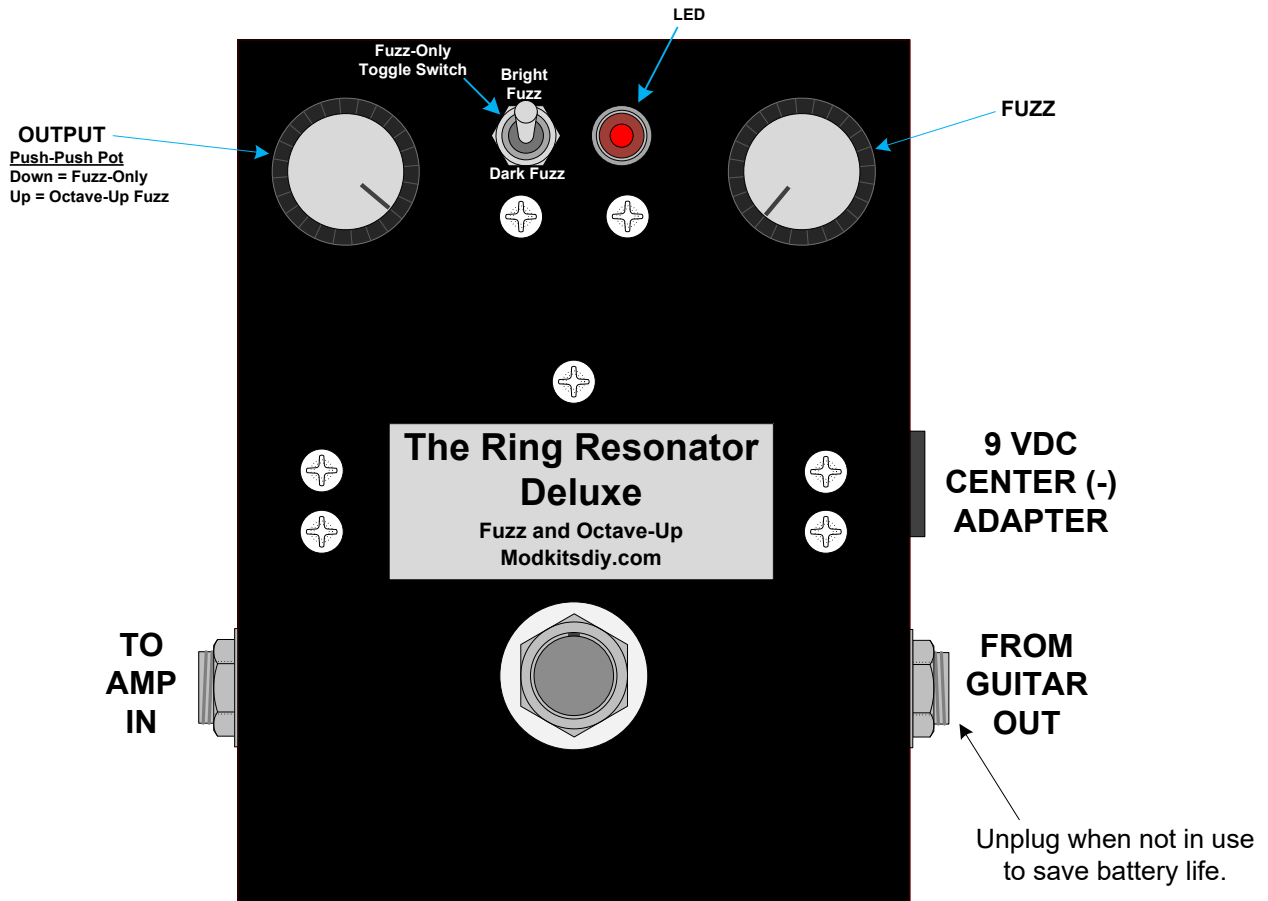


THE RING RESONATOR DELUXE (K-976)



Use these instructions to learn:

- How to build an effects pedal for fuzz and octave-up fuzz.

The Ring Resonator Deluxe is like having two all analog pedals in one. It contains the octave-up fuzz effect of the original Ring Resonator with added LED, push-push output pot and mini-toggle switch. With the push-push output pot down, the octave-up effect is removed and fuzz-only is achieved. In the fuzz-only mode of operation the toggle switch allows you to switch between dark fuzz and bright fuzz tones.

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

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www.modkitsdiy.com

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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 and e-mail info@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.

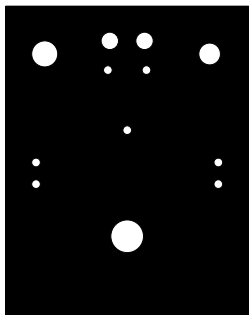
TOOL LIST

- Wire Strippers
- Needle Nose Pliers
- Cutting Pliers
- Desoldering Pump
- Solder (60/40 rosin core)
- Soldering Station
- Phillips Head Screwdrivers
- Slotted tip screwdrivers (**2 mm tip**)
- Channellock Pliers (or similar type)
- Ruler
- Hobby Vise (or other means to secure box while working)

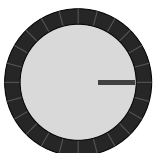
PARTS LIST 1

Stranded Wire (22 AWG) - Red
K-PUL1569 (4 FT)

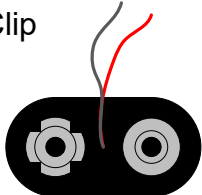
Enclosure
P-H1590BBCE-BK (1)



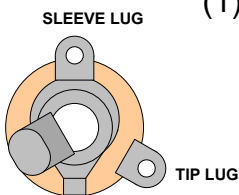
Knob, Black with Silver Top
P-K392 (2)



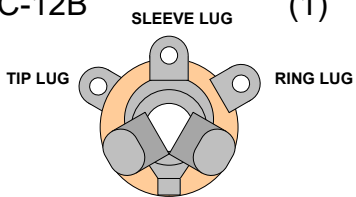
Battery Clip
S-H155 (1)



