INSTALLATION & OPERATING INSTRUCTIONS

INSTALLING THE KELCO UB25 SERIES FLOW SWITCH

WARNING

Please read these installation and operating instructions fully and carefully before installing or servicing this flow switch. The UB25 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.

CHECK THE SWITCH MODEL NUMBER

Check the model number on the label inside the electrical enclosure against the codes below – for example **UB25-B-D**.

UB25	–	B	–	D

SERIES

UB25 Series inline flow switch

SWITCH MODULE

- **B** S.P.S.T. N.O. reed switch
- **C** S.P.D.T. break before make reed switch
- **R** S.P.S.T. N.O. solid state relay

MODEL

- **Blank** Standard
- **D** Dieseline model

OUTLINE

The UB25 flow switch is a magnetically operated switch that will turn on or off in response to liquid flow. The body of the switch contains a piston that partly obstructs the line of flow. To pass through the switch, the process liquid must push the piston back and flow over it and out through the outlet of the switch.

When flowing liquid pushes the piston back, a magnet inside the piston actuates a reed switch in the electrical housing. The reed switch is used to provide a set of closed (or open) electrical contacts that are either used directly as a switch, or to control a built in Triac which in turn is used as the output device. The output of the switch can be used in control circuits to indicate flow, or to directly actuate small pump motors.

The body of the UB25 flow switch contains a second magnet that opposes the magnet in the piston. The repulsive force generated between the piston and the 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.

ENVIRONMENTAL LIMITATIONS

The UB25 flow switch has a high pressure rated solid 316 stainless steel body, suitable for applications involving neutral liquids such as hot or cold water, or oils. The UB25 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. This switch should not be used with fluids containing large particulate matter, ferrous materials or fibrous matter. If the degree of contamination of the process fluid can't be guaranteed, then suitable line filtration should be fitted to the system. The piston and electrical housing are made from glass reinforced polypropylene (Dieseline -D models use a nylon piston).

The UB25 flow switch is supplied as standard fitted with a magnetic piston retainer that allows the switch to be oriented in any required position in pipework. In vertical pipework flow can be either upward or downward through the switch.

In addition to the standard magnetic piston retainer, a non-magnetic piston retainer is also supplied with each switch. When the non-magnetic piston retainer is fitted to the switch, the switch must be oriented vertically with flow passing upward through its body. When set up this way the flow rate required to actuate the switch will be approximately 6.5 times lower than it is with the magnetic piston retainer fitted. The non-magnetic piston retainer is commonly used to enhance the sensitivity of the switch in gravity head applications such as boosting water pressure in gravity fed hot water systems.

MECHANICAL INSTALLATION

The UB25 flow switch can be mounted in any orientation in the pipework, including upside down. There is a direction of flow arrow on the electrical enclosure. This directionality must be adhered to, as the switch will not operate against a reversed flow. Pipework can be used to support the switch, or the switch can be screwed directly into valve manifolds or pump ports.

Use thread tape or sealant and do not use this flow switch as a non-return valve. For increased sensitivity, the UB25 inline flow switch is supplied with a non-magnetic piston retainer. The non-magnetic piston retainer is for use in vertically mounted applications only. Please see Maintenance on page 2 for information on installing the non-magnetic piston retainer.

