

Klone v4

Ultimate box of
transparent overdrive



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.

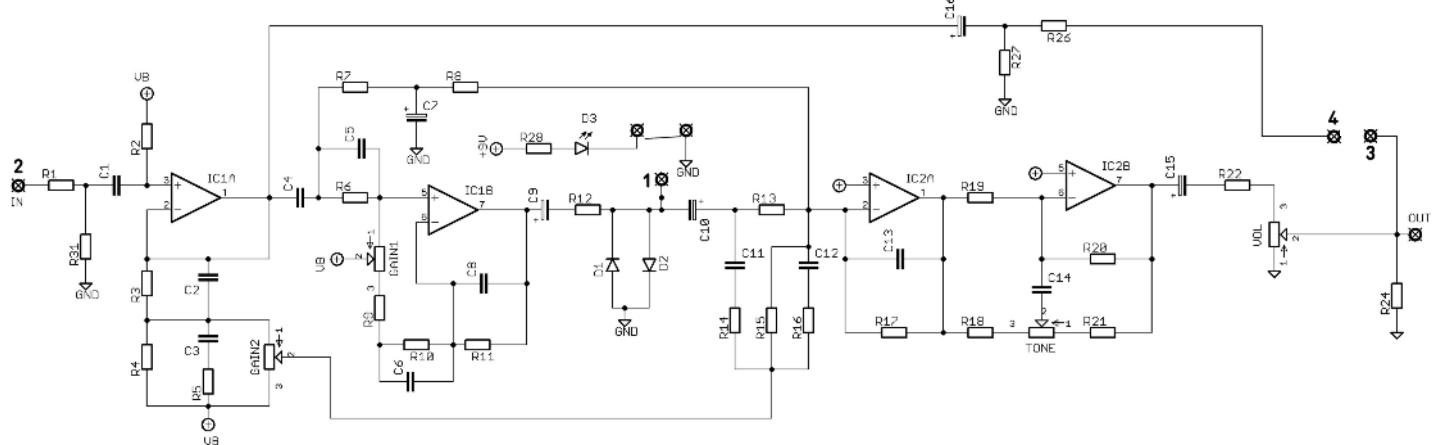
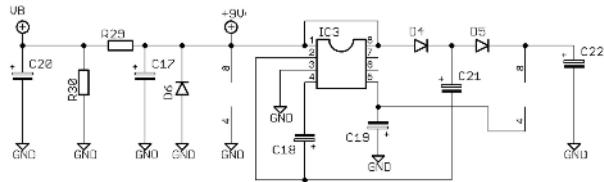
- **Diodes/LEDs:**

Cathode to square pad. Short leg to square pad for LEDs.

- **ICs:**

Square pad indicates pin 1.

Schematic



BOM is for Silver Pony version.
Gold version values shown in blue.

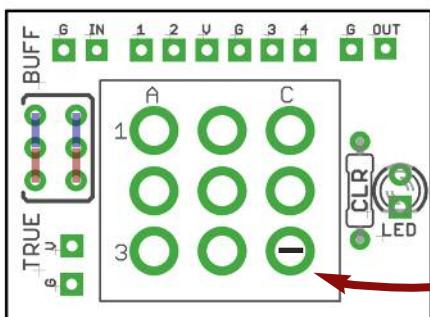
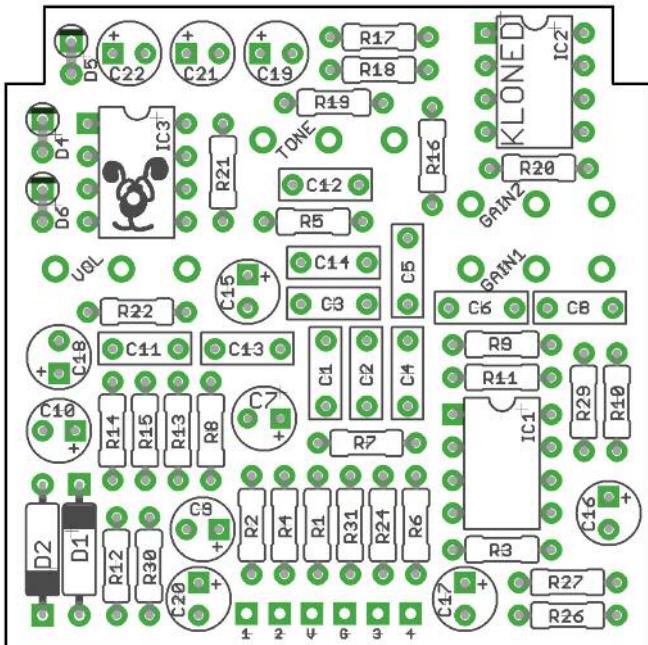
If using a 7660 for IC3 you need one with an S suffix. This ensures it will operate at a frequency high enough to be inaudible.

