ANTHONY LIFTGATES, INC.®

# SM

**SM-1800**
**SM-2500**
**SM-3000**

## INSTALLATION MANUAL


QUALITY, RELIABILITY, CUSTOMER SERVICE

MADE IN THE USA

# Contents



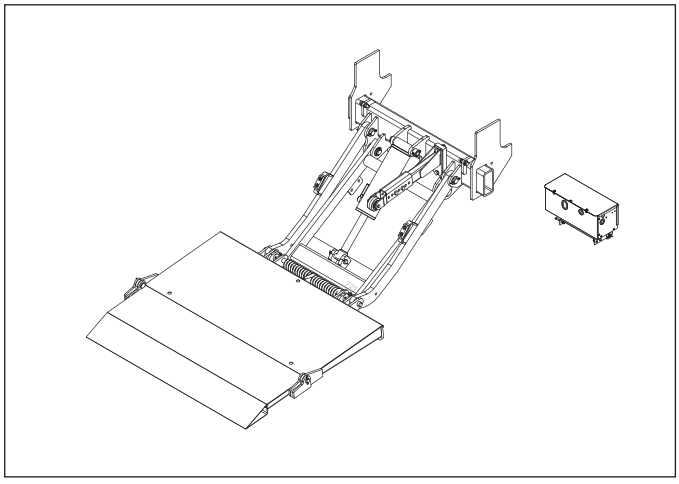
# 1. General Information

## 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. Side Mount liftgates ship 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 Side Mount Tuckunder™ liftgate.



Typical Anthony Liftgates Side Mount Tuckunder Model.

## 1.2 General Safety

**WARNING** **Read, Understand, and Follow the Manual**

**The success or failure of this liftgate to properly and efficiently operate depends 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 installer 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 the vehicle's compliance to any existing State or Federal standard, such as FMVSS 105 – Hydraulic and Electric Brake Systems. Consult each truck manufacturer's recommendations for compliance.**

**Also, make sure the weight of the liftgate and its fully loaded capacity will not overbalance the truck, possibly tipping the truck.**

## 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 mechanical 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 4 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 and mounting brackets, 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, refer to the Anthony Liftgates website **www.anthonyliftgates.com** to find the most current version of the reference material.

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.

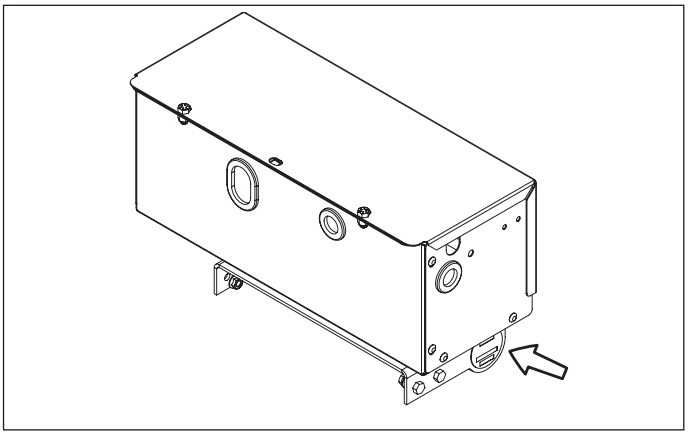
**Anthony Liftgates, Inc.**
**1037 West Howard Street**
**Pontiac, Illinois 61764**
**(815) 842-3383 or 800-482-0003**

### 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 serial number information.



Before calling with questions or other product information requests, have the serial number, model number, and lift capacity of the liftgate available. This information is stamped into the identification plate on the side of the power unit.

## 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** **Being unaware of safety recommendations can lead to personal injury. The installer must make sure all decals are attached to both the liftgate and truck and are clearly legible.**

# 2. Safety

The success or failure of this liftgate to properly operate depends on the installation; however, the most important part of the installation is your safety.

## 2.1 Safety is Your Responsibility

It is the responsibility of the installer to understand the 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 an essential 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 others.

DO NOT proceed with any installation process 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.

## 2.2 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 "2.5.3 Hazard Avoidance" on page 6.

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

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

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

**SAFETY INSTRUCTIONS** **Indicates specific safety-related instructions or procedures.**

***Note:*** *Contains additional information important to a procedure.*

## 2.3 Safety Rules

### 2.3.1 Personal Protection

**WARNING** **During installation, do not work under the liftgate while it is suspended from the lifting device or after it is tack welded to the truck. Failure of the lifting device could cause severe crushing injuries. Do not remove the lifting device until the liftgate is securely tack welded onto the truck frame. Unintentional lowering of the liftgate could also cause severe injury.**

**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 such as welders gloves and flame-resistant welders jacket.**

**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 to the side of the platform, clear of the liftgate when it is operating.**

**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 parts laying around in the work area.**

**Place chocks in front and behind the wheels to prevent the truck from moving during the installation of the liftgate, which could result in a serious crushing injury.**

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

**Do not place hands or feet into pinch point areas, between the platform and the floor extension, or under the edge of the platform.**

**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 or plasma torch, and welding equipment.**

**CAUTION** To prevent possible injuries due to improper operation, make sure all decals are attached to the liftgate and truck and are clearly legible to the user.

### 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 wires, 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 severe 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 - Plasma 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.

**WARNING** Always follow all State and Federal health and safety laws and/or local regulations when using an arc welder, MIG welder, plasma cutter, 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 or plasma cutter, 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

**CAUTION**

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

## 2.5 Safety Icons Nomenclature

This manual has numerous safety icons that visually help alert you to potential personal injury hazards.

### 2.5.1 Personal Protection/ Important Information


Read the manual


Eye protection


Face shield / welding helmet


Breathing protection


Head protection


Protective shoes


Hand protection / protective clothing


Use two people when lifting heavy objects


Use proper tools


Set parking brake


Remove ignition key

Use only OEM parts


Properly install parts


Damaged safety signs

### 2.5.2 Prohibited Actions


Do not alter or modify


Do not weld


No smoking


No open flame


No alcohol


No drugs

### 2.5.3 Hazard Avoidance


Safety alert symbol


Slipping injury


Tripping injury


Pinch point hazard (hand)


Pinch hazard (foot)


Dangerous fumes


Adequate ventilation


Crush hazard


Crush hazard


Crush hazard (chock wheels)


Set parking braking, remove key / rollover hazard


Fall hazard (truck)


Fall hazard (platform)


