

2562461A REV. A 309

Safety Message to Installers of Siren Speakers

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 and the original product. In addition, listed below are some other important safety instructions and precautions you should follow:

Before Installation

Qualifications

- To properly install an electronic siren, you must have a good understanding of automotive 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 installing equipment on a vehicle.

Sound Hazards

- Your hearing and the hearing of others, in or close to your emergency 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."
- All effective sirens and horns produce loud sounds (120 dB) that may cause permanent hearing loss. Always minimize your exposure to siren sound and wear hearing protection. Do not sound the siren indoors or in enclosed areas where you and others will be exposed to the sound.
- Federal Signal siren amplifiers and speakers are designed to work together as a system. Combining a siren and speaker from different manufacturers may reduce the warning effectiveness of the siren system and may damage the components. You should verify or test your combination to make sure the system works together properly and meets federal, state and local standards or guidelines.

During Installation

- 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 to prevent metal shavings from entering 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 wiring is shorted to vehicle frame, high current conductors can cause hazardous sparks resulting in electrical fires or flying molten metal.
- Be sure the siren amplifier and speaker(s) in your installation have compatible wattage ratings.
- In order for the electronic siren to function properly, the ground connection must be made to the NEGATIVE battery terminal.
- Sound output will be severely reduced if any objects are in front of the speaker. If maximum sound output is required for your application, you should ensure that the front of the speaker is clear of any obstructions.
- Install the speaker(s) as far forward on the vehicle as possible, in a location which provides maximum signaling effectiveness and minimizes the sound reaching the vehicle's occupants. Refer to the National Institute of Justice guide 500-00 for further information.

- Mounting the speakers behind the grille will reduce the sound output and warning effectiveness of the siren system. Before mounting speakers behind the grille, make sure the vehicle operators are trained and understand that this type of installation is less effective for warning others.
- Sound propagation and warning effectiveness will be severely reduced if the speaker is not facing forward. Carefully follow the installation instructions and always install the speaker with the projector facing forward.
- DO NOT install the speaker(s) or route the speaker wires where they may interfere with the operation of airbag sensors.
- Installation of two speakers requires that you wire the speakers in phase.
- Never attempt to install aftermarket equipment, which connects to the vehicle wiring, without reviewing a vehicle wiring diagram, which is available from the vehicle manufacturer. Insure that your installation will not affect vehicle operation and safety functions or circuits. Always check vehicle for proper operation after installation.
- DO NOT install equipment or route wiring or cord in the deployment path of an airbag.
- Locate the control head so the vehicle, controls, and microphone can be operated safely.
- When drilling into a vehicle structure, be sure that both sides of the surface are clear of anything that could be damaged.

After Installation

- After installation, test the siren system and 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 installation has not affected vehicle operation or changed any vehicle safety function or 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 and/or reinstalling the product.

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

Before You Begin

IMPORTANT: The ES100 and MS100 comply with the requirements of SAE J1849 EVS3 and CCR Title 13 Class A when they are used with Federal Signal Corporation electronic sirens.

The ES100 and MS100 are compact speakers intended to be mounted with the supplied mounting system. If the ES100 and MS100 are installed with another mounting system, the safety and effectiveness of the installation must be carefully evaluated.

Unpacking the Kit

After unpacking the kit, inspect it for damage that may have occurred in transit. If it has been damaged, do not 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. Ensure that the parts listed in *Table 1* on page 3 are included in the package.

Table 1: Kit contents

Qty.	Description	Part Number
1	Bracket, Speaker Mounting	8567196
4	Screw, 1/4" x 5/8", Type B	7011165-10
4	Lockwasher, Split 1/4"	7074A015

Mounting a Speaker

NOTICE

The installation procedure in step 2 below may not apply to all vehicles. See “Mounting a Speaker on a 1998 Chevrolet Tahoe,” on page 5. Otherwise, use the procedure in step 2.

The bracket is designed for mounting directly on a surface suitable for installing a speaker. In addition, the bracket can be used to install the speaker on an adapter bracket fabricated by the installer.

