

The simple insertion paddlewheel flow switch type F3.05 is designed to protect a pump from running dry or pumping against a closed valve. It is equipped with a mechanical SPDT contact activated when the flow velocity drops below the factory preset value of 0.15 m/s (0.5 ft/s). A specially designed family of fitting ensures an easy and quick installation into all pipe materials in sizes from DN15 to DN600 (0.5" to 24").

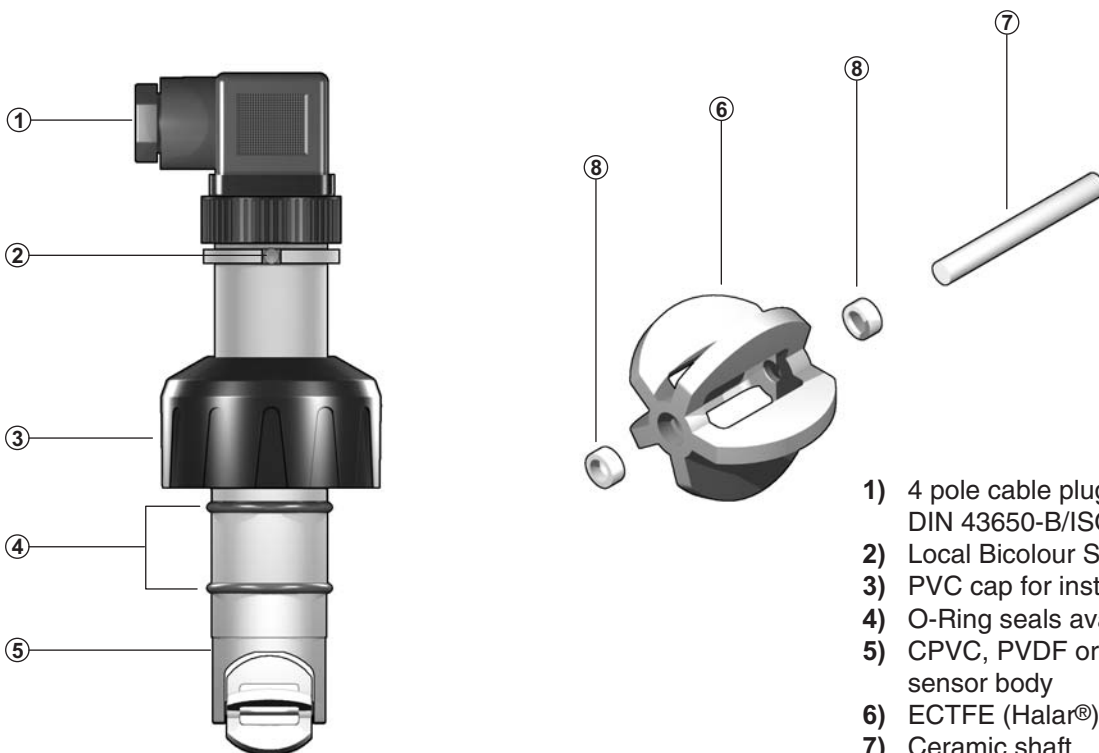
## Main Features

- CPVC, PVDF or Stainless Steel sensor body.
- Easy insertion system.
- High chemical resistance.
- No-Flow alarm relay output.
- Highly visible Local Bicolour Status Indicator.
- Maintenance free.
- Very low pressure drop.

## Applications

- Pump protection.
- Filtration systems.
- Cooling water systems.

