PLATON

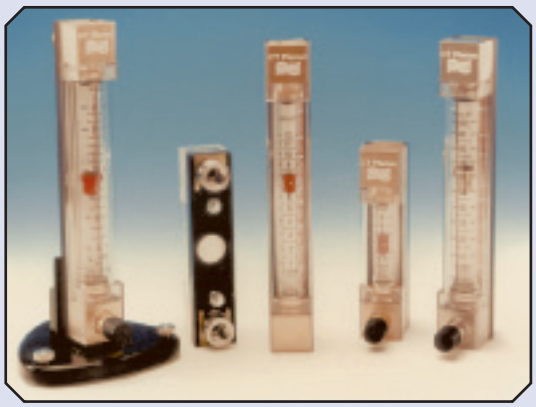
FLOW

Product Data Sheet DS1112

Glass Variable Area Flowmeters

GAPMETER TYPES LG/NG

- Easy to Use, high visibility scale
- Simple and reliable
- Gas or Liquid flow measurement
- Operator confidence from float rotation
- Instantaneous response
- Accuracy up to ±1.25% FSD
- Air flow range 5mL/min to 150L/min
- Linear scales, typically 10:1 range
- Scales 100mm or 30mm long
- Glass tube removal without tools
- Alarm Option

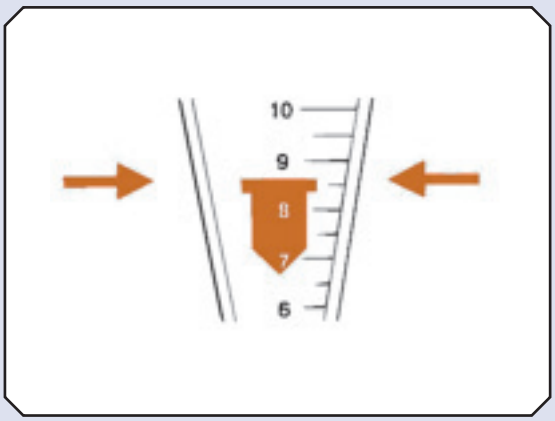


ENGINEERED TO FIT

- Standard or custom scaled glass tubes to suit process fluids and conditions
- Wide range of process connections to fit pipe-work requirements
- Brass or stainless steel end blocks with optional flow control valve
- Supplied with studs for surface panel mounting

ACCURATE MEASUREMENT

Flow up the tapered tube lifts the float to an equilibrium position. Flow rate is then measured against the flat top edge of the float.



FLOWMETER CHOICE

A complete VA flowmeter consists of a glass flow tube and float scaled to the flow units required, and a frame to provide the end block supports and to cover and protect the tube. The NG Series frames use flow tubes with nominal 100mm long scales, whereas the smaller LG frames use flow tubes with nominally 30mm scales.

To choose a complete flowmeter select the frame code required, and separately specify the fluid flow range needed on the flow tube scale.

NG and LG Series frames are designed to fit your process. The options available allow easy installation, usually surface mounted on a vertical panel. Process connections and labelling can be customised to suit the application.

SPECIFICATION – FRAMES

Backplate	Black anodised aluminium
End Blocks	Suffix B – Brass Suffix S – Stainless Steel
Seals	Nitrile on brass units Viton on stainless steel units Alternative seals available
Cover	Clip on clear polycarbonate (required to locate flow tube into end blocks)
Connections	Models available with in-line or rear facing process connections (See page 3).
Max. Temp	100°C with viton seals 80°C with nitrile seals
Max. Pressure	Recommended maximum operating in non-shock applications: 16bar
Valve Option	Fine control valve option has needle valve fitted on flowmeter inlet.
Mounting Stud	M5 studs 13mm long c/w nut

