

## AutoTalk Interface Board

Controller



Talking Skull

Talking  
Animatronic Head



Talking Character

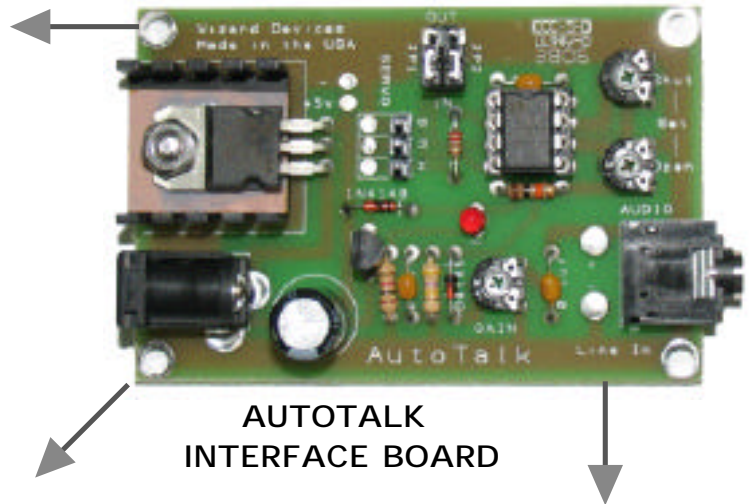


Talking Puppets



The AutoTalk board will move a standard R/C type servo in response to either an audio or speech line level input signal.

The AutoTalk includes the ability to set both the maximum, minimum travel position and direction of the attached servo motor.



AUTOTALK  
INTERFACE BOARD

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# Auto Talk Board

## Quick Setup Example

Instruction

I

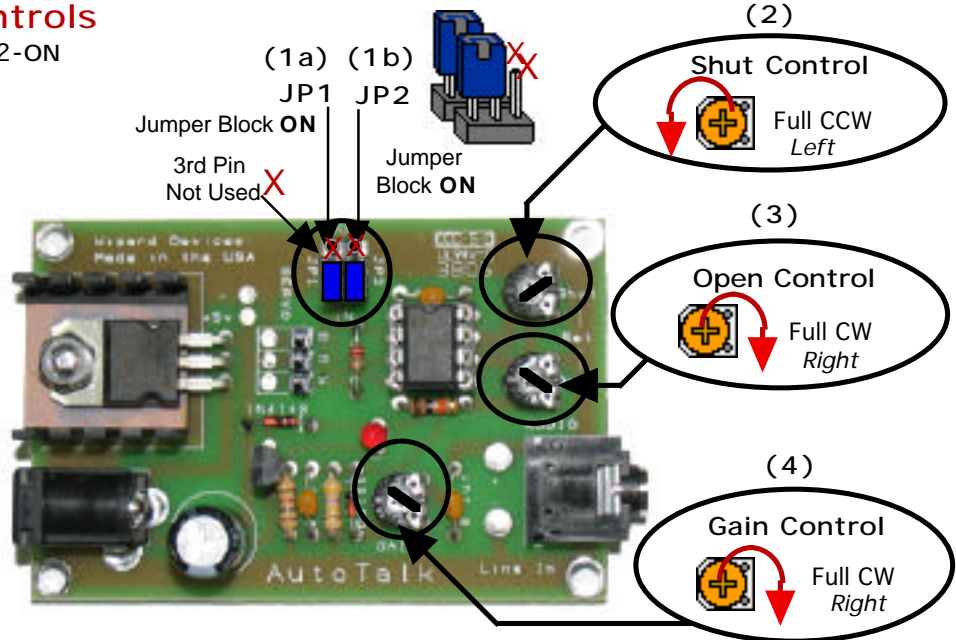
Ver 2.0

### (1). Set AutoTalk Controls

- (1a, 1b) Jumpers JP1-ON, JP2-ON
- (2) Shut Control - Full CCW
- (3) Open Control - Full CW
- (4) Gain Control - Full CW

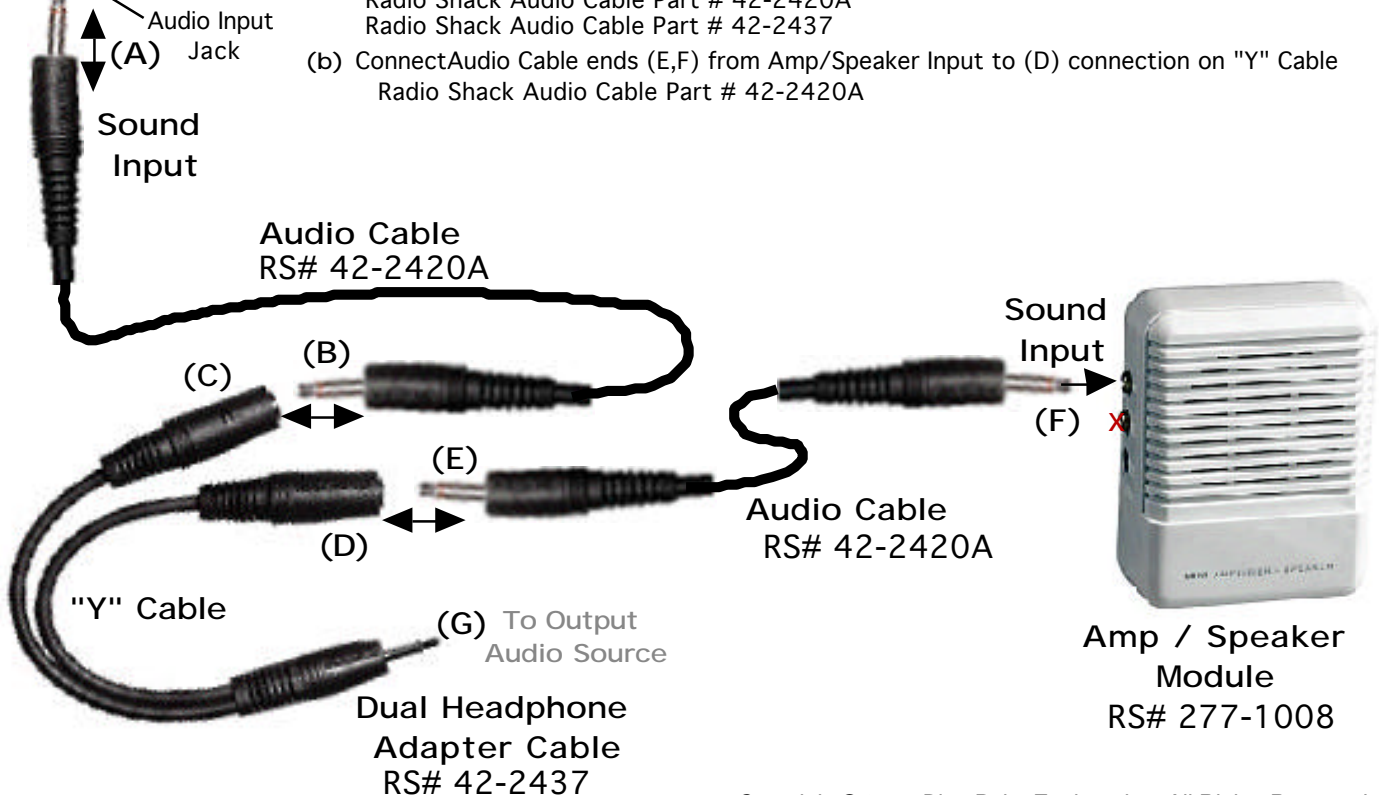
### CAUTION:

The potentiometers (Shut, Close, Gain) used in this AutoTalk Module are very precise. DO NOT force the potentiometers to the far Left, Right range or press down hard on the potentiometers with a screwdriver. Doing so will damage the potentiometer resulting in physical damage to the AutoTalk and cause faulty operation of the on-board electronics.



### (2). Connect Audio Cables

- (a) Connect Audio Cable ends (A,B) from AutoTalk sound Input to (C) connection on "Y" Cable  
Radio Shack Audio Cable Part # 42-2420A  
Radio Shack Audio Cable Part # 42-2437
- (b) Connect Audio Cable ends (E,F) from Amp/Speaker Input to (D) connection on "Y" Cable  
Radio Shack Audio Cable Part # 42-2420A



