

# GLASS TUBE ROTAMETER

*GTRM Series*



**FLOWTECH**

CE

## Product Description

Flowtech Glass Tube Variable Area Flow Meters (Rotameters) are intended for general in line and ByPass metering applications (i.e. for Gas & Liquid) where operating conditions are with the limitations of Glass metering tubes. These are the principle of Variable Area.

The float moves freely up and down tapered borosilicate glass with fluid flow from bottom to top. The float takes up a position where buoyancy forces and the float weight are balanced in proportion to flow rate. The Vertical position of the float as indicated by scale is the measure of the instantaneous flow rate.

## Features:

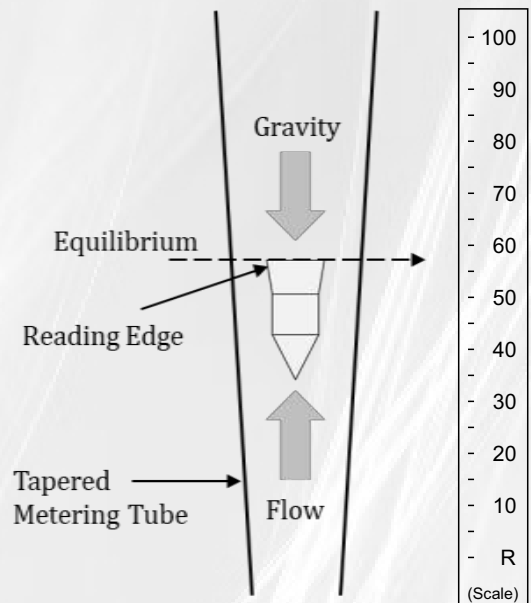
When fluid or gas flows through a taper tube containing a float, a pressure difference of P1 and P2 is created between upper and lower side of the float. The float moves upwards by a force obtained by multiplying the pressure differential by the maximum cross-sectional area of the float.

Due to taper tube, as the float moves upwards, the fluid passing area increases as a result of which the differential pressure decreases. Upward movement of float stops when the dead load is dynamically balanced by the differential pressure.

Tapering of metering tube is so designed that the vertical movement of the float becomes linearly proportional to the rate of flow and the scale is provided to read the position of the float, thus giving birth to flow rate indication.



**Glass Tube Rotameter**



$$Q = CA \sqrt{\frac{2g V (ap \nu)}{At y}}$$

Where

- Q = Volumetric flow rate
- V = Volume of Float
- C = Flow coefficient
- Af = Maximum pressure receiving area of float.
- A = Fluid passing Area
- P = Float Density
- g = gravimetric acceleration
- y = Fluid Density

## Applications :



## Technical Details :

<b>Accuracy</b>	± 2% F.S.D.
<b>Temperature Ratings</b>	Maximum Operating Temperature rating is 121°C for Gas service & 93°C for Liquid services.
<b>Repeatability</b>	0.5%
<b>Connections</b>	Flanged / Screwed / Tri Clover Joint / HoseNipple.
<b>Rangeability</b>	10:1
<b>Enclosure</b>	IP 55
<b>Scale Length</b>	180-200 mm
<b>Max Temperature</b>	upto 200°C
<b>Enclosure</b>	IP 55 or IP 65 on Request

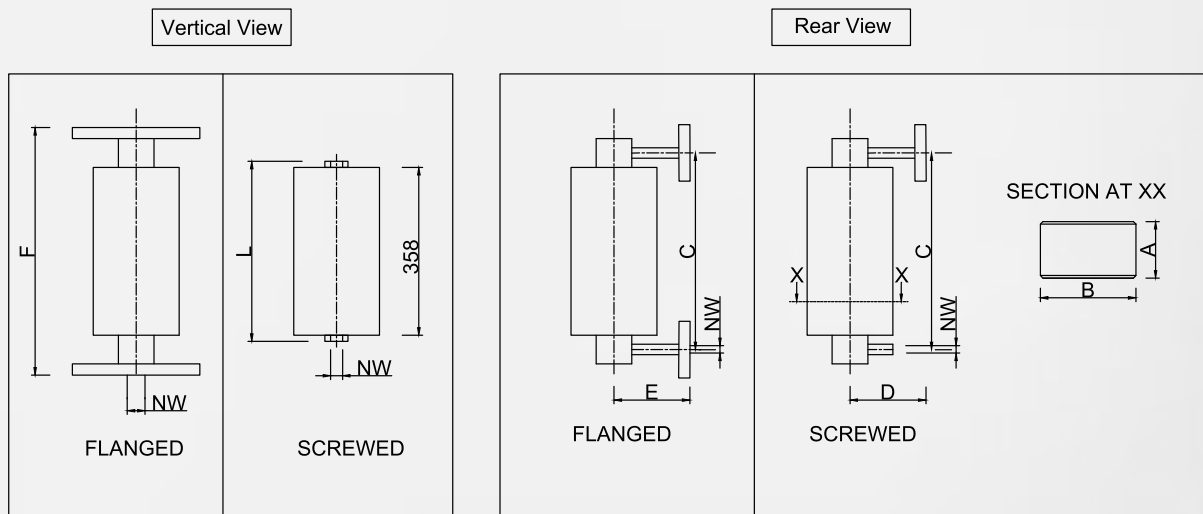
## Pressure Ratings :

