

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-in. (250 mm)	Percentage on tube or Direct Reading on external metal scale with blank tube
½ thru 50	9-in. (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 recom-
mended for continuous service on alkalis above
100°F (38°C) or more than 20% concentrations;
nor for fluorine, hydrofluoric acid, slurries, or
molten metal.

Temperature Ratings: Minimum recommended
process fluid temperature is 32°F (0°C). Maximum
process fluid temperature is 140°F (60°C).

Ambient Temperature Range: 32°F to 140°F

Pressure Ratings:

Conn. Size (inches)	Tube Size (inches)	Maximum Design Pressure psig (kPa)			
		NPT		CL 150 Flange	
		100°F (38°C)	140°F (60°C)	100°F (38°C)	140°F (60°C)
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	3.6	10	4.5
¾, 1	¾ NPT	15	6.8	--	--
¾, 1	1 Flanged	--	--	18	9.2
1 ½, 2	1 ½	25	11.3	30	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 (Tables 1, 2 & 3 only)

$$\text{gpm H}_2\text{O} = \text{gpm} \sqrt{\frac{7.02 \times \rho}{\rho f - \rho}}$$

or

$$\text{gpm H}_2\text{O} = \frac{\text{lbs/min.}}{8.33 \times \rho} \sqrt{\frac{7.02 \times \rho}{\rho f - \rho}}$$

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 H₂O = equivalent flow rate in gpm H₂O

Liquid Conversion (Tables 4 & 5 only)

$$\text{gpm H}_2\text{O} = \text{gpm} \sqrt{\frac{\rho f_2 \times \rho}{\rho f_2 - \rho}}$$

or

$$\text{gpm H}_2\text{O} = \frac{\text{lbs/min}}{8.33 \times \rho} \sqrt{\frac{\rho f_2 \times \rho}{\rho f_2 - \rho}}$$

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 1
Low Pressure Drop Design
Stainless Steel

Tube Size (Inch)	Maximum Flow	Tube Number	Tube Code	Float Number (316 sst)	Float Code	Total DP (See Note 1)	V.I.C. (See Note 2)
	gpm H ₂ O Equiv.						
1/2"	0.198	FP-1/2-17-G-10	A1	1/2-GUSVT-410	01	0.53	2.2
	0.238	FP-1/2-21-G-10	A2	1/2-GUSVT-410	01	0.53	2.2
	0.324	FP-1/2-27-G-10	A3	1/2-GUSVT-410	01	0.58	2.2
	0.436	FP-1/2-35-G-10	A4	1/2-GUSVT-410	01	1	2.2
	0.825	FP-1/2-50-G-9	A6	1/2-GUSVT-410	01	2	2.2
3/4"	0.633	FP-3/4-21-G-10	B1	3/4-GUVT-510	02	0.6	3.3
	0.86	FP-3/4-27-G-10	B2	3/4-GUVT-510	02	0.71	3.3
1"	1.205	FP-1-27-G-10	C1	1-GUSVT-611	03	1.28	4
	1.67	FP-1-35-G-10	C2	1-GUSVT-611	03	1.83	4
	2.58	FP-1-27-G-10	C1	1-GUSVT-610	04	5.47	8.6
	3.6	FP-1-35-G-10	C2	1-GUSVT-610	04	7.97	8.6
1 1/2"	2.45	FP-1 1/2 - 21-G-10	D1	1 1/2 - GUSVT-867	05	0.92	6.5
	3.33	FP-1 1/2 - 27-G-10	D2	1 1/2 - GUSVT-867	05	1.24	6.5
	6.5	FP-1 1/2 - 21-G-10	D1	1 1/2 - GUSVGT-814	06	5.75	16.2
	8.7	FP-1 1/2 - 27-G-10	D2	1 1/2 - GUSVGT-814	06	7.2	16.2
2"	5.54	FP-2-27-G-10	E1	2-GUSVT-913	07	1.65	8.9
	13.75	FP-2-27-G-10	E1	2-GUSVT-914	08	9	22

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 $\frac{\text{cps}}{\sqrt{\rho}}$ (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 2
Bead Guide Meters with USV, SV and NSV Floats
Stainless Steel

