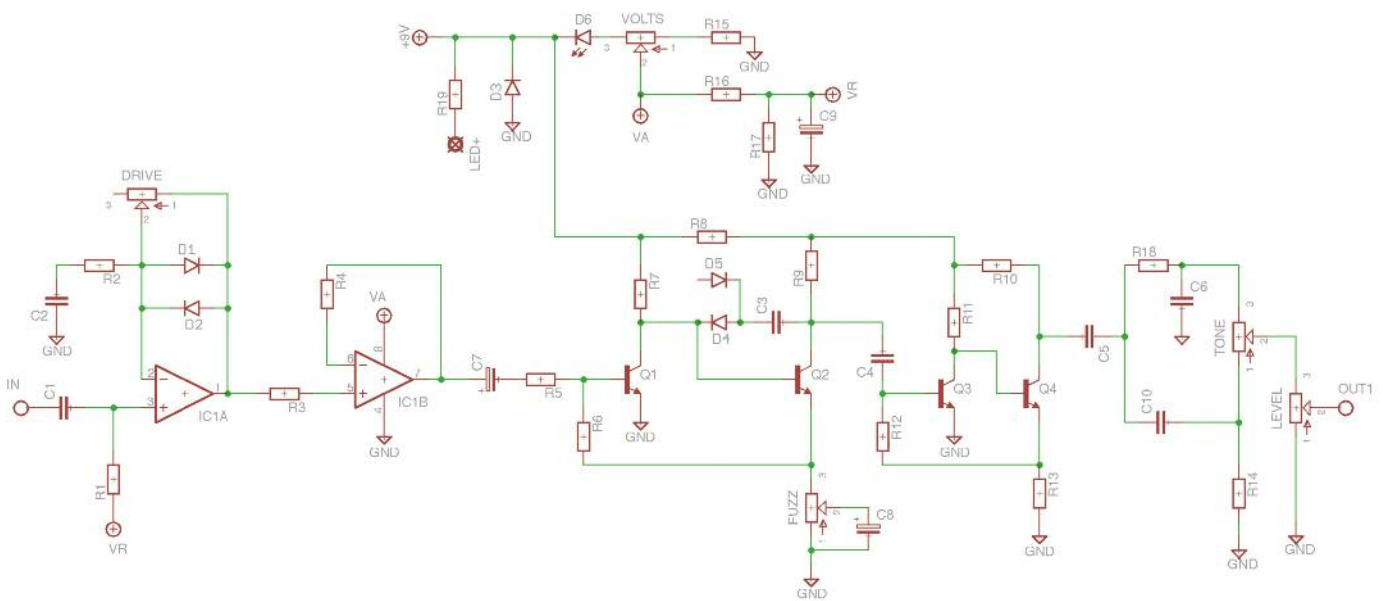


Mad Mule

Neil Young's Weld and Rust
tone in a box!

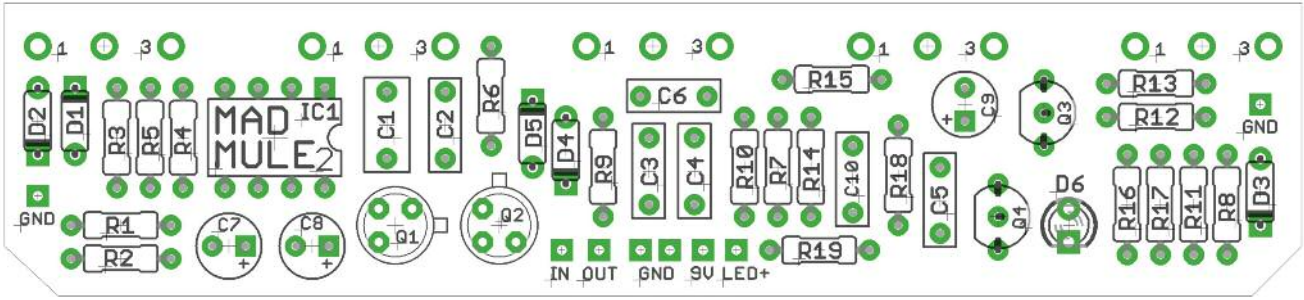
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Schematic



BOM

R1	1M	C1	1u	DRIVE	250KB
R2	22K	C2	100n	VOLTS	1KB
R3	1K	C3	100n	TONE	20KB
R4	1K	C4	100n	FUZZ	1KB
R5	39K	C5	220n	VOL	500KB
R6	33K	C6	10n		
R7	22K	C7	22u elec		
R8	1K	C8	22u elec		
R9	3K3	C9	22u elec		
R10	1K	C10	22n		
R11	1K5	D1-5	1N4148		
R12	100K	D6	3mm Green LED		
R13	1K5	IC	4558		
R14	22K	Q1-2	2N2222		
R15	560R	Q3-4	MPSA13		
R16	22K				
R17	22K				
R18	47K				
R19	2K2 (CLR)				



The PCB is designed to have the pots mounted directly to it. You can use wire if you like - simply connect the board pads to the corresponding pins on the pots.

