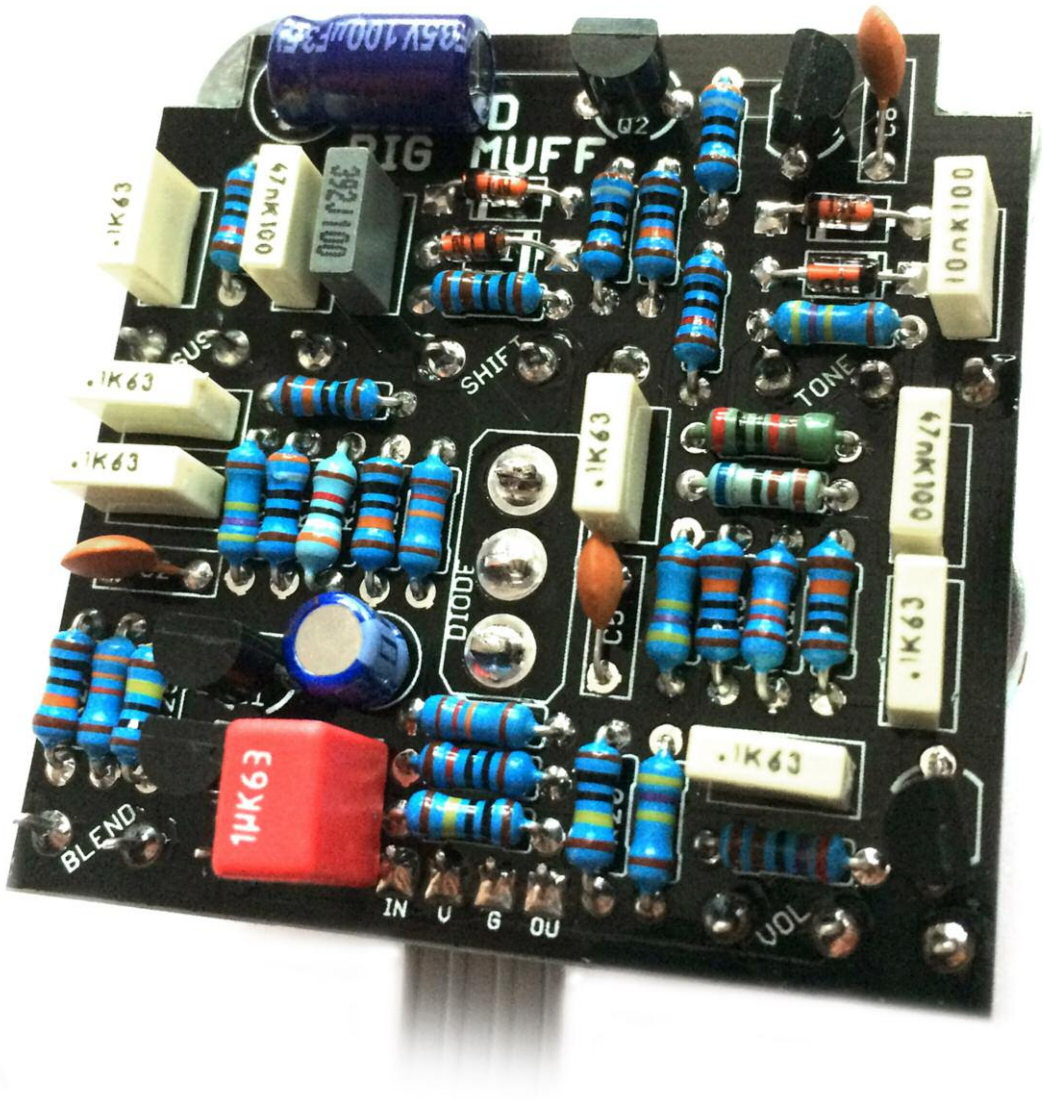
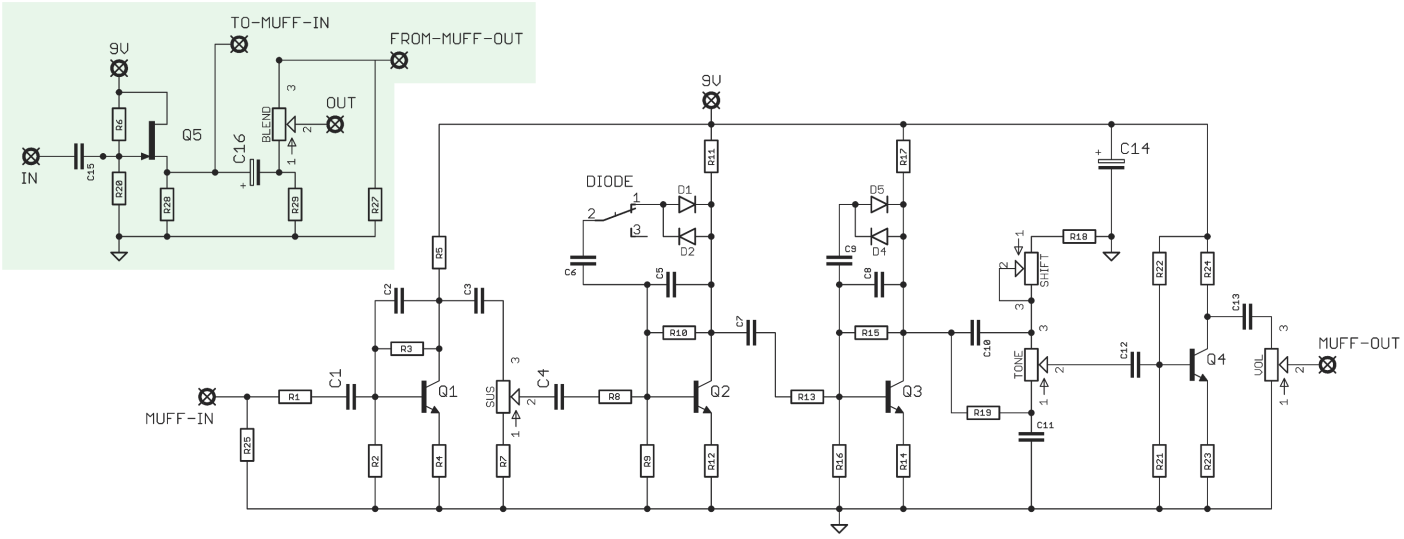


