

Sparky®

The Fire Dog

Animated Costume

Congratulations on your purchase of the **Sparky Animated Costume** from ROBOTRONICS, Inc. Your costume 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 sound and movement to your Sparky costume. It is built for ease of operation and comfort.

Please read this manual carefully. It will help you make the most of your Costume system. As with any electronic device, proper care will greatly prolong the life of the 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, or repair.

Sincerely,

ROBOTRONICS, Inc.



Robotronics

ROBOTRONICS INC.

Springville, Utah 84663

www.Robotronics.com

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Limited Warranty

The costume 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 costume 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 Sparky Animated Costume 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 from your costume 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. There is a repair form to fill out on our website. Go to **Robotronics.com**, service and repair form. Fill out this form and send it with the part.
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**.

Safety Precautions and Guidelines

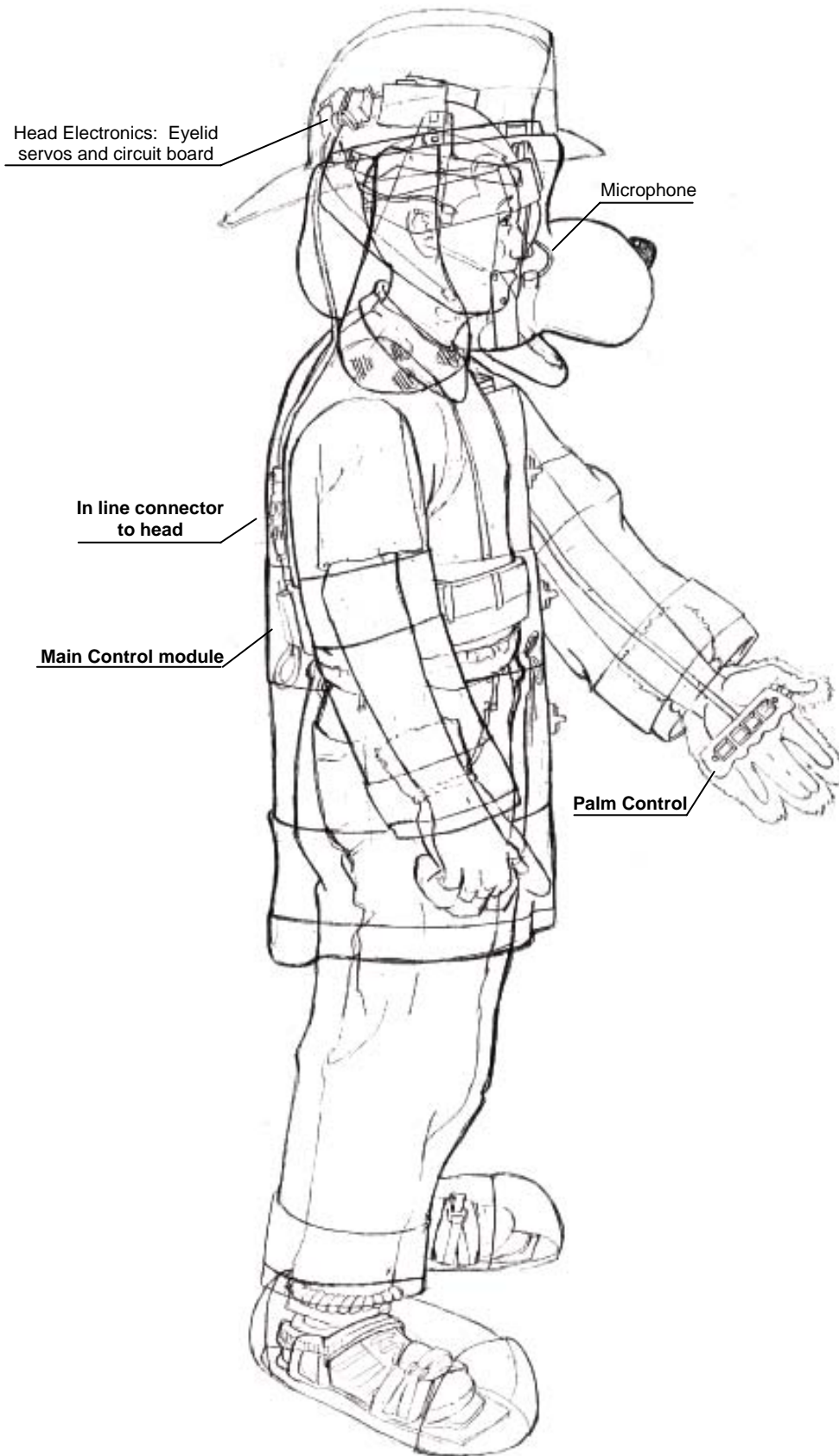
Precautions

- The wearer should use caution when walking in the Sparky costume. Visibility is restricted.
- Always have someone accompany the wearer of the costume, to help guide Sparky and indicate when there are children in his path. This person can also let Sparky know when someone wishes to speak to him, or when steps or other obstacles are nearby.
- Do not wear the costume if you have a heart condition, neck problems, or other medical condition. If in doubt, consult your physician.
- Exercise caution to avoid the effects of heat on the costume wearer. Use cooling techniques and take turns wearing the costume. During hot weather, limit the length of wearing the costume to 15-20 minute periods.
- Do not operate any machinery or eat or drink while wearing the costume.

