

# ★ Glorious Basstar ★

## Kit mounting instructions.



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## **Important notice.**

This DIY kit is not that easy and require a bit of knowledge. If you're a beginner, you're likely to go into some hardcore problems and should try easier kits before. There's a debugging chapter that you can check in case of emergency, but:

- I cannot be held responsible of any malfunction or a component burning. This board has been tested and I use it in when I build pedals myself. It's 100% functioning when everything is done correctly.
- The debugging chapter cannot take in account all the problems you may reach. (Murphy's law you know....)
- I won't refund any malfunctioning kit that has been mounted.
- Here's what you should do in case of problems:
  - 1- Keep calm.
  - 2- Check another time that each component is at it's right place and all the solders are ok.
  - 3- Check the debugging chapter at the end of this document.
  - 4- Ask for help in your surrounding family or friends. Someone who can see, plug, check and test your board is more valuable than someone on a forum or mail 10000km far.
  - 5- Check the freestombox forum, and ask for help if needed. When asking for help be sure to give the maximum of informations:  
<http://freestompboxes.org/viewtopic.php?f=7&t=27124&sid=c0f7c639e6b023fe5b67fc71c54b9590>I may reply to you on freestombox, I check it sometimes.
- 6- Mailing me is the very last thing you will do. And if you do, be sure to write the maximum of informations I need to answer you. Yes you may add pictures if you think it's relevant. Mails with only "My kit is not working" will be either ignored, either replied with a kind of passive aggressive tone, if not clearly aggressive... After all this is "Do it YOURSELF" and not "Zorg, can you do it for me please?", and I'm always under a heavy load of work, so please spare me at the maximum!!!
- Any feedback on this document is welcome. If there's something missing, something you don't understand, something you're not sure, if you reworked the document with better explanations, pics and pink elephants, grammatic or ortografik faults, please feel free to mail me.

## What's in the kit?

This is all you must find in your Glorious Basstar kit:

Item	Qty	Position
Socket SIL	9	9V1 IN1 OUT1 GND1..4 LED1 SW
Potentiometer A10k (log)	3	BASS1 TREBLE1 MID1
Potentiometer A1M (log)	3	BGAIN1 TGAIN1 MGAIN1
Capacitance 10nF Panasonic	4	C1 C8 C10 C18
Capacitance 10uF Alu	2	C2 C4
Capacitance 100uFAlu	1	C3
Capacitance 100nF céramique	4	C5..C7 C9
Capacitance 10pF Mica	1	C11
DIODE 1N4148	7	D1..D7
LED green	6	D8..D13
ICL7660S	1	ICL7660
Resistance 1M	1	R1
Resistance 1.5k	1	R2 (without relay bypass)
Resistance 1k	10	R3..R5 R8 R10..R15
Resistance 2k	1	R6
Resistance 78k	4	R7 R9 R17 R19
Resistance 20k	1	R16
Resistance 27k	2	R18 R20
Resistance 100 ohms	1	R21
Dip switches	3	R22..R27
Switch on-off-on dpdt	1	SWITCH
Potentiometer A50k (log)	1	TREBLE2
AOP TL074	1	TL074 (left)
AOP MC33079	1	TL074 (right)
Potentiometer A100k (log)	1	VOLUME1
Sockets 14 pins	2	
Socket 8 pins	1	
PCB	1	
Enclosure, pannel, screws	1	
Jacks audio	2	
Jacks DC	1	
Led bypass	1	
Led socket	1	
Knobs	8	
Footswitch	1	
Cable, heat shrink tube, insulator	1	
<b>Relay Bypass Option</b>		
Resistance 1.5k	1	R28
Resistance 200k	1	R29
Resistance 100k	2	R30 R31
Relay	1	Relay
NE555	1	NE555
Diode 1N4148	1	D14
Capacitance 1uF Alu	1	C12
Capacitance 10nF (white)	1	C13

Components numbers in the right column, C1, R1 etc. are tied to the PCB's marks. With the relay bypass option there's no R2 but there's R28, it's the contrary without the option.

