

**WIRING AND MAINTENANCE
FOR
FEDERAL ALL LIGHT STREETHAWK® LIGHT ASSEMBLY**

SAFETY MESSAGE TO INSTALLERS

 **WARNING**

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

- **To properly install this light: 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. Remove all burrs from drilled holes. To prevent electrical shorts, grommet all drilled holes through which wiring passes.**
- **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 is to be used.**
- **This product may contain high intensity LED devices. To prevent eye damage, DO NOT stare into the light beam at close range.**
- **High voltages are present inside the strobe light equipped models during and after operation. Ensure that power is disconnected and wait at least ten minutes before removing the dome.**
- **Locate light system controls so the VEHICLE and CONTROLS can be operated safely under all driving conditions.**
- **You should frequently inspect the light 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. GENERAL.

The light assembly comes from the factory with ten (10) stationary light lenses, gaskets, and mounting hardware in kit form. This enables the user to choose and install the color combination that best suits the application.

 **WARNING**

Using a lens colored differently than an LED will greatly reduce the light output, thereby reducing the effectiveness of the light for emergency signaling purposes. Either use a clear lens or match the color of the lens with the LED.

Federal recommends that lenses be installed prior to mounting the light assembly on the vehicle. To install a lens in any position, proceed as follows (see figure 5):

- A. Install gasket on rim of lens.
- B. Insert lens and gasket into lens opening. Secure with two #6 screws. Tighten to 10-15 in./lbs. of torque.

II. ELECTRICAL WIRING.

A. *General.*

The Light Assembly is completely wired at the factory and does not require any additional internal wiring. (If desired, to allow Intelli-Flash Mode 2, connect the wht/red Intelli-Flash wire to an unused power cable wire or a user-supplied wire.) The cable connected to the Light Assembly contains all the conductors necessary for proper control of all basic and optional functions (see figure 1).

 **WARNING**

To prevent personal injury and/or damage to vehicle components, in the event of a short-circuit in the power cable, install a fuse in each incoming cable conductor.

Figures 6 and 7 illustrate the external/internal Light Assembly wiring by function. Using figures 1, 6, and 7 as a guide, make the appropriate electrical connections shown in Table 1. Be sure to use fuses (current ratings shown in the applicable diagram in figures 6 and 7), wire and switches with adequate current capacity for each function.

NOTE

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

B. *Programming the Intelli-Flash (see figure 7).*

To operate the flasher in Mode 1, close SW1. To operate the flasher in Mode 2, close SW1 and SW2.

Turn on the flasher in Mode 1. Short across the programming pins until the desired pattern is running. Allow the pattern to run for at least 15-seconds to program Mode 1.

Turn on the flasher in Mode 2. Short across the programming pins until the desired pattern is running. Allow the pattern to run for at least 15-seconds to program Mode 2.

