

CP5176 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.

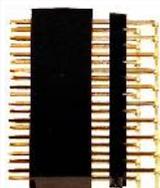
Please read the “DIY guide” before beginning.

Print or open the following documents :

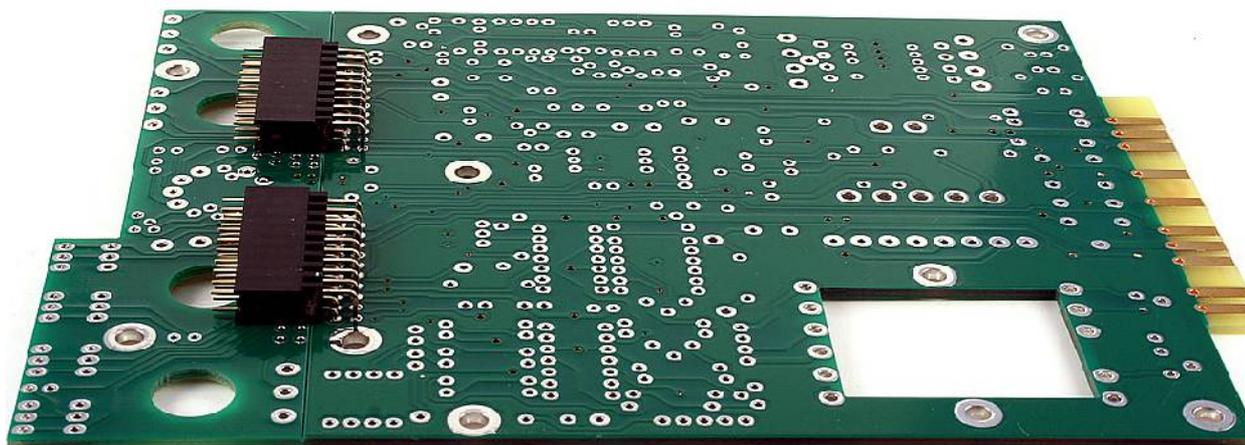
- CP5176 Schematics
- CP5176 Components layout
- CP5176 Parts list
- CP5176 Setup guide

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.

CP5176 Assembly guide – Main PCB

**1. PCB to PCB connectors**

Insert the male, 90° angled, 2x10 connectors into the corresponding 2x10 sockets and put them in place, flat **under** the PCB. Solder.



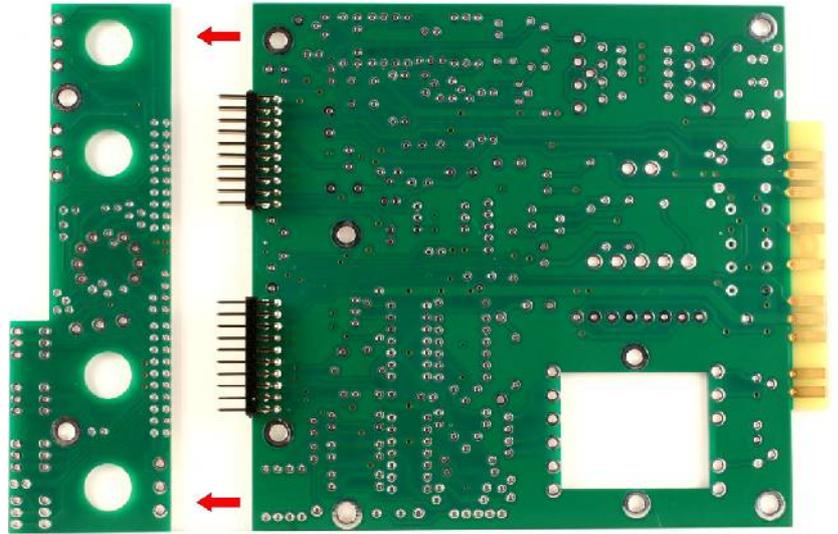
Warning : The connectors are installed *on the solder side* of the PCB.

