

INSTALLATION INSTRUCTIONS FOR MODEL 750501 (AS124) SPEAKER

SAFETY MESSAGE TO INSTALLERS OF SIREN SPEAKERS



The lives of people depend on your proper installation and servicing 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:

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 performing equipment installations 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 air bag sensors.
- Installation of two speakers requires wiring speakers in phase.
- Never attempt to install aftermarket equipment, which connects to the vehicle wiring, without reviewing a vehicle wiring diagram - 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 air bag.
- 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.

A. GENERAL.

The Model 750501 is a general application, neodymium automotive speaker for use in emergency vehicle siren applications (see figure 1). The speaker is designed to meet the guidelines of J1849 and EVS2 applications. The device is comprised of a high-impact resistant injection molded housing with attached projector, Federal Signal NS100W driver, associated 18-8 stainless steel hardware, and user-installed warning labels.

B. UNPACKING.

After unpacking the speaker, inspect it for damage that may have occurred in transit. If either the kit or the unit has been damaged, or missing parts, do not attempt to install or operate 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 all parts in the following KIT CONTENTS LIST have been included.

C. KIT CONTENTS LIST.

Qty.	Description	Part Number
2	Step Bolt 1/4-20 Stainless Steel	7017162
2	Nut, 1/4-20 Stainless Steel	7059A020
2	Washer, Stainless Steel	7072A024
2	Lockwasher, 1/4" Stainless Steel	7074A016
2	1/4" Bolt Retainer	8567059
1	Label, Warning, User Installed	1612339

D. INSTALLATION.

This product is intended for mounting directly upon a rigid surface which has been determined to be suitable for speaker installation. In addition, the speaker may be used with an adapter bracket fabricated by the installer to meet the dimensional spacing of the unit's mounting holes. Because of the variety of vehicles and possible mounting arrangements, the installer must determine installation details and mounting bracket fabrication.

1. Select an appropriate mounting location, which provides both adequate support and sufficient clearance for the speaker assembly.

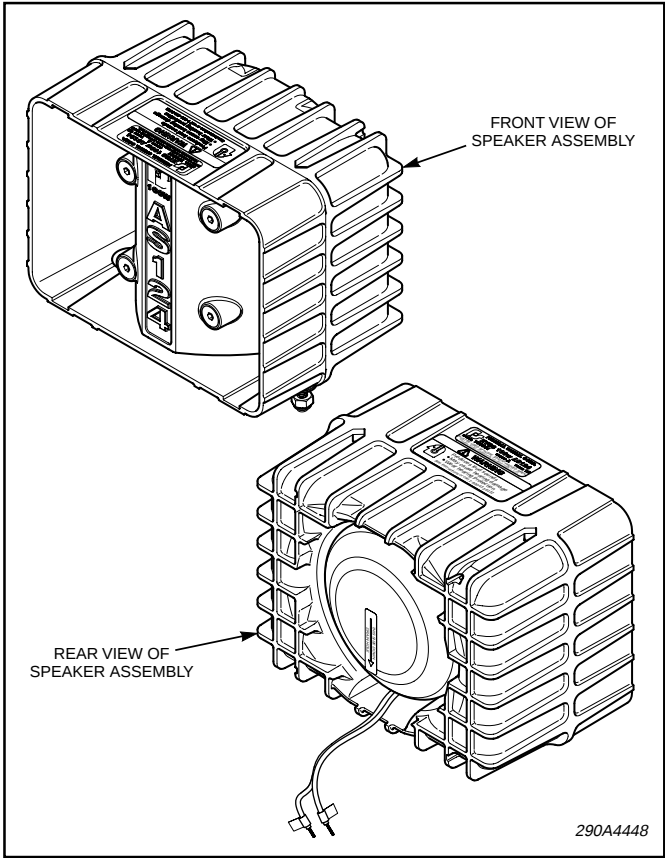


Figure 1.

Note that the speaker's included mounting hardware has two step bolts with washers, lockwashers, nuts, and bolt retainers for mounting. Allow adequate spacing around the mounting surface member to attach the hardware. In addition, the mounting location should provide maximum signaling effectiveness while minimizing the sound reaching the vehicle's occupants.

CAUTION

The AS124 speaker unit as provided, must be mounted on a horizontal positioned surface as denoted by the "DRAIN HOLE, THIS SIDE DOWN" label attached to the rear of the speaker's driver in order to promote proper water drainage. Failure to observe this caution will result in possible speaker damage.

