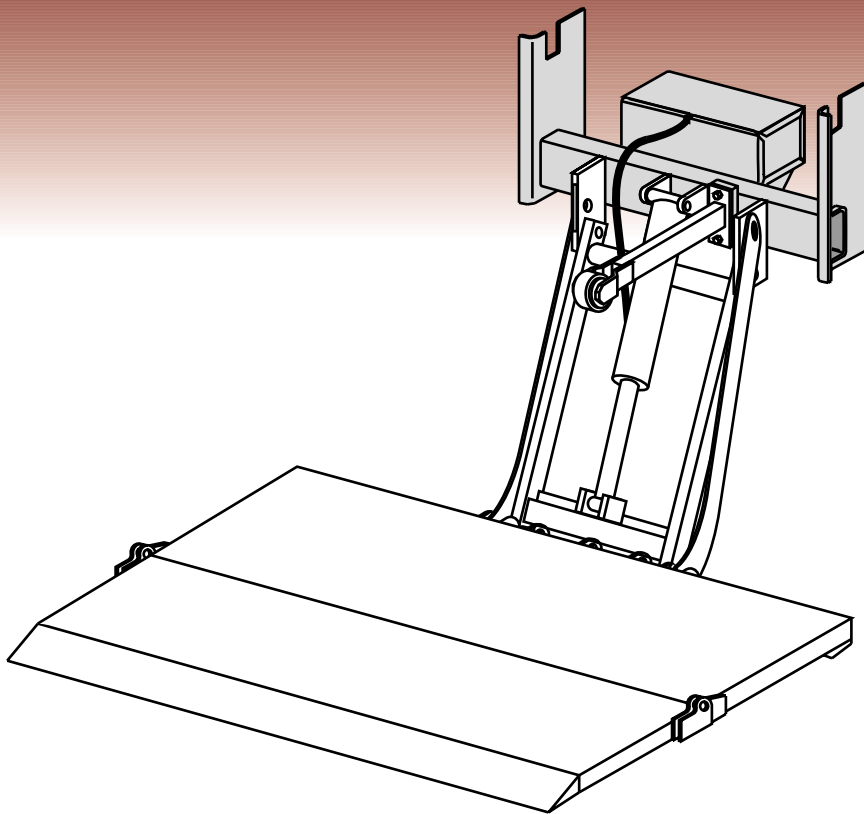


ANTHONY LIFTGATES, INC.

INSTALLATION AND OPERATION MAINTENANCE & TROUBLESHOOTING

For AST and ATU Model Tuckunder Liftgates



MODELS

AST-1500-SF

AST-2000-SF

AST-2500-SF

AST-3000-SF

ASTL-1800-SF

ASTL-2500-SF

ATU-1800-SF

ATU-2500-SF

ATU-3000-SF

ATU-3500-SF

ATU-1800LB-SF

ATU-2500LB-SF

ANTHONY
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www.anthonyliftgates.com

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General Information Section

Introduction

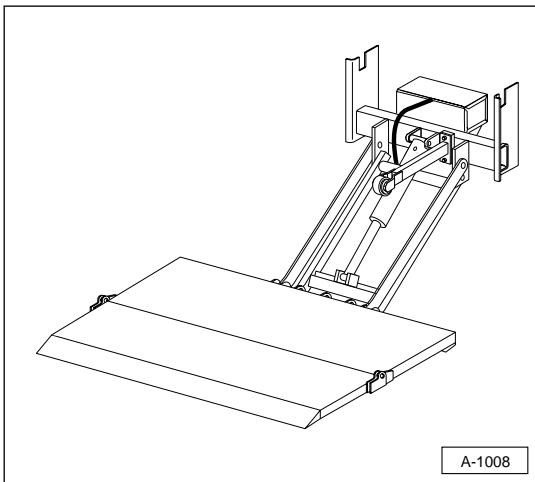
Congratulations on selecting an Anthony Liftgates Tuckunder liftgate. Anthony liftgates are among the finest liftgates available on the market today. To ensure your liftgate will perform to your expectations we have provided an Installation, Operation, Troubleshooting, and Maintenance manual as well as a Parts manual. These manuals are designed to provide you with the necessary instructions, safety precautions, and parts information to install and operate the AST and ATU Tuckunder liftgates.

This Installation, Operation, and Maintenance manual will provide you easy to follow instructions, along with photos and illustrations. We have included a series of Tips, which will facilitate the installation process. All Safety precautions have been clearly identified and detailed throughout each section.

In addition, a complete explanation of the safety words and rules are included in the Safety section on page 38 of this manual. Please turn to this section and read thoroughly before proceeding to the next page.

At the bottom of each page is the Anthony Liftgates Inc. Product Support phone number. If you are unclear about any of the instructions, please phone Anthony Liftgates' Product Support.

All Anthony Tuckunder model liftgates are factory assembled, tested, and energized to assure the highest quality performance standards. AST and ATU liftgates ship completely assembled on skids for fast, clean, and easy installation.



Typical Anthony Liftgates Tuckunder liftgate.

Even though the following goes without saying, we feel compelled to state:

Anthony liftgates should only be installed by those with sufficient skills to understand the installation and operation of the liftgate, along with the equipment required to install the liftgate. The installation instructions in this manual are intended to give typical installation instructions to the installer for both the operation and what we believe to be the most desirable sequence of installation. These instructions cannot replace a qualified person, or clear thinking and the basic knowledge that must be possessed by the installer.

We urge the installer (or anyone else) to call us if they have any questions. We have qualified personnel at our Pontiac, Illinois, plant to answer any questions that you may have. A detailed discussion on the phone can be far more satisfactory than a detailed written explanation.

It has been our experience that a knowledgeable journeyman following these installation instructions and observing the operation of the liftgate will have sufficient comprehension of the liftgate to enable this person to troubleshoot and correct all normal problems that may be encountered. However, again we urge you to call us at the Pontiac, Illinois, plant if you find the liftgate is not operating properly or if you do not know how to make the necessary repair.

If you have any doubts or questions, call us at:

Anthony Liftgates, Inc.
1037 West Howard Street
Pontiac, Illinois 61764
(815) 842-3383
www.anthonyliftgates.com

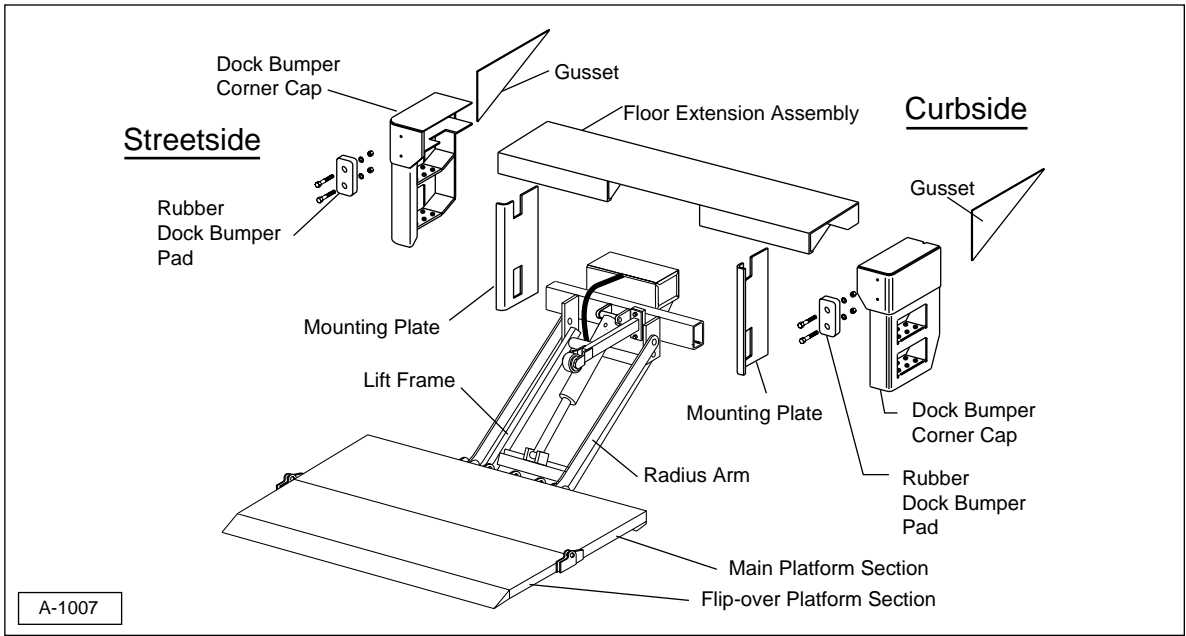
⚠ DANGER



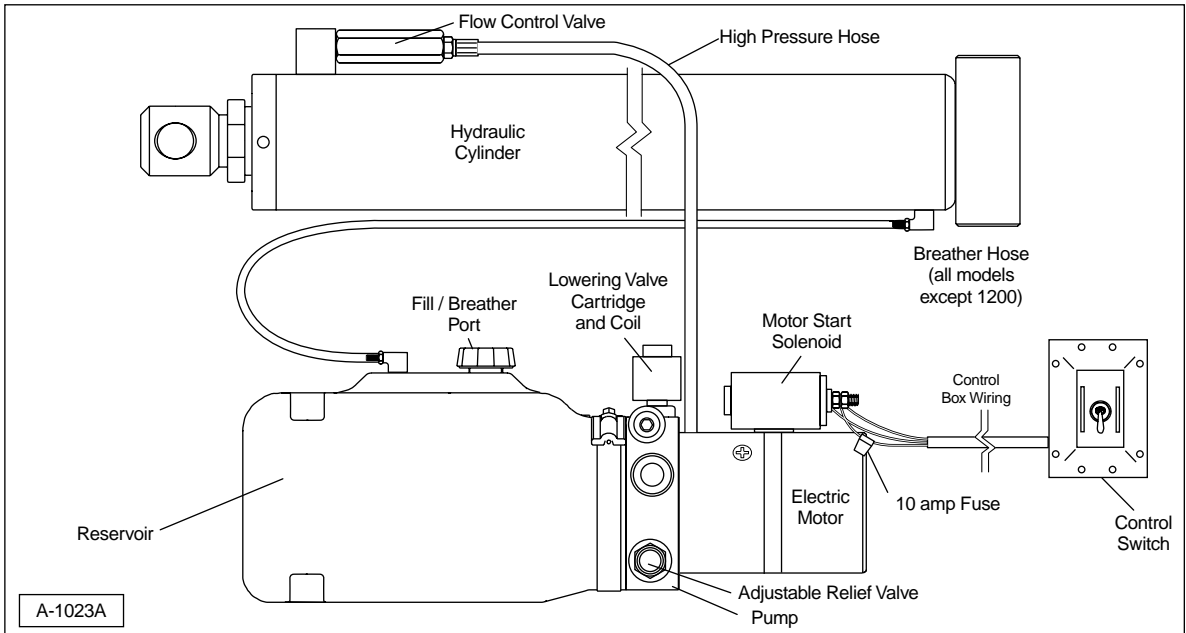
The success or failure of this liftgate to properly and efficiently operate will depend on a thorough and proper installation. Failure to read, understand, and follow the installation instructions and safety recommendations in this manual before installing the liftgate can result in serious injury or death. Also, read and understand the operating instructions in the Operation section.

