

# **B.Y.O.C. Overdrive build instructions.**

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go to [www.buildyourownclone.com/808scheme.pdf](http://www.buildyourownclone.com/808scheme.pdf) to view the schematic for this project

# Parts Checklist

## **Resistors: (resistors may be 1% metal film which have a light blue body or 5% carbon film with a light brown body)**

- 1 100ohm (1%-brown/black/black/black/brown or 5%-brown/black/brown/gold)
- 1 220ohm (1%-red/red/black/black/brown or 5%-red/red/brown/gold)
- 4 1k (1%-brown/black/black/brown/brown or 5%-brown/black/red/gold)
- 2 4.7k (1%-yellow/purple/black/brown/brown or 5%-yellow/purple/red/gold)
- 7 10k (1%-brown/black/black/red/brown or 5%-brown/black/orange/gold)
- 1 51k (1%-green/brown/black/red/brown/ or 5%-green/brown/orange/gold)
- 2 510k (1%-green/brown/brown/orange/brown or 5%-green/brown/yellow/gold)
- 1 4.7m (1%-yellow/purple/black/yellow/brown or 5%-yellow/purple/green/gold)
- 1 500kA pot (gain)
- 1 25kB pot (tone)
- 1 100kB pot (level)

## **Capacitors:**

- 1 51pf ceramic disc (small round orange)
- 1 .022uf film(223)
- 1 .047uf film(473)
- 2 .22uf tantalum (small yellow dipped)
- 1 .1uf film (104)
- 2 1uf electrolytic (non polarized)
- 1 10uf electrolytic
- 1 47uf electrolytic
- 1 100uf electrolytic

## **Diodes:**

- 2 1N914 (small orange with black stripe)

## **Transistors:**

- 2 MPSA18

## **IC's:**

- 1 JRC4558D
- 1 8 pin socket

## **Hardware:**

- 3 self adhesive nylon standoffs
- 3 knobs
- 1 heavy duty battery snap
- 1 Red T 1 3/4 (5mm)LED
- 1 3PDT footswitch
- 1 1/4" mono jack
- 1 1/4" stereo jack
- 1 AC adaptor jack
- 1 125b size enclosure
- 1 circuit board
- hook-up wire

## **Modification components:**

If you purchased your kit prior to March 4th 2007, your kit will not come with all these parts. It will only come with the 2 extra 1N4001, RC4558P, and .22uf film cap.

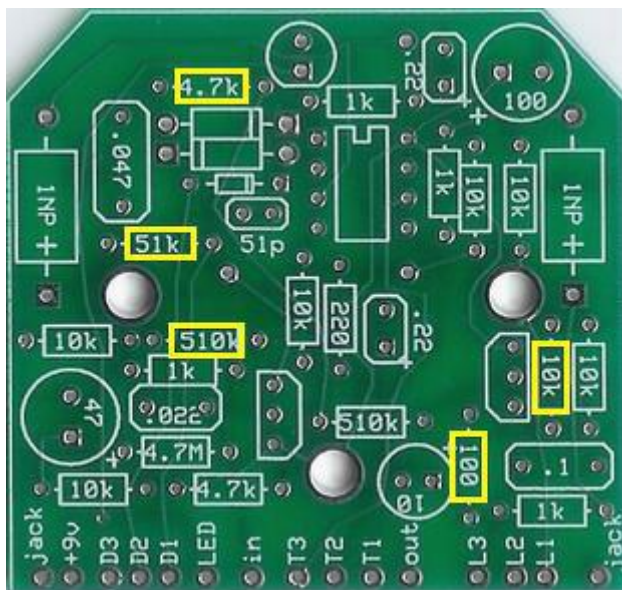
Also note that the caps in kits sold after March 4th 2007 are all rated for 18v or greater. The caps in the older kits were not.