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# Auto Talk Board

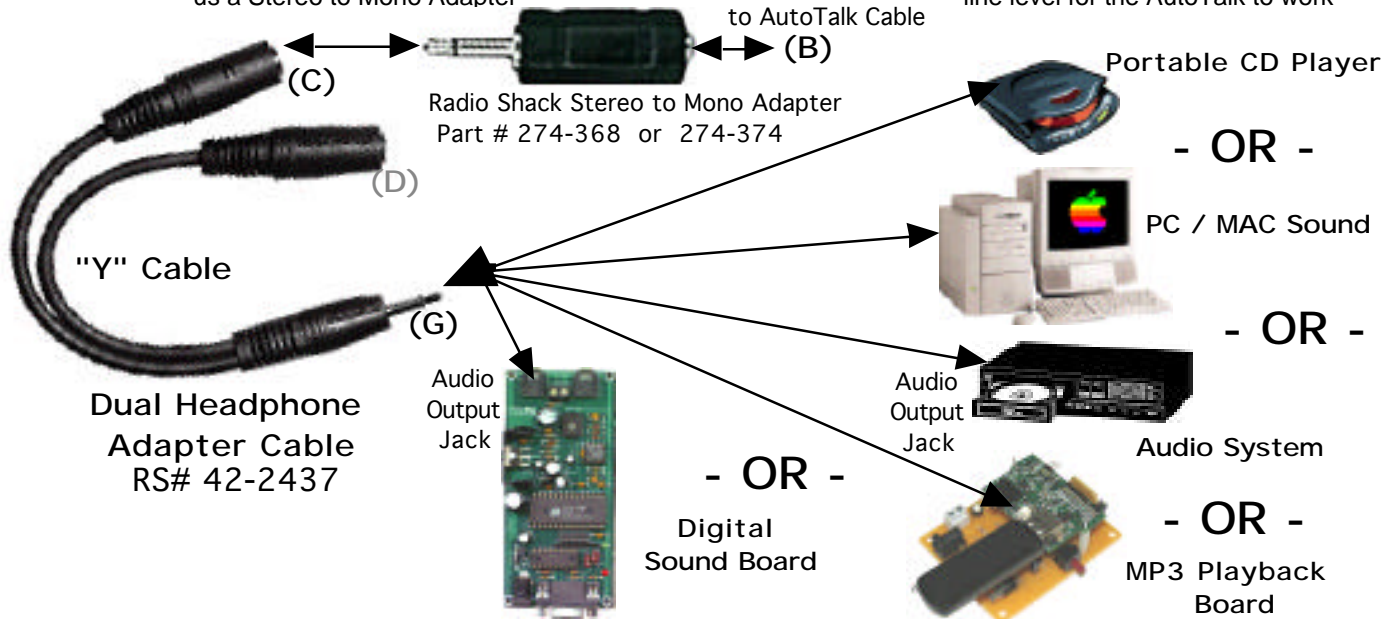
## Quick Setup Example

### (3). Connect Audio Cable to Sound Source

(a) Connect Audio "Y" Cable end (G) to Sound Source Output and Stereo to Mono Adapter if needed

**NOTE:** If Sound System is stereo output use a Stereo to Mono Adapter

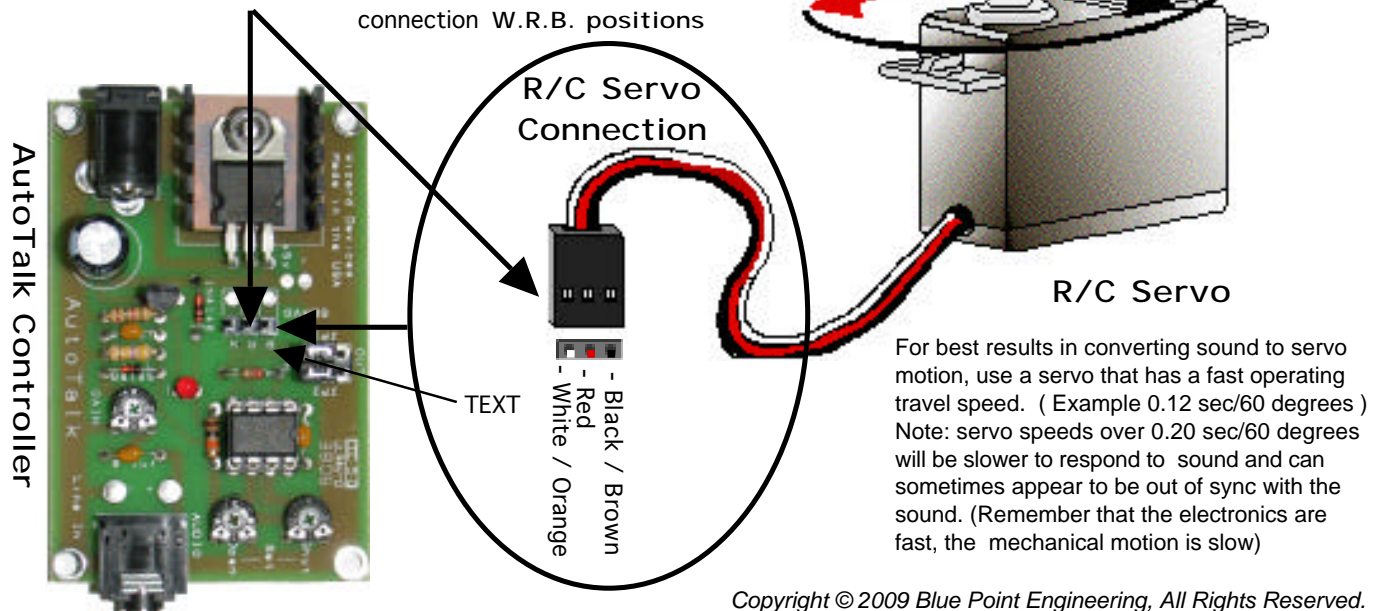
**NOTE:** Sound System must output 1Vpp line level for the AutoTalk to work



### (4). Connect Servo to AutoTalk Board

(a) Connect a standard 5 Vdc R/C hobby servo to the AutoTalk controller board servo connection header pins. (AutoTalk board, board has W.R.B text marking, Do not Reverse Servo Connections, Board can be damaged by wrong connection) (Do Not use Boosted or Coreless Servos with AutoTalk board)

**CAUTION:** Check for correct servo wire connection W.R.B. positions



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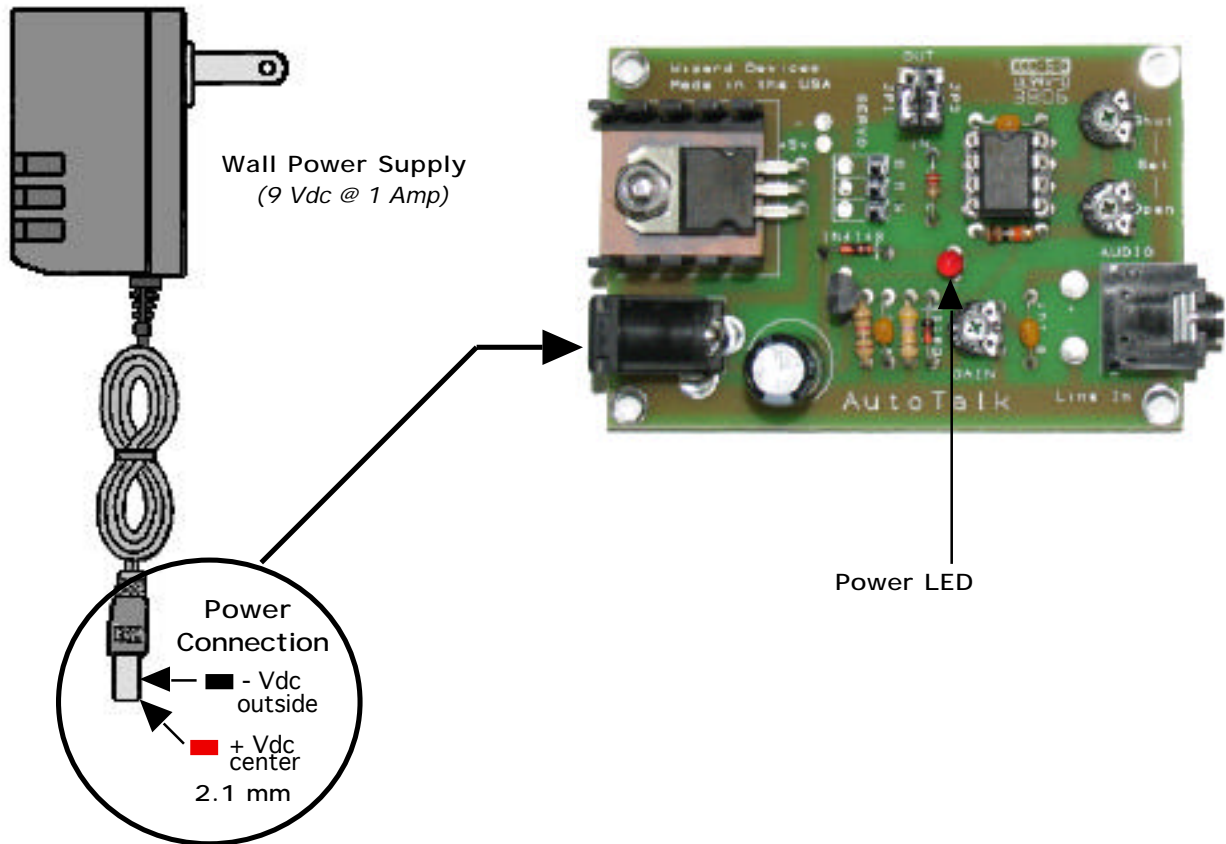


# Auto Talk Board

## Quick Setup Example

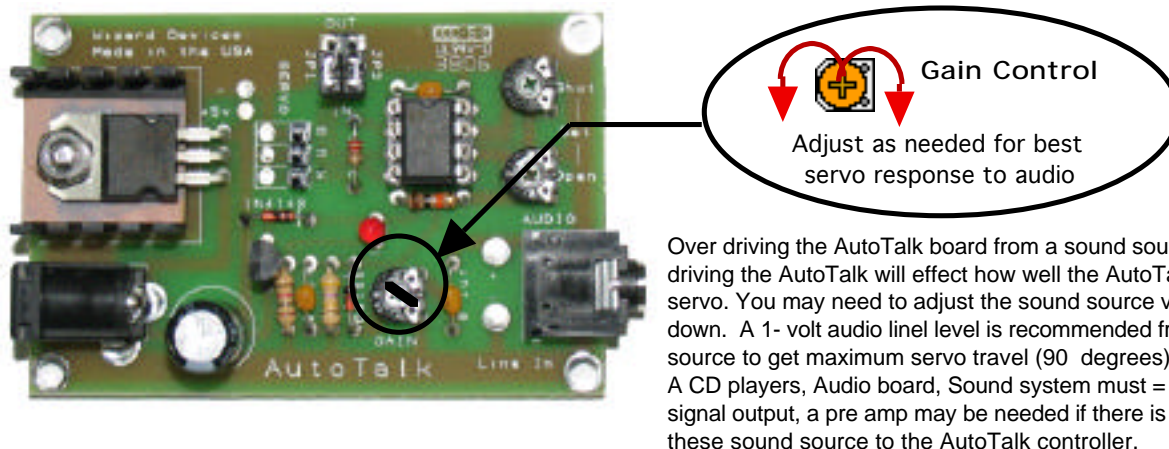
### (5). Connect Power to AutoTalk Board

