

Installation Manual

Bolt-on Mounting Brackets DH Series Liftgates



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Introduction

This manual provides you with the information necessary for the installation of the SAF-HOLLAND DS Series Liftgate with bolt-on mounting brackets.

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 Web Site (www.safholland.us and 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, work shop 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, may result in property damage.

▲ CAUTION Indicates a potentially hazardous situation which, if not avoided, may 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.

CAUTION Failure to follow the instructions and safety precautions in this manual may result in property damage.

1. To reduce risks and ensure safety at all times, this section of the manual details a number of safety rules which should always be adhered to.
2. Study all the safety messages in this manual and on the equipment carefully.
3. You must be fully trained on the capabilities and the limitations of this equipment to operate the equipment properly.

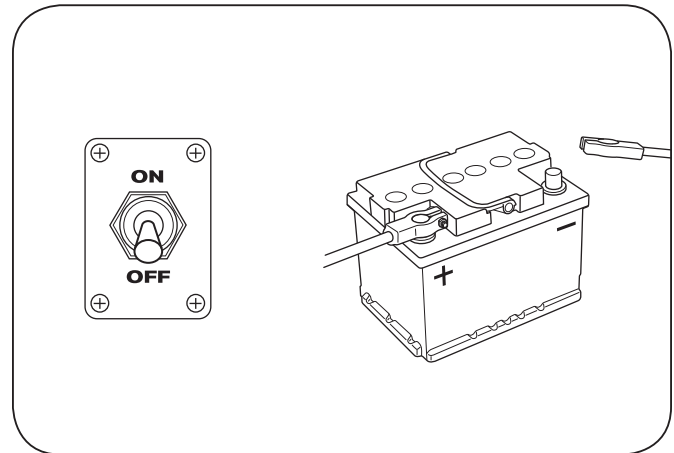
NOTE: Proper tools must be used to perform the installation procedures in this manual. Many of these procedures require special tools.

4. Do not work underneath the liftgate without properly supporting the raised platform and liftframe in accordance with workplace safety requirements.

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.

5. Before working on equipment, always disconnect the electrical power to the pump motor by turning off the master switch (**Figure 1**).
6. When welding is required, ensure that the battery ground cable is disconnected and that all electronic equipment is completely electrically isolated before welding is initiated (**Figure 1**).
7. 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.

Figure 1



2. Welding Standards

2.1 Scope

This specification applies to all components supplied by SAF-HOLLAND, and its products. The customer assumes all responsibility and liability for weld integrity if weld material and procedure differ from that 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% CO₂. If a different gas is used, welds must comply with penetration requirements shown **(Figure 2)**. 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.