## Technical Features



- 1) 4 pole cable plug according to DIN 43650-B/ISO 6952
- 2) Local Bicolour Status LED
- 3) PVC cap for installation into fittings
- 4) O-Ring seals available in EPDM or FPM
- 5) CPVC, PVDF or Stainless Steel sensor body
- 6) ECTFE (Halar®) Open-cell rotor
- 7) Ceramic shaft
- 8) Ceramic bearings

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## Operating principle

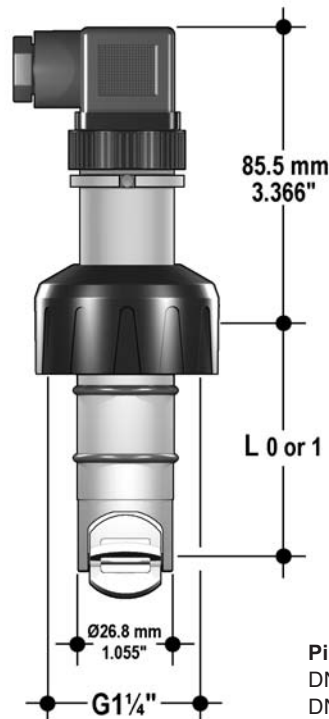
The flow switch consists of a transducer and a five-blade open cell paddlewheel using insertion technology. The paddlewheel is equipped with a permanent magnet integrated into each blade. As the magnet passes close to the transducer an output pulse is generated.

That pulse is monitored by a missing signal circuit, that trips an internal relay when the pulse frequency drops below the factory preset frequency of 0.15 m/s (0.5 ft/s). The switch is installed into the pipe using a wide range of insertion type fittings supplied by the flow switch manufacturer.

## Engineering Data

- The flow switch is available with CPVC, PVDF or AISI 316L SS body.
- The switch operates with a power supply from 12 to 24 VDC @ < 50 mA.
- The No-Flow threshold is factory preset at 0.15 m/s (0.5 ft/s).
- The flow switch provides the alarm output via an SPDT mechanical contact (No-Flow = Open Contact). The Maximum Voltage Rating is 1A @ 24 VDC, 0.1A @ 230 VAC.
- The output signal is provided via a 4 pole cable plug according to DIN 43650-B/ISO 6952.
- The flow switch is equipped with a Local Bicolour Status Indicator:  
GREEN = Flow,  
RED = No-Flow.

## Dimensions F3.05 Flow Switch



**Pipe range:**  
DN15 to DN100 (0.5" to 4")  
DN110 to DN600 (5" to 24")

L0 = 68.3 mm (2.69")  
L1 = 98.5 mm (3.88")

## Installation Fittings

Please refer to Installation Fittings section for more details and a complete listing of items.

	Type	Description
	Plastic Tees	Size: D20 to D50 (0.5" to 1.5") Materials: PVC, CPVC, PP, PVDF
	CPVC Clamp Saddles	Size: D63 to D225 (2" to 8") Insert materials: CPVC, PVDF
	PP Clamp Saddles	Size: D250 to D315 (10" to 12") Insert material: CPVC
	PVC Wafer Fittings	Size: D280 and D315 (10" and 12") Insert material: CPVC
	GR-PP Wafer Fittings	Size: D280 and D315 (10" and 12") Insert material: CPVC
	Plastic Weld-on Adapters	Size: D63 to D315 Materials: PVC, CPVC, PP, PE
	316L SS Tees	Size: D25 to D40 GAS (BSP) Female Threaded
	Metal Strap-on Saddles	Size: DN80 to DN450 Insert Material: CPVC Special order for other sizes
	316L SS Weld-on Adapters	Size: D50 to D600 (1.5" to 24")

## Installation Guidelines

- The flow switch can be installed in any position, both horizontally or vertically.
- No special installation configurations are required to install the sensor downstream of valves, fittings or any kind of obstacles.

## Mounting Positions

- Horizontal pipe runs:
  - Fig. 1: installation with no sediments present or not completely full pipeline
  - Fig. 2: installation with no air bubbles present
  - Fig. 3: installation if sediments or air bubbles may be present.
- Vertical pipe runs:
  - Install flow switch in any orientation.

