

⚠ WARNING

Safety Message to Installers, Users, and Maintenance Personnel

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:

- 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.
- 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.
- A light system is a high current system. For the system to function properly, a separate negative (–) connection and positive (+) connection must be made. All negative connections should be connected to the negative battery terminal, and a suitable fuse should be installed 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.
- 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 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.
- 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.
- 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 wiring passes. Ensure that the mounting screws do not cause electrical or mechanical damage to the vehicle.
- 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, 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 or lenses will reduce 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 that it 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 reinstalling the product. Failure to follow all safety precautions and instructions may result in property damage, serious injury, or death.

Product Overview

The Firebolt® beacon is equipped with LEDs for zero light maintenance with no bulbs or strobe tubes to replace. The combination of long-lasting LEDs, advanced dome optics, and high-intensity flash patterns eliminates dark spots or shadows around the beacon. The beacon includes a black polycarbonate base and 14 selectable “strobing” flash patterns and a test pattern. The Firebolt meets SAE J845 Class 2 requirements.

Unpacking the Beacon

After unpacking the beacon, inspect it for damage that may have occurred in transit. If it has been damaged or is missing a part, do not attempt to install or operate it. File a claim immediately with the carrier, stating the extent of the damage. Carefully check all envelopes, shipping labels and tags before removing or destroying them. If you are missing any parts, contact Customer Support at 1-800-264-3578 or 1-708-534-3400 7 a.m. to 5 p.m., Monday through Friday (CT).

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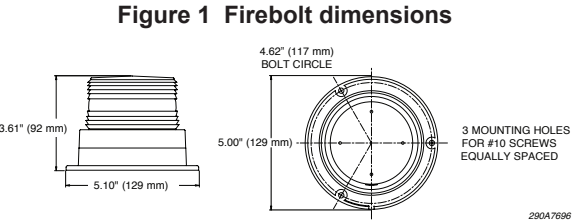
AIRBAG DEPLOYMENT: Do not install equipment or route wiring in the deployment path of an airbag. Failure to observe this warning will reduce the effectiveness of the airbag or potentially dislodge the equipment, causing serious injury or death.

Surface Mounting the Beacon

IMPORTANT: Before you begin the installation, plan all wire routing.

To mount the beacon permanently on the vehicle surface:

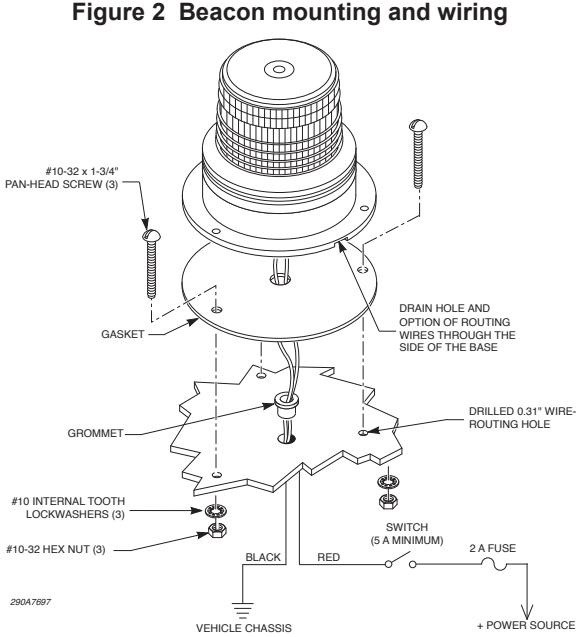
1. Select a mounting location for the beacon.
2. Using the base of the beacon as a template, scribe mounting hole locations on the mounting surface. See Figure 1. Scribe a wire routing hole location on the mounting surface. Orient the drain slot (Figure 2) to minimize its exposure to wind driven rain and moisture.



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 de-burred, 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.

3. Drill three 0.203-inch holes at the scribed mounting hole locations. Drill a 0.31-inch hole at the scribed wire routing hole location. Remove all burrs and sharp edges.
4. Install the supplied grommet in the wire routing hole.
5. Center the gasket over the drilled holes and route the wires through the gasket and grommet.



Wiring the Surface-Mounted Beacon

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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.

To wire the beacon:

1. Determine the length of wires needed for the installation. For lengths up to 15 feet (5 m), use a minimum 18 AWG (1 mm) wire. For lengths over 15 feet, use a minimum 16 AWG (1.5 mm) wire.
2. Strip 1/4 inch (5 mm) of insulation from the ends of the red and black installer-supplied wires.
3. Connect one terminal of an installer-supplied switch with a current capacity of at least 5 A to the red (+) wire of the beacon. Additional 18 AWG (1 mm) or larger wire may be added if needed.
4. Use 18 AWG (1 mm) or larger wire to connect the remaining switch terminal to one end of the supplied fuseholder and 2 A fuse.
5. Connect the other end of the fuseholder to the positive (+) terminal of the voltage source.

6.
- Connect the black (–) wire from the beacon to a known good vehicle ground as close to the beacon as practical.
7.
- Test the beacon for proper operation.

Magnetic Mounting

⚠ WARNING
DO NOT DRIVE WITH MAGNETICALLY-MOUNTED BEACON INSTALLED: *Because vehicle roof construction and driving conditions vary, do not drive a vehicle with a magnetically-mounted beacon installed. The beacon 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.*

The 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:

- Keep the mounting surface and the magnets clean, dry, and free of foreign particles that prevent good surface contact.
- Ensure that the mounting surface is flat.
- Do not use a magnetic mounting system on vehicles with vinyl tops.
- Avoid quick acceleration and hard stop to prevent the sliding of the light assembly on the mounting surface.

