

Flow Switch

Diaphragm Style Flow Switch

Series IFW5



For details about certified products conforming to international standards, visit us at www.smcworld.com.

The flow switch, series IFW is used for detection and confirmation of the flow as a relaying device for the general water applications in some various equipment such as cooling water fixture in the industrial machinery.

- Low flow setting possible (1 ℓ/min)
- Simple flow setting

Without removing the cover, you can set with a screwdriver from the outside.



How to Order

IFW5 10 - N 03 - 1 1 -

Diaphragm style flow switch

● Thread type

Nil	Rc
N	NPT
F	G

● Body size

Model	Body size	Set flow rate ^{Note)}
10	10 ℓ/min type	1 to 10 ℓ/min
20	20 ℓ/min type	10 to 20 ℓ/min
50	50 ℓ/min type	20 to 50 ℓ/min

Note) Operating pressure: 0.2 MPa or less

● Port size

03	3/8
04	1/2
06	3/4

● CE-compliant

Nil	None
Q	CE-compliant

● Light

0	None
1	With neon light (110 VAC, Red)
2	With neon light (110 VAC, Green)
3	With neon light (220 VAC, Red)
4	With neon light (220 VAC, Green)
5 ^{Note)}	With LED light (24 VDC, Red)
6 ^{Note)}	With LED light (24 VDC, Green)

Note) LED light is available for 5, 6, 7, 8 (with terminal box for 24 VDC).

● Terminal box

0	Without terminal box (Contact: 1ab)
1	With terminal box (Contact: 1a)
2	With terminal box (Contact: 1b)
5 ^{Note)}	With terminal box (24 VDC, ⊕COM, Contact: 1b)
6 ^{Note)}	With terminal box (24 VDC, ⊕COM, Contact: 1a)
7 ^{Note)}	With terminal box (24 VDC, ⊖COM, Contact: 1b)
8 ^{Note)}	With terminal box (24 VDC, ⊖COM, Contact: 1a)

Note) Terminal box for 24 VDC is available for 5, 6 (LED light).

Specifications

Fluid	Water/Non-corrosive liquid *	
Operating pressure	0.1 to 0.6 MPa	
Water resistance	1.2 MPa	
Operating temperature range	-5 to 60°C (No freezing)	
Operation	Diaphragm style	
Insulation resistance	100 MΩ (500 DC by megameter)	
Withstand voltage	1500 VAC for one min.	
Contact	Without terminal box: 1ab	
	With terminal box: 1a or 1b	
Port size	3/8, 1/2, 3/4	
Body material in contact with fluid material	Body	CAC407
	Rod	C3604B
	Diaphragm	NBR
Standard	EN60947-5-1 ^{Note)}	

About the use of *, please confirm SMC.

Note) Suffix "-Q" to the end of product number when ordering.

Micro Switch Ratings

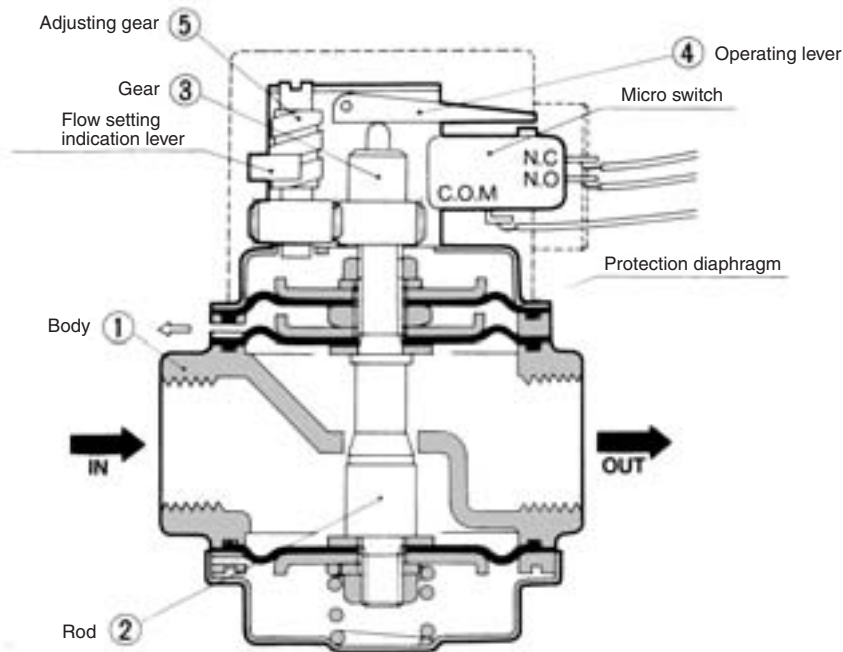
Voltage	Non inductive load (A)				Inductive load (A)			
	Load resistance		Light load		Inductive load		Motor load	
	N.C.	N.O.	N.C.	N.O.	N.C.	N.O.	N.C.	N.O.
125 VAC	5	5	1.5	0.7	4	4	2.5	1.3
250 VAC	5	5	1	0.5	4	4	1.5	0.8
8 VDC	7	5	3	3	5	4	3	3
14 VDC	5	5	3	3	4	4	3	3
30 VDC	5	5	3	3	4	4	3	3
125 VDC	0.4	0.4	0.1	0.1	0.4	0.4	0.1	0.1
250 VDC	0.3	0.3	0.05	0.05	0.3	0.3	0.05	0.05

