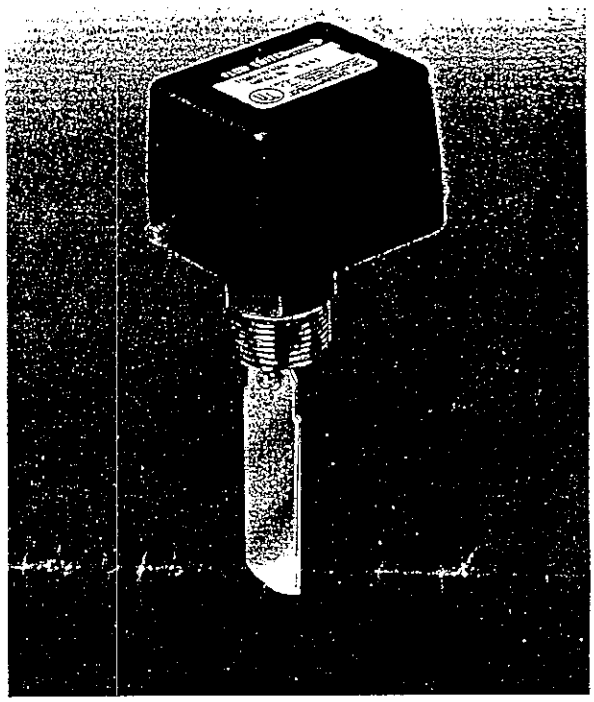
FLOW SWITCHES

GENERAL DESCRIPTION

Type FQS is a paddle type flow switch for general fluid line applications.
SPDT contact mechanism makes or breaks an electric circuit when flow starts or stops. As all components that come in contact with the fluid are made of copper alloy, the switch can be used for any fluid which does not danger to copper alloy.
Electrical contact block is completely sealed from the fluid in the line by copper alloy bellows.
The paddle consists of three segments that can be removed or trimmed with Paddle Fixing Screw for use in proper pipe from 1" to 6" in diameter.
The switch is factory set at the minimum flow rate unless otherwise specified when ordering. (See Flow Rate Table.)



CONSTRUCTION & ADVANTAGES

Catalog No.	Paddle Size	Usable Line Size	Switch Action	Max Fluid Press. MPa{kgf/cm²}	Max. Fluid Temp. (°C)	Connection	Description	Wt. (kg)
FQS-U30G	consist of 1", 2" & 3" Paddles.	1"--6"	SPDT	0.981 {10}	80	1" MPT (R1)	Standard Model	0.6

Ambient Temperature: 5 to 80°C
Ambient Humidity: 80%RH or less
*Type FQS flow switches with Stainless Steel Paddles are available upon request.
*DC (Direct Current) Model is available upon request.
*6" paddle (BQS-CCJ032) is available upon request.

Model	Standard	
Voltage (V) / Current (A)	125V AC	250V AC
Full Load Amp.	3.5	2.5
Locked Rotor Amp.	21	15
Non-Inductive Amp.	15	15

ECOTHERM INC.
588 Edward Avenue, Unit #39
Richmond Hill, ON, Canada L4C 9Y6
(905) 737-2113 Fax: 737-7319