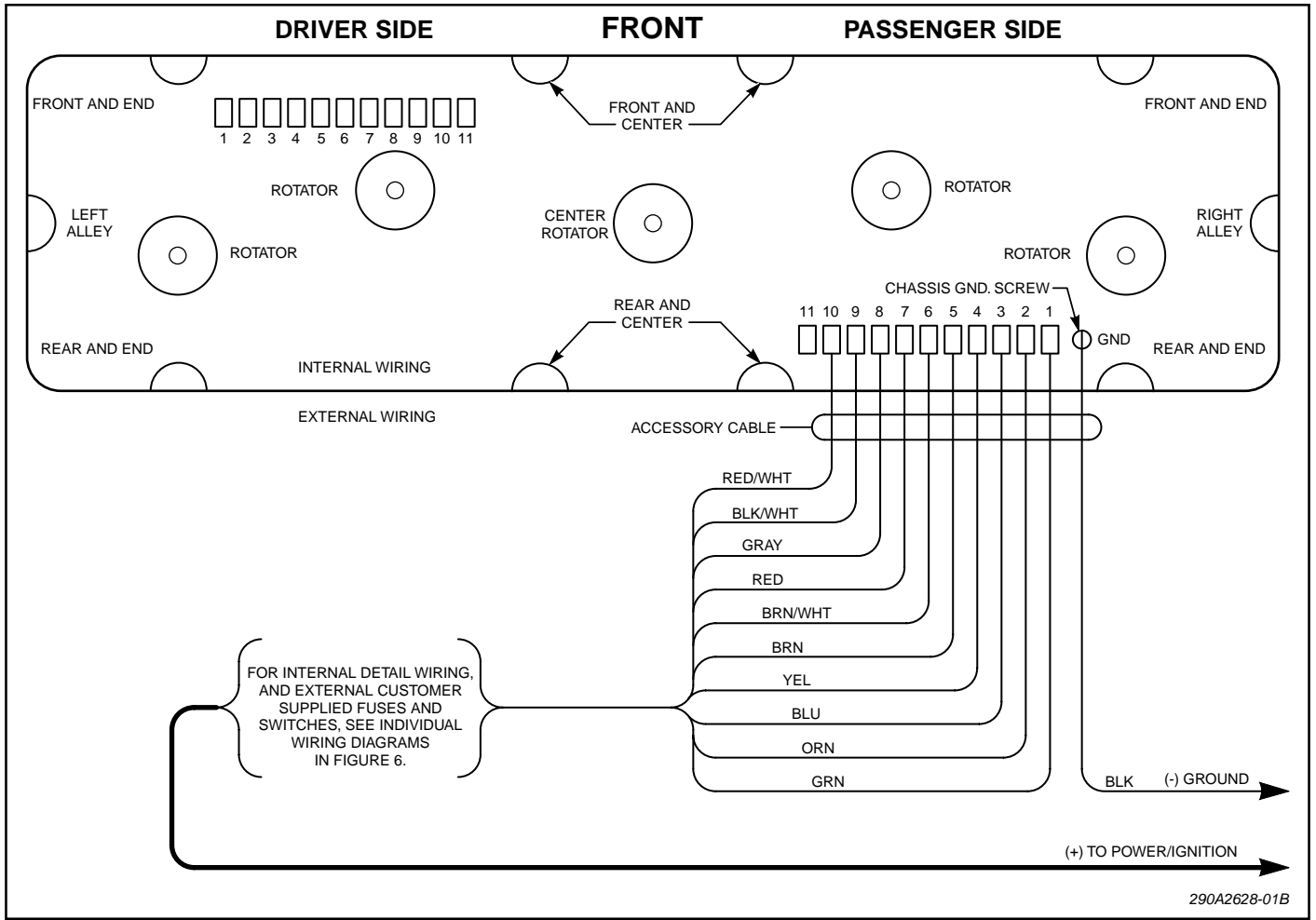


Figure 1.

III. NFPA INSTALLATION.

MESSAGE TO NFPA INSTALLERS

For mounting, color configuration, and mounting considerations, refer to the latest edition of the NFPA standard for automotive fire apparatus.

For Models FHL4856R, FHL4856W, FHL4857R, FHL4857W, SHL4856, SHL4857, and SHL4858, use figure 2 and table 2 as a guide (for mounting and wiring) when installing this light assembly as part of an NFPA certified system.

IV. MAINTENANCE.

A. *Cleaning the Plastic Domes and Lenses.*

⚠ WARNING

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

Ordinary cleaning of the plastic domes and lenses can be accomplished by using mild soap and a soft rag. Should fine

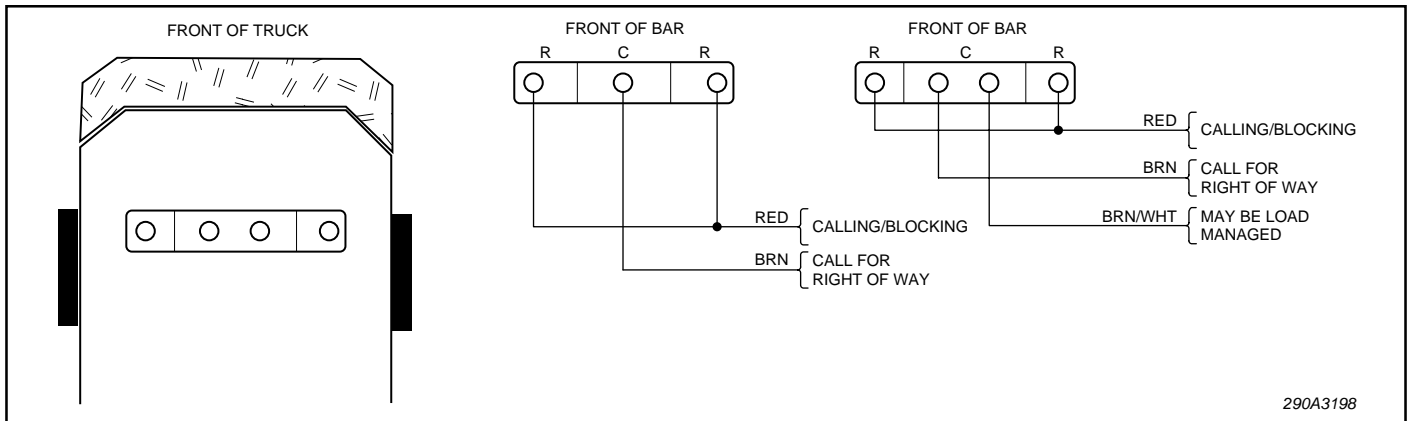


Figure 2.

Table 1. Electrical Connections.

Wire Color	Functions
GRN	Right Alley
ORN	Left Alley
BLU	Flashing, Takedown
YEL	Takedown
BRN	Flashing, Work Light, Directional Strobe, Takedown
BRN/WHT	Rotating, Traffic Clearing Light, Oscillating Light
RED	Rotating Lights
GRA	Tail Light, Directional Strobe
BLK/WHT	Left Turn Signal, Outer Work Lights
RED/WHT	Right Turn Signal, Flashing
BLK	Ground (-)

Table 2. Electrical Connections for NFPA Models.

Term. Block Position	Control Cable Wire Color	Functions
1	GRN	Right Alley (option)
2	ORN	Left Alley (option)
3	BLUE	Takedown, Flashing (option)
4	YEL	Load Managed Calling/Blocking
5	BRN	Call for Right of Way
6	BRN/WHT	Load Managed Call for Right of Way
7	RED	Calling/Blocking
8	GRA	Strobe (option)
9	BLK/WHT	Left Turn Signal (option)
10	RED/WHT	Right Turn Signal (option)
	BLK	Ground (-)

