

## Installation Manual

### DH Series Liftgates

• 4500 / 5500 / 6600 Lb. Capacity



Contents	Page
Introduction .....	2
Warranty.....	2
Notes, Cautions, and Warnings .....	2
Section 1 – Safety Precautions .....	3
Section 2 – Welding Standards .....	6
Section 3 – Model and Serial Number Information.....	7
DH Liftgate Terminology.....	8
Section 4 – Vehicle Requirements.....	10
Section 5 – Vehicle and Liftgate Preparation for Weld-On Option.....	11
Section 6 – Weld-On Liftgate Installation .....	12
Section 7 – Vehicle and Liftgate Preparation for Bolt-On Option .....	15

Contents	Page
Section 8 – Bolt-On Liftgate Installation.....	15
Section 9 – Control Station Installation .....	24
Section 10 – Pump Box Installation .....	25
Section 11 – Master-Slave Hydraulic Hose Routing .....	28
Section 12 – Flow Dividing Hydraulic Hose Routing .....	30
Section 13 – Wire Harness Installation .....	32
Section 14 – Charge and Ground Cable Installation.....	33
Section 15 – Battery and Cable Installation .....	35
Section 16 – Filling the Hydraulic Reservoir and Purging the System.....	37
Section 17 – Decal Installation.....	38
Section 18 – Final Inspection Checklist.....	39

## Introduction

This manual provides you with the information necessary for the installation of the SAF-HOLLAND DH Series Liftgate.

**NOTE:** For liftgate components replacement, contact SAF-HOLLAND Customer Service at:  
U.S. 888-396-6501  
Canada 800-503-9847

## Warranty

Refer to the complete warranty for the country in which the product will be used. A copy of the warranty certificate is included with the product as well as on the SAF-HOLLAND website ([www.safholland.us](http://www.safholland.us) and [www.safholland.ca](http://www.safholland.ca)). It may also be ordered directly from SAF-HOLLAND; the address is shown on the back cover.

## Notes, Cautions, and Warnings

You must read and understand all of the safety procedures presented in this manual before starting any work on the liftgate.

**NOTE:** In the United States, workshop safety requirements are defined by federal and/or state Occupational Safety and Health Act. Equivalent laws may exist in other countries. This manual is written based on the assumption that OSHA or other applicable employee safety regulations are followed by the location where work is performed.

Throughout this manual, you will notice the terms “NOTE,” “IMPORTANT,” “CAUTION,” and “WARNING” followed by useful product information. So that you may better understand the manual, those terms are as follows:

**NOTE:** Includes additional information to enable accurate and easy performance of procedures.

**IMPORTANT:** Includes additional information that if not followed could lead to hindered product performance.

**CAUTION** Used without the safety alert symbol, indicates a potentially hazardous situation which, if not avoided, could result in property damage.

**CAUTION** Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

**WARNING** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

## 1. Safety Precautions

**IMPORTANT:** Read this manual before using this product. Keep this manual in a safe location for future reference.

**⚠ WARNING** Failure to follow the instructions and safety precautions in this manual could result in death or serious injury.

### General Safety Precautions

1. To reduce the risks and ensure safety at all times, this section of the manual details a number of safety rules which should always be followed.
2. Read and observe all Warning and Caution hazard alert messages in this manual and on the equipment.
3. You must be fully trained on the capabilities and the limitations of this equipment to operate the equipment properly.
4. Always use the proper tool for the job. Repair or replace worn or damaged tools before starting any repairs.

**NOTE:** Proper tools must be used to perform the installation procedures in this manual. Many of these procedures require special tools.

### Installation Safety Precautions

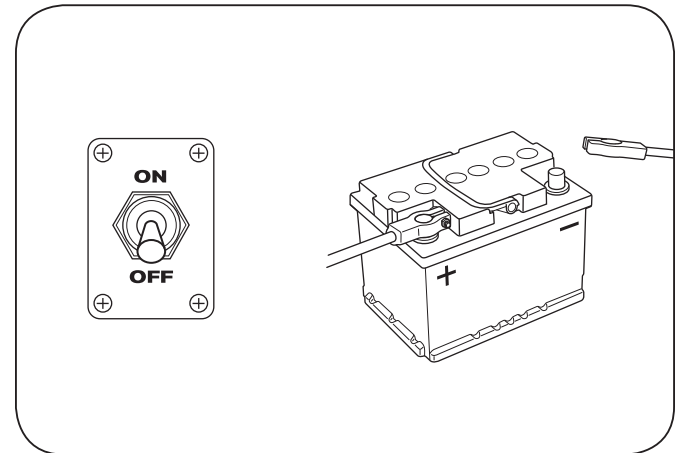
1. DO NOT work underneath the liftgate without properly supporting the raised platform and liftframe in accordance with workplace safety requirements.
2. Never strike any part of the liftgate with a steel hammer.
3. Safety protection should always be worn as protection from pressurized fluid spray, flying debris, and other airborne matter when working with tools, power tools, welding equipment, and dangerous chemicals.

**NOTE:** Never operate the liftgate with the vehicle running unless instructed to by this manual for specific service items.

**⚠ WARNING** Failure to turn off vehicle motor before commencing work could allow vehicle to move which, if not avoided, could result in death or serious injury.

4. While servicing or repairing equipment, always disconnect the electrical power to the pump motor and ensure that the platform and liftframe is supported on the ground or secured in the travel lugs.
5. When welding is required, ensure that the battery ground cable is disconnected and that all electrical equipment is completely electrically isolated before welding is initiated (**Figure 1**).

Figure 1



6. Before starting any welding, ensure that the area to be repaired is cleaned of debris and combustible material. Have a charged fire extinguisher available and know how to use it.
7. When searching for an oil leak, wear work gloves and use a piece of cardboard or wood as a detector. Wear a safety face shield or goggles for eye protection. **NEVER** use your bare hands to check for fluid leaks (**Figure 2**).

**⚠ WARNING** Failure to properly protect yourself when searching for hydraulic leaks could result in fluid injection into the skin which, if not avoided, could result in death or serious injury.

8. Pressure can remain in a hydraulic system after the power source and pump have been shut down. Ensure that there is no pressure in any of the hydraulic cylinders or hoses before performing work on components, or disconnecting any hoses (**Figure 3**).

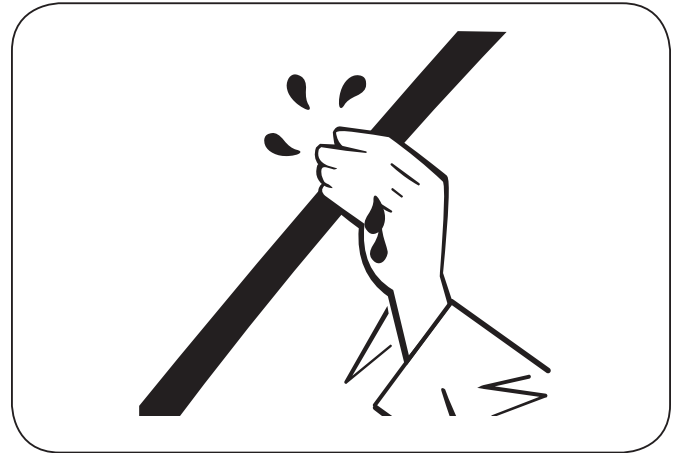
**⚠ WARNING** Failure to depressurize the hydraulic system could result in fluid injection into the skin which, if not avoided, could result in death or serious injury.

**NOTE:** Batteries contain acid that can burn and they also produce gas that can explode, follow battery manufacturers' provided safety instructions when working on your battery.

**⚠ CAUTION** Failure to follow manufacturers' safety instructions when handling batteries may result in explosion which, if not avoided, could result in minor to moderate injury.

9. Inspect the equipment daily for potential fire hazards and make any necessary repairs immediately.
10. Inspect electrical wiring and connections, and hydraulic hose runs to ensure they are secure and not rubbing against other components.
11. Clean up any excess grease, oil accumulation and spillage immediately. Use only non-flammable products for cleaning the liftgate or components.

**Figure 2**



**Figure 3**



## Operating Safety Precautions

1. Never operate the liftgate unless the area is clear of obstacles and other personnel.
2. When operating the liftgate from ground level, always stand to one side of the platform. Ensure fingers, arms, hands, legs and feet are clear of the moving liftgate.
3. Do not exceed the maximum rated capacity of the liftgate.
4. In an emergency situation, release the control switch to stop the liftgate.
5. Ensure liftgate is in stowed position when not in use.
6. NEVER step off moving equipment. Only step off the platform when it is in contact with the ground or at deck height when entering the vehicle.
7. Check for slippery surfaces before stepping off the liftgate platform.
8. Never jump off the liftgate.

## 2. Welding Standards

### 2.1 Scope

This specification applies to all components supplied by SAF-HOLLAND, and its products. The customer assumes all responsibility for weld integrity if weld material and procedure differ from those listed below.

### 2.2 Material

Frame attachment components made from low carbon or high-strength alloy steel are to be welded with AWS filler metal specification AWS A5.18, filler metal classification ER-70S-3, ER-70S-6 or equivalent unless specified on the installation drawing.

**NOTE:** Any substitution for filler material from the above standard must comply, as a minimum, with the following mechanical properties:

- Tensile Strength - 72k psi (496 MPa)
- Yield Strength - 60k psi (414 MPa)
- Charpy V notch - 20 ft.-lbs. (27 N•m) at 0°F (-17.7°C)
- % Elongation - 22%

The recommended welding gas for gas metal arc welding (GMAW) is 90% Argon / 10% CO<sub>2</sub>. If a different gas is used, welds must comply with penetration requirements shown **(Figure 4)**. Where the installation drawing specifies different than above, the drawing shall prevail.

### 2.3 Procedures

Tack welds used for positioning components are to be located in the center of the final weld, where practical. Tack weld should be completely fused to the finish weld. **DO NOT** break arc at the end of the weld. Back up all finish welds at least 1/2" (12.7 mm) or a sufficient amount to prevent craters at the end of the weld. Where weld is shown to go around corners, it is assumed the corner represents a stress concentration area. **DO NOT** start or stop weld within 1" (25.4 mm) of the corner. Particular care should be taken to prevent undercutting in this area.

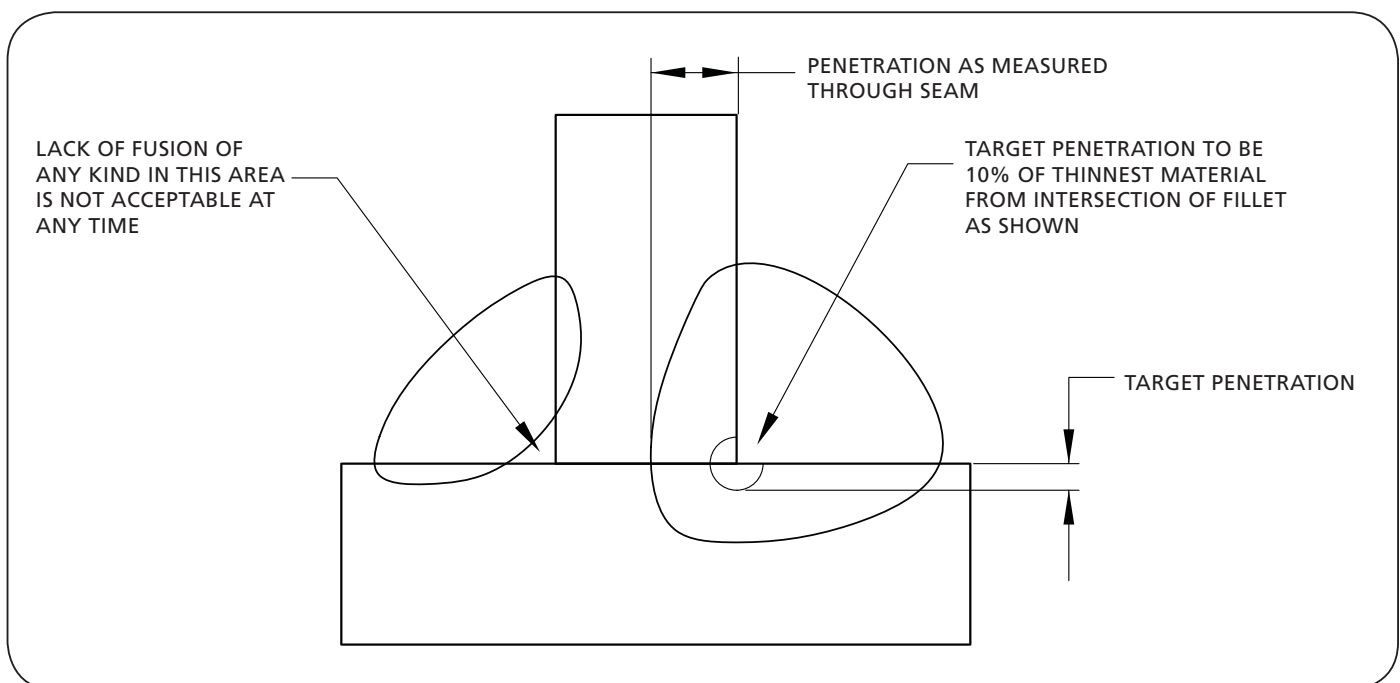
### 2.4 Workmanship

It is the responsibility of the customer to provide good workmanship when attaching components to the frame structure.

### 2.5 Weld Size

If weld size is not specified, the effective throat of the weld must be no smaller than the thinnest material being welded **(Figure 4)**.

**Figure 4**

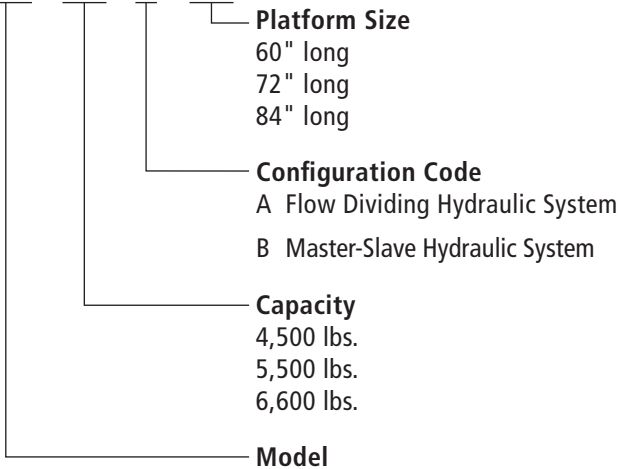


### 3. Liftgate Model and Serial Number Location

Each SAF-HOLLAND liftgate has a stamped metal tag that identifies the liftgate model and serial number (**Figure 5**). This tag is attached to the side of the curbside column (**Figure 6**). In order to properly identify your HOLLAND liftgate and its components when communicating with SAF-HOLLAND or your dealer, please record the model and serial numbers below and refer to them when ordering replacement parts.

#### Model Number

**DH 55 B 84**



#### Serial Number

**92 11 312 0123**

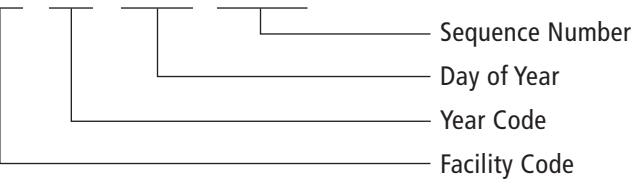


Figure 5

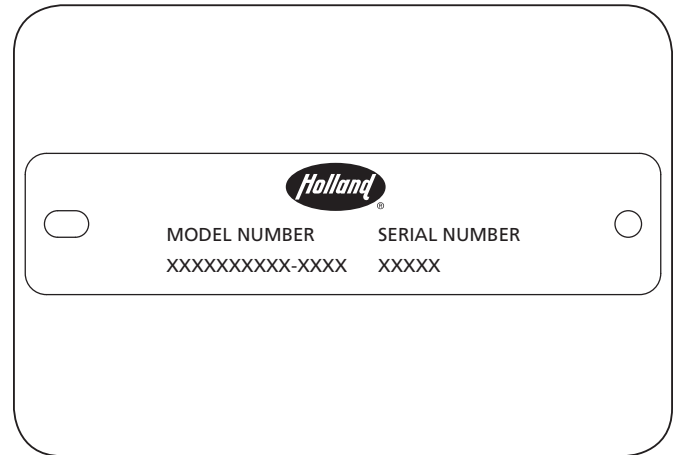
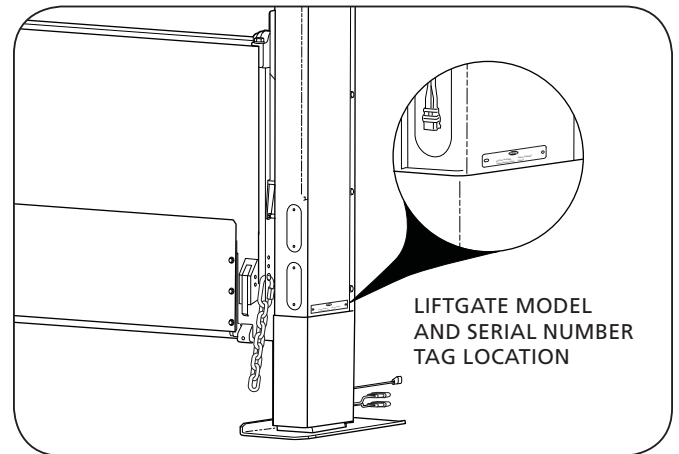