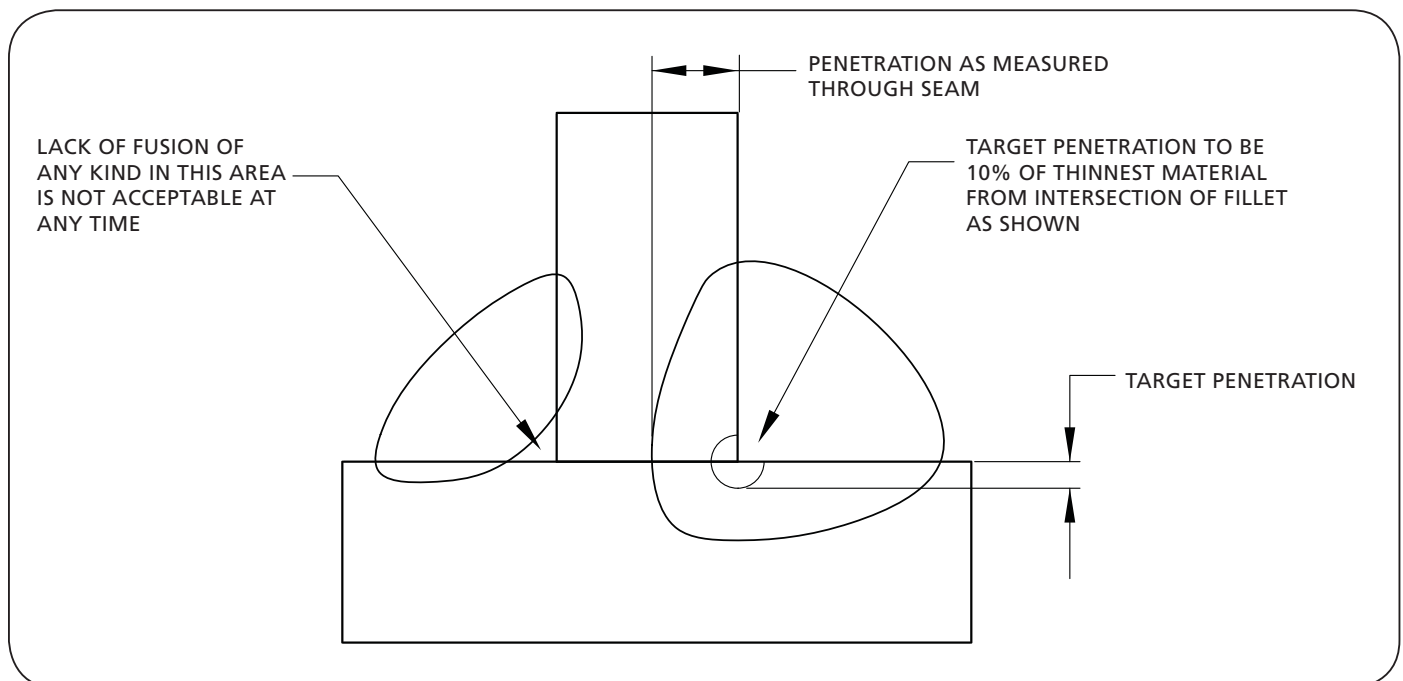
2.4 Workmanship

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

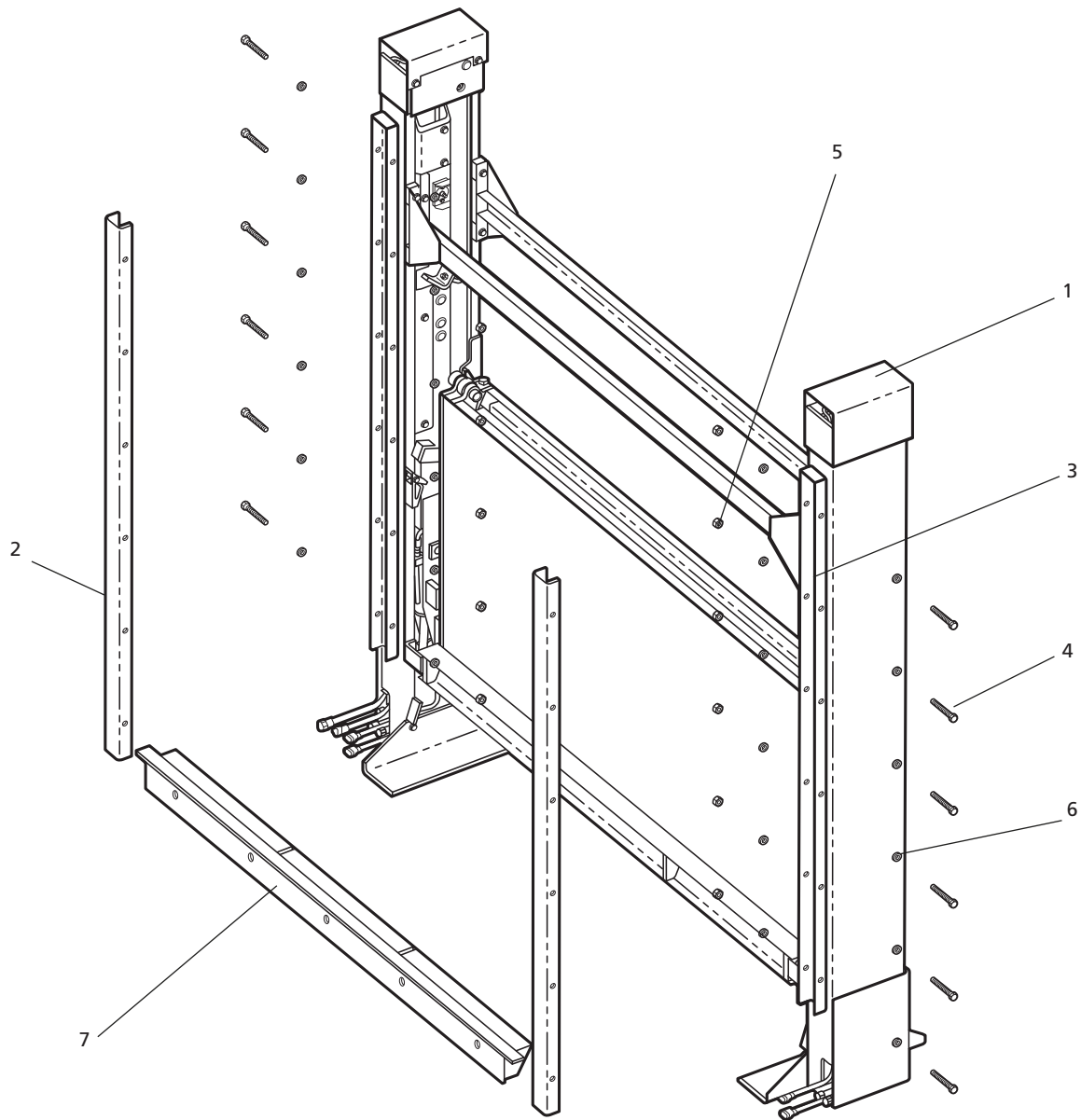
2.5 Weld Size

If weld size is not specified, the effective throat of the weld must be a minimum of the thinnest material being welded **(Figure 2)**.

Figure 2



3. Bolt-on Mounting Bracket Parts



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

4. Liftgate Welding

1. Prepare the vehicle as stated in the provided DH Liftgate Installation Manual sections 1 through 3.
2. Use these installation instructions in lieu of Sections 4.2.1 through 4.2.3. as stated in the provided DH Liftgate Installation Manual.
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 3**).

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, may result in property damage.

4. Plug weld the deck extension support bracket to the rear frame of the vehicle as in (**Figure 4**).
5. Use a folk lift or suitable lifting device to raise the liftgate by the shipping brackets (**Figure 5**).