Sparky the Fire Dog Guidelines

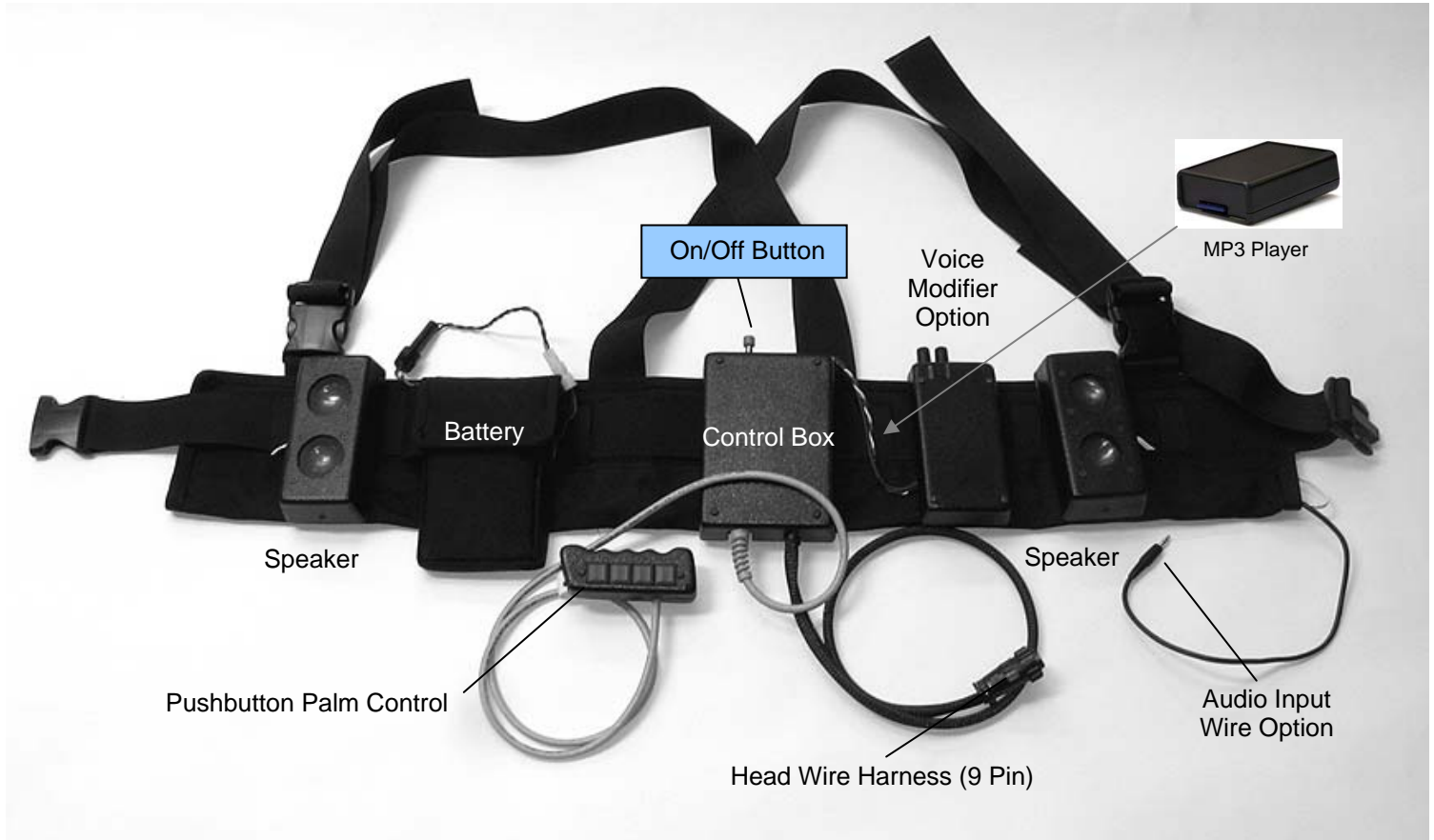
- Use the costume only to further public information, education, and awareness in the prevention of fires.
- Use the costume only in programs or events where fire prevention is a factor.
- The costume should be put on and taken off in private.
- The character is to appear only in the full costume.
- The character should always be dignified, friendly, and professional.
- Keep the costume under cover before and after use.
- The character must always have an escort.
- The wearer should be careful not to frighten or startle children.
- Never engage in any activity that may detract from the important image of Sparky.

Parts of the System-Diagram



Parts of the System - Belt

The Belt System



Note: Some models may have different speakers than those shown above. Some models may have the speakers in the pockets of the coat.

There are shoulder straps attached to this belt unit. Lay the entire belt upside down on the edge of a table. Put it around your waist, buckle it, tighten the strap and then put the shoulder straps on.

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 head and belt on a table. This will also allow you to set the volume.
4. Put on the turn out gear pants.
5. Put the belt on your waist and the shoulder straps on. Buckle it and tighten the straps.
6. If you have the Cool Down Vest option, put this on now.
7. Turn on the system with the Master On/Off pushbutton on the main box. The MP3 player will take a few seconds to start up before you can operate it.
8. Set the master volume level with the palm control if needed.
9. Connect the 9 pin round connector from the belt to the head connection. Spin the ring until it stops. This wire will run along your back.



Turn the ring only when connecting or disconnecting. Avoid pulling and jerking on the cable.

Caution: Spin the ring only not the housing of the connector. This will avoid twisting and damaging the wires.

10. Put on the Sparky costume head. If your costume has the new **foam padded head system**, adjust the chinstrap for comfort. There are two adjustments, one on the chin strap and the other on the back of head strap system. You can use the foam pillows with or without the bottom foam piece. Use the foam pieces where needed.

Tip: You may find it more comfortable to wear a [headband](#), bandana or cap.

11. Feed the palm control through the left sleeve of the turn out gear jacket before putting the jacket on.
12. If your speakers are in the pockets, feed the wires to connect to them.
13. The pushbutton palm control will typically be used in the palm of your left hand.

There is a strap to hold it in your palm. The diagram on the next page shows the function of each button. You may need to put the palm control in the glove first and then your hand. You can pull your thumb and a few fingers out of the glove to operate the controls.

As you go through the process of putting everything on you will find an order that works best for you.

Using the costume in different environments

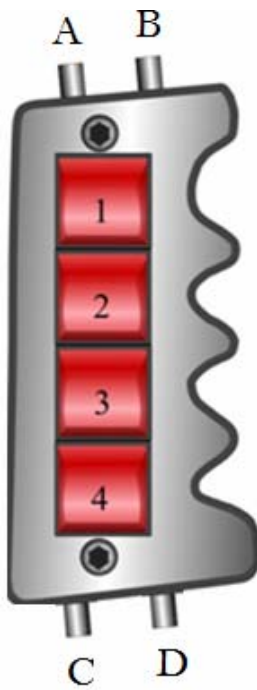
The volume of the costume is typically good for classrooms or small groups. If you are doing a program in a large group, you may want to use the PA system or an amplified speaker system. One idea would be to play your audio of Sparky singing or talking from the MP3 player or a CD player connected to the sound system. The sound system at the event could be a PA system or a portable amplified speaker that you bring along. The person portraying Sparky could move the mouth manually with the palm control in sync with the music or softly sing into the mic so that the mouth will move. You could clip a lapel mic on Sparky's coat to give the appearance of using a wireless mic.

