Concrete Distortion

Building instructions

V1.0

moderate

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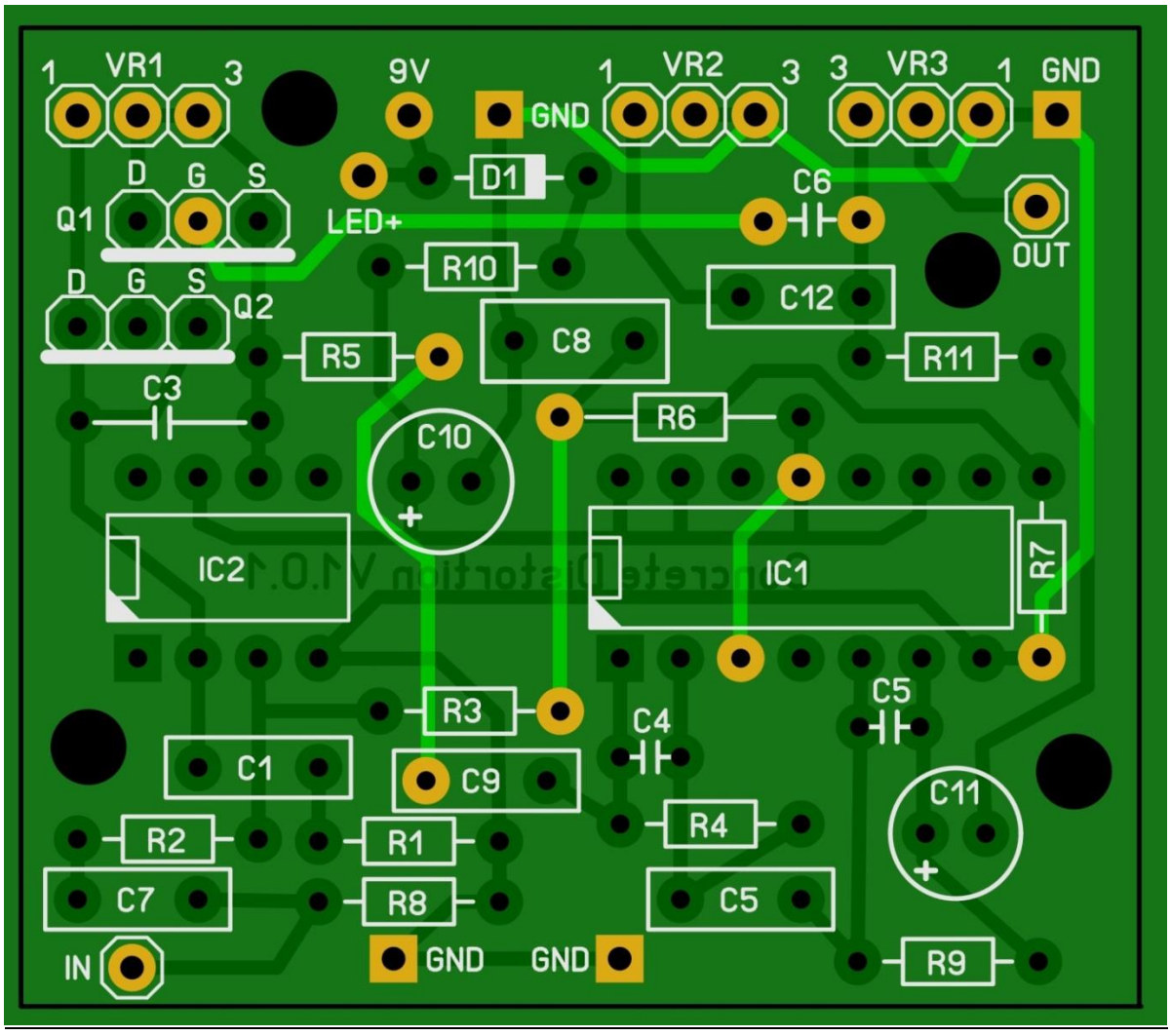
Components

C1	47n	Q1	2N3819	
C2	47n	Q2	2N3819	
C3	100p	R1	4k7	
C4	100p	R2	14k7	
C5	100p	R3	470k	
C6	15p	R4	470k	
C7	2n2	R5	200k	
C8	100n	R6	1M	
C9	10n	R7	1M	
C10	100u	R8	1M	
C11	4,7u	R9	1M	
C12	22n	R10	100R	
D1	1N4004	R11	10k	
IC1	CD4069UBE	VR1	A1M	Distortion
IC2	TL051	VR2	A50k	Tone
		VR3	A50K	Volume