*There are a few value substitutions we recommend - see next page for details and a note regarding diodes.

**R28 is the current limiter for the LED. This is now located on the footswitch daughterboard and is marked 'CLR'.

BOM

R1	10K	R22	560R	C1	100n
R2	2M	R24	100K	C2	68n*
R3	5K1	R26	560R	C3	390n (330n IS FINE)
R4	1K5	R27	100K	C4	100n
R5	1K	R28	2K2**	C5	68n
R6	10K	R29	27K	C6	82n*
R7	1K5	R30	27K	C7	1u tant
R8	15K	R31	2M	C8	390p
R9	47R (2K)	D1-2	D9E*	C9	1u elec
R10	15K	D3	LED	C10	1u elec
R11	422K (420K IS FINE)	D4-5	1N4001	C11	2n2
R12	1K	D6	12V zener rated min 1W	C12	27n
R13	47K	IC1-2	TL072	C13	560p (820p)
R14	22K	IC3	7660S*	C14	3n9*
R15	10K (27K)	VOL	10KA (10KB)	C15	4u7 elec
R16	4K7 (12K)	TONE	10KB	C16	4u7 elec
R17	392K (390K IS FINE)	GAIN	100KB	C17	47u elec
R18	4K7 (1K8)	DUAL GANG		C18	1u elec
R19	100K			C19	1u elec
R20	100K			C20	47u elec
R21	1K8 (4K7)			C21	1u elec
				C22	1u elec



*The diodes we supply with the kit are Russian D9E. On these the stripe indicates the anode rather than cathode, so they should be placed on the PCB the opposite way to that shown on the silkscreen. That being said, they are in a top-to-tail configuration, so it really doesn't matter.

The Buffered/True-Bypass selection is designed for a 2.54mm-pitch miniature slide switch.

If you prefer to hardwire one way or the other, wire in jumpers as shown above. Red for True Bypass, blue for Buffered.

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

You should use some kind of heat sink on the legs of the diodes when soldering. They aren't keen on heat. Any more than 3-4 seconds of iron and they're toast. Use sockets for the ICs or be extra careful with them too.

Footswitch lugs should be horizontal as indicated above.

PART SUBSTITUTIONS

The circuit benefits from some extra bass in both the gain and clean sections:

C2 100n (clean)

C6 120 - 150n (gain)

The Tone (Treble) control has a more useful range if you increase C14 to 6n8 or 8n2.

Footswitch lugs should be horizontal

The current limiting resistor for the LED goes into the spot marked 'CLR' on the daughterboard. We supply 2K2.

Be VERY careful when bending the legs of the germanium diodes. The glass case is very fragile and likely to break. Hold the leg with some needle-nosed pliers against the case, and bend the leg with your finger so the pliers are taking any strain away from it.

To give yourself more clearance when mounting the circuit into your enclosure, C17 and C20 can be bent over the adjacent components as shown in the cover image.

