Phaser Kit Instructions

Parts Checklist for Phaser Kit

Resistors:
2 - 4.7k (yellow/purple/red/gold)
10 - 10k (brown/black/orange/gold)
1 - 18k (brown/gray/orange/gold for "feedback" control mod in fully loaded kit only)
5 - 22k (red/red/orange/gold)
1 - 56k (green/blue/orange/gold)
6 - 150k (brown/green/yellow/gold)
2 - 470k (yellow/purple/yellow/gold)
1 - 510k (green/brown/yellow/gold for "depth" control mod in fully loaded kit only)
1 - 1M (brown/black/green/gold)
1 - 3.9M (orange/white/green/gold)

Capacitors:
3 - 0.01uf film (103k Only 2 for base kit)
6 - 0.05uf film (503k)
1 - 0.1uf film (104k This cap is not included in the base kit)
2 - 10uf aluminum electrolytic

Transistors:
4 - 2N5952
1 - 2N4125

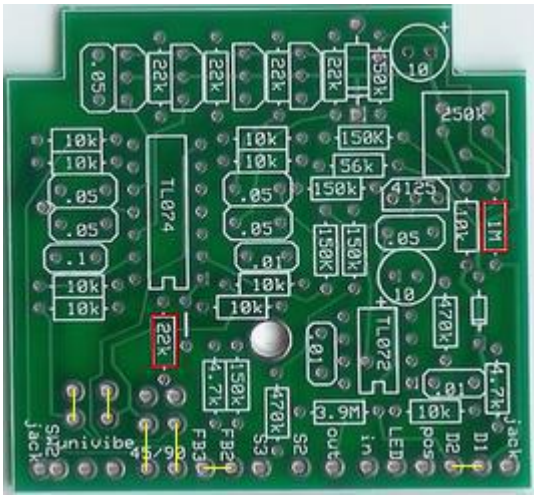
Diodes:
1 - 1N914 (small orange with black stripe)
1 - 5.1v zener (large orange with black stripe)

Integrated circuits:
1 - TL074
1 - TL072

Potentiometers:
1 - 250k trim pot
1 - C500K Reverse Audio rate pot
1 - B25k Linear feedback pot (fully loaded kit only)
1 - B500k Linear depth pot (fully loaded kit only)

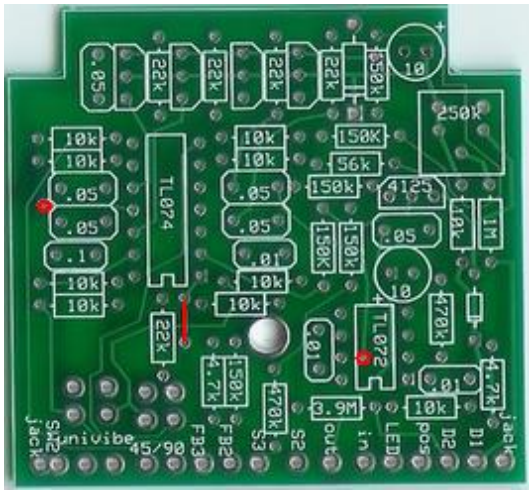
Hardware:
1 - enclosure w/ 4 screws
1 - phaser kit circuit board
1 - 3pdt footswitch
2 - dpdt toggle switches (fully loaded kit only)
1 - knob (or 3 with fully loaded kit)
1 - AC adaptor jack
1 - ¼"stereo jack
1 - ¼" mono jack
1 - battery snap
1 - red LED
1 - LED bezel
1 - piece of insulating foam
Multi-colored hook up wire

Populating the Circuit Board



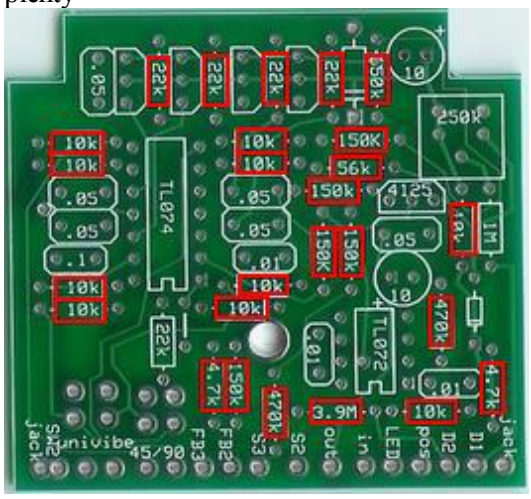
Step 1: If you are building the "fully loaded" phaser do no use these 1M and 22k resistors. Replace the 22k with the 18k and the 1M with the 510k. If you are building the "base" phaser (stock phase 90 with no mods) kit, then use the 22k and 1M resistors.

If you are building the "base" phaser, you will need to add 6 jumpers. Use the left over clippings from the 2 resistors you just added. The jumpers are shown in yellow in the diagram above. This is to bypass the "depth", "feedback", "univibe" and "45/90" mods.

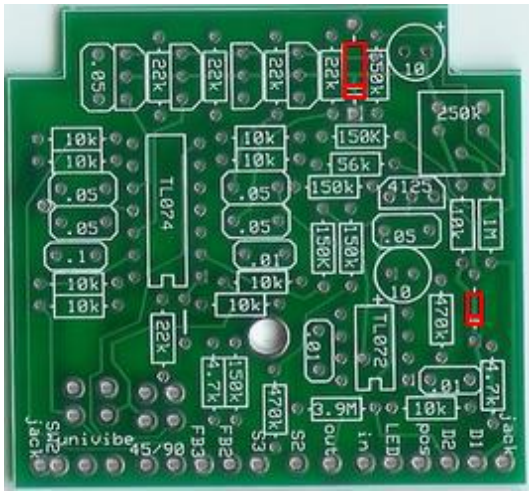


Step 2: There is ONE jumper on the circuit board that needs to be made whether you are making the base kit or the fully loaded kit. It is denoted on the circuit board by a white line between two eyelets. Use a piece of the extra resistor lead that you just clipped off from step 1 to make this jumper. It is marked by the red line in the diagram above. The two eyelets that are highlighted in red will not have anything soldered in them every. They are they to pass a trace from the top side of the board to the bottom side.

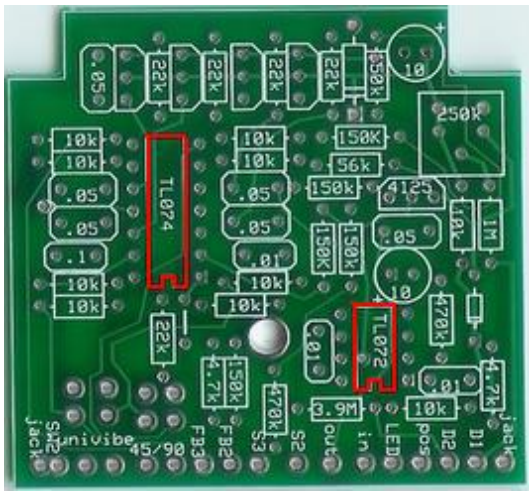
If you don't have enough clippings, come back and do it after step 3. You will definitely have plenty



Step 3: Add the rest of the resistors. There is a lot of soldering here. Take your time. Do each resistor one at a time. Make sure have the correct values in each spot and don't forget to solder any of the eyelets.



Step 4: Add the diodes. The smaller 1N914 goes in the smaller slot and the larger zener goes in the larger slot. Make sure you have the anode stripe facing the correct way as it is depicted on the circuit board layout.

