

SHERWOOD OD

PCB V3.0 BUILDER'S MANUAL

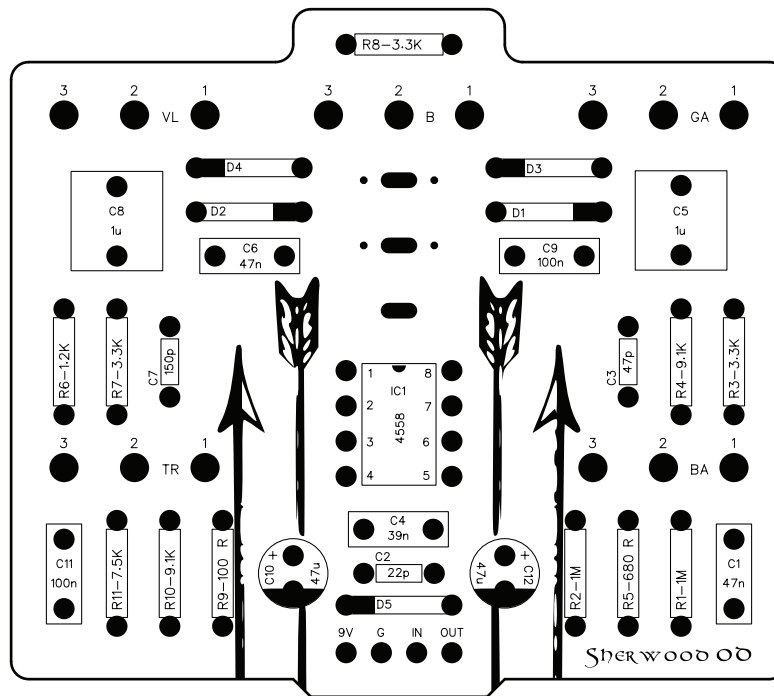
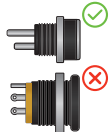


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ONBOARD POTS	DC JACK NOTE: Due to the board size and inline knob design of this PCB, the DC Jack for this build must be the smaller 2-pin type DC jack as illustrated, 
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PCB boards designed to allow direct mount
90 degree potentiometers

Dimensions (W=55.88mm x H=49.53mm)
Recommended enclosure 125B

Drill Template: HT125B-6K-08

For a downloadable PDF copy of this manual, visit www.hammondtoneworks.com/support

DISCLAIMER:

All board layouts have been tested and verified. While I do offer a guarantee on the functionality of purchased PCBs, there is an understood assumption that the end user (you) have the knowledge and skill required to assemble the product and accept any risk involved with assembling the provided boards or parts. This understood skill level includes knowing how to properly solder, troubleshooting steps, etc. If you have any questions concerning any Hammond Toneworks products, feel free to send a message on the platform of purchase, or contact support at support@hammondtoneworks.com

COMMERCIAL USE:

You may use Hammond Toneworks PCBs in commercial projects as long as the completed project is not sold as a Hammond Toneworks branded pedal, and the model name of the PCB is not used on the enclosure. Crediting the use of the PCB is not required. PCBs are not be resold as an item themselves.

Hammond Toneworks PCB boards are manufactured to accomodate the following recommended components

- Resistor:** 1/4w metal film or carbon film resistors
(7.62mm lead spacing on all resistor connections)
- Film Cap (B):** Film box type capacitor
(5mm lead spacing unless otherwise noted)
- Cer Cap (M):** Monolithic ceramic capacitor
(5.08mm lead spacing, ceramic disc capacitor can be used as a substitution)
- Cer Cap (D):** Ceramic disc capacitor
(2.54mm lead spacing)
- Elec Cap:** 25V Electrolytic Capacitor recommended, unless otherwise noted (50V caps recommended if using over 9V power)
(2.54mm lead spacing)
- Transistor:** All transistor holes are spaced to 2.54mm for easier soldering
(2.54mm lead spacing)
- Diode:** 6.32mm-7.62mm lead spacing and 0.9mm hole diameter on PCB
- Pots:** Potentiometers are to be connected to the effect board directly. Common 16mm right angle pots are recommended.
(5mm lead spacing) NOTE: Potentiometer hole diameters are sized to allow pots to be connected via wire if preferred.
- Wires:** Wiring connection holes are drilled to 1mm diameter and are spaced 2.54mm apart.
Use of 24G wire is recommended for easy assembly

RECCOMENDED ASSEMBLY ORDER**1. EFFECT BOARD ASSEMBLY**

- Solder small components first (resistors, diodes, etc) then work your way up to soldering the tallest components , then potentiometers, and finally the connection wires to the 3PDT daughter board (if used) NOTE: This is the general order of assembly, if any particular board is assembled easier using a different oder, it will be noted in the respective build docs.

2. OFFBOARD WIRING

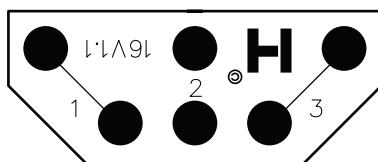
- Refer to the recommended offboard wiring methods on pages 8 or 9 (depending on your preference)

16mm PCB PIN POTENTIOMETER ADAPTER BOARD

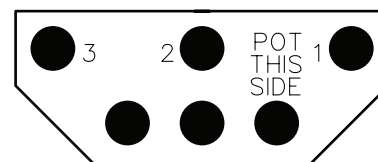
Optional potentiometer adapter boards are available for purchase directly or via our Reverb store. These allow a secure connection with potentiometers that have a straight pcb pin type connection and to help organize offboard wiring. **These adapters are optional, and only recommended if the potentiometers in use do not have solder lugs or are unable to be connected directly to the pcb.**

NOTE:

It is easier to attach the wires to the adapter boards first, then solder the potentiometer to the adapter board **LAST**. Attach the wires to the front side of the PCB with the Hammond Toneworks logo, and attach the potentiometer to the rear side of the PCB that is marked with "POT THIS SIDE".



