



## EQ250 Assembly guide



### Safety warning

The kits are main powered and use potentially lethal voltages. Under no circumstance should anyone undertake the realization of a kit unless they have full knowledge about safely handling main powered devices.

Please read the “DIY guide” before beginning.

Print or open the following documents :

- EQ250 Schematics
- EQ250 Components layout
- EQ250 Parts list
- EQ250 Setup 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, 1mm maximum. Use just the minimum necessary amount of solder. Bad joints are often masked 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.

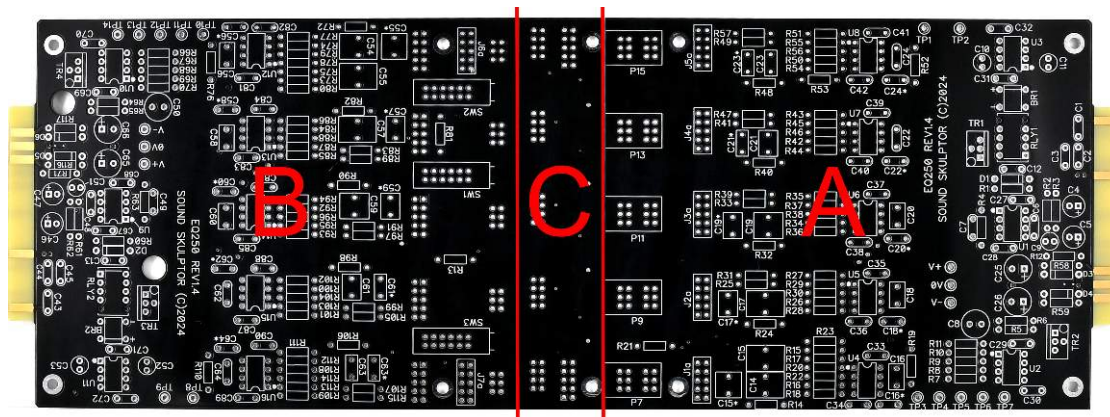
Here are two excellent introduction to soldering videos:

<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/>

## EQ250 Assembly guide – PCB A

### 1. PCB split



Split the PCB along the groove. Use extra thin sandpaper to polish all the rough sides.

## EQ250 Assembly guide – PCB A

## 2. Resistors



Here is a good method for selecting and installing the resistors:

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 choose to populate the 2 boards A & B one at a time or all together.

In the parts list, the resistor identifiers (Rx) are printed in black for PCB-A, in blue for PCB-B.

You can use the same method later, for the capacitors.

Add resistors R1 to R59. 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).

