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FEDERAL SIGNAL CORPORATION
Emergency Products

INSTRUCTION SHEET
FOR
ULTRASTAR® PREMIUM STROBE BEACON

SAFETY MESSAGE TO INSTALLERS

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 this warning 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.
- DO NOT install equipment or route wiring or cord in the deployment path of an air bag.
- You should frequently inspect the light to ensure that it is operating properly and securely attached.

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

A. GENERAL.

The UltraStar Premium is the top-of-the-line, quadruple-flash, 20 Joule strobe beacon. It is supplied with a colored dust cover which protects the clear inner Fresnel lens. Models are available with permanent/pipe or magnetic mounting. The light can operate on a 12 or 24-volt power source. An optional branch guard is available.

This strobe beacon utilizes an internal light sensor to automatically switch the light output (high or low) depending on the ambient light. The lowered light output reduces the glare and current drain.

If desired, a manual override switch can be installed to "force" the strobe to operate at high output or low output .

NOTE

For proper operation of the automatic light sensor, the top of the unit must not be shielded from the ambient light by any objects.

B. UNPACKING.

After unpacking the unit, 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. Ensure that the parts listed in the KIT CONTENTS LIST are in the package.

C. KIT CONTENTS LIST (PERMANENT/PIPE MOUNT MODELS).

Qty.	Description	Part Number
3	Screw, Pan Head, Phillips, S. S.	7011182A-12
1	Gasket, Mounting, Flat	8444294A
1	Fuseholder	143A120
1	Fuse, 5A	148A113
1	Q-C terminal, 0.187	224A218-01L
1	Template, Mounting	2561258

D. SPECIFICATIONS.

Input Voltage	
	11Vdc to 28Vdc.
Nominal	12.8 or 25.6Vdc.
Input Current (nominal)	
Day Level	2.45 amperes @ 12.8Vdc.
	1.22 amperes @ 25.6Vdc.
Night Level	1.55 amperes @ 12.8Vdc.
	0.77 amperes @ 25.6Vdc.
Flash Energy (nominal) per quadruple flash	Day Level - 20.6 joules. Night Level - 12.8 joules.
Flash Rate (nominal)	75 quadruple flashes per minute.
Flash Power (nominal)	Day Level - 25.8 watts. Night Level - 16.0 watts.
Dimensions:	
Height	7.1 in. (18.0cm).
Diameter	6.5 in. (16.5cm).
Weight (magnetic mount)	
Net	3.55 lbs. (1.61kg).
Shipping	4.4 lbs. (2.0kg).
Weight (permanent mount)	
Net	2.80 lbs. (1.27kg).
Shipping	3.7 lbs. (1.68kg).

E. INSTALLATION

WARNING

High voltages generated by light's power supply may cause property damage, serious injury or death to you or others. Ensure that power to light is disconnected and wait at least 5 minutes before working on the light.

1. *Permanent Mount.*

a. Using the supplied template, scribe the location of the three base mounting holes and the bushing and lead wire clearance hole.

CAUTION

To avoid damage when drilling, ensure that both sides of mounting surface are clear of any parts or wires.

b. Drill one 0.375" (10 mm) hole at the previously scribed position of the bushing and lead wire clearance hole. Drill three 0.147" (#26 drill) (3.8 mm) holes at the previously scribed base mounting holes positions. Remove all burrs and sharp edges from the holes.

c. Align the gasket over the four previously drilled holes. Route the red and black wires through the gasket and wiring routing hole as shown in figure 1.

d. Secure the base to the mounting surface with the #10 pan head phillips thread-forming screws (see figure 1).