The each bracket arm has three holes to secure the speaker with two 5/16-18 hex head bolts:

- Use the outer pair of holes when mounting the ES100 or MS100 on a horizontal surface (*Figure 2* on page 5).
- Use the center pair of holes when mounting the ES100 on a vertical surface (top illustration in *Figure 1* on page 4).
- Use the inner pair of holes when mounting the MS100 on a vertical surface (bottom illustration in *Figure 1* on page 4).
- When using the center or inner holes for vertical-surface mounting, space restrictions may require the removal of the excess bracket material that protrudes from the front of the vehicle (*Figure 1*).

NOTE: Because of the variety of vehicles and possible mounting arrangements, installation details and mounting bracket fabrication must be determined by the installer.

To mount a speaker to the vehicle:

1. Select a mounting location that provides both adequate support and sufficient clearance for the speaker assembly. In addition, the mounting location should provide maximum signaling effectiveness while minimizing the sound reaching the vehicle's occupants.

If you are installing a second speaker/bracket, also determine its mounting position at this time.

NOTICE

DRILLING PRECAUTIONS

Before drilling holes, check the area into which you plan to drill to ensure you do not damage vehicle components while drilling. All drilled holes should be deburred and all sharp edges should be smoothed. All wires going through drilled holes should be protected by a grommet or convolute/split-loom tubing.

2. Using the bracket as a template, scribe four drill-position marks on the selected mounting location.
3. Drill 3/16" four mounting holes at the drill-position marks.

NOTE: Some mounting arrangements may require installing the bracket on the mounting surface before securing the speaker to the bracket.

⚠ WARNING**ES100 MOUNTING PRECAUTIONS**

To avoid reducing the sound output and damaging the speaker, ensure that the speaker is mounted with the wires protruding from the bottom of the speaker.

⚠ WARNING**MS100 MOUNTING PRECAUTIONS**

To avoid reducing the sound output and damaging the speaker, ensure that the speaker is mounted with the wires protruding from the right side of the speaker when it is seen from the front.

- Secure the bracket or assembled unit to the mounting surface with the 1/4" x 5/8" Type B screws and 1/4" split lockwashers (*Figure 1* below and *Figure 2* on page 5).
- Position the front of the speaker perpendicular to a horizontal mounting surface or parallel to a vertical mounting surface, and secure the speaker to the bracket with the two 5/16-18 bolts.
- To complete the installation, see "Wiring the Speaker" and "Testing the Speaker" on page 7.

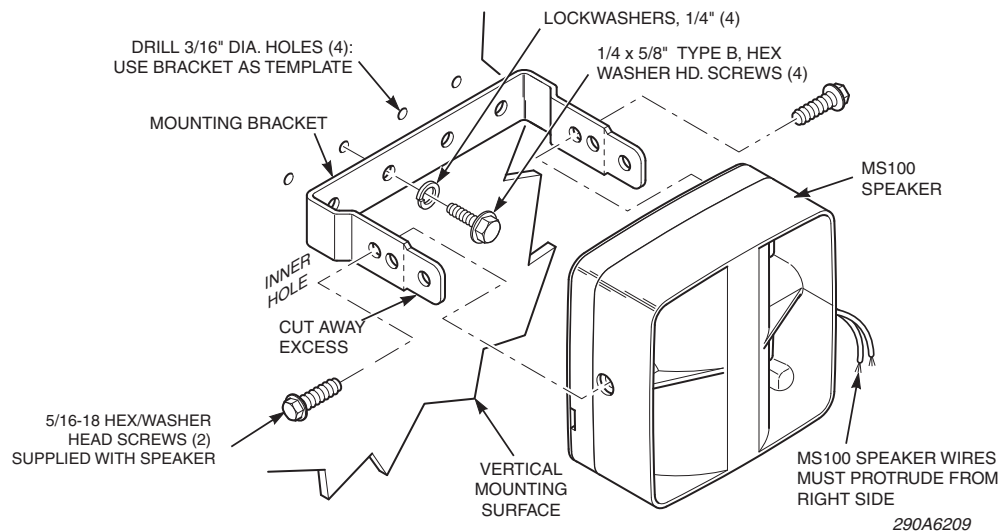
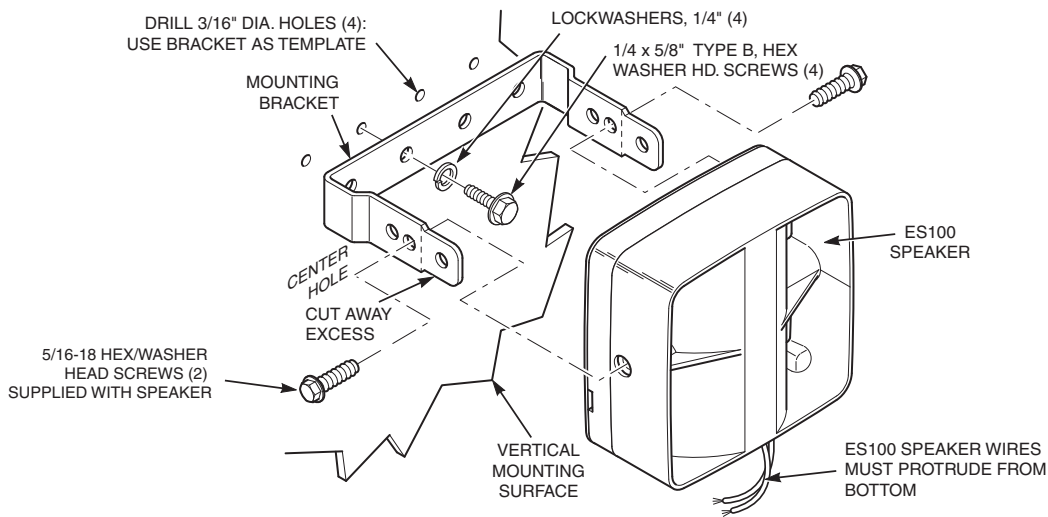


