

Operation and Maintenance Manual

TL and TG Series Liftgates

- 2500 / 3000 / 3500 / 4000 / 5000 Lb. Capacity



TL SERIES DUAL CYLINDER



TG SERIES SINGLE CYLINDER



TG SERIES DUAL CYLINDER

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Introduction

This manual provides you with the information necessary for the care, maintenance, inspection, and safe operation of the SAF-HOLLAND TL and TG 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 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 operating or 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.

Proper tools must be used to perform the maintenance and repair procedures described in this manual. Many of these procedures may require special tools.

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 can result in death or serious injury.

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. General Safety Precautions

Read and observe all Warning and Caution hazard alert messages in this publication. They provide information that can help prevent serious personal injury, damage to components, or both.

Please observe the following safety instructions in order to maintain the operational and road safety of your SAF-HOLLAND Liftgate:

1. You must be fully trained on the capabilities and the limitations of this equipment to operate the equipment properly.
2. When operating the liftgate, always stand to one side of the platform. Make sure that the area is clear of obstacles, other personnel, fingers, arms, hands, legs, and/or feet.

⚠️ WARNING Failure to keep area near your liftgate clear could create a crush and/or pinch hazard which, if not avoided, could result in death or serious injury.

IMPORTANT: DO NOT exceed liftgate capacity when raising or lowering platform.

⚠️ WARNING Failure to avoid overloading the liftgate may result in platform failure which, if not avoided, could result in death or serious injury.

3. Make sure liftgate is in stowed position when not in use.
4. 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.

⚠️ CAUTION Failure to lower the platform to ground level before stepping on or off platform could result in mild to moderate injury.

5. Check for slippery surfaces before stepping off the liftgate platform.
6. NEVER jump off the liftgate.
7. In an emergency situation, release the control switch to stop the liftgate operation.
8. SAF-HOLLAND Liftgates require routine service, inspection, and maintenance in order to maintain optimum performance, proper operation, and to identify normal wear.

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

We highly recommend the use of only SAF-HOLLAND Original Parts.

A list of SAF-HOLLAND Technical Support locations to supply SAF-HOLLAND Original Parts can be found at www.safholland.us or by contacting SAF-HOLLAND Customer Service at U.S. 1-888-396-6501 or Canada 1-800-503-9847.

Servicing 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**).
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 1

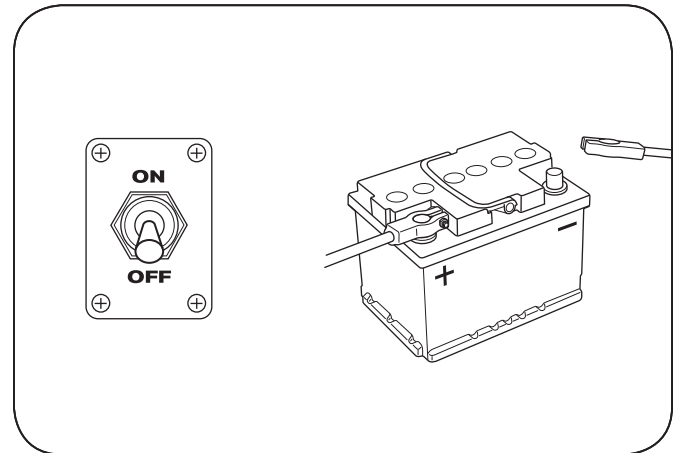


Figure 2

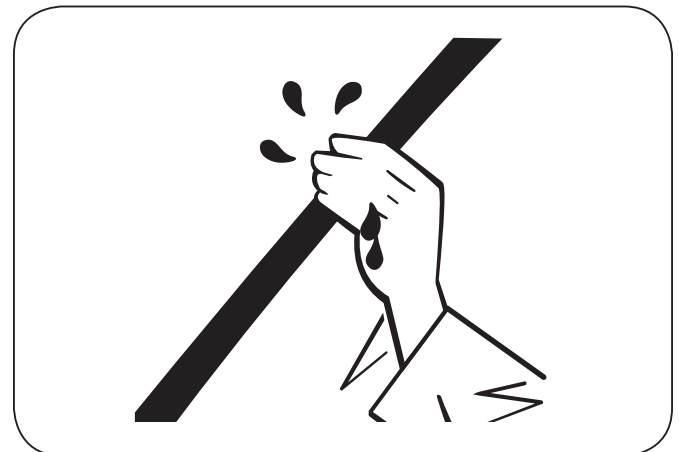


Figure 3

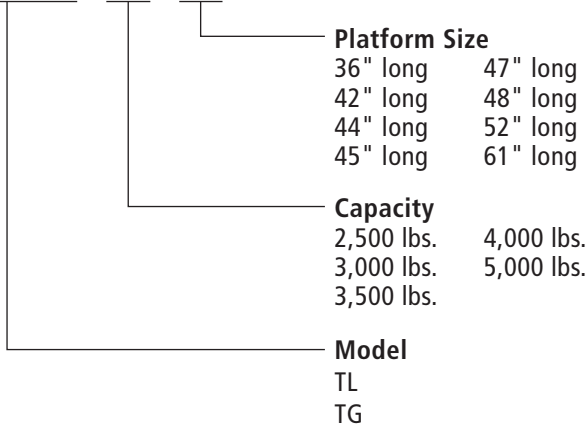


2. Liftgate Model and Serial Number Location

Each SAF-HOLLAND liftgate has a stamped metal tag that identifies the liftgate model and serial number (**Figure 4**). This tag is attached to the front roadside of the main tube (**Figure 5**). 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 and refer to them when ordering replacement parts (**Figure 6**).

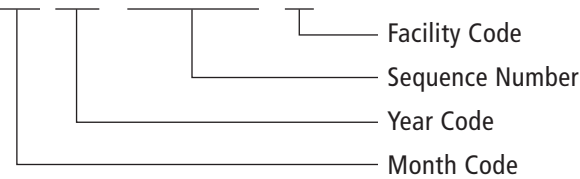
Model Number

TL / TG 35 48



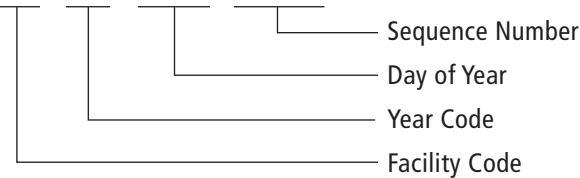
Serial Number before November 1, 2008

E 01 000123 N



Serial Number after November 1, 2008

98 02 312 0123



Equipment Model No.: _____

Serial No.: _____

Purchase Date: _____

Figure 4

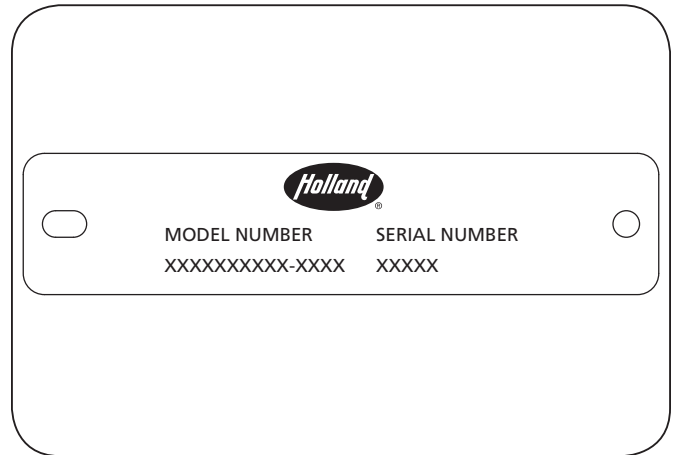
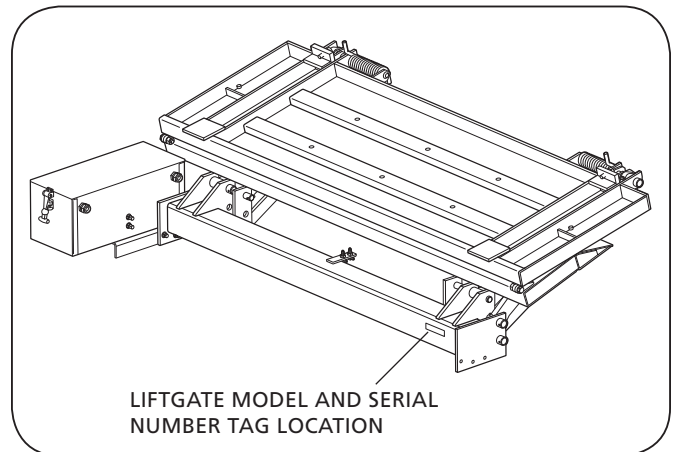


Figure 5



3. Decal Part Numbers

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

Prior to placing the vehicle into service, inspect all decals listed below. Ensure the decals are in the correct location and are legible (**Figures 6 and 7**). Replace any damaged and/or missing decals.

It is the responsibility of the end user to periodically inspect all decals and ensure that they are clean and completely legible. If any decals are missing, loose, damaged, or difficult to read, contact SAF-HOLLAND Customer Service to order replacements immediately.

