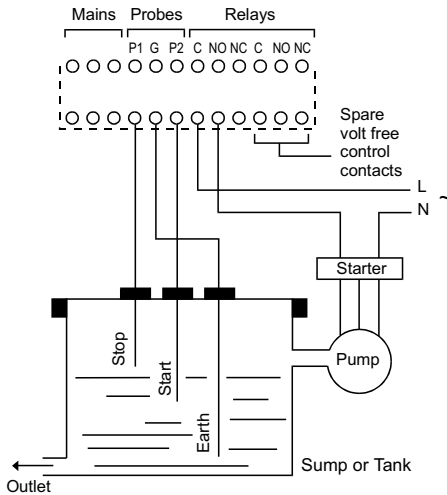




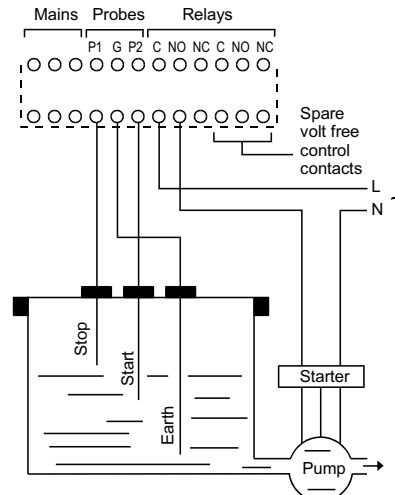
HAWKER ELECTRONICS LTD

Application Notes for Conductivity Operated Level Controllers

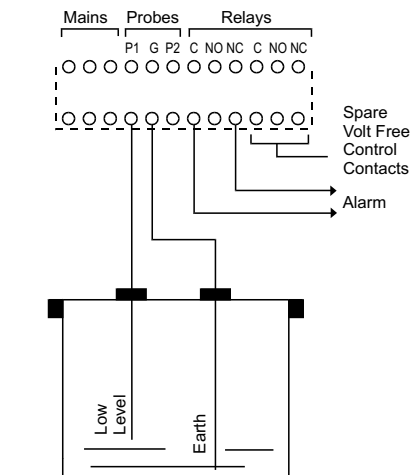
Connection Diagrams for AC1, AC1/P, AC1/12, AC2, ACJ, 118



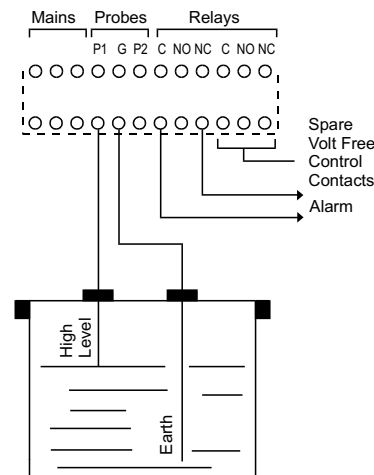
Mode **AC1/H** pumping in between 2 levels



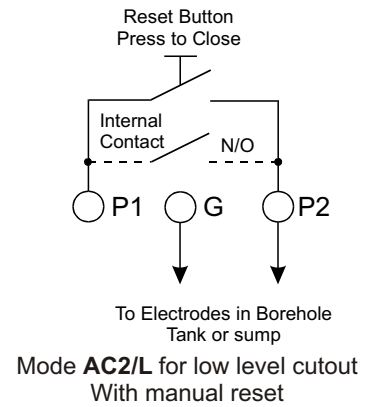
Mode **AC1/L** pumping out between 2 levels



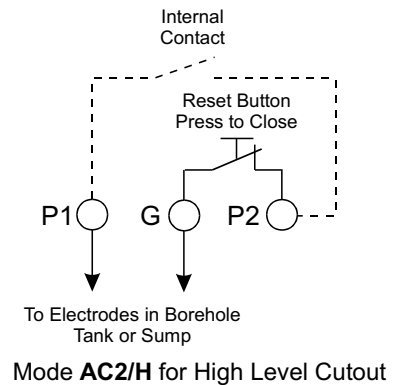
Mode **AC1/H** High Level Alarm



Mode **AC1/L** Low Level Alarm



Mode **AC2/L** for low level cutout With manual reset

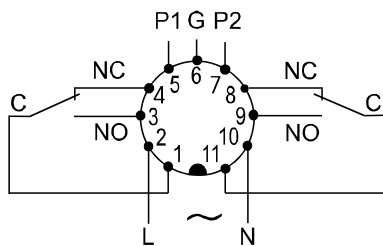


Mode **AC2/H** for High Level Cutout

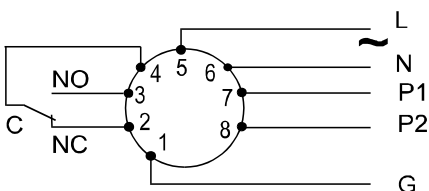
The P1 electrode is always the Shortest one.
 Controllers P2, P3, P4, P5 and 118 act in the same way as the AC1.
 A copy of these connection diagrams is included with the setting up instructions.
 For electrode holders & support brackets see data sheet 241

