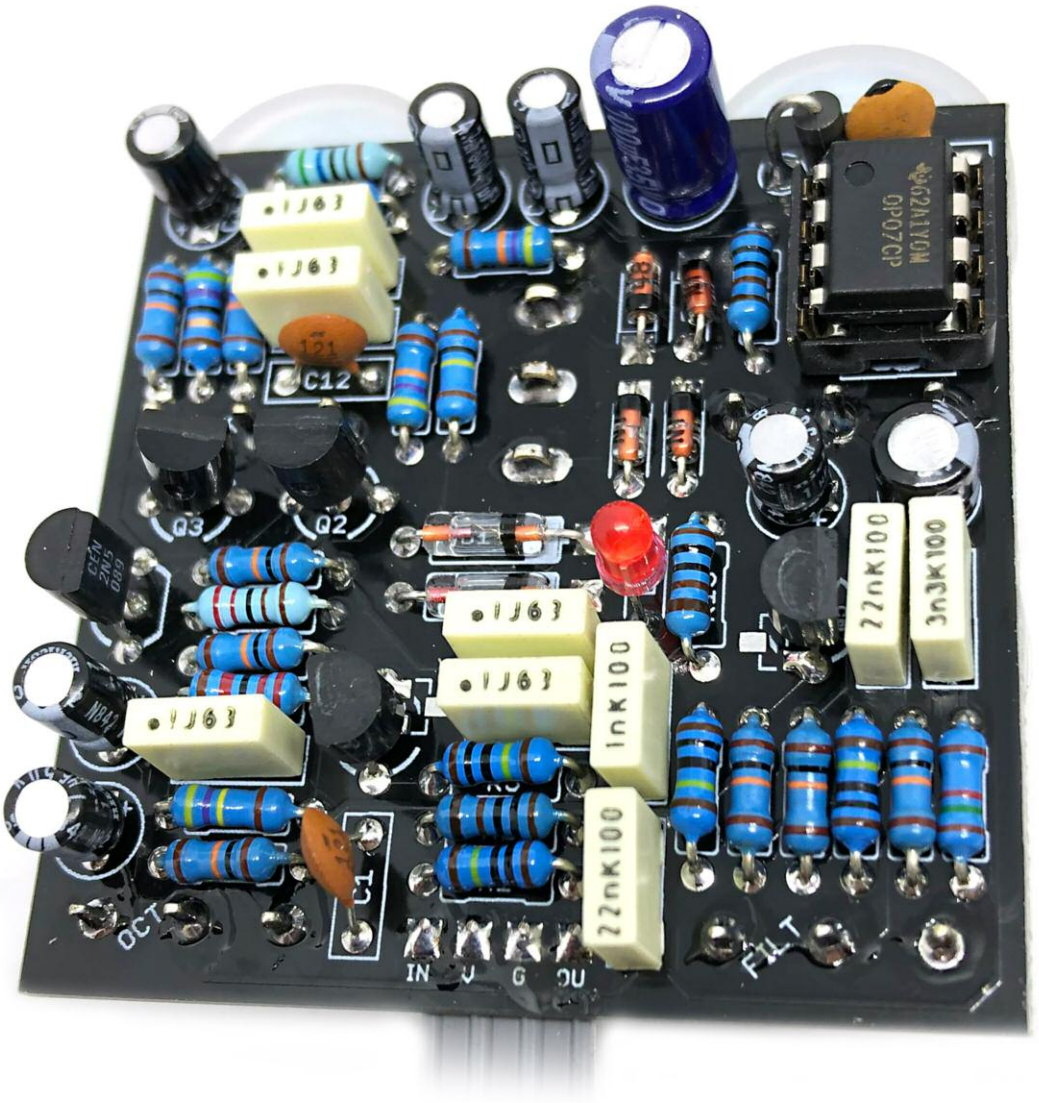


Death Drive (Mini)

Octave-up into Rat for doomy destruction

Important notes

If you're using any of our footswitch daughterboards, DOWNLOAD THE DAUGHTERBOARD DOCUMENT

- Download and read the appropriate build document for the daughterboard as well as this one BEFORE you start.
- DO NOT solder the supplied Current Limiting Resistor (CLR) to the main circuit board even if there is a place for it. This should be soldered to the footswitch daughterboard.