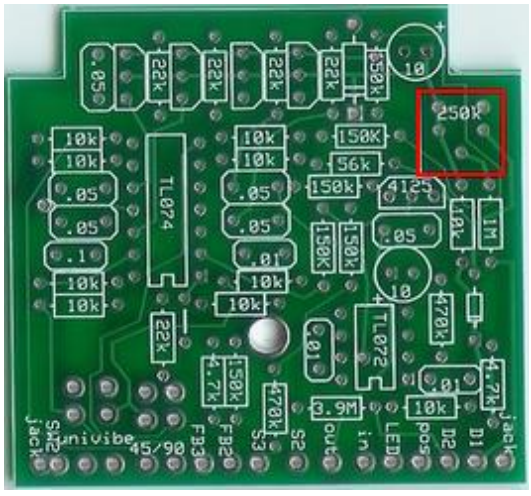


Step 5: Add the op amps.

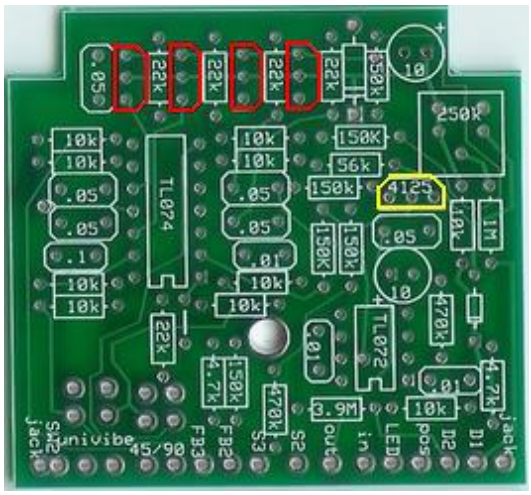
If the op amp that comes with your kit has a "U-shaped" mark on one side of it, use this as the primary indicator as to which way to orient the op amp. Match up the "U-shape" on the circuit board layout with the "U-shape" on the op amp.

If the op amp has ONLY a dot in the corner and no "U-shape", this denotes pin 1 of the op amp. Pin 1 goes in the SQUARE solder pad of the circuit board

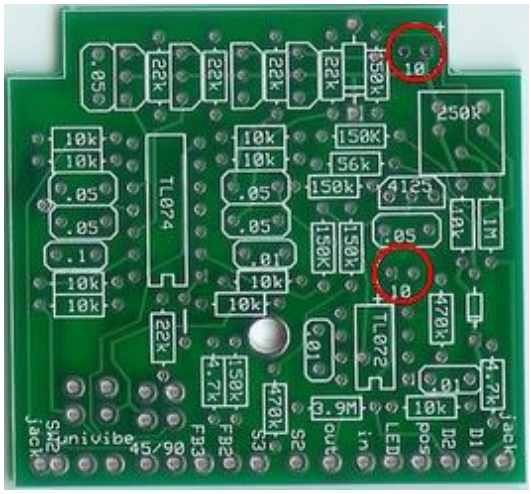
Many times the op amp will have both a dot in the corner and a "U-shape". In most cases the 2 markers will "agree" with each other, but occasionally they do not. If your op amp(s) have both markers, always use the "U-shape" as the primary indicator.



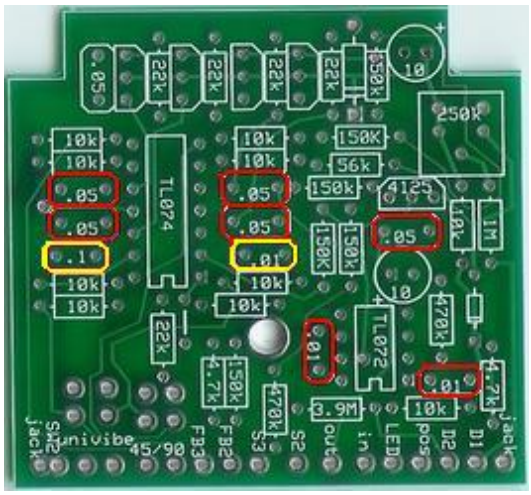
Step 6: Add the trim pot (small blue square with a white knob in the center). This will have 3 leads, but the slot in the board has 5 holes. This is so that the board can accept a variety of different brands of trim pots. There should only be one why that the trim pot that comes with your kit can fit into the slot. You will need to adjust this when you plug in for the first time. The phaser probably won't work till you do.



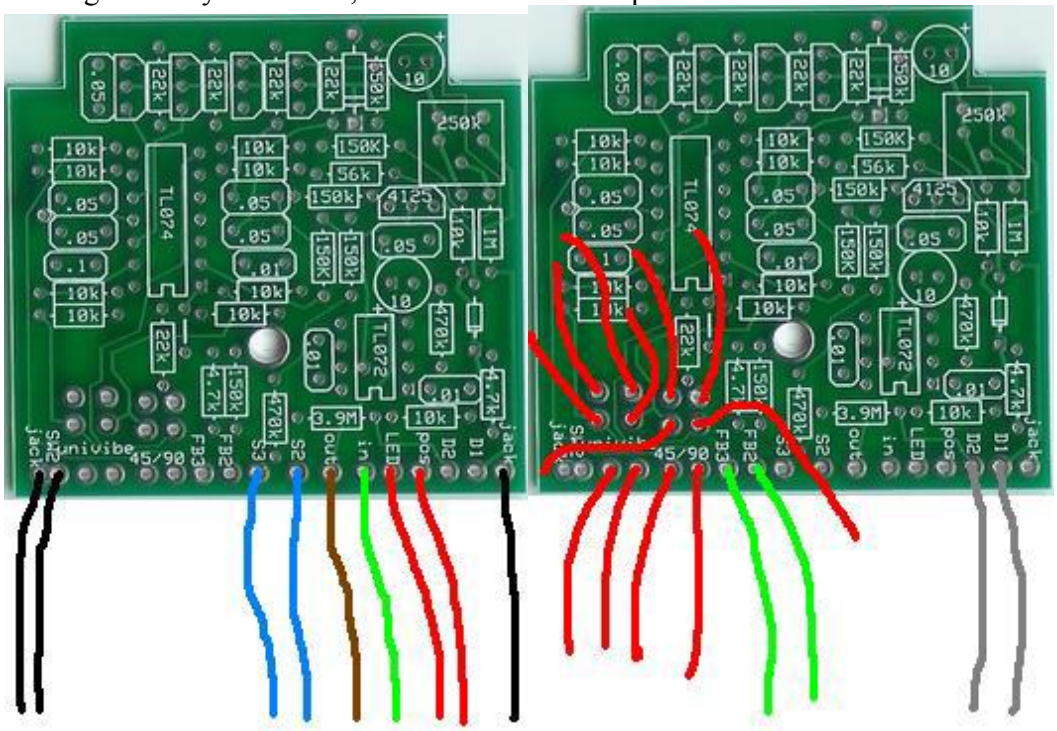
Step 7: Add the transistors. The 2n5952's go in the slots highlighted in red and the 2n4125 goes in the slot highlighted in yellow.



Step 8: Add the two 10uf aluminum electrolytic caps. These are polarized so make sure you put them in correctly. The positive lead goes in the square eyelet. The positive lead will be the longer of the two. The negative side will have a stripe running down it.



Step 9: Add the film caps. These are not polarized so they can go in either way. If you are building the "base" kit, your kit will not have the .1 and .01uf caps shown in yellow. If you are building the "fully loaded" kit, add the .1 and .01uf caps.