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



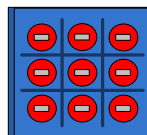
1/4" Stereo Jack (Input Jack)
W-SC-12B (1)



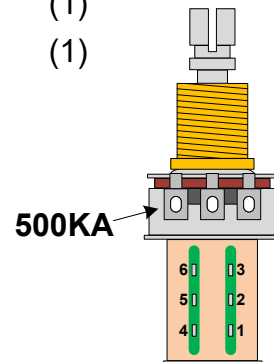
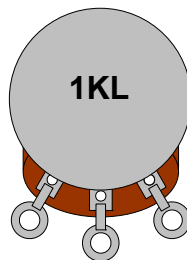
DC Power Jack
S-H750 (1)



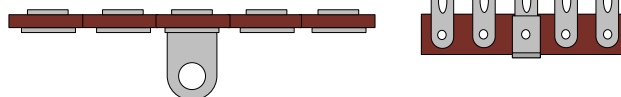
3PDT Foot Switch
P-H501 (1)



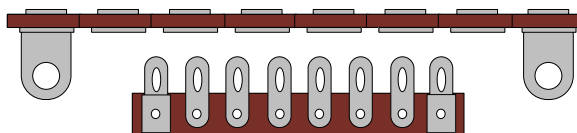
Potentiometers: 1KL and 500KA
R-VA1KL (1)
R-VPSH-500KA (1)



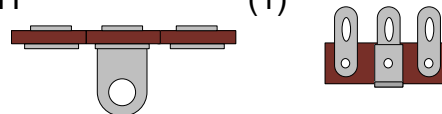
Terminal Strip with 5 Terminals
P-0501H (2)



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)



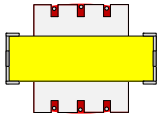
#4 Lock Washer
S-HLW4 (7)



PARTS LIST 2

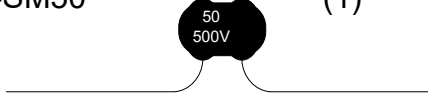
Audio Transformer (1.5K : 600 Ω)

P-T42TM022 (1)



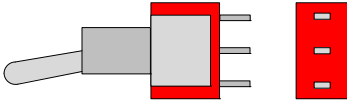
50pF Capacitor 500V

C-SM50 (1)



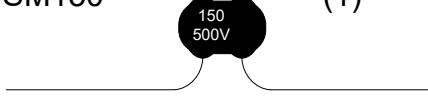
P-H540 (1)

SPDT Mini Toggle Switch



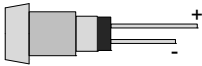
150pF Capacitor 500V

C-SM150 (1)



Light Emitting Diode

P-L400 (1)



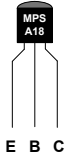
0.1 μ F Capacitor 100V

C-PEID1-100 (1)



NPN BJT (2N5088)

P-Q2N5088 (2)



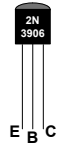
0.001 μ F Capacitor 100V

C-PEID001-100 (1)



PNP BJT (2N3906)

K-PQ-2N3906 (1)



100 μ F Polarized Capacitor 25V

C-ET100-25-IL (2)



Germanium Diode (1N34A)

P-Q972 (2)



33 μ F Polarized Capacitor 50V

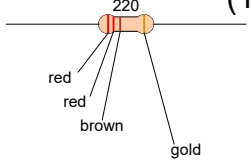
C-ET33-50 (2)



PARTS LIST 3

*220Ω Resistor ½ W

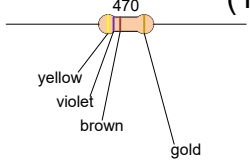
R-A220 (1)



**Do not confuse the red, red, brown 220 ohm resistor with the brown, red, red 1.2K resistor.*

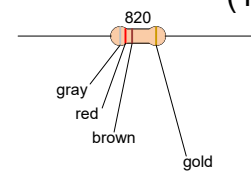
470Ω Resistor ½ W

R-A470 (1)



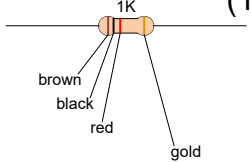
820Ω Resistor ½ W

R-A820 (1)



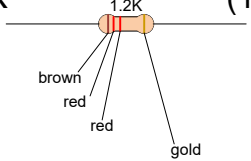
1kΩ Resistor ½ W

R-A1K (1)



*1.2kΩ Resistor ½ W

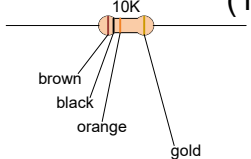
R-A1D2K (1)



**Do not confuse the red, red, brown 220 ohm resistor with the brown, red, red 1.2K resistor.*

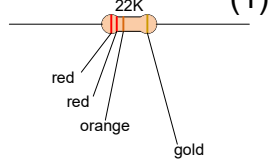
10kΩ Resistor ½ W

R-A10K (1)



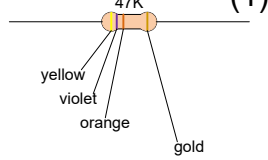
22kΩ Resistor ½ W

R-A22K (1)



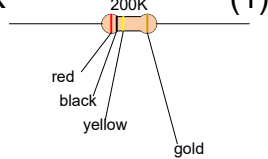
47kΩ Resistor ½ W

R-A47K (1)



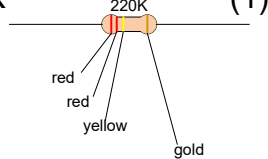
200kΩ Resistor ½ W

R-A200K (1)



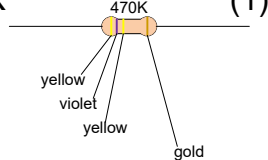
220kΩ Resistor ½ W

R-A220K (1)