(a) Connect a regulated 9 Vdc power supply to the AutoTalk controller board power input jack



### (6). Start Sound Source Playback

(a) Start the sound source and adjust the gain until the desired amount of servo travel is obtained from the audio signal. ( Check the AutoTalk Board Hints Page for additional information )



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# **Auto Talk Board**

## **Help / Hints**

### **AutoTalk Hints:**

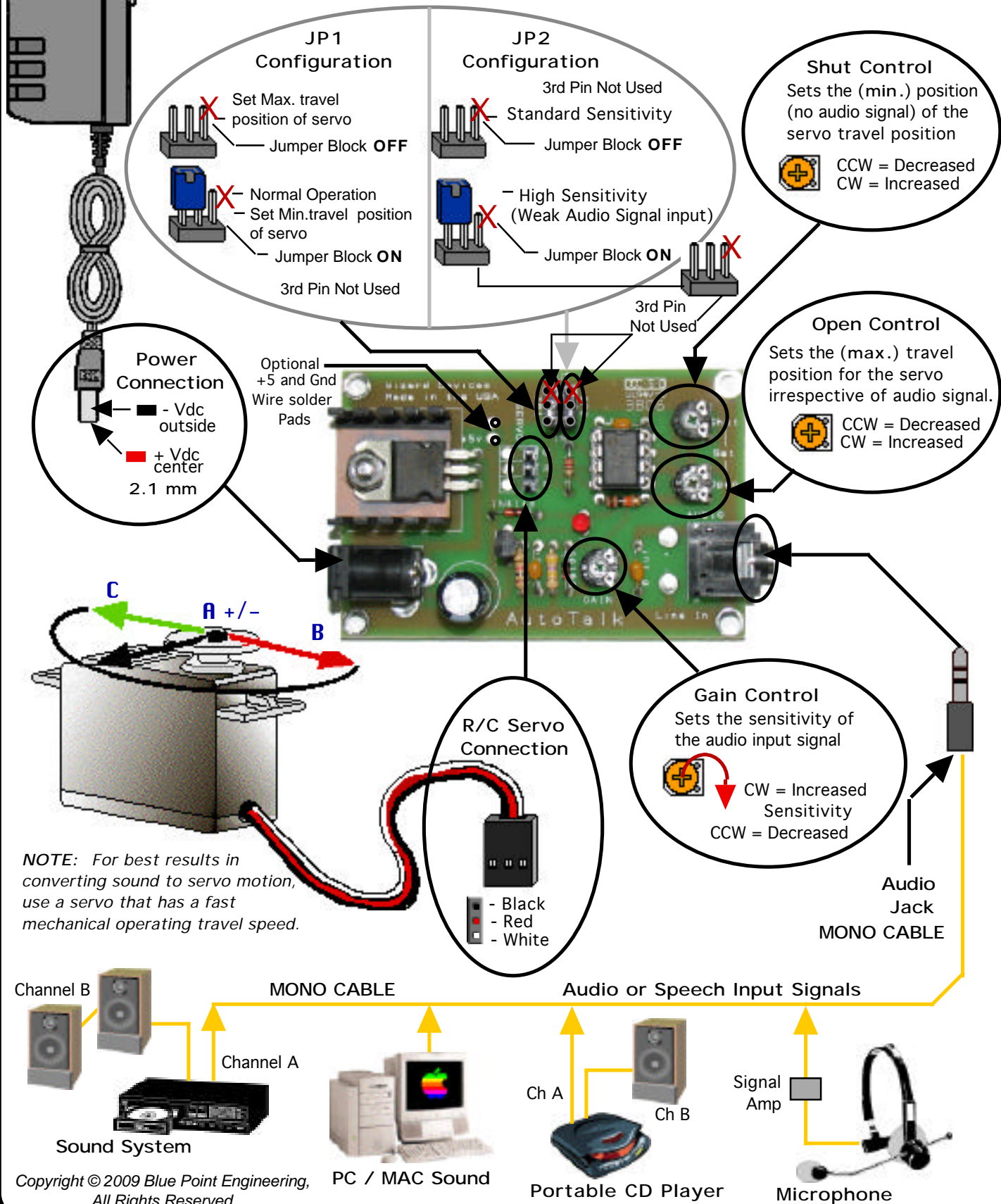
- Use a sound source with at least a 1 volt p-p line level output.  
A 1 volt audio line level is recommended from an audio source to get maximum servo travel (90 degrees), (microphone, tape, CD, sound system must = 1 volt line level signal output, a pre amp may be needed if low signal).
- Use a Mono Audio Cable, Stereo to Mono Adapter if having trouble with sound input and control.  
You may have to try the Stereo to Mono adapter at different cable connection spots to get results (Try the adapter at the (C,B) position on the "Y" cable)
- If servo is not moving or is traveling only a tiny amount - Reset Servo movement for Max positions . Remove JP1 jumper block and adjust the maximum (max) travel position needed for the servo by use the Open potentiometer . Replace the jumper after adjustment. Adjust the Shut (min) travel position needed for the servo by using the Shut potentiometer .  
Think of the Shut control, as to mouth closed, and the Open control as to how big you want the mouth to open.
- Set JP2 - Sensitivity range control: Jumper Block OFF for standard sensitivity, Jumper Block ON for high audio sensitivity - weak signal from audio source to AutoTalk board.
- Over driving the controller board from a sound source, or under driving the controller will effect how well the controller operates the servo. You will need to fine tune the board for best performance. (Gain Control)
- Use a quality audio cable between the sound source and AutoTalk controller (Mono).
- Keep the mechanical link between the servo arm and the Jaw as short as possible.
- Use a Regulated Power Supply to prevent power problems to the controller and servo.
- The center pin of the power connector jack is positive (+) and the outside is negative (-)
- Use the best quality sound source that is possible. Background noise, pops, hiss, white noise can all effect the ability of the AutoTalk to convert the sounds to servo motion. (Check your sound source for quality)
- Work with the gain potentiometer to fine tune the controller and servo movement.
- Adjust the Audio Source Level, Over-driving or Under-driving the autotalk audio level will lower the AutoTalk performance.
- The potentiometers used in this AutoTalk Module are very precise.  
DO NOT force the potentiometers to the far Left, Right range or press down hard on the potentiometers with a screwdriver. Doing so will damage the potentiometer resulting in physical damage to the AutoTalk and cause faulty operation of the on-board electronics.
- For best results in converting sound to servo motion, use a servo that has a fast operating travel speed.  
( Example 0.12 sec/60 degrees ) Note: servo speeds over 0.15 sec/60 degrees will be slower to respond to sound and can sometimes appear to be out of sync with the sound. (Remember that the electronics are fast, the mechanical motion is slow)
- DO NOT use the new servo with a power boost amplifier / Transistor or Coreless Motor internal configuration. These devices draw large amounts of current, and will damage the AutoTalk controller board if used.
- To reverse the servo movement direction ; Remove the audio source (or turn the gain down to 0). Remove JP1 jumper block and set the Shut potentiometer fully counterclockwise. Set the required maximum servo travel position with the Open potentiometer. Replace the jumper JP1 and adjust the shut position as required. Re-connect the audio signal. (Leave both Jumper Blocks ON for standard operation)  
The AutoTalk module selects either normal or reversed action depending on the relative positions for the shut and open potentiometers with the JP1 jumper off. To return the AutoTalk to normal operation, repeat the reversal procedure but in this case set the Shut potentiometer fully clockwise.
- Set Servo Travel Limits: Remove JP1 jumper block and adjust the maximum (max) travel position needed for the servo. (use the Open potentiometer), Replace the jumper after adjustment.  
Adjust the Shut (min) travel position needed for the servo. (use the Shut potentiometer)

Wall Power Supply  
(9 Vdc @ 1 Amp)

# Auto Talk Board

## Overview

The AutoTalk board will move a standard 5 Vdc R/C hobby type servo in response to either an audio or speech input signal. The AutoTalk includes the ability to set both the maximum, minimum travel position and direction of the attached servo motor.



# Auto Talk Board

## Technical Overview

### Connections:

- Servo:** Standard 5 Vdc R/C type servo connector. Ensure correct B.R.W. polarity ( see AutoTalk board for servo position connector, board has B R W text markings ( Do not Reverse Servo Connections, Board can be Damaged by wrong connection) (Do Not use Boosted or Coreless Servos with AutoTalk)
- Power:** Power supply connector - 2.1mm quick connector. AutoTalk will accept 9 - 12 Vdc. Current rating for supply depends on the servo motor being driven. AutoTalk itself requires approx. 20mA. Ensure correct polarity (-/+) to prevent damage to the board. ( Recommended power = 9 Vdc @ 1 Amp )
- Audio In:** 2.1mm (1/8) jack socket. 1V p-p audio signal level for maximum travel (90 degrees) (Mono Audio Cable)
- JP1:** Jumper Block ON - normal operation. Used to set Min travel position of servo may be also set with the Shut Potentiometer when the jumper block is on.  
Jumper Block OFF - Maximum open travel position of the servo may be set with the Open Potentiometer.
- JP2:** Sensitivity range control: Jumper Block OFF for standard sensitivity, Jumper Block ON for high audio sensitivity (low signal source input into AutoTalk from a weak audio source)
- Shut:** Sets the (min.) position (no audio signal) of the servo travel position.
- Open:** Sets the (max.) allowable travel position for the servo irrespective of audio signal.
- Gain:** Sets the sensitivity from the Audio Input signal (clockwise for increased sensitivity).