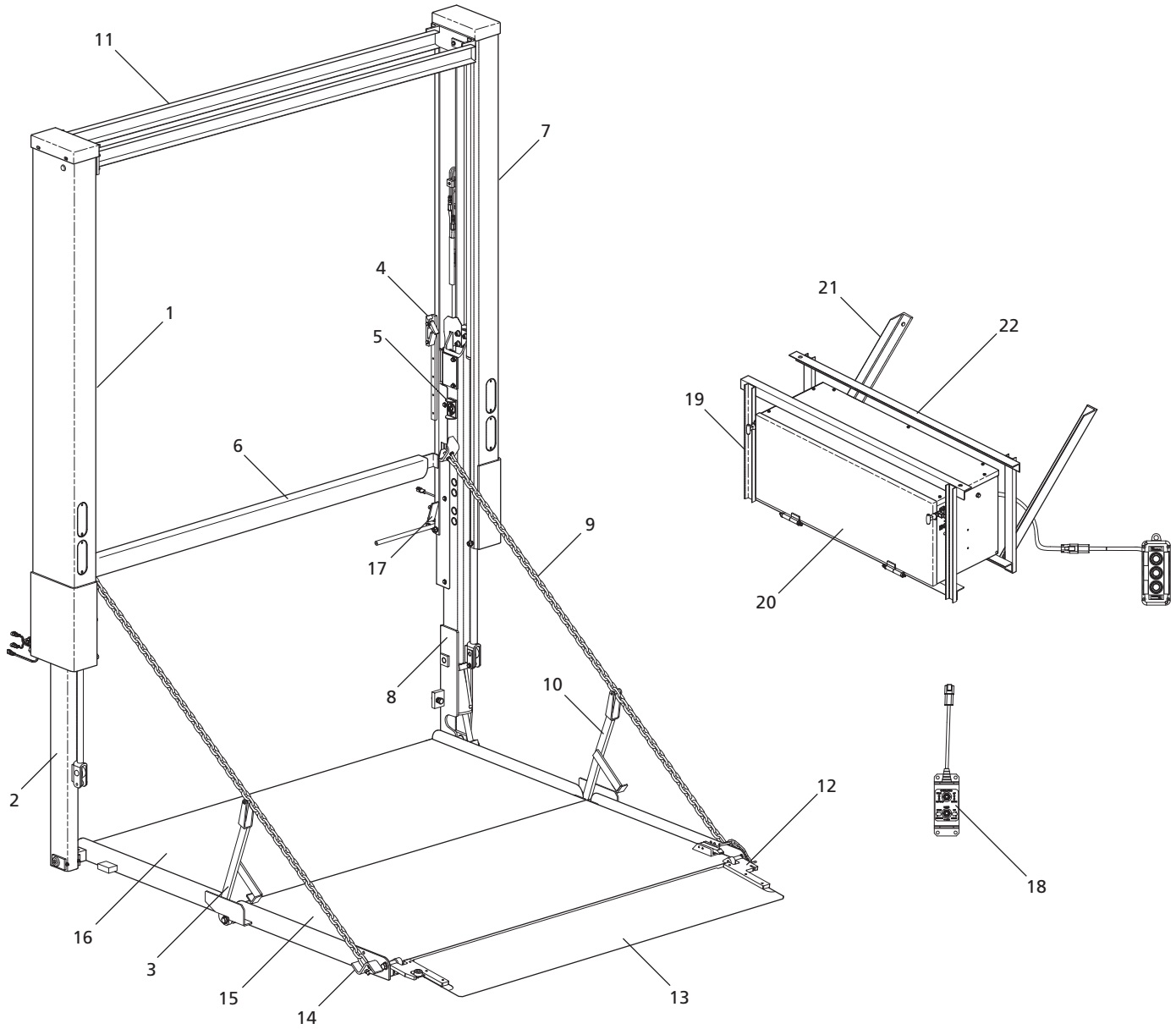
Figure 6



Equipment Model No.: \_\_\_\_\_

Serial No.: \_\_\_\_\_

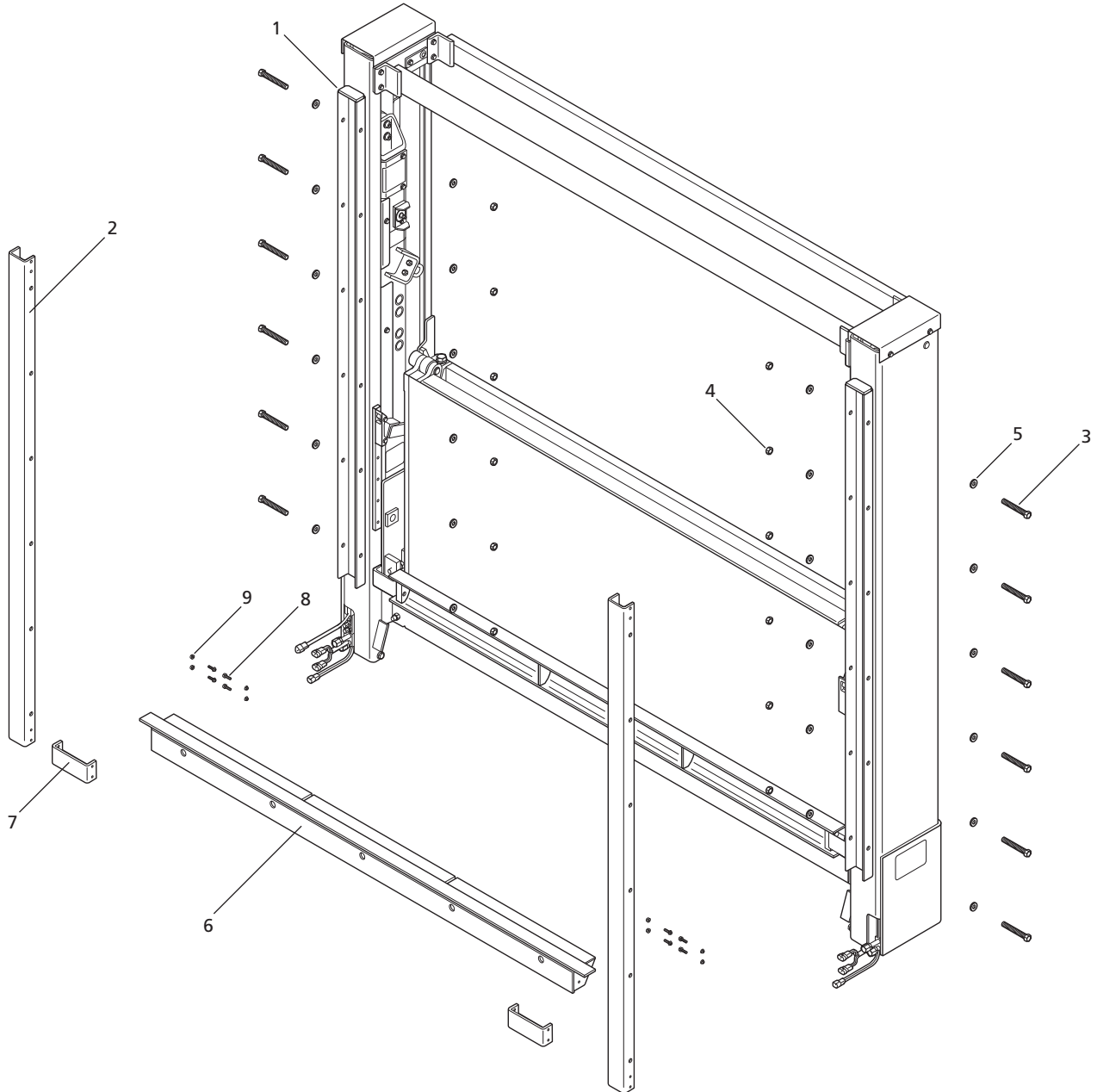
Purchase Date: \_\_\_\_\_



ITEM	DESCRIPTION	QTY
1	Roadside Column	1
2	Roadside Runner	1
3	Chain Stanchion – Roadside	1
4	Travel Auto Latch	2
5	Column Toggle Switch (Mounted to Runner)	1
6	Deck Extension (Welded to Door Sill)	1
7	Curbside Column	1
8	Curbside Runner	1
9	Chain	2
10	Chain Stanchion – Curbside	1
11	Shipping Cross Member	2

ITEM	DESCRIPTION	QTY
12	Spring Bolt Hinge	1
13	Platform Flip-Over Ramp	1
14	U-Bolt Adjustment	2
15	Outer Platform	1
16	Inner Platform	1
17	Dock Storage Lock Lug	2
18	Control Station	1
19	Pump Box Mount	1
20	Pump Box	1
21	Angle Mounting Bracket	2
22	Cross Member Mounting Bracket	2





ITEM	DESCRIPTION	QTY
1	Inner Mounting Bracket	2
2	Outer Mounting Bracket	2
3	1/2" Hex Head Cap Screw	12
4	1/2" Lock Nut	12
5	Washer	24
6	Deck Extension Support Bracket	1

ITEM	DESCRIPTION	QTY
7	Bolt On Fixture Bracket	2
8	1/4" Hex Head Cap Screw	8
9	1/4" Lock Nut	8

## 4. Vehicle Requirements

### Deck Height

The deck height is the measurement from the ground to floor level of the vehicle and can vary with the platform size of each liftgate. The dimensions listed below will allow the platform to be stored in the dock level storage lugs when dock loading (**Figure 7**).

CAPACITY (LB.)	LIFTGATE MODEL NUMBER	*PLATFORM FLAT (INCHES)	TRAILER DECK HEIGHT RANGE REQUIREMENTS INCHES
4500	DH45A60 DH45B60	86" x 60"	38" - 56"
	DH45A72 DH45B72	86" x 72"	44" - 56"
	DH45A84 DH45B84	86" x 84"	44" - 56"
5500	DH55A60 DH55B60	86" x 60"	38" - 56"
	DH55A72 DH55B72	86" x 72"	44" - 56"
	DH55A84 DH55B84	86" x 84"	44" - 56"
6600	DH66A60	86" x 60"	38" - 56"
	DH66A72	86" x 72"	44" - 56"
	DH66A84	86" x 84"	44" - 56"

\* Platform width shown is for 102" wide models. 96" wide models have an 80" wide platform.

### Side Wall

Ensure that the vehicle is capable of supporting the forces described. Please contact SAF-HOLLAND for clarification or any additional information (**Figures 8 and 9**).

### Forces

MODEL	X AND Y (LBS.)	Z (LBS.)
DH45	2400	5400
DH55	2900	6400
DH66	3400	7500

X = Side Wall Tension Y = Side Wall Compression Z = Side Wall Shear

Figure 7

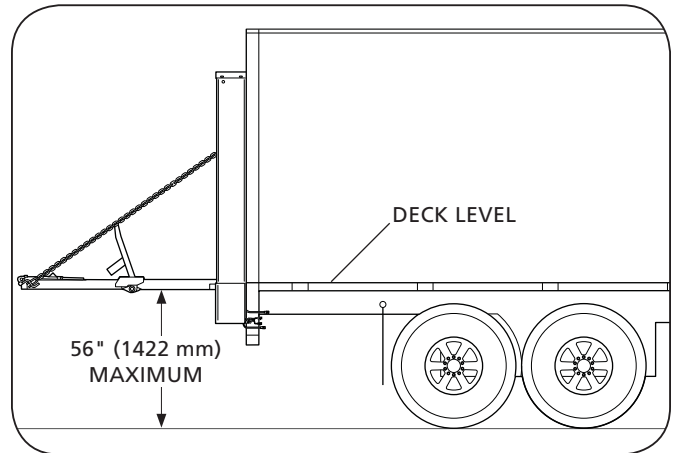


Figure 8

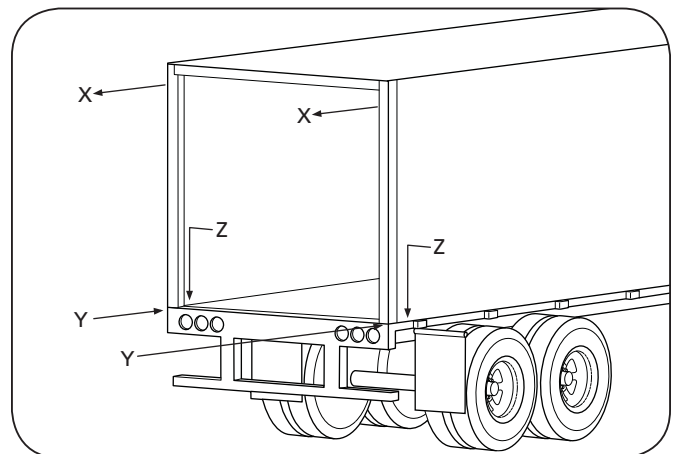
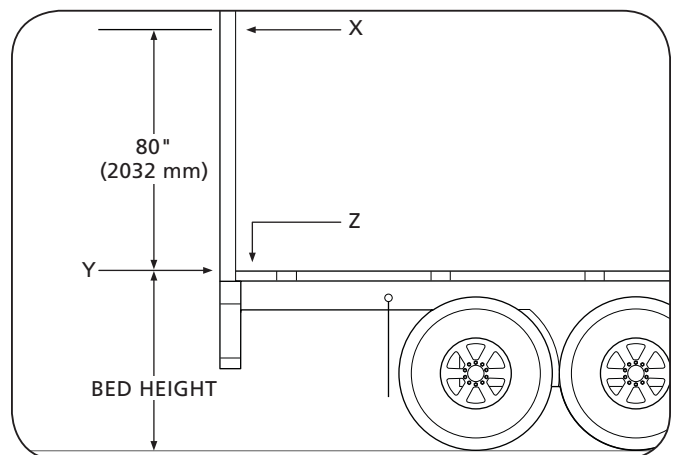


Figure 9



## 5. Vehicle and Liftgate Preparation for Weld-On Option

**NOTE:** For liftgates with optional bolt-on brackets skip to Section 7.

1. Remove bumper, step(s) or any protrusions that would prevent your liftgate from being mounted flush against the rear vehicle door frame.

**IMPORTANT:** Follow the welding standards provided in Section 2 of this manual.

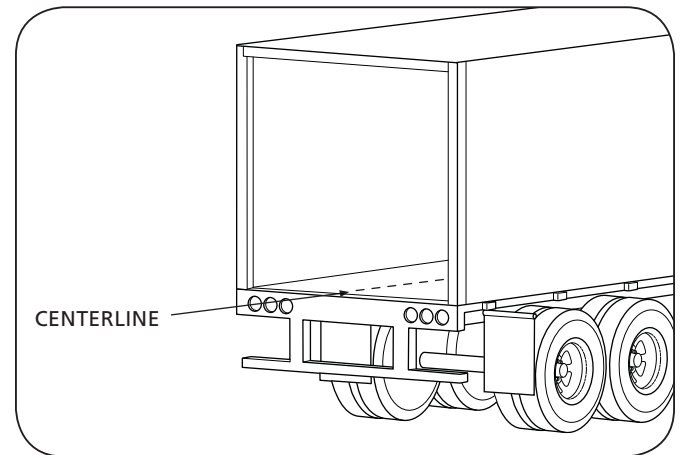
2. Locate and mark the centerline on the vehicle bed (**Figure 10**).

**CAUTION** Failure to isolate electrical equipment from ground prior to welding could result in overload which, if not avoided, could result in property damage.

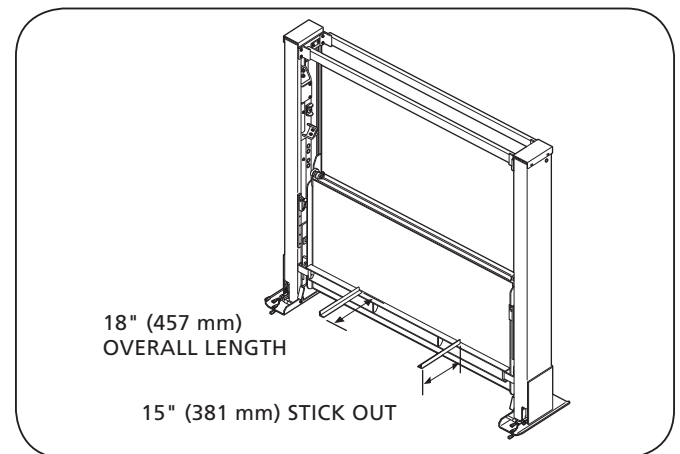
**NOTE:** When welding is required, ensure that the battery ground cable is disconnected and that all electrical equipment is completely electrically isolated before welding is initiated.

3. Tack weld two (2) temporary 2" x 2" x 3/16" x 18" (50 x 50 x 4 x 457 mm) alignment angles to the deck extension with 15" (381 mm) of overhang. These brackets will help maintain alignment (**Figure 11**).
4. Locate and mark the centerline of the liftgate on the deck extension.
5. With a grinder, remove any paint or galvanizing from the liftgate columns, deck extension and vehicle frame within 1" - 4" (25 - 101 mm) of the weld surface described in **Figures 15 and 16**.

**Figure 10**



**Figure 11**



## 6. Weld-On Liftgate Installation

**NOTE:** DO NOT work underneath the liftgate without properly supporting the liftgate in accordance with workplace safety requirements.

**⚠ WARNING** Failure to properly support the liftgate may result in the liftgate falling which, if not avoided, could result in death or serious injury.

