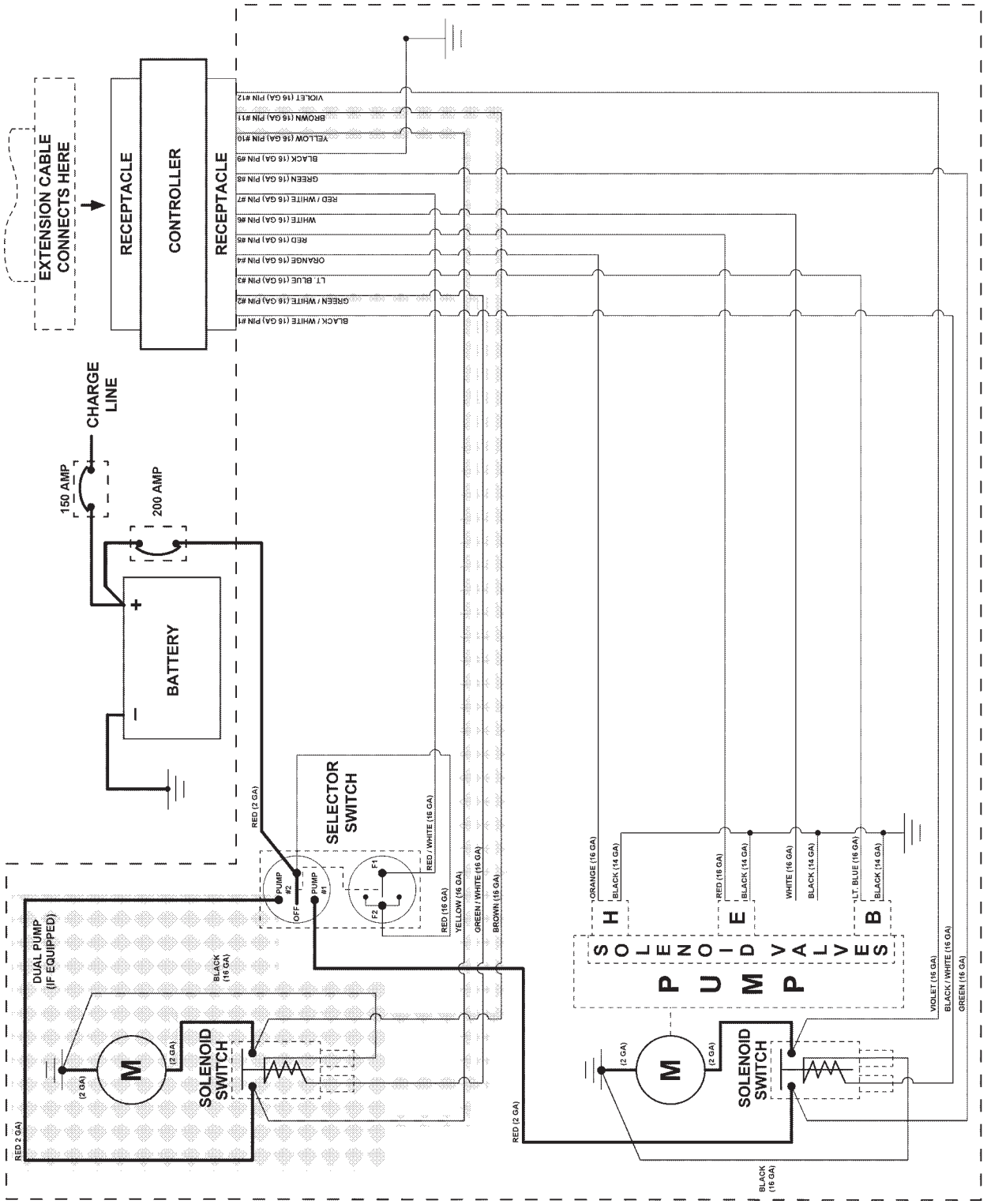

FIG. 98-1

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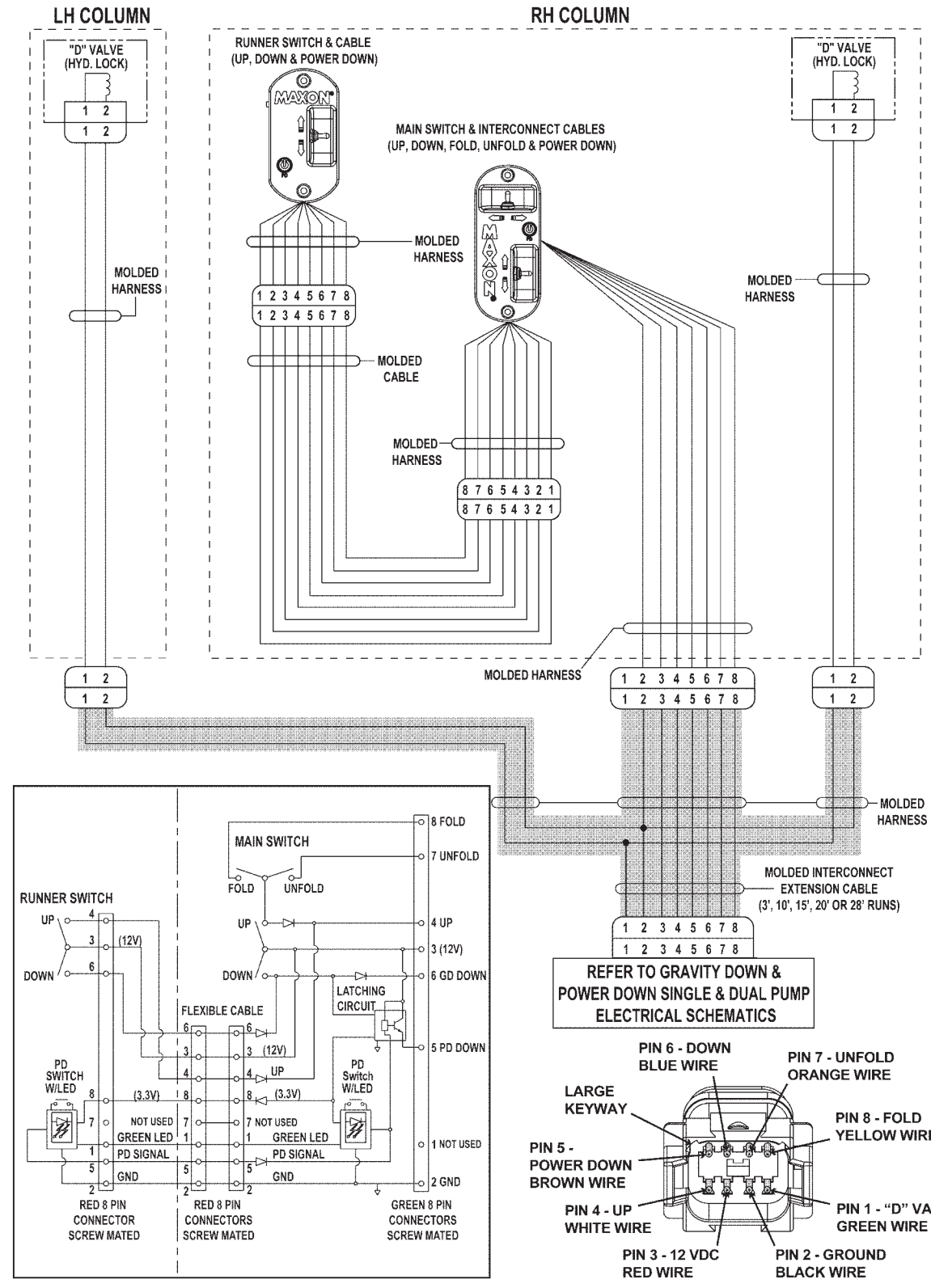
ELECTRICAL SYSTEM DIAGRAMS - Continued
INTERCONNECTING ELECTRICAL SCHEMATIC - POWER DOWN



POWER DOWN MAIN & RUNNER SWITCH INTERNAL WIRING DIAGRAM

8-PIN MALE CONNECTOR

FIG. 99-1

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ELECTRICAL SYSTEM DIAGRAMS

POWER DOWN SINGLE & DUAL PUMP ELECTRICAL SCHEMATIC

NOTE: Refer to **BMR-CS ELECTRICAL VALUES** page.