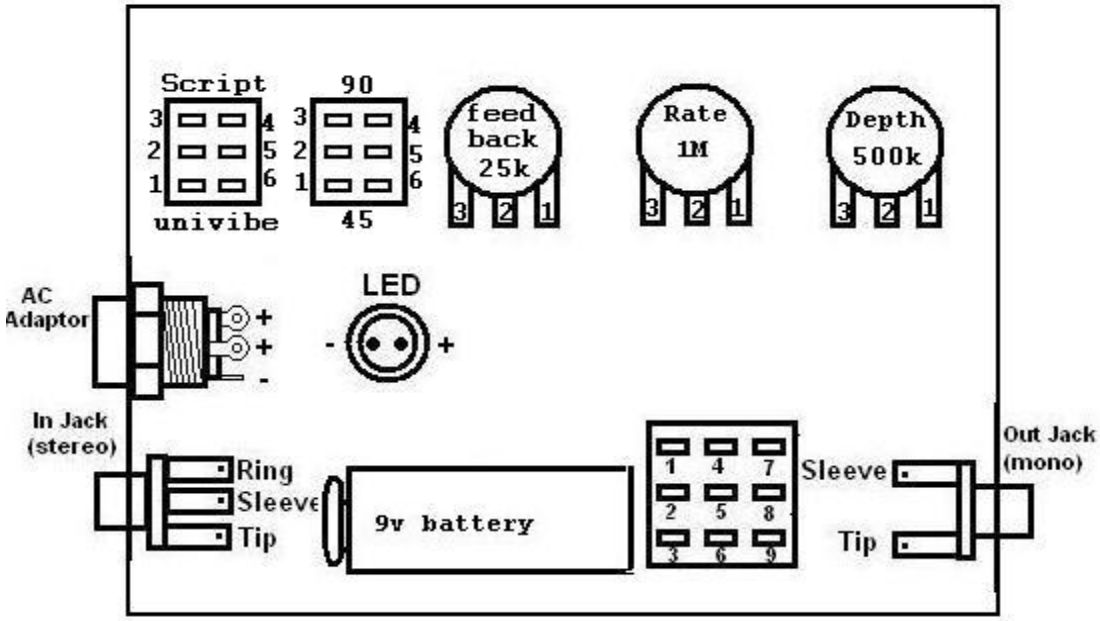


Step 10: Add the off board wires as shown in the diagram on the left. Use about 3 inches of wire for each and only connect one end to the eyelets shown in the diagram. Leave the other ends open and unsoldered to nothing. You will connect the other ends later.

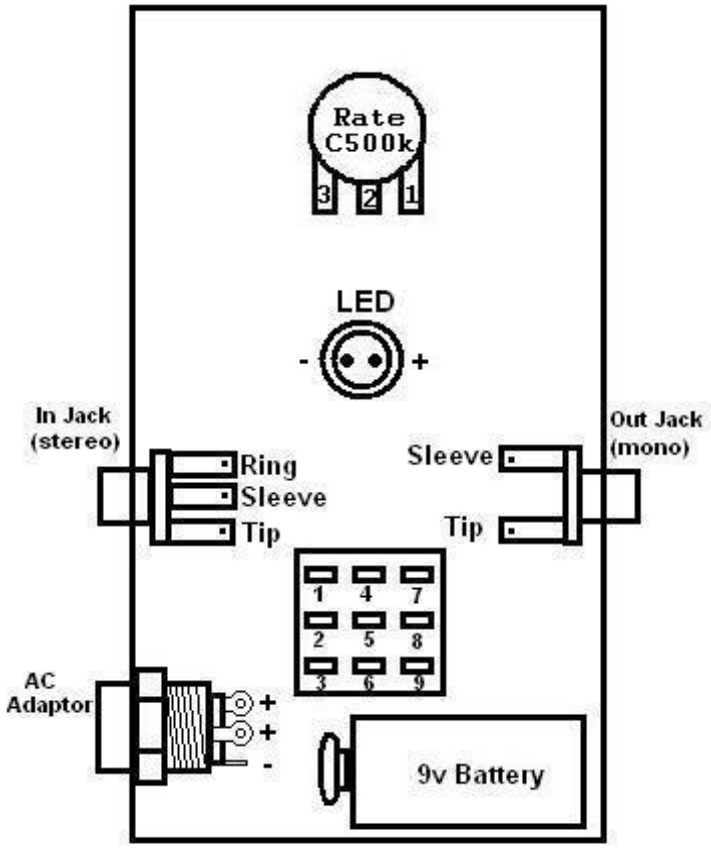
Step 11: ONLY FOR FULLY LOADED KIT. Do the same as step 10 for the diagram on the right. Use the white wire supplied with your kit here where the diagram shows red. The color red is only used for better visibility.

Assembly

Fully loaded kit

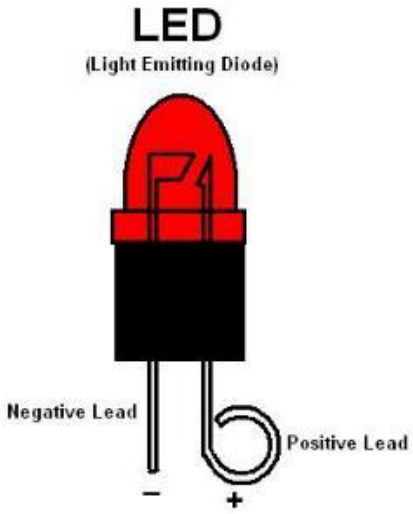


Base Kit

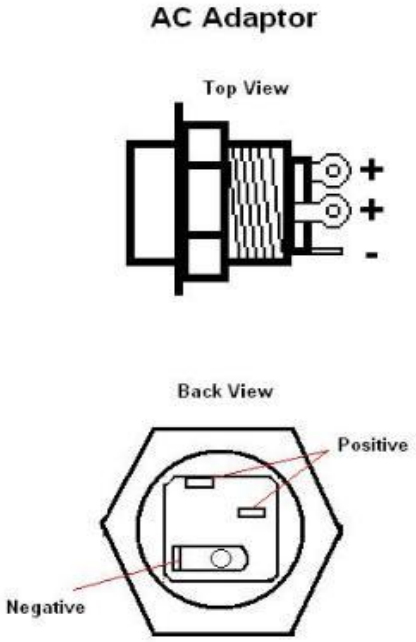


1. Install the jacks first. If you are looking down inside the enclosure, the mono jack goes on the right side and the stereo jack goes on the left. Place the washer on the outside of the enclosure. Use a 1/2" wrench to tighten.
2. Install the AC adaptor jack. The bolt goes on the inside. Use a 3/4" or 14mm wrench to tighten.
3. Install the bezel. The washer and bolt go on the inside. Use a 10mm wrench to tighten.
4. Install the potentiometer 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.
5. 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.
(Steps 6 is for the fully loaded kit only)
6. Install the toggle switches. Use a pair of pliers to tighten.

