

PROJECT NAME

VELORUM

BASED ON

Ibanez/Vemuram TSV808

EFFECT TYPE

Overdrive

BUILD DIFFICULTY

■■■■■ Easy

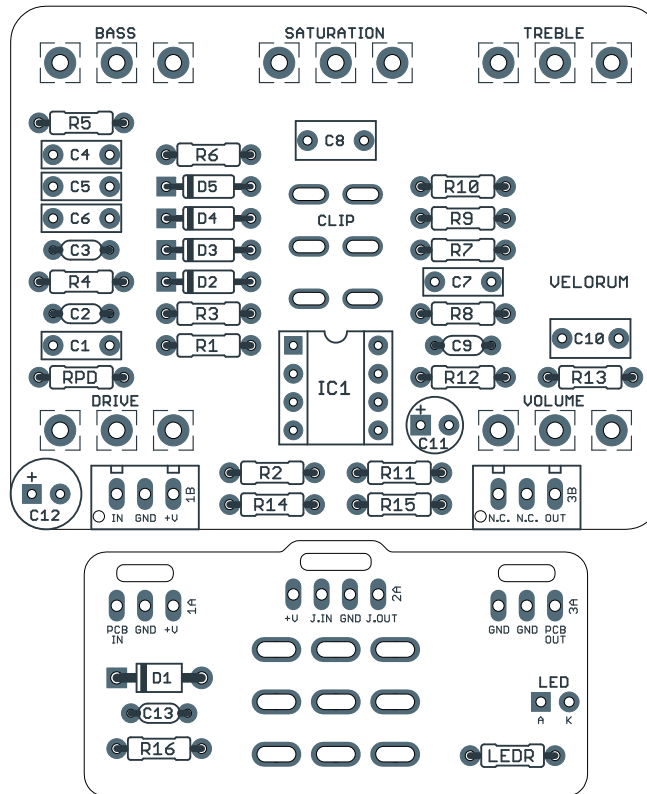
DOCUMENT VERSION

1.0.0 (2024-07-04)

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DIY GUITAR EFFECTS

PROJECT SUMMARY

A limited-edition collaboration between Ibanez and Vemuram that combines elements of the Tube Screamer and Jan Ray to create a highly tweakable transparent overdrive.



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

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INTRODUCTION

The Velorum Dynamic Overdrive is based on the Ibanez/Vemuram TSV808, a limited-run collaboration between Ibanez and Vemuram combining their Tube Screamer and Jan Ray pedals. It was originally released in 2019 and had completely sold out within a year or two, and since then they have fetched upwards of \$2,000 on the used market.

It was [traced by The Tone Geek](#) in 2022 who verified that it was pretty much exactly as described in the marketing. The first stage of the circuit is very similar to the Jan Ray, while the second stage is much like a Tube Screamer tone stack but with the tone control fixed to a specific position. All in all, it resembles a Jan Ray more than a Tube Screamer—but the two circuits were already fairly similar so the distinction is not as black-and-white.

The clean 3-knob control layout is deceptively simplistic. There are two additional trimmers inside the pedal, Bass and Saturation, that can be adjusted from the north side using a screwdriver. There are also DIP switches inside the pedal to select between symmetric and asymmetric clipping modes.

The Velorum project is a direct adaptation of the TSV808, but with all controls moved to the front of the enclosure for easy access. The trimmers have been converted to standard potentiometers. The DIP switches have been merged into a single 3-way toggle switch that selects between Tube Screamer mode (one diode in each direction), asymmetric mode (one diode in one direction and two in the other), and a third mode with two diodes in each direction.

USAGE

The Velorum has five controls and one toggle switch:

- **Drive** controls the amount of gain in the op-amp clipping stage.
- **Treble** is a passive hi-cut filter after the clipping stage.
- **Bass** adjusts the frequency of the gain stage low-pass filter.
- **Saturation** sets the gain ratio as well as the EQ of the low-mid frequencies.
- **Volume** controls the overall output.
- **Clipping** (toggle switch) lets you choose between three different combinations of silicon diodes. The top position has one diode in each direction, the same as the original Tube Screamer. The middle position has one diode in one direction and two in the other, equivalent to the BOSS SD-1. The bottom position has two diodes in each direction.

