

INSTALLATION, OPERATION, AND MAINTENANCE

MODELS

MRT-3500 MRT-3500-BH MRT-3500-GB MRT-3500-SL MRT-4500-BH MRT-4500-BH MRT-4500-SL MRT-5500-BH MRT-5500-BH MRT-6500 MRT-6500-BH <image>

QUALITY, RELIABILITY, CUSTOMER SERVICE

Contents

1.	General Information Section	. 5
	1.1 Introduction	. 5
	1.2 Design Features.	. 5
		. 5
	1.2.2 Dual Pump And Motor	. 5
	1.2.3 Direct Cylinder Lift.	. 5
	1.2.4 Gear-Type, Flow Divider	. 5
	1.2.5 Sell-Leveling (repriasing)	. 5
	1.2.0 Cylinder Mounting Swiver Connections	. 5
	1.4 Installation Recommendations	. 0
	1.5 Model Information	. 0
	1.6 Warranty	. /
	17 Decals	. /
	1.8 Ordering Parts	. 8
~		
2.	Safety Section	.9
	2.1 Safety is Your Responsibility	. 9
	2.2 Safety Signal Words	. 9
	2.3 Salety Rules.	. 9
	2.4 Salety Icons Nomenciature	11
	2.4.1 Personal Protection/Important Information	11
	2.4.2 Frombled Actions	11
-		
3.	Nomenclature	12
	3.1 Liftgate Nomenclature	12
	3.2 Power Unit Nomenclature	13
4.	Installation Section	14
	4.1 Check Shipment.	14
	4.2 Tools Required	14
	4.3 Basic Mounting Information	14
	4.4 Van Body Capacity Ratings	14
	4.5 Welding Stainless Steel to Galvanized	15
	4.5.1 Welding Safety	15
	4.5.2 Weld Wire	15
	4.5.3 Shielding Gas	15
	4.5.4 Weiding Parameters	15
		16
	4.6 Installation Of Rail frac Lingales On Flatbed Trucks	16
	 4.6 Installation Of Rail frac Lingales On Flabed Trucks	16 17 18
	 4.6 Installation Of Railfrac Lingates On Flatbed Trucks	16 17 18 18
	 4.6 Installation Of Rainfac Lingates On Flabed Trucks 4.7 Prior To Installation 4.8 Installation Procedure 4.8.1 Tack Weld Liftgate Assembly To Truck Body 4.8.2 Weld Power Pack And Battery Box Enclosures To Truck Body 	16 17 18 18 20
	 4.6 Installation Of Rainfac Lingates On Flatbed Trucks 4.7 Prior To Installation 4.8 Installation Procedure 4.8.1 Tack Weld Liftgate Assembly To Truck Body 4.8.2 Weld Power Pack And Battery Box Enclosures To Truck Body 4.8.3 Make the Hydraulic Connections 	16 17 18 18 20 21
	 4.6 Installation Of Rainfac Lingates On Flabed Trucks 4.7 Prior To Installation 4.8 Installation Procedure 4.8.1 Tack Weld Liftgate Assembly To Truck Body 4.8.2 Weld Power Pack And Battery Box Enclosures To Truck Body 4.8.3 Make the Hydraulic Connections 4.8.4 Make the Electrical Connections 	16 17 18 18 20 21 23
	 4.6 Installation Of Rainfac Lingates On Flabed Trucks 4.7 Prior To Installation 4.8 Installation Procedure 4.8.1 Tack Weld Liftgate Assembly To Truck Body. 4.8.2 Weld Power Pack And Battery Box Enclosures To Truck Body. 4.8.3 Make the Hydraulic Connections. 4.8.4 Make the Electrical Connections. 4.8.5 Check the Operation Of the Liftgate 	16 17 18 18 20 21 23 26
	 4.6 Installation Of Rainfac Englates On Flabed Trucks 4.7 Prior To Installation 4.8 Installation Procedure 4.8.1 Tack Weld Liftgate Assembly To Truck Body. 4.8.2 Weld Power Pack And Battery Box Enclosures To Truck Body. 4.8.3 Make the Hydraulic Connections. 4.8.4 Make the Electrical Connections. 4.8.5 Check the Operation Of the Liftgate 4.8.6 Complete The Final Welding. 	16 17 18 20 21 23 26 27
	 4.6 Installation Of Rainfac Englates On Flabed Trucks 4.7 Prior To Installation 4.8 Installation Procedure 4.8.1 Tack Weld Liftgate Assembly To Truck Body. 4.8.2 Weld Power Pack And Battery Box Enclosures To Truck Body. 4.8.3 Make the Hydraulic Connections. 4.8.4 Make the Electrical Connections. 4.8.5 Check the Operation Of the Liftgate 4.8.6 Complete The Final Welding. 4.9 Cable Lug Installation 	16 17 18 20 21 23 26 27 28
	 4.6 Installation Of Rainfac Lingates On Flabed Trucks 4.7 Prior To Installation 4.8 Installation Procedure 4.8.1 Tack Weld Liftgate Assembly To Truck Body. 4.8.2 Weld Power Pack And Battery Box Enclosures To Truck Body. 4.8.3 Make the Hydraulic Connections. 4.8.4 Make the Electrical Connections. 4.8.5 Check the Operation Of the Liftgate 4.8.6 Complete The Final Welding. 4.9 Cable Lug Installation 4.10 Mount Inside Van Control (Optional) 	16 17 18 20 21 23 26 27 28 29
	 4.6 Installation Of Rainfac Lingates On Flabed Trucks 4.7 Prior To Installation 4.8 Installation Procedure 4.8.1 Tack Weld Liftgate Assembly To Truck Body. 4.8.2 Weld Power Pack And Battery Box Enclosures To Truck Body. 4.8.3 Make the Hydraulic Connections. 4.8.4 Make the Electrical Connections. 4.8.5 Check the Operation Of the Liftgate 4.8.6 Complete The Final Welding. 4.9 Cable Lug Installation 4.10 Mount Inside Van Control (Optional) 4.11 Dock Seal Kit Installation (Optional) 	16 17 18 20 21 23 26 27 28 29 29
	 4.6 Installation Of Rainfac Englates On Flabed Trucks 4.7 Prior To Installation 4.8 Installation Procedure 4.8.1 Tack Weld Liftgate Assembly To Truck Body. 4.8.2 Weld Power Pack And Battery Box Enclosures To Truck Body. 4.8.3 Make the Hydraulic Connections. 4.8.4 Make the Electrical Connections. 4.8.5 Check the Operation Of the Liftgate 4.8.6 Complete The Final Welding. 4.9 Cable Lug Installation 4.10 Mount Inside Van Control (Optional) 4.11 Dock Seal Kit Installation (Optional) 4.12 Air Bleeding Procedure For MRT Liftgates (Gravity Down Models ONLY!). 	16 17 18 20 21 23 26 27 28 29 29 30
	 4.6 Installation Of Rainfrac Entgates on Flabed Trucks 4.7 Prior To Installation 4.8 Installation Procedure 4.8.1 Tack Weld Liftgate Assembly To Truck Body. 4.8.2 Weld Power Pack And Battery Box Enclosures To Truck Body. 4.8.3 Make the Hydraulic Connections. 4.8.4 Make the Electrical Connections. 4.8.5 Check the Operation Of the Liftgate 4.8.6 Complete The Final Welding. 4.9 Cable Lug Installation 4.10 Mount Inside Van Control (Optional) 4.11 Dock Seal Kit Installation (Optional) 4.12 Air Bleeding Procedure For MRT Liftgates (Gravity Down Models ONLY!). 4.13 Final Inspection Checklist 	16 17 18 20 21 23 26 27 28 29 29 29 30 31
5.	 4.6 Installation Of Rail frac Lingates On Flatbed Trucks 4.7 Prior To Installation 4.8 Installation Procedure 4.8.1 Tack Weld Liftgate Assembly To Truck Body. 4.8.2 Weld Power Pack And Battery Box Enclosures To Truck Body. 4.8.3 Make the Hydraulic Connections. 4.8.4 Make the Electrical Connections. 4.8.5 Check the Operation Of the Liftgate 4.8.6 Complete The Final Welding. 4.9 Cable Lug Installation 4.10 Mount Inside Van Control (Optional) 4.12 Air Bleeding Procedure For MRT Liftgates (Gravity Down Models ONLY!). 4.13 Final Inspection Checklist 	16 17 18 20 21 23 26 27 28 29 29 30 31 32
5.	 4.6 Installation Of Rail frac Lingates On Flatbed frucks 4.7 Prior To Installation 4.8 Installation Procedure 4.8.1 Tack Weld Liftgate Assembly To Truck Body. 4.8.2 Weld Power Pack And Battery Box Enclosures To Truck Body. 4.8.3 Make the Hydraulic Connections. 4.8.4 Make the Electrical Connections. 4.8.5 Check the Operation Of the Liftgate 4.8.6 Complete The Final Welding. 4.9 Cable Lug Installation 4.10 Mount Inside Van Control (Optional) 4.12 Air Bleeding Procedure For MRT Liftgates (Gravity Down Models ONLY!). 4.13 Final Inspection Checklist Safety Decals 5.1 Decal Locations 	16 17 18 20 21 23 26 27 28 29 29 30 31 32 32