Tube Size	Maximum Flow	Tube Number	Tube Code	Float Number	Float Code	Total DP (See Note 1)	V.I.C. (See Note 2)
(Inch)	gpm H ₂ O Equivalent			(316 sst)			
1/2"	0.267	FP-1/2-17-G-10	A1	1/2-GUSVT-40A	09	1.2	2.9
	0.328	FP-1/2-21-G-10	A2	1/2-GUSVT-40A	09	1.4	2.9
	0.442	FP-1/2-27-G-10	A3	1/2-GUSVT-40A	09	2	2.9
	0.48	FP-1/2-17-G-10	A1	1/2-GSVT-45A	10	3.5	5.1
	0.6	FP-1/2-21-G-10	A2	1/2-GSVT-45A	10	4.6	5.1
	0.619	FP-1/2-35-G-10	A4	1/2-GUSVT-40A	09	3.1	2.9
	0.67	FP-1/2-17-G-10	A1	1/2-GSVT-44A	11	6.4	7.1
	0.69	FP-1/2-17-G-10	A1	1/2-GSVT-48A	12	7.3	7.6
	0.81	FP-1/2-27-G-10	A3	1/2-GSVT-45A	10	6.8	5.1
	0.83	FP-1/2-21-G-10	A2	1/2-GSVT-44A	11	7.7	7.1
	0.88	FP-1/2-21-G-10	A2	1/2-GSVT-48A	12	8	7.6
	0.885	FP-1/2-17-G-10	A1	1/2-GNSVT-48A	13	8.2	1.1
	1.1	FP-1/2-21-G-10	A2	1/2-GNSVT-48A	13	9.9	1.1
	1.12	FP-1/2-27-G-10	A3	1/2-GSVT-44A	11	12.3	7.1
	1.15	FP-1/2-35-G-10	A4	1/2-GSVT-45A	10	8.2	5.1
	1.19	FP-1/2-27-G-10	A3	1/2-GSVT-48A	12	13.7	7.6
	1.44	FP-1/2-27-G-10	A3	1/2-GNSVT-48A	13	15.8	1.1
	1.56	FP-1/2-35-G-10	A4	1/2-GSVT-44A	11	14.8	7.1
	1.66	FP-1/2-35-G-10	A4	1/2-GSVT-48A	12	17.2	7.6
	2	FP-1/2-50-G-9	A6	1/2-GSVT-45A	10	12	5.1
2.76	FP-1/2-50-G-9	A6	1/2-GSVT-44A	11	31	7.1	
2.9	FP-1/2-50-G-9	A6	1/2-GSVT-48A	12	35.2	7.6	
3.52	FP-1/1-50-G-9	A6	1/2-GNSVT-48A	13	52	1.1	
3/4"	1.96	FP-3/4-21-G-10	B1	3/4-GSVGT-54A	14	5.3	10.4
	2.49	FP-3/4-21-G-10	B1	3/4-GNSVGT-54A	15	6.8	1.6
	2.66	FP-3/4-21-G-10	B1	3/4-GSVGT-59A	16	7	14.1
	2.7	FP-3/4-27-G-10	B2	3/4-GSVGT-54A	14	7.7	10.4
	3.37	FP-3/4-21-G-10	B1	3/4-GNSVGT-59A	17	11.5	2.1
	3.55	FP-3/4-27-G-10	B2	3/4-GNSVGT-54A	15	11.5	1.6
	3.67	FP-3/4-27-G-10	B2	3/4-GSVGT-59A	16	13.7	14
4.8	FP-3/4-27-G-10	B2	3/4-GNSVGT-59A	17	20.5	2.1	
1"	4.25	FP-1-27-G-10	C1	1-GSVGT-64A	18	12.9	14.8
	4.82	FP-1-27-G-10	C1	1-GSVGT-68A	19	18.7	16.9
	5.63	FP-1-27-G-10	C1	1-GNSVGT-64A	20	20.7	2.2
	6	FP-1-35-G-10	C2	1-GSVGT-64A	18	24.6	14.8
	6.46	FP-1-27-G-10	C1	1-GNSVGT-68A	21	32.5	2.5
	6.8	FP-1-35-G-10	C2	1-GSVGT-68A	19	37	16.9
	7.62	FP-1-27-G-10	C1	1-GNSVGT-69A	23	75	1.5
	7.84	FP-1-35-G-10	C2	1-GNSVGT-64A	20	37.7	2.2
	9	FP-1-35-G-10	C2	1-GNSVGT-68A	21	62.8	2.5
	9.5	FP-1-35-G-10	C2	1-GSVGT-69A	22	65.3	8.5
11	FP-1-35-G-10	C2	1-GNSVGT-69A	23	112	1.5	
1 1/2"	13.2	FP-1 1/2 -27-G-10	D2	1 1/2 - GSVGT-87A	24	9.5	27.6
	14.6	FP-1 1/2 -27-G-10	D2	1 1/2 - GSVGT-86A	25	13.5	31
	17.6	FP-1 1/2 -27-G-10	D2	1 1/2 - GNSVGT-87A	26	12.8	4.2
	18.6	FP-1 1/2 -27-G-10	D2	1 1/2 - GNSVGT-86A	27	15.2	4.8
2"	24	FP-2-27-G-10	E1	2-GSVGT-97A	28	24	26.5
	30	FP-2-27-G-10	E1	2-GSVGT-98A	29	34	18.5
	32	FP-2-27-G-10	E1	2-GNSVGT-97A	30	32	3
	36.1	FP-2-27-G-10	E1	2-GNSVGT-98A	31	45	3.3
	48.0(5)	FP-2-27-G-10	E1	BL-954	32	70	2
	60.0(5)	FP-2-27-G-10	E1	BL-953	33	95	2
	68.0(5)	FP-2-27-G-10	E1	BL-950	34	110	2
	90(5)	FP-2-27-G-10	E1	BL-951	35	192.7	1

- 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 $\frac{cps}{\sqrt{\rho}}$ 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 3
Meters with Alarm Option
Stainless Steel

