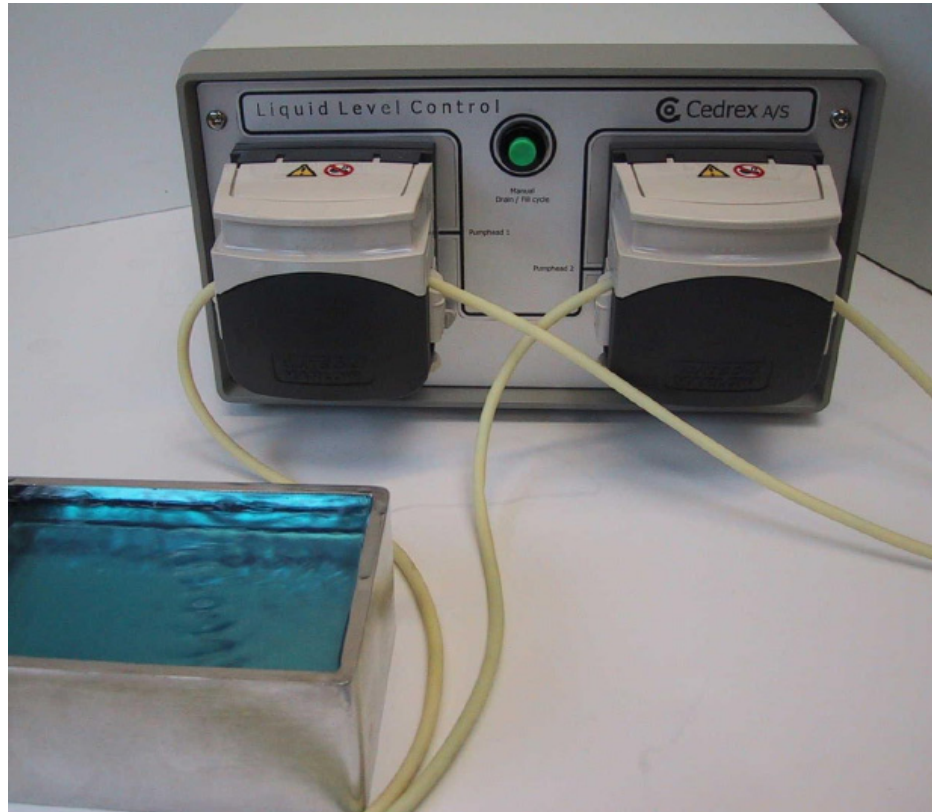


Operating Instructions For The Liquid Level Control System



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1. INTRODUCTION

1.1 General warnings

Please read and understand this manual and pay close attention to minimising any risks.

- Read and understand this manual BEFORE installing the software or operating the machine.
- This machine is specifically designed to generate a drain and fill cycle by means of electrical inputs. The Liquid Level Control was originally designed for use with the Ultrasonic Tip Wash System.
- This machine should not be altered or used for any other purpose.
- Do not cover ventilation holes.
- Do not immerse the unit in liquid.
- Do not spray any liquid directly on the unit. To clean, wipe surfaces with a damp cloth.
- Disconnect the mains inlet before dismantling the unit.
- Observe care when working with flammable liquids.
- Adhere strictly to instructions regarding storage, mixing and disposal of any liquid used in conjunction with this unit.

The following symbols are used:



This symbol can be found on the pumphead. Do not allow fingers to come into contact with moving parts.



This symbol can be found on the pumphead. Caution- refer to operation chapter in manual for instructions.

1.2 Applicable rules

The Liquid Level Control unit conforms to the provisions in the Machinery Directive (98/37/EC).

