

Build Your Own Clone Mega Chorus & Vibrato Kit Instructions



Warranty:

BYOC, Inc. 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, Inc. 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, Inc. 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 This would include any missing parts issues.

Return:

BYOC, Inc. 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 to receive a return authorization before mailing.

Tech Support:

BYOC, Inc. makes no promises or guarantees that you will successfully complete your kit in a satisfactory manor. Nor does BYOC, Inc. promise or guarantee that you will receive any technical support. Purchasing a product from BYOC, Inc. does not entitle you to any amount of technical support. BYOC, Inc. 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.byoelectronics.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 is 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. (more than, "It doesn't work, help")
2. Pic of the topside 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 answered yes to 6 and 7, what does the pedal do when it is in the "on" position?
9. Battery or adapter (if battery, is it good? If adapter, what type?)

Also, please only post photos that are in focus.

Copyrights:

All material in this document is copyrighted 2014 by BYOC, Inc.

Mega Chorus & Vibrato Kit Instruction Index

| | |
|--|----------------|
| Parts Checklist..... | page 6 |
| Populating the Circuit Board..... | page 8 |
| Main PCB Assembly..... | page 17 |
| Wiring..... | page 19 |
| Installing the IC/Finishing up..... | page 25 |
| Operation Overview..... | page 26 |
| Schematic..... | page 27 |

This is what your kit should look like when it's complete. Your kit may come with different color capacitors, switches etc. Don't be alarmed by this. They all still do the exact same thing.





Parts Checklist for Mega Chorus & Vibrato Kit

Resistors:

| | |
|----------|------------------------------------|
| 2 – 390R | (Orange/White/Black/Black/Brown) |
| 1 – 470R | (Yellow/Purple/Black/Black/Brown) |
| 2 - 1k | (Brown/Black/Black/Brown/Brown) |
| 1 – 2k2 | (Red/Red/Black/Brown/Brown) |
| 1 – 2k7 | (Red/Purple/Black/Brown/Brown) |
| 4 - 4k7 | (Yellow/Purple/Black/Brown/Brown) |
| 2 – 6k8 | (Blue/Grey/Black/Brown/Brown) |
| 24 - 10k | (Brown/Black/Black/Red/Brown) |
| 4 – 12k | (Brown/Red/Black/Red/Brown) |
| 3 – 33k | (Orange/Orange/Red/Brown/Brown) |
| 4 – 47k | (Yellow/Purple/Black/Red/Brown) |
| 1 – 56k | (Green/Blue/Black/Red/Brown) |
| 1 – 68k | (Blue/Grey/Black/Red/Brown) |
| 3 - 100k | (Brown/Black/Black/Orange/Brown) |
| 2 – 330k | (Orange/Orange/Black/Orange/Brown) |
| 1 – 470k | (Yellow/Purple/Black/Orange/Brown) |
| 2 – 1M | (Brown/Black/Black/Yellow/Brown) |

Visit www.byocelectronics.com/resistorcodes.pdf for more information on how to differentiate resistors.

Capacitors:

| |
|---|
| 1 – 47p Ceramic Disc |
| 1 – 470p Ceramic Disc (may say “471” on the body) |
| 2 – 1n0/ .0010uf film cap (may say “102” on the body) |
| 1 – 3n3/.0033uF film cap (may say “332” on the body) |
| 2 – 6n8/.0068uF film cap (may say “682” on the body) |
| 2 – 8n2/.0082uF film cap (may say “822” on the body) |
| 1 – 27n/ .027uf film cap (may say “273” on the body) |
| 5 – 47n/.047uF film cap (may say “473” on the body) |
| 1 - .47/ 470n film cap (may say “474” on the body) |
| 3- 1uf film cap (may say “105” or “1u” on the body) |
| 5 – 10uf Aluminum Electrolytic |
| 2 – 100uf Aluminum Electrolytic |

Visit www.byocelectronics.com/capcodes.pdf for more info on how to differentiate capacitors.

Diodes:

| |
|------------|
| 1 - 1N4001 |
| 4– 1N4148 |

IC's:

- 5 - DIP 8 Socket
- 1- TL022
- 1- 3102 clock driver (3101 used only if 3007 is used)
- 1- 3207 BBD (3007 is optional)
- 2 – TL072 or 4558

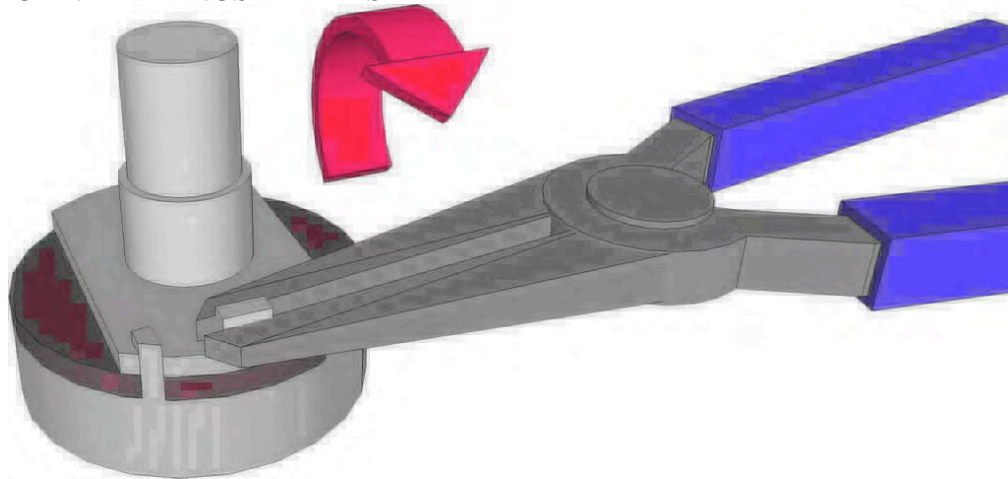
Transistor:

- 8 – 2N3904, 2N5088, 2N2222 or other similar transistor with EBC pinout.
- 1 – 78L08

Trimpot:

