

# INSTALLATION & OPERATION MANUAL

MODEL  
FM100C OR  
FM100V  
Patent Pending

Code 3, Inc., a subsidiary of  
Public Safety Equipment, Inc.

**CODE 3**<sup>®</sup>  
PUBLIC SAFETY EQUIPMENT, INC.

# *Model FM100*

## SPEAKER/FLUSHMOUNT

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**IMPORTANT:** *Read all instructions and warnings before installing and using.*  
**INSTALLER:** *This manual must be delivered to the end user of this equipment.*

## Introduction

The FM100C and FM100V are modular speaker systems for mounting in the chassis of most top of the line fire and emergency rescue vehicles. These highly effective warning units employ a mathematically designed speaker for maximum sound volume whether used as a siren or public address system.



### **WARNING!**

The use of this or any warning device does not insure that all drivers can or will observe or react to an emergency warning signal. Never take the right-of-way for granted. It is your responsibility to be sure you can proceed safely before entering an intersection, driving against traffic, responding at a high rate of speed, or walking on or around traffic lanes. The effectiveness of this warning device is highly dependent upon correct mounting and wiring. Read and follow the manufacturer's instructions before installing or using this device. The vehicle operator should insure daily that all features of the device operate correctly. In use, the vehicle operator should insure the projection of the warning signal is not blocked by vehicle components (i.e.: open trunks or compartment doors), people, vehicles, or other obstructions.

This equipment is intended for use by authorized personnel only. It is the user's responsibility to understand and obey all laws regarding emergency warning devices. The user should check all applicable city, state and federal laws and regulations.

Public Safety Equipment, Inc., assumes no liability for any loss resulting from the use of this warning device.

Proper installation is vital to the performance of this warning device and the safe operation of the emergency vehicle. It is important to recognize that the operator of the emergency vehicle is under psychological and physiological stress caused by the emergency situation. The warning device should be installed in such a manner as to: A) Not reduce the output performance of the system, B) Place the controls within convenient reach of the operator so that one can operate the system without losing eye contact with the roadway.

Emergency warning devices often require high electrical voltages and/or currents. Properly protect and use caution around live electrical connections. Grounding or shorting of electrical connections can cause high current arcing, which can cause personal injury and/or severe vehicle damage, including fire.

**PROPER INSTALLATION COMBINED WITH OPERATOR TRAINING IN THE PROPER USE OF EMERGENCY WARNING DEVICES IS ESSENTIAL TO INSURE THE SAFETY OF EMERGENCY PERSONNEL AND THE PUBLIC.**



### **WARNING! SIREN PRODUCTS:**

Sirens are an integral part of an effective audio/visual emergency warning system. However, sirens are only short range secondary warning devices. The use of a siren does not insure that all drivers can or will observe or react to an emergency warning signal, particularly at long distances or when either vehicle is traveling at a high rate of speed. Sirens should only be used in a combination with effective warning lights and never relied upon as a sole warning signal. Never take the right of way for granted. It is your responsibility to be sure you can proceed safely before entering an intersection, driving against traffic, or responding at a high rate of speed.

The effectiveness of this warning device is highly dependent upon correct mounting and wiring. Read and follow the manufacturer's instructions before installing or using this device. The vehicle operator should check the equipment daily to insure that all features of the device operate correctly.

To be effective, sirens must produce high sound levels that potentially can inflict hearing damage. Installers should be warned to wear hearing protection, clear bystanders from the area and not to operate the siren indoors during testing. Vehicle operators and occupants should assess their exposure to siren noise and determine what steps, such as consultation with professionals or use of hearing protection should be implemented to protect their hearing.



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Proper installation is vital to the performance of the siren and the safe operation of the emergency vehicle. It is important to recognize that the operator of the emergency vehicle is under psychological and physiological stress caused by the emergency situation. The siren system should be installed in such a manner as to: A) Not reduce the acoustical performance of the system, B) Limit as much as practical the noise level in the passenger compartment of the vehicle, C) Place the controls within convenient reach of the operator so that he can operate the system without losing eye contact with the roadway. Emergency warning devices often require high electrical voltages and/or currents. Properly protect and use caution around live electrical connections. Grounding or shorting of electrical connections can cause high current arcing, which can cause personal injury and/or severe vehicle damage, including fire.

**PROPER INSTALLATION COMBINED WITH OPERATOR TRAINING IN THE PROPER USE OF EMERGENCY WARNING DEVICES IS ESSENTIAL TO INSURE THE SAFETY OF EMERGENCY PERSONNEL AND THE PUBLIC.**

## Unpacking and Preinstallation

Carefully unpack the unit and check the contents against the parts list on page #6 of this booklet. Report any damage to carrier immediately.

