

Installation Manual







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Introduction

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

 $\textbf{NOTE:} \ \ \textbf{For liftgate components replacement, contact}$

SAF-HOLLAND Customer Service at:

U.S. 1-888-396-6501 Canada 1-800-503-9847.

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).

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 important product information. So that you may better understand the manual, these 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.

AWARNING

Failure to follow the instructions and safety precautions in this manual can result in death or serious injury.

General Safety Precautions

- 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 adhered to.
- 2. Study all the safety messages in this manual and on the equipment carefully.
- You must be fully trained on the capabilities and the limitations of this equipment to operate the equipment properly.
- 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.

Operating Safety Precautions

- Never operate the liftgate unless the area is clear of obstacles and other personnel.
- 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.
- 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.
- 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.
- Check for slippery surfaces before stepping off the liftgate platform.
- 8. Never jump off the liftgate.



Installation Safety Precautions

- 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.
- Safety protection should always be worn as protection from pressurized fluid spray, flying debris, and other airborne matter when working with tools, power tools,

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



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).
- 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).

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

Figure 1

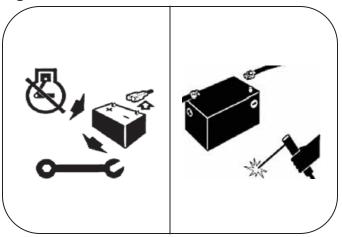


Figure 2





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).

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

NOTE: Batteries contain acid that can burn you and they produce gas that can explode, follow battery manufacturers' safety instructions that come with it when working on your battery.

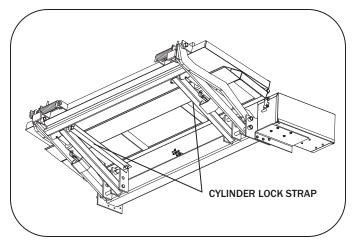
ACAUTION Failure to follow manufacturers' safety instructions when handling batteries may result in explosion which, if not avoided, may result in minor to moderate injury.

- 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.
- 12. Clean up any excess grease, oil accumulation and spillage immediately. Use only non-flammable products for cleaning the liftgate or components.
- 13. A cylinder lock strap has been factory installed between the cylinder mounting pins. This strap keeps the liftgate in the proper position for installation. This cylinder lock strap must remain in position until the liftgate has been welded to the vehicle, the motor wiring has been connected to the battery, and the hydraulic system has been activated to fill the hoses and cylinder under pressure. Care must be taken during installation to ensure that this strap is not bent, as this would affect the proper function of the liftgate when installed. Contact SAF-Holland customer service for replacement cylinder lock straps (Figure 4).

Figure 3



Figure 4



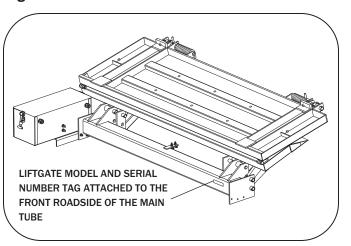


2. Liftgate Model & Serial Number Location

Each SAF-HOLLAND liftagte has a stamped metal tag that identifies the liftgate model number and the serial number. This tag is clearly visible as it is attached to the front roadside of the maintube (*Figure 5*). In order to properly identify your SAF-HOLLAND liftagte and it's 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

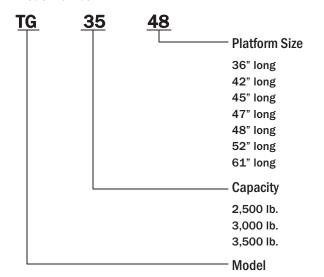
Equipment Model No.:	
Serial No.:	
Purchase Date:	
Dealer:	