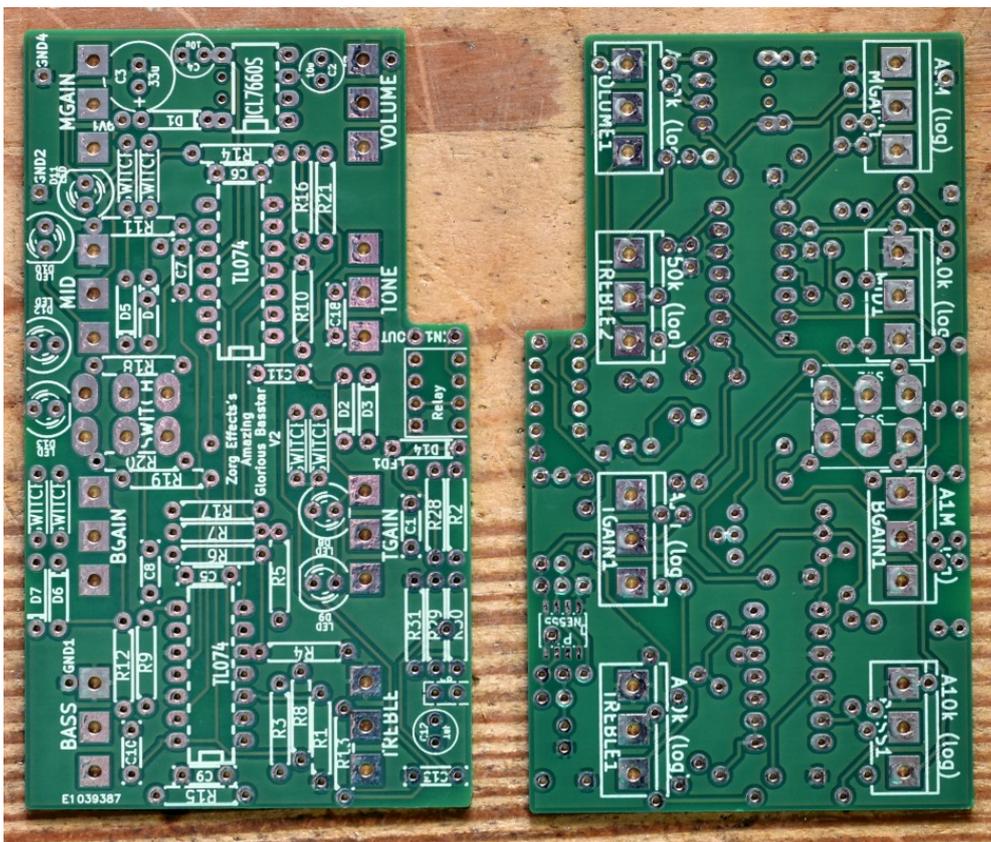
## What you'll need.

The following tools are needed to build your Glorious Basstar pedal:

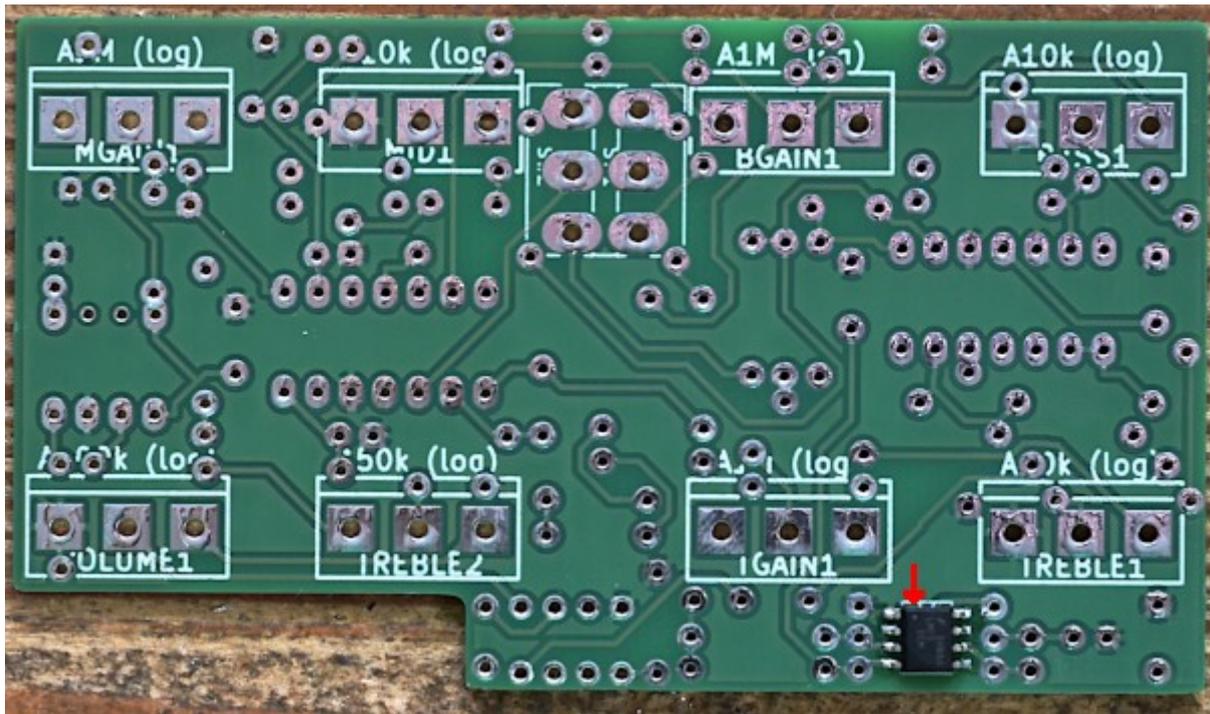
- A soldering iron.
- A un-soldering pump.
- A voltmeter/ohmmeter.
- Pliers to cut wire and remove the wire sheath.
- Pliers to screw nuts.
- A cruciform screw driver.
- And eventually wrenches.
- A 9v dc power unit, center negative.
- It's best to have an oscilloscope, and a frequency generator but not mandatory.