## Installation and Mounting



**WARNING!**

Larger wires and tight connections will provide longer service life for components. For high current wires it is highly recommended that terminal blocks or soldered connections be used with shrink tubing to protect the connections. Do not use insulation displacement connectors (e.g. 3M<sup>®</sup> Scotchlock type connectors). Route wiring using grommets and sealant when passing through compartment walls. Minimize the number of splices to reduce voltage drop. High ambient temperatures (e.g. underhood) will significantly reduce the current carrying capacity of wires, fuses, and circuit breakers. Use "SXL" type wire in engine compartment. All wiring should conform to the minimum wire size and other recommendations of the manufacturer and be protected from moving parts and hot surfaces. Looms, grommets, cable ties, and similar installation hardware should be used to anchor and protect all wiring.

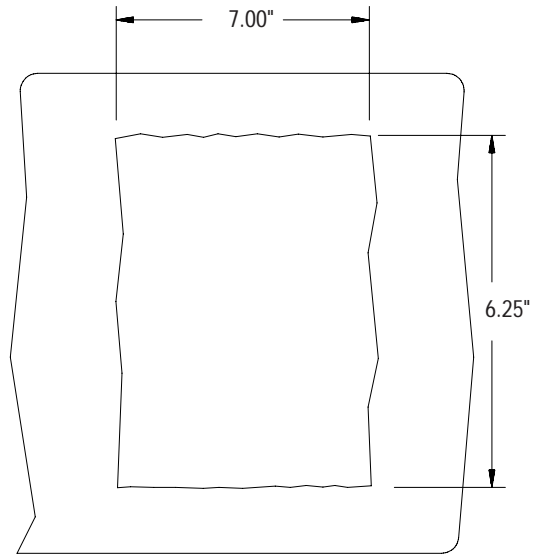
Fuses or circuit breakers should be located as close to the power takeoff points as possible and properly sized to protect the wiring and devices.

Particular attention should be paid to the location and method of making electrical connections and splices to protect these points from corrosion and loss of conductivity. Ground terminations should only be made to substantial chassis components, preferably directly to the vehicle battery.

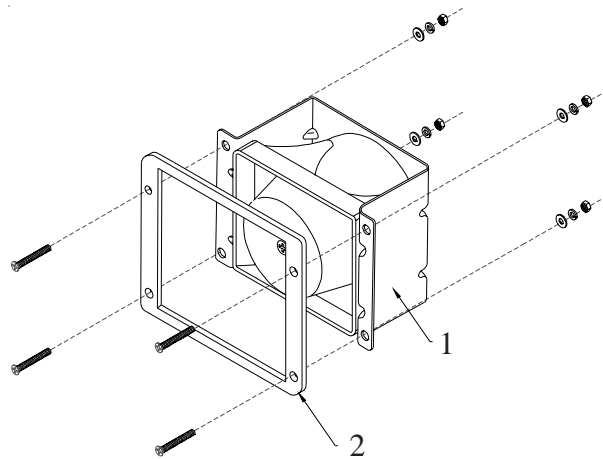
The user should install a fuse sized to approximately 125% of the maximum Amp capacity in the supply line to protect against short circuits. For example, a 30 Amp fuse should carry a maximum of 24 Amps. **DO NOT USE 1/4" DIAMETER GLASS FUSES AS THEY ARE NOT SUITABLE FOR CONTINUOUS DUTY IN SIZES ABOVE 15 AMPS.** Circuit breakers are very sensitive to high temperatures and will "false trip" when mounted in hot environments or operated close to their capacity.

**NOTE :** All of the information listed in this booklet must be given to the end user by the installer.

- 1) Cut a hole in the desired mounting location to the dimensions shown in Figure 1. Make sure this hole is properly oriented to a structural member of the vehicle for a secure mounting. This installation may require the use of spacers or longer mounting screws to bring the product to the desired orientation with the exterior surface. In some installations it may be necessary to fabricate a special adaptor plate to achieve the desired position on the vehicle.
- 2) Hold speaker assemblies against the bumper and inscribe locations for drilling holes for the mounting screws.
- 3) At the inscribed positions, drill holes for the provided 1/4" x 2-1/2" screws using a 9/32" drill bit.
- 4) Attach the speaker assemblies and bezel to the vehicle using the fasteners shown in Figure 2. Make sure that the siren wires are clear of the mounting bracket to avoid damage during installation. In addition, **DO NOT TIGHTEN** the mounting screws completely until the speaker is parallel and evenly positioned with the holes on the vehicles exterior.
- 5) Connect the wires from the speaker assembly to the leads coming from the siren control head.  
**NOTE:** When two or more speakers are to be operated by the same control head, the speakers must be connected in phase. In order to accomplish this, the white wires, which are connected to the number 1 terminals on the siren drivers, must be connected together to the same output terminal on the siren amplifier. Likewise, the blue wires, which are connected to the number 2 terminals on the drivers, must be connected together on the other output terminal of the siren amplifier.