### CAUTION:

The potentiometers (Shut, Close, Gain) used in this AutoTalk Module are very precise. DO NOT force the potentiometers to the far Left, Right range or press down hard on the potentiometers with a screwdriver. Doing so will damage the potentiometer resulting in physical damage to the AutoTalk and cause faulty operation of the on-board electronics.

### AutoTalk Operation:

- Connect a standard 5 Vdc R/C hobby fast travel servo and 9 Vdc regulated power supply (Regulated Vdc) to the AutoTalk controller board servo connection and power jack connections. ( see AutoTalk board for servo position connector, board has B R W text markings ( Do not Reverse Servo Connections, Board can be damaged by wrong connection) (Do Not use Boosted or Coreless Servos with AutoTalk)
- Connect a mono audio cable to the audio input jack on the AutoTalk board and to a sound source output. (See instructions for connecting cables) (Note: You may have to use a Stereo to Mono adapter to get the audio signal to work with the AutoTalk)
- Start the sound source and adjust the gain until the desired amount of servo travel is obtained from the audio signal. ( Check the AutoTalk Board Hints Page for additional information)
- To reverse the servo movement direction ; Remove the audio source (or turn the gain down to 0). Remove JP1 jumper block and set the Shut potentiometer fully counterclockwise. Set the required maximum servo travel position with the Open potentiometer. Replace the jumper JP1 and adjust the shut position as required. Re-connect the audio signal. (Leave both Jumper Blocks ON for standard operation)  
The AutoTalk module selects either normal or reversed action depending on the relative positions for the shut and open potentiometers with the JP1 jumper off. To return the module to normal operation, repeat the reversal procedure but in this case set the Shut potentiometer fully clockwise.
- Set Servo Travel Limits: Remove JP1 jumper block and adjust the maximum (max) travel position needed for the servo. (use the Open potentiometer), Replace the jumper after adjustment.  
Adjust the Shut (min) travel position needed for the servo. (use the Shut potentiometer)

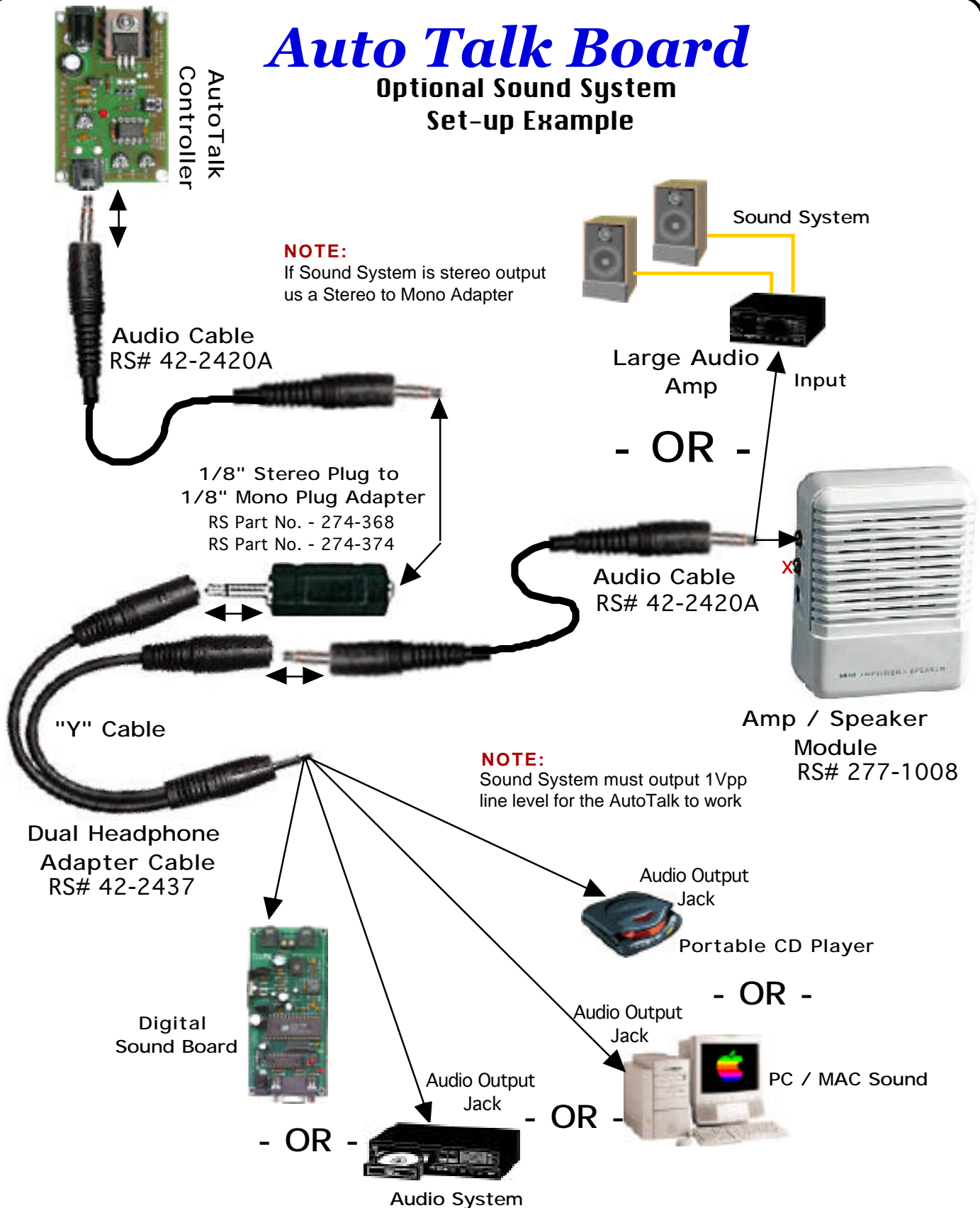
### AutoTalk Hints / Help:

Check the AutoTalk Hints Page for additional information and help.



# Auto Talk Board

## Optional Sound System Set-up Example



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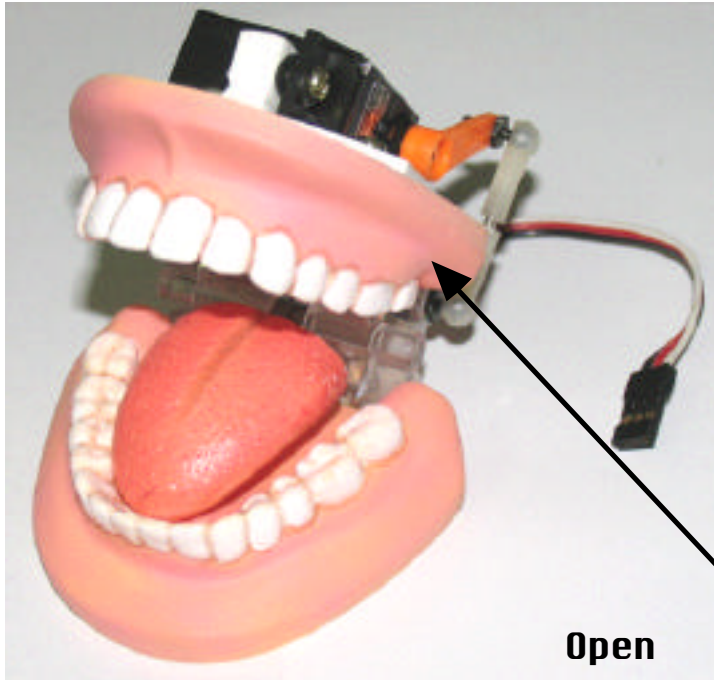
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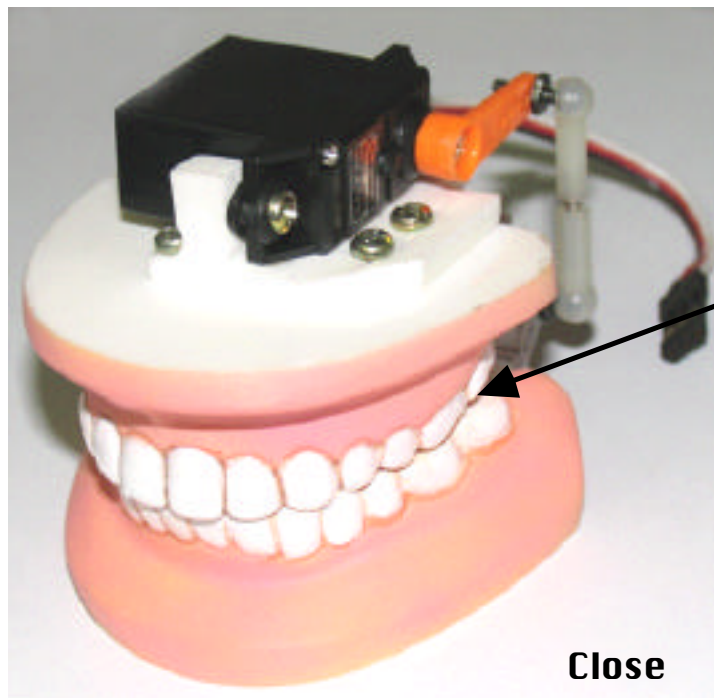
# Auto Talk Board

## Mechanical Mouth Example Board Controls

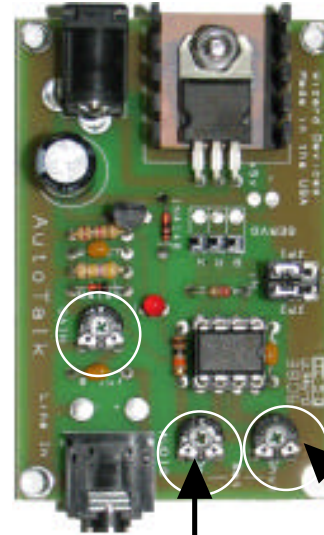
### Mechanical Mouth Kit



Open



Close



Open  
Control  
Full CW  
Right



Shut  
Control  
Full CCW  
Left

Think of the Shut control, as to mouth closed, and the Open control as to how big you want the mouth to open.

