



MP 599 Assembly guide



Safety warning

The kits are main powered and use potentially lethal voltages. Under no circumstance should someone undertake the realisation of a kit unless he has full knowledge about safely handling main powered devices.

Please read the “DIY guide” before beginning.

Print or open the following documents :

- MP599 Schematics
- MP599 Components layout
- MP599 Parts list
- MP599 Test guide

Follow this guide from item number 1 till the end, in this order. The assembly order is based on components height, from low to high profile, in order to ease the soldering process : The component you are soldering is always taller than the previously assembled ones and it is pressing nicely against the work area foam.

Soldering

All the PCB holes are metallized. It means the connection between the top and bottom pads is already done. The parts must be soldered only from below (unless differently stated).

Use only small diameter solder, 0.5 or 0.7 mm, 1 mm maximum. Use the minimum possible amount of solder. Bad joints are almost always caused by too much solder.

Cut the component leads and pins totally flush with the PCB after soldering. A too long tail could create an electric connection with the side plate.

Here are two excellent introduction to soldering videos:

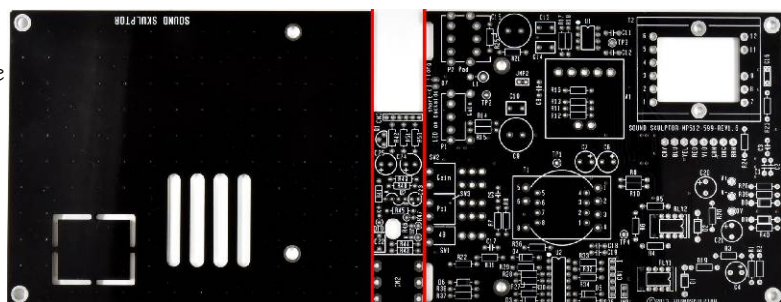
<http://www.eevblog.com/2011/06/19/eevblog-180-soldering-tutorial-part-1-tools/>

<http://www.eevblog.com/2011/07/02/eevblog-183-soldering-tutorial-part-2/>

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1. PCB split

Split the PCB into 3 parts along the grooves (red lines on the picture). Use extra thin sandpaper to polish all the rough sides.

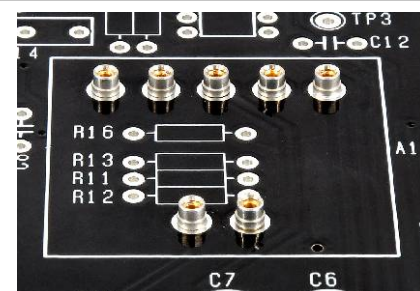


2. DOA Pin Sockets

Solder the 7 pin sockets for the DOA. Solder one at a time.

Depending on the tin thickness on the PCB you may have to press quite hard to fit them into their hole.

The correct positioning of the sockets is important for easy insertion of the DOA.



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3. Diodes

Add D1 to D6, D8, D9. Use a lead forming tool to bend the leads at 0.4".

Warning : Make sure to respect the direction of the diodes which is marked by a ring on the component and a double line on the PCB marking.



4. Resistors

The best method to select and install the resistors is the following:

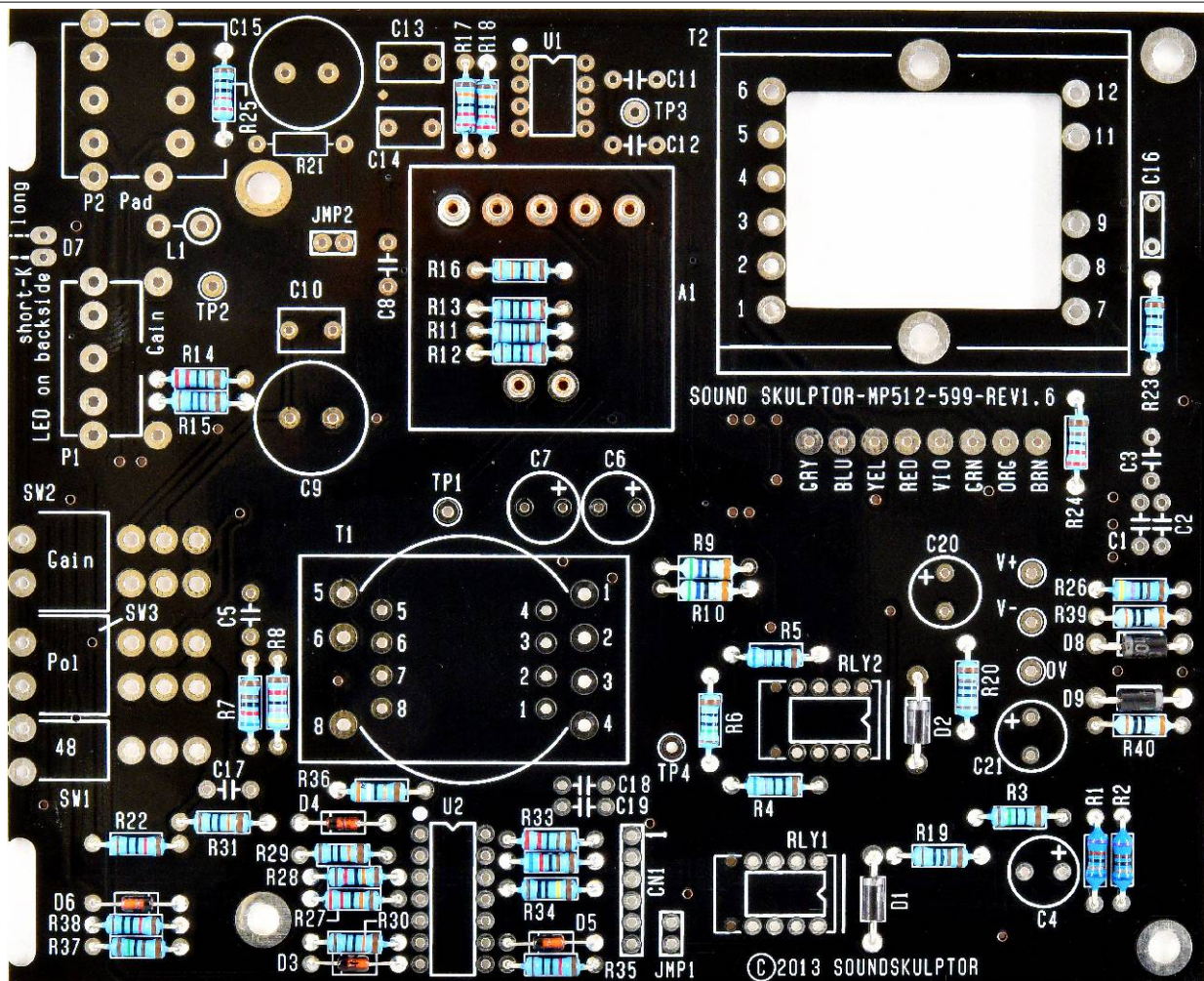
1. pick a row of resistors in the resistors bag,
2. Measure one of the resistors with your DMM,
3. Look up the parts-list PDF for the closest value,
4. Check the color code and quantity for confirmation,
5. Use the search function on the Layout PDF page with the resistor value: All the corresponding resistors are highlighted,
6. Insert and solder.

(You can use the same method later, for the capacitors)

Add R1 to R20, R22 to R40. The resistors marked NC in the parts-list should not be installed.

Control the resistor values with a digital multimeter. Bend the leads at 0.4" with a lead forming tool.

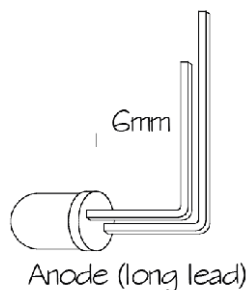
Warning : It is important to check the resistors value with a DMM because the color code can sometimes be ambiguous. For example 1K (brown-black-black-brown-brown) can be confused with 110R (brown-brown-black-black-brown).



