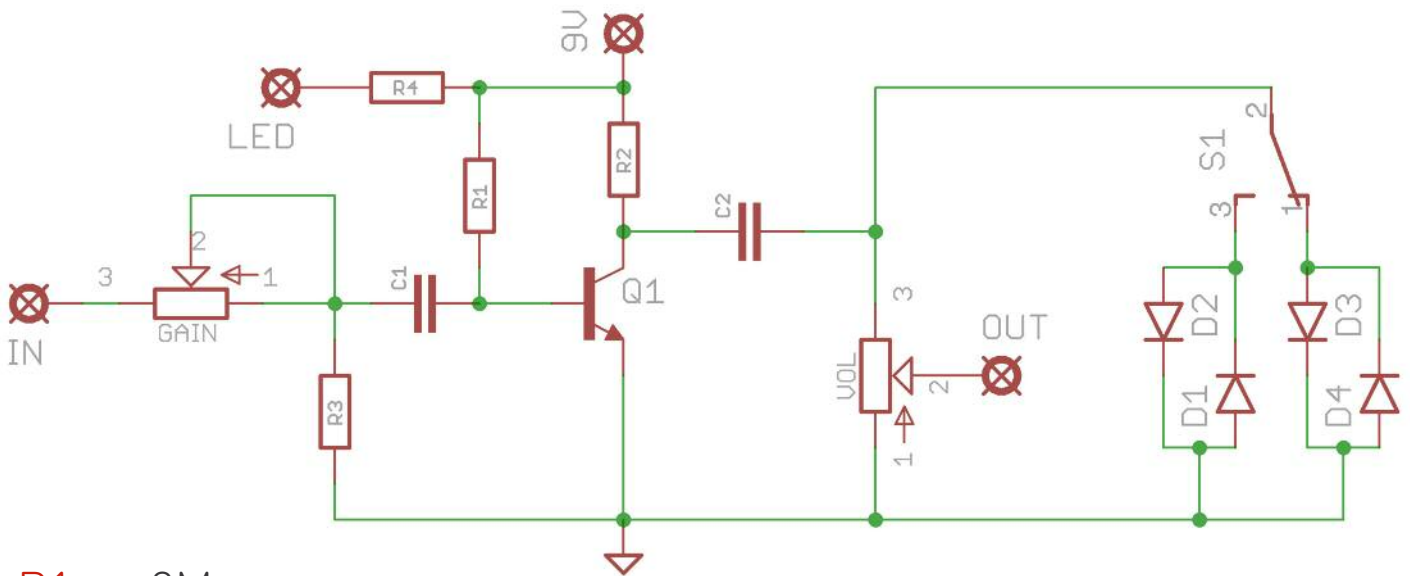


EMpathy Drive

MkII of the awesomely simple
OD/Boost with clipping options



Schematic + BOM



- R1 2M
- R2 4K7
- R3 1M*
- R4 2k2 (CLR)

*R3 is an optional anti-pop resistor - Best to put it in to avoid nasty noise when engaging the circuit.

