

PRICE \$4.00



MODEL eQ2B AND MODEL eQ2B-100W ELECTRONIC SIRENS



INSTALLATION, OPERATION, AND SERVICE INSTRUCTIONS

LIMITED WARRANTY

The Signal Division, Federal Signal Corporation (Federal), warrants each new product to be free from defects in material and workmanship, under normal use and service, for a period of two years on parts replacement and one year on labor from the date of delivery to the first user-purchaser.

During this warranty period, the obligation of Federal is limited to repairing or replacing, as Federal may elect, any part or parts of such product which after examination by Federal discloses to be defective in material and/or workmanship.

Federal will provide warranty for any unit which is delivered, transported prepaid, to the Federal factory or designated authorized warranty service center for examination and such examination reveals a defect in material and/or workmanship.

This warranty does not cover travel expenses, the cost of specialized equipment for gaining access to the product, or labor charges for removal and re-installation of the product. Lamps, flash tubes, or batteries are not covered under warranty.

This warranty does not extend to any unit which has been subjected to abuse, misuse, improper installation or which has been inadequately maintained, nor to units which have problems relating to service or modification at any facility other than the Federal factory or authorized warranty service centers.

THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL FEDERAL BE LIABLE FOR ANY LOSS OF PROFITS OR ANY INDIRECT OR CONSEQUENTIAL DAMAGES ARISING OUT OF ANY SUCH DEFECT IN MATERIAL OR WORKMANSHIP.



FEDERAL SIGNAL CORPORATION
Emergency Products

SECTION I

GENERAL DESCRIPTION



Figure 1-1.

Federal Signal's state-of-the-art eQ2B electronic siren (figure 1-1) carries on the tradition of our classic Q2B electro-mechanical siren. The eQ2B combines Digital Signal Processor (DSP) technology with true 200 watts of speaker output to reproduce genuinely and accurately the distinctive sound of the "Q" siren. In addition to the recognizable "Q" sound, the eQ2B provides all of the functionality of an electronic siren with PA.

The eQ2B is a modular system comprised of a 200-watt speaker, sold separately as the BP200-EF or BP200-Q, an Amplifier/DSP, and a Digital Output Control Head. These components work together to generate the characteristic sound of Federal's "Q" siren.

Using DSP circuitry, the eQ2B's amplifier is able to reproduce the true "Q" sound, rather than relying on a simple digital recording. The DSP enables the product to function either manually or automatically for hands free operation.

The eQ2B mechanical speaker system incorporates two 100-watt neodymium drivers that enable the unit to reproduce the harmonics that are essential for the precise reproduction of the "Q" sound. In order to deliver the "Q" sound effectively, the eQ2B's powerful speaker system produces a full 200 watts of output.

The eQ2B speaker mounts attractively within the bumper of your vehicle, behind an optional classic, chrome plated "Q" grille (Model BP200-Q). This speaker system allows you to clear traffic with the penetrating sound of the "Q" and also allows you to

maintain the traditional look of the "Q" siren when using the optional "Q" grille.

The Digital Output Controller digitally transmits and prioritizes end-user commands. The control head/amplifier interface utilizes solid-state digital decoding, which minimizes interconnection complexity.

The Digital Output Control Head allows the end-user to operate several siren functions. The traditional "Q" Wail can be activated in automatic or manual modes. Additional features include a "Q" Yelp, "Q" Brake, digitally recorded Air Horn, PA/radio rebroadcast, and push-to-talk via an integral microphone. PA volume can be adjusted by the user with a volume control potentiometer.

The eQ2B has been designed to not only reproduce the *LOOK* and *SOUND*, but also the *FEEL* of the traditional "Q-siren". In order to re-create the "Q" feel, the Digital Output Controller provides three external inputs. These inputs allow for the use of externally configured foot switches for activating the siren in the manual mode using the Cycle, Brake, and Air Horn Functions.

The eQ2B amplifier may be installed in the trunk, under the seat, or under the dash of any vehicle with a 12-volt, NEGATIVE ground electrical system. The siren circuits are protected from failure by replaceable fuses inside the siren housing.

CAUTION

The eQ2B Amplifier Unit housing is NOT waterproof. It must be mounted in a location which is sheltered from falling rain, snow, standing water, etc. Also, it must be installed in an **adequately ventilated area. Never install near heater ducts.**

Do not mount the eQ2B Amplifier Unit under the vehicle's hood.

The Model eQ2B-100W is a 100-watt siren. It incorporates all the features of the standard 200-watt siren, but is designed to drive a single 100-watt speaker, such as a Federal Signal Model BP100.

SECTION II SPECIFICATIONS

2-1. GENERAL.

Input Voltage	11VDC to 16VDC.
Polarity	Negative ground only.
Operating Temperature Range.....	-30°C to +65°C.
Standby Current	Less than .5 ampere

Dimensions:

Amplifier/DSP Unit

Height	3-1/4" (8.3cm)
Width	9-1/8" (23.2cm)
Length.....	14-1/4" (36.2cm)
Net Weight.....	7.31 lbs. (3.3kg).

Control Head

Height	3-1/8" (5.87cm).
Width	1.25" (3.18cm).
Length.....	6-3/4" (17.15cm).
Net Weight.....	9-5/8 oz. (0.273kg).
Shipping Weight	13 lbs. 6 oz. (6.1 kg).

2-2. eQ2B 200-Watt SIREN SPECIFICATIONS.

