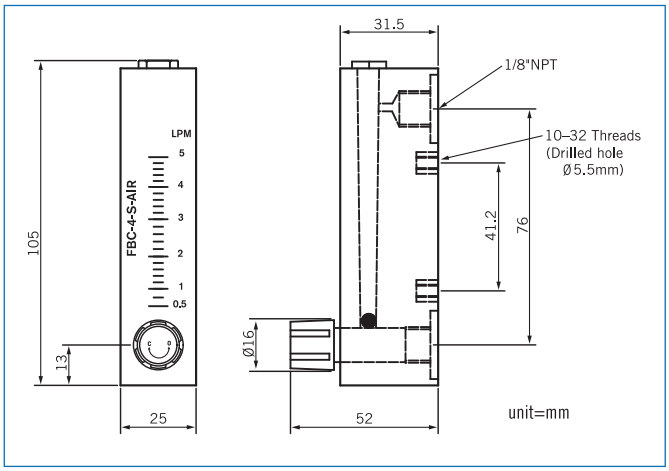
ACRYLIC PLASTIC FLOW METER

FBC SERIES

Technical Data

Service: gas & liquid
Wetted parts material: Body– Acrylic Plastic
O-ring– NBR (standard), Viton on request
Float– SS316, Glass, POM Plastic
Valve material: SS316
Connection material: SS316
Connection size: 1/8"NPT female
Temperature & pressure limits: 150 psig(10bar) @ 100°F(38°C)
Temperature limit: -24°C~+54°C
Accuracy: 3% full scale
Mounting: vertical position
Weight: 0.12 kg

Dimensions



Range Table & Ordering Information

A. Fluid Type: Water

Item	Flow Range	Float Material	Flow Unit	Needle Valve	Ordering Code
1	5~50	SS316	cc/min, cc per Minute	with	FBC-V-S-W-50-C
				without	FBC-N-S-W-50-C
2	10~100	SS316	cc/min, cc per Minute	with	FBC-V-S-W-100-C
				without	FBC-N-S-W-100-C
3	25~250	SS316	cc/min, cc per Minute	with	FBC-V-S-W-250-C
				without	FBC-N-S-W-250-C
4	100~1000	SS316	cc/min, cc per Minute	with	FBC-V-S-W-1000-C
				without	FBC-N-S-W-1000-C
5	0.1~1	SS316	LPH, Litter per Hour	with	FBC-V-S-W-1-LH
		POM, Plastic		without	FBC-N-P-W-1-LH
6	0.5~5	SS316	LPH, Litter per Hour	with	FBC-V-S-W-5-LH
				without	FBC-N-S-W-5-LH
7	1.5~15	SS316	LPH, Litter per Hour	with	FBC-V-S-W-15-LH
				without	FBC-N-S-W-15-LH
8	3~30	SS316	LPH, Litter per Hour	with	FBC-V-S-W-30-LH
				without	FBC-N-S-W-30-LH
9	6~60	SS316	LPH, Litter per Hour	with	FBC-V-S-W-60-LH
				without	FBC-N-S-W-60-LH
10	10~100	SS316	LPH, Litter per Hour	with	FBC-V-S-W-100-LH
				without	FBC-N-S-W-100-LH
11	1.5~15	SS316	GPH, Gallon (us) per Hour	with	FBC-V-S-W-15-GH
				without	FBC-N-S-W-15-GH
12	2.5~25	SS316	GPH, Gallon (us) per Hour	with	FBC-V-S-W-25-GH
				without	FBC-N-S-W-25-GH

B. Fluid Type: Air

Item	Flow Range	Float Material	Flow Unit	Needle Valve	Ordering Code
1	60~300	Glass	cc/min, Normal cc per Minute	with	FBC-V-G-A-300-C
				without	FBC-N-G-A-300-C
2	80~450	POM, Plastic	cc/min, Normal cc per Minute	with	FBC-V-P-A-450-C
				without	FBC-N-P-A-450-C
3	100~1000	Glass	cc/min, Normal cc per Minute	with	FBC-V-G-A-1000-C
				without	FBC-N-G-A-1000-C
4	0.1~1	Glass	LPM, Normal Litter per Minute	with	FBC-V-G-A-1-LM
				without	FBC-N-G-A-1LM
5	0.2~2.0	SS316	LPM, Normal Litter per Minute	with	FBC-V-S-A-2-LM
				without	FBC-N-S-A-2-LM
6	0.5~5	SS316	LPM, Normal Litter per Minute	with	FBC-V-S-A-5-LM
				without	FBC-N-S-A-5-LM
7	1~10	SS316	LPM, Normal Litter per Minute	with	FBC-V-S-A-10-LM
				without	FBC-N-S-A-10-LM
8	2~20	POM, Plastic	LPM, Normal Litter per Minute	with	FBC-V-P-A-20-LM
				without	FBC-N-P-A-20-LM
9	2.5~25	SS316	LPM, Normal Litter per Minute	with	FBC-V-S-A-25-LM
				without	FBC-N-S-A-25-LM
10	4~40	SS316	LPM, Normal Litter per Minute	with	FBC-V-S-A-40-LM
				without	FBC-N-S-A-40-LM
11	5~50	SS316	LPM, Normal Litter per Minute	with	FBC-V-S-A-50-LM
				without	FBC-N-S-A-50-LM
12	8~80	SS316	LPM, Normal Litter per Minute	with	FBC-V-S-A-80-LM
				without	FBC-N-S-A-80-LM
13	10~100	SS316	LPM, Normal Litter per Minute	with	FBC-V-S-A-100-LM
				without	FBC-N-S-A-100-LM
14	10~100	SS316	LPH, Normal Litter per Hour	with	FBC-V-S-A-100-LH
				without	FBC-N-S-A-100-LH
15	20~200	POM, Plastic	LPH, Normal Litter per Hour	with	FBC-V-P-A-200-LH
				without	FBC-N-P-A-200-LH
16	30~300	SS316	LPH, Normal Litter per Hour	with	FBC-V-S-A-300-LH
				without	FBC-N-S-A-300-LH
17	50~500	SS316	LPH, Normal Litter per Hour	with	FBC-V-S-A-500-LH
				without	FBC-N-S-A-500-LH
18	60~600	SS316	LPH, Normal Litter per Hour	with	FBC-V-S-A-600-LH
				without	FBC-N-S-A-600-LH
19	80~800	SS316	LPH, Normal Litter per Hour	with	FBC-V-S-A-800-LH
				without	FBC-N-S-A-800-LH
20	0.15~1.5	SS316	NM^3/H, Normal Cubic Meter per Hour	with	FBC-V-S-A-1.5-MH
				without	FBC-N-S-A-1.5-MH
21	0.3~3	SS316	NM^3/H, Normal Cubic Meter per Hour	with	FBC-V-S-A-3-MH
				without	FBC-N-S-A-3-MH
22	0.6~6	SS316	NM^3/H, Normal Cubic Meter per Hour	with	FBC-V-S-A-6-MH
				without	FBC-N-S-A-6-MH
23	0.3~3	SS316	SCFH, Standard Cubic Feet per Hour	with	FBC-V-S-A-3-SH
				without	FBC-N-S-A-3-SH
24	0.6~6	POM, Plastic	SCFH, Standard Cubic Feet per Hour	with	FBC-V-P-A-6-SH
				without	FBC-N-P-A-6-SH
25	1~10	POM, Plastic	SCFH, Standard Cubic Feet per Hour	with	FBC-V-P-A-10-SH
				without	FBC-N-P-A-10-SH
26	2~20	SS316	SCFH, Standard Cubic Feet per Hour	with	FBC-V-S-A-20-SH
				without	FBC-N-S-A-20-SH
27	5~50	SS316	SCFH, Standard Cubic Feet per Hour	with	FBC-V-S-A-50-SH
				without	FBC-N-S-A-50-SH
28	16~160	SS316	SCFH, Standard Cubic Feet per Hour	with	FBC-V-S-A-160-SH
				without	FBC-N-S-A-160-SH
29	20~200	SS316	SCFH, Standard Cubic Feet per Hour	with	FBC-V-S-A-200-SH
				without	FBC-N-S-A-200-SH

C. Fluid Type: Special Gas

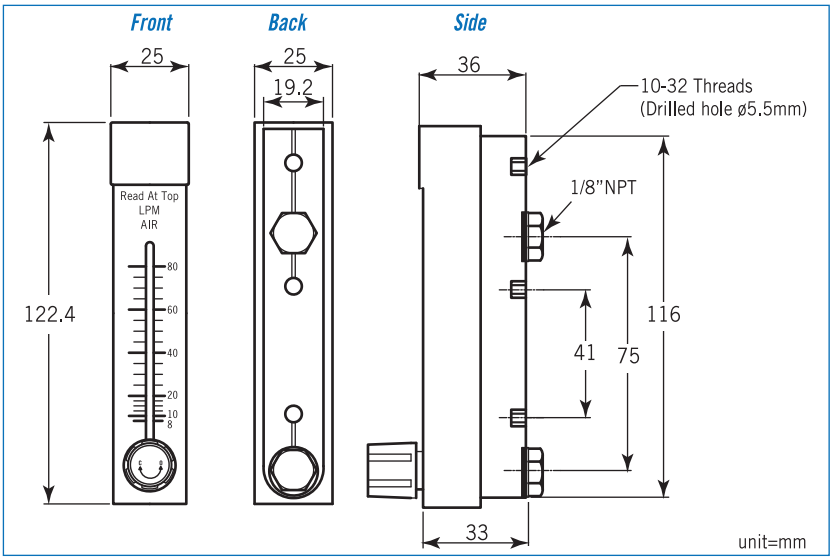
Item	Flow Range	Float Material	Flow Unit	Needle Valve	Ordering Code
1	0.02~0.2	POM, Plastic	LPM, O_2	with	FBC-V-P-A-0.2-LM
				without	FBC-N-P-A-0.2-LM
2	20~150	POM, Plastic	SCFH, NH_3	with	FBC-V-P-A-150-SH
				without	FBC-N-P-A-150-SH

PLASTIC FLOW METER
MBC SERIES

Technical Data

Service: gas & liquid
Wetted parts material: Body– Polycarbonate (PC)
O-ring– Viton (standard)
Float– SS316, POM Plastic
Valve material: SS316
Connection material: SS316
Connection size: 1/8"NPT female
Pressure limit: 150 psig(10bar) @ 100°F(38°C)
Temperature limit: -10°C~+60°C
Accuracy: 3% full scale
Mounting: vertical position
Weight: 75 g

Dimensions



Range Table & Ordering Information

A. Fluid Type: Water

Item	Flow Range	Float Material	Flow Unit	Needle Valve	Ordering Code
1	10~100	SS316	cc/min, cc per Minute	with	MBC-V-S-W-100-C
2	25~250	POM	cc/min, cc per Minute	with	MBC-V-P-W-250-C
3	30~300	POM	cc/min, cc per Minute	with	MBC-V-P-W-300-C
4	50~500	POM	cc/min, cc per Minute	with	MBC-V-P-W-500-C
5	100~1000	SS316	cc/min, cc per Minute	with	MBC-V-S-W-1000-C
6	0.6~6	SS316	LPH, Litter per Hour	with	MBC-V-S-W-6-LH
7	0.8~8	POM	LPH, Litter per Hour	with	MBC-V-P-W-8-LH
8	1.5~15	POM	LPH, Litter per Hour	with	MBC-V-P-W-15-LH
9	2~20	POM	LPH, Litter per Hour	with	MBC-V-P-W-20-LH
10	2.5~25	POM	LPH, Litter per Hour	with	MBC-V-P-W-25-LH
11	3~30	POM	LPH, Litter per Hour	with	MBC-V-P-W-30-LH
12	5~50	SS316	LPH, Litter per Hour	with	MBC-V-S-W-50-LH
13	8~80	SS316	LPH, Litter per Hour	with	MBC-V-S-W-80-LH
14	15~150	SS316	LPH, Litter per Hour	with	MBC-V-S-W-150-LH
15	20~200	SS316	LPH, Litter per Hour	with	MBC-V-S-W-200-LH
16	25~250	SS316	LPH, Litter per Hour	with	MBC-V-S-W-250-LH

B. Fluid Type: Water

Item	Flow Range	Float Material	Flow Unit	Needle Valve	Ordering Code
1	0.2~2	POM	GPH, Gallon (us) per Hour	with	MBC-V-P-W-2-GH
2	0.5~5	POM	GPH, Gallon (us) per Hour	with	MBC-V-P-W-5-GH
3	0.8~8	POM	GPH, Gallon (us) per Hour	with	MBC-V-P-W-8-GH
4	1.3~13	SS316	GPH, Gallon (us) per Hour	with	MBC-V-S-W-13-GH
5	2~20	SS316	GPH, Gallon (us) per Hour	with	MBC-V-S-W-20-GH
6	4~40	SS316	GPH, Gallon (us) per Hour	with	MBC-V-S-W-40-GH
7	5~50	SS316	GPH, Gallon (us) per Hour	with	MBC-V-S-W-50-GH
8	6.5~65	SS316	GPH, Gallon (us) per Hour	with	MBC-V-S-W-65-GH

C. Fluid Type: Air

Item	Flow Range	Float Material	Flow Unit	Needle Valve	Ordering Code
1	0.2~2	POM	LPM, Normal Litter per Minute	with	MBC-V-P-A-2-LM
2	0.4~4	SS316	LPM, Normal Litter per Minute	with	MBC-V-S-A-4-LM
3	0.6~6	SS316	LPM, Normal Litter per Minute	with	MBC-V-S-A-6-LM
4	1~10	POM	LPM, Normal Litter per Minute	with	MBC-V-P-A-10-LM
5	1.5~15	POM	LPM, Normal Litter per Minute	with	MBC-V-P-A-15-LM
6	2.5~25	SS316	LPM, Normal Litter per Minute	with	MBC-V-S-A-25-LM
7	2.5~25	POM	LPM, Normal Litter per Minute	with	MBC-V-P-A-25-LM
8	3~30	POM	LPM, Normal Litter per Minute	with	MBC-V-P-A-30-LM
9	4~40	SS316	LPM, Normal Litter per Minute	with	MBC-V-S-A-40-LM
10	4~40	POM	LPM, Normal Litter per Minute	with	MBC-V-P-A-40-LM
11	5~50	SS316	LPM, Normal Litter per Minute	with	MBC-V-S-A-50-LM
12	7~70	SS316	LPM, Normal Litter per Minute	with	MBC-V-S-A-70-LM
13	8~80	SS316	LPM, Normal Litter per Minute	with	MBC-V-S-A-80-LM
14	10~100	SS316	LPM, Normal Litter per Minute	with	MBC-V-S-A-100-LM

Item	Flow Range	Float Material	Flow Unit	Needle Valve	Ordering Code
15	12~120	POM	LPH, Normal Litter per Hour	with	MBC-V-P-A-120-LH
16	25~250	SS316	LPH, Normal Litter per Hour	with	MBC-V-S-A-250-LH
17	35~350	SS316	LPH, Normal Litter per Hour	with	MBC-V-S-A-350-LH
18	60~600	POM	LPH, Normal Litter per Hour	with	MBC-V-P-A-600-LH

Item	Flow Range	Float Material	Flow Unit	Needle Valve	Ordering Code
19	0.1~1	POM	NM^3/H, Normal Cubic Meter per Hour	with	MBC-V-P-A-1-MH
20	0.15~1.5	SS316	NM^3/H, Normal Cubic Meter per Hour	with	MBC-V-S-A-1.5-MH
21	0.2~2	POM	NM^3/H, Normal Cubic Meter per Hour	with	MBC-V-P-A-2-MH
22	0.25~2.5	SS316	NM^3/H, Normal Cubic Meter per Hour	with	MBC-V-S-A-2.5-MH
23	0.4~4	SS316	NM^3/H, Normal Cubic Meter per Hour	with	MBC-V-S-A-4-MH
24	0.5~5	SS316	NM^3/H, Normal Cubic Meter per Hour	with	MBC-V-S-A-5-MH
25	0.6~6	SS316	NM^3/H, Normal Cubic Meter per Hour	with	MBC-V-S-A-6-MH

Item	Flow Range	Float Material	Flow Unit	Needle Valve	Ordering Code
26	0.5~5	POM	SCFH, Standard Cubic Feet per Hour	with	MBC-V-P-A-5-SH
27	1~10	SS316	SCFH, Standard Cubic Feet per Hour	with	MBC-V-S-A-10-SH
28	1.2~12	SS316	SCFH, Standard Cubic Feet per Hour	with	MBC-V-S-A-12-SH
29	2~20	POM	SCFH, Standard Cubic Feet per Hour	with	MBC-V-P-A-20-SH
30	3~30	POM	SCFH, Standard Cubic Feet per Hour	with	MBC-V-P-A-30-SH
31	5~50	SS316	SCFH, Standard Cubic Feet per Hour	with	MBC-V-S-A-50-SH
32	7~70	POM	SCFH, Standard Cubic Feet per Hour	with	MBC-V-P-A-70-SH
33	8~80	SS316	SCFH, Standard Cubic Feet per Hour	with	MBC-V-S-A-80-SH
34	14~140	SS316	SCFH, Standard Cubic Feet per Hour	with	MBC-V-S-A-140-SH
35	16~160	SS316	SCFH, Standard Cubic Feet per Hour	with	MBC-V-S-A-160-SH
36	20~200	SS316	SCFH, Standard Cubic Feet per Hour	with	MBC-V-S-A-200-SH

ACRYLIC PLASTIC FLOW METER

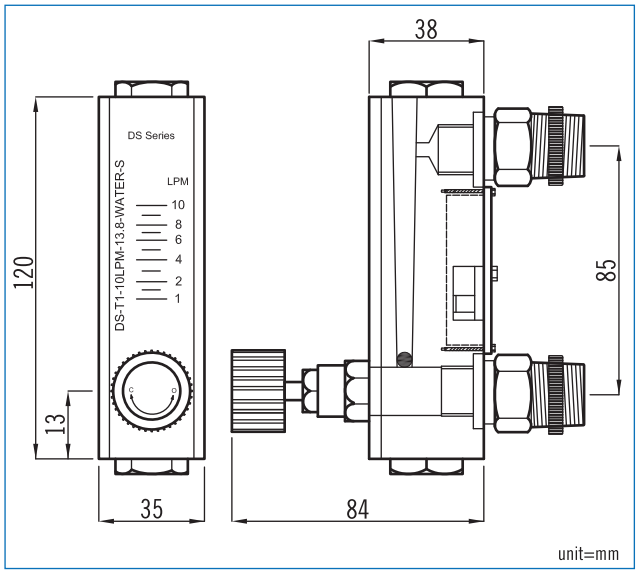
With Alarm Switch DS SERIES

with needle valve type
without needle valve type

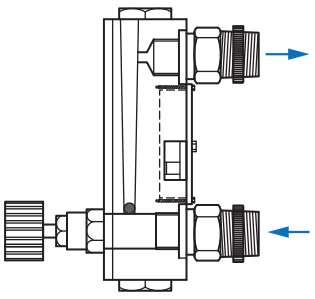
Technical Data

Service: Water, Air
Wetted parts material: Body: Acrylic Plastic; O-Ring-Viton; Float-magnet cover with Nickel
Connecting material: SS316
Connecting size: 1/4", 3/8" NPT & 3/8"PT female available
Mounting: vertical position
Temperature & pressure limits: 150 psig(10bar) @ 100°F(38°C)
Temperature limit: -24℃~+54℃
Accuracy: ±5% full scale
Alarm switch: one or two setting points, form A N.O. type bistable reed switch
Switch rating: AC 125V 0.5A / DC 100V 10W / Max. DC 250V<1mA
Weight: 0.55~0.6 kg
(Contact setting point should be within 10% to 80% of FS)

Dimensions



Flow Direction Types



Bottom Rear to Top Rear

Ordering Information

DS - 1 - A-1 - 1R - A - BT

Needle Valve
1 – With
2 – Without

Flow Direction
BT – Bottom rear to Top rear

Process Connection
A – ¼"NPT female
B – ⅜"NPT female
C – ⅜"PT female

Alarm Switch
1R – One setting point
2R – Two setting points
0 – Without alarm

Flow Range
A-1 – Water (LPH-Litter per Hour)
(1) 20~180 (2) 25~250 (3) 30~300 (4) 50~500
A-2 – Water (LPM-Litter per Minute)
(5) 0.35~3 (6) 0.4~4 (7) 0.5~5 (8) 0.8~8
B – Air (LPM-Normal Litter per Minute)
(9) 8~80 (10) 10~100 (11) 25~250
C-1 – Water (GPH-Gallon (us) per Hour)
(12) 5~50 (13) 6.5~65 (14) 8~80 (15) 13~130
C-2 – Water (GPM-Gallon (us) per Minute)
(16) 0.08~0.8 (17) 0.1~1 (18) 0.15~1.5 (19) 0.2~2
D – Air (SCFM-Standard Cubic Feet per Minute)
(20) 0.3~3 (21) 0.35~3.5 (22) 0.8~8

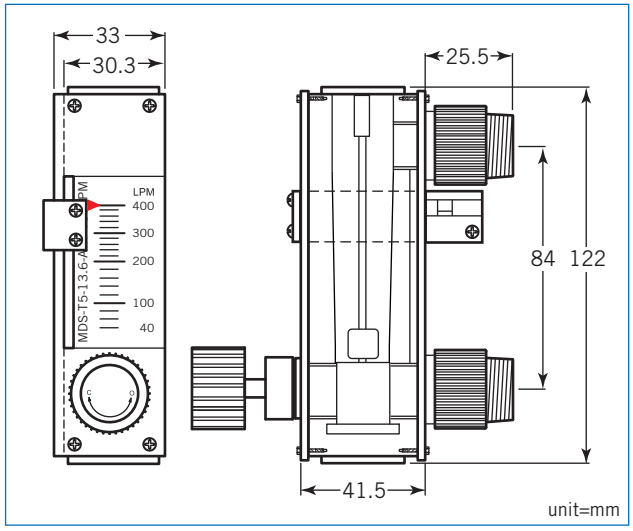
PLASTIC FLOW METER

MDS – alarm switch available – set point in front adjustable

Technical Data

Service: Water, Air
Wetted parts material: Body: Polycarbonate (P.C); O-ring: Viton; Float: SS316; Connection: SS316
Connection size: 3/8"NPT or PT female available
Mounting: Vertical position
Max. working pressure limit: 1.2 MPa (12 kg/cm²)
Max. test pressure: 2.0 MPa (20 kg/cm²) (water 25°C)
Max. working temperature limit: -10°C to 60°C (for PC body)
Accuracy: ±5% full scale
Alarm switch: One setting point, form A N.O. type bistable reed switch
Switch rating: AC 125V 0.5A / DC 100V 10W / Max. DC 250V < 1mA
Weight: 0.3~0.4 kg
(Contact setting point should be within 10% to 80% of FS)

Dimensions



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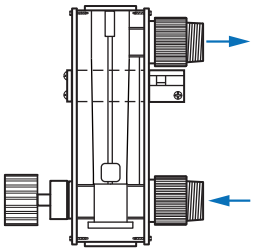
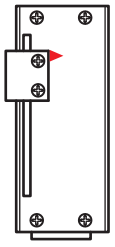
Flow Direction

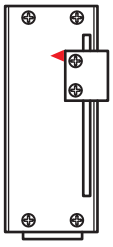


Bottom Rear to Top Rear

Alarm Switch Position



Left Side



Right Side

Ordering Information

MDS	-	A	-	PC	-	S	-	A	-	L	-	BT

Connection material
S – SS316

Body Material
PC – Polycarbonate

Flow Direction
BT – Bottom rear to Top rear

Alarm Switch Position
L – Left Side
R – Right Side
0 – Without switch

Process Connection
A – ⅜"NPT female
B – ⅜"PT female
C – ¼"PT female (only for Air with 100LPM or 150LPM)

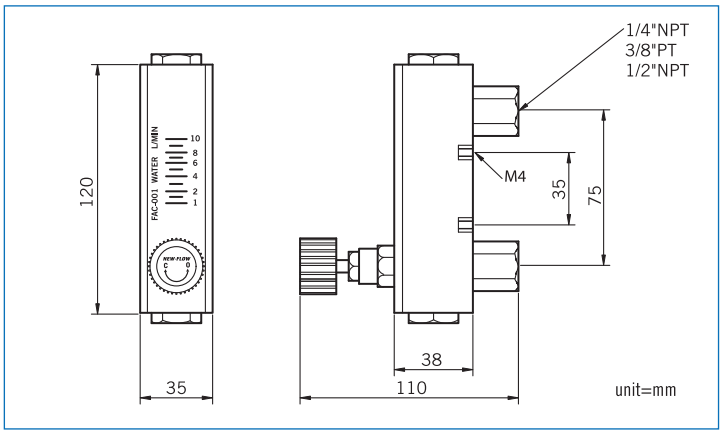
Flow Range
A – Air (LPM- Normal Litter per Minute)
(1) 10~100LPM (2) 15~150LPM
(3) 25~250LPM (4) 40~400LPM
B – Water (LPM- Litter per Minute)
(5) 0.3~3LPM (6) 0.5~5LPM
(7) 0.8~8LPM
C – Water (LPH- Litter per Hour)
(8) 20~200LPH (9) 30~300LPH
(10) 50~500LPH
D – Air (SCFM- Standard Cubic Feet per Minute)
(11) 0.35~3.5SCFM (12) 0.5~5SCFM
(13) 1~10SCFM (14) 1.5~15SCFM
E – Water (GPM- Gallon (us) per Minute)
(15) 0.08~0.8GPM (16) 0.15~1.5GPM
(17) 1~10GPM
F – Water (GPH- Gallon (us) per Houe)
(18) 5~50GPH (19) 8~80GPH
(20) 15~150GPH

ACRYLIC PLASTIC FLOW METER
FAC SERIES

Technical Data

Service: gas & liquid
Wetted parts material:
Body– Acrylic Plastic
O-ring– NBR, Viton
Float– SS316
Valve material: SS316
Connection material: SS316
Temperature & pressure limits:
150 psig(10bar) @ 100°F(38°C)
Temperature limit: -24°C~+54°C
Accuracy: 3% full scale
Mounting: vertical position
Weight: 0.45~0.5kg

Dimensions



Range Table

Water		Flow Unit
FAC-001	1~10	L/M, Liter per Minute
FAC-003	0.8~8	L/M, Liter per Minute
FAC-005	0.5~5	L/M, Liter per Minute
Air		**Flow Unit**
FAC-002	2~20	Nm³/H, Normal Cubic Meter per Hour
FAC-004	1.6~16	Nm³/H, Normal Cubic Meter per Hour
FAC-006	1~10	Nm³/H, Normal Cubic Meter per Hour

Ordering Information

FAC - 002 - S - 1 - V

Flow Range
001 – 1~10 L/M (water)
002 – 2~20 Nm³/H (air)
003 – 0.8~8 L/M (water)
004 – 1.6~16 Nm³/H (air)
005 – 0.5~5 L/M (water)
006 – 1~10 Nm³/H (air)
007 – Option

Connection & valve material
S – SS316

Connection size
1 – ¼" NPT
2 – ⅜" NPT
3 – ½" NPT
4 – Option

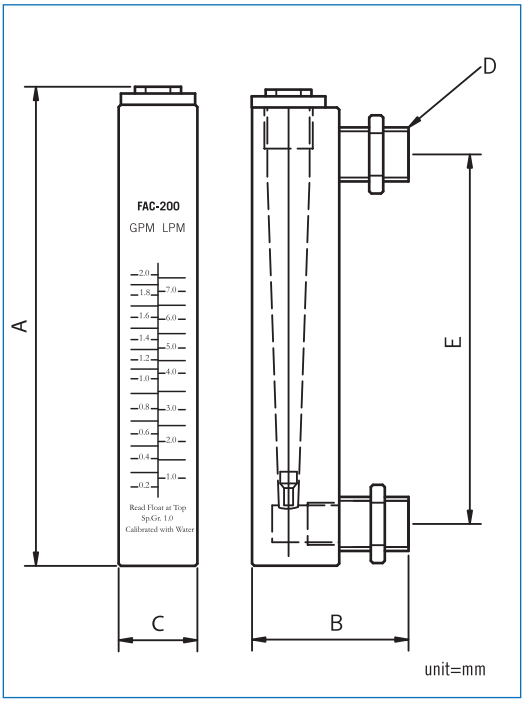
O-ring material
N – NBR
V – Viton

ACRYLIC PLASTIC FLOW METER
FAC200 SERIES

Technical Data

Service: water or liquid
Wetted parts material: Body-Acrylic, Plastic (POLYPROPYLENE), O-ring- EPDM
Float Guide: 304 stainless steel
Connection material: POLYPROPYLENE
Temperature & pressure limits: 120 psig (8.4 bar) @100°F (38°C)
Temperature limited: 0-45°C
Accuracy: ±3% full scale
Mounting: vertical position
Weight: 0.31 kg

Dimensions



Range Table / Ordering information

MODEL	Range Dual Scale		Connection size
	GPM	LPM	
FAC-201	0.2 ~2.0	1~7.5	3/8"NPT(male)
FAC-202	0.5~5.0	2~20	1/2"NPT(male)
FAC-203	1.0~10.0	4~40	3/4"NPT(male)

Flow Unit
GPM, Gallon (us) per Minute
LPM, Litter per Minute

Dimensional Data

Model	A (inch/mm)	B (inch/mm)	C (inch/mm)	D	E (inch/mm)
FAC-201	8.4/213.2	2.75/70	1.38/35	3/8"NPT	6.5/165
FAC-202	8.4/213.2	2.75/70	1.38/35	1/2"NPT	6.5/165
FAC-203	9.0/229.2	3.75/95.2	1.58/40	3/4"NPT	6.5/165

ACRYLIC PLASTIC FLOW METER FAC300

Technical Data

Service: Water, Liquid or Air
Wetted parts material: Body-Acrylic, Plastic (POLYPROPYLENE), O-ring- EPDM
Float Guide: 316 stainless steel
Connection material: POLYPROPYLENE
Temperature & pressure limits: 120 psig (8.4 bar) @100°F (38°C)
Temperature limited: 0-45°C
Accuracy: ±3% full scale
Mounting: vertical position
Weight: 0.7 kg

Range Table

A. Fluid Type: Water

Code	Flow Range	Flow Unit
11	0.5~5	GPM, Gallon (us) per Minute
12	0.7~7	GPM, Gallon (us) per Minute
13	1~10	GPM, Gallon (us) per Minute
14	2~20	GPM, Gallon (us) per Minute
15	2~20	LPM, Litter per Minute
16	2.5~25	LPM, Litter per Minute
17	5~50	LPM, Litter per Minute
18	10~90	LPM, Litter per Minute
19	0.1~1	M³/H, Cubic Meter per Hour
20	0.3~3	M³/H, Cubic Meter per Hour
21	0.5~5	M³/H, Cubic Meter per Hour

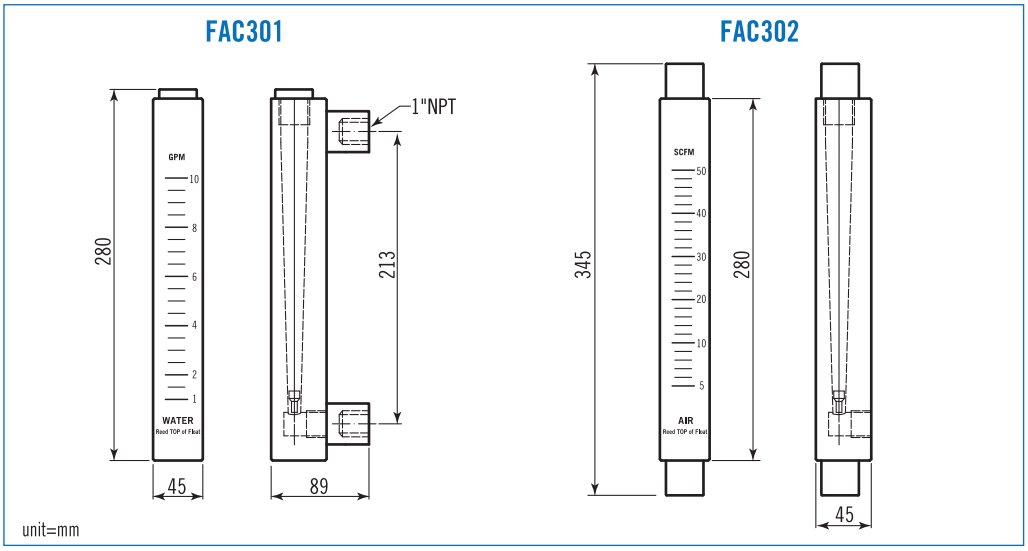
B. Fluid Type: Air

Code	Flow Range	Flow Unit
23	2.5~25	SCFM, Standard Cubic Feet per Minute
24	3~30	SCFM, Standard Cubic Feet per Minute
25	5~50	SCFM, Standard Cubic Feet per Minute
26	10~100	SCFM, Standard Cubic Feet per Minute
27	80~800	NLPM, Normal Litter per Minute
28	160~1600	NLPM, Normal Litter per Minute
29	300~3000	NLPM, Normal Litter per Minute
30	4~40	NM³/H, Normal Cubic Meter per Hour
31	5~50	NM³/H, Normal Cubic Meter per Hour
32	10~100	NM³/H, Normal Cubic Meter per Hour
33	20~200	NM³/H, Normal Cubic Meter per Hour

FAC301

FAC302

Dimensions



Ordering Information

FAC301 - 1 - A -

Model
FAC301
FAC302

Connection Size
A – 1" NPT Female

Float Material
SS – SS316

Range Scale
Please refer to the Range Table.

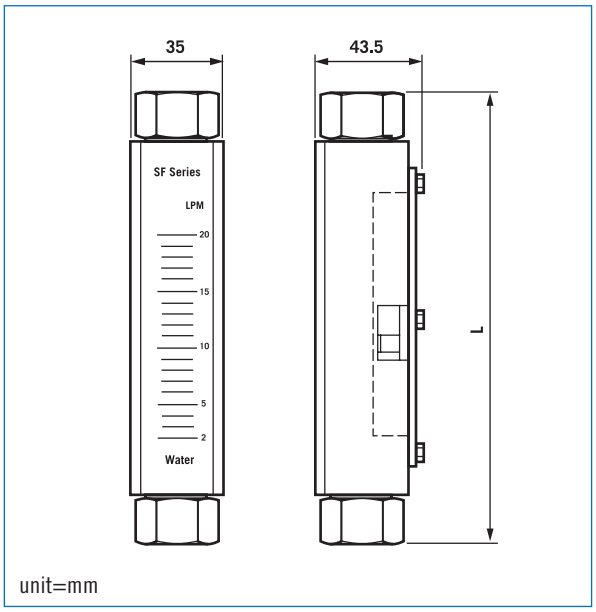
ACRYLIC PLASTIC FLOW METER – Spring Type

SF100 with alarm switch type without alarm switch type

Technical Data

Service: Liquid, Oil
Wetted parts material: Body: Acrylic plastic; O-ring: Viton;
Float: magnet cover with PPS plastic; Connection: SS316 ; Spring: SS316
Connection size: 3/8", 1/2", 3/4"NPT female available
Mounting: Vertical and Horizontal available, various flow directions
Temperature & Pressure limits: 150 psig(10bar) @100°F(38°C)
Temperature limit: -24°C~+54°C
Accuracy: ±5% full scale
Alarm switch: One or Two setting points, form A N.O. type bistable reed switch
Switch rating: AC 125V 0.5A / DC 100V 10W / Max. DC 250V < 1mA
Weight: 0.45~0.5 kg
(Contact setting point should be within 10% to 80% of FS)

Dimensions



unit=mm

Ordering Information

SF100	-	A	-	1R	-	A	-	BT

Flow Range (LPM-Litter per Minute)
- **A** – 0.6~4 LPM
- **B** – 1.6~10 LPM
- **C** – 2~20 LPM
- **D** – 6~40 LPM
- **E** – 3~30 LPM
- **F** – 5~50 LPM
- **G** – 6~60 LPM

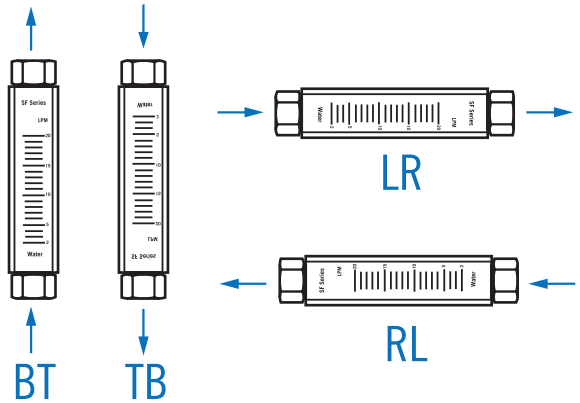
Series
- **SF100** – SF Series

Alarm Switch
- **1R** – One setting point
- **2R** – Two setting points
- **0** – Without alarm

Process Connection in Female
- **A** – ⅜"NPT (L=150mm)
- **B** – ½"NPT (L=150mm)
- **C** – ¾"NPT (L=152mm)

O-ring material
- **BT** – Bottom to Top
- **TB** – Top to Bottom
- **RL** – Right to Left
- **LR** – Left to Right

Flow Direction Types



PLASTIC FLOW METER

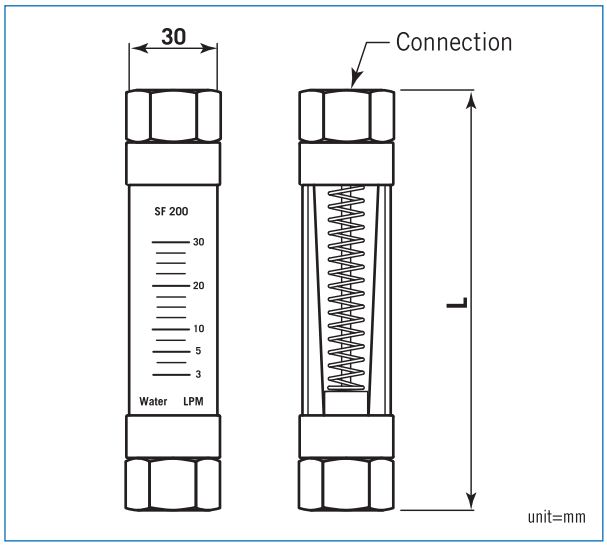
SF200 Spring Type

– With alarm switch type, Weather proof IP65
– Without alarm switch type

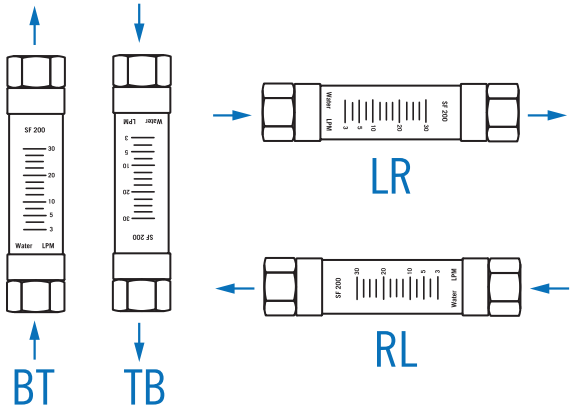
Technical Data

Service: Liquid, Oil
Wetted parts material:
Body: Polycarbonate (P.C); Polysulfone (PSU) available
O-ring: Viton
Float: –Magnet cover with PPS plastic
–If the liquid temperature > 80°C, the float coating should be PVDF
Connection: SS316
Spring: SS316
Connection size: 3/8", 1/2", 3/4"NPT female available
Mounting: Vertical and Horizontal available; various flow directions
Pressure limits: 300psig (20bar) @100°F (38°C)
Temperature limits:
–PC body tube with SS316 connection: -5°C ~ +80°C
–PSU body tube with SS316 connection: -5°C ~ +110 °C
Accuracy: ±5% full scale
Alarm switch: One setting point, form A N.O. type bistable reed switch
Switch rating: AC 125V 0.5A / DC 100V 10W / Max. DC 250V<1mA
Weight: approach 0.35kg (plastic)
(Contact setting point should be within 10% to 80% of F.S)

Dimensions



Flow Direction Types



Ordering Information

SF200	-	A	-	1R	-	PC	-	(1)	-	A	-	BT

Flow Range (Water LPM-Litter per Minute) & GPM (Gallon (us) per Minute)

A	1~4 LPM
B	1~10 LPM
C	2~20 LPM
D	4~40 LPM
E	3~30 LPM
F	5~50 LPM
G	0.1~1 GPM
H	0.25~2.5 GPM
I	0.5~5 GPM
J	0.8~8 GPM
K	1~10 GPM
L	1.3~13 GPM

Alarm Switch

1R	One setting point
0	Without alarm

Body Material

PC	Polycarbonate
PSU	Polysulfone

Connection Material

(1)	SS316

Process Connection in Female

A	3/8"NPT (L=134mm)
B	1/2"NPT (L=134mm)
C	3/4"NPT (L=162.5mm)

O-ring material

BT	Bottom to Top
TB	Top to Bottom
RL	Right to Left
LR	Left to Right

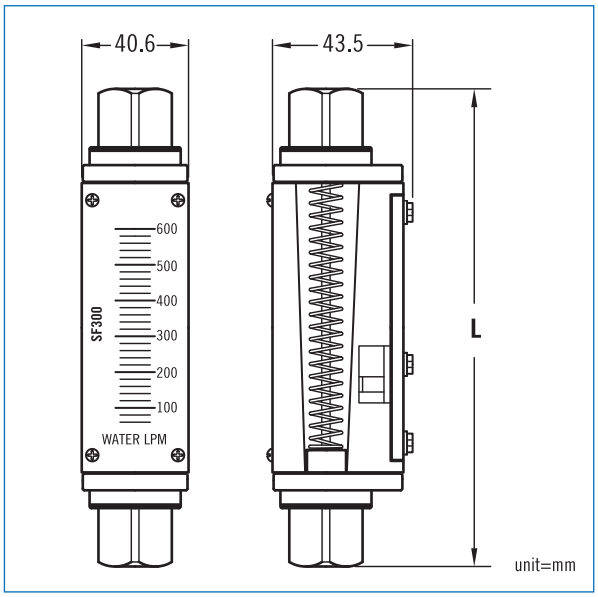
PLASTIC FLOW METER – Spring Type

SF300 with alarm switch type without alarm switch type

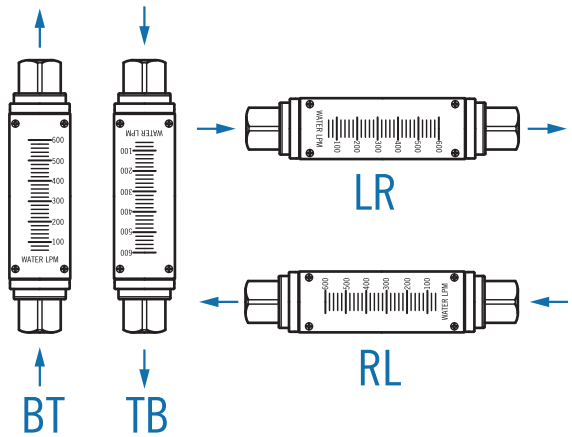
Technical Data

Service: Liquid, Oil
Wetted parts material:
Body: Polycarbonate (P.C); Polysulfone (PSU) available
O-ring: Viton
Float: magnet cover with PPS plastic
Connection: SS316
Spring: SS316
Connection size: 3/8", 1/2", 3/4"NPT female available
Mounting: Vertical and Horizontal available, various flow directions
Max. working pressure limit: 1.2 MPa (12 kg/cm²)
Max. test pressure: 2.0 MPa (20 kg/cm²) (water 25°C)
Max. working temperature limit: -10°C to 60°C (for PC body)
-10°C to 110°C (for PSU body)
Accuracy: ±5% full scale
Alarm switch: One or Two setting points, form A N.O. type bistable reed switch
Switch rating: AC 125V 0.5A / DC 100V 10W / Max. DC 250V < 1mA
Weight: 0.3~0.4 kg
(Contact setting point should be within 10% to 80% of FS)

Dimensions



Flow Direction Types



Ordering Information

SF300	-	A	-	1R	-	PC	-	SS	-	A	-	BT

Flow Range (Water LPM-Litter per Minute) & GPM (Gallon (us) per Minute)

A – 0.4~4 LPM
B – 2~10 LPM
C – 2~20 LPM
D – 3~30 LPM
E – 4~40 LPM
F – 5~50 LPM
G – 6~60 LPM
H – 0.1~1 GPM
I – 0.5~2.5 GPM
J – 0.5~5 GPM
K – 0.8~8 GPM
L – 1~10 GPM
M – 1.3~13 GPM
N – 1.5~15 GPM

Alarm Switch

1R – One setting point
2R – Two setting point
0 – Without alarm

Body Material

PC – Polycarbonate
PSU – Polysulfone

Connection Material

SS – SS316

Process Connection in Female

A – ⅜"NPT (L=150mm)
B – ½"NPT (L=150mm)
C – ¾"NPT (L=150mm)

O-ring material

BT – Bottom to Top
TB – Top to Bottom
RL – Right to Left
LR – Left to Right

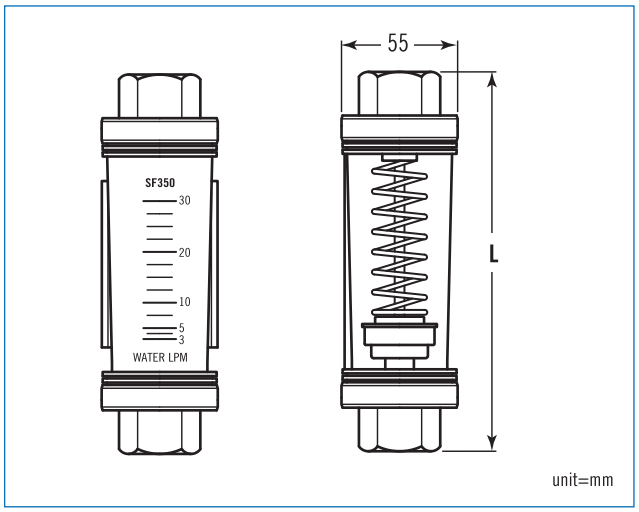
PLASTIC FLOW METER – Spring Type

SF350 with alarm switch type without alarm switch type

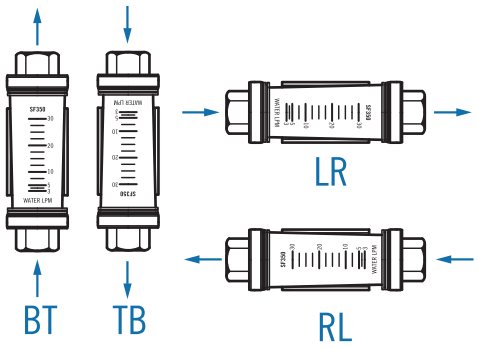
Technical Data

Service: Liquid, Oil
Wetted parts material:
Body: Polycarbonate (P.C); Polysulfone (PSU) available
O-ring: Viton
Float: PPS plastic
Connection: SS316
Spring: SS316
Connection size: ¾", 1", 1¼", 1½"NPT female available
Mounting: Vertical and Horizontal available, various flow directions
Max. working pressure limit: 1.2 MPa (12 kg/cm²)
Max. test pressure: 2.0 MPa (20 kg/cm²) (water 25°C)
Max. working temperature limit: -10°C to 60°C (for PC body)
-10°C to 110°C (for PSU body)
Accuracy: ±5% full scale
Alarm switch: One setting point, form A N.O. type bistable reed switch
Switch rating: AC 125V 0.5A / DC 100V 10W / Max. DC 250V < 1mA
Weight: 0.5~0.6 kg
(Contact setting point should be within 10% to 80% of FS)

Dimensions



Flow Direction Types



Ordering Information

SF350 - A - 1R - PC - SS - A - BT

Series
SF350

Flow Range (Water- LPM-Litter per Minute)
A – 7~70 LPM
B – 10~100 LPM
C – 15~150 LPM
D – 20~200 LPM (only for connection size 1¼" or 1½")
E – 25~250 LPM (only for connection size 1¼" or 1½")

Alarm Switch
1R – One setting point
0 – Without alarm

Body Material
PC – Polycarbonate
PSU – Polysulfone

Connection Material
SS – SS316

Process Connection in Female
A – ⅜"NPT (L=170mm)
B – 1"NPT (L=170mm)
C – 1 ¼"NPT (L=178mm)
E – 1 ½"NPT (L=178mm)

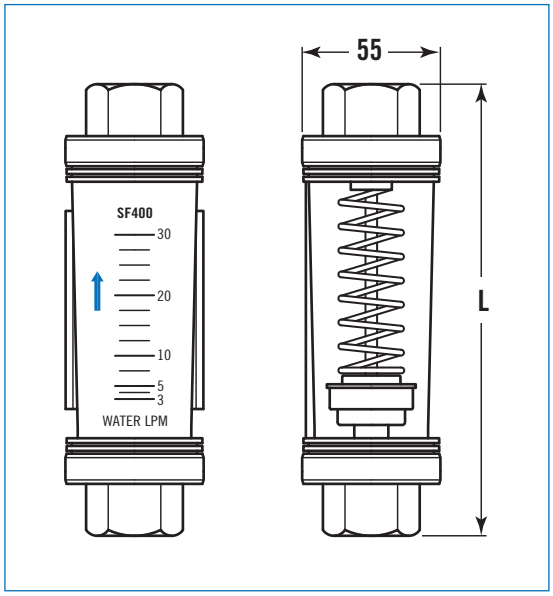
Flow Direction
BT – Bottom to Top
TB – Top to Bottom
RL – Right to Left
LR – Left to Right

PLASTIC FLOW METER SF400 – Spring Type – Without alarm switch type

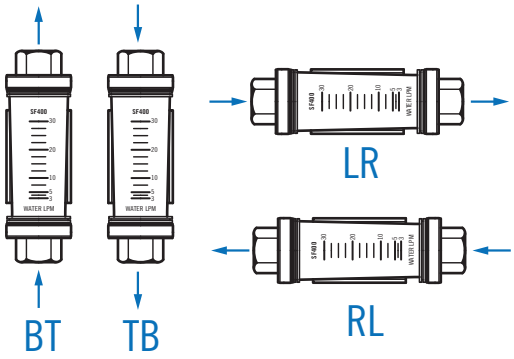
Technical Data

Service: Liquid, Oil
Wetted parts material:
Body: Polycarbonate (P.C); Polysulfone (PSU) available
O-ring: Viton
Float: SS316
Connection: SS316, PVC, PVDF available
Spring: SS316
Connection size: 1½", 2"NPT female available
Mounting: Vertical and Horizontal available, various flow directions
Accuracy: ±5% full scale
Max. working pressure limit: 1.2 MPa (12 kg/cm²)
Max. test pressure: 2.0 MPa (20 kg/cm²) (water 25°C)
Max. working temperature limit: -10°C to 60°C (for PC body); -10°C to 110°C (for PSU body)

Dimensions-mm



Flow Direction Types



Ordering Information

SF400	-	A	-	PC	-	SS	-	A	-	BT

Series
SF400

Flow Range (Water- LPM-Litter per Minute)
A – 25~250 LPM (only 1½" available)
B – 50~500 LPM (only 2" available)

Body Material
PC – Polycarbonate
PSU – Polysulfone

Connection Material
SS – SS316
PVC – PVC
PVDF – PVDF

Process Connection in Female
A – 1½"NPT (L=385mm)
B – 2" (L=415mm)

Flow Direction
BT – Bottom to Top
TB – Top to Bottom
RL – Right to Left
LR – Left to Right

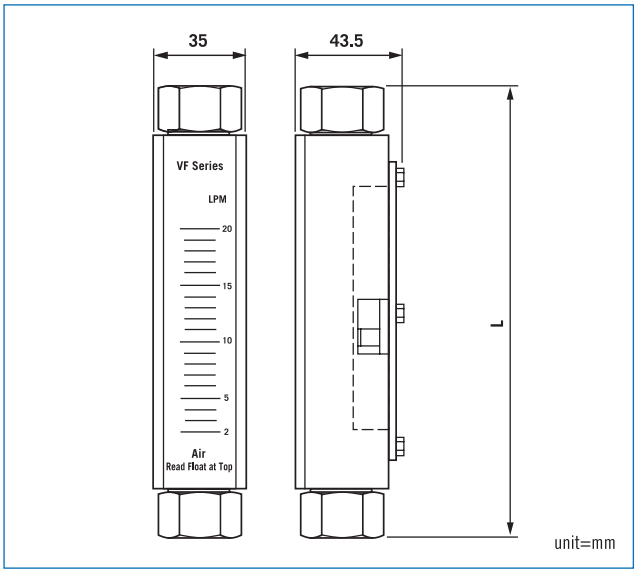
ACRYLIC PLASTIC FLOW METER

VF100 with alarm switch type without alarm switch type

Technical Data

Service: Water, Air
Wetted parts material: Body-Acrylic Plastic O-ring: Viton
Float- magnet cover with Polypropylene (P.P or SS316)
Connection material: SS316
Connection size: 3/8", 1/2", 3/4" NPT female available
Mounting: vertical position
Temperature & pressure limits: 150 psig(10bar) @ 100°F(38°C)
Temperature limit: -24°C~+54°C
Accuracy: ±5% full scale
Alarm switch: one or two setting points, form A N.O. type bistable reed switch
Switch rating: AC 125V 0.5A / DC 100V 10W / Max. DC 250V<1mA
Weight: 0.45~0.5 kg
(Contact setting point should be within 10% to 80% of FS)

Dimensions



Flow Direction Types

Ordering Information

VF100	-	A-1	-	1R	-	A	-	BT

Series
VF100

Flow Range

A-1	**Water** (LPH-Litter per Hour) **(1)** 6~60 **(2)** 14~140 **(3)** 25~250 **(4)** 36~360
A-2	**Water** (LPM-Litter per Minute) **(5)** 0.1~1 **(6)** 0.2~2 **(7)** 0.4~4 **(8)** 0.6~6 **(9)** 1~10
B	**Air** (LPM-Normal Litter per Minute) **(10)** 2~20 **(11)** 6~60 **(12)** 12~120 **(13)** 20~200 **(14)** 40~400

Alarm Switch
1R – One setting point
2R – Two setting point
0 – Without alarm

Flow Direction
BT – Bottom to Top

Process Connection in Female
A – ⅜"NPT (L=150mm)
B – ½"NPT (L=150mm)
C – ¾"NPT (L=152mm)

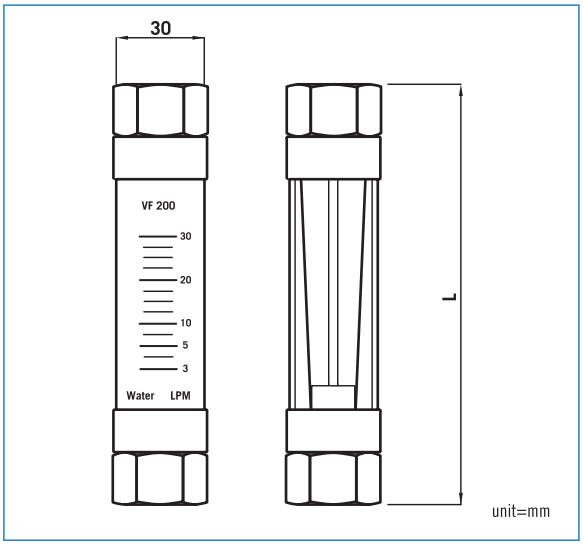
PLASTIC FLOW METER

VF200 – With alarm switch type, Weather proof IP65
– Without alarm switch type

Technical Data

Service: Water, Air
Wetted parts material:
Body: Polycarbonate (P.C); Polysulfone (PSU) available
O-ring: Viton
Float: –magnet cover with Polypropylene (P.P) or SS316
–If the liquid temperature > 80°C, the float coating should be PVDF
Connection: SS316
Connection size: 3/8", 1/2", 3/4"NPT female available
Mounting: Vertical position
Pressure limits: 300psig (20bar) @100°F (38°C)
Temperature limits:
–PC body tube with SS316 connection: -5°C ~ +80°C
–PSU body tube with SS316 connection: -5°C ~ +110°C
Accuracy: ±5% full scale
Alarm switch: One setting point, form A N.O. type bistable switch
Switch rating: AC 125V 0.5A / DC 100V 10W / Max. DC 250V<1mA
Weight: approach 0.35kg (plastic)
(Contact setting point should be within 10% to 80% of F.S)

Dimensions



Ordering Information

VF200	-	A-1	-	1R	-	PC	-	1	-	A	-	BT

Alarm Switch

1R	One setting point
0	Without alarm

Connection Material

1	SS316

Flow Direction

BT	Bottom to Top

Body Material

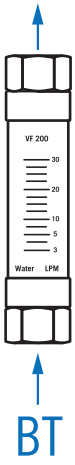
PC	Polycarbonate
PSU	Polysulfone

Process Connection in Female

A	3/8"NPT (L=134mm)
B	1/2"NPT (L=134mm)
C	3/4"NPT (L=162.5mm)

Flow Range	
A-1	**Water** (LPH-Litter per Hour)
(1)6-60 (2) 12-120 (3)25-200 (4)40-300	
A-2	**Water** (LPM-Litter per Minute)
(5)0.1-1 (6)0.2-2 (7)0.6-5 (8)0.5-3 (9)1-10	
B	**Air** (LPM-Normal Litter per Minute)
(10)6-30 (11) 10-60 (12) 10-100 (13) 15-150 (14)30-300	
C-1	**Water** (GPH-Gallon (us) per Hour)
(15)3-15 (16)5-30 (17)7-50 (18) 10-80	
C-2	**Water** (GPM-Gallon (us) per Minute)
(19)0.15-1.3 (20)0.3-2.5	
D	**Air** (SCFM-Standard Cubic Feet per Minute)
(21) 0.1-1 (22)0.2-2 (23)0.35-3.5 (24) 0.5-5 (25) 1-10	

Flow Direction Types



PLASTIC FLOW METER

VF300 with alarm switch type without alarm switch type

Technical Data

Service: Water, Air
Wetted parts material:
Body: Polycarbonate (P.C); Polysulfone (PSU) available
O-ring: Viton
Float: magnet cover with PPS Plastic
Connection: SS316
Connection size: 3/8", 1/2", 3/4"NPT female available
Mounting: Vertical position
Max. working pressure limit: 1.2 MPa (12 kg/cm²)
Max. test pressure: 2.0 MPa (20 kg/cm²) (water 25°C)
Max. working temperature limit: -10°C to 60°C (for PC body)
-10°C to 110°C (for PSU body)
Accuracy: ±5% full scale
Alarm switch: One or Two setting points, form A N.O. type bistable reed switch
Switch rating: AC 125V 0.5A / DC 100V 10W / Max. DC 250V < 1mA
Weight: 0.3~0.4 kg
(Contact setting point should be within 10% to 80% of FS)