6.	Operation Section	36
	6.1 General Safety Operating Instructions	36
	6.2 Operating Instructions	37
	6.2.1 Position Platform For Dock Loading	37
	6.2.2 Position Platform For Loading And Unloading	37
	6.2.3 Position Platform to In-Transit Stored Position	38
	6.2.4 Cart Stop Operation	38
7.	Maintenance Section	39
	7.1 Preventive Maintenance	39
	7.1.1 Monthly Inspection	40
	7.1.2 Semi-Ánnual Inspection	41
	7.2 Maintenance And Troubleshooting Procedures	42
	7.2.1 Check Lowering Valve Cartridge And Coil	42
	7.2.2 Inspect Cylinder Piston Seals	42
	7.2.3 Checking System Pressure	42
	7.2.4 Raise/Lower Flow Control Valve	43
	7.2.5 Adjusting Platform Speed	43
	7.2.6 Battery Separator	44
8.	Troubleshooting	45
	8.1 Troubleshooting Guide.	45
9.	Inspection Record	48
10.	Warranty Section	49
	10.1 Limited Warranty	49
	10.2 Warranty Policy And Procedure	49

1. General Information Section

1.1 Introduction

Congratulations on selecting an Anthony Magnum RailTrac Liftgate. Anthony liftgates are among the finest available on the market today. This manual will provide you with the necessary instructions and safety precautions to correctly install and operate the standard, bed height (BH), or gas bottle (GB) models of Anthony Magnum RailTrac liftgate. This manual, as well as a Parts Manual for this liftgate is available (PDF format) in the Manuals section of our website at www. anthonyliftgates.com/manuals.php.



Magnum RailTrac Liftgate. (2) Power Unit Enclosure.
 Battery Box.

1.2 Design Features

We believe the benefits of the Anthony SERVICE-FREE design are significant. The features designed into our liftgates ensure LOW operating costs, decrease maintenance time, and increase operating time; making Anthony Liftgates the best choice for rail application liftgates.

1.2.1 Service Free Operation

The MRT liftgate is exclusively designed for Service-Free operation. These models have NO grease zerks, no rollers or roller bearings, and no lifting cables; which are prone to significant maintenance and sometimes failure.

1.2.2 Dual Pump And Motor

The MRT is equipped with two hydraulic pumps and motors that operate together, acting as a back-up in the event one system should stop functioning. This feature allows the driver/operator to continue making uninterrupted deliveries for the the rest of his/her shift.

In the event one motor stops functioning, the travel speed of the platform will slow by approximately half the normal operating speed. On "Power Up/Gravity Down" models, only the UP speed is affected. The lowering speed will remain the same. On the "Power Up/Power Down" models, both the UP and DOWN speeds will be reduced by half.

1.2.3 Direct Cylinder Lift

Our liftgate is raised and lowered by two hydraulic cylinders. These cylinders eliminate many normal wear items such as lift chains and bearings. The cylinders are housed with the H-frame housing.

1.2.4 Gear-Type, Flow Divider

The direct cylinder lift design uses a maintenance free, non-adjustable, "gear type" flow divider. We believe our flow divider has significant benefits over other liftgates which use adjustable "orifice-type" flow divider valves. These other flow dividers are often difficult to adjust and then hard to maintain proper pressure settings.

The Anthony "gear-type" flow divider balances the fluid between the cylinders within 2% of each other. Our research and testing shows that our "gear-type" flow divider is more accurate and trouble free than "orificetype" flow dividers.

1.2.5 Self-Leveling (rephasing)

After installation and during the initial operation of the liftgate (with no load), the platform can be out of level by approximately one to one and one-half inches and still be within our specifications. This condition will not harm the liftgate structure or hydraulic components and is corrected with a procedure known as rephasing.

Rephasing is performed by raising the platform to the fully raised position. Then, lower the platform about ten inches and raise it to the fully raised position again. Repeat this step several times while holding the Up switch for 5 to 6 seconds each time. This allows hydraulic fluid to pass from one lift cylinder to the other until the hydraulic fluid is balanced on both sides.

After rephasing, the platform should be level with the truck floor. The platform may become uneven again, but this is usually caused by air trapped within the hydraulic system. The air should work itself out in a short period of time, through normal use of the hydraulic system.

1.2.6 Cylinder Mounting Swivel Connections

The Anthony MRT liftgates are equipped with our exclusive "swivel connection" ends on both lift cylinders. These connections are similar to those used in the agriculture industry on three-point tractor hitches. Our design maintains a straight vertical lift force between the two ends of each lift cylinder, even when the platform is out of level. This helps prevent internal damage and scoring of cylinder pistons and rods.

Our design testing has proven through intentional, outof-level lifting; that NO damage has occurred to any components of the liftgate, either structural or hydraulic, with even as much as 12 inches of out-of-levelness.

1.3 Important Operation Notes

A restraining system may be needed to retain certain types of cargo on the liftgate platform, depending upon the specific application, such as a cart stop, retention ramp, fencing, straps, etc. This should be considered by the purchaser for their particular application so as to prevent the possibility of severe personal injury or death due to cargo shifting and/or falling from the liftgate platform.

All users of this liftgate must be 21 years of age and have read and understood all operation instruction booklets and decals before use.

AWARNING



CRUSH HAZARD

Unsecured loads, when moved on the liftgate, can shift or fall.

To prevent personal injury or death, make sure loads are securely fastened to liftgate or restrained by cart stops, retention ramp, or fencing.

1.4 Installation Recommendations

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. Sometimes, 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 our 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 Web: www.anthonyliftgates.com Email: Sales@anthonyliftgates.com

A WARNING

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.

1.5 Model Information

The Magnum RailTrac Liftgate provides up to 58 inches of total lift height. The lifting capacity of the Magnum RailTrac Liftgate ranges from 3500 to 6500 pounds, depending on the model.

The Magnum RailTrac Liftgate works best on truck bodies with "roll-up" style doors, however it can also be installed on flat bed trucks. The standard, bed height (BH), and gas bottle (GB) models are all installed using the same method. Gas bottle versions are normally installed on flat bed trucks and require the addition of diagonal braces to connect the rails of the liftgate to the bed of the truck. These diagonal braces are not part of the kit and must be provided by the installer. Refer to the installation instructions for further details.

With the proper tools and two installers, the Magnum RailTrac Liftgate can be installed in four to five hours (8 to 10 total man-hours).

This Installation, Operation, and Maintenance manual will provide you with 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 to the installation instructions, a complete explanation of the safety words and rules are included in the Safety Section of this manual. Please turn to the Safety Section and read it 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 Magnum RailTrac model liftgates are factory assembled, tested, and energized to ensure the highest quality performance standards. The MRT model liftgates ship completely assembled for fast, clean, and easy installation.

1.6 Warranty

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.

All decals must be in place and legible or all warranties are void.

Before calling for warranty or other product information, have the <u>serial number</u>, <u>model number</u>, and <u>lift capacity</u> of your liftgate, which is stamped into the identification plate on the streetside of the liftgate. Record this information in the space provided for easy reference when contacting Anthony Liftgates with questions.



Identification plate.

Serial Number Information		
Serial No.		
Model No.		
Lift Capacity		
Date of Installation		

Refer to "10.1 Limited Warranty" on page 49 of this manual for complete warranty details.

SAFETY INSTRUCTIONS

To prevent personal injury from not being aware of safety recommendations, 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, placement, and illustrations of these decals, refer to "5. Safety Decals" on page 32 of this manual.

1.8 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.

Note: The liftgate's packet of information does not contain a "parts manual." The most current and up-to-date parts manuals can be obtained by accessing our website anytime.

Our website address is **www.anthonyliftgates.com** Click on "Manual" and choose a model.

If you do not have access to the internet, or just prefer a printed copy of a manual, we can send one to you. Call or write our office listed below.

For questions or to order parts, contact: Anthony Liftgates, Inc. 1037 West Howard Street Pontiac, Illinois 61764 (815) 842-3383 Web: www.anthonyliftgates.com Email: Sales@anthonyliftgates.com

2. Safety Section

2.1 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.

