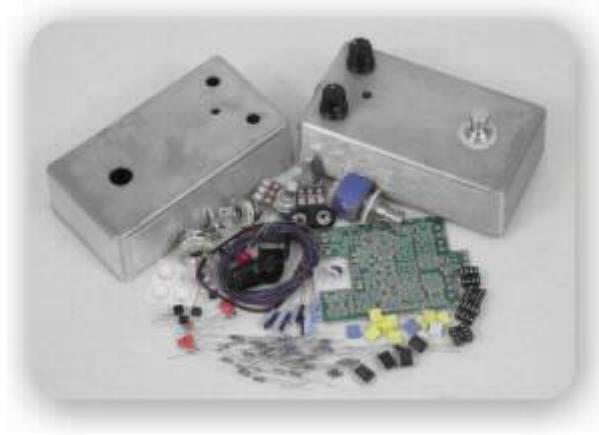


Build Your Own Clone Analog Chorus Kit Rev 1.0 Instructions



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 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 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

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 discription 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 1.0: Current. No known errors.

Previous Chorus Kit Instructions: Click [here](#) to download or go to www.buildyourownclone.com/chorusV1.pdf

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KIT Rev 1.0
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Parts Checklist for BYOC Analog Chorus Rev 1.0

Resistors:

- 1 - 47R (yellow/purple/black/gold/brown)
- 1 - 470R (yellow/purple/black/black/brown)
- 1 - 2k7 (red/purple/black/brown/brown)
- 4 - 4k7 (yellow/purple/black/brown/brown)
- 14 - 10k (brown/black/black/red/brown)
- 1 - 22k (red/red/black/black/red/brown) [used only for bass mods]
- 4 - 33k (orange/orange/black/red/brown)
- 5 - 47k (yellow/purple/black/red/brown)[one extra for bass mods]
- 1 - 56k (green/blue/black/red/brown)
- 2 - 100k (brown/black/black/orange/brown)
- 1 - 150k (brown/green/black/orange/brown)
- 1 - 220k (red/red/black/orange/brown)
- 2 - 330k (orange/orange/black/orange/brown)
- 2 - 1M (brown/black/black/yellow/brown)

Capacitors:

- 1 - 47pf ceramic disc (47 or may say 470)
- 2 - 100pf ceramic disc (101)
- 2 - 470pf ceramic disc (471)
- 2 - .0033 μ /3.3n film (332)
- 2 - .0068 μ /6.8n film (682)
- 2 - .0082 μ /8.2n film (822)
- 2 - .01 μ /10n film (103) [one extra for bass mods]
- 3 - 0.033 μ /33n film (333)
- 2 - 0.1 μ /100n film (104)
- 1 - 1 μ aluminum electrolytic
- 2 - 47 μ aluminum electrolytic
- 2 - 100 μ aluminum electrolytic

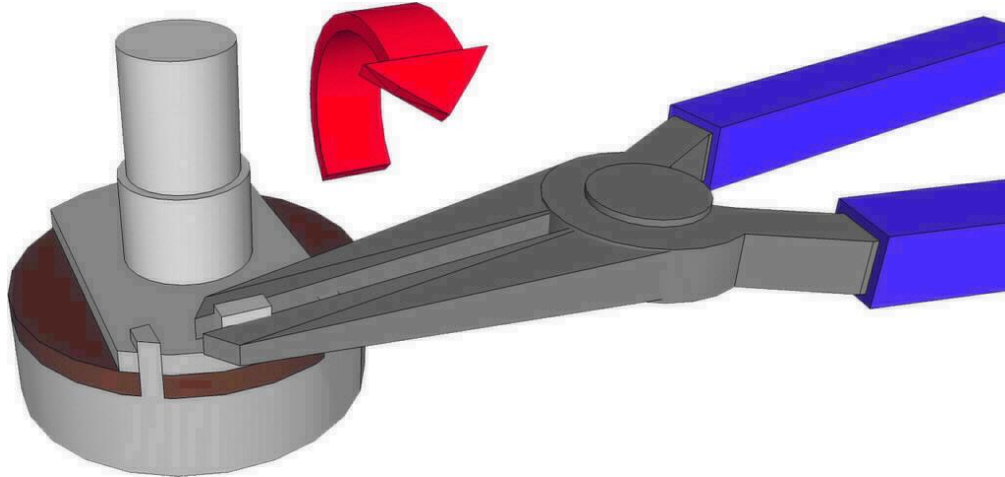
Diodes:

- 2 - 1N914 or 1N4148 (small orange glass with black stripe)
- 1 - 1N4001 (larger black plastic with silver stripe)

Trimpots:

- 1 - 25k (253)

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



2 - B100k linear (depth & rate knobs)

IC's:

1 - 4558

1 - 3102

1 - 3207

1 - TL022

4 - DIP 8 socket

Transistors:

4 - 2N5088

Hardware:

1 - drilled enclosure w/ 4 screws

1 - byoc Analog Chorus PCB

1 - 3PDT footswitch

2 - knobs

1 - AC adaptor jack

1 - 1/4" mono jack

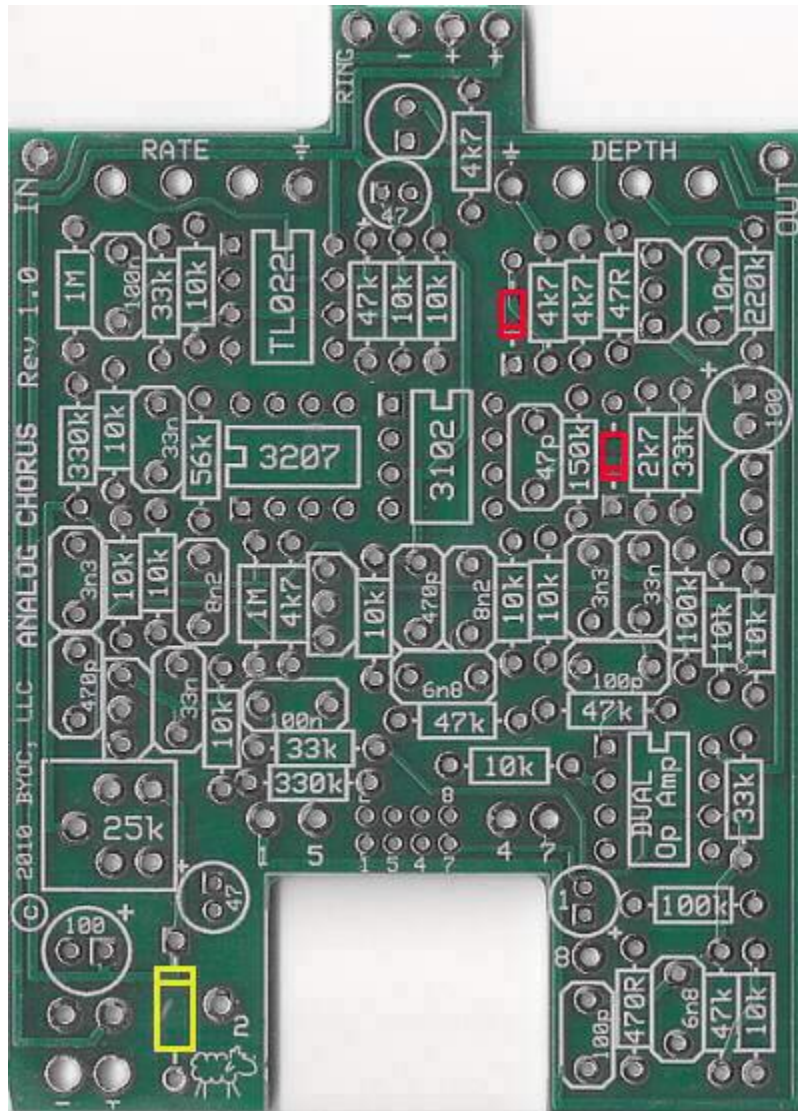
1 - 1/4" stereo jack

1 - red LED

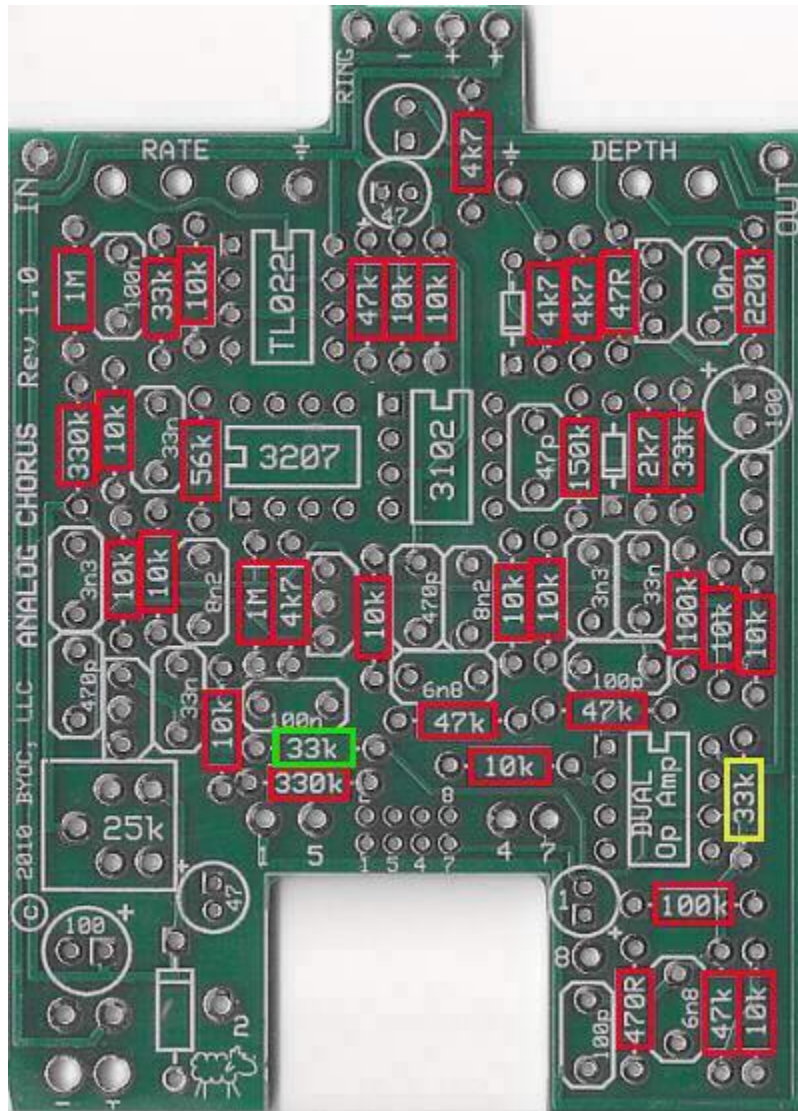
hook-up wire

Populating the Circuit Board



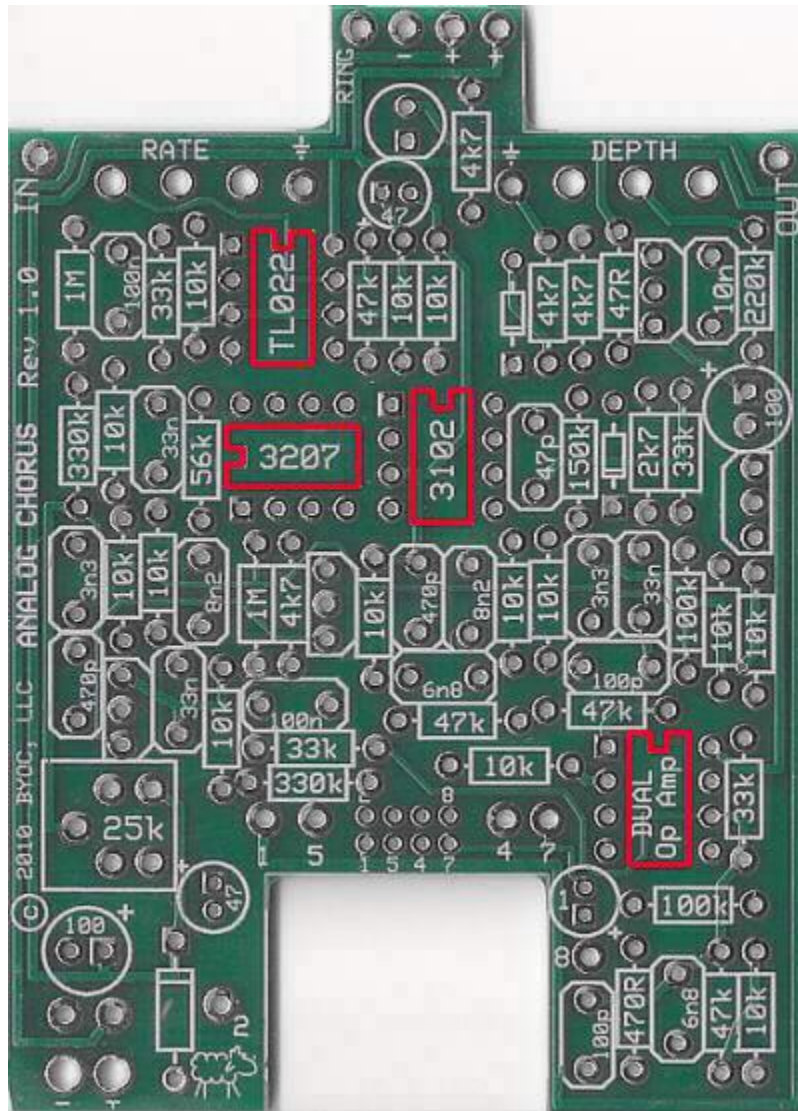


STEP 1: Add the diodes. Be sure to match the end of the diode with the stripe to the layout on the PCB. The stripped end should go in the square solder pad. Note that the 1N4001 diode goes in the space highlighted in yellow. The two small orange 1N4148 diodes go in the space highlighted in red.

