FEDERAL SIGNAL
Safety and Security Systems

Model LP800
Solaris® Beacon

Installation and Maintenance Manual

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Limited Warranty

This product is subject to and covered by a limited warranty, a copy of which can be found at www.fedsig.com/SSG-Warranty. A copy of this limited warranty can also be obtained by written request to Federal Signal Corporation, 2645 Federal Signal Drive, University Park, IL 60484, email to info@fedsig.com or call +1 708-534-3400.

This limited warranty is in lieu of all other warranties, express or implied, contractual or statutory, including, but not limited to the warranty of merchantability, warranty of fitness for a particular purpose and any warranty against failure of its essential purpose.

FEDERAL SIGNAL
Safety and Security Systems

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Safety Messages for Installers and Service Personnel of Warning Light Equipment

⚠ WARNING

People's lives depend on your proper installation and servicing of Federal Signal products. It is important to read and follow all instructions shipped with this product. Listed below are some other important safety instructions and precautions you should follow:

Before Installation or Service

Qualifications

- To properly install or service this equipment, you must have a good understanding of automotive mechanical and electrical procedures and systems, along with proficiency in the installation and service of safety warning equipment. Always refer to the vehicle's service manuals when performing equipment installations on a vehicle.

Light Hazards

- To be an effective warning device, this product produces bright light that can be hazardous to your eyesight when viewed at a close range. Do not stare directly into this lighting product at a close range, or permanent damage to your eyesight may occur.
- Do not install the light system in an area that would block, impair, or blind the driver's vision. Ensure that the light system is mounted in a position that is outside the driver's field of vision, so the driver can safely operate the vehicle.
- Federal Signal power supplies and light heads are designed to work together as a system. Combining light heads and a power supply from different manufacturers may reduce the warning effectiveness of the lighting system and may damage the components. Verify or test your combination to ensure the system works together and meets federal, state and local standards or guidelines.

Electrical Hazards

- Strobe systems present a shock hazard because they use high voltage to operate. Do not handle strobe cables, the power supply, or bulbs, or remove the lens while the equipment is

connected. Strobe systems can hold their charge even after they have been turned off. After disconnecting power to the unit, wait 5 minutes before handling any parts of the strobe system.

- A light system is a high current system. For the system to function properly, make a separate negative (–) connection and positive (+) connection. Connect all negative connections to the negative battery terminal and install a suitable fuse on the positive battery terminal connection as close to the battery as possible. Ensure that all wires and fuses are rated correctly to handle the device and system amperage requirements.
- In order for the light head to function properly, make a separate ground connection. If practical, connect to the negative battery terminal. At a minimum, attach to a solid metal body or chassis part that provides an effective ground path as long as the equipment is to be used.
- Never attempt to install aftermarket equipment that connects to the vehicle wiring without reviewing a vehicle wiring diagram available from the vehicle manufacturer. Ensure that your installation will not affect vehicle operation or mandated safety functions or circuits. Always check the vehicle for proper operation after installation.
- The lighting system components, especially light bulbs, strobe tubes, LEDs, and the outer housing, get hot during operation. Disconnect power to the system and allow the system to cool down before handling any components of the system.
- Do not mount a radio antenna within 18 inches (45.7 cm) of the lighting system. Placing the antenna too close to the lighting system could cause the lighting system to malfunction or be damaged by strong radio fields. Mounting the antenna too close to the lighting system may also cause the radio noise emitted from the lighting system to interfere with the reception of the radio transmitter and reduce radio reception.
- Do not attempt to wash any unsealed electrical device while it is connected to its power source.

During Installation and Service

- DO NOT get metal shavings inside the product. Metal shavings in the product can cause the system to fail. If drilling must be done near the unit, place an ESD-approved cover over the unit. Inspect the unit after mounting to be sure there are no shavings present in or near the unit.
- DO NOT connect this system to the vehicle battery until ALL other electrical connections are made, mounting of all components is complete, and you have verified that no shorts exist. If the wiring is shorted to the vehicle body or frame, high current conductors can cause hazardous sparks, resulting in electrical fires or flying molten metal.
- DO NOT install equipment or route wiring (or the plug-in cord) in the deployment path of an airbag.
- If a vehicle seat is temporarily removed, verify with the vehicle manufacturer if the seat needs to be recalibrated for proper airbag deployment.
- Before mounting any components, check the manual to make sure that the component you are installing is suitable for use in that area of the vehicle. Many components are not suitable for use in the engine compartment or other extreme environmental exposure areas.
- Before drilling into a vehicle structure, ensure 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 wires pass. Ensure that the mounting screws do not cause electrical or mechanical damage to the vehicle.
- Refer to the manual packed with the lighting system for proper electrical connections, additional precautions and information.
- Because vehicle roof construction and driving conditions vary, do not drive a vehicle with a magnetically mounted warning light installed. The light could fly off the vehicle, causing injury or damage. Repair of damage incurred because of ignoring this warning shall be the sole responsibility of the user.

