

ANTHONY
LIFTGATES, INC.®

INSTALLATION & MAINTENANCE MANUAL

AC

AC-1600
AC-2000
AC-2500



QUALITY, RELIABILITY, CUSTOMER SERVICE

MADE IN THE USA 

Contents

1. General Information	3	4.1 Tools Required	10
1.1 Introduction	3	4.2 Fabricated Lifting Fixture	10
1.2 General Safety	4	4.3 Bed Height and Clearance Requirements	10
1.3 State and Federal Regulations	4	4.4 Installation Preparation	10
1.3.1 Brakes	4	4.5 Connect the Platform	12
1.3.2 Lighting	4	4.6 Positioning the Liftgate	13
1.3.3 Rear Impact Guards	4	4.7 Attach the Liftgate to the Truck Frame	14
1.4 Basic Installation Instructions	4	4.8 Attach the Up-Stop Bar	16
1.5 If Installation Help is Required	4	4.9 Final Adjustments	17
1.5.1 Installation and Maintenance (Dealer)	4	4.10 Attach Chain and Staple Assemblies	18
1.5.2 Customer Service and Parts (End User)	4	4.11 Installing Optional DOT Tubular Bumper	18
1.6 Registration	4	4.12 Mount the Control Switch	18
1.7 Warranty	4	4.13 Route the Power Cable	19
1.8 Replacement Parts and Hazard Decals	5	4.14 Install a Power Cut-Off Device	20
2. Safety	5	4.14.1 Cut-Off Solenoid Connection	20
2.1 Safety is Your Responsibility	5	4.14.2 Cut-Off Switch Connection	21
2.2 Safety Icons Nomenclature	6	4.15 Adjust the Latch Pin	21
2.3 Safety Rules	6	4.16 Install DOT Lighting, Decals, or Other Accessories	21
2.3.1 Personal Protection	6	4.17 Final Inspection Checklist	22
2.2.1 Personal Protection/Important Information	6	5. Lifting Fixture	23
2.2.2 Prohibited Actions	6	6. Maintenance	24
2.2.3 Hazard Avoidance	6	6.1 Monthly Inspection	24
2.3.2 Equipment / Tools / Parts	7	6.2 Semi-Annual Inspection	24
2.3.3 Battery / Fuel Tank Safety	7	6.3 Check Power Module Fluid Level	24
2.3.4 Cutting Torch / Welding Safety	7	6.4 Power Cable Fuse - 200 Amp	25
2.4 Welding or Grinding Galvanized or Stainless Steel Material	8	6.5 Checking the Power Cable	25
2.4.1 Galvanized Metal	8	6.6 Checking Motor Start Solenoid and Power Cut-off Solenoid	25
2.4.2 Stainless Steel	8	6.7 Checking Valve Cartridge and Solenoid	26
3. Nomenclature	8	6.8 Solenoid Valve Screen	26
4. Installation	10	6.9 Replacing the Solenoid Valve	26
		6.10 Checking Cylinder Piston Seals	27

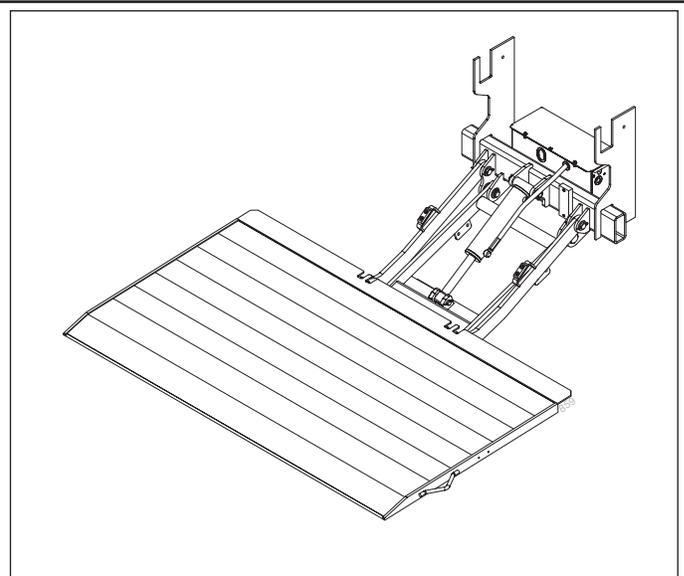
1. General Information

1.1 Introduction

Congratulations on selecting an Anthony Liftgates TuckUnder™ liftgate.

All Anthony tuckunder model liftgates are factory assembled, energized, and tested to ensure the highest quality performance standards. The AC model liftgates ship with the platform disconnected and the power module completely assembled for fast, clean, and easy installation.

To ensure your liftgate will perform to your expectations, we have provided this Installation Manual, which is designed to provide you with the necessary installation instructions and safety precautions for the installation of the AC TuckUnder™ liftgates.



Typical Anthony Liftgates AC Model.

1.2 General Safety

WARNING



Read, Understand, and Follow the Manual

The success or failure of

this liftgate to properly and efficiently operate will depend on a thorough and proper installation. Failure to read, understand, and follow the installation instructions and safety recommendations in this manual, before installing the liftgate, can result in serious injury or death to the operator or bystander.

Also, read and understand the operating instructions in the separate Operation Manual (also found in the information packet) before beginning the installation.

1.3 State and Federal Regulations

1.3.1 Brakes

WARNING

When installed, the operation or weight of this liftgate must not alter or prevent vehicle

compliance to any existing State or Federal standards, such as FMVSS 105 – Hydraulic And Electric Brake Systems. Each truck frame manufacturer's recommendations should be consulted for compliance.

Also, make sure the weight of the liftgate and its fully loaded capacity will not overbalance the truck, possibly raising the front wheels off the ground.

1.3.2 Lighting

WARNING

When installed, the transport position of this liftgate must not alter or prevent vehicle

compliance to any existing State or Federal standards such as FMVSS 108 – Lamps, Reflective Devices, and Associated Equipment. Each truck manufacturer's recommendations should be consulted for compliance.

1.3.3 Rear Impact Guards

WARNING

When installed, the transport position of this liftgate must provide protection against rear

impact, using State or Federal standards, such as FMVSS 223 – Rear Impact Guards and FMVSS 224 – Rear Impact Protection.

It is the duty of the installer to make sure that guards are installed, if necessary, to fulfill these standards. Anthony Liftgates offers a bolt-on bumper, which will meet the requirements of this standard. Each truck manufacturer's recommendations should also be consulted for compliance.

1.4 Basic Installation Instructions

1. This liftgate should only be installed by someone with sufficient skills to understand the installation and operation procedures, along with the use of any equipment or tools used to install the liftgate. This manual provides typical installation instructions, which we believe to be the most desirable sequence. These instructions cannot replace a qualified installer with clear thinking and basic knowledge.

2. This manual provides easy-to-follow instructions, along with photos and illustrations, which will help guide the installation process. Safety precautions have been clearly identified throughout each section of this manual and must be followed.
3. A complete explanation of the safety terminology and recommendations are included in section "2. Safety" on page 5 of this manual and should be read thoroughly before proceeding.
4. We urge the installer to call our qualified personnel if you have installation questions.
5. Most problems occur when positioning the adapter frame tube and mounting plates. Before completely welding the mounting plates to the truck frame, call us if you find the liftgate is not operating properly.

1.5 If Installation Help is Required

1.5.1 Installation and Maintenance (Dealer)

For additional information on installation, in the form of a quick reference guide or installation video, refer to the AC TuckUnder™ liftgate website www.anthonyliftgates.com. To find the most current version of the reference material, choose LIFTGATES, CONVENTIONAL, AC, and then DOWNLOADS.

If you have any doubts or questions about installation, call us. Before doing so, have the serial number, model number, and lift capacity of your liftgate available.

Anthony Liftgates, Inc.
1037 West Howard Street
Pontiac, Illinois 61764
(815) 842-3383 or 800-482-0003

1.5.2 Customer Service and Parts (End User)

For service or ordering replacement parts, contact an authorized dealer by going to www.anthonyliftgates.com and selecting the FIND A DEALER tab. Enter your zip code to find the nearest authorized service location.

1.6 Registration

Refer to the Operation Manual for the serial number information.

1.7 Warranty

For a detailed copy of the Warranty Statement, refer to the Operation Manual.

NOTICE

The liftgate must be installed according to these instructions or the warranty will be void.

1. Unauthorized modifications may cause improper operation or other unforeseen problems or dangers. If any deviation is deemed necessary, written permission must be obtained from Anthony Liftgates.
2. All decals must be attached by the installer and legible, or all warranties are void.

1.8 Replacement Parts and Hazard Decals

To order replacement parts or hazard/informational decals, contact us through your normal dealer channels.

**SAFETY
INSTRUCTIONS**



To prevent the personal injury of the end user from not being aware of safety recommendations, the installer must make sure all decals are attached to the liftgate and truck, and are legible.

2. Safety

2.1 Safety is Your Responsibility

It is the responsibility of the installer to understand proper installation and operating procedures. Be aware of the inherent dangers in the use of this product and the tools used to install it. Read and understand all Warnings, Cautions, Notices, Safety Instructions, and Notes in this manual, on the liftgate, or on the truck.

Accidents can often be avoided by being alert and recognizing potentially hazardous situations. The safety information in this manual serves as a basic guide in an attempt to prevent injury or death.

Anthony Liftgates cannot anticipate every possible circumstance that might involve a potential hazard. The warnings in this manual and on the product itself are, therefore, not all-inclusive. If tools, procedures, work methods, or operating techniques are used that are not specifically mentioned by Anthony Liftgates, you must satisfy yourself that they are safe for you and for others.

DO NOT proceed with any installation procedure if doubt arises about the correct or safe method of performing any procedure found in this manual. If you have any doubts or questions about installation, call us.

Safety Signal Words



Personal injury hazards are identified by the "Safety Alert Symbol" and followed by a signal word such as WARNING or CAUTION to indicate the severity of the hazard.



This safety alert icon surrounds an image showing a specific type of injury which should be avoided. These icons are shown in "2.2.3 Hazard Avoidance" on page 6.



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



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



Indicates that equipment or property damage can result if instructions are not followed.



Indicates specific safety-related instructions or procedures.

Note: Contains additional information important to a procedure.

2.2 Safety Icons Nomenclature

This manual and the equipment have numerous safety icons. These safety icons provide important operating instructions, which alert you to personal injury hazards.

2.2.1 Personal Protection/ Important Information

-  Read the manual
-  Eye protection
-  Face shield / welding helmet
-  Breathing protection
-  Head protection
-  Protective shoes
-  Hand protection
-  Use two people when lifting heavy objects
-  Use proper tools
-  Set parking brake
-  Remove key
-  OEM parts

 Properly installed parts

 Damaged safety sign

2.2.2 Prohibited Actions

-  Do not alter or modify
-  Do not weld
-  No smoking
-  No open flame
-  No alcohol
-  No drugs

2.2.3 Hazard Avoidance

-  Safety alert symbol
-  Slipping injury
-  Tripping injury
-  Pinch point hazard
-  Pinch hazard (foot)

 Dangerous fumes

 Adequate ventilation

 Crush hazard

 Crush hazard

 Crush hazard (chock wheels)

 Chock wheels /rollover hazard

 Fall hazard (truck)

 Fall hazard (platform)

 Damaged parts hazard

 Fire hazard

 Sparks / fire hazard

 Battery gas hazard

2.3 Safety Rules

2.3.1 Personal Protection

 **WARNING**  Do not work under the liftgate while it is suspended from the lifting device. Failure of the lifting device could cause serious crushing injuries. Do not remove the lifting device until the liftgate is securely tack welded onto the truck frame.

 **CAUTION**



When installing or operating this unit, wear appropriate personal protective equipment. This list may include, but is not limited to:

- A hard hat.
- Protective shoes with slip resistant soles.
- Protective goggles, glasses, or face shield.
- Protective clothing.

  Anthony Liftgates recommends not riding the liftgate; however, if the operation requires it, make sure your footing is stable before raising or lowering the platform. Always stand away from the edge. When on the ground, always stand clear of the liftgate when it is operating.

CAUTION



Do not attempt to install the liftgate under the influence of drugs or alcohol. Consult your doctor before using the liftgate while taking prescription medications.



To prevent personal injury, clean up any spilled fluids immediately. To avoid tripping, do not leave tools or components laying around in the work area.



Failure to prevent the truck from moving during the installation of the liftgate could result in a serious crushing injury.



Always use/set the truck's parking brake and remove the ignition key before installing the liftgate. Failure to follow this recommendation can result in injury.



Do not place hands or feet in pinch points.



Do not place your feet under the liftgate or between the platform and floor extension.



To prevent injury, the liftgate and its related components should only be installed by a qualified installer having knowledge and skill in using a lifting device, a cutting torch, and welding equipment.



To prevent possible injuries due to improper operation, make sure all decals are attached to the liftgate and/or truck and are legible at all times.

2.3.2 Equipment / Tools / Parts

CAUTION



Do not install this unit if it is damaged. If you believe the unit has a defect, which could cause it to work improperly, you should immediately stop the installation and remedy the problem before continuing.



Make sure the liftgate or truck will not be damaged or made unsafe by the installation or use of the liftgate.



Never secure the power cable to anything which allows it to contact sharp edges, other wiring, fuel tank, fuel lines, brake lines, air lines, exhaust system, or any other object that could cause the power cable to wear or be damaged. A cut battery cable can cause sparks and/or component damage resulting in loss of vehicle control, serious injury, or even death.



If replacement parts are necessary, genuine factory OEM replacement parts must be used to restore the liftgate to the original specifications. Anthony Liftgates will not accept responsibility for damages as a result of using unapproved parts. If non-OEM replacement parts are used, the warranty will be voided.

2.3.3 Battery / Fuel Tank Safety

WARNING



To prevent serious bodily injury, keep sparks, lighted matches, and open flames away from the top of the battery, because battery gas can explode. Always follow all the manufacturers' safety recommendations when working around the truck's battery.



Take precautions to avoid sparks coming into contact with the truck's fuel tank, brake lines, or other flammable components. Sparks can cause an explosion of combustible materials, resulting in serious injury or death.

2.3.4 Cutting Torch / Welding Safety

WARNING



Take precautions to avoid sparks from contacting the truck's fuel tank, brake lines, or other flammable components. Sparks can ignite combustible materials, resulting in serious injury or death.



Always weld or use a cutting torch in a well-ventilated area and, if in an enclosed area, vent the fumes to the outside. Breathing welding smoke and paint fumes can cause serious injury.



Always follow all State and Federal health and safety laws and/or local regulations when using an arc welder, mig welder, or cutting torch. Also, follow all manufacturers' safety guidelines. If other people are present during the installation of the liftgate, make sure the assembly area is shielded from their view.



To avoid eye injury during welding, always wear a welding helmet with the proper lens to protect your eyes.



To avoid eye injury while using a cutting torch, always use eye protection with the proper lens to protect your eyes.

SAFETY INSTRUCTIONS



Do not modify safety devices. Do not weld on the liftgate assembly, except the adapter frame tube. Unauthorized modifications may impair its function and safety.



Make sure all parts are in good working condition and properly installed. Replace any damaged parts immediately.

2.4 Welding or Grinding Galvanized or Stainless Steel Material

2.4.1 Galvanized Metal



Follow all OSHA and other workplace safety standards when welding galvanized steel, which creates zinc oxide fumes. Always grind the coating off in the area to be welded and provide adequate ventilation to avoid breathing the fumes.

Always wear the proper breathing protection when grinding or welding. Use ventilation or vacuum systems to remove any contaminated air from the work area.

Metal Fume Fever:

When zinc vapor mixes with the oxygen in the air, it reacts instantly to become zinc oxide, which is non-toxic and non-carcinogenic.

Zinc oxide that is inhaled is absorbed and eliminated by the body without complications or chronic effects.

Exposure to zinc oxide fumes causes a flu-like illness called metal fume fever.

Symptoms include headache, fever, chills, muscle aches, nausea, vomiting, weakness, and tiredness.

There are no long-term health effects. Metal fume fever typically begins about four hours after exposure, and full recovery occurs within 48 hours.

