

PROJECT NAME  
**TRI-VIBE**

BASED ON  
Runoffgroove Tri-Vibe

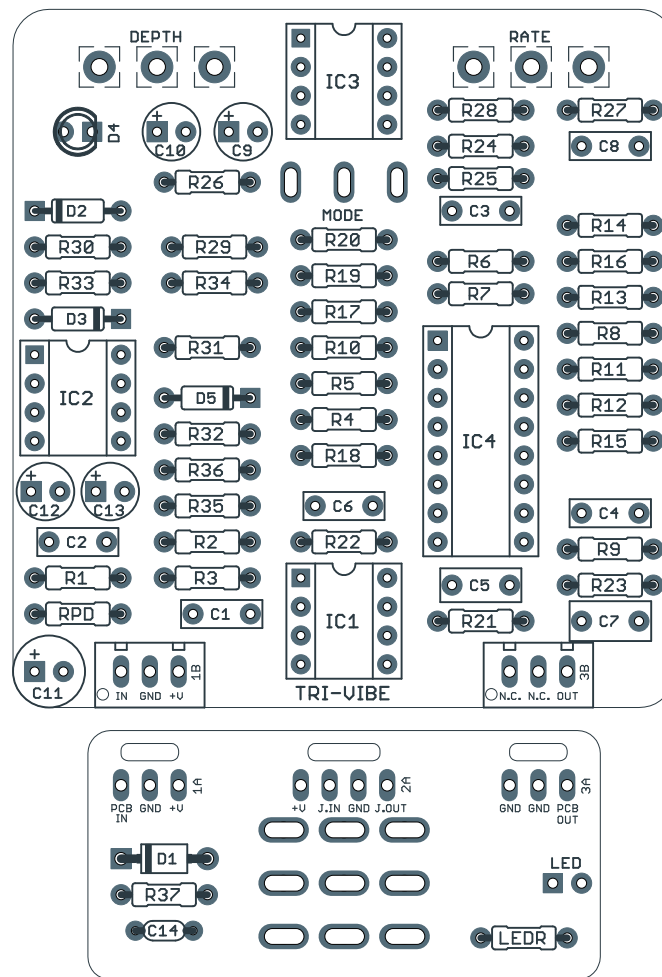
BUILD DIFFICULTY  
■■■■□ Intermediate

EFFECT TYPE  
Phaser/vibrato

DOCUMENT VERSION  
1.0.0 (2020-06-05)

**PROJECT SUMMARY**

A simple no-bias phaser and vibrato circuit that uses commonly available parts.



Actual size is 2.3" x 2.42" (main board) and 1.78" x 0.86" (bypass board).

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## INTRODUCTION

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The Runoffgroove Tri-Vibe is a vibrato & phaser circuit that is a great deal simpler than the comparable vintage circuits. Unlike most vibrato implementations, no BBDs are used, and instead the Tri-Vibe's topography is much more similar to a phaser using OTAs, but with an LFO that has been optimized for the vibrato effect.

The result is true pitch vibrato—not just the deep phasing that is often called vibrato in circuits like the Univibe. However, by mixing the dry signal back in via a toggle switch, the Tri-Vibe can achieve more traditional phaser tones similar to two-stage phasers such as the Phase 45.

The Aion FX version of the Tri-Vibe is a direct adaptation of the original Runoffgroove circuit with no modifications, just a little bit of additional power filtering.

## USAGE

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The Tri-Vibe has the following controls:

- **Rate** controls the speed of the LFO.
- **Depth** sets the depth of the LFO.
- **Mode** is a toggle switch that goes between vibrato (center), “whirl” (phaser) and “swirl” (somewhere between the two).