DECAL	QTY.	ENGLISH	FRENCH	DESCRIPTION
A	2	XB-50341	XB-50348	Max. Capacity 2500
	2	XB-50340	XB-50347	Max. Capacity 3000
	2	XB-57537	XB-50347	Max. Capacity 3500
	2	XB-51913	XB-51914	Max. Capacity 4000
	2	XA-58882	XA-58883	Max. Capacity 5000
B	2	XB-51170	XB-57067	Pinch Point
C	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-50345	XB-50352	Instructional
G	1	XB-50344	XB-50349	CAUTION - Always Stand Clear
H	1	XB-62815	XB-62878	WARNING - Riding Platform

Figure 6

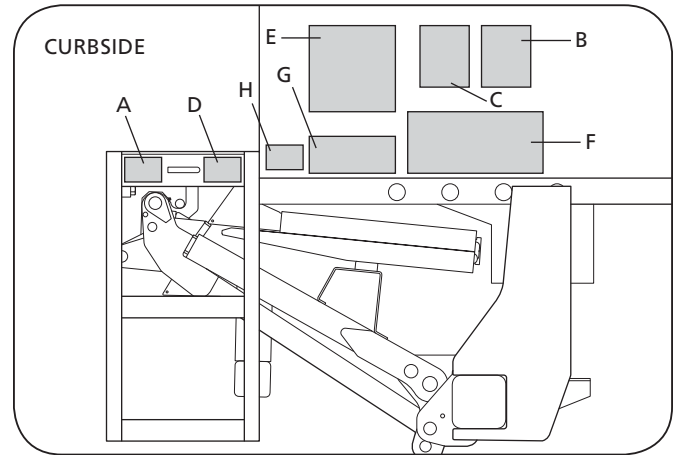
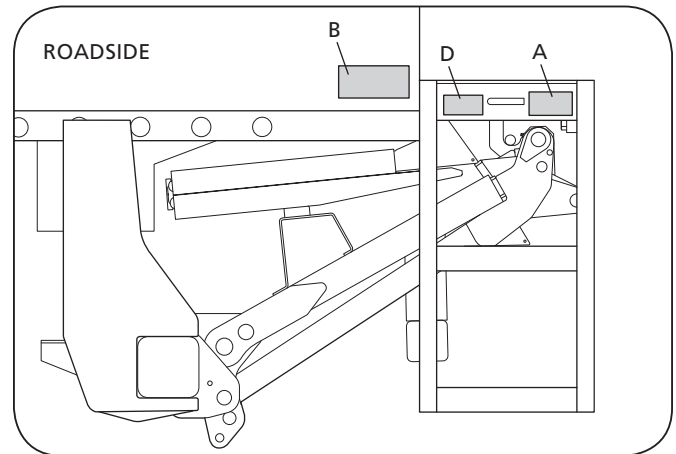
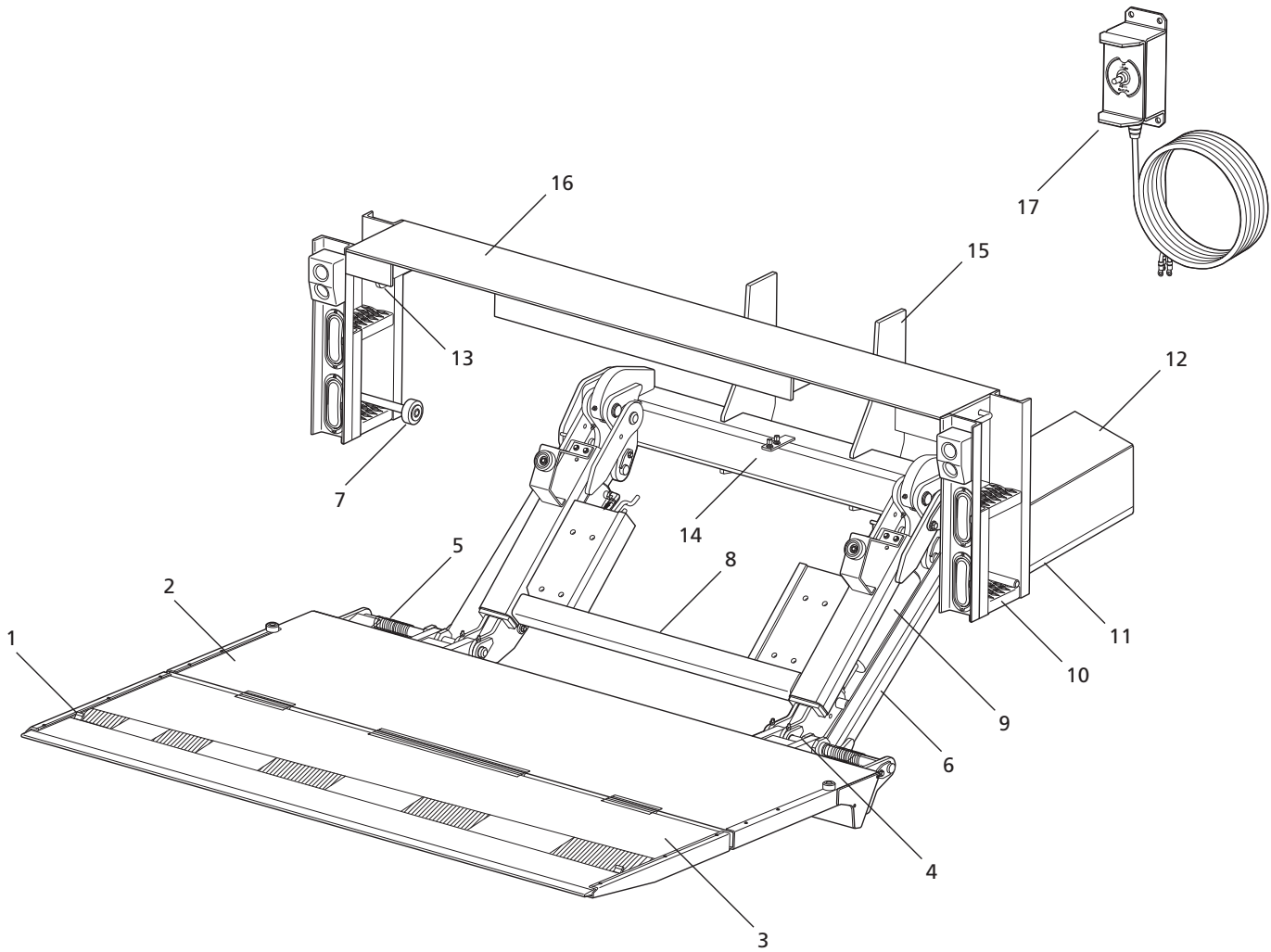


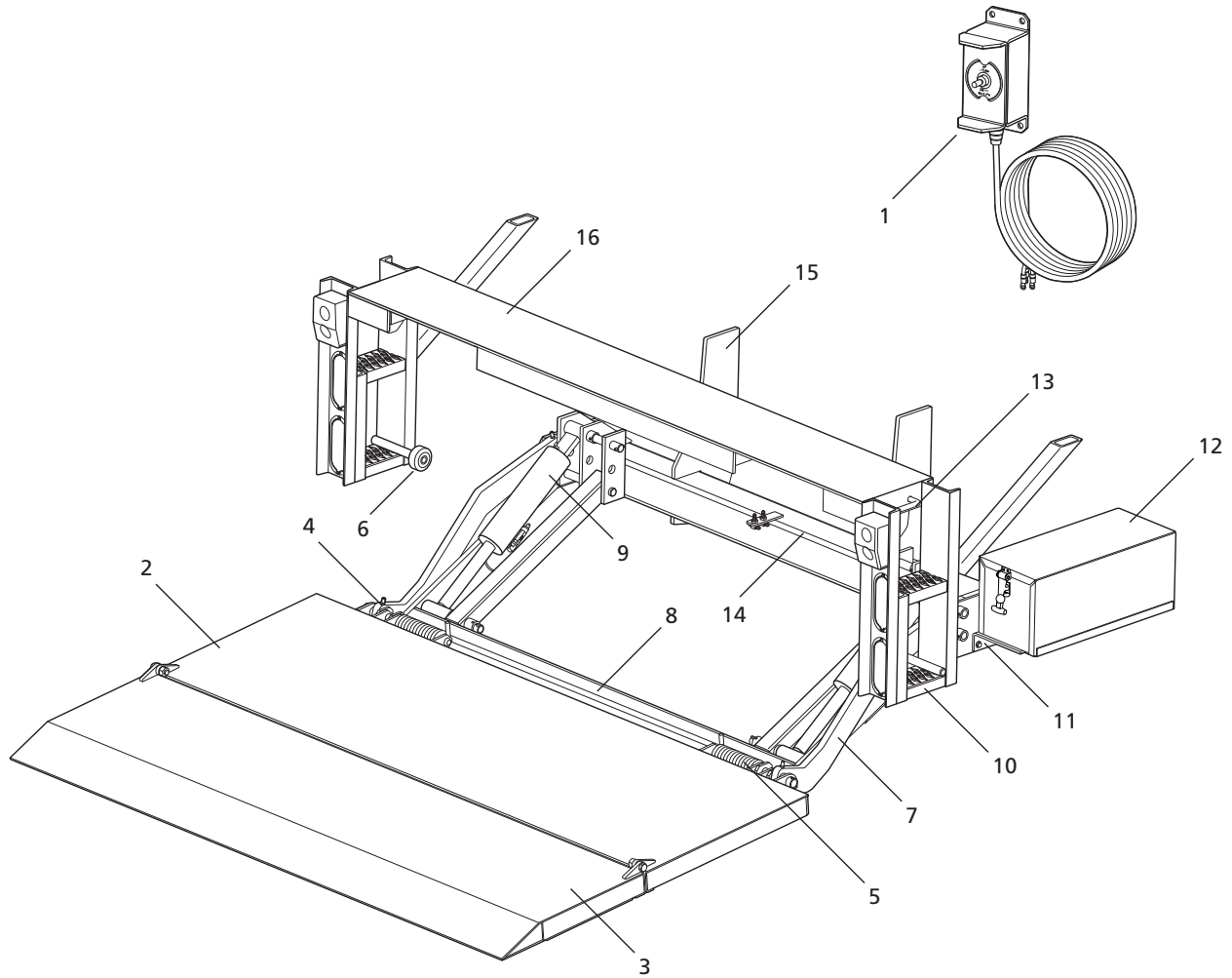
Figure 7





ITEM	DESCRIPTION
1	Cart Stops
2	Inner Platform
3	Outer Platform
4	Adjusting Bolts
5	Torsion Spring
6	Compression Member
7	Roller Opener
8	Lift Frame
9	Lift Cylinder

ITEM	DESCRIPTION
10	Side Steps
11	Pump Box Mount
12	Pump Box
13	Travel Latch
14	Main Tube
15	Attaching Plates
16	Deck Extension
17	Control Station



ITEM	DESCRIPTION
1	Control Station
2	Inner Platform
3	Outer Platform
4	Adjusting Bolts
5	Torsion Spring
6	Roller Opener
7	Parallel ARms
8	Lift Frame

ITEM	DESCRIPTION
9	Lift Cylinder
10	Side Steps
11	Pump Box Mount
12	Pump Box
13	Travel Latch
14	Main Tube
15	Attaching Plates
16	Deck Extension

4. Pre-Operation Information

1. Ensure the platform is clear of obstacles and other personnel.
2. Inspect liftgate for any damage, bruised paint or bent components.
3. Inspect electrical cables and hydraulic hoses, repair or secure as necessary.