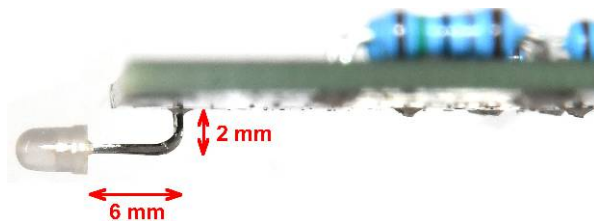
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5. Led



Bend the leads of D7 right angle at 6mm from the body taking care of the anode position (the longest lead). Insert from the PCB bottom and solder with the LED body lined up with the PCB surface.



Warning : it is easy to bend the leads in the wrong direction !



6. IC Socket

Insert and solder the IC socket for U1.

Warning : Make sure to respect the DIL sockets direction, marked by a notch.



7. Integrated Circuit

Insert U2 and solder. You will need to bend the pins slightly inwards before inserting.

Warning : Make sure to respect the IC direction, marked by a notch. Do not use a socket because it would be too high for the DiO1 board.



8. Relays

Add RLY1 & RLY2. Eight pins only are soldered.

Warning : Make sure to respect the direction of the relays which is marked by a white line on the relay and on the PCB marking.



9. Ceramic capacitors

Add C1, C2, C3, C5, C8, C11, C12, C17, C18, C19.



10. Film capacitors

Add C10, C13, C14, C16



11. Jumper header

Solder the jumper headers JMP1 and JMP2. Solder one pin first, check verticality, then solder the other pins.



12. Test pins

Solder the 7 test pins TP1, TP2, TP3, TP4, V+, V- and GND.



13. Connector

Solder the connector socket CN1. Solder one pin first, check verticality, then solder the other pins.

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14. Inductor



Add L1. This inductor is installed vertically.



