Data Sheet
D-FV-10A4600-PVC_2

Field^{IT}

Variable Area Flowmeters

VA Master™Indicating PVC Fittings

10A4600-PVC

- Rugged body design with all type 300 stainless steel construction.
- Metering tube can be removed for range change or cleaning with meter in line and without disassembly of meter
- Polycarbonate operator protection shield designed to protect personnel from glass fragments in the event of accidental tube rupture.
- All wetted parts are made of corrosion resistant materials.
- Visibility of tube and float through wide angle with standard enclosure & mounting.

VA Master™
Indicating Flowrator Meter
with PVC Fittings
Series 10A4600-PVC

VA MASTER™ - INDICATING FLOWRATOR METERS WITH PVC FITTINGS

The ABB Series 10A4600-PVC VA Master Flowrator meter is a glass tube variable-area flowmeter providing visual indication of flow rate over a 12-1/2 to 1 range on a linear scale. All wetted parts are made of corrosion resistant materials. The glass meter tube can be removed easily for range change or cleaning, without disassembling the end fittings or removing the meter from the line. Also available with one or two bi-stable alarms to give contact closure (or opening) on rising or falling flow.

The meter is available in tube sizes from 1/2-inch through 2-inch tube for corrosive liquid service.

Engineering Specifications

Repeatability: 0.5% of full scale.

Accuracy: Standard is ±2% of maximum flow. Calibrated standard is ±1 % of maximum flow.

Range: 12-1/2 to 1

Mounting: Standard — line mounting; Optional — panel mounting (flush, surface).

Scales:

Tube Sizes (Inches)	Scale	
	Nominal Length	Type and Location
½ thru 2	10-inch (250 mm)	Percentage on tube or Direct Reading on external metal scale with blank tube
½ thru 50	9-inch (227 mm)	

Materials of Construction

Tube: *Beadguide*™ borosilicate glass

USV, SV, NSV Floats: Standard — stainless steel (Capacity Tables I, II & III only)

Optional Floats: Standard — Tantalum, Teflon®, Lead Loaded PVC (capacity tables IV & V)

Packing: Teflon

Fittings: PVC

Float Stops: Teflon

Tube Rest Gaskets: Teflon

Glands: Standard — 300 series stainless steel

Compression Screws: Standard - 300 Series stainless steel

Meter Body: 304L stainless steel

Tube Retainer Spring: Armco 17-7 pH stainless steel, external to fluid stream in O-ring meters.

Shield: Polycarbonate

Electrical Specifications for Alarms

Supply Voltage: 120V ac ±15%, 45-65 Hz

Contact Rating: Max. 250V; Max. 2A

Sensor Switch Cable: Standard — 6.5 feet
Optional — up to 980 feet

Safety Classification: The sensor(s) is intrinsically safe for Class I, Div. 1, Group A, B, C & D and Class II, Div. 1, Group E, F & G when connected with control amplifier mounted in non-hazardous location.

Service Conditions

Applications: Glass tube meters are not recommended for continuous service on alkalis above 100ºF (38ºC) or more than 20% concentrations; nor for fluorine, hydrofluoric acid, slurries, or molten metal.

Temperature Ratings: Minimum recommended process fluid temperature is 32ºF (0ºC). Maximum process fluid temperature is 140ºF (60ºC).

Ambient Temperature Range: 32ºF to140ºF

Pressure Ratings:

Conn. Size (Inch)	Tube Size (Inch)	Maximum Design Pressure psig (kPa)			
		NPT		CL 150 Flange	
		100ºF(38ºC)	140ºF(60ºC)	100ºF(38ºC)	140ºF(60ºC)
½	½	260 (1790)	92 (634)	150 (1035)	50 (345)
¾	¾ & 1	200 (1380)	75 (517)	---	---
1	¾ & 1	---	---	150 (1035)	50 (345)
1½	1½	130 (897)	53 (365)	130 (897)	50 (345)
1½	2	100 (690)	53 (365)	100 (690)	50 (345)

Warning

It is important that the O-ring material be compatible with the process fluid. Meter tube breakage can occur if the wrong material is used. For example: VITON O-RING MUST NEVER BE USED FOR AMMONIA SERVICE.

