



## SK49 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:

- SK49 Schematics
- SK49 Components layout
- SK49 Parts list

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 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/>

## High impedance circuits

The electronic circuits of the sk49 include areas with very high impedance, up to 250 megohms. Inside these areas, the slightest fingerprint, the slightest solder residue will damage the operation. This is why, after assembly, it will be necessary to clean the circuit with 99.9% isopropyl alcohol.

Les circuits électroniques du sk49 comportent des zones à très haute impédances, jusqu'à 250 megohms.

A l'intérieur de ces zones, la moindre trace de doigt, le moindre résidu de soudure détériorent le fonctionnement.

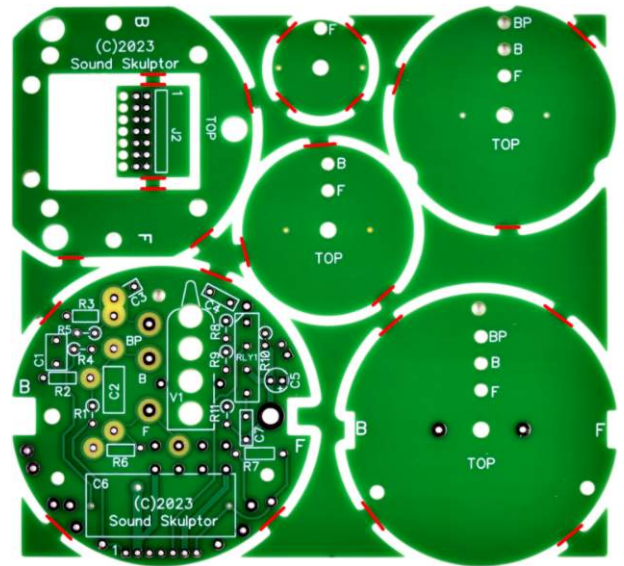
C'est pourquoi, après l'assemblage, il sera nécessaire de nettoyer le circuit avec de l'alcool isopropyl à 99.9%.

## SK49 Assembly guide – Main PCB

### 1. PCB split

Split the PCB into 7 parts by breaking it along the red lines. Use extra thin sandpaper to polish all the rough sides.

The bottom left PCB is the one which receives the components.



### 2. Resistors



R7 is soldered horizontally, normally.

R3, R2 and R6 are soldered horizontally at a small distance from the PCB, in order to minimize possible impedance leaks.

R10, R11, R4, R5, R8, R1, R9 are soldered vertically.

Control the resistor values with a digital multimeter, except R2, R3, R6 which are too high for most DMM's.. Bend the leads at 0.4" with a lead forming tool.



### 3. Film capacitors



Add capacitors C4 and C1.

C3 should be soldered at a small distance from the PCB.

### 4. Styroflex capacitor



Insert and solder C2 at a small distance from the PCB.

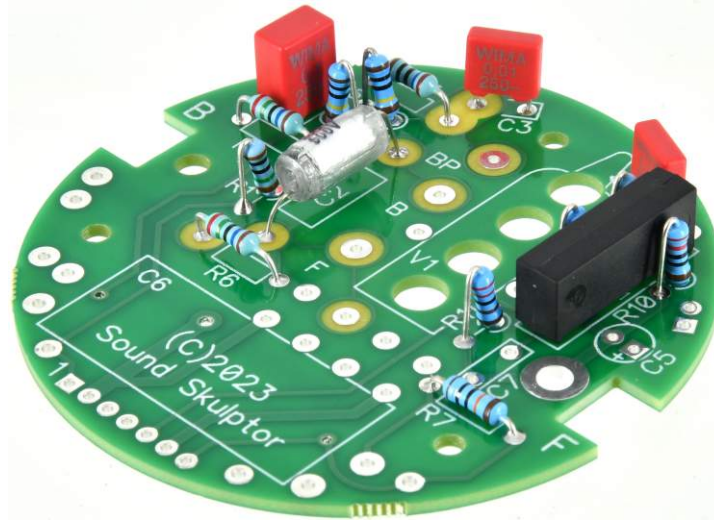
### 5. Reed relay



Solder the relay.