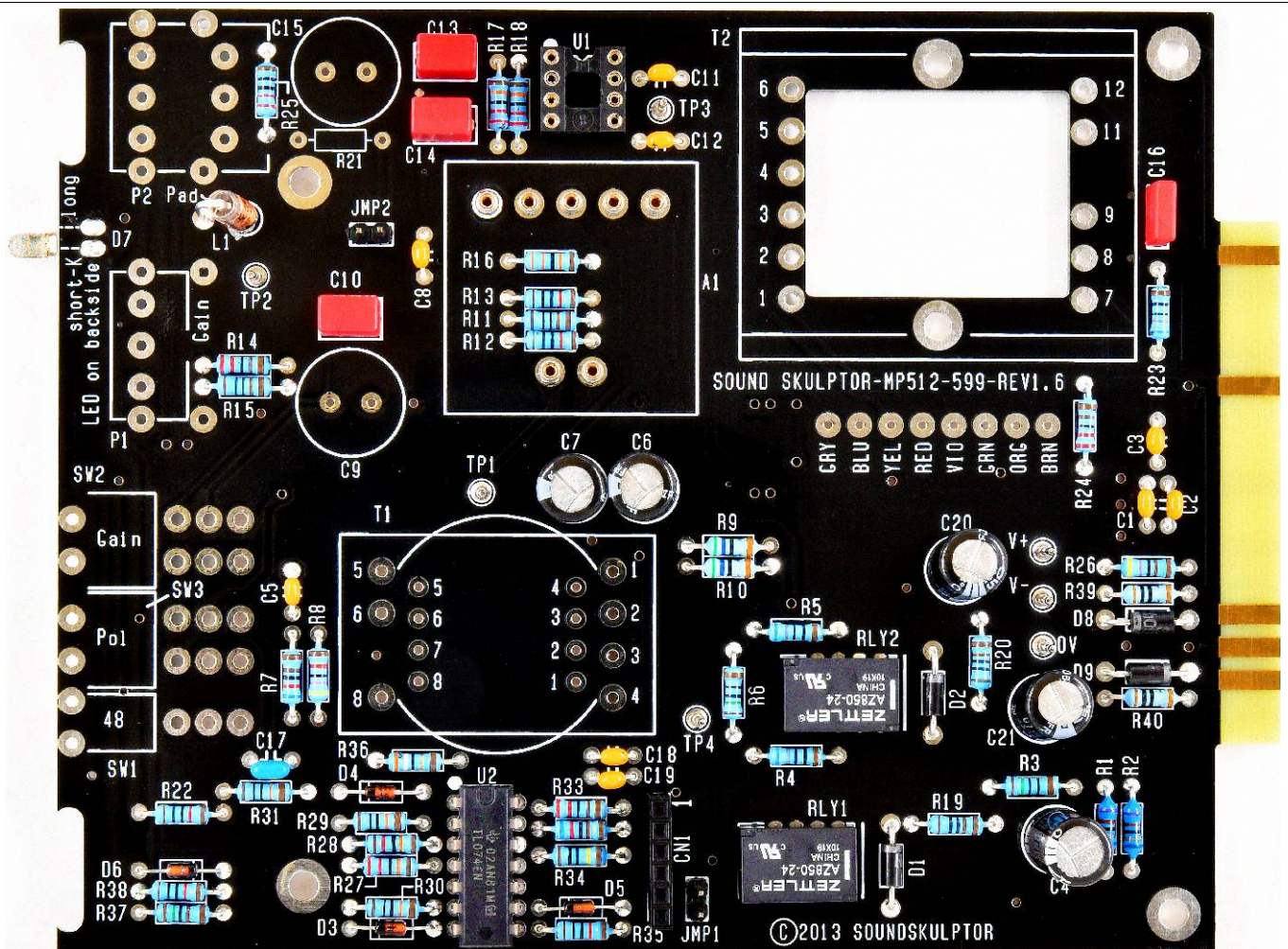
15. Small electrolytic capacitors



Add C4, C6, C7, C20, C21.

Solder one lead first, adjust verticality then solder the second lead.

Warning : The + lead must go into the + hole. Do not reverse (they may explode !)



16. Switches



Add SW1, SW2 and SW3. The position of the switches is critical for a good front-plate matching. They must sit flat on the PCB. Press firmly the switch on the PCB and solder one of the front pins (housing). Check verticality and horizontality. Then solder the other pins.

17. Input transformer



Insert and solder the input transformer.

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18. Output transformer

Insert and solder the output transformer.



19. Potentiometers P1 & P2

Place the bracket on the potentiometer bushing, and attach it with the lock washer and nut. Tighten. Insert potentiometer and bracket into the PCB holes. Solder the central potentiometer pin. Now check that the potentiometer shaft is perfectly parallel to the board. Then solder the other pins.

Warning : A good potentiometer position is very important for a good match with the front panel.



20. Large electrolytic

Add C9.

