

## INSTRUCTION SHEET FOR MODEL SHLCDK RETROFIT KIT

### SAFETY MESSAGE TO INSTALLERS

Peoples 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:

- This retrofit kit requires extensive modifications to the existing light bar. If improperly installed, the modified product may not function correctly causing injury or death to pedestrians and the motoring public. Failure to have this retrofit kit installed by a Federal Signal Corporation Authorized Service Center and/or Federal Signal Corporation Stocking Distributor voids all existing warranties. To locate an Authorized Stocking Distributor or Service Center, please call (708) 534-4745.
- To properly perform this modification: you must have a good understanding of automotive electrical procedures and systems, along with proficiency in the installation and use of safety warning equipment.
- 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.
- 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 the product.

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

### A. GENERAL.

The Model SHLCDK is a retrofit kit designed to allow you to convert a Federal StreetHawk® to an All Light StreetHawk lightbar.

After unpacking the Model SHLCDK, carefully check all envelopes, shipping labels, and tags before removing or destroying them. Ensure that the parts listed in the KIT CONTENTS LIST are contained in the packing carton.

### NOTE

In the event questions concerning this installation arise, please call our Service Department at 1-800-433-9132 (In Illinois: 708-534-3400).

### B. KIT CONTENTS LIST.

Qty.	Description	Part No.
1	Wire, Terminated, Brown	T300A218-01-0044
1	Wire, Terminated, Violet	T300A218-07-0012
1	Wire, Terminated, Wht/Red	T300A218-22-0025
1	Wire, Terminated, Wht/Yel	T300A218-24-0029
1	Wire, Terminated, Wht/Blue	T300A218-26-0029
1	Wire, Terminated, Wht/Red/Blue	T300A218-67-0004
5	Wire Tie	150A109
2	Terminal, Female Insulated	224A216-01
7	Terminal, Male Insulated	224A217-01
5	Terminal Tab	233A181
5	Terminal Tab	233A184
4	Scr., #10 Hex. Hd.	7000A302-14
5	Scr., Pan Hd.	7011A030-06
6	Scr., #10 x 3/4" Hex. Hd.	7011A122-12
14	Scr., #10 x 1/2" Hex. Hd.	7011A122-08
4	Ground Spacer	8559A000
1	Center Base	8559181
1	Base Plate	8559191
2	Gasket, Center Base	8559221
1	Center Dome	8559182A-G
1	Bracket, Channel	8559D040
2	Bracket, Channel, Extension	8559D041
5	Ext. Tooth Lockwasher	7075A026
1	Gasket, Bulkhead (Dome)	8559A091

### C. INSTALLATION.

### NOTE

To aid installation, an exploded view of the installed retrofit kit is shown in figure 8.

1. Completely disconnect all ground (-) leads at the vehicle battery.

2. See figure 1. Remove the three #10 hex head screws from the rear of the upper grill. Remove the upper grill.

3. See figure 1. Remove the eight #8-32 x 7/8" hex head dome screws (four per dome).

4. Carefully remove the domes. Ensure that the bulkhead gasket remains tucked in its groove.

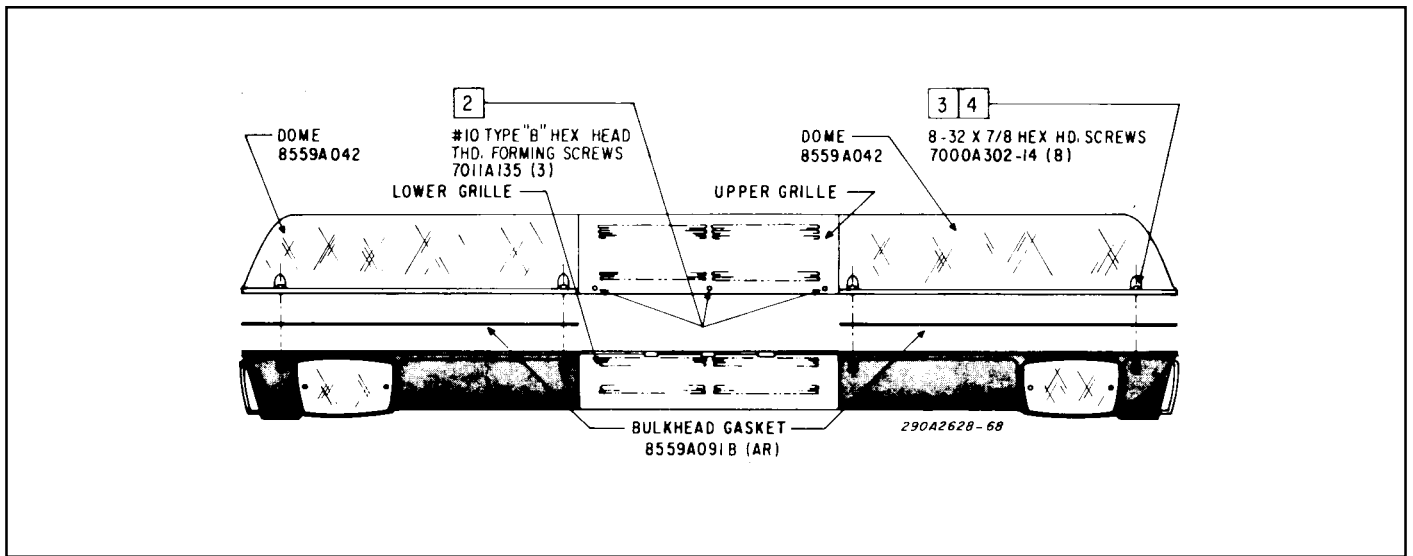


Figure 1.

5. To ease reassembly, note and record the incoming cable wires' positions on the molded-in terminal strip in the housing on the passenger side of the lightbar. Disconnect the incoming cable wires, including the ground wire. Note that the incoming cable's ground wire will be relocated in a later step. Loosen the incoming cable clamp and remove the incoming cable.

If desired, although NOT recommended, the cable can be removed from the vehicle.

**NOTE**

Although it is possible to install this retrofit kit with the lightbar installed on the vehicle, Federal recommends that the kit be installed with the lightbar REMOVED from the vehicle.

6. Remove and retain the mounting bolts from mounting brackets. Remove the lightbar from the vehicle.

7. Remove and retain the mounting kit parts from the lightbar.

8. If the lightbar is equipped with a speaker, remove the speaker and brackets from the lightbar. The converted lightbar has no provisions for a lightbar-mounted speaker. It will be necessary to relocate the speaker or purchase a bumper-mounted speaker.

9. See figure 2. Remove the driver side and passenger side diagonal mirrors from the base (5/16 hex hd). To ease reassembly, note and record their position.

10. See figure 2. Remove the rotators' ground screws. To ease reassembly, note the locations. The inboard rotators' grounds will be relocated in a later step.