When installed, this liftgate must not alter nor prevent vehicle compliance to any existing state or federal standards, and especially FMVSS 105. Each chassis manufacturer's recommendations should be consulted for compliance. Also, make sure the weight of the liftgate and its load will not overbalance the truck, possibly raising the front wheels off the ground.

Nomenclature



Platform nomenclature.



Power unit nomenclature.

General Information

Warranty

IMPORTANT NOTICE

The liftgate must be installed according to the installation instructions or the warranty will be void. Unauthorized modifications of the liftgate may cause it to improperly operate or cause other unforeseen problems or dangers. If any deviation is deemed necessary, written permission must first be obtained from Anthony Liftgates.

Decals



Safety decals provide a vital role in helping to reduce injuries and/or possibly even death. To ensure the greatest level of safety, all decals must be in place and legible at all times. Remember, it is the users responsibility to maintain these decals. For a complete part number list and illustration of the decals used on the AST and ATU Tuckunder liftgate, refer to the Decals section in the Parts manual.

For decal placement, refer to the Decals section in this manual.

For replacement decals contact:

Anthony Liftgates, Inc.
1037 West Howard Street
Pontiac, Illinois 61764
(815) 842-3383
www.anthonyliftgates.com

Ordering Parts

We manufacturer a quality liftgate that requires very little maintenance or repair. However, should a part break, become damaged, or worn our knowledgeable staff can make sure you receive the part(s) to put your liftgate back into operation.

For questions or to order parts, contact:

Anthony Liftgates, Inc.
1037 West Howard Street
Pontiac, Illinois 61764
(815) 842-3383
www.anthonyliftgates.com

Tooling Required

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

- Overhead Crane or Forklift
- Mig or Stick Welder
- Heavy-Duty C-Clamps
- Tape Measure
- Level (small, magnetic)
- Cutting Torch (in some applications)

Installation Section

General Installation Information

Fabricated Tooling

Tip: The lifting jig, shown in the illustrations, can reduce installation time when installing more than one Anthony Tuckunder liftgate. A forklift or overhead crane can also be used with a bolt and chain.



Sample lifting jig.

The photo shows a sample lifting jig. This lifting jig must be made specifically for the type and design of your particular forklift. Remember, the materials used to construct the lifting jig must be capable of lifting and supporting the Anthony liftgate being installed. The lifting jig must also contain a retaining method to hold the lifting jig in place on the forklift. The construction of this lifting jig must satisfy the user to be safe and properly constructed.



Lifting jig attached to liftgate. Lifting jig must support liftgate in a level position, as shown.

DANGER



The construction of the lifting jig 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 to the user(s).

- Make the lifting jig from tubular steel at least 0.25 inches thick or thicker.
- Make the lifting bolt from a 5/8 inch threaded eyebolt. Use a washer and nut to fasten the lifting jig to the liftgate.
- Make the lifting jig wide enough to support the liftgate and to accommodate the width of the forks on the forklift.
- The lifting bolt should be long enough to go through the lifting hole in the liftgate and allow the lifting jig to remain level.

Prior To Installation

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

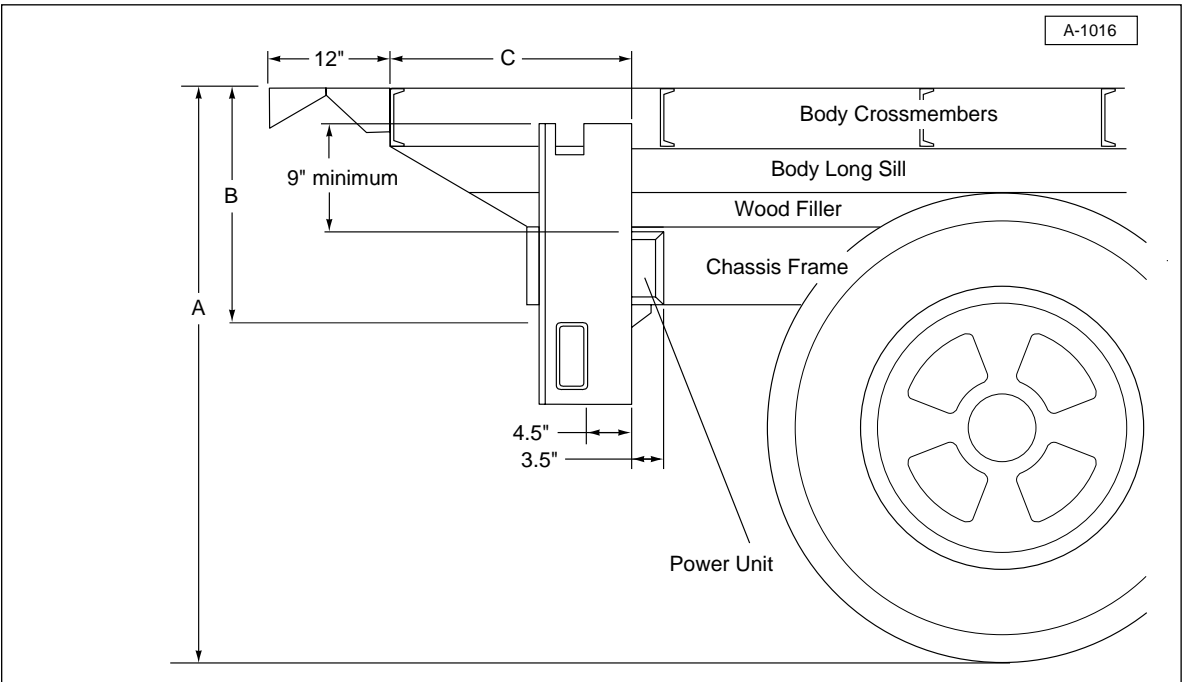
If installing multiple liftgates, consider making a lifting jig as shown in the Fabricated Tooling section of this manual.

1. Place the truck on a flat, level surface. Block the wheels to prevent possible truck movement during liftgate installation.
2. Use the Mounting Requirements illustration and chart to make sure there is enough clearance to properly install the liftgate.

Mounting Requirements		
A Bed Height Floor Extension	B Bed to top of Tube Assembly	C 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"

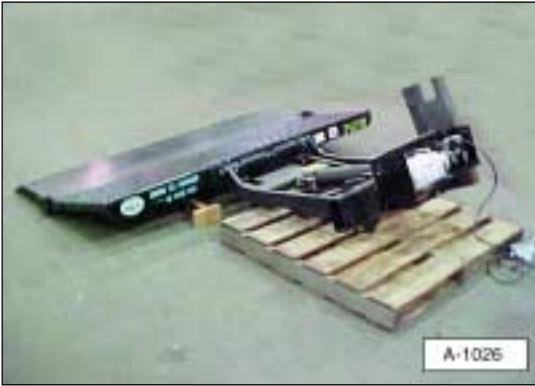
⚠ **DANGER**

Failure to prevent the truck from moving during the installation of the liftgate could result in serious personal injury or crushing of the installer(s).



Mounting requirements. Refer to the Mounting Requirements chart for dimensions.

3. Remove the banding securing the liftgate and loose parts to the pallet. Remove the curbside and streetside mounting plates from the liftgate frame. Unfold the liftgate, as shown.



Unband and unfold the liftgate.

Installation Procedure

Step 1

Remove the cover from the power unit box. Remove all the parts and installation instructions from inside the box. Replace the plug in the power unit reservoir with supplied breather cap.

Tip: The power unit box should contain plastic tie wraps for battery cable, two stop brackets, one latch plate, one fuse assembly/power cable, and one package containing decals, shims, and manuals.



Illustration 1. Remove all loose parts and installation package.

Step 2

Cut off or extend the chassis frame, wood filler, and body long sill, as shown in Illustration 2. The frame must be flush to 12 inches forward of the rear of the truck body.

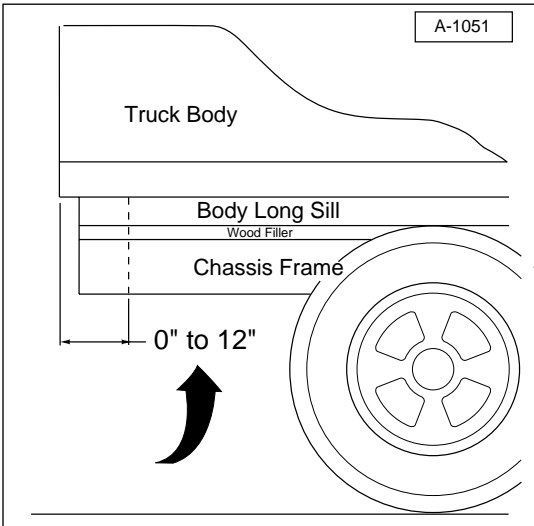


Illustration 2. Cut off or extend the body long sill and chassis frame to the dimensions shown in the illustration if the chassis frame is not within the 0 to 12" dimension shown above.

Tip: Before modifying the truck chassis, make sure the extensions meet the specifications of the truck manufacturer and that altering the frame will not void the truck warranty.