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—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	1k	Metal film resistor, 1/4W	
R2	510k	Metal film resistor, 1/4W	
R3	33k	Metal film resistor, 1/4W	
R4	10k	Metal film resistor, 1/4W	
R5	10k	Metal film resistor, 1/4W	
R6	1k	Metal film resistor, 1/4W	
R7	1k	Metal film resistor, 1/4W	
R8	10k	Metal film resistor, 1/4W	
R9	6k8	Metal film resistor, 1/4W	
R10	10k	Metal film resistor, 1/4W	
R11	4k7	Metal film resistor, 1/4W	
R12	12k	Metal film resistor, 1/4W	
R13	100R	Metal film resistor, 1/4W	
R14	9k1	Metal film resistor, 1/4W	
R15	7k5	Metal film resistor, 1/4W	
R16	100R	Metal film resistor, 1/4W	Power supply filter resistor.
RPD	1M	Metal film resistor, 1/4W	Input pulldown resistor.
LEDR	10k	Metal film resistor, 1/4W	LED current-limiting resistor. Adjust value to change LED brightness.
C1	27n	Film capacitor, 7.2 x 2.5mm	
C2	22pF	MLCC capacitor, NP0/C0G	
C3	47pF	MLCC capacitor, NP0/C0G	Original uses 51pF, but 47pF is easier to find and will perform the same.
C4	100n	Film capacitor, 7.2 x 2.5mm	
C5	47n	Film capacitor, 7.2 x 2.5mm	
C6	33n	Film capacitor, 7.2 x 2.5mm	
C7	82n	Film capacitor, 7.2 x 2.5mm	
C8	1uF	Film capacitor, 7.2 x 3.5mm	
C9	150pF	MLCC capacitor, NP0/C0G	
C10	1uF	Film capacitor, 7.2 x 3.5mm	
C11	47uF	Electrolytic capacitor, 5mm	Reference voltage filter capacitor.
C12	100uF	Electrolytic capacitor, 6.3mm	Power supply filter capacitor.
C13	100n	MLCC capacitor, X7R	Power supply filter capacitor.

PARTS LIST, CONT.

PART	VALUE	TYPE	NOTES
D1	1N5817	Schottky diode, DO-41	
D2	1N914	Fast-switching diode, DO-35	
D3	1N914	Fast-switching diode, DO-35	
D4	1N914	Fast-switching diode, DO-35	
D5	1N914	Fast-switching diode, DO-35	
IC1	OPA2134	Operational amplifier, dual, DIP8	
IC1-S	DIP-8 socket	IC socket, DIP-8	
DRIVE	500kA	16mm right-angle PCB mount pot	Audio (log) taper.
SAT.	10kB	16mm right-angle PCB mount pot	Linear taper.
TREBLE	10kB	16mm right-angle PCB mount pot	Linear taper.
BASS	50kC	16mm right-angle PCB mount pot	Reverse audio (reverse log or antilog) taper.
VOLUME	10kA	16mm right-angle PCB mount pot	Audio (log) taper.
CLIP	DPDT on-off-on	Toggle switch, DPDT center off	
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