## 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	1M	Metal film resistor, 1/4W	
R2	47k	Metal film resistor, 1/4W	
R3	15k	Metal film resistor, 1/4W	
R4	10k	Metal film resistor, 1/4W	
R5	3k9	Metal film resistor, 1/4W	
R6	470R	Metal film resistor, 1/4W	
R7	470R	Metal film resistor, 1/4W	
R8	10k	Metal film resistor, 1/4W	
R9	4k7	Metal film resistor, 1/4W	
R10	10k	Metal film resistor, 1/4W	
R11	3k9	Metal film resistor, 1/4W	
R12	10k	Metal film resistor, 1/4W	
R13	470R	Metal film resistor, 1/4W	
R14	470R	Metal film resistor, 1/4W	
R15	10k	Metal film resistor, 1/4W	
R16	4k7	Metal film resistor, 1/4W	
R17	10k	Metal film resistor, 1/4W	
R18	47k	Metal film resistor, 1/4W	
R19	100k	Metal film resistor, 1/4W	
R20	47k	Metal film resistor, 1/4W	
R21	47k	Metal film resistor, 1/4W	
R22	15k	Metal film resistor, 1/4W	
R23	100k	Metal film resistor, 1/4W	
R24	100k	Metal film resistor, 1/4W	
R25	220k	Metal film resistor, 1/4W	
R26	68k	Metal film resistor, 1/4W	
R27	12k	Metal film resistor, 1/4W	
R28	820k	Metal film resistor, 1/4W	
R29	4k7	Metal film resistor, 1/4W	
R30	100k	Metal film resistor, 1/4W	

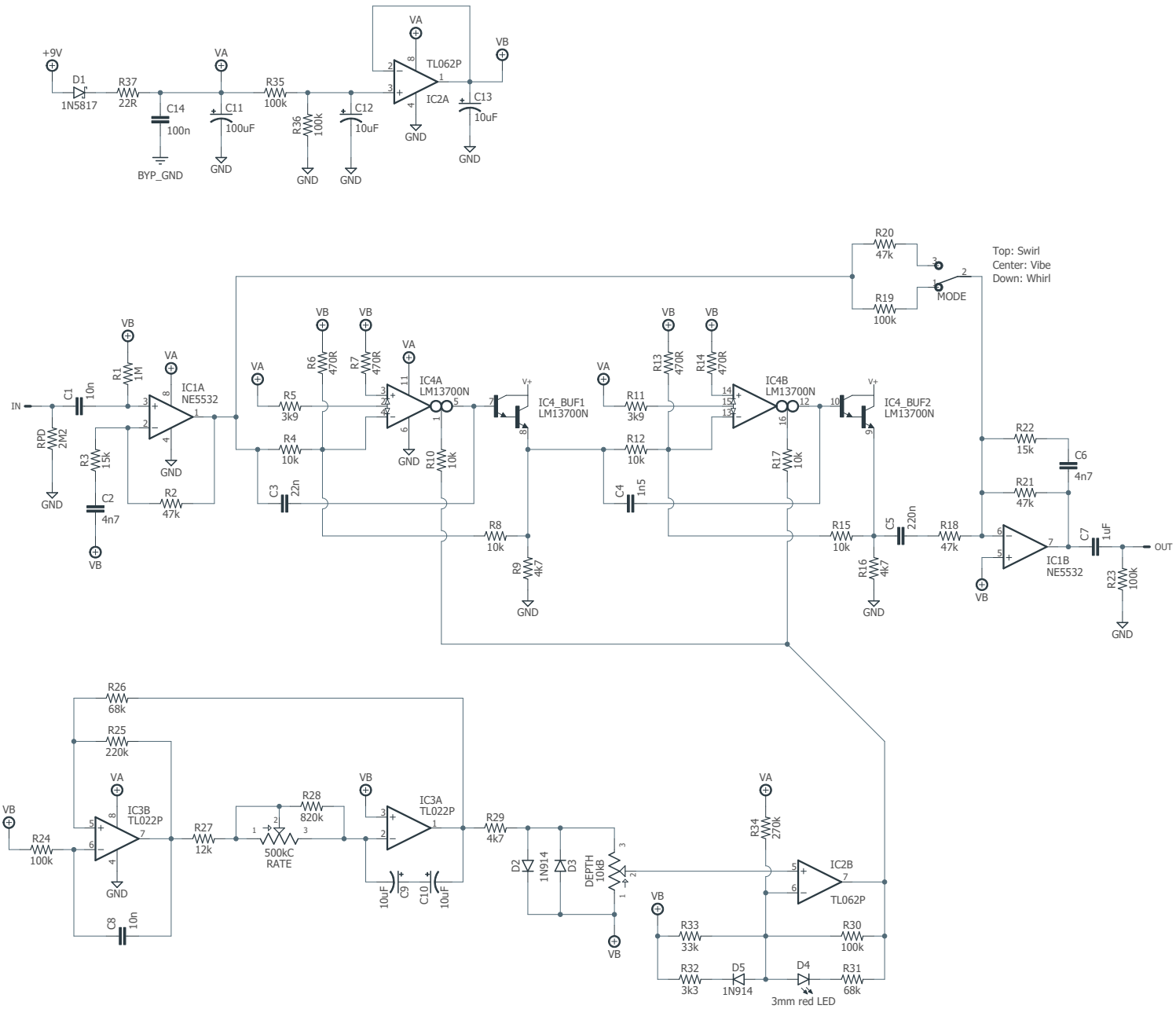
## PARTS LIST, CONT.