2.2 Safety Signal Words

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

This manual contains DANGERS, SAFETY INSTRUCTIONS, CAUTIONS, IMPORTANT NOTICES, and NOTES which must be followed to prevent the possibility of improper service, damage to the equipment, personal injury, or death. The following key words call the readers' attention to potential hazards.

Hazards are identified by the "Safety Alert Symbol" and followed by a signal word such as "DANGER", "WARNING", or "CAUTION".

A 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.

A WARNING

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.

NOTICE

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

SAFETY INSTRUCTIONS

Safety instructions (or equivalent) signs indicate specific safety-related instructions or procedures.

Note: Contains additional information important to a procedure.

2.3 Safety Rules

Most accidents involving the operation maintenance, or repair of products made by Anthony Liftgates occur because the owner/installer/operator faile 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, repairing, or maintaining 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.

A WARNING

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 of our instructions and safety recommendations.

Do not operate or work on a truck or liftgate unless you read and understand the instructions and warnings in the Installation and Operation 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.

WARNING



To prevent serious bodily injury, keep sparks, lighted matches, and open flames away from the

top of the battery, because battery gas can explode. Always follow all the manufacturers' safety recommendations when working around the truck's battery.



Take precautions to avoid sparks coming into contact with the truck's fuel tank, brake lines, wooden floor, 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, 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 loss of vehicle control, serious injury, or even 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 the smoke and fumes

can cause serious injury. 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.



Always follow all State and Federal health and safety laws and/or local regulations when using a welder or cutting torch. Also, follow all manufacturer's safety guidelines. If other people are present during the installation of the liftgate, make sure they remain clear of the cutting area and are shielded from view of any welding. This will prevent



To avoid eye injury, always wear eye protection with the proper lens to protect your eyes.



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

Do not work under the liftgate while it is suspended from the lifting equipment. Failure of the lifting equipment could cause serious crushing injuries. Do not remove the lifting equipment until the liftgate is completely welded onto the truck frame.

ACAUTION

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.

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

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

Always use/set the truck's parking brake before (P) operating 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 platform.

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.

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

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.

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

Safety Icons Nomenclature 2.4

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

2.4.1 **Personal Protection/Important Information**

X
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) Use proper tools

Read the manual

) Use two people when lifting heavy objects

Damaged safety signs



Eye protection

Breathing protection

Use grab handles

Inspect Equipment

Set parking brake

2.4.2 Prohibited Actions

No smoking

No open flame





Slipping injury





Safety alert symbol



Explosion hazard



Pinch point hazard



Lifting hazard



Stay clear



Dangerous fumes



Adequate ventilation



Crush hazard

Crush hazard (rolling)



Fall hazard





Crush hazard

Crush hazard (foot)

3. Nomenclature

3.1 Liftgate Nomenclature.





Item	Description
1	Electrical Control Wiring
2	Platform Opening Speed Adjustment
3	Platform Closing Speed Adjustment
4	Fill/Breather Cap
5	Hydraulic Fluid Level Sight Tube
6	Platform Open Valve Cartridge Coil
7	Platform Close Valve Cartridge Coil
8	Platform Up Valve Cartridge Coil
9	Platform Down Valve Cartridge Coil
10	Valve Body Manifold
11	Motor Start Solenoid

Item	Description
12	Electric Motor
13	Hydraulic Pump
14	10 Amp Fuse
15	High Pressure Hose
16	Drain Hose
17	Curbside Lift Cylinder Hydraulic Hose
18	Streetside Lift Cylinder Hydraulic Hose
19	Open/Close Cylinder Hydraulic Hose
20	Flow Divider Valve
21	Platform Raise/Lower Speed Adjustment

4. Installation Section

4.1 Check Shipment

You should have the following items for this shipment to be complete.

- 1. Liftgate Assembly
- 2. Power Unit Enclosure (steel unit containing pump/motor)
- 3. Battery Box

Inside the Power Unit Enclosure box are hoses and fittings, wiring, nuts and bolts, decals, and other miscellaneous items which will be used to complete the installation.



4.2 Tools Required

The following is a list of suggested tools that should be used to install the Magnum RailTrac Liftgate.

- Overhead Crane or Forklift
- · Mig or Stick Welder
- · Heavy-Duty C-Clamps
- Tape Measure
- Level (small, magnetic)
- Open End Wrenches
- · Flat Bladed Screwdriver

4.3 Basic Mounting Information

The Magnum RailTrac Liftgate models are intended for installation on a semi-trailer or the van body of a straight truck.

If a Magnum RailTrac Liftgate model will be installed on the van body of a straight truck, re-tighten the U-bolts that secure the van body to the chassis.

Tip: DO NOT attempt to install a Magnum RailTrac Liftgate on a flatbed vehicle without consulting the factory to determine feasibility.



Dimensions of Anthony Liftgates Magnum RailTrac Liftgate. ¹ Can be removed if other lights are used.

4.4 Van Body Capacity Ratings

The Magnum RailTrac Liftgate mounts to the rear corner posts of the truck body. Before installing the liftgate, make sure each corner can support the load capacities to be placed on them.

MRT-3500 (side walls and corner post) Tension	2250 lbs. 2250 lbs. 3500 lbs.
MRT-4500 (side walls and corner post) Tension	2800 lbs. 2800 lbs. 4500 lbs.
MRT-5500 (side walls and corner post) Tension	3500 lbs. 3500 lbs. 5500 lbs.
MRT-6500 (side walls and corner post) Tension	4250 lbs. 4250 lbs. 6500 lbs.



Locations of load.

(A) Tension. (B) Compression. (C) Shear. (1) Floor Height.
(2) Top of Column (85 inches). (3) Reinforcing Strap, optional (3/16 x 4 inch, quantity 2).

Tip: When the strength of the body is in doubt, add a reinforcing strap (3) to the interior of each side of the vehicle.

4.5 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.

4.5.1 Welding Safety



FUME HAZARD

Follow all OSHA and other workplace safety standards when welding. Welding galvanized steel 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 4 hours after exposure, and full recovery occurs within 48 hours.

ACAUTION



FUME HAZARD

Follow all OSHA and other workplace safety standards when

welding. Welding stainless steel creates hexavalent chromium fumes which 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.

- 1. Welders should position themselves upwind of the air flow which 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.

4.5.2 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.**

4.5.3 Shielding Gas

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

4.5.4 Welding Parameters

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	Voltoro	Amperage (Wire Feed Speed ipm)		
Diameter Voltage		Flat	Vertical & Overhead	
.045"	24-28	130-200 (250-425)	120-160 (225-300)	
.062 (1/16)	25-30	180-250 (150-250)	180-220 (150-200)	

- 1. 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.
- 2. No preheat of the dissimilar metals is needed.
- 3. When welding is complete, and after the area has cooled, use a cold galvanizing spray to restore corrosion resistance.

4.6 Installation Of RailTrac Liftgates On Flatbed Trucks

Described below is the installation requirements for the diagonal bracing used on flatbed truck bodies. Two sets of diagonal braces (two upper and two lower) are required. Diagonal braces can be made from the shipping/lift supports or other recommended materials.



- 1. Weld or bolt the liftgate to the truck bed. Refer to the normal installation procedure for recommendations and safety precautions.
- 2. Weld an upper diagonal brace between the H-frame rail and the truck bed on each side. The ends of the diagonal brace should be a minimum of 42" above the truck bed and a minimum of 42" from the end of the truck bed.
 - a. Cut two upper diagonal braces from the shipping/ lift support or from 2 1/2 x 2 1/2 x 1/4" thick angle iron.
 - b. Weld each diagonal brace to the H-frame rail and to the top of the truck bed.
- 3. Weld a lower diagonal brace between the H-frame rail and the truck bed on each side. The lower diagonal brace or gusset should extend at least one half the length of the rail. For example, if the H-frame rail extends 20" below the truck bed, the ends of the diagonal brace should extend at least 10" downward and 10" inward from the end of the truck bed.
 - c. Cut two lower diagonal braces from the shipping/ lift support or from 2 1/2 x 2 1/2 x 1/4" thick angle iron. A gusset (support plate) can also be made from a 1/4" thick steel plate.
 - d. Weld each diagonal brace or gusset to the liftgate H-frame rail and to the bottom of the truck bed.

4. If the truck body corner posts are made from aluminum, six steel mounting brackets must be fabricated and installed on the corner posts.

WARNING

CRUSH HAZARD

It is the responsibility of the installer(s) to make sure the steel mounting brackets will safely hold the liftgate onto the truck. If these brackets fail, possible injury or death may result.

a. The mounting brackets should be made from at least 3/16" thick steel plate. The eight mounting holes should be for 1/4" bolts or larger. Make the brackets similar to the example shown in the following drawing.



Dimensions for steel mounting plates.

b. Mount the steel brackets to the aluminum corner posts at the locations shown below. The sill of the truck bed may also require shims to make sure the surface of the mounting brackets and the sill are flush.



