# MultiView BACKUP CAMERA


# INSTALLATION & SERVICE MANUAL

HARMAR®
we lift lives

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SECTION 1

# SAFETY

## SAFETY DEFINITIONS

This safety alert symbol appears when the lift detects an issue within the unit that may affect the user's safety. Please follow the message that accompanies this safety alert symbol.

**⚠ WARNING**

**Indicates a hazardous situation that could result in death or serious injury.**

**⚠ CAUTION**

**Indicates a hazardous situation that could result in minor or moderate injury.**

**NOTICE**

*Indicates a situation which can cause damage to the lift and/or the environment, or cause the lift to operate improperly.*

*NOTE: Indicates a condition that should be followed in order for the lift to function in the manner intended.*

## REQUIRED PRACTICES

*NOTE: Installation of this device requires one person, as long as the one person follows installation instructions, has completed training, is able to instruct the user on the correct operation and has established a safety and maintenance schedule.*

## ENVIRONMENTAL CONDITIONS

The technician shall assess the surrounding conditions and verify that the location is acceptable before performing installation and/or servicing tasks. Installation shall not proceed in inclement weather conditions that jeopardize the technician's safety or ability to complete the installation in a safe manner. Tents, canopies, or other outdoor provisions that help protect the work area from weather or other safety concerns are recommended when conditions warrant.

Do not proceed IF, upon visual inspection, the vehicle or hitch has severe rust, structural damage, a possible suspension issue or the battery condition or age are in question. If you choose to proceed, you do so knowing that the warranty may NOT apply.

If you do not understand any portion of the installation or operation procedures, please consult our LiftSquad Support or authorized mobility dealer. Do not attempt to install or use this lift if you have any hesitation or question. Serious injury or damage can result if proper procedures are not followed.

SECTION 2

# INTRODUCTION

## DEVICE NAME: HARMAR MULTIVIEW BACKUP CAMERA

Intention of Use: The intended use of the Multiview Backup Camera is to aid drivers by providing an additional view of the rear area of a vehicle when reversing to reduce blind spots. It is not intended to be used as the sole point of view while reversing the vehicle.

## READ AND UNDERSTAND

Read and understand this manual prior to installation or operation. Having an overall understanding of the Camera and proper installation techniques will help you save time, energy and avoid possible injury.

This manual provides instructions for the proper installation of the Multiview Camera. Please refer to the Owner's Manual for operating instructions. Be sure to provide the Owner's Manual to the owner of the lift before it is put into service. Any alterations to the equipment without written authorization by the manufacturer may void the warranty.

The installation in this manual is shown on an AL100. While many of the steps remain the same there are some differences between the lift model types that are shown on ***Page 16***.

The list of lift models this camera can be installed on is as follows:

1. AL100
2. AL100HD
3. AL100-DE
4. AL300
5. AL300HD
6. AL300-FULL
7. AL301XL
8. AL301XLHD
9. AL500
10. AL500HD
11. AL560
12. AL560XL

SECTION 3

# PREPARATION

Installations may vary to some degree, but below are the basic tools to have on hand for a Multiview Camera installation.

If you have any questions, concerns, or comments, please contact our LiftSquad Support at 800-378-6648 or tech.services@harmar.com.

## RECOMMENDED TOOLS

- Electrical Multimeter
- Wire Piercing Hook Probes
- Pliers
- C-clamp or Locking Pliers
- PVC Cutter or Trim Cutter or Hacksaw
- Electrical Tape
- Electric Drill with #9 Drill Bit
- Deburring Tool
- Plastic Interior Trim Tools
- Torque bits (depending on vehicle) or Philips Screwdriver
- ⅛" Hex Wrench
- 5⁄32" Hex Wrench
- ⅜" Open End Wrench
- Rearview Mirror UV Glue (Installing Mirror Adapter 4)