POWER SUPPLY

Unless otherwise stated in this document this circuit is designed to be powered with 9V DC.

COMPONENT SPECS

Unless otherwise stated in this document:

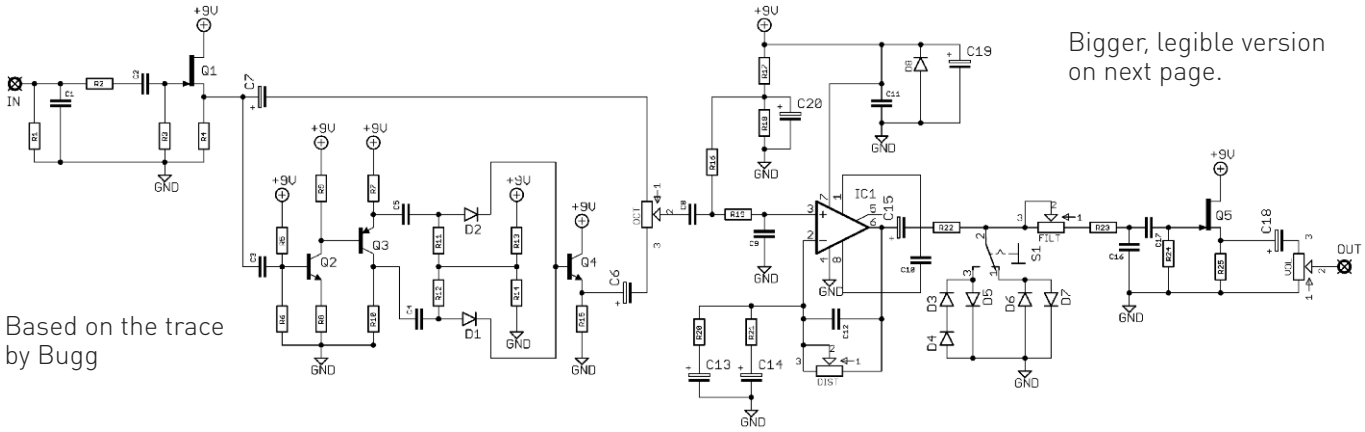
- Resistors should be 0.25W. You can use those with higher ratings but check the physical size of them.
- Electrolytics caps should be at least 25V for 9V circuits, 35V for 18V circuits. Again, check physical size if using higher ratings.

LAYOUT CONVENTIONS

Unless otherwise stated in this document, the following are used:

- **Electrolytic capacitors:**
  Long leg (anode) to square pad.
- **Diodes/LEDs:**
  Striped leg (cathode) to square pad. Short leg to square pad for LEDs.
- **ICs:**
  Square pad indicates pin 1.

Schematic + BOM



Bigger, legible version on next page.

Based on the trace by Bugg

R1	1M
R2	1K
R3	1M
R4	10K
R5	470K
R6	47K
R7	10K
R8	2K2
R9	22K
R10	10K
R11	100K
R12	100K
R13	47K
R14	47K
R15	10K
R16	1M
R17	10K
R18	10K
R19	1K
R20	560R
R21	47R
R22	1K
R23	1K5
R24	1M
R25	10K