Operating Current	30 amperes (nominal). (13.6V battery, 5.5 ohm load)
Frequency Range.....	725 to 1600Hz.
Nominal Cycle Rate	Auto - 12 cycles/min. Yelp - 180 cycles/min.
Nominal Voltage Output.....	33Vrms (siren tones).
Audio Response	300Hz to 3,000Hz ± 3db.
Audio Power.....	200 watts in PA Mode (typical with 1.4V peak to peak input).
Harmonic Distortion	Less than 10% from 5 to 200 watts.

2-3. eQ2B-100W 100-Watt SIREN SPECIFICATIONS.

Operating Current	15 amperes (nominal). (13.6V battery, 11 ohm load)
Frequency Range.....	725 to 1600Hz.
Nominal Cycle Rate	Auto - 12 cycles/min. Yelp - 180 cycles/min.
Nominal Voltage Output.....	33Vrms (siren tones).
Audio Response	300Hz to 3,000Hz ± 3db.
Audio Power.....	100 watts in PA Mode (typical with 1.4V peak to peak input).
Harmonic Distortion	Less than 10% from 5 to 100 watts.

SECTION III INSTALLATION

SAFETY MESSAGE TO INSTALLERS OF ELECTRONIC SIRENS



WARNING

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.

⚠ WARNING

When installing equipment inside air bag equipped vehicles, the installer MUST ensure that the equipment is installed ONLY in areas recommended by the vehicle manufacturer.

Failure to observe this warning will reduce the effectiveness of the air bag, damage the air bag, or potentially damage or dislodge the equipment, causing serious injury or death to you or others.

3-1. UNPACKING.

After unpacking the Model eQ2B, examine it for damage that may have occurred in transit. If the equipment has been damaged, 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.

3-2. AMPLIFIER/DSP UNIT MOUNTING LOCATION SELECTION.

When selecting a mounting location for the eQ2B Amplifier/DSP Unit (hereinafter called: Amplifier Unit) and the control head, it is necessary to keep in mind any limitations due to cable length. Before performing any installation, see figure 3-1 (block wiring diagram); plan all wiring and cable routing.

CAUTION

The eQ2B Amplifier Unit housing is NOT waterproof. It must be mounted in a location which is sheltered from falling rain, snow, standing water, etc. **Also, it must be installed in an adequately ventilated area. Never install near heater ducts.**

Do not mount the eQ2B Amplifier Unit under the vehicle's hood.

Some possible Amplifier Unit mounting locations are: under the dash, under the front seat, in a vehicle storage compartment, or in the trunk (under the rear deck, near the rear seat speakers, if vehicle is so equipped).

Using the supplied mounting flanges will allow the Amplifier Unit to be easily removed for wiring and servicing, should it be needed. The amplifier *should be mounted directly* on a metal surface to aid heat dissipation

3-3. AMPLIFIER UNIT MOUNTING.

To install the Amplifier Unit, proceed as follows:

- A. Use the amplifier housing as a template and scribe four drill positioning marks at the selected mounting location (see figure 3-2).

CAUTION

Before drilling holes in ANY part of a 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.

NOTE

The amplifier is equipped with a cooling fan. The amplifier should be mounted so that the fan and cooling slots are free from obstruction.

- B. Drill four mounting holes at the position marks.
- C. Secure the amplifier to the mounting surface with user-supplied hardware.

3-4. CONTROL HEAD INSTALLATION.

Several control head mounting methods are available. The mounting method used will depend on available room, and user preference.

CAUTION

Unreliable switch activation and loss of "tactile feedback" will result if the control head mounting method allows movement. **DO NOT** mount the control head on padded surfaces.

⚠ WARNING

When installing equipment inside air bag equipped vehicles, the installer MUST ensure that the equipment is installed ONLY in areas recommended by the vehicle manufacturer.

Failure to observe this warning will reduce the effectiveness of the air bag, damage the air bag, or potentially damage or dislodge the equipment, causing serious injury or death to you or others.

Choose a location for the control head that allows the vehicle, controls, and microphone to be operated safely at all times.

Using the surface mounting template (located on the last page of this document) as a guide, the control head may be mounted on a flat surface. The two 0.156" holes are clearance holes for the #6 mounting holes on the back of the control head. The 4.231" x 0.870" rectangular area must be removed for terminal block clearance.

See figure 3-3. The control head may be mounted using the supplied hinged mounting bracket. This enables the control head to be mounted in a variety of positions. Positioning the bracket above the unit allows mounting the control head on the underside of the dash. Positioning the bracket below the unit will permit mounting on any horizontal surface. To mount the control head using the bracket, see figure 3-3 and proceed as follows:

- A. Assemble a bracket to the control head using the 6-32 x 1/4 screws and #6 lockwashers. Assemble the other bracket to the control head/bracket assembly using the 1/4-20 x 3/4 hex head screws and 1/4" lockwashers as shown in figure 3-4.

NOTE

The brackets are not symmetrical. After assembling the brackets to the control head, ensure that the assembly can be properly positioned at the intended mounting location. If proper positioning cannot be achieved, reverse the bracket.

- B. Use the mounting bracket as a template and scribe two drill positioning marks at the selected mounting location.

