FEDERAL SIGNAL
Safety and Security Systems

# Modulator High-Powered Omni Speaker

## Model: MOD Series

Shown with optional QuadraFlare® lights

## *Description, Specifications, Installation, and Service Manual*

*25500059*
*Rev. A3 1223*
*Printed in U.S.A.*

## Limited Warranty

This product is subject to and covered by a limited warranty, a copy of which can be found at www.fedsig.com/SSG-Warranty. A copy of this limited warranty can also be obtained by written request to Federal Signal Corporation, 2645 Federal Signal Drive, University Park, IL 60484, email to info@fedsig.com or call +1 708-534-3400.

This limited warranty is in lieu of all other warranties, express or implied, contractual or statutory, including, but not limited to the warranty of merchantability, warranty of fitness for a particular purpose and any warranty against failure of its essential purpose.

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| | |
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# Safety Messages

**⚠ WARNING**

It is important to follow all instructions shipped with this product. This device is to be installed by trained personnel who are thoroughly familiar with the country's electric codes and will follow these guidelines as well as local codes and ordinances, including any state or local noise-control ordinances.

Listed below are important safety instructions and precautions you should follow:

**Important Notice**

Federal Signal reserves the right to make changes to devices and specifications detailed in the manual at any time in order to improve reliability, function, or design. The information in this manual has been carefully checked and is believed to be accurate; however, no responsibility is assumed for any inaccuracies.

**Publications**

Federal Signal recommends the following publications from the Federal Emergency Management Agency for assistance with planning an outdoor warning system:

- The "Outdoor Warning Guide" (CPG 1-17)
- "Civil Preparedness, Principles of Warning" (CPG 1-14)
- FEMA-REP-1, Appendix 3 (Nuclear Plant Guideline)
- FEMA-REP-10 (Nuclear Plant Guideline).

**Planning**

- If suitable warning equipment is not selected, the installation site for the siren is not selected properly, or the siren is not installed properly, it may not produce the intended optimum audible warning. Follow Federal Emergency Management Agency (FEMA) recommendations.
- If sirens are not activated in a timely manner when an emergency condition exists, they cannot provide the intended audible warning. It is imperative that knowledgeable people, who are provided with the necessary information, be available at all times to authorize the activation of the sirens.
- When sirens are used out of doors, people indoors may not be able to hear the warning signals. Separate warning devices or procedures may be needed to warn people indoors effectively.
- The sound output of sirens can cause permanent hearing damage. To prevent excessive exposure, carefully plan siren placement, post warnings, and restrict access to areas near sirens. Review and comply with any local or state noise control ordinances as well as OSHA noise exposure standards, regulations, and guidelines.
- Activating the sirens may not result in people taking the desired actions if those to be warned are not properly trained about the meaning of siren sounds. Users should follow FEMA recommendations and instruct those to be warned of corrective actions to be taken.

- After installation, service, or maintenance, test the siren system to confirm that it is operating properly. Test the system regularly to confirm that it will be operational in an emergency.

**Installation and Service**

- Electrocution or severe personal injury can occur when performing various installation and service functions such as making electrical connections, drilling holes, or lifting equipment. Therefore, only experienced and qualified electricians should install this product in compliance with national, state, and any other applicable codes, ordinances, and regulations. Perform all work under the direction of the installation or service crew safety foreman.
- The sound output of sirens is capable of causing permanent hearing damage. To prevent excessive exposure, carefully plan siren placement, post warnings, and restrict access to areas near the sirens. Sirens may be operated from remote control points. Whenever possible, disconnect all siren power, including batteries, before working near the siren. Review and comply with any local or state noise control ordinances as well as OSHA noise exposure standards, regulations, and guidelines.
- After installation or service, test the siren system to confirm that it is operating properly. Test the system regularly to confirm that it will be operational in an emergency.
- If future service and operating personnel do not have these instructions to refer to and are not properly trained, the system may not provide the intended audible warning, and service personnel may be exposed to hazards that could result in death, permanent hearing loss, or other bodily injuries. File these instructions in a safe place and refer to them periodically. Give a copy of these instructions to recruits and trainees. Also give a copy to anyone who is going to service or repair the siren.

**Operation**

Failure to understand the capabilities and limitations of your siren could result in permanent hearing loss, other serious injuries, or death to persons too close to the sirens when you activate them or to those you need to warn. Carefully read and thoroughly understand all safety notices in this manual and all operations-related items in all instruction manuals shipped with the equipment. Thoroughly discuss all contingency plans with those responsible for warning people in your community, company, or jurisdiction. A well-written contingency plan document is recommended.

**Hazard Classification**

Federal Signal uses signal words to identify the following:

**⚠ DANGER**

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

**⚠ WARNING**

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.

**⚠ CAUTION**

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

***NOTICE***

NOTICE is used to address practices not related to physical injury.

***Read and understand the information contained in this manual before attempting to deploy or service the siren.***

Pay careful attention to notices located on the equipment.

# General Description

## Introduction

Federal Signal Modulator Series siren products are a family of electronic sirens capable of producing high-intensity warning signals over a large area. The siren consists of a speaker array and Control and Battery Cabinets. A highly efficient design enables the siren to produce a high sound level while making moderate demands on the power source.

Modulator models purchased after September 2017 are preconfigured to support top and side lights kits for visual signaling options that can enhance the proven technology of the Modulator's intelligible voice communication and signaling.

Federal Signal omni-directional, electronic Modulator Series siren consists of aluminum modules that use four 100-watt drivers per module. The Modulator series B is available in several models with the following sound output rating at 100 feet.[1] See Table 1.

The MOD6032B is a 3200-watt siren that uses the MOD6024B siren configuration. The middle two modules use eight 100-watt drivers.

**Table 1 MOD Models Sound Output**

| Model | Decibels at 100 feet |
|---|---|
| MOD1004B[2] | 106 dBC |
| MOD2008B[2] | 112 dBC |
| MOD3012B[2] | 115 dBC |
| MOD4016B[2] | 118 dBC |
| MOD5020B[2] | 120 dBC |
| MOD6024B[2] | 121 dBC |
| MOD6032B[2] | 123 dBC |
| MOD8032B[2] | 124 dBC |

[1]Based on measurements at 500 feet.

[2]Add the letter C to the Modulator model name for Steel/Concrete pole mount model.

The Modulator Series siren provides a virtually flat frequency response from 200-2000 Hz. This gives the siren the ability to produce loud and clear voice messages and produce a full spectrum of warning tones.

An UltraVoice® Controller (Model UV) is needed for complete operation.