- 1 - 25k
- 1 – 50k

Potentiometers: SNAP THE SMALL TABS ON THE TOP OF THE POTS OFF WITH A PAIR OF NEEDLE NOSE PLIERS

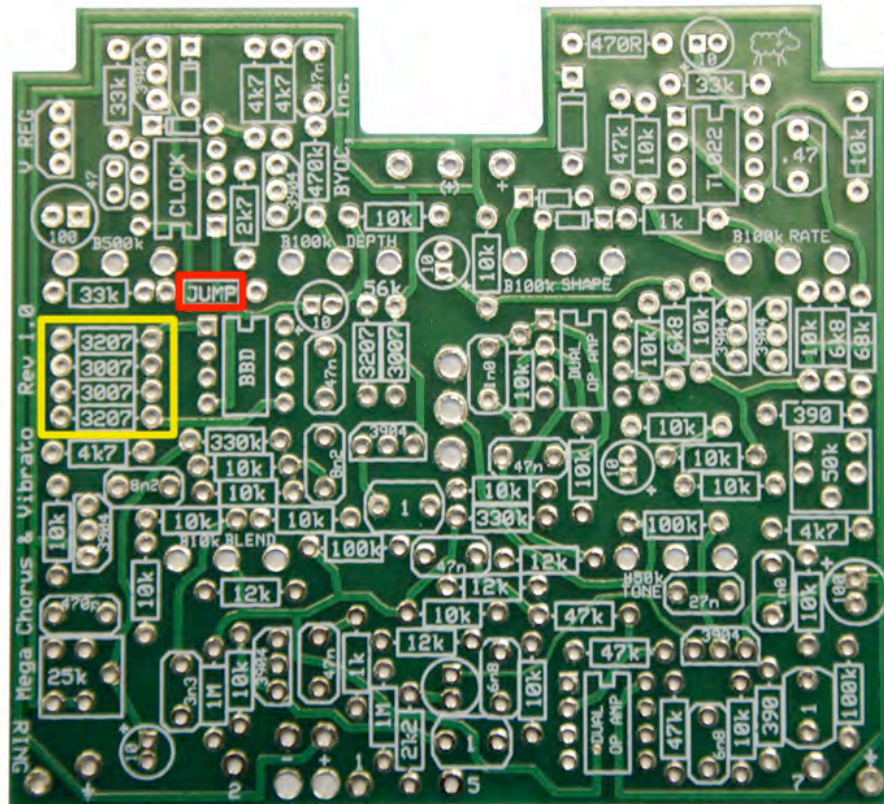


- 3 – B100k (Rate, Shape and Depth)
- 1 – B10k (Blend)
- 1 – B50k (Tone)
- 1 – B500k (Delay)

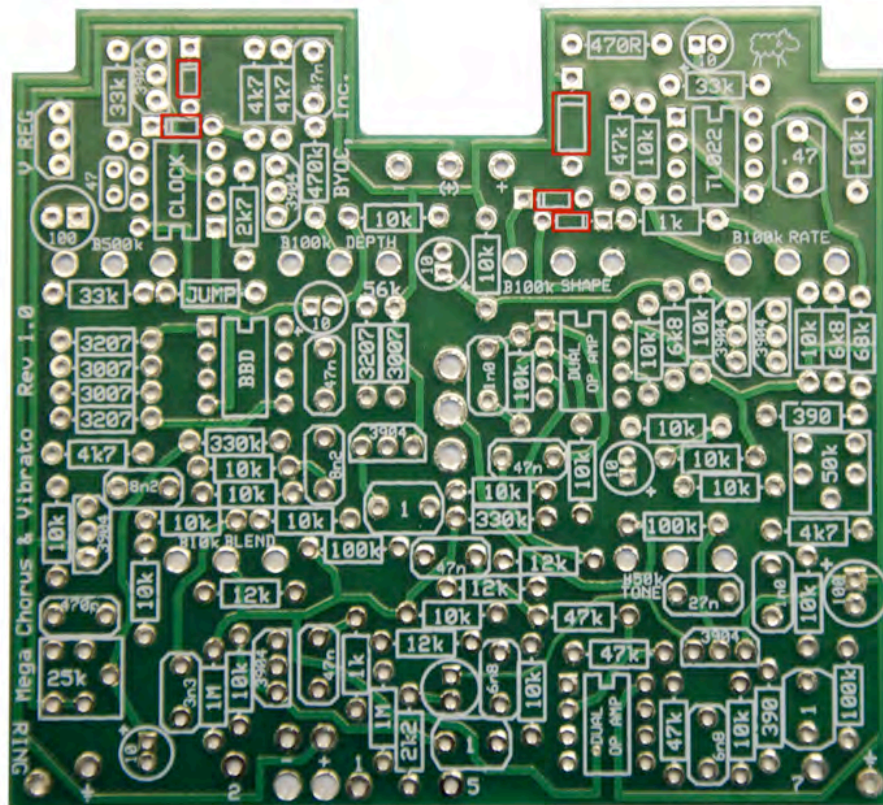
Hardware:

- 1 - predrilled enclosure w/ 4 screws
- 1 – Mega Chorus & Vibrato circuit board
- 1 – 3PDT footswitch
- 1 – SPST on-on toggle switch
- 6 - knobs
- 1 - AC adaptor jack
- 1 - ¼" stereo jack
- 1 - ¼" mono jack
- 1 - battery snap
- 1 - red LED
- 4 – rubber bumpers
- 2 – lock washers (for in and out jacks)
- hook-up wire

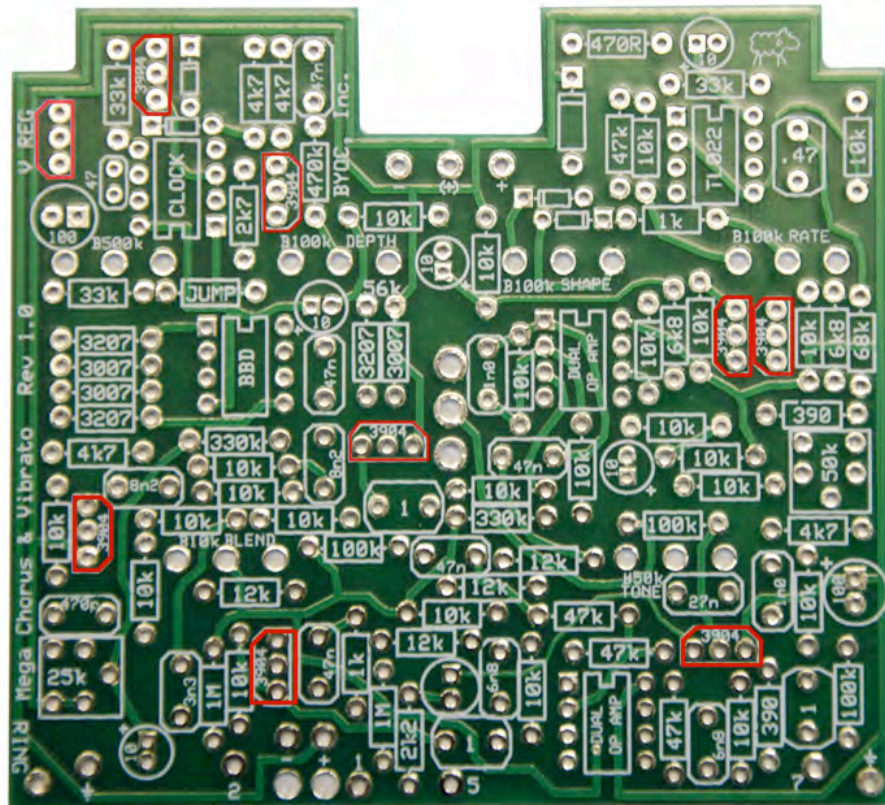
Step 2: Add jumpers to the highlighted areas. This is done by using a small amount of lead clipping left over from the last step to make a zero resistance connection. **NOTE:** The space labeled “JUMP” will be jumpered regardless of what BBD you are using. If you are using a 3207 BBD, you will put jumpers in both spaces labeled “3207” and leave both spaces labeled “3007” empty. If you are using a 3007 BBD, you will put jumpers in both spaces labeled “3007” and leave both spaces labeled “3207” empty.