⚠️ WARNING

Failure to repair and/or replace worn or damaged components before use could result in liftgate failure which, if not avoided, could result in death or serious injury.

4. Read and understand the decals referenced in Section 3.
5. Vehicle must be on flat, level ground before operating liftgate.
6. Ensure that the vehicle parking brake is securely engaged.

5. Control Station Switch Operation

To operate the liftgate, use the toggle switch on the control station located at the rear of the vehicle (**Figure 8**).

This toggle switch enables the operator to raise and lower the liftgate platform (**Figure 9**).

⚠️ WARNING

Failure to keep clear of the moving liftgate could create a crush and/or pinch hazard which, if not avoided, could result in death or serious injury.

NOTE: If the Operator is required to ride the liftgate, observe and familiarize yourself with the liftgate operation, decals and manuals. Ensure stable footing at all times. The switch only allows the operator to raise or lower the platform.

Figure 8

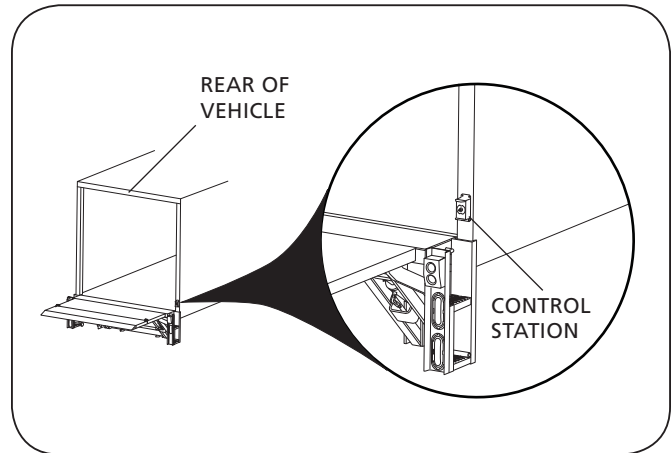
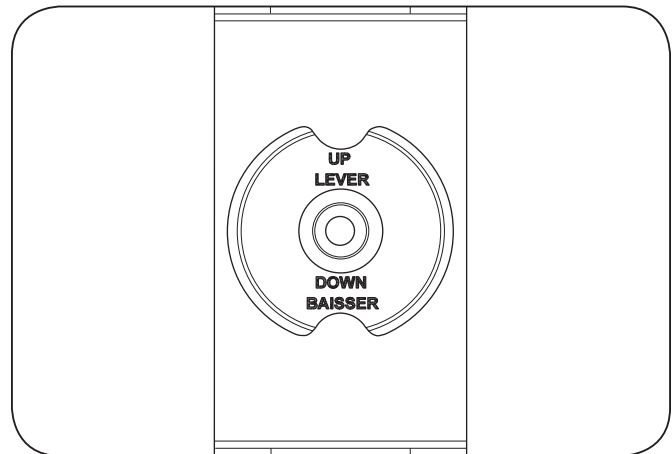


Figure 9



6. Raising or Lowering the Platform

CAUTION Failure to secure load prior to operating platform could allow load to shift and strike operator which, if not avoided, could result in moderate injury.

IMPORTANT: This unit is intended for loading and unloading cargo only. If personnel are required to ride the liftgate, familiarize yourself with this liftgate manual.

WARNING Failure to ensure stable footing while riding the liftgate could allow the operator to fall which, if not avoided, could result in death or serious injury.

6.1 Raising the Platform

1. Stand to the side of the vehicle and clear of the platform, push the control station toggle switch in the UP direction (**Figure 10**).

NOTE: The toggle switch must remain engaged for the platform to continue moving upward.

2. To stop the platform from moving upward, release the toggle switch.

6.2 Lowering the Platform

1. Stand to the side of the vehicle and clear of the platform, push the control station toggle in the DOWN direction (**Figure 11**).

NOTE: The toggle switch must remain engaged for the platform to continue moving downward.

2. To stop the platform from moving downward, release the toggle switch.

Figure 10

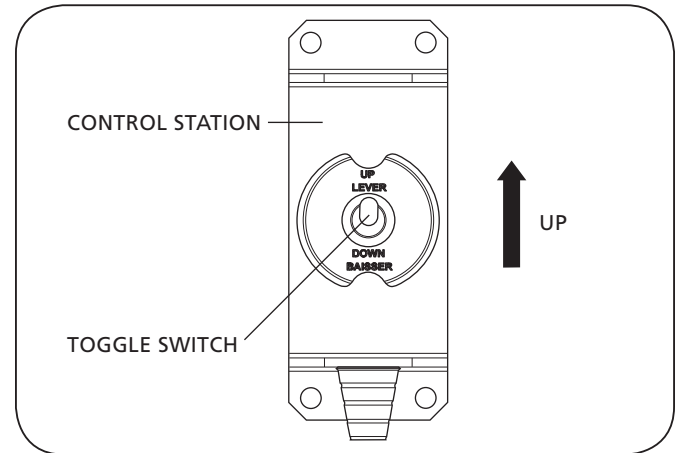
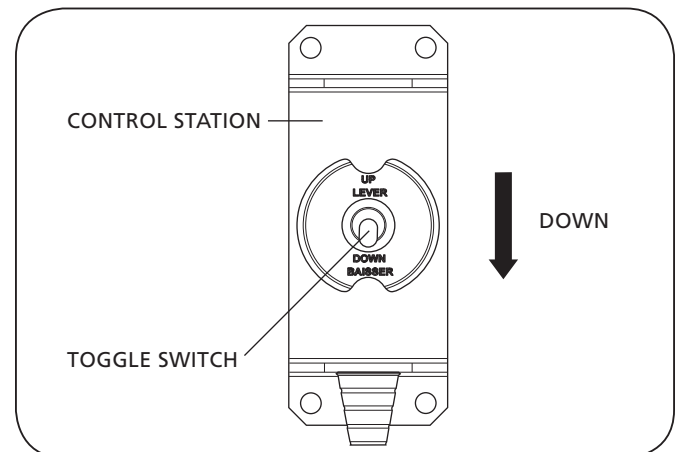


Figure 11



7. Unfolding the Platform

IMPORTANT: There are two different travel latch options: The HOOK option or the CHAIN option. Determine which option you have before proceeding.

7.1 Travel Hook Option

1. Stand clear of the liftgate, and using the control station, raise the stowed platform until the latch pins disengage from the hooks (**Figure 12**).
2. Rotate the lock handle to allow the latch pins to clear the travel latch hooks, and while holding the handle, lower the platform until clear of the travel latch hooks (**Figure 13**).
3. Continue lowering the unit until the liftgate firmly contacts the ground.

NOTE: Some TL liftgates have an optional foot pedal opener installed as shown in Figure 18. If the liftgate you are operating has the foot pedal option, skip to Section 8 Foot Pedal Opener Operation.

CAUTION Failure to ensure stable footing while engaging the foot pedal could result in slipping which, if not avoided, could result in minor or moderate injury.

4. Grasp the platform to rotate it down. As the platform starts to rotate, step back to allow the platform to fall into a horizontal position (**Figure 14**).

WARNING Failure to keep feet clear of platform during operation could create a crush and/or pinch hazard which, if not avoided, could result in death or serious injury.

5. While standing clear and to the side, grasp the flip over section and rotate it allowing it to fall into a horizontal position.