2.4.2 Stainless Steel

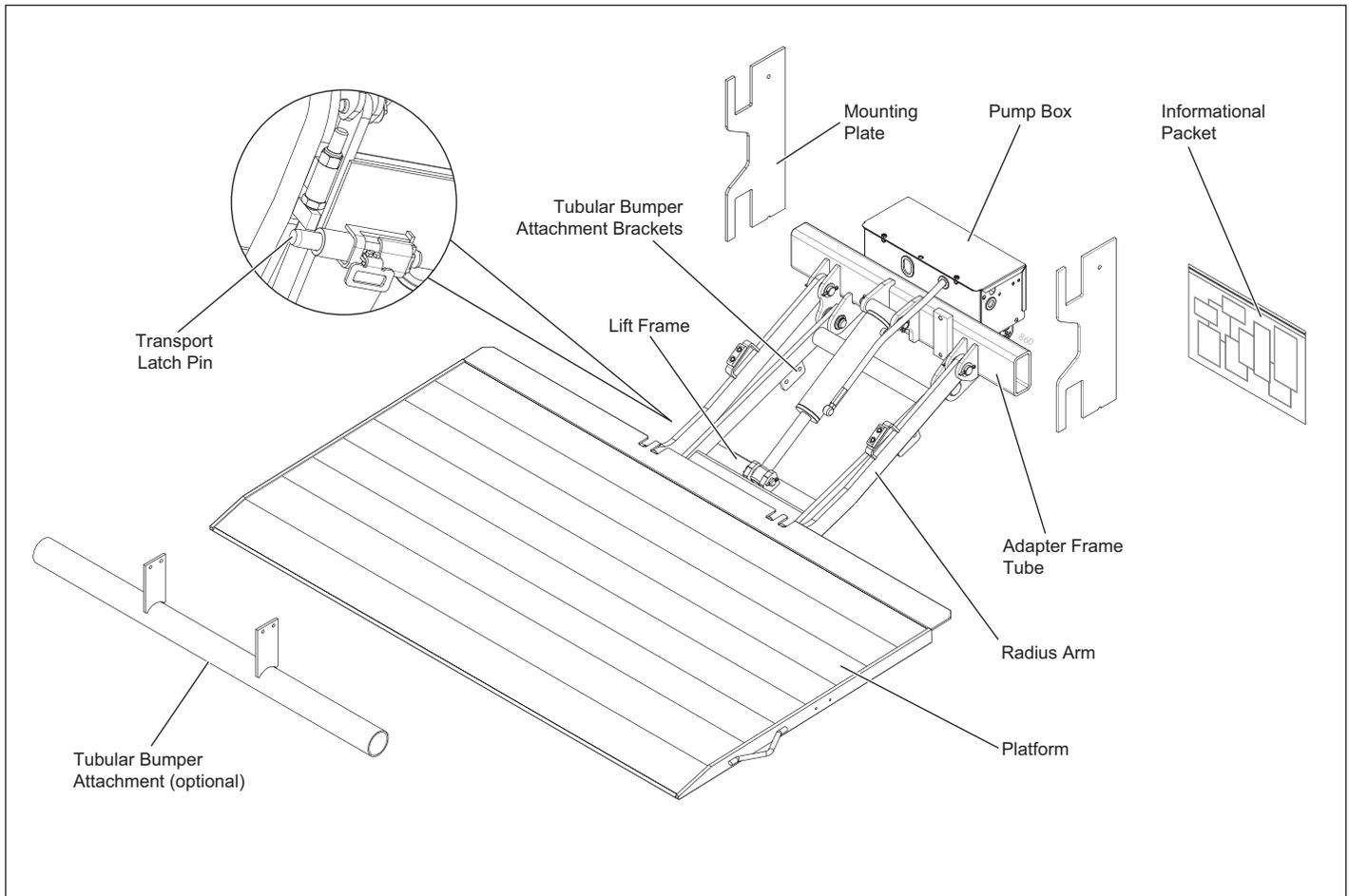
Follow all OSHA and other workplace safety standards when welding stainless steel, which creates hexavalent chromium fumes that can irritate the nose, throat, and lungs.

Repeated or prolonged exposure can damage the mucous membranes of the nasal passages and result in ulcers. In severe cases, exposure causes perforation of the septum (the wall separating the nasal passages).

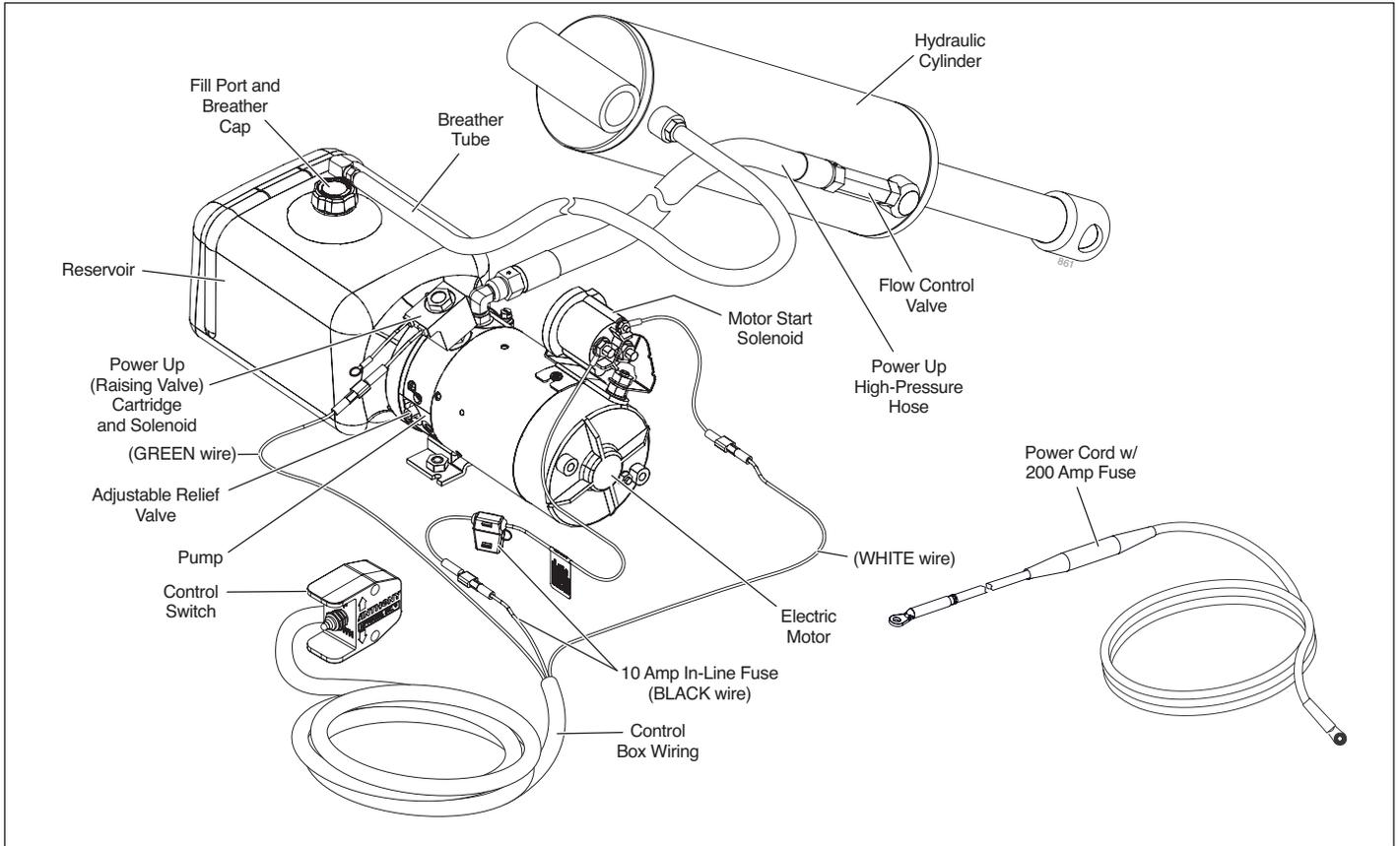
Always wear the proper breathing protection when grinding or welding. Use ventilation or vacuum systems to remove any contaminated air from the work area.

3. Nomenclature

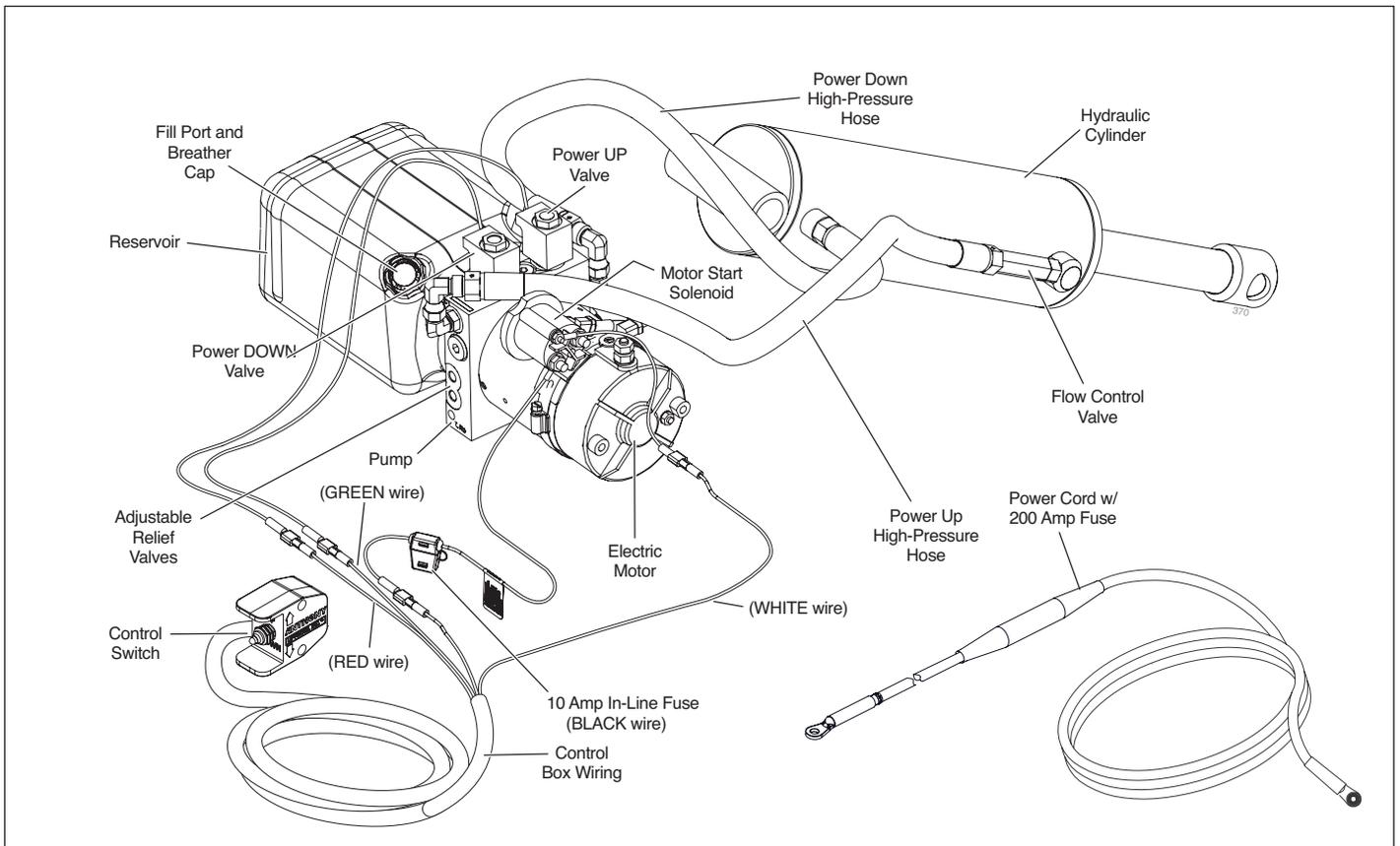
3.1 Platform Nomenclature



3.2 Gravity-Down Power Unit Nomenclature



3.3 Power-Down Power Unit Nomenclature



4. Installation

WARNING If you fail to read, understand, and follow the installation instructions and safety recommendations in this manual before installing the liftgate, it can result in severe injury or death to you or a bystander.

4.1 Tools Required

SAFETY INSTRUCTIONS It is essential for your safety that you never use or operate unfamiliar tools or equipment. Follow the manufacturer's operating instructions and safety recommendations whenever using power tools or equipment.

The following is a list of suggested tools that should be used to install the liftgate:

- Band Cutters
- Overhead Crane or Forklift
- ATU-1613 Lifting Fixture (strongly recommended)
- Mig or Stick Welder
- 3" x 3" x 1/4" Steel Angle Iron (two pieces)
- Heavy-Duty C-Clamps
- Tape Measure
- Cutting Torch (in some applications)
- Grinder (removing galvanized surface before welding)
- 9/16" Socket and Wrench (lid on pump box)
- 1-1/2" Wrench and Socket (adjusting latch assembly)
- Heat Gun or Propane Torch for Shrink Tube (cable lug)
- Crimping Tool (cable lug)

4.2 Fabricated Lifting Fixture

The installation of the liftgate can be more efficient by using a lifting fixture (ATU-1613) and forklift to position and hold the liftgate in place until it's welded to the frame rails of the truck.

A fabricated fixture is available for sale (ATU-1613 Lifting Fixture) and strongly recommended. If a fabricated fixture is not purchased, a detailed plan on how to make the fixture is in section "7. Lifting Fixture" on page <?>.

4.3 Bed Height and Clearance Requirements

Use the following steps to verify the minimum and maximum clearances of a properly installed liftgate. Do not begin the installation process unless all the requirements in the steps in this section are met.

NOTICE To prevent damage to the truck or the liftgate, make sure the model being installed is compatible with the bed height of the truck.

1. Place the truck on a flat, level surface with the parking brake set.

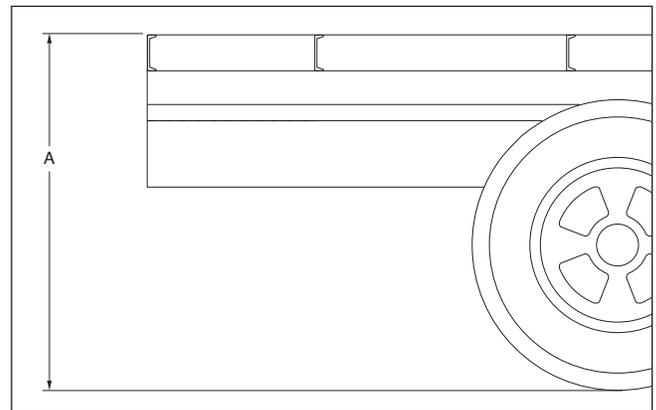
WARNING  Failure to prevent the truck from moving during the installation of the liftgate could result in serious personal injury or death.

SAFETY INSTRUCTIONS Remove the keys to prevent unwanted movement.

2. Measure height (A) of the truck bed.
 - a. If this dimension is less than the minimum height, do not proceed.

Note: If the measurement is close to the minimum requirement with an empty truck, it may not meet the requirement when the truck is fully loaded.

Minimum Truck Bed Height When Fully Loaded	
Model	Bed Height (A)
ALL	36"



- b. If this dimension is more than the maximum height, do not proceed.

Maximum Truck Bed Height When Empty	
Model	Bed Height (A)
ALL	57"

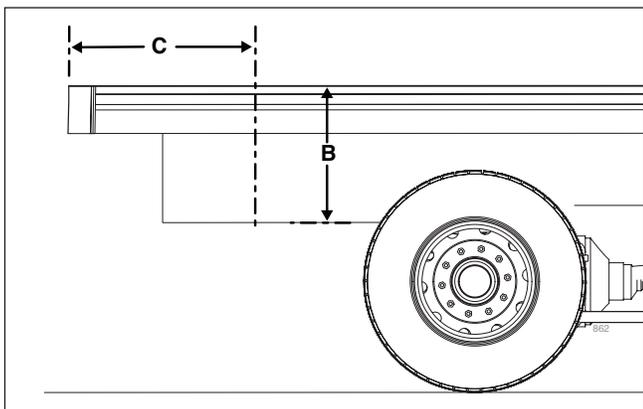
4.4 Installation Preparation

SAFETY INSTRUCTIONS  Even though the Anthony liftgate is easy to install, the installation should be done with at least two people due to the weight of some of the parts.

Typical installations take two experienced installers approximately two hours from start to finish.

1. Make sure the truck meets the height requirements in the previous section.
2. Make sure there are no accessories, obstructions, or other protrusions that will interfere with the operation of the liftgate or the installation of the mounting plates within dimensions (B) and (C) shown. The mounting plates must lay flush against the truck frame rails.

CAUTION The frame rails must be smooth and flat. Any protrusions such as a rivet or bolt head could cause the mounting plates not to be firmly attached to the frame rails.

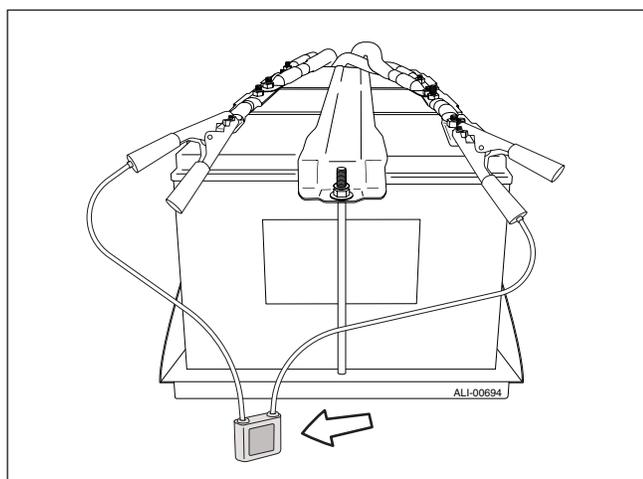


Obstruction-Free Area		
Bed Height (A)	B	C
36" - 41"	15 3/4"	35 1/2"
42" - 49"	19"	30 3/4"
50" - 51"	20"	30 1/4"
52" - 53"	21"	29 3/4"
54" - 55"	22"	29 1/8"
56" - 57"	23"	29"

- Check the OEM vehicle manual for any special requirements prior to welding on the truck frame. If required, disconnect the battery cable before welding on the truck.

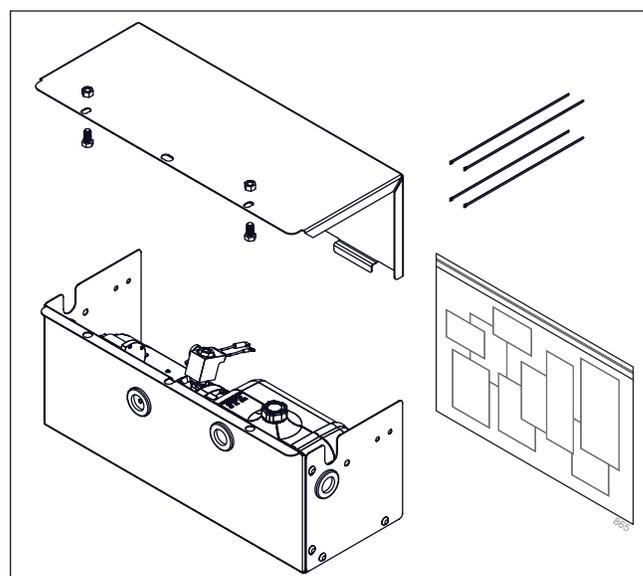
NOTICE Electronic truck accessories can be damaged by electrical surges from arc welding equipment. Some trucks require the battery cable to be disconnected prior to welding to protect sensitive electronic equipment or that a surge protector be temporarily installed.

