Digital Delay Kit Instructions
(bezel free version)

If your kit contains an LED bezel use
www.buildyourownclone.com/delayinstructionsbezel.pdf

Parts Checklist…….....…….page 2 - 3

Populating the circuit board…….....page 4 - 7

Assembling the Enclosure…….....page 8 - 9

Wiring.....page 10

Installing the LED and Mounting the Circuit Board.....page 11 - 12

Finishing up & Trouble Shooting…….....page 13

Parts Checklist for Digital Delay Kit

.

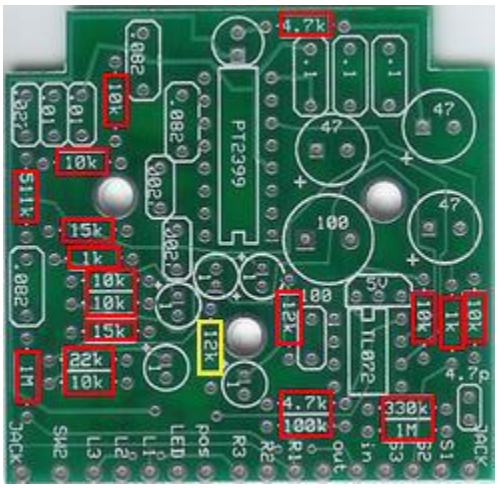
Resistors:
NOTE: All 1% metal film resistors will have a brown stripe at one end.
2 1k resistors (brown/black/black/brown)
2 4.7k resistors (yellow/purple/black/brown)
7 10k resistors (brown/black/black/red)
2 12k resistors (brown/red/black/red)
2 15k resistors (brown/green/black/red)
1 22k resistor (red/red/black/red)
1 100k resistor (brown/black/black/orange)
1 330k resistor (orange/orange/black/orange)
1 511k resistor (green/brown/brown/orange)
2 1M resistor (brown/black/black/yellow)

Capacitors
1 4.7pF ceramic disc capacitor (small round orange)
1 100pF ceramic disc capacitor (small round orange)
2 .0027uf film capacitors (272k)
2 .01uf film capacitors (103k)
1 .027uf film capacitor (273k)
3 .082uf film capacitors (823k)
3 .1uf film capacitors
5 1uf aluminum electrolytic caps
3 47uF aluminum electrolytic caps
1 100uf aluminum electrolytic cap

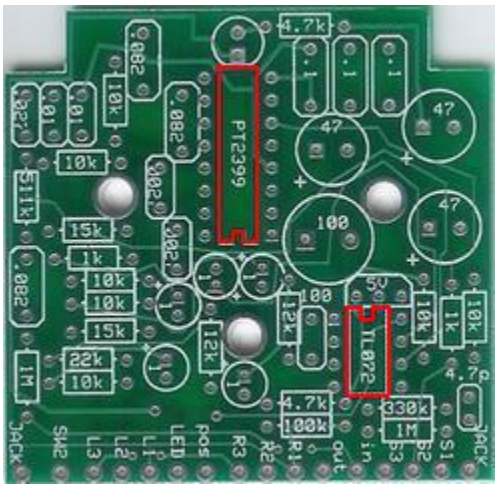
Semi-Conductors:
1 pt2399 IC
1 16 pin socket
1 TL072 op amp
1 5v Regulator (looks like a transistor)

Hardware:
1 Stereo 1/4" jack
1 Mono 1/4" jack
2 100k potentiometer (blend & repeats)
1 25k potentiometer (delay time)
1 3PDT footswitch
1 Red LED
1 AC adaptor jack
3 Black knobs
3 Self-adhesive circuit board stand-offs
1 Battery snap
4 Self-adhesive rubber feet
Hook-up Wire