Step 3: Add the diodes. Be sure to match the end of the diode with the stripe to the layout on the PCB. The stripped end should go in the square solder pad. The 1N4148 diodes will go in the 4 smaller spaces. The 1N4001 goes in the larger space.

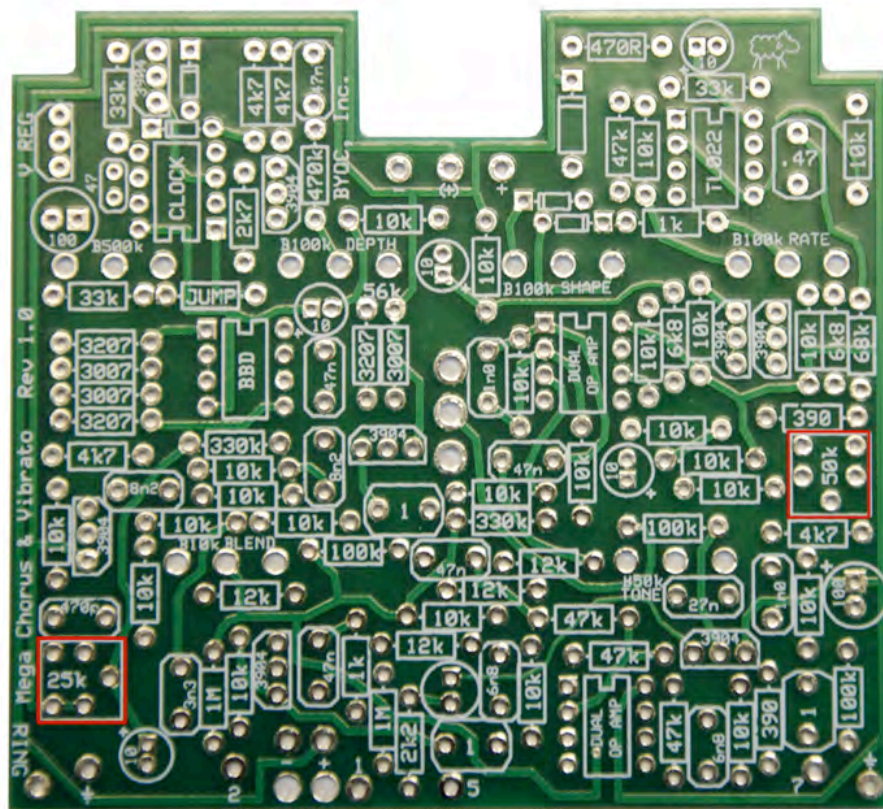


Step 5: Add the transistors. Orient them so that the flat side matches up with the flat side on the PCB layout. Be sure to insert the 78L08 8v regulator into the space labeled “V REG”.

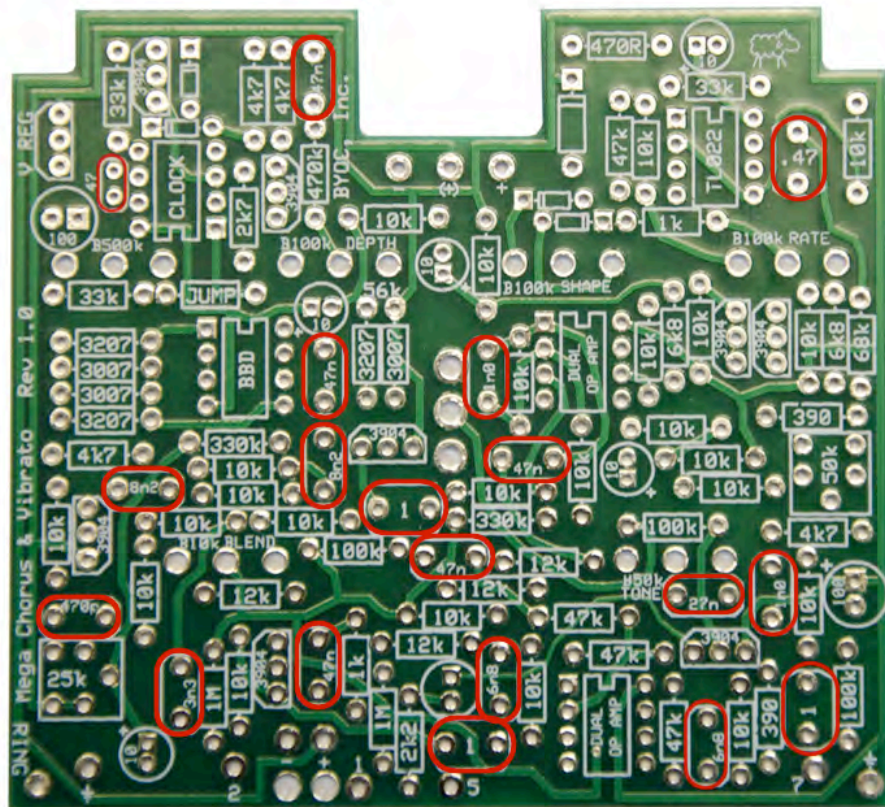


Step 6: Add the 25k and 50k Trim pots. Note that there are 5 holes on the PCB, but only 3 leads on the actual trimpot. Please do not let this confuse you. This is so that the PCB can accommodate a variety of trimpots. There should only be one way to fit the trimpot into the PCB. You do not need to bend the leads to make it fit (unless the leads were bent in shipping).