Ordering Information

VF300 - A-1 - 1R - PC - 1 - A - BT

Alarm Switch	
1R	One setting point
2R	Two setting point
0	Without alarm

Connection Material	
1	SS316

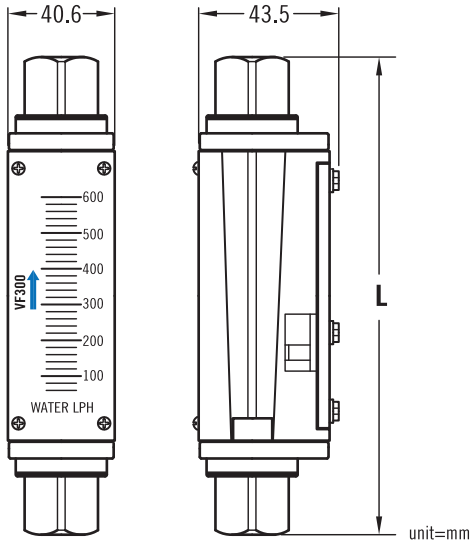
Flow Direction	
BT	Bottom to Top

Process Connection in Female	
A	3/8"NPT (L=150mm)
B	1/2"NPT (L=150mm)
C	3/4"NPT (L=150mm)

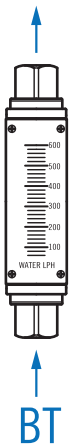
Body Material	
PC	Polycarbonate
PSU	Polysulfone

Flow Range					
A-1	Water (LPH-Litter per Hour) **(1)** 5~50 **(2)** 6~60 **(3)** 12~120 **(4)** 20~200 **(5)** 30~300 **(6)** 60~600	B	Air (LPM-Normal Litter per Minute) **(1)** 3~30 **(2)** 6~60 **(3)** 12~120 **(4)** 18~180 **(5)** 40~400	C-1	Water (GPH-Gallon (us) per Hour) **(1)** 1.2~12 **(2)** 1.5~15 **(3)** 3~30 **(4)** 5~50 **(5)** 8~80
A-2	Water (LPM-Litter per Minute) **(7)** 0.1~1 **(8)** 0.2~2 **(9)** 0.3~3 **(10)** 0.5~5 **(11)** 1~10	D	Air (SCFM-Standard Cubic Feet per Minute) **(1)** 0.1~1 **(2)** 0.2~2 **(3)** 0.4~4 **(4)** 0.6~6 **(5)** 1.4~14	C-2	Water (GPM-Gallon (us) per Minute) **(6)** 0.12~1.2 **(7)** 0.25~2.5

Dimensions



Flow Direction Types



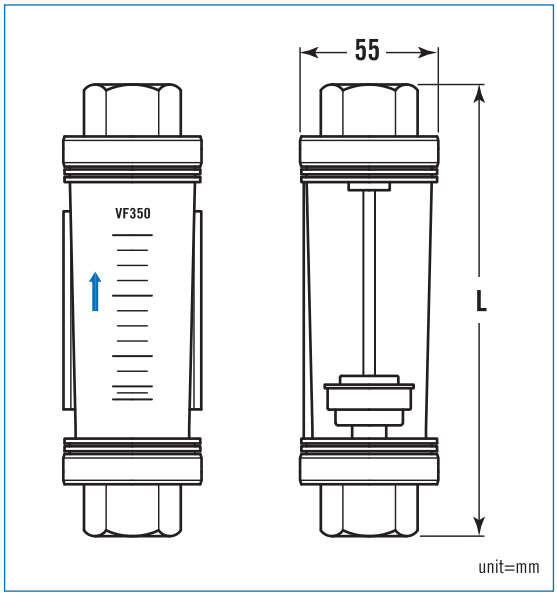
PLASTIC FLOW METER

VF350 *with alarm switch type without alarm switch type*

Technical Data

Service: Liquid, Air
Wetted parts material:
Body: Polycarbonate (P.C); Polysulfone (PSU) available
O-ring: Viton
Float: SS316
Connection: SS316
Connection size: ¾", 1", 1¼", 1½"NPT female available
Mounting: Vertical position
Max. working pressure limit: 1.2 MPa (12 kg/cm²)
Max. test pressure: 2.0 MPa (20 kg/cm²) (water 25°C)
Max. working temperature limit: -10°C to 60°C (for PC body)
-10°C to 110°C (for PSU body)
Accuracy: ±5% full scale
Alarm switch: One setting point, form A N.O. type bistable reed switch
Switch rating: AC 125V 0.5A / DC 100V 10W / Max. DC 250V < 1mA
Weight: 0.45~0.5 kg
(Contact setting point should be within 10% to 80% of FS)

Dimensions



Ordering Information

VF350	-	A-1	-	1R	-	PC	-	1	-	A	-	BT

Alarm Switch

1R	One setting point
0	Without alarm

Body Material

PC	Polycarbonate
PSU	Polysulfone

Connection Material

1	SS316

Process Connection in Female

A	3/4"NPT (L=170mm)
B	1"NPT (L=170mm)
C	1 1/4"NPT (L=178mm)
D	1 1/2"NPT (L=178mm)

Flow Direction

BT	Bottom to Top

Flow Range

A	Air, 100~600 LPM (Normal Litter per Minute)	C	Air, 250~1000 LPM (Normal Litter per Minute)	D	Water, 500~2000 LPH (Normal Litter per Hour)	G	Air, 3.5~35 SCFM (Standard Cubic Feet per Minute)
B	Water, 200~1000 LPH (Normal Litter per Hour)	F	Water, 25~250 GPH (Gallon (us) per Hour)	E	Air, 2~20 SCFM (Standard Cubic Feet per Minute)	H	Water, 50~500 GPH (Gallon (us) per Hour)

Flow Direction Types

OA Series

ACRYLIC PLASTIC FLOW METER
OEM AVAILABLE OA SERIES

OA-1 OA-2 OA-3

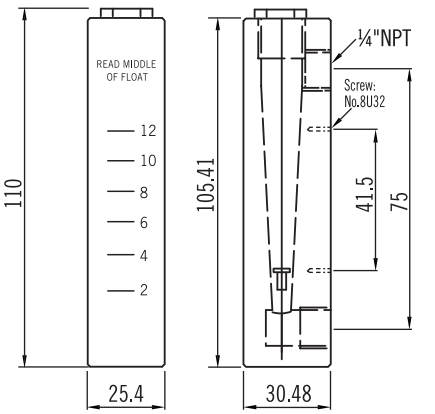
OA-4 OA-5

Technical Data

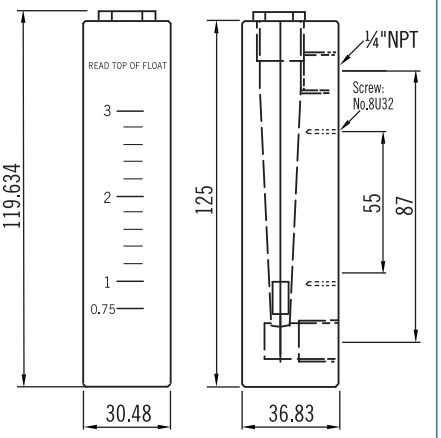
Service: water or liquid
Wetted parts material: Body-Acrylic,O-ring- EPDM
Float Guide: Top plug 304 stainless steel
Temperature & pressure limits:
120 psig (8.4 bar) @100°F (38°C)
Temperature limited: 0-45°C
Accuracy: ±3% full scale
Mounting: vertical position

Dimensions

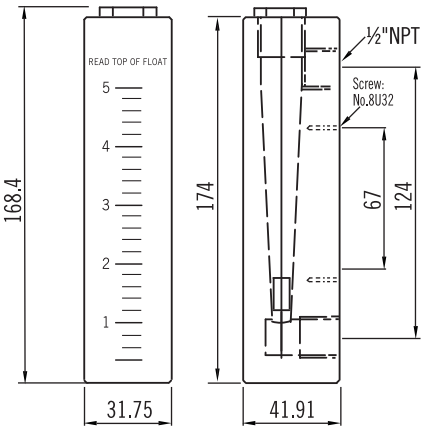
OA-1 & OA-2 Type



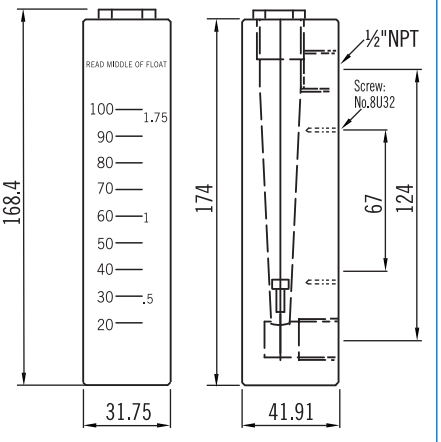
OA-3 Type



OA-4 Type



OA-5 Type



Range Table

Model	Range	Connection Size
OA-1	0~12 GPH Water	1/4"NPT Female
OA-2	0~30 GPH Water	1/4"NPT Female
OA-3	0~3 GPM Water	1/4"NPT Female
OA-4	0~5 GPM Water	1/2"NPT Female
OA-5	0~100 GPH Water	1/2"NPT Female

Flow Unit:
GPH, Gallon (us) per Hour
GPM, Gallon (us) per Minute

NOTE:
1. A expert flow meter manufacturer.
2. Any size flow range are available.
Please send your inquiry to mail@a-flow.com

Special instruction, if any:

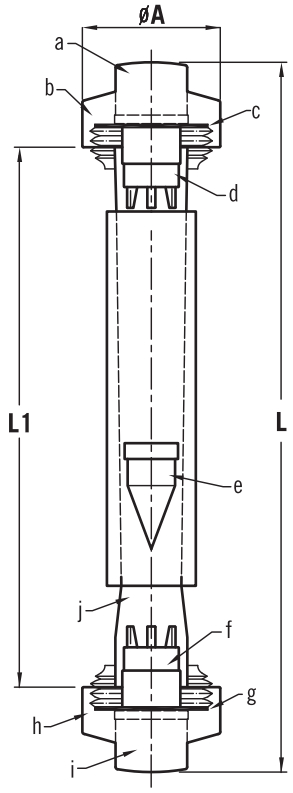
VARIABLE AREA TYPE FLOW METER

PF SERIES PLASTIC FLOWMETER

Technical Data

Service: Water, waste water, air, gases, chemical process system, industrial flow system
Measuring Range: Refer to range table
Accuracy: ±3% F.S
Scale Unit: Liquid– LPM, LPH, GPH; Gases– NLPM, NM^3/H, SCFH
Wetted Parts Material: Body– Polysulfone (PSU), Polycarbonate (P.C) available
Float– PVDF, PVC, Stainless steel available
Max. Working Pressure Limit: 1.2 MPa (12 kg/cm^2)
Max. Test Pressure: 2.0 MPa (20 kg/cm^2) (water 25°C)
Max. Working Temperature Limit: -10°C to 60°C (for PC body)
-10°C to 110°C (for polysulfone body)

Dimensions



unit=mm

Flow Body Size	A	L	L1
A ½" 15	41	233	172
B ½" 15	52	346	263
C ¾" 20	74	368	272
D 1" & 1½" 25	79	370	272
E 1½" & 2" 40	99	385	262
F 2" 50	135	415	250

Parts List Material

Item	Parts Name	Material
a	Process Connection	SS316, P.V.C, PVDF
b	Union Nut	PVC
c	O-Ring	Viton
d	Stop Bar	PVDF
e	Float	PVDF
f	Stop Bar	PVDF
g	O-Ring	Viton
h	Union Nut	P.V.C
i	Process Connection	SS316, P.V.C, PVDF
j	Flow Tube	PSU, P.C

Ordering Range Code Table

A1 Tube–1/2"
Fluid type: Water

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	4~40	Teflon	LPH,Litter per Hour	PF-4~40-LPH-Water-T-A1
2	1~10	Teflon	GPH, Gallon (us) per Hour	PF-1~10-GPH-Water-T-A1
3	12~120	SS316	LPH,Litter per Hour	PF-12~120-LPH-Water-SS-A1
4	3~30	SS316	GPH, Gallon (us) per Hour	PF-3~30-GPH-Water-SS-A1

Fluid type: Air

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	2.5~25	Teflon	NLPM, Normal Litter per Minute	PF-2.5~25-NLPM-Air-T-A1
2	5~50	Teflon	SCFH, Standard Cubic Feet per Hour	PF-5~50-SCFH-Air-T-A1
3	0.15~1.5	Teflon	NM^3/H, Normal Cubic Meter per Hour	PF-0.15~1.5-NM^3/H-Air-T-A1
4	6~60	SS316	NLPM, Normal Litter per Minute	PF-6~60-NLPM-Air-SS-A1
5	0.36~3.6	SS316	NM^3/H, Normal Cubic Meter per Hour	PF-0.36~3.6-NM^3/H-Air-SS-A1
6	12~120	SS316	SCFH, Standard Cubic Feet per Hour	PF-12~120-SCFH-Air-SS-A1

A2 Tube–1/2"
Fluid type: Water

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	6~60	Teflon	LPH,Litter per Hour	PF-6~60-LPH-Water-T-A2
2	20~200	SS316	LPH,Litter per Hour	PF-20~200-LPH-Water-SS-A2
3	0.1~1	Teflon	LPM,Litter per Minute	PF-0.1~1-LPM-Water-T-A2
4	0.3~3	SS316	LPM,Litter per Minute	PF-0.3~3-LPM-Water-SS-A2
5	5~50	SS316	GPH, Gallon (us) per Hour	PF-5~50-GPH-Water-SS-A2

Fluid type: Air

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	10~100	SS316	NLPM, Normal Litter per Minute	PF-10~100-NLPM-Air-SS-A2
2	0.6~6	SS316	NM^3/H, Normal Cubic Meter per Hour	PF-0.6~6-NM^3/H-Air-SS-A2
3	20~200	SS316	SCFH, Standard Cubic Feet per Hour	PF-20~200-SCFH-Air-SS-A2

A3 Tube–1/2"
Fluid type: Water

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	10~100	Teflon	LPH,Litter per Hour	PF-10~100-LPH-Water-T-A3
2	30~300	SS316	LPH,Litter per Hour	PF-30~300-LPH-Water-SS-A3
3	2.5~25	Teflon	GPH, Gallon (us) per Hour	PF-2.5~25-GPH-Water-T-A3
4	0.5~5	SS316	LPM,Litter per Minute	PF-0.5~5-LPM-Water-SS-A3
5	8~80	SS316	GPH, Gallon (us) per Hour	PF-8~80-GPH-Water-SS-A3

Fluid type: Air

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	12~120	SS316	NLPM, Normal Litter per Minute	PF-12~120-NLPM-Air-SS-A3
2	0.8~8	SS316	NM^3/H, Normal Cubic Meter per Hour	PF-0.8~8-NM^3/H-Air-SS-A3
3	30~300	SS316	SCFH, Standard Cubic Feet per Hour	PF-30~300-SCFH-Air-SS-A3

B1 Tube–1/2"
Fluid type: Water

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	10~100	Teflon	LPH,Litter per Hour	PF-10~100-LPH-Water-T-B1
2	2.5~25	Teflon	GPH, Gallon (us) per Hour	PF-2.5~25-GPH-Water-T-B1
3	35~350	SS316	LPH,Litter per Hour	PF-35~350-LPH-Water-SS-B1
4	10~90	SS316	GPH, Gallon (us) per Hour	PF-10~90-GPH-Water-SS-B1
5	0.6~6	SS316	LPM, Litter per Minute	PF-0.6~6-LPM-Water-SS-B1

Fluid type: Air

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	8~80	Teflon	NLPM, Normal Litter per Minute	PF-8~80-NLPM-Air-T-B1
2	0.5~5	Teflon	NM^3/H, Normal Cubic Meter per Hour	PF-0.5~5-NM^3/H-Air-T-B1
3	18~180	Teflon	SCFH, Standard Cubic Feet per Hour	PF-18~180-SCFH-Air-T-B1
4	20~200	SS316	NLPM, Normal Litter per Minute	PF-20~200-NLPM-Air-SS-B1
5	40~400	SS316	SCFH, Standard Cubic Feet per Hour	PF-40~400-SCFH-Air-SS-B1
6	1.2~12	SS316	NM^3/H, Normal Cubic Meter per Hour	PF-1.2~12-NM^3/H-Air-SS-B1

B2 Tube–1/2"
Fluid type: Water

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	18~180	Teflon	LPH,Litter per Hour	PF-18~180-LPH-Water-T-B2
2	0.3~3	Teflon	LPM,Litter per Minute	PF-0.3~3-LPM-Water-T-B2
3	5~50	Teflon	GPH, Gallon (us) per Hour	PF-5~50-GPH-Water-T-B2
4	60~600	SS316	LPH,Litter per Hour	PF-60~600-LPH-Water-SS-B2
5	1~10	SS316	LPM,Litter per Minute	PF-1~10-LPM-Water-SS-B2
6	16~160	SS316	GPH, Gallon (us) per Hour	PF-16~160-GPH-Water-SS-B2

B2 Tube–1/2"
Fluid type: Air

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	13~130	Teflon	NLPM, Normal Litter per Minute	PF-13~130-NLPM-Air-T-B2
2	30~280	Teflon	SCFH, Standard Cubic Feet per Hour	PF-30~280-SCFH-Air-T-B2
3	0.8~8	Teflon	NM^3/H, Normal Cubic Meter per Hour	PF-0.8~8-NM^3/H-Air-T-B2
4	50~300	SS316	NLPM, Normal Litter per Minute	PF-50~300-NLPM-Air-SS-B2
5	100~600	SS316	SCFH, Standard Cubic Feet per Hour	PF-100~600-SCFH-Air-SS-B2
6	3~18	SS316	NM^3/H, Normal Cubic Meter per Hour	PF-3~18-NM^3/H-Air-SS-B2

B3 Tube–1/2"
Fluid type: Water

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	30~300	Teflon	LPH,Litter per Hour	PF-30~300-LPH-Water-T-B3
2	0.5~5	Teflon	LPM, Litter per Minute	PF-0.5~5-LPM-Water-T-B3
3	8~80	Teflon	GPH, Gallon (us) per Hour	PF-8~80-GPH-Water-T-B3
4	100~1000	SS316	LPH, Litter per Hour	PF-100~1000-LPH-Water-SS-B3
5	1.5~15	SS316	LPM, Litter per Minute	PF-1.5~15-LPM-Water-SS-B3
6	30~250	SS316	GPH, Gallon (us) per Hour	PF-30~250-GPH-Water-SS-B3
7	0.4~4	SS316	GPM, Gallon (us) per Minute	PF-0.4~4-GPM-Water-SS-B3
8	0.1~1	SS316	M^3/H, Cubic Meter per Hour	PF-0.1~1-M^3/H-Water-SS-B3

Fluid type: Air

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	20~200	Teflon	NLPM, Normal Litter per Minute	PF-20~200-NLPM-Air-T-B3
2	40~400	Teflon	SCFH, Standard Cubic Feet per Hour	PF-40~400-SCFH-Air-T-B3
3	1.2~12	Teflon	NM^3/H, Normal Cubic Meter per Hour	PF-1.2~12-NM^3/H-Air-T-B3
4	40~400	SS316	NLPM, Normal Litter per Minute	PF-40~400-NLPM-Air-SS-B3
5	100~1000	SS316	SCFH, Standard Cubic Feet per Hour	PF-100~1000-SCFH-Air-SS-B3
6	3~25	SS316	NM^3/H, Normal Cubic Meter per Hour	PF-3~25-NM^3/H-Air-SS-B3

C1 Tube–3/4"
Fluid type: Water

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	2.5~25	SS316	LPM, Litter per Minute	PF-2.5~25-LPM-Water-SS-C1
2	0.16~1.6	SS316	M^3/H, Cubic Meter per Hour	PF-0.16~1.6-M^3/H-Water-SS-C1
3	160~1600	SS316	LPH,Litter per Hour	PF-160~1600-LPH-Water-SS-C1
4	40~400	SS316	GPH, Gallon (us) per Hour	PF-40~400-GPH-Water-SS-C1
5	0.6~6	SS316	GPM, Gallon (us) per Minute	PF-0.6~6-GPM-Water-SS-C1
6	60~600	Teflon	LPH,Litter per Hour	PF-60~600-LPH-Water-T-C1
7	1~10	Teflon	LPM, Litter per Minute	PF-1~10-LPM-Water-T-C1
8	16~160	Teflon	GPH, Gallon (us) per Hour	PF-16~160-GPH-Water-T-C1
9	0.25~2.5	Teflon	GPM, Gallon (us) per Minute	PF-0.25~2.5-GPM-Water-T-C1

Fluid type: Air

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	70~700	SS316	NLPM, Normal Litter per Minute	PF-70~700-NLPM-Air-SS-C1
2	150~1500	SS316	SCFH, Standard Cubic Feet per Hour	PF-150~1500-SCFH-Air-SS-C1
3	4~40	SS316	NM^3/H, Normal Cubic Meter per Hour	PF-4~40-NM^3/H-Air-SS-C1
4	2.5~25	SS316	SCFM, Standard Cubic Feet per Minute	PF-2.5~25-SCFM-Air-SS-C1
5	40~400	Teflon	NLPM, Normal Litter per Minute	PF-40~400-NLPM-Air-T-C1
6	80~800	Teflon	SCFH, Standard Cubic Feet per Hour	PF-80~800-SCFH-Air-T-C1
7	2.4~24	Teflon	NM^3/H, Normal Cubic Meter per Hour	PF-2.4~24-NM^3/H-Air-T-C1
8	1.4~14	Teflon	SCFM, Standard Cubic Feet per Minute	PF-1.4~14-SCFM-Air-T-C1

C2 Tube–3/4"
Fluid type: Water

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	4~40	SS316	LPM, Litter per Minute	PF-4~40-LPM-Water-SS-C2
2	0.25~2.5	SS316	M^3/H, Cubic Meter per Hour	PF-0.25~2.5-M^3/H-Water-SS-C2
3	60~600	SS316	GPH, Gallon (us) per Hour	PF-60~600-GPH-Water-SS-C2
4	1~10	SS316	GPM, Gallon (us) per Minute	PF-1~10-GPM-Water-SS-C2
5	80~800	Teflon	LPH,Litter per Hour	PF-80~800-LPH-Water-T-C2
6	1.4~14	Teflon	LPM, Litter per Minute	PF-1.4~14-LPM-Water-T-C2
7	20~200	Teflon	GPH, Gallon (us) per Hour	PF-20~200-GPH-Water-T-C2
8	0.3~3	Teflon	GPM, Gallon (us) per Minute	PF-0.3~3-GPM-Water-T-C2

Fluid type: Air

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	100~1000	SS316	NLPM, Normal Litter per Minute	PF-100~1000-NLPM-Air-SS-C2
2	6~60	SS316	NM^3/H, Normal Cubic Meter per Hour	PF-6~60-NM^3/H-Air-SS-C2
3	4~40	SS316	SCFM, Standard Cubic Feet per Minute	PF-4~40-SCFM-Air-SS-C2
4	60~500	Teflon	NLPM, Normal Litter per Minute	PF-60~500-NLPM-Air-T-C2
5	3~30	Teflon	NM^3/H, Normal Cubic Meter per Hour	PF-3~30-NM^3/H-Air-T-C2
6	2~18	Teflon	SCFM, Standard Cubic Feet per Minute	PF-2~18-SCFM-Air-T-C2

D1 Tube–1" & 1½"
Fluid type: Water

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	1.5~15	SS316	GPM, Gallon (us) per Minute	PF-1.5~15-GPM-Water-SS-D1
2	6~60	SS316	LPM, Litter per Minute	PF-6~60-LPM-Water-SS-D1
3	0.35~3.5	SS316	M^3/H, Cubic Meter per Hour	PF-0.35~3.5-M^3/H-Water-SS-D1
4	0.6~6	Teflon	GPM, Gallon (us) per Minute	PF-0.6~6-GPM-Water-T-D1
5	2.5~25	Teflon	LPM, Litter per Minute	PF-2.5~25-LPM-Water-T-D1
6	0.15~1.5	Teflon	M^3/H, Cubic Meter per Hour	PF-0.15~1.5-M^3/H-Water-T-D1

Fluid type: Air

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	200~1800	SS316	NLPM, Normal Litter per Minute	PF-200~1800-NLPM-Air-SS-D1
2	6~60	SS316	SCFM, Standard Cubic Feet per Minute	PF-6~60-SCFM-Air-SS-D1
3	10~100	SS316	NM^3/H, Normal Cubic Meter per Hour	PF-10~100-NM^3/H-Air-SS-D1
4	100~1000	Teflon	NLPM, Normal Litter per Minute	PF-100~1000-NLPM-Air-T-D1
5	3.5~35	Teflon	SCFM, Standard Cubic Feet per Minute	PF-3.5~35-SCFM-Air-T-D1
6	6~60	Teflon	NM^3/H, Normal Cubic Meter per Hour	PF-6~60-NM^3/H-Air-T-D1

D2 Tube–1" & 1½"
Fluid type: Water

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	2~20	SS316	GPM, Gallon (us) per Minute	PF-2~20-GPM-Water-SS-D2
2	8~80	SS316	LPM, Litter per Minute	PF-8~80-LPM-Water-SS-D2
3	0.5~5	SS316	M^3/H, Cubic Meter per Hour	PF-0.5~5-M^3/H-Water-SS-D2
4	1~10	Teflon	GPM, Gallon (us) per Minute	PF-1~10-GPM-Water-T-D2
5	3.5~35	Teflon	LPM, Litter per Minute	PF-3.5~35-LPM-Water-T-D2
6	0.2~2.2	Teflon	M^3/H, Cubic Meter per Hour	PF-0.2~2.2-M^3/H-Water-T-D2

Fluid type: Air

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	250~2500	SS316	NLPM, Normal Litter per Minute	PF-250~2500-NLPM-Air-SS-D2
2	10~80	SS316	SCFM, Standard Cubic Feet per Minute	PF-10~80-SCFM-Air-SS-D2
3	15~150	SS316	NM^3/H, Normal Cubic Meter per Hour	PF-15~150-NM^3/H-Air-SS-D2
4	140~1400	Teflon	NLPM, Normal Litter per Minute	PF-140~1400-NLPM-Air-T-D2
5	5~50	Teflon	SCFM, Standard Cubic Feet per Minute	PF-5~50-SCFM-Air-T-D2
6	8~80	Teflon	NM^3/H, Normal Cubic Meter per Hour	PF-8~80-NM^3/H-Air-T-D2

E1 Tube–1½" & 2"
Fluid type: Water

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	3.5~35	SS316	GPM, Gallon (us) per Minute	PF-3.5~35-GPM-Water-SS-E1
2	14~140	SS316	LPM, Litter per Minute	PF-14~140-LPM-Water-SS-E1
3	0.8~8	SS316	M^3/H, Cubic Meter per Hour	PF-0.8~8-M^3/H-Water-SS-E1
4	2~16	Teflon	GPM, Gallon (us) per Minute	PF-2~16-GPM-Water-T-E1
5	8~60	Teflon	LPM, Litter per Minute	PF-8~60-LPM-Water-T-E1
6	0.5~3.5	Teflon	M^3/H, Cubic Meter per Hour	PF-0.5~3.5-M^3/H-Water-T-E1

Fluid type: Air

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	20~150	SS316	SCFM, Standard Cubic Feet per Minute	PF-20~150-SCFM-Air-SS-E1
2	30~270	SS316	NM^3/H, Normal Cubic Meter per Hour	PF-30~270-NM^3/H-Air-SS-E1
3	15~80	Teflon	SCFM, Standard Cubic Feet per Minute	PF-15~80-SCFM-Air-T-E1
4	20~150	Teflon	NM^3/H, Normal Cubic Meter per Hour	PF-20~150-NM^3/H-Air-T-E1

F1 Tube–2"
Fluid type: Water

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	1500~15000	SS316	LPH, Litter per Hour	PF-1500~15000-LPH-Water-SS-F11
2	25~250	SS316	LPM, Litter per Minute	PF-25~250-LPM-Water-SS-F11
3	1.5~15	SS316	M^3/H, Cubic Meter per Hour	PF-1.5~15-M^3/H-Water-SS-F11
4	6.5~65	SS316	GPM, Gallon (us) per Minute	PF-6.5~65-GPM-Water-SS-F11

F2 Tube–2"
Fluid type: Water

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
5	2000~20000	SS316	LPH, Litter per Hour	PF-2000~20000-LPH-Water-SS-F21
6	30~300	SS316	LPM, Litter per Minute	PF-30~300-LPM-Water-SS-F21
7	2~20	SS316	M^3/H, Cubic Meter per Hour	PF-2~20-M^3/H-Water-SS-F21
8	8~80	SS316	GPM, Gallon (us) per Minute	PF-8~80-GPM-Water-SS-F21

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
9	5000~30000	SS316	LPH, Litter per Hour	PF-5000~30000-LPH-Water-SS-F22
10	100~500	SS316	LPM, Litter per Minute	PF-100~500-LPM-Water-SS-F22
11	5~30	SS316	M^3/H, Cubic Meter per Hour	PF-5~30-M^3/H-Water-SS-F22
12	30~130	SS316	GPM, Gallon (us) per Minute	PF-30~130-GPM-Water-SS-F22

F3 Tube–2"
Fluid type: Water

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
13	2500~25000	SS316	LPH, Litter per Hour	PF-2500~25000-LPH-Water-SS-F31
14	40~400	SS316	LPM, Litter per Minute	PF-40~400-LPM-Water-SS-F31
15	2.5~25	SS316	M^3/H, Cubic Meter per Hour	PF-2.5~25-M^3/H-Water-SS-F31
16	10~100	SS316	GPM, Gallon (us) per Minute	PF-10~100-GPM-Water-SS-F31

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
17	7000~35000	SS316	LPH, Litter per Hour	PF-7000~35000-LPH-Water-SS-F32
18	100~600	SS316	LPM, Litter per Minute	PF-100~600-LPM-Water-SS-F32
19	7~35	SS316	M^3/H, Cubic Meter per Hour	PF-7~35-M^3/H-Water-SS-F32
20	30~160	SS316	GPM, Gallon (us) per Minute	PF-30~160-GPM-Water-SS-F32

Ordering Information

PF - Range - PC - A - A - B

Range
Please refer to the Ordering Range Code Table and fill the requested directly

Body Material	
PC	Polycarbonate
PSU	Polysulfone

Connection Material	
A	PVC
B	PVDF
C	SS316

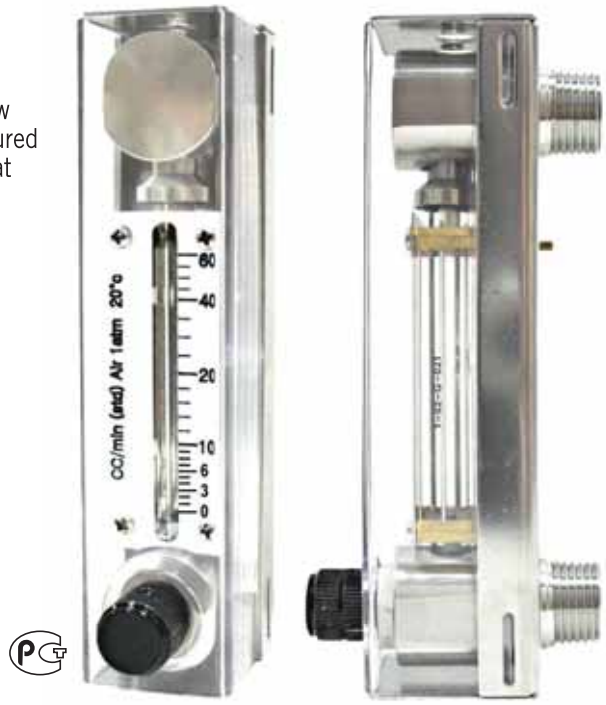
Process Connection Size	
A	1/2”
B	3/4”
C	1”
D	1 1/2”
E	2”
F	Option

Process Connection Rating	
Thread	
A	PT
B	NPT
C	PF
Flange	
D	10K
E	20K
F	ANSI 150
G	ANSI 300
H	PN10
I	PN16
J	PN25

VARIABLE AREA TYPE FLOW METER (ROTAMETER)

SM TYPE

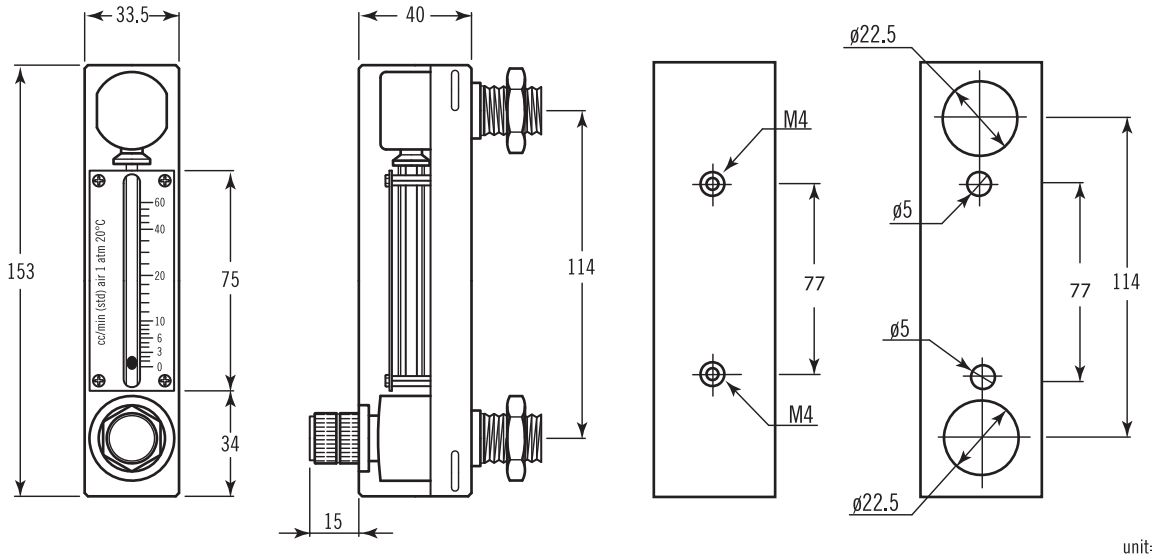
The variable area flow meter content a float & taper tube. The fluid flow through the taper tube and force up to the float. The flow rate is measured as a function of the area of the opening. This area displayed as the float that is free to move to produce the varying area.



Technical Data

Service: Gases (Air) & Liquid (Water)
Wetted parts materail:
Body: SS316
O-ring: Viton, others on request
Metering tube: Borosilicate glass
Needle valve: SS316
Float: Glass, Sapphire, Stainless steel, Carboloy, Tantalum
Mounting: Horizontal position (Bottom to Top)
Connection size: ¼"NPT female, needle valve available
Max. working temperature: 95°C
Max. working pressure: Glass tube– 200psig (14kg/cm²)
Accuracy: ±3% F.S; repeat ability 1%
Weight: 0.5~0.6 kg

Dimensions



Range Table & Ordering Information

Tube No. : 1-02-G-021

Fluid type: Air (STP)

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	6~60	Glass	cc/min, cc per Minute	SM-6~60-CCM-Air-G-021
2	10~100	Sapphire	cc/min, cc per Minute	SM-10~100-CCM-Air-SP-021
3	20~200	Stainless Steel	cc/min, cc per Minute	SM-20~200-CCM-Air-SS-021
4	34~340	Carboloy	cc/min, cc per Minute	SM-34~340-CCM-Air-CB-021
5	35~350	Tantalum	cc/min, cc per Minute	SM-35~350-CCM-Air-Tan-021

Fluid type: Water (70°F)

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	0.072~0.72	Glass	cc/min, cc per Minute	SM-0.072~0.72-CCM-Water-G-021
2	0.13~1.3	Sapphire	cc/min, cc per Minute	SM-0.13~1.3-CCM-Water-SP-021
3	0.33~3.3	Stainless Steel	cc/min, cc per Minute	SM-0.33~3.3-CCM-Water-SS-021
4	0.7~7	Carboloy	cc/min, cc per Minute	SM-0.7~7-CCM-Water-CB-021
5	0.78~7.8	Tantalum	cc/min, cc per Minute	SM-0.78~7.8-CCM-Water-Tan-021

Tube No. : 1-02-G-041

Fluid type: Air (STP)

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	7~70	Glass	cc/min, cc per Minute	SM-7~70-CCM-Air-G-041
2	10~100	Sapphire	cc/min, cc per Minute	SM-10~100-CCM-Air-SP-041
3	20~200	Stainless Steel	cc/min, cc per Minute	SM-20~200-CCM-Air-SS-041
4	40~400	Carboloy	cc/min, cc per Minute	SM-40~400-CCM-Air-CB-041
5	40~400	Tantalum	cc/min, cc per Minute	SM-40~400-CCM-Air-Tan-041

Fluid type: Water (70°F)

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	0.115~1.15	Glass	cc/min, cc per Minute	SM-0.115~1.15-CCM-Water-G-041
2	0.21~2.1	Sapphire	cc/min, cc per Minute	SM-0.21~2.1-CCM-Water-SP-041
3	0.42~4.2	Stainless Steel	cc/min, cc per Minute	SM-0.42~4.2-CCM-Water-SS-041
4	0.9~9	Carboloy	cc/min, cc per Minute	SM-0.9~9-CCM-Water-CB-041
5	1~10	Tantalum	cc/min, cc per Minute	SM-1~10-CCM-Water-Tan-041

Tube No. : 1-02-G-061

Fluid type: Air (STP)

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	50~500	Glass	cc/min, cc per Minute	SM-50~500-CCM-Air-G-061
2	70~700	Sapphire	cc/min, cc per Minute	SM-70~700-CCM-Air-SP-061
3	100~1000	Stainless Steel	cc/min, cc per Minute	SM-100~1000-CCM-Air-SS-061
4	160~1600	Carboloy	cc/min, cc per Minute	SM-160~1600-CCM-Air-CB-061
5	170~1700	Tantalum	cc/min, cc per Minute	SM-170~1700-CCM-Air-Tan-061

Fluid type: Water (70°F)

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	0.9~9	Glass	cc/min, cc per Minute	SM-0.9~9-CCM-Water-G-061
2	1.55~15.5	Sapphire	cc/min, cc per Minute	SM-1.55~15.5-CCM-Water-SP-061
3	2.9~29	Stainless Steel	cc/min, cc per Minute	SM-2.9~29-CCM-Water-SS-061
4	4.6~46	Carboloy	cc/min, cc per Minute	SM-4.6~46-CCM-Water-CB-061
5	5~50	Tantalum	cc/min, cc per Minute	SM-5~50-CCM-Water-Tan-061

Tube No. : 1-02-G-081

Fluid type: Air (STP)

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	200~2000	Glass	cc/min, cc per Minute	SM-200~2000-CCM-Air-G-081
2	250~2500	Sapphire	cc/min, cc per Minute	SM-250~2500-CCM-Air-SP-081
3	350~3500	Stainless Steel	cc/min, cc per Minute	SM-350~3500-CCM-Air-SS-081
4	560~5600	Carboloy	cc/min, cc per Minute	SM-560~5600-CCM-Air-CB-081
5	600~6000	Tantalum	cc/min, cc per Minute	SM-600~6000-CCM-Air-Tan-081

Fluid type: Water (70°F)

Item	Flow Range	Float Material	Flow Unit	Ordering Range Code
1	4.4~44	Glass	cc/min, cc per Minute	SM-4.4~44-CCM-Water-G-081
2	6.8~68	Sapphire	cc/min, cc per Minute	SM-6.8~68-CCM-Water-SP-081
3	11~110	Stainless Steel	cc/min, cc per Minute	SM-11~110-CCM-Water-SS-081
4	17~170	Carboloy	cc/min, cc per Minute	SM-17~170-CCM-Water-CB-081
5	18~180	Tantalum	cc/min, cc per Minute	SM-18~180-CCM-Water-Tan-081

VARIABLE AREA TYPE FLOW METER (ROTAMETER)

M-TYPE

Technical Data

A. Measuring The Flow Rate For

- Gases & Liquid
- Chemical process system
- Water treatment system
- Industrial flow system

B. Service Condition

- Viscosity: ≤ 3 cP
- Max. working temperature: Metal: 100°C; Plastic: 60°C
- Max. working pressure:

(1) Body material: MS: 15 kg/cm²
MV: 6 kg/cm²

(2) Glass tube: Borosilicate glass 6 kg/cm², Instant pressure: 8 kg/cm²

(3) P.C tube: 10 kg/cm², Instant pressure: 15 kg/cm²

C. Alarm Switch Available (N.O), IP67

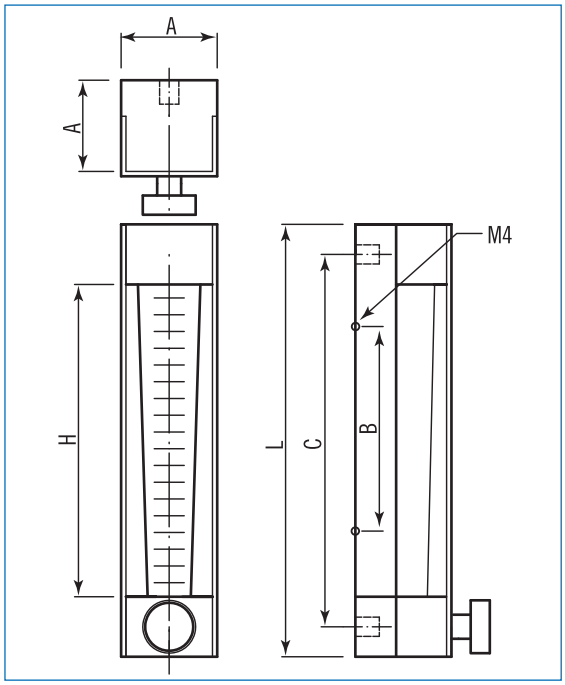
- Switch rating: AC 125V 0.5A / DC 100V 10W / Max. DC 250V <1mA

D. Accuracy: ±4%F.S

Operation Principle

The variable area flow meter content a float & taper tube. The fluid flow through the taper tube and force up to the float. The flow rate is measured as a function of the area of the opening. This area displayed as the float that is free to move to produce the varying area.

Dimensions



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Size \ Range	H₂O (Max.) L/Min	Air (Max.) NL/Min	Dimension					
			PT/NPT	L	H	A	C	B
6A	0.03~0.3	0.5~5.0	1/4"	168	110	25	145	75
10A	0.1~1.0	2~20	3/8"	168	110	25	145	75
15A	1~10	20~200	1/2"	242	165	32	210	100
20A	2~20	30~300	3/4"	290	220	42	240	140
25A	5~50	80~800	1"	295	230	46	250	140
25A	–	150~1500	1"	295	230	46	250	140

Ordering Information

M-Type - MS - 1 - 2 - 5 - 1 - 6 - 1 - 1 - L - 1 - 1R

Model
- **MS** – Wetted parts are stainless steel
- **MV** – Wetted parts are plastic

Size
- **1** – 6A
- **2** – 10A
- **3** – 15A
- **4** – 20A
- **5** – 25

Connection Rating
- **1** – NPT
- **2** – RT
- **3** – option

Body Material
- **1** – SS304
- **2** – SS316
- **3** – SS316L
- **4** – P.V.C
- **5** – P.P
- **6** – PVDF
- **7** – Option

Indicating Tube Material
- **1** – Borosilicate glass
- **2** – PC

Float Material
- **1** – SS304
- **2** – SS316
- **3** – P.V.C
- **4** – P.P
- **5** – PVDF
- **6** – Teflon
- **7** – option

Seal Material
- **1** – NBR
- **2** – Viton
- **3** – Teflon

Protection Supporter Material
- **1** – SS304
- **2** – SS316

Flow Range
- **L** – 0.03-50 L/min for liquid
- **G** – 0.5-1500 NL/ minfor gases

Flow Direction
- **1** – Horizontal
- **2** – Vertical

Alarm Switch
- **1R** – One setting point
- **2R** – Two setting point
- **0** – Without alarm

VARIABLE AREA TYPE FLOW METER (ROTAMETER)

P-TYPE

Applications

A. Measuring the flow rate for
- Chemical process system
- Water treatment system
- Industrial flow system

B. Service Condition
- Viscosity≤ 3 cP
- Max. working temperature: Metal: 100ºC; Plastic: 60ºC
- Max. working pressure:
  (1)Body material: PS, PI: 15 kg/cm², Plastic: 6 kg/cm²,
  (2)Glass tube: Borosilicate glass 6 kg/cm² ,
  (3)P.C tube: 10 kg/cm² ,
  Instant pressure: 15 kg/cm²

C. Alarm switch available (N.O)
- **Switch rating:** AC 125V 0.5A / DC 100V 10W / Max. DC 250V<1mA

D. Accuracy: ±2.5%F.S

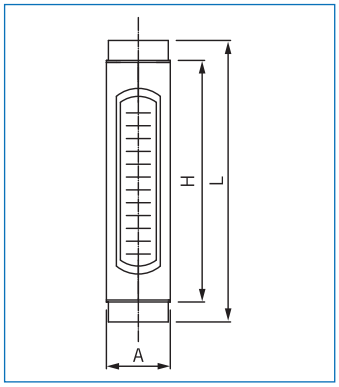
Operation Principle

The variable area Flow meter contains a float & taper tube. The fluid flows through the taper tube and forces up to the float . The flow rate is measured as a function of the area of the opening. The flow rate increases as the float becomes free to move to produce the varying area.

Plastic

Metal

Dimensions



Size \ Range	H₂O (MAX) L/min	AIR (MAX) NL/min	DIMENSION			
			L	H	A	PT/NPT
6A	0.03 – 0.3	0.5 – 5.0	200	165	—	1/4"
10A	0.1 – 1.0	2 – 20	200	165	—	3/8"
15A	1 – 10	20 – 200	240	200	—	1/2"
20A	2 – 20	30 – 300	280	240	—	3/4"
25A	5 – 50	100 – 1000	280	240	—	1"
32A	10 – 100	200 – 2000	280	240	—	1 1/4"
40A	20 – 200	300 – 3000	305	240	—	1 1/2"
50A	40 – 400	500 – 5000	315	240	—	2"

Ordering Information

P-Type - PS - 1 - 2 - 5 - 1 - 6

Model
- **PS** – stainless steel wetted parts
- **PI** – steel wetted parts
- **PV** – plastic wetted parts

Size
- **1** – 6A
- **2** – 10A
- **3** – 15A
- **4** – 20A
- **5** – 25A
- **6** – 32A
- **7** – 40A
- **8** – 50A

Connection thread (M-Male, F-Female)
- **1** – PTM
- **2** – PTF
- **3** – NPTM
- **4** – NPTF

Body (wetted parts) material
- **1** – CS
- **2** – SS304
- **3** – SS316
- **4** – SS316L
- **5** – P.V.C.
- **6** – P.P.
- **7** – PVDF
- **8** – Teflon

Indicating Tube material
- **1** – Borosilicate glass
- **2** – PC (plastic)

Float material
- **1** – SS304
- **2** – SS316
- **3** – P.V.C
- **4** – P.P.
- **5** – Nylon
- **6** – PVDF
- **7** – Teflon

\+ 2 - 5 - 1 - 6

Seal material
- **1** – NBR
- **2** – Viton

Protection Supporter material
- **1** – SS304
- **2** – SS316
- **3** – Acrylic plastic

Flow range
- **L** – 0.03-400 L/min for liquid
- **G** – 0.5- 5000 NL/min for gas

Alarm Switch
- **1R** – One setting point
- **2R** – Two setting points
- **0** – Without alarm

NOTE
Special requests on materials are available.

VARIABLE AREA TYPE FLOW METER (ROTAMETER)

NP-TYPE

Operation Principle

The variable area flow meter content a float & taper tube. The fluid flow through the taper tube and force up to the float. The flow rate is measured as a function of the area of the opening. This area displayed as the float that is free to move to produce the varying area.

Technical Data

A. Measuring The Flow Rate For

- Gases & Liquid
- Chemical process system
- Water treatment system
- Industrial flow system

B. Service Condition

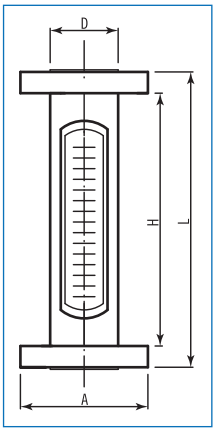
- Viscosity: ≤ 3 cP
- Max.working temperature Metal: 100°C; Plastic: 60°C
- Max.working pressure
  (1) Body material: NPS: 15 kg/cm², NPI: 15 kg/cm², NPV: 6 kg/cm²
  (2) Glass tube: Borosilicate glass 6 kg/cm²
  (3) P.C tube: 10 kg/cm², Instant pressure: 15 kg/cm²

C. Alarm Switch Available (N.O)

- Switch rating: AC 125V 0.5A / DC 100V 10W / Max. DC 250V <1mA

D. Accuracy: ±2.5%F.S

Dimensions



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Size \ Range	H_2O (Max.) L/Min	Air (Max.) NL/Min	Dimension				
			Flange	L	H	A	D
10A	0.1~1.0	2~20	3/8"	175	145	–	–
15A	1~10	20~200	1/2"	230	200	–	–
20A	2~20	30~300	3/4"	260	230	–	–
25A	5~50	100~1000	1"	265	230	–	–
32A	10~100	200~2000	1¼"	280	245	–	–
40A	20~200	350~3500	1½"	280	245	–	–
50A	40~400	500~5000	2"	285	245	–	–

Ordering Information

NP-Type - NPS - 1 - 2 - 5 - 1 + 1 - 2 - 3 - L - 1R

Model
NPS – Wetted parts are stainless steel
NPI – Wetted parts are steel
NPV – Wetted parts are plastic

Size
1 – 10A
2 – 15A
3 – 20A
4 – 25A
5 – 32A
6 – 40A
7 – 50A

Connection Rating
1 – JIS
2 – JIS 10K
3 – ANSI 150#
4 – DIN PN10

Body Material
1 – SS304
2 – SS316
3 – SS316L
4 – P.V.C
5 – P.P
6 – PVDF
7 – Option

Indicating Tube Material
1 – Borosilicate glass
2 – PC

Float Material
1 – SS304
2 – SS316
3 – P.V.C
4 – P.P.
5 – PVDF
6 – Teflon
7 – option

Seal Material
1 – NBR
2 – Viton

Protection Supporter Material
1 – SS304
2 – SS316
3 – Acrylic Plastic

Flow Range
L – 0.1-400 lymin for liquid
G – 2-5000 NLVmin for gases

Alarm Switch
1R – One setting point
2R – Two setting point
0 – Without alarm

VARIABLE AREA TYPE FLOW METER (ROTAMETER)

NR-TYPE

Operation Principle

The variable area flow meter content a float & taper tube. The fluid flow through the taper tube and force up to the float. The flow rate is measured as a function of the area of the opening. This area displayed as the float that is free to move to produce the varying area.

Technical Data

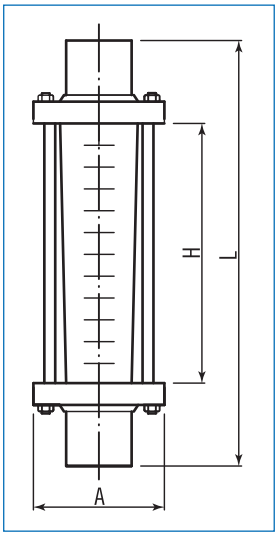
A. Measuring The Flow Rate For
- Gases & Liquid
- Chemical process system
- Water treatment system
- Industrial flow system

B. Service Condition
- Viscosity: ≤ 3 cP
- Max. working temperature: Metal: 100°C; Plastic: 60°C
- Max. working pressure:
  (1) Body material: NRS: 15 kg/cm², NRI: 15 kg/cm², NRV: 6 kg/cm²
  (2) Glass tube: Borosilicate glass 6 kg/cm²
  (3) P.C tube: 10 kg/cm², Instant pressure: 15 kg/cm²

C. Alarm Switch Available (N.O)
- Switch rating: AC 125V 0.5A / DC 100V 10W / Max. DC 250V <1mA

D. Accuracy: ±2.5% F.S

Dimensions



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Range / Size	H_2O (Max.) L/Min	Air (Max.) NL/Min	Dimension			
			Flange	L	H	A
6A	0.03~0.3	0.5~5.0	1/4"	170	103	–
10A	0.1~1.0	2~20	3/8"	170	103	–
15A	1~10	20~200	1/2"	240	160	–
20A	2~20	30~300	3/4"	280	190	–
25A	5~50	100~1000	1"	280	190	–
32A	10~100	200~2000	1¼"	300	205	–
40A	20~200	300~3000	1½"	330	205	–
50A	40~400	500~5000	2"	350	205	–

Ordering Information

NRS-Type - NRS - 1 - 2 - 2 - 1 + 1 - 2 - 1 - L - 2R

Model
- **NRS** – Wetted parts are stainless steel
- **NRI** – Wetted parts are steel
- **NRV** – Wetted parts are plastic

Size
- **1** – 6A
- **2** – 10A
- **3** – 15A
- **4** – 20A
- **5** – 25A
- **6** – 32A
- **7** – 40A
- **8** – 50A

Connection Thread
- **1** – PT Male
- **2** – PT Female
- **3** – NPT Male
- **4** – NPT Female

Body Material
- **1** – SS304
- **2** – SS316
- **3** – SS316L
- **4** – P.V.C
- **5** – P.P
- **6** – PVDF
- **7** – Option

Indicating Tube Material
- **1** – Borosilicate glass
- **2** – PC

Float Material
- **1** – SS304
- **2** – SS316
- **3** – P.V.C
- **4** – P.P.
- **5** – PVDF
- **6** – Teflon
- **7** – option

Seal Material
- **1** – NBR
- **2** – Viton
- **3** – Teflon

Protection Supporter Material
- **1** – SS304
- **2** – SS316

Flow Range
- **L** – 0.03-400 L/min for liquid
- **G** – 0.5-5000 NIVmin for gases

Alarm Switch
- **1R** – One setting point
- **2R** – Two setting point
- **0** – Without alarm

VARIABLE AREA TYPE FLOW METER (ROTAMETER)

N-TYPE

Operation Principle

The variable area flow meter content a float & taper tube. The fluid flow through the taper tube and force up to the float. The flow rate is measured as a function of the area of the opening. This area displayed as the float that is free to move to produce the varying area.

Technical Data

A. Measuring The Flow Rate For

- Gases & Liquid
- Chemical process system
- Water treatment system
- Industrial flow system

B. Service Condition

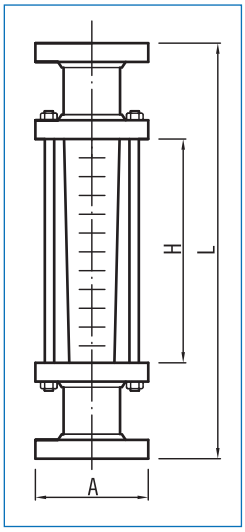
- Viscosity: ≤ 3 cP
- Max. working temperature: Metal: 100°C; Plastic: 60°C
- Max. working pressure:
  (1) Body material: NS: 15 kg/cm², NI: 15 kg/cm², NV: 6 kg/cm²
  (2) Glass tube: Borosilicate glass 6 kg/cm² for 10A~50A:
  5 kg/cm² for 65A~80A; 4 kg/cm² for 100A~150A;
  (3) P.C tube: 10 kg/cm², Instant pressure: 15 kg/cm²

C. Alarm Switch Available (N.O)

- Switch rating: AC 125V 0.5A / DC 100V 10W / Max. DC 250V <1mA

D. Accuracy: ±2.5% F.S

Dimensions



unit=mm

Range / Size	H₂O (Max.) L/Min	Air (Max.) NL/Min	Dimension			
			Flange	L	H	A
10A	0.1~1.0	2~20	3/8"	230	103	–
15A	1~10	20~200	1/2"	280	160	–
20A	2~20	30~300	3/4"	340	190	–
25A	5~50	100~1000	1"	340	190	–
32A	10~100	200~2000	1¼"	350	205	–
40A	20~200	300~3000	1½"	350	205	–
50A	40~400	500~5000	2"	350	205	–
65A	60~600	600~6000	2½"	350	205	–
80A	80~800	900~9000	3"	410	250	–
100A	100~1000	1500~15000	4"	430	260	–
125A	200~2000	3000~30000	5"	460	260	–

Ordering Information

N-Type	-	NS	-	1	-	2	-	2	-	1		1	-	1	-	2	-	L	-	2R

Model

NS	**Wetted** parts are stainless steel
NI	**Wetted** parts are steel
NV	**Wetted** parts are plastic

Size

1	10A
2	15A
3	20A
4	25A
5	32A
6	40A
7	50A
8	65A
9	80A
10	100A
11	125A

Connection Rating

1	**JIS** 5K
2	**JIS** 10K
3	**ANSI** 150#
4	**ANSI** 300#

Indicating Tube Material

1	**Borosili-cate** glass
2	**PC**

Body Material

1	SS304
2	SS316
3	SS316L
4	P.V.C
5	P.P
6	PVDF
7	Option

Float Material

1	SS304
2	SS316
3	P.V.C
4	P.P.
5	PVDF
6	Teflon
7	option

Seal Material

1	NBR
2	Viton
3	Teflon

Protection Supporter Material

1	SS304
2	SS316

Flow Range

L	**0.1-3000** LVmin for liquid
G	**2-50000** Ni7min for gases

Alarm Switch

1R	**One** setting point
2R	**Two** setting point
0	**Without** alarm

VARIABLE AREA TYPE FLOW METER (ROTAMETER)

HB TYPE

Operation Principle

The variable area flow meter content a float & taper tube. The fulid flow through the taper tube and force up to the float. The flow rate is measured as a function of the area of the opening. This area displayed in indicating ring as the float that is free to move to produce the varying area.

Application

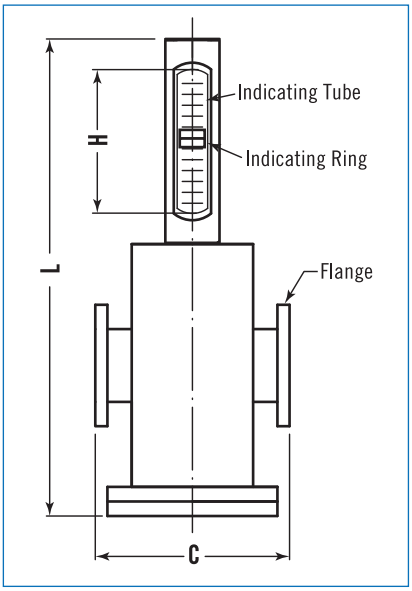
A. Measuring the flow rae for:

- Chemical process system
- Water treatment system
- Industrial flow system

B. Service Condition:

- Viscosity: ≤100cP
- Max. working temperature: 150°C
- Max. working pressure: 40 kg/cm²

Dimensions



Standard Range Table & Dimensions

unit=mm

Size \ Range	H2O (max.) M³/H	AIR (max.) Nm³/H	DIMENSION L	H	C	Flange
15A	0.06 ~ 0.6	1 ~ 12	250	80	140	½”
20A	0.12 ~ 1.2	2 ~ 20	250	80	140	¾”
25A	0.3 ~ 3	5 ~ 50	300	100	160	1”
32A	0.6 ~ 6	10 ~ 100	300	100	160	1¼”
40A	1.2 ~ 12	20 ~ 200	350	100	200	1½”
50A	2 ~ 20	30 ~ 300	400	100	240	2”
65A	3 ~ 30	40 ~ 400	450	150	300	2½”
80A	5 ~ 50	50 ~ 500	500	150	360	3”
100A	7 ~ 70	60 ~ 600	550	200	400	4”
125A	10 ~ 100	80 ~ 800	600	200	480	5”
150A	15 ~ 150	100 ~ 1000	650	200	540	6”

Ordering Information

HB-Type - **HBS** - **2** - **1** - **2** - **2** - **1** - **HBS** - **2** - **1** - **2**

Model	
HBS	**stainless** steel wetted parts

Size	
1	15A
2	20A
3	25A
4	32A
5	40A
6	50A
7	65A
8	80A
9	100A
10	125A
11	150A

Connection Rating	
1	**JIS10K**
2	**JIS20K**
3	**ANSI** 150#
4	**ANSI** 300#
5	**DIN** PN10
6	**DIN** PN40

Body (wetted parts) Material	
1	**SS304**
2	**SS316**
3	**Option**

Indicating Tube Material	
1	**Borosilicate** glass
2	**PC**

Float Material	
1	**SS304**
2	**SS316**

Seal Material	
1	**NBR**
2	**Viton**
3	**Teflon**

Protection Supporter Material	
1	**SS304**
2	**SS316**

Fluid	
L	**for** liquid
G	**for** gas

Code Flow Range
Please directly fill out the flow range in the order code.