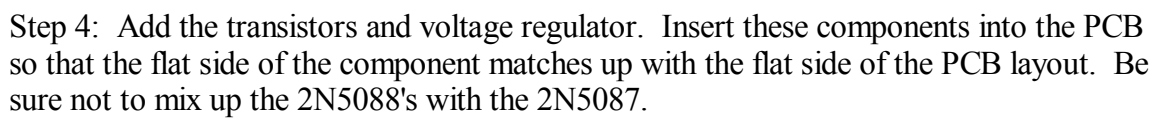


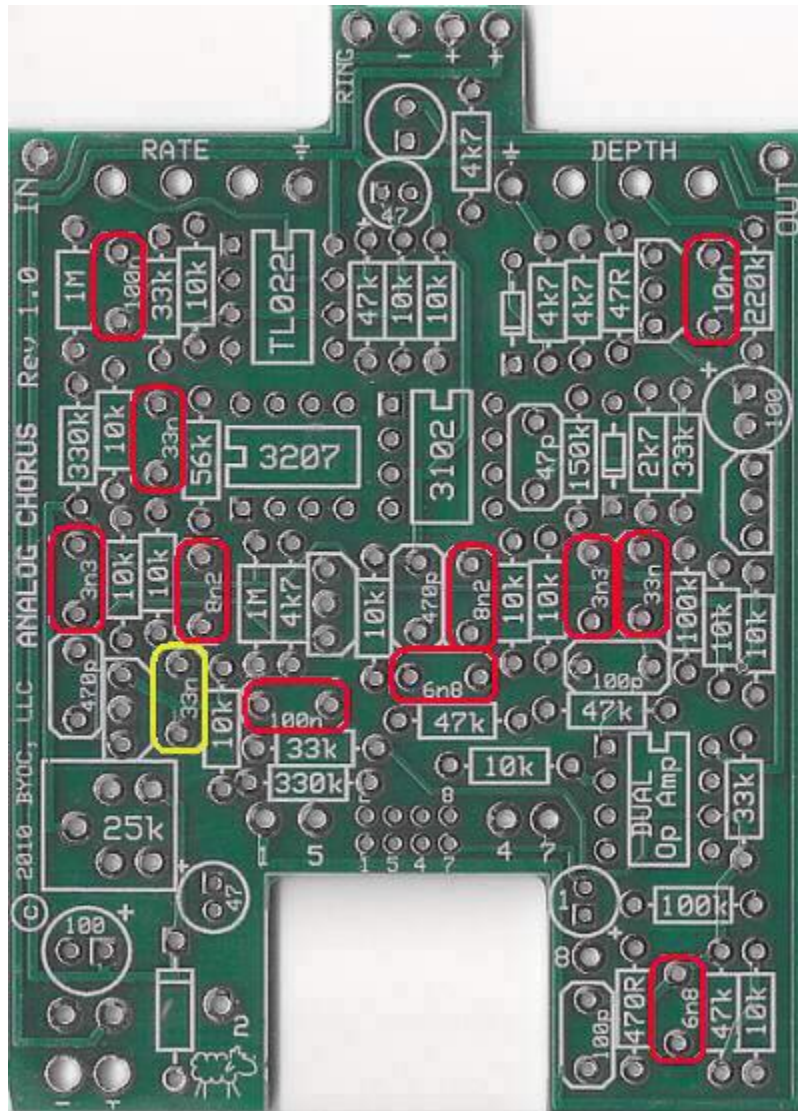
STEP 2: Add the resistors . Resistors are not polarized, so it does not matter which end goes in which solder pad. Be careful of the 47ohm(labelled 47R on the PCB) and 470ohm (labelled 470R on the PCB) resistors. Don't confuse them with the 4k7, or 47k resistors.

BASS MOD: The 33k resistors highlighted in green and yellow are the resistors you would want to change if you are building this for bass guitar. Use a 47k resistor in the space highlighted in green. Use a 22k resistor in the space highlighted in yellow. These two resistors control the wet/dry mix. This mod allows for slightly more dry signal and slightly less wet signal.



Step3: Add the 8 pin sockets. Line up each socket so that the “u-shaped” notch matches up with the end that has a notch on the layout. Only add the socket. DO NOT solder the actual chip to the PCB. DO NOT solder the chip to the socket. Only the socket gets soldered. You will never solder the chips. Installing the chips or IC's into the socket will be explained in the Installing the ICs portion of the instructions.



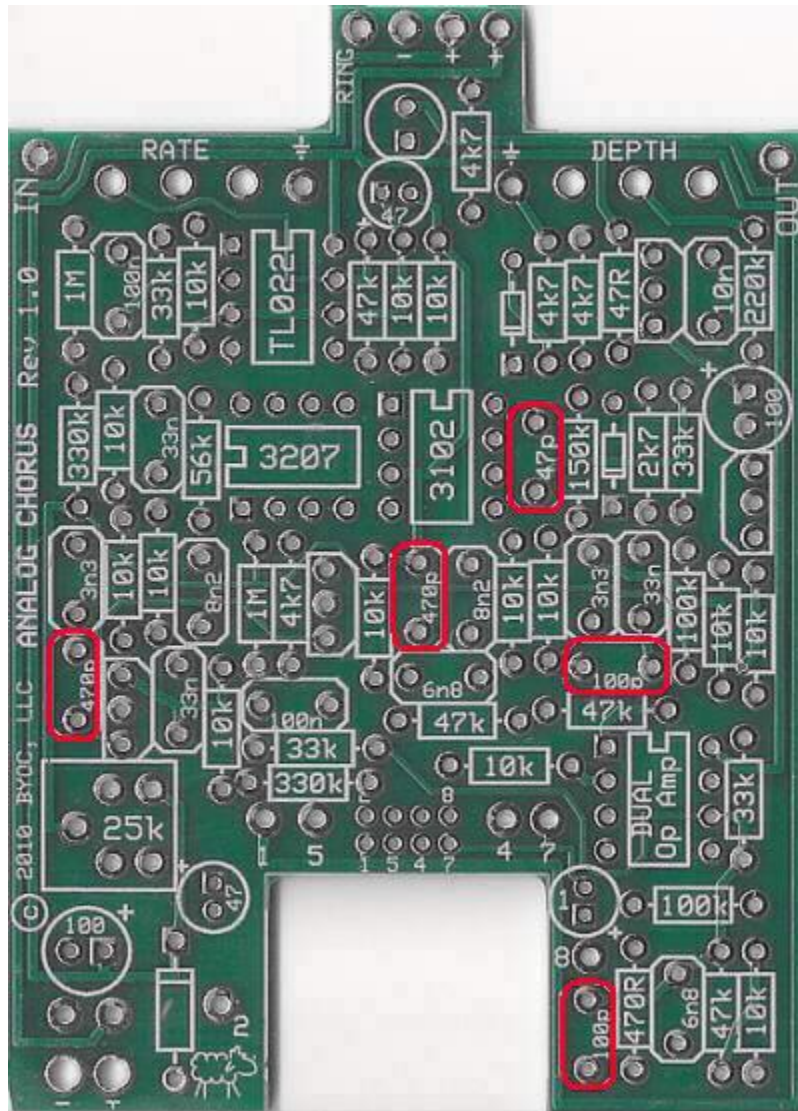


STEP 5: Add the film capacitors. These are not polarized so they can be inserted into the PCB in either direction.

BASS MOD: Use a .01uf(10n) cap in the space for the 33n cap highlighted in yellow. This will cause one of the high pass filters to cut more of the low frequencies out of the wet signal. This may seem counterintuitive, considering that this is a modification for bass, but it is important in creating a distinction between the wet and dry signals.



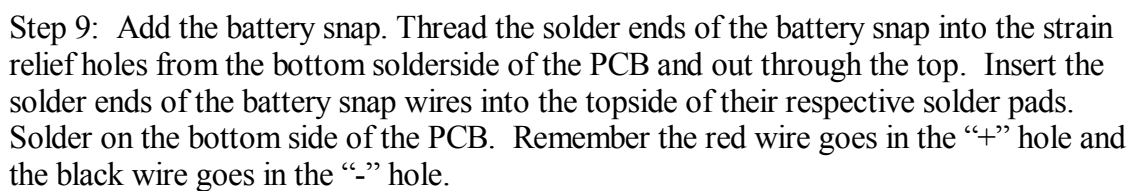
SETTING THE TRIMPOT: After you complete your chorus build, you will need to set the internal trimpot. While the pedal is engaged and plugged into an amplifier, turn the trimpot until you hear the effect turn on. Carefully adjust it further so that you get the cleanest, least distorted signal possible.