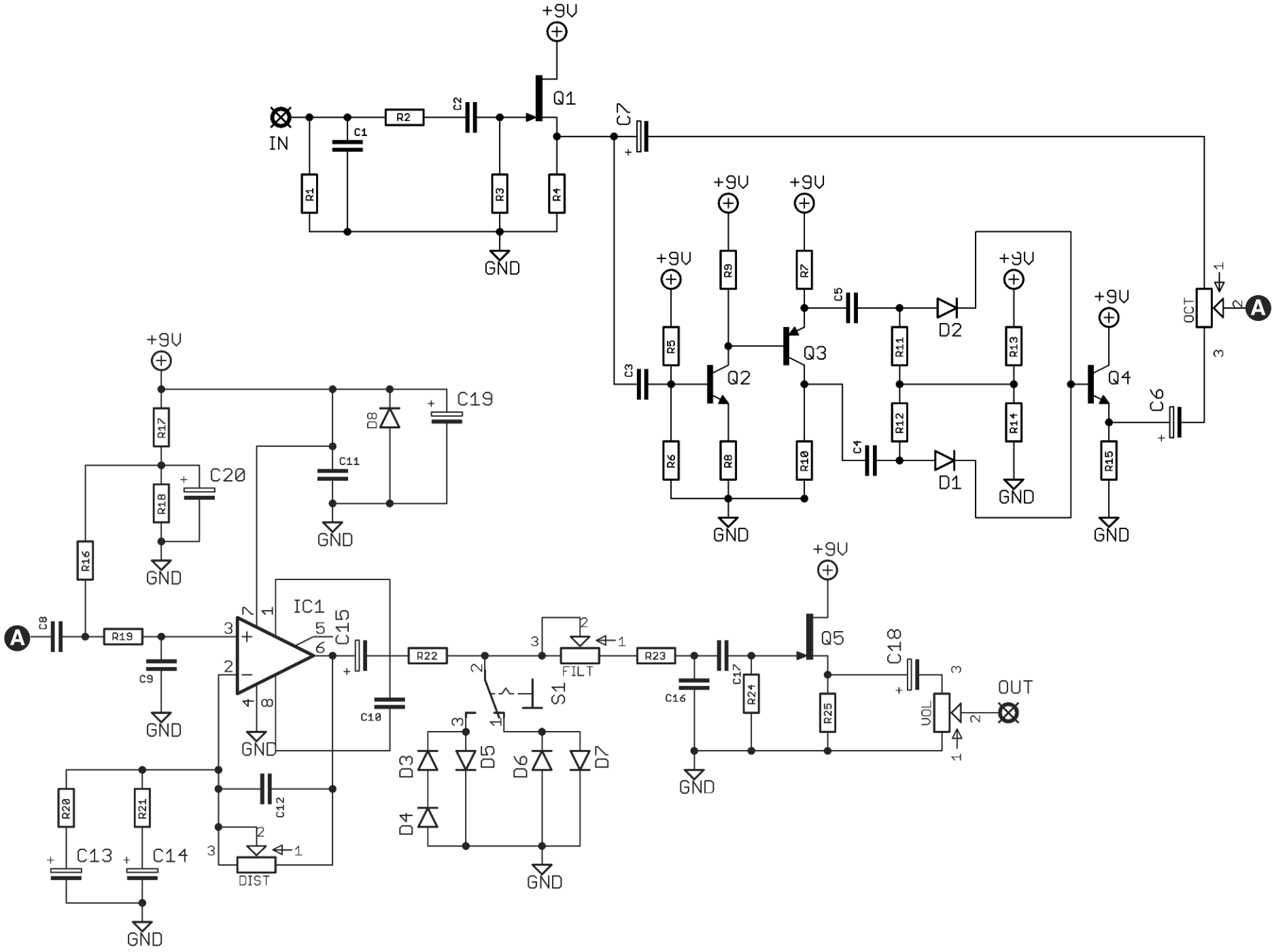
C1	100p
C2	100n
C3	100n
C4	100n
C5	100n
C6	1u elec
C7	1u elec
C8	22n
C9	1n
C10	33p
C11	100n
C12	100p
C13	4u7 elec
C14	2u2 elec
C15	4u7 elec
C16	3n3
C17	22n
C18	1u elec
C19	100u elec
C20	10u elec