Step 3

Measure and determine the center of the truck's rear sill. Mark this point.



Illustration 3. Find and mark the center of truck's rear sill.

Tip: Two men are used in the welding process to reduce the time.

Step 4

Install the floor extension.

- a. Align the "Center Mark" of the floor extension assembly with the center of the truck body. Tack weld the assembly in three places (left, center, and right) level with the floor of the truck. The tack weld must hold the weight of the floor extension, approximately 200 pounds.



Illustration 4a. Align floor extension with mark.

⚠ CAUTION	
	<p>Tack welds must be strong enough to hold the weight of the extension and the dock bumpers. Insufficient welds may not hold the truck extension in place, resulting in bodily harm.</p>

- b. Make sure the floor extension is level and parallel to the truck's rear sill.



Illustration 4b. Level the floor extension.

- c. Tack the brackets under the floor extension to the truck body.



Illustration 4c. Tack weld floor extension brackets.

- d. Finish welding the floor extension to the truck body. Weld between the white dots painted on the floor extension (approximately 2 inches each).
- e. Weld the gussets under the floor extension to the truck body on both sides of the gusset.

Step 5

Lift and position the liftgate.

⚠ **WARNING**

⚠

Use extreme caution if working under the liftgate. Failure to safely secure the liftgate to the floor extension could cause serious personal injury. Do not remove the lifting device(s) until the liftgate is completely welded onto the truck.

- a. Attach a lifting device to the liftgate. A lifting jig is shown in the installation photos, however any lifting device capable of safely lifting and holding the liftgate can be used.



Illustration 5a. Use a forklift or overhead crane to lift the liftgate.

Tip: *The lifting jig shown in Illustration 5a and 5b is not required for installation, but can reduce installation time when installing more than one liftgate. A forklift or overhead crane can also be used with a bolt and chain.*

- b. Position the liftgate level with the floor extension and centered on the truck's rear sill. The outer edge of the liftgate should be 1/2 to 3/4 inches higher than the edge against the floor extension, as shown in Illustration 5c.



Illustration 5b. Align the center mark of the liftgate platform with the center mark on the floor extension.

- c. The position of the outer edge of the liftgate should be $1/2$ to $3/4$ inches higher than the edge against the floor extension, as shown in Illustration 5c.

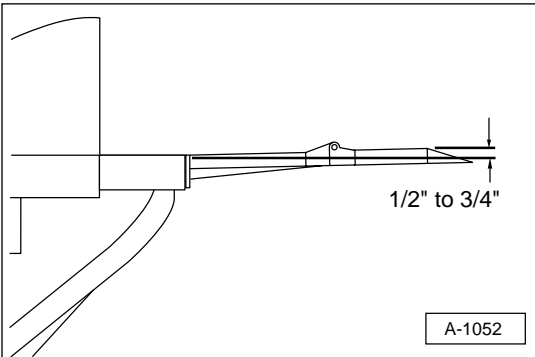


Illustration 5c. Raise the outer edge $1/2$ " to $3/4$ " above the edge against the floor extension.

Step 6

Clamp the liftgate onto the floor extension.

DANGER

To avoid personal injury, do not work under the liftgate or floor extension while installing or painting the liftgate. Work so that you would not be in the way if the clamps, weld, etc. should fail.

- a. Use two large C-clamps, as shown below, to hold the liftgate in place.



Illustration 6a. Clamp liftgate onto floor extension.

- b. An alternate method of holding the liftgate is using two, 3 to 4 feet long pieces of heavy-duty angle iron. The size of the angle iron should be $3 \times 3 \times 1/4$ inch minimum.

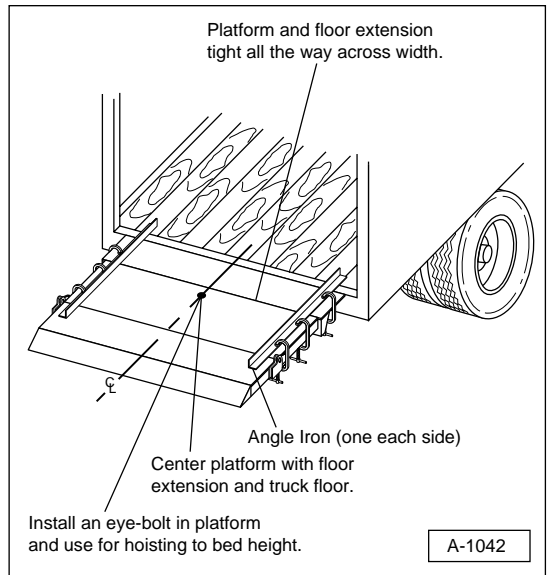


Illustration 6b. Use two pieces of angle iron clamped to liftgate to hold it in position.

Step 7

Route the supplied power cable (with attached fuse assembly) from the battery to the liftgate power supply using one of the following procedures:

Step 8 - Direct Battery Connection (not recommended)

Step 9 - Cut-Off Solenoid Connection

Step 10 - Cut-Off Switch Connection

Only one method is required to complete the wiring installation.



Illustration 7. Power cable and fuse assembly.

⚠ DANGER



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 resulting in loss of vehicle control, serious injury, or even death.

⚠ DANGER

Anthony Liftgates strongly recommends the installation of a power cut-off solenoid or cab cut-off switch. Allowing power to the liftgate when unattended can result in serious injury or death.

⚠ WARNING

The liftgate must be properly grounded. A ground wire, the same gauge or larger as the liftgate power cable, must be connected from the negative post of the battery or batteries to the truck's frame. Some trucks may have a properly sized ground wire from the battery to the frame and would require no change. If, however, there is no ground wire or it is undersize, add the correctly sized ground wire.

If this Warning is not followed, damage to the truck chassis may occur. Improper grounding can cause the electrical current to travel through brake lines, steel braided power steering hoses, or other chassis wiring causing failure to these components! Failure of these components could result in loss of vehicle control.

Step 8

Direct Battery Connection (not recommended)

IMPORTANT NOTICE

Using the standard wiring hookup is not recommended because it does not cut off power to the liftgate when the truck is left unattended. A cut-off switch or cut-off solenoid will disable the use of the liftgate when the truck is not in use.

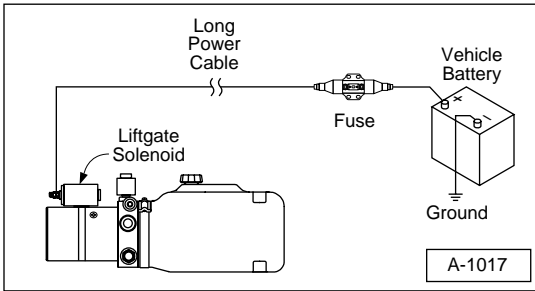
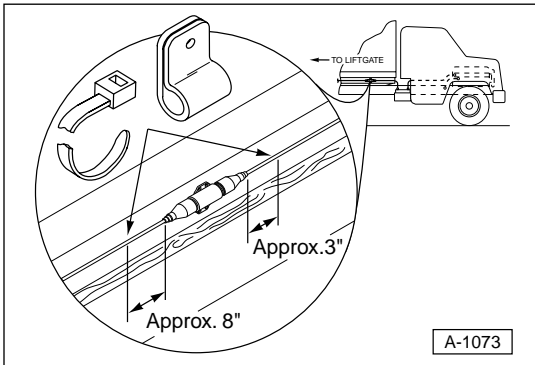


Illustration 8. Power cable connected to power unit and battery.

- a. Position the fuse assembly near the battery so the short cable end will reach the positive terminal.
- b. Attach the fuse holder to the truck body long sill using either Method A or B, shown in this step.

Tip: There are several options for attaching the power cable from the plastic fuse assembly. It can be fastened using plastic tie wraps or wire clips. The fuse assembly can also be bolted directly onto the body long sill, if desired.

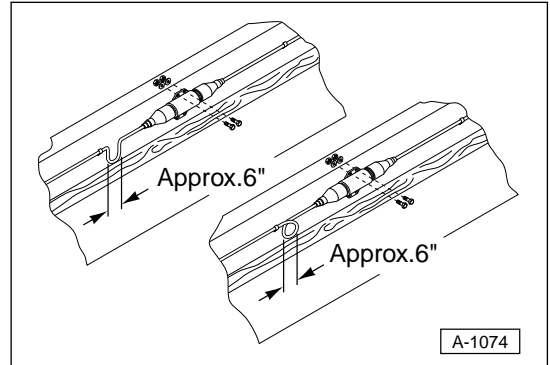
Method A



Fasten the power cable to the truck body. Locate one fastener (battery side) within 3 inches of the end of the fuse assembly. Locate the other fastener (power unit side) within 8 inches of the fuse assembly.

Using this method does not require the fuse assembly to be attached to the long sill.

Method B



Attach the fuse holder to the truck body long sill using #10 or #12 self-tapping screws or bolts, washers, and self-locking nuts. Fasten the power cable, as needed, to properly hold it in place. Using this method requires an extra length of cable on one side of the fuse assembly to permit removal of the fuse.

- c. Run the long end of the power cable from the fuse to the motor solenoid. If the power cable is longer than required, cut it to the desired length and attach a cable lug according to instructions listed below.



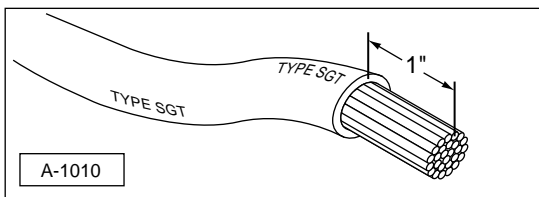
Illustration 8c. Connect power cable to motor solenoid.

- d. Connect the power cable to the motor solenoid. Make sure the power cable is connected to the correct motor solenoid post (one not connected to the motor housing with a metal strap or wire cable).
- e. Connect the short end of the power cable to the positive post of the battery.
- f. The power unit should now be operational.
- g. Coat all terminal ends, studs, and nuts with a Teflon lubricant, grease, or other electrical connection sealant to prevent corrosion.