Mounting locations for steel mounting brackets.

5. Make sure the corner posts are flush with the rear sill. If they are not flush, add spacers, as shown in the illustration.



Add spacers to make the corner posts flush with the rear sill.



Weld spacers to the corner post using $3/16 \times 2^{\circ}$ long welds every 12".

Tip: An alternative to one long spacer is using 3" long plates spaced 9" apart. Make sure the last plate is located 45" or 61" above the bed height, depending on the liftgate model being installed.

4.7 Prior To Installation

- 1. Place the truck on a flat, level surface. The rear surface of the truck or trailer must be straight and square.
- 2. Block the wheels to prevent possible truck movement during liftgate installation.
- 3. Remove the banding securing the power unit enclosure.

The power unit box should contain a package containing decals and manuals.



4. Remove the banding securing the battery box.

ALI-00137

4.8 Installation Procedure

This section of the manual will guide you through the complete installation process, step-by-step. It is important that you follow all of the instructions in the sequence we have provided. This sequence will provide a quicker and easier installation process of the liftgate.

SAFETY INSTRUCTIONS

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

4.8.1 Tack Weld Liftgate Assembly To Truck Body

1. Make sure the proper required bumper (ICC or REAR UNDERRIDE) is in place and meets all Federal Regulations.



2. Cut the banding attaching the hoses and wiring to the liftgate.



3. Measure and determine the centerline of the liftgate. Mark this point.



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





ROLLOVER HAZARD

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).

- 5. Use a forklift or hoist to raise the liftgate onto the rear of the vehicle. Lay hoses and wires down to the side of the liftgate where they will not be damaged.
- *Tip:* Raise the liftgate by the top shipping support, located between the columns.



6. Remove the two shipping legs, but do not remove bottom cross support.



7. Set the liftgate onto the rear sill of the truck body using the leveling brackets. Do not pinch wires or hoses when positioning the liftgate against the truck body.

PERSONAL INJURY HAZARD To prevent personal injury, make sure you use a lifting device to position the liftgate onto the rear sill of the truck.

Tip: Two "leveling brackets" are used to position the liftgate assembly flush with the truck body floor. The leveling brackets can be removed after the installation is complete.



AWARNING



CRUSH HAZARD

To prevent personal injury or death, DO NOT remove the lifting device until the tack welding is completed.

To avoid personal injury, do not work under the platform during installation. Work so you are not in the way if a lifting device, clamps, welds, etc. should fail.

8. Center the liftgate assembly side-to-side on the rear of the vehicle by matching the liftgate and truck body centerline markings. Hold or clamp the columns of the liftgate securely against the rear frame of the vehicle using heavy-duty C-clamp(s) on each side. The columns should now be tight (no gaps) against the full height of the rear frame of the vehicle.







9. Tack weld the liftgate to both corner posts of the vehicle. Place the tack welds (8 welds) at the top and bottom (inside and outside) of each column. The tack welds should be a minimum of

3/16 x 2 inches long and capable of holding at least 2600 pounds.

The final welding of the liftgate will be completed after the unit is tested for correct operation.



ACAUTION

CRUSH HAZARD The tack welds must be strong enough to hold the weight of the liftgate. Insufficient welds may not hold the liftgate in place, resulting in possible bodily harm.

4.8.2 Weld Power Pack And Battery Box Enclosures To Truck Body

We recommend installing the power unit enclosure (30 inches long) and the battery enclosure (27 inches long) on the curbside of the vehicle for safety purposes, such as when service is required on the road.

Typically the units are mounted behind the rear wheels (behind the furthest rear wheel on a trailer). However, if the space will not allow both units to be installed side by side, the power units can be in front of the rear wheels, or one unit on either side of the rear wheels as shown in this manual. Mounting the power unit enclosure in front of the wheels may require a hose and wiring extension kit (contact Anthony factory for an extension kit).

The hoses and wires supplied with the power units allow it to be mounted a maximum of 4 feet from the rear of the vehicle. Before welding the unit to the frame, make sure the hoses and wires will reach the enclosure box.

- 1. Make sure the truck body crossmembers are clean and free of dirt or paint.
- Raise the power unit until the "hanger channels" contact the underside of the chassis (or trailer) crossmembers.



 Use 1/4 inch welds to weld the hanger channels to all chassis crossmembers or a minimum of three trailer crossmembers and add any necessary bracing. Cover the power unit components to prevent damage from welding sparks.





4. Raise the battery box unit until the "hanger channel" contacts the underside of the chassis (or trailer) crossmembers.

5. Use 1/4 inch welds to weld the hanger channel to all chassis crossmembers or a minimum of three trailer crossmembers and add any necessary bracing.



4.8.3 Make the Hydraulic Connections

Three hydraulic hoses and one breather hose run from the liftgate to the power unit enclosure.

1. Route the street side high-pressure hose, lowpressure hose, and electrical wire through or under the crossmembers and along the frame to the power unit. Also route the curbside hoses and wire to the power unit.



2. Remove the cap from the fitting and the plug from hose. Connect the hose to the fitting and tighten it securely.



3. Remove the two caps from the flow divider, indicated by the arrows.



4. Remove the plugs from the end of each hydraulic hose.



- **Note**: This unit has been hydraulically tested at the factory and the hoses are filled with oil. Take care when removing the plugs not to drain oil from the hoses, as this will create an air bubble within the hose.
- 5. Insert hoses (1 and 2) through the rubber grommets and connect them to the flow divider. Tighten the fittings securely. It does not matter how the hoses are attached, either hose can be connected to either fitting.



- 6. Attach hydraulic hose (3) for the open/close cylinder to the fitting on the outside of the power unit.
- 7. Connect the drain hoses from the lift cylinders to the tee fitting, and another hose from the tee, long enough to reach the power unit. Secure all three hoses with small hose clamps.



- 8. Route the drain hose into the power pack enclosure.
- 9. Cut off any excess drain hose and attach to the fitting on the hydraulic tank with a small hose clamp.



10. Route the liftgate control cable through the split grommet in the back of the power pack enclosure.



11. Connect the liftgate control cable, which controls all the liftgate functions (up, down, open, and close) to its mating connection inside the power pack enclosure.



12. Connect the liftgate tail light cable, which controls the running lights, backup lights, and brake lights, to the truck wiring harness.



 Use clamps or plastic ties (provided) to secure the hoses and wires to the crossmembers, approximately every three feet.



4.8.4 Make the Electrical Connections

- **Note**: The battery supply cable may need to be cut to various lengths to connect the power pack, the batteries in the liftgate battery box, and the vehicle's batteries. For information on properly crimping battery lugs onto the cable, refer to the Cable Lug Installation section in this manual.
- **Note**: This installation uses two 12 Volt dedicated batteries located in a separate battery box. This configuration requires two circuit breakers. One circuit breaker is customer installed near the vehicle's battery box. The other circuit breaker is factory installed in the liftgate battery box and is preconnected to the On/Off power switch. These circuit breakers provide the liftgate with protection against anything that may contact the battery terminals or other situations that could cause an electrical short. The circuit breakers are able to carry up to 200 Amps. The two circuit breakers in this application will protect the "charge" cable between the liftgate batteries and the truck batteries.



Circuit breaker in liftgate battery box.



Circuit breaker in vehicle battery box.



14. Make sure the power cut-off switch on the liftgate battery box is in the Off position.



15. Route a ground cable (wire supplied with kit) through the back of the power unit enclosure. Connect one end to the pump body (A) and the other to the ground terminal on the auxiliary batteries (B).





16. Connect one end of the battery supply cable (wire supplied with kit) to the On/Off switch (C).



17. Connect the other end of the cable to the liftgate batteries positive (+) post.



18. Route the long battery cable through the right side of the battery box and connect it to the 200 Amp circuit breaker.



- 19. Route the other end of the battery cable from the liftgate battery box to the vehicle's battery box.
- Install 200 Amp Circuit Breaker (1) somewhere near or in the truck battery compartment (within 24 inches), where it is easy to reach to be reset.



- 21. Connect the battery cable from the liftgate battery box to circuit breaker terminal (H).
- **Note**: An optional battery separator can also be installed at this time. The following steps cover the installation of the battery separator. If this option is used, omit the preceding step.
- Connect the battery cable from the liftgate battery box to terminal (F) on the battery separator or terminal (H) of the circuit breaker.



- 23. Connect battery separator terminal (G) to circuit breaker terminal (H).
- 24. Connect circuit breaker terminal (I) to the batteries positive (+) post (J).

25. Connect a #14 gauge wire between chassis ground and the battery separator ground terminal. This may momentarily activate the battery separator. This is normal. For additional wiring options, refer to "7.2.6 Battery Separator" on page 44.



