



**FEDERAL SIGNAL**

Public Safety Systems

# **Model 599100-NY Hi-RISER Lightbar**

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## ***Installation and Service Manual***

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## Safety Message to Installers and Service Personnel of Warning Light Equipment

### WARNING

People's lives depend on your proper installation and servicing of Federal Signal products. It is important to read and follow all instructions shipped with this product. In addition, listed below are some other important safety instructions and precautions you should follow:

#### Before Installation or Service

##### *Qualifications*

- To properly install or service this equipment, you must have a good understanding of automotive mechanical and electrical procedures and systems, along with proficiency in the installation and service of safety warning equipment. Always refer to the vehicle's service manuals when performing equipment installations on a vehicle.

##### *Light Hazards*

- To be an effective warning device, this product produces bright light that can be hazardous to your eyesight when viewed at a close range. Do not stare directly into this lighting product at a close range or permanent damage to your eyesight may occur.
- Do not install the light system in an area that would block, impair or blind the driver's vision. Ensure that the light system is mounted in a position that is outside of the driver's field of vision, so the driver can maintain safe vehicle operation.
- Federal Signal power supplies and light heads are designed to work together as a system. Combining light heads and a power supply from different manufacturers may reduce the warning effectiveness of the lighting system and may damage the components. You should verify or test your combination to ensure the system works together and meets federal, state, and local standards or guidelines.

##### *Electrical Hazards*

- Strobe systems present a shock hazard because they use high voltage to operate. Do not handle strobe cables, the power supply or bulbs or remove the lens while the equipment is connected. Strobe systems can also hold their charge even after they have been turned off. After disconnecting power to the unit, wait five minutes before handling any parts of the strobe system.
- A light system is a high current system. In order for the system to function properly, a separate negative (-) connection and positive (+) connection must be made. All negative connections should be connected to the negative battery terminal and a suitable fuse should be installed on the positive battery terminal connection as close to the battery as possible. Ensure that all wires and fuses are rated correctly to handle the device and system amperage requirements.
- Never attempt to install aftermarket equipment that connects to the vehicle wiring without reviewing a vehicle wiring diagram available from the vehicle manufacturer. Ensure that your installation will not affect vehicle operation or mandated safety functions or circuits. Always check the vehicle for proper operation after installation.
- The lighting system components, especially light bulbs, strobe tubes, LEDs, and the outer housing, get hot during operation. Be sure to disconnect power to the system and allow the system to cool down before handling any components of the system.
- Halogen light bulbs and strobe tubes are pressurized and if broken, can burst and result in flying glass. Always wear gloves and eye protection when handling these components.

- Do not mount a radio antenna within 18 inches (45.7 cm) of the lighting system. Placing the antenna too close to the lighting system could cause the lighting system to malfunction or be damaged by strong radio fields. Mounting the antenna too close to the lighting system may also cause the radio noise emitted from the lighting system to interfere with the reception of the radio transmitter and reduce radio reception.
- Do not attempt to wash any unsealed electrical device while it is connected to its power source.

### **During Installation and Service**

- DO NOT get metal shavings inside the product. Metal shavings in the product can cause the system to fail. If drilling must be done near the unit, place an ESD-approved cover over the unit. Inspect the unit after mounting to be sure there are no shavings present in or near the unit.
- DO NOT connect this system to the vehicle battery until ALL other electrical connections are made, mounting of all components is complete, and you have verified that no shorts exist. If the wiring is shorted to the vehicle body or frame, high current conductors can cause hazardous sparks resulting in electrical fires or flying molten metal.
- DO NOT install equipment or route wiring (or the plug in cord) in the deployment path of an airbag.
- If a vehicle seat is temporarily removed during installation, verify with the vehicle manufacturer if the seat needs to be recalibrated for proper airbag deployment.
- Before mounting any components, check the manual to be sure that the component you are installing is suitable for use in that area of the vehicle. Many components are not suitable for use in the engine compartment or other extreme environmental exposure areas.
- Service life of light bulbs and strobes tubes will be shortened if the glass portion is touched during installation. Use gloves when handling these components. If the glass portion has been touched, clean the glass carefully with isopropyl alcohol.
- When drilling into a vehicle structure, be sure that both sides of the surface are clear of anything that could be damaged. Remove all burrs from drilled holes. To prevent electrical shorts, grommet all drilled holes through which wiring passes. Also, ensure that the mounting screws do not cause electrical or mechanical damage to the vehicle.
- Refer to the manual packed with the lighting system for proper electrical connections, additional precautions and information.
- Because vehicle roof construction and driving conditions vary, do not drive a vehicle with a magnetically mounted warning light installed. The light could fly off the vehicle causing injury or damage. Repair of damage incurred because of ignoring this warning shall be the sole responsibility of the user.
- To avoid denting the roof of the vehicle, place the lightbar mounting feet as close to outer edge of the roof as possible.
- Roof damage can occur if the hook-adjustment bolts are over-tightened. Tighten hook-adjustment bolts 10 to 11 ft-lb to prevent the lightbar from sliding front-to-back when pulling on the mounting bracket.
- Locate the light system controls so the VEHICLE and CONTROLS can be operated safely under all driving conditions.