Tip: Do not apply undercoating to power cable or fuse holder! The power cable should be clean near the fuse holder to ensure easy removal of the rubber boot seals if fuse needs to be replaced. For fuse replacement, see the instructions in the Maintenance section of this manual.

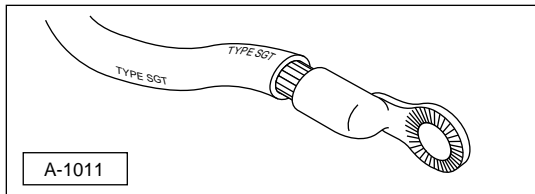
Cable Lug Installation

- 1). Strip insulation one inch back from the end of the cable to expose the copper wire.



Remove one inch of insulation.

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

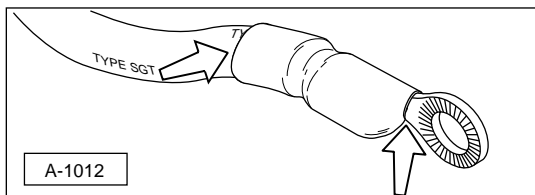


Install cable lug.

IMPORTANT NOTICE

Proper wire connections are crucial to the life of the liftgate's power unit. DO NOT smash the cable lug with a hammer to secure it to the cable. Poor connections can result in low voltage, and any attempt to operate below the minimum required voltage could cause system failure.

- 3). Use the supplied heat shrink tube to insulate the new connection. Heat the shrink tubing using a heat gun or propane torch until it shrinks around the cable insulation and cable lug, leaving only the mounting hole exposed. Do not overheat the heat shrink tubing.



Put heat shrink tubing over connection.

Step 9

Cut-Off Solenoid Connection

The installation of a cut-off solenoid is a recommended option, by Anthony Liftgates, 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 because it requires only a light weight wire running to the cab—not a large cable as required by the cut-off switch.

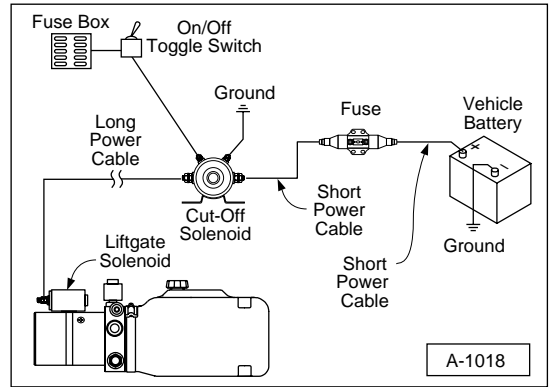


Illustration 9a. Wiring diagram with cut-off solenoid.

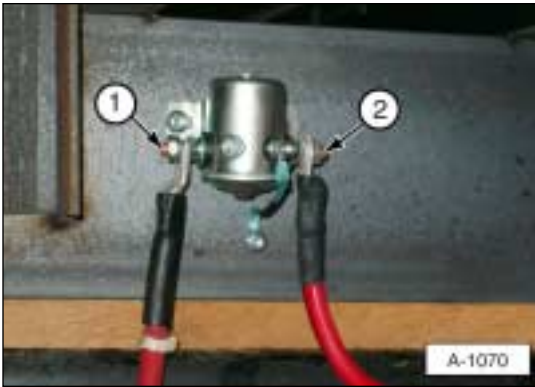


Illustration 9. Cut-off solenoid installed between battery and fuse assembly.

(1) Short cable, part of solenoid kit. (2) Short end of power cable leading to fuse.

- a. Follow the installation directions on the Installation Instruction sheet that comes with the kit.

Step 10

Cut-Off Switch Connection

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

- a. Follow the installation directions on the Installation Instruction sheet that comes with the kit.



Illustration 10a. Cut-off switch mounted in cab of truck.

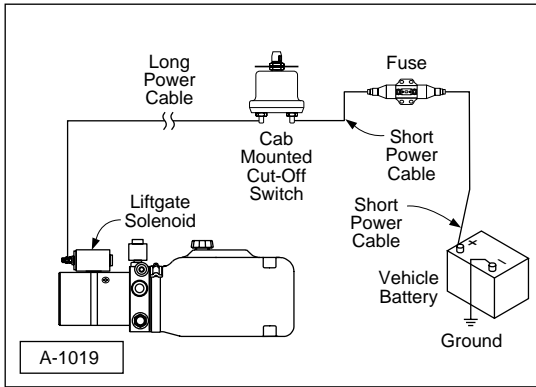


Illustration 10b. Wiring diagram with cab cut-off switch.

Step 11

Place a floor jack under the wheel arm, as shown. Raise the wheel arm until the adapter frame is almost perpendicular to the truck frame, as shown in Illustration 12.



Illustration 11. Raise the tube assembly into place.

Tip: To ensure the lifting platform will remain level with the floor extension after normal wear, tilt the mounting plates and adapter frame tube slightly towards the cab of the truck until about 1/4 inch of the cylinder rod chrome is extended.

Step 12

Slide the mounting plates into position on the 3" x 6" adapter frame tube on each side and tack weld in place. Place tack welds at the locations marked "X" (each weld should be a 3/8" fillet, 1 inch long). The angle on the plate should face the rear of the truck, as shown.



Illustration 12. Put mounting plates into position. Put 3/8" fillet by 1 inch long tack welds at locations marked "X".

Step 13

Remove the C-clamps, angle iron (if this method was used), lifting device, and jack.

Step 14

Standing on the curbside of the truck, away from the platform, actuate the DOWN button/switch to lower the platform to the ground and the UP button to raise the platform back to truck bed height. If the platform lowers to the ground and raises flush to the floor extension, finish welding the mounting plates. If the platform does not make a complete cycle, adjust the mounting plates, as necessary.

⚠ CAUTION



For safety purposes, weld the liftgate while the platform is on the floor, not in a raised position. Cover the cylinder rod to prevent weld spatter from damaging it.

Step 15

With the liftgate on the ground, completely weld the mounting brackets onto the chassis frame and tube assembly.

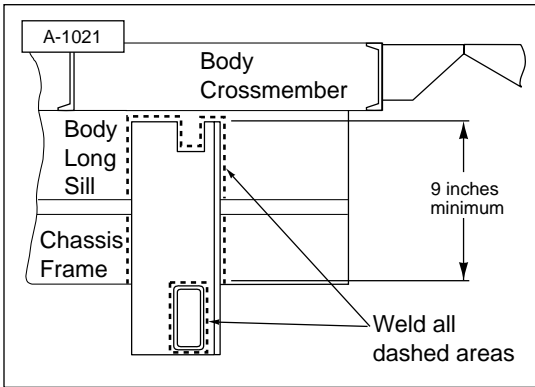


Illustration 15. Weld mounting plates to body long sill and chassis frame.

Step 16

Cut the chassis frame and body long sill, as shown in Illustration 16. After making the cut out, make sure the liftgate operates properly without hitting the chassis frame or body long sill.

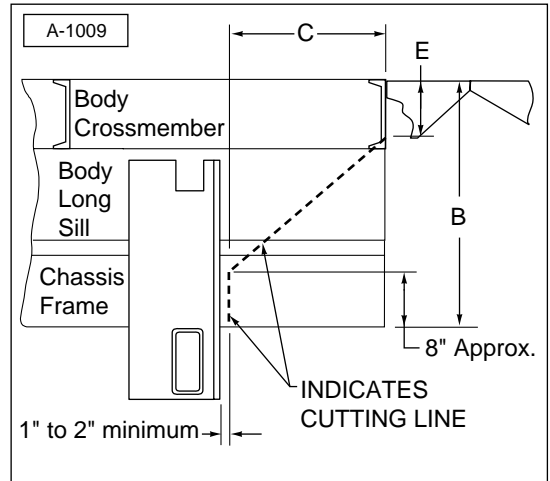


Illustration 16. Cut the body long sill and chassis frame.

Step 17

Position the liftgate and weld the platform supports in place as follows:

- a. Fold the liftgate into the storage position. Using the up and down switch, position the liftgate until there is a 1/2" gap between the cylinder body and liftgate.



Illustration 17a. Adjust liftgate until there is a 1/2" gap between the cylinder and the liftgate.

Chassis Frame Length			
Bed Height Floor Extension	B	C	E
36" - 41"	15-3/4"	13-1/2"	3-3/4"
42" - 49"	19"	14-3/4"	4-1/4"
50" - 51"	20"	14-1/4"	5-1/8"
52" - 53"	21"	13-3/4"	5-3/4"
54" - 57"	22"	13-1/8"	6-1/4"

- b. Position and tack weld the platform supports 1/16" to 1/8" from the platform on each side. If the liftgate operates properly, weld them in place on all three sides.



Illustration 17b. Weld platform supports into place on each side.

IMPORTANT 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 and raised. If this occurs, serious damage to the liftgate can occur when the liftgate is lowered.

Step 18

Attach the locking plate to the radius arm as follows:

- Raise the liftgate to the stored position and slide the latch pin across the radius arm.
- Position the locking plate on the street-side radius arm, as shown. There should be a 1/16" gap between the radius on the locking plate and the latch pin.

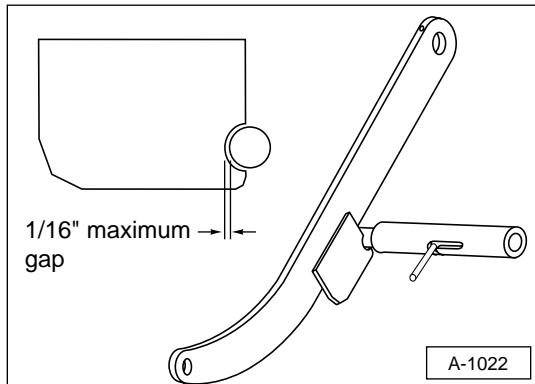


Illustration 18b. Position locking plate with 1/16" maximum gap.

- Weld the locking plate in two places with 3/8" fillet welds, as shown.