## INCLUDED PARTS (MONITOR)

- Monitor
- Power Harness
- Extension Harness
- Camera
- Cable Flex/Igus Chain
- Cable Flex/Igus Chain Bracket *(570-00691)*
- Cable Flex/Igus Chain Bracket *(570-00692)*
- Camera Mounting Bracket *(570-00693)*
- Monitor Mounting Bracket with Suction Cup
- Mounting Disc
- 2 pcs. #10-24 x 13⁄4" Button Head Cap Screw
- 2 pcs. #10-24 x 1" Button Head Cap Screw
- 2 pcs. #10-24 Locknut
- 4 pcs. #4-40 x 5⁄8" Machine Screw Change to ¼"
- 4 pcs. #4-40 x 5⁄8" Locknut
- 2 pcs. Red Electrical Crimp Connector
- 2 pcs. D-line Cable Track (*may vary by lift)*
- Replacement Reflector *(not pictured)*
- Alcohol Wipes *(not pictured)*
- Sections of the Plastic D-line Cable Track *(not pictured)*

Below is an image of all parts that should be included in the Multiview Camera Installation Kit with Monitor. ***See Figure 3-1.***

*Figure 3-1*

## INCLUDED PARTS (MIRROR)

- Mirror
- Monitor Harness
- Power Harness
- Extension Harness
- Camera
- Cable Flex/Igus Chain
- Cable Flex/Igus Chain Bracket *(570-00691)*
- Cable Flex/Igus Chain Bracket *(570-00692)*
- Camera Mounting Bracket *(570-00693)*
- 2 pcs. #10-24 x ¹³⁄₄" Button Head Cap Screw
- 2 pcs. #10-24 x 1" Button Head Cap Screw
- 2 pcs. #10-24 Locknut
- 4 pcs. #4-40 x ⁵⁄₈" Machine Screw change to ¼"
- 4 pcs. #4-40 x ⁵⁄₈" Locknut
- 2 pcs. Red Electrical Crimp Connector
- 2 pcs. D-line Cable Track *(may vary by lift)*
- Adapter 1 - Volkswagen/Audi
- Adapter 2 - Dodge/Chrysler/Jeep, Volvo *(compact)*, BMW *(compact)*
- Adapter 3 - Honda/Subaru
- Adapter 4 – Generic
- Replacement Reflector *(not pictured)*
- Alcohol Wipes *(not pictured)*
- Sections of the Plastic D-line Cable Track *(not pictured)*

Below is an image of all parts that should be included in the Multiview Camera Installation Kit with Mirror. ***See Figure 3-2.***

*Figure 3-2*

## PARTS PREPARATION

1. Remove the reflector from the platform and clean any debris or adhesive residue. ***See Figure 3-3***.


Figure 3-3

2. Inspect the surface platform frame for any damage, removing any rust, debris, flaking coating, and paint any exposed steel to prevent further corrosion.
3. Investigate online how to remove taillight assembly and/or access backup light. This information will be needed on ***page 13 steps 1-2.***
4. Directly connect the positive/negative to the battery to ensure camera and monitor is functioning properly.
   a. If camera and monitor is functioning, proceed with installation.
   b. If camera and monitor is not functioning, consult manual “Troubleshooting” section on ***page 19***.

SECTION 4

# INSTALLATION

## LOCATING AND DRILLING THE MOUNTING HOLES

1. Determine the location for the camera on the platform frame. The camera should be centered with the vehicle and Lift Tower, not necessarily the center of the lift platform. Clamp the Camera Mounting Bracket (570-00693) to the platform frame, ensuring that the bracket is even with the edge of the platform. ***See Figure 4-1.***

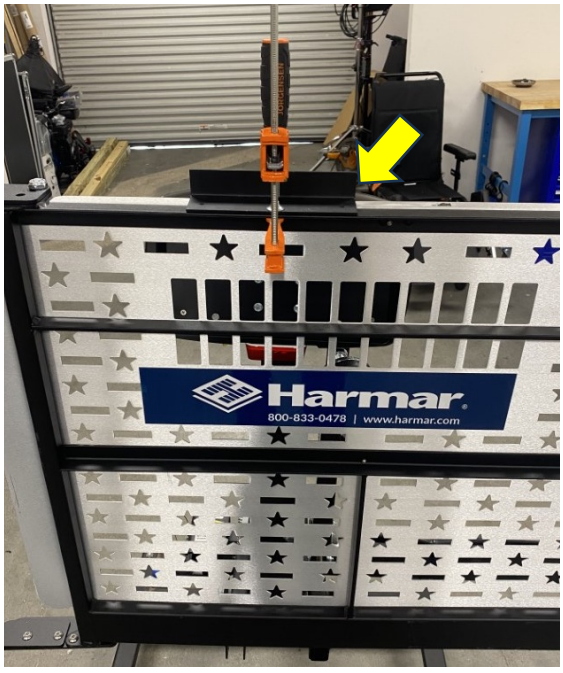


*Figure 4-1*

2. Using the mounting bracket as a guide, drill the #9 (0.196") drill bit size mounting holes through the platform frame. ***See Figure 4-2.***