Operation Guidelines and Features

Turning the system on and off

The Master On/Off switch is on the electronics box on the belt. Push the switch to turn on and push again to turn the system off. The LED will let you know if the power is on.

Pushbutton Palm Control



1= Mouth
2= Blink
3= Wink R
4= Wink L

A+1 =Play/Pause
A+2 =Stop
A+3 =Back mp3 track
A+4 = Forward mp3 track

B+1 =Snd1
B+2 =Snd2
B+3 =Snd3
B+4 =Snd4

C+1 =Volume up
C+2 =Volume down
C+3 =mp3 volume up
C+4 =mp3 volume down

D+1 =auto blink on/off
D+2 =fan on/off
D+3 =mic gain up
D+4 =mic gain down

Palm Control Functionality

The typical functions are shown above. There are additional functions shown in the table below, when the A,B,C, or D mode buttons are pushed. The power on defaults are: **automatic blink on and fan on.**

	Normal	A Button pushed	B Button pushed	C Button pushed	D Button pushed
1	Mouth	Play/Pause	Snd1	Volume up	Auto blink on/off
2	Blink	Stop	Snd2	Volume down	Fan on/off
3	Wink Right Eyelid	Back track	Snd3	Mp3 Vol. up	Mic Gain +
4	Wink Left Eyelid	Forward track	Snd4	Mp3 Vol. down	Mic Gain -

Operation Guidelines and Features

Setting the Volume Level

Before setting the master volume, set the mp3 volume and confirm that the mouth is working properly with the music. This is important because the mp3 volume has a direct effect on how well the mouth sync is working. Set the master volume at the level that you want by pushing the C mode and button 1 or 2. There is a separate Mic gain control that is adjusted with the D mode, button 3 or 4. After setting the master volume you may need to adjust the mic gain because they are related.

Caution: If the mic gain is too high the mouth may move more often than it should.

Tip: Set your volume levels before putting on the costume.

Eyelid operation

When you first turn it on, the eyelids will be in auto blink mode. Every so often the eyelids will very naturally blink. You can also wink with either eyelid whenever you want. This is done on the pushbutton palm control.

Mouth operation

The mouth operation is automatic when programmed music is playing. The mouth will move in sync with the music. If you do not have programmed music, you can operate the mouth manually from the palm control.

Turning the System Off

1. Turn off the power with the Master On/Off switch on the electronics module.
2. Disconnect the battery and recharge it **immediately**. Do not wait even until the next day. This will help prolong the life of the battery.

MP3 Player

Integrated MP3 Player Features

- Ability to play MP3 files through the costume.
- Memory Storage Card: SD or Multimedia(MMC) Card.
- Space on the card to load your own music.
- Selection of songs is done with the palm control.



There are songs that are pre-loaded on the SD card. These songs have a track that causes the mouth to move with the song.

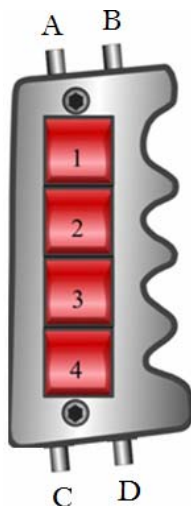
The Integrated MP3 player will only play mp3 format files. The 128kbps compression rate is the best choice for this player for best cueing speed. File names cannot be more than 20 characters long. Abbreviate your file names to accommodate this. When loading music it is important that you load your songs outside the soundfx folder on the card or they will not play.

Important

To load your own music on the card you will need to obtain a card reader that accepts SD or MMC cards. The card reader will connect to a USB port on your computer.

Play Music

The MP3 player will take a few seconds to start up before you can operate it. To play a song, hold the A mode switch and push the play switch shown on the diagram below. If you have loaded songs more than the pre-loaded four, when you go forward track you will be able to play these songs.



A+1 =Play/Pause
A+2 =Stop
A+3 =Back mp3 track
A+4 = Forward mp3 track

B+1 =Snd1
B+2 =Snd2
B+3 =Snd3
B+4 =Snd4

C+3 =mp3 volume up
C+4 =mp3 volume down

Tips

- When you scroll to the last track it will stop there. If you want to go to the first track you need to back track.
- If you stop on a song, it will remember that position when you start the mp3 player again but it will start the song from the beginning.

- If you want to change the volume of the MP3 player push the mode C button as shown in the diagram.
- If you add sound effects to be played in the place of snd1-4 they must have the filename of snd1, snd2, snd3, snd4 to play in their place. The sound effects files must be in the soundfx folder.
- You can customize the songs and sound effects that you use for different programs by getting additional cards and adding your own set of sound effects and music.

To Load Music on the Memory Card

Place the card in a card reader. Go into 'My Computer' on your desktop and find the drive that represents the card. Open the source folder where you have your MP3 music to transfer to the card. Drag and drop a copy of these files to the card. Make sure to put these files separate from the sound effects folder and not in a folder. You can place the files in the order that you want to use them. Put the memory card back in the MP3 player.

