

How to Build Pedal-Pi

This is a 4 steps guide to assembly Pedal-Pi. With all the materials on hand it takes around 2-3 hours to build it successfully. Take your time, play your favourite music on the background and enjoy the fine art of building electronics.

Step 0 – Prepare the Materials.

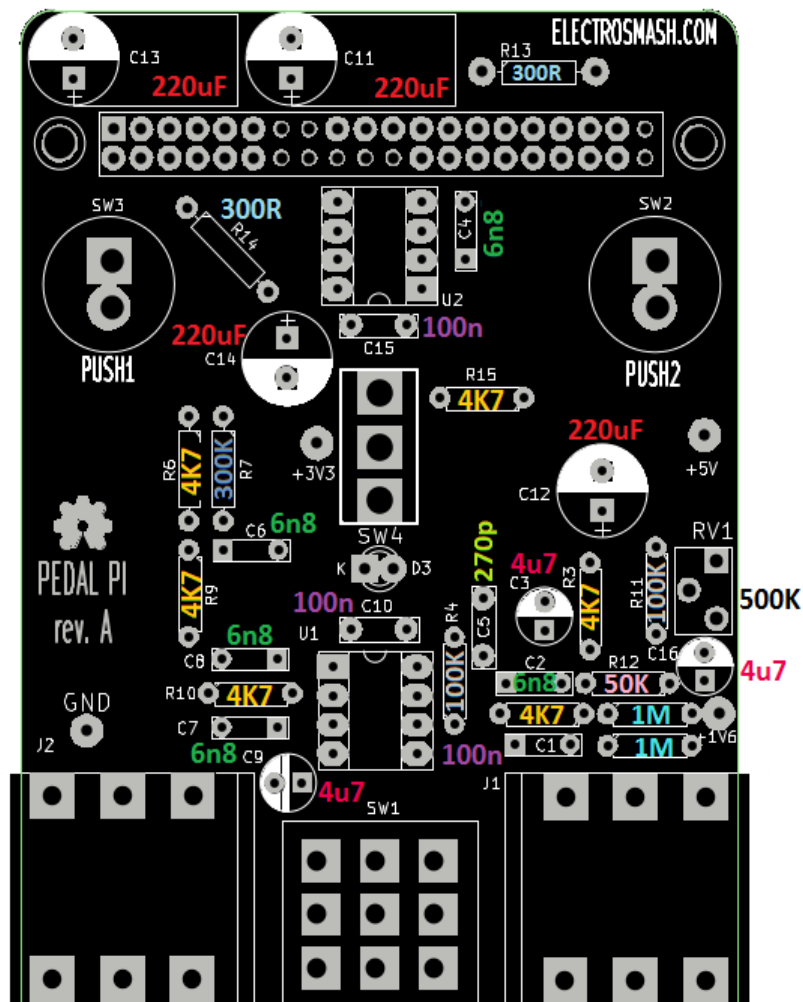
You need a soldering iron, lead and cutting pliers. Additionally cutter, scissors and pliers are convenient. The PCB has solder mask and plated holes, so it is easy to solder with any 15-30W solder iron.



Keep in short hand the PCB plan and the Bill of Materials:

