

Qualification

To replace the Newton™ Backlight-Foil, you need to be skills in modifying electronics and mechanics.

We want to inform that replacing the foil without being skilled will damage your device in an irreparable manner.

Non-Warranty

If you replace the foil by yourself ,backlight4you is not liable to any damage of the foil or your device. We guarantee for the quality and lifecycle of the foil.

This manual neither entitles nor implies any right for claims for compensation. It is merely a recommendation.

Needed Tools and Materials

- Cross-Screwdriver Philips Size 1
- Cross-Screwdriver Philips Size 0
- Screwdriver max. 1mm
- Knife
- Insulating Tape
- Pliers for electronics
- Elektronik edge cutter
- Soldering Iron
- Solder (S-Sn60Pb38Cu2 recommended)
- SMD-de-solder knives (or SMD de-solder tool)
- Soldering iron for SMD (or low-power soldering iron with very small tip)

Step 1

Remove the following parts before you continue:

- (Rechargeable-) Battery-Pack
- Stylus
- Memory- and Dummy-Cards
- Display-Lid

Put your Newton™ face down on a soft surface to avoid scratches on the display.

Step 2

Remove all screws marked with **red** circles. Lift off the bottom cover. Start at the PCMCIA-Slots.

Both parts of the cover are held together with little plastic clips. You'll find a few very tight clips in the area where the stylus-holder is located.

Tilt the lower housing diagonally upwards away. A resistance stronger as usual in this place is normal.



Step 3

Remove all components marked **yellow**.

To unplug the white ribbon-cable, you have to unlock the connector by using a little screwdriver.

Do not twist or bend that cable - it's the connection between the logic-board and the display.

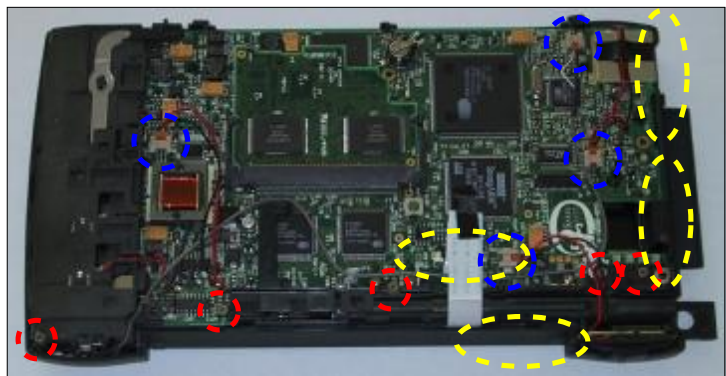
Pull all plugs marked **blue** out of their sockets (carefully!) . The **grey** wire (connects the microphone) is held in little plastic-clips. To remove the wire, press carefully (with your screwdriver) on the clips while pulling out the wire.

They otherwise loose their adhesive which keeps them in place.

⚠ Do not pull at the wires! They otherwise can remove ,themselves' in the most unfavorable case out of the plug.

Memorize the positions of the plugs and mark the positions if necessary.

Remove the screws that are marked **red**. The leftmost one keeps the top part of the battery case in place, the other four attach the stylus holder.



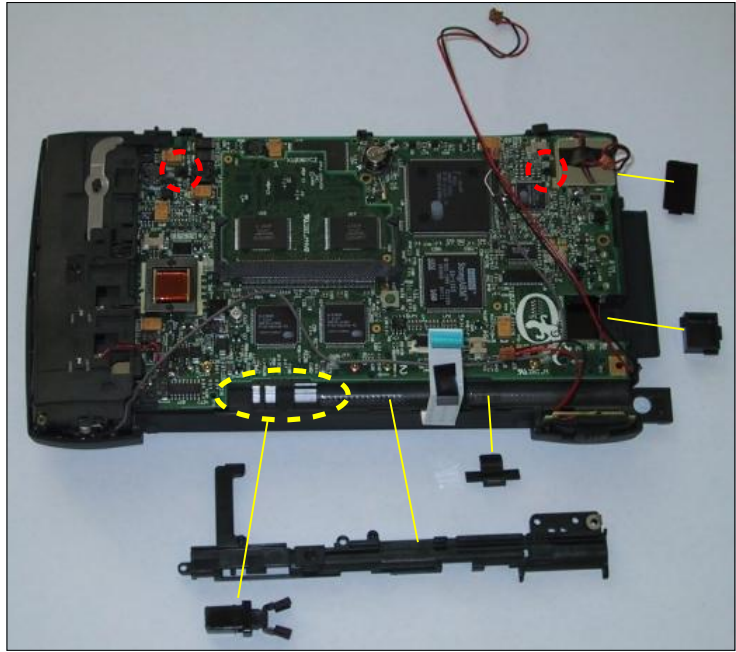
Step 4

Remove the stylus-holder and the black stylus-clip (marked in **yellow**).