- Locate the light system controls so the VEHICLE and CONTROLS can be operated safely under all driving conditions.

After Installation or Service

- After installation, test the light system to ensure that it is operating properly.
- Test all vehicle functions, including horn operation, vehicle safety functions and vehicle light systems, to ensure proper operation. Ensure that the installation has not affected the vehicle operation or changed any vehicle safety function or circuit.
- Scratched or dull reflectors, mirrors or lenses reduces the effectiveness of the lighting system. Avoid heavy pressure and use of caustic or petroleum-based products when cleaning the lighting system. Replace any optical components that may have been scratched or crazed during system installation.
- Do not attempt to activate or deactivate the light system controls while driving in a hazardous situation.
- Frequently inspect the light system to ensure that it is operating properly and is securely attached to the vehicle.
- After installation and testing are complete, provide a copy of these instructions to instructional staff and all operating personnel.
- File these instructions in a safe place and refer to them when maintaining and/or re-installing the product.

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

Overview of the LP800 Solaris Beacon

The LP800 Solaris® Beacon is an LED light source that provides a reliable signal with 14 flashing patterns. The LP800 Solaris Beacon has two Solaris reflectors with 15 powerful LEDs. The available colors are red, amber, or blue. The light can operate on 10- to 30-volt power source.

Unpacking the Product

After unpacking the product, inspect it for damage that may have occurred in transit. If it 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.

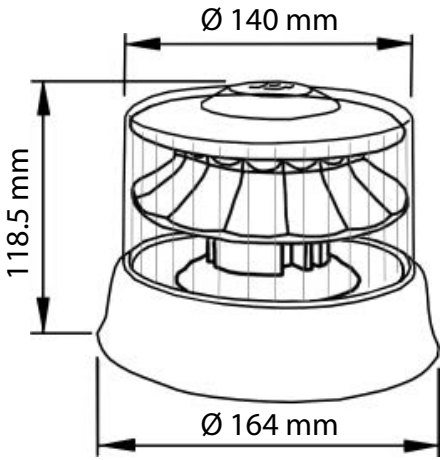
Preparing for the Installation

To prepare for the beacon installation, assemble these installer-supplied materials:

- 18 AWG (1 mm^2) wire for lengths up to 15 feet (5 m) or minimum 16 AWG (1.5 mm^2) wire for lengths greater than 15 feet (5 m)
- Fuseholder with 5 A fuse

Selecting a flash pattern is optional and should be completed during the installation. For more information, see “Selecting a Flash Pattern” on page 16.

Figure 1 LP800 Solaris



Product Specifications

Table 1 Specifications

Input Voltage	10 Vdc to 30 Vdc
Nominal	12.8 Vdc or 25.6 Vdc
Input Current, Amber (nominal)	2 A at 12.8 Vdc pulsed, 0.8 avg. 1 A at 25.6 Vdc pulsed, 0.4 avg.
Dimensions	
Height	4.67 inches (118.5 mm)
Diameter	6.45 inches (164 mm)
Weight (permanent mount/ pipe mount)	1.54 lb (0.7 kg)
Approvals	SAE J1318, J845 Class 1, J845 Class 2
Operating temperature	-20°C to 50°C (-4°F to 122°F)

Permanently Mounting the Beacon

⚠ WARNING

LIGHT HAZARD: To be an effective warning device, an emergency warning system produces bright light that can be hazardous to your eyesight when viewed at a close range. Do not stare directly into this lighting product at a close range, or permanent damage to your eyesight may occur.

To permanently mount the beacon:

1. Using the dimensions shown in Figure 7 on page 19, scribe the locations of the three mounting holes and hole for the cable.