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Weights and Connection

Tube Size (inches)	Conn. Size (inches)	Threaded		Flanged*	
		Weight			
		lb	kg	lb	Kg
½	½	8.0	3.6	10.0	4.5
¾, 1	¾ NPT	15.0	6.8	---	---
¾, 1	1 Flanged	---	---	18.0	8.2
1½, 2	1½	25.0	11.3	30.0	13.6

**Flanges match drilling of ANSI Class 125/150 Flanges.*

Meter Sizing

For sizing flowmeters when the required flow is of liquid (density 1.0 g/ml), the capacity tables may be entered directly.

The conversion equations shown permit the capacity tables to be used for other operating conditions, and apply to all Capacity Tables shown with Type 316 Stainless Steel Floats.

Liquid Conversion (Table I, II, III only)

$$\text{gpm } H_2O = \text{gpm} \sqrt{\frac{7.02 \times \rho}{\rho f - \rho}}$$

or

$$\text{gpm } H_2O = \frac{\text{lbs/min.}}{8.33 \times \rho} \sqrt{\frac{7.02 \times \rho}{\rho f - \rho}}$$

where:

gpm = desired maximum flow rate in gpm
lbs/min = desired maximum flow rate in pounds/ minute
ρ = liquid density, g/cc at operating conditions
ρf = float density (316 S/S = 8.02 Hast. C = 8.94, Monel - 8.84)
gpm H_2O = equivalent flow rate in gpm H_2O

Liquid Conversion (Tables IV, V only)

$$\text{gpm } H_2O = \text{gpm} \sqrt{\frac{\rho f_2 \times \rho}{\rho f_2 - \rho}}$$

or

$$\text{gpm } H_2O = \frac{\text{lbs/min}}{8.33 \times \rho} \sqrt{\frac{\rho f_2 \times \rho}{\rho f_2 - \rho}}$$

where:

ρf_2 = float density shown in capacity table.
ρ = liquid density g/cc at operating conditions.

Warning

These meters must not be operated without the operator protection shield in place. To do so could result in injury to personnel.

Accessories

Metal Scale Plate(s): Graduated metal scale plate mounted adjacent to metering tube.

Alarms: One or two* bi-stable alarm switches, adjustable over entire scale length to give contact closure (or opening) upon rising or falling flow. Available with SPDT or DPDT switch action.

**Note when using two switches, the minimum spacing is on 1" centers (approx. 10% of full scale).*

Surface (Front) Panel Mounting: Nuts, bolts, and lock washers for mounting meter against front of panel by means of mounting holes provided in every meter body.

Flush (Rear) Panel Mounting: Brackets, bezel and hardware for mounting meter behind panel.

Ordering Information

To eliminate any delays in the processing of orders and to insure prompt delivery, please specify:

- Complete Model Number
- Accuracy Desired
- Alarm Settings if applicable
- Operating Conditions
  - Fluid Measured
  - Maximum Flow Rate and Unit of Flow
  - Fluid Density
  - Fluid Viscosity
  - Allowable Pressure Drop
  - Operating and Maximum Temperature
  - Operating and Maximum Pressure

Capacity Table I
Low Pressure Drop Design
Stainless Steel

Tube Size (Inch)	Maximum Flow gpm H_2O Equiv.	Tube Number	Float Number (316 sst)	Total ΔP (See Note 1)	V.I.C. (See Note 2)
½	0.198	FP-1/2-17-G-10	1/2-GUSVT-410	0.53	2.2
	0.238	FP-1/2-21-G-10	1/2-GUSVT-410	0.53	2.2
	0.324	FP-1/2-27-G-10	1/2-GUSVT-410	0.58	2.2
	0.436	FP-1/2-35-G-10	1/2-GUSVT-410	1.0	2.2
	0.825	FP-1/2-50-G-9	1/2-GUSVT-410	2.0	2.2
¾	0.633	FP-3/4-21-G-10	3/4-GUSVT-510	0.60	3.3
	0.860	FP-3/4-27-G-10	3/4-GUSVT-510	0.71	3.3
1	1.21	FP-1-27-G-10	1-GUSVT-611	1.28	4.0
	1.67	FP-1-35-G-10	1-GUSVT-611	1.83	4.0
	2.58	FP-1-27-G-10	1-GUSVT-610	5.47	8.6
	3.60	FP-1-35-G-10	1-GUSVT-610	7.97	8.6
1½	2.45	FP-1½ - 21-G-10	1½ - GUSVT–867	0.92	6.5
	3.33	FP-1½ - 27-G-10	1½ - GUSVT–867	1.24	6.5
	6.50	FP-1½ - 21-G-10	1½ - GUSVGT-814	5.75	16.2
	8.70	FP-1½ - 27-G-10	1½ - GUSVGT-814	7.20	16.2
2	5.54	FP-2-27-G-10	2-GUSVT-913	1.65	8.9
	13.75	FP-2-27-G-10	2-GUSVT-914	9.00	22.0

Note: Standard percent scales are not applicable to low pressure drop floats.