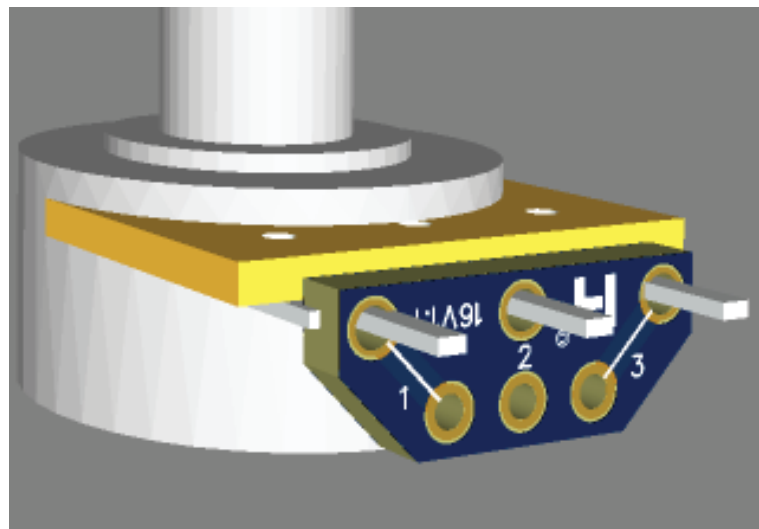
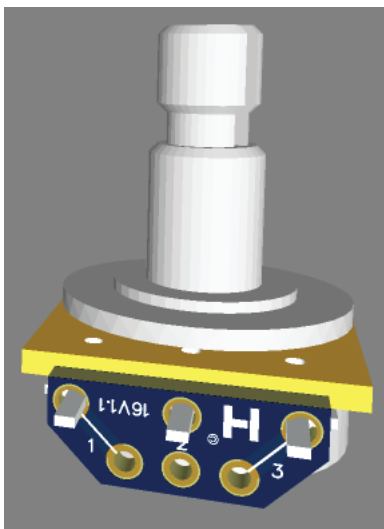
FRONT



REAR

ASSEMBLED

(SHOWN WITHOUT WIRING)

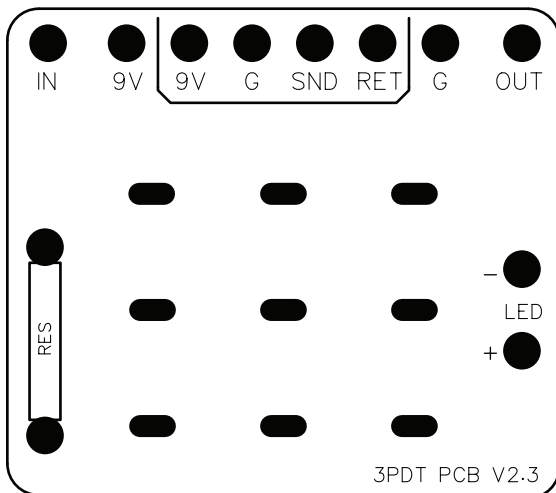


3PDT DAUGHTERBOARD PCB

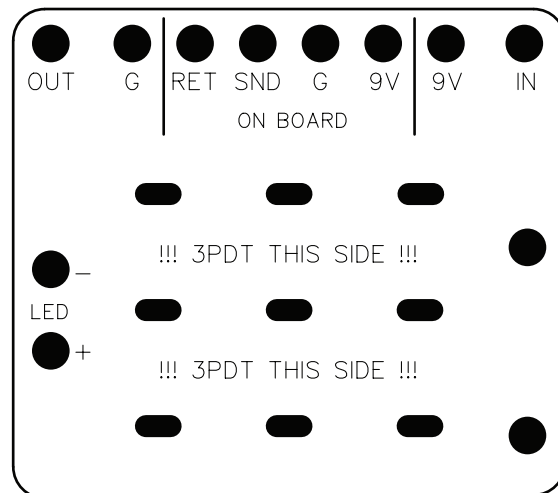
Included with your board is an optional 3PDT daughterboard PCB (compatible with enclosure sizes 1590B and larger) to help organize offboard wiring and simplify connections to the main circuit. Follow the wiring diagrams on pages 7 & 8 if using the 3PDT PCB daughterboard.

NOTE:

Attach all PCB connections and components first, then solder the 3PDT switch to the 3PDT PCB board **LAST**. This is necessary due to the fact that the switch itself blocks access to some of the onboard soldering points located on the daughterboard to save space. Assemble the components and wires to the front side of the PCB with the Hammond Toneworks logo, and attach the 3PDT switch to the reverse side of the PCB that is marked with "3PDT THIS SIDE" wiring points are labeled on both sides of the PCB for ease of assembly. This page references the current v2.3 PCB, the the older v2.2 PCB is the same except for the input hole location.

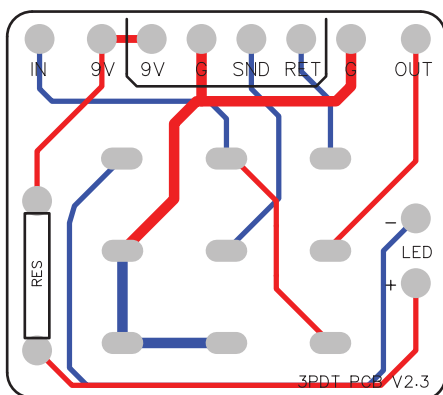


FRONT



REAR

LAYOUT



ASSEMBLED

(SHOWN WITHOUT WIRING)

SHERWOOD OD

The Sherwood OD is based on the *Vemuram Jan Ray**, which in turn is an ever so slightly modified version of another boutique overdrive. Though controversial, this pedal does make for a great low to mid gain overdrive. This PCB is for the builders who would like to build their own version of the brass pedal, with the added feature of an external bias knob and optional clipping symmetry switch.