Play Sound Effects- soundfx folder

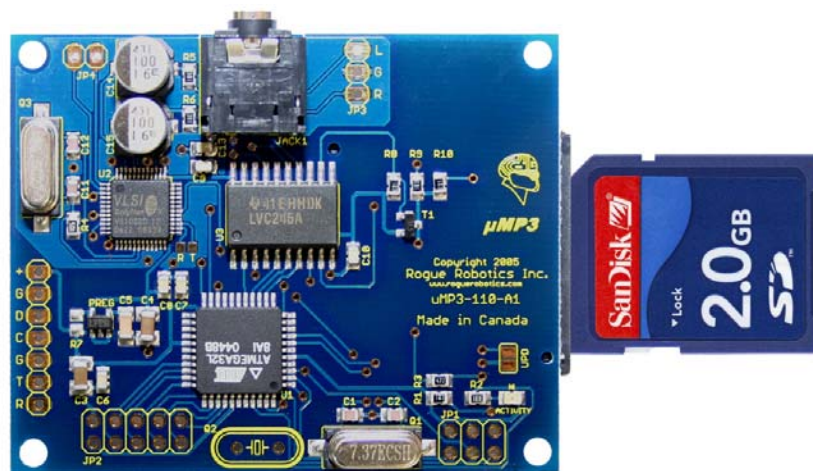
Sound effects or sound bites that are in the **soundfx** folder, on the card, can be activated from the palm control. If your card does not have this folder, you can create it when the SD card is connected to a computer. These files must be named snd1, snd2, snd3, and snd4. Hold the B mode button and the respective button 1-4 to play the sound. You can put a sound or a song in the folder, but it has to be named snd1-snd4.

Removing the SD Card

Push on the memory card and it will slide out part way. Remove the card. Now you can load music on the card. If you need more storage space, get a card with additional capacity. If you need to add the sound effects to a new card, make a copy of the folder with the sound effects on and place it on the new card.

Order of the songs playing

The songs will play based on the number at the beginning of the song such as 01, 02 ... If the song does not have a number at the beginning, then it will be the order that you transferred the song to the card.



MP3 Player Board
This shows black box inside view

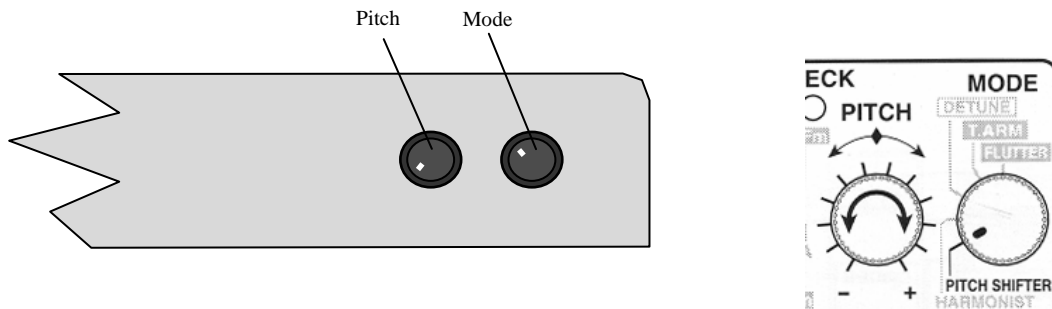
Voice Modifier (Option)

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.

Mode Switch - Selects the mode. Typically use the pitch shifter mode, Fully CCW.

Normal Voice

If you want to use your normal voice, turn the pitch to the middle position. This will give you a direct voice without any effect.

Set the mode knob to Pitch shifter and then vary the pitch knob until you get the sound of voice that you want. Use the diagram above to learn the positions of the knobs.

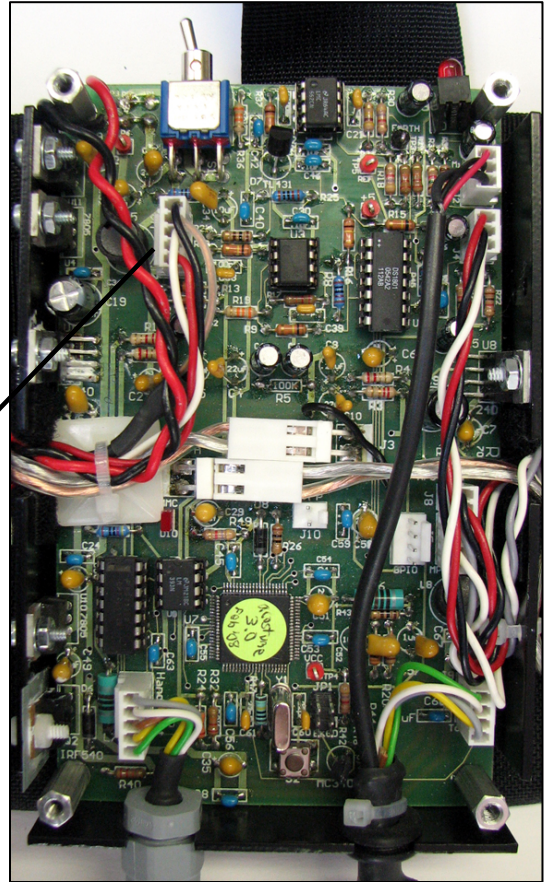
Above is a typical setting for the knobs. For a Sparky Animated Costume change the pitch until you get just the right voice for the operator.

Voice Modifier (Option)

Hook up for a voice modifier option:

1. The control box is the large box already on the belt. It has a number of wires running from it. Open up the control box by removing the four Allen screws.
2. Find the 5 pin connection with the jumper. Remove the jumper and connect the voice modifier wire.
3. Run the wire out the slot in the right side of the box and close the box.
4. Remove the belt strap so that you can thread it through the bracket on the voice modifier. Typically put the modifier to the right of the control box.
5. The modifier is now ready to use.

5 Pin Connection for
Voice Modifier.



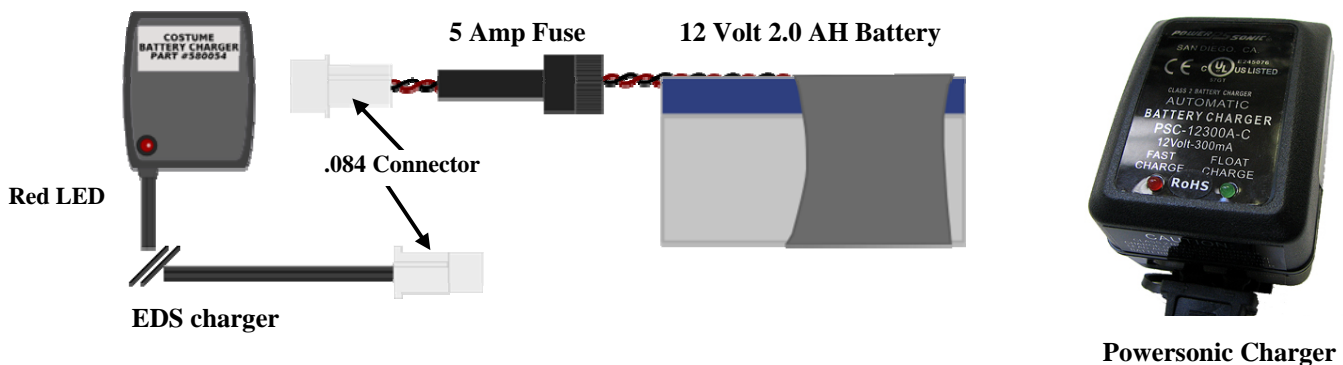
Charging and Care of the Costume Battery