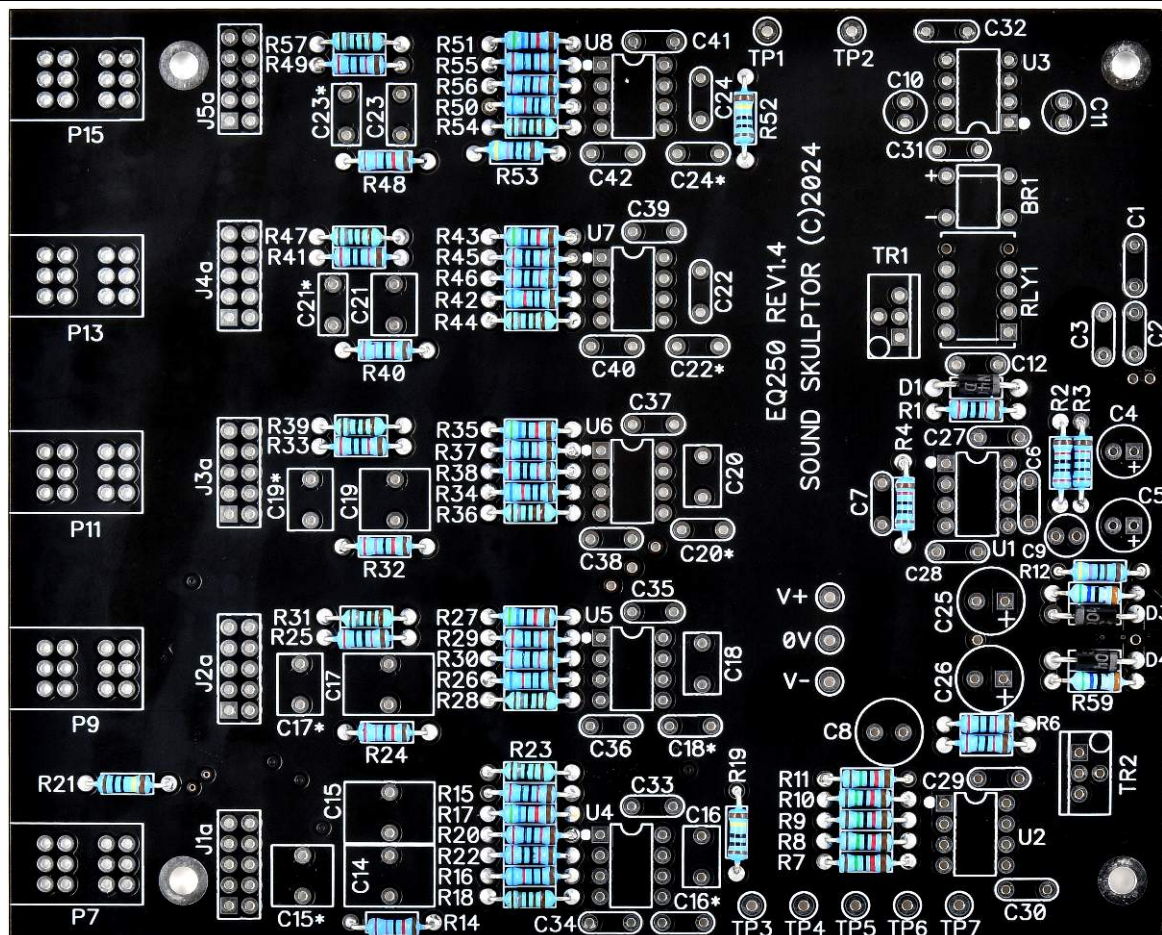
**Warning :** When soldering components close to the golden fingers of the edge connector, be very careful not to touch them with your soldering iron tip. It would cover them with irremovable tin. It is a good idea to protect them with adhesive tape.

## 3. Diodes



Add D1, D3, D4. 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.



## EQ250 Assembly guide – PCB A



## 4. IC Socket 2x4 pins

Insert and solder the eight 8 pins IC sockets.

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



## 5. Bridge rectifiers

Insert and solder the two bridge rectifier BR1.

**Warning** : The direction of the bridge is identified by a beveled side and 2 signs + and – on the case and on the PCB.



## 6. Ceramic capacitors

Add C1, C2, C3, C6, C7, C22, C24.

Add C12, C27 to C42.



## 7. Relay

Add RLY1.

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



## 8. Test pins

Solder 10 test pins TP1 to TP7, V+, V-, and OV.

The pins are inserted squared shortest end first. They require some pressure to fit. Cut short on the solder side after soldering.



## 9. Small Polypropylene capacitors

Add C20, C18, C16, C23, C21.



## 10. Trimmer potentiometers

Add TR1 and TR2. Solder one pin, check verticality then solder the other pins.



## 11. Non polarized electrolytic capacitors

Add C9, C10, C11, C8

These caps are not polarized and can be inserted in any direction.



## 12. Polarized electrolytic capacitors

Add C4, C5, C25, C26.

