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ROTAMETERS

FLOW MEASURING INSTRUMENTS

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VARIABLE AREA ROTAMETER

PRINCIPLE OF ROTAMETER

The variable area rotameters are very simple yet versatile flow measurement device for use on wide variety of industrial liquids and gases. This type of rotameter operates in a closed pipe system and utilizes a movable float housed in vertically positioned tapered tube . A calibrated scale mounted in front of or next to the tube allows the float position to be translated into a meaningful value.

It's operation is based on the variable area principle , where a gas or liquid flow raises a float in a tampered tube increasing the area for passage of flow .

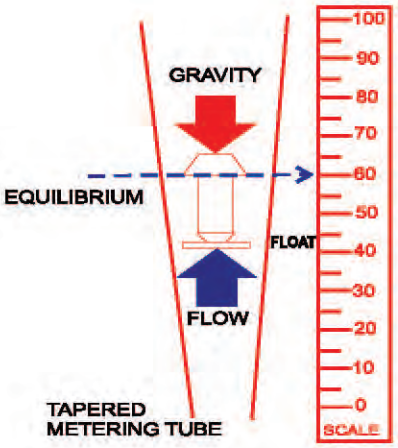
The float moves up or down in the tube in proportion to the fluid flow rate and the internal area between the float and the tube wall. The float reaches a stable position in the tube when the upward force exerted by the flowing fluid equals the downward gravitational force exerted by the weight of the float. A change in flowrate upsets this balance of forces. The float then moves up or down ,changing the annular area until it again reaches a position .The variation in percentage of repeatable is the result of scale length .

Significant aspect of excellent repeatability is one reason that variable area rotameters are so widely used in process industries and other application.

ACRYLIC BODY ROTAMETERS

FEATURES

- Easy Projection Mounting
- Best Visibility
- Direct reading Scale
- Shatter Proof Acrylic Body
- Light Weight
- Neat Modular Appearance
- Unique Flush Panel Mounting(Series-VAB)
- Built-In Flow Control Valve(Series-VAB)
- Best Visibility



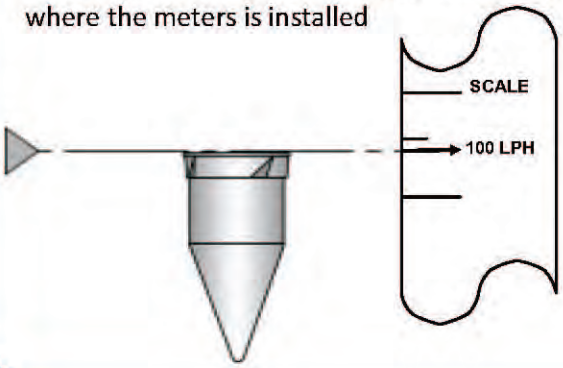
APPLICATION

These meters with all plastic fitting to eliminate corrosion completely. The meters are useful for measuring flow of air , gases , water & many organic chemicals.

OPERATING PRINCIPLE

The essential working parts is a tapered flow tube precision machined inside the acrylic body. When Floe occurs the position of float within the tube indicates flowrates on a calibration scale engraved on the acrylic body. with integral construction , a needle valve and flow parts are built into the acrylic body. Resulting in a very compact and economical design .

The Unique "front plate" design (Modal VAB) the beauty of any panel where the meters is installed



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VAA , VAB MODEL SPECIFICATION

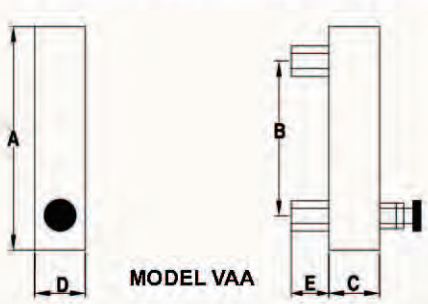
1. Meter Body : Acrylic
2. Float : SS 316 , PTFE , PVC etc
3. Wetted Parts : SS , PVC , P.P , PTFE
4. O-Rings : Neoprene , PTFE
5. Scale : Engraved on Body
6. Temp. Rating : 160 Deg. F