Figure 5

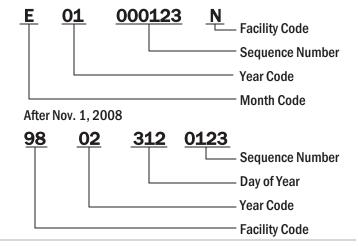




Model Number

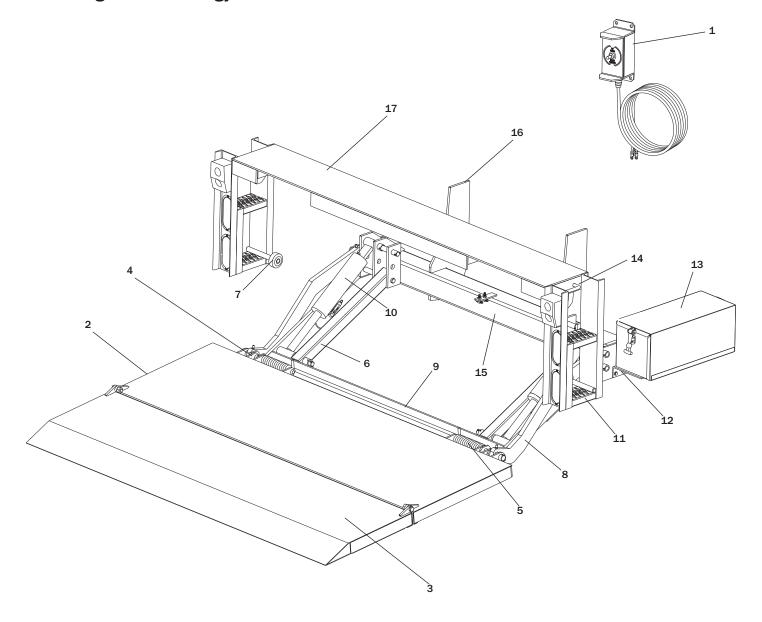


Serial Number before Nov. 1, 2008





3. Liftgate Terminology



ITEM	DESCRIPTION		
1	CONTROL STATION		
2	INNER PLATFORM		
3	OUTER PLATFORM		
4	ADJUSTING BOLTS		
5	TORSION SPRING		
6	COMPRESSION MEMBER		
7	ROLLER OPENER		
8	PARALLEL ARMS		
9	LIFT FRAME		

ITEM	DESCRIPTION
10	LIFT CYLINDER
11	SIDE STEPS
12	PUMP BOX MOUNT
13	PUMP BOX
14	TRAVEL LATCH
15	MAINTUBE
16	ATTACHING PLATES
17	DECK EXTENSION



4. Frame Preparation

STANDARD MOUNT

AWARNING Failure to properly engage the vehicle parking brake prior to installing the liftgate may allow vehicle movement which, if not avoided, could result in death or serious injury.

NOTE: Prior to installation verify the vehicle rear doorsill will support required loads.

- 1. Remove bumper, step, or any protrusions that would prevent your deck extension from being mounted flush against the rear doorsill.
- 2. Follow the frame cutout requirements as shown for your preferred installation (Figures 6, or 7).

NOTE:

Standard Mount: Additional frame modifications may be necessary, depending on the application (Figures 6 or 7).

Figure 6

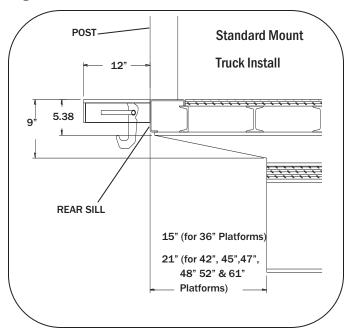
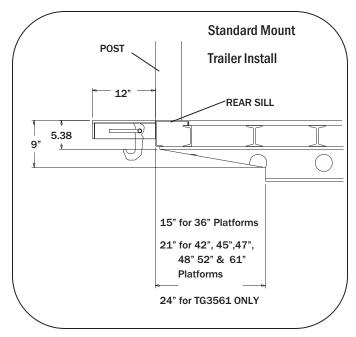


Figure 7





FLUSH MOUNT

AWARNING Failure to properly engage the vehicle parking brake prior to installing the liftgate may allow vehicle movement which, if not avoided, could result in death or serious injury.

NOTE: Prior to installation verify the vehicle rear doorsill will support required loads.

- 1. Remove bumper, step, or any protrusions that would prevent your deck extension from being mounted flush against the rear doorsill.
- 2. Follow the frame cutout requirements as shown for your flush mount installation (Figures 8 or 9).

NOTE: Flush Mount: Deck extension replaces the rear sill and is mounted flush with the rear frame posts (Figures 8 or 9) .

Figure 8

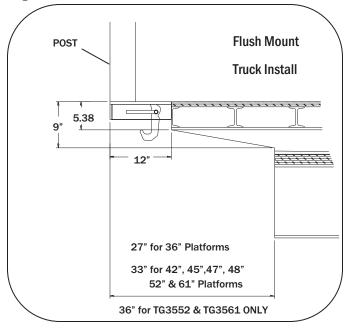
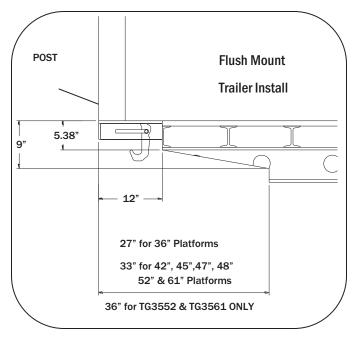


Figure 9





5. Deck Extension Installation

Position of Deck Extension (Standard Mount Only)

 Position and support the deck extension flush with the rear doorsill of the vehicle. Ensure the deck extension is flat and flush with the deck of the vehicle.