11. Cut the wire ties from the lightbar wiring harness. Remove, as much as possible, the silicone sealant from around the lightbar's wiring harness.

12. To ease reassembly, note and record the lightbar wiring harness wires' positions on the molded-in terminal strip in the housing on the driver side of the lightbar. Disconnect the wires from driver side molded-in terminal strip and secondary lights.

13. Cut the terminals off the end of the driver side lightbar wiring harness wires. Note and record the terminal type on the end of each wire (female insulated, female uninsulated, or male insulated).

14. Remove the silicone sealant around the lightbar wiring harness where it enters the driver side and passenger side bases. See figure 2. Carefully pull the lightbar wiring harness and brown zip-cord (speaker wire) toward the passenger side through the hole in the driver side base. Remove and discard the brown zip-cord speaker wire. Pull the wiring harness through the hole in the passenger side base.

15. See figure 2. Remove the #10 thread-forming screws that secure the rotators to the metal channels.

**NOTE**

It is not necessary to remove the screws which secure the rotators to the plastic bases.

16. See figure 2. Remove the #10 thread-forming screws that secure the plastic bases and lower grill to the metal channels.

17. Remove the bases. Discard the old metal channels and attached lower speaker grill.

18. Assemble the metal channels as shown in figure 3A. Install four #10 x 1/2" thread-forming screws (2 per side) at the locations shown. Do not tighten the screws at this time.

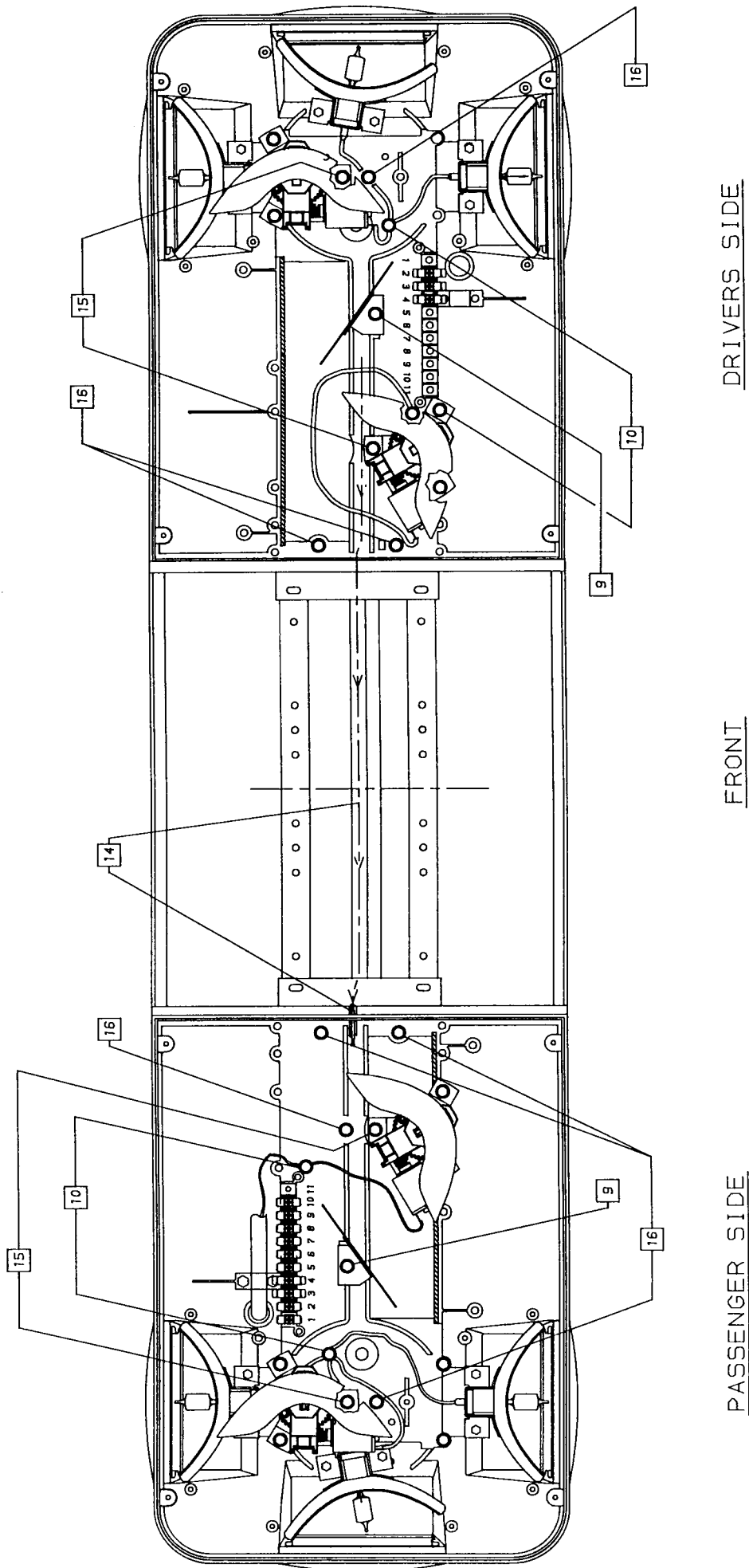


Figure 2.

