

PROJECT NAME
NAOS

BASED ON
Yamaha OD-10MII Overdrive

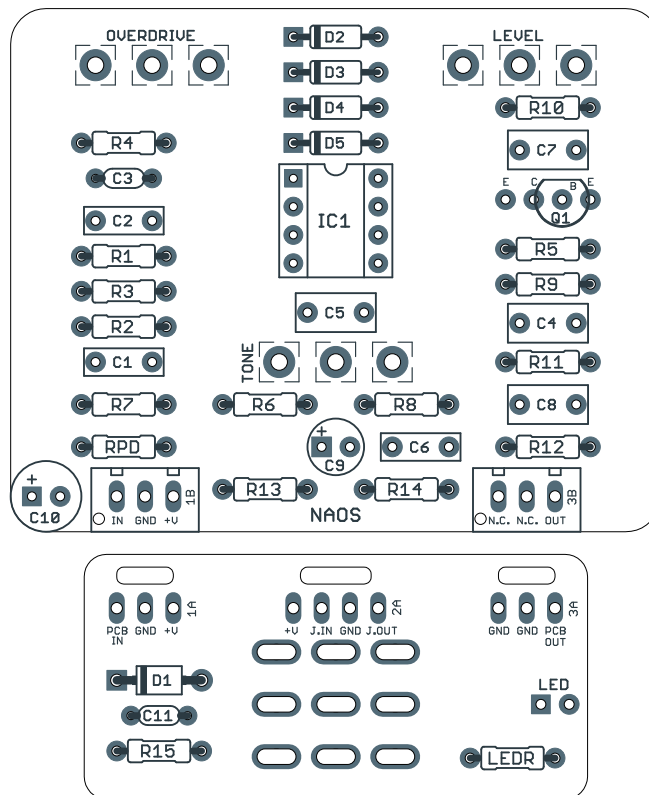
BUILD DIFFICULTY
■□□□□ Beginner

EFFECT TYPE
Overdrive

DOCUMENT VERSION
1.0.1 (2021-03-08)

PROJECT SUMMARY

A simple yet effective drive circuit that combines a Tube Screamer-style clipping section with a Big Muff-style tone control, it's more transparent than a Tube Screamer with less of a midrange emphasis.



Actual size is 2.3" x 1.86" (main board) and 1.78" x 0.87" (bypass board).

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INTRODUCTION

The Naos Classic Overdrive is based on the Yamaha OD-10MII, an overdrive pedal originally released in 1987 as part of Yamaha’s “Sound Device Series” (SDS).

The OD-10MII is very similar to the Fuzztone, a DIY project designed by Dan Coggins (Lovetone/ Dinosaural) for the magazine Electronics Today International in 1993. The main difference is in the clipping diode arrangement and the OD-10MII’s inclusion of an input buffer. Most of the component values are also different, so the two pedals sound nothing alike, but the similarities are hard to miss when looking at the two schematics side by side.

With this said, it’s unlikely that Dan referenced the OD-10MII when designing the Fuzztone, as the main building blocks of the circuit are fairly basic. But, it bears mentioning since the OD-10MII predated the Fuzztone by six years.

The Naos is a direct adaptation of the original Yamaha unit except that the flip-flop bypass has been replaced with standard true bypass.

USAGE

The Naos has the following controls:

- **Overdrive** controls the amount of gain in the overdriven op-amp stage.
- **Tone** controls the amount of treble, increasing the highs as it’s turned up.
- **Level** is the overall output level.

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.