NOTE: Some vehicles may be higher at the back than the front or could be on unlevel ground; therefore, the deck of the truck may be sloped from the rear down to the front.

Ensure that the deck extension is parallel to

2. The deck extension must be centered with respect to the vehicle chassis. This ensures that the liftgate is

mounted on the centerline of the vehicle.

3. Tack weld into position.

4. Weld per Figures 10 and 11.

the truck deck.

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.

ACAUTION

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

Figure 10

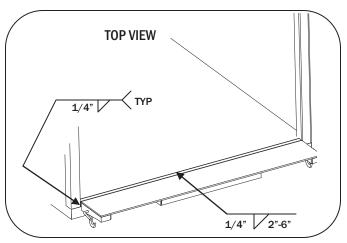
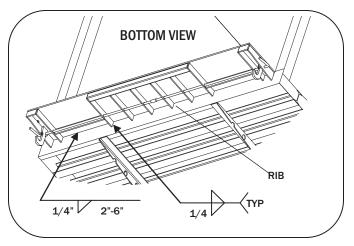


Figure 11





6. Liftgate Installation

Position of Deck Extension

NOTE:

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

AWARNING Failure to properly support the raised platform and liftframe may result in the liftgate collapsing which, if not avoided, could result in death or serious injury.

- 1. Unfold the platform and flip over (Figure 12).
- 2. Attach two temporary 2"x2"x3/16"x38" angle brackets to the deck extension with 18" of overhang. These brackets will help maintain alignment (Figure 13).
- 3. Wrap a chain around the platform and attach the chain to a hoist with adequate capacity. Attach a "C"-clamp on both the road side and curb side of the platform to ensure a chain does not slide out from under the platform (Figure 14).

AWARNING Failure to wrap the chain around the platform may result in dropping the liftgate which, if not avoided, could result in death or serious injury.

Figure 12

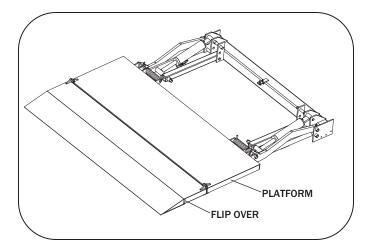


Figure 13

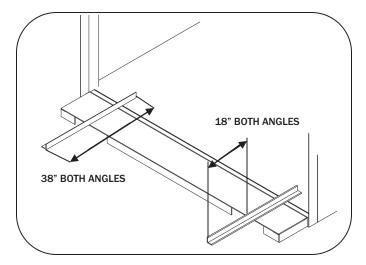
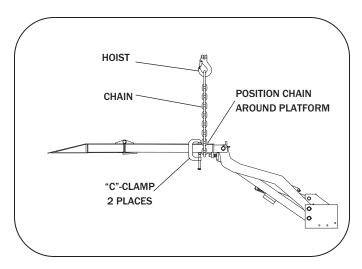


Figure 14





- 4. Lift the platform with the hoist and place a floor jack under the maintube (*Figure 15*).
- Centre the platform on the vehicle and maintaining a 1/4" gap with a spacer between the deck extension and the platform. Continue to support the platform.
- 6. The platform must be flush and parallel with the deck extension maintaining a 1/4" gap between the deck extension and the platform (*Figure 16*).
- Ensure the liftagte is positioned correctly from the top
 of the deck extension to the top of the main tube
 across the full length. (Figure 17).
 - •24"±1/2" for all models except where noted below
 - •22"±1/2" for all TG35 models
 - •21"±½" for all TG2536 low mounts
- 8. Use floor jacks to reposition the main tube parallel to the vehicle deck both front to rear and left to right.