*Figure 4-2*

3. Then Deburr the holes to clear anything that might catch or snag the screws.

## MOUNTING THE CAMERA

1. Insert the camera cable into the channel on the bottom of the camera, so that it exits the bottom of the camera to the right side as shown. ***See Figure 4-3.***


*Figure 4-3*

2. Install the two #10-24 button head cap screws of the appropriate length (either 1" or 1¾") through the hex holes in the top of the camera housing, through the frame of the platform, and into the locking nuts and tighten using the hex wrench. **See Figure 4-4.**


*Figure 4-4*

## PREPPING AND INSTALLING D-LINE CABLE TRACK FOR CABLE ROUTING

The sections of the plastic D-line Cable Track that will need to be mounted to the platform to guide the wiring will come in either 10.5 or 17-inch increments. (For the installation information for other models see page 12) The 10⅕" or 17" piece of D-line Cable Track will be mounted on the top side of the lift while it is in the folded-up position.

Cut the D-line Cable Track so that it would fall 1" away from the camera mount and 1" away from the side tube of the frame. ***See Figure 4-5.***

*Figure 4-5*

1. Apply an alcohol wipe to the surface of the lift where the D-line Cable Track will be mounted to ensure it is clean and clear of any obstruction.

2. Peel the adhesive cover and apply to the frame roughly centered between the mounting bracket and the frame tube with the opening of the D-line Cable Track facing the bottom of the lift. ***See Figure 4-6***.


*Figure 4-6*

3. Open the D-line Cable Track and route the cable through to the frame tube. Then feed it through the frame tube to the back side of the lift. Then lock the D-line Cable Track shut.

4. Peel the adhesive cover and apply the supplied replacement reflector onto the lift in the remaining available space.

5. Lower the platform into a level position but not all the way to the ground.

## ASSEMBLING THE IGUS CHAIN AND BRACKETS

1. Using the 4 #4-40 screws and nuts, a ¼" open end wrench, and a 1/16" hex key, attach the Igus chain to the brackets as shown. ***See Figures 4-7 and 4-8.***

*NOTE: Chain mounts to bracket on the side opposite of large platform mounting hole. Nuts go on bracket side, screw heads on cable side of Igus mount.)*

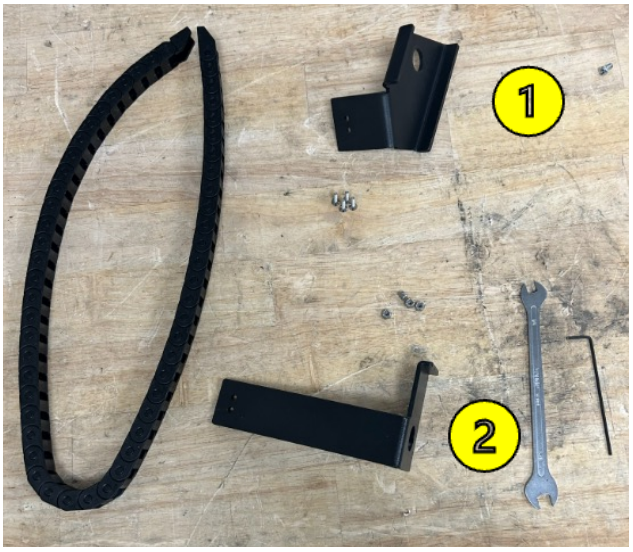


*Figure 4-7*

*Figure 4-8*

2. Route cable through Igus chain while it is lying flat for easier access. ***See Figure 4-9.***

*Figure 4-9*

3. Install Igus chain bracket 1 on platform side by removing ¾" nut from pivot bolt, installing bracket and reinstall nut.

4. Install Igus chain bracket 2 on lift side by removing ¾" nut from mounting bolt, installing the bracket, and reinstalling the nut. ***See Figure 4-10.***


*Figure 4-10*

5. Cut the second piece of the D-line Cable Track so it falls flush with the side tube and 1" away from the edge of bracket 1 when mounted.

