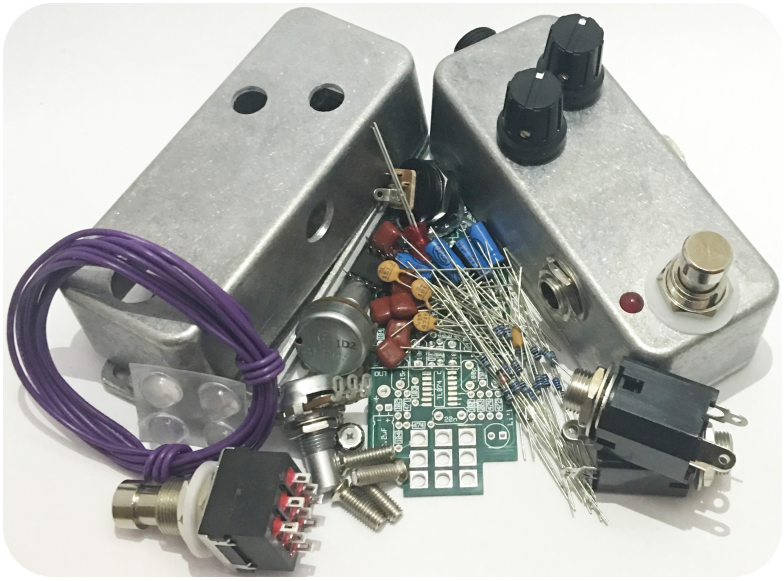
Build Your Own Clone
Li'l Analog Chorus
Kit Instructions



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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.byocelectronics.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.

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Parts Checklist for the Li'l Analog Chorus Kit

Resistors

1 - 47 Ohm/47	(Yellow/Purple/Black/Gold/Brown)
2 - 470 Ohm/471	(Yellow/Purple/Black/Black/Brown)
3 - 1k/102	(Brown/Black/Black/Brown/Brown)
2 - 4k7 /472	(Yellow/Purple/Black/Brown/Brown)
9 - 10k/103	(Brown/Black/Black/Red/Brown)
1 - 12k/123	(Brown/Red/Black/Red/Brown)
1 - 39k/393	(Orange/White/Black/Red/Brown)
1 - 47k/473	(Yellow/Purple/Black/Red/Brown)
1 - 56k/563	(Green/Blue/Black/Red/Brown)
1 - 68k/683	(Blue/Gray/Black/Red/Brown)
1 - 82k/823	(Gray/Red/Black/Red/Brown)
1 - 100k/104	(Brown/Black/Black/Orange/Brown)
1 - 120k/124	(Brown/Red/Black/Orange/Brown)
1 - 180k/184	(Black/Gray/Black/Orange/Brown)
1 - 330k/334	(Orange/Orange/Black/Orange/Brown)
3 - 470k/474	(Yellow/Purple/Black/Orange/Brown)

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

Capacitors:

1 - 100pF Ceramic Disc capacitor (round yellow with '101' on the body)
1 - 150pF Ceramic Disc capacitor (round yellow with '151' on the body)
2 - 560pF Ceramic Disc capacitor (round yellow with '561' on the body)
2 - 4n7/.0047uF Film cap (May say "472" on the body)
2 - 10n/.01uF Film cap (May say "103" on the body)
2 - 15n/.015uF Film cap (May say "153" on the body)
1 - 22n/.022uF Film cap (May say '223' on the body)
1 - 47n/.047uF Film cap (May say "473" on the body)
1 - 100n/.1uF Film cap (May say "104" on the body)
2 - 2.2uF Aluminum Electrolytic
3 - 10uF Aluminum Electrolytic

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

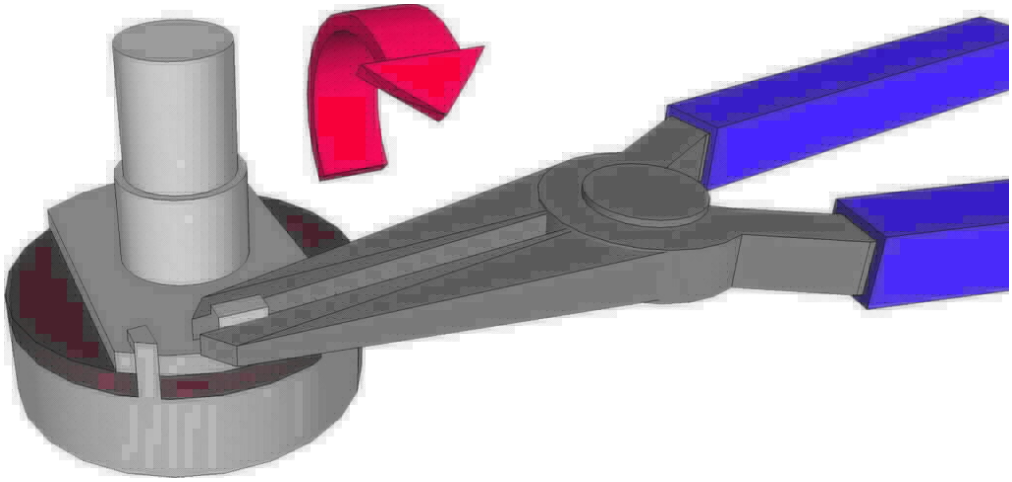
Diodes:

1 - 1N4148

IC:

1 - MN3007 (Through-hole)
1 - CD4047 (SMT)
1 - TL074 (SMT)
1 - LM358 (SMT)

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



1 - B10k (DEPTH)
1 - C1M (RATE)
1 - 100k Trimpot

Hardware:
1 - predrilled enclosure w/ 4 screws
1 - Li'l Analog Chorus PCB
1 - 3pdt footswitch
2 - enclosed Jacks
4 - rubber bumpers
2 - lock washers (for in and out jacks)
hook-up wire

