

# Build Your Own Clone Tremolo Kit Instructions



## **Warranty:**

BYOC, LLC guarantees that your kit will be complete and that all parts and components will arrive as described, functioning and free of defect. Soldering, clipping, cutting, stripping, or using any of the components in any way voids this guarantee. BYOC, LLC guarantees that the instructions for your kit will be free of any major errors that would cause you to permanently damage any components in your kit, but does not guarantee that the instructions will be free of typos or minor errors. BYOC, LLC does not warranty the completed pedal as a whole functioning unit nor do we warranty any of the individual parts once they have been used. If you have a component that is used, but feel it was defective prior to you using it, we reserve the right to determine whether or not the component was faulty upon arrival. Please direct all warranty issues to: [sales@buildyourownclone.com](mailto:sales@buildyourownclone.com) This would include any missing parts issues.

## **Return:**

BYOC, LLC accepts returns and exchanges on all products for any reason, as long as they are unused. We do not accept partial kit returns. Returns and exchanges are for the full purchase price less the cost of shipping and/or any promotional pricing. Return shipping is the customer's responsibility. This responsibility not only includes the cost of shipping, but accountability of delivery as well. Please contact [sales@buildyourownclone.com](mailto:sales@buildyourownclone.com) to receive a return authorization before mailing.

## **Tech Support:**

BYOC, LLC makes no promises or guarantees that you will successfully complete your kit in a satisfactory manner. Nor does BYOC, LLC promise or guarantee that you will

receive any technical support. Purchasing a product from BYOC, LLC does not entitle you to any amount of technical support. BYOC, LLC does not promise or guarantee that any technical support you may receive will be able to resolve any or all issues you may be experiencing.

That being said, we will do our best to help you as much as we can. Our philosophy at BYOC is that we will help you only as much as you are willing to help yourself. We have a wonderful and friendly DIY discussion forum with an entire section devoted to the technical support and modifications of BYOC kits.

[www.buildyourownclone.com/board](http://www.buildyourownclone.com/board)

When posting a tech support thread on the BYOC forum, please post it in the correct lounge, and please title your thread appropriately. If everyone titles their threads "HELP!", then it makes it impossible for the people who are helping you to keep track of your progress. A very brief description of your specific problem will do. It will also make it easier to see if someone else is having or has had the same problem as you. The question you are about to ask may already be answered. Here are a list of things that you should include in the body of your tech support thread:

1. A detailed explanation of what the problem is. (not just, "It doesn't work, help")
2. Pic of the top side of your PCB.
3. Pic of the underside of your PCB.
4. Pic that clearly shows your footswitch/jack wiring and the wires going to the PCB
5. A pic that clearly shows your wiring going from the PCB to the pots and any other switches(only if your kit has non-PC mounted pots and switches)
6. Is bypass working?
7. Does the LED come on?
8. If you answer yes to 6 and 7, what does the pedal do when it is "on"?
9. Battery or adapter.(if battery, is it good? If adapter, what type?)

Also, please only post pics that are in focus. You're only wasting both parties' time if you post out of focus, low res pics from your cell phone.

### **Revision Notes:**

Rev 3.1: No known errors. Offboard footswitch wiring eyelets added.

Rev 3.0: There are no known errors.

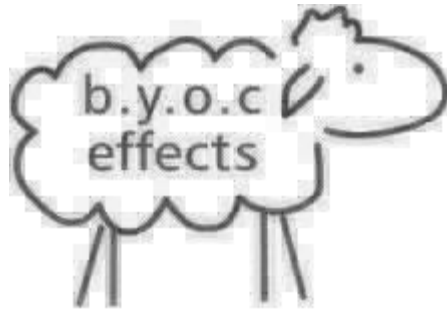
For Revisions 2.2 or earlier click here to download instructions:

[www.buildyourownclone.com/oldtreminstructions.pdf](http://www.buildyourownclone.com/oldtreminstructions.pdf)

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## Parts Checklist for BYOC Tremolo

### Resistors:

- 1 - 180 ohm (brown/gray/black/black/brown)
- 2 - 1k (brown/black/black/brown/brown)
- 1 - 4k7 (yellow/purple/black/brown/brown)
- 2 - 10k (brown/black/black/red/brown)
- 1 - 15k (brown/green/black/red/brown)
- 1 - 100k (brown/black/black/orange/brown)
- 1 - 150k (brown/green/black/orange/brown)
- 1 - 560k (green/blue/black/orange/brown)
- 3 - 1M (brown/black/black/yellow/brown)
- 1 - 2M2 (red/red/black/yellow/brown)

### Capacitors:

- 1 - 0.047 $\mu$ f/47n film (473)
- 3 - 1 $\mu$ f film (1j or u1)
- 4 - 10 $\mu$ f aluminum electrolytic
- 1 - 100 $\mu$ f aluminum electrolytic

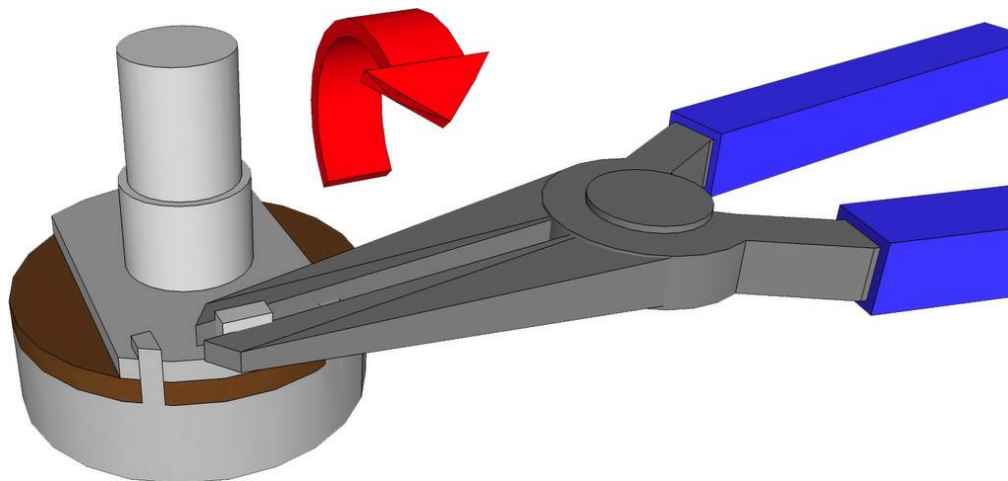
### Diodes:

- 1 - 1N4001 (larger black plastic with silver stripe)

### Transistors:

- 2 - 2N5088 (or similar NPN transistor)
- 2 - 2N5457

**Potentiometers:** Be sure to snap off the small tab on the side of each panel mounted pot.



- 1 - B1M linear (Depth knob)
- 1 - C100k linear (Rate knob)

1 - A100k audio (Level knob)

**Hardware:**

1 - drilled enclosure w/ 4 screws

1 - byoc tremoloPCB

1 - mono Footswitch PCB (not included in Rev 3.1 kits)

1 - 2 x 4 pin header (not included in Rev 3.1 kits)

1 - 2 x 4 pin header socket (not included in Rev 3.1 kits)

1 - 3PDT footswitch

3 - knobs

1 - AC adaptor jack

1 - 1/4" mono jack

1 - 1/4" stereo jack

1 - red LED

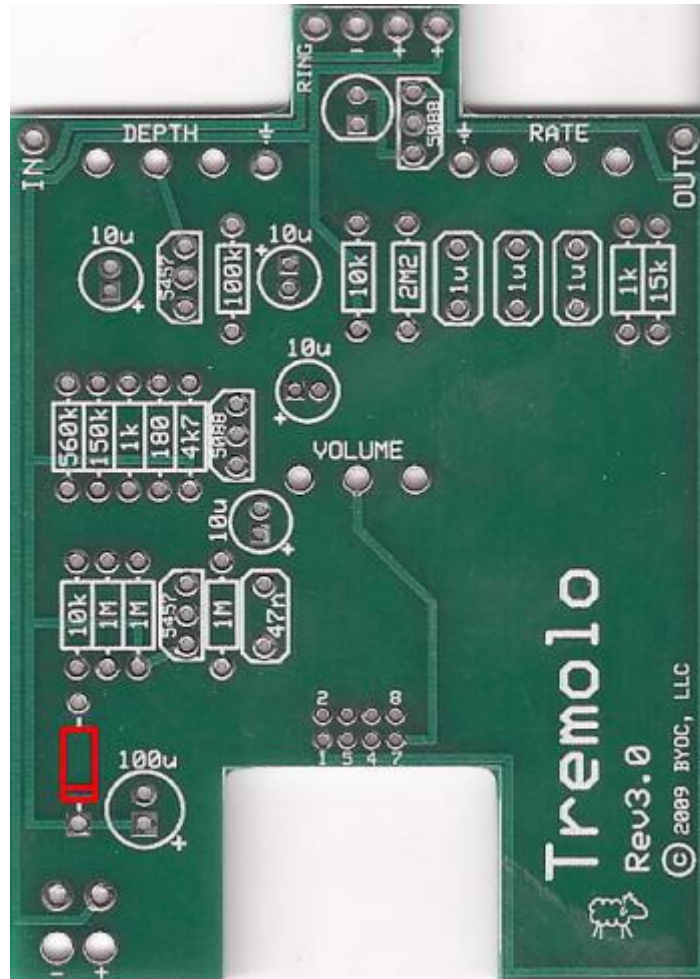
1 - battery snap

hook-up wire



Note: This is an example of the Rev3.1 PCB without footswitch PCB

## Populating the Circuit Board

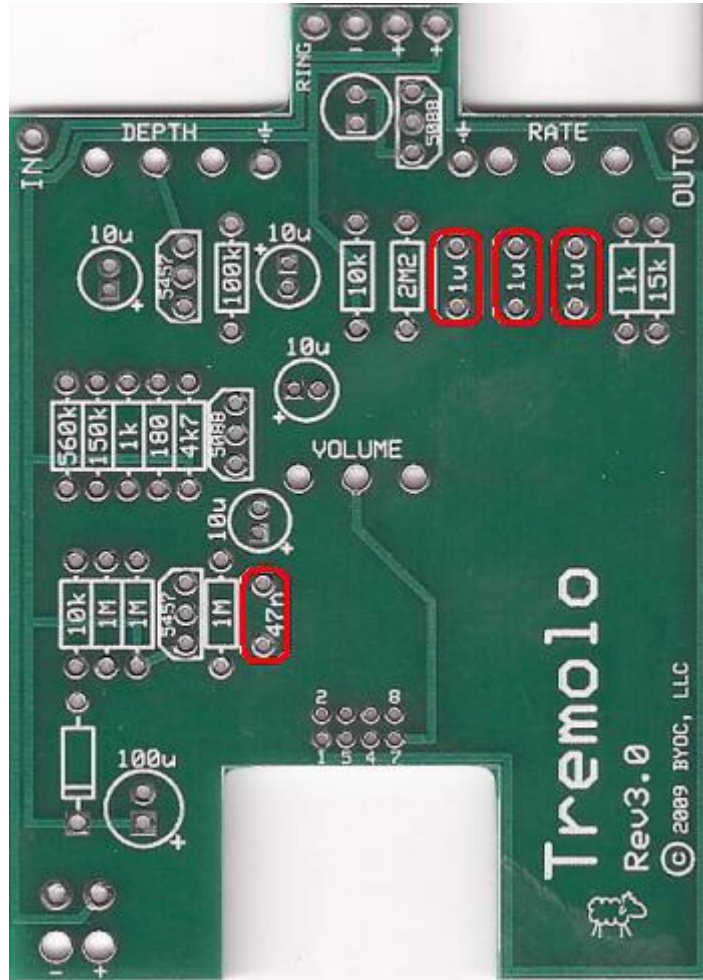


STEP 1: Add the diode. Be sure to match the end of the diode with the stripe to the layout on the PCB. The striped end should go in the square solder pad.