General guideline for components

- Capacitors: All values under 1nF should be ceramic disks. From 1nF up to 1uF should be MKT (foil/metalfilm capacitors) and over 1uF use electrolyte caps (or tantalum) 16V+ rated and watch out for polarity!
- Resistors: use 1% metalfilm for the best results.
- Socket all IC's and transistors. This way you can easily mod them or replace them if they break.
- Orientation of the transistors: the white stripe on the PCB indicates where the flat side of the transistor should be.

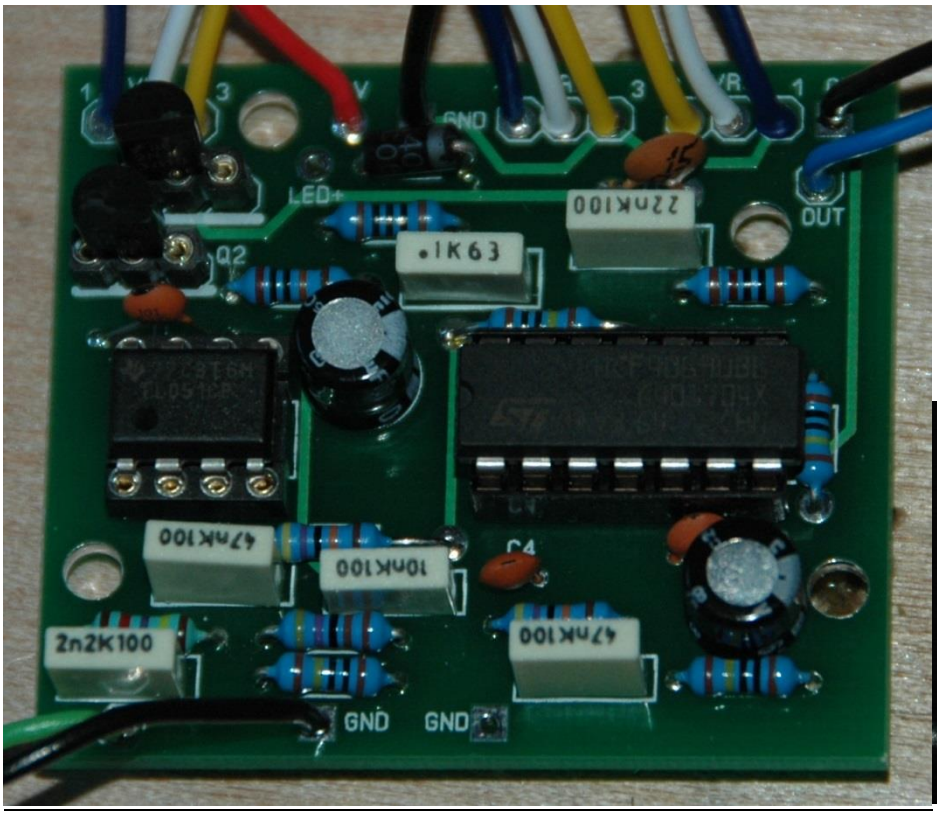
General building tips

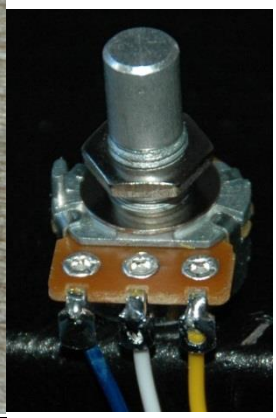
Soldering this board can be complicated for some people since the solder pads can be very close together. Use a magnifying glass to make the job easier.
Start by soldering the resistors. It is best to solder diode D1 in an upright position (remember the polarity) so do not solder it yet. Next, solder the sockets for the IC's and transistors. For the transistors you can buy a 20 pin SIL socket and cut of the pins you need. IC1 requires a 14 pin DIL socket and IC2 requires an 8 pin DIL socket. Now solder the ceramic capacitors, then you can solder the MKT capacitors and finish by soldering the electrolyte capacitors and Diode D1. Now you can place the IC's and transistors. The white triangle on the IC's point to where pin 1 of the IC should be inserted.