Figure 3

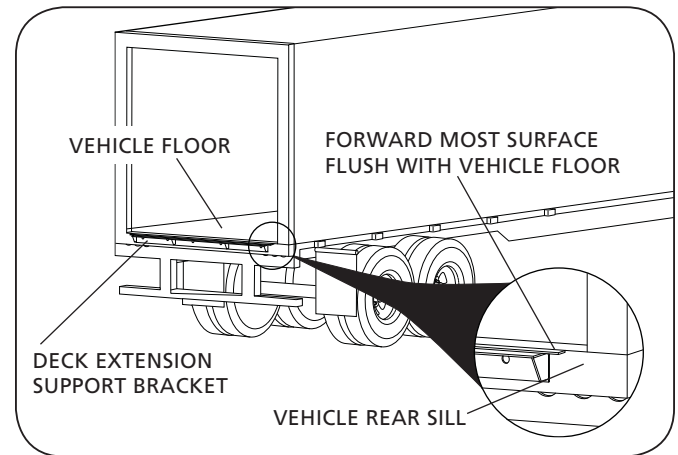


Figure 4

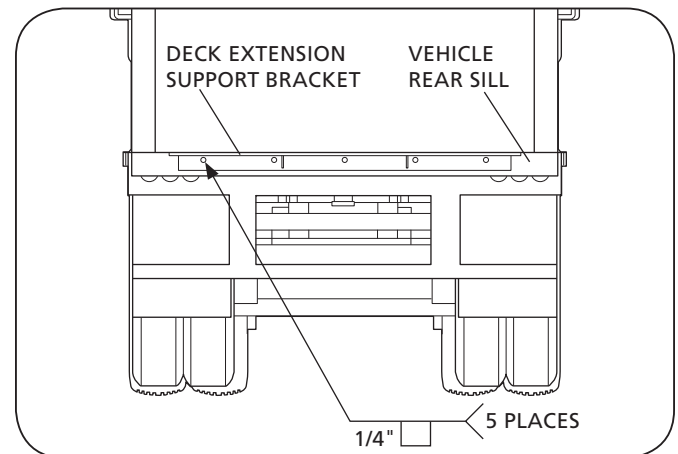
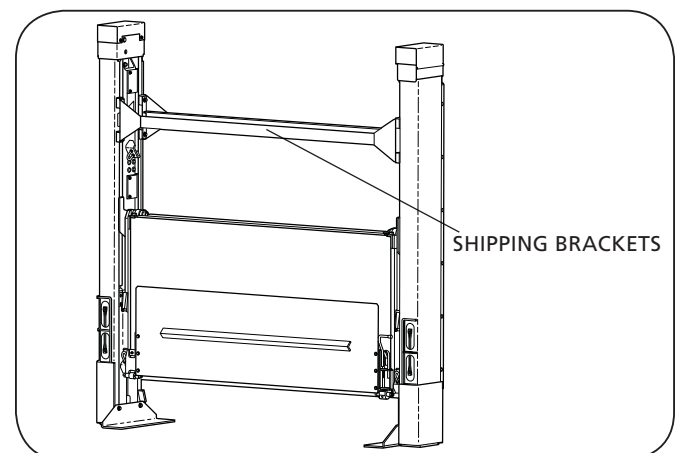
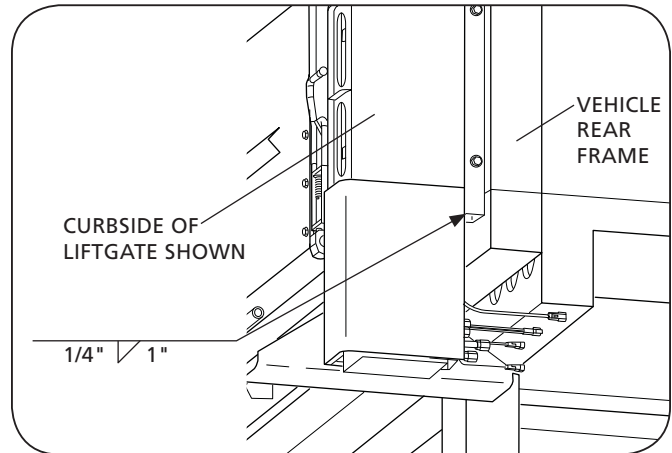


Figure 5



6. 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.
7. 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.
8. Weld the bottom edge of both the roadside and curbside inner mounting brackets to the vehicle rear frame as shown in **(Figure 6)**.
9. Tack weld the top edge of both the roadside and curbside inner mounting brackets to the vehicle rear frame as shown in **(Figure 7)**. Be careful NOT to weld the outer mounting bracket top cap to the vehicle rear frame.

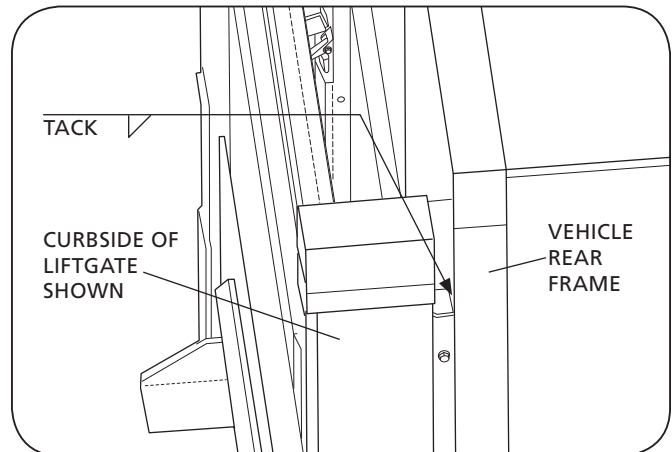
Figure 6



⚠ 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.