Base Connections

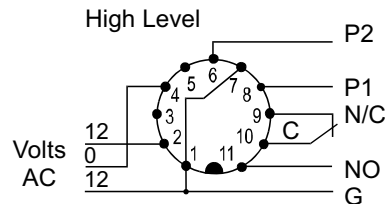
P4,P5



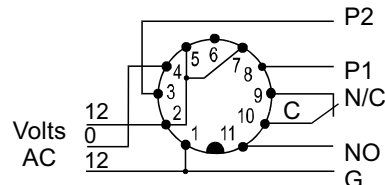
P3

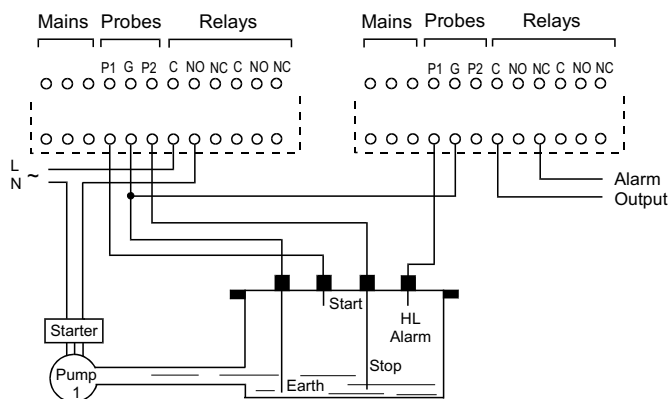


P2

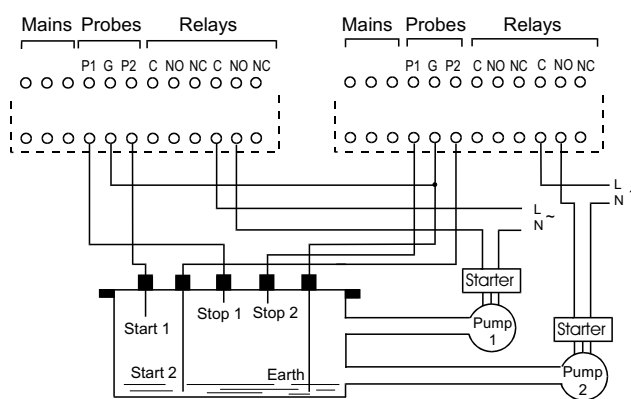


Low Level

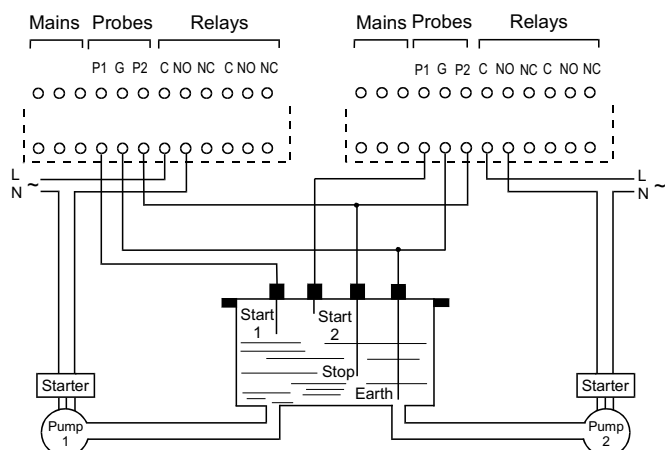




Controller AC3/LH



Controller AC3/HH



Controller AC3/LL

Mode AC3/LH pumping out control for one pump and High Level Alarm.

Mode AC3/LL pumping in control for two pumps

Mode AC3/LL pumping out control for two pumps

A separate earth return electrode must be used when the vessel is non-metallic or if there is a doubt about the efficiency of the earth return path.

AC3/HH requires two stop electrodes (FSH).

The AC5/6 Controller manually changes the starting order of Duty and Standby pumps.