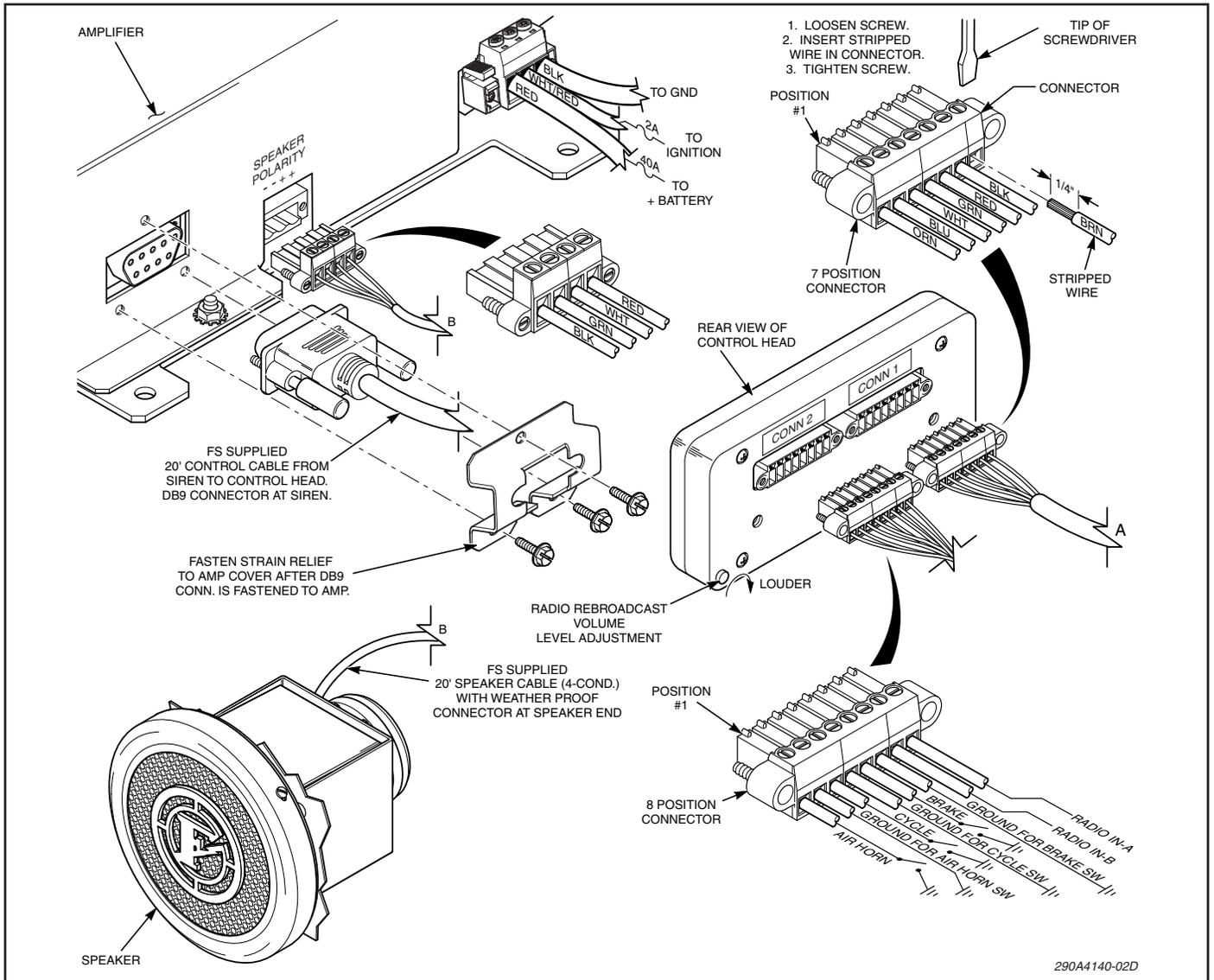


Figure 3-1.

CAUTION

Before drilling holes in ANY part of a 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.

C. Drill two mounting holes at the position marks.

D. Secure the mounting bracket to the mounting surface with the #10 thread-forming screws as shown in figure 3-4.

3-5. ELECTRICAL INSTALLATION.

WARNING

If wires are shorted to the vehicle frame or each other, high current conductors can cause hazardous sparks resulting in electrical fires and molten metal.

Verify that no short circuits exist before connecting to the Positive (+) battery terminal.

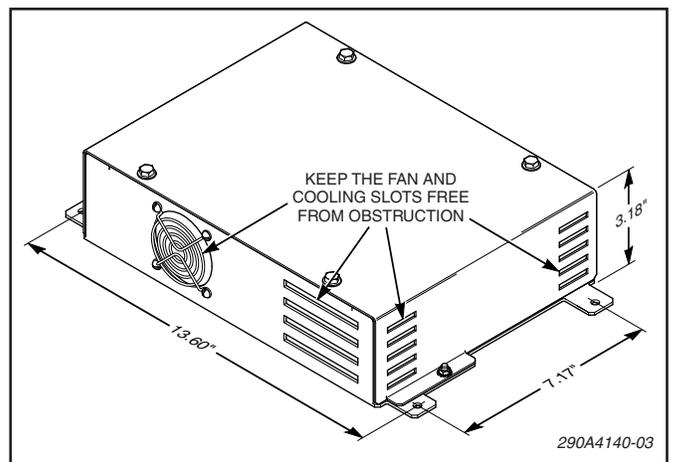


Figure 3-2.

DO NOT connect this system to the vehicle battery until ALL other electrical connections are made and mounting of all components is complete.

Failure to observe this **WARNING** will result in fire, burns and blindness.

A. Power Cable Connections.

The power cable included in the carton is equipped with a three-pin male plug that mates with the connector on the side of the Amplifier Unit (see figure 3-5). This male plug has 3 screw clamps for terminating the 3-conductor power cable. Note that there are 2 locking screws that should be tightened to prevent fretting and disconnection of the male plug to the amplifier unit connector (see figure 3-5). The amplifier is supplied with a three conductor, 20-foot power cable. See figure 3-1. The red (+) is 10AWG and should be connected to a positive source capable of supplying 40-amperes. Install a user-supplied 40-ampere fuse at the source. The unit is internally fused at 40-amperes. The negative (-) black lead is 10AWG and must connect directly to the negative battery terminal. The white lead with red stripe is 12AWG and connects to a switched circuit that is hot, or active, in the ON and START position of the vehicle's ignition system. Install a user-supplied 2-ampere fuse at the source. This line is fused internally with a 2-ampere fuse.

