

PROJECT NAME

DURANDAL



BASED ON

King Tone Blues Power

BUILD DIFFICULTY



EFFECT TYPE

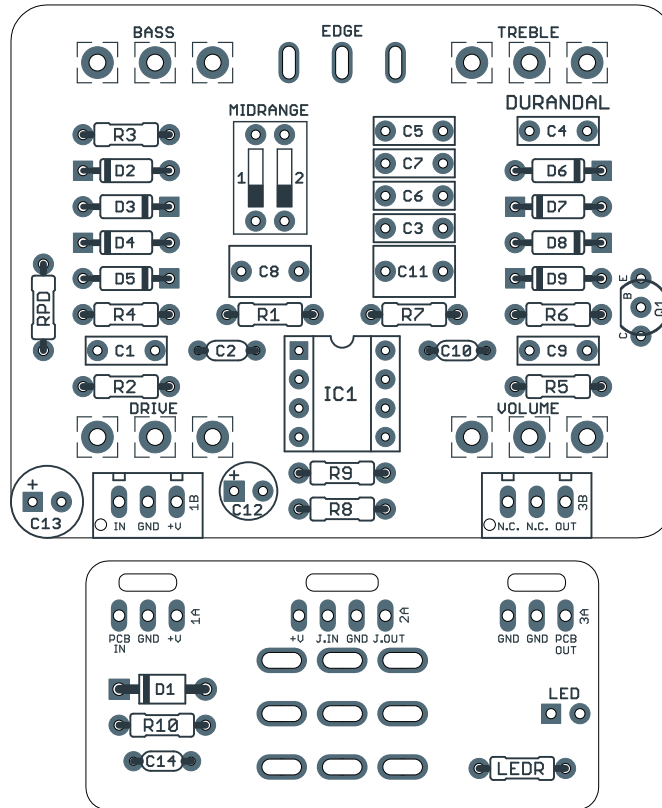
Transparent overdrive

DOCUMENT VERSION

1.0.2 (2024-05-09)

PROJECT SUMMARY

An adaptation of the legendary Timmy transparent drive pedal, with several modifications to add tonal flexibility. (And one that definitely does not.)



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

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INTRODUCTION

The Durandal Transparent Drive is based on the King Tone Blues Power, originally released in 2017.

Unlike the Duellist, there was no implication that it was based on any existing classic circuit. However, [we traced one](#) in 2022 and found that it's nearly identical to a Timmy, with a few minor tweaks and some added options. The treble response can be adjusted with the "Edge" switch (edge, stock, glass), and an internal DIP switch has four different midrange positions.

King Tone was a bit sneaky in concealing this one: the PCB has a transistor with all three legs connected to ground, meaning it's a decoy for people looking at gut shots trying to figure out what it's based on. (The earliest versions of the Blues Power didn't have this transistor.)

There are also four diodes in the second op-amp stage that seem to be for clipping, but will have very little effect since the stage only has a gain of 2, and there is already some signal loss between the first two stages due to the passive treble control. This could be another attempted decoy to distance from the Timmy, although technically in this case it's not completely useless like the transistor.

The Durandal is a direct clone of the Blues Power... including the transistor, if you want to be in on the joke. However, this can be omitted entirely with no effect.

USAGE

The Durandal has five external controls:

- **Drive** controls the amount of gain in the op-amp feedback diode clipping stage.
- **Bass** controls the low-end response of the effect before the clipping.
- **Treble** is a passive treble cut after the clipping stage.
- **Volume** controls the overall output.
- **Edge** (toggle switch) selects between Edge, Stock and Glass modes, which set the pre-clipping treble response.

There is also an internal DIP switch with four different midrange settings. Here are the positions:

- **Both up** is "Punch" mode. This is the default setting.
- **Left down, right up** is "Transparent" mode.
- **Left up, right down** is "Clear" mode.
- **Both down** is "Scoop" mode.