### **After Installation or Service**

- After installation, test the light system to ensure that it is operating properly.

- Test all vehicle functions, including horn operation, vehicle safety functions and vehicle light systems, to ensure proper operation. Ensure that the installation has not affected the vehicle operation or changed any vehicle safety function or circuit.
- Scratched or dull reflectors, mirrors or lenses will reduce the effectiveness of the lighting system. Avoid heavy pressure and use of caustic or petroleum based products when cleaning the lighting system. Replace any optical components that may have been scratched or crazed during system installation.
- Do not attempt to activate or de-activate the light system control while driving in a hazardous situation.
- You should frequently inspect the light system to ensure that it is operating properly and that it is securely attached to the vehicle.
- After installation and testing are complete, provide a copy of these instructions to instructional staff and all operating personnel.
- File these instructions in a safe place and refer to them when maintaining and/or re-installing the product.

**Failure to follow all safety precautions and instructions may result in property damage, serious injury, or death to you or others.**

**RETAIN AND REFER TO THIS MESSAGE**

**Introduction**

**IMPORTANT:** This document covers the installation and maintenance of the Model 599100-NY Hi-RISER Lightbar only, which is made by FS VAMA S.A. and is distributed by Federal Signal Corporation. This rising lightbar has two lifting arms, which have seven LED lights: four on the back and three on the front of each arm. For added visibility, the lightbar has two PAR46 spotlights.

**Unpacking the Kit**

After unpacking the lightbar assembly, inspect it for damage that may have occurred in transit. If the product has been damaged, do not attempt to install or operate it. File a claim immediately with the carrier, stating the extent of damage. Carefully check all envelopes, shipping labels, and tags before removing or destroying them.

*Table 1: Kit contents*

Qty.	Description	Qty.	Description
1	Hi-RISER Lightbar	1	In-Line Fuse Holder
4	50 mm M6 Screw, Hexcap Head	1	Red LED Indicator
2	65 mm M6 Screw, Hexcap Head	1	Green LED Indicator
4	25 mm M6 Screw, Indented Hexcap Head	1	(On)-Off-(On) Toggle Switch, Momentary
8	M6 Nut, Nylon Lock	1	25 A Fuse
8	Flat Washer	4	Red Butt Connector (18–22)
8	Fender Washer	4	Blue Butt Connector (14–16)
4	1/2" Spacer	2	Yellow Butt Connector (10–12)
4	Rubber Foot	1	Rubber Bushing
2	HAS Mounting Feet		

Two installer-supplied switches are required: one maintained switch for the spotlights and one maintained switch for the flasher. An installer-supplied bracket is required for the supplied momentary toggle switch and LED indicators.

## Installing the Model 599100-NY Hi-RISER

### **⚠ WARNING**

#### **HEAVY OBJECT**

To avoid personal injury and equipment damage, get the assistance of another person to help you handle the lightbar.

**IMPORTANT:** Plan all wire routing before installing the lightbar.

The installation includes:

- attaching the HAS mounting feet
- mounting the lightbar to the vehicle roof
- installing the (On)-Off-(On) Toggle Switch for raising and lowering the lightbars arms
- installing the LED indicators for the above momentary toggle switch
- installing switches for the spotlights and flasher
- wiring the lightbar in the vehicle

### ***Mounting the Lightbar to the Vehicle***

1. Attach the HAS mounting feet to the lightbar with the four 25 mm M6 hex-cap head screws and M6 nylon lock nuts.
2. Place the lightbar at the location you want on the vehicle roof. Center the lightbar so that the end of the lightbar assembly and the edge of the roof are equidistant from each other on each side of the vehicle.
3. Use the HAS mounting feet as a template and scribe four drill-position marks for the mounting holes.