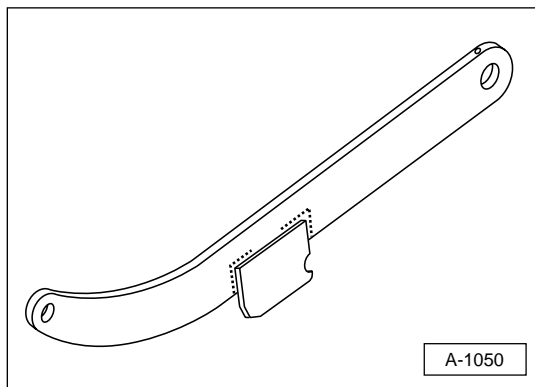


Illustration 18c. Weld locking plate to radius arm.

Step 19

Mount the control switch to truck's rear curbside post so it can be reached while standing at the curbside of the truck away from the liftgate platform.

Tip: *Mount the switch box before attaching the dock bumpers. This allows routing of the switch box wire through the slot in the dock bumper.*



Illustration 19. Install the control switch.

Step 20

Weld both the streetside and curbside dock bumpers onto the floor extension.

- a. If necessary, route the control cable through the curbside dock bumper.
- b. Place the dock bumper corners in place and tack weld into position.



Illustration 20b. Tack weld dock bumpers.

- c. Weld the dock bumper corners continuously to the floor extension and the truck body.



Illustration 20c. Correctly welded floor extension and dock bumper corners.

Tip: Place a wet shop towel or rag around the switch box control cable when welding the curbside dock bumper to prevent burning or melting the control cable.

Step 21

Weld the side gussets to the dock bumper corners and the steel side member of the truck body or the cross-members of the truck body.

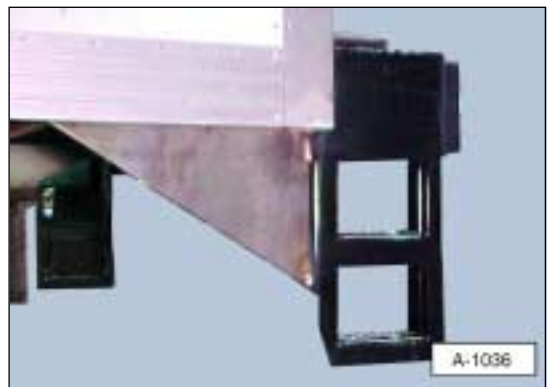


Illustration 21. Weld side gussets in place.

- a. The recommended method of attaching side gussets, is welding the gusset to the steel side member of the truck body.

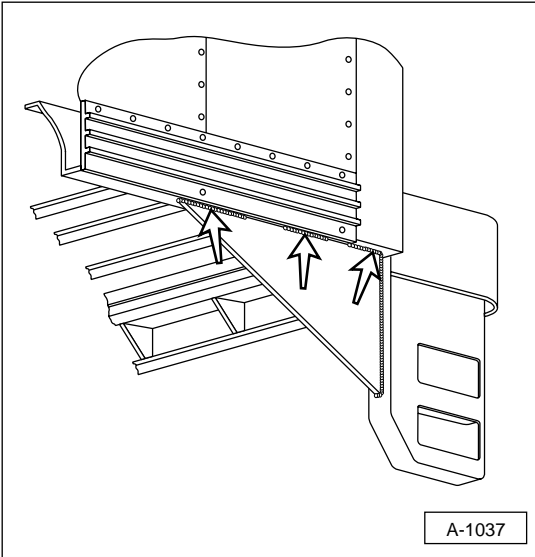


Illustration 21a. Side gusset welded to truck body.

- b. The alternate method of attaching the side gussets is to weld the gusset to the steel cross-members of truck body. Make sure gusset straddles at least three cross members. Weld both sides of each gusset.

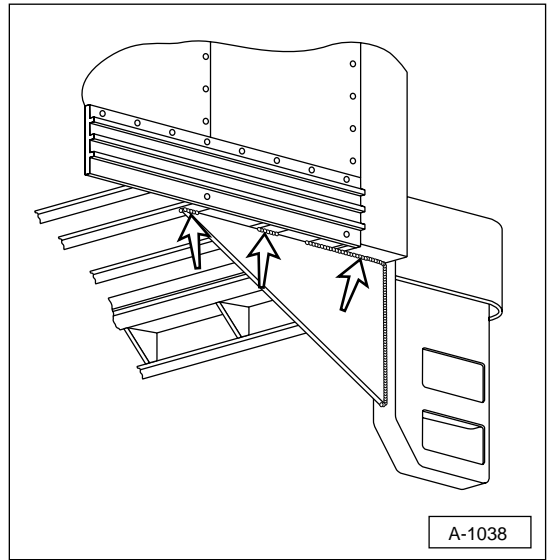


Illustration 21b. Side gusset welded to cross-members.

Step 22

Install lights or other electrical components, if needed.

Step 23

Install grab bars or hand rails, as may be necessary. Also, install license plate holder, as necessary.

IMPORTANT NOTICE

Some models of Anthony liftgates may be provided with step devices to assist in the ingress or egress of the rear of the truck or trailer. These devices are NOT to be considered all inclusive of any requirements or guidelines regarding proper ingress or egress of trucks and trailers. These items are provided only as an added feature for installers to help simplify the meeting of possible ingress or egress requirements. As there are many variables in truck sizes and shapes, it is the installers responsibility to determine proper ingress and egress requirements, such as steps, hand grips, grab bars, etc. for each vehicle receiving an Anthony liftgate.

Step 25

Attach all decals, as shown in the Decal section of this manual.

Step 26

Complete the Final Inspection Checklist section.

Step 24

Make a final operation check.

- a. Make sure the platform will travel through a complete cycle, up and down, smoothly and freely, with the platform completely open.
- b. Make sure the platform will fold and tuck under the truck in a stored position, and latch. The liftgate must fold smoothly and freely.
- c. Make sure hydraulic hose fittings are tight and hydraulic hose does not rub against the liftgate or other parts while cycling up, down, open, and closed. Adjust as necessary by loosening fittings and adjusting the position of the hose(s). Retighten fittings.

Final Inspection Checklist

DANGER



Do not use the liftgate if any of the items in the Final Inspection Checklist are not checked and verified. If you have any questions, contact your nearest Anthony distributor, or the Anthony Liftgates main office.

- Check all welds to make sure they are done properly.
- Make sure all pins are in place and held with proper retainers.
- Make sure the power unit reservoir is filled.



Fill hydraulic tank to within 1/2 inch from the top of the tank.

For **Gravity Down** models: the fluid level should be 1/2" from the top of the reservoir when the liftgate platform is on the ground.

For **Power Down** models: the fluid level should be 1/2" from the top of the reservoir when the liftgate platform is in the fully raised position.

- Install cover on power unit box. Make sure it is secured with a padlock, lock pin, or wire (customer supplied).
- Operate the liftgate through its entire operational cycle (Up, Down, Open, Close) several times. Make sure the liftgate operates evenly, freely, and smoothly throughout the entire operating range and that there is no unusual noise or vibration while operating the liftgate.
- Make sure the platform is adjusted properly (1/2 to 3/4 inch rise) with the necessary shims.
- Make sure all decals are in place and legible.
- Make sure license plate bracket is properly installed, as required by law.
- Make sure lights are installed and operating properly, per FMVS 108.
- Make sure reflectors are re-installed, if any.
- Make sure grab handles and other ingress/egress items are properly installed as may be necessary.
- If rubber dock bumper pads are required, bolt them in place to dock bumper corner caps.
- Make sure the optional cab cut-off switch or power cut-off solenoid is installed.
- Put Installation, Operation, and Maintenance manual and Parts manual in the vehicle.

Decals

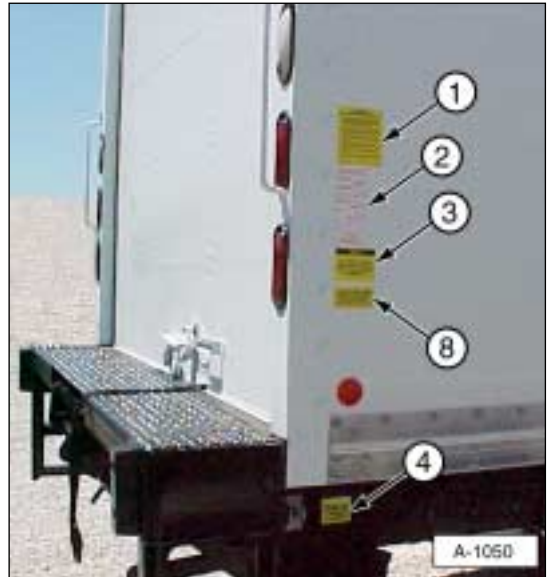
⚠ DANGER



Make sure all decals are attached to the liftgate and/or truck and are legible at all times.

Safety decals provide a vital role in helping to reduce injuries and/or possibly even death. To ensure the greatest level of safety, all decals must be in place and legible at all times. Remember, it is the users responsibility to maintain these decals. For a complete part number list of the decals used on the Tuckunder liftgates, refer to the Decals section in the Parts manual for AST and ATU Tuckunder Liftgates.

For replacement decals contact:
Anthony Liftgates, Inc.
1037 West Howard Street
Pontiac, Illinois 61764
(815) 842-3383
www.anthonyliftgates.com



1.

URGENT WARNING
ELEVATING GATE INSTRUCTIONS

Before Operating Lift, Be Sure You Understand the Following.

1. Improper operation of this lift can result in serious personal injury. Do not operate unless you have been properly instructed and have read and are familiar with, the operating instructions. If you do not have a copy of the instructions please obtain them from your employer, distributor, or lessor, as appropriate, before you attempt to operate the lift.
2. Be certain the vehicle is properly and securely braked before using the lift.
3. Always inspect this lift for maintenance or damage before using it. If there are signs of improper maintenance, damage to vital parts, or slippery platform surface, do not use the lift. Do not attempt your own repairs, unless you are specifically trained.
4. Do not overload. See Mfg. Literature and/or Rating Label on the unit for the rated load. Remember that this limit applies to both raising and lowering operations.
5. Each load should be placed in a stable position within the edges of the platform as near as possible to the center of the platform side to side, and as close to the truck sill as possible.
6. Never stand in or move through or allow anyone else to stand in or move through the area in which the lift may operate or into which an upset load might fall.
7. This is not a passenger lift. This liftgate is intended for loading and unloading of cargo only. Do not use this liftgate for anything but its intended use.

