

Build Your Own Clone Germanium Boost 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:

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Tech Support:

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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 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.

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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 Germanium Boost Kit

Resistors:

- 1 – 3k9 (Orange/White/Black/Brown/Brown)
- 1 - 4k7 (Yellow/Purple/Black/Brown/Brown)
- 2 - 470K (Yellow/Purple/Black/Orange/Brown)

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

Capacitors:

- 1 - .0047 film cap (may say “472” or “4n7” on the body)
- 1 - .01 film cap (may say “103” or “10n” on the body)
- 1 - .033 film cap (may say “333” or “33n” on the body)
- 1 - .1 film cap (may say “104” or “100n” on the body)
- 2 - 47uf Aluminum Electrolytic

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

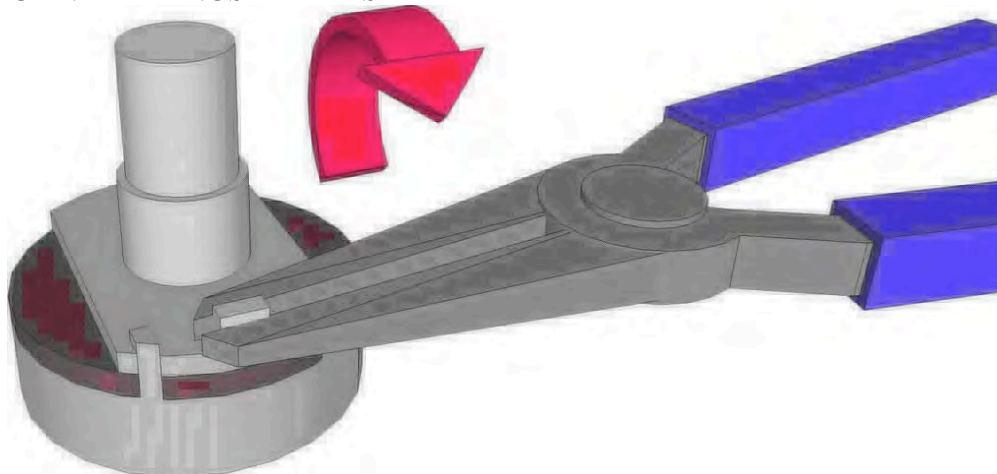
Transistor:

- 1 - TO-18 Socket (3-pin)
- 1 - OC44, OC75, OC76 or CV7003 PNP germanium transistor

Trimpots:

- 1 – 100K Trimpot

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



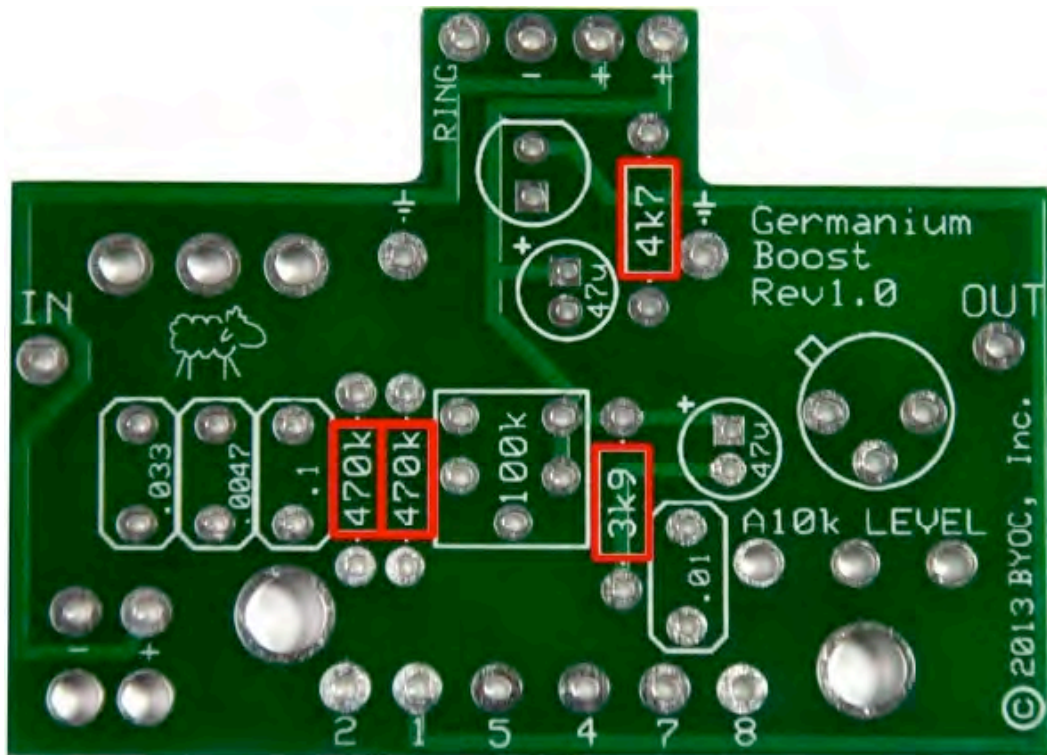
- 1 - A10k audio (logarithmic) taper

Hardware:

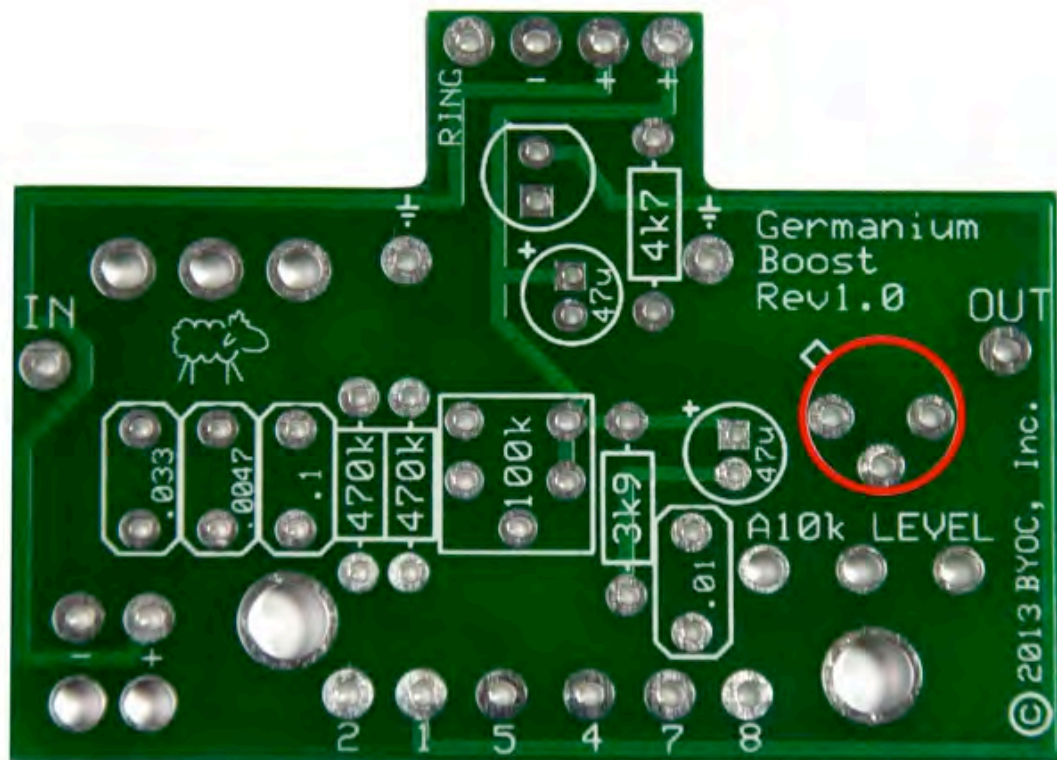
- 1 – SPDT On/Off/On Toggle Switch
- 1 - predrilled enclosure w/ 4 screws
- 1 – Germanium Boost circuit board
- 1 - 3pdt footswitch
- 1 - knob
- 1 - AC adaptor jack
- 1 - ¼” stereo jack
- 1 - ¼” mono jack
- 1 - battery snap
- 1 - red LED
- 4 – rubber bumpers
- 2 – lock washers (for in and out jacks)
- hook-up wire