Notes:
1. *Pressure drop is total pressure loss across the meter at 100% flow rate in inches of water column.*
2. *Meter is unaffected by viscosity when the value of cps/$\sqrt{\rho}$ (using ρ = operating density in g/cc and cps = viscosity in centipoises) is less than V.I.C. (viscosity immunity ceiling). V.I.C. is applicable to liquids only; all gas flows fall below Viscosity Immunity Ceiling.*

CAPACITY TABLE II
Bead Guide Meters with USV, SV and NSV Floats
Stainless Steel

Tube Size (Inch)	Maximum Flow gpm H_2O Equiv.	Tube Number	Float Number (316 sst)	Total ΔP (See Note 1)	V.I.C. (See Note 2)
1/2	0.267	FP-1/2-17-G-10	1/2-GUSVT-40A	1.2	2.9
	0.328	FP-1/2-21-G-10	1/2-GUSVT-40A	1.4	2.9
	0.442	FP-1/2-27-G-10	1/2-GUSVT-40A	2.0	2.9
	0.480	FP-1/2-17-G-10	1/2-GSVT-45A	3.5	5.1
	0.600	FP-1/2-21-G-10	1/2-GSVT-45A	4.6	5.1
	0.619	FP-1/2-35-G-10	1/2-GUSVT-40A	3.1	2.9
	0.670	FP-1/2-17-G-10	1/2-GSVT-44A	6.4	7.1
	0.690	FP-1/2-17-G-10	1/2-GSVT-48A	7.3	7.6
	0.810	FP-1/2-27-G-10	1/2-GSVT-45A	6.8	5.1
	0.830	FP-1/2-21-G-10	1/2-GSVT-44A	7.7	7.1
	0.880	FP-1/2-21-G-10	1/2-GSVT-48A	8.0	7.6
	0.885	FP-1/2-17-G-10	1/2-GNSVT-48A	8.2	1.1
	1.10	FP-1/2-21-G-10	1/2-GNSVT-48A	9.9	1.1
	1.12	FP-1/2-27-G-10	1/2-GSVT-44A	12.3	7.1
	1.15	FP-1/2-35-G-10	1/2-GSVT-45A	8.2	5.1
	1.19	FP-1/2-27-G-10	1/2-GSVT-48A	13.7	7.6
	1.44	FP-1/2-27-G-10	1/2-GNSVT-48A	15.8	1.1
	1.56	FP-1/2-35-G-10	1/2-GSVT-44A	14.8	7.1
	1.66	FP-1/2-35-G-10	1/2-GSVT-48A	17.2	7.6
	2.00	FP-1/2-50-G-9	1/2-GSVT-45A	12.0	5.1
	2.76	FP-1/2-50-G-9	1/2-GSVT-44A	31.0	7.1
	2.90	FP-1/2-50-G-9	1/2-GSVT-48A	35.2	7.6
	3.52	FP-1/2-50-G-9	1/2-GNSVT-48A	52.0	1.1
3/4	1.96	FP-3/4-21-G-10	3/4-GSVGT-54A	5.3	10.4
	2.49	FP-3/4-21-G-10	3/4-GNSVGT-54A	6.8	1.6
	2.66	FP-3/4-21-G-10	3/4-GSVGT-59A	7.0	14.1
	2.70	FP-3/4-27-G-10	3/4-GSVGT-54A	7.7	10.4
	3.37	FP-3/4-21-G-10	3/4-GNSVGT-59A	11.5	2.1
	3.55	FP-3/4-27-G-10	3/4-GNSVGT-54A	11.5	1.6
	3.67	FP-3/4-27-G-10	3/4-GSVGT-59A	13.7	14.0
	4.80	FP-3/4-27-G-10	3/4-GNSVGT-59A	20.5	2.1
1	4.25	FP-1-27-G-10	1-GSVGT-64A	12.9	14.8
	4.82	FP-1-27-G-10	1-GSVGT-68A	18.7	16.9
	5.63	FP-1-27-G-10	1-GNSVGT-64A	20.7	2.2
	6.00	FP-1-35-G-10	1-GSVGT-64A	24.6	14.8
	6.46	FP-1-27-G-10	1-GNSVGT-68A	32.5	2.5
	6.80	FP-1-35-G-10	1-GSVGT-68A	37.0	16.9
	7.62	FP-1-27-G-10	1-GNSVGT-69A	75.0	1.5
	7.84	FP-1-35-G-10	1-GNSVGT-64A	37.7	2.2
	9.00	FP-1-35-G-10	1-GNSVGT-68A	62.8	2.5
	9.50	FP-1-35-G-10	1-GSVGT-69A	65.3	8.5
	11.0	FP-1-35-G-10	1-GNSVGT-69A	112.0	1.5
1½	13.2	FP-1½ - 27-G-10	1½ - GSVGT-87A	9.5	27.6
	14.6	FP-1½ -27-G-10	1½ - GSVGT-86A	13.5	31.0
	17.6	FP-1½ -27-G-10	1½ - GNSVGT-87A	12.8	4.20
	18.6	FP-1½ -27-G-10	1½ - GNSVGT-86A	15.2	4.80
2	24.0	FP-2-27-G-10	2-GSVGT-97A	24.0	26.5
	30.0	FP-2-27-G-10	2-GSVGT-98A	34.0	18.5
	32.0	FP-2-27-G-10	2-GNSVGT-97A	32.0	3.0
	36.1	FP-2-27-G-10	2-GNSVGT-98A	45.0	3.30
	48.0(4)	FP-2-27-G-10	BL-954	70.0	2.0
	60.0(4)	FP-2-27-G-10	BL-953	95.0	2.0
	68.0(4)	FP-2-27-G-10	BL-950	110.0	2.0
	90.0(4)	FP-2-27-G-10	BL-951	192.7	1.0

