



ORIGINAL INSTRUCTIONS



Refer to Declaration of Conformity for relevant Directives

Instruction Manual

Flow Switch

Diaphragm Type Flow Switch

IFW5 Series



The intended use of the flow switch is for detection and confirmation of the flow as a relaying device for the general-purpose water cut off and water reduction relay in some various equipment such as cooling water fixture in the industrial machinery.

1 Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of "Caution," "Warning" or "Danger." They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)¹⁾, and other safety regulations.

¹⁾ ISO 4414: Pneumatic fluid power - General rules relating to systems.
ISO 4413: Hydraulic fluid power - General rules relating to systems.
IEC 60204-1: Safety of machinery - Electrical equipment of machines. (Part 1: General requirements)
ISO 10218-1: Manipulating industrial robots - Safety, etc.

- Refer to product catalogue, Operation Manual and Handling Precautions for SMC Products for additional information.
- Keep this manual in a safe place for future reference.

Caution	Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
Warning	Warning indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
Danger	Danger indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

Warning

- Always ensure compliance with relevant safety laws and standards.
- All work must be carried out in a safe manner by a qualified person in compliance with applicable national regulations.

2 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 type	
Insulation resistance	100 MΩ or more (500 VDC measured via megahmmeter)	
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	CAC408
	Rod	C3604B
	Diaphragm	NBR (Note)

About the use of *, Please confirm with SMC.

Note) For ozone environments, select the -X404

Warning

Special products might have specifications different from those shown in this section. Contact SMC for specific drawings.

