

INSTALLATION AND OPERATING INSTRUCTIONS FOR F26 SERIES HEAVY DUTY FLOW SWITCHES

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

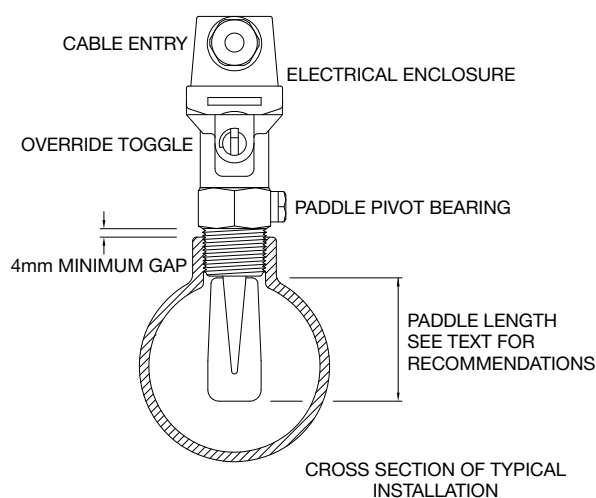
INTRODUCTION

The F26 series flow switch is a versatile heavy-duty paddle flow switch suitable for detecting flow or no flow conditions in liquids flowing in pipes of any diameter from 25mm upward. The switch is available in three basic versions, an all Polypropylene model designated F26-S, a 316 stainless body version designated F26-SS and a Brass body version designated F26-SB. In addition a dedicated Diesel fuel model designated F26-D is also available. The switches are identical with the exception of the body materials. The standard all Polypropylene switch is suitable for most applications where static or dynamic pressures does not exceed 18 Bars. The brass model can safely tolerate pressures to 100 Bars and the stainless model 200 Bars.

The F26 flow switches are available with either a 15Amp 500V SPDT switch (S models) or a 20Amp 500V SPDT switch (H models). The heavy-duty switch is specifically rated to control pump motors up to 1.5kW (2HP). Details of the exact model can be found on the rating label inside the lid of the switch.

INSTALLATION

Select a location for the flow switch in a straight run of pipe ideally with five pipe diameters of straight pipe either side of the switch. This will ensure a linear non turbulent flow acts against the paddle of the switch. Do not install the flow switch in any location likely to expose it to excessive turbulence, such as directly adjacent to valves or pumps, pipe bends or elbows. The object is to achieve a smooth flow against the paddle of the switch and thus obtain a stable non-chattering response from the flow switch. The F26 flow switch can be mounted in either the suction or discharge pipe of a pump, the switch will respond equally well in a negative pressure situation as well as in a positive pressure application.



The F26 flow switch is supplied with an extra long paddle suitable for flow sensing in large diameter pipes. Normally the paddle will require trimming to allow installation in smaller diameter pipes. The paddle can be cut and shaped as required using tin snips or similar tools. Note that the paddle can be cut both in length and if required, in width. Many installers maintain a more stable flow response can be obtained by narrowing down the paddle and thus avoiding turbulence close to the walls of the pipe.

Paddle length will depend on the application. As a general guide, cut the paddle so it extends to the centre line of the pipe, or slightly past the centre. If the flow rate is known to be high, the paddle should be proportionally shortened, and inversely, if the flow rate is known to be low, increase the paddle length. An online flow calculator is available at <http://www.kelco.com.au> to assist you in determining the best paddle length for your application.

The F26 flow switch can be installed in either horizontal or vertical piping, perpendicular to horizontal pipe, or at any angle up to 45° off the vertical axis. Do not install the flow switch on the underside of horizontal pipes, or in any orientation where debris may accumulate in the pocket in the switch body and ultimately prevent the switch from operating.

A suitable 25mm (1") B.S.P. female thread socket must be provided on the piping, to fit the flow switch. This may be a tapping saddle or a pipe tee, or a socket welded directly to the piping. Ensure that whatever fitting is used, sufficient clearance is allowed for the free movement of the paddle. Normally a clearance to the full inside diameter of the 1" B.S.P. thread (28mm) will be required. The F26 flow switch can be installed in a one inch B.S.P. socket attached to a short stand off pipe, at 90° to the main pipe. This method increases the sensitivity of the switch to low flows due to the extra leverage against the tip of a longer paddle. If it is implemented, please ensure extra clearance is allowed for the free radial movement of the longer paddle.

Use thread tape or sealant and tighten the switch into the socket using the spanner flats provided on the switch body. Do not tighten the switch into its socket by twisting the switch body, as damage to the flow switch may result. Align the flow switch squarely to the axis of the pipe, with the direction of flow arrow on the switch body pointing correctly and aligned along the pipe. This flow switch will not function correctly unless the alignment is correct. Ensure there is a minimum of 4mm gap between the top of the thread on the flow switch and the top of the socket.

When installing the flow switch in vertically running pipework, note that the sensitivity of the switch will be slightly increased. It will detect lower flows, when flow is downward, and will be slightly decreased when flow is upward. This is due to the effect of gravity and the dead weight of the paddle itself. This effect is more noticeable in larger pipes and low flows where long paddles may be used.