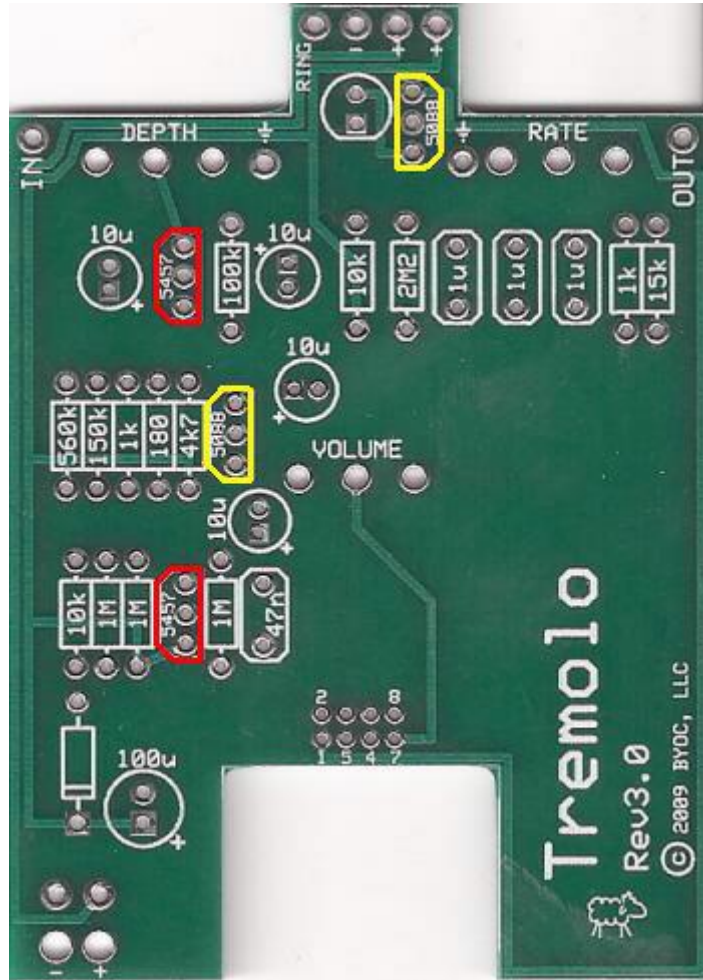






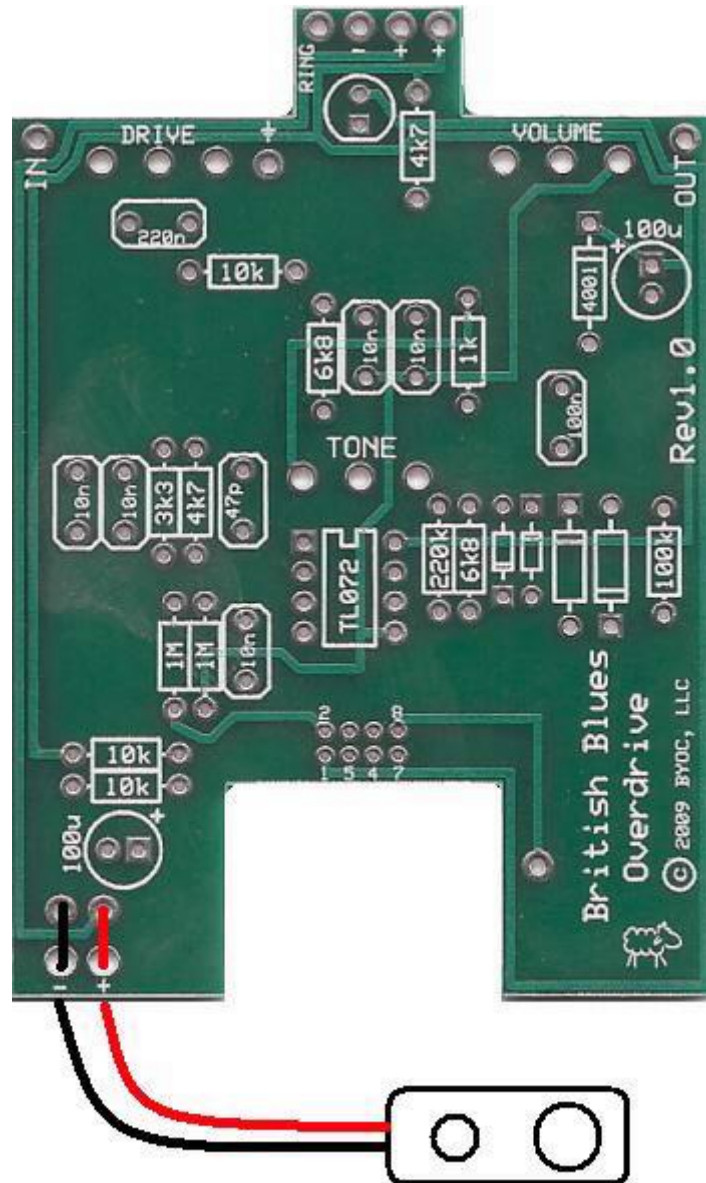


STEP 4: Add the film capacitors. These are not polarized so they can be inserted into the PCB in either direction.



STEP 5: Add the transistors. Orient the transistors so that the flat side matches up with the flat side of the PCB layout. Be sure to put the 2N5088's in the spaces highlighted in yellow and the 2N5457's in the spaces highlighted in red.