1.3 Technical specifications

ENVIROMENTAL CONDITIONS	Operative temperature Relative humidity (not condensing)	5 - 40°C 80% Max. up to 31°C decreasing linearly to 50% at 40°C.
POWER SUPPLY	Mains supply voltage Fuses	100-240 +/-10% V _{ac} 50/60 Hz rating 250v 2.5°, 5x20mm. Use IEC 60127 approved fuses only
	The Liquid Level Control package includes: <ul style="list-style-type: none">• 1 Liquid Level Control• 1 Power cord• 1 interconnecting cord m/f• 1 software CD• 1 manual	

2. EQUIPMENT DESCRIPTION

- The Liquid Level Control (LLC) is designed to apply a continuous flow of renewed cleaning fluids to a washbowl.
- Although the LLC has been specifically designed to be used with the Ultrasonic Tipwash system it is possible to use the unit with other equipment when a pumping feature is required.
- The unit can be controlled with the scheduling software of a pipetting machine or PC on the back of the unit. The LLC will then perform a complete cleaning cycle when needed, based on pre-programmed files.

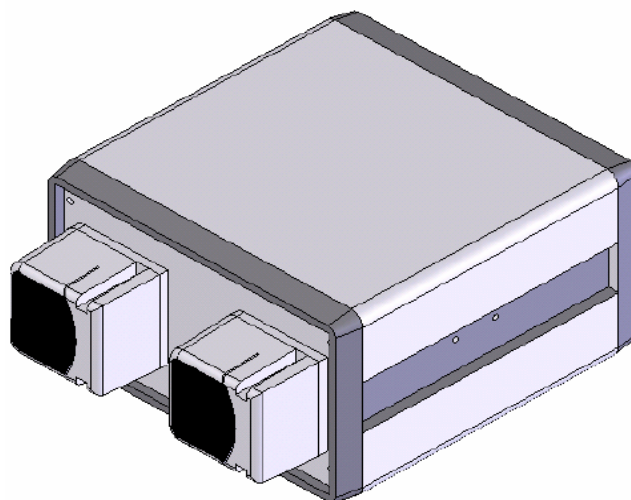


Fig. 1. Liquid Level Control Unit

3. UNIT INSTALLATION

3.1 Positioning

The unit is fitted with four rubber feet and should be placed on an even surface capable of carrying weight of the unit. Vertical positioning of the unit is possible however pumpheads must be turned also using the following procedure:

- Release the pumphead by pressing down the pin, turn pumphead counter-clockwise.
- Remove the four screws using a suitable metric Allen wrench.
- Turn the base 90° and reattach using the four screws.
- Reattach pumphead on the fingers and turn clockwise until a “click” is heard.

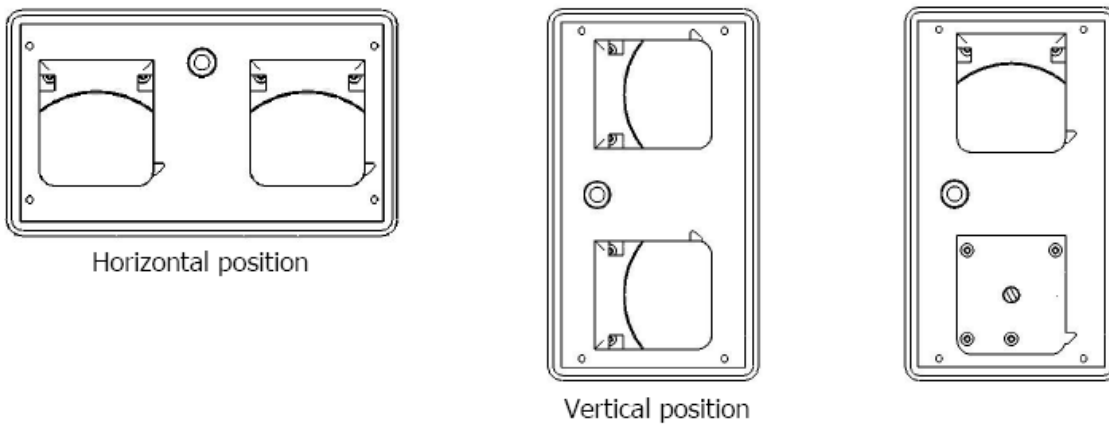


Fig. 2. Position of pumpheads.