CAUTION

To avoid damage to the light, ensure that the input voltage is the same as the voltage rating of the light. Ensure that correct polarity is observed. Also, ensure that unit is properly fused.

e. Connect one terminal of a user-supplied switch (current capacity of at least 5- amperes) to the red (+) wire of the light. Additional 18 gauge (1 mm^2) or larger wire may be added if required.

f. Using 18 gauge (1 mm^2) or larger wire, connect the remaining switch terminal to one end of the supplied fuseholder and 5-ampere slow-blow fuse.

g. Connect the other end of the fuseholder to the positive (+) terminal of the voltage source.

h. Connect the black (-) wire from the light assembly to a known good vehicle ground as close to light as practical.

2. *Pipe Mount (see figure 2).*

WARNING

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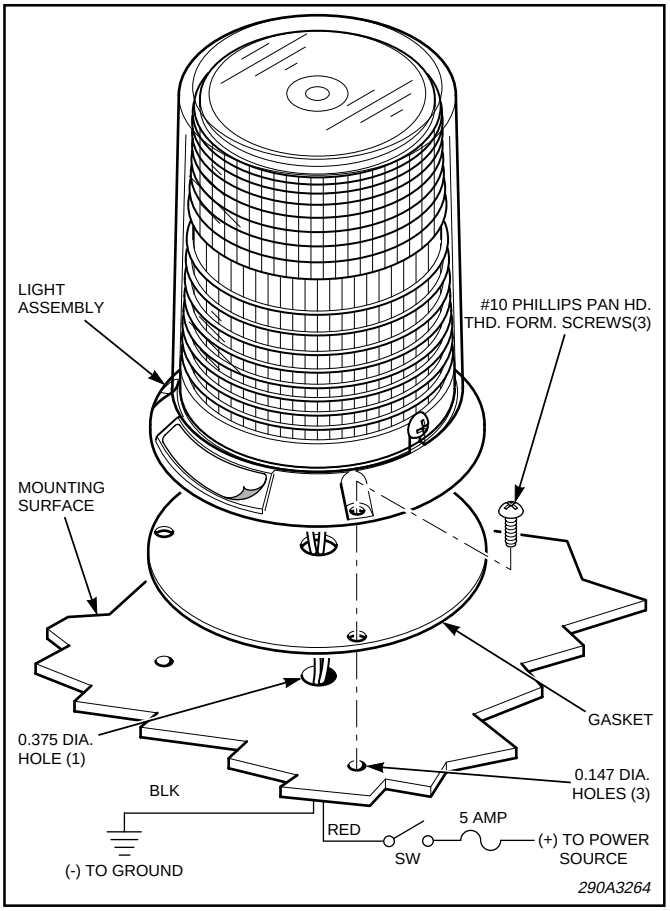

Figure 1.

CAUTION

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

a. The base is designed to be installed on the end of a threaded 1" (25.4 mm) NPT pipe.

b. Determine the length of wires needed for the installation. For lengths up to 15-feet (5m), use 18 gauge ($1mm^2$) wire; for lengths over 15-feet (5m), use 16 gauge ($1.5mm^2$) wire.

c. Strip 1/4" (5mm) of insulation from the end of appropriate length, and gauge, of red and black user-supplied wires.

d. Using user-supplied insulated butt connectors, connect the red and black wires to the light's red and black wires. Ensure that the connectors are securely crimped and properly insulated.

e. Route the wires through the pipe to the location of the user-supplied switch.

f. Screw the light assembly onto the pipe. Ensure that the wires are not pinched inside the pipe.

g. Connect one terminal of the user-supplied switch (current capacity of at least 5- amperes) to the red (+) wire of the light.

h. Using 18 gauge ($1mm^2$)or larger wire, connect the remaining switch terminal to one end of the supplied fuseholder and 5-ampere fuse.

i. Connect the other end of the fuseholder to the positive (+) terminal of the voltage source.

j. Connect the black (-) wire from the light assembly to a known good vehicle ground as close to light as practical.

3. *Magnetic Mount.*

WARNING

Because vehicle roof construction and driving conditions vary, Federal does not recommend driving a vehicle with a magnetically mounted warning light installed. The light could fly off the vehicle causing injury and damage. Repair of damage incurred because of ignoring this warning shall be the sole responsibility of the user.