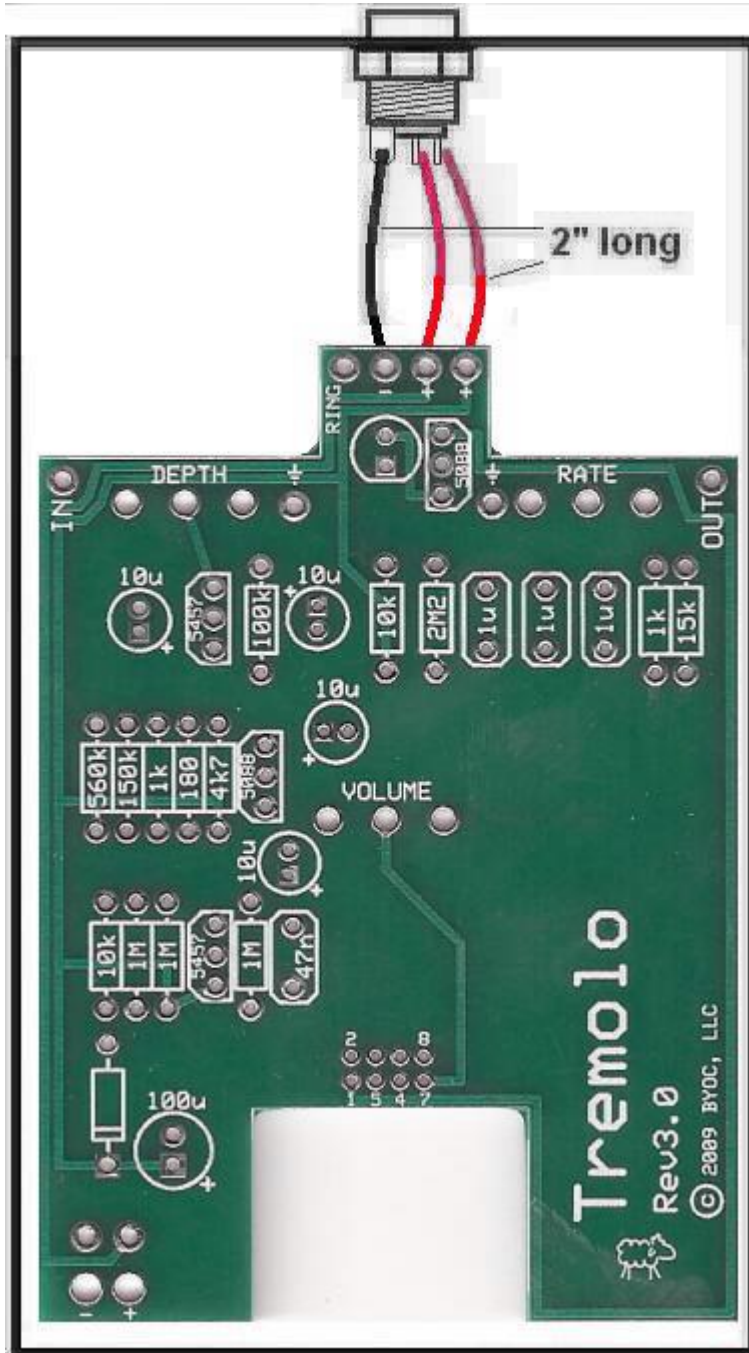


Step 7: Add the battery snap. Thread the solder ends of the battery snap into the strain relief holes from the bottom solderside of the PCB and out through the top. Insert the solder ends of the battery snap wires into the topside of their respective solder pads. Solder on the bottom side of the PCB. Remember the red wire goes in the “+” hole and the black wire goes in the “-” hole.

