

PROJECT NAME

OBSCURA

BASED ON

Prescription Electronics COB

EFFECT TYPE

Octave fuzz

BUILD DIFFICULTY

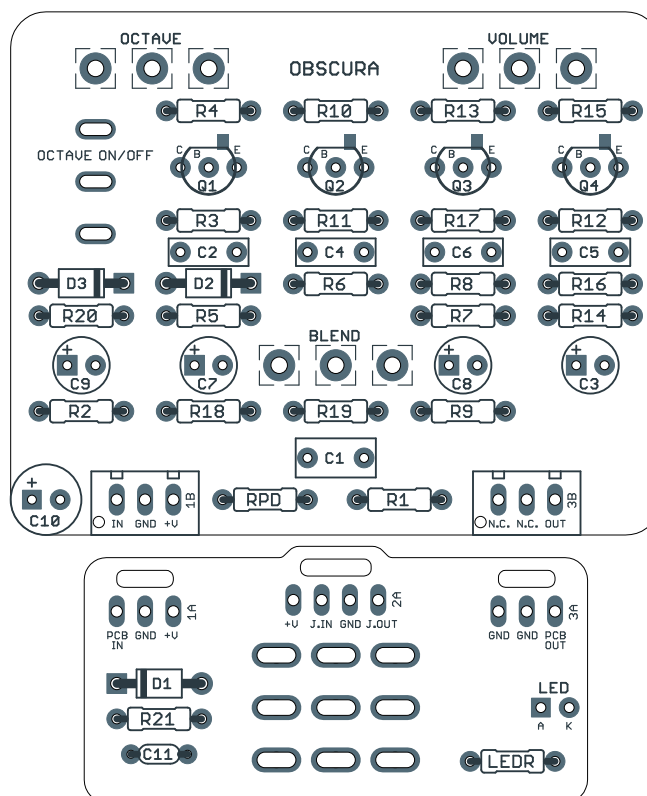
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DOCUMENT VERSION

1.0.0 (2023-09-08)

PROJECT SUMMARY

Based on the octave section of the fOXX Tone Machine, this circuit adds a clean blend and a knob to change the character of the octave effect.



Actual size is 2.3" x 1.86" (main board) and 1.78" x 0.86" (bypass board).

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INTRODUCTION

The Obscura Octave Blend is an adaptation of the Prescription Electronics COB (Clean Octave Blend), an octave fuzz with blendable clean signal.

Prescription Electronics (PEI) was one of the original boutique pedal companies, founded in 1993 by Jack Brossart in Portland, OR. The COB was introduced within a couple of years and was produced up until the company closed its doors in 2014. PEI made a brief comeback in 2019 and reissued most of their lineup, but after Jack's passing that same summer, they seem to have disappeared for good.

The COB is a very unique effect. The octave section is clearly based on the fOXX Tone Machine with a few value tweaks, but it's missing both a tone and a gain control. Instead, the Octave knob loads down the octave stage in a way that does not actually add or remove the octave, but changes its character. At some settings it's much more suitable for blending, and at others it sounds good on its own with no clean signal. There are a few great YouTube demos of the COB if you want to get an idea of how it works and what it's capable of, but suffice it to say, it's far from a typical octave fuzz.

The Obscura is a direct clone of the COB except for one addition: a switch that disables the octave, adapted from our [Vulcan](#) (fOXX Tone Machine) project. Its behavior is very different in this circuit. Typically you'll want to leave it in the down (stock) position because the octave is the whole point of the effect. But there are some interesting and unique sounds in the other two modes, especially in combination with the blend control, so we felt like it was a worthwhile addition.

USAGE

The Obscura has the following controls:

- **Octave** changes the character of the octave signal, from a glitchy tone reminiscent of a ring modulator to a more traditional octave fuzz.
- **Blend** pans between the clean and effect signal.
- **Volume** controls the overall output of the effect, which comes after the blend.
- **Octave** (toggle switch) selects between octave, no octave (original) and no octave (modified).

PARTS LIST

This parts list is also available in a spreadsheet format which can be imported directly into Mouser for easy parts ordering. Mouser doesn't carry all the parts (most notably potentiometers) so the second tab lists all the non-Mouser parts as well as sources for each.