Big Muff Blender

All your bass fuzz are belong to us

Schematic + BOM



The main schematic shows the basic Big Muff Pi used throughout most of its history with two small additions:

- Diode lift switch for Q2 clipping
- Shift pot added to the Tone section

These are both optional - see later in the document.

Not sure what to make? Check out **Kit Rae's bigmuffpage.com** - this guy knows more about all things Muff than Mike Matthews himself. Astounding work.

The schematic highlighted in green is the blend circuit. Here's the BOM for that:

R6	1M
R20	1M
R27	100K
R28	3K3
R29	100K
C15	1u
C16	10u elec
Q5	N-Channel FET (J201, 2N5457)
BLEND	100KA

With the BLEND pot fully CCW you should have a clean signal pretty much the same as your bypassed level.

Carefully tweak the VOL and BLEND controls to get your desired balance of clean and fuzz. The two are very interactive.

Important notes

SHIFT/MIDS

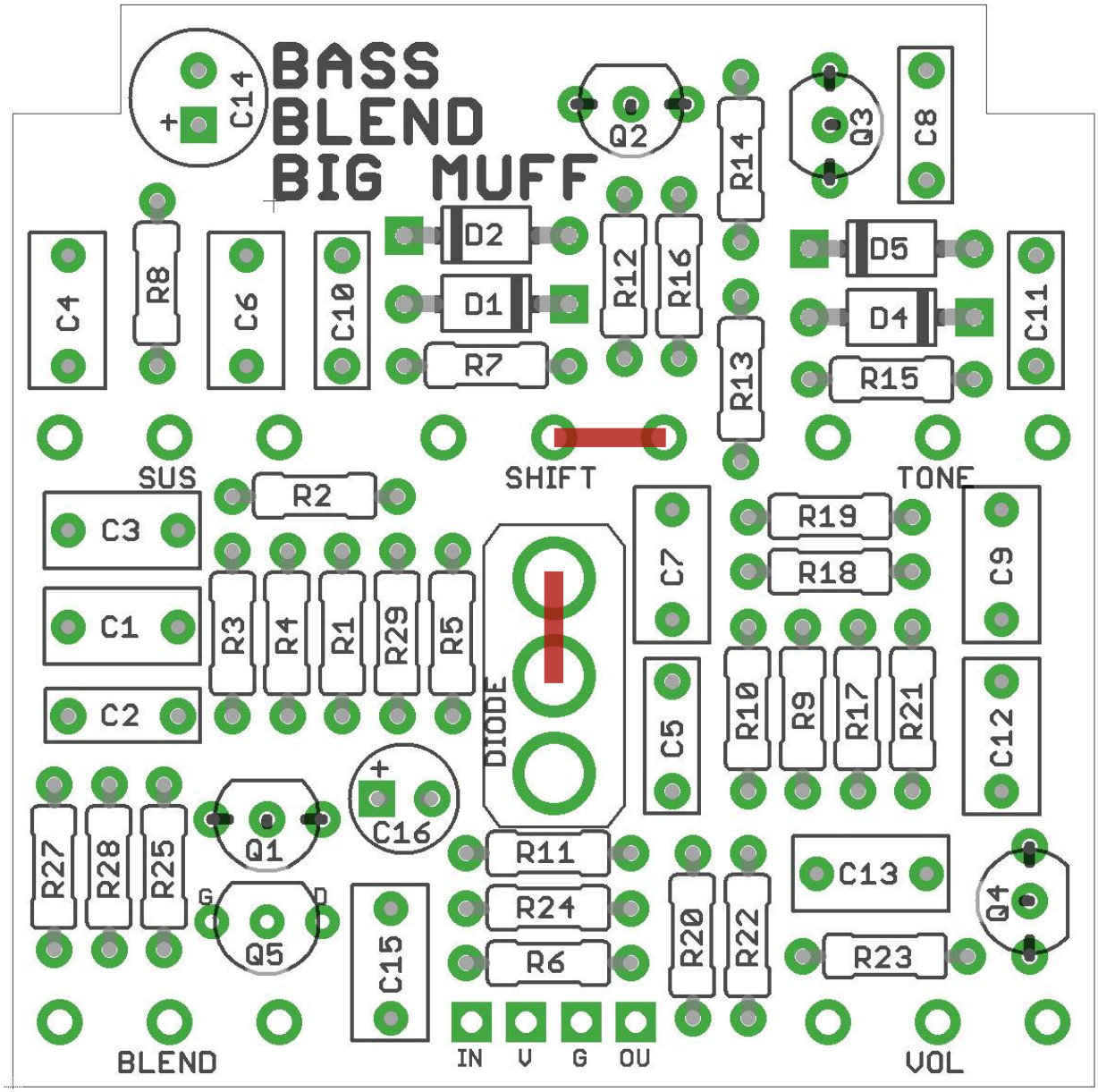
If you are NOT using this control you must place a jumper wire between pads 1 and 2.