The battery is a 12 Volt 2.0 Amp Hour (AH) sealed rechargeable AGM 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 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 battery for any problem with the wiring or connection. Also check all components to make sure there are no loose or missing screws. Please follow all care instructions so that it may stay with you for a long time to come.

Clean up

The cases of the electronic equipment may 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

Use a large sports bag or plastic container to transport the costume and keep it clean. It is much easier to keep the fur clean than to clean it. Always make sure the battery has been disconnected and fully charged before storing. Store all components in a plastic bag to keep the dust off. Always store indoors, in a clean area.

Care of the Fur, Boots and Turn Out Gear

General maintenance of your costume should include caring for the fur. After each use, clean and brush the fur and clothing so the oils and dirt do not become permanent. Keep the costume covered when not in use to keep dust and dirt off and to protect the fur and clothing.

1. Store in a well-ventilated area away from excessive temperatures. Car trunks and back seats are very hard on the costume.
2. The head should be brushed regularly, stored in its natural shape, and kept clean with a sponge and mild detergent. You can also use a damp soft cloth and a fabric cleaner such as 303 Fabric /Vinyl Cleaner. Spray disinfectant/deodorizer can be used on the inside of the head to eliminate odor. Never store damp! Store in a plastic bag.
3. The boots can be damp sponge cleaned. Spray deodorizer can be sprayed inside to eliminate odor. If needed shoes can be touched up with latex paint and a sponge roller.
4. Turn out Gear: Use a soft damp cloth with a mild soap. You can also use the 303 Fabric Cleaner on this. Dry cleaning is an option for the turn out gear.
5. Paws: The paws can be washed on gentle cycle and dried on low or drip dried. To fluff out again, use a soft brush or compressed air.
6. Remember that minor repairs with hot glue, contact adhesive, or needle and thread can keep small problems from becoming large ones. Replacement parts are available.
7. Remember also that a clean costume lasts longer.

Maintenance

Plastic Repair

Materials

ABS or PVC clear medium bodied glue

Fiberglass mesh

Rubber gloves

1. Hold the crack together tightly so that the glue you put on the inside of the body does not run through the crack on to the outside of the body.
2. If there are pieces of plastic reinforcement across the seam or crack that are unglued, PVC or ABS glue can be used between the reinforcement piece and the body. A clamp could be used to hold the plastic tightly together while drying.
3. Cut a piece of fiberglass mesh to cover the crack.
4. Position the part, so that the seam or crack is horizontal to the table. This will keep the glue from running. Apply some of the PVC glue along the seam or crack. Check to make sure that the glue is not running through the crack on to the outside of the body. Note: Avoid getting the glue on your hands.
5. Immediately put the fiberglass mesh on the glue and pat it down to saturate into the glue.
6. Apply some more PVC glue over the fiberglass mesh to saturate it some more.
7. It will dry to the touch in about 30 minutes. Allow 24 hours for complete drying.
8. For cracks that need more strength, glue a piece of ABS plastic across the crack with PVC glue.

General Precautions:

Use in a well ventilated area.

Use gloves to avoid getting glue on your hands.

Avoid getting the fiberglass on your skin or clothing. The fiberglass will not hurt you, but could cause skin irritation.

For further precautions, read the PVC container labeling.

Disassembly-Assembly

To remove the helmet and get to the head electronics:

1. There are four Phillips screws at the corners of the helmet.
2. Remove these screws and remove the helmet.
3. This will give you access to the eye servos, mouth servo, and the servo circuit board.

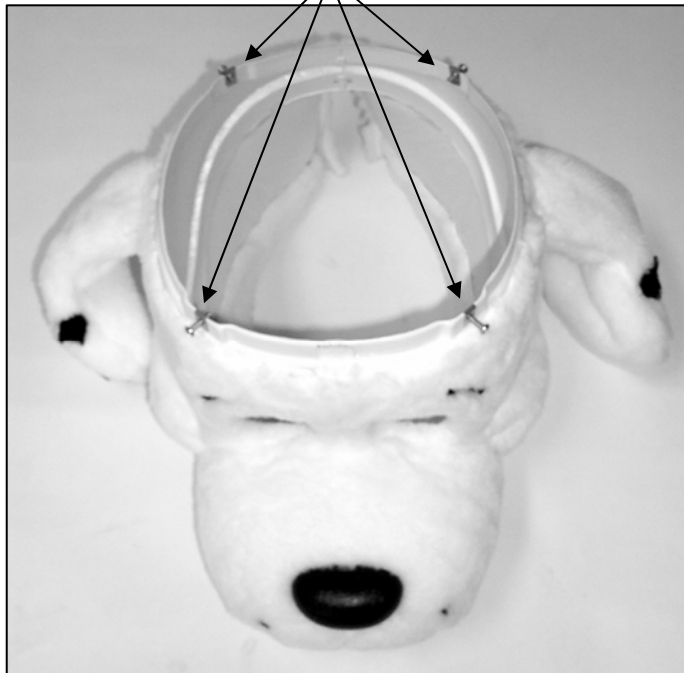
Taking apart the inner shell from the outer:

1. Tip the head upside down on something soft that will not scratch the helmet.
2. There are two screws along the side edge of the inner head. Remove these.
3. Put temporary masking tape over the eyes just behind the eyelids. This is to keep the eyes from being scratched.
4. Un-velcro the red mouth velour. This will reveal 2 more screws that you must remove. See the diagram below. You will have to move the fur slightly to see them.
5. You can now remove the inner shell by working the front out first. Pull one side out part way and then the other side part way working side to side as it comes out.
6. As it is coming out make sure the eyelids are not catching.
7. To re-install put the back in first.

