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Installation Guide: Beta™ Series Siren Amplifier

DANGER! Sirens produces extremely loud emergency warning tones! Exposure to these tones without proper and adequate hearing protection, could cause ear damage and/or hearing loss! The Occupational Safety & Health Administration (www.osha.gov) provides information necessary to determine safe exposure times in Occupational Noise Exposure Section 1910.95. Until you have determined the safe exposure times for your specific application, operators and anyone else in the immediate vicinity should be required to wear an approved hearing protection device. **FAILURE TO FOLLOW THIS RECOMMENDATION COULD CAUSE HEARING LOSS!**

Safety First

This document provides all the necessary information to allow your Whelen product to be properly and safely installed. Before beginning the installation and/or operation of your new product, the installation technician and operator must read this manual completely. Important information is contained herein that could prevent serious injury or damage.

- Proper installation of this product requires the installer to have a good understanding of automotive electronics, systems and procedures.
- If mounting this product requires drilling holes, the installer **MUST** be sure that no vehicle components or other vital parts could be damaged by the drilling process. Check both sides of the mounting surface before drilling begins. Also de-burr any holes and remove any metal shards or remnants. Install grommets into all wire passage holes.
- If this manual states that this product may be mounted with suction cups, magnets, tape or Velcro®, clean the mounting surface with a 50/50 mix of isopropyl alcohol and water and dry thoroughly.
- Do not install this product or route any wires in the deployment area of your air bag. Equipment mounted or located in the air bag deployment area will damage or reduce the effectiveness of the air bag, or become a projectile that could cause serious personal injury or death. Refer to your vehicle owner's manual for the air bag deployment area. The User/Installer assumes full responsibility to determine proper mounting location, based on providing ultimate safety to all passengers inside the vehicle.
- For this product to operate at optimum efficiency, a good electrical connection to chassis ground must be made. The recommended procedure requires the product ground wire to be connected directly to the **NEGATIVE (-)** battery post.
- If this product uses a remote device to activate or control this product, make sure this control is located in an area that allows both the vehicle and the control to be operated safely in any driving condition. **DO NOT ATTEMPT TO ACTIVATE OR CONTROL THIS DEVICE IN A HAZARDOUS DRIVING SITUATION.**
- It is recommended that these instructions be stored in a safe place and referred to when performing maintenance and/or reinstallation of this product.
- **FAILURE TO FOLLOW THESE SAFETY PRECAUTIONS AND INSTRUCTIONS COULD RESULT IN DAMAGE TO THE PRODUCT OR VEHICLE AND/OR SERIOUS INJURY TO YOU AND YOUR PASSENGERS!**

ACTIVATION OF THIS SIREN MAY DAMAGE UNPROTECTED EARS!	
 Wear Protection!	CAUTION Loud siren noise can cause hearing damage and/or loss. Refer to OSHA Section 1910.95 prior to putting ANY siren into service!

For warranty information regarding this product, visit www.whelen.com/warranty

Mounting the Beta™ Series Remote Siren Amplifier...

1. Locate a suitable mounting location for the amplifier. The trunk is often a good choice.
2. Be sure that the remote amplifier fits properly and does not interfere with any parts of the trunk or seat back.
3. Position the remote amplifier on the proposed mounting location. Using an awl or other suitable tool, scribe the mounting surface where the mounting holes are to be drilled.

CAUTION! As mounting the amplifier will require drilling, it is absolutely necessary to make sure that no other vehicle components could be damaged by the drilling process. If any vehicle component could suffer any potential harm, select a different mounting location.

4. Carefully drill the mounting holes using a #30 drill bit.
5. Using the supplied #8 x 5/8" sheet metal screws, secure the remote amplifier to the vertical trunk wall.

Wiring the Beta Series Siren Amplifier (6-pos. connector)...

Connecting to Power

1. Extend the RED and BLACK wires into the engine compartment.
2. Follow the factory wiring harness towards your vehicle's battery.

WARNING! All customer supplied wires that connect to the positive terminal of the battery must be sized to supply at least 125% of the maximum operating current and FUSED at the battery to carry that load. DO NOT USE CIRCUIT BREAKERS WITH THIS PRODUCT!

3. Connect the RED wire to one end of a user supplied fuse block. Do not connect this unit to the battery yet!
4. Connect the BLACK wire directly to the vehicle's chassis ground (typically adjacent to the battery).