Damaged parts hazard

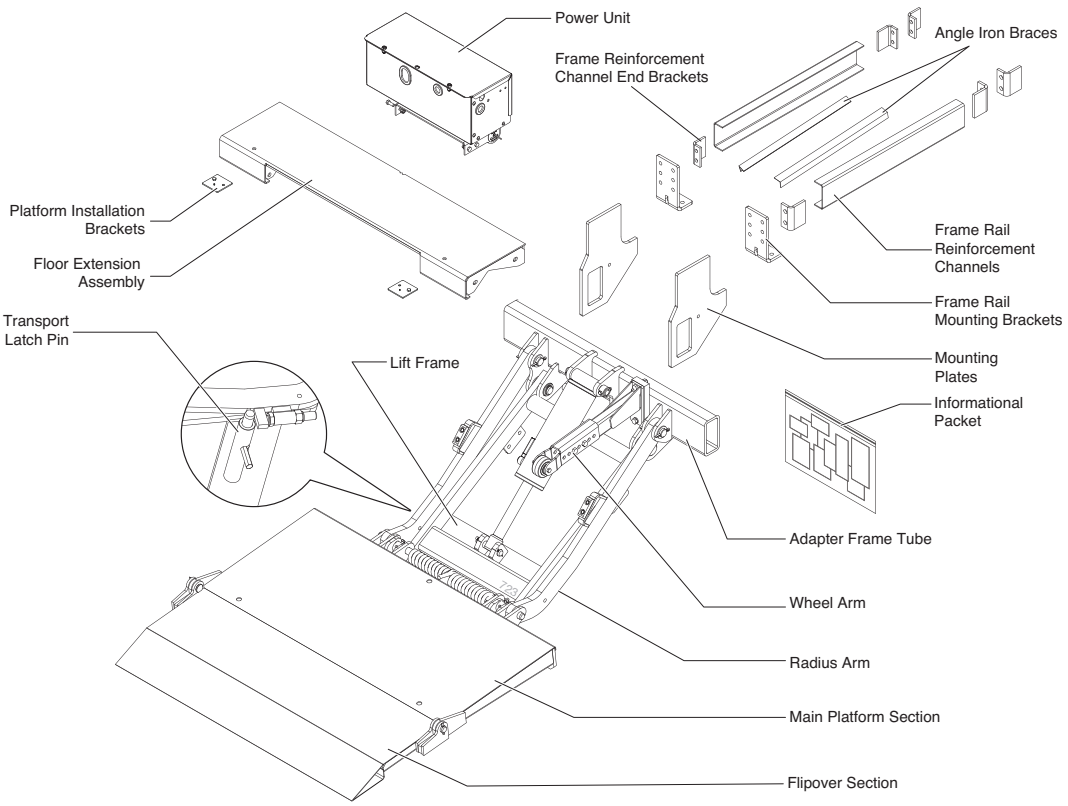

Fire hazard


Sparks / fire hazard

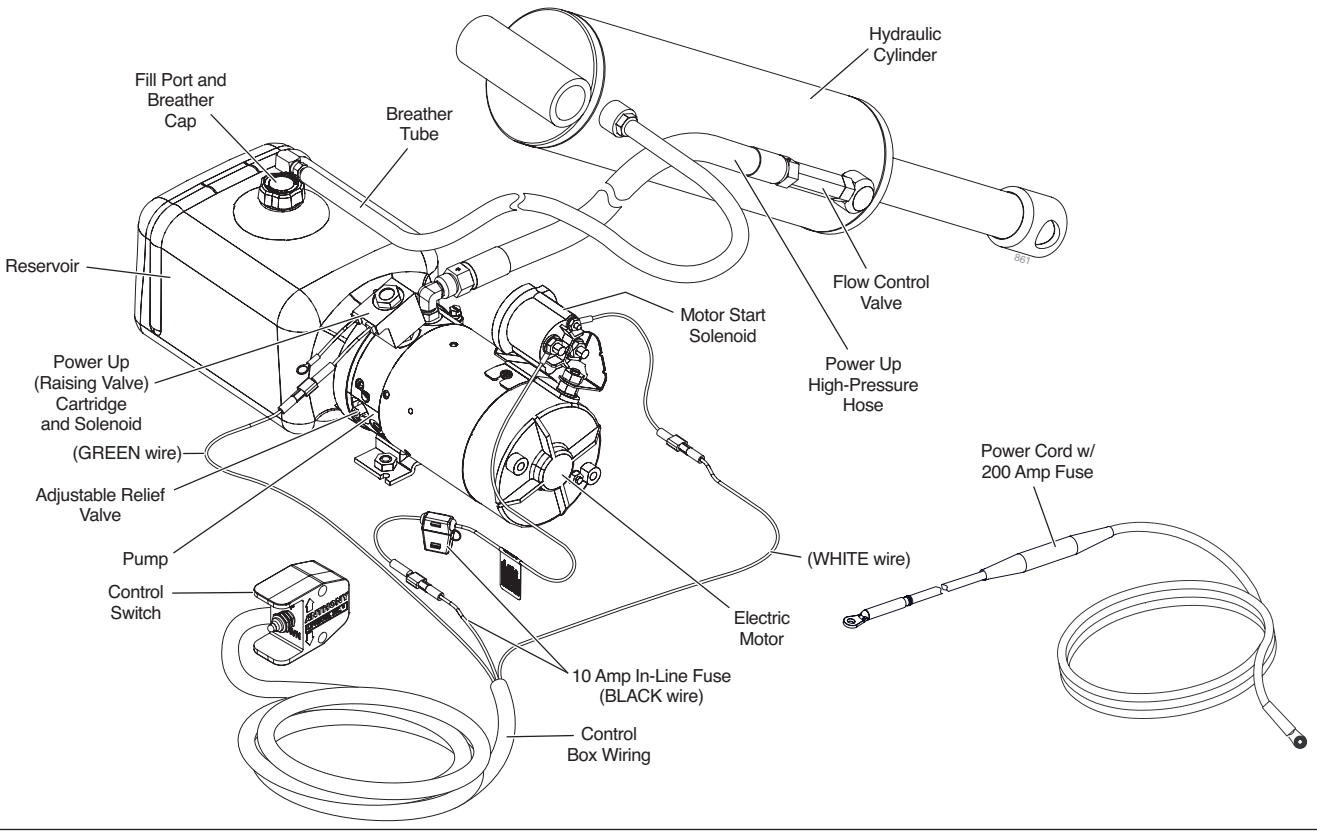

Battery gas hazard

# 3. Nomenclature

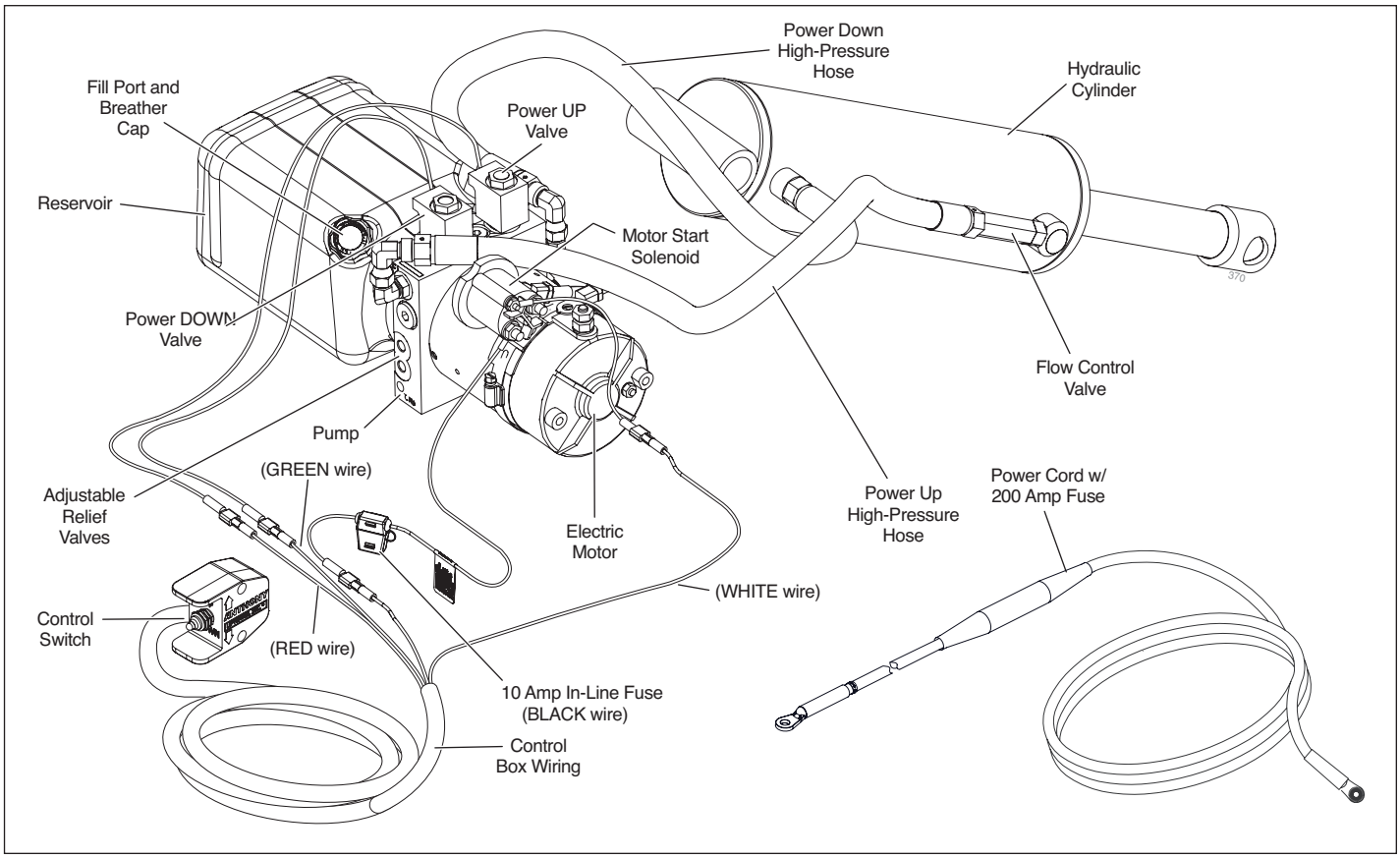
## 3.1 Platform Nomenclature




## 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.**

The mounting plates are designed to be universal and, therefore must be modified to fit the specific application.

**NOTICE** *Welding to truck frames between the axles is typically not recommended, so bolt-on plates have been provided to allow attachment of the liftgate by bolting it to the truck frame rails.*

The mounting location of the liftgate varies by chassis, bed height, stack height, and body width. Follow the procedure below to modify the mounting plates and attach the liftgate.

### 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
- Mig or Stick Welder
- Heavy-Duty C-Clamps (two)
- Tape Measure
- Level (small, magnetic)
- Cutting Torch or Plasma Cutter
- 9/16" Socket and Wrench (lid on pump box)
- 15/16 Wrench and Socket (mounting plates)
- 1-1/2" Wrench (adjusting latch assembly)
- Grinder (removing galvanized surface before welding)
- 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, detailed plans on how to fabricate the fixture are in section "5. Lifting Fixture" on page 22.

## 4.3 Preparation

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

***SAFETY INSTRUCTIONS*** **Use two people to safely install the liftgate.**

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

***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.*

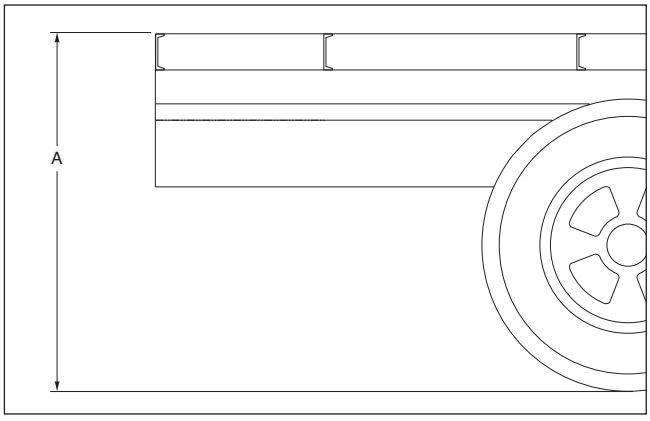
1. Place the truck on a flat, level surface with the parking brake set and remove the ignition key.

   ***SAFETY INSTRUCTIONS*** **Remove the keys to prevent unwanted movement.**

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

2. The liftgate will not operate properly if the truck bed height is less than dimension (A). This minimum height can be the result of a fully-loaded truck and/or a variety of other reasons.

| Truck Bed Height Fully Loaded | |
|---|---|
| **Model** | **Bed Height (A)** |
| SM | 42” |

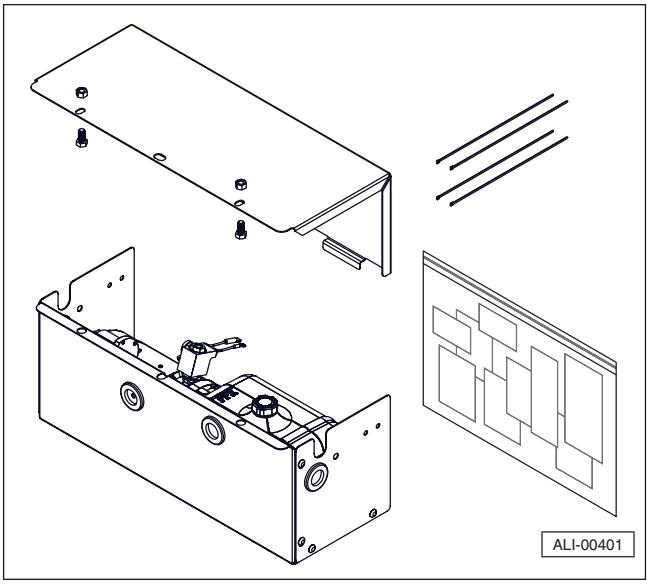



3. Measure the actual height of the unloaded truck, which must be equal to or less than dimension A (maximum height). Do not proceed if this dimension does not fall within the maximum height requirements.

| Truck Bed Height Unloaded | |
|---|---|
| **Model** | **Bed Height (A)** |
| SM | 57” |

4. Remove the banding securing the liftgate and loose parts to the pallet. Remove the mounting plates, frame rail mounting brackets, channel rails, channel rail brackets, floor extension, and miscellaneous hardware.
5. Before proceeding, make sure the complete liftgate and its related parts have been received, as listed in the chart. In some cases, related installation parts will be located on the shipping pallet, or they may be shipped separately. Some parts are also placed inside the pump box.

| Liftgate Installation Package | |
|---|---|
| **Description** | **Qty.** |
| **Located on Pallet** | |
| Floor Extension | 1 |
| Mounting Plate | 2 |
| Frame Rail Mounting Bracket | 2 |
| Frame Rail Reinforcement Channels | 2 |
| Frame Reinforcement Channel End Brackets | 6 |
| **Located Inside Pump Box** | |
| Information Packet (contains decals, manuals, shims, and other related installation information) | 1 |
| Mounting Hardware Package (Bolts, Nuts, Flat Washers) | 1 |
| Battery Cable and Fuse | 1 |
| Plastic Tie Wraps | – |



## 4.4 Floor Extension

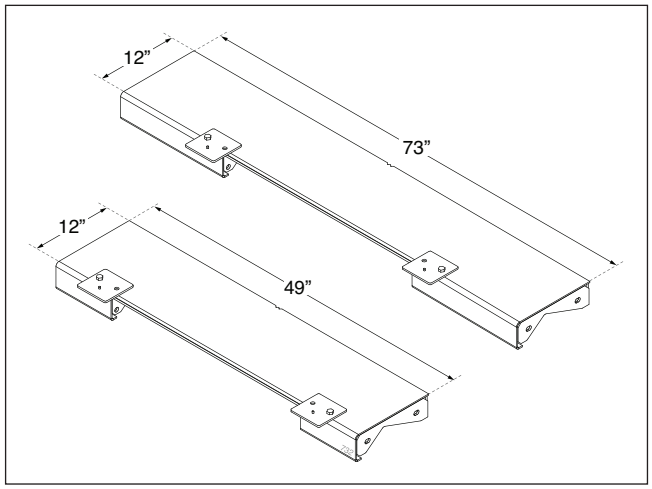
**CAUTION** **Take precautions to avoid welding sparks or the flame from a cutting torch coming into contact with the truck bed's wooden floor or other flammable components.**

**If a galvanized floor extension is being installed, 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.**

1. Create an opening in the floor of the truck body using the overall dimensions for the floor extension.

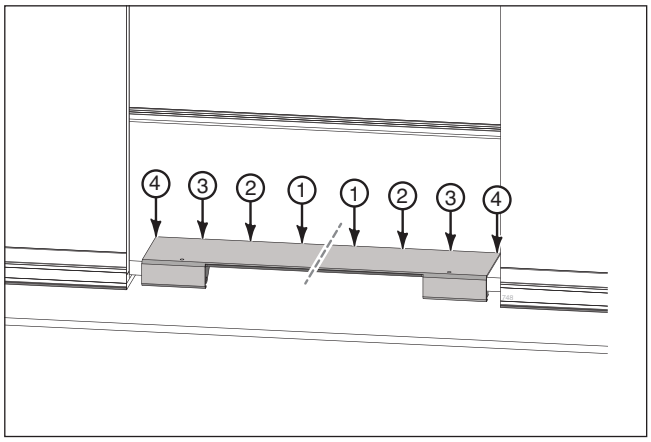



2. It is up to the installer on how to cut the opening in the floor of the truck and how to add bracing and supports to strengthen the area around the opening.
3. As part of the installation, the floor extension must be securely attached to the truck body crossmembers with bracing or reinforcing plates in order to support the potential weight of a load up to 3,000 pounds.

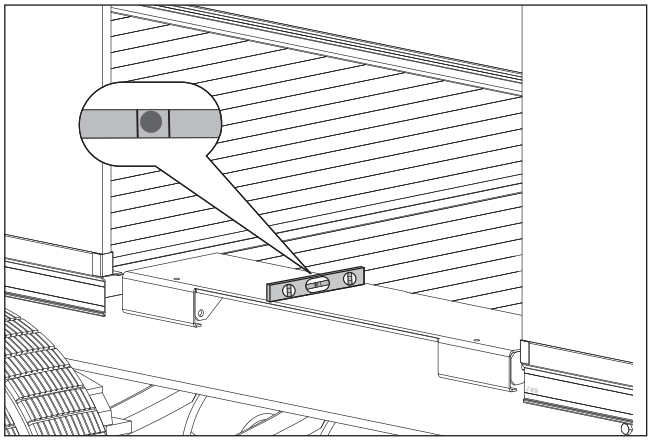
**CAUTION** **The welds must be strong enough to hold the weight of potential loads of up to 3000 lbs. Insufficient welds may not hold, resulting in bodily harm.**

4. Begin tack welding at the center of the floor extension and work outward. Make sure the extension remains level and flush with the floor of the truck bed.