Populating the Circuit Board

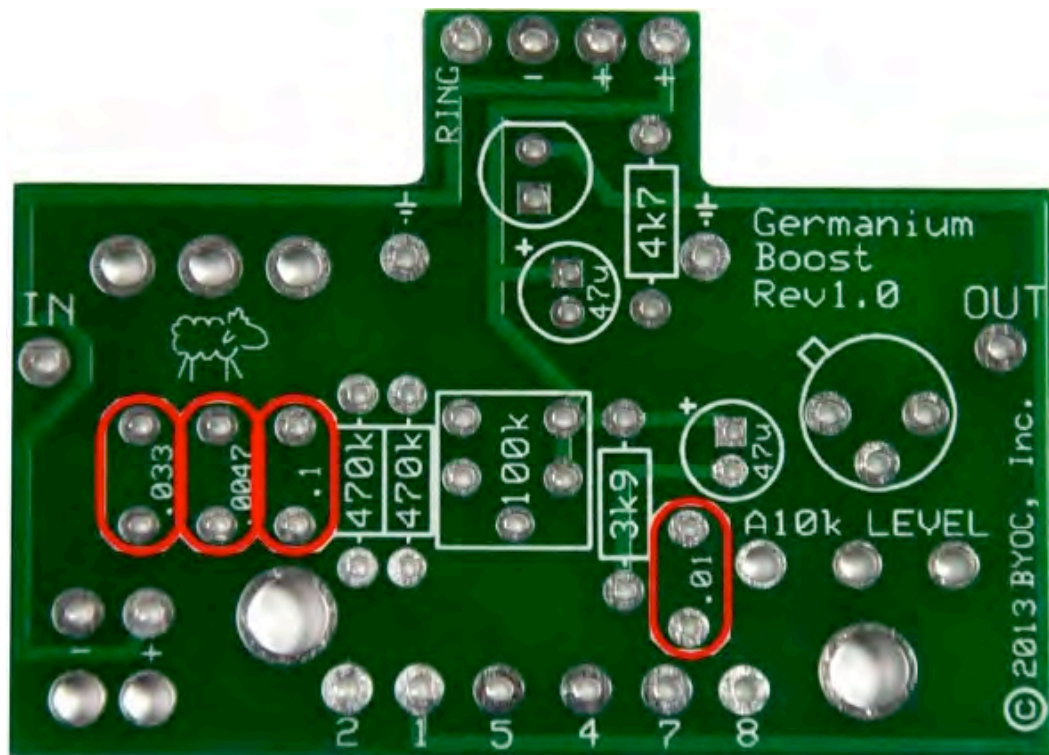
Step 1 : Add all the resistors. Resistors are not polarized and can be inserted in either direction.



Step 2: Add the TO-1 Socket (3 pin)

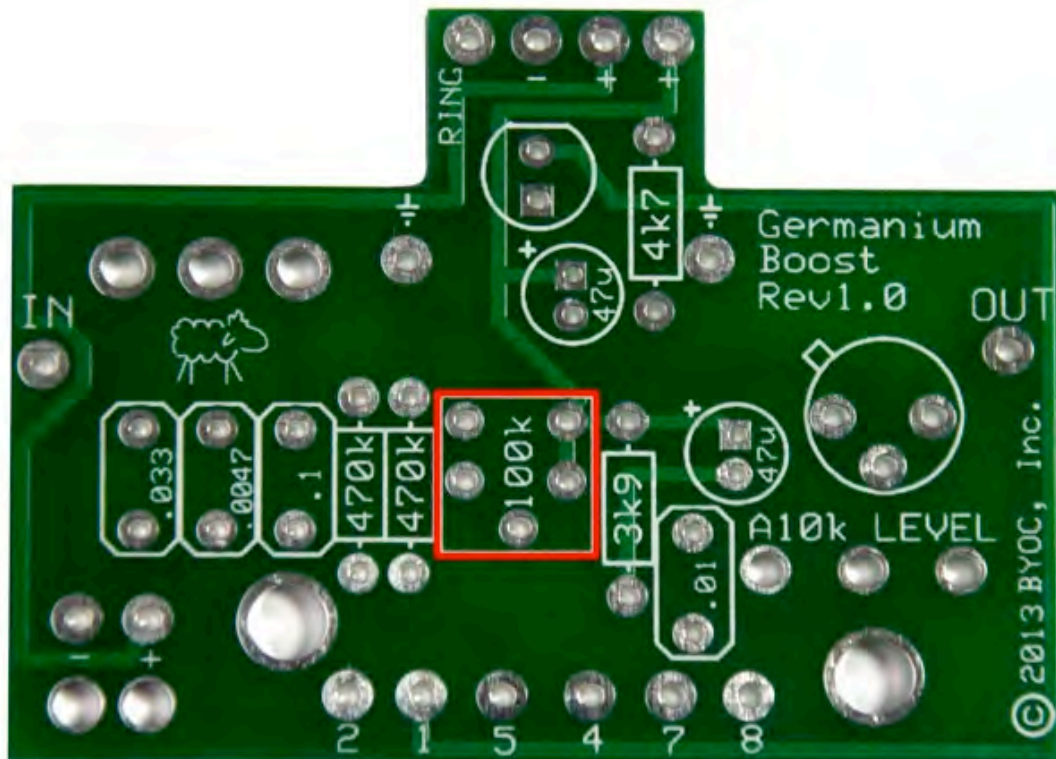


Step 3: Add the **film** capacitors. These are non-polarized so it can go in either direction.