Figure 1: ES100 and MS100 vertically mounted using inner bracket holes

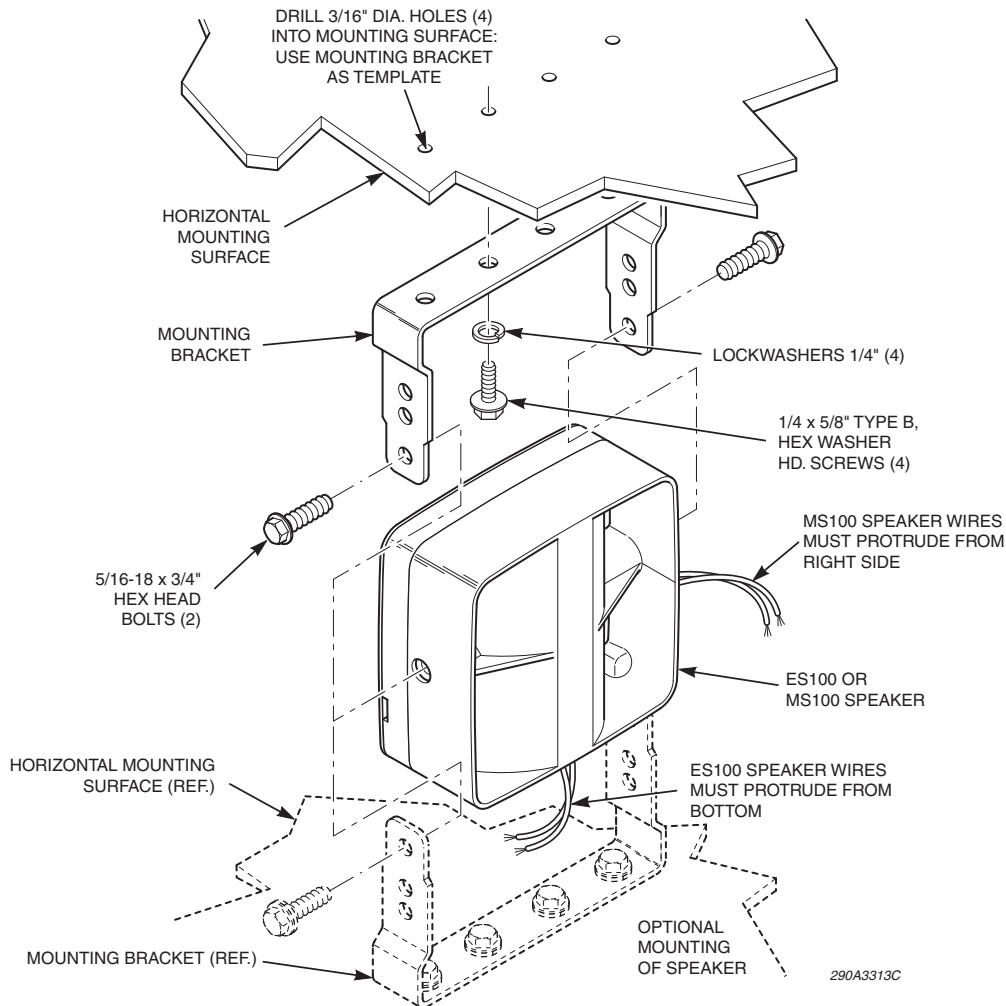


Figure 2: ES100 and MS100 horizontally mounted using outer bracket holes

Mounting a Speaker on a 1998 Chevrolet Tahoe

It is recommended that the speaker be mounted under the vehicle behind the front bumper as described in this section.

1. Locate, remove, and retain the screw that secures the plastic shield behind the bumper and in front of the steering box (*Figure 3* on page 6).
2. Use the outer-most bracket hole to temporarily install the bracket on the mounting surface with the screw removed in step 1 (*Figure 4* on page 6).

NOTICE

DRILLING PRECAUTIONS

Before drilling holes, check the area into which you plan to drill to ensure you do not damage vehicle components while drilling. All drilled holes should be deburred and all sharp edges should be smoothed. All wires going through drilled holes should be protected by a grommet or convolute/split-loom tubing.

3. Use the bracket as a template to scribe three drill-position marks on the mounting surface.
4. Remove the bracket from the mounting surface. Drill three 3/16 inch holes at the drill-position marks.

⚠ WARNING**ES100 MOUNTING PRECAUTIONS**

To avoid reducing the sound output and damaging the speaker, ensure that the speaker is mounted with the wires protruding from the bottom of the speaker.

⚠ WARNING**MS100 MOUNTING PRECAUTIONS**

To avoid reducing the sound output and damaging the speaker, ensure that the speaker is mounted with the wires protruding from the right side of the speaker when it is seen from the front.

5. Secure the bracket to the mounting surface using the screw installed in step 2, three 1/4" x 5/8" Type B screws and 1/4" split lockwashers. Position the front of the speaker forward and secure it to the bracket with the 5/16-18 bolts.

