

# WHELEN<sup>®</sup>

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## Installation Guide: WPA™ Series Waterproof 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](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!**

### 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!**

<b>ACTIVATION OF THIS SIREN MAY DAMAGE UNPROTECTED EARS!</b>	
 <b>Wear Protection!</b>	<b>CAUTION</b> 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](http://www.whelen.com/warranty)**

## INTRODUCTION...

This manual outlines the procedures necessary for the installation of the WPA™ Series Waterproof Amplifier. This includes the 100 Watt models (WPA112, WPA124) and 58 Watt models (WPA512 and WPA524).

### Mounting the WPA Series Waterproof Siren Amplifier:

**Caution: If the amplifier is mounted vertically, it must be oriented so that the connector end of the amplifier is facing downward!**

1. Locate a suitable mounting location for the WPA. Do not mount this product in any location where it may be exposed to extreme temperatures.
2. Be sure that the remote amplifier fits properly and does not interfere with any vehicle components.
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 WPA will require drilling, it is absolutely necessary to make sure that no other vehicle components could be damaged by the drilling process. If damage is likely, select a different mounting location.**

4. Carefully drill the mounting holes in the areas scribed in step 3. The diameter of these holes will be determined by the size of the mounting hardware and the thickness of the mounting surface.
5. Using the supplied #10 x 3/4" sheet metal screws and #10 external tooth lock washers, secure the remote amplifier to the mounting location.

### Wiring the WPA Series Waterproof Amplifier:

#### Connecting To Power:

1. Following the factory wiring harness, extend the RED and BLACK wires to the 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!**

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

#### Connecting To Your Speaker:

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 WPA for radio rebroadcast. This is an optional connection and does not effect the other operations of the WPA.**

#### Wiring The WPA 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 (i.e.: contains a power amp circuit in the speaker assembly), do not enable the radio rebroadcast feature.**

#### Connecting To Your Horn Relay (Optional):

**Note: This option can only be enabled when using customer supplied switches.**

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 (single pole/double throw) horn transfer switch.
3. Connect the wire coming from the horn relay output to the switch "wiper" as shown in Figure 1.
4. Connect the wire coming from the horn to one side of the switch as shown in Figure 1.
5. Connect the WHITE/GREEN wire to the other side of the switch as shown in Figure 1.

# Wiring The WPA™ Series Waterproof Amplifier To The Controls

If the WPA™ series control head (optional) is not used, siren configuration and functionality are determined by user supplied switches connected to the WPA amplifier. A brief explanation of each of the function wires will serve as a guide to help determine the best configuration for your specific needs (see table 1):

**RED/WHITE** Provides current for customer supplied switch operation (0.5 amp max).

**WHITE/GREEN** Connects to a user supplied horn transfer switch (see Figure 1). 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™ tone.

**WHITE/ORANGE** Enables Hands-Free operation.

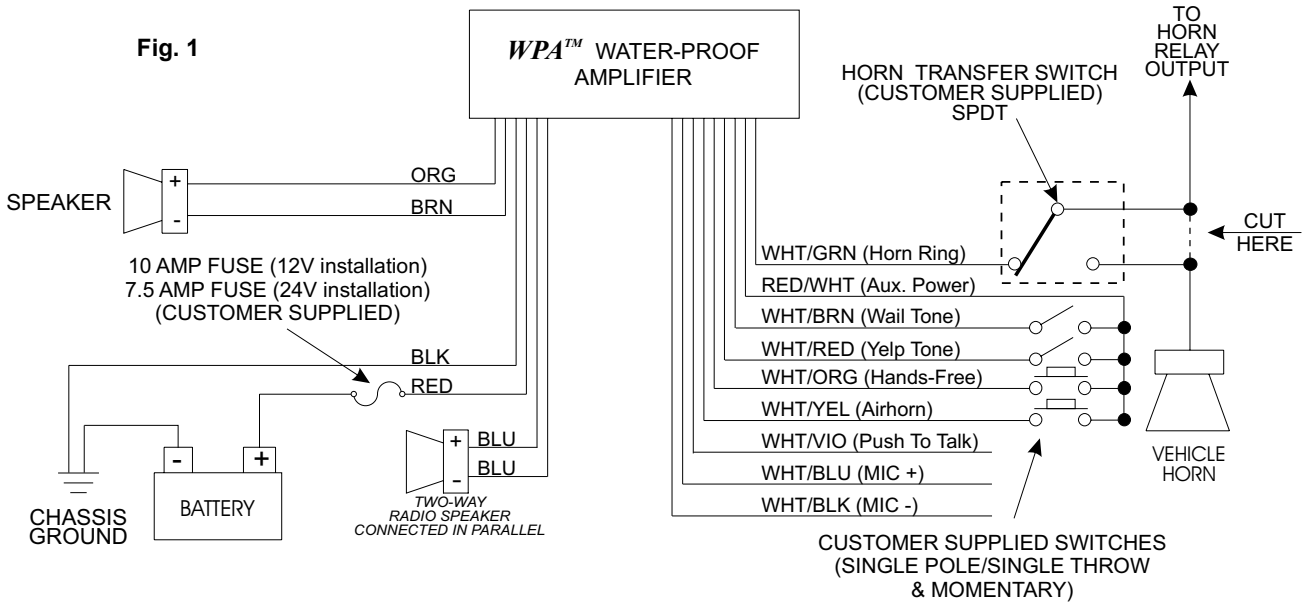
**WHITE/YELLOW** Activates Airhorn tone.