Note: You would typically only need to remove the inner shell if you need to get to the lower eyes and mouth mechanics.

Assemble in reverse order.

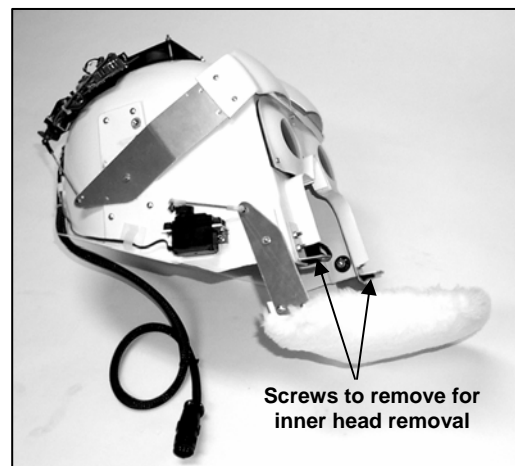
Fire Helmet screws



Outer Shell

This view shows the head with the helmet and the inner shell removed.

Inner Head Removal



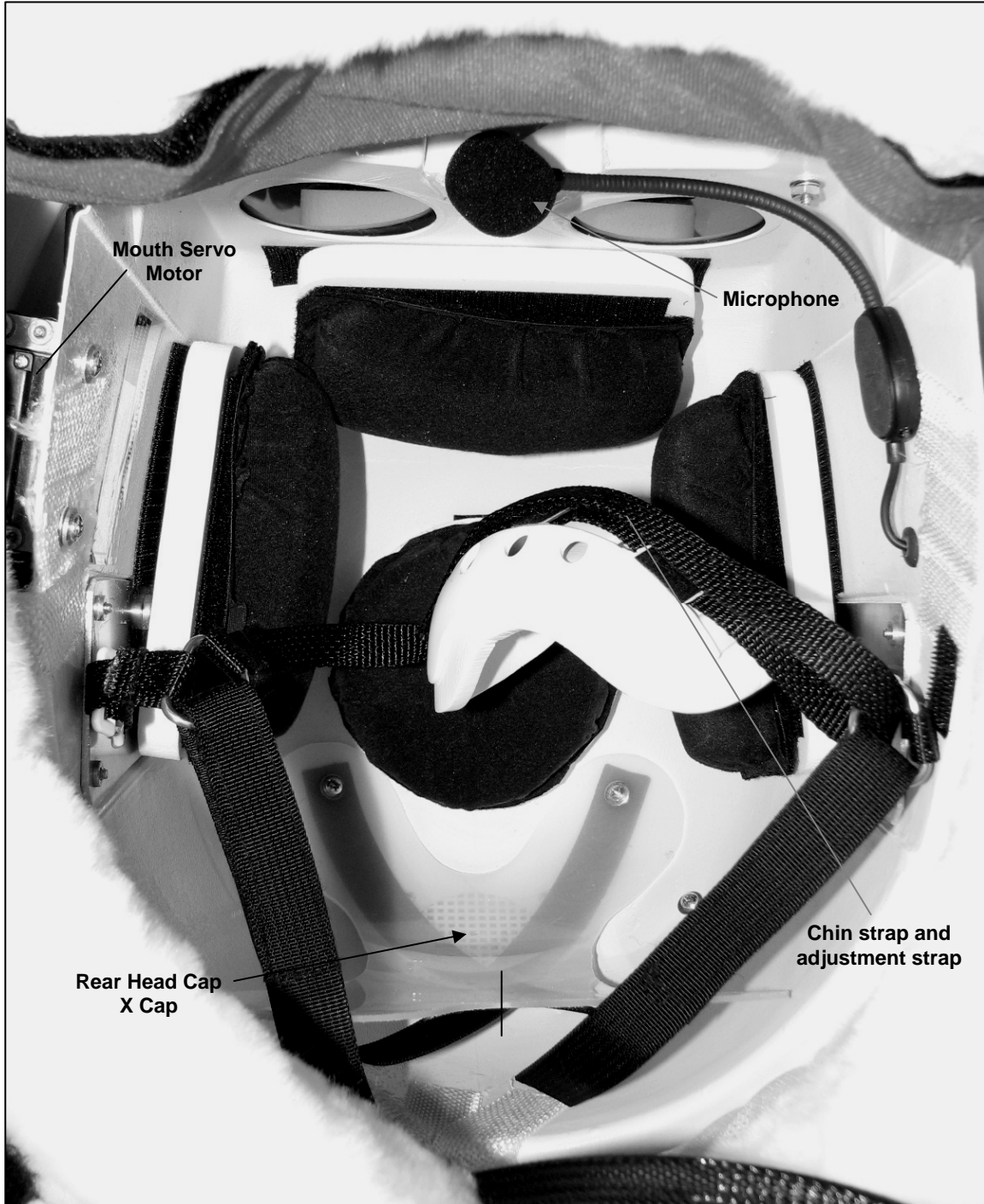
Screws to remove for inner head removal

APPENDIX

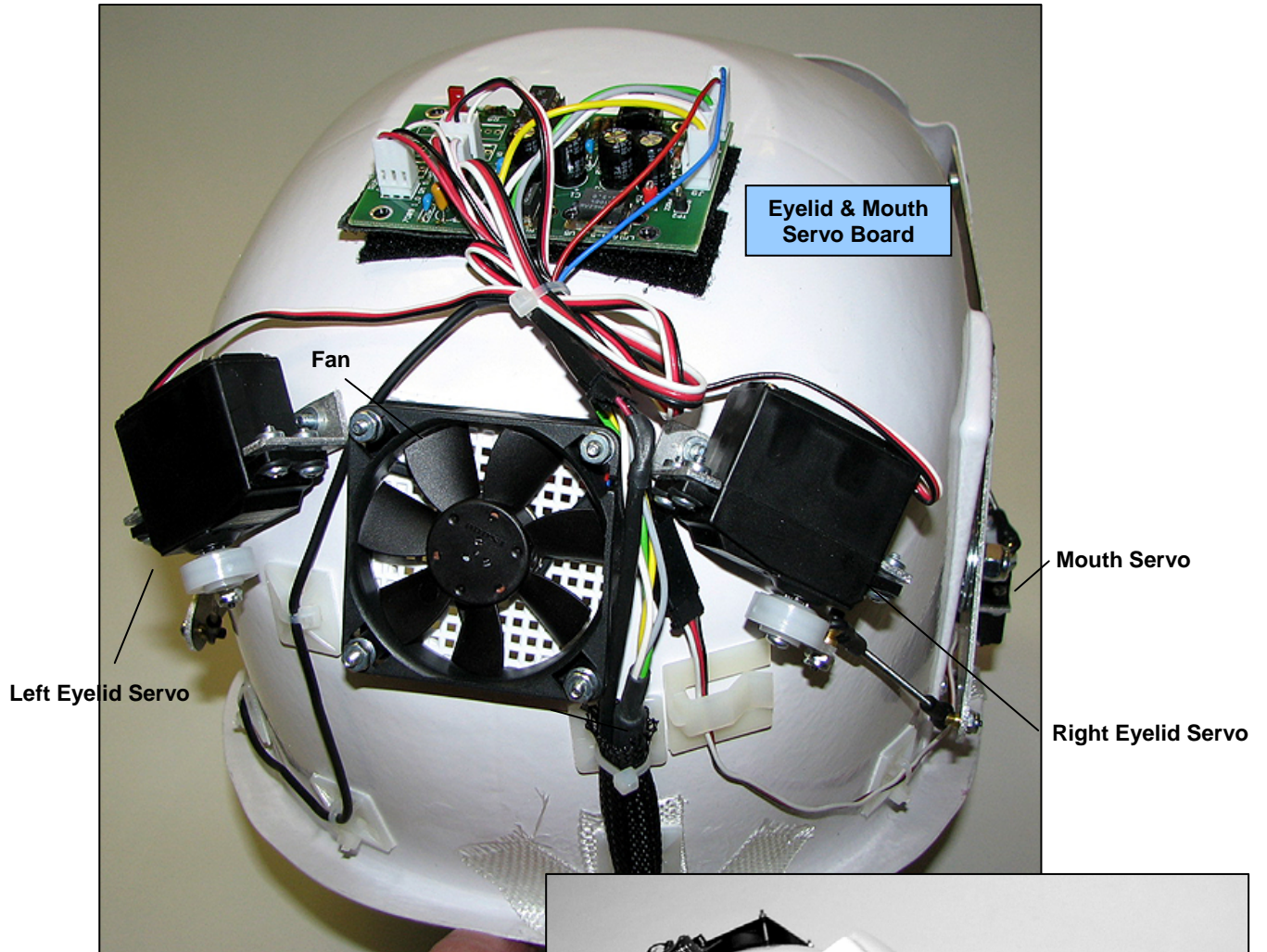
Trouble Shooting Section

Trouble Shooting Chart	
General	
No functions operate, including no fan	<ol style="list-style-type: none"> 1. Check fuse on the battery wire. 2. Charge the battery until the light flashes.
Mouth is not moving	<ol style="list-style-type: none"> 1. Master Volume or audio volume is not turned up loud enough. 2. Check wire harness connection going to the Sparky head. 3. Check the mouth servo linkage in the head especially if you can hear the servo motor. 4. Increase the mic gain and decrease the main volume if needed.
Mouth moves even after you stop talking.	<ol style="list-style-type: none"> 1. Adjust the mic gain on the palm control. See the diagram of the palm control functionality. 2. Mouth servo may have failed. Replace the mouth servo.
Audio problems	
No voice	<ol style="list-style-type: none"> 1. Check the battery voltage. 2. Is the system "ON" and working? If not, check the wiring, plugs and the fuse on the battery wire. 3. Is the mic wire connected in the main control box? 4. Make sure the mic volume is turned up.
Sound only comes out of one speaker	<ol style="list-style-type: none"> 1. Make sure both speaker wires are plugged into the speaker jacks on the wiring. 2. Are the speaker wires connected inside the main control box?
Audio Source Problems	
No sound from audio source	<ol style="list-style-type: none"> 1. Are there fresh batteries in the MP3/CD player? 2. Is the Master Volume knob turned up enough? 3. Make sure the audio wire to the main control box is plugged all the way in to the player.
Poor sound quality from audio source	<ol style="list-style-type: none"> 1. Check battery voltage. Recharge or replace the battery.
Eyelid(s)	
Both not moving	<ol style="list-style-type: none"> 1. Is the wire harness up to the head connected well.
One not moving	<ol style="list-style-type: none"> 1. Is eyelid servo disconnected in head? Reconnect. 2. If you hear motor but no movement: Either eyelid linkage rod is loose or the servo is bad. Tighten linkage or replace servo.
Fan	
No fan operation	<ol style="list-style-type: none"> 1. Turn the fan mode to on with the palm control. 2. Turning the costume power on and back on will reset the defaults to fan on. 3. Check wires from the fan back to the control module to try to find a broken wire.