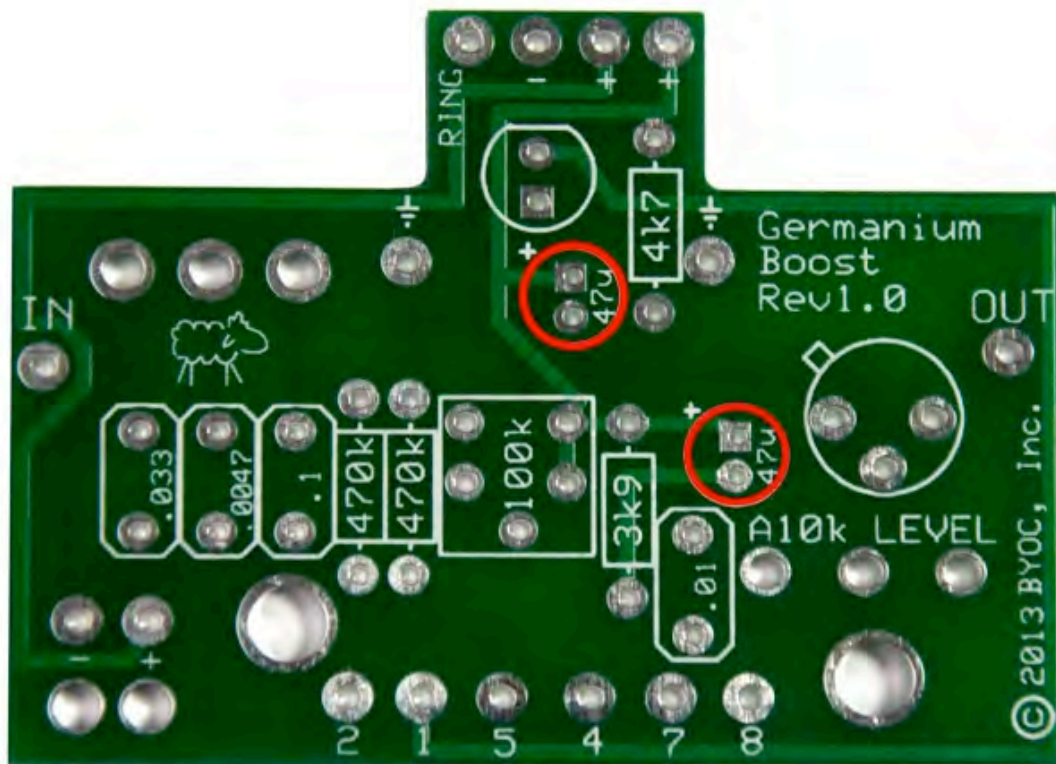


Step 4: Add the 100k trim pot. The trimpot only has 3 leads. The space on the PCB has 5 holes. Do not be alarmed by this. The extra holes are there so that this space can accommodate several different brands of trimpots. There will only be one way that your trimpot will be able to fit into the PCB. This is how you should insert it.

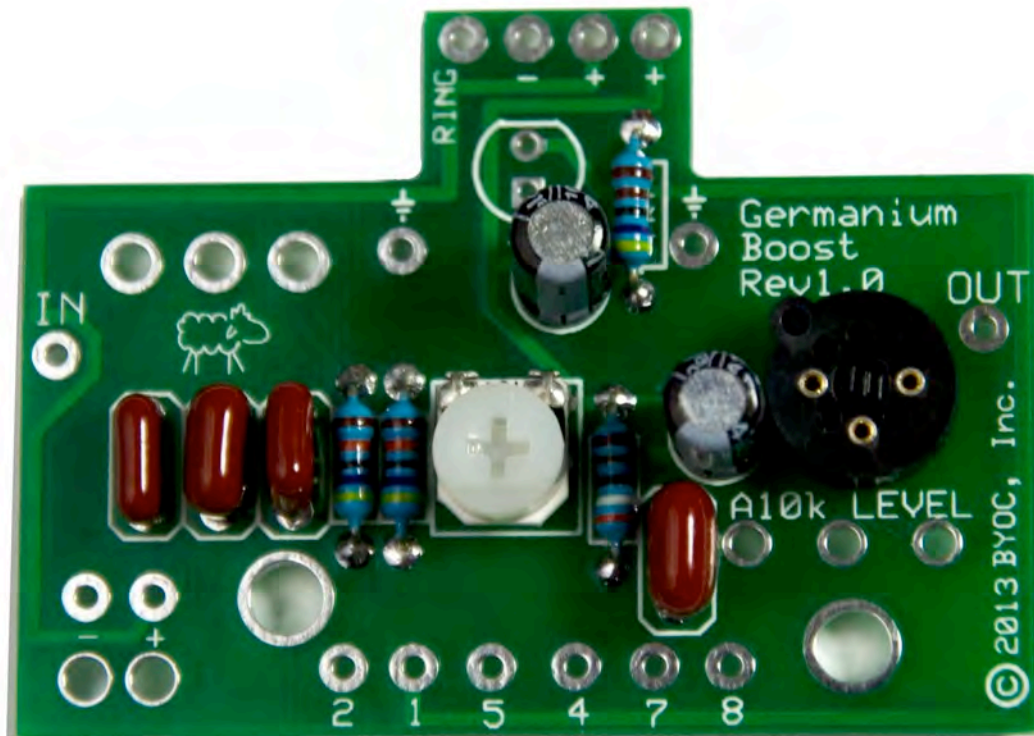
NOTE: This trimpot is for biasing the transistor. After you have finished building your germanium boost, you will want to adjust this trimpot. Just use your ear. Dial it in for the cleanest, least gated sound. Unless you want a gated fuzzy boost.



Step 5: 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.