The picture shows the positions of the components, which were removed in **step 3** (**yellow** lines).


Remove the screws marked **red** next. Note the different types of screws. Note the different length and thread of the screws (they will damage the Newton™ if screwed into the wrong hole).

Open the battery-box by carefully using a knife. Start at the side with the opening for the battery.



Step 5

Remove the spring for the battery-pack.

 The spring is really strong, be careful.

The plastic-parts which hold the spring in place are very fragile. There's no way to put the spring back if the holder is damaged.



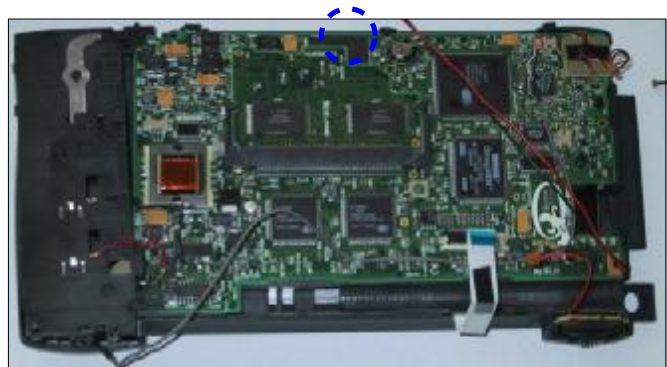
Step 6

The Logic-Board is held with the latch marked **blue**, shown in the upper area of the image.

Lift the board starting at the battery-holder while unlocking the latch carefully.

Make sure that the PCMCIA-Card Slots lift also.

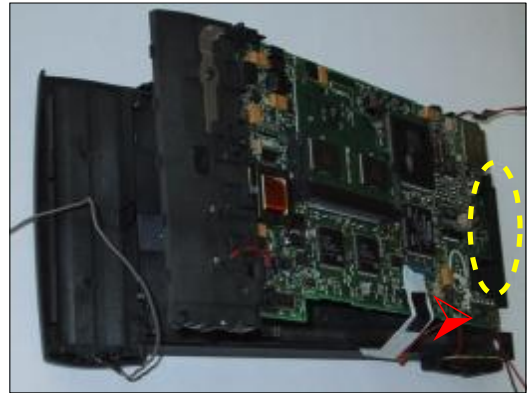
Don't remove the board now. This will be done in the next step.



Step 7

Be careful and attentionous while performing this step. You have to separate the connection between the logic-board and digitizer.

The connector (marked with **red** arrow) is on the other side of the board, right below the Interconnect-Port (Port is marked **yellow** in this picture). Lift the board up a bit and put a finger on the Flat-Cable for the digitizer. Under some circumstances the cable seems to be pasted to the board.



⚠ Do not touch the contacts neither on the cable nor on the board. The recognition of pen input will be irreparably damaged otherwise.

After this work is done, the board can be removed, completely.

Step 8

Remove all screws marked **red**. They hold the plastik-frame around the display and the upper housing in place.

To unscrew the very small screws located in the battery-holder you have to use the very small screwdriver.

⚠ Try to keep the power switch in place. You'll have some extra work to put it back in the correct position.



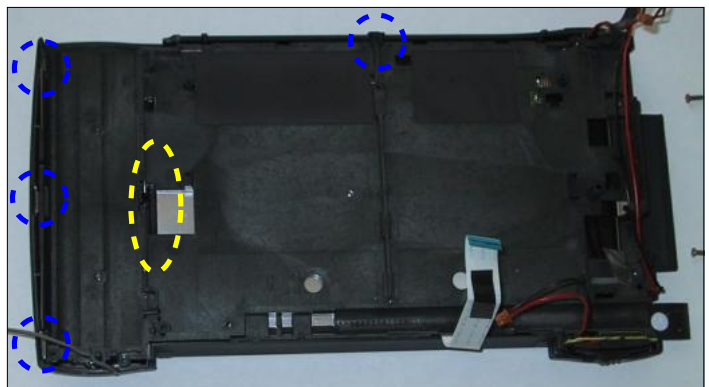
Step 9

The display-frame is held by little plastic-latches, one at the top of the image and three on the left side, marked **blue**.