PART	VALUE	TYPE	NOTES
R31	68k	Metal film resistor, 1/4W	
R32	3k3	Metal film resistor, 1/4W	
R33	33k	Metal film resistor, 1/4W	
R34	270k	Metal film resistor, 1/4W	
R35	100k	Metal film resistor, 1/4W	
R36	100k	Metal film resistor, 1/4W	
R37	22R	Metal film resistor, 1/4W	
RPD	2M2	Metal film resistor, 1/4W	
LEDR	4k7	Metal film resistor, 1/4W	
C1	10n	Film capacitor, 7.2 x 2.5mm	
C2	4n7	Film capacitor, 7.2 x 2.5mm	
C3	22n	Film capacitor, 7.2 x 2.5mm	
C4	1n5	Film capacitor, 7.2 x 2.5mm	
C5	220n	Film capacitor, 7.2 x 2.5mm	
C6	4n7	Film capacitor, 7.2 x 2.5mm	
C7	1uF	Film capacitor, 7.2 x 3.5mm	
C8	10n	Film capacitor, 7.2 x 2.5mm	
C9	10uF	Electrolytic capacitor, 5mm	
C10	10uF	Electrolytic capacitor, 5mm	
C11	100uF	Electrolytic capacitor, 6.3mm	Power supply filter capacitor.
C12	10uF	Electrolytic capacitor, 5mm	Voltage reference filter capacitor.
C13	10uF	Electrolytic capacitor, 5mm	Voltage reference 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	3mm LED	LED, 3mm, red diffused	
D5	1N914	Fast-switching diode, DO-35	
IC1	NE5532P	Operational amplifier, DIP8	
IC1-S	DIP-8 socket	IC socket, DIP-8	
IC2	TL062	Operational amplifier, DIP8	
IC2-S	DIP-8 socket	IC socket, DIP-8	
IC3	TL022	Operational amplifier, DIP8	
IC3-S	DIP-8 socket	IC socket, DIP-8	

## PARTS LIST, CONT.

PART	VALUE	TYPE	NOTES
IC4	LM13700N	Transconductance amplifier, dual, DIP16	
IC4-S	DIP16 socket	IC socket, DIP-16	
DEPTH	10kB	16mm right-angle PCB mount pot	
RATE	500kC	16mm right-angle PCB mount pot	
MODE	SPDT cntr off	Toggle switch, SPDT on-off-on	
LED	5mm	LED, 5mm, red diffused	
IN	1/4" mono	1/4" phone jack, closed frame	Switchcraft 111X 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