Note: 1. Pressure drop is total pressure loss across the meter at 100% flow rate in inches of water column.
2. Meter is unaffected by viscosity when the value of cps/$\sqrt{\rho}$ using ρ = operating density in g/cc and cps = viscosity in centipoises) is less than V.I.C. (viscosity immunity ceiling). V.I.C. is applicable to liquids only; all gas flows fall below Viscosity Immunity Ceiling.
3. Unless other shown, Range is equal to or greater than 12.5:1
4. Short Range Floats; BL-954 is 8:1; BL-953 is 3.5:1; BL-950 & Bl-951 are 3:1.

CAPACITY TABLE III

Meters with Alarm Option

Stainless Steel

Tube Size (Inch)	Maximum Flow gpm H_2O Equiv.	Tube Number	Float Number (316 sst)	Total ΔP (See Note 1)	V.I.C. (See Note 2)	Range (See Note 3)
½	0.670	FP-1/2-17-G-10	1/2-GSVTA-44	6.4	7.1	
	0.690	FP-1/2-17-G-10	1/2-GSVTA-48	7.3	7.6	11.1:1
	0.830	FP-1/2-21-G-10	1/2-GSVTA-44	7.7	7.1	
	0.880	FP-1/2-21-G-10	1/2-GSVTA-48	8.0	7.6	
	0.885	FP-1/2-17-G-10	1/2-GNSVTA-48	8.2	1.1	11.1:1
	1.03	FP-1/2-21-G-10	1/2-GNSVTA-44	8.9	1.1	
	1.10	FP-1/2-21-G-10	1/2-GNSVTA-48	9.9	1.1	
	1.12	FP-1/2-27-G-10	1/2-GSVTA-44	12.3	7.1	
	1.19	FP-1/2-27-G-10	1/2-GSVTA-48	13.7	7.6	
	1.44	FP-1/2-27-G-10	1/2-GNSVTA-48	15.8	1.1	
	1.56	FP-1/2-35-G-10	1/2-GSVTA-44	14.8	7.1	
	1.66	FP-1/2-35-G-10	1/2-GSVTA-48	17.2	7.6	
	1.84	FP-1/2-27-G-10	1/2-GNSVTA-43	18.5	1.3	7.1:1
	2.00	FP-1/2-35-G-10	1/2-GNSVTA-48	19.0	1.1	
	2.43	FP-1/2-35-G-10	1/2-GNSVTA-43	30.0	1.3	7.1:1
	2.76	FP-1/2-50-G-9	1/2-GSVTA-44	31.0	7.0	
	2.90	FP-1/2-50-G-9	1/2-GSVTA-48	35.2	7.6	
	3.52	FP-1/2-50-G-9	1/2-GNSVTA-48	52.0	1.1	
	4.00	FP-1/2-50-G-9	1/2-GNSVTA-43	72.0	1.3	10.0:1
¾	1.96	FP-3/4-21-G-10	3/4-GSVTA-54	5.3	10.4	
	2.49	FP-3/4-21-G-10	3/4-GNSVTA-54	6.8	1.6	
	2.70	FP-3/4-27-G-10	3/4-GSVTA-54	7.7	10.4	
	3.15	FP-3/4-21-G-10	3/4-GSVTA-53	11.0	16.6	4.8:1