DIODE SWITCH

If you are NOT using this switch but want to keep the clipping diodes in the circuit, you must place a jumper between the pads as shown below. If you want no clipping here, just leave it out.

C14

The PCB has been designed so C14 can lay flat to save on height - see cover image. Though the value of this cap has changed throughout the life of the BMP, 100u is supplied with all kits.



Tone Section

The PCB has been designed with an extra pot to control the MIDS of the circuit. You have several options here. The values listed below replace the same part numbers shown on the BOM for each Big Muff variation shown later in this document. If using any of the tone variation shown below, USE THESE VALUES, not those shown on the standard Muff BOMs.

STANDARD TONE WITH SHIFT POT

Not the best implementation, but it will give you some control over the mids.

R18	10K
SHIFT	25KB

AMZ PRESENCE V1

Much more control over the mids. A very nice mod without straying too far from the BMP.

R18	3K3
C10	10n (actually 12n in the AMZ guide, but 10n is easier to source and gives good results)
C11	10n
SHIFT	25KB

AMZ PRESENCE V2

A huge range of tonal variation, with humped as well as scooped mids available.

R18	3K3
R19	470K
C10	15n
C11	1n5
SHIFT	25KB
TONE	250KA

For more info on the above go to:

http://www.muzique.com/lab/tone3.htm

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 diodes and transistors. They're very sensitive to heat. You should use some kind of heat sink (crocodile clip or reverse action tweezers) on each leg as you solder them. Keep exposure to heat to a minimum (under 2 seconds).

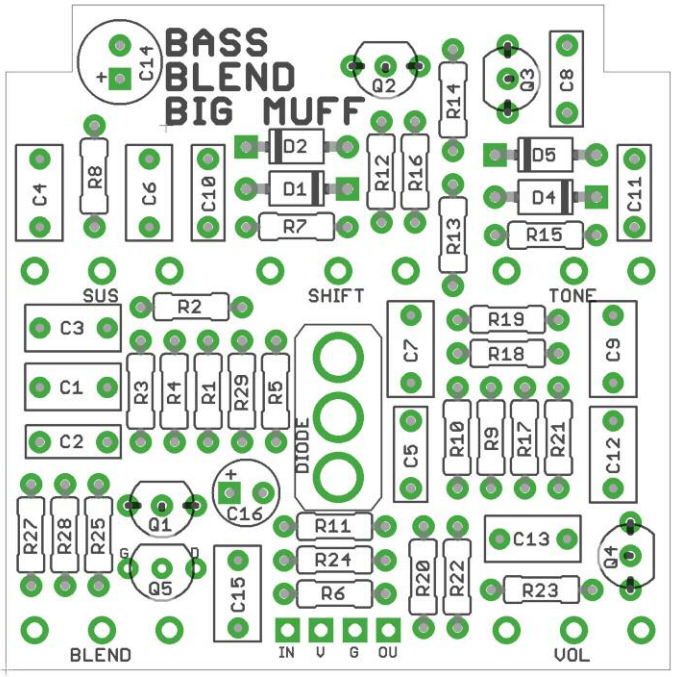
Snap the small metal tag off the pots so they can be mounted flush in the box.

Positive (anode) legs of the electrolytic caps go to the square pads.