Model

Model	Flow range (ℓ/min)	Max. flow (ℓ/min)	Hysteresis (ℓ/min) ^{Note)}
IFW510	1 to 10	20	1 or less
IFW520	10 to 20	25	1.5 or less
IFW550	20 to 50	60	3 or less

Note) Hysteresis is the flow rate that is necessary for moving the microswitch from the operation position (ON signal) to the return position (OFF signal).

Construction/Working Principle



Working Principle

Liquid flow creates a pressure differential nearby the orifice of the port of the body (1). One set of diaphragms monitors the pressure differential and operates the micro switch through the rod (2) and operating lever (4).

The rod (2) moves downward with increased flow, and upward with decreased flow. Moving the gear (5) upward or downward by the adjusting gear (3) manually offers an electric signal at various flow rates.

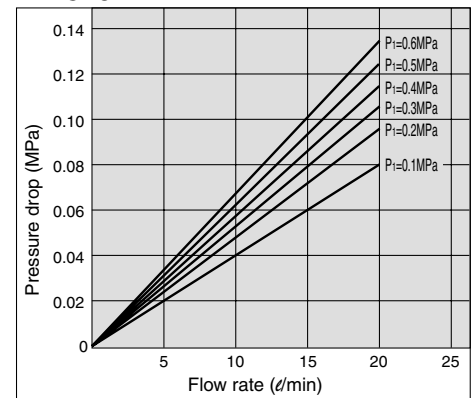
Component Parts

No.	Description	Material
1	Body	CAC407
2	Rod	C3604B
3	Gear	POM

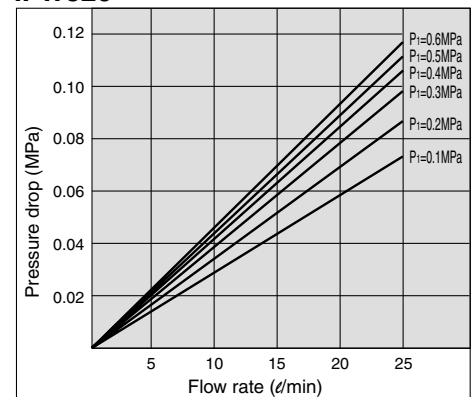
No.	Description	Material
4	Operating lever	SPPC
5	Adjusting gear	POM

