REPLACEMENT INSTRUCTION LC 110S LCD DISPLAY FLEX CABLE

In this document the procedure is described for the replacement of part 193.9519S LC110S LCD display flex cable, to solve issues related to the LCD display like no characters displayed and/or no backlight.

WARNING SYMBOLS

The following symbols are used in this instruction:

This sign warns about the risk of electric shock. It calls attention to a procedure or practice which, if not adhered to, could result in loss of life by electrocution. Do not proceed beyond a danger sign until the indicated conditions are fully understood and met.

The warning sign denotes a hazard. It calls attention to a procedure or practice which, if not adhered to, could result in severe injury, loss of life or damage or destruction of parts or all of the equipment. Do not proceed beyond a warning sign until the indicated conditions are fully understood and met.

The caution sign denotes a hazard. It calls attention to a procedure or practice which, if not adhered to, could result in damage or destruction of parts or all of the equipment and/or erratic results. Do not proceed beyond a cautions sign until the indicated conditions are fully understood and met.

This replacement instruction may only be performed by authorized service engineers of Antec or its distributors. Untrained personnel should not open the instrument. Before starting, read the whole instruction to prepare yourselve for the replacement and to get acknowledged of all steps. In case of any questions contact Antec support (support@antecscientific.com).

ELECTRICAL SAFETY

The removal of protective panels on the instrument can result in exposure to potentially dangerous voltages. Therefore, disconnect the instrument from all power sources before disassembly.

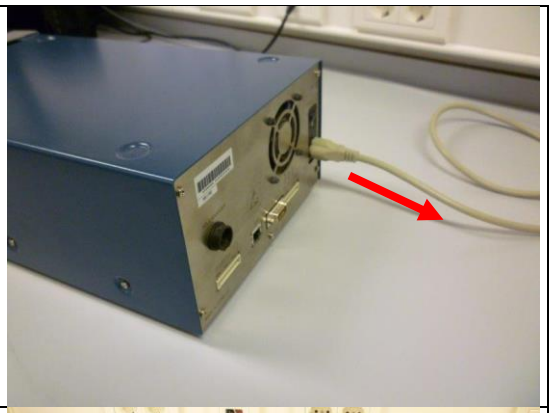
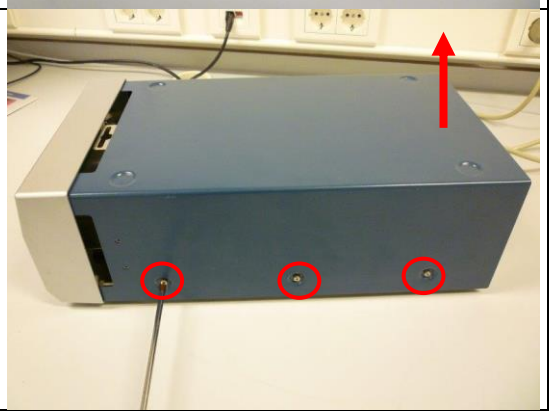
REQUIRED TOOLS AND PARTS

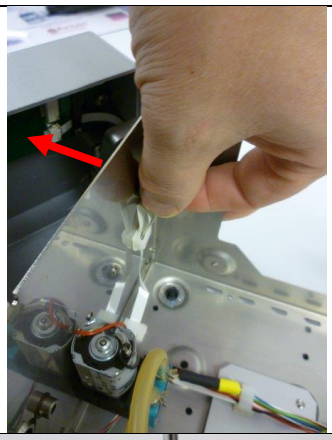
- Part 193.0519S LC110S LCD display flex cable
- Philips screwdriver #2 (long shaft)
- Micro flat head screwdriver
- ESD wrist strap