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 | 1M | Metal film resistor, 1/4W | |
| R2 | 10k | Metal film resistor, 1/4W | |
| R3 | 1k2 | Metal film resistor, 1/4W | |
| R4 | 3k3 | Metal film resistor, 1/4W | |
| R5 | 680R | Metal film resistor, 1/4W | |
| R6 | 4k7 | Metal film resistor, 1/4W | |
| R7 | 4k7 | Metal film resistor, 1/4W | |
| R8 | 47k | Metal film resistor, 1/4W | |
| R9 | 47k | Metal film resistor, 1/4W | |
| R10 | 82R | Metal film resistor, 1/4W | Power supply filter resistor. Can also use 100R. |
| RPD | 2M2 | Metal film resistor, 1/4W | Input pulldown resistor. |
| LEDR | 4k7 | Metal film resistor, 1/4W | LED current-limiting resistor. Adjust value to change LED brightness. |
| C1 | 100n | Film capacitor, 7.2 x 2.5mm | |
| C2 | 47pF | MLCC capacitor, NP0/C0G | |
| C3 | 3n3 | Film capacitor, 7.2 x 2.5mm | |
| C4 | 47n | Film capacitor, 7.2 x 2.5mm | |
| C5 | 15n | Film capacitor, 7.2 x 2.5mm | |
| C6 | 18n | Film capacitor, 7.2 x 2.5mm | |
| C7 | 22n | Film capacitor, 7.2 x 2.5mm | |
| C8 | 1.5uF | Film capacitor, 7.2 x 4.5mm | |
| C9 | 68n | Film capacitor, 7.2 x 2.5mm | |
| C10 | 100pF | MLCC capacitor, NP0/C0G | |
| C11 | 1.5uF | Film capacitor, 7.2 x 4.5mm | |
| C12 | 47uF | Electrolytic capacitor, 5mm | Reference voltage filter capacitor. |
| C13 | 100uF | Electrolytic capacitor, 6.3mm | Power supply filter capacitor. |
| C14 | 100n | MLCC capacitor, X7R | Power supply filter capacitor. |
| 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 | |
| D6 | 1N914 | Fast-switching diode, DO-35 | |

PARTS LIST, CONT.

| PART | VALUE | TYPE | NOTES |
|--------|----------------|--------------------------------|---|
| D7 | 1N914 | Fast-switching diode, DO-35 | |
| D8 | 1N914 | Fast-switching diode, DO-35 | |
| D9 | 1N914 | Fast-switching diode, DO-35 | |
| Q1 | 2N4403 | BJT transistor, PNP, TO-92 | Not connected to anything. See build notes. |
| IC1 | RC4558P | Operational amplifier, DIP8 | |
| IC1-S | DIP-8 socket | IC socket, DIP-8 | |
| MID | 2-pos. DIP | DIP switch, 2-position | |
| DRIVE | 1MA | 16mm right-angle PCB mount pot | |
| BASS | 50kC | 16mm right-angle PCB mount pot | |
| TREBLE | 10kC | 16mm right-angle PCB mount pot | |
| LEVEL | 10kA | 16mm right-angle PCB mount pot | |
| STYLE | 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. |
| FSW | 3PDT | Stomp switch, 3PDT | |
| ENC | 125B | Enclosure, die-cast aluminum | Can also use a Hammond 1590N1. |