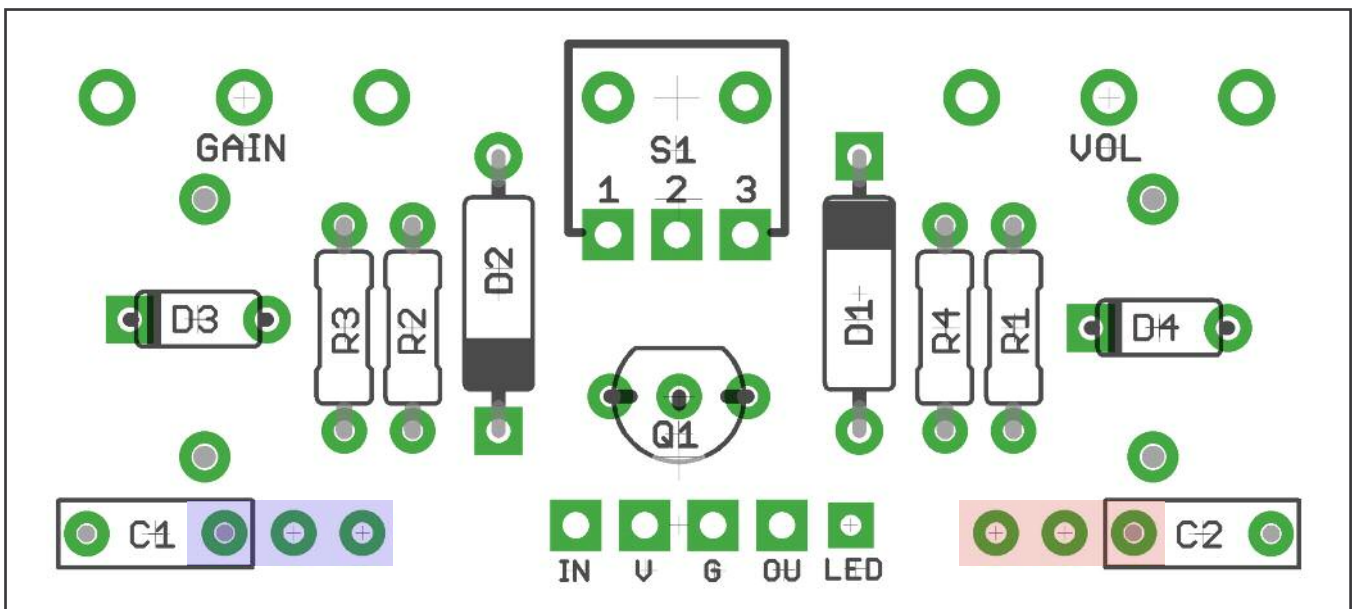
- C1 100n**
- C2 100n**

**The caps could be increased if you want lower frequencies to get through there, or decreased if you want to cut some bass.

- Q1 2N5088

- GAIN 250KB
- VOL 250KA

S1 and D1-4 are clipping mods. See overleaf.



Big Fat Mojo Caps

There's room on the back of the PCB for large paper-in-oil caps. These are marked C3-C4. C3 connects directly to the same pads as C1, C4 to C2.

Use EITHER C1-2 or C3-4, not both.



You'll notice there are extra pads next to C1 and C2. These allow easy use of bigger caps than standard 5mm pitch. If using them, make sure one leg of your cap goes into the pad nearest the side of the board, then the other leg can go in any of the other three pads at the other end of the cap space. If you look at the board layout on the previous page, the pads marked in blue all connect together at one end of C1, ditto the red ones and C2.

Clipping Mods

It's really simple to add clipping options to the circuit. You have two pairs of clipping diodes. You can use either pair, both, or none.

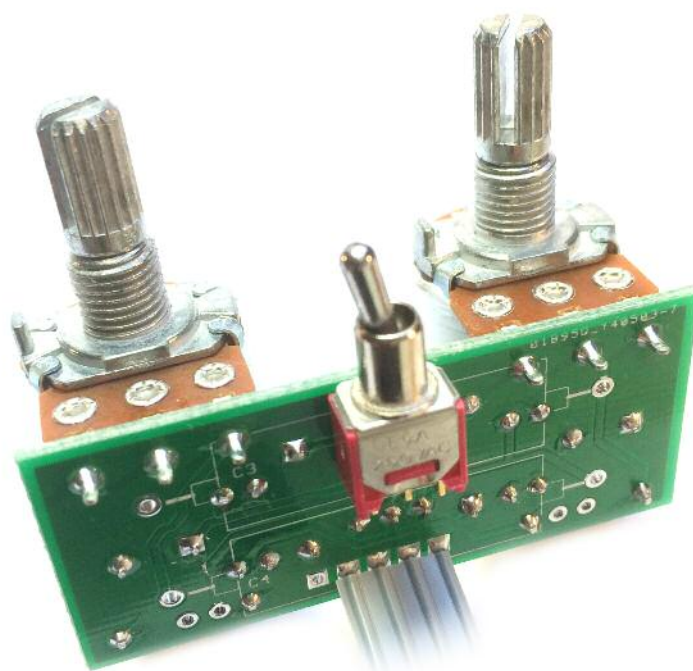
They're paired up as D1-2 and D3-4. Put in whatever your choice of diodes is. Here at FDHQ we've tried 1N34A and 1N4148. Didn't really see the need to look any further as they both gave great results.