1. Use a fork lift or suitable lifting device to raise the liftgate by the mounting brackets (**Figure 12**).
2. Center the liftgate against the vehicle rear frame (**Figure 13**).
3. Verify the positioning of the liftgate to the door frame by checking the following:
  - a. The deck extension is flush with the vehicle deck.
  - b. The liftgate is centered on the vehicle.
  - c. Both the curbside and roadside columns are square and tight against the door frame from top to bottom.

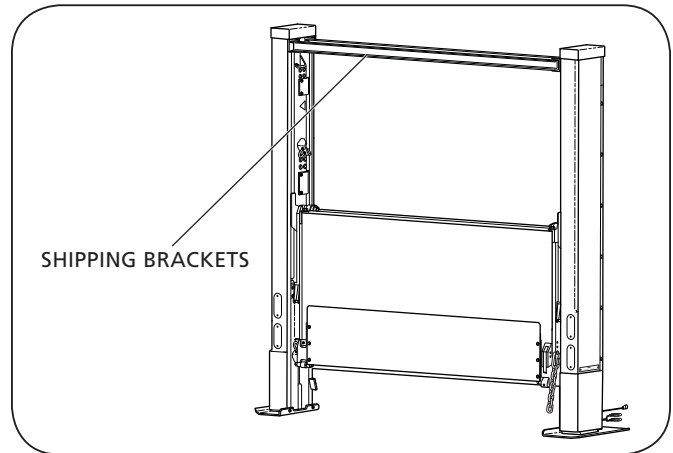
**NOTE:** When welding is required, ensure that the battery ground cable is disconnected and that all electrical equipment is completely electrically isolated before welding is initiated.

**⚠ CAUTION** Failure to isolate electrical equipment from ground prior to welding could result in overload which, if not avoided, could result in property damage.

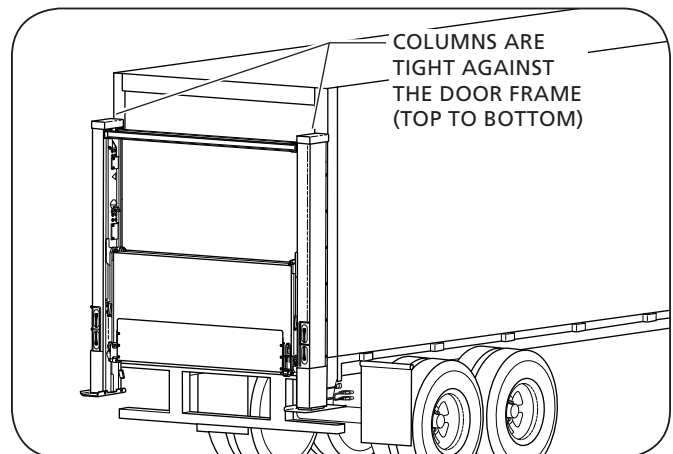
**IMPORTANT:** Follow the welding procedures provided in Section 2 of this manual.

4. Tack weld the liftgate into place by welding to the the vehicle rear frame on the inboard and outboard sides on both the roadside and curbside of the vehicle as shown in (**Figure 14**).

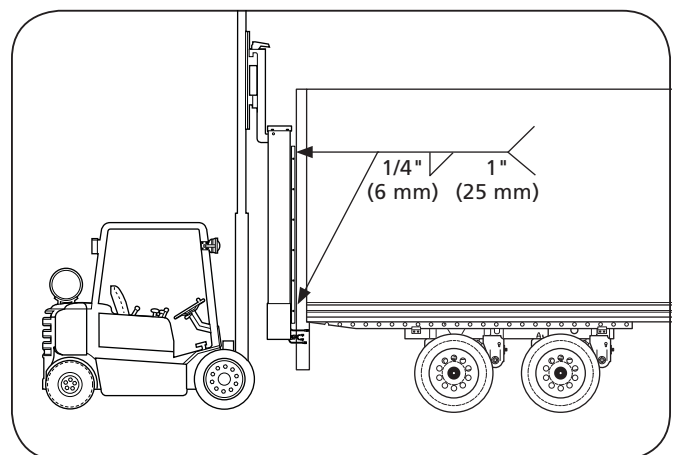
**Figure 12**



**Figure 13**

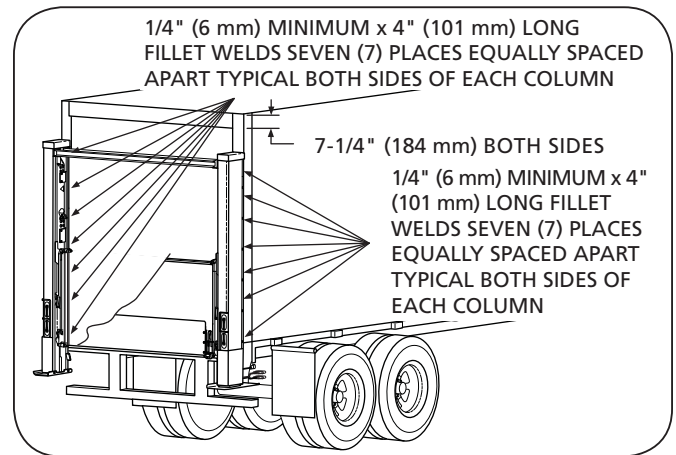


**Figure 14**

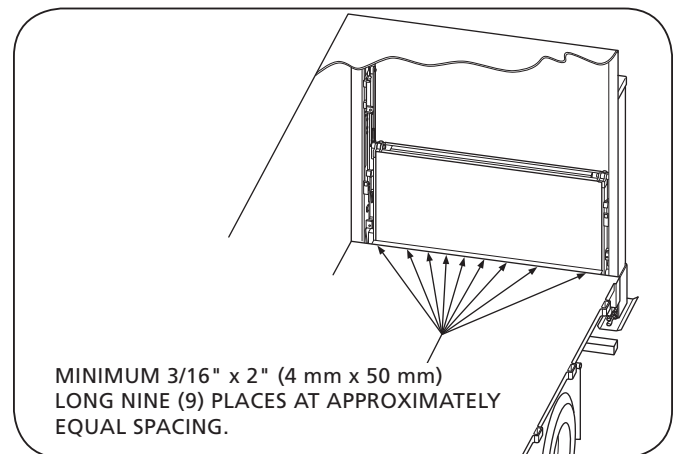


5. Start welding 7-1/4" (184 mm) from the top of the roadside and curbside column (**Figure 15**).
6. The liftgate should be welded to the vehicle rear frame on the inboard and outboard sides of both the roadside and curbside columns.
7. Remove the forklift and weld the deck extension to the rear frame of the vehicle (**Figure 16**).
8. Detach both shipping feet by removing the four bolts, two per side, washers and nuts that secure the shipping feet to the bottom of each column (**Figure 17**).

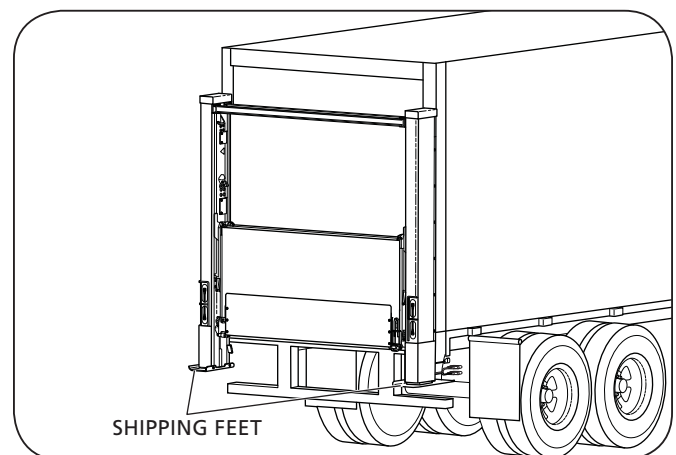
**Figure 15**



**Figure 16**

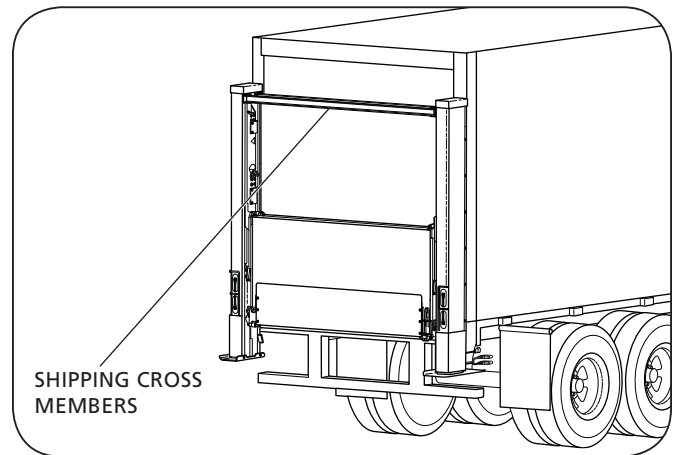


**Figure 17**

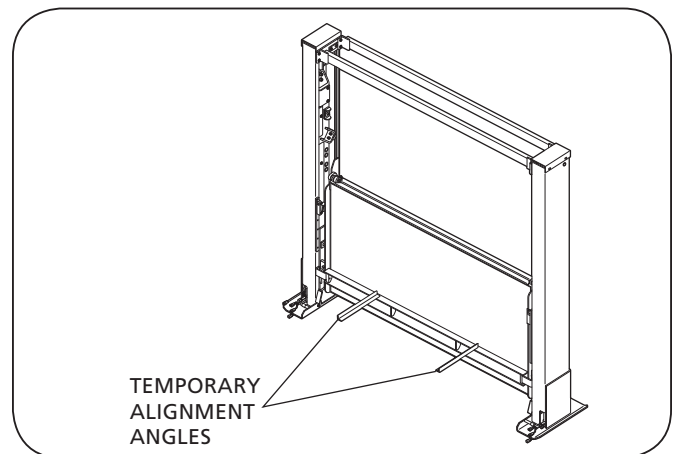


9. Detach both shipping cross members by removing the eight (8) bolts, four (4) per side, washers and nuts that secure the shipping cross members to each column (**Figure 18**). Keep the shipping cross members as they will be used to install the pump box.
10. Remove the temporary alignment angles that were installed previously in Section 5 by grinding off the welds (**Figure 19**).

**Figure 18**



**Figure 19**



## 7. Vehicle and Liftgate Preparation for Bolt-On Option

1. Remove bumper, step(s) or any protrusions that would prevent your liftgate from being mounted flush against the rear vehicle door frame.
2. Prior to liftgate installation, remove any paint or galvanizing within 1" - 4" (25 - 101mm) of the weld surface with a grinder as depicted in Figures 22, 26, and 28.
3. Locate and mark the centerline on the vehicle bed (**Figure 20**).

## 8. Bolt-On Liftgate Installation

1. Identify the method of bolt-on installation:
  - Option 1.** The liftgate is used as a mounting fixture and the inner mounting brackets are pre-installed on the liftgate.
  - Option 2.** The inner mount brackets and deck extension support bracket are mounted prior to the liftgate installation.
2. If selecting installation Option 1, continue to Step 3. If selecting Option 2, skip to Option 2 procedures, page 20.
3. Position the provided deck extension support bracket in the center of the vehicle rear sill with the forward most surface flush with the vehicle floor (**Figure 21**).

**IMPORTANT:** Follow the welding standards provided in Section 2 of this manual.

**CAUTION**

Failure to isolate electrical equipment from ground prior to welding could result in overload which, if not avoided, could result in property damage.

**NOTE:** When welding is required, ensure that the battery ground cable is disconnected and that all electrical equipment is completely electrically isolated before welding is initiated.

4. Plug weld the deck extension support bracket to the rear frame of the vehicle (**Figure 22**).

Figure 20

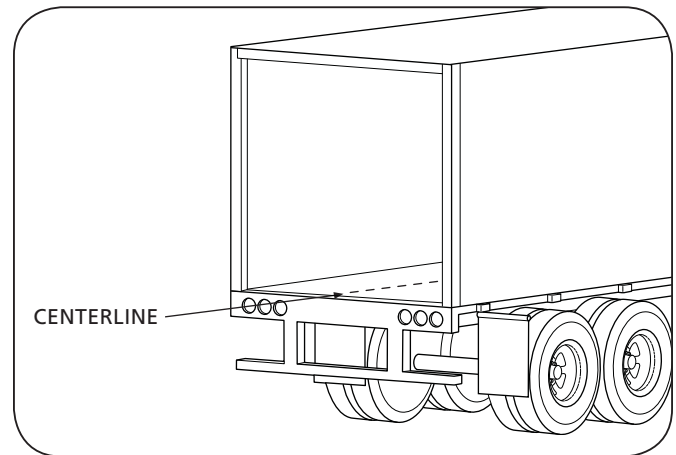


Figure 21

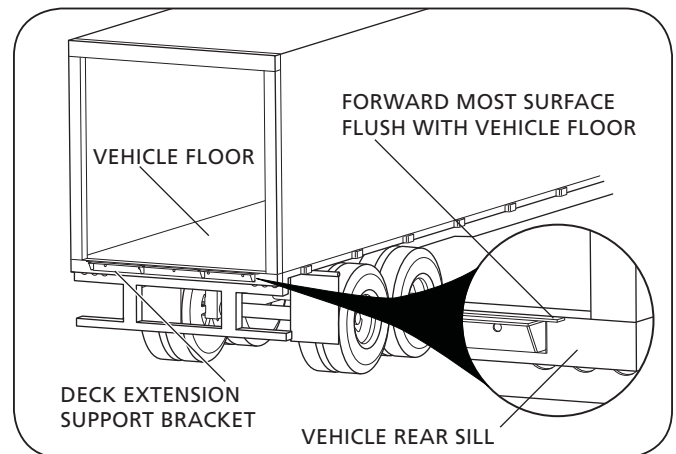
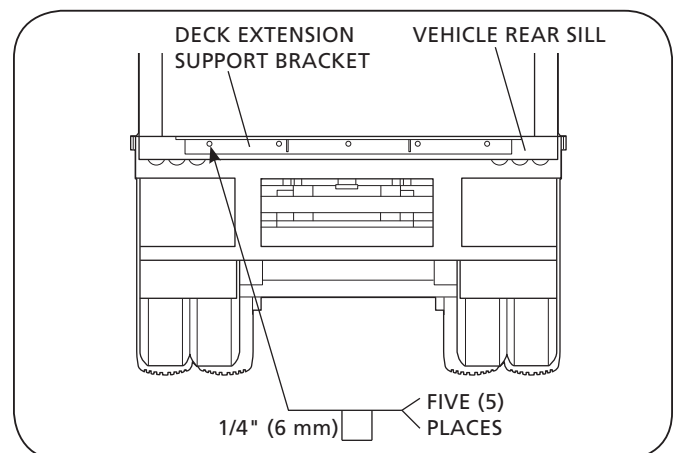
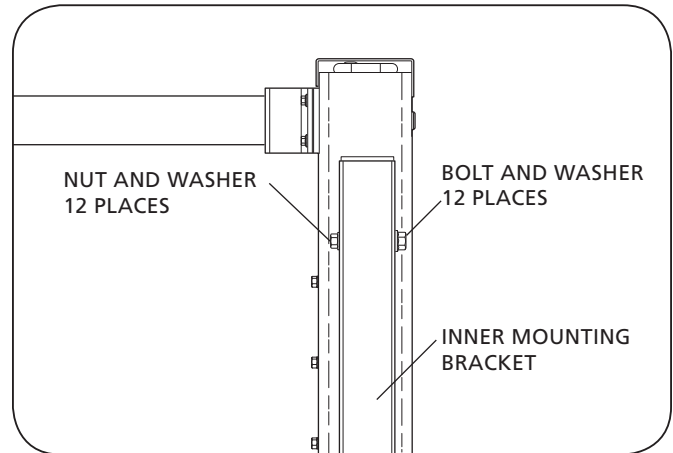


Figure 22

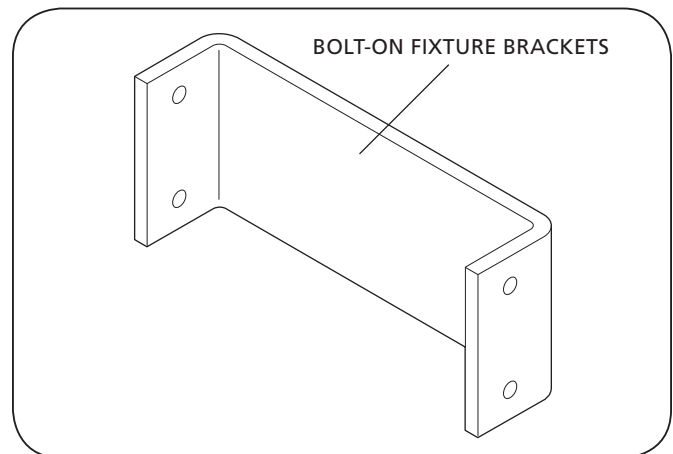


5. Install the inner mounting brackets onto the liftgate with the provided hardware (**Figure 23**).
6. The two (2) bolt-on fixture brackets are NOT required for this installation option (**Figure 24**).
7. Use a fork lift or suitable lifting device to raise the liftgate by the shipping brackets (**Figure 25**).
8. Center the liftgate against the vehicle rear frame with the deck extension resting on the deck extension support bracket and flush with the vehicle floor.
9. Verify the positioning of the liftgate to the door frame by checking the following:
  - a. The deck extension is flush with the vehicle deck.
  - b. The liftgate is centered on the vehicle.
  - c. Both the curbside and roadside column mounting brackets are square and tight against the door frame from top to bottom.