Flow Characteristics

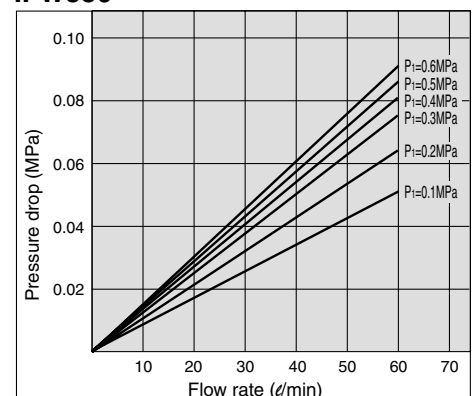
IFW510



IFW520



IFW550



PFM

PFMV

PF2A

PF2W

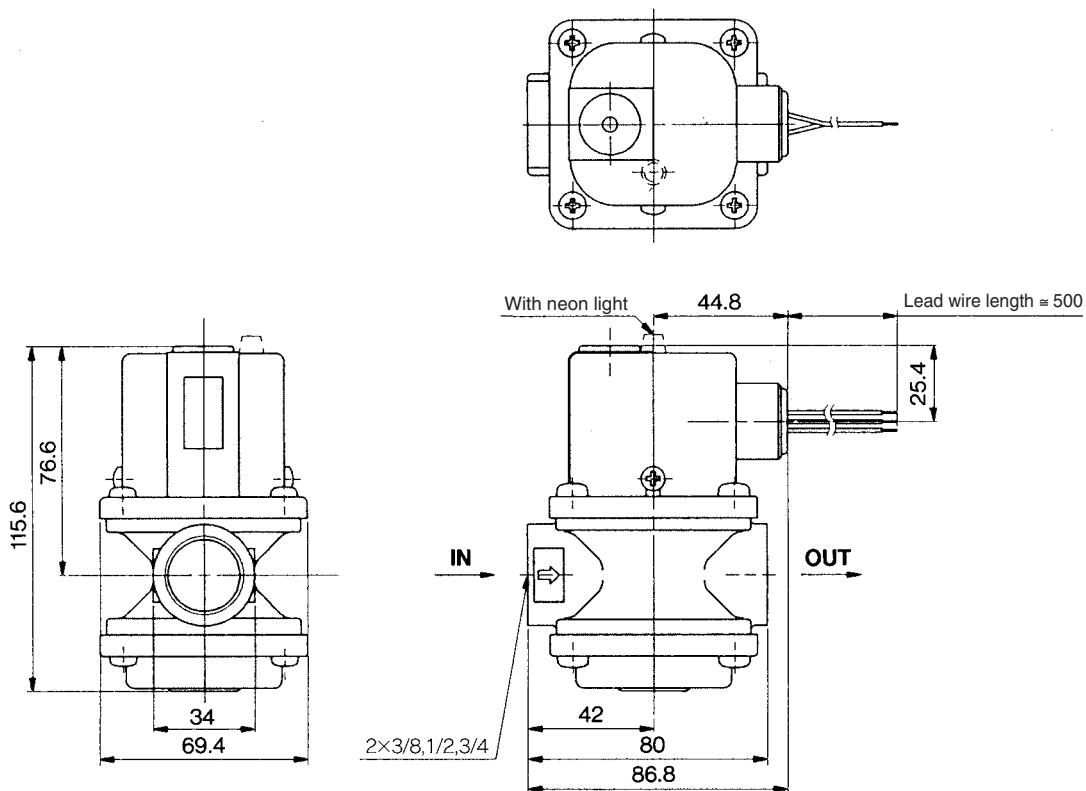
PF2D

IF

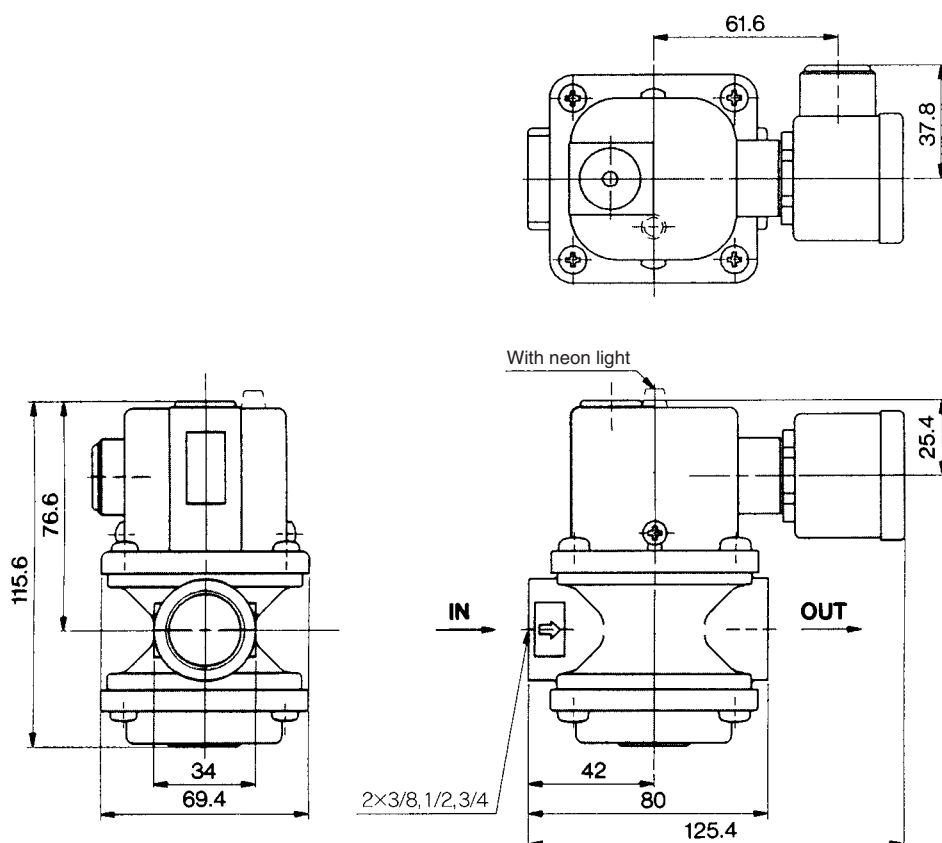
Series IFW5

Dimensions

IFW5□0-□□-00 to 04
(Without terminal box)