**FIGURE 1**



**FIGURE 2**

## Maintenance

Maintenance of your FM100C and FM100V involves the cleaning of the unit and in some cases the replacement of the siren driver, if required.

## Cleaning

Clean with soap and water to remove all salt, dirt or mud. Do not use any abrasive cleaners or harsh chemicals because the protective coating on the aluminum may be damaged allowing the exposed aluminum to dull in appearance or corrode.

## Changing Drivers

Allow the unit to cool for five minutes before attempting any maintenance. For replacing an inoperable driver, the speaker bracket assembly must be removed from the vehicle in reverse order as explained in the installation procedure. Follow the steps below once this has been accomplished. (see Figure 3)

- 1) Remove the driver cap on the front face of the speaker assembly and place it on a flat surface.
- 2) Remove the four screws on the back of the assembly and disassemble the bracket, speaker bell and driver cover.
- 3) Detach the wires from the inoperable driver and reconnect them to the appropriate terminals on the replacement driver.
- 4) Reassemble the speaker assembly to its original state and reattach it to the vehicle following the same steps outlined in the installation and mounting section in this booklet. Make sure the wires are tightly sealed at all exit points from the speaker assembly. Fill any voids with silicone caulking.  
**NOTE:** When reassembling the speaker, make sure to align the drain holes on the driver, driver cover and driver cap (the drain hole on the Atlas driver is located behind a metal tag). These holes should be oriented to the base of speaker/bracket assembly for proper drainage and orientation of the logo on the driver cap.

<b>Trouble-shooting guide</b>		
<b>PROBLEM (SPEAKER)</b>	<b>PROBABLE CAUSE</b>	<b>REMEDY</b>
NO OUTPUT FROM SPEAKER, SIREN AMPLIFIER MAKES NOISE	<ol style="list-style-type: none"> <li>1) OPEN CIRCUIT IN SPEAKER WIRING</li> <li>2) DEFECTIVE DRIVERS</li> </ol>	<ol style="list-style-type: none"> <li>1) CHECK CONNECTIONS AT AMPLIFIER AND SIREN AMPLIFIER</li> <li>2) CHECK RESISTANCE ACROSS SPEAKER WIRES. (3.8 OHMS) AND REPLACE DRIVERS</li> </ol>
LOW OUTPUT FROM SPEAKER	<ol style="list-style-type: none"> <li>1) LOW OUTPUT VOLTAGE FROM AMPLIFIER</li> <li>2) DUAL SPEAKERS NOT CONNECTED IN PHASE</li> </ol>	<ol style="list-style-type: none"> <li>1) REFER TO SIREN AMPLIFIER OWNERS MANUAL</li> <li>2) REFER TO SPEAKER WIRING INSTRUCTION IN MANUAL</li> </ol>

# Parts & Exploded Views

<u>Ref Number</u>	<u>Description</u>	<u>Part No.</u>
3	Speaker wire Assemblies	T04346 & T04347
4	Speaker Screws	T06519
5	Speaker Horn	S85477
6	Driver Cover	T03739
7	100w Siren Driver	T03470
8	Driver Cap	S85478
9	Nose Cone Screw	T09204

## Parts Shown in Fig. 2

<u>Ref Number</u>	<u>Description</u>	<u>Part No.</u>
1	Coated Mounting Bracket	S35470
2	Trim Bezel	T03776