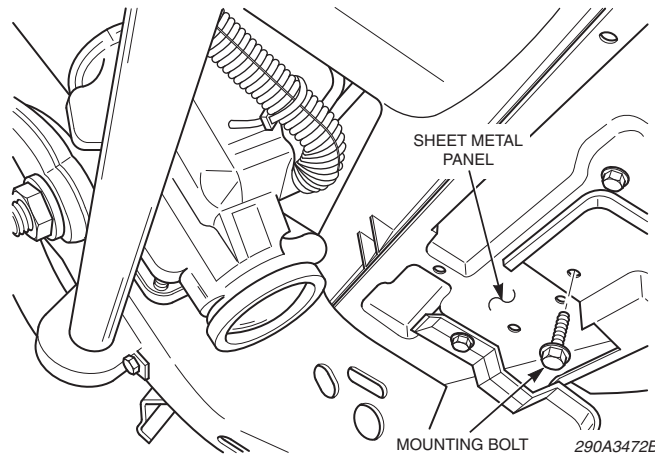


Figure 3: Screw to plastic shield behind bumper

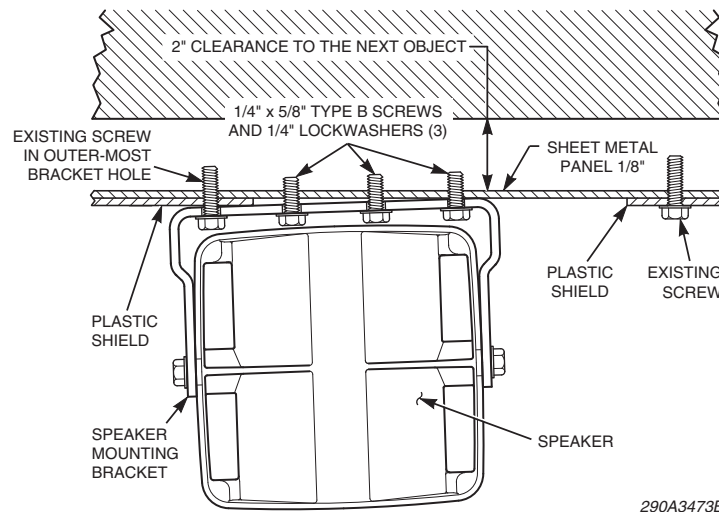


Figure 4: Speaker mounted through plastic shield and sheet metal

Wiring the Speaker

- To connect one speaker, connect the two leads from the speaker to the electronic siren's speaker cable.
- To connect two speakers, it is necessary to connect them in phase. Connect the two red speaker leads to one lead of the siren's speaker cable. Connect the two black speaker leads to the other lead of the siren's speaker cable.

Refer to the instructions provided with the electronic siren for additional details.

Testing the Siren System

WARNING

SOUND HAZARD

All effective sirens and horns produce loud sounds (120 dB) that may cause permanent hearing loss. Always minimize your exposure to siren sound and wear hearing protection. Do not sound the siren indoors or in enclosed areas where you and others will be exposed to the sound.

After the installation, test the siren system to ensure that it is operating properly. Also test all vehicle functions, including horn operation, vehicle safety functions, and vehicle lighting systems to insure proper operation. Ensure that the installation has not affected the vehicle operation or changed any vehicle safety functions or circuits.

Getting Technical Support and Service

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

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

Ordering Replacement Parts

To order replacement parts, please contact your local dealer/distributor or:

Mobile Systems Customer Support
Federal Signal Corporation
Phone: 1-800-264-3578

Returning a Product to Federal Signal

Before returning a product to Federal Signal, call 800-264-3578, 800-433-9132, or 800-824-0254 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 60466
Attn: Service Department
RMA: # _____

Safety Message to Operators of Federal Signal Electronic Sirens and Light/Sound Systems

⚠ WARNING

The lives of people depend on your safe operation of Federal products. It is important to read and follow all instructions shipped with the products. In addition, listed below are some other important safety instructions and precautions you should follow:

Qualifications

- To properly use an electronic siren and speaker(s), you must have a good understanding of general vehicle operation, a high proficiency in the use of safety warning equipment, and thorough knowledge of state and federal UNIFORM TRAFFIC CODES.

Sound Hazards

