

# TABLE OF CONTENTS

SUMMARY OF CHANGES: M-13-01, REVISION F	3
WARNINGS	4
SAFETY INSTRUCTIONS	5
NOTICE	5
VEHICLE REQUIREMENTS	6
STEP 1 - PREPARE LIFTGATE FOR INSTALLATION	9
STEP 2 - WELD LIFTGATE ON TRAILER	12
STEP 3 - LEVELING PLATFORM	16
STEP 4 - FINISH WELDING LIFTGATE	22
STEP 5 - ATTACH CONTROL SWITCHES TO TRAILER	23
STEP 6 - ATTACH STOW LIGHT TO TRAILER	
STEP 7 - RECOMMENDED POWER CONFIGURATION	36
ATTACH DECALS	37
DECAL POSITIONS	39
SYSTEM DIAGRAMS	41
PUMP & MOTOR SOLENOID OPERATION	41
HYDRAULIC SCHEMATIC	42
ELECTRICAL SCHEMATIC	43
STOW SIGNAL ELECTRICAL SCHEMATIC	
OPTIONS	45

# SUMMARY OF CHANGES: M-13-01, REVISION F

PAGE	DESCRIPTION OF CHANGE	
COVER	Updated REV, date, and cover statement.	
11	Deleted page about moving proximity sensor to RH side of Liftgate.	]
14	Updated top of trailer floor to bottom of crossmember ("Y") dimensions in Table 14-1.	1
19	Added instruction to ensure there is a 1/2" clearance (minimum) between the trailer and platform plates when platform is raised or lowered. Up- dated Note to include deburring raw edges.	
21	Updated minimum clearance to 1/2" for gap between platform and wall of trailer.	
42	Updated hydraulic schematic by removing lock valve, correcting lift and return line con- nections on cylinders, and adding flow control valves to IN and OUT lines on hydraulic motor.	
43	Updated electrical schematic. Changed one circuit breaker to 175 amps and revised the power circuit paths to the battery selector switch, starter solenoid, and stow light.	
45	Updated table of options.	1

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

#### WARNING

- Do not stand, or allow obstructions, under the platform when lowering the Liftgate. **Be sure your** feet are clear of the Liftgate.
- Keep fingers, hands, arms, legs, and feet clear of moving Liftgate parts (and platform edges) when operating the Liftgate.
- Correctly stow platform when not in use. Extended platforms could create a hazard for people and vehicles passing by.
- 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.
- 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.

#### 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 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 or 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.

# **VEHICLE REQUIREMENTS**

#### CAUTION

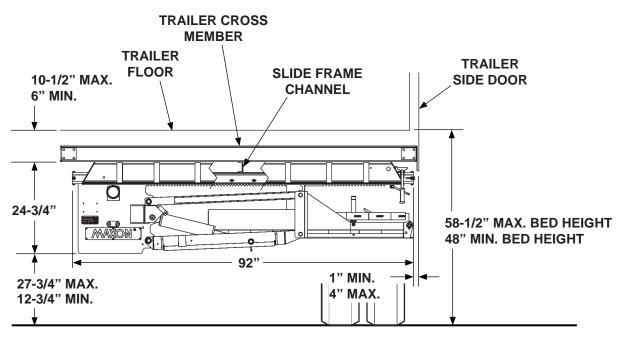
To prevent damage to Liftgate and trailer, install stops on the slide rails to keep the sliding axles from hitting Liftgate. Refer to Liftgate clearance dimensions in this section of the manual.

NOTE: BODY maximum and minimum operating bed height: Maximum height is 58-1/2" (Unloaded). Minimum height is 48" (Loaded). On vehicle bodies equipped with swing-open doors, the heel of platform may have to be notched to prevent interference from trailer.

**NOTE:** Make sure vehicle is parked on level ground while preparing vehicle and installing Liftgate.

**NOTE:** Dimensions are provided as reference for fitting Liftgate to vehicle body.

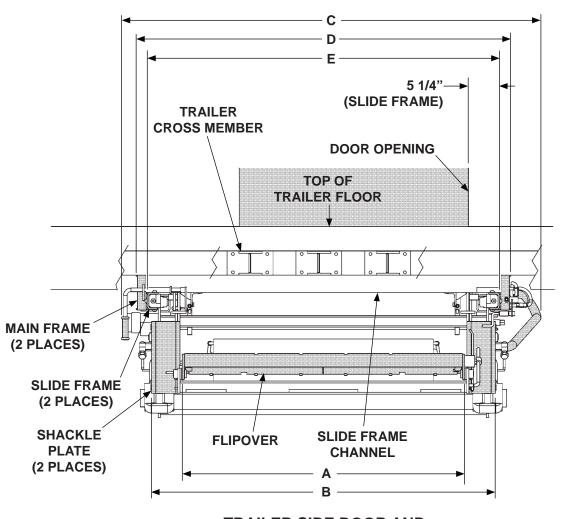
Check for correct clearances (FIG. 6-1, FIG. 7-1 and TABLE 7-1) on vehicle to prevent interference between vehicle and Liftgate.



SIDE VIEW OF LIFTGATE AS SEEN FROM REAR OF TRAILER FIG. 6-1

#### **VEHICLE REQUIREMENTS - Continued**

**NOTE:** Offset Liftgate 4-1/8" from the door opening to the outer edge of the slide frame (**FIG. 7-1**) so the platform will not hit the door when the door is open.



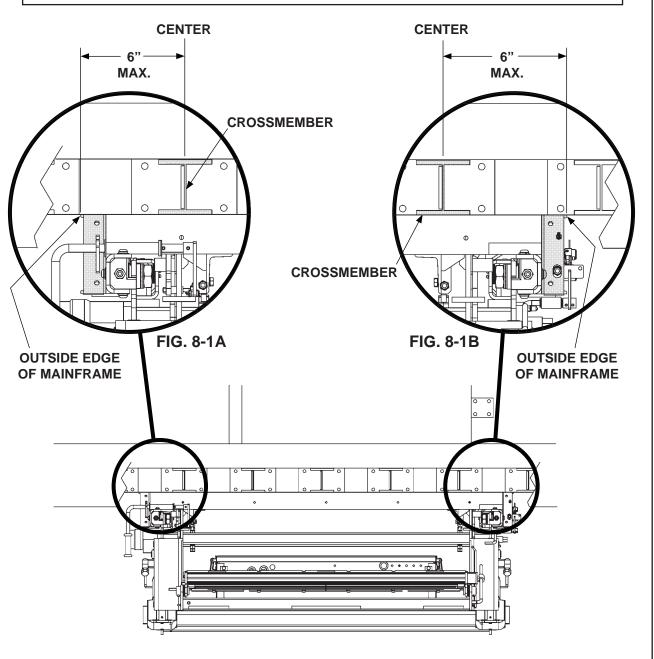
TRAILER SIDE DOOR AND LIFTGATE IN STOWED POSITION FIG. 7-1

Α	В	C D		E	
(FLIPOVER	(ACROSS SHACKLE	(OVERALL	(OUTER EDGE OF	(OUTER EDGE OF	
WIDTH)	PLATES)	WIDTH)	MAIN FRAME)	SLIDE FRAME	
49-1/4"	60"	77-7/8"	65"	61-1/2"	
61-1/4"	72"	89-7/8"	77"	73-1/2"	
83-1/4"	94"	112-1/8"	99"	95-1/2"	

#### MOUNTING SPACE REQUIREMENTS TABLE 7-1

#### **VEHICLE REQUIREMENTS - Continued**

NOTE: Center of crossmembers must be no more than 6" from outer edges of mainframe. If more than 6", consult the trailer manufacturer (FIGS. 8-1, 8-1A and 8-1B).



CROSSMEMBER SPACING REQUIREMENTS FIG. 8-1

#### **STEP 1 - PREPARE LIFTGATE FOR INSTALLATION**

**NOTE:** RA Liftgates are equipped with mechanical and electrical controls that can be located on the LH side or RH side of the Liftgate. The Liftgate is shipped with stow latch, latch handle, and flipover latch on the LH side of the Liftgate. It is ready to mount on a trailer with the side door hinges on the RH side of the door. Liftgate will be offset to the LH side of the trailer door, opposite of the hinges. The external control switch and wall switches will also be mounted on the LH side of the door. If the trailer side door hinges are on the LH side, the mechanical controls (stow latch, latch handle and flipover latch) should be moved to the RH side of the Liftgate before the Liftgate is positioned and welded on the trailer cross members. In this case, the external control switches and wall switches will be mounted on the RH side of the trailer side door. The following instructions illustrate how to move the mechanical controls to the RH side of the Liftgate, if necessary.

#### STEP 1 - PREPARE LIFTGATE FOR INSTALLATION -Continued

1. If door hinges are mounted on the LH side of side door opening, disassemble stow latch and stow latch handle from LH side of liftgate, and reassemble on the RH side of the Liftgate (FIGS 10-1 and 10-1A).