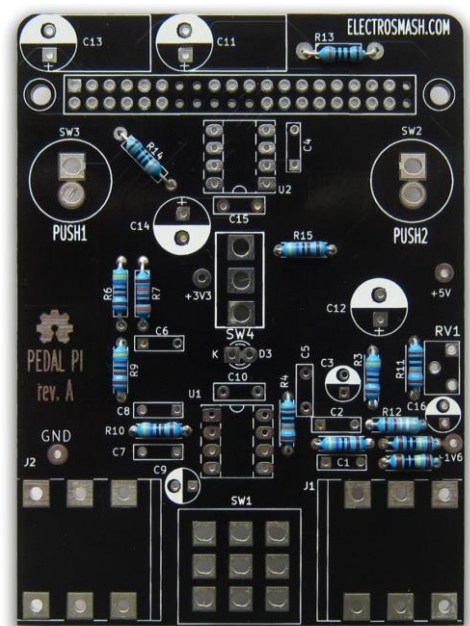
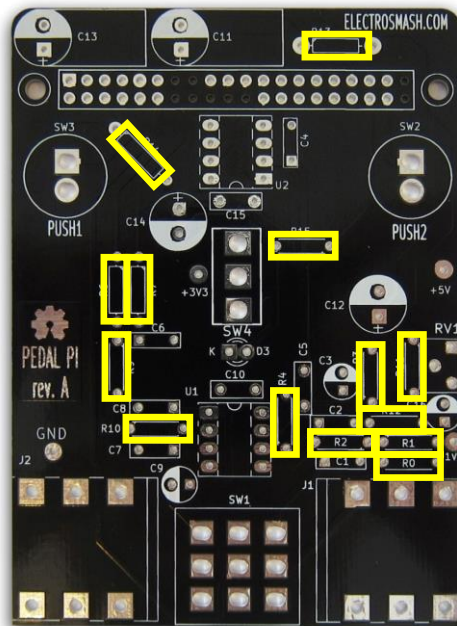
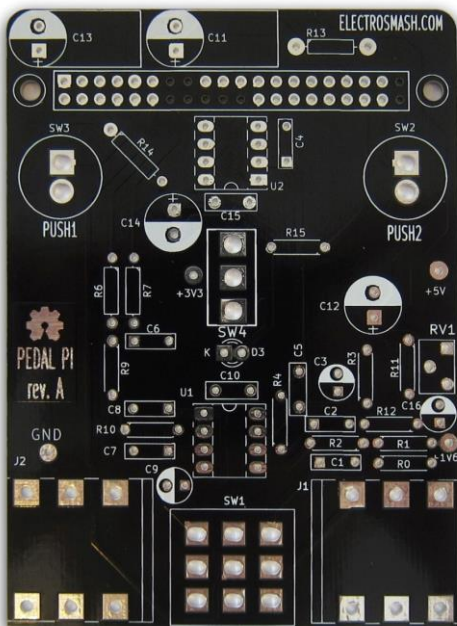
Pedal-Pi Bill of Materials.

Reference	Qty	Value
Capacitors		
C2, C4, C6, C7, C8	5	6.8nF
C1, C10, C15	3	100nF
C3, C9, C16	3	4.7uF
C5	1	270pF
C11, C12, C13, C14	4	220uF
Resistors		
R0, R1	2	1MΩ
R2, R3, R6, R9, R10, R15	6	4.7KΩ
R4, R11	2	100KΩ
R7	1	300KΩ
R12	1	50KΩ
R13, R14	2	300Ω
Others		
RV1	1	500K
D3	1	Led 3mm blue
U1	1	MCP6002
U2	1	MCP3002
IC Socket	2	dip 8 socket
SW1	1	3DPT footswitch
SW4	1	Toggle switch
SW2, SW3	2	Pushbutton
Conn1	1	40 pin header
J1, J2	2	1/4 Jack audio



STEP1 – Soldering Resistors.

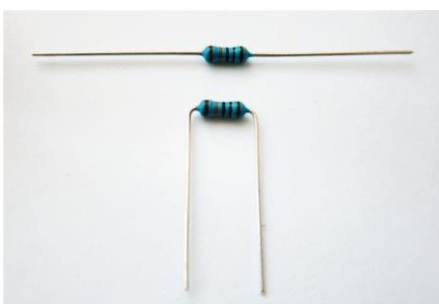
There are 14 resistors to be placed:



These are the resistors to be soldered:

- 1M Ω resistors (2 units): R0, R1.
- 4.7K Ω resistors (6 units): R2, R3, R6, R9, R10, R15.
- 100K Ω resistors (2 units): R4, R11
- 300K Ω resistor (1 units): R7
- 50K Ω resistor (1 units): R12
- 300 Ω resistors (2 units): R13, R14

tip:

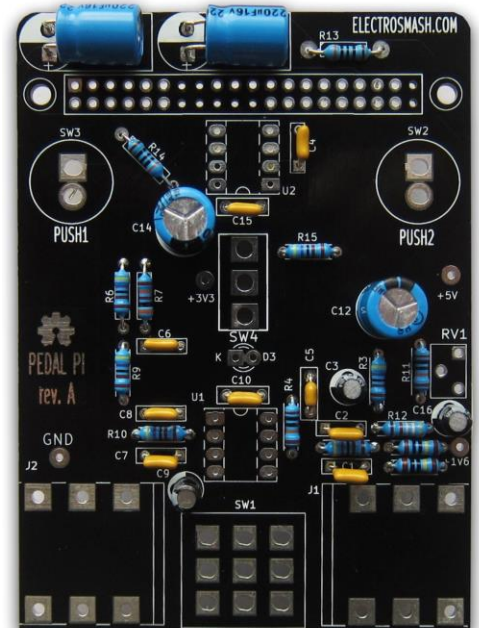
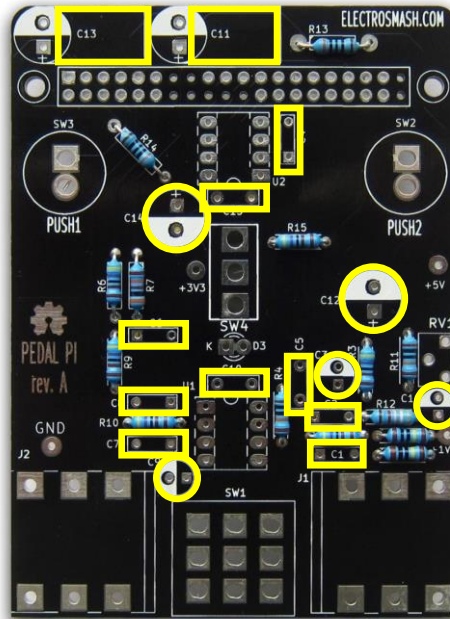
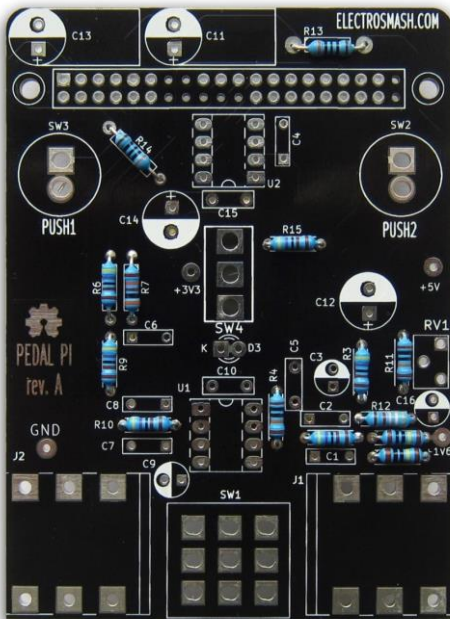


- To make a neat soldering job, bend the leads as close to the body as possible (check image on the left), fit them in the footprint and once soldered cut the excess of lead as short as possible to avoid short circuits.

There is a [nice video on Youtube](#) to learn how to solder from scratch.

STEP 2 – Soldering the Capacitors.

There are 9 film/ceramic and 7 electrolytic caps.