	3.55	FP-3/4-27-G-10	3/4-GNSVTA-54	11.5	1.6	
	3.85	FP-3/4-27-G-10	3/4-GSVTA-56	12.0	14.9	7.7:1
	4.35	FP-3/4-27-G-10	3/4-GSVTA-53	13.0	16.8	5.3:1
	5.05	FP-3/4-27-G-10	3/4-GNSVTA-56	14.0	2.2	7.7:1
	5.70	FP-3/4-27-G-10	3/4-GNSVTA-53	16.0	2.5	5.3:1
1	4.25	FP-1-27-G-10	1-GSVTA-64	12.9	14.8	
	4.82	FP-1-27-G-10	1-GSVTA-65	15.0	16.9	8.3:1
	5.63	FP-1-27-G-10	1-GNSVTA-64	20.7	2.2	
	6.00	FP-1-35-G-10	1-GSVTA-64	24.6	14.8	
	6.75	FP-1-35-G-10	1-GSVTA-65	27.0	16.9	10:1
	7.84	FP-1-35-G-10	1-GNSVTA-64	37.7	2.2	
	8.46	FP-1-35-G-10	1-GSVTA-63	45.0	20.8	4.3:1
	9.0	FP-1-35-G-10	1-GNSVTA-65	62.8	2.5	
	9.9	FP-1-35-G-10	1-GSVTA-66	75.0	8.5	9.1:1
	10.8	FP-1-35-G-10	1-GNSVTA-66	112	1.5	9.1:1
	11.1	FP-1-35-G-10	1-GNSVTA-63	120	2.9	4.3:1
1½	13.4	FP-1½-27-G-10	1½ - GSVTA-84	10.0	27.6	
	15.4	FP-1½-27-G-10	1½ - GSVTA-85	14.0	32.0	6.2:1
	16.0	FP-1½-27-G-10	1½ - GSVTA-83	16.0	33.0	5.3:1
	17.6	FP-1½-27-G-10	1½ - GNSVTA-84	15.0	4.2	
	20.4	FP-1½-27-G-10	1½ - GNSVTA-85	18.0	5.0	6.2:1
	21.2	FP-1½-27-G-10	1½ - GNSVTA-83	20.0	4.9	5.3:1
2	23.9	FP-2-27-G-10	2-GSVTA-94	24.0	40.5	6.7:1
	27.9	FP-2-27-G-10	2-GSVTA-93	30.0	49.0	3.6:1
	31.5	FP-2-27-G-10	2-GNSVTA-94	32.0	6.1	6.7:1
	36.9	FP-2-27-G-10	2-GNSVTA-96	47.0	7.6	7.1:1
	38.2	FP-2-27-G-10	2-GNSVTA-93	50.0	7.3	3.6:1

Notes:

1. *Pressure drop is total pressure loss across the meter at 100% flow rate in inches of water column.*
2. *Meter is unaffected by viscosity when the value of cps/$\sqrt{\rho}$ (using ρ = operating density in g/cc and cps = viscosity in centipoises) is less than V.I.C. (viscosity immunity ceiling). V.I.C. is applicable to liquids only; all gas flows fall below Viscosity Immunity Ceiling.*
3. *Unless otherwise shown, range is equal or greater than 12.5:1.*
4. *Short Range Floats: BL-954, Range 8:1, BL-953 is 3.5:1; BL-950 & BL-951 are 3:1.*