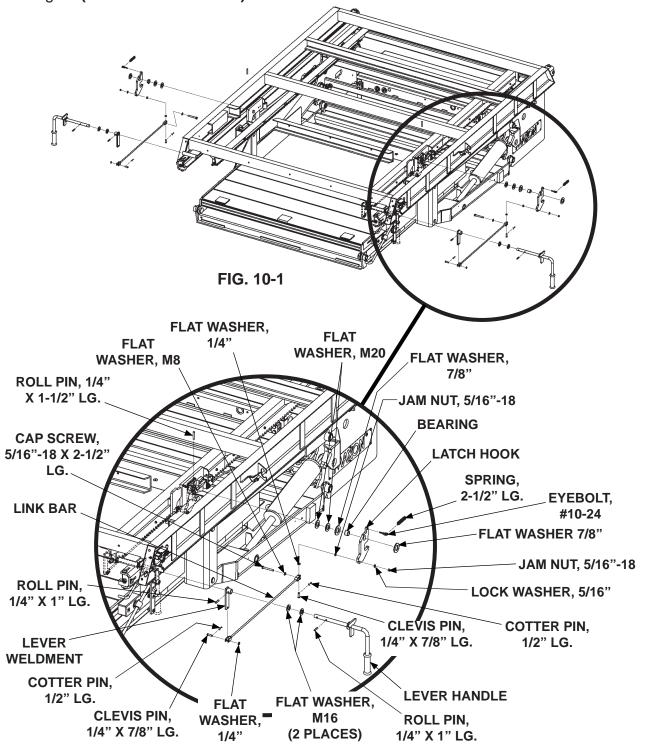
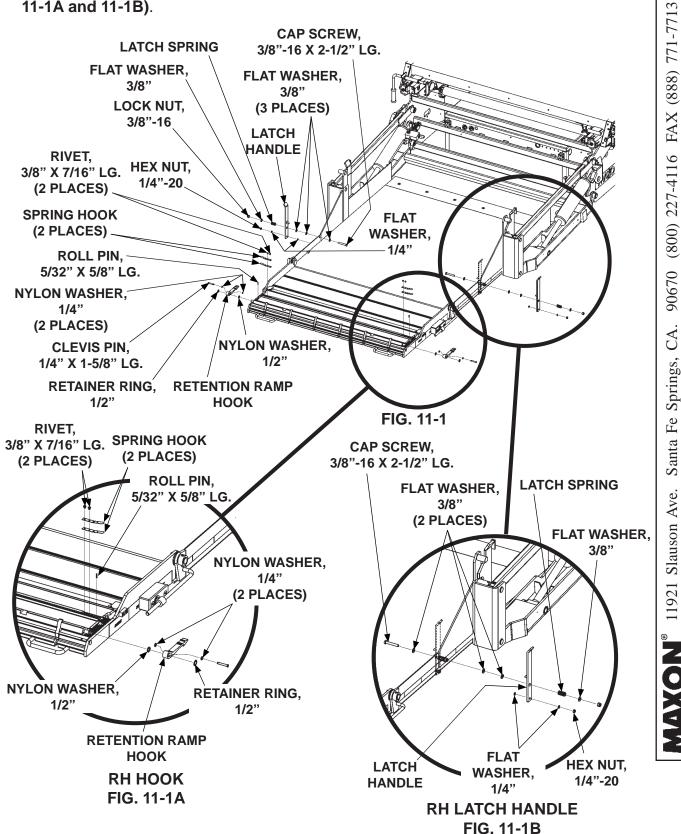


FIG. 10-1A

#### STEP 1 - PREPARE LIFTGATE FOR INSTALLATION -Continued

 Move latch handle and retention ramp hook to the RH side of Liftgate (FIGS. 11-1, 11-1A and 11-1B).



#### **STEP 2 - WELD LIFTGATE ON TRAILER**

#### A WARNING

Use weld blankets to protect lines and tubes from weld splatter.

# A WARNING

Welding on galvanized parts gives off especially hazardous fumes. To minimize hazard remove galvanizing from weld area, provide adequate ventilation, and wear suitable respirator.

# 

To avoid personal injury, use at least 2 people to position Liftgate.

**NOTE:** For installation of this Liftgate, the maximum distance from bottom of trailer cross members to top of trailer floor is 10-1/2" max.

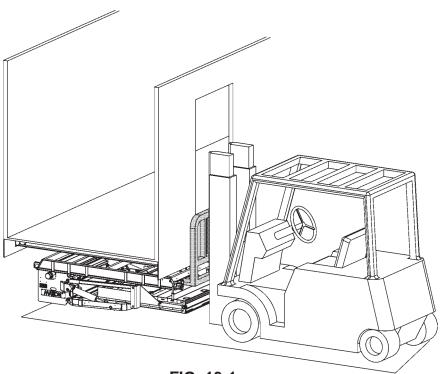
**NOTE:** Liftgate must be welded to at least 6 fixed trailer crossmembers that are typically spaced 12" between centers.

**NOTE:** Ideal installation is for edge of platform to be aligned with door opening **(FIG. 19-2)**.

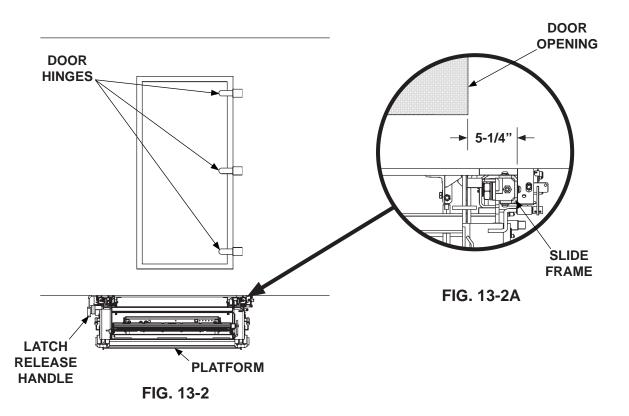
**NOTE:** Switches, stow mechanism, latch release handle and platform latch may be located on either side of the Liftgate during installation, depending on location of trailer door hinges.

#### **STEP 2 - WELD LIFTGATE ON TRAILER - Continued**

1. With forklift, position the Liftgate perpendicular to the side of trailer (FIG 13-1), with latch release handle opposite of door hinges (FIGS. 13-2 and 13-2A).







#### **STEP 2 - WELD LIFTGATE ON TRAILER - Continued**

2. Position Liftgate to trailer by butting the slide frame against the bottom of trailer crossmembers according to the "X" and "Y" dimensions as shown in FIGS. 14-1, 14-1A and TABLE 14-1.

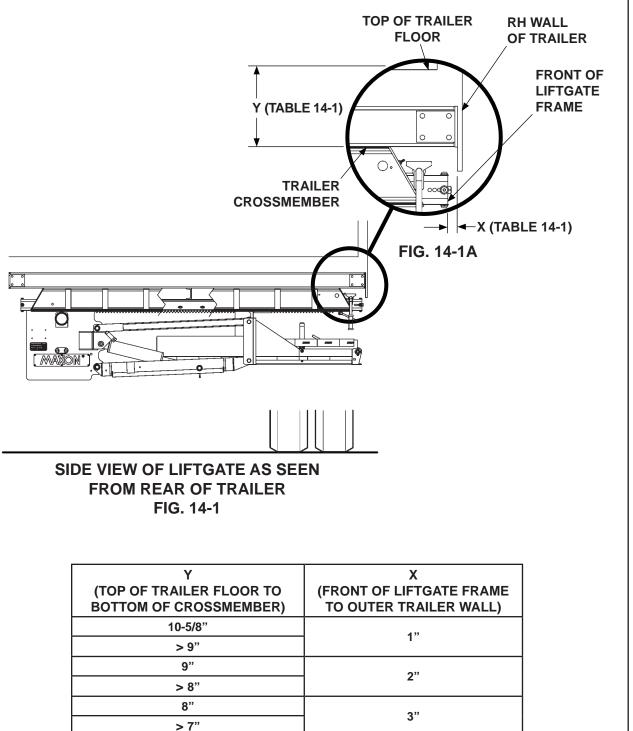


TABLE 14-1

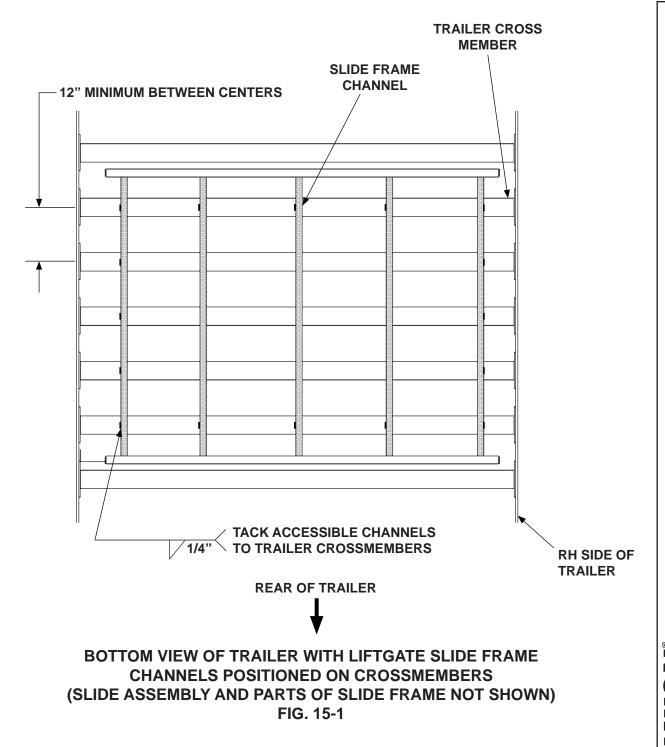
4"