Figure 15

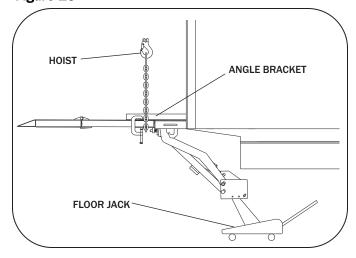


Figure 16

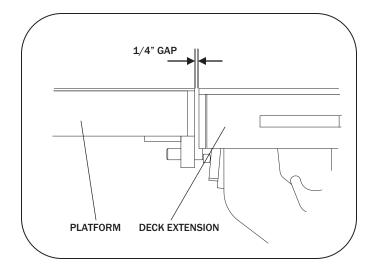
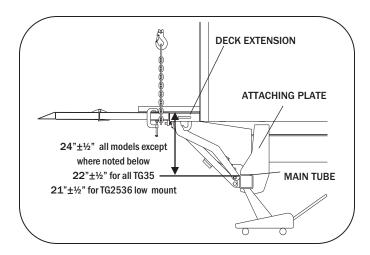


Figure 17





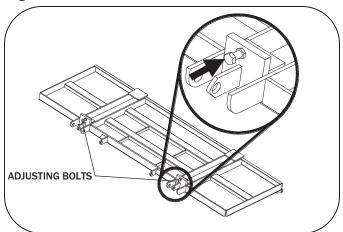
- 9. Use the platform adjusting bolts to lock the main tube in position (*Figure 18*).
- Once satisfied with the main tube positioning, weld the liftgate attaching plates to the main tube and to the vehicle frame per *Figure 19*.

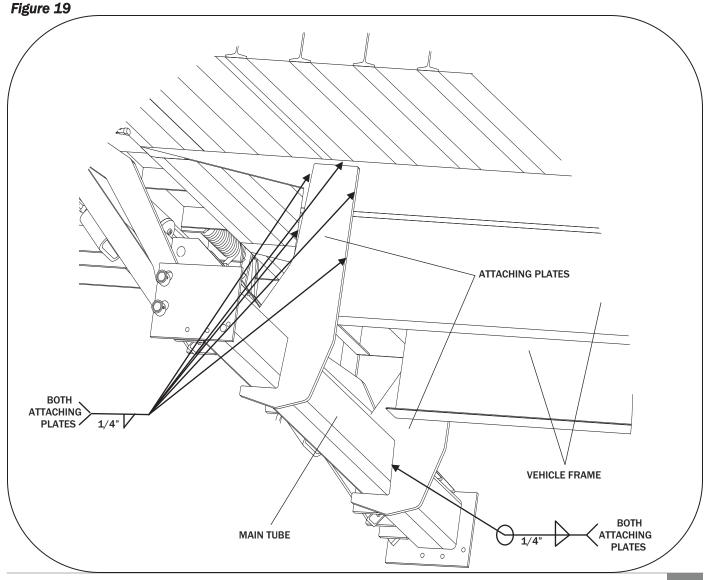
NOTE: When welding is required, ensure that the battery ground cable is disconnected and that all electrical equipment is completely electrically isolated before welding is initiated.

▲CAUTION

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









7. Pump Assembly Installation

Main tube Mount (Standard Option)

Truck & Trailer Installation

- 1. Using the supplied fasteners, fasten the pump assembly to the end of the main tube (Figure 20).
- 2. Torque nuts to 30-40 Ft-Lbs.

Side Mount Box

- Locate the pump box behind the curbside mud flap under the vehicle no more than 4' from the back of the vehicle and 6" in from the curbside of the vehicle body (Figure 21).
- 2. Position the pump assembly brackets against the truck cross members and weld per *Figure 22*.

Figure 20

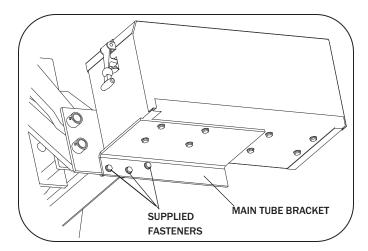


Figure 21

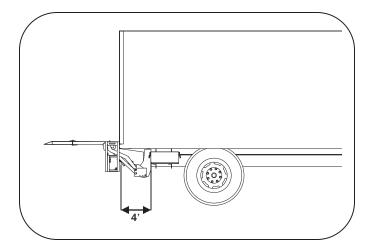
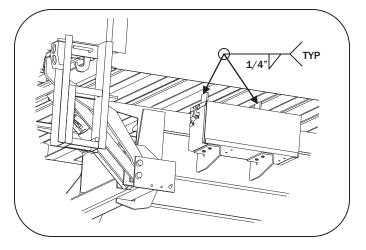


Figure 22





Side Mount & Battery Box

- Locate the pump box assembly on the curbside under the vehicle on front of the sliding suspension but no more than 20' from the back of the vehicle and 6" from the curbside of the vehicle body (Figure 23).
- 2. Position the pump assembly brackets against the trailer cross members and weld per *Figure 24*.

IMPORTANT: Ensure the lid can be removed.

