

INSTALLATION AND OPERATING 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.

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.

See diagram on right:

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.

IMPORTANT

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

OPERATING 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.

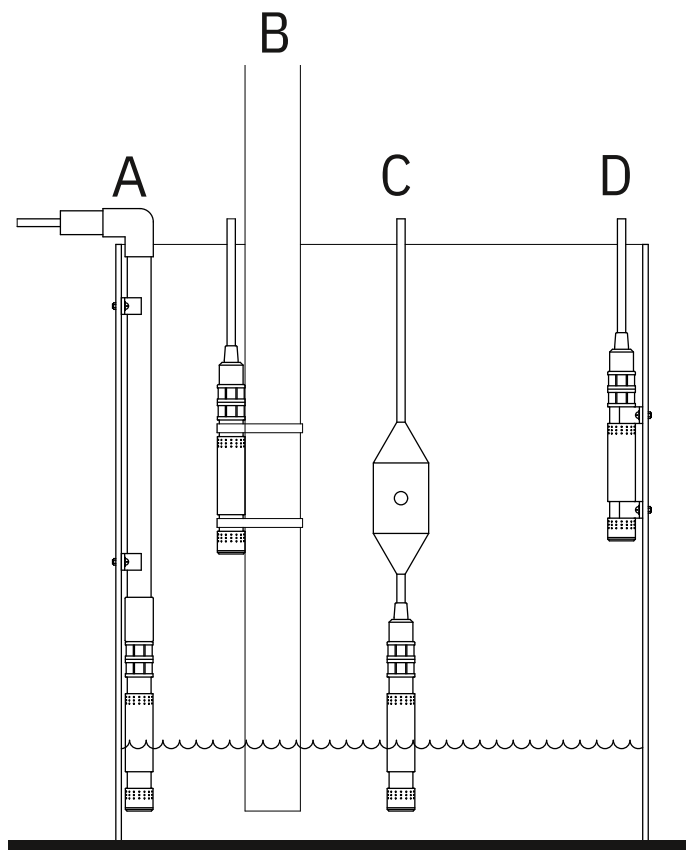
Do not expose this switch to liquid temperatures of less than -20°C or greater than $+60^{\circ}\text{C}$. Liquids in which this switch is to operate must have a specific gravity of greater than 0.92.

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 INSTALLATIONS





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 licenced Electrician, conforming to AS/NZ (or equivalent) standards and wiring rules

ELECTRICAL INSTALLATION

SWITCH TYPE

Contact Form Switching Action	Single Pole Double Throw C form (S.P.D.T.) Break Before Make
Underwriters Laboratories Recognised	UL File E47258

ELECTRICAL RATING

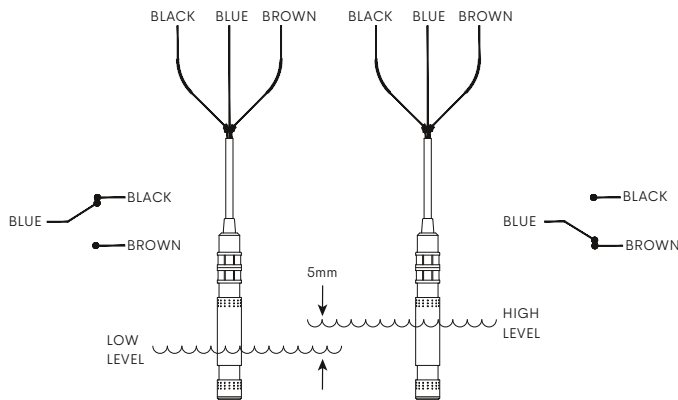
Contact Power Rating (1)	Watts / VA - Maximum	5	
Voltage	Switching Breakdown	VDC Maximum VDC Minimum	175 200
Current	Switching Carry	Amps DC Maximum Amps DC Maximum	0.25 1.50
Resistance	Contact, Initial Insulation	Ohms Maximum Ohms Minimum	0.10 10 [^] 9
Capacitance	Contact	pF Typical	1
Temperature	Operating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

IMPORTANT

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.



OPERATING LIMITATIONS

Maximum submergence	250 Metres, 2500 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	+/- 1mm liquid level change
Must be installed vertically	Within 5 degrees of vertical

The KP Switch is supplied with CPE clad three core 7.5mm diameter cable

15NB Pipe spigot can be used to convert the KP Switch into a self contained probe assembly using a length of 15NB PVC pressure pipe

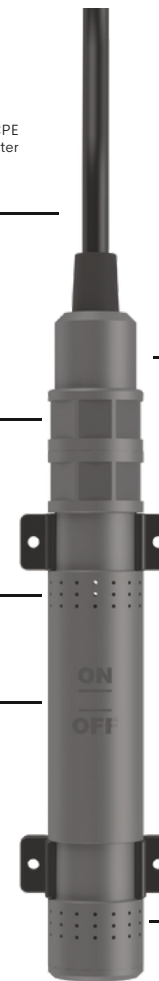
Spanner flats allow the KP Switch to be taken apart for cleaning