B. Control Head Connections.



WARNING

When installing equipment inside air bag equipped vehicles, the installer MUST ensure that the equipment is installed ONLY in areas recommended by the vehicle manufacturer.

Failure to observe this warning will reduce the effectiveness of the air bag, damage the air bag, or potentially damage or dislodge the equipment, causing serious injury or death to you or others.

All connections between the amplifier and the control head are accomplished by connecting a single 20-foot shielded cable. The cable has a molded DB9 connector at one end which connects to the amplifier's DSP board. The other end of the cable is unterminated. Route this cable through the vehicle compartment and cut off the excess wire. Strip the wire jacket back, and terminate the 7 conductors with the supplied 7-position connector that mates with the connector on the back of the control head as shown in figure 3-1.

If external user-supplied switches (such as a footswitch) are used to activate the siren in manual mode, operate the brake function, or to activate the air horn, terminate these switch wires with the supplied 8-position connector that mates with the connector on the back of the control head as shown in figure 3-1. The external switches, when activated, must provide a good chassis ground to positions 1, 3, and 5 of the 8-position connector. The chassis

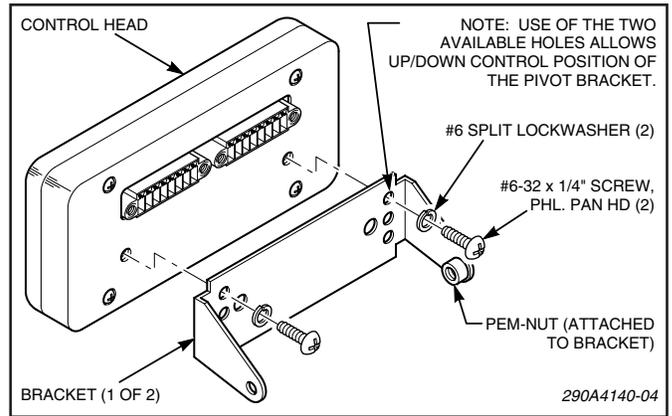


Figure 3-3.

ground for the switches may be provided in either a remote manner or by interconnection to positions 2, 4, and 6 of the 8-position connector. Note that the switch wires are to be supplied by the end user.

To allow incoming radio messages to be rebroadcast over the outside speakers, connect two wires from the vehicle's two-way radio speaker to the back of the control head as shown in figure 3-1.

Federal Signal does not provide wiring to connect these features. It is recommended that the installer use a minimum of 18 gauge wire for these terminations. Document the terminations for future reference and store it in a safe place. Termination of all the control head wire leads is shown in figure 3-1.

C. Model eQ2B 200-watt Speaker Connections.



WARNING

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.

The amplifier is designed to operate with a Federal Signal BP200-Q or BP200-EF 200-watt speaker system. This speaker system utilizes two 11-ohm, 100W

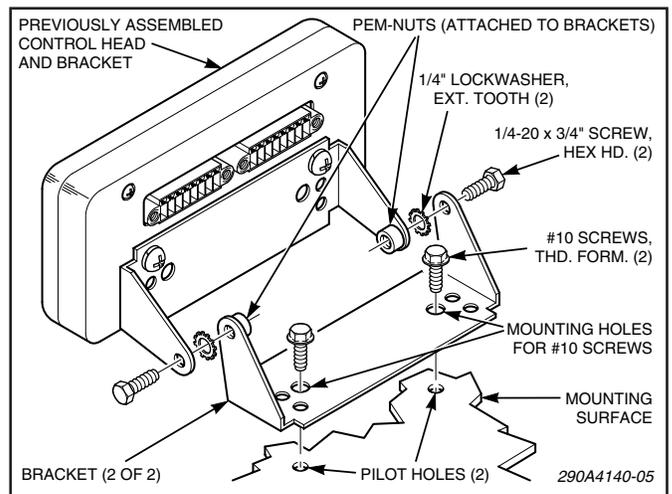


Figure 3-4.

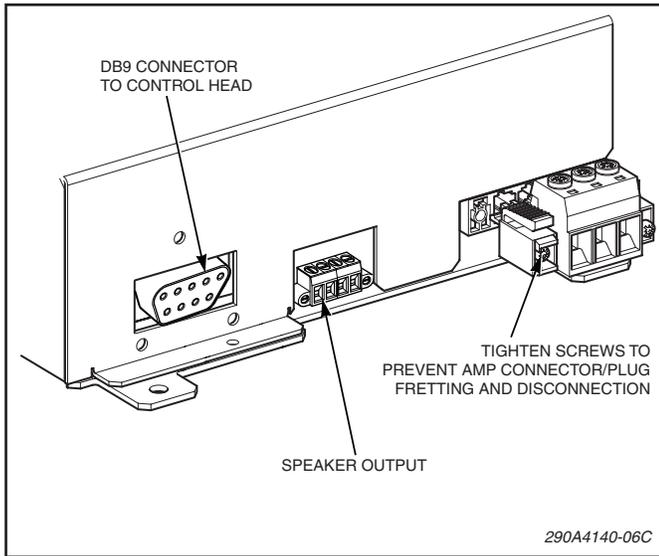


Figure 3-5.

speakers connected in parallel and in phase. The speaker system is not included as part of the electronic siren. Federal Signal speakers are weatherproof and may be installed in any unobstructed convenient location; on the fender, behind the grill, etc. Any special mounting instructions applicable to the type of speaker you have chosen will be found in the speaker carton.