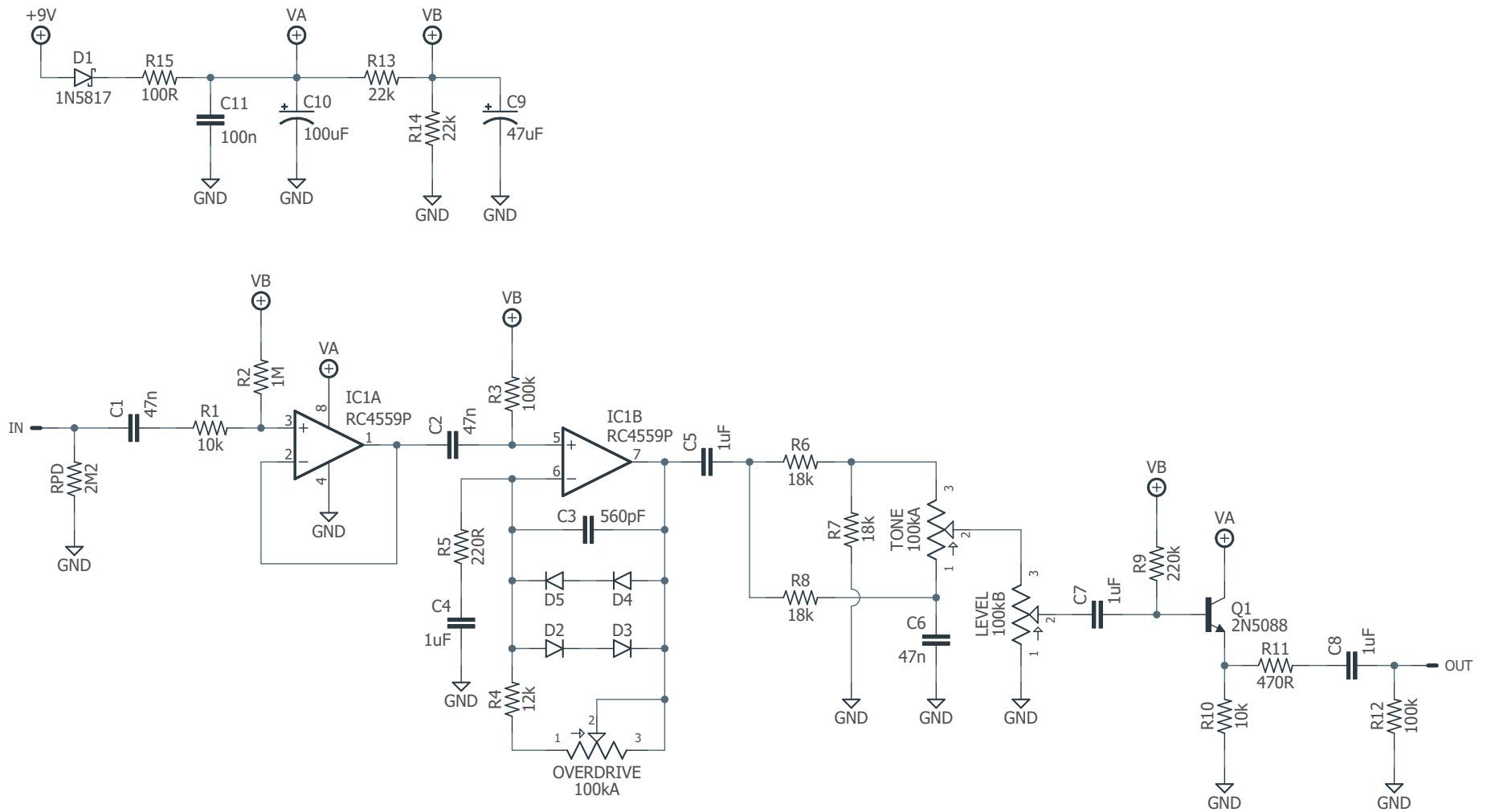
[View parts list spreadsheet](#) →

PART	VALUE	TYPE	NOTES
R1	10k	Metal film resistor, 1/4W	
R2	1M	Metal film resistor, 1/4W	
R3	100k	Metal film resistor, 1/4W	
R4	12k	Metal film resistor, 1/4W	
R5	220R	Metal film resistor, 1/4W	
R6	18k	Metal film resistor, 1/4W	
R7	18k	Metal film resistor, 1/4W	
R8	18k	Metal film resistor, 1/4W	
R9	220k	Metal film resistor, 1/4W	
R10	10k	Metal film resistor, 1/4W	
R11	470R	Metal film resistor, 1/4W	
R12	100k	Metal film resistor, 1/4W	
R13	22k	Metal film resistor, 1/4W	
R14	22k	Metal film resistor, 1/4W	
R15	100R	Metal film resistor, 1/4W	
RPD	2M2	Metal film resistor, 1/4W	
LED1	4k7	Metal film resistor, 1/4W	
C1	47n	Film capacitor, 7.2 x 2.5mm	
C2	47n	Film capacitor, 7.2 x 2.5mm	
C3	560pF	MLCC capacitor, NP0/COG	
C4	1uF	Film capacitor, 7.2 x 3.5mm	
C5	1uF	Film capacitor, 7.2 x 3.5mm	
C6	47n	Film capacitor, 7.2 x 2.5mm	
C7	1uF	Film capacitor, 7.2 x 3.5mm	
C8	1uF	Film capacitor, 7.2 x 3.5mm	
C9	47uF	Electrolytic capacitor, 5mm	Reference voltage filter capacitor.
C10	100uF	Electrolytic capacitor, 6.3mm	Power supply filter capacitor.
C11	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	
Q1	2N5088	BJT transistor, NPN, TO-92	
IC1	RC4559P	Operational amplifier, DIP8	
IC1-S	DIP-8 socket	IC socket, DIP-8	
DRIVE	100kA	16mm right-angle PCB mount pot	
TONE	100kA	16mm right-angle PCB mount pot	
LEVEL	100kB	16mm right-angle PCB mount pot	
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.
FSW	3PDT	Stomp switch, 3PDT	
ENC	125B	Enclosure, die-cast aluminum	Can also use a Hammond 1590N1.