Connect the two PCBs together using pads

1 2 V G 3 4

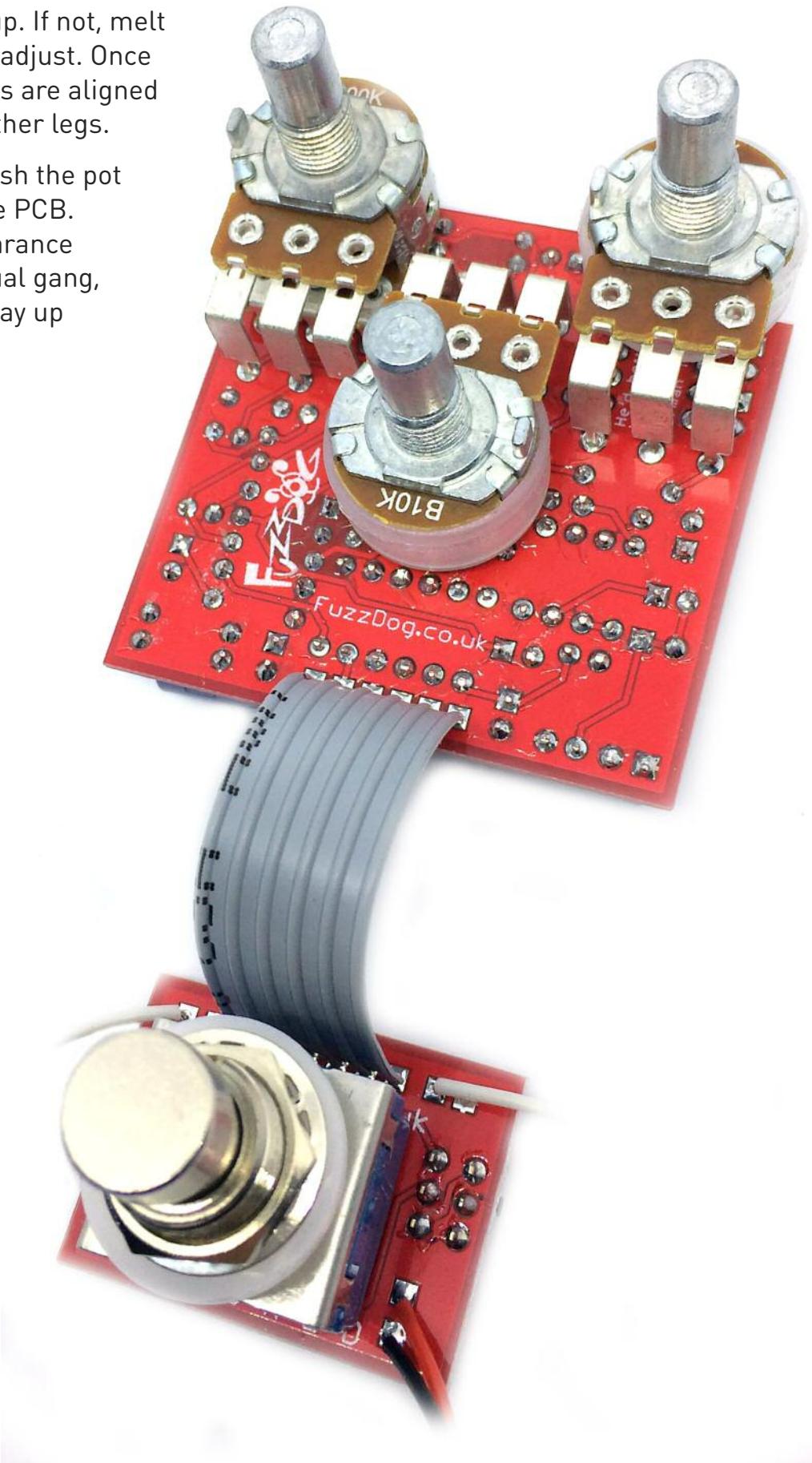
Your jacks connect to G / IN and G / OUT on the daughterboard.

DC connections are G and V pads next to 'TRUE'.

The best way to get the pots lined up is to first solder one pin of each.

Once they're tacked in place adjust them so they're straight and check to see if the heights line up. If not, melt that soldered joint and adjust. Once you're happy all the pots are aligned you can solder in the other legs.

Make sure you don't push the pot pins all the way into the PCB. There's not a lot of clearance on the bottom of the dual gang, so it has to sit a little way up from the PCB.



Keep it simple...

No charge...

You can eliminate the charge pump if you prefer. It's only in there to give IC2 more headroom and avoid clipping. Is there any need? The signal is already clipped by the diodes anyway.

To leave this out and avoid any potential whining issues associated with charge pumps, do the following:

Leave out:

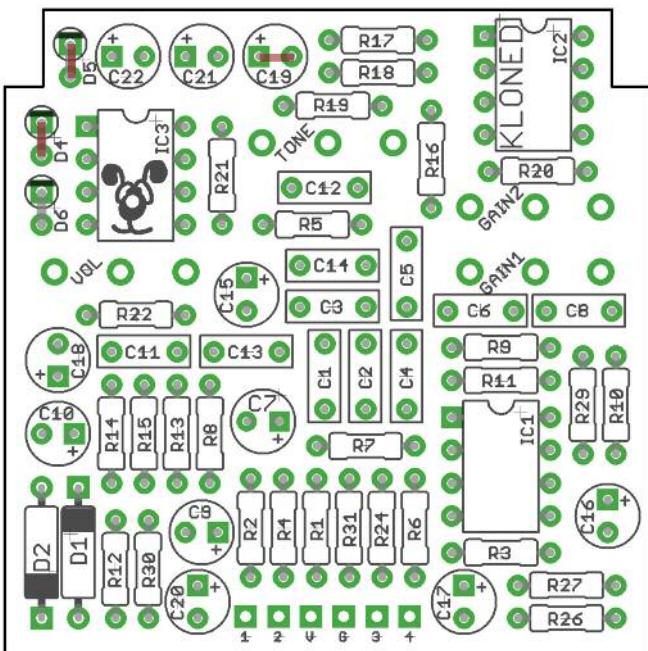
C18, C19, C21, C22

D4, D5

IC3

Place jumper wires in place of:

D4, D5, C19



No buffer...