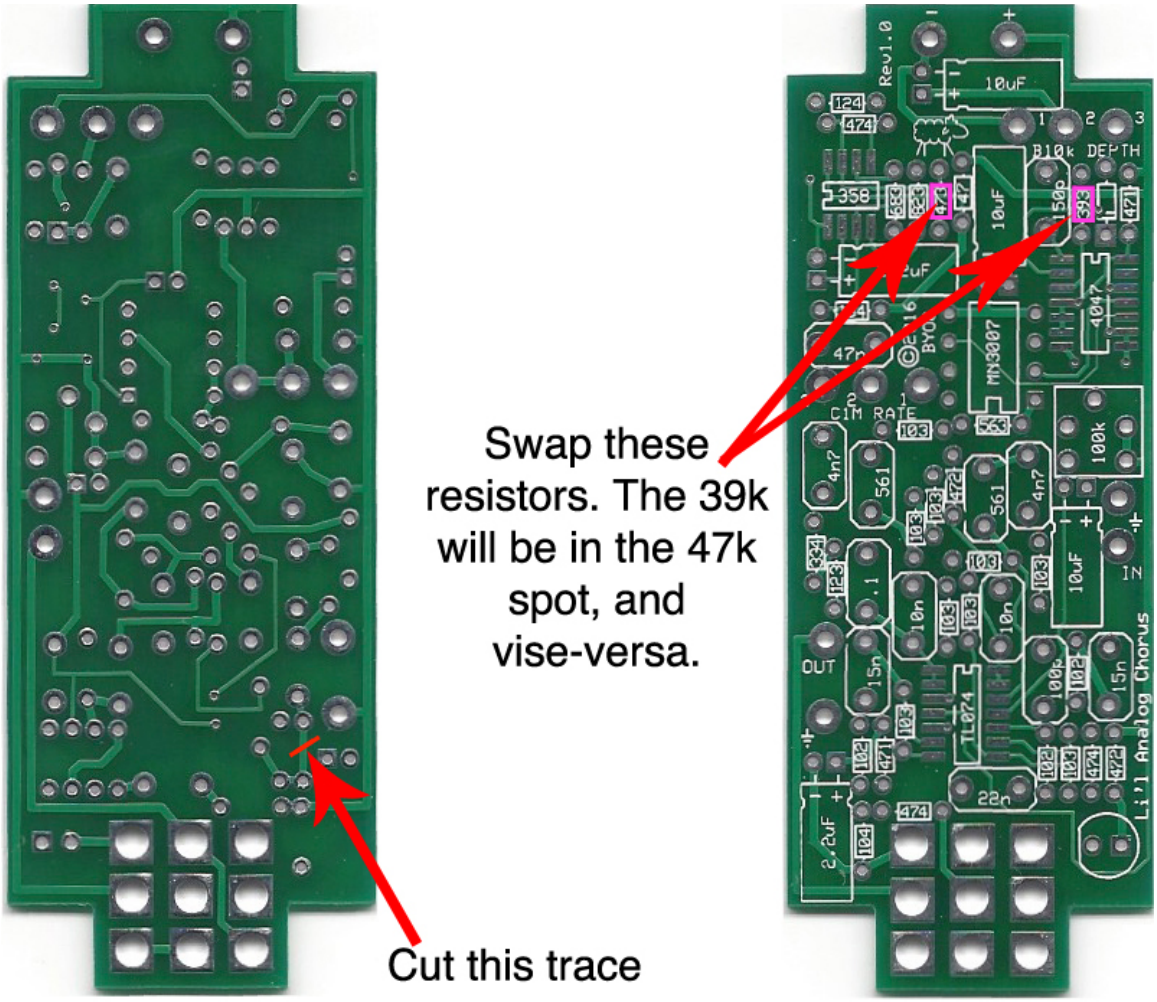
Your build should look similar to this when you're finished.

Before You Begin:

There are a couple issues with the current batch of PCBs. This section will let you know about them.

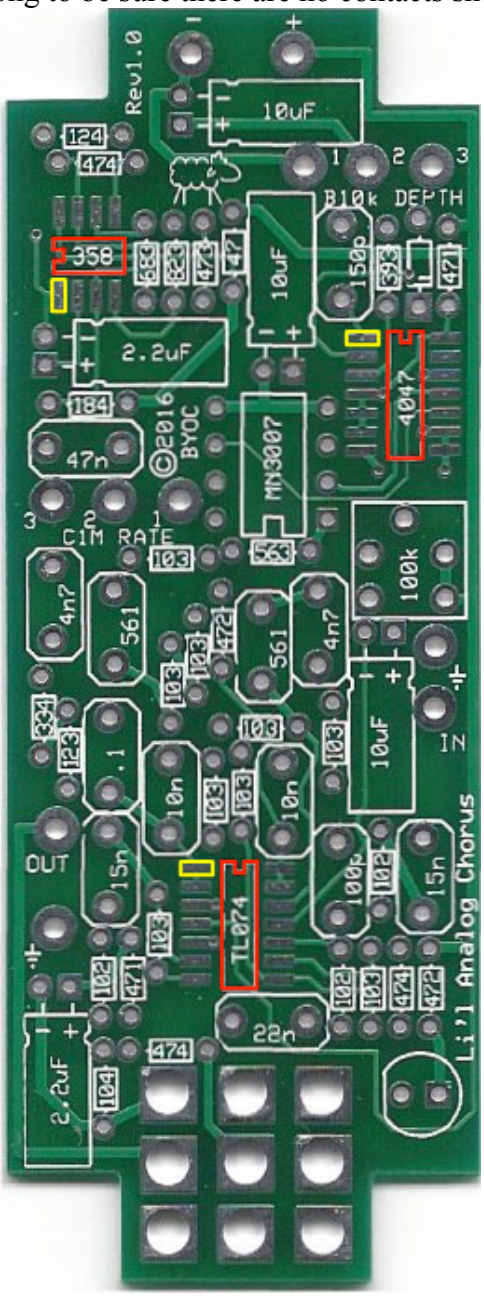
There is a trace on the back-side of the PCB that needs cut. We have gone through and cut the trace on all the PCBs that we have. If your PCB doesn't have a cut on the trace shown, simply cut it.

There is also a resistor swap. You will swap the resistor values shown below.



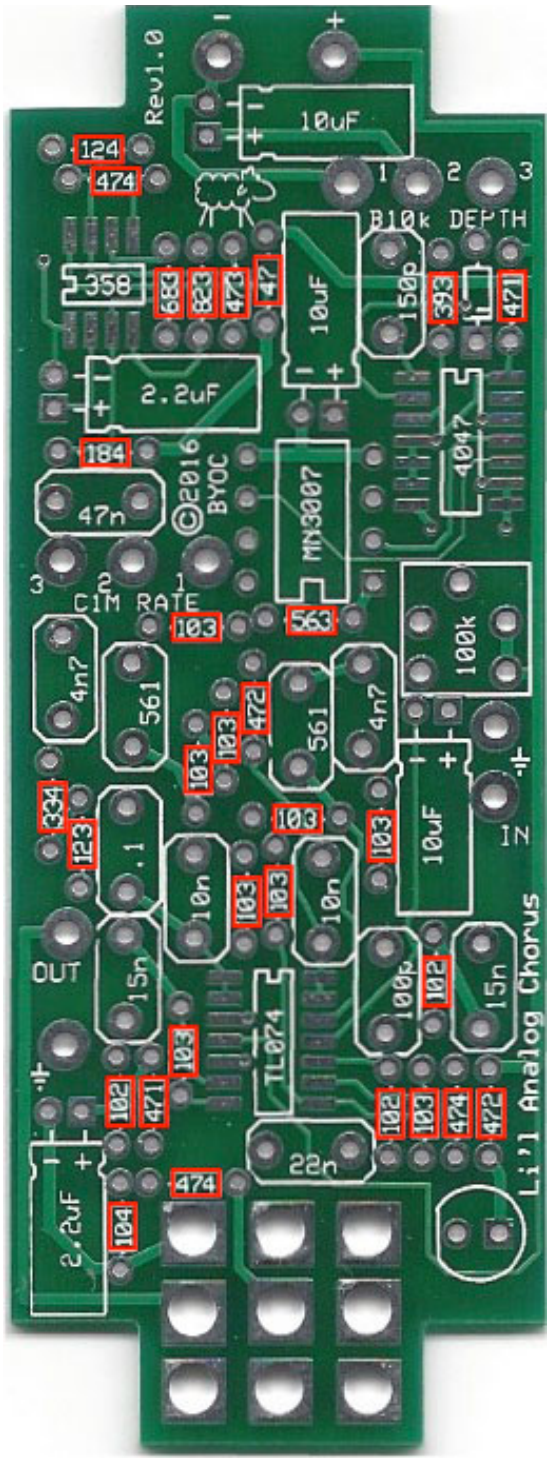
Populating the Circuit Board

Step 1: Add the TL074, LM358, and CD4047 chips. This is a very delicate procedure. Be sure you line up the pins as exact as you can. Be sure to look very closely at the solder connections as you go along to be sure there are no contacts shorting against each other.