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:

- Mounting surface and magnets must be kept clean, dry, and free of foreign particles that prevent good surface contact.
- Ensure that mounting surface is flat.
- To prevent sliding of light assembly on mounting surface, quick acceleration and hard stops should be avoided.
- If the light is to be held directly to the roof by the magnet, ensure that the power cable is not under the magnet.

Place the light on a level steel surface.

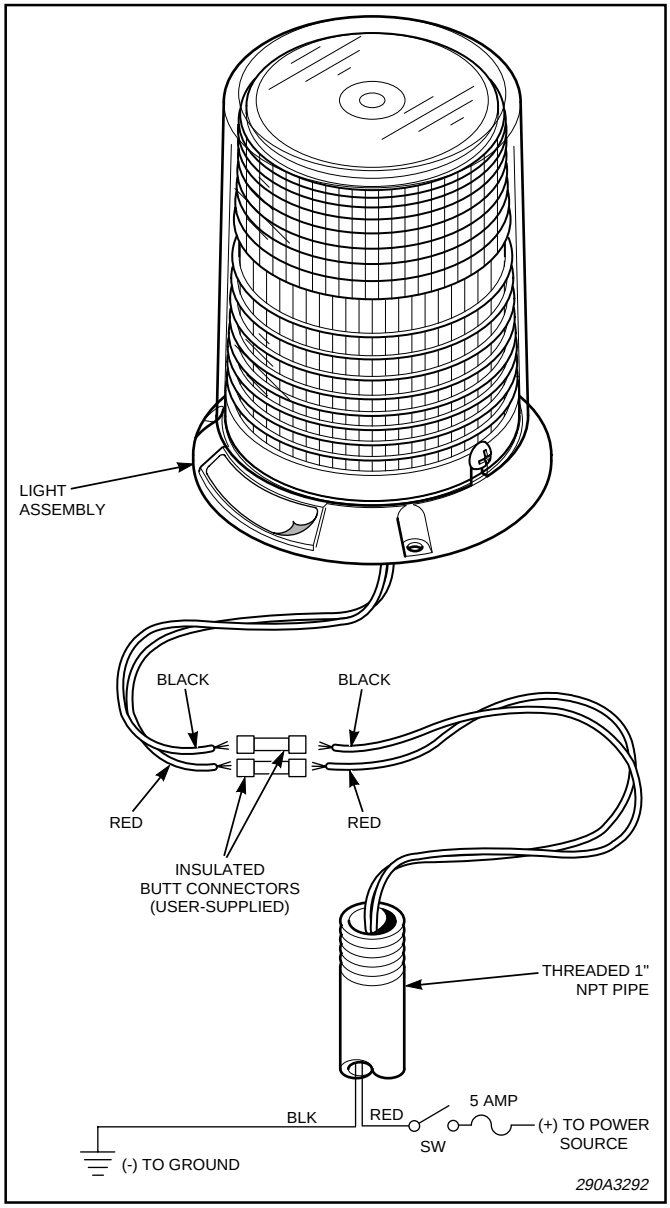

Figure 2.

4. *Manual Override Option.*

The UltraStar Premium includes an automatic sensor which adjusts the light output for day or night conditions. Additional installation is not necessary for automatic operation.

NOTE

For proper operation of the automatic sensor, ensure that the top of the dome is free of opaque objects which prevent ambient light from reaching the sensor.

Installation of the manual override requires an additional user-supplied wire, a fuseholder, and a three position SPDT switch. To install the manual override, proceed as follows:

a. Disconnect battery power. Remove and retain the two screws which secure the dome and dust cover to the base.

b. Remove and retain the dome and dust cover.

c. See figure 3. Locate the notch on the edge of the circuit board. The manual override control terminal is located under the notch. Determine the length of wire needed for the installation.

d. Terminate one end of a user-supplied 22 gauge ($1/2mm^2$) control wire with the supplied right angle quick-connect terminal.

e. Connect the terminated end of the wire to the override control terminal on the printed circuit board.

f. See figure 3. Remove and retain the three screws which secure the bracket and PC board to the base. Retain the insulator and rubber spacer. Carefully lift the PC board assembly.

g. Route the control wire through the power wires' exit hole.

h. Carefully position the PC board in the base. Ensure that the insulator is properly positioned and that the rubber spacer is pressing the transistor on the insulator. Secure the PC board and bracket with the previously removed screws.