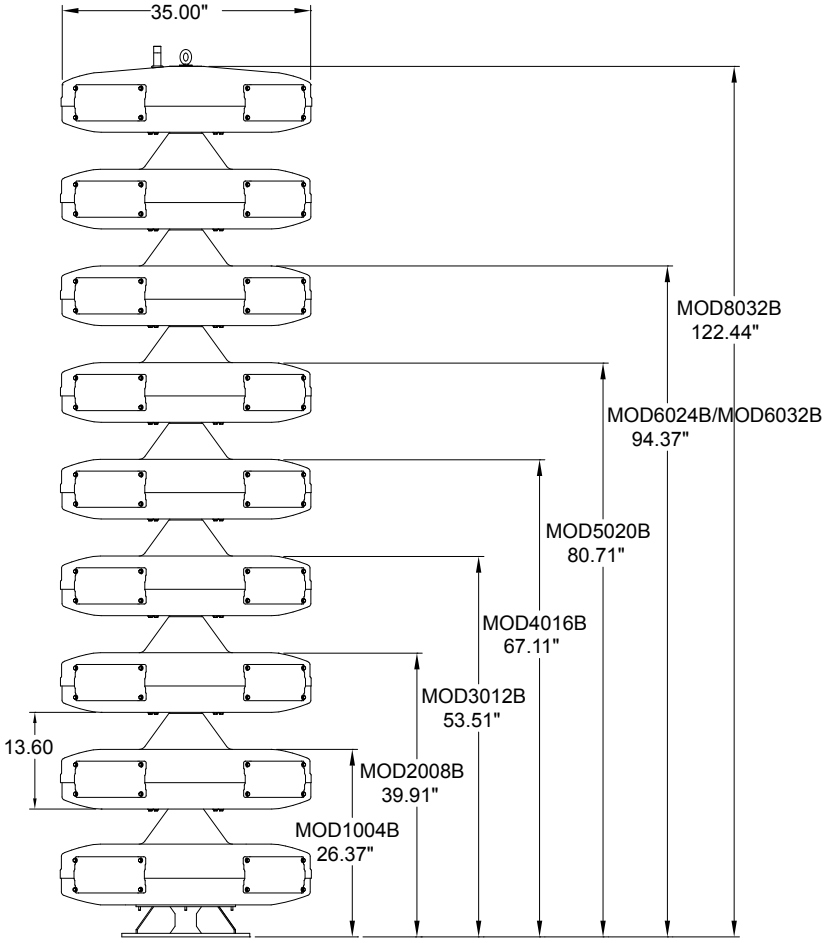
## Features

The Modulator Speaker has the following features:

- Light-weight, compact design
- Uses Federal Signal UltraVoice® for control and amplification
- Excellent frequency response for clear voice reproduction
- 360° coverage without sound variation in horizontal planes
- Easy servicing through convenient access panels
- Anechoic chamber-certified
- Optional visual signaling options that enhance the Modulator's intelligible voice communication and signaling
- New models offer steel/concrete pole mounting solution

The following is a picture of the Modulator.

**Figure 1 Modulator Speaker**



## Ordering Information

Contact our Federal Signal sales engineers to design a system that meets your specific requirements. Specify a speaker array model number. Each speaker array model must be ordered with a specific corresponding UV and amplifier.

**Table 2 Ordering Information**

| Speaker | Controller[1] |
|---|---|
| MOD1004B[2] | UV + 1 UV400 |
| MOD2008B[2] | UV + 2 UV400 |
| MOD3012B[2] | UV + 3 UV400 |
| MOD4016B[2] | UV + 4 UV400 |
| MOD5020B[2] | UV + 5 UV400 |
| MOD6024B[2] | UV + 6 UV400 |
| MOD6032B[2] | UV + 8 UV400 |
| MOD8032B[2] | UV + 8 UV400 |

[1]Controllers available in radio, IP, and landline.

[2]Add the letter C to the Modulator model name for Steel/Concrete pole mount model.

**NOTE**: For the standard cable length supplied with the siren, see “Table 13 Number of Wires and Cable Length per Module” on page 20. The extension cable is also available in 10-foot increments. Mounting the UV controller farther than 100 feet is not recommended. (Farther mounting may decrease the power output.)

# Specifications

**Table 3 General Specifications**

| | |
|---|---|
| Color | Weather Guard White III |
| Paint Type | TGIC Polyester Powder Coat |
| Modular Horn Type | Hyperbolic Flare |
| Frequency Response | 200-2000 Hz |
| Horizontal Coverage | 360 Degrees |
| Bottom (non-active) Module* Dimensions | 13-1/2 x 35 inches Diameter |
| Input Voltage | 66 $V_{RMS}$ min., 400 W max. |

* The bottom module of the siren is a passive device that does not contain any drivers. Its functional use is to complete the horn formed by the bottom and the first active module. The bottom module also provides a mounting solution for the optional side lights.

The following tables list each MOD model number with its specifications. Each speaker array model must be ordered with a specific corresponding UV and Amplifier.

Wind load calculations are for speaker array only.

**Table 4 MOD1004B**

| | |
|---|---|
| Number of Active Modules | 1 |
| Power | 400 watts |
| dB Output | 106 dBC at 100 feet (30.48 m) |
| Height of Speaker Array | 26.37 inches (66.98 cm) |
| Weight | 125 lb (56.70 kg) |
| EPA at 40 feet (12.19 m) | 3.30 $ft^2$ (0.31 $m^2$) |
| Wind Load (110 mph, 40 feet above ground) | 252 lb (114.31 kg) |

**Table 5 MOD2008B**

| | |
|---|---|
| Number of Active Modules | 2 |
| Power | 800 watts |
| dB Output | 112 dBC at 100 feet (30.48 m) |
| Height of Speaker Array | 38.91 inches (98.83 cm) |
| Weight | 190 lb (86.18 kg) |
| EPA at 40 feet (12.19 m) | 4.94 $ft^2$ (0.46 $m^2$) |
| Wind Load (110 mph, 40 feet above ground) | 378 lb (171.46 kg) |

**Table 6 MOD3012B**

| | |
|---|---|
| Number of Active Modules | 3 |
| Power | 1200 watts |
| dB Output | 115 dBC at 100 feet (30.48 m) |
| Height of Speaker Array | 53.51 inches (135.92 cm) |
| Weight | 255 lb (115.67 kg) |
| EPA at 40 feet (12.19 m) | 6.59 $ft^2$ (0.61 $m^2$) |
| Wind Load (110 mph, 40 feet above ground) | 504 lb (228.61 kg) |

**Table 7 MOD4016B**

| | |
|---|---|
| Number of Active Modules | 4 |
| Power | 1600 watts |
| dB Output | 118 dBC at 100 feet (30.48 m) |
| Height of Speaker Array | 67.11 inches (170.46 cm) |
| Weight | 320 lb (145.15 kg) |
| EPA at 40 feet (12.19 m) | 8.24 $ft^2$ (0.77 $m^2$) |
| Wind Load (110 mph, 40 feet above ground) | 630 lb (285.76 kg) |

**Table 8 MOD5020B**

| | |
|---|---|
| Number of Active Modules | 5 |
| Power | 2000 watts |
| dB Output | 120 dBC at 100 feet (30.48 m) |
| Height of Speaker Array | 80.71 inches (205.00 cm) |
| Weight | 385 lb (174.63 kg) |
| EPA at 40 feet (12.19 m) | 9.89 $ft^2$ (0.92 $m^2$) |
| Wind Load (110 mph, 40 feet above ground) | 756 lb (342.92 kg) |