- 1 - 470hm resistor (1%-yellow/purple/black/black/brown or 5%-yellow/purple/brown/gold)
- 1 - 1.5k resistor (1%-brown/green/black/brown/brown or 5%-brown/green/red/gold)
- 1 - 2.7k resistor (1%-red/purple/black/brown/brown or 5%-red/purple/red/gold)
- 1 - 20k resistor (1%-red/black/black/red/brown or 5%-red/black/orange/gold)
- 1 - 100k resistor (1%-brown/black/black/orange/brown or 5%-brown/black/yellow/gold)
- 1 - 620k resistor (1%-blue/red/black/orange/brown or 5%-blue/red/yellow/gold)
  
- 1 - B2k linear potentiometer
  
- 1 - 0.1uf film cap (104)
- 1 - 0.22uf film cap (244)
- 2 - 0.15uf tantalum caps (small yellow dipped)
- 2 - 1uf film caps (105)
  
- 1 - RC4558P dual op amp
- 1 - TLC2272 dual op amp (ONLY USE THIS CHIP WITH 9VOLTS)
  
- 3 - 3mm red LEDs
- 3 - 1N34A germanium diodes (clear glass)
- 3 - 1N4001 diodes (black plastic)
- 1 - 1N914 (small orange glass in addition to the two 1N914 used for stock specs)
  
- 1 - spool of desoldering braid

# Modifications

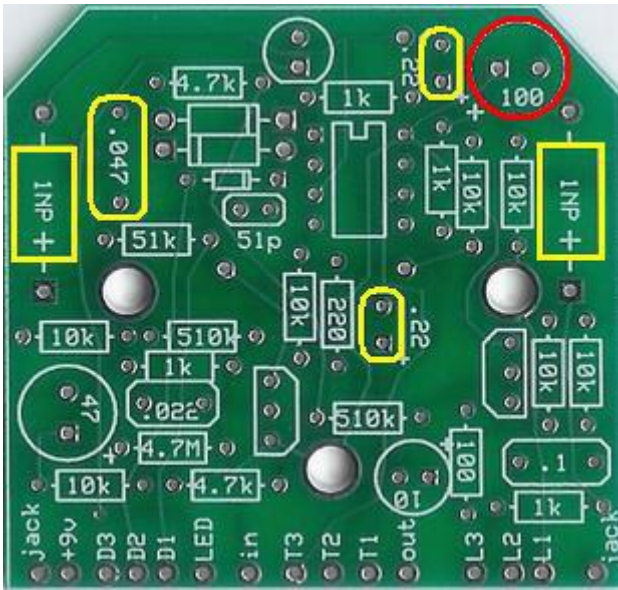
We'll start with the modifications section first, so that you get an idea of what you'd like to do when you actually build your kit. However I suggest you start with a completely "stock" build and work from there.

## 1. Changing the resistors:



- A. Replace the 4.7k for more maximum distortion. Use either the 1.5k or 2.7k resistors. The smaller the value you use here, the more distortion you will get, but you will also get more noise and possibly some feedback or high pitched noise if you go too low.
- B. Replace the 51k for less minimum distortion. Use the 20k resistor.
- C. Replace the 510k resistor for higher input impedance. This will give your tone a brighter sound. Particularly useful with humbuckers. Use the 620k resistor
- D. Replace the 10k with the 100k and the 100ohm with the 470ohm to convert from "808" specs to "9 series" specs. Genereally, 808 specs are more desired, but here it is if you want 9 series specs.

## 2. Changing Capacitors:



- A. Before you start, notice that the 100uf electrolytic cap is highlighted in red. If you plan to use the 1uf metal film caps in place of the 1uf electrolytics, then you will need to leave the 100uf cap sticking up out of the PCB just a little bit when you solder it so that you can bend it down out of the way. This is because the 1uf metal film caps are physically larger than the electrolytics and will not fit with the 100uf cap mounted flush against the board.
- B. Replace the 1N1P electrolytic caps with the 1uf metal film caps. These will help preserve the quality of your original tone.
- C. Replace the .22uf tantalum caps with the .15uf tantalum caps. This will make the frequency response of the tone knob more “guitar friendly” or operate in the spectrum that is more useful for guitar.
- D. Replace the .047uf film cap with either the .22uf film cap or the .1uf film cap. This will increase bass response and reduce the mid hump overall. The .22 will have a more dramatic affect, but can be a bit muddy for some people....particularly if you are using humbuckers.