Start soldering first the smaller ceramic caps:

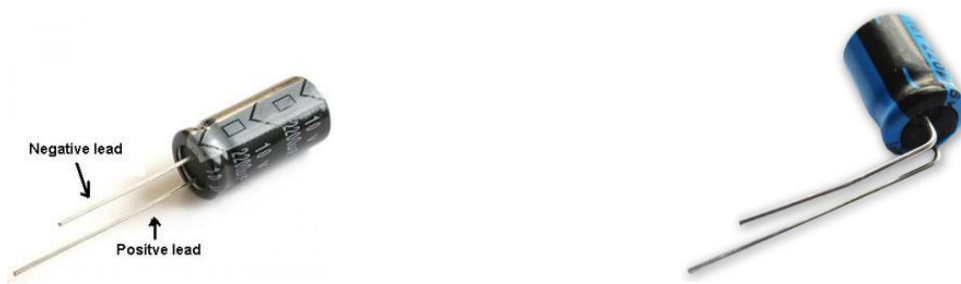
- 270pF capacitor (1 unit): C5.
- 6.8nF capacitors (5 units): C2, C4, C6, C7, C8.
- 100nF capacitors (3 units): C1, C10, C15.

...and finish with the bigger electrolytics (check tips before soldering below):

- 4.7uF capacitor (3 units): C3, C9, C16.
- 220uF capacitor (4 units): C11, C12, C13, C14.

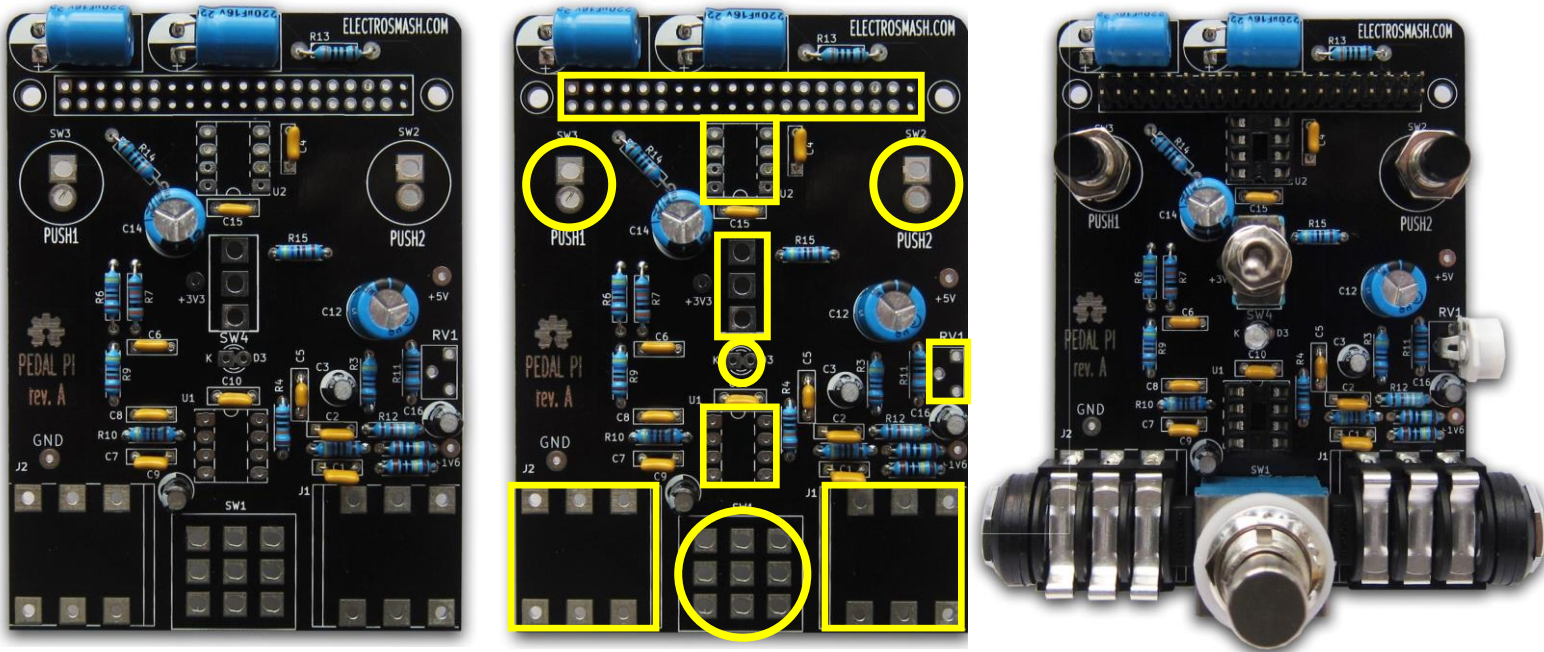
Tips before soldering:

- Be careful with the electrolytic caps polarity, the negative lead (the short one) has to be placed in the round hole with the white semi-circular paint, check the image down-left.
- Caps C11 and C13 have to be bent like the image down-right.



