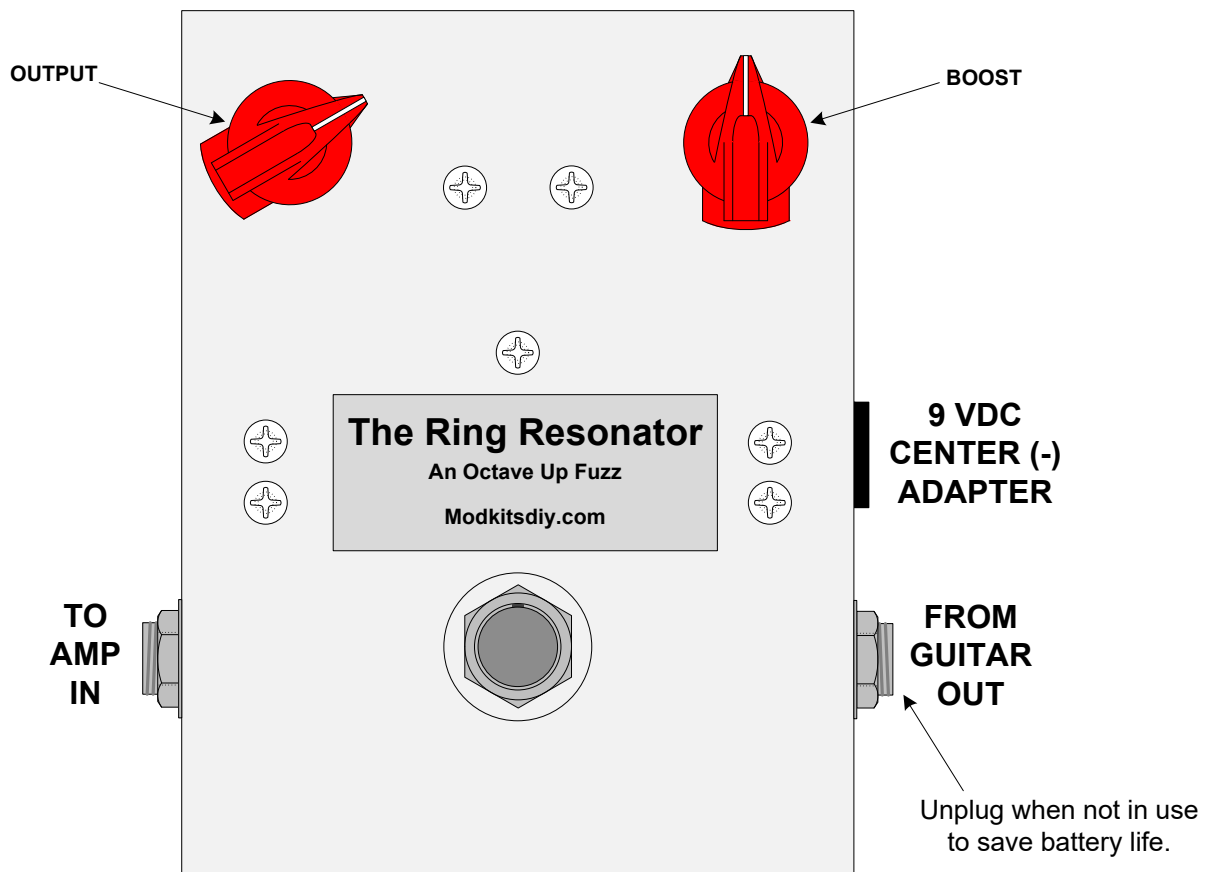


THE RING RESONATOR (K-975)



Use these instructions to learn:

- How to build an effects pedal for octave fuzz.

The Ring Resonator is an octave up fuzz effect that is an all analog design that captures those late 60's octave up fuzz tones. Transformer coupled germanium diodes produce sounds that range from a subtle octave up to thick, harmonically rich sonic textures, and synth like tones. Experimenting with different pickups and tone control settings on your guitar with the Ring Resonator can also produce sitar like sounds.

Warning: This circuit was designed for use with a 9 VDC power supply only.

MOD[®]
www.modkitsdiy.com

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ASSEMBLY DRAWINGS (4 Drawings)11, 12

These are the last 2 pages. They should be separated and used as a reference to help assemble the kit correctly.

Visit www.modkitsdiy.com if you have any problems when first turning on your pedal for troubleshooting help. Remember to use caution when applying power to the pedal to avoid electric shock.