- Connect a 12/24 Volt surge protector to the battery to protect the vehicle's electronic accessories from voltage spikes, which could occur during welding.

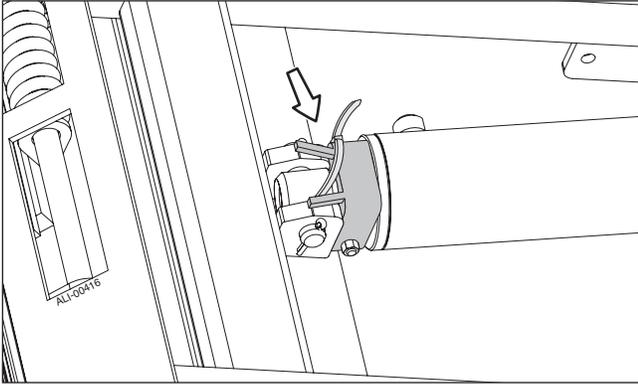


- Before proceeding, make sure the complete liftgate and its related parts have been received, as listed in the chart. The platform is shipped separate from the lifting structure and must be attached. Some of the installation parts are placed inside the pump box.

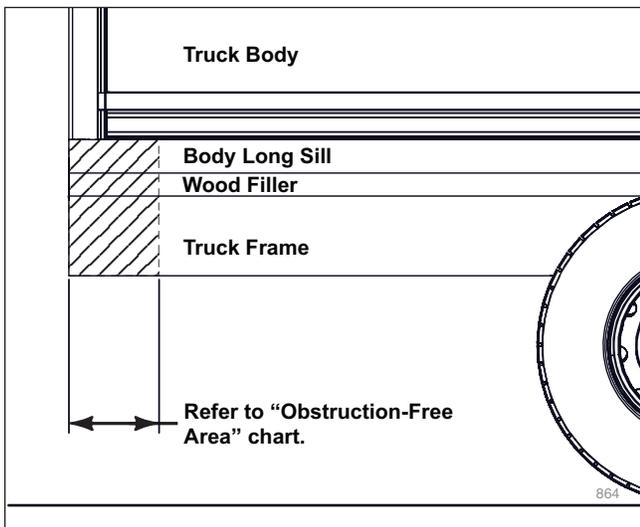
Liftgate Installation Package	
Description	Qty.
Located on Pallet	
Liftgate Structure	1
Platform	1
Mounting Plates	2
Power Cable with 200 Amp Fuse	1
Hardware Mounting Kit	1
Located Inside Pump Box	
Liftgate Control Switch	1
Cab Cut-off Switch	1
Information Packet (contains decals, manuals, shims, and other related installation information)	1
Plastic Tie Wraps	—
Optional Parts	
Tubular Bumper to help meet "Rear Impact Guards" standard	—



Note: A spacing guide is installed over the end of the cylinder rod. Do not remove this guide until the liftgate has been tack welded in place on the truck body.



- Some trucks may require the frame rails to be extended. Determine this distance using the "Obstruction-Free Area" chart in Step 2 to make sure the mounting plates will have a sufficient behind them, in order to install the liftgate mounting plates. The frame can extend all the way to the back of the truck and not interfere with the operation of the liftgate.



- If the frame rails must be extended, make sure the extension meets the specifications of the truck manufacturer and that altering the frame will not void the truck warranty.

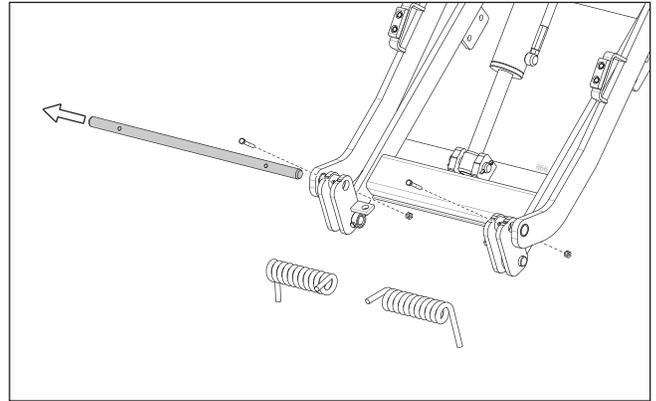


Take precautions to avoid welding sparks or the flame from a cutting torch coming into contact with a truck bed's wooden floor or other flammable components.

4.5 Connect the Platform

- Place the liftgate mechanism flat on the floor in a position to easily access the radius arms.
- Remove the two 5/16 locknuts and bolts from the platform/cam pin in the liftgate mechanism.

- Remove the platform/cam pin from the radius arms and cam plates. The two platform springs will fall free as the pin is removed.



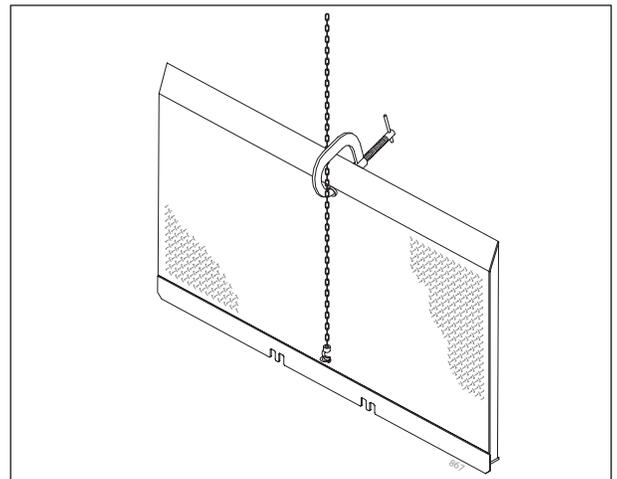
- Hang the platform from a hoist or other lifting device, as shown.



Make sure the capacity of the lifting device and the chains or straps are capable of holding the platform. A steel platform can weigh as much as 350 pounds.

Steel platforms:

- Install an eye bolt, capable of lifting the platform, through the 3/4" hole in the platform. The "eye" should be on the top side of the platform.
- Attach a lifting chain to the eyebolt.
- Attach a clamp to the ramp end of the platform and thread the chain through the C-clamp.
- Lift the platform into a vertical position.



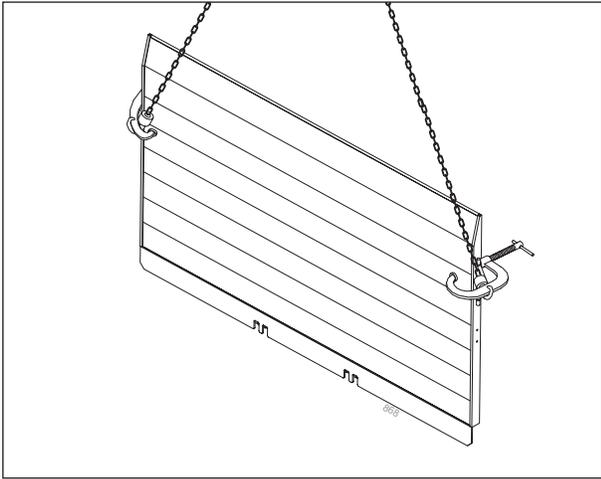
Aluminum platforms:

- Attach two, heavy duty, C-clamps to the sides of the platform.



Attach the C-clamps where they will not slip off when the platform is raised into a vertical position. The clamps must be strong enough to hold the weight of the aluminum platform which can weigh as much as 300 pounds.

- b. Securely attach a chain or lifting strap the clamps.
- c. Raise the platform into a vertical position.



4.6 Positioning the Liftgate

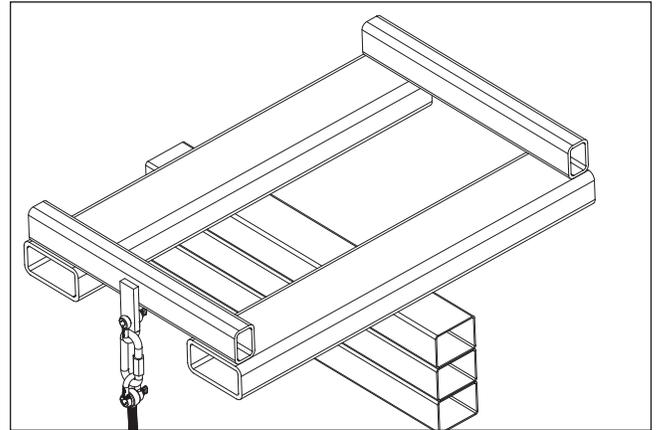
Use a forklift or overhead lifting device to lift the liftgate.

WARNING



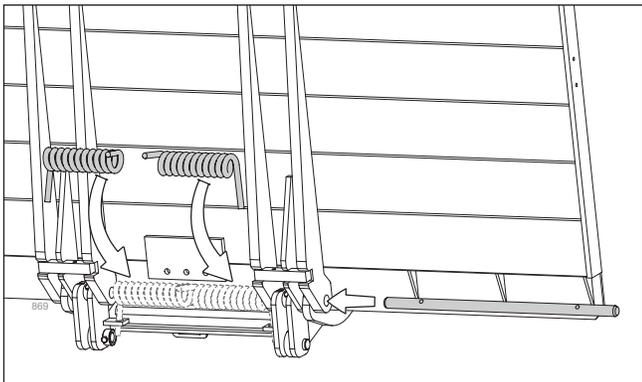
Do not work under the liftgate while it is suspended from the lifting device. The liftgate can weigh up to 1,100 lbs. and failure of the lifting device could cause serious crushing injuries.

1. The safest and easiest way to install the liftgate with the attached platform is to use the ATU-1613 Lifting Fixture.

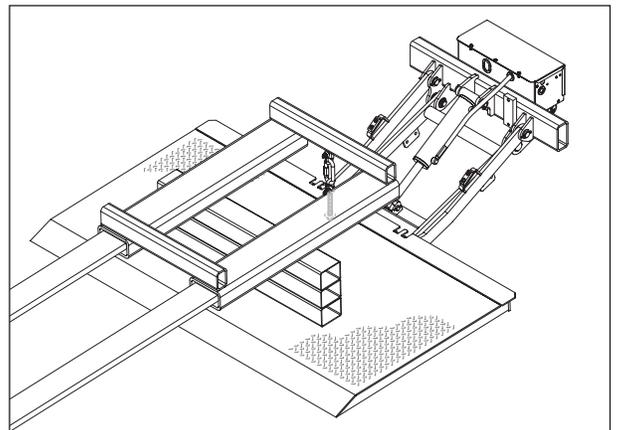


5. Carefully position the platform over the liftgate mechanism and align the holes in the platform with the hole in the radius arm and cam plate.
6. Slide the platform/cam pin through the first hole in the platform and through the radius arm.
7. Align the cam plate hole and slide the platform/cam pin through it.
8. Place the tang of the spring into the slotted hole in the cam plate and continue to slide the platform/cam pin through the spring.

Note: The springs have a right and left-hand side. Make sure the springs are installed in their proper orientation.



2. For steel platform liftgates:
 - a. Place the lifting fixture on top of the platform.
 - b. Place the threaded rod through the lifting hole in the platform.



9. Continue to add the other platform spring, sliding the platform/cam pin through it, the cam plate, the radius arm, and the platform mounting holes.
10. Align the 5/16 holes, in the platform/cam pin, for the retaining bolts and install the bolts and lock nuts.

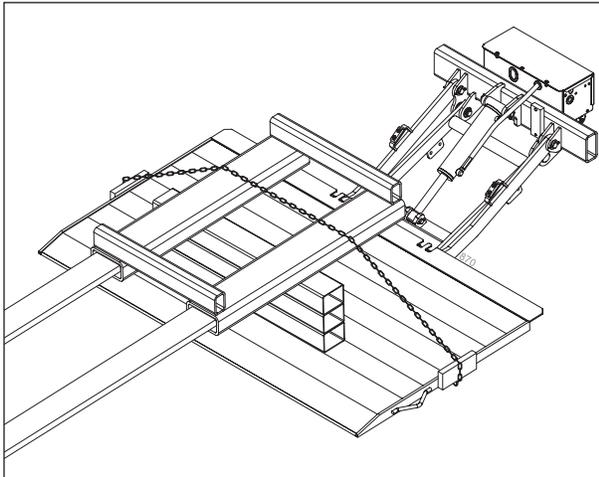
- c. On the underside of the platform, install a washer and nut onto the threaded rod.
- d. Raise the liftgate, making sure the platform is almost parallel with the ground. Use the threaded rod and nut to make the required leveling adjustments.

Note: It may be necessary to connect the pump to a power supply and press the UP button on the control switch in order to lower the adapter frame tube into the correct position.

3. For aluminum platform liftgates:
 - a. Place the lifting fixture on top of the platform.
 - b. Place a chain securely around the lifting fixture and the platform.

NOTICE

To prevent damage to the aluminum platform, use wood or other protective material between the lifting chain and the platform to prevent surface damage.



- c. Adjust the chain until the platform is almost parallel with the ground as it is lifted.
- d. Raise the liftgate, making sure the platform is almost parallel with the ground.

Note: It may be necessary to connect the pump to a power supply and press the UP button on the control switch in order to lower the adapter frame tube into the correct position.

4.7 Attach the Liftgate to the Truck Frame

1. Place 1" spacers, installer supplied, against the rear sill of the truck.

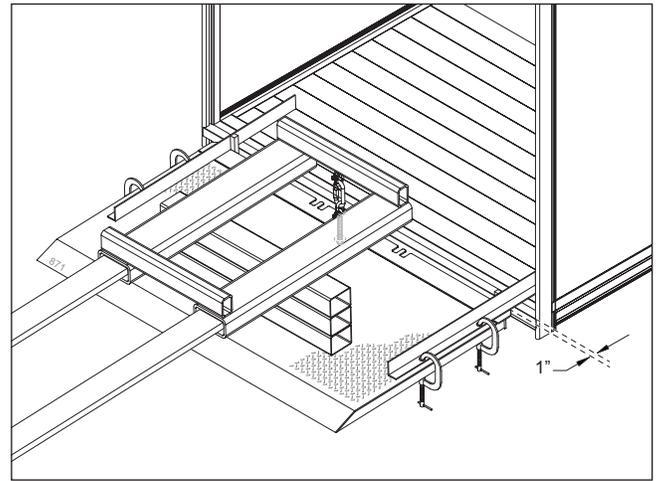
Note: The spacers hold the liftgate away from the truck bed to provide the proper clearance between the bed and the platform when it is folded into its stored vertical position.

2. Using two large C-clamps, clamp two 4 foot long heavy duty leveling beams such as 3" x 3" x 1/4" steel angle iron, installer supplied, to the platform, as shown. The beams should extend 2 feet into the truck bed.

NOTICE

If the liftgate has an aluminum platform, use wood or other protective material to prevent surface damage from the clamps.

3. Center the platform from side-to-side with the truck body and then lower and level the platform with the truck bed.

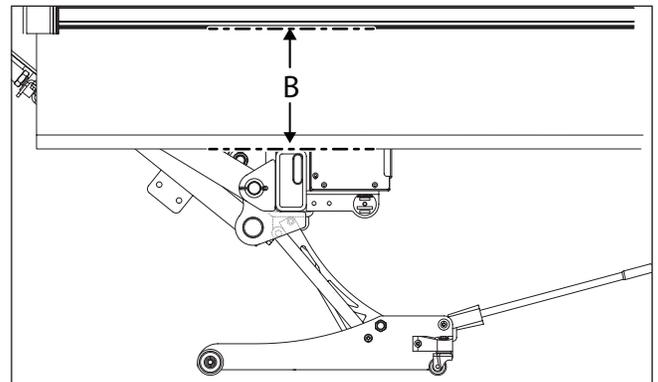


WARNING



Do not work under the liftgate while it is suspended from the lifting device. The liftgate can weigh up to 1,000 lbs. and failure of the lifting device could cause serious crushing injuries. Do not remove the lifting device until the liftgate is securely tack welded onto the truck frame.

4. Place a lifting device, such as a floor jack, under the adapter frame tube, in the location shown.



5. Determine the installed height (B) to the top of the adapter frame tube using the Mounting Requirements chart.

Mounting Requirements	
A Bed Height (floor surface)	B Floor Surface to Top of Adapter Frame Tube
36" - 41"	15-3/4"
42" - 49"	19"
50" - 51"	20"
52" - 53"	21"
54" - 55"	22"
56" - 57"	23"

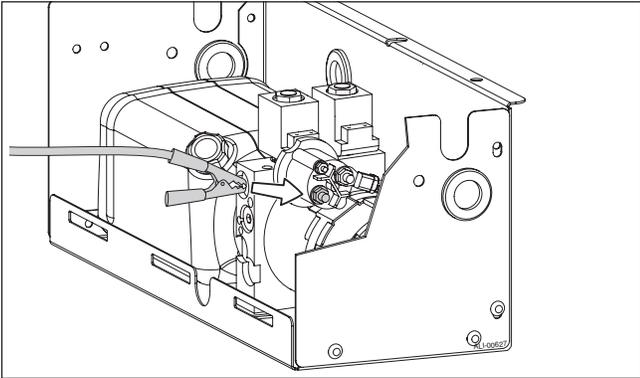
Note: In some cases, the top of the adapter frame tube may be against the frame or could be above the frame. It may be necessary to notch the frame in order to achieve the required height of the adapter tube frame.