The marked spots on the left are only important when you reassemble the Newton™.

Lift-off the display-frame, starting at the stylus-holder.


⚠ Be careful to not harm the display-cable!




The **yellow** marks are important in **Step 11**.

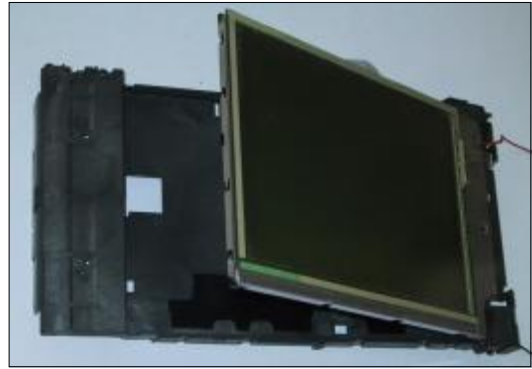
Step 10

The display is kept in place by the handle (shown in Step 9) that is marked **yellow**, only.

 Don't press the handle with too much power. It breaks very fast.

Push the handle leftwards (relative to the image shown here) and lift up the display by pushing it up with a finger (use the square opening).


 Be careful with the Digitizer-Cable. The shape of the cable makes it very fragile. If you lift up the display without care you may probably tear the cable by accident.



Step 11

The wires for the backlight-foil are located at the position marked **yellow**. There's a little notch. Pull out the wires carefully before going to the next sub-step.

Pull out the foil.


 Do not touch or bend the green circuit board. Do not open the latches which hold the board in place. The connection to the display can be damaged in a manner which cannot be fixed or corrected easily.

The **blue** markings are only interesting in Step 14 when you put the foil back in place.



Step 12

Cut the wires of the original foil close to the soldered connection. Shorten the connection wires of the replacement foil to a length of about 5 millimeters.

 The EL-sheet will be damaged if soldered too hot or too long. Be careful!

Unisolate the wire-ends for about 2 millimeters. Tin one of the two wires; keep the tin fluid and make the connection with the connector of the replacement foil.

The connector is made of very thin copper which will heat up very fast.


For thermal compensation use the pliers and pick the connector where it comes out of the lamination. This ensures, that most of the soldering-heat is guided into the pliers instead of causing harm to the foil.

Continue with the second wire the same way. Don't care about the color of these wires - it's not needed because the foil is driven by alternating current (ac).

Use some insulating tape to protect the contacts against short circuits.

Step 13


Put the foil back behind the display. Remember the latches marked **blue** from **Step 12**. The foil must fit behind them!

 If there's some dust between foil and display you'll have to clean the area first by using a lint free cloth. Do not use any chemicals. Otherwise you'll see dark spots if the backlight is on.

Put the wires back into the notch shown in **Step 12 (yellow)**.

Step 14

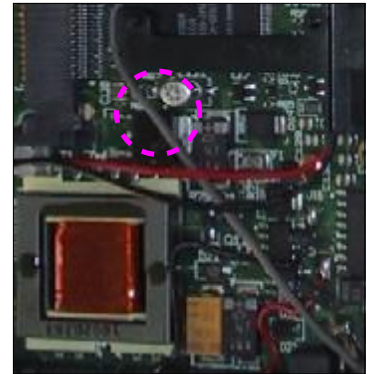
Replace the capacitor C121 which is marked **magenta** with the one included in the replacement kit.

 Only if the capacitor is replaced the foil will be driven with the same frequency as the original one.

By replacing the capacitor you'll reduce the risk to get flickering effects with moving images on the display in some environments (depending on the used lighting-technology)

Another effect is that the foil will shine brighter (about 5%) with the new capacitor.

The correct position of the capacitor: The shape of the capacitor-foot and the printed shape on the board must match!



Step 15

Reassemble your Newton™ by doing the above steps in backwards order. Make sure to place the cables in their correct positions in order to avoid squeezing or sheering them between the housing-parts.