

ANTHONY

LIFTGATES, INC.®

**AST • AST-L •
AST-PLUS**



INSTALLATION MANUAL

MODELS

AST-1500

AST-2000

AST-2500

AST-3000

AST-3500

AST-L-1800

AST-L-2500

AST-PLUS-2500

AST-PLUS-3000



QUALITY, RELIABILITY, CUSTOMER SERVICE

MADE IN THE USA 

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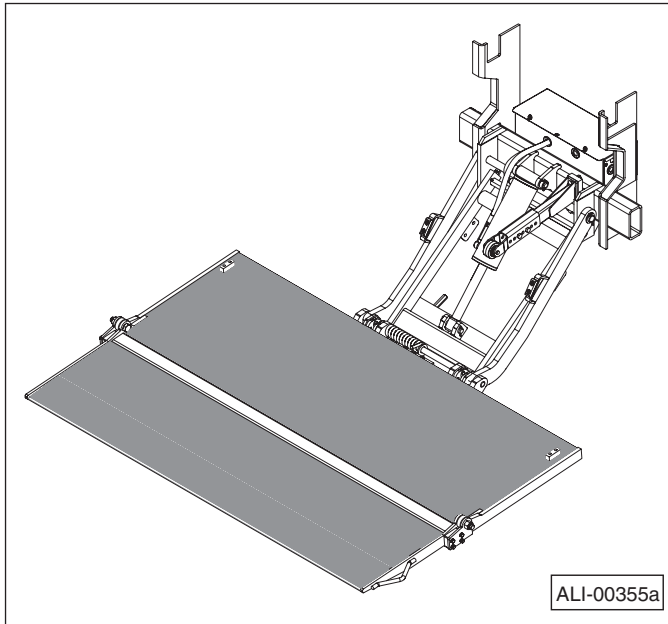
1. General Information

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. AST, AST-L, and AST-PLUS 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 AST, AST-L, or AST-PLUS TuckUnder™ liftgates.



Typical Anthony Liftgates Tuckunder Model.

1.2 General Safety



Read and Understand 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



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



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



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 AST TuckUnder™ liftgate website www.anthonyliftgates.com. To find the most current version of the reference material, choose LIFTGATES, TUCKUNDER™, AST or AST-L or AST-PLUS, 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.

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.

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.

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 potential 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



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.



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.



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



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



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



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.



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

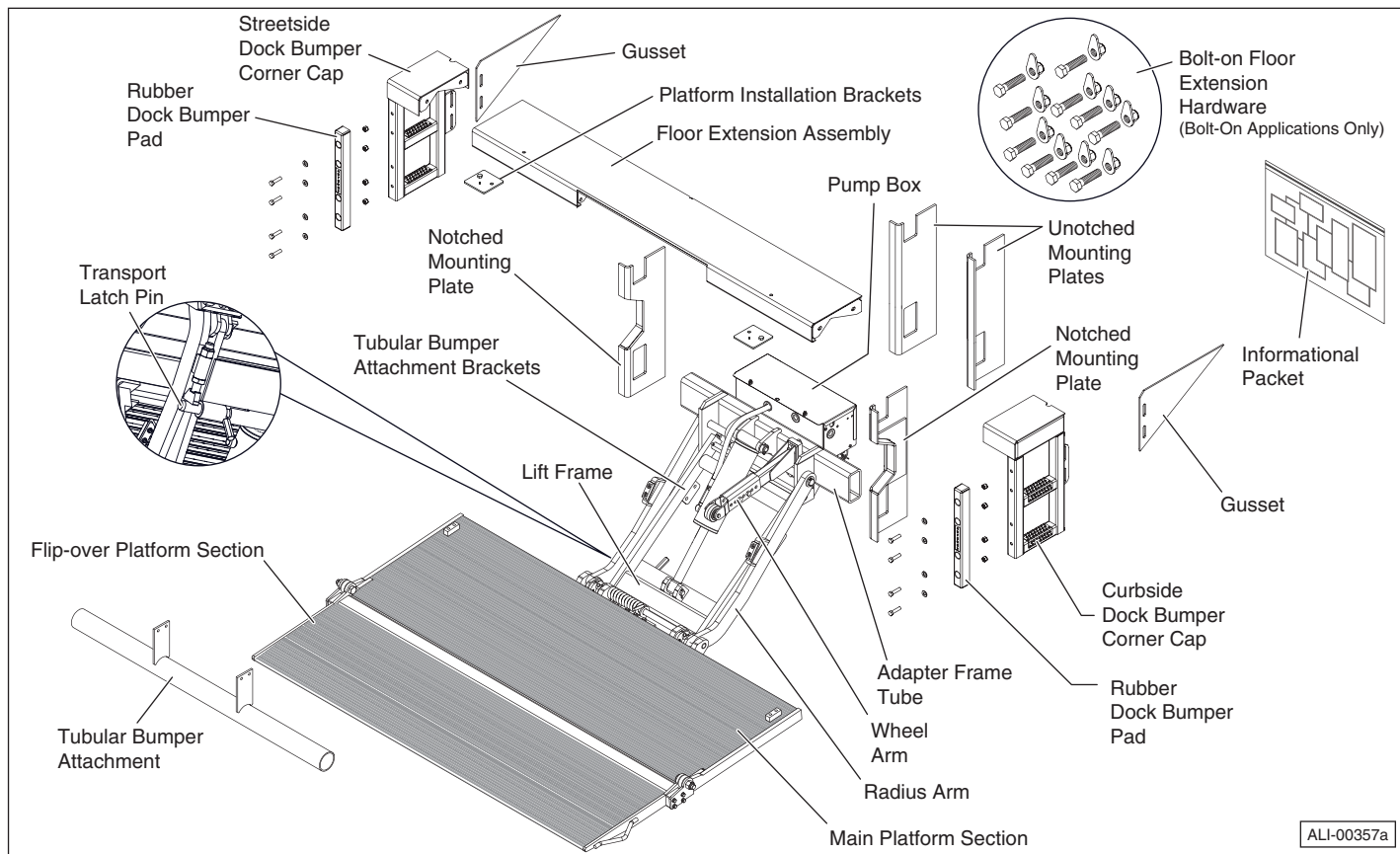
Follow all OSHA and other workplace safety standards when welding stainless steel, which creates hexavalent chromium fumes that can irritate the nose, throat, and lungs.

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).

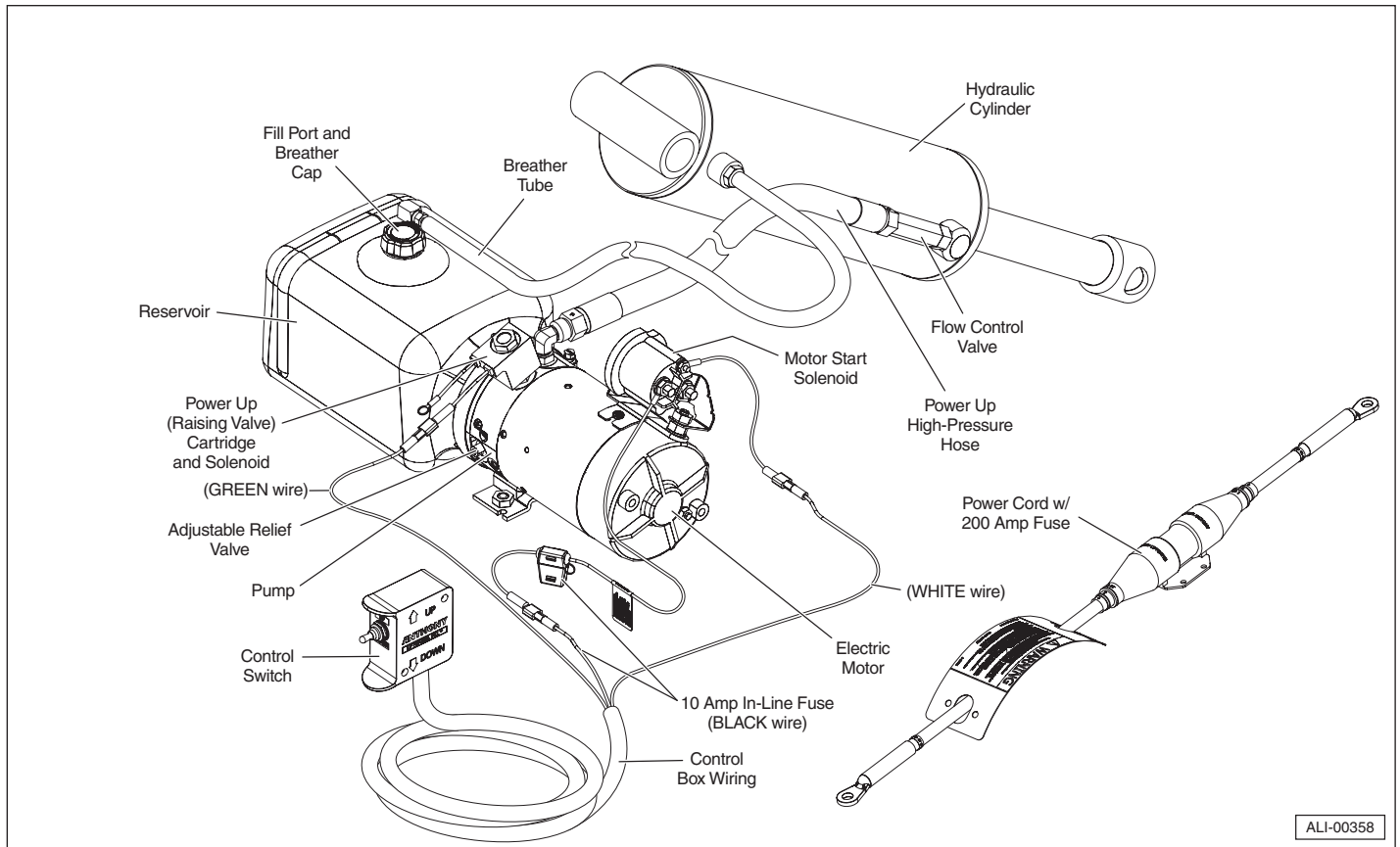
Always wear the proper breathing protection when grinding or welding. Use ventilation or vacuum systems to remove any contaminated air from the work area.

3. Nomenclature

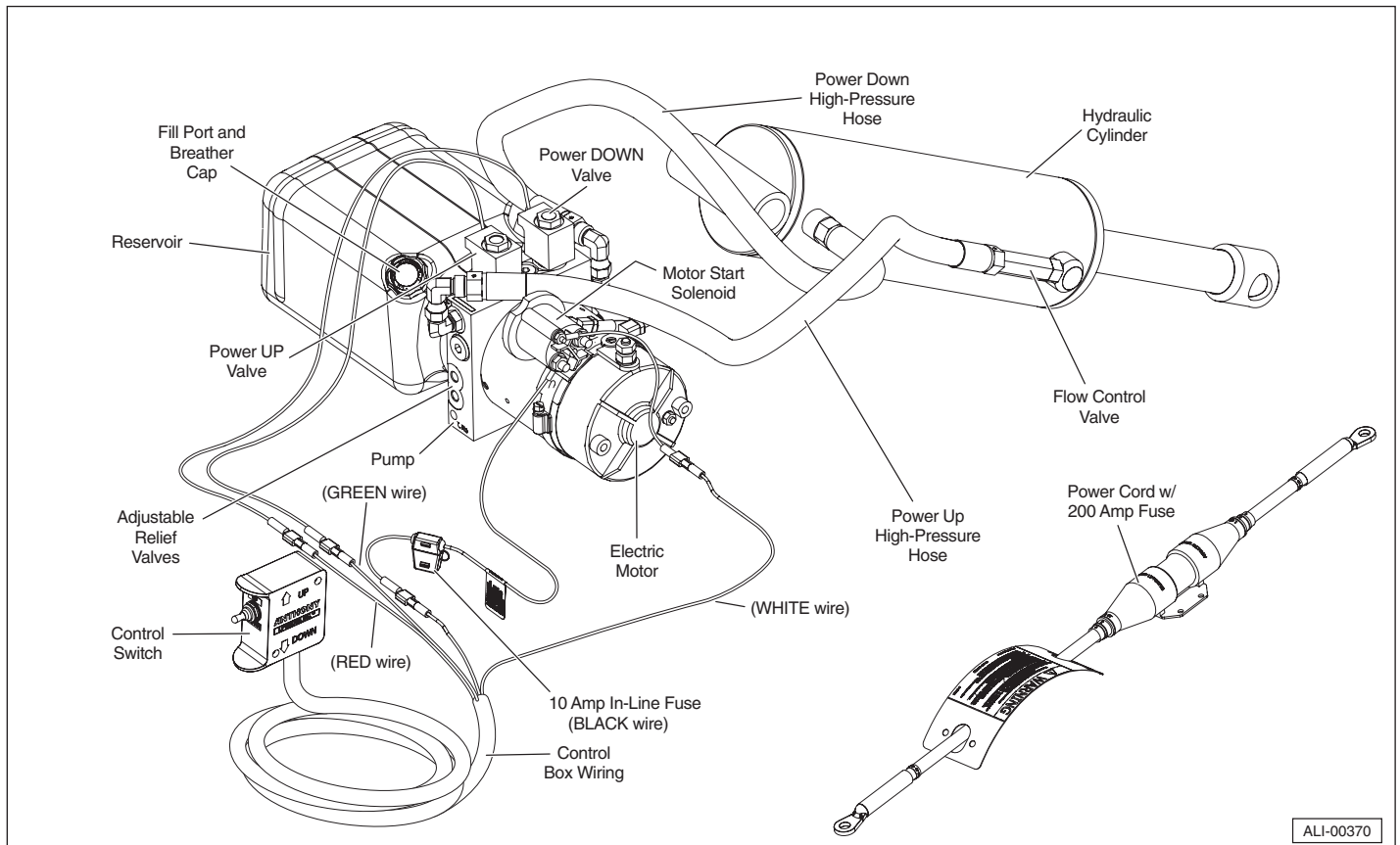
3.1 Platform Nomenclature



3.2 Gravity-Down Power Unit Nomenclature



3.3 Power-Down Power Unit Nomenclature



4. Installation

4.1 Tools Required

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
- Tape Measure
- Level (small, magnetic)
- Cutting Torch (in some applications)
- Wrenches (bolt-on models only)
- Grinder (removing galvanized surface before welding)
- 1/2 inch Impact Wrench (bolt-on floor extension)
- Heat Gun or Propane Torch for Shrink Tube (cable lug)
- Crimping Tool (cable lug)

4.2 Quick Reference Installation Guide

A Quick Reference Installation Guide is available online for experienced installers but should not replace the detailed installation instructions on the following pages.