- Position the top of the adapter frame tube at the correct height of dimension (B).

Note: If the adapter frame tube does not easily raise, it may be necessary to actuate the control valve to release hydraulic pressure in the cylinder if the adapter frame tube will not raise completely.

- To actuate the control valve and to raise and lower the platform during the installation process, connect a 12 Volt slave battery to the motor start solenoid.

Connect the red jumper cable from a 12 Volt slave battery to the positive (+) terminal of the motor start solenoid. Connect the black (-) cable to a ground on the pump box.

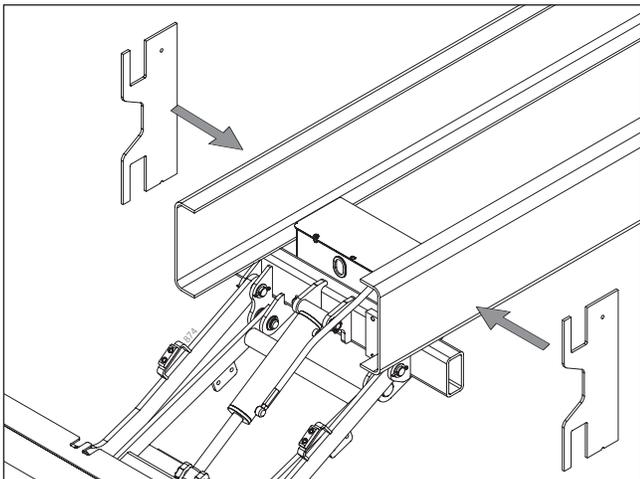


- For gravity-down models, simply press and hold the control switch in the DOWN position to release the pressure in the cylinder.

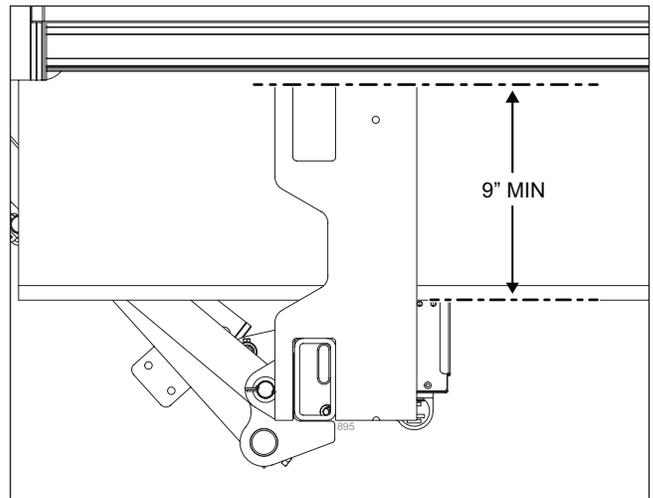
For power-down models, briefly press and release the control switch in the UP position. Remember that pressing the UP control will hydraulically raise the adapter frame tube.

Once the adapter frame tube is at the proper height, the top of the tube should be slightly angled toward the back of the truck.

- Slide the mounting plates over the adapter frame tube on each side, as shown.



Note: The mounting plate must extend at least 9 inches above the bottom of the truck frame. Extend or shorten the mounting plates, if necessary.

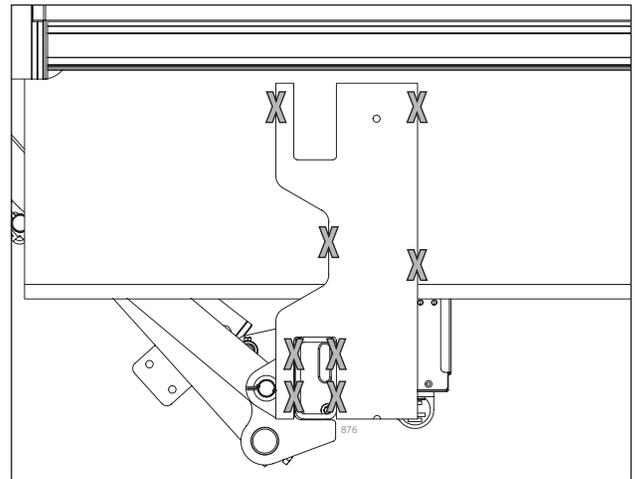


If the liftgate has a galvanized finish, the galvanized material must be removed prior to welding.

Follow all OSHA and other workplace safety standards when grinding or welding galvanized steel, which creates zinc oxide fumes. Always grind the coating off in the area to be welded and provide adequate ventilation to avoid breathing the fumes.

Always wear the proper breathing protection when grinding or welding. Use a ventilation or vacuum system to remove any contaminated air from the work area.

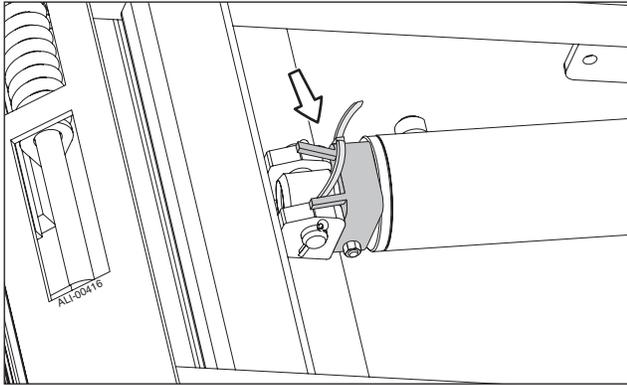
- Tack weld the mounting plates to the frame in the locations marked "X" (each tack weld should be a 3/8 inch fillet, 1 inch long).



WARNING The tack welds must be strong enough to hold the weight of the liftgate, which can be up to 1,100 lbs. Insufficient welds may not hold the liftgate in place, resulting in possible bodily harm.

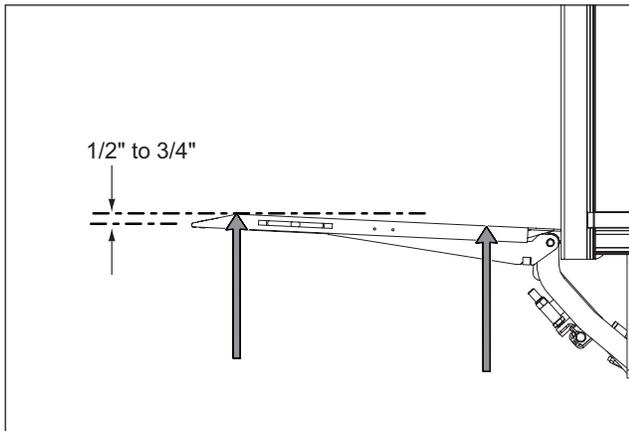
- Remove the floor jack.
- Remove the two large C-clamps and two leveling beams
- Make sure the latch pin is in the open position.

- Standing on the curbside of the truck, away from the platform, actuate the DOWN switch to lower the platform to the ground. Remove the spacing guide from the lift cylinder.



- Slowly raise the platform until it is flush with the truck bed.

The outboard edge of the flip-over section should be 1/2 to 3/4 inches higher than the platform section, as shown, when correctly installed.



NOTICE

At this point in the installation, the platform will raise above the height of the bed, because the up-stop bar has not been installed. Damage can occur to the liftgate or the truck if the platform is raised too high.

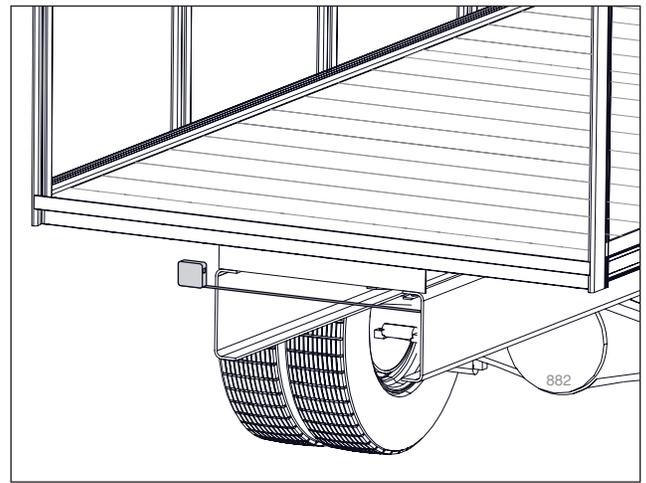
4.8 Attach the Up-Stop Bar

The “up-stop bar” is used to stop the liftgate when the platform reaches the truck floor. This bar is welded in place between the frame rails of truck chassis where the liftframe will contact it when the platform is flush with the truck bed.

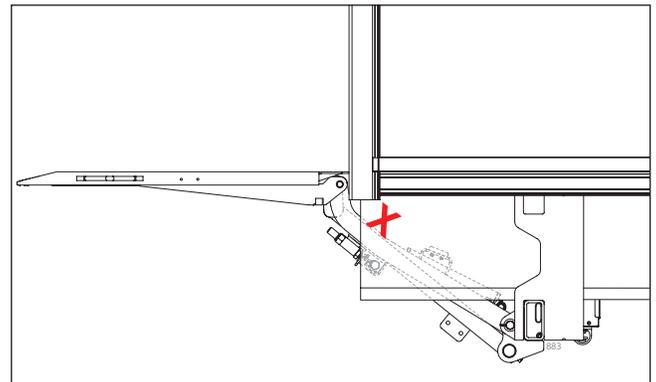
- Make sure the platform is raised and aligns flush with the truck bed.

Note: There should also be at least a 1” gap between the back of the platform and truck’s rear sill.

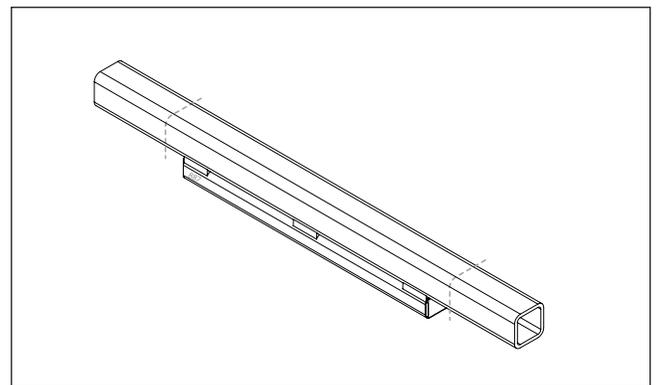
- Measure the distance between the frame rails or body long sills where the up-stop bar will rest against the liftframe (location “X”).



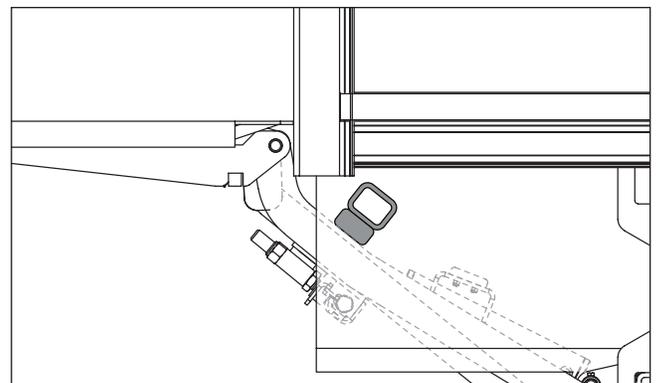
The platform is not shown for clarity of the measurement location.



- Cut the up-stop bar to length by removing an equal amount from each end.



- Position the up-stop bar between the frame rails and tack weld it in place.



NOTICE

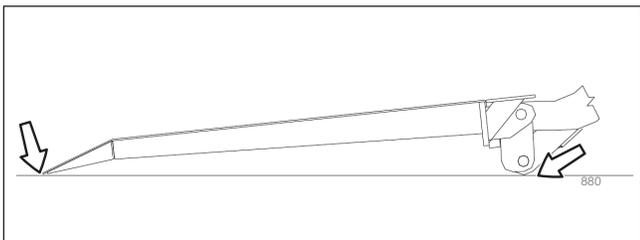
Make sure the location of the up-stop bar will not interfere with the cylinder when it is in the fully retracted position.

5. Lower the platform to the ground. Cover the cylinder rod to protect it against weld spatter and weld the up-stop bar to the frame rails.

4.9 Final Adjustments

1. Completely raise and lower the platform several times.
2. In the lowered position, the front edge of the flip-over platform section should lower to the ground and the two connections to the lift frame at the back of the platform should also contact the ground. If the front edge does not touch the ground, refer to the next step.

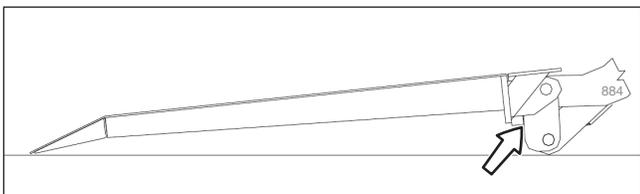
In the raised position, the back of the platform should raise flush to the floor of the truck while the front edge should be angled slightly upward. If the platform is not flush with the floor, the stop bar is incorrectly positioned.



3. If the end of the platform does not contact the ground, adding a shim to the stop block (arrow) will raise the outboard end of the flip-over section.

Removing material from the stop blocks will lower the outboard end of the flip-over section.

If the platform is made of steel, the shims will be welded onto the platform stop blocks. If the platform is aluminum, the shims are bolted on.



Note: One shim can move the ramp end of the platform as much as 1/2 inch. Temporary attach the shims with tape or other means to determine the exact amount of shims needed before parentally attaching the shims.

4. If the platform is operating correctly, proceed to the next step. If the platform does not make a complete cycle, it may be necessary to adjust the mounting plates.



Take precautions to avoid welding sparks coming into contact

with the truck bed's wooden floor or other flammable components.

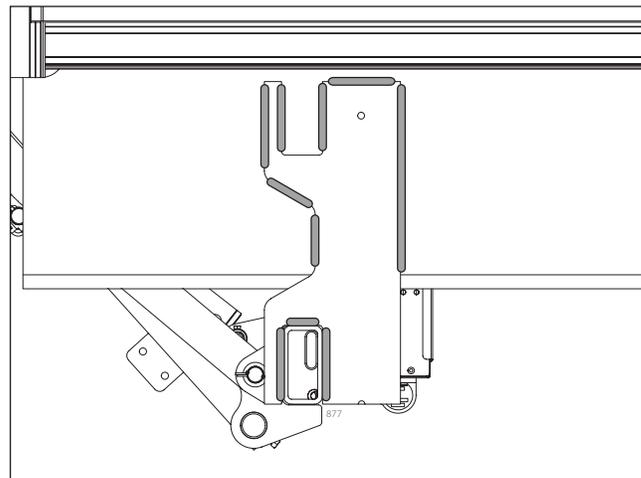
SAFETY INSTRUCTIONS

For safety purposes, finish welding the liftgate while the platform is on the ground, not in a raised position.

NOTICE

Cover the cylinder rod to prevent weld spatter from damaging it.

5. With the platform on the ground, finish welding the mounting plates to the truck frame and adapter frame tube. Use a continuous weld around all sides of the adapter frame tube and on both sides of the mounting plates.



6. Remove the 1 inch spacer blocks.

4.10 Attach Chain and Staple Assemblies

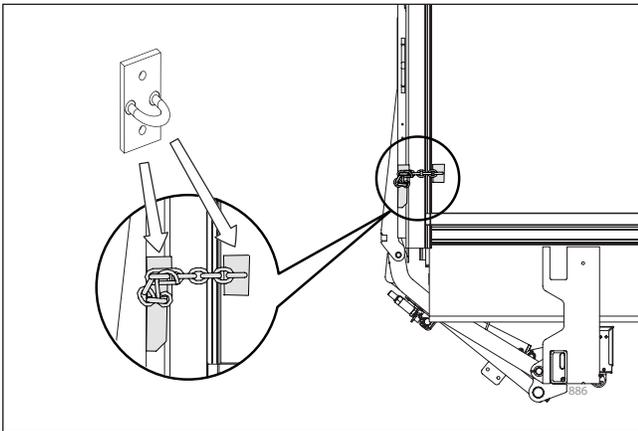
The chain and staple parts are used to secure the platform in an upright position during transit.

1. Fold the platform to an upright position.
2. Place a temporary 5/8" filler board or attach a permanent installer-supplied rubber bumper onto the corner posts of the bed.

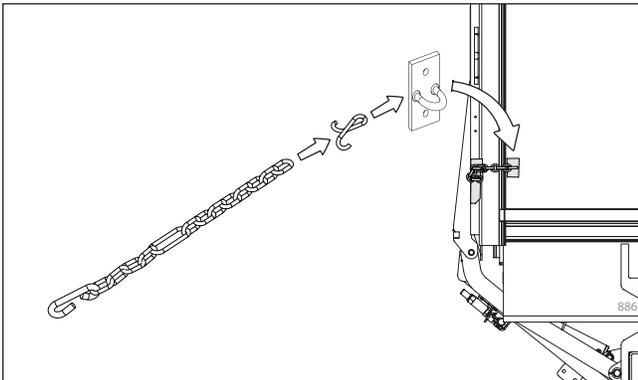
Note: If liftgate is being mounted on a flat bed truck without corner posts, then a structure should be welded onto the bed to act as corner posts.

