

FLOWMETERS

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Riteflow™ Flowmeters

Compatible with a Wide Range of Gases or Liquids for Laboratory or Plant Applications

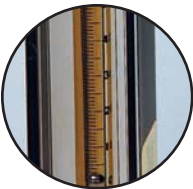
Used for flow measurements in the lab, process flows in pilot plants, metering carrier gases in chromatography, indicating and controlling gases in manufacturing processes and for indicating flow rates in pumping or flow systems. Formed from heavy-walled, shock-resistant borosilicate glass, these flowmeters can be used at operating pressures up to 200 p.s.i.g. and maximum temperatures of 121°C (250°F). They feature fused ceramic scales that are accurate to within $\pm 2\%$ of full scale. Repeatability is 0.25%. Uniformly tapered bores have internal rib guides to stabilize the glass, stainless steel or carbonyl floats. Flow measurement is taken by reading the center of the float on the universal scale. The number on the scale corresponds to a flow rate for the given fluid or gas on a calibration chart that is supplied. Flowmeters are available in four styles. 65mm scale, sizes 1-6 and 150mm scale sizes 1-5.

I. Unmounted Flowmeters

II. Guarded Flowmeters

III. PTFE Mounted Flowmeters

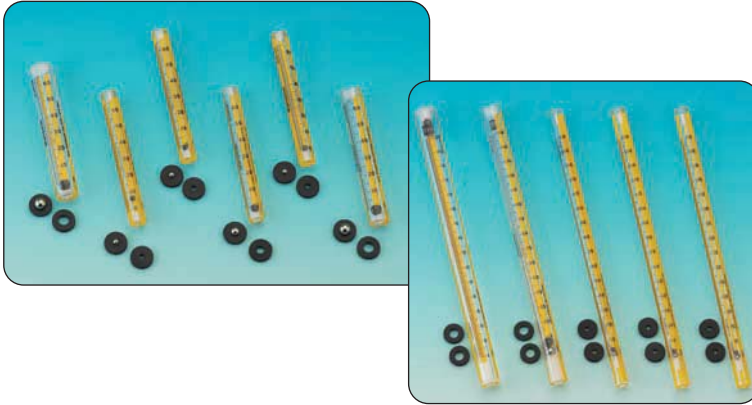
IV. Aluminum Mounted Flowmeters



Universal Millimeter Scales - 65mm and 150mm

Millimeter scales indicate the height to which the float rises within the flowmeter and are correlated with specific flow rates through the use of appropriate calibration data sheets or curves. Scales of this type permit utilization of a given flowmeter for a great number of different fluids at diverse pressure and temperature conditions.

See Tables of Standard Flow Capacities, On Page 124



I. Riteflow™ Flowmeters with Plain Ends (Unmounted)

Flexible tubing is connected directly to the top and bottom of the flowmeter and can be held in place with a clamp. Maximum pressure is 200 p.s.i.g., maximum operating temperature is 121°C (250°F).

65mm scale, 8cm (3³/₁₆" overall length.

CATALOG NO.	SIZE	O.D. INLET/OUTLET
H40400-0005	1	9.5mm / 9.5mm (3/8" . 3/8")
H40400-0010	2	9.5mm / 9.5mm (3/8" . 3/8")
H40400-0015	3	9.5mm / 9.5mm (3/8" . 3/8")
H40400-0020	4	9.5mm / 9.5mm (3/8" . 3/8")
H40400-0025	5	12.3mm / 11.9mm (3/8" . 15/32")
H40400-0030	6	14.3mm / 12.7mm (1/2" . 1/2")

150mm scale, 19cm (7¹/₂" overall length.

