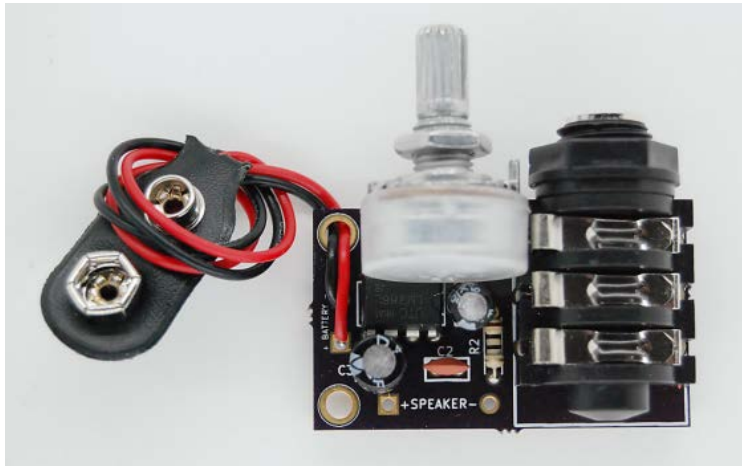




The Toymakers @ tymkrs.com
 Questions? Please contact us:
feedback@tymkrs.com

DATASHEET

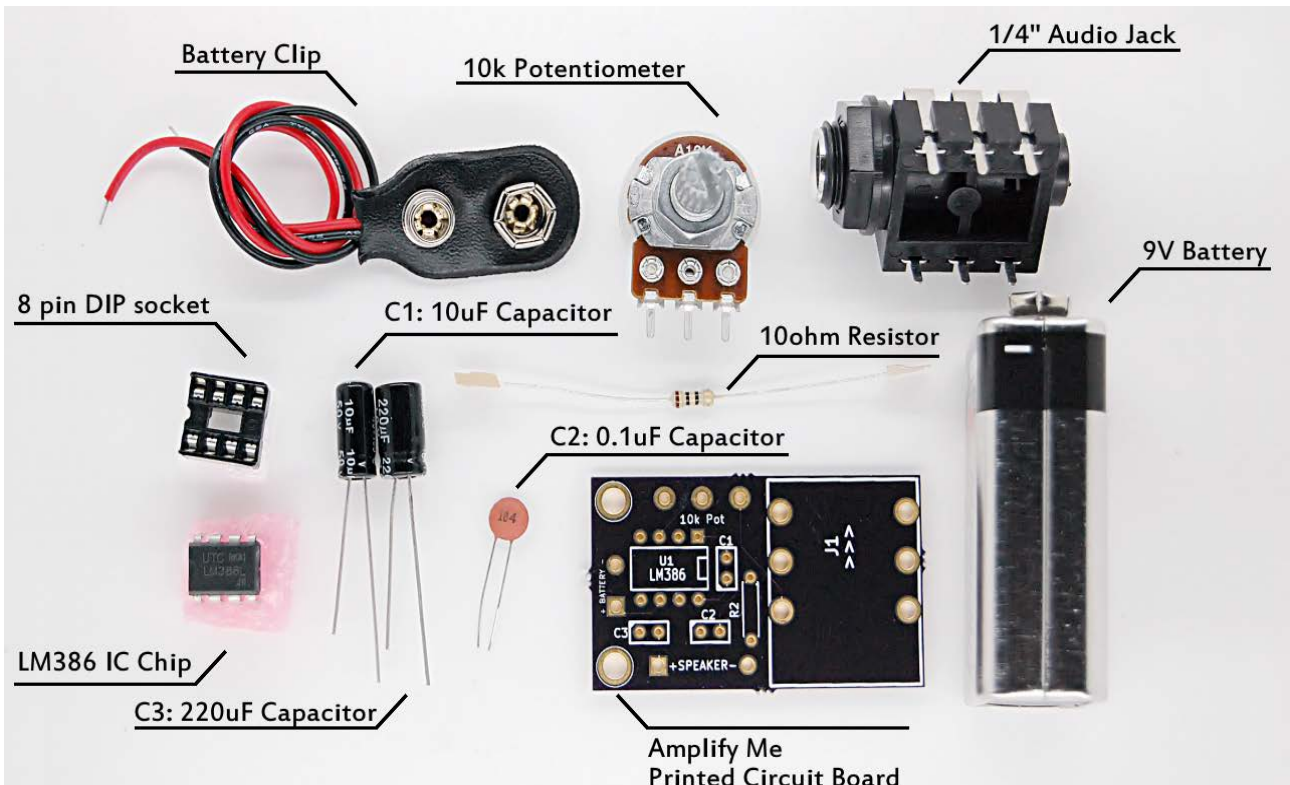


Amplify Me
 LM386 Audio Amplifier Kit

The Amplify Me kit is a LM386-based audio amplifier that is great for hobby-level audio projects, instruments, and radios!

- Kit Type: Through-hole soldering
- Assembly instructions: In datasheet
- Function: Low voltage audio amplifier
- Audio gain from 20 to 200 (26dB to 46dB)

KIT CONTENTS



Contents of the Amplify Me Kit:

- Amplify Me printed circuit board (44.40 x 26.39 x 1.60mm)
- 9V Battery and Battery Clip
- J1: 1/4" Stereo Audio Jack
- Electrical Components