6. Apply an alcohol wipe to the surface of the lift to ensure it is clean and clear of any obstruction.

7. Peel the adhesive cover and apply the D-line Cable Track flush to the inner side of the frame tube with the opening facing the bottom of the lift as seen below. ***See Figure 4-11.***

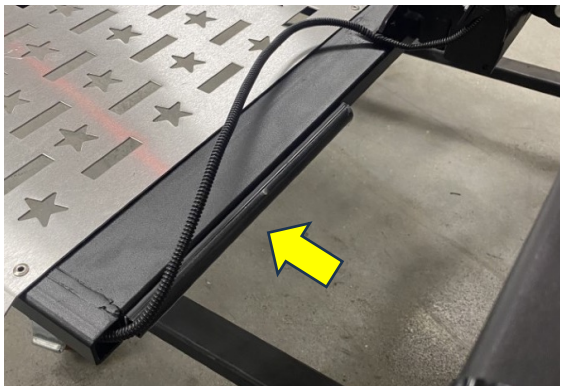

*Figure 4-11*

8. Route the cable through the D-line Cable Track and lock it shut.

9. Route cable along swing away in same manner as lift cable. Install zip ties at locations shown. ***See Figure 4-12.***

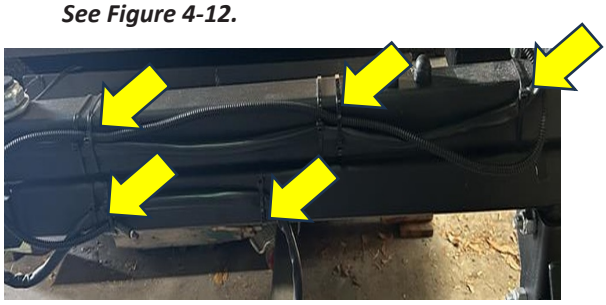

*Figure 4-12*

10. In the event there is not a swing away, follow the power cable for the lift for routing.

## RUNNING CABLING THROUGH VEHICLE AND CONNECTING POWER

1. Determine location of monitor with owner first, for quicker installs.
2. Layout wiring before installation to know where to put excess and determine best path inside vehicle.

Connect the power supply for the camera to the reverse light (Preferably on the driver's side of the vehicle) by connecting it to the Ground and Power wires. For Incandescent bulbs this is straight forward as there are usually either only two wires (Power and Ground) or three wires (Power, Ground, and Control). For LED lights you will need to test with a Multimeter to determine the ground and which wire is getting power while the vehicle is in reverse.

**⚠ CAUTION**

**In a truck or sedan, you can simply access the driver's side taillight to connect to the reverse light wiring. In a hatchback, the reverse light will typically be in the hatch so you will need to locate the harness behind the interior paneling in the driver's side of the vehicle to connect for power.**

3. Connecting Power: Connect the red wire to the + (12V positive) of the reverse light.
4. Connect the black wire to the - (Ground) of the reverse light. ***See Figure 4-13.***

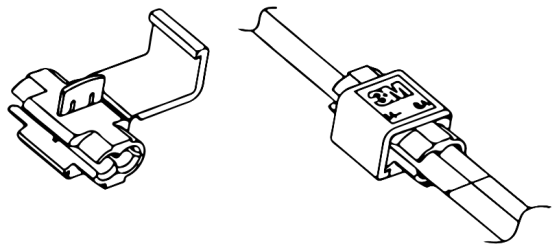

*Figure 4-13*

5. Place vehicle wire inside run channel
6. Insert unstripped camera system power or ground wire
7. Hold crimp tool/pliers perpendicular to wire and crimp the u-contact down flush with the top of the plastic insulator.
8. Close top hinged cover until latched.

Camera Harness: Route the camera harness from the rear of the vehicle to the front of the vehicle, so it may be connected to the monitor's camera input. Routing the harness above vehicle's headliner from rear to front is the preferred method when possible

Monitor Harness: If installing the rearview mirror monitor option: Route the monitor harness above the vehicle's headliner near the mirror and over to the top of the driver side A-pillar so it can be mated with the camera harness.