SCHEMATIC



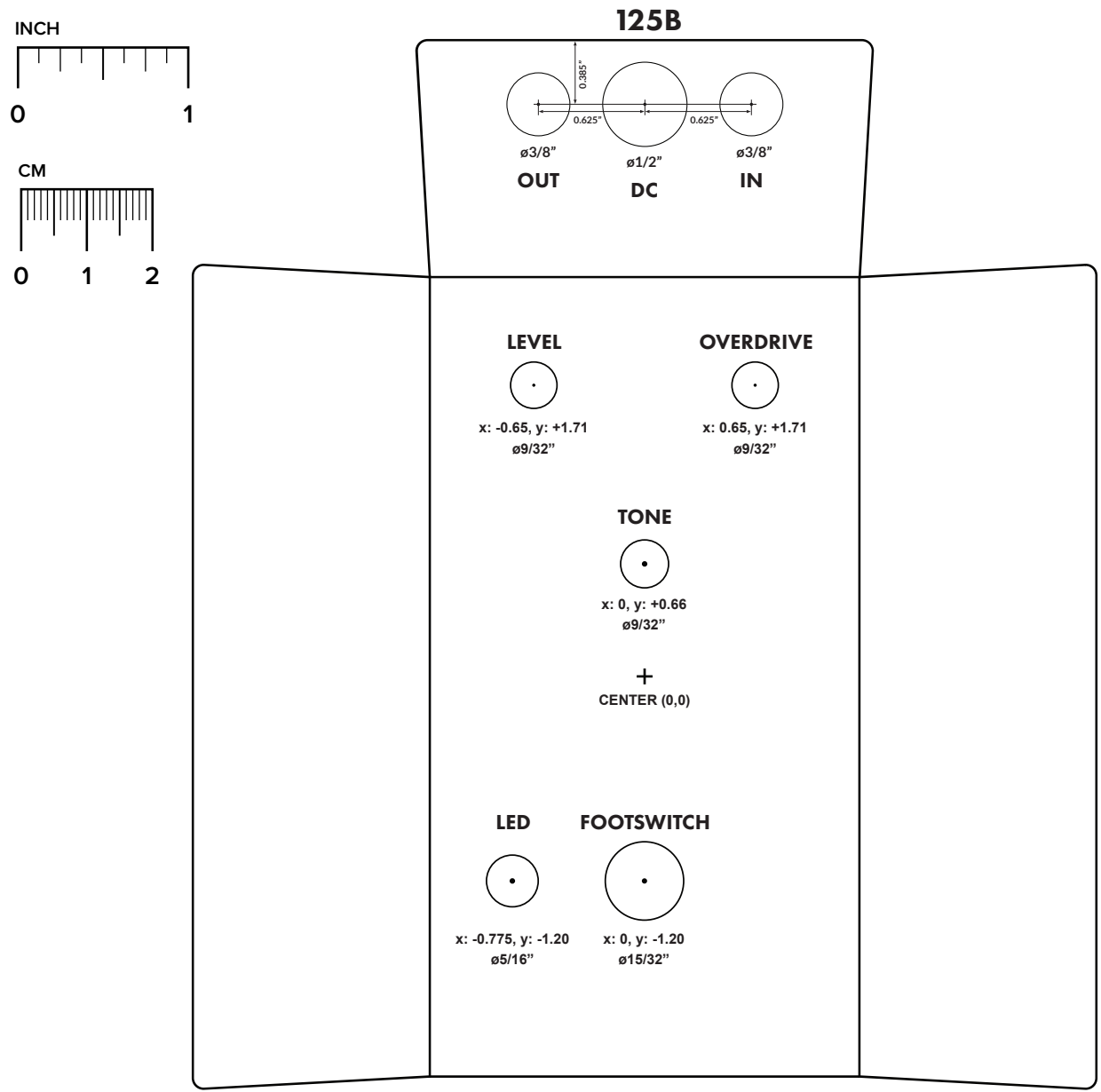
DRILL TEMPLATE

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.

