

# INSTALLATION AND OPERATING INSTRUCTIONS FOR THE KELCO KP SERIES PROBE LEVEL SWITCH

## APPLICATION

The Kelco KP series probe level switch is a self contained close differential float switch designed for use in restricted areas. It can be rigidly fixed to the wall of a pit or cable tied to pipe work. The KP probe switch does not need to float or tilt to operate. Its actuating float is contained within its vented UPVC housing.

The KP probe level switch is a very versatile device. For example, it has a spigot at the top end of its body that is the same diameter (21.30mm) as 15 NB UPVC pipe. A standard 15NB PVC socket can be pressed or solvent glued onto the KP switch using its integral spigot. A length of 15NB PVC pressure pipe can then be solvent welded into the socket transforming the KP probe switch into a rigid probe assembly for use in tanks and pits etc. Set up this way the switch is ideal for use in tight locations and in close proximity to other pipe work. The cable from the KP switch is contained within the 15NB PVC pipe and thus protected from mechanical and chemical damage.

## INSTALLATION

A little care taken when installing the KP float switch will greatly prolong its service life. Select the installation site carefully. Avoid installing this switch in any area where there is likely to be violent turbulence or where the switch or cable can abrade against adjacent objects. Any abrasion between the switch cable and adjacent surfaces will greatly reduce the life of the switch and may cause premature failure.

**A)** A rigid probe assembly can be made from a length of 15NB PVC pressure pipe and a PVC socket. The assembly can be fixed to a wall using the 15NB pipe saddles supplied with the KP switch.

**B)** The KP switch and its cable can be strapped to any suitable pipework using standard cable ties. There are locating trenches in the KP body to facilitate this method of fixing.

**C)** The KP switch can be suspended vertically in a pit or tank. If required a Kelco KCW cable weight can be fitted to the cable to hold the switch in one place.

**D)** The KP switch can be bolted to the side wall of a pit or tank using the 15NB wall clips provided with the switch. The KP body has trenches provided to facilitate this fixing method.

## ENVIRONMENT

The KP switch is constructed from UPVC, Polypropylene and CPE elastomer shielded cable. There are no metal parts in contact with the process liquid and the switch can be used in water, sea water, acids, alkalis and a great variety of chemical solutions.

The KP switch should not be used in closed vessels at greater than 2500 kPa static pressure, or in submerged applications at greater than 250 metres.

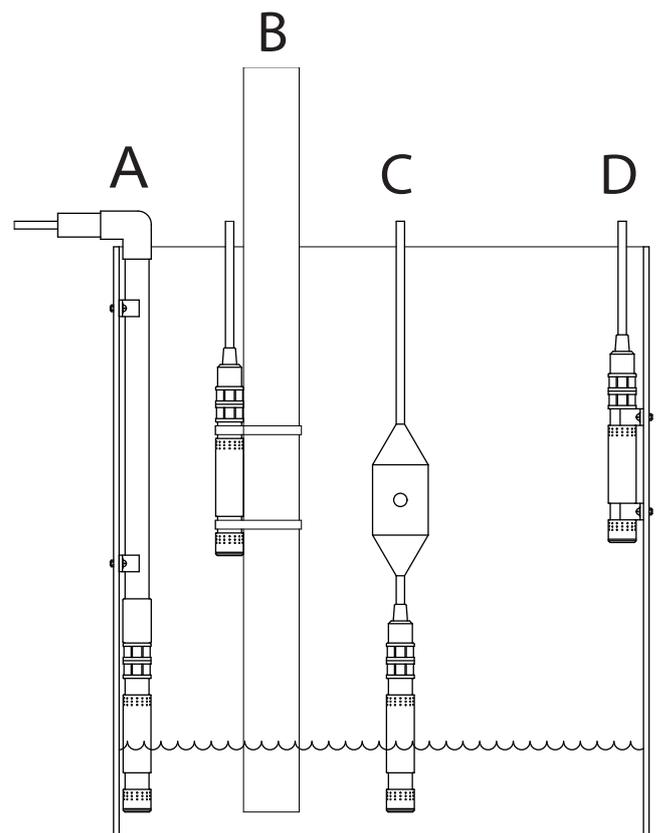
Do not expose this switch to liquid temperatures of less than  $-20^{\circ}\text{C}$  or greater than  $+60^{\circ}\text{C}$ . Liquids in which this switch is to operate must have a specific gravity of greater than 0.92.

The KP probe switch contains a magnet and we recommend it not be used in applications involving Ferric solutions such as Ferric Chloride or in applications containing suspended Iron particulates. Iron sludge may agglomerate around the magnet and prevent the free movement of the float contained within the KP switch.

## HAZARDOUS APPLICATIONS

The KP level switch is classed as a simple device and does not require separate certification to be used in hazardous applications. In any such installation the KP level switch should be isolated by an intrinsically safe barrier, a Zener barrier.