Your switching options are:

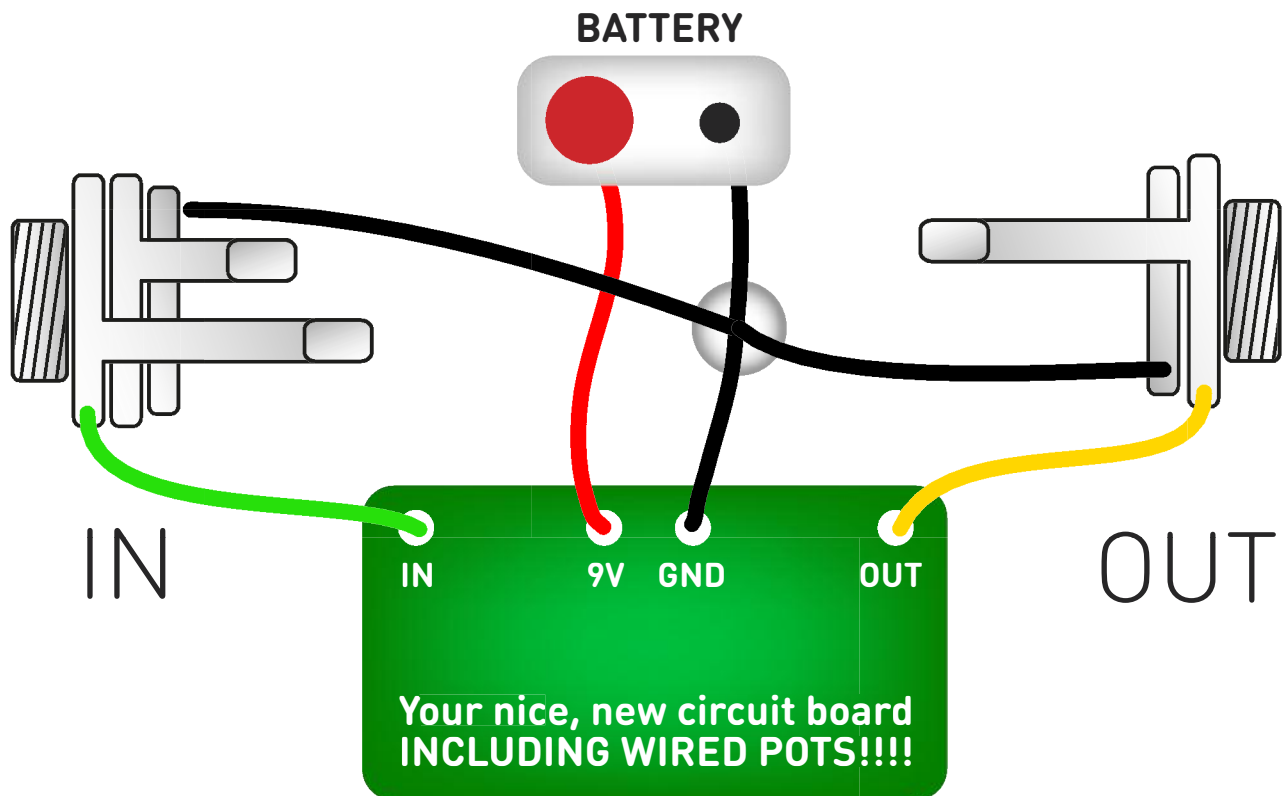
- If using one set of diodes, use a SPDT ON-ON to choose between stock (no clipping) and clipped.
- If using two sets of diodes, use a SPDT ON-OFF-ON to choose between clipped 1, stock (no clipping) and clipped 2
- Maybe you want two clipping options and no stock unclipped options. Just put in both pairs of diodes and use a SPDT ON-ON.

You can mount a micro toggle switch straight to the PCB. It can go on either face, depending on how far away from the pots you want it to be. If you're using PIO caps it has to go on the same side as the other components and the pots.

If you want to wire up a standard switch just connect the lugs of the switch to the S1-1,2,3 pads. Pad 2 to middle lug.



Test the board!



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.