Anthony Liftgates, Inc.

6/95


Q-003013

2.

ANTHONY ATU, AST, AK & LB LIFTGATE OPERATING INSTRUCTIONS

1

UNLATCH LIFTGATE BY TWISTING, THEN SLIDING "LATCH PIN" IN DIRECTION OF ARROW



2

LOWER PLATFORM BY PUSHING CONTROL SWITCH TO "DOWN" POSITION

Platform will begin to open as it lowers.



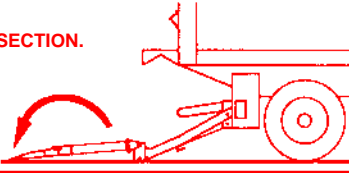
3

UNFOLD PLATFORM BY PULLING PLATFORM HANDLE OUTWARD AND TOWARD GROUND.




4

UNFOLD FLIP SECTION.



5

FLIP SWITCH "UP" TO RAISE PLATFORM
-OR-
FLIP SWITCH "DOWN" TO LOWER PLATFORM



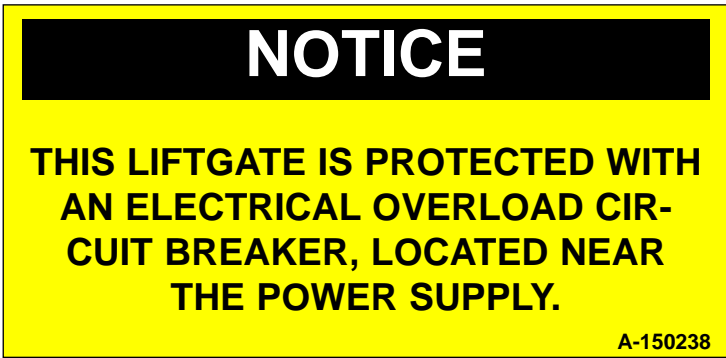
6 TO TUCK UNIT UNDER AFTER USE, LOWER PLATFORM TO GROUND AND REVERSE STEPS

- 1**
- 2**
- 3**
- 4**

ANTHONY LIFTGATES, INC.

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3.



4.



IMPORTANT NOTICE

Make sure the proper "maximum capacity" decal goes on the appropriate liftgate. For example, the "1500 maximum capacity" decal goes on AST1500 models only. Do not put a higher rated decal (3000 pound) on a smaller liftgate (model 1500); this could result in liftgate damage or possibly personal injury.

5.



6.



7.

Note:

Disengage “latch” before attempting to use liftgate.

Engage “latch” after using liftgate.

A-131017

8.

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.



This decal is attached, at the factory, to the power cable/fuse assembly.

Operation Section

General Safety Operating Instructions

DANGER



Do not stand in the platform's work area while operating the liftgate. Serious injury or death could result if the load shifts or is unstable on the platform.

The following is a list of Do's and Don'ts for the operation of the liftgate.

✓ Do's

- ✓ Read and follow warning decals, operating decals, and owners manual.
- ✓ Keep all decals in place and legible and retain the owners manual in the vehicle or all Warranties are void.
- ✓ Make sure the vehicle is properly and securely braked before using the liftgate.
- ✓ Keep yourself clear of all moving parts.
- ✓ Make sure the area in which the platform will open and close is clear before opening, closing, raising, or lowering the platform.
- ✓ Make sure the platform area, including the area in which loads may fall from the platform, is clear before, during, and at all times while operating the liftgate.
- ✓ Always place the load as close to the center of the platform as possible. Also, position the load as close to the center of the truck's rear sill as possible.
- ✓ Only operate the liftgate with the push button/switch controls mounted on the truck body.

- ✓ Check the oil level in the hydraulic reservoir monthly. Change it if it is contaminated or dirty.
- ✓ Visually inspect your liftgate frequently and keep it properly adjusted.
- ✓ Repair any damage to the liftgate to prevent accidents.
- ✓ Lock the liftgate into the storage position with the latch pin when the liftgate is not in use.



Proper operating position.

X Don'ts



- ✘ Do not overload the platform. The maximum rated capacity is based on an evenly distributed load on the platform's flat surface.
- ✘ Do not ride on the liftgate. Always stand clear of liftgate when it is operating.
- ✘ Do not allow children to play around or operate the liftgate.
- ✘ Do not allow your liftgate to be used by persons not familiar with its operation.
- ✘ Do not use your liftgate if it shows signs of abuse or fails to operate freely.
- ✘ Do not allow the motor/pump to run after the liftgate is closed, or in the up position.
- ✘ Do not use brake fluid in the hydraulic reservoir.
- ✘ Do not bounce the platform by pushing and releasing the control button/switch abruptly.
- ✘ Do not use the liftgate for anything other than its intended use of loading and unloading cargo.
- ✘ Do not operate lift trucks on or over any part of the platform.
- ✘ Do not stand under or place any object under the liftgate work area.

Operating Instructions

Opening and Closing the Liftgate

Step 1

Twist and slide the latch pin toward curb-side of the liftgate.

Step 2

Stand clear of the platform and lower the liftgate by pressing "Down" on control button/switch.

Step 3

Open the platform.

Step 4

Open the flipover ramp.

Step 5

Press the "Up" switch to raise platform or the "Down" switch to lower the platform.

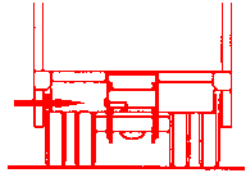
Step 6

To tuck the liftgate into its storage position after use, reverse Steps 1, 2, 3, and 4 from ground level.

ANTHONY ATU, AST, AK & LB LIFTGATE OPERATING INSTRUCTIONS

1

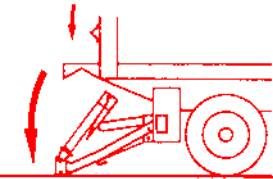
UNLATCH LIFTGATE BY TWISTING, THEN SLIDING "LATCH PIN" IN DIRECTION OF ARROW



2

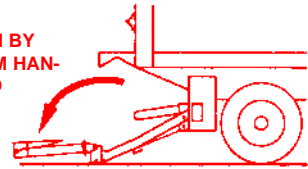
LOWER PLATFORM BY PUSHING CONTROL SWITCH TO "DOWN" POSITION

Platform will begin to open as it lowers.



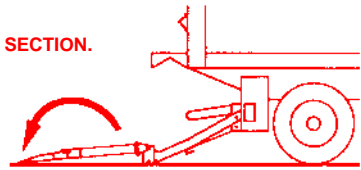
3

UNFOLD PLATFORM BY PULLING PLATFORM HANDLE OUTWARD AND TOWARD GROUND.



4

UNFOLD FLIP SECTION.



5

FLIP SWITCH "UP" TO RAISE PLATFORM
-OR-
FLIP SWITCH "DOWN" TO LOWER PLATFORM



6

TO TUCK UNIT UNDER AFTER USE, LOWER PLATFORM TO GROUND AND REVERSE STEPS



ANTHONY LIFTGATES, INC.

1037 WEST HOWARD ST., PONTIAC, IL 61764

ATU-423

Maintenance Section

Quick Check Maintenance Guide

Monthly Inspection

SPECIAL NOTE: As of December 1994 Anthony Tuckunder Liftgates are "Service-Free". This means that newer liftgates have lubrication-free bushings at the major pivot points which, of course, do not require lubrication. Consequently these liftgates do not have grease zerks. Models manufactured previous to December 1994, with grease zerks, require routine lubrication at major pivot points.

1. Make sure the liftgate operates freely and smoothly throughout its entire range of movement.
2. Check for damage to the liftgate such as bent or distorted members, or any cracked weld which may have resulted from overload or abuse. Check for excessively worn parts. Replace bushings and pins if extremely worn.
3. Check all pins and pivot points. Make sure they are secured with proper retainers.
4. Make sure platform is angled upward from truck bed 1/2 to 3/4 inch when raised to bed height. See Platform Adjustment for shimming procedure.
5. Make sure all electrical wires, switches, and connections are in good working condition and operate properly.
6. Check for oil leaks in these areas:
 - a. Hydraulic lift cylinder.
 - b. Hydraulic hoses. Replace if they show signs of leakage or excessive abrasion of the covering.
 - c. Check all hydraulic fittings for damage or leaks. Tighten fittings to stop leaks or replace if damaged.
7. Check reservoir oil level.
 - a. Gravity down models - With the platform on the ground, the oil level should be within 1/2 inch of the top of the reservoir.
 - b. Power down models - Place liftgate in the fully raised, the oil level should be within 1/2 inch of the top of the reservoir.
 - c. Fill as required with Mobil DTE-13 oil or Penzoil AWX Automatic Transmission Fluid or equivalent.

IMPORTANT NOTICE

Use only Mobil DTE-13 or Penzoil AWX Automatic Transmission Fluid or equivalent in the power unit reservoir. Do not use brake fluid.

8. Check the fluid level of the vehicle battery. Fill as required.
9. Examine all Warning, Capacity, and Operational Decals. If they are not readable they should be replaced. Decals may be obtained free of charge from Anthony Liftgates, Inc.
10. Oil the roller wheel and make sure it spins freely.

Maintenance and Troubleshooting Procedures

Platform Adjustment (adding shims)

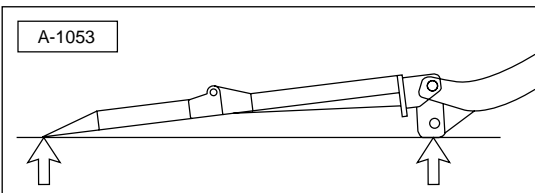
The ramp (outboard) end of platform should be 1/2 to 3/4 inches higher than truck floor. If the outboard end of the platform is sagging, add shims as described below, to raise the end. Shimming is a normal procedure as the liftgate ages and the parts become worn.

1. Position the necessary amount of "shim plates" in the contact area between the cam plates and platform.



Add shims to this area to eliminate sagging.

