



Installation and Maintenance Manual

IF3 Series Paddle Type Flow Switch

For future reference, please keep this manual in a safe place

This manual should be read in conjunction with the current product catalogue

Safety Instructions

These safety instructions are intended to prevent a hazardous situation and/or equipment damage. These instructions indicate the level of potential hazard by label of "Caution", "Warning" or "Danger". To ensure safety, be sure to observe ISO4414 (Note 1), JIS B 8370 (Note 2) and other safety practices.

Note 1: ISO 4414: Pneumatic fluid power – Recommendations for the application of equipment to transmission and control systems.

Note 2: JIS B 8370: Pneumatic system axiom.

CAUTION : Operator error could result in injury or equipment damage.

WARNING: Operator error could result in serious injury or loss of life.

DANGER : In extreme conditions, there is a possible result of serious injury or loss of life.

WARNING

1. The compatibility of pneumatic equipment is the responsibility of the person who designs the pneumatic system or decides its specifications.

Since the products specified here are used in various operating conditions, their compatibility for the specific pneumatic system must be based on specifications or after analysis and/or tests to meet your specific requirements.

2. Only trained personnel should operate pneumatically operated machinery and equipment.

Compressed air can be dangerous if an operator is unfamiliar with it. Assembly, handling or repair of pneumatic systems should be performed by trained and experienced operators.

3. Do not service machinery/equipment or attempt to remove component until safety is confirmed.

- 1) Inspection and maintenance of machinery/equipment should only be performed after confirmation of safe locked-out control positions.
- 2) When equipment is to be removed, confirm the safety process as mentioned above. Switch off air and electrical supplies and exhaust all residual compressed air in the system.
- 3) Before machinery/equipment is re-started, ensure all safety measures to prevent sudden movement of cylinders etc. (Bleed air into the system gradually to create back-pressure, i.e. incorporate a soft-start valve).

4. Contact SMC if the product is to be used in any of the following conditions:

- 1) Conditions and environments beyond the given specifications, or if product is used outdoors.
- 2) Installations in conjunction with atomic energy, railway, air navigation, vehicles, medical equipment, food and beverage, recreation equipment, emergency stop circuits, press applications, or safety equipment.
- 3) An application which has the possibility of having negative effects on people, property, or animals, requiring special safety analysis.

CAUTION

Ensure that the air supply system is filtered to 5 micron.

Specifications

Fluid	Copper alloy Stainless steel	Water & non-corrosive liquid Liquid compatible with stainless steel
Operating pressure	Max. 9.9 kgf/cm ²	
Proof pressure	17.5 kgf/cm ²	
Isolation	100MΩ or more (at 500VDC)	
Voltage proof	AC1500V for one min.	
Contact	1ab	

Micro switch ratings

Voltage	Resistance load	Inductive load cosφ=0.4	Motor, lamp load	
			N.C	N.O
125V AC	15A	10A	3A	1.5A
250V	15A	10A	3A	1.5A
125V	0.5A	-	-	-
250V DC	0.25A	-	-	-

Fluid and ambient temperature range

Fluid temperature	*Corresponding ambient temperature
70°C or less	70°C (70°C) or less
80°C	58°C (60°C) or less
90°C	47°C (50°C) or less
100°C	35°C (40°C) or less

* () : for IF32.

Installation

WARNING

Ensure all AIR and Power supplies are ISOLATED before commencing installation.

Do not use these switches in explosive atmospheres.

Avoid installations where water can enter the switch housing.

CAUTION

Mount the switch ensuring that the flow direction coincides with the flow direction arrow on the switch body.

The switch can be mounted in any direction.

Ensure that a straight run of pipe, at least 5 times the pipe OD, is provided either side of the switch body.

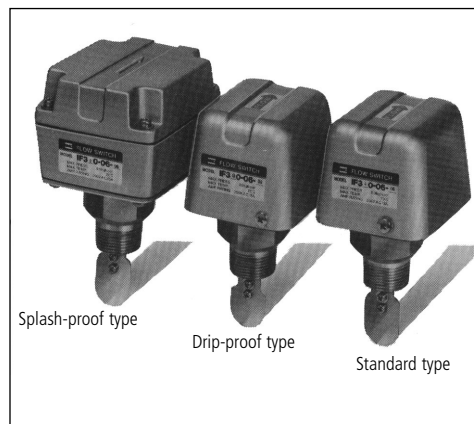


Fig 1

Construction (Fig 2)