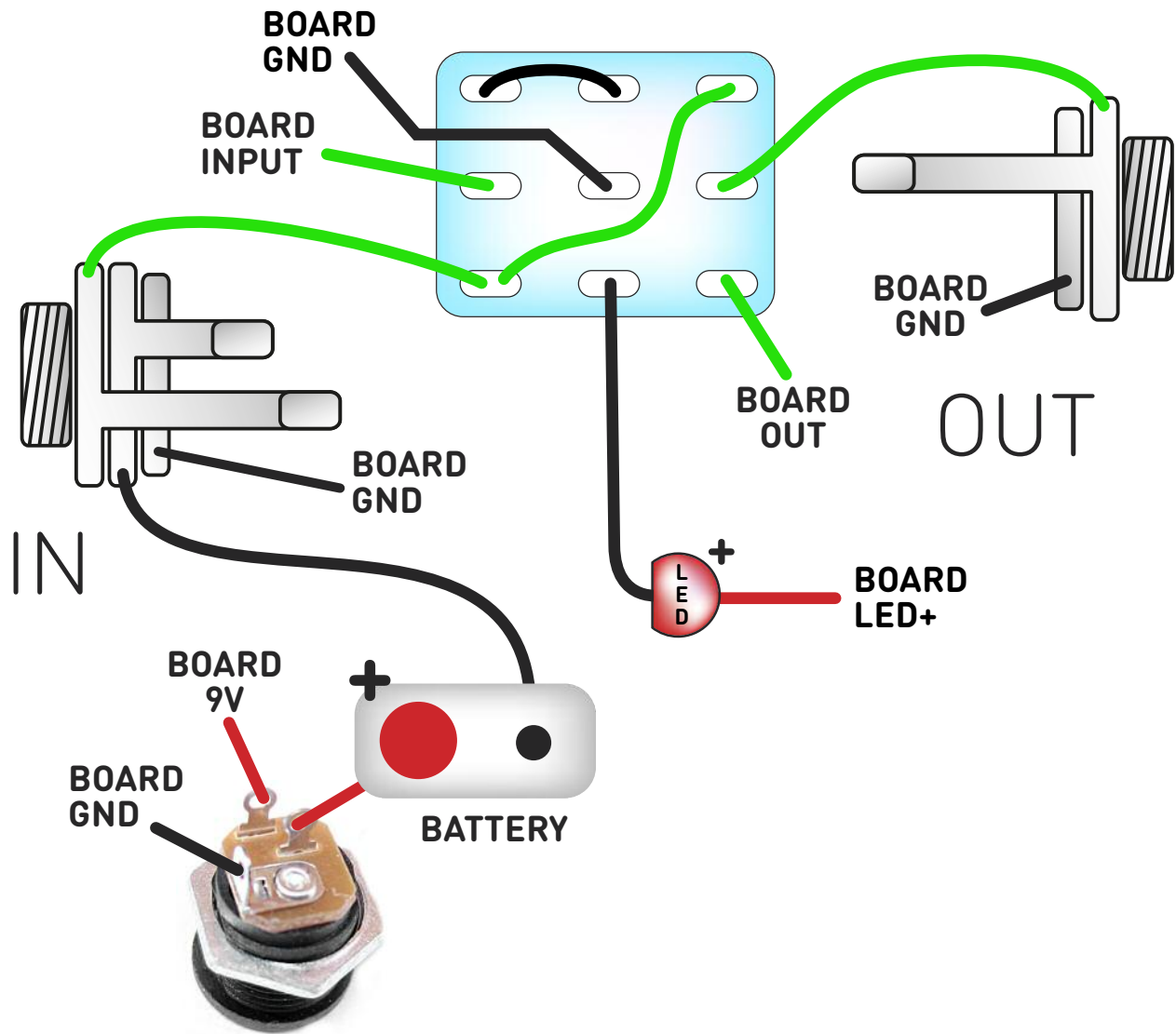
Solder some nice, long lengths of wire to the board connections for 9V, GND, IN and OUT. Connect IN and OUT to the jacks as shown. Connect all the GNDs together (twist them up and add a small amount of solder to tack it). Connect the battery + lead to the 9V wire, same method. Plug in. Go!