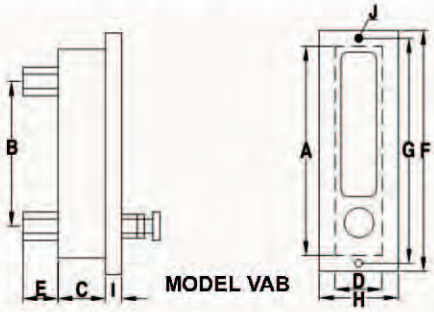
MODEL AND RANGES VAA & VAB

MODEL	Air at Amb. Temp LPM	NM/HR	Pressure Rating maximum	Model	Water at 20Deg.C LPM	LPH	Pressure Rating maximum
VAA & VAB	0.1-1					0.4-5	
	0.2-2					1-10	
	0.4-5			50/100		3-30	
50/100	1-10				0.1-1	4-50	5kg/cm2
	2-20	0.1-1.2	5kg/cm2		0.15-1.5	10-100	
	3-30	0.15-1.8		150	0.4-4	20-250	
	4-50	0.3-3		200	0.2-2.5	15-150	
150	15-150	0.8-9			0.4-5	30-300	
200	10-100	0.6-6		300	0.8-8	40-500	
300	15-160	1-10			1-10	60-600	
	20-250	1.5-15			1.5-16	100-1000	10kg/cm2
	40-500	3-30	10kg/cm2		2-25	150-1500	
350	80-800	4-50		350	3-30	200-2000	
	100-1000	6-60			4-40	200-2500	

OVERALL DIMENSION (MM) MODEL VAA & VAB

Model VAA/VAB	A	B	C	D	E	F	G	H	I	J HOLE	Connection BSP"F'
50	100	64	28	28	18	130	116	32	3	5	¼" & 1/8"
100	150	114	28	28	18	180	166	32	3	5	¼"
150	150	110/114	35	28	18	180	166	32	3	5	¼"
200	195	159	28	28	18	225	210	36	3	5	¼"
300	250	200	40	40	25	290	275	52	3	5	½"
350	250	194	48	42	25	290	275	52	3	5	¾"





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VAC Model

SPECIFICATION

1. **Meter Body** : Acrylic
2. **Float** : SS 316 , PTFE , PVC etc
3. **Wetted Parts** : SS , PVC , P.P , PTFE etc.
4. **O-Rings** : Neoprene , PTFE Sillicon etc.
5. **Scale** : Engraved on Body
6. **Temp. Rating** : 160 Deg. F
7. **Repeatability** : 0.5%
8. **Rangeability** : 10:1
9. **Connection**: Flanged or Threaded
10. **Accuracy of Full Scale**: Model 50±5%, 100& 150±3%
    Model200,300,350& 400±2%
    Model 450,500,600,700&800±2%

MODEL AND RANGES, MODEL VAC

Model	Air at Amb. Temp LPM	NM/HR	Pressure Rating maximum	Model	Air at Amb. Temp LPM	NM/HR	Pressure Rating maximum
VAC 50/100	0.04-0.5		5kg/cm2	50/100		0.4-5	5kg/cm2
	0.1-1					1-10	
	0.2-2					3-30	
	0.4-5				0.1-1	4-50	
	1-10				0.15-1.5	10-100	
	2-20	0.1-1.2		150	0.4-4	20-250	
	3-30	0.15-1.8		200	0.2-2.5	15-150	
	4-50	0.3-3		300	0.4-5	30-300	10kg/cm2
150	15-150	0.8-9			0.8-8	40-500	
200	8-75	0.4-4.5			1-10	60-600	
	10-100	0.6-6			1.5-16	100-1000	
300	15-160	1-10	10kg/cm2	350	2-25	150-1500	
	20-250	1.5-15			3-30	200-2000	
	40-500	3-30			4-40	200-2500	
350	80-800	4-50		400	4-50	300-3000	
	100-1000	6-60			6-60	400-4000	
400	150-1500	10-100			8-80	400-5000	
	200-2000	10-120			10-100	600-6000	
	200-2500	15-150		450	10-100	600-6000	
450		20-200			10-130	600-8000	
500		25-250	20kg/cm2	500	10-130	600-8000	20kg/cm2
		30-300			10-160	1000-10000	
		40-400			20-200	1000-12000	
		50-500			20-250	1000-15000	
600		60-600		600	20-300	1000-18000	
		70-700			30-330	2000-20000	
650		80-800		650	40-400	2000-25000	
		100-1000			40-500	3000-30000	
		120-1200			60-650	3600-36000	
700		80-800		700	40-400	2000-25000	
		100-1000			40-500	3000-30000	
		130-1300			60-650	4000-40000	
		160-1600			80-800	5000-50000	
800		200-2000		800	100-1000	6000-60000	
		250-2500			150-1300	10000-80000	

