

Polar White Fuzz

Modern fuzz that plays like
a vintage beast



Important notes - DO NOT SKIP!

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 the build.
- 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. This applies to older PCBs with a pad marked LED next to the IN V G OU pads.

POWER SUPPLY

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

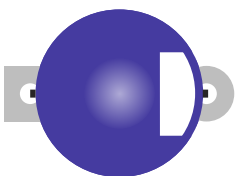
COMPONENT SPECS

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. For kits that use 3mm resistors instead of standard 6mm, these will usually be either 0.125W or 0.4W.
- 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. Stripe indicates cathode.



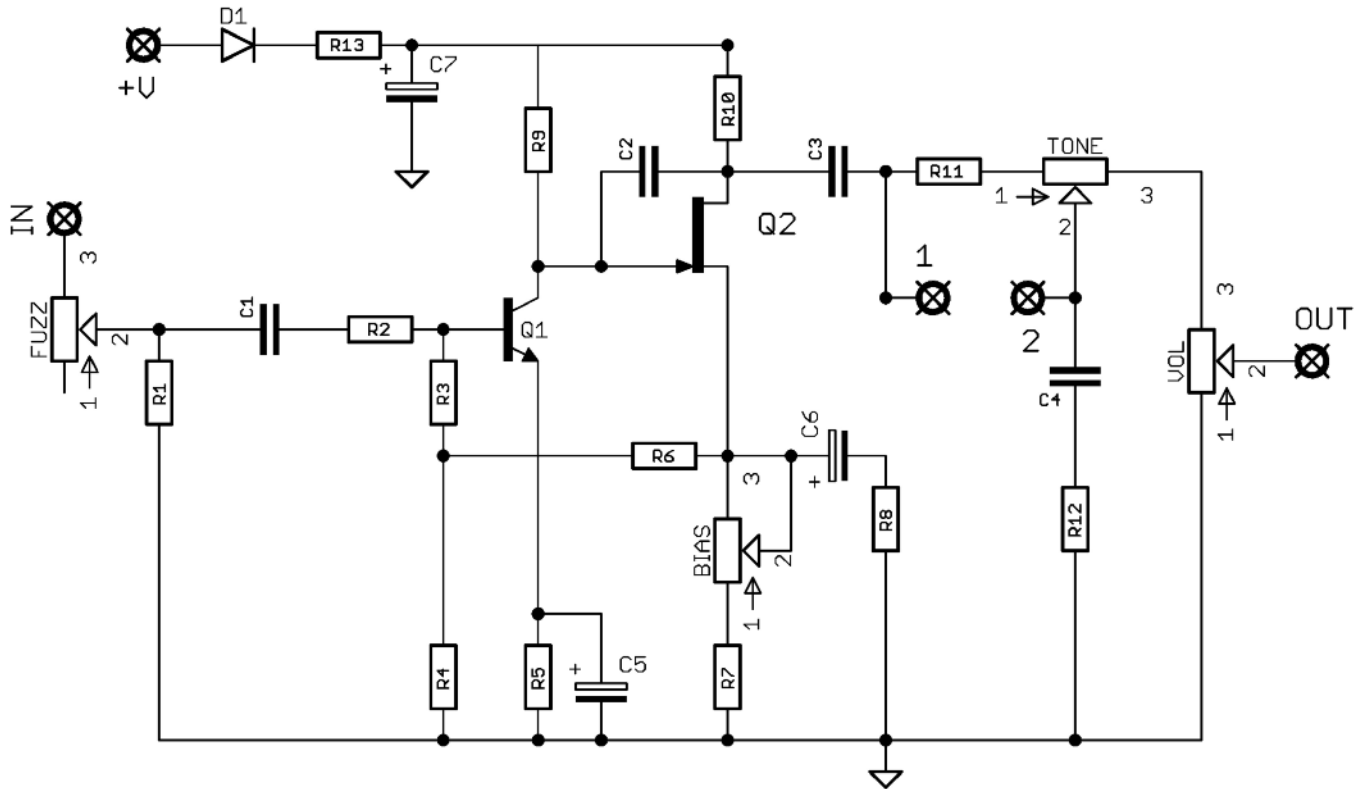
Diodes/LEDs:

Striped leg (cathode) to square pad. Short leg to square pad for LEDs. The exception to this is with Russian germanium diodes - stripe = anode.

- **ICs:**

Square pad indicates pin 1.