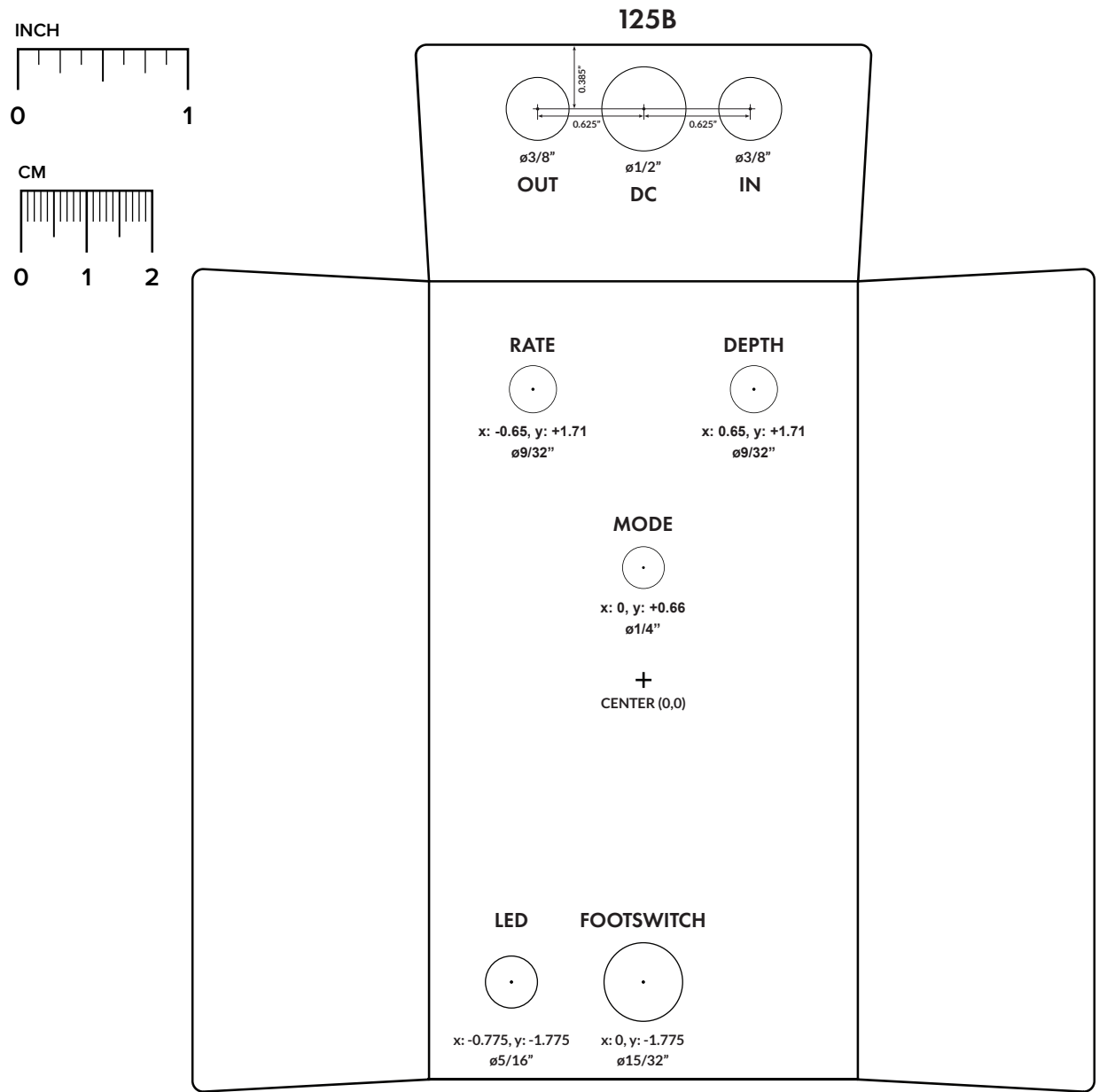
# DRILL TEMPLATE

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.