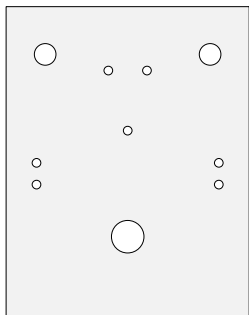
TOOL LIST

- Wire Strippers
- Needle Nose Pliers
- Cutting Pliers
- Desoldering Pump
- Solder (60/40 rosin core)
- Soldering Station
- Phillips Head Screwdrivers
- Slotted tip screwdrivers (3 mm tip)
- Channellock Pliers (or similar type)
- Ruler
- Hobby Vise (or other means to secure box while working)

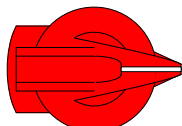
PARTS LIST 1

Stranded Wire (22 AWG) - Red
K-PUL1569 (3 FT)

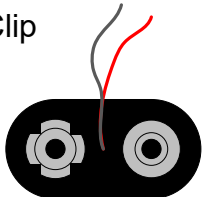
Enclosure
P-H1590BBCE-W (1)



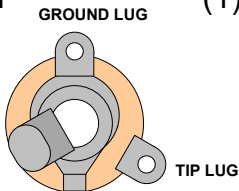
Mini Chicken Head Knob
P-K900R (2)



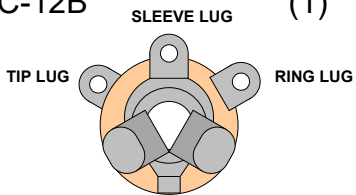
Battery Clip
S-H155 (1)



1/4" Mono Jack (Output Jack)
W-SC-11-T (1)



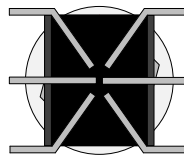
1/4" Stereo Jack (Input Jack)
W-SC-12B (1)



DC Power Jack
S-H750 (1)



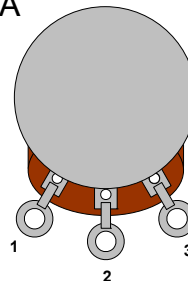
DPDT Foot Switch
P-H498 (1)



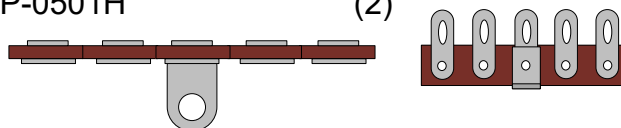
Potentiometers: 1KL and 500KA

R-VA1KL (1)

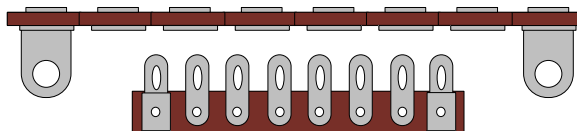
R-VA500KA (1)



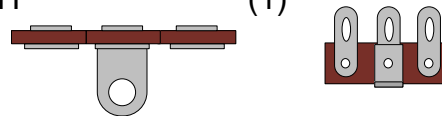
Terminal Strip with 5 Terminals
P-0501H (2)



Terminal Strip with 8 Terminals
P-0802H (2)



Terminal Strip with 3 Terminals
P-0301H (1)



#4 Screw (3/8" long)
S-HS440-38 (7)



#4 Nut
S-HHN440 (7)



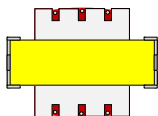
#4 Lock Washer
S-HLW4 (7)



PARTS LIST 2

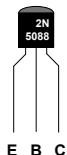
Audio Transformer (1.5K : 600 Ω)

P-T42TM022 (1)



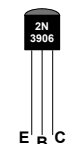
NPN BJT (2N5088)

P-Q2N5088 (2)



PNP BJT (2N3906)

K-PQ-2N3906 (1)



Germanium Diode (1N34A)

P-Q972 (2)



100 μ F Polarized Capacitor 25V

C-ET100-25-IL (2)



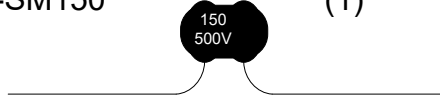
33 μ F Polarized Capacitor 50V

C-ET33-50 (2)



150pF Capacitor 500V

C-SM150 (1)



0.1 μ F Capacitor 100V

C-PEID1-100 (1)