3. Position and install a staple assembly onto each side of the platform.

Note: The installed height of the chain should be easily reached while standing on the ground. The staple assembly can be either welded or bolted onto steel platforms and bolted onto aluminum platforms with the supplied bolts.

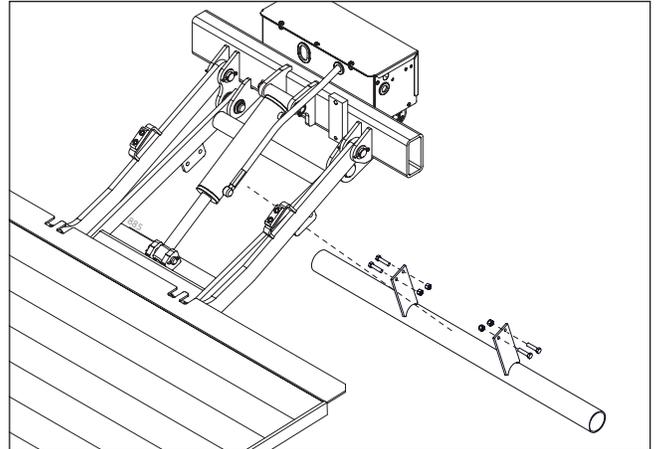


4. Position and attach a staple assembly directly across from the one on the platform onto each side of the truck body. Either weld or bolt the part to a frame member.
5. Position the large link of chain over the staple on the platform and insert the hook through the staple.
6. Pull the chain back towards the staple on the frame member. Attach the chain using the provided repair link through the chain.



4.11 Installing Optional DOT Tubular Bumper

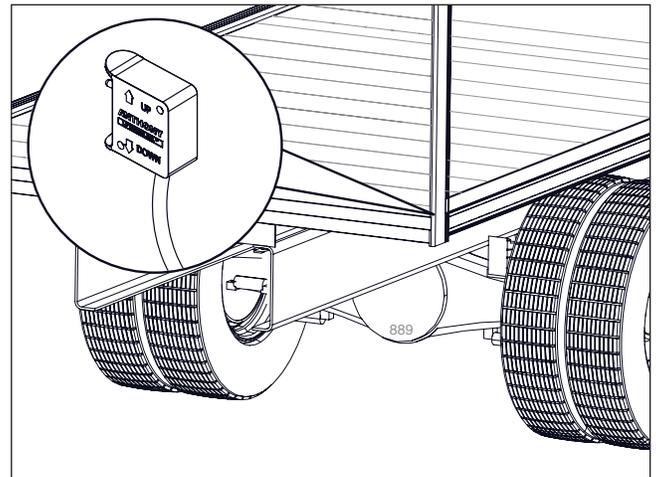
1. If desired, install the optional tubular bumper using the supplied hardware. Make sure the installation is in compliance with all State and Federal regulations.



2. With the liftgate in the stored position, attach the red and white reflective tape to the tube where it will be clearly visible.

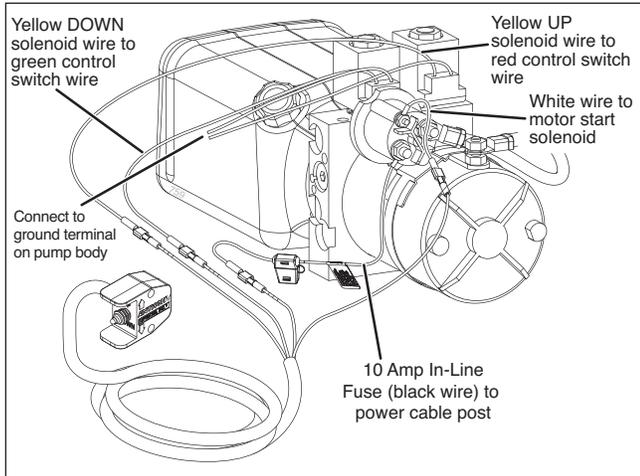
4.12 Mount the Control Switch

1. Remove the slave battery's jumper cables.
2. Disconnect the wires of the control switch from the terminals on the power unit.
3. Mount the control switch to the truck's rear curbside corner post and route the control cable into the pump box. The height of the control switch should be easily reached while standing on the ground.

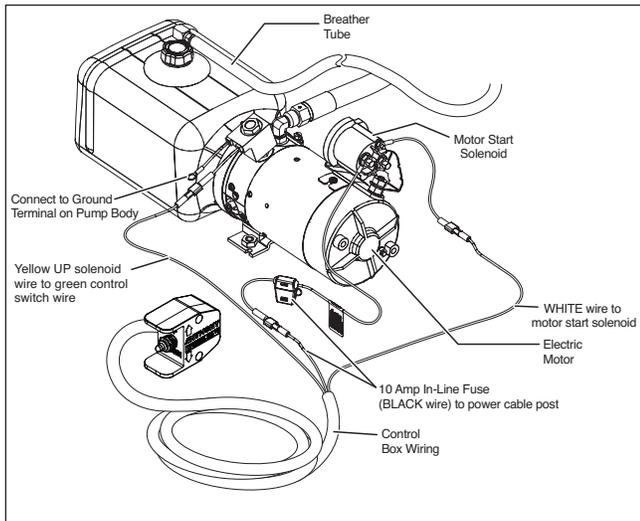


4. Reattach the control unit wires to the appropriate terminals, as shown.

a. Power down models:

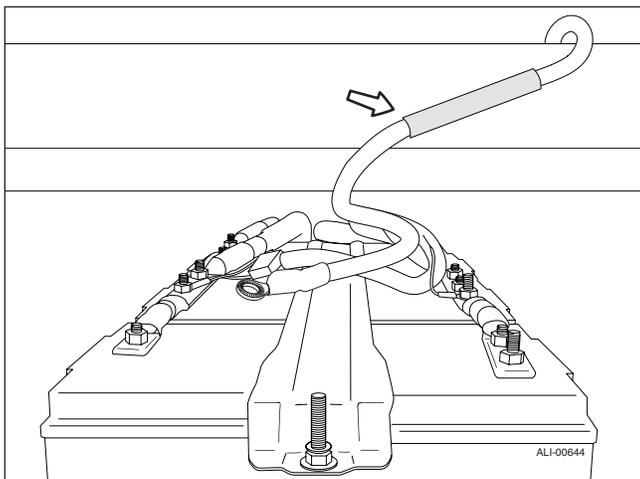


b. Gravity down models:



4.13 Route the Power Cable

1. Place the end of the power cable with the fuse near the battery box, but do not connect the cable lug to the battery terminal in this step.



2. Route the power cable along the truck frame rail to the pump box attaching it with plastic tie wraps or wire clips.



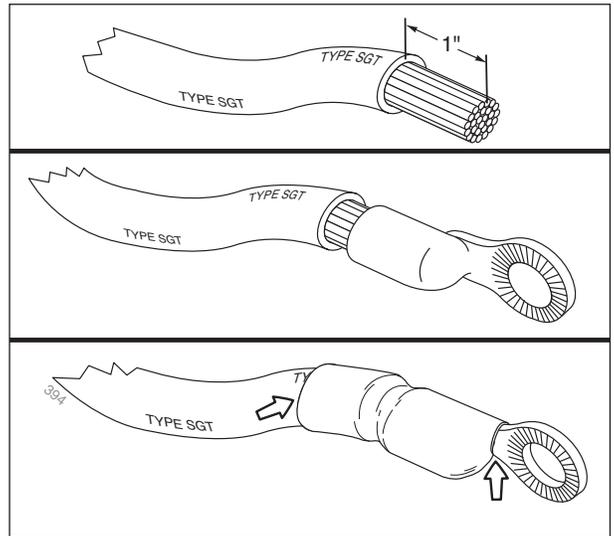
Never secure the power cable to anything which allows it to contact sharp edges, other wires, the fuel tank, fuel lines, brake lines, air lines, exhaust system, or any other object that could cause the power cable to wear or be damaged. A cut battery cable can cause sparks, resulting in the loss of vehicle control, serious injury, or even death.

3. Install the power cut-off solenoid “4.12.1 Cut-Off Solenoid Connection” on page 20 that was provided or install an optional cab cut-off switch.



Anthony Liftgates strongly recommends the installation of an optional power cut-off solenoid (“4.10 Cut-Off Solenoid Connection” on page 21) or cab cut-off switch (“4.11 Cut-Off Switch Connection” on page 21). Allowing power to the liftgate when the truck is unattended can result in serious injury or death.

4. If the power cable is too long, cut the cable and crimp a new cable lug on the end.
 - a. Strip the insulation one inch back from the end of the cable to expose the copper wire.

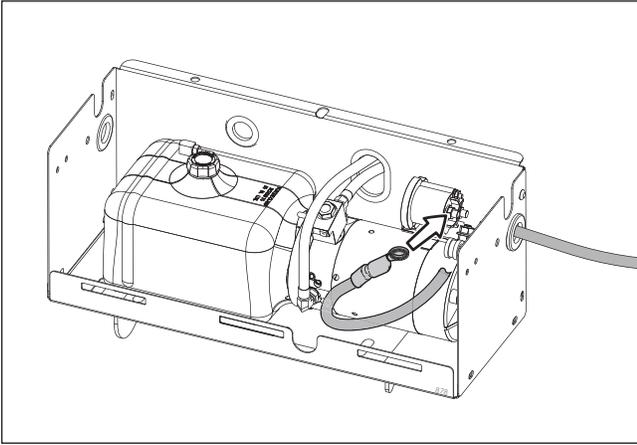


- b. Position the cable lug on the exposed wire, as shown. Crimp the cable lug using a cable crimping tool (hydraulic or manual).
- c. Use the supplied heat shrink tube to insulate the new connection, leaving only the mounting hole exposed.

NOTICE

Proper wire connection is crucial to the life and dependability of the liftgate’s electrical components. A poor connection can result in low Voltage causing the liftgate to work improperly. DO NOT crimp (smash) the cable lug with a hammer to secure it to the cable.

- Connect the power cable to the motor start solenoid.

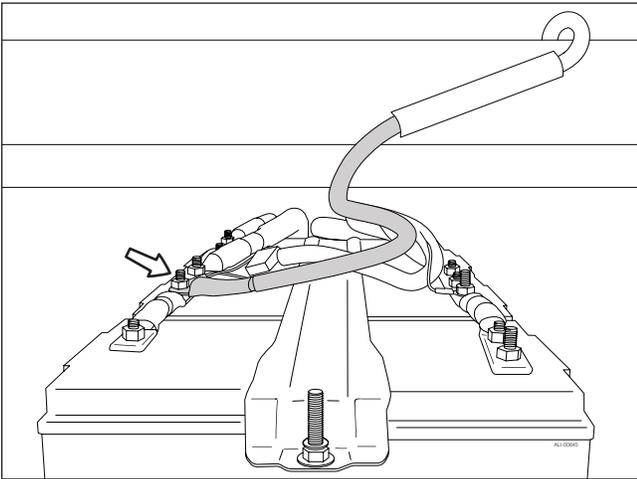


Gravity down model shown.



Improper grounding can cause an electrical current to travel through brake lines, steel braided power steering hoses, or other truck frame components, causing failure to these components, which could result in the loss of vehicle control.

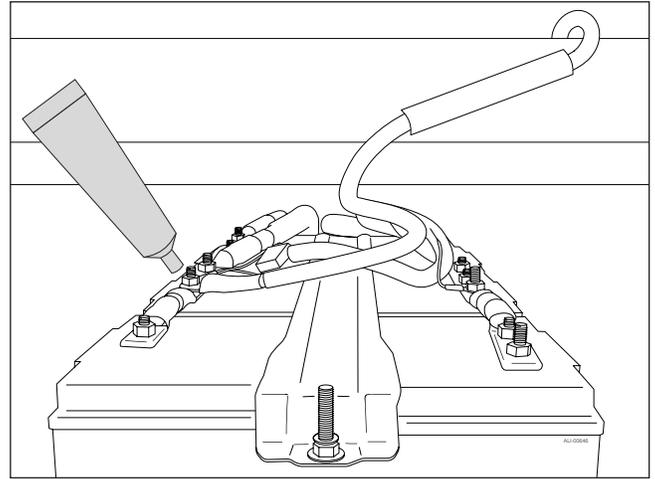
- If needed, attach a ground strap, the same gauge or larger as the liftgate power cable, between the pump box and the truck frame.
- Connect the battery cable to the positive (+) post of the truck battery.



- Coat any terminal ends, studs, and nuts in the liftgate electrical system with suitable corrosion inhibiting lubricant such as DeoxIT L260D Grease.

NOTICE

Do not apply petroleum-based lubricant to the liftgate motor start solenoid. Use only a dry film lubricant on this component.



- Use the control switch to raise and lower the platform.
- Replace the battery box cover and lock it in place.

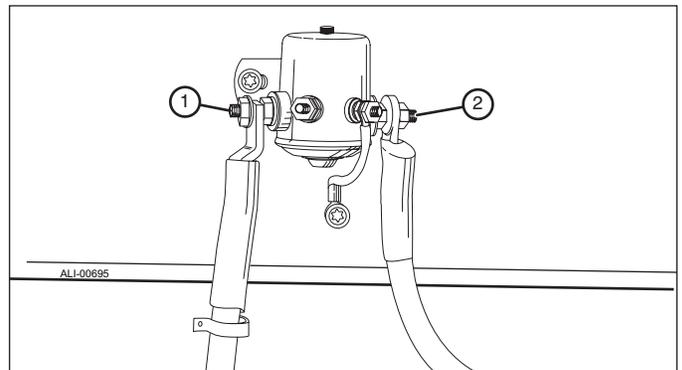
4.14 Install a Power Cut-Off Device

4.14.1 Cut-Off Solenoid Connection

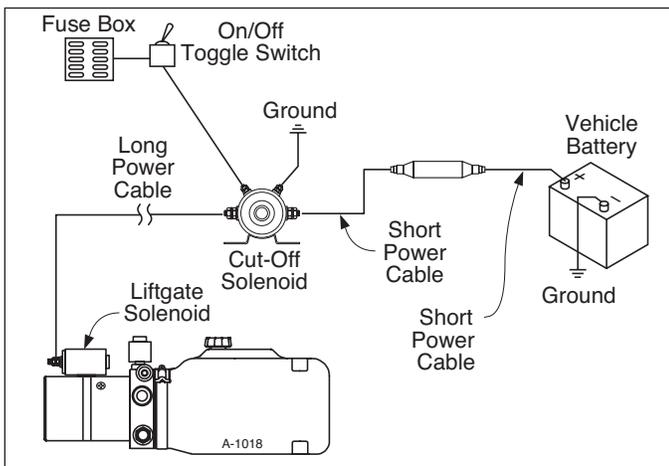
The installation of a cut-off solenoid is a recommended option for all 12 Volt electric liftgates. Installing a cut-off solenoid will help to prevent accidental or unauthorized use of the liftgate.

The optional A-133036 Cut-Off Solenoid Kit can be used in any truck, but is essential for tilt cab applications, as it requires only a lightweight wire running to the cab, not a large cable, as required by the cut-off switch.

Follow the directions on the installation instruction sheet that comes with the kit.



Cut-Off Solenoid Installed Between Battery and Fuse Assembly. (2) Short cable, part of solenoid kit. (1) Long length of power cable leading to power unit.

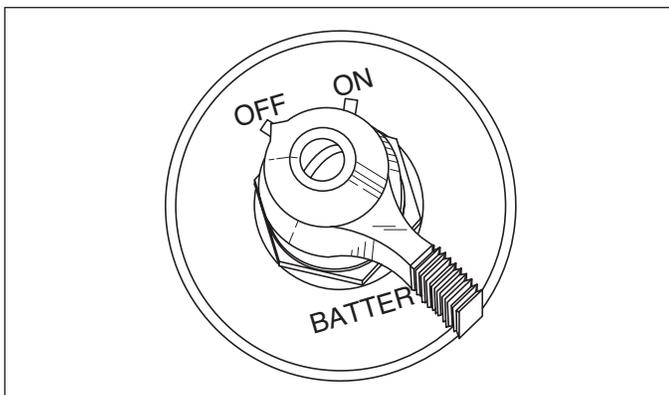


Wiring Diagram with Cut-Off Solenoid.

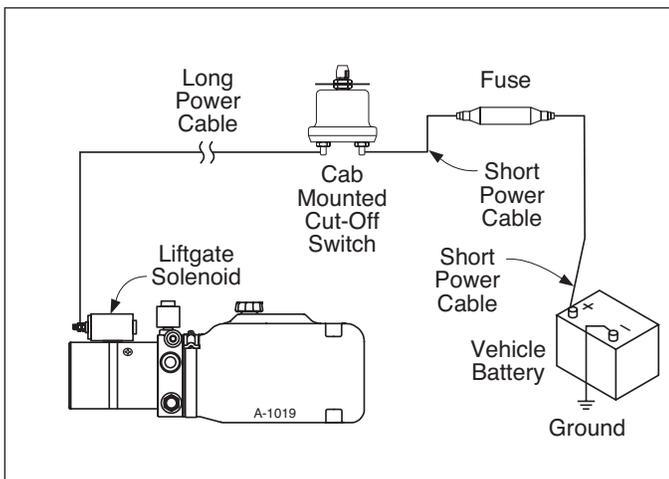
4.14.2 Cut-Off Switch Connection

The installation of a cut-off switch is also a recommended option for all 12 Volt electric liftgates. Installing a cut-off switch will help to prevent accidental or unauthorized use of the liftgate.

Follow the installation directions on the installation instruction sheet that comes with the kit.



