

INSTALLATION AND MAINTENANCE INSTRUCTIONS FOR RICOCHET® POWERED VISTA® STROBE LIGHT ASSEMBLY

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.

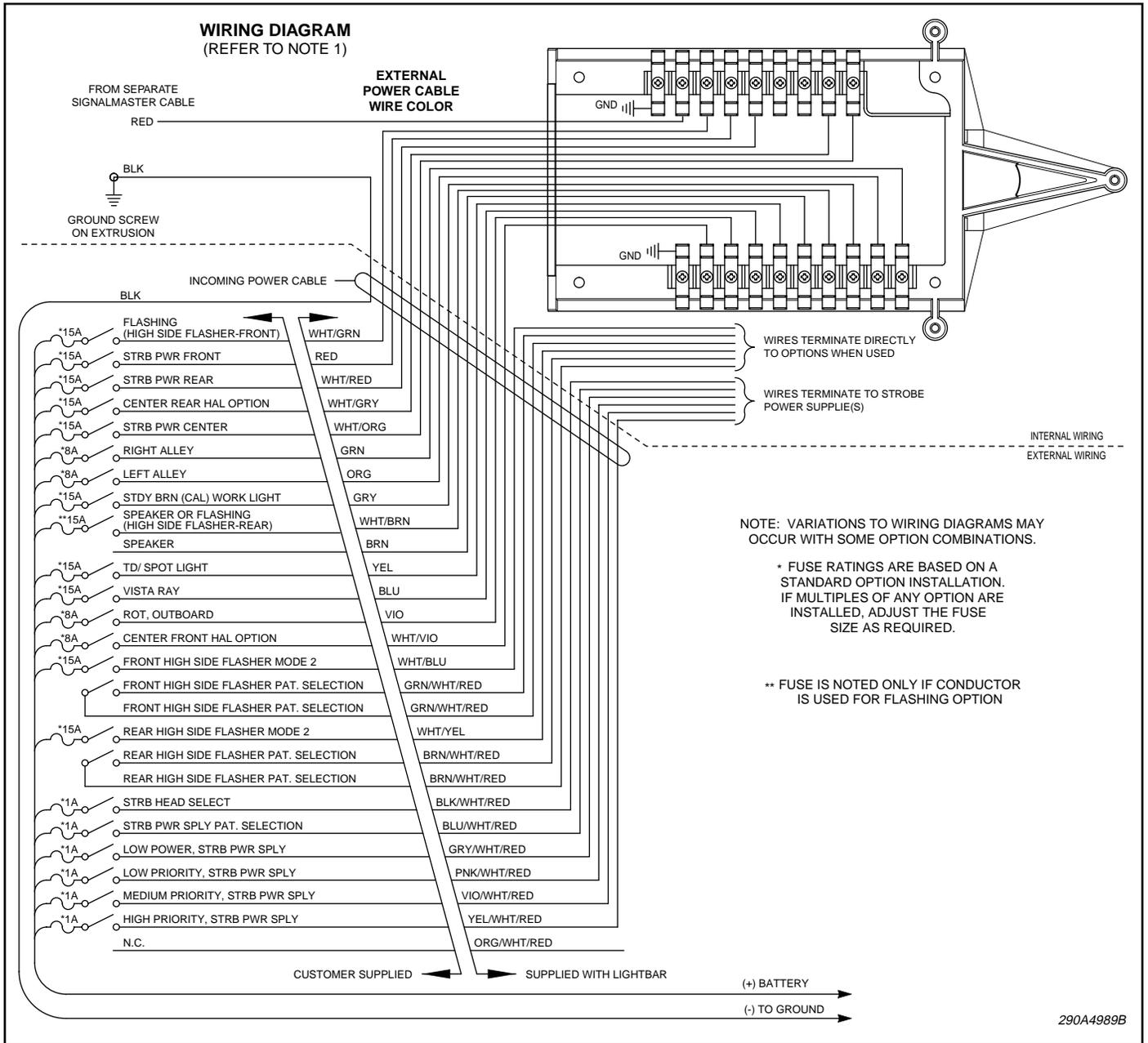


Figure 1.

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.