**3. Using the 2k tone pot:** This will change the taper of the tone knob. The taper is the “feel” of the knob.

**4. Using different op amp:** The kit comes with 3 different op amps. You can use ANY DUAL OP AMP. Just make sure you put it in the socket correctly or you will likely fry the chip. Remember DO NOT USE THE TLC2272 with anything higher than 9V

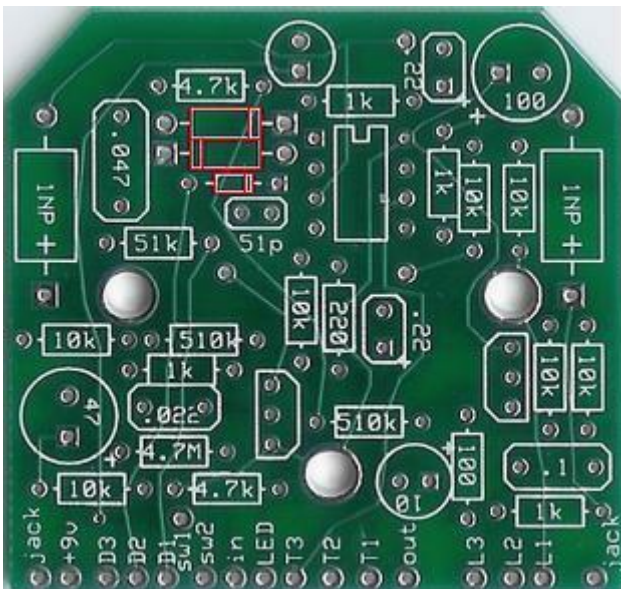
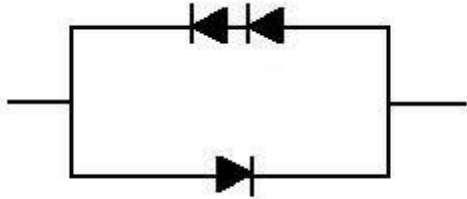
**5. 18VOLT operation:** There's really nothing to this. Just use an 18v power supply. You can also use 9v, 12v, or 15v. You can also use lesser voltage supplies if you want. You do not need to rewire anything. BUT YOU MUST USE A NEGATIVE TIP POWER SUPPLY!!!!!!



## B. Simple Asymmetrical clipping:

This is done exactly the same way as the symmetrical clipping above, but you simply use two different diodes. This will not have a huge affect on the tone of the pedal, but it will start to open up the compression some. A very common recipe used in modified Ibanez tubescreamers is one 1N914 and one 1N4001. They usually use this recipe because there's no space on the PCB to add much of anything else.