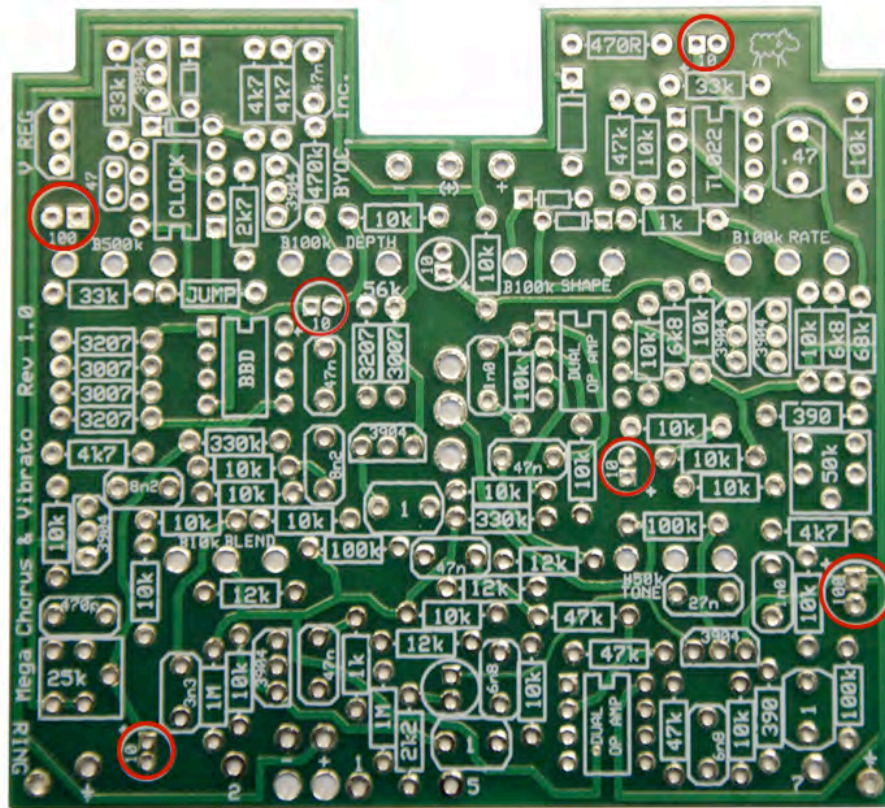
You will need to adjust the trimpot when you are finished building the pedal. The 25k adjusts the circuits bias voltage and the 50k trimpot adjusts the sine wave symmetry. You start by setting the trimpots at the middle of its rotation or “noon”. This will get you started and should definitely produce a chorus sound when you plug in for the first time. You fine tune the bias trimpot by strumming or plucking as hard as you can and dialing the trim pot till you get the least amount of distortion. If you have a guitar with hotter pickups, you should use it for this step. You will need to have the wave toggle switch in the sine position to adjust the sine wave. You do not need any special tools for this. Just use your ears.



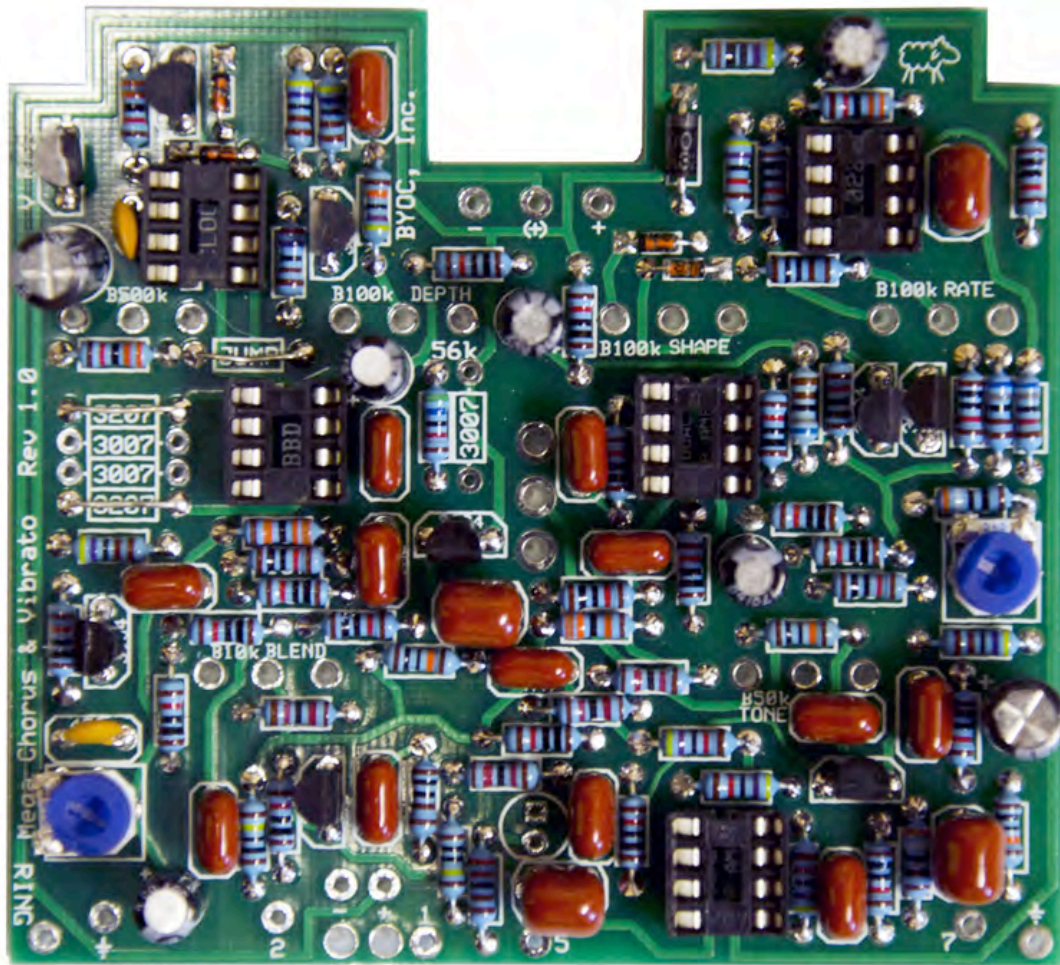
Step 7: Add the film and ceramic disc capacitors. These are non-polarized so they can go in either direction.