#### HINT / HELP

If servo is not moving or is traveling only a tiny amount - **Reset Servo movement for Max positions.** Remove JP1 jumper block and adjust the maximum (**max**) travel position needed for the servo by use the **Open potentiometer**. Replace the jumper after adjustment. Adjust the Shut (**min**) travel position needed for the servo by using the **Shut potentiometer**.

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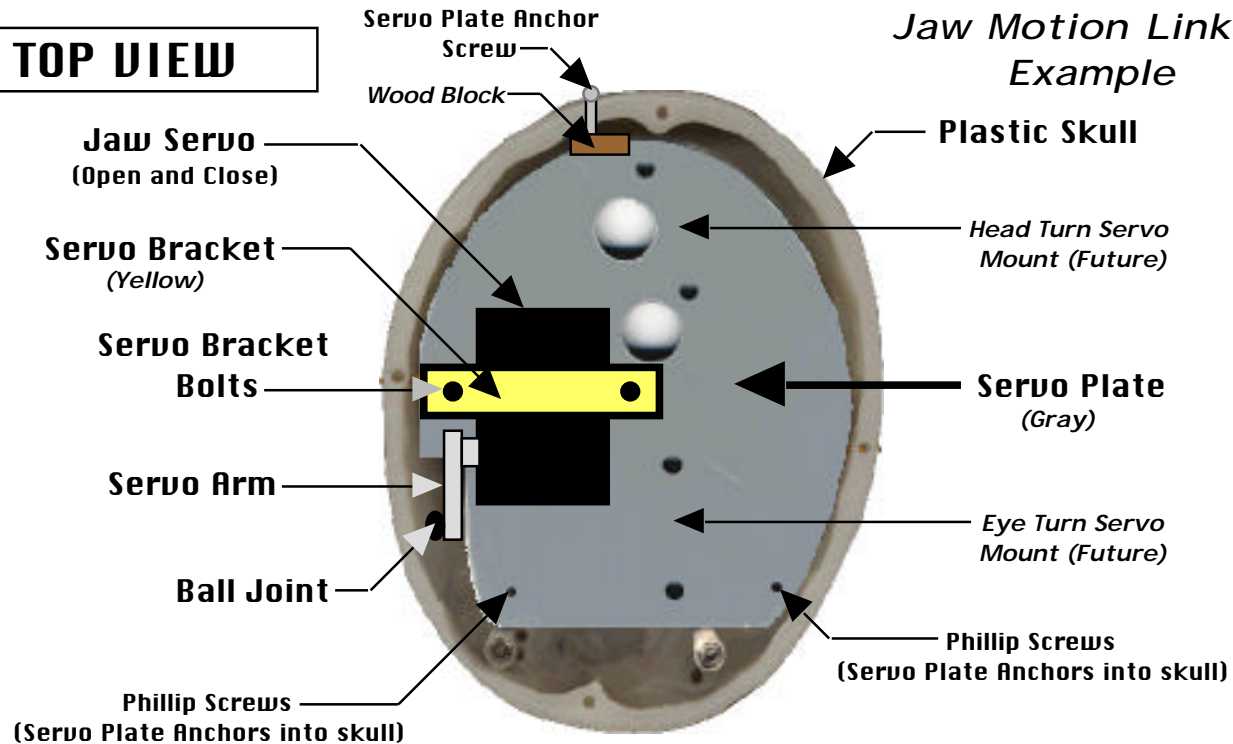
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# Auto Talk Board