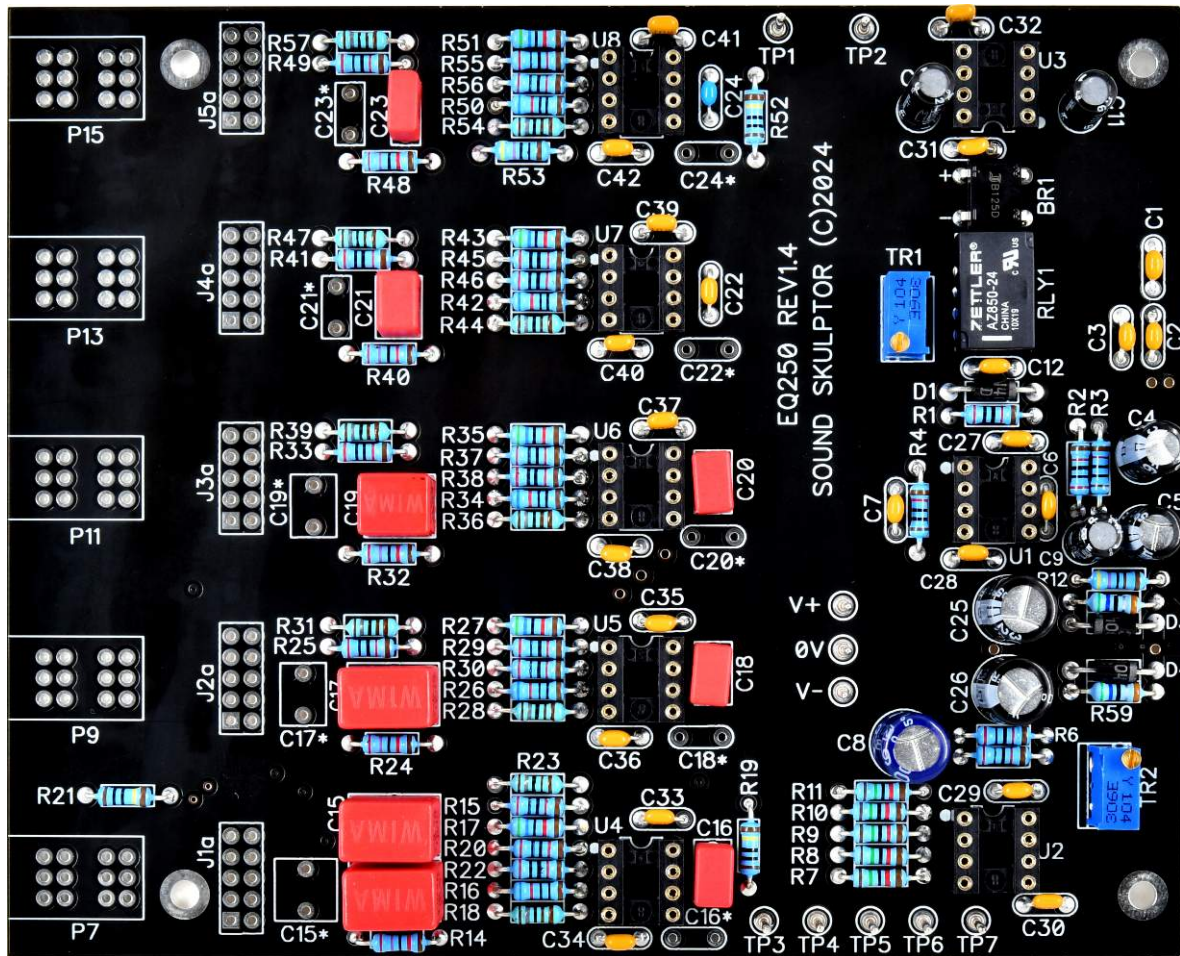
**Warning** : The +lead must go into the +hole. Do not reverse, it would damage them.



## 13. Large Polypropylene capacitors

Add C19, C14, C15, C17.

## EQ250 Assembly guide – PCB A



## 14. 2x5 headers

Insert the headers into their position J1 a to J5a, short end first and solder one pin. Check the verticality, reflow if necessary then solder the other pins.



## 15. Potentiometers



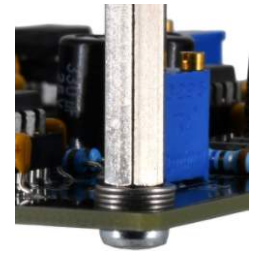
Add the five potentiometers P7, P9, P11, P13, P15. Solder one pin first, check the position then solder the other pins.