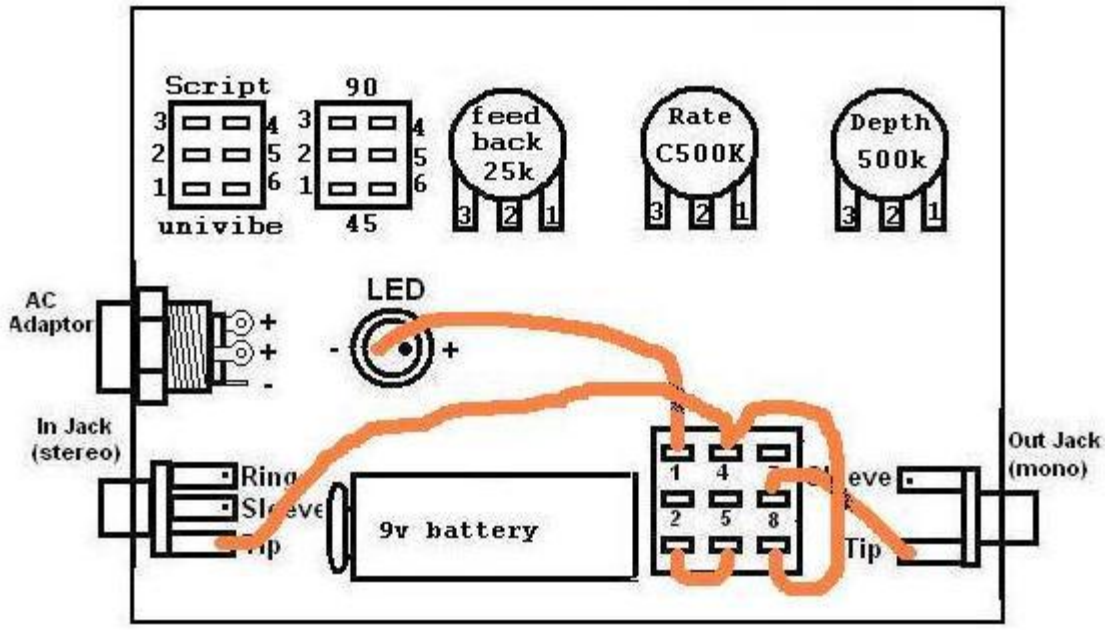
Wiring



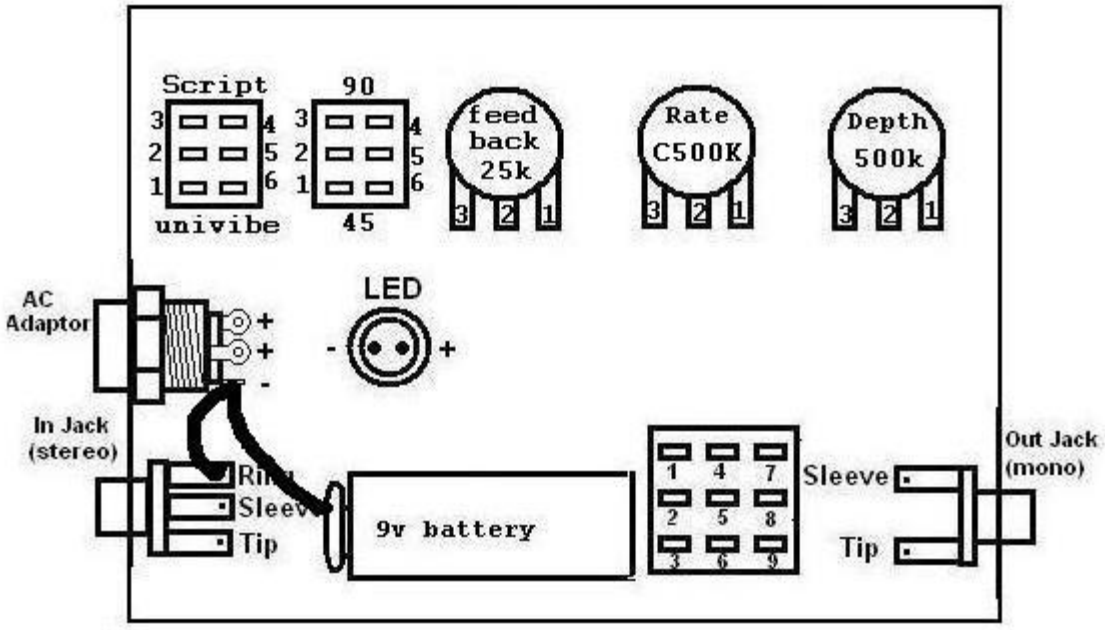
On most polarized components such as an LED the positive lead will be longer than the negative. You will need to make solder lugs for your LED by bending the leads into circles (needle-nose pliers work well for this). Insert the leads into the rubber bezel cork before you do this. You will need to clip the leads so that they are not too long, but don't make them so short that they touch the bezel when you insert the LED and cork into the bezel. Be sure to keep track of which newly formed lug is positive and negative once the leads are clipped. If you forget you can tell them apart by the flag shaped filament that is connected to the negative lead.



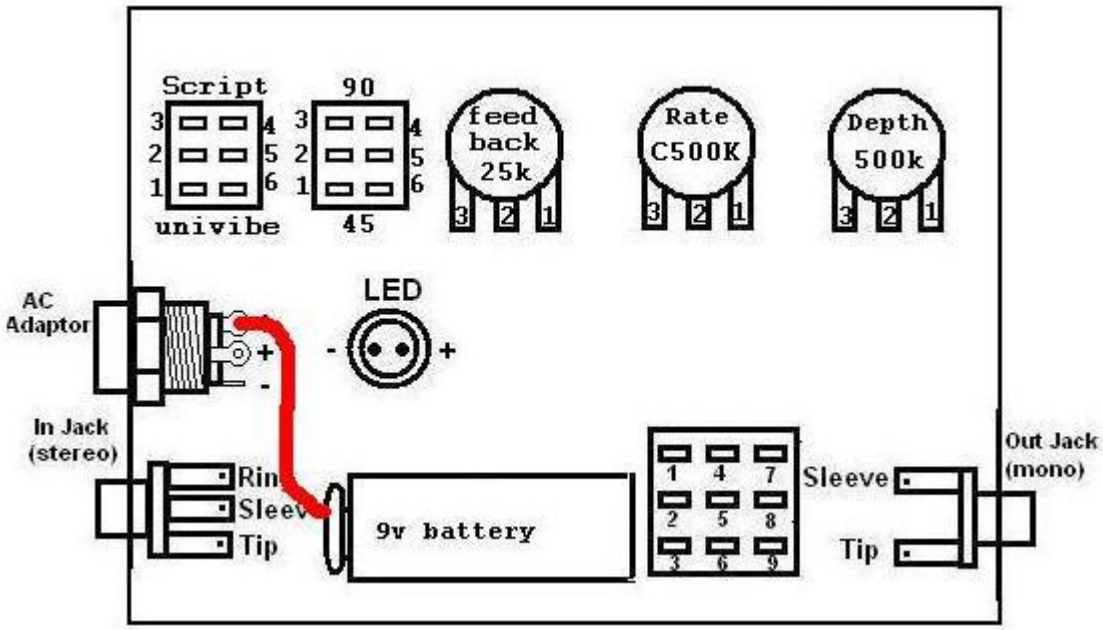
This is a “disconnect” ac adaptor jack. That means that when you have a battery connected and you plug in the adaptor, it will disconnect the battery. That is why there are 2 positive terminals. They are both connected when there is no plug in the jack, but when the plug is inserted only one of the terminals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



