Tubbutec KAC TM62100

Installation manual for Yamaha SK20

Tools you will need:

- Soldering iron
- Metal drill 3.2mm (or similar)
- Metal drill for a 15mm hole (stepping drill for example)
- Center punch
- Screw driver

Included in the kit:

- TM62100 KAC Chip
- 40pin IC socket
- Connection cable assemblies
- 100K resistor for cutoff control
- Midi socket drill guide
- 4x M3 bolt, 4xM3 nut for midi sockets
- Sticker for midi socket labelling

Principle of operation

The Tubbutec KAC replaces the key assigner chip of the Yamaha SK20 (YM62100).
This enables the user to play the SK20 via MIDI. It also adds filter, resonance and sustain control via MIDI, and MIDI Out.

The original behaviour is fully maintained.

Considerations before assembly

You need to remove the main board and the jack board from the synthesizer. It is also required to desolder the original Yamaha key assigner chip (YM62100, labelled YM621 F) from the main board. This needs to be done with care not to damage the original chip and/or traces on the board.

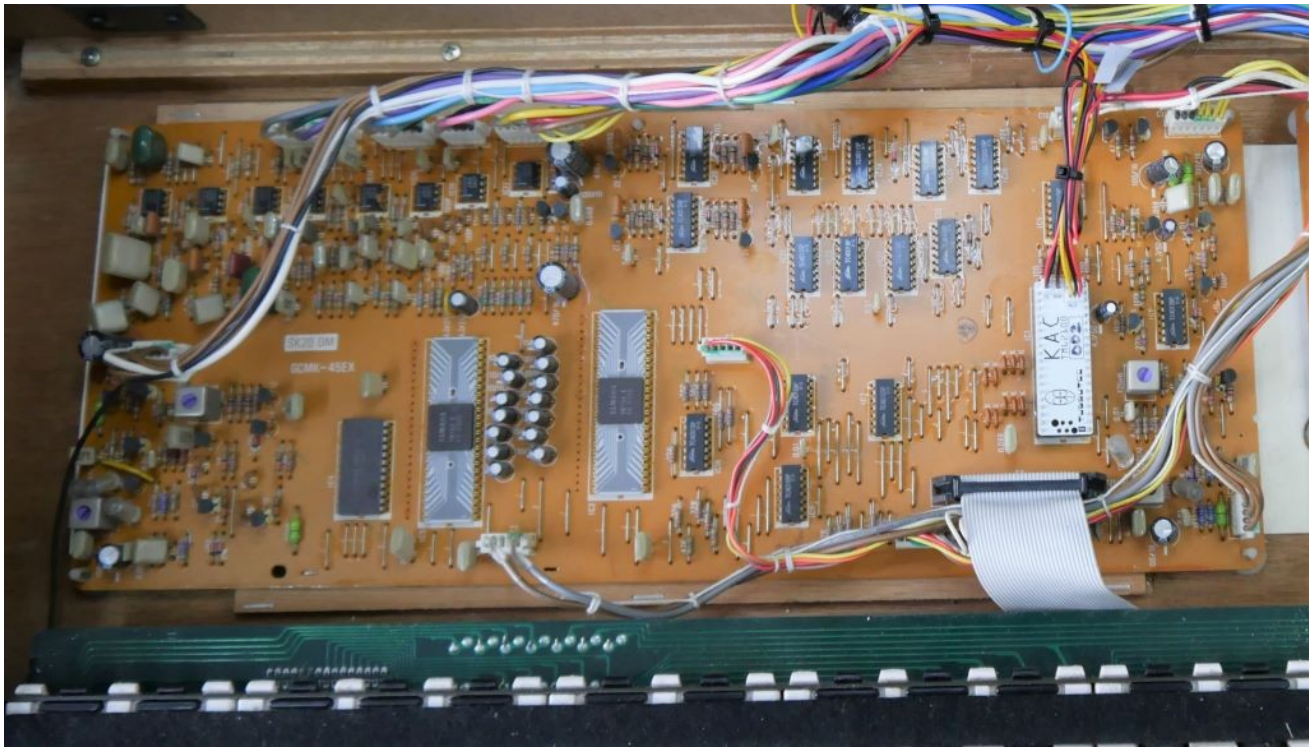
Proper tools are required to do this and some basic skills in desoldering.