Besides the components mentioned in the table on the first page, you will need:

- **2 input jacks**. 2 mono jacks if you are not going to use a battery but only the 9V adapter. 1 mono (for output) and 1 stereo jack (for input) if you will be using both a 9V battery and the 9V adapter.
- **3PDT footswitch** (9 pins). I also carry an easy off board circuit for this.
- **2,1mm DC jack** (isolated).
- **9v battery clip** (optional).
- **22 gage stranded hook-up wire**.
- **Hammond 1590B** case (or similar) in your favourite colour. A 1590BB will give you more room to experiment with.

The finished board



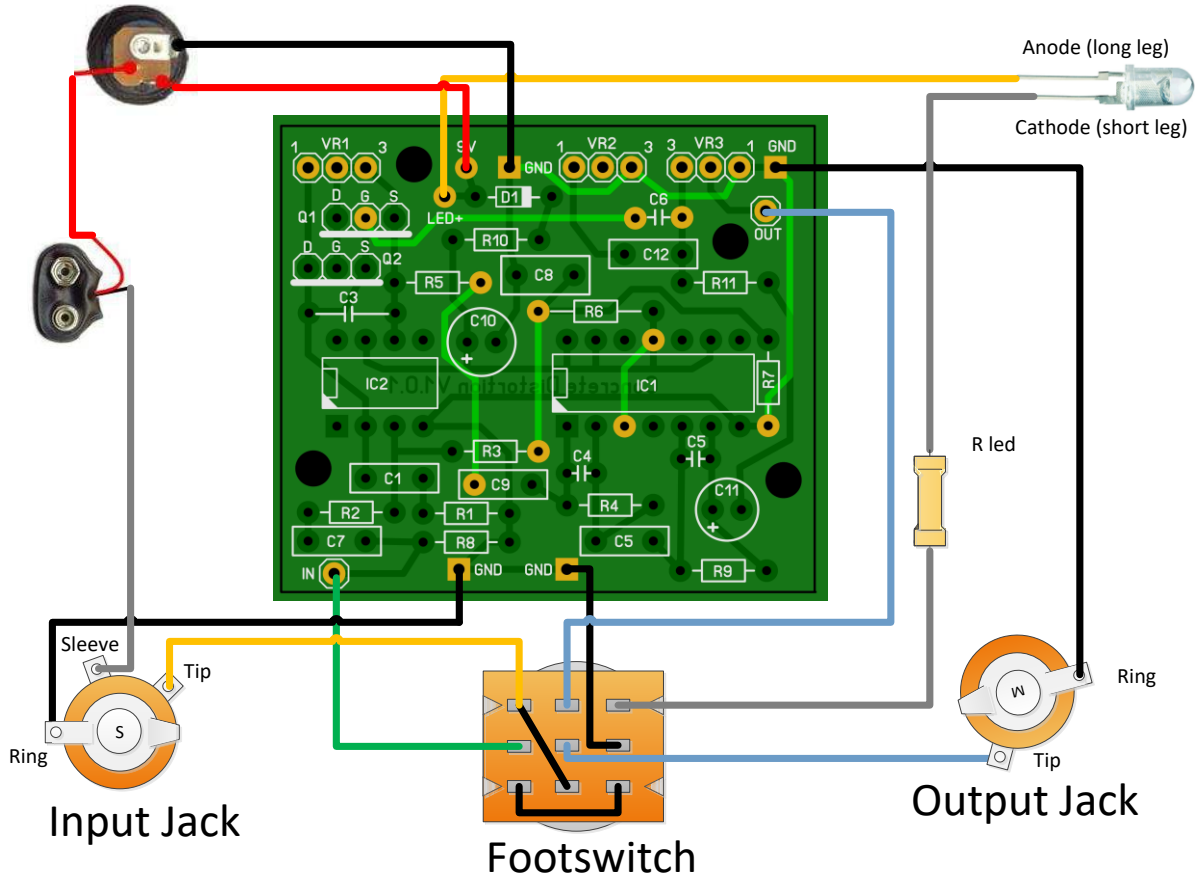


VR:	Blue = pin1, White = pin2, Yellow = pin3
IN:	Green = hot, Black is ground
OUT:	Blue = hot, Black is ground
Adapter:	Red = 9V+, Black is ground

Modifications

You could try to substitute the TL051 for another single opamp like NE5534, TL061,TL071,TL081,LM741. Feel free to experiment!