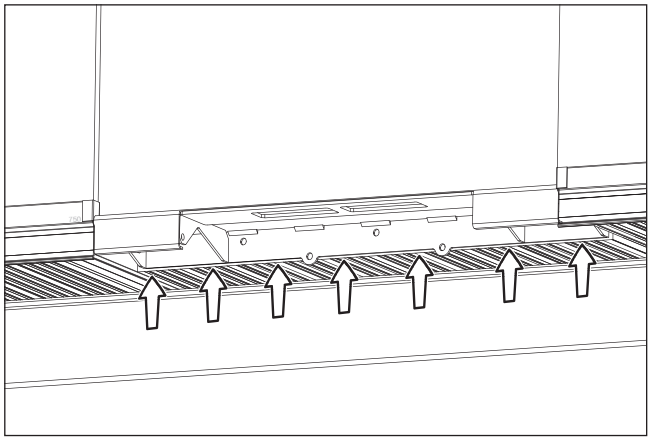
***Note:*** *The floor extension may have a natural bow in it, which must be straightened as it is installed.*




5. Also, make sure the floor extension is level and parallel to the truck's floor.

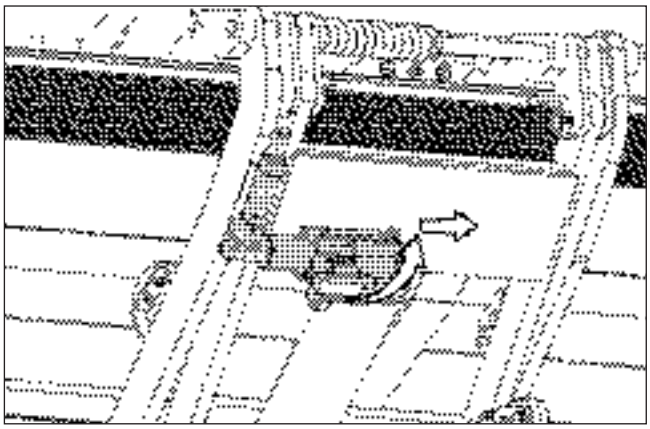


6. Weld across the bottom of the floor extension in seven to eight locations.



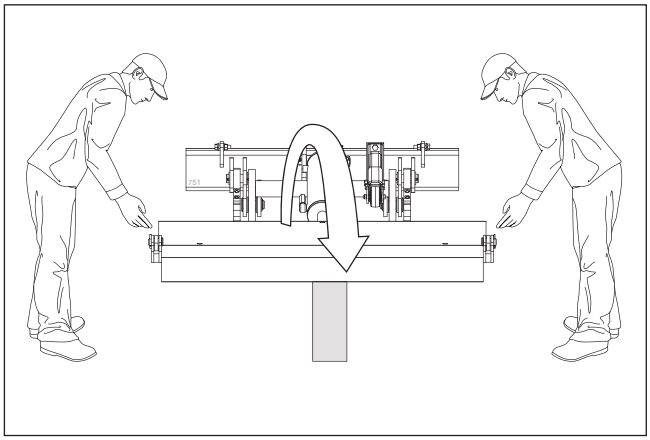
## 4.5 Raise and Position the Liftgate

1. Release the latch pin from its storage position.

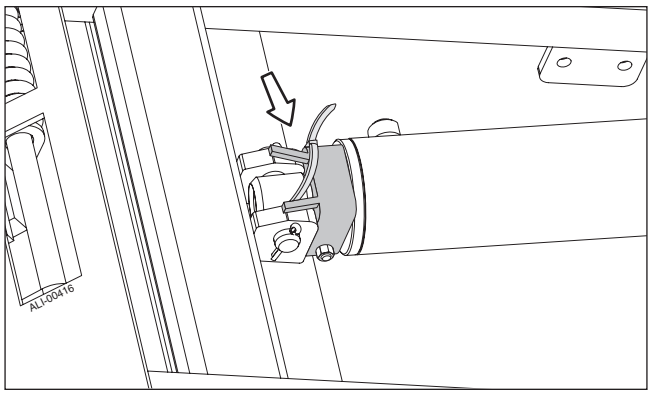


**NOTICE** *The latch pin is only for in-transit locking of the liftgate. DO NOT slide the latch pin into the latched position when the platform is unfolded or raised. If this occurs, serious damage to the liftgate can occur when the liftgate is lowered.*

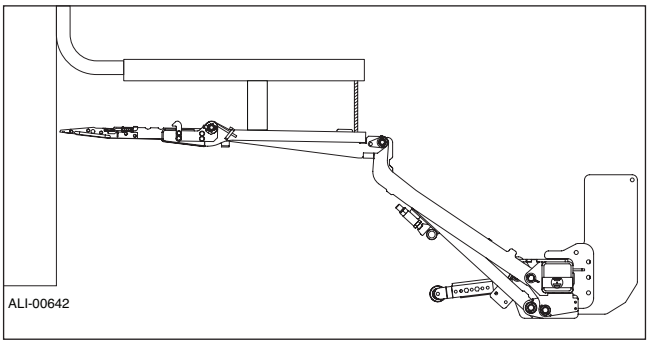
2. Carefully unfold the liftgate using two people. To keep the liftgate somewhat level once it's unfolded, a wooden block, approximately 12 inches tall, can be placed under the platform.



***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.*




3. Attach a forklift or overhead lifting device to lift the liftgate. If using a forklift, the use of an ATU-1613 Lifting Fixture makes installation easier and safer.




***Note****: Using the fabricated lifting fixture is likely to be the safest way to position the unit. Refer to "5. Lifting Fixture" on page 22 for a dimensional drawing to fabricate the lifting fixture.*

   a. Place the lifting fixture over the liftgate.

   b. Place the threaded rod through the lifting hole in the platform.

   c. Install a washer and nut on the threaded rod.

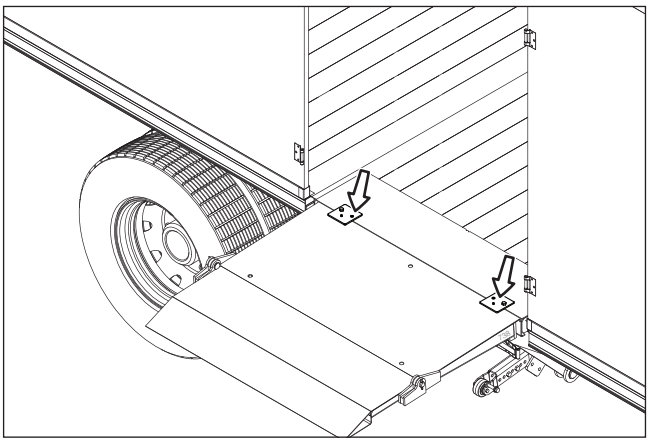
4. Raise the liftgate, making sure the platform is almost parallel with the ground. Use the threaded rod and nut to make the required leveling adjustments.

**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.**

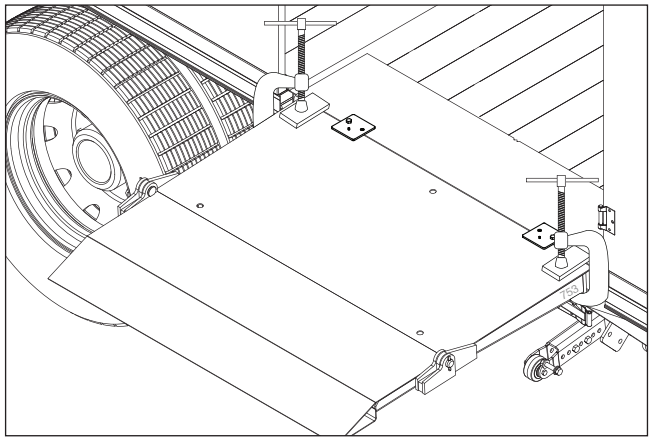
5. Position the liftgate against the platform installation brackets (arrows), which are attached to the floor extension. Also, push the liftgate against the spacer portion of the installation brackets.

**SAFETY INSTRUCTIONS** **For viewing purposes, the illustration does not show the lifting device attached. DO NOT REMOVE THE LIFTING DEVICE UNTIL INSTRUCTED.**

***Note:*** *The platform installation brackets help to hold the liftgate level with the floor extension and also provide the proper spacing between the liftgate and the floor extension.*

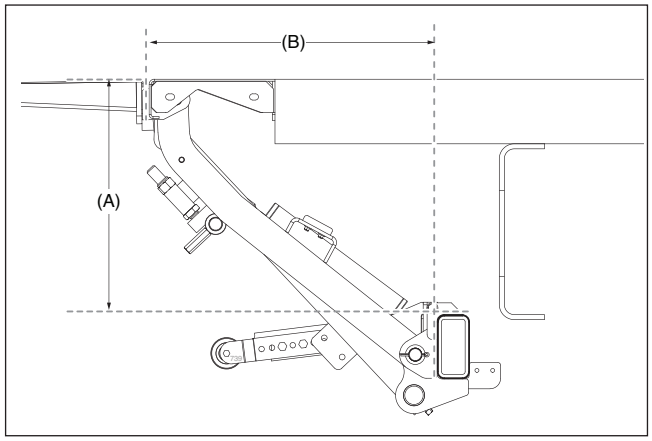


6. Clamp the liftgate against the floor extension using two large C-clamps, as shown.



**WARNING** **Do not remove the lifting device until the liftgate is securely tack welded onto the truck frame.**

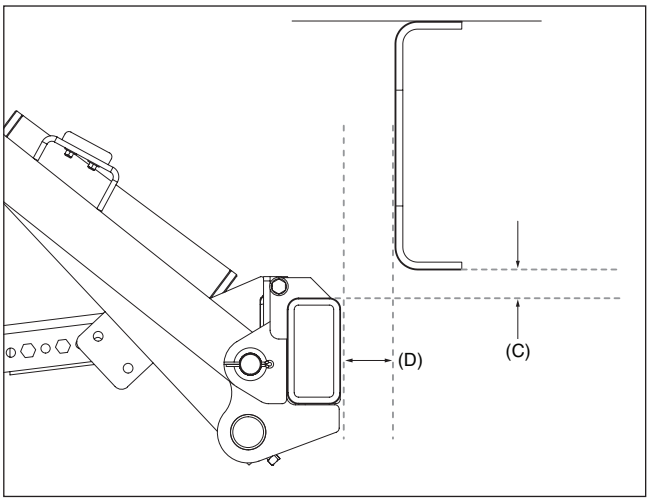
7. Position the adapter frame tube to the correct height and depth dimensions (A and B), which are based on the height of the truck bed using a floor jack or other similar lifting device.



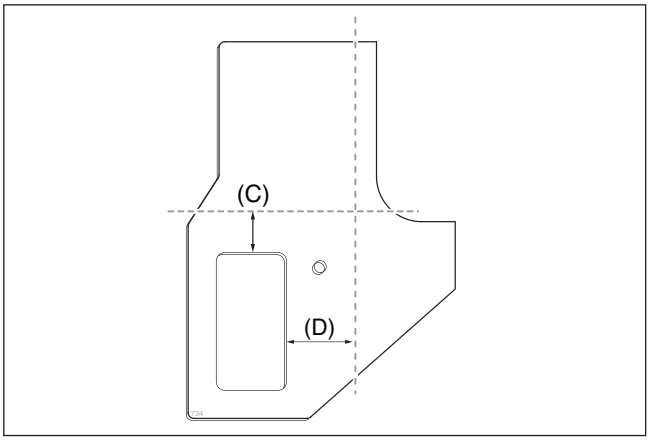

| Mounting Requirements | | |
|---|---|---|
| **Bed Height (floor surface)** | **A Floor Surface to Top of Adapter Frame Tube** | **B Front of Floor Extension to Front of Adapter Frame Tube** |
| 42-49" | 19" | 30.75" |
| 50-51" | 20" | 29.875" |
| 52-53" | 21" | 29" |
| 54-57" | 22" | 28" |

## 4.6 Fit Mounting Plates to Frame Rails

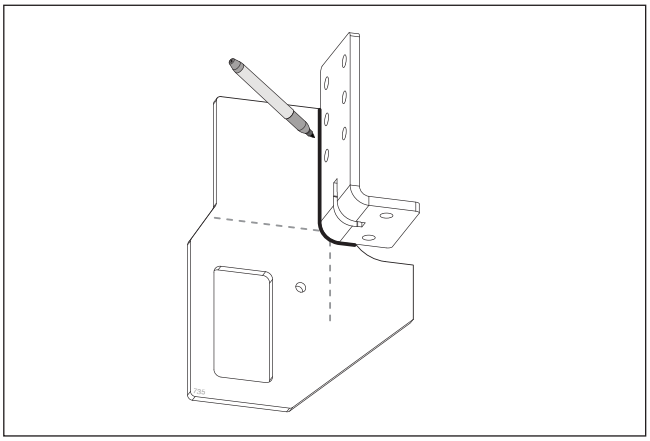
1. Measure from the back of the adapter frame tube to the face of the truck frame rail (D). Measure from the top of the adapter frame tube to the bottom of the truck frame rail (C). Record these two dimensions.