## TYPICAL INSTALLATION



## ELECTRICAL DATA

### SWITCH TYPE

Contact Form	Single Pole Double Throw S.P.D.T. Break Before Make
Underwriters Laboratories Recognised	UL File E47258

### ELECTRICAL RATING

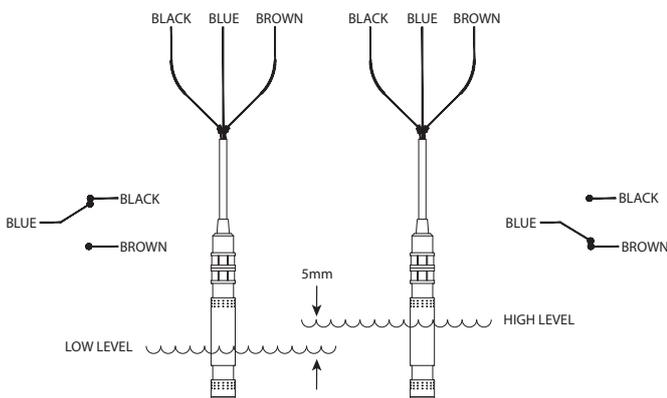
Contact Power Rating (1)		Watts / VA - Maximum	5
Voltage	Switching Breakdown	VDC Maximum	175
		VDC Minimum	200
Current	Switching Carry	A DC Maximum	0.25
		A DC Maximum	1.50
Resistance	Contact, Initial Insulation	Ohms Maximum	0.10
		Ohms Minimum	10 <sup>9</sup>
Capacitance	Contact	pF Typical	1
Temperature	Operating	Deg. C	-40 to +125

#### IMPORTANT (1)

**Contact Power Rating is the product of switching voltage and current and it must never exceed 5 Watts / VA.**

The KP level switch is a low voltage device. It must never be used in mains voltage applications. It is ideal for low voltage low current signalling applications. Connection is via a three core 0.75mm CPE clad cable. With the float hanging vertically the core colours are Blue, Common, Black Normally Closed and Brown Normally Open.

When liquid level rises it causes a float housed within the KP switch to lift and actuate a magnetically coupled SPDT reed switch. Blue to Brown closes and Blue to Black opens. As a general guide terminate the float switch well above the liquid high level in the tank or pit. Where possible avoid running the float switch cable any appreciable distance through conduit as this makes servicing, testing or replacement more difficult. Most installations will only require the use of two of the three available wires. This will be the blue common and one of the other two wires. Be aware that when the float switch actuates, the free end of the unused wire will be live, and it should therefore always be isolated.

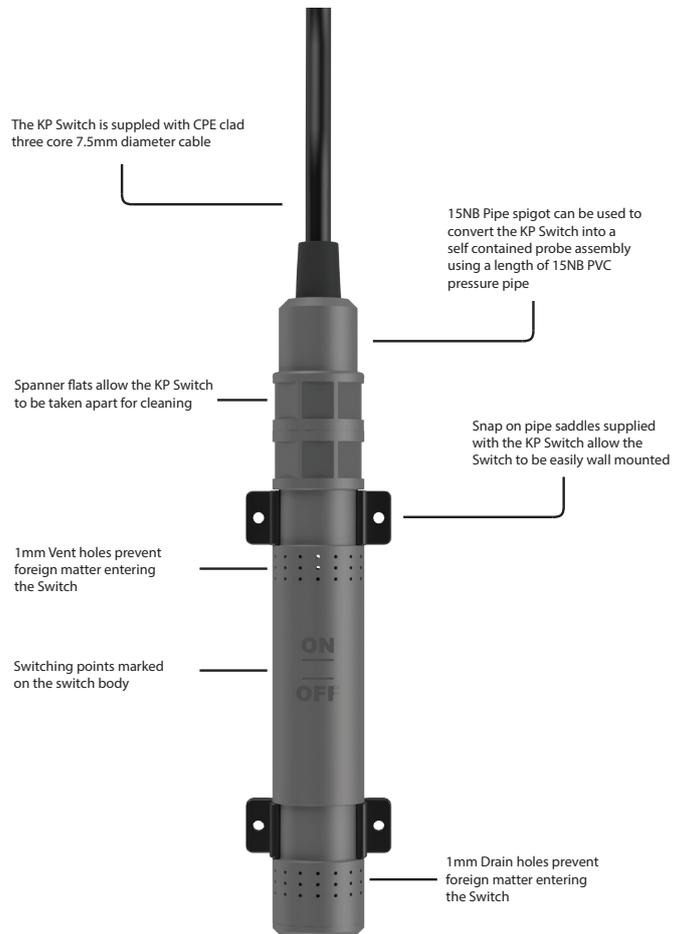


## ENVIRONMENTAL LIMITATIONS

Maximum submergence	250 Meters, 2500 kPa Static Pressure
Minimum burst pressure	3500 kPa or 350 Meters Static Pressure
Maximum liquid temperature	50°C
Minimum liquid temperature	-1°C
Liquid specific gravity	>0.92
Liquid Ph	1 to 14
Smallest diameter hole or well that the switch can operate in.	Within a 25.4 mm inside diameter vertically oriented hole or pipe
Liquid level change for the switch to operate. On to Off, Off to On	5 mm
Closest switching point to tank floor.	80 mm
Smallest opening through which the switch will fit.	25.4 mm
Suitability for use in sea water.	Fully compatible
Suitability for use in potable water.	Fully compatible
Switching Repeatability	+/- 1mm Liquid Level Change
Must be installed vertically (2)	Within 5 degrees of vertical

#### IMPORTANT (2)

**The KP probe switch must be installed vertically with its cable at the top. It will not operate in any other orientation.**



## KELCO Engineering Pty Ltd

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