Backlight Exchange Manual for Korg Wavestation EX

Wavestation EX with a dead EL-panel

Area of Application

This manual is meant as an example for similiar built music machines such as:
Korg 01 W, Korg i3, Korg T2, Korg T3, Korg Wave Station AD, Korg Wavestation EX, Yamaha DEQ 5, Yamaha TG-77, Yamaha SY-77, Yamaha SY-99, Akai MPC60 Version 1, ASQ-10, Kurzweil K2000, Roland D-70, Roland DM80R, DM800, S750, W30, Akai PB1000, S1000, S1100, S2800, S3000(XL), S3200(XL), VX600, MPC60II,

with the same or similiar LCDs:
Optrex DMF5005, AND711A, Sharp LM24014, Toshiba TLX 711A.

Requirements and Qualifications

The exchange of the backlight requires certain skills and qualifications in modifying electronics and mechanics.
Replacing the backlight without the necessary skills may lead to an irreparable damage of your device and the EL-panel.

Version 1.0 of 29.March.2009

Disclaimer

If you replace the backlight by yourself, backlight4you will not be liable in any way, neither for a damaged EL-panel nor the device.

This manual neither entitles nor implies any rights for claims for compensation. Its merely a recommendation.

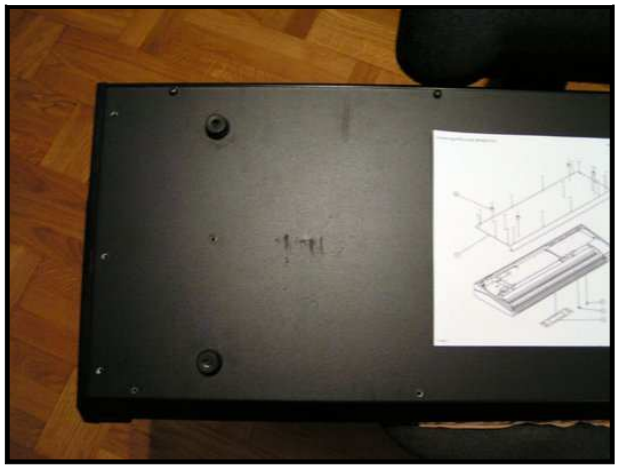
Needed Tools and Materials

-Cross screwdriver, middle
-Cross screwdriver, small
-Needle-nosed pliers
-Small straight nail scissors
-Soldering iron for SMD with needlelike tip
-Solder (leadfree and low heat preferred)
-A piece of thermal conducting metal like copper(e.g. a copper coin) =>
=> [Please watch our info about: How to handle an EL-panel, carefully]
-evtl. a long, small and straight knife about 20cm long
-Replacement EL-panel

Display of a Wavestation EX with a dead backlight

Step 1

Start loosening the screws of the bottom casing cover of the device, except the screws located in the rubber feet.



