Installation Instructions

Altronic Liquid Level Switch, 690050 Series

Form LLS II 6-10

altronic
HOERBIGER Engine Solutions

1.0 OVERVIEW

1.1 This manual provides installation instructions and maintenance information for the Altronic Liquid Level Switch, model 690050-1 (2" NPT). It is recommended that the user read this manual in its entirety before commencing operations.

This advice is intended to help the end user install the Altronic Liquid Level Switch in such a manner to reduce the risk of accident to personnel or to equipment.

1.2 The LLS meets ANSI/ISA requirements for process sealing between electrical systems and flammable or combustible process fluids. It is a stainless steel, float-activated liquid level switch. The level switch is unique in that the electrical switch and connections are in a cavity completely separate from the liquid and float. There is no risk of liquid contamination to the switch, which is the leading cause of failure in similar industry level switches. The float activates an electrical SPDT micro-switch. This switch may be used for alarm or shutdown monitoring. Mounting is accomplished by threading unit directly into the wall of the vessel to be monitored.

1.3 The Altronic Liquid Level Switch 690050-1 can be configured as either a low level or high level sensor. This minimizes the number of different parts required for inventory and stocking purposes.

1.4 When using the stainless steel float supplied with model 690050-1, the maximum static operating pressure is 1500 psig (10.3 Mpa). The maximum temperature of the monitored liquid is 257°F (125°C).

1.5 The SPDT micro switch is rated 0.5A at 30Vdc max.

WARNING: DEVIATION FROM THESE INSTRUCTIONS MAY LEAD TO IMPROPER OPERATION OF THE MACHINE WHICH COULD CAUSE PERSONAL INJURY TO OPERATORS OR OTHER NEARBY PERSONNEL.

CAUTION: THE 690050 SERIES ALTRONIC LIQUID LEVEL SWITCH IS SUITABLE FOR USE IN CLASS 1, GROUPS C & D, DIVISION 1 OR 2 HAZARDOUS LOCATIONS WHEN INSTALLED IN ACCORDANCE WITH THESE INSTRUCTIONS.

CAUTION: DO NOT ATTEMPT TO OPERATE, MAINTAIN, OR REPAIR THE LIQUID LEVEL SWITCH UNTIL THE CONTENTS OF THIS DOCUMENT HAVE BEEN READ AND ARE THOROUGHLY UNDERSTOOD.

2.0 INSTALLATION (SEE FIGURE 1)

2.1 The Altronic Liquid Level Switch should be inspected immediately after unpacking. Check for any damage that may have occurred during shipping. If there are any questions regarding the physical integrity of the switch, contact your Altronic distributor or a factory service representative.

NOTE: The LLS Series of Liquid Level Switches are Single Seal CSA Certified and do not require a secondary seal.

2.2 When considering where to place the level switch, choose a location away from any extreme sources of heat. Operating ambient temperature is –40°F to +185°F (–40°C to +85°C). **DO NOT** expose the switch to temperatures outside of these boundaries.

2.3 INSTALLATION INTO PRESSURE VESSEL WALL:

A. Determine that the float travel is not obstructed by the coupling in the vessel wall, internal baffles, etc. The level switch requires 2" NPT threaded entry. The appropriate pipe dressing (teflon tape, pipe dope, etc.), should be used to minimize the risk of leaks. Tighten the switch body and check that the hex flat engraved "TOP" is pointed towards top of vessel.

B. The electrical connection fitting should be positioned at the bottom when the unit is correctly oriented for proper operation.

C. Be sure that all pressure connections are tight before pressurizing the system.

WARNING: ALL PRESSURE CONNECTIONS MUST BE TIGHT BEFORE THE SYSTEM IS PRESSURIZED. FAILURE TO DO SO CAN RESULT IN LEAKS.

2.4 INSTALLATION WITH A WELD COLLAR:

A. A 2" NPT weld collar must be welded into the wall of the pressure vessel according to code standards and good welding practice. Be sure to install this collar at the proper height for monitoring.

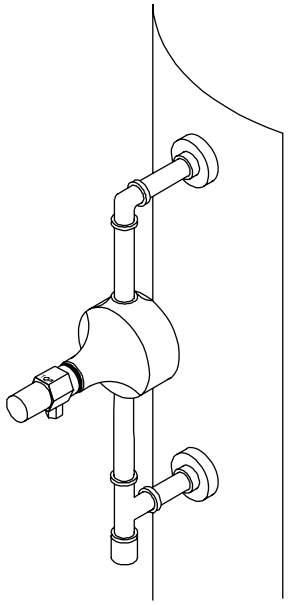
B. Follow the instructions above for direct installation.

2.5 INSTALLATION USING AN EXTERNAL FLOAT CHAMBER:

A. Install a float chamber sized for the level switch on the outside wall of the pressure vessel using 1" NPT piping. Position the 2" NPT threaded connection on the float chamber at the desired liquid level height. The 2 inch opening must be facing away from the tank wall.