SPECIFICATION – FLOWTUBES

Flowtube	Borosilicate glass, precision moulding in three diameters to suit flow range
Scale	Fused ceramic black ink
Scale Length	NG Series – 100mm nominal LG Series – 30mm nominal
Float	Precision machined float, rotates to give flow visualisation Model HD: Hollow Dural, red anodised Model HS: Hollow Stainless Steel Model SS: Solid Stainless Steel
Accuracy	±1.25% FSD standard for NG Series (±2.5% for 1CHD/BHD models, ±3% for predicted scales) ±5% FSD for LG Series
Calibration	All tubes are flow tested. Standard scales are for air & water, as listed. Custom scales to suit process fluid

NG FLOW RANGES – 100mm Scale

Model (for gases)	Air @ ATP (1.013bar abs. & 20°C)		Frame Size
	Suffix-B	Suffix-D	
GTF1CHD-*	5-100cm³/min	-	1
GTF1BHD-*	50-250 cm³/min	-	1
GTF1AHD-*	60-600 cm³/min	2-40 l/h	1
GTF1AHS-*	0.1-1.2 l/min	5-70 l/h	1
GTF2CHD-*	0.2-2 l/min	10-120 l/h	2
GTF2BHD-*	0.6-5 l/min	30-300 l/h	2
GTF2BHS-*	1-10 l/min	-	2
GTF2AHD-*	1-12 l/min	50-700 l/h	2
GTF2AHS-*	2-25 l/min	0.1-1.5 m³/Hr	2
GTF3AHD-*	6-50 l/min	0.3-3 m³/Hr	3
GTF3AHS-*	10-100 l/min	0.6-6 m³/Hr	3
GTF3ASS-*	30-150 l/m	-	3
Model (for water)	**Water @ 20°C**		**Frame Size**
	Suffix-C	**Suffix-E**	
GTF1AHS-*	2-25 cm³/min	-	1
GTF1ASS-*	10-80 cm³/min	0.6-4.6 L/Hr	1
GTF2BHS-*	20-280 cm³/min	1-16 L/Hr	2
GTF2AHS-*	50-800 cm³/min	2-46 L/Hr	2
GTF2ASS-*	0.2-1.5 l/min	10-90 L/Hr	2
GTF3AHS-*	0.2-3.0 l/min	10-180 L/Hr	3
GTF3ASS-*	0.4-4.4 l/min	20-270 L/Hr	3

* - Suffix letter defines standard scale markings. Tubes can be custom scaled for the required fluids and line pressure/temperature conditions (See correction factors on page 4).

REDUCED SIZE FLOWMETERS

LG Flow Ranges – 30mm scale tubes

Model (for Gases)	Air at ATP (1.013 bar.a + 20°C)	Frame Size
RGTF 1 CHD-A	5-100 cm³/min	1
RGTF 1 BHD-A	50-250 cm³/min	1
RGTF 1 AHD-A	50-500 cm³/min	1
RGTF 1 AHS-A	100-1000 cm³/min	1
RGTF 2 CHD-A	0.5-2.5 L/min	2
RGTF 2 BHD-A	0.5-5 L/min	2
RGTF 2 AHD-A	2-10 L/min	2
RGTF 2 AHS-A	5.25 L/min	2
Model (for liquids)	**Water at 20°C**	**Frame Size**
RGTF 1 ASS-C	1.5 L/hr	1
RGTF 2 BHS-C	5-15 L/hr	1
RGTF 2 AHS-C	5-40 L/hr	2

Tubes can be custom scaled for the required fluids and line pressure/temperature conditions.

STANDARD FRAME CODES

Typical Model: **N G T B 3 1 2**

Flowmeter Types
NG – Standard size (100mm scale)
LG – Reduced size (30mm scale)
3 = 8mm push-fit
(see below for options)

End Block Style
I – In-line connections
T – Rear facing connections
V – Built in needle valve with rear connections