Bottom of the casing cover pic 1

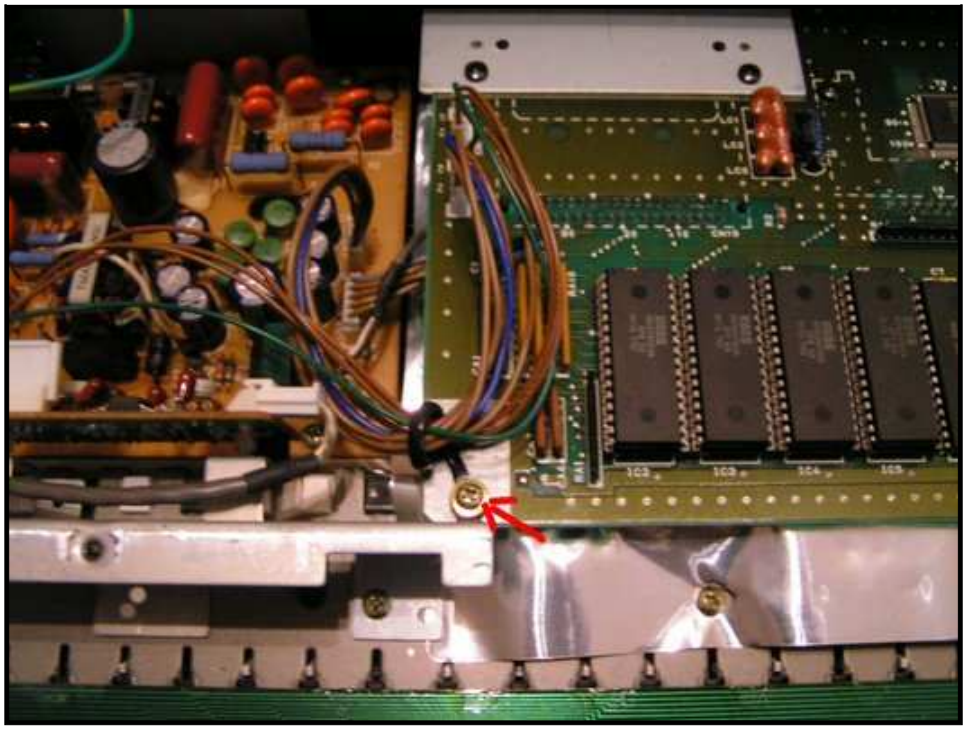
Bottom of the casing cover pic 2

After removing the casing bottom cover the Korg looks like this:

Wavestation EX after removal of the bottom casing cover

Step 2

Loosen screws from the left side of the mainboard KLM-1415D, watch red arrow.



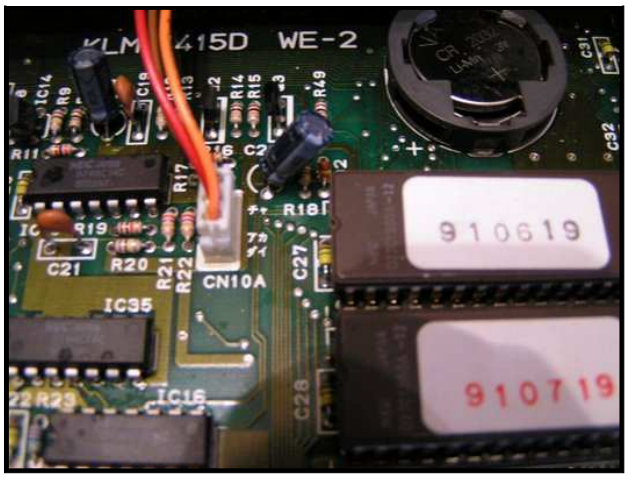
Left side of the opened Wavestation

Loosen screw on the right side of the mainboard KLM-1415D, watch red arrow.

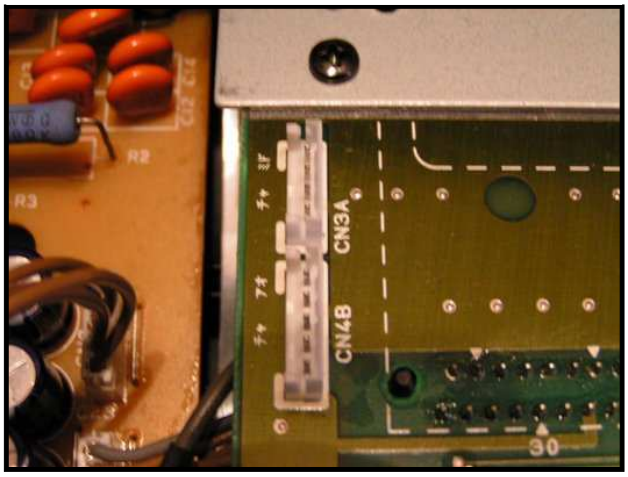
Right side of the mainboard KLM-1415D

Step 3

Unplug the connectors CN10A, CN3A and CN4B from the mainboard.