In Mode 6 the Duty pump stops, when the standby starts

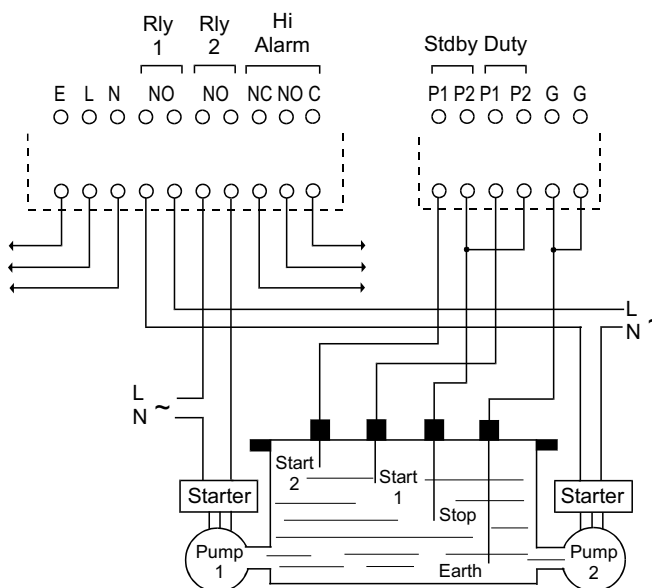
In Mode 5 the Duty pump starts, then the Standby, and then there both run together.

Mode 6 is fitted ex works.

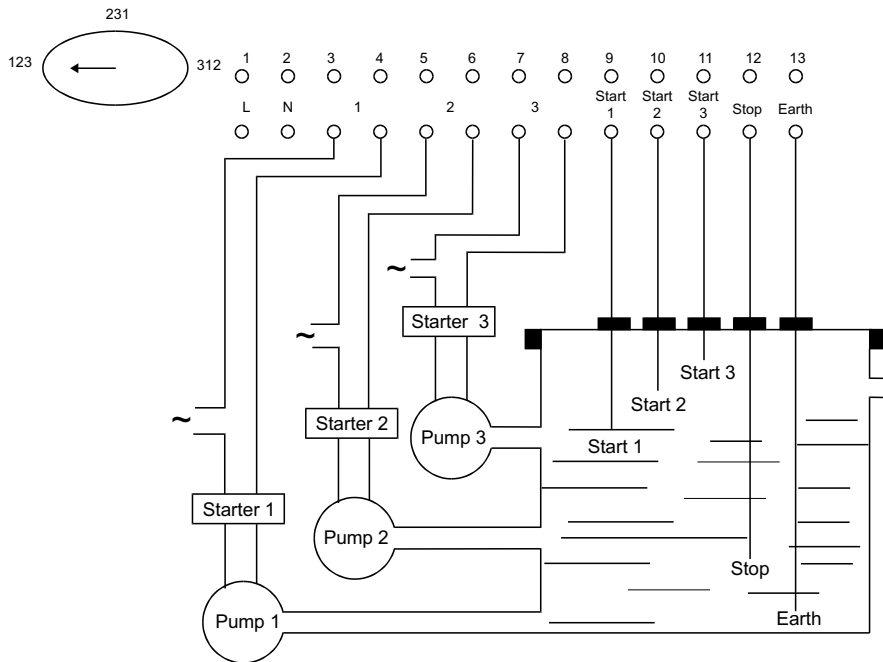
To convert to Mode 5, link the two labelled terminals on the PCB.

Fail Safe ex works is normally set FSL for pumping out applications. FSH pumping in applications can be supplied to order. Independent stop electrodes are required for FSH applications.

The AC5/6 AS Auto Sequencing Controller automatically changes the Duty Standby pump starting order at each operating cycle. The switch has 3 positions: AUTO for automatic operation. HOLD inhibits the automatic operation and the starting order become fixed even after mains failure. SELECT gives instant pump sequence changeover which can be fixed by moving the switch to HOLD. Red and Amber LED's indicate respective pump1 and pump 2 running conditions. Also when both pumps happen to be stopped, will indicate which was the last pump to run as duty