Capacity Table IV

Tantalum Floats

ρf_2 = 16.6 gms/cc

Tube Size (Inch)	Maximum gpm Liquid SP GR 1.0	Metering Tube Nomenclature	Float Hydraulic Designator	Float Part Number (2)	ΔP IN. H_2O Note 1	V.I.C Factor Note 2	(5) Range
½	0.80	FP-1/2-17-G-10	BS-41	603A911W10	6.2	8.0	
	1.0	FP-1/2-21-G-10	BS-41	603A911W10	6.7	8.0	
	1.3	FP-1/2-27-G-10	BS-41	603A911W10	7.7	8.0	
	1.9	FP-1/2-35-G-10	BS-41	603A911W10	12.0	6.0	
	3.32	FP-1/2-50-G-10	BS-41	603A911W10	30.0	5.0	
¾	1.9	FP-3/4-21-G-10	BS-50	603A912W10	4.5	10.0	
	2.5	FP-3/4-27-G-10	BS-50	603A912W10	5.7	10.0	
1	4.4	FP-1-27-G-10	BS-62	603A914W10	14.7	16.0	
	5.8	FP-1-27-G-10	BS-60	603A913W10	26.5	20.0	10.0:1
	6.3	FP-1-35-G-10	BS-62	603A914W10	18.7	16.0	11.1:1
	8.1	FP-1-35-G-10	BS-60	603A913W10	30.0	20.0	
1-1/2	8.3	FP-1-1/2-21-G-10	BS-80	603A916W10	8.7	24.0	
	11.0	FP-1-1/2-27-G-10	BS-80	603A916W10	11.5	24.0	
2	14.4	FP-2-27-G-10	BS-90	603A917W10	10	26.0	6.7:1
	20.7	FP-2-27-G-10	BS-91	603A918W10	19	37.0	

NOTES:
Notes 1 & 2 - See page 6.
Notes 5 Unless otherwise shown. Range is equal to or greater than 12.5:1