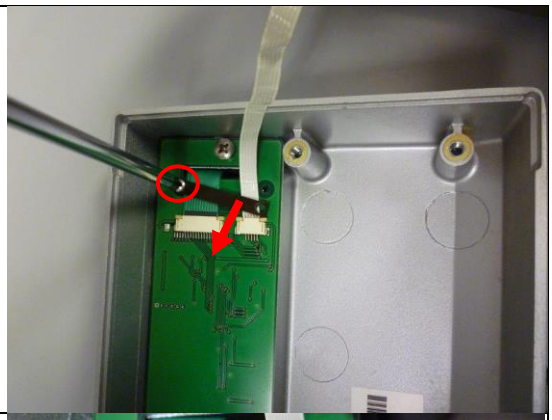
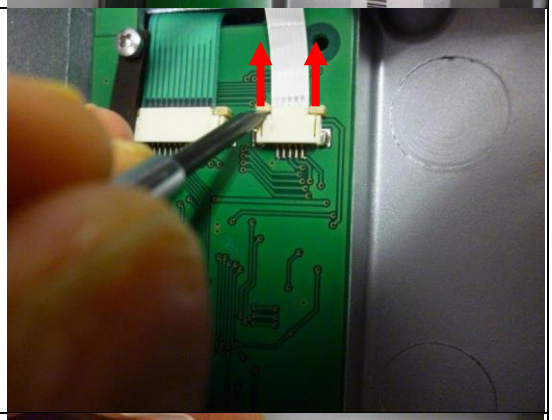
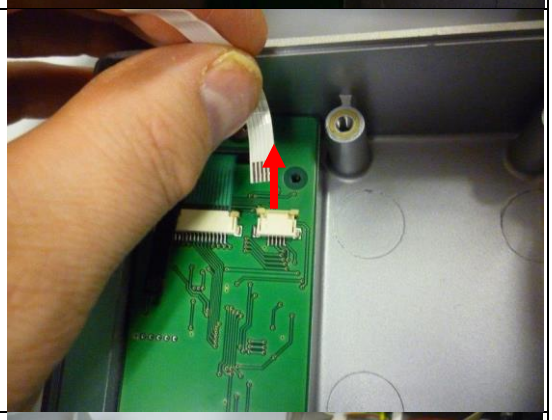
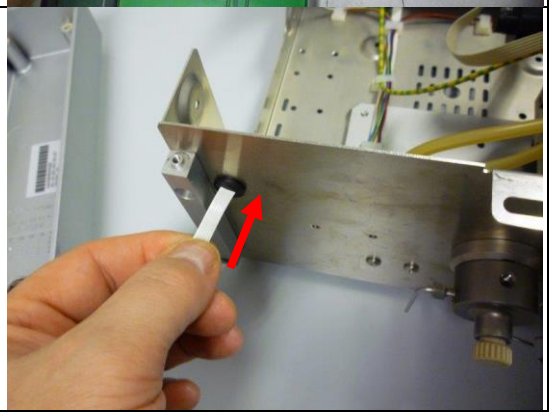
REPLACEMENT PROCEDURE

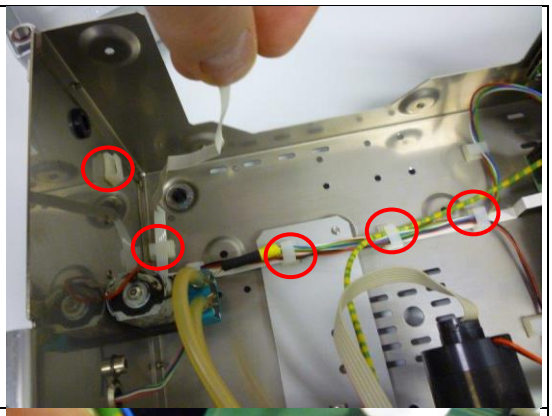
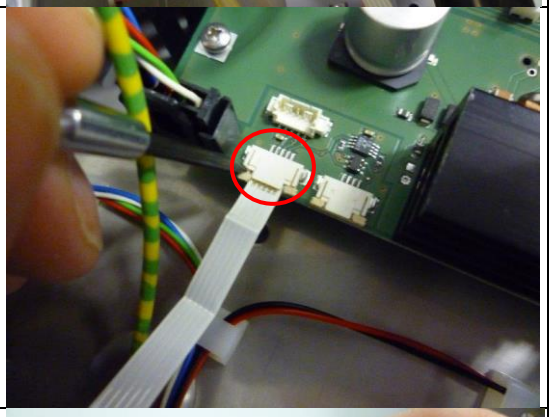
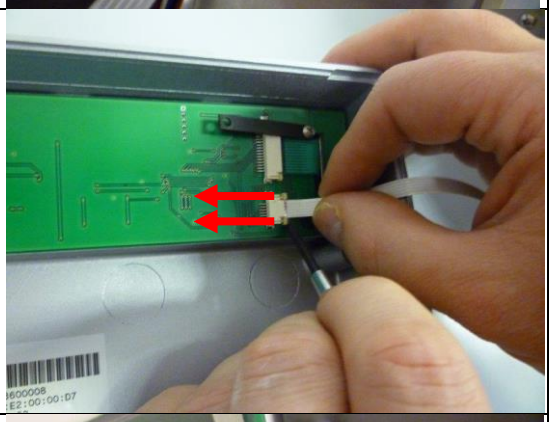
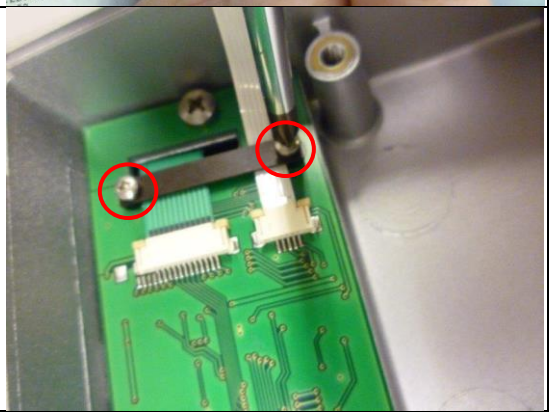
Please follow the steps below to replace the LCD flex cable.