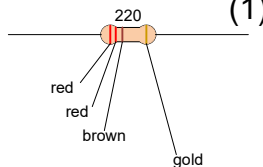
0.001 μ F Capacitor 100V

C-PEID001-100 (1)



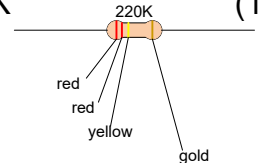
220 Ω Resistor $\frac{1}{2}$ W

R-A220 (1)



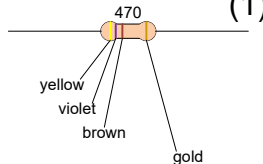
220k Ω Resistor $\frac{1}{2}$ W

R-A220K (1)



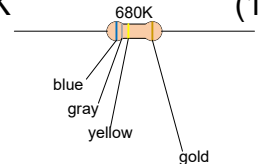
470 Ω Resistor $\frac{1}{2}$ W

R-A470 (1)



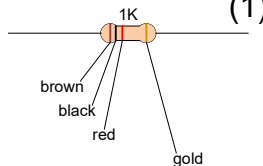
680k Ω Resistor $\frac{1}{2}$ W

R-A680K (1)



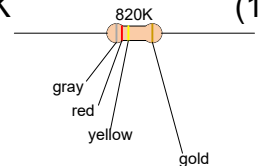
1k Ω Resistor $\frac{1}{2}$ W

R-A1K (1)



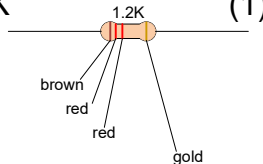
820k Ω Resistor $\frac{1}{2}$ W

R-A820K (1)



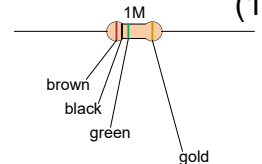
1.2k Ω Resistor $\frac{1}{2}$ W

R-A1D2K (1)



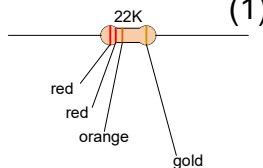
1M Ω Resistor $\frac{1}{2}$ W

R-A1M (1)



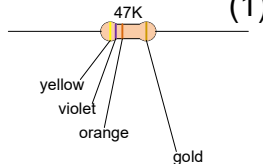
22k Ω Resistor $\frac{1}{2}$ W

R-A22K (1)



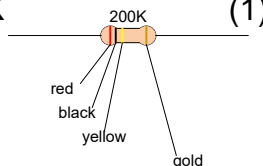
47k Ω Resistor $\frac{1}{2}$ W

R-A47K (1)