## C. Asymmetrical Clipping:

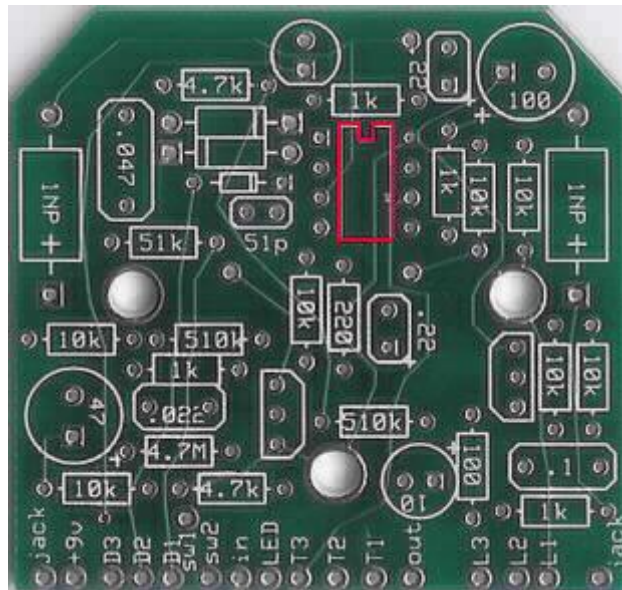


This involves using 3 diodes, where you have one diode facing one directions and two diodes in series facing the other direction. This will give you a more dramatic affect on your tone than simple asymmetrical clipping. They BYOC PCB has been designed for this. The two larger diode slots are your “series” diodes and the smaller diode slot is the 3rd diode by itself. This will give you a more “tube-like” tone. A very common recipe is two 1N4001 in series and a 1N914.

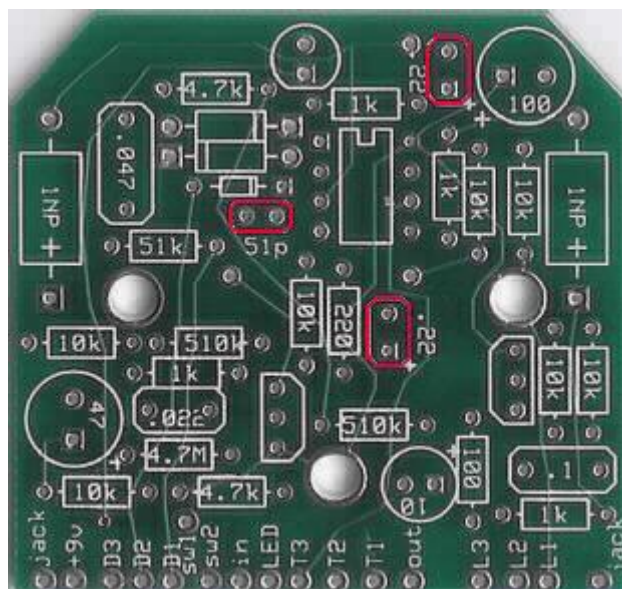




Step 3: Add the 8 pin IC socket. Match up the u shaped cut out on the socket with the u shape on the layout. Do not install the IC into the socket yet.

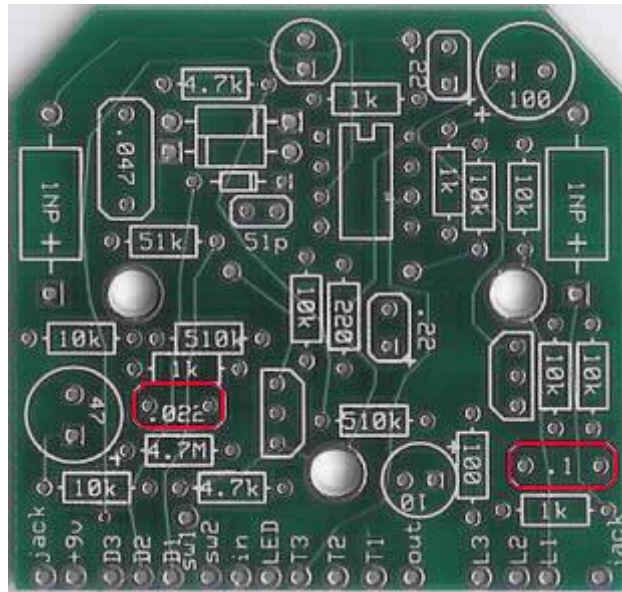


Step 4: Add the .22uf tantalum caps and the 51pf ceramic disc cap. The .22uf's are polarized and should go in a certain way. The positive end will have the longer lead and/or "+" symbol above the positive lead and goes in the square solder pad hole. The 51pf cap is not polarized and can go in any direction.