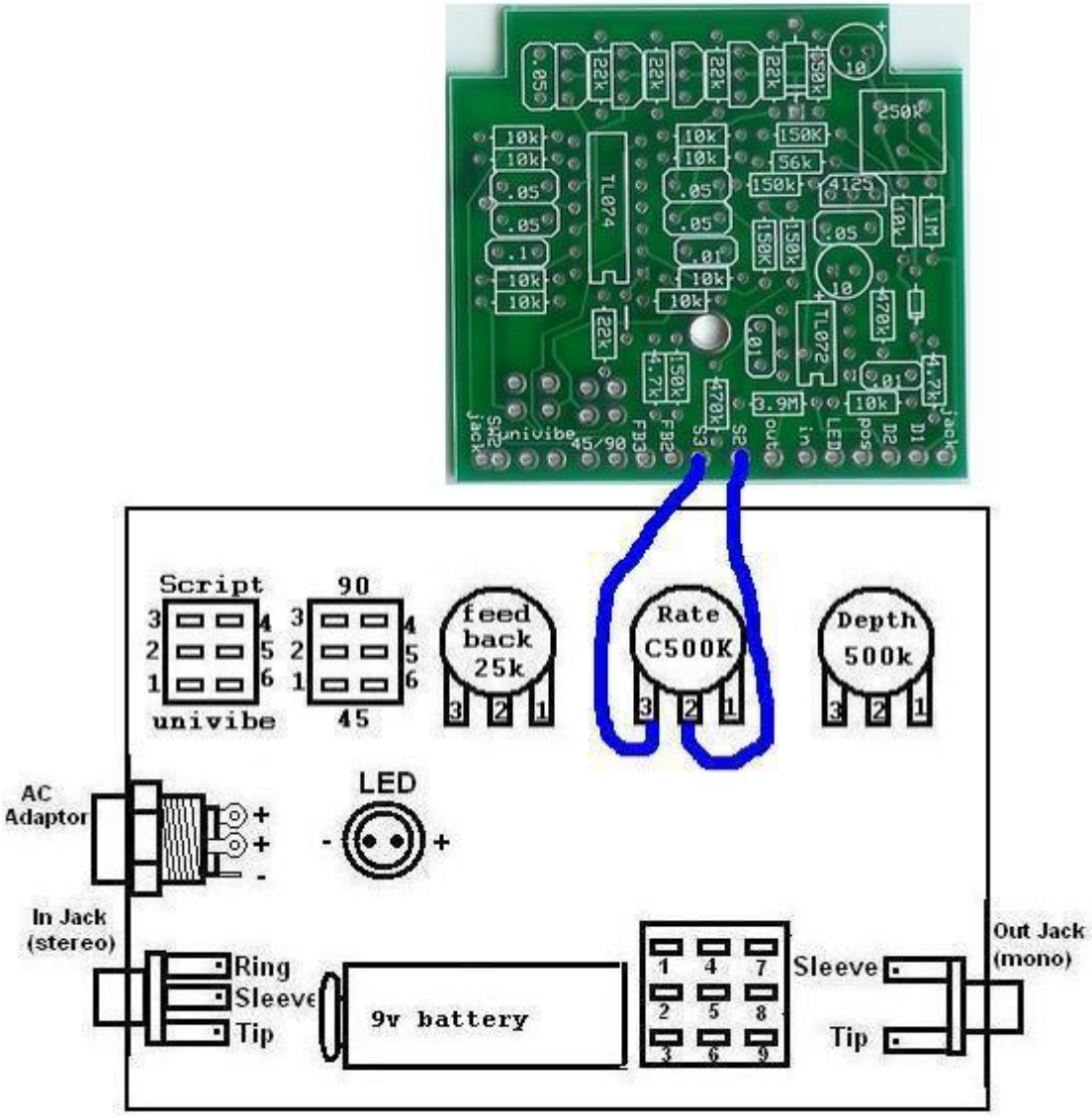
NOTE: Steps 1 through 9 are relatively the same for both the "fully loaded" and "base" kits even though the position of some of the components may differ.
Step 1: Jumper lug3 to lug 6
Step 2: Jumper lug 9 to lug 4
Step 3: Connect lug 4 to the tip of the in jack
Step 4: Connect lug 8 to the tip of the out jack
Step 5: Connect lug 1 to the negative terminal of the LED



Step 6: Connect the black battery snap wire to the negative terminal of the ac adaptor jack
Step 7: Connect the negative terminal of the AC adaptor jack to the ring of the in jack

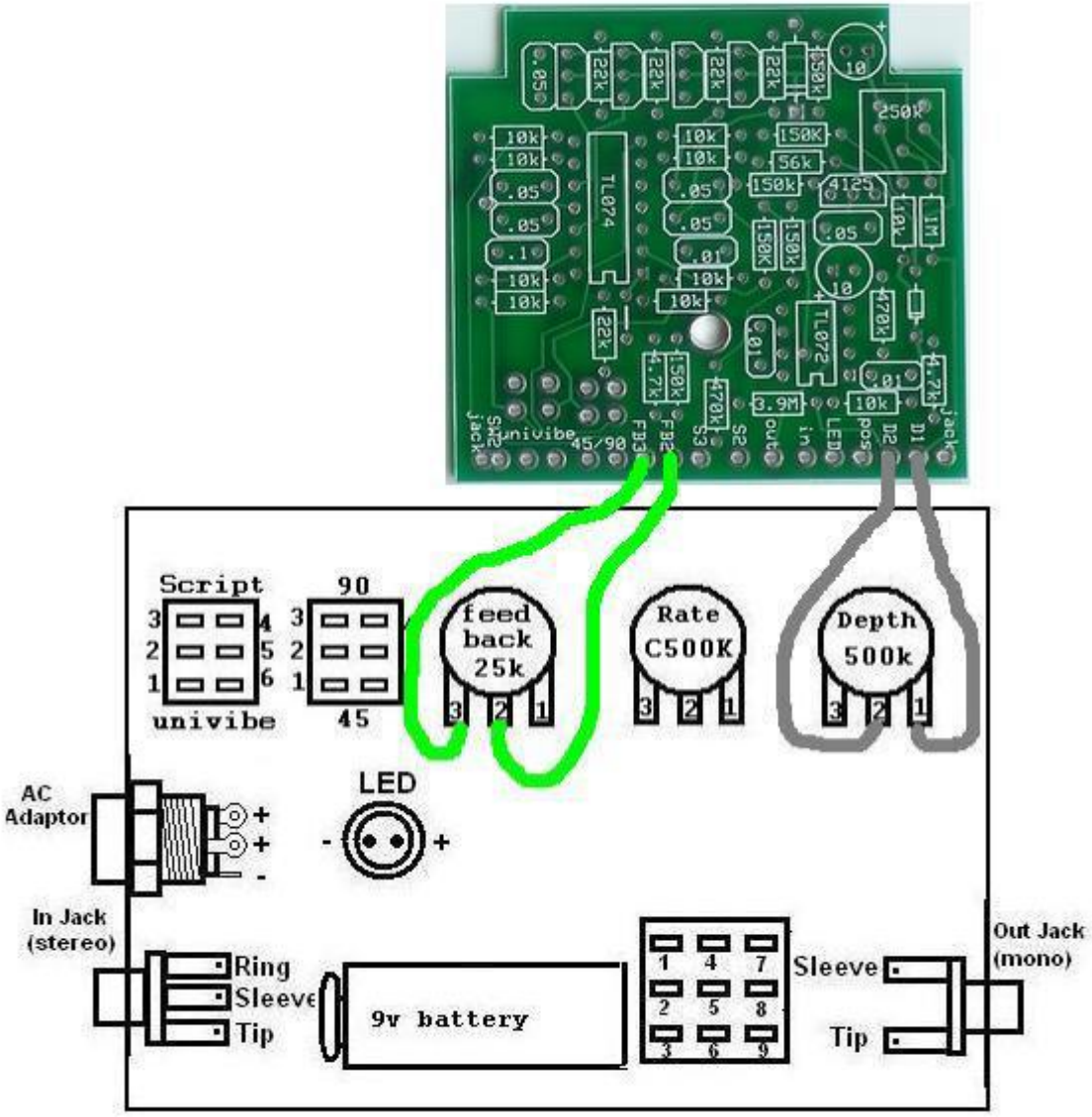


Step 8: Connect the red battery snap wire to the positive “battery” terminal of the ac adaptor jack