## EQ250 Assembly guide – PCB A



## 16. 35mm fem/fem Spacers

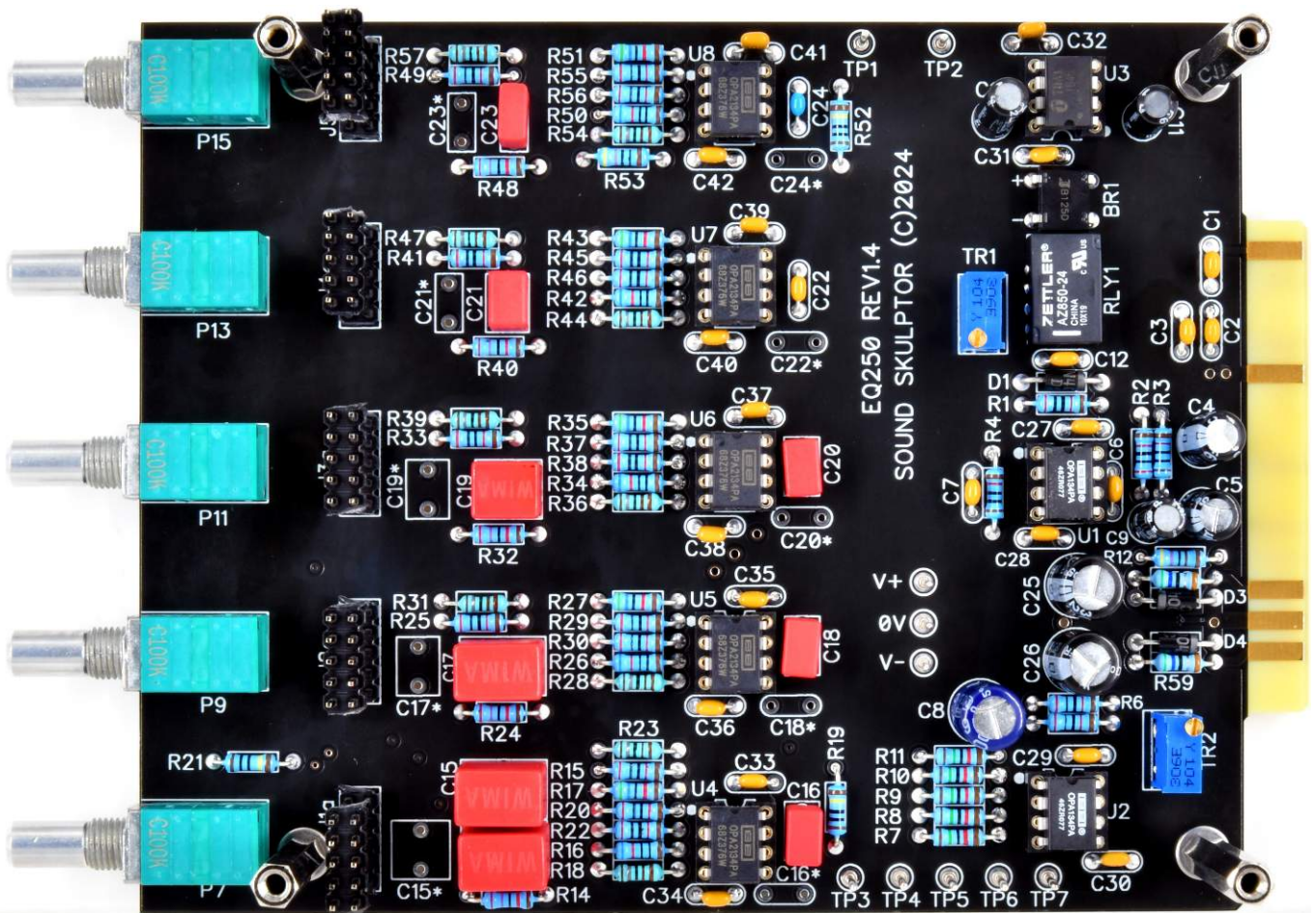
In each of the 4 corners of the PCB, insert an M3x6mm screw into the hole provided from the back face, insert 3 washers and screw in the spacer.



## 17. IC's

Insert the 8 IC's into their respective socket.  
There are 3 different IC references. Don't mix up!

**Warning** : Make sure to insert the IC's in the correct direction.



## 18. Visual check

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 PCB B.