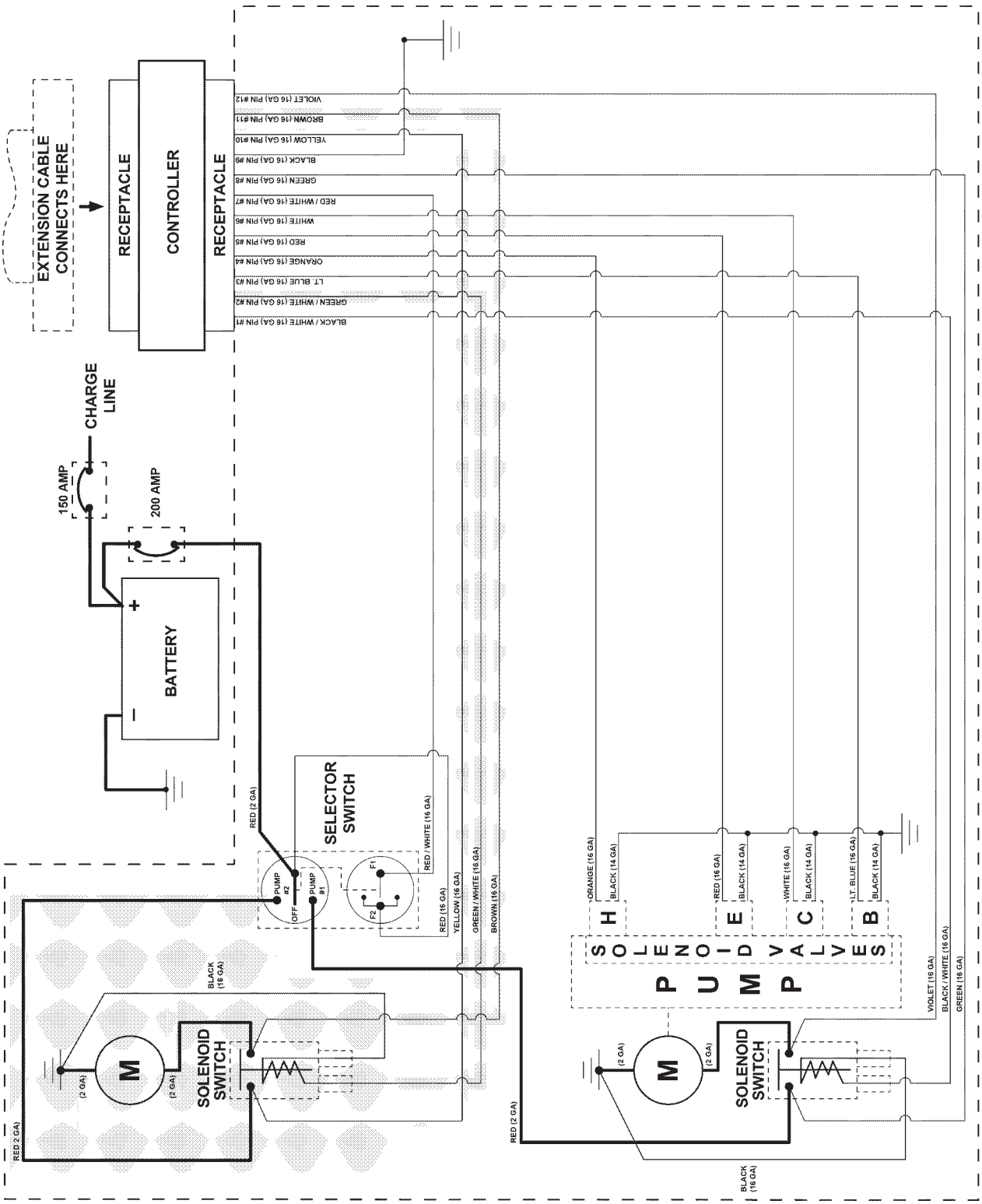

FIG. 100-1

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ELECTRICAL SYSTEM DIAGRAMS

BMR-CS ELECTRICAL VALUES & TORQUE SPECIFICATIONS

BUCHER PUMP
Solenoid Switch: • Coil: 5.4Ω @ 70ºF. ±15% • Ampere: 2.2A @ 12V • Coil terminal torque: 10-15 **lb-in** • Contact terminal torque: 30-35 **lb-in**
Solenoid Valves (H, E, and C): • Coil: 4.0Ω @ 70ºF. ±15% • Ampere: 2.5A @ 10V • Coil nut torque: 15-45 **lb-in**
Solenoid Valve (B): • Coil: 4.0Ω @ 70ºF. ±15% • Ampere: 2.5A @ 10V • Coil nut torque: 15-45 **lb-in**
H, E, C & B Valve Cartridge Torque: 25-30 **lb-ft** maximum • Coil nut torque: 15-45 **lb-in**
Solenoid Valve (D): • Coil: 8.0Ω @ 70ºF. ±15% • Ampere: 1.5A @ 12V • Coil nut torque: 3-4.5 **lb-ft** • Valve cartridge torque: 18.5-22 **lb-ft**
Pump Selector Switch Terminal Stud Torque: 140 **lb-in** maximum
Cable Ground Stud Torque: 24 **lb-ft** maximum

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MAXON®

PRE-DELIVERY INSPECTION FORM

Important! This pre-delivery checklist is to aid the installer in confirming the proper installation of this Maxon product. It is not a comprehensive list and does not replace the use of the installation manual. The installer is responsible for following all instructions in the installation manual.

Model:_____ **Date:** _____

Serial Number: _____ **Technician:** _____

Pre-Installation Inspection:

- ☐ Correct model
- ☐ Correct capacity
- ☐ Correct platform size
- ☐ Correct options
- ☐ Correct manuals & decals

Structural Inspection:

- ☐ Liftgate is centered on vehicle rear door & mounted per dimensions in this manual.
- ☐ Pump box is mounted securely.
- ☐ All installation welds are done per instructions in this manual.
- ☐ All roll pins, bolts & fasteners on liftgate are tight.
- ☐ All hardware & fasteners, used to secure liftgate to vehicle body, are tight.
- ☐ Ensure platform ramp touches ground when runner is 1" above ground. The main platform & flipover surfaces should be level to one another and rest evenly when touching the ground.
- ☐ Verify runner slide pads are in adjustment per **STEP 18** in this manual.