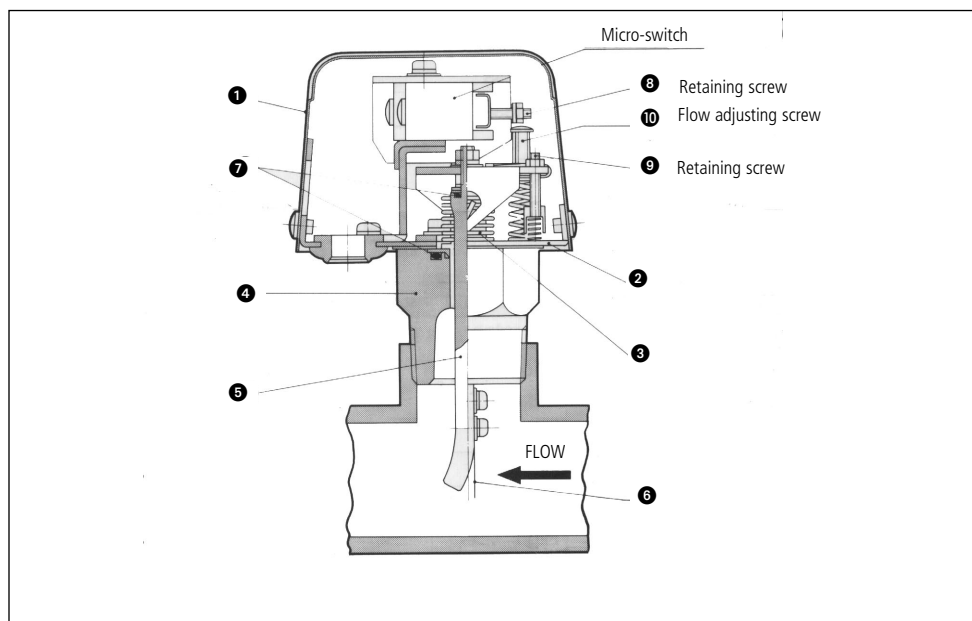


Fig 2

Parts list

No.	Description	Material		
		IF 30	IF 31	IF 32
1	Cover	Steel	Steel	Aluminum
2	Mounting plate	Steel	Stainless steel	Stainless steel
3	Bellows	Phosphor bronze or stainless steel		
4	Body	Brass or stainless steel		
5	Mobile bar	Brass or stainless steel		
6	Paddle	Phosphor bronze or stainless steel		
7	O-ring	NBR or FPM		

Micro switch terminals (Fig 3)

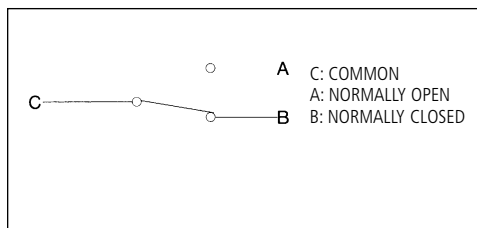


Fig 3

Maintenance

WARNING

Ensure that AIR and POWER supplies are ISOLATED before carrying out any maintenance work.

Flow adjustment

Rotate the flow adjustment screw 10 (Fig 2), clockwise to increase flow.

NOTE: Table shows the relationship between % flow rate and the number of turns of the adjusting screw. CAUTION: This table is a GUIDE only. For precise settings a flow meter should be used.

Number of turns	0	1	2	3	4	5	6	7	8	9	10	11	12 times
ON-flow setting	30	40	50	59	68	74	80	85	89	93	96	98	100%
Max. ON-flow													

Do not disturb factory settings of screws nos. 8 and 9 as shown in construction view.

Enclosure

Standard type	Indoor applications away from moisture.
Drip-proof (JIS C0920)	Indoor or outdoor applications can tolerate water drip.
Splash-proof (JIS C0920)	Sealed construction can tolerate hosing or salt laden atmosphere.

Applicable fluid

Applicable fluid depends on fluid-contact material.

Please select appropriate material according to the specifications.

Applicable fluid	Materials in contact with fluid			Seal material
	Bellows	Paddle	Others	
City water, industrial water	Phosphor bronze	Phosphor bronze	Brass	NBR
Low viscosity oil not compatible with nitric rubber such as L.P. oil, cutting oil etc	Phosphor bronze	Phosphor bronze	Stainless steel	FPM
Sea water, corrosive water*	Stainless steel	Stainless steel	Stainless steel	FPM

* Please contact SMC representative when using such fluid.

For additional information please contact your local SMC office, see details below:

When you enquire about the product, please contact the following

SMC Corporation:

ENGLAND	Phone 01908-563888	GERMANY	Phone 6103-402-0
ITALY	Phone 02-92711	FRANCE	Phone 1-64-76-10-00
HOLLAND	Phone 020-6255525	SWEDEN	Phone 08-7088590
SWITZERLAND	Phone 052-34-0022	AUSTRIA	Phone 02262-62-280
SPAIN	Phone 945-290600	IRELAND	Phone 01-4501822
GREECE	Phone 01-3426076	DENMARK	Phone 8738-0800
FINLAND	Phone 358-0-6750033	NORWAY	Phone 67-13-4080
BELGIUM	Phone 03-234-14-44	POLAND	Phone 48-22-6131847
TURKEY	Phone 212-2211512		