Electrical Components:

Reference	Quantity	Type	Value
10k Pot	1	Potentiometer	10k ohm
U1	1	IC Chip	LM386
C1	1	Electrolytic Capacitor, 25V	10uF
C2	1	Ceramic Capacitor, 50V	0.1uF
C3	1	Electrolytic Capacitor, 16V	220uF
R2	1	Resistor, 1/4 W	10 ohm

Absolute Maximum Ratings

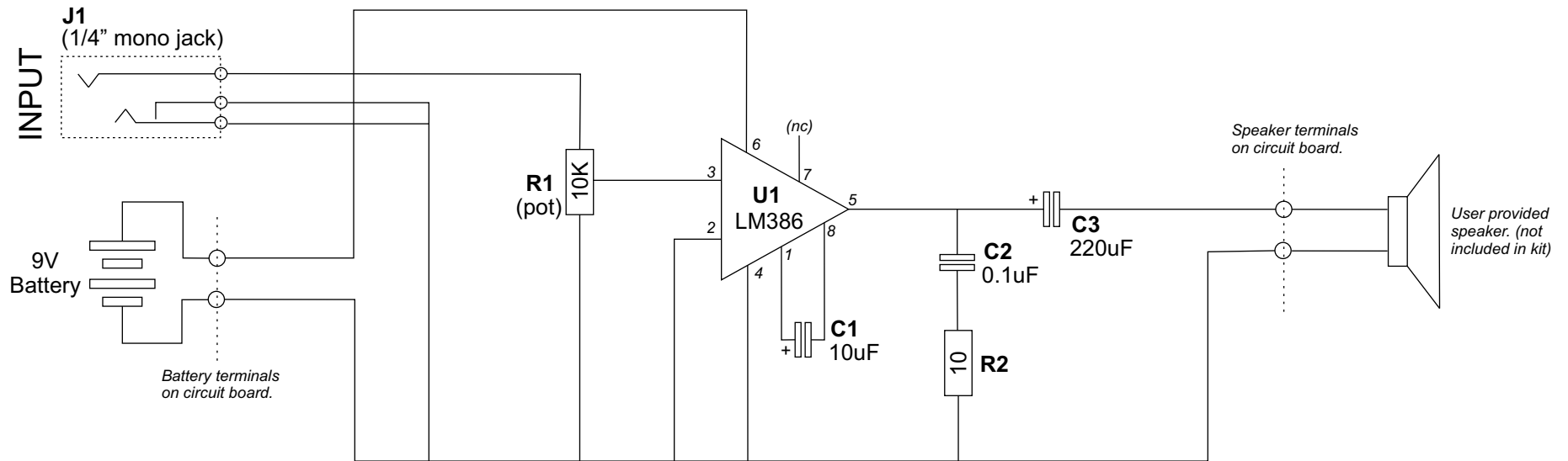
Parameter	Ratings	Unit
Supply Voltage	15	V
Input Voltage	-0.4V - +0.4V	V
Power Dissipation (SOP-8)	600	mW
Operating Temperature	0 - +70	°C
Junction Temperature	+125	°C
Storage Temperature	-40 - +150	°C

Note: Absolute maximum ratings are stress ratings only and functional device operation is not implied. The device could be damaged beyond Absolute maximum ratings.