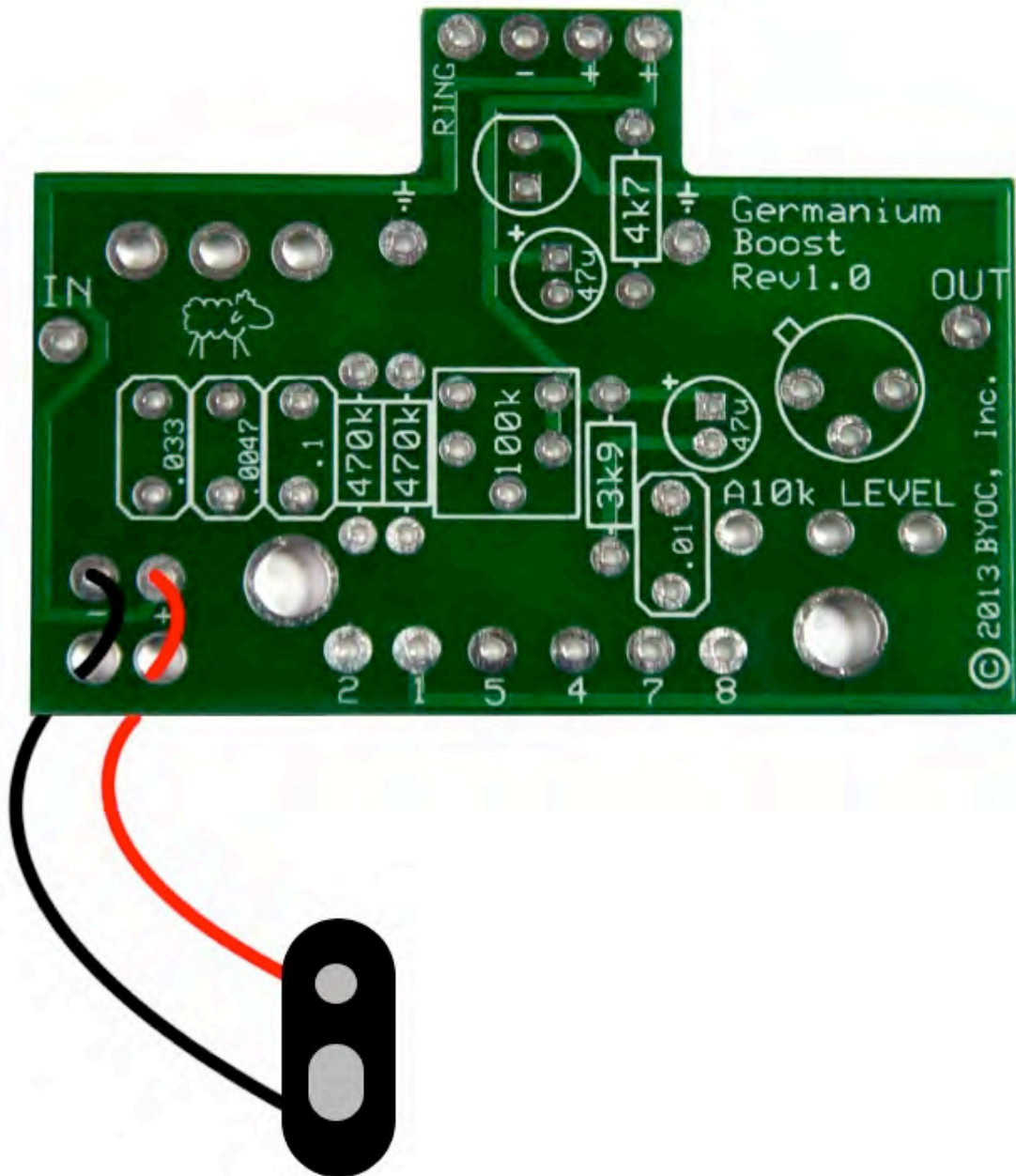


At this point your board should look like this:

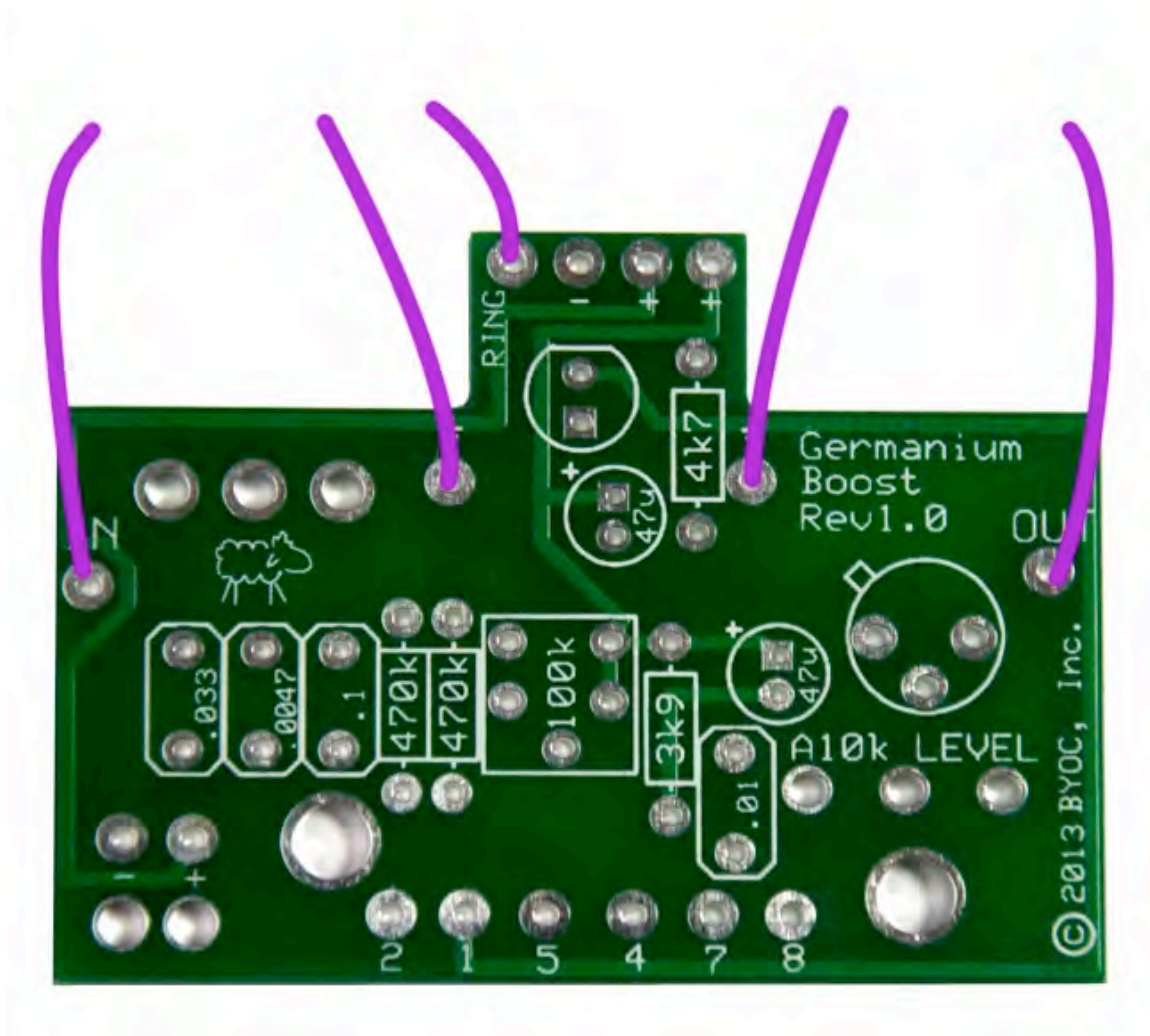


Step 6: Add the battery snap. Thread the solder ends of the battery snap into the strain relief holes from the bottom solder side of the PCB and out through the top. Insert the solder ends of the battery snap wires into the topside of their respective solder pads. Solder on the bottom side of the PCB.