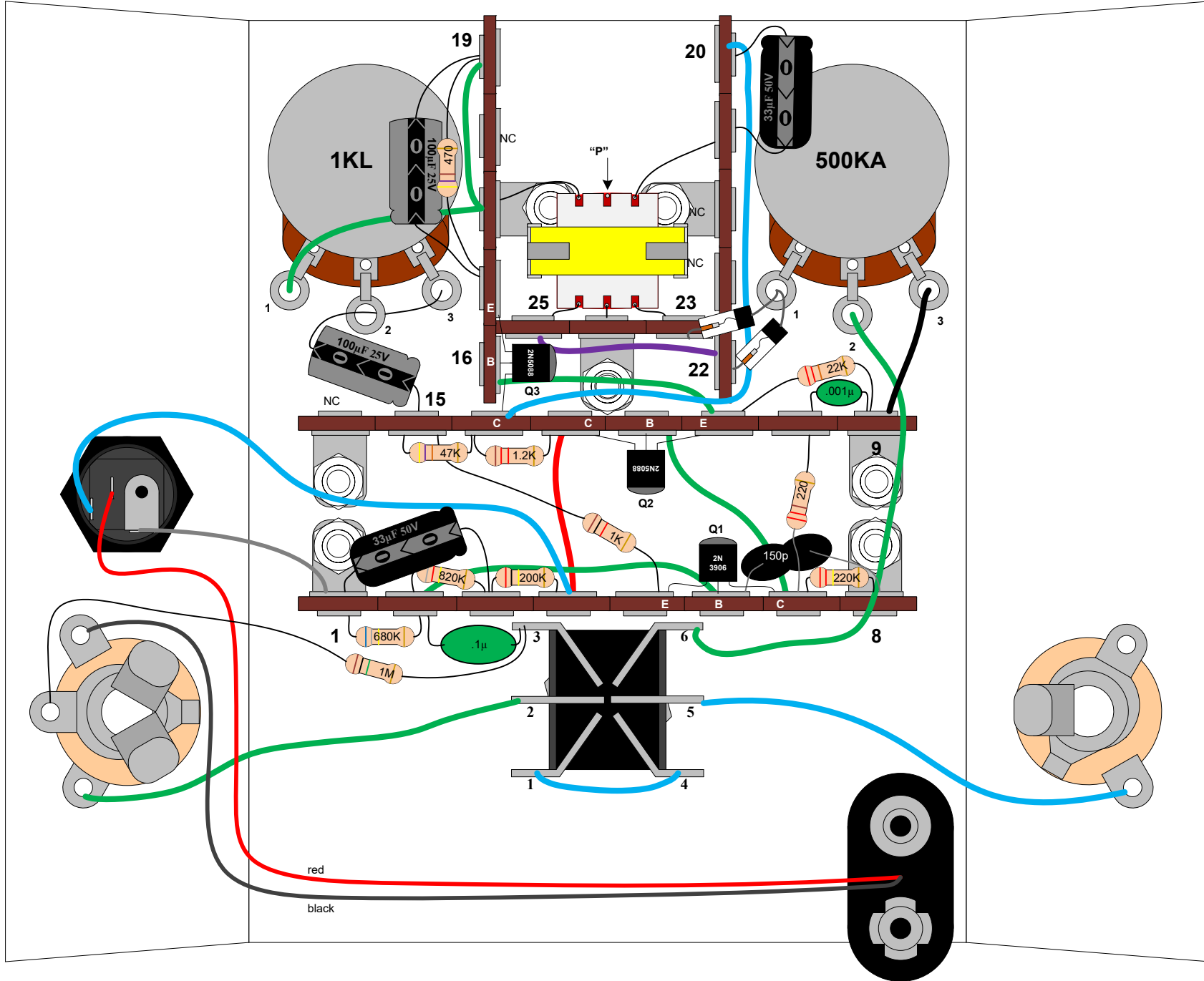
200k Ω Resistor $\frac{1}{2}$ W

R-A200K (1)



FINAL ASSEMBLY REFERENCE DRAWING

This is a large version of the final assembly drawing. Refer to this drawing as you make your way through each step of the instructions. Before you make a new connection at a particular terminal or solder lug, notice how many other connections will be made at that terminal. That way you can decide whether it's best for you to solder the connection and leave space open for future connections or hold off on soldering until after every connection at that location has been made.

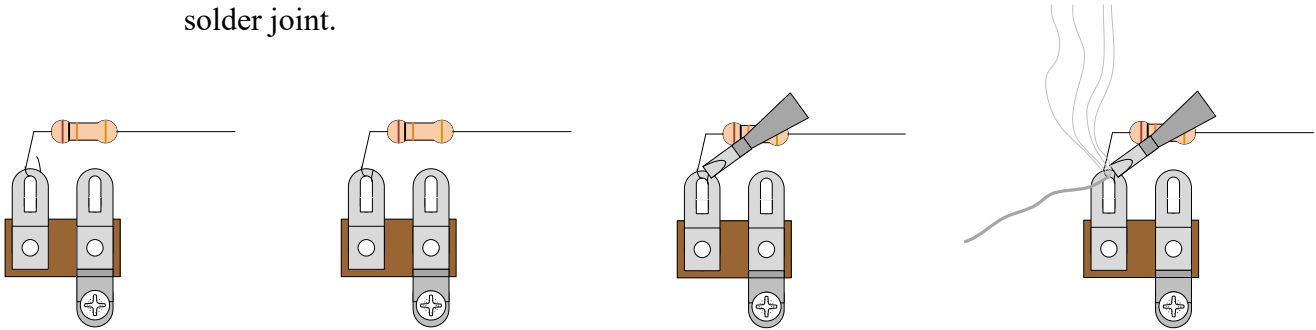


SOLDERING TIPS

It is important to make a good solder joint at each connection point. A cold solder joint is a connection that may look connected but is actually disconnected or intermittently connected. (A cold solder joint can keep your project from working.)