Figure 23

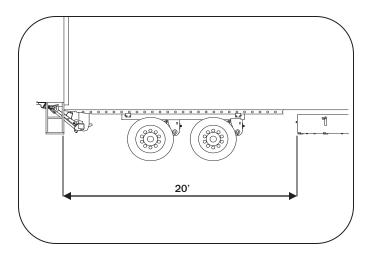
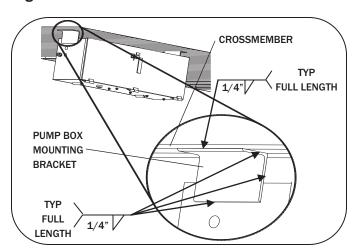


Figure 24





8. Hydraulic Hose Installation

NOTE: Packaged with your liftgate, you will find two hoses of equal length.

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

- 1. Connect a hose to the 'A' fitting on the main tube, feed through the hole in the attaching plate, then connect the other end to the 'A' fitting on the back of the pump box (Figure 25, 26 & 27).
- 2. Connect a hose to the 'B' fitting on the main tube, feed through the hole in the attaching plate, then connect the other end to the 'B' fitting on the back of the pump box (Figure 25, 26 & 27).
- 3. Install the supplied abrasion sleeve over both hydraulic hoses and through the hole in the attaching plate.

Figure 25

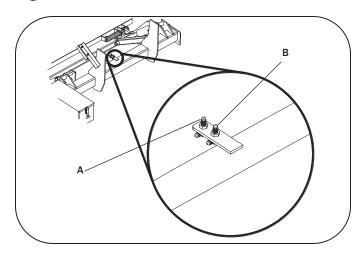


Figure 26

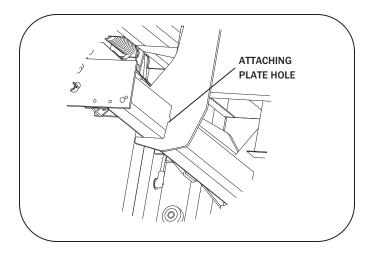
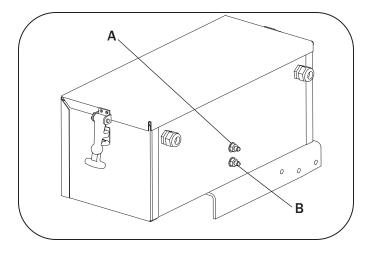


Figure 27





9. Toggle Installation

NOTE: Verify the vehicle power supply is disconnected prior to installing the toggle.

- 1. Position the toggle in a location that is accessible from the ground and deck level.
- 2. Run and secure the control station cable under the vehicle chassis to the pump box.
- 3. Feed the control station cable through the strain relief on the back of the pump box (*Figure 28*).
- 4. Connect the green wire from the control station cable to the power side terminal of the pump solenoid (Figure 29).
- Connect the white wire from the control station cable to the coil with white wire from the diode harness (Figure 29).
- Connect the black wire from the control station cable to the coil with black wire from the diode harness (Figure 29).
- 7. Coil the excess control station cable inside the pump box.

Figure 28

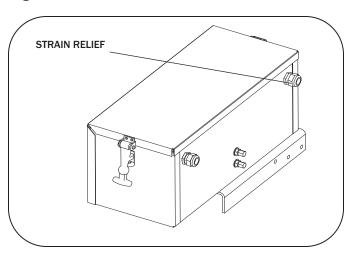
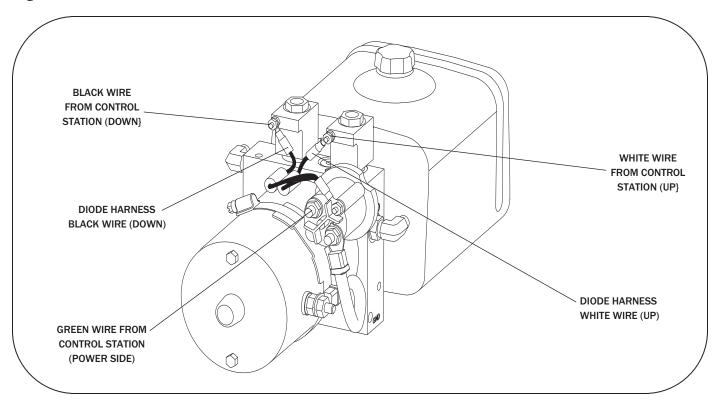


Figure 29





10. Electrical Installation

- Identify the power source from either the truck or the connector at the front of the trailer on which your liftgate is to be installed.
- 2. Feed one end of the power cable through the strain relief in the pump box (*Figure 30*).
- 3. Strip the protective rubber coating from the end of the cable that's inside the pump box.
- 4. Install the cable end on the bare end of the cable and crimp securely into place.