Remember the red wire goes in the “+” hole and the black wire goes in the “-” hole.



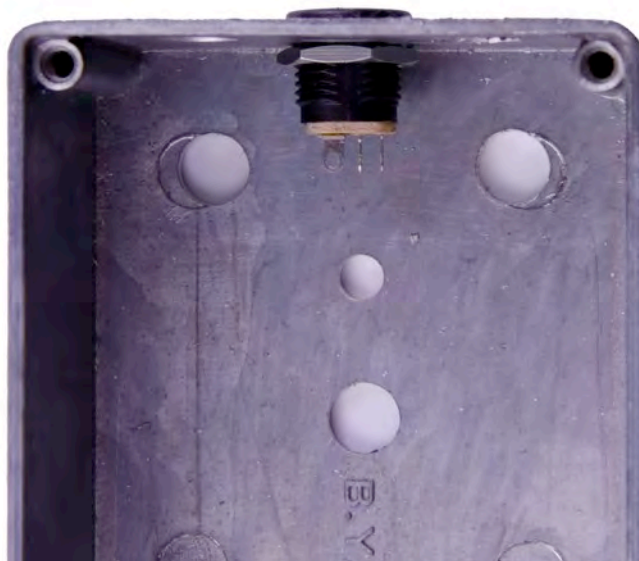
Step 8: Add wires to the IN, OUT, RING, and two Ground eyelets. Start by cutting four 2.5" pieces of wire, and one 1.5" piece. Strip 1/4" off each end and tin the ends. Tinning means to apply some solder to the stripped ends of the wires. This keeps the strands from fraying and primes the wire for soldering. Solder a 2.5" piece of wire to each of the IN, OUT, and Ground eyelets on the PCB. Solder the 1.5" piece to RING eyelet on the PCB. Load the wires in from the top and solder on the bottom of the PCB.

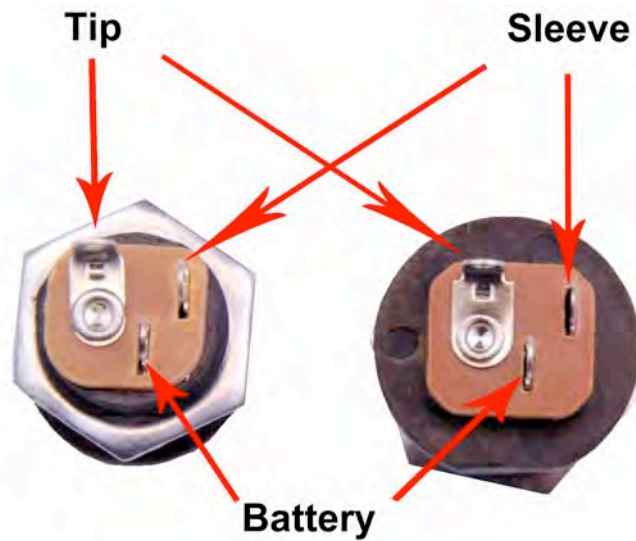


Main PCB Assembly

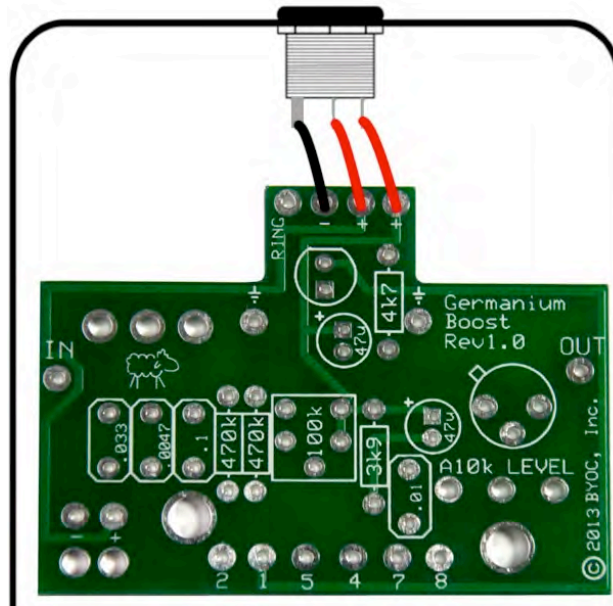


Step 1: Mount the AC adapter jack to the enclosure. Your kit may come with either an external thread or internal thread. Don't get confused by this. They still function exactly the same. You just thread the external nut on the outside and the internal nut on the inside. The picture below is of an internal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