Warning : It is important not to split the PCB before this step as the small PCB is used to line up the connectors horizontally.

CP5176 Assembly guide – Main PCB

2. PCB split

Split the PCB along the groove, taking care not to press on the connectors.



3. DOA Pin Sockets



Solder the 7 pin sockets for the DOA. Solder one at a time. Insert one socket, turn over the PCB and press against a solid but flexible surface like cork or dense foam then solder. The correct positioning of the sockets is very important for easy insertion of the DOA.



4. Diodes



Add D1, D4 to D7. 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.

5. Resistors



Add R3 to R66. 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., except for R29 which is bent at à 0.6”.

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

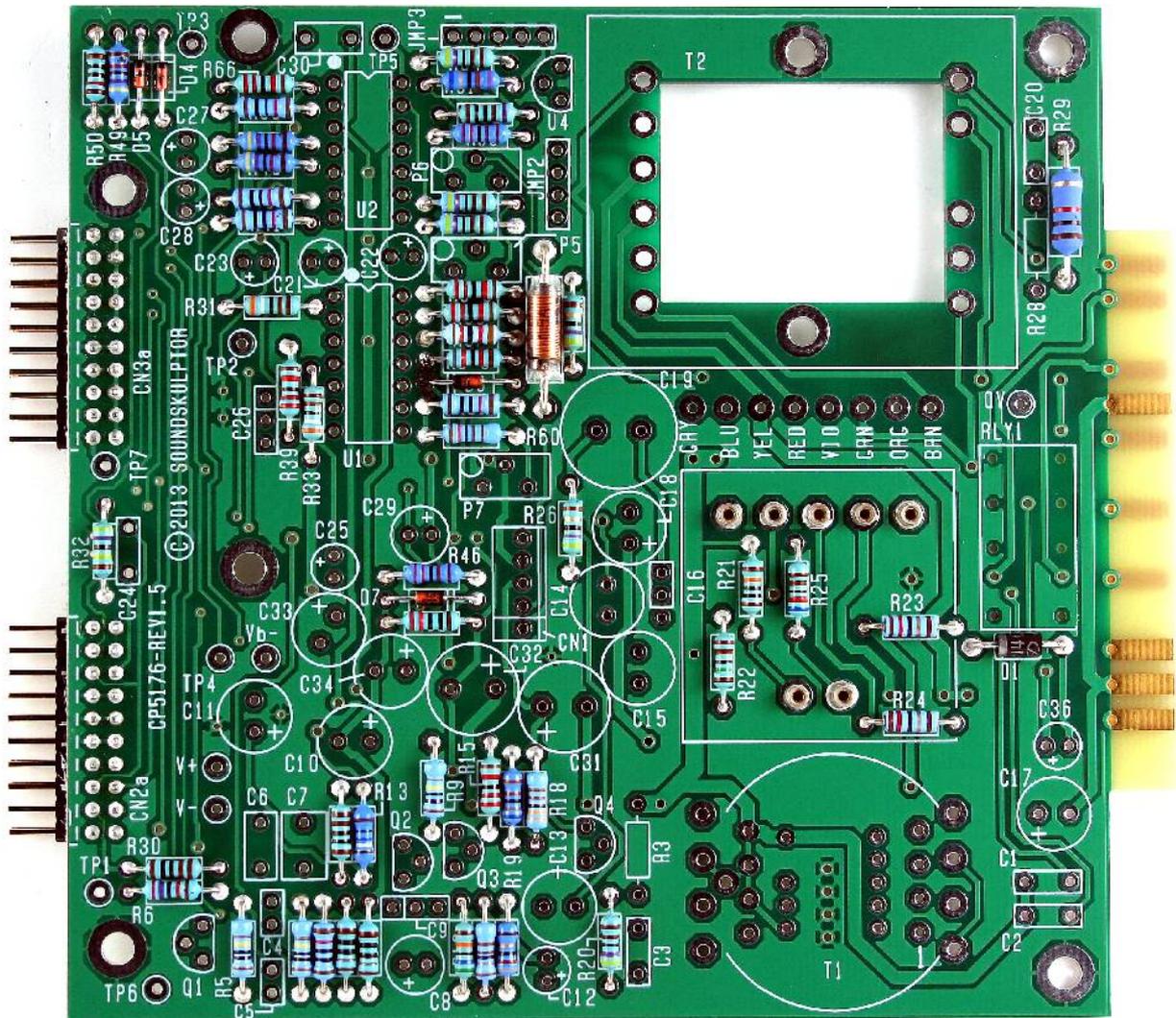
Warning : Resistors R51 (6K8) and R52 (1K) are 0.1% precision resistors. They must not be confused with 1%, same value resistors. Their last colour ring is violet instead of brown.