### **⚠ WARNING**

#### **ROOF SUPPORT STRUCTURE**

There is a roof support structure that spans the distance between the driver's and passenger's side. **DO NOT DRILL THROUGH THIS structure!** Adjust any hole locations until the holes can be drilled without going through this support.

Failure to follow this warning will weaken the roof of the vehicle and may lead to an increased chance of bodily injury or death in a roll-over accident.

### **NOTICE**

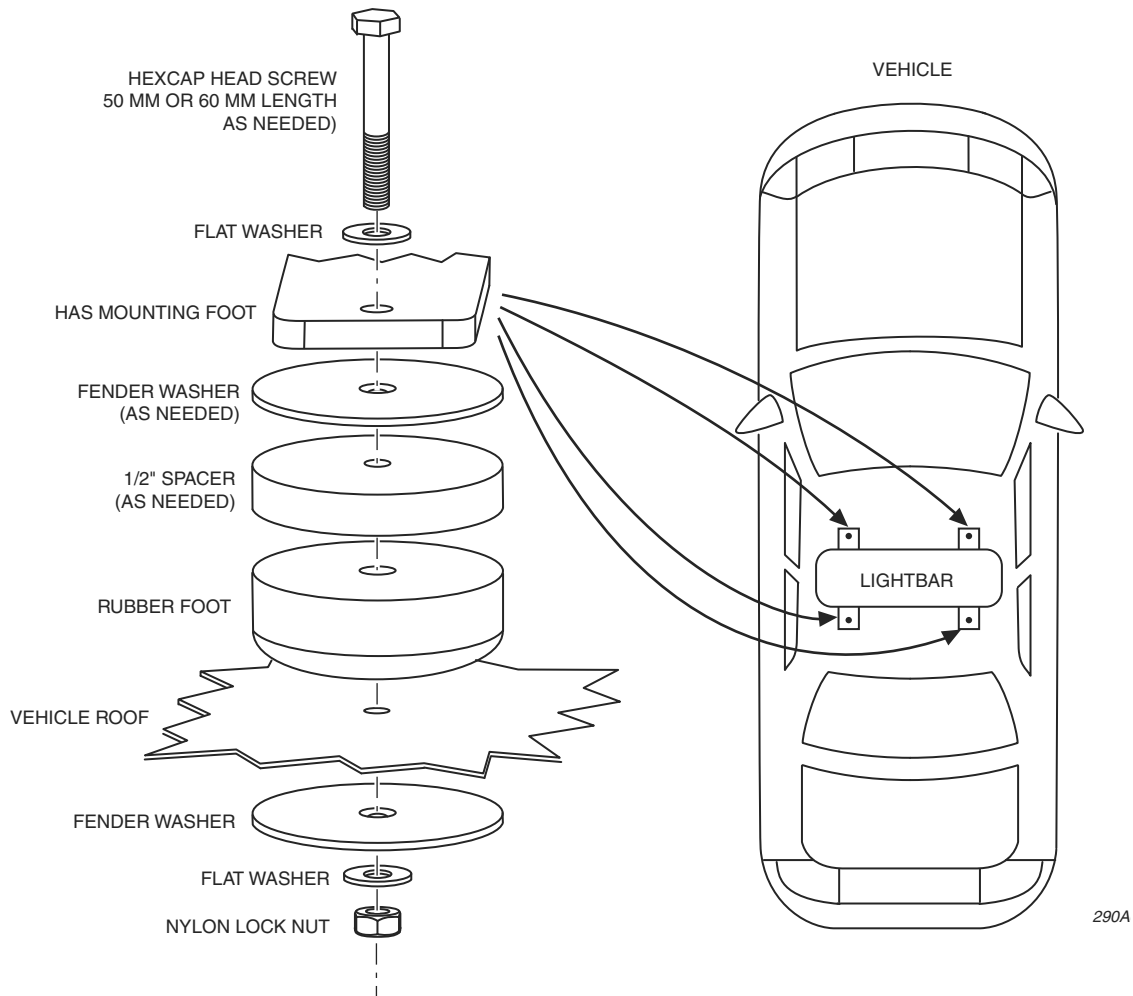
#### **DRILLING PRECAUTIONS**

Before drilling holes, check the area into which you plan to drill to ensure you do not damage vehicle components while drilling. All drilled holes should be de-burred and all sharp edges should be smoothed. All wires going through drilled holes should be protected by a grommet or convolute/split-loom tubing.