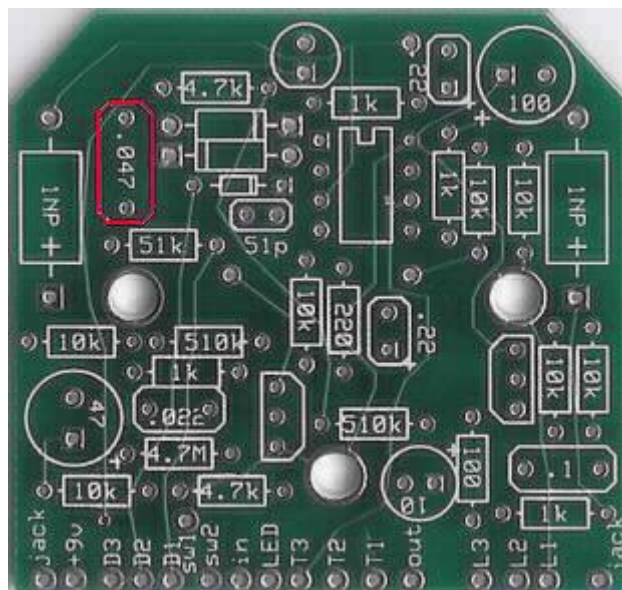




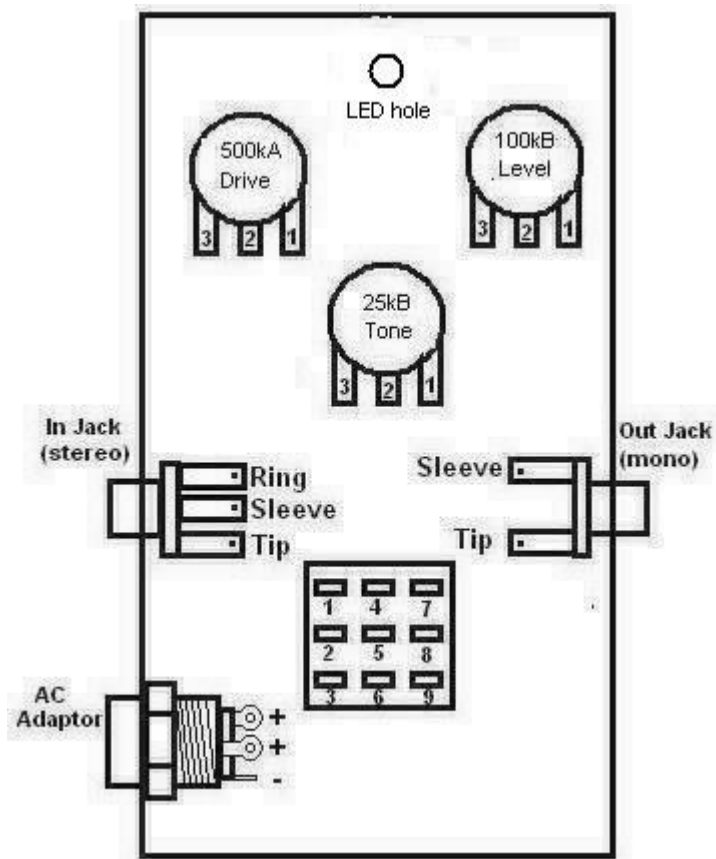
Step 7: Add the .022uf (or .02uf) and .1uf caps. These are not polarized.



Step 8: Add the .047uf cap. It is not polarized.

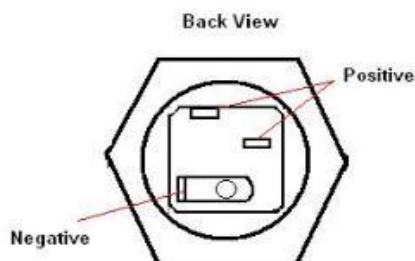
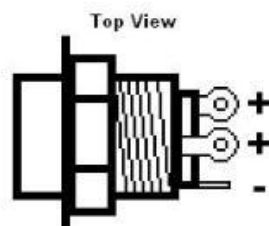


## Assembly



1. Install the jacks first. If you are looking down inside the enclosure, the mono jack goes on the right side and the stereo jack goes on the left. Place the washer on the outside of the enclosure. Use a 1/2" wrench to tighten.
2. Install the AC adaptor jack. The bolt goes on the inside. Use a 3/4" or 14mm wrench to tighten.