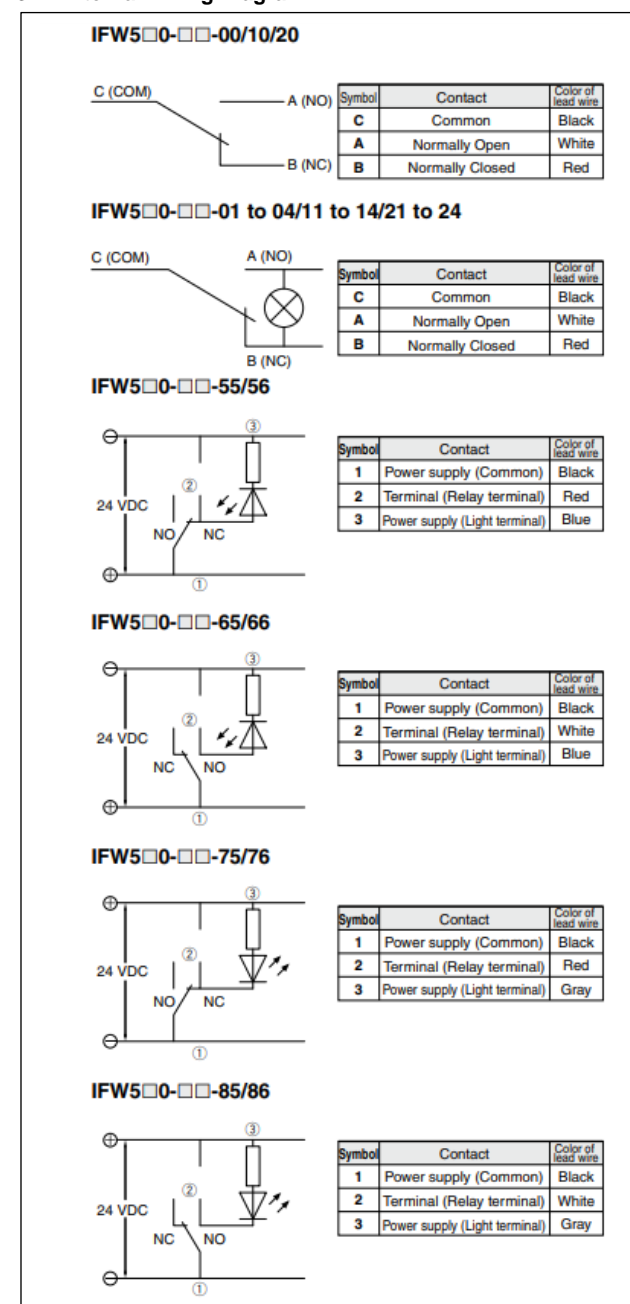
3 Installation

3.1 Installation

Warning

- Do not install the product unless the safety instructions have been read and understood.
- Mount a switch, so that the liquid flow is in the same direction as that of the arrow on the body.
 - Be sure to fill the passage with the fluid.
 - 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 in 3.2.
 - 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 type, 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.

3.2 Internal Wiring Diagram



3 Installation - continued

3.3 Environment

Warning

- Do not use in an environment where corrosive gases, chemicals, saltwater or steam are present.
- Do not use in an explosive atmosphere.
- Do not expose to direct sunlight. Use a suitable protective cover.
- Do not install in a location subject to vibration or impact in excess of the product's specifications.
- Do not mount in a location exposed to radiant heat that would result in temperatures in excess of the product's specifications.

3.4 Piping

Caution

- Before connecting piping make sure to clean up chips, cutting oil, dust etc.
- When installing piping or fittings, ensure sealant material does not enter inside the port. When using seal tape, leave 1-2 threads exposed on the end of the pipe/fitting.
- Tighten fittings to the specified tightening torque.

3.5 Lubrication

Caution

- SMC products have been lubricated for life at manufacture, and do not require lubrication in service.
- If a lubricant is used in the system, refer to catalogue for details.

4 Settings

1. 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.

2. 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.

3. 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.

4. Use at or below the maximum operating pressure and maximum flow rate.

5. 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.

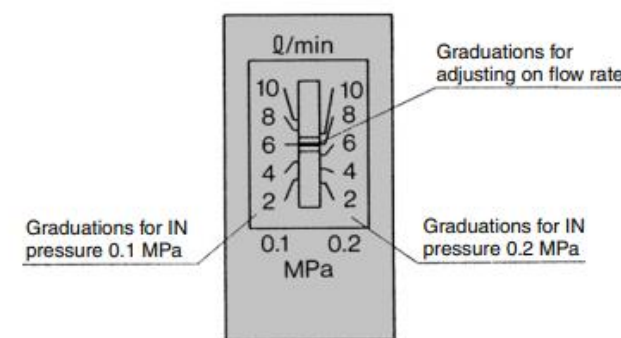


Fig. 1 Window name plate example: IFW 510

5 How to Order

Refer to drawings or catalogue for 'How to Order'.

6 Outline Dimensions (mm)

Refer to drawings or catalogue for outline dimensions.

7 Maintenance

7.1 General Maintenance

Caution

- Not following proper maintenance procedures could cause the product to malfunction and lead to equipment damage.
- If handled improperly, compressed air can be dangerous.
- Maintenance of pneumatic systems should be performed only by qualified personnel.
- Before performing maintenance, turn off the power supply and be sure to cut off the supply pressure. Confirm that the air is released to atmosphere.
- After installation and maintenance, apply operating pressure and power to the equipment and perform appropriate functional and leakage tests to make sure the equipment is installed correctly.
- If any electrical connections are disturbed during maintenance, ensure they are reconnected correctly, and safety checks are carried out as required to ensure continued compliance with applicable national regulations.
- Do not make any modification to the product.
- Do not disassemble the product, unless required by installation or maintenance instructions.

8 Limitations of Use

8.1 Limited warranty and Disclaimer/Compliance Requirements

Refer to Handling Precautions for SMC Products.

9 Product disposal

This product should not be disposed of as municipal waste. Check your local regulations and guidelines to dispose this product correctly, in order to reduce the impact on human health and the environment.

10 Contacts

Refer to www.smcworld.com or www.smc.eu for contacts.

SMC Corporation

URL : <http://www.smcworld.com> (Global) <http://www.smc.eu> (Europe)
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