Follow these tips to make a good solder joint. *Take your time with each connection and make sure that all components are connected and will remain connected if your project is bumped or shaken.*

1. Bend the component lead or wire ending and wrap it around the connection point.
 - Make sure it is not too close to a neighboring component which could cause an unintended connection.
2. Wrap the component lead so that it can hold itself to the connection point.
3. Touch the soldering iron to both the component lead and the connection point allowing both to warm up just before applying the solder to them.
4. Be sure to adequately cover both component lead and connection point with melted solder.
 - Remove the soldering iron from your work and allow the solder joint to cool. (The solder joint should be shiny and smooth after solidifying.)
 - Cut off any excess wire or component leads with cutting pliers.
 - Clean the soldering iron's tip by wiping it across the wet sponge again after making the solder joint.



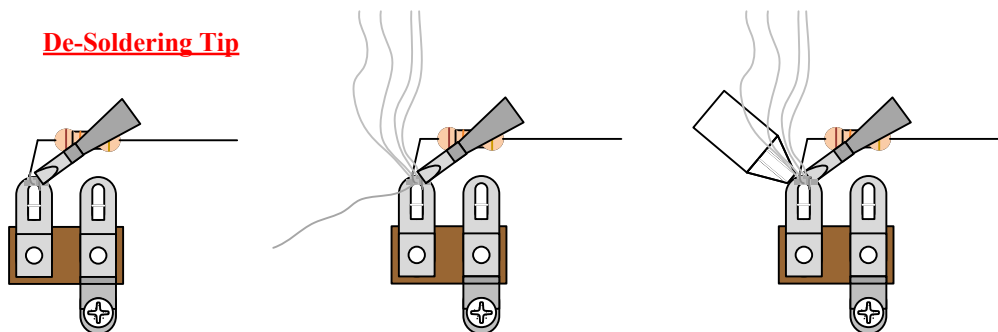
1. Bend the component lead and wrap it around the connection point.

2. Wrap the component lead so that it can hold itself to the connection point.

3. Heat up both component lead and connection point with the soldering iron.

4. Apply solder to both component lead and connection point.

De-Soldering Tip



1. Heat up old solder joint with the soldering iron.

2. Apply fresh solder to mix in with old solder joint

3. Use a de-soldering tool to remove the old solder joint while it is heated.

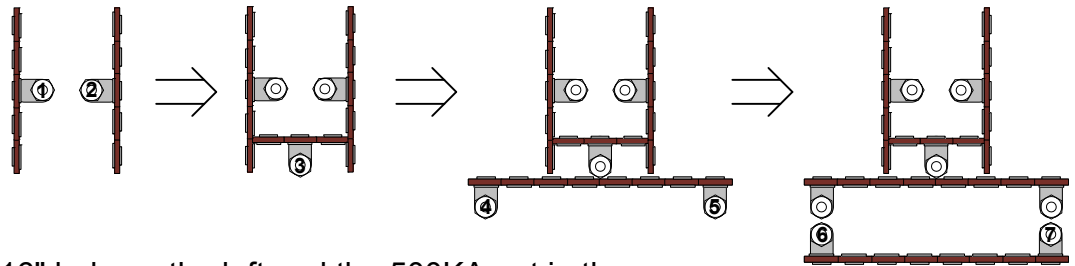
SECTION 1 – Mount Large Components

Please refer to **DRAWING 1** and **DRAWING 2**.

Orient the enclosure with the two 5/16" holes on top.

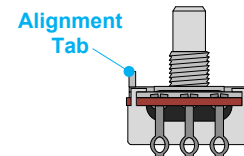
Using the seven screws, nuts and lock washers provided, fasten the five terminal strips to match **DRAWING 2**.

Fasten the two 5 lug terminal strips and the 3 lug terminal strips first. Then fasten the two 8 lug terminal strips.

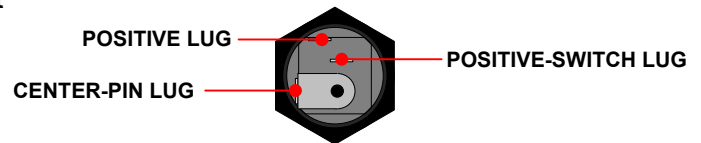


Mount the 1KL pot in the 5/16" hole on the left and the 500KA pot in the remaining 5/16" hole on the right.

- Bend back and remove the alignment tab on the top of each potentiometer using a pair of pliers before mounting the pots so that they can mount flush against the enclosure surface.



Mount the DC power jack in the 15/32" hole on the left side of the enclosure. Orient its solder lugs so that the center-pin lug is facing the bottom side of the enclosure.



Mount the input jack in the 3/8" hole on the left side of the enclosure with the hardware provided. The washer goes under the nut on the outside of the enclosure. Make sure the center solder lug of the input jack is facing up. Correct positioning of the jack makes soldering the connections easier.