To temporarily mount the beacon to a vehicle with a magnetic mounting system:

1.
- Place the beacon on the vehicle roof in a location that provides maximum signaling effectiveness for your application.
2.
- To operate the magnet-mounted beacon, insert the plug at the end of the cable assembly into the 12 V power outlet socket.
3.
- Test the beacon for proper operation.

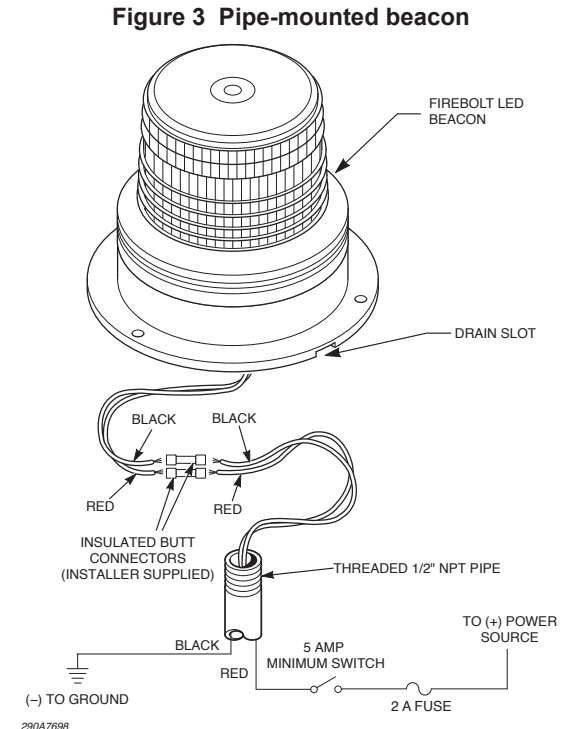
Pipe Mounting and Wiring the Beacon

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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.*

The base was designed for the option of installing the beacon onto the end of a threaded 1/2-inch NPT pipe.

1.
- Determine the length of wires needed for the installation. For lengths up to 15 feet (5 m), use minimum 18 AWG (1 mm) wire. For lengths over 15 feet, use minimum 16 AWG (1.5 mm) wire.
2.
- Strip 1/4 inch (5 mm) of insulation from the ends of the red and black installer-supplied wires.
3.
- Use insulated butt connectors to connect the red and black wires of vehicle electrical system to the red and black wires of the beacon. Ensure that the connectors are securely crimped and properly insulated.



4.
- Route the red and black wires through the pipe to the location of the installer-supplied switch (current capacity of at least 5 A).
5.
- Screw the beacon onto the pipe. Ensure that the wires are not pinched inside the pipe.
6.
- Connect one terminal of the installer-supplied switch to the red (+) wire of the beacon.
7.
- Use minimum 18 AWG (1 mm) wire to connect the remaining switch terminal to one end of the supplied fuseholder and 2 A fuse.
8.
- Connect the other end of the fuseholder to the positive (+) terminal of the voltage source.

9.
- Connect the black (–) wire from the beacon to a known good vehicle ground as close to the beacon as practical.
10.
- Test the beacon for proper operation.

Selecting a Flash Pattern

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To select the flash patterns shown in Table 1, cycle the power switch at a once-per-second pace. If you wait too long, the beacon ignores the request to enter programming mode. The beacon also ignores a quick flick of the switch; therefore, the switch must stay closed for a minimum of 1/10 of a second to register. There is a 15-second window of time to watch the pattern and change it again before the beacon automatically exits programming mode.

To select a flash pattern:

1.
- With the beacon off, cycle power off/on three times, once per second, to enter the programming mode.
2.
- While in the programming mode, cycle the switch off and on to advance the active pattern to the next in the sequence.
3.
- When you see the pattern that you want, allow the beacon to operate for a minimum of 15 seconds, or turn it off for more than five seconds to exit programming mode and to set the pattern.

Table 1 Flash patterns		
Pattern	Description	Rate (FPM)
1	4 Single, 2 Quad	120-60
2	7X Flash	65
3	Chopped Double	60
4	Single Flash	60
5	Single Flash	80
6	Single Flash	120
7	Test	—
8	Double Flash	80
9	Double Flash	120
10	Triple Flash	60
11	Triple Flash	120
12	Pulsing Double Flash	80
13	Quad Flash	60
14	Pulsing Quad Flash	60
15	5X Flash	75

Cleaning the Dome

⚠ 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.*

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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.*

To clean the dome:

1.
- Rinse the dome with lukewarm water to loosen dirt and debris.
2.
- Use a mild soap, lukewarm water, and a soft cloth to gently clean the dome. Do not use heavy pressure or caustic, abrasive, or petroleum-based cleaners.
3.
- Rinse and dry the dome with a soft cloth to prevent water spotting.

Getting Technical Support and Service

For technical support and service, please contact:

Service Department
Federal Signal Corporation
Phone: 1-800-433-9132
Email: empserviceinfo@fedsig.com
www.fedsig.com

Getting Repair Service

The Federal Signal factory provides technical assistance with any problems that cannot be handled locally.

Any units returned to Federal Signal for service, inspection, or repair must be accompanied by a Return Material Authorization (RMA). Obtain an RMA from a local Distributor or Manufacturer’s Representative.

Provide a brief explanation of the service requested, or the nature of the malfunction.

Address all communications and shipments to the following:

Federal Signal Corporation
Service Department
2645 Federal Signal Drive
University Park, IL 60484-3167