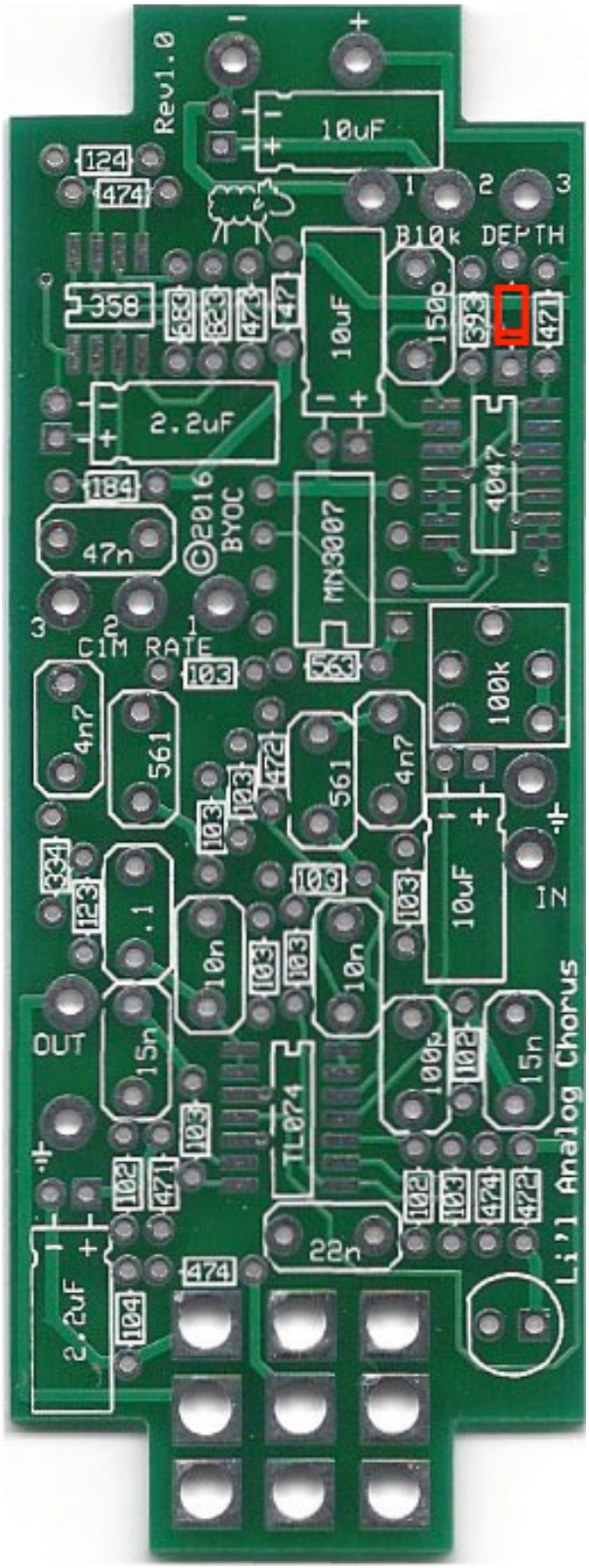
Installation note: If you decided to add the SMD chips yourself, you will want to pay attention to the orientation of the chips. The PCB has the orientation indicated; the yellow outlined pad is pin 1. Look at your chips and there will be an orientation indicator; the indicator could be a dot, a u-shaped notch, or a solid line running from the first pin to the last. If there is both a dot and a u-shaped notch, use the u-shaped notch. If you are not sure, don't add the chip, head to the forum http://byocelectronics.com/board and make sure. Once the SMD chips are mounted, they are incredibly difficult to remove.

Step 2: Add all the resistors. Resistors are not polarized and can be inserted in either direction.

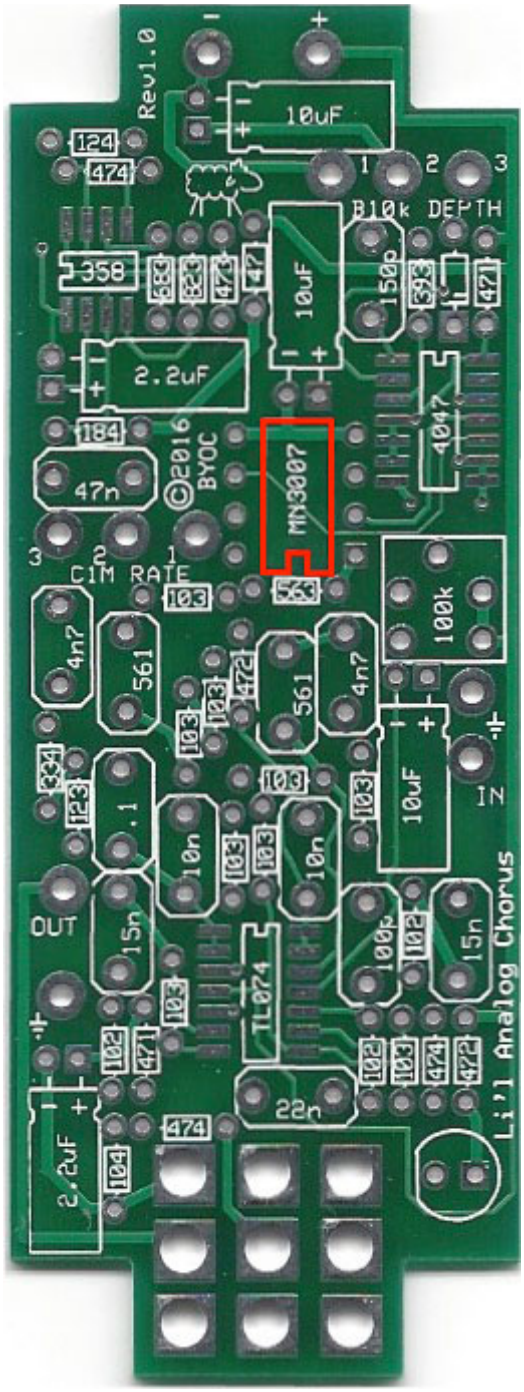


Note: Remember the 47k ←→ 39k swap.

