

Robotronics

The Leader In Safety Education Products

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WAVE™ System

(Wearable Amplified Voice Equipment)
Operating Manual

40 Watt WAVE

WAVE System Operating Manual

Congratulations on your purchase of the **WAVE** Wearable Amplified Voice Equipment from **ROBOTRONICS, Inc.** Your **WAVE** system has been carefully constructed of the highest quality components. With its compact size and convenient features, you will find it an extremely effective tool for giving speech to your costume characters. It is built for ease of operation and comfort.

Please read this manual carefully. It will help you make the most of your **WAVE** system. As with any electronic device, proper care will greatly prolong the life of your **WAVE** system. Most problems you encounter will be minor and the manual will provide an answer. Please feel free to contact us if you have unanswered questions relating to operation, maintenance, and repair.

Sincerely,

ROBOTRONICS, Inc.

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*This section can be used to place additional notes that you would like to record during your use of the **WAVE** system.

Limited Warranty

The Wave and accessories have a limited one year warranty, which covers all parts and labor. This period covers the normal burn-in for electronic components. Experience has shown that this warranty period catches most component defects and other possible flaws. If you have a problem, we are anxious to help. Our desire is to be certain you receive a quality product.

Warranty work is specifically limited to correction of defects by repair or replacement of faulty equipment or parts. The Wave or accessories shall be repaired or replaced at Seller's option. Equipment returned to the factory for repair must have pre-authorization from our service department and must be sent freight pre-paid, and will be returned freight pre-paid by UPS ground or common carrier. If you need parts sent by air shipment you will be responsible to pay the additional shipping charges.

In no event shall ROBOTRONICS, Inc. be liable for any incidental or consequential damages in connection with or arising from the use of the costume or accessories.

The buyer is responsible to ensure that proper and complete training be given to those operating the Wave as all aspects of such operation cannot be covered in a brief manual such as this. In no event shall ROBOTRONICS, Inc. be liable for any incidental or consequential damages in connection with or arising from the use of this manual or any procedures contained herein.

If You Have a Problem

1. Call our service department and explain the problem. The phone number is (801) 489-4466. Most difficulties are minor and can be solved easily over the phone. If possible, have the item near the phone when you call.

Important: Have the serial number ready. This will help our technician identify the model you have. The **serial number** is located on the inside of the head. The serial number reflects the date the costume was shipped out to you. The **model number** shows the version of the costume. Record this information below for your reference.

Record the vital information here for future access
Date Received: _____
Customer Number: _____
Model Number: _____
Serial Number: _____

2. If you must return a part for repair, pack it carefully and send it prepaid according to instructions. Include a letter explaining the problems. You must obtain a return authorization number from the service department before shipping the item to the factory.
3. Parts are best sent by a carrier such as UPS, or U.S. mail, because shipping is based on the actual weight of the package. Be sure to insure the shipment for the correct value. Pack the item(s) carefully, using sufficient cushioning

materials to prevent damage during shipment. Most shippers recommend packaging all items to withstand a 3-foot drop. Since shippers often use automated conveyor systems, packages often receive severe bumps and falls and often have “This side up” and “Fragile” warnings ignored. Please keep this in mind when packaging all items.