7"

5-1/2"

#### **STEP 2 - WELD LIFTGATE ON TRAILER - Continued**

3. Tack weld Liftgate slide frame to trailer cross members (FIG. 15-1).

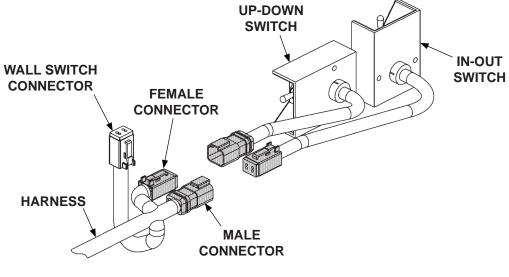


#### **STEP 3 - LEVELING PLATFORM**

**NOTE:** Make sure Liftgate is tack-welded to trailer before connecting power.

**NOTE:** If necessary, external 12 VDC power may be used in place of batteries for initial platform leveling adjustments.

1. Connect IN-OUT and UP-DOWN switches to main wiring harness so slide assembly and platform can be repositioned (FIG. 16-1). Then, ensure Liftgate batteries are connected as shown in (FIG 16-2).





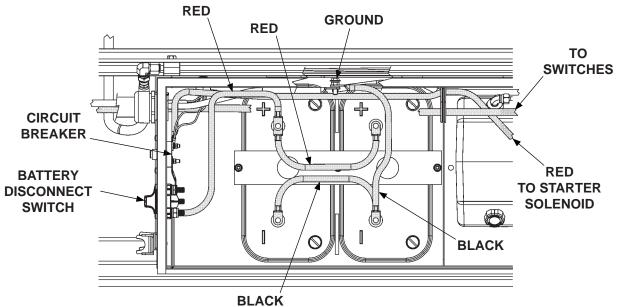


FIG. 16-2

#### CAUTION

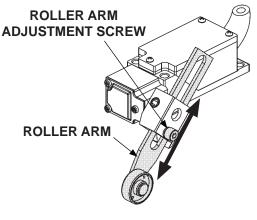
Operate Liftgate with caution and no load until installation is complete.

#### CAUTION

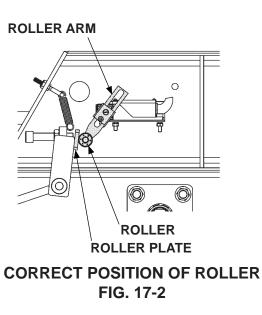
Limit switch is activated when the platform is raised and not fully in the OUT position **(FIG. 17-2)**. If the limit switch does not activate, the parallel arms, stow latch mechanism, and trailer can be damaged. To prevent Liftgate and trailer damage, make sure limit switch roller arm is adjusted correctly.

NOTE: Refer to Operating Instructions decal and applicable WARNING & CAUTION decals.

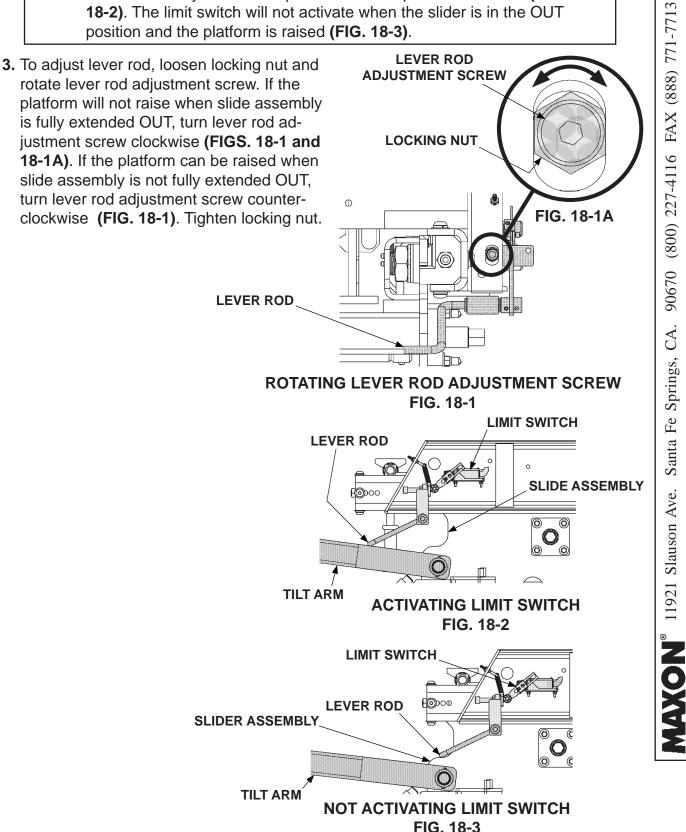
 To adjust roller arm, loosen roller arm adjustment screw (FIG. 17-1). If the roller doesn't connect with the center of the roller plate (FIG. 17-2), slide the roller arm out a little to make it longer (FIG. 17-1). If the roller extends past the roller plate (FIG. 17-2), slide the roller arm in a little to make it shorter (FIG. 17-1). Tighten roller arm adjustment screw (FIG. 17-1).



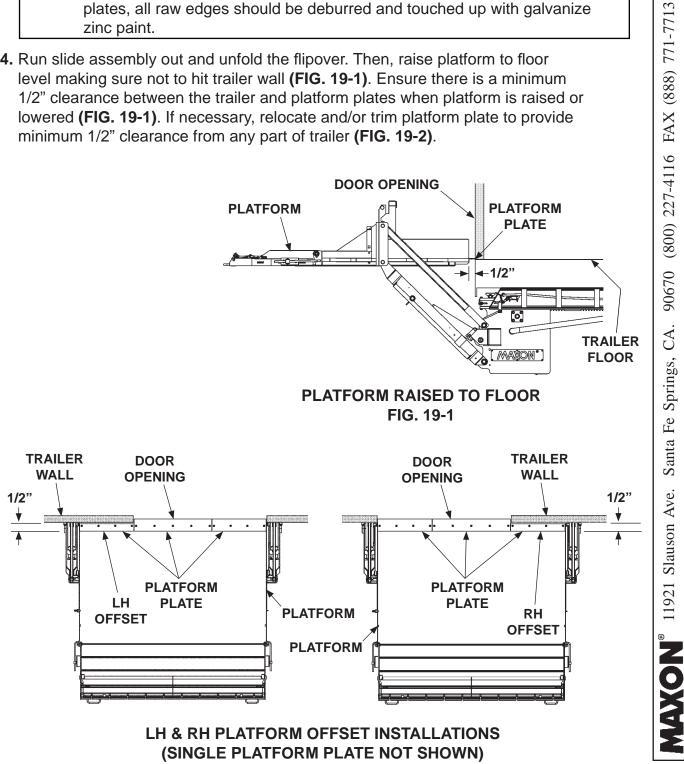
#### ADJUSTING ROLLER ARM FIG. 17-1



NOTE: Lever rod is adjusted correctly when the limit switch is activated if the slider is not fully in the OUT position and the platform is raised (FIG. 18-2). The limit switch will not activate when the slider is in the OUT position and the platform is raised (FIG. 18-3).



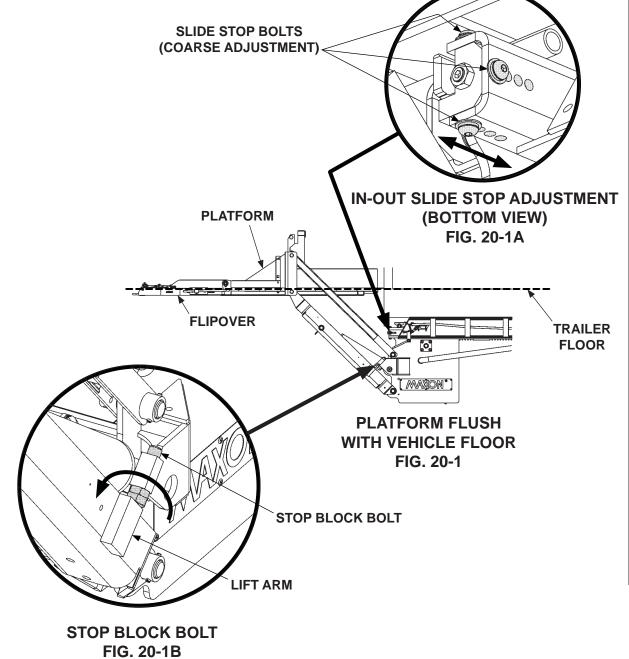
- NOTE: Platform plates can be unbolted to move and trim as needed to clear the door opening for right or left offset installations. After trimming platform plates, all raw edges should be deburred and touched up with galvanize zinc paint.
- 4. Run slide assembly out and unfold the flipover. Then, raise platform to floor level making sure not to hit trailer wall (FIG. 19-1). Ensure there is a minimum 1/2" clearance between the trailer and platform plates when platform is raised or lowered (FIG. 19-1). If necessary, relocate and/or trim platform plate to provide minimum 1/2" clearance from any part of trailer (FIG. 19-2).