If you feel uncomfortable to perform this task you might consider reaching out for a technician in your area, or you can contact us.
A list of synth techs can be fund here: https://tubbutec.de/synth-techs/

Two holes for the MIDI jacks need to be drilled in the back panel of the synthesizer.

Desoldering the YM62100 chip

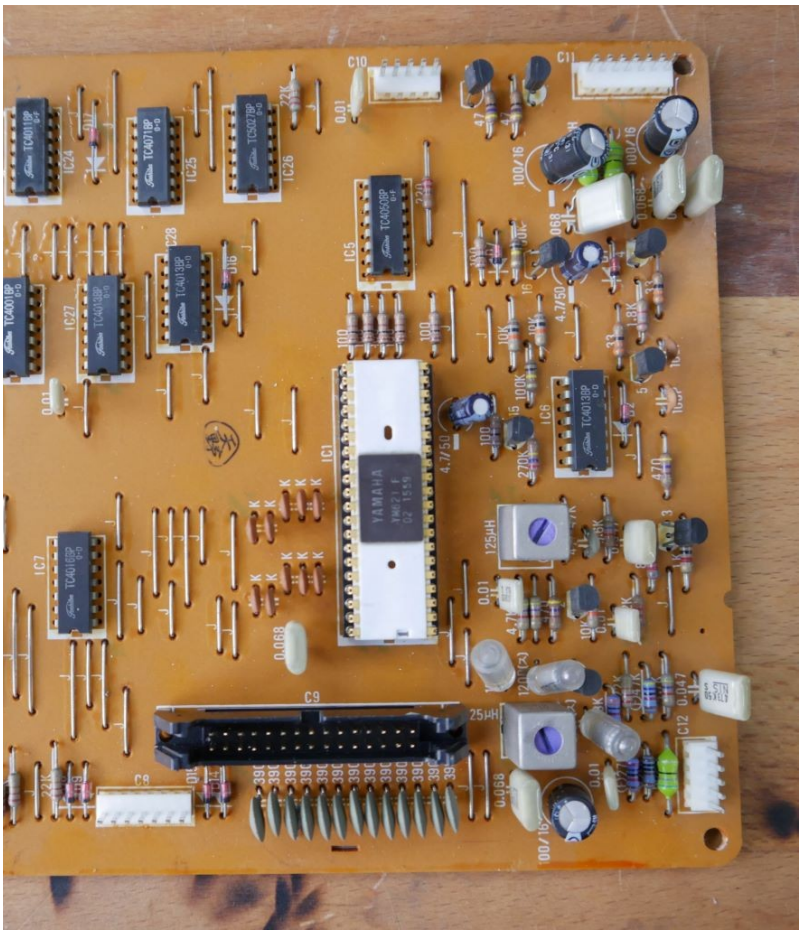
First you need to remove the mainboard from the synthesizer.
To do so carefully unplug all wire assemblies. The picture below can be used for reference to plug the connectors back in the right positions later. Be careful not to damage any of the plastic spacers holding the board.