4. Drill a 0.276" mounting hole at the four drill-position marks.
5. Center a rubber foot, a 1/2" spacer, and a fender washer over each mounting hole (*Figure 1* on page 5).
6. Place the lightbar on top of the fender washers and spacers. To level the lightbar, add fender washers or 1/2" spacers.

7. Insert bolts of the appropriate length (50 mm or 60 mm) through the mounting holes in the HAS mounting feet, washers, spacers, and vehicle roof. Insert and tighten the M6 nylon lock nuts on the bolts.

Figure 2: Wiring Diagram and toggle switch positions



### Installing the (On)-Off-(On) Toggle Switch and LED Indicators

The (On)-Off-(On) Toggle Switch raises and lowers the Hi-RISER arms. The green LED lights when the arms are in the down position. The red LED lights when the arms not in the down position.

1. Select a mounting location for the momentary toggle switch that allows the vehicle and controls to be operated safely at all times. Keep in mind the length of the lightbar's wires when selecting the switch's mounting location (*Figure 2* on page 7).
2. Use the momentary toggle switch and the LED indicators as a guide and scribe the three drill-position marks on the mounting surface.
3. Drill a 0.500" hole for the toggle switch and two 0.328" holes for the LED indicators. Secure the switch into position with the installer-supplied bracket. Insert the LED indicators into the holes and secure them with the same bracket used for the switch.

### **Wiring the Lightbar in the Vehicle**

The lightbar's wire sheath has 10 wires. For a description of their functions, see *Table 2*. Select mounting locations for the installer-supplied switches for the spotlights and flasher that allow the vehicle and controls to be operated safely at all times.