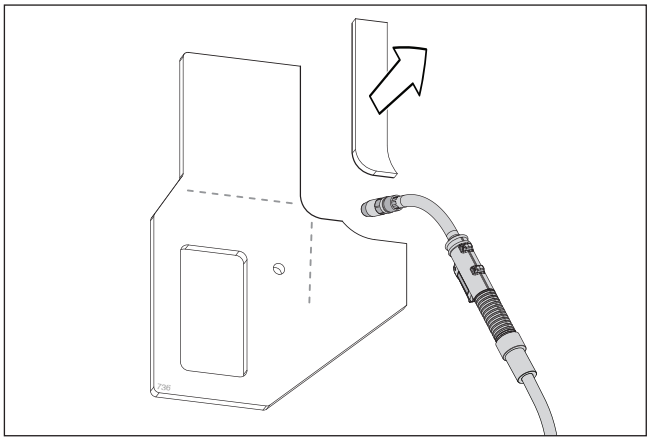

2. Transfer measurements (C) and (D) to the face of the mounting plates and mark parallel lines on the plate.



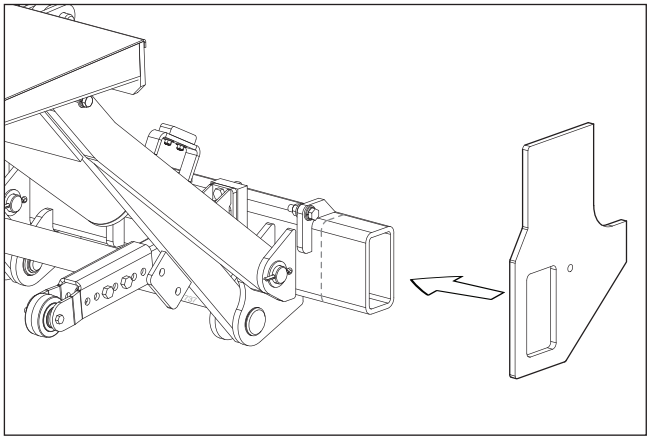

3. Place the inside face of the mounting bracket against the marked lines and trace a line on the outside of the mounting bracket onto the face of the mounting plate.



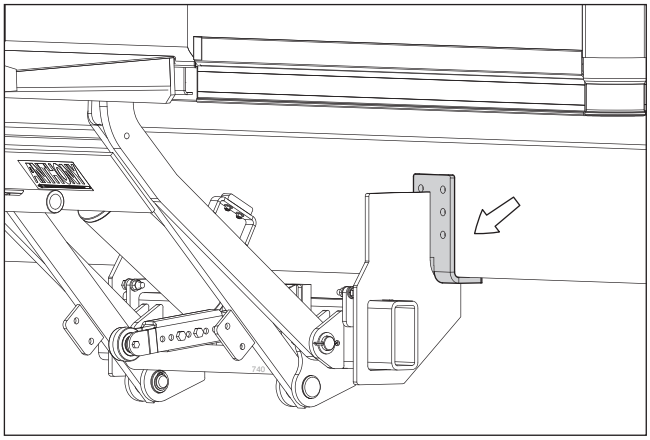
4. Use a cutting torch or plasma cutter to cut the required profile into the mounting plate.



5. Slide the mounting plates onto the adapter frame tube. Position the outside edge of the mounting plates 4 inches from the ends of the tube.

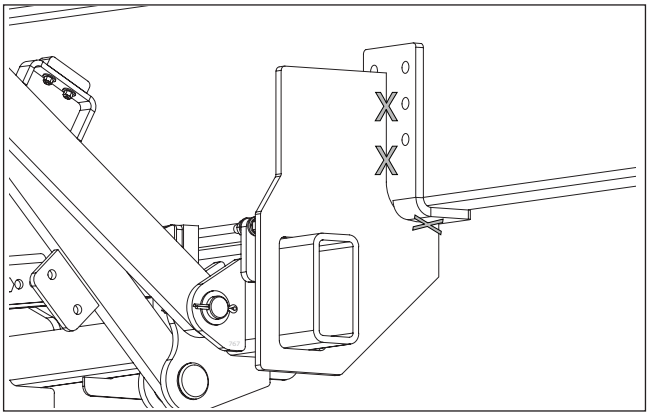


6. Slide the frame rail mounting brackets between the truck frame rail and mounting plate.

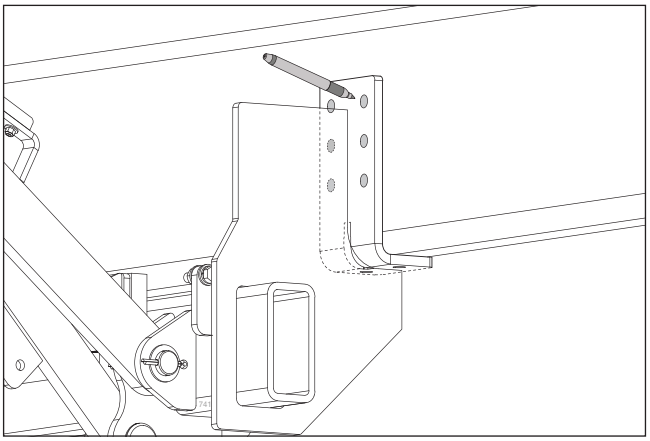


7. Tach weld the mounting plate to the mounting bracket in the locations marked “X” (each tack weld should be a 3/8 inch fillet, 1 inch long). Repeat for the other side. Do not weld the mounting plates to the adapter frame tube during this step.

**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.**

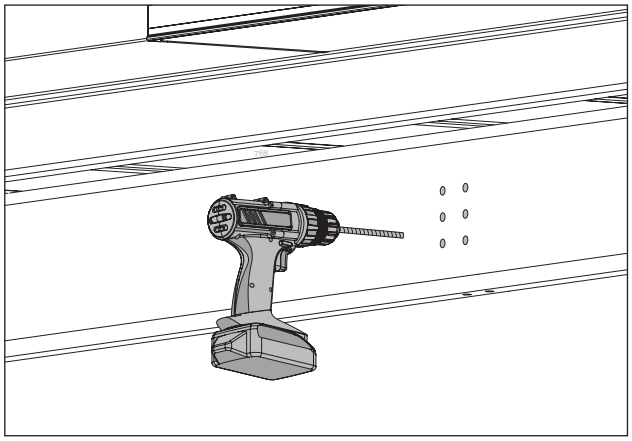



8. Mark the location of the eight holes in the mounting bracket on the truck frame rails.

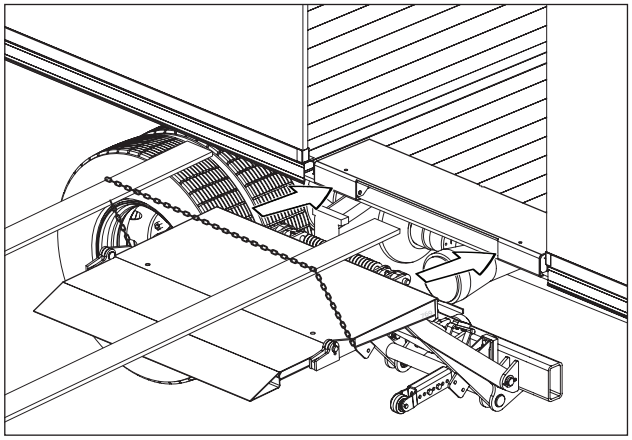


9. Remove the mounting plate from the truck.

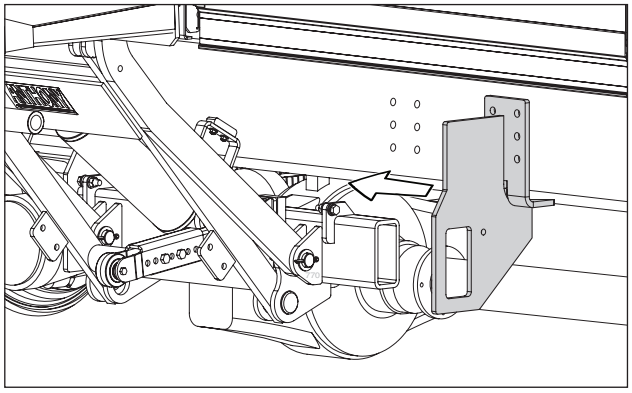
10. Drill eight holes through the frame for each mounting plate.



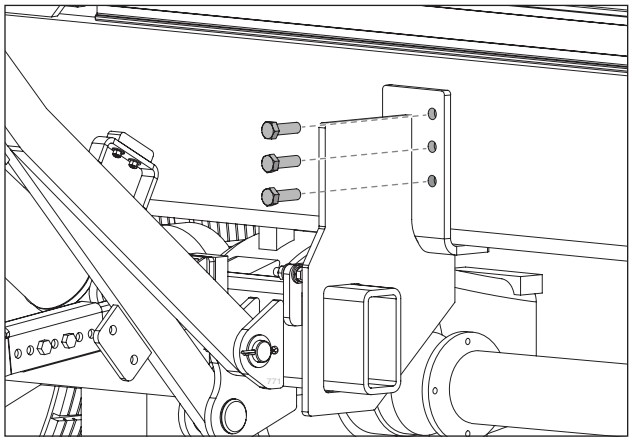
11. If the liftgate was removed to allow holes to be drilled in the frame, reposition the liftgate against the floor extension and reinstall the C-clamps.



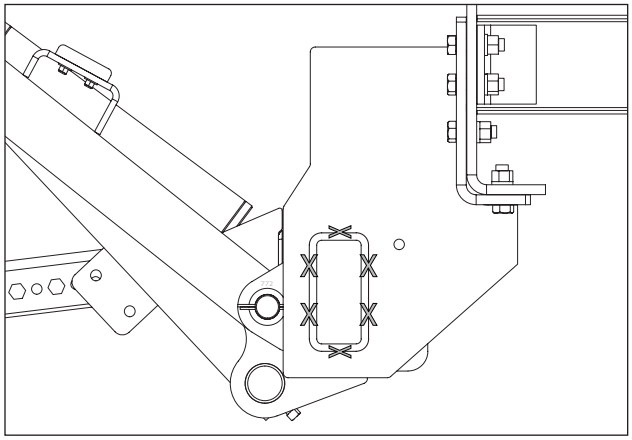
12. Slide the mounting plate / mounting bracket assembly onto the adapter frame tube.



13. Bolt the mounting bracket to the truck frame rail using the eight supplied bolts. Repeat this step for the other mounting plate.



14. Tack weld the outside of both mounting plates to the adapter frame tube.

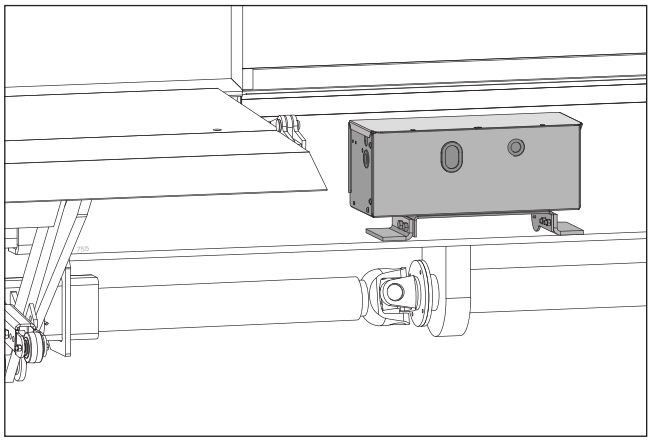


15. Remove the lifting device.

### 4.7 Install the Power Unit

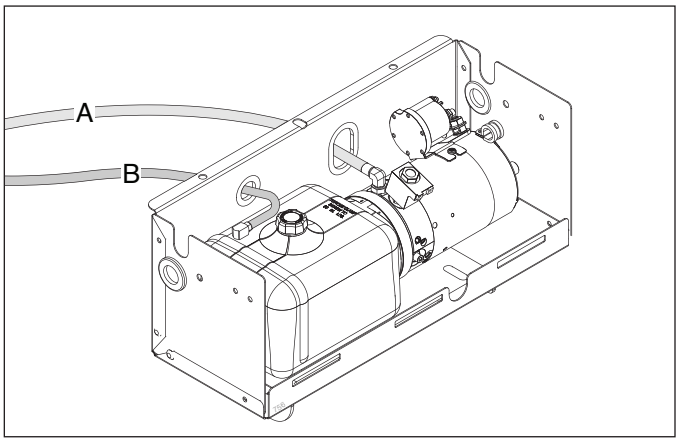
Select a location for the pump box near the liftgate. The hydraulic hoses from the liftgate are 90 inches long, so the pump box must be positioned within that distance.

1. Attach the pump box to the truck frame using, installer-supplied, angle iron or channel supports. Each installation will be different. Make sure the supports will securely hold the weight of the pump box.

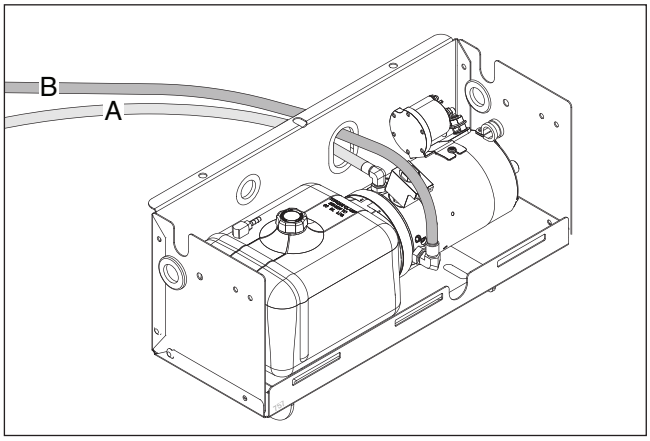


2. Attach the hoses from the liftgate to the fittings on the pump.

   a. For gravity down models, connect the clear tubing (B) to the hose barb and the hydraulic hose (A) from the rod end of the cylinder to the pump fitting.

