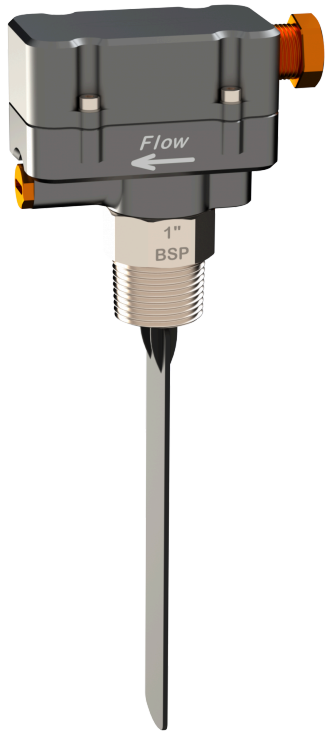
FM SERIES

HEAVY DUTY FLOW SWITCHES

For pipe sizes 25 mm (1") and larger



FEATURES

- 5–500 VAC 15 A S.P.D.T. switch ('H' model)
- Low voltage gold contact 'L' model available
- 316 stainless steel process connection
- Super tough billet aluminium housing
- Manual override built in
- ¾" and 1" models available with BSP or NPT threads
- 400 bar (5800 psi) pressure rating
- Seal-less magnetic drive
- Dieseline and high temperature versions available
- Weatherproof IP67 housing
- Easily serviceable

15 A	400 bar	IP67	316 SS
S.P.D.T. switch rated 5–500 VAC	5800 psi pressure rating	Weatherproof billet aluminium housing	One-piece stainless process connection

OUTLINE

The FM Series flow switch is built tough for the most arduous industrial and mining applications. It is a rugged but highly sensitive paddle flow switch, suitable for a wide range of flow sensing applications in both hot and cold liquids.

The FM Series flow switch can be supplied with a glass fibre reinforced polypropylene paddle or a nickel copper alloy paddle. The paddle can be cut and shaped as required to suit pipework 25 mm (1") or larger. A unique feature of the FM flow switch is its built-in manual override. The manual override allows the flow switch to be switched on at any time at the press of a button, regardless of lack of flow. Using the manual override allows pumps to be manually started at any time by simply pressing the button. It also makes the testing and commissioning of systems very simple.

A magnetic coupling system is built into each FM flow switch and couples the paddle's movement to the high compliance switch through a solid wall of stainless steel and aluminium. The result is a high-pressure flow switch with no seals, diaphragms, bellows or other points of potential failure.

The FM flow switch is supplied as standard with a one-piece 316 stainless steel process connection and a fully machined billet aluminium housing. The switch is suitable for use in bore water, sea water and many chemical solutions. There is also a dedicated Dieseline and high temperature compatible version available with a nickel copper alloy paddle.

Chemical Compatibility Checker ›

APPROVED STANDARDS

UL	CSA	EN	CE
UL1054 · File E41515	C22.2 No.55 · File LR21642	EN61058-1	Marked

The 'H' and 'L' microswitches are approved to UL1054 (File No. E41515), CSA C22.2 No.55 (File No. LR21642) and EN61058-1, and are CE marked.

ORDERING

Build your part number from the codes below – for example **FM-H-25B-D**.

FM – **H** – **25B** – **D**

SERIES

FM Series flow switch with a metal (aluminium) body

SWITCH

- **H** Standard heavy duty switch
- **L** Low voltage switch with gold contacts

PROCESS CONNECTION

- **20B** ¾" BSP thread
- **20N** ¾" NPT thread
- **25B** 1" BSP thread
- **25N** 1" NPT thread

PADDLE

- **Blank** Supplied with a polypropylene paddle
- **D** Supplied with a nickel copper alloy paddle for Dieseline and high temperature applications

OPERATING LIMITATIONS

One-piece 316 stainless steel process connection and billet aluminium housing. Pressures are at ambient temperature, static or dynamic.

PARAMETER	FM POLYPROPYLENE PADDLE	FM-D METAL PADDLE
Maximum operating pressure (static or dynamic) at ambient temperature	**400 bar** 5800 psi	**400 bar** 5800 psi
Minimum burst pressure at ambient temperature	**800 bar** 11 600 psi	**800 bar** 11 600 psi
Maximum operating temperature	**80 °C** 176 °F	**100 °C** 212 °F
Minimum operating temperature	**–60 °C** –76 °F	**–60 °C** –76 °F
Ingress protection rating	**IP67**	**IP67**

FLOW SENSITIVITY

The flow rates required to actuate the FM flow switch depend on many variables, such as turbulence, liquid viscosity and the exact area of the paddle face exposed to the flow. For an accurate estimate of the switch performance, and to determine the effect of paddle trimming, use the Paddle Trimming Calculator on our website (see below).

HAZARDOUS AREAS

The FM-H is 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).

The FM-L is simple apparatus under AS/NZS 60079.11 and may be used in a hazardous area only as part of an intrinsically safe circuit, connected through suitably certified associated apparatus. It is not Ex certified in its own right. The associated apparatus must not exceed Uo ≤ 30 V, Io ≤ 100 mA. The full conditions of use are given in the installation sheet.

Paddle Trimming Calculator ›

Not sure how much to trim the paddle? Go to www.kelco.com.au/en/tools/paddle-calculator and use the calculator – enter your pipe inside diameter, flow rate and liquid to check the switch will operate reliably at your flow.