CONTROLS

GAIN:

The GAIN control adjusts the amount of gain in the inverted feedback loop of the op-amp. Turn the potentiometer clockwise to increase the gain, causing the signal to clip more. Turn counter-clockwise to decrease.

BIAS:

The BIAS control is the same as the internal bias trimpot on the original pedal, but has been moved to a normal potentiometer to allow adjustments on the fly. Use this to fine tune the sound of the pedal to work with your setup, or experiment for either a brighter or mellow sound. Start in the middle and adjust to your preference.

VOLUME:

The VOLUME control adjusts the overall output volume of the circuit. Turn clockwise to increase the output level of the circuit.

BASS:

The BASS control adjusts the amount of low frequencies passed through the EQ section of the circuit. Turn clockwise to allow more bass, and counter-clockwise to cut the bass.

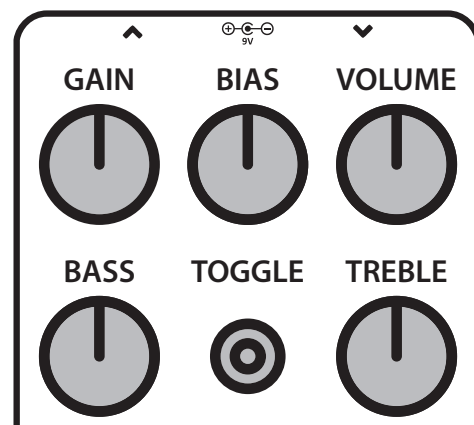
TOGGLE:

The TOGGLE switch in this circuit allows you to choose between symmetrical (toggle up) and asymmetrical (toggle down) clipping options. This is an optional mod, if you would like to use only the original clipping method (symmetrical) then simply omit the toggle from the PCB altogether. No jumping required.

TREBLE:

The TREBLE control adjusts the amount of high frequencies passed through the EQ section of the circuit. Turn clockwise to allow more treble. Turn counter-clockwise to cut treble.

NOTE: Turning the bias control to the extreme left or extreme right may produce squealing or an undesirable sound with some rigs. This is expected since the control retains the full range of the original bias knob. The purpose of this control is to allow you to find the position in the sweep that sounds best with your instrument and amplifier. Personally I would prefer to call this something other than a "bias" knob, as it is more of an EQ range related control and less of a typical voltage bias control, but to keep translation consistent with the original pedal, it is labeled Bias here. It also alters the sound enough to justify an external control as opposed to an internal trim pot.



* Hammond Toneworks is in no way affiliated with the Vemuram brand or Tri-sound.inc

BILL OF MATERIALS

SHERWOOD OD V3															
Qty	Value	Designator	Footprint	Qty	Value	Designator	Footprint	Qty	Value	Designator	Footprint	Qty	Value	Designator	Footprint
1	100R	R9	1/4W RESISTOR	1	39n	C4	BOX CAP	1	TL072	U1	IC DIP-8	1	TL072	U1	IC DIP-8
1	680R	R5	1/4W RESISTOR	2	47n	C1,C6	BOX CAP	1	SPST	U2	SW SPST or SPDT ON/ON	1	SPST	U2	SW SPST or SPDT ON/ON
1	1.2k	R6	1/4W RESISTOR	2	100n	C9,C11	BOX CAP	3	B10K	TREB, BIAS, VOL	MOUNTED POT	3	B10K	TREB, BIAS, VOL	MOUNTED POT
3	3.3k	R3,R7,R8	1/4W RESISTOR	2	1u	C5,C8	BOX CAP	1	B50K	BASS	MOUNTED POT	1	B50K	BASS	MOUNTED POT
1	7.5k	R11	1/4W RESISTOR	1	22pf	C2	CER CAP	1	B500K	GAIN	MOUNTED POT	1	B500K	GAIN	MOUNTED POT
2	9.1k	R4, R10	1/4W RESISTOR	1	47pf	C3	CER CAP								
2	1M	R1,R2	1/4W RESISTOR	1	150pf	C7	CER CAP								
5	4148	D1,D2,D3,D4,D5	DIODE	2	47u	C10,C12	ELECTRO CAP								

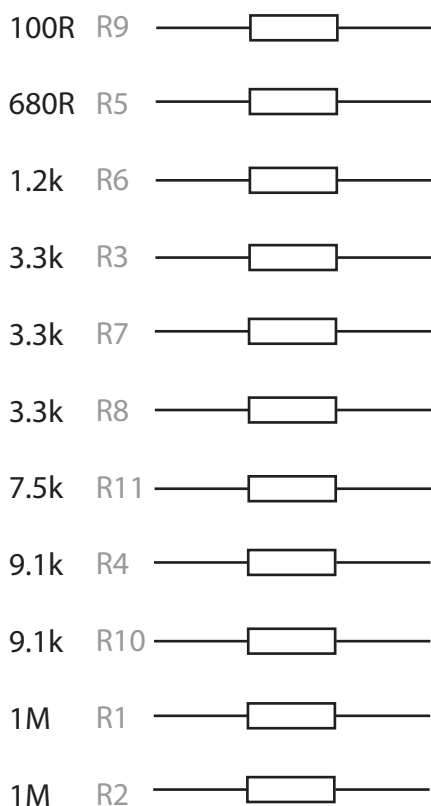
*NOTE: Off board components are not listed (indicator LED, input/output jacks, power input jack, footswitch)

SMALL COMPONENT TABLE

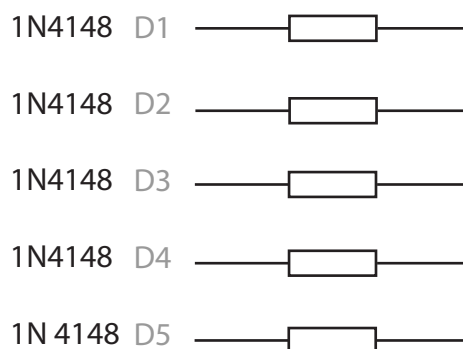
(Small components may be taped down here)