If it works, crack 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 - with battery

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

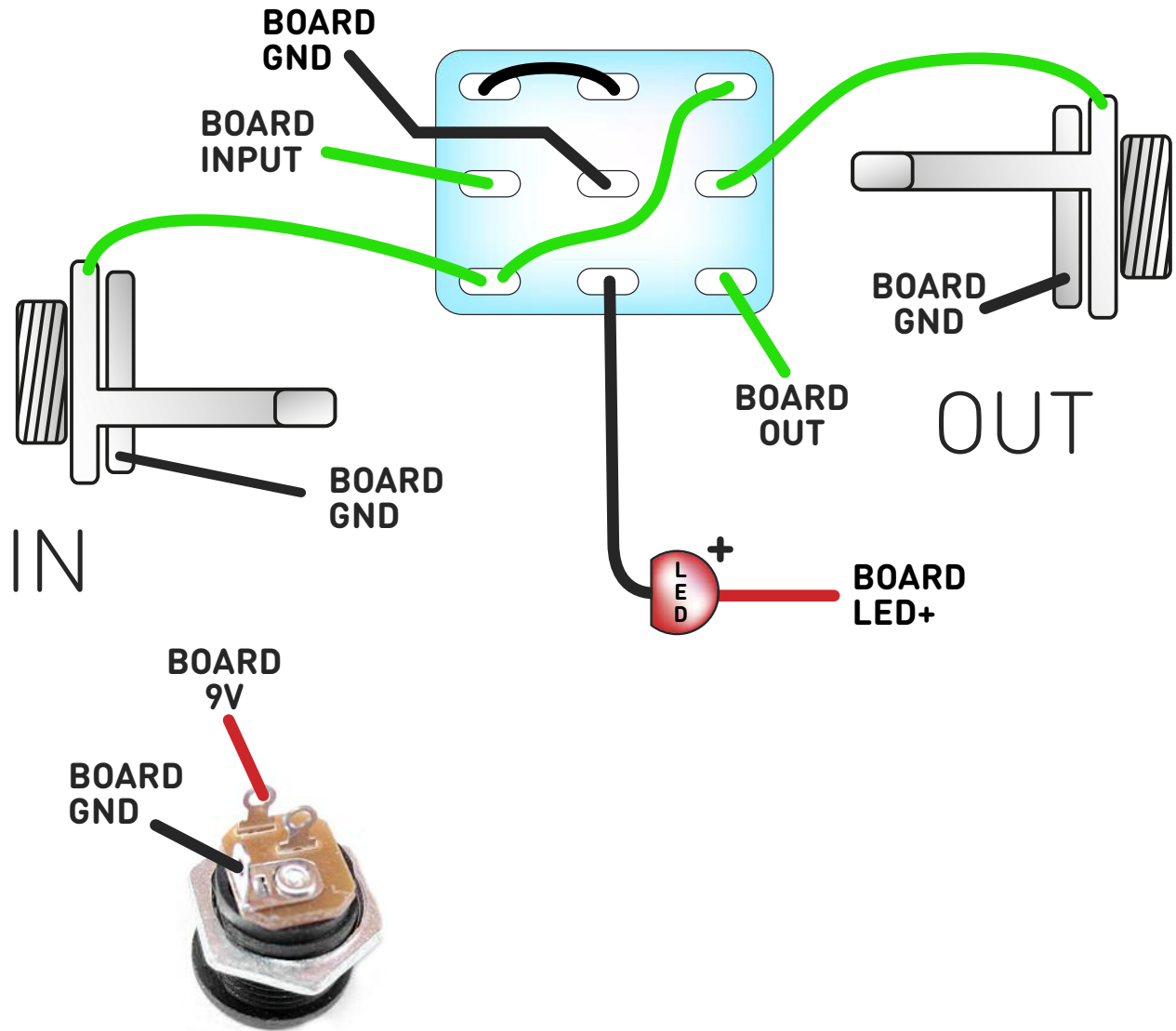


This circuit is standard, Negative GND. Your power supply should be Tip Negative / Sleeve Positive. That's the same as your standard pedals (Boss etc), and you can safely daisy-chain your supply to this pedal.