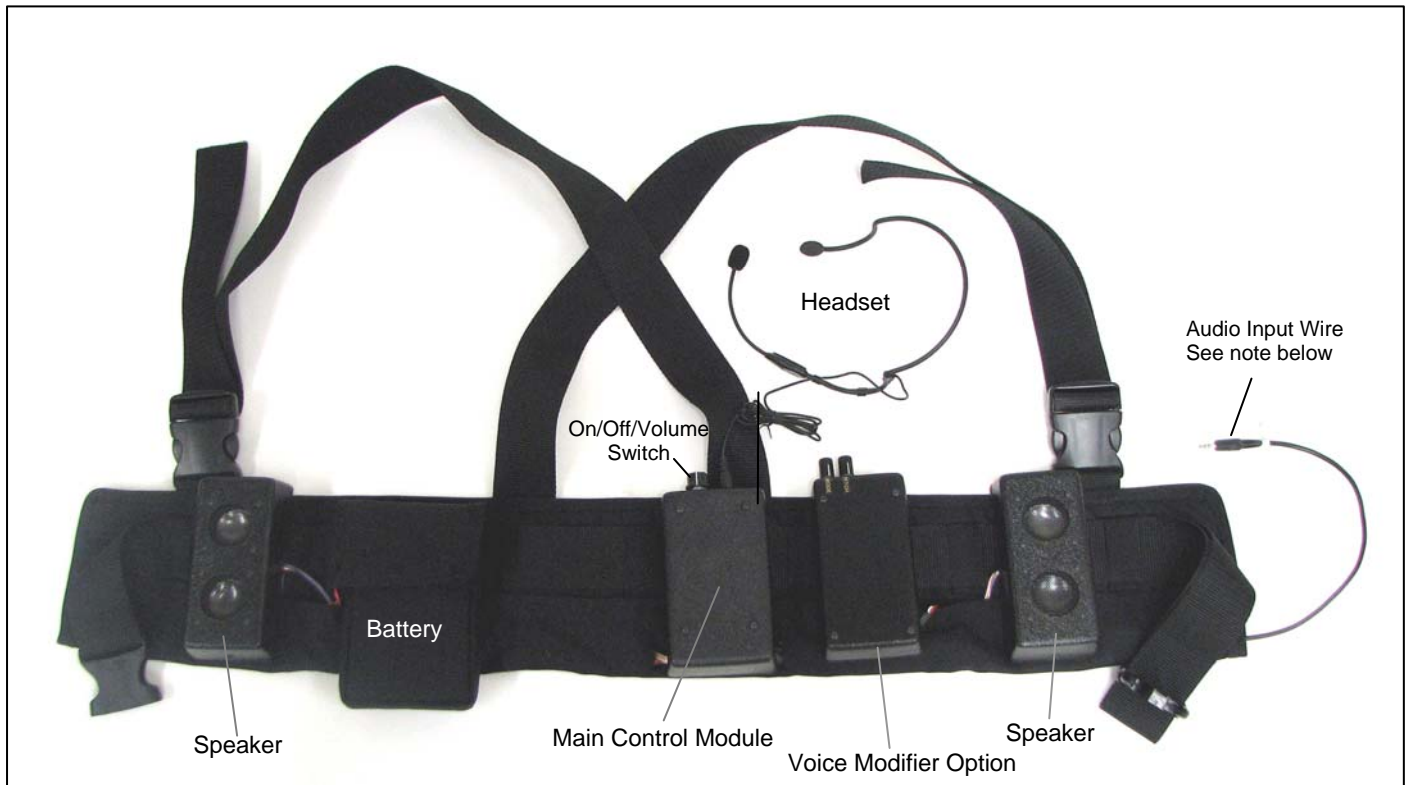
After The Warranty Repair and Help

Our technical staff is always available to help with your questions. Again, most problems are easily solved. If you do need replacement parts, we can usually ship them the following day after you call. Please call our service department for a return authorization number before sending any items in for repair or modifications.

Because of parts availability, costumes may vary slightly from unit to unit. If you have any questions, please contact our service department. The service department phone number is: **(801) 489-4466. Our website is Robotronics.com**

Parts of the System

The Belt System



Note: Some models may have different speakers than those shown above.

Audio Input: The audio input wire is for an audio device such as an MP3 player or CD player that you can connect to the system to play music or any audio that you want.