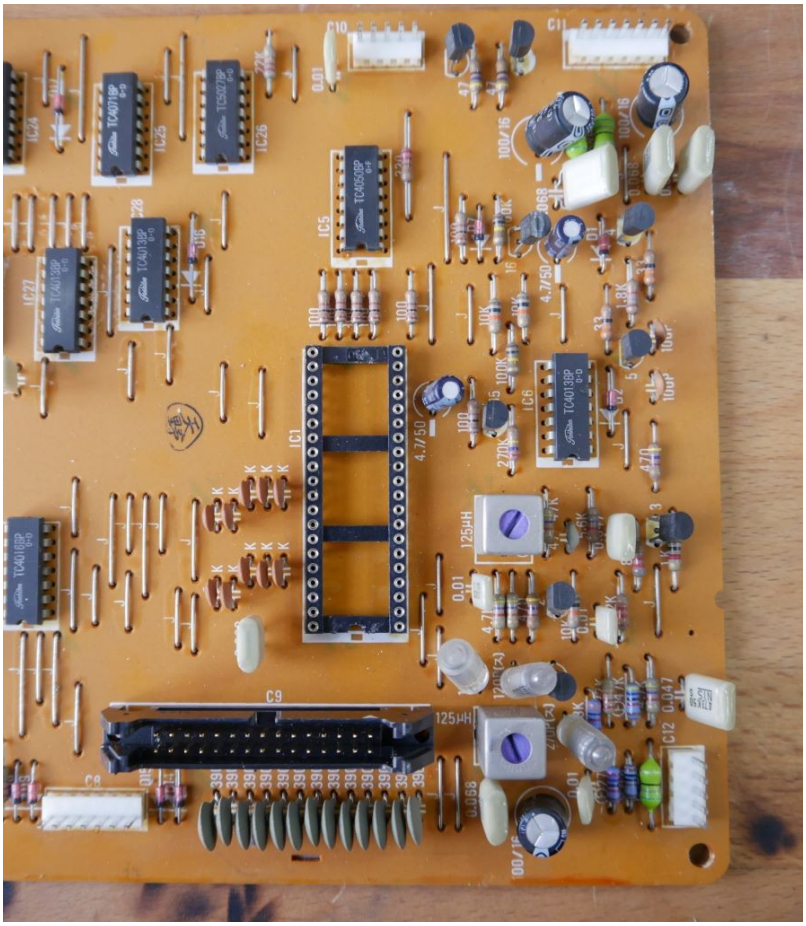
Use a desoldering pump to desolder IC1, the YM62100 chip. As this is a single layer board without plated-through holes this is relatively easy to do, but take care not to apply too much heat and pressure to the solder pads, as this can easily damage the pads and/or the chip.

After you have removed the Yamaha chip put it in antistatic foam included in the kit to protect it.

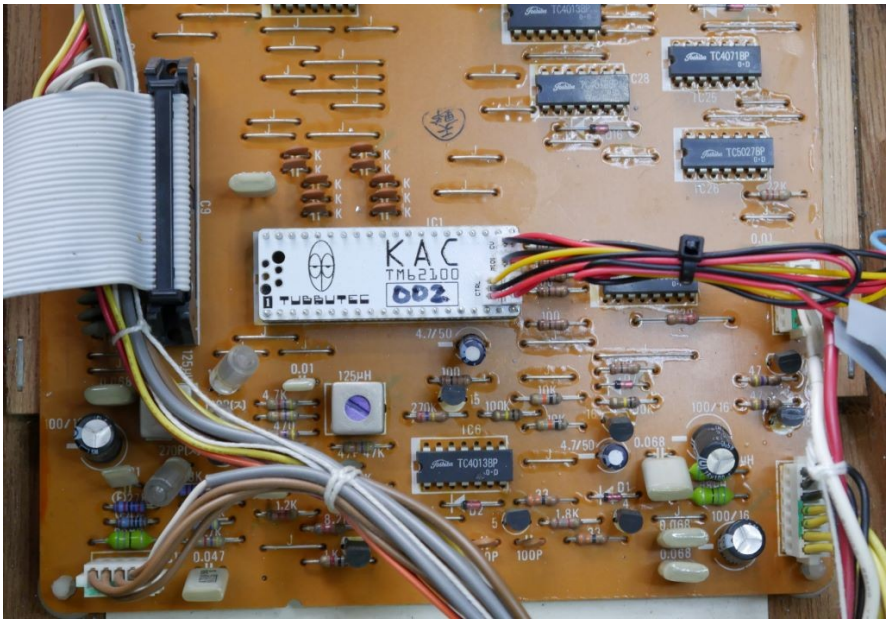
Make sure all solder is removed from the solder pads, and that the pads and traces are all intact.
Next step is soldering the 40pin IC socket in place, make sure the notch of the socket reflects the pin 1 location of the original chip.
Install the Tubbutec KAC chip.
Reinstall the mainboard in the synthesizer.
Reconnect the wire assemblies, take care to plug them into the correct sockets.