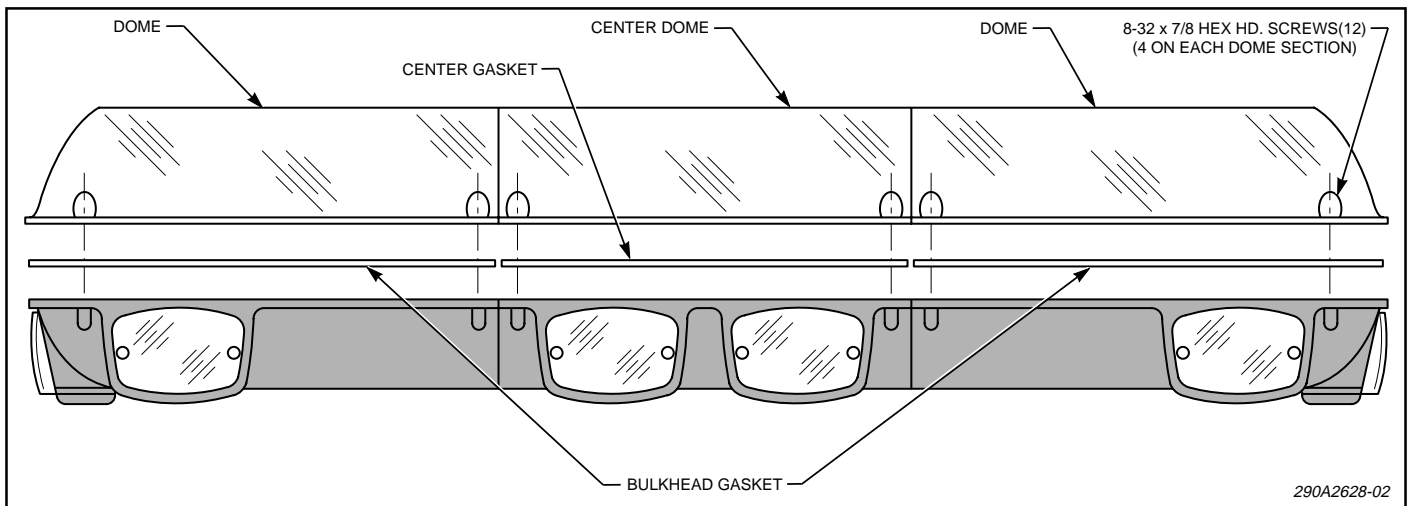


Figure 3.

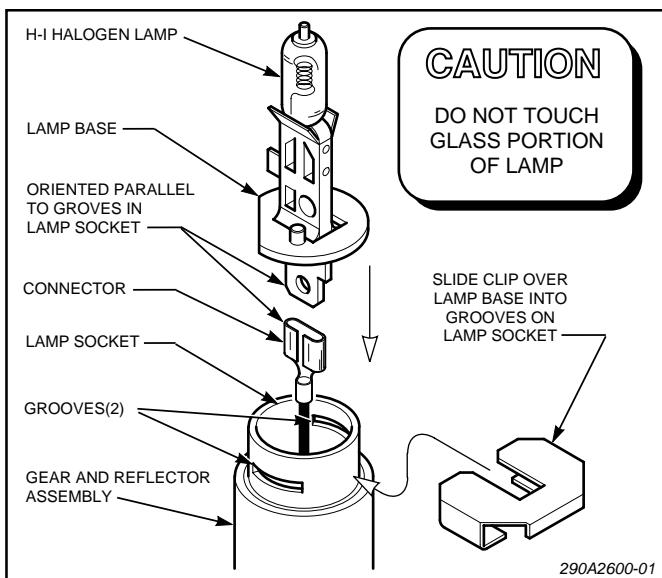


Figure 4.