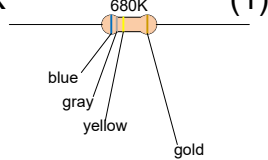
470kΩ Resistor ½ W

R-A470K (1)



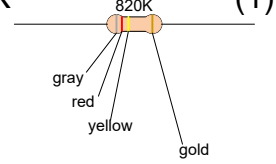
680kΩ Resistor ½ W

R-A680K (1)



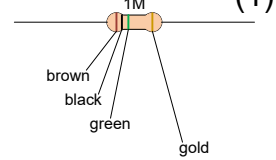
820kΩ Resistor ½ W

R-A820K (1)



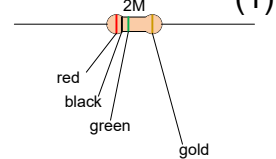
1MΩ Resistor ½ W

R-A1M (1)



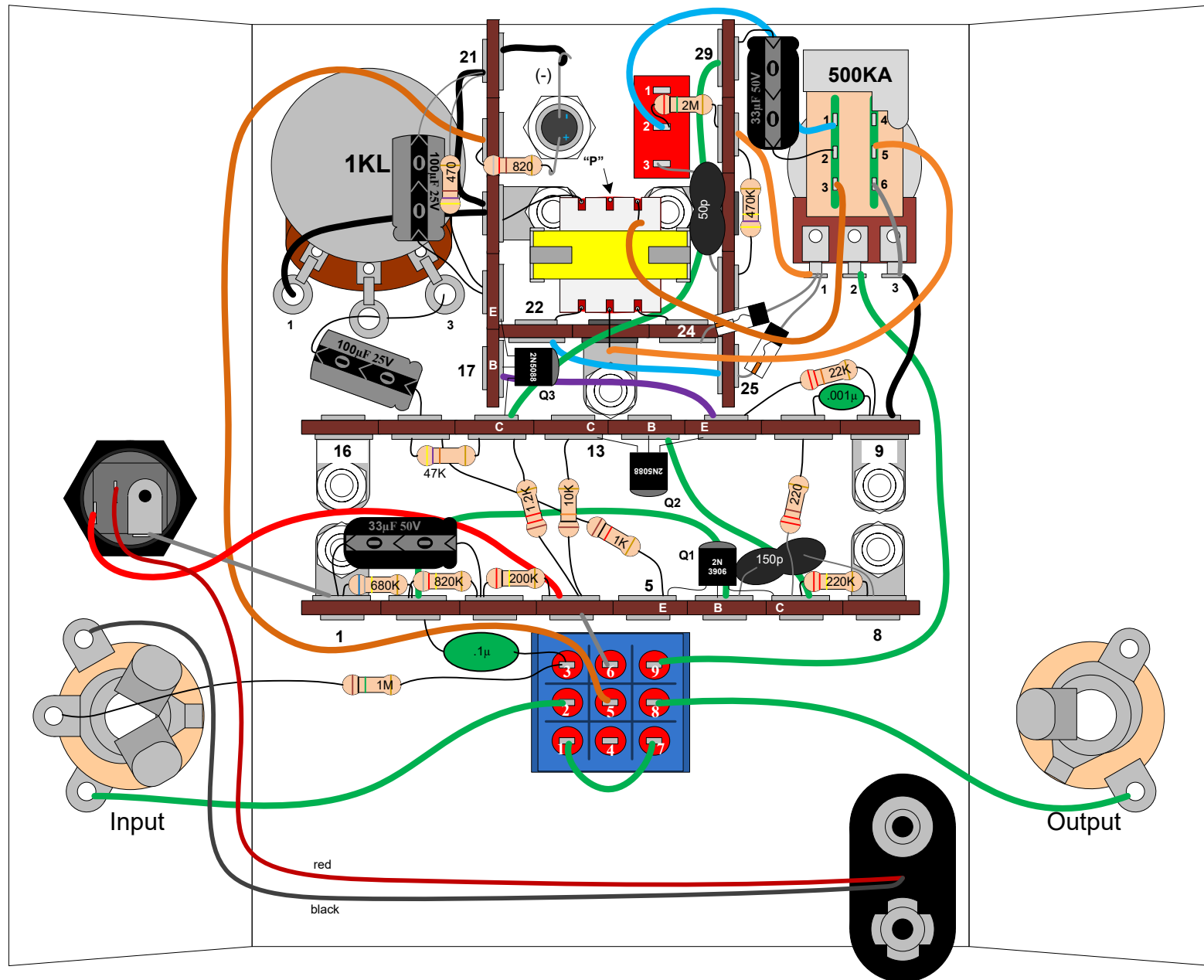
2MΩ Resistor ½ W

R-A2M (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.

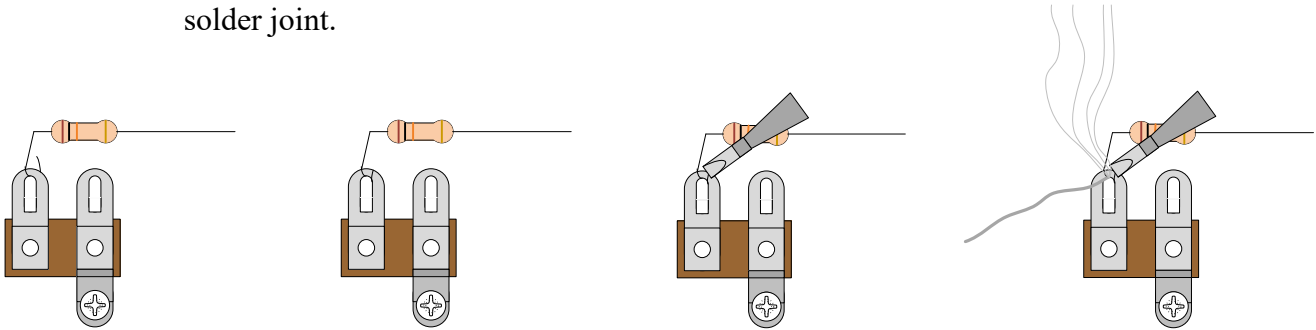


SOLDERING TIPS

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.