NOTE

Ensure that the wires will not shield the top of light sensor from the ambient light. Also, ensure that wires are not pinched between the PC board and the base.

i. Inspect the gasket and replace if defective. Place the dome in position and ensure that wires are not pinched between the dome and other parts. Install the dust cover and secure the dome and dust cover in position with the previously removed screws.

j. Connect the control wire to the center (wiper) terminal of the user-supplied SPDT switch.

k. Connect one of the remaining switch terminals to a vehicle ground as close to the switch as practical.

l. Connect the remaining switch terminal to one end of a user-supplied fuseholder. Connect the other end of the fuseholder to the closest battery positive (+) connection. Install a fuse no larger than 1/2A in the fuseholder.

m. Check all connections. Reconnect battery power. Apply power to the light and check for proper operation.

NOTE

Since even the low light output level is very bright, check the light output level by observing the light reflections on nearby objects.

When the override switch is in the "off" position, the automatic sensor will select the light output level depending on the ambient light. The automatic mode can be checked by shining a flash light through the top of the dome in dim ambient light conditions, or by covering the dome top with an opaque object in daylight conditions.

When the override switch supplies ground to the control wire, the light output level remains high. When the override switch supplies battery positive to the control wire, the light output level remains low.

Label the switch positions "HIGH", "LOW", and "AUTO" after determining that the unit is operating properly.