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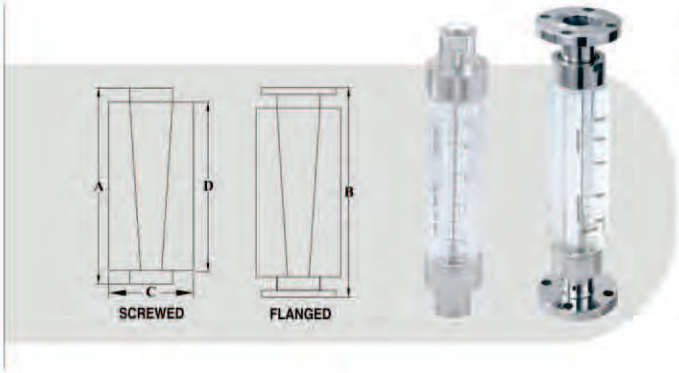


SPECIAL SIZES & RANGES					
Model	A	B	C	D	Connection BSP"F" /Flange
50	135		28	100	1/8" & ¼"
100	185		28	150	¼"
150	185		32	150	¼" & ½"
200	240		28	195	¼"
300	250	275	35	180	½"
350	250	275	42	180	¾"
400	300	325	55	230	1" &1 ½"
450	400	450	60	320	1" &1 ½"
500/600	400	450	70	320	1 ½" & 2"
650		450	85	320	2" &2 ½"
700		450	100	320	2 ½" & 3"
800		450	100	320	4"

METAL TUBE ROTAMETER

OPERATING PRINCIPLE

The essential working part is a tapered tube with an imbedded magnetic float. These are usually manufactured of stainless steel with stainless steel floats When flow occurs , the position of the float is determined by magnetic or mechanical followers that can be read from the outside of the metering tube. The meter works well with liquids gases even at elevated pressure and temperatures.

SPECIFICATIONS

1. Meter Body ; SS316L , SS316 , SS304 etc
2. Float : SS316L , SS316 , PTFE etc
3. Indicator housing : ABS , Optional – Aluminium , SS304
4. Temperature Rating – 350Deg. C
5. Pressure : 90 BAR
6. Accuracy : +_ 2% of full scale
7. Accessories : 1. Electronic transmitter with (Steam jacket) 4-20m A 0/P
   2. Digital Flowrate indicator totaliser
   3. Hi-low flow switch

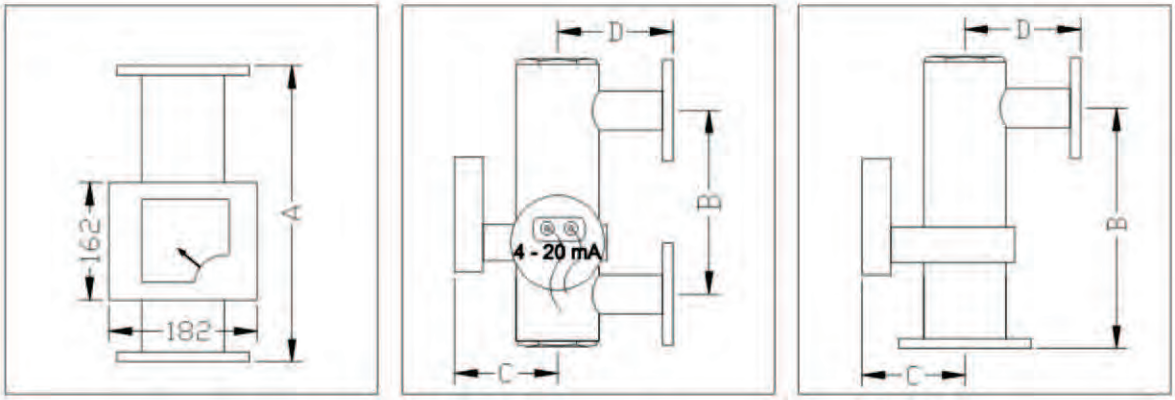
APPLICATIONS

Process treatment plant manufactures use this meter due to its ease of installation, perfect safety and easy maintenance. It may be used for monitoring flow of De-moneralized water, Gases, Acids, Salts, Organic Solvents and most petroleum products.