A 20-foot speaker cable is included with each Federal Signal BP200 speaker. This cable has a waterproof connector on one end, which connects to the speaker. The other end of the cable is supplied unterminated. Connect the waterproof connector to the speaker and route the speaker cable through the vehicle compartment to the amplifier. Carefully strip back the outer jacket exposing the four different color conductors. These wires are terminated with the supplied connector that mates with the four position terminal block of the amplifier as shown in figure 3-1. The speaker cable wires are terminated in the waterproof connector as shown in figure 3-6.

The eQ2B was designed to operate optimally when used with the Model BP200-Q or the Model BP200-EF speaker system. It is recommended that the siren is used with these speaker systems. If another speaker system (two 11-ohm, 100-watt speakers) is chosen, connect the speakers as shown in figure 3-7. Use 18AWG (minimum) wire when connecting speakers.

CAUTION

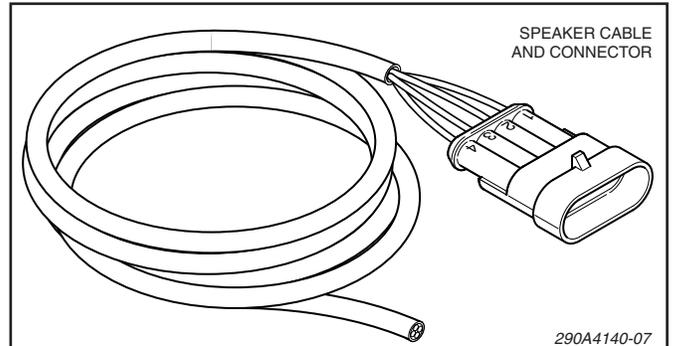
For proper operation and performance, always connect the speakers in parallel and in phase.

D. Model eQ2B-100W 100-watt Speaker Connections.

The eQ2B-100W amplifier is designed to operate with a single 100-watt speaker, such as a Federal Signal Model BP100 (100-watt) speaker. The speaker system is not included as part of the electronic siren. Federal Signal speakers are weatherproof and may be installed in any unobstructed convenient location: on the fender, behind

the grill, etc. Any special mounting instructions applicable to the type of speaker you have chosen can be found in the speaker carton.

Connection of the speaker should be performed as shown in figure 3-7, using only one speaker. Connect the single 11-ohm, 100-watt speaker as either Speaker A or Speaker B. Use 18AWG (minimum) wire when connecting the speaker.



Connector Position No.	Wire Color	Speaker Connection
1	Black	Front Driver Neg. (-)
2	White	Front Driver Pos. (+)
3	Green	Rear Driver Neg. (-)
4	Red	Rear Driver Pos. (+)

Figure 3-6.

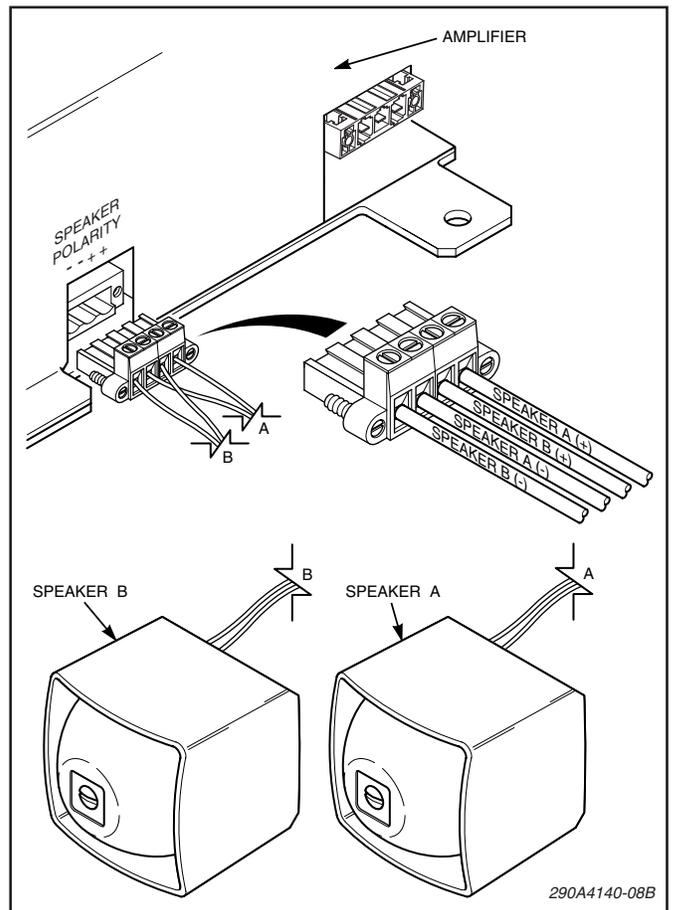


Figure 3-7.

SECTION IV 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.

OPERATING INSTRUCTIONS

The Siren is controlled through use of a Control Head which may be remotely located from the Amplifier.

The Control Head consists of a five-position rotary switch, two pushbutton switches, two paddle switches, and two volume control potentiometers. The two potentiometers are user adjustable for control of PA volume and radio rebroadcast audio level.

Siren operation is determined by a priority level which is assigned to each siren function. From high to low priority, the siren functions are as follows: PA, Radio Rebroadcast, Air Horn, Cycle, Auto, Yelp, Brake, and Manual. If two siren functions are simultaneously requested, the one with higher priority is activated. Lower priority siren functions are overridden by higher priority siren functions. For instance, if AUTO is selected and the AIR HORN switch is activated, the AIR HORN tone sounds and overrides the AUTO function. When the AIR HORN switch is released, the AUTO function is reactivated.

