



INSTALLATION AND MAINTENANCE INSTRUCTIONS  
FOR  
53" OHIO STATE HIGHWAY PATROL VISTA® LIGHTBAR (581016-OHPxx)

SAFETY MESSAGE TO INSTALLERS  
OF  
FEDERAL SIGNAL LIGHT SYSTEMS

**⚠ WARNING**

People's lives depend on your safe installation of our products. It is important to read, understand and follow all instructions shipped with the products. In addition, listed below are some other important safety instructions and precautions you should follow:

- To properly install a light assembly: you must have a good understanding of automotive electrical procedures and systems, along with proficiency in the installation and use of safety warning equipment.
- When drilling into a vehicle structure, be sure that both sides of the surface are clear of anything that could be damaged.
- A light system is a high current device. In order for it to function properly, a separate ground connection must be made. If practical, it should be connected to the negative battery terminal. At a minimum, it may be attached to a solid metal body or chassis part that will provide an effective ground path as long as the light system is to be used.
- Locate light system controls so the VEHICLE and CONTROLS can be operated safely under all driving conditions.
- This product contains high intensity LED devices. To prevent eye damage, DO NOT stare into the light beam at close range.
- You should frequently inspect the light system to ensure that it is operating properly and that it is securely attached to the vehicle.
- File these instructions in a safe place and refer to them when maintaining and/or reinstalling the product.

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

I. UNPACKING.

After unpacking the Vista lightbar, inspect it for damage that may have occurred in transit. If the unit has been damaged, 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.

II. INSTALLATION.

A. General.

The lightbar is completely wired at the factory and does not require any additional internal wiring. All the conductors necessary for control of any and all basic and optional functions are contained in the cable.

The basic light functions of the unit must be controlled by a user-supplied control head.

Before proceeding, ensure that the lightbar has been installed on the vehicle roof in accordance with the instructions packed with the mounting kit.

**⚠ WARNING**

**Light system controls must be located so that VEHICLE and CONTROLS can be operated safely under all driving conditions.**

1. Route the control cable into the vehicle and under the dash, near the eventual location of the user-supplied control head.
2. For proper light operation, the control cable must be properly terminated inside the user-supplied control head. Using figure 1 and table 1 as a guide, make the appropriate electrical connections. Ensure that the lines are adequately fused as shown, and that switch capacity is adequate for the current requirement.

**⚠ CAUTION**

Reverse polarity may damage the power supply and prevent operation. Ensure that correct polarity is observed.

3. Connect the separate 8 gauge black lead to the vehicle battery ground (-) terminal.

**NOTE**

All of the lightbar functions can be activated by applying 12VDC to the appropriate control line. The heavy black lead (-) must be connected to battery ground, to perform a function check.