Electrical Characteristics

Parameter	Test Conditions	MIN	TYP	MAX	UNIT
Operating Supply Voltage		4		12	V
Quiescent Current	$V_{SS} = 6V, V_{in} = 0$		4	8	mA
Output Power	$V_{SS} = 6V, R_L = 8\Omega, THD = 10\%$ $V_{SS} = 9V, R_L = 8\Omega, THD = 10\%$	250 500	325 700		mW mW
Voltage Gain	$V_{SS} = 6V, f = 1kHz$ 10uF from pin 1 to pin 8		26 46		dB dB
Bandwidth	$V_{SS} = 6V, \text{pin 1 and 8 open}$		300		kHz
Total Harmonic Distortion	$P_{out} = 125mW, V_s = 6V, f = 1kHz, R_L = 8\Omega$ pin 1 and pin 8 open		0.2		%
Rejection Ratio	$V_{SS} = 6V, f = 1kHz, C_{bypass} = 10uF, \text{pin 1 and pin 8 open, Referred to output}$		50		dB
Input Resistance			50		k Ω
Input Bias Current	$V_{SS} = 6V, \text{Pin 2 and Pin 3 open}$		250		nA

AUDIO AMPLIFIER MODULE



NOTES:

- The kit includes a battery clip for a 9 volt battery, however the LM386 can be operated anywhere from 6 Vdc to 12 Vdc.
- Specifications given presume an 8-ohm speaker. Speakers of up to 32-ohms may be used however specifications will change. Refer to the LM386 datasheet for details.

SPECIFICATIONS

POWER OUTPUT	0.7 W
DISTORTION (AVG)	0.4%
QUIESCENT CURRENT	4 mA
INPUT IMPEDANCE	50K



Tymkrs Amplify Me!

<http://www.tymkrs.com/kits/lm386kit/>

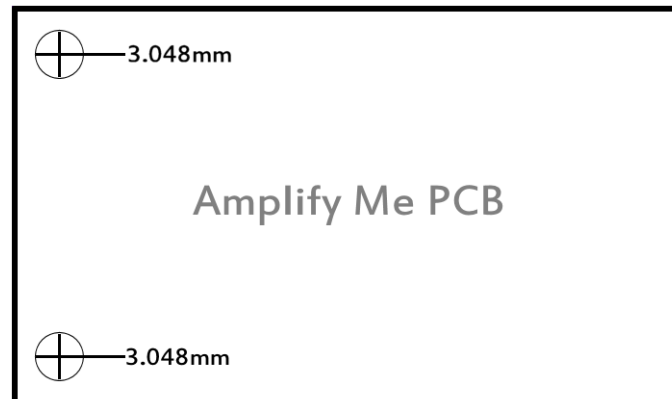
Tools and material required for assembly (not included with the kit):

- Soldering iron
- Solder
- Wire clippers

User provided items required for audio:

- Speaker: 8 ohm is ideal but 4-16 ohm speakers can be driven.

Mounting Holes:



Additional physical/electrical specifications:

- Printed Circuit Board size: 1.75 x 1.04 x 0.063" (44.40 x 26.39 x 1.60mm)
- PCB thickness: 0.063" (1.60mm), not including any components
- PCB thickness: 1.024" (26mm), max height with audio jack and potentiometer
- PCB thickness: 0.866" (22mm), max height with audio jack but no potentiometer
- Mounting holes: 2 holes provided. See drawings for locations and size.

Additional Picture:



Assembled PCB

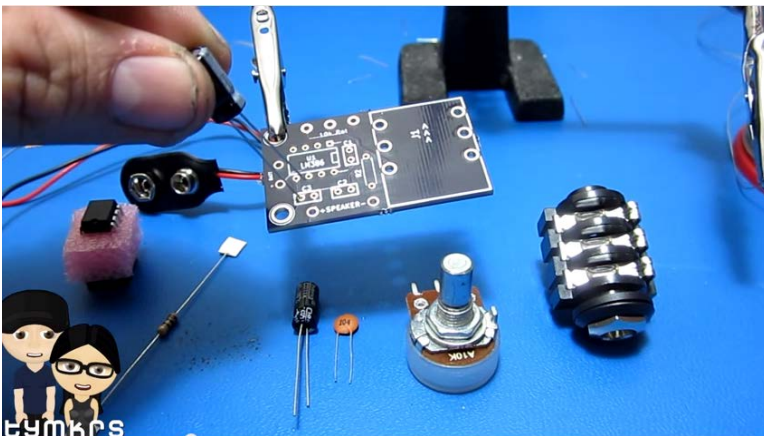
Assembly Instructions

Build Notes:

- 1/4" jack is soldered as a mono jack. Ring and shield are connected.
- Using the 8-pin DIP socket will not allow flush mounting of the 10k potentiometer.
- The 10k potentiometer is the volume control.
- Speaker holes are provided on the board.

Note, the following instructions can be done in pretty much any order. I personally place all of the components on before soldering, but you are welcome to put in a component, solder it, then repeat with the rest of the components.

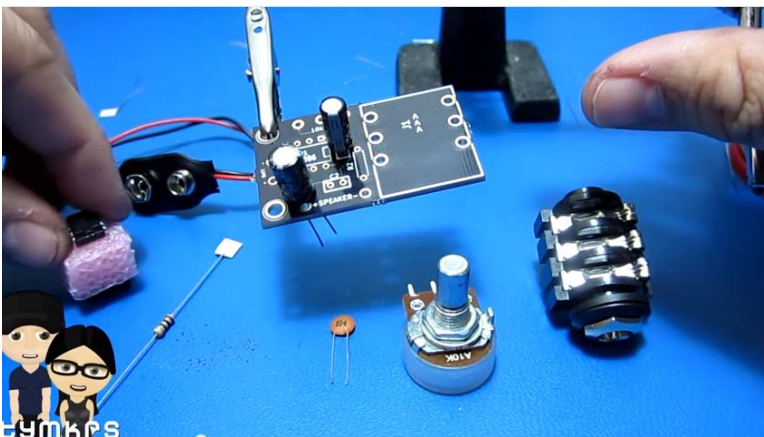
Step 1: Put in the components!



C3: 220uF capacitor

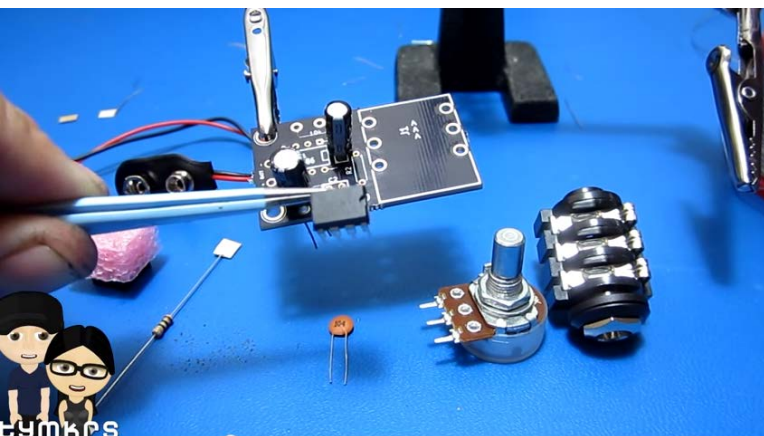
The cathode (- side of capacitor) faces the right.

I've put it facing the left before also and the board has worked just fine as well.



C1: 10uF capacitor

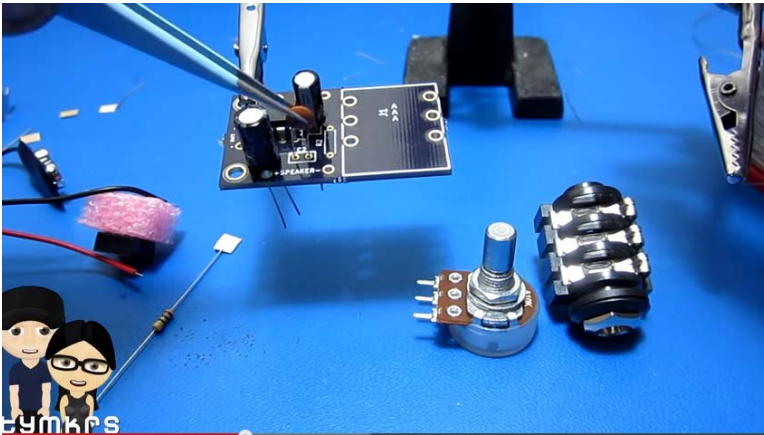
The cathode (- side of capacitor) faces the bottom.