STEP 3 – Big Size Components.

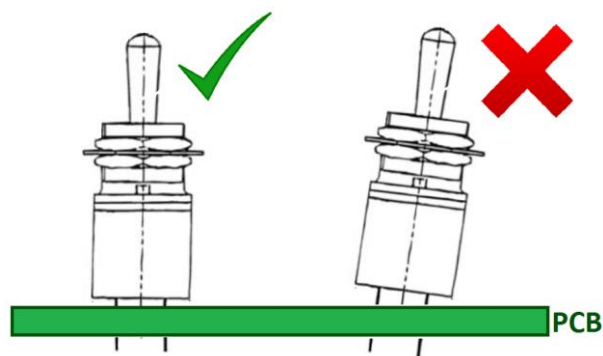
The last components to be placed are the dip sockets, resistor trimmer, led, jack, switches, etc:



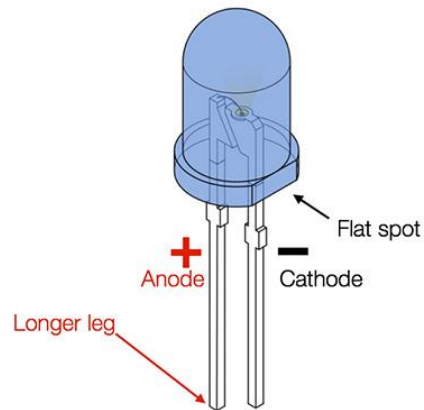
In this step it is important to solder the remaining parts from small to big, the optimum order is:

- Trimmer resistor RV1
- 8-pin dip sockets (U1 and U2)
- 40 pin Raspberry Pi connector (check tips below)
- Toggle Switch (SW4)
- Jacks (J1 and J2)
- Footswitch (SW1)
- Pushbuttons (SW1 and SW2)

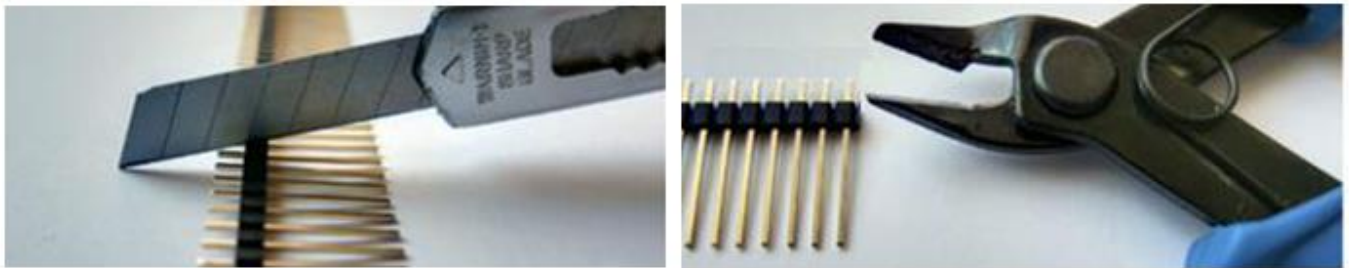
Tips before soldering:



Big components tent to tilt when solder, make sure they are straight. I usually solder one pin and once I am 100% sure that it's perpendicular I solder the rest of the pins. It would be good to check their positioning against the acrylic cover.



Take care with the LED D3 soldering: present the plastic cover to size the length of the leads. The short lead (cathode) it is marked with a "K" on the PCB.