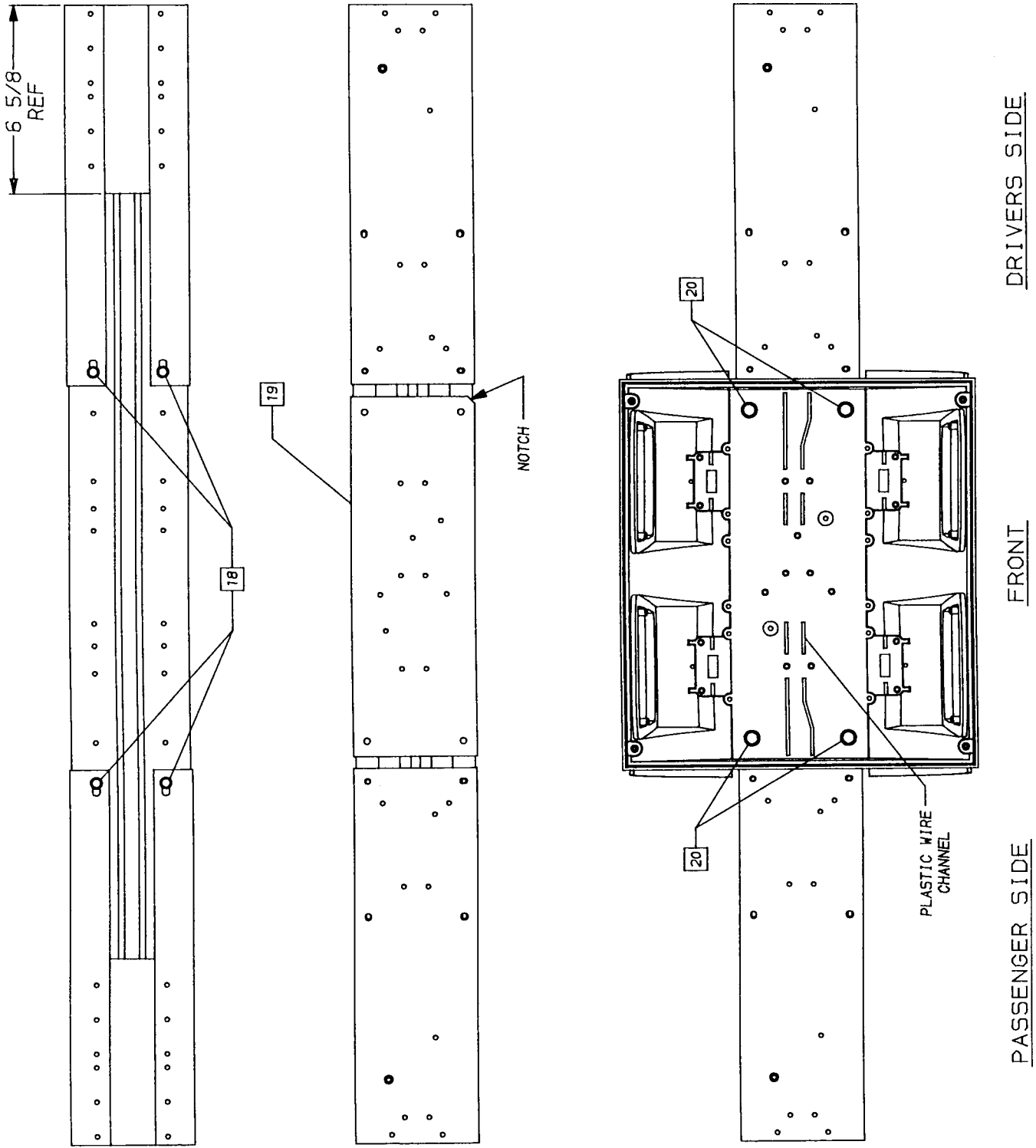


Figure 3.

19. See figure 3B. Place the center base plate in position on the top center of the metal channel with the notch facing the front driver side of the lightbar.

20. See figure 3C. Place the center base with the wire channel positioned as shown over the base plate/metal channel assembly. Ensure that all holes in plastic base and base plate are properly aligned. Secure the center base in position using four #10 x 3/4" thread-forming screws.

21. See figure 4. Remove the backing from one of the center base gaskets. Align the hole in the gasket with the hole in the center base and press into place. Install the other center base gasket on the other side of the center base.

22. Remove all old silicone sealant from the end of the driver and passenger side bases. Bases may not fit properly on the new metal channel if any old sealant remains on the bases.

23. See figure 5. Place the driver and passenger side bases in position on the channel assembly. Secure the bases in position using the previously removed #10 screws. Allow approximately 1/16" between the center base and the driver/passenger side bases. If adjustment is required, loosen the #10 screws on the bottom of the channel extensions and slide each channel extension as needed. Tighten the screws on the bottom of the channel extensions just enough to keep them from sliding.

24. See figure 5. Route the unterminated end of the existing internal wiring harness (5 wires) through the holes in the bases into the driver side base.

25. See figure 5. Route the unterminated end of the supplied new wires (6 wires) through the hole in the passenger side base and into the center base.

26. See figure 5. Connect the driver and passenger side inboard rotators' ground wires to the metal channel at each rotator's leg using #10 thread-forming screws and external tooth lockwashers. Each external tooth lockwasher should be installed between the rotator's leg and the ground terminal. Torque the #10 thread-forming screws to 30 - 55 in-lbs.

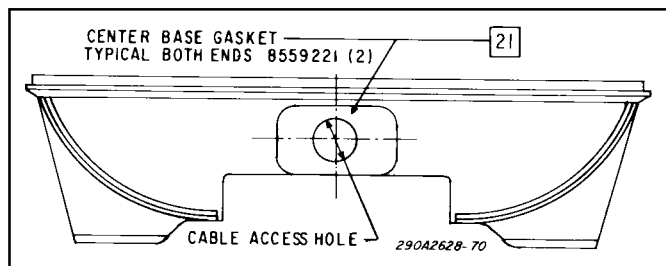


Figure 4.

See figure 5. Connect the driver side outboard rotator and secondary ground wires to the metal channel using a ground spacer, external tooth lockwasher, and #10 x 3/4" thread-forming screw. Install the external tooth lockwasher between the ground terminal and ground spacer. Torque the #10 thread-forming screw to 30 - 55 in-lbs.

27. Strip approximately 1/4" of insulation from the ends of the five internal wiring harness wires. Crimp the supplied terminals on the wire ends as specified in chart 1.

28. Reconnect the red wire to terminal 4 of the molded-in driver side terminal strip. Using figures 6, 7 and your notes as a guide, connect the wires listed in chart 1 to the appropriate terminals of the molded-in driver side terminal strip.

29. Using figure 7 and your notes as a guide, reconnect the driver side secondary lights.

30. Strip approximately 1/4" of insulation from the ends of the six new wires (white/yellow, white/red, white/blue, white/red/blue, violet, and brown) in the center base. Crimp the six male insulated terminals (Part No. 224A217-01) on the wire ends.

31. If applicable, install and connect any driver and passenger side options (rotators, flashing lights, takedowns, etc.) as described in the instructions included with the options. Torque the #10 thread-forming screws to 30 - 55 in-lbs.

32. See figure 5. Dress driver side wires neatly in the plastic channel. Reinstall the driver side diagonal mirror. Ensure that wires are not pinched between the mirror bracket and the plastic channel. Torque the #10 thread-forming screw to 20 - 30 in-lbs.

### CAUTION

Interference with a rotating reflector can damage the reflector or wires. Ensure that wires are dressed to prevent any interference.

33. Dress the wires using the supplied wire ties. Cut excess wire tie flush to create a neat appearance.

Wire Color	Terminal Type	Part Number
Red	Female Uninsulated	224A221-01
Gray	Female Insulated	224A216-01
Blue	Male Insulated	224A217-01
Orange	Male Insulated	224A217-01
Yellow	Male Insulated	224A217-01

Chart 1.