DIMENSIONS SERIES VAD						
Model & Ranges			Dimensions in mm			
Model No.	RangeM3/HR Water	Connection Flange Type	A	B	C	D
VAD 100S	0.1-1	½"	350	400	135	100
	0.2-2	¾"	350	400	135	100
100	0.3-3	1"	350	400	135	100
	0.5-5	1"	350	400	135	100
200	1-10	1 ½"	350	400	135	100
	1.5-15	1 ½"	350	400	135	100
300	2-20	2"	350	400	135	120
	2.5-25	2"	350	400	135	120
400	3-30	2 ½"	350	400	135	120
	4-40	2 ½"	350	400	135	120
500	4-40	3"	350	400	155	150
	5-50	3"	350	400	155	150
600	6-60	4"	350	400	155	150
	8-80	4"	500	500	175	170
	10-100	4"	500	500	175	170
700	13-130	5"	500		175	
800	16-160	6"	500		200	
900	20-200	8"	500		200	

APPLICATION

Process treatment plant use this meter due to its easy of installation , perfect safety any easy maintenance . it may be used for monitoring of flow .



Note : Dimensions Can be modified on Request.

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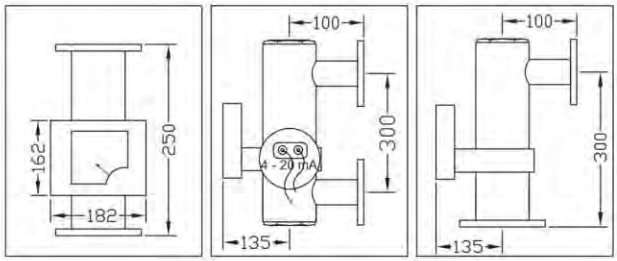
Metal Tube Rotameters :VADM

SPECIFICATION MODEL VADM

1. Meter Body ; SS316L , SS316 , SS304 etc
2. Float : SS316L , SS316 , PTFE etc
3. Indicator housing : ABS , Optional – Aluminium , SS304
4. Temperature Rating – 350Deg. C
5. Pressure : 90 BAR
6. Accuracy : ± 2% of full scale
7. Accessories : Electronic Transmitter with 4-20 mA O/P, Digital Flowrate Indicator totaliser, Hi- low flow switch

MODEL & RANGES		
Model No.	Range LPH water	Connection
VADM 100S	50-500	½"
	100-1000	¾"
	200-2000	¾"
100	300-3000	1"
	500-5000	1"
200	800-8000	1 ½"
	1000-10000	1 ½"
300	1500-15000	2"
	2000-20000	2"



GLASS TUBE ROTAMETERS

Vautomat glass tube rotameter are unique design for industrial usage high precision tapered borosilicate glass tube are utilizd for best performances. The basic rotameter is the glass tube indicating type The float is usually made of stainless steel to provide corrosion resistance . The float has a sharp metering edge where the is observed by means of a scale mounted alongside the tube.The Special design features eliminate stresses on glass tube even under industrial handling conditions. Glass tube are field replaceable without disturbing end connections.

SPECIFICATIONS MODEL VAG

1. Meter Body : Powder coated M.S optional SS 304, 316 etc.
2. Float : SS316, SS316, PTFE, Monel, PVC etc.
3. Wetted parts : SS316L, SS 316, SS 304, MS PTFE, PVC, P.P,, Monel etc.
4. Packings : Neoprene, PTFE, Silicon etc.
5. Tube : Borosilicate glass.
6. Scale Length : 175-225mm.
7. Temp Max : upto 200C depends on gland Pacing material.
8. Connections : Flanged, threaded etc.
9. Accurecy : +-2% of full scale.
10. Repeatibility :0.5%.
11. Rangeability : 10.1.
12. Accessories : Hi-low flow switch, steam jacketed.