Schematic + BOM



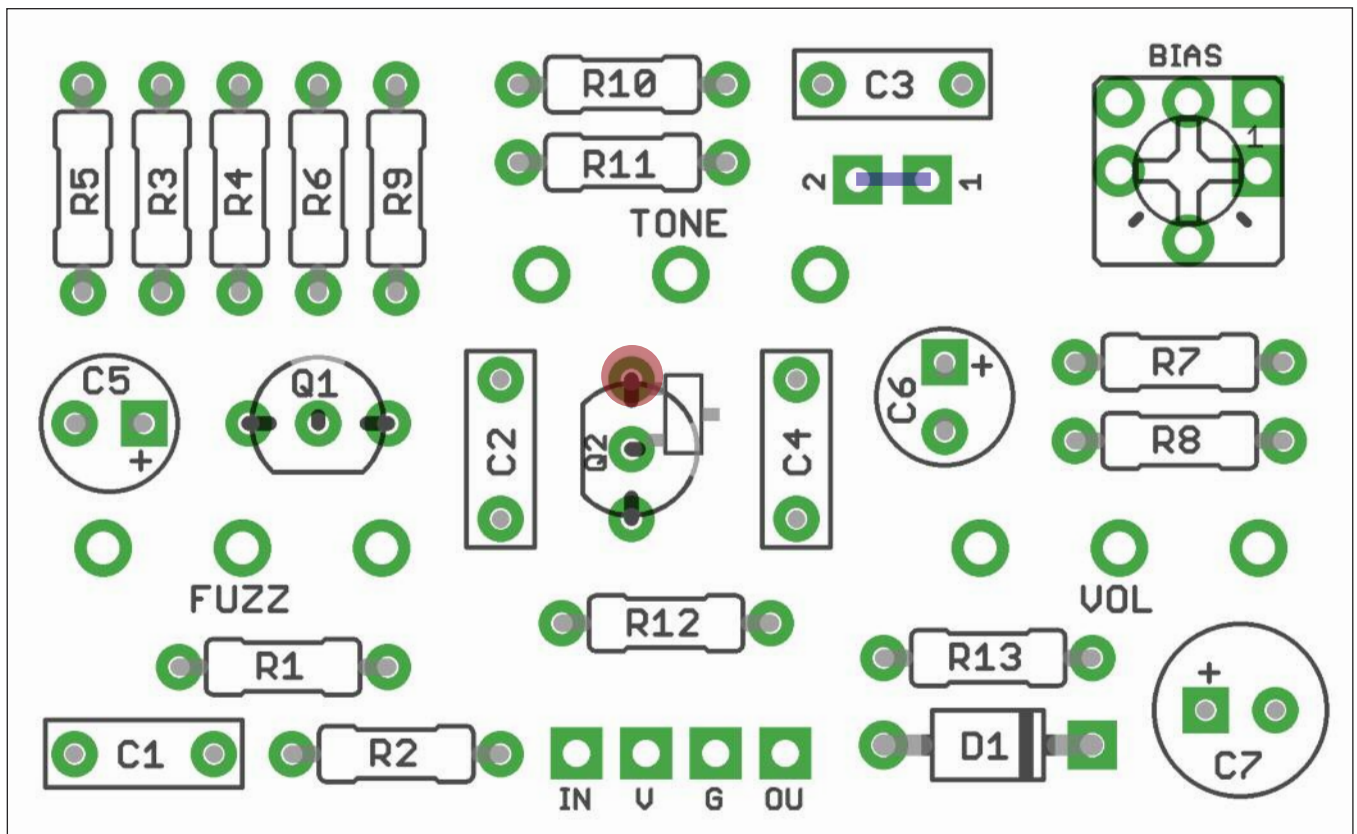
R1	1M	C1	22n	Q1	BC550C
R2	2K	C2	100p	Q2	J113 / PF5102*
R3	91K	C3	22n	FUZZ	1MC
R4	91K	C4	22n	TONE	50KB
R5	1K	C5	22u elec	VOL	50KA / 100KA**
R6	180K	C6	4u7 elec	BIAS	10K trimmer
R7	1K	C7	100u elec		
R8	100R				
R9	47K	D1	1N5817		
R10	9K1				
R11	5K6				
R12	2K				
R13	1K				

*PF5102 in original but these are obsolete. J113 = good match.

**50KA in the original, but 100KA feels better.

The tone control on the original is quite subtle but works well enough, adding some girth and bite as you move CW. To go with this add a jumper across pads 1-2.

For a bigger tone control range you can leave out the jumper but it'll work backwards compared to a 'normal' tone. Solder genius Chuck D. Bones (PedalPCB forum) recommends dropping C3 to 15n and R11 to 3K9 for this configuration.



PCB layout ©2023 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 diode 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). Same goes for the ICs if you aren't using sockets.

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

You should solder all other board-mounted components before you solder the pots and switches. 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.