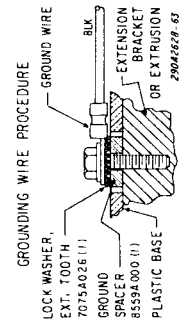
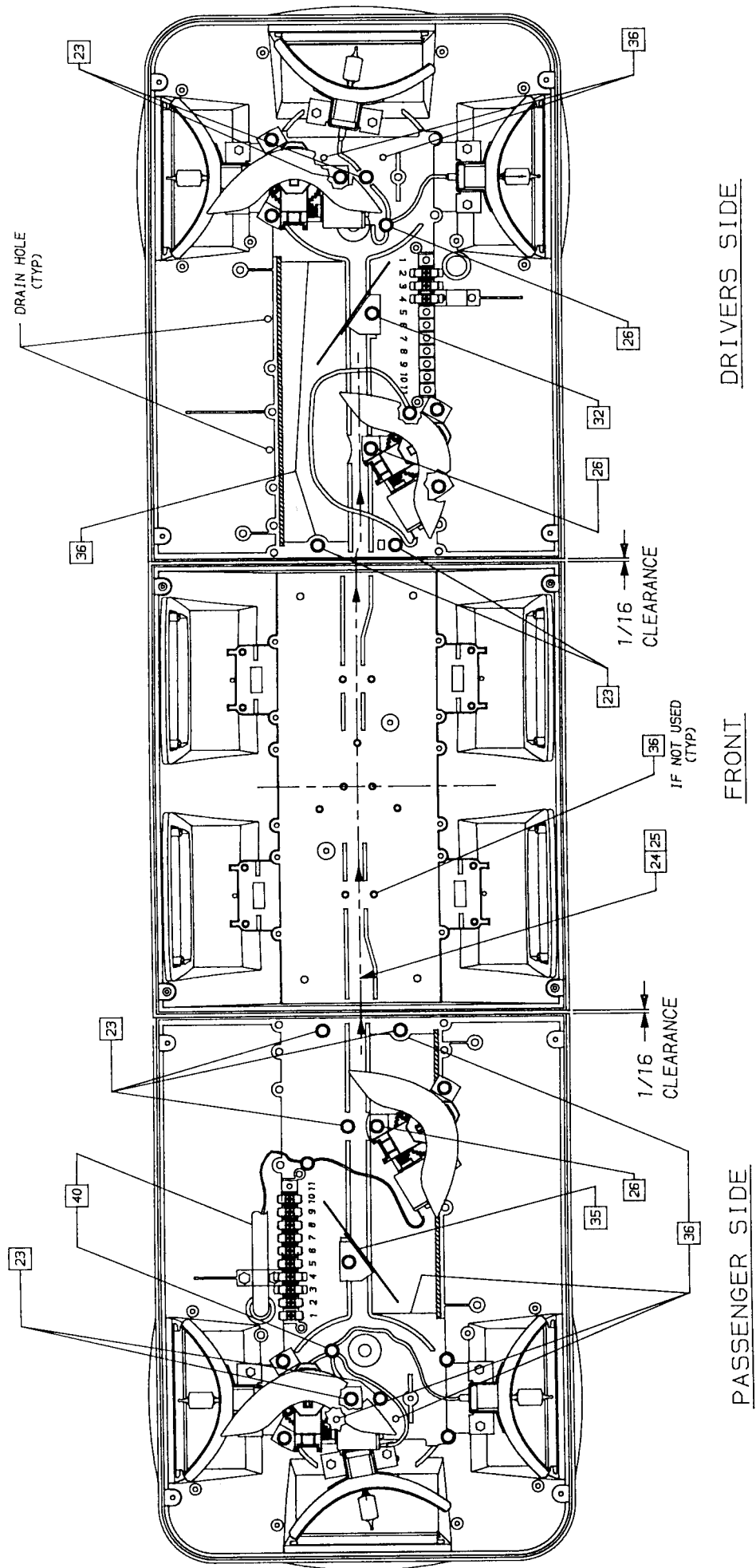


Figure 5.

**WARNING**

Added lighting options may cause excessive current draw. Before proceeding with installation, ensure that conductors are not overloaded. Using the current requirements shown in table 1, calculate the total current requirement with the currently installed options. The total current requirement must not exceed 50-amperes.

34. Install center section options (rotators, oscillators, DynaRays, takedowns, flashers, etc.) as described in the instructions included with the options. Using figure 7 and the instructions included with the options as a guide, connect the option wires. Torque the #10 thread-forming screws to 30 - 55 in-lbs.

35. Dress center wires neatly in the plastic channel and wire tie as required. Allow sufficient clearance between moving parts and wires.

See figure 5. Dress passenger side wires neatly in the plastic channel. Reinstall the passenger side diagonal mirror. Ensure that wires are not

pinched between the mirror bracket and the plastic channel. Torque the #10 thread-forming screw to 20 - 30 in-lbs.

36. Before proceeding, test the operation of all lights to ensure proper operation. Use a test jumper wire to connect the lightbar to vehicle ground. Use another test jumper wire connected to +12VDC and touch it to the appropriate passenger side terminal strip position. See figure 6. Ensure that all moving parts are free to move without obstruction.

Using a silicone sealant, seal openings where water may leak into the lightbar. However, DO NOT seal the DRAIN HOLES in the bottom of the bases. See figure 5.

37. Install the driver and passenger domes and check for proper fit. See figure 9.

38. Install the gasket in the center dome. Ensure that the gasket is seated in the bottom of the dome groove. If the gasket is kinked, the dome will not fit correctly on the base.

**NOTE**

A spline roller tool, purchased at a local hardware store, is recommended for installing the dome gasket in the dome groove.

Install the center dome and check for proper fit in relation to the driver and passenger domes. See figure 9.

39. Check the fit between the center and driver and passenger bases. The gap should be approximately 1/16" per side. Adjust, if necessary, by loosening the two #10 screws on the bottom of each channel extension and sliding the channels as required. See figures 3A, 5, and 9. Tighten the #10 screws after the domes fit properly.

40. Reinstall and secure the mounting kit parts on the lightbar as described in the instructions included with the mounting kit. Place the lightbar in position on the vehicle. Reinstall the incoming cable, if removed, and secure using the cable clamp. Torque the #10 cable clamp screws to 30 - 55 in-lbs. Using your notes and figure 6 as a guide, reconnect the incoming cable wires to the molded-in terminal strip. Using a silicone sealant, seal the area around the cable where it enters the base.

See figure 5. Connect the incoming cable's ground wire, secondary light's ground wires, and outboard rotator ground wire to the metal channel. Use a ground spacer, external tooth lockwasher, and #10 x 3/4" thread-forming screw. Install the external

<i>Option</i>	<i>Current Requirement</i>	<i>See Note</i>
Right Alley	4.0 amperes	
Left Alley	4.0 amperes	
Flashing(2)	2.74 amperes	
Take Down	4.0 amperes	
Work Light	4.0 amperes	
Dir. Strobe	10.0 amperes	A
Rotator	4.3 amperes	B
TCL	4.0 amperes	
DynaRay	4.3 amperes	
Tail Light	0.59 amperes	
Left Turn	2.10 amperes	
Right Turn	2.10 amperes	
Cal	4.3 amperes	
Ground	—	C

Notes:

A. One J-30 power supply with two directional strobes requires 5.0 amperes. Two J-30 power supply with two directional strobes requires 10.0 amperes.