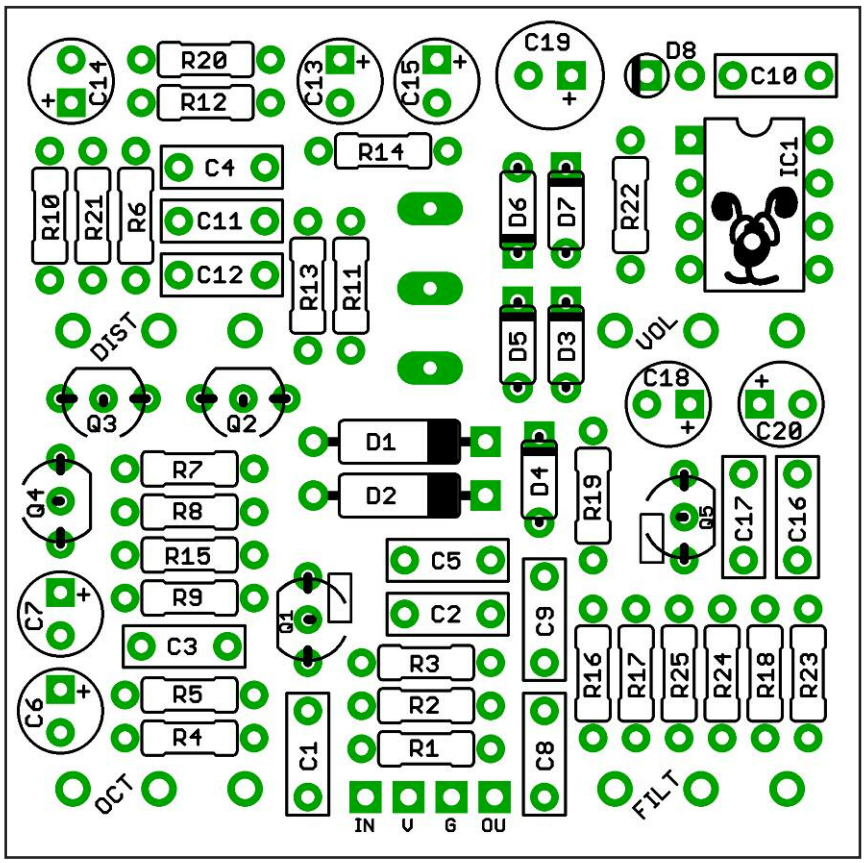
IC1	OP07*
Q1	2N5457**
Q2	2N5089
Q3	2N5087
Q4	2N5089
Q5	2N5457**
D1-2	Ge***
D3	1N4148
D4	3mm Red LED
D5-7	1N4148
D8	1N4001
VOL	100KA
DIST	100KA
FILT	100KA
OCT	50KB
S1	SPDT ON-OFF-ON

*Original is LM308. Other single op-amps will work.

**Original is PF5102. Other N-channel FETs work in these buffer sections, and will have very little or no impact on tone. Pads are included for through-hole or SMT FETs.

***We supply D9K which have the stripes at the anode. These don't even need to be germanium - 1N4148 work fine. They should be matched for forward voltage. **These should be reversed when placed on the PCB, i.e. cathode to square pad.**


+9V
IN
R1
C1
R2
C2
Q1
R3
R4
GND
C7
R5
R9
R7
C5
D2
R11
R13
OCT
A
C3
Q2
Q3
Q4
C6
R6
R8
R10
C4
D1
R12
R14
R15
R16
R17
C20
R18
C19
D8
C11
C8
R19
C9
IC1
C15
R22
S1
FILT
R23
Q5
C18
C16
C17
R24
R25
VOL
OUT
C10
D3
D5
D6
D7
D4
R20
R21
C12
C13
C14
DIST



PCB layout ©2019 Pedal Parts Ltd.

The power and signal pads on the PCB conform to the FuzzDog Direct Connection format, so can be paired with the appropriate daughterboard for quick and easy offboard wiring. Check the separate daughterboard document for details.

Be very careful when soldering the transistors and diodes. They're very sensitive to heat. Keep exposure to heat to a minimum (under 2 seconds) and leave a few seconds between soldering each leg. Same goes for the IC if you aren't using a socket.

The glass case on the Ge transistors is very delicate. Take care when bending the legs. Hold a the leg right up against the body with some small needle-nosed pliers to take the strain, and bend the leg with your finger.

You should solder all other board-mounted components before you solder the pots. Once they're in place you'll have no access to much of the board. Make sure your pots all line up nicely.

The best way to do that is to solder a single pin of each pot in place then melt and adjust if necessary before soldering in the other two pins. Same for the toggle switch. If your pots don't have protective plastic jackets ensure you leave a decent gap between the pot body and the PCB otherwise you risk shorting out the circuit.

Snap the small metal tag off the pots so they can be mounted flush in the box.

Test the board!

Check the relevant daughterboard document for more info before you undertake this stage.