### AC Adaptor

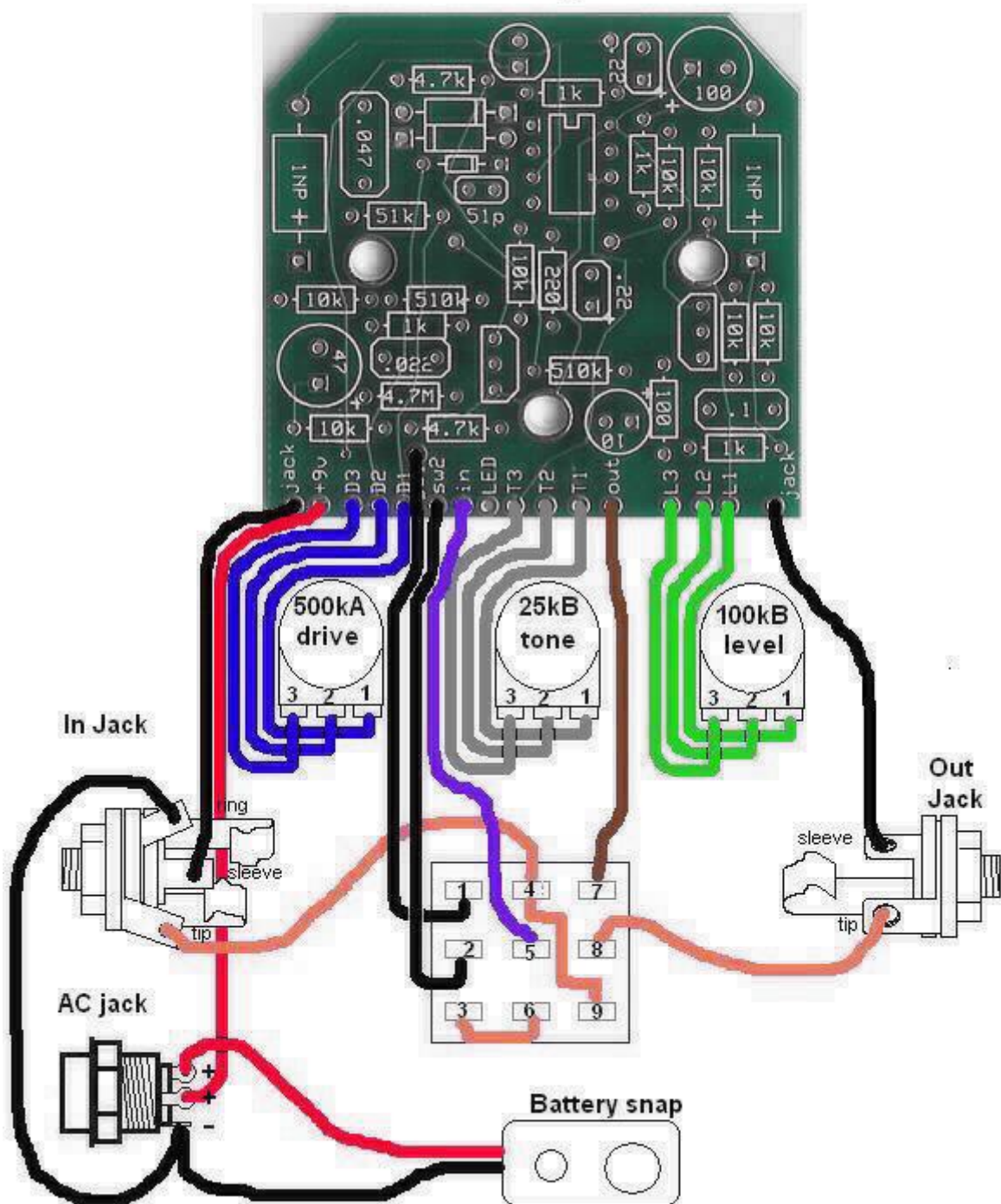


This is a “disconnect” ac adaptor jack. That means that when you have a battery connected and you plug in the adaptor, it will disconnect the battery. That is why there are 2 positive terminals. They are both connected when there is no plug in the jack, but when the plug is inserted only one of the terminals (the uppermost terminal in the “back view”) is connected to the sleeve of the adaptor. The advantage of this is that you can leave batteries in your pedals as a back up power source if you are a “working” musician and they will stay fresh even when you have the input jack plugged in as long as you keep the adaptor plugged in.