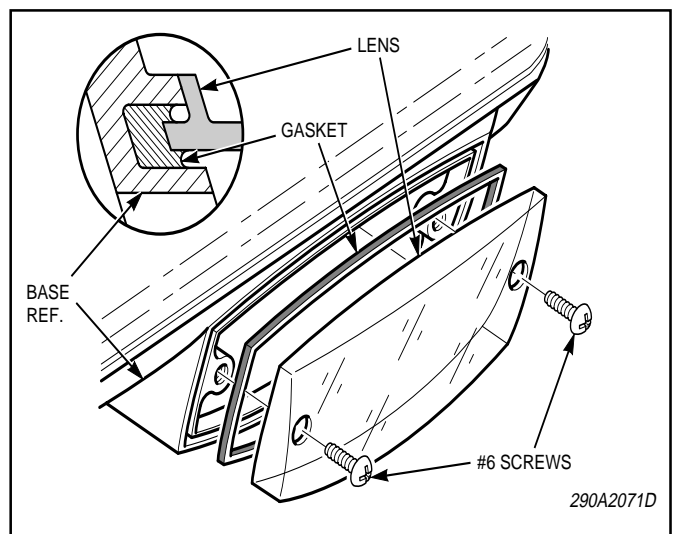
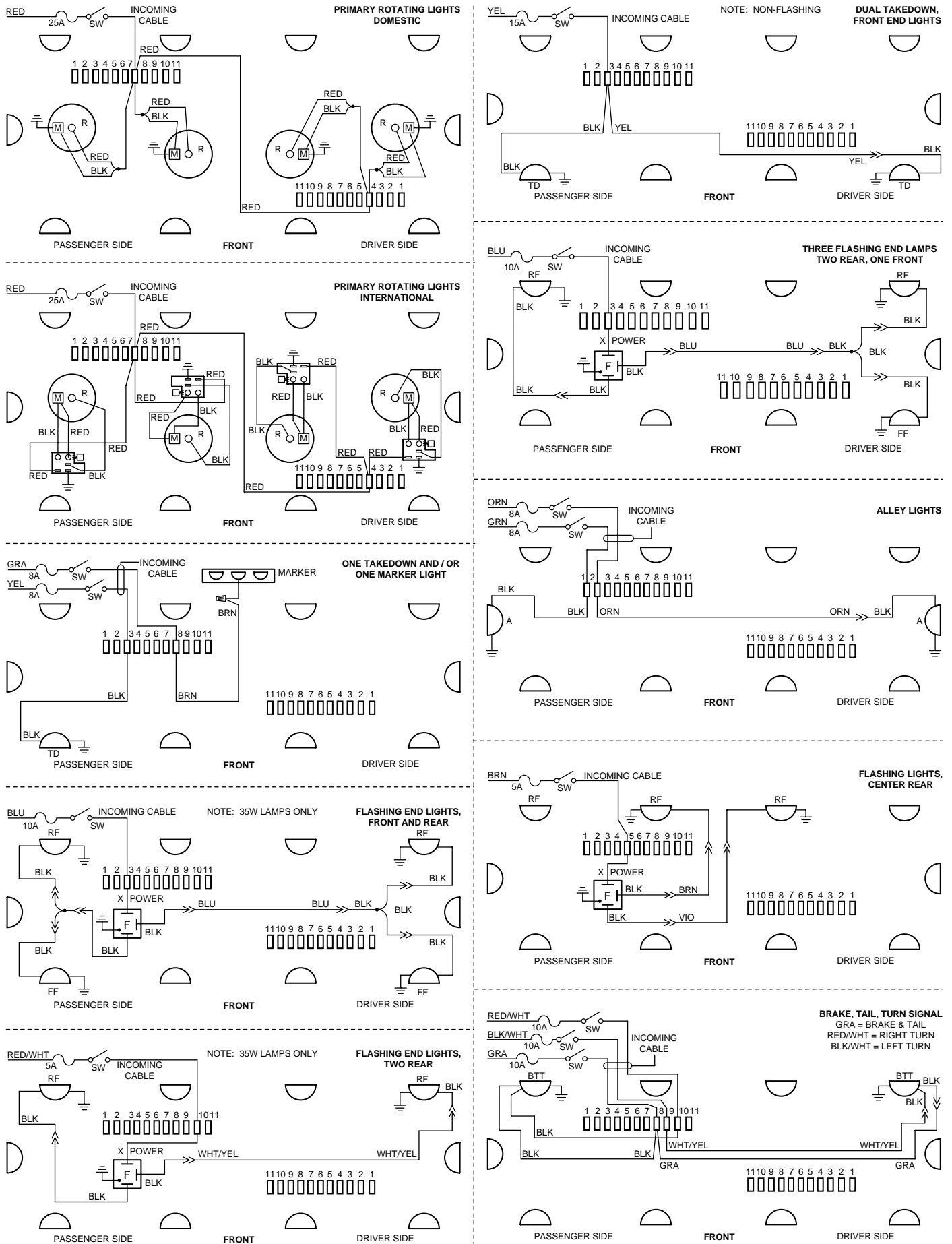
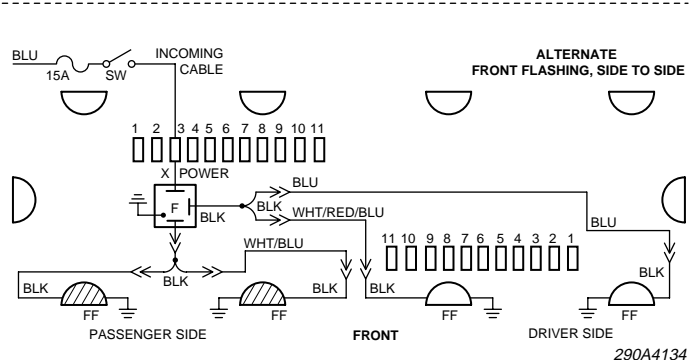
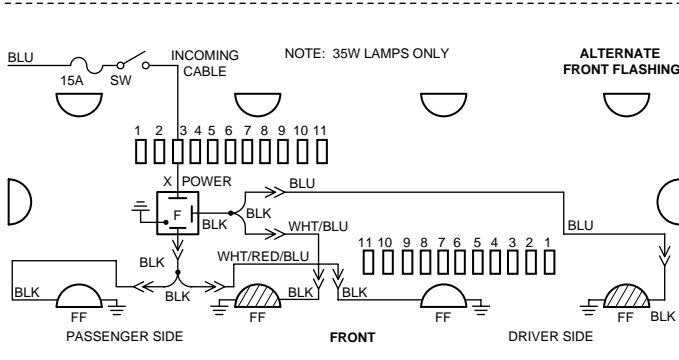
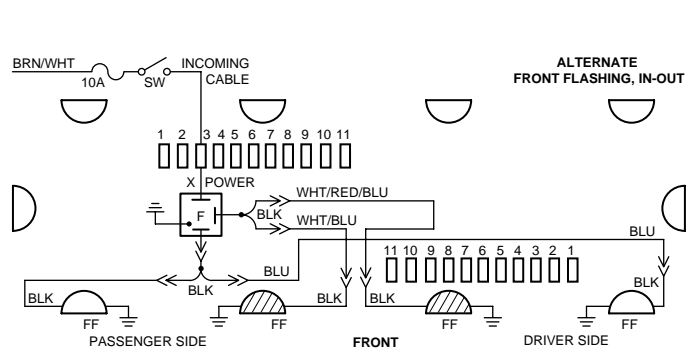
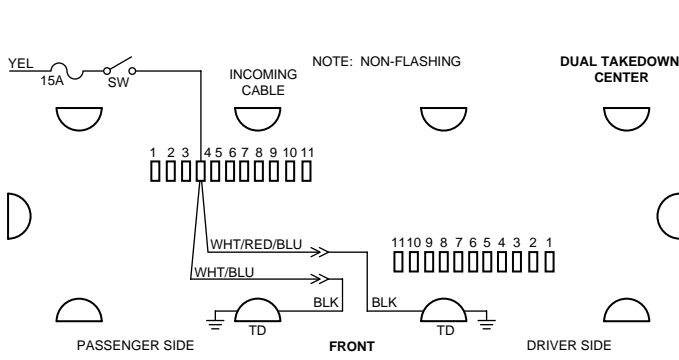
