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

a. Usage in a manner other than the original intended use for the *Kelco Products* or component thereof.
b. Usage other than as described in the *Usage Conditions*.
c. Usage that is not in accordance with Section 2 (Descriptions) and Section 3 (Precautions) above.
d. Modification or repair made to the *Kelco Products* by persons other than *Kelco*.
e. Causes which could not have been foreseen with the level of science and technology at the time of shipping from *Kelco*.
f. Replacement or repair of any (1) consumables (including cables, paddles and circuit boards), or (2) lost parts or accessories.
g. Service of any product whilst it is outside Australia.
h. Causes originating from other than *Kelco* or *Kelco Products* (including force majeure such as but not limited to natural disasters)
i. 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.

(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.

INSTALLING AND OPERATING P20 INLINE FLOW SWITCH

PLEASE READ THIS INSTALLATION SHEET CAREFULLY AND FULLY BEFORE INSTALLING THIS FLOW SWITCH

INTRODUCTION

The P20 flow switch is an in line piston flow switch that is supplied preset to switch on or off at a specific flow rate. The body of the switch contains a piston that obstructs the line of flow. To pass through the switch, the process fluid must push the piston back and flow over the piston and out through the outlet fitting. When fluid pushes the piston back, a magnet inside the piston actuates a reed switch in the electrical enclosure; this provides a set of closed, (or open) electrical contacts, which can be used in control circuits to indicate flow. The body of the P20 contains a fixed magnet that opposes the magnet in the piston.

The repulsive force generated between the piston and body magnets constantly pushes the piston back to the off position, against the incoming flow. This unique magnet system negates the need for metal springs and provides the switch with exceptional reliability.

OPERATING ENVIRONMENT

The P20 flow switch has no metal parts in contact with the process fluid. Inert thermoplastics are all that come in contact with the liquid passing through the switch. This means the P20 can be used in aggressive chemical solutions, seawater, bore water and in many fluids that would attack metal parts. The P20 flow switch contains a close fitting piston and should only be used in applications where the process fluid is reasonably clean and free of entrained or suspended material. Fluids containing large particulate matter, ferrous materials or fibrous matter should not be used in this switch. If the degree of contamination of the process fluid can't be guaranteed then suitable line filtration should be fitted to the system upstream of the P20 flow switch.

The standard P20 flow switch is constructed entirely from glass reinforced polypropylene with nitrile O-Ring seals. The P20 flow switch is weatherproof to IP56 That is, it is hose-proof and suitable for all outdoor exposed applications. The switch should be protected from freezing, or from exposure to fluid temperatures in excess of **60°C**

The P20 flow switch should not be used in applications where the line pressure exceeds 18 bars, in the interest of safety, the switch has a burst pressure rating of >97 bars. Care should be taken not to expose the P20 switch to excess pressures such as may be generated by water hammer. The environmental limitations of the standard P20 flow switch are set out in the operating environment table**.**

OPERATING ENVIRONMENT TABLE

Maximum Operating Pressure (Static or Dynamic) at Ambient Temperature	**1800 Kpa (261 PSI)**
Minimum Burst Pressure at Ambient Temperature	**9700 Kpa (1406 PSI)**
Maximum Liquid Temperature	**60°C at a pressure of 1 bar absolute, see note below.**
Minimum Liquid Temperature (Standard P20 Switch)	**-30°C**
Maximum Recommended Continuous Flow Rate (Water)	**25 Litres per Minute**
Liquid Ph Range	**1 to 14**

Warning : The Maximum operating pressure of the P20 in line flow switch must be linearly de-rated as operating temperature is increased so that at 60°C the maximum permissible operating pressure for the switch is not more than one Bar Absolute.

INSTALLATION

The P20 flow switch can be mounted in any orientation in the pipe work, including upside down. There is a direction of flow arrow on the switch body. This directionality must be adhered to as the switch will not operate against a reversed flow. Pipe-work can be used to support the switch, or the switch can be connected directly into valve manifolds or pump ports.

WARNING

After installing or servicing this flow 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 flow 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. Without its lid the flow switch is not weather or insect proof and presents a potential shock hazard that may result in death or serious injury.