[View parts list spreadsheet](#) →

PART	VALUE	TYPE	NOTES
R1	22k	Metal film resistor, 1/4W	
R2	150k	Metal film resistor, 1/4W	
R3	1k5	Metal film resistor, 1/4W	
R4	47k	Metal film resistor, 1/4W	
R5	560k	Metal film resistor, 1/4W	
R6	120k	Metal film resistor, 1/4W	
R7	10k	Metal film resistor, 1/4W	
R8	10k	Metal film resistor, 1/4W	
R9	680k	Metal film resistor, 1/4W	
R10	36k	Metal film resistor, 1/4W	
R11	47k	Metal film resistor, 1/4W	
R12	1k	Metal film resistor, 1/4W	
R13	47k	Metal film resistor, 1/4W	
R14	100k	Metal film resistor, 1/4W	
R15	100k	Metal film resistor, 1/4W	
R16	4k7	Metal film resistor, 1/4W	
R17	4k7	Metal film resistor, 1/4W	
R18	100k	Metal film resistor, 1/4W	
R19	100k	Metal film resistor, 1/4W	
R20	100k	Metal film resistor, 1/4W	
R21	100R	Metal film resistor, 1/4W	Power supply filter resistor.
RPD	2M2	Metal film resistor, 1/4W	Input pulldown resistor. Can be as low as 1M.
LEDR	10k	Metal film resistor, 1/4W	LED current-limiting resistor. Adjust value to change LED brightness.
C1	1uF	Film capacitor, 7.2 x 3.5mm	
C2	100n	Film capacitor, 7.2 x 2.5mm	
C3	10uF	Electrolytic capacitor, 5mm	
C4	100n	Film capacitor, 7.2 x 2.5mm	
C5	100n	Film capacitor, 7.2 x 2.5mm	
C6	1n	Film capacitor, 7.2 x 2.5mm	
C7	10uF	Electrolytic capacitor, 5mm	
C8	10uF	Electrolytic capacitor, 5mm	
C9	10uF	Electrolytic capacitor, 5mm	

PARTS LIST, CONT.

PART	VALUE	TYPE	NOTES
C10	100uF	Electrolytic capacitor, 6.3mm	Power supply filter capacitor.
C11	100n	MLCC capacitor, X7R	Power supply filter capacitor.
D1	1N5817	Schottky diode, DO-41	
D2	1N4001	Rectifier diode, DO-41	
D3	1N4001	Rectifier diode, DO-41	
Q1	2N3904	BJT transistor, NPN, TO-92	
Q2	2N3904	BJT transistor, NPN, TO-92	
Q3	2N3904	BJT transistor, NPN, TO-92	
Q4	2N3904	BJT transistor, NPN, TO-92	
BLEND	250k Ω	16mm right-angle PCB mount pot	
OCTAVE	1M Ω	16mm right-angle PCB mount pot	
VOLUME	100k Ω	16mm right-angle PCB mount pot	
OCT. SW.	SPDT cntr off	Toggle switch, SPDT on-off-on	
LED	5mm	LED, 5mm, red diffused	
IN	1/4" stereo	1/4" phone jack, closed frame	Switchcraft 112BX or equivalent.
OUT	1/4" mono	1/4" phone jack, closed frame	Switchcraft 111X or equivalent.
DC	2.1mm	DC jack, 2.1mm panel mount	Mouser 163-4302-E or equivalent.
BATT	Battery snap	9V battery snap	Optional. Use the soft plastic type—the hard-shell type will not fit.
FSW	3PDT	Stomp switch, 3PDT	
ENC	125B	Enclosure, die-cast aluminum	Can also use a Hammond 1590N1.

BUILD NOTES

Octave knob functionality

The Octave knob does not necessarily reduce or increase the octave effect, but changes the character of it. All the way down, the Q3 transistor is severely loaded in a way that weakens the signal and cuts highs. This can increase the octave effect or turn it into a glitchy ring-mod type of sound. At these lower settings, the octave seems to be almost isolated from the main signal, which makes it great for adding into an otherwise clean sound with the blend knob.

As you turn the Octave knob up, it gets closer to a standard octave fuzz tone, more like the [fOXX Tone Machine](#) it's based on. But as with all of these transistor-based octave effects, its behavior will vary wildly depending on the guitar and the surrounding signal chain.