Mount the output jack in the 3/8" hole on the right side of the enclosure. Make sure the two solder lugs are in their most upright position before tightening the nut.

Mount the footswitch in the 15/32" hole in the center of the enclosure. The nylon washer goes under the mounting nut on the outside of the enclosure. Then the lock washer mounts on the inside between the enclosure surface and the other nut. Make sure that the footswitch is oriented to match **DRAWING 2**.

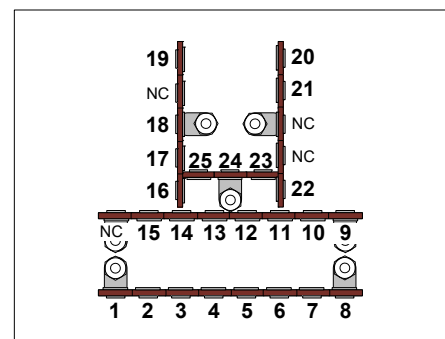
SECTION 2 – Wire Large Components

Please refer to **DRAWING 3**.

Stripping wire, tinning wire and soldering. Throughout these instructions you will be told to strip and tin a length of wire numerous times. Unless noted otherwise, cut the wire to the length stated in the instructions. Then strip 1/4" of insulation off each end. Twist each end of the stranded wire, and apply a small amount of solder to each end (i.e. tin the wire ends).

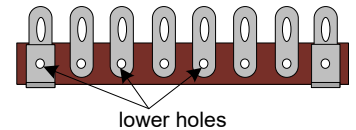
This will prevent the stranded wire from fraying and will make the final soldering much easier.

Please note that each terminal has been numbered as illustrated here and will be referred to as a "terminal #_" when connecting different components and wires throughout the assembly instructions.



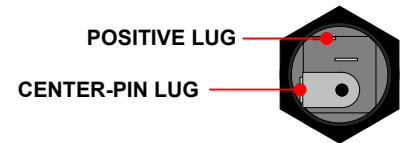
- Strip and tin a 2" piece of wire and connect Footswitch lug 5 to the output jack's tip lug.
- Strip and tin a 1 ½" piece of wire and connect Footswitch lugs 1 and 4.
- Strip and tin a 2" piece of wire and connect Footswitch lug 2 to the input jack's tip lug.
- Strip and tin a 4" piece of wire and connect Footswitch lug 6 to the 500KA pot's lug 2.

- Strip and tin a 1 ½" piece of wire and connect it from the lower hole of terminal #7 to the lower hole of terminal #12. *(This allows for more room when connecting components later in the instructions).*



- Strip and tin a 2 ½" piece of wire and connect it from the lower hole of terminal #2 to the lower hole of terminal #6.
- Strip and tin a 1 ¼" piece of wire and connect it from terminal #4 to the lower hole of terminal #13. **Do not solder the terminal #4 connection, yet.**

- Strip and tin a 2" piece of wire and connect it from terminal #4 to the power jack's positive lug. **Leave room at #4 for the 200K resistor that will mount to #3 and #4 later on.**



- Strip ¾" of insulation off the end of the wire spool, twist and tin it. When this tinned wire end cools, cut off the bare portion of wire. (This will be used as a short jumper wire). Connect this jumper from the power jack's center-pin lug to terminal #1. Use the excess length of this jumper to wrap around the connection points.
- Strip and tin a 1 ¼" piece of wire and the 500KA pot's lug 3 to terminal #9.
- Strip and tin a 4" piece of wire and connect from the lower hole of terminal #14 to the lower hole of terminal #20.
- Strip and tin a 1 ¾" piece of wire and connect terminals #11 and #16.
- Strip and tin a 1 ¼" piece of wire and connect terminals #22 and #25.
- Strip and tin a 1 ½" piece of wire and connect terminal #18 to the 1KL pot's lug 1. **Do not solder the terminal #18 connection, yet.**
- Strip and tin a 1 ½" piece of wire and connect terminals #18 and #19. **Now solder the #18 connection.**

Double check all of your connections at this point because it will be very difficult to make corrections after the components are soldered into place.

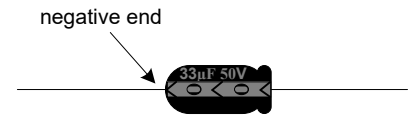
SECTION 3 – Mount Components to Terminal Strips

Please refer to DRAWING 4.