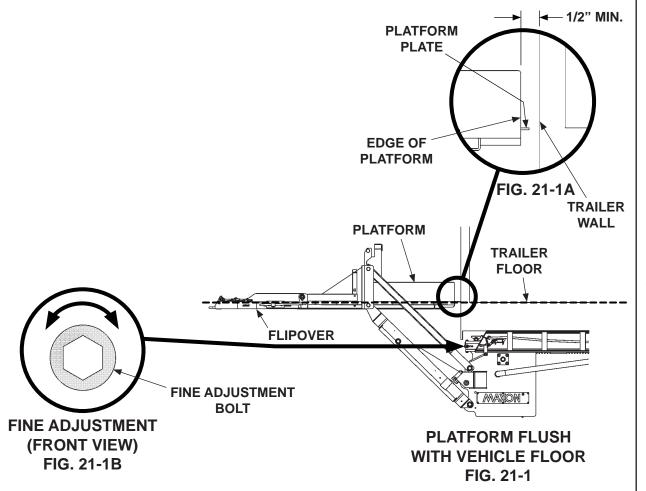


**NOTE:** The slide stop bolts move the platform 1/2" per each hole. The fine adjusment moves the platform 3/8".

- 5. If needed, move slide stop bolts to level platform with trailer floor as shown in FIGS. 20-1 and 20-1A. Bolting the stop closer to the trailer wall will stop slider closer to trailer wall and allow the platform to be raised higher. Bolting the stops farther away from trailer wall will stop slider farther from the trailer wall and decrease the height platform can be raised.
- 6. With platform at floor level, turn stop block bolts **COUNTERCLOCKWISE** until butted against each lift arm as shown in **FIG. 20-1B**. This will prevent the platform from hitting the trailer wall.

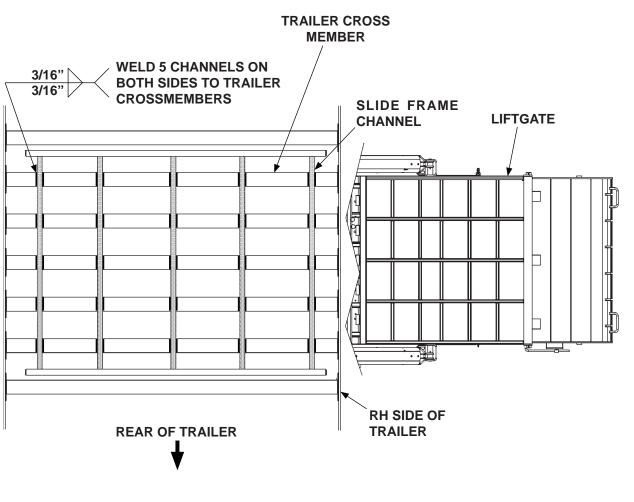


 Check for 1/2" minimum clearance between platform and any part of trailer (FIG. 21-1A), and ensure the platform plate overlaps the trailer door opening (FIGS. 21-1 and 21-1A). If necessary, turn fine adjustment bolt to get the minimum 1/2" distance (FIGS. 21-1A and 21-1B). Turning the bolt COUNTERCLOCKWISE will increase the distance, turning the bolt CLOCKWISE will decrease the distance.



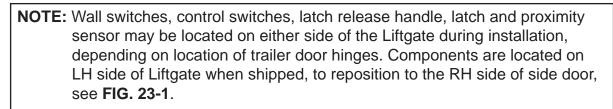
#### **STEP 4 - FINISH WELDING LIFTGATE**

Weld slide frame to tailer crossmembers as shown in FIGS. 22-1.



BOTTOM VIEW OF TRAILER WITH LIFTGATE SLIDE FRAME CHANNELS POSITIONED ON CROSSMEMBERS (SLIDE ASSY AND PARTS OF SLIDE FRAME NOT SHOWN) FIG. 22-1

# **STEP 5 - ATTACH CONTROL SWITCHES TO TRAILER**



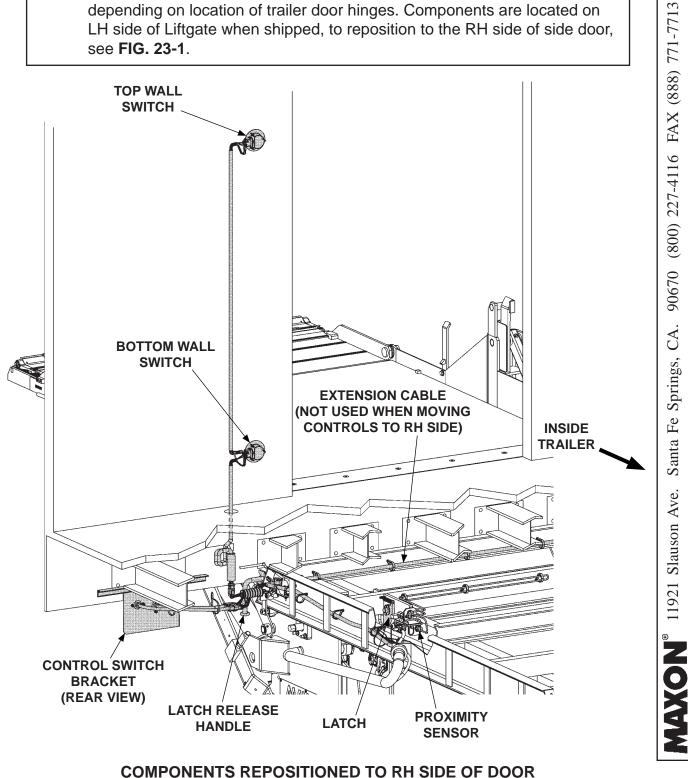
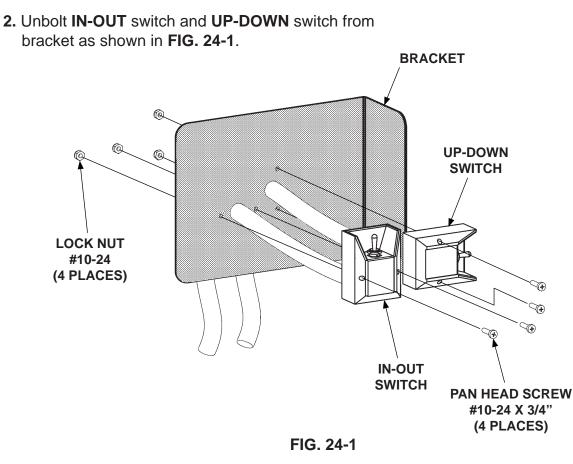
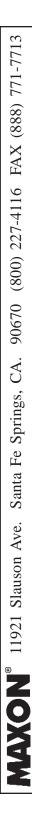