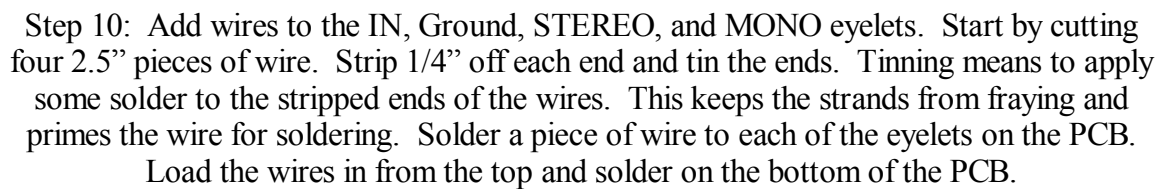


Step 7: Add the ceramic disc capacitors. These will be the small round orange caps. These are not polarized and can be inserted into the PCB in either direction.



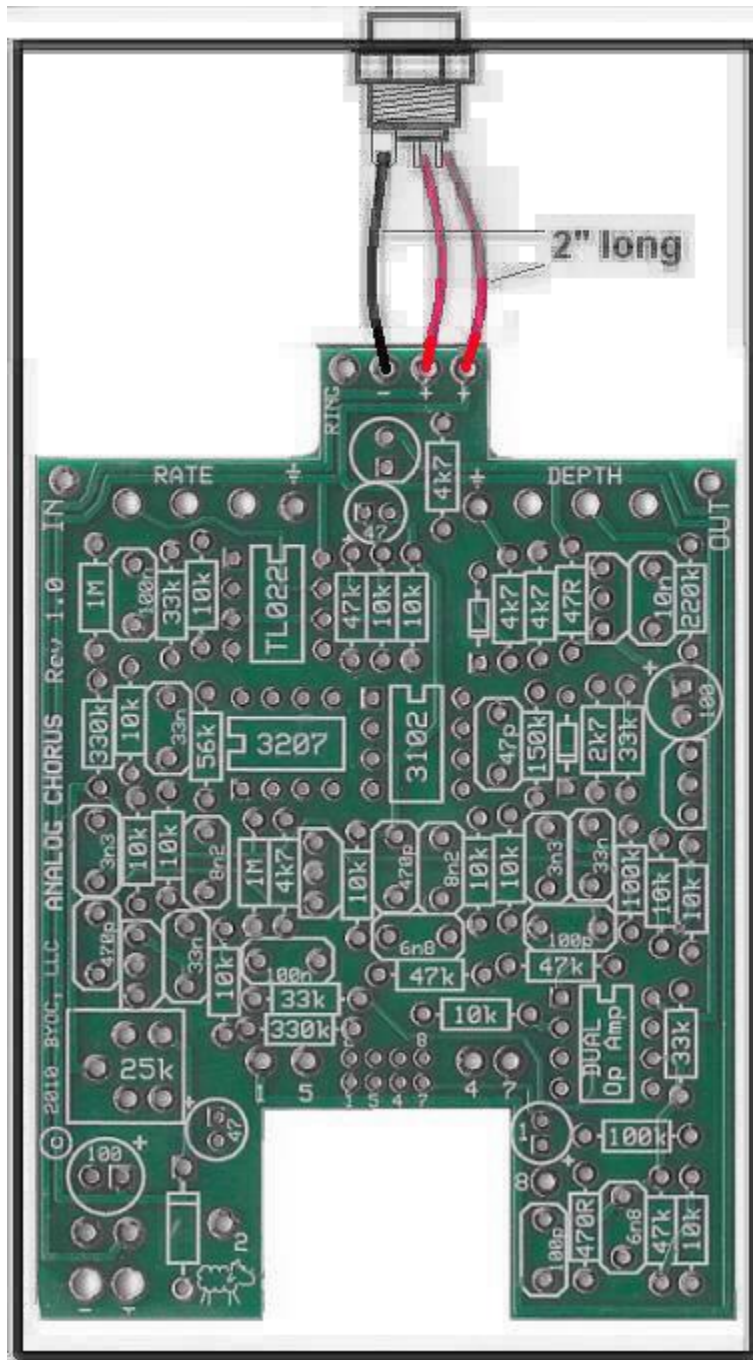
have a shorter lead with a black strip running down the body of the capacitor.