## Talking Skull Example

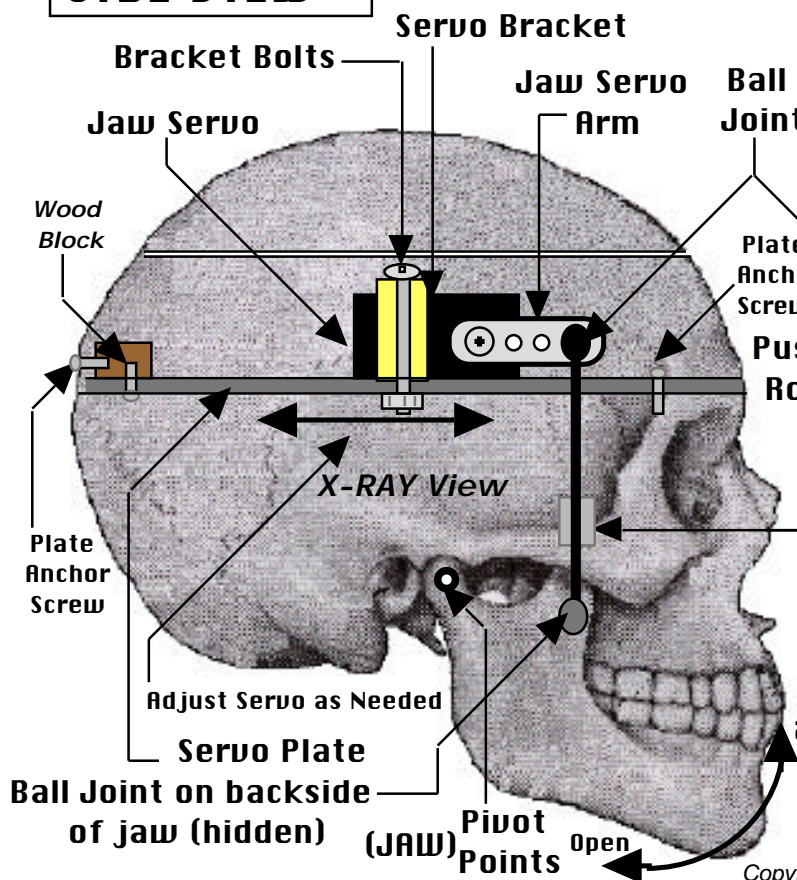
### TOP VIEW



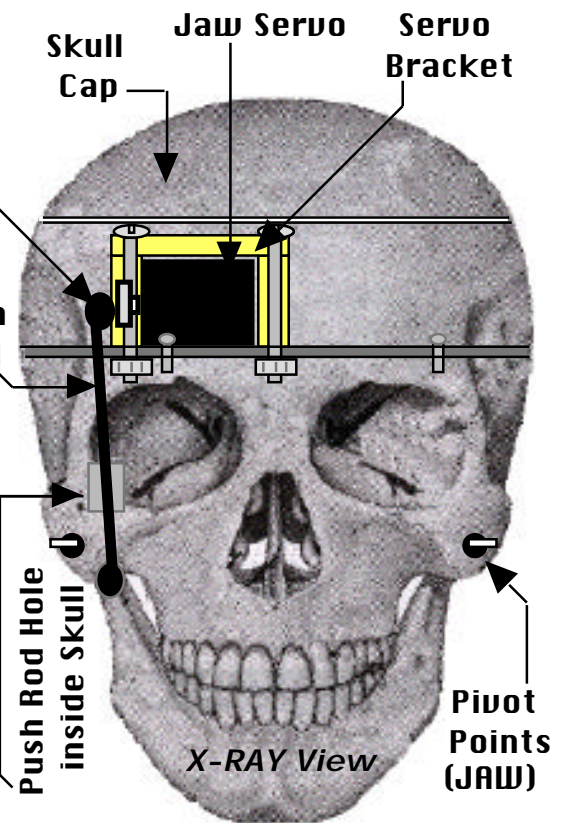
### Jaw Motion Linkage Example

### SKULL FRONT

### SIDE VIEW



### FRONT VIEW



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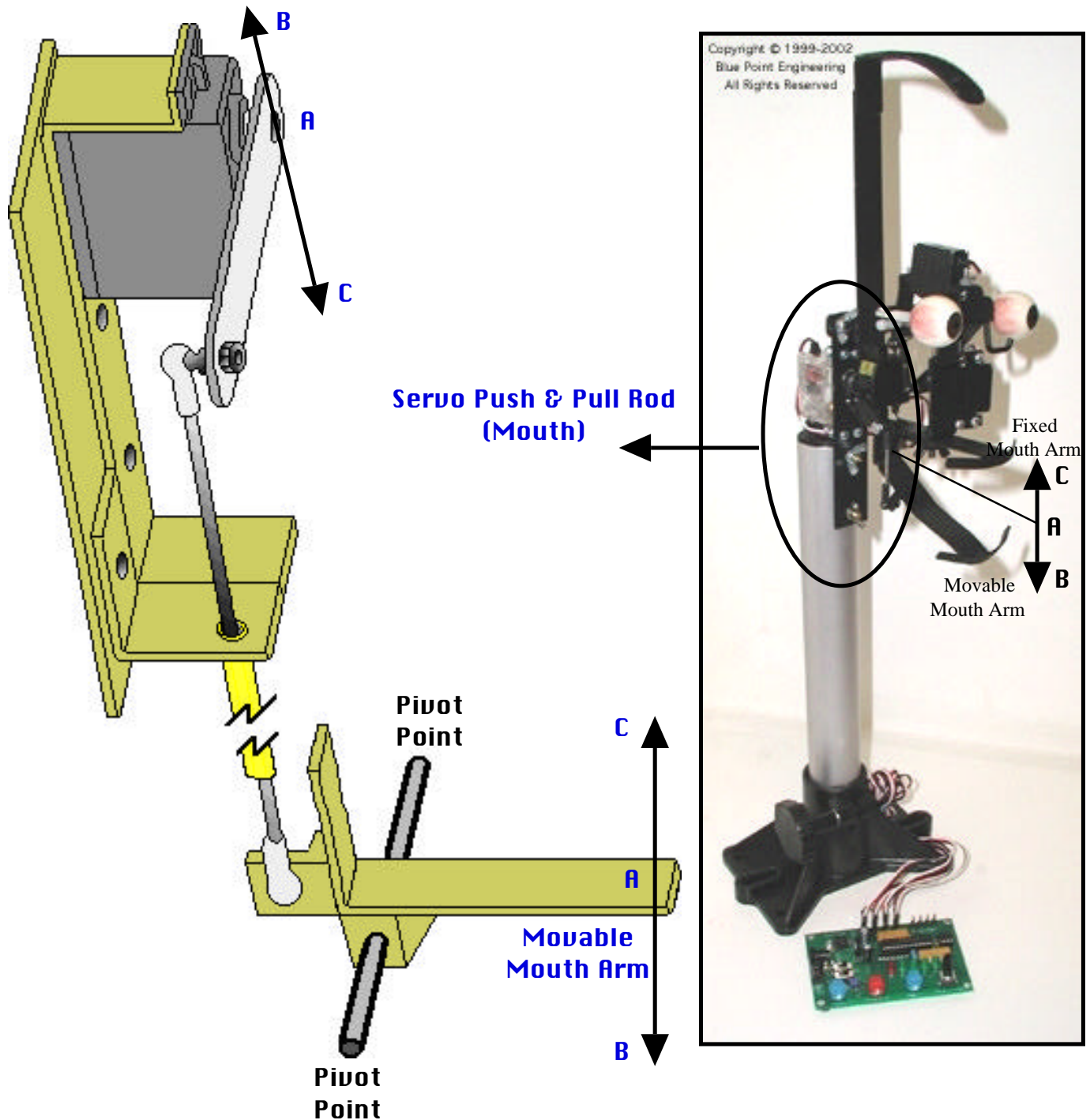
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# Auto Talk Board

## Mechanical Mouth Example

### Animatronics



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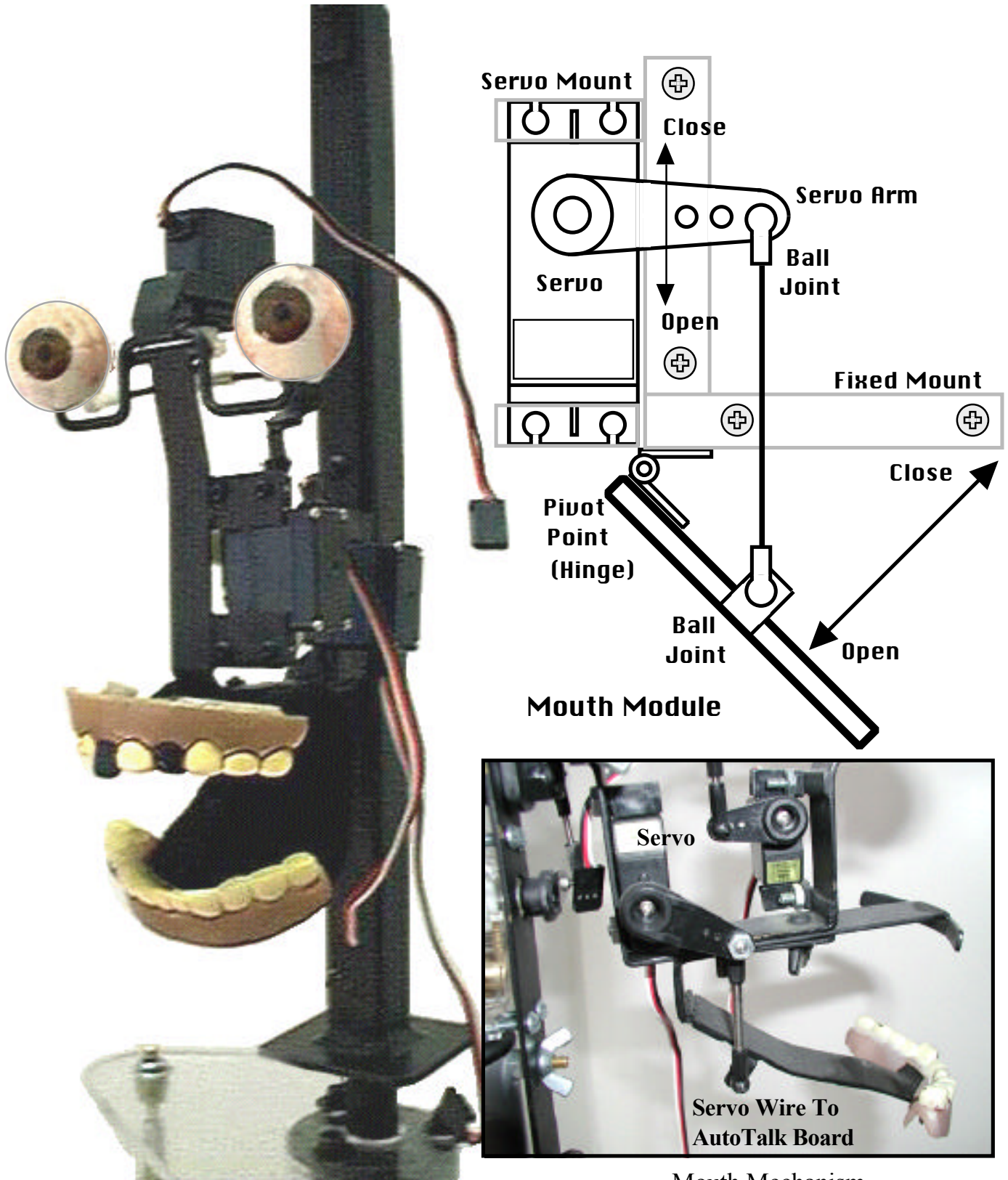
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# Auto Talk Board

## Mechanical Mouth Example



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Mouth Mechanism

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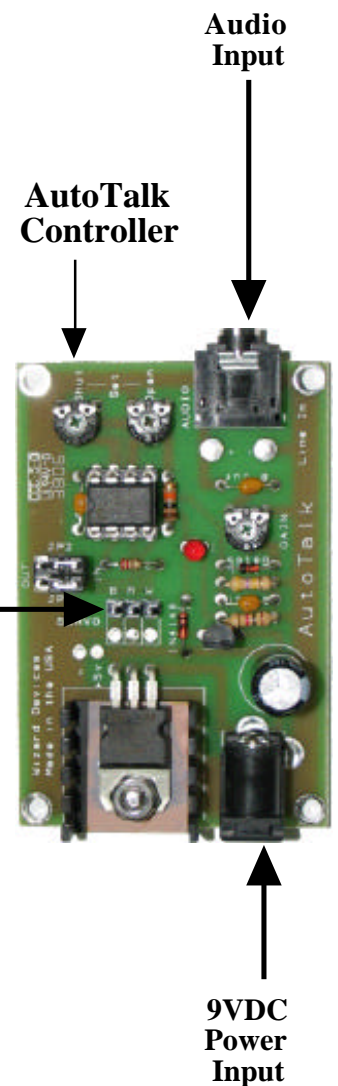
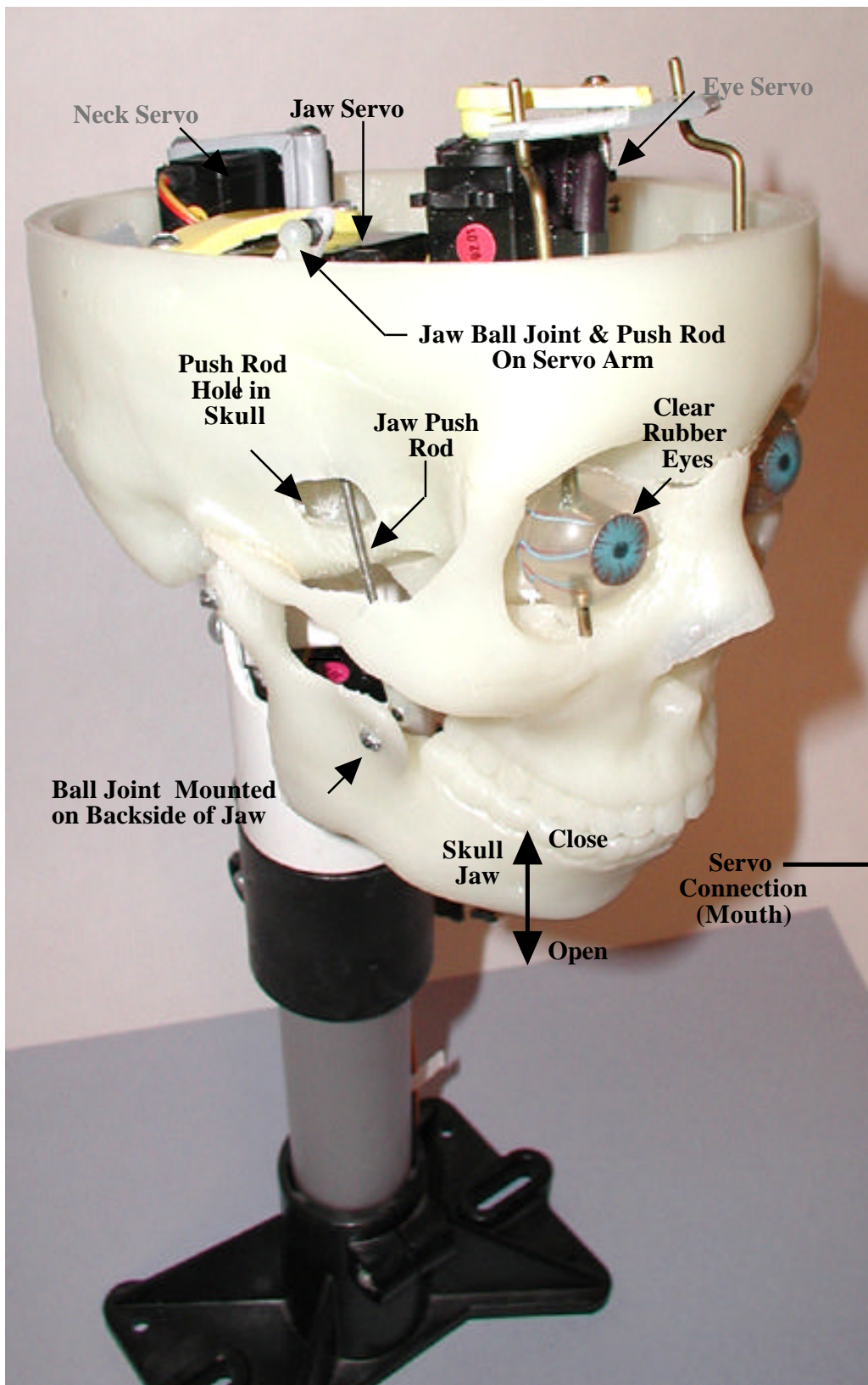
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# Talking Skull