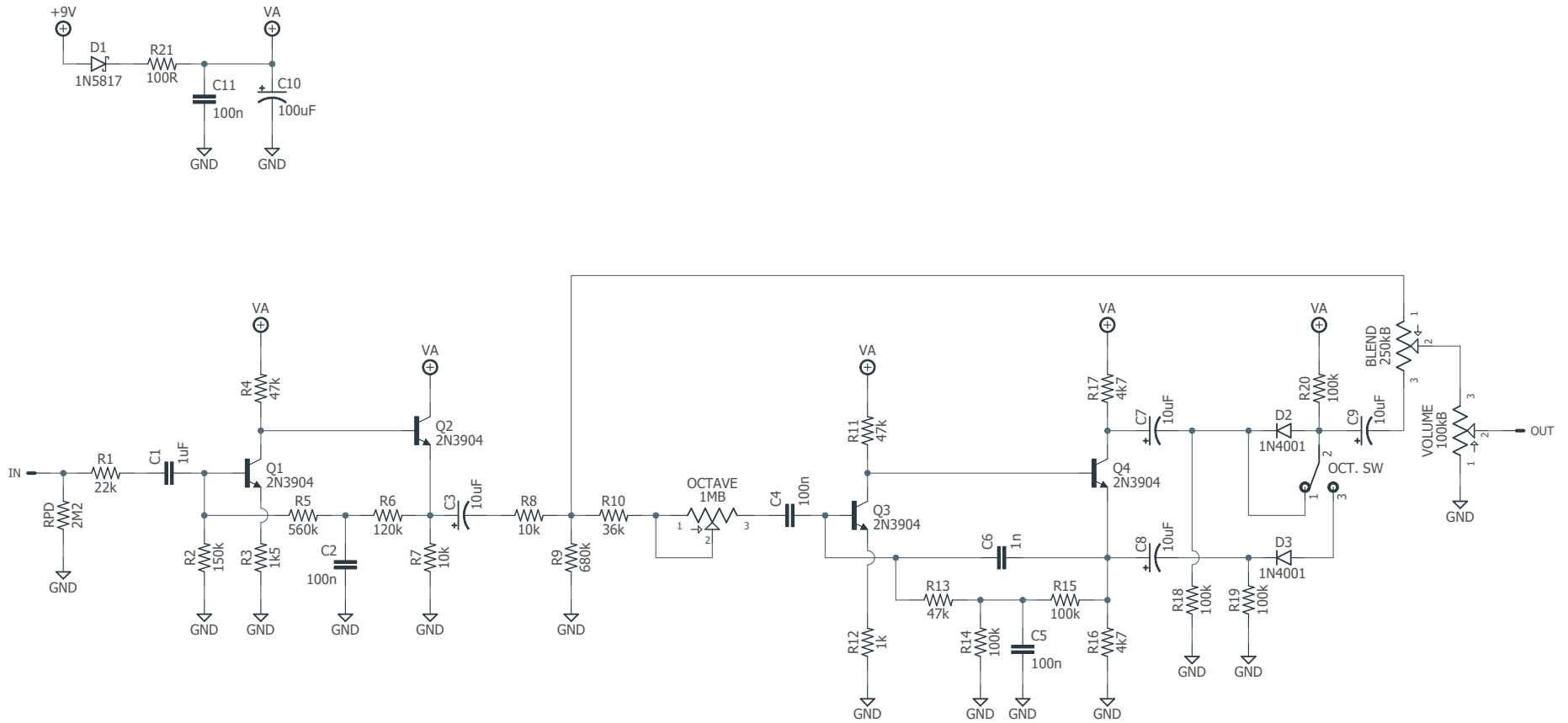
Octave switch

The octave in this effect is generated by splitting the signal into two, one in-phase and one out of phase, and then rectifying the signals to cancel out half of the waveform of each. The signals are then combined back together which emphasizes the octave overtone.

The octave switch lets you disable half of the phase splitter to cancel out the octave effect. However, the non-octave signal still passes through a series diode (D2) which introduces something called “crossover distortion”. While this crossover distortion is part of the sound of the COB, it sounds very good without it as well and justifies having its own setting.

As a result, the octave switch has been modified to have Octave, No Octave (original) and No Octave (modified) settings. Since it's primarily an octave effect, it obviously is going to work best in the Octave mode, but there are some interesting sounds to be discovered in the other two positions.