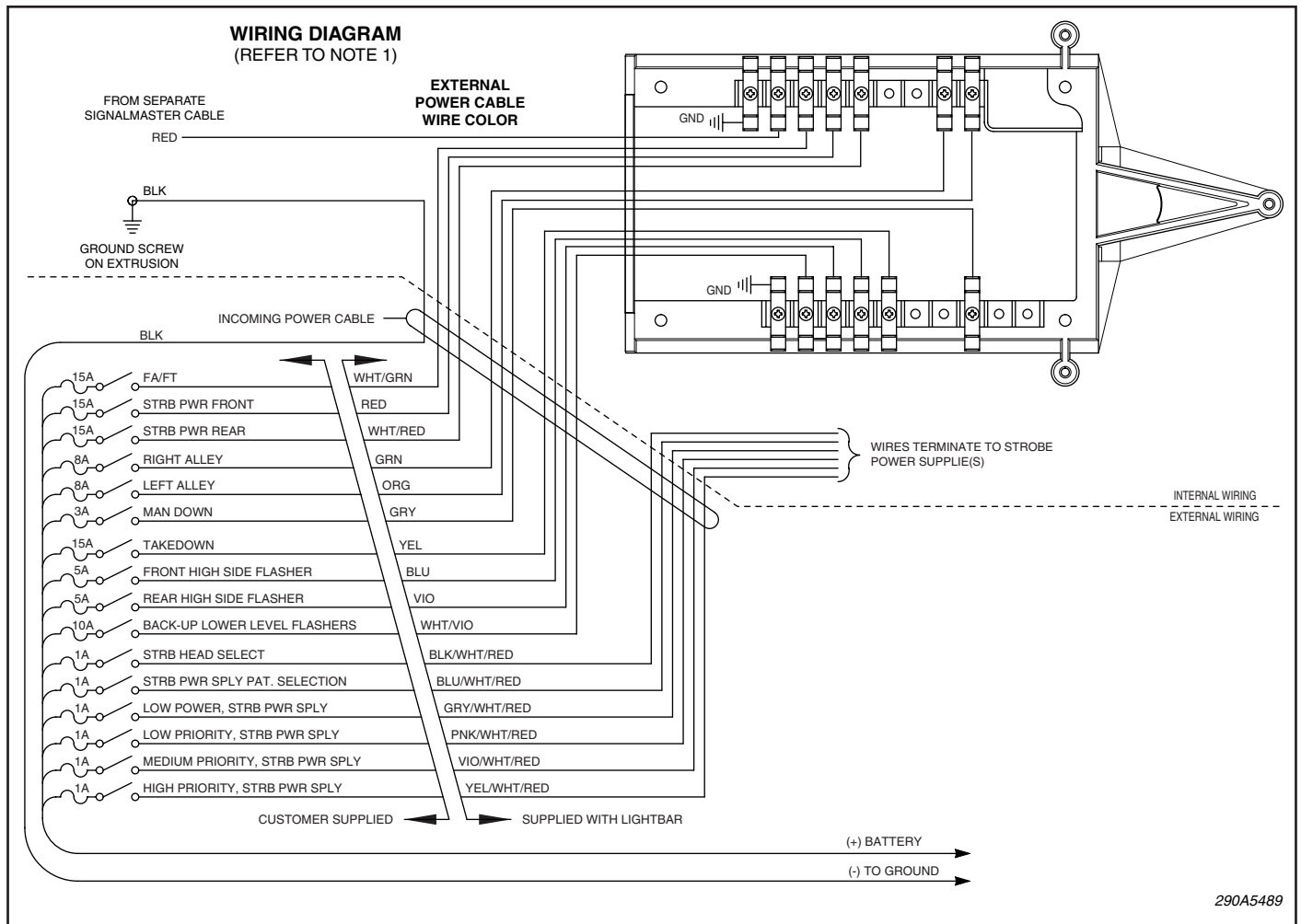


Figure 1.

**NOTE 1. VARIATIONS TO WIRING DIAGRAMS MAY OCCUR WITH SOME OPTION COMBINATIONS. BEFORE CUTTING ANY POWER CABLE LEADS, PERFORM A FUNCTION CHECK BY APPLYING 12VDC TO THE APPROPRIATE CONTROL LEADS. THE HEAVY BLACK LEAD (-) MUST BE CONNECTED TO BATTERY GROUND, TO PERFORM A FUNCTION CHECK.**

Table 1. Electrical Connections.

Wire Color	Vista Ricochet Powered Lightbar Function with Man Down
BLK	Ground (-)
RED	Strobe Power, Front
WHT/RED	Strobe Power, Rear
WHT/ORG	N.C.
BLK/WHT/RED	Strobe Head Select
BLU/WHT/RED	Strobe Pattern Select
GRY/WHT/RED	Strobe Low Power
PNK/WHT/RED	Strobe Low Priority
VIO/WHT/RED	Strobe Medium Priority
YEL/WHT/RED	Strobe High Priority
VIO	Rear Flashing LED
WHT/VIO	Back-up Lower Level LED Flasher
WHT/GRY	N.C.
BLU	Front Flashing LED
YEL	Takedown
GRY	Man Down
GRN	Passenger Alley
ORG	Driver Alley
BRN	N.C.
WHT/BRN	N.C.
WHT/GRN	Flashing Alley/Takedown
GRN/WHT/RED	N.C.
BRN/WHT/RED	N.C.
WHT/BLU	N.C.
WHT/YEL	N.C.
ORG/WHT/RED	N.C.