Wire Color (refer to note)	Vista Ricochet Powered Lightbar Function
BLK	Ground (-)
RED	Strobe Power - Single Upper Level OR Front (when 2 upper level supplies incl.)
WHT/RED	Strobe Power - Rear (when 2 upper level supplies incl.) OR Primary Outboard ROT Option
WHT/ORG	Strobe Power - Center Lower Level
BLK/WHT/RED	Strobe Head Select (upper level)
BLU/WHT/RED	Strobe Pattern Select (upper level)
GRY/WHT/RED	Strobe Low Power (upper level)
PNK/WHT/RED	Strobe Low Priority (upper level)
VIO/WHT/RED	Strobe Medium Priority (upper level)
YEL/WHT/RED	Strobe High Priority (upper level)
VIO	Secondary Outboard ROT Option
WHT/VIO	Center Front HAL Option
WHT/GRY	Center Rear HAL Option
BLU	VistaRay
YEL	Takedown / Spotlight
GRAY	Steady Burn (CAL) Work Light
GRN	Right Alley
ORG	Left Alley
BRN	Speaker
WHT/BRN	Speaker OR Rear Flashing (High Side Flasher Mode 1)
WHT/GRN	Front Flashing (High Side Flasher Mode 1)
GRN/WHT/RED	Front High Side Flasher Pattern Selection (2 wires)
BRN/WHT/RED	Rear High Side Flasher Pattern Selection (2 wires)
WHT/BLU	Front High Side Flasher Mode 2
WHT/YEL	Rear High Side Flasher Mode 2
ORG/WHT/RED	N.C.
NOTE: 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.	

NOTE

All of the lightbar functions (except low power and action pattern) 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.

B. Function Activation-Primary Strobe.

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 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.

C. 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

D. *High Side Flasher Option (see table 1).*

⚠ WARNING

DO NOT connect flasher to brake light circuit of ANY vehicle.

DO NOT connect flasher to the headlight circuit of any vehicle.

Connection of aftermarket electrical equipment into this circuit may interfere with the brake shift interlock.

This could cause the vehicle to unexpectedly move forward causing possible property damage, injury or death to the vehicle operator or others.

The flasher will provide the end user with two preselected flash patterns. The preselected flash patterns are to be chosen from the eight factory programmed patterns provided with each flasher. It is recommended that the preselected flash patterns be determined and programmed during installation. One steady-on setting is also provided. SAE compliant patterns will be noted by a green LED on a powered assembly.

The following procedures demonstrate the programming and operating features of the flasher:

Apply power to Mode 1 input of the high side flasher. Momentarily short pattern selection wires until the desired pattern is running. Allow the pattern to run for 15-seconds; Mode 1 is now programmed.

Apply power to both Mode 1 and Mode 2 of the high side flasher. Momentarily short pattern selection wires until the desired pattern is running. Allow the pattern to run for 15-seconds; Mode 2 is now programmed.

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.

1. Primary Lamps.

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

2. Secondary Lamps.

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.

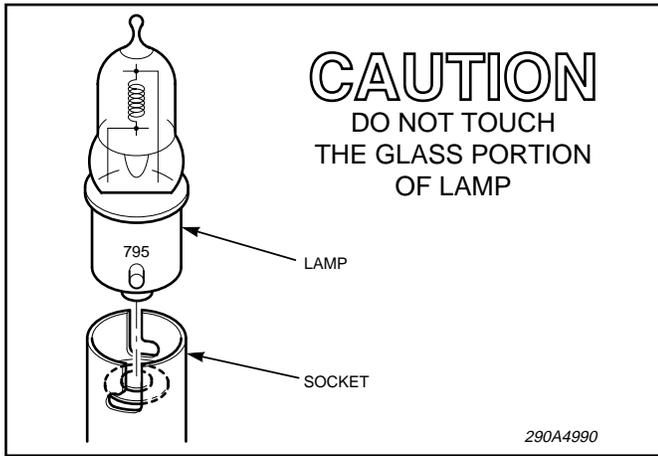


Figure 2.

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

Table 2.

FUNCTION	REPLACEMENT LAMP
Alley, Takedown, Steady Burn, Work, Spot Light	50W Halogen, GH-8 (bi-pin) Part No. 8107169
Flashing	35W Halogen, GH-9 (bi-pin) Part No. 8107170
SignalMaster	27W Halogen, bi-pin Part No. 8573007
VistaRay	50W Halogen, Sylvania #795 Part No. 8107A119 Part No. 8107191, Blue Part No. 8107191-01, Red
Brake/Tail Light	Incandescent Lamp #1157 Part No. 8107A095
TCL, Rotating, Oscillating	50W Halogen, Sylvania #795X Part No. 8107141
Directional Strobe	Strobe Tube Assy. Part No. 8583310
Primary Strobe Assembly	Replacement Module Red-Part No. 8583302-01 Clear-Part No. 8583302 Amber-Part No. 8583302-02 Blue-Part No. 8583302-03 Green-Part No. 8583302-04
Gen-1 LED	PCB, LED Assembly Red-Part No. 2005102 Amber-Part No. 2005102-01 Blue-Part No. 2005145
Gen-3 LED	Replacement Module Amber-Part No. 8583228-02 Blue-Part No. 8583228-03 Red-Part No. 8583228-04 White-Part No. 8583228-05
Gen-3 LED Economy	Replacement Module Amber-Part No. 8583228-02E Blue-Part No. 8583228-03E Red-Part No. 8583228-04E White-Part No. 8583228-05E