ORDERED BY VALUE FROM LEAST TO GREATEST

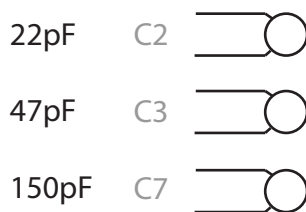
RESISTORS



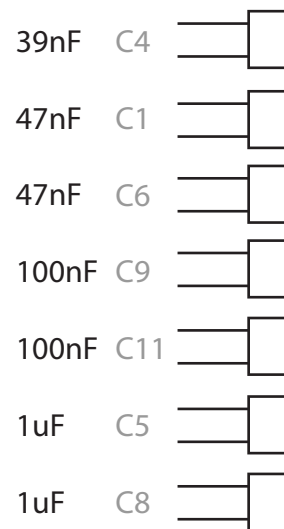
DIODES



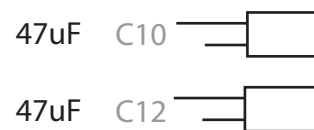
CERAMIC CAPACITORS



FILM CAPACITORS



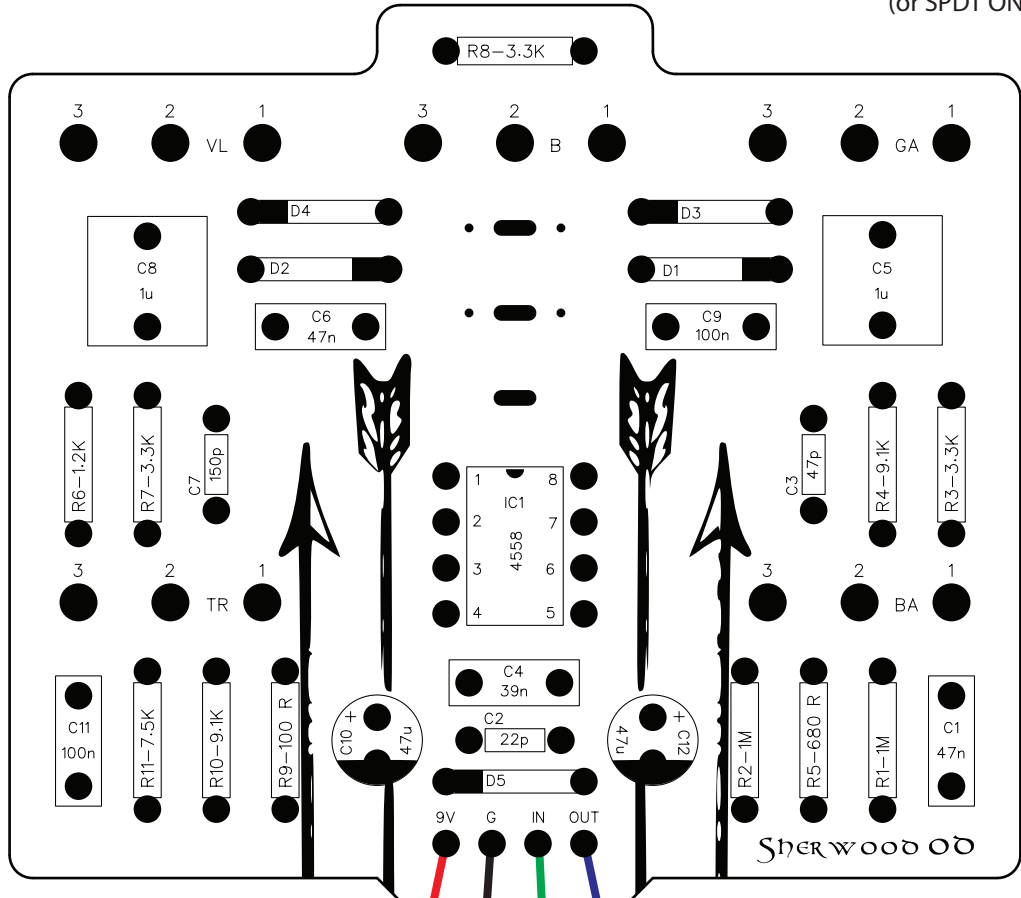
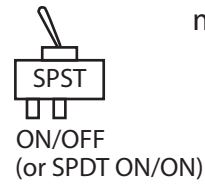
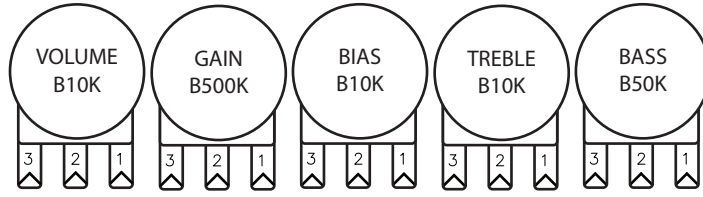
ELECTRO CAPACITORS



Refer to the illustration below when attaching components to your PCB

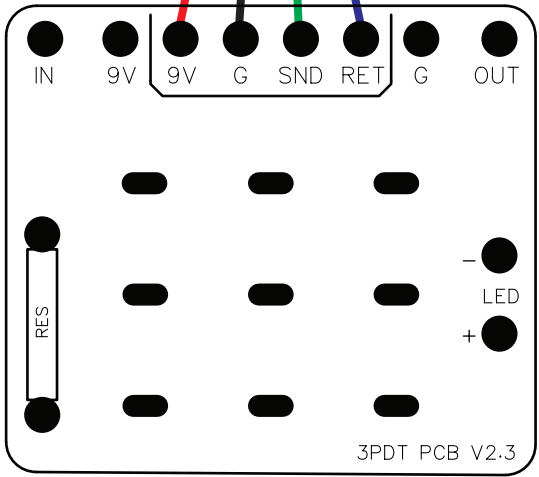
(wire length, boards, and pots are not shown to scale. They have been sized to fit this page for illustration purposes)

Board mounted pots (see page 7a for pot mounting)



TOGGLE OPTIONS
If using an SPDT ON/ON switch, then the orientation does not matter. If using an SPST, match the switch pins with the pads marked with the circle indicators beside them. (See illustration below)

NO TOGGLE
To eliminate the toggle options and use only symmetrical clipping (the UP toggle position) Simply omit the toggle switch altogether and leave the component spot blank.