**WHITE/RED + WHITE/ORANGE** Places WPA in Manual Mode. Applying +12VDC to these wires will activate a tone that rises in pitch to a preset level.

**WHITE/BROWN + WHITE/RED + WHITE/ORANGE** Places WPA in Radio Mode. In this mode any signal that is received by the vehicle's two-way radio will be simultaneously broadcast over the vehicle's loud speaker.

Table 1

WIRE COLOR	+ 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™	↓	↓	↓	↓
WHITE/ORANGE	→	→	→	HANDS-FREE MODE	↓	↓	↓
WHITE/YELLOW	→	→	→	→	AIRHORN	↓	↓
WHITE/RED + WHITE/ORANGE	→	→	→	→	→	MANUAL MODE	↓
WHITE/BROWN + WHITE/RED + WHITE/ORANGE	→	→	→	→	→	→	RADIO MODE



The installation of your WPA Series 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, inspect the fuses at the amplifier and at the battery. If either of these fuses are blown, carefully inspect all of the circuit wires and make sure they are wired correctly. Replace the blown fuses with one of an identical amp rating as the original. If these fuses blow after installation or activation, contact Whelen Engineering Technical Support.

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!

### Hands-Free Siren Activation...

The WPA™ Series Waterproof Amplifier, when installed according to the wiring diagram above, 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 the customer installed control switch, connected via the WHT/ORG wire, is closed. When the 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, turn off the customer installed switch for the hands-free mode and return the horn transfer switch to its normal operating position. Normal vehicle horn operation is then restored.

### Manual Siren Activation (Manual Mode)...

The WPA Siren Amplifier, when installed according to the wiring diagram (Figure 1), 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 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.

### To Adjust the Radio Repeat Levels...

Before using the WPA Series Waterproof Amplifier, the Radio Repeat output volume must be adjusted to satisfactory operating levels. To adjust this level, a small, flat-blade screwdriver is needed.

### Radio Repeat Volume

Locate the Radio Repeat adjustment port (potentiometer) to the left of the 12-position input port on the remote amplifier. The potentiometer is hidden behind a 10-32 Phillips head machine screw. Once this screw is removed, set the volume level of the vehicle's two-way radio to its normal operating volume. Place the amplifier in Radio Repeat mode. Insert the screwdriver in the Radio Repeat adjustment port and turn in a clockwise direction to increase the sound to its maximum desired volume. Return the Phillips head screw to its original position (see Fig. 2 below).

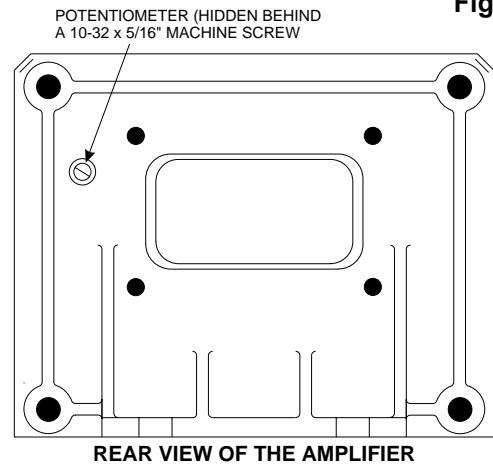


Fig. 2

### WPA™ SIREN SPECIFICATIONS

<b>SPEC:</b>	<b>WPA112™</b>	<b>WPA124™</b>	<b>WPA512™</b>	<b>WPA524™</b>
INPUT VOLTAGE	13.5 VDC ± 20%	26.5 VDC ± 20%	13.5 VDC ± 20%	26.5 VDC ± 20%
INPUT CURRENT (OFF)	0 mA	0 mA	0 mA	0 mA
INPUT CURRENT (STANDBY)	10 mA (TYP.)	5 mA (TYP.)	10 mA (TYP.)	5 mA (TYP.)
INPUT CURRENT (SIREN)	8 Amps (TYP.)	4 Amps (TYP.)	5 Amps (TYP.)	3 Amps (TYP.)
OUTPUT VOLTAGE	34 V RMS (MAX.)	34 V RMS (MAX.)	25 V RMS (MAX.)	25 V RMS (MAX.)
SPEAKER	(1) 11 ohm	(1) 11 ohm	(1) 11 ohm	(1) 11 ohm
OUTPUT POWER @ 15 VDC	105 WATTS (MAX.)	105 WATTS (MAX.)	58 WATTS (MAX.)	58 WATTS (MAX.)
CONTROL VOLTAGE	INPUT VOLTAGE	INPUT VOLTAGE	INPUT VOLTAGE	INPUT VOLTAGE
CONTROL CURRENT	125 mA (TYP.)	125 mA (TYP.)	125 mA (TYP.)	125 mA (TYP.)
HORN RING VOLTAGE	INPUT VOLTAGE	INPUT VOLTAGE	INPUT VOLTAGE	INPUT VOLTAGE
HORN RING CURRENT	OR GROUND 15 mA (TYP.)	OR GROUND 15 mA (TYP.)	OR GROUND 15 mA (TYP.)	OR GROUND 15 mA (TYP.)
OPERATING TEMP.	-30° C TO +60° C	-30° C TO +60° C	-30° C TO +60° C	-30° C TO +60° C
OPERATING HUMIDITY	95% NON-CONDENSING	95% NON-CONDENSING	95% NON-CONDENSING	95% NON-CONDENSING