6. Inductor



Add L1. Bend at 0.7”.

CP5176 Assembly guide – Main PCB



7. IC Sockets

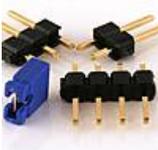
Insert and solder the 14 pins sockets of U1 and U2.

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



8. Test pins

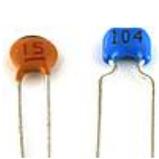
Solder the 11 test pins TP1 to TP7, V+, V-, Vb- and OV.



9. Jumper headers

Solder the jumper header JMP2, JMP3 (there is no JMP1). Solder one pin first, check verticality, then solder the other pins.

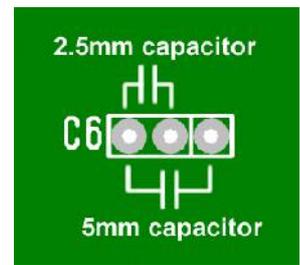
CP5176 Assembly guide – Main PCB



10. Ceramic capacitors

Add C9, C16, C26.

Warning : Some capacitors have provision for 2 sizes. Small size capacitors must be inserted in the correct holes as shown in the picture.



11. Film capacitors

Add C4, C5, C1, C2, C24, C6, C30, C7.



12. Transistors and regulators

Add Q1 to Q4 and U4.

Warning : Watch out the transistor direction.



13. Trimmer potentiometer

Add P5, P6, P7. These 3 trimmers are different from each other. Solder one pin, check verticality then solder the other pins.



14. Connecteur

Add CN1. Solder one pin, check verticality then solder the other pins.



15. Relay

Add RLY1.



16. Electrolytic capacitors

Add C12, C21, C22, C23, C25, C27, C28, C36.

Add C8, C29, C10, C13, C14, C15, C11, C17, C18, C33, C34.

Add C31, C32.

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

C33 is larger than on the PCB silkscreen but fits without problem. The + (long lead) to the right.

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



17. Input transformer

It is necessary to leave a small gap between the transformer and the PCB surface in order to avoid any electrical contact between the metal case and pads. Fit a piece of double sided adhesive tape under the transformer, between the pins. It is not necessary to remove the second protective layer from the tape as it is only used as a spacer.

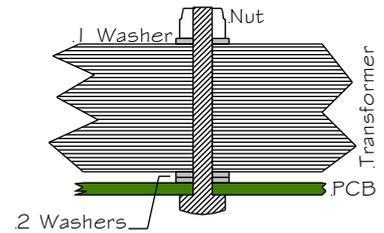
Pin 1 on the transformer is identified by a red dot. Insert the transformer, pin 1 into hole number 1. Start soldering 2 opposite pins, check the position, adjust if necessary then solder the other pins.

Warning : Double check the pin 1 position because this transformer can be mounted backwards!

CP5176 Assembly guide – Main PCB

**18. Output transformer**

The transformer is mounted using two 25mm M3 screws inserted from the back of the board. Two metal washers are fitted on each screw to prevent the transformer touching the PCB. One more washer is used before the nut to protect the lams. Shorten the leads to the necessary length, around 6 cm. Strip on 5mm and tin. Insert in the pad hole and bend the tinned tip flat on the pad before soldering. Cut flush.

