

LOW FLOW GLASS TUBE VARIABLE AREA FLOWMETER

Introduction

The Nixon NFX Glass Tube Variable Area Flowmeter is available in a full range of lengths and is available scaled for liquid or gas measurement. Customised scales match the meter to specific conditions. There is a choice of three scale lengths for optimum readability or compact installation. Repeatability is better than 0.5% of reading to improve process control. An optional needle valve is available for precise control at reduced cost.

The tubes are removable from the frame for easy cleaning/replacement. Angled or straight connections allow for flexible pipe layout. The meters can be simply mounted to reduce installation costs. The instruments have a retained polycarbonate cover to ensure operator safety in the event of a breakage. The units are aesthetically styled to suit integration into original equipment.

Technical Data

Flow Ranges	Gas Range 5 cc/min - 115 l/min (Air Equivalent)
	Liquid Range 1.0 cc/min - 4.8 l/min (Water Equivalent)
Scale Length Options	140mm / 100mm / 30mm
Accuracy Class - %	2.5 / 4 VDI/VDE
Temperature Range	-15°C to +120°C
Maximum Pressure	20 Bar Non Shock
Connections	Stainless Steel or Nickel Plated Brass 1/4" BSP Female
Seals	Viton, other options available
Flow Tubes	Borosilicate Glass
Float	Stainless Steel, Duraluminium & PEEK



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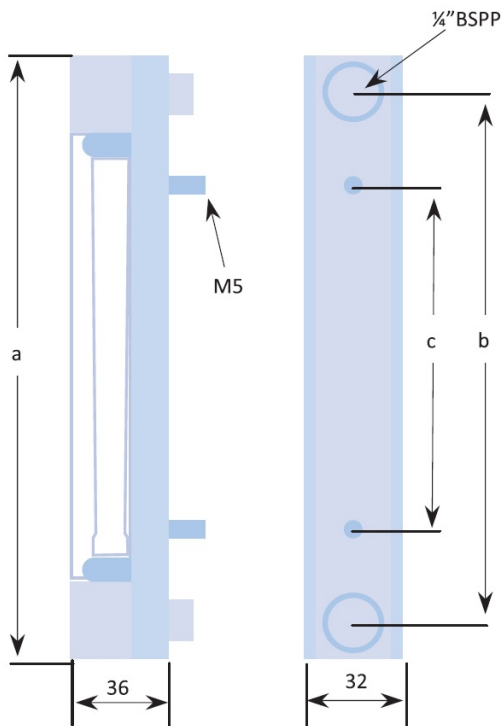
Operating Principle

Fluid flowing vertically through a tapered tube exerts an upward force on the float such that the float takes up a point of equilibrium where the downward weight is balanced by the upward thrust of the fluid. This point then represents a specific flowrate. Increase in fluid velocity will cause the float to rise again until the next equilibrium point is reached, and this represents a higher specific flowrate. The tube may thus be scaled in terms of flowrate in an almost linear manner.

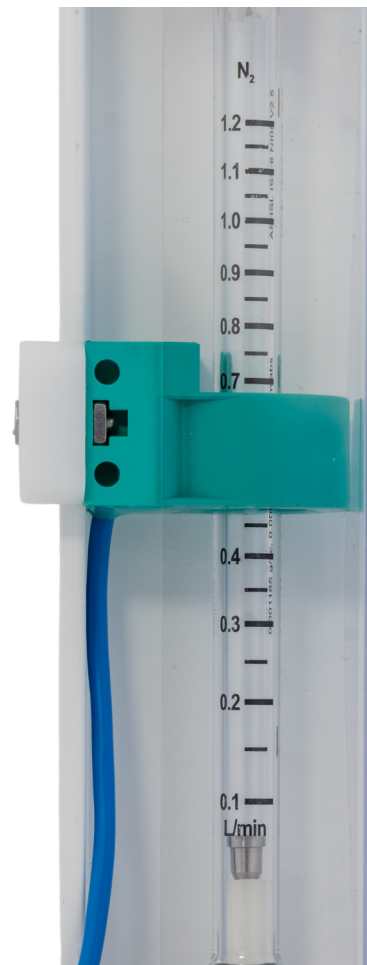
Ranging and scaling depends on three main factors:

- Shape and density of the float
- Taper of the tube
- Fluid density, viscosity & pressure (gases)