If installing the 5" stand alone monitor option: Route the monitor harness behind and up the driver side A-pillar so it can be mated with the camera harness.

**⚠ WARNING**

**Take special care to avoid routing any harnesses over or in front of any vehicle airbags.**

## INSTALLING THE 5" MONITOR

1. Find a mounting surface inside the vehicle where the monitor can be easily seen from the driver's seat and does not obstruct vision when driving. The monitor can be mounted on the dashboard or windshield.
2. Prep the surface for the desired mounting location of the monitor.
3. Press the suction cup against the mounting surface and push the suction cup lock lever down to lock the suction cup in place.
4. Slide the monitor onto the bracket. The angle of the monitor can be adjusted by loosening the rotary knob. One in desired position, tighten the rotary knob to secure.

*NOTE: If the mounting surface is not ideal, please use the included mounting plate. Prep the surface and remove the adhesive backing. Then install the suction cup of the bracket onto the plate.*

## INSTALLING THE REARVIEW MIRROR

1. Remove the OEM mirror and replace it with the supplied LCD mirror. Once the mirror is in position, tighten set screw to secure.

*NOTE: Different cars require different brackets. DO NOT force the mirror off the bracket. Your vehicle may require an included adapter for installation. Refer to the bracket instructions to find the correct bracket and adapter if applicable for your vehicle. Adapters may not be applicable to all years of a specific make/model. In those cases, refer to adapter 4.*

**ADAPTER 1**

Volkswagen/Audi

*NOTE: Not needed with mirror that have a protective case)* ***See Figure 4-14.***

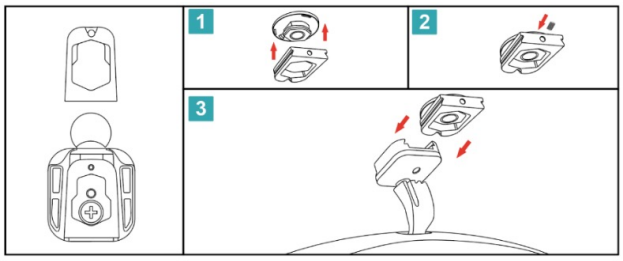


*Figure 4-14*

**ADAPTER 2**

Dodge/Chrysler/Jeep, Volvo (Compact), BMW (Compact)

*NOTE: Not needed with mirror that have a protective case).* ***See Figure 4-15.***

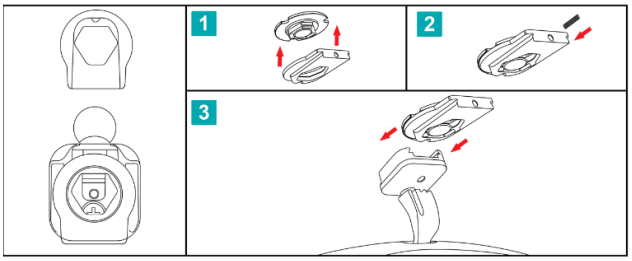


*Figure 4-15*

**ADAPTER 3**

Honda/Subaru ***See Figure 4-16.***

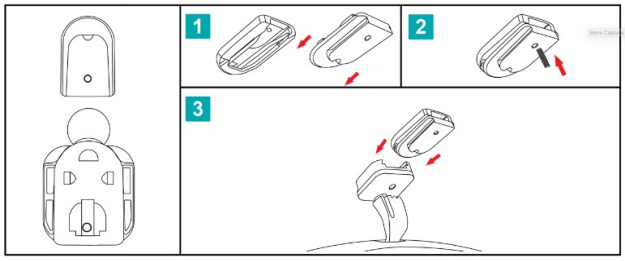


*Figure 4-16*

**ADAPTER 4** ***See Figure 4-17.***

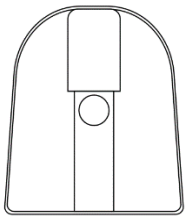

*Figure 4-17*

In some vehicles, the Harmar mirror will not fit in the standard brackets in the vehicle and none of the adapters will fit. In this case, glue adapter 4 on the windshield using rear view mirror UV glue *(not provided*).

