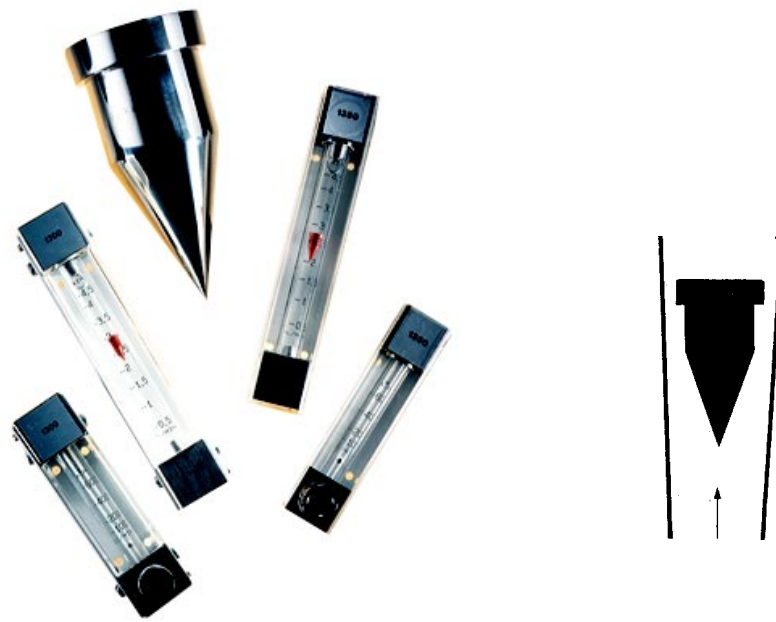


KDG

Rotameter Series 1300 & 1350 Variable Area Flowmeters

Data sheet
1709



Description of operation

Glass tube V.A. (variable area) flowmeter tubes taper over the full length with the internal diameter increasing towards the top.

The float settles at a position in the tube where its mass is just balanced by the upward forces due to the fluid flow through the annulus between float and tube. The greater the flow the higher the float must rise to create a larger annulus.

The float position and flow rate are read off against a graduated scale.

These instruments are intended for flow indication in purging systems, small analytical equipment and similar applications.

Features

- Calibration options
- Customised scales
- Optional flow control valve
- Optional downstream/upstream pressure regulator
- Choice of connection materials
- In-line, panel or free standing options
- A variety of accessories available

Construction

A steel (1300) or extruded aluminium (1350) channel carries at each end a connection block containing the fittings which secure the tube. A needle valve can be incorporated at either the inlet or outlet. The front of the instrument is protected by a transparent perspex dust cover.

Contact Materials

Metering tubes:		Borosilicate glass.
Connection blocks	1300:	Brass or 316 stainless steel
	1350:	Glass loaded nylon 12
Tube fittings:		316 stainless steel.
'O' rings and seals:		Viton or nitrile rubber
Valve body	1300:	Stainless steel or brass
	1350:	Brass
Float materials:		Refer to tables below

Connections

Internally screwed $\frac{1}{8}$ " BSP parallel. Normal arrangement is rear-pointing (angled), but straight-through connections are also available.

Calibration and Accuracy Options

TABLE A	Tubes 63mm long with "plumb-bob" floats. Scale length 38mm approx. Individually calibrated. Accuracy : to VDI/VDE 3513, Class 4 i.e. \pm (3% indicated flow + 1% full scale value). Float materials : Anodised light alloy (suffix A) and 316 stainless steel (suffix S).
TABLE B	Tubes 100mm long with "plumb-bob" floats. Scale length 75mm approx. Individually calibrated. Accuracy : to VDI/VDE 3513, Class 4 i.e. \pm (3% indicated flow + 1% full scale value). Float materials : Anodised light alloy (suffix A) and 316 stainless steel (suffix S).
TABLE C	Tubes 63mm long with ball floats. Scale length 38mm approx. Flow scales are produced mechanically - not by individual calibration. Accuracy : \pm 5% of full scale value (FSR) Grade P2 Float materials : Ruby (Suffix R), glass (suffix G) and 316 stainless steel (suffix S).
TABLE D	Tubes 100mm long with ball floats. Scale length 75mm approx. Flow scales are produced mechanically - not by individual calibration. Accuracy : \pm 5% of full scale value (FSR)Grade P2 Float materials : Ruby (Suffix R), glass (suffix G) and 316 stainless steel (suffix S).