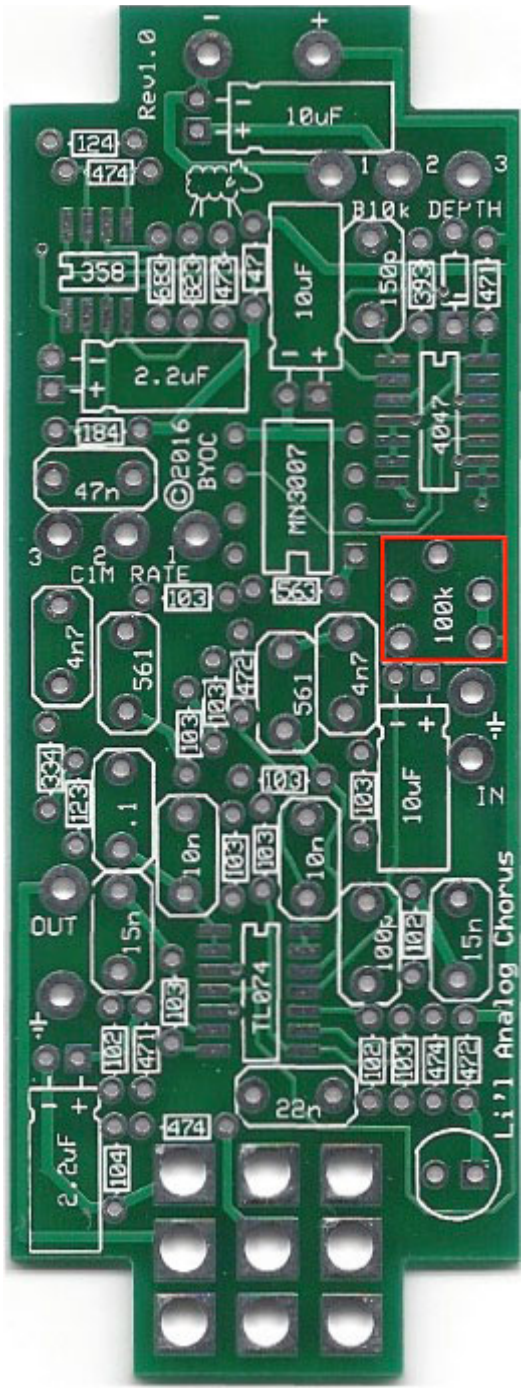
Step 3: Add the diode. Be sure to match the end of the diode with the stripe to the layout on the PCB. The striped end should go in the square solder pad.



Step 4: Add the through-hole IC. Be sure to orient it correctly. There may be a notch on the IC between pins 1 and 8. Line that up with the screenprint on the PCB. If your IC does not have a notch, look for a dot to indicate pin 1. Pin one on the PCB will be a square hole.

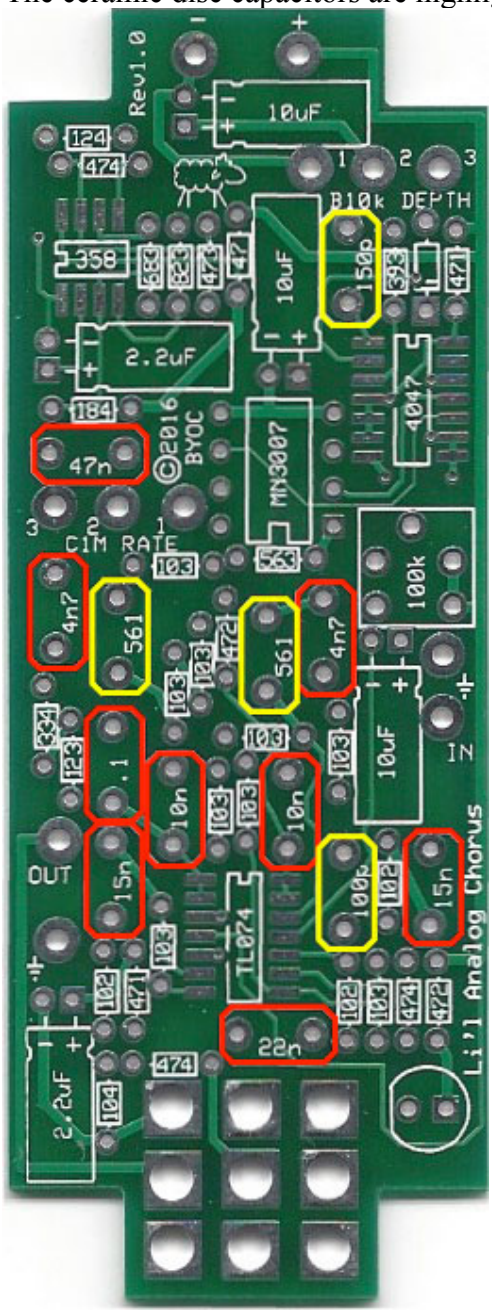


Step 5: Add the trimpot. There are five holes on the PCB, but your trimpot will only use three of them.

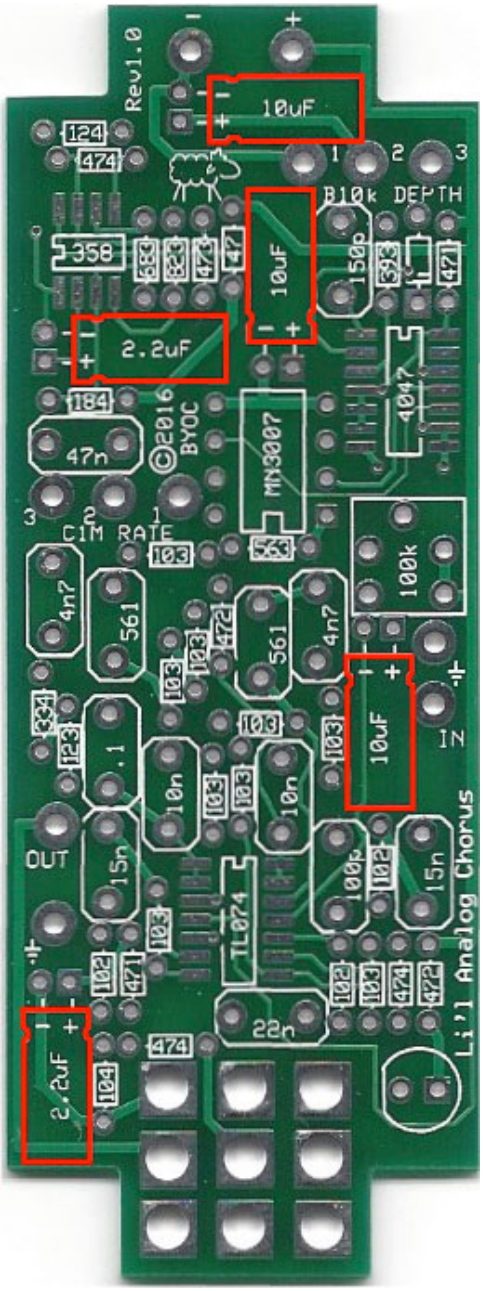


How to set the trimpot: After you finish your build, you will need to adjust the trimpot until you get the best chorus sound possible. First, set the trimpot to the middle of its rotation, and make slight adjustments until you hear the chorus effect. There will be a part of the sweep that will allow you to hear the chorus effect; within that window is where you want to set your trimpot. Use your ears to find the 'sweet spot'.