CAUTION

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

- 5. Connect the load end of the power cable as follows:
 - 5a. For a pump box without batteries connect the cable end to the power side of the motor start solenoid (Figure 31).
 - 5b. For a pump box with batteries connect the cable end to the power side of the 150A circuit breaker in the pump box (Figure 32).
- Route the power cable along the underside of the vehicle to the front and secure to cross members.
 - 6a. For truck installations the cable needs to be long enough to reach the vehicle battery.
 - 6b. For trailer installations the cable needs to be long enough to reach the connector.

Figure 30

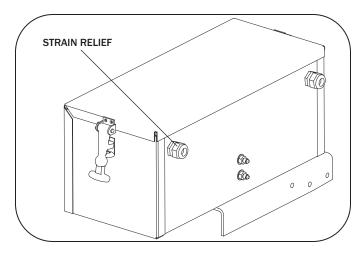


Figure 31

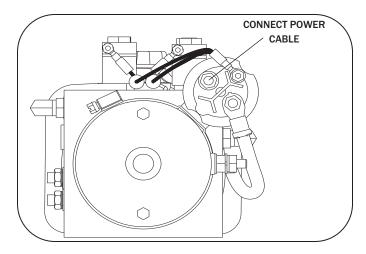
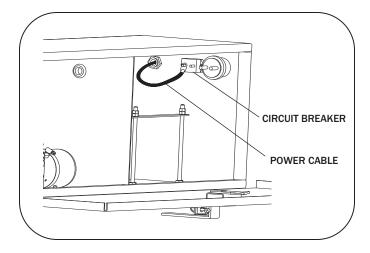


Figure 32





- 7. Connect the line end of the cable as follows:
 - 7a. For truck installation (Figure 33).
 - 7a.1. Mount the circuit breaker as close to the truck battery as possible.
 - 7a.2. Mount the master disconnect switch in the cab where the driver can reach it.
 - 7a.3. Cut the cable at the master disconnect switch and circuit breaker positions and prepare the cable ends per steps 3 & 4.

NOTE: Ensure the master disconnect switch is in the off position prior to connecting the battery.

- 7a.4. Connect the cable to the master disconnect switch, circuit breaker, and battery.
- 7b. For trailer installation (Figure 34).
 - 7b.1. Mount the connector to the front of the trailer adjacent to the airline connections.
 - 7b.2. Cut the cable at the connector position and prepare the cable end per steps 3 & 4.
 - 7a.3. Attach the cable to the connector.

IMPORTANT: Verify that the tractors electrical system is properly designed to protect the lift-gate and tractor from overload.

Figure 33

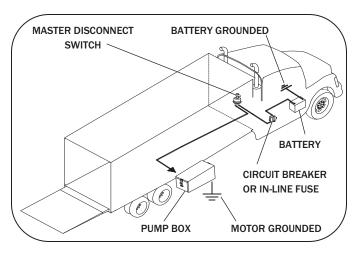
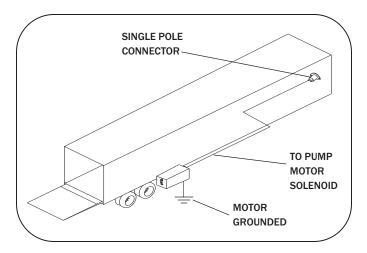


Figure 34





11. Auxiliary Battery & 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 AMP hours/1000 CCA.

- Position the auxiliary batteries so the positive terminals are towards the outside of the 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) 12"battery cable to the positive terminals of the battery (*Figure 35*).
- 4. Connect the black (negative) 12"battery cable to the negative terminals of the battery (*Figure 35*).

IMPORTANT: Verify the master disconnect switch is off before connecting it to 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, may result in property damage.

- 5. Connect the red (positive) 18"battery cable that is already installed on the master disconnect switch to the positive terminal of the battery (*Figure 36*).
- 6. Connect the red (positive) 12" cable that is already installed on the circuit breaker to the positive terminal on the battery. (*Figure 36*).