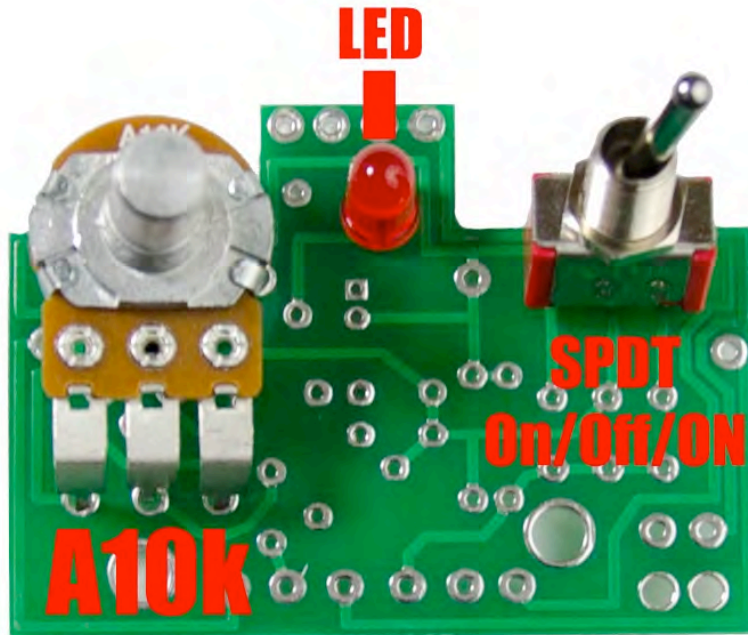


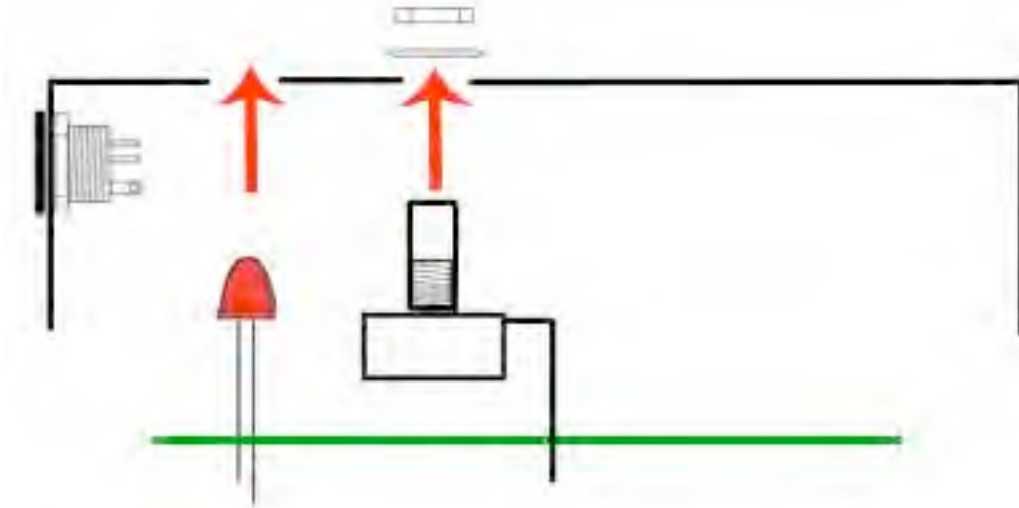


Step 2: Connect the TIP (negative) terminal of the DC adaptor jack to the eyelet on the PCB labeled “-“. Connect the SLEEVE of the DC adaptor jack to the eyelet on the PCB labeled “+” farthest to the right. Connect the battery disconnect terminal of the DC adaptor jack to the second eyelet on the PCB labeled “+” located in the middle of the other two eyelets . See diagram on the next page.



Step 3: Flip the PCB over so that the bottom or solder side is up. Insert the A10k potentiometer, Toggle Switch, and the 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.**





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 pot, 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 pot and toggle switch. Only tighten them with your fingers. **You do not want them very tight yet.**

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

Step 6: Solder the pot, toggle switch, and LED. You will solder these parts on the component side of the PCB (topside or the side with the silkscreened layout). After you have soldered them in place, be sure to tighten up their nuts.

Wiring

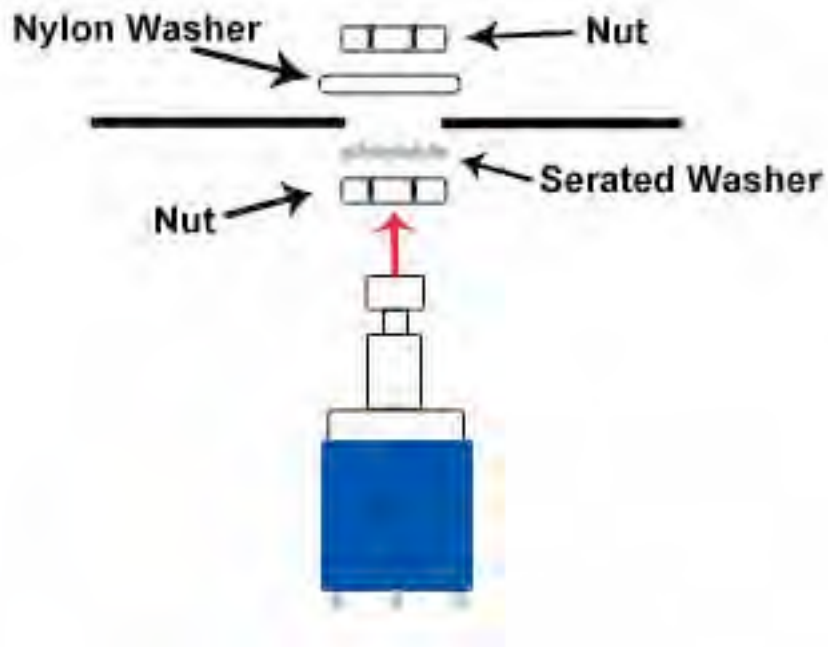
Stereo (input) Jack



Mono (output) Jack



Step 1: Install the 1/4" jacks to the enclosure. Be sure to add the internal tooth lock washers. The lock washers go on the inside of the enclosure. The flat washers and nuts go on the outside of the enclosure.

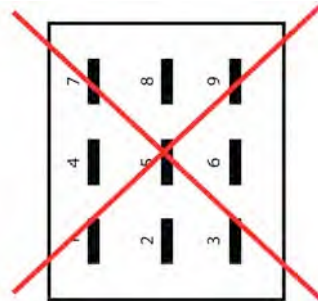
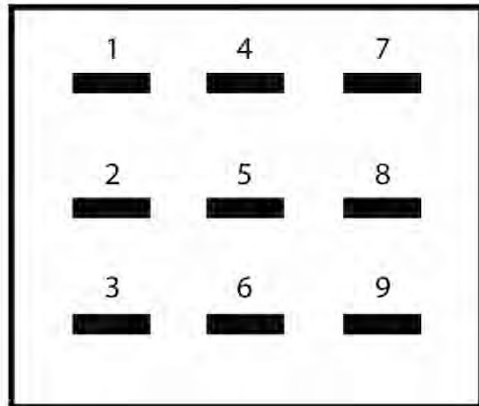


Step 2: Install the footswitch. Orient the footswitch so that the flat sides of the solder lugs are like the diagram below.

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.

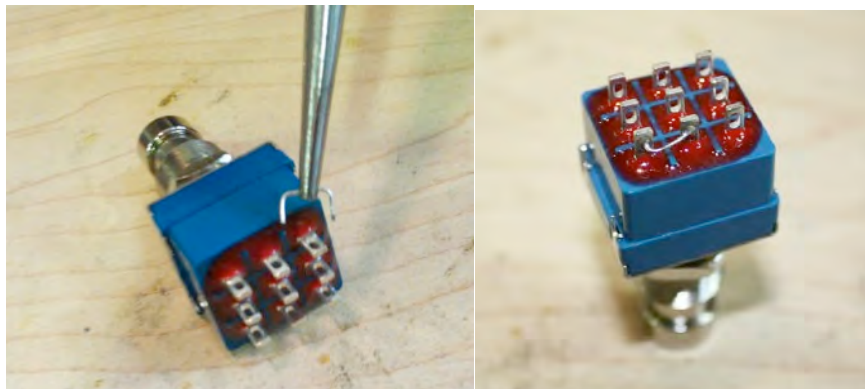
NOTE: It may be easier to wire up the foot switch before installing it into the pedal. There will be more room to work & it will be much easier to thread the lug 4 to lug 9 jumper.

FOOT SWITCH SOLDER LUG DESIGNATIONS



Step 3: Wiring the foot switch.