VARIABLE AREA TYPE FLOW METER (ROTAMETER)

KB TYPE

Operation Principle

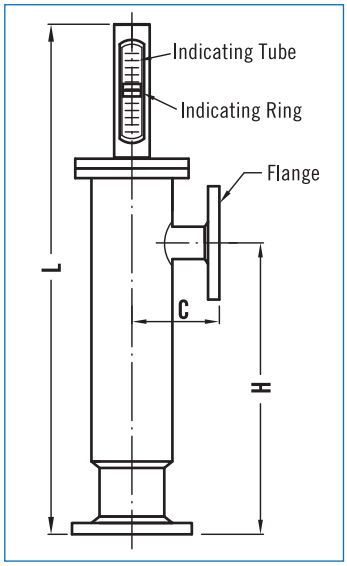
The variable area flow meter content a float & taper tube. The fulid flow through the taper tube and force up to the float. The flow rate is measured as a function of the area of the opening. This area displayed in indicating ring as the float that is free to move to produce the varying area.

Application

A. Measuring the flow rae for:
- Chemical process system
- Water treatment system
- Industrial flow system

B. Service Condition:
- Viscosity: ≤100cP
- Max. working temperature: 150°C
- Max. working pressure: 100 kg/cm² (according to flange rating)

Dimensions



Standard Range Table & Dimensions

unit=mm

Size \ Range	H2O (max.) M³/H	AIR (max.) Nm³/H	DIMENSION L	H	C	Flange
15A	0.06 ~ 0.6	1 ~ 12	380	200	80	½"
20A	0.12 ~ 1.2	2 ~ 20	380	200	80	¾"
25A	0.3 ~ 3	5 ~ 50	400	210	80	1"
32A	0.6 ~ 6	10 ~ 100	400	210	80	1¼"
40A	1.2 ~ 12	20 ~ 200	400	210	100	1½"
50A	2 ~ 20	30 ~ 300	430	220	100	2"
65A	3 ~ 30	40 ~ 400	430	220	100	2½"
80A	5 ~ 50	50 ~ 500	580	300	120	3"
100A	7 ~ 70	60 ~ 600	720	400	150	4"
125A	10 ~ 100	80 ~ 800	800	430	180	5"
150A	15 ~ 150	100 ~ 1000	850	450	200	6"

Ordering Information

KB-Type - KBS - 2 - 1 - 2 - 2 - 1 - 2 - 2 - L - 2

Model	
KBS	**stainless** steel wetted parts

Size	
1	15A
2	20A
3	25A
4	32A
5	40A
6	50A
7	65A
8	80A
9	100A
10	125A
11	150A

Connection Rating	
1	**JIS** 10K
2	**JIS** 20K
3	**ANSI** 150#
4	**ANSI** 300#
5	**DIN** PN40

Body (wetted parts) Material	
1	**SS304**
2	**SS316**
3	**Option**

Indicating Tube Material	
1	**Borosilicate** glass
2	**PC**

Float Material	
1	**SS304**
2	**SS316**

Seal Material	
1	**NBR**
2	**Viton**
3	**Teflon**

Protection Supporter Material	
1	**SS304**
2	**SS316**

Fluid	
L	**for** liquid
G	**for** gas

Flow Range
Please directly fill out the flow range in the order code.

VARIABLE AREA TYPE FLOW METER (ROTAMETER)

KC TYPE

Operation Principle

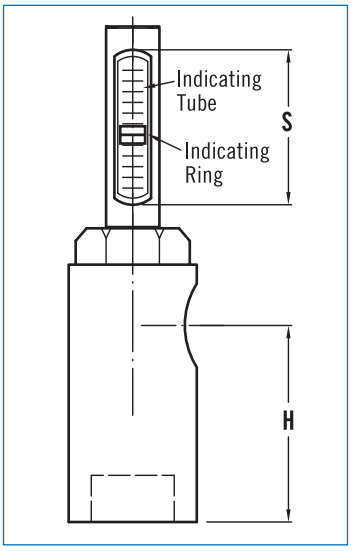
The variable area flow meter content a float & taper tube. The fulid flow through the taper tube and force up to the float. The flow rate is measured as a function of the area of the opening. This area displayed in indicating ring as the float that is free to move to produce the varying area.

Application

A. Measuring the flow rae for:
- Chemical process system
- Water treatment system
- Industrial flow system

B. Service Condition:
- Viscosity: ≤100cP
- Max. working temperature: 150°C
- Max. working pressure: 100 kg/cm²

Dimensions



Standard Range Table & Dimensions

unit=mm

Size \ Range	H2O (max.) M³/H	AIR (max.) Nm³/H	DIMENSION H	S	PT/NPT
15A	0.06 ~ 0.6	1 ~ 12	115	80	½"
20A	0.12 ~ 1.2	2 ~ 20	120	80	¾"
25A	0.3 ~ 3	5 ~ 50	130	90	1"

Ordering Information

KCS-Type	-	KCS	-	2	-	1	-	2	-	2	-	1	-	2	-	1	-	L	-	2

Model	
KCS	**stainless** steel wetted parts

Size	
1	15A
2	20A
3	25A

Connection Thread- Female	
1	PT
2	NPT

Indicating Tube Material	
1	**Borosilicate** glass
2	PC

Body (wetted parts) Material	
1	SS304
2	SS316
3	Option

Float Material	
1	SS304
2	SS316
3	Option

Seal Material	
1	NBR
2	Viton
3	Teflon

Protection Housing Material	
1	SS304
2	SS316

Fluid	
L	**for** liquid
G	**for** gas

Code Flow Range
Please directly fill out the flow range in the order code.

FLOW SWITCH FS20

FS20R & FS20 Din – Weather Proof
FS20X – Explosion Proof

FS-20R

FS-20 DIN

FS-20X

Technical Data

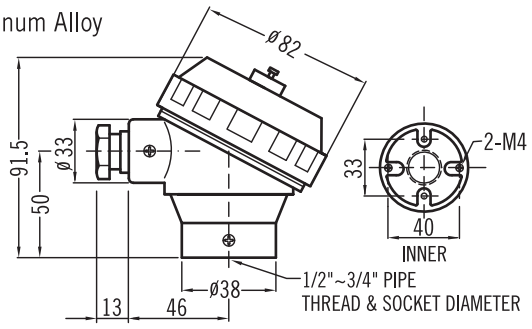
Size: From ½" to 1"
Service: For liquid fluid
Material: Wetted parts 316 stainless steel
Temperature Limit: -20 to 150°C
Pressure Limit: 7.0 MPa (70 kg/cm²)
Enclosure housing: FS20R – Weather Proof IP65
FS20 Din – Weather Proof IP65
FS20X – Explosion Proof. EExdIICT6

Switch function: SPDT micro switch
Switch rating: 3A/250VAC, 3A/30VDC, 0.4A/125VDC
Conduit Connection: ½"NPT female, option available

Head Type

FS20R–Weather Proof IP65

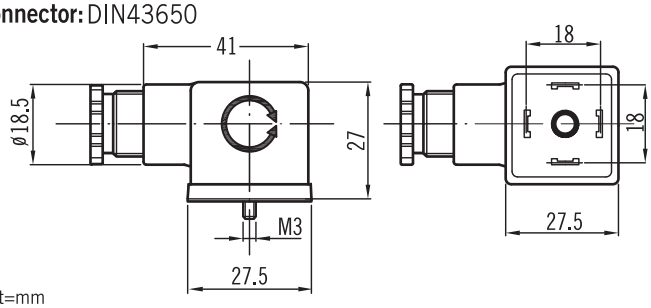
Material: Aluminum Alloy



unit=mm

FS20 Din–Weather Proof IP65

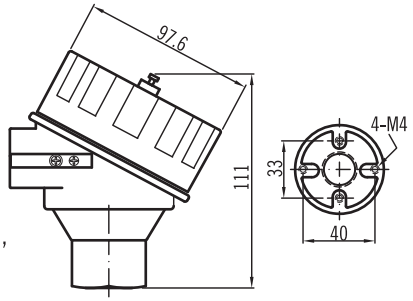
Material: Thermoplaastic Rubber
Cable Gland: PG9
Connector: DIN43650



unit=mm

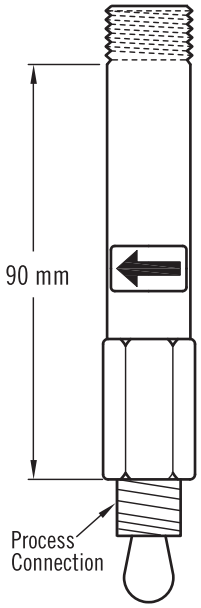
FS20X–Explosion Proof

Material: Aluminum Alloy- standard;
SS316 available
ATEX directive code: II 2 G D
Standard code: Ex d IIC T6,
Ex tD A21,
T100°C IP6x Ta= -20°~+40°C
FM Approvals: XP/I/1/ABCD/T6;
DIP/II, III/1/EFG/T6; Type 4X,
Explosion proof for Class I,
Division 1, Groups A,B,C and D;
and dust-ignition proof for class II,
III, Division 1, Groups E,F and G,
hazardous (classified) locations;
indoor/outdoor (NEMA Type 4X).



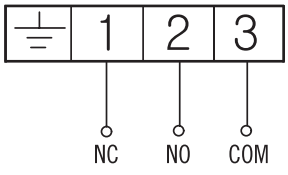
unit=mm

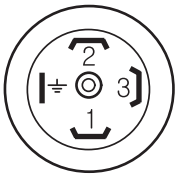
Dimensions



Connection Diagram

3-Wire





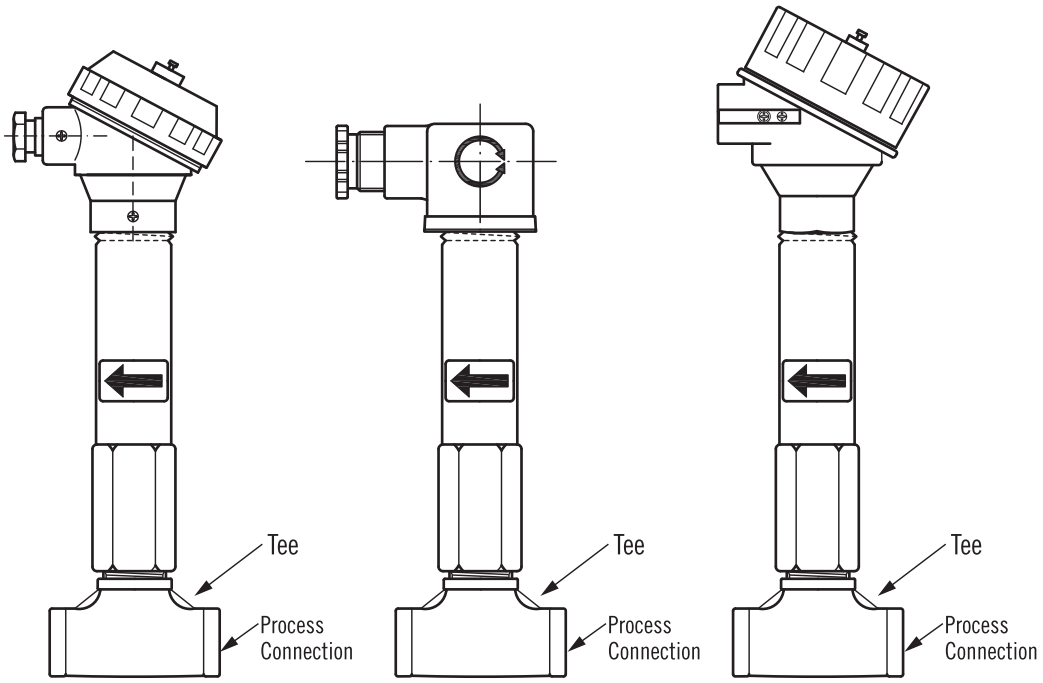
DIN

Flow Rate Table

Process Connection (Female with Tee Fitting)	Flow Rates Required Water at 25°C	
	Acuate (on) ℓ/hour	Deacuate (off) ℓ/hour
½"NPT	380,...460	150,...210
¾"NPT	550,...610	140,...240
1"NPT	930,...1010	750,...780

NOTE.
The Flow Rate Table is only for reference.
Please consult with manufacturer for the accurate flow rate if without tee fitting.

With Tee Drawings



Ordering Information

FS-20R - **A(2)**

Model
FS-20R
FS-20 DIN
FS-20X

Process Connection	
A	**With** Tee (Material: SS316)
	(1) ½"NPT (2)¾"NPT (3) T'NPT
B	**Without** Tee
	(4) ½"NPT (5)¾"NPT (6) 1"NPT

PADDLE FLOW SWITCH FOR LIQUIDS

FS25R – WEATHER PROOF FS25X – EXPLOSION PROOF

Easy installation into existing pipe
For a wide range of pipe size from diameter 25 to 200
Reed switch provide a SPDT contact function
Max. pressure rating 1500 psi (st. steel)

Technical Data

FS25R

Operation temperature: -30 ~ +120°C
Reed switch: 250VAC/DC 60W/VA
Carrying current: 1A
Wire conduit: ½" NPTF
Protection class: IP65
Material: Housing– Aluminum alloy;
Body– SS316 + Teflon; Plate– stainless steel 301
Optional: other materials available upon request

Pipe Size	Flow Rates Required to Actuate, Deactuate (m³/h) Water at 25°C		Process Connection NPT
	Actuate (ON)	Deactuate(OFF)	
1"	1.4	1.05	1"
1¼"	1.45	1.1	1"
1½"	1.5-2	0.9-1.5	1"
2"	3-4	2-4	1"
2½"	4-5	3-4	1"
3"	6-7	5-6	1"
4"	10-14	8-10	1"
6"	20-30	12-17	1"
8"	30-35	25-30	1"

NOTE.
The Flow Rate Table is only for reference.
Please consult with manufacturer for the accurate flow rate if necessary.

FS25X

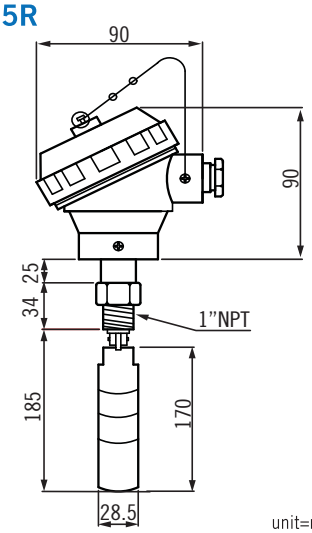
Operation temperature: -30 ~ +120°C
Reed switch: 250VAC/DC 60W/VA
Carrying current: 1A
Wire conduit: ½" NPTF
Protection class: Explosion proof
ATEX directive code: II 2 G D
Standard code: Ex d IIC T6, Ex tD A21, T100°C IP6x Ta= -20°C to +40°C
FM Approvals: XP/I/1/ABCD/T6; DIP/II, III/1/EFG/T6; Type 4X, Explosion proof for class I, Division 1, Groups A,B,C and D; and dust-ignitionproof for class II, III Division 1, Groups E,F, and G, hazardous (classified) locations; indoor/outdoor (NEMA Type 4X).
Material: Housing– Aluminum alloy-standard, SS316 available;
Body– SS316 + Teflon; Plate– stainless steel 301
Optional: other materials available upon request

Pipe Size	Flow Rates Required to Actuate, Deactuate (m³/h) Water at 25°C		Process Connection NPT
	Actuate (ON)	Deactuate(OFF)	
1"	1.4	1.05	1"
1¼"	1.45	1.1	1"
1½"	1.5-2	0.9-1.5	1"
2"	3-4	2-4	1"
2½"	4-5	3-4	1"
3"	6-7	5-6	1"
4"	10-14	8-10	1"
6"	20-30	12-17	1"
8"	30-35	25-30	1"

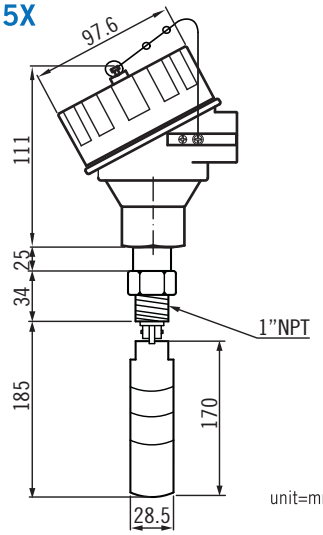
NOTE.
The Flow Rate Table is only for reference.
Please consult with manufacturer for the accurate flow rate if necessary.

Dimensions

FS25R



FS25X



FLOW SWITCH FS30R

FS30RB–BRASS
FS30RS–STAINLESS STEEL

Easy Installation
Wide Range Pipe Size Selections

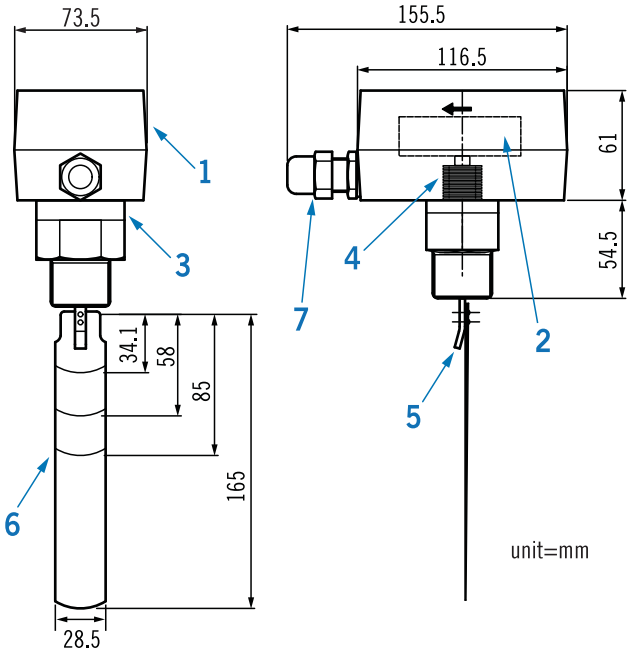
Technical Data

Protection class: IP65
Process Connection: 1"NPT male
Material: Housing: Plastic (Other wetted part: brass or stainless steel)
Application: Liquid
Installation: Easily mounted directly in a pipe
Pipe size range: 25~200 (1"~8"), large size is available
Microswitch: SPDT, 15A 125, 250V 480 VAC, ½A 125 VDC, ¼A 250 VDC
Conduit Connection: PG11, other thread available with adaptor
Temperature Limit: -30~+120˚C
Pressure Limit: 15 kg/cm² — stainless steel; 10 kg/cm² — brass

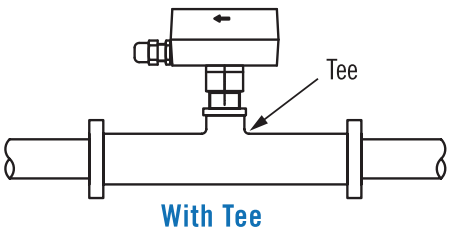
Flow Rate Table (For Acuate & Deactuate)

Flow Rates Required to Actuate, Deactuate Litter per Minute (L/M) Water at 25˚C				
Pipe Size	Actuate (on)		Deactuate (OFF)	
	FS-30RB	FS-30RS	FS-30RB	FS-30RS
1"	23~40	26~45	14~35	16~39
1¼"	38~64	42~70	22~64	24~71
1½"	49~88	54~97	27~74	30~82
2"	72~125	80~137	36~91	40~100
2½"	92~160	100~176	44~140	48~154
3"	114~198	125~218	46~173	51~190
4"	151~279	166~307	75~243	82~267
5"	223~436	245~480	111~349	122~384
6"	300~629	330~690	150~466	165~512
8"	770~1560	847~1715	643~1480	707~1620

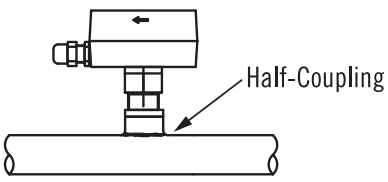
Dimensions



Installation Instruction



With Tee



With Welded Half-Coupling

Material List

Item		FS-30RB	FS-30RS
1	Housing	plastic	plastic
2	Switch mechanism	Microswitch unit	Microswitch unit
3	Connection	brass	SS316
4	Bellows	brass	SS316
5	Paddle guide	brass	SS316
6	Paddle	SS301	SS301
7	Conduit	plastic	plastic

FLOW SWITCH FS40R

FS40RB–BRASS
FS40RS–STAINLESS STEEL

Easy Installation
For Small Pipe Application

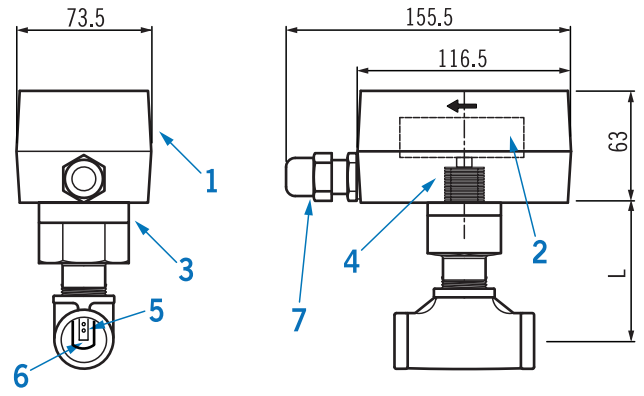
Technical Data

Protection class: IP65
Process Connection: ½", ¾" Female (Tee), NPT and PT available
Material: Housing: Plastic (Other wetted part: brass or stainless steel)
Application: Liquid
Installation: Easily mounted directly on pipe line
Microswitch: SPDT, 15A 125, 250V 480 VAC, ½A 125 VDC, ¼A 250 VDC
Conduit Connection: PG11, other thread available with adaptor
Temperature Limit: -30~+120°C
Pressure Limit: 20 kg/cm² — stainless steel; 10 kg/cm² — brass

Flow Rate Table (For Acuate & Deactuate)

Flow Rates Required to Actuate, Deactuate Litter per Hour (L/H) Water at 25°C				
Pipe Size	Actuate (on)		Deactuate (OFF)	
	FS-40RB	FS-40RS	FS-40RB	FS-40RS
½"	590~600	610~630	370~390	390~410
¾"	760~780	790~810	465~480	490~520

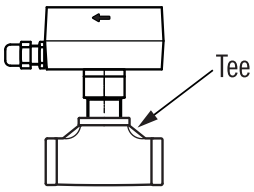
Dimensions



*Pipe size ½", L=63mm; Pipe size ¾", L=78mm

unit=mm

Installation Instruction



With Tee

Material List

Item		FS-40RB	FS-40RS
1	Housing	plastic	plastic
2	Switch mechanism	Microswitch unit	Microswitch unit
3	Connection	brass	SS316
4	Bellows	brass	SS316
5	Paddle guide	brass	SS316
6	Paddle	SS301	SS301
7	Conduit	plastic	plastic

Ordering Information

FS-40R - B - 1

Connection Material	
B	Brass
S	SS316

Process Connection	
1	½" NPT female
2	½"PT female
3	¾"NPT female
4	¾" female
0	option

METAL TUBE FLOW METER BR250S– SPRING TYPE

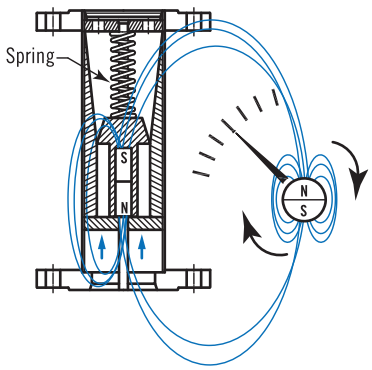
Vertical Flow Direction

Horizontal Flow Direction

Technical Data

BR250S for high flows of gas, liquid, steam and oil
Case Material: Aluminum alloy case with paint; SS316 available
Body Wetted Parts Material: SS316, others on request, indication via magnetic coupling (no sealed)
Lens Material: Safety Glass
Scales Calibrated: in l/h, m³/h, kg/h, %, etc.
Flow Rates For:
– Water: 30 l/h up to 120,000 l/h (special ranges on request)
– Air: 0.8 Nm³/h up to 1,200 Nm³/h (special ranges on request)
Connection Type: Only Flange Type
Connection Size: ½"~5"
Mounting: Vertical and Horizontal available
Mounting Length: 250mm standard; Connection size bigger than 3": mounting length is 300mm; 300mm for explosion proof.
Protection Class: IP66 or Explosion proof, Class I , Groups B, C & D; Class II, Groups E, F & G; NEMA 4, 7, 9
Accuracy: ±2.5% F.S (±2.0% F.S option)
Max. Pressure: 40 kg/cm² (standard); Option: up to 100 kg/cm²
Temperature: -50°C to +200°C (standard); up to 400°C on request
Alarm Switch: Micro switch, Inductive switch, Reed switch available
LCD Display: available
***HART® Communication:** available
Two Wire Transmitter with HART® Protocol:
–Galvanic Isolation
–Suitable for application in SIL 2 installations

Principle

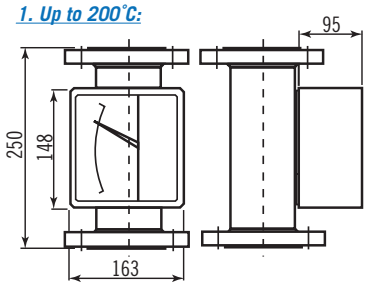


Dimensions-mm

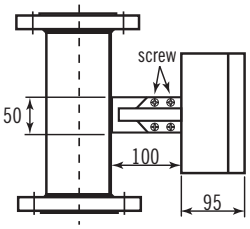
IP66

Case Type: (A-1) Rectangle Bolt Tight Type
Housing Material: Alunimum alloy case with paint

1. Up to 200˚C:



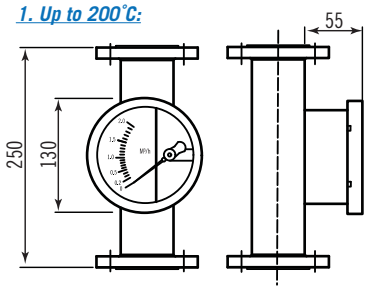
2. Up to 400˚C c/w cooling element:



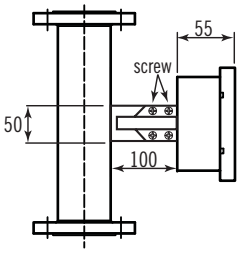
IP66

Case Type: (B-1) Round Bayonet Ring Type (only for indicating)
Housing Material: SS316

1. Up to 200˚C:



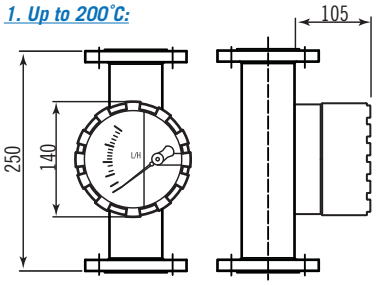
2. Up to 400˚C c/w cooling element:



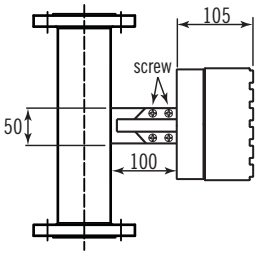
IP66

Case Type: (A-2) Round Screw Tight Type
Housing Material: Aluminum alloy
Case Type: (B-2) Round Screw Tight Type
Housing Material: SS316

1. Up to 200˚C:



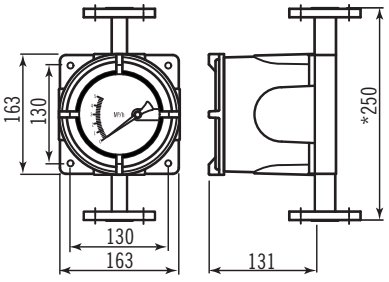
2. Up to 400˚C c/w cooling element:



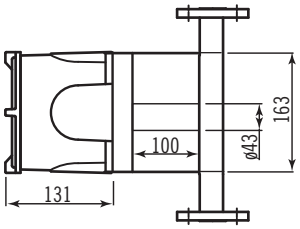
Explosion Proof

Class I, Groups B,C & D; Class II, Groups E,F & G; NEMA 4,7,9

1. Up to 200˚C:



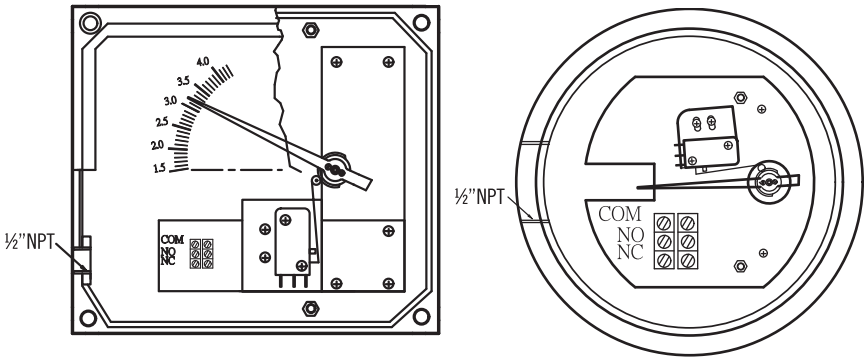
2. Up to 400˚C c/w cooling element:



*Mounting length: 250mm standard
Connection size bigger than 3", mounting length is 300mm.

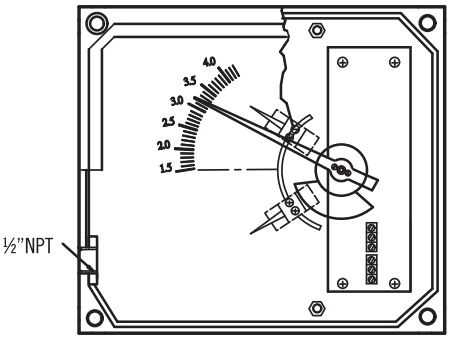
Alarm / Analog Output

BR-250S/GS-M (Micro Switch)



Adjustable Micro Switch, Series BR250S/GS-M
1 adjustable alarm contact
Load: 5A/250VAC/125VAC/30VDC
Temperature: -25°C ~ +100°C (AMB)
Hysteresis: ±10% F.S (Dead Band)

BR-250S/GS-R (Reed Switch)

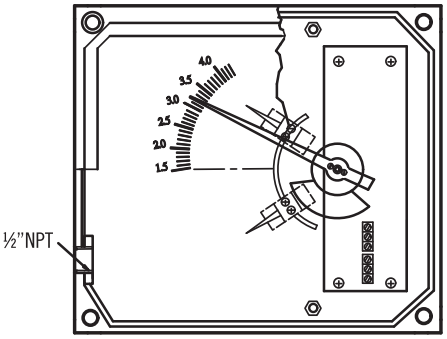


Alarm Switch: One or Two setting point, form A bistable type (N.O type)
Hysteresis: ±10% F.S (Dead Band)
Switch Rating: AC 125V 0.5A / DC 100V 10W / Max. DC 250V<1mA

1 adjustable alarm
Contact setting point should be within 10% to 100% of F.S

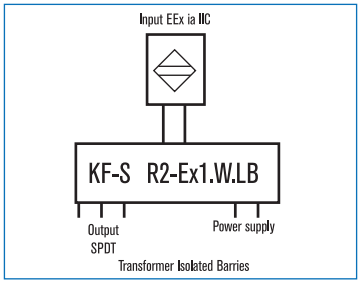
2 adjustable alarm
The second setting point should be a gap 40% from first setting point.

BR-250S/GS-C (Inductive Switch)



Adjustable inductive alarm switch
Hysteresis: ±1% F.S (Dead Band)
Inductive sensors slotted type: 3.5mm slot switch
DC. voltage 2 wire's to DIN19234 (NAMUR) for use in hazardous areas.
– Power supply: 8 VDC (Ri.approx. 1kΩ)
– Current consumption: Active face uncoved 3mA; Active face coved 1mA
– Ambient temp.: -25°C ~ +100°C

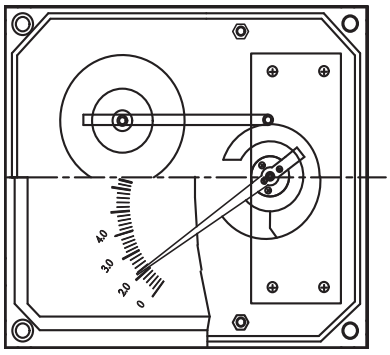
Isolated barriers output relay for inductive sensor:
– Rail mounting
– Control circuit EEx ia IIC
– EMC acc to NAMUR NE21
– Contact loading 250 VAC 2A SPDT 40 VDC 2A



1 adjustable alarm
Contact setting point should be within
10% to 100% of F.S
For 24VDC: KFD2-SR2-Ex1.W
115VAC: KFA5-SR2-Ex1.W
230VAC: KFA6-SR2-Ex1.W

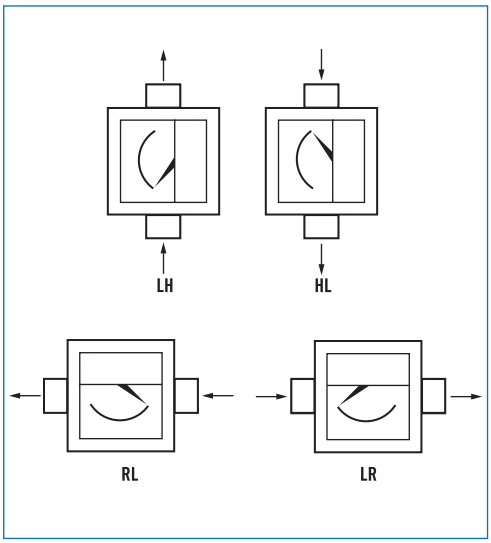
2 adjustable alarm
The second setting point should be a gap
65% from first setting point.
For 24VDC: KFD2-SR2-Ex2.W
115VAC: KFA5-SR2-Ex2.W
230VAC: KFA6-SR2-Ex2.W

BR-250S/GT (Analog Output)



Electric Transmitter BR-250S/GT
Analog output available: 4~20mA (2-wire)
No Alarm Switch Available
Power Supplier: 24VDC
Temperature: +25°C ~ +100°C (AMB)

Flow Direction Type



Standard Scales

Tube	L/H 20°C Water	NM³/H Air 0°C 1.013bar	Pressure Loss psig	Connection	Accuracy
BR250S01	30~300	0.8~8	≤3.5	½"	±2.5% F.S
BR250S02	40~400	1~10	≤3.8	½"	±2.5% F.S
BR250S03	50~500	1.2~12	≤3.7	½"	±2.5% F.S
BR250S04	70~700	1.7~17	≤3.6	½"	±2.5% F.S
BR250S05	80~800	2~20	≤3.8	½"	±2.5% F.S
BR250S06	100~1000	2.7~27	≤4.0	½"	±2.5% F.S
BR250S07	150~1500	4~40	≤4.2	½"	±2.5% F.S
BR250S08	180~1800	5~50	≤4.5	½"	±2.5% F.S
BR250S09	150~1500	4~40	≤3.8	¾"	±2.5% F.S
BR250S10	200~2000	6~60	≤4.0	¾"	±2.5% F.S
BR250S11	300~3000	9~90	≤3.4	1"	±2.5% F.S
BR250S12	400~4000	12~120	≤3.6	1"	±2.5% F.S
BR250S13	600~6000	15~150	≤3.9	1"	±2.5% F.S
BR250S14	600~6000	15~150	≤3.6	1½"	±2.5% F.S
BR250S15	800~8000	24~240	≤3.8	1½"	±2.5% F.S
BR250S16	1000~10000	30~300	≤3.9	1½"	±2.5% F.S
BR250S17	1200~12000	35~350	≤4.3	1½"	±2.5% F.S
BR250S18	1200~12000	35~350	≤3.2	2"	±2.5% F.S
BR250S19	1600~16000	50~500	≤3.4	2"	±2.5% F.S
BR250S20	2000~20000	60~600	≤3.8	2"	±2.5% F.S
BR250S21	2500~25000	70~700	≤;4.I	2"	±2.5% F.S
BR250S22	2000~20000	70~700	≤3.0	2½"	±2.5% F.S
BR250S23	3000~30000	80~800	≤3.2	2½"	±2.5% F.S
BR250S24	3000~30000	90~900	≤3.4	3"	±2.5% F.S
BR250S25	4000~40000	120~1200	≤3.7	3"	±2.5% F.S
BR250S26	5000 ~ 50000	--------	≤3.6	4"	±2.5% F.S
BR250S27	6000 ~ 60000	--------	≤4.2	4"	±2.5% F.S
BR250S28	10000~100000	--------	≤3.8	5"	±2.5% F.S
BR250S29	12000~120000	--------	≤4.3	5"	±2.5% F.S

Ordering Information

G - **R2** - **B2** - **B** - **A** - **10**

Type	
G	**Indicating** only
GS	**Indicating** + switch
GT	**Indicating** 4~20mA (no alarm switch available)
GTH	**Indicating** + HART (4-20mA) no alarm switch available

Alarm	
0	**Without** alarm switch
CI	**One** inductive alarm switch
C2	**Two** inductive alarm switches
MI	**One** micro switch
RI	**One** reed switch
R2	**Two** reed switches

Body & wetted parts	
A	**SS316,** standard
B	**SS316L**
0	**Option**

Float material	
A	**SS316**
B	**SS316L**
0	**Option**

Connection rating	
5	**JIS** 5K
10	**JIS** 10K
20	**JIS** 20K
15	**ANSI** 150#
30	**ANSI** 300#
60	**ANSI** 600#
90	**ANSI** 900#
T	**Other:**

Housing protection / Case type / Material	
AI	**IP66/** Rectangle bolt tight type/Aluminum alloy
A 2	**IP66/** Round screw tight type/Aluminum alloy
BI	**IP66/** Round bayonet ring type / SS316 (only for indicating)
B2	**IP66/** Round screw tight type / SS316
C	**Explosion** proof /Aluminum alloy **Class** 1, Groups B, C & D; Class II, Groups E, F & G; **NEMA** 4,7,9

G - **R2** - **B2** - **C** - **A** - **B**

Connection size	
4F	1/2" Flange
6F	3/4" Flange
10F	1" Flange
12F	1 1/2" Flange
20F	2" Flange
m	2 1/2" Flange
30F	3" Flange
40F	4" Flange
50F	5" Flange

Fluid	
G	**Gas**
O	**Oil**
L	**Liquid**
S	**Steam**

Flow Direction	
0	**LH**
5	**HL**
10	**RI**
20	**LR**

LCD Display	
D	**With**
N	**Without**

Range	
S	**Standard** range
	Please directly till out the flow range in the order code.

Transmitter protection	
G	**IP66** (General type)
Ix.	**Intrinsically** Safe (EExiallCT6), IP66 (only for HART)
0	**Without** transmitter

NOTE:
1. Custom-made flow range and flange size upon request.
2. Please fill in the ordering information and service condition
   Please send your inquiry to mail@a-flow.com

Special instruction, if any:

_____

_____

_____

Service Condition:

Fluid name: _____

Sp. Gr. (density): _____

Viscosity: _____

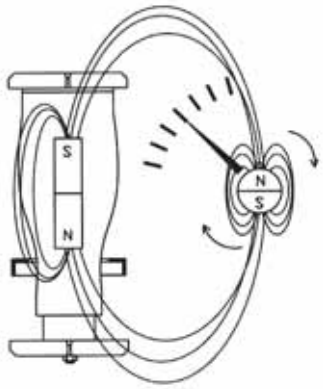
Press.: _____

Temp.: _____

Full scale: _____

METAL TUBE FLOW METER BF300

Principle



Technical Data

BF300 for high flows of gas, liquid, steam

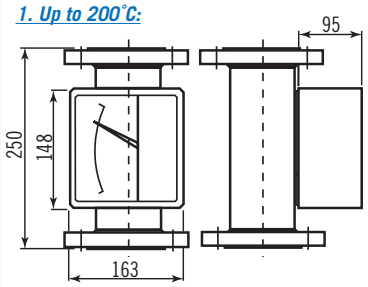
Material: Aluminum alloy case with paint; SS316 available
Body Wetted Parts: SS316; SS316+PTFE lining (PVDF float); others on request; indication via magnetic coupling (no sealed)
Scales Calibrated: in l/h, m³/h, kg/h, %, etc.
Flow Rates For:
SS316 Float:
– Water: 1 l/h up to 100,000 l/h (special ranges on request)
– Air: 0.03 Nm³/h up to 1,200 Nm³/h (special ranges on request)
PVDF Float:
– Water: 4 l/h up to 10,000 l/h (special ranges on request)
– Air: 0.1 Nm³/h up to 450 Nm³/h (special ranges on request)
Connection Types: Thread Type, Flange type, Trip Clamp & Sanitary (other on request)
Connection Size: ½"~5"
Mounting Length: 250mm standard; Connection size bigger than 3": mounting length is 300mm; 300mm for explosion proof.
Temperature: -50°C to +200°C (standard); up to 400°C on request.
Protection Class: IP66 or Explosion proof, Class I , Groups B, C & D; Class II, Groups E, F & G; NEMA 4, 7, 9
Accuracy: ±2% F.S (±1.6% F.S option)
Max. Pressure: 40 kg/cm² (standard); Option: up to 100 kg/cm²
Option: Switch available (Micro switch 5A/250VAC, 2A/30VDC); Adjustable reed alarm switch available (form A bistable type, N.O. type); Adjustable inductive alarm switch available; 4~20mA 2-wires analog output available
LCD Display: available
***HART® Communication:** available
Two Wire Transmitter with HART® Protocol:
–Galvanic Isolation
–Suitable for application in SIL 2 installations

Dimensions-mm

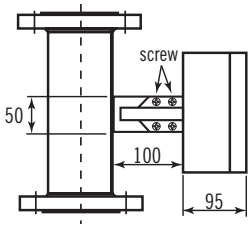
IP66

Case Type: (A-1) Rectangle Bolt Tight Type
Housing Material: Alunimum alloy case with paint

1. Up to 200°C:



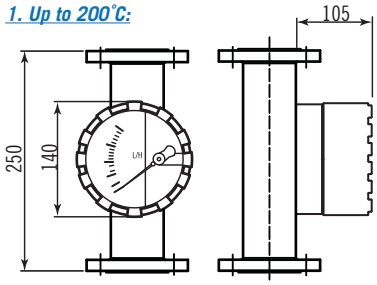
2. Up to 400°C c/w cooling element:



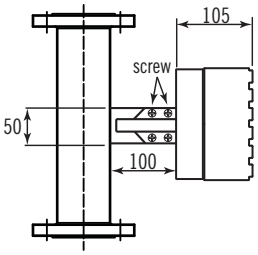
IP66

Case Type: (A-2) Round Screw Tight Type
Housing Material: Aluminum alloy
Case Type: (B-2) Round Screw Tight Type
Housing Material: SS316

1. Up to 200°C:



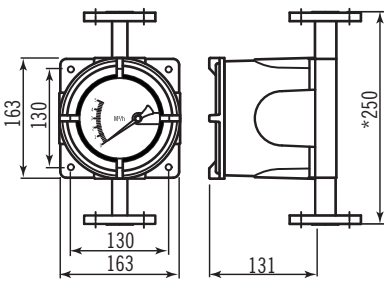
2. Up to 400°C c/w cooling element:



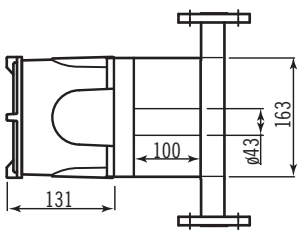
Explosion Proof

Class I, Groups B,C & D; Class II, Groups E,F & G; NEMA 4,7,9

1. Up to 200°C:



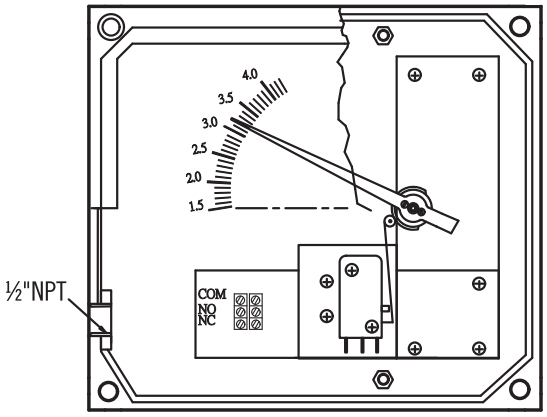
2. Up to 400°C c/w cooling element:



*Mounting length: 250mm standard
Connection size bigger than 3", mounting length is 300mm.

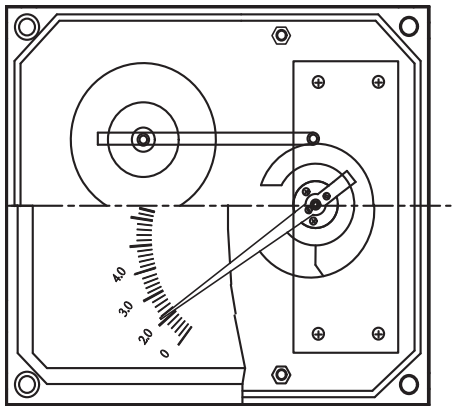
Alarm / Analog output

BF-300/GS-M (Micro Switch)



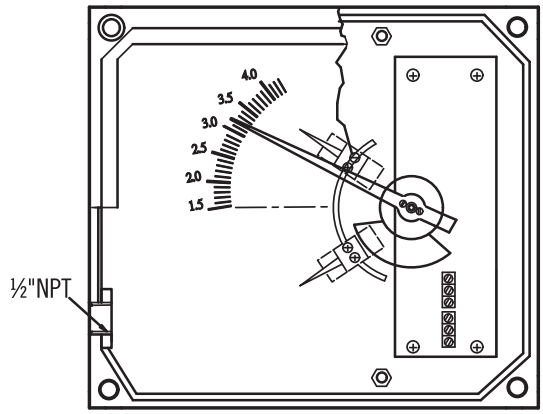
Adjustable Micro Switch, Series BF300/GS-M
1 adjustable alarm contact
Load: 5A/250VAC, 2A/30VDC
Temperature: -25°C ~ +100°C (AMB)
Hysteresis: ±10% F.S (Dead Band)

BF-300/GT (Analog Output)



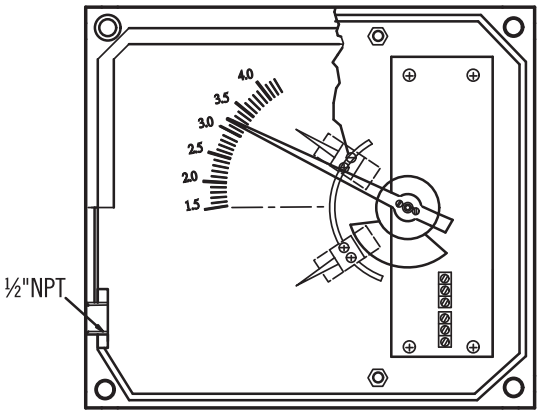
Electric Transmitter BF-300/GT
Analog output available: 4~20 mA (2 wire)
No Alarm Switch Available
Power Supplier: 24Vdc
Temperature: +25°C ~ +100°C (AMB)

BF-300/GS-C (Inductive Switch)



Adjustable inductive alarm switch
Hysteresis: ±1% F.S (Dead Band)
Inductive sensors slotted type:
3.5mm slot switch
DC. voltage 2 wire's to DIN19234 (NAMUR) for use in hazardous areas.
– Power supply: 8 Vdc (Ri.approx. 1kΩ)
– Current consumption: Active face uncoved 3mA
Active face coved 1mA
– Ambient temp: -25°C ~ +100°C
Isolated barriers output relay for inductive sensor:
– Rail mounting
– Control circuit EEx ia IIC
– EMC acc to NAMUR NE21
– Contact loading 250VAC 2A SPDT 40VDC 2A

BF-300/GS-R (Reed Switch)



Alarm Switch:
one or two setting points, form A bistable type (N.O. type)
Hysteresis:
±10% F.S (Dead Band)
Switch Rating:
AC 125V 0.5A / DC 100V 10W / Max. DC 250V<1mA

1 adjustable alarm
Contact setting point should be within 10% to 100% of F.S.

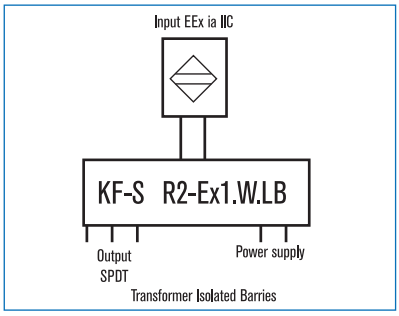
2 adjustable alarm
The second setting point should be a gap 40% from first setting point.

1 adjustable alarm
Contact setting point should be within 10% to 100% of F.S

For 24VDC: KFD2-SR2-Ex1.W
115VAC: KFA5-SR2-Ex1.W
230VAC: KFA6-SR2-Ex1.W

2 adjustable alarm
The second setting point should be a gap 65% from first setting point.

For 24VDC: KFD2-SR2-Ex2.W
115VAC: KFA5-SR2-Ex2.W
230VAC: KFA6-SR2-Ex2.W



Standard Scales

A. Float Material: SS316, SS316L available

Tube	L/H 20°C Water	NM³/H Air 0°C 1.013bar	PmmWater	Connec-tion	Accuracy (NOTE 1.)
BF300a	1 - 10	0.03 - 0.3	<750	½"	±5% F.S
BF300b	1.8 - 18	0.06 - 0.6	<750	½"	±5% F.S
BF3001	2.5 - 25	0.075 - 0.75	<750	½"	±5% F.S
BF3002	4-40	0.13-1.3	<750	½"	±5% F.S
BF3003	5.5-55	0.17-1.7	<750	½"	±5% F.S
BF3004	8-80	0.2-2	<750	½"	±2% F.S
BF3005	16 - 160	0.5-5	<750	½"	±2% F.S
BF3006	18 - 180	0.6-6	<750	½"	±2% F.S
BF3007	30 - 300	1 - 10	<750	½"	±2% F.S
BF3008	50 - 500	1.5- 1.5	<750	½"	±2% F.S
BF3009	60 - 600	1.8- 18	<750	½"	±2% F.S
BF3010	70 - 700	2-20	<750	½"	±2% F.S
BF3011	100 - 1000	3-30	<750	¾"	±2% F.S
BF3012	120- 1200	4-40	<750	1"	±2% F.S
BF3013	160 - 1600	5-50	<700	1"	±2% F.S
BF3014	200 - 2000	6-60	<700	1"	±2% F.S
BF3015	240 - 2400	7-70	<700	1"	±2% F.S
BF3016	280 - 2800	8.5-85	<700	1"	±2% F.S
BF3017	320 - 3200	9-90	<700	1"	±2% F.S
BF3018	350 - 3500	10 - 100	<700	1"	±2% F.S
BF3019	500 - 5000	14 - 140	<650	1½"	±2% F.S
BF3020	600 - 6000	15 - 150	<650	1½"	±2% F.S
BF3021	700 - 7000	20 - 200	<650	1½"	±2% F.S
BF3022	800 - 8000	24 - 240	<650	1½"	±2% F.S
BF3023	1000 - 10000	30 - 300	<650	2"	±2% F.S
BF3024	1200 - 12000	35 - 350	<650	2"	±2% F.S
BF3025	1400 - 14000	40 - 400	<650	2"	±2% F.S
BF3026	1500 - 15000	45 - 450	<1000	2"	±2% F.S
BF3027	1800 - 18000	60 - 600	<800	1½"	±2% F.S
BF3028	2000 - 20000	75 - 750	<800	1½"	±2% F.S
BF3029	2300 - 23000	90 - 900	<850	3"	±2% F.S
BF3030	2500 - 25000	120- 1200	<1000	3"	±2% F.S
BF3031	2800 - 28000	-------	<1100	3"	±2% F.S
BF3032	3000 - 30000	-------	<1200	3"	±2% F.S
BF3033	3500 - 35000	-------	<1000	4"	±2% F.S
BF3034	4000 - 40000	-------	<1000	4"	±2% F.S
BF3035	5000 - 50000	-------	<1200	4"	±2% F.S
BF3036	6000 - 60000	-------	<1500	4"	±2% F.S
BF3037	10000 - 100000	-------	<2500	5"	±2% F.S

B. Float Material: PVDF (only SS316+PTFE lining wetted parts available)

Tube	L/H 20°C Water	NM³/H Air0°C 1.013bar	PmmWater	Con-nec-tion	Accuracy (NOTE 1.)
BF3001P	4~40	0.1~1	≤750	½"	±5% F.S
BF3002P	5.5~55	0.17~1.7	≤750	½"	±5% F.S
BF3003P	8~80	0.2~2	≤750	½"	±5% F.S
BF3004P	16~160	0.5~5	≤750	½"	±2% F.S
BF3005P	28~280	0.9~9	≤750	¾"	±2% F.S
BF3006P	35~350	1.1~11	≤750	¾"	±2% F.S
BF3007P	40~400	1.3~13	≤750	¾"	±2% F.S
BF3008P	50~500	5~50	≤750	1"	±2% F.S
BF3009P	70~700	6~60	≤700	1"	±2% F.S
BF3010P	90~900	7~70	≤700	1"	±2% F.S
BF3011P	100~1000	8.5~85	≤700	1"	±2% F.S
BF3012P	120~1200	9~90	≤700	1"	±2% F.S
BF3013P	160~1600	10~100	≤700	1"	±2% F.S
BF3014P	200~2000	14~140	≤700	1"	±2% F.S
BF3015P	250~2500	15~150	≤650	1"	±2% F.S
BF3016P	300~3000	20~200	≤650	1½"	±2% F.S
BF3017P	350~3500	24~240	≤650	1½"	±2% F.S
BF3018P	450~4500	30~300	≤650	1½"	±2% F.S
BF3019P	450~4500	35~350	≤650	1½"	±2% F.S
BF3020P	500~5000	40~400	≤650	1½"	±2% F.S
BF3021P	650~6500	45~450	≤650	2"	±2% F.S
BF3022P	700~7000	-------	≤650	2"	±2% F.S
BF3023P	800~8000	-------	≤650	2"	±2% F.S
BF3024P	900~9000	-------	≤650	2½"	±2% F.S
BF3025P	1000~10000	-------	≤650	2½"	±2% F.S

NOTE.

1. The accuracy ±5% F.S for tube BF300a/b and BF3001(P)~BF3003(P).
   The accuracy ±2% F.S for tube BF3004~BF3037 and BF3004P~BF3025P; option ±1.6% F.S on request.
2. Performance Technical Data are effective with date of issue and are subject to change without prior notice.

Ordering Information

G - R2 - B - B - A - 10 - 2B - G - L - S - S - D

Type	
G	**Indicating** only
GS	**Indicating** + switch
GT	**Indicating** + 4~20mA (no alarm switch available)
GTH	**Indicating** + HART (4~20mA) no alarm switch available

Housing protection / Case type / Material	
AI	**IP66** / Rectangle bolt tight type / Aluminum alloy
A2	**IP66** / Round screw tight type / Aluminum alloy
B	**IP66** / Round screw tight type / SS316
C	**Explosion** proof/ Aluminum alloy **Class** 1, Groups B, C & D; Class II, Groups E, F & G; **NEMA** 4,7,9

Float material	
A	**SS316**
B	**SS316L**
C	**PVDF**
0	**Option**

Connection rating	
0	**Thread** connection
5	**JIS5K**
10	**JIS** 10K
20	**J** IS 20K
15	**ANSI** 150#
30	**ANSI** 300#
60	**ANSI** 600#
90	**ANSI** 900#
T	**Other:**

Alarm	
0	**Without** alarm switch
CI	**One** inductive alarm switch
C2	**Two** inductive alarm switches
MI	**One** micro switch
RI	**One** reed switch
R2	**Two** reed switches

Body & wetted parts	
A	**SS316,** standard
B	**SS316L**
C	**SS316+PTFE** lining (only PVDF float available)
0	**Option** -1-

Connection size	
2B	½" BSP (Female)
2N	½" NPT (Female)
6B	¾" BSP (Female)
6N	¾" NPT (Female)
10B	1" BSP (Female)
ION	1" NPT (Female)
4F	½" Flange
6F	¾" Flange
10F	1" Flange
12F	1 ½'' Flange
20F	2" Flange
22F	2 ½'' Flange
30F	3" Flange
40F	4" Flange
50F	5" Flange

Transmitter Protection	
G	**IP66** (General type)
Ix.	**Intrinsically** Safe (EExiallCT6), IP66 (only for HART)
0	**Without** transmitter

Fluid	
G	**Gas**
O	**Oil**
L	**Liquid**
S	**Steam**

Range	
S	**Standard** range
	Please directly fill out the flow range in the order code.