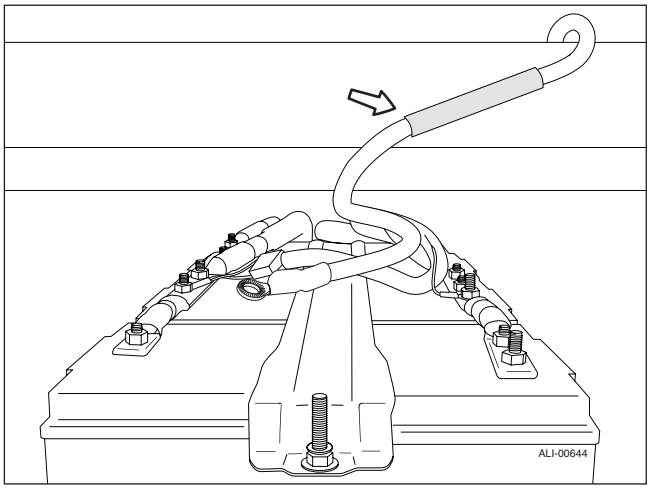



   b. For power down models, connect hydraulic hose (A) from top of the cylinder to the fitting on the rear of the unit and hydraulic hose (B) from the rod end of the cylinder to the fitting on the front of the unit.



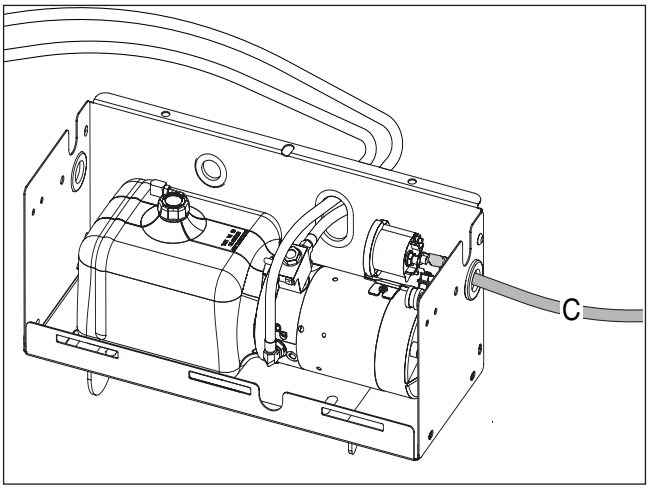

3. Route the power cable with the fuse from the battery box to the pump box, but do not connect the cable to the battery terminal in this step.

   ***Note:*** *The fuse end of the cable should be nearest the battery.*




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

   ***Note:*** *If the cable is too long, cut it to the desired length and proceed to install the cable lug.*



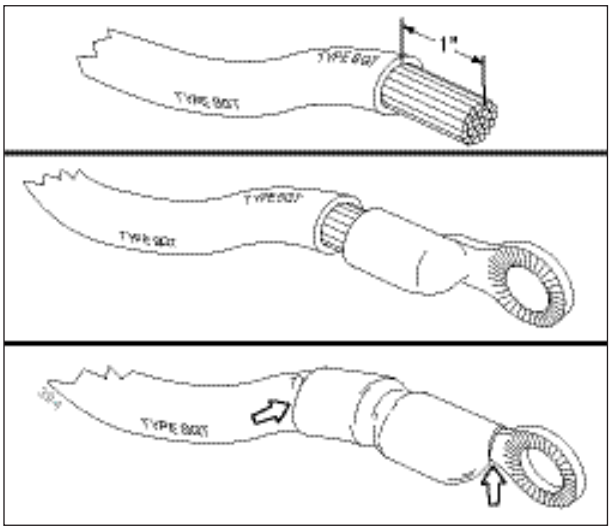

**WARNING** **Never secure the power cable to anything which allows it to contact sharp edges, other wires, the fuel tank, fuel lines, brake lines, air lines, exhaust system, or any other object that could cause the power cable to wear or be damaged. A cut battery cable can cause sparks, resulting in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

5. Install the power cut-off solenoid (“4.14.1 Cut-Off Solenoid Connection” on page 21) that was provided or install an optional cab cut-off switch.

**WARNING** **Anthony Liftgates strongly recommends the installation of an optional power cut-off solenoid (“4.14.1 Cut-Off Solenoid Connection” on page 21) or cab cut-off switch (“4.14.2 Cut-Off Switch Connection” on page 21). Allowing power to the liftgate when the truck is unattended can result in serious injury or death.**

6. To install cable lugs on the end of the power cable or connect the ends to the power cut-off solenoid.

   a. Strip the insulation one inch back from the end of the cable to expose the copper wire.



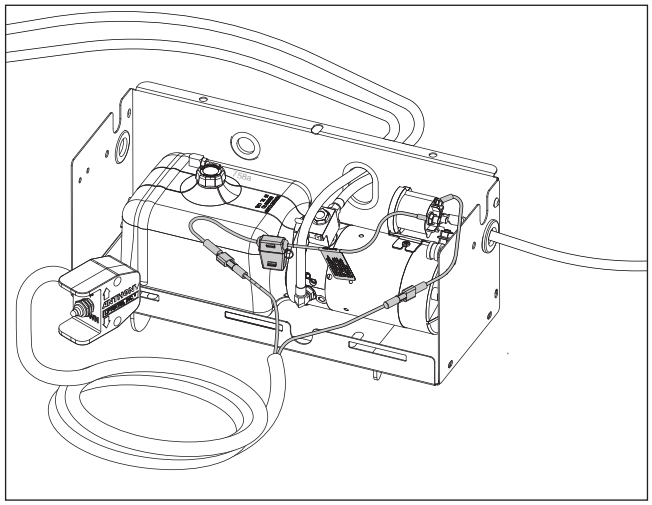

   b. Position the cable lug on the exposed wire, as shown. Crimp the cable lug using a cable crimping tool (hydraulic or manual).

   c. Use the supplied heat shrink tube to insulate the new connection, leaving only the mounting hole exposed.

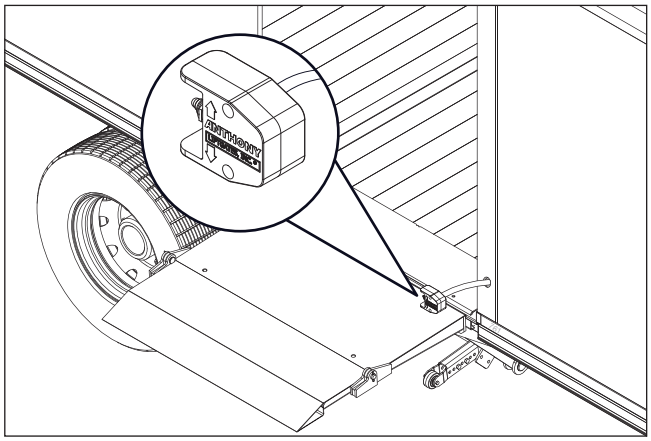
**NOTICE**

*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.*

7. Disconnect the wires of the control switch from the power unit.

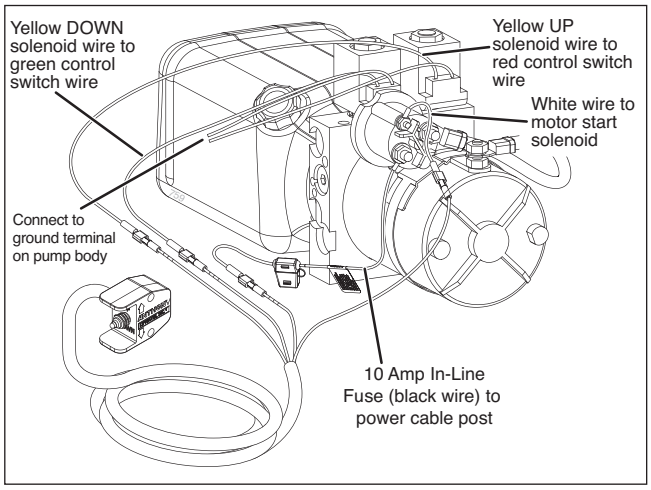


8. Drill a hole through the upright post of the truck body and route the cable through the floor and into the pump box.

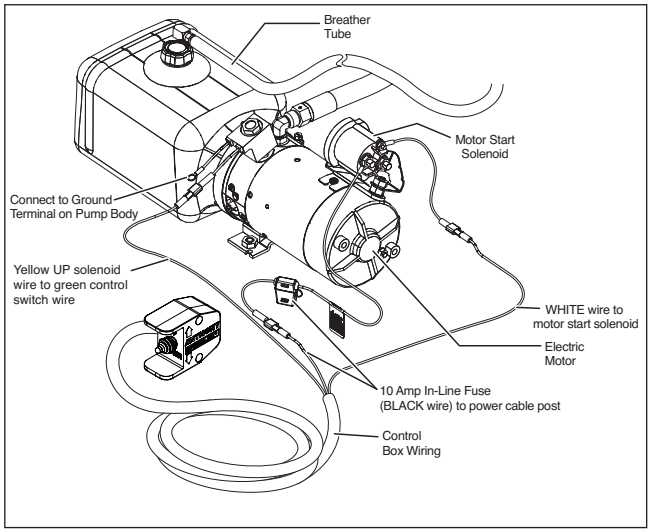


9. Route the control cable into the pump box and reattach the control unit wires to the appropriate terminals, as shown.

   a. Power down models:



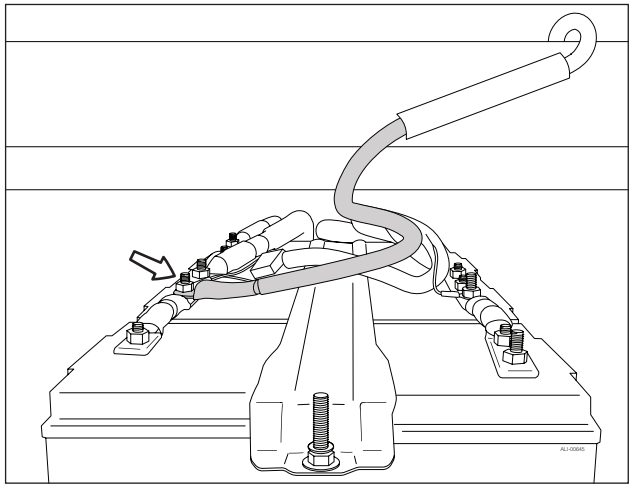

   b. Gravity down models:



10. If needed, attach a ground strap, the same gauge or larger as the liftgate power cable, between the pump box and the truck frame.

**WARNING** **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.**

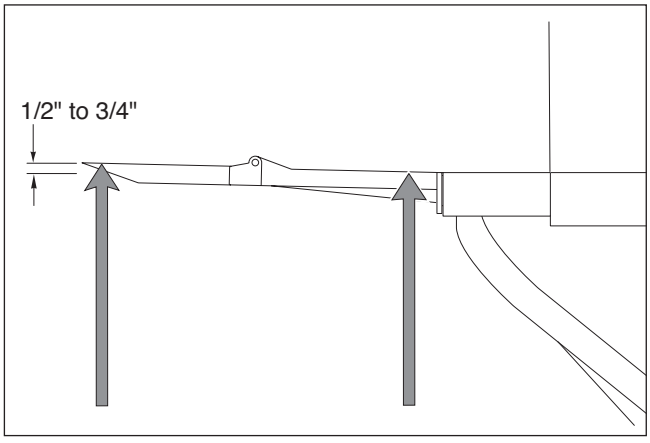
11. Connect the battery cable to the positive (+) post of the truck battery.



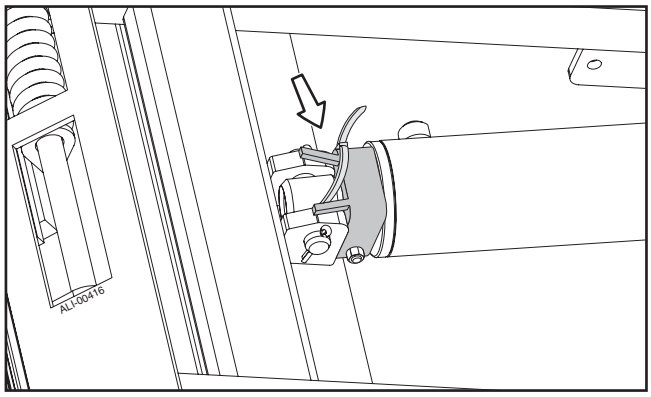
## 4.8 Check the Liftgate Operation

1. Remove the floor jack and the liftgate lifting device.
2. Completely raise the platform.

   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.