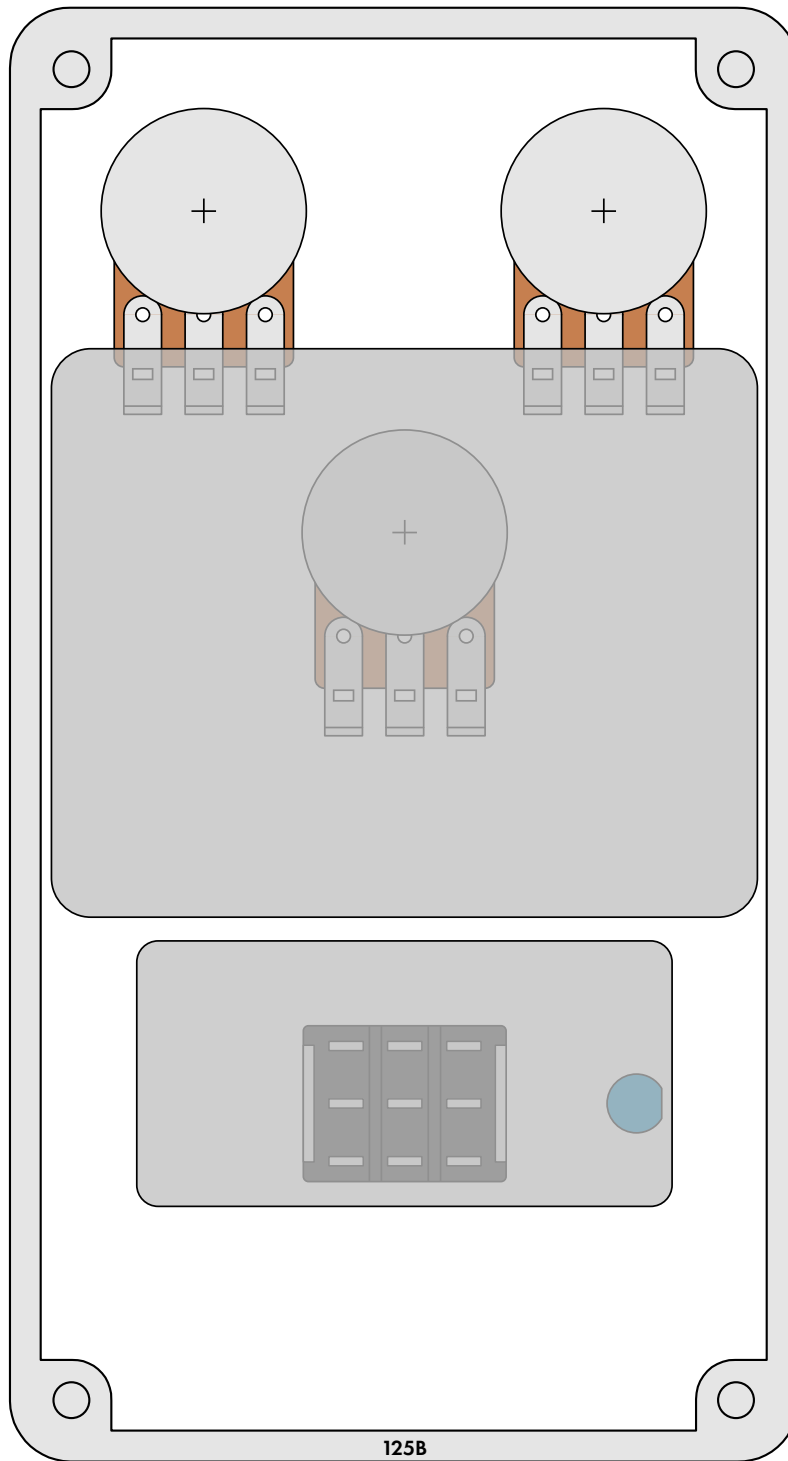
Top jack layout assumes the use of closed-frame jacks like the [Switchcraft 111X](#). If you'd rather use open-frame jacks, please refer to the [Open-Frame Jack Drill Template](#) for the top side.