Failure to read, understand, and follow the detailed instructions

and safety recommendations in this manual, before installing the liftgate, can result in serious injury or death to the installer or bystanders.

4.3 Bed Height and Clearance Requirements

NOTICE

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

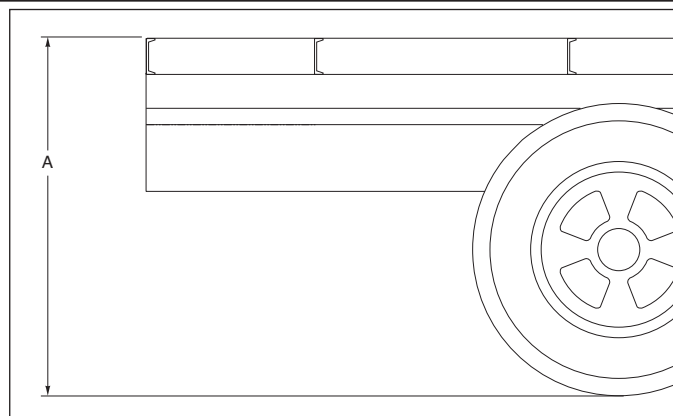
1. Place the truck on a flat, level surface with the parking brake set.

SAFETY INSTRUCTIONS

Remove the keys to prevent unwanted movement.

2. Be aware that as part of the installation preparation, the liftgate will not operate properly if the truck bed height falls beneath dimension (A). This reduced height can be the result of a fully loaded truck and/or a variety of other reasons. Do not proceed if the truck will not meet the minimum height requirement.

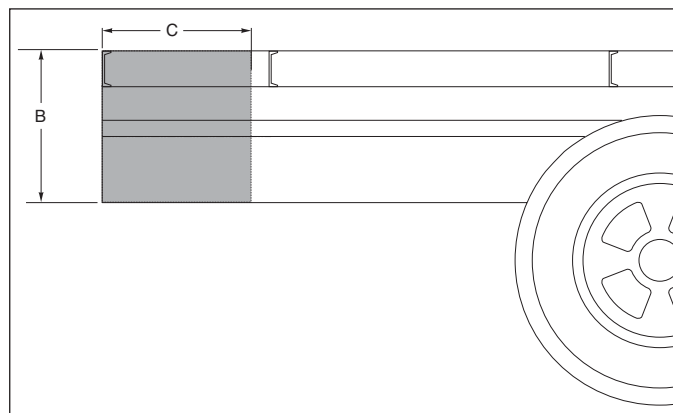
Truck Bed Height Fully Loaded	
Model	Bed Height (A)
AST	42"
AST-L	36"
AST-PLUS	38"



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)
AST	57"
AST-L	44"
AST-PLUS	56"

4. Use the following illustration and chart to ensure there is no interference between the liftgate and truck frame, in the area of dimensions B and C, which would prevent proper installation.



Note: The dimensions in the following chart are only a guide for required clearances.

TRUCK MOUNTING REQUIREMENTS			
A	B	C	
Bed Height	Bed to Top of Tube Assembly	Mounting Plate	
36"-41"	15 3/4"	29"	
42"-49"	19"	24 1/4"	
50"-51"	20"	23 3/4"	
52"-53"	21"	23 1/4"	
54"-55"	22"	22 5/8"	
56"-57"	23"	22 1/2"	

4.4 Installation

4.4.1 Preparation



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

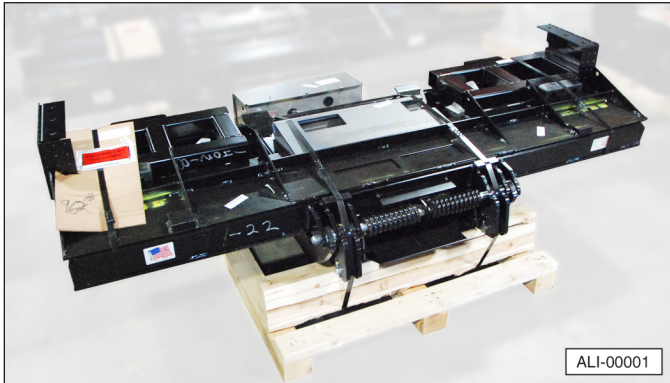


Use two people to safely install the liftgate.



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.

1. Remove the banding securing the liftgate and loose parts to the pallet. Remove the curbside and streetside mounting plates, the floor extension, the dock bumpers, and the side gussets from the liftgate frame.



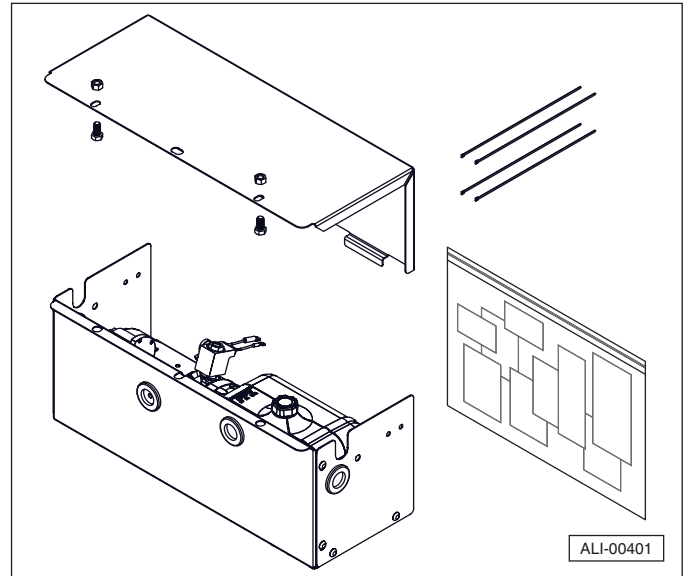
Typical Single Liftgate Shipping Pallet (steel liftgate shown).



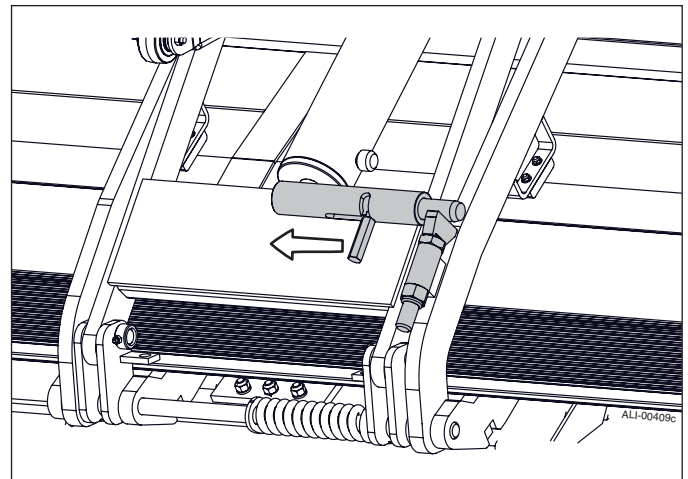
Typical Multiple Liftgate Shipping Pallet (aluminum liftgates shown).

2. 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
Streetside Step and Dock Bumper Assembly	1
Curbside Step and Dock Bumper Assembly	1
Streetside Mounting Plate	1
Curbside Mounting Plate	1
Power Cable with 200 Amp Fuse	1
Located Inside Pump Box	
Information Packet (contains decals, manuals, shims, and other related installation information)	1
Plastic Tie Wraps	—



3. Release the latch pin from its storage position.

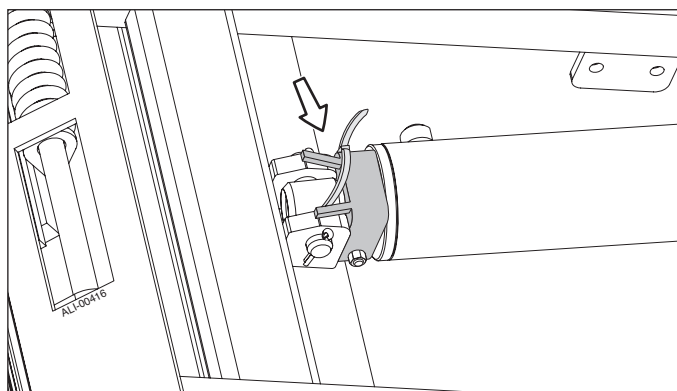


NOTICE The latch pin is only for in-transit locking of the liftgate. **DO NOT** slide the latch pin into the latched position when the platform is unfolded or raised. If this occurs, serious damage to the liftgate can occur when the liftgate is lowered.

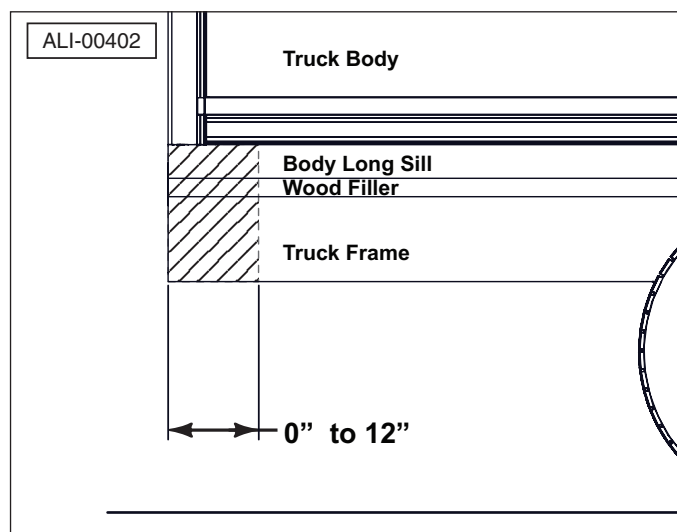
4. Carefully unfold the liftgate using two people. To keep the liftgate somewhat level once it's unfolded, a wooden block, approximately 12 inches tall, can be placed under the platform.



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 on the truck body.



5. Some truck body variations may require the frame to be extended within 12 inches of the rear of the truck, in order to install the liftgate mounting plates. Always extend the frame as close to the back of the truck as possible, without interfering with the operation of the liftgate (see Step 6).

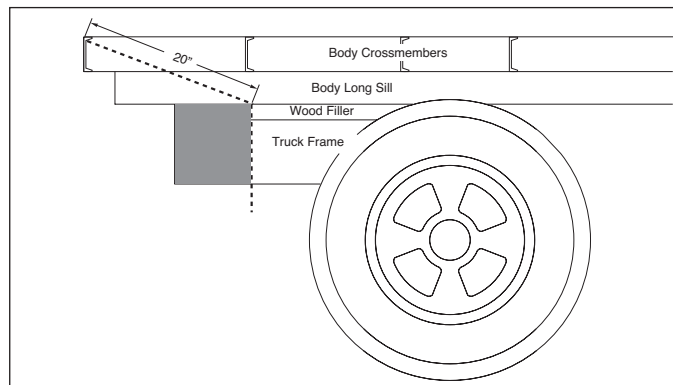
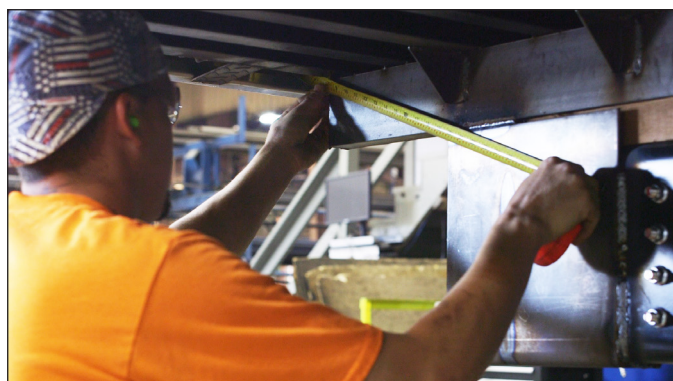


Take precautions to avoid welding sparks or the flame from a cutting torch coming into contact with the truck bed's wooden floor or other flammable components.

