

# WHELEN<sup>®</sup>

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### Installation Guide: Beta™ Siren Amplifier

**DANGER!** Sirens produce 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](http://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!

#### Warnings to Installers

Whelen's emergency vehicle warning devices must be properly mounted and wired in order to be effective and safe. Read and follow all of Whelen's written instructions when installing or using this device. Emergency vehicles are often operated under high speed stressful conditions which must be accounted for when installing all emergency warning devices. Controls should be placed within convenient reach of the operator so that they can operate the system without taking their eyes off the roadway. Emergency warning devices can require high electrical voltages and/or currents. Properly protect and use caution around live electrical connections. Grounding or shorting of electrical connections can cause high current arcing, which can cause personal injury and/or vehicle damage, including fire. Many electronic devices used in emergency vehicles can create or be affected by electromagnetic interference. Therefore, after installation of any electronic device it is necessary to test all electronic equipment simultaneously to insure that they operate free of interference from other components within the vehicle. Never power emergency warning equipment from the same circuit or share the same grounding circuit with radio communication equipment. All devices should be mounted in accordance with the manufacturer's instructions and securely fastened to vehicle elements of sufficient strength to withstand the forces applied to the device. Driver and/or passenger air bags (SRS) will affect the way equipment should be mounted. This device should be mounted by permanent installation and within the zones specified by the vehicle manufacturer, if any. Any device mounted in the deployment area of an air bag will damage or reduce the effectiveness of the air bag and may damage or dislodge the device. Installer must be sure that this device, its mounting hardware and electrical supply wiring does not interfere with the air bag or the SRS wiring or sensors. Mounting the unit inside the vehicle by a method other than permanent installation is not recommended as unit may become dislodged during swerving; sudden braking or collision. Failure to follow instructions can result in personal injury. Whelen assumes no liability for any loss resulting from the use of this warning device. PROPER INSTALLATION COMBINED WITH OPERATOR TRAINING IN THE PROPER USE OF EMERGENCY WARNING DEVICES IS ESSENTIAL TO INSURE THE SAFETY OF EMERGENCY PERSONNEL AND THE PUBLIC.

#### Warnings to Users

Whelen's emergency vehicle warning devices are intended to alert other operators and pedestrians to the presence and operation of emergency vehicles and personnel. However, the use of this or any other Whelen emergency warning device does not guarantee that you will have the right-of-way or that other drivers and pedestrians will properly heed an emergency warning signal. Never assume you have the right-of-way. It is your responsibility to proceed safely before entering an intersection, driving against traffic, responding at a high rate of speed, or walking on or around traffic lanes. Emergency vehicle warning devices should be tested on a daily basis to ensure that they operate properly. When in actual use, the operator must ensure that both visual and audible warnings are not blocked by vehicle components (i.e.: open trunks or compartment doors), people, vehicles, or other obstructions. It is the user's responsibility to understand and obey all laws regarding emergency warning devices. The user should be familiar with all applicable laws and regulations prior to the use of any emergency vehicle warning device. Whelen's audible warning devices are designed to project sound in a forward direction away from the vehicle occupants. However, because sustained periodic exposure to loud sounds can cause hearing loss, all audible warning devices should be installed and operated in accordance with the standards established by the National Fire Protection Association.

#### 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.

**⚠ WARNING:** This product can expose you to chemicals including Lead which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

- Proper installation of this product requires the installer to have a good understanding of automotive electronics, systems and procedures.
- Whelen Engineering requires the use of waterproof butt splices and/or connectors if that connector could be exposed to moisture.
- Any holes, either created or utilized by this product, should be made both air- and watertight using a sealant recommended by your vehicle manufacturer.
- Failure to use specified installation parts and/or hardware will void the product warranty.
- 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 the 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 (this does not include products that use cigar power cords).
- If this product uses a remote device for activation or control, make sure that this device is located in an area that allows both the vehicle and the device to be operated safely in any driving condition.
- 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!**