FIG. 23-1

**1.** Disconnect battery power from Liftgate.



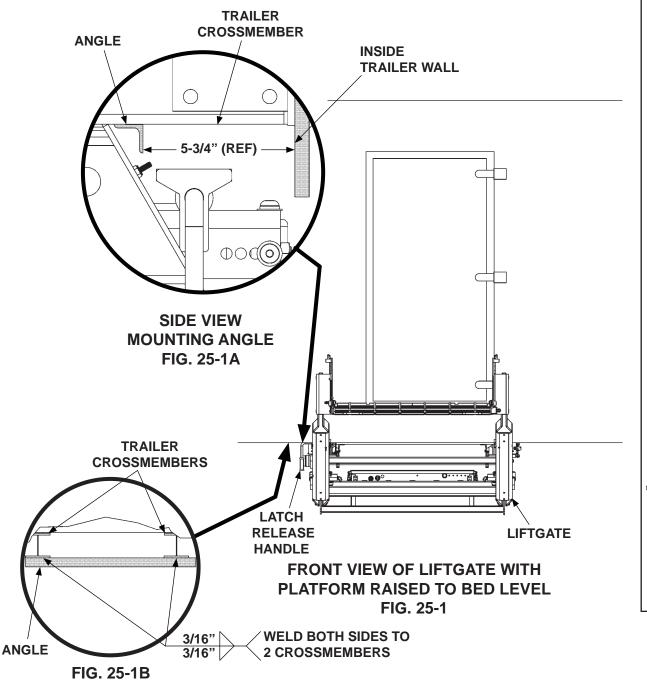


#### CAUTION

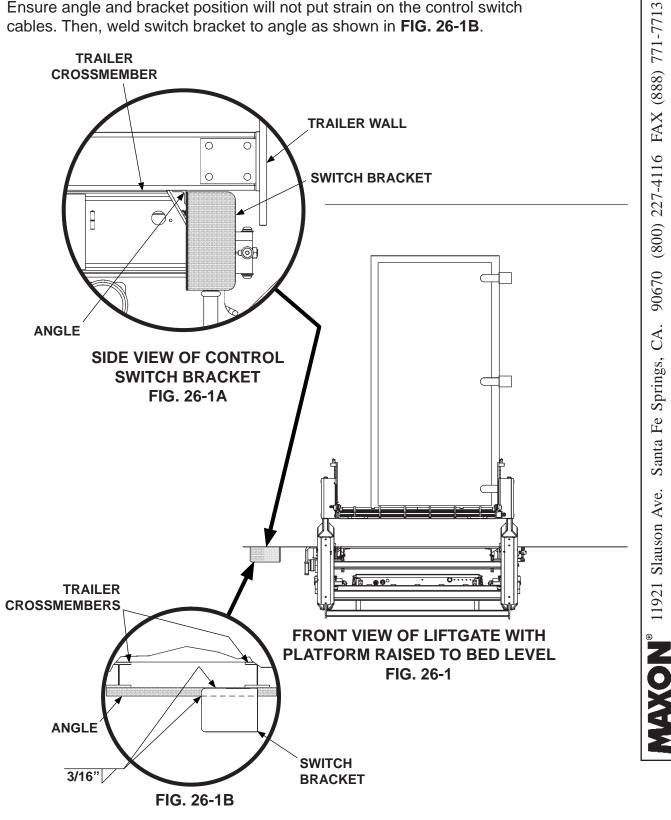
Prevent damage to switches and harness by using a protective cover such as a welding blanket to cover switches and harness.

**NOTE:** Angle must be welded on 2 cross members.

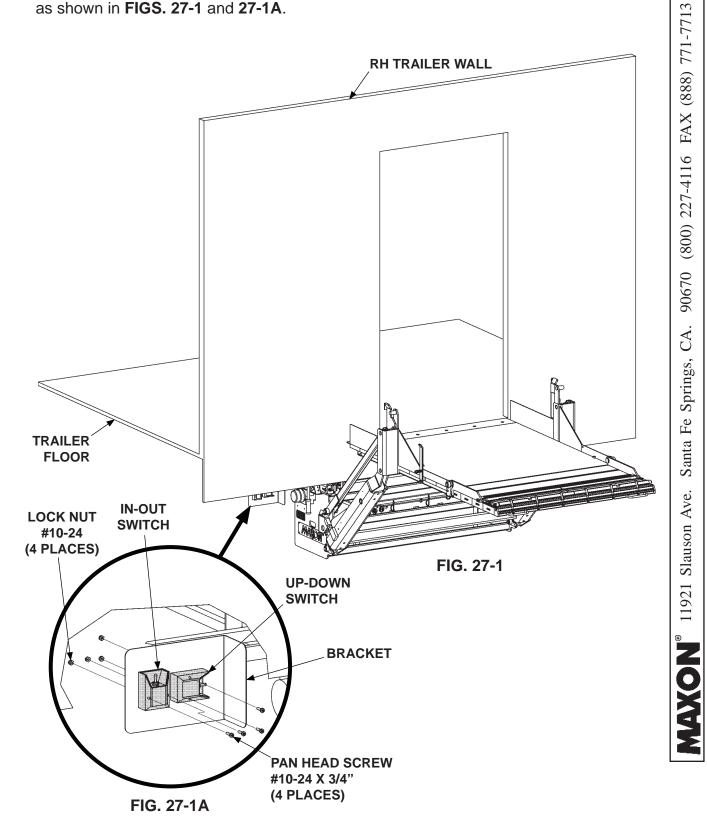
**3.** Position angle on nearest crossmembers by latch release handle (FIGS. 25-1, 25-1A and 25-1B). Then, weld angle to the 2 crossmembers (FIG. 25-1B).



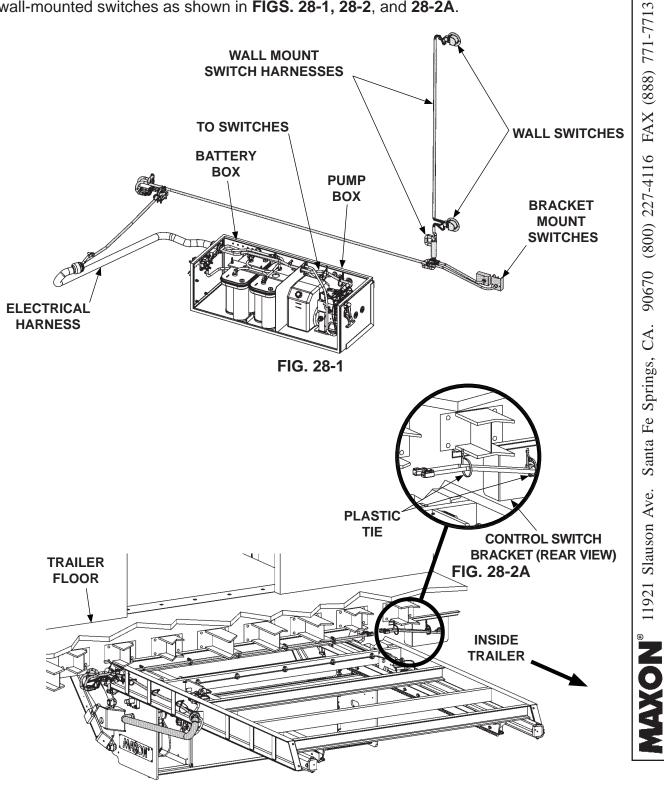
4. Position control switch bracket on angle as shown in FIGS. 26-1 and 26-1A. Ensure angle and bracket position will not put strain on the control switch cables. Then, weld switch bracket to angle as shown in FIG. 26-1B.



5. Bolt IN-OUT and UP-DOWN control switches to bracket as shown in FIGS. 27-1 and 27-1A.



6. Route and connect electrical harness to bracket-mounted switches and wall-mounted switches as shown in FIGS. 28-1, 28-2, and 28-2A.



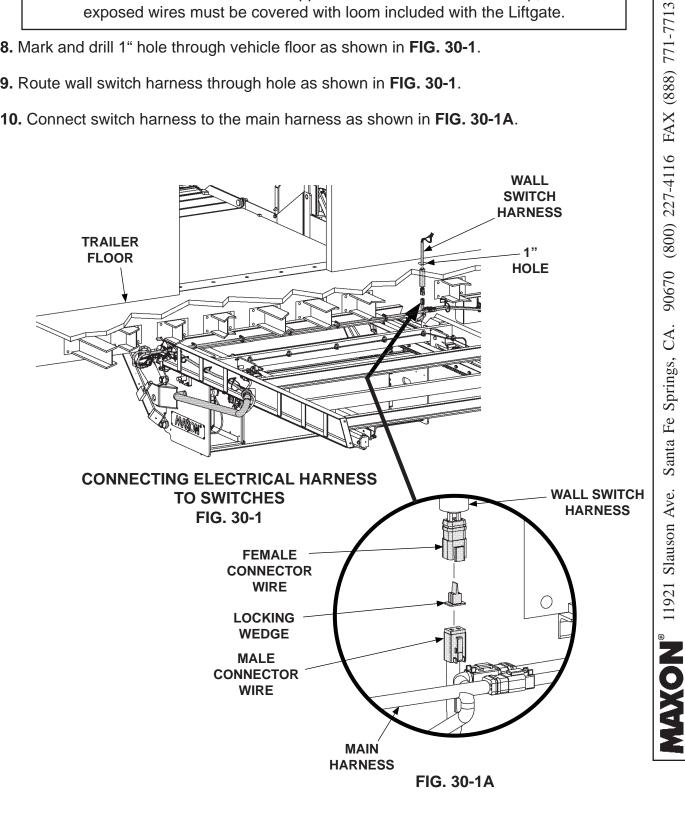
ELECTRICAL HARNESS ROUTED UNDER TRAILER FLOOR FIG. 28-2

# **STEP 5 - ATTACH CONTROL SWITCHES TO TRAILER -**Continued 7. Reconnect IN-OUT and UP-DOWN switches to electrical harness as shown in FIG. 29-1 and 29-1A. **IN-OUT UP-DOWN** SWITCH SWITCH FEMALE CONNECTOR MALE CONNECTOR NO MALE FEMALE CONNECTOR CONNECTOR CONTROL BRACKET SWITCH (REAR VIEW) **HARNESS** FIG. 29-1A

CONNECTING ELECTRICAL HARNESS TO SWITCHES FIG. 29-1

NOTE: Unused terminals must be wrapped and sealed with shrink wrap, and exposed wires must be covered with loom included with the Liftgate.