Tube Size (Inch)	Maximum Flow		Tube Number	Tube Code	Float Number (316 sst)	Float Code	Total DP (See Note 1)	V.I.C. (See Note 2)	psia Critical (See Note 3)	Range (See Note 4)
	gpm Liquid sp. gr. 1.0	scfm Air @ STP								
1/2"	0.67	2.76	FP-1/2-17-G-10	A1	1/2-GSVTA-44	36	6.4	7.1	33.4	
	0.69	2.85	FP-1/2-17-G-10	A1	1/2-GSVTA-48	37	7.3	7.6	39	11.1:1
	0.83	3.42	FP-1/2-21-G-10	A2	1/2-GSVTA-44	36	7.7	7.1	33.8	
	0.88	3.62	FP-1/2-21-G-10	A2	1/2-GSVTA-48	37	8	7.6	24.6	
	0.885	3.65	FP-1/2-17-G-10	A1	1/2-GNSVTA-48	38	8.2	1.1	19.8	11.1:1
	1.03	4.24	FP-1/2-21-G-10	A2	1/2-GNSVTA-44	39	8.9	1.1	33.4	
	1.1	4.52	FP-1/2-21-G-10	A2	1/2-GNSVTA-48	38	9.9	1.1	20	
	1.12	4.6	FP-1/2-27-G-10	A3	1/2-GSVTA-44	36	12.3	7.1	16.2	
	1.19	4.9	FP-1/2-27-G-10	A3	1/2-GSVTA-48	37	13.7	7.6	18.6	
	1.44	5.93	FP-1/2-27-G-10	A3	1/2-GNSVTA-48	38	15.8	1.1	16.5	
	1.56	6.43	FP-1/2-35-G-10	A4	1/2-GSVTA-44	36	14.8	7.1	16.5	
	1.66	6.85	FP-1/2-35-G-10	A4	1/2-GSVTA-48	37	17.2	7.6	18.8	
	1.84	7.6	FP-1/2-27-G-10	A3	1/2-GNSVTA-43	40	18.5	1.3	27.5	7.1:1
	2	8.24	FP-1/2-35-G-10	A4	1/2-GNSVTA-48	38	19	1.1	8.8	
	2.43	10	FP-1/2-35-G-10	A4	1/2-GNSVTA-43	40	30	1.3	22.7	7.1:1
	2.76	11.4	FP-1/2-50-G-9	A6	1/2-GSVTA-44	36	31	7	7.7	
2.9	12	FP-1/2-50-G-9	A6	1/2-GSVTA-48	37	35.2	7.6	8.9		
3.52	14.5	FP-1/2-50-G-9	A6	1/2-GNSVTA-48	38	52	1.1	8.8		
4	16	FP-1/2-50-G-9	A6	½-GNSVTA-43	40	72	1.3	12.3	10.0:1	
3/4"	1.96	8.1	FP-3/4-21-G-10	B1	3/4-GSVTA-54	41	5.3	10.4	13.9	
	2.49	10.2	FP-3/4-21-G-10	B1	3/4-GNSVTA-54	42	6.8	1.6	13.9	
	2.7	11.1	FP-3/4-27-G-10	B2	3/4-GSVTA-54	41	7.7	10.4	9.6	
	3.15	13	FP-3/4-21-G-10	B1	3/4-GSVTA-53	43	11	16.6	36	4.8:1
	3.55	14.6	FP-3/4-27-G-10	B2	3/4-GNSVTA-54	42	11.5	1.6	9.6	
	3.85	15.8	FP-3/4-27-G-10	B2	3/4-GSVTA-56	44	12	14.9	19.8	7.7:1
	4.35	18	FP-3/4-27-G-10	B2	3/4-GSVTA-53	43	13	16.8	25	5.3:1
	5.05	20.8	FP-3/4-27-G-10	B2	3/4-GNSVTA-56	45	14	2.2	19.8	7.7:1
5.7	23.6	FP-3/4-27-G-10	B2	3/4-GNSVTA-53	46	16	2.5	25	5.3:1	
1"	4.25	17.5	FP-1-27-G-10	C1	1-GSVTA-64	47	12.9	14.8	11.5	
	4.82	19.8	FP-1-27-G-10	C1	1-GSVTA-65	48	15	16.9	14.8	8.3:1
	5.63	23.2	FP-1-27-G-10	C1	1-GNSVTA-64	49	20.7	2.2	11.3	
	6	24.7	FP-1-35-G-10	C2	1-GSVTA-64	47	24.6	14.8	6.8	
	6.75	27.9	FP-1-35-G-10	C2	1-GSVTA-65	48	27	16.9	8.9	10:01
	7.84	32.4	FP-1-35-G-10	C2	1-GNSVTA-64	49	37.7	2.2	6.8	
	8.46	35.1	FP-1-35-G-10	C2	1-GSVTA-63	50	45	20.8	13.9	4.3:1
	9	36.9	FP-1-35-G-10	C2	1-GNSVTA-65	52	62.8	2.5	8.9	
	9.9	40.6	FP-1-35-G-10	C2	1-GSVTA-66	51	75	8.5	13.4	9.1:1
	10.8	44.5	FP-1-35-G-10	C2	1-GNSVTA-66	53	112	1.5	14.5	9.1:1
11.1	45.7	FP-1-35-G-10	C2	1-GNSVTA-63	54	120	2.9	13.1	4.3:1	
1½"	13.4	55	FP-1½-27-G-10	D2	1½-GSVTA-84	55	10	27.6	15.4	
	15.4	63.5	FP-1½-27-G-10	D2	1½-GSVTA-85	56	14	32	20.3	6.2:1
	16	66	FP-1½-27-G-10	D2	1½-GSVTA-83	57	16	33	22	5.3:1
	17.6	72	FP-1½-27-G-10	D2	1½-GNSVTA-84	58	15	4.2	15.4	
	20.4	84	FP-1½-27-G-10	D2	1½-GNSVTA-85	59	18	5	20.3	6.2:1
	21.2	87	FP-1½-27-G-10	D2	1½-GNSVTA-83	60	20	4.9	22	5.3:1
2"	23.9	99	FP-2-27-G-10	E1	2-GSVTA-94	61	24	40.5	16.4	6.7:1
	27.9	115.2	FP-2-27-G-10	E1	2-GSVTA-93	62	30	49	24	3.6:1
	31.5	129.8	FP-2-27-G-10	E1	2-GNSVTA-94	63	32	6.1	17.4	6.7:1
	36.9	152.1	FP-2-27-G-10	E1	2-GNSVTA-96	64	47	7.6	21.2	7.1:1
	38.2	156.6	FP-2-27-G-10	E1	2-GNSVTA-93	65	50	7.3	24	3.6:1

Notes:

- Pressure drop is total pressure loss across the meter at 100% flow rate in inches of water column.
- Meter is unaffected by viscosity when the value of $\frac{cps}{\sqrt{\rho}}$ (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.
- Unless otherwise shown, range is equal or greater than 12.5:1.