Note: Before extending the truck frame, make sure the extension meets the specifications of the truck manufacturer and that altering the frame will not void the truck warranty.

6. Most truck bodies require the frame to be either extended or cut back in order to properly install the liftgate.

Simply measure 20 inches from the rear edge of the truck body frame to the long sill. Make a mark on the long sill and either add or remove material from the frame.



Note: Once the liftgate is installed, make sure it will operate properly, without interfering with the truck frame or the body long sill.

4.4.2 Installing Floor Extension



If a galvanized floor extension and dock bumpers are being installed, the galvanized material must be removed prior to welding. Refer to the Installation manual for the proper procedure.

There is also a special procedure to follow when welding galvanized material to a stainless steel truck body sill.

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.

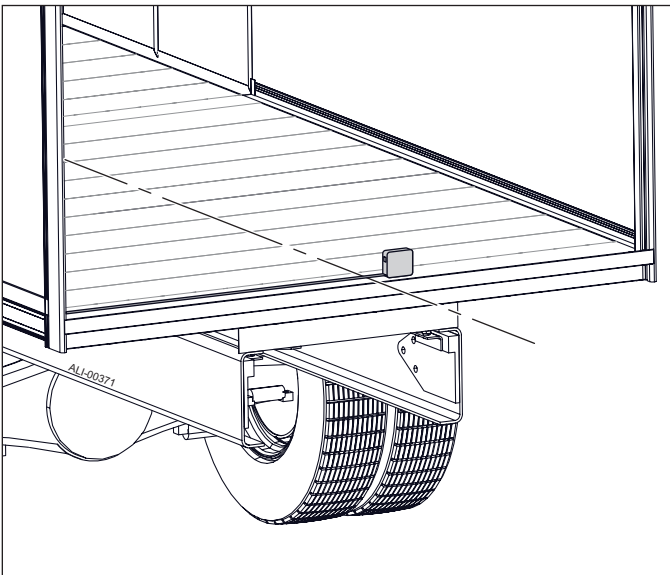
Always wear the proper breathing protection when grinding or welding. Use a ventilation or vacuum system to remove any contaminated air from the work area.

This procedure is for welding the floor extension to the truck body. If a bolt-on method is preferred, refer to section "4.7 Bolt-On Floor Extension" on page 24 for the complete procedure.

1. If desired, spray the parts of the truck body near the areas to be welded with anti-splatter spray.

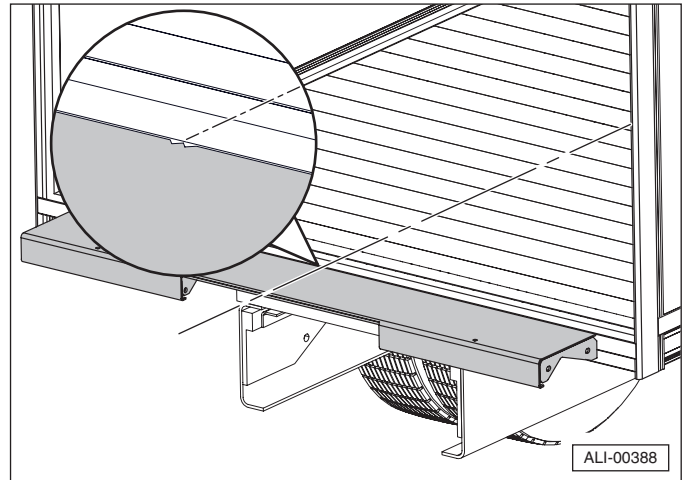


2. Find and mark the center of the truck's rear sill and the center of the floor extension with a white marker.



3. Install the floor extension.

- a. Use a white marker to also mark the finish weld locations with a repeating 2 inch continuous weld with a 4 inch gap. Make your marks from both ends inward toward the middle.
- b. Using a lifting device, center the white mark on the floor extension with the white mark on the truck body.

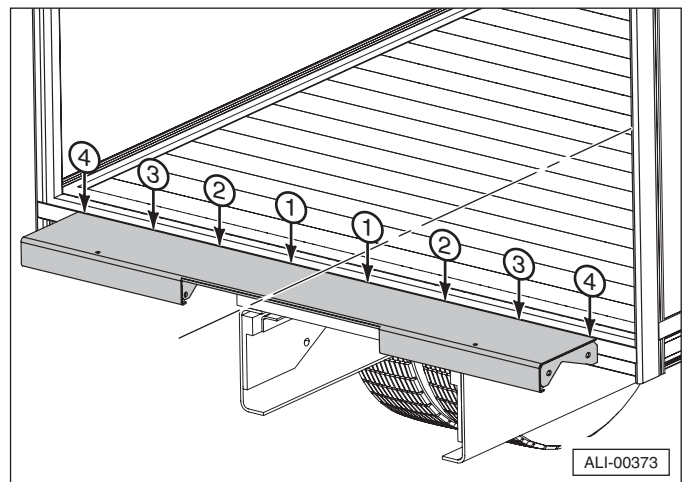


- c. With the center of the floor extension level with the floor of the truck, begin tack welding at the center and work outward. Make sure the extension remains level and flush with the floor of the truck bed.

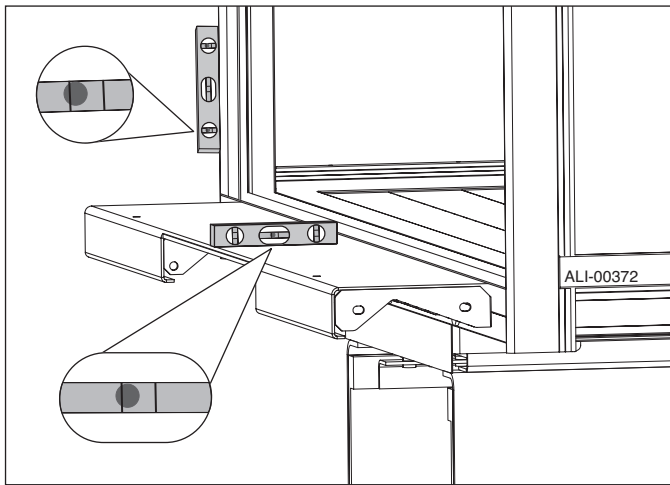
Note: The floor extension has a natural bow in it and must be straightened as it is installed.



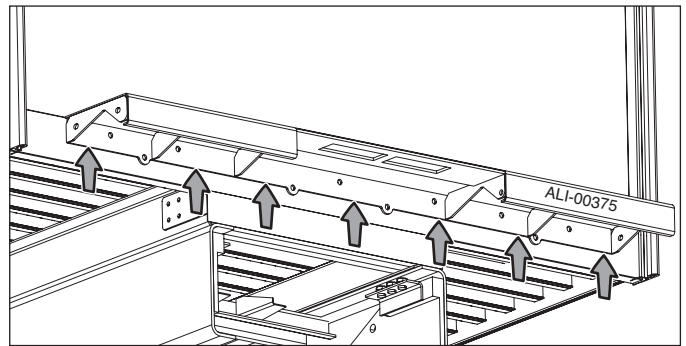
Tack welds must be strong enough to hold the weight of the floor extension (up to 300 lbs.) until the final welds are completed. Insufficient welds may not hold the floor extension, resulting in possible bodily harm.



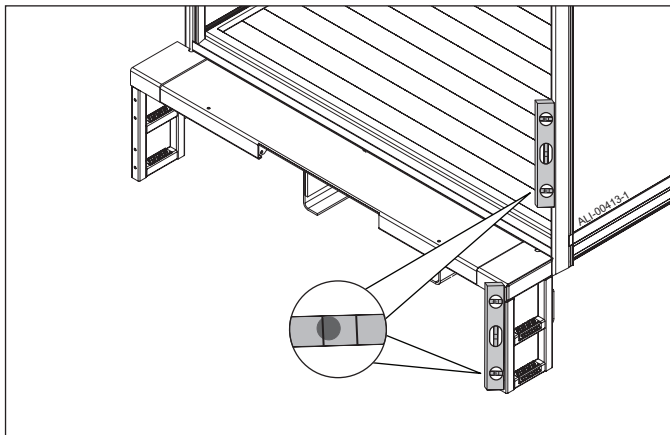
- d. Also, make sure the floor extension is level and parallel to the truck's rear sill.



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

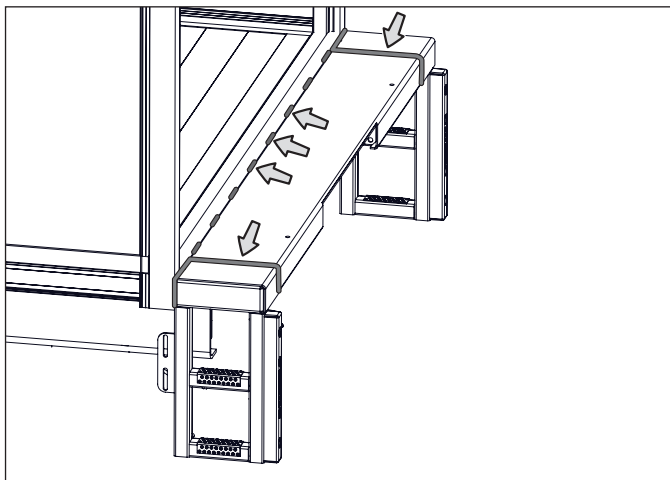


4. Tack weld both the streetside and curbside dock bumpers onto the floor extension.

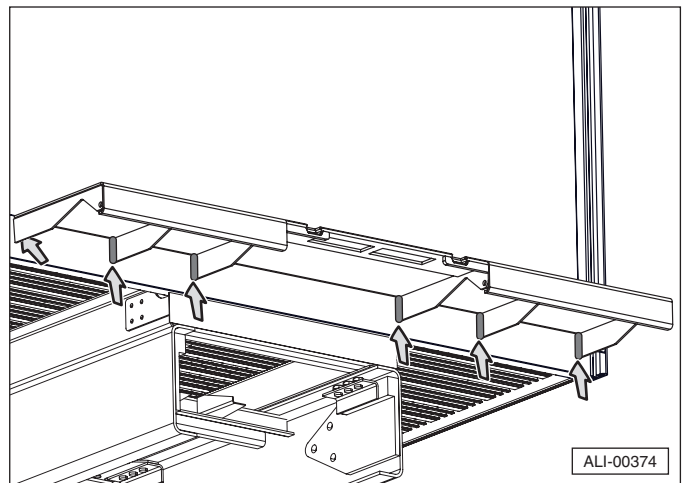


- e. Once you have verified the floor extension is straight and level, finish welding it to the sill of the truck body with 2 inch long welds, every 4 inches.

Weld the dock bumpers to the floor extension and the truck body sill using a continuous weld.



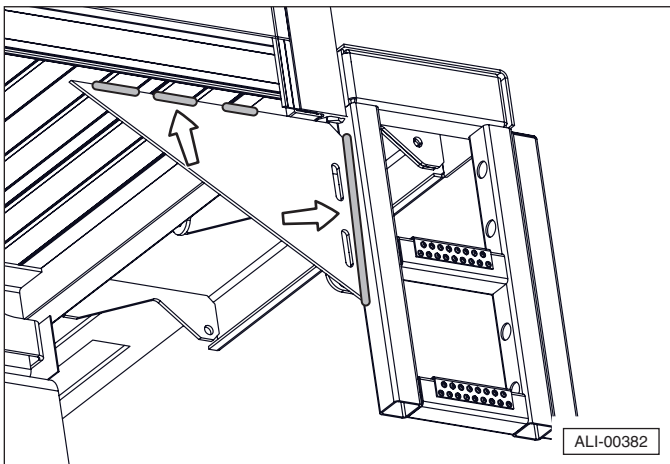
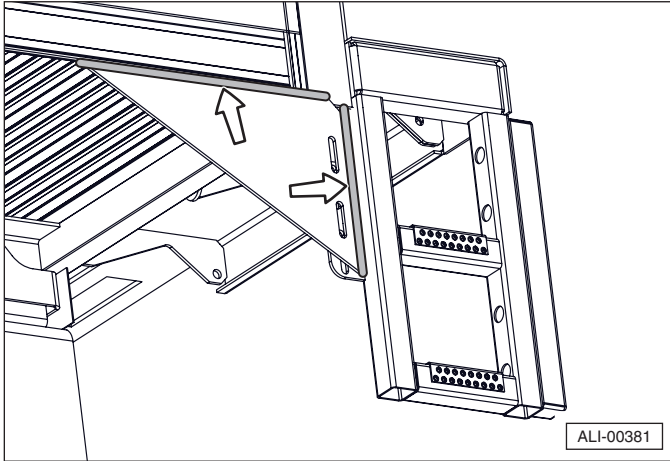
- g. If a walk ramp floor extension is being installed, weld both sides of the support gussets to the truck body sill.



- h. If not already installed, weld several installer-supplied strengthening plates between the crossmembers and the truck body sill.



5. Weld and/or bolt the side gussets to the dock bumper and the truck body. If welding to the truck body cross-members, make sure it spans at least three of them.