FLOW RATES

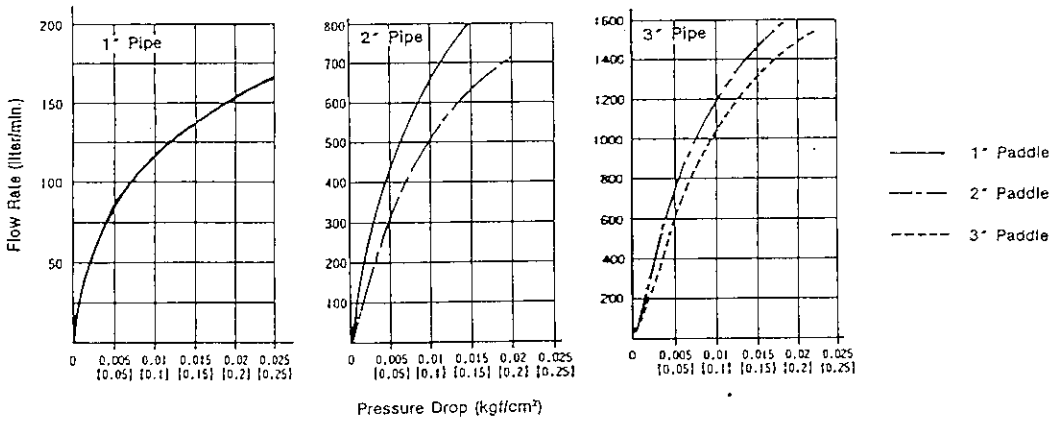
Pipe Size	Paddle Size	Adjustable Flow (liter/min) Min.		Max.	
		Flow Decrease	Flow Increase	Flow Decrease	Flow Increase
1″	1	18	(21)	45	(50)
1¼″	1	43	(46)	100	(102)
1½″	1	63	(68)	140	(145)
2″	1	105	(120)	250	(255)
2½″	1	195	(200)	565	(570)
3″	1	360	(370)	850	(880)
2″	2	50	(58)	150	(155)
2½″	2	105	(120)	355	(360)
3″	2	170	(180)	480	(490)
4″	2	330	(350)	940	(950)
3″	3	100	(115)	225	(260)
4″	3	200	(210)	600	(610)
5″	3	350	(380)	1120	(1140)
6″	3	530	(570)	1700	(1800)

This table shows adjustable flow rate based on actual test data when 1″, 2″ and 3″ paddles are used for 1–6″ pipes. Differential (a difference between switch-ON and switch-OFF) depends on the condition of flow.
(Flow rates for "Flow Increase" shown in parenthesis are calculated value.)

Note: Flow Decrease: Flow amount at which the switch operates when a flow is decreasing.
Flow Increase: Flow amount at which the switch operates when a flow is increasing.

PRESSURE DROP CHARACTERISTICS

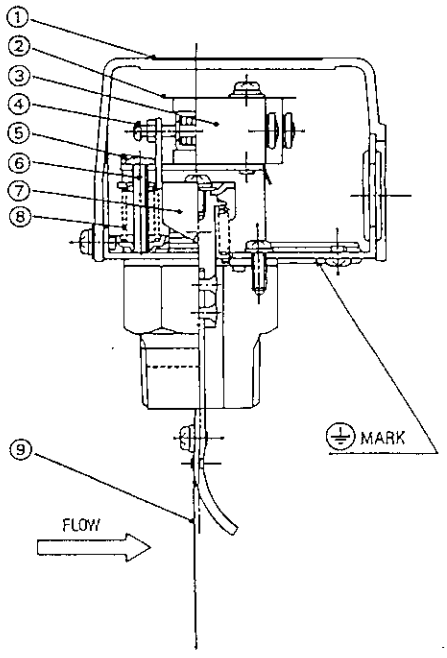
These charts show fluid pressure drop caused by 1″, 2″ and 3″ paddles that are used for 1″, 2″ and 3″ pipes.



ADJUSTMENT

Turn the Flow Adjusting screw ⑥ clockwise to increase operating flow rate. Adjusting screw ④ for differential should not be adjusted in the field.