Capacity Table 4

Tantalum Floats

$$\rho f_2 = 16.6 \text{ gms/cc}$$

Tube Size (Inches)	Maximum gpm Liquid SP GR 1.0	Metering Tube Nomenclature	Tube Code	Float Hydraulic Designator	Float Code	Float Part Number (Note 2)	P In. H ₂ O (Note 1)	V.I.C. Factor (Note 2)	Range (Note 5)
½	0.8	FP-1/2-17-G-10	A1	BS-41	66	603A911W10	6.2	8	
	1	FP-1/2-21-G-10	A2	BS-41	66	603A911W10	6.7	8	
	1.3	FP-1/2-27-G-10	A3	BS-41	66	603A911W10	7.7	8	
	1.9	FP-1/2-35-G-10	A4	BS-41	66	603A911W10	12	6	
	3.32	FP-1/2-50-G-9	A6	BS-41	66	603A911W10	30	5	
¾	1.9	FP-3/4-21-G-10	B1	BS-50	67	603A912W10	4.5	10	
	2.5	FP-3/4-27-G-10	B2	BS-50	67	603A912W10	5.7	10	
1	4.4	FP-1-27-G-10	C1	BS-62	68	603A914W10	14.7	16	
	5.8	FP-1-27-G-10	C1	BS-60	69	603A913W10	26.5	20	10.0:1
	6.3	FP-1-35-G-10	C2	BS-62	68	603A914W10	18.7	16	11.1:1
	8.1	FP-1-35-G-10	C2	BS-60	69	603A913W10	30	20	
1-1/2	8.3	FP-1-1/2-21-G-10	D1	BS-80	70	603A916W10	8.7	24	
	11	FP-1-1/2-27-G-10	D2	BS-80	70	603A916W10	11.5	24	
2	14.4	FP-2-27-G-10	E1	BS-90	71	603A917W10	10	26	
	20.7	FP-2-27-G-10	E1	BS-91	72	603A918W10	19	37	6.7:1

NOTES:

Notes 1 & 2 - See page 6.

Notes 5 Unless otherwise shown. Range is equal to or greater than 12.5:1

Capacity Table 5

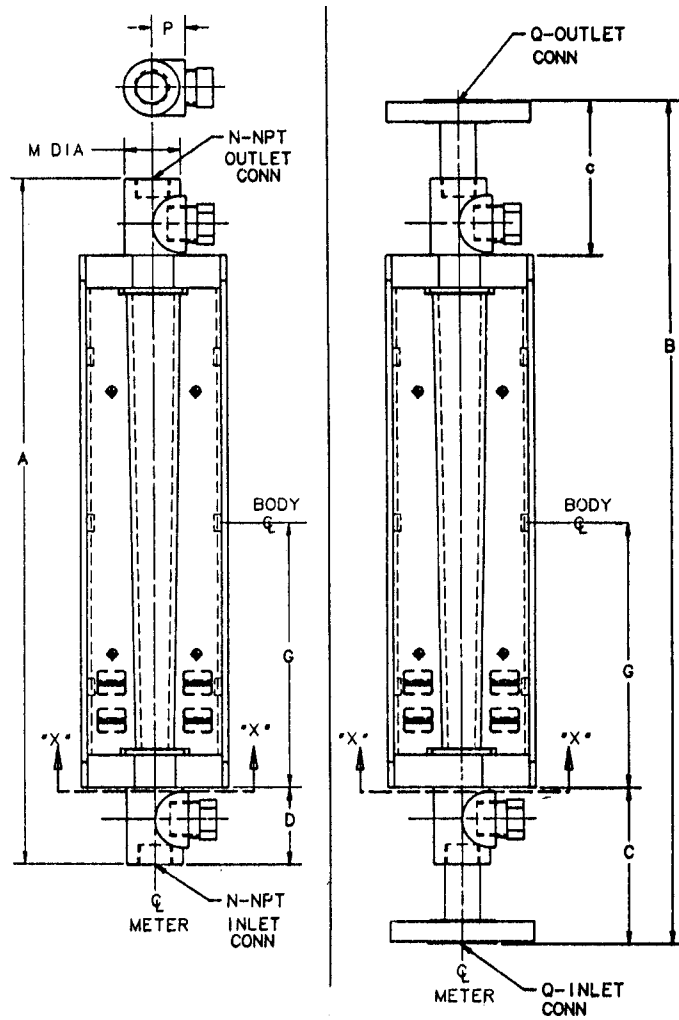
Teflon & Lead Loaded PVC Floats

$$\rho f_2 (\text{Teflon}) = 2.31 \text{ gms/cc}, \rho f_2 \text{ PVC} = 5.5 \text{ gms/cc}$$

Tube Size (Inches)	Maximum gpm Liquid SP GR 1.0	Metering Tube Nomenclature	Tube Code	Float Hydraulic Designator	Float Code	Part Number	Float Matl	P In. H ₂ O (Note 1)	V.I.C. Factor (Note 2)	Range (Note 5)
½	0.55	FP-1/2-17-G-10	A1	½-GL-471	73	303J100U01	Teflon	3.5	1.8	
	0.66	FP-1/2-21-G-10	A2	½-GL-471	73	303J100U01	Teflon	3.68	1.8	
	0.96	FP-1/2-27-G-10	A3	½-GL-471	73	303J100U01	Teflon	4.6	1.8	
	1.02	FP-1/2-17-G-10	A1	½-GL-410	74	603G820F10	PVC	9	2.45	
	1.33	FP-1/2-21-G-10	A2	½-GL-410	74	603G820F10	PVC	10.1	2.45	
	1.42	FP-1/2-35-G-10	A4	½-GL-471	73	303J100U01	Teflon	9	1.8	
	1.92	FP-1/2-27-G-10	A3	½-GL-410	74	603G820F10	PVC	12.7	2.45	
	2.13	FP-1/2-50-G-9	A6	½-GL-471	73	303J100U01	Teflon	12	1.8	
	2.85	FP-1/2-35-G-10	A4	½-GL-410	74	603G820F10	PVC	18.7	2.45	
	4.9	FP-1/2-50-G-9	A6	½-GL-410	74	603G820F10	PVC	40	2.45	
¾	1.95	FP-3/4-21-G-10	B1	¾-GL-571	75	303J100U25	Teflon	5.13	2.2	
	4.2	FP-3/4-21-G-10	B1	¾-GL-510	76	603G821F10	PVC	14.6	2.97	
	5.87	FP-3/4-27-G-10	B2	¾-GL-510	76	603G821F10	PVC	19.1	2.97	
1	4.55	FP-1-27-G-10	C1	1-GL-671	77	303J100U09	Teflon	15.6	3	6.67:1
	9.72	FP-1-27-G-10	C1	1-GL-610	78	603G822F10	PVC	54.3	3.89	6.67:1
	14.7	FP-1-35-G-10	C2	1-GL-610	78	603G822F10	PVC	70	3.89	7.1:1
1-1/2	9.38	FP-1-1/2-21-G-10	D1	1-1/2-GL-871	79	303J100U23	Teflon	11.4	3.98	8.3:1
	13.3	FP-1-1/2-27-G-10	D2	1-1/2-GL-871	79	303J100U23	Teflon	15.9	3.98	9.1:1
	23.5	FP-1-1/2-21-G-10	D1	1-1/2-GL-810	80	603G823F10	PVC	44	6.4	7.7:1
	32.6	FP-1-1/2-27-G-10	D2	1-1/2-GL-810	80	603G828F10	PVC	73	6.4	8.3:1
2	21.8	FP-2-27-G10	E1	2-GL-971	81	303J100U16	Teflon	22.2	5.95	5.1:1
	56.7	FP-2-27-G10	E1	2-GL-910	82	603G824F10	PVC	105	9.7	5.1:1