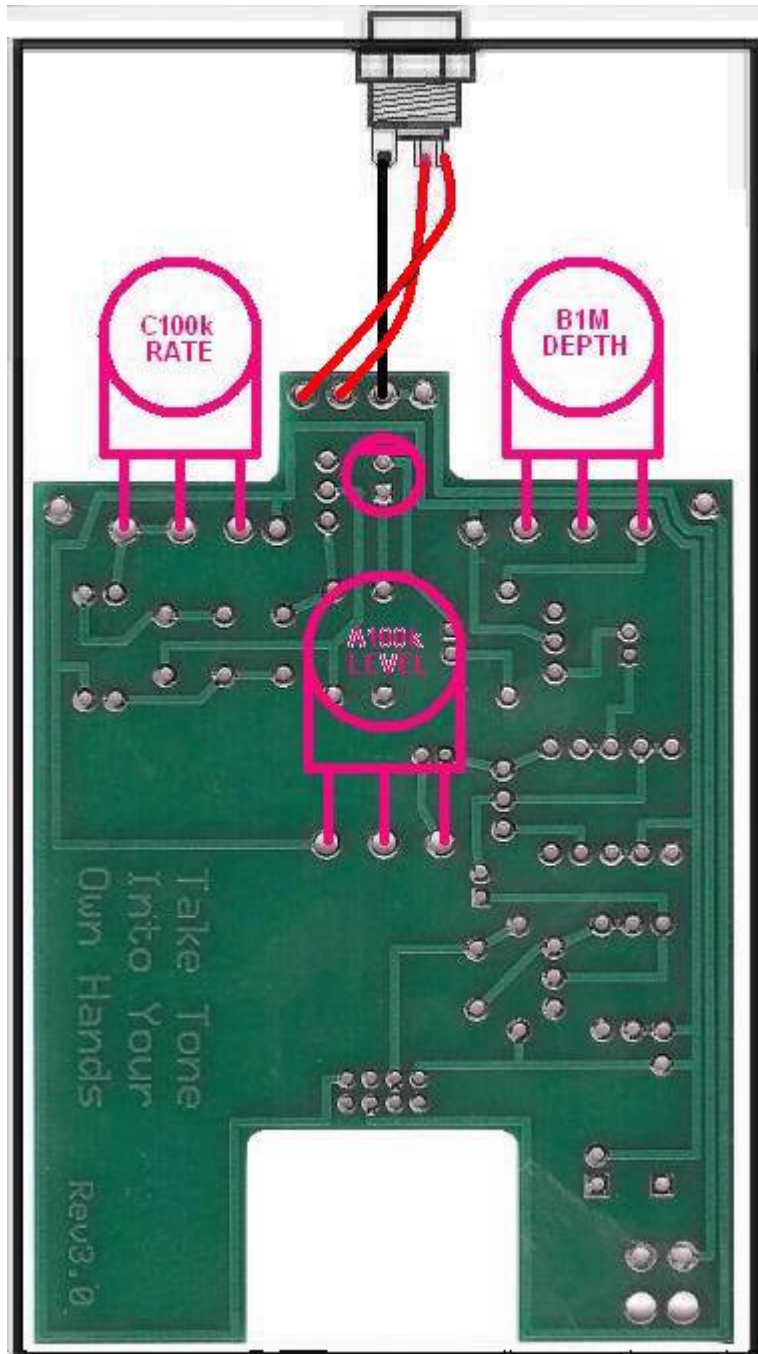


# Assembly

Step 1: Mount the DC adaptor jack to the enclosure.

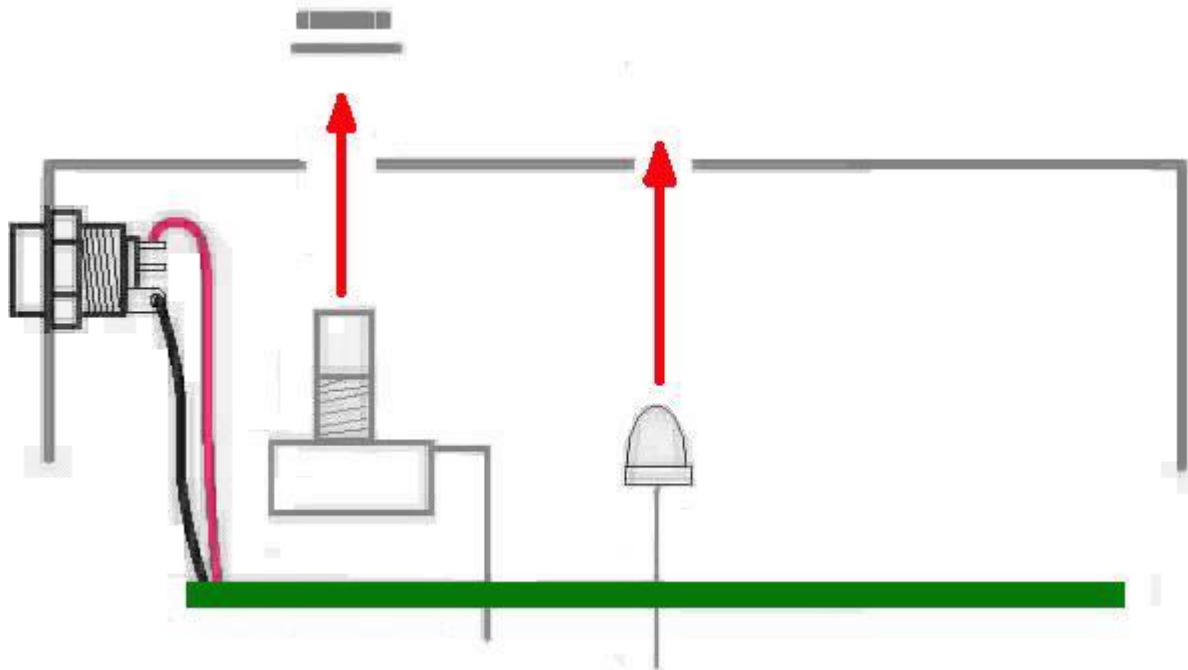


**Step 2:** Connect the TIP (negative) terminal of the DC adaptor jack to the “-” eyelet on the PCB with 2 inches of hook up wire. Connect the SLEEVE of the DC adaptor jack to the “+” eyelet on the far right side of the PCB with 2 inches of hook up wire. Connect the battery disconnect terminal of the DC adaptor jack to the “+” eyelet more towards the center of the PCB with 2” of hookup wire. Load the wires in from the bottom of the PCB and solder on the topside.



Step 3: Flip the PCB over so that the bottom or solder side is up. Insert the B1M(depth), A100k(level), C100K(rate) potentiometers, and the LED into the bottom side of the PCB.  
DO NOT SOLDER YET!!! The LED will have one lead that is longer than the other.  
The longer lead goes in the hole with the square solder pad.