Offboard wiring



Notice that in the “off” position the effect input is connected to ground to prevent possible oscillation.

The LED requires a resistor (R led in the diagram) depending on the type of LED you are using. An ultra-bright red or blue LED requires a 3k3 resistor.

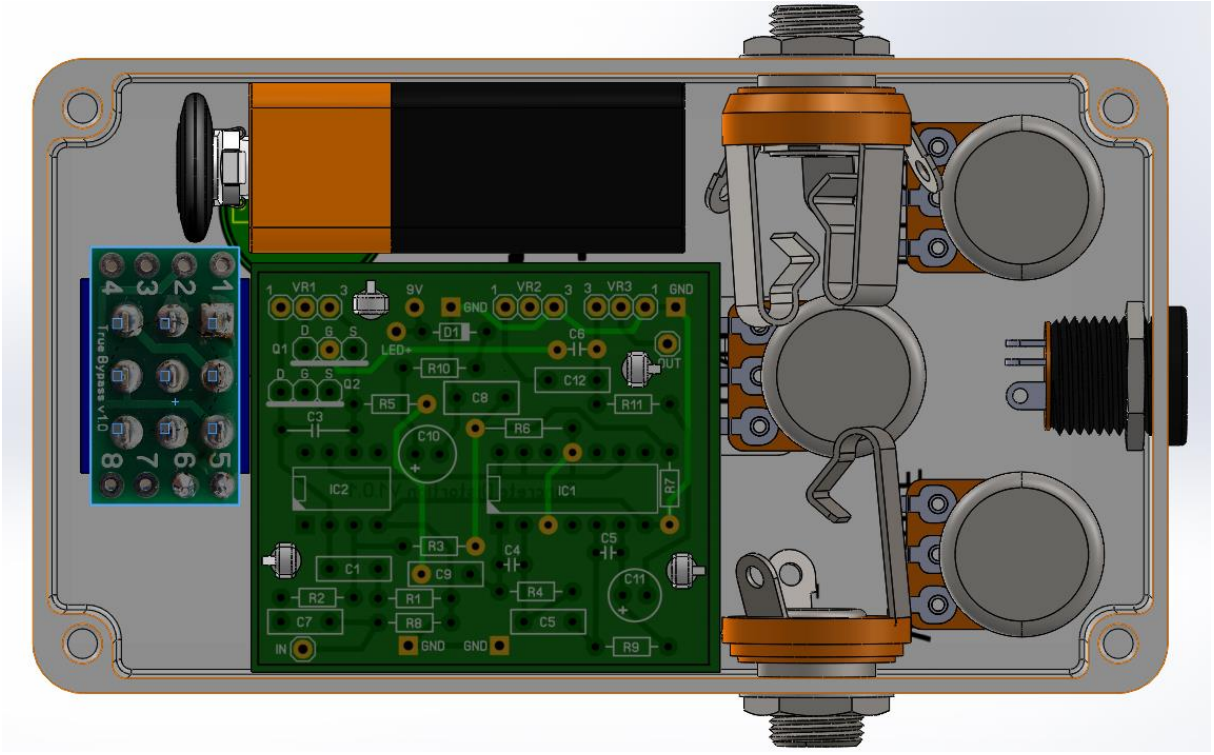
Troubleshooting

All PCB's have been e-tested 100% in the factory, so there should not be a connection problem on the PCB itself.