Capacity Table V

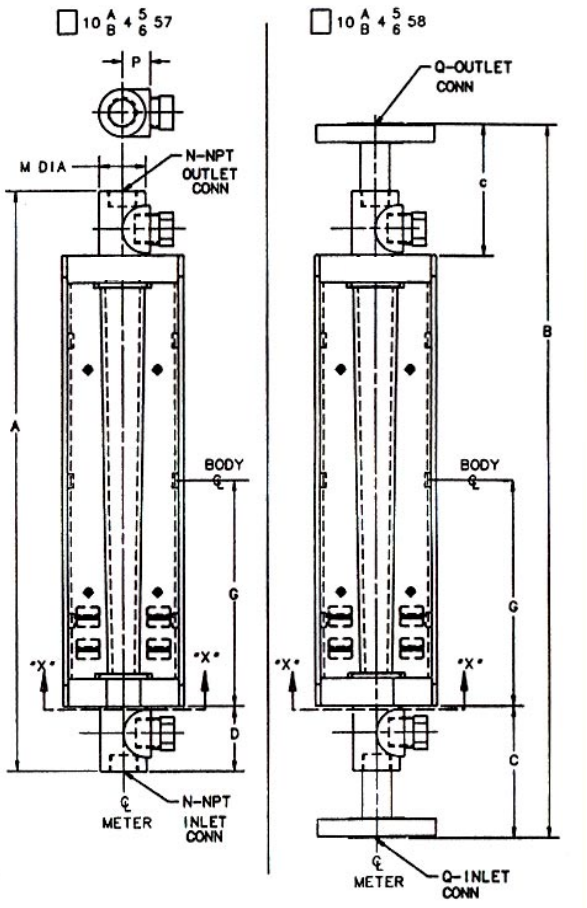
Teflon & Lead Loaded PVC Floats

ρf_2 (Teflon) = 2.31 gms/cc, ρf_2 PVC = 5.5 gms/cc

Tube Size (Inch)	Maximum gpm Liquid SP GR 1.0	Metering Tube Nomenclature	Float Hydraulic Designator	Part Number	Float Mat'l	Δ P IN. H_2O Note 1	V.I.C. Factor Note 2	(5) Range
½	0.55	FP-1/2-17-G-10	½-GL-471	303J100U01	Teflon	3.50	1.80	
	0.66	FP-1/2-21-G-10	½-GL-471	303J100U01	Teflon	3.68	1.80	
	0.96	FP-1/2-27-G-10	½-GL-471	303J100U01	Teflon	4.60	1.80	
	1.02	FP-1/2-17-G-10	½-GL-410	603G820F10	PVC	9.0	2.45	
	1.33	FP-1/2-21-G-10	½-GL-410	603G820F10	PVC	10.1	2.45	
	1.42	FP-1/2-35-G-10	½-GL-471	303J100U01	Teflon	9.0	1.80	
	1.92	FP-1/2-27-G-10	½-GL-410	603G820F10	PVC	12.7	2.45	
	2.13	FP-1/2-50-G-9	½-GL-471	303J100U01	Teflon	12.0	1.80	
	2.85	FP-1/2-35-G-10	½-GL-410	603G820F10	PVC	18.7	2.45	
	4.90	FP-1/2-50-G-9	½-GL-410	603G820F10	PVC	40.0	2.45	
¾	1.95	FP-3/4-21-G-10	¾-GL-571	303J100U25	Teflon	5.13	2.20	
	4.20	FP-3/4-21-G-10	¾-GL-510	603G821F10	PVC	14.6	2.97	
	5.87	FP-3/4-27-G-10	¾-GL-510	603G821F10	PVC	19.1	2.97	
1	4.55	FP-1-27-G-10	1-GL-671	303J100U09	Teflon	15.6	3.00	6.67:1
	9.72	FP-1-27-G-10	1-GL-610	603G822F10	PVC	54.3	3.89	6.67:1
	14.7	FP-1-35-G-10	1-GL-610	603G822F10	PVC	70.0	3.89	7.1:1
1-1/2	9.38	FP-1-1/2-21-G-10	1-1/2-GL-871	303J100U23	Teflon	11.4	3.98	8.3:1
	13.3	FP-1-1/2-27-G-10	1-1/2-GL-871	303J100U23	Teflon	15.9	3.98	9.1:1
	23.5	FP-1-1/2-21-G-10	1-1/2-GL-810	603G823F10	PVC	44.0	6.40	7.7:1
	32.6	FP-1-1/2-27-G-10	1-1/2-GL-810	603G828F10	PVC	73.0	6.40	8.3:1
2	21.8	FP-2-27-G10	2-GL-971	303J100U16	Teflon	22.2	5.95	5.1:1
	56.7	FP-2-27-G10	2-GL-910	603G824F10	PVC	105	9.70	5.1:1