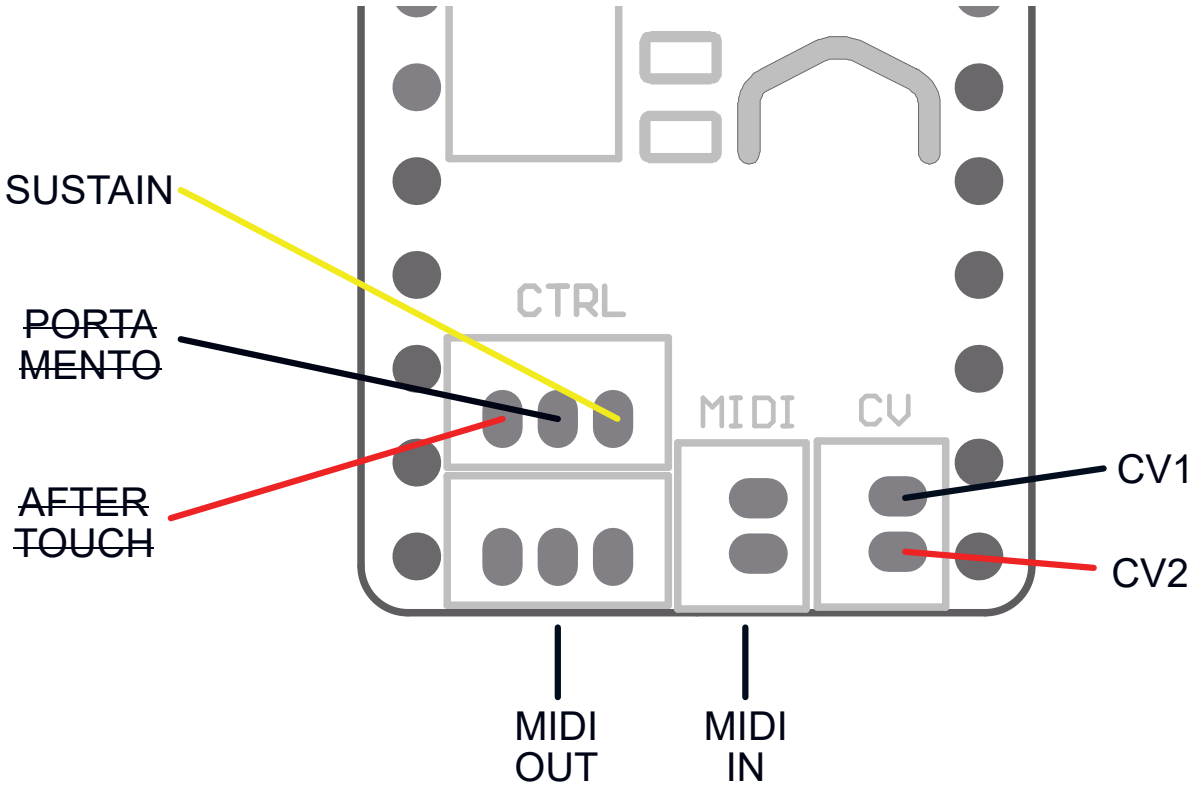
Mainboard with original KAC



Mainboard with socket



Mainboard with TM62100



Soldering the Cutoff and Resonance wires

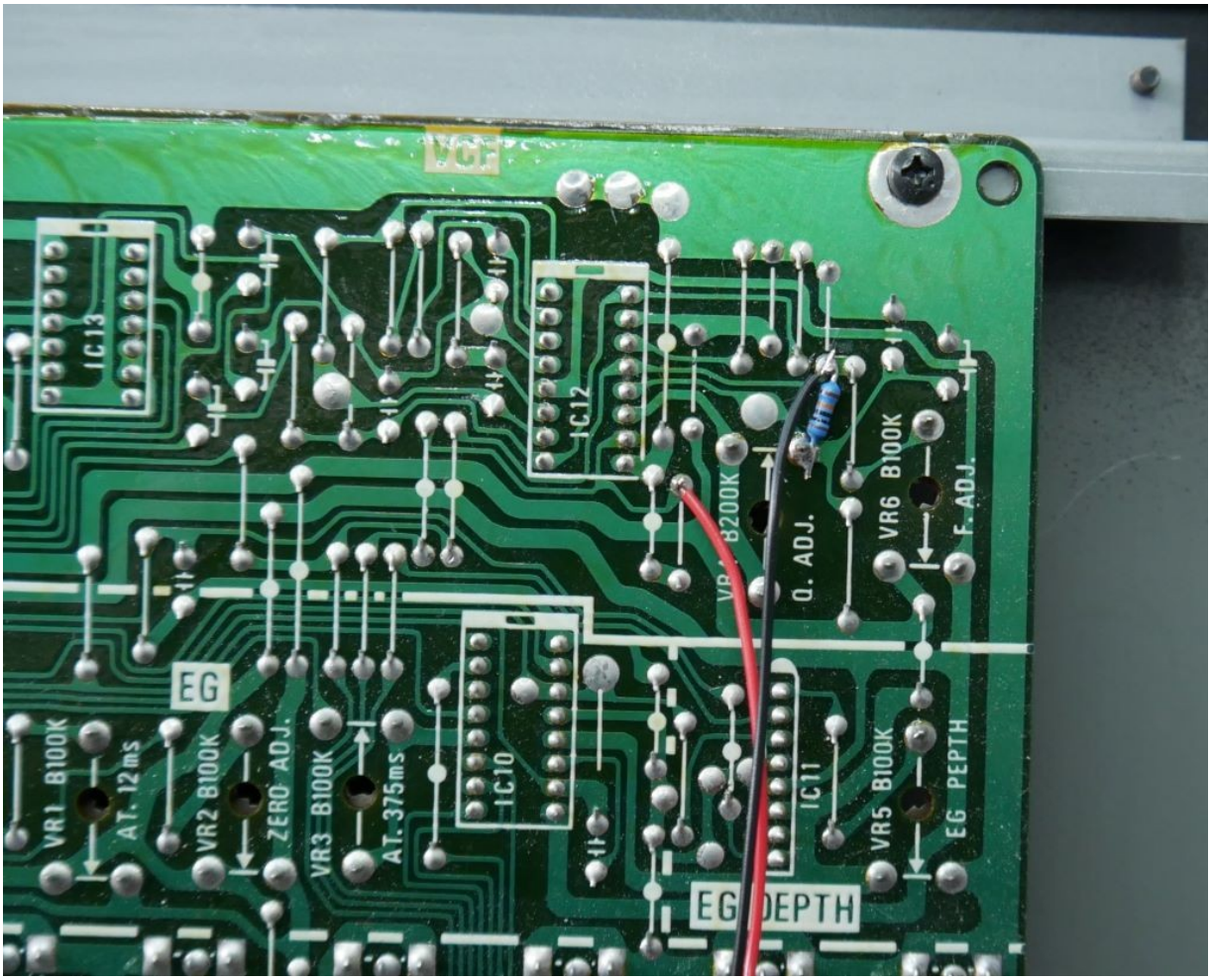
Plug the 2pin connector with the long wires in the socket labelled CV on the KAC board.

Route the wires to the upper right corner of the control panel pcb.

Solder the 100K resistor in place where shown in the picture.

Solder the red wire (Resonance control) to the spot shown.

Solder the black wire (Cutoff control) to the spot shown.



Secure the wires with cable ties to the wire loom.