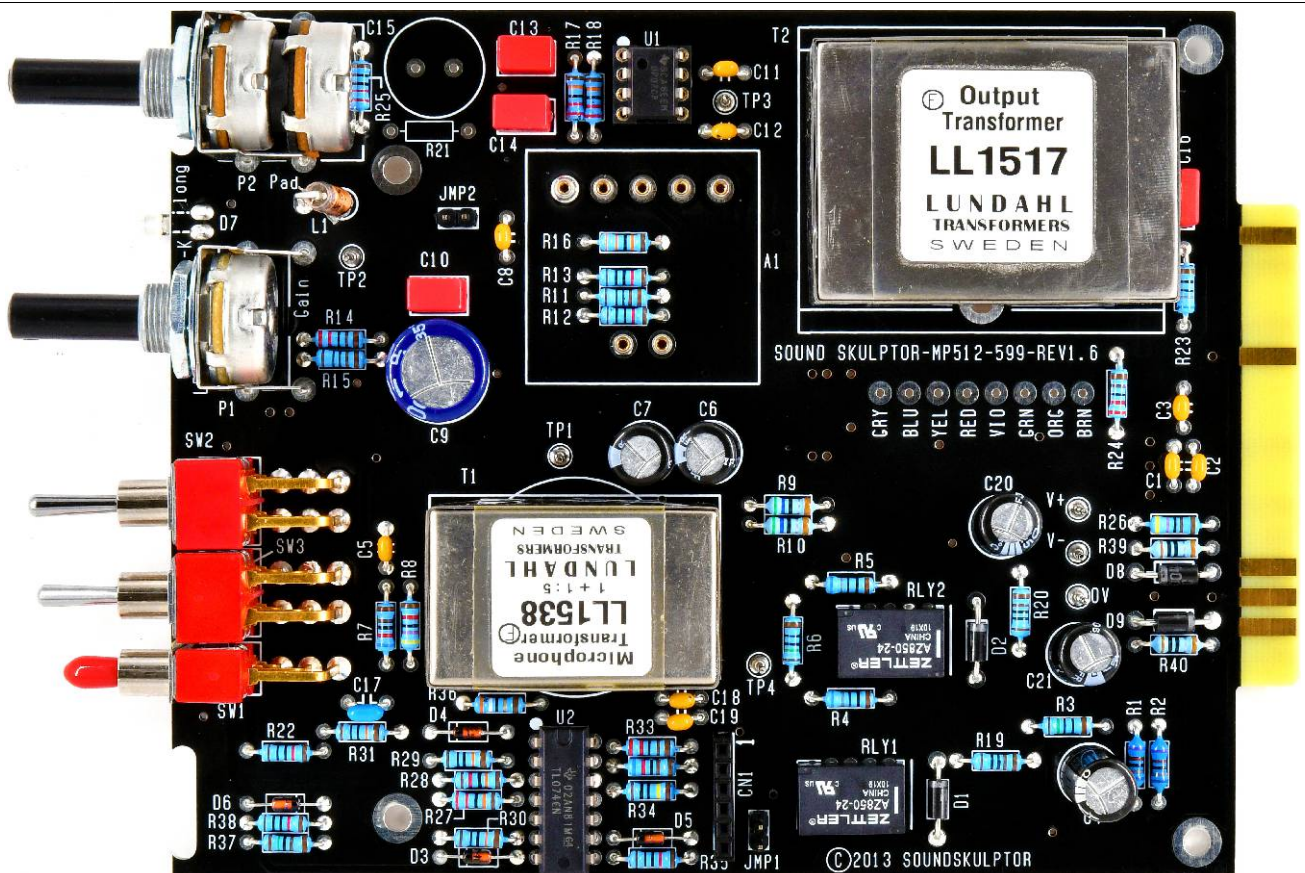
This capacitors is bipolar so it can be inserted in any direction.



21. IC

Insert U1 into its socket. It is necessary to bend the pins slightly inward before inserting.

Warning : Make sure to insert the IC in the correct direction which is identified by a notch.



22. Visual check

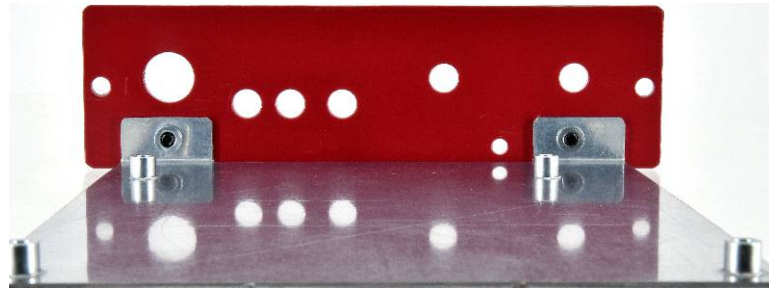
At this point, brush the solder side with a hard tooth brush to remove any remaining solder bits.

Make a full visual check. When everything looks correct, proceed with the frame assembly.

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23. Frame assembly

Attach the side panel to the front plate with two M3x6 black countersunk screws.