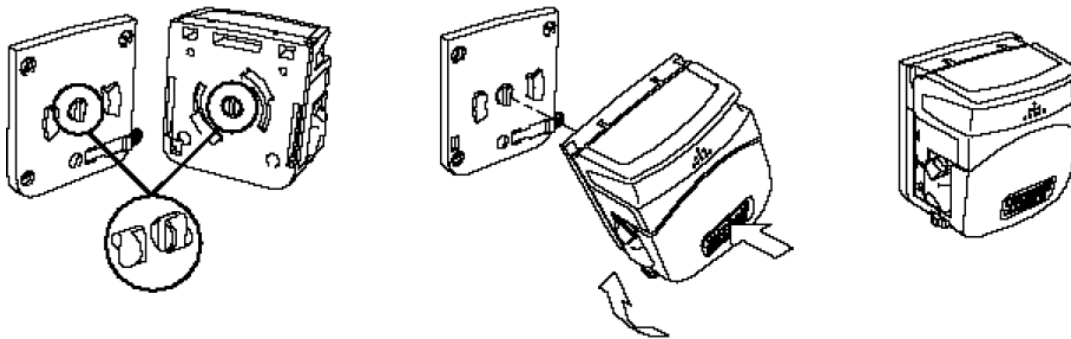


Fig. 3. Attaching pumpheads.

Do not cover the ventilation holes in the bottom and on the back of the unit as this will lead to overheating and malfunction.

3.2 Connections

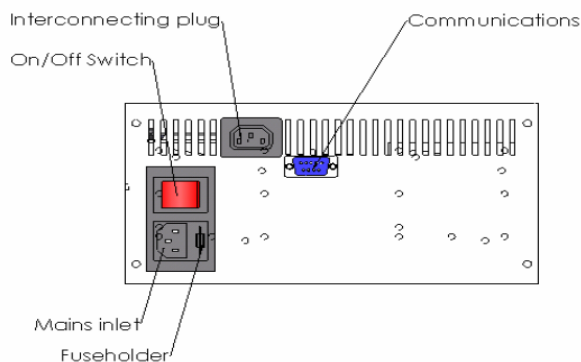


Fig. 4. Connecting the unit.

3.3 Fuse replacement.

The power supply uses 2 fuses 5x20mm rated at 250V slow, 2.5A, IEC 60127 approved.

Important: Turn power switch off and remove power cable before replacing the fuses.

Procedure:

- Remove fuse holder using fingers.
- Remove fuse with small screwdriver and replace it with new. Press until it snaps into position.
- Replace second fuse in same way.
- Refit fuse holder.
- Turn power on.

3.4 Interconnecting plug.

Connect the enclosed power cord on the back to an Ultrasonic Tipwash unit and turn power on. This will provide power to the Tip Wash unit via the LLC.

3.5 Communications 9 pin SUB-D.

Connect the enclosed cable to the LLC and to an available COM port on a PC or pipetting system. Refer to the software install notes in this manual or on the enclosed CD –ROM for further instructions.

3.6 Main power.

Connect the power cord on the back to a wall or machine outlet. Turn power on.

3.7 Installation of the tube.

For further information on flow rates and tube specs, please refer to the manuals provided by respective manufacturers. The manual for 313D pumphead and drive specifications can be found on the enclosed CD-ROM.

4. INSTALLATION OF SOFTWARE

4.1 Installation.

Procedure:

- Insert the CDROM
- Run dcon_setup.exe from the CDROM and follow the on-screen instructions.
- Reboot when prompted.
- Run dotnetfx.exe (.NET framework 2.0) from the CDROM and follow the on-screen instructions.
- Run LLC Setup.msi from the CDROM and follow the on-screen instructions
- Install complete - follow the next section to make sure everything works.

4.2 Pre-programmed schedules.

Procedure:

- Open the CDROM, locate the file "schedules.ini" and copy the file using right-click on mouse.
- Paste file to LLC program folder (probably "c:\program files\Cedrex\LLC").
- A prompt to overwrite the existing file will appear - click "yes". This file contains the program cycles designed for the Ultrasonic Tipwash unit.
- If experienced in programming, alterations can be made in this file for configuring schedules. Please refer to the user guide on the CDROM.