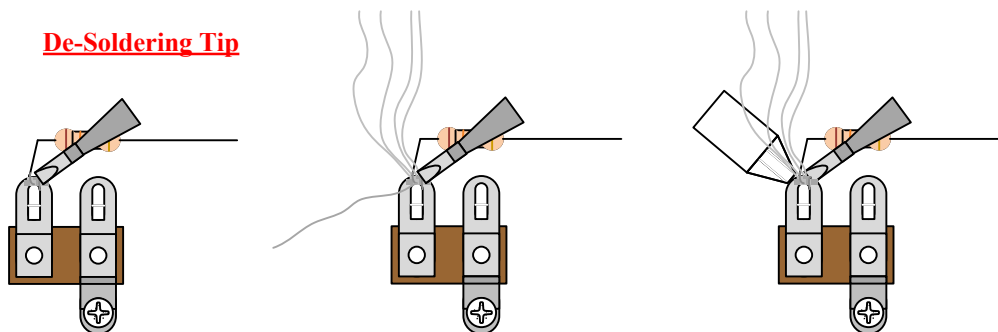
1. Bend the component lead and wrap it around the connection point.

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.

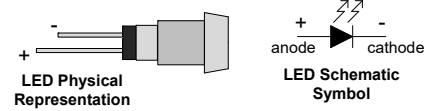
SECTION 1 – Mount Large Components

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

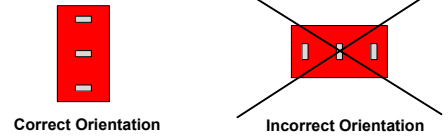
Orient the enclosure with the two 1/4" holes on top.

- Mount the LED in the 1/4" hole that's closer to the top left on the inside of the enclosure. Align the LED leads so that the cathode (-) lead is closer to the top side of the enclosure as shown in Drawing 2.

The Cathode (-) side of the LED is indicated by a slightly shorter lead and/or a negative sign.

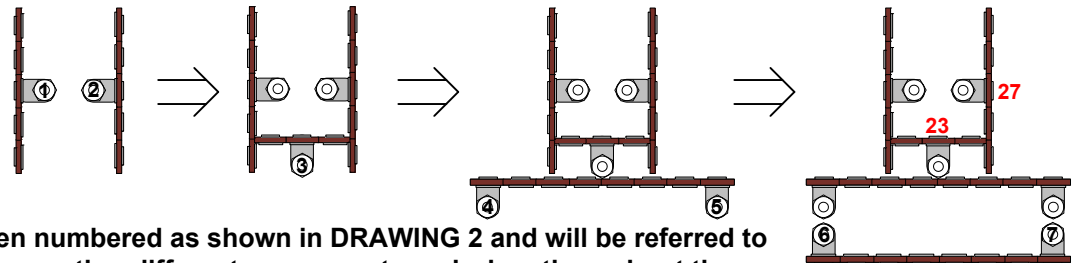


- Mount the toggle switch in the 1/4" hole that's closer to the top right on the inside of the enclosure. Make sure its solder lugs are oriented as shown in Drawing 2.



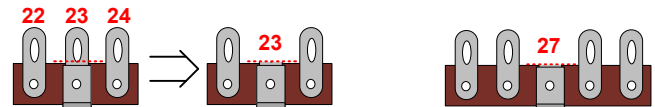
- Using the seven screws, nuts and lock washers provided, fasten the five terminal strips to match **DRAWING 2**.

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



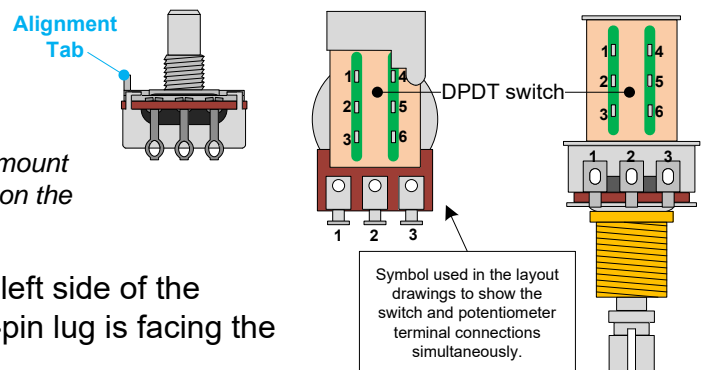
Note each terminal has been numbered as shown in **DRAWING 2** and will be referred to as a "terminal #_" when connecting different components and wires throughout the assembly instructions.

- Use cutters to clip off terminals #23 and #27. They will not be used and will only get in the way.



- Mount the 1KL pot in the 5/16" hole on the left side of the enclosure and the 500KA push-push pot in the 3/8" hole on the right side.

- Bend back and remove the alignment tab on the top of the 1KL pot using a pair of pliers before mounting so that it can mount flush against the enclosure surface.
- For a proper fit inside the enclosure, only use one nut to mount the push-push pot. Place the washer underneath the nut on the outer surface of the enclosure.



- 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**.

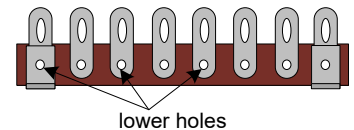
SECTION 2 – Wire Large Components

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 $\frac{1}{4}$ " 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.

- Strip and tin a 2" piece of wire and connect Footswitch lug 8 to the output jack's tip lug.
- Strip and tin a 1 $\frac{1}{2}$ " piece of wire and connect Footswitch lugs 1 and 7 to each other.
- 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 9 to the 500KA pot's lug 2.