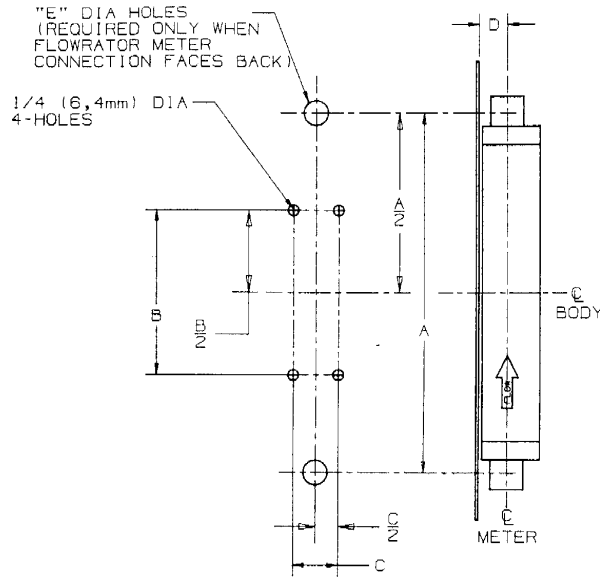
Dimension Drawings

VERTICAL CONNECTIONS



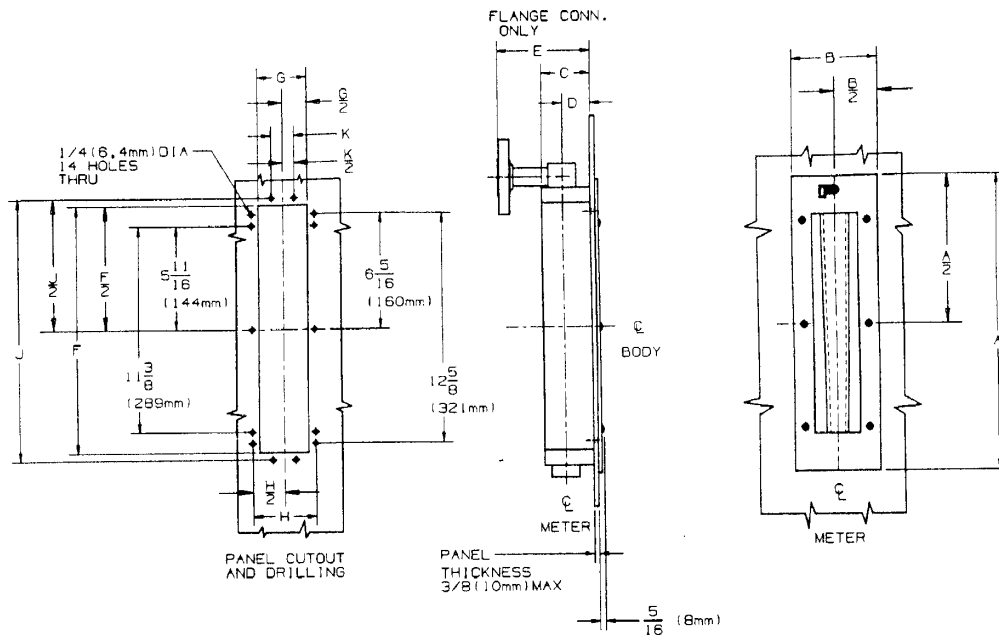
Meter Tube Size	1/2"		3/4" to 1"		1-1/2" to 2"	
Dim.	Inch	mm	Inch	mm	Inch	mm
A	16-5/8	422	17-7/8	454	20-1/8	511
B	20-3/8	518	21-3/8	543	24-1/2	622
C	2-17/32	64	2-25/32	71	3-5/8	92
D	5/8	16	15/16	24	1-1/16	27
E	3-3/8	86	15/16	24	1-1/16	144
F	2-5/8	67	3-27/64	87	4-7/8	124
G	7-21/32	194	7-29/32	201	8-5/8	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	7-13/16	198	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

For detailed specifications, refer to Data Sheet D-FL-10A4600-PVC

Product Code: A

Base Price includes borosilicate glass metering tube, PVC fittings, Teflon Packing 316 Stainless steel float and percent on metal scale factor tag

Calibration is required on all meters used above the Viscosity Immunity Ceiling and/or for +1% of maximum flow rate accuracy, or where accuracy certification is required.

Price Adder includes mounting bracket assembled to meter body, alarm float, amplifying relay and minimum and/or maximum switches with 5.5 feet of lead wire.