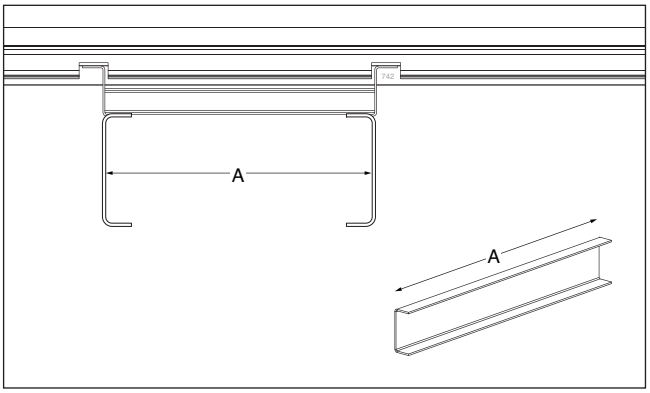

3. Make sure the latch pin is in the open position.
4. Standing away from the platform, actuate the DOWN switch to lower the platform to the ground. Remove the spacing guide from the lift cylinder.



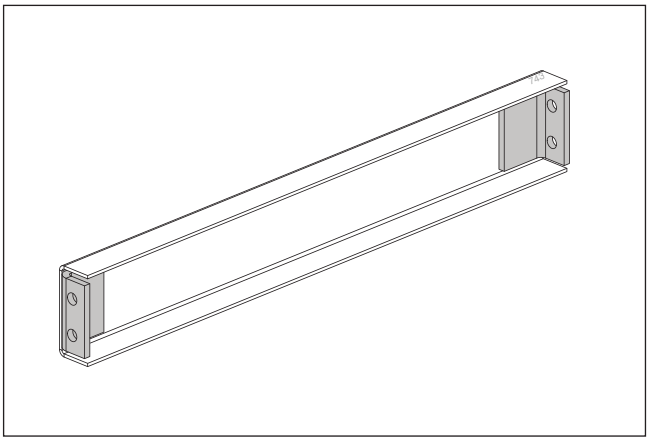

5. Operate the platform up and down, making sure it raises completely to the floor extension and lowers completely to the ground.

## 4.9 Install Frame Rail Reinforcement Channels

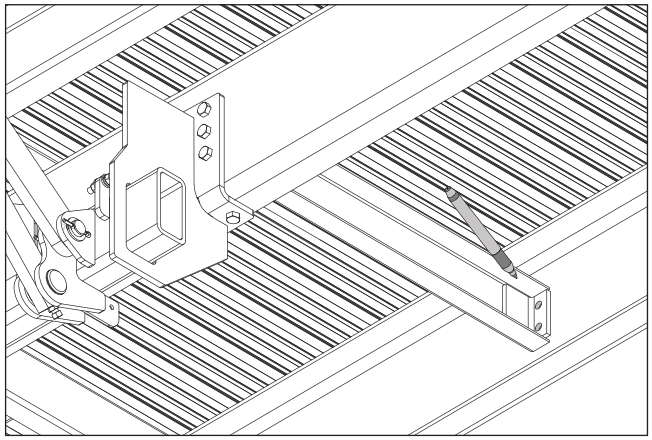
1. Measure the inside width of the truck frame rails and cut the frame rail reinforcement channels to that width.



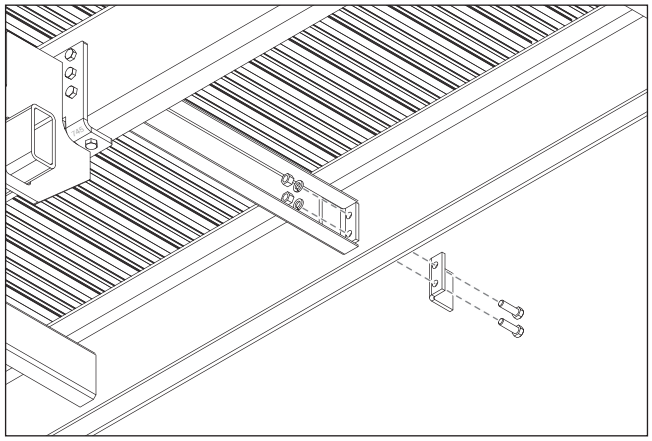

2. Weld the channel ends (angle iron) into the channel flush with the ends of the channel, as shown.



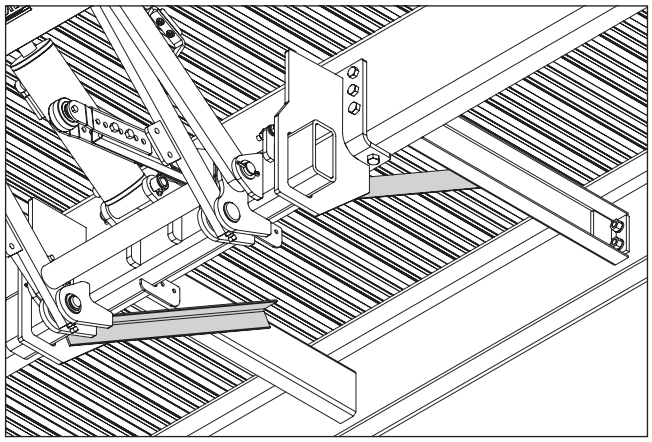
3. Place the channel over the two bolts on the curbside frame and trace the position of the mounting holes in the streetside frame rail. Remove the channel and drill the holes.



4. Bolt the channels between the two frame rails, as shown, with the angle bracket on the outside of the streetside frame rail.

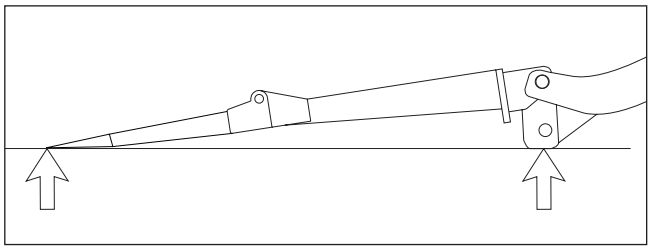


5. Install the angle iron brace between the mounting plate and the channel. Position the brace in order to avoid the drive shaft. Weld the brace to the mounting plate and to the channel.



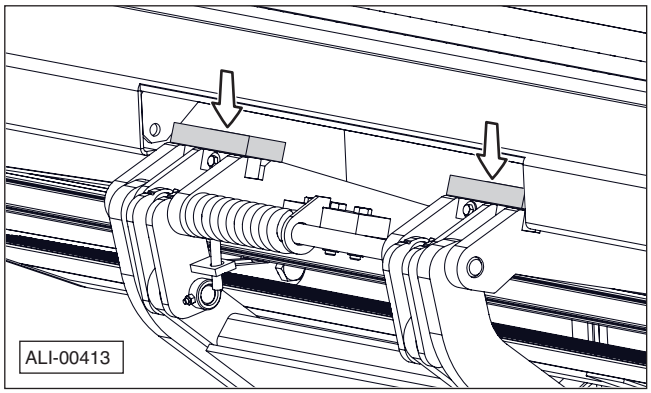
6. Completely raise and lower the platform several times.

7. The front edge of the flip-over platform section should lower to the ground and contact the ground at the points seen below, and the back of the platform should raise flush to the floor extension. If the front edge does not touch the ground, refer to the next step.



8. If the end of the platform does not contact the ground, adding a shim to the stop block 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.




***Note:*** *One shim can move the ramp end of the platform as much as 1/2 inch.*

## 4.10 Final Welding

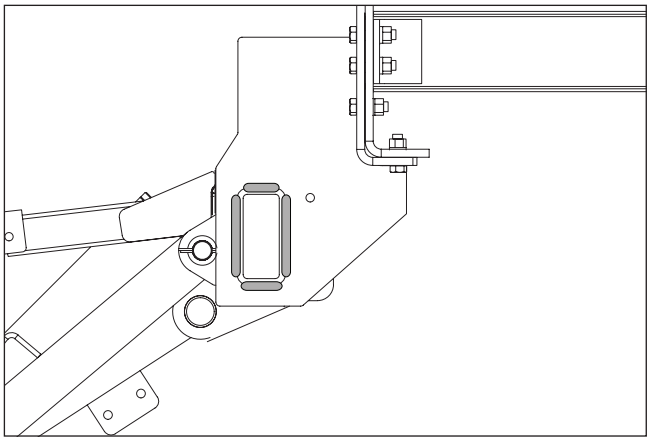
1. If the platform is operating correctly, finish welding the mounting plates. If the platform does not make a complete cycle, it may be necessary to adjust the mounting plates.

**CAUTION** **Take precautions to avoid welding sparks coming into contact with the truck bed's wooden floor or other flammable components.**

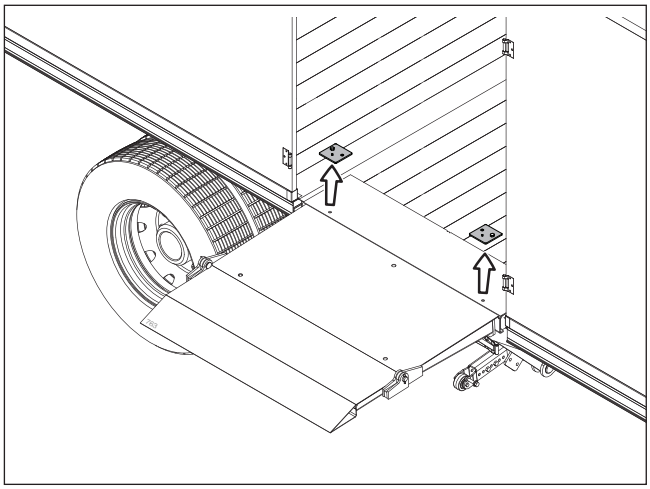
***SAFETY INSTRUCTIONS*** **For safety purposes, finish welding the liftgate while the platform is on the ground, not in a raised position.**

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

2. 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.



3. Remove the installation brackets from the floor extension.

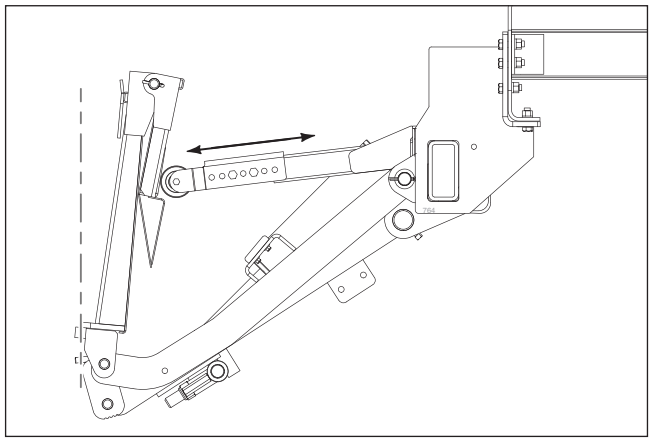


## 4.11 Adjust the Wheel Arm

The wheel arm helps unfold the platform as it is lowered from the stored position. The wheel arm can be adjusted so the platform unfolds with either greater or lesser effort.

**WARNING** **Never stand in front of the platform when it is opened. Always stand to the side and away from the edge of the platform.**
**When adjusting the position of the wheel arm, consider that the vehicle may be parked on a sloped surface. Adjust the wheel arm to prevent the platform from completely unfolding in this type of situation.**

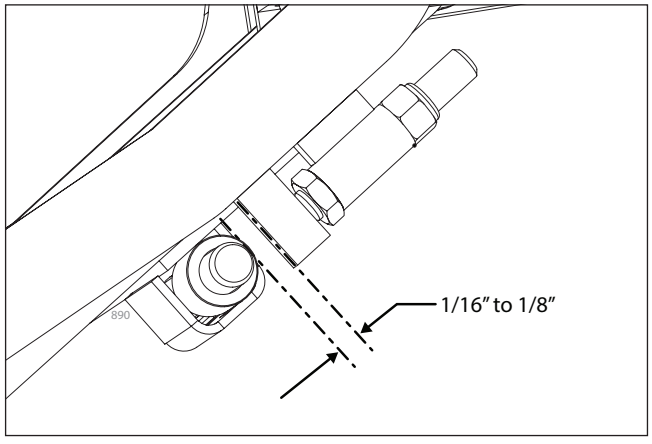
1. Test and adjust the wheel arm.
2. If adjustment is needed, remove the two bolts on the wheel arm and the nuts on the wheel arm.
3. Lengthen or shorten the wheel and channel assembly on the tube, as desired.



4. Align the two holes in the wheel and channel assembly with the holes in the tube nearest the desired position.
5. Re-install the two bolts and nuts. Tighten the nuts to secure the wheel and channel assembly.

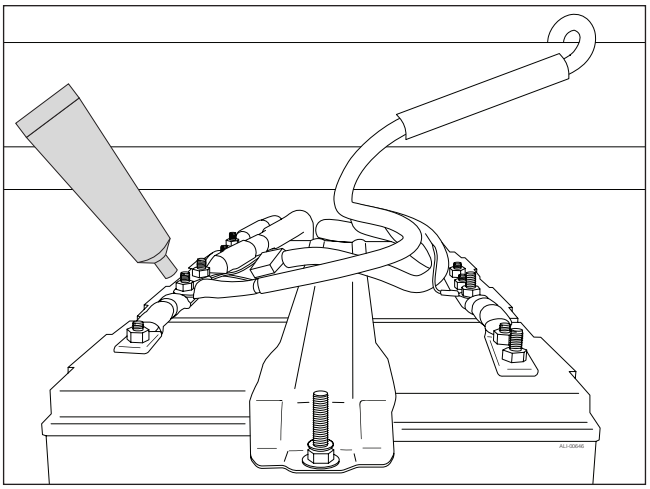
## 4.12 Adjust Latch Pin

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.



