

INSTALLING AND OPERATING THE KELCO C15 INLINE FLOW SWITCH



WARNING

Please read these installation and operating instructions fully and carefully before installing or servicing this Inline Flow switch. The C15 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.

INSTALLATION

The C15 inline flow switch can be installed in any location in vertical or horizontal pipes. In vertical pipes flow can be either upward or downward through the switch. Where possible, install a union on the inlet and outlet of the flow switch to allow easy removal for cleaning and servicing. Ensure the flow switch is oriented correctly to direction of flow. The male threaded end of the switch is the inlet.

When installing, make sure no thread tape or other foreign matter from the installation becomes entrained in the switch. Also ensure no foreign matter can enter the flow switch from tanks or pipework. Where scale or other material may be present always install a Y-strainer in the inlet pipe directly before the switch. The electrical module that saddles the flow switch body can be removed if required to allow the body of the switch to be screwed into tight locations, for example into the discharge port of a pump. To remove the electrical module undo the 4 self-tapping screws that secure the two halves of the module together.

CHECK VALVES

Many applications will benefit from a non-return valve in the pipework directly before the C15 inline flow switch. The flow switch is not designed to operate as a one-way valve and rapid or high pressure flow reversal, such as water hammer can damage the piston in the flow switch. A simple non-return valve adjacent to the flow switch will reduce the possibility of damage to the flow switch due to flow reversal.

FLOW SENSITIVITY AND PISTON INSTALLATION

Sensitivity to flow depends on liquid viscosity and piston clearance. There are three pistons and two Piston retaining components supplied with the C15 flow switch. The Pistons are designated and marked A, B and C. The "A" Piston and the magnetic Piston retaining component are supplied pre-fitted. The tables below show the switch on and switch off flow rates for the three pistons using the magnetic repelling component, and using the non-magnetic retaining component.

Switching sensitivity can be greatly enhanced by using the non-magnetic retaining component however, the switch must be mounted in vertical position with the flow switch entry facing down. The piston and retaining components can be changed by removing the stainless steel Circlip, using long nose pliers.

Switching points when using the fitted magnetic piston repelling / retaining assembly			
Piston Markings	Switching Point on a Slowly Rising Flow in Litres per Minute	Switching Point on a Slowly Reducing Flow in Litres Per Minute	Electrical Responce Time in Seconds
A (fitted)	0.140	0.065	0.4
B	0.570	0.370	0.3
C	1.70	1.33	0.2

Switching points when using the supplied non-magnetic retainer (to be used in vertically mounted applications only)			
Piston Markings and Designation	Switching Point on a Rising Flow In Litres Per Hour	Switching Point on a Reducing Flow in Litres Per Hour	Electrical Response Time in Seconds on Cessation of Flow
A (Fitted)	0.32	0.30	4
B	3.10	3.05	3
C	12.8	12.6	2

Note: The data shown in the table above refers to water at ambient temperature as the test medium. Increasing fluid viscosity will decrease the switch on points. Decreasing the fluid viscosity will proportionally increase the switch on points.

REFITTING ELECTRICAL MODULES

The electrical module of the C15 inline flow switch can be oriented to suit the application. It can be mounted in either direction on the switch body and can be rotated around the switch body to any required position. All modules are normally off switches that turn on in response to flow. Reversing the orientation of the electrical module does not reverse the action of the switch. To refit a module to the switch body, fit and tighten the 4 stainless self-tapping screws. Do not place any material such as grease, glue or packing material between the electrical module and the switch body, to do so may alter the heat flow characteristics of the switch and possibly lead to overheating or premature failure.

OPERATING LIMITATIONS

This flow switch is suitable for use with hot or cold liquids up to 90°C. Systems can be steam sterilized at 100°C for short periods without damaging the switch. Note that the continuous switched power of the C15-R model must be linearly reduced at elevated temperatures. See the notes on electrical data below.

ELECTRICAL



WARNING

All electrical work associated with the C15 inline flow switch must be carried out by qualified electrical personnel and all electrical work must conform to AS/NZ (or equivalent) standards and to local wiring rules.

The C15 flow switch is available with one of two switching modules. There is an identification number inside the lid of each module that indicates the type. The modules are numbered "B" or "R". The electrical specifications of both models are detailed in the following table.



WARNING

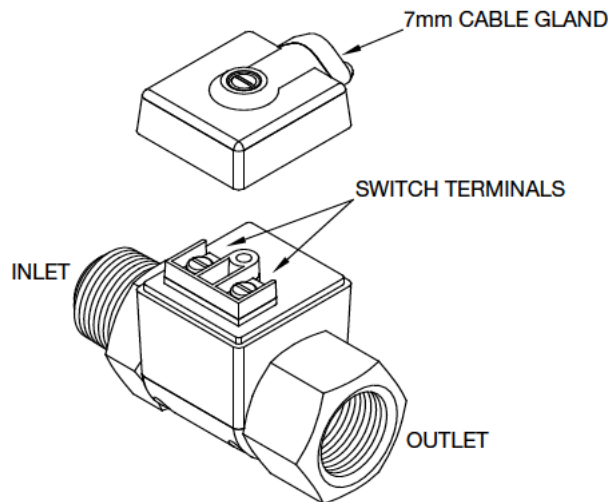
After installing or servicing this flow switch always replace its lid and fully tighten its lid screw. Also ensure the cable gland is fully tightened. Never leave the lid off the Inline Flow switch for extended periods. Without its lid in place this Inline Flow switch is not water resistant and presents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

ELECTRICAL DATA

Sensor Model	Module Type	Contact Configuration Maximum	Switched Power Maximum	Switched Voltage Resistive AC (rms)	Switched Current	Inductive Loads	Typical Application
B	Dry Contact Reed Switch	S.P.S.T NO	40 Watts	240V AC 200V DC	1 Amp Maximum	Not Suitable	PLC Telemetry and Relay Logic circuits
R	Solid State Relay	S.P.S.T NO	750 Watts	240V AC	4 Amps Maximum	4 Amps at 240V AC	AC control circuits & AC motor control

Note: The switched power of the C15-R inline flow switch module given above refers to a switch operating in a water pipe system at ambient temperature. In hot water applications the switched power must be proportionally reduced to avoid overheating the Triac. At the top operating temperature of 90°C the switched power must not exceed 375 Watts. The C15-B flow switch modules do not require de-rating at elevated temperatures.

GENERAL LAYOUT



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