Connector CN10A

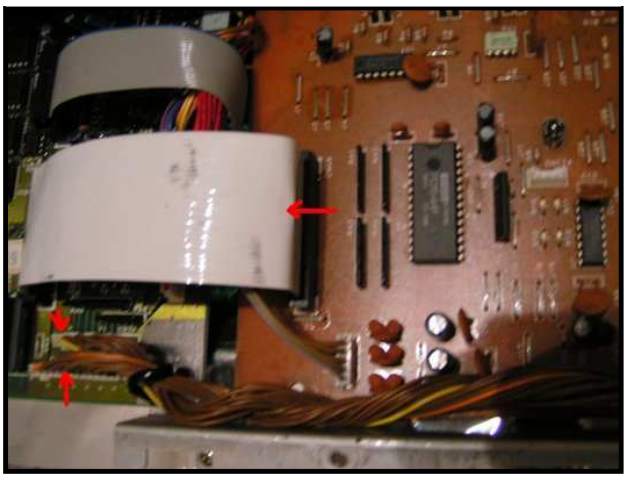


Connectors CN3A and CN4B

Step 4

Carefully remove cables and connectors from the mainboards KLM-1415D and KLM-1416D, watch red arrows.

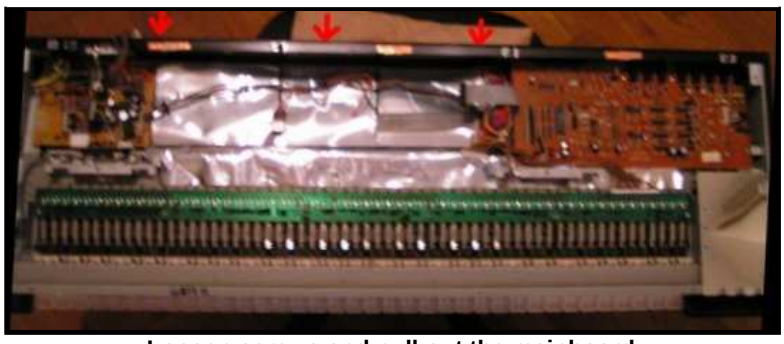
Remove small flatcable and 2 connectors



Remove big flatcable and 2 connectors

Step 5

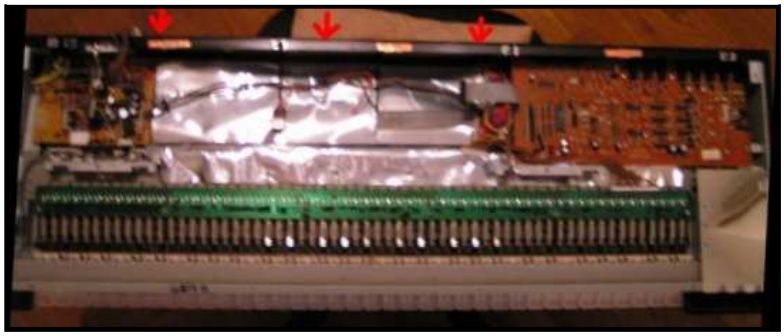
Watch red arrows and remove all the black screws. Pull out the mainboard KLM-1415D carefully.



Loosen screws and pull out the mainboard

Step 6

Watch red arrows and remove all the black screws. Pull out the mainboard KLM-1416D carefully.