If you prefer to keep things True Bypass and you want to use your own daughterboard you can get rid of the buffered bypass element.

Leave out:

R24, R26, R27

C16

Take wires from the following pads to your daughterboard or switch wiring.

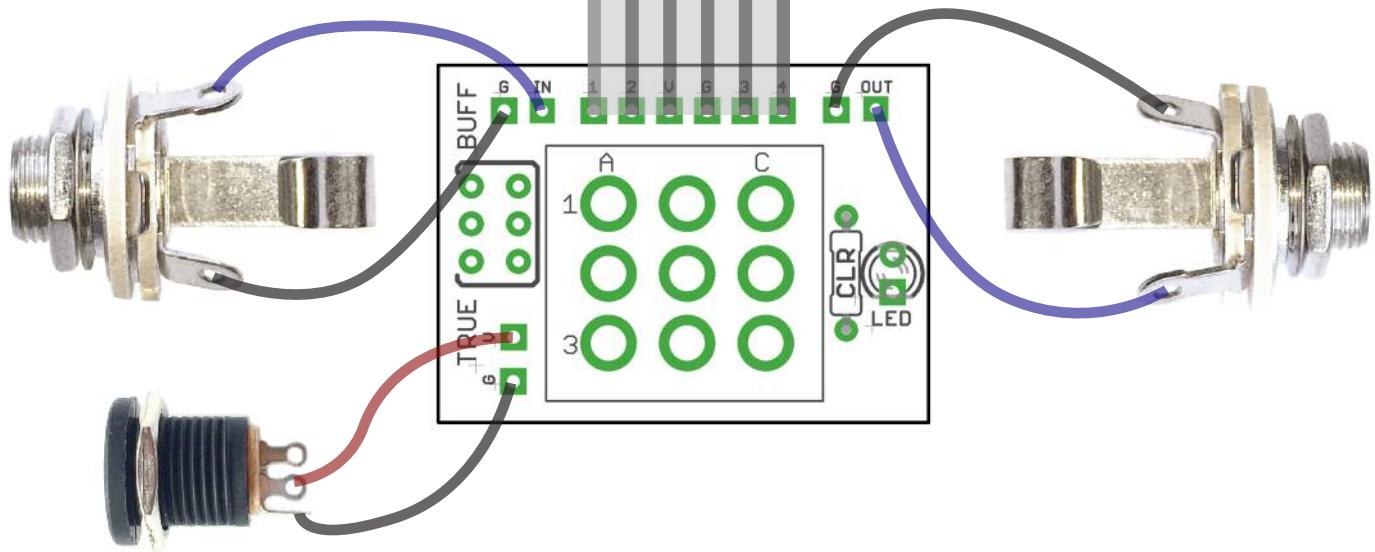
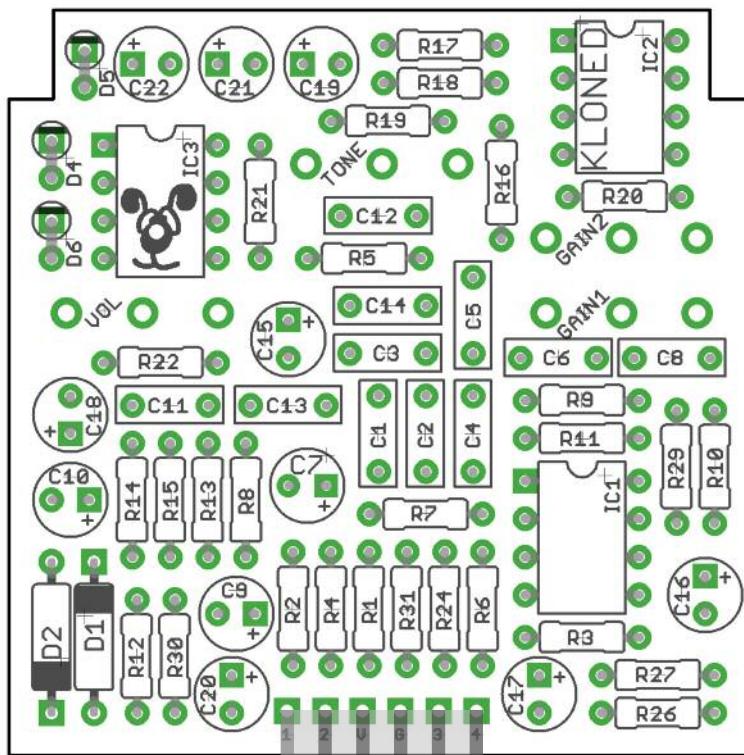
2 - IN