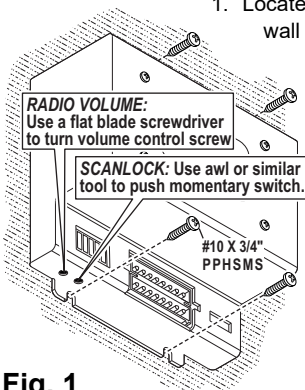
**CAUTION**

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

**Congratulations on selecting the Beta™ Siren. This siren offers a unique and distinctive collection of features designed to allow the user to customize the operation to suit their individual needs. Features include:**

- Compact design
- Title 13 compliant operation
- Radio Repeat
- Siren in Use output signal
- Power to drive two 100 watt speakers
- 16 programmable siren tones
- 8 Programmable modes of operation
- Simulated mechanical wail tone
- Hands Free operation
- 10 second override

**Mounting:**



**Fig. 1**

1. Locate a suitable mounting location. The vertical wall between the trunk and the passenger compartment is often a good choice and is the method described in this manual.
2. Be sure that the remote amplifier fits properly and does not interfere with any parts of the trunk lid or seat back.
3. Position the amplifier onto the mounting location. Using an awl or other suitable tool, scribe the mounting surface where the mounting holes are to be drilled.
4. Carefully drill the mounting holes using a #16 drill bit.

5. Using the supplied #10 x 3/4" sheet metal screws, secure the remote amplifier to the vertical trunk wall (Fig. 1).

**Wiring / Power:**

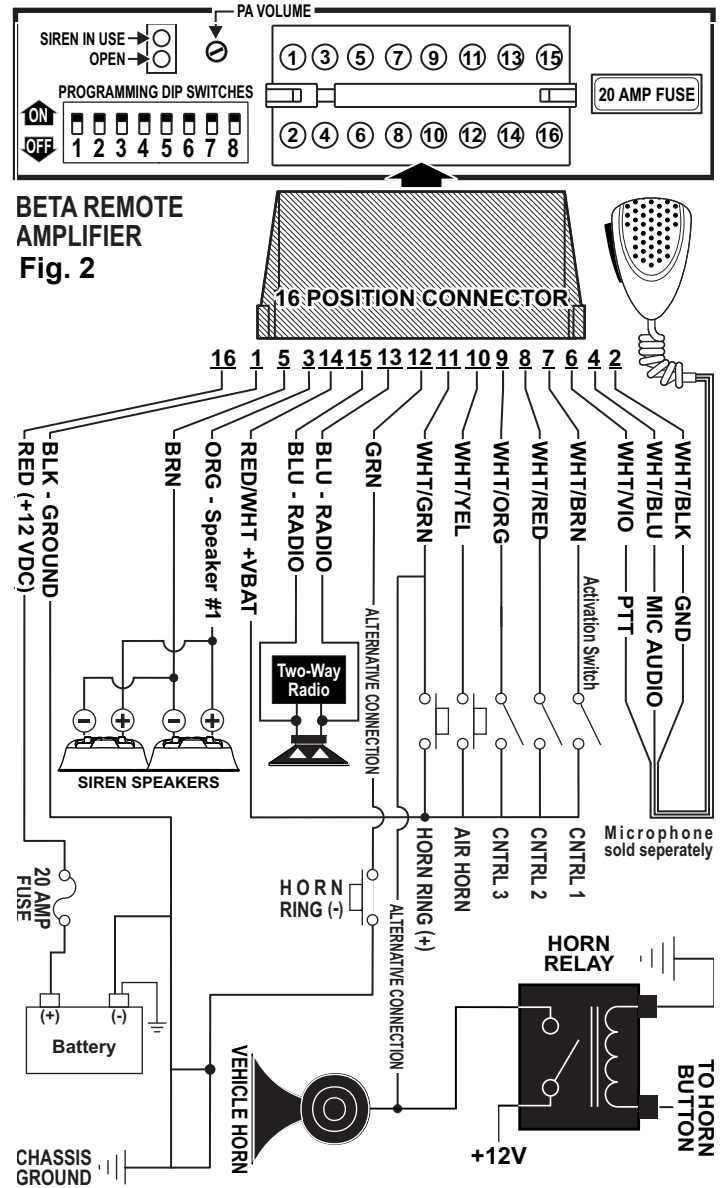
**WARNING! All customer supplied wires that connect to the positive terminal of the battery must be sized to supply at least 125% of the maximum operating current and FUSED at the battery to carry that load. DO NOT USE CIRCUIT BREAKERS WITH THIS PRODUCT!**

1. Extend the RED wire along the factory wiring harness to the POSITIVE +12VDC battery terminal.
2. Connect the RED wire to one end of a user supplied fuse block. Do not connect this fuse block to the battery yet.
3. Extend the BLACK wire along the factory wiring harness to the NEGATIVE battery terminal.