**Table 9 MOD6024B**

| | |
|---|---|
| Number of Active Modules | 6 |
| Power | 2400 watts |
| dB Output | 121 dBC at 100 feet (30.48 m) |
| Height of Speaker Array | 94.37 inches (239.70 cm) |
| Weight | 450 lb (204.12 kg) |
| EPA at 40 feet (12.19 m) | 11.54 $ft^2$ (1.07 $m^2$) |
| Wind Load (110 mph, 40 feet above ground) | 882 lb (400.07 kg) |

**Table 10 MOD6032B**

| | |
|---|---|
| Number of Active Modules | 6 |
| Power | 3200 watts |
| dB Output | 123 dBC at 100 feet (30.48 m) |
| Height of Speaker Array | 94.37 inches (239.70 cm) |
| Weight | 496 lb (224.98 kg) |
| EPA at 40 feet (12.19 m) | 11.54 $ft^2$ (1.07 $m^2$) |
| Wind Load (110 mph, 40 feet above ground) | 882 lb (400.07 kg) |

**Table 11 MOD8032B**

| | |
|---|---|
| Number of Active Modules | 8 |
| Power | 3200 watts |
| dB Output | 124 dBC at 100 feet (30.48 m) |
| Height of Speaker Array | 122.44 inches (311 cm) |
| Weight | 580 lb (263.08 kg) |
| EPA at 40 feet (12.19 m) | 14.85 $ft^2$ (1.38 $m^2$) |
| Wind Load (110 mph, 40 feet above ground) | 1134 lb (514.37 kg) |

# Installation

**⚠ WARNING**

***SOUND HAZARD: The output level of a siren is capable of causing permanent hearing damage. To prevent excessive exposure, carefully plan siren location and post warnings where excessive levels may be encountered. Refer to OSHA 29 CFR 1910.95 for safe exposure limits.***

***Do not expose personnel to sound levels above 123 dBC.***

## Determining a Suitable Location

Careful consideration of the factors affecting the propagation of sound from the siren and the response of the human ear to the sound will optimize the ability of the siren to warn the community effectively. Follow Federal Emergency Management Agency (FEMA) guidelines when designing the warning system.

As the distance from the siren increases, the reduction of signal intensity and the minimum desired signal level at the fringe of the area to be covered are important considerations when choosing a siren installation site. As the distance from the siren increases, sound level losses accumulate. These losses result from weather conditions, the terrain, obstructions in the sound path, the pitch of the sound, and the height of the siren.

Optimum sound propagation conditions occur when no obstructions exist in the sound path, the terrain is hard and flat, and the air is blowing away from the source. Under these conditions, you can expect a 6 dB loss per distance doubled. A loss per distance doubled of 10 dB is typically experienced because atmosphere is rarely calm, terrain may not be flat, and buildings or other obstructions are frequently present in the sound path.

Using a 10 dB per distance doubled loss factor, the following sound levels are predicted for the sirens in the following table.

**Table 12 Sound levels predictions**

| Distance | MOD6024B |
|---|---|
| 100 feet (30.5 m) the sound level is | 121 dB |
| 200 feet (61 m) the sound level is | 111 dB |
| 400 feet (122 m) the sound level is | 101 dB |

FEMA studies indicate typical ambient sound levels vary by location as follows:

- Industrial Areas: 70+ dBC
- Urban Areas: 60 dBC
- Rural Areas: 50 dBC

Assuming a typical 10 dB loss per distance doubled and a 70 dB minimum sound level required to warn a typical urban area, the effective range of a MOD6024B is approximately 3,900 feet.

Optimum warning is obtained when the warning signal is at least 10 dB above ambient. Do not expose personnel to sound levels above 123 dBC.

Wind speed and direction often affect the propagation of sound from the siren. Consequently, the direction of the prevailing wind may be a significant factor to consider when selecting the installation site(s) of a small, one- or two-site siren system. For example, if the prevailing wind is from the west, it may be desirable to install the siren toward the western edge of the area to be covered.

Other factors to consider when selecting the installation site(s) include the availability of suitable electrical power, the access to and ease of installation and maintenance, the height of surrounding obstructions, and security against vandalism and any applicable state or local noise control ordinance.

## Installing the Sirens

**⚠ DANGER**

***ELECTROCUTION HAZARD: Electrocution or severe personal injury can occur when making electrical connections, drilling holes, or lifting equipment. Therefore, experienced electricians in accordance with national and local electrical codes, acting under the direction of the installation crew safety foreman, should perform the installation.***

Most siren installations are one of two types: Pole Mount or Flat Surface Mount. These two configurations make installing a siren possible in almost any situation. If the installations in this section are unsuitable, modifying one of the configurations may be practical.

A siren is typically installed 40 to 50 feet above the ground. If the installation is located less than 40 feet above the ground, the sound intensity at close range may increase, but at the same time, the effective range of the siren may be reduced. Conversely, if the siren is located more than 50 feet above ground, the effective range of the siren may increase, but the sound may skip over areas closer to the siren. These variables may make it desirable to test the sound coverage of the siren at various heights and locations whenever possible.

**NOTE**: To protect the speaker arrays from damage during shipping, all models have been shipped without drivers installed.

### Connecting the Driver Wires

After uncrating the siren, connect the driver wires:

1. Remove the four (4) driver access doors from each individual active module by removing the four (4) bolt and washer sets of each door. Note the position of the flat washer and lock washer.
2. Thread the drivers clockwise onto the horn throats.
3. Hand tighten approximately a half turn after gasket engagement.
4. Locate the two (2) wires tie wrapped near the end of the horn throat.
5. Note the label on the back of the drivers.
6. Connect the solid wire to terminal 1, the striped wire to terminal 2, and white jumpers from 1 to 2 as shown in “Figure 6 Driver Connections” on page 20.

**⚠ WARNING**

***SOUND REDUCTION HAZARD: Connecting driver wires out of phase may cause severe reduction in sound output, which may result in serious injury or death.***

## Wooden Pole Mounting

A typical wooden pole-mounted siren installation is shown in Figure 3. The siren is mounted on a Class 2 utility pole (ANSI-type wooden pole or equivalent) with a minimum horizontal ground stress rating of 3,700 pounds (1678 kg). Ensure that soil loads will conform to this utility pole size. It is attached to the pole using legs, as shown in Figure 2.