B. A tee should be installed at the bottom of the 1 inch riser connection to allow draining of the float chamber during service.

C. Follow the instructions above for direct installation into the wall of a pressure vessel.



SEE FIGURE 3
FLOAT CHAMBER INSTALLATION

3.0 WIRING (SEE FIGURE 2)

3.1 INSTRUCTIONS:

A. Remove switch cover by unscrewing it from body.

B. Viewing the SPDT micro-switch from the side indicates normally closed (NC2), normally open (NO3), and common (COM) connections via 3 spade terminals.

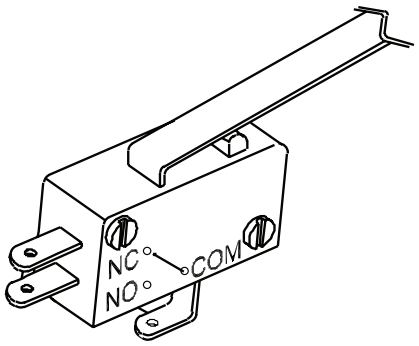
C. For High Level monitoring, use the normally open (NO3) and common (COM) connections, the switch closes when the level is high.

D. For Low Level monitoring, use the normally closed (NC2) and common (COM) connections, the switch closes when the level is low.

E. Wiring is to be accomplished using female spade terminals provided. Care must be taken to ensure that wires do not interfere with switch actuation.

F. The above connections should be wired to the appropriate alarm or shutdown inputs of the monitoring device (consult manufacturers wiring instructions).

G. Before reconnecting electrical power, check that all electrical connections are insulated and the cover is fully installed. Switch cover must be installed to assure safe operation. The cover should be firmly hand tightened or snugged up with a strap wrench to insure engagement of the O-ring seal.



SEE FIGURE 2
WIRING

3.2 HAZARDOUS AREA OPERATION:
The 690050-1 Altronic Liquid Level Switch is **Single Seal CSA Certified for use in CLASS I, DIVISION 1, GROUPS C & D areas or CLASS I, DIVISION 2, GROUPS C & D** areas. The wiring practices used for the installation must match the requirements for the application's hazardous rating.

In all cases, the Model 690050-1 switch must be installed per the local inspection authority having jurisdiction. The electrical connections to the 690050-1 switch must be in accordance with the National Electrical Code and in Canada, the Canadian Electrical Code. In addition, the following requirements must be met:

1. Run the wires entering the Liquid Level Switch in an approved conduit with approved seals as required for the area rating, Division 1 or Division 2.
2. Keep wires separate from all other wiring.
3. Wires must have a grade of insulation capable of withstanding 500 Vac.

WARNING: DIVISION I USE REQUIRES USE OF APPROVED SEAL. DIVISION 2 USE REQUIRES USE OF APPROVED SEAL UNLESS SWITCH IS CONNECTED TO AN APPROVED NON-INCENDIVE CIRCUIT.

4.0 OPERATION

WARNING: DO NOT REMOVE ELECTRICAL HOUSING COVER OR DISCONNECT WIRES IN A DIV. 1 OR 2 ENVIRONMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NON-HAZARDOUS.

4.1 The Altronic Liquid Level Switch uses a stainless steel housing to resist corrosion and provide long service life. Due to the straightforward construction, operation is simple. As condensate rises in the scrubber or other vessel, the float on the Altronic Level Switch rises and moves an arm. This causes the tripping of a SPDT micro switch in an opposing cavity. The connection between the two cavities is through a magnetic field. Therefore, these cavities remain sealed from each other, and no liquid is able to contaminate the SPDT micro-switch. This principle eliminates the biggest source of failure of similar float level switches. Once the SPDT micro-switch is tripped, a signal is sent via wired connections to the monitoring system fault or shutdown input. The Altronic Liquid Level Switch can be used as either a low level or a high level sensor by wiring it accordingly.

5.0 SERVICE AND REPAIR OVERVIEW

5.1 The Altronic Liquid Level Switch has been designed to provide reliable operation with a minimum amount of maintenance. To ensure optimum performance, periodic inspection and cleaning is necessary. Preventative maintenance issues can be integrated into the maintenance schedule of the machine. Most maintenance requires minimal effort and downtime of the system. Corrective maintenance is to be done when the Altronic Liquid Level Switch begins to behave erratically. Follow these general guidelines:

External Visual Inspection – Inspect the exterior of the Liquid Level Switch for loose connections, frayed wires or structural damage.

Cleaning – Exterior cleaning will aid in the visual inspection of the external casing and ensure good connections. Mild soapy water can be used as a cleaning agent.

Maintenance Log – To facilitate troubleshooting and to establish service schedules, a maintenance log should be kept on the Liquid Level Switch.

6.0 SERVICING THE LIQUID LEVEL SWITCH

6.1 The Altronic Liquid Level Switch is set and tested at the factory and no adjustments are required. The unit is not field serviceable and must be returned to the factory for all service work.