## ANGLING CAMERAS FOR BEST VIEWING

1. While the lift is in the folded-up position, loosen the screws on both sides of the active camera and angle the camera down so that you can clearly see what is behind the vehicle from the monitor. (This will likely involve aiming the camera as far down as possible) Once in the desired position, re-tighten the screws to secure it in place. ***See Figure 4-18.***


*Figure 4-18*

2. Lower lift to the ground, load your mobility device, then raise it back to the position it will ride in.

3. Once in the loaded riding position, loosen the screws on both sides of the active camera and angle the camera up so that you can clearly see what is behind the vehicle from the monitor. It is important to do this with the mobility device loaded because the weight of the mobility device will apply some tilt to the platform and could change the needed camera angle. Once in the desired position, re-tighten the screws to secure them in place.

## INSTALLING ON OTHER LIFT TYPES

- AL100HD – Cut the D-line cable track so that it falls 1" away from the camera mount and 1" away from the side tube of the frame. Then cut the second piece so it falls 1" away from the side tube and 1" away from the edge of bracket 1 when mounted.
- AL100DE – This unit does not have a side tube on the frame so there will be 3 D-line cable track pieces sent. Still cut the D-line cable track so that it falls 1" away from the camera mount and 1" away from the side of the frame. Then cut the second piece so it falls 1" away from the side and 1" away from the edge of bracket 1 when mounted. The remaining pieces will be placed along the side of the frame so that they end 1" away from the front and 1" away from the back of the frame.
- AL300 – This unit does not have an accessible side tube on the frame so you will need to drill a 7⁄16" hole at the front and back of the lift ***(See Figure 4-19)***. Then cut the D-line cable track so that it falls 1" away from the camera mount and 1" away from the side tube of the frame. Then cut the second piece so it falls 1" away from the side tube and 1" away from the edge of bracket 1 when mounted.

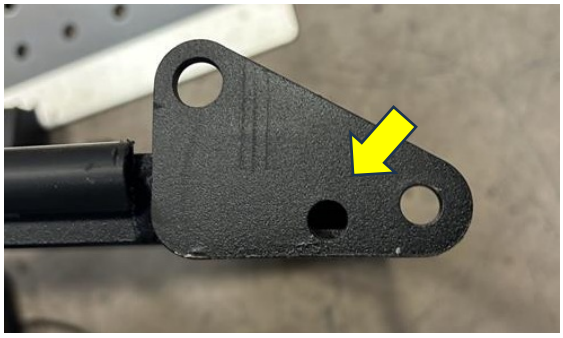

*Figure 4-19*

- AL300HD – This unit does not have an accessible side tube on the frame so you will need to drill a 7⁄16" hole at the front and back of the lift ***(See Figure 4-19)***. Then cut the D-line cable track so that it falls 1" away from the camera mount and 1" away from the side tube of the frame. Then cut the second piece so it falls 1" away from the side tube and 1" away from the edge of bracket 1 when mounted.
- AL300FULL – This unit does not have an accessible side tube on the frame so you will need to drill a 7⁄16" hole at the front and back of the lift ***(See Figure 4-20)***. Then cut the D-line cable track so that it falls 1" away from the camera mount and 1" away from the side tube of the frame. Then cut the second piece so it falls 1" away from the side tube and 1" away from the edge of bracket 1 when mounted.

*Figure 4-20*

- AL301XL/XLHD – This unit does not have an accessible side tube on the frame so you will need to drill a 7⁄16" hole at the front and back of the lift ***(See Figure 4-21)***. Then cut the D-line cable track so that it falls 1" away from the camera mount and 1" away from the side tube of the frame. Then cut the second piece so it falls 1" away from the side tube and 1" away from the edge of bracket 1 when mounted.