- 8. Mark and drill 1" hole through vehicle floor as shown in FIG. 30-1.
- 9. Route wall switch harness through hole as shown in FIG. 30-1.
- 10. Connect switch harness to the main harness as shown in FIG. 30-1A.

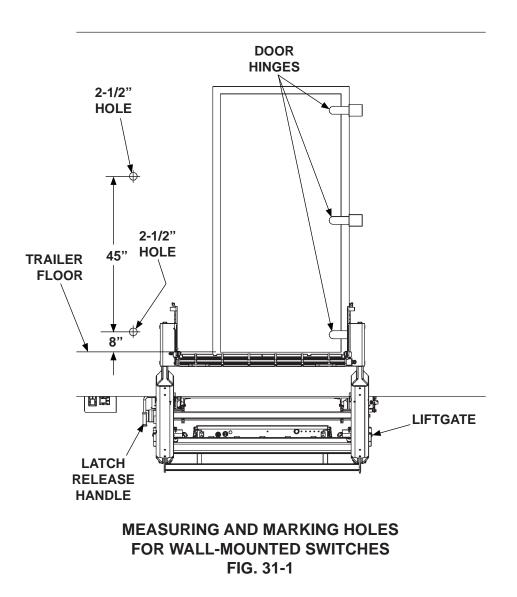


# 90670 (800) 227-4116 FAX (888) 771-7713 Santa Fe Springs, CA. MAXON<sup>®</sup> 11921 Slauson Ave.

#### STEP 5 - ATTACH CONTROL SWITCHES TO TRAILER -Continued

**NOTE:** Mount control switches on outside wall opposite hinges and on same side as latch release handle.

**11.** Measure, mark, and drill 2-1/2" hole, in 2 places, on the trailer side wall as shown in **FIG. 31-1**.



12. Fasten wall switches to trailer wall with self drilling screws as shown in FIG. 32-1 and 32-1A.

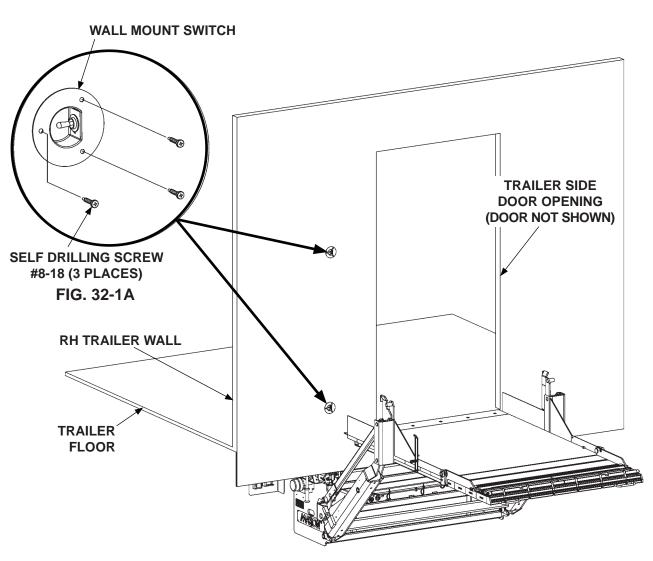


FIG. 32-1

NOTE: After assembly, MAXON recommends to seal all connections with NCP-2 corrosion preventive sealer from NOCO or equivalent.

13. Splice top wall switch harness to bottom wall switch harness as shown in FIGS. 33-1 and 33-1A.

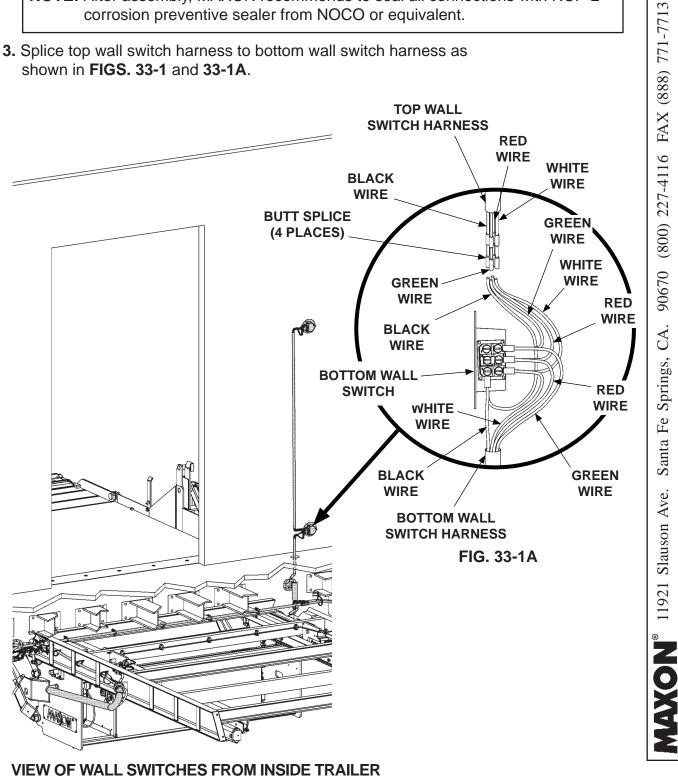
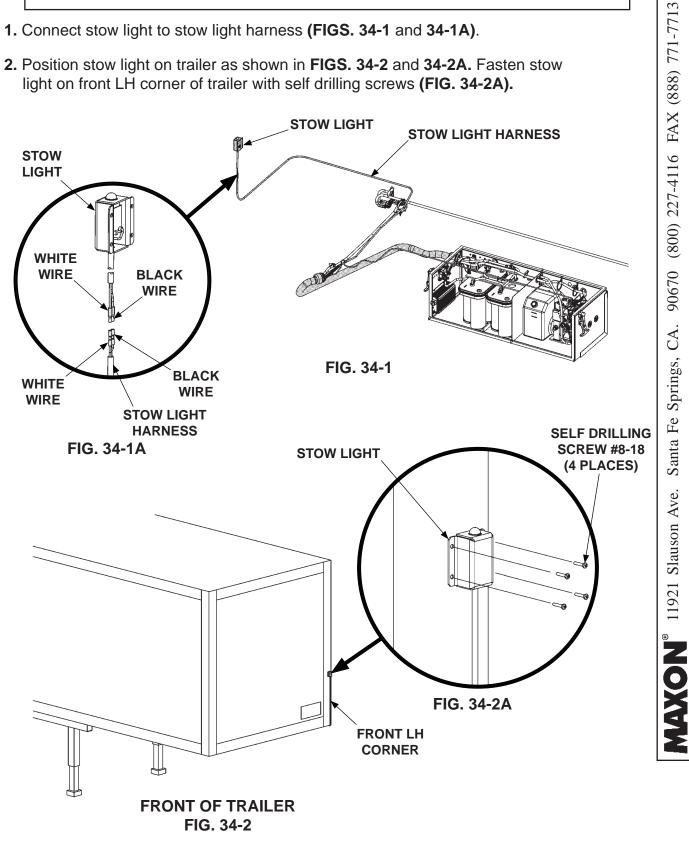


FIG. 33-1

#### **STEP 6 - ATTACH STOW LIGHT TO TRAILER**

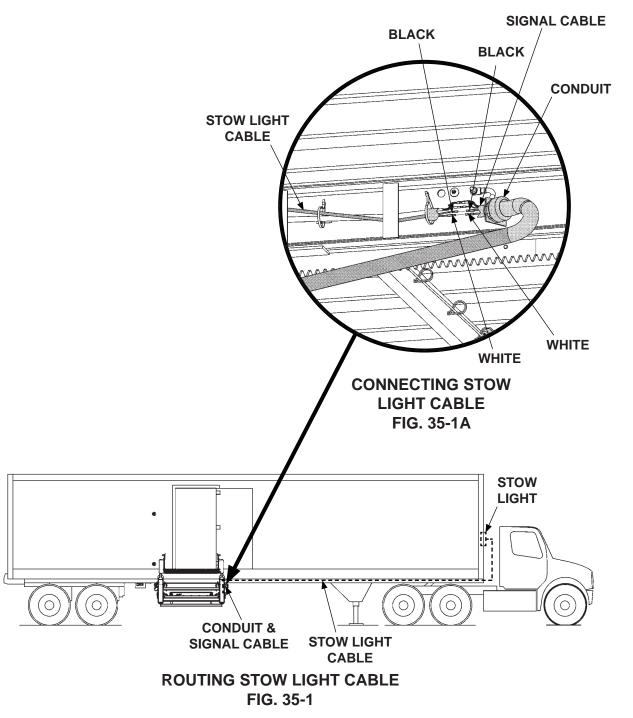
NOTE: Stow light will warn vehicle driver if the Liftgate is not stowed. Light must be positioned so the driver can see the light from the LH sideview mirror.

- 1. Connect stow light to stow light harness (FIGS. 34-1 and 34-1A).
- 2. Position stow light on trailer as shown in FIGS. 34-2 and 34-2A. Fasten stow light on front LH corner of trailer with self drilling screws (FIG. 34-2A).