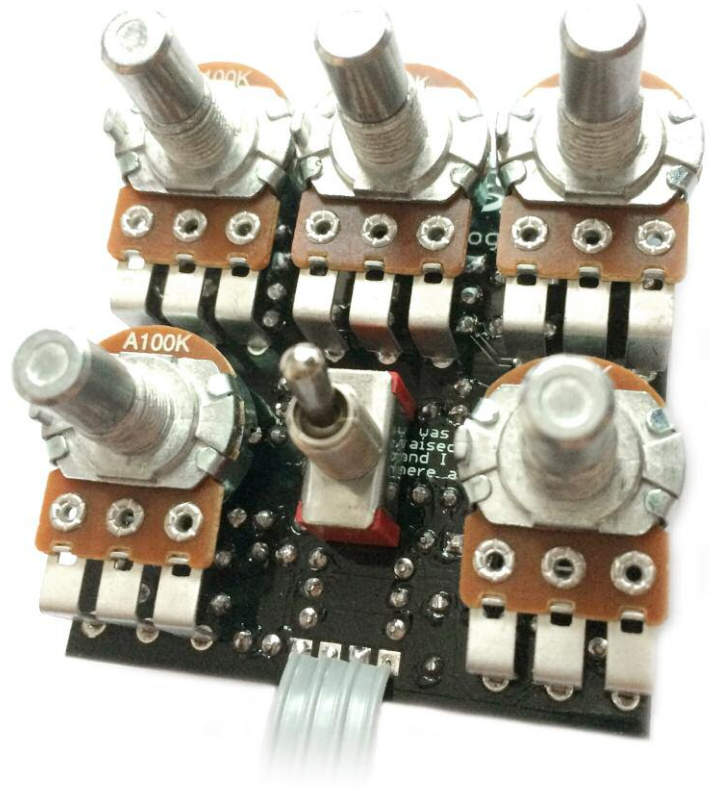
Negative (cathode) legs of the diodes go to the square pads.

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. 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.

Same goes for the toggle switch. Use your enclosure as a guide for positioning them to ensure they line up properly. Solder one lug, then melt it and adjust to get it straight before soldering any others.



PCB layout ©2016 Pedal Parts Ltd.



3rd (70s)

C1	100n
C2	470p
C3	1u
C4	1u
C5	470p
C6	100n
C7	1u
C8	470p
C9	100n
C10	3n9
C11	10n
C12	100n
C13	100n
C14	100u

Q1	2N5088
Q2	2N5088
Q3	2N5088
Q4	2N5088
D1	1N4148 / 1N914
D2	1N4148 / 1N914
D4	1N4148 / 1N914
D5	1N4148 / 1N914
SUSTAIN	100kA
TONE	100kB
VOLUME	100kA

R1	39K
R2	100K
R3	470K
R4	100R
R5	15K
R7	1K
R8	8K2
R9	100K
R10	470K
R11	15K
R12	100R
R13	8K2
R14	100R
R15	470K
R16	100K
R17	15K
R18	100K
R19	39K
R21	100K
R22	390K
R23	2K2
R24	10K
R25	1M

Green Russian

C1	100n
C2	470p
C3	100n
C4	100n
C5	470p
C6	47n
C7	100n
C8	470p
C9	47n
C10	3n9
C11	10n
C12	100n
C13	100n
C14	100u

Q1	2N5088
Q2	2N5088
Q3	2N5088
Q4	2N5088
D1	1N4148 / 1N914
D2	1N4148 / 1N914
D4	1N4148 / 1N914
D5	1N4148 / 1N914
SUSTAIN	100kA
TONE	100kB
VOLUME	100kA

R1	39K
R2	100K
R3	470K
R4	390R
R5	12K
R7	1K
R8	10K
R9	100K
R10	470K
R11	12K
R12	390R
R13	10K
R14	390R
R15	470K
R16	100K
R17	12K
R18	22K
R19	20K
R21	100K
R22	470K
R23	2K
R24	10K
R25	1M

Black Russian

C1	100n
C2	470p
C3	100n
C4	100n
C5	470p
C6	47n
C7	100n
C8	470p
C9	47n
C10	3n9
C11	10n
C12	100n
C13	100n
C14	100u

Q1	2N5088
Q2	2N5088
Q3	2N5088
Q4	2N5088
D1	1N4148 / 1N914
D2	1N4148 / 1N914
D4	1N4148 / 1N914
D5	1N4148 / 1N914
SUSTAIN	100kA
TONE	100kB
VOLUME	100kA

R1	39K
R2	100K
R3	470K
R4	390R
R5	12K
R7	1K
R8	10K
R9	100K
R10	470K
R11	12K
R12	390R
R13	10K
R14	390R
R15	470K
R16	100K
R17	12K
R18	22K
R19	22K
R21	100K
R22	470K
R23	2K7
R24	10K
R25	1M