Connecting to your Speaker (100 watt):

1. Route the ORANGE and BROWN wires towards your speaker.
2. Connect the ORANGE wire to the POSITIVE (+) terminal on the speaker.
3. Connect the BROWN wire to the NEGATIVE (-) terminal on the speaker.

NOTE: The two (2) BLUE wires are used to connect your two-way radio's external speaker to the Beta amplifier for radio rebroadcast. This is an optional connection and does not effect the other operations of the Beta siren amplifier.

Wiring The Beta Siren Amplifier Radio Rebroadcast Wires (BLUE)...

1. Locate the two wires that connect the external speaker to the vehicle's two-way radio.
2. Cut one of these wires and splice one of the BLUE wires into this circuit.
3. Cut the remaining speaker wire and splice the remaining BLUE wire into this circuit.

NOTE: Radio rebroadcast will NOT work with amplified remote speakers! If your remote speaker is amplified (contains a power amp circuit in the speaker assembly), do NOT enable the radio rebroadcast feature.

Wiring the Beta Series Siren Amplifier (9-position connector)

If the Beta series control head (optional) is not used, siren configuration and functionality are determined by user supplied switches connected to the Beta amplifier. A brief explanation of each of the function wires of the 9 position connector will serve as a guide to help determine the best configuration for your specific needs:

- RED/WHITE** Provides current for customer supplied switch operation (0.5 amp max.).
- WHITE/GREEN** Connects to a user supplied horn transfer switch (see schematic). This enables the vehicle horn ring to control the siren.
- WHITE/BROWN** Activates the Wail tone.
- WHITE/RED** Activates the Yelp tone.
- WHITE/BROWN + WHITE/RED** Activates Piercer™ or Hi/Low tone.
- WHITE/ORANGE** Enables Hands-Free operation.
- WHITE/YELLOW** Activates Airhorn tone.
- WHITE/RED + WHITE/ORANGE** Places Beta in Manual mode.
- WHITE/BROWN + WHITE/RED + WHITE/ORANGE** Places Beta in Radio mode.

Tone Control Table

	+ Battery Terminal	+ Battery Terminal	+ Battery Terminal	+ Battery Terminal	+ Battery Terminal	+ Battery Terminal	+ Battery Terminal
WHITE/BROWN	WAIL	↓					
WHITE/RED	→	YELP	↓				
WHITE/BROWN & WHITE/RED	→		PIERCER or Hi/Low	↓			
WHITE/ORANGE	→			HANDS FREE	↓		
WHITE/YELLOW	→				AIRHORN	↓	
WHITE/RED & WHITE/ORANGE	→					MANUAL MODE	↓
WHITE/BROWN & WHITE/RED & WHITE/ORANGE	→						RADIO MODE

The installation of your Beta™ siren amplifier will be complete after the fuse block wire is connected to the POSITIVE (+) terminal of the battery. After this connection has been made, visually inspect the fuses at the back of the amplifier and at the battery. If either of these fuses is blown, carefully inspect all of the circuit wires and make sure they are wired correctly. Replace the blown fuses with ones of an identical amp rating as the original. If these fuses blow after installation or activation, contact Whelen Engineering Technical Support.

Connecting to your horn relay:

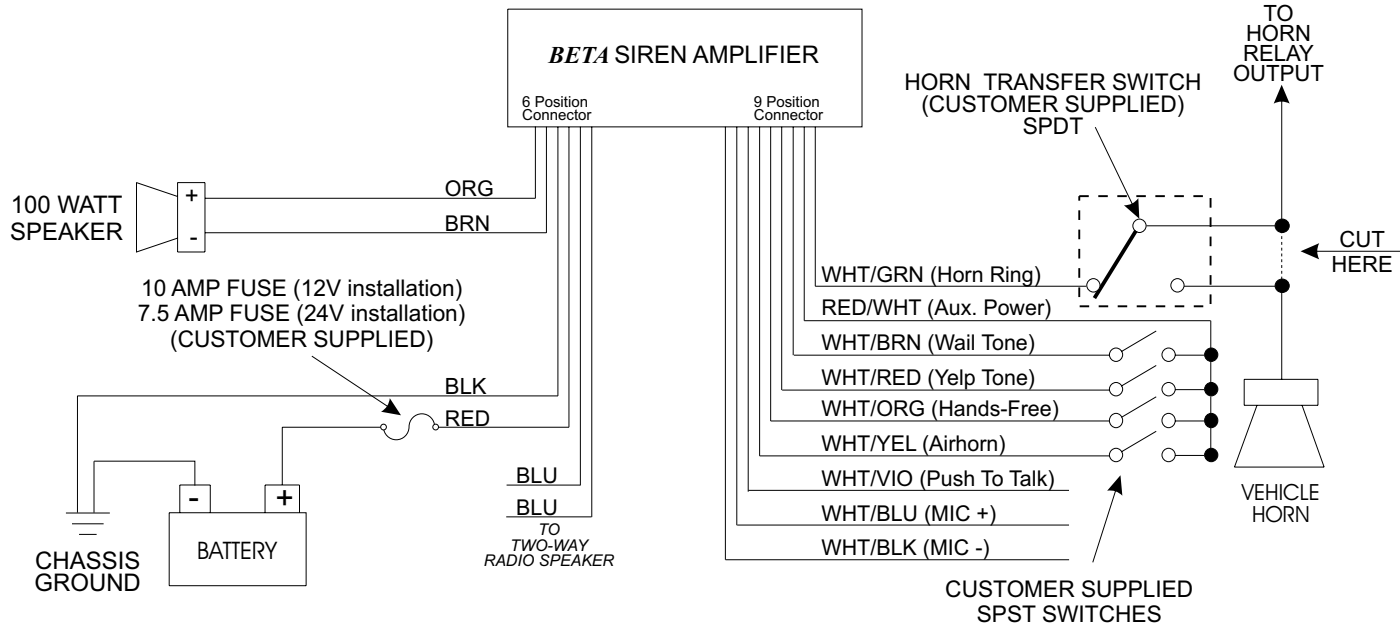
1. Locate your vehicle's horn relay. Now locate the wire that connects the vehicle horn to the horn relay output and cut this wire.
2. Extend each end of the cut wire (using a minimum 16 gauge wire) to a user supplied SPDT horn transfer switch.
3. Connect the wire coming from the horn relay output to the switch "wiper" as shown below.
4. Connect the wire coming from the horn to one side of the switch as shown below.
5. Connect the WHITE/GREEN wire from the 9-position connector to the other side of the switch as shown below.

ACTIVATION OF THIS SIREN MAY DAMAGE UNPROTECTED EARS!



Wear Protection!

CAUTION
 Loud siren noise can cause hearing damage and/or loss. Refer to OSHA Section 1910.95 prior to putting ANY siren into service!



BETA™ SIREN SPECIFICATIONS

INPUT VOLTAGE
INPUT CURRENT (OFF)
INPUT CURRENT (STANDBY)
INPUT CURRENT (SIREN)

12 Volt
 13.5 VDC ± 20%
 0 mA
 120 mA (TYP.)
 8 Amps (TYP.)

24 Volt
 26.5 VDC ± 20%
 0 mA
 60 mA (TYP.)
 4 Amps (TYP.)

OUTPUT VOLTAGE
SPEAKER
OUTPUT POWER @ 15 VDC

34 V RMS (MAX.)
 (1) 11 ohm
 105 WATTS (MAX.)

34 V RMS (MAX.)
 (1) 11 ohm
 105 WATTS (MAX.)

H/R VOLTAGE
H/R CURRENT

INPUT VOLTAGE or GROUND
 15 mA (TYP.)

INPUT VOLTAGE or GROUND
 15 mA (TYP.)

OPERATING TEMP.
OPERATING HUMIDITY

-30° C. to +60° C.
 95% NON-CONDENSING

-30° C. to +60° C.
 95% NON-CONDENSING

RADIO INPUT
MIC (-)
MIC (+)

0 dB (TYP)
 GRND
 0V to 2V (Peak to Peak)

0 dB (TYP)
 GRND
 0V to 2V (Peak to Peak)

Hands-Free Siren Activation...