The CYCLE, BRAKE, and AIR HORN functions can be activated either by Control Head switches or by remotely located footswitches. The footswitches, if installed, interconnect to the rear of the Control Head.

The siren may be controlled by the position of the five-position rotary switch located on the Control Head. The five rotary switch positions are PA, OFF, MAN, AUTO, and YELP. In addition, the Radio Rebroadcast function is available while the PA mode of operation is selected and the RADIO switch is in the "ON" position.

If the MAN position is selected, the siren can be manually activated by pressing the CYCLE or BRAKE pushbutton switches, or footswitches (if installed). By activating the CYCLE switch, the siren tone increases in frequency. By releasing the CYCLE switch, the siren tone gradually decreases in frequency. The activation of the CYCLE switch simulates the application of voltage to the original electromechanical "Q" siren. Releasing the CYCLE switch simulates the coasting down of the original electromechanical "Q" siren. The activation of the BRAKE switch

simulates the accelerated braking, or slowing down, of the siren output. This braking action is similar to the original electromechanical "Q" when the brake solenoid is activated.

The AIR HORN function may be selected when the siren is active and a higher priority function is NOT selected. AIR HORN will override the MAN, CYCLE, BRAKE, AUTO, and YELP functions. The microphone via its Push-To-Talk switch, or the PA/Radio Rebroadcast function, will override the AIR HORN function.

When selected, the AUTO function outputs a preprogrammed WAIL tone which exhibits the distinctive "Q" sound. When YELP is selected, the siren outputs a continuous, rapid "warbled" tone.

The Control Head is supplied with a hand-held microphone as standard equipment. The microphone connects to the Control Head at its right-hand side via a modular phone plug. An optional high quality, noise canceling microphone (Federal Model MNC-1) is available for user's whose audio must be of very high quality. Keying the microphone overrides all of the siren functions and produces PA power.

WARNING

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.

PA volume adjustment is accomplished using the volume control knob on the Control Head. Clockwise rotation of the knob increases voice volume in the public address mode.

The radio may be rebroadcast through the siren's speaker. To enable this function, rotate the rotary switch to the PA function and switch the radio switch to the "ON" (up) position. Volume is factory set but may be adjusted by access from the rear of the control head (see figure 3-1). Volume level increases when turning the control clockwise.

SECTION V

SERVICE AND MAINTENANCE

SAFETY MESSAGE TO PERSONNEL SERVICING FEDERAL SIGNAL ELECTRONIC SIRENS

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.

5-1. GENERAL.

The only user-serviceable components in the amplifier are fuses. In order to reduce equipment downtime, Federal recommends that an entire printed circuit board be replaced.

For warranty service, contact your local Distributor.

The factory can and will service your equipment or assist you with technical problems that cannot be handled satisfactorily and promptly locally.

If this unit fails and the failure is of an emergency nature, contact Federal Signal Service Department for an immediate replacement unit.

Communications and shipments should be addressed to:

Service Department
Federal Signal Corporation
2645 Federal Signal Drive
University Park, IL 60466

1-800-433-9132
(In Illinois) 708-534-3400

5-2. REPLACEMENT PARTS LIST.

<i>Reference Designation</i>	<i>Description</i>	<i>Part Number</i>
	Amp Board (200-watt Model eQ2B)	2005112
	Amp Board (100-watt Model eQ2B-100W)	2005112-01
	Control Head Board	2005117
	Selector Knob	141A111
	PA Volume Knob	141134
	DSP Board	2005113
	Cable, Control Head	1751075
	Red Power Cable, 10AWG	C300210-02-021
	Black Power Cable, 10AWG	C300210-10-002
	Red/White Power Cable, 12AWG	C300112-22-001
	Cable, Speaker	1751082
F3	2-Amp Automotive Fuse	148A142-10
F4	10-Amp Automotive Fuse	148A142-05
F1,F2	20-Amp Automotive Fuse	148A142
F5, F6	25-Amp Automotive Fuse	148A142-07
	Hand Held Noise Cancelling Microphone	MNC-1
	Terminal Block, Speaker Output	140417-04
CONN 2	Terminal Block, Foot Switch	140418-08
CONN 1	Terminal Block, Control Head	140418-07
	Bracket, Control Head	85361065
	Jack Screws For DB-9 Cable	230271
	Screw, 6-32 x 5/16 Phil Pan Head	7000A404-05
	Screw, Cap Hex Head, 1/4-20, 3/4" Long	7002A000-L 2
	Screw, Thread Forming, Ph, Phillips, #10	7011A047-08
	Lockwasher, Split Steel, #6	7074A001
	Lockwasher, Ext Tooth, 1/4-20	7057A007
	Fan, Terminated	288740A-02
	Fan Guard	288743
	Control Head, Complete	8616015
	Amplifier/DSP Assembly Complete	8616005
K1	Relay, Power	131194

Material Safety Data Sheet
Federal Signal Part No. R81-14-02

NYOGEL 760G

Product: 760G

Revision Date: 2003/02/10

Section 1 : PRODUCT AND COMPANY IDENTIFICATION

Manufacturer: Nye Lubricants, Inc.
12 Howland Road
Fairhaven, MA 02719 U.S.A.

Manufacturer emergency phone Chemtrec 800-424-9300.
number: 508-996-6721 (8:00AM – 5:00PM ET weekdays).

Supplier: Same as manufacturer.

Product name: Nyogel 760G.

Chemical family: Lubricating grease.