CATALOG NO.	SIZE	O.D. INLET/OUTLET
H40401-0035	1	9.5mm / 9.5mm (3/8" . 3/8")
H40401-0075	2	9.5mm / 9.5mm (3/8" . 3/8")
H40401-0125	3	9.5mm / 9.5mm (3/8" . 3/8")
H40401-0215	4	12.7mm / 12.7mm (1/2" . 1/2")
H40401-0305	5	12.7mm / 14.3mm (1/2" . 1/2")

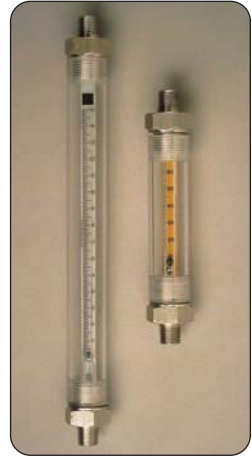
For Teflon® Tubing, See Page 418

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II. Riteflow™ Guarded Flowmeters

Guarded tubes provide additional protection against breakage, especially when used under high pressure. Includes one flowmeter inserted into a plastic cylindrical guard which has two end bushings, 6.3mm (¼") NPT fittings and an O.D. of 25.4mm (1"). Maximum operating pressure 200 p.s.i.g. with a maximum operating temperature of 65.5°C (150°F).



65mm scale, 15.2cm (6") overall length.

CATALOG NO.	SIZE
H40402-0005	1
H40402-0010	2
H40402-0015	3
H40402-0020	4
H40402-0025	5
H40402-0030	6

150mm scale, 26.3cm (10³/₈") overall length.

CATALOG NO.	SIZE
H40403-0055	1
H40403-0095	2
H40403-0145	3
H40403-0235	4
H40403-0325	5

Refer to Flow Rate Charts for Selection, On Page 124

Riteflow™ Mounted Flowmeters

Aluminum Housing with Built-In Valves for Ease of Use

Flowmeters are housed in a black anodized aluminum frame that features an exclusive tube-lock to prevent turning during locking. Once in place, the meter will not shift under pressure or vacuum. A special magnifying window runs the entire length of the scale for easy reading of flow measurements. Tubing connectors are rear mounted for attachment to an instrument when used as a bench stand. A Leveling Base (optional) assures that the meter is vertical, eliminating error caused by friction between the float and tube.



III. Riteflow™ PTFE Mounted Flowmeters

Mounted Flowmeters with PTFE Fittings have high chemical resistance and purity and have 9.5mm ($\frac{3}{8}$ ") straight glass connectors with PTFE and Kel-F® valves. Specifications: Maximum operating pressure 100 p.s.i.g. and maximum operating temperature 65.5°C (150°F). *Note: Riteflow™ PTFE mounted flowmeter is shown on leveling base sold separately, page 123.*

65mm scale: Dimensions are 158 x 31.8mm wide ($6\frac{1}{4}$ x $1\frac{1}{4}$ "). 12.7mm ($\frac{1}{2}$ ") mounting holes are located 139mm ($5\frac{1}{2}$ ") center to center.

CATALOG NO.	SIZE
H40404-0005	1
H40404-0010	2
H40404-0015	3
H40404-0020	4
H40404-0025	5
H40404-0030	6

150mm scale: Dimensions are 266 x 31.8mm wide ($10\frac{1}{2}$ x $1\frac{1}{4}$ "). 12.7mm ($\frac{1}{2}$ ") mounting holes are located 247mm ($9\frac{3}{4}$ ") center to center.

CATALOG NO.	SIZE
H40405-0035	1
H40405-0075	2
H40405-0125	3
H40405-0215	4
H40405-0305	5

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IV. Riteflow™ Aluminum Mounted Flowmeters

Mounted Flowmeters with Aluminum Fittings are economical and have Buna-N, 316 stainless steel and Delrin® valves with hose barbs that accept tubing from 8mm ($\frac{5}{16}$ "") to 9.5mm ($\frac{3}{8}$ "") I.D., which can be removed for use with female 3.2mm ($\frac{1}{8}$ "") NPT fittings. Specifications: Maximum operating pressure 200 p.s.i.g. and maximum operating temperature 121°C (250°F).