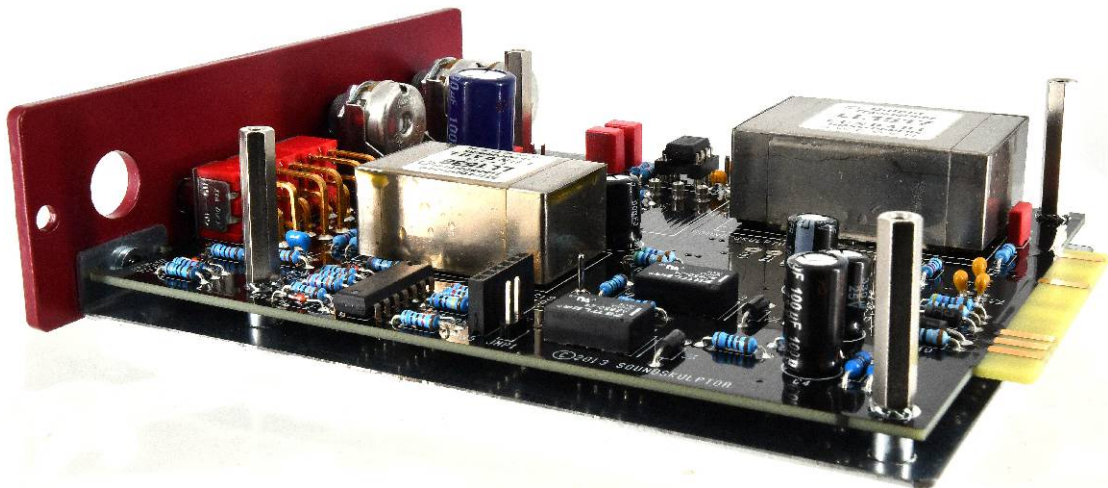


24. PCB mounting

Put the PCB in place, switches and pots going through the front panel. Watch out for the LED position. Attach the PCB with 4 M3x25 mm spacers and 4 shake-proof washers.

25. Knobs

Attach the 2 knobs.



26. Test

Your MP 599 is now ready for test. Please follow instructions in the “MP599 Test” document.

DI board Assembly guide

1. Horizontal resistors



Add R41 to R45, R48 to R51.

Control the resistor values with a digital multimeter. Bend the leads at 0.4” with a lead forming tool.

2. Diodes



Add D10, D11. These diodes are installed vertically, cathode (black ring) on top.

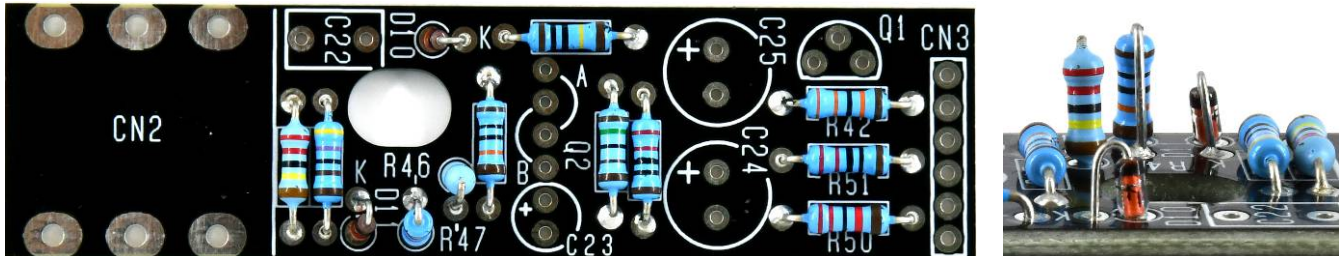
Warning: Make sure to respect the direction of the diodes which is marked by a ring on the component and a “k” on the PCB marking.

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3. Vertical resistors



Add R46 & R47.



4. Film capacitor



Add C22.

5. Transistors



Add Q1 and Q2.

The PCB has provision for two pinouts for Q2. With the current 2SK170, use the A position.

Warning: Q1 (2N7000) is a device that is sensitive to static electricity before being soldered. It is safer to handle it without your shoes on.

6. Electrolytic capacitors



Add C23, C24, C25.

Solder one lead first, adjust verticality then solder the second lead.

Warning: The +lead must go into the +hole. Do not reverse (they may explode !)

7. Connector



Solder the connector CN3. Solder one pin first, check verticality, then solder the other pins.

Warning: the connector pins must be exactly perpendicular to the PCB to allow proper insertion in the preamp board.

8. Jack connector



Add CN1. The position of the socket is important for a good front-plate matching. It must sit flat on the PCB. Press firmly the socket on the PCB and solder one of the pins. Check position then solder the other pins.