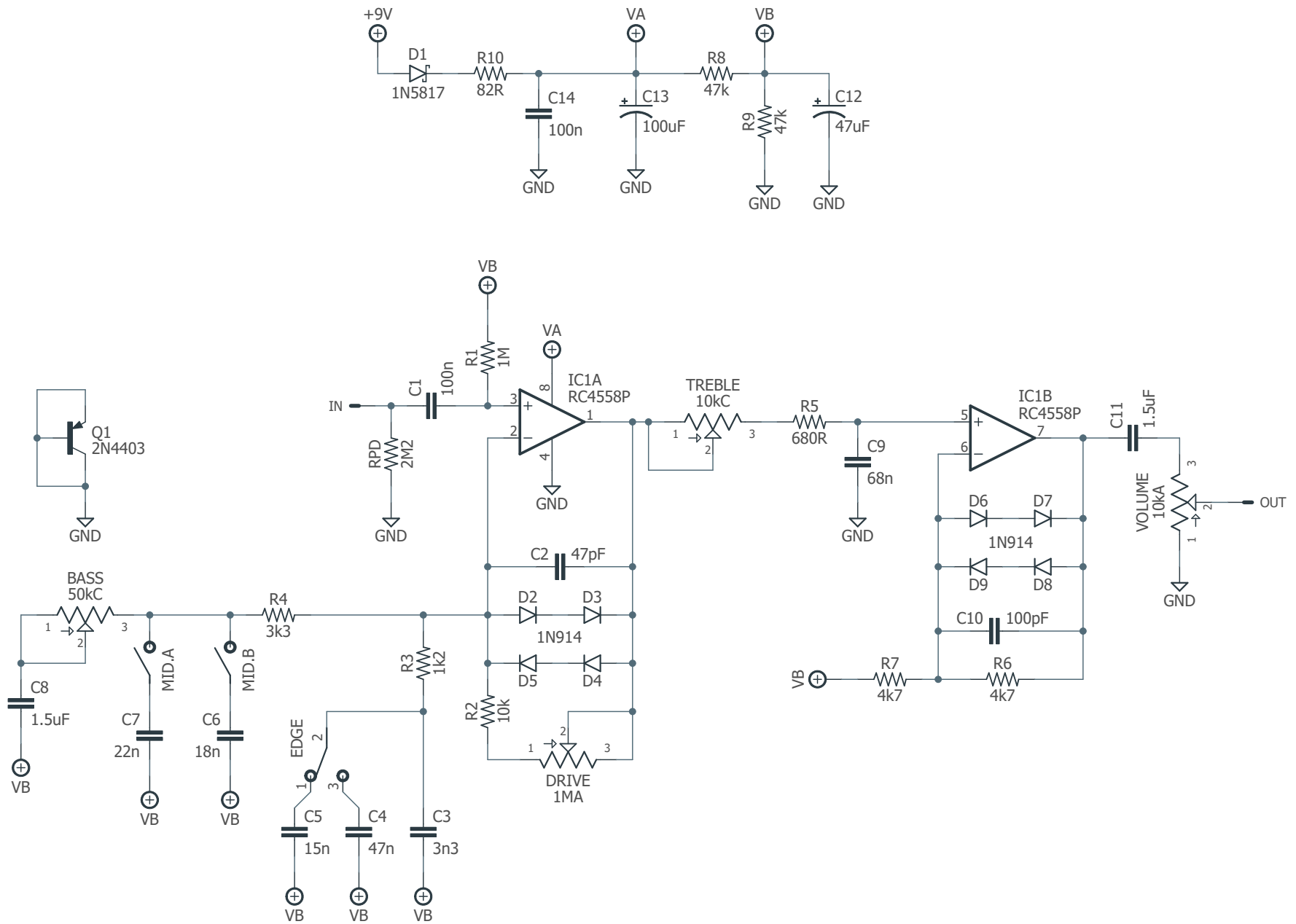
BUILD NOTES

Decoy transistor (Q1)

The original Blues Power has a transistor whose 3 legs are connected to ground. This is a decoy part meant to obscure the fact that it's essentially just a hot-rodded Timmy. See the [tracing journal](#) for a more in-depth discussion of this including photo proof.

We've included this transistor on the PCB since there was extra space, but it's purely for the sake of irony and the circuit will sound the same if it is omitted.