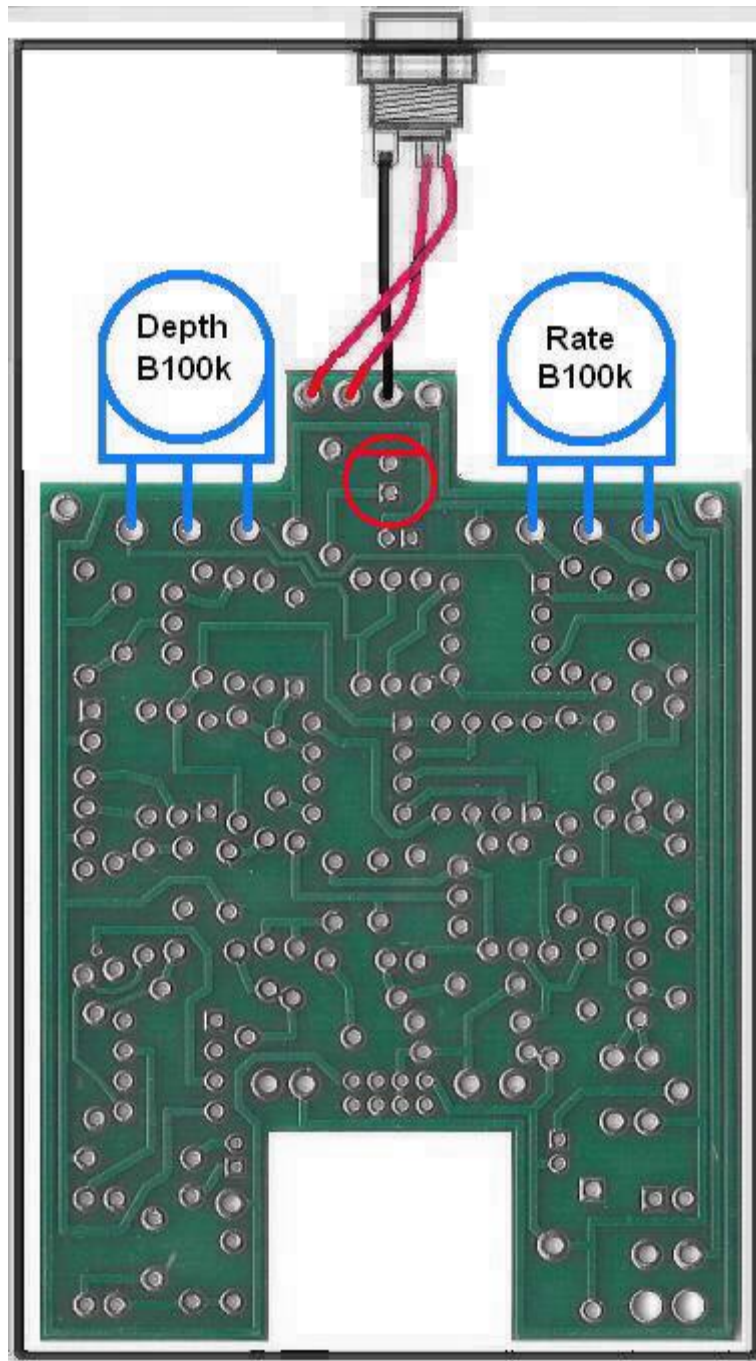


Assembly

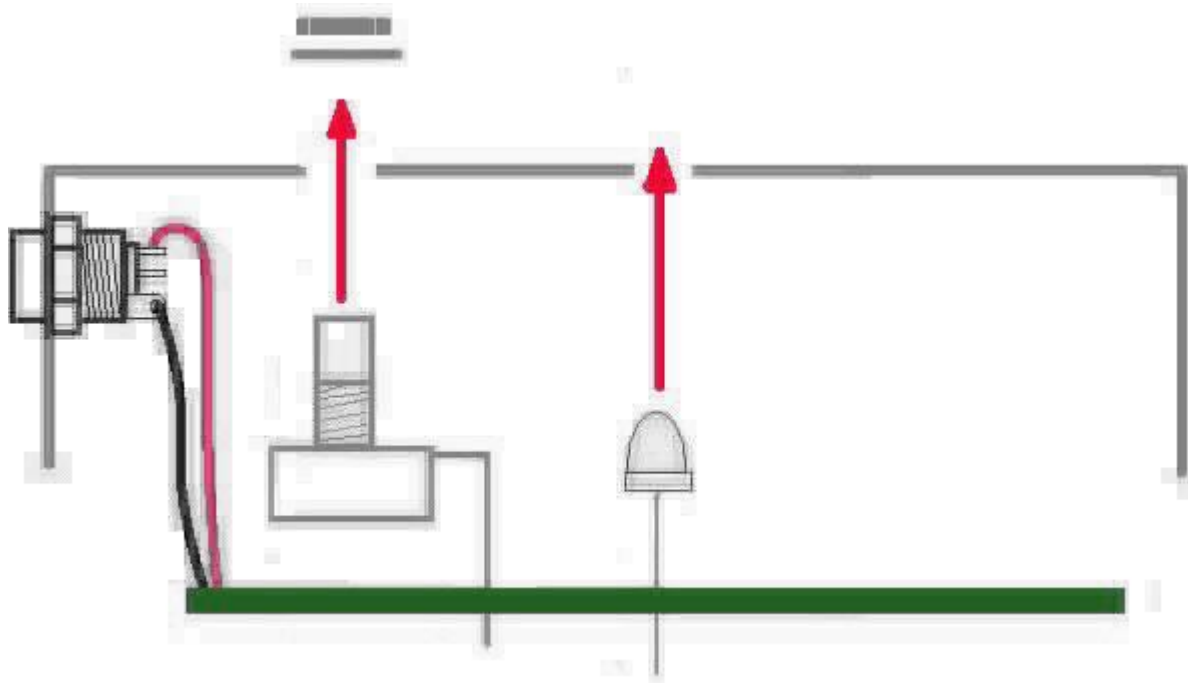
Step 1: Mount the DC adaptor jack to the enclosure.



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 (positive terminal) of the DC adaptor jack to the “+” eyelet on the far right side of the PCB with 2 inches of hook up wire.



Step 3: Flip the PCB over so that the bottom or solder side is up. Insert the two B100k(rate & depth) 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 of the square solder pad.

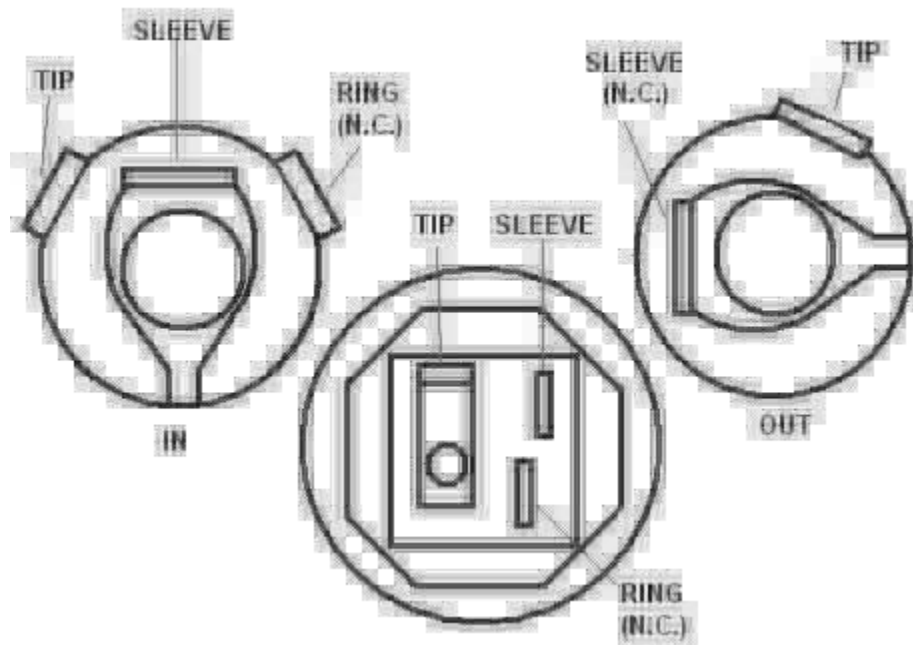


Step 4: Hold the PCB in one hand so that the component side of the PCB is in the palm of your hand and the bottom side with the pots, toggle switch and LED is facing up. Now use your other hand to guide the predrilled enclosure onto the PCB assembly so that the pots and LED all go into their respective 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 PC mounting posts of the pots and toggle switch.

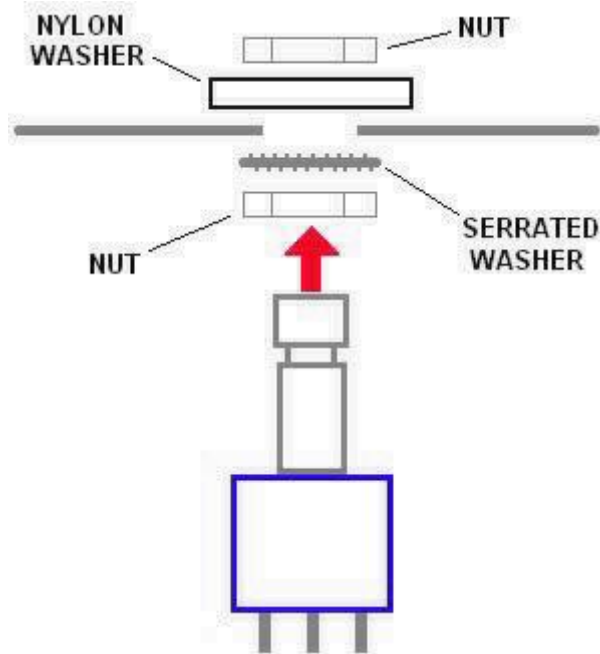
Step 5: Turn the entire pedal over so that the component side of the PCB is facing up. Lift the PCB up off the pots and toggle switch about 2mm just to make sure that the back of the PCB does not short out against that pots. Make sure the PCB is level and symmetrically seated inside the enclosure.