**Warning:** The relay is polarized and must be inserted in the right orientation. Pin 1 is identified by a little circle to the left of the writings and a square pad on the PCB.

## SK49 Assembly guide – Main PCB

**6. Tube holder**

Cut a 7cm long copper wire and a 9cm neoprene tube and prepare a loop around the tube body.

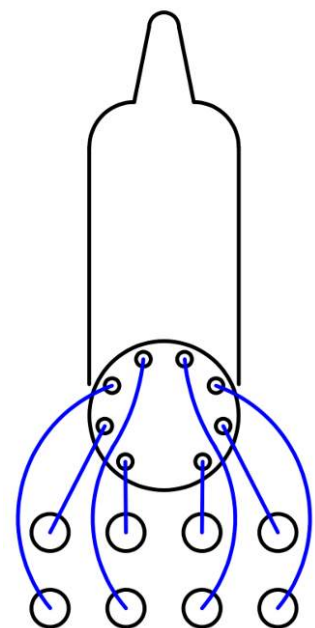
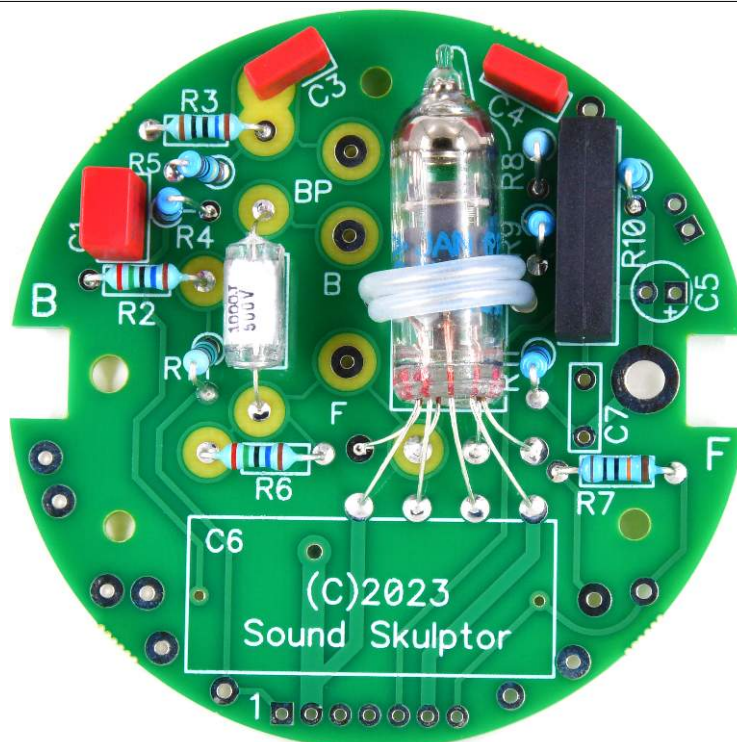
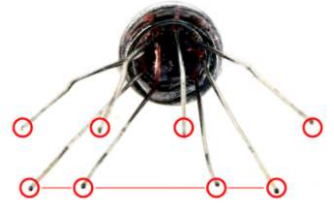
**7. Tube soldering**

Arrange the tube wires in 2 rows of 4 and shorten one row by 1 cm.

Insert the long row first then the short row.

Bend the wires by placing the tube horizontally in position.

Place the loop on the tube body and insert it into the holes provided. Pull the wires to lock the tube and solder. Solder the tube leads.



## SK49 Assembly guide – Main PCB



### 8. Electrolytic capacitor

Add the electrolytic capacitor C5.

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

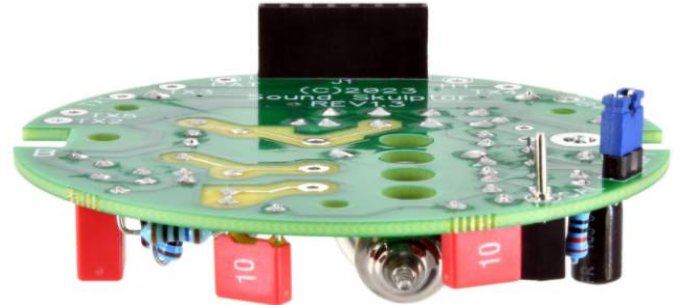
### 9. Polypropylene capacitor

Add C6

### 10. PCB backside

On the other side of the PCB, add a test pin in "CAL", a jumper in JMP1 and the 7 points connector J1.

