

Carnivale

Building instructions

v1.1

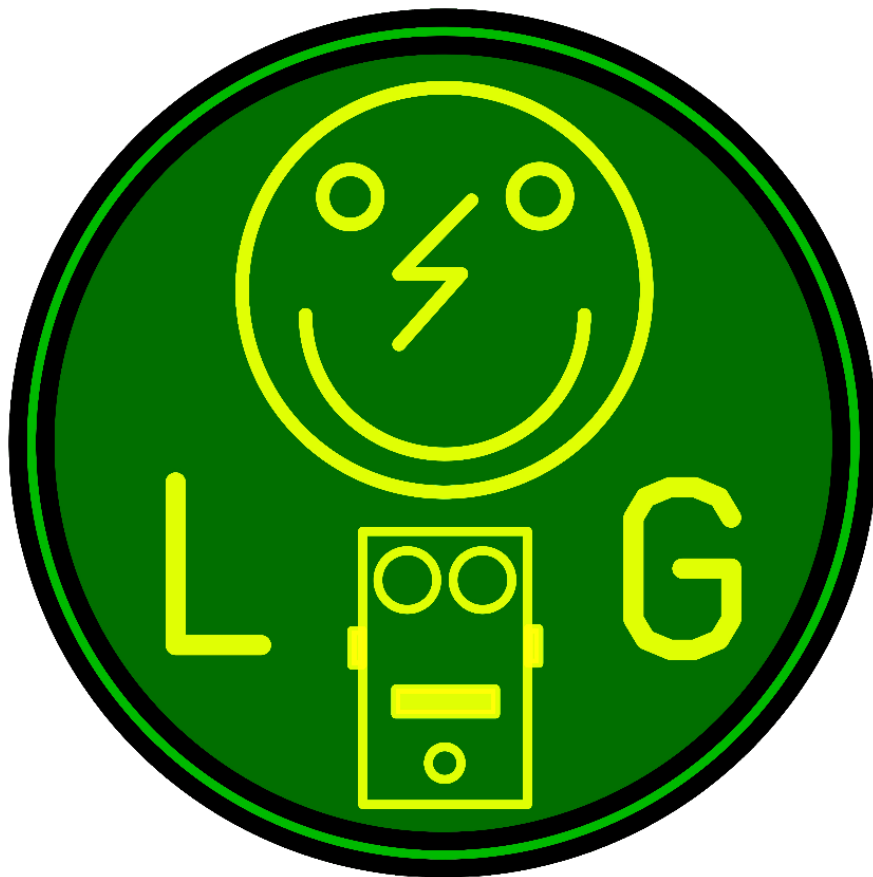


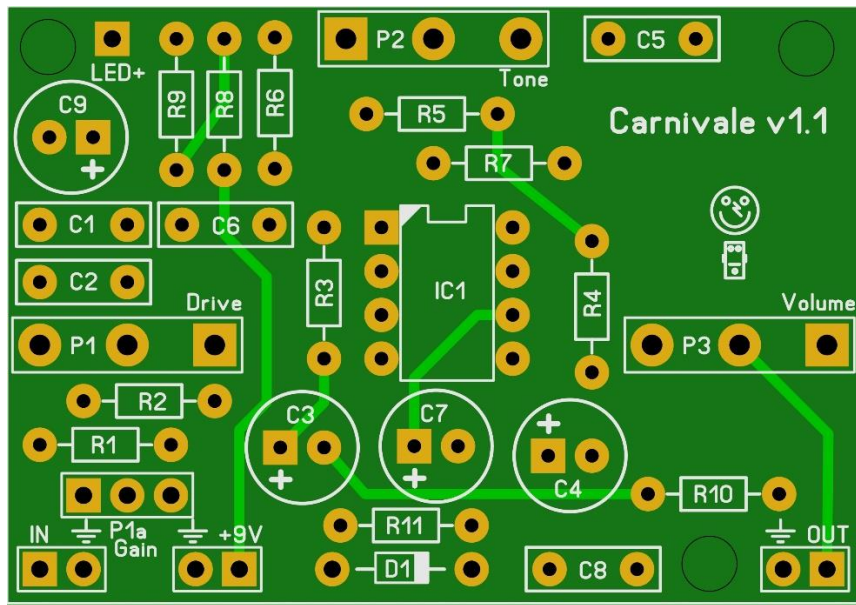
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Read this entire manual thoroughly before you start building the effect!