3. Install the potentiometers so that the solder lugs are pointing down towards the footswitch side of the enclosure. Use a 10mm wrench to tighten but only snug. Do not over tighten the pots.
4. Install the footswitch. The first bolt and metal washer go inside. The plastic washer and second bolt go on the outside. It does not matter which side you designate as the "leading edge" of the footswitch as long as you orientate it so that the flat sides of the solder lugs are aligned in horizontal rows, not vertical columns. Use a 14mm wrench to tighten.

## b.y.o.c. Overdrive Wiring Diagram

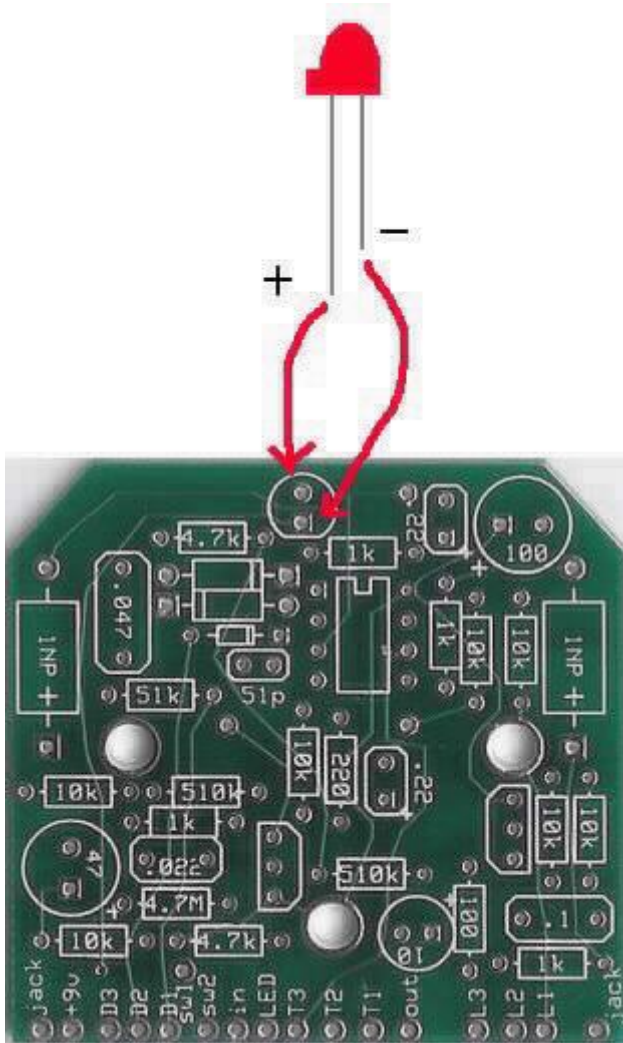
Previous Version with "sw1"  
and "sw2" eyelets