Step 6: Add the film and ceramic disc capacitors. These are non-polarized and can go in either direction. The ceramic disc capacitors are highlighted in yellow.

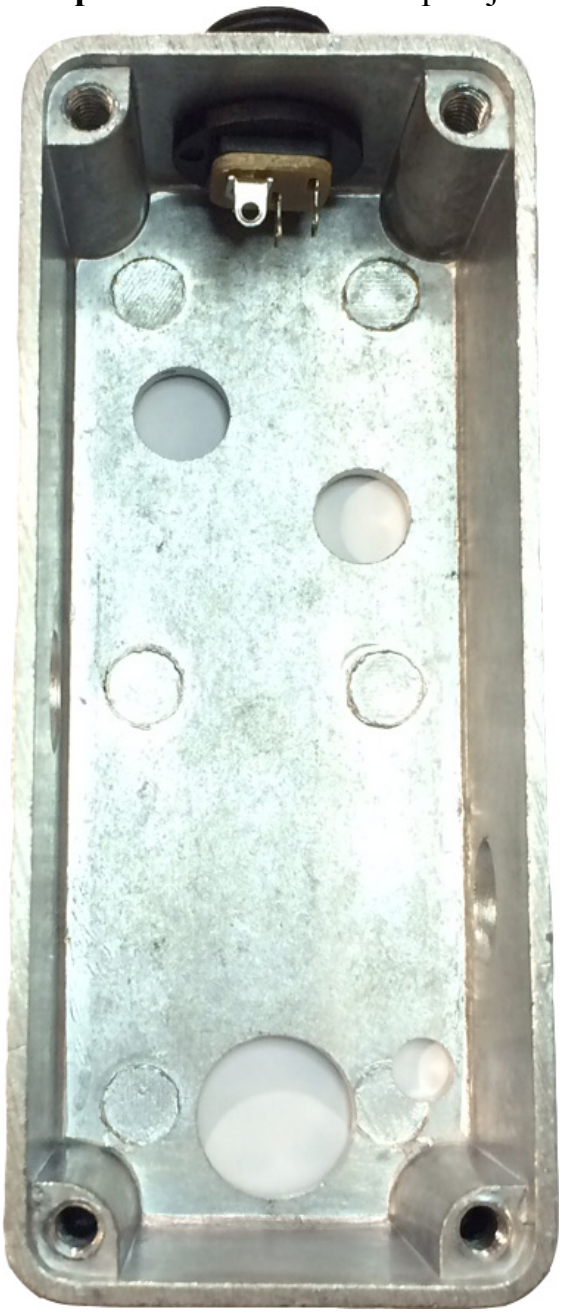


Step 7: Add the aluminum electrolytic capacitors. These ARE polarized, meaning there is a positive and negative end. The positive side will have a longer lead and goes in the square solder pad. The negative side will have a shorter lead and a stripe running along the body of the cap, and goes in the round solder pad. Before soldering, bend the capacitor so it is laying down like below.

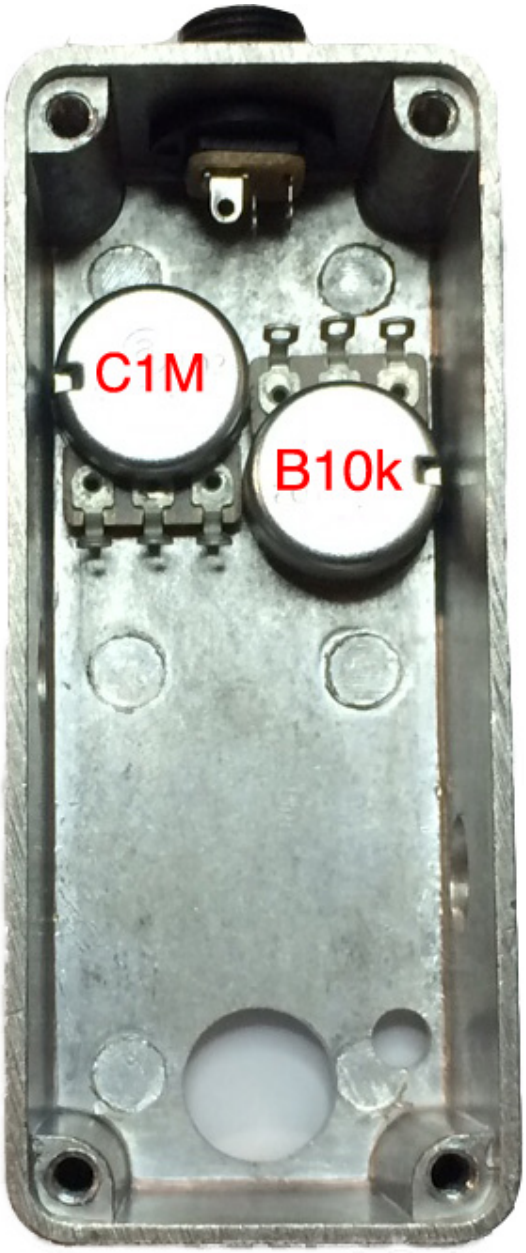


Enclosure Hardware Assembly

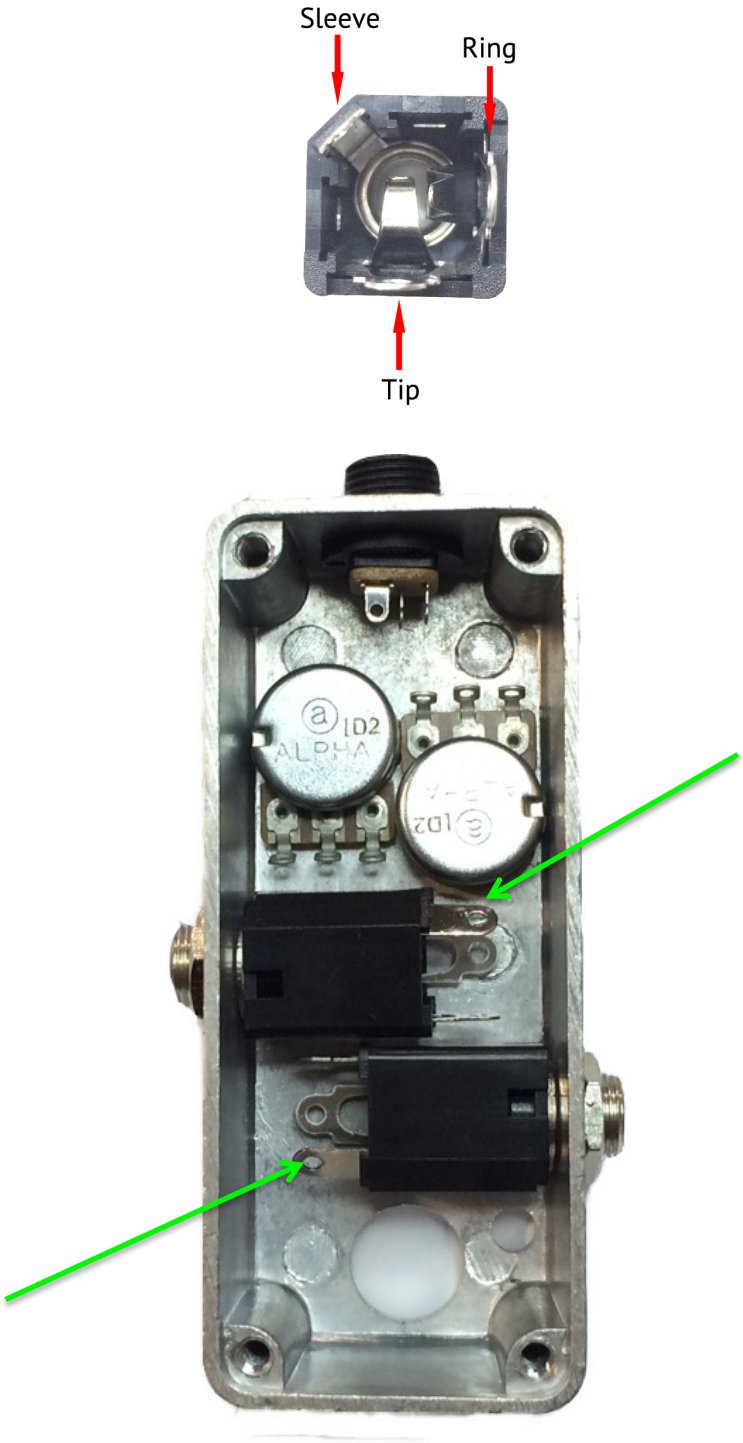
Step 1: Mount the DC adapter jack.