LCD Display	
D	**With**
N	**Without**

Damper	
D	**With**
N	**Without**

NOTE:
1. Custom-made flow range and flange size upon request.
2. Please fill in the ordering information and service condition Please send your inquiry to mail@a-flow.com

Special instruction, if any:

_____

_____

_____

Service Condition:

Fluid name: _____

Sp. Gr. (density): _____

Viscosity: _____

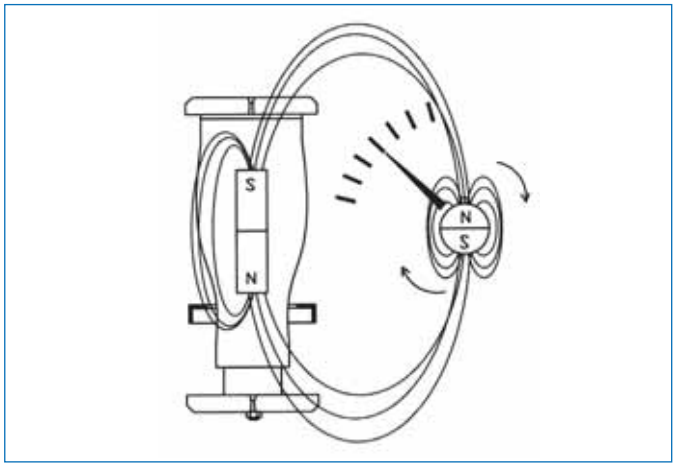
Press.: _____

Temp.: _____

Full scale: _____

METAL TUBE FLOW METER BF300E

Principle



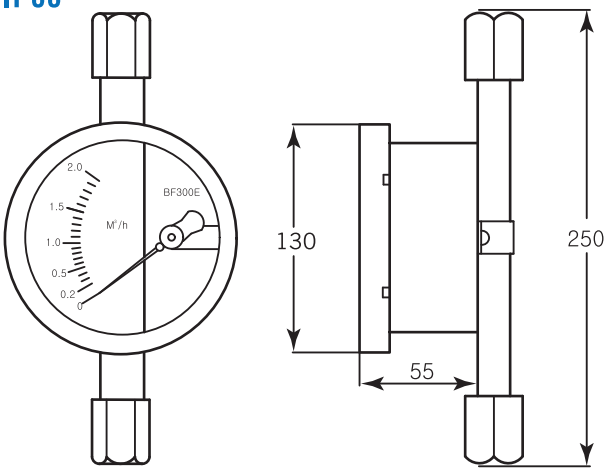
Technical Data

BF300E for high flows of gas, liquid and steam

Case Material: SS316
Body wetted parts: SS316, Others on request.
Indication via magnetic coupling (no sealed)
Scales calibrated: in l/h, m³/h, kg/h, %, etc.
Flow rates for:
– Water: 4 l/h up to 100,000 l/h
(special ranges on request)
– Air: 0.1 Nm³/h up to 1200 Nm³/h
(special ranges on request)
Connection types:
– Thread type, Flange type, Trip Clamp & Sanitary
(other on request)
Connection size: 1/2" ~ 5"
Mounting Length: 250 mm, standard or others
Temperature: -50°C to +200°C (300°C option)
Protection class: IP66
Accuracy: ±2% F.S(±1.6% F.S Option)
Max pressure: 40 kg/cm² (standard)
(Option: up to 100 kg/cm²)

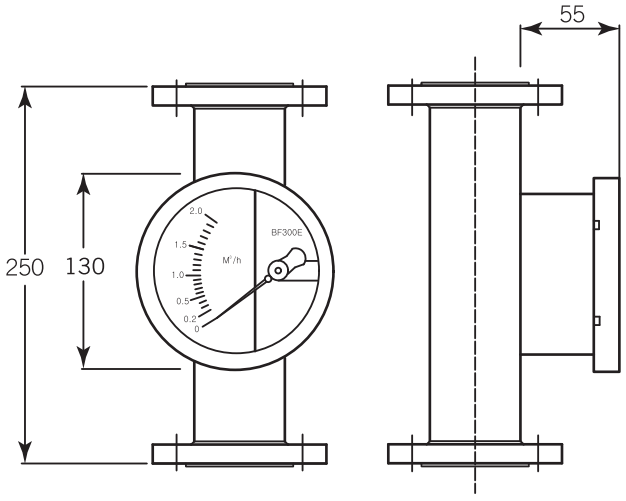
Dimensions

IP66



unit: mm

IP66



unit: mm

Standard Scales

Tube	L/H 20°C Water	NM^3/H Air 0°C 1.013bar	PmmWater	Connection	Accuracy (NOTE 1.)
BF3001E	4 ~ 30	0.1 ~ 1	≤750	1/2"	±5% F.S
BF3002E	4 ~ 40	0.13 ~ 1.3	≤750	1/2"	±5% F.S
BF3003E	5.5 ~ 55	0.17 ~ 1.7	≤750	1/2"	±5% F.S
BF3004E	8 ~ 80	0.2 ~ 2	≤750	1/2"	±2% F.S
BF3005E	16 ~ 160	0.5 ~ 5	≤750	1/2"	±2% F.S
BF3006E	18 ~ 180	0.6 ~ 6	≤750	1/2"	±2% F.S
BF3007E	30 ~ 300	1 ~ 10	≤750	1/2"	±2% F.S
BF3008E	50 ~ 500	1.5 ~ 15	≤750	1/2"	±2% F.S
BF3009E	60 ~ 600	1.8 ~ 18	≤750	1/2"	±2% F.S
BF3010E	70 ~ 700	2 ~ 20	≤750	1/2"	±2% F.S
BF3011E	100 ~ 1000	3 ~ 30	≤750	3/4"	±2% F.S
BF3012E	120 ~ 1200	4 ~ 40	≤750	1"	±2% F.S
BF3013E	160 ~ 1600	5 ~ 50	≤700	1"	±2% F.S
BF3014E	200 ~ 2000	6 ~ 60	≤700	1"	±2% F.S
BF3015E	240 ~ 2400	7 ~ 70	≤700	1"	±2% F.S
BF3016E	280 ~ 2800	8.5 ~ 85	≤700	1"	±2% F.S
BF3017E	320 ~ 3200	9 ~ 90	≤700	1"	±2% F.S
BF3018E	350 ~ 3500	10 ~ 100	≤700	1"	±2% F.S
BF3019E	500 ~ 5000	14 ~ 140	≤650	1½"	±2% F.S
BF3020E	600 ~ 6000	15 ~ 150	≤650	1½"	±2% F.S
BF3021E	700 ~ 7000	20 ~ 200	≤650	1½"	±2% F.S
BF3022E	800 ~ 8000	24 ~ 240	≤650	1½"	±2% F.S
BF3023E	1000 ~ 10000	30 ~ 300	≤650	2"	±2% F.S
BF3024E	1200 ~ 12000	35 ~350	≤650	2"	±2% F.S
BF3025E	1400 ~ 14000	40 ~ 400	≤650	2"	±2% F.S
BF3026E	1500 ~ 15000	45 ~ 450	≤1000	2"	±2% F.S
BF3027E	1800 ~ 18000	60 ~ 600	≤800	2½"	±2% F.S
BF3028E	2000 ~ 20000	75 ~ 750	≤800	2½"	±2% F.S
BF3029E	2300 ~ 23000	90 ~ 900	≤850	3"	±2% F.S
BF3030E	2500 ~ 25000	120 ~ 1200	≤1000	3"	±2% F.S
BF3031E	2800 ~ 28000	---------	≤1100	3"	±2% F.S
BF3032E	3000 ~ 30000	---------	≤1200	3"	±2% F.S
BF3033E	3500 ~ 35000	---------	≤1000	4"	±2% F.S
BF3034E	4000 ~ 40000	---------	≤1000	4"	±2% F.S
BF3035E	5000 ~ 50000	---------	≤1200	4"	±2% F.S
BF3036E	6000 ~ 60000	---------	≤1500	4"	±2% F.S
BF3037E	10000 ~ 100000	---------	≤2500	5"	±2% F.S

NOTE.

1. The accuracy ±5% F.S for tube BF3001E~BF3003E.
   The accuracy ±2% F.S for tube BF3004E~BF3037E and option ±1.6% F.S on request.
2. Performance Technical Data are effective with date of issue and are subject to change without prior notice.

Ordering Information

G	-	A	-	C	-	10		G	-	A	-	C	-	10	-	10

Type

G	**Indicating** only -1-

Body & wetted parts

A	**SS316**, standard
B	**SS316L** |
C	**PTFE** lining + stainless steel
D	**option**

Float material

A	SS316
B	SS31GL
C	PTFE
D	option

Connection rating

0	**Thread** connection
5	**JIS** 5K
10	**JIS** 10K
20	**JIS** 20K
15	**ANSI** 150#
30	**ANSI300#**
60	**ANSI** 600#
90	**ANSI** 900#
T	**Other:**

Connection size

2B	½" BSP (Female)
2N	½" NPT (Female)
6B	¾" BSP (Female)
6N	¾" NPT (Female)
10B	1" BSP (Female)
10N	1" NPT (Female)
4F	½" Flange
6F	¾" Flange
10F	1" Flange
12F	1 ½" Flange
20F	2" Flange
22F	1 ½" Flange
30F	3" Flange
40F	4" Flange
50F	5" Flange

Fluid

G	Gas
O	Oil
L	Liquid
S	Steam

Protection Class

IP	IP66

Range

S	**Standard** range
	Please directly fill out the flow range in the order code.

Damper

D	With
N	Without

NOTE:
1. Custom-made flow range and flange size upon request.
2. Please fill in the ordering information and service condition.
   Please send your inquiry to mail@a-flow.com

Special instruction, if any:

_____

_____

_____

Service Condition:

Fluid name: _____

Sp. Gr. (density): _____

Viscosity: _____

Press.: _____

Temp.: _____

Full scale: _____

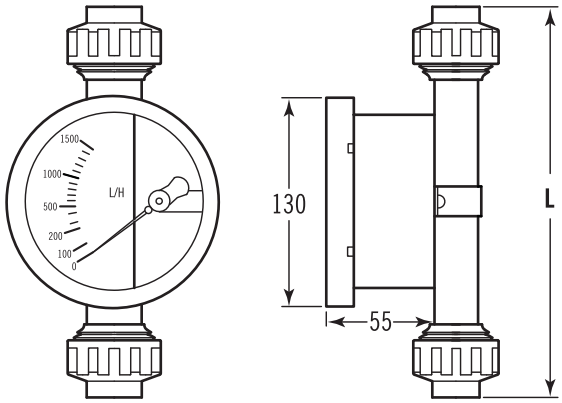
PLASTIC TUBE FLOW METER BPF300

Technical Data

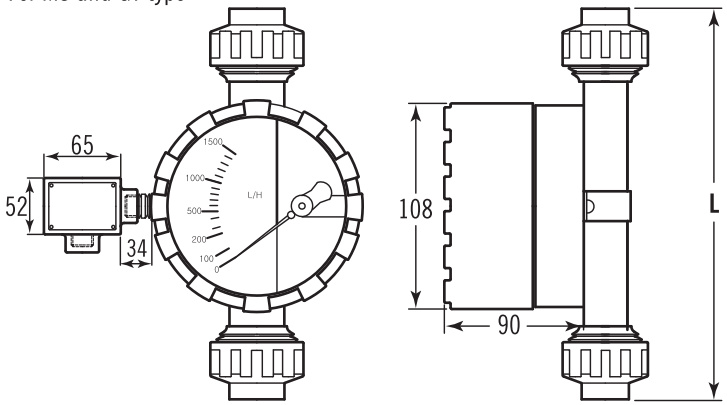
BPF300 for high flows of gas and liquid
Case material: SS316; Aluminum alloy available
Body wetted parts material: in PVC, CPVC, PVDF
indication via magnetic coupling (no sealed)
Scales calibrated: in l/h, m³/h, kg/h, %, etc.
Flow rates for: – Water: 4 l/h up to 15,000 l/h (SS316 float)
4 l/h up to 10,000 l/h (PVDF float)
(special ranges on request)
– Air: 0.1 Nm³/h up to 450 Nm³/h
Connection size: Thread ½"~2½"NPT or BSP available;
Flange type available
Mounting length: 250mm, standard or others
Protection class: IP66
Accuracy: ±5% F.S for tube BPFS(P)3001~BPFS(P)3003;
±2% F.S for tube BPFS(P)3004~BPFS(P)3026; option ±1.6% on request
Max. working pressure: 20 kg/cm² (PVDF); 15 kg/cm² (PP & PVC)
Max. working temperature: PVC: 0~40°C; PP: 0~60°C
PVDF: -30~100°C
Adjustable micro switch: 1 adjustable alarm contact
Load: 5A/250VAC/125VAC/30VDC
Hysteresis: ±10% F.S (Dead Band)
Electric transmitter: Analog output available 4~20mA (2 wire)
No alarm switch available
Power supply: 24VDC
Temperature: -25°C~+50°C (AMB)

Dimensions

Case Material: SS316
Case Type: Round Bayonet Ring Type
Only for indicating type



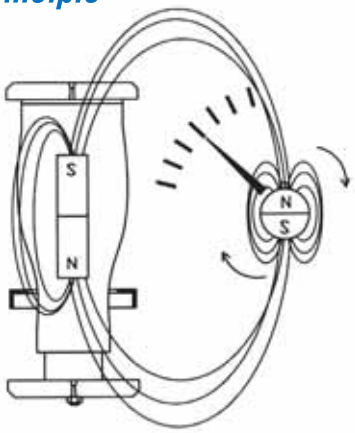
Case Material: Aluminum alloy and SS316 available
Case Type: Round Screw Tight type
For MS and GT type



L: Standard 250mm
Other please refer to the *Standard Sceles*

unit=mm

Principle



BPF300

Standard Scales

A. Float Material: SS316

Tube	L/H 20°C Water	NM³/H Air0°C 1.013bar	PmmWater	Thread Connection	Thread Type L (mm)	Accuracy (NOTE 1.)
BPFS3001	4~30	0.1~1	≤750	½”	221	±5% F.S
BPFS3002	4~40	0.13~1.3	≤750	½”	221	±5% F.S
BPFS3003	5.5~55	0.17~1.7	≤750	½”	221	±5% F.S
BPFS3004	8~80	0.2~2	≤750	½”	221	±2% F.S
BPFS3005	16~160	0.5~5	≤750	½”	221	±2% F.S
BPFS3006	18~180	0.6~6	≤750	½”	221	±2% F.S
BPFS3007	30~300	1~10	≤750	½”	221	±2% F.S
BPFS3008	50~500	1.5~15	≤750	½”	221	±2% F.S
BPFS3009	60~600	1.8~18	≤750	½”	221	±2% F.S
BPFS3010	70~700	2~20	≤750	½”	221	±2% F.S
BPFS3011	100~1000	3~30	≤750	½”	235	±2% F.S
BPFS3012	120~1200	4~40	≤750	½”	235	±2% F.S
BPFS3013	160~1600	5~50	≤700	¾”	250	±2% F.S
BPFS3014	200~2000	6~60	≤700	¾”	250	±2% F.S
BPFS3015	240~2400	7~70	≤700	¾”	250	±2% F.S
BPFS3016	280~2800	8.5~85	≤700	¾”	250	±2% F.S
BPFS3017	320~3200	9~90	≤700	¾”	250	±2% F.S
BPFS3018	350~3500	10~100	≤700	¾”	250	±2% F.S
BPFS3019	500~5000	14~140	≤650	1” & 1½”	270	±2% F.S
BPFS3020	600~6000	15~150	≤650	1”& 1½”	270	±2% F.S
BPFS3021	700~7000	20~200	≤650	1” & 1½”	270	±2% F.S
BPFS3022	800~8000	24~240	≤650	1” & 1½”	270	±2% F.S
BPFS3023	1000~10000	30~300	≤650	2”	306	±2% F.S
BPFS3024	1200~12000	35~350	≤650	2”	306	±2% F.S
BPFS3025	1400~14000	40~400	≤650	2”	306	±2% F.S
BPFS3026	1500~15000	45~450	≤1000	2”	306	±2% F.S

NOTE.

1.Accuracy±5% F.S: BPFS3001~BPFS3003
Accuracy±2% F.S: BPFS3004~BPFS3026
and option ±1.6% F.S on request.

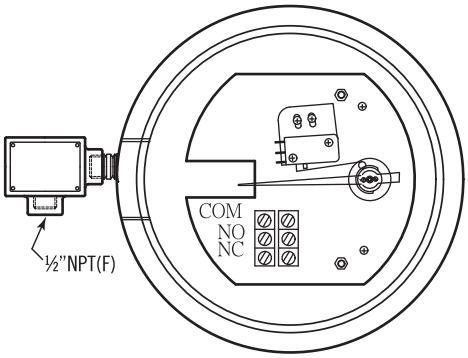
2.Performace Technical Data are effective with date of issue and are subject to change without piror notice.

B. Float Material:PVDF

Tube	L/H 20°C Water	NM³/H Air0°C 1.013bar	Pm m Water	Thread Connection	Thread Type L (mm)	Accuracy (NOTE 1.)
BPFP3001	4~40	0.1~1	≤750	½"	221	±5% F.S
BPFP3002	5.5~55	0.17~1.7	≤750	½"	221	±5% F.S
BPFP3003	8~80	0.2~2	≤750	½"	221	±5% F.S
BPFP3004	16~160	0.5~5	≤750	½'	221	±2% F.S
BPFP3005	28~280	0.9~9	≤750	½"	235	±2% F.S
BPFP3006	35~350	1.1~11	≤750	½"	235	±2% F.S
BPFP3007	40~400	1.3~13	≤750	½"	235	±2% F.S
BPFP3008	50~500	5~50	≤750	¾"	250	±2% F.S
BPFP3009	70~700	6~60	≤700	¾"	250	±2% F.S
BPFP3010	90~900	7~70	≤700	¾"	250	±2% F.S
BPFP3011	100~1000	8.5~85	≤700	¾"	250	±2% F.S
BPFP3012	120~1200	9~90	≤700	¾"	250	±2% F.S
BPFP3013	160~1600	10~100	≤700	¾"	250	±2% F.S
BPFP3014	200~2000	14~140	≤700	¾"	250	±2% F.S
BPFP3015	250~2500	15~150	≤650	¾"	250	±2% F.S
BPFP3016	300~3000	20~200	≤650	1” & 1½”	270	±2% F.S
BPFP3017	350~3500	24~240	≤650	1” & 1½”	270	±2% F.S
BPFP3018	450~4500	30~300	≤650	1” & 1½”	270	±2% F.S
BPFP3019	450~4500	35~350	≤650	1” & 1½”	270	±2% F.S
BPFP3020	500~5000	40~400	≤650	1” & 1½”	270	±2% F.S
BPFP3021	650~6500	45~450	≤650	2"	306	±2% F.S
BPFP3022	700~7000	-------	≤650	2"	306	±2% F.S
BPFP3023	800~8000	-------	≤650	2"	306	±2% F.S
BPFP3024	900~9000	-------	≤650	2½”	350	±2% F.S
BPFP3025	1000~10000	-------	≤650	2½”	350	±2% F.S

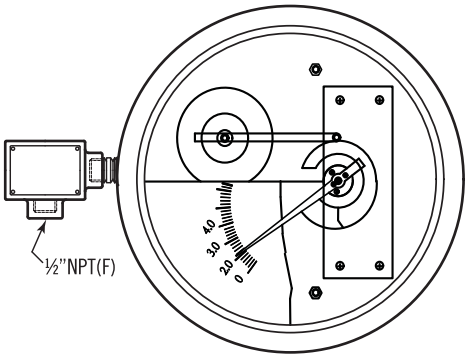
Alarm / Analog output

BPF300-MS (Micro Switch)



Adjustable Micro Switch, Series BPF300-MS
1 Adjustable alarm contact
Load: 5A/250VAC/125VAC/30VDC
Temperature: -25°C ~ +50°C (AMB)
Hysteresis: ±10% F.S (Dead Band)
Conduit connection: ½"NPT female; others on request

BPF300-GT (Analog Output)



Electric Transmitter, Series BPF300-GT
Analog output available: 4~20mA (2 wire)
No Alarm Switch Available
Temperature: -25°C ~ +50°C (AMB)
Power Supply: 24Vdc
Conduit connection: ½"NPT female; others on request

Ordering Information

BPF300 - G - 0 - A - A - 10

Type	
G	**Indicating** only
MS	**Indicating** + Switch
GT	**Indicating** + 4~20mA (no alarm switch available)

Body & wetted parts	
A	**PVC,** standard
B	**PP**
C	**PVDF**
D	**option**

Float material	
A	**SS316**
B	**SS316L**
C	**PVDF**
D	**option**

Switch	
0	**Without** alarm switch
MI	**One** micro switch

Connection rating	
0	**Thread** connection
5	**JIS** 5K
10	**JIS** 10K
15	**ANSI** 150#
30	**ANSI** 300#
T	**other:**

2B - IP - G - S

Protection Class	
IP	**IP66**

Fluid	
G	**Gas**
L	**Liquid**

Range	
S	**Standard** range
	Please directly fill out the flow range in the order code.

Connection size			
2B	½" BSP (Female)	4F	½" Flange
2N	½" NPT (Female)	6F	¾" Flange
6B	¾" BSP (Female)	10F	1" Flange
6N	¾" NPT (Female)	12F	1 ½'' Flange
10B	1" BSP (Female)	20F	2" Flange
10N	1" NPT (Female)	22F	2 ½'' Flange
12B	1 ½" BSP (Female)		
12N	1 ½" NPT (Female)		
20B	2" BSP (Female)		
20N	2" NPT (Female)		
22B	2 ½'' BSP (Female)		
22N	2 ½'' NPT (Female)		

NOTE:
1. Custom-made flow range and flange size upon request.
2. Please fill in the ordering information and service condition.
   Please send your inquiry to mail@a-flow.com

Special instruction, if any:

_____
_____
_____

Service Condition:

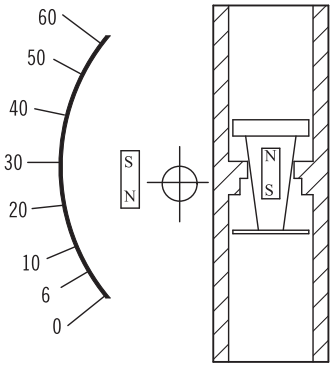
Fluid name: _____
Sp. Gr. (density): _____
Viscosity: _____
Press.: _____
Temp.: _____
Full scale: _____

METAL TUBE MINI FLOW METER MF100E

Technical Data

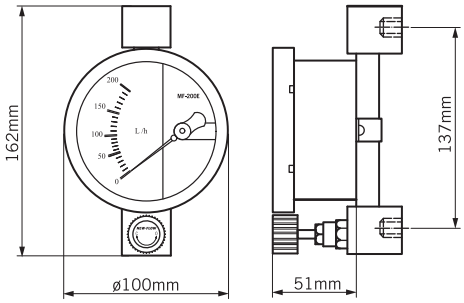
MF100E for mini low flow of gas
Material: 316 stainless steel for case and body.
Indication: via magnetic coupling (no seals)
Flow rate: 8~150NL/H
Connection types: BSP, NPT, flange type on request
Working Temperature:
Combine without electronic parts: -40°C~+180°C
Working Pressure: Standard 100 kg/cm²;
other options upon request
Connection size: ¼" NPT or BSP available
Protection Class: IP66
Accuracy: ± 5% FS

Principle



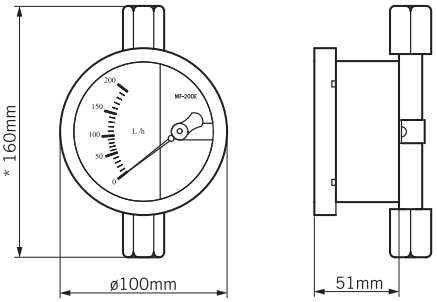
Dimensions

Model: MF100E-B



MF100E-B
Basic Model:
Rear connection + needle valve

Model: MF100E-S



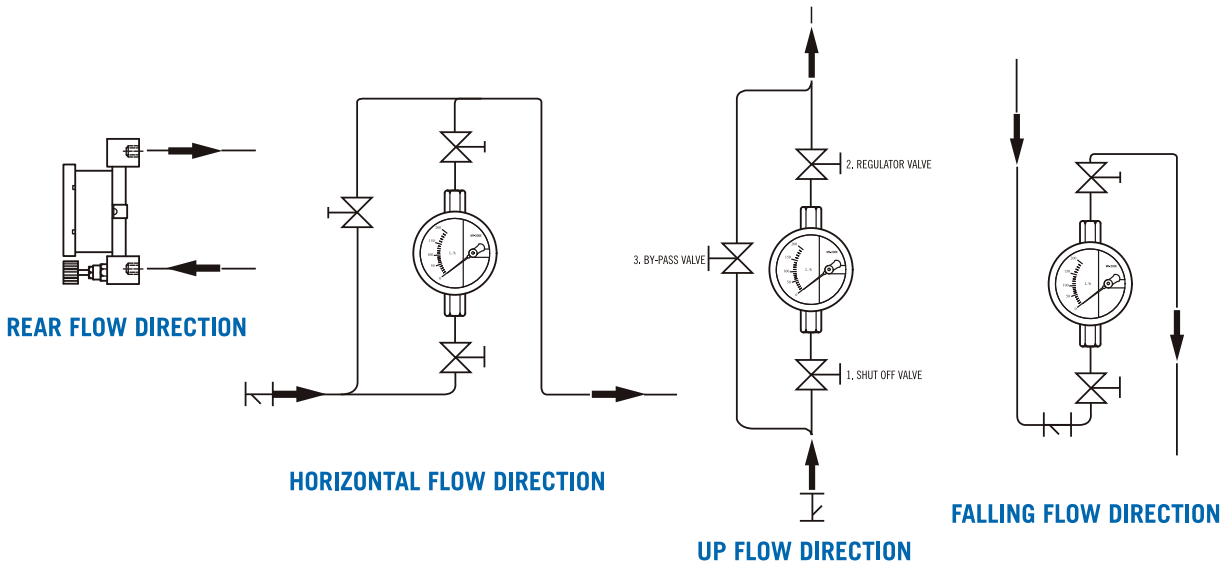
MF100E-S
Basic Model:
Thread connection

Standard Scales

Tube	NL/H Air 0℃ 1.013bar	Accuracy
MF1001	8~40NL/H	±5% F.S
MF1002	10~70NL/H	±5% F.S
MF1003	15~90NL/H	±5% F.S
MF1004	15~150NL/H	±5% F.S

NOTE.
Performance Technical Data are effective with date of issue and are subject to change without prior notice.

Installation



SPECIAL NOTE
No minimum length requirement for straight pipe.

Ordering Information

MF100E - S - G - 0 - A - A - 0 - S - G - 0 - A

Connection	
S	**Thread** connection
B	**Rear** connection with needle valve

Type	
G	**Indicating** only

Alarm	
0	**Without** alarm switch

Body material	
A	SS316

Float & Wetted part material	
A	SS316

Connection rating	
0	**Thread** connection

Connection size	
4B	¼" BSP (Female)
4N	¼" NPT (Female)

Protection Class	
IP	IP66

Fluid	
G	**Gas**

Range	
S	**Standard** range
	Please directly fill out the flow range in the order code.

NOTE:
1. Custom-made flow range and flange size upon request.
2. Please fill in the ordering information and service condition.
   Please send your inquiry to mail@a-flow.com

Special instruction, if any:

_____

_____

_____

Service Condition:

Fluid name: _____

Sp. Gr. (density): _____

Viscosity: _____

Press.: _____

Temp.: _____

Full scale: _____

METAL TUBE FLOW METER MF200

Technical Data

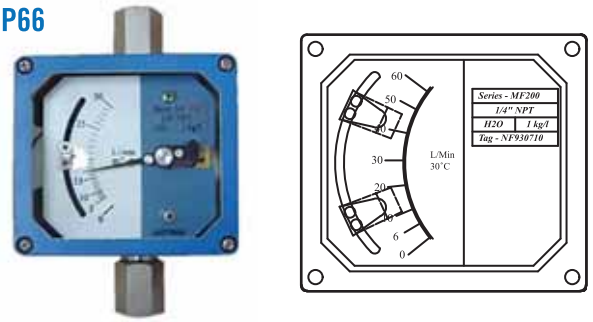
MF200 for low flow of gas, liquid and steam
Material: aluminum alloy painted for case;
body in stainless steel.
Indication: via magnetic coupling (no seals)
Scales: calibrated in l/h,m³/h,kg/h, %
Flow rate: water–0.4 l/h up to 4000 l/h
air–21 NL/h up to 120,000 NL/h
Connection types: BSP, NPT, flange type on request
Working Temperature:
Combine with electronic parts: -40°C~+150°C
Combine without electronic parts: -40°C~+180°C
Working Pressure: standard 100 kg/cm²; other options upon request
Connection size: ¼" ~1½"
Protection Class: IP66
Accuracy: ± 2% F.S (±1.6% F.S option)

CE PG

Alarm Option

MF200–C (Inductive Switch)

IP66

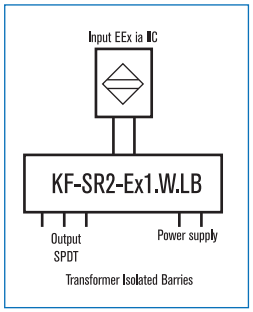


- *Adjustable inductive alarm switch*
  Hysteresis: ±2% F.S (Dead Band)
  Inductive sensors slotted type : 3.5mm slot switch
  DC. voltage 2 wire's to DIN19234(NAMUR) for use in hazardous areas.
  — **Power supply:** 8 Vdc(Ri.approx. 1kΩ)
  — **Current consumption:** active face uncoved 3mA
  active face coved 1mA
  — **Ambient temp:** -25°C ~ +100°C

Isolated barriers output relay for inductive sensor :
— Rail mounting
— Control circuit EEx ia IIC
— EMC acc to NAMUR NE21
— Contact loading 250 VAC 2A SPDT 40 VDC 2A

1 adjustable alarm
Contact setting point should be within 10% to 100% of F.S.
For 24VDC : KFD2-SR2-Ex1.W
115VAC : KFA5-SR2-Ex1.W
230VAC : KFA6-SR2-Ex1.W

2 adjustable alarm
The second setting point should be a gap 35% from first setting point.
For 24VDC : KFD2-SR2-Ex2.W
115VAC : KFA5-SR2-Ex2.W
230VAC : KFA6-SR2-Ex2.W



MF200–R (Reed Switch)

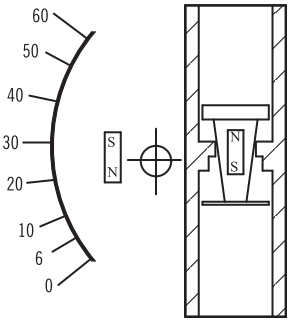
IP66

- *Adjustable reed alarm switch*
  Alarm Switch: one or two setting points, form A bistable type (N.O. type)
  Hysteresis: ±15% F.S (Dead Band)
  Switch Rating: AC 125V 0.5A / DC 100V 10W /
  Max. DC 250V < 1mA

1 adjustable alarm
Contact setting point should be within 20% to 100% of F.S.

2 adjustable alarm
The second setting point should be a gap 20% from first setting point.

Principle

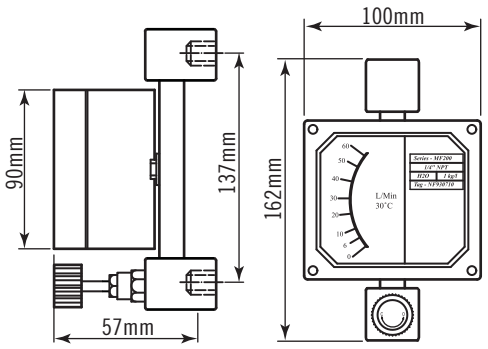


Dimensional Drawings

MF200-B Metal Tube Flow Meter
Basic Model:
Rear connection + needle valve

NOTE.
Max. range: 1000 L/H for Liquid; 30000 NL/H for Air
Connection size: ¼"~¾"BSP/NPT available

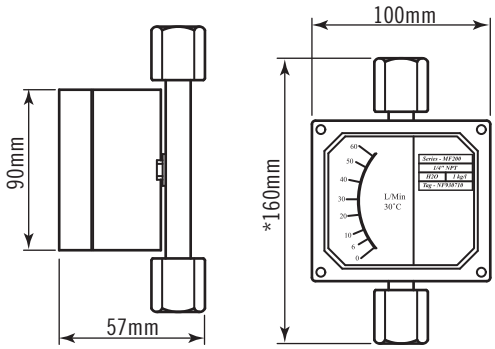
Model: MF200-B



MF200-S Metal Tube Flow Meter
Basic Model:
Thread connection

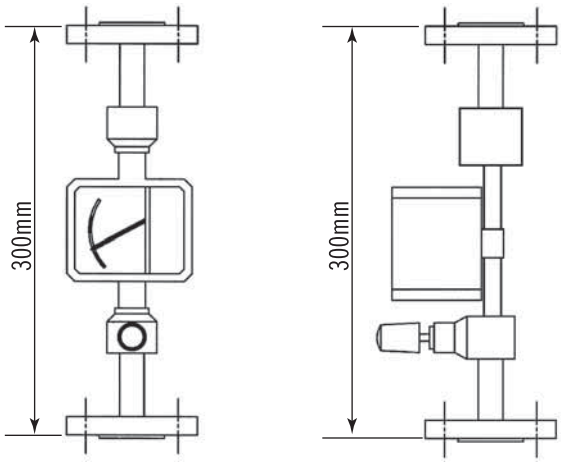
NOTE.
*1½"BSP, C to C =170mm

Model: MF200-S



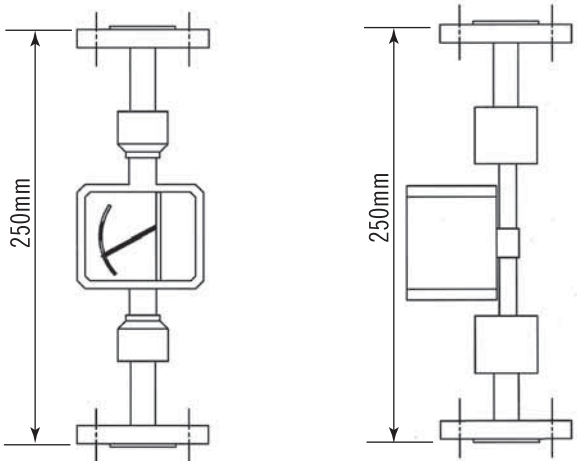
MF200-R Metal Tube Flow Meter
Flange-needle Model:
flange connection + needle valve

Model: MF200-R



MF200-T Metal Tube Flow Meter
Flange Model:
flange connection

Model: MF200-T



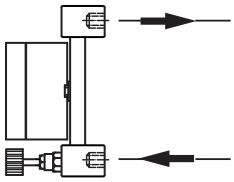
Standard Scales

Tube	L/H 20°C Water	NL/H Air 0°C 1.013 bar	ΔPmm Water	BSP/NPT	Accuracy (NOTE 1.)
MF2001	0.4 ~ 4	21~210	340	1/4"	±6% F.S
MF2002	0.6 ~ 6	33~330	340	1/4"	±3% F.S
MF2003	1 ~ 10	48~480	340	1/4"	±2% F.S
MF2004	1.5 ~ 15	60~600	340	1/4"	±2% F.S
MF2005	2 ~ 20	72~720	340	1/4"	±2% F.S
MF2006	3 ~ 30	90~900	340	1/4"	±2% F.S
MF2007	5 ~ 50	120~1200	340	1/4"	±2% F.S
MF2008	6 ~ 60	180~1800	340	1/4"	±2% F.S
MF2009	10 ~ 100	300~3000	340	1/4"	±2% F.S
MF2010	15 ~ 150	500~5000	340	1/2"	±2% F.S
MF2011	25 ~ 250	750~7500	340	1/2"	±2% F.S
MF2012	45 ~ 450	1500~15000	340	1/2"	±2% F.S
MF2013	75~750	2000~20000	340	3/4"	±2% F.S
MF2014	100 ~ 1000	3000~30000	340	1"	±2% F.S
MF2015	150~1500	5000~50000	450	1-1/2"	±2% F.S
MF2016	200~2000	7500~75000	450	1-1/2"	±2% F.S
MF2017	300~3000	9000~90000	450	1-1/2"	±2% F.S
MF2018	350~3500	11000~110000	450	1-1/2"	±2% F.S
MF2019	400~4000	12000~120000	450	1-1/2"	±2% F.S

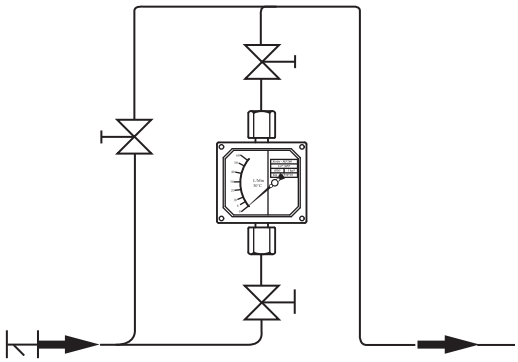
NOTE.

1. The accuracy ±6% F.S for tube MF2001; The accuracy ±3% F.S for tube MF2002.
   The accuracy ±2% F.S for tube MF2003~MF2019 and option ±1.6% F.S on request.
2. Performance Technical Data are effective with date of issue and are subject to change without prior notice.

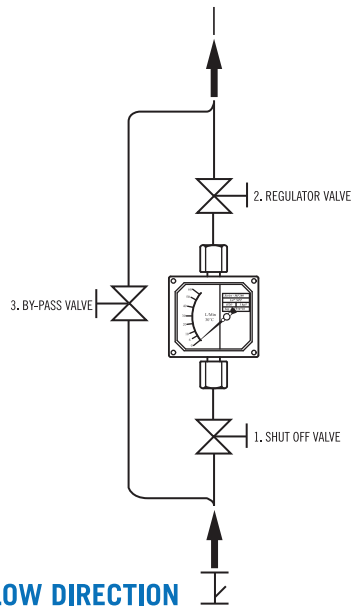
Installation



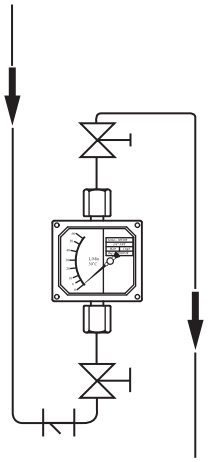
REAR FLOW DIRECTION



HORIZONTAL FLOW DIRECTION



UP FLOW DIRECTION



FALLING FLOW DIRECTION

SPECIAL NOTE
No minimum length requirement for straight pipe.

Ordering Information

MF200 - S - G - 0 - A - A - 0 - 0 - A - A - 0

Connection	
S	**Thread** connection
R	**Connection** with needle valve
T	**Flange** connection
B	**Rear** connection with needle valve

Type	
G	**Indicating** only
GS	**Indicating** + switch

Alarm	
0	**Without** alarm switch
CI	**One** inductive alarm switch
C2	**Two** inductive alarm switches
RI	**One** reed switch
R2	**Two** reed switches

Body material	
A	SS316

Float & Wetted part material	
A	SS316

Connection rating	
0	**Thread** connection
5	**JIS** 5K
10	**JIS** 10K
20	**JIS** 20K
15	**ANSI** 150#
30	**ANSI** 300#
40	**ANSI** 400#
60	**ANSI** 600#
T	**Other:**

Connection size	
4B	¼" BSP (Female)
4N	¼" NPT (Female)
2B	½" BSP (Female)
2N	½" NPT (Female)
6B	¾" BSP (Female)
6N	¾" NPT (Female)
IB	1" BSP (Female)
IN	1" NPT (Female)
15B	1 ½'' BSP (Female)
15N	1 ½" NPT (Female)
20B	2" BSP (Female)
20N	2" NPT (Female)
2F	½" Flange
6F	¾" Flange
10F	1" Flange
15F	1 ½'' W Flange

Protection Class	
IP	IP66

Fluid	
G	Gas
0	Oil
L	Liquid
S	Steam

Range	
S	**Standard** range
	Please directly fill out the flow range in the order code.

NOTE:
1. Custom-made flow range and flange size upon request.
2. Please fill in the ordering information and service condition Please send your inquiry to mail@a-flow.com

Special instruction, if any:

_____

_____

_____

Service Condition:

Fluid name: _____

Sp. Gr. (density): _____

Viscosity: _____

Press.: _____

Temp.: _____

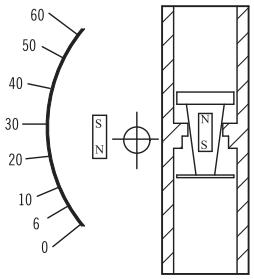
Full scale: _____

METAL TUBE FLOW METER MF200E

Technical Data

MF200E for low flow of gas, liquid and steam
Material: 316 stainless steel for case and body or option.
Indication: via magnetic coupling (no seals)
Scales: calibrated in l/h, m³/h, kg/h, %
Flow rate: water–0.4 l/h up to 4000 l/h
air–21 NL/h up to 120,000 NL/h
Connection types: BSP, NPT, flange type on request
Working Temperature:
Combine with electronic parts: -40°C~+150°C
Combine without electronic parts: -40°C~+180°C
Working Pressure: Standard 100 kg/cm²;
other options upon request
Connection size: ¼" ~1½"
Protection Class: IP66
Accuracy: ± 2% FS (± 1.6% FS option)

Principle

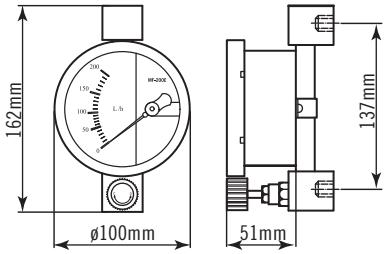


Standard Scales

Tube	L/H 20°C Water	NL/H Air 0°C 1.013 bar	ΔPmm Water	BSP /NPT	Accuracy (NOTE 1.)
MF2001E	0.4 ~ 4	21 ~ 210	340	1/4"	±6% F.S
MF2002E	0.6 ~ 6	33~330	340	1/4"	±3% F.S
MF2003E	1 ~ 10	48~480	340	1/4"	±2% F.S
MF2004E	1.5 ~ 15	60~600	340	1/4"	±2% F.S
MF2005E	2 ~ 20	72~720	340	1/4"	±2% F.S
MF2006E	3 ~ 30	90~900	340	1/4"	±2% F.S
MF2007E	5 ~ 50	120~1200	340	1/4"	±2% F.S
MF2008E	6 ~ 60	180~1800	340	1/4"	±2% F.S
MF2009E	10 ~ 100	300~3000	340	1/4"	±2% F.S
MF2010E	15 ~ 150	500~5000	340	1/2"	±2% F.S
MF2011E	25 ~ 250	750~7500	340	1/2"	±2% F.S
MF2012E	45 ~ 450	1500 ~ 15000	340	1/2"	±2% F.S
MF2013E	75~750	2000~20000	340	3/4"	±2% F.S
MF2014E	100~1000	3000~30000	340	1"	±2% F.S
MF2015E	150~1500	5000~50000	450	1-1/2"	±2% F.S
MF2016E	200~2000	7500~75000	450	1-1/2"	±2% F.S
MF2017E	300~3000	9000~90000	450	1-1/2"	±2% F.S
MF2018E	350~3500	11000~110000	450	1-1/2"	±2% F.S
MF2019E	400~4000	12000~120000	450	1-1/2"	±2% F.S

Dimensions

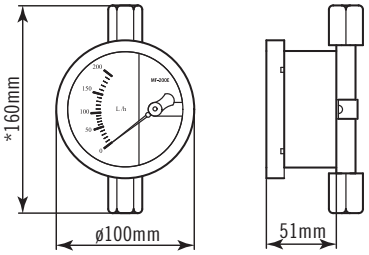
Model: MF200E-B



NOTE.
Max. Range: 1000 L/H for Liquid; 30000 NL/H for Air
Connection Size: ¼"~¾"BSP/NPT

MF200E-B
Basic Model:
Rear connection + needle valve

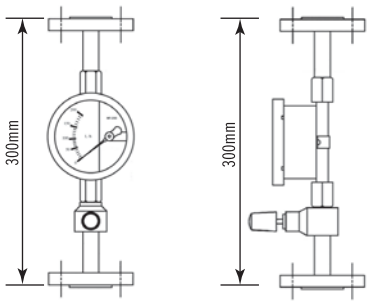
Model: MF200E-S



NOTE.
*1½"BSP, C to C =170mm

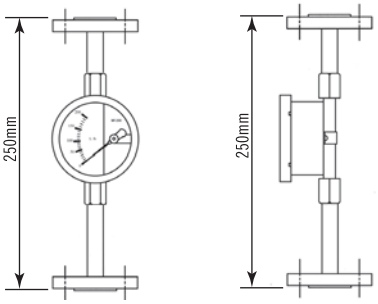
MF200E-S
Basic Model:
Thread connection

Model: MF200E-R



MF200E-R
Flange-needle Model:
flange connection + needle valve

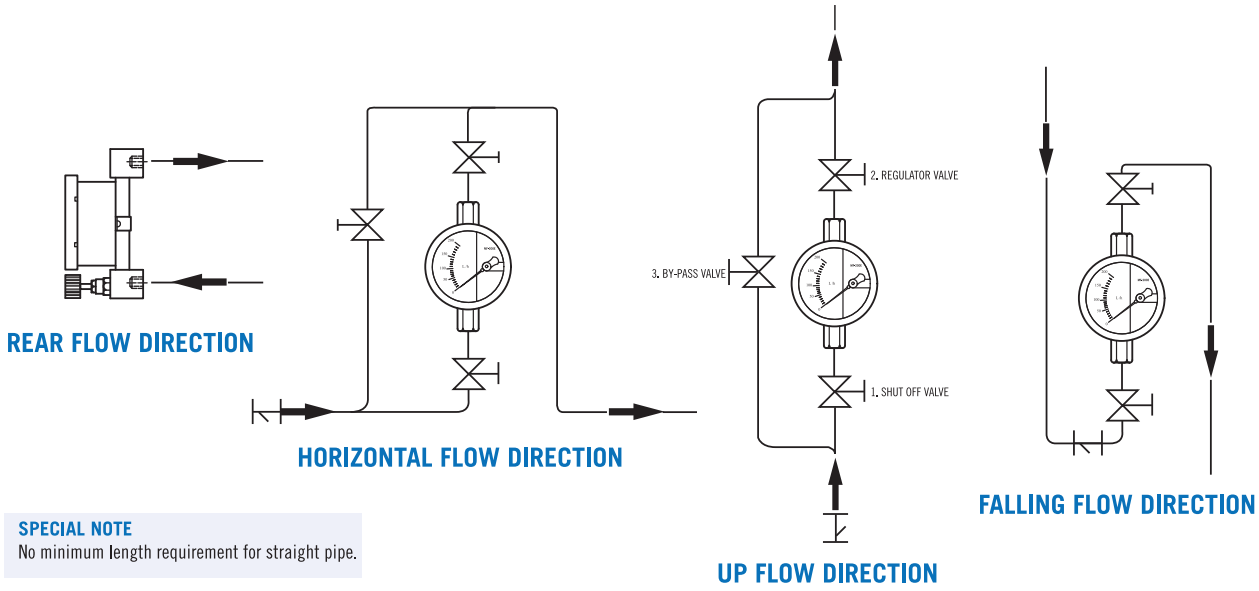
Model: MF200E-T



MF200E-T
Flange Model:
flange connection

NOTE.
1. The accuracy ±6% F.S for tube MF2001E; The accuracy ±3% F.S for tube MF2002E.
The accuracy ±2% F.S for tube MF2003E~MF2019E and option ±1.6% F.S on request.
2. Performance Technical Data are effective with date of issue and are subject to change without prior notice.

Installation



SPECIAL NOTE
No minimum length requirement for straight pipe.

Ordering Information

MF200E - S - G - 0 - A - A - 0 - 4B - IP - G - S

Connection	
S	**Thread** connection
R	**Connection** with needle valve
T	**Flange** connection
B	**Rear** connection with needle valve

Type	
G	**Indicating** only

Alarm	
0	**Without** alarm switch

Body material	
A	SS316
B	SS316L

Float & Wetted part material	
A	SS316
B	SS316L

Connection rating	
0	**Thread** connection
5	**JIS** 5K
10	**JIS** 10K
20	**JIS** 20K
15	**ANSI150#**
30	**ANSI300#**
40	**ANSI400#**
60	**ANSI600#**
T	**Other:**

Connection size	
4B	¼" BSP (Female)
4N	¼" NPT (Female)
2B	½" BSP (Female)
2N	½" NPT (Female)
6B	¾" BSP (Female)
6N	¾" NPT (Female)
1B	1" BSP (Female)
1N	1" NPT (Female)
15B	1 ½'' BSP (Female)
15N	1 ½'' NPT (Female)
20B	2" BSP (Female)
20N	2" NPT (Female)
2F	½" Flange
6F	¾" Flange
10F	1" Flange
15F	1 ½'' Flange

Protection Class	
IP	IP66

Fluid	
G	**Gas**
O	**Oil**
L	**Liquid**
S	**Steam**

Range	
S	**Standard** range
	Please directly fill out the flow range in the order code.

NOTE:
1. Custom-made flow range and flange size upon request.
2. Please fill in the ordering information and service condition
   Please send your inquiry to mail@a-flow.com

Special instruction, if any:

_____

_____

_____

Service Condition:

Fluid name: _____

Sp. Gr. (density): _____

Viscosity: _____

Press.: _____

Temp.: _____

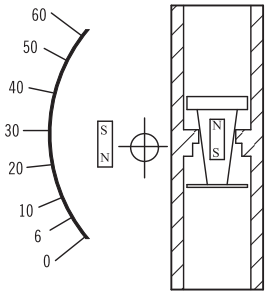
Full scale: _____

PLASTIC TUBE FLOW METER MPF200

Technical Data

Service: Air, gases, water, waste water and other liquid
Material: Case–SS316; Body–PVC, CPVC; Float–SS316
Indication: via magnetic coupling (no seals)
Scales: calibrated in l/h, m³/h, kg/h, %
Flow rate: water–0.4 l/h up to 1,000 l/h,
Air–21 NL/h up to 30,000 NL/h
Connection types: Thread BSP, NPT
Max. working temperature: PVC: 0~40°C; CPVC: 0~60°C
Max. working pressure: Standard 20 kg/cm²;
other options upon request
Connection size: ¼" ~ ½" NPT or BSP
Protection class: IP66
Accuracy: ±2% FS (±1.6% FS option)

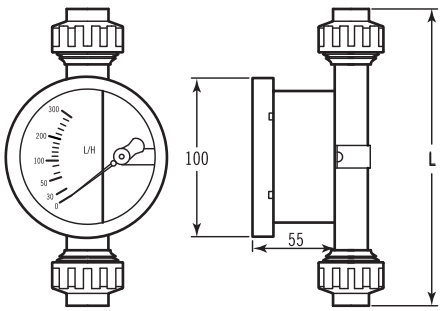
Principle



Dimensions

MPF200-S
Basic Model: Thread Connection

Model: MPF200-S



* L: Please refer to the *Standard Scales*. unit: mm

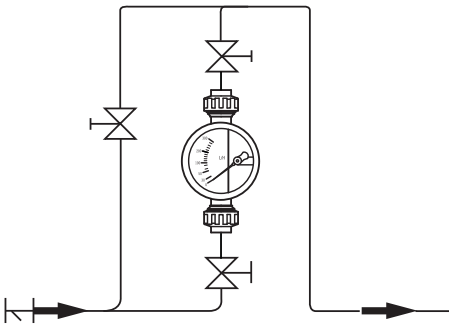
Standard Scales

A. Float Material: SS316

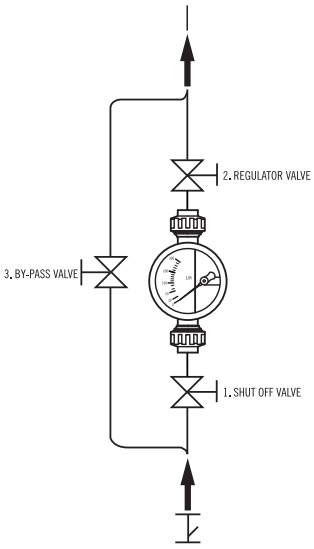
Tube	L/H 20°C Water	NL/H Air 0°C 1.013 bar	ΔPmm Water	BSP/NPT	Thread Type L (mm)	Accuracy (NOTE 1.)
MPF2001	0.4 ~ 4	21 ~ 210	340	1/2"	158	±6% F.S
MPF2002	0.6 ~ 6	33~330	340	1/2"	158	±3% F.S
MPF2003	1 ~ 10	48~480	340	1/2"	158	±2% F.S
MPF2004	1.5 ~ 15	60~600	340	1/2"	158	±2% F.S
MPF2005	2 ~ 20	72~720	340	1/2"	158	±2% F.S
MPF2006	3 ~ 30	90~900	340	1/2"	158	±2% F.S
MPF2007	5 ~ 50	120~1200	340	1/2"	158	±2% F.S
MPF2008	6 ~ 60	180~1800	340	1/2"	158	±2% F.S
MPF2009	10 ~ 100	300~3000	340	1/2"	158	±2% F.S
MPF2010	15 ~ 150	500~5000	340	1/2"	158	±2% F.S
MPF2011	25 ~ 250	750~7500	340	1/2"	158	±2% F.S
MPF2012	40 ~ 400	1200~12000	340	1/2"	158	±2% F.S
MPF2013	60 ~ 600	1800~18000	340	1/2"	158	±2% F.S
MPF2014	75~750	2000~20000	340	1/2"	175	±2% F.S
MPF2015	100 ~ 1000	3000~30000	340	1/2"	175	±2% F.S

NOTE.
1. The accuracy ±6% F.S for tube MPF2001; The accuracy ±3% F.S for tube MPF2002. The accuracy ±2% F.S for tube MPF2003~MPF2015 and option ±1.6% F.S on request.
2. Performance Technical Data are effective with date of issue and are subject to change without prior notice.

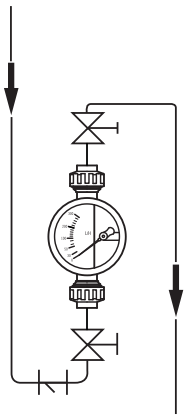
Installation



HORIZONTAL FLOW DIRECTION



UP FLOW DIRECTION



FALLING FLOW DIRECTION

SPECIAL NOTE
No minimum length requirement for straight pipe.

Ordering Information

MPF200 - S - G - 0 - A - A - 0 0 - A - A - 0

Connection	
S	**Thread** connection

Type	
G	**Indicating** only -1-

Body material	
(A)	**PVC**
(B)	**CPVC**

Float & Wetted part material	
A	**SS316**

Alarm	
0	**Without** alarm switch

Connection rating	
0	**Thread** connection

Connection size	
4B	¼" BSP (Female)
4N	¼" NPT (Female)
2B	½" BSP (Female)
2N	½" NPT (Female)

Protection Class	
IP	**IP66**

Fluid	
G	**Gas**
L	**Liquid**

Range	
S	**Standard** range
	Please directly fill out the flow range in the order code.

NOTE:
1. Custom-made flow range and flange size upon request.
2. Please fill in the ordering information and service condition, and send this along with your inquiry to mail@fluid-line.ru

Special instruction, if any:

_____

_____

_____

Service Condition:

Fluid name: _____

Sp. Gr. (density): _____

Viscosity: _____

Press.: _____

Temp.: _____

Full scale: _____

METAL TUBE FLOW METER DF SERIES

DF-1 Indicating Only
DF-2 With Alarm Switch

DF-1

DF-2

Technical Data

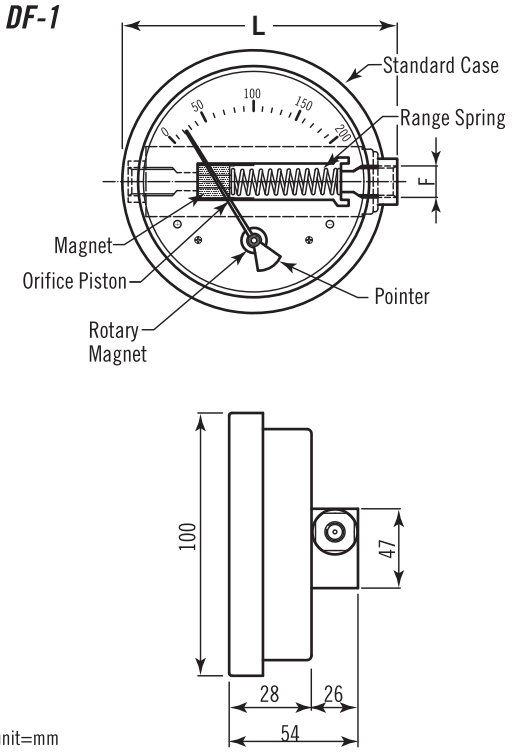
Service: Air, Water
Material: Case–SS316 for DF-1; Aluminum for DF-2; Body–SS316; Orifice Piston–SS316, PVDF
Dial Size: ø4", ø6" available (Switch type only for ø4")
Indication: Via magnetic coupling (no seals)
Scales: LPM, LPH in water; NLPM, Nm³/H in air
Flow Rate: Water–0.25 LPM up to 20 LPM; 15 LPH up to 1200 LPH
Air–6 NLPM up to 500 NLPM; 0.35 Nm³/Hr up to 30 Nm³/Hr
Max. Working Temperature: 80°C
Max. Working Pressure: Standard 200 kg/cm²; Other options upon request
Adjustable Micro Switch
1 adjustable alarm contact
Load: 5A/250VAC/125VAC/30VDC
Temperature: -25°C ~ +100°C (AMB)
Hysteresis: ±10% F.S (Dead Band)
Connection Size: ¼", ½"NPT or BSP
Protection Class: IP66
Accuracy: ±4% FS (±3% FS option)

Range Selection Table

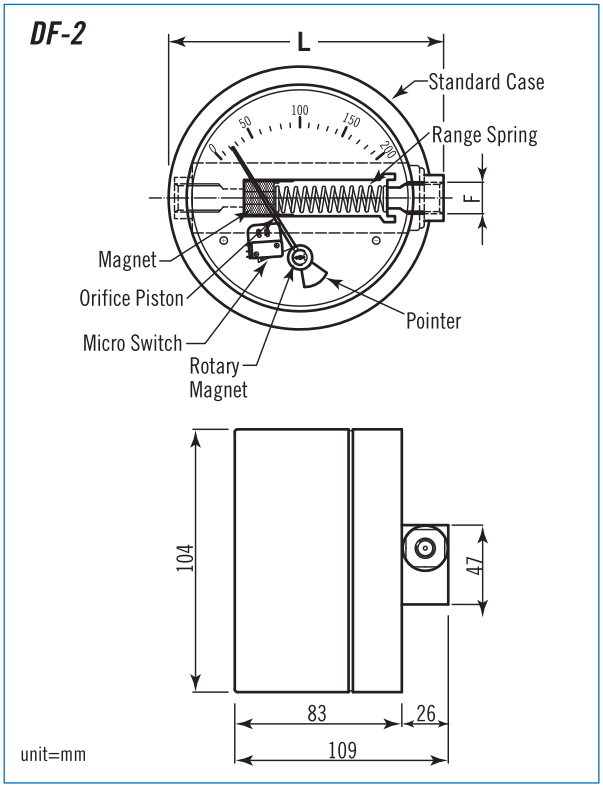
Water 20°C				Air 20°C 1.013 bar				BSP/ NPT	Thread Type
Code	LPM	Code	LPH	Code	NLPM	Code	Nm³/Hr		L (mm)
001	0.25~1.3	007	15~80	013	6~30	019	0.35~1.7	¼"	≒108
002	0.7~3	008	40~200	014	15~80	020	1~4.7	½"	≒130
003	0.8~4	009	50~250	015	20~110	021	1.3~6.6		
004	1.8~9	010	110~550	016	40~220	023	2.6~13		
005	2.6~13	011	160~800	017	60~320	024	4~20		
006	4~20	012	250~1200	018	100~500	025	6~30		

Dimensions

DF-1



DF-2



Ordering Information

DF - 1 - S - A - 1 - A - 1

Type	
1	**Indicating** only (case material SS316)
2	**With** alarm switch {case material Aluminum)

Wetted Parts Material	
(A)	SS316

Conduit Connection	
(A)	¾"**NPT** Female
(B)	½"**NPT** Female, Standard
(0)	**Without**

Flow Range	
S	**Standard** Range (Please refer to Range Selection Table.)
	Please directly fill out the flow range in the order code.