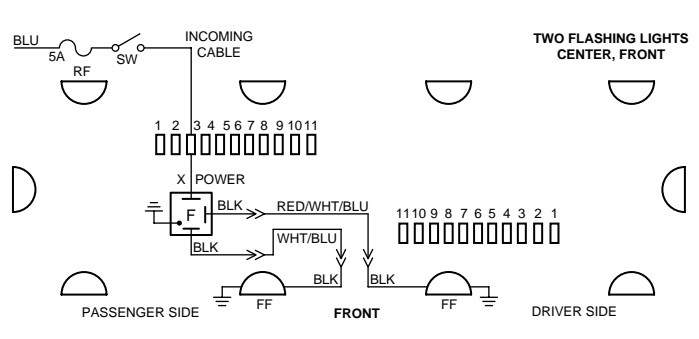
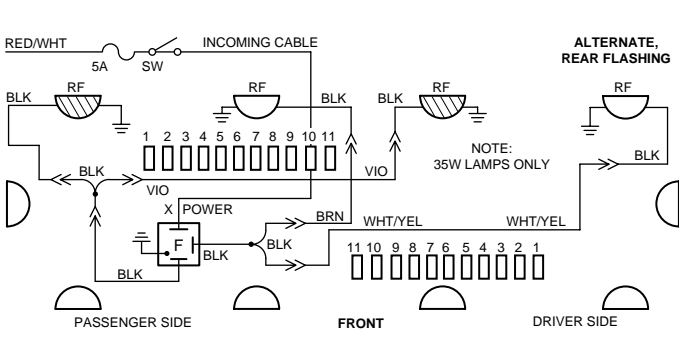
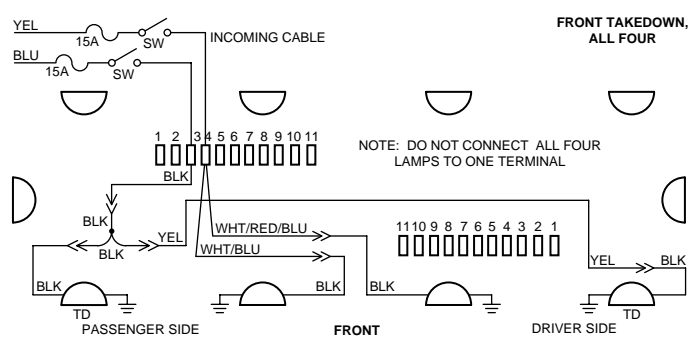
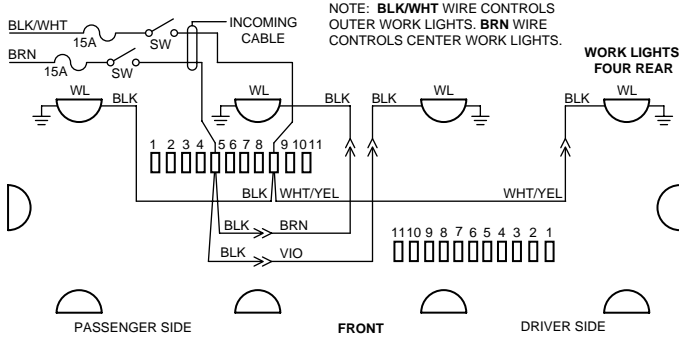
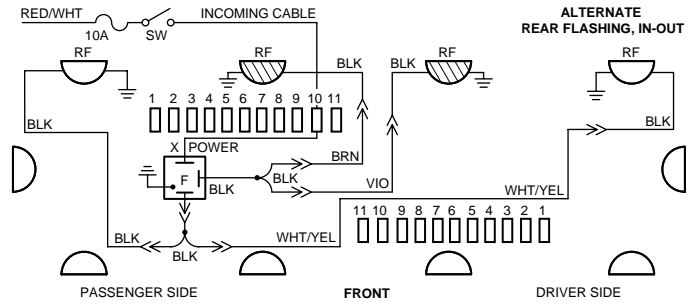
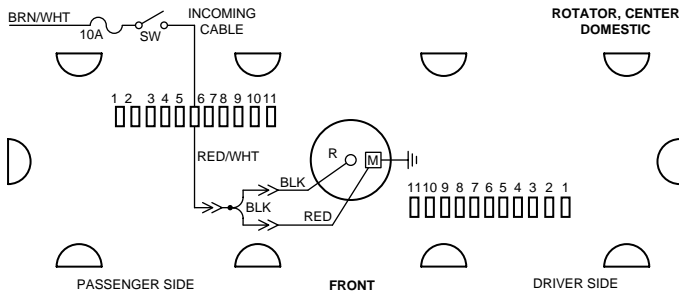