Figure 12

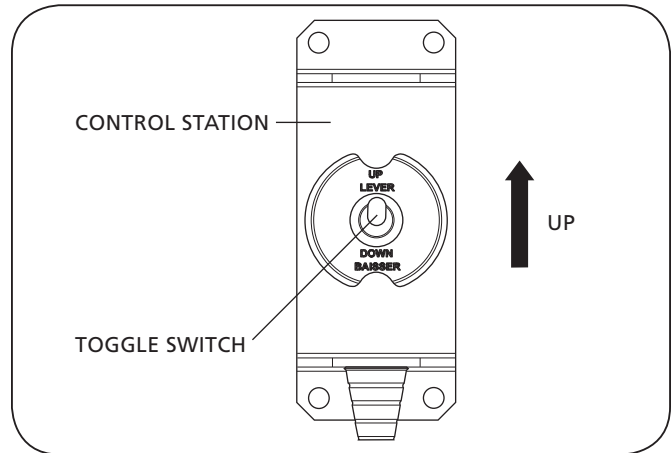


Figure 13

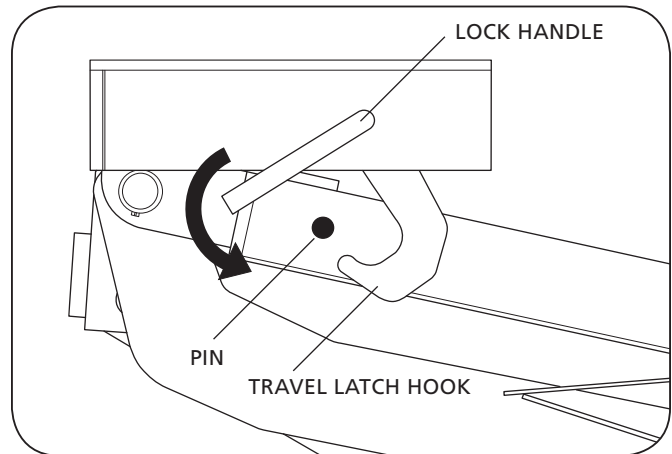
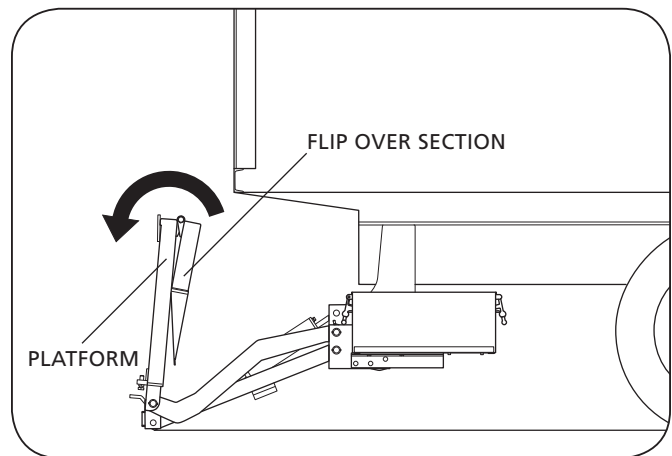


Figure 14



7.2 Travel Chain Option

1. Stand clear of the liftgate, and using the control station, raise the stowed platform to relieve any tension on the travel chain (**Figure 15**).
2. Disengage the travel latch chain hook from the platform (**Figure 16**).
3. With the travel chain clear, lower the unit until the liftgate firmly contacts the ground.

NOTE: Some TL liftgates have an optional foot pedal opener installed as shown in Figure 19. If the liftgate you are operating has the foot pedal option, skip to Section 8 Foot Pedal Opener Operation.

CAUTION Failure to ensure stable footing while engaging the foot pedal could result in slipping which, if not avoided, could result in minor or moderate injury.

4. Grasp the platform to rotate it down. As the platform starts to rotate, step back to allow the platform to fall into a horizontal position (**Figure 17**).

WARNING Failure to keep feet clear of platform during operation could create a crush and/or pinch hazard which, if not avoided, could result in death or serious injury.

5. While standing clear and to the side grasp the flip over section and rotate it allowing it to fall into a horizontal position.

Figure 15

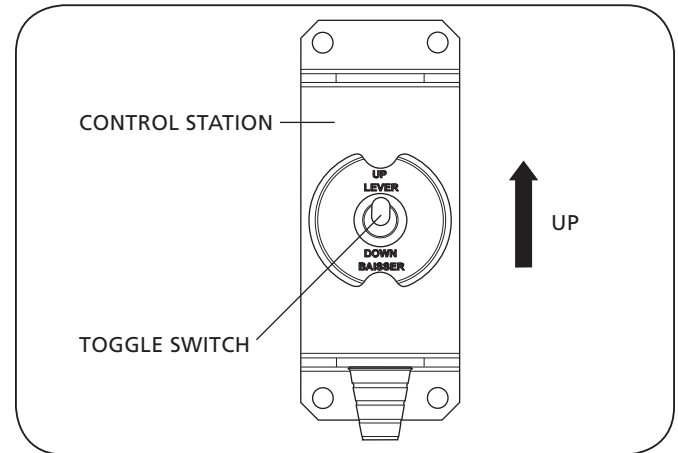


Figure 16

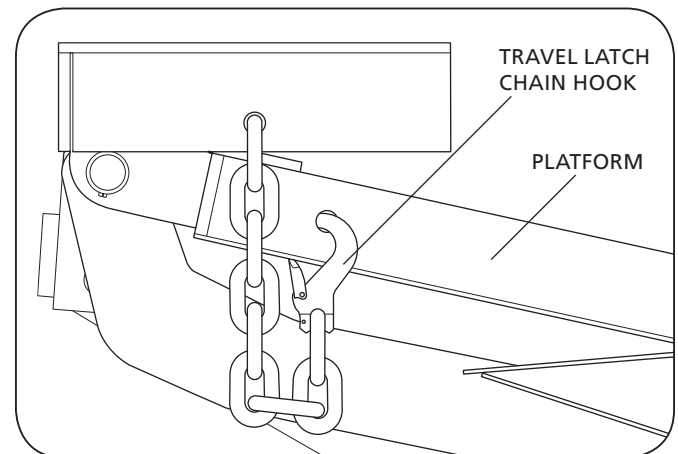
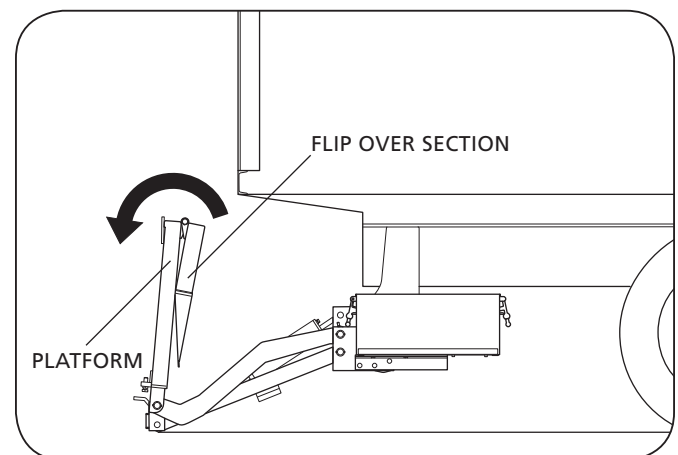


Figure 17



8. Foot Pedal Opener Operation (TL Option Only)

1. Grasp the platform and insert one foot into the foot pedal (**Figure 18**).
2. While applying weight to the foot pedal, slowly rotate the platform out from under the vehicle (**Figure 19**).

CAUTION Failure to ensure stable footing while engaging the foot pedal could result in slipping which, if not avoided, could result in minor or moderate injury.

3. As the platform starts to rotate, remove your foot from the foot pedal and step aside to allow the platform to fall to a horizontal position (**Figure 20**).

WARNING Failure to keep feet clear of platform during operation could create a crush and/or pinch hazard which, if not avoided, could result in death or serious injury.

4. While standing clear and to the side, grasp the flip over section rotating it open to the horizontal position.

Figure 18

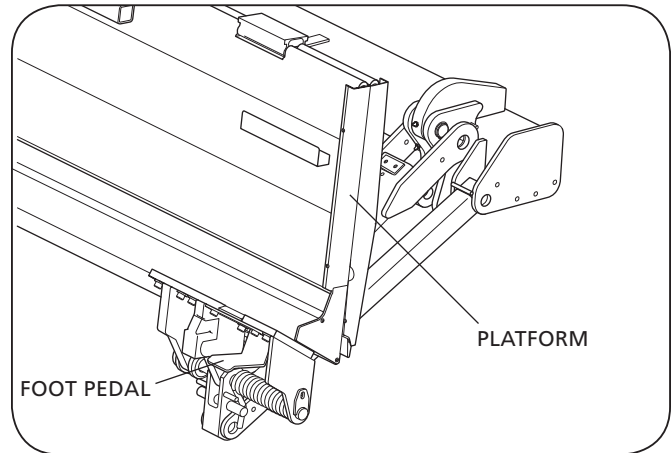


Figure 19

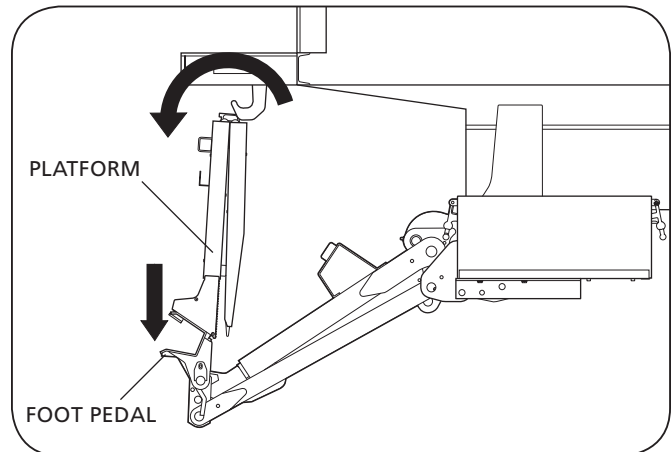
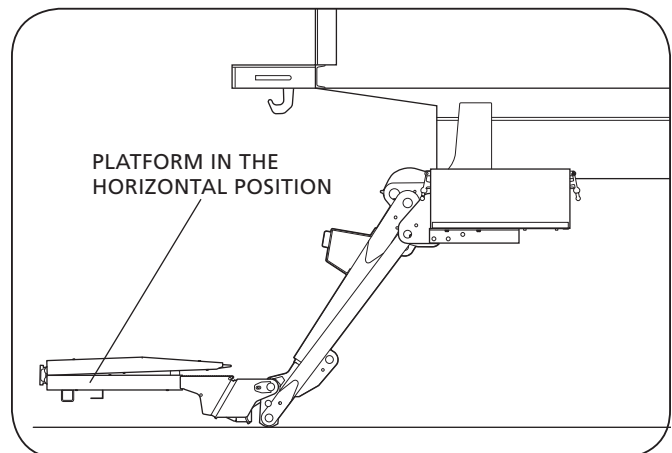


Figure 20



9. Platform Loading

CAUTION Failure to keep load within platform edge could create a crush hazard which, if not avoided, may result in damage to the load.