Pots mount on the back side of the PCB, opposite side to the components.

Snap the little metal tag off the pots to mount them flush in the box.

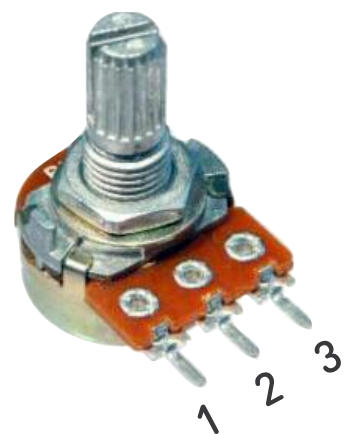
The polarity indication stripes for the diodes may not be visible on the PCB. The striped leg goes into the square pad.

The TONE control on the previous version of the PCB seems to work backwards compared to normal, i.e. more bass when turned clockwise. By popular demand this has been changed on v2.0 of the board.

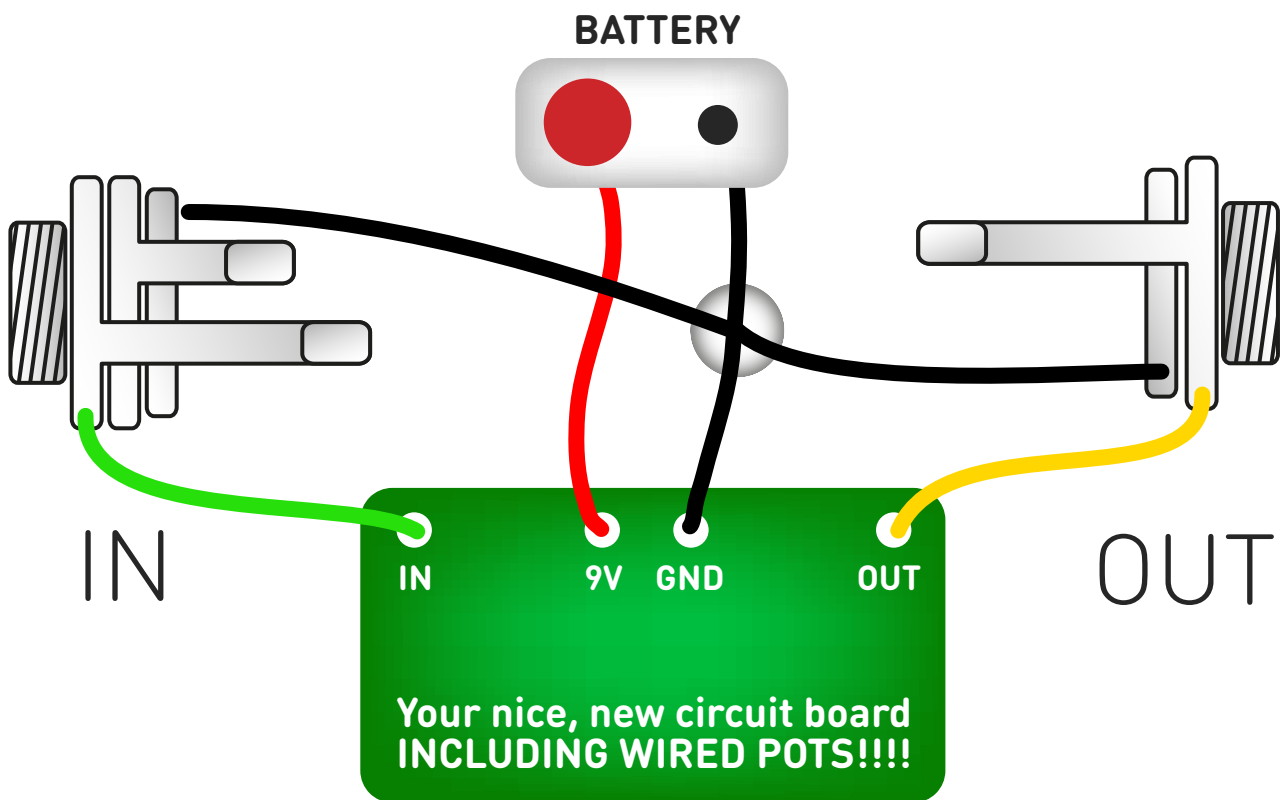
Extra GND connection pads are placed at either side of the PCB. Use these for convenient connection to the jack sockets.