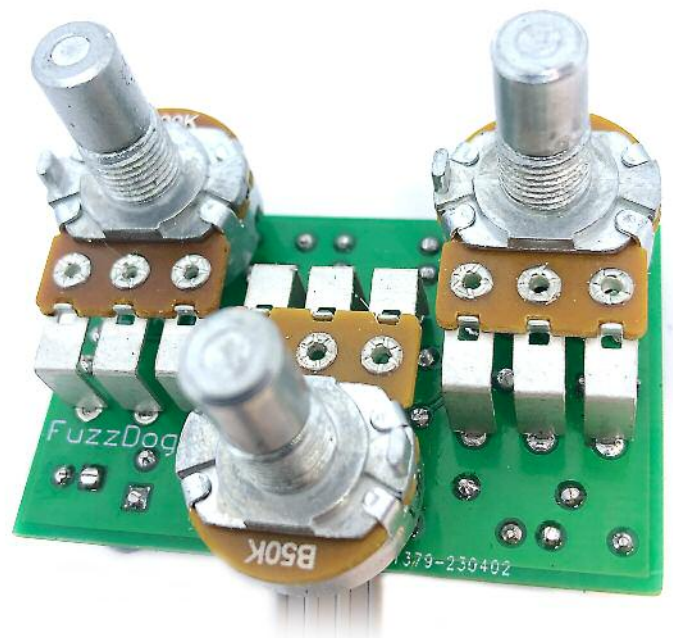
BIASING Q2

Adjust your trimmer until you get 4.5-5V on the red point.

Don't get too hung up on numbers. If it sounds good, it sounds good.

TONE CONTROL

For original, add a jumper as shown in blue above. For a full range, albeit backwards, leave it out.



Test the board!

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

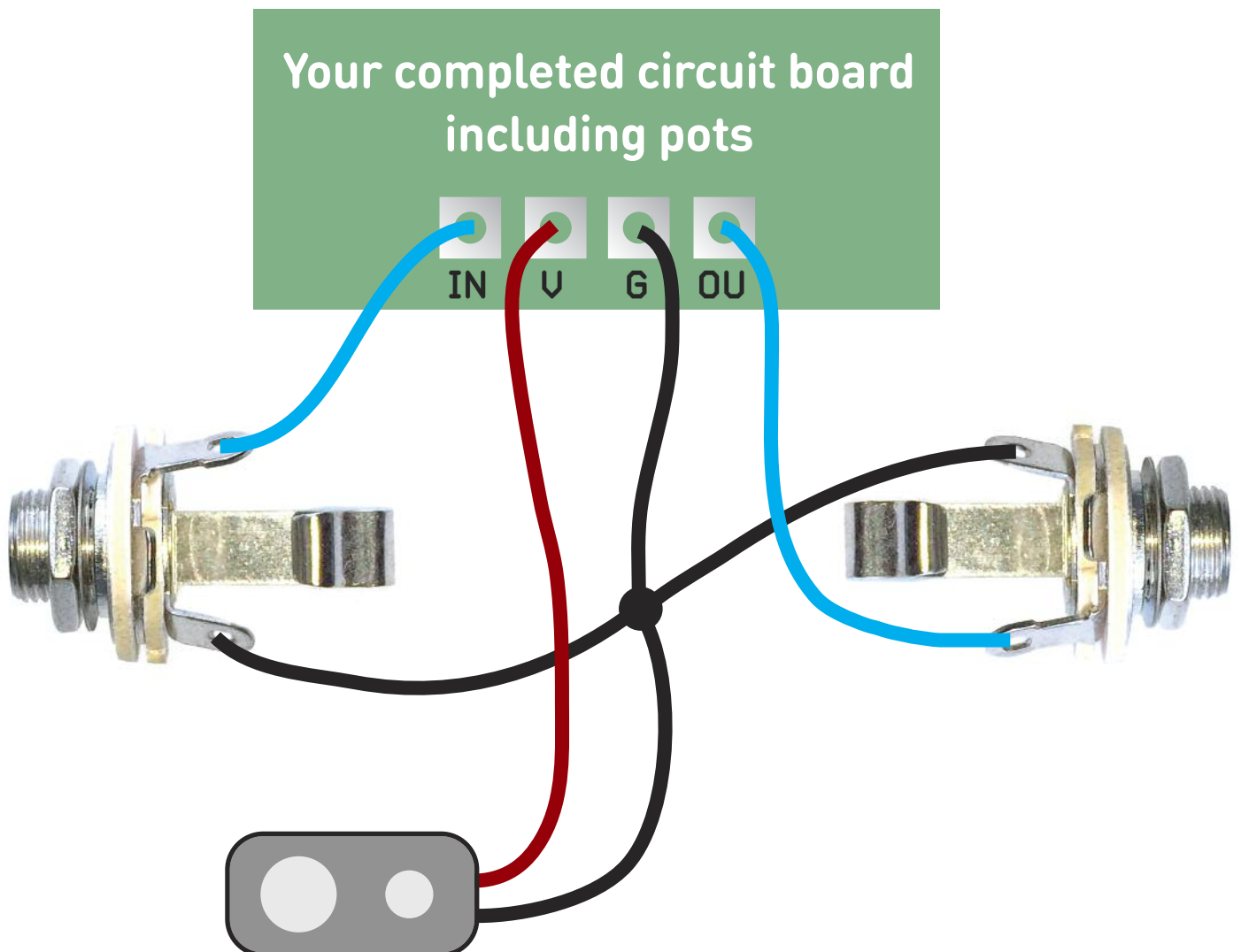
UNDER NO CIRCUMSTANCES will troubleshooting help be offered if you have skipped this stage. No exceptions.