WARNING Failure to keep loads stable and within design capacity could result in falling objects or component failure which, if not avoided, could result in death or serious injury.

WARNING When riding the platform, failure to keep feet within front edge of platform could create a crush hazard which, if not avoided, could result in death or serious injury.

9.1. Cart Stop Operation (TL Only)

NOTE: The TL cart stops are divided into curbside and roadside halves of the platform. To raise all the cart stops, both triggers must be rotated.

1. To raise the cart stops, fully rotate both the curbside and roadside triggers (**Figure 21**).
2. To lower the cart stops, fully rotate both curbside and roadside triggers until the cart stops are flush with the platform (**Figure 22**).

CAUTION Failure to keep load within platform edge could create a crush hazard which, if not avoided, may result in damage to the load.

Figure 21

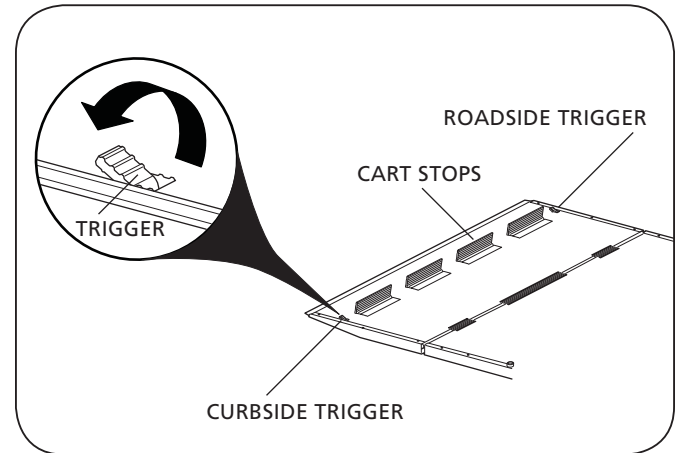
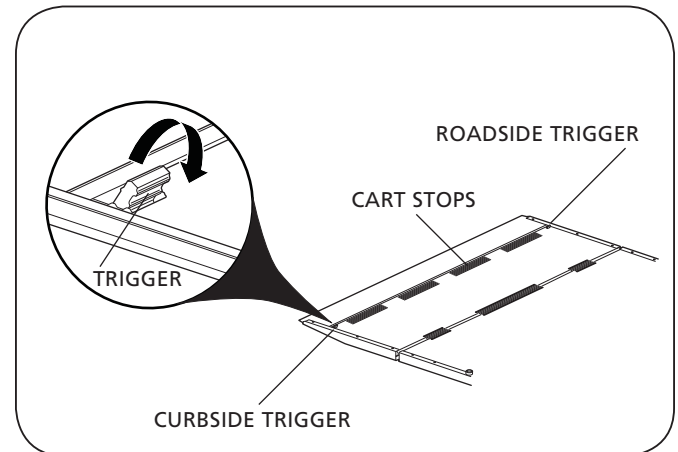


Figure 22



9.2 Loading from the Ground

1. Using the control station, open the platform from the stowed position and lower it to the ground (Refer to Sections 6 and 7).

IMPORTANT: Never operate a fork lift truck on or over the platform.

Failure to remove fork lift trucks from the liftgate platform area could cause component failure which, if not avoided, could result in death or serious injury.

2. Load the platform by placing the load center as close to the center of the platform as possible and placing the heaviest part of the load to the front of the platform (**Figure 23**).

For TL Models

Engage the cart stops to the up position (**Figure 21**).

3. Using the control station toggle switch at the rear of the vehicle, raise the platform to deck height and unload (**Figure 24**). If required, repeat procedures to continue with additional loads.
4. When the liftgate has been unloaded, lower and stow the platform (Refer to Sections 6 and 10).

Figure 23

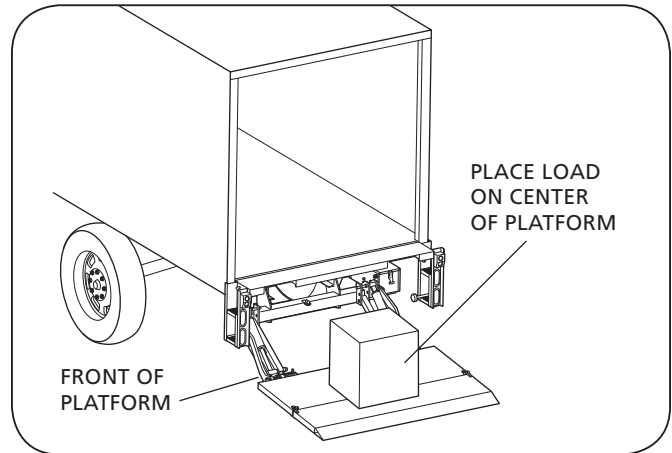
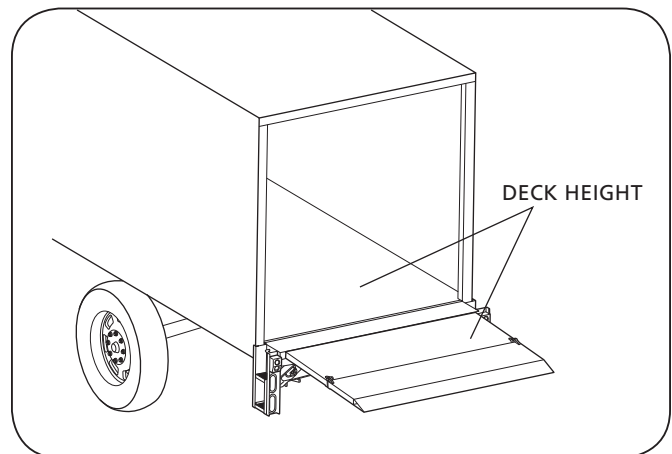


Figure 24



9.3 Loading from the Vehicle

1. Using the control station, open and raise the platform to deck height (Refer to Sections 6 and 7).

For TL Models

Engage the cart stops to the Up position (**Figure 21**).

2. Load the platform by placing the load center as close to the center of the platform as possible and placing the heaviest part of the load to the front of the platform (**Figure 25**).

IMPORTANT: Never operate a fork lift truck on or over the platform.

⚠ WARNING

Failure to remove fork lift trucks from the liftgate platform area could cause component failure which, if not avoided, could result in death or serious injury.

3. Using the control station toggle switch on the rear of the vehicle, lower the platform to the ground.

For TL models

Lower the cart stops and unload (**Figure 26**). If required, repeat procedures to continue with additional loads.

4. When the liftgate has been unloaded, stow the platform (Refer to Section 10).

Figure 25

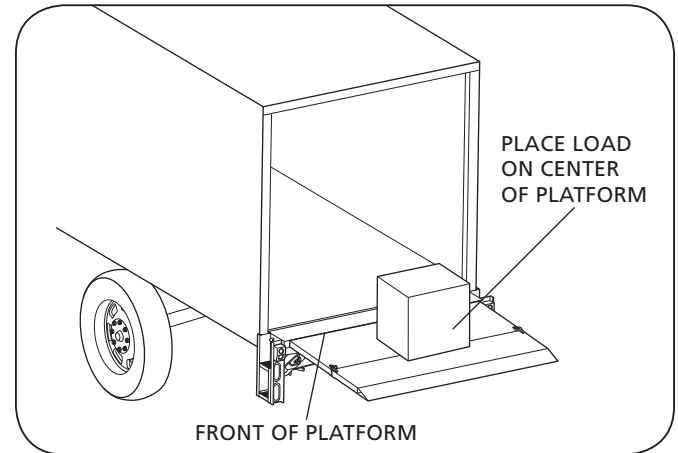
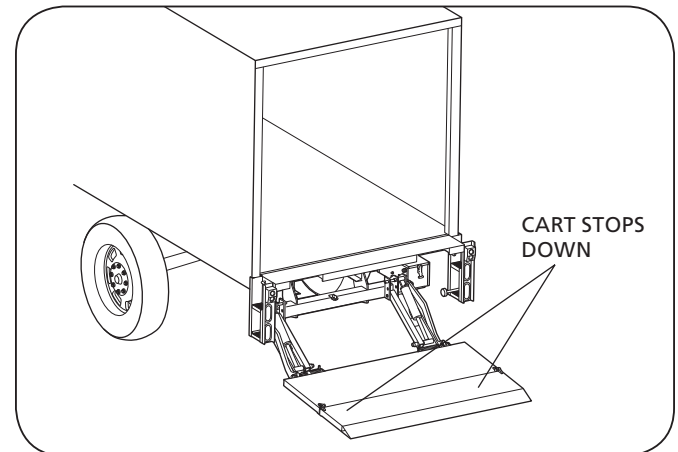


Figure 26



10. Stowing the Platform

IMPORTANT: There are two different travel latch options: The HOOK option or the CHAIN option. Determine which option you have before proceeding.

Travel Hook Option

1. Lower the platform to below waist level, lift the end of the flipover section, rotating it about the pivot bolts and allow the flipover to fall onto the platform (**Figure 27**).

WARNING Failure to keep feet clear of platform during operation could create a crush and/or pinch hazard which, if not avoided, could result in death or serious injury.

2. Lower the platform to the ground and rotate the inner platform allowing it to rest against the platform roller openers (**Figure 28**).
3. Stand clear and using the control station, raise the platform until the lock pins are above the travel latch.

NOTE: When the liftgate is fully retracted to the stored position, release the control switch.