NOTICE

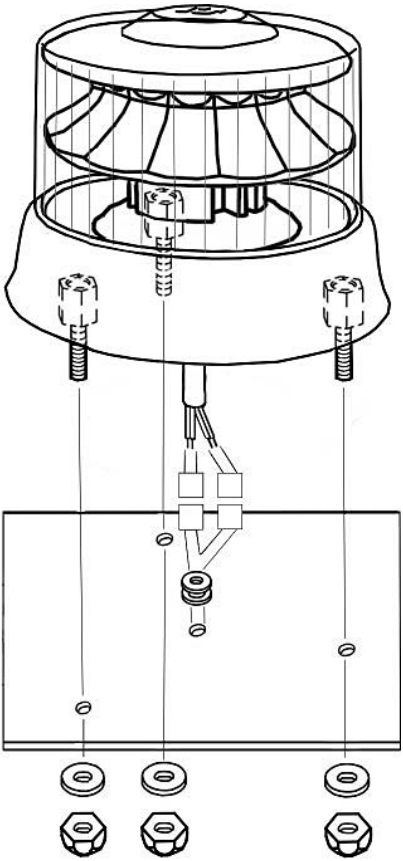
DRILLING PRECAUTIONS: When drilling holes, check the area you are drilling into to ensure that you do not damage vehicle components while drilling. All drilled holes should be deburred, and all sharp edges should be smoothed. All wire routings going through drilled holes should be protected by a grommet or convolute/split loom tubing.

2. Drill three 9/32-inch (7 mm) holes at the scribed mounting hole locations. Drill one 25/64-inch (10 mm) hole at the scribed hole for the cable.

3. Place the supplied grommet in the hole drilled for the cable, and then feed the cable through the grommet.

4. Using the supplied hardware, mount the beacon to the mounting surface.

Figure 2 Vehicle permanent mount

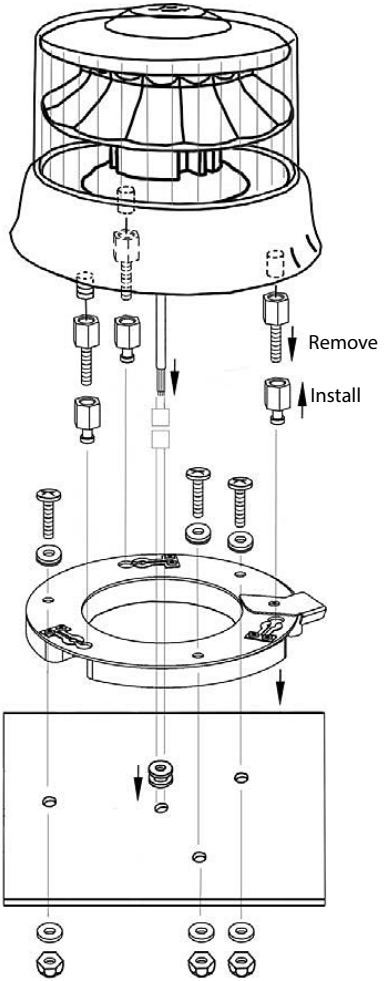


Needed material (Not supplied)

The following list the materials you need to install the light:

- Drill
- 6 mm wrench
- 9/32-inch Drill Bit (7 mm)
- 25/64-inch Drill Bit (10 mm)

Figure 3 LP800-BASE

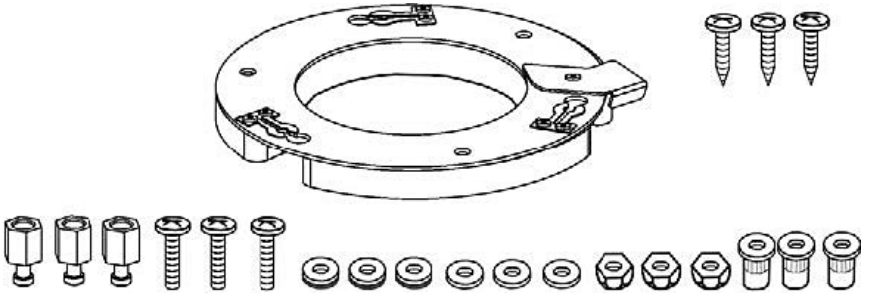


Needed material (Not supplied)

The following list the materials you need to install the light:

- Drill
- 6 mm wrench
- 13/64-inch Drill Bit (5 mm)
- 25/64-inch Drill Bit (10 mm)

Figure 4 LP800-BASE Kit Contents



Wiring the Mounted Beacon

NOTICE

REVERSE POLARITY/MISWIRING: Reverse polarity may damage the siren amplifier. To avoid damage to the siren/amplifier, ensure that the battery voltage is the same voltage as the rating of the light and that the correct polarity is observed.