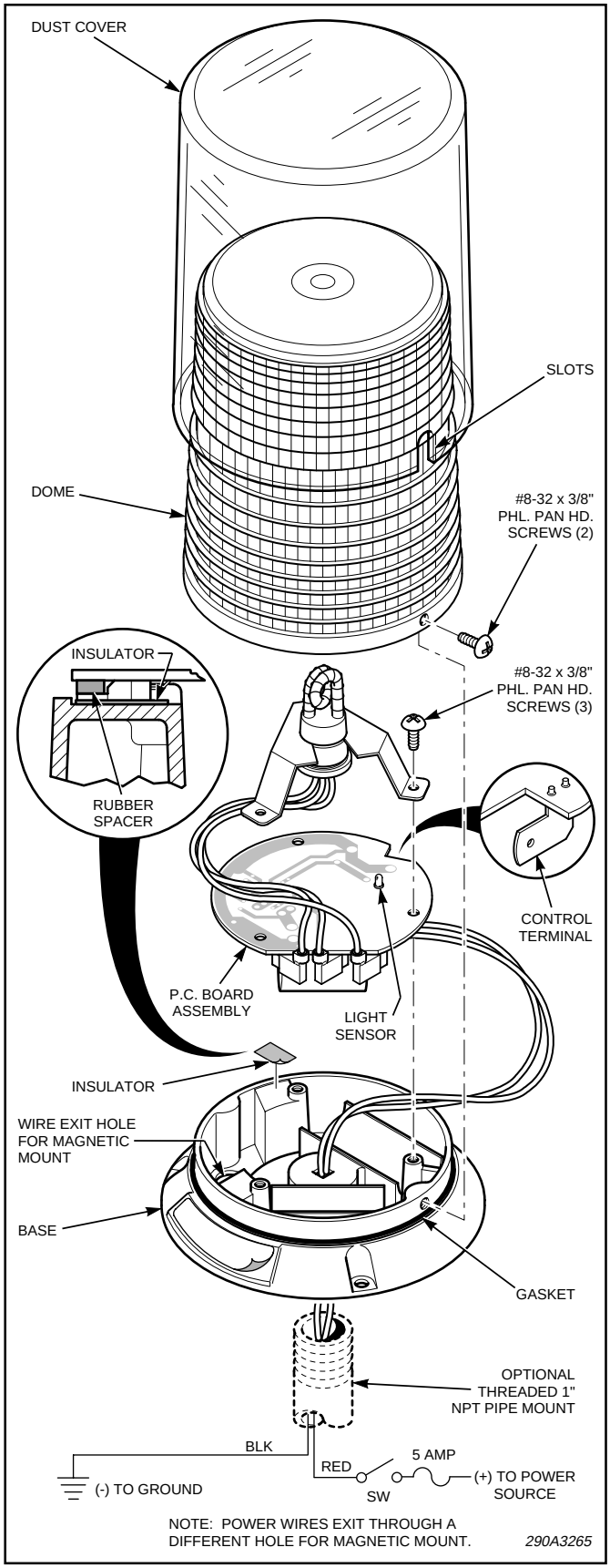

Figure 3.

F. MAINTENANCE.

WARNING

High voltage generated by light's power supply may cause property damage, serious injury or death to you or others. Ensure that power to light is disconnected and wait at least 5 minutes before working on the light.

The flash tube is the only user serviceable component. Do not attempt to repair any other component. To replace the flash tube, proceed as follows:

CAUTION

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

1. Remove and retain the two screws which secure the dust cover and the dome to the base.

2. Remove and retain the dust cover, the dome, and the gasket.

3. See figures 4 and 5. Using a long nose pliers, disconnect the strobe tube's red, white, and black wires at the edge of the PCB.

4. See figure 5. Gently push the silicone rubber base of the strobe tube down toward the PC board, and then carefully slide it out through the slot in the metal bracket.

5. See figure 5. Slide the new tube through the slot into the round center of the bracket, and then push the tube up into its position by pressing the rubber base from the bottom.

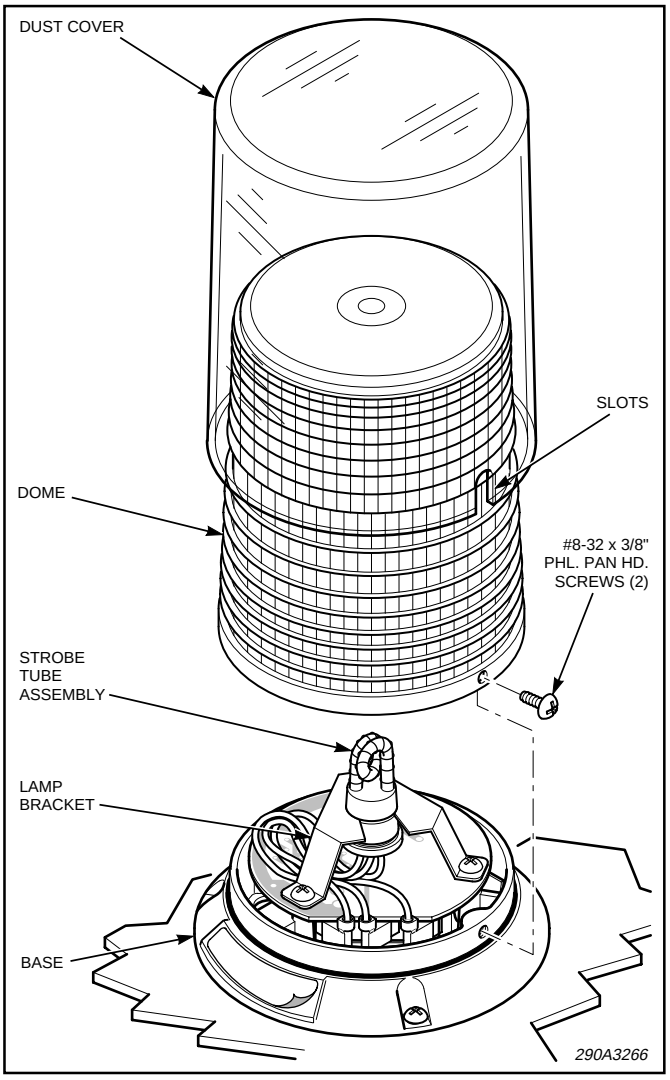

Figure 4.