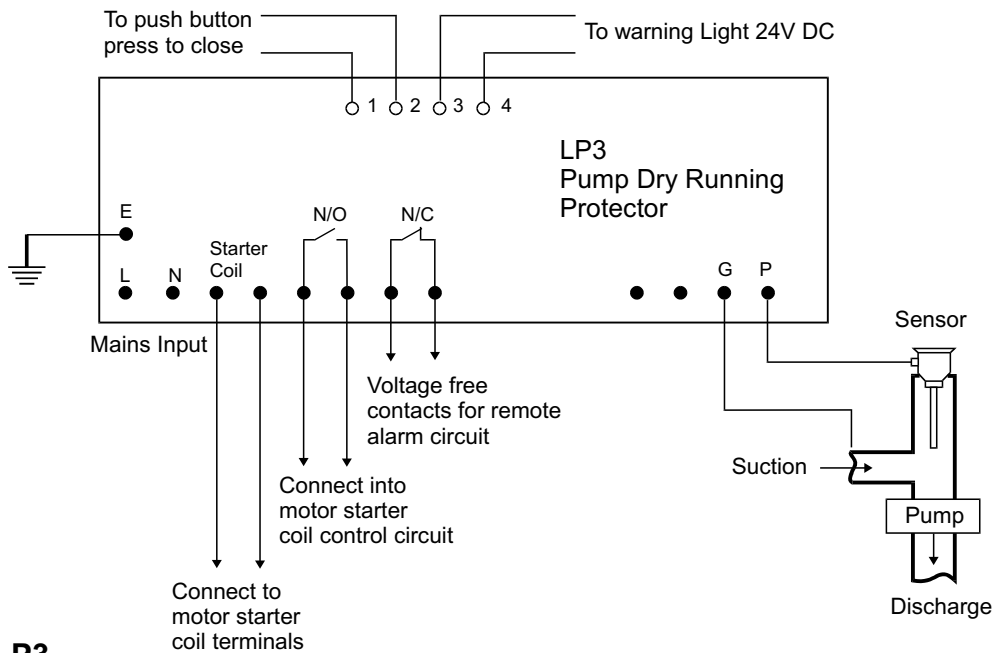


Controllers AC5/6 and AC5/6/AS



Controller **AC8/L**

The AC8 provides starting and stop control for three pumps with the facility, by an external switch, to change the pump starting order in the sequence 1 : 2 : 3, 2 : 3 : 1, 3 : 1 : 2. The P2 electrodes are commoned so that all three pumps stop together at the stop electrode. By removing the links it can be made to stop at additional stop electrodes fitted at the levels required. The unit is normally supplied in the FSL pumping out mode as AC8/L. A unit for the pumping in mode with FSH can also be supplied and is designated AC8/H. In this mode separate stop electrodes are required at each stop level.



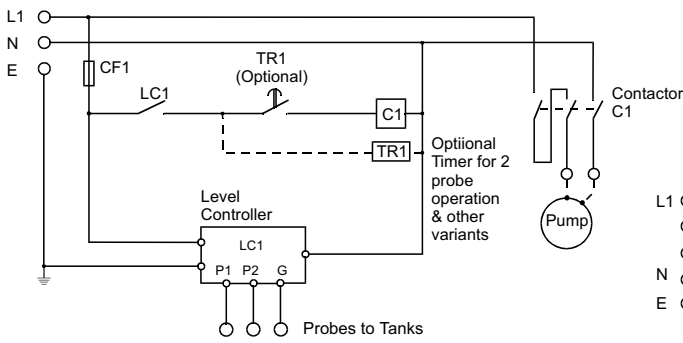
Controller **LP3**

The LP3 Pump Dry Running Protector employs a small sensor located in the pump suction. Under normal operating conditions, water (or any other conducting liquid) covers the sensor tip causing the controller to become energised and the pump to run. If there is a blocked suction or empty tank, the liquid falls away from the sensor tip, the controller de-energises, the pumps stops, a warning light is illuminated, or a remote alarm is activated by N/C voltage free contacts. When the pump is switched on initially, the sensor may be uncovered during the priming period and it is necessary for the controller to remain energised. This is accomplished by a timer which is variable between 2 and 60 seconds.