Connect and solder all the following components to their respective terminals as listed. *(Make sure that none of the component leads are so close together that it could cause an unintended short).*

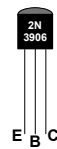
- Connect the 680K resistor to terminals #1 and #2.
- Connect the 0.1µF cap to terminal #2 and Footswitch lug 3. Mount this cap upside down with its leads facing up.
- Connect the 1M resistor to footswitch lug 3 and the input jack's ground lug.

- Connect the 820K resistor to terminals #2 and #3. Push this component down slightly to allow room for the next component. **Do not solder the connection on terminal #3, yet.**
- Connect one of the 33 μ F caps to terminals #1 and #3. Make sure the negative (-) end of the cap is connected to terminal #1. **Do not solder the connection on terminal #3, yet.**



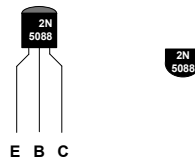
- Connect the 200K resistor to terminals #3 and #4. **Solder the connections at #3, now.**
- Connect the 220K resistor to terminals #7 and #8.
- Connect the 150pF cap to terminals #6 and #8. Push this cap down to allow room for the next component.
- Connect the 220 ohm resistor to terminals #7 and #10.
- Connect the 2N3906 transistor to terminals #5, #6 and #7 as listed below. **Do not solder the terminal #5 connection, yet.**

Terminals #5: Emitter
Terminals #6: Base
Terminals #7: Collector



- Connect the 1K resistor to terminal #5 and #15. **Now solder the #5 connection.**
- Connect the .001 μ F cap to terminals #9 and #10.
- Connect the 22K resistor to terminals #9 and #11.
- Connect one of the 2N5088 transistors to terminals #11, #12 and #13 as listed below.

Terminals #11: Emitter
Terminals #12: Base
Terminals #13: Collector

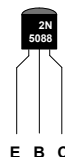


- Connect the 1.2K resistor to terminals #13 and #14. **Leave room on #14 for mounting Q3 later.**
- Connect the 47K resistor to terminals #14 and #15. **Leave room on #14 for mounting Q3 later.**
- Connect the positive (+) end of a 100 μ F cap to terminal #15 and the negative (-) end to both lugs 2 and 3 of the 1KL pot.



- Connect the remaining 2N5088 transistor to terminals #14, #16 and #17 as listed below.

Terminals #14: Collector
Terminals #16: Base
Terminals #17: Emitter

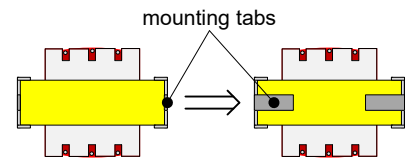


- Connect the 470 ohm resistor to terminals #17 and #19. *(Remember that terminals #17 and #19 are three terminals apart from one another so make sure you connect correctly).*

- Connect the remaining 100 μ F cap to terminals #17 and #19. Make sure the negative (-) end is connected to #19.



- Press the metal mounting tabs of the transformer inward so they are flush with the bottom of the transformer. Now place the transformer upside down in the enclosure in the area shown on DRAWING 4. The side marked “P” should be facing the top side of the enclosure.

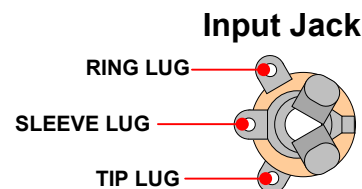
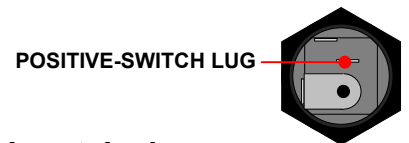


- With the transformer resting upside down, insert its three leads facing the bottom side of the enclosure through terminals #23, #24 and #25, but do not solder.
- Only two of the three leads on the “P” side of the transformer will be used. Connect the lead on the left side to terminal #18. Connect the lead on the right side to terminal #21.
- Carefully clip off the remaining unused middle lead on the “P” side of the transformer and solder the three transformer lead connections at terminals #23, #24 and #25.
- Connect the remaining 33 μ F cap to terminals #20 and #21. Make sure the negative (-) end is connected to #21.