LM386 Chip

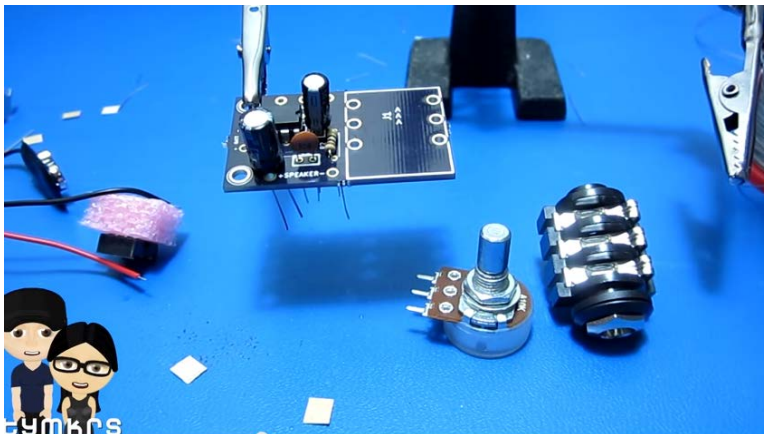
Be sure to line the divot in the chip to the graphic on the board!

If you solder in the 8 pin DIP socket you won't be able to flush mount the potentiometer.



C2: 0.1uF capacitor

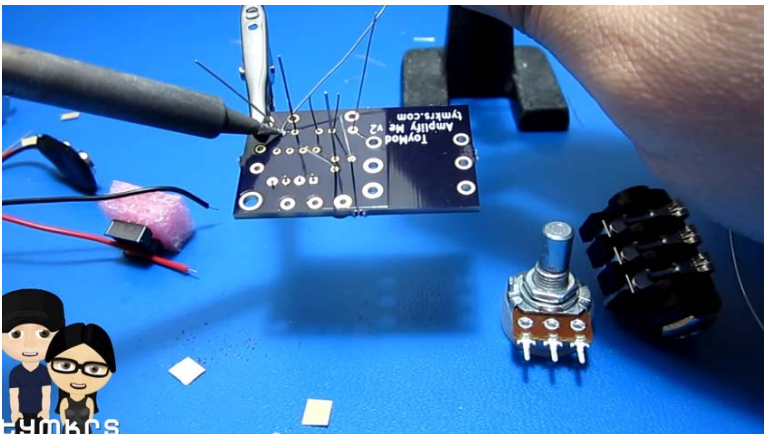
Polarity does not matter for this ceramic capacitor!



R2: 10 ohm resistor

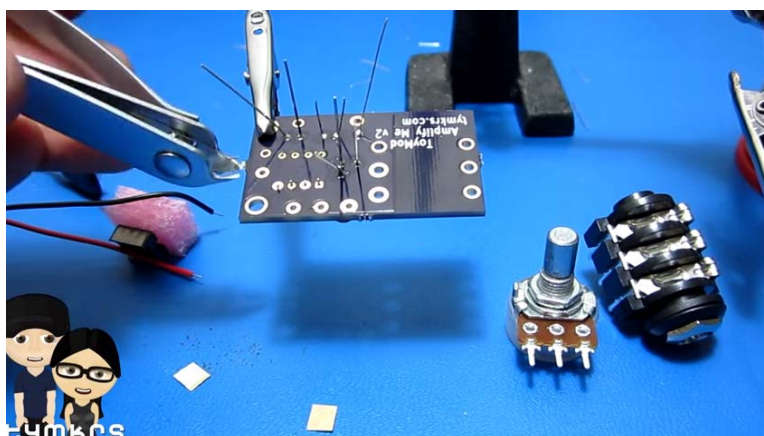
You can bend the leads before sticking it into the holes. Polarity does not matter!

Step 2: Solder in the electrical components!