#### B. Antenna Bracket Installation.

The following is applicable to lightbars that require an antenna bracket. Before installing the lightbar on vehicle, the antenna bracket must be mounted to the underside of lightbar.

See figure 2 and proceed as follows:

#### NOTE

When turning the lightbar over, use caution to avoid damaging the lightbar domes.

1. Remove and retain the supplied nut and lock-washer from the underside of the lightbar.
2. Position the bolt in the center of the lightbar. Ensure that the area indicated is free from oil and dirt.
3. Remove the liner from the double stick tape (affixed to the bracket) and mount the bracket to the lightbar.
4. Using the previously removed hardware, secure the bracket to the lightbar. Refer to the instructions included with the antenna for proper installation.

#### C. Function Activation.

#### NOTE

In the four and six head model only one strobe power supply is provided. The red 12 AWG wire in the control cable must be connected to 12 VDC and fused (15-amperes) at the source for the power supply to operate. In the eight, ten, and twelve head models there are two strobe power supplies provided. The red 12 AWG wire (front) and the 12 AWG white/red 12 AWG wire in the control cable must be connected to 12 VDC and fused (15 AMP) at the source for both power supplies to operate.

##### 1. Low Priority Control Input.

Applying 12 VDC to the pink/white/red 22 AWG wire in the control cable will select the low priority mode. This mode will be overridden when the medium or high priority is selected. This input must be fused (1-ampere) at the source.

##### 2. Medium Priority Control Input.

Applying 12 VDC to the violet/white/red 22 AWG wire in the control cable will select the medium priority mode. This mode will be overridden when the high priority mode is selected. This input must be fused (1-ampere) at the source.

##### 3. High Priority Control Input.

Applying 12 VDC to the yellow/white/red 22 AWG wire in the control cable will select the high priority

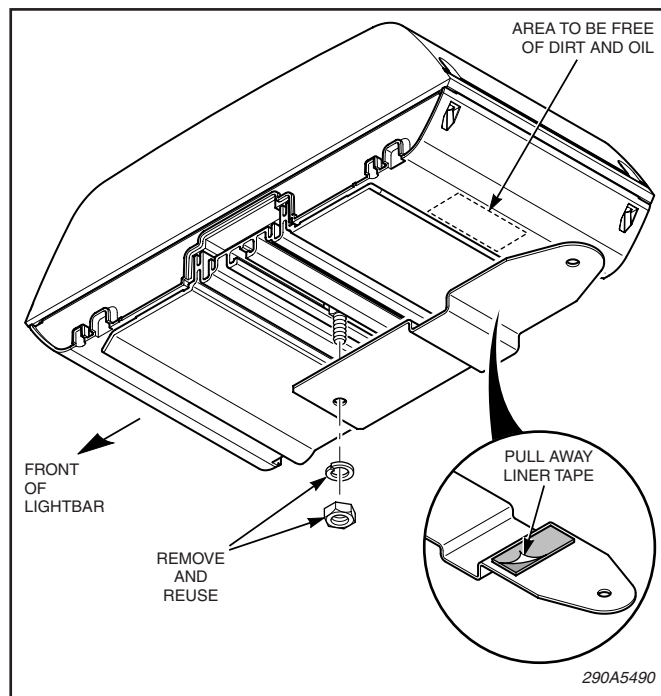


Figure 2.

mode. This mode will override both the medium and low priority modes. This input must be fused (1-ampere) at the source.

#### 4. Low Power Input

Applying 12 VDC to the grey/white/red 22 AWG wire in the control cable will cause the strobes to flash at approximately one half power. This input must be fused (1-ampere) at the source.