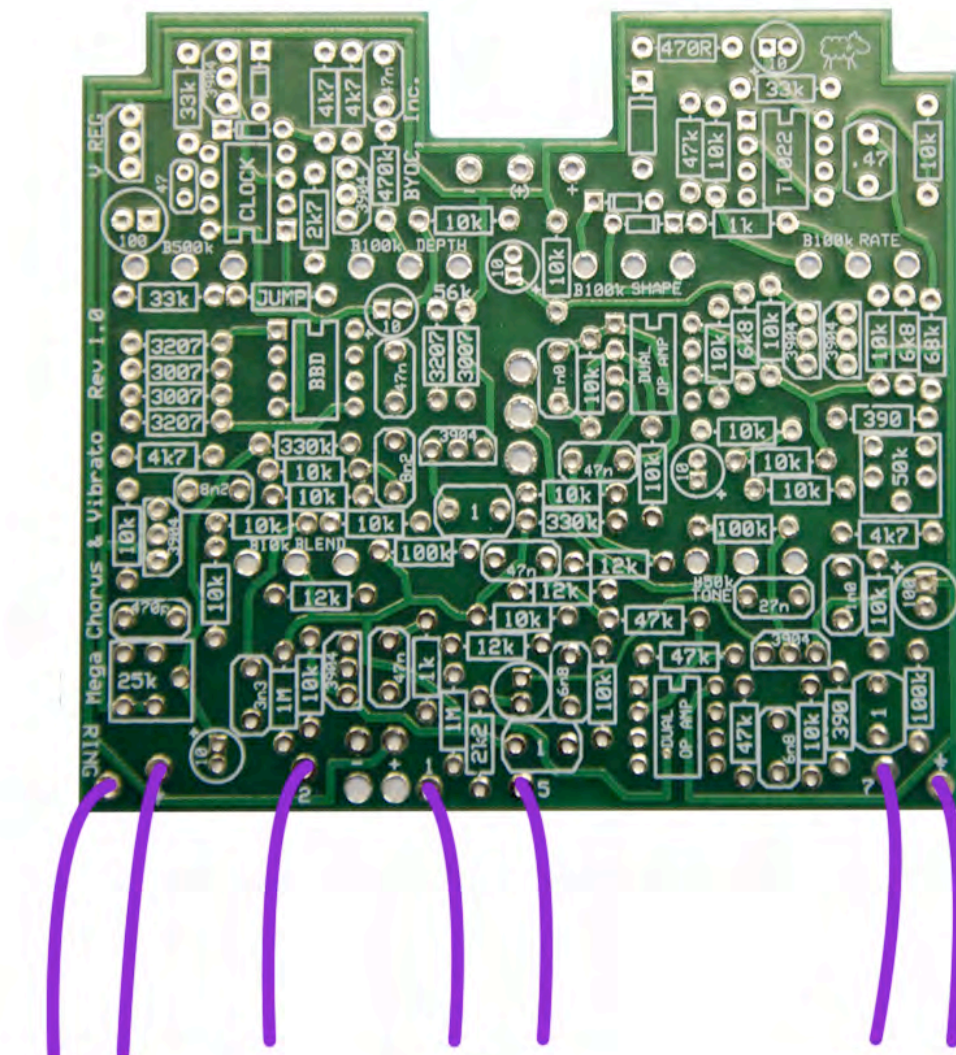
Step 8: Add the aluminum electrolytic capacitors. These ARE polarized, meaning there is a positive and negative end. The positive side will have a longer lead and goes in the square solder pad. The negative side will have a shorter lead and a stripe running along the body of the cap, and goes in the round solder pad.



At this point your board should look like this: (If built to 3207 spec's)