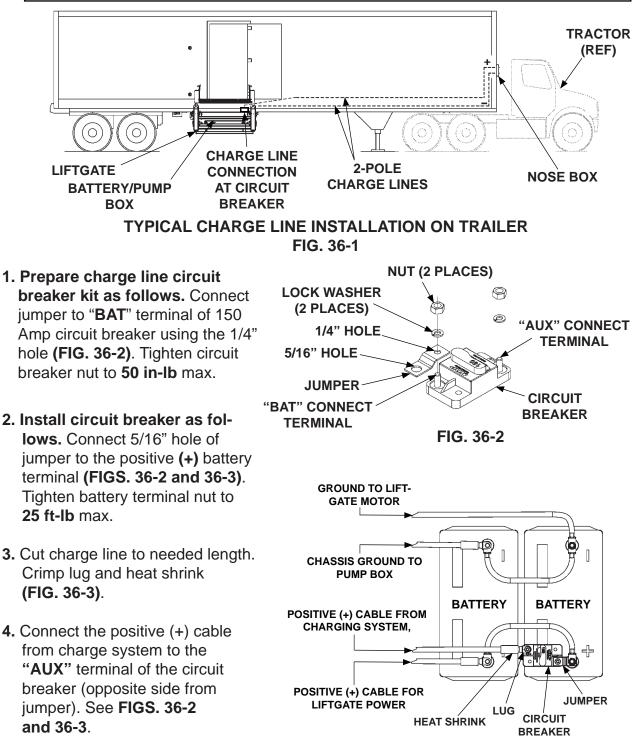
# STEP 6 - ATTACH STOW LIGHT TO TRAILER - Continued

**3.** Route and connect stow light cable to signal cable connectors extending from the conduit as shown in **FIGS. 35-1** and **35-1A**.



# **STEP 7 - RECOMMENDED POWER CONFIGURATION**

**NOTE:** Make sure Liftgate power unit, and all batteries on the vehicle for power unit, are connected correctly to a common chassis ground. Always use circuit protection on positive battery cables. Circuit protection should be as close as possible to the battery connection. Use 150 Amp circuit breaker kit provided to connect the positive (+) 2 gauge cable (charge line kit) to the Liftgate batteries.





(800) 227-4116 FAX (888) 771-7713

90670

CA.

Santa Fe Springs,

**AXON**<sup>®</sup> 11921 Slauson Ave.

#### ATTACH DECALS

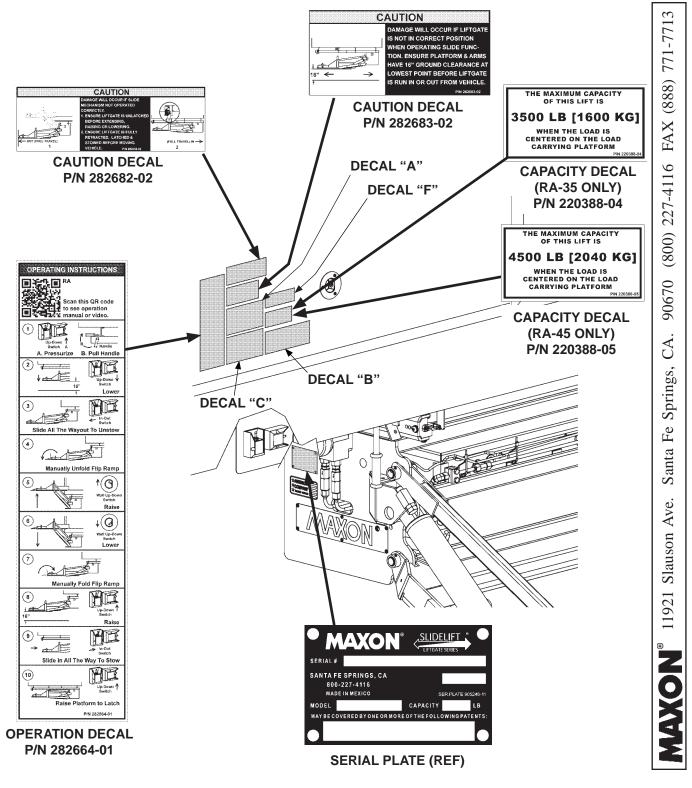
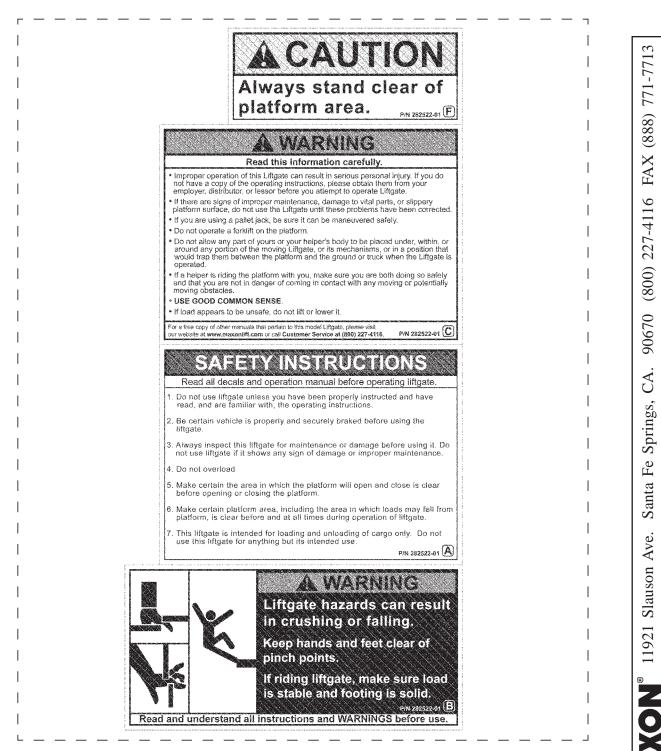