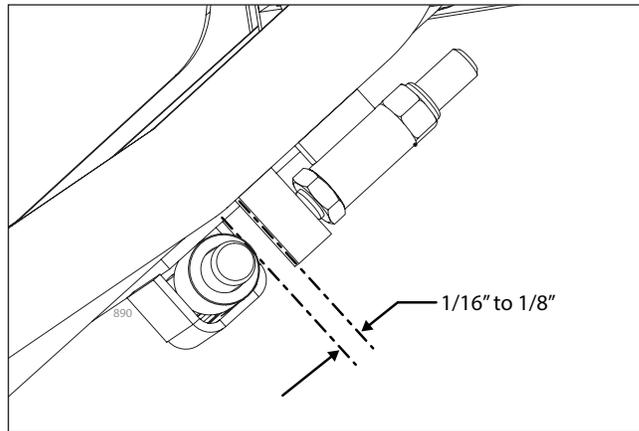
Cut-Off Switch Mounted in Cab of Truck.



Wiring Diagram With Cab Cut-Off Switch.

4.15 Adjust the Latch Pin

1. Adjust the latch pin plate allowing a 1/16 to 1/8 inch gap between the latch plate and the latch pin.
2. Insufficient clearance can allow binding of the latch pin as the liftgate is used, while too much clearance will not properly secure the liftgate.
3. If the latch pin will not easily open, press the UP control button to release any tension on the latch pin.



4.16 Install DOT Lighting, Decals, or Other Accessories

1. Install DOT lighting or other electrical components.
2. Install the license plate bracket.
3. If required, install grab bars or hand rails.

NOTICE Most liftgates have built-in steps to assist in ingress/egress of the platform. These steps are NOT to be considered all-inclusive of any requirements or guidelines regarding proper ingress or egress. It is the installer's responsibility to determine the proper requirements, such as steps, hand grips, grab bars, etc.

4. Attach all decals, as shown in section "7. Decals" on page 33.
5. Make a final operation check. Refer to section "4.15 Final Inspection Checklist" on page 22.

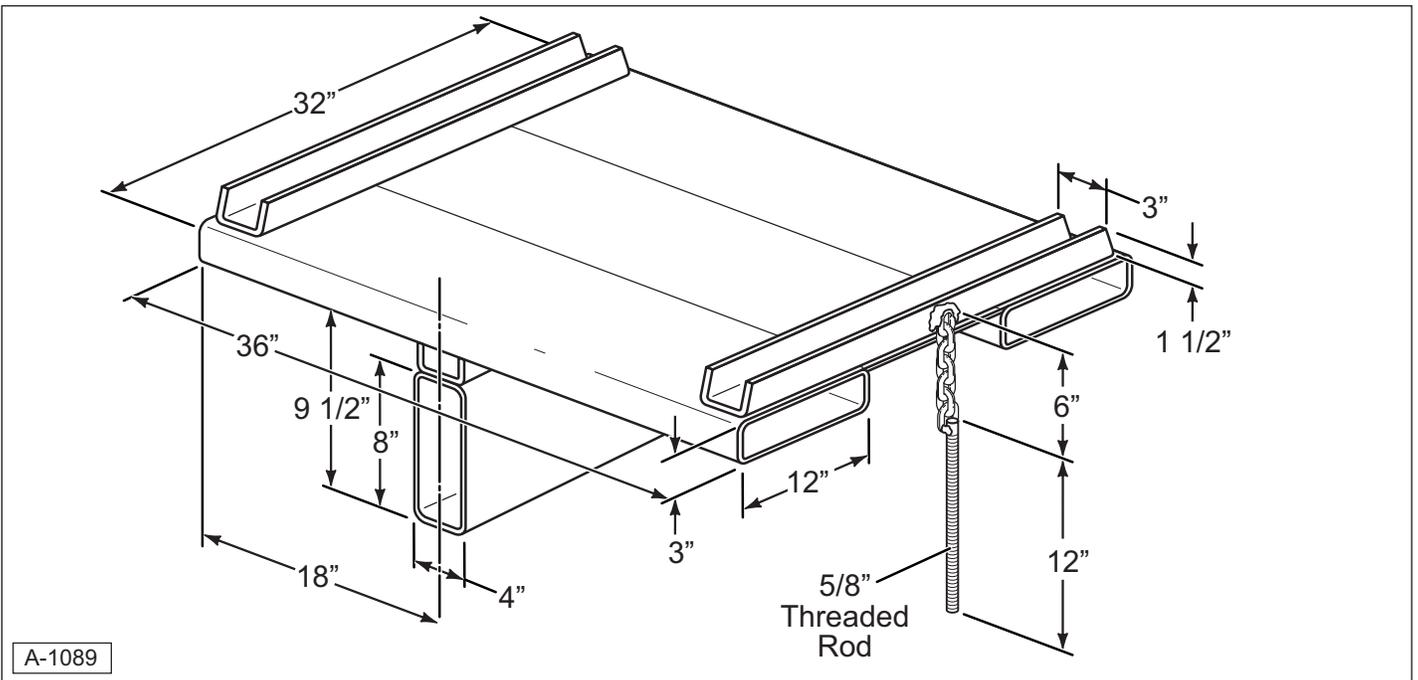
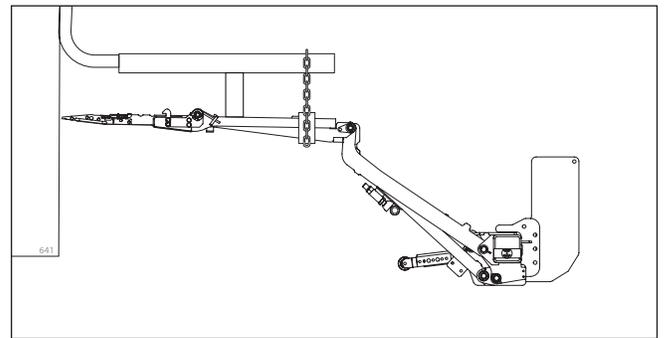
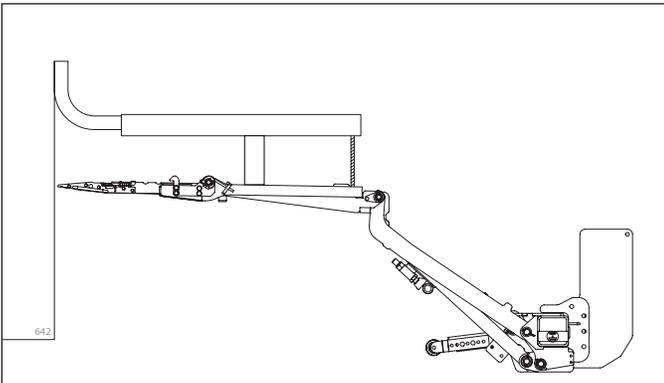
5. Lifting Fixture

When installing several liftgates a year, the following lifting fixture can save time and make the installation process more efficient. A prefabricated fixture is available through Anthony Liftgates by ordering part number ATU-1613 Lifting Fixture.

This lifting fixture must be made specifically for the type and design of the particular forklift used in the installation. Remember, the materials used to construct the lifting fixture must be capable of lifting and supporting the liftgate being installed. The lifting fixture must also contain a retaining method to hold it onto the forklift.

WARNING  The construction of the lifting fixture must satisfy the user to be safe and properly constructed. Failure to use the proper materials or material thickness can result in serious injury or death.

- This lifting fixture is intended for use on liftgates equipped with steel or aluminum platforms.
- Make the lifting fixture from tubular steel 1/4 inch thick or thicker.
- Make sure the lifting fixture is wide enough to support the liftgate and to accommodate the width of the forks on the forklift.
- Make the lifting bolt from 5/8 inch threaded rod. Use a washer and nut to fasten the lifting fixture to the steel platform (not used to lift aluminum platforms).
- The lifting bolt should be long enough to go through the lifting hole in a steel platform and allow the lifting fixture to remain level (not used to lift aluminum platforms).
- Aluminum platforms can use the lifting fixture by securing the platform to the fixture with heavy-duty chains. The chains are wrapped around the platform and over the lifting fixture.



6. Maintenance

6.1 Monthly Inspection

All Anthony Tuckunder Liftgates are "Service-Free" which means they have lubrication-free bushings at the major pivot points.

Mechanical Components

1. Make sure the liftgate operates freely and smoothly throughout its entire range of movement.
2. Check for damage to the liftgate, such as bent or distorted parts. Check for excessively worn parts.
3. Check for cracked welds which may have resulted from overload or abuse.
4. Check all pins and pivot points. Secure all pins with proper retainers. Replace worn bushings and pins.
5. Oil the roller of the wheel arm and make sure it spins freely.
6. Make sure the platform is angled upward from truck bed 1/2 to 3/4 inch when raised to bed height. See Platform Adjustment for shimming procedure, "4.5 Platform Adjustment" on page 10.

Power Unit

7. Check for oil leaks in the following areas:
 - a. Hydraulic lift cylinder.
 - b. Hydraulic hoses. Replace any hose that shows signs of leakage or excessive abrasion of the covering.
 - c. Check all hydraulic fittings for damage or leakage. Tighten fittings to stop leaks or replace if damaged.
8. Check reservoir oil level. Refer to section "5.3 Check Power Module Fluid Level" on page 24. Fill as required with Hyken Glacial Blu.

NOTICE

To prevent damage to the pump, use only the recommended Hyken Glacial Blu anti-wear, low-viscosity, hydraulic fluid in the power unit reservoir.

In an emergency, use any anti-wear hydraulic fluid, but flush the system and replace it with our recommended fluid soon as reasonably possible. Do not mix hydraulic oil and automatic transmission fluid due to possible compatibility problems.

Use the appropriate viscosity of fluid based on the surrounding climate conditions. Viscosity is important because the pump will not cause a temperature increase to the oil in the reservoir, like a typical closed-loop hydraulic system.

DO NOT use brake fluid in place of our recommended fluids.

Electrical Components

9. Make sure all electrical wires, switches, and connections are in good working condition and operate properly.

10. Proper wire connection is crucial to the life and dependability of the liftgate's electrical components. A poor connection can result in low Voltage, causing the liftgate to work incorrectly.

11. Check the fluid level of the vehicle battery.

Safety Signs and Informational Decals

12. Examine all warning, capacity, and operational decals. If they are not readable, replace them. Decals may be obtained free of charge your authorized dealer.

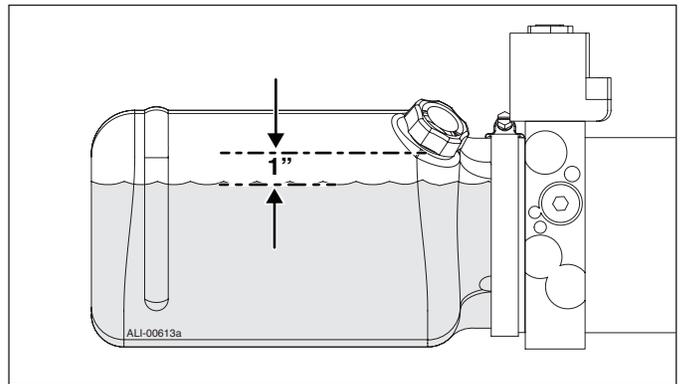
6.2 Semi-Annual Inspection

In addition to the items requiring monthly inspection, also inspect the condition of the hydraulic fluid.

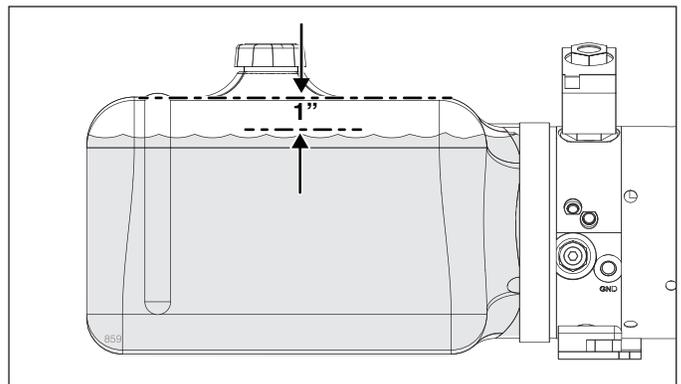
If the oil in the hydraulic tank is dirty, drain the oil and flush the entire system. Refill the system with the recommended oil outlined in Step 8 of the "Monthly Inspection" section.

6.3 Check Power Module Fluid Level

Power Down Models: Check the fluid level with the platform fully raised. The oil level should be approximately 1 inch below the filler cap.



Gravity Down Models: Check the fluid level with the platform resting on the ground. The oil level should be a maximum of 1 inch from the top of the reservoir.



NOTICE

To prevent damage to the pump, use only the recommended Hyken Glacial Blu anti-wear, low-viscosity, hydraulic fluid in the power unit reservoir.

In an emergency, use any anti-wear hydraulic fluid, but flush the system and replace it with our recommended fluid soon as reasonably possible. Do not mix hydraulic oil and automatic transmission fluid due to possible compatibility problems.

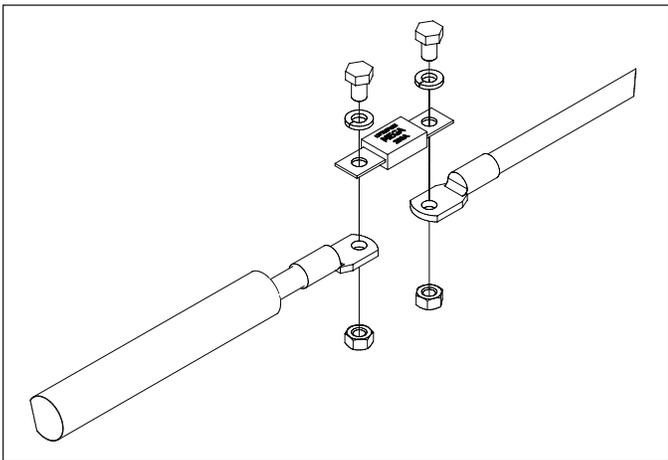
Use the appropriate viscosity of fluid based on the surrounding climate conditions. Viscosity is important because the pump will not cause a temperature increase to the oil in the reservoir, like a typical closed-loop hydraulic system.

DO NOT use brake fluid in place of our recommended fluids.

6.4 Power Cable Fuse - 200 Amp

CAUTION

To avoid injury or property damage, disconnect the liftgate's power cable from the battery before starting to replace the fuse. An "arc" can occur, resulting in personal injury or property damage if the power cable is connected to the battery.



1. Cut the heat shrink tube to expose the fuse, mounting hardware, and lugs.
2. Remove the bolt, washer, and lock washer from each end of the fuse.
3. Use the A-133610, 200 Hi-Amp Fuse Replacement Kit for the replacement parts.
4. Slide the new heat shrink tube over one side of the wiring.
5. Bolt the new fuse to the cable lugs using the bolts, washers, and lock washer, as shown.
6. Slide the heat shrink tube over the fuse, hardware, and lugs. Using a heat gun apply heat evenly to shrink the tubing.
7. Reconnect the power cable to the battery after you are certain the platform area is clear.

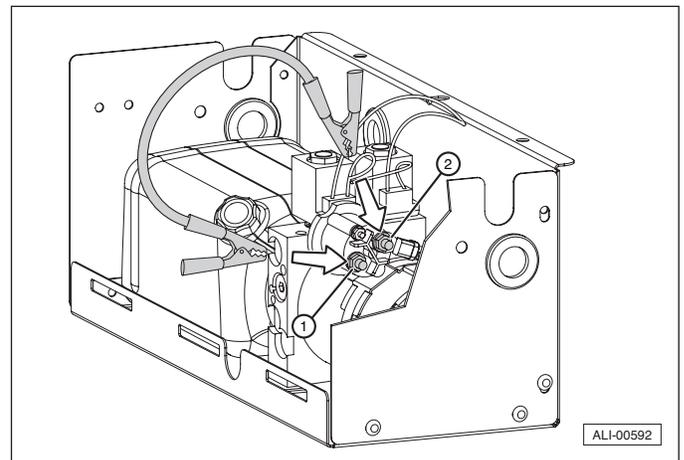
Note: If the fuse continues to blow, contact your authorized dealer.

6.5 Checking the Power Cable

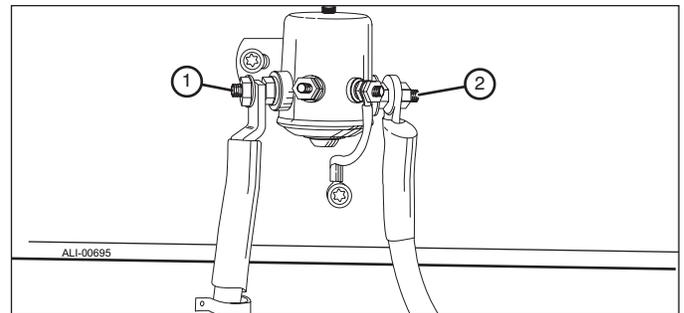
To check for a defective power cable, run the motor directly from a spare battery using jumper cables.

1. Remove the battery connection to the motor.
2. Connect the negative jumper cable (ground) directly to the liftgate. Connect the positive cable to the terminal on the motor start solenoid.
3. If the motor operates, the battery cable is defective and should be replaced.

6.6 Checking Motor Start Solenoid and Power Cut-off Solenoid



Motor start solenoid.