4.3 Testing and configuring the LLC software.

Procedure:

- Connect the LLC to an available COM port on PC, using a straight through serial cable.
- Connect the Ultrasonic Tipwash unit to the LLC with the interconnecting power cable and turn the power on.
- Connect the LLC to a power outlet and switch it on.
- If connected the LLC to other ports than COM1, follow the section "Setting the COM port".
- Locate and open the LLC program folder (probably "c:\program files\Cedrex\LLC").
- Run Liquid Level Control.exe.
- If message in the text output field of the LLC application, "Error opening COM port", the LLC is probably not connected or switched on. Shut down the program (right-click on the icon in the system tray and click "exit") and check the physical serial cable connection and the power-on of the Ultrasonic Tipwash unit.
- Restart the program. If the program does not run then the serial cable may be connected to an incorrect COM port. In this case, go to section: "Setting the COM port".
- If error message box is not seen then click the combo box, labeled "Available programs" on the LLC software form, select a program, and click "Start". This will start the pump cycle.
- Installation is correct if the pump starts running and continues. If problems persist contact FluidX Ltd. or local distributor.

4.4 Using the software in an automated software environment.

Procedure:

- To start the cleaning schedule, run "Liquid Level Control.exe [program name]" without the '[' and ']' characters. Eg. full_cycle_x1. Applying the program name, as a parameter, after the exe file, will start the cleaning cycle.
- If only "Liquid Level Control.exe" is executed WITHOUT any parameters, the cycle will not start.

4.5 Setting the COM port (Not usually a required step).

Procedure:

- Open the folder containing the LLC program (usually "c:\program files\Cedrex\LLC").
- Open "config.ini" with a text editor.
- Locate the line saying: "com port=com?" (Where '?' sign most likely is a '1').
- Type in the com port you actually connected the LLC to, for example "com port=com2" if connected to com2.
- Save the config.ini file and close it.
- Restart the Liquid Level Control.exe file. The program will now use COM2 when connecting to the LLC.

5. OPERATION

5.1 Wash programs.

The enclosed software contains six different wash programs each performing a complete wash cycle. A wash cycle contains a filling of the washbowl, sonication and emptying of the wash bowl. Program 3 provides the best results.

- Program 1 performs 1 full-cycle (fill washbowl up 127ml)
- Program 2 performs 2 full-cycles
- Program 3 performs 3 full-cycles
- Program 4 performs 1 half-cycle (half-fills washbowl)
- Program 5 performs 2 half-cycles
- Program 6 performs 3 half-cycles

See LLC software install notes and user guide for operating instructions.

WARNING. The following time sets are based on a tube bore of 4.8mm and wall thickness of 4.6mm. Drive speed 116min⁻¹

The time sets in all full-cycle programs are set to run for:

Fill pump 1:	30 sec.
Sonication:	40 sec.
Drain pump 2:	45 sec.

The time sets in all half-cycle programs are set to run for:

Fill pump 1:	15 sec.
Sonication:	40 sec.
Drain pump 2:	30 sec.

If other time sets are preferred, please refer to install notes or user guide on CD-ROM. Always remember to let drain pump run longer than the fill pump to ensure a complete drainage before new liquid is pumped in. If you encounter any problems, please call support.

5.2 Adjustments.

No further adjustments are required during the use of the LLC.

5.3 Extension pumpheads.

It is possible to use extension pumpheads on the LLC by exchanging the 313D with a 313X. Please refer to manuals for further instruction. Any alterations of this nature is performed at customers own risk. Extension is not recommended as LLC is likely to tip over due to change in weight distribution.

6. MAINTENANCE

6.1 Maintenance and cleaning.

- Wipe surfaces with a damp cloth
- For cleaning of pumphead please refer to manual

6.2 Repair.

- If the LLC is in need of repair please contact FluidX Ltd or local distributor.
- Parts are available for replacement unless components have been updated and modified.

7. WARRANTY AND RETURNS

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