- Strip and tin a 1 $\frac{1}{2}$ " 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).*

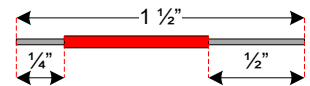


- Strip and tin a 2 $\frac{1}{2}$ " piece of wire and connect it from the lower hole of terminal #2 to the lower hole of terminal #6.

- 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 connecting three resistors later on.**

- Strip $\frac{3}{4}$ " 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.

- Cut a 1 $\frac{1}{2}$ " piece of wire. Strip and tin $\frac{1}{2}$ " on one end and the usual $\frac{1}{4}$ " on the other. Connect the $\frac{1}{4}$ " end to terminal #9 and connect the $\frac{1}{2}$ " end to both 500KA pot lug 3 and its push-push switch lug 6. *(You can wrap the tinned wire end around switch lug 6 if it's too big to fit through the hole easily.)*



- Strip and tin a 1 $\frac{1}{2}$ " piece of wire and connect terminals #11 and #17.
- Strip and tin a 1 $\frac{1}{4}$ " piece of wire and connect terminals #22 and #25.
- Strip and tin a 3 $\frac{1}{4}$ " piece of wire and connect it from the lower hole of terminal #14 to the lower hole of terminal #29.
- Strip and tin a 1 $\frac{1}{2}$ " piece of wire and connect the 500KA pot's lug 1 to terminal #28. **Do not solder the pot's lug 1 connection, yet.** *Make sure and leave room at the top of terminal #28 for two resistor lead connections later.*
- Strip and tin a 1 $\frac{1}{2}$ " piece of wire and connect terminal #19 to the 1KL pot's lug 1. **Do not solder the terminal #19 connection, yet.**
- Strip and tin a 1 $\frac{1}{2}$ " piece of wire and connect terminal #19 to #21. **Now solder the #19 connection, but leave room for connecting a transformer lead near the top of the terminal.**
- Strip and tin a 6 $\frac{1}{2}$ " piece of wire and connect footswitch lug 5 to terminal #20.

- Strip and tin a 1" length of wire and connect the cathode (-) lead of the LED to terminal #21. *(Connect the wire end and cathode lead by bending and crimping them around each other. Solder them once they are tightly connected to each other).*
- Strip and tin a 2 ½" piece of wire and connect push-push switch lug 1 to toggle switch lug 2. **Do not solder the toggle switch lug 2 connection, yet.** Route this wire along the top side of the enclosure so it does not get in your way while making connections at terminals #26 to #29.
- 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. Connect this jumper from footswitch lug 6 to terminal #4. **Leave room at #4 for connecting three resistors later on.**

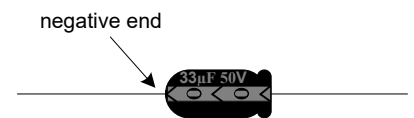
Double check all of your connections at this point because it will be difficult to make corrections after the components are soldered into place.

SECTION 3 – Mount Components to Terminal Strips

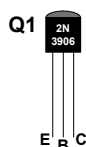
Please refer to DRAWING 4.

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. **Do not solder the lug 3 connection, yet.**
- Connect the 1M resistor to footswitch lug 3 and the input jack's sleeve lug. **Now solder the footswitch lug 3 connection.**
- 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 33µF 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. **Do not confuse this resistor with the 1.2K resistor. (220 ohm = red, red, brown, gold) and (1.2K = brown, red, red, gold).**
- Connect the 2N3906 transistor to terminals #5, #6 and #7 as listed below.



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

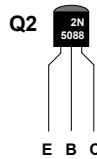


- Connect the 1K resistor to terminal #5 and #15.
Consider mounting this resistor toward the bottom of the terminals so there is more space above it for connecting the 1.2K and 10K resistors.

- 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

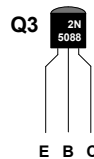


- Connect the 10K resistor to terminals #4 and #13.
- Connect the 1.2K resistor to terminals #4 and #14. **Leave room on #14 for mounting Q3 later.**
- Connect the 47K resistor to terminals #14 and #15. **Leave room on #14 for mounting Q3 later.**
- Connect the positive (+) end of a 100 μ F cap to terminal #15 and the negative (-) end to both lugs 2 and 3 of the 1KL pot.

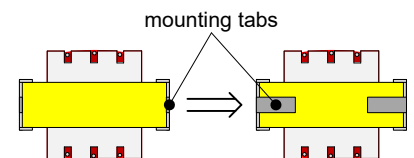


- Connect the remaining 2N5088 transistor to terminals #14, #17 and #18 as listed below.

Terminals #18: Emitter
Terminals #17: Base
Terminals #14: Collector



- Locate the transformer and clip off the “P” side’s middle lead.
- 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, connect the leads of both sides as listed below and shown in DRAWING 4. Two of the leads will not be connected until the end of assembly.

“P” side connections

- Left lead: Terminal #19
- Middle lead: Unused – cut it off
- Right lead: **Not connected, yet.**

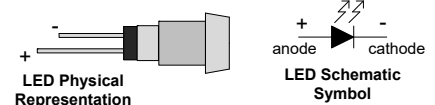
Other side connections

- Left lead: Terminal #22
- Middle lead: **Not connected, yet.**
- Right lead: Terminal #24

- Connect the 820 ohm resistor from terminal #20 to the LED’s anode (+) lead.

Clip the anode lead of the LED and resistor to a reasonable length and connect them by bending and crimping the leads around each other. Solder them once they are tightly connected to each other.

The Anode (+) side of the LED is indicated by a slightly longer lead and/or a positive sign.



- Connect the 470 ohm resistor to terminals #18 and #21.
- Connect the remaining 100 μ F cap to terminals #18 and #21. Make sure the negative (-) end is connected to #21.