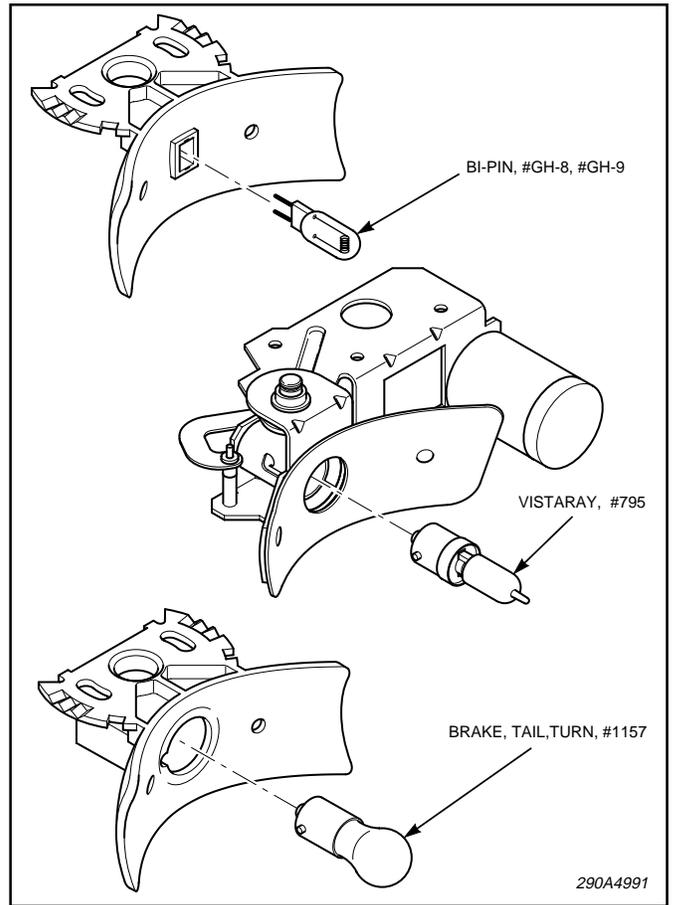


Figure 3.

a 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.

1. Primary Linear Strobe Assembly.

See figure 4 and proceed as follows:

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

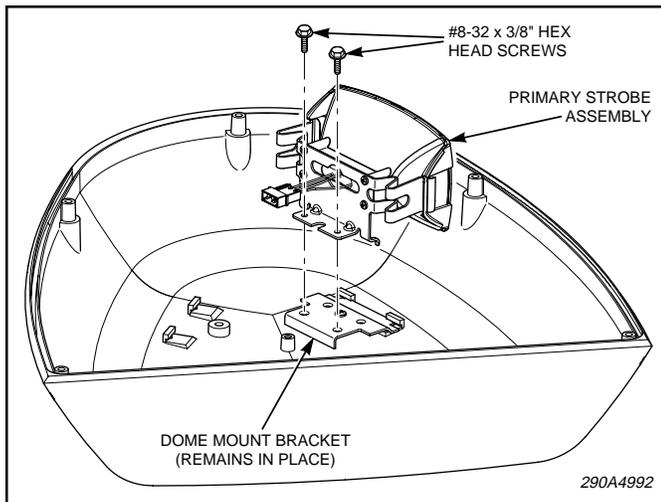


Figure 4.

2. Secondary Strobe Tube Assembly.

See figure 5 and proceed as follows:

- a. Refer to table 2 for the correct strobe tube part number.
- b. Push the defective strobe tube assembly out of the reflector.
- c. Disconnect the red 3-position connector at the end of the tube's wiring.
- d. To facilitate assembly, apply a high temperature grease, or Vaseline, to the rubber edge of the strobe tube. SLOWLY insert the strobe tube into the reflector housing. Ensure that the flat on the strobe tube is aligned with the flat on the reflector.
- e. Reconnect the red 3-position connector.