B. The incoming cable's red 12AWG conductor is rated at 35 amperes. The internal wiring harness uses 18 AWG conductors rated at 13 amperes each. DO NOT overload the conductors.

C. The sum of all option's current requirements shall not exceed 50 amperes.

Table 1. Option Current Requirements.

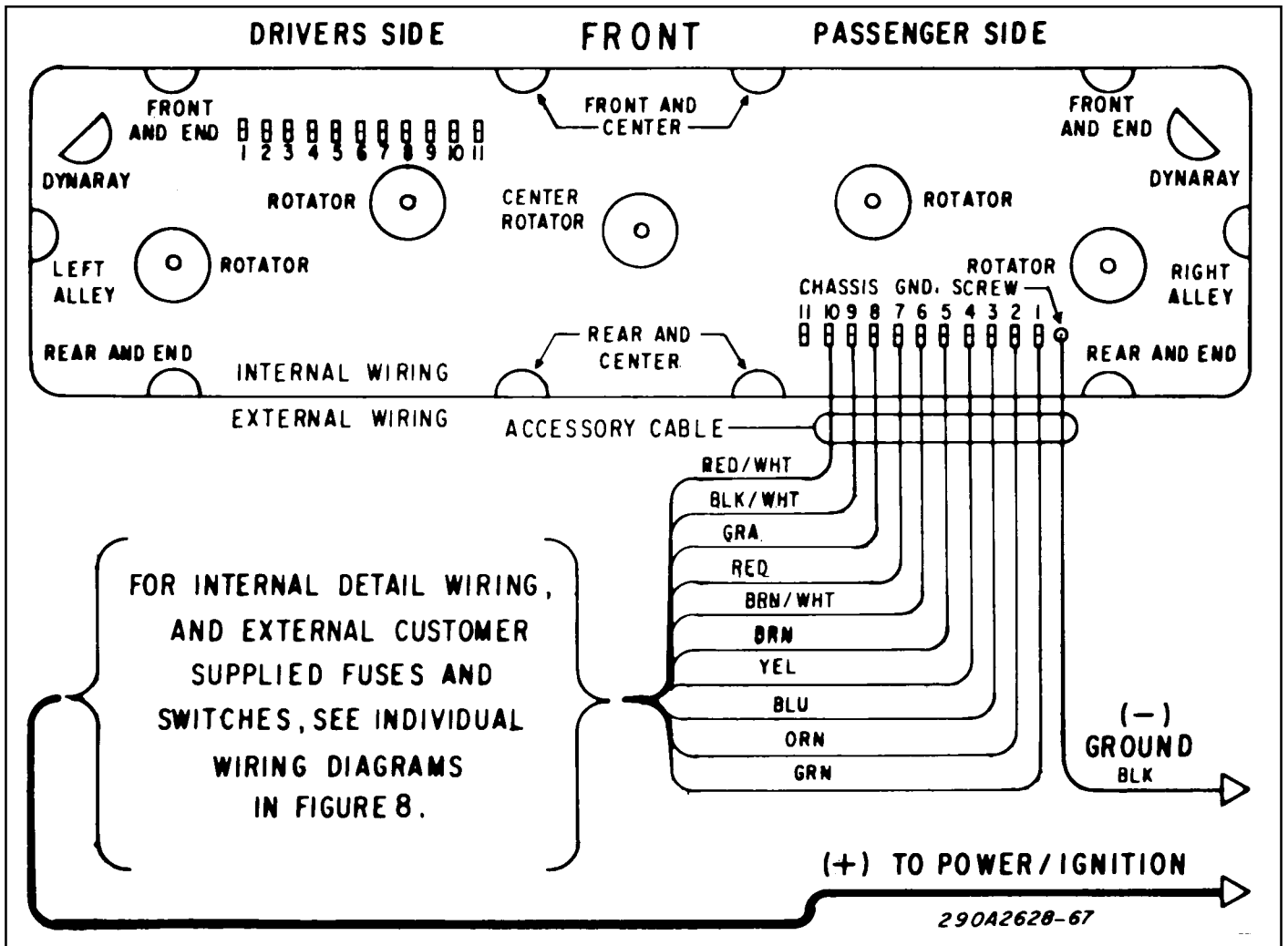


Figure 6.

tooth lockwasher between the ground terminals and ground spacer. Torque the #10 thread-forming screw to 30 - 55 in-lbs.

41. See figure 9. Install the passenger side and driver side dome screws (#8-32 x 7/8" hex head), and torque the dome screws to 14 - 18 in-lbs. Then, install and torque the center dome screws to 14 - 18 in-lbs.

42. Secure the lightbar in position as described in the mounting kit instructions.

**D. CHECK AFTER INSTALLATION.**

**WARNING**

To prevent personal injury and/or damage to vehicle components, in the event of a short-circuit in the power cable, ensure that a fuse is installed in each incoming cable conductor. Use figures 6, 7, and table 2 to determine the proper fuse for each conductor.

1. Check all screws for proper torque specification as follows:

- a. Base, ground, and terminal tab screws should be torqued to 30 - 55 in-lbs.
- b. Diagonal mirror screws should be torqued to 20 - 30 in-lbs.
- c. Secondary lens screws should be torqued to 10 - 15 in-lbs.
- d. Dome screws should be torqued to 14 - 18 in-lbs.

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
RED/WHT	Right Turn Signal, Flashing
BLK	Ground (-)

Table 2. Electrical Connections.