Snap on pipe saddles supplied with the KP Switch allow the Switch to be easily wall mounted

1mm Vent holes prevent foreign matter entering the Switch

Switching points marked on the switch body

1mm Drain holes prevent foreign matter entering the Switch



Kelco Engineering Pty Ltd

ABN 20 002 834 844

Head Office & Factory
9/9 Powells Road,
Brookvale 2100 NSW Australia

Postal Address
PO Box 7485 Warringah Mall
Brookvale 2100 NSW Australia

Phone: +61 2 99056425
Fax: +61 2 9905 6420

Email: Sales@kelco.com.au
Web: www.Kelco.com.au

PLEASE NOTE: Kelco Engineering Pty Ltd reserves the right to change the specification of this product without notice. Users will use their own judgment to determine the appropriateness of using Kelco Products in an application, any safety measures required and that the product is properly installed for that application. To the extent permitted by law Kelco Engineering Pty Ltd disclaims and excludes all and any liability for the use of this product in any particular application or for defective installation. Kelco switches are warranted against malfunction by a 12 month return to base manufacturer's warranty. Full details of our warranty and limitation of liability can be found in this document or downloaded from: <http://www.kelco.com.au/warranty>

All rights reserved copyright Kelco Engineering Pty Ltd © 2022

Warranty and Limitation of Liability

Thank you for purchasing Kelco Engineering Pty Ltd, (ABN 200 002 834 844) ("Kelco") products (*Kelco Products*). This document sets out the terms and conditions of the product warranty and Limitation of Liability for *Kelco Products*. It is an important document. Please keep it with your proof of purchase documents in a safe place for future reference should you need to lodge a claim.

This Warranty and Limitation of Liability (or any more recent version in effect when you purchase a *Kelco Product*) ("*Warranty*") applies to all *Kelco Products* regardless of where you purchased the *Kelco Products*.

When you place an order, you are deemed to agree to the *Warranty*, unless otherwise agreed in writing with Kelco.

Kelco is located at 9/9 Powells Road, Brookvale, NSW 2100, AUSTRALIA and may be contacted by calling 61 2 99056425 or emailing: sales@kelco.com.au

1. Definition

The following terms used herein are defined as follows:

- (1) *Australian Consumer Law or ACL*: Schedule 2 to the Competition and Consumer Act 2010 (Cth).
- (2) *Brochures and Technical data sheets*: Kelco brochures, including, without limitation, sales brochures and technical data sheets, whether or not provided electronically.
- (3) *Customer Application*: Any application of *Kelco Products* or component parts by a you including, but not limited to, embedding and/or using *Kelco Products* in your parts/components, electronic substrates, devices, equipment and /or systems manufactured by customers.
- (4) *Non- Excludable Guarantee*: a Consumer Guarantee applicable to these *Warranty Terms* under the *Australian Consumer Law or New Zealand Consumer Guarantee Act 1993*.
- (5) *Fitness*: (a) fitness for a particular purpose, (b) performance, (c) compliance with laws and regulations and (d) conformity to standards of a *Kelco Product*.
- (6) *Kelco Products*: flow switches, level switches and float switches, related products and electronic/mechanical components under the *Kelco* brand.
- (7) 'You' or "Customer" means the purchaser of the *Kelco Products* not having purchased the *Kelco Products* for re-sale, and 'your' has a corresponding meaning.
- (8) *Usage Conditions*: Usage conditions, rating, performance, operating environment, handling instructions, warnings, restrictions on use, etc. of *Kelco Products* described in the *Brochures and technical data sheets*.

2. Descriptions

You are deemed to accept the following terms and conditions regarding the descriptions provided of *Kelco Products* in the Brochures and technical data sheets when you adopt or use a *Kelco Product* or component thereof.

- (1) Rated values and performance values are based on average performance established from batch production runs and Kelco does NOT warrant any rated values and performance values for multiple composite conditions.
- (2) Reference data is provided for your reference only. Kelco does NOT warrant that *Kelco Products* work properly at all times or continuously as provided in the reference data.
- (3) Application examples (if any) are provided for your reference only. Kelco does NOT warrant the *Fitness of Kelco Products* under such applications.
- (4) Kelco may discontinue the production of *Kelco Products* or change their specifications for the purpose of improving such products or for other reasons entirely at its own discretion and is under no obligation to notify you of any such change.