'H' SWITCH ELECTRICAL DATA

The 'FM-H' models use an S.P.D.T. (single pole, double throw) microswitch for general control circuits up to 500 VAC – ideal for pump starters, relay logic, contactors and timers.

IMPORTANT

Use at any voltage from 5 to 500 VAC (minimum load 160 mA at 5 VDC). Directly switches pump motors up to ¼ HP (approx. 185 W) at 240 VAC – use a contactor or relay for larger motors.

RATED VOLTAGE	NON-INDUCTIVE LOADS (A)			INDUCTIVE LOADS (A)		
	RESISTIVE	LAMP		INDUCTIVE	MOTOR	
	NC / NO	NC	NO	NC / NO	NC	NO
125 VAC	15	3	1.5	15	5	2.5
250 VAC	15	2.5	1.25	15	3	1.5
500 VAC	10	1.5	0.75	6	1.5	0.75
8 VDC	15	3	1.5	15	5	2.5
14 VDC	15	3	1.5	10	5	2.5
30 VDC	6	3	1.5	5	5	2.5
125 VDC	0.5	0.5	0.5	0.05	0.05	0.05
250 VDC	0.25	0.25	0.25	0.03	0.03	0.03

NOTE Absolute limits: 500 VAC maximum; 15 A maximum (10 A at 500 VAC); 5 VDC and 160 mA minimum. Maximum voltage and maximum current cannot be applied together – use the table for the limit at each voltage and load type.

'L' SWITCH ELECTRICAL DATA

The 'FM-L' models use an S.P.D.T. gold contact microswitch rated down to 1 mA at 5 VDC, so they switch reliably at the low wetting currents of PLC inputs, telemetry and relay logic.

PLEASE NOTE

Not suitable for inductive or capacitive loads such as contactors and relays. Loads above the rating will damage the switch.

Switch type	**Gold contact microswitch**
Contact configuration	**S.P.D.T.**
Contact material	**Gold alloy**
Rated current (resistive)	**0.1 A at 125 VAC** **0.1 A at 8, 14 and 30 VDC**
Inrush current	**0.1 A maximum (NC and NO)**
Minimum applicable load	**1 mA at 5 VDC**
Operating range (micro load)	**5 to 30 V, 5 to 800 mW** **(26 mA maximum at 30 V)**
Contact resistance	**50 mΩ maximum (initial)**
Typical applications	**PLC, telemetry and low voltage control**

DIMENSIONS

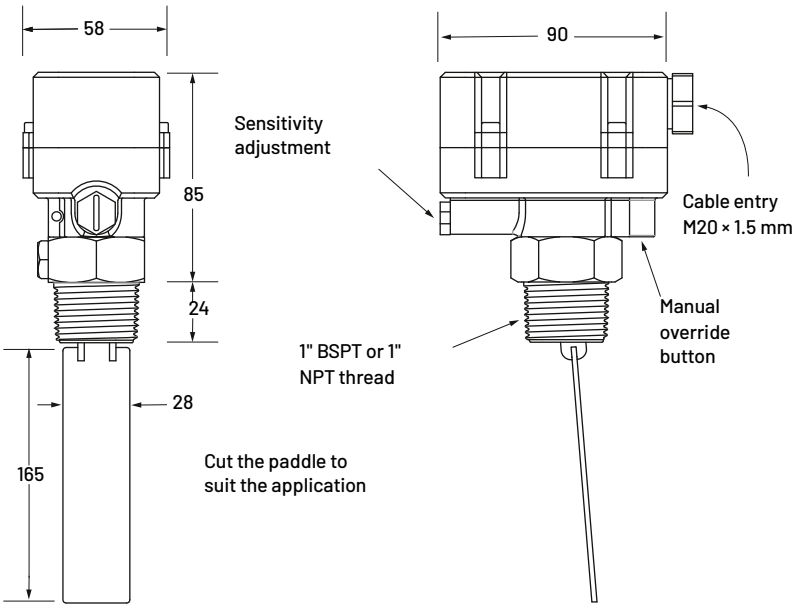


FIG. 1 Overall dimensions in millimetres

TYPICAL SMALL PIPE INSTALLATION

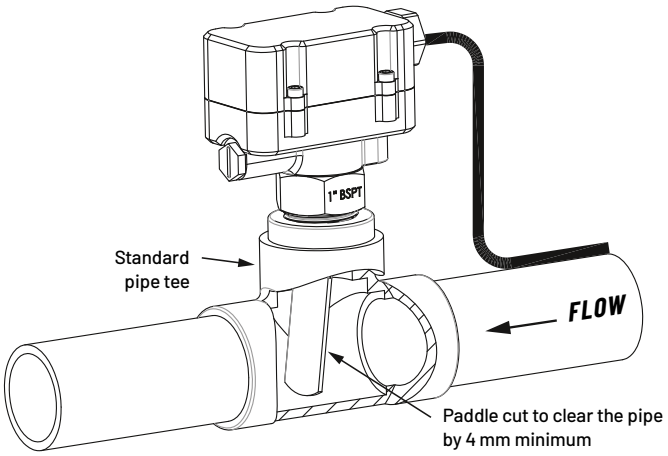


FIG. 2 FM Series mounted in a standard pipe tee

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