## Soldering on the pcb.

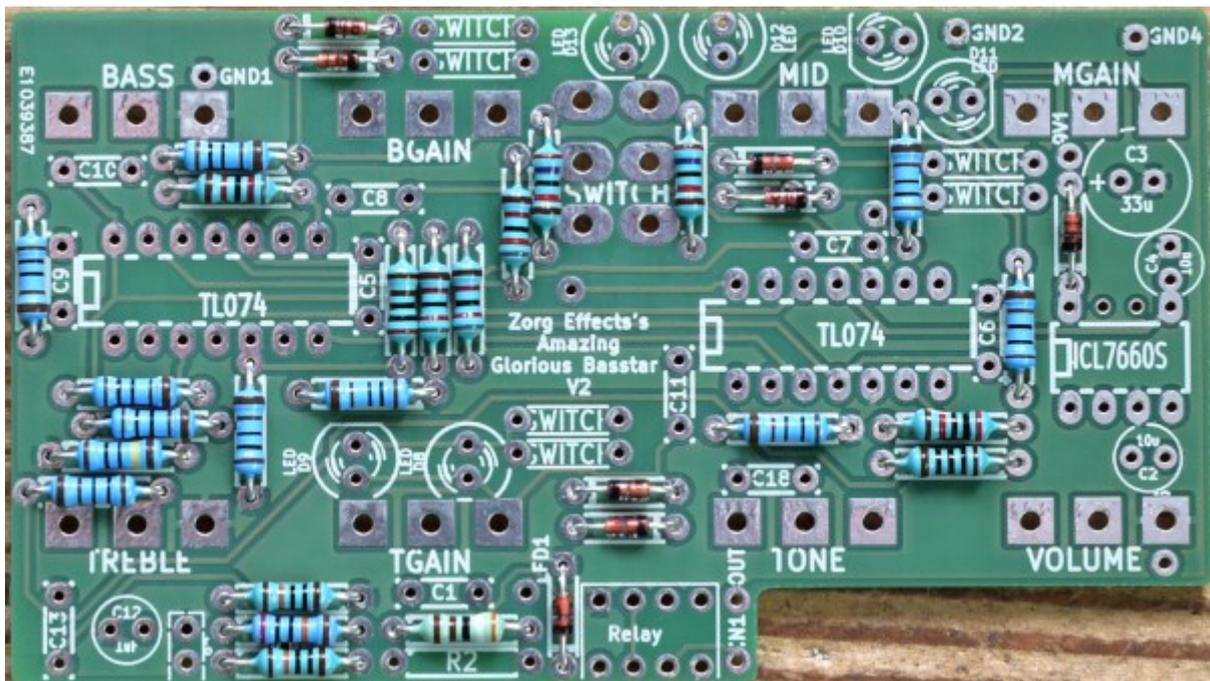
This is the PCB (Top/Bottom):



If you choose the relay bypass option, you need to solder the NE555 on the bottom. Beware of its direction, a dot on the picture below shows the first leg that should be up left (red arrow):

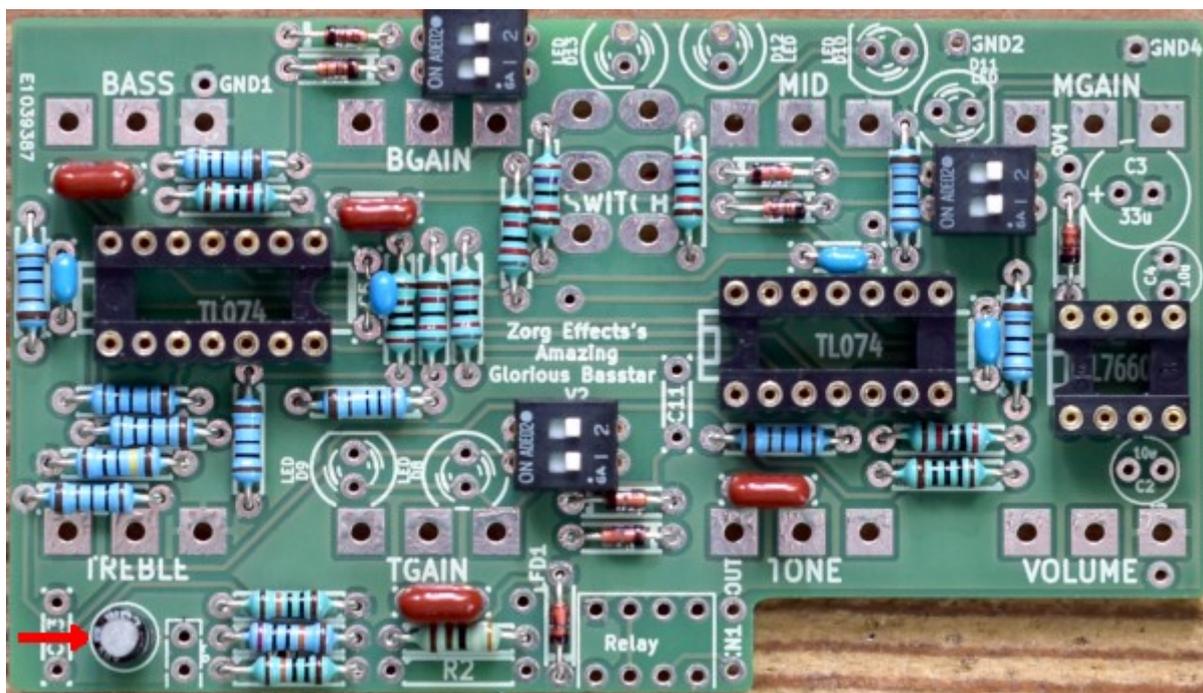


Then we're going to solder components from the smaller to the taller. First, diodes and resistances. You shall take care of the diodes positions. They MUST be on the same direction as on this picture :