TYPICAL APPLICATION

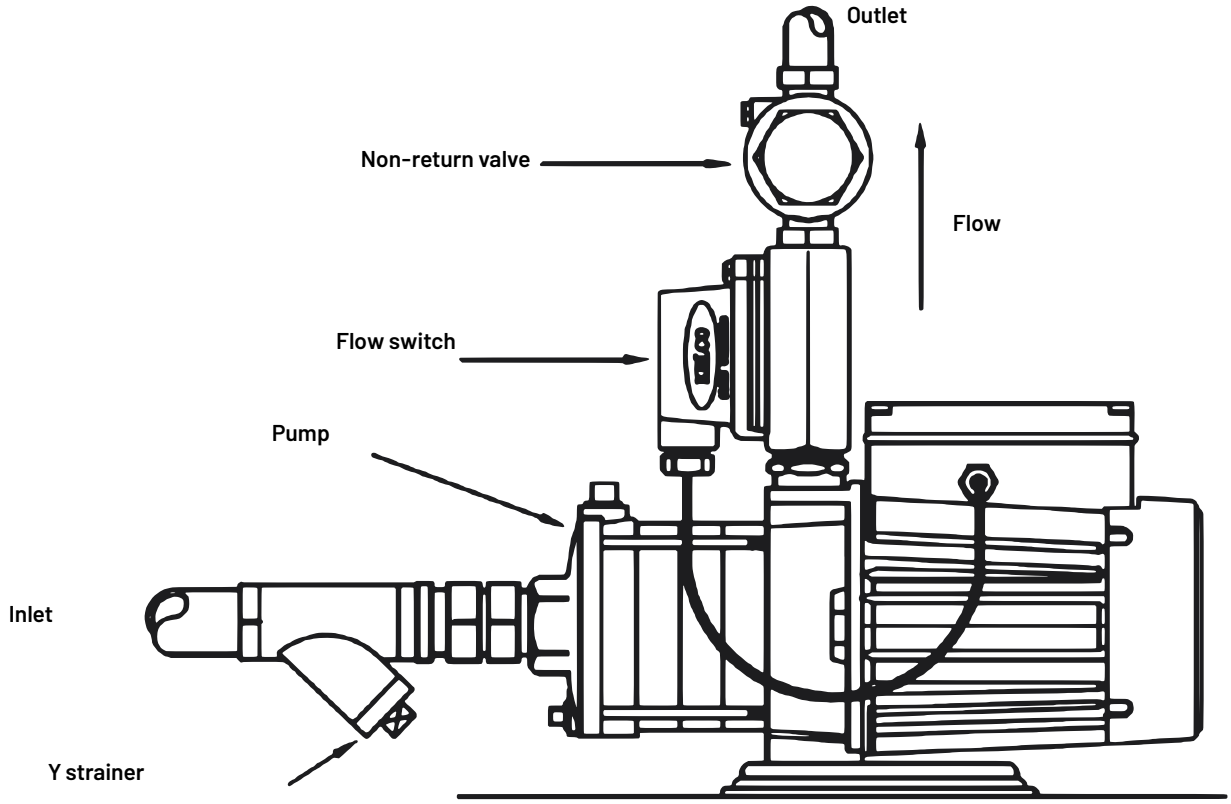


FIG. 1 UB25 flow switch fitted to the discharge of a pressure boosting pump

MAINTENANCE

If the UB25 flow switch is correctly installed and if the process fluid is compatible with the materials of construction of this switch, then a very long maintenance free service life can be expected. Factors that may contribute to early failure of this flow switch include excess temperature, excess pressure or electrical loads in excess of the circuit board's rating.

To service the piston or to install the non-magnetic piston retainer, use a pair of long nosed pliers to 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 retainer. Ensure there are no pieces of iron scale adhered to the piston or retainer and that both parts are free of damage. Reassemble the switch and test it to ensure the piston is a free and smooth fit.

Most components of this switch are available in spare part kits.

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.

ELECTRICAL INSTALLATION

This flow switch can be supplied with one of three optional electrical modules. The details of the various modules are set out in the table below. The model of the switch and its electrical module is indicated by a label fixed to the inside of the electrical enclosure of every 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
UB25-B	Dry reed switch	S.P.S.T. N.O.	50 W	250 VAC 200 VDC	1.5 A	Not suitable	PLC and general control circuits
UB25-C	Dry reed switch	S.P.D.T. break before make	20 W	140 VAC 150 VDC	1 A	Not suitable	PLC control and safety showers
UB25-R	Solid state relay	S.P.S.T. N.O.	740 W	12 to 240 VAC	4 A continuous (spike to 15 A)	4 A at 240 VAC	AC control circuits and AC motor control

PLEASE NOTE All UB25 Series flow switches use 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.

HAZARDOUS AREAS

The UB25-B and UB25-C (including -D models) 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 ratings: UB25-B 50 W/VA, 250 VAC / 200 VDC, 1.5 A maximum; UB25-C 20 W/VA, 140 VAC / 150 VDC, 1 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 stainless steel body must be bonded to the plant earth. The electrical housing is non-metallic; the installer must assess electrostatic charging risk under AS/NZS 60079.0 for the zone and gas group. Suitability of the -D models for diesel refers only to the chemical resistance of the wetted materials and does not make them suitable for flammable atmospheres outside an intrinsically safe circuit. The UB25-B and UB25-C are not suitable for use in a hazardous area outside an intrinsically safe circuit.

The UB25-R and UB25-R-D are not certified for use in hazardous areas and must not be installed in any area classified as hazardous under AS/NZS 60079.10 (Zone 0, 1, 2, 20, 21 or 22). They contain a solid-state relay for switching mains-voltage loads, have no recognised Ex protection concept, and are not simple apparatus. They must not be connected to, or form part of, an intrinsically safe circuit. Suitability of the -D model for diesel refers only to the chemical resistance of its wetted materials.

OPERATING LIMITATIONS

The table below sets out the main operating limitations of the UB25 Series flow switches.

PARAMETER	AS SUPPLIED (STANDARD, WITH MAGNETIC PISTON RETAINER FITTED)	WITH NON-MAGNETIC PISTON RETAINER FITTED
Switching point on a slowly rising flow ±15%	1.5 L/min	0.23 L/min
Switching point on a slowly falling flow ±15%	1.2 L/min	0.18 L/min
Minimum gravity head required to actuate the switch	1.5 metres	
Maximum recommended continuous flow (water)	100 L/min	
Maximum recommended operating pressure, static or dynamic	**200 bar** 2900 psi	
Minimum burst pressure	**400 bar** 5800 psi	
Maximum liquid temperature	**90 °C**	
Minimum liquid temperature	**–20 °C**	
Ingress protection rating (weatherproof rating)	**IP67**	

Chemical Compatibility Checker ›

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