HMIS
H 1
F 1
R 0
PPE Sec. 8

Section 2 : INGREDIENT INFORMATION

C.A.S.	Concentration% wt/wgt	Ingredient Name	OSHA-PEL TWA	OSHA-PEL STEL	ACGIH-TLV TWA	ACGIH-TLV STEL	NIOSH REL TWA	NIOSH REL STEL	NIOSH IDLH
		OIL MIST	5 mg/m3	Not available	5 mg/m3	Not available	5 mg/m3	10 mg/m3	2500 mg/m3

Section 2A: ADDITIONAL INGREDIENT INFORMATION

Note: Product formulation is Proprietary.
No ingredients are known to be hazardous under normal usage.

Section 3 : HAZARD IDENTIFICATION

Emergency overview: May irritate eyes. Prolonged or repeated skin contact may cause irritation. Inhalation of oil mist or vapors from material at high temperatures may irritate respiratory passages.

Route of entry: Skin contact, eye contact, inhalation and ingestion.

Effects of acute exposure

Eye contact: May cause irritation.

Skin contact: May cause irritation on prolonged or repeated contact.

Inhalation: Oil mist and vapors at high temperatures may irritate respiratory passages.

Ingestion: May cause gastro-intestinal irritation.

Effects of chronic exposure: See effects of acute exposure.

Carcinogenic effects: IARC, NTP, and OSHA do not list this product or its ingredients as carcinogens.

Section 4 : FIRST AID MEASURES

- Skin contact:** Remove contaminated clothing.
Wash thoroughly with soap and water.
Seek medical attention if irritation persists.
- Eye contact:** Flush with water for at least 15 minutes.
Obtain immediate medical attention.
- Inhalation:** Remove victim to fresh air. If not breathing, qualified personnel should administer artificial respiration. Get medical attention.
If breathing is difficult, administer oxygen.
- Ingestion:** Obtain immediate medical attention.
Do not induce vomiting, unless directed to do so by a physician.

Section 5 : FIRE FIGHTING MEASURES

- Flammability:** Not flammable.
- Conditions of flammability:** At temperatures at or above flash point.
- Extinguishing media:** Carbon dioxide, dry chemical, foam.
Water spray.
- Special procedures:** Self-contained breathing apparatus required.
Firefighters should wear the usual protective gear.
Do not let firefighting water runoff enter a sewer.
- Auto-ignition temperature:** Not available.
- Flash point (°C), method:** Closed cup.
ASTM D-93.
>400°F (204°C).
- Lower flammability limit (% vol):** Not available.
- Upper flammability limit (% vol):** Not available.
- Explosion Data**
- Sensitivity to static discharge:** Not available.
- Sensitivity to mechanical impact:** Not available.
- Hazardous combustion products:** Carbon monoxide (CO).
Traces of other toxic fumes.
- Rate of burning:** Not available.
- Explosive power:** Not available.

Section 6 : ACCIDENTAL RELEASE MEASURES

- Leak/Spill:** Contain the spill.
Prevent entry into drains, sewers, and other waterways.
Area will be slippery until cleaned.
Wear appropriate protective equipment.
Wipe or scrape up spilled material.
Wash spill area after material pick up is complete.
Transfer to an approved container for disposal or recovery.
Observe precautions from other sections.

Section 7 : HANDLING AND STORAGE

- Handling procedures and equipment:** Wash thoroughly after using, particularly before eating or smoking.
Do not eat, drink or smoke in handling area.
Avoid contamination of cigarettes or other tobacco products.
Launder contaminated clothing prior to reuse.
Users should be alert to the possibility that very small percentages of the population may display unexpected allergic reactions to otherwise innocuous industrial lubricants and raw materials.
- Storage requirements:** Store away from incompatible materials.
Do not store in open or unlabelled containers.

Section 8 : EXPOSURE CONTROLS / PERSONAL PROTECTION

Precautionary Measures

Gloves/Type:



Chemical resistant gloves.
Avoid skin contact.

Respiratory/Type: None required under normal use.



If exposure limit is exceeded, wear a NIOSH approved respirator.
Avoid breathing oil mist.

Eye/Type: Avoid eye contact.



Safety glasses, goggles or face shield.
In accordance with OSHA 29 CFR 1910.133.

Footwear/Type:



Safety shoes per local regulations.

Clothing/Type: Wear adequate protective clothes.
Apron

Other/Type: Eye wash facility should be in close proximity.
Emergency shower should be in close proximity.

Ventilation requirements: Local ventilation is generally not necessary under normal conditions of use with adequate general ventilation. Ventilation and other forms of engineering controls are the preferred means for controlling chemical exposures.

Section 9 : PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Semi-solid.

Appearance & odor: Slight odour.
Clear to light yellow.
Smooth grease.

Odor threshold (ppm): Not available.
Vapour pressure (mmHg): Negligible.
Vapour density (air=1): Not available.
Volatiles (%): None
Evaporation rate (butyl acetate = 1): Not available.
Boiling point (°C): Not volatile.
Freezing point (°C): Non-melting.
pH: Not available.
Specific gravity @ 20 °C: (water = 1, @ 4°C).
0.91 @ 25°C
Solubility in water (%): Insoluble.
Coefficient of water\oil dist.: Not available.
VOC: None

Section 10 : STABILITY AND REACTIVITY

Chemical stability: Stable under normal conditions.
Conditions of reactivity: Pyrolysis.
Hazardous polymerization: Will not occur.
Incompatible substances: Strong oxidizing agents.
Hazardous decomposition products: See hazardous combustion products.