**19. Large electrolytics**

Add C19. Solder one lead first, adjust vertically then solder the second lead.

**20. IC's**

Insert U1 and U2 in their sockets. It is necessary to bend the pins slightly inward before inserting.

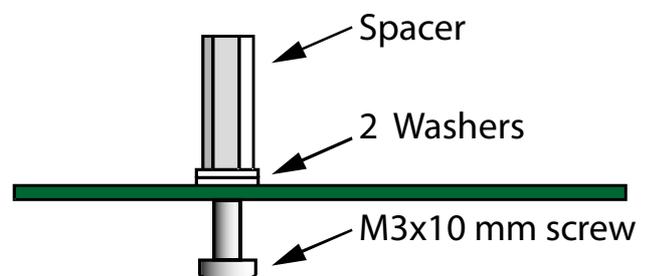
Attention : Make sure to insert the IC's in the correct direction which is identified by a notch.

**21. Jumpers**

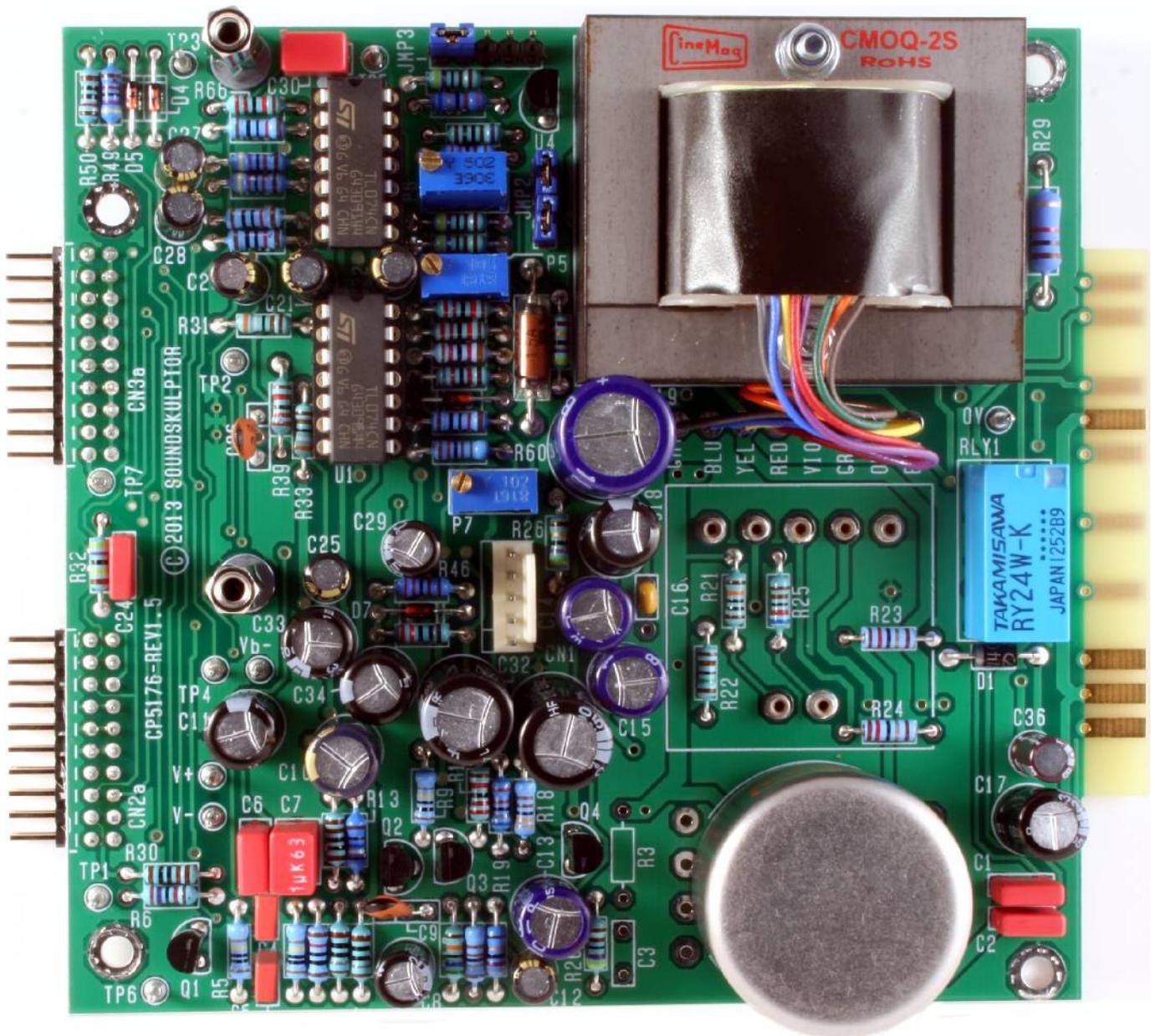
Insert two jumpers on JMP2 and one jumper on JMP3 (between pins 1 & 2).