FLOW SENSITIVITY & HYSTERESIS

The table below sets out the flow required to actuate and de-actuate the P20 flow switch. Note the P20-C model is not as sensitive to flow as the P20-B and P20-R. The table refers to water at ambient temperature as the test medium.

Model	Switching Point on a Slowly Rising Flow in Litres per Minute	Switching Point on a Slowly Reducing Flow in Litres Per Minute	Electrical Response Time in Seconds
P20-B & P20-R	0.14	0.065	0.4
P20-C	< 0.50	0.30	0.4

ELECTRICAL

WARNING

Please read these installation and operating instructions fully and carefully before installing or servicing this inline flow switch. The P20 inline flow 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.

The electrical enclosure on the P20 switch is accessible by removing one screw on the lid. The lid has an integral 20mm cable gland designed to accept flexible cable up to 10mm diameter. If the gland nut is removed the exposed female thread will then accept a 20mm conduit bush. Various electrical options are available for the P20 flow switch. Details of the specific circuit board module, including its model number are located inside the lid of the electrical housing of each switch. All the available electrical modules use a reed switch as the primary switching element. The contacts of the reed switch open and close in response to the position of the switch piston magnet. The reed switch may be the primary switch, or it may be used to drive a triac or a relay that is included on the circuit board in the switch. Where the reed switch is used as the main switch care should be taken to ensure it is not overloaded. Reed switches are very reliable devices but may be damaged easily if overloaded. Use interposing relays and avoid inductive loads, fit suitable protection such as diodes or rate effect suppression circuits. Avoid capacitive coupling effects associated with long cable runs, use shielded cable in such situations and fit diode protection to the reed switches in DC applications. The table below sets out details of the various electrical modules, their model numbers and their electrical specifications.

SWITCH MODEL	MODULE TYPE	CONTACT CONFIGURATION	SWITCHED POWER MAXIMUM	SWITCHED VOLTAGE MAXIMUM	SWITCHED CURRENT RESISTIVE AC (RMS) MAXIMUM	INDUCTIVE LOADS (POWER FACTOR 0.4)	TYPICAL APPLICATION
P20-B	Dry Reed Switch	S.P.S.T N.O	40 Watts	240V AC 200V DC	1 Amp	Not Suitable	PLC and General Control Circuits
P20-C	Dry Reed Switch	S.P.D.T	20 Watts	140V AC 150V DC	1 Amp	Not Suitable	PLC and General Control Circuits
P20-R	Solid State Relay (Triac)	S.P.S.T N.O	740 Watts	2 to 240V AC	4 Amp Continuous (Spike to 15A)	4A at 240V AC 5A at 30V DC	AC Control Circuits and AC Motor Control

Note: The P20 In Line Flow Switch uses reed switches as the primary switching element. Reed switches are one of the most reliable mechanical switching devices ever devised. They offer an operating life in excess of 100 million cycles, however, care needs to be taken to ensure they are not electrically overloaded or if applied in questionable applications, suitable protection should be added to the control circuit.

TESTING

The P20 switch can be tested for electrical function in the following way. With the switch isolated, place a continuity tester across terminals S1 and S2 or C and NO. (Do not use a lamp tester for this due to the high inrush current.) Use a pencil or similar object to depress the piston. Each time the piston is depressed a closed circuit should appear across S1 and S2 or C and NO.

The piston is accessed by pushing the pencil straight down the centre of the switch, through the inlet fitting. This test can be done dry and without the switch in the pipe-work. Each time the piston is released it should return to the off position due to the internal magnetic repulsion, and the switch should respond with an open circuit across its terminals.

MAINTENANCE

This flow switch is a very low maintenance device. If The P20 flow switch is correctly installed and if the process fluid is compatible with the materials of construction of this switch, then a very long service life can be expected. Factors that may contribute to early failure of this device include excess temperature, excess pressure or electrical loads in excess of the electrical modules ratings.

COMPONENT PARTS

The P20 In Line Flow Switch is a fully serviceable device. All of the component parts of the switch are available as spare parts, and many of the parts are interchangeable. These include the circuit boards, the pistons and the inlet and outlet adaptors and unions. The interchangeability of components allows custom configuration of the switch.

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