4. Visually check to ensure that both lock pins are properly engaged in the travel latch hooks (**Figure 29**).

Figure 27

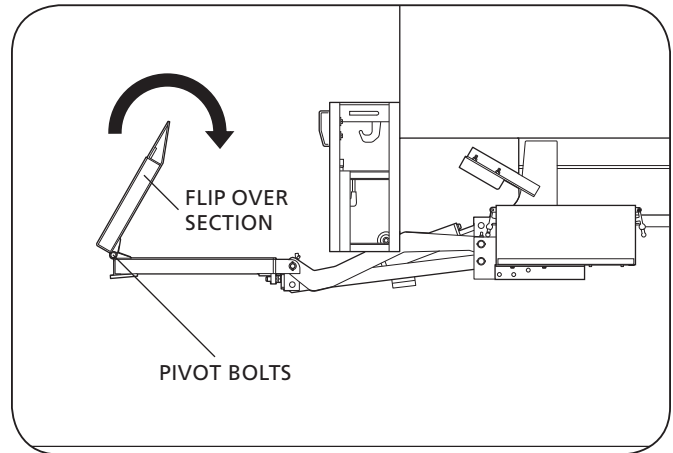


Figure 28

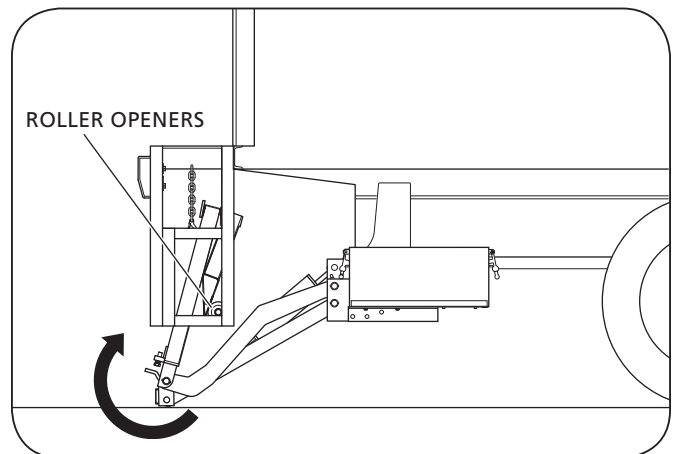
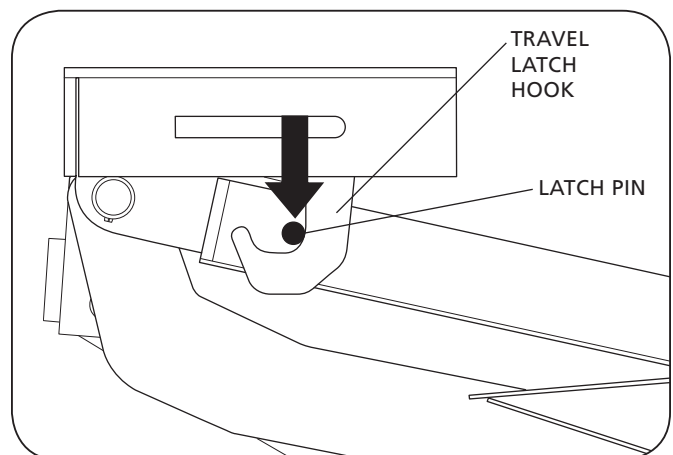


Figure 29



Travel Chain Option

1. Lower the platform to below waist level, lift the end of the flipover section, rotating it about the pivot bolts and allow the flipover to fall onto the platform (**Figure 30**).

⚠ WARNING

Failure to keep feet clear of platform during operation could create a crush and/or pinch hazard which, if not avoided, could result in death or serious injury.

2. Lower the platform to the ground and rotate the inner platform allowing it to rest against the platform roller openers (**Figure 31**).
3. Stand clear and using the control station, raise the platform until the platform is in fully raised position.

NOTE: When the liftgate is fully retracted to the stored position, release the control switch.

4. Position the travel latch chain hook into the latch hook hole in the side of the platform (**Figure 32**).

Figure 30

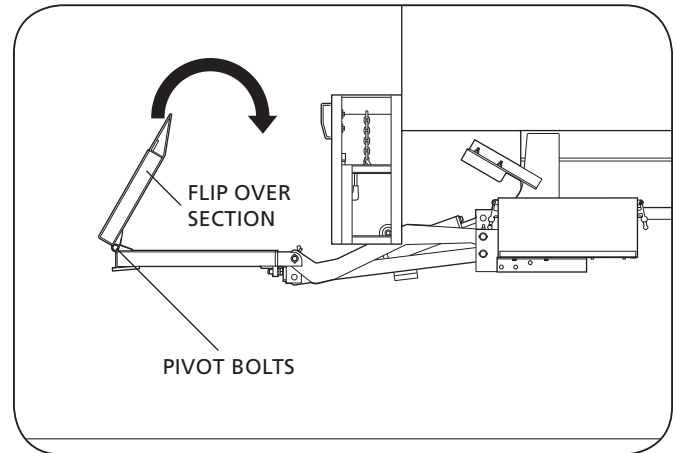


Figure 31

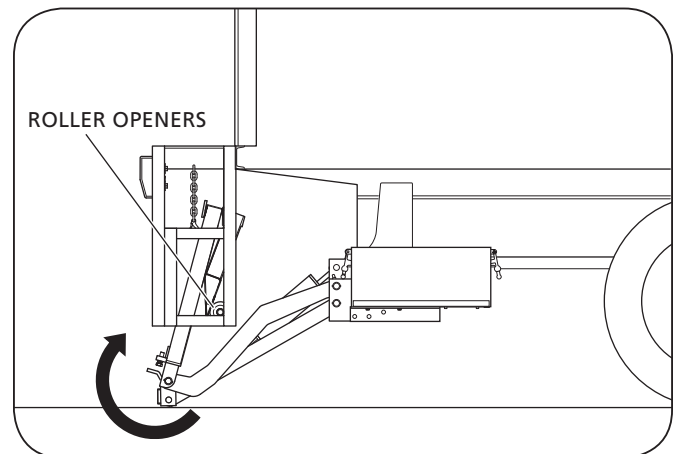
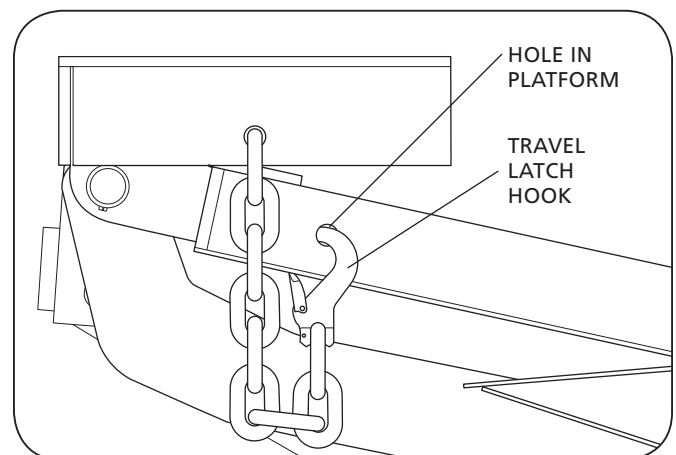


Figure 32



11. Filling the Hydraulic Reservoir

IMPORTANT: Keep dirt, water, and other contaminants from entering the hydraulic system; clean the area to prevent contamination of the hydraulic fluid and use a clean funnel with a fine screen mesh.

1. Set the vehicle parking brake.
2. **TG Models**
Using the control station, put the platform in the up and open position (**Figure 33**).
- TL Models**
Using the control station, put the platform in the down and open position (**Figure 34**).
3. Remove the filler cap and add recommended hydraulic fluid to pump reservoir. Check that the hydraulic fluid is at the proper fill level (**Figure 35**).

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

Figure 33

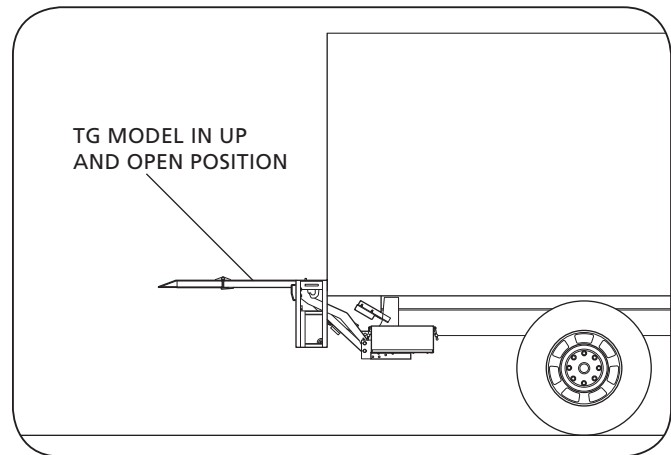


Figure 34

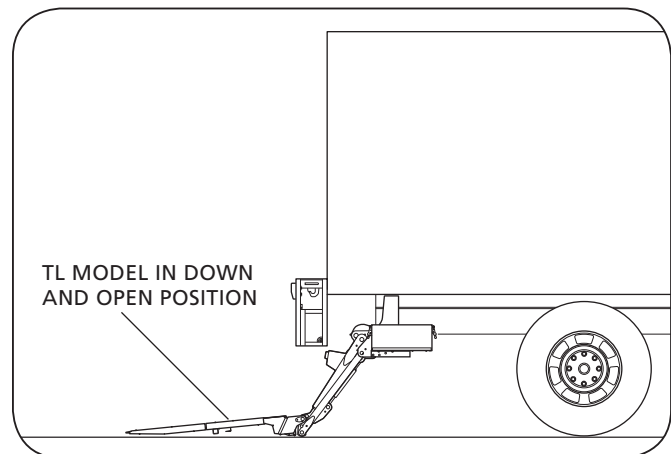
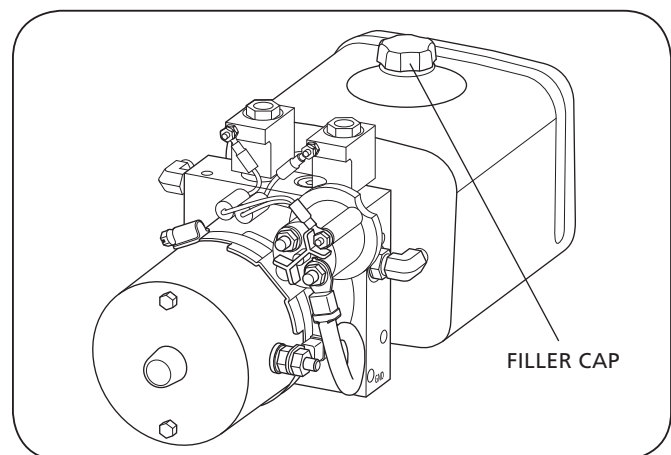