4.4.3 Positioning the Liftgate

Use a forklift or overhead lifting device to lift the liftgate. If using a forklift, the use of a lifting fixture makes the installation process easier and safer.

Note: Refer to “6. Lifting Fixture” on page 31 for a dimensional drawing to fabricate the lifting fixture.



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. For steel platform liftgates:
 - 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.
 - 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.



2. For aluminum platform liftgates:
 - a. Place the lifting fixture over the liftgate.
 - b. Place chains or a lifting strap around the lifting fixture and the platform.

NOTICE

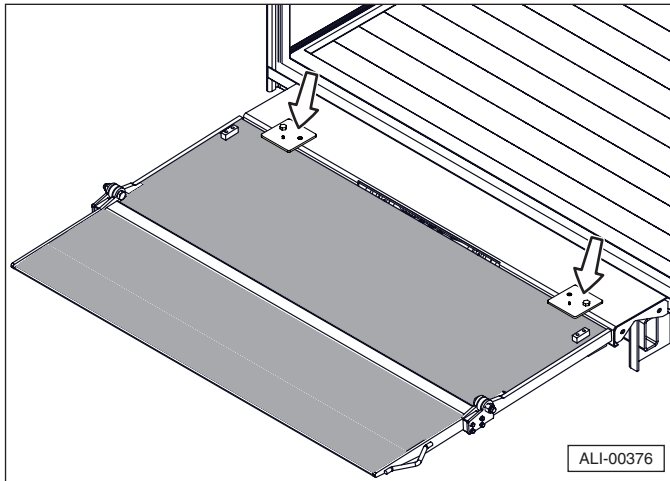
To prevent damage to the liftgate, use wood or other protective material between the lifting chain/strap and the platform to prevent surface damage.

- c. Adjust the chains/strap until the liftgate is almost parallel with the ground.



4.4.4 Attaching Liftgate to Truck Frame

1. Raise and 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.



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.



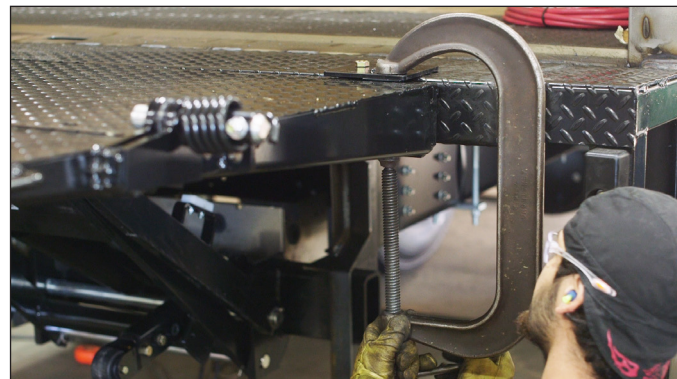
Do not work under the liftgate while it is suspended from the lifting device.

The liftgate can weigh up to 1,100 lbs. and failure of the lifting device could cause serious crushing injuries. Do not remove the lifting device until the liftgate is securely tack welded onto the truck frame.

2. Center the platform from side-to-side with the truck body.
3. Clamp the liftgate against the floor extension using two large C-clamps, as shown.



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



4. Place a lifting device (floor jack shown) under the wheel arm, as shown.



5. Determine the installed height (B) of the adapter frame tube using the chart and the illustration in Step 6.

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"

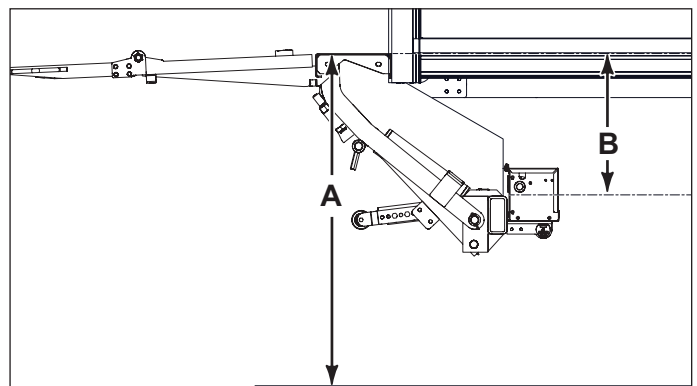
Note: In some cases, the top of the adapter frame tube may be against the frame or could be above the frame. It may be necessary to notch the frame in order to achieve the required height of the adapter tube frame.

6. Raise the adapter frame tube to the correct height of dimension (B), which is based on the height of the truck bed.



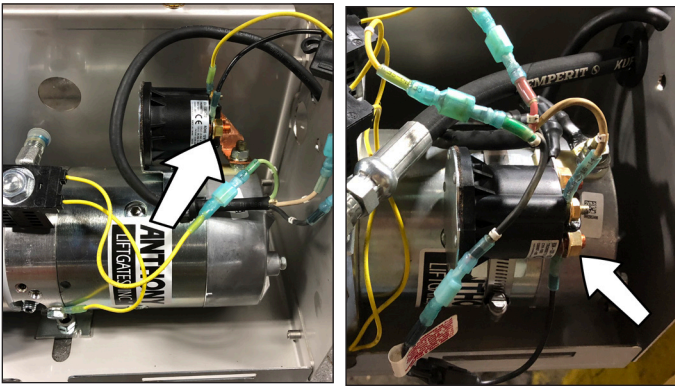
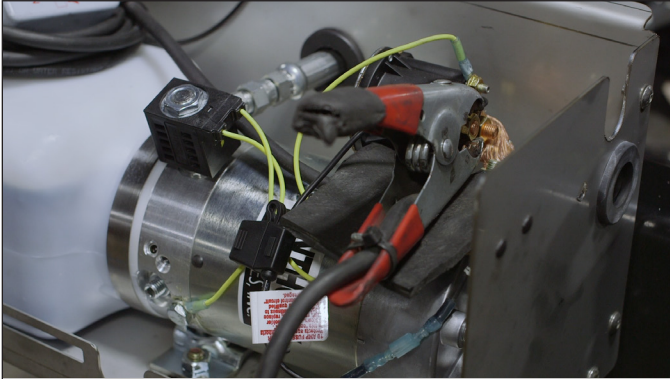
Do not bend the wheel arm during the leveling process.

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.



7. To actuate the control valve, it's necessary to 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.

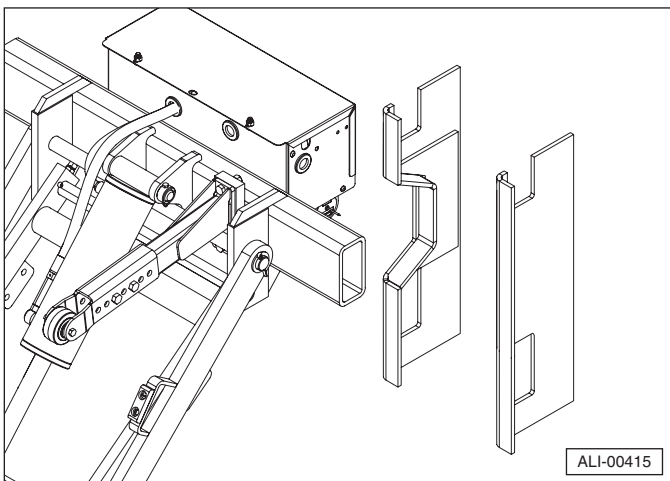


8. For gravity-down models, simply press and hold the control switch in the DOWN position to release the pressure in the cylinder.

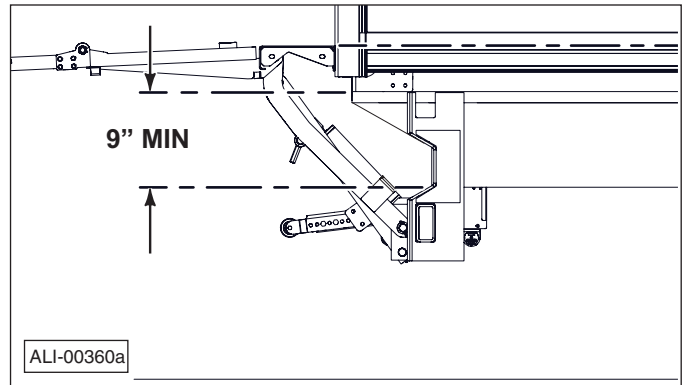
For power-down models, briefly press and release the control switch in the UP position. Remember that pressing the UP control will hydraulically raise the adapter frame tube.

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.

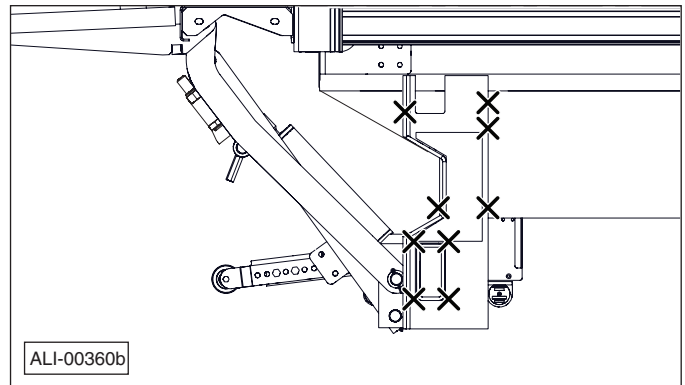
9. Slide the mounting plates over the adapter frame tube on each side, as shown.



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.

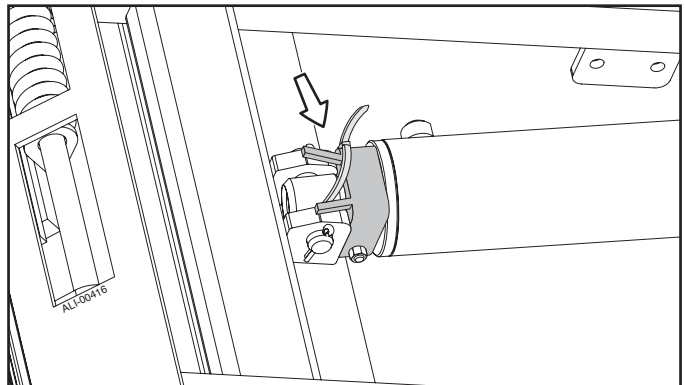


10. Tack weld the mounting plates to the frame in the locations marked "X" (each tack weld should be a 3/8 inch fillet, 1 inch long).



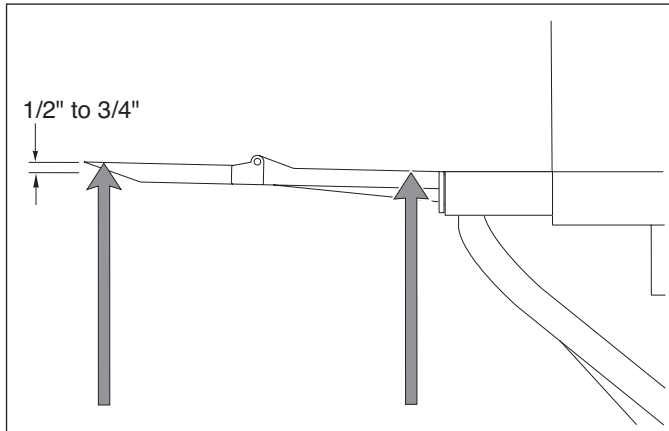
WARNING   The tack welds must be strong enough to hold the weight of the liftgate, which can be up to 1,100 lbs. Insufficient welds may not hold the liftgate in place, resulting in possible bodily harm.

11. Remove the floor jack.
12. Make sure the latch pin is in the open position.
13. 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.

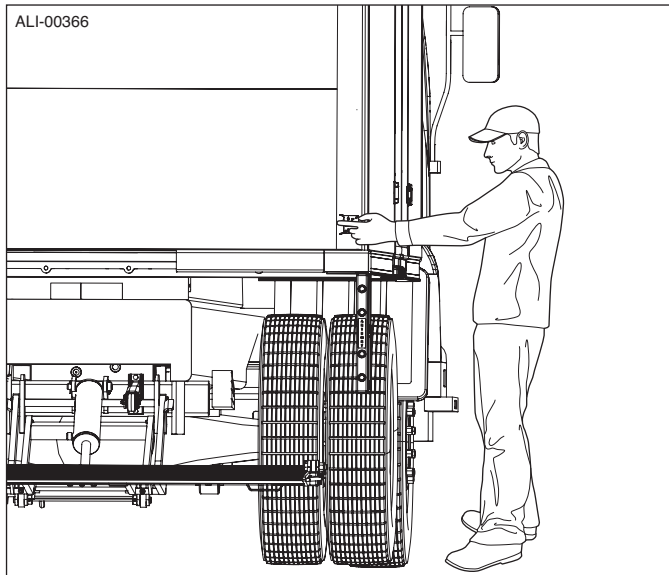


14. Completely raise the platform.

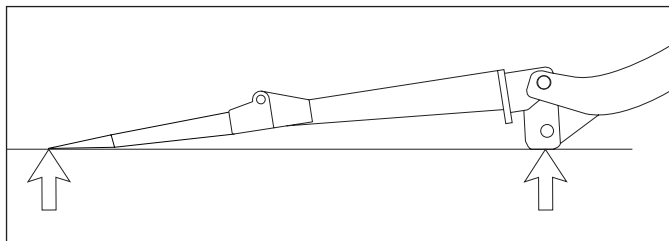
The outboard edge of the flip-over section should be 1/2 to 3/4 inches higher than the platform section, as shown, when correctly installed.