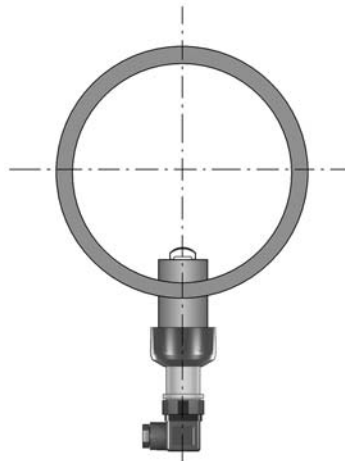


Fig. 1

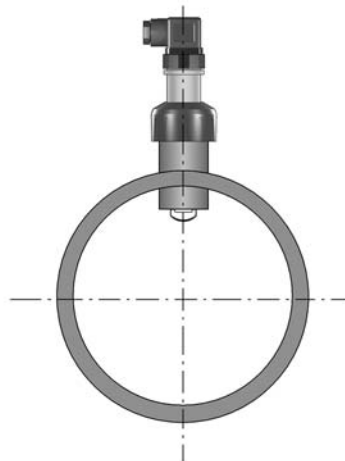


Fig. 2

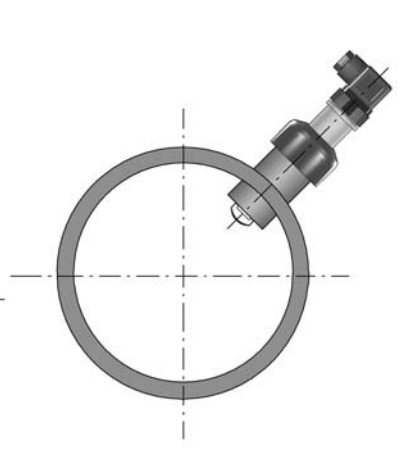
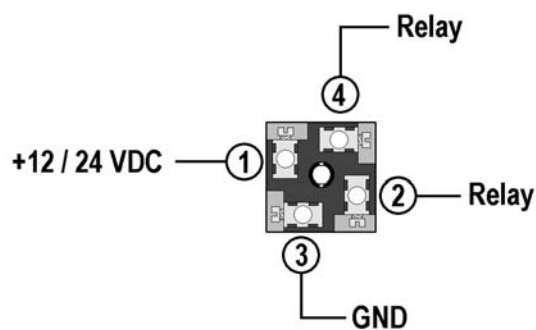


Fig. 3

## Wiring



## Technical Data

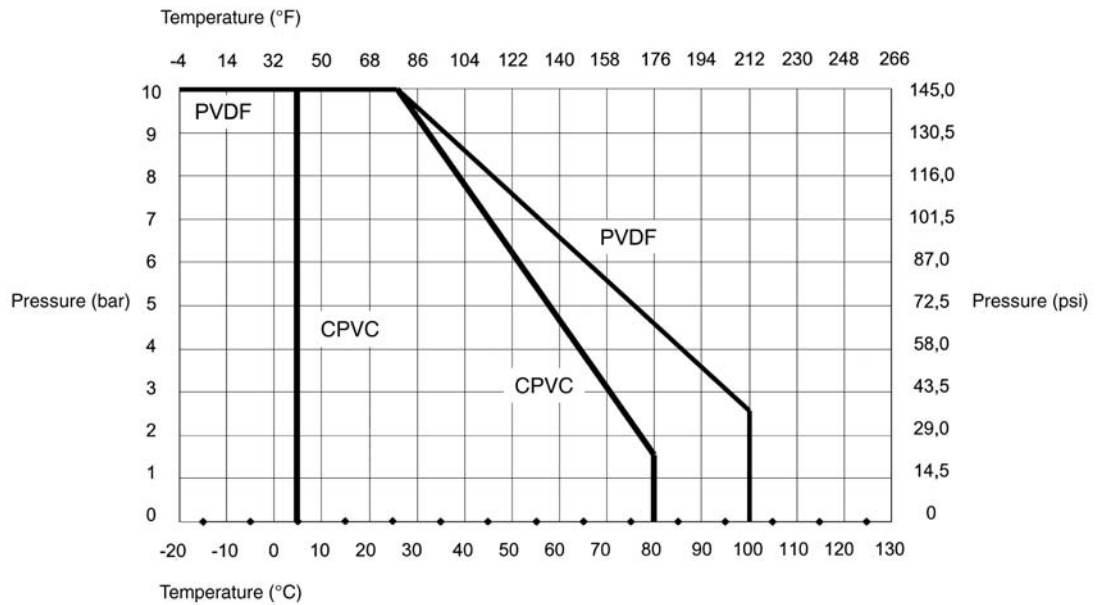
- Pipe Size Range: DN15 to DN600 (0.5" to 24"). Please refer to Installation Fittings section for more details.
- Supply voltage: 12 to 24 VDC regulated.
- Supply current: < 50 mA.
- Relay Output: mechanical SPDT contact, 1A @ 24 VDC, 0.1A @ 230 VAC.
- Local Status Indicator:
  - GREEN Led = Flow
  - RED Led = No Flow.
- No-Flow Rate Point: 0.15 m/s (0.5 ft./s).
- Enclosure: IP65.
- Wetted Materials:
  - Sensor Body: CPVC or PVDF or 316L SS
  - O-rings: EPDM or FPM
  - Rotor: ECTFE (Halar®)
  - Shaft: Ceramic (Al<sub>2</sub>O<sub>3</sub>)
  - Bearings: Ceramic (Al<sub>2</sub>O<sub>3</sub>).