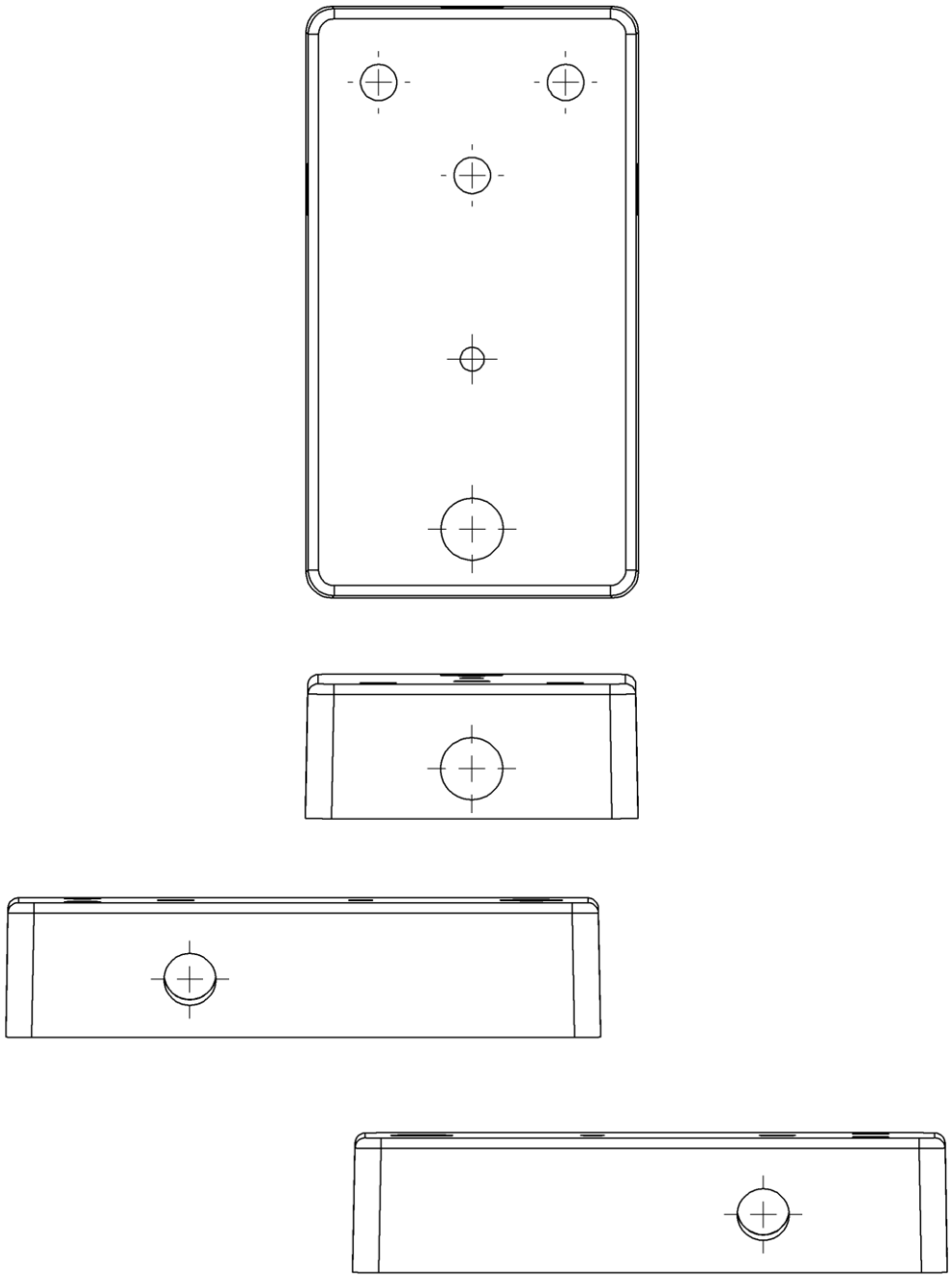
The board is not working (at all), what now?

- Check if your 9V is plugged in correctly (and/or soldered correctly on the board).
- Check that you oriented the capacitors, IC's ,transistors and diodes the right way. MKT capacitors and resistors do not need to be oriented.
- 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 lose or cold solder can be really bad for your board.
- Replace the IC's and transistors, one might be defective. Before doing that first unplug the 9V and wait 5 seconds.
- Check that you have good/high grade components. A lot of Chinese sourced parts are fakes (especially high end opamps) so be careful that you source your parts from reliable suppliers.