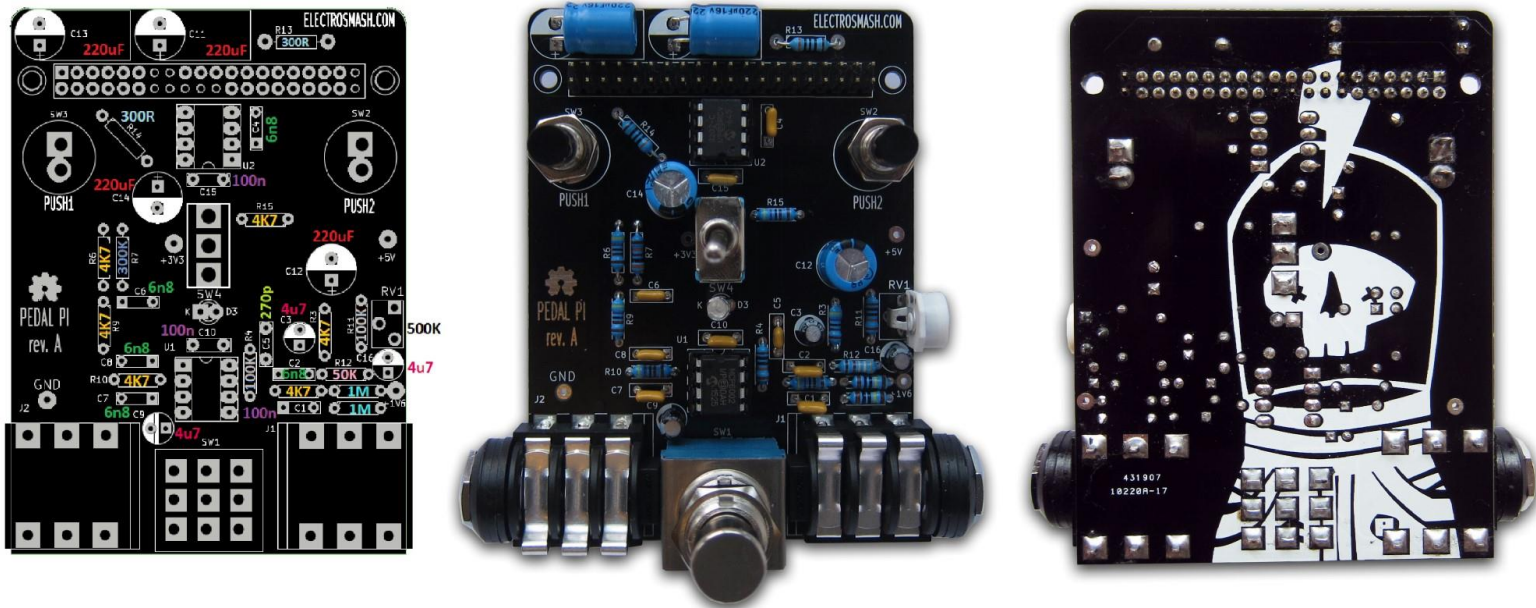


The kit is supplied with a male and female connectors that connect Pedal-Pi to the PI ZERO board. The male (40 pins single row) needs to be cut in the middle to create 2x20pins.

Use a cutter or a tool to cut them properly, they tend to brake in the wrong place if you use just your hands.

STEP4 – Checking Out the Job Done.

After this 4 stages you will have a mounted board exactly like the one shown below:



Double check your PCB with the model component by component.

Before power it up, check this 3 ticks:

- 1. Visual inspection of the PCB bottom, there is no short circuits or long uncut leads.
- 2. Electrolytic caps are placed with the marking matching the PCB silkscreen.
- 3. The Op-Amp and ADC are placed right (not upside down) and not swapped with each other.

If you need more help there is a topic in the forum called [Guide to troubleshoot Pedal-Pi](#).



Finally the plastic cover can be placed, it is kept in place by the foot-switch nut & plastic washer and two M2.5x25 screws & nuts.

