

ATL Liquid Level Control Installation Instructions

The ATL Liquid Level Control consists of two parts:

- * A Probe Assembly and
- * the Milk Pump Motor Control.

The Probe Assembly is fitted to a collection jar or tank and detects the level of milk by passing an electric current through the stainless steel probes and milk. The long probe detects low milk level and the short probe detects high milk level. Both work in conjunction with a third 'common' probe.

When the milk level is low, the electrical resistance between the 'common' probe and high level (short) probe is extremely high, but when the milk level rises sufficiently to cover both probes, an electric current flows through the milk and the resistance between the probes drops. An electronic circuit senses the change and switches on the pump transferring the milk to the bulk tank. The same principle is used to detect the low milk level between the 'common' and low level probe as the milk is pumped out.

Electrical Path Considerations.

A good electrical path through the milk is essential for the system to function efficiently which is why ATL fit an additional 'common' probe to their unit. However, some units are available from other suppliers which have only two probes- high and low level, the earth usually being made via a steel connecting pipe or to the pump motor body. This type of arrangement can behave erratically since the mechanical connections are seldom electrically sound and should be the first point of inspection if problems are encountered. Plastic and glass tubes are not suitable and must be replaced with stainless steel; or a problem-free ATL Probe Assembly fitted. *Do not rely upon residual milk in the tube between the collection jar and the milk pump as an earth connection.*

Motor Control Installation.

The Liquid Level Motor Control must be mounted on a vertical wall within easy reach of the collection jar or tank, the milk pump and an AC 220volt (nominal) 50Hz mains supply. Easy access is essential because the Control has a pump motor overload cutout which has to be reset manually. Cables 1.5metres long are pre-fitted to the box but may be replaced by longer lengths providing the new cable is of the same current rating and overall diameter as the original. *Do not extend the cables by taping on an extra piece.* If additional access holes are required they must be cut *ONLY* into the bottom edge of the box- *NOT* the top or sides. The mains supply must be permanent via a switched, fused outlet. A 13Amp plug and socket is not suitable. Two mounting plates are supplied with the control.

Probe Assembly Installation.

The milk level Probe Assembly may be fitted to glass jars or steel tanks providing a suitable opening exists and can be fitted with a rubber bung or cap. The bung should have a slit or hole that will accept the plastic body of the Probe Assembly snugly and securely. The seal between jar, bung and Probe Assembly must be good enough to avoid milk contamination. If a sealing compound is used, it *must* comply with any prevailing food quality standards.

The probes may be cut to length with a sharp hacksaw to suit the depth of the jar or tank. When assessing the length of the low level (long) probe, make sure that sufficient milk will remain in the jar to cover the milk pump outlet when the pump stops. If the milk level drops below the outlet, air may drawn into the milk pump causing the jar or tank to flood and allowing milk into the vacuum line and possibly the vacuum pump.

A minimum length for the short (high level) probe is difficult to specify since it depends upon the type of vessel being used, the specifications for the milk pump and the distance between pump and vessel. Consideration must be given to the time it takes for the milk pump to start drawing off milk. If suction build up is slow, milk will be entering the jar after the high level has been detected and the pump switched on. The jar will continue to fill even though the milk pump is running and could cause an overflow, so a reasonable amount of 'headroom' must be left from the bottom of the short probe to the top of the receiving vessel. In practice leave the short probe as long as possible.

Trim the plastic protecting sleeve so that about 1cm of steel is exposed after the cut is made. Remove any burrs and swarf.

Twin Probe Assemblies and Float Switches.

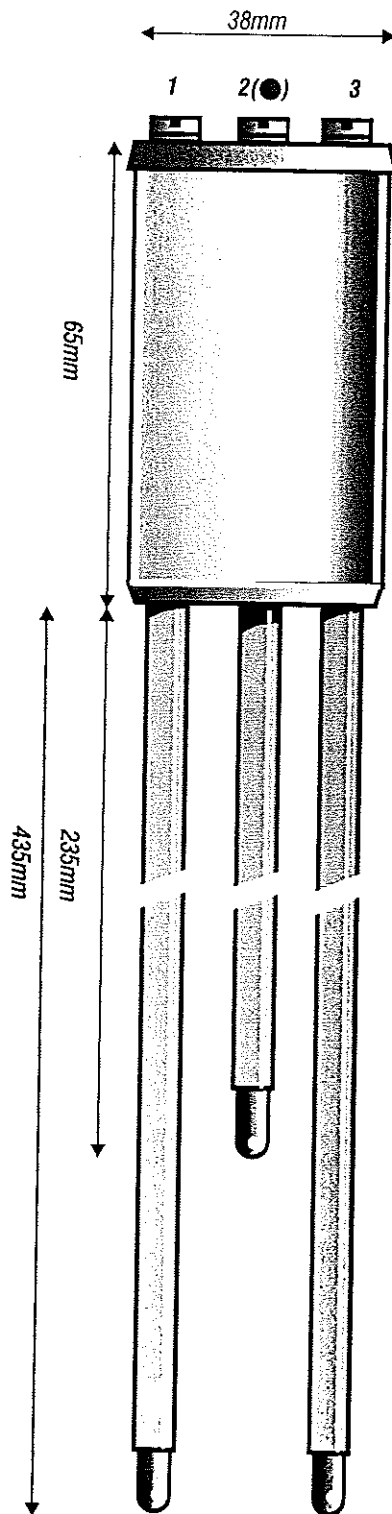
The ATL Liquid Level Control may be used with twin probe sensors and float switches from other manufacturers. Connections are shown on Page 3.

Milk Pump Motor Overload.