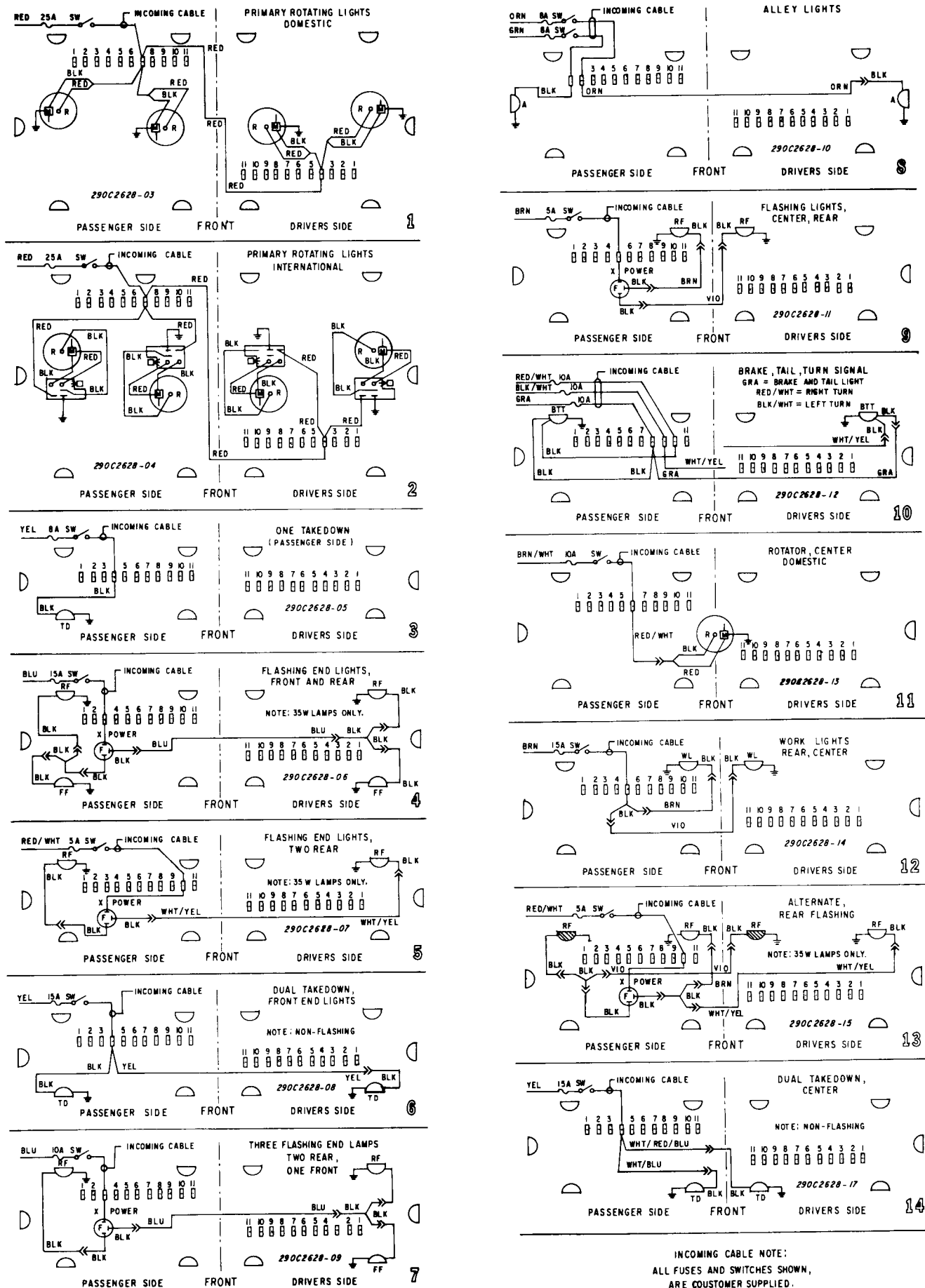


Figure 7.