15. Completely raise and lower the platform several times.

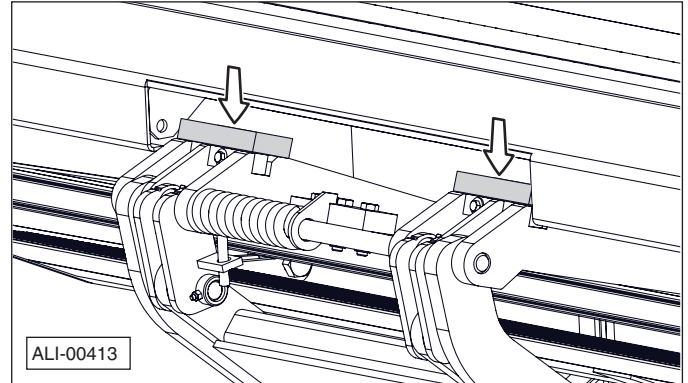


16. The front edge of the flip-over platform section should lower to the ground and contact the ground at the points seen below, and the back of the platform should raise flush to the floor extension. If the front edge does not touch the ground, refer to the next step.



17. 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.

18. If the platform is operating correctly, finish welding the mounting plates. If the platform does not make a complete cycle, adjust the mounting plates, as necessary.



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

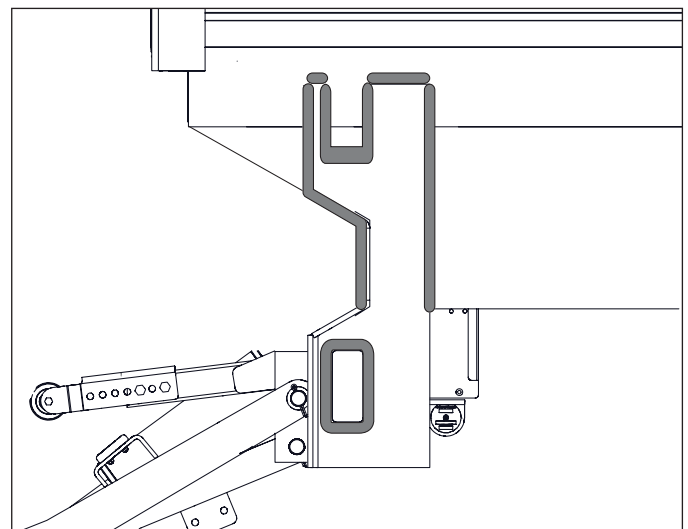


For safety purposes, finish welding the liftgate while the platform is on the ground, not in a raised position.

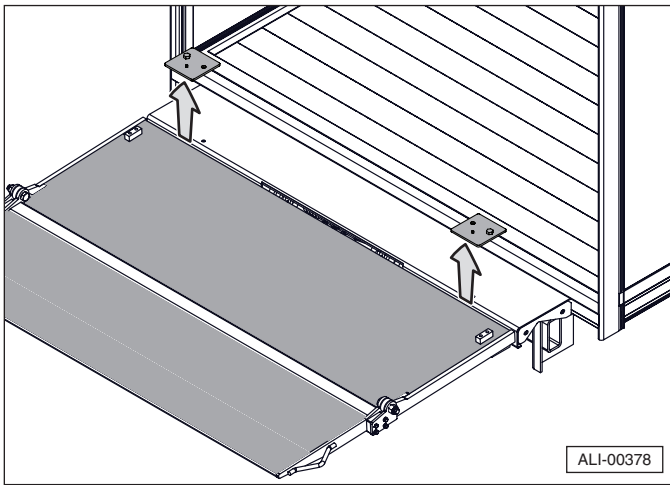


Cover the cylinder rod to prevent weld spatter from damaging it.

19. 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.

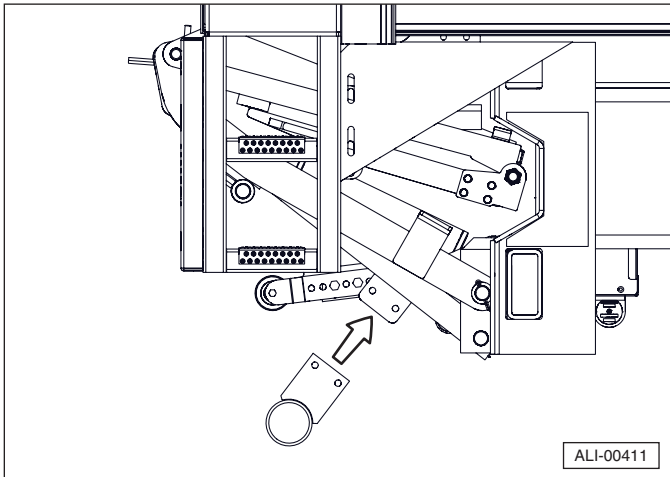


20. Remove the installation brackets from the floor extension.



4.4.5 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.

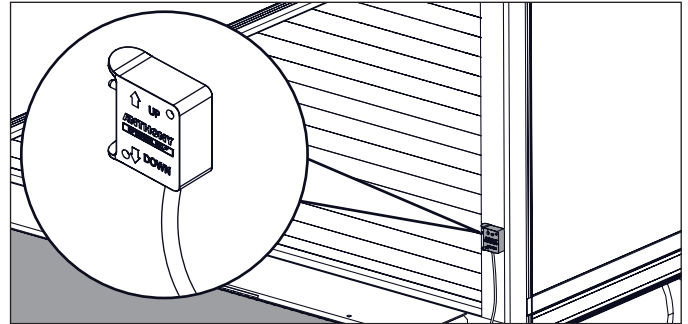


2. With the liftgate in the stored position, attach the red and white reflective tape.

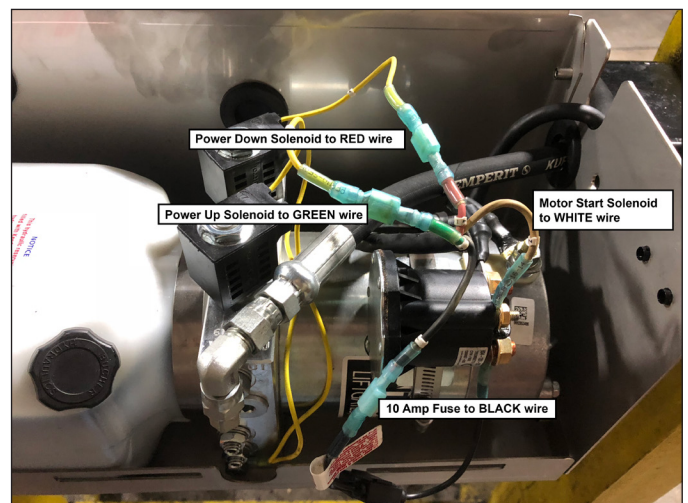
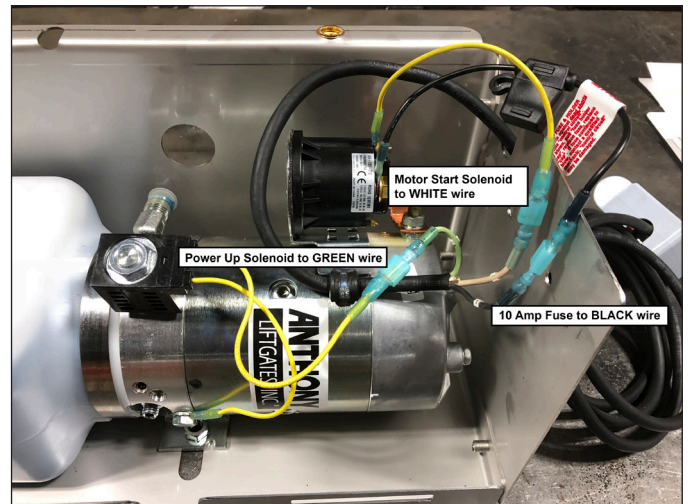


4.4.6 Mounting Control Switch and Routing the Power Cable

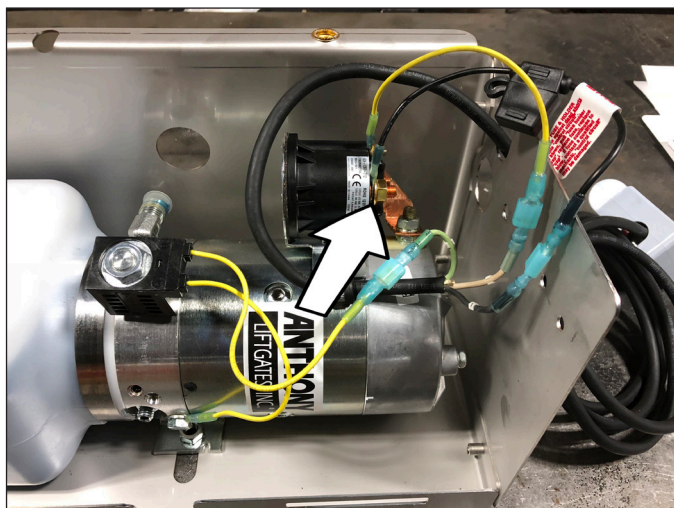
1. Remove the slave battery's jumper cables and disconnect the wires of the control switch from the power unit.
2. Mount the control switch to the truck's rear curbside post, so it can be reached while standing at the curbside of the truck, away from the liftgate platform.



3. Disconnect the wires of the control switch from the power unit.
4. Install the protective rubber grommet in the dock bumper and route the wire through the dock bumper.
5. Reattach the control unit wires to the appropriate terminals, as shown.




6. Connect the long section of the power cable to the motor start solenoid.




Connection for gravity down models.



Connection for power down models.

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.

7. 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  Never secure the power cable to anything which allows it to contact sharp edges, other wiring, 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.

8. Route the power cable along the truck frame to the battery box attaching it with plastic tie wraps or wire clips.

If the cable is too long, cut it to the desired length.

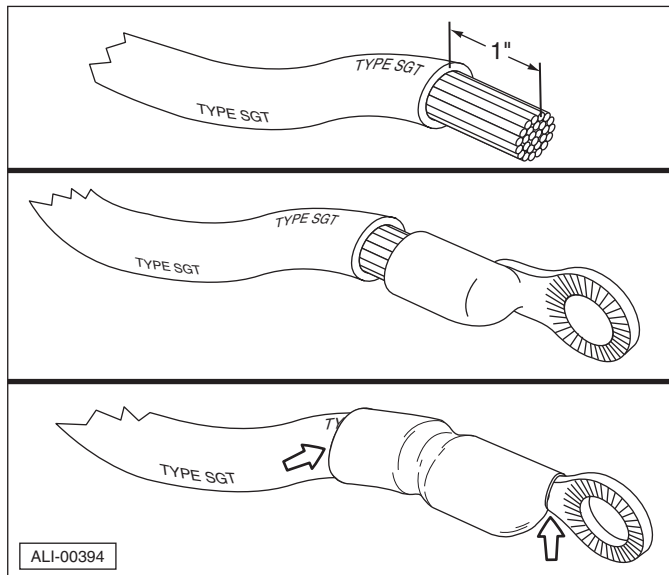
9. Install the optional cut-off solenoid or cut-off switch, if desired.

WARNING



Anthony Liftgates strongly recommends the installation of an optional power cut-off solenoid ("4.5 Cut-Off Solenoid Connection" on page 23) or cab cut-off switch ("4.6 Cut-Off Switch Connection" on page 24). Allowing power to the liftgate when the truck is unattended can result in serious injury or death.

10. Reconnect the newly-cut end to the fuse.
11. If the power cable requires a cable lug on the end, follow these steps.
 - a. Strip the insulation one inch back from the end of the cable to expose the copper wire.

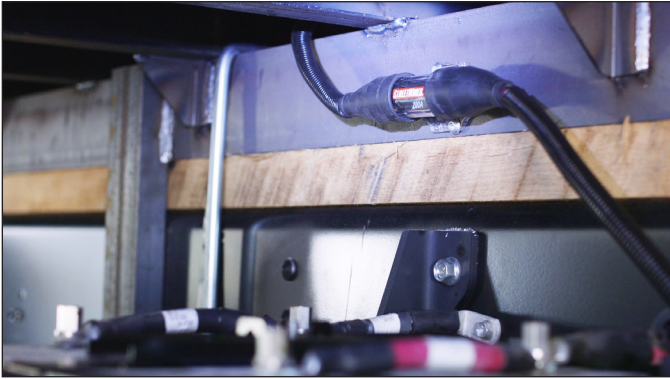


- b. Position the cable lug on the exposed wire, as shown. Crimp the cable lug using a cable crimping tool (hydraulic or manual).
 - c. Use the supplied heat shrink tube to insulate the new connection, leaving only the mounting hole exposed.