**Figure 2 Siren Leg Assembly**

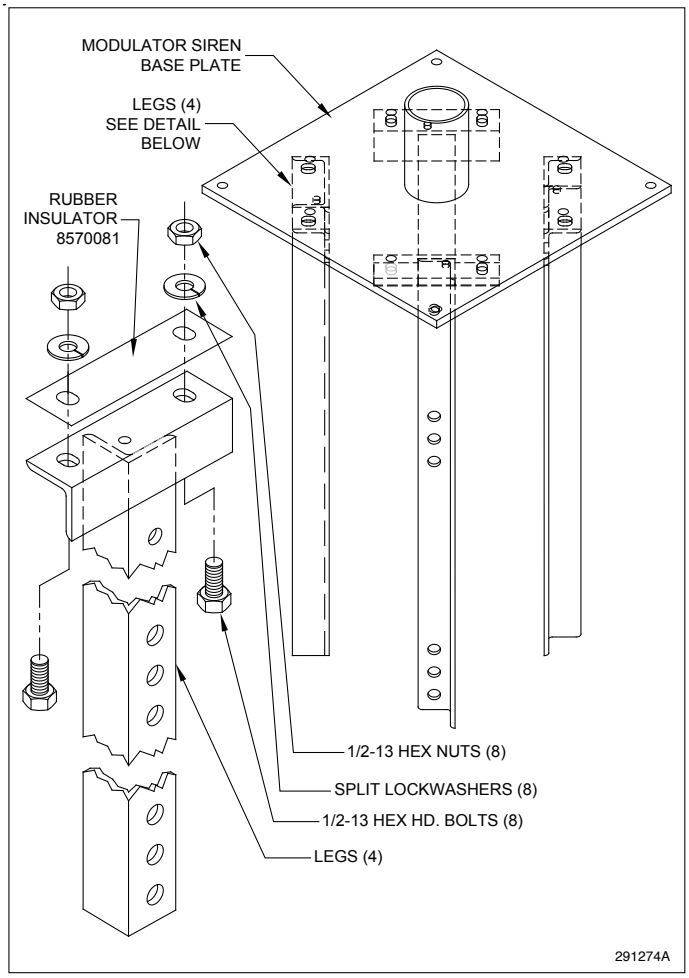
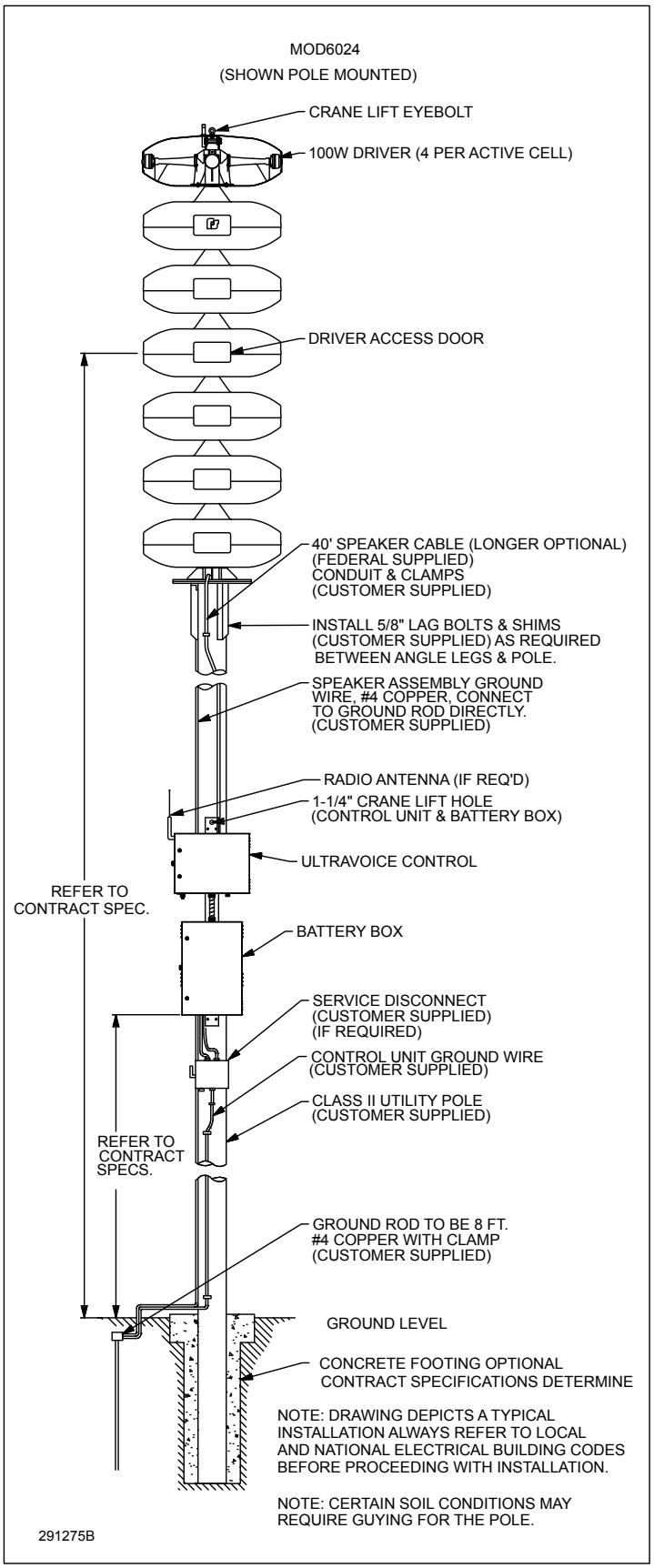


**Figure 3 Typical Wooden Pole-mounted Installation**



To mount the siren on the Class 2 utility pole using the three-foot-long angle iron legs:

1. Uncrate the siren and remove the nuts that hold the siren on the shipping base. Install drivers if needed. Lift the siren approximately 3-1/2 feet with a crane or hoist.

   **NOTE**: To protect the speaker arrays from damage during shipping, all models have been shipped without drivers installed.

2. If you ordered optional top and side lights, see “Installing Lights on the Siren” on page 22. You may want to install the lights before placing the siren onto the pole.

3. Install the four legs on the siren mounting plate, as shown in “Figure 2 Siren Leg Assembly” on page 15. Use two stainless steel 1/2-inch bolts, nuts, and lock washers (provided) for each leg. All mounting hardware needed is supplied in the hardware kit shipped with this manual. Do not tighten the bolts completely.

***NOTICE***

***INSTALLATION PRECAUTIONS: The eyebolt does NOT have sufficient strength to support the combined weight of the siren and a utility pole. Therefore, do NOT attempt to erect the pole and siren together using the eyebolt as a lifting point.***

4. Erect the utility pole according to accepted practices and FEMA guidelines. (Refer to notice.) Ensure the pole extends at least 40 feet above the ground.

5. Raise the siren to the necessary height and lower it over the pole. Maintain tension on lifting chain until all bolts are tightened.

6. Adjust the legs and insert shims, if necessary, between the siren legs and pole. Bolt the siren to the pole using two user-supplied 5/8-inch lag bolts, at least 4 inches long, for each leg. Tighten all bolts, including those from step 2.

## Steel Pole Mounting

In a typical steel pole-mounted siren installation, the MOD1004BC, MOD2008BC, and MOD3012BC sirens are mounted on a Grade A Standard galvanized steel pole. The MOD4016BC, MOD5020BC, MOD6024BC, MOD6032BC, and MOD8032BC are mounted on a Grade A Heavy galvanized steel pole. (Ensure that soil loads will conform to this utility pole size.)