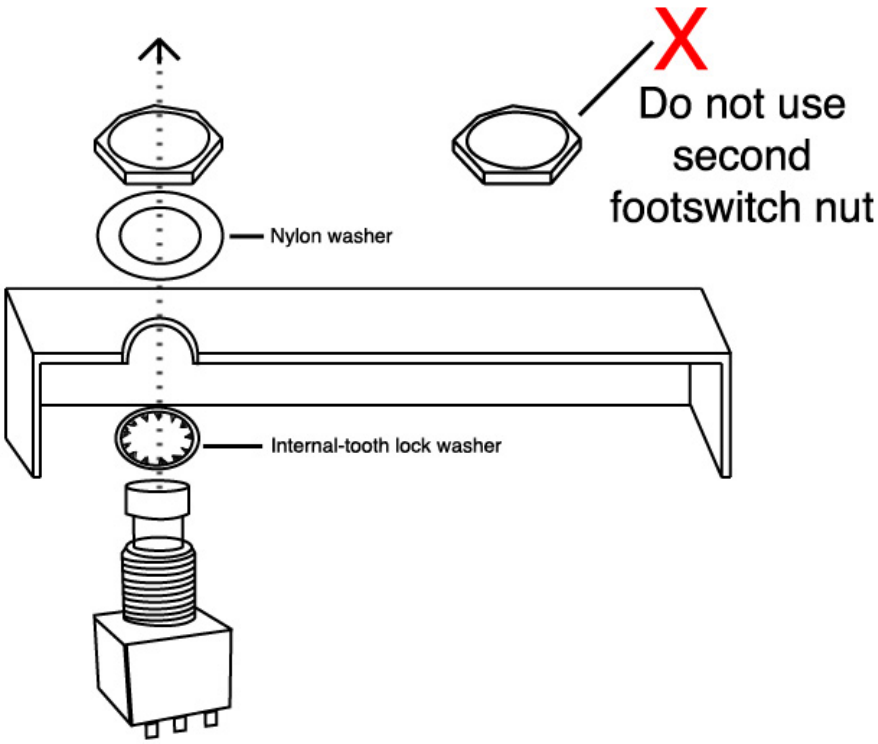
Step 2: Mount the potentiometers. You will mount the right potentiometer with the solder lugs facing towards the DC Jack, and the left potentiometer with the solder lugs facing the footswitch as shown below.



Step 3: Mount the Audio Jacks. You want to orient them so that the SLEEVE terminals (beveled corner of the jack) are facing away from each other. If looking at the inside of the enclosure, the INPUT jack will have its sleeve terminal facing towards the AC jack. The OUTPUT jack will have its sleeve terminal facing towards the footswitch hole. The green arrows are pointing at the sleeves.



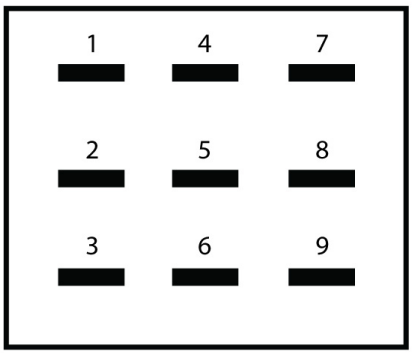
Step 4: Remove both nuts from the footswitch and mount the footswitch.

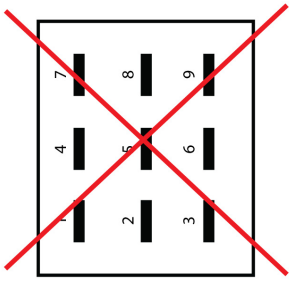


Orient the footswitch so that the flat sides of the solder lugs are like the diagram below.