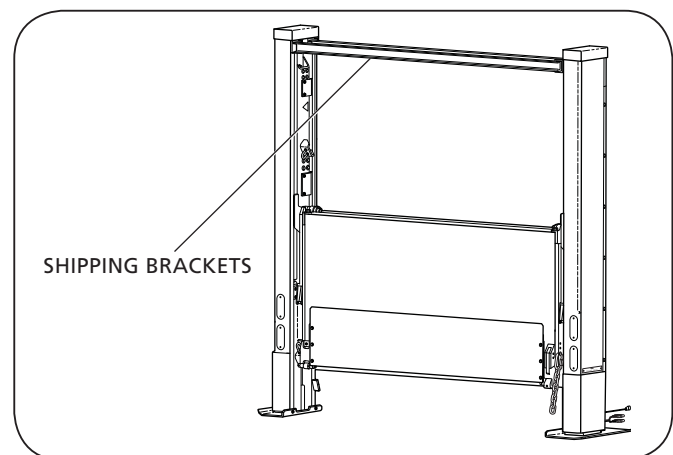
**Figure 23**



**Figure 24**



**Figure 25**





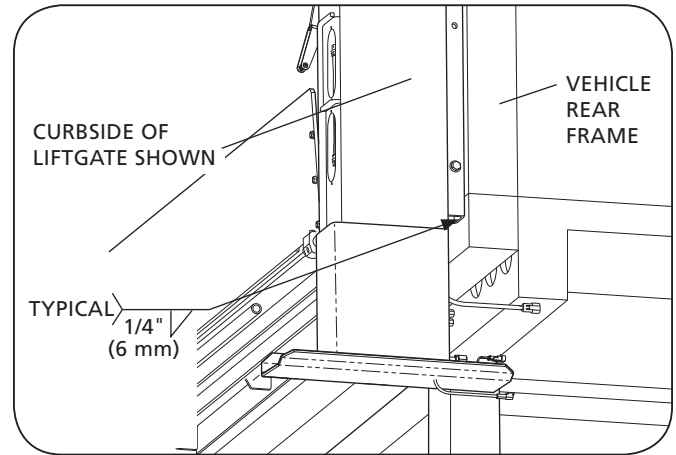
10. Weld the bottom edge of both the roadside and curbside inner mounting brackets to the vehicle rear frame (**Figure 26**).
11. Tack weld the top edge of both the roadside and curbside inner mounting brackets to the vehicle rear frame (**Figure 27**). BE CAREFUL NOT TO WELD THE OUTER MOUNTING BRACKET TOP CAP TO THE VEHICLE REAR FRAME.

**⚠ WARNING** Failure to continually support the liftgate through the shipping brackets before the liftgate is fully welded to the vehicle frame may result in dropping the liftgate which, if not avoided, could result in death or serious injury.

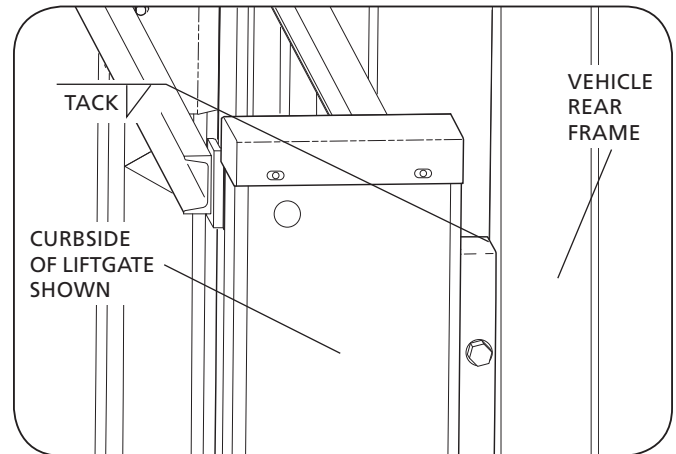
12. If the position of the liftgate is correct, remove the bolt-on bracket bolts allowing the liftgate to be removed.
13. Remove the liftgate from the rear of the vehicle so there is enough room to finish welding the inner mounting brackets to the vehicle rear frame.
14. Start welding at the top of each inner mounting bracket and weld (**Figure 28**). The inner mounting brackets should be welded to the vehicle rear frame on the inboard and outboard sides on both the roadside and curbside of the vehicle.

**⚠ WARNING** Failure to continually support the liftgate through the shipping brackets before the liftgate is fully welded to the vehicle frame may result in dropping the liftgate which, if not avoided, could result in death or serious injury.

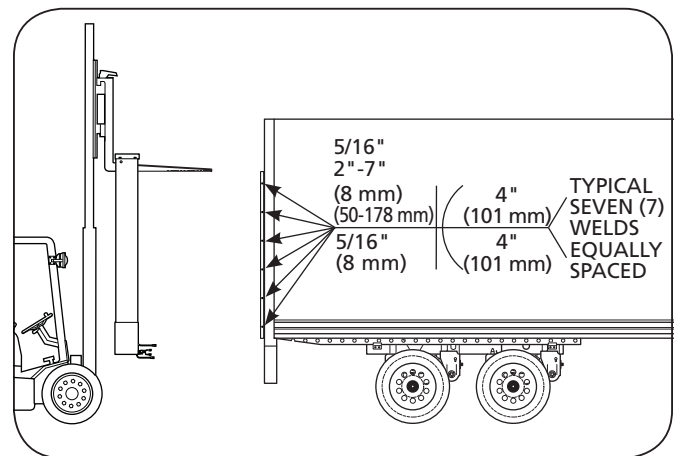
**Figure 26**



**Figure 27**

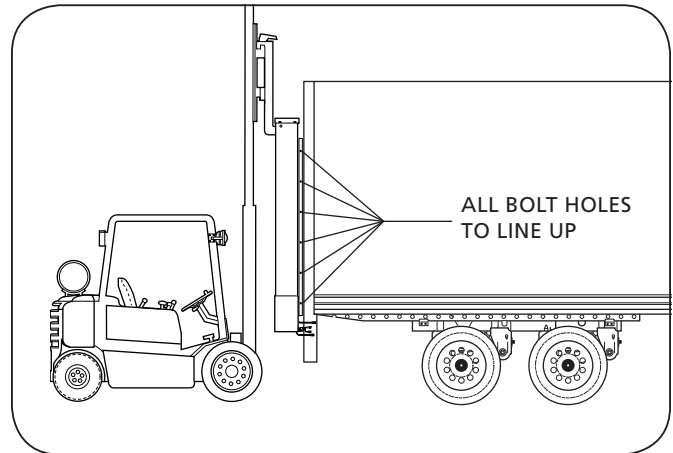


**Figure 28**

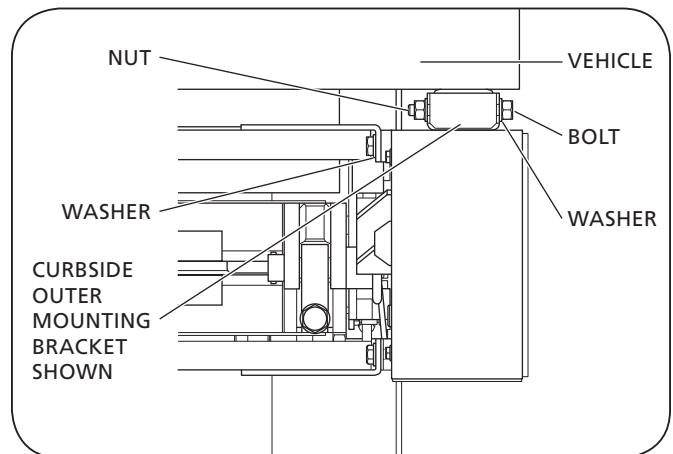


15. Once the welding of the inner mounting brackets to the vehicle rear frame is complete, move the liftgate back into position onto the deck extension support bracket. Ensure the outer and inner mounting bracket bolt holes line up (**Figure 29**).
16. With the heads facing outward, install the six (6) curbside and six (6) roadside bolts, washers and nuts into the bolt-on brackets (**Figure 30**).
17. Torque the six (6) curbside and six (6) roadside nuts on the bolted inner and outer mounting bracket connections to 100-120 ft.-lbs. (135 - 162 N•m).
18. Remove the forklift.
19. Detach both shipping feet by removing the four (4) bolts, two (2) per side, washers and nuts that secure the shipping feet to the bottom of each column (**Figure 31**).

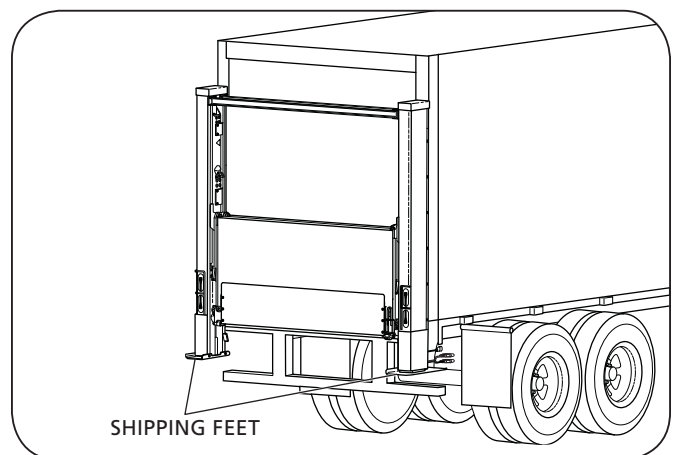
**Figure 29**



**Figure 30**

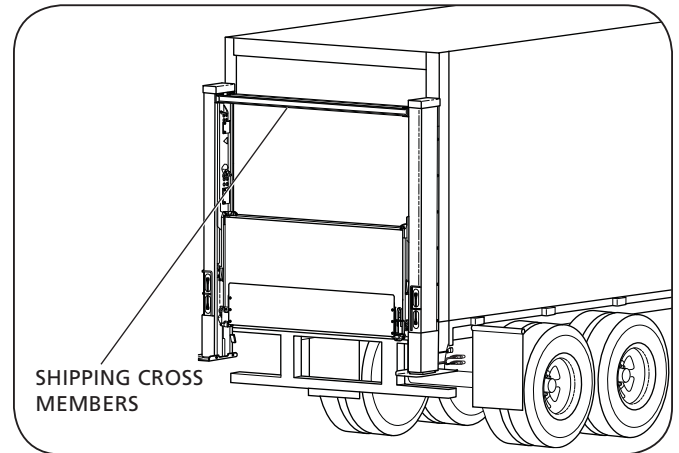


**Figure 31**

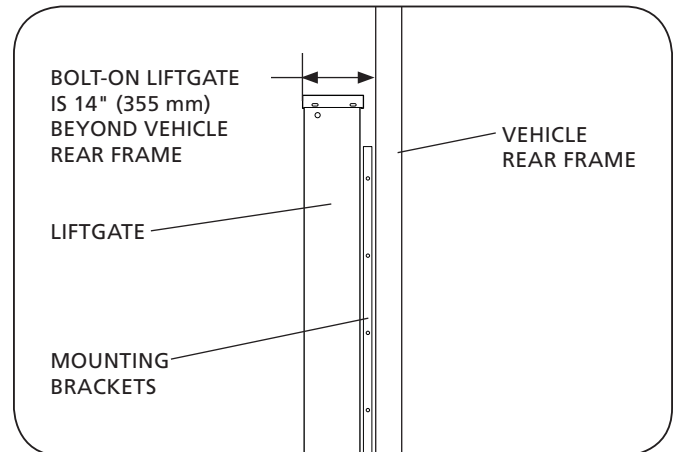


20. Detach both shipping cross members by removing the eight (8) bolts, four (4) per side, washers and nuts that secure the shipping cross members to each column (**Figure 32**). Keep the shipping cross members as they will be used to install the pump box.
21. Verify the vehicle rear impact guard is within the Federal Regulation distance from the end of the vehicle (**Figure 33**).

**Figure 32**



**Figure 33**



## Bolt-On Liftgate Installation – Option 2

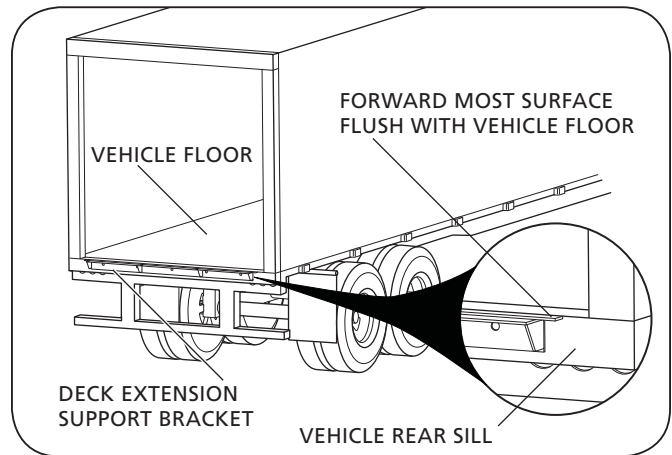
**IMPORTANT:** Follow the welding standards provided in Section 2 of this manual.

**CAUTION** Failure to isolate electrical equipment from ground prior to welding could result in overload which, if not avoided, could result in property damage.

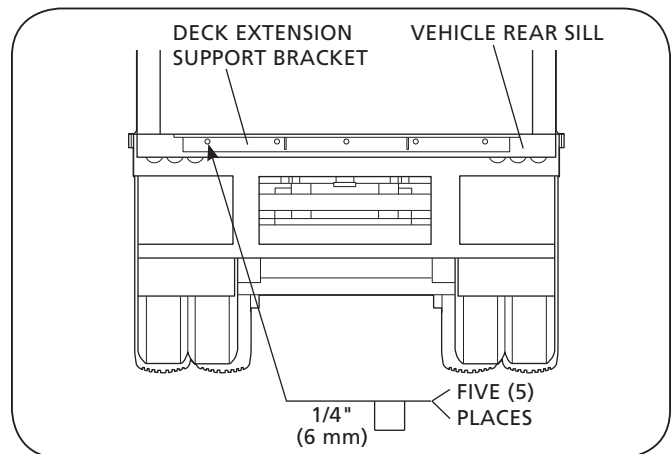
**NOTE:** When welding is required, ensure that the battery ground cable is disconnected and that all electrical equipment is completely electrically isolated before welding is initiated.

1. Position the provided deck extension support bracket in the center of the vehicle rear sill with the forward most surface flush with the vehicle floor (**Figure 34**).
2. Plug weld the deck extension support bracket to the rear frame of the vehicle (**Figure 35**).
3. Install the bolt-on fixture brackets onto the deck extension support bracket on both the roadside and curbside with the supplied 1/4" x 1" long bolts and nuts at four (4) places (**Figure 36**).

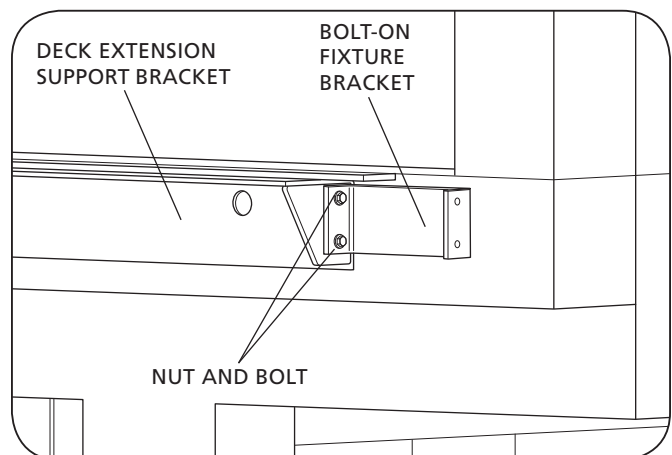
**Figure 34**



**Figure 35**

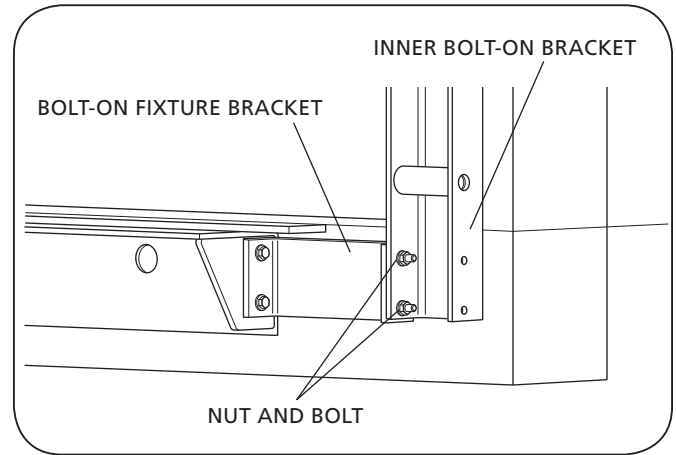


**Figure 36**

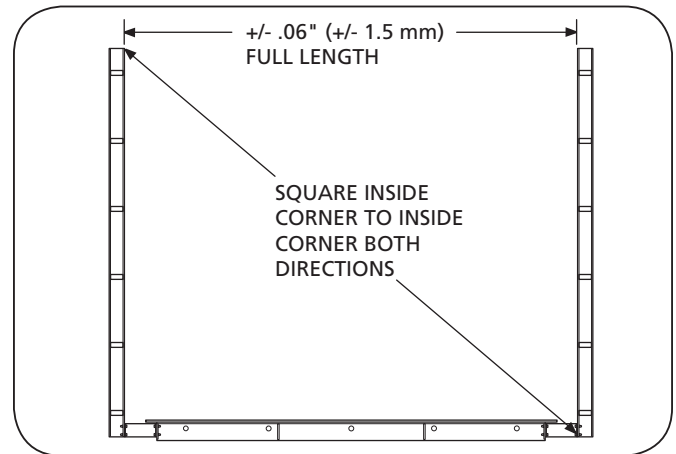


4. Install the inner bolt-on brackets to the bolt-on fixture brackets on both the roadside and curbside with the supplied 1/4" x 1" long bolts and nuts at four (4) places (**Figure 37**).
5. Ensure the inner bolt-on brackets are parallel and square to each other and perpendicular to the deck extension support bracket (**Figure 38**).
6. Start welding at the top of each inner mounting bracket and weld (**Figure 39**). The inner mounting brackets should be welded to the vehicle rear frame on the inboard and outboard sides on both the roadside and curbside of the vehicle.
7. Remove and discard the bolt-on fixture brackets and related nuts and bolts that were installed in Steps 3 and 4 (**Figures 36 and 37**).