The data above refers to the tables below and opposite. The tables give flow ranges for air and water. Tube and floats for other fluids are supplied to order. Please telephone our VA sales department for advice on 01293 525151

Table A

		AIR 15°C / 1013 mbar abs				WATER 20°C		
Tube	Float	cm ³ /min	l/min	l/h	ft ³ /h	cm ³ /min	l/h	g/h
G - A - 63	GA	100 - 400		10 - 25	0.2 - 1			
G - B - 63	GA		0.5 - 1.5	30 - 90	1 - 3			
G - C - 63	GA		0.5 - 2	50 - 150	1 - 5			
G - D - 63	GA		1 - 5	50 - 300	2 - 10			
G - A - 63	GS					15 - 45	1 - 2.5	0.2 - 0.6
G - B - 63	GS					40 - 120	3 - 7	0.5 - 1.5
G - C - 63	GS					50 - 150	3 - 10	0.6 - 2
G - D - 63	GS					100 - 300	5 - 20	1 - 4

Working Pressures & temperature

Gas service:	6 bar max. operating
Liquid service:	11.5 bar max. operating
Max. temperature:	60°C
Min. temperature:	0°C

Accessories

Connection nozzles for $\frac{1}{4}$ " rubber or plastic hose.
Bezel for flush panel mounting.
Differential pressure regulator (1300 only) for maintaining a constant flow despite up or down stream pressure variations. See data sheet 1711

Please note: The optional Needle valve fitted to this instrument is intended for flow control and is not designed to give absolute shut off. A separate shut off valve should be fitted if there is any risk of leakage creating a hazard.

Table B

		AIR 15°C / 1013 mbar abs				WATER 20°C		
Tube	Float	cm ³ /min	l/min	l/h	ft ³ /h	cm ³ /min	l/h	g/h
G - A - 100	GA	100 - 900		10 - 50	0.2 - 2			
G - B - 100	GA		0.5 - 2.5	30 - 150	1 - 5			
G - C - 100	GA		0.5 - 4.5	50 - 300	1 - 10			
G - D - 100	GA		1 - 10	100 - 600	2 - 20			
G - A - 100	GS					20 - 80	1 - 5	0.2 - 1
G - B - 100	GS					40 - 200	3 - 12	0.5 - 2.5
G - C - 100	GS					50 - 350	3 - 20	0.5 - 4.5
G - D - 100	GS					100 - 800	5 - 45	1 - 10

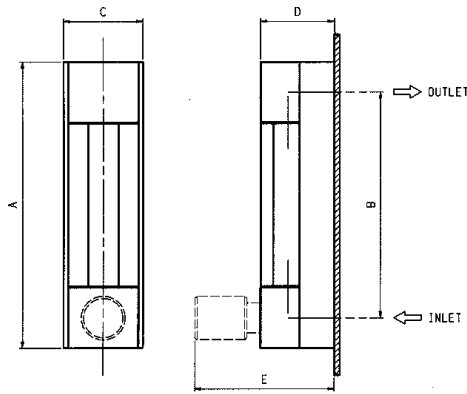
Table C

		AIR 15°C / 1013 mbar abs				WATER 20°C		
Tube	Float	cm ³ /min	l/min	l/h	ft ³ /h	cm ³ /min	l/h	g/h
2 - A - 63	B - 2 - R	50 - 150		3 - 9	0.1 - 0.3	1 - 2.5	0.04 - 0.12	0.01 - 0.03
2 - A - 63	B - 2 - S	100 - 300		5 - 15	0.2 - 0.6	2 - 5	0.1 - 0.3	0.02 - 0.06
2 - B - 63	B - 2 - R	50 - 250		3 - 15	0.1 - 0.5	1 - 5	0.1 - 0.3	0.02 - 0.06
2 - B - 63	B - 2 - S	100 - 500		5 - 30	0.2 - 1	2 - 10	0.2 - 0.6	0.05 - 0.15
2 - C - 63	B - 2 - R	50 - 400		5 - 25	0.2 - 0.8	1 - 6	0.1 - 0.4	0.02 - 0.1
2 - C - 63	B - 2 - S	100 - 600		5 - 40	0.5 - 1.5	2 - 15	0.2 - 1	0.05 - 0.2
2 - D - 63	B - 2 - R	200 - 1,000		20 - 60	0.5 - 2	5 - 20	0.2 - 1.5	0.05 - 0.3
2 - D - 63	B - 2 - S		0.5 - 1.5	30 - 90	1 - 3	10 - 40	0.5 - 2.5	0.1 - 0.5
4 - A - 63	B - 4 - G		0.5 - 2	30 - 100	1 - 4	5 - 30	0.5 - 1.5	0.05 - 0.3
4 - A - 63	B - 4 - S		1 - 4	50 - 200	2 - 8	20 - 100	1 - 6	0.25 - 1.25
4 - F - 63	B - 4 - G		2 - 6	100 - 300	4 - 12	40 - 120	2 - 8	0.5 - 1.5
4 - F - 63	B - 4 - S		4 - 12	200 - 600	10 - 25	100 - 300	6 - 18	2 - 4