SCHEMATIC



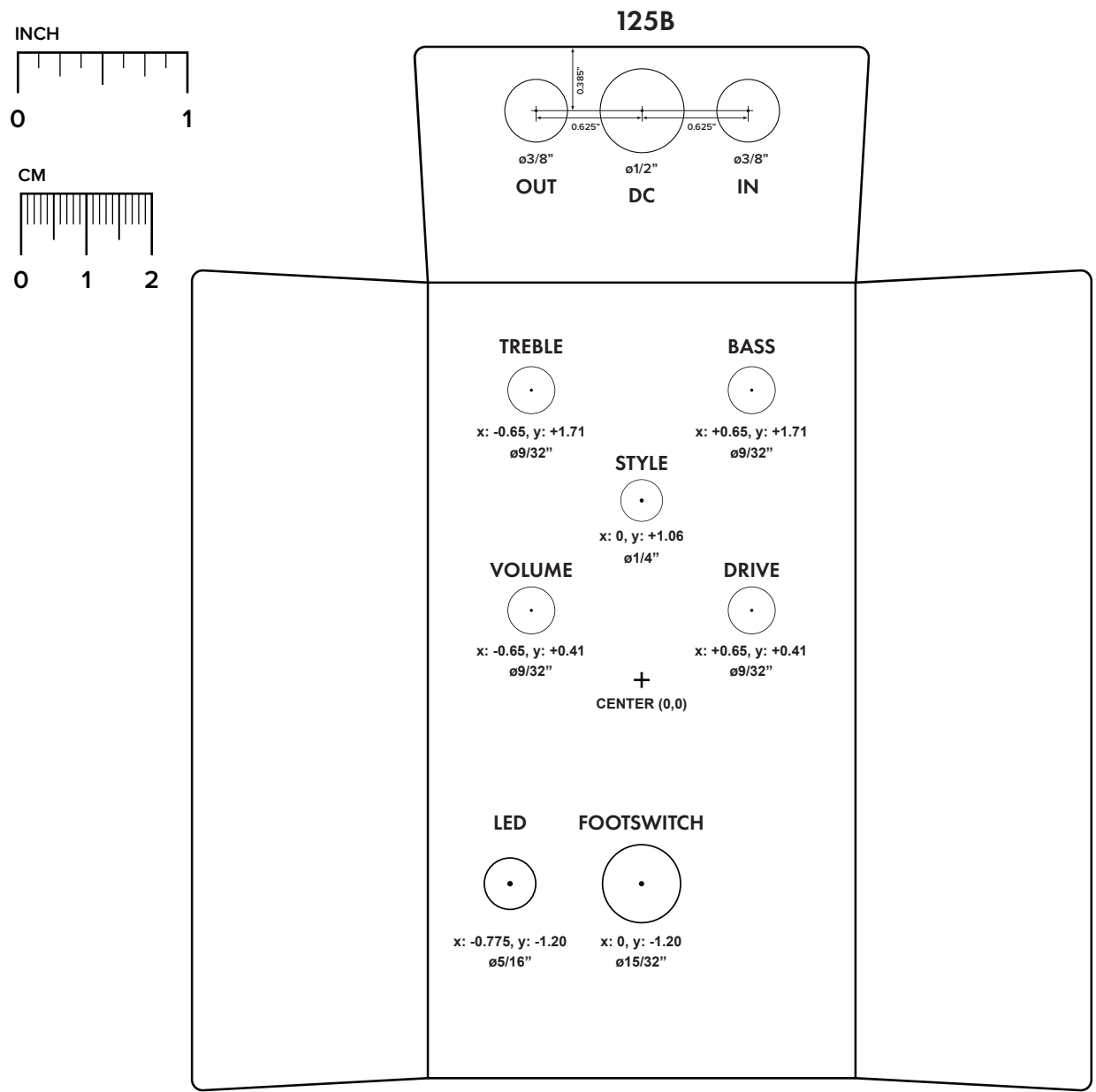
DRILL TEMPLATE

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.