### Standards & Approvals

- Manufactured under ISO 9002.
- CE.

### Maximum Operating Pressure / Temperature (25 years lifetime)

- CPVC body:
  - 10 bar (145 psi) @ 25°C (77°F)
  - 1,5 bar (22 psi) @ 80° C (176°F).
- PVDF body:
  - 10 bar (145 psi) @ 25°C (77°F)
  - 2,5 bar (36 psi) @ 100°C (212°F).
- SS body:
  - 25 bar (363 psi) @ 120°C (248°F).



## Ordering Data

### Flow X3 F3.05.XX

Part No.	Power Supply	Length	Body	O-rings	Enclosure
F3.05.01	12 to 24 VDC	L0	CPVC	EPDM	IP65
F3.05.02	12 to 24 VDC	L0	CPVC	FPM	IP65
F3.05.03	12 to 24 VDC	L1	CPVC	EPDM	IP65
F3.05.04	12 to 24 VDC	L1	CPVC	FPM	IP65
F3.05.05	12 to 24 VDC	L0	PVDF	EPDM	IP65
F3.05.06	12 to 24 VDC	L0	PVDF	FPM	IP65
F3.05.07	12 to 24 VDC	L1	PVDF	EPDM	IP65
F3.05.08	12 to 24 VDC	L1	PVDF	FPM	IP65
F3.05.09	12 to 24 VDC	L0	316L SS	EPDM	IP65
F3.05.10	12 to 24 VDC	L0	316L SS	FPM	IP65
F3.05.11	12 to 24 VDC	L1	316L SS	EPDM	IP65
F3.05.12	12 to 24 VDC	L1	316L SS	FPM	IP65

### Spare Parts

Item	Part No.	Name	Description
A-1	F3.SP8	4 pole Cable Plug	Cable Plug according to DIN 43650
A-2	F3.SP2.1	Sensor Cap	Black Sensor Cap
A-3	F3.SP3.1	O-Rings	EPDM Sensor body O-rings
A-3	F3.SP3.2	O-Rings	FPM Sensor body O-rings
A-4	F3.SP4	Rotor KIT	ECTFE (Halar®) rotor with Ceramic Shaft and Bearings
	F3.SP5.1	Sensor Plug	CPVC Sensor Plug
	F3.SP5.2	Sensor Plug	PVDF Sensor Plug
	F3.SP5.3	Sensor Plug	Stainless Steel Sensor Plug