**22. Gain reduction meter spacers**

Insert a M3x10 mm screw from below PCB, add two metal washers and the 20mm spacer. Repeat for the second spacer.



CP5176 Assembly guide – Main PCB



23. 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 front PCB assembly.

CP5176 Assembly guide – front PCB assembly

1. Resistors



Add R14, R34... R38, R42... R45.

Control the resistor values with a digital multimeter. The resistors are installed vertically.

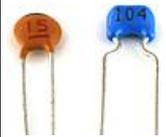
CP5176 Assembly guide – front PCB assembly



2. Diode

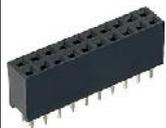
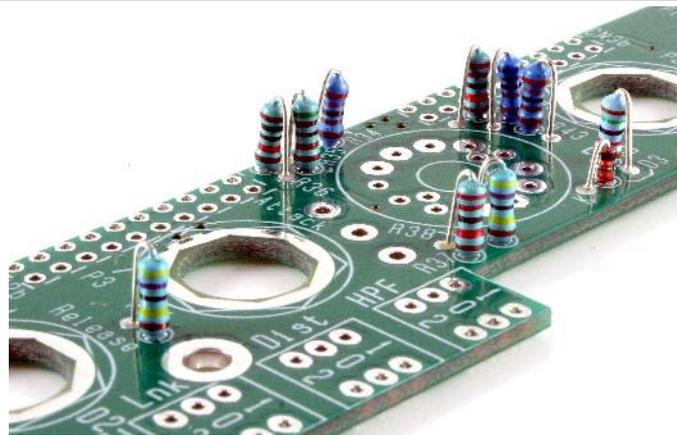
Add D3.

Warning : Make sure to respect the direction of the diode which is marked by a ring on the component and letter K on the PCB marking.

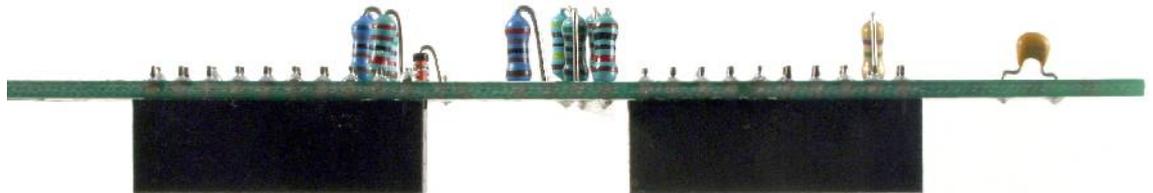


3. Ceramic capacitor

Add C35.



4. Connectors 2x10



Solder the two 2x10 connectors on the back of the PCB, inserted from the solder side.