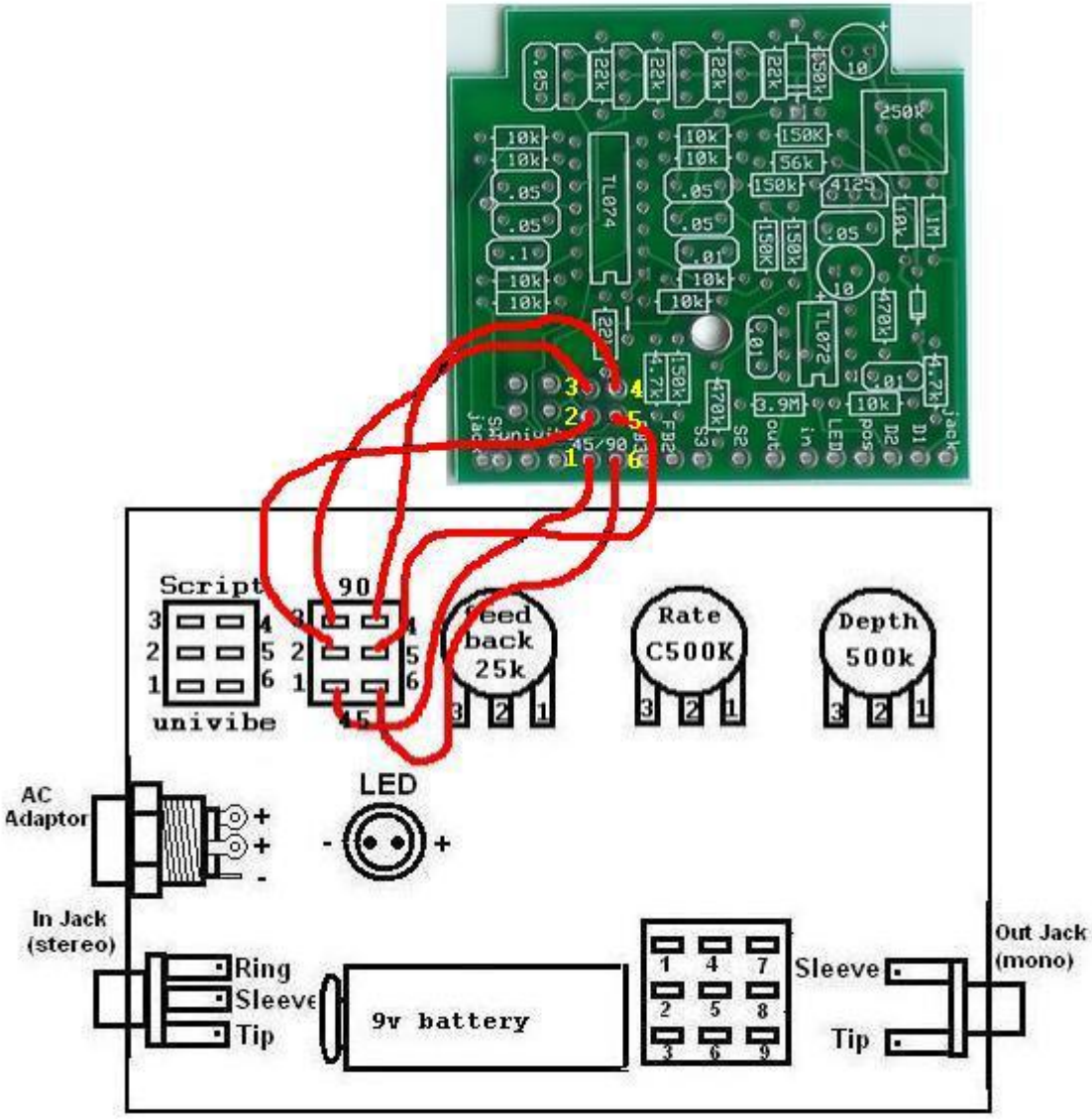
Step 9: Connect the blue wires to the C500k "rate" pot. You will connect the wire from the "S3" eyelet to lug 3 of the rate pot. Connect "S2" to lug 2 of the "rate" pot.

NOTE: STEPS 10 THROUGH 13 ARE FOR THE FULLY LOADED KIT ONLY. Resume base kit instructions at step 14.

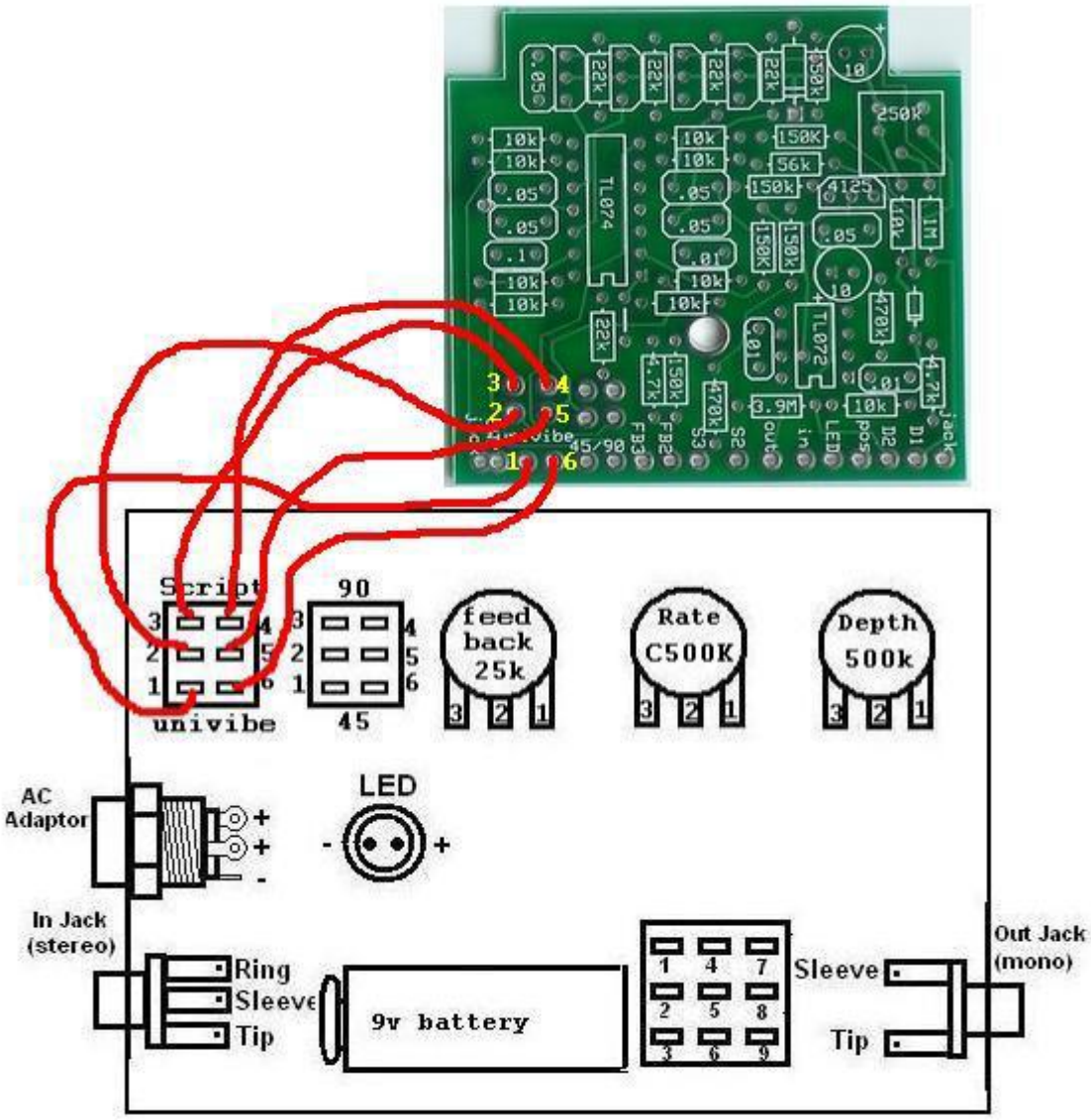


Step 10: Connect the green wires to the 25k "feedback" pot. You will connect the wire from the "FB3" eyelet to lug 3 of the feedback pot. Connect "FB2" to lug 2 of the volume pot.

