

# INSTALLING AND OPERATING THE KELCO P25 SERIES FLOW SWITCH



## WARNING

Please read these installation and operating instructions fully and carefully before installing or servicing this Inline Flow Switch. The P25 Series 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 P25 flow switch is a 25mm (1") magnetically operated inline flow sensor that will provide an electrical signal in response to liquid flow through the switch body. The switch is available with a choice of 3 different electrical configurations, three different switching points and three different size pipe terminations. The following model designation describes the various options.

Process connection PVC  
Sockets to suit pressure pipe  
15 = 15NB  
20 = 20NB  
25 = 25NB

P25—B—25

Electrical Module

B = Single pole single throw normally open reed switch  
C = Single pole double throw reed switch  
S = 500VAC 15A 2HP S.P.D.T mechanical

The P25 flow switch has no metal parts in contact with the process liquid. Inert thermoplastics are all that come in contact with liquid passing through the switch. This means the P25 can be used in aggressive chemical solutions, seawater and bore water and in many fluids that would attack metal parts, including most acids and alkalis. The P25 contains a close fitting piston and should only be used in applications where the process fluid is clean and free from entrained or suspended materials. Solutions that contain large particulates, ferrous materials or fibrous matter should not be used in this switch. If the degree of contamination of the process liquid can't be guaranteed then a suitable line strainer should be installed prior to the flow switch. The P25 flow switch is made from glass reinforced polypropylene with nitrile o-rings. The switch is weatherproof and it is suitable for all outdoor exposed applications. The switch should be protected from freezing and from exposure to hot liquids >60°C. The P25 flow switch must not be used in applications where the static or dynamic pressure exceeds 18 Bars. Care should be taken to ensure the switch is not exposed to water hammer. The following table sets out the environmental limitations of the P25 flow switch.

## OPERATING LIMITATIONS

Maximum Recommended Continuous Flow Rate	100 Litres per Minute (Head loss across the switch <50kPa at 100L/min.)
Maximum Recommended Operating Pressure (Static or Dynamic) at Ambient Temperature	18 Bars (260 P.S.I.)
Minimum Burst Pressure at Ambient Temperature	60 Bars (865 P.S.I.)
Maximum Liquid Temperature	60°C
Minimum Liquid Temperature	-20°C
Liquid Ph Range	1 to 14
Ingress Protection Rating	IP67

**IMPORTANT NOTE:** Maximum operating pressure given in the table above must be de-rated in proportion to temperature increase and in consideration of any chemical solutions being processed. At top operating temperature (60°C) the maximum operating pressure is 1 Bar absolute. (Fully open atmospheric discharge).

## INTRODUCTION

The P25-B and P25-C flow switches are supplied with three different pistons, designated A (fitted), B and C. Each piston requires a specific flow rate to cause it to move and actuate the switch.

**Please Note:** that the P25-S is only available fitted with the "B" piston.

The switching point for each piston is given in the table below. The table refers to water at ambient temperature as the process medium. Liquids of high viscosity will proportionally lower the switching threshold and equally, low viscosity liquids will proportionally increase the flow rate required to actuate the switch.

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 Response Time in Seconds
A	1	0.6	0.1
B	4.7	2.7	0.1
C	7.3	4.5	0.1

Note: Pistons are identified by a small mound or brail bump on the front face of their guide fins. The A piston has one bump, the B piston 2 and the C piston 3. The brail bumps can be seen when looking into the inlet of the P25 flow switch.

## INSTALLATION

The P25 flow switch can be mounted in any orientation 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 reverse flow. Pipework can be used to support the switch, or the switch can be connected directly to valve manifolds or pump ports. Do not use this flow switch as a non-return valve.

## OVERRIDE SWITCH (P25-S MODEL ONLY)

The P25-S flow switch is fitted with a manual override. This allows the switch to be actuated even if there is no flow. The override is located on the side of the switch body, under a locking cap. The locking cap can be removed by placing a small screwdriver in the notch provided on the underside of the cap. The cap simply pops off when lifted gently. The override dial turns through 90 degrees between AUTO and ON. In the ON position the state of flow is ignored and the flow switch will be on. The override can be used to override the off state of the flow switch and allow pumps to be started. It can also be used when installing or commissioning systems to simulate switch operation.