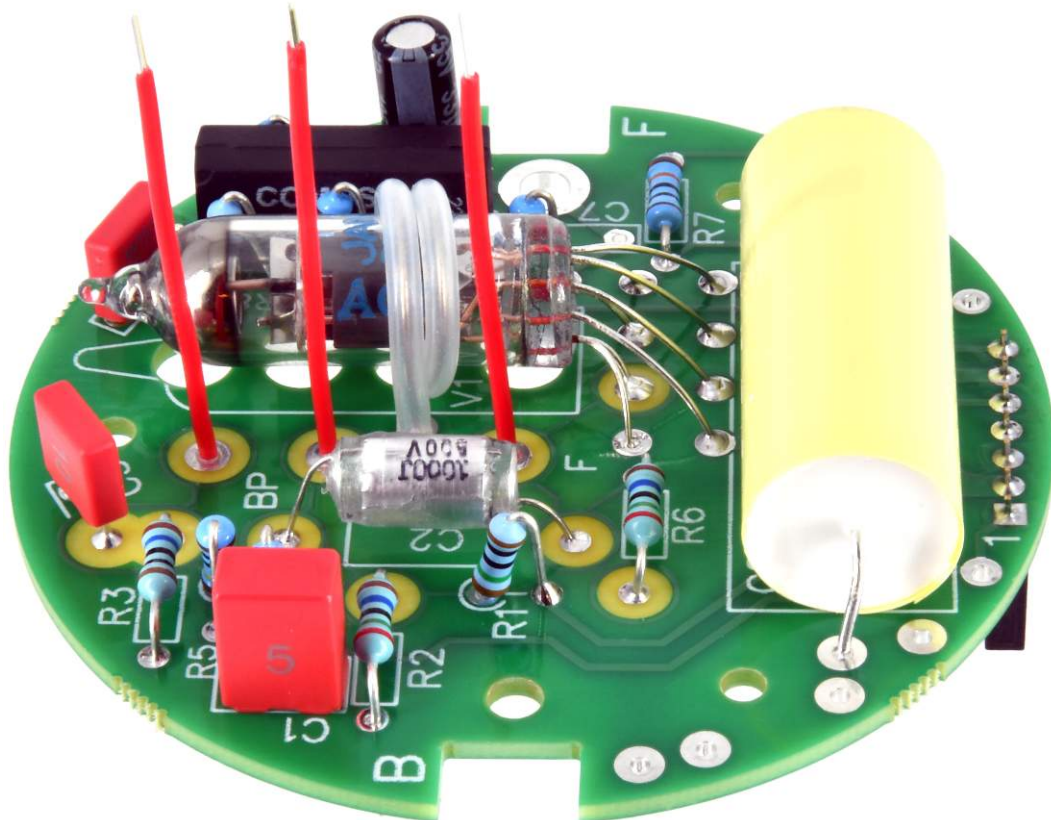
Start by soldering one pin, check verticality then solder the other pins.



### 11. Teflon wires

Cut three pieces of teflon wire 4cm long and strip both ends by 4mm. Solder in the pads "BP", "B" and "F".

**Warning**: Teflon wire is difficult to strip because it is very hard and doesn't melt at the temperature of the iron. We recommend practicing on one end of the provided wire before cutting.



## SK49 Assembly guide – Main PCB

### 12. Cleaning

Use isopropyl alcohol at 99.9%. Immerse the pcb completely. Leave to act for 10 minutes and brush both sides as well as the components with a toothbrush. Repeat a second time after replacing the alcohol with new alcohol.

After this only manipulate the PCB from the sides or with surgical gloves.