26. Make sure all hoses and wires are securely attached to the frame of the vehicle. Make sure that no wire or hose will be damaged by rubbing against another part.

ACAUTION

Make sure the area where the platform will be functioning (up, down, open, and close) is free of obstructions and people before operating the liftgate.

The standard Magnum RailTrac Liftgate operates as a power up (close) and gravity down (open) unit. It can also be ordered to operate as a power up (close) and power down (open) unit, which provides power when lowering.

 Press and hold the Up/Down switch in the Up position until the platform raises approximately 1/8 inch.



2. Press and hold the Open/Close switch in the Close position until you see the platform close a little.





4. Press the Down switch to lower the platform approximately 8 inches.





5. Press the Open switch to unfold the platform.



 Raise and lower the platform to make sure it operates without binding. Air introduced into the system during installation will work itself out after several cycles of normal operaton. To bleed air out of the cylinders, refer to "4.12 Air Bleeding Procedure For MRT Liftgates (Gravity Down Models ONLY!)" on page 30.



7. If the liftgate has been successfully operated through its cycle, remove and discard the upper shipping support.



4.8.6 Complete The Final Welding

- 1. Thoroughly check the position of the liftgate assembly before starting the final welding.
 - a. The liftgate must be centered on the chassis or trailer.
 - b. The crossmember must be flush with the floor.
 - c. Both columns must be tight against the rear frame.
 - d. The columns must be square with the vehicle body and parallel to each other.
- If any of these items is not correct, reposition the liftgate.
- Weld the liftgate columns to the rear frame of the chassis or trailer using seven, equally spaced 3/16" wide by 2" long welds (A) down both sides (inside and outside) of each column (28 total welds).



Tip: Do not over weld the outside of the columns, because too much heat can damage the hoses and wires inside the columns.

- 3. Weld the floor extension crossmember to the chassis or trailer rear sill using seven, equally spaced 3/16" wide by 2" long welds across the top edge of the floor extension crossmember.
- 4. Connect the liftgate tail light connector to the vehicle tail light cable. Make sure the connection is watertight.



- 5. Attach the license plate and license plate light to the chassis (or trailer) below the level of the truck floor using the original bracket.
- 6. Attach all decals, as shown in "5. Safety Decals" on page 32.
- 7. Complete "4.13 Final Inspection Checklist" on page 31.

4.9 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.

 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.



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 result in 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.

4.10 Mount Inside Van Control (Optional)

The inside van control (optional) will allow an operator to raise and lower the liftgate from inside the trailer. The inside van control is designed to mount in the plywood lining of the trailer (up to 1/4 inch thick).

- *Tip: If the plywood lining is more than 1/4 inch thick, "spot face" the plywood lining or cut out a bigger hole and mount cup into a thin piece of metal.*
- Place the inside van control approximately 3 feet above the floor of the trailer or at your desired location.
- 2. Drill a 2-1/4 inch diameter hole through the plywood lining for the recessed switch plate.
- 3. Drill a 1/2 inch hole in the bottom rail of the side wall, directly below the switch location.
- 4. Feed the electrical cord inside the side wall and through the hole in bottom rail.
- 5. Secure the recessed plate and switch to the plywood lining with 3 wood screws.
- 6. Route the electrical cord through (or under) the vehicle crossmembers and tie any dangling cord to the vehicle.
- 7. Route the electrical cord into the power unit enclosure and connect the wires into the terminal strip by matching the wire numbers.
- *Tip:* The white wire in the UP/DOWN control should be attached to the small post on the motor-start solenoid.
- 8. After connections are completed, close the pump enclosure door and secure the latch.

4.11 Dock Seal Kit Installation (Optional)

The dock seal kit should be installed after liftgate installation is complete.

- 1. Trim the side panels to the length needed. This dimension varies from vehicle to vehicle.
- Position the panels as shown and bolt together or weld to the rear corner posts and header of the trailer/ body.



3. Weld or bolt the corner gussets to the top panel and side panels.

4.12 Air Bleeding Procedure For MRT Liftgates (Gravity Down Models ONLY!)

This procedure will remove/bleed the air that is trapped inside the lift cylinders and hoses in the hydraulic circuit quickly and effectively. If this procedure is not performed, air in the hydraulics will eventually work its way out. Until then, however, the lift cylinders may be "spongy", not as smooth as they normally would be, and the platform may not remain perfectly level while in motion.

- 1. Lower the opened (unfolded) platform until the runners extend below the bottom of the columns so the lift cylinder piston rods are visible.
- 2. Remove the stop collar from each of the piston rods using a hex key. By removing the stop collars, the lift cylinders will retract slightly more than normal (1/8") when fully retracted (platform raised completely). This opens an internal "bleeder valve" in the piston and allows the trapped air that was introduced during installation to be expelled from the hydraulic lift cylinders.

ACAUTION

PINCH POINT HAZARD Keep hands clear of moving parts. To avoid possible injury, make sure the platform up/ down switch is not activated while removing or replacing the stop collars.





- 3. Using the "UP" control switch, raise the liftgate platform all the way up until the platform stops at truck/trailer floor level (the lift cylinders will be fully retracted). Continue to hold the "UP" switch in the "ON" position for several seconds, until you see oil start to flow out of the cylinders and into the clear breather hoses. Once oil starts flowing, STOP! All the air should now be released.
- 4. Lower the platform until the lift cylinder piston rods are exposed below the columns. Replace the collars onto the piston rods.

A WARNING

PERSONAL INJURY HAZARD Do not use the liftgate if any of the items in the Final Inspection Checklist are not checked and verified. Personal injury may result. 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 hydraulic fluid reservoir is filled.

Power Down model – Fill to within 1/2" of full with the platform raised.

Gravity Down model – Fill to within 1/2" of full with the platform on the ground.

Use only Dexron VI, Dexron III, or Hyken Glacial Blue hydraulic fluid. For cold weather operation, we recommend Hyken Glacial Blue.



NOTICE

Use only Dexron VI, Dexron III, or Hyken Glacial Blue hydraulic fluid in the power unit reservoir. For cold weather operation, we recommend Hyken Glacial Blue. DO NOT thin hydraulic fluid with brake fluid, and DO NOT use brake fluid in place of hydraulic fluid.

If an emergency situation occurs, any anti-wear hydraulic fluid can be used, but the system should be flushed and the fluid changed as soon as reasonably possible. Hydraulic fluids should not be mixed due to possible compatibility problems.

The recommended fluids are compatible and may be mixed, however, the cold weather operating characteristics of Hyken Glacial Blue will be adversely affected.

- Close the cover on the power pack enclosure and battery box. Make sure they are secured with a padlock, lock pin, or wire (customer supplied).
- Operate the liftgate through its entire operational cycle (Up, Down, Open, and 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 operating at the recommended speeds of 5 seconds for "opening" and 5-7 seconds for "closing". If not, refer to the Maintenance section for instructions on adjusting the speed of the platform.
- □ Make sure all decals are in place and legible.
- Make sure the license plate bracket is properly installed, as required by law.
- Make sure the truck and/or trailer meets all local, state, and federal regulations; including, but not limited to those required for bumpers, lighting, and reflectors.
- Put the Installation, Operation, and Maintenance manual in the glove compartment of the vehicle.

5. Safety Decals

SAFETY INSTRUCTIONS

To prevent personal injury from not being aware of safety recommendations, 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 Magnum RailTrac Liftgates, refer to the Decals section in the Parts manual.

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

All decals must be in place and legible or all warranties are void.

5.1 Decal Locations









Item	Part no.	Description	
1	A-176566	Operating Instructions Decal	
	ATU-177	3500 lbs. Maximum Capacity Decal	
	A-131024	4500 lbs. Maximum Capacity Decal	
	A-131010	5500 lbs. Maximum Capacity Decal	
	A-131025	6500 lbs. Maximum Capacity Decal	
3	A-150238	Electrical Overload Decal	
4	A-131115	Personal Injury Hazard Decal	
5	AR-18-76	Caution: PinchPoint Decal	
6	A-131028	Weld Warning Decal Not For Storage	
7	A-131130		
8	—	Serial Number Plate	
9	A-146982	Danger: Clearance Decal	
10	A-131030	Platform Opening/Closing Speed Adjustment Decal	
11	A-131085	Warning - Secure Cover Decal	
12	A-131013	Anthony Decal	
13	A-131131	Notice - Stow in Fully Raised Position	

5.2 Decal Illustrations



03/2008

result in liftgate damage or possibly personal injury. 3500 lb. - ATU-177 4500 lb. - A-131024

5500 lb. - A-131010 6500 lb. - A-131025

A-131010

CAPACITY

NOTICE

THIS LIFTGATE IS PROTECTED WITH AN ELECTRICAL OVERLOAD CIRCUIT BREAKER, LOCATED NEAR THE POWER SUPPLY.