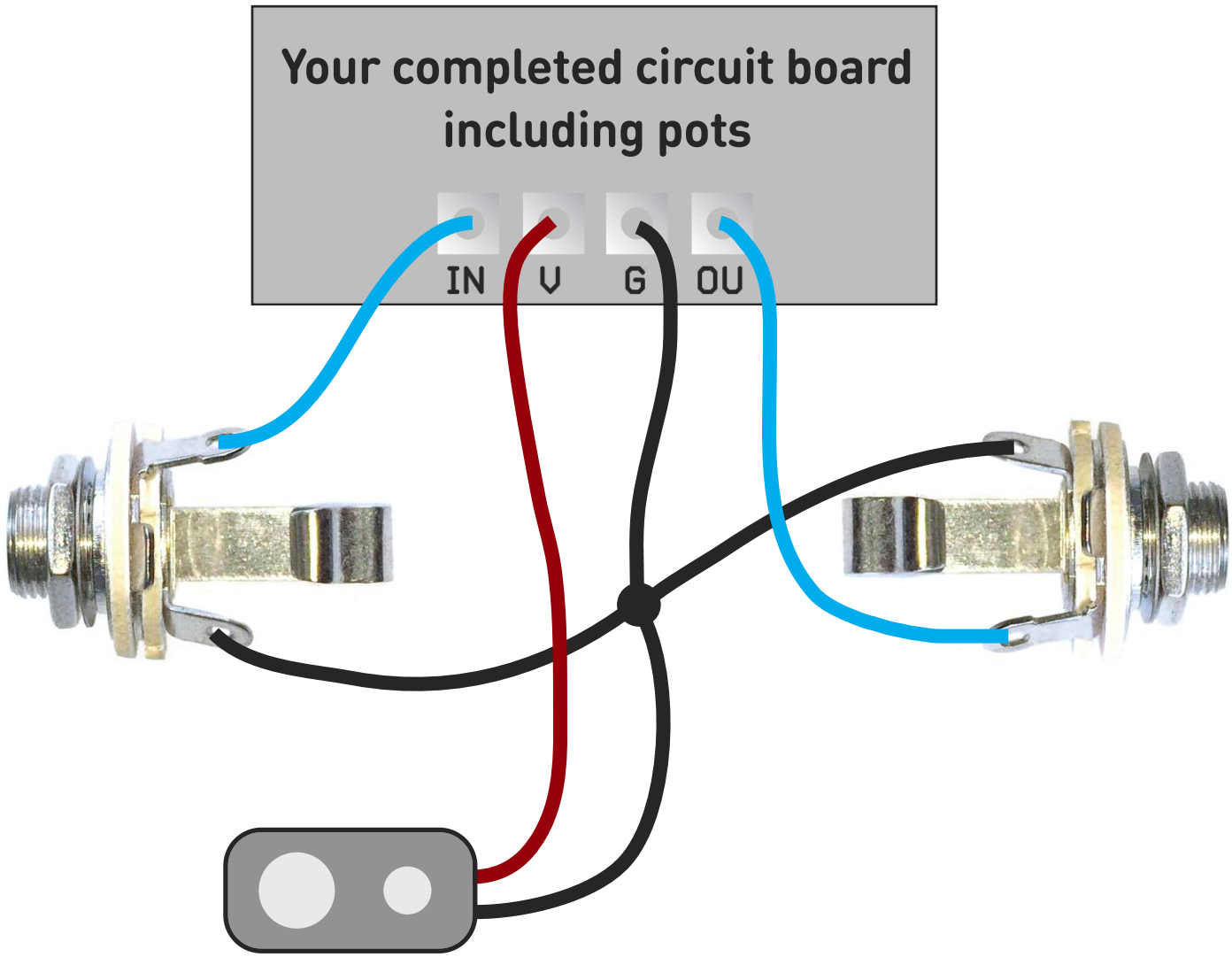
UNDER NO CIRCUMSTANCES will troubleshooting help be offered if you have skipped this stage. No exceptions.

Once you've finished the circuit it makes sense to test is before starting on the switch and LED wiring. It'll cut down troubleshooting time in the long run. If the circuit works at this stage, but it doesn't once you wire up the switch - guess what? You've probably made a mistake with the switch.