3 - OUT

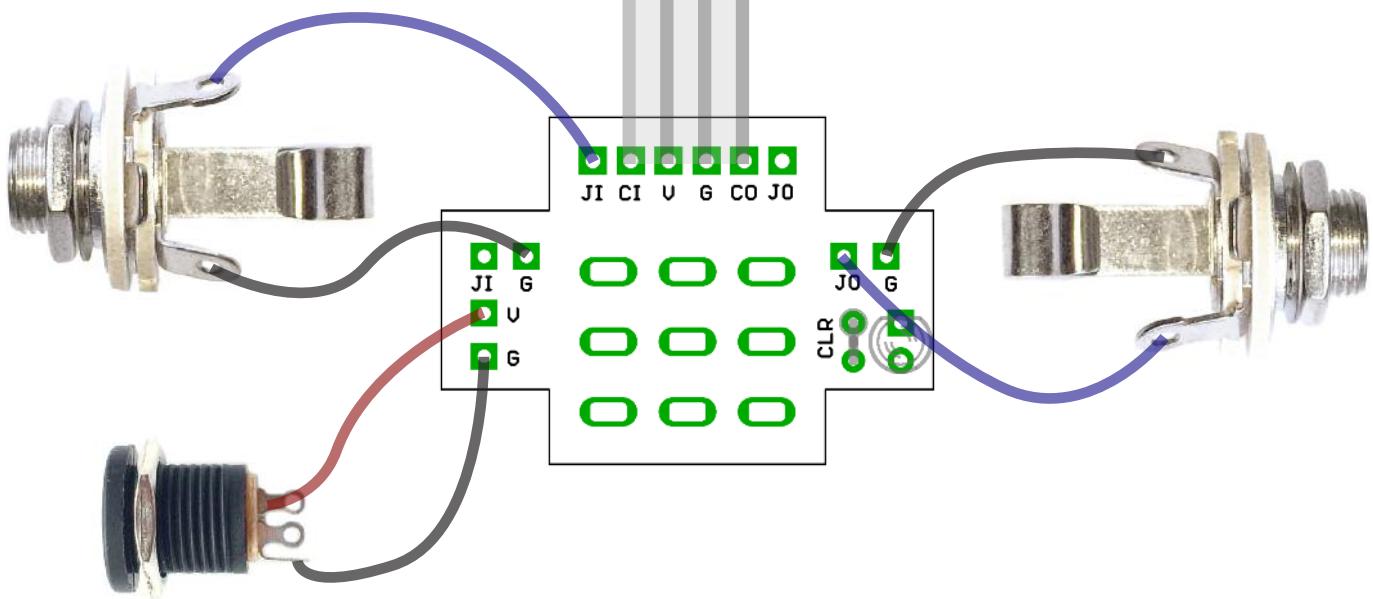
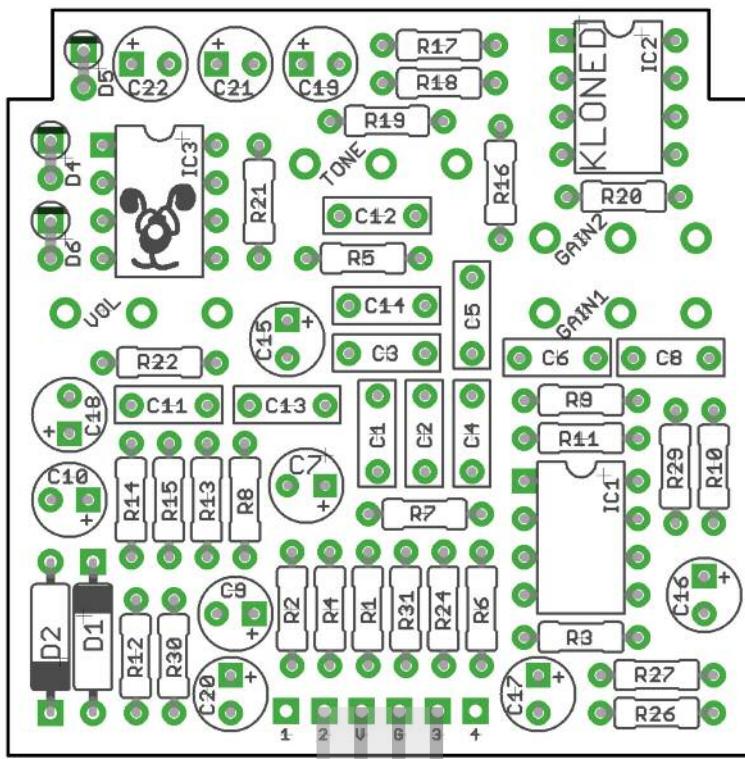
V - +Volts

