# **SF Flow Switch Operation Manual**

## **PRINCIPLE**

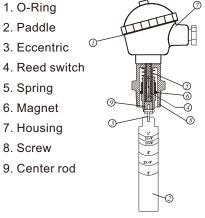
Flow Switch utilizes the force of liquid flow to propel its paddle in order to detect the incoming flow or moving of the existing liquid in pipe. In condition of static liquid or no liquid, the spring is expanding and press the magnet downward vertically. Reedswitch contact is N.O.

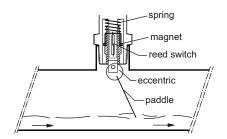
As flow occurs and the paddle is thrusted and raised at an upward angle of 20°~30°, the eccentric of paddle will push the magnet upward to actuate the reed switch which is thusin a close circuit.

The length of paddle can be adjusted with the diameter of a pipe.

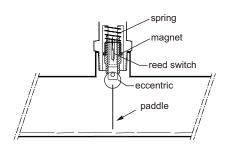
## **SECTIONAL DRAWINGS**

- 1. O-Ring
- 2. Paddle
- 3. Eccentric
- 5. Spring
- 6. Magnet
- 7. Housing
- 8. Screw
- 9. Center rod



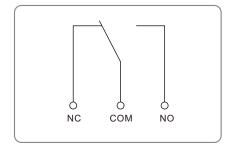


Switch on in case of liquid flowing in pipes



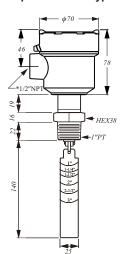
Switch off in case of no moving liquid in pipes

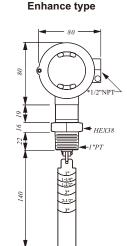
#### WIRING



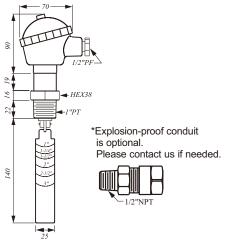
#### **DIMENSION**

MODEL: SF1710 **Explosion-Proof type** 





## MODEL: SF1800 Standard type



## **SPECIFICATION**

Model	SF1	SF1800			
Model	Explosion-Proof type	Explosion-Proof type Enhance type			
Housing material	Stainless steel, IP65	Aluminum Alloy, Ex d	Aluminum Alloy, IP65		
Process temp.	-30 ~ 130°C	-30 ~ 150°C	-30 ~ 150°C		
Wetted material	SUS304				
Operation pressure	Max.355 PSIG				
Pressure drop allowance	3 PSIG				
Set point tolerance	±25%				
Repeatability tolerance	±5%				
Contact capacity	1A,40W 230Vac / 30Vdc SPDT	1A,60W 220Vac / 200Vdc SPDT			
Certification	NEPSI Ex d IIC T4~T6 Gb	N/A			

### FLOW CONTROL RANGE TABLE

Pipe spec.		1"	1-1	1/2"	:	2"	2-	1/2"	;	3"
Flow volume  Paddle length  Min.	Act.	De-Act.	Act.	De-Act	Act.	De-Act.	Act.	De-Act.	Act.	De-Act.
1"	4.7	3.9	10.9	8.3	19.9	16.1				
1-1/4"			7.7	6.1	16.5	12.3	31.3	22.8		
1-1/2"			5.7	4.5	13.4	9.5	25.2	18.5		
2"					8.4	6.3	15.1	12.8	29.7	21.9
2-1/2"							13.9	10	20.4	15.4
3"									17.1	12.8

#### PRECAUTIONS WHEN USING THE PRODUCT

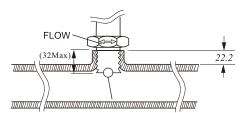
- Only the explosion proof type specifications can be used in explosive hazardous environments.
- 2. The product manufacturer must be contacted to handle the repairs involving explosion proof joints.
- There should be no harmful gases which can corrode the housing of the product on the installation site.
- 4. Due to the characteristics of the density for some of the measured liquid will be changed against the pipe temperature, which will affect the position of the actuation points. Please contact us for assistance.
- 5. Please regularly remove impurities or sediment from the pipe to avoid hardening and affect the normal operation of the paddle.
- 6. The product shall be installed in the explosion proof zone. The conduit must be equipped with cable connector or plug-in cap approved by qualified certification agency for explosion proof standards; Ex d IIC Gb and the number of meshing buckles must be more than 5 buckles before it can be used in the explosive hazardous environments.
- In the explosion proof mark of the product, the relation between the temperature group & measured medium temperature & permissible maximum surface temperature are as follows,

Temperature group	T4	T5	Т6
Medium temperature	≦ 135°C	≦ 100°C	≦ 95°C
Permissible maximum surface temperature	≦ 130°C	≦ 95°C	≦ 80°C

- \*The product's tolerable temperature shall be based on the latest product catalog issued by the Company and managed in accordance with the explosion proof certification mark.
- 8. The product is equipped with a grounding terminal and reliable grounding shall be connected in installation for use.
- 9. The warning of "Open the Cover Only after Power off" must be strictly complied with when using and maintaining in the field.
- 10. The users are not allowed to replace the parts and components of the product by themselves. They shall work together with the product manufacturer to resolve the problems that occur during operations to prevent damage.
- 11. The installation, use and maintenance of the product must strictly comply with the product instructions and the following relevant standards:
  - GB3836.13 (IEC 60079-19) "Electrical apparatus for explosive gas atmospheres. Part 13: Equipment repair, overhaul and reclamation."
  - GB3836.15 (IEC 60079-14) "Electrical apparatus for explosive gas atmospheres. Part 15: Electrical installation in hazardous areas" (other than mines).
  - GB3836.16 (IEC 60079-17) "Electrical apparatus for explosive gas atmospheres. Part 16: Inspection and maintenance of electrical installation." (other than mines).
  - GB50257-2014 "Code for construction and acceptance of electric device for explosion atmospheres and fire hazard electrical equipment installation engineering."

#### **INSTALLATION**

- Paddle length conditions actuation point.
   Paddle length is confined by conduit length and desired actuation point. Then cut the paddle from the properly-marked line. (User may also mark the desired length and cut )
- The paddle must be parallel to the sectional area of a pipe and the mounting screw is 1" NPT
- 3. The FLOW mark on the screw hexagon must be parallel to the pipe and the ground.
- 4. Before installing the unit to T pipe, be sure to apply tape seal to the screw then tighten up.
- It is not recommended to use the 1" NPT plastic pipe. (Please refer to below for installation)



#### TROUBLE SHOOTING

Abnormal condition	Cause	Solution		
	The flow is too low for unable to push the paddle	Increase the flow volume or reduce the diameter of the pipe		
Liquid flow, switch indicates no flow	The flow is too large to cause the paddle bent & unable to restore	Slow down the initial speed and replace with a good one		
	The paddle is too long against the pipe wall for unable to push	Cut the paddle according to the diameter of the pipe		
	The switch contacts reach the end of life and have poor contact	Contact with the local sales representative.		
Liquid stop, the switch indicates the flow	The paddle is deformed & touch the pipe wall for unable to return	Flatten the paddle or replace with a new one		
	The magnetic impurities can be attracted to the magnet to prevent the swing of the paddle	Make the change to use SPX flow switch		
	Too much sediments in the pipe and affect paddle return	Remove the obstacles and reinstall		
	The switch contacts reach the end of life and have poor contact	Contact with the local sales representative.		

If the failure is not listed or cannot be resolved, please contact your local business representative.