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

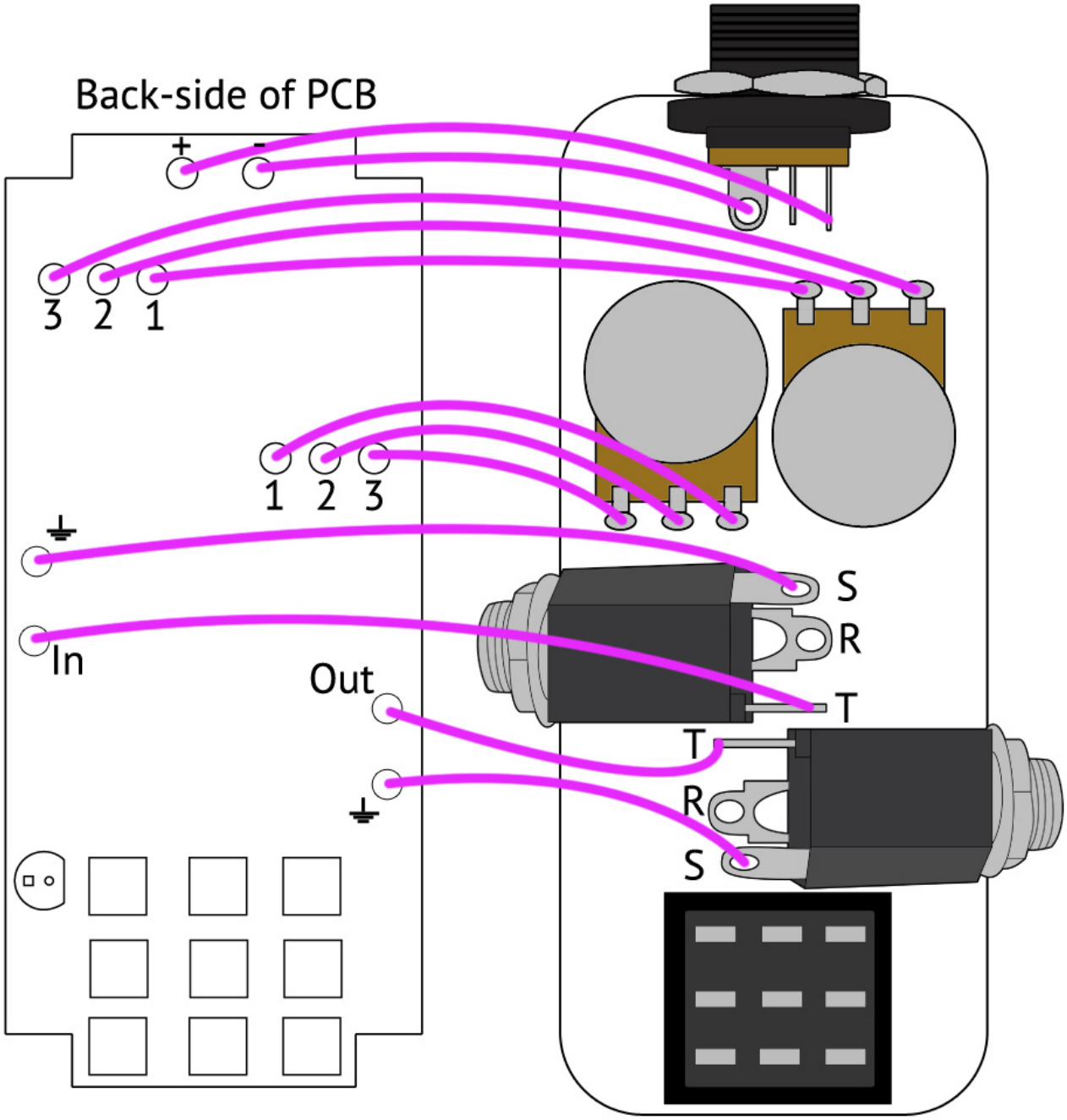




Wiring

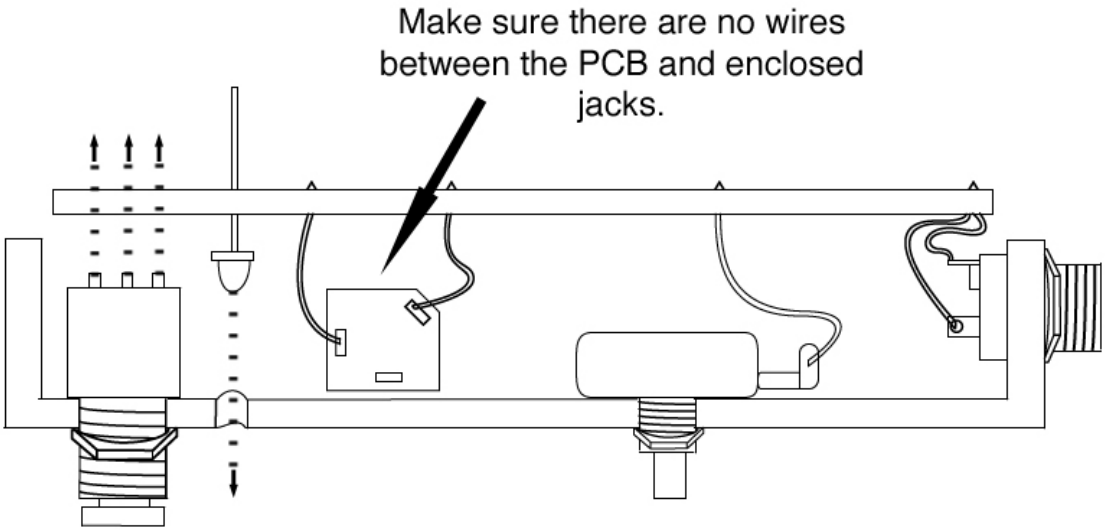
FLIP PCB OVER!!!

STEP 1: Wire the PCB as shown in the diagram below. Make all connections to the back side of the PCB and solder on the top (screen printed) side of the PCB. Make the wires as short as possible but allow enough length so that if you need to do any trouble shooting later, you will be able to do so without having to remove all the enclosure mounted components.



Step 2: Once the AC jack, potentiometer, and IN/OUT jacks are wired, insert the LED in its hole. **Insert the long lead into the square hole!!!** You might want to slightly bend the leads away from each other to keep them in the holes for now. DO NOT SOLDER YET

Step 3: Flip the PCB right-side-up, tuck the wires into the enclosure, and place the PCB onto the footswitch. DO NOT SOLDER YET!!!!!



Buffalo Bill says, “Be sure to tuck really well!”

It is extremely important that when you place the PCB on the footswitch, you make sure to tuck all the wires out of the way so that that PCB can rest flush against the enclosed jacks and footswitch.

Step 4: Solder ONLY 1 of the footswitch lugs.

Your PCB should be recessed inside the enclosure about 1cm. It should be level.