The Beta™ siren amplifier, when installed according to the wiring diagram on page 2, offers the ability to activate siren tones using the vehicle's steering wheel horn ring. After the horn transfer switch has been set to siren operation, the hands-free mode is enabled when switch 3 is closed. After hands-free mode is enabled, pressing the horn ring button will start the Wail siren tone. A second press of the horn ring button will change the siren tone from Wail to Yelp. A third press will change the siren tone from Yelp to Piercer. The siren tones will continue to cycle from Wail to Yelp to Piercer with each subsequent press of the horn ring button. Two, rapid presses on the horn ring button ends hands-free siren tone generation until the horn ring button is pressed again. At that time the cycle is repeated.

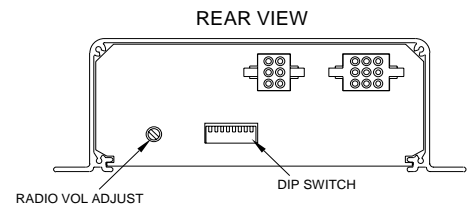
To exit the Hands-Free mode, end current siren tone with two, rapid horn ring presses, turn off Switch 3 and return the horn transfer switch to its normal operating position. Normal vehicle horn operation is then restored.

Manual Siren Activation (Manual Mode)...

The Beta siren amplifier, when installed according to the wiring diagram on page 2, offers Manual siren activation using the vehicle's steering wheel horn ring as a momentary switch. After the Horn Transfer switch has been set to siren operation, the horn ring button will now activate the Manual siren tone. The default manual siren tone "ramps up" to a predetermined level and continues at that level until the Manual switch is released. When the switch is released, the tone is immediately terminated.

Radio Repeat Volume

Before using the Beta siren amplifier, the Radio Repeat output volume must be adjusted to satisfactory operating levels. To adjust this level, a small, flat-blade screwdriver is needed. Locate the radio repeat adjustment port (potentiometer) to the left of the dip switches on the back side of the remote amplifier (see diagram to the right). Set the volume level of the vehicle's two-way radio to its normal operating volume. Turn the rotary knob on the control head to RAD to activate radio repeat. Insert the screwdriver in the radio repeat adjustment port and turn in a clockwise direction to increase the sound to its maximum desired volume.



Dip Switch Functions Explained...

Some of the default functions of the Beta siren amplifier can be customized (via dip switches) to suit the needs of the operator. In the default factory configuration, each dip switch is in the Down (ON) position. The following section will explain dip switch functionality in both the ON and OFF position:

Dip Switch #1	Down (Default) Up (Optional)	Tone 3 and Hands-Free 3rd tone are enabled Tone 3 and Hands-Free 3rd tone are disabled
Dip Switch #2	Down (Default) Up (Optional)	Tone 3 and Hands-Free 3rd tone are Piercer™ Tone 3 and Hands-Free 3rd tone are Hi/Low
Dip Switch #3	Down (Default) Up (Optional)	Tone 3 is the override tone for Yelp Airhorn is the override tone for Yelp
Dip Switch #4	Down (Default) Up (Optional)	Wail has normal Yelp override Wail has 10 second override for Yelp
Dip Switch #5	Down (Default) Up (Optional)	Manual Tone ramps up to a predetermined level and, upon release, terminates Manual Tone ramps up to a predetermined level and, upon release, ramps down and terminates

Dip Switches #6, #7 & #8

NOTE: Unlike dip switches #1 through #5, where each dip switch functions independently of the others, dip switches #6, #7 and #8 are used in conjunction with each other to achieve a specific function.

Default setting

Dip Switch #6 Down
Dip Switch #7 Down
Dip Switch #8 Down

- Default system configuration

Optional setting

Dip Switch #6 Up
Dip Switch #7 Down
Dip Switch #8 Down

- Configures system so that Wail tone has priority over all tones (except Airhorn).
- Hands-Free siren activation is not effected in this setting.

Optional setting

Dip Switch #6 Down
Dip Switch #7 Up
Dip Switch #8 Down

- Configures system so that Yelp tone has priority over all tones (except Airhorn).
- Hands-Free siren activation is not effected in this setting.

Optional setting

Dip Switch #6 Up
Dip Switch #7 Up
Dip Switch #8 Down

- Configures system so that Wail tone has priority over all tones (except Airhorn).
- Configures system so that Manual siren operation replaces Hands-Free siren operation.
- The vehicle's horn ring button now acts as the manual siren tone activation button.
- Hands-Free siren functions are not available in this configuration.