1. Label
2. Insulated Plate
3. Micro switch
4. Adjusting screw (Do not touch)
5. Metal fitting for flow adjusting
6. Flow Adjusting screw
7. Actuating plate
8. Adjusting spring
9. Paddle



INSTALLATION INSTRUCTIONS

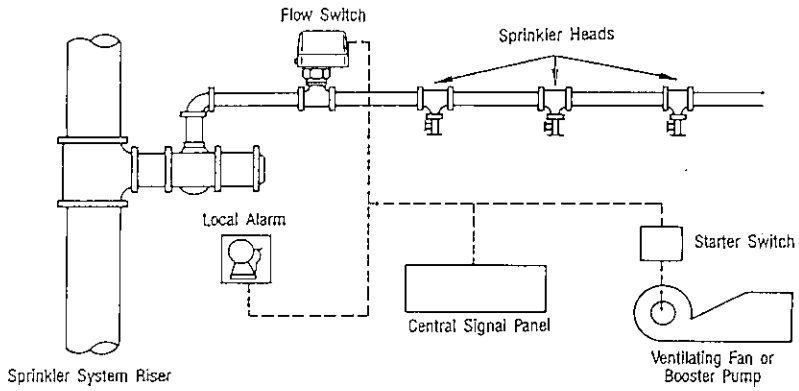
1). The switch should be screwed into a pipe by depth of 12.0±1.2mm. (Please note that the flow characteristics shown in the Flow Rate Table is based on such installation.) Liquid flow direction should be in accordance with an arrow mark on the switch body.

2). Install the switch to a pipe where there can be a straight-line length of at least five times the pipe diameter before the switch in the upper-stream. (This is for prevention of hunting to be caused by a turbulent flow.)

3). The switch (FQS) is supplied with the paddle consisting of 3 segments for pipe sizes ranging from 1″ to 3″ and set at the minimum flow rate unless otherwise specified when ordering. The individual segments can be removed or trimmed, as required for the pipe size involved.

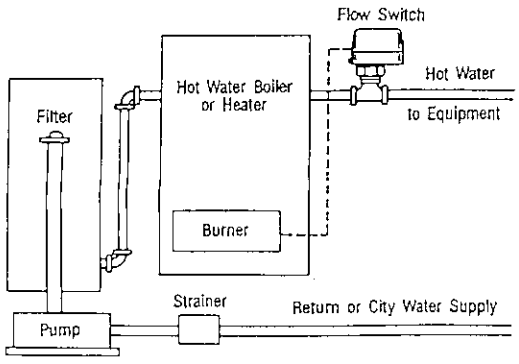
TYPICAL APPLICATION EXAMPLES

Fire Sprinkler System



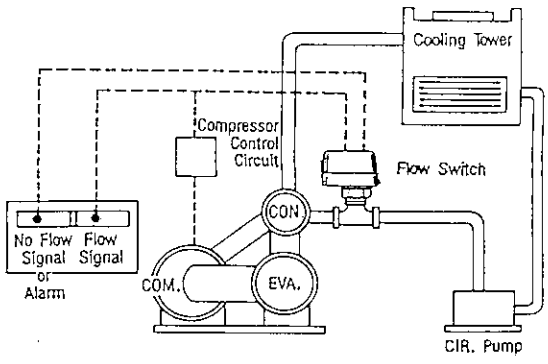
Water Flow Switch used as a safety control to activate alarms or signals, and to start or stop mechanically when fire occurs.

Hot Water Supply System



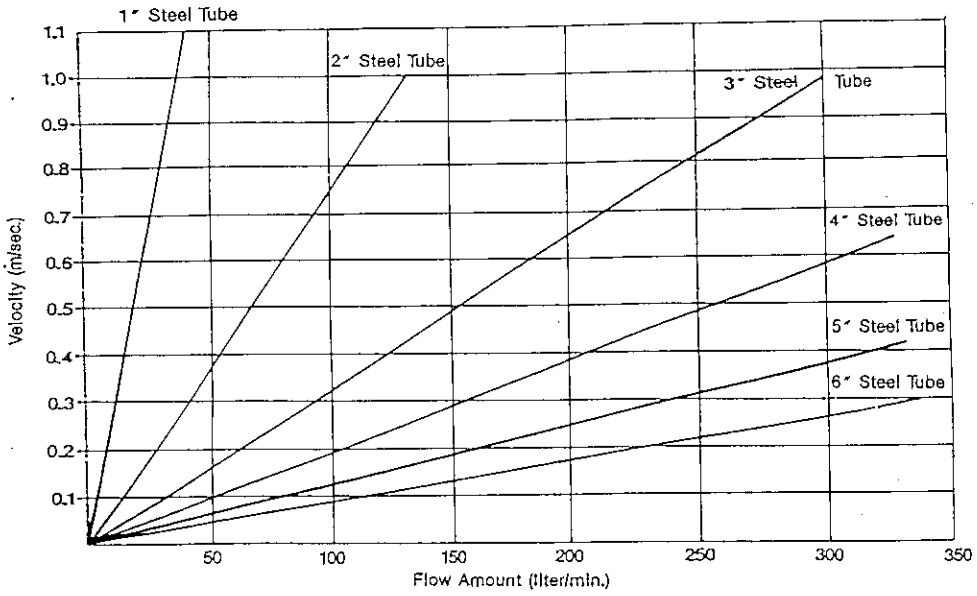
Flow Switch used as an actuating and safety control on instantaneous hot water heating units.

