INSTALLATION & OPERATING INSTRUCTIONS

INSTALLING AND OPERATING THE KELCO KP SERIES PROBE LEVEL SWITCH

WARNING

Please read these installation and operating instructions fully and carefully before installing or servicing this switch. All electrical work on this switch must be performed by a fully qualified and licensed electrician, conforming to AS/NZS (or equivalent) standards and wiring rules.

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 pipework. 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 (21.30 mm) as 15 NB UPVC pipe. A standard 15 NB PVC socket can be pressed or solvent glued onto the KP switch using its integral spigot. A length of 15 NB 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 pipework. The cable from the KP switch is contained within the 15 NB PVC pipe and thus protected from mechanical and chemical damage.

OPERATING ENVIRONMENT

The KP switch is constructed from UPVC and polypropylene, with a fluorosilicone cable boot and S05RN-F CPE sheathed 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 450 kPa static pressure, or in submerged applications at greater than 45 metres.

Do not expose this switch to liquid temperatures of less than –1 °C or greater than 50 °C. Liquids in which this switch is to operate must have a specific gravity of greater than 0.9.

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.

Chemical Compatibility Checker ›

HAZARDOUS AREAS

The KP is a passive reed switch that meets the definition of simple apparatus under AS/NZS 60079.11. It is not Ex certified in its own right. It may be used in a hazardous area only as part of an intrinsically safe circuit, connected through suitably certified associated apparatus such as a Zener barrier or galvanic isolator. The design of the intrinsically safe system and its installation are the responsibility of the system designer and installer, in accordance with AS/NZS 60079.14 and AS/NZS 60079.25. Reed switch rating: 5 W/VA, 140 VAC / 150 VDC, 0.25 A maximum, resistive loads only. The associated apparatus must not exceed these limits. Where the associated apparatus monitors for line faults, end-of-line resistors must be fitted as specified by its manufacturer. The KP is of non-metallic construction; the installer must assess electrostatic charging risk under AS/NZS 60079.0 for the zone and gas group. The KP is not suitable for use in a hazardous area outside an intrinsically safe circuit.

MECHANICAL 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.

TYPICAL INSTALLATIONS

See Fig. 1:

A A rigid probe assembly can be made from a length of 15 NB PVC pressure pipe and a PVC socket. The assembly can be fixed to a wall using the 15 NB 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 15 NB wall clips provided with the switch. The KP body has trenches provided to facilitate this fixing method.

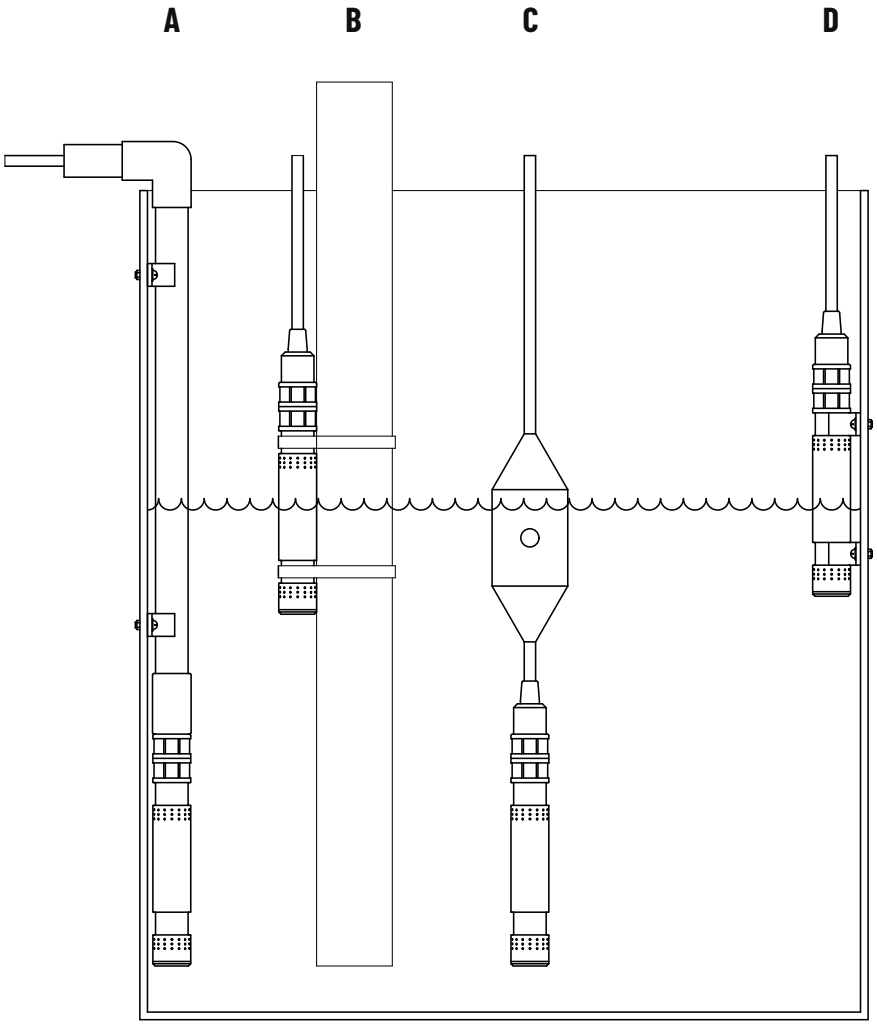


FIG. 1 Typical installations

IMPORTANT

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

ELECTRICAL INSTALLATION

ELECTRICAL RATING

Switch type	**Dry contact reed switch**
Contact form	**Single pole double throw (S.P.D.T.), break before make**
Contact power rating maximum	**5 Watts / VA**
Switching voltage maximum	**140 VAC / 150 VDC**
Switching current maximum	**0.25 Amp**
Carry current maximum	**1 Amp**
Breakdown voltage minimum	**200 VDC**
Typical applications	**PLC, telemetry & general low voltage control**

The high compliance single pole double throw reed switch used in the KP probe switch is suitable for low wetting current and low voltage applications. Such applications include PLC and BMS control at 24 V, 3.3 V and 5 V, signalling and telemetry control, and relay logic circuits. For use in hazardous areas, see Hazardous Areas. Please note the KP probe switch is not suitable for switching inductive loads such as high wattage relays, motors of any kind or contactors.