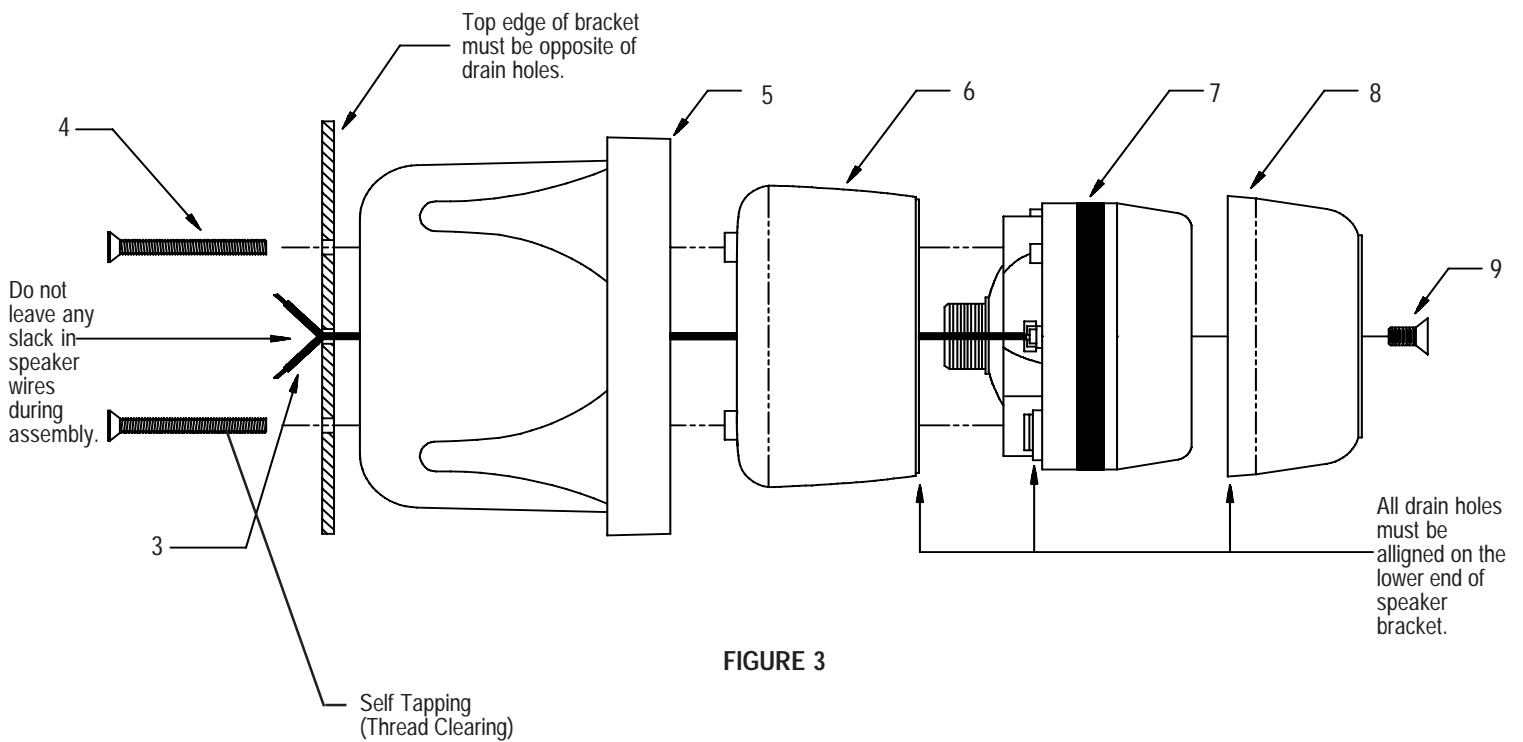


FIGURE 3

# NOTES

# WARRANTY

This product was tested and found to be operational at the time of manufacture. Provided this product is installed and operated in accordance with the manufacturer's recommendations, Public Safety Equipment guarantees all parts and components except the lamps for a period of 1 year from the date of purchase or delivery, whichever is later. Units demonstrated to be defective within the warranty period will be repaired or replaced at the factory service center at no cost.

Use of a lamp or other electrical load of a wattage higher than installed or recommended by the factory, or use of inappropriate or inadequate wiring or circuit protection causes this warranty to become void. Failure or destruction of the product resulting from abuse or unusual use and/or accidents is not covered by this warranty.

PSE shall in no way be liable for other damages including consequential, indirect or special damages whether loss is due to negligence or breach of warranty.

**PSE MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY INCLUDING, WITHOUT LIMITATION, WARRANTIES OF FITNESS OR MERCHANTABILITY, WITH RESPECT TO THIS PRODUCT.**

## PRODUCT RETURNS

In order to provide you with faster service, if you are going to return a product for repair or replacement\*, please contact our factory to obtain a Return Goods Authorization Number (RGA number) before you ship the product to PSE. Write the RGA number clearly on the package near the mailing label. Be sure you use sufficient packing materials to avoid damage to the product being returned while in transit.

\*PSE reserves the right to repair or replace product at its discretion. PSE assumes no responsibility or liability for expenses incurred for the removal and/or reinstallation of products requiring service and/or repair.

**PROBLEMS OR QUESTIONS? CALL OUR TECHNICAL ASSISTANCE HOTLINE (314) 996-2800**

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