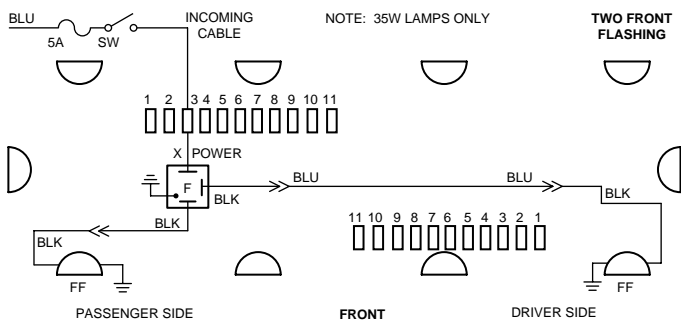
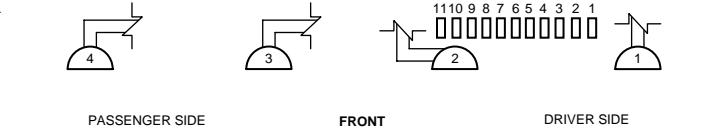
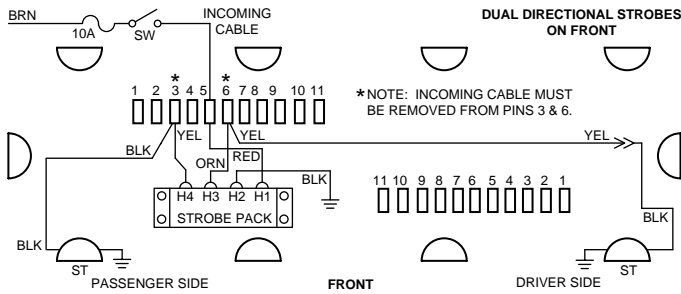
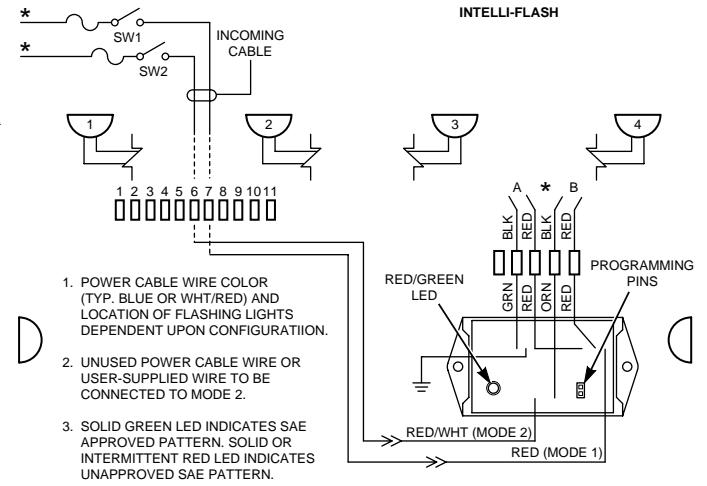
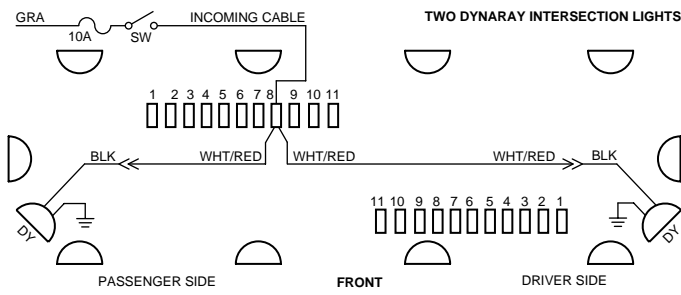
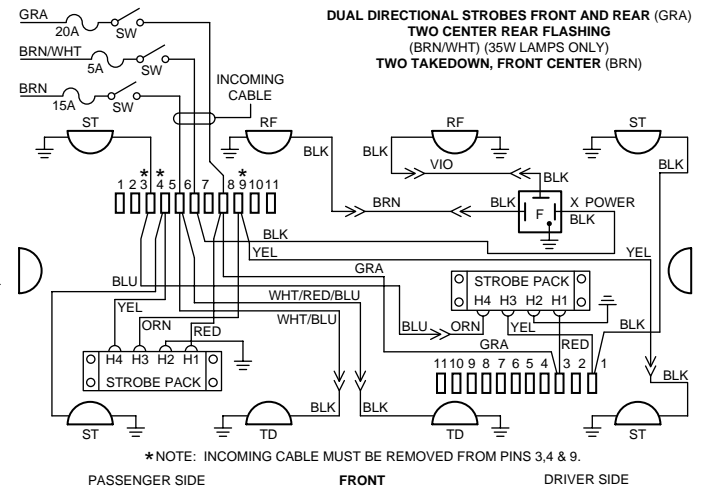
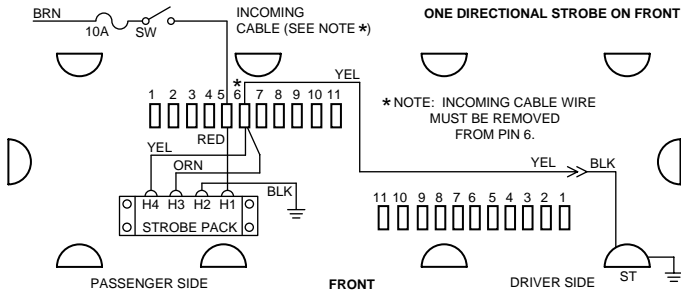
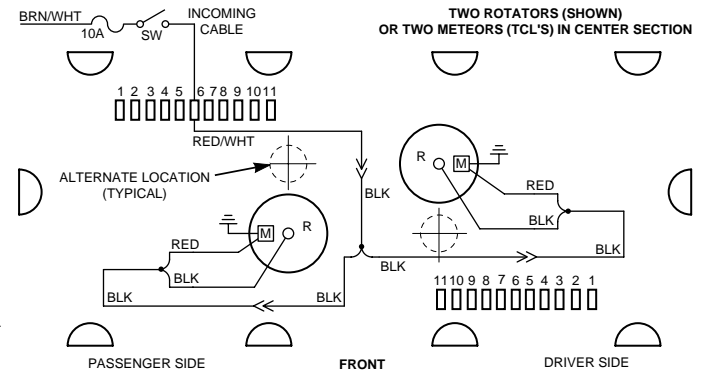
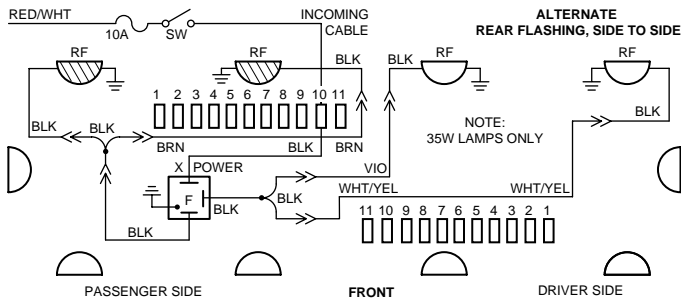
Figure 5.