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.

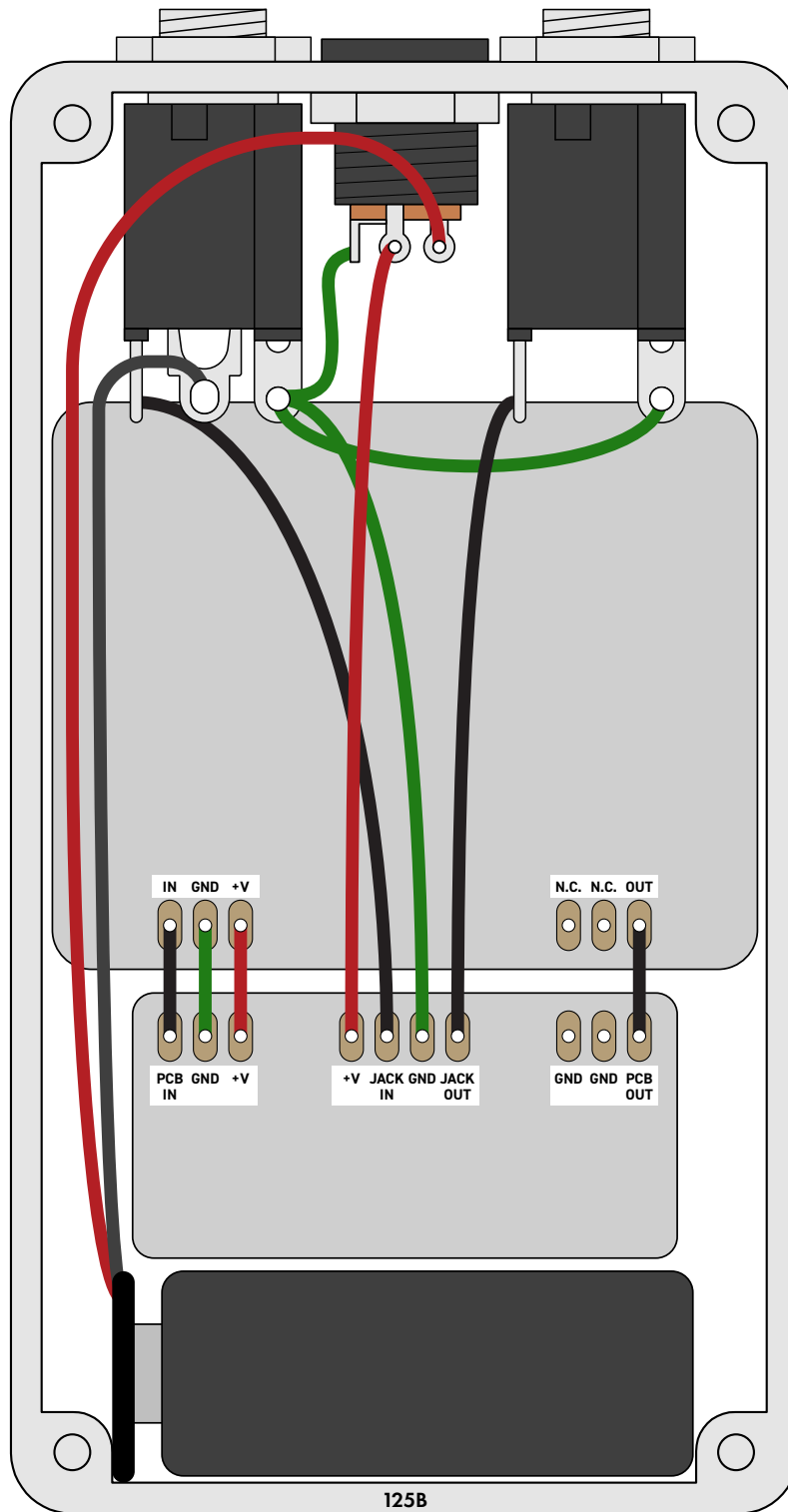


ENCLOSURE LAYOUT

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



WIRING DIAGRAM



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

1.0.1 (2021-03-08)

Corrected missing diodes and IC from parts list.

1.0.0 (2021-02-19)

Initial release.