Civil War

C1	100n
C2	560p
C3	100n
C4	100n
C5	560p
C6	47n
C7	100n
C8	560p
C9	47n
C10	3n9
C11	10n
C12	100n
C13	100n
C14	100u

Q1	2N5088
Q2	2N5088
Q3	2N5088
Q4	2N5088
D1	1N4148 / 1N914
D2	1N4148 / 1N914
D4	1N4148 / 1N914
D5	1N4148 / 1N914
SUSTAIN	100kA
TONE	100kB
VOLUME	100kA

R1	39K
R2	100K
R3	470K
R4	390R
R5	12K
R7	1K
R8	10K
R9	100K
R10	470K
R11	12K
R12	390R
R13	10K
R14	390R
R15	470K
R16	100K
R17	12K
R18	22K
R19	20K
R21	100K
R22	470K
R23	2K7
R24	10K
R25	1M

Triangle

C1	100n
C2	560p
C3	100n
C4	100n
C5	560p
C6	47n
C7	100n
C8	560p
C9	47n
C10	3n9
C11	10n
C12	100n
C13	100n
C14	100u

Q1	2N5088
Q2	2N5088
Q3	2N5088
Q4	2N5088
D1	1N4148 / 1N914
D2	1N4148 / 1N914
D4	1N4148 / 1N914
D5	1N4148 / 1N914
SUSTAIN	100kA
TONE	100kB
VOLUME	100kA

R1	3K3
R2	82K
R3	390K
R4	820R
R5	22K
R7	1K
R8	8K2
R9	82K
R10	390K
R11	12K
R12	150R
R13	8K2
R14	820R
R15	390K
R16	82K
R17	22K
R18	39K
R19	39K
R21	100K
R22	390K
R23	2K7
R24	12K
R25	1M

Ram's Head

***Originally electrolytic but you'll get much better results replacing these with 1u film caps.**

C1	10u*
C2	560p
C3	100n
C4	100n
C5	560p
C6	100n
C7	100n
C8	560p
C9	1u*
C10	3n9
C11	10n
C12	100n
C13	1u*
C14	100u

Q1	2N5088
Q2	2N5088
Q3	2N5088
Q4	2N5088
D1	1N4148 / 1N914
D2	1N4148 / 1N914
D4	1N4148 / 1N914
D5	1N4148 / 1N914
SUSTAIN	100kA
TONE	100kB
VOLUME	100kA

R1	39K
R2	47K
R3	470K
R4	120R
R5	10K
R7	1K
R8	10K
R9	100K
R10	470K
R11	10K
R12	150R
R13	10K
R14	150R
R15	470K
R16	100K
R17	15K
R18	22K
R19	39K
R21	100K
R22	430K
R23	3K3
R24	15K
R25	1M

Violet Ram's Head

C1	100n
C2	470p
C3	100n
C4	100n
C5	4700p
C6	100n
C7	100n
C8	470p
C9	100n
C10	3n9
C11	10n
C12	100n
C13	100n
C14	100u

Q1	2N5088
Q2	2N5088
Q3	2N5088
Q4	2N5088
D1	1N4148 / 1N914
D2	1N4148 / 1N914
D4	1N4148 / 1N914
D5	1N4148 / 1N914
SUSTAIN	100kA
TONE	100kB
VOLUME	100kA

R1	33K
R2	100K
R3	470K
R4	100R
R5	12K
R7	560R
R8	8K2
R9	100K
R10	470K
R11	12K
R12	100R
R13	8K2
R14	100R
R15	470K
R16	100K
R17	12K
R18	33K
R19	33K
R21	100K
R22	470K
R23	2K7
R24	12K
R25	1M

NYC Reissue

C1	1u
C2	470p
C3	1u
C4	1u
C5	470p
C6	1u
C7	1u
C8	470p
C9	1u
C10	3n9
C11	10n
C12	1u
C13	1u
C14	100u

Q1	2N5088
Q2	2N5088
Q3	2N5088
Q4	2N5088
D1	1N4148 / 1N914
D2	1N4148 / 1N914
D4	1N4148 / 1N914
D5	1N4148 / 1N914
SUSTAIN	100kA
TONE	100kB
VOLUME	100kA

R1	39K
R2	100K
R3	510K
R4	100R
R5	10K
R7	1K8
R8	10K
R9	100K
R10	470K
R11	10K
R12	390R
R13	10K
R14	390R
R15	470K
R16	100K
R17	10K
R18	22K
R19	22K
R21	100K
R22	470K
R23	2K
R24	10K
R25	1M

V3 79#2 - J Mascis

Based on what is supposedly one of J Mascis' favourite Muffs. The original has true tone bypass, this doesn't. Deal with it.