A-150238

3.

03/2008

	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 instruction
	• 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.
7	• Do not allow body parts to contact moving component
	• Ensure footing is stable and stand away from edge
	before raising or lowering platform.
	• Owner/operators must properly maintain liftgate.







6.

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).



11.

A WARNING

Secure this cover using "thumb screws" on front, and if equipped, with "rubber straps"!

If cover falls off while in transit, personal injury may result!

NOTICE STOW IN FULLY RAISED AND CLOSED POSITION

13.

6. Operation Section

6.1 General Safety Operating Instructions

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(s).
- Keep all decals in place and legible and retain the owners manual(s) 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 where the platform will be functioning (up, down, open, and close) is free of obstructions and people before operating the liftgate.
- ✓ 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.
- ✓ Make sure the slide runners move smoothly inside the H-frame columns with no unusual noise or vibration.
- ✓ Only operate the liftgate with the Up/Down control mounted on the H-frame column or using an optional, inside van control.
- ✓ Follow a complete, thorough lubrication and maintenance schedule as directed by this manual.
- ✓ Check the oil level in the hydraulic tank monthly. Change the oil if it is dirty or contaminated using Dexron III ATF hydraulic oil or Hyken Glacial Blue. For cold weather operation, we recommend Hyken Glacial Blue.
- ✓ Visually inspect your liftgate frequently and keep it properly adjusted.
- ✓ Visually inspect the platform chains and replace them if signs of wear or damage are present.
- ✔ Repair any damage to the liftgate to prevent accidents.
- ✓ Place the liftgate into the storage position when the liftgate is not in use.

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 the 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 crash your liftgate into loading docks or other objects which can inflict serious damage to the liftgate.
- ✗ Do not use your liftgate if it shows signs of abuse or fails to operate freely and smoothly.
- ✗ Do not allow the motor/pump to run after the liftgate is fully raised and has stopped moving.
- **X** 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 in the platform's work area while operating the liftgate or place any object under the liftgate work area.
- ✗ Do not drive the truck unless the liftgate is in the stored position.

6.2 Operating Instructions

6.2.1 Position Platform For Dock Loading

1. Turn ON the main power to the liftgate. The switch is located on the side of the trailer with the battery box or in the cab.



2. Press the "Down" switch to lower the liftgate platform straight down until the platform is below the truck floor.



6.2.2 Position Platform For Loading And Unloading

1. Turn ON the main power to the liftgate. The switch is located on the side of the trailer with the battery box or in the cab.



2. Press the "Down" switch to lower the liftgate platform straight down, approximately 8 inches.





3. Press the "Open" switch to unfold the platform.



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



5. Turn the liftgate control switch to "Off."



6.2.3 Position Platform to In-Transit Stored Position

- 1. Make sure the platform is clear of all objects and every one is clear of moving parts of the liftgate platform.
- 2. Position the platform approximately 8 inches below the floor of the truck.
- 3. Press the "Close" switch to fold the liftgate platform. Make sure the platform folds into proper position for raising.



4. Press the "Up" switch to fully raise the liftgate.



6.2.4 Cart Stop Operation

- 1. To release the cart stop to its open position, push the cart stop latch outboard with your foot in a hard sole shoe/boot.
- 2. To close the cart stop, step on the cart stop flipper and press it back down. The cart stop will automatically latch into a locked and flat positon, level with the liftgate platform.

7. Maintenance Section

7.1 Preventive Maintenance

Preventive maintenance is one of the most cost effective practices that any equipment owner can implement. Taking approximately 15 minutes of your time to inspect the Magnum RailTrac can result in hundreds and even thousands of dollars in savings. These savings can come from:

- Increased operating time (no unscheduled breakdowns at someone's loading dock).
- Normal wear items will last longer because they have been properly maintained and lubricated.
- Less chance of someone becoming injured due to parts that may fail because of mistreatment or abuse.

Preventive maintenance inspections should only be completed with qualified mechanical personnel. In no way are these steps intended to encourage usage or service of the liftgate by anyone who is not qualified to do so. The overall performance of the liftgate is directly related to the skill and knowledge of the mechanic performing the inspection. If the mechanic cannot see potential problems, or is unaware of the signs of potential problems, the inspection procedure may be a costly waste of time.

AWARNING

Do not attempt to maintain the liftgate without fully understanding all of our instructions and safety precautions. Do not attempt to maintain a liftgate unless you have read and understand all of 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.

To prevent serious injury or death, only qualified mechanical personnel who are aware of and/or able to understand the signs of potential problems should maintain the liftgate.

7.1.1 Monthly Inspection

Preventive maintenance should be performed on a monthly schedule or any time the unit shows signs of improper/abnormal operation or abuse. Following these steps helps to ensure maximum operator safety and your overall performance satisfaction.

This inspection procedure starts at the front of the truck and works its way back to the liftgate. Make sure the vehicle is securely braked before performing any of the following steps.

- 1. Check the truck's battery.
 - □ Make sure the cells of the battery are properly filled.
 - □ Check the battery for cracks, leaks, or other obvious damage.
 - □ Make sure the battery hold-down clamp is securely tightened.
 - □ Make sure the liftgate power cable connection is tight.
 - □ Remove any corrosion, dirt, or grease from the battery terminals and/or wire connections.
 - Periodically replace the old battery. (Do not let the battery fail and then replace it.)
- 2. Check the circuit breakers to make sure the connections are tight. One circuit breaker is located in the truck's battery box and the other is in the liftgate's battery box. Check the power cut-off switch to make sure it disables the power to the power unit when it is turned to the off position.
- 3. Check the power cable from the truck battery back to the liftgate power unit.
 - Make sure all connections are free of dirt and corrosion.
 - □ Make sure all connections are tight.
 - □ Make sure the entire length of the power cable is not cut or damaged.
- 4. Inspect the power pack enclosure and battery box for damage.
 - □ Remove any buildup of dirt or debris.
 - Make sure all the rubber grommets are installed in the access holes through the side of the box. This prevents damage to wires and hoses from rubbing against the metal surface of the enclosure.
- 5. Inspect the batteries in the battery box enclosure using the inspection checks in Step 1.

- 6. Check the electrical and hydraulic connections inside the power pack enclosure and the battery box.
 - Check all control wires for corrosion and make sure they have tight connections. When replacing connectors use only Heat Shrink Terminals.
 - □ Check the electrical connections to the starter solenoids.
 - Check all hydraulic hoses and fittings for fluid leaks. Tighten the fittings to stop leaks or replace them if they are damaged.
 - Check the condition of the hydraulic hoses. Replace them if they show signs of leakage or excessive abrasion of the covering.
- Check the fluid level in the power unit hydraulic tank. Fill the tank as required with Dexron VI, Dexron III ATF hydraulic oil or Hyken Glacial Blue. For cold weather operation, we recommend Hyken Glacial Blue. Do not use brake fluid.
 - □ Fill to within 1/2" of full with the platform on the ground.
 - □ Fill power down models to within 1/2" of full with platform raised.
- 8. Inspect the hoses and control wires coming from power unit to the liftgate.
 - □ Check for signs of leaks or chaffing on the outside covering of the hoses and wiring.
 - Make sure the wires are securely fastened to the truck body and not hanging loose where they could be damaged.
 - □ Remove any build-up of dirt and debris from the hoses and wires.
- 9. Make sure the liftgate is operating properly through the complete opening and closing cycle. Before operating the liftgate, make sure the area is free of all obstacles, obstructions, or people. Also, if the liftgate is equipped with a power cut-off switch, turn the switch to On.
 - Check for any clearly visible damage that would prevent the liftgate from operating properly.
 - □ Check the control switches for corrosion, dirt buildup, or damage.
 - Check for unusual noises or vibration as the liftgate operates.

- □ Check for any mechanical interference in the slide runners or as the platform opens.
- Make sure the liftgate operates freely and smoothly throughout its entire range of movement (up, down, open, and close).
- Make sure the platform is level when raised to bed height.
- Make sure the platform can be lowered straight down (below dock level) for dock loading.
- 10. Inspect the liftgate.
 - Inspect the liftgate for damage (bent platform members or slide runners, cracked welds, etc).
 - Check all the fasteners on pins, brackets, etc. to make sure those parts are securely held in place.
 - Check the platform chains and connection points. Make sure they are in good shape and the ends are connected properly.
 - Inspect the retention ramp and make sure it works properly.
 - □ Oil the platform hinge points.
- 11. Inspect the slide runners.
 - □ Clean any build-up of grime or dirt off of the slide runners (power wash if necessary).
 - Check both mechanical and hydraulic connections to the cylinders.
 - Check for any excessive wear or gouging of slide pads.
 - To decrease the effects of road salt, road grime, and dirt on the slide runners, you can clean the slides and runners with a power washer.
 - Lubricate the slide runners. You can apply "Pam" cooking spray or other spray cooking oil to rejuvenate slides for smoother operation.
- 12. Check for hydraulic fluid leaks at all three cylinders, (one closing and two lifting) along the path of the hydraulic hoses, and in the power unit enclosure. Replace the hoses if they show signs of excessive abrasion or leakage. Tighten any hydraulic fittings showing signs of leakage and replace any hydraulic fittings which are damaged.
- 13. Examine all Warning, Capacity, and Operational Decals. If they are not readable they should be replaced. New replacement decals can be obtained from Anthony Liftgates, Inc.