Two mounting holes are provided on the top and bottom horizontal mid-sections of the unit as shown in figure 2. If the speaker must be mounted in the vertical position (upon a vertical structural member), proceed with step 2.

If the speaker will be mounted in a horizontal position, proceed to step 7.

2. The AS124 unit is constructed of two main parts, the housing assembly, consisting of the rectangular housing with attached AS124 projector and the speaker driver. Both are held together by means of four 1/4-20 x 2-1/4" long flat head socket bolts. Remove the four bolts with a 5/32" socket key disassembling the driver from the housing assembly. (See figure 3.)
3. Upon removing the driver, position the housing assembly vertically (as your intended mount).
4. Rotate the driver 90° so as the "DRAIN HOLE, THIS SIDE DOWN" label is pointing downwards.
5. Reinstall the driver into the housing assembly so as the label maintains its downward positioning and the lead wires exit at one of the side reliefs. (See figure 4.)
6. Reattach the four flat head mounting bolts securing the driver to the housing unit.
7. Scribe two drill positioning marks spaced at 5.6" apart on the intended mounting surface.

CAUTION

Before drilling holes in ANY part of vehicle, be sure that both sides of the mounting surface are clear of parts that could be damaged; such as brake lines, fuel lines, electrical wiring or other vital parts.

8. Drill two 5/16" holes at the drill position marks.
9. Position the speaker over the holes and feed through the two step bolts, insuring that the head lies flat upon the speaker's internal housing wall. Attach the washers and stop nuts to captivate the unit to the mounting surface.

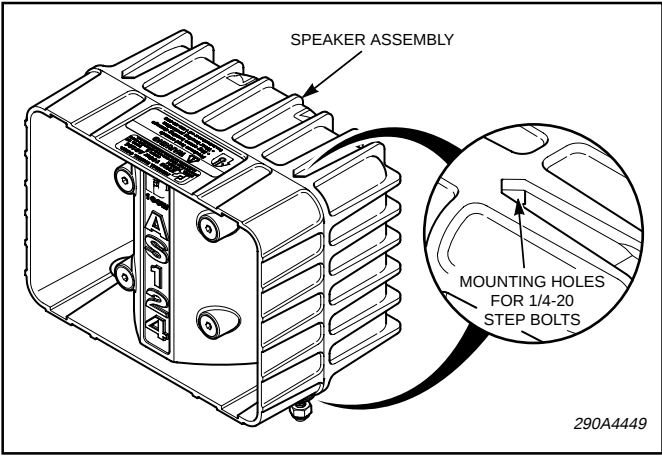


Figure 2.

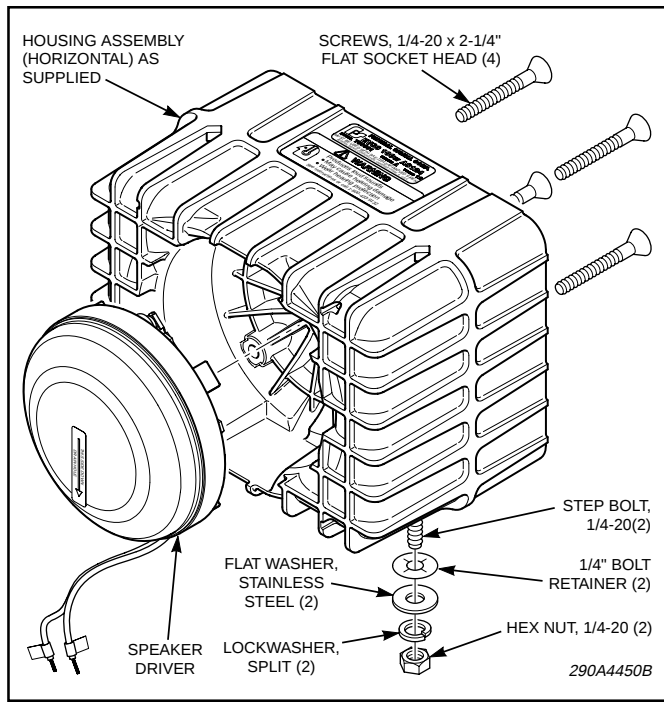


Figure 3.

CAUTION

The maximum torque upon tightening the nuts unto the 1/4-20 step bolts is not to exceed 75 in-lbs. Exceeding this limit may over stress the bolt/housing mounting design limitations.