65mm scale: Dimensions are 15.8 x 3.2cm wide ($6\frac{1}{4}$ x $1\frac{1}{4}$ ""). 15.9mm ($\frac{5}{8}$ "") mounting holes are located 114mm ($4\frac{1}{2}$ "") center to center.

CATALOG NO.	SIZE
H40406-0005	1
H40406-0010	2
H40406-0015	3
H40406-0020	4
H40406-0025	5
H40406-0030	6

150mm scale: Dimensions are 26.6cm x 3.2cm wide ($10\frac{1}{2}$ x $1\frac{1}{4}$ ""). 15.9mm ($\frac{5}{8}$ "") mounting holes are located 222.3mm ($8\frac{3}{4}$ "") center to center.

CATALOG NO.	SIZE
H40407-0035	1
H40407-0075	2
H40407-0125	3
H40407-0215	4
H40407-0305	5



Roto-Flo™ Flow Indicators

Colored Paddle Wheels Go with the Flow

- Immediate visualization of flow
- Brightly colored polypropylene paddle wheel spins when gas or liquid flows through a system

Molded clear polystyrene body with smooth connecting barbs for easy installation. Internal flow channel diameter is 5mm, paddle wheel shell is 25mm, overall length is 51mm. Maximum recommended pressure is 10 p.s.i.g. Minimum flow: 0.5 LPM. Maximum flow: 10 LPM. Not for use with corrosive chemicals or fluids with a temperature in excess of 64°C (147°F). **Per each, 12 per case.**



CATALOG NO.	FITS TUBING I.D.	TUBE ENDS	WHEEL COLOR
H19937-0001	4.7 to 6.4mm ($\frac{3}{16}$ to $\frac{1}{4}$ "")	Straight	Blue
H19937-0002	4.7 to 6.4mm ($\frac{1}{4}$ to $\frac{5}{16}$ "")	Barbed	Red
H19937-0003	6.4 to 12.7mm ($\frac{3}{16}$ to $\frac{1}{2}$ "")	Barbed	Green



Flow Indicator

Provides Immediate Visual Indication of Water/Liquid Flow

- Highly visible, nylon indicator ball is housed in clear polycarbonate and rotates in circular channel during flow
- Continuity and relative flow rate indicated by speed of ball's rotation
- An arrow shows direction of flow

A minimum water flow rate of 100/ml per minute in a horizontal position and 140ml per minute in a vertical position is required to mobilize the ball. Upper flow limit is in excess of 1 liter/minute. Maximum working pressure is 10 p.s.i.g. (69 kN/m²). The polycarbonate indicator measures 30 x 57mm (1½ x 2¼") with two 23mm (.9") long tube extensions to accept 6.4mm (¼") to 9.5mm (⅜") I.D. tubing. Overall size is 76 x 57mm (3 x 2½") **Per each, 12 per case.**



CATALOG NO.

H19935-0000

Flow Monitor

Red Paddle Wheel Clearly Indicates Liquid or Gas Flow

- Clear outer case reveals bright red paddle wheel
- Paddle wheel spins freely with flow

This superior in-line device indicates liquid or gas flow from 95ml/sec. down to 5ml/sec. (or down to 3ml/sec. in fluid with air bubbles removed). Not for use with corrosive fluids or over 65°C (150°F). Dimensions are 90 x 19 x 54mm (3½ x ¾ x 2¼"). Serrated tubulations accept 9.5mm to 14.3mm (⅜ to ⅝") ID tubing. **Per each, 12 per case.**



CATALOG NO.

H19937-0000



Leveling Base Kit

Assures that the flowmeter is exactly vertical eliminating error caused by friction between the float and the flow tube. The triangular base is 15.2cm (6") Plexiglas® with three adjustable feet and vial level.

CATALOG NO.

H40404-1000

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Tables of Standard Flow Capacities

Flow capacities shown in the following tables are based on calibrations for air and water at standard conditions (21.1°C (70°F) and 14.7 psia/l atm). Correlation data for other fluids is available as well as special sizes and floats. For further information contact Bel-Art Technical Support.