## EQ250 Assembly guide – PCB B



## 19. Resistors

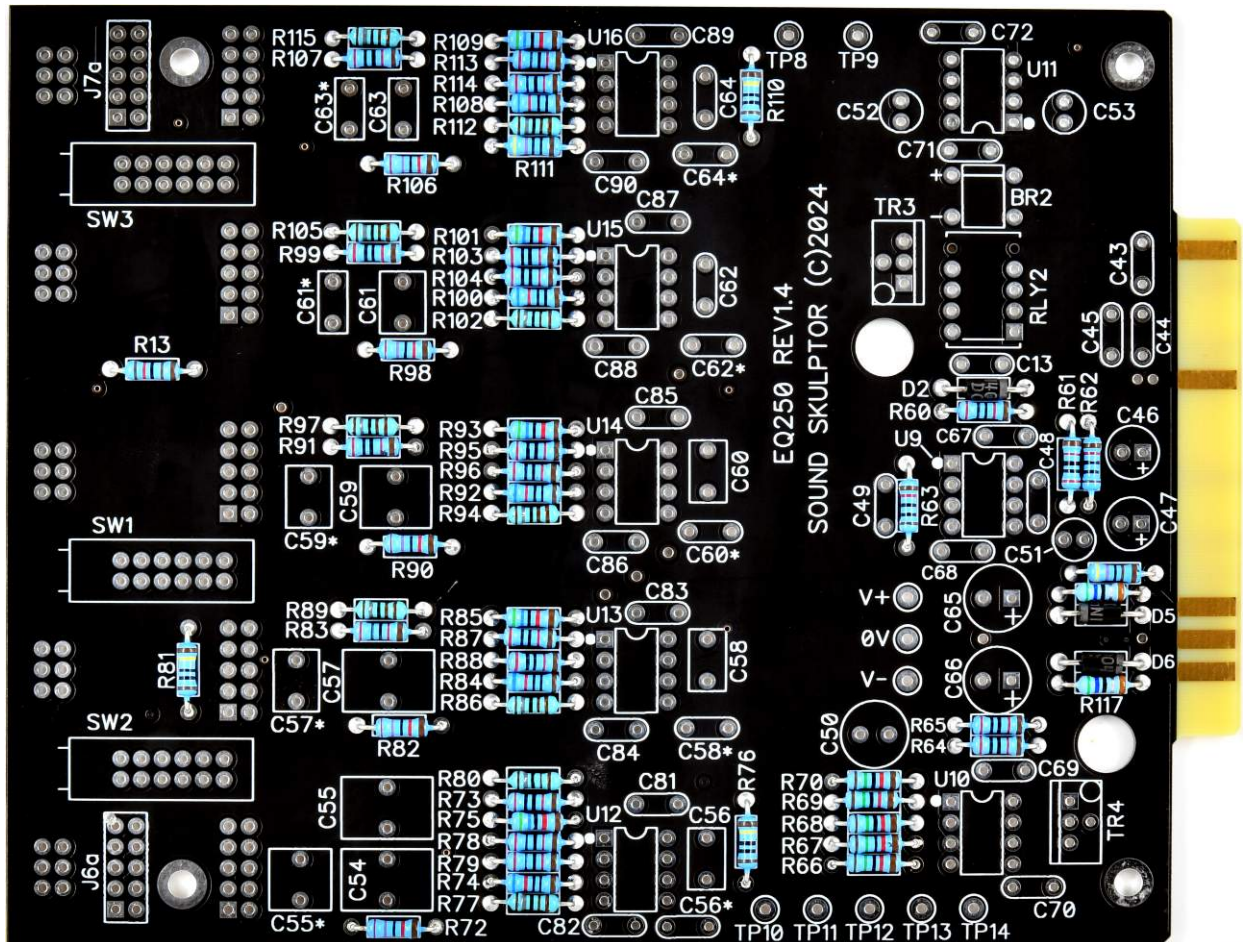
Add resistors R60 to R117. Bend the leads at 0.4" with a lead forming tool.

## EQ250 Assembly guide – PCB B



## 20. Diodes

Add D2, D5, D6. Bend the leads at 0.4".



## 21. IC Socket

Insert and solder the eight 8 pins IC sockets:

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



## 22. Bridge rectifiers

Insert and solder the bridge rectifier BR2.

**Warning** : The direction of the bridge is identified by a beveled side and 2 signs + and – on the case and on the PCB.



## 23. Ceramic capacitors

Add C43, C44, C45, C48, C49, C62, C64.  
Add C13, C67 to C90.



## 24. Relay

Add RLY2.

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

## EQ250 Assembly guide – PCB B

**25. Test pins**

Solder 10 test pins TP8 to TP14, V+, V- and OV.

**26. Small Polypropylene capacitors**

Add C60, C58, C56, C63, C61.

**27. Trimmer potentiometers**

Add TR3 and TR4. Solder one pin, check verticality then solder the other pins.

**28. Non polarized electrolytic capacitors**

Add C51, C52, C53, C50.

These caps are not polarized and can be inserted in any direction.