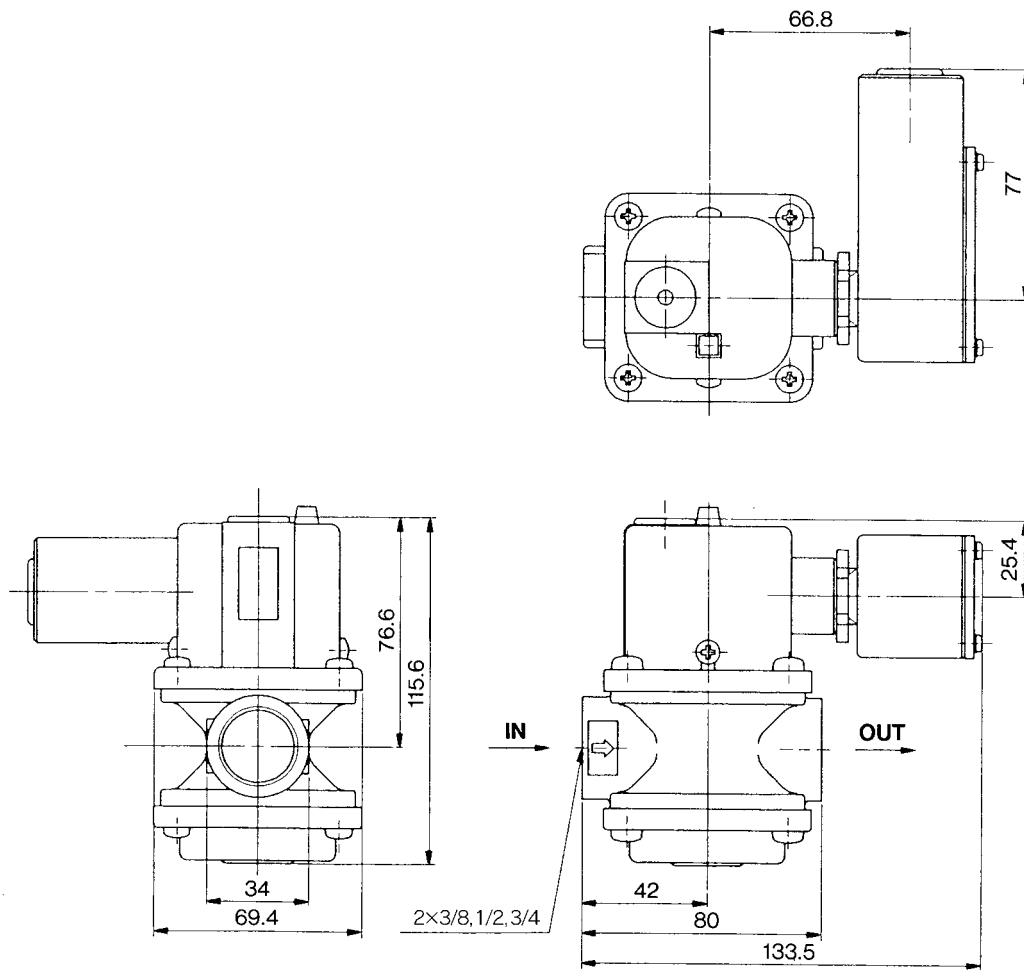
IFW5□0-□□-10 to 24
(With terminal box)



Dimensions

IFW5□0-□□-55 to 86

(With light, Terminal box for 24 VDC)



PFM

PFMV

PF2A

PF2W

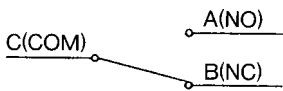
PF2D

IF

Series IFW5

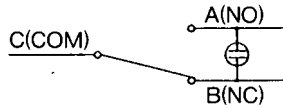
Internal Wiring Diagram

IFW5□0-□□-00/10/20



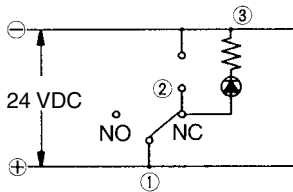
Symbol	Contact	Color of lead wire
C	Common	Black
A	Normally Open	White
B	Normally Closed	Red