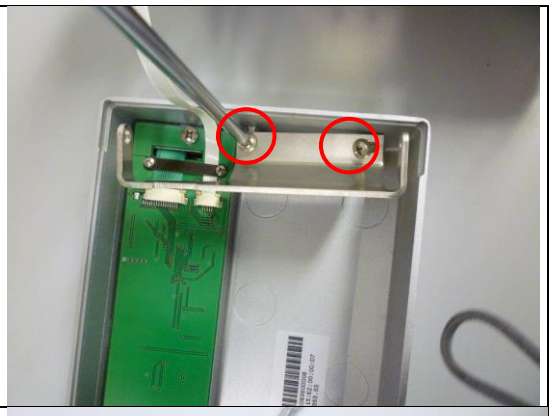
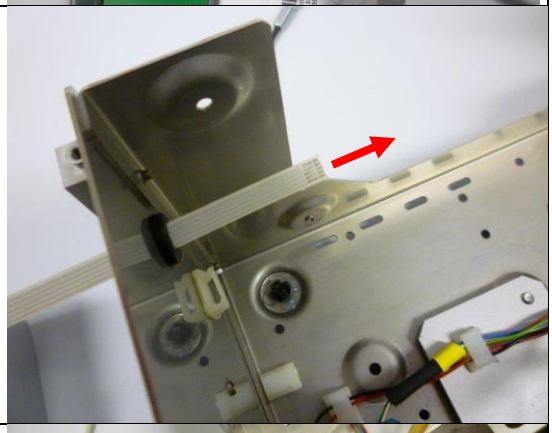
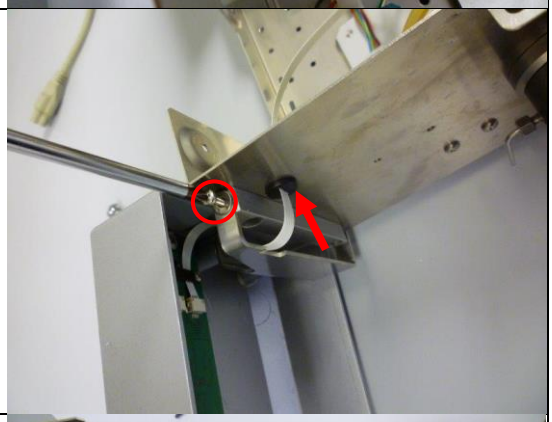
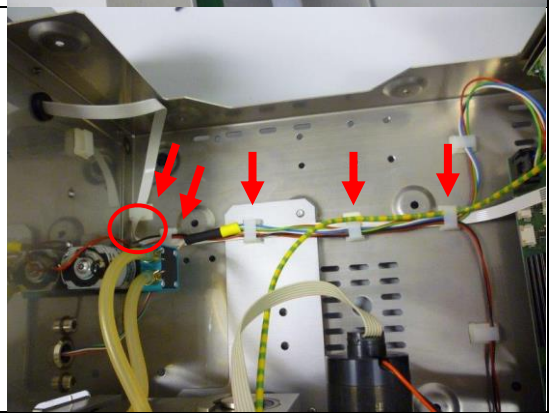
Handle the flex cable with care, the cable can be easily damaged. Perform the procedure on a smooth and flat table under good light conditions and take protective measures to avoid electrostatic discharge, using for instance an ESD wrist strap. If not properly grounded this may lead to damage to electronic components of the pump by electrostatic discharge.