C1	1u
C2	470p
C3	1u
C4	1u
C5	470p
C6	1u
C7	100n
C8	470p
C9	1u
C10	3n9
C11	10n
C12	100n
C13	1u
C14	100u

Q1	MPSA18
Q2	MPSA18
Q3	MPSA18
Q4	MPSA18
D1	1N4148/1N914
D2	1N4148/1N914
D4	1N4148/1N914
D5	1N4148/1N914
SUSTAIN	100kA
TONE	100kB
VOLUME	100kA

R1	39K
R2	100K
R3	470K
R4	100R
R5	15K
R7	1K
R8	8K2
R9	100K
R10	470K
R11	15K
R12	100R
R13	8K2
R14	100R
R15	470K
R16	100K
R17	15K
R18	22K
R19	39K
R21	100K
R22	390K
R23	2K2
R24	10K
R25	1M

Tall Font Green Russian

Bass players' favourite. The feedback caps in the original are two 1nf in series, but that's the same as 500pf.

C1	100n
C2	500p
C3	100n
C4	100n
C5	500p
C6	47n
C7	100n
C8	500p
C9	47n
C10	3n9
C11	10n
C12	100n
C13	100n
C14	100u

Q1	2N5089
Q2	2N5089
Q3	2N5089
Q4	2N5089
D1	1N4148/1N914
D2	1N4148/1N914
D4	1N4148/1N914
D5	1N4148/1N914
SUSTAIN	100kA
TONE	100kB
VOLUME	100kA

R1	39K
R2	100K
R3	470K
R4	390R
R5	12K
R7	1K
R8	10K
R9	100K
R10	470K
R11	12K
R12	390R
R13	10K
R14	390R
R15	470K
R16	100K
R17	12K
R18	22K
R19	20K
R21	100K
R22	470K
R23	2K7
R24	10K
R25	1M

Stoned Cleric

Stoner heaven, based closely around a Ram's Head 74#1 but with different cans and a different emitter resistor in the first gain stage. Awesome stuff.

***BC549C pinout is the opposite to that shown on the PCB, so flip them.**

C1	100n
C2	560p
C3	100n
C4	100n
C5	560p
C6	1u
C7	100n
C8	560p
C9	1u
C10	4n7
C11	10n
C12	100n
C13	100n
C14	100u

Q1-4	BC549C*
D1-2	1N4148
D4-5	1N4148
SUSTAIN	100KA
TONE	100KB
VOLUME	100KA

R1	33K
R2	100K
R3	470K
R4	470R
R5	10K
R7	1K
R8	10K
R9	100K
R10	470K
R11	10K
R12	150R
R13	10K
R14	150R
R15	470K
R16	100K
R17	10K
R18	33K
R19	33K
R21	100K
R22	470K
R23	2K7
R24	10K
R25	1M