Example  
Set-up

Technical

T



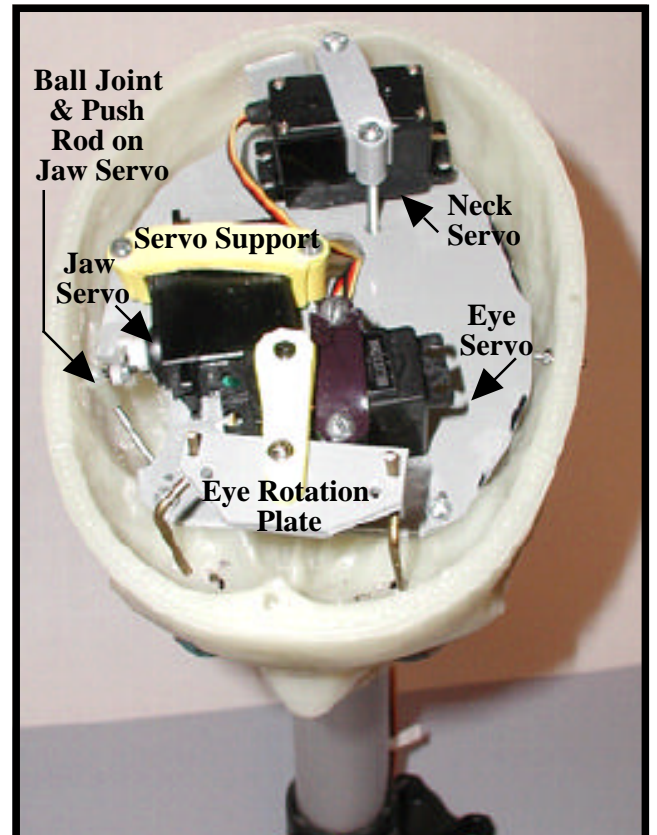
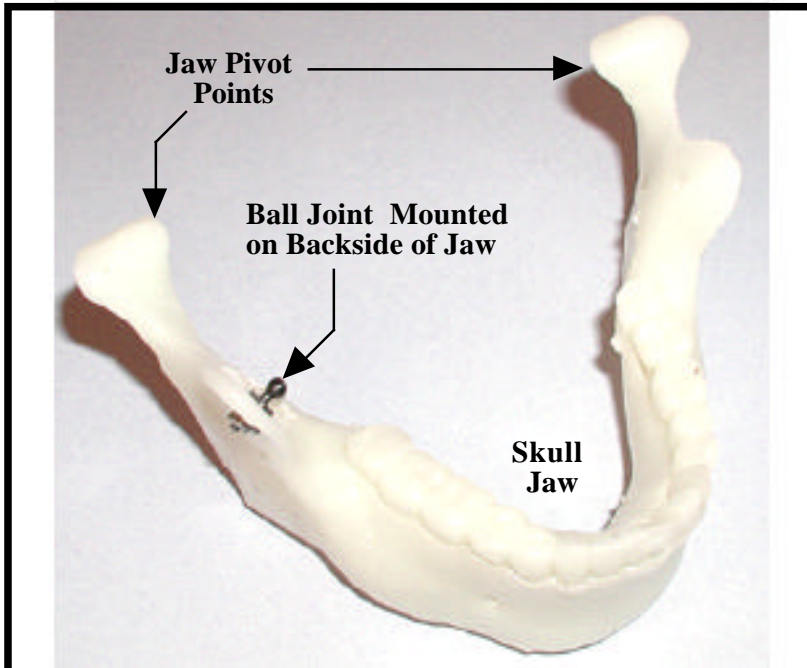
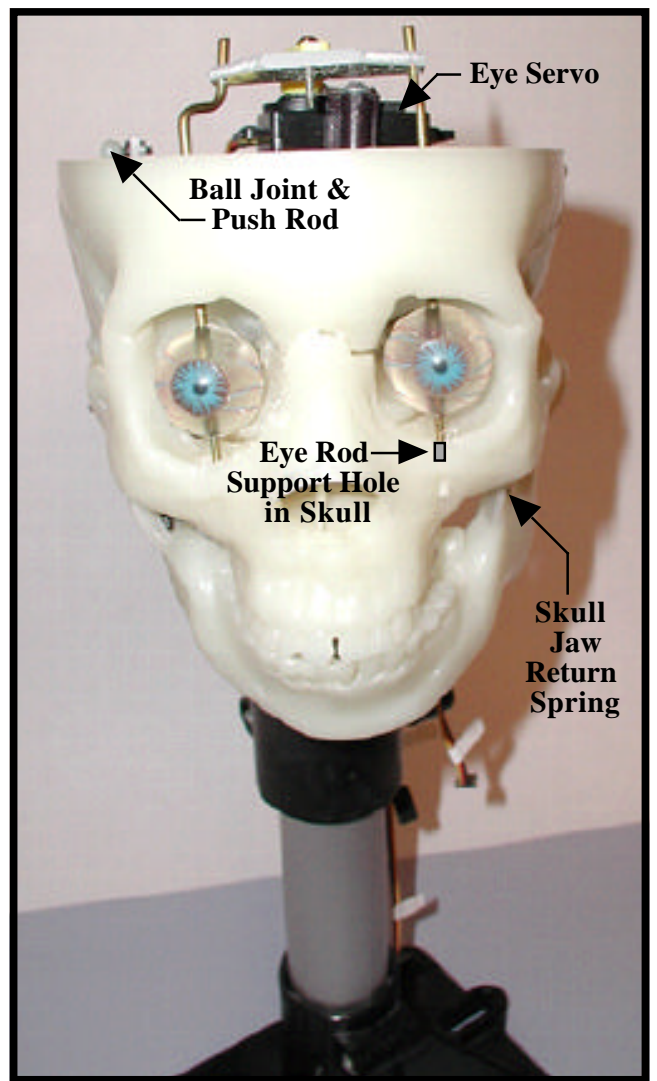
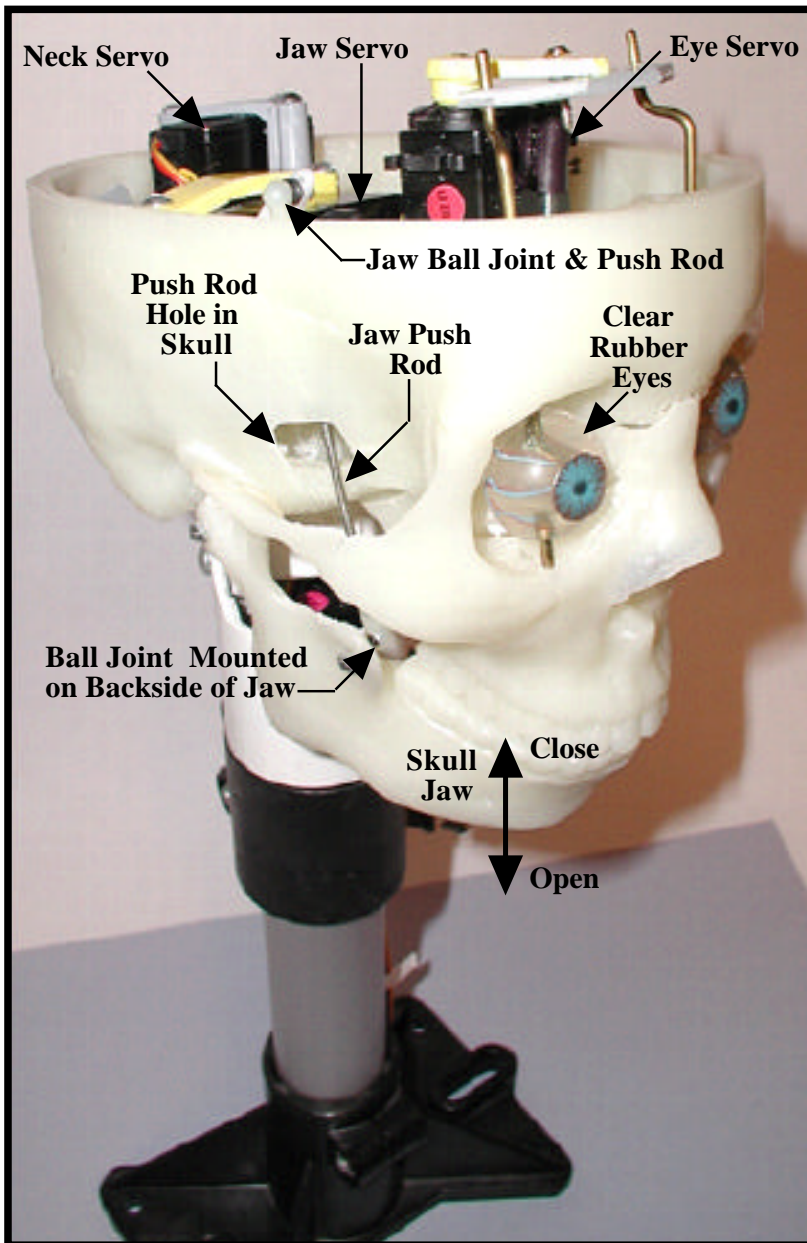
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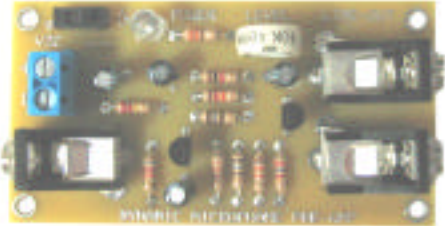
# Mic to AutoTalk Board Example

