INSTALLATION & OPERATING INSTRUCTIONS

INSTALLING THE KELCO C25 SERIES FLOW SWITCH

WARNING

Please read these installation and operating instructions fully and carefully before installing or servicing this flow switch. The C25 Series flow switch is a **mains voltage device**. Death or serious injury may result if this switch is not correctly installed and operated. All electrical work on this switch must be performed by a fully qualified and licensed electrician.

INSTALLATION

The C25 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 or servicing. Ensure the flow switch is oriented correctly to the direction of flow.

The male threaded end of the switch is the inlet. When installing, make sure no thread tape or other material 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 entrained material may be present, always install a Y-strainer in the inlet pipe directly before the switch. Note that this flow switch operates magnetically and is therefore not suited to any application where iron or iron scale may be present in the process liquid.

The electrical module that saddles the flow switch body can be removed or loosened 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 completely remove the electrical module, undo the 4 self-tapping screws that secure the two halves of the module together; the sealed electrical module then simply lifts off.

REFITTING ELECTRICAL MODULES

The electrical module of the C25 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.

CHECK VALVES

Many applications will benefit from a non-return valve in the pipework directly before the C25 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.

ENVIRONMENTAL LIMITATIONS

This flow switch is suitable for use with hot or cold liquids up to 90 °C continuous. Systems can be steam sterilised at 100 °C for short periods without damaging the switch.

Chemical Compatibility Checker ›

SERVICING

The C25 flow switch operates magnetically. The piston within the switch body should be a free fit and spring back to its off position as soon as flow stops. To test the flow switch, push your finger into the inlet of the switch and press the piston back as far as it can go. When released, the piston should spring back freely. If the piston becomes jammed, it may require removal and cleaning.

Using a pair of long-nose pliers, remove the spring circlip located in the outlet port of the switch. Press the piston back with your finger; it should pop out along with its three-finned magnetic spider. Ensure there are no pieces of iron scale adhered to the piston or spider and that both parts are free of damage. Reassemble the switch and test it to ensure the piston is a free and smooth fit. The C25-B flow switch can be tested electrically using a continuity tester. The switch should be initially off and switch on when the piston is pushed back.

WARNING

All electrical work associated with the C25 inline flow switch must be carried out by qualified electrical personnel, and all electrical work must conform to AS/NZS (or equivalent) standards and to local wiring rules.

ELECTRICAL DATA

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**.

The C25 flow switches are supplied with a dry reed switching module. There is a model number and an electrical rating on the inside of every switch. The electrical rating of the module is set out in the following table.

ELECTRICAL MODULE	MODULE TYPE	CONTACT CONFIGURATION	SWITCHED POWER MAXIMUM	SWITCHED VOLTAGE MAXIMUM	SWITCHED CURRENT RESISTIVE AC (RMS)	INDUCTIVE LOADS (POWER FACTOR 0.4)	TYPICAL APPLICATION
B	Dry contact reed switch	S.P.S.T. normally open	50 W/VA	250 VAC 200 VDC	1.5 A maximum	Not suitable	PLC, telemetry and relay logic circuits

FLOW SENSITIVITY AND PISTON INSTALLATION

Switching point and sensitivity to flow depend on the orientation of the switch, liquid velocity, viscosity and piston clearance. To give users as wide a choice as possible, a non-magnetic piston retainer is supplied with the C25 flow switch. With the switch mounted vertically and with flow passing upward through the switch, the non-magnetic piston retainer reduces the switch-on flow rate by a factor of 6. That is, it makes the switch approximately 6 times more sensitive to flow.

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

INSTALLATION	SWITCHING POINT ON A SLOWLY INCREASING FLOW	SWITCHING POINT ON A SLOWLY DECREASING FLOW
Standard switch (as supplied) installed horizontally or vertically, with the magnetic piston retainer fitted	**1.6** litres per minute	**1.3** litres per minute
Switch installed vertically with flow passing upward through the switch body, and with the non-magnetic piston retainer fitted	**0.28** litres per minute	**0.2** litres per minute

PLEASE NOTE

Maximum recommended flow rate through the C25 flow switch is 100 litres per minute.

GENERAL LAYOUT

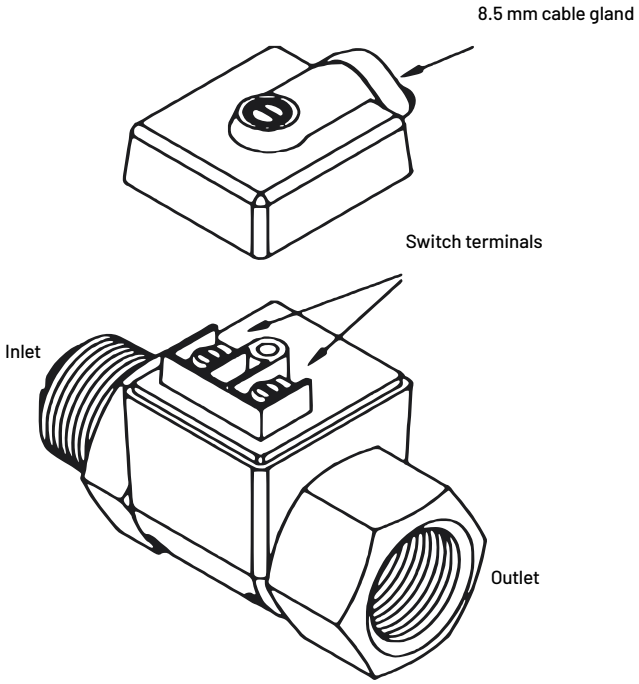


FIG. 1 C25 Series general layout

HAZARDOUS AREAS

The C25-B and C25-B-D are passive reed switches that meet the definition of simple apparatus under AS/NZS 60079.11. They are not Ex certified in their own right. They 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: 50 W/VA, 250 VAC / 200 VDC, 1.5 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 brass body must be bonded to the plant earth. The electrical module is non-metallic; the installer must assess electrostatic charging risk under AS/NZS 60079.0 for the zone and gas group. Suitability of the C25-B-D for diesel and oil refers only to the chemical resistance of the wetted materials and does not make it suitable for flammable atmospheres outside an intrinsically safe circuit. The C25-B and C25-B-D are not suitable for use in a hazardous area outside an intrinsically safe circuit.

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