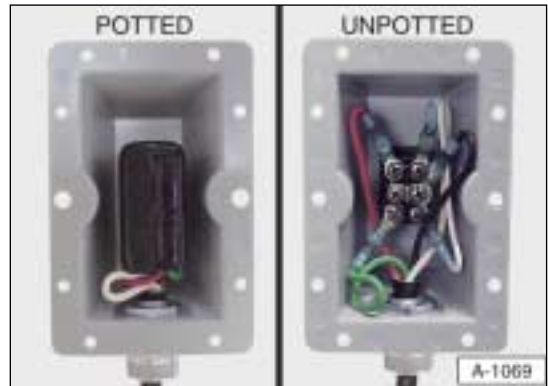
2. Weld the steel shim plates to the blocks on platform.
3. When the platform is lowered to the ground, it should touch at the lift arm end and at the ramp end.



Liftgate should contact the ground at these two locations.

Checking the Control Switch

Newer control switches, shown on the left side of the photo, are permanently sealed (potted) and cannot be checked. If these switches are not working properly, replace them.



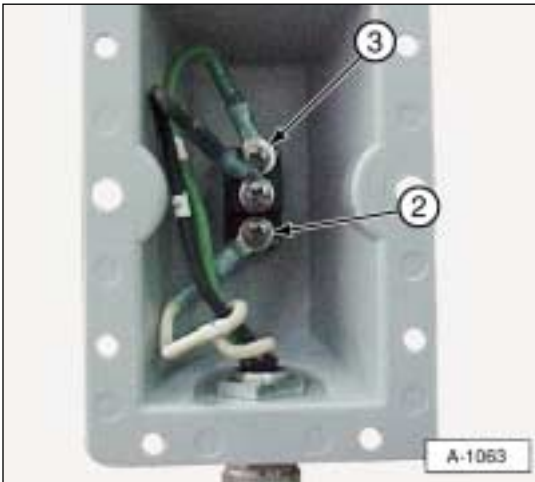
The older unpotted switch can be checked to make sure it is operating properly.

⚠ CAUTION

Stand clear of the liftgate when checking the control switch. It is possible for the liftgate to activate when testing the switch, which could lead to personal injury.

Gravity Down Models (unpotted)

1. Connect one end of a continuity tester to either top terminal (3) or bottom terminal (2).
2. Connect the other end of the continuity tester to a chassis ground or the body ground.

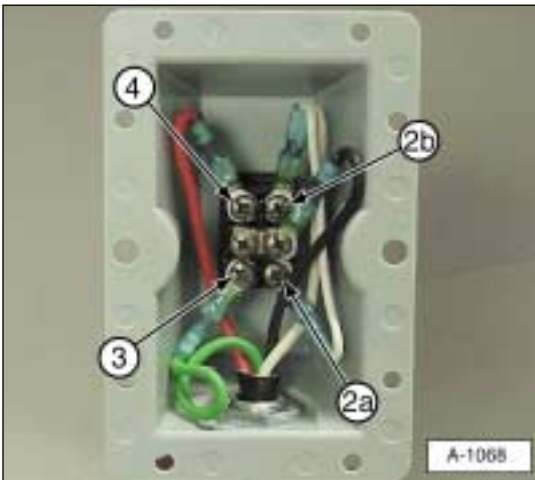


Inside of gravity down control switch.

1. Connect one end of a continuity tester to terminal [2 (a or b), 3, or 4].
2. Connect the other end of the continuity tester to a chassis ground or the body ground.
3. Once connected, flip the switch for that function (up or down). If the switch is good, the tester will light to indicate good continuity. If the tester does not light, then that function of the switch is bad.
4. Repeat the procedure for the other two terminals.
5. If the switch is bad, replace it.


3. Once connected, flip the switch for that function (up or down). If the switch is good, the tester will light to indicate good continuity. If the tester does not light, then that function of the switch is bad.
4. Repeat the procedure for the other terminal.
5. If the switch is bad, replace it.

Power Down Models (unpotted)



Inside of power down control switch.

Replacing the Fuse


WARNING

To avoid injury, disconnect the liftgates power from the battery(ies) before replacing the fuse, or before disassembling the fuse holder. Ignoring this warning can cause an electrical “arc”, resulting in personal injury or property damage.

To replace a fuse:

1. Pull back the rubber boots from the fuse holder.

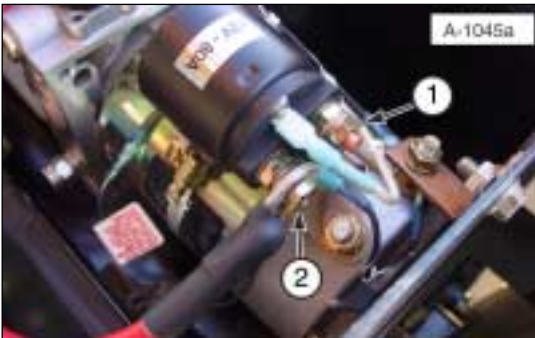


2. Unscrew the fuse holder ends from the fuse holder body and pull it apart.



3. Slide the fuse holder body one direction (left or right) to expose the blown fuse.
4. Loosen the screws from each end of the fuse and remove it. Replace the fuse with the same size (Amperage) fuse as the one removed. If you are unsure of the replacement fuse amperage, contact Anthony for your specific size fuse. Retighten the screws.
5. Re-assemble the fuse in reverse order. Be sure the rubber boots are sealed around the fuse holder and cable.
6. Re-connect power after you are certain liftgate area is clear.

Checking Motor Start Solenoid and Power Cut-off Solenoid



Motor start solenoid.



Power cut-off solenoid.

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

1. Use jumper cables for this test.
2. Connect one jumper cable to the battery side (2) of the solenoid. Connect the other cable to the motor side (1) of the solenoid.
3. If the liftgate is activated, the solenoid is bad and should be replaced.

Checking Battery Cable

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

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

Checking Lowering Valve Cartridge and Solenoid

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



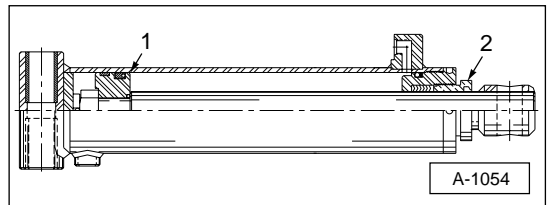
Place a screwdriver over the solenoid.



Push spool to check for free movement.

3. Momentarily activate the control switch in the DOWN position. The screwdriver should be attracted to the magnetic field created by the solenoid.
4. If no magnetic pull is produced, the solenoid is bad and should be replaced. If the solenoid is good, check the cartridge valve.
5. Remove the solenoid from the valve assembly.
6. Remove the valve cartridge from the pump body.
7. Clean the cartridge and blow it dry with compressed air (not greater than 30 psi). Also, blow out the pump body.
8. Use a small screwdriver and carefully press on the spool inside the cartridge. If the spool moves freely, the cartridge is good. If it does not move, replace the cartridge, because the spool could be bent, pitted, or damaged in some other way.

Checking Cylinder Piston Seals (drifting - caused by seal leakage)



Piston rod seals (1) and packing gland nut and seals (2).

Piston Rod Seals (Gravity Down)

1. Remove the breather hose (gravity down models only).
2. Raise the liftgate all the way up and hold the switch in the "on" position while checking for oil coming out of the cylinder's breather port.
3. If a continuous flow of oil comes out of this port (while the liftgate is all the way up and the switch is held "on"), then the piston seals are leaking and the cylinder should be rebuilt or replaced.

If the cylinder is under warranty, do not rebuild. In these cases the cylinder will be replaced.

Piston Rod Seals (Power Down)

1. Check the lowering valve. Make sure it is operating correctly and the valve is not sticking or dirty.
2. If the lowering valve is operating properly, then the drifting is most likely caused by worn piston seals. Rebuild the cylinder and replace the piston seals.

If the cylinder is under warranty, do not rebuild. In these cases the cylinder will be replaced.

Packing Gland Nut

On newer model cylinders, purchased after Spring of 2003, there is no packing seal adjustment. If a leak is found, rebuild the cylinder with a new seal kit.

On older models, if the packing seals are leaking and oil is flowing down the cylinder piston, this leakage can be stopped in most cases by tightening the gland nut.

1. Place the platform on the ground.
2. Use a pipe wrench or other suitable wrench to tighten the gland nut 1/4 to 1/2 of a turn. Do not tighten the nut more than 1/2 of a turn at a time.



Packing gland nut.

3. If the packing gland nut continues to leak, tighten the nut again or rebuild the cylinder using a new seal kit.

IMPORTANT NOTICE

Do not overtighten the packing gland nut. If the cylinder does not extend or extends very slowly, the packing gland nut may be too tight. If the leak cannot be stopped by tightening the packing gland nut, rebuild the cylinder and replace the packing gland seal.

Checking and Adjusting System Pressure

For gravity down systems there is only one relief valve (power up) for setting pressure. Power down models have two relief valve settings; one for raising the platform (power up) and one for lowering the platform (power down).

To check the “power up” pressure setting:

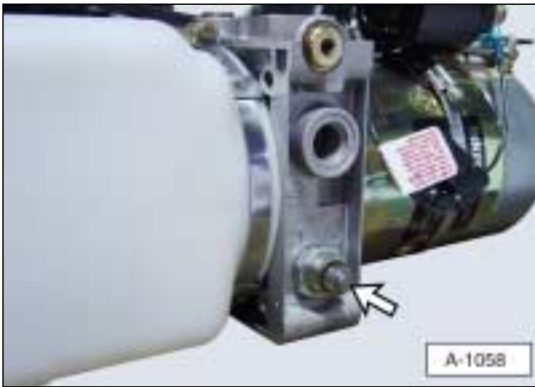
1. Place the liftgate on the ground and remove the pressure hose from the power up port of the pump.
2. Install a tee (customer supplied) into the power up port.
3. Connect a pressure gauge and reconnect the hydraulic hose.