A current limiting device is included in the milk pump motor circuit to protect it against overload. As shipped, this is set to 7Amps but higher currents can be accommodated on request. In the event of an overload, the Trip Button situated on the lower edge of the Control, drops out switching off the motor. Once the problem has been cleared, the Trip Button must be pressed in to reset the Control. Until the problem is cleared, pressing the button has no effect- it will not work as a manual override.

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The Short Probe connector screw is marked with a black dot



Setting the Sensitivity.

The point at which the probes conduct and turn the milk pump on and off, is set by the Sensitivity Control which is adjusted by a small, slotted screwdriver. The access hole for the Control is situated in the top of the Relay Module.

The unit must be set up using the plain (no chemicals added) rinsing water. Glass receiving jars present no problems, but it is impossible to see the water level in a steel tank and so the sensitivity setting will have to be carried out in a separate, transparent vessel.

With the system connected and the Mode Switch set to AUTOMATIC, turn the Sensitivity Control fully clockwise. Fill the receiving jar with water until it just covers the short (high level) probe. Slowly turn the Sensitivity Control anticlockwise until the relay or contactor engages and the milk pump motor starts. With the system set up for rinsing water it will also work with milk which has a lower resistance than water.

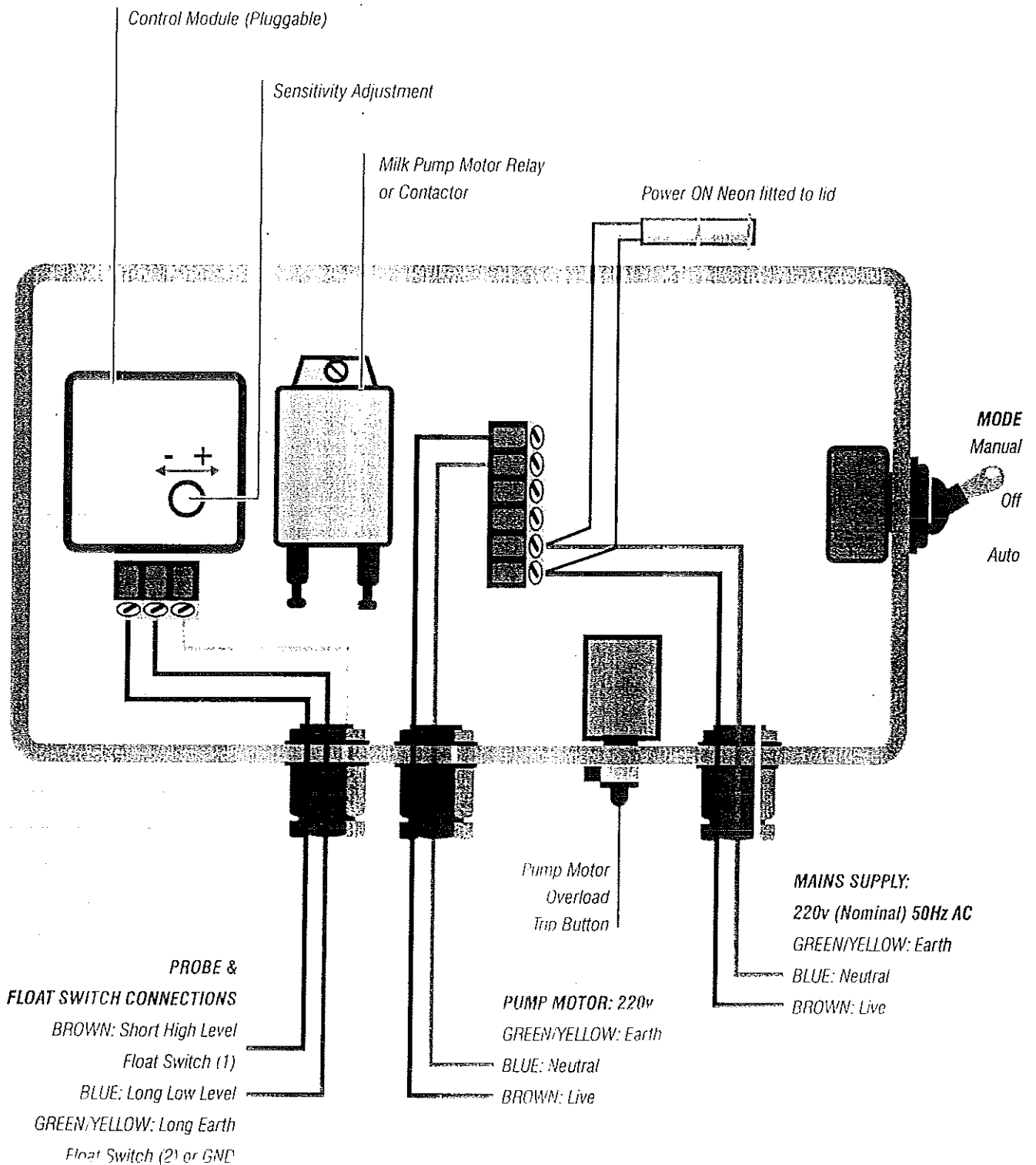
CAUTION: Many parts of the Liquid Level Control box are at mains potential.

Switching Rate

The Liquid Level Control will switch up to 7Amps 220volts (nominal) AC. This current level is determined by the Pump Motor Overload which is set to 7Amps; an overload with a higher current rating may be factory fitted on request.

The Pump Motor is switched by a heavy duty Relay fitted as standard or by a Contactor which is an option. The large contacts of the Relay will resist heating if the Pump Motor is cycling at moderate speeds- less than two cycles per minute consistently. For high cycling speeds- greater than two cycles per minute- and in situations where a small receiving jar or tank is fitted, the Contactor is recommended. The higher the cycling rate, the more prone to heating and burning are the contacts. Care should be exercised when 'balancing' the capacity of the Pump with the size of the receiving vessel.

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