<- 55.88mm ->

IF YOU GRABBED ONE OF THE DISCOUNTED FIRST RUN BOARDS:
An early run of this PCB was initially discounted due to having a label error on R9. The correct value for R9 is "100 Ohm" (100 R) as shown above. If your board already labels R9 as "100 R" then you can disregard this message.

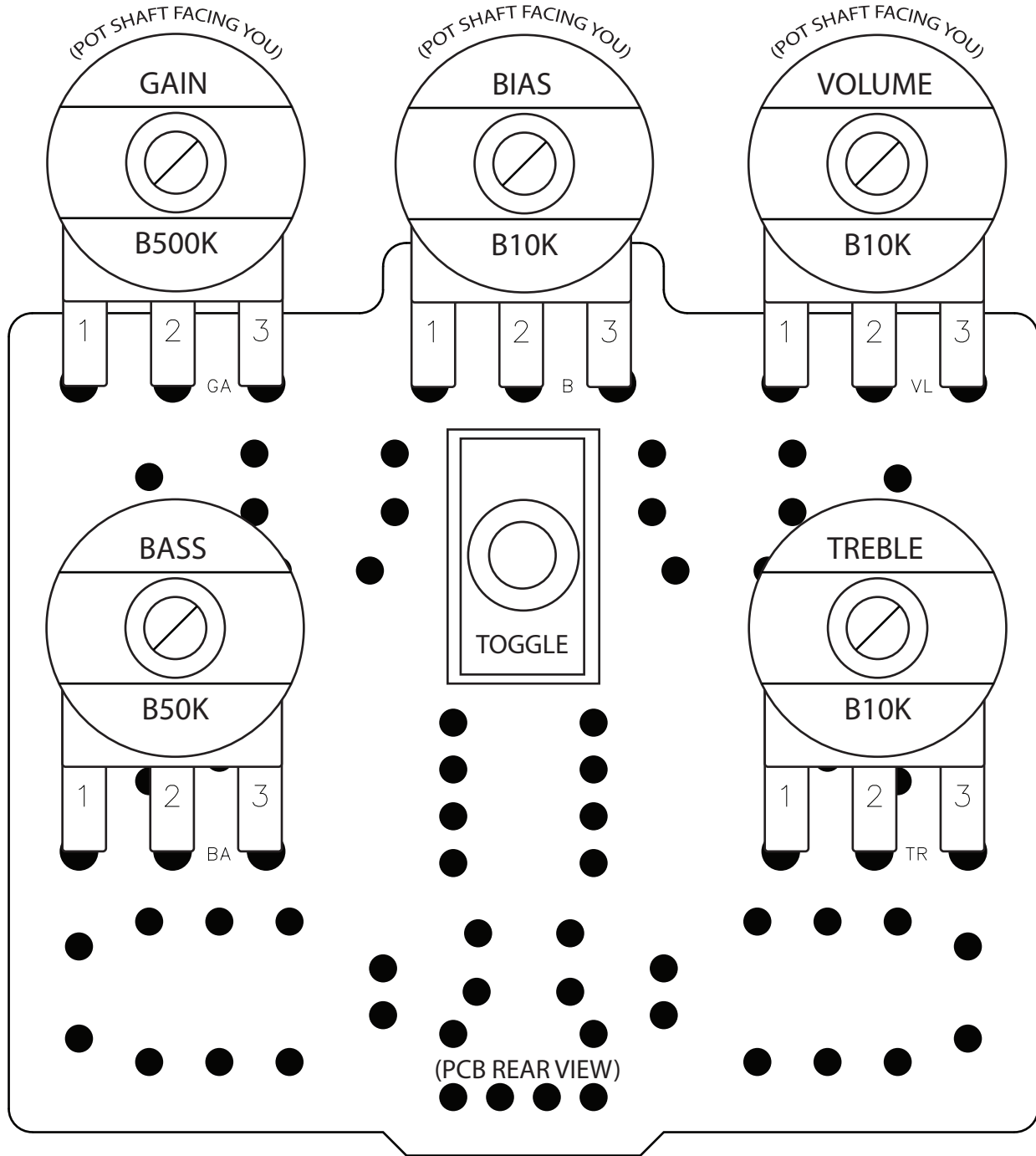
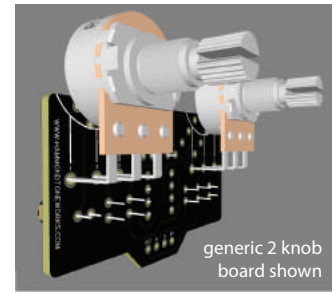
(3PDT PCB OPTIONAL)
Bill of materials on page 6