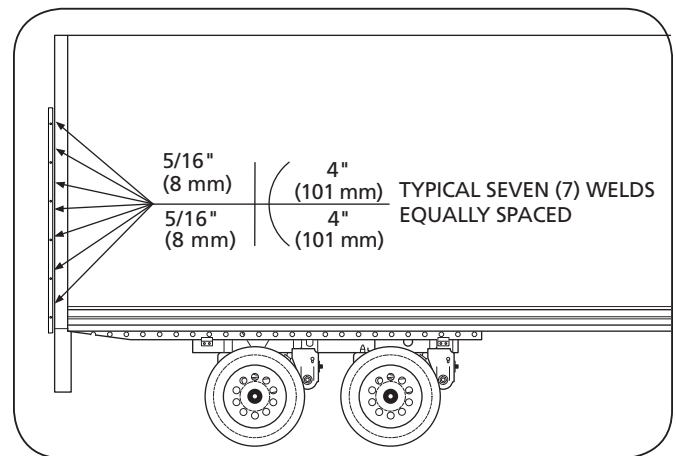
**Figure 37**



**Figure 38**

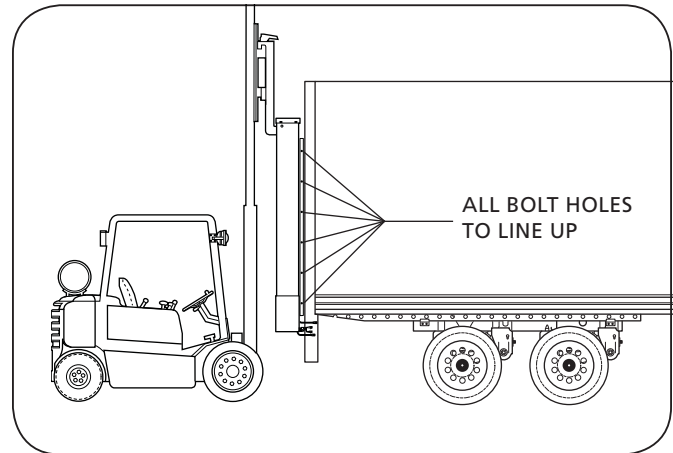


**Figure 39**

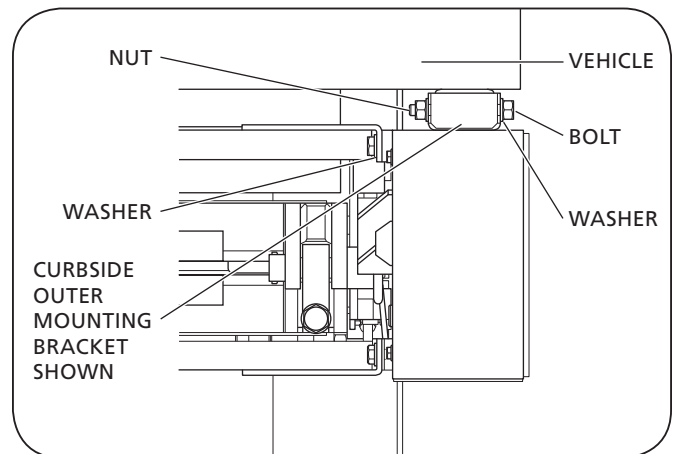


8. Once the welding of the inner mounting brackets to the vehicle rear frame is complete, move the liftgate into position onto the deck extension support bracket. Ensure the outer and inner mounting bracket bolt holes line up (**Figure 40**).
9. With the heads facing outward, install the six (6) curbside and six (6) roadside bolts, washers and nuts into the bolt-on brackets (**Figure 41**).
10. Torque the six (6) curbside and six (6) roadside nuts on the bolted inner and outer mounting bracket connections to 100-120 ft.-lbs. (135 - 162 N•m).
11. Remove the forklift.
12. Detach both shipping feet by removing the four (4) bolts, two (2) per side, washers and nuts that secure the shipping feet to the bottom of each column (**Figure 42**).

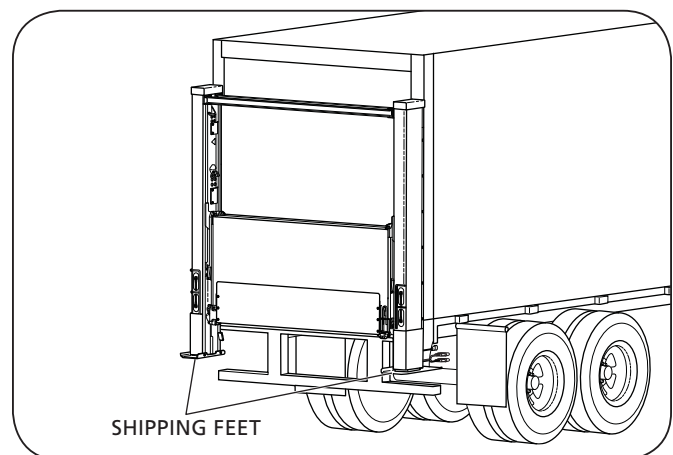
**Figure 40**



**Figure 41**

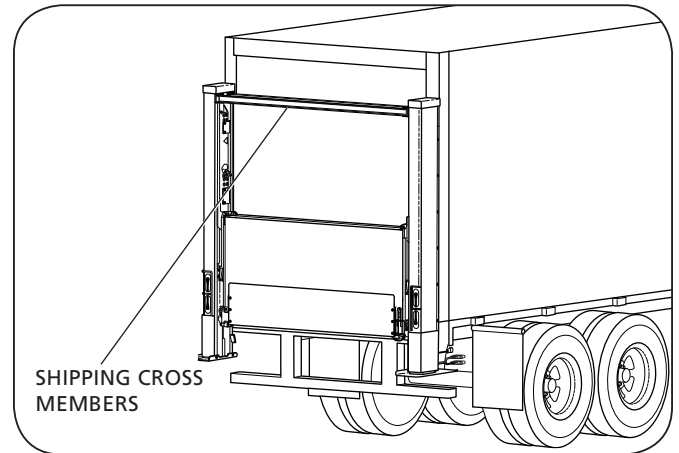


**Figure 42**

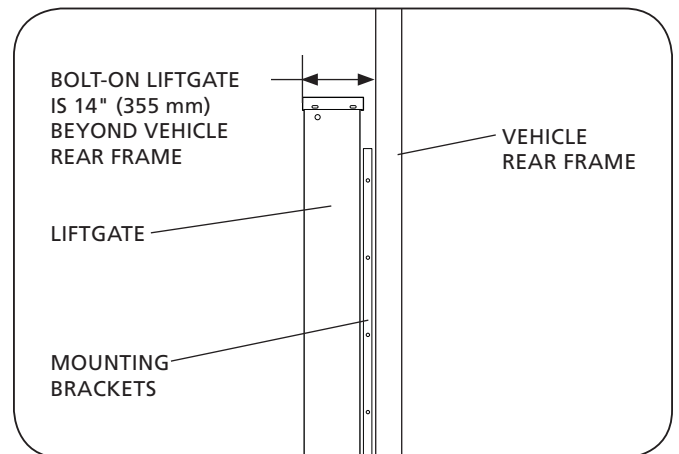


13. Detach both shipping cross members by removing the eight (8) bolts, four (4) per side, washers and nuts that secure the shipping cross members to each column (**Figure 43**). Keep the shipping cross members as they will be used to install the pump box.
14. Verify the vehicle rear impact guard is within the Federal Regulation distance from the end of the vehicle (**Figure 44**).

**Figure 43**



**Figure 44**

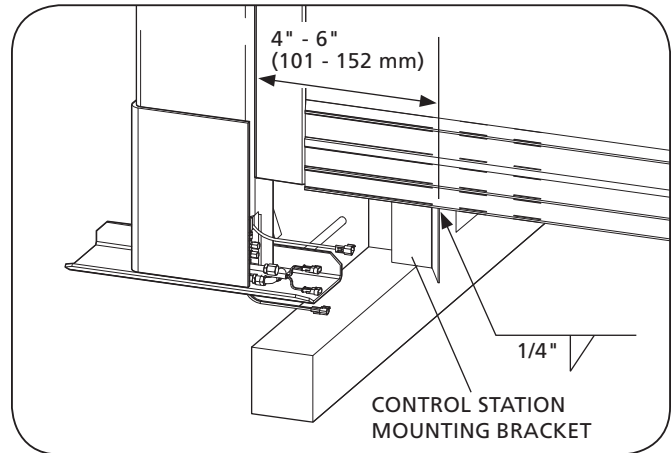


## 9. Control Station Installation

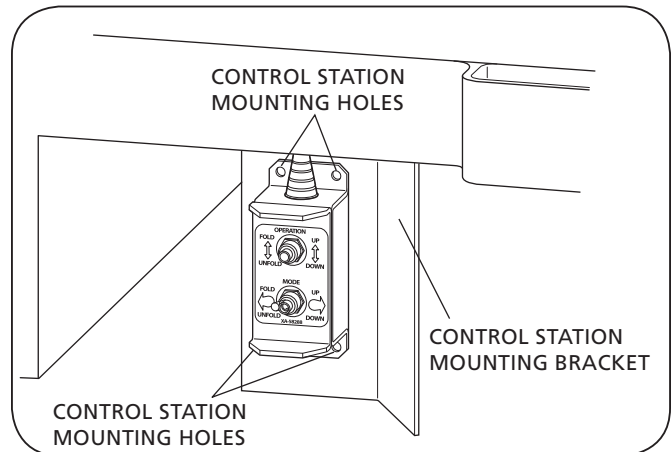
**NOTE:** Do not work underneath the liftgate without properly supporting the liftgate in accordance with workplace safety requirements.

1. Weld the control station mounting bracket to the vehicle chassis on the curbside 4" - 6" (101 - 152 mm) from the rear of the vehicle rear frame (**Figure 45**).
2. Using the control station as a template position and drill 4" x 1/4" (101 x 6 mm) diameter control station mounting holes (**Figure 46**).
3. With the supplied bolts and lock nuts, mount the control station to the control station mounting bracket (**Figure 47**).

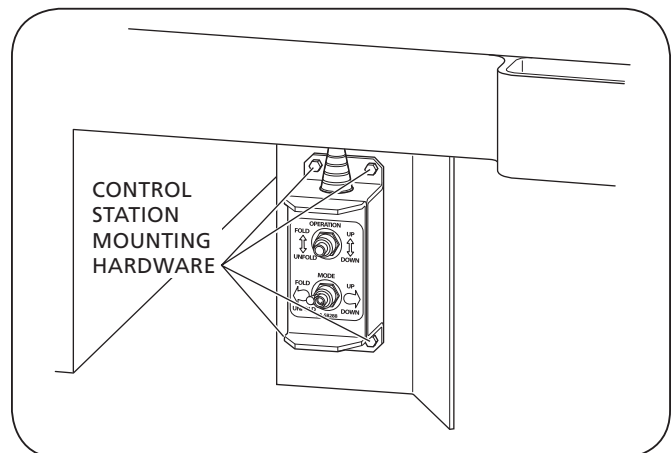
**Figure 45**



**Figure 46**



**Figure 47**





## 10. Pump Box Installation

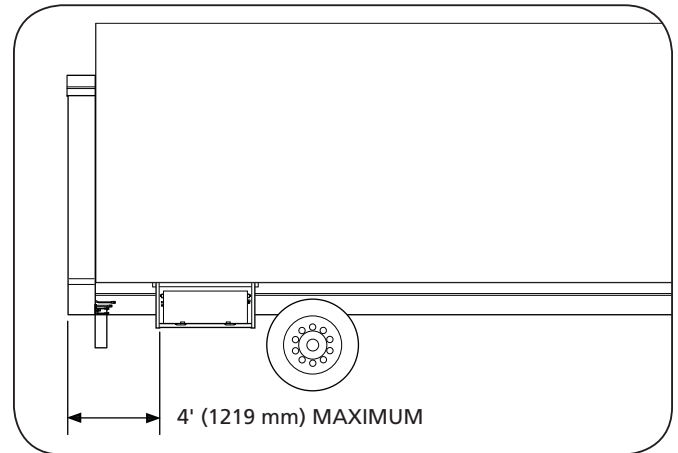
**⚠ WARNING** Failure to properly engage the vehicle parking brake prior to installing the pump box may allow vehicle movement which, if not avoided, could result in death or serious injury.

1. For a truck installation, position the pump box behind the curbside mud flap under the vehicle no more than 4' (1219 mm) from the back of the vehicle and 6" (152 mm) in from the curbside of the vehicle body (**Figure 48**).

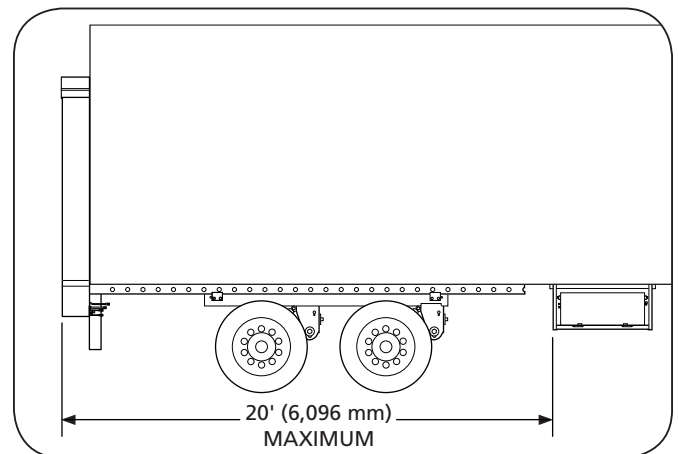
For a trailer installation, position the pump box under the vehicle no more than 20' (6096 mm) from the back of the vehicle and 6" (152 mm) in from the curbside of the vehicle body (**Figure 49**).

2. Measure the vertical pump box mounting brackets from flat to flat. This dimension will be used to position the cross member mounting brackets (**Figure 50**).

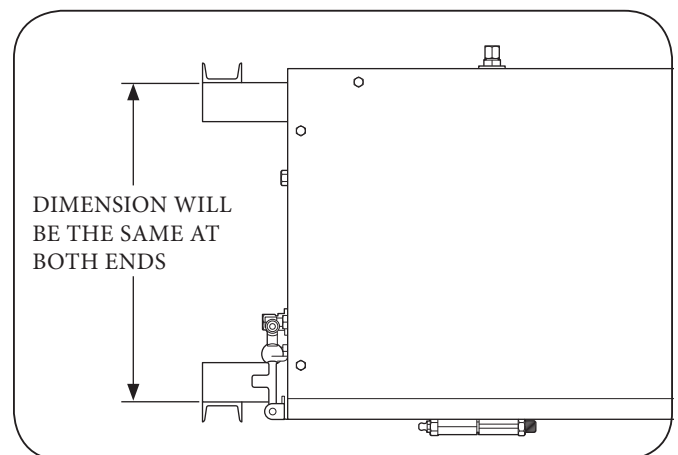
**Figure 48**



**Figure 49**



**Figure 50**



3. From the previously removed shipping cross members, construct two (2) cross member mounting brackets. Cut one (1) 60" (152 mm) section (**Figure 50**) and leave enough material to cut another 35" (88 mm) section.
4. With the remaining shipping cross members, cut two (2) sections as long as possible. Make a 45° angle cut at each end to form the pump box mounting brackets. (**Figure 51**).
5. Position the cross member mounting brackets under the vehicle perpendicular to the cross members.
6. Before welding the cross member mounting brackets, prep the cross member mounting brackets and vehicle cross members by grinding off any paint or galvanizing within 1" - 4" (25 - 101 mm) of the weld surface.

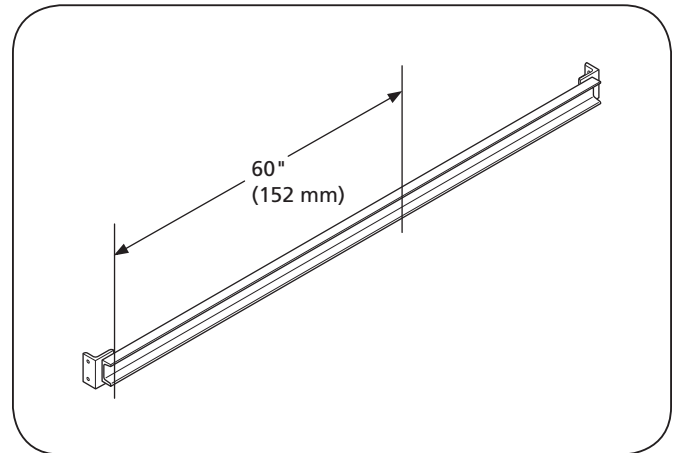
**NOTE:** When welding is required, ensure that the battery ground cable is disconnected and that all electrical equipment is completely electrically isolated before welding is initiated.