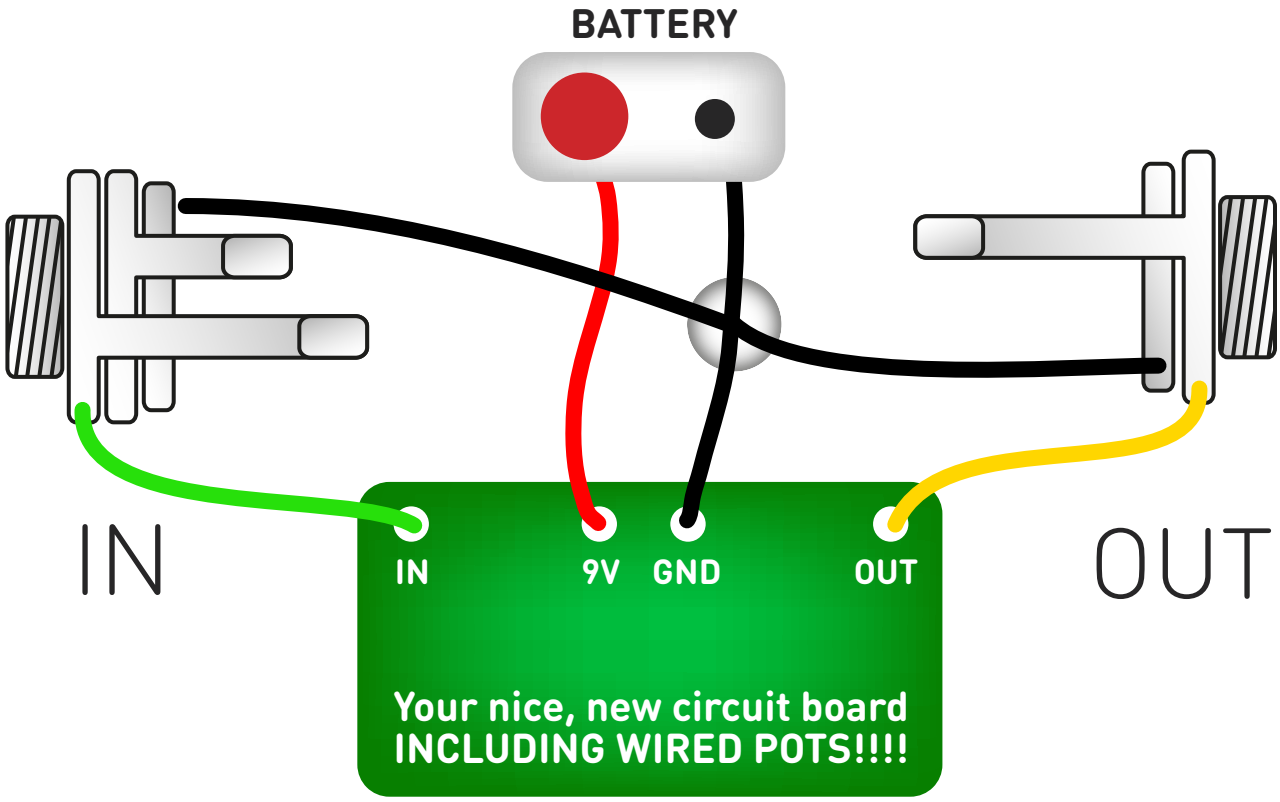
Creamy Dreamer

C1	1u
C2	470p
C3	47n
C4	1u
C5	470p
C6	1u
C7	1u
C8	470p
C9	1u
C10	4n7
C11	10n
C12	100n
C13	100n
C14	100u

Q1	2N5089
Q2	2N5089
Q3	2N5089
Q4	2N5089
D1	1N4148
D2	1N4148
D3	Jumper
D4	1N4148
D5	1N4148
SUSTAIN	100kB
TONE	100kA
VOLUME	100kA

R1	39K
R2	100K
R3	470K
R4	Jumper
R5	15K
R7	1K
R8	8K2
R9	100K
R10	470K
R11	15K
R12	Jumper
R13	8K2
R14	Jumper
R15	470K
R16	100K
R17	15K
R18	47K
R19	47K
R21	100K
R22	390K
R23	2K2
R24	10K

Test the board!



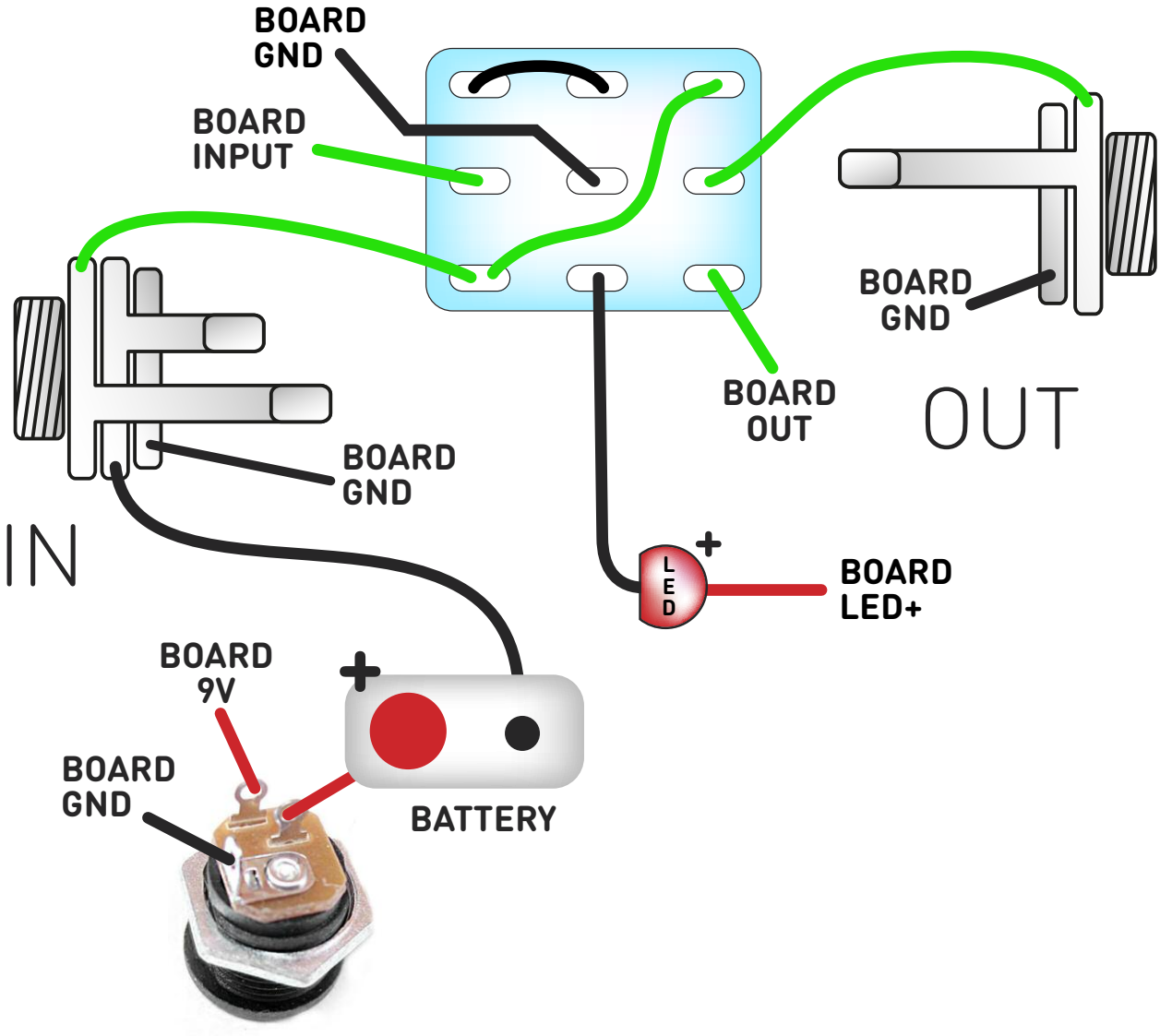
UNDER NO CIRCUMSTANCES will troubleshooting help be offered if you have skipped this stage. No exceptions.