G - Ground

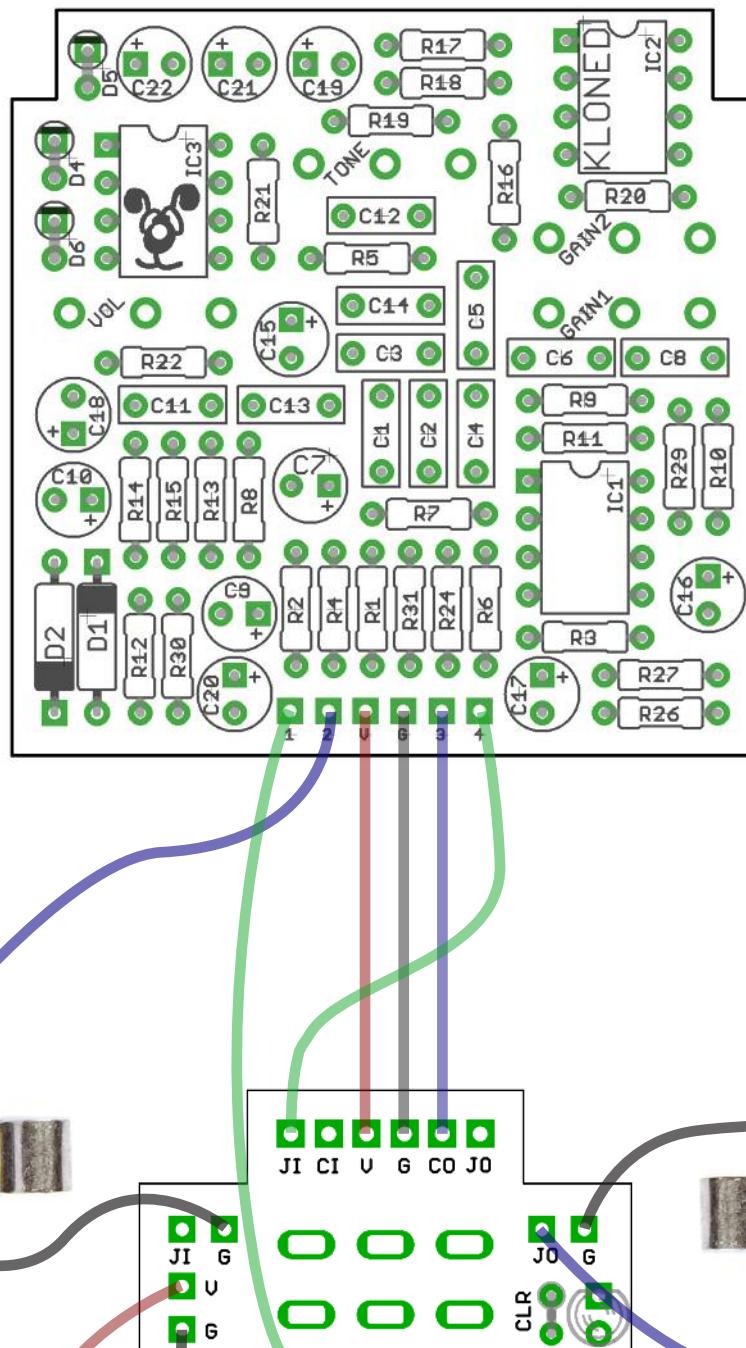
Wire it up - switching board



Wire it up - true bypass



