INSTALLING AND OPERATING THE KELCO LM SERIES LEVEL SWITCH

WARNING

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

WARNING

After installing or servicing this level switch always replace its lid and fully tighten its lid screws. Also ensure the cable gland is fully tightened. Never leave the lid off the level 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.

OVERVIEW

The LM 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 LM level switch has been designed to operate in water and sea water applications. The process connection on the switch is made from 316 Stainless Steel. The float and all other wetted pats of the switch are made from glass reinforced Polypropylene.

INSTALLATION

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

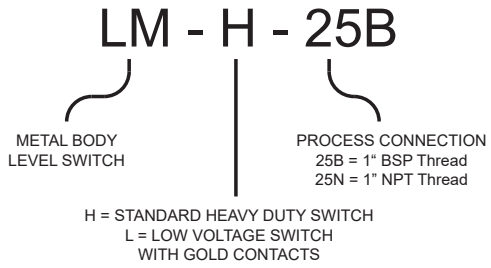
Do not install this switch in either pressure vessels or in vented tanks where the liquid temperature is greater than 80ºC. Safety should always be considered when installing this switch, particularly where aggressive or dangerous process liquids are involved.

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 4mm 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 or the switch and pointing straight down. 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. Do not use this level switch in high temperature applications. This level switch is not designed to be used in water hotter than 80ºC. Do not use this level switch in pressure vessels.

The stainless body of the switch is rated to withstand 400 Bars pressure, however, the float itself is only designed to withstand 100 meters head pressure,(980kPa or 142 psi).

CHECK THE SWITCH MODEL NUMBER

Check the part number of the switch before installing it. The low voltage "L" version of this switch is easily damaged if overloaded so please check the part number before applying a voltage to this switch. The part number of the switch can be found on a label inside the lid of the switch and on the packaging.



OPERATING LIMITS

Parameter	Standard LM Series Level Switch
Maximum submergence of the float	100 Metres of head (328 feet of head)
Minimum burst pressure of the Polypropylene float at ambient temperature	1800 kPa (260 PSI) (183 Metres or 602 feet of head)
Minimum burst pressure of the switch body at ambient temperature	800 Bars (11600 PSI)
Maximum operating temperature (Process Liquid)	80ºC
Minimum operating temperature	-60°C (-76°F)
Minimum liquid S.G.	0.95
Ingress protection rating	IP67

ELECTRICAL DATA

WARNING

After installing or servicing this flow switch always replace its lid and fully tighten its lid screws. Also ensure the cable gland is fully tightened. Never leave the lid off the switch for extended periods. Without its lid in place this flow switch is not water resistant and presents a potential shock hazard. Take great care not to splash water onto the inside of the flow switch's electrical housing when the lid is not in place.

ELECTRICAL DATA FOR THE STANDARD H SWITCH

The standard microswitch is a Single Pole Double Throw switch suitable for general purpose control circuit applications up to 500VAC. The standard switch can also be used in low voltage AC and DC application, for example at 12 or 24VAC or DC.

IMPORTANT

The standard H switch can operate at ANY voltage from 5 to 500VAC. It can be used to directly control pump motors up to 375 Watts (0.5HP) at 240VAC. For larger motors always use an interposing contactor or relay between the level switch and the motor.

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

Maximum Switched Voltage	**500VAC**
Maximum Switched Current	**15A**
Minimum Switched Voltage	**5VDC**
Minimum Switched Current	**160mA**

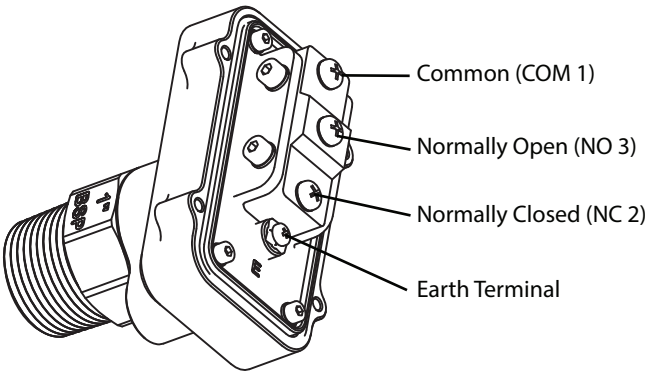
Note: Do not apply maximum voltage at maximum current across the switch contacts. See main data table for current limits at specific voltages and for specific loads.

ELECTRICAL DATA FOR THE L MICROSWITCH

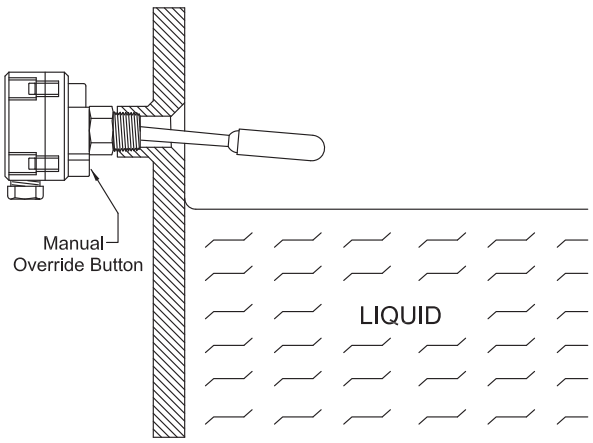
The model "L" microswitch is a Single Pole Double Throw low voltage low wetting current switch with gold contacts, it is suitable for low voltage signalling applications up to 30VDC.

Maximum Switched Voltage	**30VDC**
Maximum Switched Current	**26mA**
Minimum Switched Voltage	**5VDC**
Minimum Switched Current	**1mA**

Note: Do not apply loads in excess of the limits in the table above. Do not apply inductive or capacitive loads to the L microswitch. The "L" microswitch will be damaged by loads in excess of the limits in the table.



TYPICAL INSTALLATION



KELCO Engineering Pty Ltd

ABN 20 002 834 844 **Head office and factory:** 9/9 Powells Road Brookvale NSW 2100 Australia. **Postal Address:** PO Box 7485 Warringah Mall Post Shop Brookvale NSW 2100 Australia. **Phone:** +61 2 9905 6425 **Fax:** +61 2 9905 6420 **Email:** Sales@kelco.com.au **Web:** www.Kelco.com.au