## 4.13 Final Inspection Checklist

1. Coat any terminal ends, studs, and nuts in the liftgate electrical system with suitable corrosion inhibiting lubricant.



2. Replace the battery box cover and lock it in place.

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

3. Use the control switch to raise and lower the platform.

**SAFETY INSTRUCTIONS** **The installation procedure is not complete until all of the following items are checked and verified. If you have any questions, contact Anthony Liftgates.**

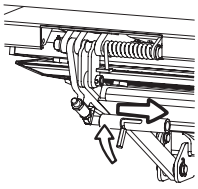
- ❑ Make sure the latch pin works correctly.
- ❑ Make sure retainers are properly held in place on all factory-installed pivot pins.
- ❑ Make sure all hydraulic fittings are tight and not leaking.
- ❑ Operate the liftgate through its entire operational cycle (Up, Down, Fold In, Fold Out) several times. Make sure the liftgate operates evenly, freely, and smoothly, without unusual noise or vibration.
- ❑ Make sure the cover on the pump box is properly installed. It can also be secured with a customer-supplied padlock or lock pin.
- ❑ Make sure all welds are properly sized.
- ❑ If required, make sure grab handles and other ingress/egress items are properly installed.
- ❑ If installed, make sure the optional cab cut-off switch or power cut-off solenoid works properly.
- ❑ Make sure all decals are properly attached and legible.
- ❑ Put separate Installation, Operation, and Maintenance Manuals in the vehicle.

ANTHONY TUCKUNDER LIFTGATES

**OPERATING INSTRUCTIONS**

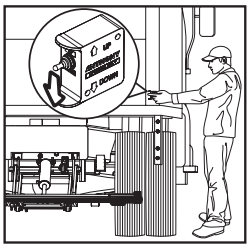
**1. Raise (twist) latch pin handle upwards and then slide pin sideways to release.**

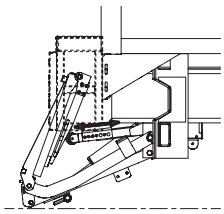
**Do not force the latch. Liftgate may need to be slightly raised or lowered to release pressure on latch pin.**



**2. Press control switch DOWN until folded platform rests on ground.**

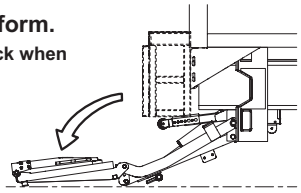
**Always stand on curbside of truck when raising or lowering platform with control switch.**



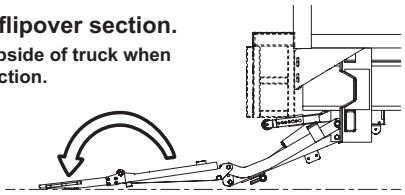
**3. Manually unfold main platform.**

**Always stand on curbside of truck when unfolding platform.**

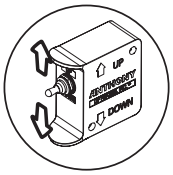


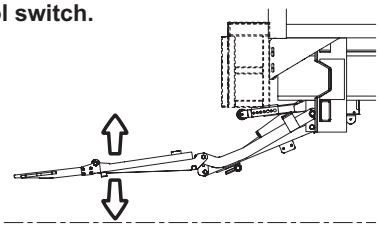
**4. Manually unfold flipover section.**

**Always stand on curbside of truck when unfolding flipover section.**

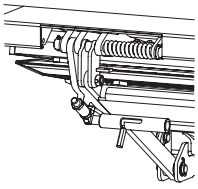


**5. Raise and lower platform using UP and DOWN functions of control switch.**



**6. Reverse steps to fold and store platform. Make sure platform is locked in storage position with latch pin after use.**



ATU-423

- ❑ Make sure the platform will fold smoothly and freely, tuck under the truck in a stored position and latch.
- ❑ Hydraulic hoses must be routed to prevent rubbing against any surface while cycling the platform up/down or being opened/closed.
- ❑ Make sure the power unit reservoir is filled with Hyken Glacial Blu. Refer to separate Maintenance Manual for additional specifications.

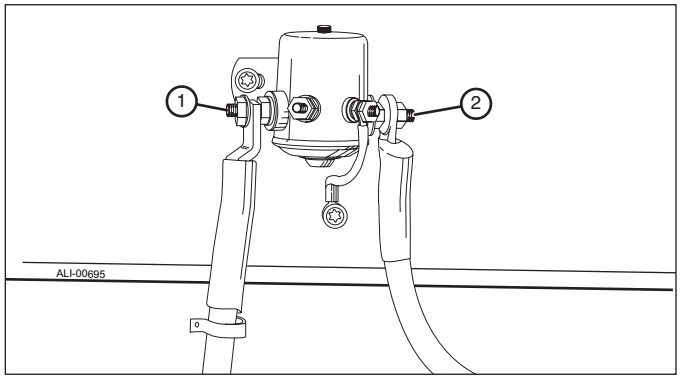
## 4.14 Accessory Installation

### 4.14.1 Cut-Off Solenoid Connection

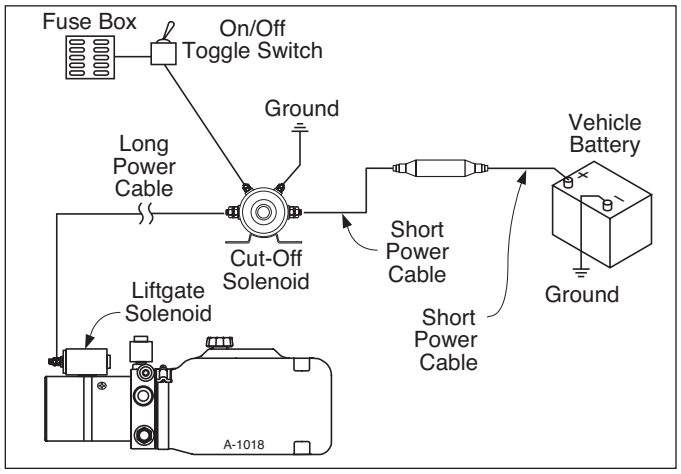
The installation of a cut-off solenoid is a recommended option for all 12 Volt electric liftgates. Installing a cut-off solenoid will help to prevent accidental or unauthorized use of the liftgate.

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.

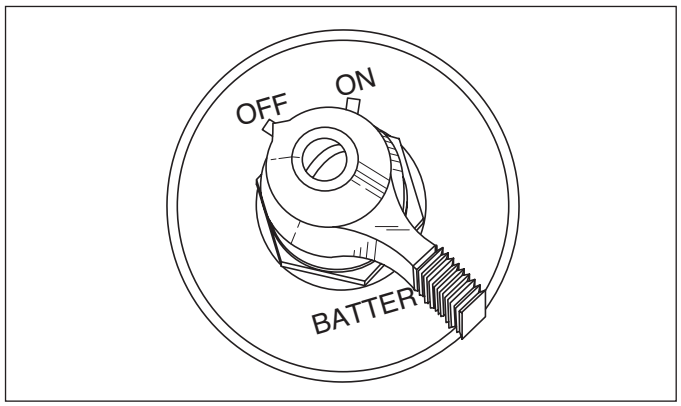



Wiring Diagram with Cut-Off Solenoid.

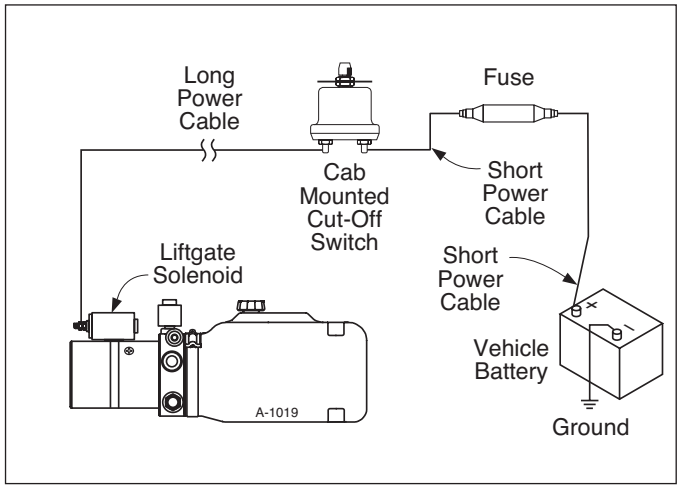
### 4.14.2 Cut-Off Switch Connection

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.



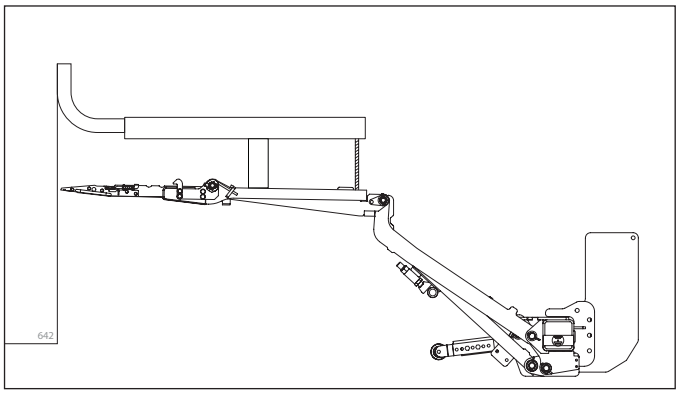

Wiring Diagram With Cab Cut-Off Switch.

## 5. Lifting Fixture

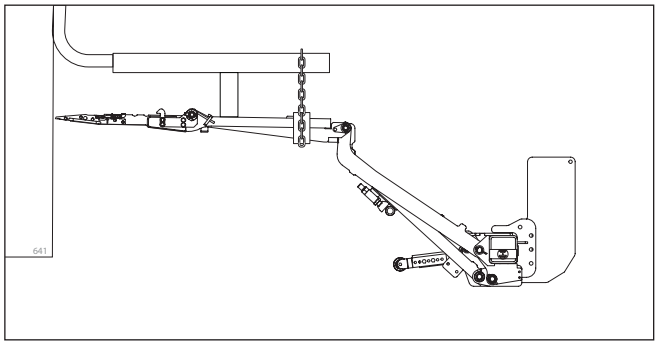
When installing several liftgates a year, the following lifting fixture can save time and make the installation process more efficient. A prefabricated fixture is available through Anthony Liftgates by ordering part number ATU-1613 Lifting Fixture.

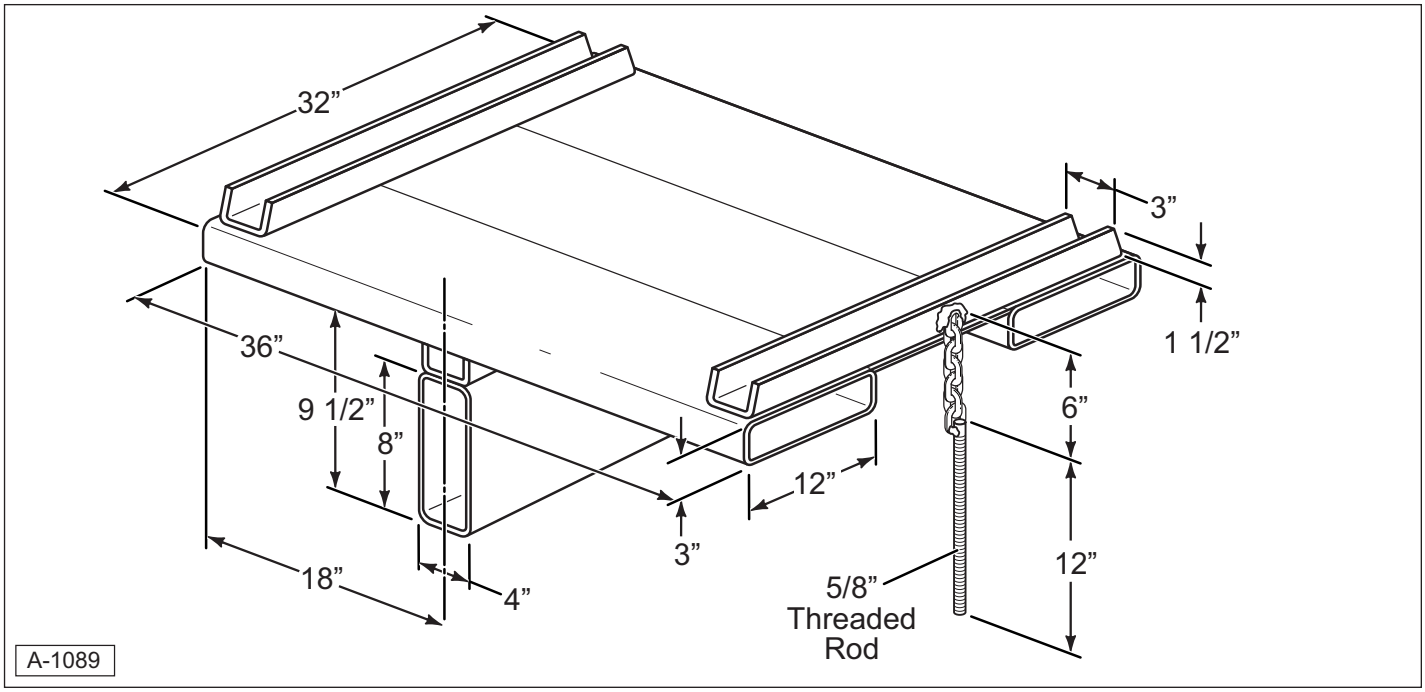
This lifting fixture must be made specifically for the type and design of the particular forklift used in the installation. Remember, the materials used to construct the lifting fixture must be capable of lifting and supporting the liftgate being installed. The lifting fixture must also contain a retaining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