Section 11 : TOXICOLOGICAL INFORMATION

Sensitization to product: Not available.
Reproductive effects: Not available.
Teratogenicity: Not available.
Mutagenicity: Not available.
Synergistic materials: Not available.

Section 12 : ECOLOGICAL INFORMATION

Environmental toxicity: No data at this time.
Environmental fate: No data at this time.

Section 13 : DISPOSAL CONSIDERATIONS

Waste disposal: Contact a licensed waste-disposal contractor for detailed recommendations. Many states classify waste lubricants as "hazardous", which means disposal can only be a licensed firm. Follow applicable Federal, provincial, and local regulations.

Section 14 : TRANSPORT INFORMATION

DOT:

Not regulated.



Special shipping information: Not regulated.

Section 15 : REGULATORY INFORMATION

USA Regulatory Information

SARA hazard categories sections Immediate (Acute) Health Hazard: No.

311/312: Delayed (Chronic) Health Hazard: No.

Fire Hazard: No.

Sudden Release of Pressure: No.

Reactive: No.

SARA Section 313: Not regulated.

TSCA inventory: All components of this product are listed on the TSCA inventory.

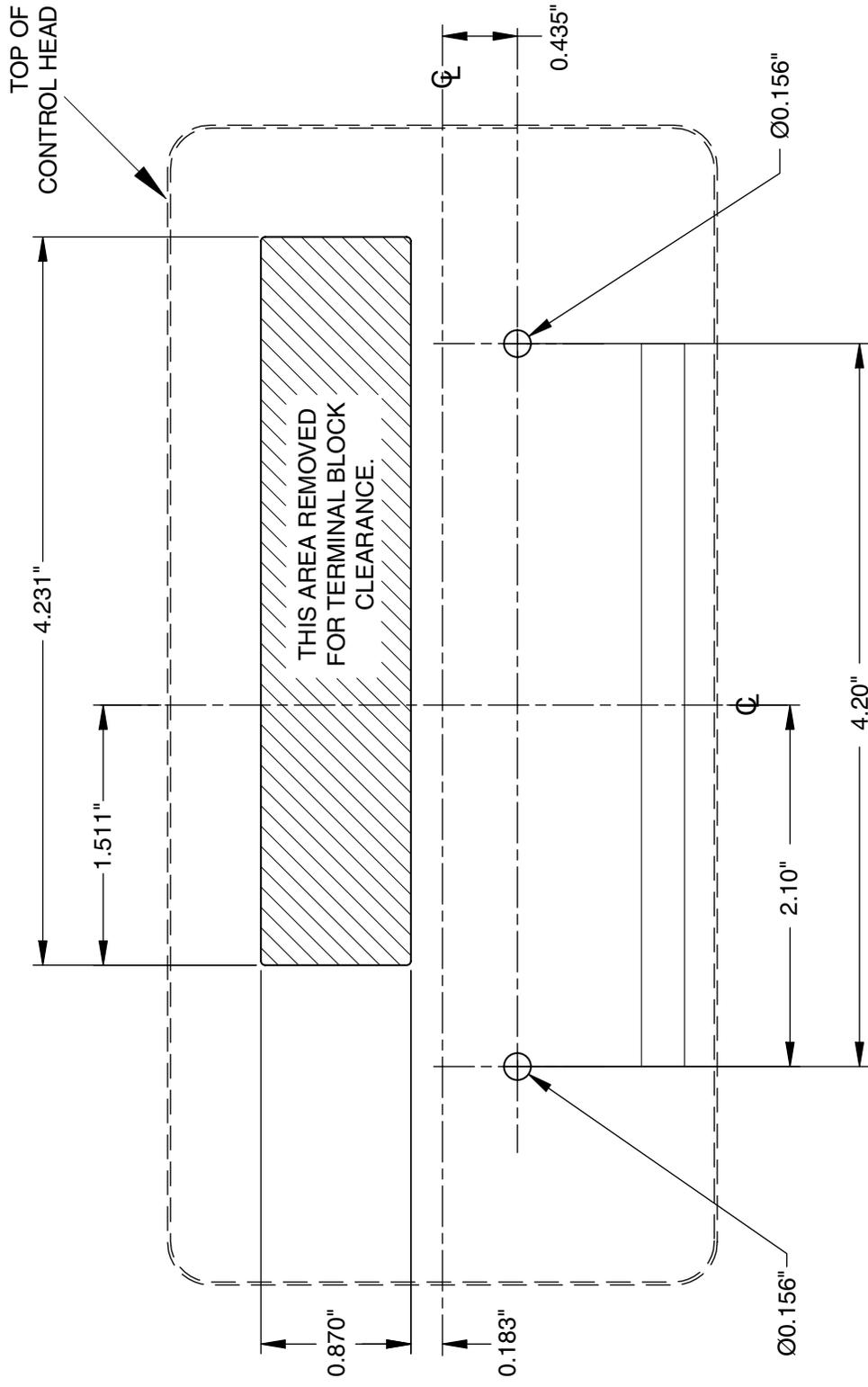
Section 16 : OTHER INFORMATION

Supplier MSDS date: 2003/02/10

Data prepared by: Conform–Action Data Systems
A division of 2843471 Canada inc.
1975 Hymus Blvd. suite 230
Dorval, QC H9P 1J8
Tel: (514) 683–2060 Fax: (514) 683–1445
24 hr. 1–800–990–5093 support@netmsds.com.

Disclaimer: While the information and recommendations set forth herein are believed to be accurate as of the date hereof, Nye Lubricants, Inc. makes no warranty with respect thereto and disclaims all liability with respect thereon.

SURFACE MOUNTING TEMPLATE



290A4262