Once you've finished the circuit it makes sense to test 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, 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 to 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.



Now's the time
to refer to the
daughterboard
document for
your chosen
bypass method.

Enjoy your pedal!

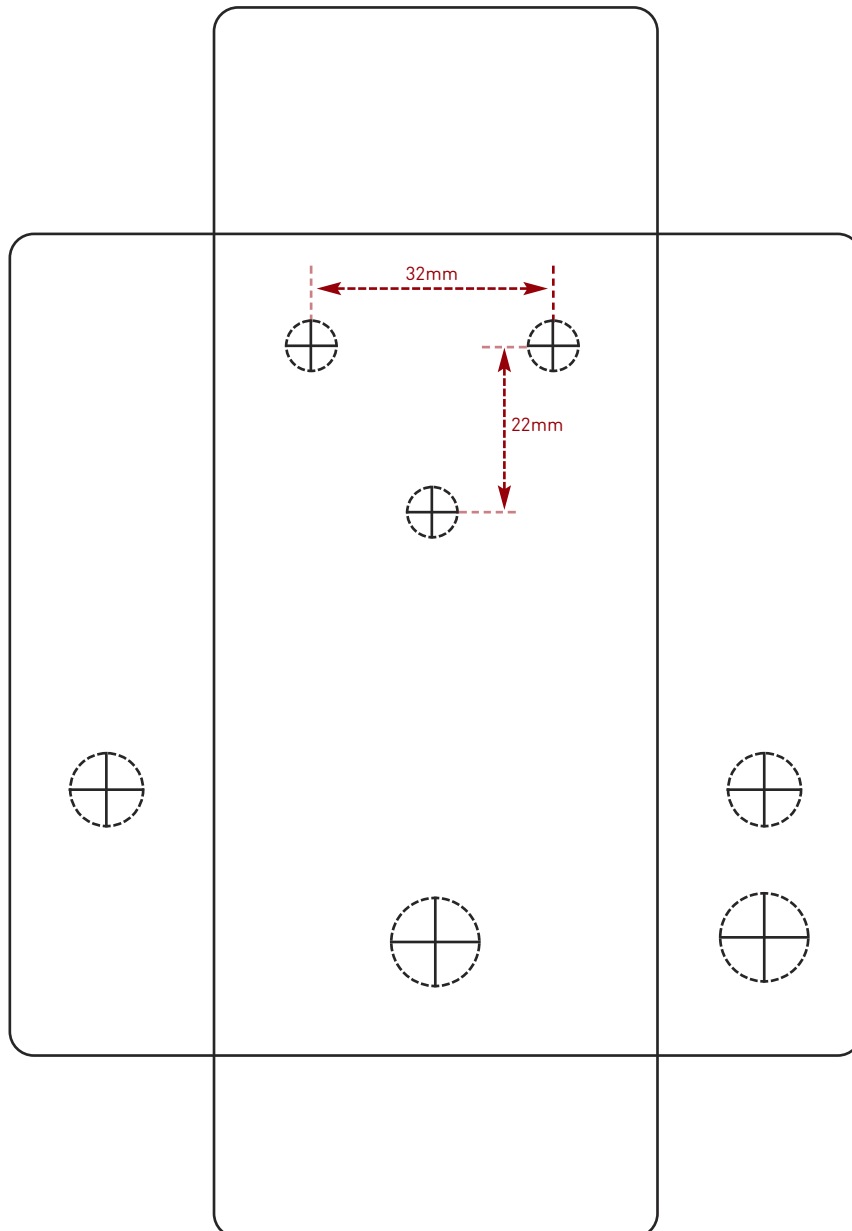
Drilling template without battery - side DC

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