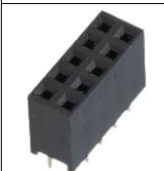
**29. Polarized electrolytic capacitors**

Add C46, C47, C65, C66.

**Warning** : The +lead must go into the +hole. Do not reverse, it would damage them.

**30. Push switches**

Add the 3 push switches SW1, SW2, SW3. Solder one pin, check the position then solder the other pins.

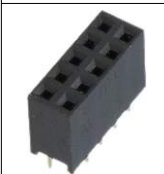
**31. Five 2x5 Connector sockets at the back of the PCB**

Solder the five 2x5 pins sockets J1b to J5b **on the back side** of the PCB.

**Warning**: Be extremely careful not to touch the push switches with your iron tip.

**32. Large Polypropylene capacitors**

Add C59, C54, C55, C57.

**33. Two 2x5 Connector sockets at the front**

Solder the two 2x5 pins sockets J6a and J7a **on the front side** of the PCB.

**Warning**: Be extremely careful not to touch 2x5 sockets with your iron tip.

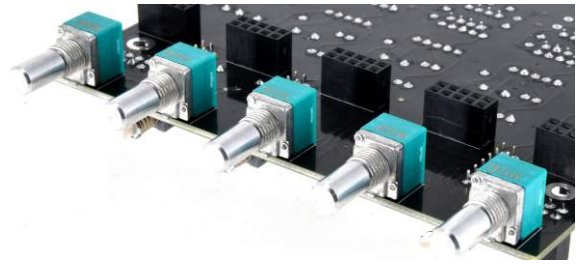
## EQ250 Assembly guide – PCB B



## 34. Potentiometers

Add the 5 potentiometers P6, P8, P10, P12, P14 on the back side of the PCB. Solder one pin first, check the position then solder the other pins.