Process Connection (Female)	
(1)	¼" NPT
(2)	½" NPT
(3)	¼" BSP
(4)	11½" BSP

Switch Form	
1	**One** SPDT (only for DF-2)
2	**Without**

FLOW SWITCH AND INDICATOR OF100 SERIES

Technical Data

Piston type for high viscosity
Fluid: Water, oil, other liquid available; Gases
Flow Range: 15~30,000 l/h (at Water); 0.4~740 Nm³/h (at Air)
Accuracy: ±3% F.S, On request: ±2.5% F.S
Size: ¼" to 2½"
Connetion Type: NPT, Flange type on request
Working Limits: Temperature: -40°C to +180°C
Working Pressure: 30 kg/cm²
Option–100 kg/cm² for 1" or less
Option–200 kg/cm² for 1½" or bigger
Protection Class: IP66, Explosion proof
Housing Material: NS, CS, MS type– Aluminum Alloy
ES type– SS316
Lens Material: Safety glass
Mounting: Veritcal, Horizontal available
Material: Wetted parts SS316; Teflon lining float for Gases application
Alarm Switch: Micro switch, Inductive switch available

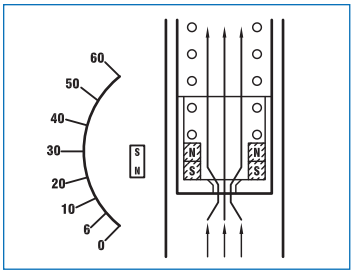
NS Type (Indicating only)

CS Type (With inductive switch)

ES Type (Indicating only)

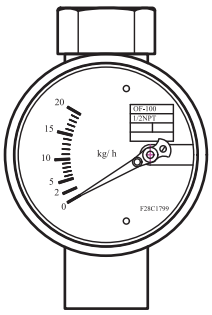
MS Type (With micro or reed switch)

Principle

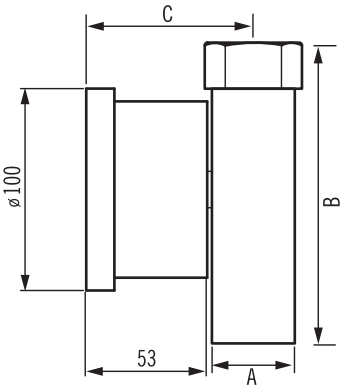


Dimensions

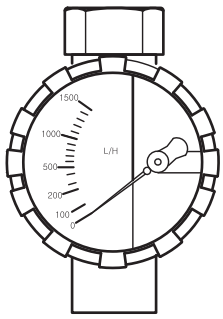
IP66

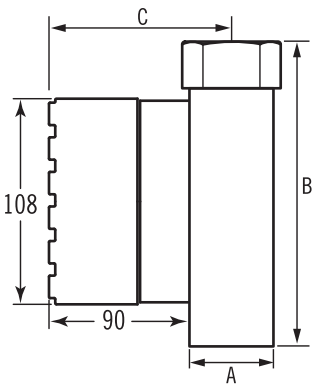


ES Type



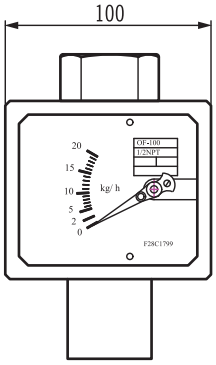
MS Type

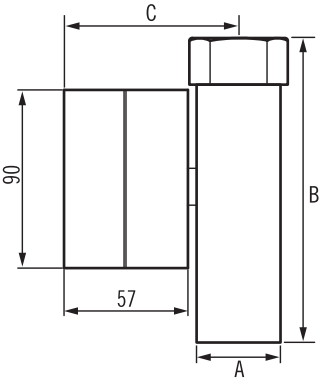




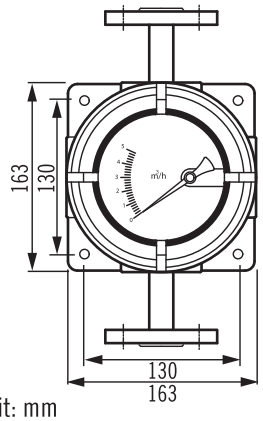
unit: mm

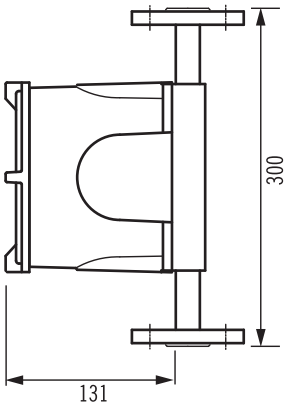
IP66 CS, NS TYPE





Explosion Proof

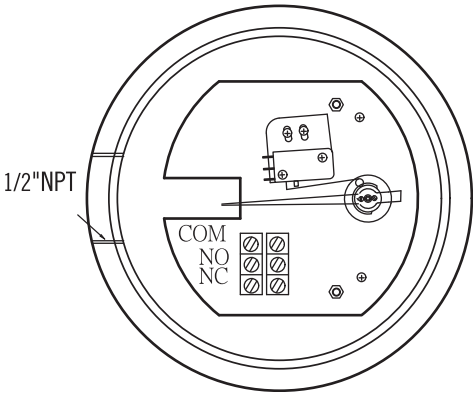




unit: mm

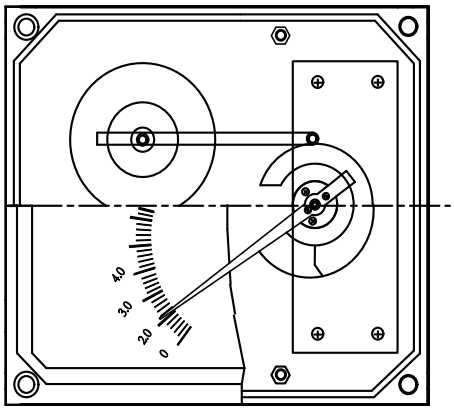
Alarm / Analog output

OF100–MS (Micro Switch)



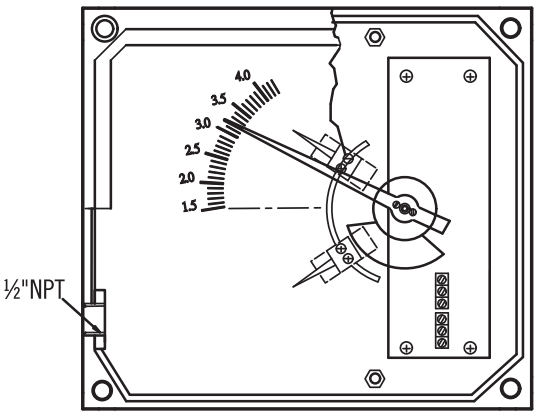
Adjustable Micro Switch, Series OF100-MS
1 adjustable alarm contact, or 2 adjustable alarm contact on request
Load: 5A/250VAC/125VAC/30VDC
Temperature: -25°C ~ +100°C (AMB)
Hysteresis: ±10% F.S (Dead Band)

OF100/GT (Analog Output)



Electric Transmitter OF100/GT
Analog output available: 4~20mA (2 wire)
No Alarm Switch Available
Effective range within 20% to 100%
Power supplier: 24V dc
Temperature: +25°C ~ +100°C (AMB)

OF100–CS (Inductive Switch)



Adjustable inductive alarm switch
Hysteresis: ±2% F.S (Dead Band)
Inductive sensors slotted type:
3.5mm slot switch
DC. voltage 2 wire's to DIN19234 (NAMUR) for use in hazardous areas.
– Power supply: 8 Vdc (Ri.approx. 1kΩ)
– Current consumption: Active face uncoved 3mA
Active face coved 1mA
– Ambient temp: -25°C ~ +100°C

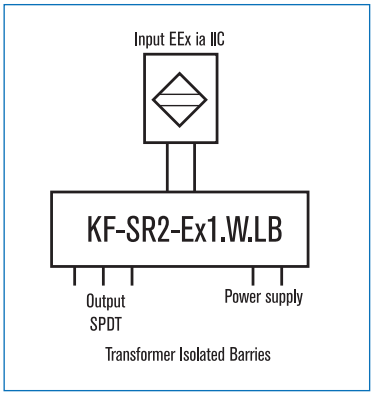
Isolated barriers output relay for inductive sensor:
– Rail mounting
– Control circuit EEx ia IIC
– EMC acc to NAMUR NE21
– Contact loading 250 VAC 2A SPDT 40 VDC 2A

1 adjustable alarm
Contact setting point should be within 20% to 100% of F.S

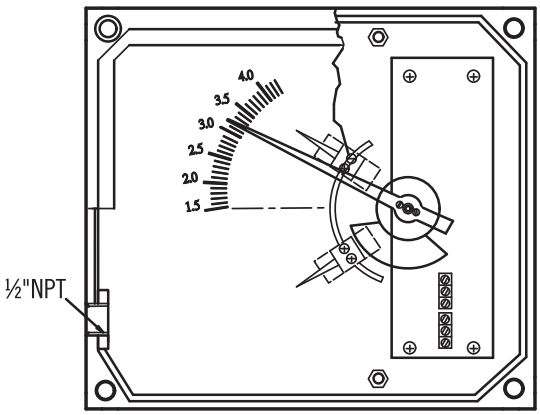
For 24VDC: KFD2-SR2-Ex1.W
115VAC: KFA5-SR2-Ex1.W
230VAC: KFA6-SR2-Ex1.W

2 adjustable alarm
The second setting point should be a gap 40% from first setting point.

For 24VDC: KFD2-SR2-Ex2.W
115VAC: KFA5-SR2-Ex2.W
230VAC: KFA6-SR2-Ex2.W



OF100–RS (Reed Switch)



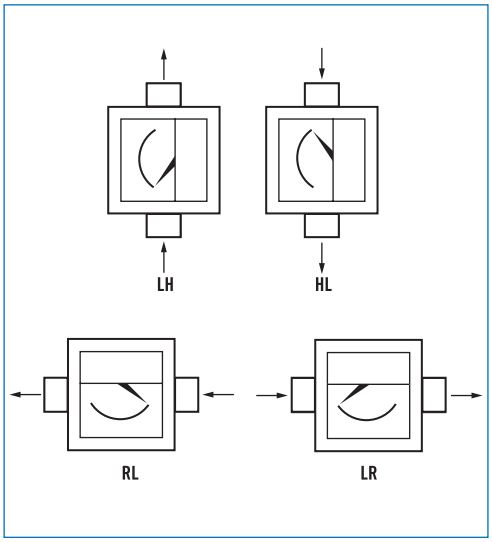
Alarm Switch:
one or two setting points, form A bistable type (N.O. type)
Hysteresis:
±15% of full scale (Dead Band)
Switch Rating:
AC 125V 0.5A / DC 100V 10W / Max. DC 250V<1mA

1 adjustable alarm
Contact setting point should be within 20% to 100% of F.S.

Standard Scales

Tube	L/H Water 20°C	NM³/H Air 0°C 1.013bar	A	B	C	BSP/ NPT
OF101	15 ~ 70	–		150		1/4"
OF102	18 ~ 80	0.4 ~ 2		150		1/4"
OF103	20 ~ 100	0.5 ~ 2.5		150		1/4"
OF104	25 ~ 125	0.6 ~ 3.2		150		1/4"
OF105	30 ~ 150	0.75 ~ 3.8		150		1/4"
OF106	40 ~ 210	1 ~ 5		150		1/2"
OF107	60 ~ 330	1.5 ~ 7.5		150		1/2"
OF108	70 ~ 400	1.6 ~ 8		150		1/2"
OF109	120 ~650	3 ~ 15		150		1/2"
OF110	160 ~ 800	4 ~ 20		150		1/2"
OF111	190 ~ 950	4.8 ~ 24		150		1/2"
OF112	300~1500	6.4 ~ 32		150		1/2"
OF113	200~1000	8 ~ 40		150		3/4"
OF114	350 ~ 1900	10 ~ 50		150		3/4"
OF115	500 ~ 2700	13 ~ 65		150		3/4"
OF116	700 ~ 3500	18 ~ 90		150		1"
OF117	800 ~ 6000	20 ~ 150		150		1"
OF118	800 ~ 6000	20 ~ 150		160		1 1/2"
OF119	900 ~ 7000	23 ~ 175		160		1 1/2"
OF120	2000~ 14000	70~ 350		160		1 1/2"
OF121	1500 ~ 20000	100 ~ 500		160		2"
OF122	2000 ~ 16200	50 ~ 400		160		2 1/2"
OF123	3000 ~ 30000	140 ~ 740		160		2 1/2"

Flow Direction Type



Ordering Information

OF100 - NS - 0 - A - 5 - 1 - IP - 0 - G - 5

Type	
NS	**Indicating** only (Housing-Aluminum Alloy)
ES	**Indicating** only (Housing—SS316)
CS	**With** inductive switch
MS	**With** Micro switch
RS	**With** Reed switch
GT	**Indicating** + 4~20mA (no alarm switch available)

Body Material	
A	SS316
B	Option

Connection Type
(0) Thread Connection
(5)JIS5K (10)JIS 10K (20) JIS 20K
(15) ANSI 150# (30) ANSI 300#
(40) ANSI 400# (60) ANSI 600#
(T) Other:

Connection size	
1	¼"
2	½"
3	¾"
4	1"
5	1-½"
6	2"
7	2-½"

Flow direction	
0	LH
5	HL
10	RL
20	LR

Fluid	
G	Gas
O	Oil
L	Liquid

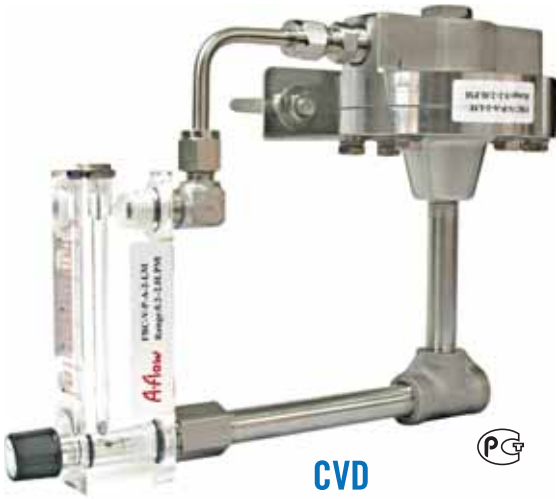
Switch	
0	**Without** alarm switch
C1	**One** inductive alarm switch
C2	**Two** inductive alarm switches
M1	**One** Micro alarm switch
M2	**Two** Micro alarm switch
R1	**One** reed switch

Protection Class	
IP	IP66
Ex.	**Explosion** Proof: CLASS 1, GROUPS B, C &D; CLASS II, GROUPS E, F, & G; NEMA 4, 7, 9

Range	
S	**Standard** range

FLOW CONSTANT VALVE FOR PURGE METER CVA/CVD

CVA

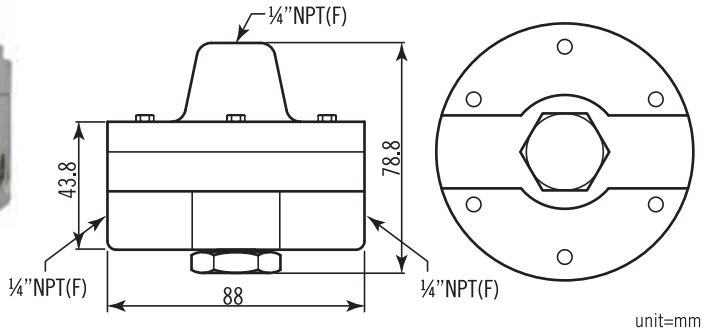


CVD

Technical Data

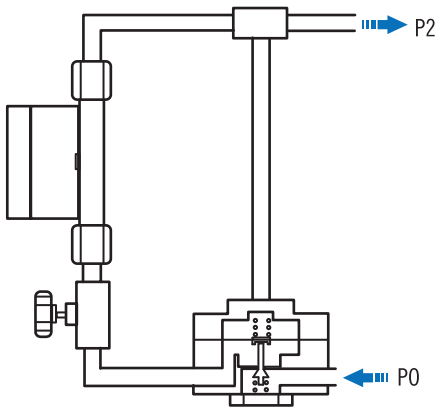
The CVA series is used in where the pressure at the inlet is variable and the pressure at the outlet is constant.
The CVD series is used in where the pressure at the inlet is constant and the pressure at the outlet is variable.
Flow Rate:
Liquid: Maximum 1000 cc/min water for ¼"NPT, bigger than it on request
Gas: Maximum 50 NL/Min air for ¼"NPT, bigger than it on request
Process Connection: ¼"NPT female, others on request
Temperature Limit: 120°C max.
Pressure Limit: 10 kg/cm², bigger than it on request
Controllable Differential Pressure:
Air– Min. 0.02 kg/cm², Max. 4 kg/cm²;
Liquid– Min. 0.2 kg/cm², Max. 4 kg/cm²;
Special range on request.
Accuracy: ±5% F.S.
Material: Body and metal parts-316 stainless steel
Membrane-Teflon, option on request

Dimension

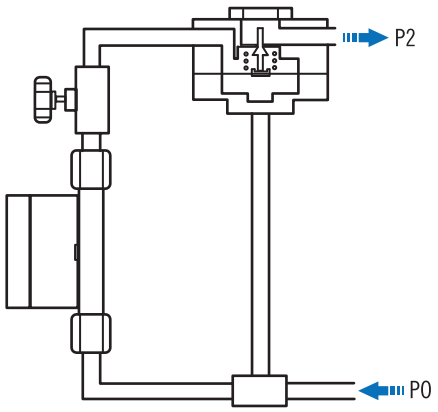


unit=mm

Installed Drawing



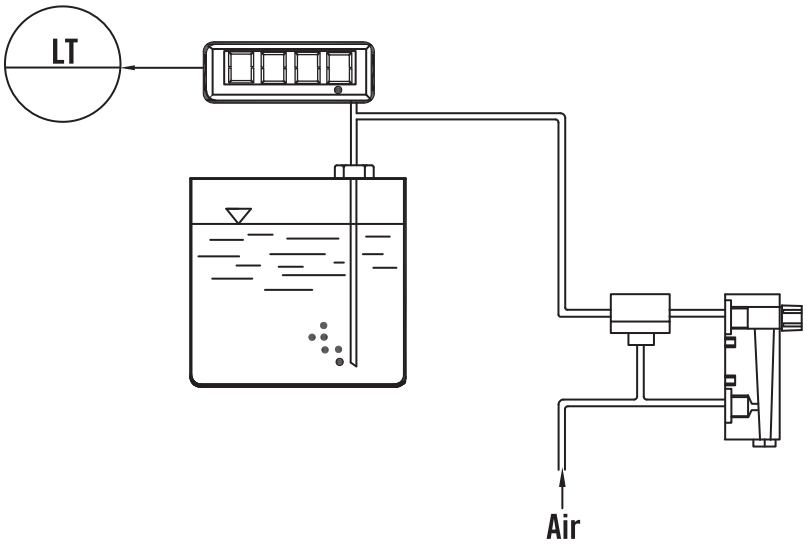
CVA



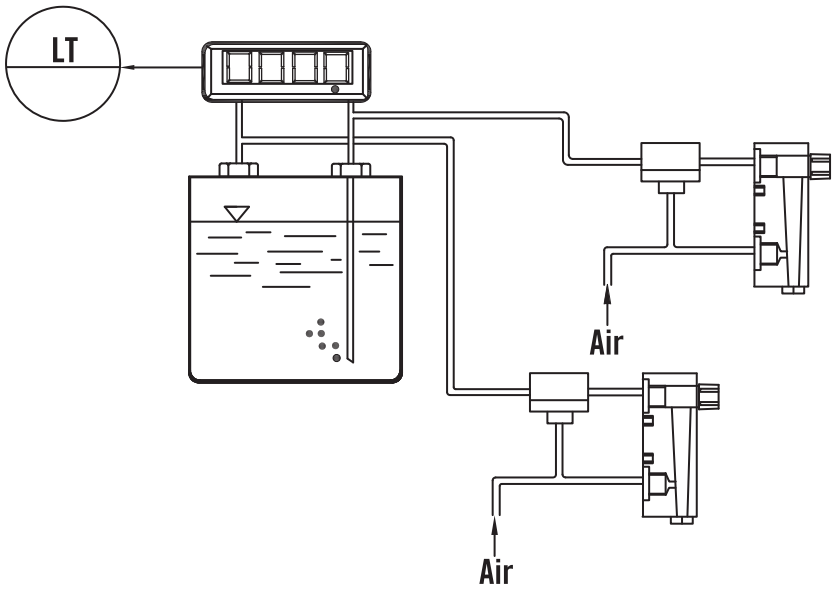
CVD

Installed Method

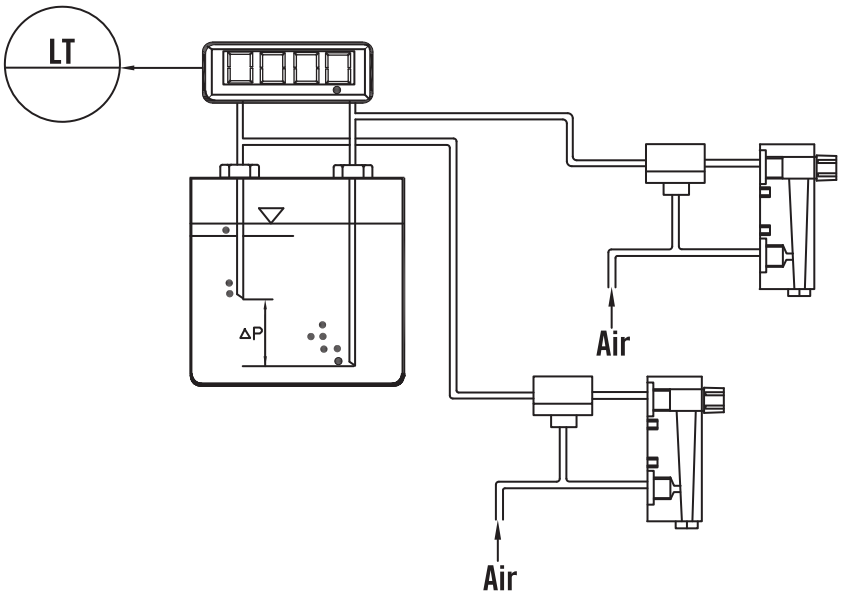
Open Tanks Type Installed Method



Closed Tanks Type Installed Method

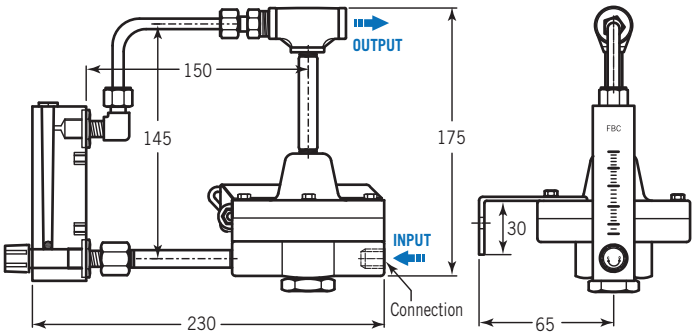


Measuring Density Type Installed Method

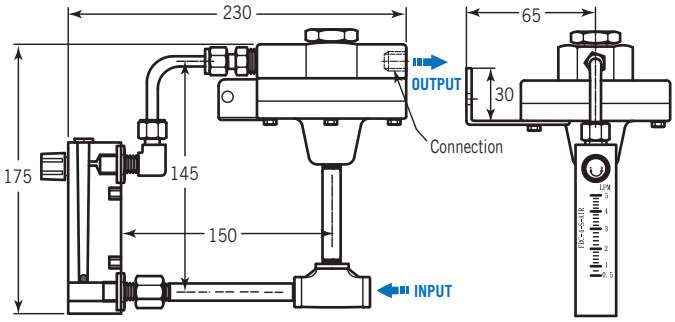


Purge Set W/ Mounting Method

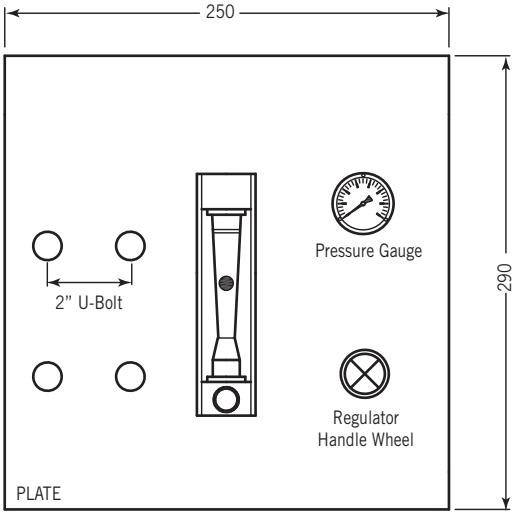
Type A
Acrylic Plastic Flow Meter– CVA purge set



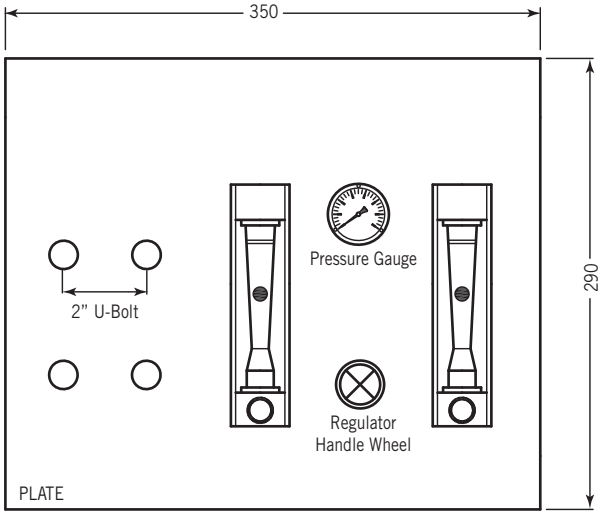
Type B
Acrylic Plastic Flow Meter– CVD purge set



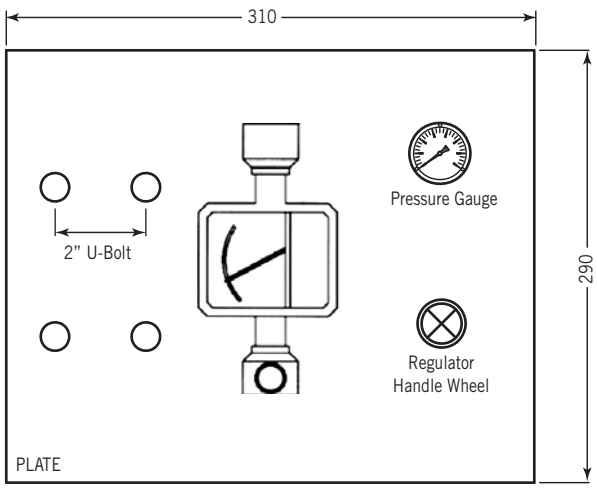
Type C
Glass Tube Flow Meter– One set



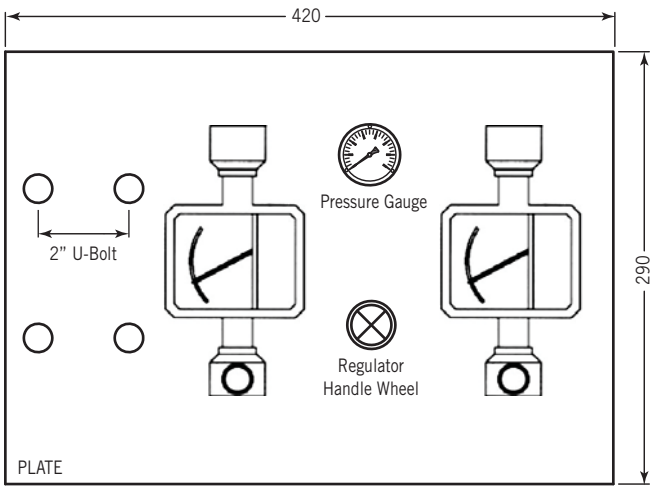
Type D
Glass Tube Flow Meter– Two sets



Type E
Metal Tube Flow Meter– One set



Type F
Metal Tube Flow Meter– Two sets

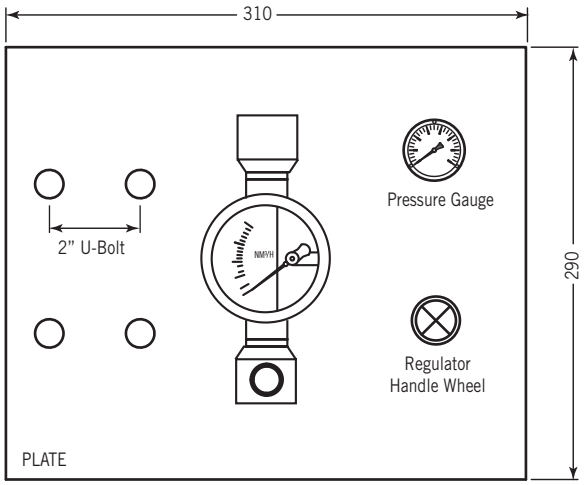


unit=mm

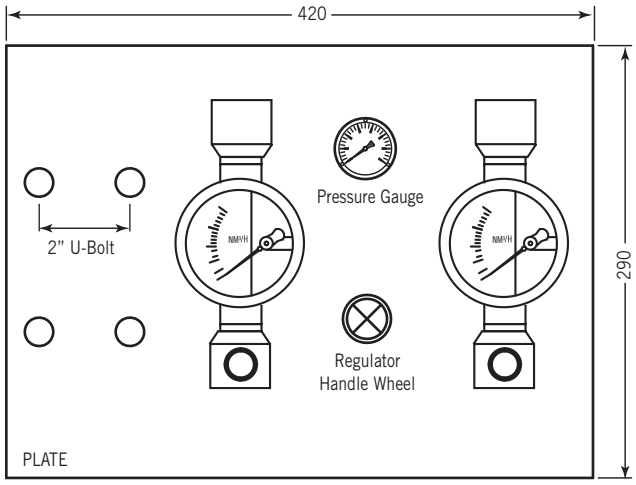
NOTE
Option: Other style available.

Purge Set W/ Mounting Method

Type G
Metal Tube Flow Meter– One set



Type H
Metal Tube Flow Meter– One set



unit=mm

NOTE
Option: Other style available.

ROOTS TYPE POSITIVE DISPLACEMENT FLOW METER JA SERIES

JA (Standard type)

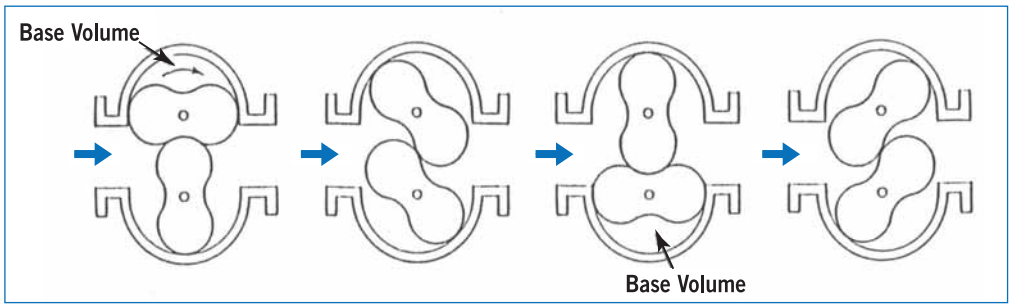
JAR (Zero Rest type)

JAH (High Temperature type)

JAT (Pulse Transmitter type)

Principle

The flow meter was designed a special two rotary of Roots for measuring the volume of liquid fluid when the fluid running into the meter pushes two Roos. The driving roots drive a magnet coupling with a direct gear. Then the magnet coupling transmit to the totalizing counts with a gear too. It comes to measure the amount of the fluid which pass to the meter.



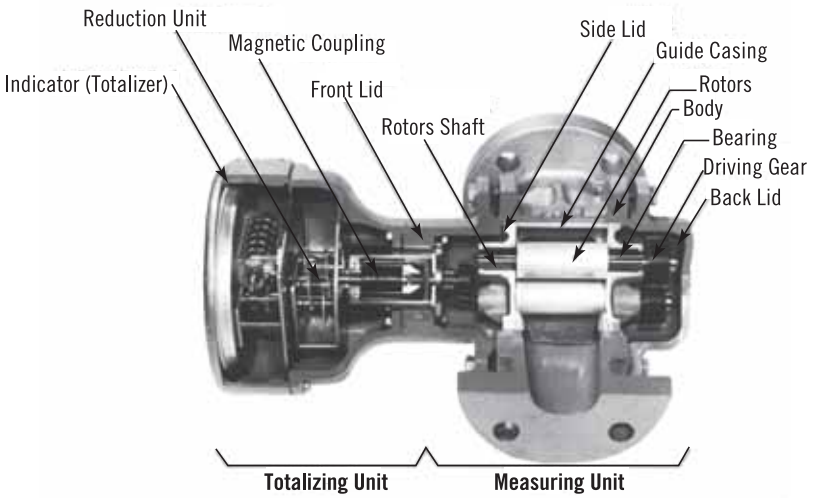
Technical Data

- **Petroleum and Petrochemical:** For process control
- **Chemical:** Process control; shipment of products; intake of materials
- **Pharmaceutical & Paint:** Mixing of various types; quality control; shipment of products
- **Food & Fat:** Mixing of ingredients, tank-to tank transfer, shipment of products
- **Steel making & Shipbuilding:** Measuring fuel consumption of burner, diesel engine fuel

Maximum Working Pressure: 10 kg/cm²
Maximum Working Temperature: 100°C (usual model); only JAH type up to 200°C
Material: Cast Iron, Carbon Steel, SS304, SS316 are available, please refer to the Material List
Totalizer Counter: 6 digital
Zero Rest Counter: 5 digital
Accuracy: ±0.5%
Signal Output (NPN): 100 cc/pulse; 1 liter/pulse; 10 liter/pulse available on request
(If you select JAT pulse transmitter type, please refer to the following table for connection instructoin.)

Signal	Cable Wire	Max. Transfer Distance	Function / Color
Pulse NPN	3 Wires ø0.75mm x 3C	60M	+24/+12 VDC power input..../ Brown Out Signal...../ Black 0V (GND)...../ Blue

Constructoin Diaphragm



Material List of Measuring Unit

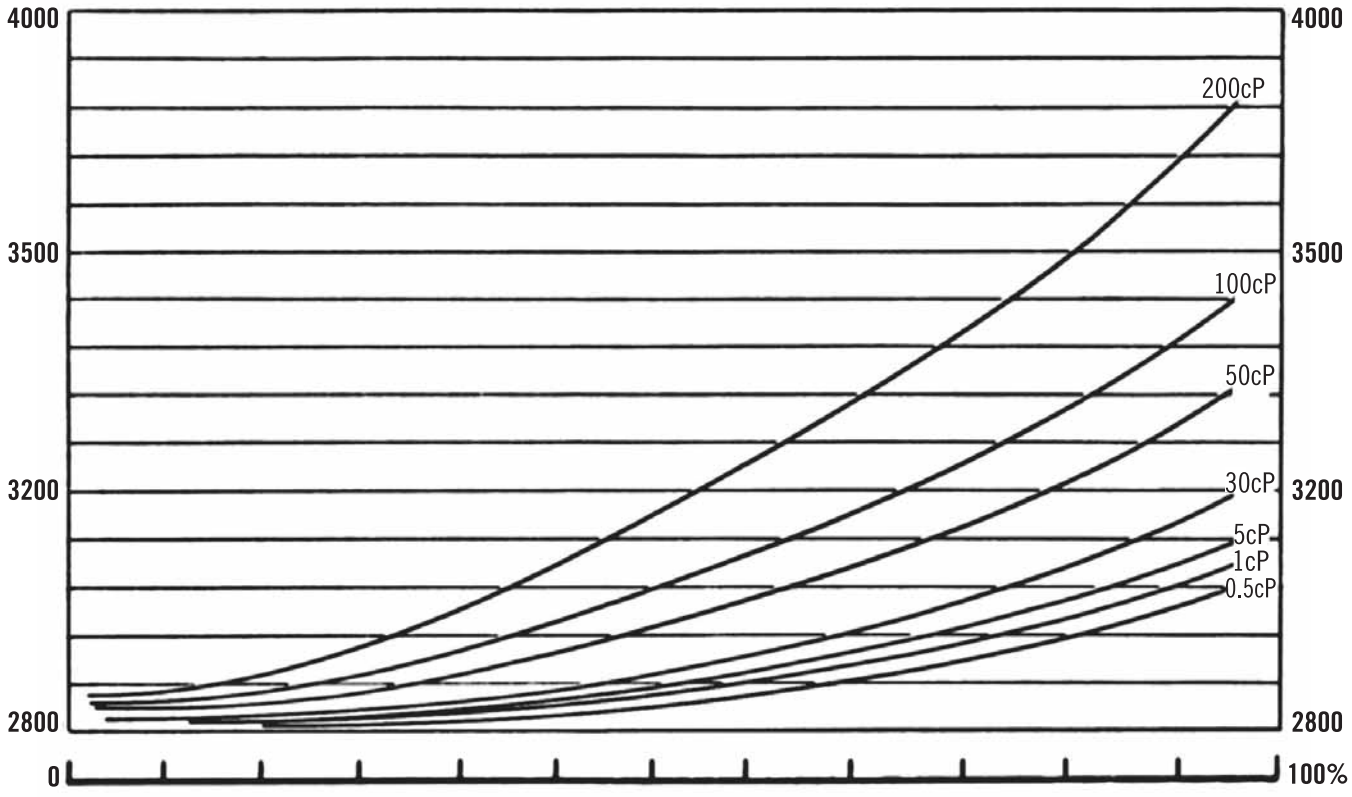
Selection 1: Body Material

Option Item	Body Material
1	Cast Iron
2	Carbon Steel
3	SS304
4	SS316

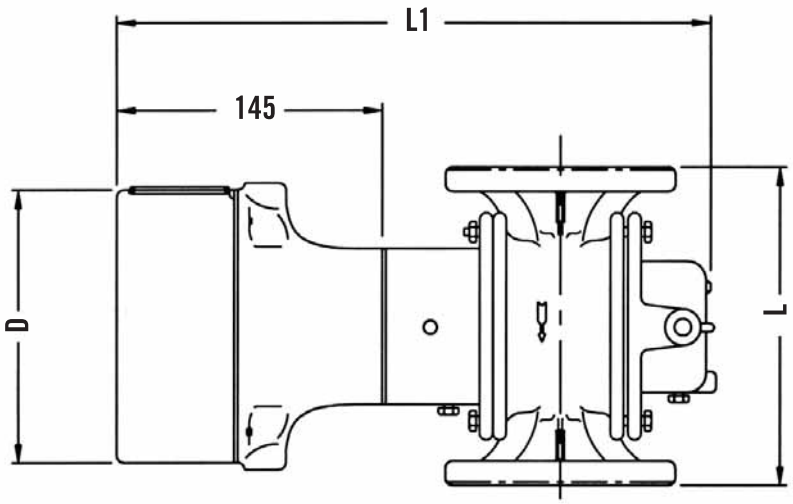
Selection 2: Inner Material

Option Item	Inner Housing	Roots	Roots Shaft	Driving Gear	Other
A	Bronze	Aluminum	S.S	S.S	SS304
B	Bronze	Bronze	S.S	S.S	SS304
C	Bronze	SS304	SS304	SS304	SS304
D	SS304	SS304	SS304	SS304	SS304
E	SS316	SS316	SS316	SS316	SS316

Pressure Loss Curves



Dimensions



Standard Type
(For JA / JAR Series)

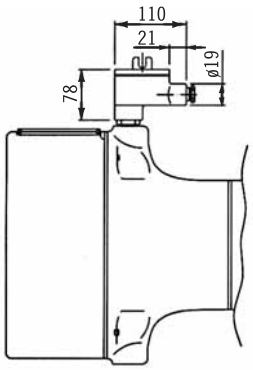
Dimensions for Standard Flow Range-mm

Size	D	L	L1 (Note. 1)
1"JA-25A	180	200	325
1½"JA-40A	180	200	325
2"JA-50A	180	250	375
3"JA-80A	180	325	430

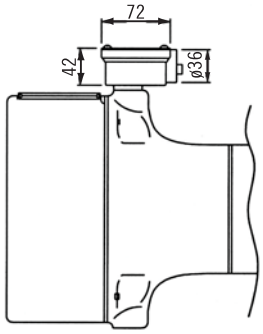
Dimensions for High Flow Range-mm

Size	D	L	L1 (Note. 1)
1½"JA-40A	180	250	375
2"JA-50A	180	325	430

Note. 1
Length "L1" has to add 85mm for JAH (high temperature) type.



Explosion Proof Type
(For JAT Series)

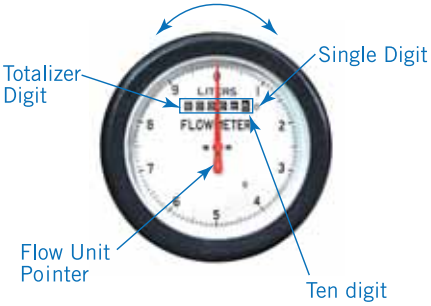


Weather Proof Type
(For JAT Series)

High Temperature type
(For JAH Series)

Function

Indicating diameter can be rotated for 90°,180° and 360°



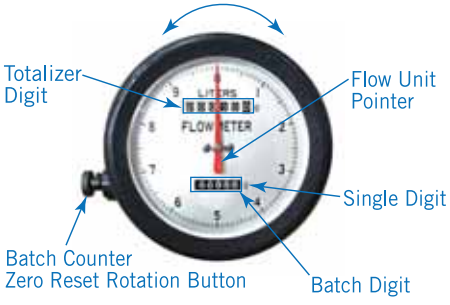
Standard Type
Totalizer Digit & Flow Unit Pointer

– For the single-digit indication:
When the flow meter starts using, the flow unit pointer will be running clockwise from "0", if the flow unit pointer has pointed to 3, it meas the flow rate is 3 Liter.

– For the ten-digit indication:
If the flow unit pointer has passed the scale "0,1,2.. 9 to 0" by running clockwise in a circle, the ten-digit will be shown 1, and it means the flow rate is 10 Liter.

– For the rest indication:
the rest may be deduced by analogy.

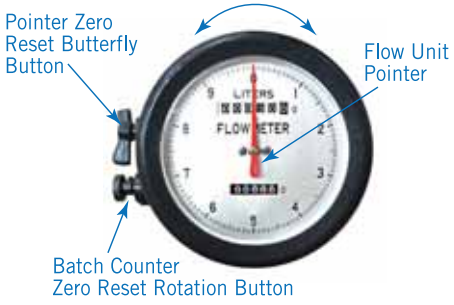
Indicating diameter can be rotated for 90°,180° and 360°



Zero Reset Type
With Batch Counter

– Totalizer digit cannot be reset to zero.
– Batch digit can be reset to zero.

Indicating diameter can be rotated for 90°,180° and 360°



Zero Reset Type
With Batch Counter & Pointer

– Pointer zero reset & Batch counter zero reset (only for zero reset JAR type)

When the pointer pass or stays on the scale of 1, the first number of batch will be shown 1, and it means the flow rate is 1 Liter. But, if the flow rate < 1 Liter, the first number of batch digit remains at 0 location. The maximum flow rate will be 99999 Liter < 100 m³.

Flow Range Table (L/H- liter per hour)

Type number	Diameter (mm)	viscosity terms		Water: 80 °C less normal temp. water	Water: 80~120 °C high temp. water	Chemicals: Concentrated sulfuric acid, nitric acid	Petrochemicals: Plasticizer 50cp	Petrochemicals: Tar 500cp	Petrochemicals: Polyester 2000cp
JA	25	Normal	Intermittent	800~ 3,500	800~ 3,000	800~ 3,000	800~3,500	800~4,000	800~4,000
			Continuous	800~ 2,500	800~ 2,000	800~ 2,500	800~3,000	800~3,000	800~3,000
		Maximum		5,500	4,000	4,000	4,000	4,500	4,500
JA	40	Normal	Intermittent	1,000~ 5,000	1,000~ 4,000	1,000~ 6,000	1,000~ 6,000	1,000~ 6,000	1,000~ 5,000
			Continuous	1,000~ 4,000	1,000~ 3,000	1,000~ 5,000	1,000~ 5,000	1,000~ 5,000	1,000~ 4,000
		Maximum		6,000	5,000	7,000	7,000	7,000	5,500
JA	50	Normal	Intermittent	1,500~ 9,000	2,000~ 8,000	1,000~ 6,000	1,000~ 12,000	1,000~ 12,000	1,000~ 10,000
			Continuous	1,500~ 7,000	2,000~ 6,000	1,000~ 5,000	1,000~ 10,000	1,000~ 10,000	1,000~ 7,500
		Maximum		10,000	9,000	7,500	12,000	12,000	12,000
JA	80	Normal	Intermittent	3,500~ 25,000	5,000~ 21,000	3,500~ 21,000	3,000~ 22,000	3,000~ 22,000	3,000~ 20,000
			Continuous	3,500~ 20,000	5,000~ 18,000	3,500~18 ,000	3,000~ 20,000	3,000~ 20,000	3,000~ 18,000
		Maximum		25,000	25,000	25,000	25,000	25,000	22,000

Name of applicable fluid (reference)				Petroleum: L.P.G.	Gasoline	Kerosene	Light oil A-heavy oil (high temp)	A-heavy oil	C-heavy oil	C-heavy oil	High viscosity fluid
Type number	Diameter (mm)	viscosity terms		0.1 CP~	0.5~	2~	5~	10~	150~	500~	2000~
JA	25	Normal	Intermittent	1,000~ 3,500	600~ 5,000	500~ 5,000	500~ 6,000	500~ 6,000	500~ 6,000	500~ 5,000	500~ 4,500
			Continuous	1,000~ 3,000	600~ 4,000	500~ 4,000	500~ 5,000	500~ 5,000	500~ 5,000	500~ 4,000	500~ 3,500
		Maximum		5,000	6,500	6,500	7,000	7,000	7,000	6,000	5,000
JA	40	Normal	Intermittent	1,000~ 4,500	1,000~ 5,500	800~ 6,000	500~ 6,000	500~ 7,000	500~ 7,000	500~ 6,000	500~ 5,500
			Continuous	1,000~ 3,500	1,000~ 4,000	800~ 5,000	500~ 5,000	500~ 6,000	500~ 6,000	500~ 5,000	500~ 4,500
		Maximum		6,000	6,000	7,000	7,000	8,000	8,000	7,000	6,000
JA	50	Normal	Intermittent	2,000~ 10,000	2,000~ 10,000	1,500~ 12,000	800~ 12,000	800~ 12,000	1,000~ 12,000	1,000~ 12,000	1,000~ 10,000
			Continuous	1,000~ 8,000	2,000~ 8,500	1,500~ 10,000	800~ 10,000	800~ 10,000	1,000~ 10,000	1,000~ 10,000	1,000~ 9,000
		Maximum		12,000	12,000	13,000	13,000	13,000	12,000	12,000	11,000
JA	80	Normal	Intermittent	3,500~ 20,000	3,000~ 20,000	3,000~ 22,000	3,000~ 23,000	3,000~ 23,000	3,000~ 23,000	3,000~ 20,000	3,000~ 19,000
			Continuous	3,500~ 17,000	3,000~ 17,000	3,000~ 19,000	3,000~ 20,000	3,000~ 20,000	3,000~ 20,000	3,000~ 19,000	3,000~ 17,000
		Maximum		22,000	22,000	25,000	27,000	27,000	27,000	25,000	22,000

NOTE. If your request size is bigger than DN80 or the flow range is higher than 25m³/hr (our option special flow range is 30m³/hr), please consult the factory.

Ordering Information

JA - 1 - A - 1 - A - 1 - 1

Model	
JA	**Standard** Type
JAR	**Zero** Rest Type
JAH	**High** Temperature Type
JAT	**Pulse** Transmitter Type

Connection Size	
(1)	1”
(2)	½”
(3)	2”
(4)	3”

Flange Rating	
(A)	JISIOK
(B)	JIS 20K
(C)	ANSI 150#
(D)	ANSI 300#
(E)	PN10
(F)	PN16

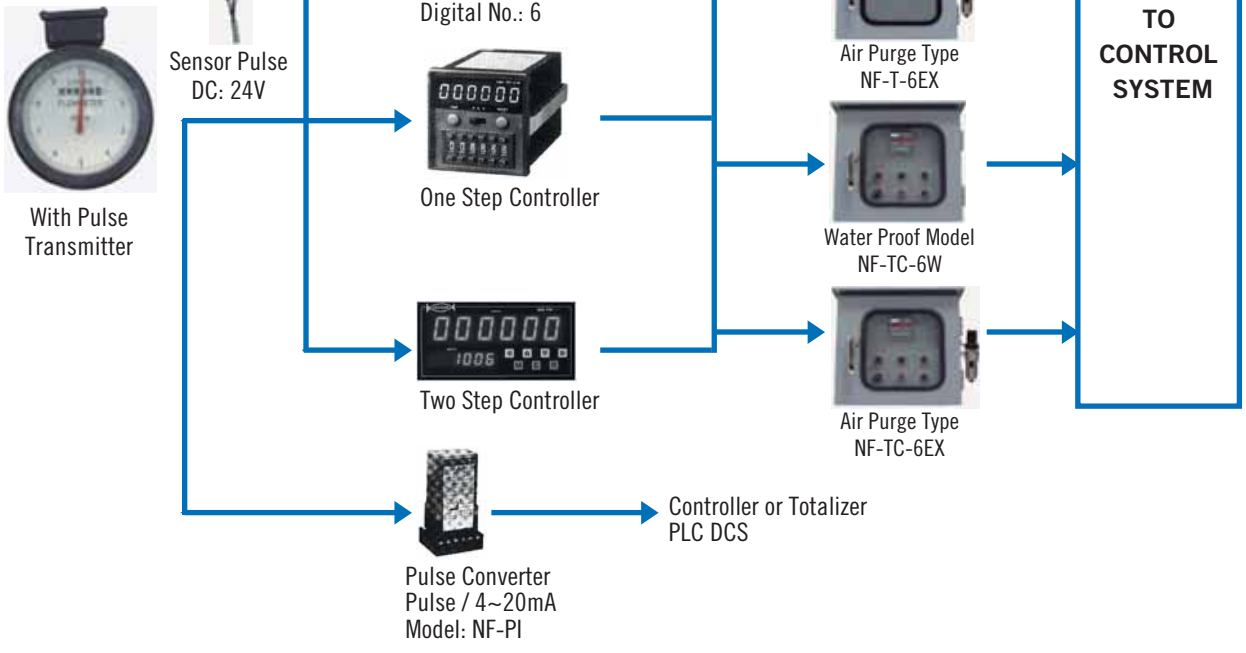
Body Material	
(1)	**Cast** Iron
(2)	**Carbon** Steel
(3)	**SS304**
(4)	**SS316**

Inner Material (Housing-Roots)	
(A)	Bronze-Aluminum
(B)	Bronze-Bronze
(C)	Bronze-SS304
(D)	SS304-SS304
(E)	SS316-SS316

Indicator Housing Unit-only for JAT type	
(1)	**Weather** proof type
(2)	**Explosion** proof type
(3)	**Without**

Signal Output (NPN)-only for JAT type	
(1)	**100cc/pulse**
(2)	**1** liter/pulse
(3)	**10** liter/pulse
(4)	**Without**

Standard Control System Mode



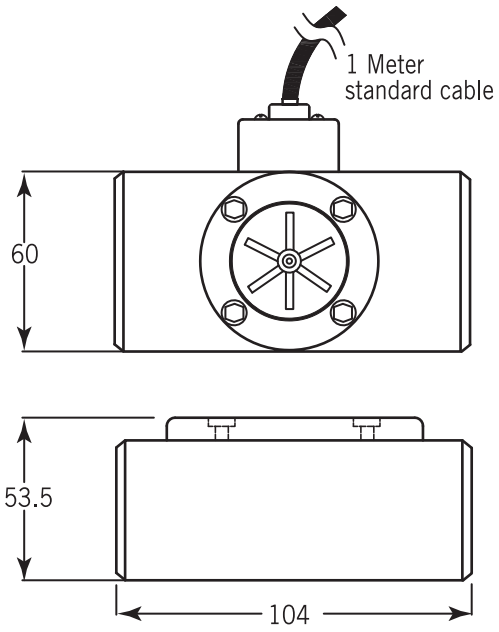
PADDLE WHEEL LIQUID FLOW METER

HF100

Technical Data

Connecting size: ⅜", ½", ¾", 1" NPT female standard
Power supply: 3.8V to 30VDC
Output: Sink(NPN)
Material: Body-polypropylene , PTFE, PVDF available
Cover-acrylic, PP, PTFE, PVDF available
Rotor-PVDF
Shaft-ceramic
Bearings-ceramic
O-ring: Viton
Max. temperature: 70°C
Max. pressure: Polypropylene and PTFE–10kg/cm²
PVDF–15kg/cm²
Accuracy: ±2%F.S

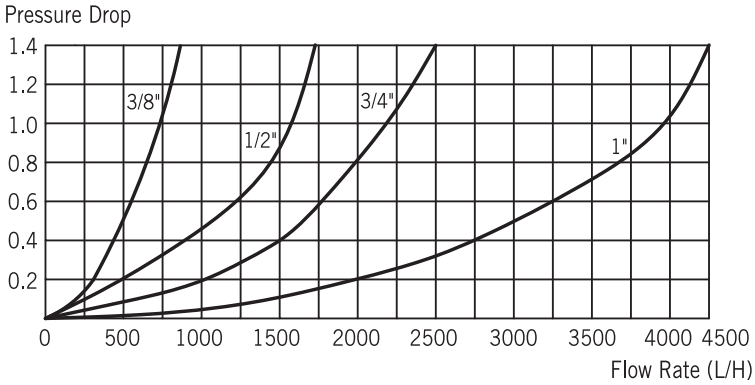
Dimensions



Range Table

Size	Flow Rates /LPH	Nominal Factors Per Liter
3/8"	20~800	398.32
1/2"	30~1400	205.32
3/4"	100~2100	150.32
1"	120~4200	61.02

Pressure Drop: 3/8"~1"



Ordering Information

HF100 - 1 - A - 4

Process connection size	
(1)	⅜"
(2)	½"
(3)	¾"
(4)	1"

Body material	
A	Polypropylene
B	PTFE
C	PVDF

Cover Material	
(1)	Acrylic(standard)
(2)	P.P
(3)	PTFE
(4)	PVDF

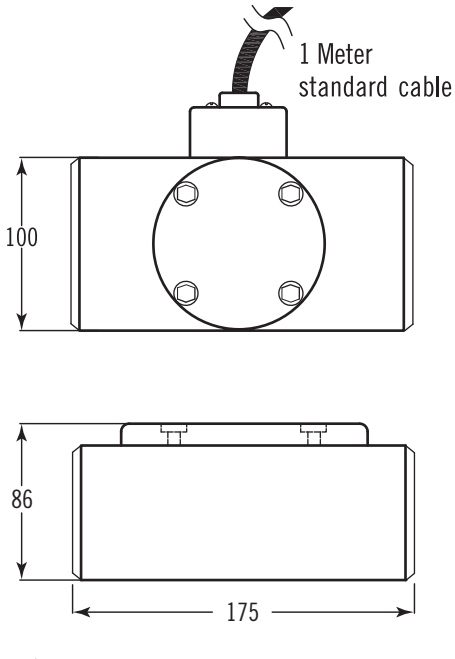
PADDLE WHEEL LIQUID FLOW METER

HF200

Technical Data

Connecting size: 1½"NPT female standard
Power supply: 3.8V to 30VDC
Output: Sink(NPN)
Material: Body– Polypropylene, PVDF available
Cover– PP, PVDF available
Rotor– PVDF
Shaft– HC276
Bearings– PVDF
O-ring: Viton
Max.temperature: 70℃
Max.pressure: Polypropylene-10kg/cm²
PVDF-15kg/cm²
Accuracy: ±2%F.S

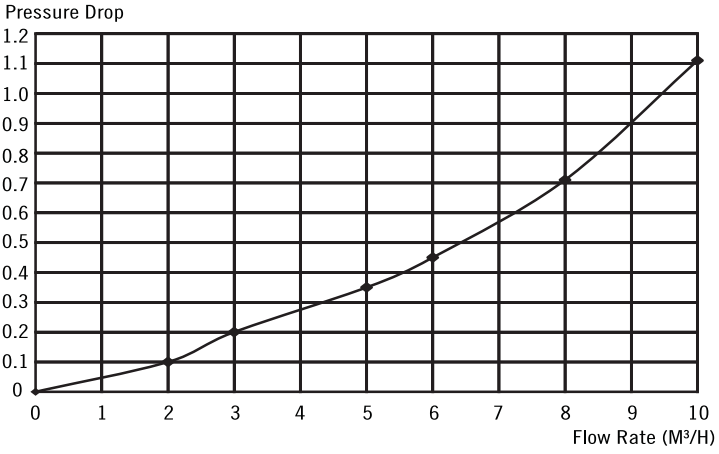
Dimensions



Range Table

Size	Flow Rates /M³H	Nominal Factors Per Liter
1½"	1~10	7.1

Pressure Drop: 1½"



Ordering Information

HF200 - 1 - A - 1

Process connection size	
(1)	1 ½"

Body material	
A	Polypropylene
B	PVDF

Cove Material	
(1)	P.P
(2)	PVDF

MASS FLOW METERS Without LCD Display

TAF SERIES

Economy Type
±1.5% Accuracy
Linear Output
Thermal Technology
For Using in Non Corrosive gas
For Flow Rates up to 50 SLM

The Thermal Mass Flow Meters provide high performance. Thermal Technology offers advantages in accuracy, sensitivity and turn quality components and the latest technology are combined to provide reliable, compact meters. The TAF Series comes without an LCD display, and come with linear 0-5 VDC output. The TAF Series measures the mass flow rate of gases in 17 ranges from 0-10 SCCM to 0-50 SLM as shown in the range table.

Technical Data

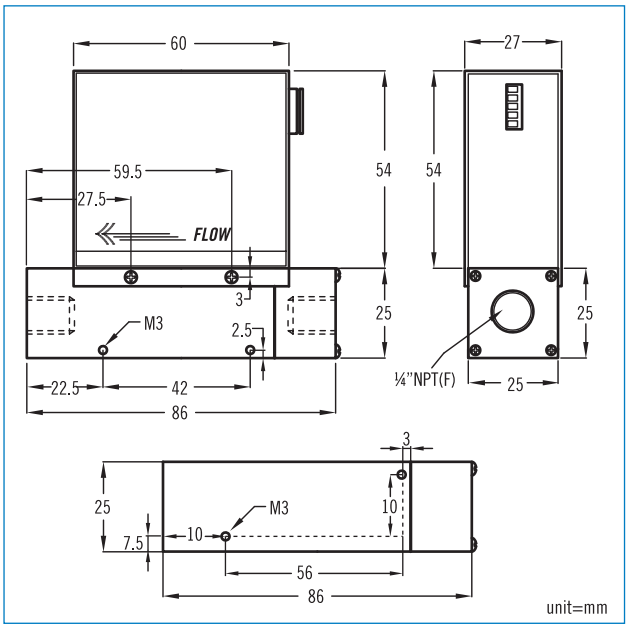
Wetted Material: Standard flowbody– 316 Stainless Steel
O-ring– Viton.
Output Signal: 0-5 VDC Linear min. load 1000Ω
Input Power: 24 VDC, 15 VDC and 12 VDC available
Accuracy: ±1.5% F.S (for 10 SCCM ~ 5 SLM, including linearity)
±5% F.S (0~25% Flow Range)
±2% F.S (25~100% Flow Range)
Turn Down Ratio: 50 : 1
Repeatability: ±0.15% FS or better
Electric Connection: 5 Pin post header
(provide with mating connector)
Process connection: ¼"NPT Female
Range: 0-10 SCCM to 0-50 SLM
Minimum Pressure: 40" H_2O
Max. Pressure: 500 PSIG
Temperature Range: 0~50 ℃
Response Time: 1 Second
Temp. Coefficient: 0.05% Full scale per 1℃ or better
Pressure Coefficient: 0.01% Full scale per PSIG or better
Weight: app. 0.5 kg

Range Table

Code	SCCM	Code	SLM	Code	SLM
00	0-10	06	0-1	14	0~35
01	0-20	07	0-2	15	0~40
02	0-50	08	0-5	16	0~45
03	0-100	09	0-10	17	0-50
04	0-200	10	0-15	18	*Custom Flow Rate
05	0~500	11	0-20		
		12	0-25		
		13	0-30		

*Please notice that the max. flow range is 50 SLM.