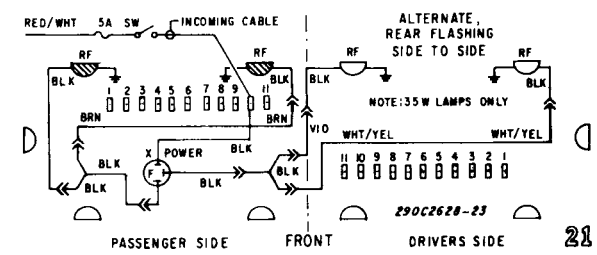
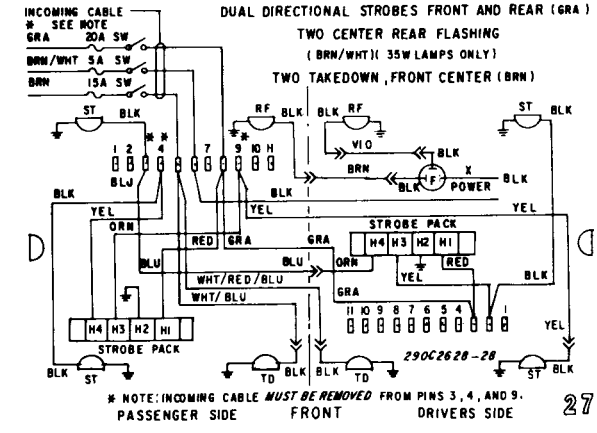
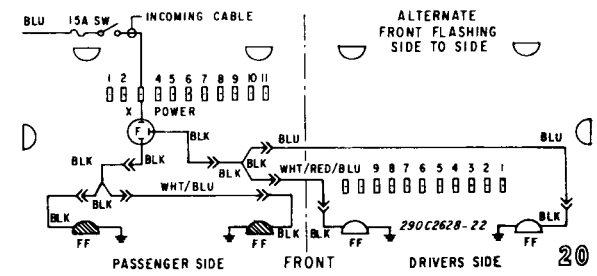
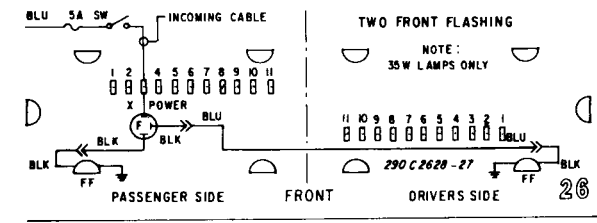
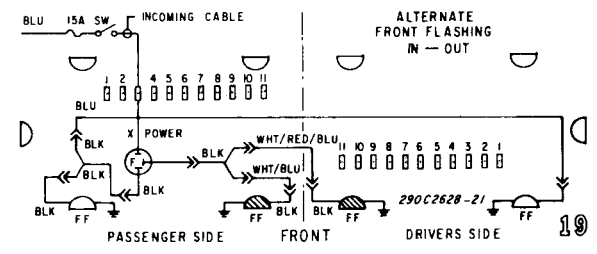
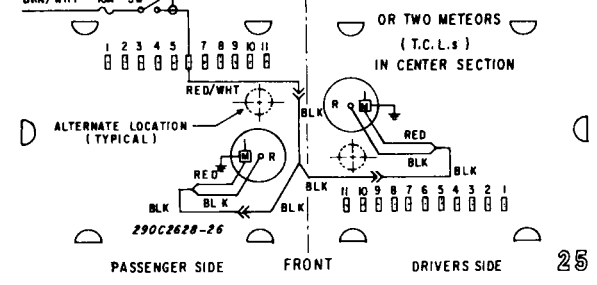
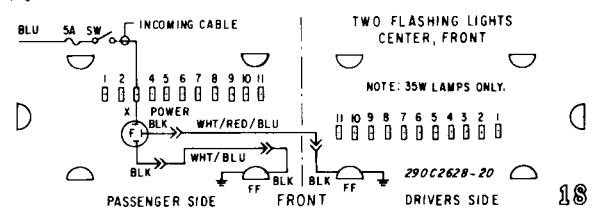
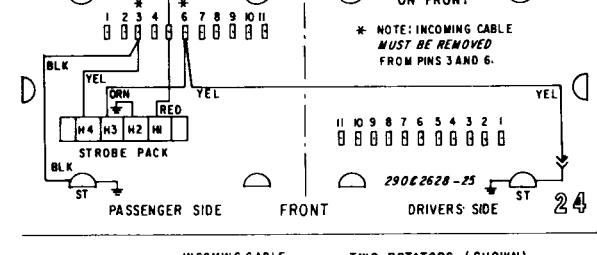
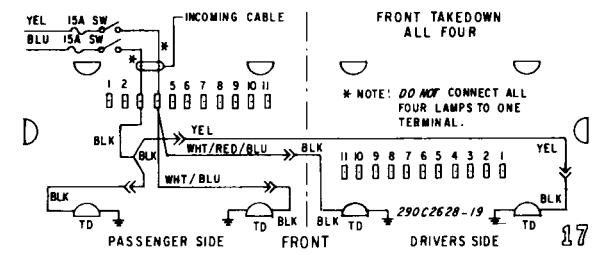
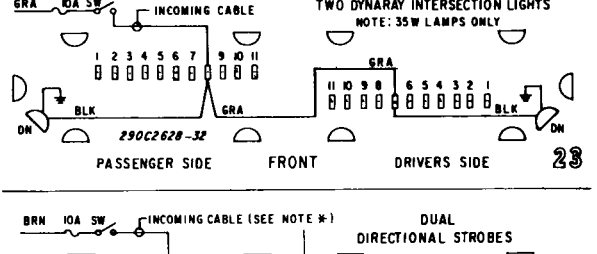
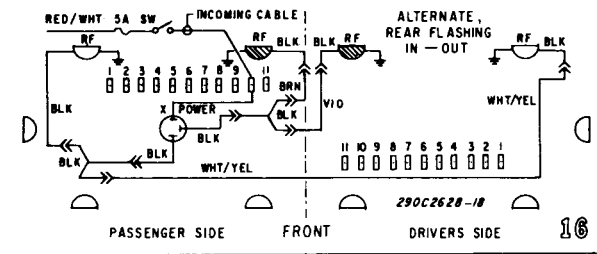
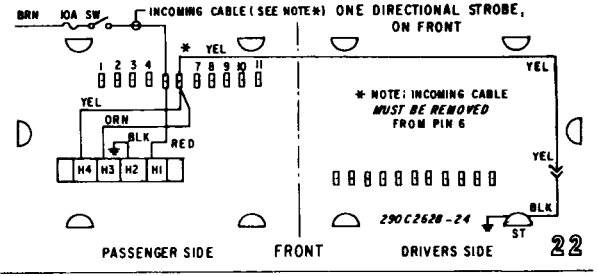
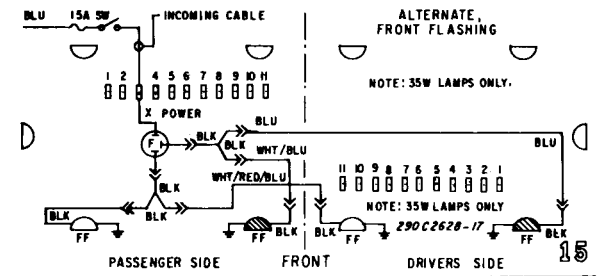
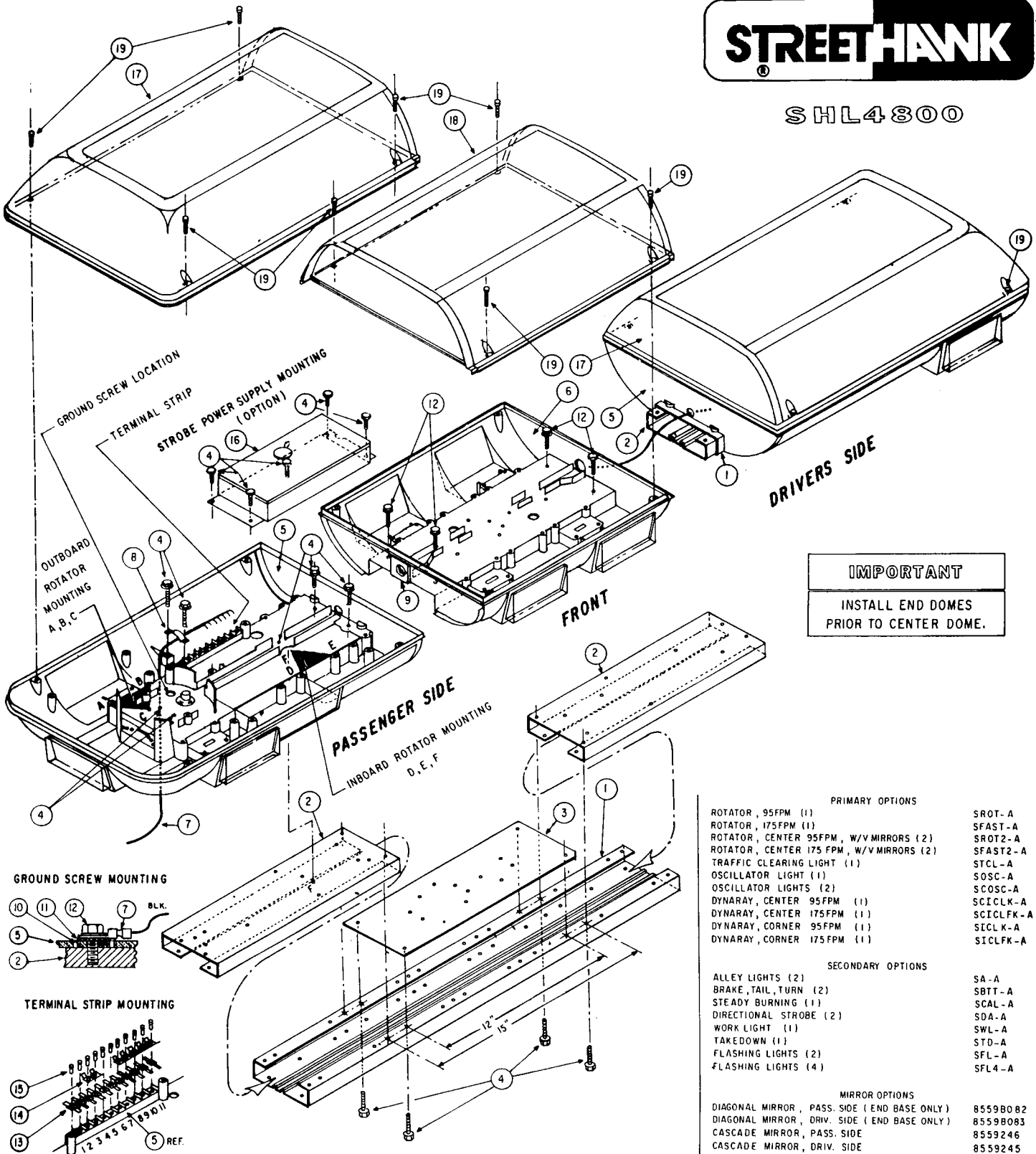


Figure 7 (cont.).