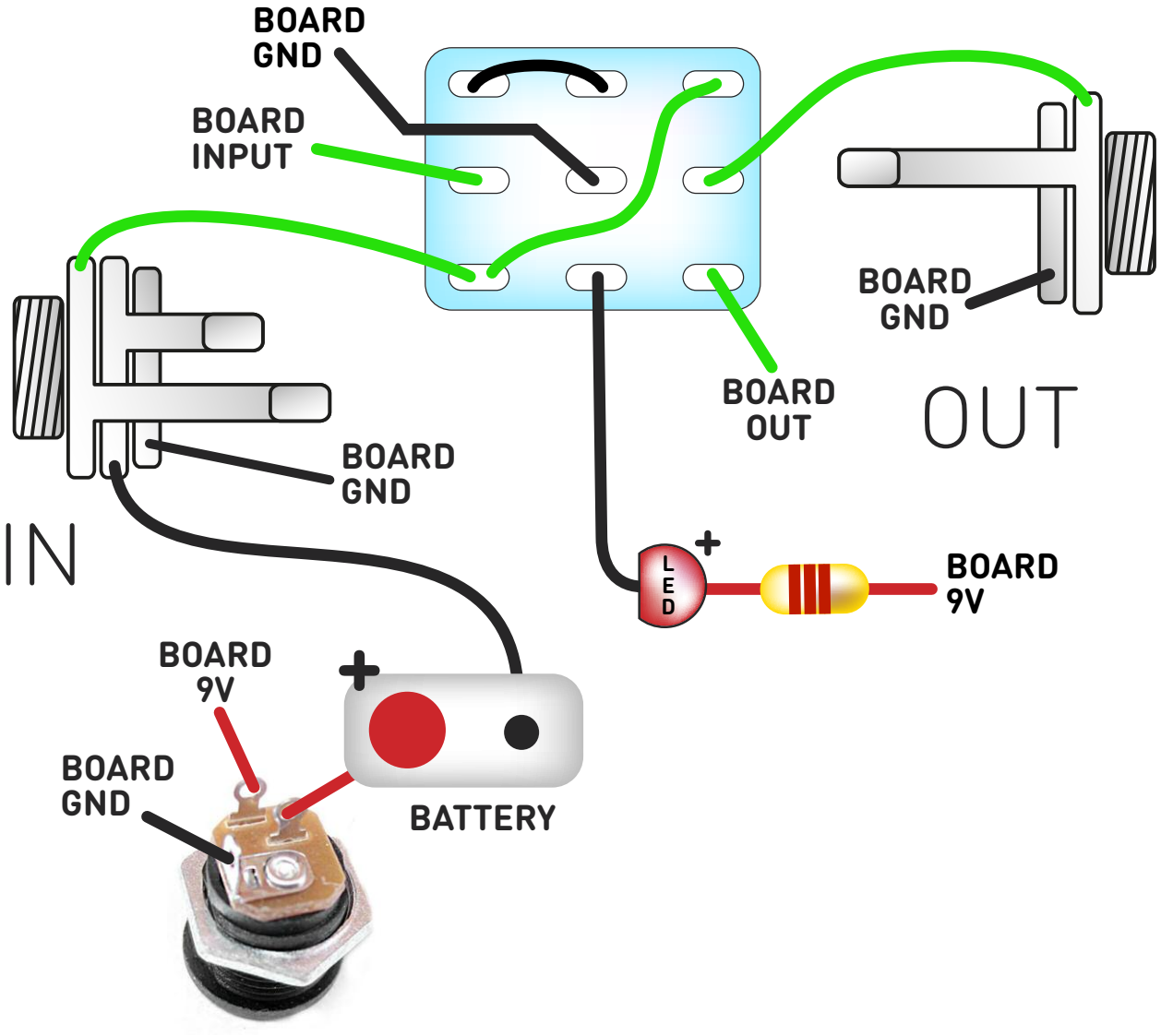
Solder some nice, long lengths of wire to the board connections for 9V, GND, IN and OUT. Connect IN and OUT to the jacks as shown. Connect all the GNDs together (twist them up and add a small amount of solder to tack it). Connect the battery + lead to the 9V wire, same method. Plug in. Go!

If you're using a ribbon cable you can tack the wires to the ends of that. It's a lot easier to take them off there than it is do desolder wires from the PCB pads.

If it works, carry on and do your switch wiring. If not... aw man. At least you know the problem is with the circuit. Find out why, get it working, THEN worry about the switch etc.



Wire it up (if using a daughterboard please refer to the relevant document)



Wiring shown above will disconnect the battery when you remove the jack plug from the input, and also when a DC plug is inserted.

The Board GND connections don't all have to directly attach to the board. You can run a couple of wires from the DC connector, one to the board, another to the IN jack, then daisy chain that over to the OUT jack.