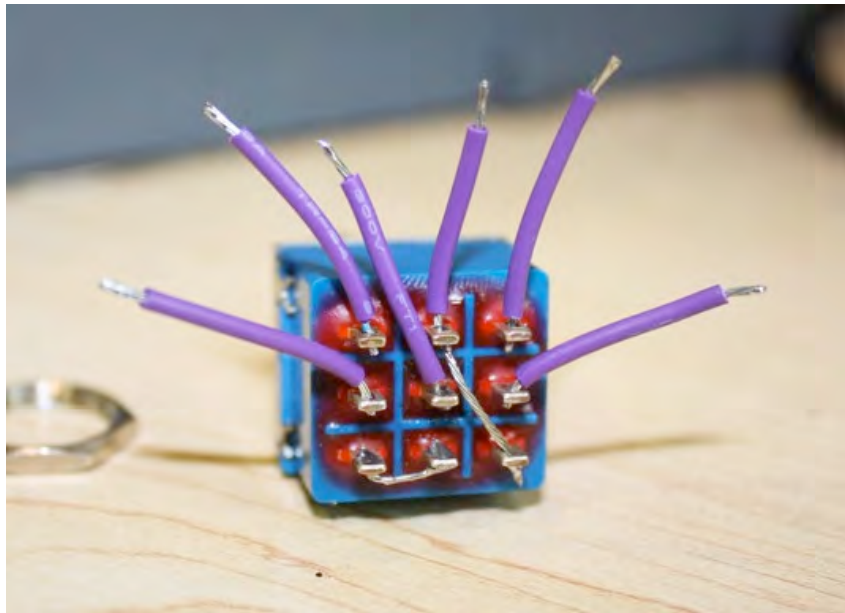
- Make a jumper between lugs 3 & 6 from clippings from the resistors. Simply use your needle nose pliers to make a U shape & insert into lugs 3 & 6, then solder.



- Cut a 1.5" piece of wire. Strip 1/8" of one end. Strip 1/2" off the other end. Tin both ends. This will be used to connect lug/eyelet 4. The longer stripped end will be used to jumper lug 4 to 9.

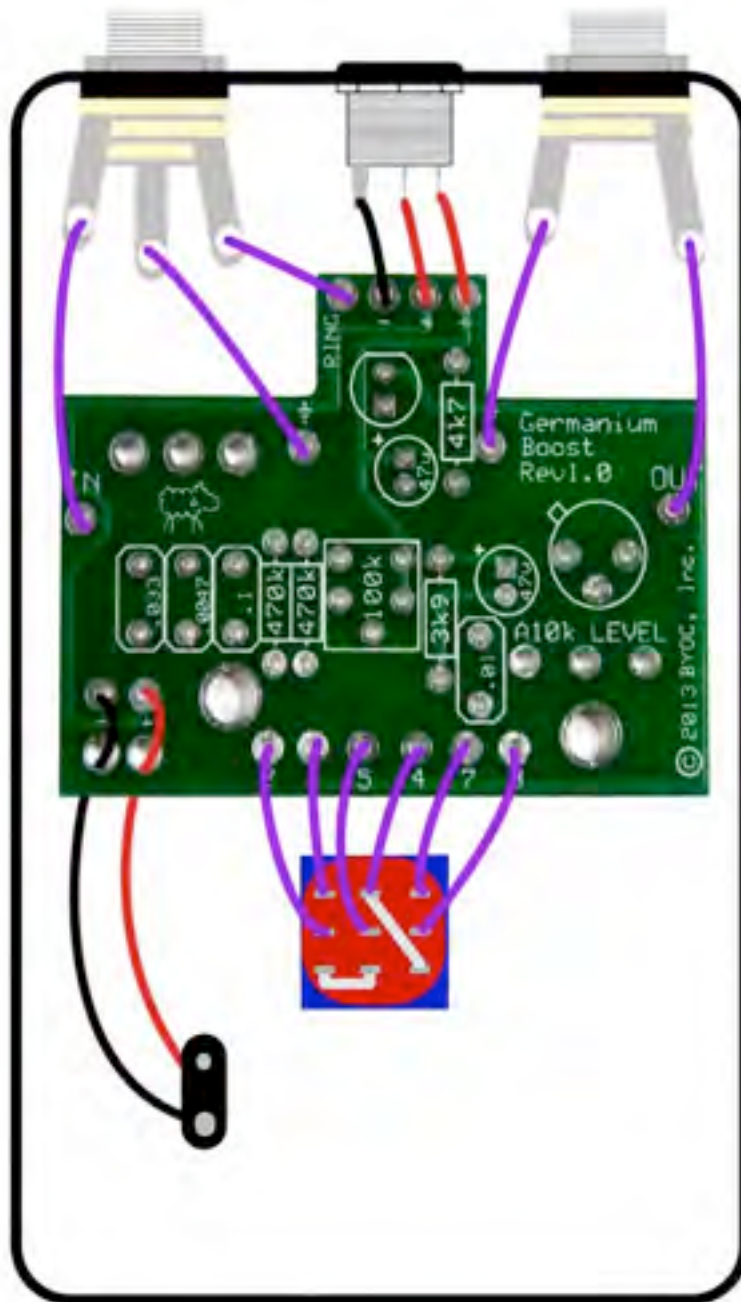


- Cut two 1" pieces of wire. Strip 1/8" off each end and tin. These will be used to connect lugs/eyelets 1 & 7
- Cut three 1.25" pieces of wire. Strip 1/8" off each end and tin. This will be used to connect lugs/eyelets 2, 5, & 8



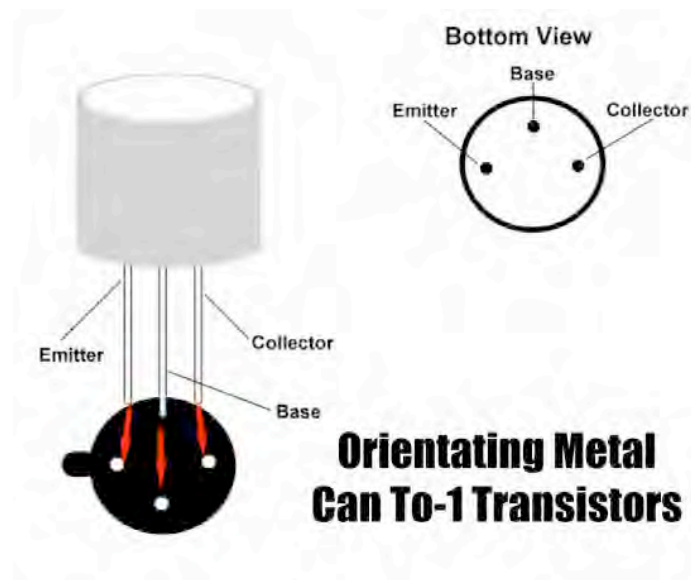
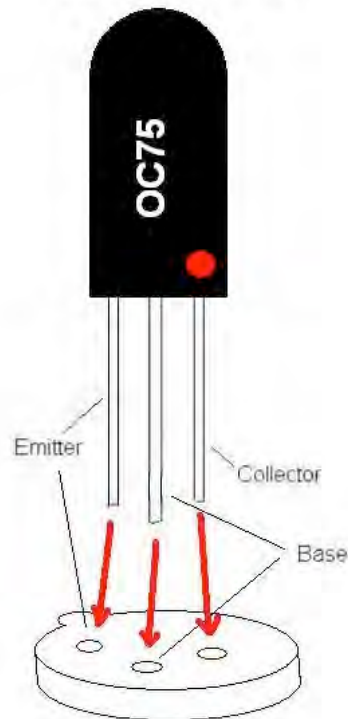
Step 4: Install the foot switch into the enclosure if it isn't already. Insert the foot switch wires into their respective eyelets on the PCB. You can insert them into the top side and solder on the top side as well. The solder pads should be large enough (if you are using a soldering iron that isn't too big) to allow you to do this without burning the PVC coating on the wires if you are careful. If you do singe the plastic on the wires, it's OK. It's not going to hurt anything. It's purely aesthetic.