5. Spacers

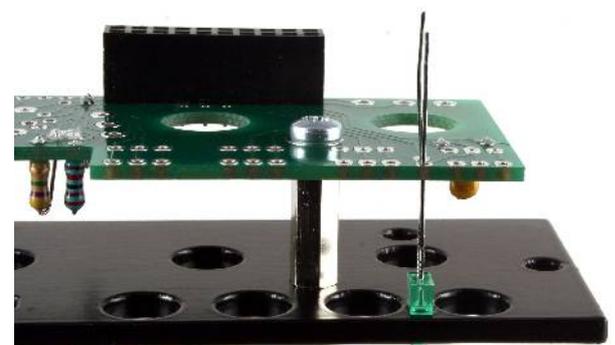
Attach two 15 mm spacers with two M3x6 mm screws, inserted from the solder side.



6. 2mm LED

Insert the 2mm LED, taking care of the anode/cathode position. The shortest leg (cathode) is the closest to the PCB edge. Temporarily attach the front panel with two M3x8 mm screws. Adjust the LED flush with the front panel surface. Solder.

Remove the front panel.



CP5176 Assembly guide – front PCB assembly

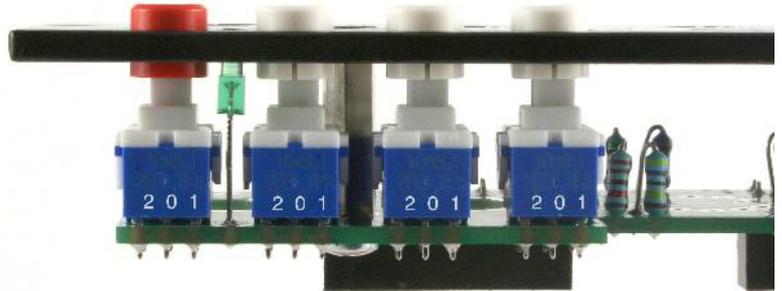


7. Push buttons

Insert the caps on the push buttons. Insert the push buttons, flat, in the correct direction and solder only one pin.

Warning : The push button direction is given by digits 2 0 1, engraved on one side of the switch. Match the digits with the ones on the PCB.

Install the front panel temporarily and check the position of the switches. When all is correct, with the caps well centred in the front panel holes, Solder the other pins.



8. Potentiometers

Add P1, P2, P3 and P4. Insert the potentiometers into the PCB holes from the solder side, making sure the pins fit into the corresponding PCB pads. Attach with washer and nut on the component side, tighten firmly to ensure a perfect perpendicular position and solder.

Warning : The 4 potentiometers have different values.



9. Rotary switch

Add the 6 positions rotary switch RSW1.

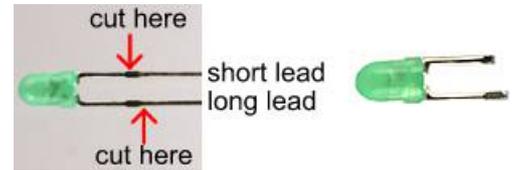
Warning : The position of the switch is critical for a good front-plate matching. The switch rests on 3 small feet that must sit perfectly flat on the PCB. Press the switch on the PCB and solder two opposed pins. Check position then solder the other pins.



CP5176 Assembly guide – Gain reduction meter

1. LEDs

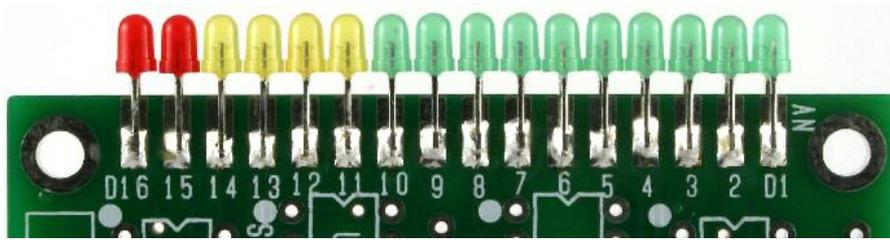
For each one of the 16 LED's cut the short leg (cathode) at 5mm from body and cut the long leg (anode) at 6mm.



Then insert the first green LED on the PCB, long leg (anode) on top. Make sure that the leg is perfectly parallel to the pad. Solder the anode but leave the cathode free for now. The position is still easy to adjust until both legs are soldered.