- Your hearing and the hearing of others, in or close to your emergency 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."
- All effective sirens and horns produce loud sounds (120 dB) that may cause permanent hearing loss. Always minimize your exposure to siren sound, roll up your windows and wear hearing protection. Do not sound the siren indoors or in enclosed areas where you and others will be exposed to the sound. Only use the siren for emergency response situations.

Sound Limitations

- Before using the vehicle, check to see if the siren speakers are concealed from view. If the siren speaker is not in clear view on the front of the vehicle, use extra caution when operating the vehicle. A concealed siren speaker installation is less effective at warning others.
- Maximum sound output will be severely reduced if any objects are in front of the speaker. If your installation has obstructions in front of the speaker, drive even more cautiously.
- Frequently inspect the speaker to ensure that it is clear of any obstruction, such as mud or snow, which will reduce maximum sound output.

Signaling Limitations

- Be aware that the use of your visual and audible signaling devices does not give you the right to force your way through traffic. Your emergency lights, siren, and actions are REQUESTING the right-of-way.
- 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 driving cautiously.
- Situations may occur which obstruct your warning signal when natural or man-made objects are between your vehicle and others. This can also occur when you raise your hood or trunk lid. If these situations occur, be especially careful.

Driving Limitations

- At the start of your shift, you should ensure that the light/sound system is securely attached to the vehicle and operating properly.
- If the unique combination of emergency vehicle equipment installed in your vehicle has resulted in the siren controls being installed in a position that does not allow you to operate them by touch only, OPERATE CONTROLS ONLY WHILE YOUR VEHICLE IS STOPPED.
- If driving conditions require your full attention, you should avoid operating the siren controls while the vehicle is in motion.

Continuing Education

- File these instructions in a safe place and refer to them periodically. Give a copy of these instructions to new recruits and trainees.

Failure to follow these safety precautions may result in property damage, serious injury, or death to you, to passengers, or to others.



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