Air Conditioning System



Flow Switch used as a safety control and automatic signaling device in a condenser cooling water system.

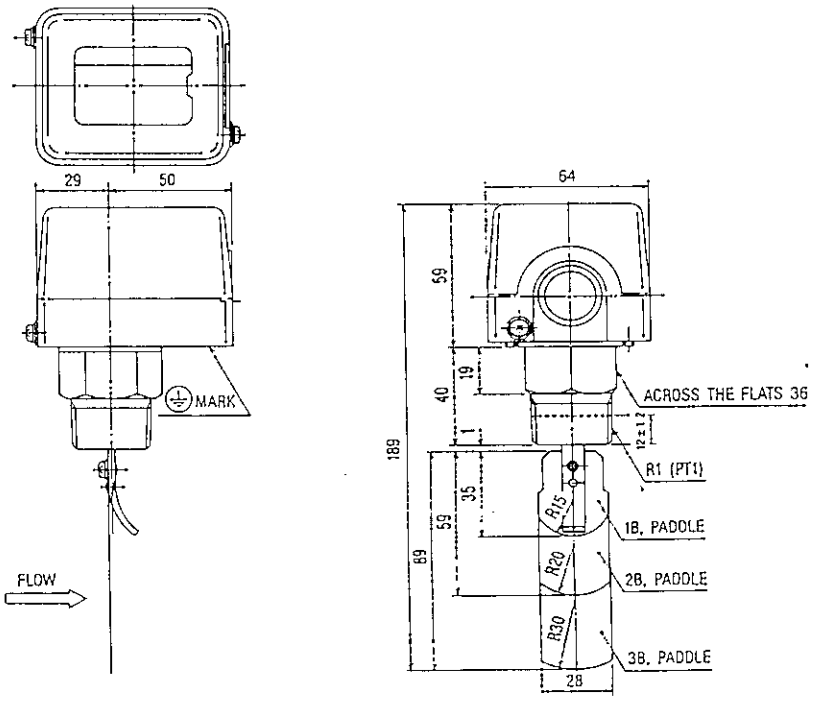
FLOW AMOUNT—FLOW VELOCITY CHARACTERISTICS



Q : Flow Amount (liter/min.)
V : Velocity (m/sec.)
d : Pipe I.D. (mm)

$$Q = \frac{\pi d^2}{4} \times V \times 6 \times 10^{-2} \text{ (liter/min.)}$$

DIMENSION DRAWINGS



Note: Dimension in mm

⚠ NOTES FOR SAFETY

Failure to read and follow all instruction carefully before installing or operating the product could cause personal injury and/or property damage.

Specifications are subject to change without notice.

SAGINOMIYA SEISAKUSHO, INC.
Shinhanzomon Building, 13-1, Ichiban-cho, Chiyoda-ku, Tokyo 102 Japan
Tel. +81 3 3238-1251
Fax. +81 3 3238-1252
Telex. 2322168 NISIMI J

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