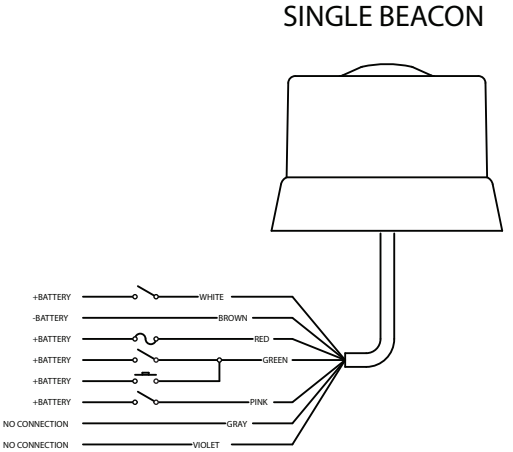
Wiring the Single Beacon

To wire the single beacon:

1. See Figure 5. Connect the red, white, green, and pink conductors as required. “Table 2 Wire Functions” on page 15 details the function of each conductor.

2. Connect the brown wire from the beacon to a known good vehicle ground as close to the beacon as possible.

Figure 5 Wiring the Single Beacon



Wiring the Dual Beacon

Simultaneous Flash

To wire the simultaneous beacon, do the following:

1. Connect the gray, red, white, green, and pink conductors as required. “Table 2 Wire Functions” on page 15 details the function of each conductor. See Figure 6.

2. Connect the brown wire from the beacon to a known good vehicle ground as close to the beacon as possible.

Figure 6 Wiring the Simultaneous Flash

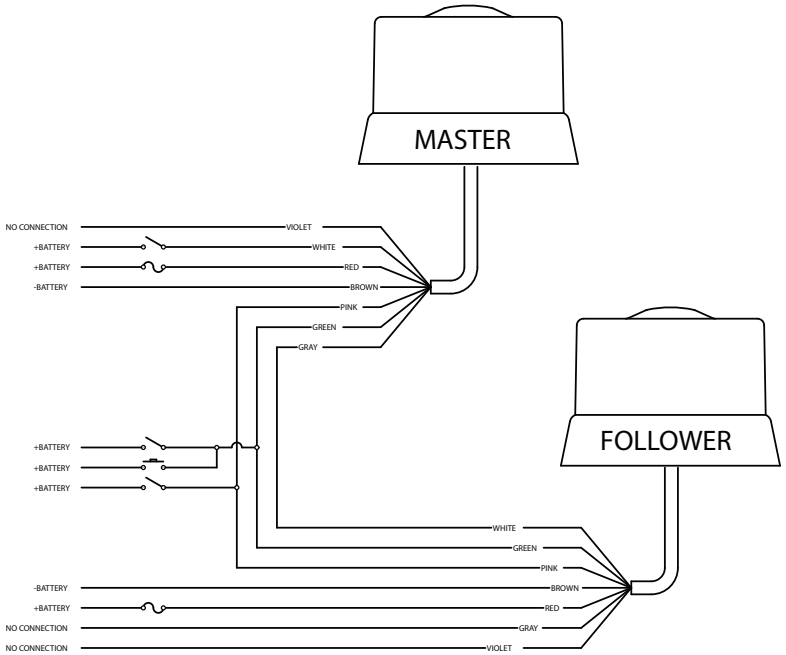


Table 2 Wire Functions

Wire Color	Function (Switch Type)
White	(On/Off)
Brown	Ground
Red	+ Battery, 5 A fuse
Green	Pattern select (Momentary) and/or cruise (on/off)
Pink	Dim mode (on/off)
Gray	Simultaneous flash
Violet	No connection

Selecting a Flash Pattern

Selecting a flash pattern is optional and should be done during installation. The flash pattern is advanced by momentarily touching the green wire to positive voltage. See Table 3 for a list of flash patterns. Once you have selected the flash pattern, connect the green wire to an on/off switch to use the cruise feature of the beacon or to cut and insulate to ensure it does not make unwanted contact with the vehicle.

Table 3 Flash Patterns

Number	Flash Pattern
1	Medium Single
2	Fast Single
3	Single
4	4 x single/ 2 x quad
5	7 x strobe
6	Chopped double
7	Double
8	Fast double
9	Triple
10	Fast Triple
11	Pulsing double
12	Quad
13	Pulsing quad
14	5 x
15	Test (steady)

Maintaining the Beacon

Frequently inspect the beacon to ensure that it is securing attached to the vehicle and operates properly. Clean the beacon with a mild soap and a soft rag.