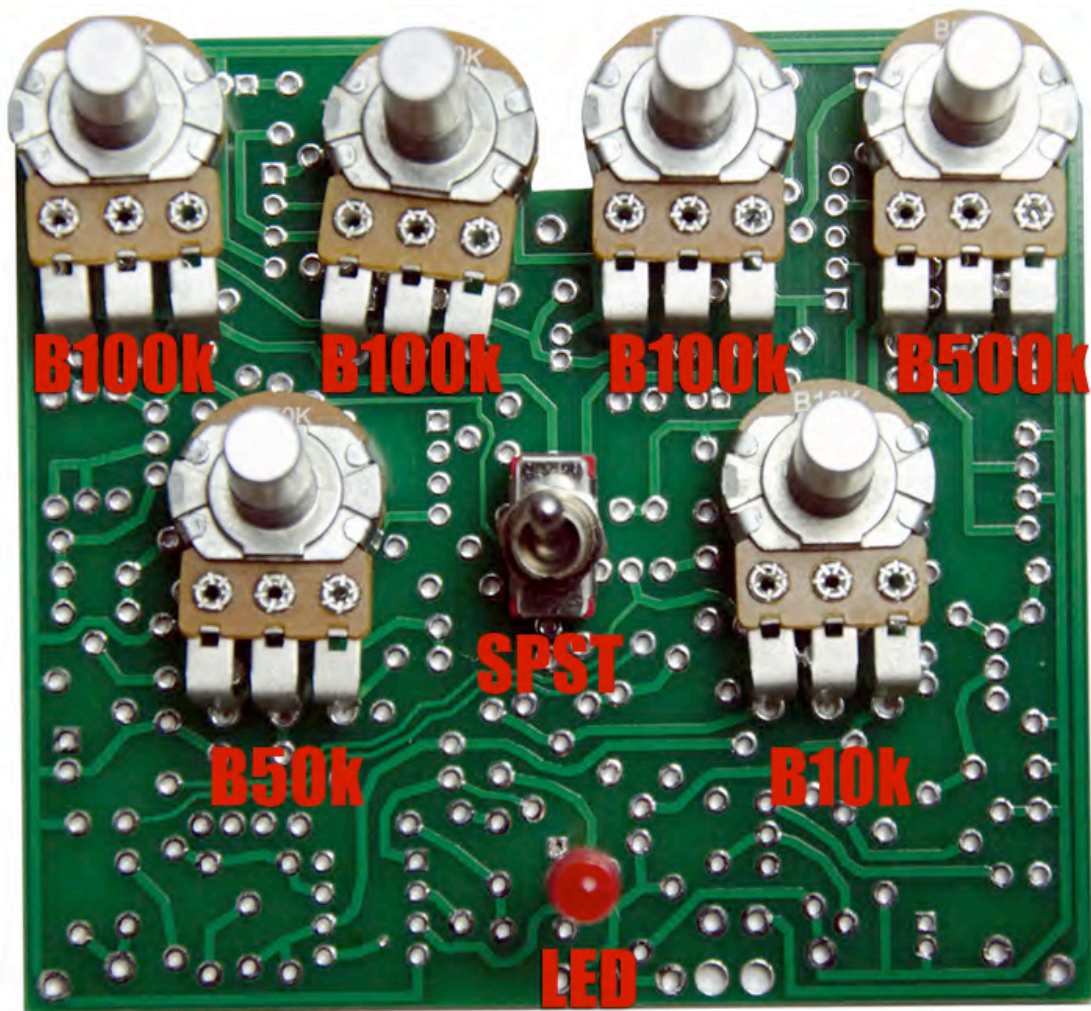


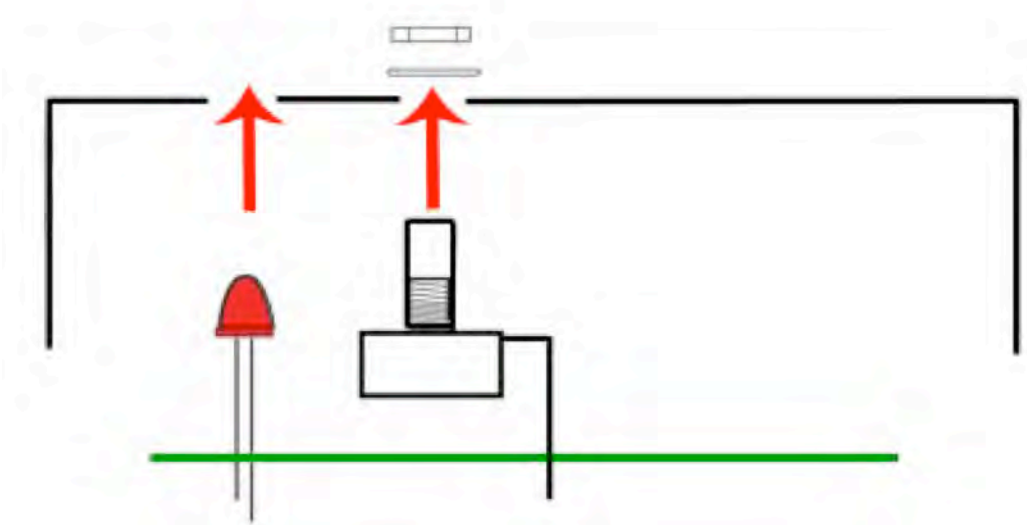
Step 10: Add wires to the “Ring”, “1”, “2”, “5”, “7” and the two Ground eyelets. Start by cutting seven 4” pieces of wire. You will want to strip 1/4” off each end and tin the ends. Tinning means to apply some solder to the stripped ends of the wires. This keeps the strands from fraying and primes the wire for soldering. Load the wires in from the top and solder on the bottom of the PCB. But before you strip and tin the wires, you’ll want to measure them and trim them so that they will be the proper length for connecting to the footswitch. It would probably be easier to do this after the entire PCB assembly has been installed into the enclosure.



Main PCB Assembly

Step 1: Flip the PCB over so that the bottom or solder side is up. Insert the six potentiometers, toggle switch, and LED into the bottom side of the PCB. **DO NOT SOLDER ANYTHING YET!!!** The LED will have one lead that is longer than the other. **THIS WILL GO INTO THE SQUARE SOLDER HOLE.** Don't forget to remove the nuts and washers from the pots and also to snap off the tabs before you do this step.



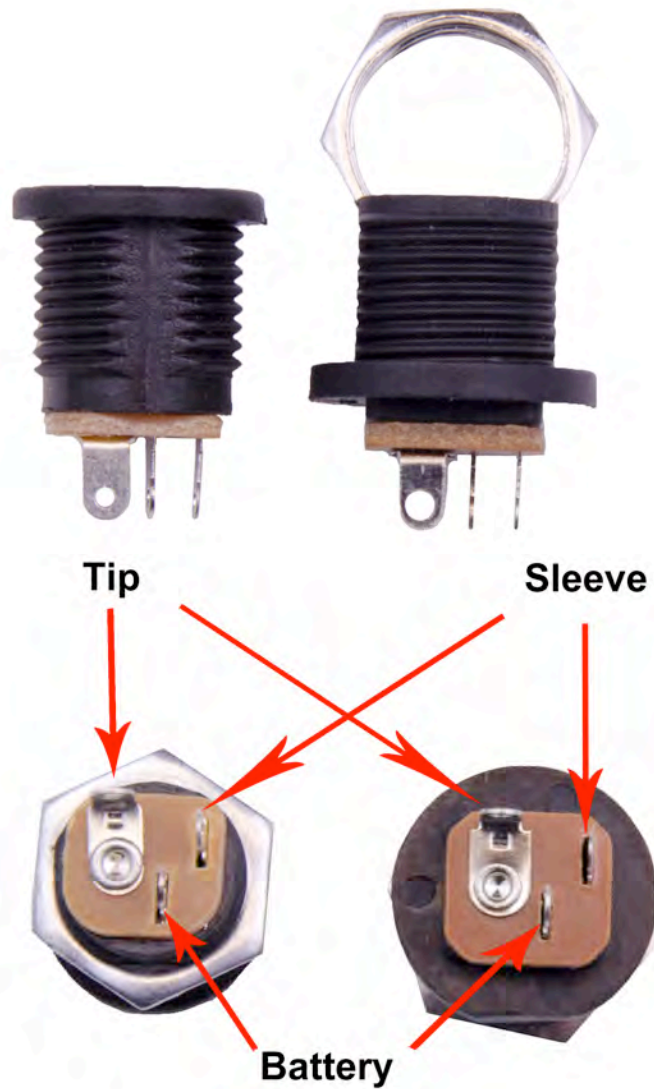


Step 2: Hold the PCB in one hand so that the component side of the PCB is in the palm of your hand and the bottom side with the pots and LED are facing up. Now use your other hand to guide the predrilled enclosure onto the PCB assembly so that the pots, toggle switch and LED all go into their respective holes. Once the PCB assembly is in place, secure it by screwing on the washers and nuts for the pots. Only tighten them with your fingers. **You do not want them very tight yet.** Make sure you've removed the nuts and washers from the pots and that you've also snapped the tabs off the pots as well before installing.

Step 3: Turn the entire pedal over so that the component side of the PCB is facing up. Lift the PCB up off the pots 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 4: Solder the pots and LED. 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. Be careful not to burn any of the components on the PCB. If you do, it won't harm anything, but it will look ugly.

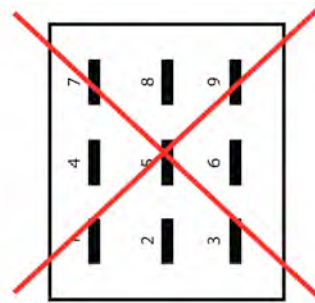
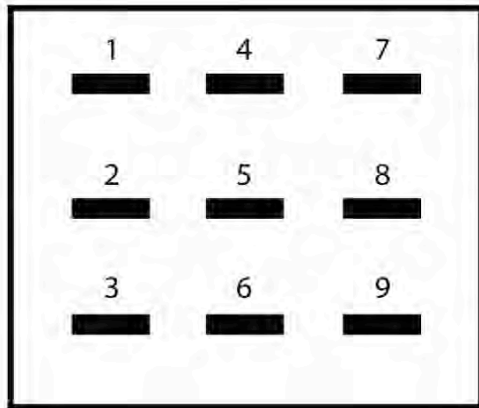
Wiring



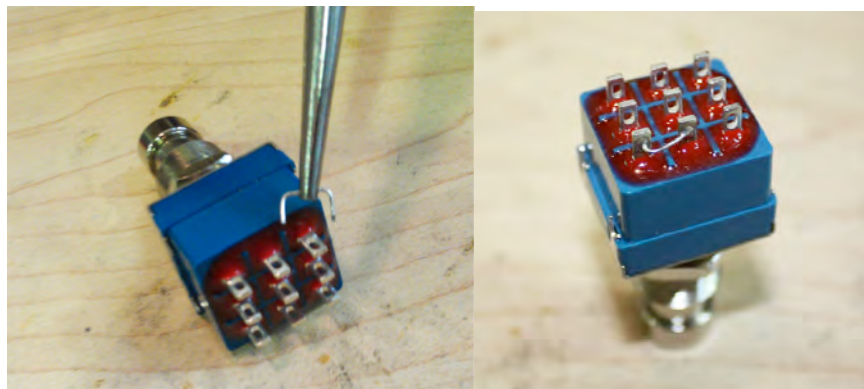
Step 1: Mount the DC adapter jack to the enclosure. Your kit may come with either an external thread or internal thread. Don't get confused by this. They still function exactly the same. You just thread the external nut on the outside and the internal nut on the inside.