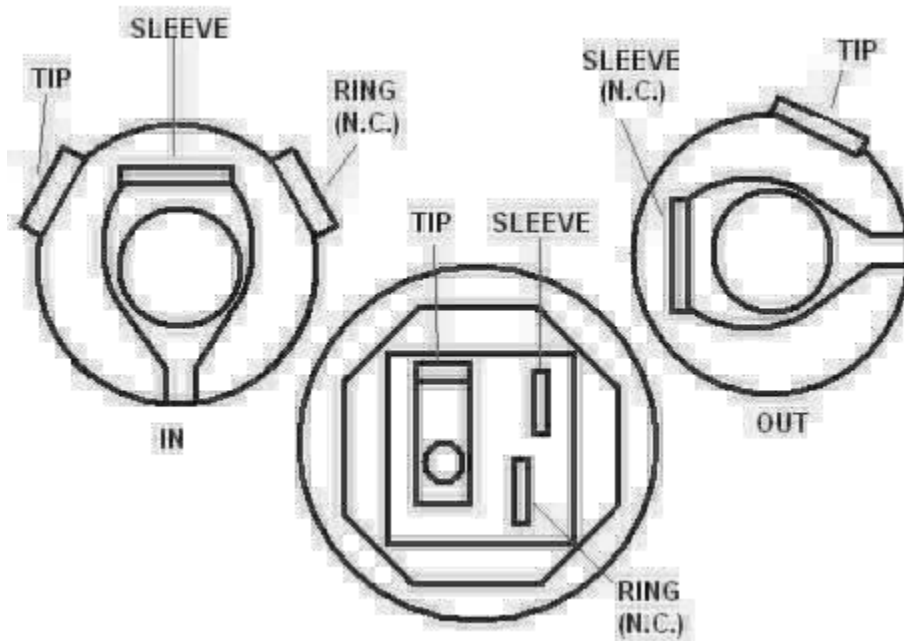


Step 4: Hold the PCB in one hand so that the component side of the PCB is in the palm of your hand and the bottom side with the pots, toggle switch and LED is facing up. Now use your other hand to guide the predrilled enclosure onto the PCB assembly so that the pots and LED all go into their respective holes. Once the PCB assembly is in place, secure it by screwing on the washers and nuts for the pots and toggle switch. Only tighten them with your fingers. You do not want them very tight yet. Be sure to keep your hand on the PCB so that it does not fall off the PCB mounting posts of the pots and toggle switch.

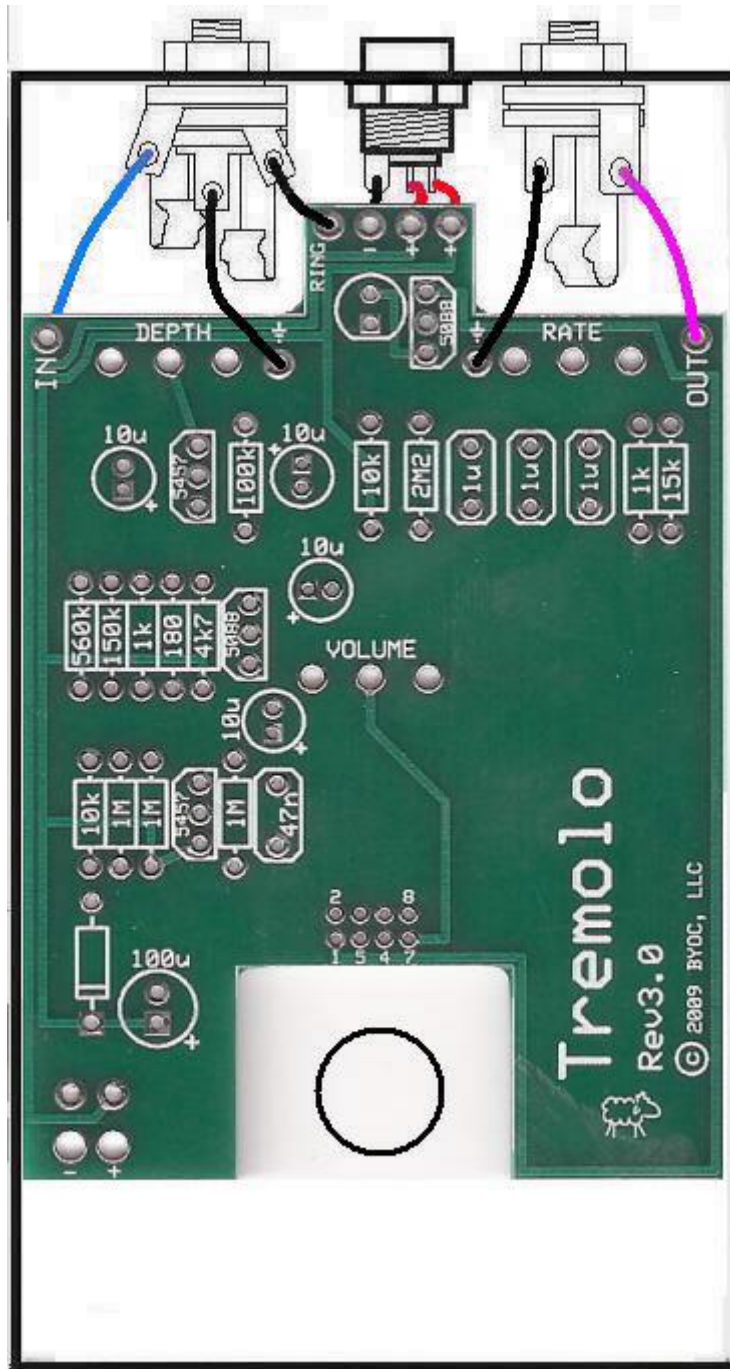
Step 5: Turn the entire pedal over so that the component side of the PCB is facing up. Lift the PCB up off the pots and toggle switch about 2mm just to make sure that the back of the PCB does not short out against the pots. Make sure the PCB is level and symmetrically seated inside the enclosure.

Step 6: Solder the pots and LEDs. You will solder these parts on the component side of the PCB. After you have soldered them in place, be sure to tighten up their nuts.

# Wiring the jacks



Step 1: Install the 1/4" jacks to the enclosure. Be sure to turn the OUT jack a 1/4 turn counter clockwise so that solder terminal for the tip does not short out against the enclosure.

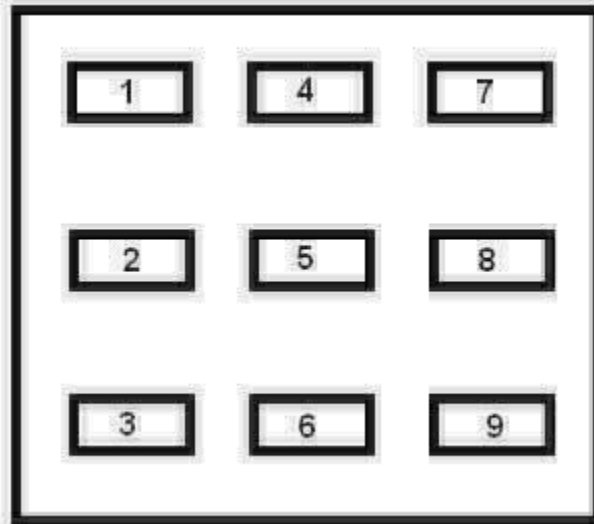


Step 2: Connect the pre stripped and tinned wires to the 1/4" jacks.