FIG. 37-1

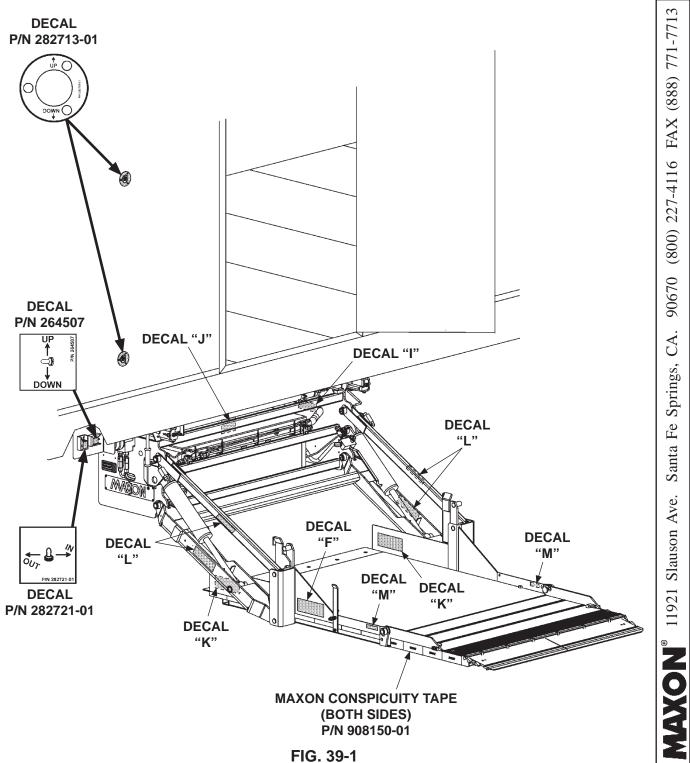
#### **ATTACH DECALS - Continued**



DECAL SHEET P/N 282522-01 FIG. 38-1

38

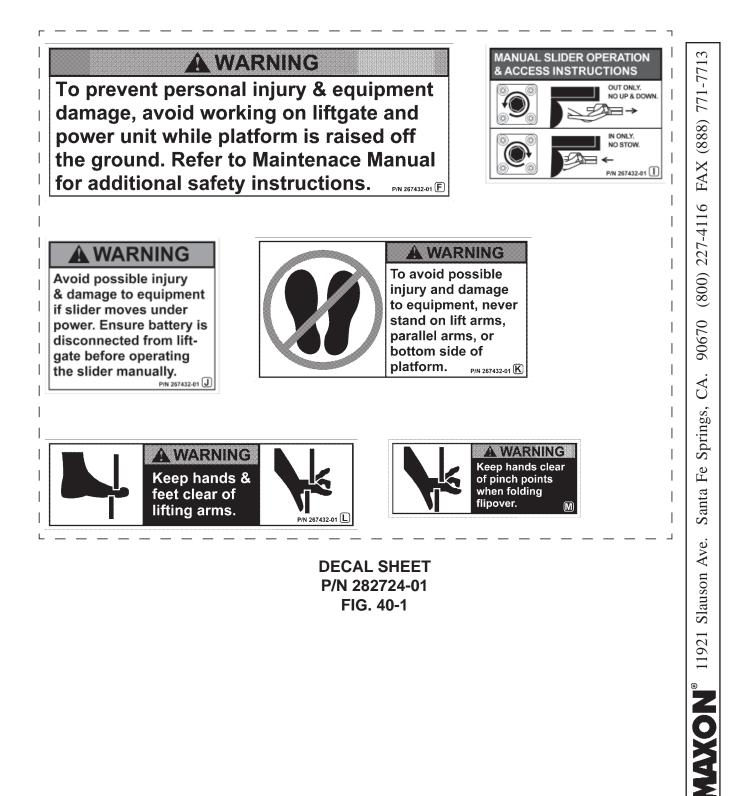
#### **DECAL POSITIONS**





39

#### **DECAL POSITIONS - Continued**



#### SYSTEM DIAGRAMS PUMP & MOTOR SOLENOID OPERATION

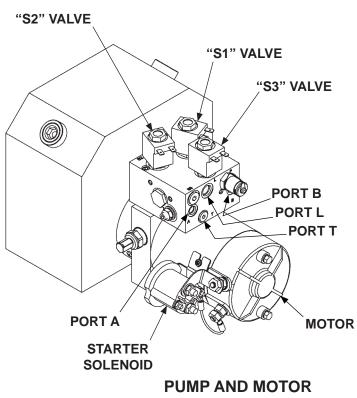
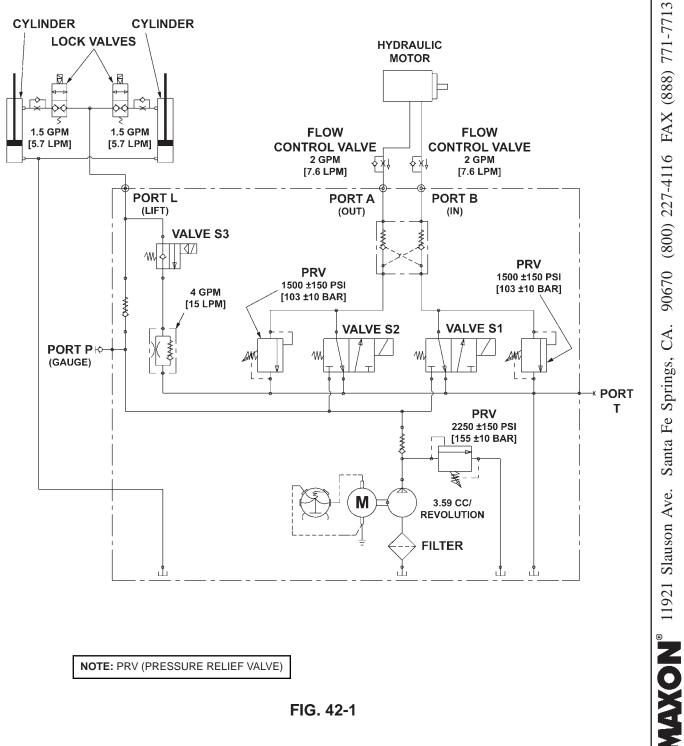


FIG. 41-1

POWER UNIT MOTOR & SOLENOID OPERATION						
LIFTGATE	PORT -	SOLENOID OPERATION (✓ MEANS ENERGIZED)				
FUNCTION		MOTOR	VALVE "S1"	VALVE "S2"	VALVE "S3"	LOCK VALVE
RAISE	L	$\checkmark$	-	-	-	$\checkmark$
LOWER	т	-	-	-	$\checkmark$	$\checkmark$
SLIDE OUT	А	$\checkmark$	-	$\checkmark$	-	-
SLIDE IN	В	$\checkmark$	$\checkmark$	-	-	-
REFER TO VALVES SHOWN ON HYDRAULIC SCHEMATIC						

#### **TABLE 41-1**

#### **SYSTEM DIAGRAMS - Continued** HYDRAULIC SCHEMATIC





#### SYSTEM DIAGRAMS - Continued ELECTRICAL SCHEMATIC

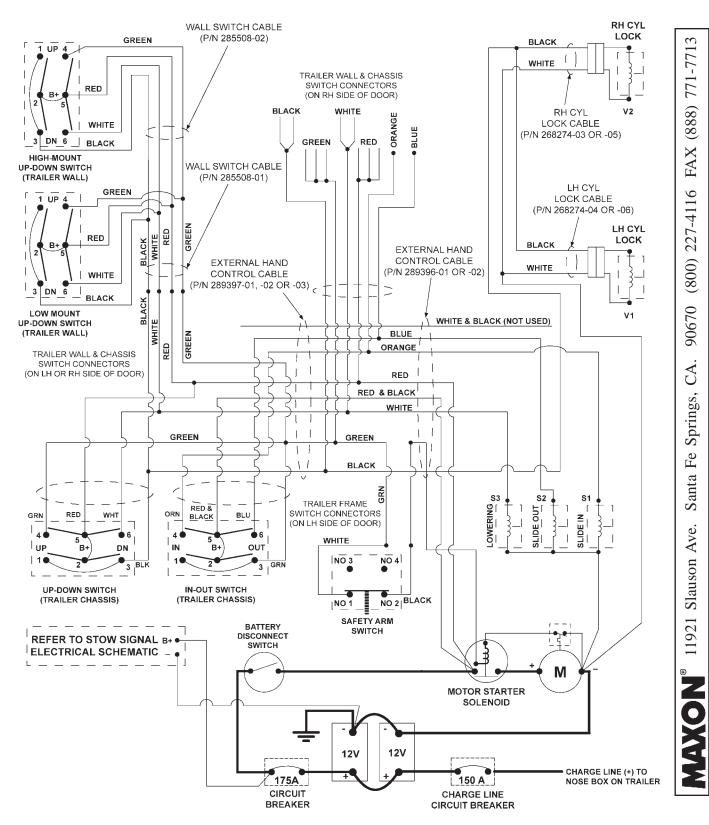


FIG. 43-1

#### **SYSTEM DIAGRAMS - Continued** STOW SIGNAL ELECTRICAL SCHEMATIC

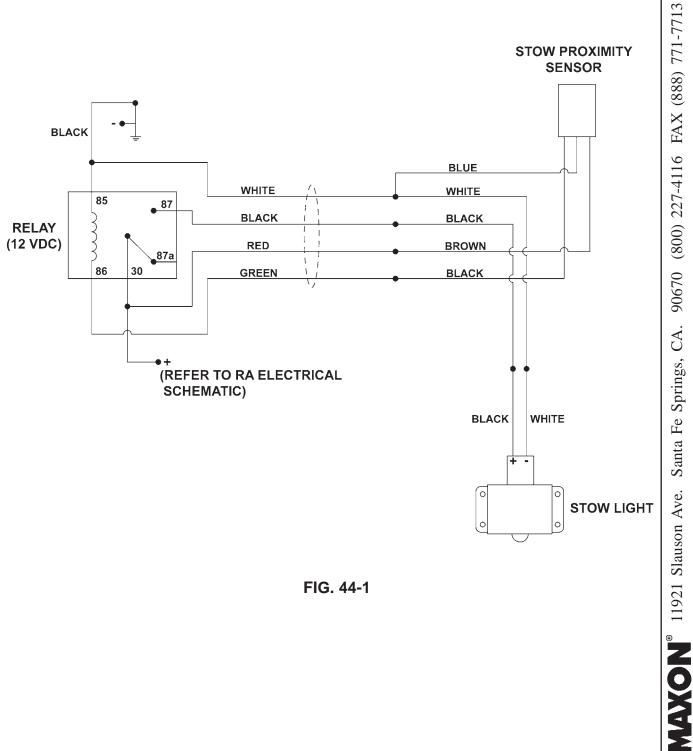


FIG. 44-1

44

#### **OPTIONS**

#### **OPTIONAL LIFTGATE COMPONENTS**

MISCELLANEOUS KITS	PART NO.
UNIVERSAL CAB CUT-OFF SWITCH, 60 FT	298905-01
MUD GUARD	225216
EXTRA CONTROLS AND CONTROL KITS	
HAND HELD CONTROL	285609-01
WALL SWITCH KITS	
RECESSED WALL SWITCHES	288670-01
OUTSIDE WALL SWITCHES	288947-01
BATTERY CABLE KITS	
16' BATTERY CABLE INSTALLATION	289230-01
26' BATTERY CABLE INSTALLATION	289230-02
36' BATTERY CABLE INSTALLATION	289230-03
48' BATTERY CABLE INSTALLATION	289230-04
LIGHT KITS	
FLASHING LIGHTS, FOR 82" WIDTH	295196-01
FLASHING LIGHTS, FOR 60" WIDTH	295196-02
FLASHING LIGHTS, FOR 48" WIDTH	295196-03
WORK LIGHTS	295198-01
TRAILER FRONT LIGHTS	295199-01
SAFETY LIGHT, RA	210519-01

**TABLE 45-1** 

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