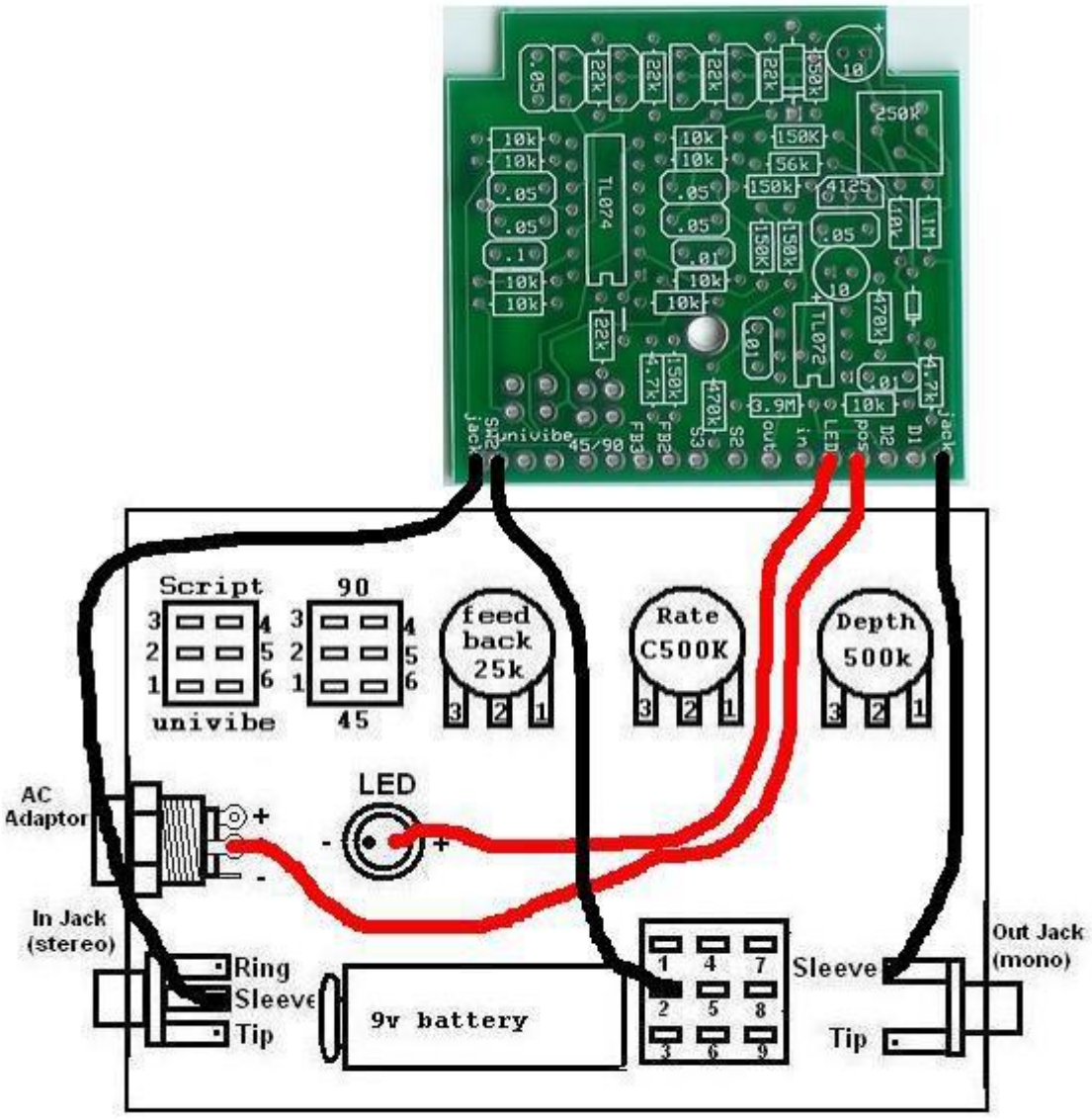
Step 11: Connect the gray wires to the 500k Depth pot. You will connect the wire from the "D1" eyelet to lug 1 of the depth pot. Connect "D2" to lug 2 of the volume pot.



Step 12: Wire the "90/45" mod. The wire should be white but is shown here in red. The eyelets are labeled 1 - 6 as are the solder lugs of the toggle switch. You should connect the eyelet number with its matching toggle switch number. When you flip the enclosure over and have the toggle switch in the up position, it will be in 90 mode (4 phase stages). When you have the switch in the down position it will be in 45 mode (2 phase stages).



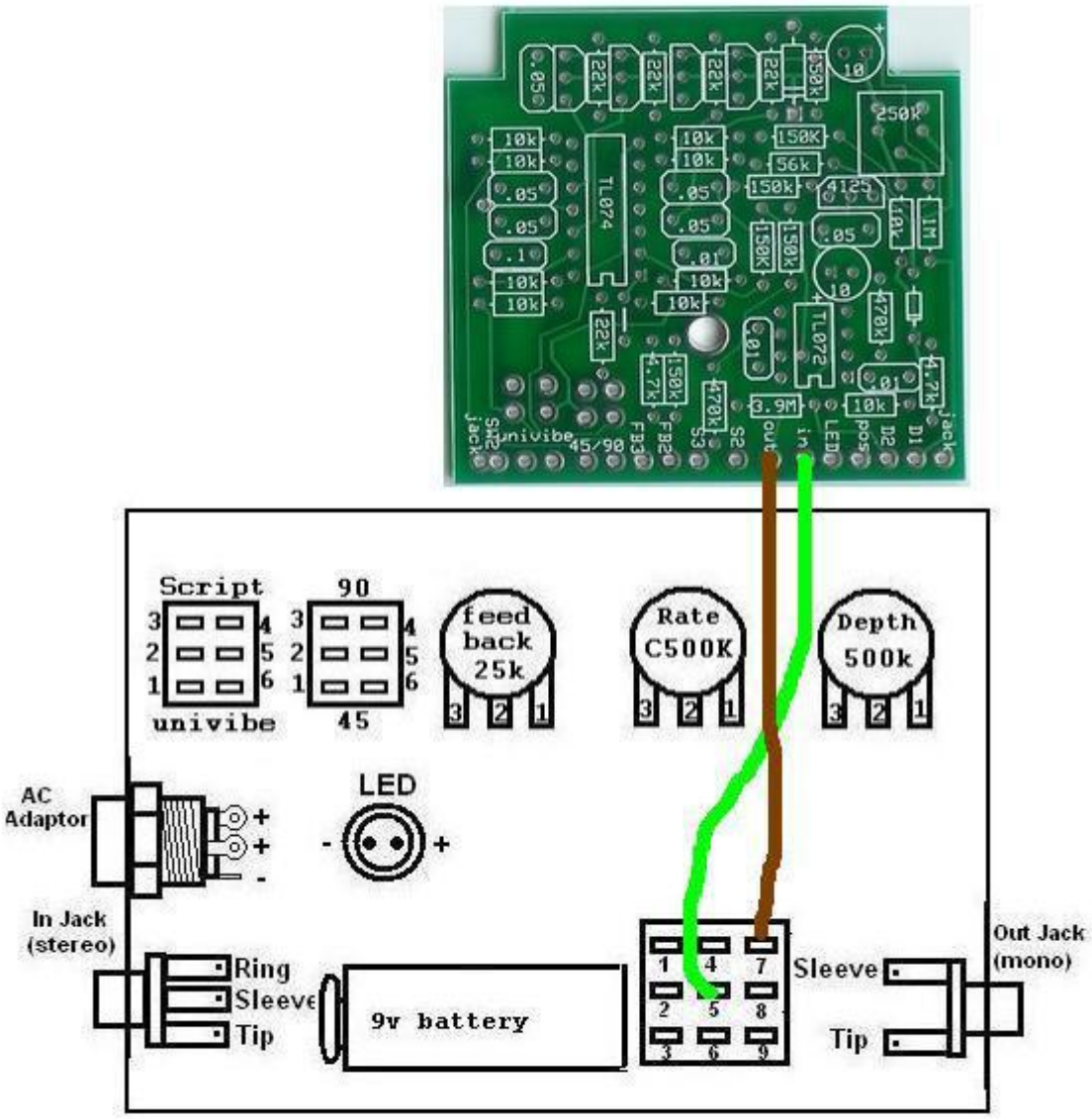
Step 13: Wire the "univibe" mod. The wire should be white but is shown here in red. The eyelets are labeled 1 - 6 as are the solder lugs of the toggle switch. You should connect the eyelet number with its matching toggle switch number. When you flip the enclosure over and have the toggle switch in the up position, it will be in script mode (stock MXR). When you have the switch in the down position it will be in univibe mode (modified). NOTE: This mod does not turn your phase90 clone into a univibe. It only alters the "vocal" quality of the phase sweep to have a more liquid and less throaty character similar to the
univibe.