Figure 35



12. Routine Service and Inspection

12.1 Daily Inspection

1. Daily or before each trip, inspect the liftgate for damage to mounting assemblies, mechanical parts, and hydraulic components and hoses. Any noticeable defects must be repaired prior to operation to avoid damage and possible injury. Inspect and verify the condition of the following key components:
 - Torsion springs – are not broken or rusted
 - Stowage lock mechanism – is in working order
 - Attaching plates – no bends and/or cracked welds are present
 - Deck extension – no cracked welds are present
 - Pivot points – no pin movement caused by excessive wear
 - Pivot points – all pins and bushings are present and in good working order
 - Shackles – are in proper orientation and proper platform presentation
 - Platform – no bends are present
 - Platform – no weld cracks are present
 - Flip over – no bends are present
 - Flip over – no weld cracks are present
 - Control switch – is in properly operational
 - Control switch – no damage is present
 - Control switch – have no noticeable corrosion
 - Hydraulic hoses – have no leaks
 - Hydraulic hoses – are secured properly
 - Hydraulic hoses – no rub or abrasion marks are present
 - Cylinders – have no leaks
 - Cylinders – no damage is present
2. Inspect and replace any decals that have been removed or have become illegible.

12.2 Monthly Inspection

1. Every 1000 cycles or 30 days, whichever occurs first, lubricate all pivot points using EP2 chassis grease. In severe winter conditions, it may be necessary to lubricate more frequently.
2. Lubricate linkage pivot points with light spray lubricant.
3. Check oil level in reservoir (1/2" [13 mm] from top of tank with cylinders retracted).
4. Verify electrical connections, coat with dielectric grease or equivalent.

12.3 Yearly Inspection

1. Change the oil and oil filter. When filling pump reservoir, use a funnel with a fine mesh screen. Use only recommended hydraulic fluid (refer to Section 15).

2. Lubricate linkage pivot points with light spray lubricant.
3. Inspect all decals. Replace any decals that are not clearly visible or legible.

12.4 Alternate Year Inspection

1. Every 24,000 cycles or two (2) years, whichever occurs first, inspect all pivot points for wear. Replace any pins or parts that show signs of wear.
2. Replace any worn hydraulic hoses, leaking fittings or leaking cylinders.
3. Undercoat all crossmembers by removing plugs in crossmembers; spray undercoat inside and replace plugs.

NOTE: Some models may be equipped with greaseless bushings at all or most pivot points.

IMPORTANT: Review General Safety Precautions before working on hydraulic or electrical components.

12.5 Monthly Hydraulic and Electrical Inspection

1. Inspect and remove the coil from the valve and look for signs of corrosion. If corrosion is present, clean and repair as necessary.
2. Inspect to ensure all hydraulic hoses are tight and not leaking. If hoses are showing signs of wear, replace as necessary. After torquing the hydraulic hoses, SAF-HOLLAND recommends putting a line across the fittings for a future visual reference that will indicate loose fittings.
3. Inspect the filler cap for signs of damage. The foam baffle on the inside of the cap should be flat and in place. Inspect all wire connections on toggles, push buttons or any other controls attached to the liftgate. Clean and apply dielectric grease to all electrical components to help reduce corrosion.
4. Inspect all wiring and wiring connections to ensure they are tight and free of corrosion. If the pump has foreign debris, clean the entire pump and wire connections. Once you are satisfied that all components are clean, apply non-aerosol dielectric grease to all connections. If any wires show signs of deterioration, replace as required.
5. SAF-HOLLAND recommends that you flush and replace the hydraulic oil every year to ensure contaminants are flushed from the system. Remove the pump tank and wipe free with a lint free cloth. If present, clean reservoir magnet of contaminants. Remove the strainer and flush. Replace the strainer. Remove any contaminants.

NOTE: To reduce downtime, bring in your liftgate every two to three (2-3) months for quick and simple inspections. Daily inspections while doing the circle check on your vehicle will spot any concerns before they become serious failures.

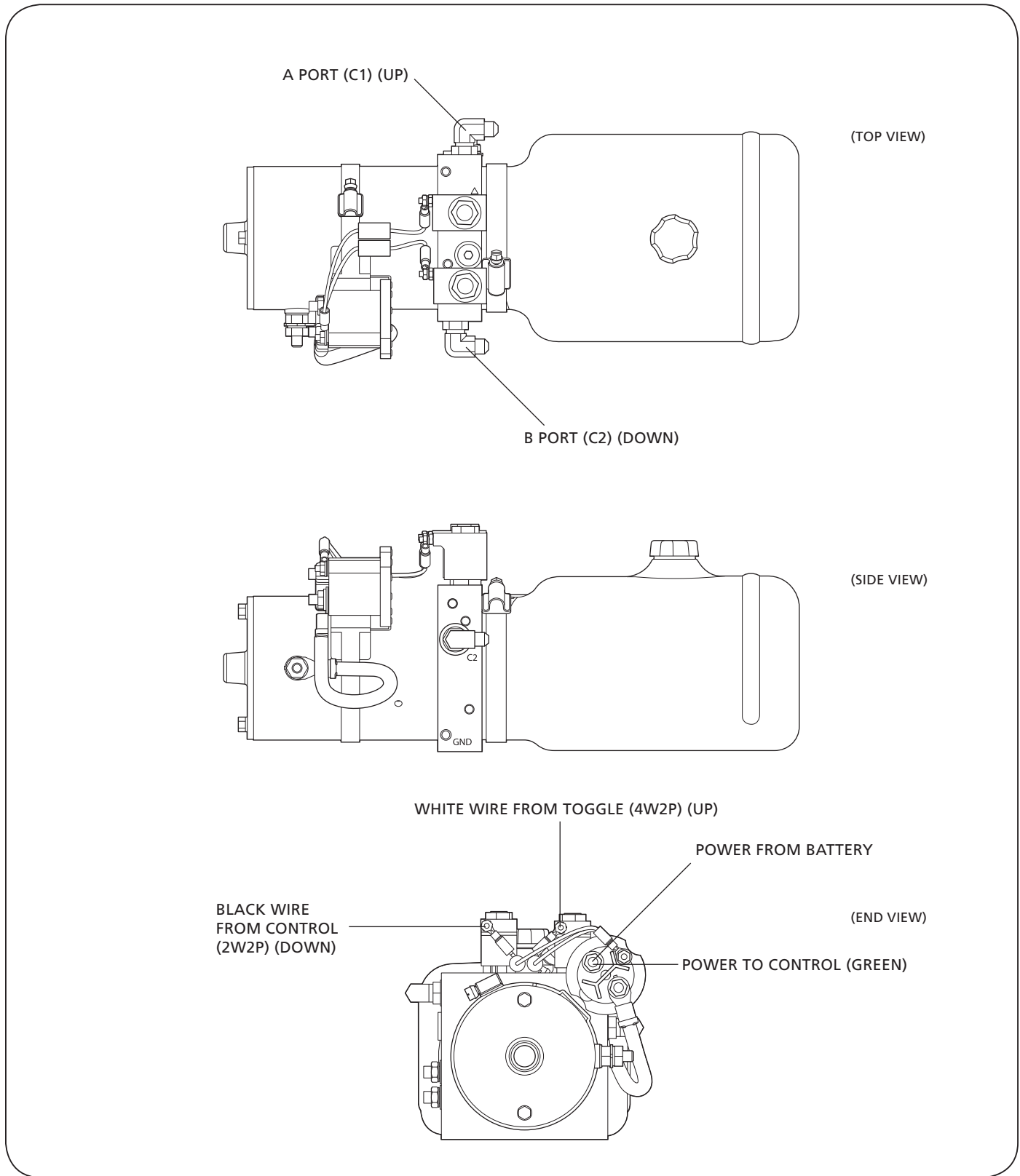
13. Troubleshooting

PROBLEM	POSSIBLE CAUSE	RESOLUTION
Platform lowers slowly or does not lower.	Flow control incorrectly installed.	Check location and direction of arrow on valve.
	Electrical connections loose, disconnected or corroded.	Check connections and wire condition.
	Battery does not have enough voltage to activate solenoid properly.	Verify voltage and recharge or replace battery. Ensure that cables are in good condition with secure connections.
	Restriction/blockage of hydraulic hose.	Check hoses for external damage or pinching. Check for blockages in hoses.
	Flow control valve blocked.	Clean or replace valve.
	Mechanical components seized or damaged.	Lubricate all pivot points and replace all damaged items.
	Incorrect or contaminated oil in system.	Oil should be clean and for the appropriate geographical climate.
Unit will not lift capacity load.	Hydraulic system not plumbed properly.	Check to see that the hose connected to the 'A' port is plumbed to the rod end of the cylinder.
	Hydraulic cylinder leaking internally.	Replace seals or complete cylinder.
	Relief valve setting too low.	Adjust relief valve setting.
	Hydraulic pump worn.	Change worn parts or pump.
Oil expels from reservoir while loading.	Too much oil in reservoir.	Ensure level of oil allows displacement of rods.
	Wrong flow control fitting.	Check that the number stamped on flow control valve is correct as per the appropriate schematic.
	Motor is not running when lowering platform.	Check faulty 'down button' on push-button control box.
Pump will not operate.	Master disconnect switch is turned off	Verify the main power is turned on.
	Battery does not have enough voltage/current.	Verify voltage and recharge or replace battery. Ensure that cables are in good condition with secure connections.
	Electrical wiring to pump is loose, disconnected or corroded	Check wiring to pump.
	Remote control switch broken or shorted.	Check wiring to switch.
	Solenoid switch on pump faulty.	Check solenoid switch.
	Electrical coupling to trailer not complete (Tractor/Trailer vehicles only).	Connect coupling.