Step 4: Install the footswitch. Orient the footswitch so that the flat sides of the solder lugs are like the diagram below. **NOTE:** There are no actual number markings on the footswitch. There are two correct ways you can orient the footswitch. They are both 180 degrees of each other. Either way is fine. It does not matter as long as the flat sides of the solder lugs are running horizontal, not vertical.

FOOT SWITCH SOLDER LUG DESIGNATIONS

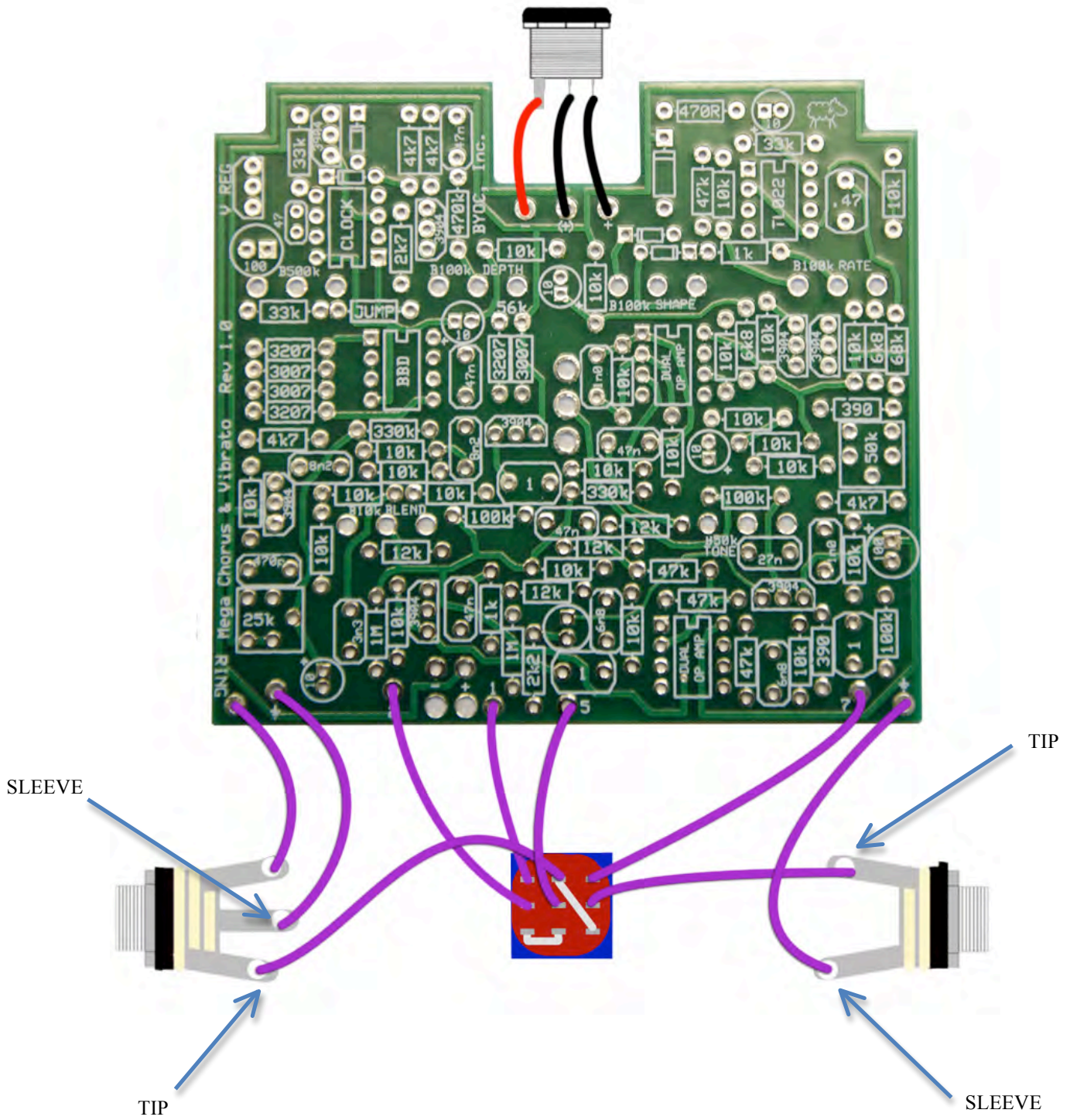


Step 5: Make a jumper between lugs 3 & 6 from clippings from the resistors. Simply use your needle nose pliers to make a U shape & insert into lugs 3 & 6, then solder.



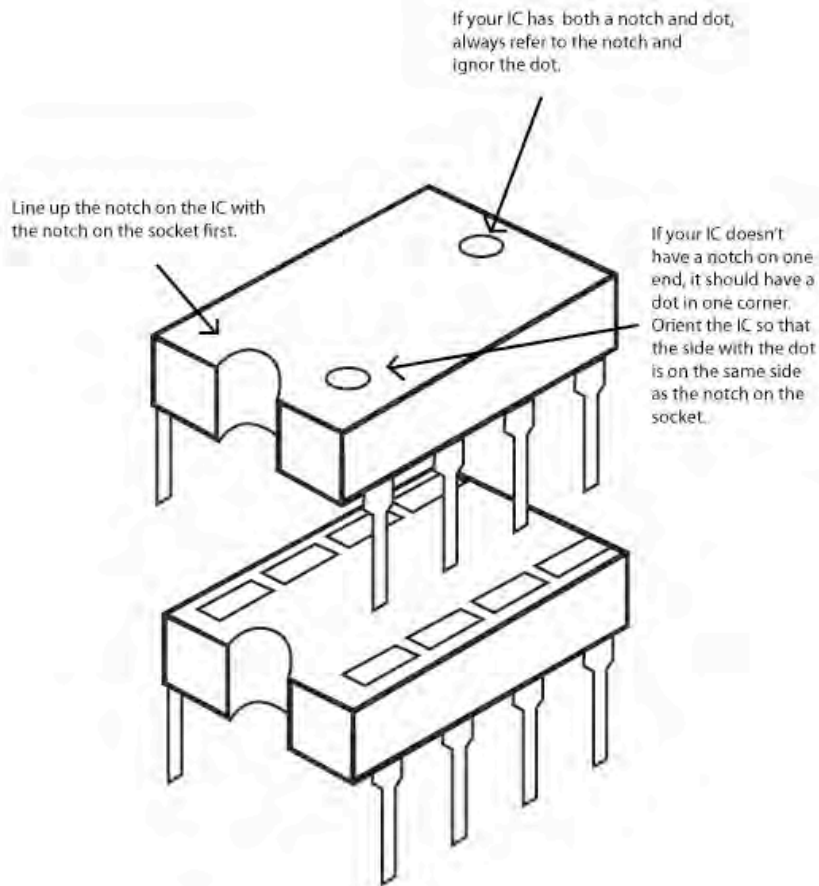
Step 6: Install the foot switch into the enclosure.