## Installing the LED

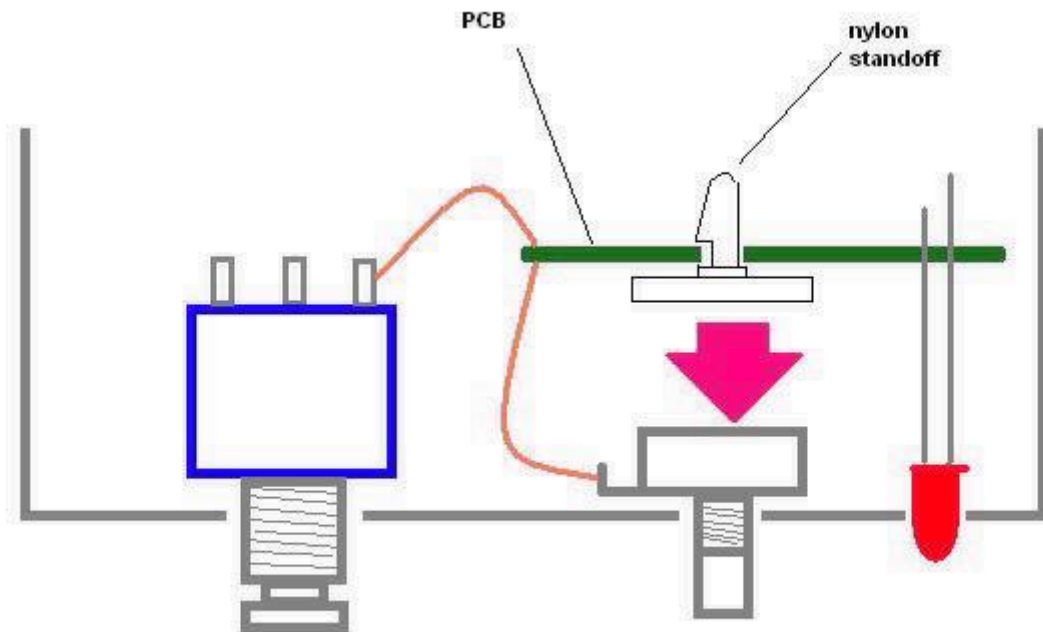
Insert the LED into the **UNDERSIDE** of the PCB, but **DO NOT SOLDER IT**. Make sure the longer lead goes in the round hole and the shorter lead goes in the square hole. No, this is not a typo. Yes, this is contradictory to the way most other components go in the circuit board.



The positive end will have the longer lead just like the other components, but this time it goes in the round solder pad. The negative lead will have the shorter lead, but this time it will go in the square solder pad. Notice that the negative side is flat. On diodes the negative side is called the cathode and the positive side the anode.

1. Insert the LED into its slot on the underside or “solder side” of the circuit board, but **DO NOT SOLDER** it yet.
2. Once you have the LED in place, bend the leads a little bit so that it will not fall out when you turn the PCB over.
3. Install the nylon circuit board standoffs into the mounting holes.
4. Remove the paper backings on the standoff to expose the self-adhesive tape.
5. Insert the LED bulb into the LED hole in the enclosure.

6. Secure the Standoffs to the back of the potentiometers.
7. Your LED should still be free to move up and down slightly. You probably do not want your LED sticking all the way out of the hole. So pull up on the LED legs till you have it properly positioned and then solder.
8. Clip off the excess LED leg wire.



# Finishing Touches

1. Install the IC of your choice. You must line up the U-Shapes!!!! Some IC's won't have a U-shape. If they don't then they will have a small dot in one corner. This dot represents pin #1. The dot should be on the same side as the U-shape. The JRC4558D is the traditional tubescreamer IC. The RC4558P is higher fidelity and is preferred by boutique builders. Try them both out....you've got a socket!
2. Install the base of the enclosure with the 4 screws that came with your kit.
3. Add the rubber bumper feet...unless you're a velcro person.

If you've got any problems that you can't figure out yourself, visit

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

for technical support.