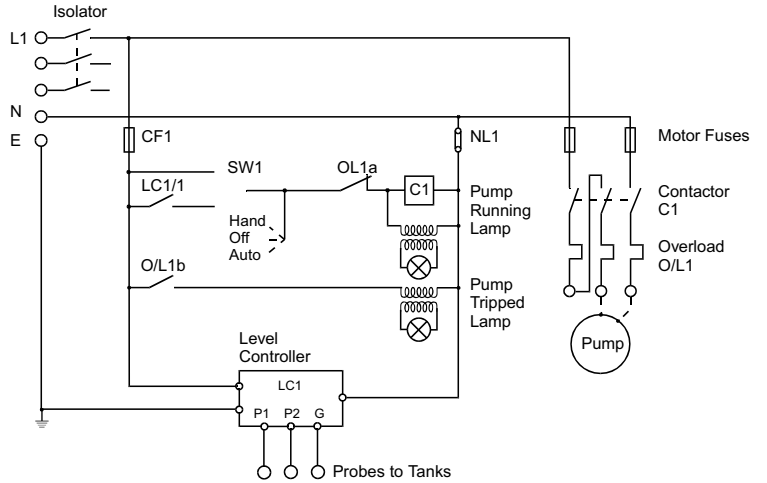
If the sensor remains uncovered after the preset time, the controller de-energises and a N/O contact stops the pump . The controller can be re-energised by a push button. Alternatively an add on automatic mains failure reset unit is available. The time delay is also used to precede an alarm caused by momentary uncovering of the sensor due to aerations or air pockets in the line. The controller is powered via the pump starter motor coil terminals, so that it is only energised when the pump is switched on.

A.C Plus

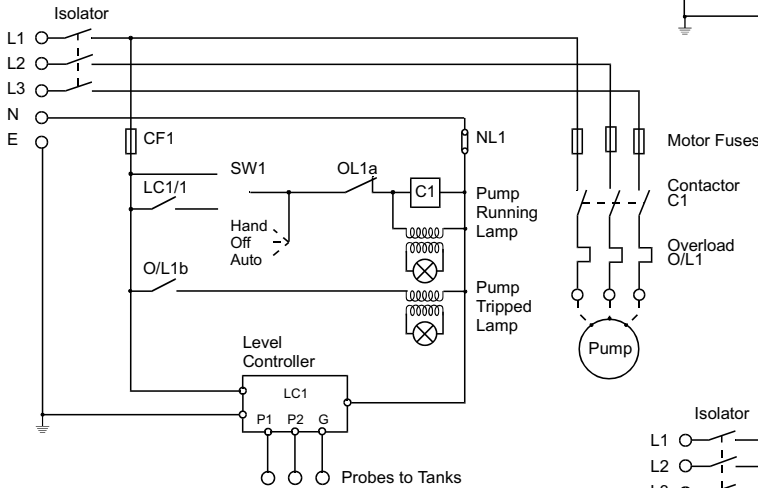
Level Control & Pump Starter



Single Phase System **MMO**

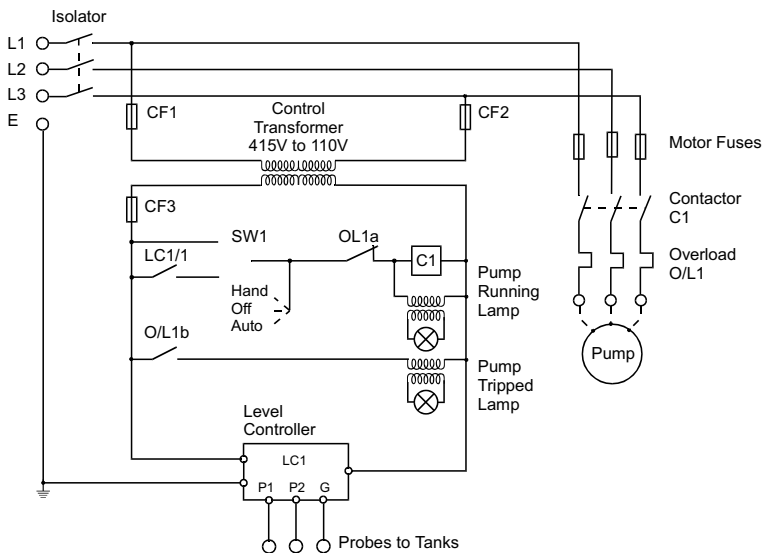
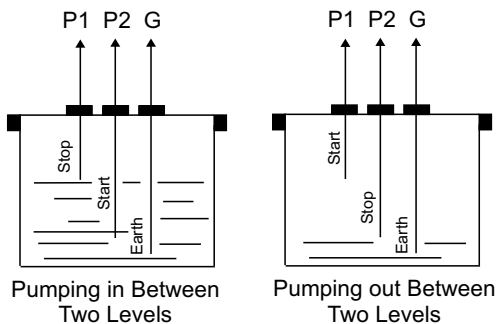


Single Phase System **MM1**



Three Phase and Neutral System **MM1/3**

Electrode Connections



Three Phase Three Wire System **MM3**

This product has been designed and complies to the relevant standards as listed in its certificate of conformity The installer/user must ensure system compliance
 Because of continuing development we reserve the right to change the specifications without notice.

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