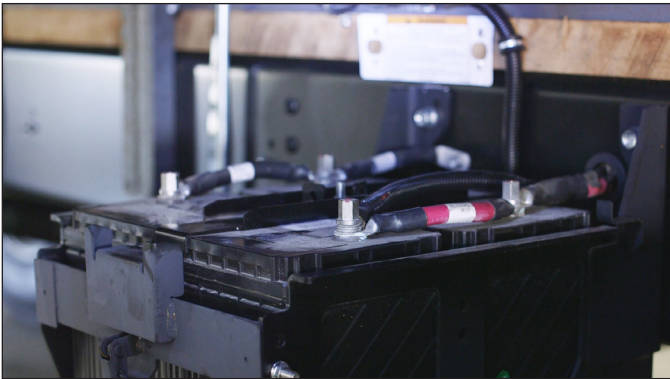
NOTICE

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.

12. Mount the fuse in a desired location.



13. Route the short, 3 foot section of cable into the battery box and connect the end to the positive (+) post of the truck battery.



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

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



16. 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.

4.4.7 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

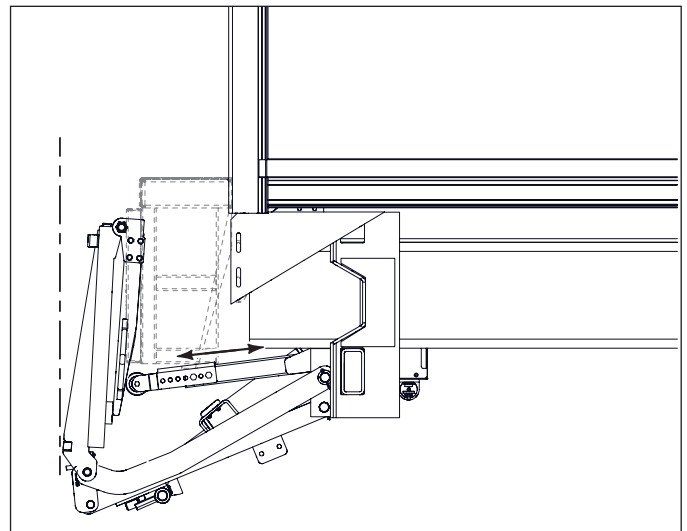


Never stand behind the liftgate when it is opened. Always stand to the side

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 upward, sloped surface. Adjust the wheel arm to prevent the platform from completely unfolding in this type of situation.

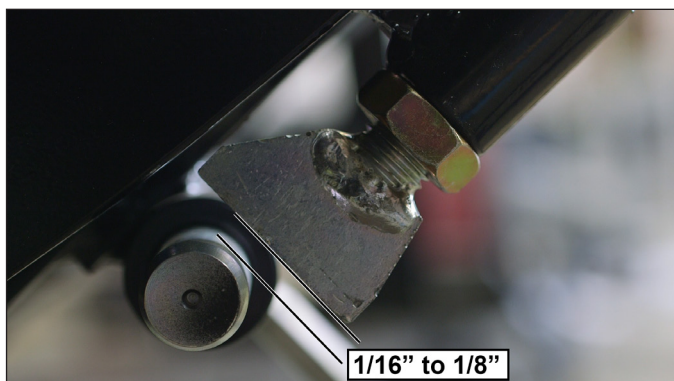
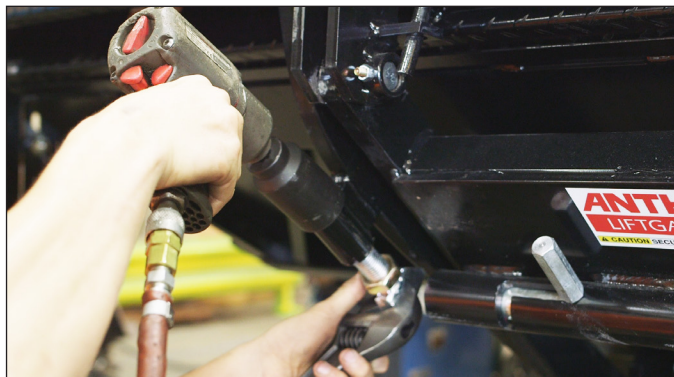
1. Test and adjust the wheel arm.
2. If adjustment is needed, remove the two bolts on the wheel arm and the nuts on the wheel arm.
3. Lengthen or shorten the wheel and channel assembly on the tube, as desired.



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.

4.4.8 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. Insufficient clearance can allow binding of the latch pin as the liftgate is used, while too much clearance will not properly secure the liftgate. If the latch pin will not easily open, press the UP control button to release any tension on the latch pin.



4.4.9 Installing DOT Lighting, Decals, and Any Components Not Part of Liftgate

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 "5. Decals" on page 27.
5. Make a final operation check. Refer to section "4.4.10 Final Inspection Checklist" on page 22.

4.4.10 Final Inspection Checklist

SAFETY INSTRUCTIONS

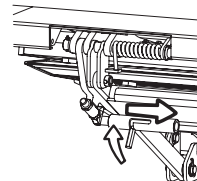
The installation procedure is not complete until all of the following items are checked and verified. If you have any questions, contact Anthony Liftgates.

- ☐ 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.

ANTHONY TUCKUNDER LIFTGATES OPERATING INSTRUCTIONS

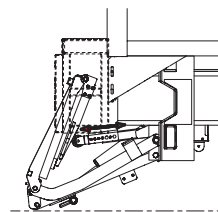
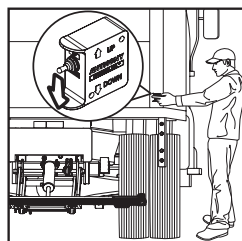
1. Raise (twist) latch pin handle upwards and then slide pin sideways to release.

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



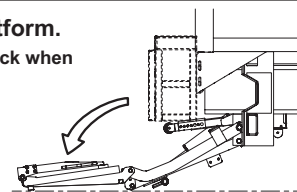
2. Press control switch DOWN until folded platform rests on ground.

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



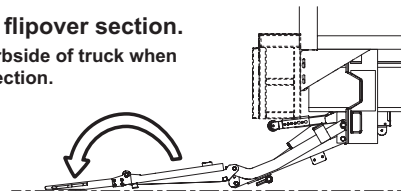
3. Manually unfold main platform.

Always stand on curbside of truck when unfolding platform.

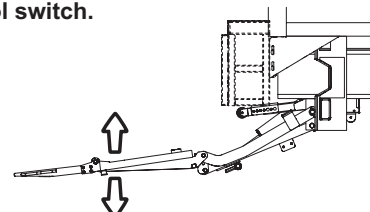
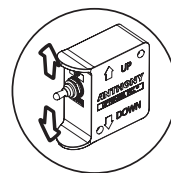


4. Manually unfold flipover section.

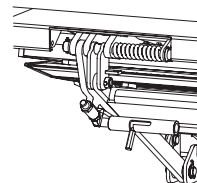
Always stand on curbside of truck when unfolding flipover section.



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.



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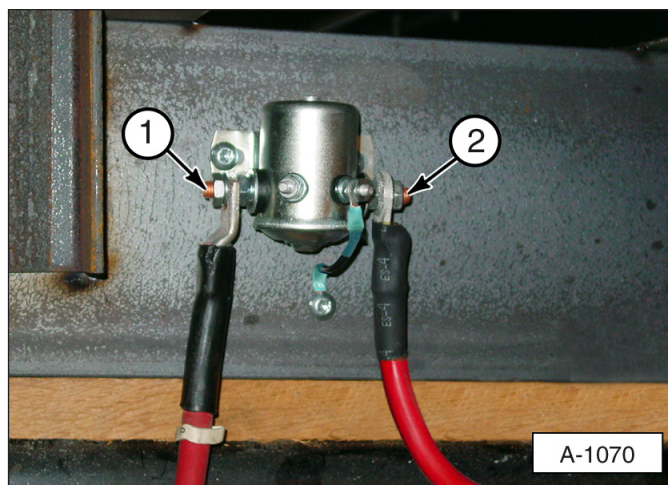
- ❑ Make sure the platform will fold smoothly and freely, tuck under the truck in a stored position and latch.
- ❑ Make sure the latch pin works correctly.
- ❑ Make sure retainers are properly held in place on all factory-installed pivot pins.
- ❑ Make sure all hydraulic fittings are tight and not leaking.
- ❑ 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 Dexron VI, Dexron III, or Hyken Glacial Blue. Refer to separate Maintenance Manual for additional specifications.
- ❑ 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.
- ❑ Make sure reflectors, license plate bracket, and DOT lights are installed and operating properly, per FMVS 108 – Lamps, Reflective Devices, and Associated Equipment.
- ❑ If required, make sure a rear impact protection device is installed, according to FMVSS 223 – Rear Impact Guards and/or FMVSS 224 – Rear Impact Protection.
- ❑ Make sure truck brakes work properly, according to FMVSS 105 – Hydraulic And Electric Brake Systems.
- ❑ 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 work properly.
- ❑ Make sure all decals are properly attached and legible.
- ❑ Put separate Installation, Operation, and Maintenance Manuals in the vehicle.

4.5 Cut-Off Solenoid Connection

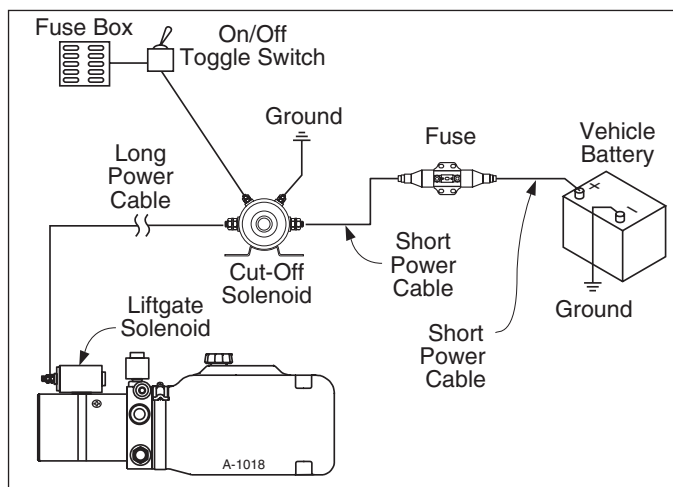
The installation of a cut-off solenoid is a recommended option for all 12 Volt electric liftgates. Installing a cut-off solenoid will help to prevent accidental or unauthorized use of the liftgate.

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.

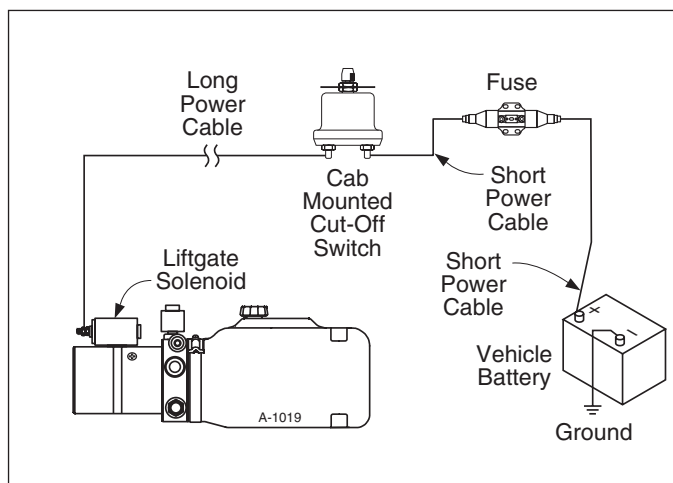
4.6 Cut-Off Switch Connection

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.

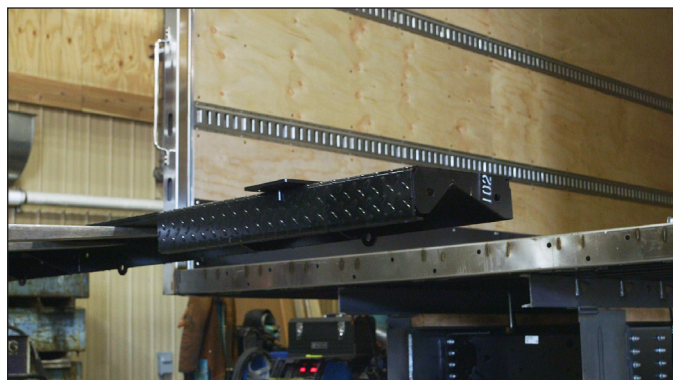


Wiring Diagram With Cab Cut-Off Switch.

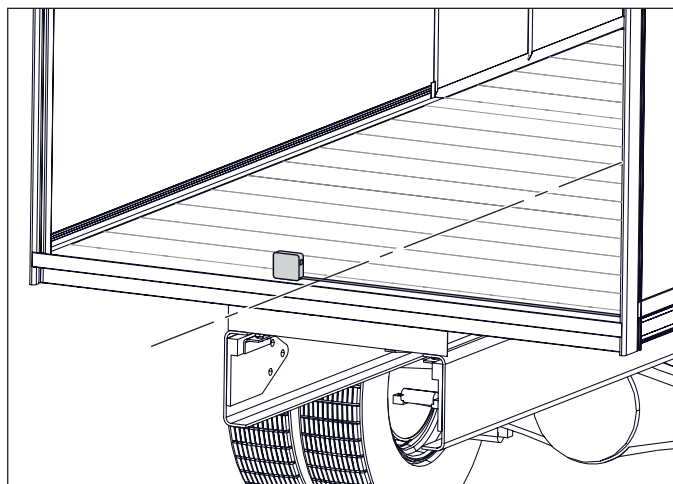
4.7 Bolt-On Floor Extension

Use the following procedure to bolt the floor extension to the truck body.