MANUAL OVERRIDE

The F26 flow switch has a built in manual override, located under the cable gland on the end face of the switch. The override is located under a cover that snap fits over the override. The cover has a small notch on its under side, use the point of a small screwdriver, or your fingernail to lift the cap off. Do not under any circumstances pull or rotate the cap with pliers, as to do so will badly damage the switch. The rotary toggle switch is marked AUTO and ON. In the AUTO position the flow switch responds solely to flow and the toggle switch has no effect. In the ON position the flow switch is actuated regardless of the state of the actual flow, that is, the switch is turned on. The override feature is handy for testing new installations, commissioning systems and for manually priming pumps or starting diesel pump sets etc. In normal operation the override switch should be rotated fully into the AUTO position. Do not operate the flow switch with the override partly between auto and on, as it may not function correctly.

OPERATING LIMITATIONS

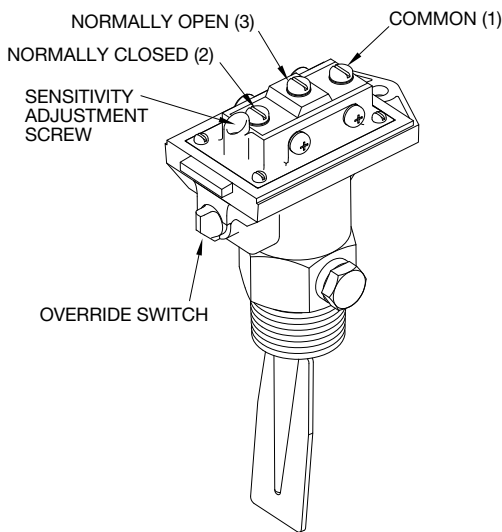
Switch Model	F26-S & H	26-SS & HS	26-SB & HB	F26-D
Maximum operating pressure (static or dynamic) at ambient temperature	18 Bars (260 psi)	200 Bars (2880 psi)	100 Bars (1440 psi)	100 Bars (1440 psi)
Minimum burst pressure at ambient temperature	45 Bars (650 psi)	500 Bars (7200 psi)	250 Bars (3600psi)	250 Bars (3600psi)
Maximum operating temperature (Liquid)	60°C See Note Below	80°C	80°C	60°C
Minimum operating temperature (Liquid)	-20°C	-20°C	-20°C	-20°C
Ingress protection rating (Weatherproof rating)	IP67	IP67	IP67	IP67

PLEASE NOTE: Maximum operating pressure of the all Polypropylene F26-S & F26-H must be linearly de-rated as operating temperature is increased so that at a process liquid temperature of 60°C the maximum permissible operating pressure for the switch must not exceed one Bar Absolute.

ELECTRICAL

All electrical work associated with this flow switch must be carried out by qualified persons only and must be in accordance with the relevant local codes.

The F26 flow switch houses a magnetically coupled high current high voltage single pole double throw microswitch. Two versions are available, the F26-S which is fitted with a 15Amp 500Volt switch suitable for most general control circuit applications and the F26-H which is fitted with a 20Amp 500Volt switch capable of directly controlling motors up to 1.5kW 2HP. The accompanying table and sketch gives the electrical rating of the two models and the terminal designations.



MAINTENANCE

If the F26 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 the F26 flow switch include excess temperature, excess pressure or electrical loads in excess of the switch's rating.

ELECTRICAL DATA F26-S

The F26-S flow switch is suitable for general control circuit applications, up to 500VAC. In addition the switch can be used to directly control small single-phase 240VAC pump motors up to 0.360kW maximum.

Rated Voltage	NON INDUCTIVE LOADS				INDUCTIVE LOADS			
	Resistive Load		Lamp Load		Inductive Load		Motor Load	
	NC	NO	NC	NO	NC	NO	NC	NO
125 VAC	15A		3A	1.5A	15A		5A	2.5A
250 VAC	15A		2.5A	1.25A	15A		3A	1.5A
500 VAC	10A		1.5A	0.75A	6A		1.5A	0.75A
8 VDC	15A		3A	1.5A	15A		5A	2.5A
14 VDC	15A		3A	1.5A	10A		5A	2.5A
30 VDC	6A		3A	1.5A	5A		5A	2.5A
125 VDC	0.5A		0.5A	0.5A	0.05A		0.05A	0.05A
250 VDC	0.25A		0.25A	0.25A	0.03A		0.03A	0.03A

ELECTRICAL DATA F26-H

The F26-H flow switch is supplied with a heavy-duty 20 Amp 500V SPDT switch that is suitable for the direct control of 240V AC single phase pump motors up to 1.5kW (2HP).

Rated Voltage	NON INDUCTIVE LOADS				INDUCTIVE LOADS			
	Resistive Load		Lamp Load		Inductive Load		Motor Load	
	NC	NO	NC	NO	NC	NO	NC	NO
125 VAC	20A		7.5A		20A		12.5A	
250 VAC	20A		7.5A		20A		8.3A	
500 VAC	15A		4A		10A		2A	
8 VDC	20A		3A	1.5A	20A		12.5A	
14 VDC	20A		3A	1.5A	15A		12.5A	
30 VDC	6A		3A	1.5A	5A		5A	
125 VDC	0.5A		0.5A		0.05A		0.05A	
250 VDC	0.25A		0.25A		0.03A		0.03A	

In exposed locations ensure the lid and cable gland are securely tightened and secondary precautions such as cable drip loops are employed to ensure the ingress protection rating of this switch is achieved.

MADE IN AUSTRALIA BY

KELCO Engineering Pty Ltd

ABN 20 002 834 844

Head office and factory: 9/9 Powells Road Brookvale 2100 NSW Australia

Postal Address: PO Box 496 Brookvale NSW 2100

Phone: +61 2 9905 6425 Fax: +61 2 9905 6420

Email: sales@kelco.com.au Web: www.kelco.com.au

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