There's also an extra GND in the centre which you can use to connect to the footswitch.

D6 - place the long leg in the square pad, short leg in the round pad.



Test the board!



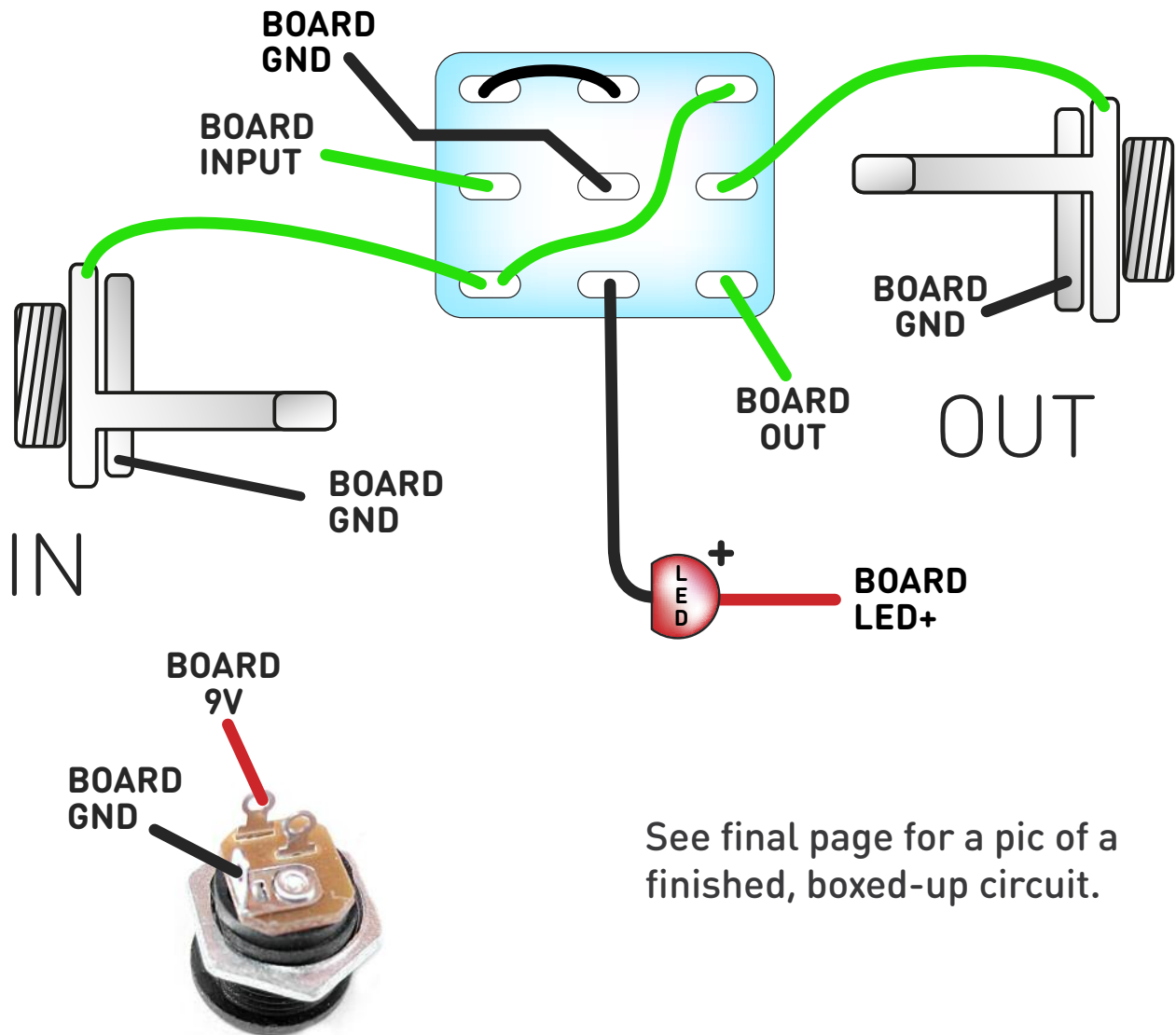
UNDER NO CIRCUMSTANCES will troubleshooting help be offered if you have skipped this stage. No exceptions.