Warning: the hole must face outside the PCB ;-)

9. Visual check

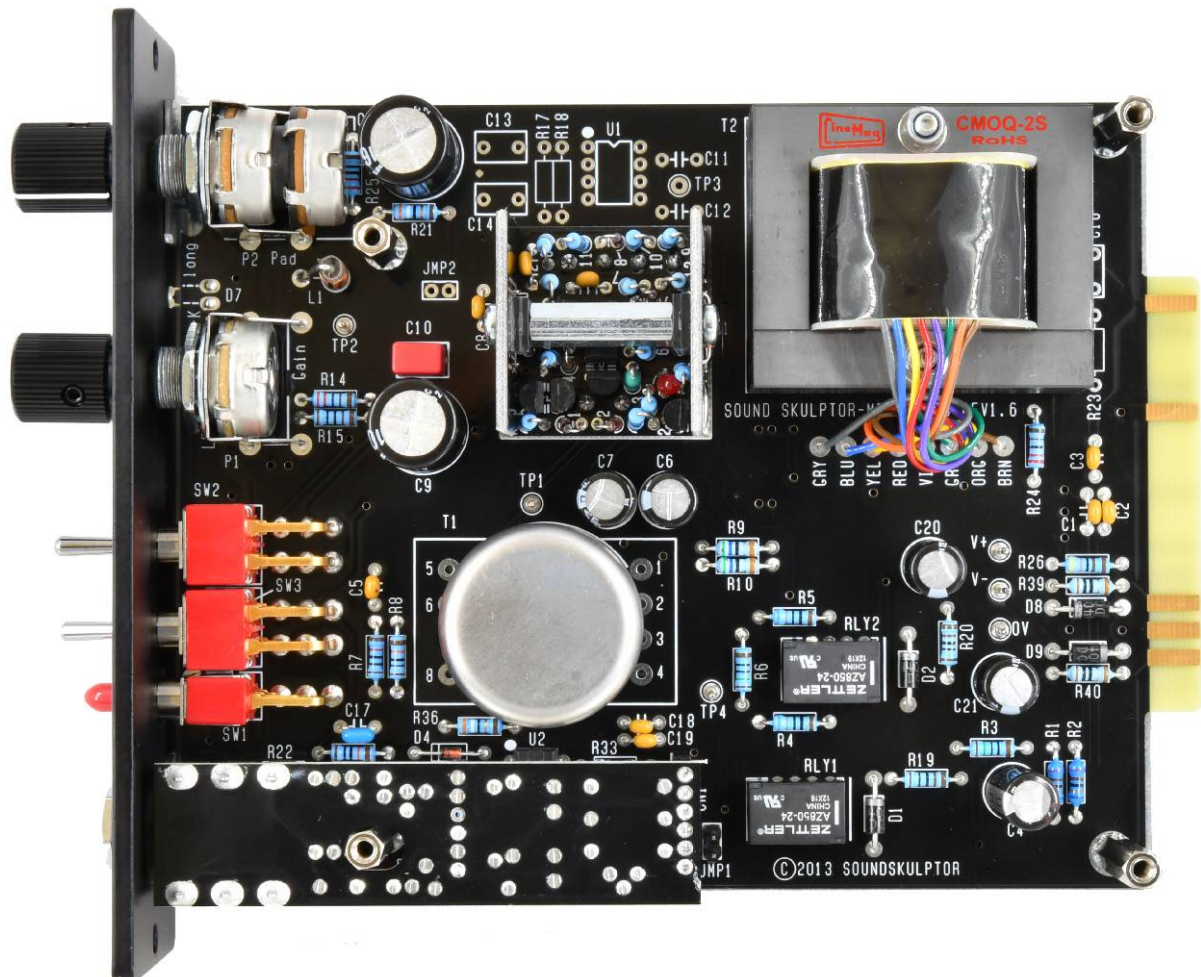
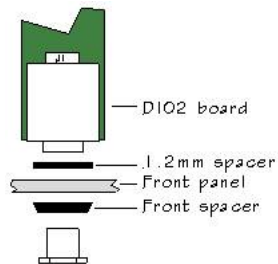
Brush the solder side with a hard tooth brush to remove any remaining solder bits. Make a full visual check. The DI board is ready for testing !



Final assembly

10. DI bBoard installation

Place one 1.2mm plastic spacer on the jack sockets and insert into the front panel while fitting the CN2 connector pins into the socket on the preamp PCB. Screw in the front nut through the beveled front spacer with an M1.2 socket spanner.



11. Closing

Attach the cover PCB with four M3x6 countersunk screws.

12. Congratulations !

You're done !



Final assembly