Refer to the illustration below when attaching components to your PCB

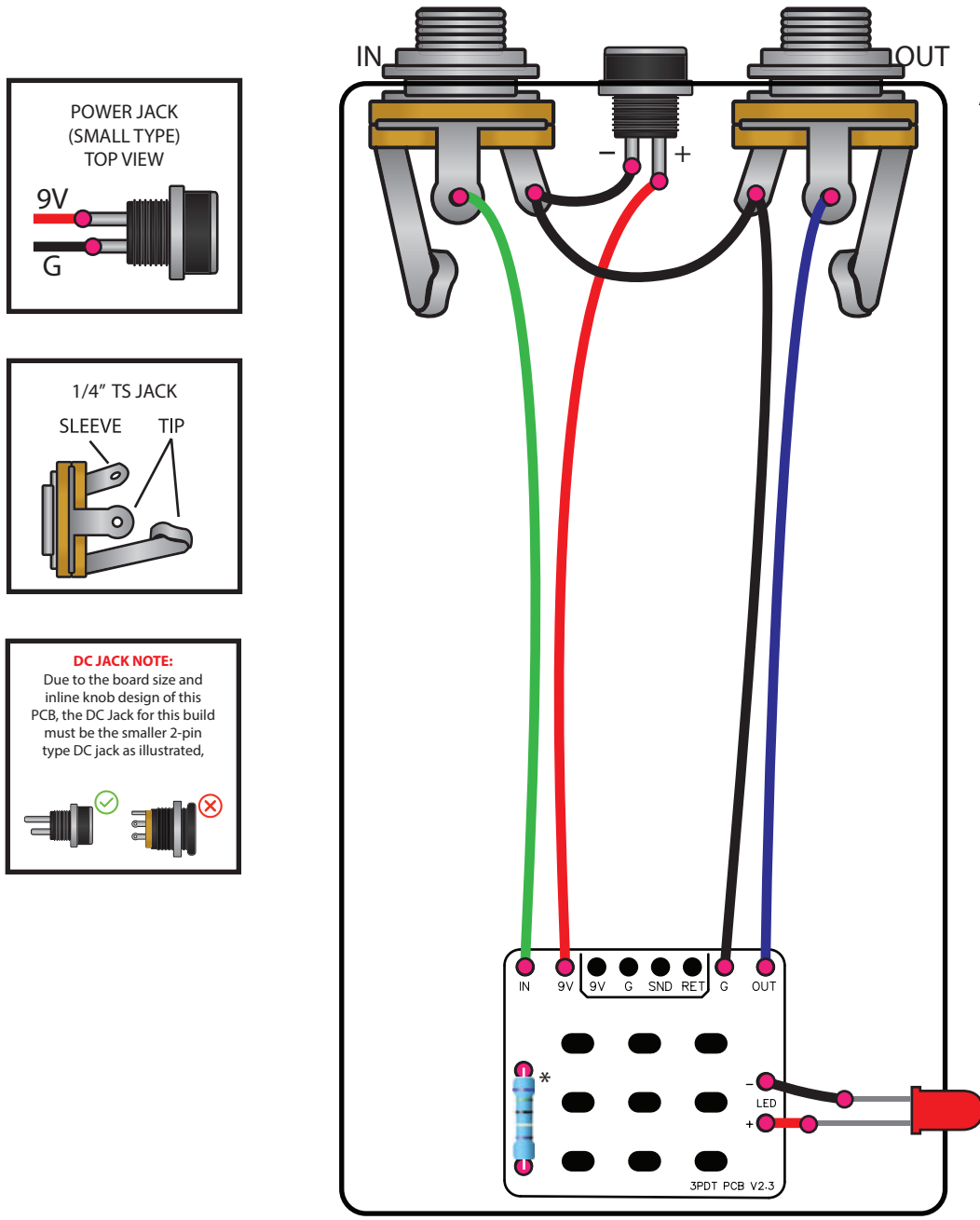
BOARD MOUNTED POTS (PCB REAR VIEW)

(Pots are not shown to scale. They have been sized to fit this page for illustration purposes)

EXAMPLE VIEW



A 3PDT PCB board is included with your effect board to simplify the offboard wiring process. You may use your own method of offboard wiring if preferred. The illustration below is recommended if you are using the included 3PDT PCB. As long as the effect PCB receives the correct 9V, Ground, In, and Out connections, it will work properly. The method below allows the pedal to be powered using a common standard modern 9V positive sleeve/negative center power supply.



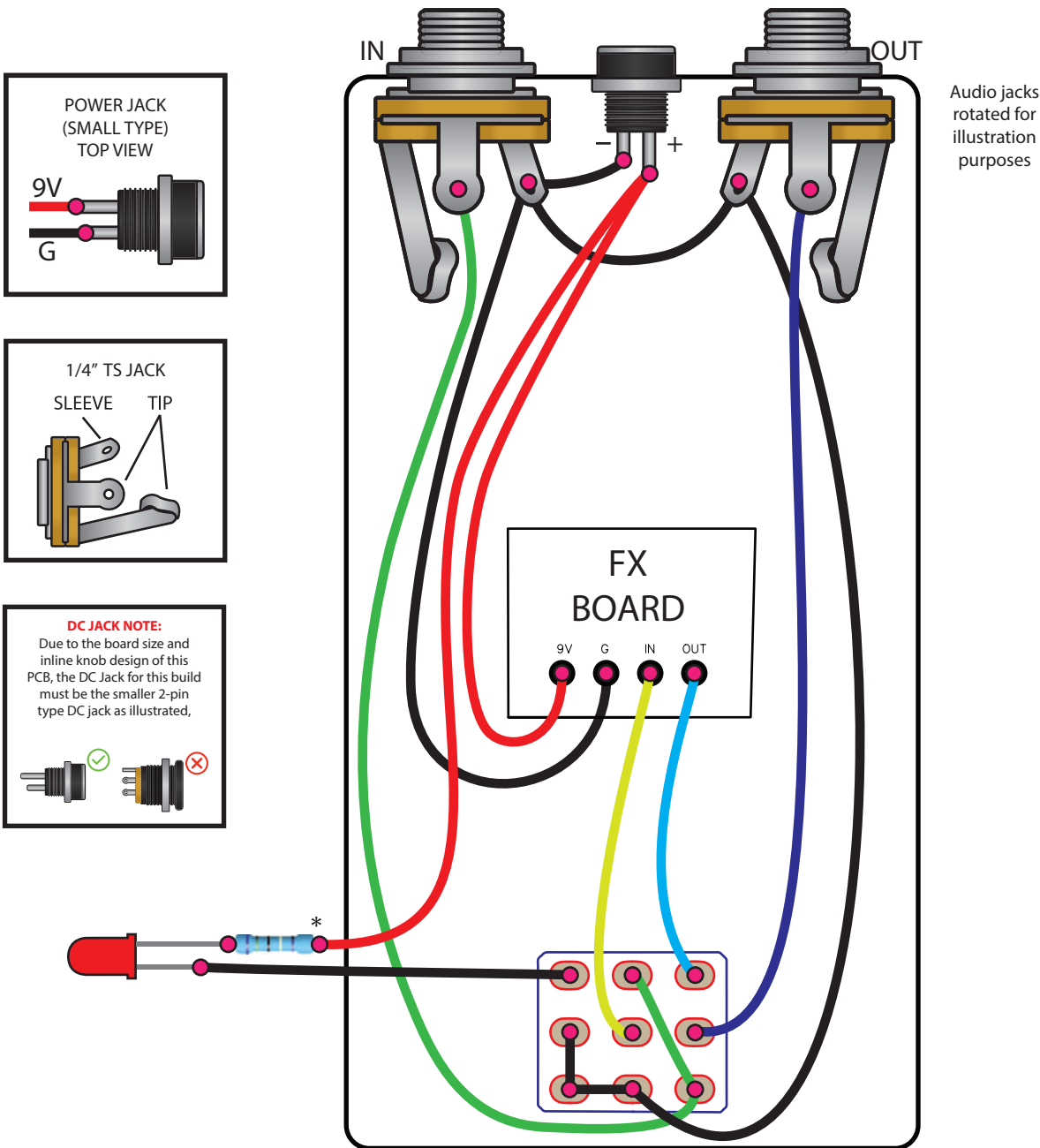
Audio jacks rotated for illustration purposes