Once you've finished the circuit it makes sense to test it 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 (any of the GND pads will do for now), 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 - DC only version



See final page for a pic of a finished, boxed-up circuit.

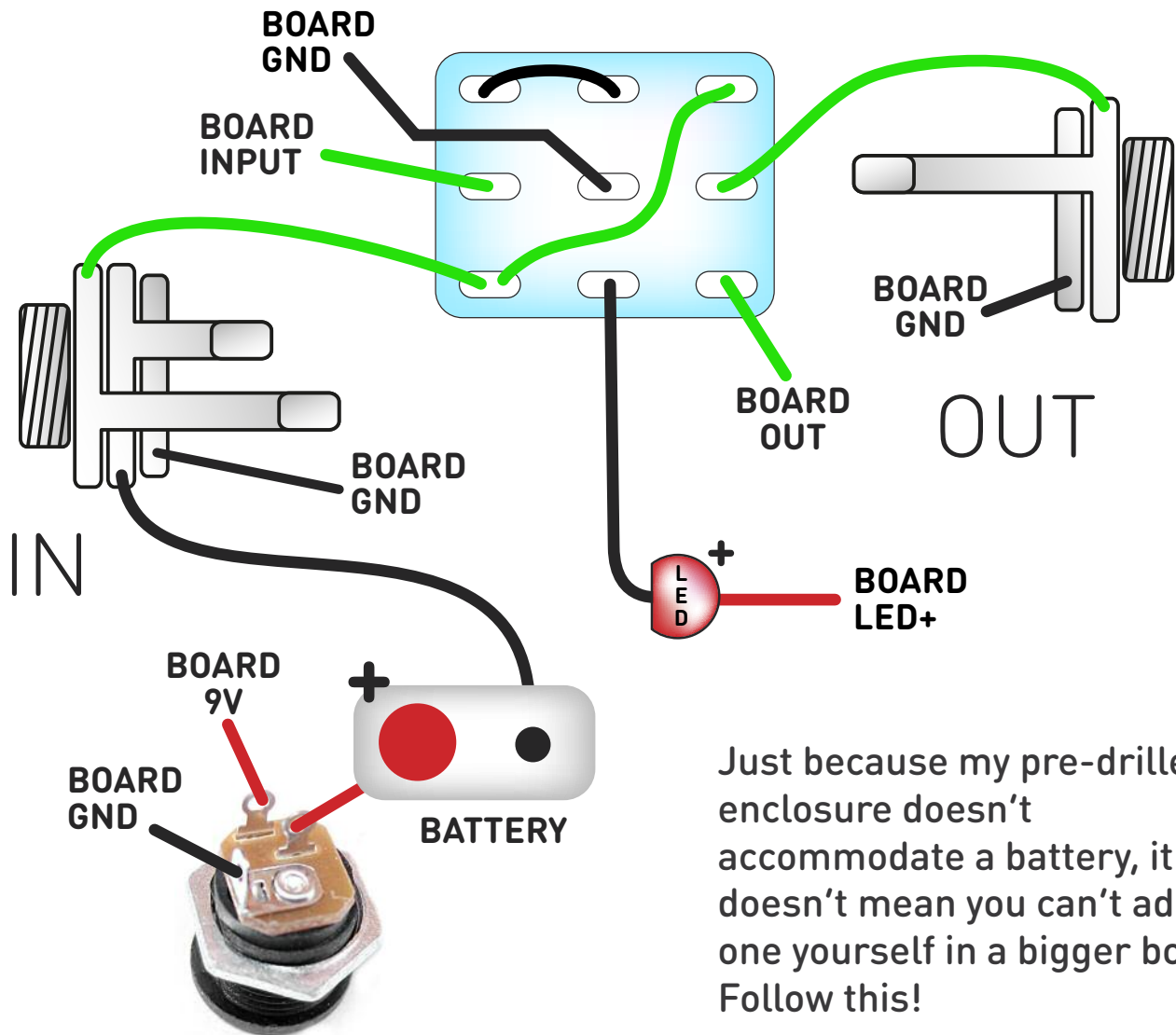
There are GND connections for both jacks at either end of the board.

All the GND pads are connected to each other in the traces on the PCB, and all of them are connected to both sides of the board.

For your convenience there is a GND pad for every required connection.

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.

Wire it up - with battery



There are GND connections for both jacks at either end of the board.

All the GND pads are connected to each other in the traces on the PCB, and all of them are connected to both sides of the board.

For your convenience there is a GND pad for every required connection.

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.

Finished article....