### NOTE

For eight, ten and twelve head models front or rear cutoff can be implemented by removing 12 VDC from the 12 AWG red (front) or 12 AWG white/red (rear) wires.

#### D. Programming.

##### 1. Flash Pattern.

The flash pattern assigned to a priority control input can be change by applying 12 VDC to the desired priority input, then applying 12 VDC to the blue/white/red wire will advance the pattern to the next available pattern. To advance the pattern selection, 12 VDC must be removed from the blue/white/red wire and re-applied. Repeat the above until the desired pattern is selected. When 12 VDC is removed from the priority input, the pattern selection will be stored in memory. Listed below are the available patterns:

- a. Null (no flash)
- b. Action
- c. ModQuad
- d. Sweep
- e. Random
- f. RicoFlash
- g. Triple
- h. Triple-2
- i. Double
- j. Double-2
- k. Combo

##### 2. Head Select.

The number of head pairs (A/B, C/D and E/F) that operate when a priority control input is selected can be changed by applying 12 VDC to the desired priority input, then applying 12 VDC to the black/white/red wire will advance to the next available combination of head pair operation. To advance to the next available combination, 12 VDC must be removed from the black/white/red wire and re-applied. When 12 VDC is removed from the priority input, the head pair combination will be stored in memory. Listed below are the available head pair combinations:

- a. A/B, C/D & E/F
- b. A/B & C/D
- c. A/B & E/F
- d. C/D & E/F
- e. A/B
- f. C/D
- g. E/F

#### E. Function Activation - Lower Level LED's.

##### 1. Front LED's/Flasher.

To activate front LED flasher apply 12VDC to the Blue wire. See figure 1 for proper fusing.

##### 2. Rear LED's/Flasher.

To activate rear LED flasher apply 12VDC to the Violet wire. See figure 1 for proper fusing.

##### 3. Backup Operation.

To activate the backup activation for both front and rear LED flashers apply 12VDC to the WHT/VIO wire. See figure 1 for proper fusing.

#### F. Function Activation – Man Down Blue LED Module.

##### 1. Activation.

Apply 12VDC to the Gray wire. See figure 1 for proper fusing.

##### 2. Intensity Adjustment.

Remove upper center dome. Apply 12VDC to the Gray wire. Locate the Man Down/Backup Feed circuit board. Adjust potentiometer R1 clockwise to increase intensity and counter-clockwise to decrease intensity. Remove 12VDC and reinstall center dome.

### III. BASIC MAINTENANCE.

#### WARNING

**High voltages are present inside the lightbar. Wait at least ten (10) minutes, after shutting off power, before servicing this unit. Failure to do so may result in property damage, serious injury, or death to you or others.**

**Disconnect ALL power to the lightbar before any maintenance is performed.**

#### A. Cleaning the Plastic Domes.

Ordinary cleaning of the plastic domes can be accomplished by using mild soap and a soft rag. Should fine scratches or a haze appear on the domes, they can ordinarily be removed with a non-abrasive, high quality automotive paste wax.

#### WARNING

**Crazing (cracking) of domes will cause reduced effectiveness of light system. Do not use cleaning agents (which will cause crazing) such as strong detergents, solvents, or petroleum products. If crazing of domes does occur, reliability of light for emergency warning purposes may be reduced until domes are replaced.**

## B. Halogen Lamp Replacement.

### ⚠ WARNING

**A serious injury may result if lamp is touched when hot. Always allow lamp to cool before removing. Halogen lamps are pressurized and if broken can result in flying glass. Always wear gloves and eye protection when handling the lamps.**

### ⚠ CAUTION

Service life of lamp will be shortened if glass portion is touched. If glass has been handled, clean carefully with a grease solvent.

For Takedown and Alley Lamps replacement, see figure 3. Refer to table 2 and replace the defective lamp with an exact replacement only.

## C. Cleaning Reflector Assemblies.

Use a soft tissue to clean the reflectors. Avoid heavy pressure and the use of caustic or petroleum base solvents which will scratch or dull the surface.