Hydraulic Inspection:

- ☐ Fluid is at correct level (See **OPTIMIZE HY DRAULIC FLUID LEVEL** step in this manual.)
- ☐ No leaks from hydraulic fittings in pump box
- ☐ No leaks from hydraulic line connections

Electrical Inspection:

- ☐ Check power/charge plug and terminal.
- ☐ Check for tight wire connections.
- ☐ Circuit breaker (150A) installed in battery box (if equipped) or by truck/tractor battery.
- ☐ Ensure batteries are fully charged, all cable connections are tight & protected from corrosion and tiedowns are tight.
- ☐ Inspect all solenoid connections.
- ☐ Check all electrical cable connections are tight, secure, and protected from corrosion.

Operation Inspection:

NOTE: The following times are for 56" bed height, aluminum platform and flipover, 85" W x 42" + 42" L, Exxon Univis HVI-13 oil, & temperature at 70°F. Times are for reference only and may vary for larger platforms, smaller platforms, steel platforms, or temperature changes.

- ☐ Liftgate operates correctly using all main & optional control switches.
- ☐ **All BMR:** Platform unfolds in 5 to 7 sec.
- ☐ **All BMR:** Platform can be lowered onto the bottom stop position for dock loading, and 1" below the threshhold plate.
- ☐ **All BMR:** platform folds in 5 to 7 sec.

BMR-35 or -44 only

- ☐ Unloaded platform lowers in **8 to 20 sec**.
- ☐ Unloaded platform raises in **9 to 21 sec**.

BMR-55 or -66 only

- ☐ Unloaded platform lowers in **12 to 23 sec**.
- ☐ Unloaded platform raises in **13 to 26 sec**.
- ☐ **All BMR:** Unloaded platform raises and lowers evenly in GD and PD modes. Maximum 1" difference of runners from side to side.
- ☐ **All BMR:** Platform stores securely behind both column wedges.
- ☐ Cycle counter indicates total number of up and down cycles and adds 1 more count each time platform is raised and lowered.
- ☐ Decals in correct location and legible.

Verify all lights are operational

- ☐ Platform lights turn **ON** when platform is un-folded, and turn **OFF** when platform is stowed.
- ☐ Taillights, stop lights, turn lights, and backup lights turn **ON** and **OFF** correctly.

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