Setting up the System

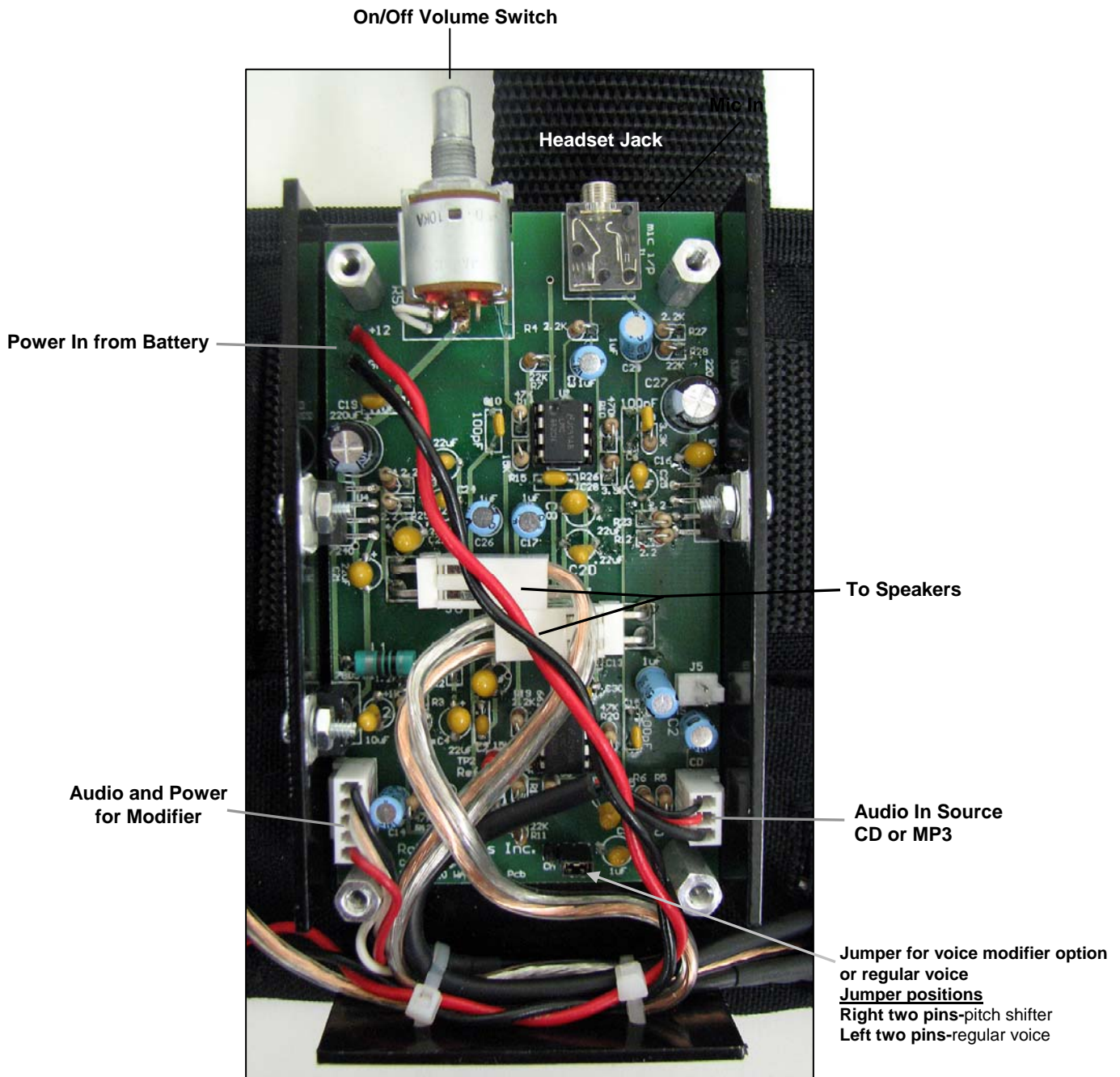
The elements of the belt system will be connected as much as possible when you receive it. Generally keep it connected together like this between uses. You can activate the system on a table and run through the functions. This will help you become familiar with everything.

1. Charge the battery. The light on the charger will flash when it has a full charge.
2. Place the battery in the pocket of the pouch. Connect the battery at the white in line connector.
3. To become familiar with the controls you can operate the features with the belt on a table. This will also allow you to set the volume.
4. Put the belt on your waist and the shoulder straps on. Buckle it and tighten the straps.
5. If you have the Cool Down Vest option, put this on now.
6. Turn on the system with the Master On/Off switch on the main box.
7. Set the volume level with the same switch adjustment.
8. Connect an audio source of your choosing to the audio input wire. This could be an MP3 player or CD player. The wire has extra length so that you put the player somewhere accessible on the operator.