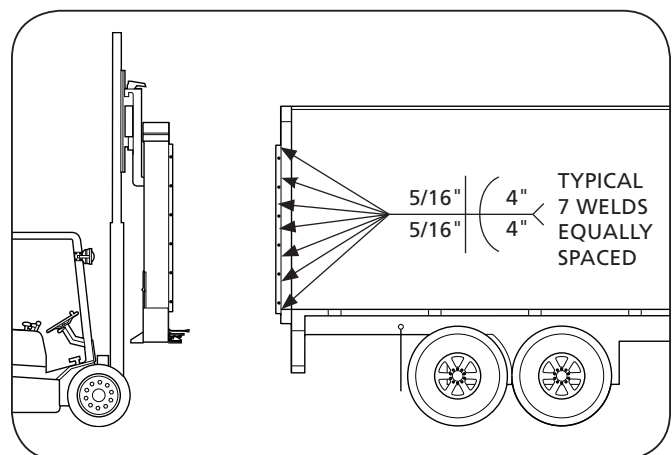
10. If the position of the liftgate is correct remove the bolt on bracket bolts allowing the liftgate to be removed.
11. Remove the liftgate from the rear of the vehicle so there is enough room to finish welding the inner mounting brackets to the vehicle rear frame.
12. Start welding at the top of each inner mounting bracket and weld per **(Figure 8)**. 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.

Figure 7

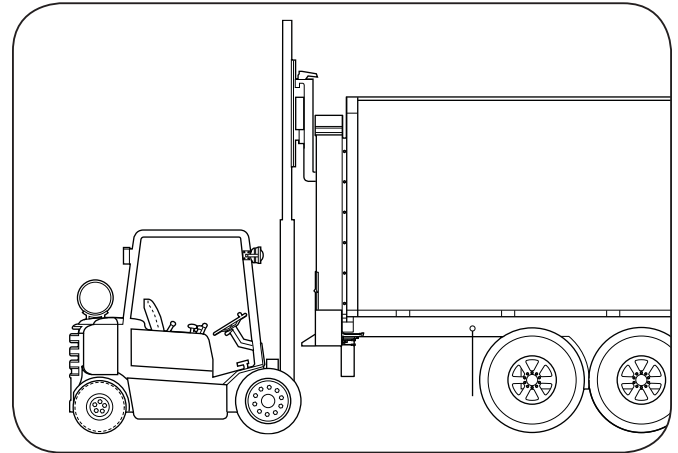
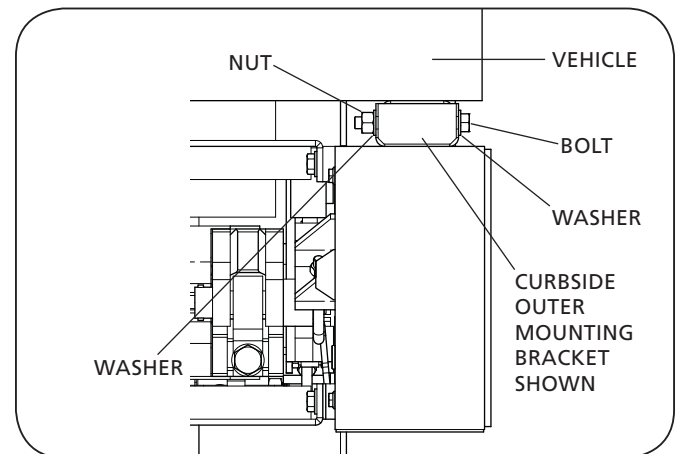


⚠ WARNING Failure to continually support the liftgate through the shipping brackets before the liftgate is fully welded to the vehicle frame may result in dropping the liftgate which, if not avoided, could result in death or serious injury.