**Warning:** Be extremely careful not to touch the push switches or the 2x5 sockets with your iron tip.

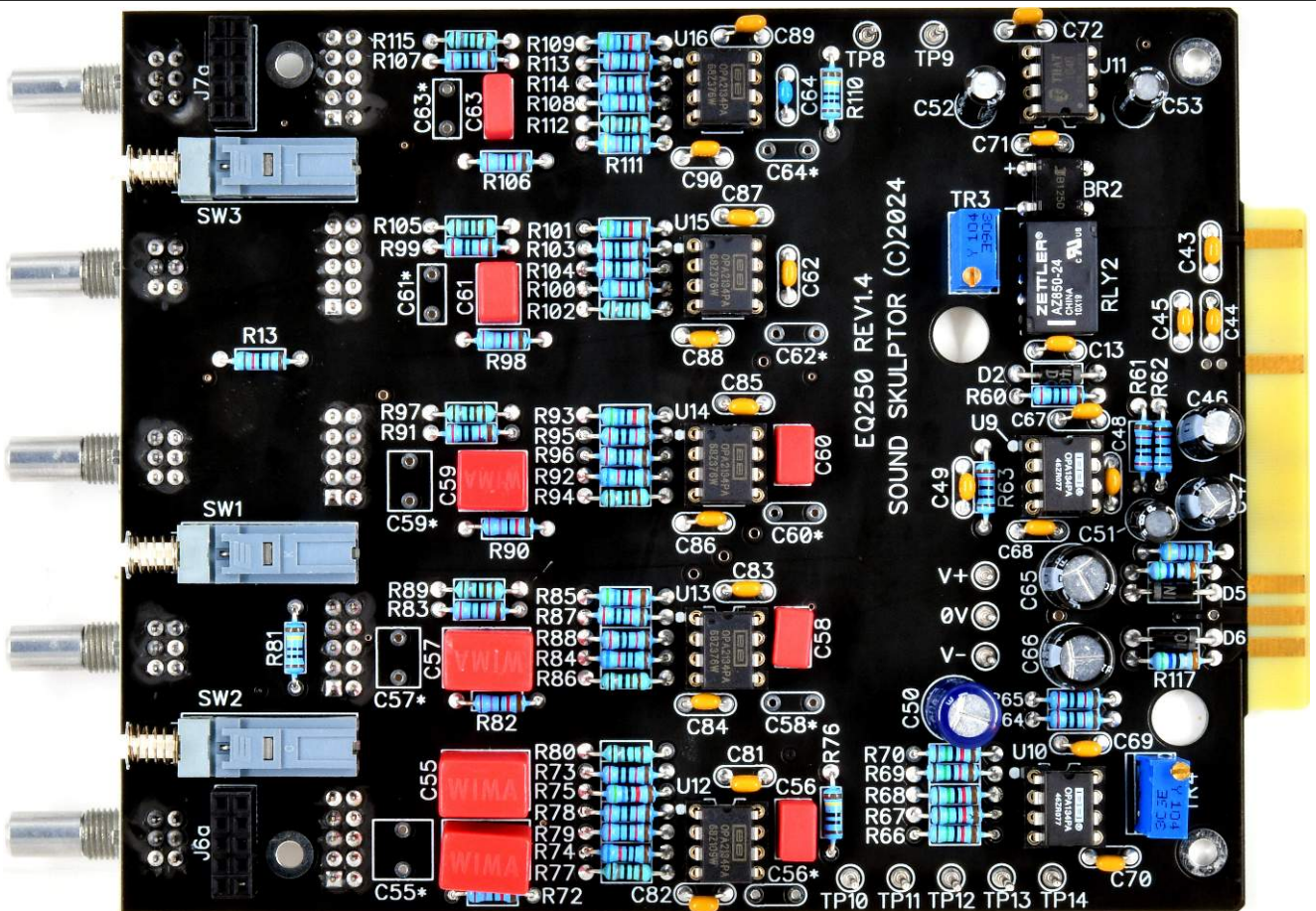


## 35. IC's

Insert the 8 IC's into their respective socket.

There are 3 different IC references. Don't mix up!

**Warning :** Make sure to insert the IC's in the correct direction.



## 36. Switch caps

Insert the caps on the 3 switches.

## 37. Visual check

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 PCB C.



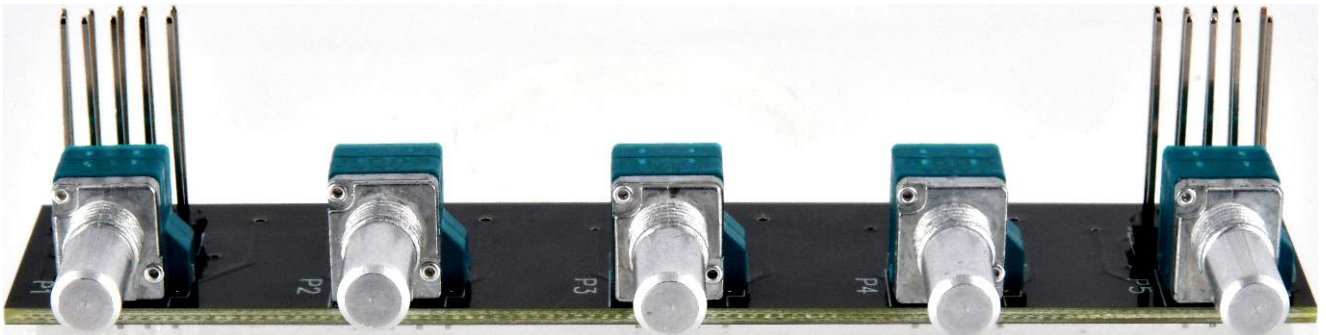
## EQ250 Assembly guide – PCB C

**38. Potentiometers**

Add the five 2x4 pins potentiometers P1 to P5. Solder one pin first, check the position then solder the other pins.

**39. 25mm pin headers**

Add the two 2x5 pins header J6b and J7b. Solder one pin first, check the verticality then solder the other pins.

**40. Visual check**

Brush the solder side with a hard tooth brush to remove any remaining solder bits.

Make a full visual check. Any missing component on the board ? Any remaining component in the box ?

