

Flow Switches for Liquids / Gases (-1S2 or -2S2 Options)

Sturdy in-line metal construction (Bronze, SST & Monel) are fitted with 1 (option 1S2) or 2 (option 2S2) single pole double throw reed switches for safety interlock or control circuits.

Features and Benefits

- 3.5" (90mm) 270° analog dial for reading at a glance
- Suitable for use with opaque and clear fluids.
- Measures 6:1 range with $\pm 3\%$ F.S. accuracy
- Liquid flow ranges from 4 GPH (15 l/h) in 1/2" flow meter to 3000 GPM (12000 l/m) in 8" flow meter.
- Gas flow ranges from 40 SCFH (1 Nm³/h) in 1/2" flow meter to 20,000 SCFM (600Nm³/m) in 8" flow meter.

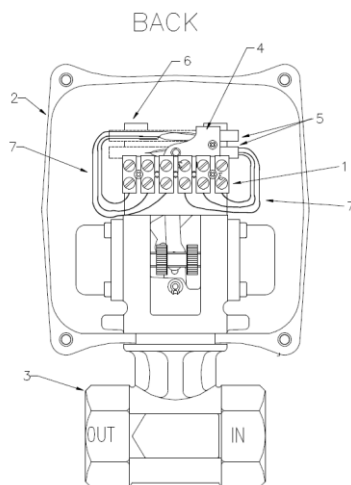


Applications

- Chillers
- Liquid Cooled UHF TV Transmitters
- Industrial Energy & Utilities

Principle of Operation

Our differential pressure flow meters are based on the premise that the pressure drop across the meter is proportional to the square of the flow rate. The flow rate is obtained by measuring the pressure differential and extracting the square root. Our single pole double throw switches can be adjusted independently from 30% to 90% of full scale.



- 1 – Terminal Strip
- 2 – Housing
- 3 – Body
- 4 – Reed Switch Clamp
- 5 – 2S2 Reed Switches
- 6 – Reed Switch Bracket
- 7 – Reed Switch Wires

Specifications

	Standard	Options
Housing	Polycarbonate	Aluminum
Body	Bronze	Monel 316 SS
Bellows	Bronze	Monel 316 SS Inconel
Seals	Buna-N	Viton EPR Teflon
Crystal	Polycarbonate	Glass Plastic
Gear Movement	Bronze	316 SS
Pressure		
Maximum	180 psig	400 psig
Minimum	10 psig	10 psig
Temperature		
Maximum	212°F	350°F
Minimum	-30°F	-80°F

Reed Switches

Setability	$\pm 5\%$ F.S.
Repeatability	$\pm 1\%$ F.S.
Hysteresis	7 to 13% F.S.
Contact Rating	10 Watts
Voltage	175 Vdc max. 125 Vac max.
Current	350mA max. switching 1.5 Amp max. carry

Model Number System

The example **1/2"-71-R-10-1S2** describes a 1/2" pipe size, 7000 series threaded connection, bronze material, flow from left to right, flow rate of 10 GPM, Options – 1 single pole double throw (1S2 option).

<u>1/2"</u>	-	<u>7</u>	-	<u>1</u>	-	<u>R</u>	-	<u>10</u>	-	<u>1S2</u>
Pipe Size		Series		Material		Flow Direction		Flow Rate		Options
1/4"	(8mm)	7000 Series		1 - Bronze		L – Right to Left		See Flow Chart		See Table
1/2"	(15mm)	8000 Series		2 - Monel		R – Left to Right				
3/4"	(20mm)			3 - SST		VUR – Vertical Up Flow Dial Right				
1"	(25mm)					VUL - Vertical Up Flow Dial Left				
1 1/2"	(40mm)					VDR - Vertical Down Flow Dial Right				
2"	(50mm)					VDL - Vertical Up Flow Dial Left				
2 1/2"	(65mm)									
3"	(80mm)									
4"	(100mm)									
5"	(125mm)									
6"	(150mm)									
8"	(200mm)									

Table of Options

A	Viton Seals
B	EPR Seals
B2	Teflon Seals
C	Calibrated for Specific Gravity
D	Gasketed Case
D2	Gasketed Case w/Condulet
E	Non-Standard Flow Rate
ES	Low Flow Rate (Below 2 GPM)
F	Aluminum Housing w/Plastic Dial Crystal
F2	Aluminum Housing w/Glass Dial Crystal
G	Custom Scales and Dials
H	High Pressure Service (400 psig max.)
I	Compressed Gas Service
P	Panel Mount
R2	Remote Readout, Brass (Mech. Indicator)
R3	Remote Readout, 316 SS (Mech. Indicator)
T	Expanded Temperature (-80°F-350°F max.)
V	High Viscosity Service (5-500 cps)
1S2	1 Single Pole Double Throw Switch
2S2	2 Single Pole Double Throw Switches