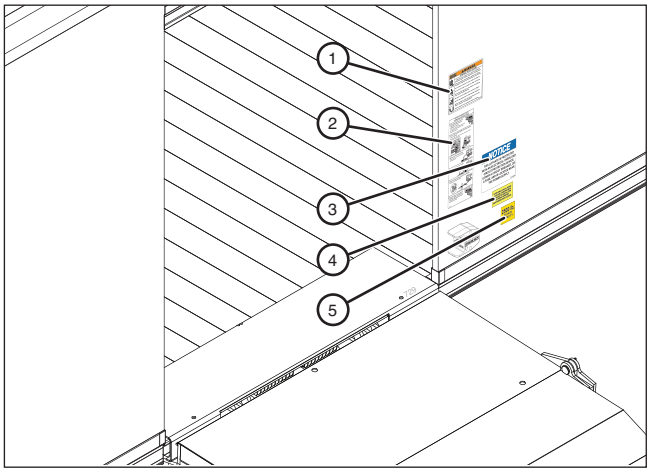
# 6. Decals

**SAFETY INSTRUCTIONS**

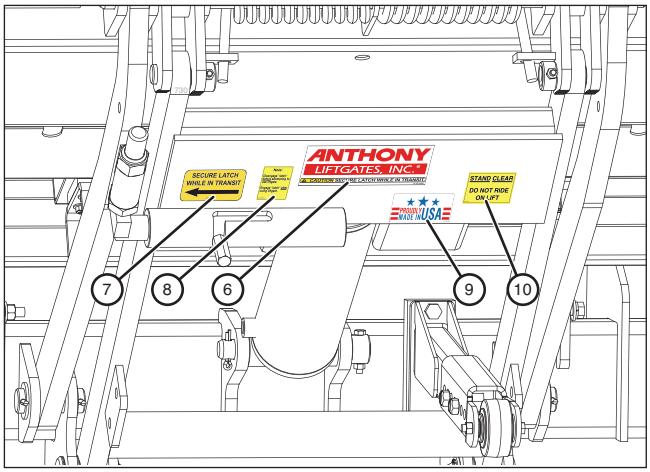
**To prevent possible injuries due to improper operation, make sure all decals are attached to the liftgate and truck and are legible.**

## 6.1 Decal Placement

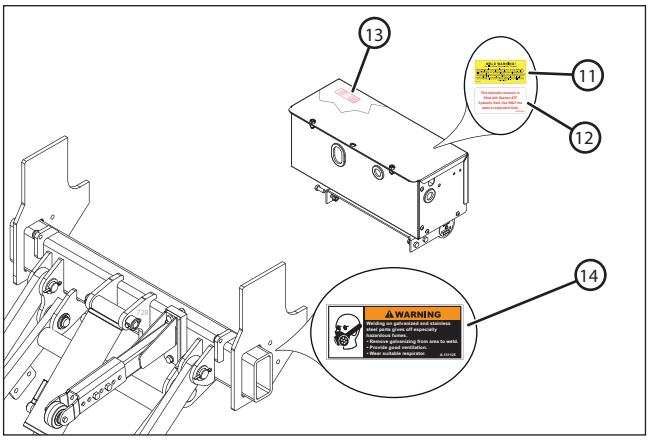
1. Attach decals 1 through 5 to the truck body, as shown.




2. Make sure factory-installed decals 6 through 10 are attached to the lift arms and platform.



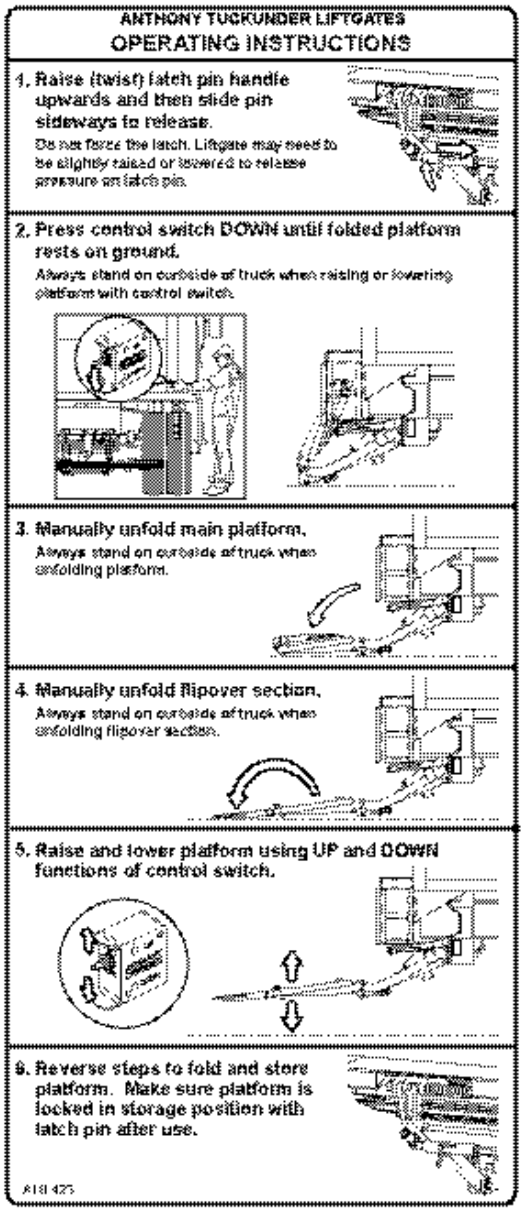

3. Make sure factory-installed decals 11 through 13 are installed on the power unit. Decal 14 is only attached to galvanized liftgates on the adapter frame tube.



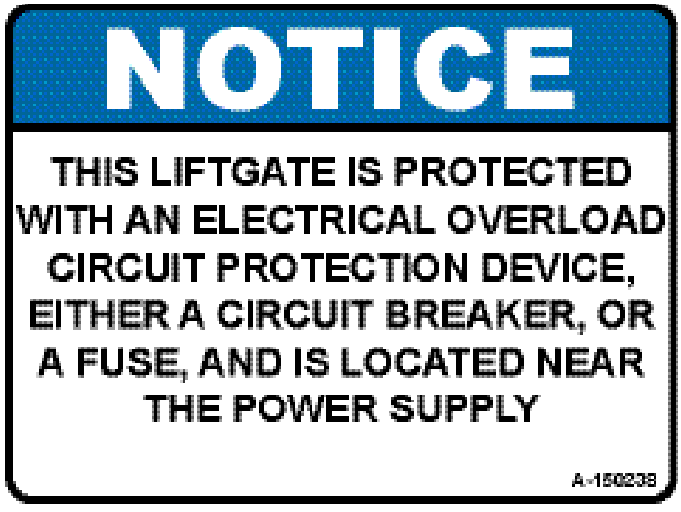

## 6.2 Decals

**1 — A-131115**

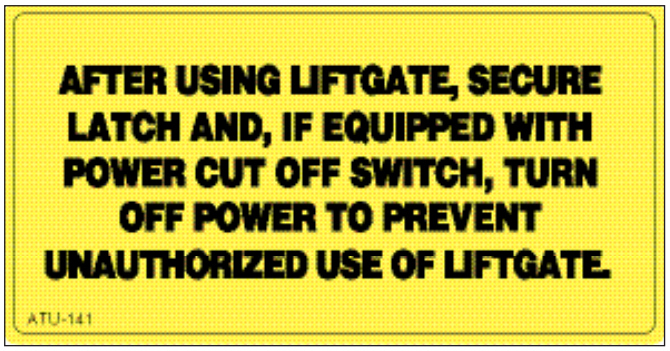
**2 — ATU-423**



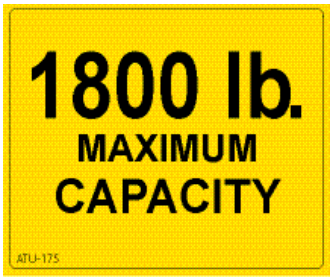

**3 — A-150238**



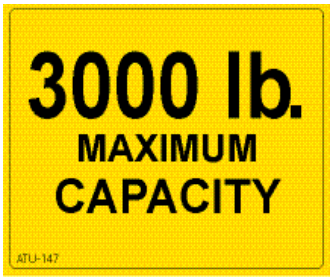

**4 — ATU-141**




**5 — ATU-175, ATU-174, ATU-147**








**CAUTION** 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.

**6 — A-131034**

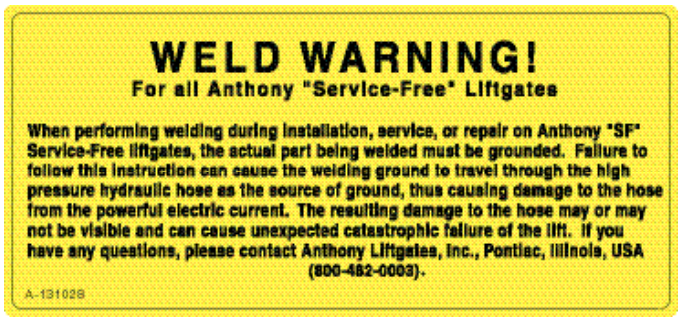
7 — ATU-143


8 — A-131017

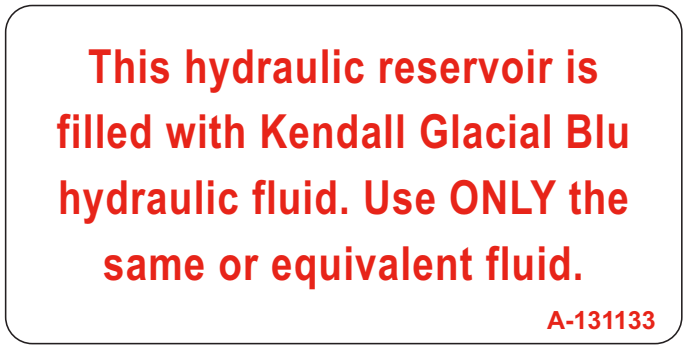

9 — A-150601


10 — ATU-146


11 — A-131028




12 — A-131133




13 — A-131001 (attached to control cable)


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

# 7. Welding Stainless Steel to Galvanized

If the installation requires welding galvanized steel parts to stainless steel, special procedures must be followed to ensure the safety of the welder and the integrity of the welds.

## 7.1 Safety

### 7.1.1 Welding or Grinding Galvanized Material


**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 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.**

### 7.1.2 Welding or Grinding 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 proper breathing protection when grinding or welding. Use ventilation or vacuum systems to remove any contaminated air from the work area.**

## 7.2 General Guidelines

1. Welders should position themselves upwind of the air flow that removes the fumes so that fumes and dust do not collect inside the welding shield (helmet).
2. In addition to proper positioning, an effective method to prevent inhaling zinc oxide fumes or hexavalent chromium fumes is to wear a good fume-rated respirator.

### 7.2.1 Weld Wire

We recommend AWS E312T1 flux core wire, such as Midalloy Mastercor™ E312T1-1/4 or equivalent.
**Do not use stainless steel weld wire.**

### 7.2.2 Shielding Gas

100% $CO^2$ or 75/25 Argon/$CO^2$ mix can be used.

### 7.2.3 Welding Guidelines

1. The welding of galvanized steel is the same as welding bare steel of the same composition. It uses the same welding processes, Volts, amps, travel speed, etc.

| Wire Diameter (inches) | Voltage (V) | Amperage (Amp) [Wire Feed Speed (ipm)] | |
|---|---|---|---|
| | | Flat | Vertical & Overhead |
| .045 | 24-28 | 130-200 [250-425] | 120-160 [225-300] |
| .062 | 25-30 | 180-250 [150-250] | 180-220 [150-200] |

2. Use a soft disc grinder to remove the galvanized coating in the area to be welded. This will improve weld quality and reduce the welder's exposure to zinc oxide fumes.
3. No preheating of the dissimilar metals is needed.
4. When welding is complete, and after the area has cooled, use a cold galvanizing spray to restore corrosion resistance.

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Este manual en español también está disponsible en nuestro sitio Web.