Optional setting

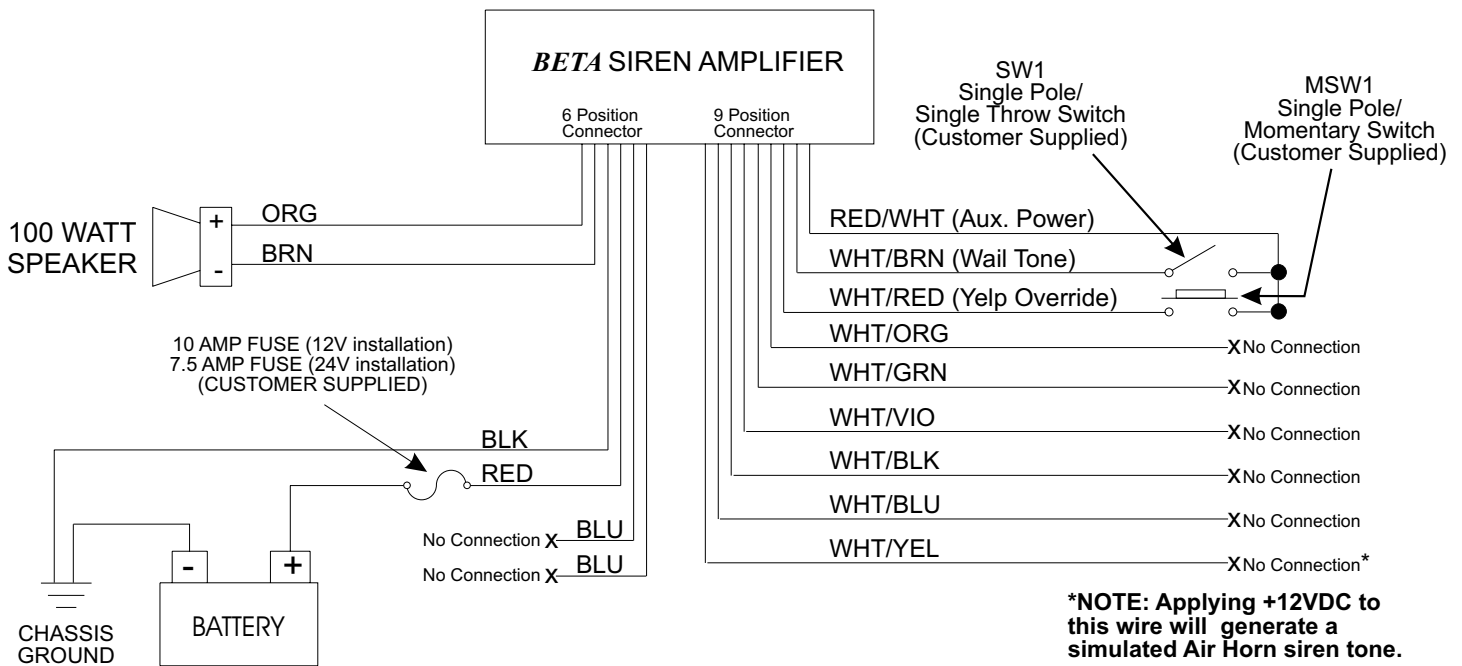
Dip Switch #6 Up
Dip Switch #7 Up
Dip Switch #8 Up

- Configures system so that Yelp tone has priority over all tones (except Airhorn).
- Manual siren operation replaces Hands-Free siren operation.
- The vehicle's horn ring button now acts as the manual siren tone activation button.
- Hands-Free siren functions are not available in this configuration.

Optional setting

Dip Switch #6 Down
Dip Switch #7 Down
Dip Switch #8 Up

- Siren system emulates WS610 siren operation. If the Beta™ siren is to be configured for WS610 emulation, it must be wired as shown in the following schematic:



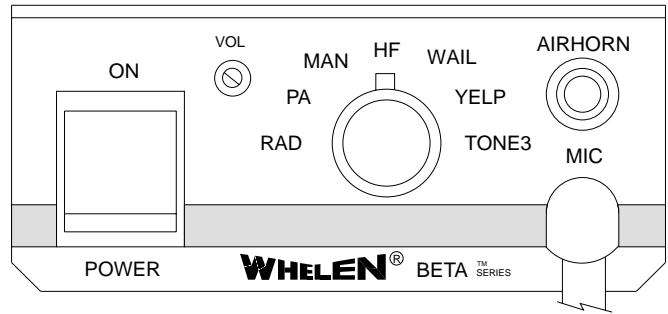
In this configuration, a Wail tone is generated by closing the switch (SW1) connected to the WHT/BRN wire. Pressing the momentary switch (MSW1) connected to the WHT/RED wire changes the tone to Yelp. Subsequent presses of the momentary switch will cause the tones to alternate between Wail and Yelp. Opening SW1 ends siren tone generation. Pressing the momentary switch, while SW1 is open, will cause a Yelp tone to be generated for as long as the momentary switch is pressed.