Tube Size	Max. Operating Pressure in Kg/Cm <sup>2</sup> (g)
1 - 7	10
8 - 11	10
12 - 14	7.5
15 - 17	5.0
18 - 20	3.0

## Material of Construction :

<b>Tube</b>	: Borosilicate Glass
<b>Float</b>	: SS 316 / PTFE / Aluminium / P.P.
<b>Pickings</b>	: Neoprene, PTFE, Silicon, Viton
<b>Frame &amp; Cover</b>	: M.S. / SS
<b>End Fitting</b>	: M.S. / C.S. / SS304 / SS316 / MS with PTFE Lined / SS PTFE Lined
<b>Frame &amp; Cover</b>	: M.S. / SS / MS with FRP Lined

## Dimensional Details :



Model : GTRM FE

Model : GTRM SE

Model : GTRM FE - S

Model : GTRM SE - S

Standard Ranges - Glass Tube Rotameter with SS Float								
NW	Glass Size	Water at Amb. Temp LPH		Air at 20°C. 760 Torr mm <sup>3</sup>		SCFM		Pressure Drop mm WC
		Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	
15	PG-1	4	40	0.14	1.4	0.90	9.00	140
	PG-2	6	60	0.2	2	0.13	1.30	
	PG-3	10	100	0.3	3	0.19	1.90	
20	PG-4	16	160	0.5	5	0.32	3.20	360
	PG-5	25	250	0.8	8	0.50	5.00	
	PG-6	40	400	1.2	12	0.76	7.60	
25	PG-7	60	600	1.85	18.5	0.98	9.8	650
	PG-8	60	600	2	20	1.25	12.50	
	PG-9	100	1000	3	30	1.90	19.00	
40	PG-10	160	1600	5	50	7.9	79.00	950
	PG-11	250	2500	7.7	77	5.0	50	
	PG-12	160	1600	5	50	3.10	31.00	
50	PG-13	300	3000	8	80	5.00	50.00	550
	PG-14	400	4000	10.7	107	6.6	66.00	
	PG-15	400	4000	12	120	7.60	76.00	
80	PG-16	600	6000	18	180	11.30	113.00	950
	PG-17	1000	10000	30	300	19.00	190.00	
	PG-18	1000	10000	30	300	19.00	190.00	
80	PG-19	1600	16000	50	500	31.6	316	750
	PG-20	2500	25000	78	780	-	-	
	PG-20	2500	25000	78	780	-	-	



## Product Ordering Information

### Order Code for Glass Tube Rotameter Decodification

Line Size	Description	Code
	Line Size	Number

Process Connection Type	Description	Code
	Flanged	F
	Screwed / Threaded	S
	Triclover joint	TC
	Hose Nipple	HN
Other	OTH	

Process Connection Type	Description	Code
	ASA 150 #	1
	ASA 300 #	2
	BS Table 'E'	3
	BS 10 Table 'F'	4
	BSP (M)	5
	BSP (F)	6
	NPT (M)	7
NPT (F)	8	

Housing	Description	Code
	MS	1
	SS	2
MS + FRP Lining	3	

Process Connection Material	Description	Code
	CS	C
	SS 304	S1
	SS 316	S2
	SS 304 L	Ss1
	SS 316 L	Ss2
Polypropelene	PP	
MS + PTFE Lined	MST	

Gland MOC	Description	Code
	CI	1
	SS 304	2
	SS 316	3
	SS 304L	4
	SS 316L	5
PP	6	

Gland Packing	Description	Code
	PTFE + Neoprene	1
	Neoprene	2
	PTFE	3
	Nitrile	4
Silicon	5	

Scale	Description	Code
	Aluminum	A
	Acrylic	AC
	SS 304	S
	SS 304L	SL
	SS 316	SS
SS 316L	SSL	

Float Material	Description	Code
	SS 316	A
	PTFE	AC
	Polypropelene	S
Aluminum	SL	

Accessories	Description	Code
	Flow Switch (Proximity Point)	FSPPL
	Flow Switch (Proximity Double Point)	FSPHL
	Needle Valve	NV
	SS Frame	SF

**FLOWTECH**

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