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Figure 6.





1. POWER CABLE WIRE COLOR (TYP. BLUE OR WHT/RED) AND LOCATION OF FLASHING LIGHTS DEPENDENT UPON CONFIGURATION.

2. UNUSED POWER CABLE WIRE OR USER-SUPPLIED WIRE TO BE CONNECTED TO MODE 2.

3. SOLID GREEN LED INDICATES SAE APPROVED PATTERN. SOLID OR INTERMITTENT RED LED INDICATES UNAPPROVED SAE PATTERN.

PATTERN	POSITION	1	2	3	4
OUTSIDE	A	A	A	A	A
INSIDE	A	B			
ALTERNATING	A	B	A	B	
SIDE-TO-SIDE	A	A	B	B	
IN-OUT	A	B	B	A	

PATTERN 1 75 FPM ALTERNATING
 PATTERN 2 95 FPM ALTERNATING
 PATTERN 3 115 FPM ALTERNATING
 PATTERN 4 4 @ 120 FPM ALTERNATING THEN 4 @ 120 FPM SIMULTANEOUS
 PATTERN 5 180 FPM ALTERNATING
 PATTERN 6 ALTERNATING 260 FPM DOUBLE
 PATTERN 7 ALTERNATING 300 FPM TRIPLE
 PATTERN 8 300 FPM TRIPLE/60 FPM SINGLE

Figure 7

scratches or a haze appear on the domes, they can ordinarily be removed with a non-abrasive, high quality, one-step, automotive paste cleaner/wax and a soft cloth.

B. 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.

1. Dome Removal (see figure 3).
 - a. Turn-off power to Light Assembly.
 - b. Remove four #8-32 x 7/8" hex head screws which secure the center dome to the center base. Lift center dome away from center base.
 - c. Remove the eight (four on each side) #8-32 x 7/8" hex head screws from the front and rear edges of the dome.
 - d. Carefully remove the domes. Ensure that the bulkhead gasket remains tucked in its groove.
 - e. The domes can be replaced by reversing the procedure. Torque dome screws to 14-18 in./lbs.
2. Primary Rotating Lamps.

To replace the halogen lamp, proceed as follows (see figure 4):

CAUTION

Forced rotation of the light mechanism will cause damage to the worm gear. ALWAYS rotate the light mechanism by rotating the motor shaft.

- a. Rotate the reflector until the lamp clip (located at the base of the lamp) can be removed, and remove the clip by sliding it away from the reflector.
- b. Note the lamp's orientation and pull the defective lamp and connector out of the socket.

CAUTION

When installing a new lamp, do not touch the glass portion. If the glass has been touched, shortened lamp life will result. If the glass end has been handled, it should be carefully cleaned with a grease solvent.

- c. Replace the defective lamp with a new H-1 halogen lamp (Part No. 8440A265A). When reassembling, ensure that the lamp is secured to the connector and that the clip is properly seated in the grooves on the lamp socket.

3. Secondary Lamps.

To replace lamps in the secondary light positions (ten locations), proceed as follows (see figure 5):

- a. Remove the two #6 pan head screws and washers.
- b. Remove lens by pulling straight out. Remove lens gasket.
- c. Replace defective lamp with proper lamp only. Refer to Table 3, Secondary Lamp Replacement Guide.

d. Reinstall lens and gasket . Secure with two #6 screws and washers removed in step a.

4. Gen III PCB Assembly Replacement.

- a. Remove the domes.
- b. See figure 8. Disconnect the electrical connector from the PCB assembly.
- c. Gently pry the PCB assembly from the snap-top standoffs on the backplane.
- d. Remove the two heat sink retaining screws and the heat sink.
- e. Assembly is the reverse of disassembly. Prior to installation of the PCB assembly, ensure that the LED connector pins on the PCB are not bent or damaged.

5. Gen III LED Module Replacement.

- a. Remove the domes.
- b. See figure 8. Disconnect the electrical connector from the PCB assembly.
- c. Gently pry the PCB assembly from the snap-top standoffs on the backplane.
- d. Remove the device from the light bar.
- e. See figure 9. Remove and discard the Rivscrews retaining the LED module to the backplane. Remove the LED module.
- f. Unlatch the Fresnel lens from the LED module.

Table 3. Secondary Lamp Replacement Guide.

FUNCTION	DESCRIPTION	Part No.
Alley Light (right and left)	50W Halogen, Sylvania #795	8107A119
End Lamps (right and left, front and rear)	35W Halogen, Sylvania #796	8548A028A
Takedown Lights (front only) SEE NOTE	50W Halogen, Sylvania #795	8107A119
Directional Strobe (front and rear)	Flash Tube Assy.	8107A127
Brake/Tail Light (rear only)	Incandescent Lamp #1157	8107A095
Gen III PC Board	PCB Assembly Red/Amber Blue	Z2005175-N Z2005175-02N
Gen III LED Module	LED Module Assy. Amber Blue Red	Z8625106-AS Z8625106-BS Z8625106-RS
Gen III Lens	Lens, Fresnel	8625101
NOTE: If the alternating flash feature is desired, the flasher supplied with the Alternating Flasher Kit is required.		