Code

**Indicating Flowrator Meter With PVC End Fittings
 Model 10A4600-PVC**

10A465

For quantity greater than 10 call

1 : Connection Type & Orientation

Vertical Threaded	7
Vertical Flanged	8

2 : Scale Type

Percent on Tube	X
Direct Reading on Tube	Y
Direct Reading Metal Scale and Percent on Tube	E
Percent on Metal Scale	P
Direct Reading Metal Scale	S
Dual Direct Reading Metal Scales	D

3 : Mounting

Line Mounted	X
Front Panel Mounted	(Note: 1) Y
Rear (Flush) Panel Mounted Not Available W/ Flanged Vertical Connections	(Note: 1) Z

4 : Design Level

B	B
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5 : Connection Size

Connector, Size 1/2 in., NPT or Flange Tube Size 1/2 in.	H
Connector, Size 3/4 in. NPT, Tube Size 3/4 in.	(Note: 1) J
Connector, Size 3/4 in. NPT, Tube Size 1 in.	(Note: 1) K
Connector, Size 1 in., Flanged, Tube Size 3/4 in.	(Note: 2) L
Connector, Size 1 in., Flanged, Tube Size 1 in.	(Note: 2) M
Connector, Size 1-1/2 in. NPT or Flange, Tube Size 1-1/2 in.	N
Connector, Size 1-1/2 in. NPT or Flange, Tube Size 2 in.	P

6 : Fitting Material

PVC Fitting	F
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7 : Seal Material

Packing Gland Design Teflon	D
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8 : Connection Type

Threaded	(Notes: 1, 3) B
Flanged, Flat Face Class 125	(Notes: 2, 4) C

10A465

Code	
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9 : Alarms

Not Required	X	0.00
Low Alarm, SPDT	C	Table 10A465-C
High Alarm, SPDT	B	Table 10A465-C
High & Low Alarm, SPDT	D	Table 10A465-C
Low Alarm, DPDT	F	Table 10A465-C
High Alarm, DPDT	E	Table 10A465-C
High & Low Alarm, DPDT	G	Table 10A465-C
High & High Alarm, SPDT	H	Table 10A465-C
Low & Low Alarm, SPDT	J	Table 10A465-C
High & High Alarm, DPDT	K	Table 10A465-C
Low & Low Alarm, DPDT	L	Table 10A465-C

10 : Reserved

Not Required	X
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11 : Inlet Connection Orientation

Bottom Vertical	5
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12 : Outlet Connection Orientation

Top Vertical	5
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10A465

Code

13: Float Code

1/2-GUSVT-410	(Note: 5)	01
3/4-GUSVT-510	(Note: 6)	02
1-GUSVT-611	(Note: 7)	03
1-GUSVT-610	(Note: 7)	04
1 1/2-GUSVT-867	(Note: 8)	05
1 1/2-GUSVGT-814	(Note: 8)	06
2-GUSVT-913	(Note: 9)	07
2-GUSVT-914	(Note: 9)	08
1/2-GUSVT-40A	(Note: 5)	09
1/2-GSVT-45A	(Note: 5)	10
1/2-GSVT-44A	(Note: 5)	11
1/2-GSVT-48A	(Note: 5)	12
1/2-GNSVT-48A	(Note: 5)	13
3/4-GSVGT-54A	(Note: 6)	14
3/4-GNSVGT-54A	(Note: 6)	15
3/4-GSVGT-59A	(Note: 6)	16
3/4-GNSVGT-59A	(Note: 6)	17
1-GSVGT-64A	(Note: 7)	18
1-GSVGT-68A	(Note: 7)	19
1-GNSVGT-64A	(Note: 7)	20
1-GNSVGT-68A	(Note: 7)	21
1-GSVGT-69A	(Note: 7)	22
1-GNSVGT-69A	(Note: 7)	23
1 1/2-GSVGT-87A	(Note: 8)	24
1 1/2-GSVGT-86A	(Note: 8)	25
1 1/2-GNSVGT-87A	(Note: 8)	26
1 1/2-GNSVGT-86A	(Note: 8)	27
2-GSVGT-97A	(Note: 9)	28
2-GSVGT-98A	(Note: 9)	29
2-GNSVGT-97A	(Note: 9)	30
2-GNSVGT-98A	(Note: 9)	31
BL-954	(Note: 9)	32
BL-953	(Note: 9)	33
BL-950	(Note: 9)	34
BL-951	(Note: 9)	35
1/2-GSVTA-44	(Note: 5)	36
1/2-GSVTA-48	(Note: 5)	37
1/2-GNSVTA-48	(Note: 5)	38
1/2-GNSVTA-44	(Note: 5)	39
1/2-GNSVTA-43	(Note: 5)	40
3/4-GSVTA-54	(Note: 6)	41
3/4-GNSVTA-54	(Note: 6)	42
3/4-GSVTA-53	(Note: 6)	43
3/4-GSVTA-56	(Note: 6)	44
3/4-GNSVTA-56	(Note: 6)	45
3/4-GNSVTA-53	(Note: 6)	46
1-GSVTA-64	(Note: 7)	47
1-GSVTA-65	(Note: 7)	48
1-GNSVTA-64	(Note: 7)	49
1-GSVTA-63	(Note: 7)	50
1-GSVTA-66	(Note: 7)	51
1-GNSVTA-65	(Note: 7)	52
1-GNSVTA-66	(Note: 7)	53
1-GNSVTA-63	(Note: 7)	54
1 1/2-GSVTA-84	(Note: 8)	55
1 1/2-GSVTA-85	(Note: 8)	56
1 1/2-GSVTA-83	(Note: 8)	57
1 1/2-GNSVTA-84	(Note: 8)	58
1 1/2-GNSVTA-85	(Note: 8)	59
1 1/2-GNSVTA-83	(Note: 8)	60
2-GSVTA-94	(Note: 9)	61

10A465**Code**

2-GSVTA-93	(Note: 9)	62
2-GNSVTA-94	(Note: 9)	63
2-GNSVTA-96	(Note: 9)	64
2-GNSVTA-93	(Note: 9)	65
BS-41	(Note: 5)	66
BS-50	(Note: 6)	67
BS-62	(Note: 7)	68
BS-60	(Note: 7)	69
BS-80	(Note: 8)	70
BS-90	(Note: 9)	71
BS-91	(Note: 9)	72
1/2-GL-471	(Note: 5)	73
1/2-GL-410	(Note: 5)	74
3/4-GL-571	(Note: 6)	75
3/4-GL-510	(Note: 6)	76
1-GL-671	(Note: 7)	77
1-GL-610	(Note: 7)	78
1½-GL-871	(Note: 8)	79
1½-GL-810	(Note: 8)	80
2-GL-971	(Note: 9)	81
2-GL-910	(Note: 9)	82