The BOARD GND connections don't all have to connect to one point. They can be daisy-chained around the circuit, using larger connection points (such as jack socket lugs) for multiple connections. As long as they all connect together in some way.

Wire it up - DC only version

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



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.

The BOARD GND connections don't all have to connect to one point. They can be daisy-chained around the circuit, using larger connection points (such as jack socket lugs) for multiple connections. As long as they all connect together in some way.

Drilling template

Micro-Toggle Switch

Hammond 1590B

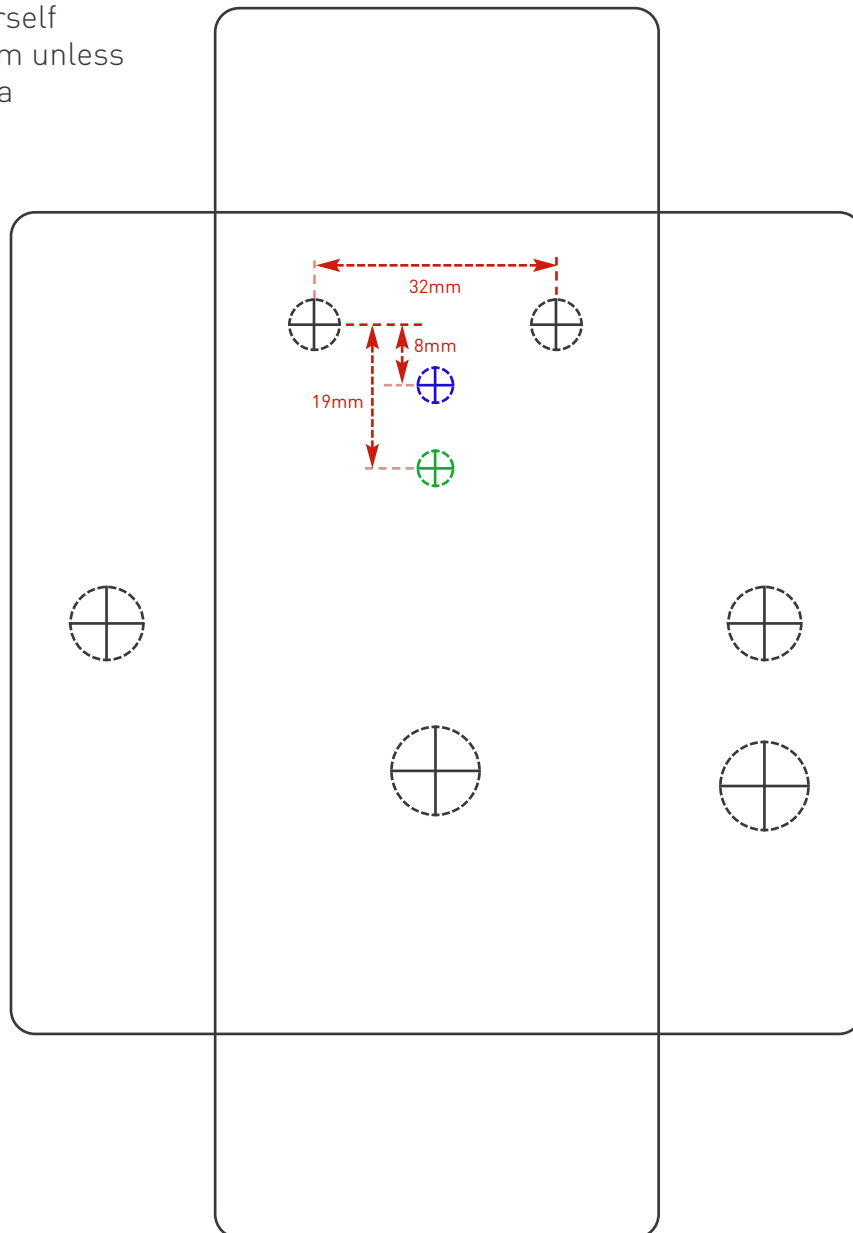
60 x 111 x 31mm

It's a good idea to drill the holes for the pots 8mm to give yourself some wiggle room unless you're a drill ninja

Recommended drill sizes:

Pots	7mm
Jacks	10mm
Footswitch	12mm
DC Socket	12mm
Micro-Toggle	5mm

Blue hole is for micro toggleswitch mounted same side of the pcb as the pots.
Green for opposite side.