3. Precautions

You are deemed to accept the following terms and conditions when you purchase *Kelco Products*:

- (1) You will use *Kelco Products* in compliance with *Usage Conditions* including rating and performance.
- (2) You will confirm *Fitness* and use your own judgment to determine the appropriateness of using of *Kelco Products* in a *Customer Application*. *Kelco products* are unlike conventional flow and level switches and pump controllers in that they can be applied to virtually any fluid or pumping system in any manner defined by an original equipment manufacturer, a wholesaler or end user or their agents. The knowledge and experience of such parties is outside the control of Kelco, and their having relevant knowledge and experience is critical to the successful application and operation of the *Kelco Products*. Kelco does NOT warrant the *Fitness of Kelco Products* in a *Customer Application*.
- (3) You will confirm that *Kelco Products* are properly wired and installed for their intended use in your overall system. In the case of *Kelco* pump controllers, the flexibility of their operating system means it requires an extensive knowledge of pumps and their characteristics and the intended overall goal of the system in order to select the correct functions and settings. Failure to understand the ramifications of incorrect settings may result in a system that fails to perform to your expectations and or may even damage the pump or system itself. It is therefore critical that correct settings are used to achieve a stable and reliable overall system and to provide any such system with appropriate pressure and or flow protection the pump controller is intended to provide. Kelco does NOT warrant *Kelco Products* against defective installation, incorrect programming, incorrect wiring or electrical overload in any form.
- (4) When using *Kelco Products*, you will make sure to (i) maintain a margin of safety in relation to the published rated and performance values, (ii) design to minimize risks to any *Customer Application* in case of failure of any *Kelco Products*, such as introducing redundancy i.e. critical systems should include double redundancy of all controls, (iii) adopt system-wide safety measures to notify risks to users such as independent backup protection. Such backup may consist of a simple or complex independent alarm system to alert an operator to any issue with the system, and (iv) conduct regular maintenance on *Kelco Products* and the *Customer Application*.
- (5) It will be your sole responsibility as user to determine and use adequate measures and checkpoints to satisfy your particular requirements for (i) data input and output, (ii) maintaining a means for reconstruction of lost data, (iv) preventing *Kelco Products* installed thereon from being infected with computer viruses and (v) protecting *Kelco Products* from unauthorized access. Kelco shall not be responsible and/or liable for any loss, damage, or expenses directly or indirectly resulting from any third-party software or hardware not contained in the product as originally configured by the manufacturer, the infection of *Kelco products*, or any computer equipment, computer programs, networks, databases or other proprietary material connected thereto, by service attack, computer viruses, other technologically harmful material and/or unauthorized access.
- (6) *Kelco Products* are designed and manufactured as general-purpose products for use in general industrial products. They are not intended to be used in the applications described in subsection 3...(5)(a), (b), and (c). If you are using *Kelco Products* in the applications described below, Kelco does not provide any warranty for such *Kelco Products*, except for specific applications where Kelco has specified that it intends to provide a warranty or by separate written agreement between the customer and Kelco.

a.

b.

Applications with stringent safety requirements and applications that could cause physical injury to a person or result in loss of life.

Applications under severe conditions or in severe environment, including but not limited to outdoor equipment, equipment exposed to chemical contamination, equipment exposed to electromagnetic interference and equipment exposed to vibration and shocks.

- c. Applications under conditions or environments not described in any of the Brochures and Technical data sheets.
- d. *Kelco Products* are not intended for use in Hydrocarbons other than Dieseline.

4. Warranty

Kelco warrants that *Kelco Products* will perform in accordance with the specifications set out in the Technical data sheets, subject to and in accordance with the following:

- (1) Warranty period: The *Warranty* shall apply for 12 months from the date of original purchase of *Kelco Products* by the customer. .
- (2) Sole Remedy: Unless required to do otherwise as a result of statutory guarantees applicable under *ACL*, *Kelco* will provide, at its own discretion, either of the following two services as the sole remedy for a malfunctioning *Kelco Product*:
Repair of the malfunctioning *Kelco Product(s)* or components by *Kelco* or *Kelco* authorised dealer at no charge to the customer, or

- a. Replacement of the malfunctioning *Kelco Product(s)* or components by *Kelco* or *Kelco* authorised dealer with the same number of replacement/alternative products or components at no charge to the customer.
- (3) Exceptions: This *Warranty* of *Kelco Products* does not apply if the cause of the malfunction falls under any of the following:

Usage in a manner other than the original intended use for the *Kelco Products* or component thereof.

- a. Usage other than as described in the *Usage Conditions*.
- b. Usage that is not in accordance with Section 2 (Descriptions) and Section 3 (Precautions) above.
- c. Modification or repair made to the *Kelco Products* by persons other than *Kelco*.
- d. Causes which could not have been foreseen with the level of science and technology at the time of shipping from *Kelco*.
- e. Replacement or repair of any (1) consumables (including cables, paddles and circuit boards), or (2) lost parts or accessories.
- f. Service of any product whilst it is outside Australia.
- g. Causes originating from other than *Kelco* or *Kelco Products* (including force majeure such as but not limited to natural disasters)
- h. Causes from any environmental factors. Such factors may include but are not limited to water or chemical ingress, fire damage, lightning damage, mechanical damage, sun damage or degradation, failure due to over-heating, freezing or vibration. Failure due to customers over tightening threads or fittings. Failure due to power supply fluctuations, surges, spikes, brown outs. or AC supplies that do not provide a pure sine wave output.
- i.