Subsystems of the WAVE

A. Main Control Module with Audio Amplifier

This module is mainly an amplifier for the audio from the headset and an audio source. There is power in from the battery and outputs to the speakers connected to this unit.



To remove the cover you need to remove the 4 Allen screws, the volume knob, and the volume nut.

Subsystems of the WAVE

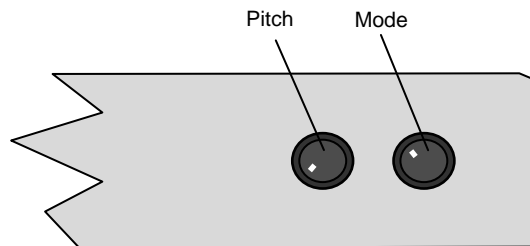
B. Voice Modifier (Option)

The pitch shifter (voice modifier) can change the operator's voice to disguise it and create a modified character voice. The operator's voice signal is received like normal by the amplifier/mixer in the main box. The modified signal is then amplified and sent out to the speakers.

The shifter receives power from the main box; no internal battery is needed. When the pitch shifter is plugged into the main box, it comes on automatically when the amplifier is turned on. The shifter will take a few seconds to power up. You will know that it is on because it will modify your voice.

Voice Modifier Control Descriptions

Voice Modifier Controls on Front Panel



Pitch Switch- Adjusts the amount of pitch shift to your voice.

Mode Switch- Selects the mode. Typically use the pitch shifter mode which is fully CCW.

Normal Voice

If you want to use your normal voice, turn the mode knob clockwise. This will give you a direct voice with very little effect.

Subsystems of the WAVE

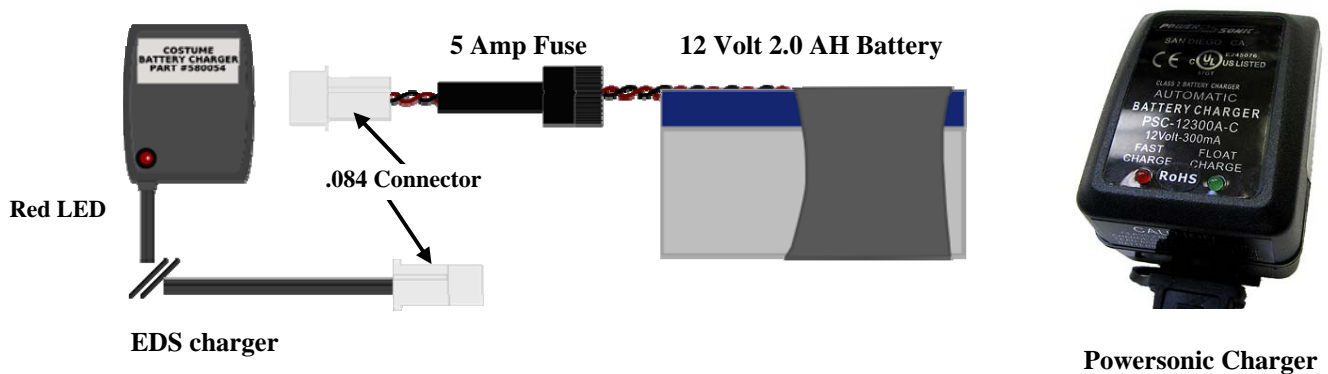
C. Wave System Battery and Charger

The battery is a 12 Volt 1.2 Amp Hour (AH) rechargeable AGM Cell lead acid type battery. This type of battery is very dependable and safe. It can be repeatedly charged and discharged but must be brought to a full charge immediately after each use. You should get about 3-4 hours fan operation.

To recharge the battery, first unplug the battery at the white .084 connectors and remove from the pouch. Connect the charger to it. Finally, plug the charger into a 110-volt AC outlet. The red LED on both types of chargers indicates the battery is charging. You will have one of two types of chargers.

EDS charger- charged when red LED is flashing.

Powersonic charger- Green LED indicates full charge and that the charger is getting power from the outlet. If lights are flashing green to red to green, this indicates incorrect polarity.