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

⚠ DANGER

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

4. Raise the liftgate and check the pressure. If the pressure is low, adjust the pressure relief valve.

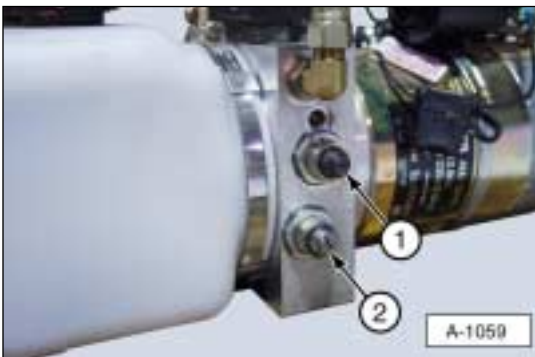


Relief valve adjustment for gravity down systems.

5. With the liftgate on the ground, loosen the locknut. Use an Allen wrench and turn the pressure adjustment screw counterclockwise to increase pressure or clockwise to decrease the pressure.

If the appropriate pressure cannot be reached, replace the pump.

6. Hold the valve adjustment screw in place and tighten the locknut. This method will prevent the adjustment screw from turning when the locknut is tightened.



Relief valve adjustment for power down systems. (1) Power-up adjustment. (2) Power-down adjustment.

7. Check the power down relief valve pressure in the same way as the gravity down system by installing a tee and gauge.
8. The power down pressure should not exceed 400 psi. Turn the adjusting screw counterclockwise to decrease the pressure or clockwise to increase the pressure.

Flow Control Valve



Flow control valve.

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

⚠ DANGER	
	<p>Do not operate the liftgate without the flow control valve. Serious injury or death could result if this action is not followed.</p>

Safety Section

Safety

Safety is Your Responsibility

It is the responsibility of the installer/operator to understand and perform proper 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 Danger, Warnings, Cautions, and Important Notices in this manual and on the liftgate or truck.

Safety Signal Words

A signal word or words call attention to the safety sign and designate a degree or level of hazard seriousness. The signal words for Anthony Liftgates' product safety signs are DANGER, WARNING, CAUTION, and IMPORTANT NOTICE.

DANGER

DANGER: Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is limited to the most extreme situations.

WARNING

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

CAUTION

CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

IMPORTANT NOTICE

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

Safety Rules

DANGER



To avoid personal injury or death, carefully read and understand all instructions pertaining to the Anthony Liftgates product. Do not attempt to install, operate, or maintain our product without fully understanding all our instructions and safety precautions. Do not operate or work on a truck or liftgate unless you read and understand the instructions and warnings in the Installation, Operation, and Maintenance manual. If any doubt or question arises about the correct or safe method of performing anything found in this or other Anthony Liftgates' manuals, contact your Anthony Liftgates' dealer or call the Inside Sales and Service representatives at our main headquarters. Proper care is your responsibility.

DANGER



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



Always weld 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 manufacturer's safety guidelines. If other people are present during the installation of the liftgate, make sure the welding area is shielded from their view. This will help prevent serious eye injury from the bright light.



To avoid eye injury during welding, always wear a welding helmet with the proper lens to shield your eyes from the bright light.



Failure to prevent the truck from moving during the installation of the liftgate could result in serious personal injury or crushing of the installer(s).

DANGER



To prevent injury, make sure all decals are attached to the liftgate and/or truck and are legible at all times.

DANGER



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.



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 resulting in loss of vehicle control, serious injury, or even death.

WARNING



Use extreme caution if working under the liftgate during installation. Failure to safely secure the liftgate to the floor extension could cause serious personal injury. Do not remove the lifting device(s) until the liftgate is completely welded onto the truck.



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.



Do not place hands or feet in pinch points.



Do not ride on the platform.



Do not place your feet under the liftgate.



Always use/set the truck's parking brake before operating the liftgate. Failure to follow this recommendation can result in injury.

WARNING



Most accidents involving the operation, maintenance, or repair of products made by Anthony Liftgates occur because the installer/owner/operator failed to observe basic safety rules or operating instructions. Accidents can often be avoided by being alert and recognizing potentially hazardous situations. Any individuals installing, operating, maintaining, or repairing products manufactured by Anthony Liftgates should have the necessary training, skills, and tools required to perform these functions properly and safely. 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 that are not specifically mentioned by Anthony Liftgates are used, you must satisfy yourself that they are safe for you and for others. Make sure the liftgate or truck it is mounted onto will not be damaged or made unsafe by any operation, lubrication, maintenance, or repair procedures that you choose.

DO NOT proceed, if any doubt arises about the correct or safe method of performing anything found in this or other Anthony Liftgates' manuals. Seek out expert assistance from a qualified person before continuing.

CAUTION



Many liftgate models provide drivers' steps as a convenience feature. When steps are present, customer-supplied grab handles and other ingress/egress items should be installed.



Even though the Anthony liftgate is easy to install, the installation should be done with at least two people.



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.



Tack welds must be strong enough to hold the weight of the individual components being held in place. Insufficient tack welds may not hold the parts in place, resulting in possible bodily harm.

IMPORTANT NOTICE

Use only Mobil DTE-13 oil or Penzoil AWX Automatic Transmission Fluid or equivalent in the power unit reservoir. Do not use brake fluid.

Troubleshooting Section

Troubleshooting Guide

Troubleshooting Chart		
Problem	Possible Cause	Possible Solution
Motor does not run when control switch is activated.	Cab cut-off switch.	Turn switch to ON position.
	Dead battery.	Make sure battery is fully charged. Check for loose or corroded battery connections. Replace or recharge battery.
	Main power cable circuit protection tripped or blown.	Replace fuse or reset breaker.
	Control cord fuse (10 Amp) inside power unit box is blown.	Replace, if fuse is blown. If problem continues, check for shorts in the electrical system.
	Control box switch.	Check switch using Checking Control Switch procedure in Maintenance section.
	Motor start solenoid.	Check solenoid using the procedure in the Maintenance section.
	Optional power cut-off solenoid.	Check solenoid using the procedure in the Maintenance section.
	Battery cable.	Connect motor directly to a spare battery using the procedure in the Maintenance section.
	Motor.	If the motor is determined to be bad, it should be replaced. Bad motors are typically caused by weak batteries (low voltage), loose connections, corrosion, or a poor ground.
	If liftgate is installed on a semi trailer make sure the battery wire is two gauge or heavier. Smaller wires can reduce the voltage, resulting in motor failures.	
If the motor does not operate in freezing conditions, make sure the motor housing does not contain water.		

Troubleshooting Chart (continued)

Problem	Possible Cause	Possible Solution
Motor runs, but liftgate will not open or lower to the ground.	Structural damage. Check clearance between platform and dock bumpers.	Fix damage. Replace worn parts.
	Latch pin.	Slide the latch pin to the open position.
	Control switch box.	Check DOWN terminal using the procedure in the Maintenance section.
	Lowering valve solenoid.	Check the solenoid using the procedure in the Maintenance section.
	Lowering valve cartridge.	Check, remove, and clean valve cartridge using the procedure in the Maintenance section.
	Flow control valve.	Remove flow control valve and hook hydraulic hose directly to the cylinder. If the cylinder operates properly, replace the valve.
Motor runs, but platform will not raise, will not raise rated capacity, or raises, but drifts down when control switch is released.	Load capacity has been exceeded.	Verify load capacity and adjust load weight.
	Structural damage.	Replace damaged parts.
	Low fluid level.	Fill reservoir.
	Low Voltage.	Inspect the battery connection terminals and check the battery's Voltage (9 Volts minimum).
	Lowering valve.	Solenoid or cartridge may need cleaning or replacement. See Maintenance section.
	Bad piston seals.	See Maintenance section for Checking Cylinder for Leakage.
	Pump relief valve needs adjusted.	See Maintenance section for Checking and Adjusting System Pressure.
Hydraulic pump is worn.	Replace hydraulic pump.	
Sagging platform.	Normal wear.	Add shims to platform. See Maintenance section for Platform Adjustment.
	Bushing wear where lift arms connect to platform.	Replace bushings.
	Structural damage.	Replace worn parts.

Troubleshooting Chart (continued)		
Problem	Possible Cause	Possible Solution
Foaming oil.	Air in the hydraulic hose(s).	Check oil level in reservoir.
	Broken or loose fluid return tube.	Remove the oil reservoir and make sure the return tube is below the oil level. If the tube has turned or fallen out, reinstall it into the pump housing. Use a center punch to "stake" the tube into position.
Hydraulic fluid is leaking from packing gland.	Loose packing gland nut.	See Maintenance section for Checking Cylinder for Leakage.
Latch pin is broken or bent.	Operator has lowered platform without releasing latch pin.	The latch pin is only used to prevent the liftgate from opening due to a pressure leak or pressure bleed-off over an extended period of time. Always release latch before opening liftgate.
Liftgate raises truck when lowered to the ground.	Power down system pressure is set too high.	See Maintenance section for Checking and Adjusting System Pressure.
Liftgate will not open.	Platform operating area is not clear.	Clear platform operating area.
	Pin will not slide freely.	Activate the "UP" switch and raise the liftgate to the fully stored position. The latch pin should slide freely.
Platform lowers extremely slow.	Low oil level on power down models.	Fill reservoir.
	Improper oil in hydraulic reservoir.	See Monthly Inspection.
	Bushing wear where lift arms connect to platform.	Replace bushings.
	Damaged or kinked hydraulic hose.	Repair or replace.
	Cylinder rod is scored, pitted, or bent.	Repair or replace.
	Flow control valve.	Remove flow control valve and hook hydraulic hose directly to the cylinder. If the cylinder operates properly, replace the valve.
	Lowering valve.	Solenoid or cartridge may need cleaning or replacement. See Maintenance section.
Platform raises partially and stops.	Load capacity has been exceeded.	Verify load capacity and adjust load weight.
	Structural damage.	Replace damaged parts.
	Low Voltage.	Recharge battery (if less than 9 volts).
	Low pressure.	Refill reservoir. Check pump and motor.
Platform will not lower.	Platform operating area is not clear.	Clear area.
	Structural damage.	Replace damaged parts.
	Low Voltage.	Recharge battery (if less than 9 volts).
	Lowering valve.	See Maintenance section.
	Hydraulic pump and motor.	Replace power unit.



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