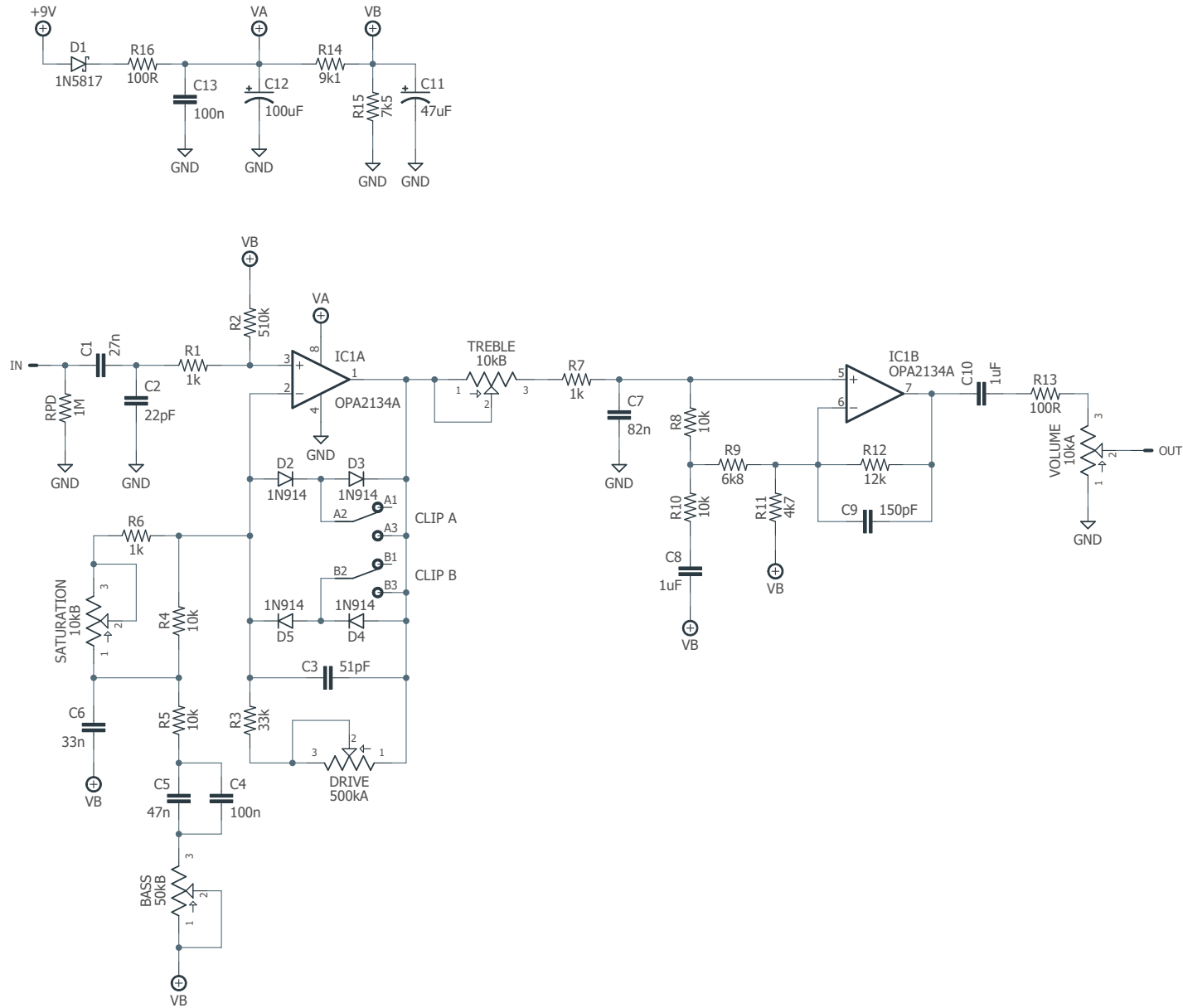
Potentiometer modifications

The original TSV808 used a 50k Ω potentiometer for the Bass control and 10k Ω for Volume. Both of these would benefit from different tapers. We recommend a 50k Ω C (reverse audio or antilog taper) for the bass control and a 10k Ω A (audio or log taper) for the volume control. These are the defaults in the parts list for this project.

If there's not enough bass cut at the minimum setting, you can increase the bass control to 100k Ω .

The range of the Drive control is impacted by the position of the Saturation control, but if you have the Saturation set where you like it and it doesn't have enough gain at maximum, you can increase the Drive control to 1M Ω .