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



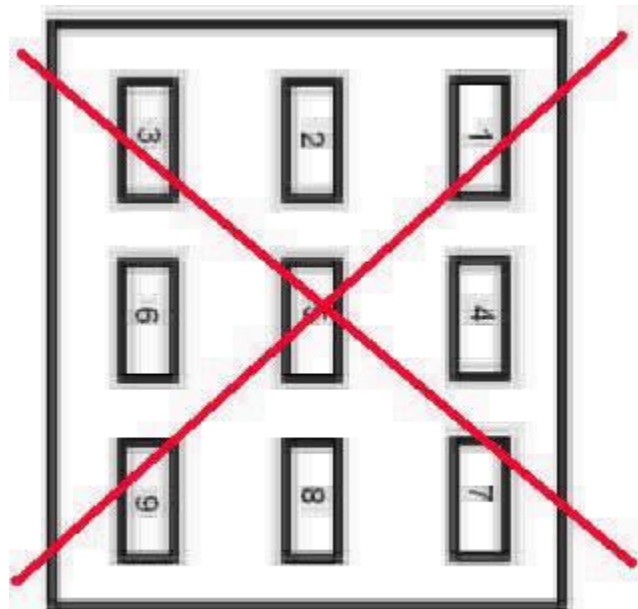
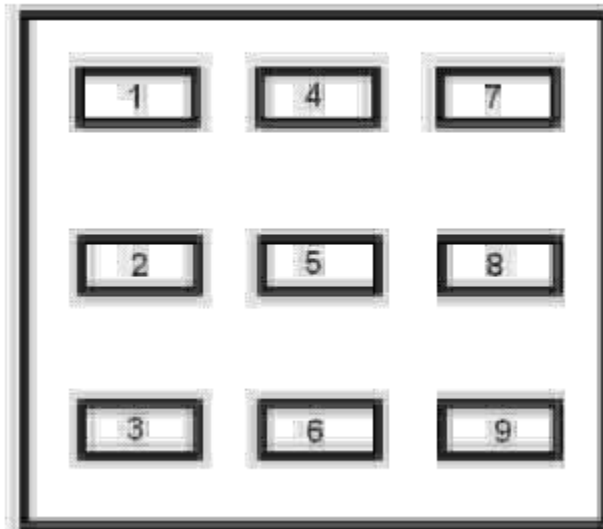
Step 1: Install the 1/4" jacks to the enclosure. Be sure to turn the OUT jack a 1/4 turn counter clockwise so that solder terminal for the tip does not short out against the enclosure.

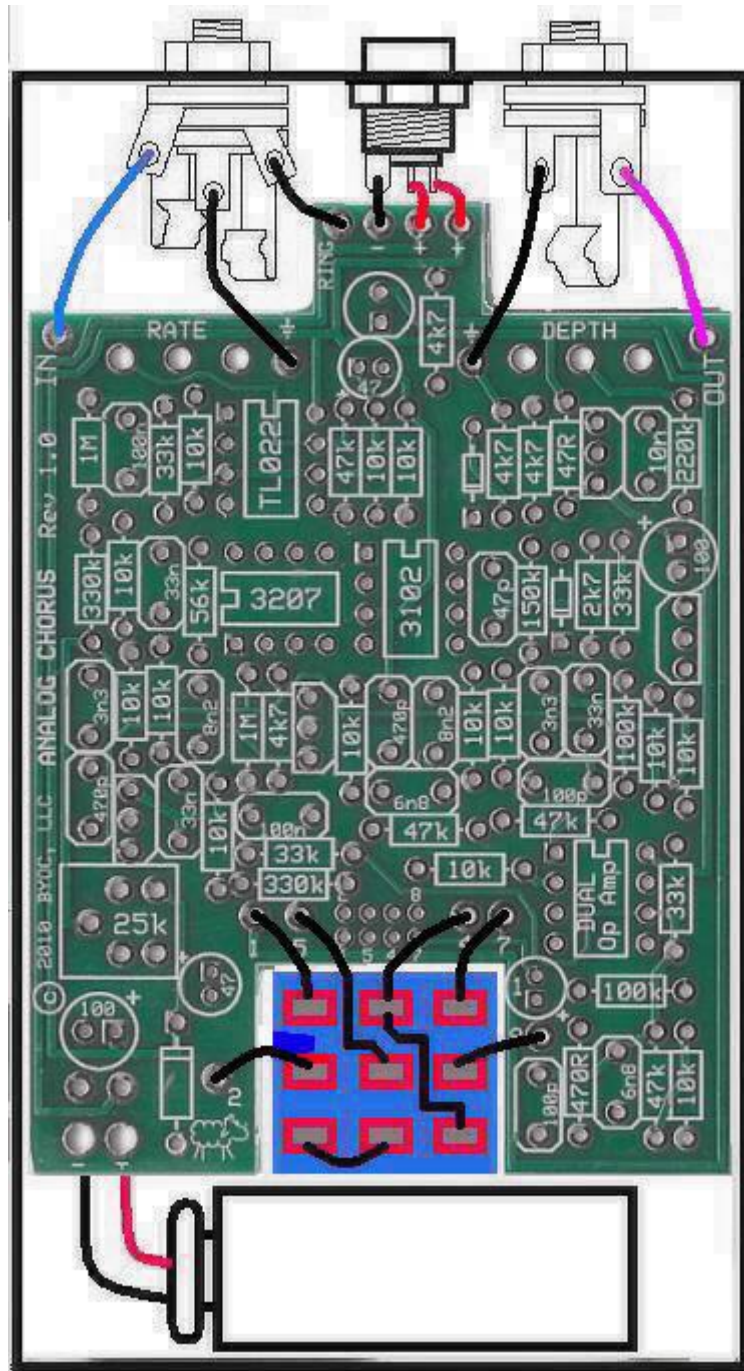


Step 2: Install the footswitch. Orient the footswitch so that the flat sides of the solder lugs are like the diagram below. NOTE: There are no actual number markings on the footswitch. There are two correct ways you can orient the footswitch. They are both 180

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.

Footswitch Solder Lug Designations





Step 3: Connect the pre stripped and tinned wires to the 1/4" jacks.

Step 4:

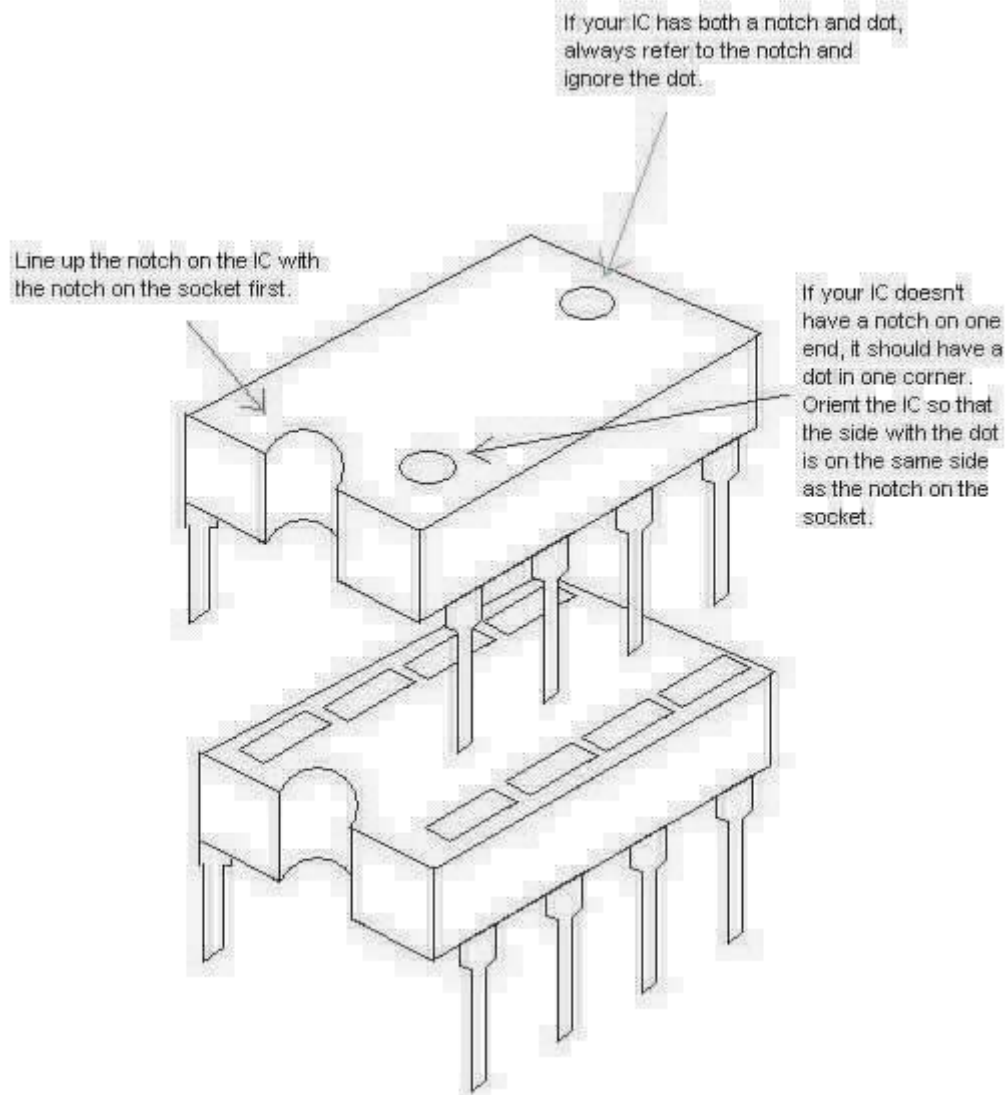
- Cut 4 x 3/4" pieces of wire. Strip 1/8" off each end. These will be used to connect lugs/eyelets 1, 2, 7, & 8
- Cut 1 x 1" piece of wire. Strip 1/8" off each end. This will be used to connect lug/eyelet 5
- Cut 1 x 1.5" peice of wire. Strip 1/8" of one end. Strip 1/2" off the other end. This will be used to connect lug/eyelet 4. The longer stripped end will be used to jumper lug 4 to 9.

- Cut 3 x 2" pieces of wire. Strip 1/4" off each end. These will be used to connect the tip and sleeve of the IN jack and the tip of the OUT jack to the PCB.
- Cut 1 x 1.5" piece of wire. Strip 1/4" off each end. This will be used to connect the ring of the IN jack to the ring eyelet on the PCB.

Step 5: Solder one end of the pre-cut and pre-stripped wires to the footswitch.

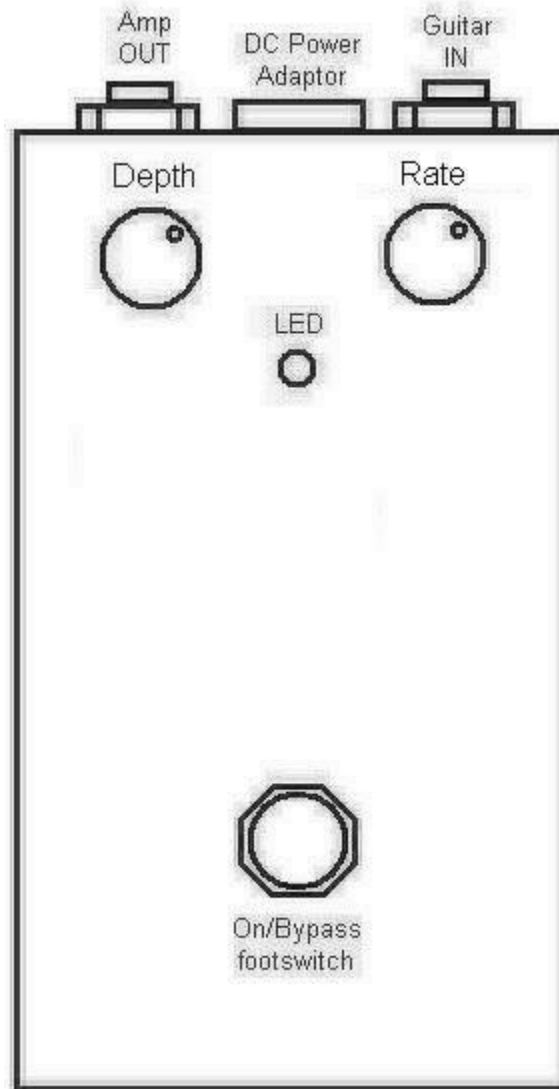
Step 6: Insert the other remaining ends of the pre-cut and pre-stripped wires into the topside of the PCB and solder. You can solder these on the topside as well. It is easier this way, but you may burn a small amount of the PVC coating on the wires. This is purely aesthetic and won't damage the wires in anyway. But you can avoid this by removing the PCB assembly and footswitch from the enclosure entirely (the PCB assembly will still be attached to the enclosure via the DC jack wiring) so that you have access to solder the underside of the PCB.

Installing the IC's and Finishing Up



Don't forget to adjust your trimpot. Then put the cover on the enclosure and apply the bumpers to the cover if you like to use them.

Operating Overview



DEPTH: Sometimes called Width or Intensity. Controls how deep the vibrato of the chorus bends pitch.

RATE: Sometimes called Speed or Frequency. Controls how fast the vibrato of the chorus bends pitch up and down.