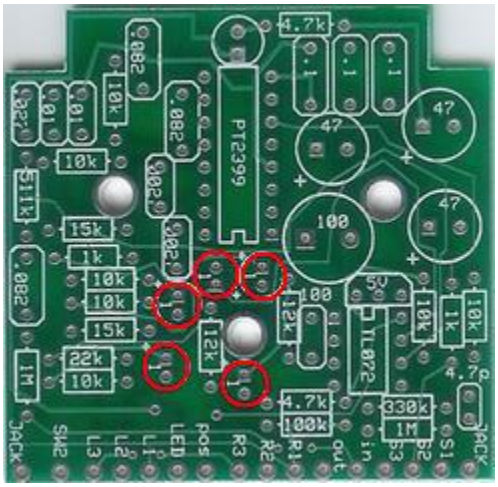
Populating the circuit board



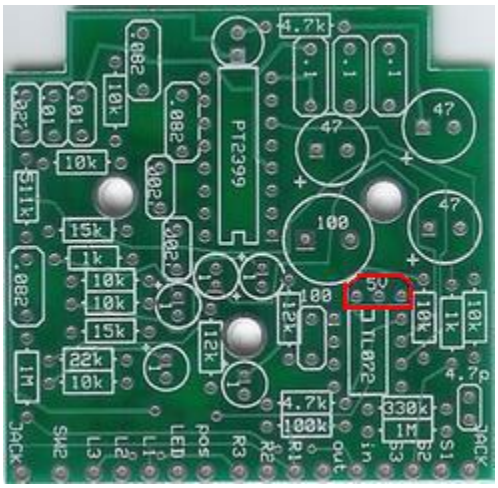
Step 1: Add all of the resistors. You will be tempted to rush this by inserting them all into the board and then soldering, but you will have much better results if you do each resistor one at a time. The 12k resistor highlighted in yellow is the "self-oscillation" resistor. If you don't want your delay to have the ability to self-oscillate, then use the extra 15k resistor in this position.



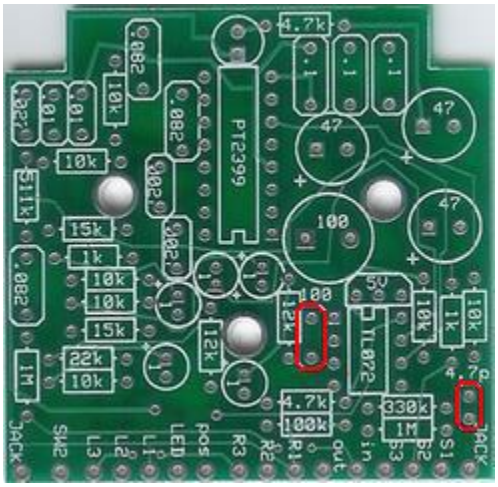
Step 2: Add the TL072 and the SOCKET for the PT2399. Do not solder the PT2399 directly to the board. The PT2399 chip itself does not get soldered at all. It is inserted into the socket.. Match up the "u" shape on the socket and op amp with the "u" shape printed on the circuit board. If either of your chips do not have a "u" shaped notch on one end they will have a small dot in one corner. This dote denotes pin # 1 and should be matched up with the square solder pad. If you chip has both a dot and a "u" shaped notch, ALWAYS!!!!!!! defer to the "u" shaped notch first.



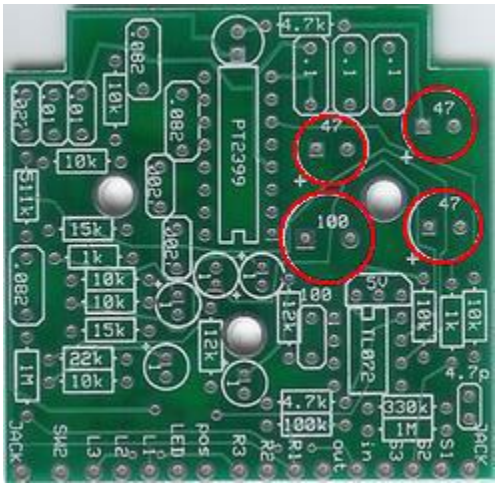
Step 3: Add all of the 1uf electrolytic caps. These are polarizes which means they have a positive and negative side. The positive side will have the longer lead and goes in the eyelet with the square solder pad. The negative side will have the shorter lead and a stripe down the side and goes in the regular round solder pad.



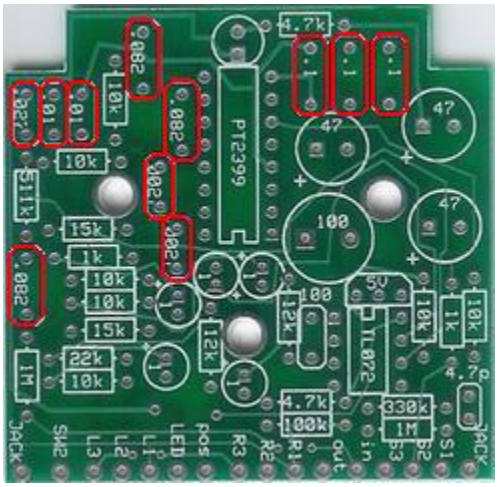
Step 4: Add the 5v voltage regulator. It will look like a plain transistor. Insert it into the board so that the flat side matches the flat side printed on the circuit board layout and the rounded side matches the rounded side printed on the circuit board layout.



