LeveLock™ LL-2: µFluid Chamber Level Controller

Minimizing fluid levels in recording and imaging chambers is critical for reducing stray capacitance and noise, but maintaining low fluid levels with surface aspiration generates turbulent flow and unstable liquid levels. ALA's LeveLock™, LL-2, features a miniaturized, exquisitely sensitive optical sensor that regulates aspiration beneath the air-liquid interface, providing stable and smooth liquid flow at very reduced fluid levels. The LeveLock™, LL-2, is excellent for cellular electrophysiology and imaging applications.

LeveLock™ LL-2 System Highlights

* Optical sensor eliminates electrical noise
* Controls fluid levels within 100 µm!
* Subsurface aspiration minimizes turbulence
* Overflow protection to safeguard expensive optics
* Handles flow rates between 0 and 8 ml/min
* Miniaturized sensor works in confined areas

The **Level Lock™**, **LL-2**, fluid level controller is the only commercial fluid level controller designed for the sensitive environment of the patch clamp rig.

The **Level Lock™**, **LL-2**, utilizes an insulated optical fiber that transmits infrared light. Because of the infrared signal, no electrical noise is generated in the vicinity of the preparation and no radiative pick-up by the sensor components is possible. The aspiration valve is positioned beneath the air-liquid interface. This minimizes turbulence and enables use of insulating films on the bath surface.

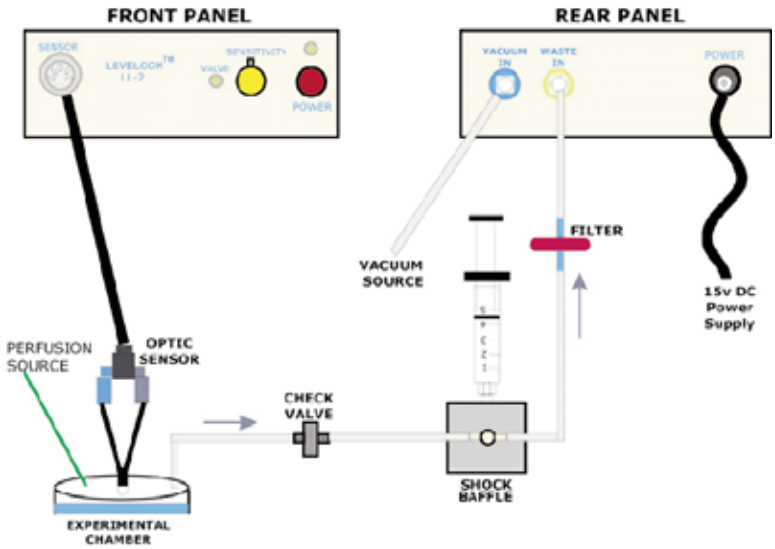
ALA Scientific Instruments' **VWK**, **Vacuum Waste Kit** (see other side) is a highly recommended accessory for the **LL-2**, although any source of steady vacuum in the range of -17 KPa is acceptable. The **LL-2** works best with steady liquid flows into the bath, such as those generated by gravity-driven and pressure-driven perfusion systems, like ALA's BPS systems, DAD systems, or OctaFlow.

Expanded view of LL-2 sensor

Optional LL-2 sensor holder

Block diagram of a typical set-up. There are three main items in the fluid flow pathway to the **Level-Lock™**. The first is a check valve, which should be located within inches of the chamber. Second is a shock baffle, that consists of a syringe on a stand. The third is a filter to protect and prolong the life of the valve in the **Level-Lock™**. Note: the shock baffle and filter should be kept close to the **Level-Lock™**.

A vacuum source (like the **VWK**) must be connected to the back of the **Level-Lock™**. It should have a collection chamber to gather all the effluent for disposal. The vacuum source need not be greater than -17 KPa A strong vacuum source should be attenuated with a needle valve to reduce the suction.



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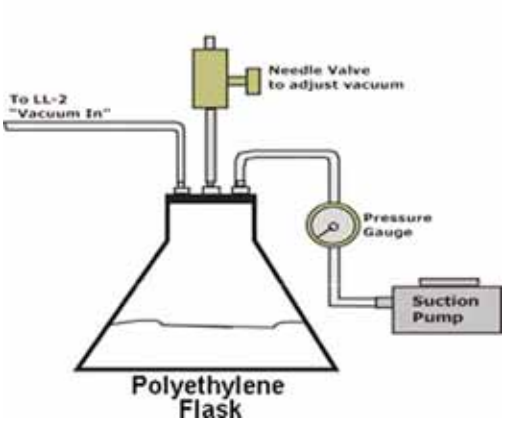
VWK - Vacuum Waste Kit

An Economical Laboratory Waste System

The vacuum waste kit **VWK** is designed to assist in the removal of fluid from cell preparations. It can provide up to -2.5psi/-17.2kPa suction and trap nearly 2l of fluid. It serves as an ideal suction source for the ALA **Level-Lock™** fluid level controller, and is ideal for all light duty suction jobs involving small cell chambers. Using the **VWK** in an experiment is very simple. The gauge will read the vacuum pressure in the flask. The needle valve is provided to reduce the amount of suction to your system or cell chamber. The **VWK** comes with a 2l polyethylene flask, vacuum pump, vacuum gauge, needle valve, misc. fittings and tubing, and a plastic stand. The plastic stand stabilizes all of the parts in a small area so it takes up as little room as possible in tight laboratory setups.



block diagram of the VWK

Specifications - LL-2

Controller Size:	13.5x13.5x5.1cm	Flow rate:	0-8ml/min with Lee LFAA valve
Weight:	0.77lb/350g	Vacuum requirement:	-2.5psi/-17.2kPa
Power Requirement:	15V 1A	OD of fiber optic sensor:	0.0195”/0.5mm
Nominal length of fiber optic:	5in/12.7cm	IR frequency:	950nm (peak)
Sensor cable:	1.5m	Sensor material:	Lucite/Acrylic

Specifications - VWK

Dimensions:	12x10x9” / 30x25.4/23 cm	Weight:	3.2kg / 7 lb
Power Requirement:	110/220VAC 3.5W	Tubing Diameter:	1/16”x1/8” / 1.6mm x3.2mm Tygon
Storage Container:	2 liter flask	Max Vacuum:	-2.5psi/-17.2kPa

Ordering Details and Accessories

ALA LL-2	LeveLock™ - Chamber Fluid Level Controller
ALA LL-2Filter	20µm waste filter replacement for LeveLock™ - Set of 10
ALA VWK	Vacuum Waste Kit - for use with LeveLock™ or stand alone
ALA LL-SHOLD	LeveLock™ optional sensor holder with adjustment control