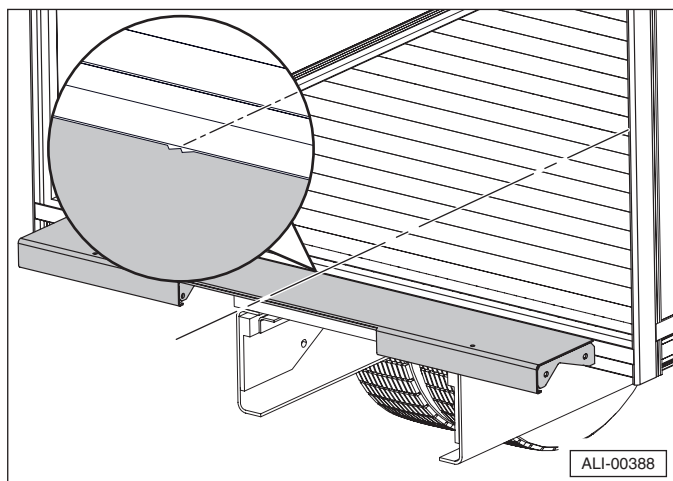
1. Using a lifting device, align the holes in the floor extension with the predrilled holes in the truck body sill. A dimensional drawing showing the hole location can be found in this section.



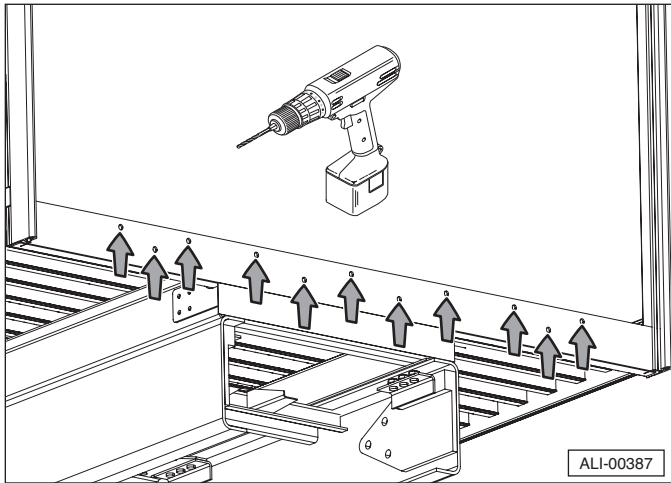
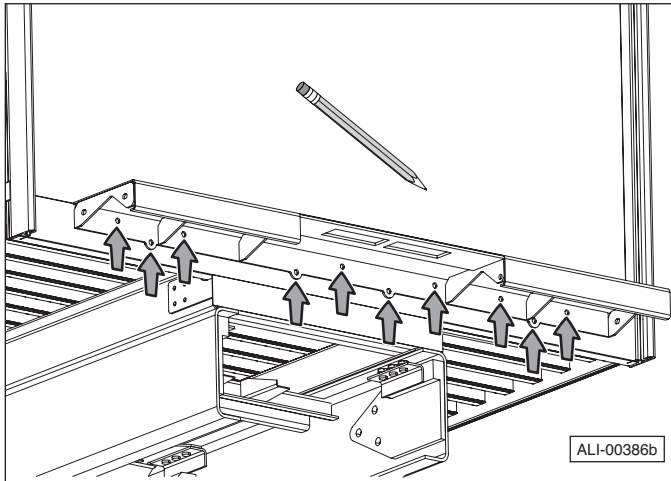
2. If the predrilled holes are not in the truck body sill, follow these steps.
 - a. Find and mark the center of the truck body.



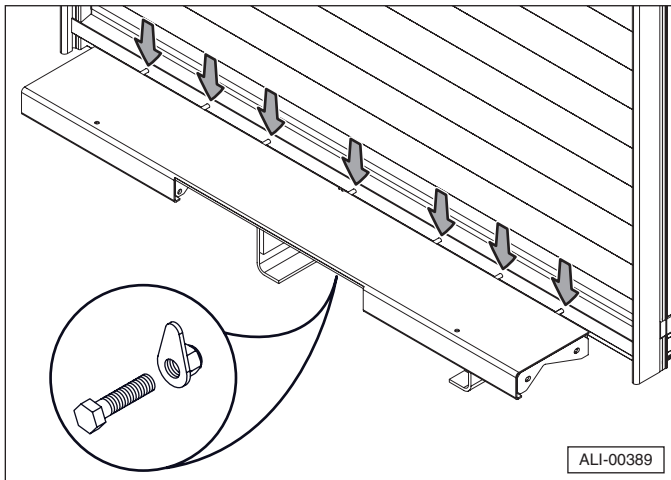
- b. Center the floor extension on the truck body using the notched cutout.



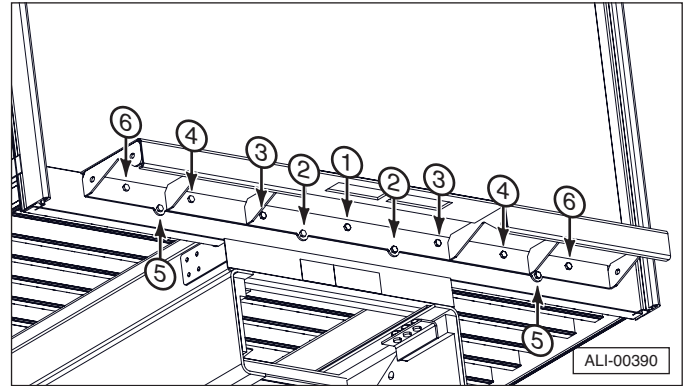
c. Mark and drill mating holes.



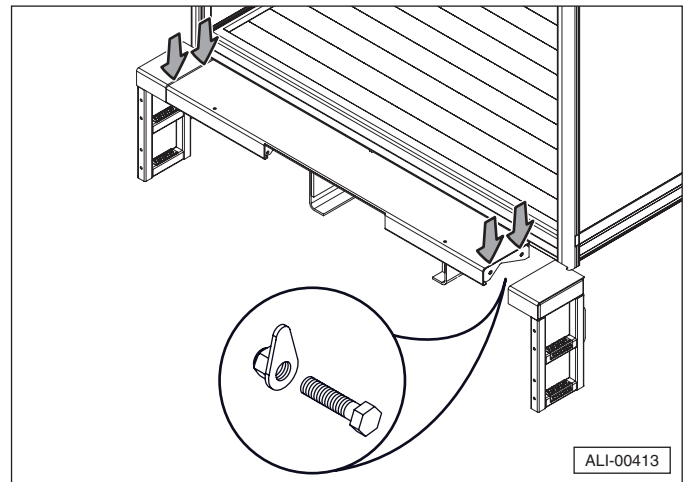
3. Install the flanged bolts through the floor extension and truck frame, with the bolt heads facing the rear of the truck.



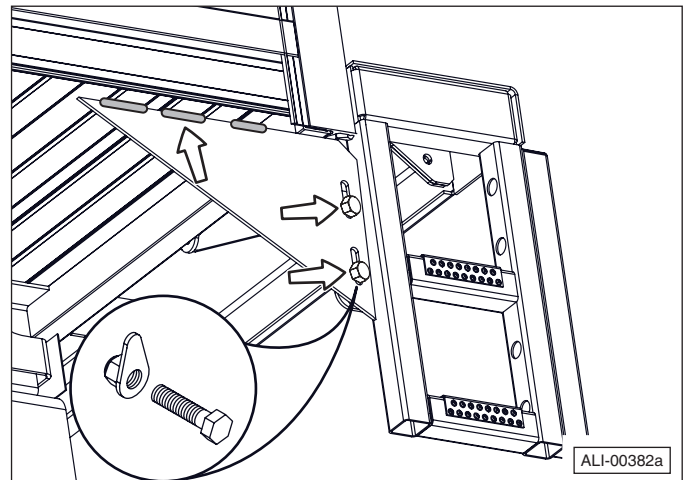
4. The floor extension has a natural bow in it and must be straightened as it is installed. Tighten the nuts from the center out, keeping the extension flush with the bed of the truck.



5. Install both dock bumpers.



6. Bolt the side gussets onto each of the dock bumpers.

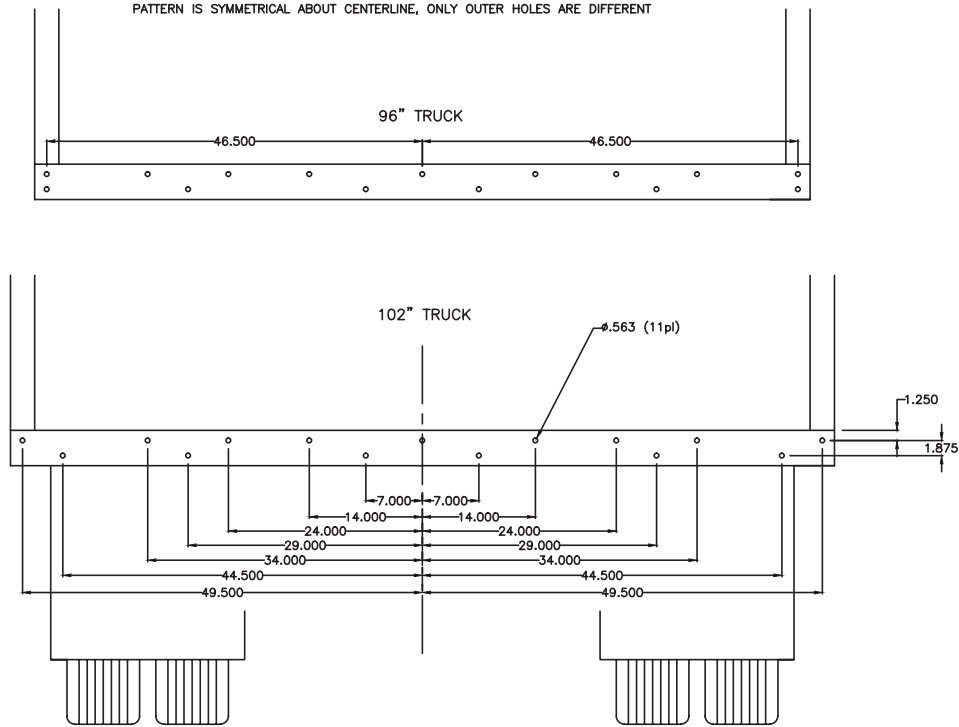


7. Weld the top of the side gussets to the truck body frame.

8. Make sure all bolts are tightened to standard torque.

HOLE PATTERN FOR BOLT-ON FLOOR EXTENSION

PATTERN IS SYMMETRICAL ABOUT CENTERLINE, ONLY OUTER HOLES ARE DIFFERENT



5. Decals

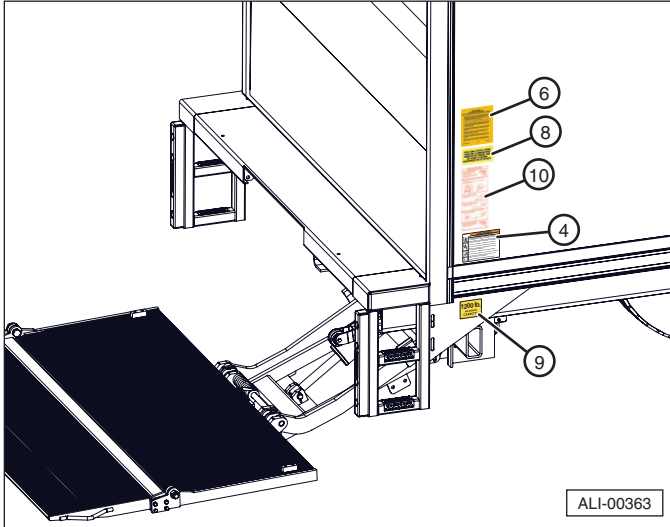
SAFETY INSTRUCTIONS



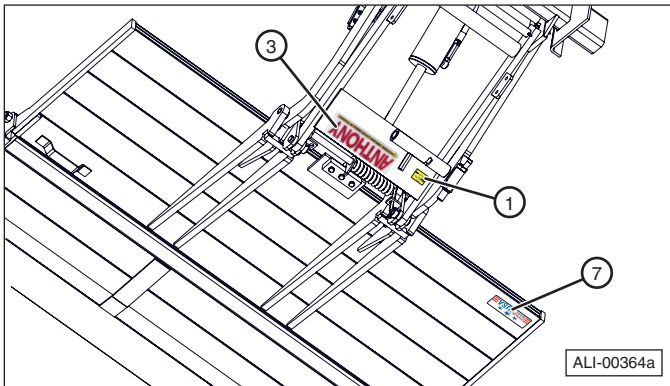
To prevent possible injuries due to improper operation, make sure all

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

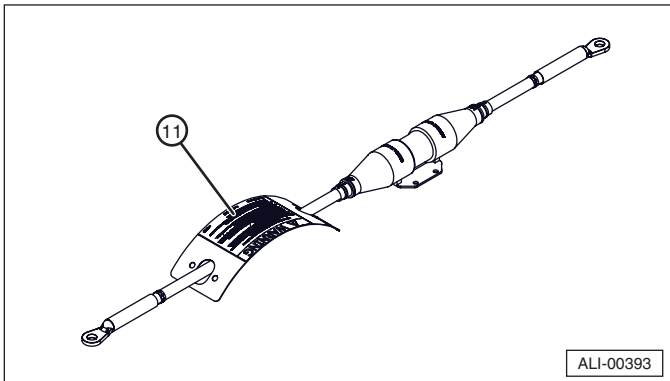
1. Attach decals 4, 6, 8, 9, and 10 to the truck body, as shown.