Not going to kid you - its a tight fit. I recommend having the board tipped back a bit on the pots, i.e. not at 90° to the box, as shown above. This gives a lot more clearance for the jack sockets, which would be very close to the diodes on the right hand side there. It also allows much more clearance when your jack plugs are inserted, otherwise you'll be scraping the top of the IC and the green LED.

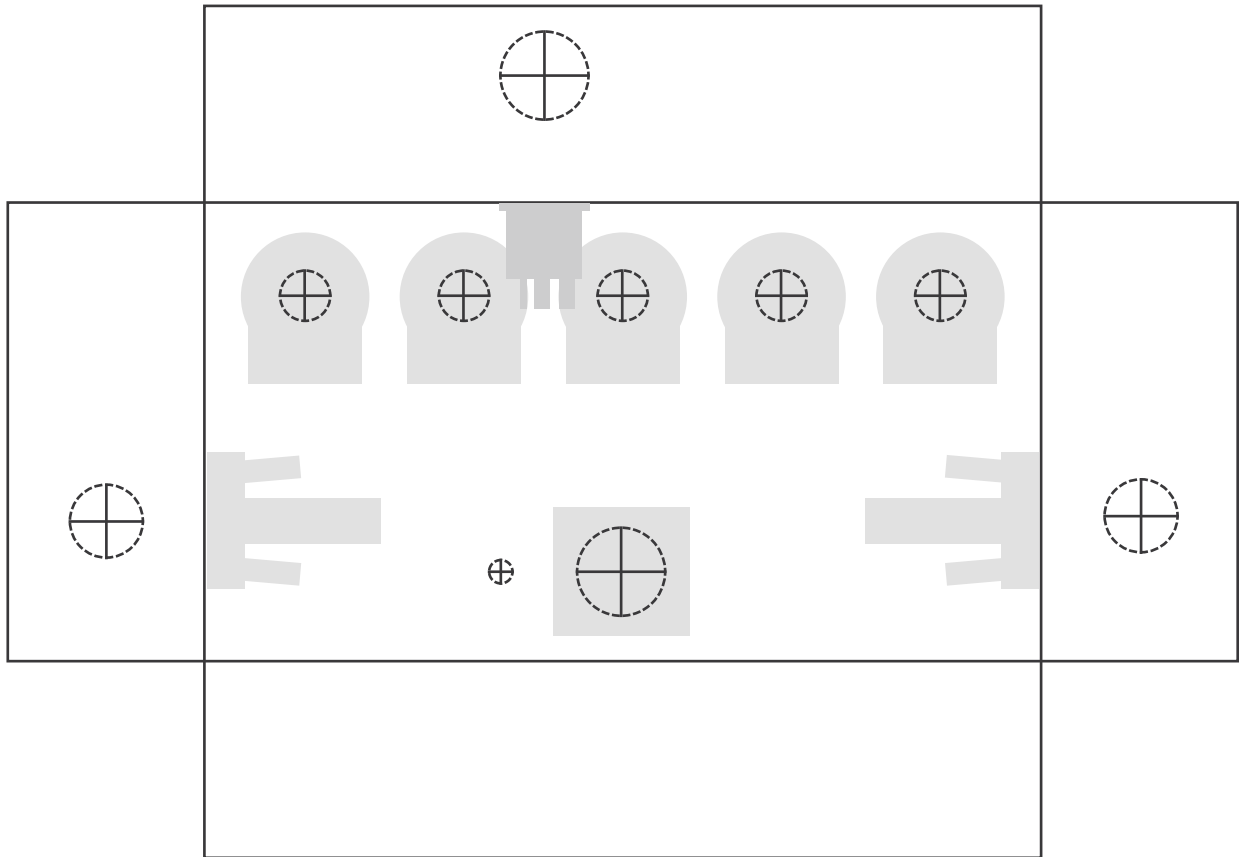
If the lugs of the jack sockets are a bit too close to the enclosure for your liking, just gently bend them in a little.

You can either solder the pots pre-angled, or solder them at 90° and gently push the board back when in-situ in the box. Easy does it... only go as far as you need to. Insert a jack plug and judge it from there.

In the pic above I have the LED attached directly to the PCB, as I have the hole higher up than normal (I have my reasons!). You should use lengths of wire.

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Drill template



Please check positioning before drilling - those holes are your responsibility and these templates are just a guide.

The best way to mark holes for the pots is to lay the PCB on the box before you start soldering anything and mark at the centre pad of each.

The DC socket needs to be quite close to the edge of the box so it comfortably clears the pots.

Recommended drill sizes:

Footswitch, DC 12mm

Jack sockets 9.5-10mm

Pots 7mm