It doesn't matter how they all connect, as long as they do.

This circuit is standard, Negative GND. Your power supply should be Tip Negative / Sleeve Positive. That's the same as your standard pedals (Boss etc), and you can safely daisy-chain your supply to this pedal.

Drilling template

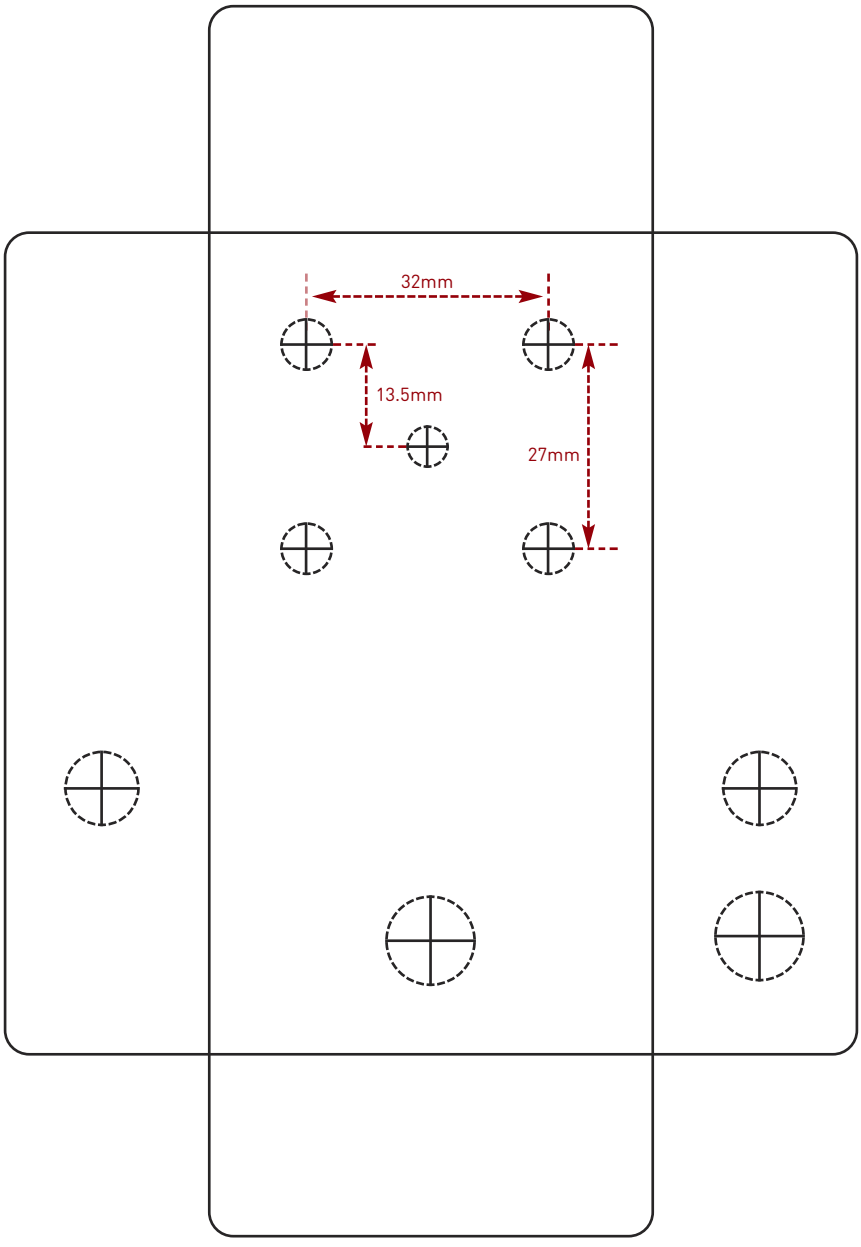
Hammond 1590B

60 x 111 x 31mm

It's a good idea to drill the pot and toggle switch holes 1mm bigger if you're board-mounting them.
Wiggle room = good!

Recommended drill sizes:

Pots	7mm
Jacks	10mm
Footswitch	12mm
DC Socket	12mm
Toggle switches	6mm



This template is a rough guide only. You should ensure correct marking of your enclosure before drilling. You use this template at your own risk.
Pedal Parts Ltd can accept no responsibility for incorrect drilling of enclosures.

FuzzDog.co.uk