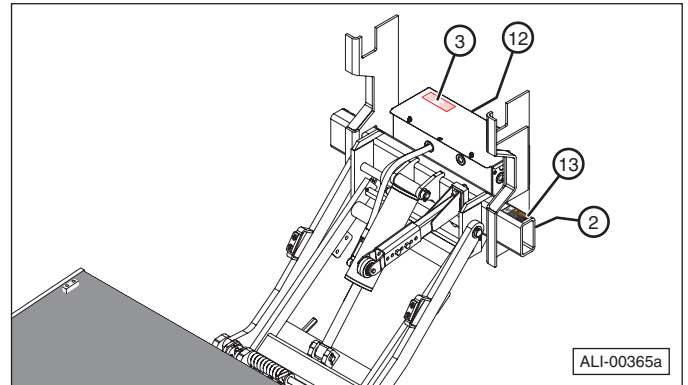
2. Make sure factory-installed decals 1, 3, and 7 are attached to the lift arms and platform.



3. Make sure the factory-installed fuse changing decal is on the power cable and is visible near the location of the fuse.



4. Make sure factory-installed decals 2, 3, 12, and 13 are installed on the power unit and on the adapter frame tube.



Item	Part Number	Description
1*	A-131017	Note - Disengage Latch
2*	A-131028	Weld Warning
3*	A-131034	Anthony Label
4	A-131115	Warning, Personal Injury
5*	A-131133	Hydraulic Fluid
6	A-150238	Notice - Protected With Electrical Overload Circuit Breaker
7*	A-150601	Made In The USA
8	ATU-141	After Using Liftgate
9	A-131015 ATU-175 A-131020 ATU-174 ATU-147 ATU-177	1500 Lb. Maximum Capacity 1800 Lb. Maximum Capacity 2000 Lb. Maximum Capacity 2500 Lb. Maximum Capacity 3000 Lb. Maximum Capacity 3500 Lb. Maximum Capacity
10	ATU-423	Operating Instructions
11*	A-131036	Warning, 200 Amp Fuse Changing Procedure (attached to power cable)
12*	A-131001	10 Amp Fuse Changing Procedure (attached to control wiring in pump box)
13*	A-131125	Warning, Galvanized Fumes Hazard

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

Note:

**Disengage "latch"
before attempting to
use liftgate.**

**Engage "latch" after
using liftgate.**

A-131017

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

ANTHONY
LIFTGATES, INC.®

⚠ CAUTION SECURE LATCH WHILE IN TRANSIT.

A-131034

ANTHONY
LIFTGATES, INC.®

⚠ WARNING**PERSONAL INJURY HAZARD**

Operation may require user to stand on platform.
To prevent injury or death of operators or bystanders:

- Read and follow operator/owner manual for safety, operation, inspection, and maintenance instructions.
- Do not place unstable or unsafe loads on platform.
- Do not allow loads to extend over edge of platform.
- Do not exceed capacity or use liftgate for anything other than intended purpose.
- Be aware of surroundings when operating liftgate.
- Do not allow body parts to contact moving components.
- Ensure footing is stable and stand away from edge before raising or lowering platform.
- Owner/operators must properly maintain liftgate.

A-131115

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

A-131133

NOTICE

**THIS LIFTGATE IS PROTECTED
WITH AN ELECTRICAL OVERLOAD
CIRCUIT PROTECTION DEVICE,
EITHER A CIRCUIT BREAKER, OR
A FUSE, AND IS LOCATED NEAR
THE POWER SUPPLY**

A-150238



8 — ATU-141

AFTER USING LIFTGATE, SECURE LATCH AND, IF EQUIPPED WITH POWER CUT OFF SWITCH, TURN OFF POWER TO PREVENT UNAUTHORIZED USE OF LIFTGATE.

ATU-141

9 — A-131015, A-131020, ATU-147, ATU-175, ATU-174, ATU-177

1500 lb.
MAXIMUM
CAPACITY

A-131015

1800 lb.
MAXIMUM
CAPACITY

ATU-175

2000 lb.
MAXIMUM
CAPACITY

A-131020

2500 lb.
MAXIMUM
CAPACITY

ATU-174

3000 lb.
MAXIMUM
CAPACITY

ATU-147

3500 lb.
MAXIMUM
CAPACITY

ATU-177

CAUTION

Make sure the proper "MAXIMUM CAPACITY" decal is

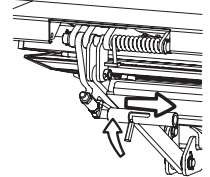
placed on the truck for the appropriate lifting capacity of the liftgate being installed. Do not put a higher rated decal on a liftgate with a lower capacity; this could result in liftgate damage or possibly personal injury.

10 — ATU-423

ANTHONY TUCKUNDER LIFTGATES OPERATING INSTRUCTIONS

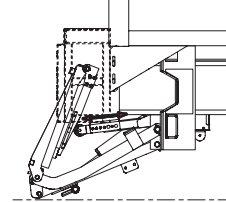
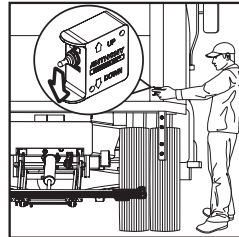
1. Raise (twist) latch pin handle upwards and then slide pin sideways to release.

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



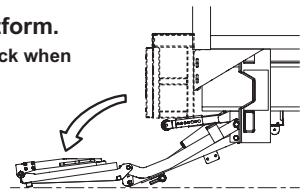
2. Press control switch DOWN until folded platform rests on ground.

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



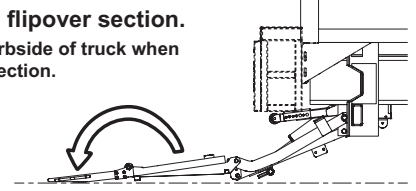
3. Manually unfold main platform.

Always stand on curbside of truck when unfolding platform.

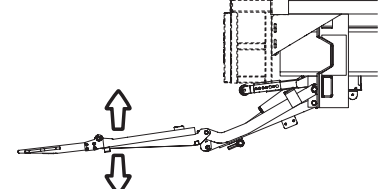
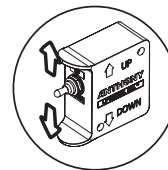


4. Manually unfold flipover section.

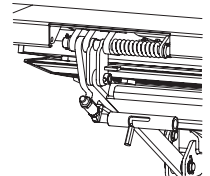
Always stand on curbside of truck when unfolding flipover section.



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

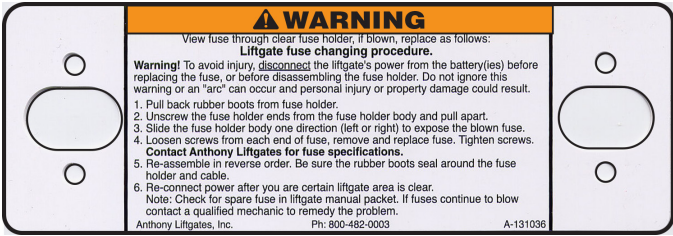


6. Reverse steps to fold and store platform. Make sure platform is locked in storage position with latch pin after use.

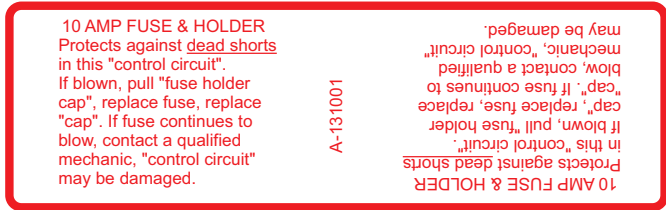


ATU-423

11 — A-131036 (attached to power cable)



12 — A-131001 (attached to control cable)



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



6. Lifting Fixture

When installing several liftgates a year, the following lifting fixture can save time and make the installation process more efficient.

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.

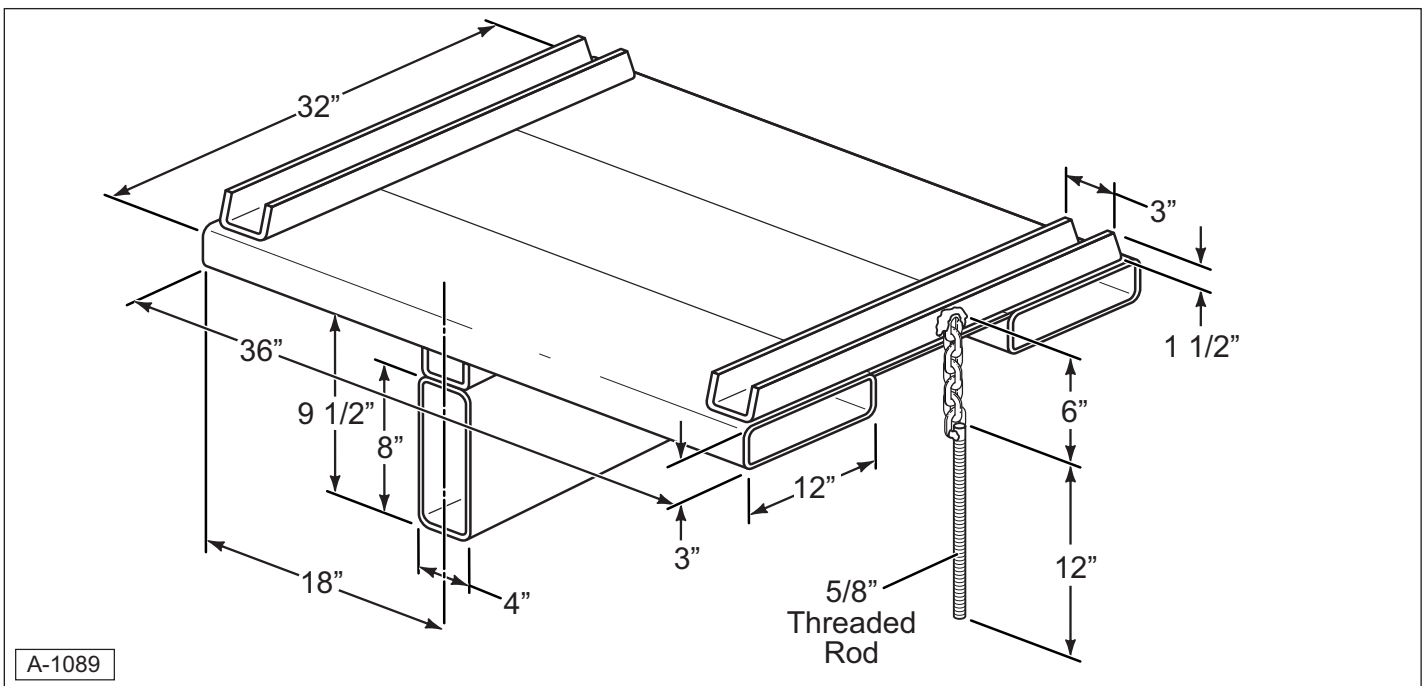
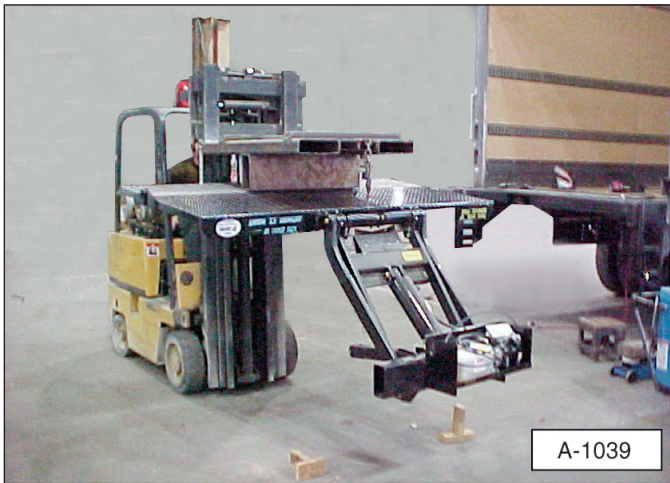
WARNING



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 at least 1/4 inch thick or thicker.
- Make the lifting fixture 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 liftgate (not used to lift aluminum platforms).
- The lifting bolt should be long enough to go through the lifting hole in the liftgate and allow the lifting fixture to remain level (not used to lift aluminum platforms).



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 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.

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 the 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% CO₂ or 75/25 Argon/CO₂ 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.

[illegible]

[illegible]

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