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.

Drilling template

Standard Switch

Hammond 1590B

60 x 111 x 31mm

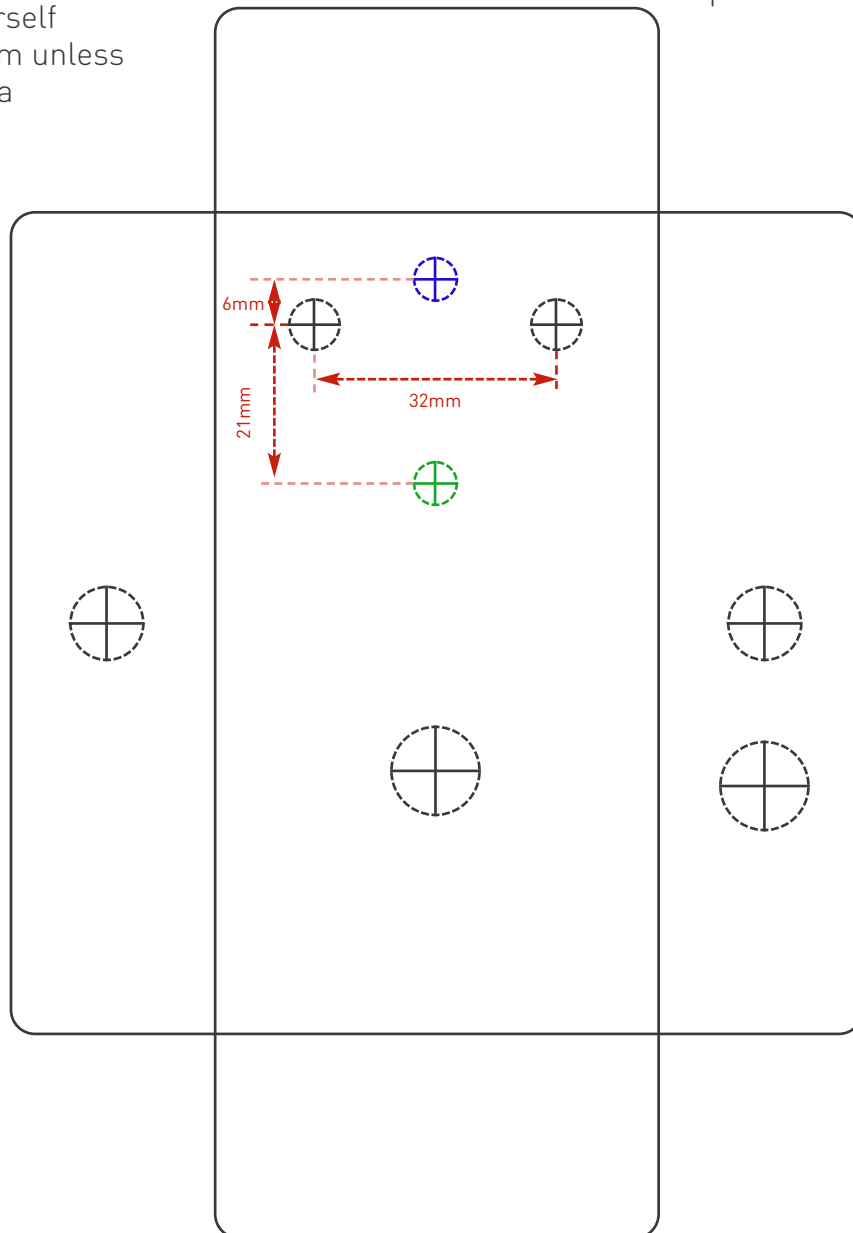
It's a good idea to drill the holes for the pots 8mm to give yourself some wiggle room unless you're a drill ninja

Recommended drill sizes:

Pots	7mm
Jacks	10mm
Footswitch	12mm
DC Socket	12mm
Standard Toggle Switch	6mm

Green hole is for normal toggle switch position.

If using a normal switch along with large PIO capacitors you need to put the switch above the pots in the blue position.



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