Loosen screws and pull out the mainboard

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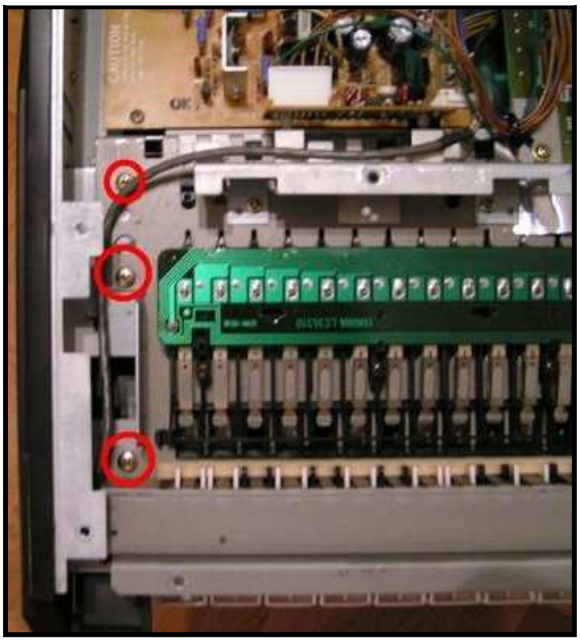
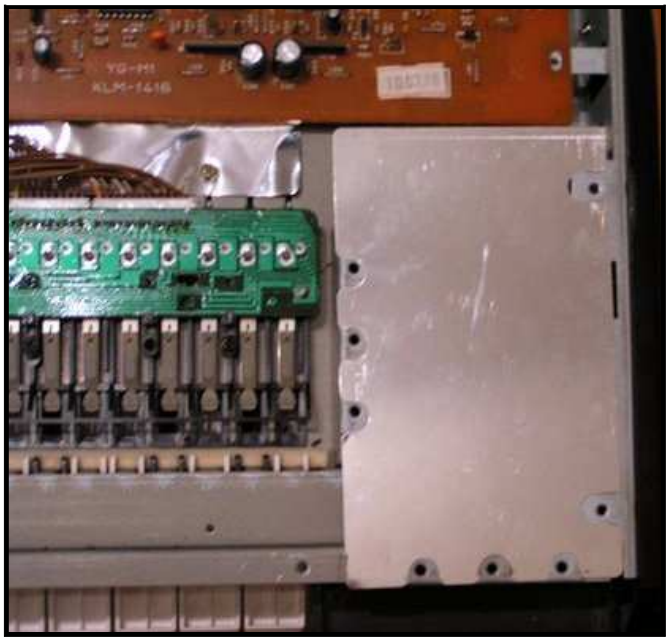
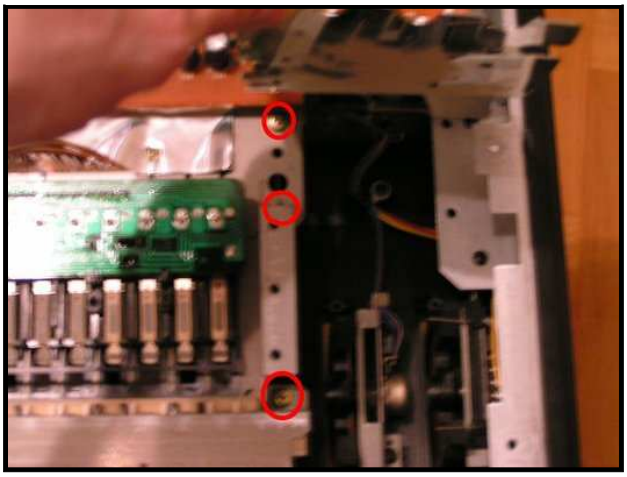
Loosen screws of the left side of the keyboard. The screws, on the right, are hidden by a metal sheet. Lift the sheet and loosen screws, watch red circles.



