INSTALLATION & OPERATING INSTRUCTIONS

INSTALLING THE KELCO L SERIES LEVEL SWITCH

FOR L-H MODELS · STANDARD MICROSWITCH

WARNING

Please read these installation and operating instructions fully and carefully before installing or servicing this level switch. The L Series level switch is a **mains voltage device**. Death or serious injury may result if this switch is not correctly installed and operated. All electrical work on this switch must be performed by a fully qualified and licensed electrician.

CHECK THE SWITCH MODEL NUMBER

Check the part number on the label inside the lid against the codes below – for example **L-H-25B-SS**.

L	–	H	–	25B	–	SS

SERIES

L Series level switch

SWITCH

H Standard heavy duty switch

PROCESS CONNECTION

25B 1" BSP thread

25N 1" NPT thread

WETTED MATERIALS

Blank All polypropylene wetted parts

SS Supplied with a high pressure 316 stainless steel process connection and polypropylene paddle

OUTLINE

The L Series level switch is a side entry tank level switch that provides a single switch point level reference when installed in the side wall of a tank or vessel. This document sets out in detail the installation and functions of the level switch and some of the main ways in which it can be used.

APPLICATION

The L Series level switch has been specifically designed to be used in both water and aggressive chemical solutions. The process connection on the switch is available in either polypropylene or 316 stainless steel. The float and all other wetted parts of the switch are made from polypropylene and glass reinforced polypropylene.

The all-polypropylene models are suitable for use in a wide range of liquids including potable water, sea water, acids, bases, ground water and many chemical solutions containing dissolved mineral salts. The switches should not be used in organic solvents. If there is any doubt about the suitability of this switch for a specific application, please contact the manufacturer before installing the switch.

Chemical Compatibility Checker ›

WARNING

Without its lid in place the L Series level switch is not water resistant and presents a potential **shock hazard**. Take great care not to splash water onto the switch when the lid is not in place. Always replace the lid and fully tighten its securing screw after wiring or servicing this switch.

MECHANICAL INSTALLATION

This level switch should be installed in a tank socket on the side wall of a tank. The switch requires a minimum of 25 mm of clearance above and below its centre line axis to facilitate the free movement of its float (see Fig. 1).

Do not install this switch where the pressure or liquid temperature is greater than the ratings in the Environmental Limitations table on page 4. Safety should always be considered when installing this switch, particularly where aggressive or dangerous process liquids are involved.

This level switch is intended to be installed in the horizontal plane in the side of a tank or riser pipe. A suitable female threaded tank socket should be installed at a level where the switch point is required. The level switch is supplied with a float designed to pass through the inside diameter of a standard pipe thread socket. This allows the switch to be installed from the outside of the tank.

Apply thread tape or sealant to the thread on the switch and screw the switch into the tank socket using the spanner flats on the process adaptor of the switch. Do not screw the switch into the tank socket by twisting the electrical housing; always use the spanner flats provided. Do not wind the switch all the way into the tank socket – leave a gap of approximately 4 mm between the end of the thread on the switch and the face of the tank socket. Orient the switch so the float arm rises and falls vertically. The cable entry on the switch must be on the underside of the switch and pointing straight down.

TYPICAL INSTALLATION

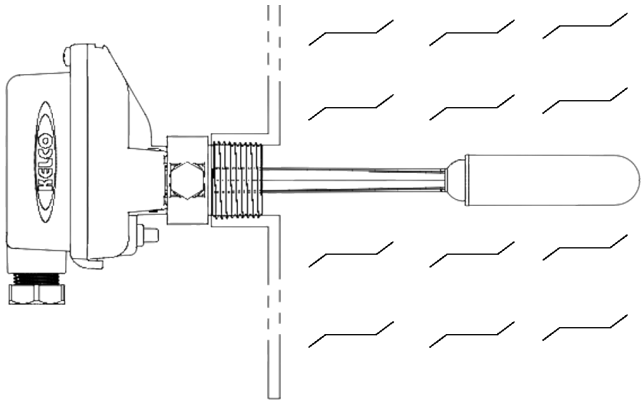


FIG. 1 L Series installed in a tank socket on the side wall of a tank

1. Do not expose this level switch to freezing. If the level switch is to be used in areas where low temperatures will be encountered, always lag the tank and switch to prevent the unit from freezing.
2. Do not use this level switch in hot liquid applications. Do not exceed the maximum operating temperature in the table on page 4: 60 °C for the all-polypropylene model, 80 °C for the stainless model.
3. Do not exceed the recommended pressure limitations outlined in this document (page 4).