- Connect one of the 1N34A diodes to terminal #23 and the 500KA pot's lug 1. Make sure the black (cathode) end connects to the pot lug 1. **Do not solder the Pot lug 1 connection, yet.**



- Connect the remaining 1N34A diode to terminal #22 and lug 1 of the 500KA pot (also with the cathode end at lug 1). **Now solder the connection at lug 1.**
- Locate the battery snap connector. Connect and solder the red lead to the positive-switch lug of the power jack.
- Connect and solder the black lead of the battery snap connector to the input jack's ring lug.



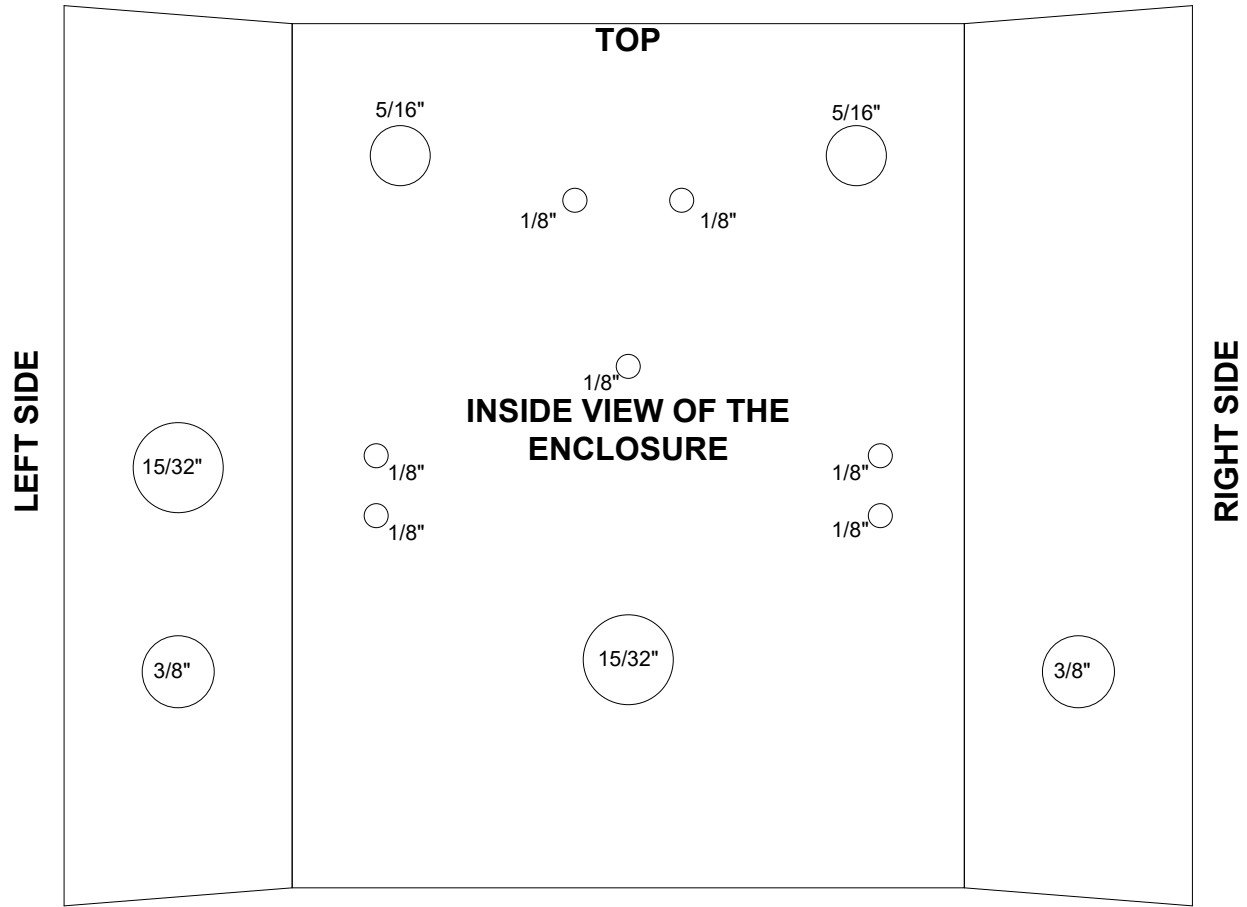
SECTION 4 – Finishing Up

It's always a good idea to thoroughly double-check your connections before applying power.

Attach the knobs provided to the two potentiometer shafts. Install 9 volt battery, close cover using screws provided. Plug guitar into input jack on right. This turns unit on. Plug cable into output jack and plug into your amplifier.

Unplug from the input jack of the unit to turn it off and save power.

DRAWING 1



DRAWING 2