Figure 8



13. 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 9**).
14. Install the six (6) curbside and six (6) roadside bolts, washers and nuts into the bolt-on brackets (**Figure 10**). Bolt heads facing outwards.
15. 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).
16. Remove the forklift.

Figure 9**Figure 10**

17. 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 11**).
18. 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 12**).
19. Verify the vehicle rear impact guard is within the Federal Regulation distance from the end of the vehicle (**Figure 13**).
20. Refer back to the provided DH installation manual starting with Section 4.2.4 to continue with the remainder of the installation.

Figure 11

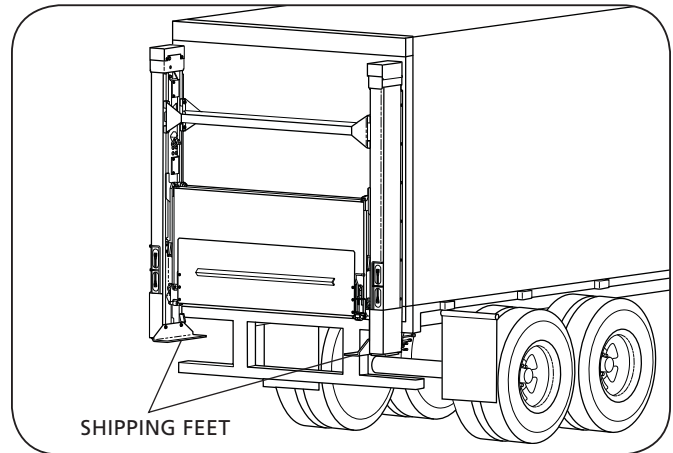


Figure 12

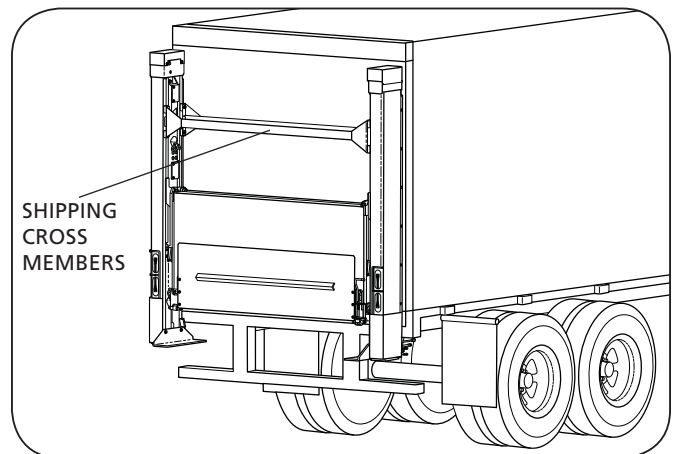
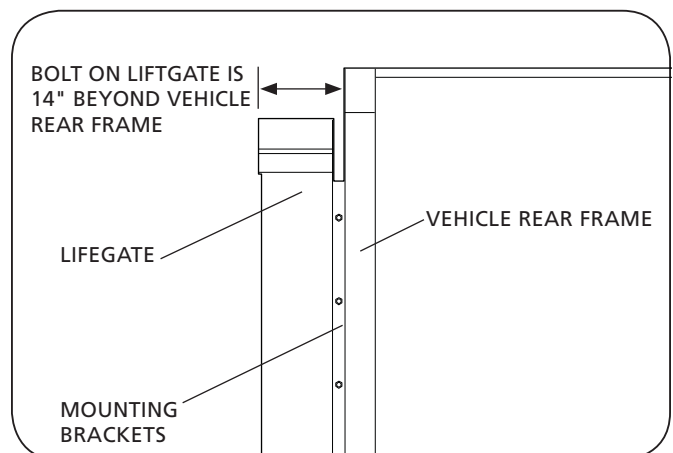


Figure 13







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.

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