SCHEMATIC



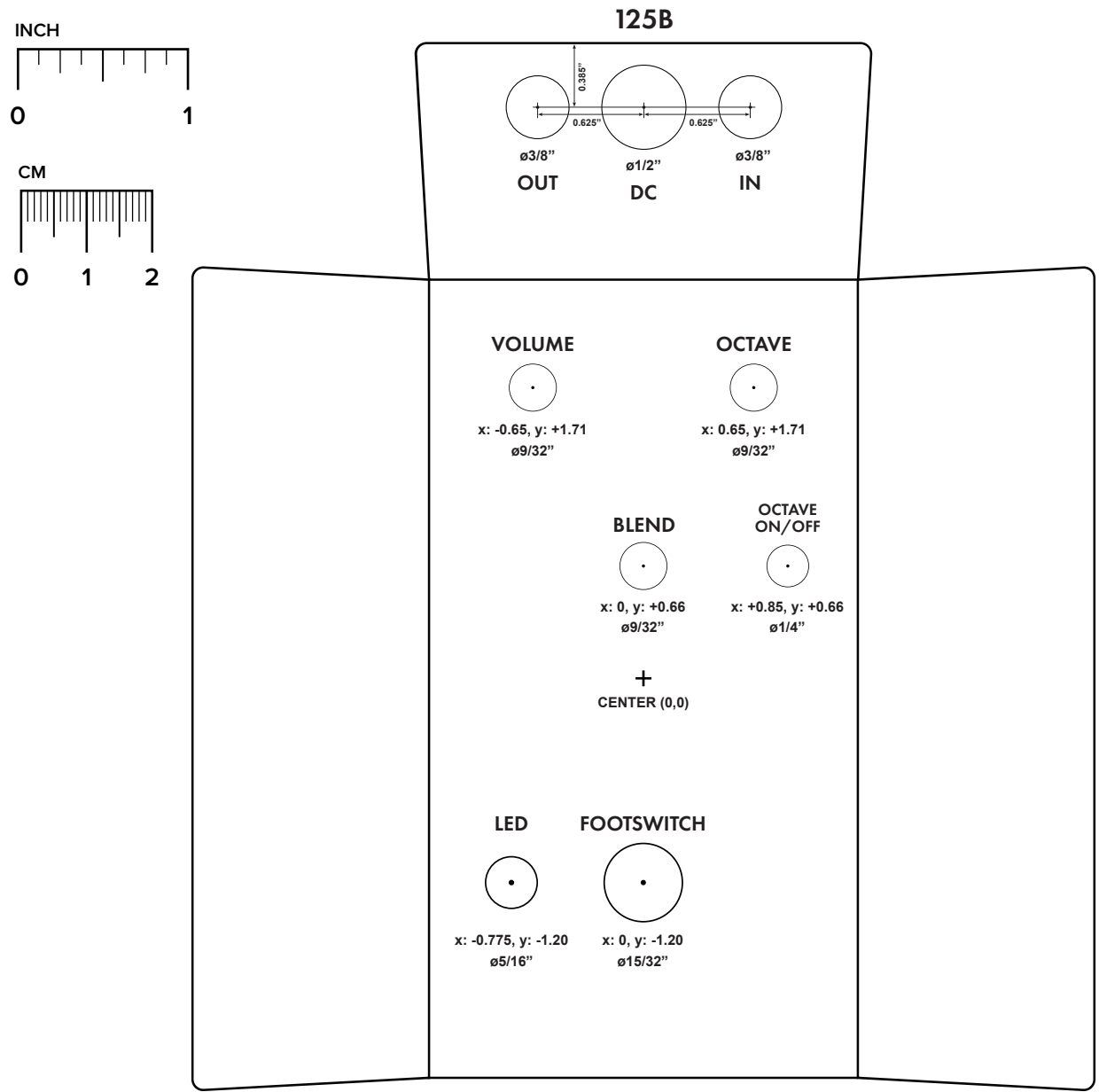
DRILL TEMPLATE

Cut out this drill template, fold the edges and tape it to the enclosure. Before drilling, it's recommended to first use a center punch for each of the holes to help guide the drill bit.

Ensure that this template is printed at 100% or "Actual Size". You can double-check this by measuring the scale on the printed page.