- 14. Place the liftgate in the stored position and turn off the power cut-off switch after each use and/or inspection.
- 15. If you find anything that shows signs of excessive wear or damage, replace that part and any mating parts that may also be damaged.

If you have any doubts or questions about your qualifications to operate or maintain the liftgate, call us at:

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

7.1.2 Semi-Annual Inspection

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

1. If the oil in the hydraulic tank is dirty, drain the oil and flush the entire system. Refill the system with the recommended oil outlined in Step 7 of the "Monthly Inspection" section.

7.2 Maintenance And Troubleshooting Procedures

7.2.1 Check Lowering Valve Cartridge And Coil

- 1. Place the platform on the ground in the open position.
- 2. Place a steel screwdriver over the top of the lowering valve cartridge coil.



- 3. Momentarily activate the control switch in the DOWN position. The screwdriver should be attracted to the magnetic field created by the coil.
- 4. If there is no magnetism, determine if there is power from the control switch to the coil. If there is no power, determine if the switch is bad or if the problem is in the wire from the switch to the coil. If there is power to the coil, but it has no magnetism, then the coil is bad and should be replaced. If the coil is good, check the lowering valve cartridge for proper operation.
- 5. Remove the coil from the lowering valve cartridge assembly.
- 6. Remove the lowering valve cartridge from the pump body.
- 7. Clean the lowering valve 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 poppet inside the lowering valve cartridge. The poppet is spring loaded and should move when it is pressed. If the poppet does not move, then the lowering valve cartridge should be replaced.



7.2.2 Inspect Cylinder Piston Seals

Inspect the cylinder piston rod seals for drifting, caused by seal leakage.

- 1. Remove the breather hose, if equipped.
- 2. Raise the platform all the way up and hold the switch in the "ON" position while checking for oil coming out of the breather port to the cylinder.
- 3. If a continuous flow of oil comes out of this port, while the platform is all the way up and the switch is held "ON", then the piston seals are leaking and the cylinder should be replaced.

7.2.3 Checking System 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.

Low Pressure Threshold Chart		
Model	Low Pressure Threshold	
MRT-3500	1500 psi	
MRT-4500	1700 psi	
MRT-5500	2000 psi	
MRT-6500	2400 psi	

AWARNING

CRUSH HAZARD

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.
- 5. If the appropriate pressure cannot be reached, replace the pump.
- 6. Check the power down relief valve pressure in the same way as the gravity down system by installing a tee and gauge.
- 7. The power-down pressure should not exceed 500 psi.

7.2.4 Raise/Lower Flow Control Valve

Depending on several factors, such as oil viscosity (thickness) and ambient temperature, the raise and/ or lower speed of the liftgate platform may need to be adjusted.

- 1. To increase the lifting and lowering speed turn the knob on valve counterclockwise.
- 2. To decrease the speed, turn the knob clockwise.



7.2.5 Adjusting Platform Speed

The platform should operate at recommended speeds of 5 seconds to "open" and 5-7 seconds to "close" the platform.

Adjust the platform speed through two needle valves on top of the manifold (directly behind the cartridge valves).



- 1. Time the platform opening and closing speed.
- 2. Turn the adjustment knob in the back to control the "opening" speed and the adjustment knob in the front to control the "closing" speed of the platfrom.
- 3. Turn the appropriate adjustment knob "In" (clockwise) to reduce and "Out" (counterclockwise) to increase the speed of the platform.



7.2.6 Battery Separator

The optional battery separator is designed for use in MRT application as a solenoid priority system to protect the chassis charging system from excessive loading while allowing the liftgate batteries to be charged. The battery separator has two basic operational characteristics:

Protect The Charging System

The battery separator monitors the battery system to determine if the batteries are being charged. When the engine or liftgate batteries reach 13.2 Volts, indicating charging is taking place, the battery separator will engage, joining the two battery banks. If the drain on the charging system by the liftgate batteries or main battery bank reduces the system voltage below 12.8 Volts, the battery separator will disconnect the batteries from each other, thus protecting the respective battery banks from excessive drain.

A delay function has been incorporated in the control circuit to prevent the battery separator from reacting to momentary voltage fluctuations and chattering.

Assist In Engine Starting

When the starter is activated the battery separator compares the voltage of both battery banks. If the vehicle's battery is lower than the liftgate batteries, the battery separator will engage allowing the liftgate batteries to aid in vehicle starting. The start signal must be at least three volts for the operation to occur.

The priorities are to assist in engine starting, if required, and to protect the charging system from excessive power drain.

Auxiliary Start Connection (optional)

Automatic operation. Connect a #14 gauge wire from the start position of the ignition switch to the Start terminal of the battery separator. Make this connection at the ignition switch. This wire should only have voltage when the ignition switch is in the start position.

- **Note**: The start signal must be able to produce at least 3 Volts in order to provide automatic boost, see connection diagram above for manual operation option.
- **Note**: The auxiliary start function should activate the battery separator if the main battery voltage is lower than the auxiliary battery. The start terminal must see at least 3V* to activate. The auxiliary battery must read at least 10 Volts.

Lamp Connections (optional)

Connect a #14 gauge wire from the lamp terminal of the battery separator to one end of an indicator lamp (250 mA maximum current draw). Connect the opposite end of the lamp to the chassis ground. This lamp will illuminate when the auxiliary start function is activated.

Checking Operation

The battery separator should now be operational. Start the vehicle or apply a charge to the main battery. Once the main battery rises to 13.2 Volts the battery separator should activate. Turn off the vehicle or remove the charge to the main battery. The battery separator should disconnect the auxiliary battery once the voltage on the main battery drops below 12.8 Volts.



8. Troubleshooting

8.1 Troubleshooting Guide

Troubleshooting Chart				
Problem	Possible Causes	Possible Solution		
Motor does not run when control switch is activated.	Cab cut-off switch.	Turn switch located in pump enclosure to ON position.		
	Dead or low battery.	Make sure battery is fully charged. Check for loose or corroded battery connections. Replace or recharge battery.		
	Corroded or loose wire connections.	Check all wire connections on power unit for corrosion or looseness. Replace defective terminals with "heat shrink" factory type terminals. Check main power cable from batteries, to circuit breakers, to cut-off switch, to power unit.		
	Blown circuit breaker(s). (Located near the batteries.)	Reset or replace circuit breaker(s). (A-150495)		
	Blown 10 Amp fuse in power unit box.	Replace, if fuse is blown. If problem continues, check for shorts in the electrical system.		
	Defective Control box switch.	Check switch. Replace if defective.		
	Motor start solenoid.	Check solenoid. Replace if defective.		
	Optional power cut-off solenoid.	Check solenoid. Replace if defective.		
	Defective motor.	If the motor is determined to be defective, it should be replaced. Defective motors are typically caused by weak batteries (low voltage), loose connections, corrosion, or a poor ground.		
	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.			
Motor runs, but liftgate will not lower to the ground.	Structural damage.	Fix damage. Replace worn parts. Check clearance between platform and dock bumpers.		
	Defective control switch.	Check switch. Replace if defective		
	Defective lowering valve coil.	Check the coil. "7.2.1 Check Lowering Valve Cartridge And Coil" on page 42.		
	Defective lowering valve cartridge. (A-176305)	Check, remove, and clean valve cartridge using the procedure in the Maintenance section.		
	Defective Flow control valve.	Replace the flow control valve. See the Flow Control Valve section		
	Low Voltage	Recharge battery (if less than 9 volts).		
	Defective hydraulic pump and motor	Replace power unit		