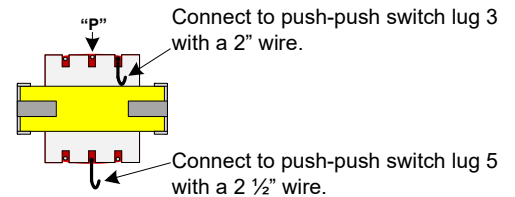


- Connect the 2M resistor from toggle switch lug 2 to terminal #28 leaving space on the terminal for another resistor lead connection. **Now solder the toggle switch lug 2 connection.**
- Connect the remaining 33 μ F cap from the push-push pot's switch lug 2 to terminal #29. Make sure the negative (-) end is connected to lug 2.
- Connect the 470K resistor from terminal #26 to #28. Leave room for the 50 pF cap as shown in DRAWING 4.
- Connect the 50pF cap from toggle switch lug 3 to terminal #26.
- Connect one of the 1N34A diodes from terminal #24 to the 500KA pot lug 1, but **do not solder at lug 1, yet.** Make sure the black (cathode) end connects to lug 1.



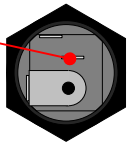
- Connect the remaining 1N34A diode from terminal #25 to 500KA pot lug 1 with the cathode end at lug 1. **Now solder the pot's lug 1 connection.**

- Connect the two remaining disconnected transformer leads to their respective push-push switch lugs as shown in DRAWING 4. Clip the leads to about 1/4" and make small hooks in the lead ends that can hook in with their respective wire ends.



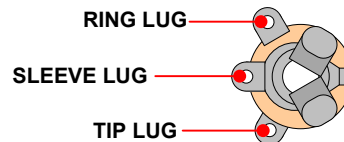
- Locate the battery snap connector. Connect and solder the red lead to the positive-switch lug of the power jack.

POSITIVE-SWITCH LUG



- Connect and solder the black lead of the battery snap connector to the input jack's ring lug.

Input Jack



SECTION 4 – Finishing Up

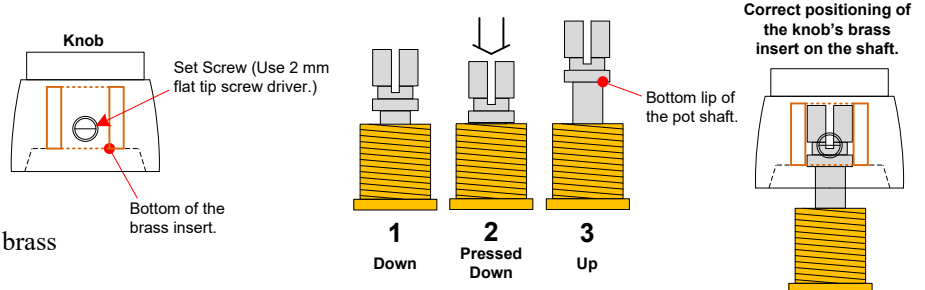
It's always a good idea to thoroughly double-check your connections before applying power.

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.

Fastening the knob onto the push-push pot can be tricky. Just make sure the bottom of the knob's brass insert is lined up with, and not sitting lower than, the bottom lip of the pot shaft. Otherwise, the switch will not be able to change settings when pressed down.

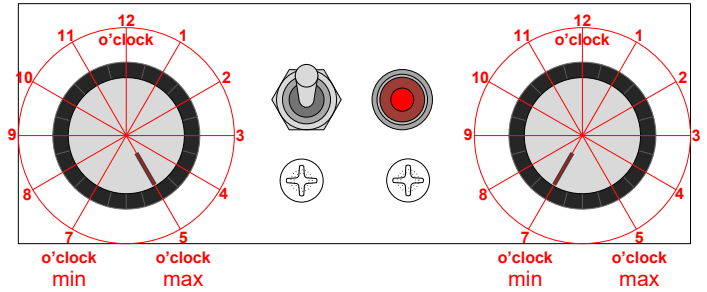
Tip: It's easier to fasten the knob and see where the brass insert lines up when the shaft is in the up position.



SUGGESTED SETTINGS

The Ring Resonator Deluxe offers significant versatility for fuzz tones. Here are a few suggested settings for recreating some of the distinct fuzz tones we had in mind when creating the Ring Resonator Deluxe.

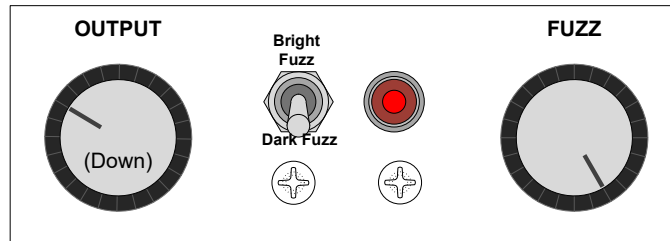
Because the Ring Resonator Deluxe does not have labels, we use clock notation for the control knob settings with the idea that most people will fasten their knobs as shown so that 7 o'clock is the minimum (or "0") setting and 5 o'clock is the maximum (or "10") setting.



Suggested Settings

Push-Push Pot: Down
Toggle: Down (Dark Fuzz)
Output: 10 o'clock
Fuzz: 5 o'clock (max)
Guitar Pickup: Neck

“American Woman” Lead



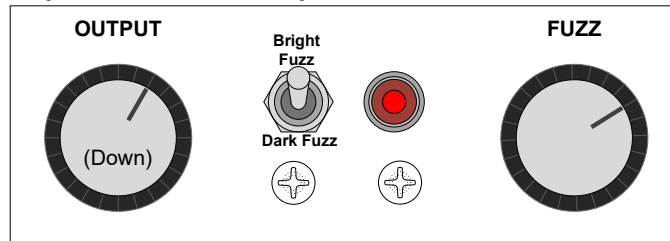
Comments

This fuzz tone is extremely smooth with the highs rolled off dramatically and lots of sustain.