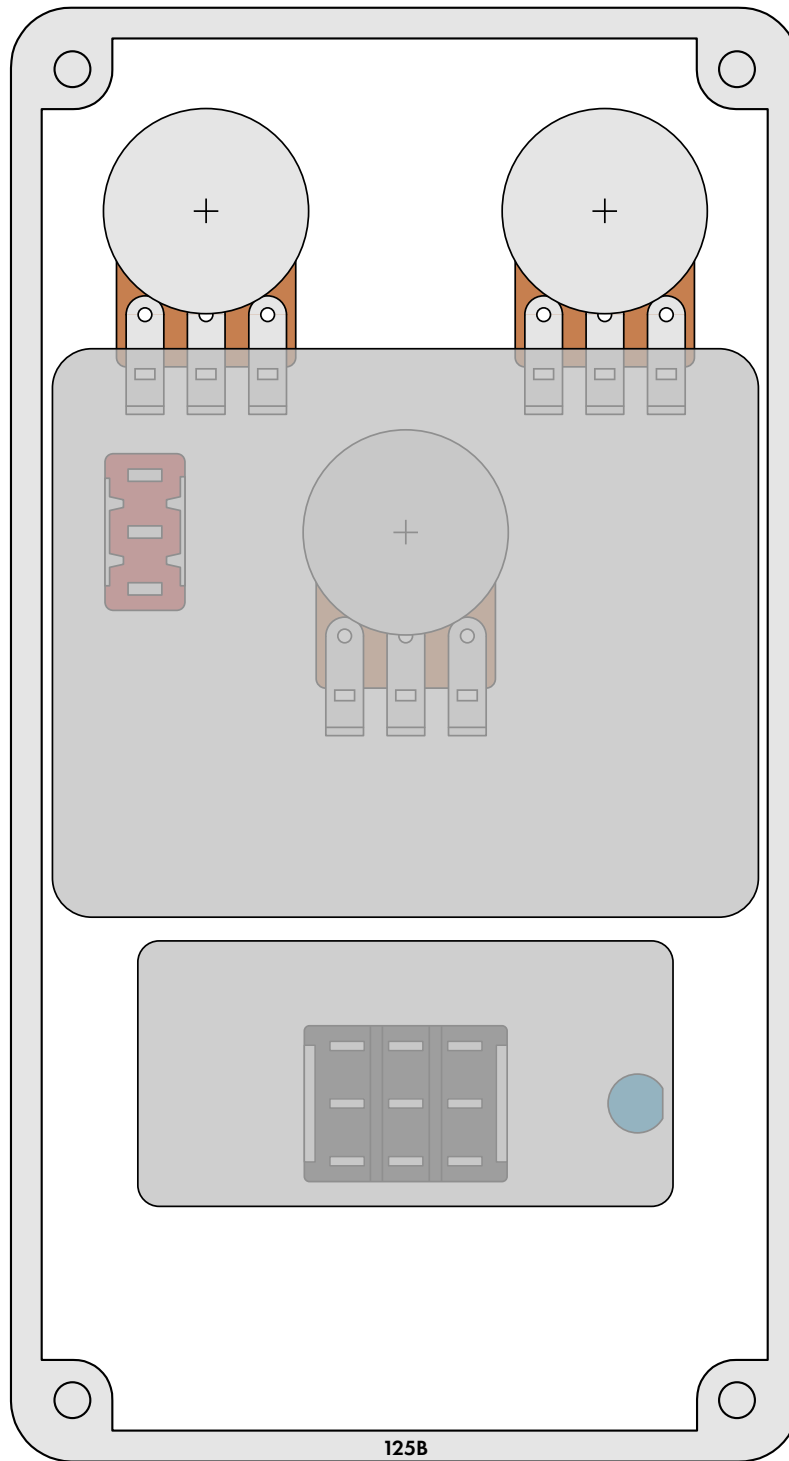
Top jack layout assumes the use of closed-frame jacks like the [Switchcraft 111X](#). If you'd rather use open-frame jacks, please refer to the [Open-Frame Jack Drill Template](#) for the top side.

LED hole drill size assumes the use of a [5mm LED bezel](#), available from several parts suppliers. Adjust size accordingly if using something different, such as a 3mm bezel, a plastic bezel, or just a plain LED.