If a simulated Airhorn tone is desired, connect a single pole/single throw switch to the WHT/YEL wire. When +12VDC is applied, the desired Airhorn tone will be generated.

Operating the BETA™ Controls...

Power Switch

This switch has two positions: Down (Beta - Off) and Up (Beta - On). When this switch is in the Off position, the Beta will not function. When the switch is in the On position the siren is functional and may be activated at the operator's discretion. **NOTE: If the Beta is connected to the vehicle's horn ring circuit, the vehicle horn is disabled when the BETA™ power switch is in the ON position. The horn ring will now function as a manual siren switch.**



Rotary Switch

The rotary knob controls the siren and PA (public address) functions of the Beta. There are 7 positions that may be selected. Each position and its function is outlined below:

RAD (Radio Repeat) - When the rotary knob is in the RAD position, any signal that is received by the vehicle's two-way radio will be simultaneously broadcast over the vehicle's loudspeaker (the Beta must be connected to the two-way radio as outlined in this manual). This function overrides any other siren function.

PA (Public Address) - When the rotary knob is in the PA position, public address functions are operational. Messages may be broadcast over the vehicle's loudspeaker when the BETA™ microphone is in use. The volume level of PA transmissions is controlled by the volume adjustment screw. If the horn ring is pressed while the rotary knob is in this position, an airhorn siren tone will be generated by your vehicle's loudspeaker. This tone is generated until the horn ring button is released.

MAN (Manual Siren) - When the rotary knob is in the MAN position, pressing the horn ring generates a tone that rises in pitch to a pre-set level. This tone is generated for as long as the horn ring is pressed. Please note that the BETA™ microphone will override the siren function.

HF (Hands Free Operation) - When the rotary knob is in the HF position, the siren functions of the Beta are placed in a stand-by mode. Siren tones are activated by a single "tap" on the vehicle's steering wheel horn ring button (if the vehicle's horn has been wired to the Beta). The first tap produces a Wail tone (a steady, rise and fall tone). A second tap produces a Yelp tone (a fast, rise and fall tone). A third tap produces a Piercer™ tone (an extremely fast, rise and fall tone). The next tap returns the siren to a Wail tone and the cycle repeats itself. Two quick, successive taps will stop the siren.

WAIL (Wail Tone) - When the rotary knob is in the WAIL position, a steady, rise and fall tone is produced. A single tap on the vehicle's steering wheel horn ring button (if the vehicle's horn has been wired to the Beta), changes the siren tone to a Yelp pattern (a fast, rise and fall tone). A second tap, and the siren returns to a Wail tone. Please note that the Beta microphone will override the siren function.

YELP (Yelp Tone) - When the rotary knob is in the YELP position, a fast, rise and fall tone is produced. A single tap on the vehicle's steering wheel horn ring button (if the vehicle's horn has been wired to the Beta), changes the siren tone to TONE3. A second tap, and the siren returns to a YELP tone. Please note that the Beta microphone will override the siren function.

TONE3 (Piercer™ Tone (In default configuration)) - When the rotary knob is in the TONE3 position, an extremely fast, rise and fall tone is produced. Pressing on the vehicle's steering wheel horn button (if the vehicle's horn has been wired to the Beta), changes the siren tone to a simulated air horn tone for as long as the button is pressed. Releasing the button causes the siren to return to the Piercer tone. Please note that the Beta microphone will override the siren function.

Volume Adjustment Screw

The volume adjustment screw controls the volume of public address function. Volume is increased by rotating the adjustment screw in a clockwise direction. Rotating the volume adjustment screw in a counter-clockwise direction decreases the volume produced by these features. The volume adjustment screw has no effect on any siren tones produced.