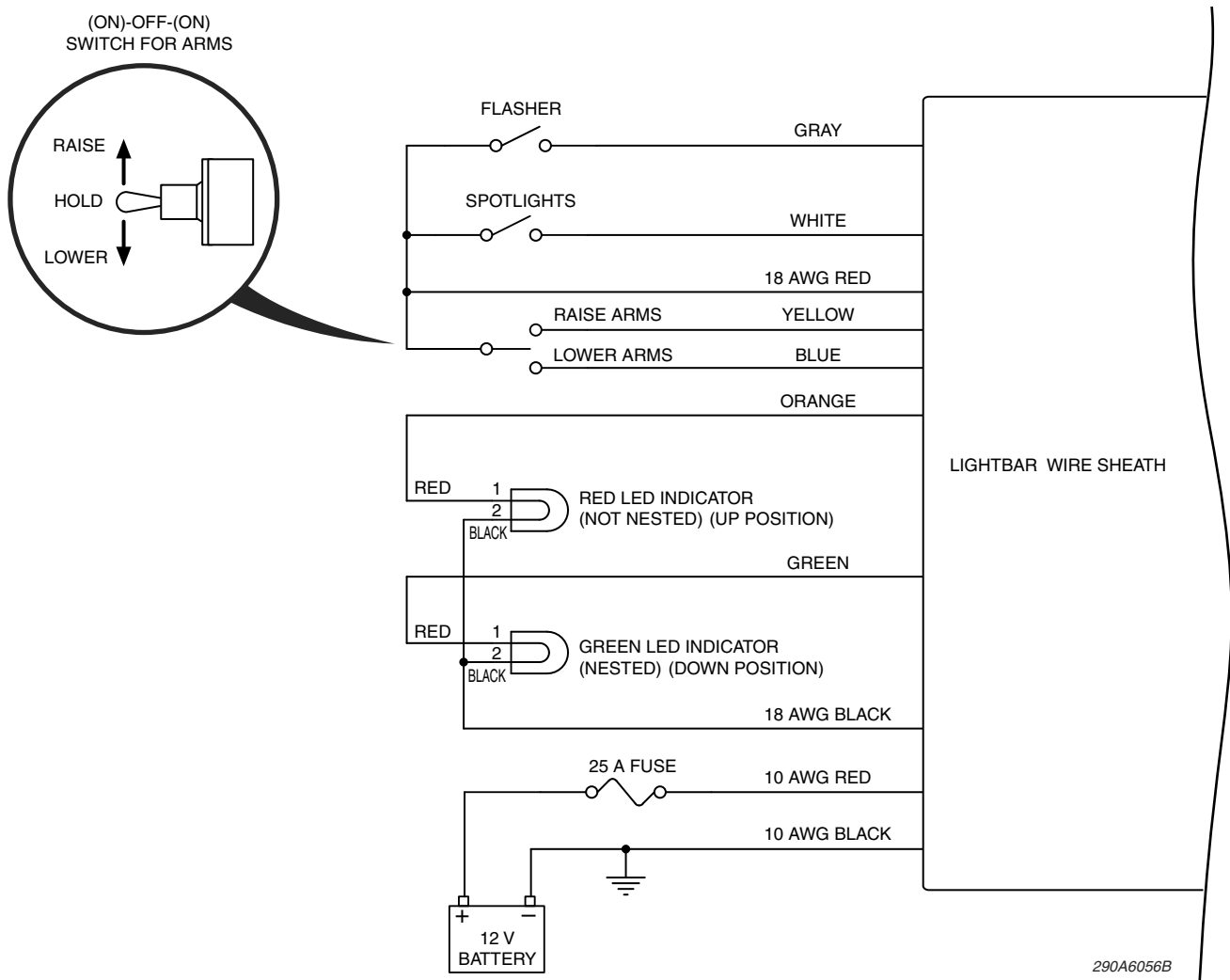
1. Refer to *Figure 2: Wiring diagram and toggle switch positions* on page 7. Route the wires through the vehicle and make the these connections.
  - a. Connect the blue and yellow wires to the toggle switch for the arms. Splice the 18 AWG red wire to the switch's other terminal.
  - b. Splice the green wire to the GREEN LED indicator's red wire.
  - c. Splice the orange wire to the RED LED indicator's red wire.
  - d. Splice the black wires from the LED indicators to the 18 AWG black wire.
2. Make these switch connections:
  - a. Connect the white wire to the maintained switch for the spotlights. Splice the 18 AWG red wire to the switch's other terminal.
  - b. Connect the gray wire to the maintained switch for the flasher. Splice the 18 AWG red wire to the switch's other terminal.
3. Remove the 25 A fuse, if installed, from the fuse holder. Splice the 10 AWG red wire to one end of the in-line fuse holder.
4. Connect the other side of the fuse holder to the 12 Vdc battery's positive terminal (+BAT). The lightbar must be connected to constant power.
5. Connect the 10 AWG black wire to the battery's negative ground terminal (-NEG).

*Table 2: Wire functions*

<b>Color</b>	<b>Function</b>
Gray	Flasher
White	Spotlight
Red	+12 Vdc Control Power
Yellow	Raise Arms
Blue	Lower Arms
Black	Ground Indicators
Green	Green LED Indicator for arms in the down position
Orange	Red LED Indicator for arms in not the down position
Red 10 AWG	+12 Vdc (use a 25 A fuse)
Black 10 AWG	Ground (-GND)



Figure 2: Wiring Diagram and toggle switch positions



### Checking the Installation and Wiring

- 1 Double-check the installation.
- 2 Ensure that all switches are off and that the toggle switch is on the HOLD position (*Figure 2*). Install the 25 A fuse.
- 3 To test the arms, carefully move the toggle switch up to raise the arms and wait for the arms to fully extend. Then move the toggle switch down to lower the arms.

**NOTE:** The green LED indicator lights when the arms are in the down position. The red LED indicator lights when the arms not in the down position.

### NOTICE

The Hi-Riser lightbar has an ambient operational temperature range of 0 °F to 104 °F for the raising and the lowering of the arms. If the actuation of the arms occurs beyond that range the arms may not fully raise or retract to their up or down positions. Upon this situation, locate the unit within an environment of 0 °F to 104 °F or await the change in environment to 0 °F to 104 °F, then actuate the unit to place the arms in their intended positions.

## Cleaning the Plastic Domes

**⚠ WARNING**

### CRAZING/CLEANING SOLUTIONS

The use of cleaning solutions, such as strong detergents, solvents, and petroleum products, can cause crazing (cracking) of the plastic domes and lenses.