SCHEMATIC



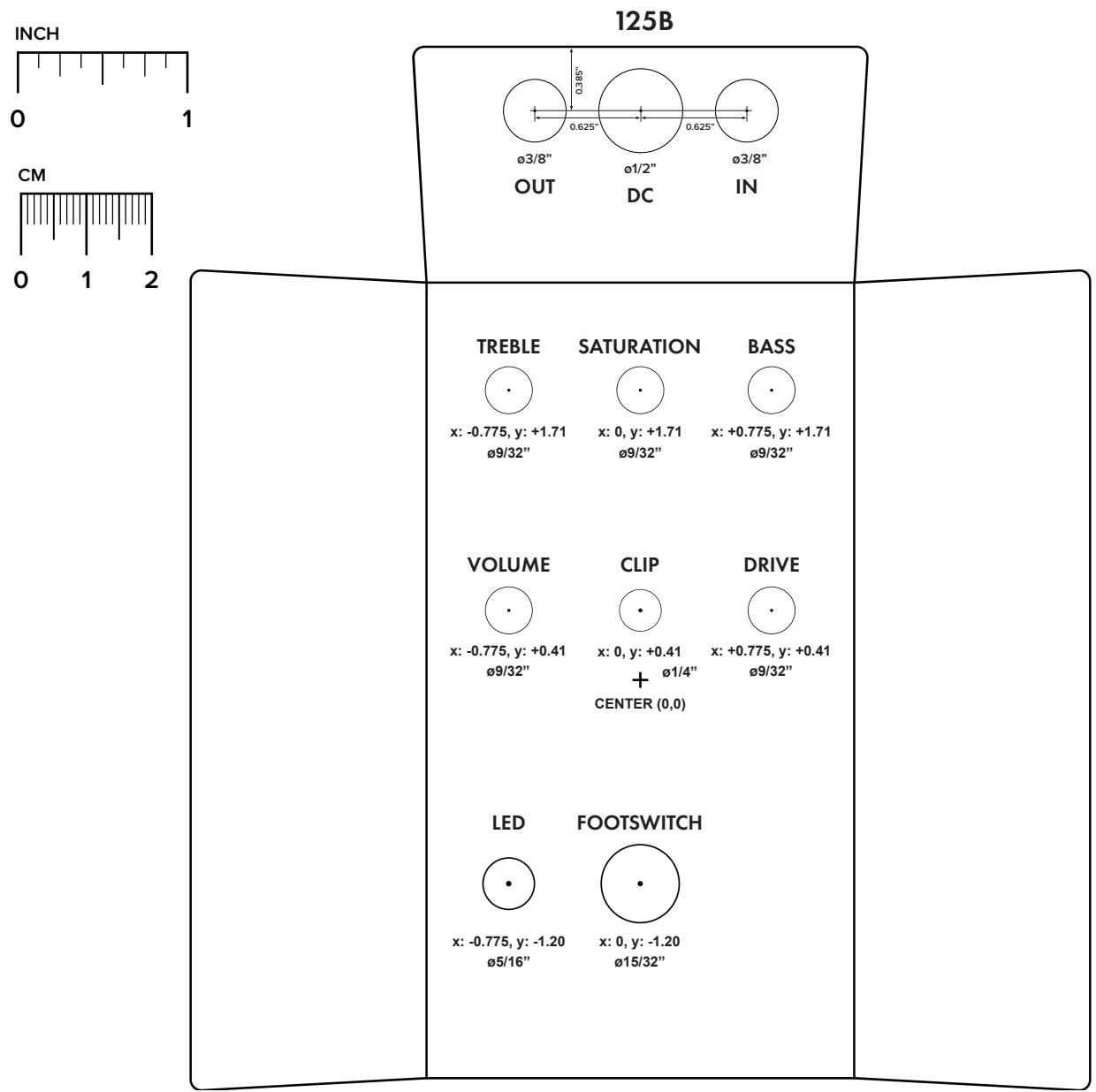
DRILL TEMPLATE

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.