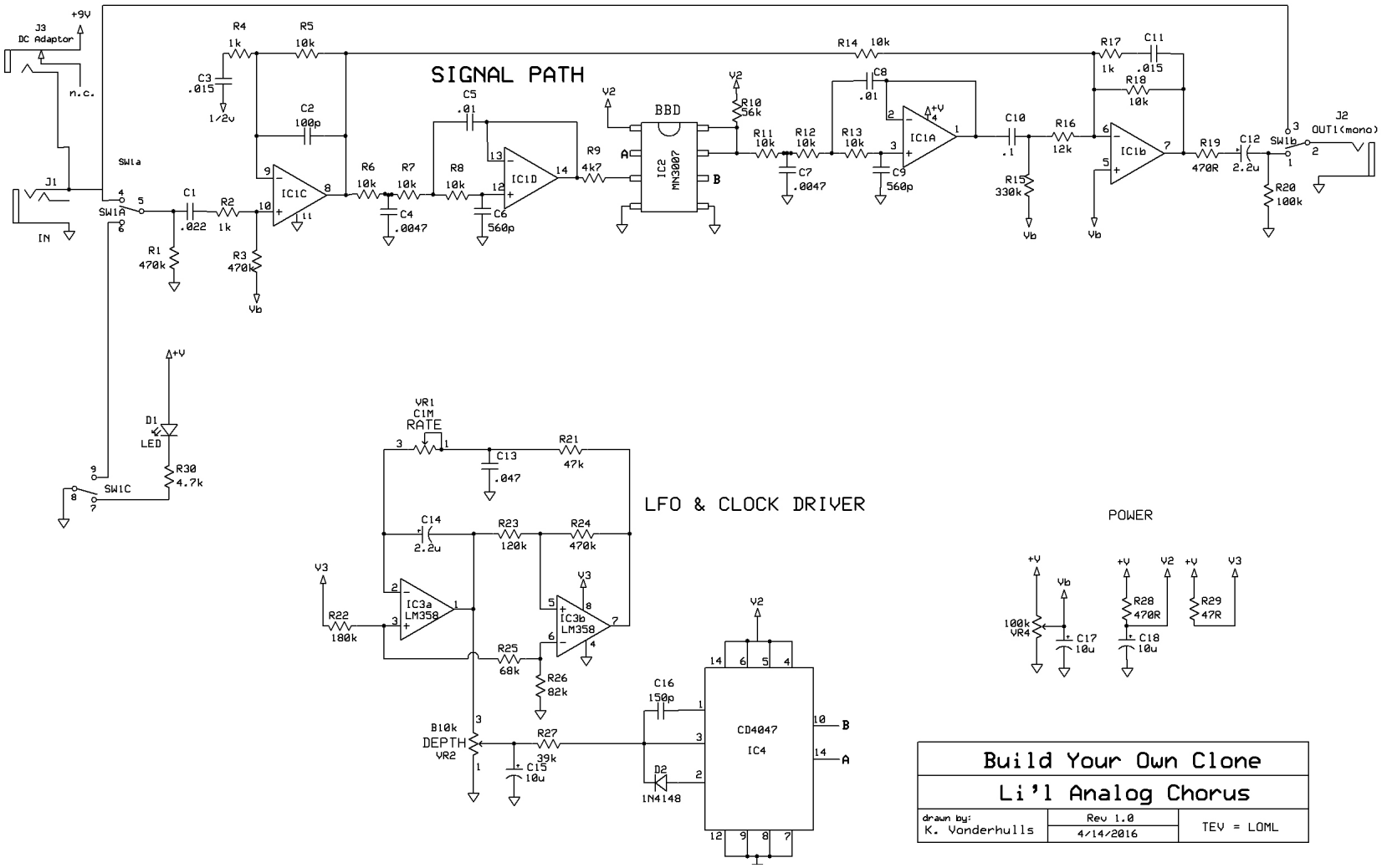
Some of your components may be sticking up out of the enclosure just a bit, particularly the film capacitors. This is to be expected. This is OK. The lid has a deep recess.

If you need to adjust the position of the PCB so that it fits correctly, reheat the single solder joint you just made on the footswitch. Adjust the position of the PCB while the keeping the solder joint hot. Remove the heat and hold the PCB in position while allowing the solder joint to cool completely. Now solder the rest of the footswitch lugs.

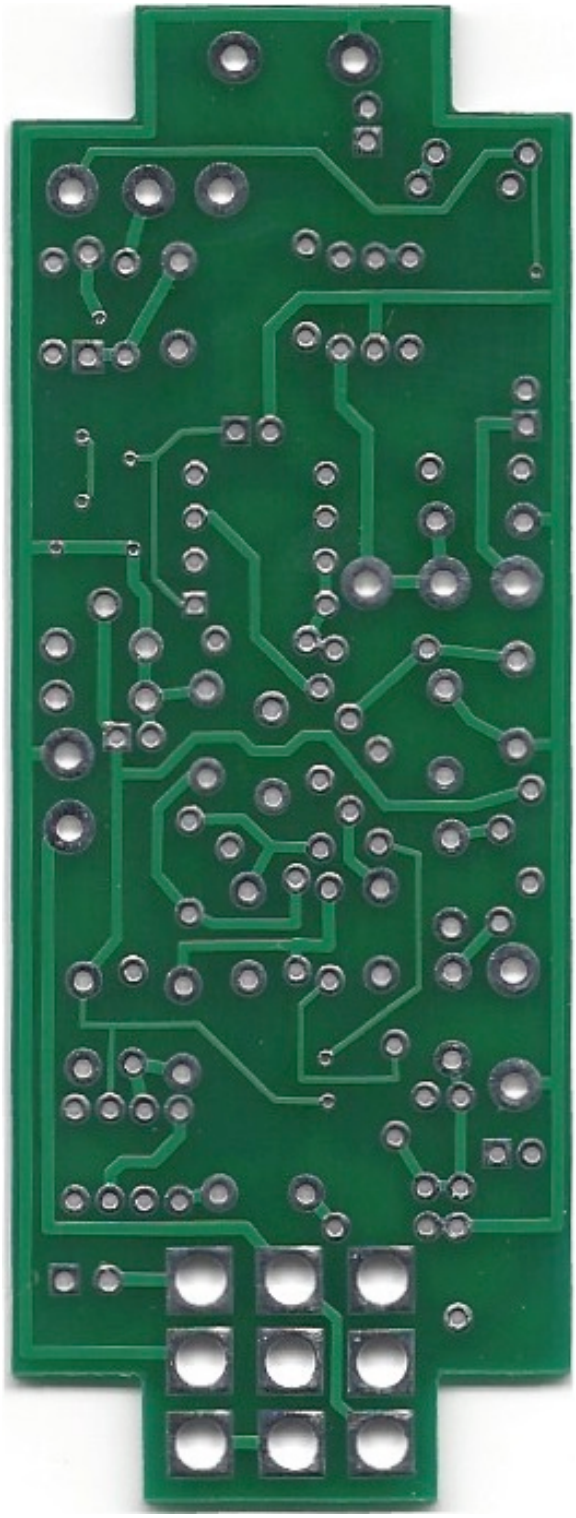
Step 5: Once you have your PCB positioned and soldered, guide the LED into its enclosure hole using the leads that are sticking up through the PCB. Once the LED is in position, solder and trim the excess leads.

Operating Overview

DEPTH: Control the intensity of the chorus effect.
RATE: Controls the speed of the chorus effect.
Power supply: 2.1mm negative tip.
Current Draw: 7.5mA
Input Impedance: 470k ohms
Output Impedance: 100k ohms


SIGNAL PATH
LFO & CLOCK DRIVER
POWER
J3
DC Adaptor
+9V
n.c.
J1
IN
SW1a
SW1b
SW1C
J2
OUT1(mono)
R1 470k
R2 1k
R3 470k
R4 1k
R5 10k
R6 10k
R7 10k
R8 10k
R9 4k7
R10 56k
R11 10k
R12 10k
R13 10k
R14 10k
R15 330k
R16 12k
R17 1k
R18 10k
R19 470R
R20 100k
R21 47k
R22 180k
R23 120k
R24 470k
R25 68k
R26 82k
R27 39k
R28 470R
R29 47R
R30 4.7k
C1 .022
C2 100p
C3 .015
C4 .0047
C5 .01
C6 560p
C7 .0047
C8 .01
C9 560p
C10 .1
C11 .015
C12 2.2u
C13 .047
C14 2.2u
C15 10u
C16 150p
C17 10u
C18 10u
IC1C
IC1D
IC1A
IC1b
IC2 MN3007
BBD
IC3a LM358
IC3b LM358
IC4 CD4047
D1 LED
D2 1N4148
VR1 C1M RATE
B10k DEPTH VR2
100k VR4
Vb
V2
V3
+V
1/2v
Build Your Own Clone
Li'l Analog Chorus
drawn by: K. Vanderhulls
Rev 1.0
4/14/2016
TEV = LOML

PCB Back Trace Photo



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