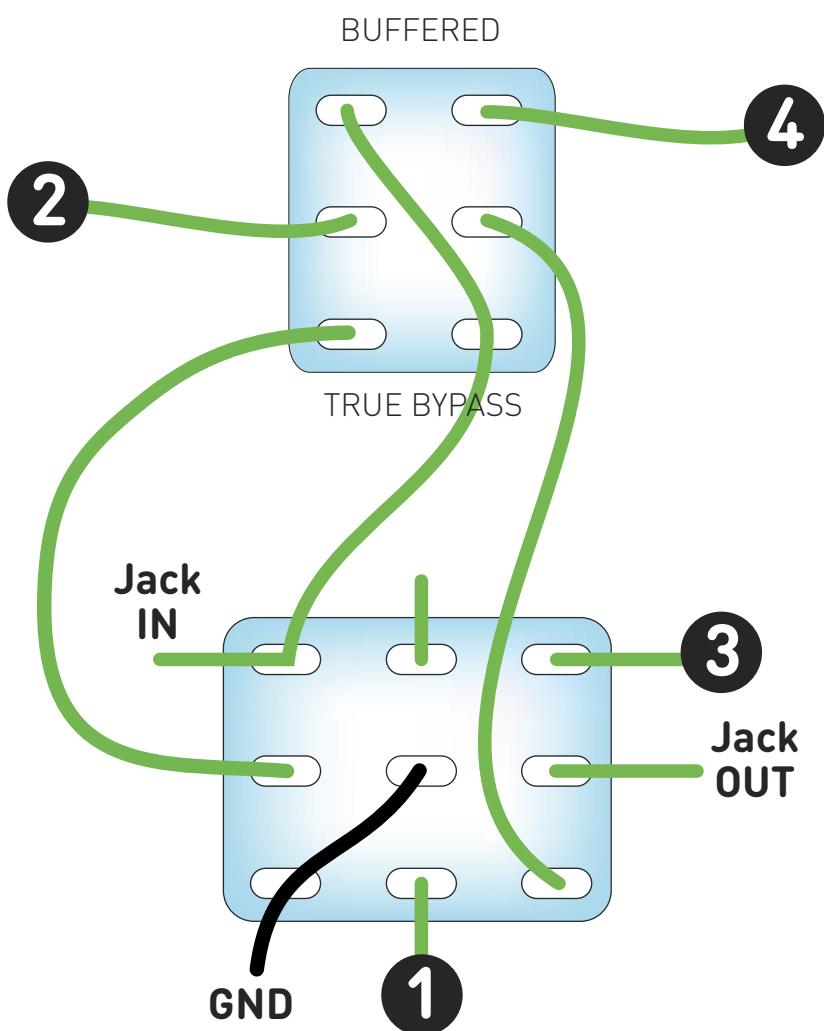
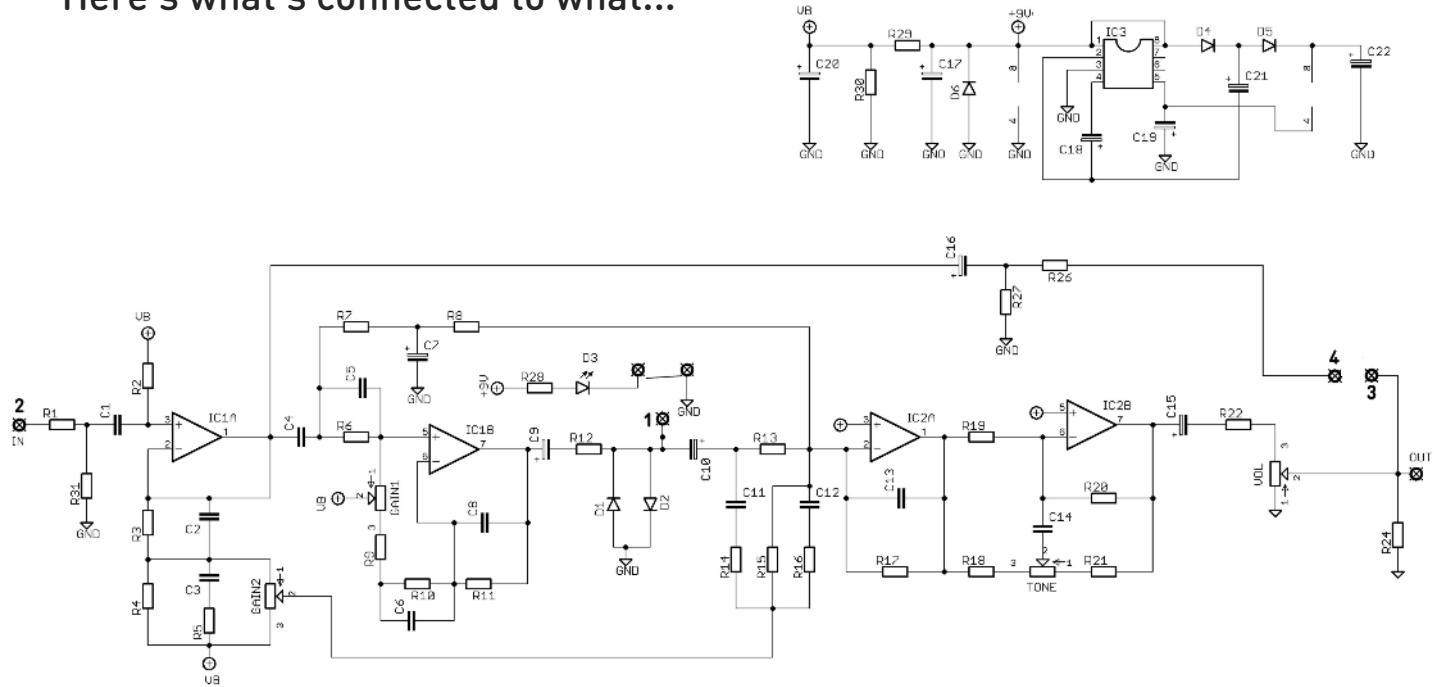
Wire it up - buffered bypass