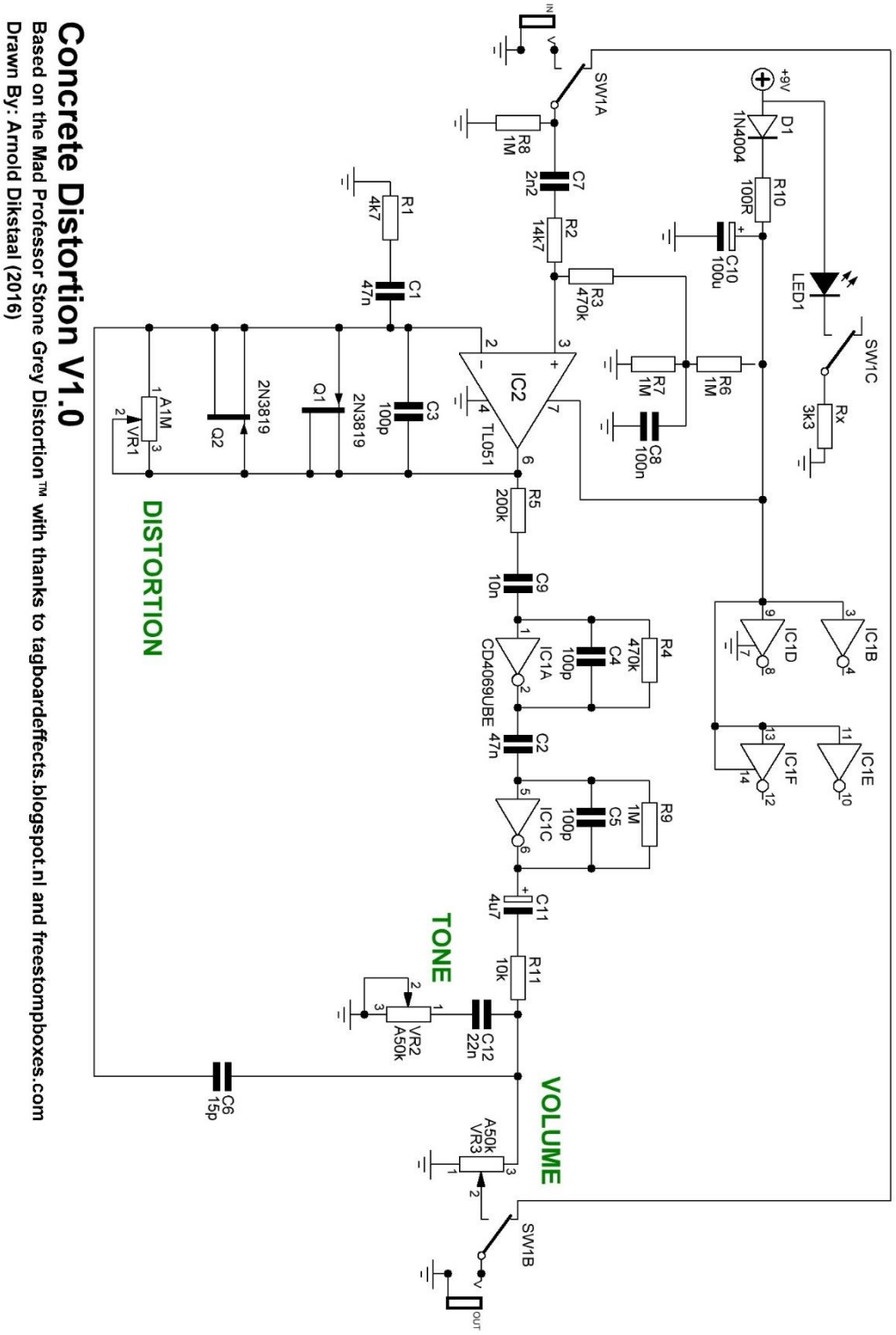
Inside Layout



Drilling template



Schematic


Concrete Distortion V1.0
Based on the Mad Professor Stone Grey Distortion™ with thanks to tagboardeffects.blogspot.nl and freestompboxes.com
Drawn By: Arnold Dikstaal (2016)
DISTORTION
TONE
VOLUME
IC2
TL051
IC1A
IC1B
IC1C
IC1D
IC1E
IC1F
CD4069UBE
SW1A
SW1B
SW1C
D1
1N4004
LED1
Rx
3k3
R1
4k7
R2
14k7
R3
470k
R4
470k
R5
200k
R6
1M
R7
1M
R8
1M
R9
1M
R10
100R
R11
10k
C1
47n
C2
47n
C3
100p
C4
100p
C5
100p
C6
15p
C7
2n2
C8
100n
C9
10n
C10
100u
C11
4u7
C12
22n
VR1
A1M
VR2
A50k
VR3
A50k
Q1
2N3819
Q2
2N3819
+9V
IN
OUT