Step 7: Wire the PCB to the foot switch and jacks.



Installing IC/Finish up

Don't forget to adjust the trimpots, add the knobs, put the cover on the enclosure, and apply the bumpers to the cover.



Operating Overview



Blend: Controls the ratio of wet vibrato signal to dry signal.

Depth: Controls the intensity of the wet vibrato signal.

Speed: Controls the speed of the Low Frequency Oscillator (LFO).

Tone: Clockwise adds high frequencies in the wet signal. Counter clockwise cuts high frequencies in the wet signal. Noon is neutral, but keep in mind that the circuit has low pass filters, so there will naturally be some loss of high frequencies in the wet signal with the tone knob at noon.

Delay: Controls the amount of delay time produced by the BBD

Shape: Changes the shape of the LFO. Counter clockwise produces a saw wave (bends pitch up faster and down slower). Clockwise produces a ramp wave (bends pitch up slower and down faster).

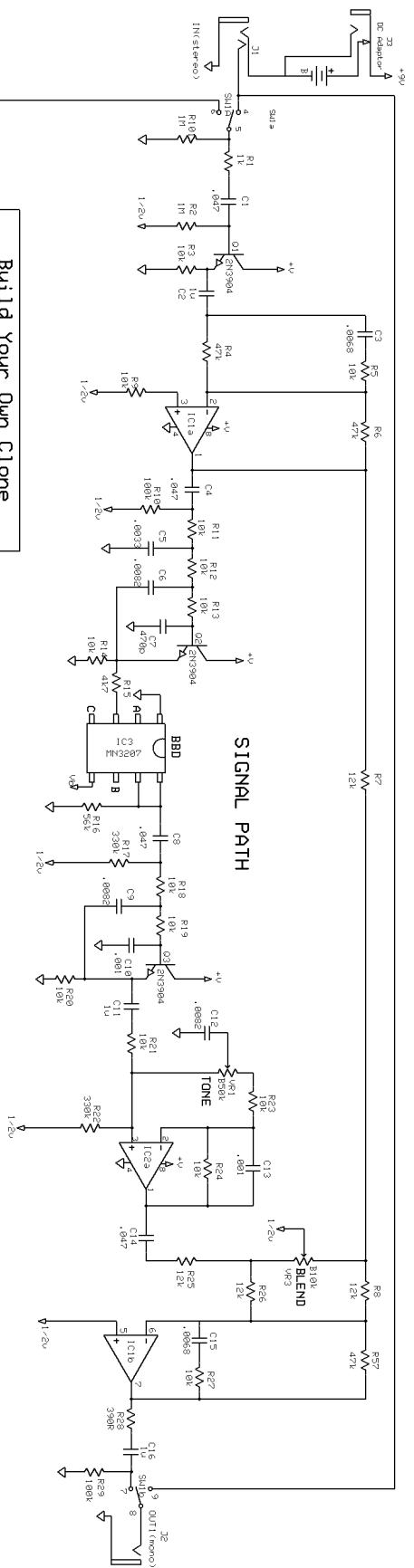
Sine/Triangle Switch:

Power supply: 9V battery or 2.1mm negative tip. 9V ONLY!!!!

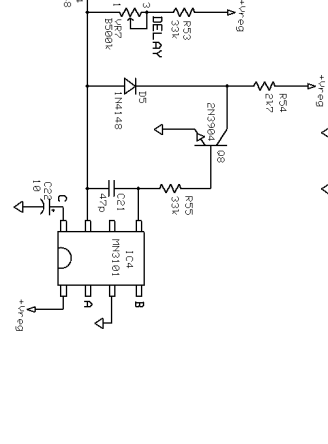
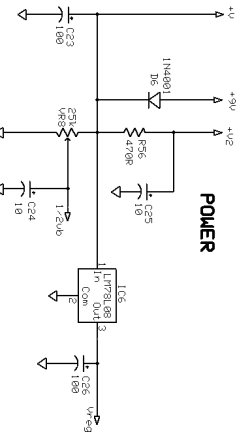
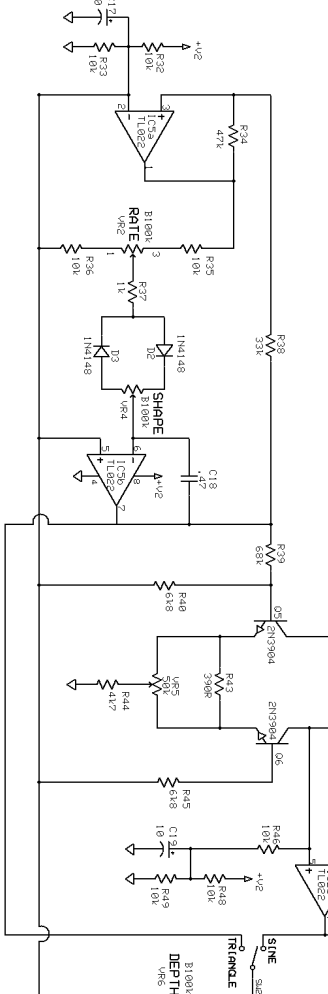
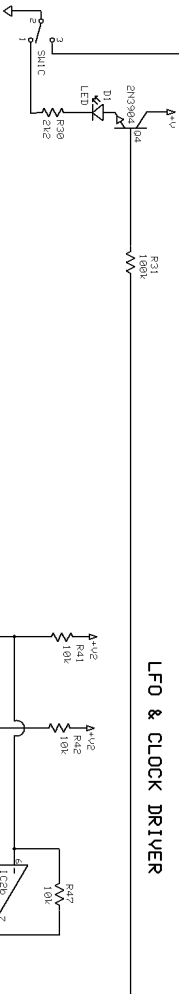
Current Draw: 14.5 mA

Input Impedance: 470k ohms

Output Impedance: 100k ohms



Build Your Own Clone
Mega Chorus & Vibrato
 Designed by:
 K. Vonderhulst
 Rev 2.0
 2-11-2014
 Page 1 of 1



For hi-res schematic visit <http://www.byoelectronics.com/mcvschematic.pdf>

Please visit
<http://byoelectronics.com/board>
for any technical support

copyright 2014
BYOC, Inc.