**Failure to follow this warning can damage the domes and lenses and may result in bodily injury or death to you or others.**

1. Rinse the domes with lukewarm water to loosen dirt and debris.
2. Use a mild soap, lukewarm water, and a soft cloth to gently clean the plastic surfaces. To avoid damaging the reflectors, do not use heavy pressure or caustic, abrasive, or petroleum-based cleaners.
3. Rinse and dry the plastic surfaces with a soft cloth to prevent water spotting.

To remove fine scratches and haze, use a specialty plastic cleaner/polish such as Plexus® and a soft cloth. You can also use a high quality automotive paste cleaner/wax that is non-abrasive.

## Ordering Replacement Parts

To order replacement parts, please contact your local dealer/distributor or:

Customer Support  
Federal Signal Corporation  
Phone: 1-800-264-3578  
7 a.m. to 5 p.m., Monday through Friday (CT)

## Getting Technical Support and Service

The factory will service the New Vision for you. If you are experiencing problems, please contact:

Service Department  
Federal Signal Corporation  
Phone: 1-800-433-9132  
Fax: 1-800-343-9706  
Email: [empserviceinfo@fedsig.com](mailto:empserviceinfo@fedsig.com)  
[www.fedsig.com](http://www.fedsig.com)  
7 a.m. to 5 p.m., Monday through Friday (CT)

## Returning a Product to Federal Signal

Before returning a product to Federal Signal, call 800-264-3578, 800-433-9132, or 800-824-0254 (7 AM to 5 PM, Monday through Friday CT) to obtain a Returned Merchandise Authorization number (RMA number). To expedite the process please be prepared with the following information:

- Your Federal Signal customer or account number.
- The purchase order number under which the items were purchased.
- The shipping method.
- The model or part number of the product being returned.

- The quantity of products being returned.
- Drop ship information as needed.
- Any estimate required.

When you receive your RMA Number:

- Write the RMA number on the outside of the box of returned items.
- Reference the RMA number on your paperwork inside of the box.
- Write the RMA number down, so that you can easily check on status of the returned equipment.

Send all material with the issued RMA Number to:

Federal Signal Corporation  
2645 Federal Signal Drive  
University Park, IL 60484-3167  
Attn: Service Department  
RMA: # \_\_\_\_\_

## Safety Message to Operators of Warning Light Equipment

### WARNING

**People's lives depend on your safe use of our products. Listed below are some important safety instructions and precautions you should follow:**

- Do not attempt to activate or de-activate the light system control while driving in a hazardous situation.
- Although your warning system is operating properly, it may not be completely effective. People may not see or heed your warning signal. You must recognize this fact and continue driving cautiously.
- Also, situations may occur which obstruct your warning signal when natural and man-made objects are between your vehicle and others, such as raising your hood or trunk lid. If these situations occur, be especially careful.
- All effective sirens and horns produce loud sounds which may cause, in certain situations permanent hearing loss. You and your passengers should consider taking appropriate safety precautions such as wearing hearing protection.
- In order to be an effective warning device, this product produces bright light that can be hazardous to your eyesight when viewed at a close range. Do not stare directly into this lighting product at a close range or permanent damage to your eyesight may occur.
- It is important that you fully understand how to safely operate this warning system before use.
- You should only operate your vehicle and its light/sound system in accordance with your department's Standard Operating Procedures.
- If a selected function does not perform properly or if any of the lamps remain illuminated when the control is off, disconnect the power connector from the control unit and contact the nearest service center.
- At the start of your shift, you should ensure that the entire warning light system and the siren system is securely attached and operating properly.

- Suction cup mounting is for temporary applications only. The unit should be removed from the window and stored securely when not in use. Temperature changes and sunlight can cause suction cups to lose holding power. Periodically check the unit to be sure the suction cups have a firm grip on the mounting surface. An improperly secured light could fall off of the vehicle causing injury and damage.
- The holding power of magnetic mounting systems is dependent upon surface finish, surface flatness, and thickness of the steel mounting surface. Therefore, to promote proper magnetic mounting:
  - ✓ The mounting surface and magnets must be kept clean, dry, and free of foreign particles that prevent good surface contact.
  - ✓ Ensure that the mounting surface is flat.
  - ✓ A magnet mounting system should not be used on vehicles with vinyl tops.
  - ✓ To prevent the sliding of the lightbar on the mounting surface, quick acceleration and hard stops should be avoided.

**Failure to follow these precautions may result in property damage, serious injury, or death to you, to passengers, and to others.**

**RETAIN AND REFER TO THIS MESSAGE**



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