Last update: 26-04-2018

PCB layout



Dimensions: 49,4 mm x 35 mm
1.94 inch x 1.38 inch

Components

Jubilee version

Name	Value	Comment	Name	Value	Comment
C1	390p	MLCC	R1	2M2	1% metalfilm
C2	4n7	MKT/WIMA/SMF	R2	4k7	1% metalfilm
C3	47u	Electrolytic	R3	47R	1% metalfilm
C4	47u	Electrolytic	R4	4k7	1% metalfilm
C5	22n	MKT/WIMA/SMF	R5	4k7	1% metalfilm
C6	100n	MKT/WIMA/SMF	R6	1k8	1% metalfilm
C7	100u	Electrolytic	R7	330R	1% metalfilm
C8	100n	MKT/WIMA/SMF	R8	4k7	1% metalfilm
C9	10u	Electrolytic	R9	390R	1% metalfilm
D1	1N5817	or BAT46	R10	NC	NC
IC1	JRC386D		R11	10R	1% metalfilm
P1	A250k	Drive			
P1a	NC	Short pad 2 and 3			
P2	B50k	Tone			
P3	A100k	Volume			

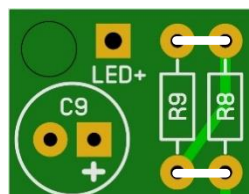
Plexi version

Name	Value	Comment	Name	Value	Comment
C1	370p	MLCC	R1	2M2	1% metalfilm
C2	4n7	MKT/WIMA/SMF	R2	4k7	1% metalfilm
C3	47u	Electrolytic	R3	10R	1% metalfilm
C4	47u	Electrolytic	R4	4k7	1% metalfilm
C5	4n7	MKT/WIMA/SMF	R5	4k7	1% metalfilm
C6	100n	MKT/WIMA/SMF	R6	1k74	1% metalfilm
C7	100u	Electrolytic	R7	330R	1% metalfilm
C8	100n	MKT/WIMA/SMF	R8	4k7	1% metalfilm
C9	10u	Electrolytic	R9	390R	1% metalfilm
D1	1N5817	or BAT46	R10	470R	1% metalfilm
IC1	JRC386D		R11	10R	1% metalfilm
P1	NC	Short pad 2 and 3			
P1a	B1k	Gain			
P2	B5k	Tone			
P3	A100k	Volume			

Try to keep the electrolytic capacitors as small/low as possible to be able to fit a 1590A! The effect operates on only 9V DC so do not get high rated electrolytic caps as they tend to be big.

The potentiometers **P1-P3** can be PCB mounted. If you prefer another layout of the pots, you can use the old fashioned way and wire non PCB mounted jacks to the corresponding holes (see off board wiring for more details). **P1a** can only be wired the old fashioned way and is not PCB mounted.

Note: **R8**, **R9** and **C9** are optional and can be left out in any version. It uses the LED anti-pop method as stated on [AMZ Fx](#). If you leave it out and only want to use the **LED+** pad then you should short **R8** and **R9** like this:





Build sequence

Before you start, you must decide which version you are going to build!

Soldering this board can be very complicated for some people since the solder pads are close together. Use a magnifying glass to make the job easier.

The trick to soldering a PCB is to work from small to big components. My building sequence suggestions in this section are based on the parts I used myself. Sometimes some components are smaller (or bigger) so always use your own common sense and change the order accordingly. Usually capacitors can differ a lot in size depending on their rating and value.

Note: Do not blow on your solder in an attempt to cool it down. That can result in a bad join that might corrode! Also take extra care not to short components.

Start by soldering the resistors and then the diode. Next, solder the IC socket for **IC1** and then the MLCC capacitor. Finish by soldering the MKT/SMF/Wima capacitors and then the electrolytic capacitors. See the off board wiring section for details about the potentiometers and how to wire them.

You are almost ready to rock, well... not really. The difficult part starts now.