ELECTRICAL INSTALLATION

1. This sheet covers the **L-H** models: a standard S.P.D.T. microswitch for control circuits from 5 to 500 VAC. Check the part number on the lid label before wiring – L-L models have their own installation sheet.
2. Confirm the load is within the electrical ratings on page 3.
3. The switch has terminals marked 'C' for the common terminal, 'NO' for the normally open terminal and 'NC' for the normally closed terminal. In a two-wire installation one wire will always be connected to the common terminal and the switch wire will be connected to either the normally open or normally closed terminal, depending on the application.

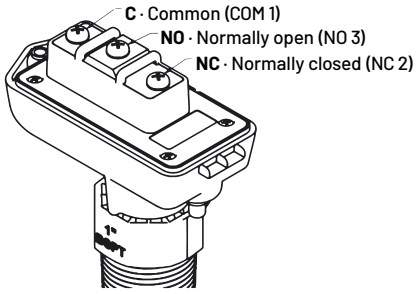


FIG. 2 Switch terminals

'H' SWITCH ELECTRICAL DATA

The 'L-H' models use an S.P.D.T. microswitch for general control circuits up to 500 VAC – ideal for pump starters, relay logic, contactors and timers.

IMPORTANT

Use at any voltage from 5 to 500 VAC (minimum load 160 mA at 5 VDC). Directly switches pump motors up to ¼ HP (approx. 185 W) at 240 VAC – use a contactor or relay for larger motors.

RATED VOLTAGE	NON-INDUCTIVE LOADS (A)			INDUCTIVE LOADS (A)		
	RESISTIVE	LAMP		INDUCTIVE	MOTOR	
	NC / NO	NC	NO	NC / NO	NC	NO
125 VAC	15	3	1.5	15	5	2.5
250 VAC	15	2.5	1.25	15	3	1.5
500 VAC	10	1.5	0.75	6	1.5	0.75
8 VDC	15	3	1.5	15	5	2.5
14 VDC	15	3	1.5	10	5	2.5
30 VDC	6	3	1.5	5	5	2.5
125 VDC	0.5	0.5	0.5	0.05	0.05	0.05
250 VDC	0.25	0.25	0.25	0.03	0.03	0.03

NOTE Do not apply maximum voltage at maximum current across the switch contacts. Maximum switched current is 15 A (10 A at 500 VAC). See the table above for current limits at specific voltages and for specific loads.

HAZARDOUS AREAS

The L-H is not certified for use in hazardous areas and must not be installed in any area classified as hazardous under AS/NZS 60079.10 (Zone 0, 1, 2, 20, 21 or 22). It contains a silver-contact microswitch rated for mains voltage, has no recognised Ex protection concept, and is not suitable as simple apparatus in an intrinsically safe circuit because its contacts require a minimum load of 160 mA at 5 VDC.

ENVIRONMENTAL LIMITATIONS

PARAMETER	ALL POLYPROPYLENE MODEL	WITH STAINLESS STEEL PROCESS CONNECTION
Maximum operating pressure (static or dynamic) at ambient temperature	**18 bar** 261 psi	**400 bar** 5800 psi
Minimum burst pressure at ambient temperature	**45 bar** 652 psi	**500 bar** 7215 psi
Maximum operating temperature	**60 °C** see note *	**80 °C** 176 °F
Minimum operating temperature	**–20 °C** –4 °F	**–20 °C** –4 °F
Ingress protection rating	**IP67**	**IP67**

*** PLEASE NOTE** Maximum operating pressure of the all-polypropylene L Series switch must be linearly de-rated as operating temperature is increased, so that at 60 °C (140 °F) the maximum permissible operating pressure for the switch does not exceed one bar (15 psi) absolute.

MAINTENANCE

The L Series switches are low maintenance devices. Provided it is correctly installed it should function properly for many years. Factors that may reduce its useful life are pressures and temperatures in excess of its rating and electrical loads greater than the limits of its built-in microswitch.

Should maintenance be required, spare parts including replacement floats are available from your supplier.

WARNING

After installing or servicing this level switch always replace its lid and fully tighten its lid screw. Also ensure the cable gland is fully tightened. Never leave the lid off the switch for extended periods. Without its lid in place this level switch is not water resistant and presents a potential shock hazard. Take great care not to splash water onto the inside of the level switch's electrical housing when the lid is not in place. Without its lid the level switch is not weather or insect proof and presents a potential **shock hazard that may result in death or serious injury**.

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