**NOTE**: The siren leg assembly is not included with the steel/concrete pole models.

To mount the siren on a Grade A Standard galvanized steel pole:

1. Erect the steel utility pole according to accepted practices and FEMA guidelines.

2. Uncrate the siren. Remove and dispose of any hardware that holds the siren on the shipping base. Install drivers. Lift the siren with a crane or hoist to the necessary height and lower it over the pole. Maintain tension on the lifting chain until all bolts are tightened.

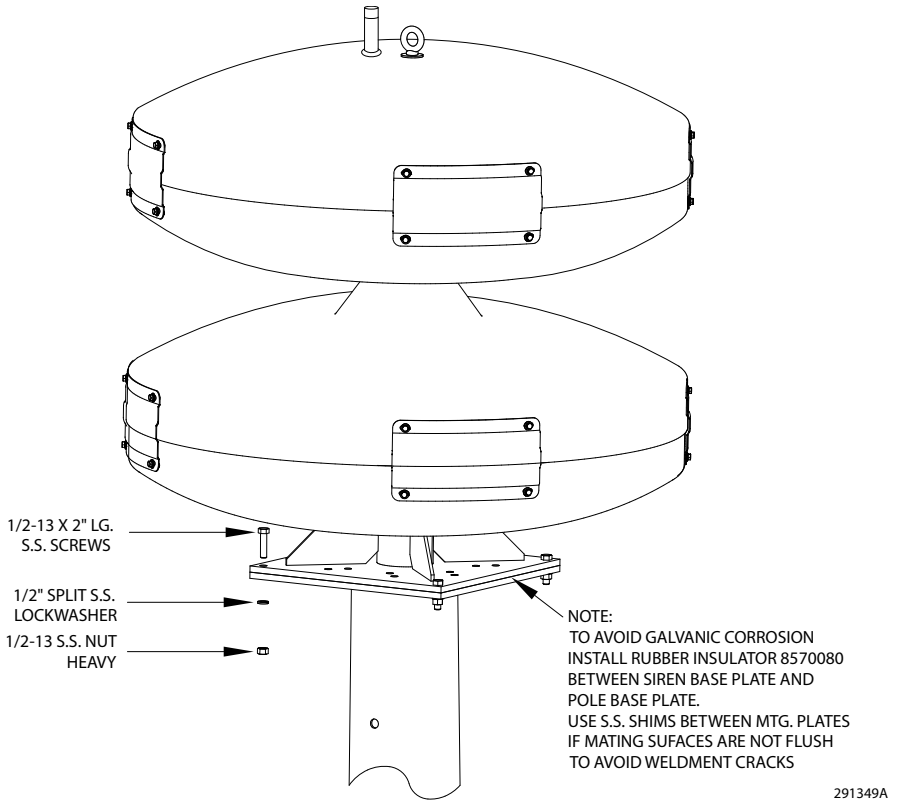
3. If you ordered optional top and side lights, see Installing Lights on the Siren. You should install lights before placing the siren onto the poll.

**NOTE**: Siren cable is run through the center of the mounting plate through the steel pole. The siren cable can be pre-assembled through center of mounting plate for a no-conduit installation.

***NOTICE***

***INSTALLATION PRECAUTIONS: The eyebolt does NOT have sufficient strength to support the combined weight of the siren and a utility pole. Therefore, do NOT attempt to erect the pole and siren together using the eyebolt as a lifting point.***

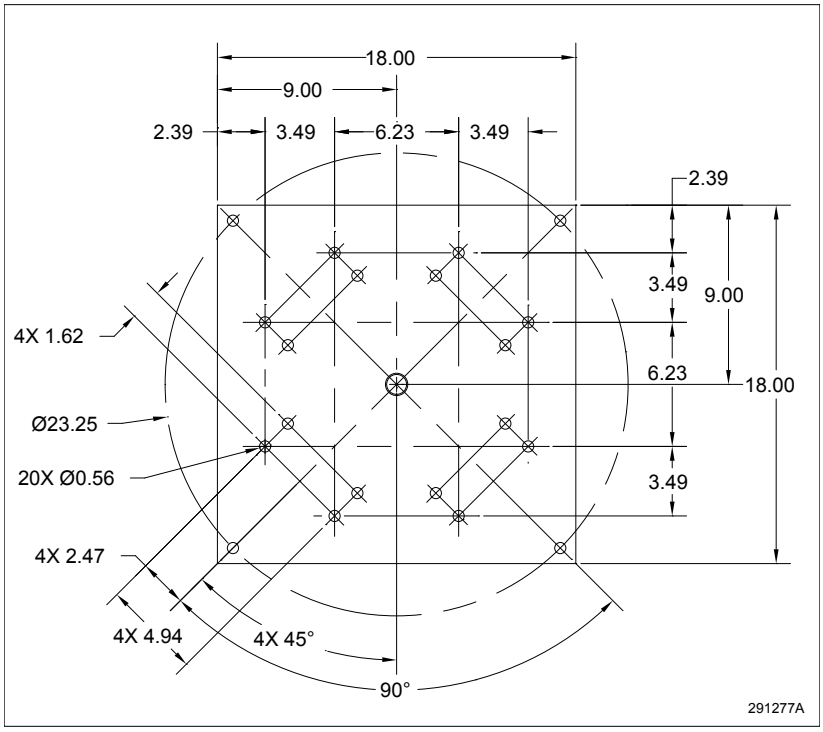
**Figure 4 Steel Pole Mounting**




4. Attach the modulator base to the pole's top plate with rubber insulator 8570080 between them.

5. Use four stainless steel 1/2-inch bolts, nuts, and lock washers provided. (See Figure 4.) All mounting hardware needed is supplied in the hardware kit shipped with this manual. Not all the hardware in the kit will be used in this type of installation. Before tightening bolts, check mounting surfaces for warping. If the modulator base and top plate of pole have a gap greater than approximately 1/16 inch between them, install galvanized or stainless steel shims to even it out. Tighten bolts to 45-46 ft-lb torque.

**Figure 5 Siren Base Plate**




## Flat Surface Mounting

This installation configuration is practical when the installation site is on a flat-roofed building. A weight distribution mat is often required to distribute the siren's weight on the roof safely. A Structural Engineer is required.

## Driver Connections

Depending on the model of siren used, the number of driver connections and wire colors will vary. This is due to the different number of drivers required for each model. See Figures 6 and 7 for wiring and position.

Observe proper polarity when making these connections:

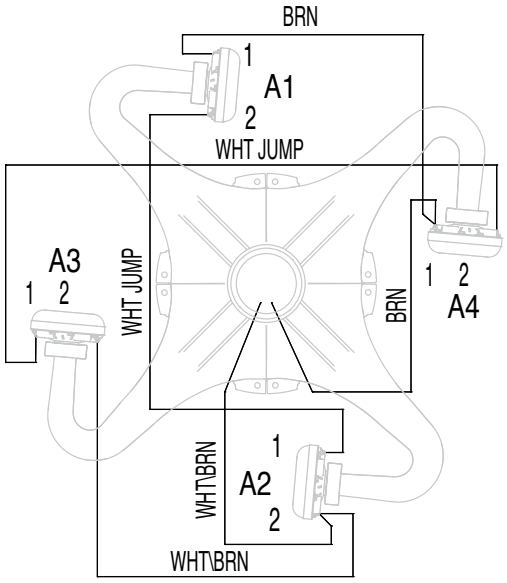
- The striped wire is common and goes to position 2.
- The solid colored wire is signal high and goes to position 1.