Sorry, it's not particularly elegant, but pad 1 from the main board should connect directly to the footswitch lug as shown. It should actually work fine without this wire, but it follows the original in that it grounds the output of the gain section on bypass.

What's going on with those switches?

Here's what's connected to what...



Drilling template

Hammond 1590B

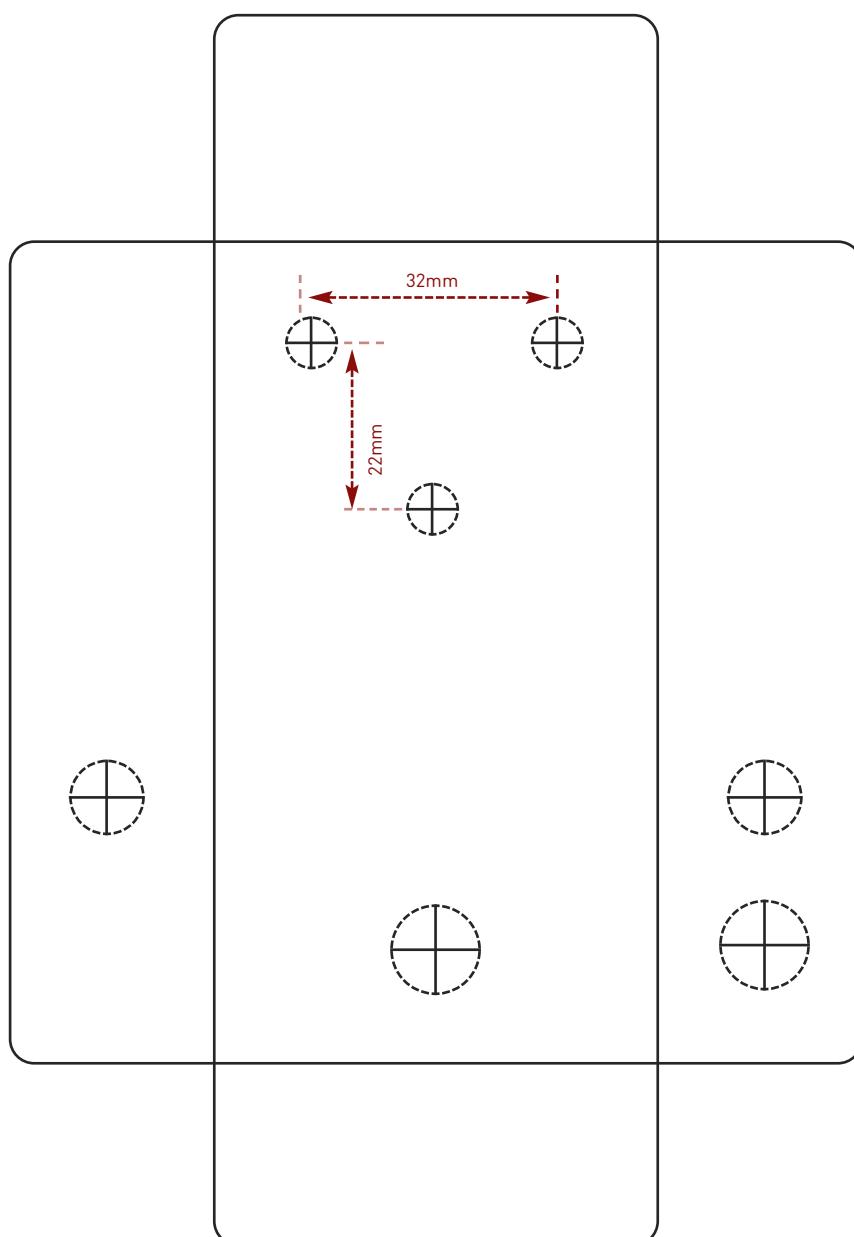
60 x 111 x 31mm

Recommended drill sizes:

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

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

Wiggle room = good!



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.

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