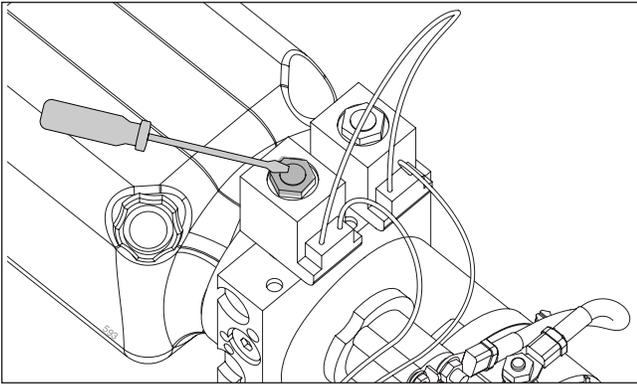
Power cut-off solenoid.

Both the motor start solenoid and power cut-off solenoid can be checked by bypassing the solenoid itself.

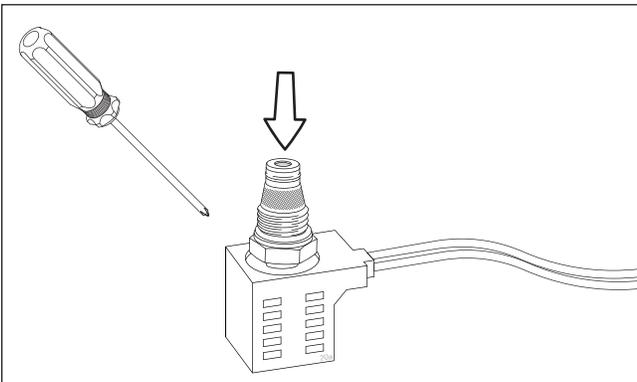
1. Use 12 Volt jumper cables for this test.
2. Connect one jumper cable to the battery side of the solenoid. Connect the other cable to the motor side of the solenoid.
3. If the liftgate is activated, the solenoid is defective and should be replaced. Replacement part — ATU-120 (motor start solenoid) or A-150263 (power cut-off solenoid).

6.7 Checking Valve Cartridge and Solenoid

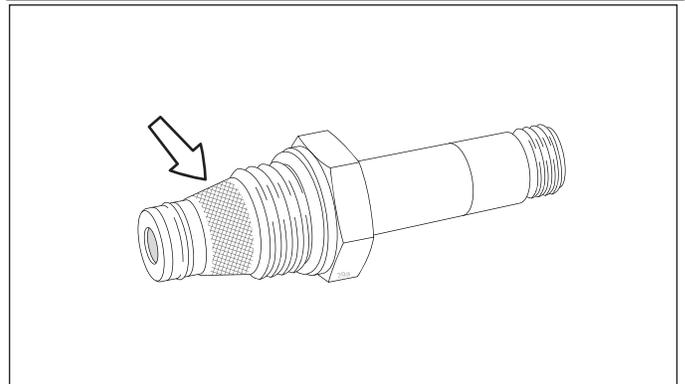
1. Place the liftgate on the ground in the open position.
2. Place a steel screwdriver over the top of the power down valve solenoid.



3. Momentarily activate the control switch in the DOWN position. The screwdriver should be attracted to the magnetic field created by the solenoid.
4. Repeat the process to check the power up solenoid. Momentarily activate the control switch in the UP position.
5. If no magnetic pull is produced, the solenoid is defective and should be replaced. If the solenoid is activated, check the cartridge valve.
6. Remove the solenoid from the valve assembly. Replacement part — A-176315.
7. Remove the valve cartridge from the pump body. Replacement part — A-130216 (lowering valve) or A-130215 (raising valve).
8. Clean the cartridge and blow it dry with compressed air (not greater than 30 psi). Also, blow out the pump body.
9. Use a small screwdriver and carefully press on the spool inside the cartridge. If the spool moves freely, the cartridge is good. If it does not move, replace the cartridge, as the spool could be bent, pitted, or damaged in some other way.

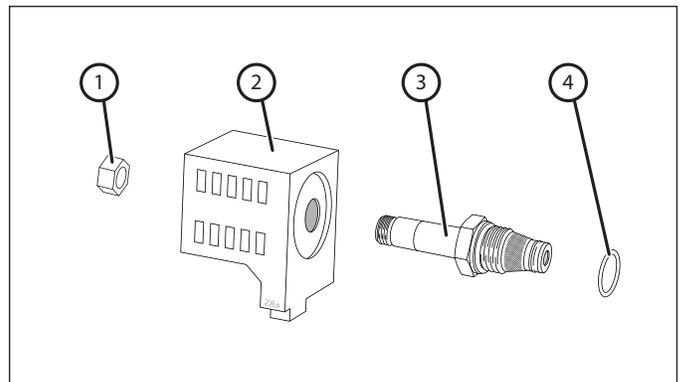
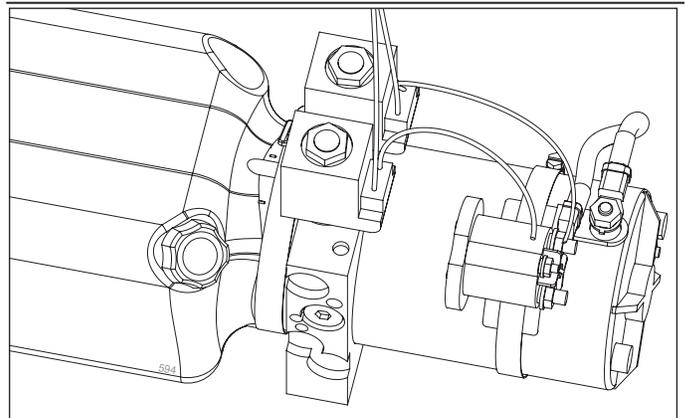


6.8 Solenoid Valve Screen



If the solenoid is working electrically, check the debris screen and clean if dirty.

6.9 Replacing the Solenoid Valve

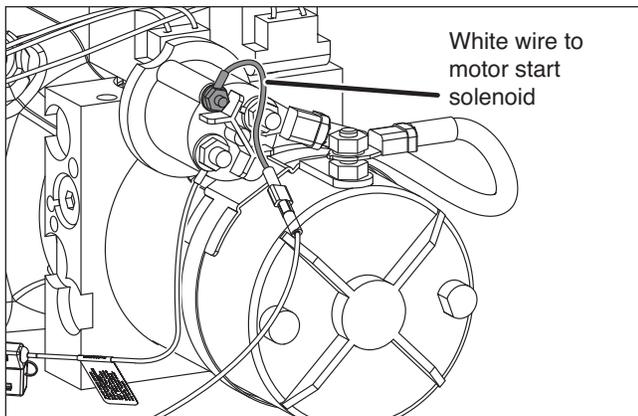


1. While installed in the pump, remove nut (1).
2. Remove coil (2) from cartridge (3).
3. Remove cartridge (3) from pump body.
4. O-ring (4) is not required on current models and can be discarded.

6.10 Checking Cylinder Piston Seals

6.10.1 Power Down Models

1. First, check the lowering valve. Make sure it is operating correctly, and the valve is not sticking or dirty. Replace the valve if necessary. Refer to “5.7 Checking Valve Cartridge and Solenoid” on page 26.
2. Raise the platform approximately 12 inches off of the floor.
3. Place a floor jack securely under the platform to support its full weight. An overhead lifting device could also be used.
4. Raise the floor jack until the platform begins to raise slightly.
5. Disconnect the white wire from the motor start solenoid. Place electricians tape around the end of the wire to prevent it from making a ground connection.



6. With the platform securely supported by the lifting device, activate the control switch in the DOWN position and hold the switch for 15 seconds. This will release any pressure in the power down hose.
7. Now activate the control switch in the UP position and hold it for 15 seconds. This will release any pressure in the power up hose.
8. Repeat holding the control switch in the DOWN position for 15 seconds and again in the UP position for 15 seconds. This should release any trapped pressure.
9. Carefully remove the flow control valve from the rod end of the cylinder. Plug or cap the fitting.
10. Remove the hose from the cap end of the cylinder and attach a temporary hose to catch any potential leakage from the cylinder. Place the end of the hose in a minimum one gallon container.
11. Lower the floor jack or lifting device.
12. Major seal damage will be apparent right away as the platform would begin to slowly lower and fluid will come out of the hose. Less extensive damage may take longer to be seen. Allow the platform to sit for several hours or overnight.



WARNING



Make sure nothing or no one could accidentally go under the platform while the hoses are disconnected.

13. If the platform does not lower, the seals are not the problem, most likely it is a faulty lowering valve.
14. Reconnect the white wire to the motor start terminal. Raise and lower the platform several times to remove any trapped air.

6.10.2 Gravity Down Models

1. Completely raise the platform.



WARNING



Do not stand under the platform.

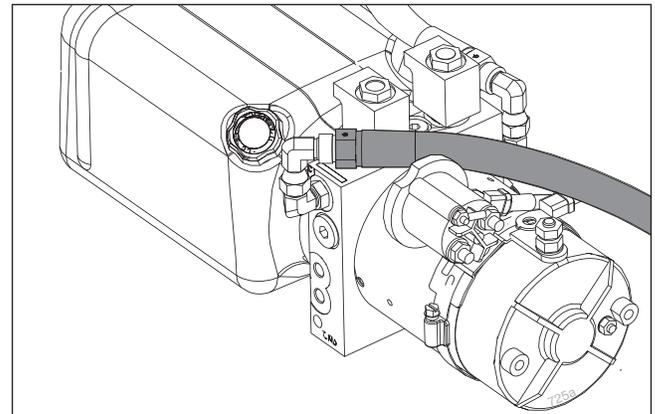
2. Remove breather tube from the cap end of the cylinder and attach a short piece of hose routed into a hand-held container.
3. Activate the control switch in the UP position.
4. If oil is continuously pumped out of the hose, replace the cylinder.

6.11 Checking System Pressure

For gravity down systems, there is only one relief valve (power up). Power down models have two relief valve settings; one for raising the platform (power up, upper adjusting screw) and one for lowering the platform (power down, lower adjusting screw).

To check the “power up” pressure setting:

1. Place the liftgate on the ground and remove the pressure hose from the power up port of the pump.



Power UP Model Pressure Hose Shown

2. Install a T-fitting (customer supplied) into the power up port.
3. Connect a pressure gauge and reconnect the hydraulic hose.

The pressure gauge must be rated above the maximum pressure of the liftgate. For example, use a 4000 psi pressure gauge on a 3000 psi maximum capacity liftgate.

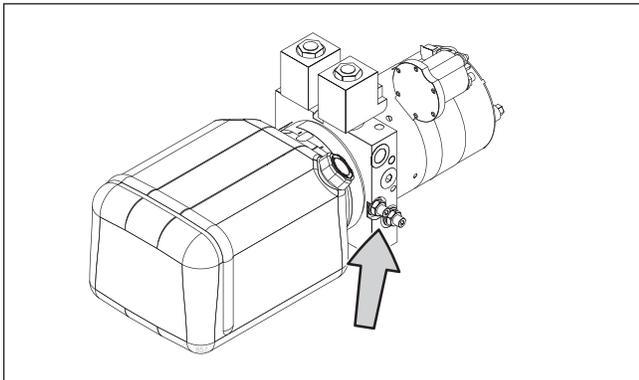
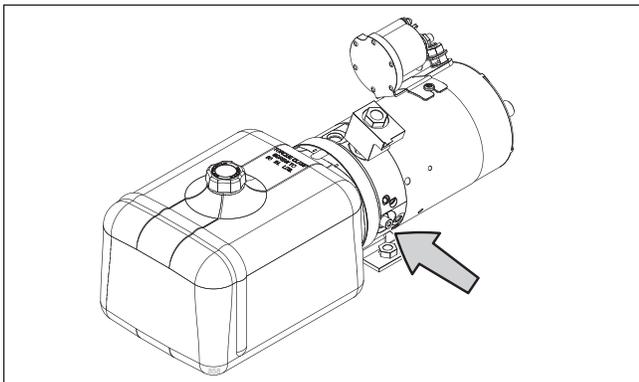
4. Raise the liftgate and check the pressure on the gauge.

Low Pressure Threshold Chart		
Model	Power Up	Power Down
1600	2800 psi	350 psi
2000	2800 psi	
2500	1850 psi	

WARNING  Do not stand or work in the platform's work area while operating the liftgate. Place the pressure gauge so it can be read while operating the liftgate from a safe location. Serious injury or death could result if this action is not followed.

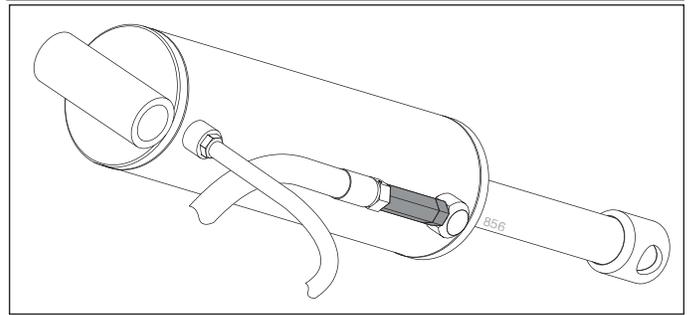
5. To adjust the pressure, loosen the lock nut and turn Allen screw clockwise to increase pressure or counterclockwise to decrease the pressure. *Retighten locknut, and retest the pressure setting.*

Note: To rest the pressure from zero, turn the adjusting screw in all the way, then back out one full turn. Retighten lock nut, test liftgate with load. If liftgate performs well, set pump pressure according to factory settings.



6. Check the "power down" relief valve pressure in the same way as the "power up" by installing a T-fitting and pressure gauge in the power down port.

6.12 Checking Flow Control Valve

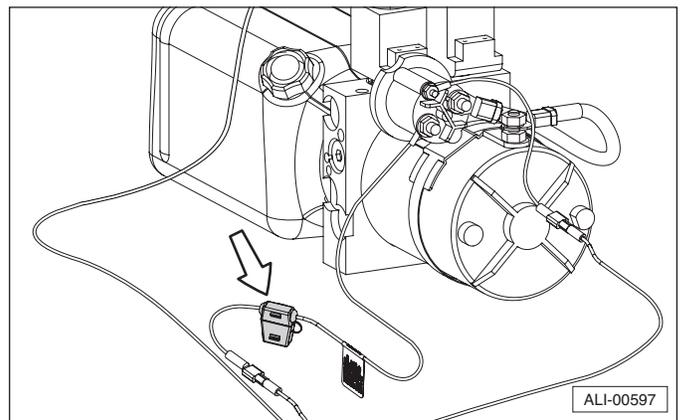
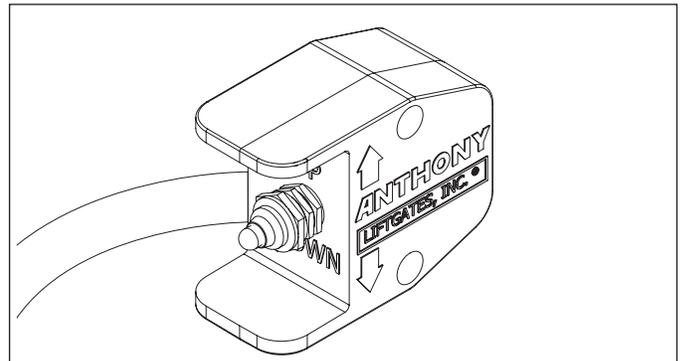


If the cylinder does not operate or operates slower than normal, remove the flow control valve and hook the hydraulic hose directly to the cylinder. If the cylinder operates properly, replace the flow control valve. Replacement part — A-130102.

WARNING  Do not operate the liftgate without the flow control valve. Serious injury or death could result if this action is not followed.

6.13 Control Switch Fuse - 10 Amp

If the control switch is not operating the liftgate, check the in-line fuse located on the control cable inside the power unit box. Replace with A-150438 10A Fuse.



7. Troubleshooting Chart

Troubleshooting Chart		
Problem	Possible Causes	Possible Solution
Motor does not run when control switch is activated.	Cab cut-off switch.	Turn switch to ON position. Replacement part — A-150031
	Optional power cut-off solenoid.	Check solenoid. "4.8 Checking Motor Start Solenoid and Power Cut-off Solenoid" on page 11. Replacement part — A-150263
	Dead battery.	Make sure battery is fully charged. Check for loose or corroded battery connections. Replace or recharge battery.
	Circuit protection (200 Amp fuse).	Replace fuse. Refer to "4.6 Power Cable Fuse - 200 Amp" on page 11. Replacement part — A-133610.
	Control switch (10 Amp) fuse is blown.	Replace the fuse inside power unit box. If problem continues, check for shorts in the electrical system. "4.15 Control Switch Fuse - 10 Amp" on page 14 Replacement part — A-150438.
	Battery cable.	Inspect main power cable from batteries, to circuit breakers, to cut-off switch to power unit. To verify a faulty cable, connect motor directly to a spare battery using the procedure in the Maintenance section. Replacement part — A-133604
	Corroded or loose wire connections.	Check all wire connections on power unit for corrosion or looseness. Replace defective terminals with 'heat shrink' factory type terminals.
	Motor start solenoid.	Check solenoid. "4.8 Checking Motor Start Solenoid and Power Cut-off Solenoid" on page 11. Replacement part — ATU-120.
	Power unit motor.	If the motor is determined to be defective, it should be replaced. Defective motors are typically caused by weak batteries (low Voltage), loose connections, corrosion, or a poor ground. Replacement part — A-150018 If the motor does not operate in freezing conditions, make sure the motor housing does not contain water.
Sagging platform.	Normal wear.	Add shims to platform. "4.5 Platform Adjustment" on page 10. Replacement part — ATU-071 SHIM, 14GA
	Bushing wear where lift arms connect to platform.	Replace bushings. Refer to separate Parts Manual.
	Structural damage.	Replace worn parts. Refer to separate Parts Manual.