Instruction

I

## Optional Dynamic Microphone to AutoTalk Board Set-up

Connect the Mic-Board to a Dynamic Microphone, an AutoTalk controller board and you have a system that will control the AutoTalk Servo movement as you talk through the microphone.



Mic-Board  
Interface



AutoTalk  
Controller



Audio Cable

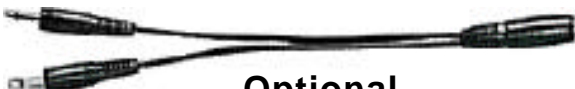


Dynamic  
Microphone



Amplified Speakers

Power  
Supply 9 Vdc



Optional  
"Y" Adapter  
Stereo to  
Mono

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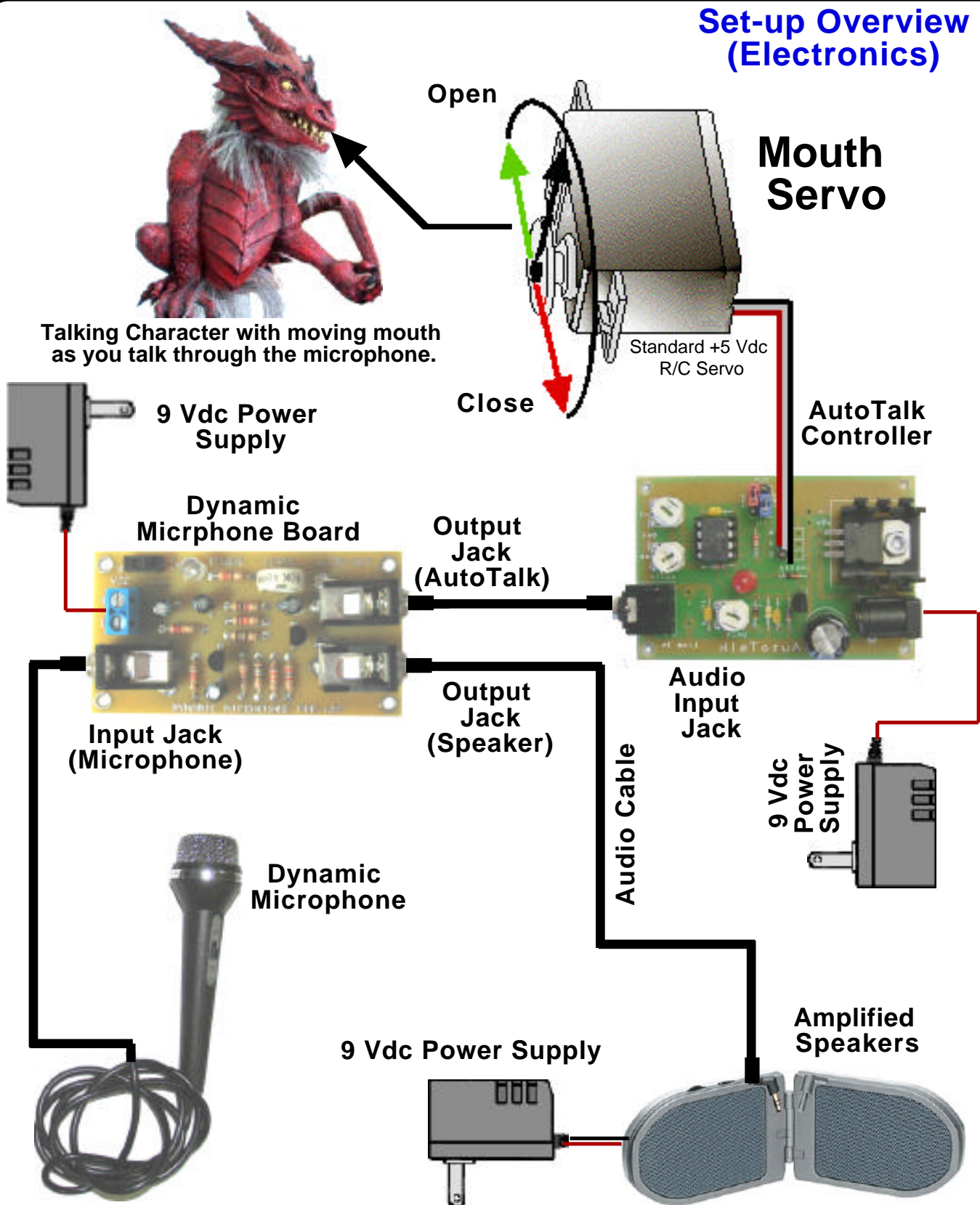
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# Mic to AutoTalk Board

Instruction

I

## Set-up Overview (Electronics)



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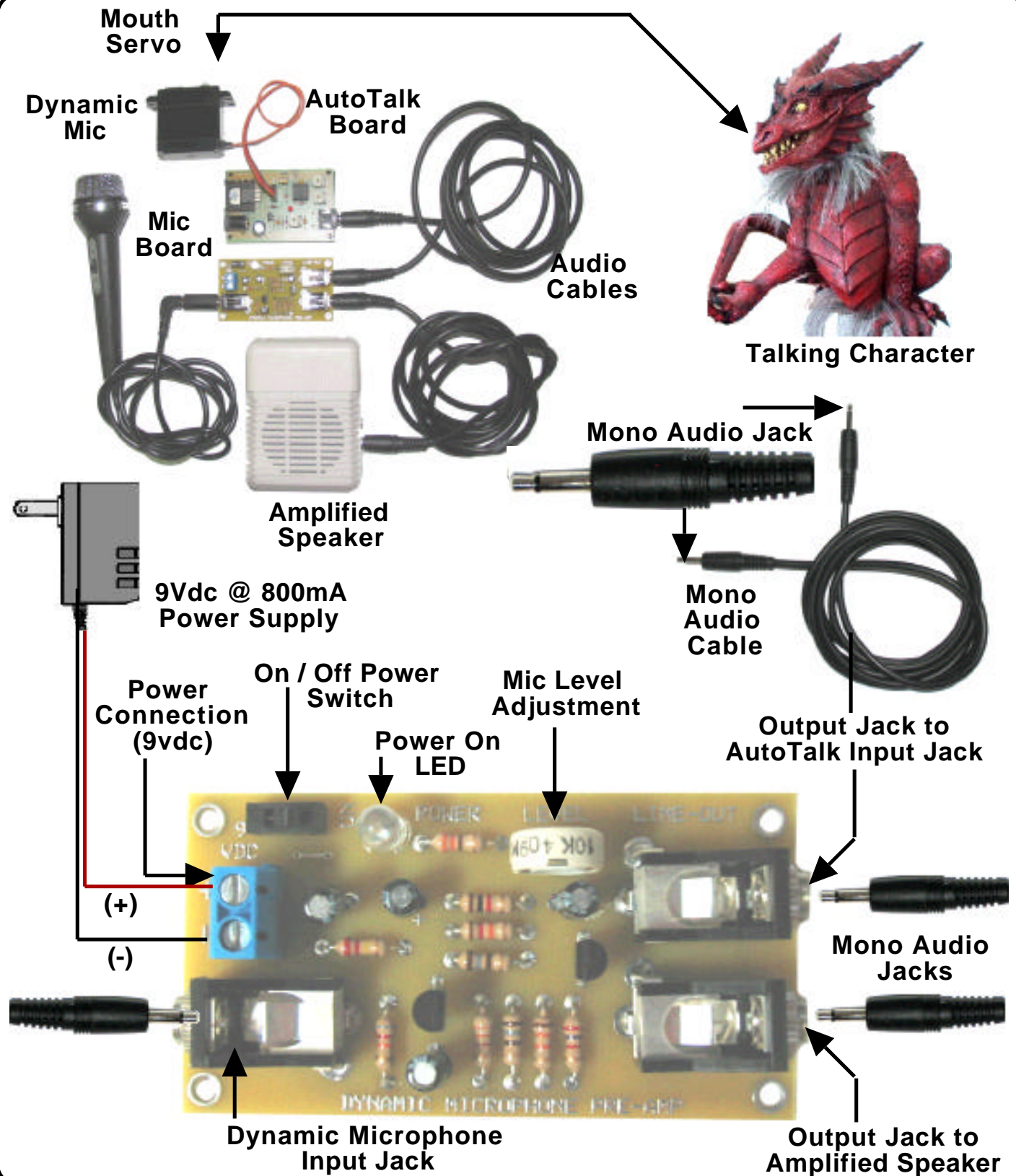
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# Mic to AutoTalk Board

Instruction

I



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