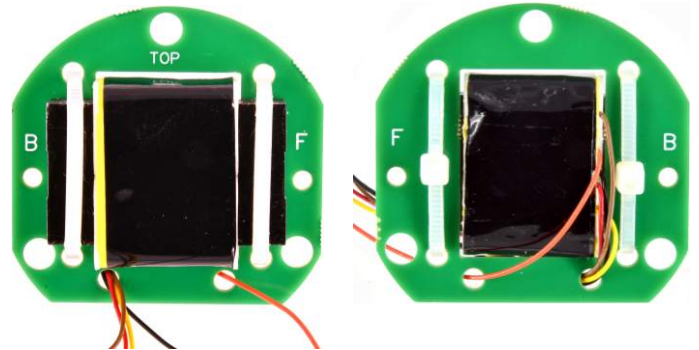


## SK49 Assembly guide – Transformer assembly

### 13. Fixing the transformer

Place the transformer on the TOP side, with the wires going into the rectangular cutout. Secure with 2 cable ties, placing the cable tie lock under the PCB.

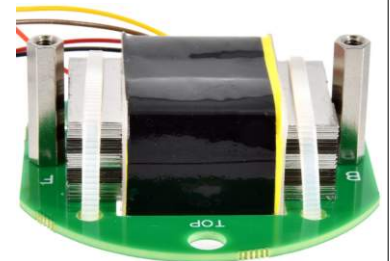
Run the orange wire into the right hole (seen from top) and the 4 other wires into the left hole.



### 14. Spacers

Attach 2 M3x20mm spacers on the top side with 2 M3x6mm screws.

**Warning:** do not use the M3x6mm screw with a smaller head. This one is reserved for the capsule saddle.

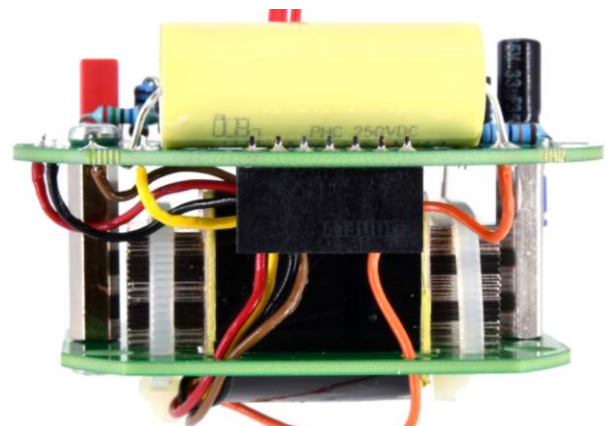


### 15. Transformer and main PCB assembly

Place the transformer PCB under the main PCB, making sure to match sides B(back) and F(front) and secure with two M3x6mm screws.

Shorten the wires to convenient length and solder to the main PCB:

- Red to TX2 pad
- Black to TX5 pad
- Brown to TX1 pad
- Yellow to TX3 pad
- Orange to TX4 pad



## SK49 Assembly guide – Capsule assembly

### 16. Capsule base assembly

Pile up the 4 round PCB's, lining up the holes with the help of a M3 screw and keeping the TOP marked sides on top.

Insert the 2 pins downwards into the small holes and solder to lock everything. Cut short at both ends.



### 17. Capsule mounting

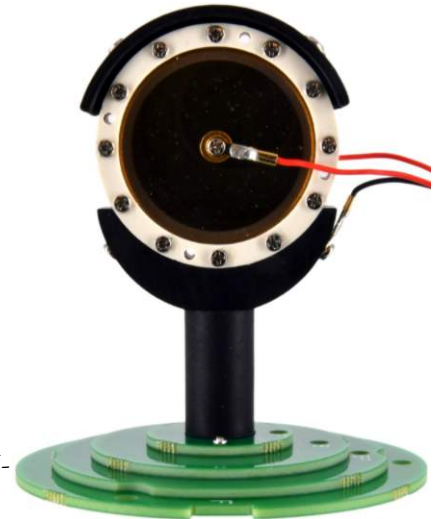
Secure the capsule saddle to the anti-vibration post with the M3x6mm screw provided. This screw has a smaller head than the other M3 screws in order to fit into the saddle hole.

**Warning:** You should never touch the membranes with your fingers. Protect the capsule in a small plastic bag before handling.