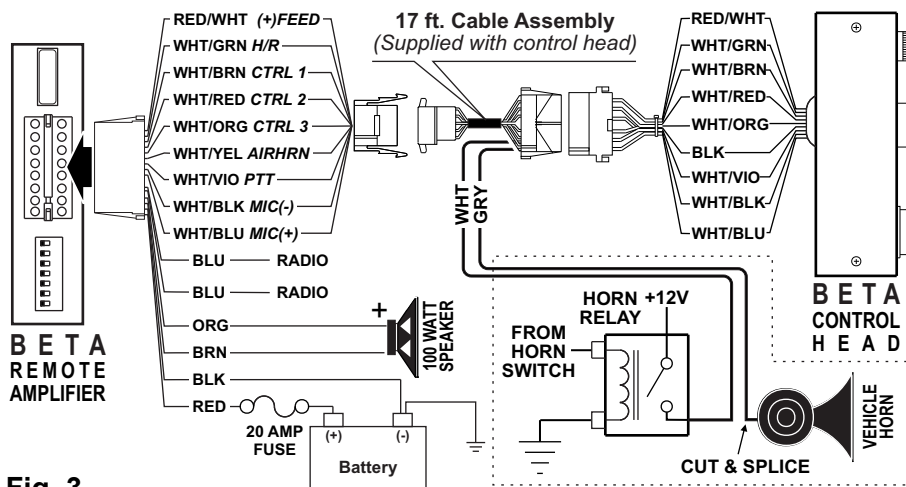
Wire Gauge / AWG	22	20	18	16	14	12	10	
Current Draw AMPS	10	3	5	7.5	12	19.5	31	49
	INS	INS	4	6	9.5	15.5	24.5	
	Distance in Feet							

**Control Switches:**

This siren amplifier has six control inputs available. Not all control inputs will need to be wired depending on the "Mode of Operation" chosen. Five of the control inputs (CNTRL 1-3, air horn and horn ring) are activated by applying positive voltage (+VBAT) to them. The RED/WHITE wire (PIN 14) is a current limited output that can be used for this purpose. The last input (CYCLE) is activated by applying ground to it (Fig. 2)



**BETA REMOTE AMPLIFIER Fig. 2**



**Fig. 3**

A BETA CONTROL HEAD (sold separately) can also be used to operate the BETA amplifier (Fig. 3).

**Speakers:**

1. Extend the ORANGE and BROWN wires along the factory wiring harness towards your siren speakers.
2. Connect the ORANGE wire to the POSITIVE (+) terminal and the BROWN wire to the NEGATIVE (-) terminal of speaker #1.
3. Extend both wires to the POSITIVE and NEGATIVE terminals of speaker #2 as shown in the wiring diagram.

## Operation:

**Siren in use:** This output will become active (+VBAT) whenever a tone is being produced by the siren.

**Modes:** There are 8 modes of operation. Mode 6 is the factory default mode. See "Mode Programming" to change the mode of operation.

The following tables show the factory default tone settings. See the "Siren tone programming procedures" section to make desired changes.