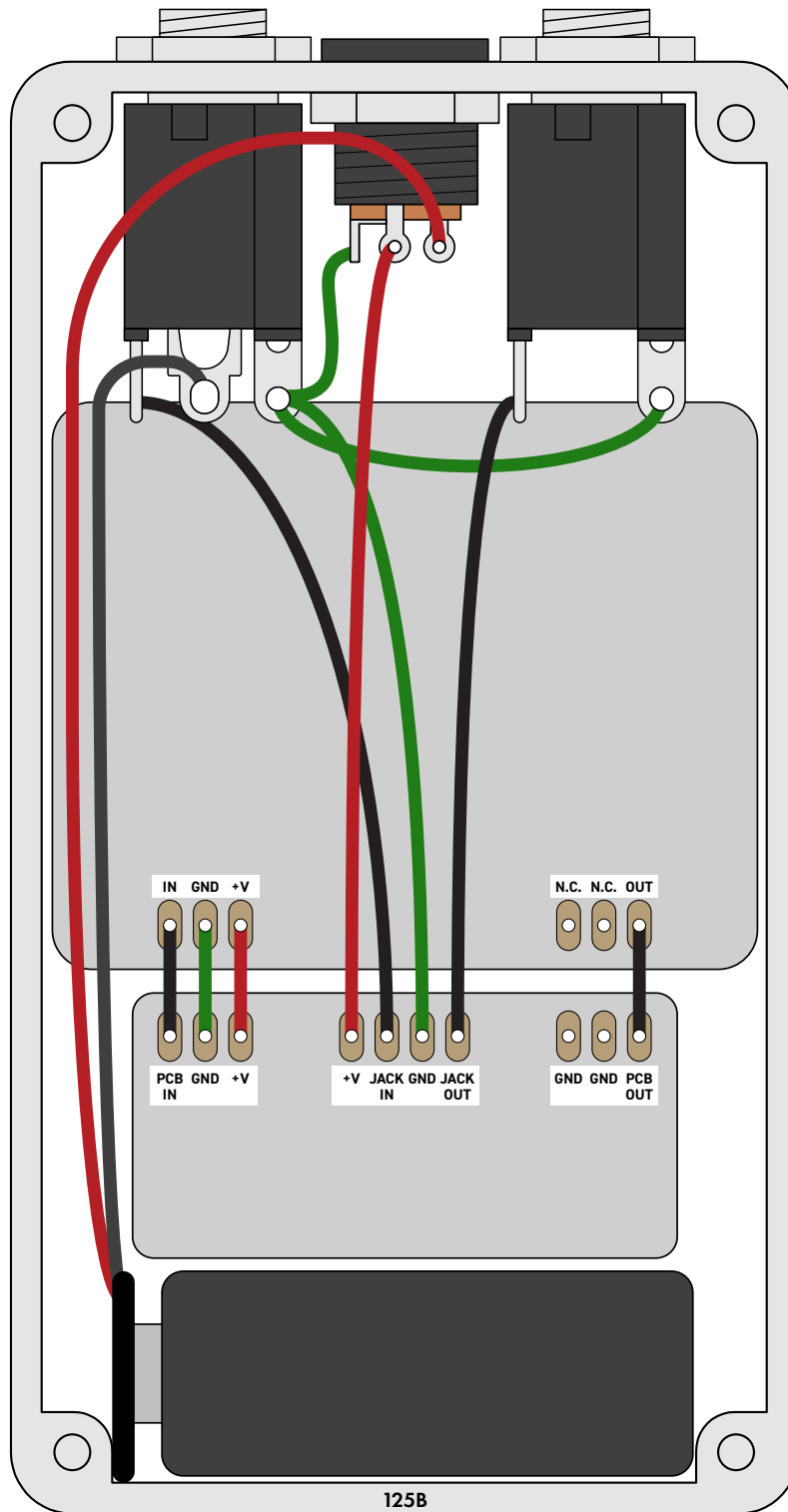


ENCLOSURE LAYOUT

Enclosure is shown without jacks. See next page for jack layout and wiring.



WIRING DIAGRAM



*Shown with optional 9V battery. If battery is omitted, both jacks can be mono rather than one being stereo.
Leave the far-right lug of the DC jack unconnected.*

LICENSE & USAGE

No direct support is offered for these projects beyond the provided documentation. It's assumed that you have at least some experience building pedals before starting one of these. Replacements and refunds cannot be offered unless it can be shown that the circuit or documentation are in error.

All of these circuits have been tested in good faith in their base configurations. However, not all the modifications or variations have necessarily been tested. These are offered only as suggestions based on the experience and opinions of others.

Projects may be used for commercial endeavors in any quantity unless specifically noted. No attribution is necessary, though a link back is always greatly appreciated. The only usage restrictions are that **(1) you cannot resell the PCB as part of a kit without prior arrangement, and (2) you cannot "goop" the circuit, scratch off the screenprint, or otherwise obfuscate the circuit to disguise its source.** (In other words: you don't have to go out of your way to advertise the fact that you use these PCBs, but please don't go out of your way to hide it. The guitar effects industry needs more transparency, not less!)

DOCUMENT REVISIONS

1.0.0 (2023-09-08)

Initial release.