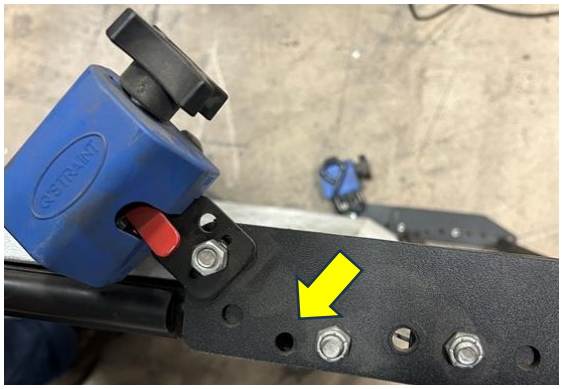

Figure 4-21

- AL500 – Cut the D-line cable track so that it falls 1" away from the camera mount and 1" away from the side tube of the frame. Then cut the second piece so it falls 1" away from the side tube and 1" away from the edge of bracket 1 when mounted.
- AL500HD – Cut the D-line cable track so that it falls 1" away from the camera mount and 1" away from the side tube of the frame. Then cut the second piece so it falls 1" away from the side tube and 1" away from the edge of bracket 1 when mounted.
- AL560 – Cut the D-line cable track so that it falls 1" away from the camera mount and 1" away from the side tube of the frame. Then cut the second piece so it falls 1" away from the side tube and 1" away from the edge of bracket 1 when mounted.
- AL560XL – Cut the D-line cable track so that it falls 1" away from the camera mount and 1" away from the side tube of the frame. Then cut the second piece so it falls 1" away from the side tube and 1" away from the edge of bracket 1 when mounted.

SECTION 5

# OPERATING THE SYSTEM

When the car is put in reverse the system will power on and the image from the reverse camera will appear on the screen. When the car is out of reverse, the system will power off and no image will appear.

An image will appear no matter the position of the lift when the vehicle is put in reverse.

If the image is no longer desired while reversing, press the power button to turn off the monitor.

Every time the vehicle is put in reverse, an image will appear, even if the monitor was manually turned off previously.

## ACCESSING THE MENU ON THE 5" MONITOR

There are 3 mechanical buttons on the right side of the monitor: ▲ M ▼

1. Press and hold the (M) button on the side of the monitor while the system is powered on to bring up the menu.

   This will bring up the menu for the following options: Brightness, Contrast, Saturation, Color. ***See Figure 5-1.***


*Figure 5-1*

2. Use the up and down (▲ or ▼) buttons to increase, decrease values. Pres the (M) button to move to the next option.

3. For quick brightness adjustment, press the up or down (▲ or ▼) button and the brightness bar will appear at the bottom of the screen. Press the up or down buttons to increase/ decrease the values. Values increase/decrease in increments of 5.

4. Ensure monitor mount is securely/firmly attached to the glass in the event it is moved for any reason.

## ACCESSING THE MENU ON THE REARVIEW MONITOR


*Figure 5-2*

1. Press and hold the  button on the front of the mirror while the system is powered on to bring the menu up.

2. Press and hold the  button each time to cycle through the options >> Brightness, Contrast, Saturation, Color.

3. To adjust the value for each, press the  button and it will increase by increments of 5, from 0 to 100, default is 50. When it reaches 100 the next press will cycle the increment back to 0.

*NOTE: Video of rear view will only appear while vehicle is put in reverse. All other times it will default to regular mirror.*

SECTION 6

# TROUBLESHOOTING

## NO POWER TO CAMERA/MONITOR

1. Using a digital multimeter, check 2AMP fuse. ***See Figure 6-1.***

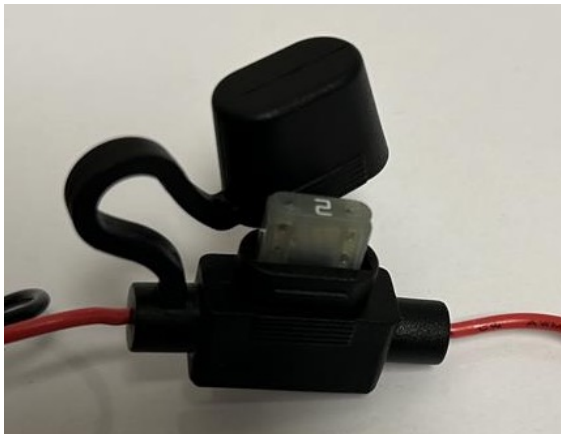

*Figure 6-1*

2. If fuse is defective, replace with identical fuse size and current(I) rating.

*NOTE: Replacing fuse with a higher current rating could potentially cause electrical damage to camera and/or vehicle. Warranty will be void.*

3. If fuse is good, check for voltage (12 VDC) by engaging vehicle in reverse and placing the multimeter leads on the positive and negative wires.
4. Check monitor wire connection.
5. Check wiring harness for damage and/or severed connections.

Contact Liftsquad support for further troubleshooting assistance.

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