### MODE 1

CONTROL - input	OPERATION	AIR HORN - switch*	HORN RING
CNTRL 1	Wail	Airhorn	Yelp Override
CNTRL 2	Yelp	Airhorn	Piercer Override
CNTRL 3	HF-Standby	Airhorn	HF cycle (Wail, Yelp, Piercer)**
AIRHORN*	Airhorn	Airhorn	Airhorn

### MODE 2

CONTROL input	OPERATION	AIR HORN / switch*	HORN RING
CNTRL 1	Wail	Airhorn	Yelp Override
CNTRL 2	Yelp	Airhorn	Piercer Override
CNTRL 3	MANUAL-Stby	Airhorn	Manual Wail, Coast to Stop
AIRHORN*	Airhorn	Airhorn	Airhorn

### MODE 3

CONTROL input	OPERATION	AIR HORN / switch*	HORN RING
CNTRL 1	Wail	Airhorn	Yelp Override
CNTRL 2	Yelp	Airhorn	Piercer Override
CNTRL 3	RadioRepeat	Airhorn	Airhorn
AIRHORN*	Airhorn	Airhorn	Airhorn

### MODE 4

CONTROL input	OPERATION	AIR HORN / switch*	HORN RING
CNTRL 1	Wail	Airhorn	Yelp Override
CNTRL 2	InstantHF (wail,yelp,pier)**	Airhorn	No Change
CNTRL 3	Instant MANUAL (wailcoast)**	Airhorn	No Change
AIRHORN*	Airhorn	Airhorn	Airhorn

### MODE 5

CONTROL input	OPERATION	CNTRL 2	AIR HORN / switch*	HORN RING
CNTRL 1	Wail	Yelp Override	Airhorn	Yelp override
CNTRL 2	Yelp	Yelp	Airhorn	Piercer override
CNTRL 3	Radio Repeat	Yelp	Airhorn	Airhorn
AIRHORN*	Airhorn	Airhorn	Airhorn	Airhorn

### MODE 6 / BETA CONTROL HEAD

Rotary Switch	OPERATION	AIR HORN / switch	HORN RING
RAD	Radio Repeat	Airhorn	Airhorn Override
PA	Manual Standby	Airhorn	Manual Wail, Coast to Stop
MAN	Manual Standby	Airhorn	Manual Wail, Instant Stop
HF	HF Standby	Airhorn	HF cycle (Wail, Yelp, Piercer)**
WAIL	Wail	Airhorn	Yelp Override
YELP	Yelp	Airhorn	Piercer Override
Tone 3	Piercer	Airhorn	Airhorn Override

### MODE 7

CONTROL / input	OPERATION	HORN RING & CYCLE SWITCH
CNTRL 1	HF-Standby	HF Cycle (Wail, Yelp, Piercer)**

### MODE 8

CONTROL / input	OPERATION	AIR HORN / switch*	HORN RING & CYCLE SWITCH
CNTRL 1	Wail	Airhorn	10 Second Yelp
CNTRL 2	HF-Standby	Airhorn	HF Cycle (Wail, Yelp, Piercer)**
CNTRL 3	HF-2 Cycle Standby	Airhorn	HF 2 Cycle (Wail, 10 sec. Yelp)****
AIRHORN*	Airhorn	Airhorn	Airhorn

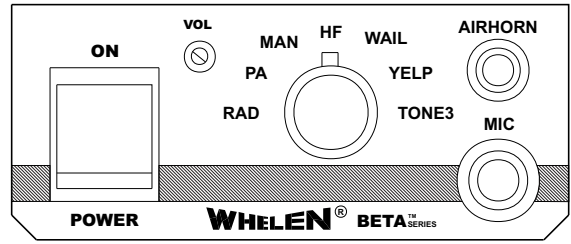
\* The AIRHORN switch produces AIR HORN as a main tone as well as an override tone.

\*\* The word 'instant' implies that activating CNTRL2 will generate the HF cycle on its own, and that activating CNTRL3 will generate the Manual tone on its own. CNTRL 2 & 3 should be momentary switches for this application.

\*\*\* HF cycle: tones are activated by a single tap on the CNTRL2 switch. 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. The next tap returns the siren to a wail tone and the cycle repeats itself. Two successive taps will stop the siren.

\*\*\*\* HF 2 cycle: Tones are activated by a single tap on the horn ring or cycle switch. 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). The next tap returns the siren to a WAIL tone or after 10 seconds the siren automatically returns to a WAIL tone and the cycle repeats itself. Two quick successive taps will stop the siren.