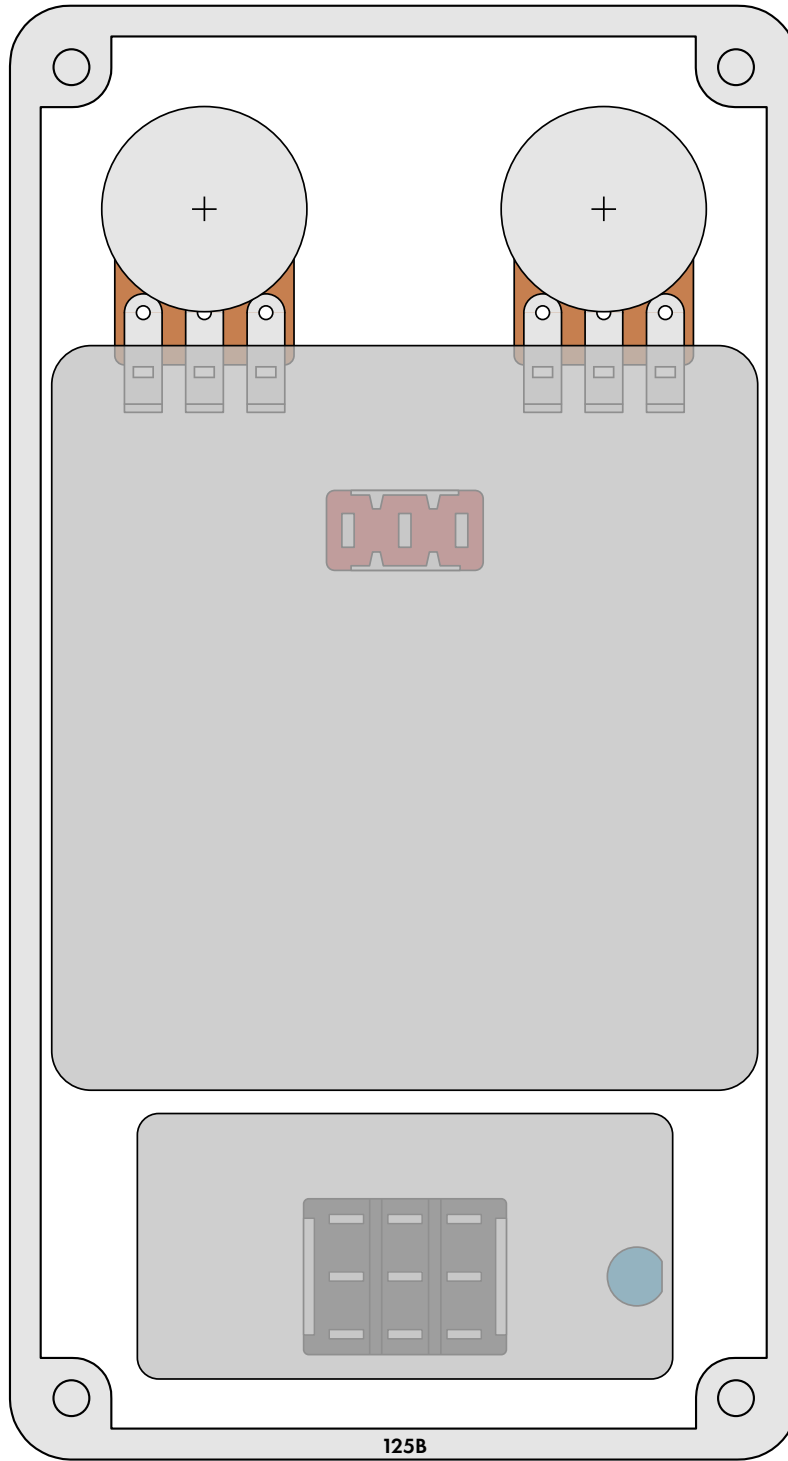
**LED hole drill size** assumes the use of a [5mm LED bezel](#), available from several parts suppliers. Adjust size accordingly if using something different, such as a 3mm bezel, a plastic bezel, or just a plain LED.