Step 5: Add the 100pf and 4.7pf ceramic disc caps. These will be the small round orange caps.

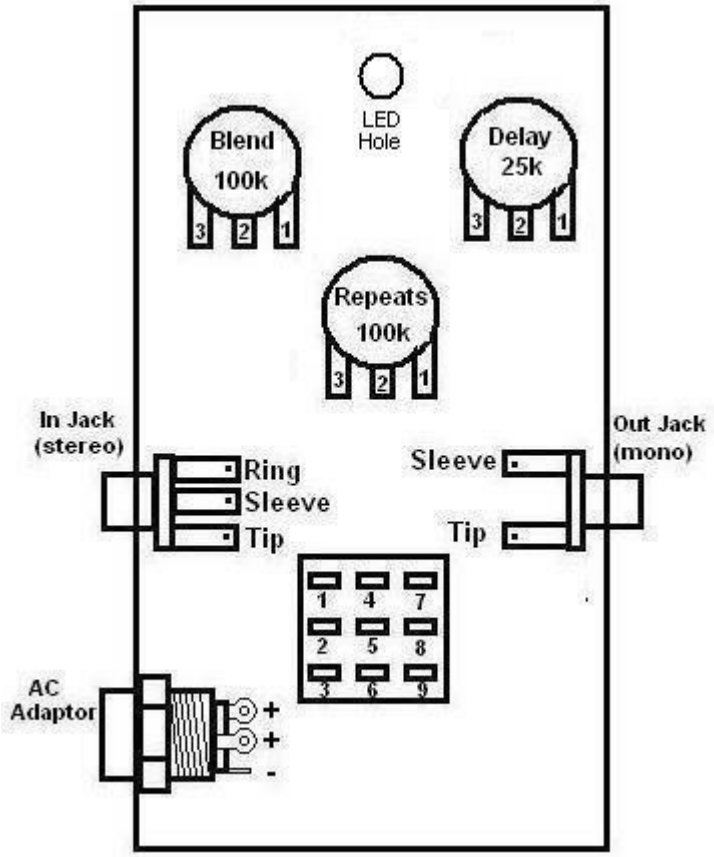


Step 6: Add the larger 100uf and 47uf electrolytic caps. These are also polarized.



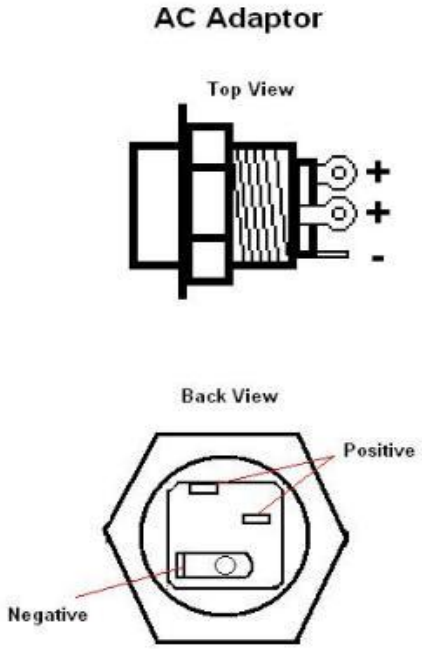
Step 7: Add the film caps. These are not polarized and can go in either direction.