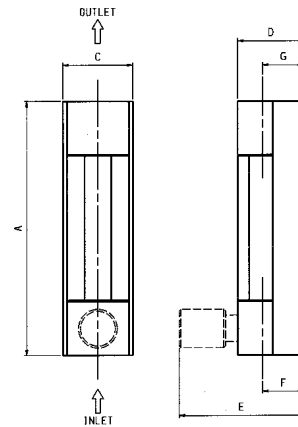
Table D

		AIR 15°C / 1013 mbar abs				WATER 20°C		
Tube	Float	cm ³ /min	l/min	l/h	ft ³ /h	cm ³ /min	l/h	g/h
2 - A - 100	B - 2 - R	50 - 300		3 - 20	0.1 - 0.7	1 - 6	0.05 - 0.3	0.01 - 0.07
2 - A - 100	B - 2 - S	100 - 600		5 - 35	0.2 - 1.2	2 - 12	0.1 - 0.7	0.02 - 0.16
2 - B - 100	B - 2 - R	50 - 700		3 - 40	0.1 - 1.4	1 - 14	0.1 - 1	0.02 - 0.2
2 - B - 100	B - 2 - S	100 - 1000		5 - 70	0.2 - 2	2 - 30	0.2 - 1.8	0.05 - 0.4
2 - C - 100	B - 2 - R	50 - 900		5 - 50	0.2 - 1.8	1 - 20	0.06 - 1.2	0.02 - 0.25
2 - C - 100	B - 2 - S		0.1 - 1.4	5 - 80	0.2 - 3	2 - 40	0.2 - 2.2	0.05 - 0.5
2 - D - 100	B - 2 - R		0.2 - 2	10 - 100	0.5 - 4	5 - 50	0.5 - 3	0.05 - 0.6
2 - D - 100	B - 2 - S		0.5 - 3	20 - 180	1 - 6	10 - 90	0.5 - 5	0.2 - 1.2
4 - A - 100	B - 4 - G		0.5 - 3.5	30 - 200	1 - 7	5 - 75	0.3 - 4.5	0.1 - 1.0
4 - A - 100	B - 4 - S		1 - 6	50 - 400	2 - 12	20 - 200	1 - 12	0.5 - 2.5
4 - F - 100	B - 4 - G		2 - 12	100 - 700	5 - 25	50 - 250	4 - 16	0.5 - 3.5
4 - F - 100	B - 4 - S		4 - 22	300 - 1300	10 - 45	100 - 600	10 - 40	2 - 8

Dimensions: Angled Connections



Dimensions: Straight Connections



Model	Tube length	A	B	C	D	E	F	F	G
					with cover fitted	valved only	non valved	valved only	
1300/1300V	63	105	83	32	27	51	17	9	17
1300/1300V	100	143	121	32	27	51	17	9	17
1350/1350V	63	105	83	27	27	55	14	14	14
1350/1350V	100	142	120	27	27	55	14	14	14

All dimensions in millimeters (+/- 0.5mm)

ORDERING INFORMATION

Code	Type							
1300	1300 series							
1350	1350 series							
Code	Tube & calibration option							
A	Tube and float from Table A							
B	Tube and float from Table B							
C	Tube and float from Table C							
D	Tube and float from Table D							
Code	Connection material							
N	Nylon (1350 series only)							
B	Brass (1300 series only)							
S	Stainless steel (1300 series only)							
Code	Control valve							
Y	Optional control valve required (see note 1)							
N	No valve							
Code	Inlet							
A	Rear pointing							
S	Straight through							
Code	Outlet							
A	Rear pointing							
S	Straight through							
OPTIONS								
Code	Mounting							
P	Bezel for flush panel mounting							
S	Standard perspex dust cover							
Code	Certificate							
C	Calibration certificate (tubes in table A & B only)							
1300	B	S	Y	A	A	P	C	Typical ordering information

KDG Instruments

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