Several special versions of the NFX flowmeter are available. The long series provide maximum readability and extended flow ranges, suitable for laboratory and calibration applications. Accuracy of 1% of reading to fully traceable standards is available on request. An infrared alarm can be fitted which can be user Set to provide a switched output on safety critical applications. Units can be fitted with a bench stand for laboratory applications. Anaesthetic flow tubes for use in medical equipment are available for air, oxygen and nitrous oxide.



mm	Compact	Standard	Long
a	133	210	250
b	108	184	226
c	65	121	121



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Sizing Tables

Compact Glass Tubes					
Units	Air	Float Material	Tube Size	Tubes Floats are	Water H ₂ O
cm ³ /min	20-200	Dural	5	cm ³ /min	-
	50-500	Dural	9		15-80
l/min	0.2-1	Dural			-
	0.5-2.5	Dural			25-250
	0.5-5	Dural			10-700
	2-12	Dural			0.2-1
	5-25	St.Steel		-	

Long Glass Tubes					
Units	Air	Float Material	Tube Size	Floats are	Water H ₂ O
l/min	0.05-1.6	St.Steel	5	cm ³ /min	2-80
	0.3-4.6	PEEK	9		30-380
	0.5-16	Dural	15	l/min	0.5-1.5
	1-33	St.Steel			0.1-3.4
	5-115	St.Steel			0.1-4.8

Standard Glass Tubes													
Units	Water H ₂ O	Air AIR	Argon AR	Butane C ₄ H ₁₀	Carbon Dioxide CO ₂	Carbon Monoxide CO	Cracked Ammonia N:3H	Helium He	Hydrogen H ₂	Methane CH ₄	Nitrogen N ₂	Oxygen O ₂	Propane C ₃ H ₈
cm ³ /min	-	5-100	5-80	20-130	10-100	10-100	10-120	5-100	20-250	10-150	5-100	5-90	10-140
cm ³ /min	1-10	20-250	20-200	50-290	20-250	20-270	30-360	20-280	40-600	40-360	20-250	20-220	40-300
cm ³ /min	2-25	60-600	60-560	100-700	60-600	50-700	-	50-800	-	-	60-600	40-600	100-700
cm ³ /min	4-60	50-750	40-660	100-800	50-750	50-800	-	-	-	-	50-800	50-700	100-850
cm ³ /min	30-280	-	-	-	-	-	-	-	-	-	-	-	-
cm ³ /min	40-480	-	-	-	-	-	-	-	-	-	-	-	-
cm ³ /min	50-750	-	-	-	-	-	-	-	-	-	-	-	-
l/min	0.1-1.2	0.1-1.2	0.1-1	0.1-1.1	0.1-1.1	0.1-1.2	0.1-1.8	0.05-1.1	0.1-2	0.05-0.9	0.1-1.2	0.1-1.1	0.1-1.2
l/min	0.3-3	0.2-2	0.2-1.7	0.4-2	0.2-1.8	0.2-2	0.3-3	0.1-1.8	0.2-3.4	0.1-1.1	0.2-2	0.2-1.8	0.3-2.2
l/min	0.4-4.4	0.3-3.4	0.2-2.9	0.5-3	0.3-3	0.3-3.5	0.4-5.8	0.2-3	0.4-5.6	0.1-1.7	0.3-3.5	0.3-3.2	0.3-3.4
l/min	-	0.6-5	0.4-4	0.8-4	0.6-4.4	0.6-5	1-8	0.3-5.8	0.5-10	0.4-2.8	0.6-5	0.4-4.4	0.8-4.8
l/min	-	1-10	1-8	1.5-8	1-8.5	1-10	2-18	0.5-9	1-15	0.4-4.8	1-10	1-9.5	1.5-9
l/min	-	1-13	1-11	1-10	1-11	1-12	2-22	2-20	3-34	1-7	1-13	1-12	1-11
l/min	-	2-26	2-22	2-19	2-20	2-26	4-48	1-28	2-46	2-14	2-27	2-25	2-22
l/min	-	4-50	4-44	4-36	4-40	6-54	10-90	2-60	5-95	1-18	4-50	4-50	4-40
l/min	-	10-100	10-90	10-70	10-80	10-100	20-180	5-120	10-180	3-36	10-100	10-100	10-85
l/min	-	-	-	-	-	-	-	20-270	40-400	5-70	-	-	-
l/min	-	-	-	-	-	-	-	-	-	15-140	-	-	-

Customised scales can also be supplied to suit any more specific fluids, gases and operating conditions

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