14 : Tube Code

FP-1/2-17-G-10	(Notes: 5, 10)	A1
FP-1/2-21-G-10	(Notes: 5, 10)	A2
FP-1/2-27-G-10	(Notes: 5, 10)	A3
FP-1/2-35-G-10	(Notes: 5, 10)	A4
FP-1/2-50-G-9	(Notes: 5, 10)	A6
FP-3/4-21-G-10	(Notes: 6, 11)	B1
FP-3/4-27-G-10	(Notes: 6, 11)	B2
FP-1-27-G-10	(Notes: 7, 12)	C1
FP-1-35-G-10	(Notes: 7, 12)	C2
FP-1 1/2-21-G-10	(Notes: 8, 13)	D1
FP-1 1/2-27-G-10	(Notes: 8, 13)	D2
FP-2-27-G-10	(Notes: 9, 14)	E1

15 : Float Material

316 Stainless Steel (standard)		1
Hasteloy C		2
Monel		3
Tantalum (float codes 66, 67, 68, 69, 70, 71, 72)	(Note: 15)	4
PVC - 1/2" size (float code 74)	(Note: 16)	5
PVC - 3/4"-1" size (float codes 76 & 78)	(Note: 17)	5
PVC - 1½ -2" size (float codes 80 & 82)	(Note: 18)	5
TEFLON - 1/2" size (float code 73)	(Note: 19)	6
TEFLON - 3/4"-1" size (float codes 75 & 77)	(Note: 20)	6
TEFLON - 1½ -2" size (float codes 79 & 81)	(Note: 21)	6

Additional ordering information**16 : Calibrations Includes Certificate of Calibration**

Standard, uncalibrated accuracy		C1
Calibrated Accuracy; Liquids at 1 ctk. Viscosity		C2
Calibrated Accuracy; Liquids at viscosity up to 100 ctk. (1/2 In., 3/4 In., and 1 In.)	(Note: 22)	C3
Calibrated accuracy; Liquids at viscosity up to 100 ctk. (1 1/2 In., and 2 In.)	(Note: 23)	C4

17 : Preparation Procedure

Oxygen cleaning per ABB 3BUJ980096		P1
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10A465

Code

18 : Certifications

Certificate of Conformance; per order	D1
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19 : Material Certifications

Material Certifications; "typicals", per material	M1
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20 : Pressure Test

Hydrostatic pressure test; 1/8 In. ... 1/2 In. diameter	(Note: 5)	H1
Hydrostatic pressure test; 3/4 In. ... 1 In. diameter	(Note: 24)	H2
Hydrostatic pressure test; 1½ In. ... 2 In. Diameter	(Note: 25)	H3

21 : Tags

Stainless Steel Tags (wired on) per meter	T1
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Table 10A465-A

10A465 Connection Size Connector, Size 1/2 in., NPT or Flange Tube Size 1/2 in.

Connection Type & Orientation
Vertical Threaded
Vertical Flanged

10A465 Connection Size Connector, Size 3/4 in. NPT, Tube Size 3/4 in.

Connection Type & Orientation
Vertical Threaded

10A465 Connection Size Connector, Size 3/4 in. NPT, Tube Size 1 in.

Connection Type & Orientation
Vertical Threaded

10A465 Connection Size Connector, Size 1 in., Flanged, Tube Size 3/4 in.

Connection Type & Orientation
Vertical Flanged

10A465 Connection Size Connector, Size 1 in., Flanged, Tube Size 1 in.

Connection Type & Orientation
Vertical Flanged

10A465 Connection Size Connector, Size 1-1/2 in. NPT or Flange, Tube Size 1-1/2 in.

Connection Type & Orientation
Vertical Threaded
Vertical Flanged

10A465 Connection Size Connector, Size 1-1/2 in. NPT or Flange, Tube Size 2 in.

Connection Type & Orientation
Vertical Threaded
Vertical Flanged

Table 10A465-C

10A465 Alarms Low Alarm, SPDT

Connection Size

- Connector, Size 1/2 in., NPT or Flange Tube Size 1/2 in.
- Connector, Size 3/4 in. NPT, Tube Size 3/4 in.
- Connector, Size 1 in., Flanged, Tube Size 3/4 in.
- Connector, Size 3/4 in. NPT, Tube Size 1 in.
- Connector, Size 1 in., Flanged, Tube Size 1 in.
- Connector, Size 1-1/2 in. NPT or Flange, Tube Size 1-1/2 in.
- Connector, Size 1-1/2 in. NPT or Flange, Tube Size 2 in.

10A465 Alarms High Alarm, SPDT

Connection Size

- Connector, Size 1/2 in., NPT or Flange Tube Size 1/2 in.
- Connector, Size 3/4 in. NPT, Tube Size 3/4 in.
- Connector, Size 1 in., Flanged, Tube Size 3/4 in.
- Connector, Size 3/4 in. NPT, Tube Size 1 in.
- Connector, Size 1 in., Flanged, Tube Size 1 in.
- Connector, Size 1-1/2 in. NPT or Flange, Tube Size 1-1/2 in.
- Connector, Size 1-1/2 in. NPT or Flange, Tube Size 2 in.

10A465 Alarms High & Low Alarm, SPDT

Connection Size

- Connector, Size 1/2 in., NPT or Flange Tube Size 1/2 in.
- Connector, Size 3/4 in. NPT, Tube Size 3/4 in.
- Connector, Size 1 in., Flanged, Tube Size 3/4 in.
- Connector, Size 3/4 in. NPT, Tube Size 1 in.
- Connector, Size 1 in., Flanged, Tube Size 1 in.
- Connector, Size 1-1/2 in. NPT or Flange, Tube Size 1-1/2 in.
- Connector, Size 1-1/2 in. NPT or Flange, Tube Size 2 in.

10A465 Alarms Low Alarm, DPDT

Connection Size

- Connector, Size 1/2 in., NPT or Flange Tube Size 1/2 in.
- Connector, Size 3/4 in. NPT, Tube Size 3/4 in.
- Connector, Size 1 in., Flanged, Tube Size 3/4 in.
- Connector, Size 3/4 in. NPT, Tube Size 1 in.
- Connector, Size 1 in., Flanged, Tube Size 1 in.
- Connector, Size 1-1/2 in. NPT or Flange, Tube Size 1-1/2 in.
- Connector, Size 1-1/2 in. NPT or Flange, Tube Size 2 in.