Useful metering ratios are 10:1 or better. 150mm flowmeters may be used with dual float combinations to increase metering ratio to 20:1. 65mm flowmeters are supplied with two different floats (which must be used separately) resulting in a 20:1 metering ratio.

SIZE NO.	FLOAT	65MM AIR FLOW RANGE ML/MIN	65MM WATER FLOW RANGE ML/MIN
1	G	0.75 to 5.77	0.01 to 0.07
	SS	1.40 to 16.67	0.02 to 0.28
2	G	2.80 to 48.70	0.01 to 0.55
	SS	8.10 to 145.00	0.10 to 2.38
3	G	13.10 to 202.10	0.18 to 2.64
	SS	45.00 to 522.00	0.76 to 12.01
4	G	28 to 1249	0.56 to 26.97
	SS	90 to 2520	3.73 to 70.67
5	G	853 to 6318	4 to 147
	SS	1973 to 12058	42 to 364
	C	N/A	N/A
6	G	1992 to 22575	36 to 522
	C	6082 to 58500	176 to 1866

SIZE NO.	FLOAT	150MM AIR FLOW RANGE ML/MIN	150MM WATER FLOW RANGE ML/MIN
1	G	1.8 to 23	0.02 to 31
	SS	6.4 to 73	0.09 to 1.25
2	G	21 to 37	0.23 to 5.5
	SS	36 to 814	1.11 to 20.40
3	G	185 to 2313	1.6 to 53.5
	SS	480 to 4562	9.4 to 130.4
4	G	333.4 to 8678	3 to 209.5
	SS	995.9 to 16737	18.8 to 506.3
5	G	545.3 to 23564	13.1 to 567.90
	SS	1790.0 to 44336	55.3 to 1369.90
	C	2897.3 to 65898	92.7 to 2108.70
6	G	N/A	N/A
	C	N/A	N/A

1 ml/min = .0021 ft.3/hr.

Floats: G = Glass, SS = Stainless Steel, C = Carbonyl

Maximum Flow Capacities for Routine Gases

15cm Flowtubes (Minimum flow x 10% maximum)

SIZE NO.	FLOAT	ARGON		CARBON DIOXIDE		HELIUM	
		STD ML/MIN	SCFH	STD ML/MIN	SCFH	STD ML/MIN	SCFH
1	G	19	0.040	28	0.059	20	0.042
	SS	59	0.125	85	0.180	67	0.142
2	G	322	0.681	305	0.646	441	0.934
	SS	708	1.497	672	1.422	1297	2.745
3	G	1970	4.170	2070	4.390	4890	10.350
	SS	3965	8.400	4090	8.670	10040	21.200
4	G	7360	15.580	7390	15.650	19250	40.700
	SS	14060	29.770	13850	29.300	38800	82.350
5	G	19600	41.500	19460	41.200	52950	112.100
	C	51500	109.000	50200	106.500	149500	316.000

SIZE NO.	FLOAT	HYDROGEN		NITROGEN		OXYGEN	
		STD ML/MIN	SCFH	STD ML/MIN	SCFH	STD ML/MIN	SCFH
1	G	47	0.100	24	0.051	20	0.042
	SS	148	0.314	75	0.159	64	0.136
2	G	952	2.150	384	0.813	360	0.763
	SS	2480	5.250	846	1.790	791	1.675
3	G	7790	16.500	2360	4.990	2190	4.640
	SS	15450	32.700	4770	10.100	4405	9.320
4	G	29600	62.600	8960	18.960	8330	17.65
	SS	58200	123.200	16850	35.700	15800	33.40
5	G	94200	199.200	23600	49.900	21750	46.00
	SS	221000	467.500	61600	130.500	57400	121.90

1 ml/min = .0021 ft.3/hr.

Floats G = Glass, SS = Stainless Steel, C = Carbonyl

SCFH = Standard Cubic Feet per Hour

**Flow Charts for a Variety of Fluids and Gases are Available from Bel-Art Products,
Call Our Technical Service Department at 1-800-423-5278**