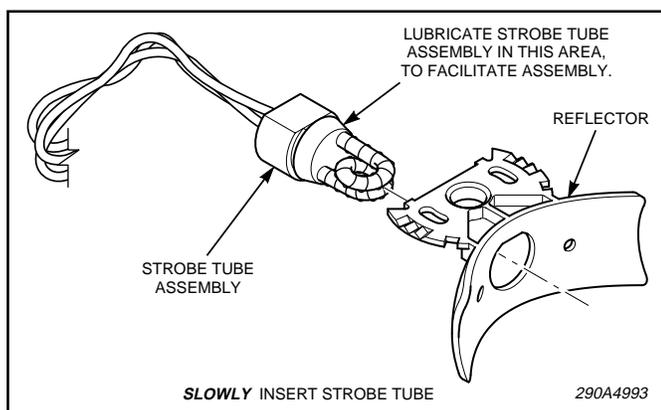


Figure 5.

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 and secondary strobe power supplies 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. Rotator Gear Service.

All rotator gears are lubricated at the factory. Depending on operating conditions, we recommend periodic inspection and lubrication of all gears. Use Dow Corning Molykote 33 or equivalent medium consistency

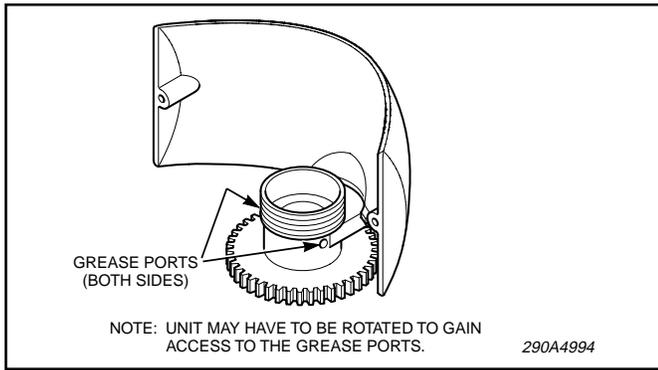


Figure 6.

grease. The special grease fitting (Federal Signal part no. 8542A293) required to perform this operation can be purchased from the Federal Signal service department. The fitting can be attached to any grease gun having a 1/8" N.P.T. outlet. See figure 6 for grease port locations.

H. 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. Gen-1 LED.

See figure 7. Refer to table 2 and replace the defective LED assembly with an exact replacement only.

2. Gen-3 LED and Gen-3 LED Economy.

See figure 8. Refer to table 2 and replace the defective LED assembly with an exact replacement only.

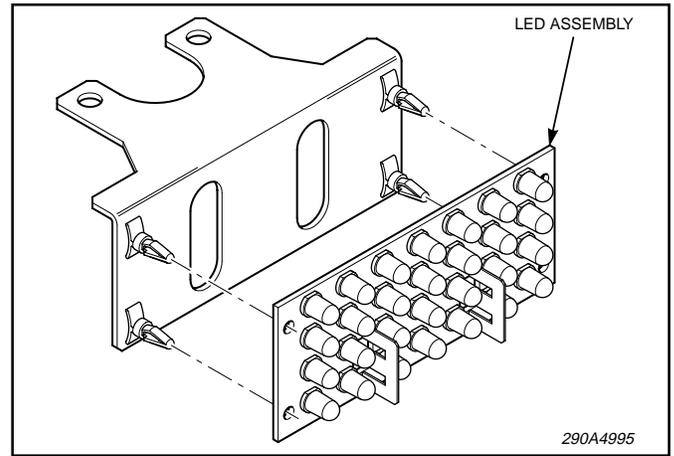


Figure 7.

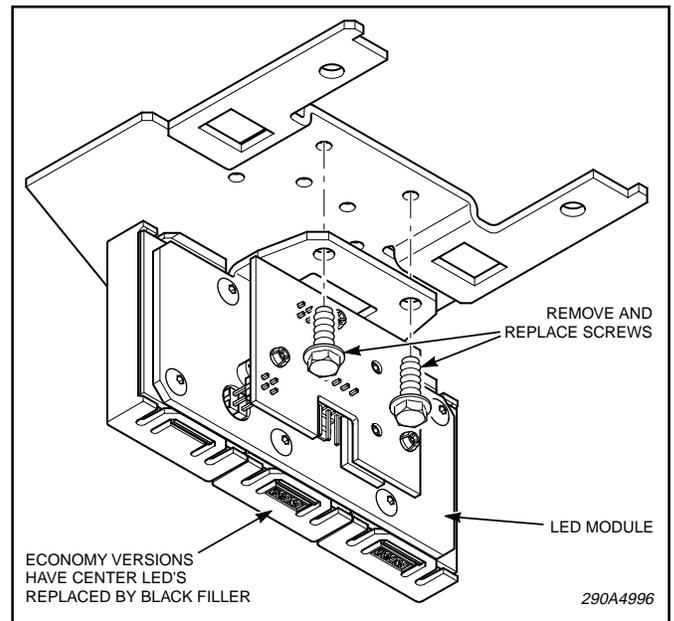


Figure 8.