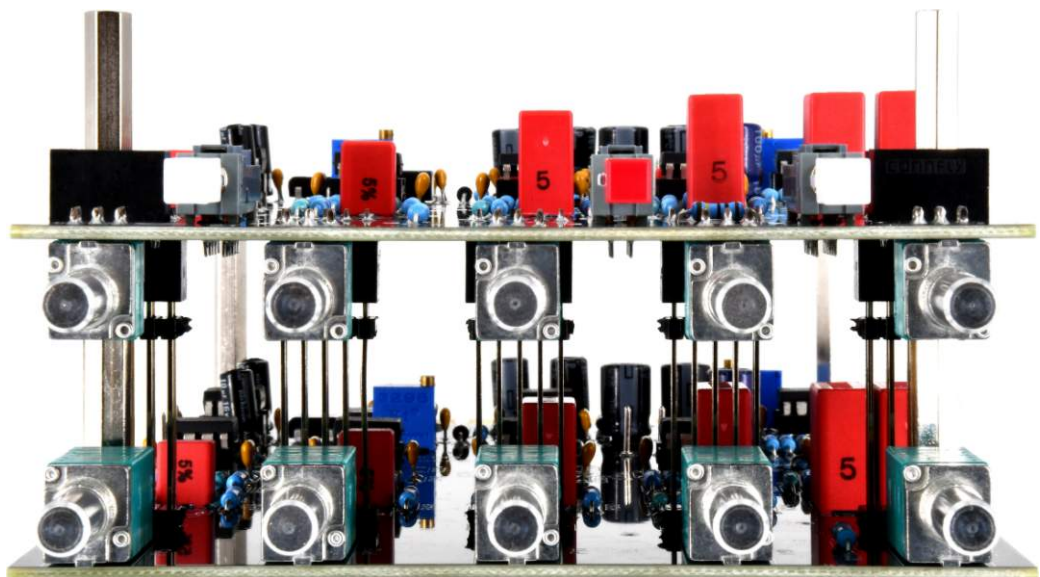
When everything looks correct, proceed with the final assembly.

## EQ250 Assembly guide – Final assembly

**41. PCB A & PCB B**

Position the 5 headers of PCB A in front of the matching sockets of PCB B and press gently until contact is made.

Attach together with 2 M3x25mm spacers at the front and 2 M3x6mm screws at the back.

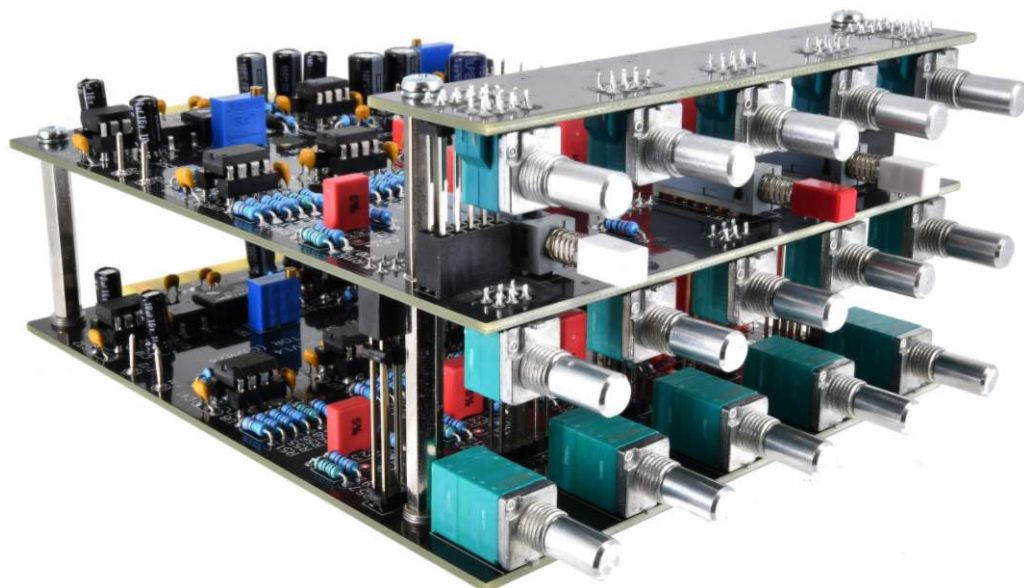


## EQ250 Assembly guide – Final assembly

### 42. PCB C

Position the 2 headers of PCB C in front of the matching sockets of PCB B and press gently until contact is made.

Attach together with 2 M3x6mm screws.



### 43. Setup

It is now time to setup the EQ. Please refer to the Setup Guide.

### 44. Front panel

Wait until the setup and general check is done.

When ready, place the front panel and attach with the 15 potentiometer nuts.

### 45. Knobs

Attach the 15 knobs, lining up the index with the marking.

### 46. Congratulations !

You're done !



### EQ250 Assembly guide – Final assembly