PROBLEM	POSSIBLE CAUSE	RESOLUTION
Platform will not raise.	Battery does not have enough voltage/current.	Verify voltage and recharge or replace battery. Ensure that cables are in good condition with secure connections.
	Insufficient oil in reservoir.	With platform on ground, fill tank within 2" of top with Dextron III Automatic Transmission Fluid.
	Defective actuating coil on valve.	Replace actuating coil.
	Liftgate is overloaded.	Reduce the load on the platform.
	Hose or fitting leak.	Check and re-torque fittings.
	Leaking check valve or relief valve.	Clean, adjust or replace valve.
	Worn piston seals.	Replace seals.
	Worn or scored piston.	Replace cylinders.
	Pivot points seized.	Lubricate.
	Pump is worn out.	Replace pump.
	Broken pump shaft or coupler.	Replace shaft or coupling as necessary.
Platform will not raise smoothly.	Insufficient oil in reservoir.	Fill reservoir.
	Air lock in hydraulic system.	Operate 'Raise Control' for a few seconds at top of stroke. Repeat two (2) times, pausing between operations.
	Undue mechanical wear or lack of lubrication.	Lubricate pivots, replace worn parts.
Platform creeps down when stationary.	Cylinder seal leak.	Replace seals or cylinder if scored.
	Worn or dirty check valve.	Clean or replace valve.
	Hose or fitting leak	Replace hose or tighten fitting
Platform raises slowly.	Battery does not have enough voltage/current.	Verify voltage and recharge or replace battery. Ensure that cables are in good condition with secure connections.
	Liftgate is overloaded.	Reduce load on platform.
	Faulty cable connections: Electrical connections corroded or disconnected.	Check connections.
	Pump motor not grounded adequately.	Check grounding to truck frame.
	Hose leaking.	Tighten or replace hoses.
	Cylinder internal leak.	Replace seals or replace cylinder.
	Lack of lubrication or undue mechanical wear.	Lubricate all pivot points and replace worn parts.
	Incorrect relief valve setting.	Check relief valve setting.
Worn pump.	Replace pump.	

14. Pump Hydraulic and Electrical Diagrams

Figure 36



15. Pump Hydraulic and Electrical Schematic

Figure 37 (Hydraulic Schematic)

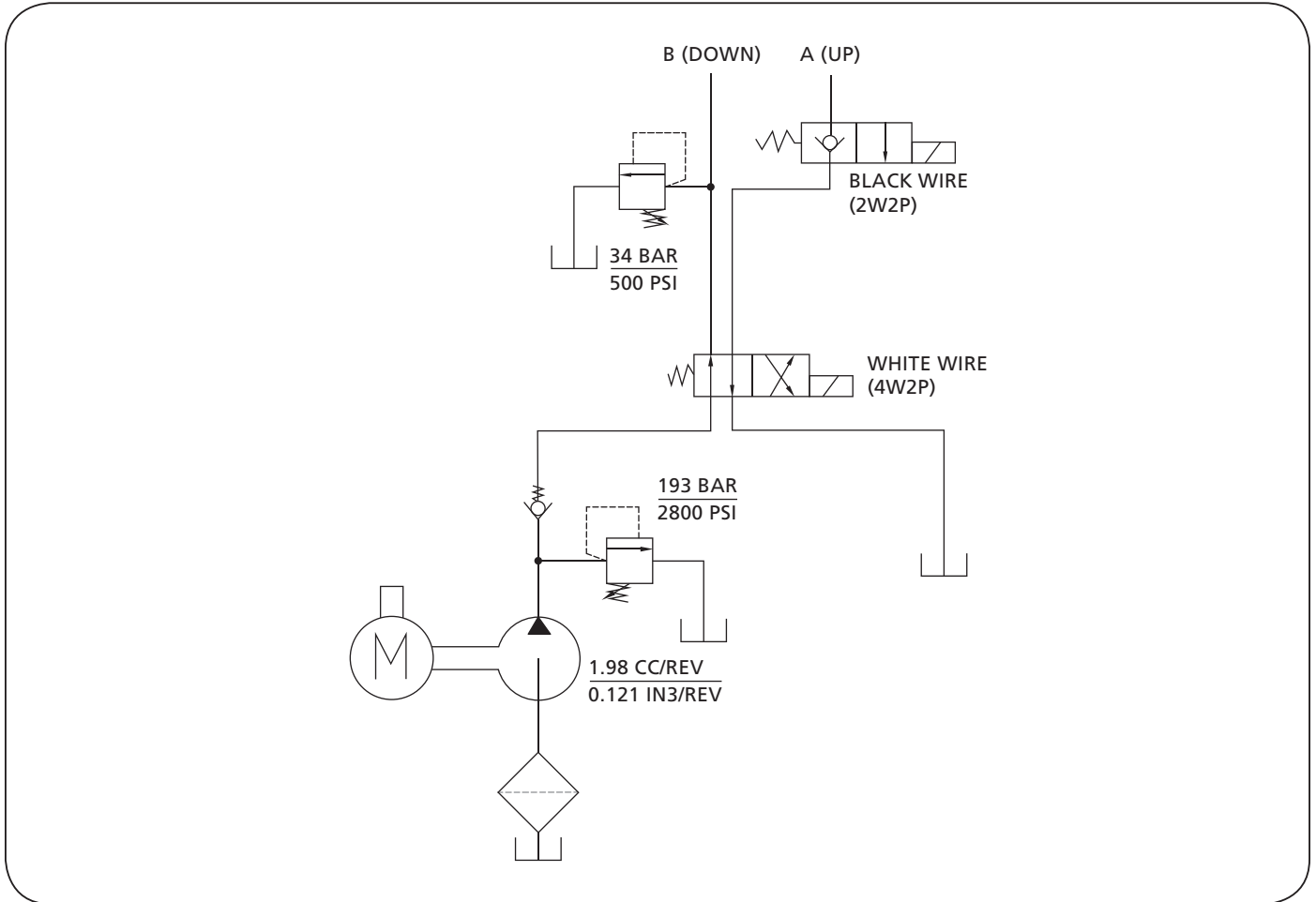
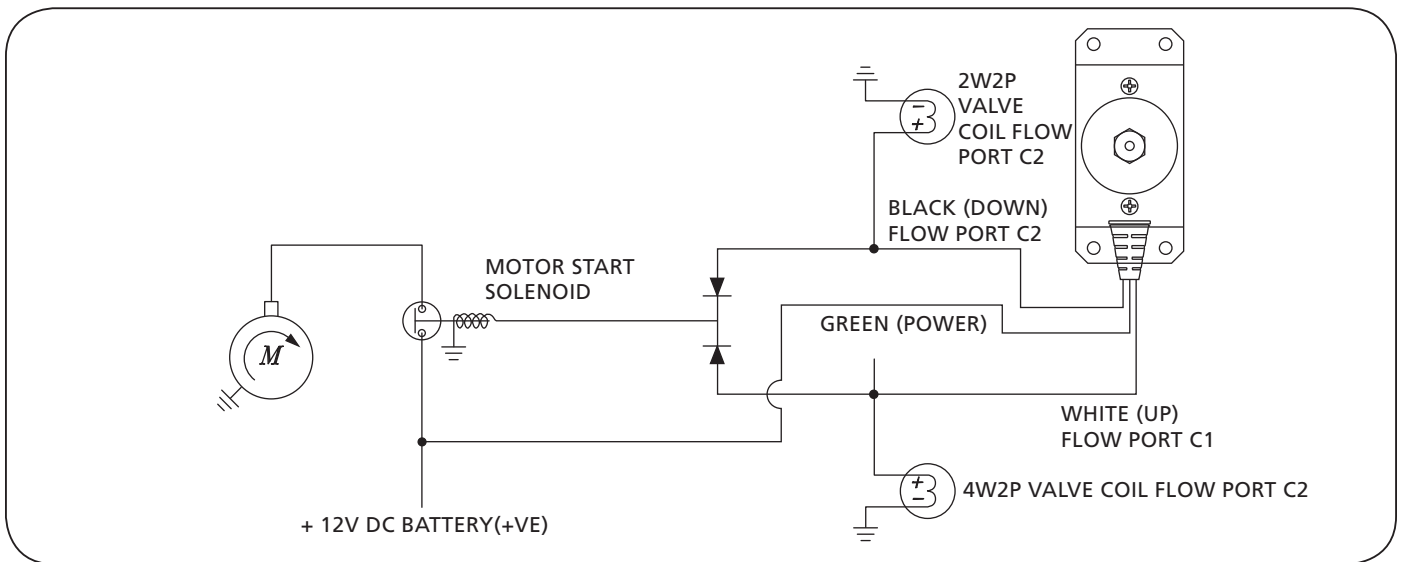


Figure 38 (Electrical Schematic)









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