⚠ IMPORTANT: Leaving the battery in a discharged condition for a length of time is the single most abusive condition encountered in Gel Cell or AGM battery usage. You can avoid this by charging the battery after each use. A stand in the discharged condition of two or three days is not serious, but two or three months most likely will damage the battery.

It is best not to allow the battery to go completely dead as this shortens the life of the battery and makes recharging more difficult.

⚠ Batteries are provided with a polarized connector to avoid connecting the battery backwards. If these connections are disturbed, please be careful to observe proper polarity when reconnecting the battery. The red wire goes to the positive (+) terminal and the black goes to negative (-).

⚠ CAUTION: When charging, a Gel Cell battery gives off hydrogen gas. This battery has pressure relief vents. Although it only gives off a small percentage of the gas that a wet lead acid battery does, the following precautions should be observed:

- Do not position your face over the battery at any time while making connections.
- Do not smoke, strike a match, or cause a spark in the vicinity of the battery during charging.
- Charge battery in a dry, well ventilated area.
- Always unplug the AC supply cord **before connecting or disconnecting** the charger lead from the battery.
- Do not expose the charger to rain.
- Replace defective cords and wires immediately.

Storage and Maintenance

Fully charge the battery **monthly** in storage, because of self- discharge. If the fan does not operate, check the fuse and connections before replacing the battery. Use a Voltmeter if needed. The Voltage of a good battery charged will be about 12-13 Volts.

Maintenance

To maintain peak comfort and performance, do an occasional check up to make sure all parts are in good condition. Check all straps and buckles for frayed or broken parts. Check wiring and connectors to see that none are damaged or loose. Check the battery for any corrosion or leakage. Also check all components to make sure there are no loose or missing screws. Follow the recommendations in the audio source instructions, if you are using one.

Clean up

If the **WAVE** belt or vest becomes soiled, you may spot clean it with a mild soap and water solution and a damp cloth or sponge. **DO NOT MACHINE WASH**; it may shrink and distort. The cases of the electronic equipment may also be cleaned with a damp cloth or sponge and a mild cleaning solution. Do not spray the electronic equipment directly with any kind of cleaner; spray the cloth or sponge instead. Excess cleaner sprayed directly on the case may leak inside and cause electronic circuit damage.

Storage

Always make sure the battery has been fully charged and disconnected from the amplifier before storing the **WAVE** System. This insures maximum battery life. Store all components and the belt in a plastic bag or the optional duffel bag to reduce exposure to dust or other contaminants.

Appendix

Technical Tips and Trouble Shooting Section

Trouble Shooting Chart

Amplifier Problems	
No sound	<ol style="list-style-type: none">1. Check the battery voltage. It should measure 12 Volts with the system on.2. Is the WAVE amplifier "ON" and working? If not, check the wiring, plugs and the fuse on the battery wire.
An audio source* works but no voice	<ol style="list-style-type: none">1. Is microphone connector fully inserted?
Sound only comes out of one speaker	<ol style="list-style-type: none">1. Make sure both speaker wires are plugged into the speaker connectors on the control module circuit board.2. Some WAVE systems only have one speaker.
Voice Modifier Problems	
No voice when amplifier is first turned on	<ol style="list-style-type: none">1. Allow voice modifier to warm up for a few seconds.
Voice modifier does not change voice	<ol style="list-style-type: none">1. Turn mode knob to pitch shifter mode.2. Turn pitch knob to change the voice.3. The jumper for the pitch shifter is in the wrong position. See the main control module for the location of this jumper.
Audio Source Problems	
Voice works but audio source not operating	<ol style="list-style-type: none">1. Is audio source turned on?2. Is it properly connected? Check for damaged wiring or loose plugs.3. Are batteries good in the audio source unit?4. Is the audio wire good back to the control module?
Poor sound quality from audio source*	<ol style="list-style-type: none">1. If sound quality is poor, test the audio source with a separate headset to make sure the audio is good.2. Check battery voltage. <p>* An audio source could be a MP3 player or CD player.</p>

Notes Section