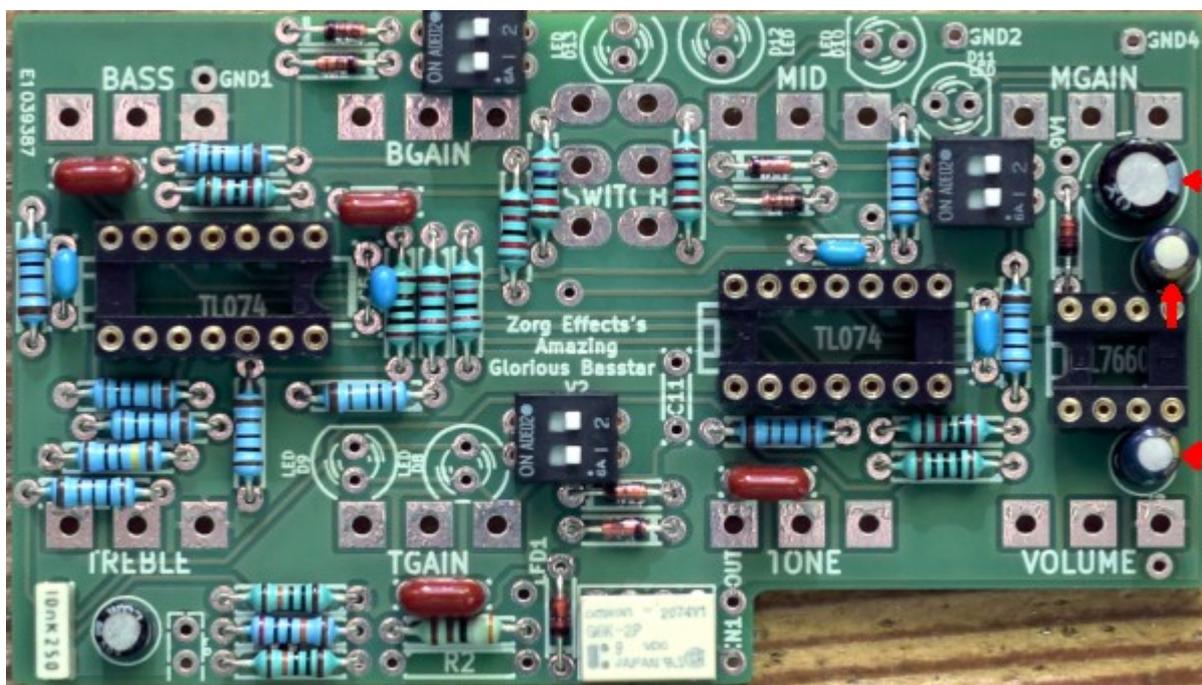


Then by order :

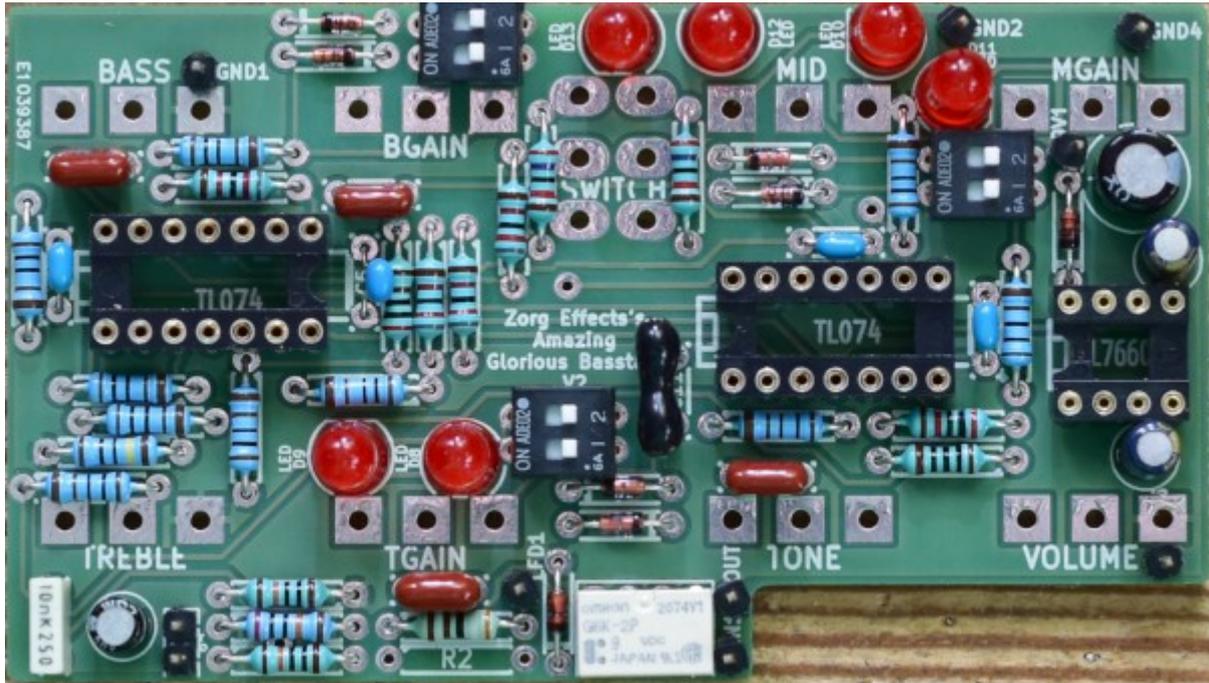
- IC sockets and blue 100nF capacitances which are decoupling caps.
- The 3 mini dip switches.
- The panasonic 10nF caps.
- If you've the relay bypass option C21, beware of its direction, it must be with the negative side (white stripe) on the sides marked by a red arrow:



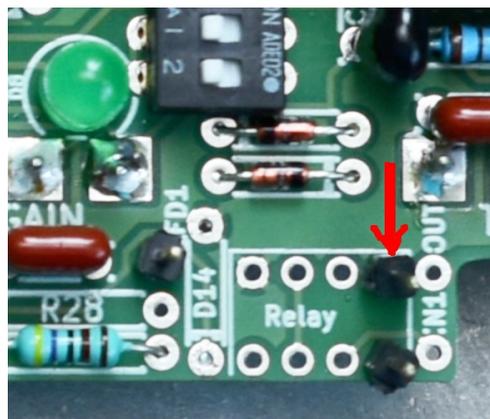
If you have the relay bypass option add the relay and cap C13. Then whatever option you have add the electrolytics caps. Beware of their directions, they must be with the negative side (white stripe) on the side marked by a red arrow:



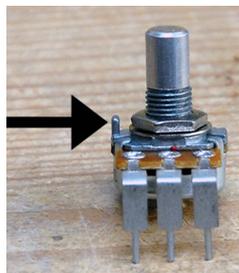
Then cut the SIL socket to makes pins for inputs/outputs (GND1..4, IN1 etc...). Add the leds and aware of their direction, flat side MUST be placed as specified on the board, if there's not flat side on the led, the shortest leg is on the flat side.



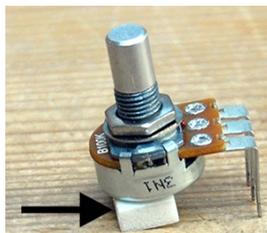
Also beware **without** the relay bypass version, the IN1 and OUT1 sockets must be moved in the relay square as showed on this picture:



Now flip the board. We're going to solder the switch and pots on the other side. Begin with the switch. You should push it all the way into the board. If you let some space between the board and the switch, the problem will be that the height of the switch will be a bit higher than the pots height and this can somewhat be a problem when screwing the pots on the enclosure. Though if the switch is lower than the pots, you can still use a washer or nut to level it... Now we're going to solder the pots on the same side of the switch. First you'll need to prepare the pots: Cut the little rectangular shaft next to the axis, you won't need it.



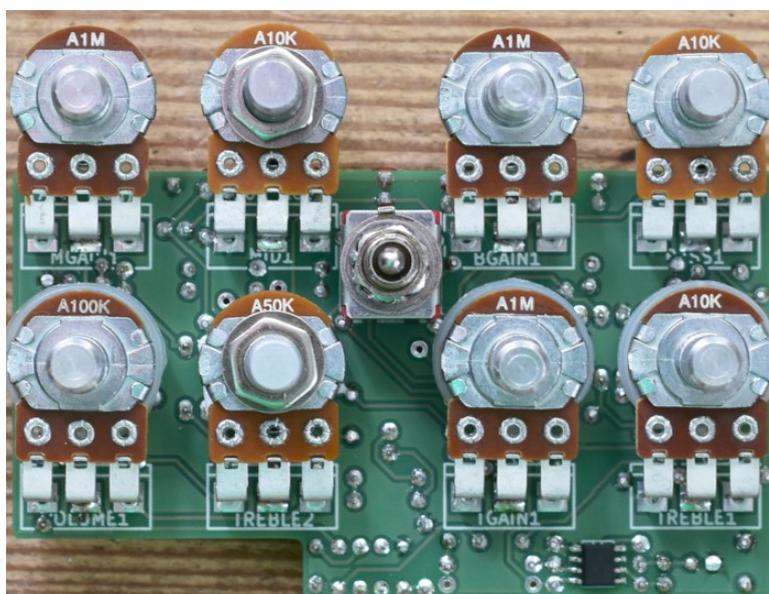
If you have un-insulated pots, stick 16mm length of window insulator under each pot of the first row. It's in order to prevent solders on the board to connect with the body of the pot and shortcut some circuits.