Suggested Settings

Push-Push Pot: Down
Toggle: Up (Bright Fuzz)
Output: 1 o'clock
Fuzz: 2 o'clock
Guitar Pickup: Bridge

“(I Can’t Get No) Satisfaction” Lead

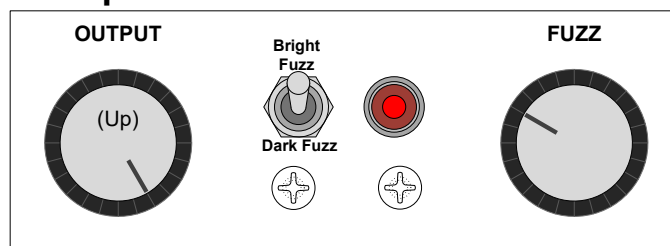


This fuzz tone almost stings with a nasty buzz loaded with attitude.

Suggested Settings

Push-Push Pot: Up
Toggle: *not active*
Output: 5 o'clock (max)
Fuzz: 10 o'clock
Guitar Pickup: Neck

“Purple Haze” Lead



The octave effect is most apparent with the fuzz control turned down and while playing closer to the 12th fret with the guitar's neck pickup selected.

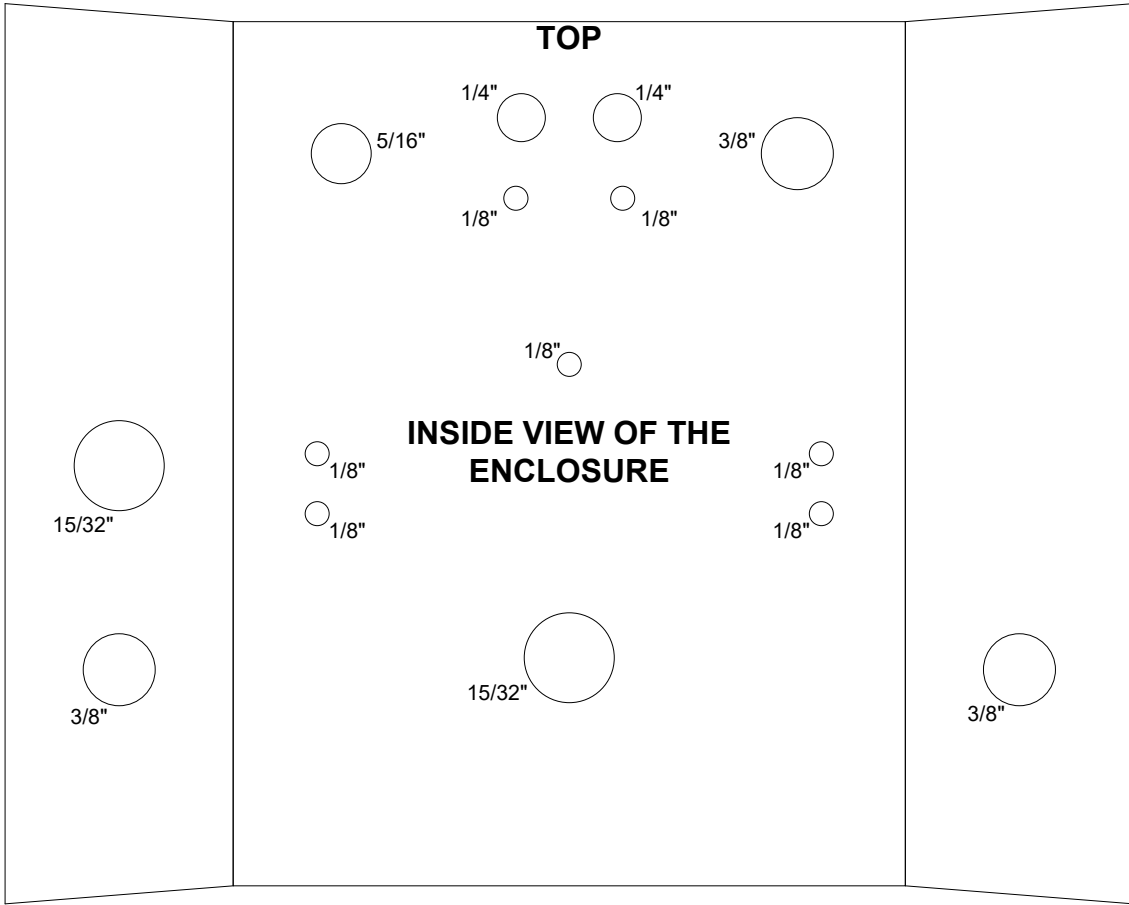
DRAWING 1

LEFT SIDE

RIGHT SIDE

TOP

INSIDE VIEW OF THE ENCLOSURE

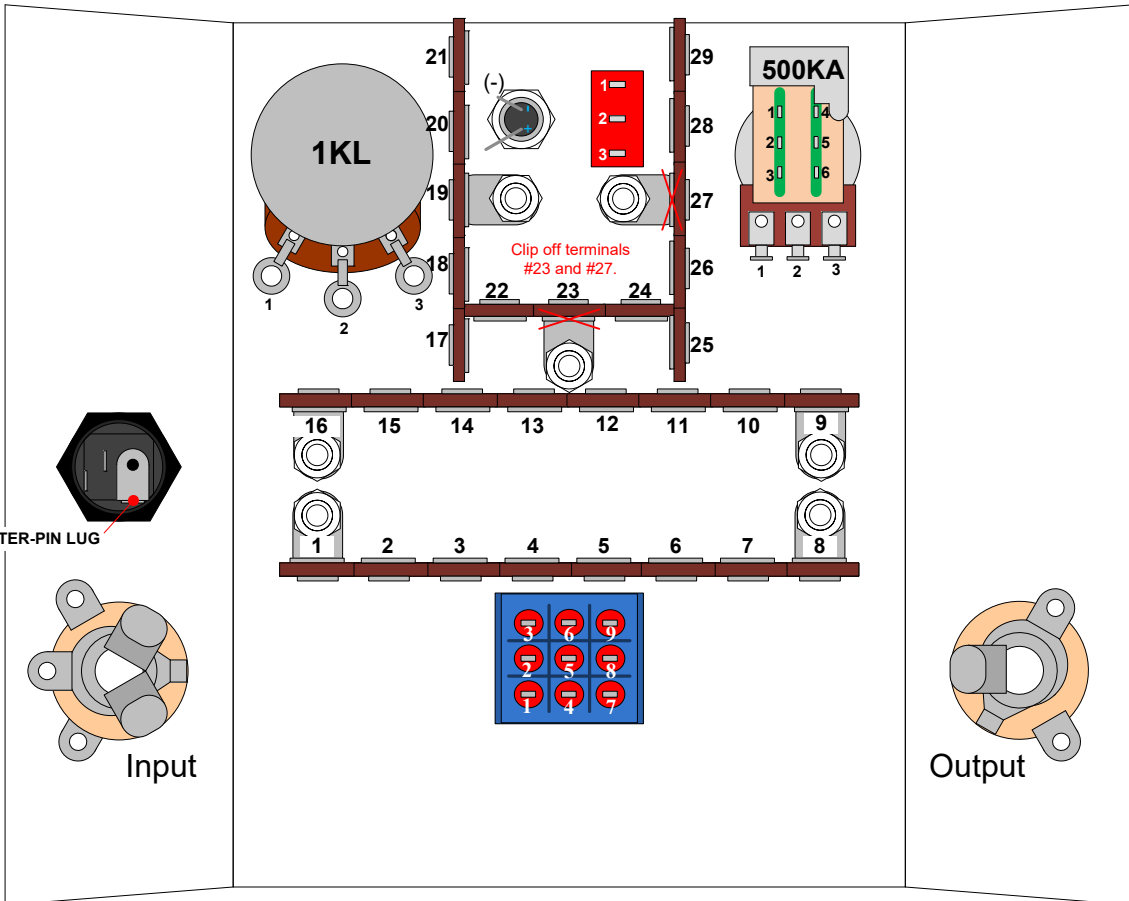


DRAWING 2

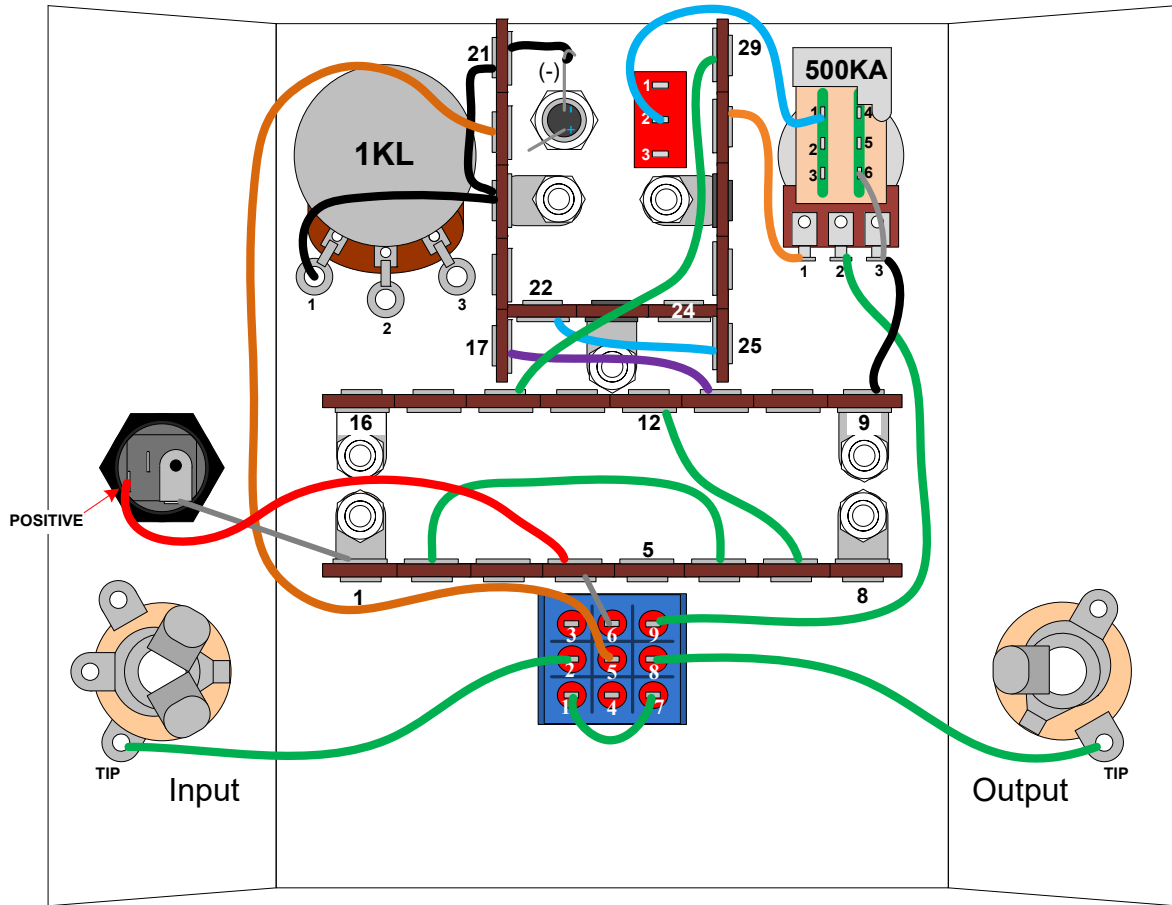
CENTER-PIN LUG

Input

Output



DRAWING 3



DRAWING 4