10. Connect the speaker to the electronic siren as described in the instructions supplied with the electronic siren.
11. After the mounting and performing the electrical connections to the vehicle are completed, review the safety messages in Section 'G': OPERATION. Test the unit for proper operation upon power up, and also test drive the vehicle so that any vibration does not permit an inadequately mounted unit to loosen from its intended sound direction.
12. Attach the kit-supplied user-installed warning labels concerning safety on exposure to the speaker's sound level, in suitable locations within the vehicle.

E. MECHANICAL SPECIFICATIONS AND FEATURES.

The outer dimensions of the device are 7.84 inches wide by 5.78 inches tall and the depth is 4.66 inches. Typical weight is approxi-

mately 6 pounds. The components' housing and projector are an injection molded 30% glass filled black polyester thermoplastic, resistant to most acids and alkalines. Factory-mounted bolts attaching the driver to the housing are 18-8 stainless steel socket flat head 1/4-20 at 2-1/4" length. Mounting screws supplied within the kit are 18-8 stainless steel step 1/4-20 bolts. Corresponding kit mounting washers, nuts, and lockwashers are also 18-8 stainless steel.

F. ELECTRICAL SPECIFICATIONS AND FEATURES.

The unit is rated for use at 12.8 Vdc. The driver housing is marked with a "2" and a "1" near each associated terminal for proper polarity identification in the event a supplied lead wire is disconnected from the terminal. Connect the two leads from the speaker to the electronic siren's speaker cable. If two speakers are installed, it is necessary to connect the speakers in-phase. This is accomplished by connecting the two speaker leads marked "1" to the same lead of the siren's speaker cable, and the two speaker leads marked "2" to the other lead of the siren's speaker cable. Refer to the instructions included with the electronic siren for additional details.

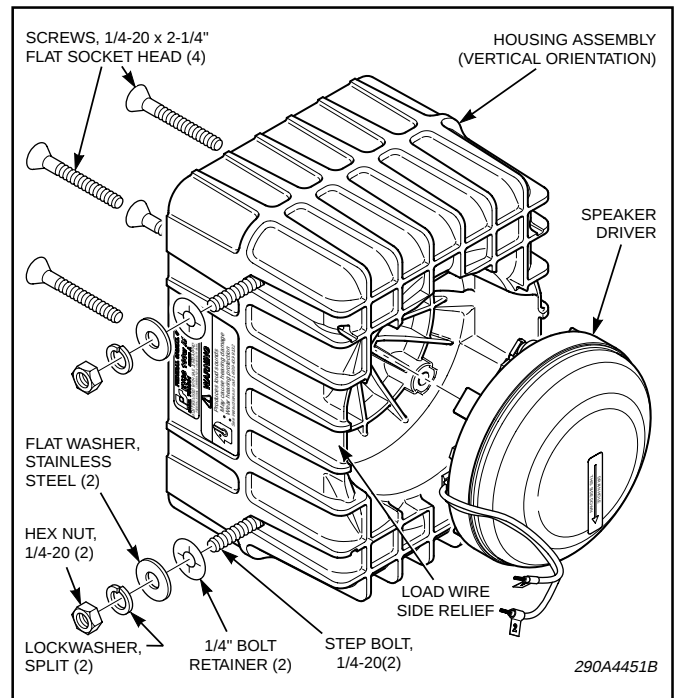


Figure 4.

G. OPERATION.

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.

H. MAINTENANCE/SERVICE.

This unit contains NO user replaceable components. Consult the factory regarding warranty repairs/replacement issues.

Manufactured by:
Federal Signal Corporation
Emergency Products Group
2645 Federal Signal Drive
University Park, Illinois 60466

SAFETY MESSAGE TO PERSONNEL SERVICING FEDERAL SIGNAL SIREN SPEAKERS



WARNING

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

- Read and understand all instructions in this manual before servicing the electronic siren or speaker.
 - To properly service an electronic siren or speaker: 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 performing service on a vehicle.
 - Electronic circuit and speaker repairs must be performed by a qualified and competent electronic technician.
 - 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.
 - DO NOT connect this system to the positive terminal of the battery until servicing is complete, and you have verified that there are no short circuits to ground.
 - In order for the electronic siren to function properly, the ground connection must be made to the NEGATIVE battery terminal.
 - After repair, test the electronic siren and speaker system to ensure that it is operating properly.
 - 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 both federal, state and local standards or guidelines.
- Failure to follow all safety precautions and instructions may result in property damage, serious injury, or death to you or others.**