Troubleshooting Chart				
Problem	Possible Causes	Possible Solution		
Motor runs, but platform will not raise, will not raise rated capacity, or raises, but drifts down when control switch is released.	Load capacity has been exceeded.	Verify load capacity and adjust load weight.		
	Structural damage.	Replace damaged parts.		
	Low fluid level.	Fill reservoir. "7.1.1 Monthly Inspection" on page 40.		
	Low Voltage.	Inspect the battery connection terminals and check the battery's Voltage (9 Volts minimum).		
	Dirty or Defective Lowering valve.	Solenoid or cartridge may need cleaning or replacement. See Maintenance section. "7.2.1 Check Lowering Valve Cartridge And Coil" on page 42.		
	Defective piston seals.	See Maintenance section for Checking Cylinder for Leakage. "7.2.2 Inspect Cylinder Piston Seals" on page 42.		
	Hydraulic pump is worn.	Replace hydraulic pump.		
	Air in the hydraulic hose(s).	Check oil level in reservoir. Fill to within 1/2" of full with platform on ground. Power down models fill to within 1/2" of full with platform raised. "7.1.1 Monthly Inspection" on page 40.		
	Cylinder piston seals blown, allowing fluid to leak past piston when trying to raise platform.	Remove breather hose from end of cylinder. Activate power unit to raise position, if hydraulic fluid pumps out of breather port, replace cylinder.		
	Lowering valve stuck partially or fully open.	With platform on ground, remove lowering valve and inspect. Clean if dirty. Replace if plunger not freely moveable.		
Foaming oil.	Air in the hydraulic hose(s).	Check oil level in reservoir. Fill to within 1/2" of full with platform on ground. Power down models fill to within 1/2" of full with platform raised. "7.1.1 Monthly Inspection" on page 40.		
	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.		
Liftgate will not open.	Platform operating area is not clear.	Clear platform operating area.		
	Blown circuit breaker	Check all connectors and connections for worn or loose parts, replace any worn terminals with "heat shrink" factory terminals. Reset circuit breaker.		
	Blown in-line fuse.	Replace blown fuse with 10 Amp ATO or ATC fuse.		
	Bad opening valve coil.	Remove coil from cartidge and test magnetism of inside of coil with metal object (screwdriver) while energizing down control side of switch only.		
	Clogged or bad opening valve on power unit.	Remove valve, clean and inspect. If plunger will not move freely, replace.		

Troubleshooting Chart				
Problem	Possible Causes	Possible Solution		
Platform lowers extremely slow.	Defective flow control valve.	Readjust flow control valve (inside pump box, in line of hydraulic hose). One valve is for open and close speed, the other is for lowering speed. Replace the flow control valve. See the Flow Control Valve section. (A-130184, A-130255).		
	Improperly adjusted flow control valve.	Readjust flow control needle valve, located in valve manifold, inside pump box. If clogged, remove valve, clean, and reinstall. Replace if needed. (A-176560, A-130204, A-176681)		
	Improper oil in hydraulic reservoir.	Fill with proper oil. "7.1.1 Monthly Inspection" on page 40.		
	Slide runners or wear strips are dirty, damaged, or need oil.	Clean columns and oil slide runners with 30W motor oil. Replace slide runners or wear strips if they are bent or damaged.		
	Damaged or kinked hydraulic hose.	Repair or replace hose.		
	Cylinder rod is scored, pitted, or bent.	Replace cylinder.		
	Flow control valve.	Remove flow control valve and hook hydraulic hose directly to the cylinder. If the cylinder operates properly, replace the valve. "7.2.4 Raise/Lower Flow Control Valve" on page 43.		
	Clogged or defective lowering valve.	Coil or cartridge may need cleaning or replacement. "7.2.1 Check Lowering Valve Cartridge And Coil" on page 42.		
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. "7.1.1 Monthly Inspection" on page 40.		
Platform will not close completely.	Twisted platform hinge pin (hex pin).	Check to see if twisted by lowering platform below column to see hex pin. Check alignment of hex pin and lower cylinder pin, should be in between the 8 o'clock and 9 o'clock position with platform open. If not, replace by sawing pin in half and removing pin and bushings. Replace hex pin and both hex bushings.		
	Closure cylinder defective	Replace cylinder. DO NOT repack or dismantle.		
Platform will not close at all, motor does run.	Bad cartridge valve coil.	Remove coil from cartidge and test magnetism of inside of coil with metal object (screwdriver) while energizing down control side of switch only.		
	Closer valve stuck in the closed position.	With platform on the ground, remove closing valve, clean and inspect. If plunger not moving freely, replace valve.		

9. Inspection Record

Anthony Liftgates, Inc.		
Date of Inspection	Notes, observations, maintenance performed, etc.	

10. Warranty Section

10.1 Limited Warranty

Magnum RailTrac 3 yrs Mechanical + 3 yrs Electric/Hydraulic

Thank you for purchasing an Anthony liftgate. We strive to produce the most trouble free and reliable liftgates in the market. We believe you will experience years of reliable operation and minimum downtime interruptions. To further insure your confidence in Anthony, this warranty will cover your unit for 3 years or 8,000 cycles (whichever occurs first) on mechanical/structure, electrical, and hydraulic operating parts. This warranty is extended to the original purchaser (user only) and is not transferable. The warranty term begins from the date of shipment from our factory or warehouse.

Anthony Liftgates Inc. will cover all failed components during the warranty period. Labor will be provided under our Flat Rate Warranty Schedule, in effect at the time of the part failure, and includes diagnosis time. Contact Anthony for current reimbursement amounts. For repairs NOT listed on the Flat Rate Warranty Schedule, contact the Anthony Warranty Department for approved reimbursement, prior to performing repairs. Anthony Liftgates Inc. reserves the right of determination of whether a component is defective or has failed. This warranty applies to Anthony liftgates installed, operated, and maintained in accordance with Anthony Liftgates Inc. installation, operation, and maintenance manuals, videos, etc.

Certain Anthony models have published Lifetime Warranties on listed components, as published in current literature. This additional coverage will be detailed on the published operation components, providing the unit has been operated and maintained within the intended usage.

Anthony Liftgates, Inc. will process all claims and determine their eligibility for authorization upon the receipt of the failed part, the identification of the claimant, and the liftgate serial number. All parts must be returned freight prepaid and following the instructions given by the Anthony Warranty Department. Freight collect shipments will not be accepted.

PLEASE NOTE THAT NO CLAIMS WILL BE PROCESSED WITHOUT THE PART, THE CLAIMANT'S INFORMATION, AND THE LIFTGATE SERIAL NUMBER.

Claims not submitted within 30 days of repair date will be denied.

Note: ALL CLAIMS MUST BE COMPLETED ON THE ANTHONY LIFTGATES INC. WARRANTY CLAIM FORM.

This form provides all the necessary information.

Upon approval of the claim, Anthony will, at the direction of the claimant, return a replacement part and labor allowance, or a parts credit based on current distributor net pricing, and the appropriate flat rate labor allowance. Anthony Liftgates, Inc. is not responsible or liable for loss of time, cost, labor, material, profits, direct or indirect damages caused by failed components, whether due to rights arising under purchase, order, contract of sale or independently thereof, and whether or not such claim is based on contract, tort, or warranty. The sale of products of Anthony Liftages, Inc. under any other warranty or guarantee express or implied is not authorized. This warranty does not cover misuse, abuse, damage, or product finish, normal wear, maintenance adjustments, careless or negligence of use or maintenance. Modifications to our product are not covered unless prior authorized by Anthony.

Purchased Parts warranty is 1 year from date of purchase and covers replacement of part only.

If you require assistance or have questions, please contact Anthony Liftgates Inc. at 815-842-3383.

Note: Most (not all) Anthony liftgate models incorporate our Service-Free feature. Service-Free refers to the fact that these models require no routine or scheduled lubrication of the major pivot points that contain our service-free bushings. Normal repair and maintenance of your liftgate, per our instruction, is necessary for ALL Anthony liftgates.

Anthony Liftgates, Inc. 1037 W. Howard St. P.O. Box 615 Pontiac, IL 61764-0615

PH: 815-842-3383 FAX: 815-844-3612 E-Mail: warrantyclaims@anthonyliftgates.com

10.2 Warranty Policy And Procedure

All warranty claims must be completed on the Anthony Liftgates Warranty Claim Form utilizing the Flat Rate Warranty Schedule. See the current rates as listed for each model. Using this process will allow for quick and accurate credit payment.

Claims will not be processed without the failed part returned (pre-paid) to Anthony Liftgates, and the warranty claim form completed.

Note: When returning defective parts for warranty consideration, be sure to call ahead for a Return Authorization Number.

If you require further assistance or have questions, please contact the Anthony Liftgates Warranty Dept. at 815-842-3383 or email warrantyclaims@anthonyliftgates.com.

Notes



ANTHONY LIFTGATES, INC. 1037 W. HOWARD ST. • P.O. BOX 615 PONTIAC, IL 61764-0615 PH: 815-842-3383 FAX: 815-844-3612 TOLL FREE: 800-482-0003 WWW.ANTHONYLIFTGATES.COM