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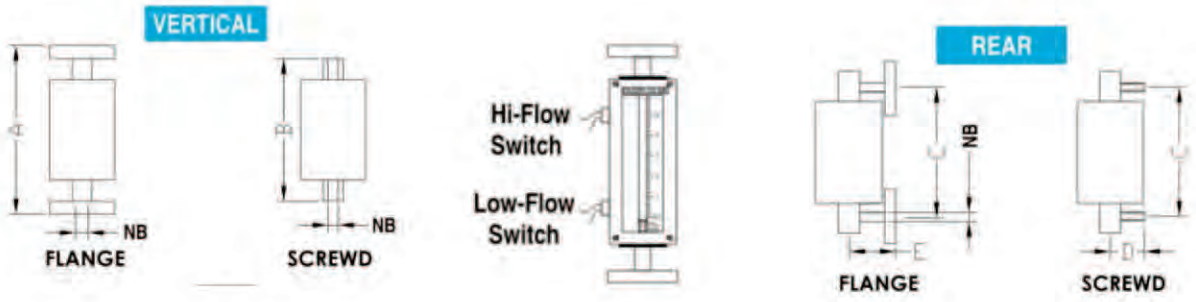
STANDARD RANGES					
NB	MODELS	FLOW RATES		Pressure Rating KG/CM²	Pressre Drop MM WG
		Water At 20⁰ C LPH	Air At Amb. Temp. Nm³ / Hr		
15	VAG-1	10-100	0.3-3	20	250
	VAG -2	25-250	0.8-8		
20	VAG -3	50-500	1.5-15	20	360
	VSG-4	60-600	1.8-18		
25	VAG -5	100-1000	3-30	12	650
	VAG -6	200-200	6-60		
	VAG -7	300-3000	8-80		
40	VAG -8	400-4000	12-120	9	650
	VAG -9	500-5000	15-150		
	VAG -10	600-6000	18-180		
50	VAG -11	80-8000	24-240	7	850
	VAG -12	1000-10000	30-300		
	VAG -13	1200-12000	.....		
65	VAG -14	1500-15000	.....	5	950
80	VAG -15	2000-20000	.....	5	950
	VAG -16	3000-30000	.....	5	1100
	VAG -17	8000-40000	.....	5	1100

OVERALL DIMENSIONS					
NB	A	B	C	D	E
15	500	425	440	55	90
20	500	425	440	60	90
25	500	425	500	65	115
40	500	425	500	8/5	140
50	500	450	500	85	455
65	500	N/A	500	N/A	190
80	500	N/A	500	N/A	190



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VAGM MODEL
SPECIFICATIONS MODEL VAGM

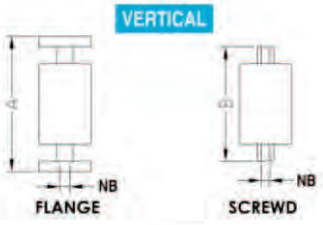
1. Meter Body : Power coated M.S. optional SS 304. SS 316 etc.
2. Float : SS 316L, SS 316, PTFE, Monel, PVC etc.
3. Scale Length : 100-125mm.
4. Packings : Neoprene PTFE, Silicon etc.
5. Tube : Borosilicate glass.
6. wetted Parts : SS316L, SS 316, SS 304, MS PTFE, PVC. P.P,, Monel etc.
7. Temp. Max : Upto 200C° depends on gland packing material.
8. Connections : Flanged, threaded etc.
9. Accuracy : +-2% of full scale.
10. Rangeability : 10:1.
11. Repeatibillity : 0.5%
12. Accessories : Hi-low flow switch