**NOTE**: Drivers on all Modulators except MOD1004 and MOD2008 are not assembled due to shipping orientation.

The bottom module in the speaker array is an inactive module. This means there are no drivers contained in the module. The next module up is called module number one. The next module above module one is called module number two, and so forth. These are referred to as active modules. Each active module contains four (4) drivers, except the MOD6032B, which has two modules with eight (8) drivers.

## Figure 6 Driver Connections

| ACTIVE MODULE | SPEAKER CABLE | DRIVER - TERMINAL | JUMPER WIRE | DRIVER - TERMINAL | LIGHT |
|---|---|---|---|---|---|
| | PNK | --- | --- | --- | BOTTOM MOUNT + |
| | BLK | --- | --- | --- | BOTTOM MOUNT - |
| 1 | --- | A1 - 2 | WHT | A2 - 1 | --- |
| | WHT/BRN | A2 - 2 | WHT/BRN | A3 - 2 | --- |
| | --- | A3 - 1 | WHT | A4 - 2 | --- |
| | BRN | A4 - 1 | BRN | A1 - 1 | --- |
| 2 | --- | B1 - 2 | WHT | B2 - 1 | --- |
| | WHT/RED | B2 - 2 | WHT/RED | B3 - 2 | --- |
| | --- | B3 - 1 | WHT | B4 - 2 | --- |
| | RED | B4 - 1 | RED | B1 - 1 | --- |
| 3 | --- | C1 - 2 | WHT | C2 - 1 | --- |
| | WHT/ORG | C2 - 2 | WHT/ORG | C3 - 2 | --- |
| | --- | C3 - 1 | WHT | C4 - 2 | --- |
| | ORG | C4 - 1 | ORG | C1 - 1 | --- |
| 4 | --- | D1 - 2 | WHT | D2 - 1 | --- |
| | WHT/YEL | D2 - 2 | WHT/YEL | D3 - 2 | --- |
| | --- | D3 - 1 | WHT | D4 - 2 | --- |
| | YEL | D4 - 1 | YEL | D1 - 1 | --- |
| 5 | --- | E1 - 2 | WHT | E2 - 1 | --- |
| | WHT/GRN | E2 - 2 | WHT/GRN | E3 - 2 | --- |
| | --- | E3 - 1 | WHT | E4 - 2 | --- |
| | GRN | E4 - 1 | GRN | E1 - 1 | --- |
| 6 | --- | F1 - 2 | WHT | F2 - 1 | --- |
| | WHT/BLU | F2 - 2 | WHT/BLU | F3 - 2 | --- |
| | --- | F3 - 1 | WHT | F4 - 2 | --- |
| | BLU | F4 - 1 | BLU | F1 - 1 | --- |
| 7 | --- | G1 - 2 | WHT | G2 - 1 | --- |
| | WHT/VIO | G2 - 2 | WHT/VIO | G3 - 2 | --- |
| | --- | G3 - 1 | WHT | G4 - 2 | --- |
| | VIO | G4 - 1 | VIO | G1 - 1 | --- |
| 8 | --- | H1 - 2 | WHT | H2 - 1 | --- |
| | WHT/GRY | H2 - 2 | WHT/GRY | H3 - 2 | --- |
| | --- | H3 - 1 | WHT | H4 - 2 | --- |
| | GRY | H4 - 1 | GRY | H1 - 1 | --- |
| | RED/WHT | --- | --- | --- | TOP MOUNT + |
| | RED/BLK | --- | --- | --- | TOP MOUNT - |




TOP VIEW
FIRST ACTIVE MODULE DRIVER ORIENTATION

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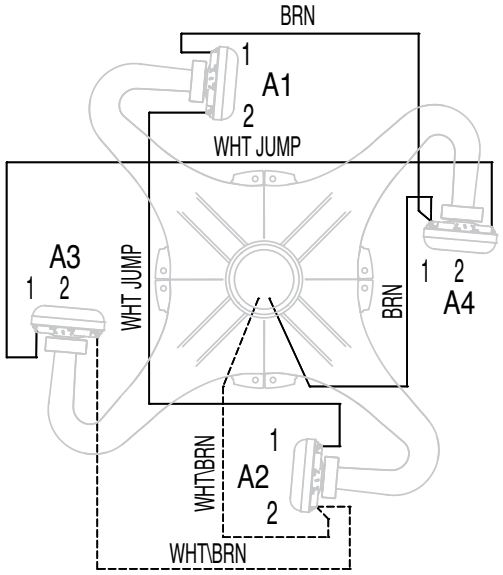
For the standard cable length supplied with the siren, see Table 13. The number of conductors and colors varies from module to module. For example, in a MOD5020B, there are 16 wires, with only 10 of those being used for driver connections. Note that each cable has four spare wires for top or side light connections.

**Table 13 Number of Wires and Cable Length per Module**

| Module | Number of wire and how wires are used | Cable Length |
|---|---|---|
| MOD1004B/MOD1004BC | 8 wires: 2 are used for driver connections, 4 are reserved for top or side lights | 44 ft |
| MOD2008B/MOD2008BC | 8 wires: 4 are used for driver connections, 4 are reserved for top or side lights | 44 ft |
| MOD3012B/MOD3012BC | 16 wires: 6 are used for driver connections, 4 are reserved for top or side lights | 42.5 ft |
| MOD4016B/MOD4016BC | 16 wires: 8 are used for driver connections, 4 are reserved for top or side lights | 42.5 ft |
| MOD5020B/MOD5020B | 16 wires: 10 are used for driver connections, 4 are reserved for top or side lights | 42.5 ft |
| MOD6024B/MOD6024BC | 16 wires: 12 are used for driver connections, 4 are reserved for top or side lights | 42.5 ft |
| MOD8032B/MOD8032BC<br>MOD6032B/MOD6032BC | 20 wires: 16 are used for driver connections, 4 are reserved for top or side lights | 44 ft |