Assembling the Enclosure

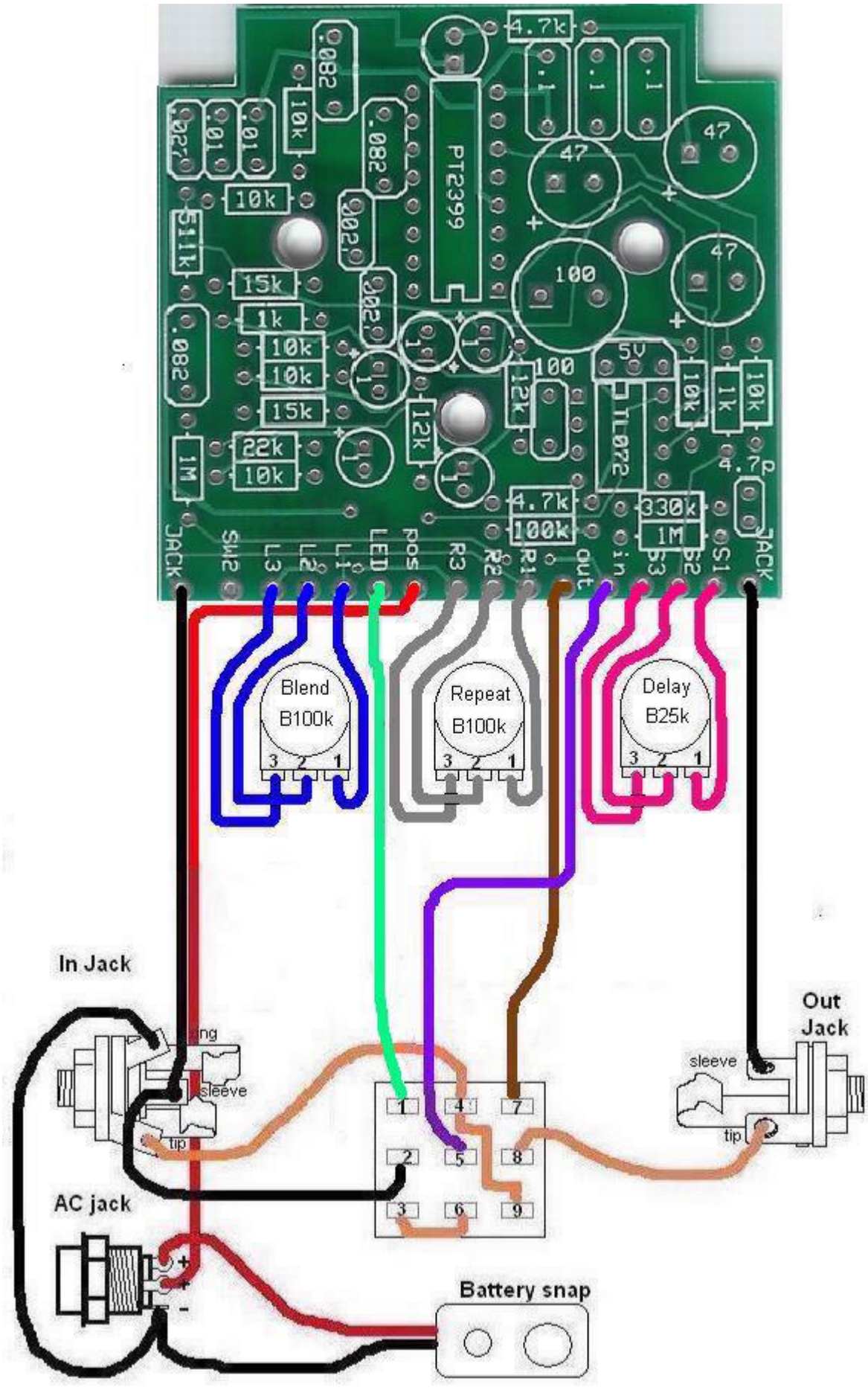


1. Install the jacks first. If you are looking down inside the enclosure, the mono jack goes on the right side and the stereo jack goes on the left. Place the washer on the outside of the enclosure. Use a 1/2" wrench to tighten.
2. Install the AC adaptor jack. The bolt goes on the inside. Use a 3/4"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

Wiring

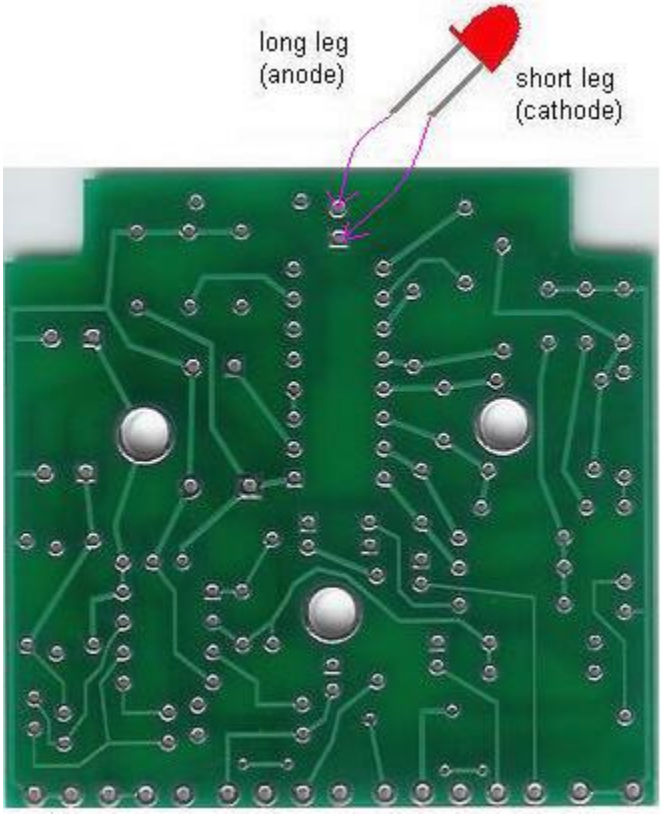


This is a “disconnect” ac adaptor jack. That means that when you have a battery connected and you plug in the adaptor, it will disconnect the battery. That is why there are 2 positive terminals. They are both connected when there is no plug in the jack, but when the plug is inserted only one of the terminals (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.