**CAUTION**

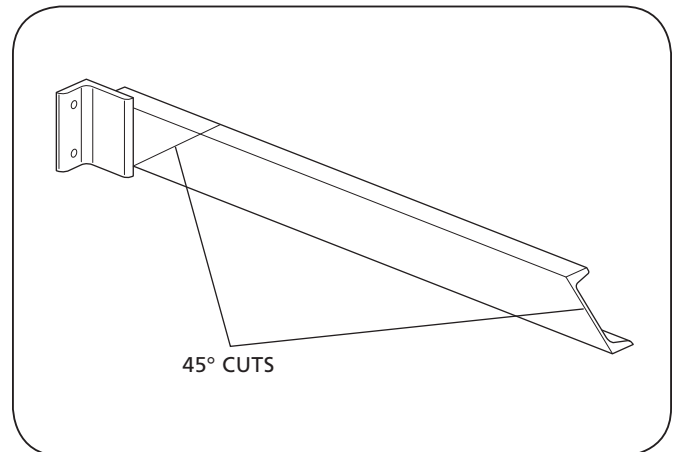
Failure to isolate electrical equipment from ground prior to welding could result in overload which, if not avoided, could result in property damage.

7. Weld both sides of the cross member mounting brackets to each of the vehicle cross members (**Figure 53**).
8. Before welding the pump box to the cross member mounting brackets, prep the pump box and cross member mounting brackets by grinding off any paint or galvanizing within 1" - 4" (25 - 101 mm) of the weld surface.

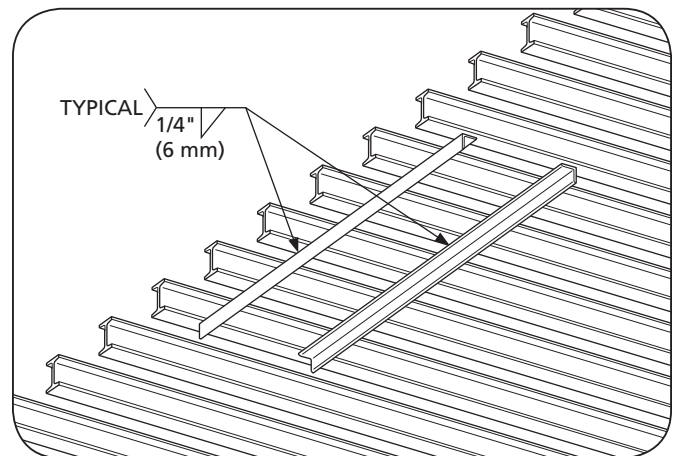
**Figure 51**



**Figure 52**



**Figure 53**



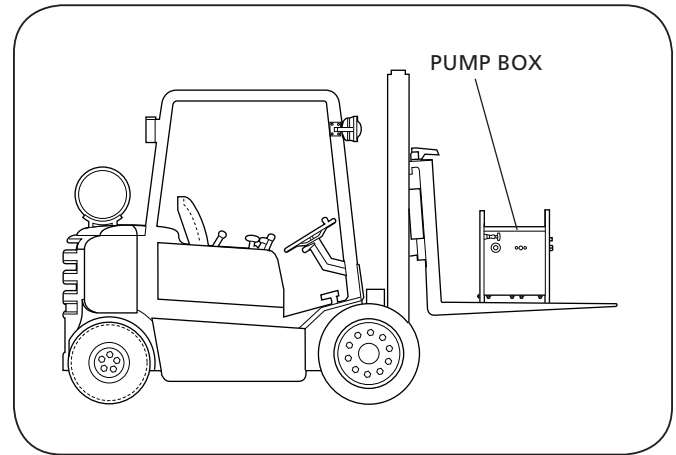
9. With a fork lift or other suitable lifting device, lift the pump box up to the cross member mounting brackets under the vehicle (**Figure 54**).

**⚠ WARNING**

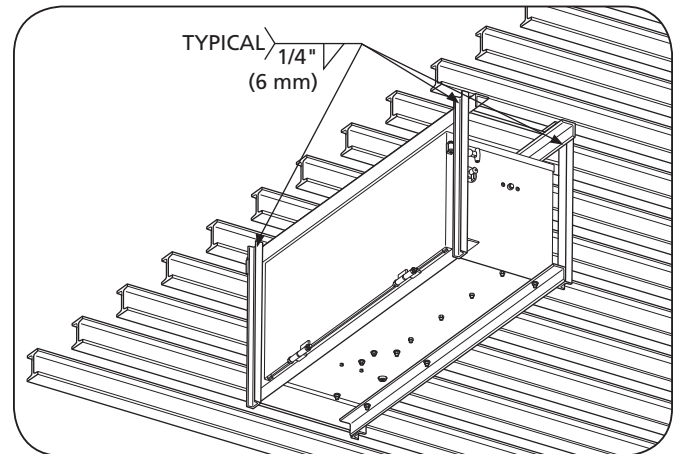
Failure to continually support the pump box until it is fully welded to the cross member mounting brackets may result in dropping the pump box which, if not avoided, could result in death or serious injury.

10. Weld both sides of the pump box mounting brackets to the cross member mounting brackets (**Figure 55**).
11. Before welding the angle mounting brackets to the pump box mount and vehicle cross members, prep the pump box mounts, angle mounting brackets and cross member mounting brackets by grinding off any paint or galvanizing within 1" - 4" (25 - 101 mm) of the weld surface.
12. Weld the angle mounting brackets to the pump box mounts and vehicle cross members (**Figure 56**).

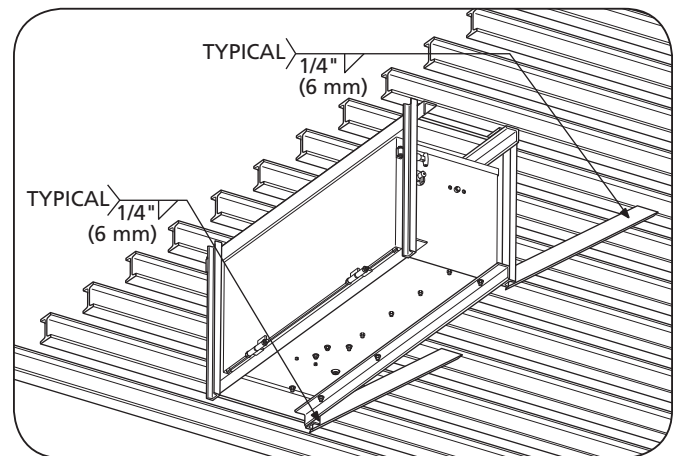
**Figure 54**



**Figure 55**



**Figure 56**



## 11. Master-Slave Hydraulic Hose Routing Configuration

1. Start by identifying your hydraulic system. If the pump box contains a flow dividing cylinder skip Section 11 and go to Section 12 (**Figure 57**). If it does not, continue with Section 11 and skip Section 12.

**IMPORTANT:** Hydraulic hoses and hydraulic fittings are shipped with end caps installed which must be removed before installation.

**IMPORTANT:** When routing hydraulic hoses, avoid moving parts, brake lines, sharp edges and sharp bends. Ensure the hoses are free of kinks and are securely mounted.

**NOTE:** Labeling hydraulic lines before installation will ensure they are routed correctly.

### For Models DH45 and DH55 Master-Slave Configuration

**IMPORTANT:** Hydraulic hose "E" (**Figure 58**) has already been installed at the factory. If hydraulic hose "E" needs to be disconnected for hose routing, disconnect one end only and cap it to keep the hydraulic fluid in the line.

1. Install the curbside hydraulic lines from top to bottom starting with hydraulic line "A", "B" then "C" (**Figure 58**).
2. Install the roadside hydraulic line "D" (**Figure 58**).
3. Finish by installing the hydraulic lines into the pump box (**Figure 58**).

**Figure 57**

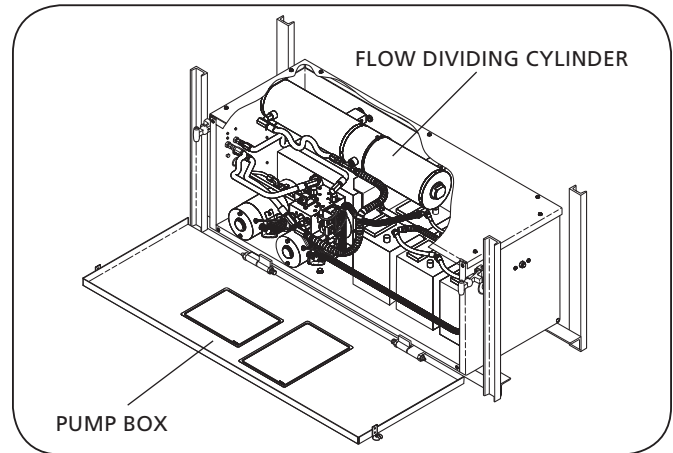
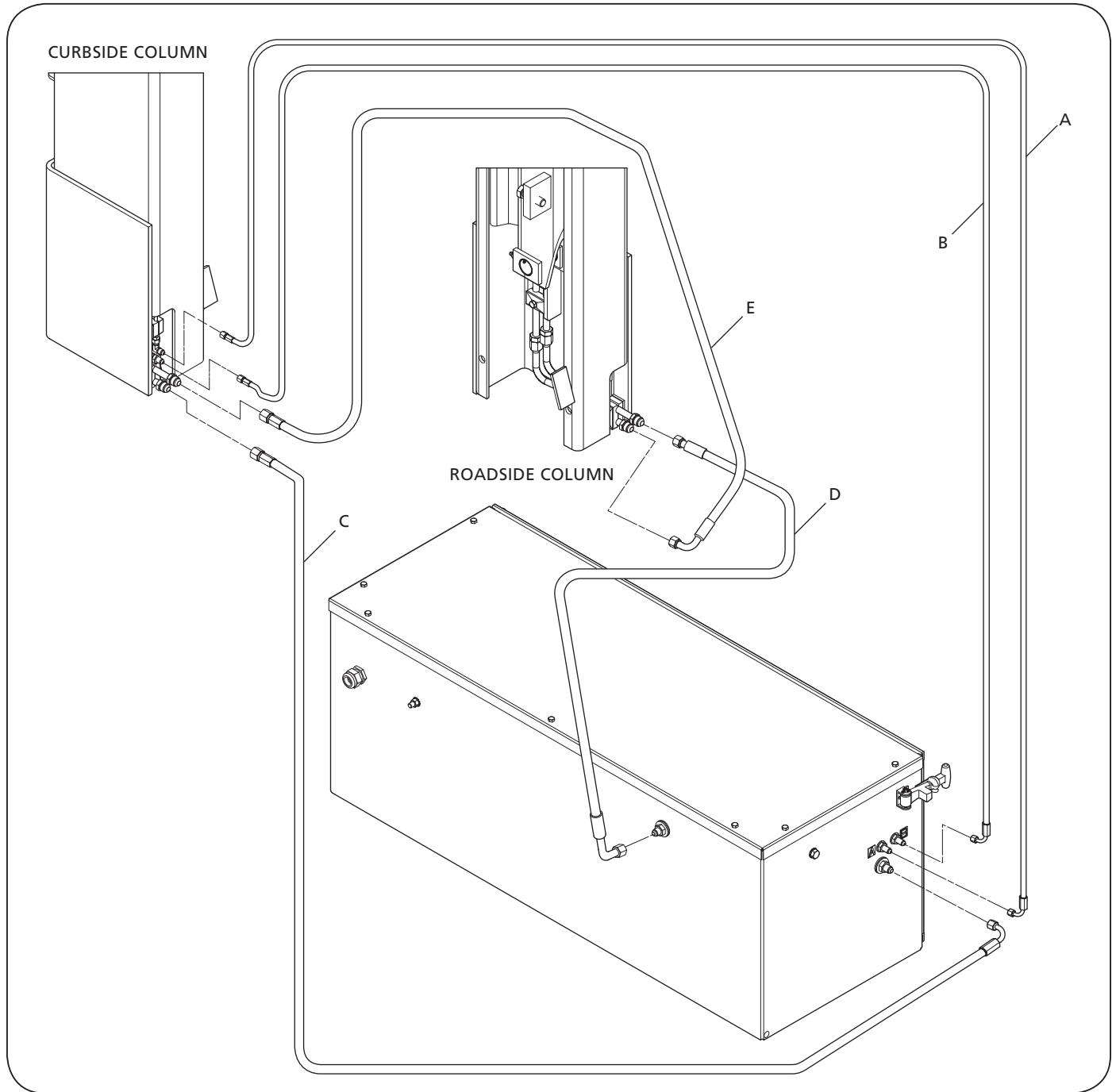


Figure 58



HOSE	HOSE LENGTH			
	48' TRAILER	35' TRAILER	PUP TRAILER	TRUCK
A	288" (7,061 mm)	216" (5,486 mm)	168" (4,267 mm)	40" (1,016 mm)
B	288" (7,061 mm)	216" (5,486 mm)	168" (4,267 mm)	40" (1,016 mm)
C	396" (10,058 mm)	312" (7,924 mm)	276" (7,010 mm)	168" (4,267 mm)
D	300" (7,620 mm)	276" (7,010 mm)	180" (4,572 mm)	60" (1,524 mm)
E	132" (3,352 mm)	132" (3,352 mm)	132" (3,352 mm)	132" (3,352 mm)

## 12. Flow Dividing Hose Routing Configuration

**IMPORTANT:** Hydraulic hoses and hydraulic fittings are shipped with end caps installed which must be removed before installation.

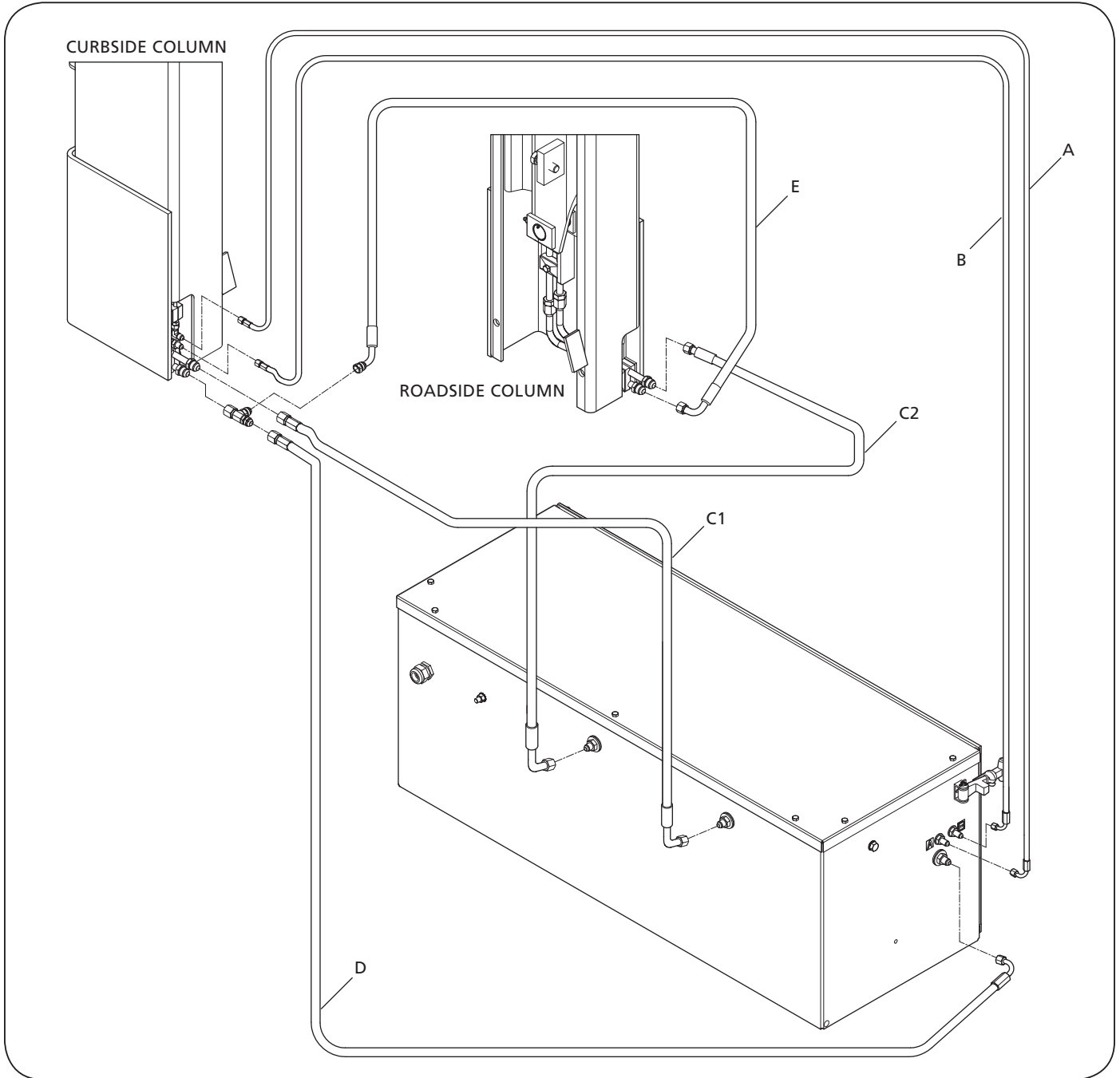
**IMPORTANT:** When routing hydraulic hoses, avoid moving parts, brake lines, sharp edges and sharp bends. Ensure the hoses are free of kinks and are securely mounted.