Secure the hat to the capsule with the two M1.6x4mm screws.

Secure the capsule to the saddle with two M1.6x6mm screws, one of which receives the lug of the black backplate wire.

Place one lock washer on the M3x10mm screw and secure the post to the PCB base, ensuring that the capsule is perpendicular to the F-B (front-back) axis.



## SK49 Assembly guide – Wire connector assembly

### 18. Opening the mic

Unscrew the bottom bell, remove the body cylinder and remove the 4 screws that secure the two rails to the base.

Keep the small screws carefully (easy to loose).

Remove the head basket.

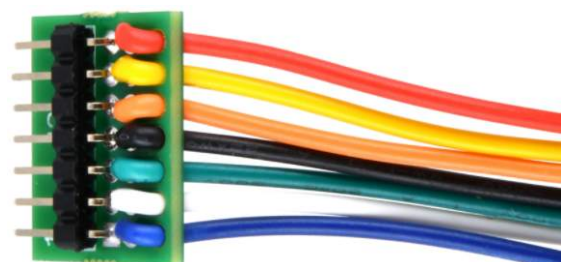
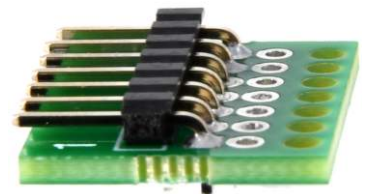


### 19. Connector J2

Insert the 7 pins male connector on the small PCB, on the side marked J2 and solder.

Pass the 7 wires from the other side, marked 1 2 3 4 5 6 7 in the corresponding holes, insert into the adjacent pads and solder.

- 1: Blue
- 2: White
- 3: Green
- 4: Black
- 5: Orange
- 6: Yellow
- 7: Red



## SK49 Assembly guide – Final assembly

### 20. Spacers

Screw three 25mm spacers into the base.



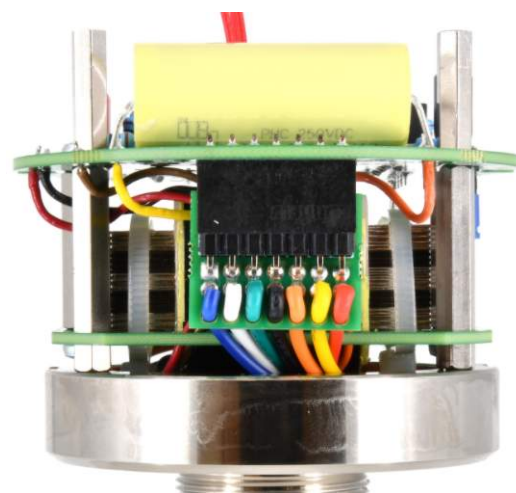
### 21. Electronics

Fold the 7 wires around the base cavity and Insert the PCB block into the 3 spacers.

The rail notches in the base must match the PCB notches:  
There is only one possible position.

Insert the 7 wires connector into the PCB connector.

Secure the top PCB with three 15mm spacers.



### 22. Capsule

Keep the capsule protected in a plastic bag during the whole operation.

Insert the 3 Teflon wires from the main PCB into the capsule base while matching the F, B and BP markings.

Secure the capsule base to the 3 spacers with three M2.5x6mm screws.

Cut the capsule wires to a suitable length and solder to the 3 Teflon wires:

- F wire to the front membrane,
- B wire to the back membrane,
- BP to the capsule backplate (the metal side).



### 23. Closing the microphone

If necessary, cut any pieces of metal that may protrude from the weld between the head base ring and the mesh with wire cutters.

Carefully insert the capsule into head basket and secure the rails with the 4 screws.

Insert the body cylinder taking care to place the logo towards the front side of the capsule.

Close the mic with the bottom bell.

Power the mic and let it burn-in for 24 hours to allow the tube to stabilize its characteristics and eliminate any moisture in the mic.

## 5K49 Assembly guide – Final assembly

### 24. Congratulations

You're done!

Power the mic and let it burn-in for 24 hours to stabilize the tube characteristics and eliminate any moisture in the shell.