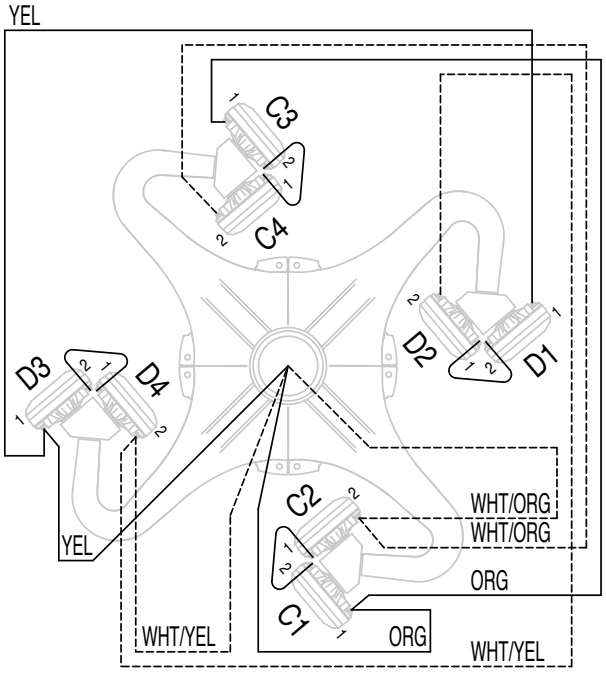
## Figure 7 MOD6032B Driver Connections

| ACTIVE MODULE | SPEAKER CABLE | DRIVER - TERMINAL | JUMPER WIRE | DRIVER - TERMINAL | LIGHT |
|---|---|---|---|---|---|
| | PNK | --- | --- | --- | BOTTOM MOUNT + |
| | BLK | --- | --- | --- | BOTTOM MOUNT - |
| 1 | --- | A1 - 2 | WHT | A2 - 1 | --- |
| | WHT/BRN | A2 - 2 | WHT/BRN | A3 - 2 | --- |
| | --- | A3 - 1 | WHT | A4 - 2 | --- |
| | BRN | A4 - 1 | BRN | A1 - 1 | --- |
| 2 | --- | B1 - 2 | WHT | B2 - 1 | --- |
| | WHT/RED | B2 - 2 | WHT/RED | B3 - 2 | --- |
| | --- | B3 - 1 | WHT | B4 - 2 | --- |
| | RED | B4 - 1 | RED | B1 - 1 | --- |
| 3 | ORG | C1 - 1 | ORG | C3 - 1 | --- |
| | --- | C1 - 2 | WHT | C2 - 1 | --- |
| | WHT/ORG | C2 - 2 | WHT/ORG | C4 - 2 | --- |
| | --- | C3 - 2 | WHT | C4 - 1 | --- |
| | YEL | D3 - 1 | YEL | D1 - 1 | --- |
| | --- | D3 - 2 | WHT | D4 - 1 | --- |
| | WHT/YEL | D4 - 2 | WHT/YEL | D2 - 2 | --- |
| | --- | D1 - 2 | WHT | D2 - 1 | --- |
| 4 | GRN | E1 - 1 | GRN | E3 - 1 | --- |
| | --- | E1 - 2 | WHT | E2 - 1 | --- |
| | WHT/GRN | E2 - 2 | WHT/GRN | E4 - 2 | --- |
| | --- | E3 - 2 | WHT | E4 - 1 | --- |
| | BLU | F3 - 1 | BLU | F1 - 1 | --- |
| | --- | F3 - 2 | WHT | F4 - 1 | --- |
| | WHT/BLU | F4 - 2 | WHT/BLU | F2 - 2 | --- |
| | --- | F1 - 2 | WHT | F2 - 1 | --- |
| 5 | --- | G1 - 2 | WHT | G2 - 1 | --- |
| | WHT/VIO | G2 - 2 | WHT/VIO | G3 - 2 | --- |
| | --- | G3 - 1 | WHT | G4 - 2 | --- |
| | VIO | G4 - 1 | VIO | G1 - 1 | --- |
| 6 | --- | H1 - 2 | WHT | H2 - 1 | --- |
| | WHT/GRY | H2 - 2 | WHT/GRY | H3 - 2 | --- |
| | --- | H3 - 1 | WHT | H4 - 2 | --- |
| | GRY | H4 - 1 | GRY | H1 - 1 | --- |
| | RED/WHT | --- | --- | --- | TOP MOUNT + |
| | RED/BLK | --- | --- | --- | TOP MOUNT - |




TOP VIEW

ACTIVE MODULE DRIVERS 1, 2, 5 & 6 ORIENTATION




TOP VIEW

ACTIVE MODULE DRIVERS 3 & 4 ORIENTATION

## Installing Lights on the Siren

Modulator models can be ordered with optional top lights and/or side lights. If not ordered with the Modulator siren, they can be added later by purchasing the Top Light Kit (Federal Signal part number 191XL-024R) or Side Light Kit (Federal Signal part number MOD-QF-KIT). Modulator models purchased after September 2017 are preconfigured to support Top Light and Side Light Kits.

**NOTE**: The standard light referenced is red, but other colors are available.

The following instructions refer to the configuration of the Modulators that have been preconfigured.

### Installing the Top Light Kit

The Top Light Kit is installed onto the strobe bracket that extends out of the top module.

To install the Top Light Kit:

1. Remove the strobe bracket cap.
2. Locate the two spare wires within the strobe bracket.
3. Connect the top light wiring to the two spare wires (red/white positive and red/black negative) from the wire harness within the module.

**Figure 8 Top Light**

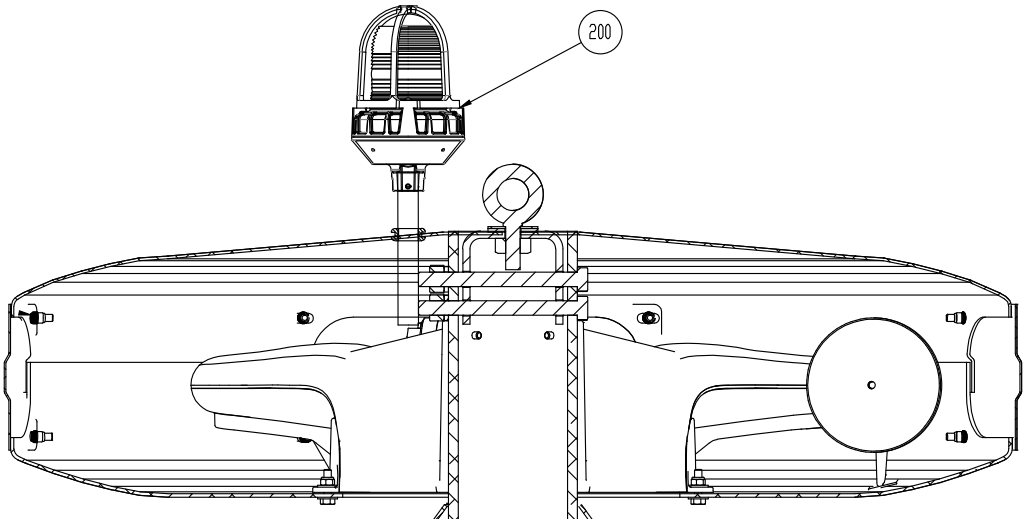



**Table 14 Top Light Kit (Model 191XL-024R)**

| Item No. | Qty. | Description | Part Number |
|---|---|---|---|
| 200 | 1 | Light, HAZ, LOC, LED, Red | 191XL-024R |

## Installing the Side Light Kit

The Side Light Kit is installed on the bottom (inactive) module. See Figures 9 and 10.

To install the Side Light Kit:

1. Replace the standard driver access doors with the side light mounting doors.
2. Wire the four side lights to the two spare wires from the wire harness within the module. Connect the wires (four red and one pink positive) together with a wire nut. Connect the black wires (five black negatives) together with a wire nut. Zip-tie the wires to the pole.