# Footswitch Wiring/Assembly

Kits with Rev3.1 PCBs will have a wired footswitch. Kits with a Rev 3.0 PCB will have a PC mounted footswitch. If your kit came with a Rev 3.1 PCB, please continue with the instructions and skip pages 22 - 23. If your kit came with a Rev 3.0 PCB, please skip page 21.

## Footswitch Solder Lug Designations



There are no actual number markings on the footswitch. Orient the footswitch so that the flat sides of the solder lugs are running horizontally, not vertically. There is no “top side” or “bottom side” of the switch until you actually solder something to it and designate it as such.

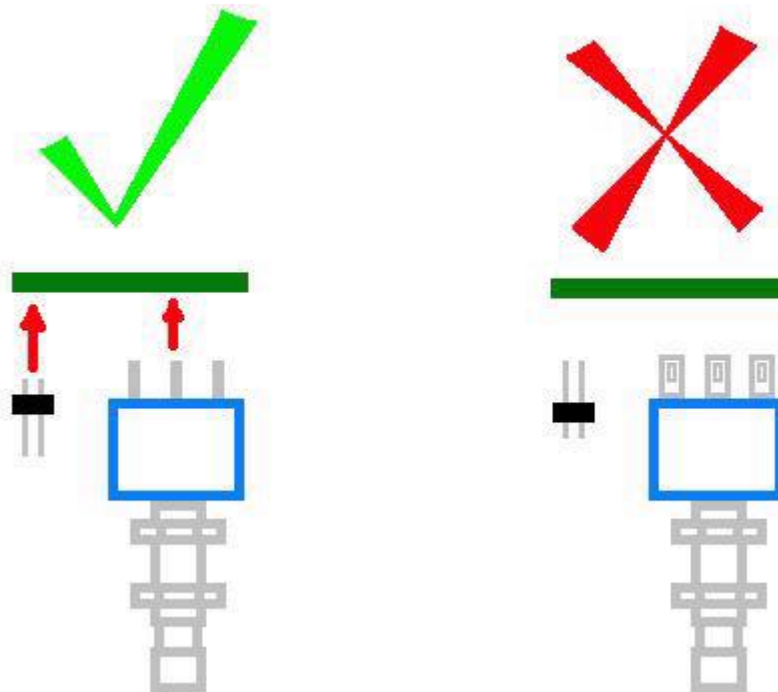


## Installing the PC Mounted Footswitch

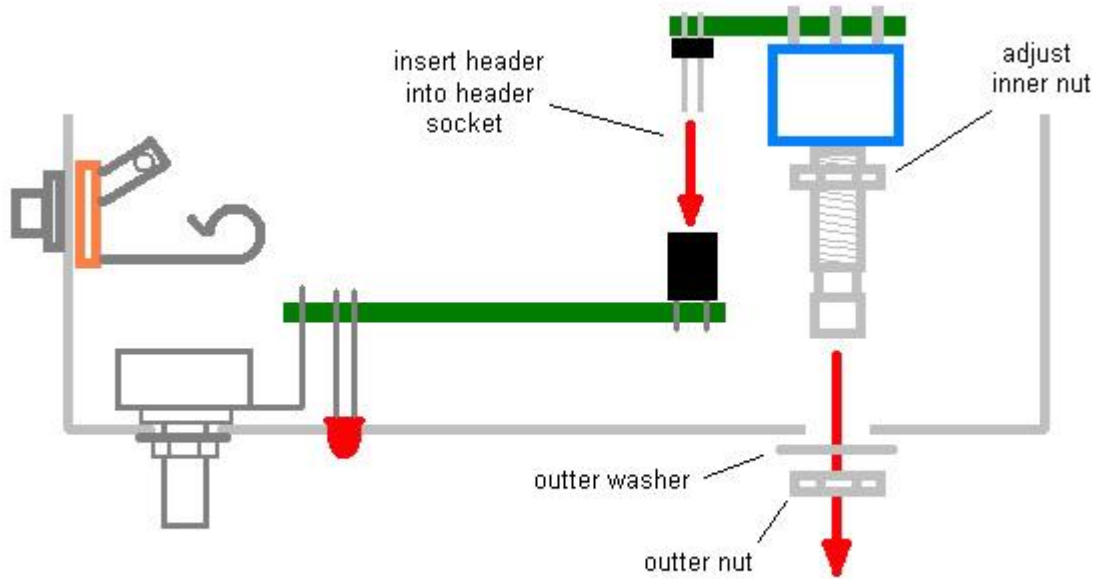


Top Side of Footswitch PCB

Make sure that the footswitch and 2 x 4 header go into the underside of the footswitch PCB. Not the topside. You will solder on the topside of the PCB. But do not solder anything yet.