NOTE:
If using a 3PDT PCB, it is easier to solder all wires and components first, and then solder the 3PDT switch to the board last.

● = Solder point

* LED resistor can be any value of your choice.
Typical recommendation is 4.7k for normal red diffused LEDs, but may require up to 33k or so, depending on LED type and color.

The following wiring is recommended only if no 3PDT board is available. As long as the effect PCB receives the correct 9V, Ground, In, and Out connections, it will work properly. **A 3PDT PCB board is included with your effect PCB to simplify the offboard wiring process, if you would like to use the included 3PDT board, see page 8.** The offboard wiring method below allows the pedal to be powered using a common standard modern 9V positive sleeve/negative center power supply.

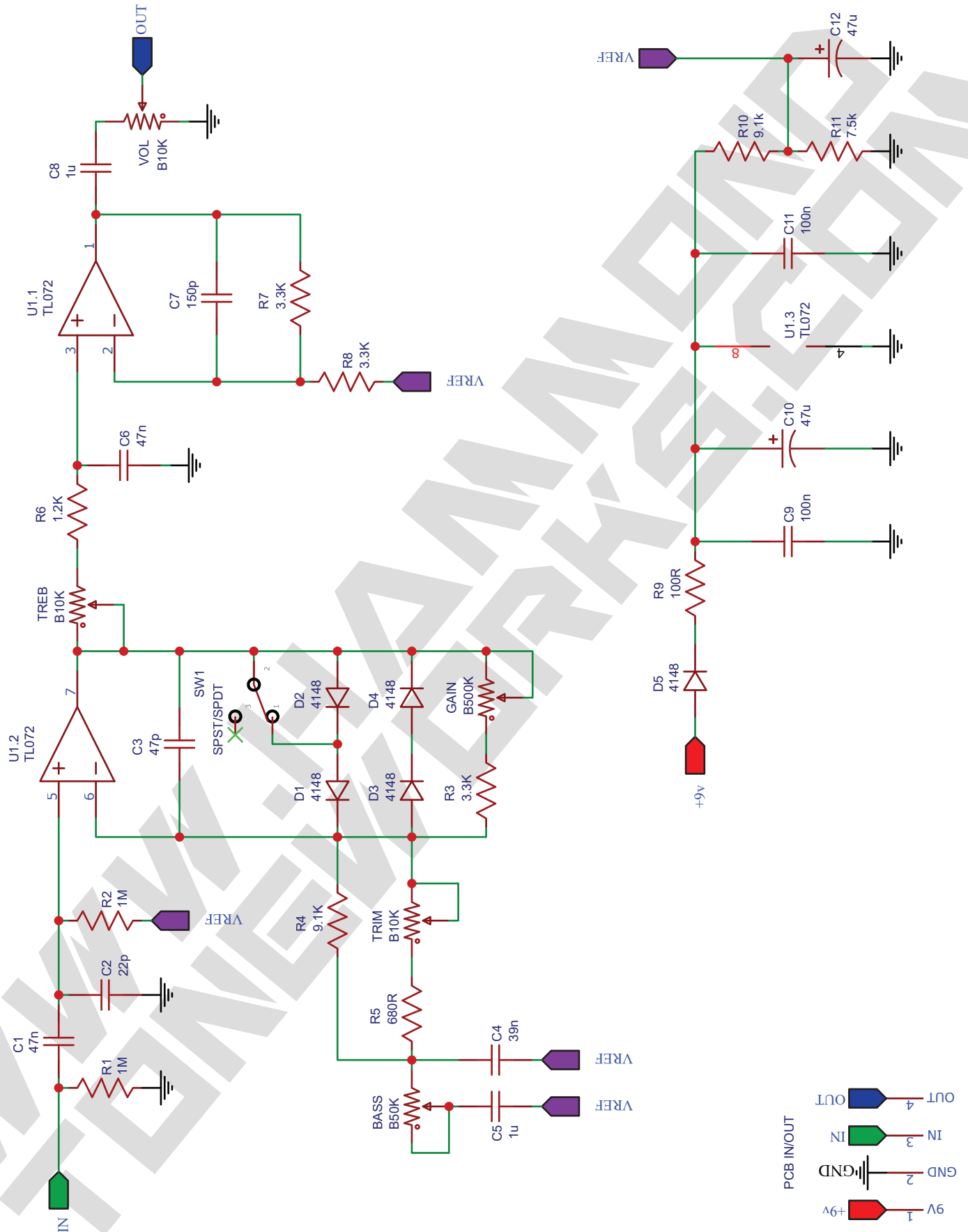


Audio jacks rotated for illustration purposes

● = Solder point

* LED resistor can be any value of your choice.