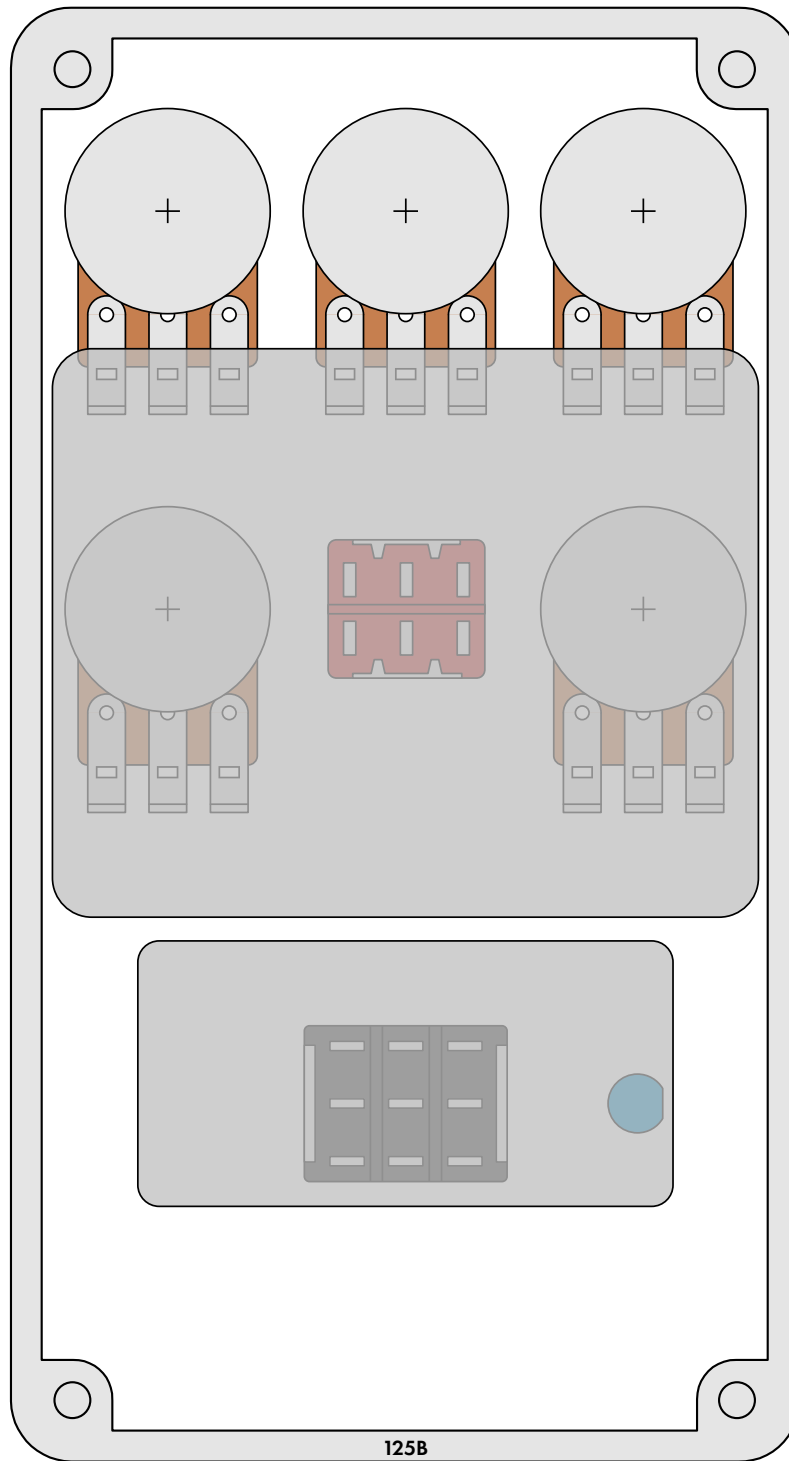
Top jack layout assumes the use of closed-frame jacks like the [Switchcraft 111X](#). Open-frame jacks will not fit in layouts with 5 or more knobs due to the placement of the DC jack.

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.