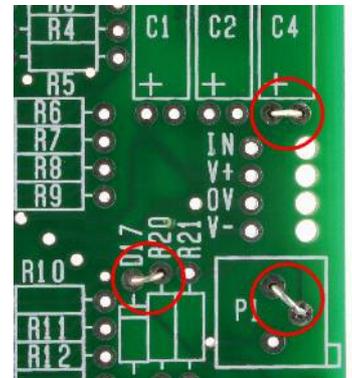
Insert and solder the next LED and repeat until the 16 LEDs are in position.

Make a last visual check and correct LED's that are not perfectly lined up, then solder the cathodes on the PCB back side.



2. Straps

Solder the 3 straps indicated in red on the layout schematic. Use resistors legs that were previously cut.



3. Resistors



Add R1 to R23.

The resistors marked NC in the parts list are not installed.

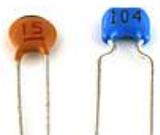
Control the resistor values with a digital multimeter. Bend the leads at 0.4" with a lead forming tool.

4. Integrated Circuits



Insert U1, U2, U3 and U4 and solder. You will need to bend the pins slightly inwards before inserting.
Warning : Make sure to respect the IC direction, marked by a semi-circular notch on the IC and a dot on the PCB.

5. Ceramic capacitor



Add C3.

CP5176 Assembly guide – Gain reduction meter



6. Electrolytic capacitors

Add C1, C2.

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



7. Regulator IC's

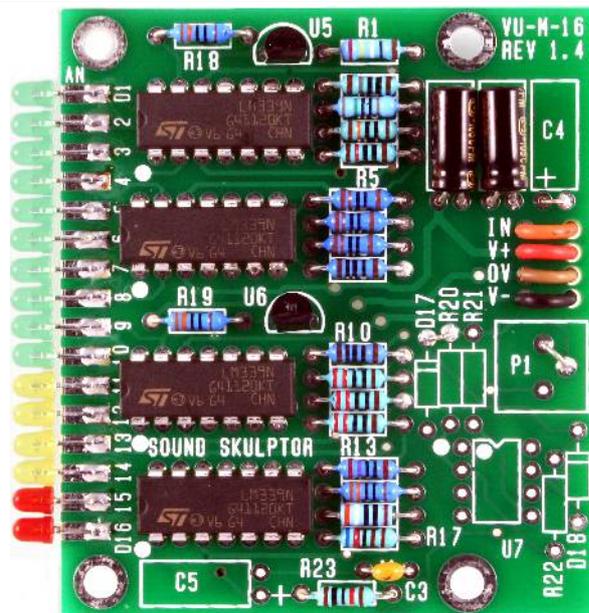
Add U5 and U6. Press the IC's down as far as possible in order to keep the components height low.

Warning : Watch out the IC direction.

8. Wiring

Install and solder the wires that come from the driving board. The wires are inserted from below the card through 4 holes and from top into 4 pads for soldering.

If the driving board is the Stereo Tape Simulator, connect orange to IN, red to V+, Brown to OV, black to V- and remove the yellow wire.



CP5176 Assembly guide – Final assembly

9. Front panel and Side plate assembly

Attach the potentiometers PCB to the front panel with two M3x8 black screws (hex screws).

Attach the side plate to the front panel with two M3x8 black screws (hex screws).



CP5176 Assembly guide – Final assembly

10. Main PCB assembly

Insert the main PCB connectors into the connectors of the potentiometers PCB until match of the main PCB holes with the side plate standoffs.

Attach the main PCB with four M3x6 screws and four shake-proof washers



11. Knobs

Attach the 5 knobs to the 5 potentiometers and switch spindles.