6. Connect the red, white, and black wires to the appropriate terminals on the PCB. Ensure that the wires are looped to the left as shown in figure 4.

7. Inspect the gasket and replace if defective. Install the gasket; install the dome and dust cover and secure with the previously removed screws.

G. BRANCH GUARD INSTALLATION.

Refer to the instructions supplied with the branch guard.

H. REPLACEMENT PARTS.

Description	Part No.
Dust Cover, Amber	8444310-02
Dust Cover, Blue	8444310-03
Dust Cover, Red	8444310-01
Dust Cover, Clear	8444310
Dust Cover, Green	8444310-04
Kit, Accessory	8444300
Dome, Clear, Tall	8422B428
Gasket, O-ring	8444295
Cord, Straight	8444299
Strobe Tube Assembly	8444308-01
Mylar Magent Cover	439374
Magnet Assembly	8550A012-02
Branch Guard	8433061

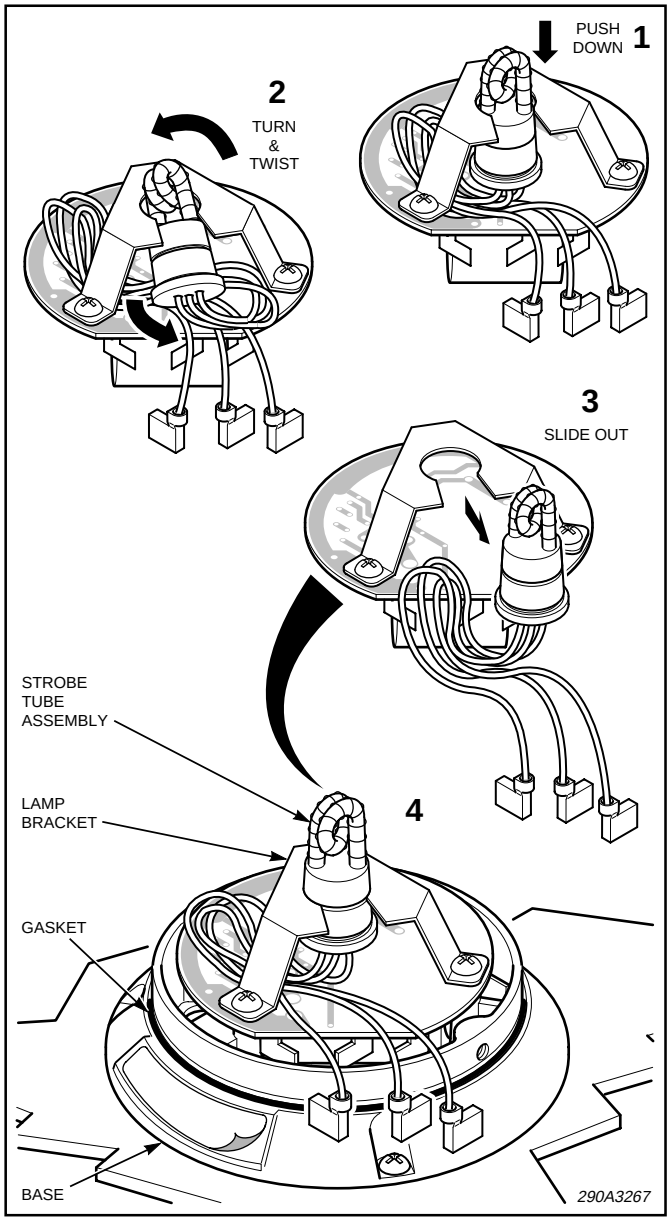

Figure 5.