FIG. 1 DIMENSIONS

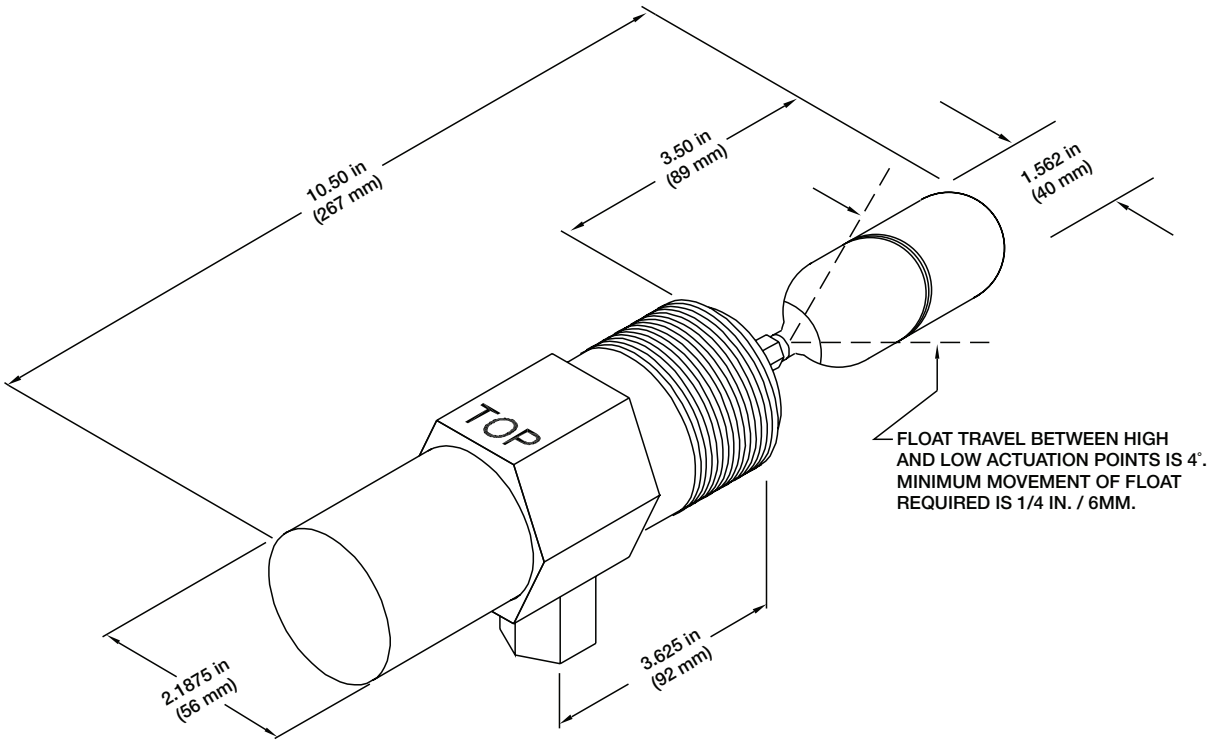


FIG. 2 WIRING

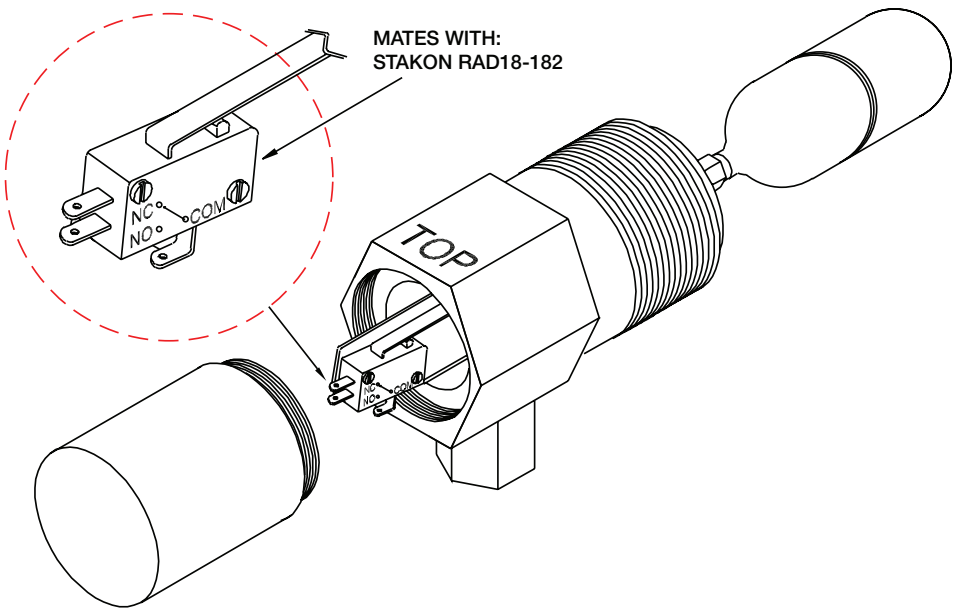


FIG. 3 FLOAT CHAMBER INSTALLATION