Dimensions



Ordering Information

TLF - 18 - A - 1 - 0 - 1 - 1

Flow Range	
00-17	**Please** refer to the measure range table.
18	***Custom** range (Please directly fill in the requested range)

Wetted Material	
(A)	SS316

Display	
0	**Without** display

Process Connection	
1	¼" NPT (F)

Output Signal	
(1)	0-5VDC

Input Power	
1	24VDC
2	15VDC
3	12VDC

MASS FLOW METERS

ULF SERIES – Without LCD Display – Top Electric Connection Type

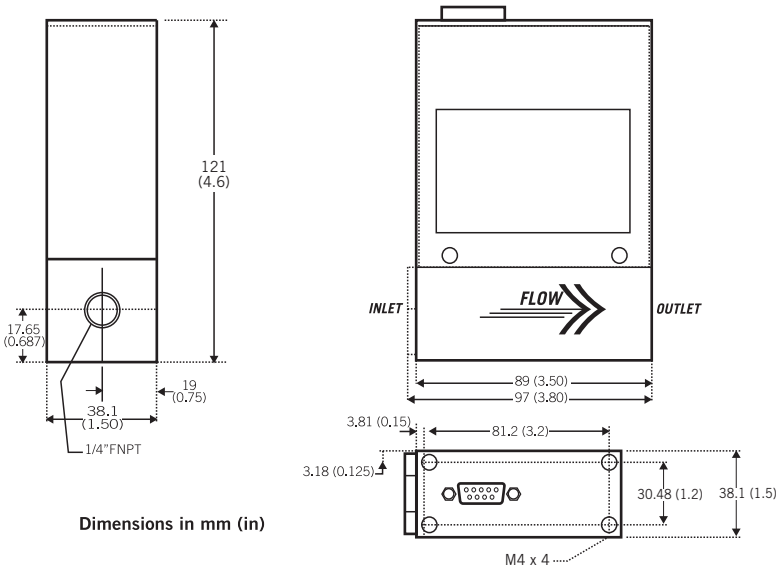
±1% Accuracy
Linear Output
Thermal Technology
For Using in Non Corrosive Gas
Power Supply Included

The Thermal Mass Flow Meters provide high performance. Thermal Technology offers advantages in accuracy, sensitivity and turn quality components and the latest technology are combined to provide reliable, compact meters and controllers. The ULF Series comes an without an LCD display, and all models come with linear 0-5 VDC and 4-20 mA output.The ULF Series measures the mass flow rate of gases in 23 ranges from 0-10 SCCM to 0-100 SLM as shown in the range table.

Technical Data

Wetted Material: Standard flowbody–SS316; Tapcon; option available.
O-ring–Viton
Output Signal: 0-5 VDC Linear min. load 1000Ω or 4-20 mA Linear, loop resistance 500Ω
Input Power: 24 VDC standard; optional power supply 15 VDC 115 VAC, 220 VAC @500mA
Accuracy: ±1% FS (including linearity)
Turn Down Ratio: 100:1
Repeatability: ±0.15% FS or better
Electric Connection: 9 Pin Sub "D"
Process Connection: ¼"NPT female
Range: 0-10 SCCM to 0-100 SLM
Minimum Pressure: 40" H_2O
Max Pressure: SS316–500 psig; Tapcon–250 psig
Temperature Range: 0~50°C
Response Time: 1 Second
Temp. Coefficient: 0.05% Full Scale per 1°C or better
Pressure Coefficient: 0.01% Full Scale per PSIG or better
Weight: app. 1.08 kg with power supply

Dimensions



Dimensions in mm (in)

Range Table

Code	SCCM	Code	SLM	Code	SLM
00	0-10	06	0-1	14	0-35
01	0-20	07	0-2	15	0-40
02	0-50	08	0-5	16	0-45
03	0-100	09	0-10	17	0-50
04	0-200	10	0-15	18	0-55
05	0-500	11	0-20	19	0-60
		12	0-25	20	0-65
		13	0-30	21	0-70
				22	0-75
				23	0-100
				24	*Custom Flow Rate

Note. *Please notice that the max. flow rate is 100 SLM.

Ordering Information

ULF - 24 - A - 1 - 0 - 1 - 1 - 1

Flow Range	
00-23	**Please** refer to the measure range table.
24	***Custom** range (please directly fill in the requested range)

Wetted Parts Material	
(A)	SS316
(T)	Tapcon
(0)	option

Process Connection	
1	¼" NPT(F)

Display	
0	**Without** display

Output Signal	
(1)	0-5VDC
(2)	4-20 mA

Input Power	
(1)	24VDC
(2)	15VDC

Power Supply for 24VDC	
(1)	With
(2)	Without

MASS FLOW CONTROLLERS

ULFC SERIES – Without LCD Display – Top Electric Connection Type

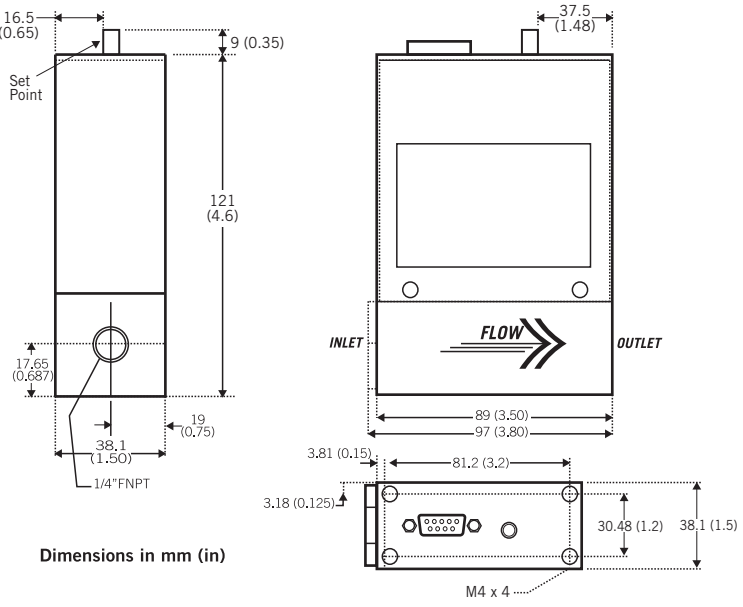
±1% Accuracy
Linear Output
Thermal Technology
For Using in Non Corrosive Gas
Power Supply Included

The Thermal Mass Flow Meters provide high performance. Thermal Technology offers advantages in accuracy, sensitivity and turn quality components and the latest technology are combined to provide reliable, compact meters and controllers. The ULFC Series comes without an LCD display, and all models come with linear 0-5 VDC and 4-20 mA output.The ULFC Series measures the mass flow rate of gases in 18 ranges from 0-10 SCCM to 0-50 SLM as shown in the range table. The ULFC Series combines a mass flow transducer with an electromagnetic proportional valve. Valves are not recommended as shut off valves. Controllers use a 0-5 VDC linear set-point signal supplied from the local set-point pot or from a remote souce.

Technical Data

Wetted Material: Standard flowbody– SS316; option available. O-ring– Viton
Output Signal: 0-5 VDC Linear min. load 1000Ω or 4-20 mA Linear, loop resistance 500Ω
Input Power: 24 VDC standard; optional power supply 15 VDC 115 VAC, 220 VAC @500mA
Accuracy: ±1% FS (including linearity)
Turn Down Ratio: 100:1
Repeatability: ±0.15 FS or better
Electric Connection: 9 Pin Sub "D"
Process Connection: ¼"NPT female
Control Signal: Integral or 0-5 VDC
Control Valve: Electromagnetic N/C (Norm. Closed)
Range: 0-10 SCCM to 50 SLM (24 VDC); 0-10 SCCM to 20 SLM (15 VDC)
Max. Pressure: 500 psig (SS316); 250 psig (Tapcon-plastic)
Temperature Range: 0~50°C
Response Time: 1 Second
Temp. Coefficient: 0.05% Full Scale per 1°C or better
Pressure Coefficient: 0.01% Full Scale per PSIG or better
Weight: app. 1.35 kg with power supply

Dimensions



Dimensions in mm (in)

Operating Differential Pressure

F.S ≤ 5 SLM (0.5 kg/cm² ~3 kg/cm²)
Low differential pressure specification depend on types of gas and flow rates to be used.
5 SLM < F.S < 20 SLM (1 kg/cm²~3 kg/cm²)
20 SLM < F.S < 50 SLM (2 kg/cm²~3 kg/cm²)

Range Table

Code	SCCM	Code	SLM	Code	SLM
00	0~10	06	0~1	12	0~25
01	0~20	07	0~2	13	0~30
02	0~50	08	0~5	14	0~35
03	0~100	09	0~10	15	0~40
04	0~200	10	0~15	16	0~45
05	0~500	11	0~20	17	0~50
18	Custom Flow Rate (*Please notice that the max. flow range is 50 SLM.)				

Ordering Information

ULFC - 18 - A - 1 - 0 - 1 - A - 1 - 1 - _

Flow Range	
00-17	**Please** refer to the measure range table.
18	***Custom** range (please directly fill in the requested range)

Process Connection	
1	¼"**NPT(F)**

Output Signal	
(1)	**0-5** VDC
(2)	**4-20mA**

Input Power	
(1)	**24** VDC
(2)	**15VDC**

D.P.	
	kg/cm2

Display	
0	**Without** display

Wetted Parts Material	
(A)	**SS316**
(0)	**option**

Control Signal	
A	**Integral** (manual operating by set point)
B	**0-5** VDC (from a remote source)

Power Supply for 24VDC	
(1)	**With**
(2)	**Without**

MASS FLOW METERS

TLF SERIES With or Without LCD Display

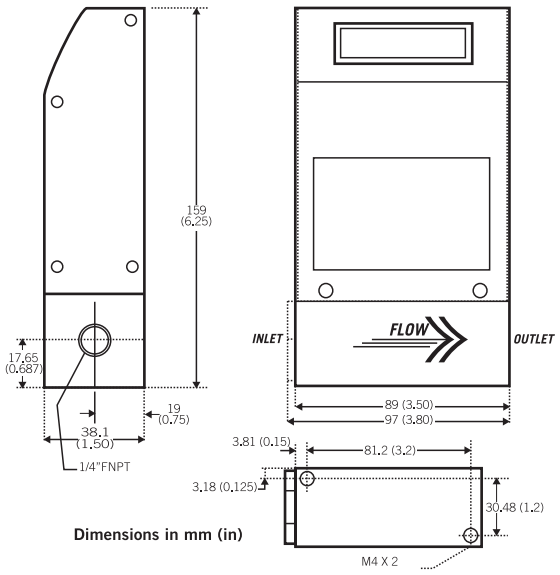
±1% Accuracy
Linear Output
Thermal Technology
For Using in Non Corrosive gas
For Flow Rates up to 100 SLM
Power Supply Included

The NEW-FLOW Thermal Mass Flow Meters provide high performance. Thermal Technology offers advantages in accuracy, sensitivity and turn quality components and the latest technology are combined to provide reliable, compact meters and controllers. The TLF Series comes with or without an LCD display, and all models come with linear 0-5VDC and 4-20 mA output. The TLF Series measures the mass flow rate of gases in 23 ranges from 0-10 SCCM to 0-100 SLM as shown in the range table.

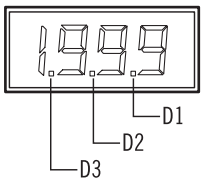
Technical Data

Wetted Material: Standard flowbody–SS316; Tapcon; option available.
O-ring–Viton
Output Signal: 0-5 VDC Linear min. load 1000Ω or 4-20 mA Linear, loop resistance 500Ω
Input Power: AC adaptor: 100~240 VAC 50/60Hz 0.5A
Accuracy: ±1% FS (including linearity)
Turn Down Ratio: 100:1
Repeatability: ±0.15% FS or better
Electric Connection: 9 Pin Sub "D"
Process Connection: ¼"NPT female
Range: 0-10 SCCM to 0-100 SLM
Minimum Pressure: 40" H_2O
Max Pressure: SS316–500 psig; Tapcon–250 psig
Temperature Range: 0~50°C
Response Time: 1 Second
Temp. Coefficient: 0.05% Full Scale per 1°C or better
Pressure Coefficient: 0.01% Full Scale per PSIG or better
Weight: app. 1.08 kg with power supply

Dimensions



Display Digital Decimal Point Function



Range	Decimal Point
0 ~ 1.999	D3
2.00 ~ 19.99	D2
20.0 ~ 199.9	D1
200 ~ 1999	None

Range Table

Code	SCCM	Code	SLM	Code	SLM
00	0-10	06	0-1	14	0~35
01	0-20	07	0-2	15	0~40
02	0-50	08	0-5	16	0~45
03	0-100	09	0-10	17	0-50
04	0-200	10	0-15	18	0~55
05	0~500	11	0-20	19	0-60
		12	0-25	20	0-65
		13	0-30	21	0-70
				22	0-75
				23	0-100
				24	*Custom Flow Rate

Note. *Please notice that the max. flow rate is 100 SLM.

Ordering Information

TLF - 18 - A - 1 - 0 - 1 - 1 - 2

Flow Range	
00-23	Please refer to the measure range table.
24	*Custom range (please directly fill in the requested range)

Wetted Parts Material	
(A)	SS316
(T)	Tapcon
(0)	opion

Process Connection	
1	¼" NPT(F)

Display	
W	With display
B	With display + Blue back-lighted
0	Without display

Output Signal	
(1)	0~5VDC
(2)	4~20mA

Input Signal	
(1)	24VDC
(2)	15VDC

Power Supply for 24VDC	
(1)	with
(2)	without

MASS FLOW CONTROLLERS

With or Without LCD Display

TLFC SERIES

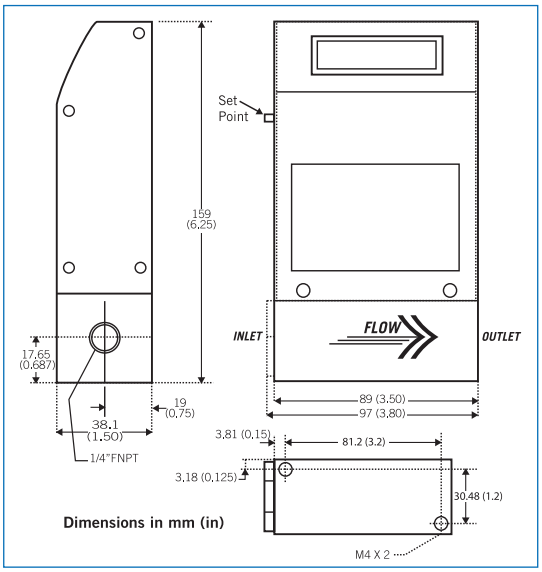
±1% Accuracy
Linear Output
Thermal Technology
For Using In Non Corrosive Gas
For Flow Rates up to 50 SLM
Power Supply Included

The Thermal Mass Flow Meters provide high performance. Thermal Technology offers advantages in accuracy, sensitivity and turn quality components and the latest technology are combined to provide reliable, compact meters and controllers. The TLFC Series comes with or without an LCD display, and all models come with linear 0-5VDC and 4-20 mA output. The TLFC Series measures the mass flow rate of gases in 18 ranges from 0-10 SCCM to 0-50 SLM as shown in the range table. The TLFC Series combines a mass flow transducer with an electromagnetic proportional valve. Valves are not recommended as shut off valves. Controllers use a 0-5 VDC linear set-point signal supplied from the local set-point pot or from a remote source.

Technical Data

Wetted Material: Standard flowbody– SS316; option available. O-ring– Viton
Output Signal: 0-5 VDC Linear min. load 1000Ω or 4-20 mA Linear, loop resistance 500Ω
Input Power: 24 VDC standard; optional power supply 15 VDC 115 VAC, 220 VAC @500mA
Accuracy: ±1% FS (including linearity)
Turn Down Ratio: 100:1
Repeatability: ±0.15 FS or better
Electric Connection: 9 Pin Sub "D"
Process Connection: ¼"NPT female
Control Signal: Integral or 0-5 VDC
Control Valve: Electromagnetic N/C (Norm. Closed)
Range: 0-10 SCCM to 50 SLM (24 VDC); 0-10 SCCM to 20 SLM (15 VDC)
Max. Pressure: 500 psig (SS316); 250 psig (Tapcon-plastic)
Temperature Range: 0~50°C
Response Time: 1 Second
Temp. Coefficient: 0.05% Full Scale per 1°C or better
Pressure Coefficient: 0.01% Full Svale per PSIG or better
Weight: app. 1.35 kg with power supply

Dimensions



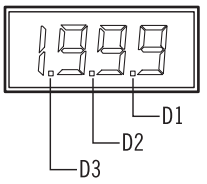
Operating Differential Pressure

F.S ≤ 5 SLM (0.5 kg/cm² ~3 kg/cm²)
Low differential pressure specification depend on types of gas and flow rates to be used.
5 SLM < F.S < 20 SLM (1 kg/cm²~3 kg/cm²)
20 SLM < F.S < 50 SLM (2 kg/cm²~3 kg/cm²)

Range Table

Code	SCCM	Code	SLM	Code	SLM
00	0~10	06	0~1	12	0~25
01	0~20	07	0~2	13	0~30
02	0~50	08	0~5	14	0~35
03	0~100	09	0~10	15	0~40
04	0~200	10	0~15	16	0~45
05	0~500	11	0~20	17	0~50
18	Custom Flow Rate (*Please notice that the max. flow range is 50 SLM.)				

Display Digital Decimal Point Function



Range	Decimal Point
0 ~ 1.999	D3
2.00 ~ 19.99	D2
20.0 ~ 199.9	D1
200 ~ 1999	None

Ordering Information

TLFC - 11 - A - 1 - W + 1 - A - 2 - 1 - ____

Flow Range	
00~17	Please refer to the measure range table.
18	*Custom range (please directly fill in the requested range)

Wetted Parts Material	
(A)	SS316
(T)	Tapcon

Process Connection	
1	¼" NPT(F)

Display	
W	With display
B	With display + Blue back-lighted
0	Without display

Output Signal	
(1)	0~5VDC
(2)	4~20mA

Control Signal	
A	Integral (manual operating by set point)
B	0~5VDC (from a remote source)

Input Signal	
(1)	24VDC
(2)	15VDC

Power Supply for 24VDC	
(1)	with
(2)	without

D.P.
____ kg/cm²

MASS FLOW METERS

TMF SERIES With or Without LCD Display

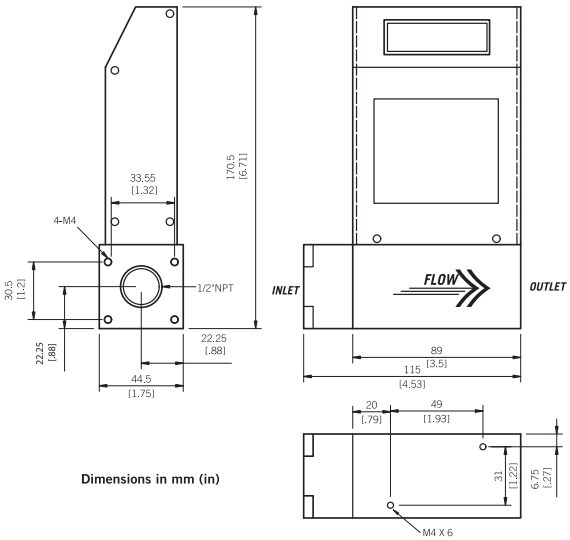
±1% Accuracy
Linear Output
Thermal Technology
For Using in Non Corrosive Gas
For Flow Rates up to 200 SLM
Power Supply Included

The Thermal Mass Flow Meters provide high performance. Thermal Technology offers advantages in accuracy, sensitivity and turn quality components and the latest technology are combined to provide reliable, compact meters and controllers. The TMF Series comes with or without an LCD display, and all models come with linear 0-5 VDC and 4-20 mA output. The TMF Series measures the mass flow rate of gases in 3 ranges from 0-100 SLM to 0-200 SLM as shown in the range table.

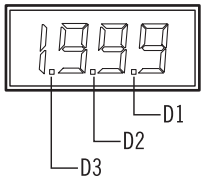
Technical Data

Wetted Material: Standard flowbody–SS316; option available.
O-ring–Viton
Output Signal: 0-5 VDC Linear min. load 1000Ω or 4-20 mA Linear, loop resistance 500Ω
Input Power: 24 VDC standard; optional power supply 15 VDC 115 VAC, 220 VAC @500mA
Accuracy: ±1% FS (including linearity)
Turn Down Ratio: 100:1
Repeatability: ±0.15% FS or better
Electric Connection: 9 Pin Sub "D"
Process Connection: ½"NPT female
Range: 0-100 SLM to 0-200 SLM
Minimum Pressure: 100" H_2O
Max Pressure: 500 psig
Temperature Range: 0~50°C
Response Time: 1 Second
Temp. Coefficient: 0.05% Full Scale per 1°C or better
Pressure Coefficient: 0.01% Full Scale per PSIG or better
Weight: app. 1.64 kg with power supply

Dimensions



Display Digital Decimal Point Function



Range	Decimal Point
0 ~ 1.999	D3
2.00 ~ 19.99	D2
20.0 ~ 199.9	D1
200 ~ 1999	None

Range Table

Code	SLM
00	0-100
01	0-150
02	0-200
03	*Custom Flow Rate

Note. *Please notice that the max. flow range is 200 SLM.

Ordering Information

TMF - 18 - A - 1 - 0 - 1 - 1 - 2

Flow Range	
00	0-100 SLM
01	0-150 SLM
02	0-200 SLM
03	*Custom range (please directly fill in the requested range)

Process Connection	
1	¼" NPT(F)

Wetted Parts Material	
(A)	SS316
(T)	Tapcon

Input Power	
(1)	24VDC
(2)	15VDC

Power Supply for 24VDC	
(1)	with
(2)	without

Output Signal	
(1)	0~5VDC
(2)	4~20mA

Display	
W	With display
B	With display + Blue back-lighted
0	Without display

MASS FLOW CONTROLLERS

TMFC SERIES With or Without LCD Display

±1% Accuracy
Linear Output
Thermal Technology
For Using In Non Corrosive Gas
For Flow Rates up to 200 SLM
Power Supply Included

The Thermal Mass Flow Meters provide high performance. Thermal Technology offers advantages in accuracy, sensitivity and turn quality components and the latest technology are combined to provide reliable, compact meters and controllers. The TMFC Series comes with or without an LCD display, and all models come with linear 0-5 VDC and 4-20mA output. The TMFC Series measures the mass flow rate of gases in 3 ranges from 0-100 SLM to 0-200 SLM as shown in the range table. The TMFC Series combines a mass flow transducer with an electromagnetic proportional valve. Valves are not recommended as shut off valves. Controllers use a 0-5 VDC linear set-point signal supplied from the local set-point pot or from a remote source.

Technical Data

Wetted Parts Material: Standard flowbody- SS316; O-ring- Viton
Output Signal: 0-5 VDC Linear min. load 1000Ω or 4-20mA Linear, loop resistance 500Ω
Input Power: 24 VDC standard; Optional power supply
Accuracy: ±1% F.S (including linearity)
Turn Down Ratio: 100:1
Repeatability: ±0.15% F.S or Better
Electric Connection: 9 Pin Sub "D"
Process Connection: ½"NPT female
Control Signal: Integral or 0-5 VDC
Control Valve: Electromagnetic N/C (norm. closed)
Range: 0-100 SLM to 0-200 SLM
Max. Pressure: 500 psig
Temperature Range: 0~50℃
Response Time: 1 Second
Temp. Coefficient: 0.05% full sacle per 1℃ or better
Pressure Coefficient: 0.01% full scale per PSIG or better
Weight: app. 3.27kg with power supply

Operating Differential Pressure

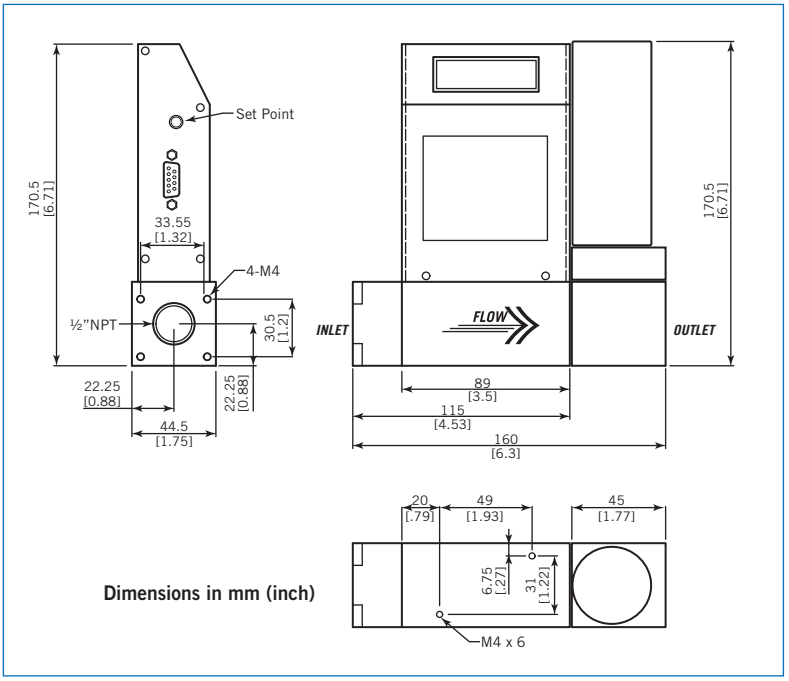
Low differential pressure specification depend on types of gas and flow rates to be used.
100SLM < F.S < 200 SLM (2 kg/cm²~3 kg/cm²)

Range Table

Code	SLM
00	0~100
01	0~150
02	0~200
03	*custom flow rate

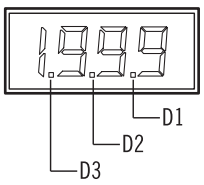
NOTE.*please notice that the max. flow range is 200 SLM.

Dimensions



Dimensions in mm (inch)

Display Digital Decimal Point Function



Range	Decimal Point
0 ~ 1.999	D3
2.00 ~ 19.99	D2
20.0 ~ 199.9	D1
200 ~ 1999	None

Ordering Information

TMFC - 01 - A - 1 - W - 1 - A - 2 - ____

Flow Range	
00	0-100 SLM
01	0-150 SLM
02	0-200 SLM
03	*Custom flow rate (please directly fill in the requested range)

Wetted Parts Material	
(A)	SS316

Process Connection Size	
1	½" NPT(F)

Display	
W	With display
B	With display + Blue back-lighted
0	Without display

Output Signal	
(1)	0~5VDC
(2)	4~20mA

Power Supply for 24VDC	
(1)	with
(2)	without

Control Signal	
A	Integral (manual operating by set point)
B	0~5VDC (from a remote source)

D.P.
____ kg/cm^2

MASS FLOW METERS

THF SERIES With or Without LCD Display

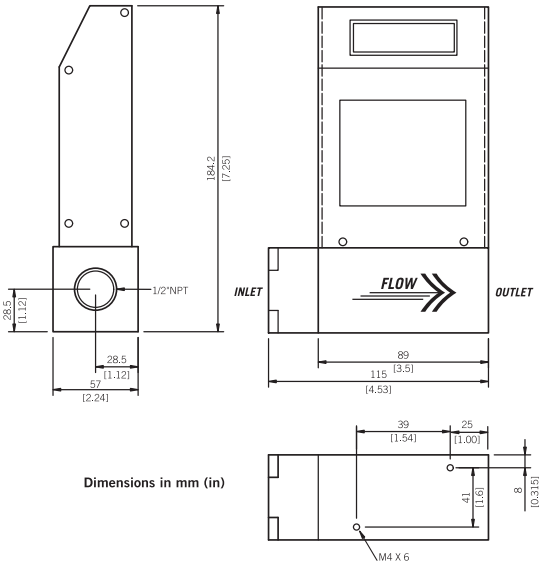
±1% Accuracy
Linear Output
Thermal Technology
For Using in Non Corrosive Gas
For Flow Rates up to 500 SLM
Power Supply Included

The Thermal Mass Flow Meters provide high performance. thermal Technology offers advantages in accuracy, sensitivity and turn quality components and the latest technology are combined to provide reliable, compact meters and controllers. The THF Series comes with or without an LCD display, and all models come with linear 0-5 VDC and 4-20 mA output. The THF Series measures the mass flow rate of gases in 4 ranges from 0-250 SLM to 0-500 SLM as range table.

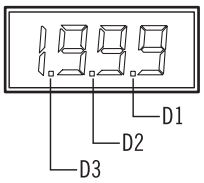
Technical Data

Wetted Material: Standard flowbody–SS316; option available.
O-ring–Viton
Output Signal: 0-5 VDC Linear min. load 1000Ω or 4-20 mA Linear, loop resistance 500Ω
Input Power: 24 VDC standard; optional power supply 15 VDC 115 VAC, 220 VAC @500mA
Accuracy: ±1% FS (including linearity)
Turn Down Ratio: 100:1
Repeatability: ±0.15% FS or better
Electric Connection: 9 Pin Sub "D"
Process Connection: ½"NPT female
Range: 0-250 SLM to 0-500 SLM
Minimum Pressure: 100" H_2O
Max Pressure: 500 psig
Temperature Range: 0~50°C
Response Time: 1 Second
Temp. Coefficient: 0.05% Full Scale per 1°C or better
Pressure Coefficient: 0.01% Full Scale per PSIG or better
Weight: app. 2.45 kg with power supply

Dimensions



Display Digital Decimal Point Function



Range	Decimal Point
0 ~ 1.999	D3
2.00 ~ 19.99	D2
20.0 ~ 199.9	D1
200 ~ 1999	None

Range Table

Code	SLM
00	0-250
01	0-300
02	0-400
03	0-500
04	*Custom Flow Rate

Note. *Please notice that the max. flow range is 500 SLM.

Ordering Information

THF - 01 - A - 1 - W - 1 - 1 - 2

Flow Range	
00	0~250 SLM
01	0~300 SLM
02	0~400 SLM
03	0~500 SLM
04	*Custom range (please directly fill in the requested range)

Process Connection	
1	½" NPT(F)

Wetted Parts Material	
(A)	SS316
(O)	Option

Output Signal	
(1)	0~5VDC
(2)	4~20mA

Input Power	
(1)	24VDC
(2)	15VDC

Power Supply for 24VDC	
(1)	with
(2)	without

Display	
W	With display
B	With display + Blue back-lighted
0	Without display

MASS FLOW METERS

With or Without LCD Display

TSF SERIES

±2% Accuracy
Linear Output
Thermal Technology
For Using in Non Corrosive Gas
For Flow Rates up to 1500 SLM
Power Supply Included

The Thermal Mass Flow Meters provide high performance. Thermal Technology offers advantages in accuracy, sensitivity and turn quality components and the latest technology are combined to provide reliable, compact meters and controllers. The TSF Series comes with or without an LCD display, and all models come with linear 0-5 VDC and 4-20 mA output. The TSF Series measures the mass flow rate of gases in 4 ranges from 0-750 SLM to 0-1500 SLM as range table.

Technical Data

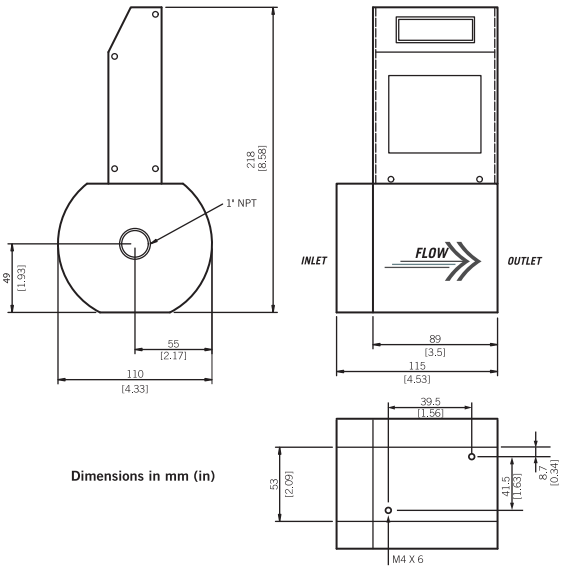
Wetted Material:
Standard flowbody– 316 Stainless Steel,
Option available. O-ring– Viton.
Output Signal: 0-5 VDC Linear min. load 1000Ω or 4-20 mA Linear, loop resistance 500Ω
Input Power: 24 VDC Standard, optional power supply 15 VDC 115 VAC, 220 VAC @500mA
Accuracy: ±2% F.S (including Linearity)
Trun Down Ratio: 100:1
Repeatability: ±0.15% F.S or better
Electric Connection: 9 Pin Sub "D"
Process Connection: 1" NPT Female
Range: 0-750 SLM to 1500 SLM
Minimum Pressure: 100"H_2O
Max Pressure: 500 PSIG
Temperature Range: 0~50°C
Response Time: 1 Second
Temp. Coefficient: 0.05% Full scale per 1°C or better
Pressure Coefficient: 0.01% full scale per PSIG or better
Weight: app. to 6.5kg with power supply

Range Table

Code	SLM
00	0-750
01	0-1000
02	0-1250
03	0-1500
04	*Custom Flow Rate

Note. *Please notice that the max. flow range is 1500 SLM.

Dimensions



Ordering Information

TSF - 01 - A - 1 - W - 1 - A - 1

Flow Range	
00	0~750 SLM
01	0~1000 SLM
02	0~1250 SLM
03	0~1500 SLM
04	*Custom range (please directly fill in the requested range)

Process Connection	
1	1" NPT(F)

Wetted Parts Material	
(A)	SS316
(O)	Option

Output Signal	
(1)	0~5VDC
(2)	4~20mA

Input Power	
(1)	24VDC
(2)	15VDC

Power Supply for 24VDC	
(1)	with
(2)	without

Display	
W	With display
B	With display + Blue back-lighted
0	Without display

ORIFICE FLANGES AND ORIFICE PLATE

All orifice unions are manufactured according to the software by Flow Soft inc. The following is a list of commonly used standards and references used in flow measurement calculations:

- Flow Measurement Engineering Handbook. 2nd edition. R.W. Miller.
- Principles and practice of Flow Meter Engineering. 9th edition. L.K. Spink.
- Fluid Meters, Their Theory and Application. 6th edition, Howard S. Bean.
- Measurement of Fluid Flow in Pipes Using Orifice, Nozzle, and Venturi, ASME MFC-3M-1985.
- Measurement of fluid flow by means of pressure differential devices-Orifice plates, inserted in circular cross section conduits running full, ISO 5167-2-2003.
- Orifice Metering of Natural Gas and Other Related Hydrocarbon Fluids, AGA Report 3, API 2000,2003.

Technical Data

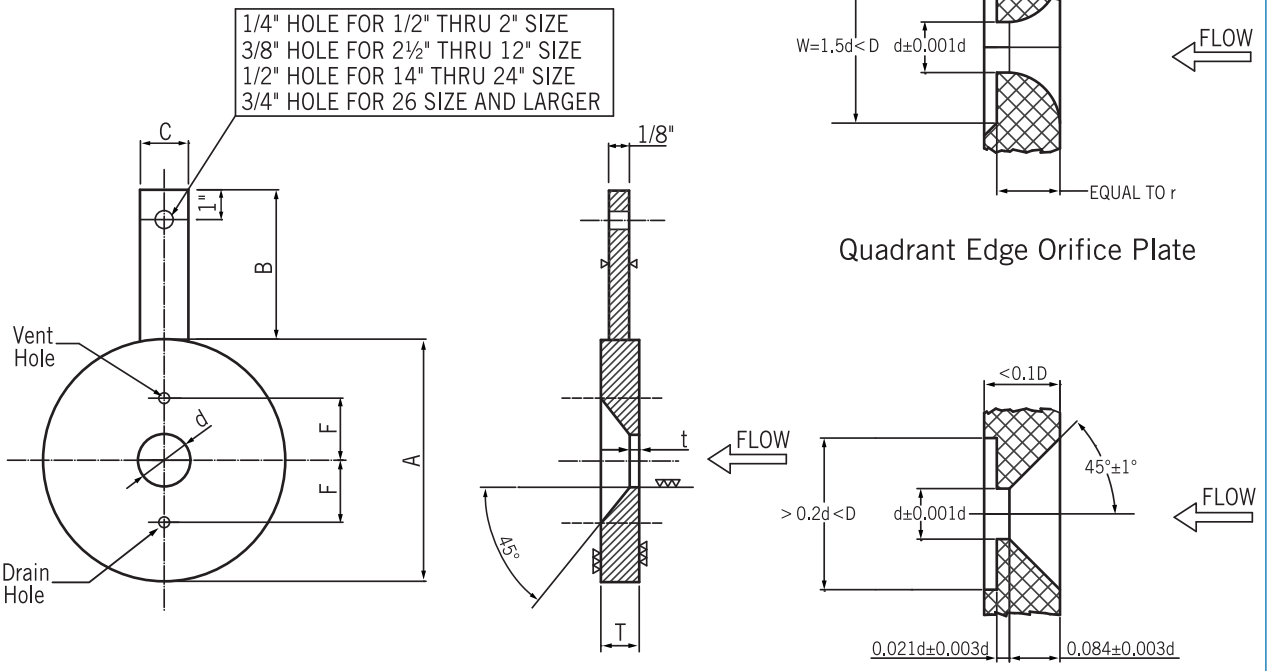
Orifice Plate Series: Restriction plate. Concentric orifice plate.
Quadrant edge orifice plate.
Conical entrance orifice plate. Large and small orifice plate.
Eccentric orifice plate. Segmental orifice plate. Ring-joint orifice plate.
Screw type ring-joint orifice plate. Corner type plate.

Orifice Tap Series: (a) flange taps. radius or D-D/2 taps, vena contract taps. and pipe taps.
(b) corner tap-individual pressure tap and annular slot design.

Orifice Flange Series: 1. Raised Face (RF type) 2. Ring-Joint (RJ type) 3. Slip-on (SO type) 4.Thread type

PADDLE TYPE ORIFICE PLATE

Model: COP



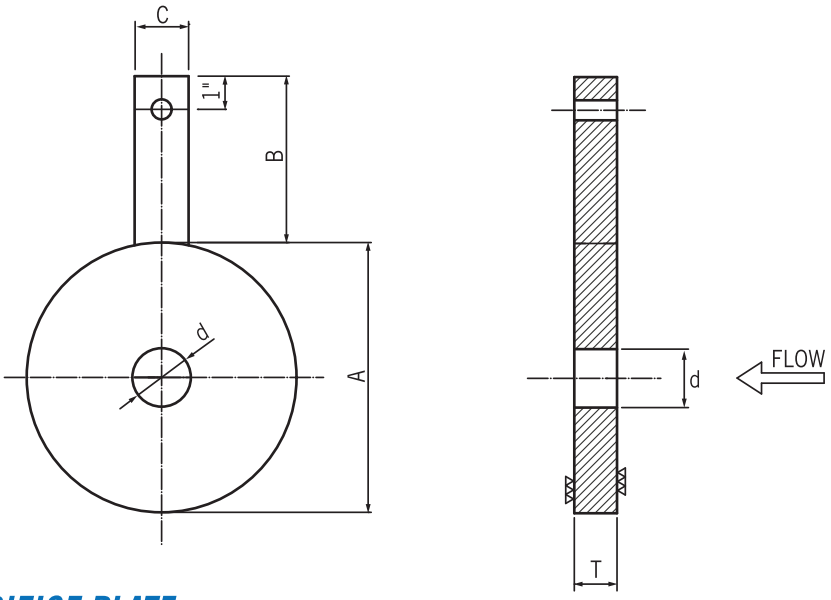
Concentric Orifice Plate

Quadrant Edge Orifice Plate

Conical Entrance Orifice Plate

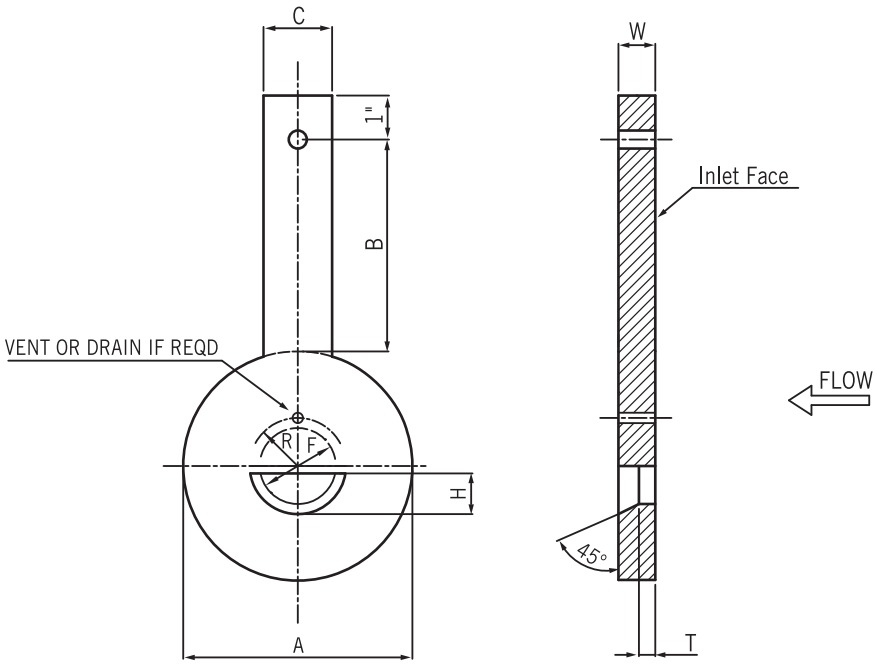
PADDLE TYPE RESTRICTION PLATE

Model: PRP



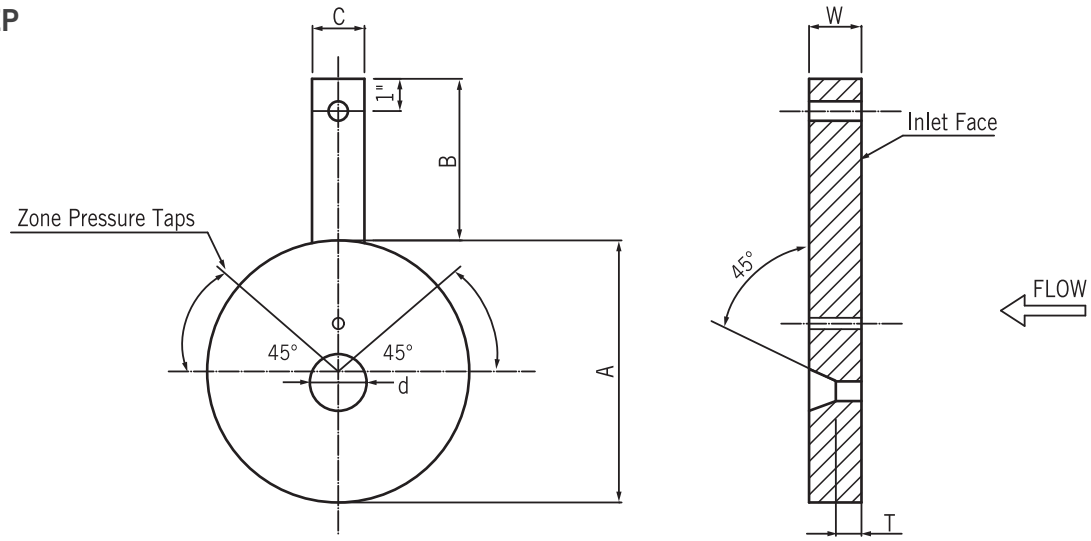
SEGMENTAL ORIFICE PLATE

Model: SOP



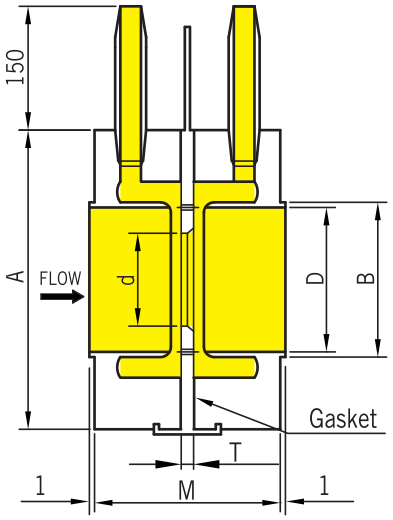
ECCENTRIC PLATE

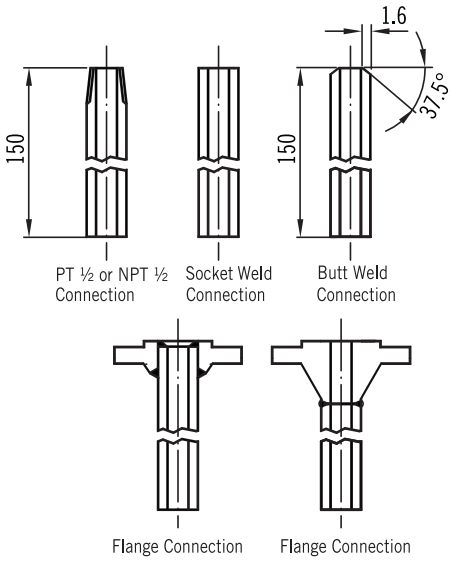
Model: EP



CORNER TYPE PLATE

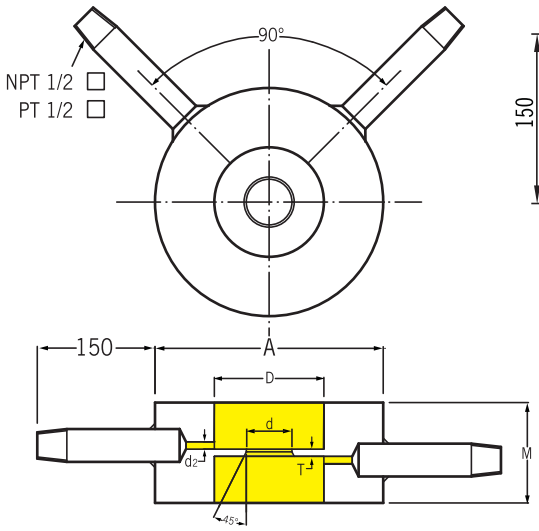
Model: CORNER TAP-1

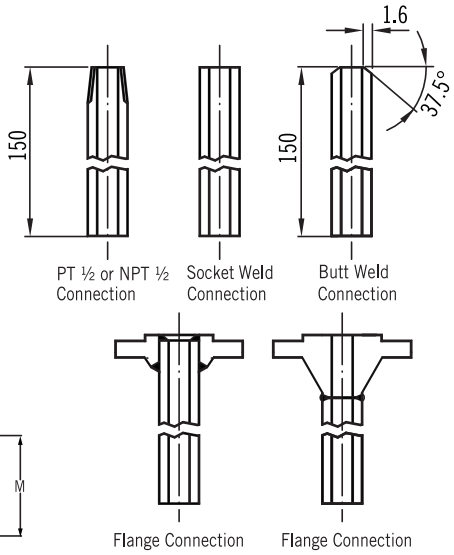




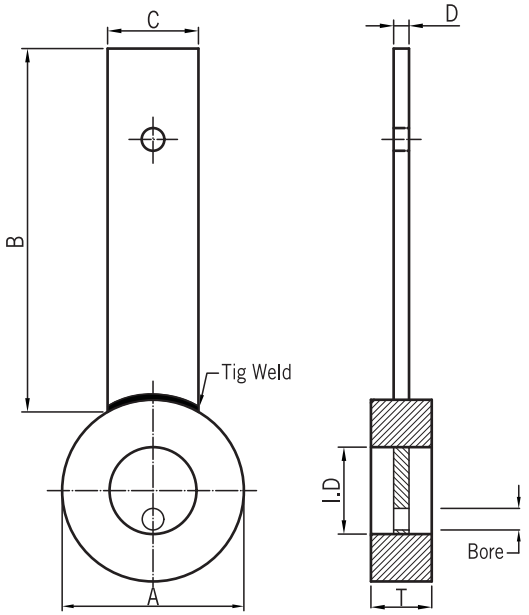
CORNER TYPE PLATE

Model: CORNER TAP-2

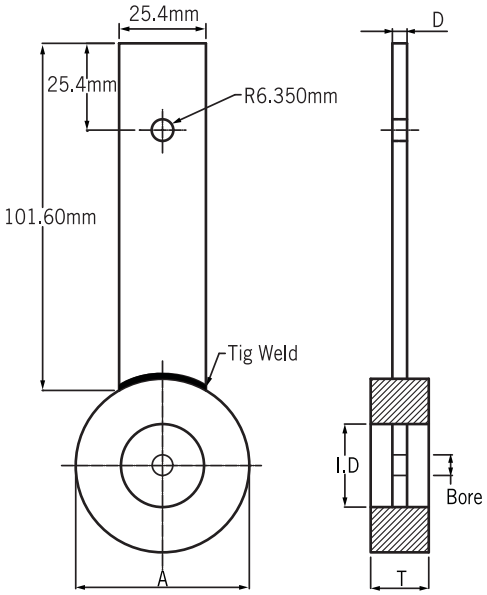




PADDLE TYPE LARGE AND SMALL ECCENTRIC PLATE

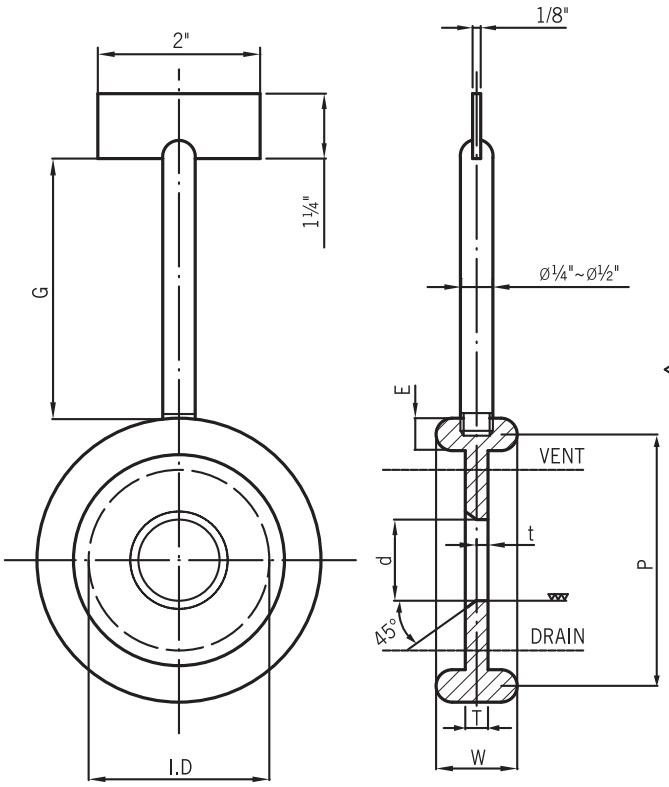


PADDLE TYPE LARGE AND SMALL CONCENTRIC PLATE

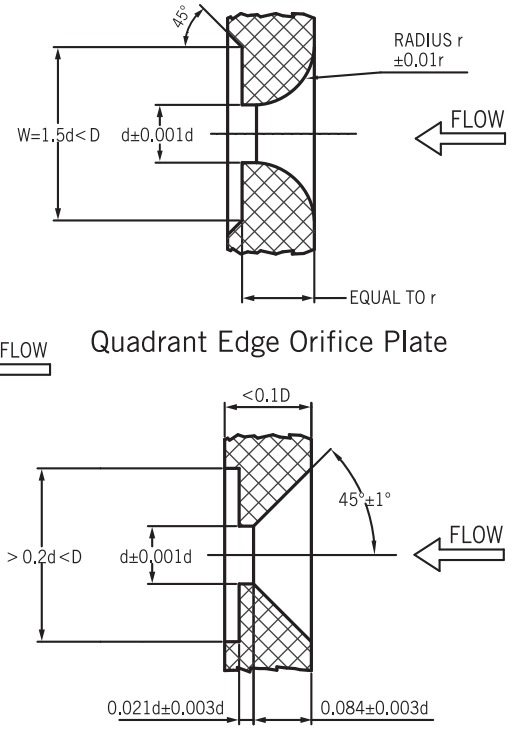


RING-JOINT ORIFICE PALTE

Model: RJO



Square Edged

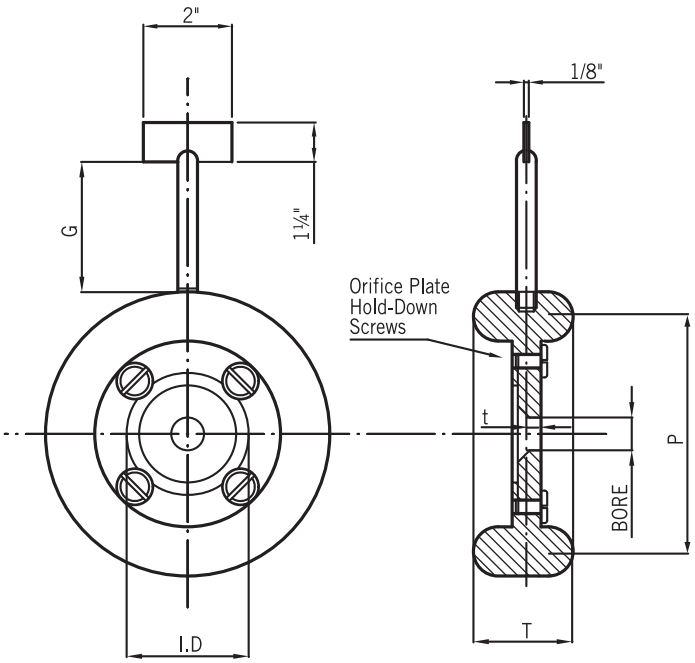


Quadrant Edge Orifice Plate

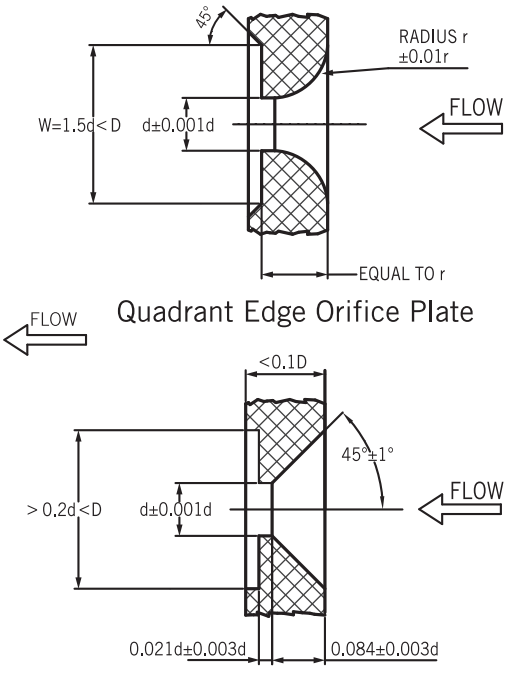
Conical Entrance Orifice Plate

SCREW TYPE RING-JOINT ORIFICE PLATE

Model: SRJO



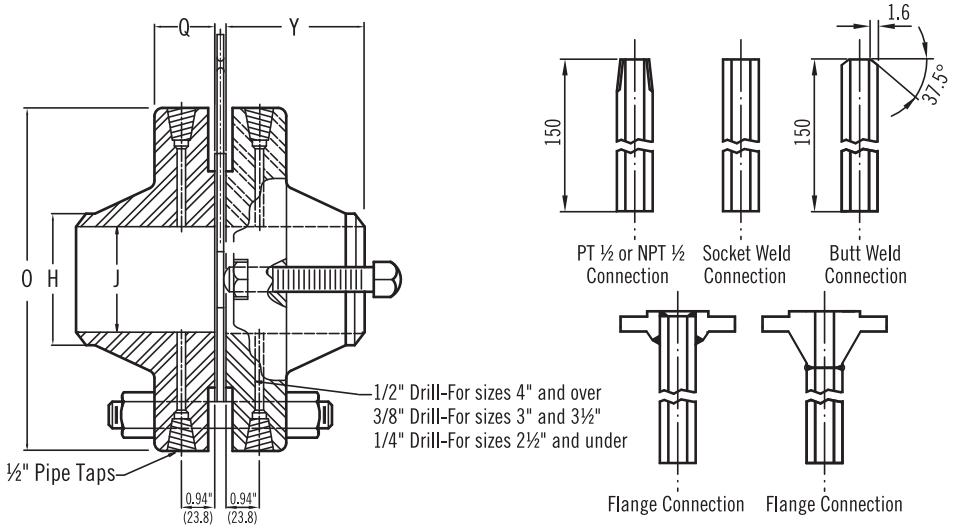
Square Edged



Quadrant Edge Orifice Plate

Conical Entrance Orifice Plate

300LB. -400LB. ANSI B16.36 FORGED STEEL WELDING NECK ORIFICE FLANGES



RAISED FACE (RF TYPE)

unit:mm

300 LB.														
NOMINAL PIPE SIZE	OUTSIDE DIAM OF FLANGE	THICKNESS OF FLANGES RAISED FACE	DIAM . OF HUB	LENGTH THROUGH HUB RAISED FACE	DIAM. OF BORE	DIAM. OF RAISED FACE	DEPTH OF JACK SCREW SLOT RAISED FACE	JACK SCREW SIZE	NUMBER OF BOLT HOLES	DIAM. OF HOLES	DIAM. OF BLOTS	LENGTH OF BOLTS RAISED FACE	BOLT CIRCLE	APPROX. WEIGHT UNION lb. RAISED FACE
	O	Q	H	Y	J			Two extra carbon steel bolts are furnished to be used as jack screws.						
1	123.8	38.1	33.5	82.6	26.7	71.4	9.5		4	19.1	15.9	101.6	88.9	8.2
1½	155.6	38.1	48.3	85.7	40.9	93.7	12.7		4	22.2	19.1	107.9	114.3	11.4
2	165.1	38.1	60.5	85.7	52.6	109.5	9.5		8	19.1	15.9	101.6	127.0	12.2
2½	190.5	38.1	73.2	88.9	62.7	128.6	12.7		8	22.2	19.1	107.9	149.2	15.8
3	209.6	38.1	88.9	88.9	78.0	147.6	12.7		8	22.2	19.1	107.9	168.3	19.5
4	254.0	38.1	114.3	92.7	102.4	179.4	12.7		8	22.2	19.1	107.9	200.0	29.9
6	317.5	38.1	168.4	100.0	154.2	247.7	12.7		12	22.2	19.1	107.9	269.8	48.1
8	381.0	41.1	219.2	111.1	203.0	304.8	15.9		12	25.4	22.2	107.9	330.2	69.0
10	444.5	47.8	273.1	117.5	254.5	358.8	19.1		16	28.6	25.4	139.7	387.4	98.0
12	520.7	50.8	323.9	130.2	304.8	419.1	22.2		16	31.8	28.6	139.7	450.9	148.5
14	584.2	53.8	355.6	142.9	366.6	482.6	22.2		20	31.8	28.6	152.4	514.4	203.3
16	647.7	57.2	406.1	146.1	387.4	536.6	25.4		20	34.9	31.8	165.1	571.5	270.5
18	711.2	60.5	457.2	158.8	438.2	593.7	25.4		24	34.9	31.8	165.1	628.6	336.4
20	774.7	63.5	508.0	161.9	489.0	650.9	25.4		24	34.9	31.8	177.8	685.8	402.6
24	914.4	69.9	609.6	168.3	593.1	771.5	31.8		24	42.3	38.1	190.5	812.8	595.2