**NOTE:** Labeling hydraulic lines before installation will ensure they are routed correctly.

### For Models DH55 and DH66 Flow Diving Configuration

1. Install the curbside hydraulic lines from top to bottom starting with hydraulic line "A", "B", "C1", "Run Tee", "D" then "E" (**Figure 59**).
2. Install the roadside hydraulic lines from top to bottom starting with hydraulic line "C2" then "E" (**Figure 59**).
3. Finish by installing the hydraulic lines into the bump box (**Figure 59**).

Figure 59



HOSE	HOSE LENGTH			
	48' TRAILER	35' TRAILER	PUP TRAILER	TRUCK
A	288" (7,061 mm)	216" (5,486 mm)	168" (4,267 mm)	40" (1,016 mm)
B	288" (7,061 mm)	216" (5,486 mm)	168" (4,267 mm)	40" (1,016 mm)
C1	396" (10,058 mm)	312" (7,924 mm)	276" (7,010 mm)	168" (4,267 mm)
C2	396" (10,058 mm)	312" (7,924 mm)	276" (7,010 mm)	168" (4,267 mm)
D	300" (7,620 mm)	276" (7,010 mm)	180" (4,572 mm)	60" (1,524 mm)
E	132" (3,352 mm)	132" (3,352 mm)	132" (3,352 mm)	132" (3,352 mm)

### 13. Wiring Harness Installation

**NOTE:** Verify the pump box batteries have been disconnected prior to installing the wiring harness.

1. Starting at the roadside and curbside columns, connect the 2-pin connectors from the base of the columns to the 2-pin connectors of the wiring harness (**Figure 60**). Install the supplied shrink wrap over the connection and heat with a hot air gun.
2. Connect the 3-pin connector from the curbside column to the 3-pin connector of the wiring harness (**Figure 60**). Install the supplied shrink wrap over the connection and heat with a hot air gun.
3. Connect the 5-pin connector from the main control station to the 5-pin connector of the wiring harness (**Figure 60**). Install the supplied shrink wrap over the connection and heat with a hot air gun.
4. Connect the 6-pin connector from the cable extension to the 6-pin connector of the wiring harness (**Figure 60**). Install the supplied shrink wrap over the connection and heat with a hot air gun.

**NOTE:** The cable extension will be 72" (1,828 mm) long for truck applications and 288" (7,315 mm) long for trailer applications.

5. With the pump box open, install the cable extension and strain relief through the access hole in the aft side of the pump box (**Figure 61**).
6. After installing the cable extension into the pump box, connect the 6-pin connector to the 6-pin connector on the pump wiring harness (**Figure 62**). Cover the connection with the supplied shrink wrap and heat with a hot air gun.
7. Secure any loose or dangling wires to the vehicle frame with a tie wrap.

Figure 60

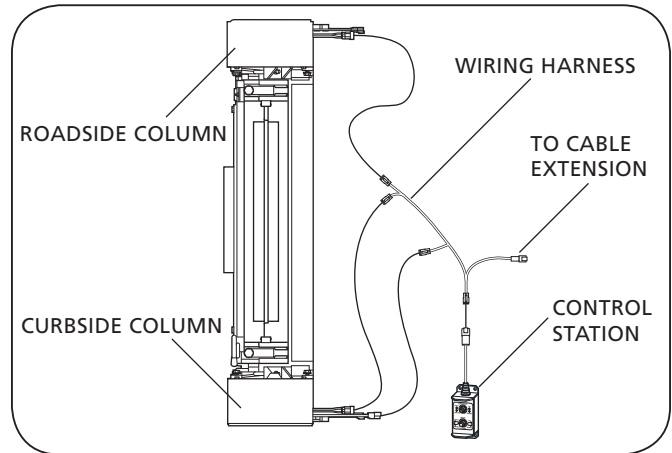


Figure 61

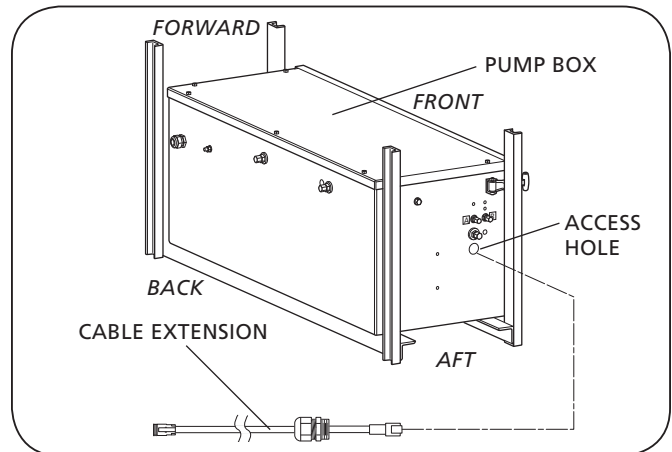
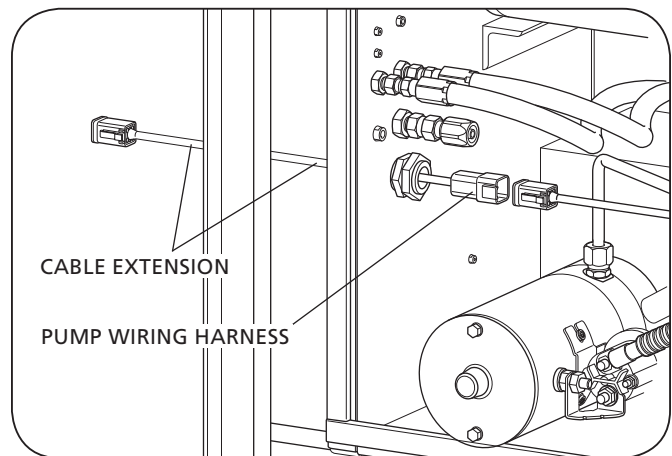


Figure 62





## 14. Charge and Ground Cable Installation

1. Determine the battery charge source from either the truck or a connector at the front of the trailer where the liftgate will be installed.
2. Strip the protective rubber coating from both ends of the supplied red battery charge cable.
3. Feed one end of the supplied red battery charge cable through the strain relief in the back of the pump box (**Figure 63**).
4. To prepare cable ends, place the bare ends into the connector and crimp securely into place. Cover the connection with the supplied shrink wrap and heat with a hot air gun.

### CAUTION

Failure to properly secure the cable may result in electrical overload which, if not avoided, could result in electrical component damage.

5. Connect the charge cable to the power side of the 150A circuit breaker in the pump box (**Figure 64**).
6. On the underside of the vehicle, route the charge cable from the pump box to the front of the vehicle. Secure the cable to the vehicle frame.

#### For truck installation:

- 6.1. The cable needs to be long enough to reach the vehicle battery.

#### For trailer installation:

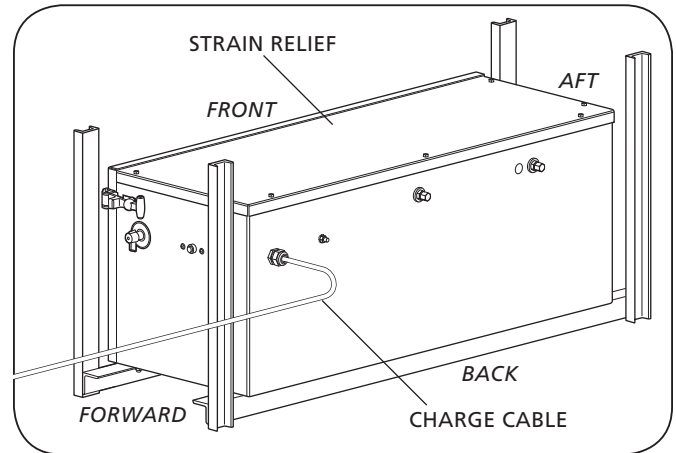
- 6.1. The cable needs to be long enough to reach the connector.

7. Connect the other end of the cable as follows:

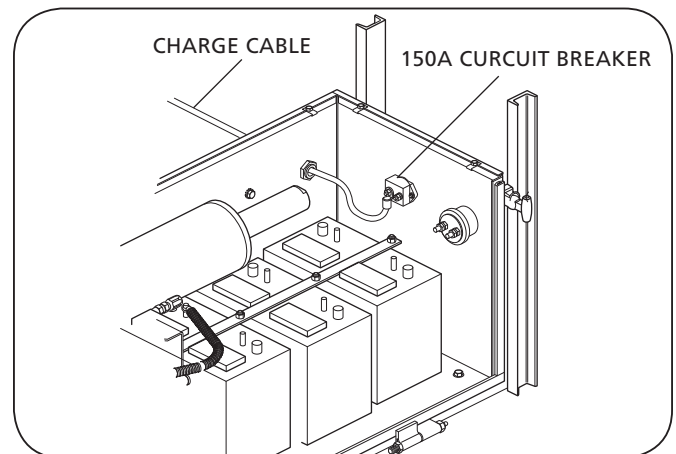
#### For truck installation (**Figure 65**):

- 7.1. Mount a circuit breaker as close to the truck battery as possible.
- 7.2. Cut the cable at the circuit breaker position, strip the rubber coating and prepare the cable ends per Step 4.
- 7.3. Connect the cable to the circuit breaker and battery positive terminal.

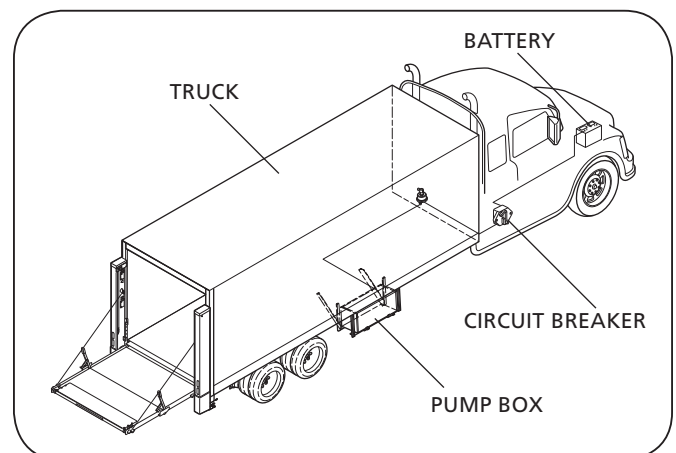
**Figure 63**



**Figure 64**



**Figure 65**



**For trailer installation (Figure 66):**

- 7.1. Mount the connector to the front of the trailer adjacent to the airline connections.
- 7.2. Cut the cable at the connector position, strip the rubber coating and prepare the cable end per Step 4.
- 7.3. Attach the cable to the connector.

**IMPORTANT:** Verify that the tractor's electrical system is properly designed to protect the liftgate and tractor from overload.

8. Strip the protective rubber coating from both ends of the supplied black battery ground cable.
9. Place the ground cable bare ends into the connector and crimp securely into place. Cover the connection with the supplied shrink wrap and heat with a hot air gun.  
Connect one end of the ground cable to the grounding stud on the back of the pump box (Figure 67).
10. On the underside of the vehicle, route the ground cable from the pump box to the front of the vehicle. Secure the cable to the vehicle frame.

11. Connect the other end of the cable as follows:

**For truck installation:**

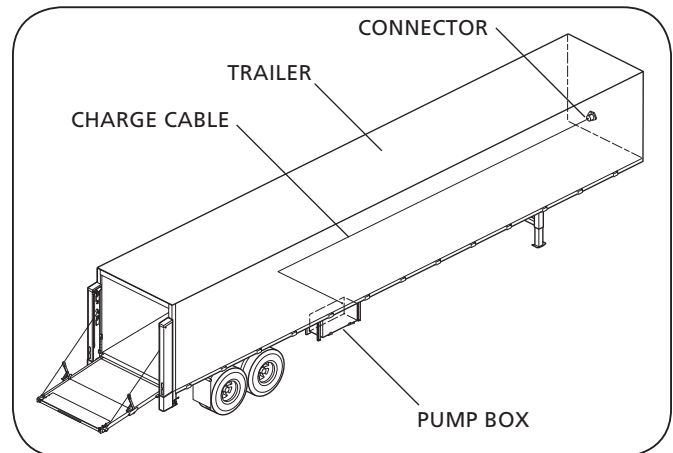
- 11.1. Connect the ground cable to the truck battery negative terminal.

**For trailer installation:**

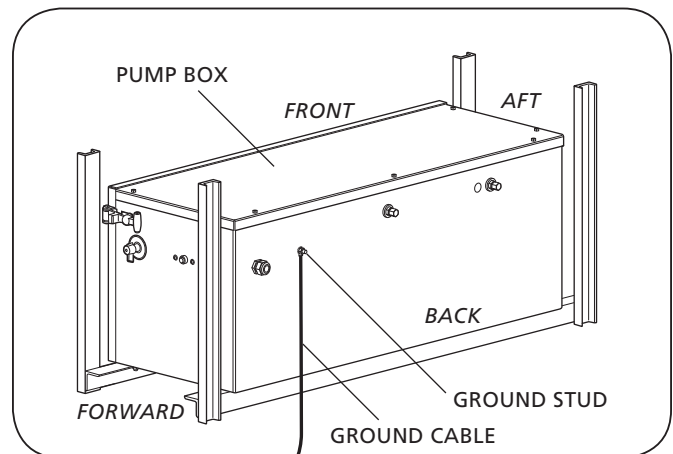
- 11.1. Connect the ground cable to the connector previously installed in Step 7.

12. For trailer installations only, install the hydraulic hoses and cables into the supplied conduit channel.
13. Mount the conduit channel containing the hydraulic hoses and cables to the underside of the trailer frame with thread cutting screws (Figure 68).

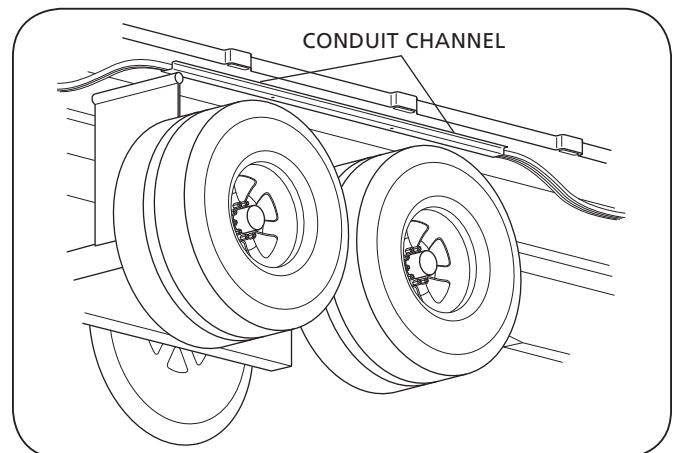
**Figure 66**



**Figure 67**



**Figure 68**



## 15. Battery and Cable Installation

**IMPORTANT:** SAF-HOLLAND recommends the use of 12V Group 31 top stud post AGM or heavy duty dual purpose type batteries with a minimum reserve capacity of 170 reserve capacity/1000 CCA.

**IMPORTANT:** SAF-HOLLAND recommends the use of three (3) batteries for optimal liftgate performance.

1. Position the batteries with the positive terminals toward the outside edge of the trailer.
2. Install the supplied battery tie down strap. Tighten the nuts on the threaded bars to ensure the batteries are securely seated.
3. Connect the red (positive) 10" (254 mm) battery cables to the positive terminals of all the batteries (**Figure 69**).
4. Connect the black (negative) 10" (254 mm) battery cable to the negative terminals of all the batteries (**Figure 69**).

**IMPORTANT:** Verify the master disconnect switch is OFF before connecting the battery.

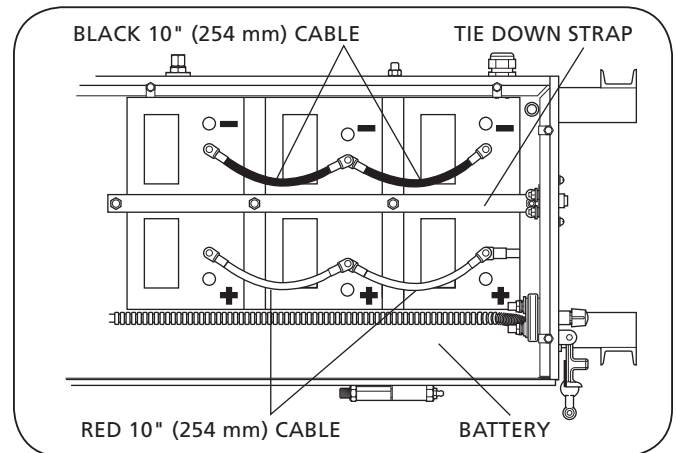
**CAUTION**

Failure to turn the master disconnect switch OFF prior to connecting power may result in unintended pump operation which, if not avoided, could result in property damage.

