

# INSTRUCTIONS FOR FEDERAL SIGNAL BACKUP ALARMS

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## Safety Message to Installers of Federal Signal Backup Alarms

### ⚠ WARNING

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

- To properly install a backup alarm, you must have a good understanding of truck and heavy equipment electrical procedures and systems, along with proficiency in the installation and use of safety warning equipment.
- Backup alarms should be used for backup WARNING applications only. The backup alarm sound is generally recognized as a warning for reversing vehicles/mobile equipment. Alarm products with different sound tones are available for non-reversing applications.
- When drilling into a vehicle structure, be sure that both sides of the surface are clear of anything that could be damaged.
- Locate the backup alarm so it will operate safely under all conditions. The location must provide protection from impact and adverse weather conditions while allowing unobstructed sound projection to the target hazard area.
- All effective backup alarms produce loud sounds which may cause, in certain situations, permanent hearing loss. You should take appropriate precautions and follow your employer's hearing conservation program and safety guidelines for instructions as to whether you should wear hearing protection.
- Ensure that the vehicle's supply voltage is within the voltage rating specified on the backup alarm.

## An Overview of the Product

The Federal Signal 2012 Series backup alarm is a solid-state audible warning device enclosed in a weatherproof housing. When activated, the backup alarm produces a tone with a sound intensity of 87 dB(A), 97 dB(A), or 102 dB(A) at 4 ft (1.2 m) depending on the model (see Table 1). This tone is interrupted at a rate of approximately 80 times per minute.

- You should frequently inspect the backup alarm system to ensure that it is operating properly and that it is securely attached to the vehicle.

- DO NOT install equipment or route wiring or cords 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.

- 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 vehicle operation or changed any vehicle safety function circuit.

- After testing is complete, provide a copy of these instructions to the instructional staff and all operating personnel.

- File these instructions in a safe place and refer to them when maintaining or reinstalling the product.

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

## Unpacking the Product

After unpacking the product, inspect it for damage that may have occurred in transit. If it has been damaged, do not attempt to install it. 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. If you are missing any parts, contact Customer Support at 1-800-824-0254, 7 a.m. to 5 p.m., Monday through Friday (CT).

## Product Specifications

Operating Voltage: 9 Vdc to 32 Vdc

System Voltage: 12 Vdc to 24 Vdc systems

Operating Current: See Table 1.

Sound Output Level: See Table 1.

Operating Temperature Range:  
-40 °F to +85 °F (-40 °C to +29 °C)

Overall Dimensions:

4.13 in (L) x 1.25 in (W) x 2.50 in (H)  
(10.48 cm [L] x 3.18 cm [W] x 6.35 cm [H])

Net Weight: 0.4 lb (18 kg)

Housing: Steam-cleanable weatherproof glass-filled nylon

Table 1 Specifications by model

Model	Decibels*	Connection Type	Operating Current
210238-S	87 dB(A)	stud terminals	0.3 A max.
210239-S	97 dB(A)	stud terminals	0.3 A max.
210240-S	102 dB(A)	stud terminals	0.5 A max.
210238-W	87 dB(A)	with wires	0.3 A max.
210239-W	97 dB(A)	with wires	0.3 A max.
210240-W	102 dB(A)	with wires	0.5 A max.

\* The product label on the backup alarm housing describes the sound output in decibels (dB[A]).

## Mounting the Backup Alarm

### ⚠ WARNING

**INSTALLATION PRECAUTIONS—This backup alarm is designed to concentrate its audible alarm in the target hazard area. For proper warning signal coverage, the alarm should be mounted approximately 4 ft (122 cm) above ground level with the sound ports of the backup alarm facing the target hazard area. There should be no obstructions around or blocking the sound ports of the alarm.**

### ⚠ WARNING

#### SOUND PORTS MUST NOT FACE

**UPWARD—Do not mount the backup alarm with the sound ports facing upward where it can become buried, submerged or clogged with mud, water and other debris. A clogged alarm will be rendered ineffective and will produce little or no sound output. Always be sure that the alarm's sound ports are facing the area you are trying to warn, the ports are not clogged and that the alarm is functioning properly before using the vehicle.**

The alarm's built-in "L-type" bracket enables installation in a variety of locations. Ensure that the sound openings are positioned to allow unobstructed sound projection to the target hazard area. Installer-provided mounting hardware is required.

To mount the alarm to the vehicle:

- Select a mounting location at the rear of the vehicle that is protected from flying debris and adverse weather conditions while allowing unobstructed sound projection to the target hazard area.

### NOTICE

**DRILLING PRECAUTIONS—Before drilling holes, be sure you do not damage vehicle components. All drilled holes should be deburred and all sharp edges should be smoothed. All wire routings should be protected by a grommet or convolute/split-loom weaving.**

- Use the alarm housing as a template to mark the locations of the mounting holes. Drill holes at the marks.
- Secure the alarm through the mounting holes with the installer-provided hardware.