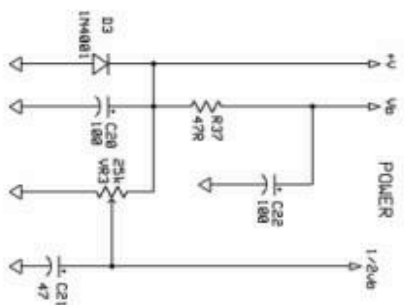
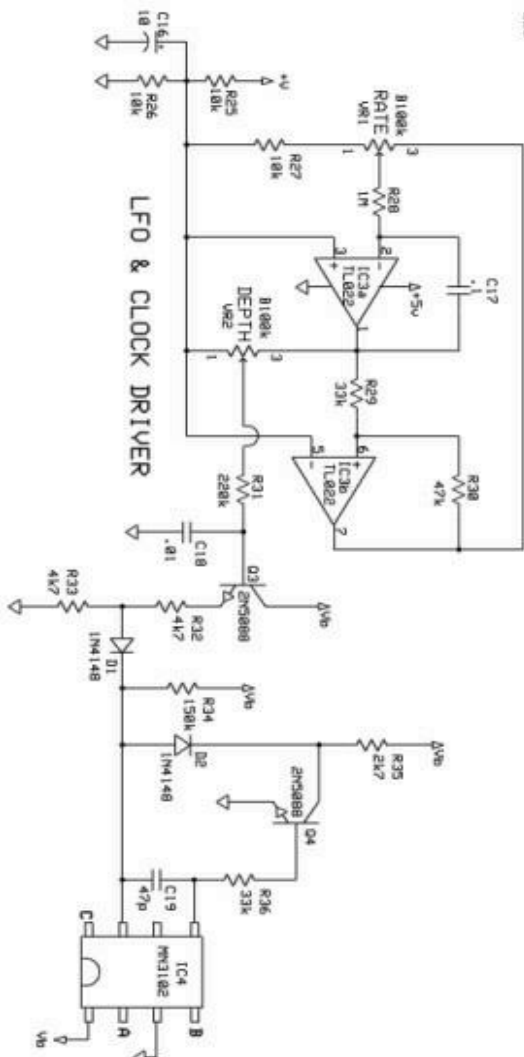
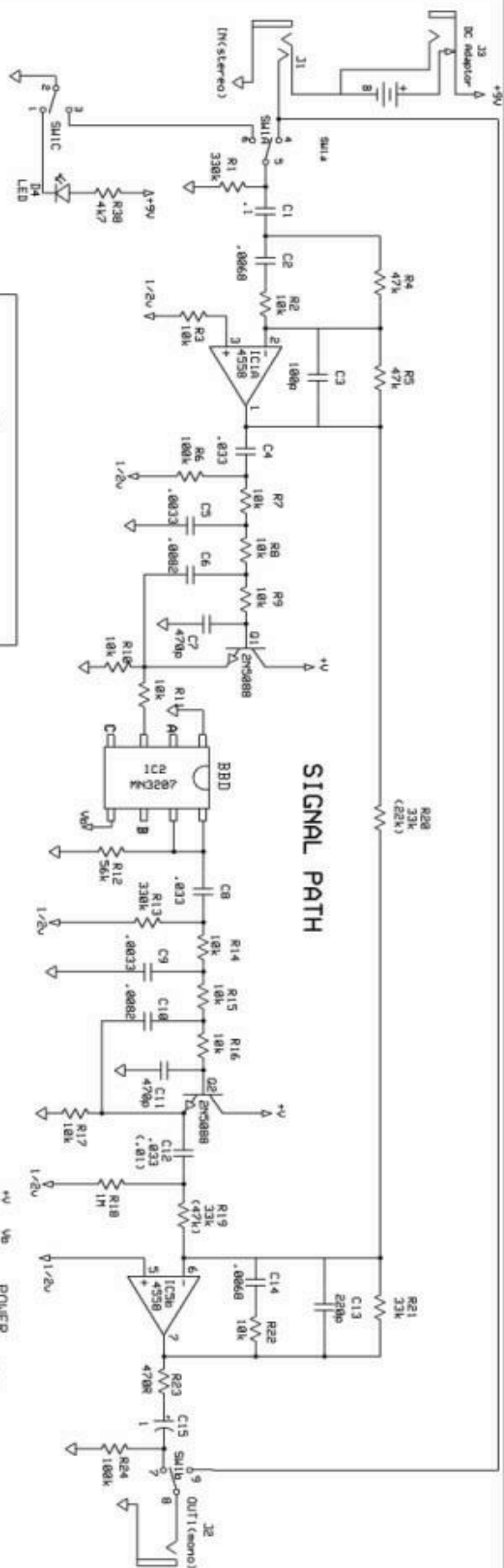
DC power supply - Use a 2.5mm negative tip 9VDC adaptor (this is your standard guitar fx style adaptor). If using battery power, only use a single 9V battery.

Current Draw - 8.5mA

Input Impedance - 330k ohms

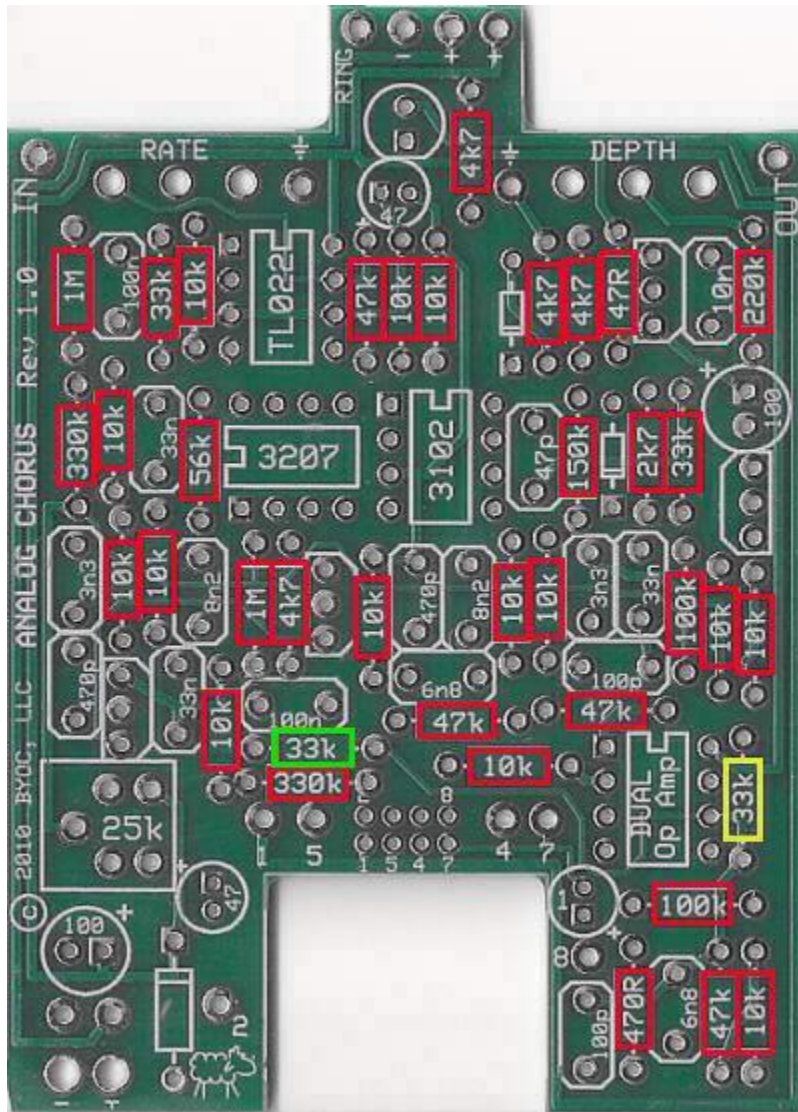
Output Impedance - 100k ohms

Go to the next page for low res schematic. Click [here](#) or go to www.buildyourownclone.com/chorusschematic.pdf for hi res schematic.



Build Your Own Clone		
Analog Chorus		
© 2018	Rev 1.0	TEK = LOML
K. Vonderhulst		

MODIFICATIONS



Wet/Dry Mix and Volume:

This was explained briefly in the bass mod in Step 2 of Populating the Circuit Board. The 33k resistor highlighted in green controls the amount of wet signal level mixing into the output buffer. The 33k resistor controls the amount of dry signal level mixing into the output buffer. Lowering the resistance will increase the levels. Increasing the resistance will lower the levels. The total resistance between the two resistors should be somewhere between 65k - 70k to maintain the overall volume level of the pedal. If you wanted to increase the overall volume of the pedal, the lower the total resistance. If you wanted to lower the overall volume of the pedal, then increase the total resistance.



Delay Time:

The 47p cap and 150k resistor highlighted in red control the delay time. Increasing the value of either of these components will increase the delay time. Possible mods would be putting several capacitor values on a switch or replacing the 150k resistor with a B500k potentiometer. Add a 47k resistor on one end of the pot as a limiting resistor.

Faster or Slower LFO:

The 100n (.1uf) cap highlighted in yellow controls the min/max speed of the Low Frequency Oscillator (LFO). Using a larger value will make the LFO go slower, but will also reduce its max speed. Using a smaller value will make the LFO go faster, but will also increase its minimum speed. A possible mod would be to put 3 capacitor values on a switch: .22uf very slow; .047uf moderate - fast speeds; .022uf ultra fast - ring mod.

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

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