Figure 35

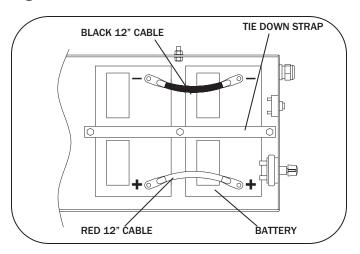
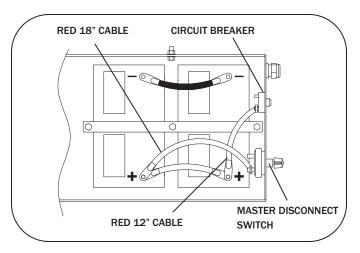


Figure 36





- 7. Connect the black ground cable that is already installed on the back of the pump box to a negative terminal on the battery (*Figure 37*).
- 8. Ensure the battery connections are as shown (Figure 38).

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

Figure 37

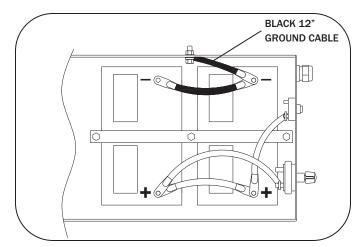
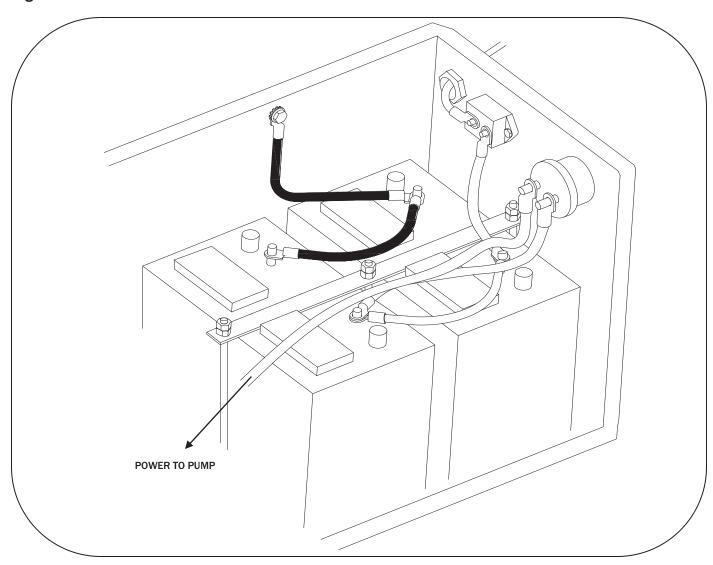


Figure 38





12. Initial Platform Lowering

- Fill the pump reservoir with an approved fluid up to within 1/2" from the top of the reservoir. Refer to the approval chart *Figure 39*.
- 2. Turn the master disconnect switch and circuit breaker to the on position.
- Push the control station toggle switch to the up position to activate the pump. This will allow the pump to fill the hoses and cylinders with oil.
- 4. Release the switch, then refill pump reservoir to within 1/2" from the top of the reservoir.
- Remove all cylinder lock straps from the cylinder pins.
 There will be one cylinder lock strap per cylinder (Figure 40).
- Support the platform from underneath, and remove the temporary brackets that have been holding the platform in position that were installed in Section 6 (Figure 13).
- 7. Remove the supports from underneath.
- 8. Push the control station toggle to the down position and lower the platform to the ground.
- Check the fluid level in the pump reservoir with the platform in the lowered position. If necessary fill the pump reservoir to within 1/2" from the top of the reservoir.
- 10. Raise and lower the platform several times to check the operation of the unit.
- 11. With the platform in the up position use the platform adjusting bolts to establish an incline of 1" 2" from platform base to platform tip (*Figure 41*).

IMPORTANT: Ensure that the hydraulic hoses do not interfere with the moving parts. Also ensure that the hoses do not stretch or kink while the liftgate is in operation.

 Fold the platform in accordance with the operating instructions and check the clearances under the vehicle during the complete travel until the liftgate is fully stored.

Figure 39

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

Figure 40

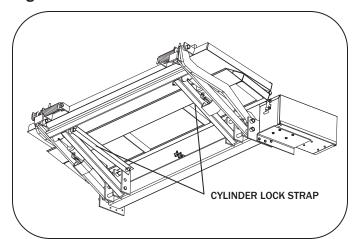
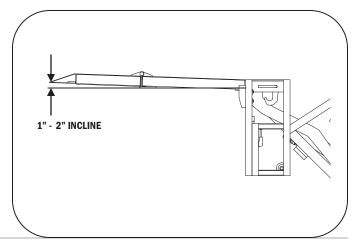


Figure 41





13. Return Spring Installation

1. Install one return spring to each latch hook. (Figure 42).

14 Latch Pin Installation

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.