Position screws on the left



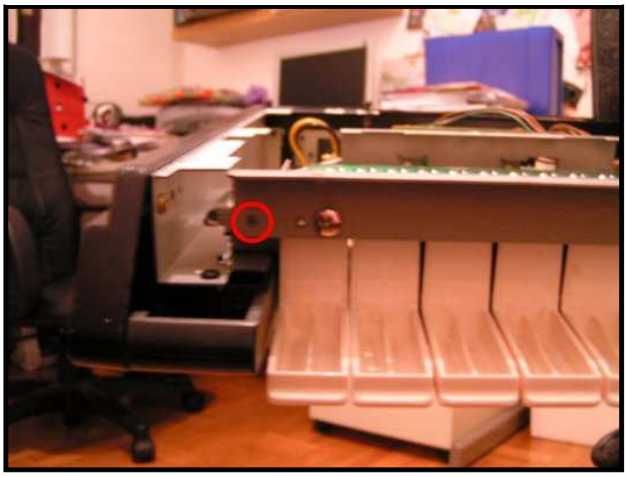
Position metal sheet on the right



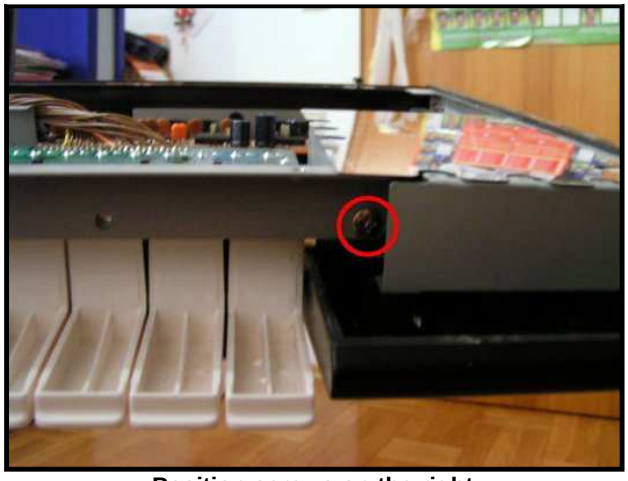
Position screws below the metal sheet

Step 8

Remove screws of the keyboard on the left and the right side, watch red circles.



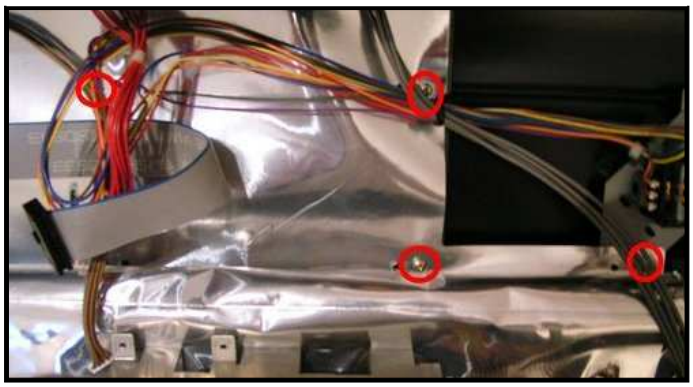
Position of screws on the left



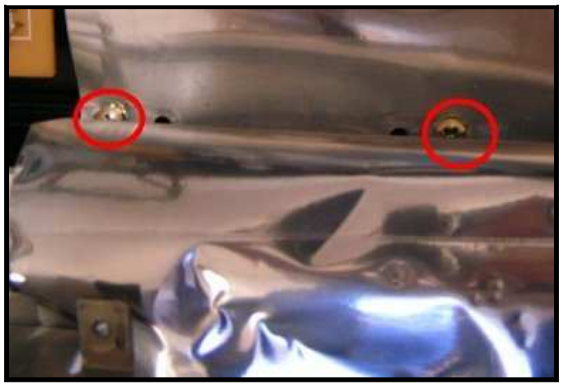
Position screws on the right

Step 9

Remove screws of the metal foil according to the pictures below. Lift keyboard a little and pull slightly to the bottom now, that some more screws come to sight, watch red circles for help.