## BETA™1 Controls: Mode 6



### 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.

**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.**

### Volume Adjustment Screw

The volume adjustment screw controls the volume of the public address and radio functions and has no effect on siren tones. Volume is increased by rotating the screw clockwise and decreased by rotating it counter-clockwise. (See Figs. 1 & 2 for volume control location)

### Programming the Siren:

**WARNING: Never try to program the siren while it is wired to the vehicle. A low level audio device is built into the siren so siren tones can be heard during programming.**

There are two important operational characteristics of the siren that can be re configured; Mode of Operation and Tone Selection. The Scan-Lock™ button is used to select the desired tone changes and the DIP Switches are used to select Mode of Operation. The Scan-Lock button can be activated with a pen or similar object. (See Fig. 1 for Scan-Lock™ button location)

### Siren Tone Programming Procedures:

With Scan-Lock™ the tonal operation of the siren can be customized to fit your needs. Scan-Lock™ is used to change the default siren tones as shown below.

**To change the primary tone for CNTRL1, CNTRL2 and Rotary switch positions:** Activate the siren control switch that you wish to change.

**To cycle forward through tones,** press the Scan-Lock™ switch for less than 1 second and release.

**To cycle backward through tones,** press the Scan-Lock™ switch for more than 1 second and release. When the desired tone is generated, it is automatically saved for that control switch position

CNTRL1&2 PRIMARY TONE LIST * = Title 13 compliant		
• TONE OFF	• WARBLE	• ALT YELP *
• WAIL *	• WHOOP	• PULSED PIERCER
• YELP *	• MECHANICAL	• PULSE YELP/AIRHORN
• HI/LO	• PULSED AIRHORN	• B-WAIL
• PIERCER	• AIRHORN-HI/LO	• B-YELP
• Y249 *	• ALT. WAIL *	• B-HI/LO

**To change the override tone for CNTRL1, CNTRL2 and Rotary switch positions:**

Activate the siren control switch that you wish to change the override tone on. Press and hold the HORN RING.

**To cycle forward through tones,** press

the Scan-Lock™ switch for less than 1 second and release. **To cycle backward through tones,** press the Scan-Lock™ switch for more than 1 second and release. When the desired tone is present, it will automatically be saved as the override tone for that control switch. Release the HORN RING.

CNTRL1&2 OVERRIDE TONE LIST * = Title 13 compliant		
• TONE OFF	• Y249 *	• ALT YELP *
• WAIL *	• WARBLE	• PULSED PIERCER
• YELP *	• WHOOP	• PULSE YELP/AIRHORN
• HI/LO	• MECHANICAL	• B-WAIL
• AIRHORN-HI	• PULSED AIRHORN	• B-YELP
• AIRHORN-LO	• AIRHORN-HI/LO	• B-HI/LO
• PIERCER	• ALT. WAIL *	

**To change a tone in the hands free cycle (for MODES 1, 6, 7 & 8):**

Place the siren in HF standby, by activating the CNTRL3 or ROTARY switch. Using the HORN RING, advance to the tone you wish to change.

HF TONE LIST			* = Title 13 compliant
• WAIL*	• WHOOP	• PULSED PIERCER	
• YELP*	• MECHANICAL	• PULSE YELP/AIRHORN	
• HI/LO	• PULSED AIRHORN	• B-WAIL	
• PIERCER	• AIRHORN-HI/LO	• B-YELP	
• Y249*	• ALT. WAIL*	• B-HI/LOW	
• WARBLE	• ALT YELP*		

**To cycle forward through tones**, press the Scan-Lock™ switch for less than 1 second and release. **To cycle backward through tones**, press the Scan-Lock™ switch for more than 1 second and release. When the desired tone is generated, it will automatically be saved for that hands-free cycle position.

**To change a tone in the hands free cycle (for MODE 4):**

Using the CNTRL2 switch, advance to the HF tone that you wish to change. **To cycle forward through tones**, press the Scan-Lock™ switch for less than 1 second and release. **To cycle backward through tones**, press the Scan-Lock™ switch for more than 1 second and release. When the desired tone is generated, it will automatically be saved for that hands-free cycle position.