End Block Material
B – Brass
S – Stainless

Process Connections
1 = ¼" BSPP
2 = ¼" NPT

O-Ring Seals
1 = Nitrile
2 = Viton

Frame Size
Chosen to suit flow tube required

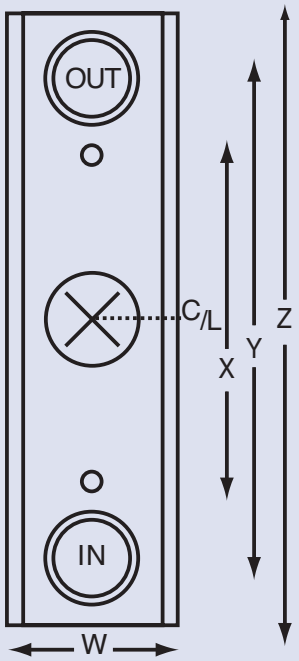
EXTERNAL CONNECTIONS

Process Connections:
Standard ¼" BSPP
or ¼" NPT, 20mm OD

Mounting Stud:
M5 threaded with nut to locate meter on Vertical panel

Safety Vent:
Allows rear discharge of process fluid in event of glass tube breakage. Dia 20mm

Dims	NG	LG
W	30mm	30mm
X	121mm	65mm
Y	184mm	108mm



CUSTOM BUILD

Construction of the NG and LG series frames makes custom build or special process connections easily acheivable, whether for rear facing or mixed rear/in-line fittings.

Specific custom logos can be printed on the glass tubes and polycarbonate covers if required to suit the application.

ACCESSORIES

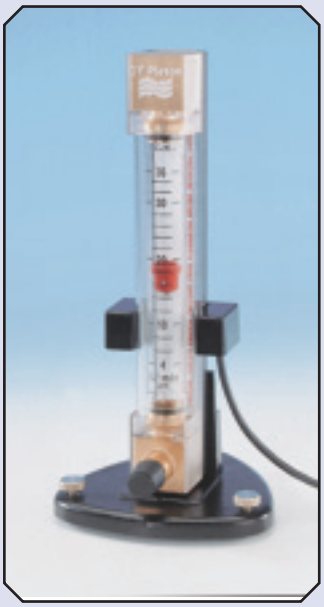
Roxspur Measurement and Control manufacture a range of accessories for use with NG and LG Gapmeters. Infrared optical alarm modules can be fitted to the flowmeter frame, giving a high or low rate alarm output directly from the DC powered module. A separate mains supply unit and slave relay alarm output is available.

The bench stand can be used to support a free standing Gapmeter, type NG or LG, particularly for Laboratory or portable use.

The flush mounting bezel is available for either valved or non-valved NG series units, allowing the flowmeter to be mounted behind a Makrolon window in a control panel.

Additional connectors, flow control valves and automatic flow controllers can be supplied to allow fine flow rate adjustment and maintain gas or liquid flow despite line pressure changes, particularly useful for blending or analysis applications.

For further information, please ask for the separate data sheets.



HAZARDOUS FLUIDS

The rear blowout vent and polycarbonate cover on NG and LG flowmeters offer a measure of operator protection from glass tube rupture or process leakage. However, for increased operator protection or use on exposed plant pipework, Model GU safety housings should be used with glass tube meters. Alternatively, type API or GMT metal tube meters provide the highest security and integrity.

NG and LG flowmeters are not recommended for hydrochloric acid or chlorine because of corrosion of the end blocks. Similarly, sulphuric acid below 80% attacks stainless steel. Borosilicate glass is attacked by flourine and most of its compounds and high concentrations of caustic soda. Flowmeters constructed from PTFE or plastic materials can be used for some of these chemicals, and are available from Roxspur Measurement and Control: please enquire. Ammonia attacks brass, but can be used with stainless steel end blocks and nitrile O-ring seals.

The VA flowmeter principle is suitable for transparent liquids and some slurries: should the float become stuck in the tube this is visible, and the flow blockage will cause the float to rise. For further application advice, please contact the Sales office shown at the bottom of the page.