**Figure 9 Side Light**

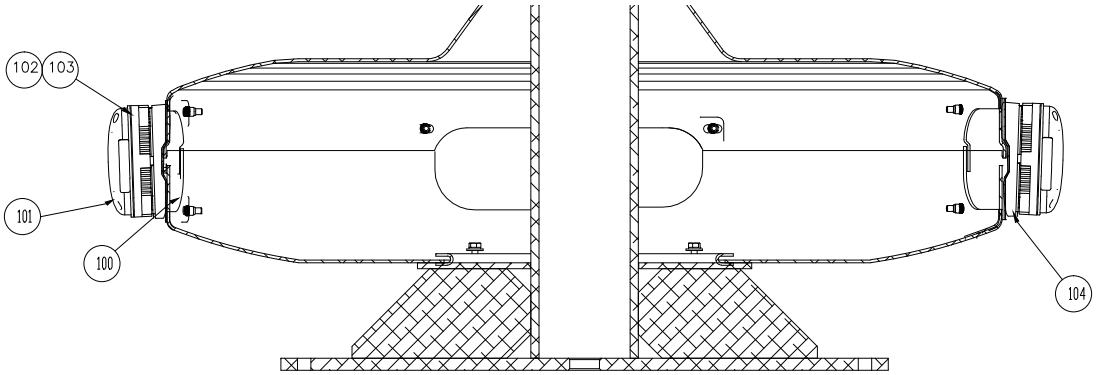
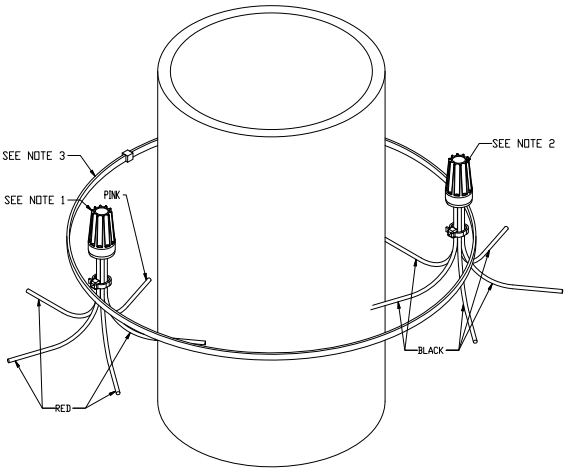



**Table 15 Side Light Kit (Model MOD-QF-KIT)**

| Item No. | Qty. | Description | Part Number |
|---|---|---|---|
| 100 | 4 | Door, Driver Access, QF MNT | 857000018A-01 |
| 101 | 4 | QuadraFlare® LED, 24 V, Red | QL64-24RR-ANS |
| 102 | 16 | Screw, Machine, 6-32, Phillips®, Stainless Steel | 7000A427-28 |
| 103 | 16 | Nut, Hex, Ext KEPS®, 6-32 | 7058A046 |
| 104 | 4 | QL64, Radiused Wedge, Gasket | 801201900A |

**Figure 10 Side Light Wiring**




NOTES:

1. RED WIRES FROM QUADRAFLARE SHOULD BE WIRE TIED TO PINK WIRE FROM 17501367A AND TWISTED INTO 19901365A.
2. BLACK WIRES FROM QUADRAFLARE SHOULD BE WIRE TIED TO BLACK WIRE FROM 17501367A AND TWISTED INTO 19901365A
3. WIRE BUNDLE SHOULD THEN BE CABLE TIED TO POLE.

## Pre-Operation Checkout

After the siren has been completely installed, perform the following checks before putting the siren into service.

**⚠ WARNING**

***SOUND HAZARD: The output sound level of a siren is capable of causing severe hearing discomfort or permanent hearing damage. Therefore, ALWAYS wear appropriate hearing protection when performing tests or maintenance on the siren, and post warnings to warn people before they are exposed to excessive sound pressure levels.***

1. Ensure all connections in the Control and Battery Cabinets are correct and properly tightened.
2. Activate wail on the control panel. Check for proper sound output and siren tone.
3. After the installation is complete and it has been established that the siren is operating properly, Federal Signal recommends that all control devices be padlocked to discourage tampering and vandalism.

# Maintenance

**⚠ WARNING**

***SOUND HAZARD: Service or maintenance should be performed by qualified personnel familiar with the siren, associated controls, and power sources being used.***

***The sound output of sirens is capable of causing permanent hearing damage at short distances. Therefore, ALWAYS wear hearing protection when performing tests or maintenance on the siren and avoid excessive exposure.***

***To prevent the siren from sounding, always turn off the power to the siren at the disconnect switch and remove any DC power being supplied by the battery box before inspecting or maintaining the siren.***

***Before servicing or maintaining, ensure that remote activation cannot occur and disconnect power to the siren and its controls.***

Test the siren for proper operation at least once a month. A daily test at noon, curfew, or other selected time is preferred. This not only enhances the usefulness of the siren and verifies that it remains ready for use in an emergency but also instills public confidence in the reliability of the warning system.

In order to minimize the possibility of siren failure, annual inspection and maintenance are desirable.

Perform a driver inspection as described in the next section.

## Replacing the Driver

To determine if a driver is defective, refer to the procedure outlined in the installation instructions for the amplifier control unit or remove the speaker circuit from the terminal block and measure the impedance of the circuit. The impedance of each 400 W cell of the siren will measure approximately 4.5 ohms. If the reading is higher (9 ohms), one driver is defective. If the circuit is open, multiple drivers are defective, or a wire has been severed. The impedance of a single driver should be 2.25 ohms.

To determine the location of the defective driver, see “Figure 6 Driver Connections” on page 20 and “Figure 7 MOD6032B Driver Connections” on page 21.

To replace a defective driver:

1. Remove the four hex head 1/4-inch mounting bolts holding the inspection plate. Make sure the flat washer and split washer are not misplaced. Note the color and location of the wires going to the driver.
2. Remove the wire from the terminals on the driver.
3. Remove the driver by turning it counterclockwise.
4. Add a new driver by turning it clockwise.
5. Make sure that the male threads are greased.
6. Reconnect the wires as previously noted.

## Ordering Parts

To order replacement parts, call customer support.

**Table 16 Replacement Parts**

| Description | Part Number |
|---|---|
| Top Light Kit | 191XL-024R |
| Side Light Kit | MOD-QF-KIT |
| Driver, 100 watts | K8570063A |

# Getting Technical Support and Service

For technical support, contact:

Federal Signal
Technical Support
Phone: 800-524-3021 or 708-534-4790
Email: techsupport@fedsig.com
www.fedsig.com

For customer support, contact:

Federal Signal
Customer Support
Phone: 800-548-7229 or 708-534-3400 extension 367511
Email: customersupport@fedsig.com
www.fedsig.com

FEDERAL SIGNAL
Safety and Security Systems

2645 Federal Signal Drive
University Park, Illinois 60484

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