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 0.75 mm^2 S05RN-F 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 S.P.D.T. 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.

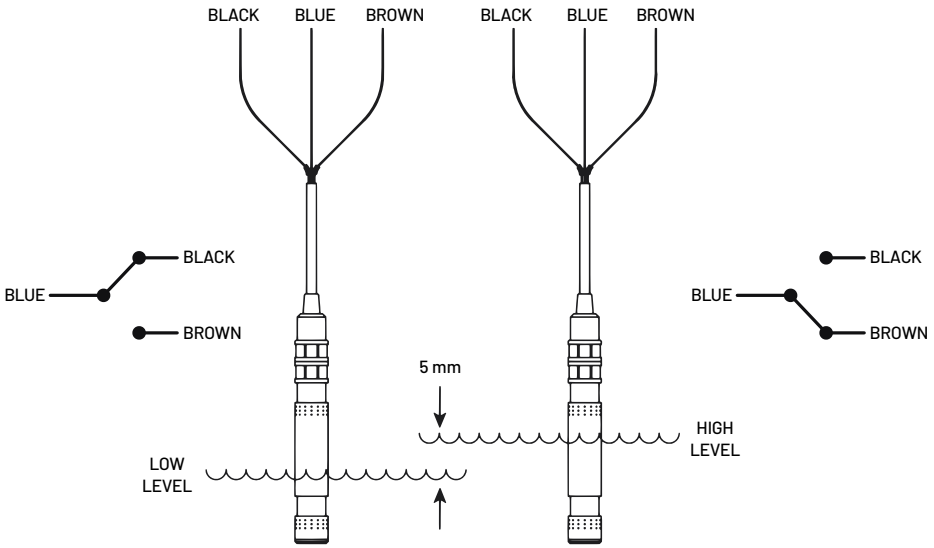


FIG. 2 Switch contacts at low and high liquid level

OPERATING LIMITATIONS

Maximum submergence	**45 metres, 450 kPa static pressure**
Minimum burst pressure	**3500 kPa or 350 metres static pressure**
Maximum liquid temperature	**50 °C**
Minimum liquid temperature	**–1 °C**
Liquid specific gravity	**> 0.9**
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 or off to on)	**5 mm**
Closest switching point to tank floor	**80 mm**
Smallest opening through which the switch will fit	**25.4 mm diameter**
Suitability for use in sea water	**Fully compatible**
Suitability for use in potable water	**Fully compatible**
Switching repeatability	**±1 mm liquid level change**
Must be installed vertically	**Within 5 degrees of vertical**

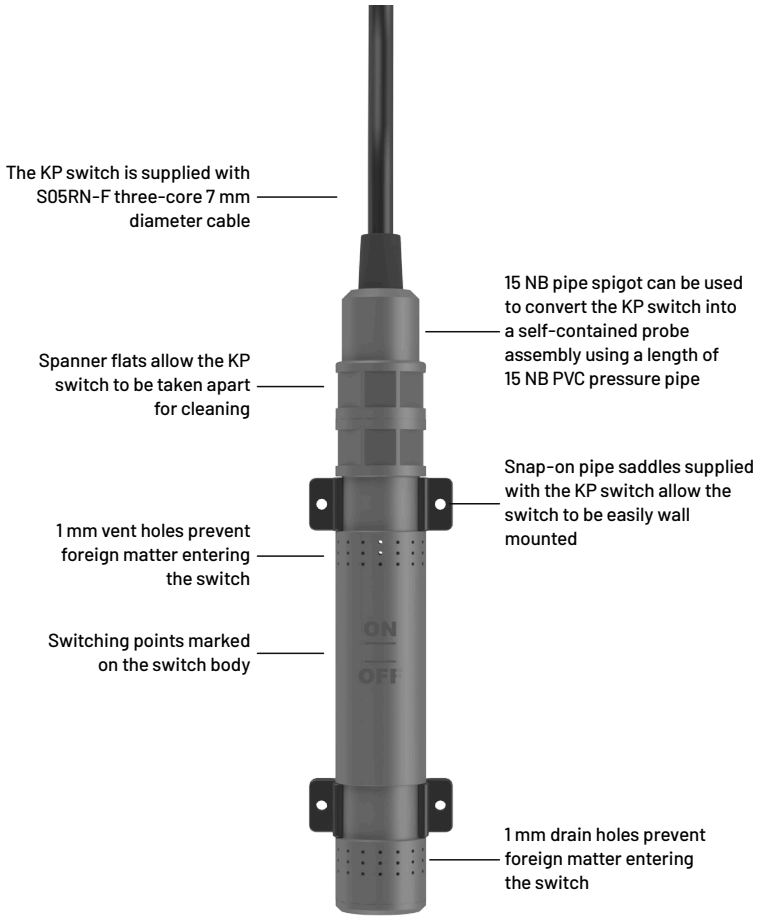


FIG. 3 KP Series features

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