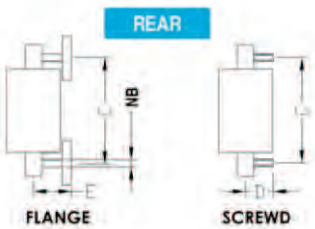
STANDARD RANGES

NB	Models	FLOW RATES		Pressure Rating KG/CM²	Pressure Drop MM WG
		Water At 20°C LPH	Air Amb. Temp. Nm²/Hr		
15	VAGM-1	10-100	0.3-3	20	250
	VAGM-2	25-250	0.8-8		
20	VAGM-3	50-500	1.5-15	20	360
	VAGM-4	60-600	1.8-18		
25	VAGM-5	100-1000	3-30	12	650
	VAGM-6	200-2000	6-60		
	VAGM-7	300-3000	8-80		
40	VAGM-8	400-4000	12-120	9	650
	VAGM-9	500-5000	15-150		

OVERALL DIMENSIONS

NB	A	B	C	D	E
15	350	300	325	55	90
20	350	300	325	60	90
25	350	300	325	65	115
40	350	300	325	85	140





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BYPASS ROTAMETERS (MODEL VBPR)

V.Automat Bypass Rotameter system are designed for the accurate measurement of fluid rate of flow in pipe line 25 NB in diameter or larger design standard ISO 5167 or BS/1042. They accomplished this by providing bypass flow that is directly proportional to main flow. Since Rotameter measure bypass flow. Not static differential, flow ranges up to 10 to 1 are possible with thease instruments. This provides a decided advantage over the type of flow measuring devices.

SYSTEM- A complete bypass Rotameter installation consist of the following : orifice flanges with orifice plate for insertion into the main pipeline; bypass piping with valves and fittings; a range orifice for insertion into the bypass pipeline; and what ever type Rotameter is considered best suited to a particular application.

INSTALLATION- BYPASS

Rotameter can be installed to measure horizontal flow (Fig. C) for propr operation, a straight run of pipe is required on both sides of the orifice or, when space is limited, straightening vanes must be used as indicated in Table.

SPECIFICATIONS

1. Type of tapping : Flange, D and D/2, corner
2. Accuracy : (+-) 25% of of full flow.
3. Rangeability : 7:1 or 5:1
4. Accessories : Hi-low flow switch 4-20 mA transmitter.

METRE ASSEMBLY

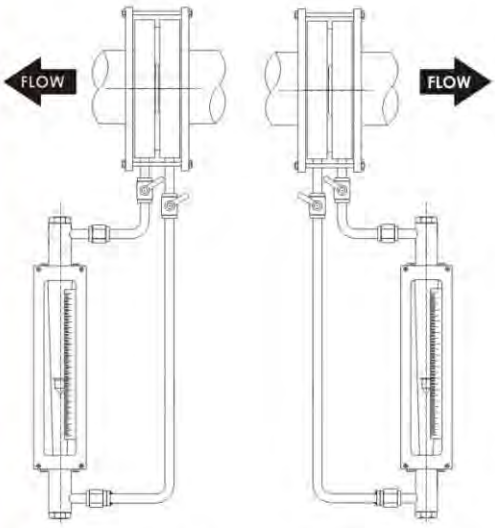
1. Glass tube Rotameter : VAAG-1
2. Metal Tube Rotameter : FAD-100

STANDARD RANGES FOR WATER AT 20 °C & PRESSURE UPTO 3 KG/CM²			
NB	Maximum Flowrate (M3/HR.)	NB	Maximum Flowrate (M3/HR.)
25	5	250	550
40	15	300	800
50	25	3 50	1000
65	40	4 00	1500
80	60	4 50	2000
100	120	500	2500
125	150	600	3000
150	200	700	4000
200	320	800	5000

NOTE:- By increasing pressure flowrate can be increased.

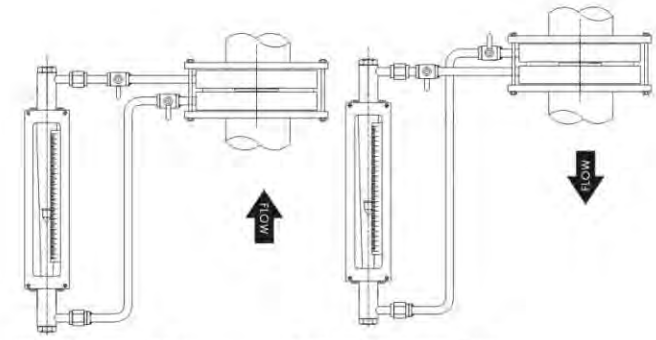
INSTALLATION-BYPASS

Rotameters can be installed to measure horizontal flow (fig.A) or vertical flow up)fig.B) or down (fig. C) for proper operation, a straight run of pipe is required on both sides of the orifice or, when space is limited, straightening vanes must be used as indicated in table.