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

- 1. Once the installers have satisfied themselves that the installation is proper, sound, and safe, the liftgate is to be fitted with two latch pins for safety in the storage position.
- 2. With the liftgate in the folded and fully raised, position and weld the roadside and curbside latch pins per figures 44 and 45 (Figures 43 & 44).

Figure 42

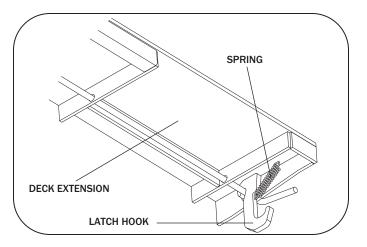


Figure 43

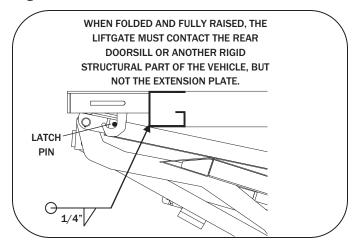
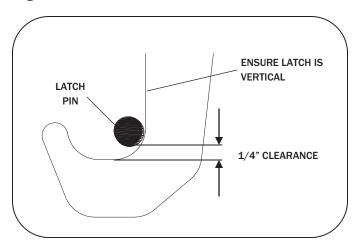


Figure 44





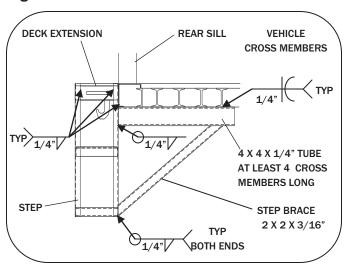
15. Step Installation

The steps are positioned so that the top of the step upright is flush with the top of the deck extension. Weld the steps to both the deck extension and the rear doorsill (Figure 46).

- 1. Ensure that the steps are straight and square so they do not affect the overall width of the vehicle or obstruct the operation of the liftgate.
- 2. SAF-Holland requires that step braces be installed. The braces must be secured to the step and to the vehicle cross members (Figure 45).

ACAUTION Failure to maintain proper clearance between steps and liftgate may interfere with proper operation which, if not avoided, could result in liftgate damage.

Figure 45





16. Roller Opener Installation

- With the liftgate in the stored position, lower the platform and position the opener on the step so it contacts the tip of the ramp half of the platform (Figure 46).
- 2. If the liftgate operates properly, weld the roller opener into position (*Figure 47*). Repeat these steps for the other side.

Figure 46

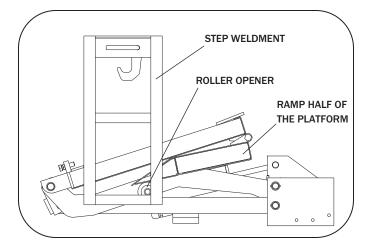
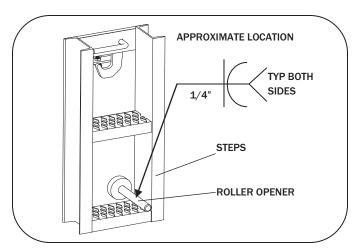


Figure 47





17. Decal Installation

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

Prior to putting the vehicle into service, install all decals listed in figure 51 as shown in figures 49 and 50 (*Figures 48, 49 & 50*).

Figure 48

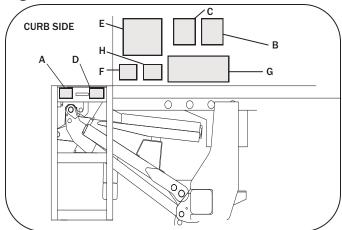


Figure 49

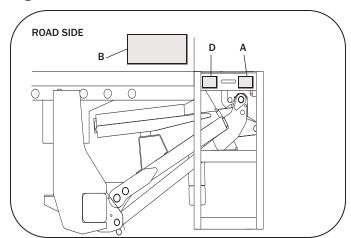


Figure 50

DECAL	QTY.	ENGLISH	FRENCH	DESCRIPTION
Α	2	XB-50341	XB-50348	Max. Capacity 2500
	2	XB-50340	XB-50347	Max. Capacity 3000
	2	XB-57537	XB-50347	Max. Capacity 3500
В	2	XB-51170	XB-57067	Pinch Point
С	1	XB-54995	XB-64388	High Pressure Fluid
D	2	XB-50528	XA-62611	Safety Latches
E	1	XB-50346	XB-50353	Warning
F	1	XB-62815	XB-62878	Warning - Riding Platform
G	1	XB-50345	XB-50352	Instructions
Н	1	XB-50344	XB-50349	Caution - Always Stand Clear



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