**To change the tone for the manual cycle (for MODE 2 or 6):**

Place the siren in MANUAL standby, by Activating the CNTRL3 or ROTARY switch. Press and hold the HORN RING. **To cycle forward through tones**, press the Scan-Lock™ switch for less than 1 second and release. **To cycle backward through tones**, press the Scan-Lock™ switch for more than 1 second and release. When the desired tone is present, it will automatically be saved as the MANUAL tone. Release the HORN RING.

**To change the tone for the manual cycle (for MODE 4):** Press and hold the CNTRL3 switch. **To cycle forward through tones**, press the Scan-Lock™ switch for less than 1 second and release. **To cycle backward through tones**, press the Scan-Lock™ switch for more than 1 second and release. When the desired tone is present, it will automatically be saved as the MANUAL tone. Release the CNTRL3 switch.

MANUAL TONE LIST	
• TONE OFF	• H-WAIL-COAST
• WAIL-COAST	• H-WAIL-STOP
• WAIL-STOP	• AIRHORN-HI
• MECHANICAL-COAST	• AIRHORN-LO
• MECHANICAL-STOP	

**To change the tone for the AIRHORN:** Press and hold the AIRHORN switch. **To cycle forward through tones**, press the Scan-Lock™ switch for less than 1 second and release. **To cycle backward through tones**, press the Scan-Lock™ switch for more than 1 second and release. When the desired tone is present, it will automatically be saved as the AIRHORN tone. Release the AIRHORN switch.

AIRHORN tone list		
• TONE OFF	• AIR HORN-HI	• AIR HORN-LO

**Title 13 Operation:**

In Title 13 mode, Airhorn will not override primary tones.

**Note: A set of Title 13 compliant tones must also be programmed.** (see Siren Tone Programming Procedures)

**To reset the siren tone to factory defaults:**

1. Turn off all siren tones.
2. Hold the Scan-Lock switch in, then depress CNTRL1.
3. Release switches.

**Mode Programming:**

There are eight modes of operation plus Title 13 (SW1) and 10 second override (SW4) built into this siren. Mode 6 is the factory default mode. To change the mode of operation use the DIP Switch Operation table to set switch positions for the desired siren operation.

**Dip Switch Operation Table:**

SW1	SW2	SW3	SW4	SW5
ON - Normal Operation	3 Cycle HF	Not Used	ON - Normal Override	Not Used
OFF - Title 13 operation (No tone over 250 cycles)	2 Cycle HF		OFF - 10 second override	
SW6	SW7	SW8		
OFF	ON	ON	MODE 1	
OFF	OFF	ON	MODE 2	
ON	ON	OFF	MODE 3	
ON	OFF	ON	MODE 4	
ON	OFF	OFF	MODE 5	
ON	ON	ON	MODE 6 - For use with Beta1 Control Head	
OFF	ON	OFF	MODE 7	
OFF	OFF	OFF	MODE 8	

**Radio Rebroadcast (optional) - Two BLUE wires**

The two remaining BLUE wires are used to connect your two-way radio's external speaker for radio rebroadcast (optional connection). **Note: If your remote speaker is amplified (speaker has a power amp circuit), radio rebroadcast will not work and should not be used.**

1. Locate the two wires that connect the external speaker to the 2-way radio, cut one and splice one of the BLUE wires into this circuit.
2. Cut the remaining speaker wire and splice the other BLUE wire into this circuit.

**Specifications:**

	12 volt unit	24 volt unit
Input Voltage	12.8 VDC	25.6 VDC
Input Current: @ 15 V DC @ 5.5 OHMS 16 AMPS Max.		.8 AMP
Input Fuse	20 amps	10 AMPS
Speaker Impedance	.5.5 ohms Minimum	.5.5 ohms
Operating Temperature	-30°C. to +60°C.	-30°C. to +60°C
Storage Temperature	-40° C to +70°C.	-40° C to +70°C
Humidity	.99% Non condensing	.99% Non condensing
Output Voltage @15 V DC @ 11 ohms 34V RMS Max.		34V RMS
Output Power @ 15 V DC @ 11 ohms 105 Watts Max.		105 Watts Max.