Installing the MIDI sockets

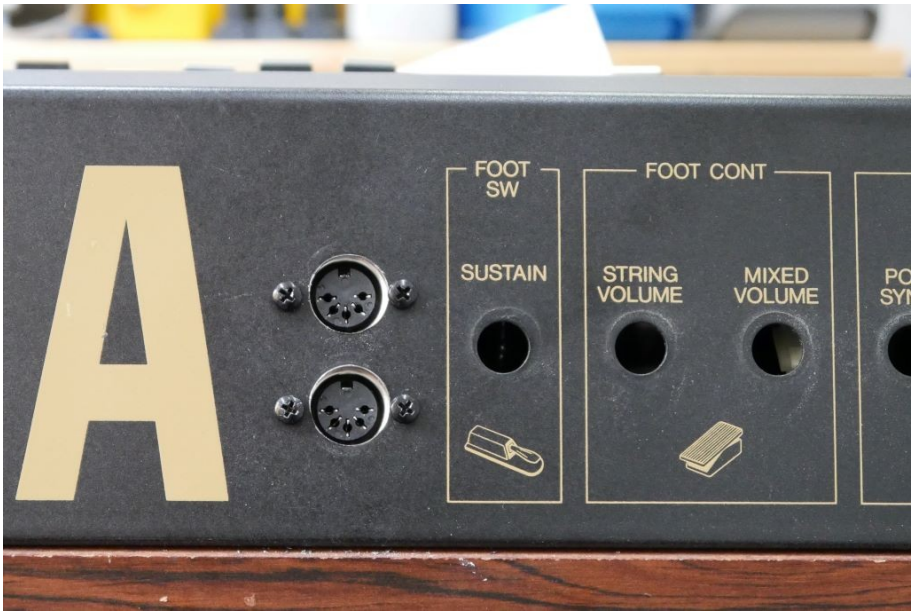
First place the drill aid for the MIDI sockets on the back panel of the synthesizer.

Then you need to remove the jack board. To do that you first need to unplug all wire connectors. Please be careful, the board is very (!) fragile!

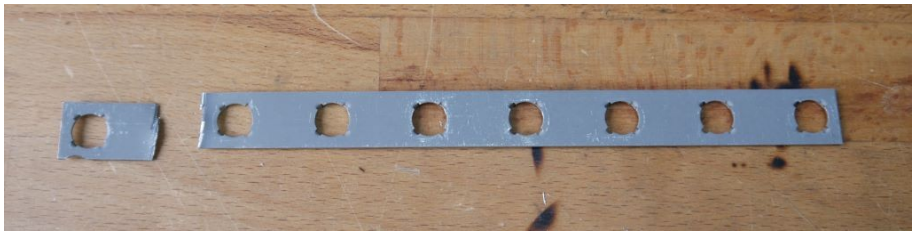
After you removed the connectors just remove the jack nuts and remove the board from the synthesizer.

Now you can drill the holes for the MIDI jacks. The mounting holes should be 3.2 to 3.5mm in diameter, the holes for the MIDI jacks 15mm.

Next step is installing the MIDI jacks. The upper jack is MIDI In (2pin wire assembly), the lower MIDI Out (3pin wire assembly).



There is a mounting bracket for the jack sockets with an unused hole next to the sustain socket. This unused part needs to be removed in order to install the midi socket in the location shown above.



Now reinstall the jack board. Take care not to bend it too much. Don’t forget to reinstall the jack mounting bracket, and take care to plug in the wire assemblies to the right spots.

Plug in the MIDI wire assemblies on the KAC chip as shown in the diagram above.

As the MIDI jack assemblies are detachable it is also possible to mount the jacks from the outside. In this case it is advisable to drill a 16mm hole.