Step 5: Connect the pre stripped and tinned wires to the 1/4" jacks and connect the wires from the footswitch to the PCB. The wire from the IN eyelet goes to the tip of the stereo jack. The wire from the RING eyelet goes to the ring of the stereo jack. The wire from the ** eyelet closest to the stereo jack goes to the sleeve of the stereo jack. The wire from the OUT eyelet goes to the tip of the mono jack. The wire from the ** eyelet closest to the mono jack goes to the sleeve of the mono jack. The wires on the footswitch go to the eyelets numbered correspondingly to the lug numbers.



Orienting Transistor's/Finish up

Orientating Black Glass TO-18 Transistors



Step 1: Install the transistors

Black Glass transistors will have a red dot that denotes the collector.

If a Metal Can transistor does not have an emitter tab, it will not have any obvious markers to help you orient. However, the leads will always be configured in an offset triangle. If you follow the diagram above, this should make it easy for you to properly orient your transistor.

If any of this is horribly confusing to you, DON'T FREAK OUT!!! Just remember that you will not damage your transistor if you install it into the socket with the orientation incorrect. Install the transistor as best you can, plug the pedal in, and test it. If it doesn't work, try again. Or send us a pic of how you oriented the transistor, and we'll help you out.

Do not solder the transistors. Simply push the lead wires into the appropriate socket holes. The transistor socket hole with the tab next to it will be the emitter. The lead wires on the germanium transistors will be rather long, so you will want to clip off the excess. But be sure to leave enough so you can bend the transistor down and out of the way when you seal the enclosure. But do not clip the transistor leads until you have tested your pedal and know that it works.

Step 2: Adjusting the bias trimpot.

There is no special trick to this. Simply turn the trimpot till it sounds good to you. Start with the trimpot set at noon and trust your ears for this step.

Operating Overview



Level: Controls the volume of the effect.

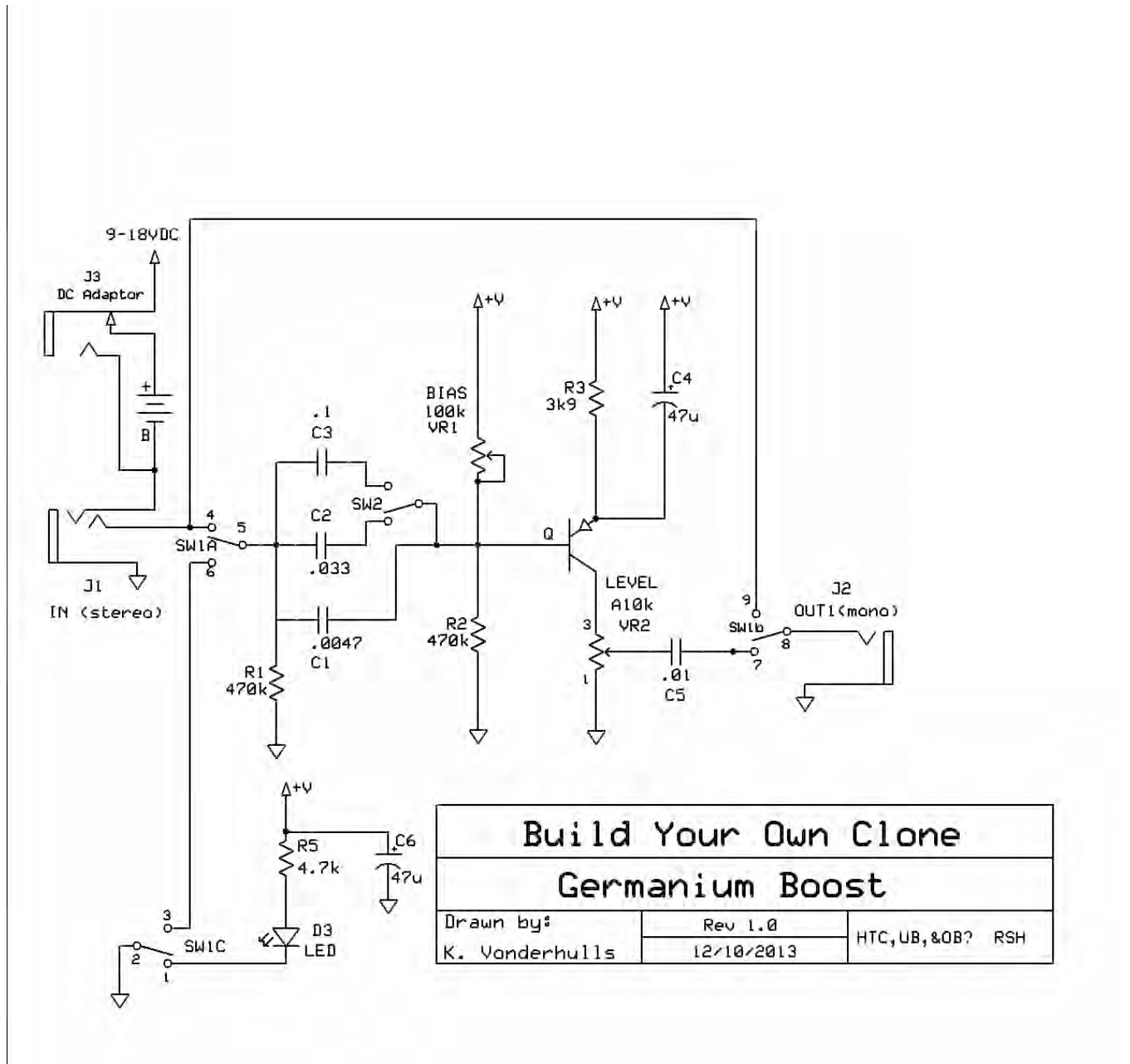
Toggle: Tone Control for Mids, Treble or Full

Power supply: 9V battery or 2.1mm negative tip, 9VDC only.

Current Draw: 2.5mA

Input Impedance: 470k ohms

Output Impedance: 10k ohms



For hi-rez schematic visit <http://www.byoelectronics.com/germaniumboostschematic.pdf>

Please visit
[Http://byoceletronics.com/board](http://byoceletronics.com/board)
For tech support

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