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 (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

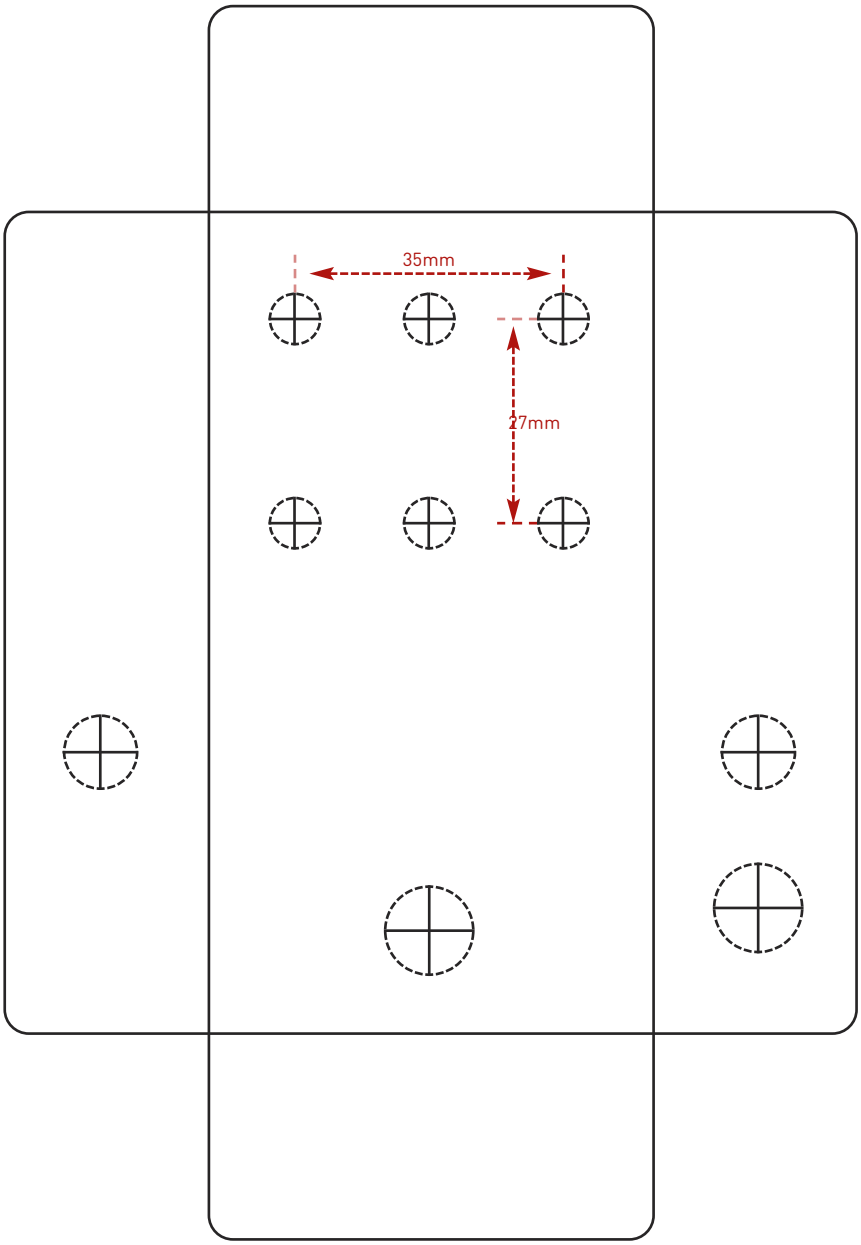
Hammond 1590B

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 switch	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.

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