10A465 Alarms High Alarm, DPDT

Connection Size

- Connector, Size 1/2 in., NPT or Flange Tube Size 1/2 in.
- Connector, Size 3/4 in. NPT, Tube Size 3/4 in.
- Connector, Size 1 in., Flanged, Tube Size 3/4 in.
- Connector, Size 3/4 in. NPT, Tube Size 1 in.
- Connector, Size 1 in., Flanged, Tube Size 1 in.
- Connector, Size 1-1/2 in. NPT or Flange, Tube Size 1-1/2 in.
- Connector, Size 1-1/2 in. NPT or Flange, Tube Size 2 in.

10A465 Alarms High & Low Alarm, DPDT

Connection Size

- Connector, Size 1/2 in., NPT or Flange Tube Size 1/2 in.
- Connector, Size 3/4 in. NPT, Tube Size 3/4 in.
- Connector, Size 1 in., Flanged, Tube Size 3/4 in.
- Connector, Size 3/4 in. NPT, Tube Size 1 in.
- Connector, Size 1 in., Flanged, Tube Size 1 in.
- Connector, Size 1-1/2 in. NPT or Flange, Tube Size 1-1/2 in.
- Connector, Size 1-1/2 in. NPT or Flange, Tube Size 2 in.

10A465 Alarms High & High Alarm, SPDT

Connection Size

10A465 Alarms High & High Alarm, SPDT

Connection Size
Connector, Size 1/2 in., NPT or Flange Tube Size 1/2 in.
Connector, Size 3/4 in. NPT, Tube Size 3/4 in.
Connector, Size 1 in., Flanged, Tube Size 3/4 in.
Connector, Size 3/4 in. NPT, Tube Size 1 in.
Connector, Size 1 in., Flanged, Tube Size 1 in.
Connector, Size 1-1/2 in. NPT or Flange, Tube Size 1-1/2 in.
Connector, Size 1-1/2 in. NPT or Flange, Tube Size 2 in.

10A465 Alarms Low & Low Alarm, SPDT

Connection Size
Connector, Size 1/2 in., NPT or Flange Tube Size 1/2 in.
Connector, Size 3/4 in. NPT, Tube Size 3/4 in.
Connector, Size 1 in., Flanged, Tube Size 3/4 in.
Connector, Size 3/4 in. NPT, Tube Size 1 in.
Connector, Size 1 in., Flanged, Tube Size 1 in.
Connector, Size 1-1/2 in. NPT or Flange, Tube Size 1-1/2 in.
Connector, Size 1-1/2 in. NPT or Flange, Tube Size 2 in.

10A465 Alarms High & High Alarm, DPDT

Connection Size
Connector, Size 1/2 in., NPT or Flange Tube Size 1/2 in.
Connector, Size 3/4 in. NPT, Tube Size 3/4 in.
Connector, Size 1 in., Flanged, Tube Size 3/4 in.
Connector, Size 3/4 in. NPT, Tube Size 1 in.
Connector, Size 1 in., Flanged, Tube Size 1 in.
Connector, Size 1-1/2 in. NPT or Flange, Tube Size 1-1/2 in.
Connector, Size 1-1/2 in. NPT or Flange, Tube Size 2 in.

10A465 Alarms Low & Low Alarm, DPDT

Connection Size
Connector, Size 1/2 in., NPT or Flange Tube Size 1/2 in.
Connector, Size 3/4 in. NPT, Tube Size 3/4 in.
Connector, Size 1 in., Flanged, Tube Size 3/4 in.
Connector, Size 3/4 in. NPT, Tube Size 1 in.
Connector, Size 1 in., Flanged, Tube Size 1 in.
Connector, Size 1-1/2 in. NPT or Flange, Tube Size 1-1/2 in.
Connector, Size 1-1/2 in. NPT or Flange, Tube Size 2 in.

Note 1: Not available with Connection Type & Orientation code 8

Note 2: Not available with Connection Type & Orientation code 7

Note 3: Not available with Connection Size code L, M

Note 4: Not available with Connection Size code J, K

Note 5: Not available with Connection Size code J, K, L, M, N, P

Note 6: Not available with Connection Size code H, K, M, N, P

Note 7: Not available with Connection Size code H, J, L, N, P

Note 8: Not available with Connection Size code H, J, K, L, M, P

Note 9: Not available with Connection Size code H, J, K, L, M, N

Note 10: Not available with Float Code code 02, 03, 04, 05, 06, 07, 08, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 67, 68, 69, 70, 71, 72, 75, 76, 77, 78, 79, 80, 81, 82

Note 11: Not available with Float Code code 01, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 68, 69, 70, 71, 72, 73, 74, 77, 78, 79, 80, 81, 82

Note 12: Not available with Float Code code 01, 02, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 70, 71, 72, 73, 74, 75, 76, 79, 80, 81, 82

Note 13: Not available with Float Code code 01, 02, 03, 04, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 61, 62, 63, 64, 65, 66, 67, 68, 69, 71, 72, 73, 74, 75, 76, 77, 78, 81, 82

Note 14: Not available with Float Code code 01, 02, 03, 04, 05, 06, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 66, 67, 68, 69, 70, 73, 74, 75, 76, 77, 78, 79, 80

Note 15: Not available with Float Code code 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82

Note 16: Not available with Float Code code 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 75, 76

Note 17: Not available with Float Code code 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75

Note 18: Not available with Float Code code 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75

Note 19: Not available with Float Code code 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 74, 75, 76

Note 20: Not available with Float Code code 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 76

Note 21: Not available with Float Code code 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75

Note 22: Not available with Connection Size code N, P

Note 23: Not available with Connection Size code M, L, K, J, H

Note 24: Not available with Connection Size code H, N, P

Note 25: Not available with Connection Size code H, J, K, L, M

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