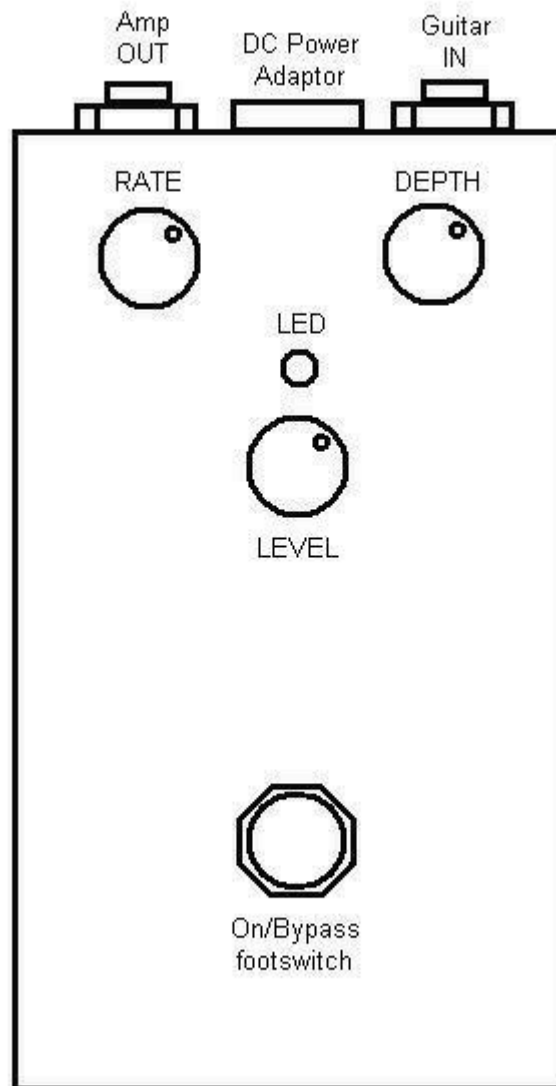


Also make sure that the shorter pins of the 2 x 4 header go into the PCB. The longer pins of the header get inserted into the header socket mounted to the main PCB. But do not solder anything yet.



Insert the header all the way into the header socket and mount the footswitch to the enclosure. Adjust the height of the inner footswitch nut so that the footswitch pcb lies flat on both the footswitch and header and is parallel to the main PCB, i.e., adjust the inner footswitch nut so that everything fits nice. Now solder the header and footswitch to the footswitch PCB.

# Operating Overview



Pretty simple. Volume, Depth, Rate. Guitar plugs in on the left. Amp plugs in on the right.

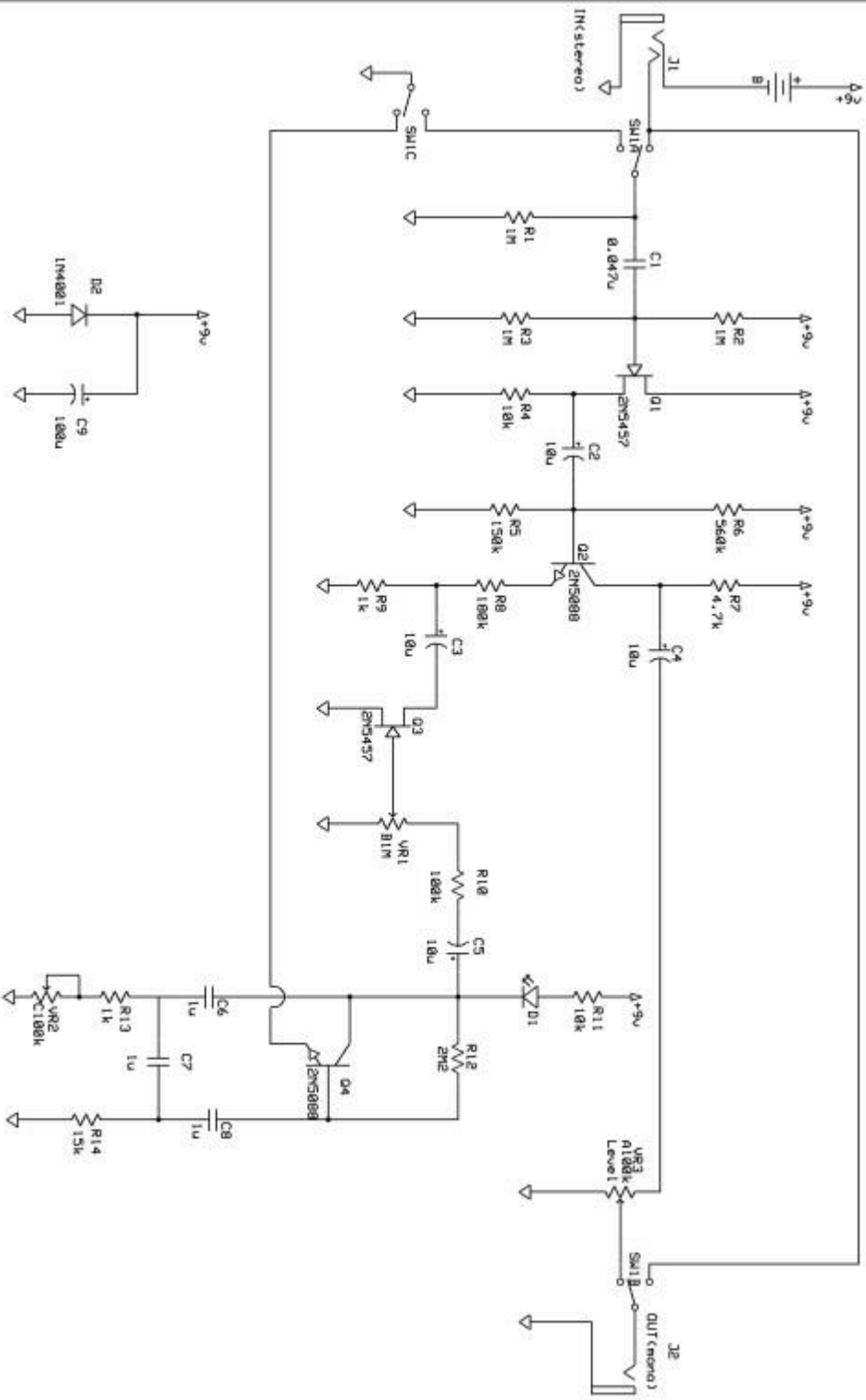
DC power supply - Use a 2.5mm negative tip 9VDC adaptor (this is your standard guitar fx style adaptor). If using battery power, only use a single 9V battery.

Current Draw - 3.5mA

Input Impedance - 1M ohms

Output Impedance - 100k ohms





# Build Your Own Clone

## Tremolo

drawn by: Rev 3.0  
 k. vanderhulst 6/10/2009  
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