- PRIMARY OPTIONS**
- ROTATOR, 95FPM (1)
  - ROTATOR, 175FPM (1)
  - ROTATOR, CENTER 95FPM, W/V MIRRORS (2)
  - ROTATOR, CENTER 175 FPM, W/V MIRRORS (2)
  - TRAFFIC CLEARING LIGHT (1)
  - OSCILLATOR LIGHT (1)
  - OSCILLATOR LIGHTS (2)
  - DYNARAY, CENTER 95FPM (1)
  - DYNARAY, CENTER 175FPM (1)
  - DYNARAY, CORNER 95FPM (1)
  - DYNARAY, CORNER 175 FPM (1)
- SECONDARY OPTIONS**
- ALLEY LIGHTS (2)
  - BRAKE, TAIL, TURN (2)
  - STEADY BURNING (1)
  - DIRECTIONAL STROBE (2)
  - WORK LIGHT (1)
  - TAKEDOWN (1)
  - FLASHING LIGHTS (2)
  - FLASHING LIGHTS (4)
- MIRROR OPTIONS**
- DIAGONAL MIRROR, PASS. SIDE (END BASE ONLY)
  - DIAGONAL MIRROR, DRIV. SIDE (END BASE ONLY)
  - CASCADE MIRROR, PASS. SIDE
  - CASCADE MIRROR, DRIV. SIDE
  - V MIRROR
- OPTIONAL PARTS**
- SR0T-A
  - SFAST-A
  - SROT2-A
  - SFAST2-A
  - STCL-A
  - SOSC-A
  - SCOSC-A
  - SCICLK-A
  - SCICLFK-A
  - SICLK-A
  - SICLFK-A
  - SA-A
  - SBTT-A
  - SCAL-A
  - SDA-A
  - SWL-A
  - STD-A
  - SFL-A
  - SFL4-A
  - 8559B082
  - 8559B083
  - 8559246
  - 8559245
  - 8559C125

290C2628-71

NO.	DESCRIPTION	PART NUMBER	QTY.
1	BRACKET, CHANNEL	8559D040	1
2	BRACKET, CHANNEL EXTENSION	8559D041C	2
3	PLATE, BASE CENTER	8559191A	1
4	SCREW, #10 X 1/2 TYPE B THD. FRM., HEX WSH. HD.	7011A122-08	14
5	BASE	8559D038C	2
6	BASE, CENTER	8559181A	1
7	CABLE, INCOMING, 15 FEET LG.	175773	1
8	CLAMP, CABLE	8559A001	1
9	GASKET, CENTER BASE	8559221A	2
10	SPACER, BRASS	8559A000	1
11	LOCKWASHER, #10 EXT. TOOTH	7075A026	1

NO.	DESCRIPTION	PART NUMBER	QTY.
12	SCREW, #10 X 3/4 TYPE B, THD. FRM. HEX. WSH. HD.	7011A122-12	6
13	TERMINAL, TAB 250 (FLAT)	233A181	14
14	TERMINAL, TAB 250 X 45°	233A184	7
15	SCREW, #8 TYPE B THD. FRM., PHL. PAN HD.	7011A030-06	14
16	POWER SUPPLY, J30 (STROBE OPTION)	8559C100	AR
17	DOME, CLEAR	8559D042C	2
18	DOME, CENTER CLEAR	8559182A	1
19	SCREW, MACHINE 8-32 X 7/8 SLT. IND. HEX HD.	7000A302-14	12

NOTE: FOR COMPLETE PARTS LIST SEE SERVICE PARTS INDEX SHL4800 PAGES I-58A & I-58B

Figure 8.  
-11-

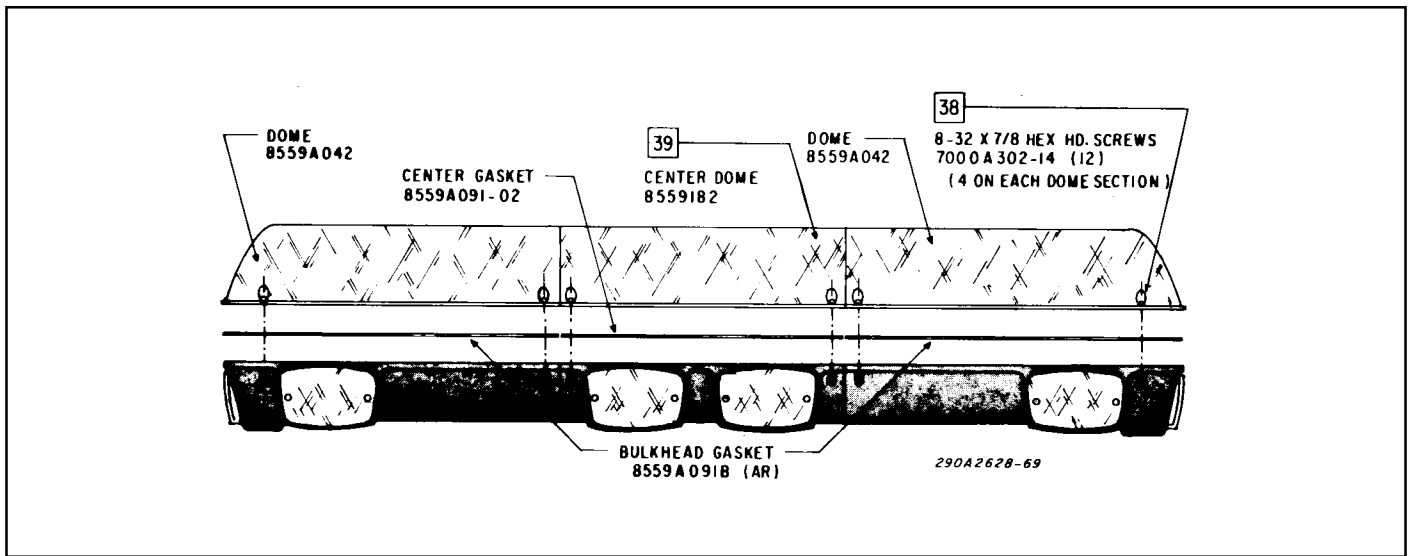


Figure 9.

**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 functional check.

2. Check all lighting functions for proper operation. Ensure that the proper fuses are installed in each circuit as shown in figure 7.
3. Ensure that all rotators are free and clear of obstructions.
4. Ensure that wires are not touching any lamp.
5. All drain holes should be free and clear to promote proper drainage of moisture accumulation.
6. Ensure that all openings that could allow water to enter the lightbar are sealed. However, NEVER seal the drain holes in the bottom of the bases.

**E. MAINTENANCE.**

1. *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, one-step, automotive paste cleaner/wax and a soft cloth.

**CAUTION**

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 purposes may be reduced until domes are replaced.

2. *Service Parts Kits.*

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