400 LB.														
NOMINAL PIPE SIZE	OUTSIDE DIAM OF FLANGE	THICKNESS OF FLANGES RAISED FACE	DIAM . OF HUB	LENGTH THROUGH HUB RAISED FACE	DIAM. OF BORE	DIAM. OF RAISED FACE	DEPTH OF JACK SCREW SLOT RAISED FACE	JACK SCREW SIZE	NUMBER OF BOLT HOLES	DIAM. OF HOLES	DIAM. OF BLOTS	LENGTH OF BOLTS RAISED FACE	BOLT CIRCLE	APPROX. WEIGHT UNION lb. RAISED FACE
	O	Q	H	Y	J									
1	123.8	44.5	33.5	82.6	To be specified by purchaser.	71.4	9.5	47.6	4	19.1	15.9	120.7	88.9	8.2
1½	155.6	44.5	48.3	85.7		93.7	12.7	57.2	4	22.2	19.1	127.0	114.3	11.4
2	165.1	44.5	60.5	85.7		109.5	9.5	47.6	8	22.2	15.9	120.7	127.0	12.3
2½	191.5	44.5	73.2	88.9		128.6	12.7	57.2	8	22.2	19.1	127.0	149.2	15.9
3	209.6	44.5	88.9	88.9		147.6	12.7	57.2	8	22.2	19.1	127.0	168.3	19.5
4	254.0	44.5	114.3	88.9		157.2	6.4	57.2	8	25.4	22.2	139.7	200.0	37.2
6	317.5	47.5	168.4	103.2		215.9	12.7	88.9	12	25.4	22.2	158.8	269.9	61.7
8	381.0	54.1	219.2	117.5		269.5	12.7	88.9	12	28.6	25.4	171.5	330.2	96.7
10	444.5	60.2	273.1	123.8		323.9	12.7	101.6	16	31.8	28.6	193.7	387.4	140.3
12	520.7	63.5	323.9	136.5		381.0	12.7	101.6	16	34.9	31.8	203.2	450.9	194.8
14	584.2	67.1	355.6	149.2		412.8	12.7	108.3	20	34.9	31.8	209.6	514.4	251.5
16	647.7	69.9	406.0	152.4		469.9	12.7	108.3	20	38.1	34.9	222.3	571.5	320.0
18	711.2	72.9	457.2	165.1		533.4	12.7	44.3	24	38.1	34.9	234.9	628.7	391.8
20	774.7	76.2	508.0	168.3		584.2	12.7	120.7	24	41.3	38.1	247.7	685.8	483.9
24	914.4	82.6	609.6	174.6		692.2	12.7	127.0	24	47.6	44.5	279.4	812.8	706.0

600LB. -1500LB. ANSI B16.36 FORGED STEEL WELDING NECK ORIFICE FLANGES

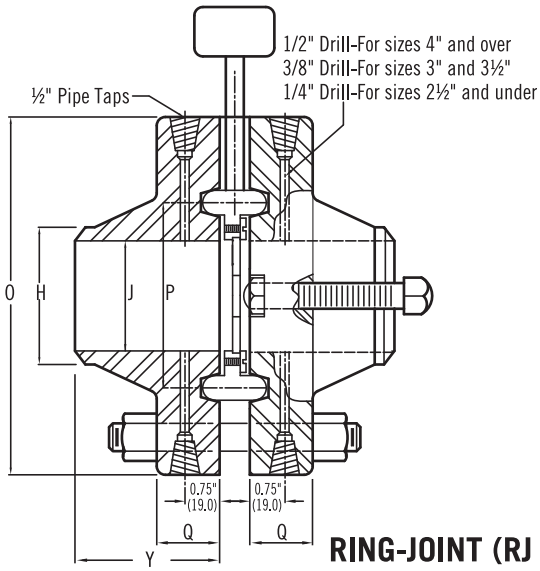
RAISED FACE (RF TYPE)

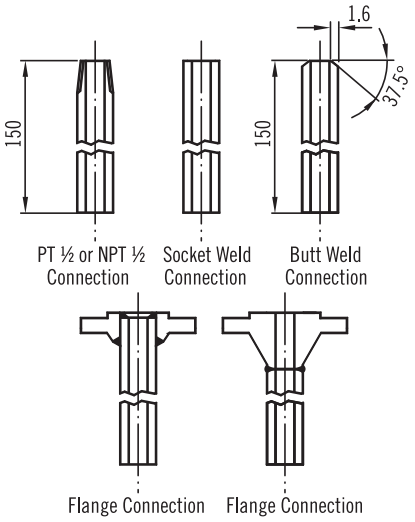
600 LB.														
NOMINAL PIPE SIZE	OUTSIDE DIAM OF FLANGE	THICKNESS OF FLANGES RAISED FACE	DIAM . OF HUB	LENGTH THROUGH HUB RAISED FACE	DIAM. OF BORE	DIAM. OF RAISED FACE	DEPTH OF JACK SCREW SLOT RAISED FACE	JACK SCREW SIZE	NUMBER OF BOLT HOLES	DIAM. OF BOLT HOLES	DIAM. OF STUD BLOTS	LENGTH OF STUD BOLTS RAISED FACE	BOLT CIRCLE	APPROX. WEIGHT UNION lb. RAISED FACE
	O	Q	H	Y	J									
1	123.8	44.5	33.5	82.6	To be specified by purchaser.	71.4	9.5	47.6	4	17.5	15.9	125	88.9	8.2
1½	155.6	44.5	48.3	85.7		93.7	12.7	57.2	4	20.6	19.1	135	114.3	11.4
2	165.1	44.5	60.5	85.7		109.5	9.5	47.6	8	17.5	15.9	125	127.0	12.3
2½	190.5	44.5	73.2	88.9		128.6	12.7	57.2	8	20.6	19.1	135	149.2	15.9
3	209.6	44.5	88.9	88.9		147.6	12.7	57.2	8	20.6	19.1	135	168.3	19.5
4	273.1	44.5	114.3	101.6		157.2	6.4	57.2	8	25.4	22.2	150	215.9	46.8
6	355.6	54.1	168.4	117.5		215.9	12.7	88.9	12	28.6	25.4	180	292.1	88.5
8	419.1	62.0	219.2	133.3		269.9	12.7	101.6	12	31.8	28.6	195	349.3	126.2
10	508.0	69.9	273.1	152.4		323.9	12.7	101.6	16	34.9	31.8	220	431.8	206.1
12	558.8	72.9	233.9	155.6		381.0	12.7	114.3	20	34.9	31.8	230	489.0	251.1
14	603.3	76.2	355.6	165.1		412.8	12.7	127.0	20	38.1	34.9	240	527.1	370.0
16	685.8	82.6	406.4	177.8		469.9	12.7	127.0	20	41.3	38.1	260	603.3	505.3
18	743.0	88.9	457.2	184.2		533.4	12.7	127.0	20	44.5	41.3	280	654.1	592.9
20	813.8	95.3	508.0	190.5		584.2	12.7	152.4	24	44.5	41.3	300	723.9	612.9
24	939.8	108.0	609.6	203.2		692.2	12.7	152.4	24	50.8	47.6	335	838.2	1044.2

900 LB. (for sizes 2-1/2 inch and smaller, use 1500LB.)														
NOMINAL PIPE SIZE	OUTSIDE DIAM OF FLANGE	THICKNESS OF FLANGES	DIAM . OF HUB	LENGTH THROUGH HUB	DIAM. OF BORE	DIAM. OF RAISED FACE	DEPTH OF JACK SCREW SLOT RAISED FACE	JACK SCREW SIZE	NUMBER OF BOLT HOLES	DIAM. OF BOLT HOLES	DIAM. OF STUD BLOTS	LENGTH OF STUD BOLTS RAISED FACE	BOLT CIRCLE	APPROX. WEIGHT UNION lb. RAISED FACE
	O	Q	H	Y	J									
3	241.3	44.5	88.9	101.6	To be specified by purchaser.	127.0	9.5	88.9	8	25.4	22.2	150	190.5	35.9
4	292.1	50.8	114.3	114.3		157.2	9.5	88.9	8	31.8	26.5	180	235.0	58.6
6	381.0	62.0	168.4	139.7		215.9	15.9	114.3	12	31.8	28.6	195	317.5	119.4
8	469.9	69.9	219.2	161.9		269.9	15.9	114.3	12	38.1	34.9	230	393.7	202.0
10	546.1	76.2	273.1	184.2		323.9	15.9	114.3	16	38.1	34.9	240	469.9	287.8
12	609.1	85.6	323.9	200.0		381.0	15.9	114.3	20	38.1	34.9	260	533.4	395.9

1500 LB.														
NOMINAL PIPE SIZE	OUTSIDE DIAM OF FLANGE	THICKNESS OF FLANGES RAISED FACE	DIAM . OF HUB	LENGTH THROUGH HUB RAISED FACE	DIAM. OF BORE	DIAM. OF RAISED FACE	DEPTH OF JACK SCREW SLOT RAISED FACE	JACK SCREW SIZE	NUMBER OF BOLT HOLES	DIAM. OF BOLT HOLES	DIAM. OF STUD BLOTS	LENGTH OF STUD BOLTS RAISED FACE	BOLT CIRCLE	APPROX. WEIGHT UNION lb. RAISED FACE
	O	Q	H	Y	J									
1	149.2	44.5	33.5	73.1	To be specified by purchaser.	50.8	6.4	76.2	4	25.4	22.2	150	101.6	11.8
1½	177.8	44.5	48.3	82.6		73.1	6.4	76.2	4	28.6	25.4	160	123.8	20.4
2	215.9	44.5	60.5	101.6		92.1	6.4	76.2	8	25.4	22.2	150	165.1	29.5
2½	244.5	47.5	73.2	104.8		104.8	6.4	76.2	8	28.6	25.4	165	190.5	44.5
3	266.7	54.1	88.9	117.5		127.0	9.6	114.3	8	31.8	28.6	185	203.2	55.8
4	311.2	60.2	114.3	123.8		157.2	9.6	114.3	8	34.9	31.8	205	241.3	82.6
6	393.7	88.9	168.4	171.5		215.9	15.9	165.1	12	38.1	34.9	265	317.5	184.8
8	482.6	98.3	219.2	212.7		269.9	15.9	165.1	12	44.5	41.3	300	393.7	306.5
10	584.2	114.3	273.1	254.0		323.9	15.9	165.1	12	50.8	47.6	345	482.6	498.9
12	673.1	130.3	323.9	282.6		381.0	15.9	165.1	16	54.0	50.8	380	571.5	774.5
14	749.3	139.7	355.6	298.5		412.8	15.9	170.0	16	60.5	57.2	415	635.0	973.0
16	825.5	152.5	406.4	311.2		469.9	15.9	185.0	16	66.7	63.5	450	704.9	1260
18	914.4	168.4	457.2	327.2		533.4	15.9	198.5	16	73.0	71.1	500	774.7	1695
20	984.3	184.2	508.0	355.6		584.2	15.9	215.0	16	79.4	76.2	545	831.9	2064
24	1168.4	209.4	609.6	406.4		692.2	15.9	240.0	16	92.1	88.9	620	990.6	3305

300LB. -400LB. ANSI B16.36 FORGED STEEL WELDING NECK ORIFICE FLANGES





RING-JOINT (RJ TYPE)

unit:mm

300 LB.														
NOMINAL PIPE SIZE	OUTSIDE DIAM OF FLANGE	THICKNESS OF FLANGES RING JOINT	DIAM. OF HUB	LENGTH THROUGH HUB RING JOINT	DIAM. OF BORE	DIAM. OF PITCH	DEPTH OF JACK SCREW SLOT RING JOINT	JACK SCREW SIZE	NUMBER OF BOLT HOLES	DIAM. OF HOLES	DIAM. OF BLOTS	LENGTH OF BOLTS RING JOINT	BOLT CIRCLE	APPROX. WEIGHT UNION lb. RING JOINT
	O	Q	H	Y	J	P								
1	123.8	38.1	33.5	76.2	26.7	50.8	6.4	Two extra carbon steel bolts are furnished to be used as jack screws.	4	27.0	15.9	139.2	88.9	6.8
1½	155.6	38.1	48.3	79.4	40.9	68.3	6.4		4	30.2	19.1	149.2	114.3	11.4
2	165.1	38.1	60.5	79.4	52.6	82.6	6.4		8	27.0	15.9	138.2	127.0	13.6
2½	190.5	38.1	73.2	82.6	62.7	101.6	6.4		8	30.2	19.1	148.2	149.2	20.8
3	209.6	38.1	88.9	82.6	78.0	123.8	6.4		8	30.2	19.1	148.2	168.3	25.4
4	254.0	38.1	114.3	85.7	102.4	149.2	6.4		8	30.2	19.1	148.2	200.0	29.5
6	317.5	38.1	168.4	98.4	154.2	134.9	6.4		12	22.2	19.1	148.2	269.8	48.6
8	381.0	41.1	219.2	111.1	203.0	269.9	9.5		12	25.4	22.2	158.2	330.2	76.7
10	444.5	47.8	273.1	117.5	254.5	323.9	12.7		16	28.6	25.4	178.2	387.4	113.5
12	520.7	50.8	323.9	130.2	304.8	381.0	15.9		16	31.8	28.6	193.2	450.9	165.7
14	584.2	53.8	355.6	142.9	366.6	419.1	15.9		20	31.8	28.6	198.2	514.4	222.4
16	647.7	57.2	406.1	146.1	387.4	469.9	19.1		20	34.9	31.8	208.2	571.5	290.6
18	711.2	60.5	457.2	158.8	438.2	533.0	19.1		24	34.9	31.8	218.2	628.6	356.4
20	774.7	63.5	508.0	161.9	489.0	584.2	19.1		24	34.9	31.8	227.0	685.8	435.8
24	914.4	69.9	609.6	168.3	593.1	692.2	25.4		24	42.3	38.1	256.8	812.8	640.1

400 LB.														
NOMINAL PIPE SIZE	OUTSIDE DIAM OF FLANGE	THICKNESS OF FLANGES RING JOINT	DIAM. OF HUB	LENGTH THROUGH HUB RING JOINT	DIAM. OF BORE	DIAM. OF PITCH	DEPTH OF JACK SCREW SLOT RING JOINT	JACK SCREW SIZE	NUM-BER OF BOLT	DIAM. OF HOLES	DIAM. OF BLOTS	LENGTH OF BOLTS RING JOINT	BOLT CIRCLE	APPROX. WEIGHT UNION lb. RING JOINT
	O	Q	H	Y	J	P								
1	123.8	44.5	33.5	82.6	To be specified by purchaser.	50.8	6.4	63.5	4	27.0	15.9	---	88.9	6.8
1½	155.6	44.5	48.3	85.7		68.3	6.4	76.2	4	30.2	19.1	---	114.3	11.4
2	165.1	46.0	60.5	85.7		82.6	6.4	63.5	8	30.2	15.9	---	127.0	13.6
2½	191.5	46.0	73.2	88.9		101.6	6.4	76.2	8	30.2	19.1	---	149.2	20.9
3	209.6	46.0	88.9	88.9		123.8	6.4	76.2	8	30.2	19.1	---	168.3	25.4
4	254.0	46.0	114.3	88.9		149.2	15.9	76.2	8	30.2	22.2	152.4	200.0	40.9
6	317.5	49.1	168.4	103.2		134.9	22.2	101.6	12	25.4	22.2	165.1	269.9	65.8
8	381.0	55.7	219.2	117.5		269.9	22.2	114.3	12	28.6	25.4	184.2	330.2	99.9
10	444.5	61.8	273.1	123.8		323.9	22.2	114.3	16	31.8	28.6	203.2	387.4	147.6
12	520.7	65.1	323.9	136.5		381.0	22.2	127.0	16	34.9	31.8	216.0	450.9	204.3
14	584.2	68.6	355.6	149.2		419.1	22.2	127.0	20	34.9	31.8	228.6	514.4	267.9
16	647.7	71.4	406.0	152.4		469.9	22.2	127.0	20	38.1	34.9	235.0	571.5	338.2
18	711.2	74.5	457.2	165.1		533.0	22.2	127.0	24	38.1	34.9	241.3	628.7	413.1
20	774.7	79.4	508.0	168.3		584.2	22.2	139.7	24	41.3	38.1	260.4	685.8	526.6
24	914.4	87.3	609.6	174.6		690.2	22.2	152.0	24	47.6	44.5	292.1	812.8	755.9

600LB. -1500LB. ANSI B16.36 FORGED STEEL WELDING NECK ORIFICE FLANGES

RING-JOINT (RJ TYPE)

unit:mm

600 LB.

NOMINAL PIPE SIZE	OUTSIDE DIAM OF FLANGE	THICKNESS OF FLANGES	DIAM. OF HUB	LENGTH THROUGH HUB	DIAM. OF BORE	DIAM. OF PITCH	DEPTH OF JACK SCREW SLOT	JACK SCREW SIZE	NUM-BER OF BOLT HOLES	DIAM. OF BOLT HOLES	DIAM. OF STUD BLOTS	LENGTH OF STUD BOLTS	BOLT CIRCLE	APPROX. WEIGHT UNION lb.
		RING JOINT		RING JOINT			RING JOINT					RING JOINT		RING JOINT
	O	Q	H	Y	J	P								
1	123.8	44.5	33.5	76.2	To be specified by purchaser.	50.8	12.7	55.6	4	19.1	15.9	140	88.9	6.8
1½	155.6	44.5	48.3	79.4		68.3	12.7	55.6	4	22.2	19.1	140	114.3	11.4
2	165.1	46.0	60.5	79.4		82.6	12.7	63.5	8	19.1	15.9	140	127.0	13.6
2½	190.5	46.0	73.2	82.6		101.6	12.7	63.5	8	22.2	19.1	145	149.2	20.9
3	209.6	46.0	88.9	82.6		123.8	15.9	76.2	8	22.2	19.1	145	168.3	25.4
4	273.1	46.0	114.3	101.6		149.2	15.9	76.2	8	25.4	22.2	165	215.9	44.9
6	355.6	55.7	168.4	117.5		211.1	22.2	114.3	12	28.6	25.4	190	292.1	89.4
8	419.1	63.6	219.2	133.3		269.9	22.2	120.7	12	108.0	28.6	210	349.3	128.9
10	508.0	71.4	273.1	152.4		323.9	22.2	127.0	16	34.9	31.8	235	431.8	214.3
12	558.8	74.5	233.9	155.6		381.0	22.2	127.0	20	34.9	31.8	240	489.0	259.2
14	603.3	77.8	355.6	165.1		419.1	22.2	139.7	20	38.1	34.9	255	527.1	377.0
16	685.8	84.1	406.4	177.8		469.9	22.2	139.7	20	41.3	38.1	275	603.3	515.3
18	743.0	90.5	457.2	184.2		533.4	22.2	146.1	20	44.5	41.3	290	654.1	603.8
20	813.8	98.4	508.0	190.5		584.2	22.2	158.8	24	44.5	41.3	320	723.9	631.1
24	939.8	112.7	609.6	203.2		692.2	22.2	177.8	24	50.8	47.6	350	838.2	1078.3

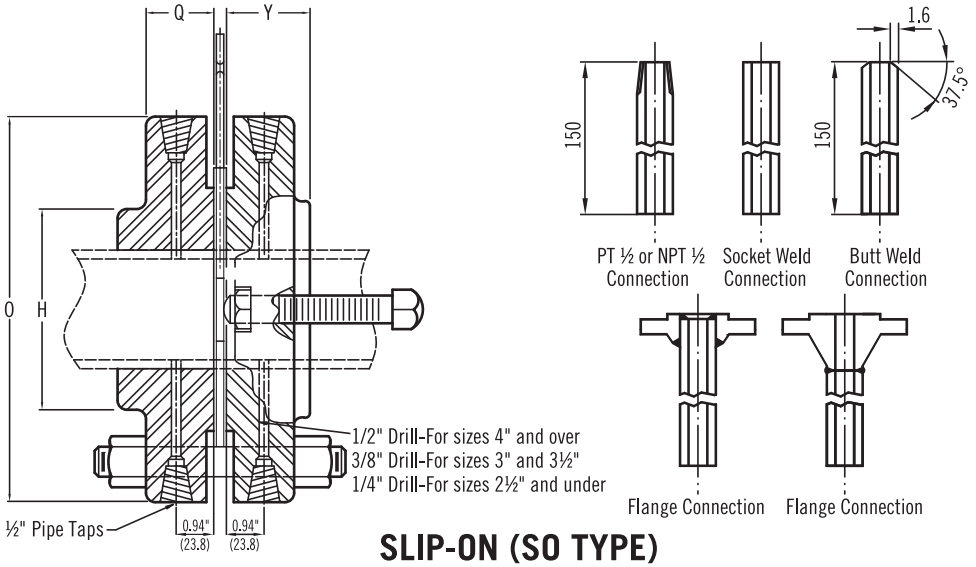
900 LB. (for sizes 2-1/2 inch and smaller, use 1500LB.)

NOMINAL PIPE SIZE	OUTSIDE DIAM OF FLANGE	THICKNESS OF FLANGES	DIAM. OF HUB	LENGTH THROUGH HUB	DIAM. OF BORE	DIAM. OF PITCH	DEPTH OF JACK SCREW SLOT	JACK SCREW SIZE	NUMBER OF BOLT HOLES	DIAM. OF BOLT HOLES	DIAM. OF STUD BLOTS	LENGTH OF STUD BOLTS	BOLT CIRCLE	APPROX. WEIGHT UNION lb.
							RING JOINT					RING JOINT		RING JOINT
	O	Q	H	Y	J	P								
3	241.3	46.0	88.9	101.6	To be specified by purchaser.	123.8	15.9	120.7	8	25.4	22.2	165	190.5	38.6
4	292.1	52.4	114.3	114.3		149.2	15.9	85.7	8	31.8	26.5	190	235.0	63.6
6	381.0	63.6	168.4	139.7		211.1	22.2	120.7	12	31.8	28.6	210	317.5	127.1
8	469.9	71.4	219.2	161.9		269.9	22.2	127.0	12	38.1	34.9	240	393.7	215.7
10	546.1	77.8	273.1	184.2		323.9	22.2	133.3	16	38.1	34.9	255	469.9	306.5
12	609.1	87.2	323.9	200.0		381.0	22.2	139.7	20	38.1	34.9	275	533.4	422.2

1500 LB.

NOMINAL PIPE SIZE	OUTSIDE DIAM OF FLANGE	THICKNESS OF FLANGES	DIAM. OF HUB	LENGTH THROUGH HUB	DIAM. OF BORE	DIAM. OF PITCH	DEPTH OF JACK SCREW SLOT	JACK SCREW SIZE	NUMBER OF BOLT HOLES	DIAM. OF BOLT HOLES	DIAM. OF STUD BLOTS	LENGTH OF STUD BOLTS	BOLT CIRCLE	APPROX. WEIGHT UNION lb.
		RING JOINT		RING JOINT			RING JOINT					RING JOINT		RING JOINT
	O	Q	H	Y	J	P								
1	149.2	44.5	33.5	76.2	To be specified by purchaser.	50.8	12.7	55.6	4	25.4	22.2	160	101.6	12.3
1½	177.8	44.5	48.3	82.6		68.3	12.7	55.6	4	28.6	25.4	165	123.8	18.6
2	215.9	46.0	60.5	101.6		95.3	12.7	63.5	8	25.4	22.2	165	165.1	32.2
2½	244.5	49.1	73.2	104.8		108.0	12.7	63.5	8	28.6	25.4	180	190.5	45.4
3	266.7	55.7	88.9	117.5		127.0	15.9	85.7	8	31.8	28.6	185	203.2	59.5
4	311.2	61.8	114.3	123.8		157.2	15.9	85.7	8	34.9	31.8	215	241.3	90.8
6	393.7	92.1	168.4	171.5		215.9	22.2	152.4	12	38.1	34.9	280	317.5	197.5
8	482.6	103.1	219.2	212.7		269.9	22.2	165.1	12	44.5	41.3	310	393.7	324.6
10	584.2	119.1	273.1	254.0		323.9	22.2	177.8	12	50.8	47.6	355	482.6	528.9
12	673.1	138.2	323.9	282.6		381.0	22.2	203.2	16	54.0	50.8	400	571.5	812.7

300LB. -1500LB. ANSI B16.36 FORGED STEEL SLIP-ON ORIFICE FLANGES



SLIP-ON (SO TYPE)

unit:mm

300 LB.															
NOMINAL PIPE SIZE	OUTSIDE DIAM OF FLANGE	THICKNESS OF FLANGES	DIAM . OF HUB	LENGTH THROUGH HUB	DIAM. OF RAISED FACE SLIP-ON	DIAM. OF BORE	HEIGHT TO COUNTER BORE	FACE COUNTER BORE HEIGHT	DEPTH OF JACK SCREW SLOT	NUM-BER OF BOLT HOLES	DIAM. OF BOLT HOLES	DIAM. OF BLOTS	LENGTH OF BOLTS	BOLT CIRCLE	APPROX. WEIGHT UNIT lb.
	O	Q	H	Y			F	G							
1	123.8	38.1	54.0	47.6	71.4	34.5	38.1	20.6	9.5	4	17.5	15.9	125	88.9	6.8
1½	155.6	38.1	44.5	47.6	93.7	49.5	38.1	15.9	12.7	4	20.6	19.1	135	114.3	8.6
2	165.1	38.1	84.1	49.2	109.5	62.0	38.1	12.7	9.5	8	17.5	15.9	125	127.0	10.4
2½	190.5	38.1	100.0	50.8	128.6	76.7	44.5	15.9	12.7	8	20.6	19.1	135	149.2	14.1
3	210.0	38.1	117.5	52.4	147.6	90.7	44.5	12.7	12.7	8	20.6	19.1	135	168.3	17.7
4	254.0	38.1	146.1	54.0	179.4	116.1	44.5	11.1	12.7	8	20.6	19.1	135	200.0	27.2
6	317.5	38.1	206.4	54.0	247.7	170.7	44.5	6.4	12.7	12	22.2	19.1	135	270.0	45.4
8	381.0	41.1	260.4	61.9	304.8	221.5	50.8	-	15.9	12	25.4	22.2	145	330.2	60.8
10	444.5	47.8	320.7	66.7	358.8	276.4	55.6	-	19.1	16	28.6	25.4	165	387.4	89.0
12	520.7	50.8	374.7	73.0	419.1	327.2	60.3	-	22.2	16	31.8	28.6	180	450.9	128.0
14	584.2	53.8	425.5	76.2	482.6	359.2	63.5	-	22.2	20	31.8	28.6	185	514.4	172.5
16	647.7	57.2	482.6	82.6	536.6	410.5	68.3	-	25.4	20	34.9	31.8	195	571.5	281.5
18	711.2	60.5	533.4	88.9	593.7	461.8	69.9	-	25.4	24	34.9	31.8	205	628.6	313.7
20	774.7	63.5	587.4	95.3	650.9	513.1	73.0	-	25.4	24	34.9	31.8	215	685.8	354.6
24	914.4	69.9	701.7	106.4	692.2	616.0	82.6	-	31.8	24	41.3	38.1	240	812.8	545.3

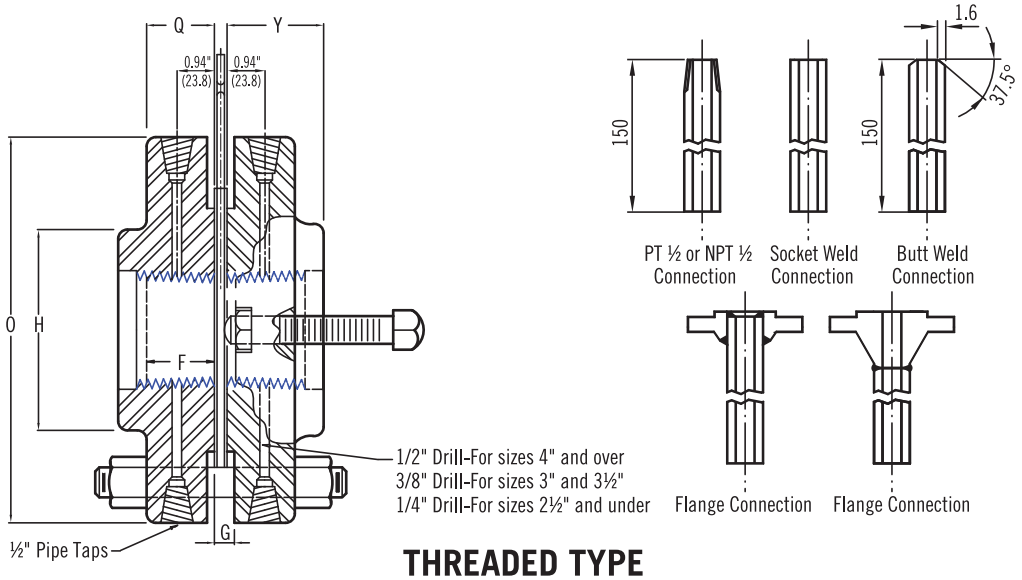
400 LB. (sizes 3 inch and smaller furnished same as 300LB. except with stud bolts long enough for extra nut.)														
NOMINAL PIPE SIZE	OUTSIDE DIAM OF FLANGE	THICKNESS OF FLANGES	DIAM . OF HUB	LENGTH THROUGH HUB	HEIGHT TO COUNTER BORE	DIAM. OF TO RAISED FACE	DEPTH OF JACK SCREW SLOT	JACK SCREW SIZE	NUMBER OF BOLT HOLES	DIAM. OF BOLT HOLES	DIAM. OF BLOTS	LENGTH OF BOLTS STUD	BOLT CIRCLE	APPROX. WEIGHT UNIT lb.
	O	Q	H	Y	F									
4	254.0	44.5	146.1	50.8	42.9	157.2	6.4	19.1x76.2	203.2	25.4	22.2	139.7	200.0	29.0
6	317.5	47.5	206.4	57.2	52.4	215.9	9.5	25.4x88.9	304.8	25.4	22.2	158.8	269.9	50.0
8	381.0	54.1	260.4	68.3	57.2	269.9	9.5	25.4x88.9	304.8	28.6	25.4	171.5	330.2	76.7
10	444.5	60.2	320.7	73.0	61.9	323.9	12.7	25.4x101.6	406.4	31.8	28.6	190.5	387.4	108.5
12	520.7	63.5	374.7	79.4	66.7	381.0	15.9	25.4x101.6	406.4	34.9	31.8	203.2	450.9	151.2

600 LB. (sizes 3 inch and smaller furnished same as 300LB. except with stud bolts long enough for extra nut.)														
NOMINAL PIPE SIZE	OUTSIDE DIAM OF FLANGE	THICKNESS OF FLANGES	DIAM . OF HUB	LENGTH THROUGH HUB	HEIGHT TO COUNTER BORE	DIAM. OF TO RAISED FACE	DEPTH OF JACK SCREW SLOT	JACK SCREW SIZE	NUMBER OF BOLT HOLES	DIAM. OF BOLT HOLES	DIAM. OF BLOTS STUD	LENGTH OF BOLTS STUD	BOLT CIRCLE	APPROX. WEIGHT UNIT lb.
	O	Q	H	Y	F									
4	273.1	44.5	152.4	54.0	47.6	157.2	6.4	19.1x76.2	8	25.4	22.2	150	215.9	40.4
6	355.6	54.1	222.3	66.7	57.2	215.9	12.7	25.4x88.9	12	28.6	25.4	180	292.1	87.6
8	419.1	62.0	273.1	76.2	63.5	269.9	12.7	25.4x101.6	12	31.8	28.6	195	349.3	124.4
10	508.0	69.9	342.9	85.7	71.4	323.9	12.7	25.4x101.6	16	34.9	31.8	220	431.8	195.0
12	558.8	72.9	400.1	92.1	76.2	381.0	12.7	25.4x114.3	20	34.9	31.8	230	489.0	241.1

900 LB.														
NOMINAL PIPE SIZE	OUTSIDE DIAM OF FLANGE	THICKNESS OF FLANGES	DIAM . OF HUB	LENGTH THROUGH HUB	HEIGHT TO COUNTER BORE	DIAM. OF TO RAISED FACE	DEPTH OF JACK SCREW SLOT	JACK SCREW SIZE	NUMBER OF BOLT HOLES	DIAM. OF BOLT HOLES	DIAM. OF BLOTS STUD	LENGTH OF BOLTS STUD	BOLT CIRCLE	APPROX. WEIGHT UNIT lb.
	O	Q	H	Y	F									
3	241.3	44.5	127.0	54.0	47.6	127.0	6.4	19.1x88.9	8	25.4	22.2	150	190.0	35.0
4	292.1	50.8	158.8	69.9	54.0	157.2	6.4	19.1x88.9	8	31.8	28.6	180	235.0	60.4
6	381.0	62.0	235.0	85.7	63.5	215.9	12.7	25.4x114.3	12	31.8	28.6	195	317.5	117.6
8	469.9	69.9	298.5	101.6	69.9	269.9	12.7	25.4x114.3	12	38.1	34.9	230	393.7	188.4
10	546.1	76.2	368.3	108.0	77.8	323.9	12.7	25.4x114.3	16	38.1	34.9	240	470.0	267.0
12	609.6	85.6	419.1	117.5	82.6	381.0	12.7	25.4x114.3	20	38.1	34.9	260	533.4	354.0

1500 LB.														
NOMINAL PIPE SIZE	OUTSIDE DIAM OF FLANGE	THICKNESS OF FLANGES	DIAM . OF HUB	LENGTH THROUGH HUB	HEIGHT TO COUNTER BORE	DIAM. OF TO RAISED FACE	DEPTH OF JACK SCREW SLOT	JACK SCREW SIZE	NUMBER OF BOLT HOLES	DIAM. OF BOLT HOLES	DIAM. OF BLOTS STUD	LENGTH OF BOLTS STUD	BOLT CIRCLE	APPROX. WEIGHT UNIT lb.
	O	Q	H	Y	F									
1	149.2	44.5	52.4	47.6	38.1	50.8	6.4	15.9x76.2	4	25.4	22.2	150	101.6	11.8
1½	177.8	44.5	69.9	47.6	38.1	73.0	6.4	15.9x76.2	4	28.6	25.4	160	123.8	20.4
2	215.9	44.5	104.8	57.2	44.5	92.1	6.4	15.9x76.2	8	25.4	22.2	150	165.1	29.5
2½	244.5	47.5	123.8	63.5	54.0	104.8	6.4	15.9x76.2	8	28.6	25.4	165	190.5	44.5
3	266.7	54.1	133.4	73.0	57.2	127.0	6.4	19.1x114.3	8	31.8	28.6	185	203.2	55.8
4	311.2	60.2	161.9	90.5	63.5	157.2	6.4	19.1x114.3	8	34.9	31.8	205	241.3	82.6
6	393.7	88.9	228.6	119.1	76.2	215.9	12.7	25.4x165.1	12	38.1	34.9	265	317.5	184.8
8	482.6	98.3	292.1	142.9	82.6	269.9	12.7	25.4x165.1	12	44.5	34.9	300	393.7	292.8
10	584.2	114.3	368.3	158.8	90.5	323.9	12.7	25.4x165.1	12	50.8	47.6	345	482.6	482.6
12	673.1	130.3	450.9	181.0	98.4	381.0	12.7	25.4x165.1	16	54.0	50.8	380	571.5	753.6

300LB. ANSI B16.36 FORGED STEEL THREAD ORIFICE FLANGES



THREADED TYPE

unit:mm

300 LB.															
NOMINAL PIPE SIZE	OUTSIDE DIAM OF FLANGE	THICK-NESS OF FLANGES	DIAM . OF HUB	LENGTH THROUGH HUB	DIAM. OF TO RAISED FACE THREADED	DIAM. OF BORE	HEIGHT TO COUNTER BORE	FACE COUNTER BORE HEIGHT	DEPTH OF JACK SCREW SLOT	NUM-BER OF BOLT HOLES	DIAM. OF BOLT HOLES	DIAM. OF BLOTS	LENGTH OF BOLTS	BOLT CIRCLE	APPROX. WEIGHT UNIT lb.
	O	Q	H	Y			F	G							
1	123.8	38.1	54.0	47.6	71.4	34.5	38.1	20.6	9.5	4	17.5	15.9	125	88.9	6.8
1½	155.6	38.1	44.5	47.6	93.7	49.5	38.1	15.9	12.7	4	20.6	19.1	135	114.3	8.6
2	165.1	38.1	84.1	49.2	109.5	62.0	38.1	12.7	9.5	8	17.5	15.9	125	127.0	10.4
2½	190.5	38.1	100.0	50.8	128.6	76.7	44.5	15.9	12.7	8	20.6	19.1	135	149.2	14.1
3	210.0	38.1	117.5	52.4	147.6	90.7	44.5	12.7	12.7	8	20.6	19.1	135	168.3	17.7
4	254.0	38.1	146.1	54.0	179.4	116.1	44.5	11.1	12.7	8	20.6	19.1	135	200.0	27.2

Ordering Information

Individual Specification				Requirement		Requirement	
1	Tag No.	With S.S. Tag Nameplate					
2	Maker						
3	Model No.						
4	Quantity						
5	P&ID No.						
6	Line No. / Vessel No.						
7	Line Size	Sched No.					
8	Accuracy						
9	FCFC s Painting or Makers Painting STD						
Orifice Plates							
10	Plate Type						
11	Applied Code or Standard						
12	Plate Material						
13	Plate Thickness		(mm)				
14	Bore / Diameter Ratio		(d/D)				
15	Drain Hole	Vent Hole					
Flange & Ring							
16	Pipe Material						
17	Type (Flange or Ring)						
18	Flange / Ring Type						
19	Flange Conn. & Rating						
20	Flange / Ring Material						
21	Gasket Material						
22	Tap Type						
23	Tap Conn.						
24	Tap Material						
Accessories							
25	Bolts & Nuts	Jack Screws					
26	Drain Plugs	Material					
27	Tap Valve (½" x 2pc)	Material					
28	Others Material (Bolts & Nuts, ...)						
Operating Condition							
29	Fluid & State						
30	Flow Rate: Norm.	Max.	(T/Hr)				
31	Press. Norm.	Max.	(kg/cm^2G)				
32	Temp. Norm.	Max.	(°C)				
33	Specific Gravity Density						
34	Molecular Weight						
35	Viscosity Range		(cp)				
36	Compression Factor						
37	Ratio of Spec. Heat		(Cp/Cv)				
38	Measuring Range						
39	Diff. Pressure Range						

* Please fill in above block on request.

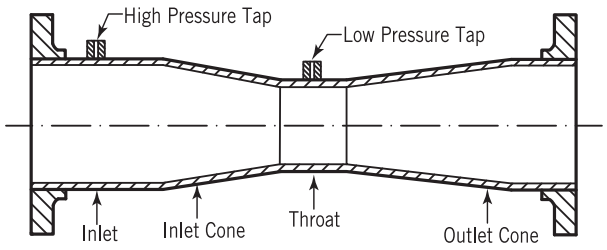
CLASSICAL VENTURI TUBES

The classical venturi tube consists of a straight inlet section of the same diameter as the pipe and in which the high pressure tap is located a converging conical inlet section in which the cross section of the stream decreases and the velocity increases with a consequent increase of velocity head and decrese of pressure head.
The pressure taps are located one-quarter to one-half pipe diameter upstream of the inlet cone and at the middle of the throat section.

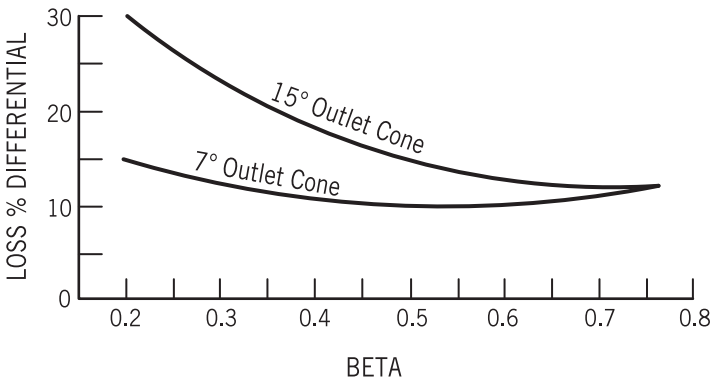
Technical Data

- **ISO-5167-4 standard**
- **Beta ratio β :** 0.3~0.75
- **Minimum recommended reynold number:** 75,000
- **Minimum recommended pipe I.D:** 3" (75mm)
- **Size:** 3" ~ 42" available
- **Material:** A105, steel, stainless steel, available. Special material on request.

Classic Venturi Tube

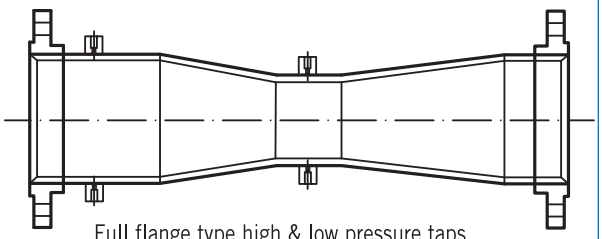


Venturi Pressure Loss



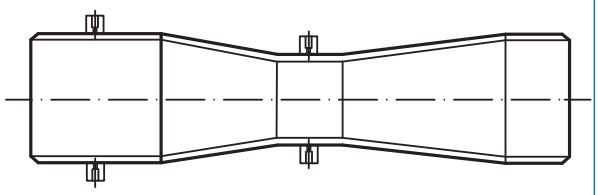
Representative Schematic

Model VTF



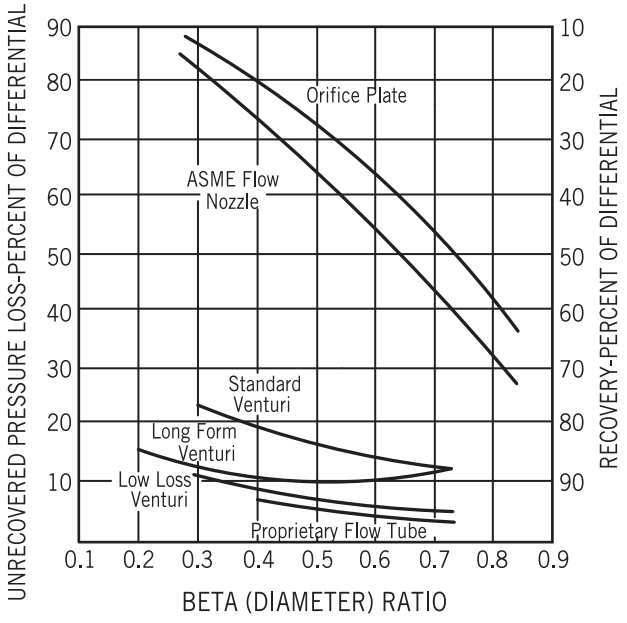
Full flange type high & low pressure taps

Model VTW



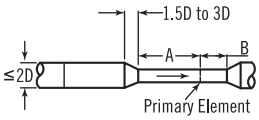
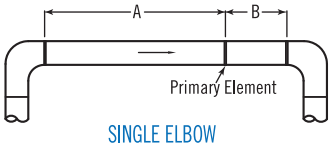
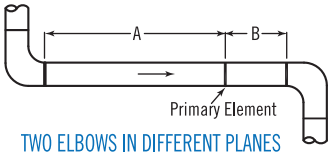
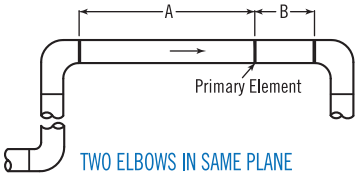
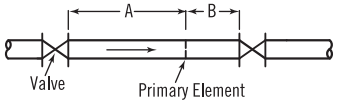
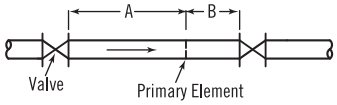
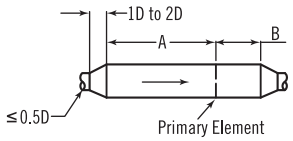
Weld-In type high & low pressure taps

Pressure Loss Curves



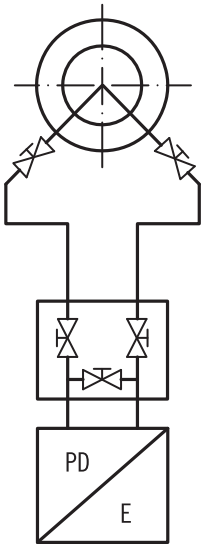
ISO Standard 5167 Required

Straight Lengths for Orifice Nozzle ISA Venturi Nozzle and Venturi in Multiples of Pipe Diameter D

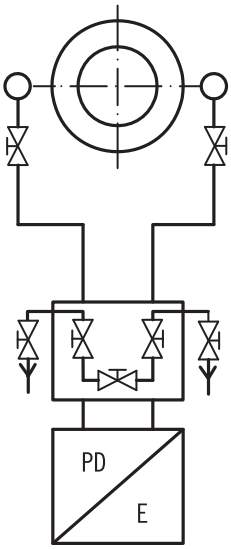
Upstream disturbance	Dimension	Device	β 0.2	0.3	0.4	0.5	0.6	0.7	0.75
 REDUCER	A	Orifices Nozzles	5	5	5	6	9	14	22
		Venturis		0.5	2.5	5.5	8.5	10.5	11.5
 SINGLE ELBOW	A	Orifices Nozzles	14	16	18	20	26	28	36
		Venturis		0.5	0.5	1.5	3	4	4.5
 TWO ELBOWS IN DIFFERENT PLANES	A	Orifices Nozzles	34	34	36	40	48	62	70
		Venturis		0.5	0.5	8.5	17.5	27.5	29.5
 TWO ELBOWS IN SAME PLANE	A	Orifices Nozzles	14	16	18	20	26	36	42
		Venturis		1.5	1.5	2.5	3.5	4.5	4.5
 GATE VALVE, FULLY OPEN	A	Orifices Nozzles	12	12	12	12	14	20	24
		Venturis		1.5	2.5	3.5	4.5	5.5	5.5
 GLOBE VALVE, FULLY OPEN	A	Orifices Nozzles	18	18	20	22	26	32	36
		Venturis							
 EXPANDER	A	Orifices Nozzles	16	16	16	18	22	30	38
		Venturis		1.5	1.5	2.5	3.5	5.5	6.5
Downstream length for all Pictured disturbances	B	Orifices Nozzles	4	5	6	6	7	7	8
		Venturis		4d	4d	4d	4d	4d	4d

Orifice / Nozzle / Venturi Tube Installed Guide

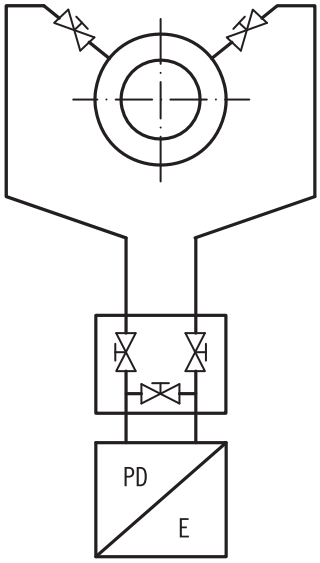
Liquid
DP-Flow Element
With 3-way manifold.



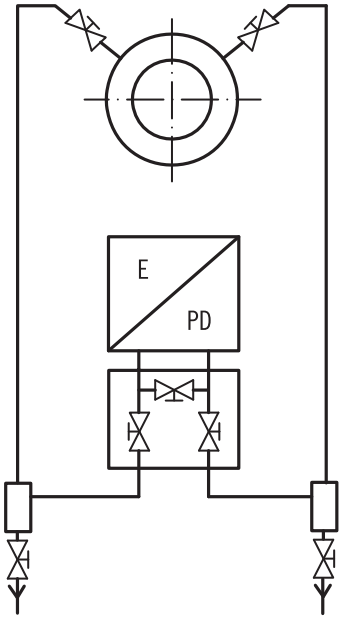
Steam
DP-Flow Element
With 5-way manifold and condense pots



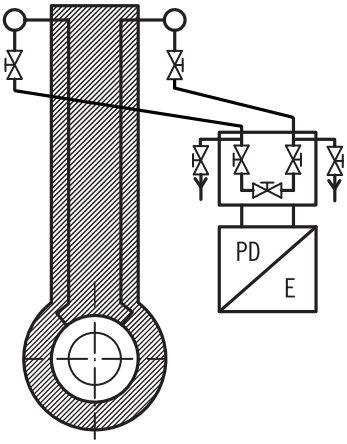
Dry Gas
DP-Flow Element
With 3-way manifold



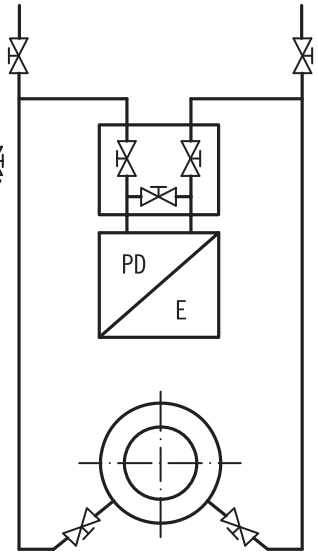
Humid Gas
DP-Flow Element
With 3-way manifold and drain pot



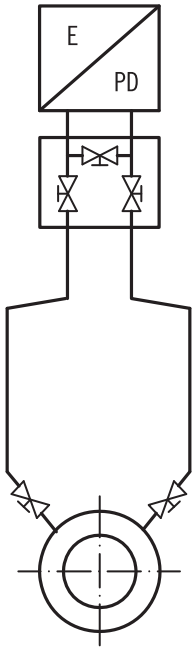
Steam
DP-Flow Element on top mounting
With condense pots



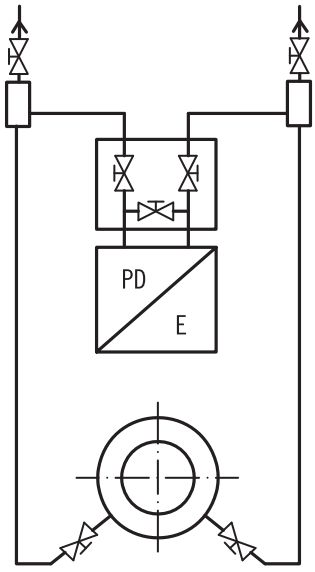
Liquid
DP-Flow Element on top mounting
With 3-way manifold and vent valves



Gas, dry and humid
DP-Flow Element on top mounting
With 3-way manifold



Gaseous Fluid
DP-Flow Element on top mounting
With 3-way manifold and vent pots



Ordering Information

Individual Specification				Requirement		Requirement	
1	Model No.						
2	P&ID No.						
3	Line No.						
4	Service						
	Meter						
5	Type of Element						
6	Size & Process Connection						
7	Pressure Taps						
8	Taps Connection						
9	Wetted Parts Material						
10	Condensate or Sealing Chamber						
11	Diff. Pressure (mmH_2O)	Design	Calculated				
12	Beta Ratio	Design	Calculated				
13	Calculation STD	Design	Calculated				
14	Painting						
15	Fluid	Phase					
16	Flow Range	Flow unit					
17	Flow Rate	Max.	Nor.				
18	Temp. (℃)	Max.	Nor.				
19	Press. (kg/cm^2G)	Max.	Nor.				
20	Viscosity @Cp	Cp/Cv					
21	SpGr @Cp./@Base	Mol. Wt.					
22	Pipe Size (mm)	I.D	O.D				
23	Pipe Material	Pipe Schedule No.					
24	Max. Permissible Pressure Loss (mmH_2O)						
25	Tag No.						

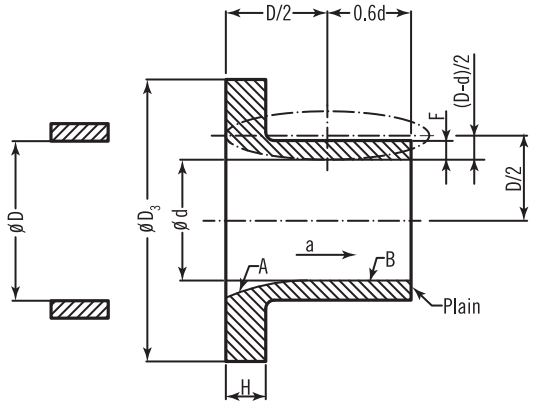
* Please fill in above block on request.

LONG RADIUS NOZZLES

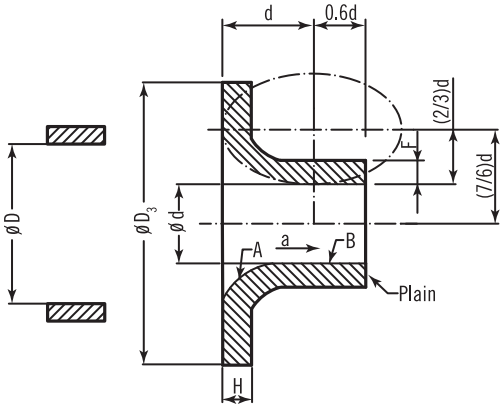
Technical Data

ISO 5167-3,2003(E) standard
Two long radius type
high-ratio nozzles ($0.25 \leq \beta \leq 0.8$)
low-ratio nozzles ($0.20 \leq \beta \leq 0.5$)
Flange wafer type.
Welded-in type.
Welded-in with holding ring type.
Material: A105, stainless steel, Others on request.

Long Radius Series



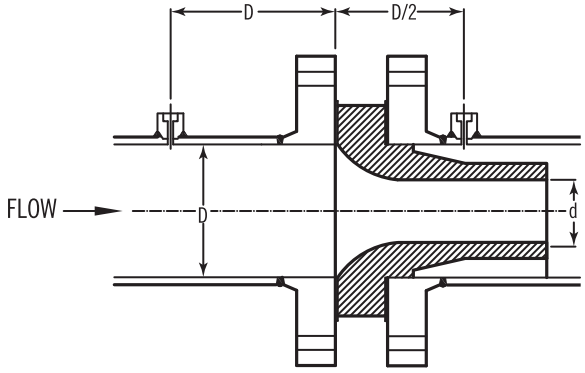
High ratio $0.25 \leqq \beta \leqq 0.8$



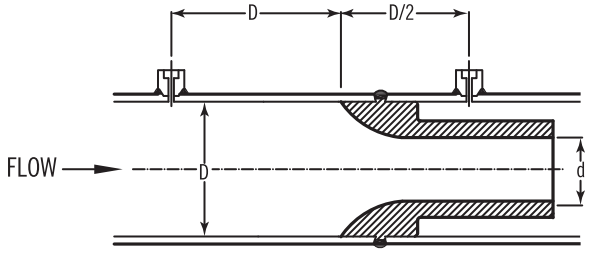
Low ratio $0.2 \leqq \beta \leqq 0.5$

* A: convergent section
B: throat

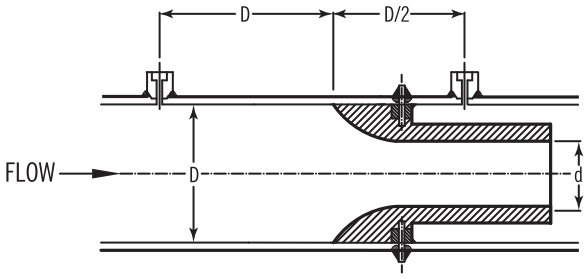
Flow Nozzle Series



Wafer Type-Typical Nozzle
Model: NF



Welded-In Type-Flow Nozzle
Model: NW



Welded-In with Holding Ring-Type
Model: NWR

Ordering Information

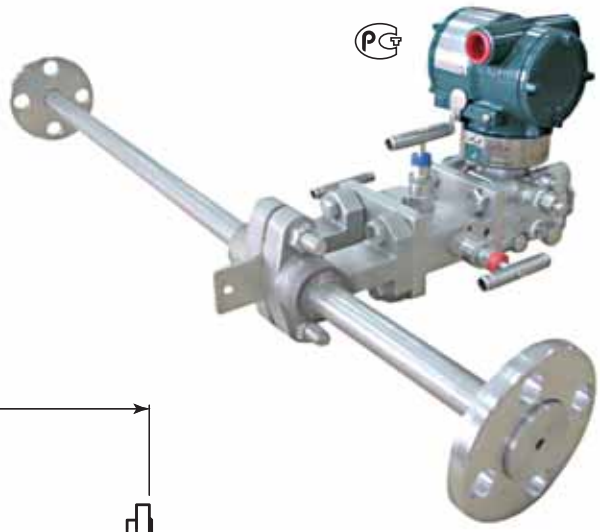
Individual Specification			Requirement		Requirement	
General						
1	P & ID No.					
2	Line No. / Vessel No.					
3	Line Size					
4	Sched No.					
5	Accuracy					
6	FCFCs Painting or Makers Painting STD					
Flow Nozzle						
7	Nozzle Type					
8	Applied Code or Standard					
9	Nozzle Material					
10	Meter Run					
11	Bore / Diameter Ratio (d/D)					
12	Tap Type					
13	Tap Conn.					
Operating Condition						
14	Fluid & State					
15	Flow Rate: Norm.	Max. (T/Hr)				
16	Press. Norm.	Max. (kg/cm^2G)				
17	Temp. Norm.	Max. (°C)				
18	Specific Gravity / Density					
19	Molecular Weight					
20	Viscosity Range	(Cp)				
21	Compression Factor					
22	Ratio of Spec. Heat	(Cp/Cv)				
23	Measuring Range	(T/H)				
24	Diff. Press. Range	(mmH_2O)				
25	Total Length					
26	Q'ty					
27	Tag No.					

* Please fill in above block on request.

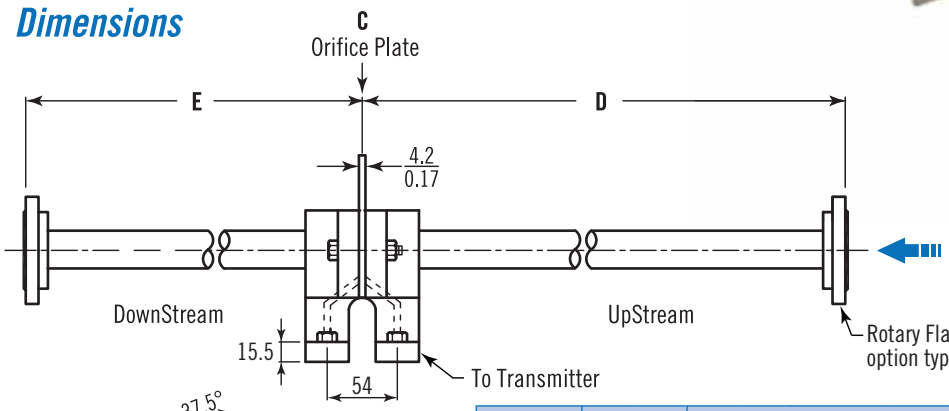
INTEGRAL ORIFICE ASSEMBLY IOA SERIES

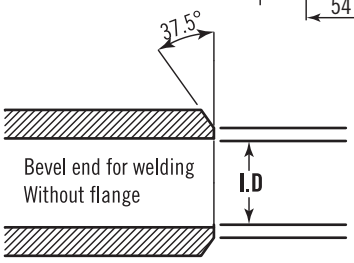
Technical Data

Used Differental Pressure Transmitter
Various Process Pipe Size: ⅜", ½", ¾", 1", 1½" available
Process Connection: Bevel welded, flange
Orifice Plate According To: ISO 5167, ASME and AGA-3 standard
Flange Rating: 150LB up to 600LB
Pressure Limited: Up to 100 kg/cm²
Temperature Limited: -40°C~+350°C
Material: SS316 wetted parts & Teflon gasket; option available



Dimensions





Assembly Line Size	Pipe Schedule		Straight Length Of Piping							
			With Flange				Without Flange			
			D		E		D		E	
			mm	in	mm	in	mm	in	mm	in
3/8"	40S	80S	254	10.0	115	4.5	242	9.5	112	4.4
1/2"	40S	80S	318	12.5	145	5.7	315	12.4	142	5.6
1"	40S	80S	513	20.2	221	8.7	510	20.1	218	8.6
1½"	40S	80S	721	28.4	302	11.9	716	28.2	297.2	11.7

* Orifice plate bore size is by vendor.