Besides the components mentioned in the components table, you will need:

- **1 mono input jack and 1 stereo input jack.**
- **3PDT footswitch** (9 pins)
- **2,1mm DC jack** (isolated) not recommended in positive ground setup.
- **22 gage stranded hook-up wire.**
- **OPTIONAL LED holder and LED (3mm or 5mm depending on your taste).**
- **Hammond 1590A** case (or similar) in your favorite color. If you need more room you could consider using a **Hammond 1590B**.

Off board wiring

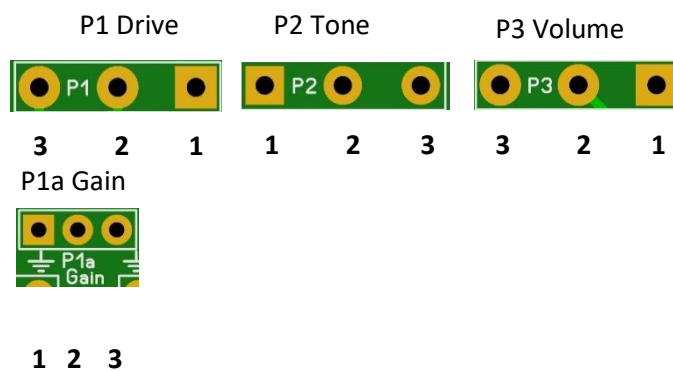
As mentioned before, you can either mount the potentiometers directly to the PCB with special potentiometers or use the traditional solder lug potentiometers.

Potentiometers non PCB mounted

In the pictures below you see the correct pin numbering of the pots.

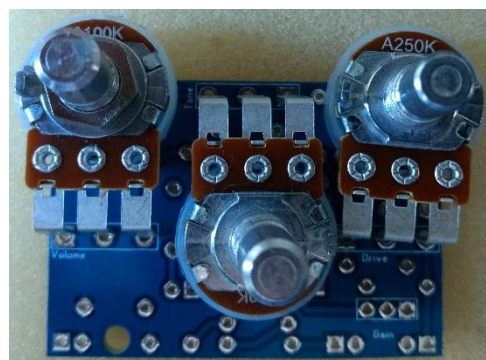
Solder the wires accordingly and it is always a good idea to twist the wires together to create a sort of extra shielding against external noise.

You can break of the pin I marked with the yellow circle with a small pair of pliers.



Potentiometers PCB mounted

I would advise that you first drill the 3 holes for the potentiometers in the enclosure. Now insert the pots in the enclosure, tighten the bolts and then click the PCB on the pots from the bottom (non component) side like this:



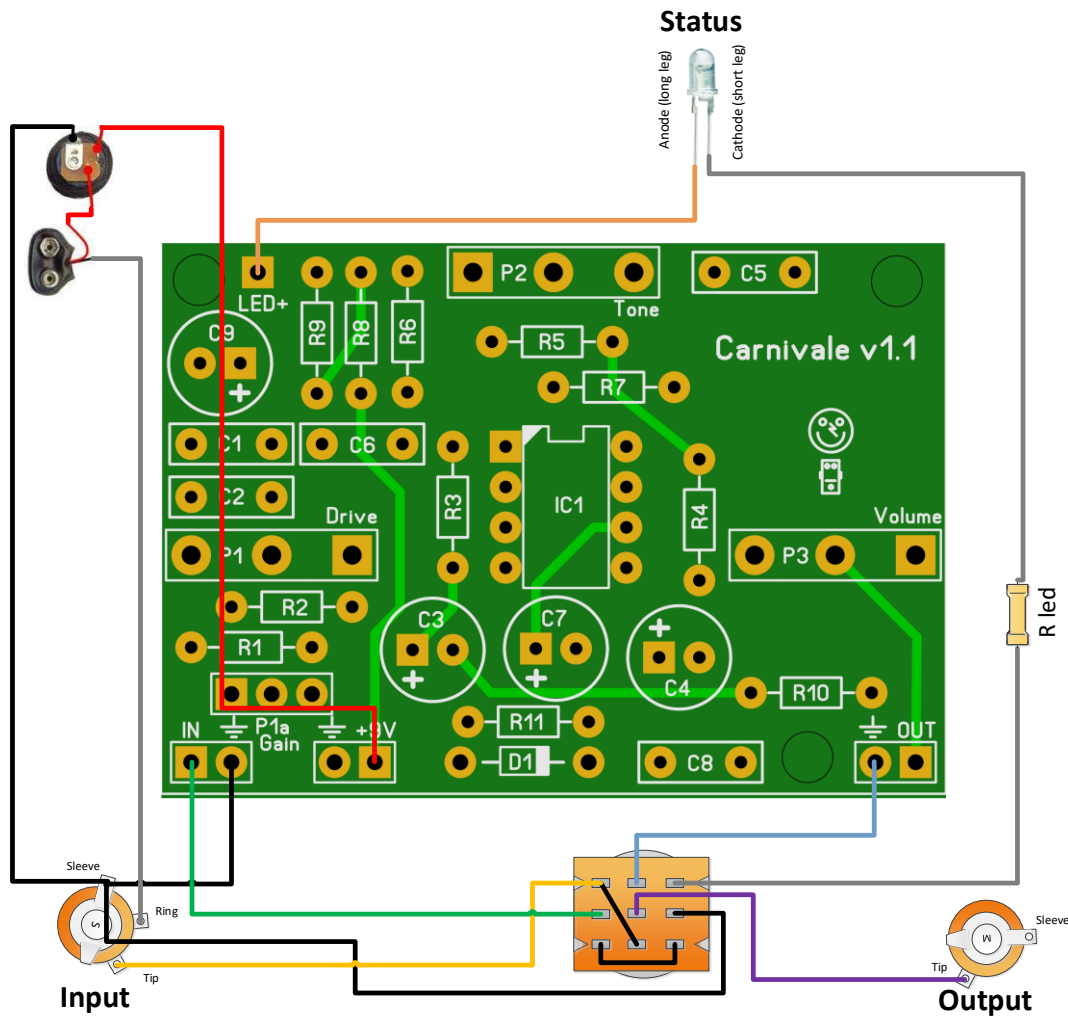
You can best solder the pots while in the enclosure. When you are done, you can measure where to put the rest of the components (footswitch, DC jack, in-/output jacks, LED) and determine where to drill the holes.

NB make sure the underside of the pots do not touch the PCB else there might be a short circuit. Use special plastic Alpha caps or some tape to isolate the pots from the PCB.

Manufacturers and product names are mentioned solely for circuit identification, and where applicable their trademarks are the property of their respective owners who are in no way associated or affiliated with the author. No cooperation or endorsement is implied.



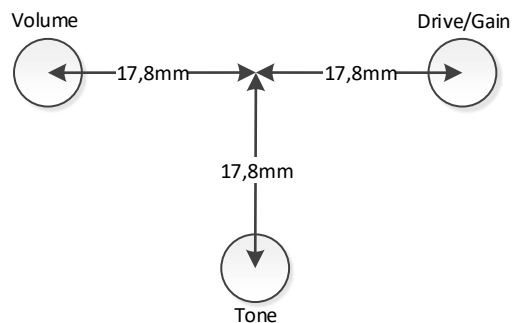
Wiring



Note that **R led** is a **4k7** resistor. You can change this value depending on the type of LED you use but 4k7 is safe enough for almost all LEDs @+9V.

The sleeve of the output jack is not connected on purpose. It does however require a good contact between the output jack and enclosure to work. If this is not possible then connect the sleeve of the output jack to the sleeve of the input jack.

Drill instructions



Holes for the potentiometers should be **7mm**.