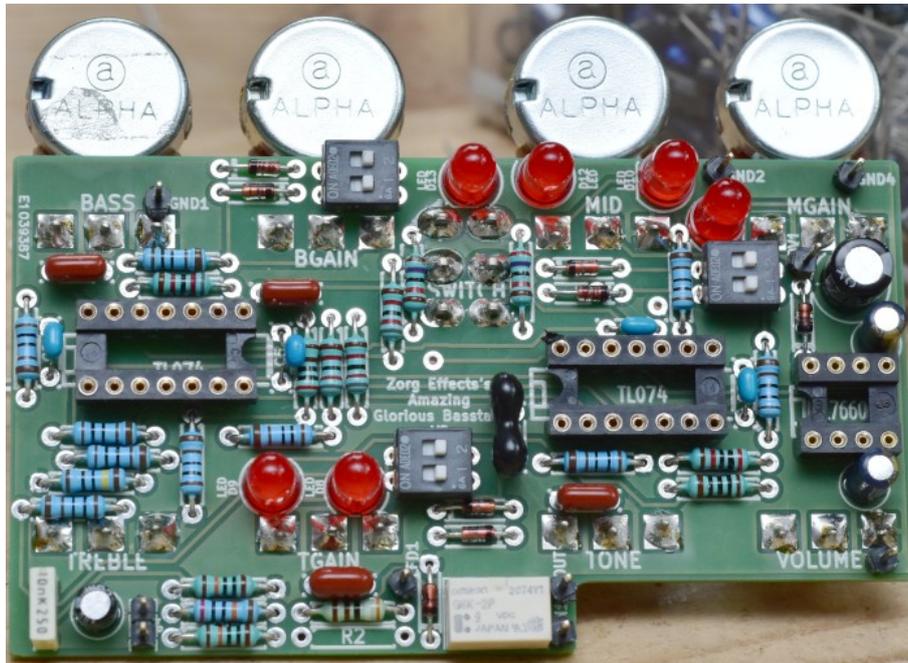
If you have insulated pots, you need to remove the plastic insulator of the 2<sup>nd</sup> row, because it'll prevent the jacks to be aligned with their holes.

Now you are ready to solder them on the board. But don't go too quick! First put one of them and solder ONLY the middle leg. Then try to fit the card in the enclosure. It can happen that the pot is not in right the middle of the hole in the enclosure. If it's the case, you have only one solder to heat to move it a bit and rectify the position. Then add them one by one, soldering only the middle leg, and adjusting after each one to have them in front of their holes. At the end it should enter the enclosure without to much force (sometime a bit though).

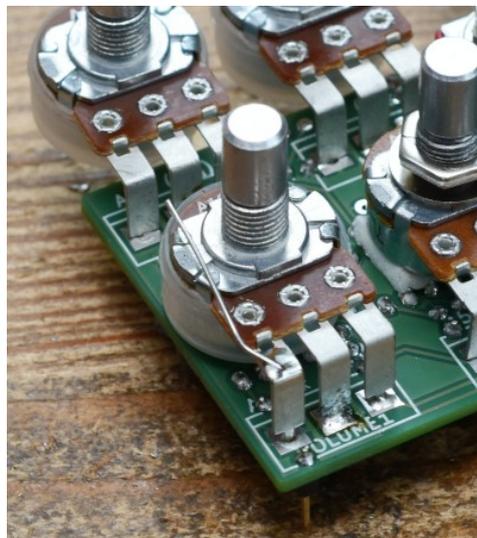
When it's fitting well in the enclosure with all pots, solder the remaining legs. You should now be proud to have that:



The picture below shows the upper row of pots without their insulation:



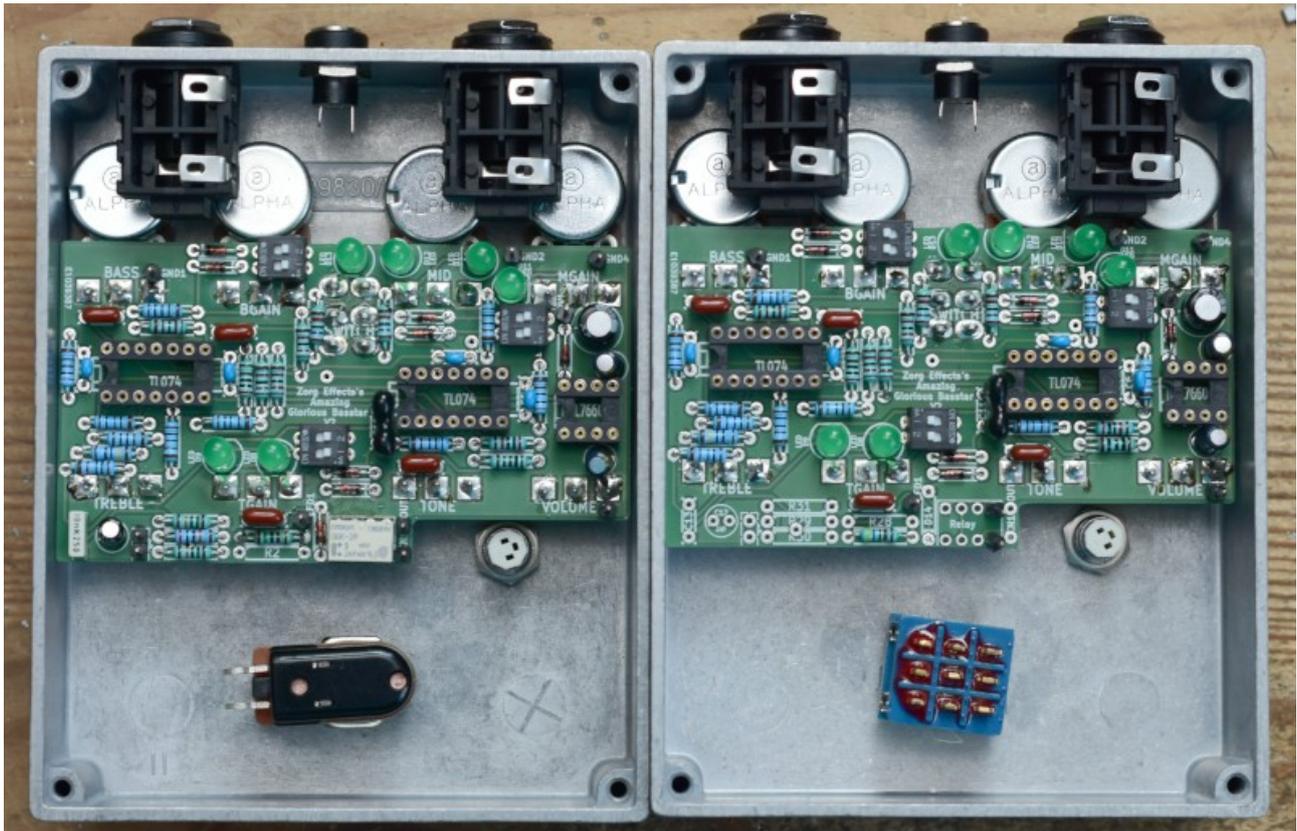
There's one last thing to do. We need to wire the enclosure to the ground. For that we'll use a resistance leg and solder it to the volume pot's left leg and make it lay on the pot top's enclosure as shown on this picture:



Now insert the card in the enclosure a screw the switch on the enclosure. We're going to...

## Wiring the pedal.

So there you go with the card in the box. Now you can screw the audio jacks, led socket, footswitch and CD jack.



(Left is with the relay bypass option, right is without)

**With the relay bypass option, we're going to wire that, like this:**



9V1 goes to +9v of the DC jack (long leg if you wish to wire it center negative)

Gnd2 goes to gnd of the DC jack (short leg if you wish to wire it center negative)

GND1 and GND4 go to ground of the audio jack.

IN1 goes to the input jack.

OUT1 goes to the output jack.

LED1 goes to the positive leg of your display led.

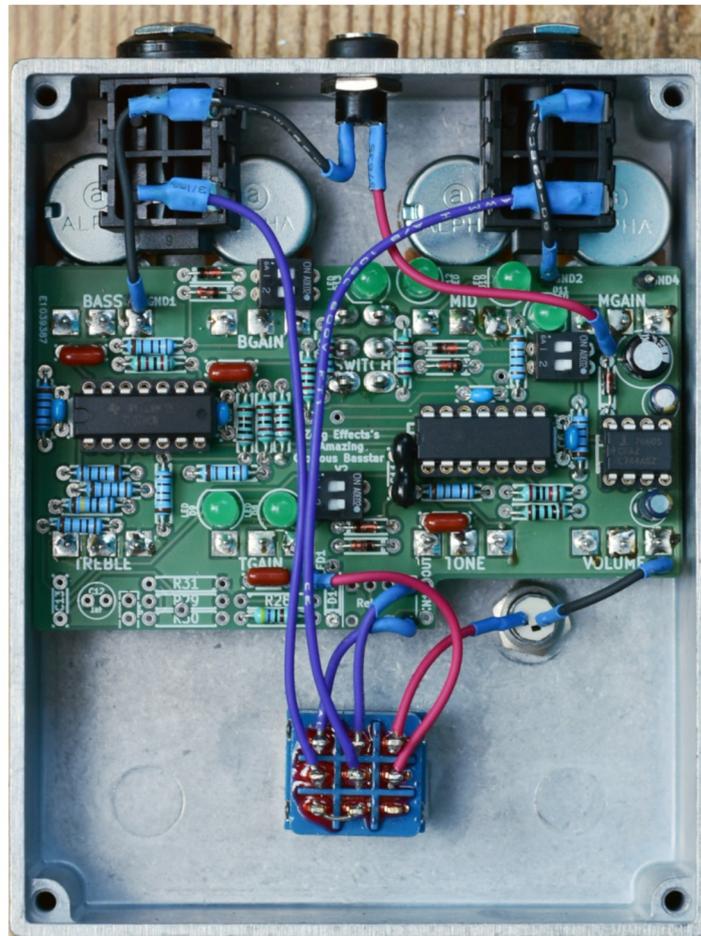
Negative leg of the led (short leg, or the one on the flat side) goes to the terminal on the the bottom right, which is a ground.

The footswitch is connected to the two last terminals next to C12

Important: Use the eat shrink tube to strengthen and protect all your wire connections (on the board and on the connectors).

You're ready to plug your glorious basstar and...

**Without the relay bypass option, we're going to wire that, like this:**



9V1 goes to +9v of the DC jack (long leg if you wish to wire it center negative)

Gnd2 goes to gnd of the DC jack (short leg if you wish to wire it center negative)

GND1 and GND4 go to ground of the audio jack.

Negative leg of the led (short leg, or the one on the flat side) goes to the terminal on the the bottom right, which is a ground.

Then if you number the footswitch:

**1 2 3**

**4 5 6**

**7 8 9**

7 and 8 are soldered together.

1 is connected to IN1

2 is connected to OUT1.

3 is connected to the positive (long leg) of the led.

4 is connected to the input jack.

5 is connected to the output jack.

6 is connected to LED1.

9 is not connected.

Important: Use the eat shrink tube to strengthen and protect all your wire connections (on the board and on the connectors).

You're ready to plug your glorious basstar and...