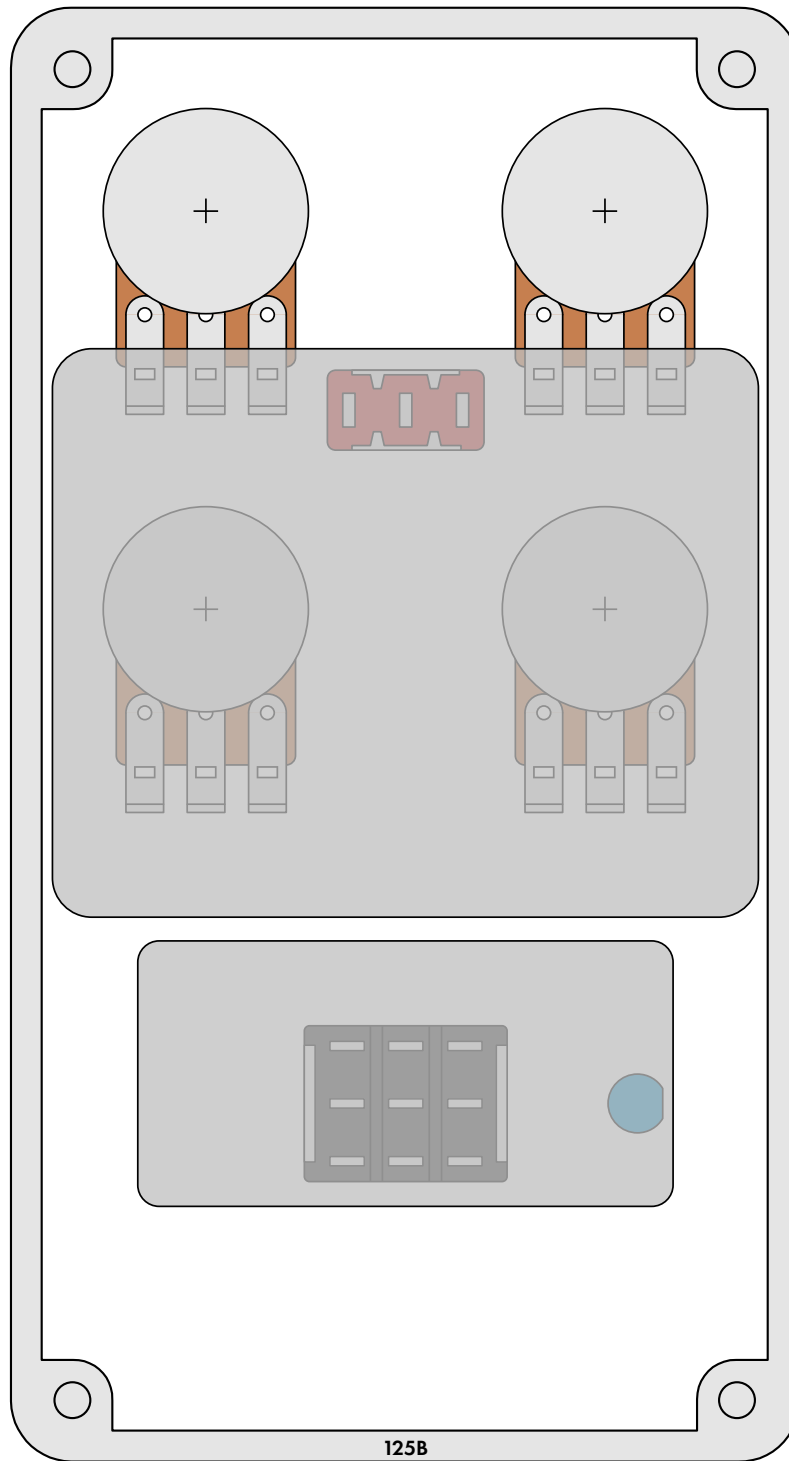
Top jack layout assumes the use of closed-frame jacks like the [Switchcraft 111X](#). If you'd rather use open-frame jacks, please refer to the [Open-Frame Jack Drill Template](#) for the top side.

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.