## D. Strobe Tube Replacement.

### ⚠ WARNING

**High voltages are present inside the lightbar. Wait at least ten (10) minutes, after shutting off power, before servicing this unit. Failure to do so may result in property damage, serious injury, or death to you or others.**

**Disconnect ALL power to the lightbar before any maintenance is performed.**

As strobe lights are used, flash tubes begin to darken, causing the light output to decrease. Also, as flash tubes age, they may have a tendency to misfire (not fire periodically).

After extended operation, occasionally check for flash tube degradation. Should the tube misfire, have a

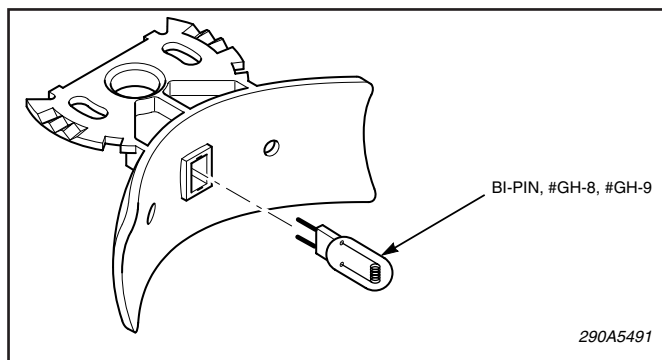


Figure 3.

Table 2.

FUNCTION	REPLACEMENT LAMP
Alley, Takedown	50W Halogen, GH-8 (bi-pin) Part No. 8107169
Primary Strobe	Linear Strobe Tube Part No. 8583302
Man Down LED (blue)	PCB, LED Assy., 2005145
Gen-3 LED	Replacement Module Amber-Part No. 8583228-02 Blue-Part No. 8583228-03 Red-Part No. 8583228-04

noticeable decrease in light output, glow continuously, or darken excessively, it should be replaced.

### NOTE

Not replacing a strobe tube when any of the above conditions exist could cause a break-down of other power supply components.

See figure 4 and proceed as follows:

1. Refer to table 2 for the correct strobe tube part number.
2. Remove and retain the two #8-32 screws which secure the defective strobe head assembly to the dome.
3. Disconnect the 3-position red connector from the wiring harness attached to the dome.
4. Carefully install the new strobe assembly using the two #8-32 screws. Reconnect the 3-position red connector to the corresponding connector in the dome.
5. Carefully replace the dome ensuring that the replaced strobe assembly's wiring does not interfere with the operation of other options in the lightbar.

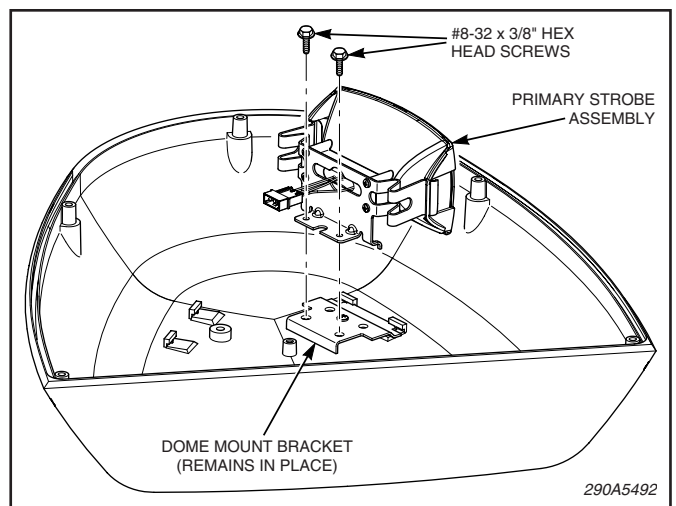


Figure 4.