Flow Ranges – Series 7000 & 8000

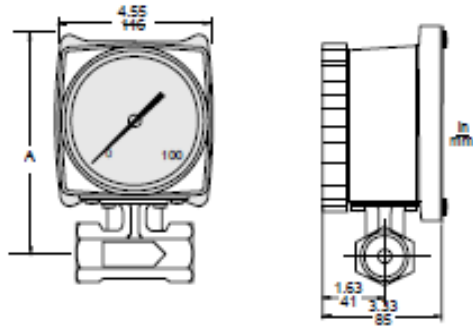
Size	Liquids				Gases		Size	Liquids			Gases	
	GPM	LPM	SCFM	Nm³/h	SCFM	Nm³/h		GPM	LPM	SCFM	Nm³/h	
1/4	2	8	10	15	2 1/2	60	240	600	1000			
1/4	3	10	20	30	2 1/2	100	400	800	1200			
1/4	4	15	30	50	2 1/2	150	600	1000	1500			
2 1/2	200	800	1200	2000								
1/2	2	8	10	15	3	200	800	1000	1500			
1/2	3	10	20	30	3	300	1000	2000	3000			
1/2	4	15	30	50	3	400	1500	3000	5000			
1/2	6	25	40	80	3	500	2000	4000	6000			
1/2	10	40	60	100								
3/4	6	25	60	100	4	300	1000	1500	50			
3/4	10	40	100	150	4	400	1500	3000	100			
3/4	15	60	150	200	4	600	2400	5000	150			
3/4	20	80	200	300	4	800	3000	6000	200			
1	15	60	150	250	5	300	1000	1500	50			
1	20	80	200	400	5	400	1500	3000	100			
1	30	120	300	500	5	600	2400	5000	150			
1	40	150	400	600	5	800	3000	6000	200			

Low Flow Rates – Option ES

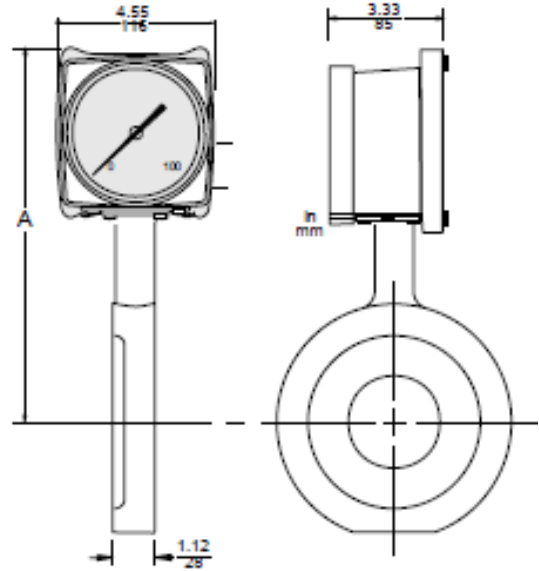
Size	GPH	l/h	cc/m	1 1/2	30	120	300	500	6	600	2400	3000	100
1/2	4	15	200	1 1/2	40	150	400	600	6	800	3000	5000	150
1/2	6	20	300	1 1/2	60	240	600	1000	6	1000	4000	8000	250
1/2	10	40	400	1 1/2	100	400	800	1200	6	2000	8000	15000	400
1/2	15	60	600	2	40	150	400		8	600	2400	5000	150
1/2	20	80	1000	2	60	240	600		8	1000	4000	8000	250
1/2	30	120	2000	2	100	400	800		8	2000	8000	15000	400
1/2	40	150	3000	2	150	600	1000		8	3000	12000	20000	600
1/2	60	240	4000	2	200	800	1200						
1/2	100	400	6000										

Note: Available with 1/2" 7000 Series Only

7000 Series – 1/4" to 3" Connections



8000 Series – 1/2" to 8" Connection



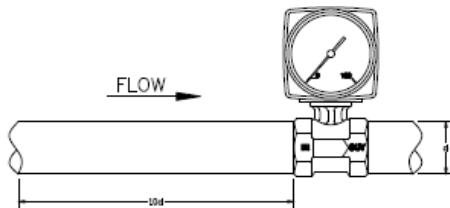
Dimensions

Nominal Sizes		Series 7000 – A		Series 8000 - A	
In	mm	In	mm	in	mm
1/4	08	5.95	151	n/a	n/a
1/2	15	5.95	151	6.62	168
3/4	20	5.95	151	7.06	179
1	25	6.07	154	7.25	184
1 1/2	40	6.39	162	7.81	198
2	50	6.80	172	8.00	203
2 1/2	65	n/a	n/a	8.54	217
3	80	7.48	190	8.87	225
4	100	n/a	n/a	9.95	252
5	125	n/a	n/a	10.36	263
6	150	n/a	n/a	11.05	280
8	200	n/a	n/a	12.30	311

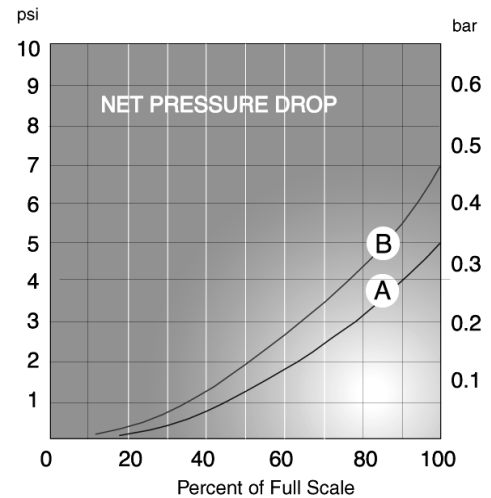
Note: Dimensions are based on bronze meters.

Piping Requirements

The site selected should provide at least 10 pipe diameters of straight meter sized pipe between the meter inlet and any upstream fitting such as elbow, tee or valve.



Pressure Drop Characteristics



Curve A – Bronze Bellows
Curve B – Monel, SS, Inconel Bellows

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