(Flow Right to Left) (Flow Left to Right)

Horizontal Flow
(Fig -A)



Vertical Upward Flow
(Fig-B)

Vertical Downward Flow
(Fig-C)

Bypass Rotameter Assembly Through Carrier Rings

STANDARD MAERIAL OF CONSTRUCTION

1 Orifice flange : SS 316 L, SS 316, SS304, CS etc.
2 Orifice Plate : SS316, SS316, SS304, Hastelloy 'C'
3 Carrier Rings : SS 316 L, SS 316, Mild steel, PP etc.
4 By Pass Line : SS 316 L, SS 316, SS 304, Mild steel, PVC etc.
5 Wetted parts of the Rotameter : SS316, SS 316, SS304, Mild steel, PP etc.

PLEASE PROVIDE US GENERAL ORDERING INFORMATIONS FOR BY-PASS ROTAMETER.

1 Name of fluid.
2 Operating density of fluid / specific gravity.
3 Operating viscosity of fluid.
4 Clarity of fluid transparent or opaque.
5 Operating pressure.
6 Perferred material of construction for wetted parts and non wetted parts.
7 Line size.
8 Operating temp.
9 Type of connection.
10 Minimum & maximum flow rate.
11 Actual I.D of pipe or schedule of pipe or class of pipe horizontal .
(Left to right or right to left.)

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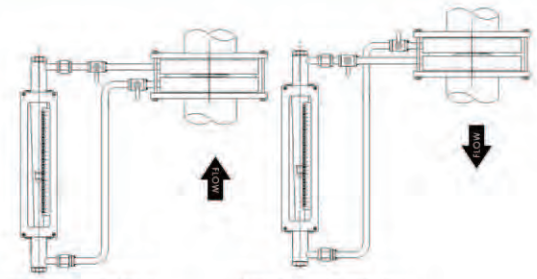
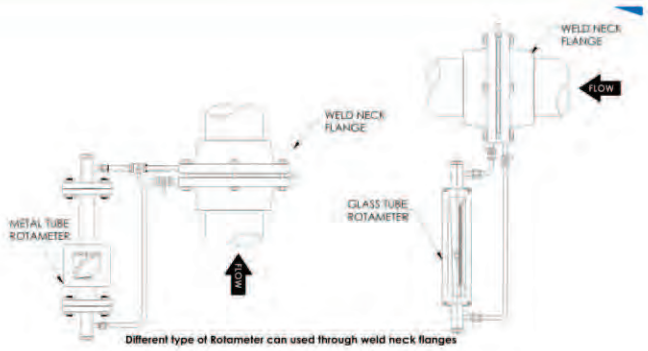


Vertical Upward Flow (Fig-B)

Vertical Downward Flow (Fig-C)

Bypass Rotameter Assembly Through Carrier Rings



Different type of Rotameter can used through weld neck flanges

MINIMUM UPSTRAIGHT LENGTHS REQUIRED		DIAMETER RATIO (B)											
Fitting Before Straight Run		0.2	0.25	0.3	0.35	0.4	0.45	0.5	0.55	0.6	0.65	0.7	0.75
Signal 90^0 bend or tee		10	10	10	12	14	14	14	16	18	22	28	36
Two or more 90^0 bends in the same planes		14	14	16	16	18	18	20	22	26	32	36	42
Reducers or Expanders		34	34	34	36	36	38	40	44	48	54	62	70
Globe Value Fully Open		16	16	16	16	16	18	20	20	22	24	26	28
Gate Valve Fully open		18	18	18	18	20	20	22	24	26	28	32	36
Gate Valve Fully open		12	12	12	12	12	12	12	14	16	16	20	24
Minimum Down Stream Straight Lengths Required		4	4	5	5	6	6	6	6	7	7	7	8

Valve of the Straight Length are of 'D' B=D/D D= Orifice Diameter of Pipe.

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