## Safety Messages for Wiring the Backup Alarm

### ⚠ WARNING

People's lives depend on your proper wiring of the backup alarm. It is important to read and follow all the instructions in this section. Listed below are some other important safety instructions and precautions you should follow:

- DO NOT wire in parallel with a solenoid or relay coil. DO NOT install the alarm or its wiring in proximity to ignition wires. DO NOT spray any coating material, such as paint, undercoating, etc., over any part of the alarm. Failure to observe this warning may adversely affect the performance of the alarm and cause property damage, serious injury, or death.
- Improper grounding could cause the backup alarm to function improperly and result in death or serious injury to those who rely on this device for personal safety. The ground connection (−) must be attached to a solid metal body or chassis part that will provide a dependable ground path for as long as the device is to be used.
- During operation the voltage differential between the common ground and the negative terminal (−) of the backup alarm must not exceed 150 mV. During operation, the voltage differential between the positive voltage of the power source and the positive terminal of the backup alarm (+) must not exceed 150 mV.
- The backup alarm is sensitive to polarity and will not operate when its power and ground connections are reversed. Ensure that the battery voltage is the same as the voltage of the alarm and that correct polarity is observed.
- Do not connect the backup alarm to high-powered motor-reverse circuitry. Failure to observe these warnings may damage the backup alarm or prevent it from

operating, potentially causing property damage, serious injury, or death.

## Wiring the Backup Alarm

**NOTE:** This product is a safety device. To assure its continued operation, it must be connected to the fused circuit of the vehicle reversing light or to its own separate fused power point. See Figure 1.

To wire the backup alarm to the vehicle electrical system:

1. Make connections with 18 AWG (minimum) wiring according to the appropriate diagram in Figure 1. The positive (+) and negative (-) connections are marked on the housing.
  2. Test the backup alarm for proper operation. If the backup alarm does not sound, refer to the warnings and precautions at the beginning of this section. Do not operate the vehicle if the backup alarm is not functioning properly.
  3. After confirming proper operation, affix one of each type of provided warning label to the dashboard of the vehicle in plain view of the operator. Affix the remaining label in an area that is clearly visible to anyone near the area of the vehicle equipped with the backup alarm.
  4. Also test all vehicle functions, including horn operation, vehicle safety functions, and vehicle lighting systems to ensure proper operation. Ensure that the installation has not affected the vehicle operation or changed any vehicle safety functions or circuits. Do not test the vehicle while driving.
- WARNING**
- People's lives depend on your safe operation of the backup alarm. It is important to read and follow all the instructions in this section. Listed below are some other important safety instructions and precautions you should follow:
- It is important that you fully understand how to safely operate this warning system before use
  - Do not operate the vehicle if the backup alarm is inoperative; it could jeopardize the safety or lives of those who depend on the backup alarm signal for personal safety.
  - All effective backup alarms produce loud sounds which may cause, in certain situations, permanent hearing loss. You should follow your employer's hearing conservation program and safety guidelines for instructions as to whether you should wear hearing protection.
  - Your hearing and the hearing of others, in or close to your vehicle, could be damaged by loud sounds. This can occur from short exposures to very loud sounds, or from longer exposures to moderately loud sounds. For hearing conservation guidance, refer to federal, state, or local recommendations. OSHA Standard 1910.95 offers guidance on "Permissible Noise Exposure."
  - Optimum sound propagation will be reduced if backup alarm becomes clogged with a foreign substance such as mud or snow. While cleaning, ensure that foreign material is not packed into the sound ports.
  - Although your warning system is operating properly, it may not alert everyone. People may not hear, see, or heed your warning signal. You must recognize this fact and continue to operate your vehicle cautiously.

## Safety Messages to Operators of Federal Signal Backup Alarms

### ► WARNING

People's lives depend on your safe operation of the backup alarm. It is important to read and follow all the instructions in this section. Listed below are some other important safety instructions and precautions you should follow:

- Testing the backup alarm should be listed on the daily maintenance report. The backup alarms on operating vehicles must be tested each day prior to the operation of the vehicles. Results of this test must be recorded in the maintenance file.
- Notify your supervisor that people operating this equipment MUST check for proper operation at the beginning of every shift.

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

## Getting Technical Support and Service

The backup alarm has no field-serviceable parts. Opening it will void the warranty. The Federal Signal factory can and will service your backup alarm. If you are experiencing problems with it, please contact:

Federal Signal Corporation  
Service Department  
Public Safety Systems  
Phone: 1-800-433-9132  
Fax: 1-800-343-9706  
Email: empserviceinfo@fedsig.com

## Returning a Product to Federal Signal

Before returning a product to Federal Signal, call 800-264-3578 (Mobile Systems), 800-433-9132 (Service), or 800-824-0254 (Amber Products Customer Service) to obtain a Returned Merchandise Authorization number (RMA number). To expedite the process please be prepared with the following information:

- Your Federal Signal customer or account number
- The purchase order number under which the items were purchased
- The shipping method
- The model or part number of the product being returned

- The quantity of products being returned
- Drop ship information as needed
- Any estimate required

When you receive your RMA Number:

- Write the RMA number on the outside of the box of returned items
- Reference the RMA number on your paperwork inside of the box
- Write the RMA number down so that you can easily check on status of the returned equipment

Send all material with the issued RMA number to:

Federal Signal Corporation  
2645 Federal Signal Drive  
University Park, IL 60484-3167  
Attn: Service Department  
RMA: # \_\_\_\_\_

**Figure 1** Wiring options for backup alarm