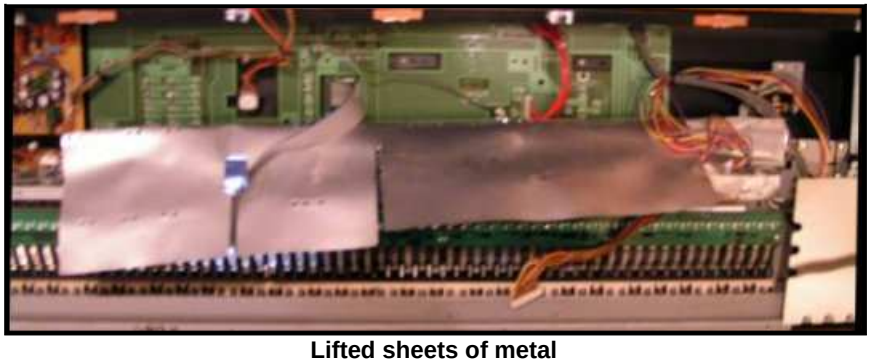
Screws left



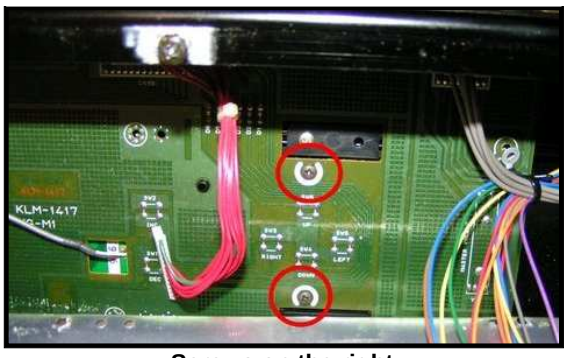
Screws below the keyboard

Step 10

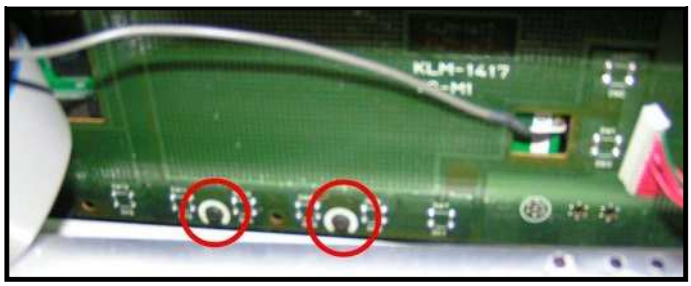
Lift the metal sheet as much that you reach for the mainboard KLM-1417. Loosen screws on the right and middle and remove the mainboard.



Lifted sheets of metal



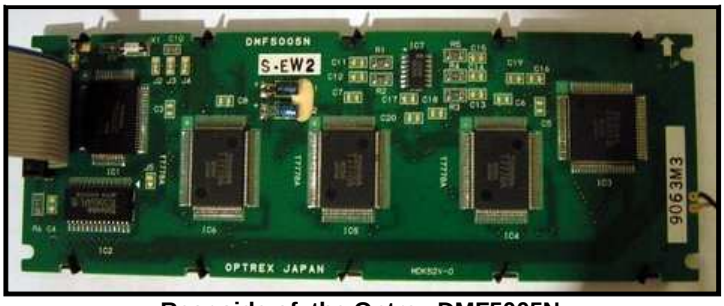
Screws on the right



Screws on the left

Step 11

Finally you reached the Optrex DMF5005N display. Loosen the screws from the display, watch red circles. Pull out the display and turn it to the frontside.