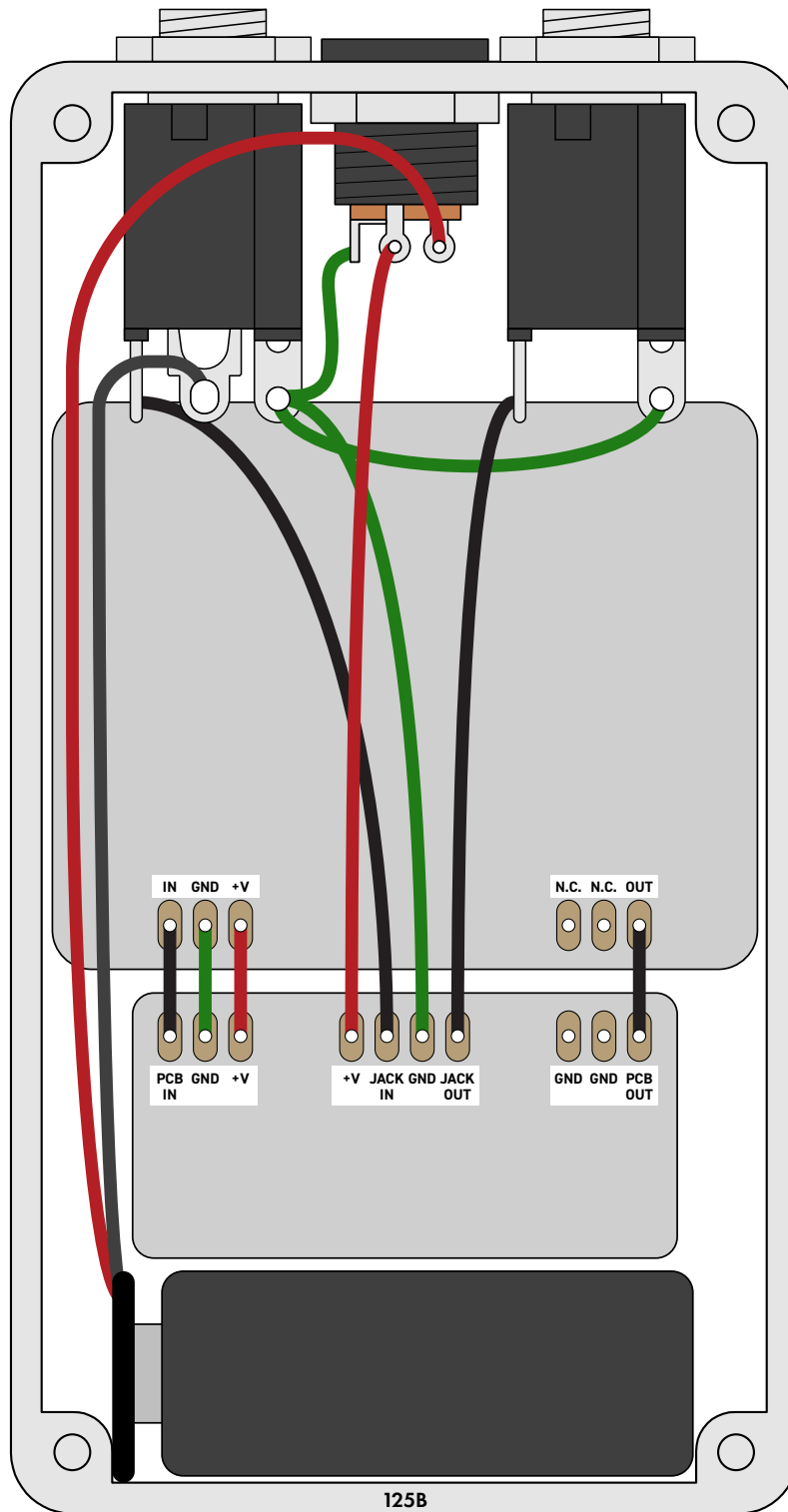


ENCLOSURE LAYOUT

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 (2024-07-04)

Initial release.