(4) If you intend to make a claim under this *Warranty* you must contact *Kelco* to register your claim by telephone on (02)99056425 and provide the following details to enable *Kelco* to assess the claim: (i) proof of purchase; (ii) evidence of the particulars of the claim that gives rise to the application of the *Warranty* ; (iii) confirmation that the cause of the malfunction was not an Exception set out above; and (iv) your phone number, email and address details.

You must provide or make the *Kelco product* available to *Kelco* for evaluation. If you are required to return the product to *Kelco* for repair replacement or evaluation, *Kelco* will provide delivery details and a return goods authorisation number to you. The *Kelco Products* will be at the owner's risk whilst in transit to and from *Kelco*, unless transported by *Kelco* or its authorised representatives.

The *Kelco Product* presented for repair may be replaced by refurbished products of the same type rather than being repaired. Refurbished parts may be used to repair the product.
To the extent permitted by law replacement of the product or a part does not extend or restart the *Warranty Term*.

Kelco may seek reimbursement of any costs incurred by them when the *Kelco* product is found to be in good working order.

5. Non-excludable Statutory Guarantees

(1) The *Warranty* is given by *Kelco* in addition to other rights and remedies which you may be entitled to under by law, nothing contained in this agreement excludes, restricts or modifies any condition, guarantee, warranty or other obligation which is applicable to or is conferred on *Kelco* pursuant to law where to exclude, restrict or modify any such condition, warranty or other obligation is unlawful. (2) Australia: To the extent that you are a consumer for the purposes of the *ACL*, *Kelco Products* come with guarantees that cannot be excluded under the *ACL*. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. "Acceptable Quality" and "major failure" have the meaning they have in the *ACL*. (3) New Zealand: For *Kelco Products* provided by *Kelco* in New Zealand, the *Kelco Products* come with a guarantee by *Kelco* pursuant to the provisions of the Consumer Guarantees Act, section 345(1)(i) of the Contract and Commercial Law Act 2017 and the Fair Trading Act. Where the *Kelco Product* was purchased in New Zealand for commercial purposes the Consumer Guarantee Act does not apply.

6. Disclaimer and Limitation of Liability

TO THE EXTENT PERMITTED BY APPLICABLE LAW:

(1) SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, OTHER THAN AS STATED IN SECTION 4 ABOVE AND SELLER DISCLAIMS AND EXCLUDES ANY WARRANTY OF ANY OTHER KIND. (2) THE SOLE AND EXCLUSIVE REMEDY FOR MALFUNCTIONING KELCO PRODUCTS SHALL BE AS SET FORTH IN SECTION 4. ABOVE. (3) *KELCO* AND THE DISTRIBUTORS OF *KELCO PRODUCTS* ARE NOT LIABLE FOR ANY DAMAGES WHICH MAY ARISE FROM OR BE RELATED TO *KELCO PRODUCTS*.

7. Confidentiality: You accept that if you make a *Warranty* claim, *Kelco* and its agents may exchange information in relation to you to enable *Kelco* to meet its obligations under this *Warranty*.

8. Export/ Import Controls

Customers of *Kelco Products* shall comply with all applicable laws and regulations of Australia and/or other relevant countries with regard to security export/import control, when exporting/importing *Kelco Products* and/or technical documents or providing such products and/or documents to a non-resident of Australia. At its discretion *Kelco* may not provide customers with *Kelco Products* and/or technical documents should they fail to comply with such laws and regulations.

Kelco Engineering Pty Ltd

ABN 20 002 834 844

Head Office & Factory
9/9 Powells Road,
Brookvale 2100 NSW Australia

Postal Address
PO Box 7485 Warringah Mall
Brookvale 2100 NSW Australia

Phone: +61 2 99056425
Fax: +61 2 9905 6420

Email: Sales@kelco.com.au
Web: www.Kelco.com.au

PLEASE NOTE: Kelco Engineering Pty Ltd reserves the right to change the specification of this product without notice. Users will use their own judgment to determine the appropriateness of using Kelco Products in an application, any safety measures required and that the product is properly installed for that application. To the extent permitted by law Kelco Engineering Pty Ltd disclaims and excludes all and any liability for the use of this product in any particular application or for defective installation. Kelco switches are warranted against malfunction by a 12 month return to base manufacturer's warranty. Full details of our warranty and limitation of liability can be found in this document or downloaded from: <http://www.kelco.com.au/warranty>