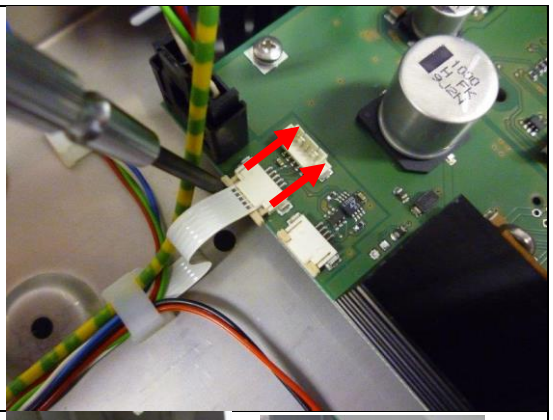
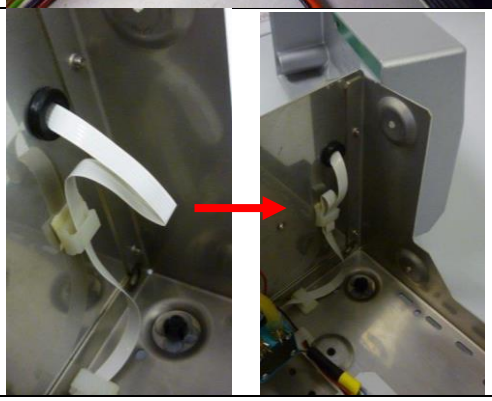
1	Switch off instrument and remove power cable	
2	Remove the 6 Philips screws (three on both sides holding the top cover of the instrument with the Philips screwdriver. Subsequently remove the cover.	

3	Release the part of the flex print which is folded in the clip on the back side of the front plate and push it through the opening outwards. This will assure that you have enough length of flex cable outside the pump to be able to let the front door rest on the table for further handling.	
4	Open the door and remove the Philip screw which holds the door hinge. Subsequently lay the door on the table with the front panel facing downwards. To prevent scratches, place a piece of tissue or carton below the door.	
5	Remove the screws of the hinge bracket to be able to access the connector of the flex cable on the LCD printed circuit board	
6	Remove the screw of the black retaining clip. (the screw which is the closest to the white/grey LCD flex cable)	

7	Loosen the screw of the retaining clip just enough to be able to pivot the retaining clip over the two flex cable connectors to be able to release the LCD flex cable from its connector. Be careful, not to damage the delicate connectors and the green keyboard flex cable on the left side.	
8	Use the micro flat head screw driver to **gently** loosen the retaining clips on the flex cable connector, by moving them in the direction of the arrows.	
9	The flex cable can now be released by gently moving it out of the connector in the direction indicated by the arrow.	
10	Gently push the flex cable through the black cable guide in the front plate.	

11	The cable is retained/fixed in a series of clips on the front and bottom plate of the pump. Release the cable from all the cable clips to be able to remove the cable out of the interior of the pump. To release the cable from the clip, bend the top part of the clip slightly upwards to release the tension on the cables. Subsequently you will then be able to move the cable out of the clip. Note that there might me a slight difference in the location of the clips in your pump, compared to the example shown in the photograph.	
12	Remove the cable from the flex cable connector on the main board. Do this in the same manner as described for the connector on the LCD circuit board in section 8 and 9. The flex cable is now completely detached from the pump and can be disposed.	
13	Take the new flex cable and insert it in the corresponding connector on the LCD circuit board. Slide the connector in as far as possible with the contacts facing upwards. Fix the cable by pushing the retaining clips on both sides in the direction indicated by the arrows as far as possible. Do this very gently.	
14	Pivot the black retaining clip back in position and tighten the screws. WARNING: the LCD flex cable is located very close to the mounting screw thread, make sure not to damage the flex cable when fixing the screws. DON'T OVERTIGHTEN THE SCREWS BECAUSE IT MAY RESULT IN TEARING OF THE CABLE.	

15	Re-install the hinge bracket.	
16	Guide the flex cable through the black cable guide. Be careful not to damage the end of the cable with contacts when searching for the slit-shaped opening in the cable guide, only push it through when the cable end is completely aligned with the slit and can be pushed through without obstruction.	
17	Hang the door back into the hinge and push any excess length of the flex cable inside of the pumps electronics compartment. Fix the screw of the door hinge.	
18	Insert the flex cable into the cable clips as shown in the photo on the right side. Position the flex cable on the bottom side of the clips (beneath all other cables) to assure that the cable keeps its flat shape. Do not make sharp bends in the cable at the corners (see red circle), because it might damage the conductors in the cable,	

19	Fix the flex cable into the connector on the main board in the same manner as done on the LCD circuit board, described in section 13.	
20	Fold the excess of cable length into the cable clip. Also in this case avoid making too sharp bends/turns in the cable.	
21	Install the instrument cover and fix the 6 screws on the bottom side of the cover (3 on each side) as shown in section 2.	
22	Insert the power cable and power on the instrument to check if the display and key-board is functioning correctly. If all was suc-cessful, the instrument can be installed in the LC system again.	