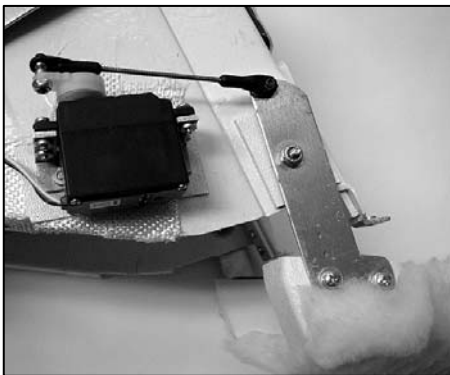
Head Inside View



Head Inside Top Views - Electronics



This is the Inner Shell



Main Control Box

Power On/Off

Power Connection
from Battery
Blk/Red- Audio Section
Blk/Red-Digital Section

Power
LED

Mic
Input

MP3/Audio Input
Optional

Speaker Wires

Speaker Wires

MP3 Power 5V
Red/Blk

MP3 Signal
Gray/White

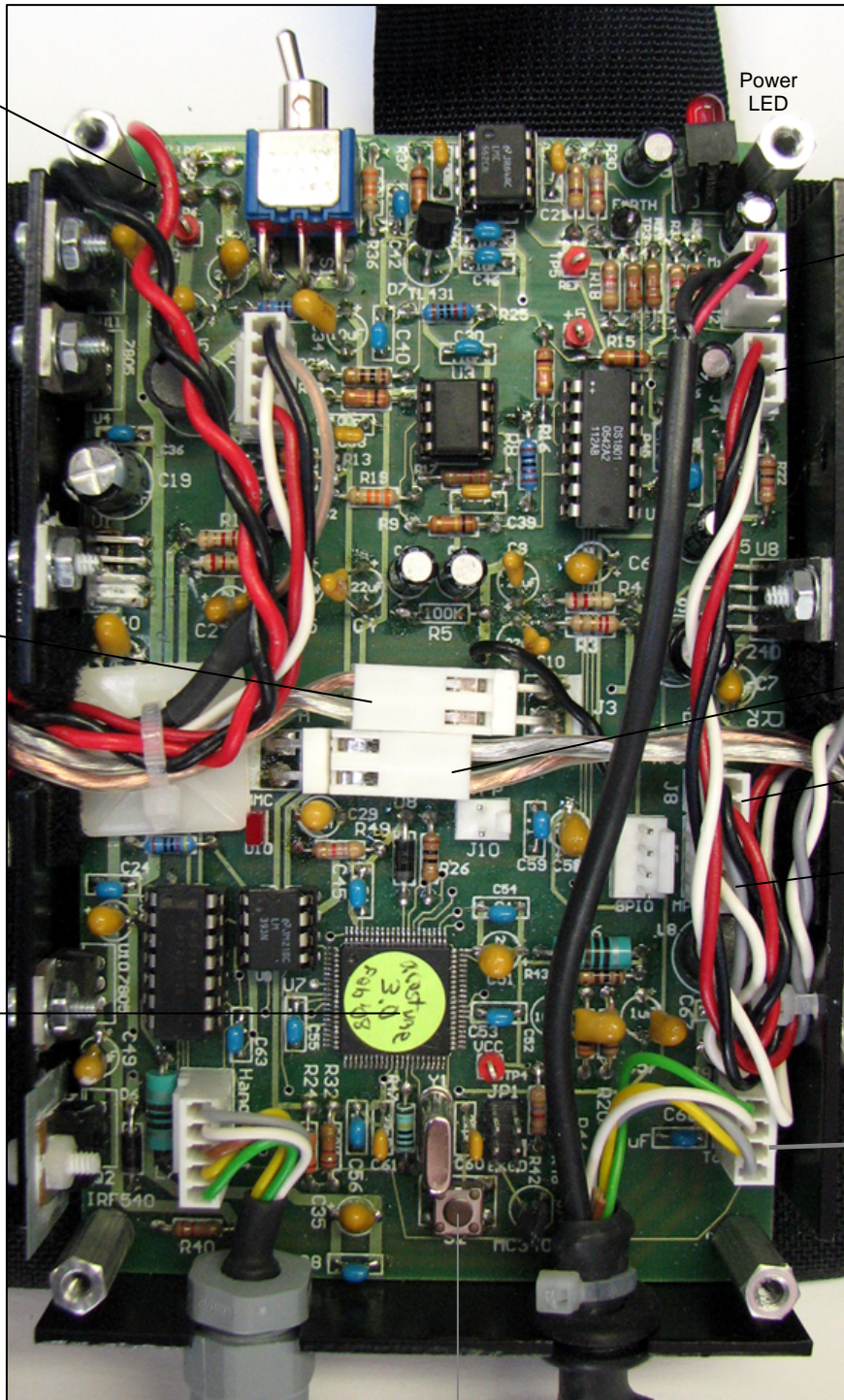
Processor Chip

Signal to Head

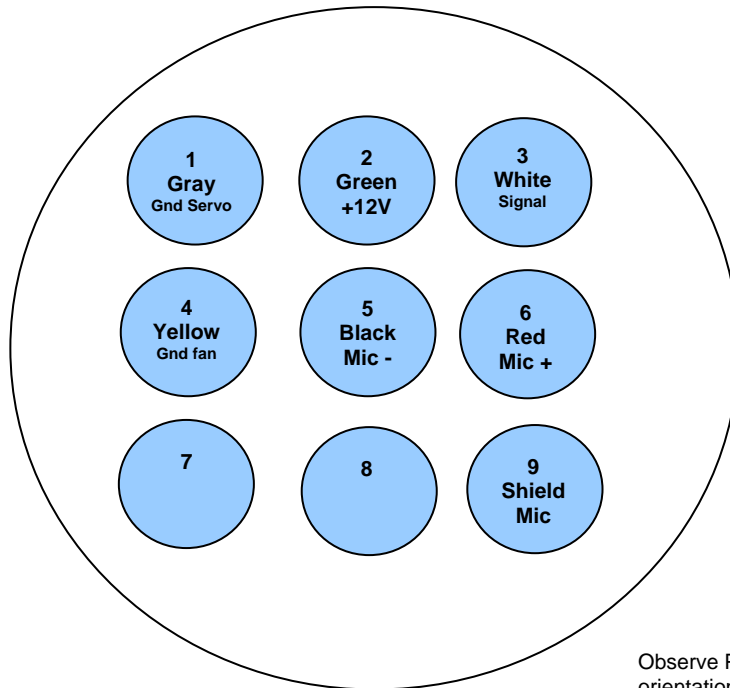
Palm Control
Connection

Reset

Head Wire
Connection



9 Pin Connector Pinout



Observe Pin numbers not orientation.

Servo Board Wires-Gray, Green, White, and Yellow
Green - +12V
Yellow - Gnd to fan
Gray Gnd- for servo board
White- Signal

Mic Wire- Red, Black, and Shield



Turn the ring only when connecting or disconnecting.

Notes Section