## ELECTRICAL



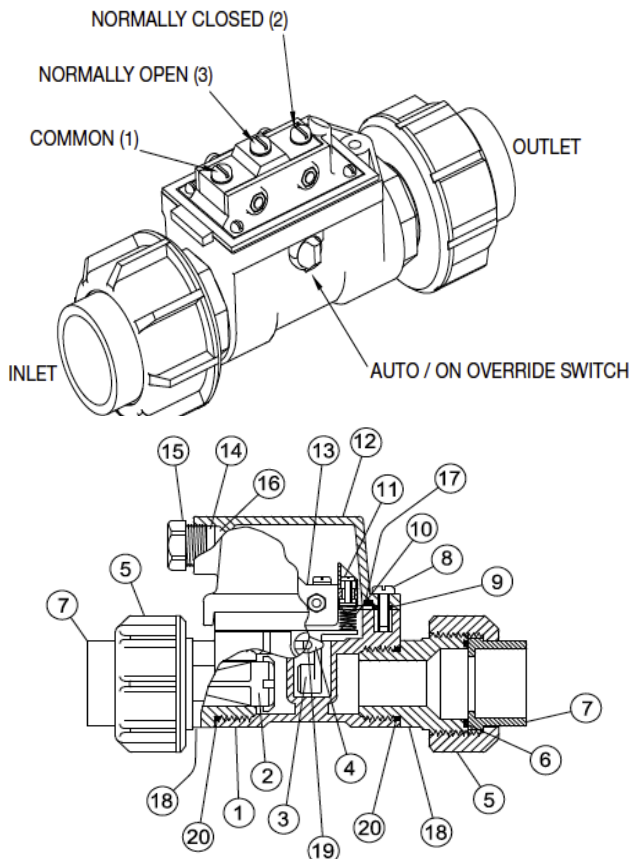
### WARNING

All electrical work associated with the P25 Series 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.

Switch Model	Module Type	Contact Configuration	Switched Power Maximum	Switched Voltage Maximum	Switched Current Resistive AC (rms)	Inductive Loads	Typical Application
P25-B	Dry contact reed switch	S.P.S.T Normally Open	40 Watts	240V AC 200V DC	1 Amp Maximum	Not Suitable	PLC Telemetry & Relay Logic Circuits
P25-C	Dry contact reed switch	S.P.D.T	20 Watts	140V AC 150V DC	1 Amp Maximum	Not Suitable	PLC Telemetry & Relay Logic Circuits
P25-S	Heavy Duty Mechanical Switch	S.P.D.T	1.5 kW	500V AC 250V DC	20 Amps @ 240V AC	Direct Control of Motors to 1.5 kW / 2HP	AC Control Circuits & AC Motor Control

The P25 flow switch is available in three electrical configurations, outlined above. The standard version (P25-S) of the flow switch is supplied with an SPDT microswitch fitted. Two reed switch versions (S.P.D.T and S.P.S.T) of the flow switch are available for low power applications. The model number of the switch is located on a label inside the switch lid. The standard flow switch houses a magnetically coupled high current high voltage single pole double throw microswitch that is suitable for most general-purpose control circuit applications at any voltage up to 500VAC. The reed switch versions of the P25 house a gas filled reed switch that provide either an S.P.D.T (make before break) or S.P.S.T switching action. The cable gland on the P25 flow switch is threaded M20 and will accept standard M20 conduit bushes in addition to flexible cable. When wiring an P25 flow switch, ensure the lid and cable gland are securely tightened and in fully exposed locations use secondary precautions such as cable drip loops to make sure no water can enter the switch housing.

### DETAILS OF THE P25-S



Item	Description	Qty	Material
1	Body	1	Glass reinforced Polypropylene
2	Piston	1	Glass reinforced Polypropylene
3	Switch arm and magnet	1	ASA
4	Toggle assembly	1	ASA
5	Union nut	2	Glass reinforced Polypropylene
6	O-Ring	2	Nitrile
7	Pipe socket	2	PVC
8	Lid Screw	1	M5 X 15 Stainless pan head
9	Retainer ring	1	Nitrile
10	Spring	1	Stainless steel
11	Sensitivity Adjustment	1	M3.5 X 14 Stainless pan head
12	Lid	1	Glass reinforced Polypropylene
13	Microswitch Assembly	1	Microswitch and carrier (carrier ASA)
14	Gland backing ring	1	Glass reinforced Polypropylene
15	Gland nut	1	Glass reinforced Polypropylene
16	cable grommet	1	Santoprene
17	lid gasket	1	Santoprene
18	adaptor	2	Glass reinforced Polypropylene
19	toggle O-Ring	1	Nitrile
20	Body O-Ring	2	Nitrile

Please Note: Spare part kits are available for the P25 Inline Flow Switch

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