# ENCLOSURE LAYOUT

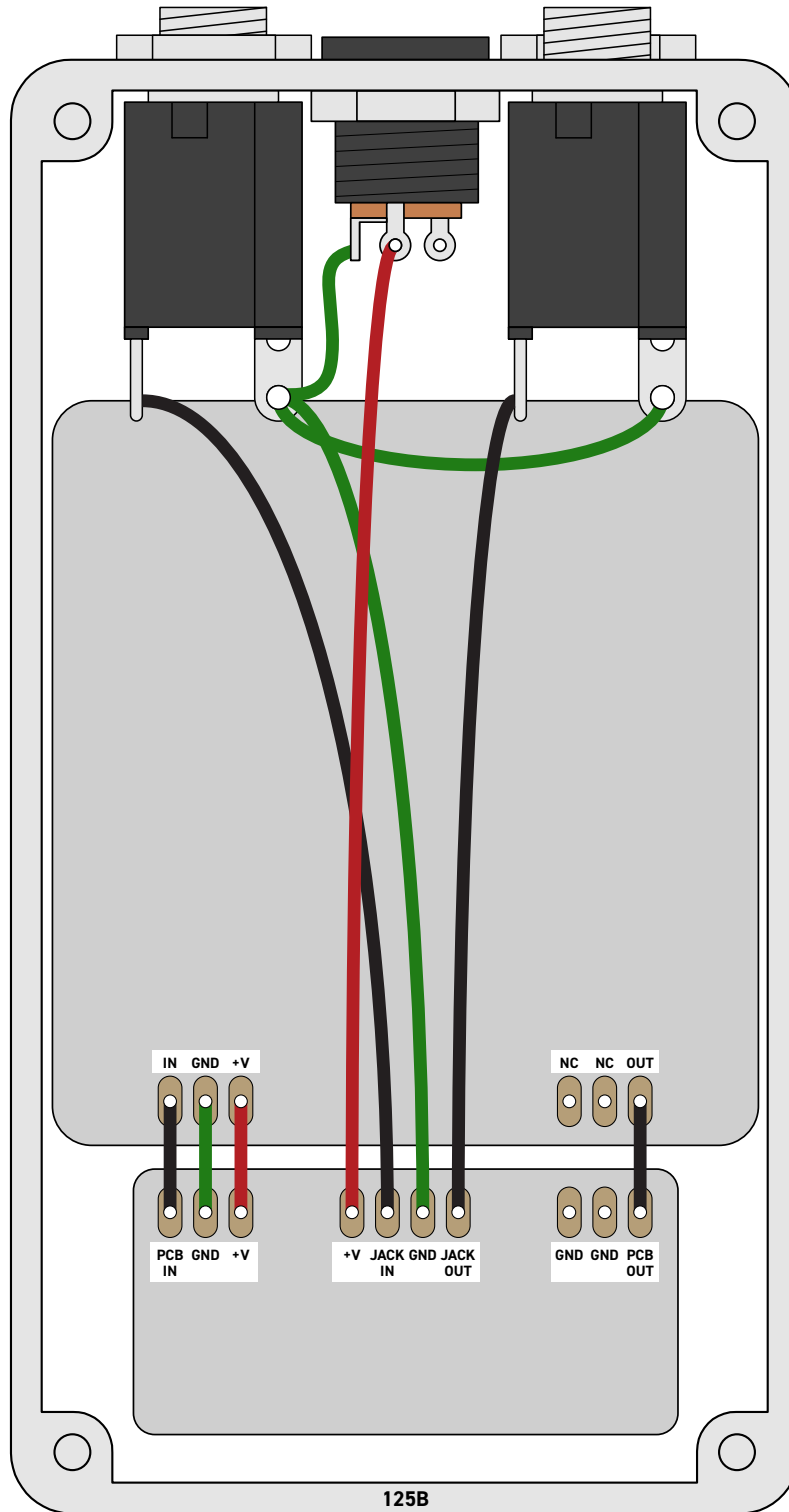
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Enclosure is shown without jacks. See next page for jack layout and wiring.





# WIRING DIAGRAM



## LICENSE & USAGE

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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.

### Runoffgroove circuit licensing

Runoffgroove circuits have special licensing that is different from standard Aion FX projects. **These projects are for personal use only and may not be used for commercial endeavors** without approval from Runoffgroove. Here are the terms of use from their site:

runoffgroove.com projects are provided free-of-charge to builders for personal, non-commercial use. We do offer licensing for builders who wish to sell pedals based on, in whole or in part, our projects. As part of the licensing agreement, the builder must clearly state that the circuit was developed by runoffgroove.com, both in promotional literature and on the circuit board. If you see a pedal for sale that seems to be based on a runoffgroove.com project and does not credit us, the builder may not be officially licensed by us and therefore, not compensating us as the developer. Please contact us with the information and we will investigate the situation. Thank you.

## DOCUMENT REVISIONS

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### 1.0.0 (2020-06-05)

Initial release.