## Test the board.

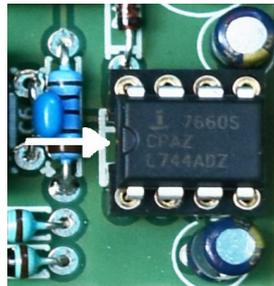
Now don't put the ICs in the box. First we're going to test the power supply.

Step 1: connect your 9v DC power unit to the DC jack. Switch on/off your footswitch. The led MUST also switch on and off. If not there's likely to be a bad connection somewhere... (See "debug" paragraph)

Step 2: check the following voltages with a voltmeter on the ICL7660s socket.



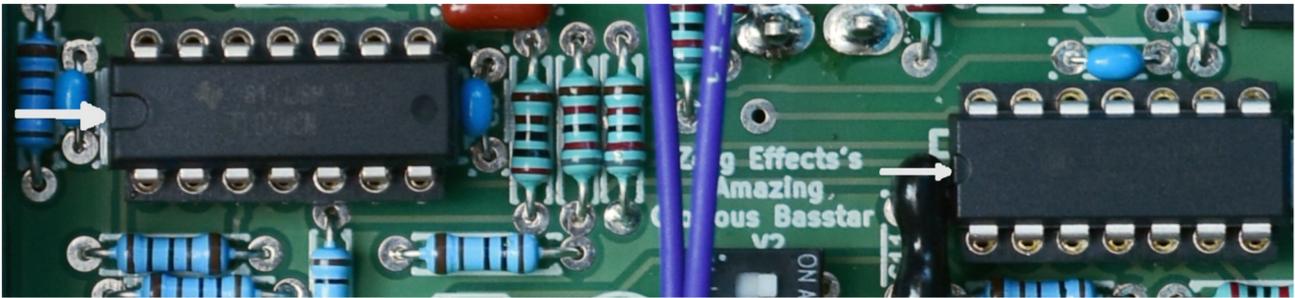
Step3: if step 2 is ok, add the ICL 7660scpa in his socket. Be careful of the orientation or you'll blow it up.



Then check the following voltages on U2 and U3 (-9v values might be a bit lower, -8v will be ok too):



Step 4: insert the TL074 in socket U2 and the TLE2074 in socket U3.



If you made everything fine, your glorious basstar should be working now. Plug in your favorite instrument and rock it! (And then screw all the pots screws as well as the knobs).

If this is not working you're good to read the...

## Debugging chapter.

First, voltages!

If at step 2 of tests chapter you don't have 9v voltages on the 7660 socket, check:

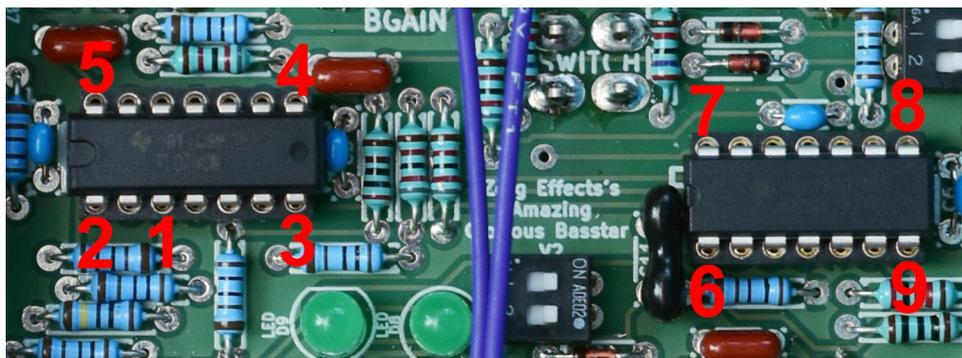
- That your DC power unit is working.
- That the connections between the plug and the board are ok.

If at step 3 of tests chapter you don't have -9v voltages on the U2 or U3 socket, remove the DC power immediately. Check the temperature of the ICL7660s.

- If it's hot, check the IC and electrolytic caps directions.
- If it's cold, check that you've around -9v on pin 5 of the ICL7660, if not, it's likely to be dead. If there's between -7v and -9v it's ok. If there's between -2v and -7v it's strange, check that all components are at their right place and without shortcuts in between.

No or poor audio? (Even with all volume pots at 100%?)

You'll need an oscilloscope and a frequency generator. Send a 200Hz sin wave in the pedal input. Set the switch to middle position (Low freq). Then check the tests points below for the sin wave. They are in order of signal flow:



1- This is the input. No signal here might come from bad solders of the input wires.

2- Output of input buffer. No signal here means your TL074 might be dead.

3,4,5- Respectively output of Treble, Mid and Bass bands. These three output are produced by the same filter. No sine wave here means you have a problem within your filter. Check components values and solders and that there's no short cuts between components of this part of the board.

6- Output of treble clipper. No sine wave here means you have a problem within your clipping stage. Check components values and solders and that there's no short cuts between components of this part of the board.

7- Output of bass clipper. No sine wave here means you have a problem within your clipping stage. Check components values and solders and that there's no short cuts between components of this part of the board.

8- Output of mid clipper. No sine wave here means you have a problem within your clipping stage. Check components values and that there's no short cuts between components of this part of the board.

Any case you have no signal on 6, 7 and 8 this can also mean your TLE2074 is dead.

9- Output of the mixing and output gain stage. No sine wave here means you have a problem within your mix/output stage. Check components values and that there's no short cuts between components of this part of the board.