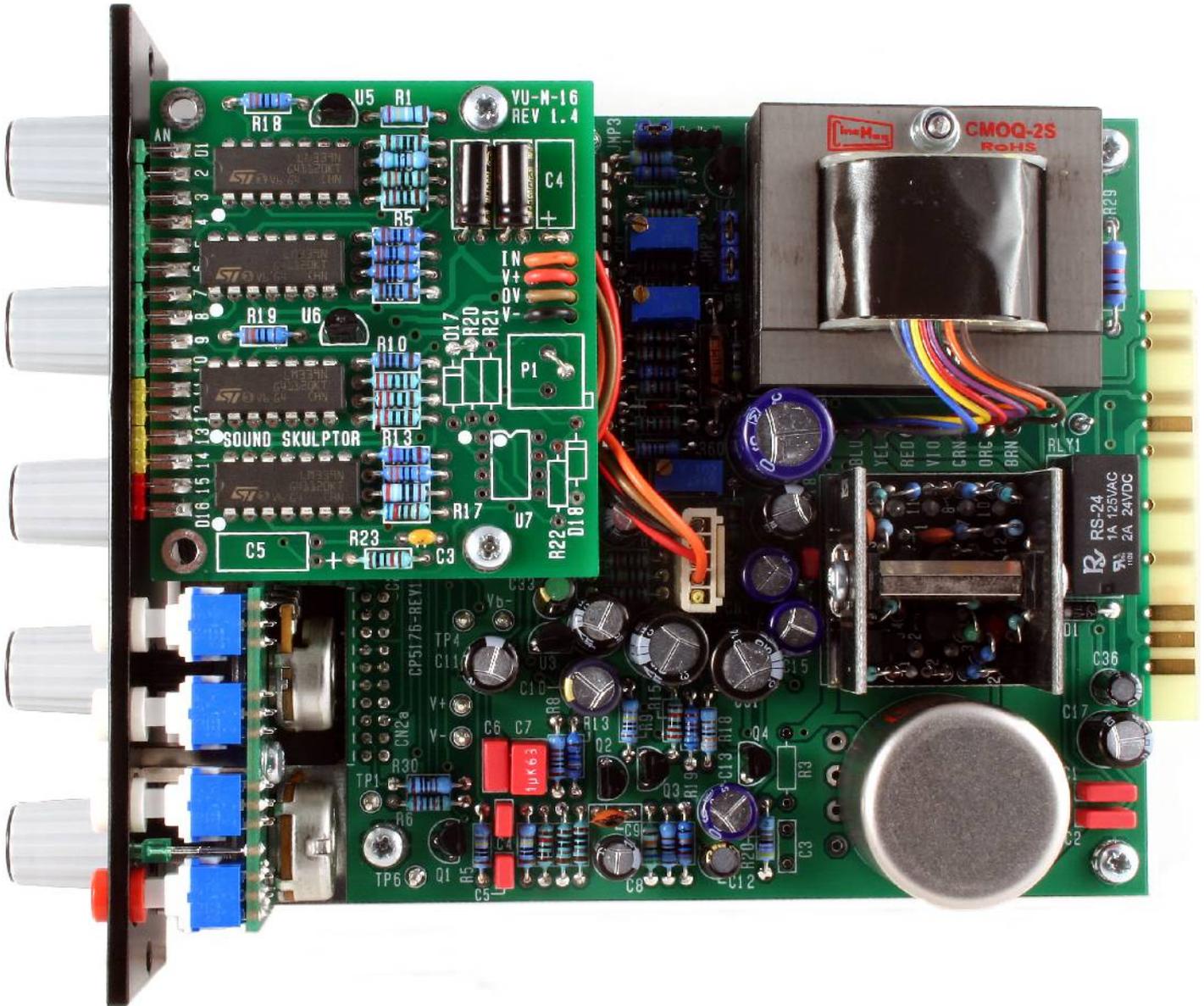
12. Gain reduction meter assembly

Attach the GR meter on the two spacers with two M3x6 screws, making a loop with the cable under the PCB. Don't plug the cable yet.

13. Test and setup

It is time for test and setup. Follow instructions on [cp5176-setup-guide.pdf](#).

CP5176 Assembly guide – Final assembly



14. Congratulations !

You're done !