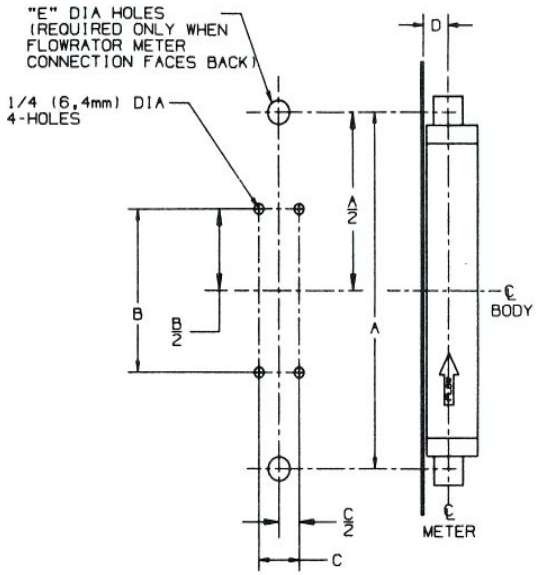
Dimension Drawings

VERTICAL CONNECTIONS



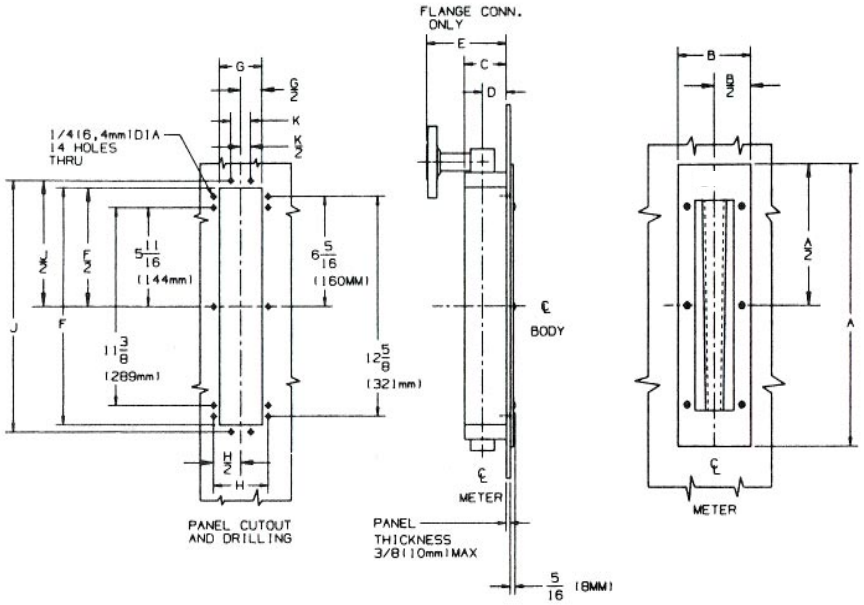
Meter Tube Size	1/2"		3/4" to 1"		1-1/2" to 2"	
Dim.	**Inch**	**mm**	**Inch**	**mm**	**Inch**	**mm**
A	16-5/8	422	17-7/8	454	20-1/8	511
B	20-3/8	518	21-3/8	543	24-1/2	622
C	2-17/32	64	2-25/32	71	3-5/8	92
D	5/8	16	15/16	24	1-1/16	27
E	3-3/8	86	15/16	24	1-1/16	144
F	2-5/8	67	3-27/64	87	4-7/8	124
G	7-21/32	194	7-29/32	201	8-5/8	219
L	1-1/2	38	1-59/64	49	2-5/8	67
M	1-1/2	38	2-1/4	57	3-3/4	95
N	1/2	13	3/4	19	1-1/2	38
Q	1/2	13	1	25	1-1/2	38

FRONT PANEL MOUNTING (Threaded Connections Only)



Conn. Size	1/2”		3/4”		1-1/2”	
Scale Length	10”		10”		10”	
Dim.	Inch	mm	Inch	mm	Inch	mm
A	16-1/2	419	17-1/2	445	20-1/2	521
B	7-9/16	192	7-13/15	19B	9-1/4	235
C	2-1/16	52	2-1/2	64	3-1/4	83
D	1-9/32	33	1-21/32	42	2-13/32	61

REAR PANEL MOUNTING (Threaded Connections Only)



Conn. Size	1/2”		3/4” & 1”		1-1/2”	
Scale Length	10”		10”		10”	
Dim.	Inch	mm	Inch	mm	Inch	mm
A	16-3/16	411	16-3/16	411	17-3/4	451
B	4-9/16	116	5-1/4	133	6-1/8	156
C	2-5/8	67	3-7/16	87	4-7/8	124
D	1-1/2	38	1-15/16	49	2-5/8	67
E	5	127	5-15/16	151	7-5/8	200
F	13-5/8	346	13-7/8	352	15-5/16	389
G	2-11/16	68	3-3/8	86	4-1/4	108
H	3-7/16	87	4-1/8	105	5	127
J	14-7/16	367	14-13/16	376	16-1/4	413
K	1-1/4	32	1-11/16	43	2-3/8	60

MODEL NUMBER DESIGNATION

Variable Area Flowmeters **10A465** ___ ___ ___ **B** ___ **F** **D** ___ ___

Connection Designation
- Vertical Threaded 7
- Vertical Flanged 8

Scales
- Percent of Metal Scale ..... P
- Direct Reading Metal Scale ..... S
- Dual Direct Reading Metal Scales ..... D
- Percent of Tube X
- Direct Reading Metal Scale & Percent on Tube ..... E
- Direct Reading on Tube ..... Y

Panel Mounting
- Line Mounted X
- Front Panel Mounted ..... Y
- Rear (Flush) Panel Mounted ..... Z

Design Level ..... B

Sizes (inches)

Conn. Size	Tube Size	
1/2	1/2	H
3/4 (NPT)	3/4	J
3/4 (NPT)	1	K
1 (Flgd)	3/4	L
1 (Flgd)	1	M
1-1/2	1-1/2	N
1-1/2	2	P

Fitting Material
- PVC ..... F

Seal Material
- Teflon ..... D

Connection Type
- NPT ..... B
- Flat Face Flange Class 125 C

Alarms
- Not Required X
- Low Alarm (SPDT) C
- High Alarm (SPDT) ..... B
- High & Low Alarm (SPDT) ..... D
- Low Alarm (DPDT) ..... F
- High Alarm (DPDT) ..... E
- High & Low Alarm (DPDT) ..... G

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