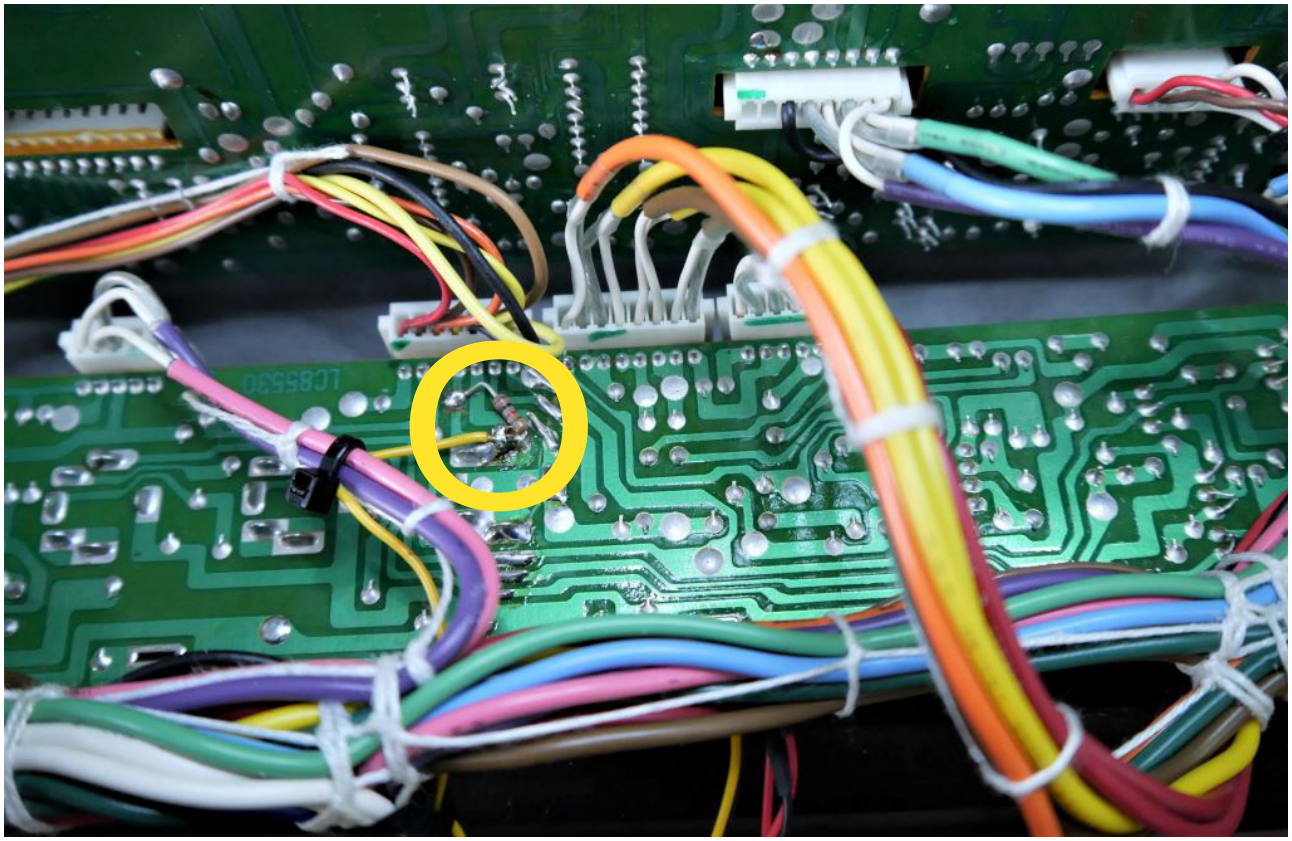
You can now use the sticker included in the kit to label the midi sockets. The sticker is transparent in order to blend with the existing print.

Soldering the sustain wire

After you reinstalled the jack board you can now solder the sustain wire.

Plug the 3pin connector in the socket labelled CTRL on the KAC board.

Only the yellow wire is used here, we recommend to secure the red and black wires so they can’t touch anything in the synthesizer, ie use insulating tape at the wire ends.



The sustain wire gets soldered directly to the tip of the sustain jack, see picture.

That’s all. Have fun.