CUSTOM SCALES – GASES

Flow scales on VA glass tubes are normally expressed in volume flow rate of gas referred to ATP (1.013 bar.a at 20°C). The standard scales for air are calibrated for process conditions in the flowmeter measuring tube also at 1.013 bar.a and 20°C. If the process/temperature is different, or the gas involved is not air, then a new scale can be computer predicted and fired onto the tube. Roxspur Measurement and Control specialises in producing scales custom labelled for the site conditions and gas mixtures to be measured. The tabulation shows some of the tubes available as standard for different gases, measured at ATP process conditions.

Gas	Tube and Float code: GTF-	Flow Ranges For Standard 100mm Scale GTF Tubes										Scale Code
		1CHD	1BHD	1AHD	1AHS	2CHD	2BHD	2AHD	2AHS	3AHD	3AHS	
Acetylene		10-150	30-350	5-900	0.1-1.5	0.3-2.5	0.8-5.8	1-14	2-28	6-54	10-110	F
Argon		5-80	2-200	60-560	0.1-1	0.2-1.7	0.6-4	1-10	2-22	4-40	10-85	J
Butane		2-120	50-290	100-700	0.1-1.1	0.4-2	0.8-4	1-10	2-18	4-36	10.75	M
Carbon Dioxide		10-100	30-250	50-700	0.1-1	0.2-1.8	0.6-4.4	1-10	2-20	4-40	10-80	R
Helium		10-100	2-280	50-800	0.1-1.8	0.2-3	0.5-9	2-28	4-60	10-120	20-270	N
Hydrogen		25-250	50-600	0.2-2*	0.2-3.4	0.4-5	1-15	2-44	5-95	10-180	40-380	S
Methane		10-150	40-360	0.05-1*	0.1-1.7	0.4-2.8	1-7	1-18	2-36	10-65	15-140	H
Nitrogen		5-100	2-250	60-600	0.1-1.2	0.2-2	0.6-5	1-12	2-25	6-50	10-100	L
Oxygen		5-90	20-220	40-600	0.1-1.1	0.2-1.8	0.6-4.4	1-12	1-25	4-48	10-100	P
Propane		30-140	40-300	100-750	0.1-1.2	0.3-2.2	0.8-4.8	1-11	2-22	4-40	10-85	T
		Cm3/min at ATP			*L/min at ATP (1.013 bar.a + 20oC)							

An approximate guide to the effect of non standard process conditions is shown below. The tabulation gives the multiplying factor to be used on any gas flow scale reading resulting from process temperatures or pressures at the measurement tube different to the ATP values.

Gauge Pressure (Bar)	0	1	2	4	6	7
0°C	1.036	1.460	1.786	2.304	2.725	
20°C	1.0 (ATP)	1.410	1.724	2.222	2.632	
40°C	0.967	1.364	1.670	2.151	2.544	

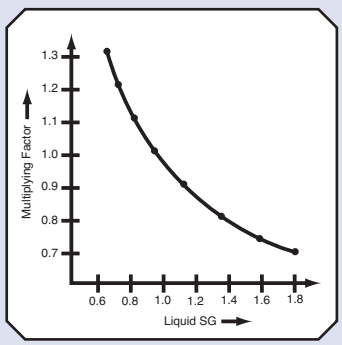
CUSTOM SCALES – LIQUID

The scaling of liquid VA flowmeters is affected by the density and viscosity of the flowing liquid. As a guide, the maximum viscosity measurable on glass VA meters is typically:

Size 1 6cP (SS) **Size 2** 12cP (HS) 20cP (SS) **Size 3** 20cP (HS) 36cP (SS)

For liquids with viscosity below the figure, the flow tube FSD can be estimated using the graph below, according to the density of the liquid.

The multiplying factor to be used on the water flow tube scale is plotted against liquid SG: this gives the volume flow rate of the liquid when monitored with that tube and float, which can be custom scaled appropriately.



0043

CT PLATON SAS
2 Rue du Plant Loger
BP 26
95 331 DOMONT CEDEX
FRANCE
T: 33-(0)1-39-35-44-00 F: 33-(0)1-39-35-44-01
E-Mail : sales@ctplaton.com

CERTIFICATE NO. 22358