PT2399
TL072
JACK
SW2
L3
L2
L1
LED
Pos
R3
R2
R1
out
in
B3
B2
S1
JACK
Blend
B100k
Repeat
B100k
Delay
B25k
In Jack
sleeve
tip
AC jack
Battery snap
Out
Jack
sleeve
tip

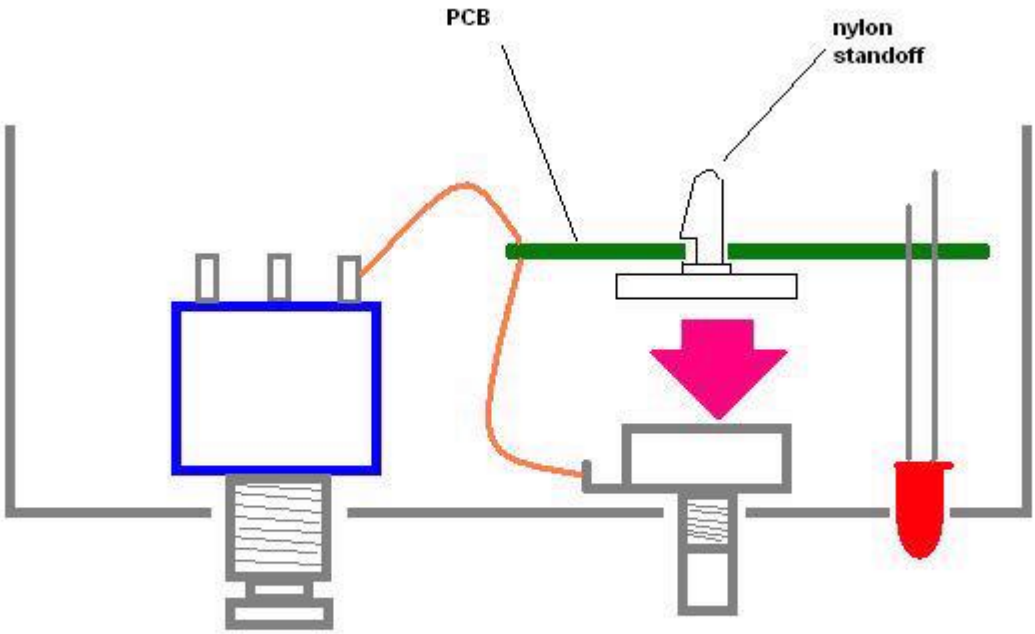
Installing the LED and Mounting the Circuit Board

1. Insert the LED into its slot on the underside or solder side of the circuit board,but DO NOT SOLDER it yet. Make sure the anode(the long leg) goes in the round solder pad and the cathode(the short leg)goes in the square solder



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 up & Troubleshooting

1. Install the PT2399 chip. Line up the U shaped notches. Ignore the dot.

2. Test the pedal to make sure it works.

3. Put the cover on and screw it down.

4. Apply the rubber feet.

5. Turn on your amp and rock out.

Is you pedal working? Here's a few common mistakes:

1. **No sound at all in either the bypass or on position.** If you aren't getting sound in bypass then you did not wire your footswitch correctly. Getting the bypass to work is the first thing you need to worry about.

2. **Bypass works and the LED lights up when "on", but there's no sound.** You either have a problem with the wiring from the in to the out of the circuit board and foot switch. The green wire is the in and the brown wire is the out. Or you have a problem with something on the circuit board.

3. **Bypass works, but there's sound when on and the LED does not come on**. You probably aren't getting any power to the circuit. Check all the black and red wires.

If none of this helps, and you can't seem to figure out the problem, I always find that it is best to just set the pedal aside for a day or 2 and then come back to it with a fresh pair of eyes. Then the problem usually jumps right out at you….usually.

If you still can't get it working, start a thread on the BYOC forum board.buildyourownclone.com and ask for help.