Troubleshooting

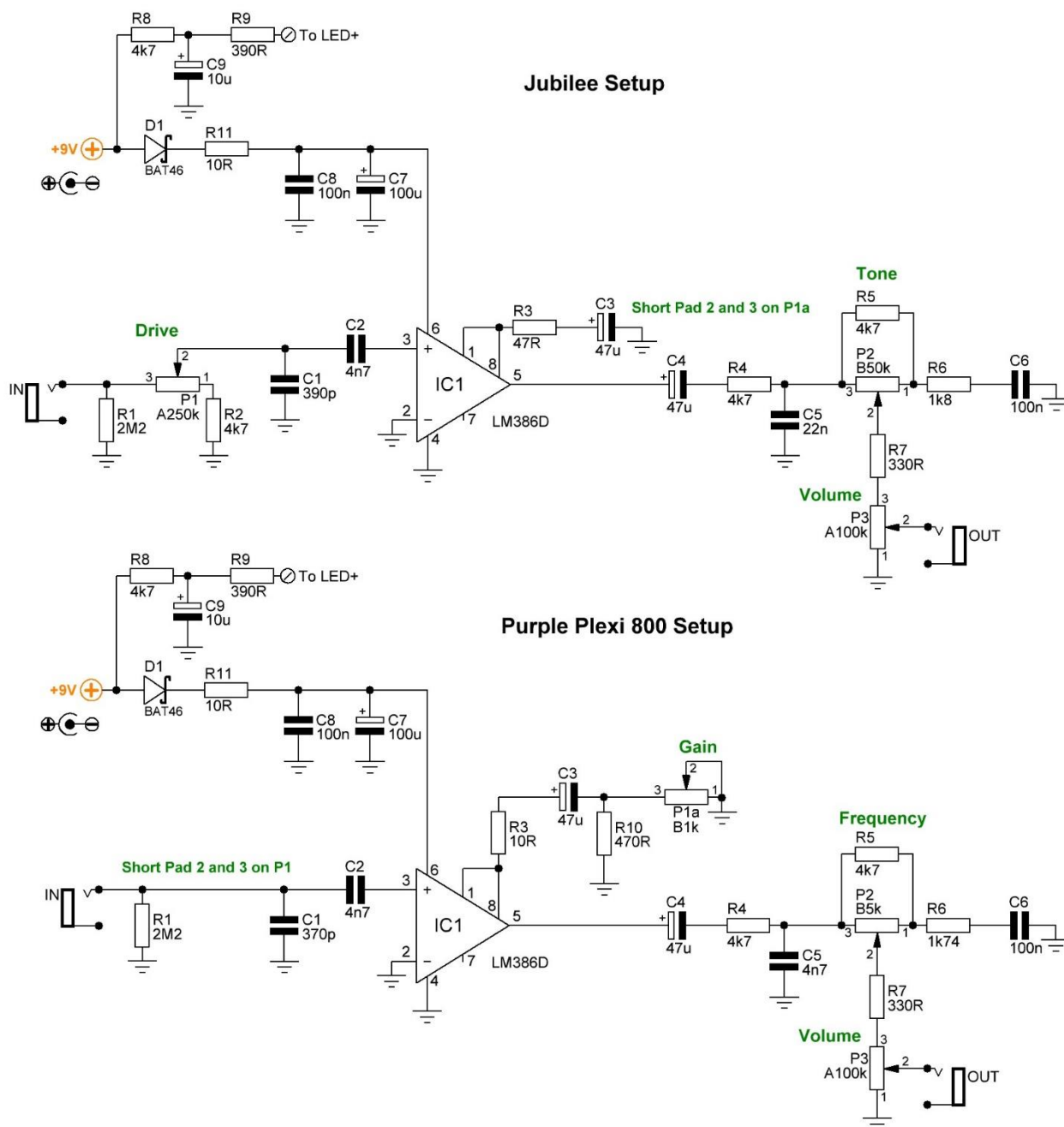
All PCB's have been 100% factory e-tested and out of every batch I receive I build an effect to double check, so there should not be a connection problem on the PCB itself.

The board is not working (at all), what now?

- Check if your 9V is plugged in correctly (and/or soldered correctly on the board). Pay special attention to the polarity.
- Check that you oriented the capacitors, IC's ,transistors and diodes the right way. SMF, MKT and ceramic capacitors as well as resistors do not need to be oriented. A likely sign of incorrect capacitors and/or orientation is when an effect is sputtering, rumbling or "motorboating".
- Check if you used the correct values of the components. For resistors you can look here: <http://www.diyaudioandvideo.com/Electronics/Color/>
- Double and triple check your soldering! A loose or cold solder can be really bad for your board.
- Replace the IC and/or transistors, one might be defective. Before doing that first unplug the 9V and wait for 5 seconds.
- Check that you have good/high grade components. A lot of Chinese sourced parts are fakes (especially high end opamps, audio capacitors, vintage diodes and transistors) so be careful that you source your parts from reliable suppliers.



Schematic



Carnivale v1.1

Drawn by: **Arnold Dikstaal (2018)**

Based on the Lovepedal Jubilee and Purple Plexi 800 with thanks to AMZFx, diystompboxes.com and tagboardeffects.blogspot.nl