Rear side of the Optrex DMF5005N

Screws of the Optrex DMF5005N

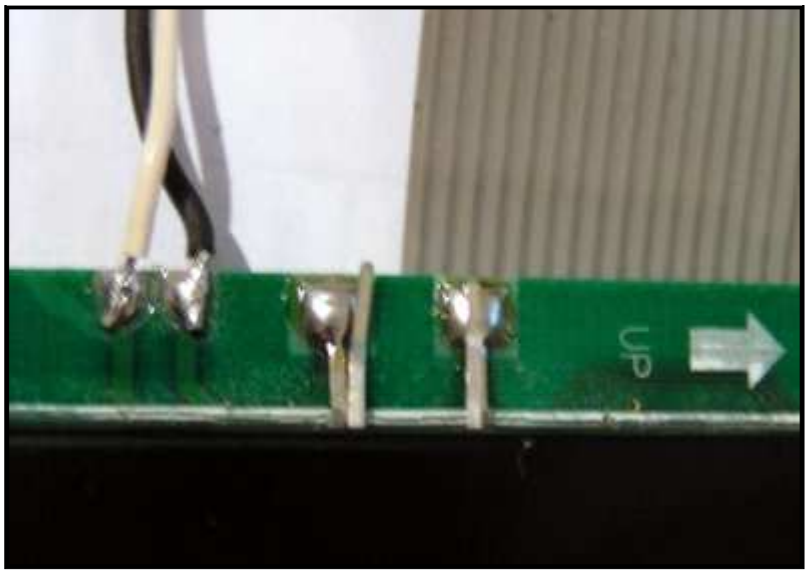
Step 12

With the flatcable to the left you are watching the small slot for inserting the EL-panel under the glass of the LCD. In the next 2 pictures you see the new EL-panel inserted on top of the old one. NOTICE: The new EL-panel is shown with the wrong rear, not with the luminous side, in the picture below.

Inserting the EL-panel into the LCD(wrong EL side!)

You must look at the luminous side of the EL-sheet. This is the side with the grey, yellow or pink colour)! The old EL-panel must not be removed necessarily, if the new EL-panel can be inserted on top, easily. But the pins of the old EL-panel have to be removed/cut from electric contact with a small pair of nail scissors.

Afterwards solder the pins of the new EL-panel to the tips from the inverter. Please be very carefully and solder quickly. Its important to look for a thermal dissipation e.g. with the coin ontop of the pin you actually want to solder or with the needle-nosed pliers. Notice: Too much heat can destroy the EL-panel in the contact area!



New EL-panel on top of the old(you can see the pins of the old)

If you can`t insert the new EL-panel on top of the old one, you have to remove the old EL-panel first. Desolder the pins of the old panel and pull out the sheet. If you have problems to pull out the old EL-panel it may be glued. Try carefully with a small, long knife to separate the panel from the glue on its rear side.

Step 13

The reassembly can happen now in the opposite way. After locking the last screw your Wavestation EX can shine now as in the following picture.

Korg Wavestation EX with new EL-panel from backlight4you

A close look onto the display of the Wavestation with a new EL-panel from backlight4you.

Now your display shines bright again!

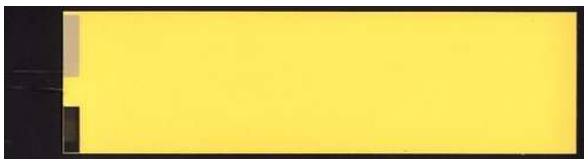
Another Hint: Annoying whine

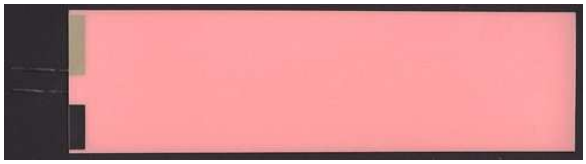
Cited from http://indra.com/~cliffcan/01disp.htm#Annoying Whine

»Some users have reported that their display emits an "annoying whine". (Be careful not to confuse this with another reported whine that can come from the power supply.) One user reports he stopped this whine by reversing the polarity of the backlight on the LCD:

How to reverse the polarity (thanks to Mike Werning, who wrote:)
You don't have to disconnect any circuit boards, just remove the bottom panel on the 01 to get to the insides. The connector is located right next to the main board on the power supply board. It is a 4-pin connector with only the two outside pins populated. I believe its designator is CN16 (01W/fd) on the power supply board. Since the connector is keyed, you cannot simply unplug the connector rotate it 180 degrees and re-plug it in. You must disconnect the connector, pull out the pin receptacles on the connector and swap the positions. It's simple to do. Just use a jewelers screwdriver to depress the lock tabs on each pin to release them. Once you have swapped the pins and reinserted them into the connector housing, plug it back in to the main board. That's it.«

If you have this humming problem this may be an opportunity to fix it while your machine is open for the EL-panel exchange.





Thank you very much Andreas Trapp for all the nice pictures and the german raw description of this manual and Mike Werning for his hint to eliminate the whining noise.