Troubleshooting Chart		
Problem	Possible Causes	Possible Solution
Foaming oil.	Air in the hydraulic hose(s) or cylinder.	Fill reservoir with proper fluid. Refer to "4.1 Monthly Inspection" on page 9 for oil specifications and "4.3 Check Power Module Fluid Level" on page 9 for oil level. Raise and lower platform several times to remove any trapped air.
	Filter screen.	Filter screen in pump reservoir is damaged or plugged with dirt. Replace filter screen. Replacement part — A-150016.
	Broken or loose fluid return tube.	Remove oil reservoir and make sure return tube is below oil level. If tube has turned or fallen out, reinstall it into the pump housing. Use a center punch to "stake" tube into position. Replacement part — A-150015
Motor runs, but liftgate will not open or platform will not lower to the ground.	Structural damage. Check clearance between platform and floor extension.	Fix damage. Replace worn parts. Refer to the separate Parts Manual.
	Latch pin.	Slide the latch pin to the open position.
	Lowering valve solenoid (power down models only).	Check the solenoid. "4.9 Checking Valve Cartridge and Solenoid" on page 12. Replacement part — A-176315.
	Lowering valve cartridge (power down models only).	With platform on ground, check, remove, and clean valve cartridge using the procedure in section "4.9 Checking Valve Cartridge and Solenoid" on page 12. If plunger will not move freely, replace. Replacement part — A-130216.
	Cylinder seals.	Cylinder piston seal are damaged allowing fluid to leak past piston when trying to raise platform. Replace the cylinder, repair is not practical. Refer to section "4.12 Checking Cylinder Piston Seals" on page 12. Replacement part — A-130113 Cylinder 3" or A-130114 Cylinder 4".
	Flow control valve.	Remove flow control valve and hook hydraulic hose directly to the cylinder. If the cylinder operates properly, replace the valve. "4.14 Checking Flow Control Valve" on page 14. Replacement part — A-130102.
Latch pin is broken or bent.	Operator has lowered platform without releasing latch pin.	The latch pin is only used to prevent the liftgate from opening due to a pressure leak or pressure bleed-off over an extended period of time. Always release latch before opening liftgate.
Platform raises truck when lowered to the ground (power down models only).	Power down system pressure is set too high.	See section "4.13 Checking System Pressure" on page 13.
Platform will not open.	Platform operating area is not clear.	Clear platform operating area.
	Latch pin will not slide freely to release liftgate.	Activate the "UP" switch and raise the liftgate to the fully stored position. The latch pin should slide freely.

Troubleshooting Chart		
Problem	Possible Causes	Possible Solution
Motor runs, but platform will not raise, will not raise rated capacity, or raises but drifts down when control switch is released.	Load capacity has been exceeded.	Verify load capacity and reduce load weight.
	Structural damage.	Replace damaged parts. Refer to the separate Parts Manual.
	Low fluid level.	Fill reservoir with proper fluid. Refer to "4.1 Monthly Inspection" on page 9 for oil specifications and "4.3 Check Power Module Fluid Level" on page 9 for oil level.
	Low Voltage.	Inspect the battery connection terminals and check the battery's Voltage (9 Volts minimum).
	Lowering valve (power down models only).	Valve may not be fully closing. Cartridge may need cleaning or replacement. See section "4.9 Checking Valve Cartridge and Solenoid" on page 12. Replacement part — A-130216
	Defective piston seals.	Cylinder piston seals are damaged allowing fluid to leak past piston when raising platform. Replace the cylinder, repair is not practical. Refer to section "4.12 Checking Cylinder Piston Seals" on page 12. Replacement part — A-130113 Cylinder 3" or A-130114 Cylinder 4".
Platform raises partially and stops.	Hydraulic pump is worn.	Replace power unit. Replacement part — A-130117 Power Down or A-130116 Gravity Down.
	Load capacity has been exceeded.	Verify load capacity and adjust load weight.
	Structural damage.	Replace damaged parts. Refer to the separate Parts Manual.
	Low Voltage.	Recharge battery (if less than 9 Volts).
Platform will not lower.	Low pressure.	Fill reservoir with proper fluid. Refer to "4.1 Monthly Inspection" on page 9 for oil level and oil specifications. Also check pump and motor. "4.1 Monthly Inspection" on page 9.
	Platform operating area is not clear.	Clear area.
	Structural damage.	Replace damaged parts. Refer to the separate Parts Manual.
	Low Voltage.	Recharge battery (if less than 9 Volts).
	Lowering valve (power down models only).	Solenoid or cartridge may need cleaning or replacement. Refer to section "4.9 Checking Valve Cartridge and Solenoid" on page 12. Replacement part — A-130216.
	Hydraulic pump and motor.	Replace power unit. Refer to the separate Parts Manual.

Troubleshooting Chart		
Problem	Possible Causes	Possible Solution
Platform lowers extremely slow.	Low oil level on power down models.	Fill reservoir with proper fluid. Refer to "4.1 Monthly Inspection" on page 9 for oil specifications and "4.3 Check Power Module Fluid Level" on page 9 for oil level.
	Improper oil in hydraulic reservoir.	Fill reservoir with proper fluid. Refer to "4.1 Monthly Inspection" on page 9 for oil specifications and "4.3 Check Power Module Fluid Level" on page 9 for oil level.
	Bushing wear where lift arms connect to platform.	Replace bushings. Refer to the separate Parts Manual.
	Damaged or kinked hydraulic hose.	Repair or replace. Refer to the separate Parts Manual.
	Cylinder rod is scored, pitted, or bent.	Replace the cylinder, repair is not practical. Replacement part — A-130113 Cylinder 3" or A-130114 Cylinder 4".
	Flow control valve.	Remove flow control valve and hook hydraulic hose directly to the cylinder. If the cylinder operates properly, replace the valve. "4.14 Checking Flow Control Valve" on page 14. Replacement part — A-130102.
	Lowering valve (power down models only).	Solenoid or cartridge may need cleaning or replacement. Refer to section "4.9 Checking Valve Cartridge and Solenoid" on page 12. Replacement part — A-130216.
Motor runs, but platform will not lift stated load or drifts down after being raised.	Low fluid level has caused air in the lines.	Fill reservoir with proper fluid. Refer to "4.3 Check Power Module Fluid Level" on page 9 for oil level and specifications. Raise and lower the platform several times to expel any trapped air.
	Lowering valve stuck in the open position (power down models only).	With platform on ground, check, remove, and clean valve cartridge using the procedure in section "4.9 Checking Valve Cartridge and Solenoid" on page 12. If plunger will not move freely, replace. Replacement part — A-130216.
	Damaged cylinder piston seals.	Refer to section "4.12 Checking Cylinder Piston Seals" on page 12 for additional information.
	Relief valve is set too low or clogged with contaminants.	Loosen locknut and turn Allen screw clockwise to increase pressure. Remove and clean if necessary.

8. Decals

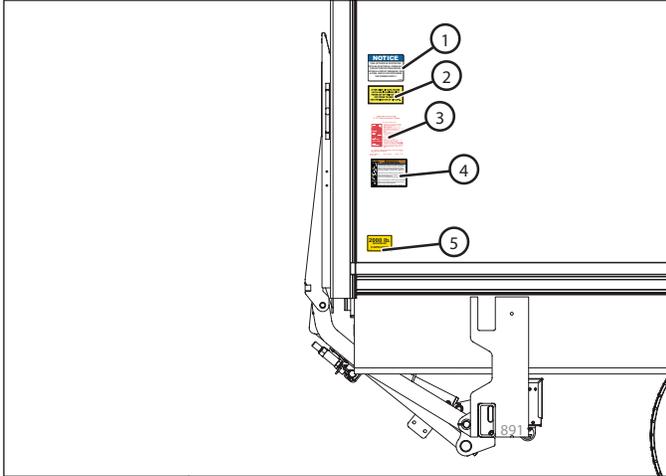
SAFETY INSTRUCTIONS



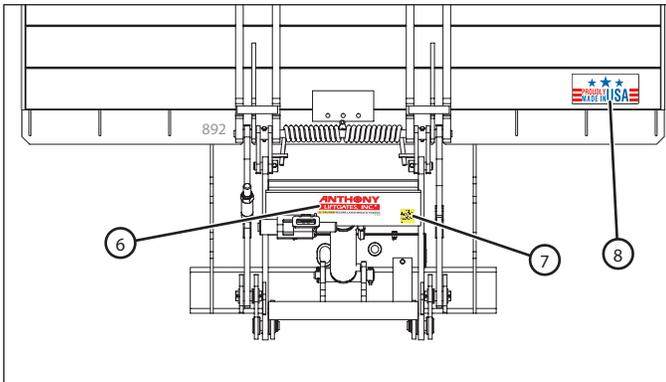
To prevent possible injuries due to improper operation, make sure all

decals are attached to the liftgate and truck and are legible.

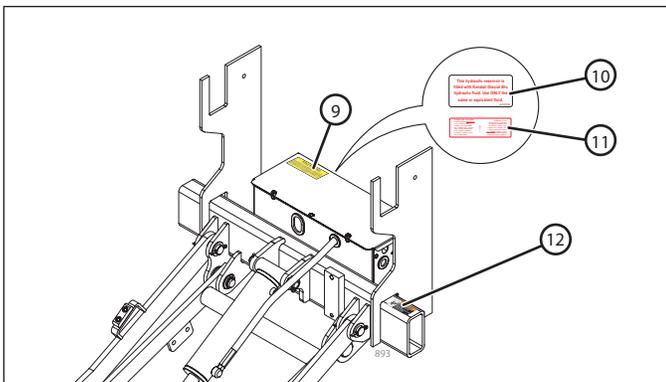
1. Attach decals 1, 2, 3, 4, and 5 to the truck body, as shown. If the truck is a flatbed, place the decals as close to the control switch as possible and still clearly visible.



2. Make sure factory-installed decals 6, 7, and 8 are attached to the lift arms and platform.



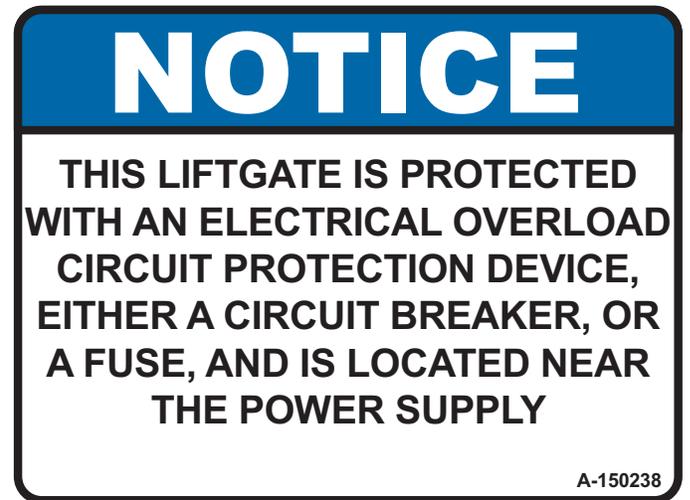
3. Make sure factory-installed decals 9, 10, 11, and 12 are installed on and inside the power unit and on the adapter frame tube.



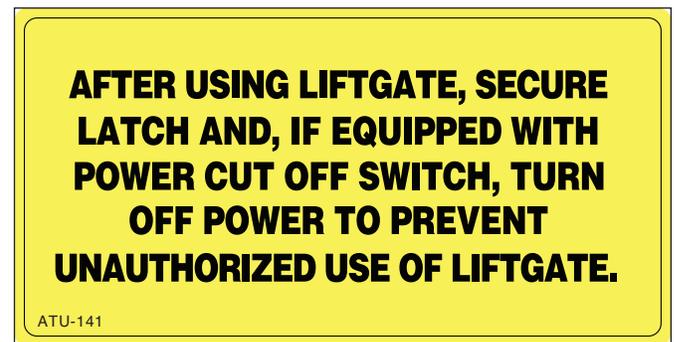
Item	Part Number	Description
1	A-150238	Notice - Protected With Electrical Overload Circuit Breaker
2	ATU-141	After Using Liftgate
3	A-131023	Operating Instructions
4	A-131115	Warning, Personal Injury
5	ATU-145 A-131020 ATU-174	1600 Lb. Maximum Capacity 2000 Lb. Maximum Capacity 2500 Lb. Maximum Capacity
6*	A-131034	Anthony Label
7*	A-131017	Note - Disengage Latch
8*	A-150601	Made In The USA
9*	A-131028	Weld Warning
10*	A-131133	Hydraulic Fluid
11*	A-131001	10 Amp Fuse Changing Procedure (attached to control wiring in pump box)
12*	A-131125	Warning, Galvanized Fumes Hazard (galvanized models only)

*Factory Installed – Installer must make sure all decals are attached, as shown.

1 — A-150238



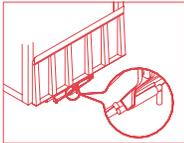
2 — ATU-141



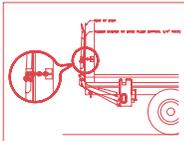
3 — A-131023

OPERATING INSTRUCTIONS
For "AC" Series Conventional Liftgates

OPEN PLATFORM TO HORIZONTAL POSITION.

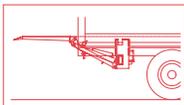


- A) Unlatch the "latch pin", near the center of the liftgate mechanism, by twisting, then sliding it past the "latch block" welded to the radius arm.
- B) Remove the "hook and chain" from each side of the platform, streetside first.
- C) Unfold the platform, by pulling back on the platform, until in horizontal position (this is done manually).
- D) Press the "Down" switch, on the control, to lower the platform.
- E) Press the "Up" switch, on the control, to raise the platform.
- F) Load and unload cargo with the platform at either the truck floor level or the ground. Repeat step D and E to raise and lower cargo.



STORING PLATFORM FOR TRANSIT

- A) Raise the platform to truck bed level.
- B) Fold the platform, by lifting up on the platform, until it's in the vertical position (this is done manually).
- C) Re-attach the "hook and chain" on each side of the platform, curbside first. Slip the large link of chain over the "staple" on the platform. Then, insert the hook through the "staple". The hook should go through the bottom of the staple first.
- D) Set the "latch pin" by twisting, then sliding it past the "latch block" welded to the radius arm near the center of the liftgate.



Note: If liftgate has a "Main Power Cut-off Switch" be certain to turn it "Off" when not in use to prevent unauthorized use!

Anthony Liftgates, Inc. 1037 W. Howard St. Pontiac, IL 61764
Part #A-131023 894

5 — ATU-145, A-131020, ATU-147



Make sure the proper "MAXIMUM CAPACITY" decal is

placed on the truck for the appropriate lifting capacity of the liftgate being installed. Do not put a higher rated decal on a liftgate with a lower capacity; this could result in liftgate damage or possibly personal injury.

4 — A-131115

ANTHONY LIFTGATES, INC.	
WARNING	
PERSONAL INJURY HAZARD	
<p>Operation may require user to stand on platform. To prevent injury or death of operators or bystanders:</p>	
	<p>• Read and follow operator/owner manual for safety, operation, inspection, and maintenance instructions.</p>
	<p>• Do not place unstable or unsafe loads on platform.</p>
	<p>• Do not allow loads to extend over edge of platform.</p>
	<p>• Do not exceed capacity or use liftgate for anything other than intended purpose.</p>
	<p>• Be aware of surroundings when operating liftgate.</p>
	<p>• Do not allow body parts to contact moving components.</p>
	<p>• Ensure footing is stable and stand away from edge before raising or lowering platform.</p>
	<p>• Owner/operators must properly maintain liftgate.</p>
<small>A-131115</small>	

6 — A-131034

ANTHONY

LIFTGATES, INC.®

CAUTION SECURE LATCH WHILE IN TRANSIT.

A-131034

7 — A-131017

Note:

Disengage "latch" before attempting to use liftgate.

Engage "latch" after using liftgate.

A-131017

8 — A-150601



12 — A-131125 (attached only to galvanized liftgates)

⚠ WARNING

Welding on galvanized and stainless steel parts gives off especially hazardous fumes.

- Remove galvanizing from area to weld.
- Provide good ventilation.
- Wear suitable respirator.

A-131125

9 — A-131028

WELD WARNING!
For all Anthony "Service-Free" Liftgates

When performing welding during installation, service, or repair on Anthony "SF" Service-Free liftgates, the actual part being welded must be grounded. Failure to follow this instruction can cause the welding ground to travel through the high pressure hydraulic hose as the source of ground, thus causing damage to the hose from the powerful electric current. The resulting damage to the hose may or may not be visible and can cause unexpected catastrophic failure of the lift. If you have any questions, please contact Anthony Liftgates, Inc., Pontiac, Illinois, USA (800-482-0003).

A-131028

10 — A-131133

This hydraulic reservoir is filled with Kendall Glacial Blu hydraulic fluid. Use **ONLY** the same or equivalent fluid.

A-131133

11 — A-131001 (attached to control cable)

10 AMP FUSE & HOLDER
Protects against dead shorts in this "control circuit".
If blown, pull "fuse holder cap", replace fuse, replace "cap". If fuse continues to blow, contact a qualified mechanic, "control circuit" may be damaged.

A-131001

10 AMP FUSE & HOLDER
Protects against dead shorts in this "control circuit".
If blown, pull "fuse holder cap", replace fuse, replace "cap". If fuse continues to blow, contact a qualified mechanic, "control circuit" may be damaged.

ANTHONY
LIFTGATES, INC.®



THE ORIGINAL NAME IN LIFTGATES - SINCE 1941

ANTHONY
LIFTGATES, INC.®

AC

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