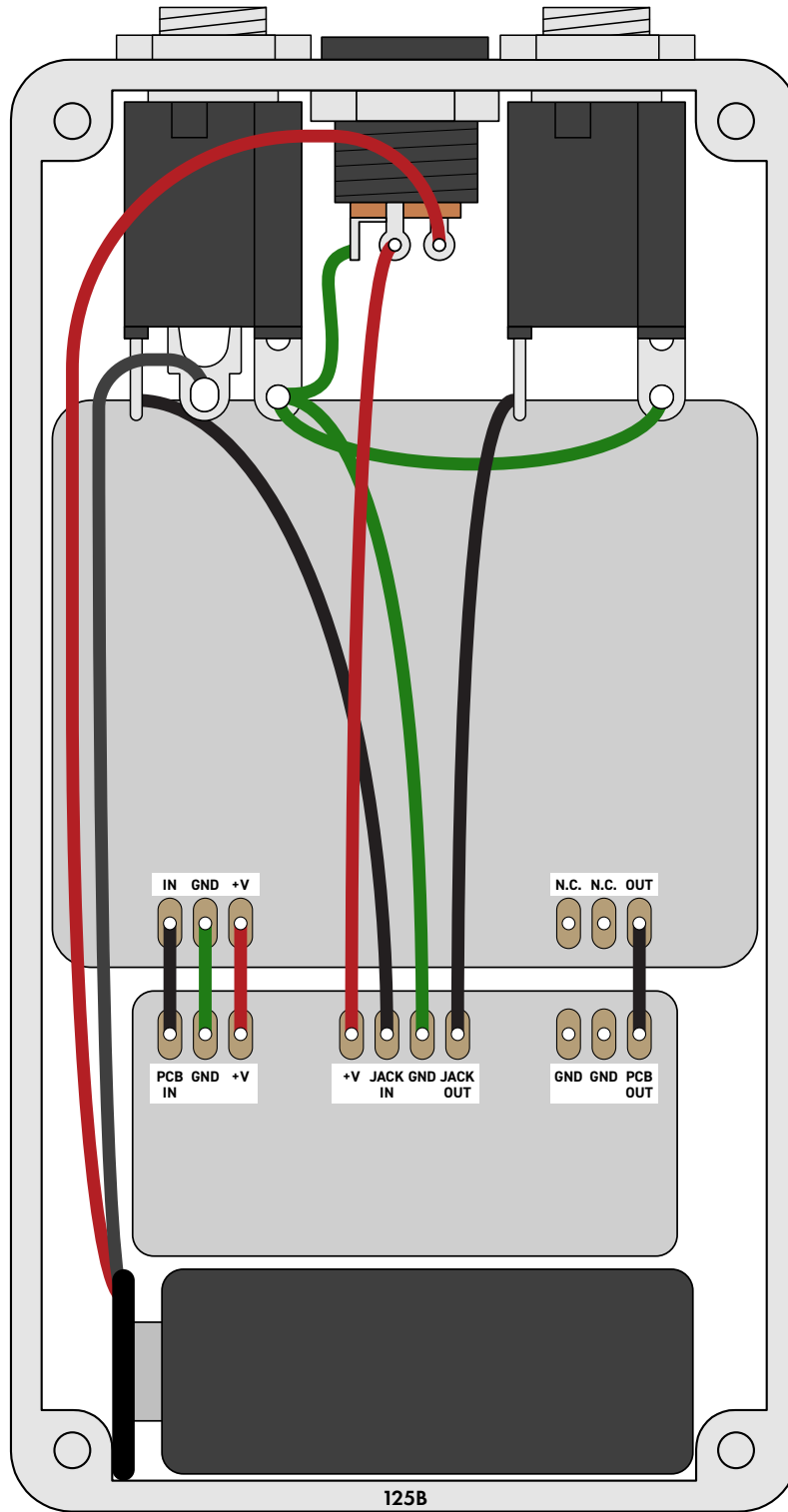


ENCLOSURE LAYOUT

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

1.0.2 (2024-05-09)

Corrected the drill template coordinates. The positions of the four pots were correct, but the listed X coordinates were not.

1.0.1 (2022-07-12)

Revised information on decoy parts since D6-D9 are technically in the circuit even if they don't do anything.

1.0.0 (2022-05-13)

Initial release.