Step 14: Solder the "ground" wires. Connect the black wire from the left most eyelet labeled "jack" to the sleeve of the "IN" jack. Connect the black wire from the right most eyelet labeled "jack" to the sleeve of the "OUT" jack. Connect the black wire from the eyelet labeled "SW2" to Lug 2 of the footswitch.

Step 15: Solder the red wire from the "pos" eyelet to the positive terminal of the AC jack.

Step 16: Solder the red wire from the eyelet labeled "LED" to the positive terminal of the LED.

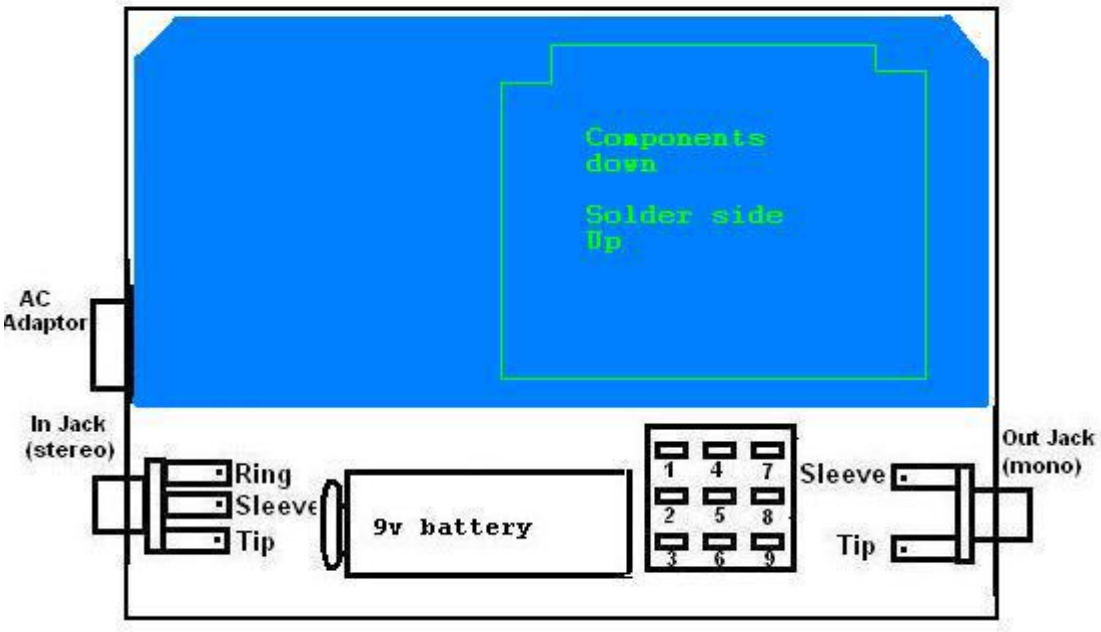


Step 18: Solder the green wire from the “in” eyelet to lug 5 of the footswitch.

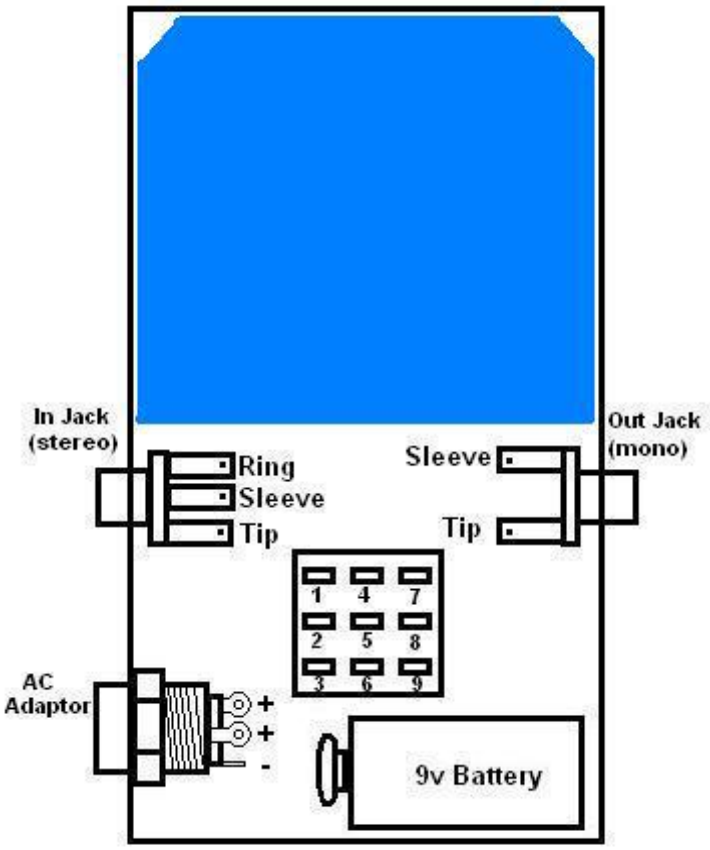
Step 19: Solder the brown wire from the “out” eyelet to lug 7 of the footswitch.

Finishing up & Troubleshooting

1. Test the pedal to make sure it works. You'll need to adjust the 250k trimpot to bias the JFETS. Don't worry about "correct" voltages. Just turn the trimmer till the sweep of the phase sounds the way you think it should.



2. Flip the circuit board over so that the "solder side" is up. Trim the insulating foam to fit the enclosure. Stuff the circuit board into the enclosure, but make sure there is not bare metal on metal. Place the insulating foam on top of the circuit board and cover the solder joints "old school MXR style".



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 and ask for help.