Typical recommendation is 4.7k for normal red diffused LEDs, but may require up to 33k or so, depending on LED type and color.



**PRINT THIS PAGE
ACTUAL SIZE**

**TAYDA DRILL TEMPLATE
HT125B-6K-08 (small DC)**

**125B
6 Knob Drill Template
Including drill size**

Max knob diameter: 16mm

DIRECTIONS:

1. Cut along dotted lines, and fold along the solid outline to preshape the paper template.

2. Carefully align template to the empty enclosure (without bottom lid) and tape in place to the enclosure.

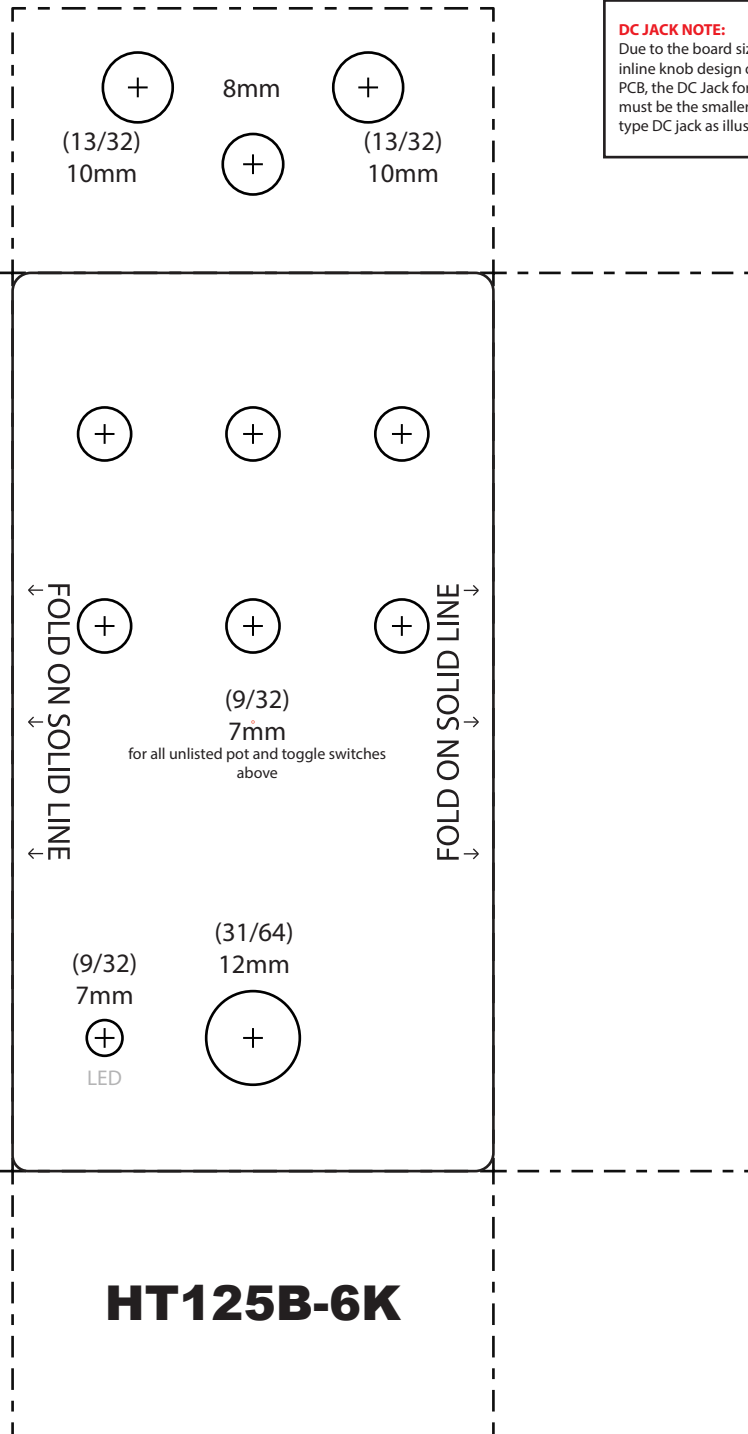
You can also tape the corners of the template together once it is attached, to have a "cast" paper template ready if drilling more than one enclosure.

3. Using a steel punch, mark the drilling holes in the center of each cross. (mind the number of knobs) The punch should mark the enclosure even through the paper.

4. Remove template and check spacing on punched drill markers to ensure that everything will fit nicely. It's better to find out now than later. A common issue is the 1/4" jacks being too high, low, or offset. Hold a jack centered on the punch mark to see the clearance and make sure the lid will close (requires 2mm clearance from the open end of enclosure). Re-punch the drill markers if needed

5. Drill away!
Take your time. It's more rewarding to be patient and have a properly drilled enclosure than to rush and be out of alignment.

TIP:
After drilling, check your top jack fitment. Make sure you can fit both audio and power jacks in place properly. Top jacks are a tight fit, if one is off, bore out the hole slightly to get a good position if needed, no more than 1mm extra, as the external washer still needs to be able to have enough space around the hole to grab the enclosure.



DC JACK NOTE:
Due to the board size and inline knob design of this PCB, the DC Jack for this build must be the smaller 2-pin type DC jack as illustrated,

* This template and its measurements were calculated using manufacturer's specs and physically tested on Tayda branded size 125B enclosures.

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