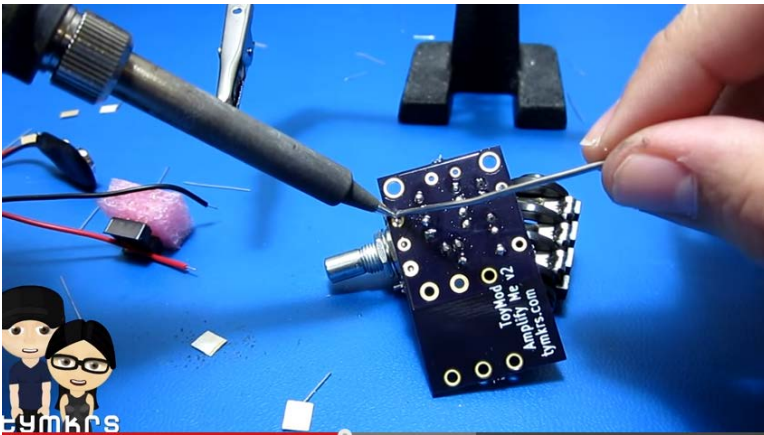
I use 60/40 0.38mm gauge solder for these pads. But also have 1.3mm gauge solder for the larger solder pads.

Step 3: Trim the extra leads off of the electrical components!



Once you're done soldering the components, it's a good idea to clean up all of the extra leads from the electrical components. We use a spare pair of nail clippers – it works quite easily!

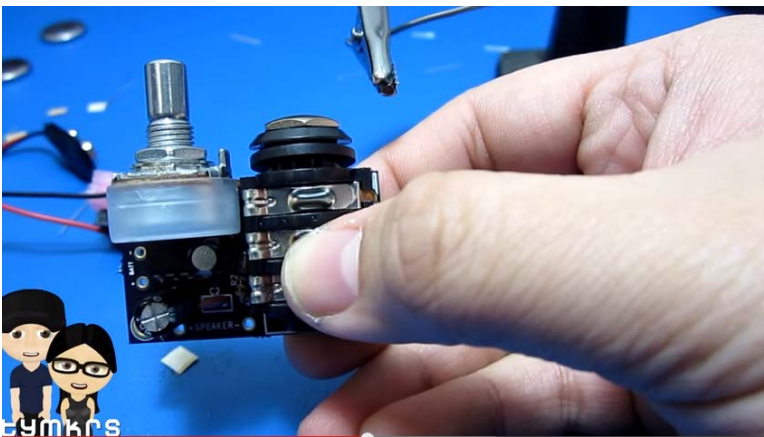
Step 4: Finish up soldering the larger components.



10k potentiometer

If you solder in the 8 pin DIP socket you won't be able to flush mount the potentiometer.

Also remember the dial of the potentiometer must face away from the rest of the board so that as you turn it clockwise, the volume increases properly!

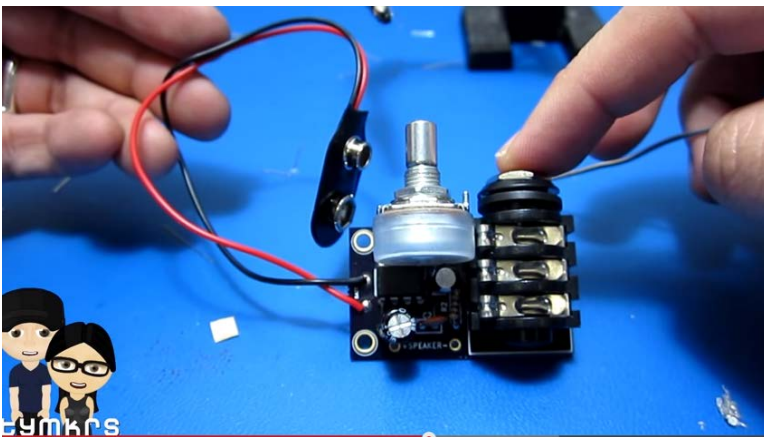


1/4" Audio Jack

The ring and shield of this jack is electrically connected, so the jack has been set up in a mono configuration.

You want the hole to face the same direction as the potentiometer knob.

This is where the audio you want to amplify is put in!



And finally....

9V Battery Clip

The red wire goes to Battery + and the black wire goes to Battery -