E. *Strobe Power Supply Fuse Replacement.*

**▲WARNING**

**High voltages are present inside the lightbar. Wait at least ten (10) minutes, after shutting off power, before servicing this unit. Failure to do so may result in property damage, serious injury, or death to you or others.**

Disconnect ALL power to the lightbar before any maintenance is performed.

Replace the fuse on the power supply's top with an EXACT replacement. The 15A fuse for the primary strobe power supply is Federal Part No. 148A142-06.

F. *Strobe Power Supply Replacement.*

**▲WARNING**

**High voltages are present inside the lightbar. Wait at least ten (10) minutes, after shutting off power, before servicing this unit. Failure to do so may result in property damage, serious injury, or death to you or others.**

**Disconnect ALL power to the lightbar before any maintenance is performed.**

Other than the fuse, the strobe light power supply does not contain any user serviceable parts. Should a breakdown in the power supply occur, it should be returned to Federal for repair and replaced. To remove the power supply, proceed as follows:

1. Unplug the connectors from the power supply.
2. Remove the four #8 screws which secure the power supply.
3. Install the new power supply by performing the previous steps in reverse order.

G. *LED Assembly Replacement.*

**▲WARNING**

**A serious injury may result if LED assembly is touched when hot. Always allow LED assembly to cool before removing.**

1. Man Down LED.

See figure 5. Refer to table 2 and replace the defective LED assembly with an exact replacement only.

2. Gen-3 LED.

See figure 6. Refer to table 2 and replace the defective LED assembly with an exact replacement only.

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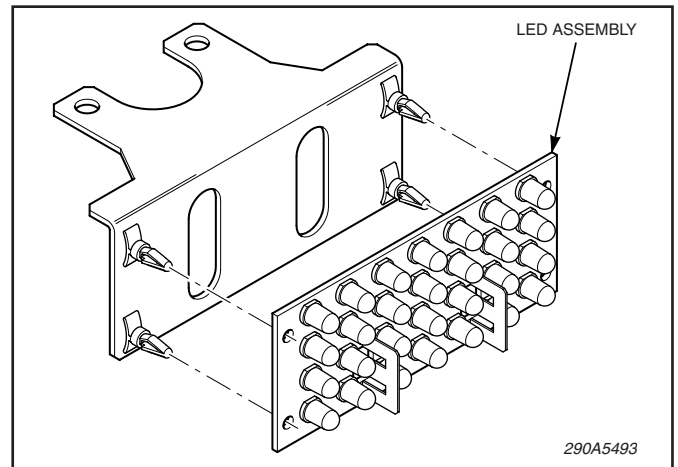


Figure 5.

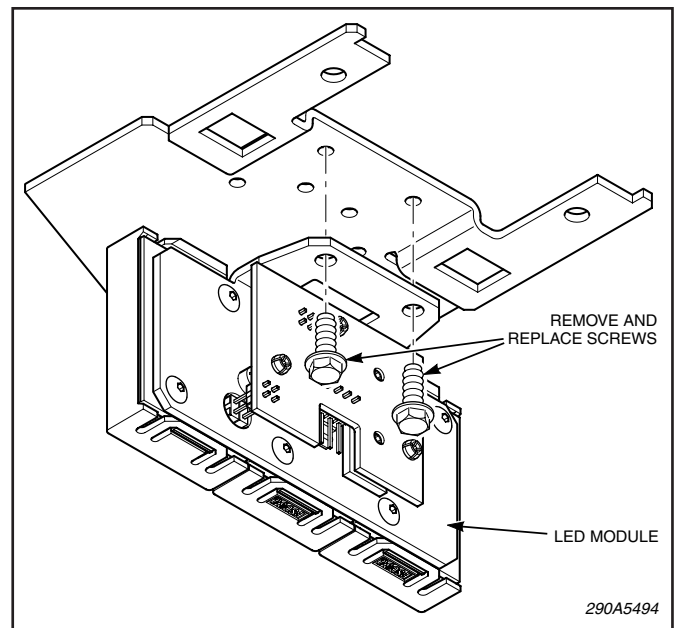


Figure 6.