Cleaning the Lens

Polycarbonate and ABS parts

To extend the life of this product, Federal Signal recommends periodic cleaning using correct methods and cleaners. For general cleaning, do not use an abrasive cleaner or highly alkaline. Furthermore, do not scratch the plate with a rubber brush, razor blade, or with other sharpened instrument. Do not clean polycarbonate and ABS parts under strong sunlight or high temperatures, as this could cause staining.

To clean this product, apply warm water and wash it with neutral pH soap. Use a soft cloth or sponge to remove any remaining dirt. Finally, rinse with cold water and dry with a soft cloth to avoid water spots.

Should fine scratches or a haze appear on the lenses, remove with a nonabrasive, high quality, one-step automotive paste cleaner/wax and a soft cloth.

⚠ WARNING

CRAZING HAZARD: Crazed, cracked, or faded domes or reflectors reduce the light output and the effectiveness of the lighting system. Tops or reflectors showing this type of aging must be replaced. Failure to follow this warning may result in bodily injury or death to you or others.

⚠ WARNING

CLEANING SOLUTION WARNING: The use of cleaning solutions, such as strong detergents, solvents, and petroleum products, can cause crazing (cracking) of the domes and reflectors. Failure to follow this warning can damage the domes and reflectors and may result in bodily injury or death to you or others.

Replacing the Dome

To replace the dome:

1. Disconnect unit from power source and remove unit from mounting surface.
2. Turn unit over and remove the three large head Phillips screws.
3. Separate dome from base. Discard or recycle old dome.

4. Align the three screw bosses in new dome with voids in the center of unit.
5. Reattach dome to base using the previously removed screws.
6. Remount the unit to surface and connect power.
7. Test unit for proper operation before returning vehicle to service.

Table 4 Dome Types

Color	Part Number
Clear	9151916-01
Amber	9151916-03
Blue	9151916-02
Red	9151916-04

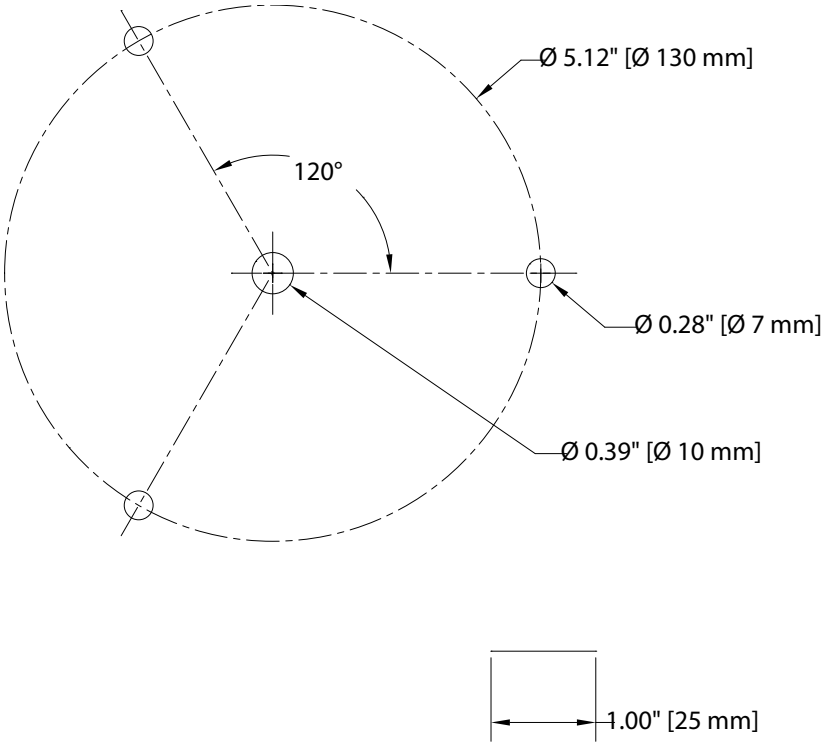
Ordering Replacement Parts or Technical Support Service

Federal Signal Service Department
1-800-433-9132 / 1-708-534-3400
Monday-Friday, 7 a.m. to 5 p.m. (CST)
fstechsupport@fedsig.com
www.fedsig.com

Returning a Product to Federal Signal

All products returned must be accompanied with a Returned Merchandise Authorization (RMA) number. To obtain an RMA number, call 1-800-433-9132.

Figure 7 Template for Permanent Mounting



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