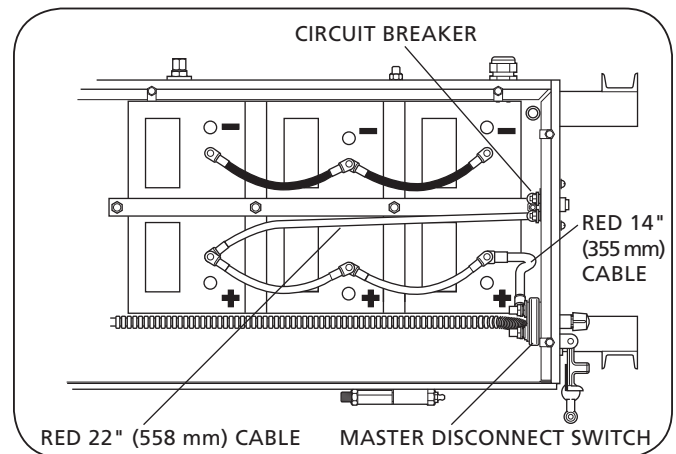
5. Connect the red (positive) 14" (355 mm) battery cable that is installed on the master disconnect switch to the positive terminal of the battery (**Figure 70**).
6. Connect the red (positive) 22" (558 mm) cable that is installed on the circuit breaker to the positive terminal on the battery (**Figure 70**).
7. Connect the black ground cable that is installed on the back of the pump box to a negative terminal on the battery (**Figure 71**).

**NOTE:** After tightening all electrical connections, apply a dielectric grease to prevent corrosion.

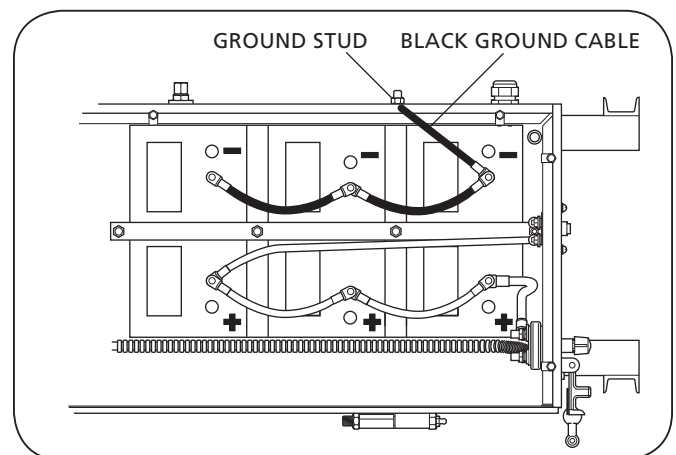
**Figure 69**



**Figure 70**

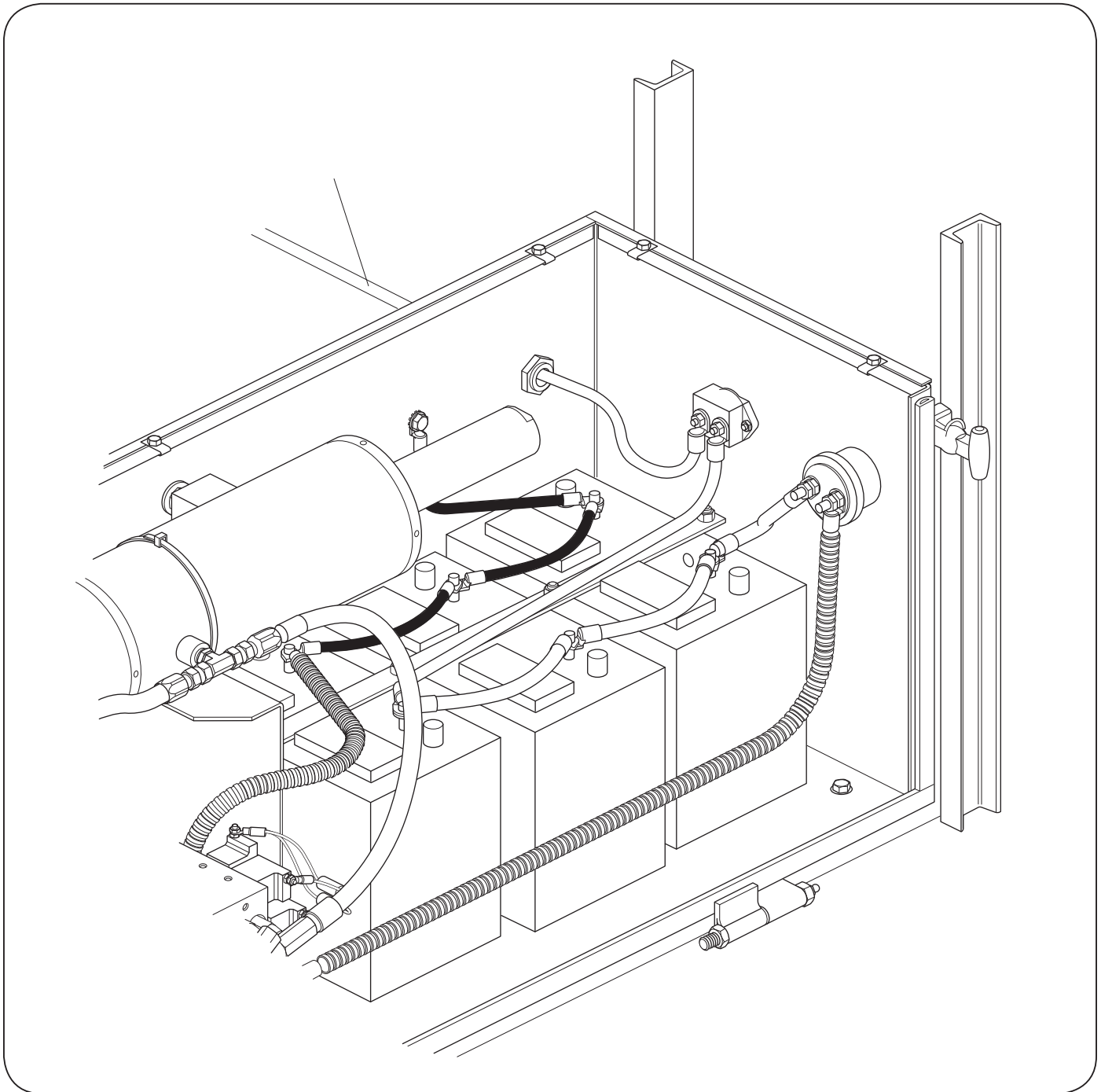


**Figure 71**



8. Connect the loose end of the ground cable already attached to the pump valve body to the negative terminal of one of the batteries.
9. Ensure the battery connections are as shown (**Figure 72**).

**Figure 72**



## 16. Filling the Hydraulic Reservoir and Purging the System

**IMPORTANT:** Keep dirt, water and other contaminants from entering the hydraulic system; clean the area to prevent contamination of the hydraulic fluid.

**IMPORTANT:** Always use the correct grade of hydraulic fluid. Refer to the chart below for recommended hydraulic fluid or contact your SAF-HOLLAND representative.

TEMPERATURE RANGE	RECOMMENDED FLUIDS	
	MANUFACTURER	TYPE
Above 0° C (32° F)	Any	AW-32 ISO 32
-25 to 65° C (-15 to 150° F)	Any ESSO, EXXON MOBIL, SHELL	HYDRAUL 50 DTE 11 DONAX TD Low Viscosity
-35 to 50° C (-30 to 120° F)	EXXON, ESSO, SHELL, PETRO-CAN	UNIVIS N15 TELLUS T15 MV ARCTIC 15
-45 to 40° C (-50 to 100° F)	Any ESSO, EXXON, SHELL	MIL-H-5606 UNIVIS J-13 UNIVIS HV1 13 FLUID #4

1. Set the vehicle parking brake.
2. Remove the filler cap (**Figure 73**) and add a recommended hydraulic fluid to the pump reservoir until the fluid is visible through the reservoir sight glass.
3. Check for leaks and thoroughly clean the area of any spilled hydraulic fluid.
4. Using the control station, put the platform in the up and open position in accordance with the DH Series Operations and Maintenance Manual XL-TG101390M-en-US supplied with your liftgate and hold the up switch for 15-20 seconds (**Figure 74**).
5. Lower the platform to the ground and raise it up fully. Once it reaches deck height, hold the up button for an additional 15-20 seconds, then release.
6. Put the toggle switch into the UP position and hold for an additional 15-20 seconds.
7. Lower the platform to the ground and raise it up fully. Once it reaches deck height hold the up button for an additional 15-20 seconds.
8. Check the hydraulic fluid level with the platform in the up and open position; add fluid if necessary.

Figure 73

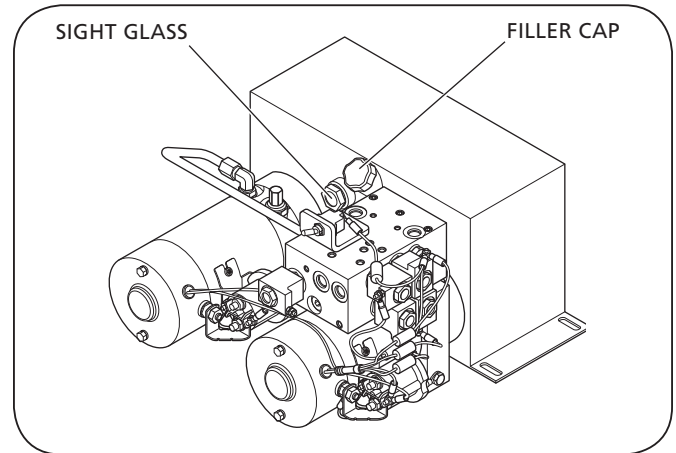
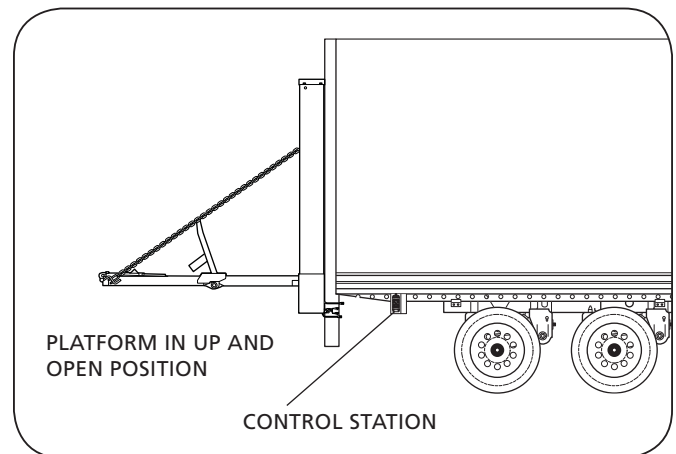


Figure 74



## 17. Decal Installation

**IMPORTANT:** All decals must be installed, maintained, and kept visible and legible.

Prior to putting the vehicle into service, install all supplied decals listed in the table below (**Figures 75, 76 and 77**).

DECAL	QTY.	ENGLISH	FRENCH	DESCRIPTION
A	2	XA-58090	XA-58091	Max. Capacity 4,500
	2	XA-58099	XA-58100	Max. Capacity 5,500
	2	XB-57502	XB-57503	Max. Capacity 6,600
B	1	XA-58401	XA-58402	Instructional
C	1	XA-58403	XA-58404	WARNING - DH Series
D	2	XB-50344	XB-50349	CAUTION - Always Stand Clear
E	2	XB-51170	XB-57067	DANGER - Pinch Point
F	3	XB-54995	XB-64388	WARNING - High Pressure
G	1	XB-62815	XB-62878	WARNING - Riding Platform

Figure 75

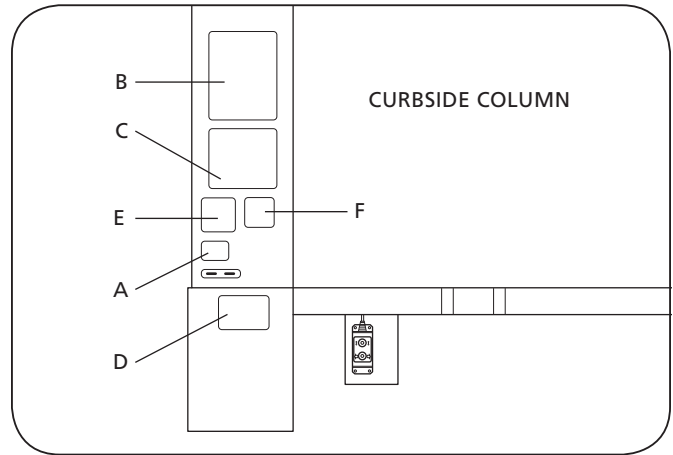


Figure 76

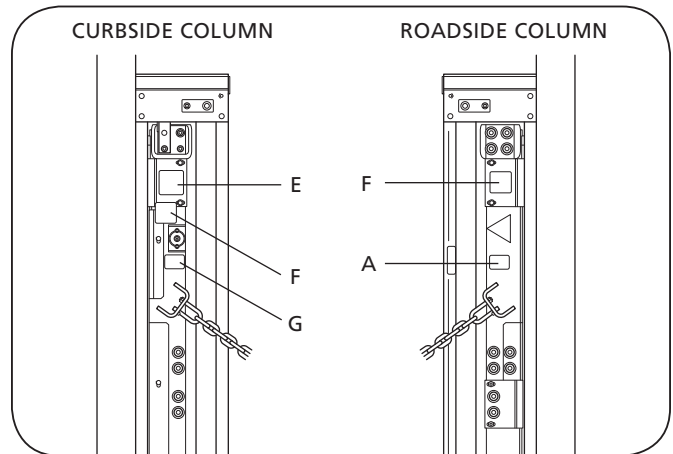
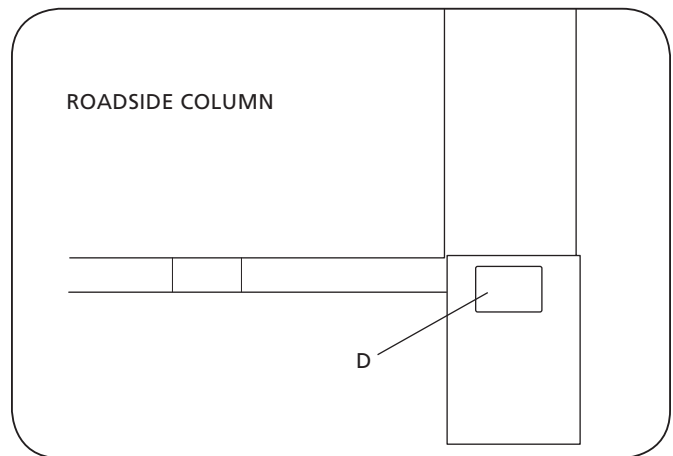


Figure 77





**Pre-Delivery Inspection**

Vehicle VIN: \_\_\_\_\_

Liftgate Model #: \_\_\_\_\_

DOM: \_\_\_\_\_

Liftgate Serial #: \_\_\_\_\_

INSTALLATION	YES	NO
<b>LIFTGATE MOUNTING</b>		
Liftgate centered on vehicle centerline		
Left outside column – flush – welding, seven (7) 5/16" x 4" (8 x 101 mm) fillet welds		
Left inside column – flush – welding, seven (7) 5/16" x 4" (8 x 101 mm) fillet welds		
Right outside column – flush – welding, seven (7) 5/16" x 4" (8 x 101 mm) fillet welds		
Right inside column – flush – welding, seven (7) 5/16" x 4" (8 x 101 mm) fillet welds		
Liftgate deck extension – flush – welding, nine (9) 3/16" x 3" (5 x 76 mm) fillet welds		
Liftgate control station mounting bracket properly positioned and welded to vehicle cross member		
Pump box properly positioned, assembled and welded to cross-members		
Conduit channel properly positioned and attached		
<b>HYDRAULIC</b>		
Pump Box – fittings all connected and tight		
All hydraulic hoses routed from the pump box through the conduit channel to the rear of the trailer		
Verify that all hoses are secured to the vehicle frame		
No excessive looping, routed over sharp edges, or too tightly secured to the vehicle frame		
Curbside column – fittings are connected and tight		
Roadside column – fittings are connected and tight		
Pump reservoir is filled to the correct level		
Check liftgate system for hydraulic leaks		
<b>ELECTRICAL</b>		
The six (6) wire electrical cable routed to the pump box through the conduit channel to the rear of the trailer		
The battery cable from the pump box routed to and securely attached to the single pole connector at the front of the trailer		
Verify that all cables and wires are secured to the vehicle frame		
No excessive looping, routed over sharp edges, or too tightly clamped		
Wiring harness connections tight with shrink wrap applied		
Battery cables tight and have dielectric grease		
Master disconnect switch operational		
Liftgate lights are functional		
<b>LIFTGATE OPERATION</b>		
Liftgate operates per decal description at control stations		
Liftgate raises and lowers per decal description on right column		
Liftgate decals are installed properly and legible		



From fifth wheel rebuild kits to suspension bushing repair kits, SAF-HOLLAND Original Parts are the same quality components used in the original component assembly.

SAF-HOLLAND Original Parts are tested and designed to provide maximum performance and durability. Will-fits, look-alikes or, worse yet, counterfeit parts will only limit the performance potential and could possibly void SAF-HOLLAND's warranty. Always be sure to spec SAF-HOLLAND Original Parts when servicing your SAF-HOLLAND product.

**SAF-HOLLAND USA • 888.396.6501 • Fax 800.356.3929**  
[www.safholland.us](http://www.safholland.us)

**SAF-HOLLAND CANADA • 519.537.3494 • Fax 800.565.7753**  
**WESTERN CANADA • 604.574.7491 • Fax 604.574.0244**  
[www.safholland.ca](http://www.safholland.ca)

**SAF-HOLLAND MEXICO • +(52) 55.5362.8743 • Fax +(52) 55.5362.8743**  
[www.safholland.com.mx](http://www.safholland.com.mx)

[info@safholland.com](mailto:info@safholland.com)