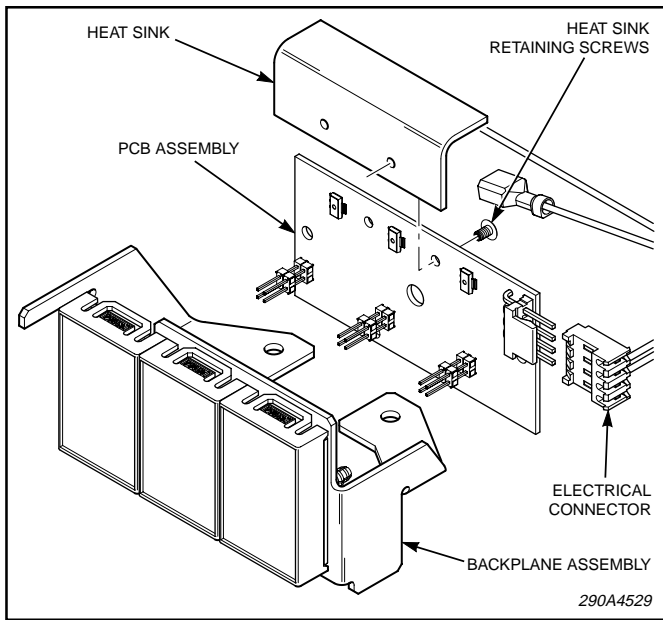


Figure 8.

g. Snap the Fresnel lens onto the new module. Make sure the rectangular recess in the lens aligns with the black connector on the new LED module.

h. Position the LED module on the backplane, aligning the black connector on the LED with the large clearance hole in the backplane. Secure the module with the 2 #6-32 screws provided.

i. Remainder is the reverse of disassembly.

6. Fresnel Lens Replacement.

Same as LED Module Replacement above, except that the Rivscrews must be retained for reuse if a new LED module is not being installed.

C. Worm Gear and Bearing.

All gears should be greased at least twice a year. Use medium consistency Dow Corning DC33 or equivalent type grease. Proceed as follows (see figure 10):

1. Remove lamp and clip from rotating light.
2. Lift-off reflector and worm gear. Lubricate with grease as shown in figure 10.
3. Replace parts by performing the above procedure in reverse order.

NOTE

When reassembling, ensure that the lamp is secured to the connector and that the clip is properly seated in the grooves on the lamp socket.

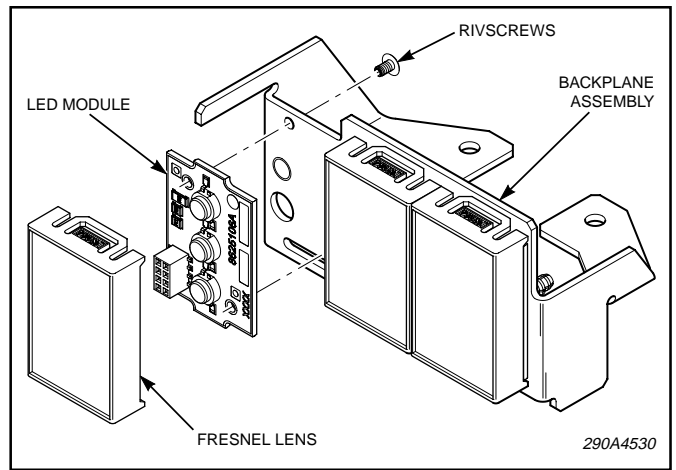


Figure 9.

D. Motor.

1. Before attempting to service the motor, ensure that the worm gear and worm are free of binding.
2. There should be a small amount of gear backlash for proper motor operation.
3. Replace motor if operation is sluggish or intermittent, after it has been determined that there is no binding and that all electrical connections are correct.

E. Service Parts Kits.

Service Parts Kits and Instructions are available for these lights. Contact your local Distributor for more information.

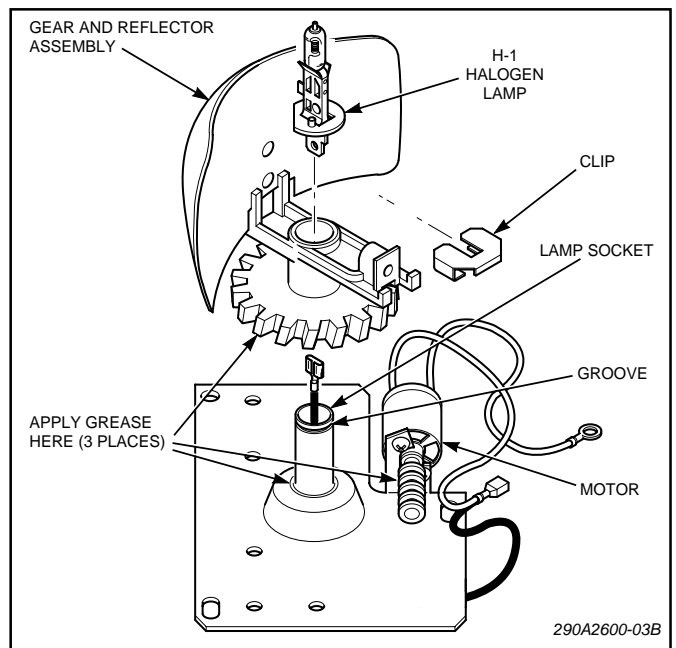


Figure 10.