IFW5□0-□□-01 to 04/11 to 14/21 to 24



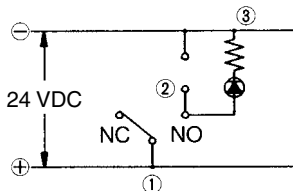
Symbol	Contact	Color of lead wire
C	Common	Black
A	Normally Open	White
B	Normally Closed	Red

IFW5□0-□□-55/56



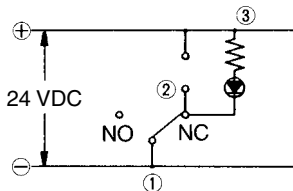
Symbol	Contact	Color of lead wire
1	Power supply (Common)	Black
2	Terminal (Relay terminal)	Red
3	Power supply (Light terminal)	Blue

IFW5□0-□□-65/66



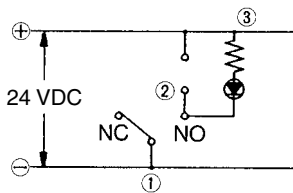
Symbol	Contact	Color of lead wire
1	Power supply (Common)	Black
2	Terminal (Relay terminal)	White
3	Power supply (Light terminal)	Blue

IFW5□0-□□-75/76



Symbol	Contact	Color of lead wire
1	Power supply (Common)	Black
2	Terminal (Relay terminal)	Red
3	Power supply (Light terminal)	Gray

IFW5□0-□□-85/86



Symbol	Contact	Color of lead wire
1	Power supply (Common)	Black
2	Terminal (Relay terminal)	White
3	Power supply (Light terminal)	Gray

⚠ Precautions

Be sure to read before handling.
Refer to front matters 58 and 59 for Safety Instructions and pages 892 to 896 for Flow Switch Precautions.

Mounting & Wiring

⚠ Caution

- Mount a switch, so that the liquid flow is in the same direction as that of the arrow on the body.
- The flow switch can be installed either horizontally or vertically.
- Provide a straight pipe portion that corresponds to approximately 5 times the bore of the pipe before and after the area of the pipe on which the product is installed, thus keeping the product as far away as possible from the elements that disturb the flow, such as elbows or valves.
- For wiring, refer to the internal wiring diagram.
- If a terminal box is not available, wire by selecting the contact at 1a or 1b. At that time, insulate the lead wires that will not be used.
- Because this is an open style, it cannot be used where water or oil splashes.
- It cannot be used if a water hammer or pulsation pressure is applied to the fluid.
- In order to prevent a malfunction or diaphragm damage caused by debris or cutting chips in the fluid, install a filter with approximately 100 mesh on the inlet side of a flow switch.

Adjusting

⚠ Caution

- To adjust flow, remove grommet of the upper cover and rotate flow adjusting gear using a flat head screwdriver. Turning clockwise can increase the set flow and turning counterclockwise can decrease the set flow.
- The flow rate setting point is set at the ON flow rate. Therefore, in the case of the 1a contact, the ON signal is output if fluid with a higher flow rate than the set flow rate has occurred. In the case of the 1b contact, the ON signal is output when the flow rate has decreased from the set flow rate for the amount that corresponds to the hysteresis.
- To prevent the chattering that is associated with the fluctuation of the operating flow rate, set the difference between the set flow rate and the operating flow rate so that it is as large as possible.
- Use at or below the maximum operating pressure and maximum flow rate.
- The indicator on the window name plate (Fig. 1) is only a guideline. For precise setting, mount a flow meter on the downstream side of the flow switch, and set the level. Also, when setting levels with a low flow rate at pressures of 0.2 MPa or more, there may be interference between the indicator needle and the scale plate. In such cases, detach the indicator needle and scale plate before setting. After setting, the indicator needle and scale plate can be reattached in positions of your choice.

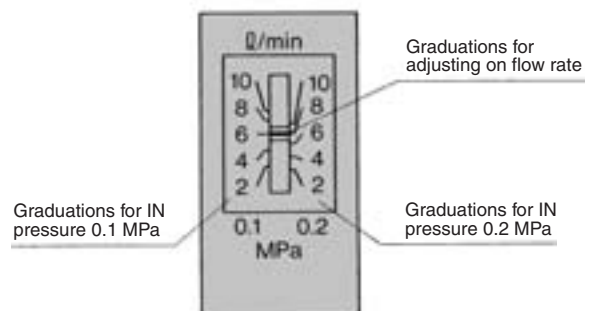


Fig. 1 Window name plate