Ordering Information

IOA - S - T - (A) - (A) - 15

Wetted Parts Material	
S	SS316

Gasket Material	
T	Teflon

Line Size	
(A)	⅜"
(B)	½"
(C)	1"
(D)	1 ½"
(0)	option

Process Flange Size	
(A)	½"
(B)	¾"
(C)	1"
(D)	1 ½"
(0)	option

Process Connection			
1. Flange Rating		2. Welded Type	
15	ANSI 150#	B	Bevel End
30	ANSI 300#		
60	ANSI 600#		
10	PN 10		
16	PN 16		
40	PN 40		
10K	JIS 10K		
20K	JIS 20K		
T	Other:		

*Please fill in the ordering information and the specificaion of service condition in the next page.

Specification of Integral Orifice Flowmeter

	Individual Specification		Requirement	Requirement
1	Tag No. / P & ID No.			
2	Line No.			
3	Line Size & Schedule			
4	Pipe Material			
	METER			
5	Design Type			
6	Calculation Standard			
7	Process Connection			
8	Plate Material			
9	Beta Ratio d/D			
10	Orifice Bore Diameter	(mm)		
11	Vent or Drain Hole			
12	Plate Thickness	(mm)		
13	Body Material			
14	Flange Material			
15	Bolts Material			
16	Gasket Material			
	ASSEMBLY			
17	Associated Piping Material			
18	Flange Material			
19	3-Valve Manifold Material			
	TRANSMITTER			
20	Type			
21	Mounting			
22	Case Material			
23	Enclosure Class			
24	Hazardous Area Classification			
25	Hazard Protection			
26	Power Supply			
27	Signal Output			
28	Conduit Connection			
29	Accuracy			
30	Zero Elevation / Suppression			
31	Output Gauge			
	FLUID DATA			
32	Fluid			
33	Fluid Phase / Flow Unit			
34	Flow Range			
35	Flow Nor. / Max.			
36	Temp. Nor. / Max.	(°C)		
37	Press. Nor. / Max.	(BarG)		
38	Sp. Gr. @operating / @1 ATM 60°F			
39	Molecular Weight			
40	Operating Viscosity	(cP)		
41	Oper. Gas Compress. Factor			
42	Max. Allowable DP			
	MODEL			
43	Manufacturer			
44	Model No.			

* Please fill in above block on request.

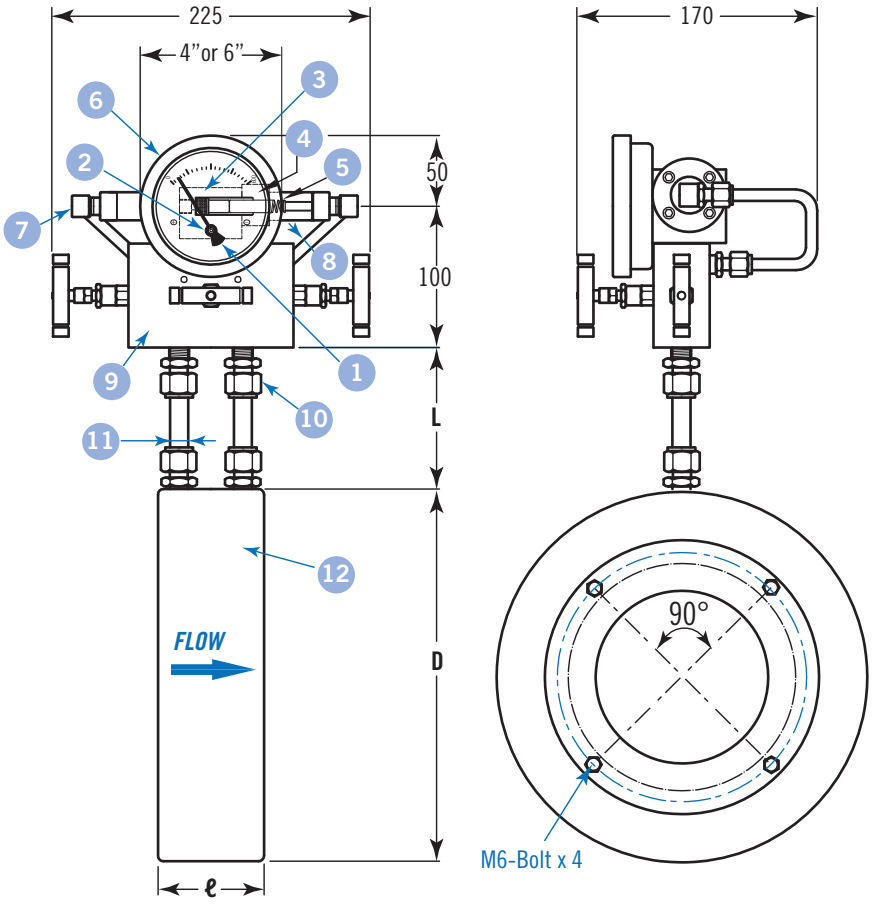
ORIFICE PLATE TYPE FLOWMETER

OPF SERIES

Technical Data

Service: Air, Gases, Water and other liquid
Indicator: Dial ø4" or ø6" available
Housing Material: SS304
Body Material: SS316, SS304, PVC, PVDF, option available
Protection Class: IP66
Flow Element: Orifice type
Connection Size: 2"~20" and option available
Connection Rating: ANSI 150#, ANSI 300#, other available
Flow Range: Water– 3~2500 M³/H; Air– 30~2400 NM³/H
Max. Working Temperature: PVC– 40ºC; PVDF– 80ºC; Metal– 80ºC
Accuracy: ±3% F.S (Ascending)

Dimensions-mm



NOTE
Tolerance: ±10mm

Parts List & Material

Item	Parts Name	Material
1.	Pointer	Aluminum
2.	Rotary Magnet housing	SS304
3.	Body	SS316
4.	Rolling Diaphragm	Viton
5.	Range Spring	SS316
6.	Standard Case	SS316
7.	90° Fitting O.D ø6 x ¼"NPT	SS316
8.	Tube ø8mm	SS316
9.	3 Ways Monifold	SS316
10.	Half Fitting O.D ø12.7 x ½"NPT	SS316
11.	Tube ø12.7mm	SS316
12.	Flow Element Body	SS316

Length \ Size		2"	2½"	3"	4"	5"	6"	8"	10"	12"	14"	16"	18"	20"
ℓ	ANSI 150LB	75	75	75	75	75	75	75	75	75	75	75	80	80
	ANSI 300LB	75	75	75	75	75	75	75	75	80	80	85	90	95
D	ANSI 150LB	105	124	137	175	197	222	279	340	410	451	514	546	603
	ANSI 300LB	111	130	149	181	216	251	308	362	422	486	540	594	651

NOTE
Tolerance: ±5mm

Ordering Information

OPF - (1) - A(1) - 15 - L

Body Material	
(1)	SS316
(2)	SS304
(3)	PVC
(4)	PVDF
(0)	option

Connection Rating	
15	ANSI 150#
30	ANSI 300#
T	Other:

Connection Size	
A	**Water** (1)2" (2)2 ½" (3)3" (4)4" (5)5" (6)6" (7)8" (8)10" (9)12" (10)14" (11)16" (12)18" (13)20"
B	**Air** (14) 2" (15)2 ½" (16) 3" (17) 4" (18) 5" (19) 6" (20) 8" (21) 10" (22) 12" (23) 14" (24) 16" (25) 18" (26) 20"

Flow Range (Please directly fill out the flow range in the order code.)	
L	**3-2500** MVHr for liquid
G	**30-2400** NMVHr for gases

FLOW SIGHT GLASS GAUGE

FW-1–SINGLE WINDOW FW-2–DOUBLE WINDOW

Technical Data

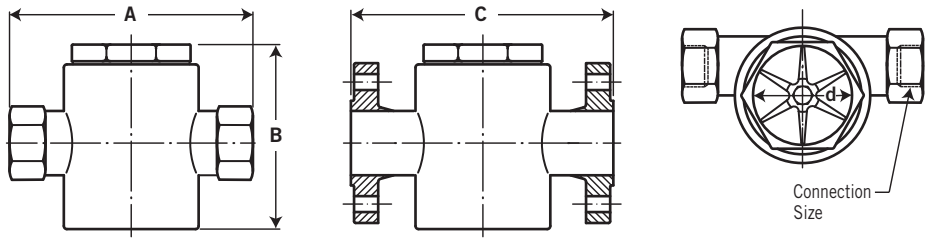
Service: For gases and liquid
Wetted Parts Material: Window- Tempered glass; Body- SS316; Gasket- Teflon; Impeller- (1) ABS plastic, (2) PVDF, (3) option
Temperature Limit: For impeller- (1) ABS plastic: 70°C
(2) PVDF: 140°C
Pressure Limit: FW-1: 150 psig (10.34 bar)
FW-2: 125 psig (8.62 bar)
Connection: Threaded
Size: ¼", ⅜ ", ½", ¾", 1", 1¼", 1½", 2" NPT or PF female; and Flange type available

FW-1
(Single Window)

FW-2
(Double Window)

Dimension-mm

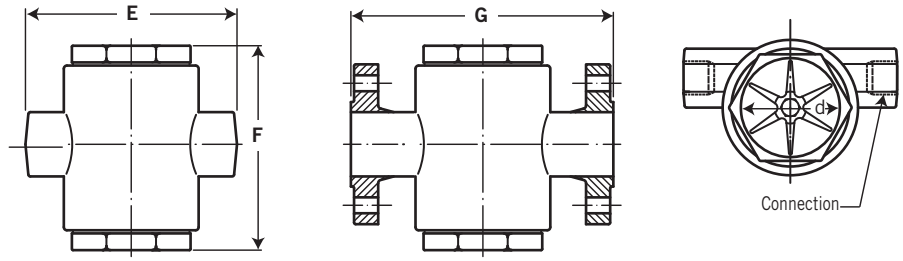
(1) Single Window: Thread type & Flange type



Size	1/4"	3/8"	1/2"	3/4"	1"	1¼"	1½"	2"
A	76	76	100	100	109	109	150	150
B	43	43	67	67	72	72	95	95
d	32	32	40	40	40	40	57	57

Size	1/2"	3/4"	1"	1½"	2"
C	130	130	160	200	220
C (option)	140	140	140	180	220

(2) Double Window: Thread type & Flange type



Size	1/4"	3/8"	1/2"	3/4"	1"	1¼"	1½"	2"
E	76	76	100	100	109	109	150	150
F	70	70	80	80	96	96	110	110
d	32	32	40	40	40	40	57	57

Size	1/2"	3/4"	1"	1½"	2"
G	130	130	160	200	220
G (option)	140	140	140	180	220

Ordering Information

FW	-	1	-	T	-	S	-	T	-	A	FW	-	(1)	-	(1)	-	1

Model	
1	**Single** Window
2	**Double** Win-dows

Type	
T	**Thread** type
F	**Flange** type

Body Material	
S	SS316

Gasket Material	
T	Teflon

Indicator Type	
A	Impeller-ABS
B	Impeller-PVDF
C	Impeller-option

Connection Size	
(1)	¼"
(2)	⅜"
(3)	½"
(4)	¾"
(5)	1"
(6)	1 ¼"
(7)	1 ½"
(8)	2"

Connection Rating	
(1)	NPT
(2)	PF
(3)	JIS 10K
(4)	ANSI 150#
(5)	option

CE_{1128} Mark Request	
1	with label sticker
2	with S.S nameplate
3	stamp
4	without

FLOW SIGHT GLASS GAUGE

T SERIES – Thread Connection With Spring Paddle

The flow sight glass was designed with spring paddle for easy observation of flowing fluid from any direction.

CE 1128

TA TYPE

CE 1128

TB TYPE

Technical Data

Service: – Compatible gas and liquid
– Water treatment system
– Industrial flow system
– Double window indication

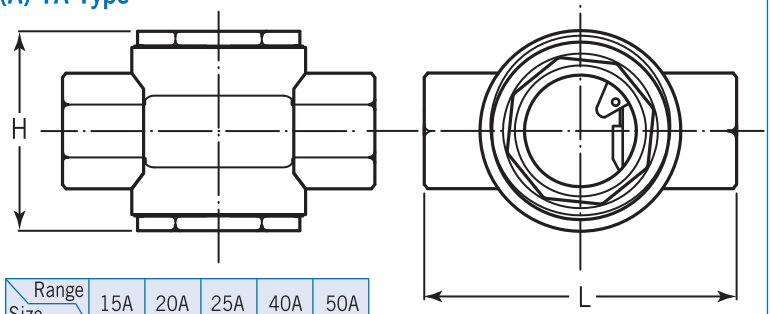
Material: Body–SS304, SS316, SS316L ; Paddle–SS316; Spring–SS316
Guge–Tempered glass; Gasket–Teflon, Gore Tex, Graphite

Max working temperature: 150°C (Teflon), 300°C (Gore-Tex)

Max working pressure: TA type-10 kg/cm² at 25°C water
TB type-15 kg/cm² at 25°C water

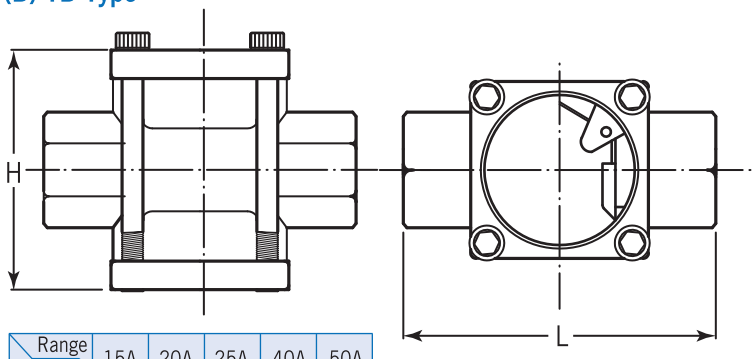
Dimension

(A) TA Type



Range / Size	15A	20A	25A	40A	50A
L	114	114	114	130	150
H	72	72	72	120	136

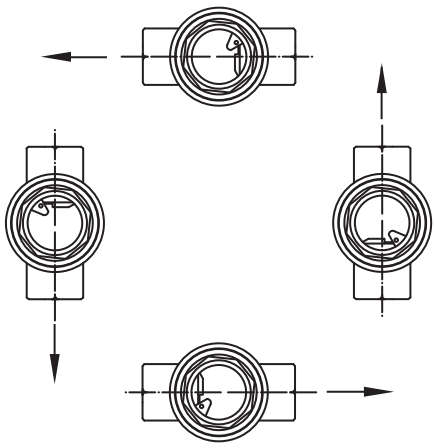
(B) TB Type



Range / Size	15A	20A	25A	40A	50A
L	114	114	114	130	150
H	72	72	72	115	129

unit=mm

Mounting Position



Ordering Information

TA/TB - (A) - (1) - (1) - (1)

Body Material	
(A)	SS304
(B)	SS316
(C)	SS316L

Size	
(1)	15A
(2)	20A
(3)	25A
(4)	40A
(5)	50A

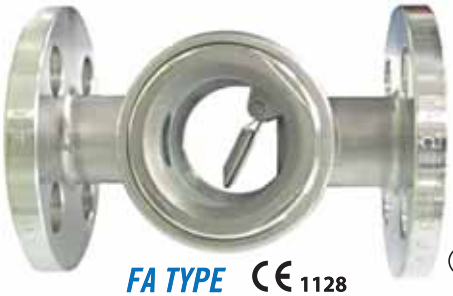
Connection Thread	
(I)	NPT
(2)	PF
(3)	Option

Gasket Material	
(1)	Teflon
(2)	Gore-Tex
(3)	Graphite

TA/TB

CE_{1128} mark Request	
1	with label sticker
2	with S.S nameplate
3	stamp
4	without

FLOW SIGHT GLASS GAUGE
F SERIES



FA TYPE CE 1128

FB TYPE CE 1128

Flange Connection With or Without Spring Paddle

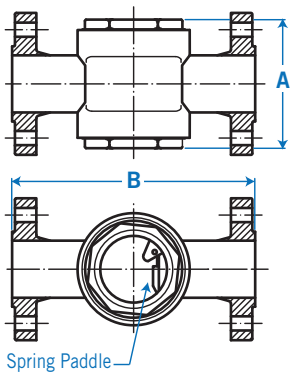
The flow sight glass was designed with or without spring paddle for easy observation of flowing fluid from any direction.

Technical Data

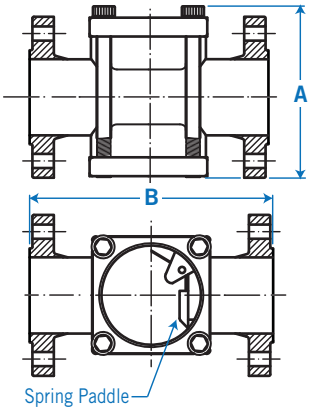
Service: – Compatible gas and liquid – Water treatment system
– Industrial flow system – Double window indication
Material: Body– SS316, SS304, SS316L, SS304L, option available;
Paddle– SS316; Spring– SS316; Guge– Tempered glass;
Gasket– Teflon, Gore Tex, Graphite
Max. working temperature: 200°C (option: 300°C available)
Max. working pressure: FA type– 10 kg/cm² at 25°C water
FB type– 15 kg/cm² at 25°C water (option: 30 kg/cm²)
(FA, FB upon pressure on request available)

Dimension-mm

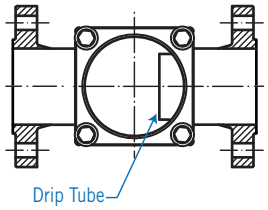
FA Type (with paddle)



FB Type (with paddle)



Drip Tube Type (without paddle)



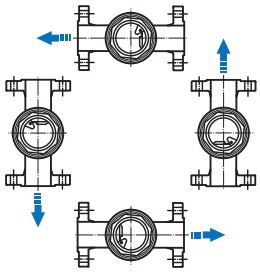
for FA Type

Size \ Range	15A	20A	25A	40A	50A
A	114	114	114	130	150
B	130	130	160	200	220
B (option)	140	140	140	180	220

for FB Type

Size \ Range	15A	20A	25A	40A	50A	65A	80A	100A	125A	150A	200A
A	72	72	72	115	129	134	150	190	240	250	345
B	130	130	160	200	220	270	270	320	380	420	500
B (option)	140	140	140	180	220	260	260	310	–	–	–

Mounting Position



Flow Range Table

Item Code	Flow Range	Connection Size
A	0~1.5 M³/H	½"(15A), ¾"(20A), 1"(25A)
B	0~3 M³/H	½"(15A), ¾"(20A), 1"(25A)
C	0~4 M³/H	½"(15A), ¾"(20A), 1"(25A)
D	0~8 M³/H	1¼"(32A), 1½"(40A), 2"(50A)
E	0~10 M³/H	1¼"(32A), 1½"(40A), 2"(50A)
F	0~12 M³/H	1¼"(32A), 1½"(40A), 2"(50A)
G	0~16 M³/H	1¼"(32A), 1½"(40A), 2"(50A)
H	0~18 M³/H	2"(50A)
I	0~24 M³/H	2"(50A)
J	0~22 M³/H	3"(80A) , FB type available only

Ordering Information

FA/FB - W - (1) - (1) - (1) - (1) - (1) - N

Type	
W	With Paddle
N	Without Paddle (Drip Tube)-scale unavailable

Wetted Parts Material	
(1)	SS316
(2)	SS304
(3)	SS316L
(4)	SS304L
(5)	option

Size	
(1)	15A
(2)	20A
(3)	25A
(4)	40A
(5)	50A
(6)	65A
(7)	80A
(8)	100A
(9)	125A
(10)	150A
(11)	200A

Connection Rating	
(1)	JIS 10K
(2)	JIS 20K
(3)	ANSI 150#
(4)	ANSI300#
(5)	PN10
(6)	PN16
(7)	PN25
(0)	option

Gasket Material	
(1)	Teflon
(2)	Gore-Tex
(3)	Graphite

CE1128 Mark Request	
(1)	with label sticker
(2)	with S.S nameplate
(3)	stamp
(4)	without

Flow Range	
A-J	Plase refer to the Flow Range Table, and fill out the item code of requested range directly.
N	No need flow range scale

FLOW SIGHT GLASS GAUGE

FS SERIES

The flow meter sight glass gauge was designed with spring paddle to indicating flow rate for easy observation of flowing fluid from Left to Right or Right to Left direction.

Technical Data

Service: – Water treatment system
– Industrial liquid flow system
– Double window indication

Material: Body– SS316; Paddle– SS316; Spring– SS316; Guge– Tempered glass; Gasket– Teflon or Gore Tex; Flange– SS316, SS304 available

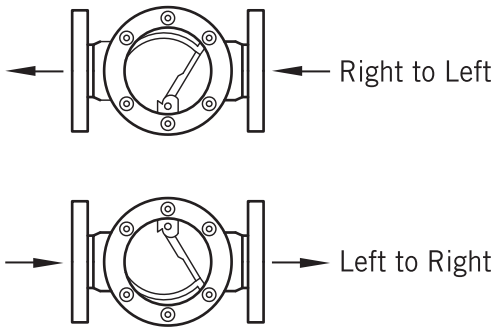
Max. Working Temperature: 80°C

Max. Working Pressure: 10 kg/cm² at 25°C water

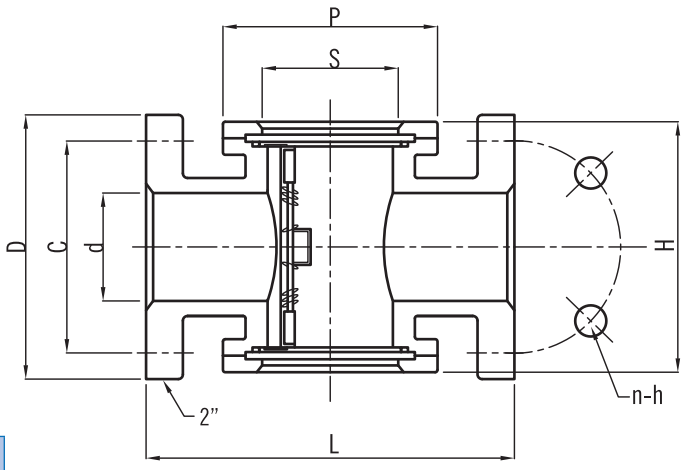
Connection Size: 2”

Connection Rating: JIS 10K, ANSI 150#, PN10 and PN16 available

Mounting Position



Dimensions



unit=mm

Size	Range (m³/h)	Dimensions							
		d	C	D	H	S	P	L	n-h
2”	2~10	48	120	155	170	102	149.5	220	19ø
	2~18	48	120	155	170	102	149.5	220	19ø

NOTE
1. Flange rating: JIS 10K, ANSI 150#, PN10 and PN16 are available.
2. The Dimensions of C, D will be changed by flange rating.

Ordering Information

FS - 1 - 1 - 2 - 1 - A - R

Body Material	
1	SS316 (standard)

Connection Size	
1	2”

Flange Rating	
1	JIS 10K
2	ANSI 150#
3	PN10
4	PN16

Flange Material	
1	SS316
2	SS304

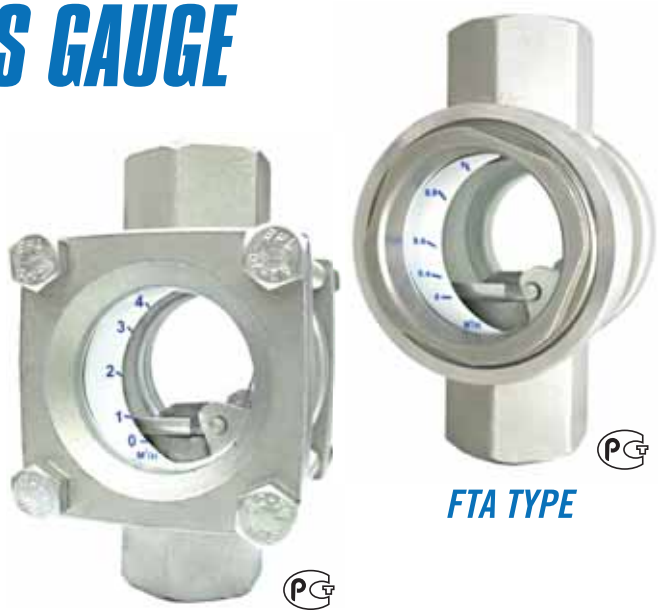
Flow Range	
A	2-10 MVH
B	2-18 MVH

Flow Direction	
R	RL
L	LR

FLOW METER SIGHT GLASS GAUGE

FT SERIES – Thread Connection

The flow meter sight glass was designed with spring paddle to indicating flow rate for easy observation of flowing fluid from any direction.



FTA TYPE

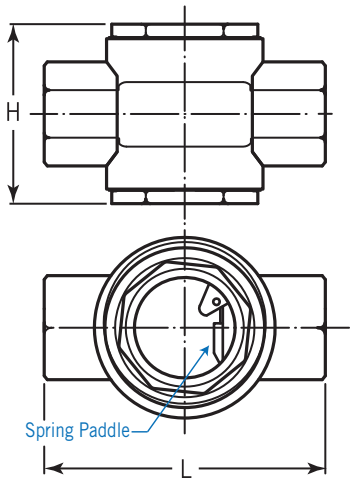
FTB TYPE

Technical Data

Service: – Compatible gas and liquid – Water treatment system
– Industrial flow system – Double window indication
Material: Body– SS304, SS316, SS316L available;
Paddle– SS316; Spring– SS316
Guge– Tempered glass; Gasket– Teflon or Gore Tex
Max. working temperature: 80°C
Max. working pressure: FTA type– 10 kg/cm² at 25°C water
FTB type– 15 kg/cm² at 25°C water

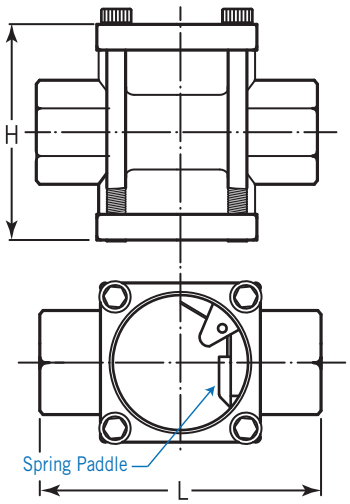
Dimensions

FTA Type (with paddle)



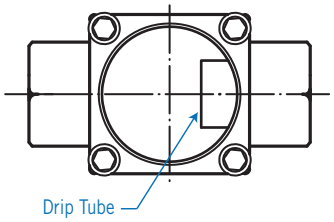
Size	15A	20A	25A	32A	40A	50A
L	114	114	114	130	130	150
H	72	72	72	120	120	136

FTB Type (with paddle)

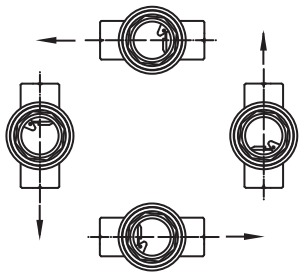


Size	15A	20A	25A	32A	40A	50A
L	114	114	114	130	130	150
H	72	72	72	115	115	129

Drip Tube Type (without paddle)



Mounting Position



Ordering Information

FTA/FTB - W - (A) - (1) - (1) - N

Type	
W	With Paddle
N	Without Paddle (Drip Tube)- scale unavailable

Material	
(A)	SS304
(B)	SS316
(C)	SS316L

Size	
(1)	15A
(2)	20A
(3)	25A
(4)	32A
(5)	40A
(6)	50A

Connection Thread	
(1)	NPT
(2)	PF
(3)	option

Flow Range	
A-I	Plase refer to the Flow Range Table, and fill out the item code of requested range directly.
N	No need flow range scale

Flow Range Table

Item Code	Flow Range	Connection Size
A	0~1.5 M³/H	½"(15A), ¾"(20A), 1"(25A) available
B	0~3 M³/H	½"(15A), ¾"(20A), 1"(25A) available
C	0~4 M³/H	½"(15A), ¾"(20A), 1"(25A) available
D	0~8 M³/H	1¼"(32A), 1½"(40A), 2"(50A) available
E	0~10 M³/H	1¼"(32A), 1½"(40A), 2"(50A) available
F	0~12 M³/H	1¼"(32A), 1½"(40A), 2"(50A) available
G	0~16 M³/H	1¼"(32A), 1½"(40A), 2"(50A) available
H	0~18 M³/H	2"(50A)
I	0~24 M³/H	2"(50A)

Ordering code example:
FTA-B-1-1-A
→ FTA = Model
→ W = with paddle
→ B = SS316
→ 1 = 15A (½")
→ 1 = NPT
→ A = 0~1.5 M³/H

FLOW SIGHT GLASS GAUGE

TB SERIES-C *Indicating With Color Ball*

CE 1128

PG

Technical Data

Service: – Compatible gas and liquid
– Water treatment system
– Industrial flow system
– Double window indication

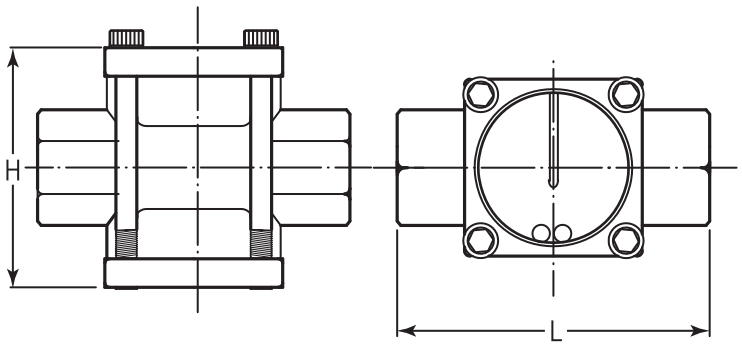
Material: Body–SS316; Color Ball: Teflon
Gage-Tempered glass; Gasket-Teflon

Max working temperature: 150˚C (Teflon)

Max working pressure: 15 kg/cm² at 25˚C water

Dimension

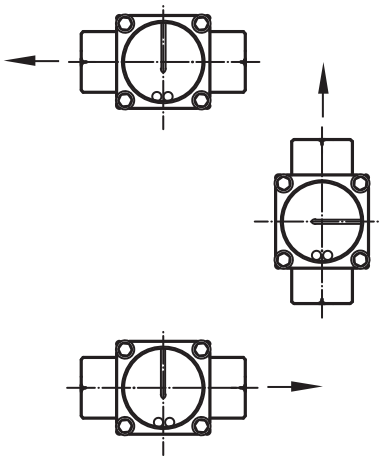
TB-C Type



Range / Size	15A	20A
L	114	114
H	72	72

unit=mm

Mounting Position



Ordering Information

TB-C - S - (1) - (1) - (1)

Model	
S	Wetted parts areSS316

Size	
(1)	15A
(2)	20A

Connection Thread	
(1)	NPT
(2)	PF
(3)	Option

Gasket Material	
(1)	Teflon

TB-C

CE1128 mark Request	
1	with label sticker
2	with S.S nameplate
3	stamp
4	without

FLOW SIGHT GLASS GAUGE

NAW-1 – WITH TEFLON BALL NAW-2 – WITH ROTOR

NAW-1

NAW-2

Technical Data

Service: for Gases and Liquid
Wetted Parts Material: Window– Tempered glass; Body– SS316; Gasket– Viton; Ball– Teflon; Rotor– PP+10% glass fiber; Rotor Guide– SS316
Temperature Limit: NAW-1: 200°C; NAW-2: -5°C~+120°C
Pressure Limit: 16 bar
Connection: Threaded type
Size: ¼", ⅜", ½", ¾", 1¼", 1½" NPT or BSP female available
Mounting: Horizontal installation
Flow Direction: Left to Right or Right to Left available

Flow Range Table

NAW-1 : With Teflon Ball

Size	¼"	⅜"	½"	¾"	1"	1¼"	1½"
Min. Flow (L/Min)	0.12	0.12	0.15	2.5	2.9	11.5	16.5
Max. Flow (L/Min)	1.12	1.12	1.15	5.5	6.0	17.0	22.0
ΔP (2m/sec) BAR	0.15	0.15	0.19	0.18	0.45	0.20	0.25

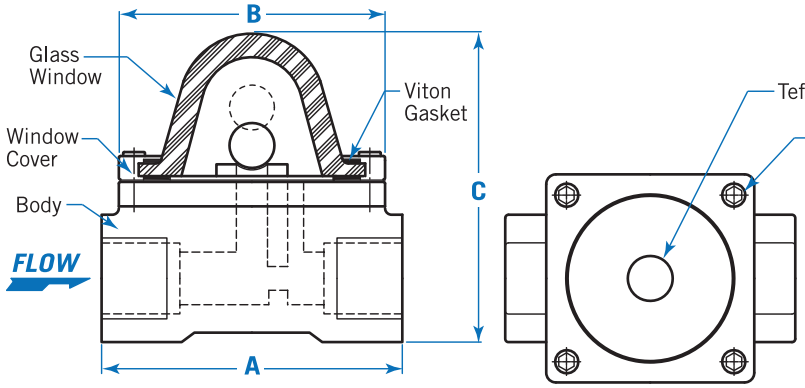
NAW-2 : With Rotor

Size	¼"	⅜"	½"	¾"	1"
Min. Flow (L/Min)	0.8	0.9	1.1	1.4	2.0
Max. Flow (L/Min)	31	41	56	95	145
ΔP (2m/sec) BAR	0.15	0.18	0.21	0.20	0.50

NOTE.
The Flow Range Table is based on Water.

Dimensions

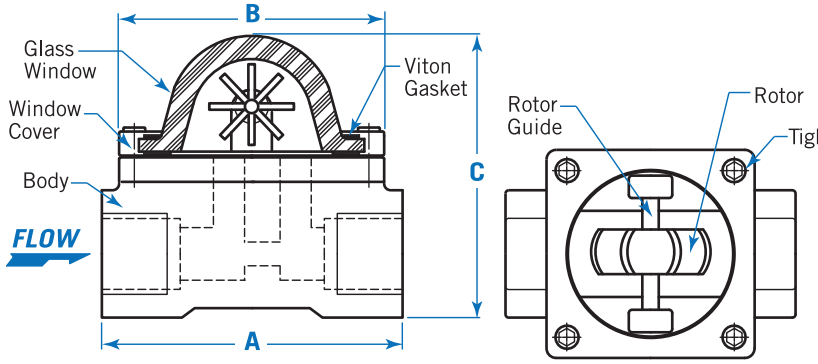
(A) *NAW-1*, With Teflon Ball



unit=mm

Size	¼"	⅜"	½"	¾"	1"	1¼"	1½"
A	76	76	76	89	89	117	117
B	63	63	63	63	63	75	75
C	79	79	79	95	95	125	125

(B) *NAW-2*, With Rotor



unit=mm

Size	¼"	⅜"	½"	¾"	1"
A	76	76	76	89	89
B	63	63	63	63	63
C	65	65	65	83	83

Ordering Information

NAW - 1 - S - V - (1) - (1)

Model	
1	Teflon ball type
2	Rotor type

Body Material	
S	SS316

Gasket Material	
V	Viton

Connection Size (Female)	
(1)	¼”
(2)	⅜”
(3)	½”
(4)	¾”
(5)	1”
(6)	1 ¼” (unavailable for NAW-2)
(7)	1 ½” (unavailable for NAW-2)

Thread Type	
(1)	NPT
(2)	BSP
(3)	option

FLOW SIGHT GLASS GAUGE
NA TYPE

Operation Principle

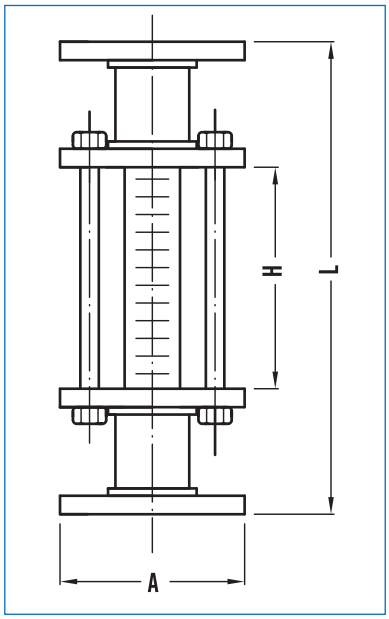
The flow sight glass gauge was designed for easy observation of flowing fluid from the up or down in the pipe.

Application

A. Measuring the flow rate for:
- Chemical process system
- Water treatment system
- Industrial flow system

B. Service Condition:
- Max working temperature: 100°C
- Max working pressure: 5 kg/cm²

Dimensions



unit=mm

Size \ Range	DIMENSION			
	L	H	A	Flange
10A	240	100	–	⅜”
15A	240	100	–	½”
20A	240	100	–	¾”
25A	240	100	–	1”
32A	260	120	–	1¼”
40A	260	120	–	1½”
50A	260	120	–	2”
65A	260	120	–	2½”
80A	300	150	–	3”
100A	300	150	–	4”

Ordering Information

NA-Type - NAS - (1) - (1) - (1) - (1) - (1) - (1)

Model	
NAS	stainless steel wetted parts
NAI	steel wetted parts
NAV	plastic wetted parts

Size	
(1)	10A
(2)	15A
(3)	20A
(4)	25A
(5)	32A
(6)	40A
(7)	50A
(8)	65A
(9)	80A
(10)	100A

Connection Rating	
(1)	JIS 5K
(2)	JIS 10K
(3)	ANSI 150#
(4)	DIN PN10

Body (wetted parts) Material	
(1)	CS
(2)	SS304
(3)	SS316
(4)	PVC
(5)	PP
(6)	PVDF
(7)	Teflon
(8)	Option

Indicating Tube Material	
(1)	Borosilicate glass
(2)	PC

Seal Material	
(1)	NBR
(2)	Viton
(3)	Teflon

Protection Rod Material	
(1)	SS304
(2)	SS316

FLOW SIGHT GLASS GAUGE
NS TYPE

Operation Principle

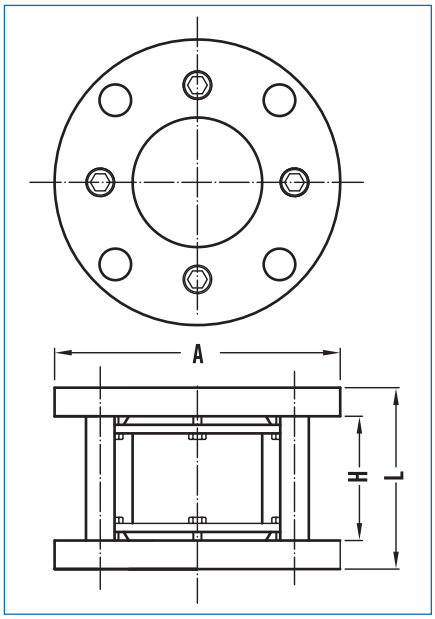
The flow sight glass gauge was designed for easy observation of flowing fluid from the up or down in the pipe.

Application

A. Measuring the flow rate for:
- Chemical process system
- Water treatment system
- Industrial flow system

B. Service Condition:
- Max working temperature: 100°C
- Max working pressure: 5 kg/cm²

Dimensions



unit=mm

Size \ Range	DIMENSION			
	L	H	A	Flange
15A	150	122	–	½”
20A	150	122	–	¾”
25A	150	120	–	1”
32A	150	120	–	1¼”
40A	150	120	–	1½”
50A	150	120	–	2”
65A	180	140	–	2½”
80A	180	140	–	3”
100A	200	150	–	4”

Ordering Information

NS-Type - NAS - (1) - (1) - (1) - (1) - (1) - (1)

Model	
NSS	stainless steel wetted parts
NSI	steel wetted parts
NSV	plastic wetted parts

Size	
(1)	10A
(2)	15A
(3)	20A
(4)	25A
(5)	32A
(6)	40A
(7)	50A
(8)	65A
(9)	80A
(10)	100A

Connection Rating	
(1)	JIS 5K
(2)	JIS 10K
(3)	ANSI 150#
(4)	DIN PN10

Body (wetted parts) Material	
(1)	CS
(2)	SS304
(3)	SS316
(4)	PVC
(5)	PP
(6)	PVDF
(7)	Teflon
(8)	Option

Indicating Tube Material	
(1)	Borosilicate glass
(2)	PC

Seal Material	
(1)	NBR
(2)	Viton
(3)	Teflon

Protection Rod Material	
(1)	SS304
(2)	SS316

FLOW SIGHT GLASS GAUGE

NAH-1 – WITHOUT ROTOR NAH-2 – WITH ROTOR

NAH are used for mounting in pipes for fluids. The instruments are equipped with female threads at inlet and outlet and can be supplied with either brass or stainless steel fittings.

NAH-1 NAH-2

Technical Data

Material: Body: Polycarbonate (P.C), Polysulfone (PSU) & SS316 available
Tube Housing: Polycarbonate (P.C), Polysulfone (PSU) & Glass available
O-rings: Viton
Rotor: POM, PP+10% glass fiber available
Rotor guide: SS316
Thread connection: SS316

Viscosity: 1~150 mm²/s

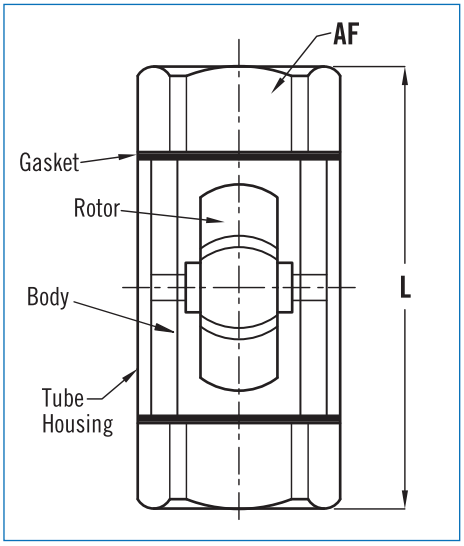
Indication Range: minimum 0.4~4 L/Min; maximum 1.6~40 L/Min for water

Max. Pressure: PC body: 8bar; PSU body: 12bar; SS316 body: 16bar

Max. Temperature: PC body: -5°C~+80°C; PSU & SS316 body: -5°C~+100°C

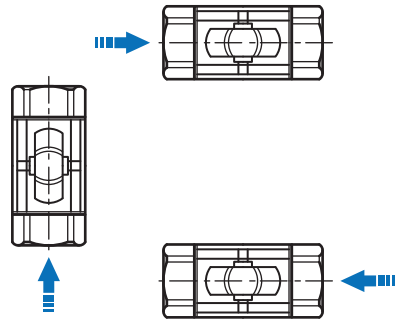
Connection Size: ¼", ⅜", ½", ¾", 1" female PF or NPT available

Dimensions-mm



Size	L		AF	
	NPT	PF	NPT	PF
¼"	80	80	30	30
⅜"	80	80	30	30
½"	104	104	40	40
¾"	104	104	40	40
1"	104	104	40	46

Flow Direction



NOTE:
Flow Direction only can:
1. Bottom to Top
2. Left to Right
3. Right to Left

Ordering Informaion

NAH - 1 - 1 - (1) - 1 - V - 1

Model	
1	Without Rotor
2	With Rotor

Body/Tube Housing Material	
1	P.C/P.C
2	PSU/PSU
3	SS316/ Glass

Connection Rating-female	
1	NPT
2	PF

O-Ring Material	
V	Viton

Connection Size	
(1)	¼"
(2)	⅜"
(3)	½"
(4)	¾"
(5)	1"

Rotor Material	
1	POM
2	PP+10% galss fiber
3	Without Rotor (NAH-1 only)

Range Table

PF/NPT	With Rotor	Without Rotor
¼"	0.4~4 L/Min	8.3 L/Min
⅜"	0.6~8 L/Min	11.1 L/Min
½"	1~12 L/Min	31.5 L/Min
¾"	1~25 L/Min	36.5 L/Min
1"	1.6~40 L/Min	38.0 L/Min

FLOW SIGHT GLASS GAUGE

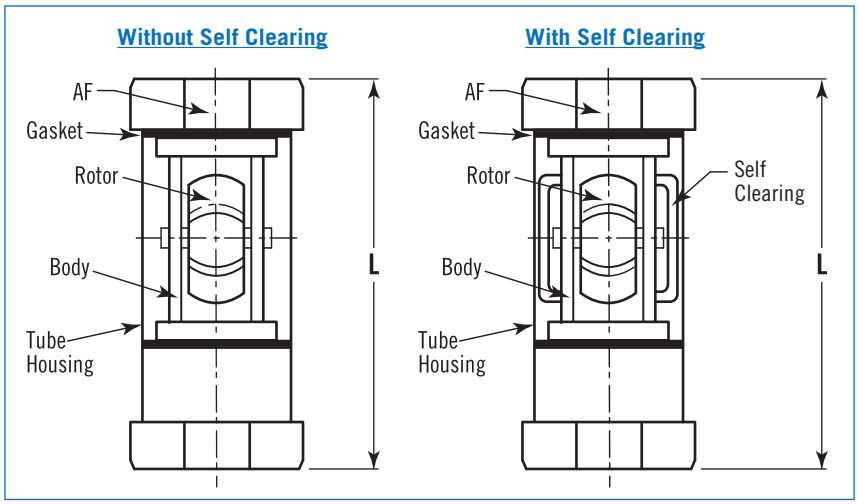
NAM SERIES – Self Clearing Available

NAM is used for mounting in pipes for fluids. The instruments are equipped with female threads at inlet and outlet and can be supplied with either brass or stainless steel fittings.

Technical Data

Self Clearing Function Available
Material: Body: SS316; Tube Housing: Glass; O-ring: Viton, NBR available
Rotor: POM, PP+10% glass fiber available; Rotor Guide: SS316
Thread Connection: SS316
Viscosity: 1~150 mm²/s
Indication Range: Minimum 0.4~4 L/Min; Maximum 8~100 L/Min for water
Max. Pressure: SS316 body: 16bar
Max. Temperature: SS316 body: -5°C~+100°C
Connection Size: ¼", ⅜", ½", ¾", 1", 1¼", 1½" female PF or NPT available

Dimensions



unit=mm

Size	L		Spanner Size (AF)
	NPT	PF	NPT /PF
¼"	71	71	36
⅜"	71	71	36
½"	86	86	46
¾"	94	94	46
1"	104	104	46
1¼"	120	120	65
1½"	130	130	65

Range Table

PF/NPT	Flow Range (water)
¼"	0.4 ~ 4 L/Min
⅜"	0.6 ~ 8 L/Min
½"	1 ~ 12 L/Min
¾"	1 ~25 L/Min
1"	1.6 ~ 40 L/Min
1¼"	8 ~80 L/Min
1½"	8 ~ 100 L/Min

Ordering Information

NAM - 1 - 1 - (1) - 1 - V - 1 - 1

Type	
1	Without Rotor
2	With Rotor

Connection Size	
(1)	¼"
(2)	⅜"
(3)	½"
(4)	¾"

O-Ring Material	
V	Viton
N	NBR

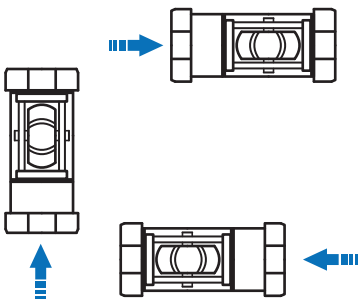
Body/Tube Housing Material	
1	SS316/ Glass

Connection Rating	
1	NPT female
2	PF female

Self Clearing	
1	With
2	Without

Rotor Material	
1	POM
2	PP+10% galss fiber

Flow Direction



NOTE:
Flow Direction only can:
1. Bottom to Top
2. Left to Right
3. Right to Left

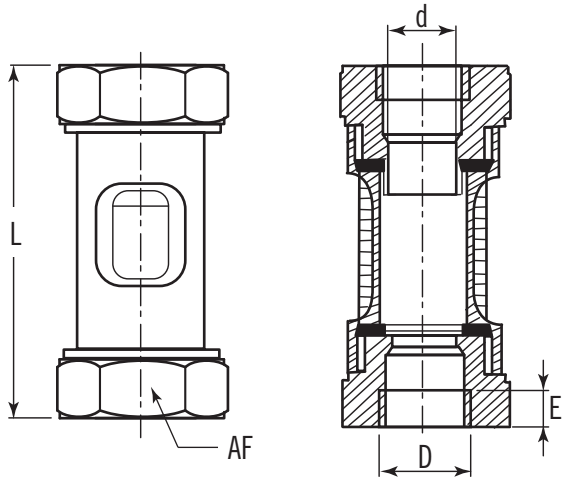
FLOW SIGHT GLASS GAUGE
NAC

NAC are used for mounting in small pipes for liquid fluids. The instruments are equipped with female threads at inlet and outlet and can be supplied with either brass fittings.

Technical Data

Material: Body: Brass
Tube Housing: Borosilicate Glass
O-ring: Viton
Thread connection: Brass
Max. Pressure: 10 Bar
Max. Temperature: 70°C
Connection Size: G¼", G⅜" , G½" or NPT available

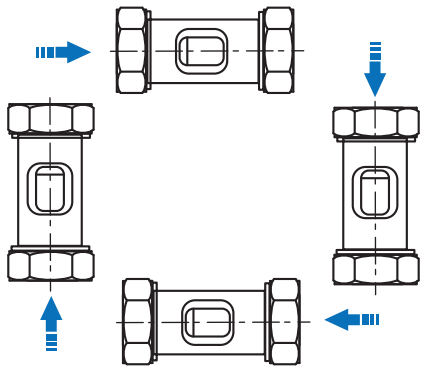
Dimensions



unit=mm

Size	L	AF	D	d	E	Weight (kg)
¼"	70	19	¼	5	12	0.085
⅜"	70	27	⅜	8	12	0.17
½"	80	32	½	12	15.5	0.28

Flow Direction



NOTE:
Any direction available.

Ordering Information

NAC - (1) - (1) - V

Connection Size	
(1)	¼"
(2)	⅜"
(3)	½"

O-Ring Material	
V	Viton

Connection Rating-female	
1	NPT female
2	G(BSP)

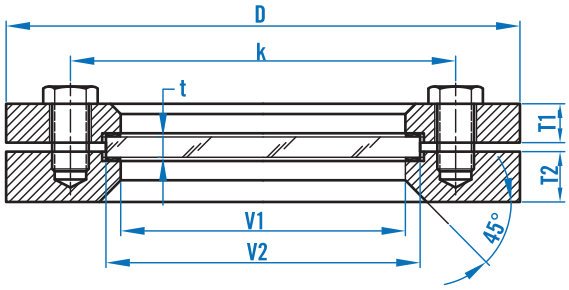
SIGHT GLASS SO SERIES

Welding– On Vessel Type
Low Pressure System Used

Technical Data

Size: 1"~10" available
Pressure Limit: Up to 5 bar (kg/cm²); depending on request size
Temperature Limit: Up to 280°C
Material: Wetted part & Body–SS304, SS316 and others on request
Sight Glass–Transparent tempered glass
Bolt–SS304 and others on request

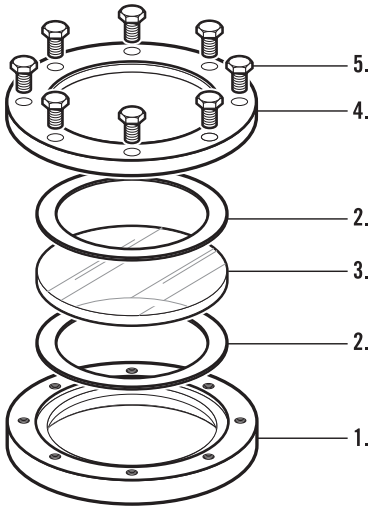
Dimensions



unit=mm

Size (inch)	1"	2"	3"	4"	5"	6"	8"	10"
Pressure Limit (bar)	5	5	5	5	5	5	4	3
V1 – Visible Diameter	50	80	100	125	150	175	225	300
V2 – Visible Diameter	60	89	114	150	175	200	250	325
t – Tempered Glass Thickness	10	10	12	15	19	19	25	25
D – Flanges O.D	100	150	177	203	229	255	304	405
T1	20	20	20	20	25	25	30	35
T2	25	25	28	35	38	40	45	50
Bolts (Pitch)	78	127	152	178	204	229	280	366
Bolt No.	4	4	4	8	8	8	8	8
Bolt Size	M12	M12	M12	M12	M12	M12	M12	M12
Bolt Length	30	30	30	35	35/45	35/45	40/45	45

Parts List



Item	Part Name
1.	Body
2.	Gasket
3.	Tempered Glass
4.	Cover
5.	Bolt

Ordering Informaion

SO - 1 - (1)

Body Material	
1	SS304
2	SS316
3	Option

Size	
(1)	1"
(2)	2"
(3)	3"
(4)	4"
(5)	5"
(6)	6"
(7)	8"
(8)	10"

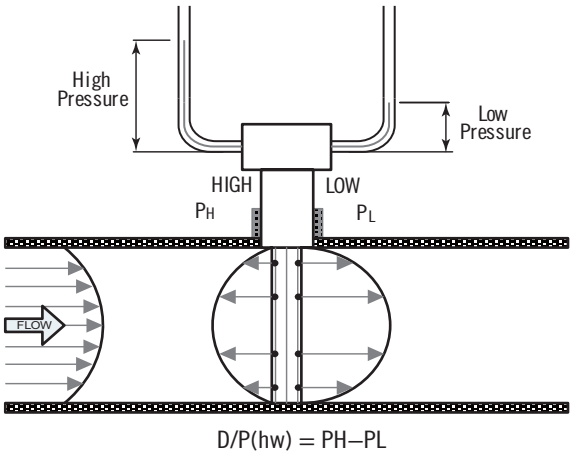
PITOT TUBE FLOW SENSORS
NFB SERIES

The A-Flow bar is used for flow measurement of large pipe size.
Low permanent pressure loss for clean liquid or gas (vapor). There are many parallel holes that are located on upstream and downstream of this probe. When fluid through this probe generate high pressure in upstream and low pressure in downstream. The upstream read out average pressure is called total pressure(stagnation pressure). The downstream read out average pressure is called static pressure. This device insert into a flow pipe probe.
Then detect out high/low pressure for ΔP transmitter or ΔP gauge to indicate the flow rate.

Technical Data

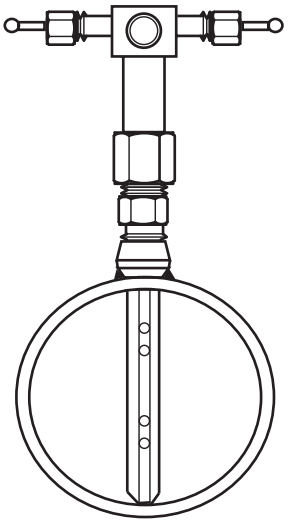
1. NFB-Series is a flow element suitable for liquid steam and gases (vapor) flow measurement.
2. Accuracy ±1% of flow rate.
3. Repeatability of measurement ±0.1%.
4. Flow rate turndown typically 10:1
5. Max. temperature limit to 420°C, depended on model and material.
6. Max. pressure limit to 1500 psi depended on model and material.
7. Low permanent pressure loss.
8. Bi-directional flow sensing.
9. Energy save.

Principle A

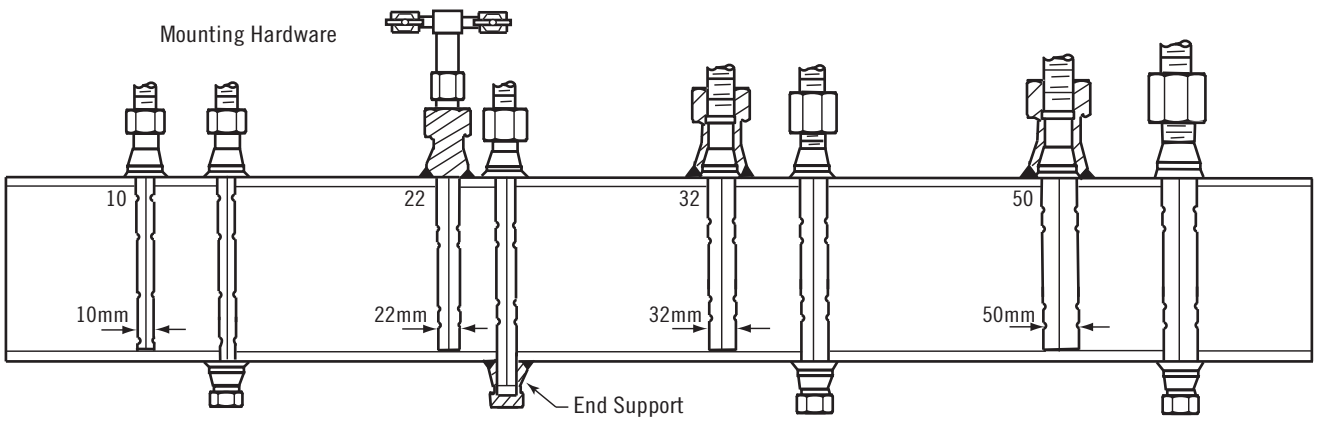


D/P(hw) = PH–PL

Figure



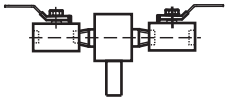
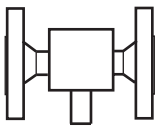
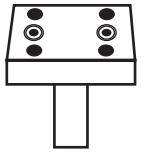
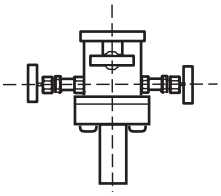
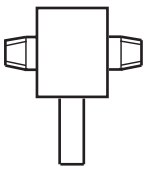
Probe Size and Installation Method

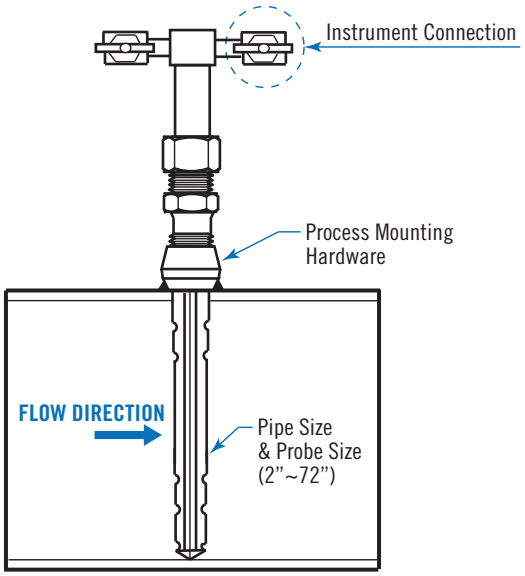


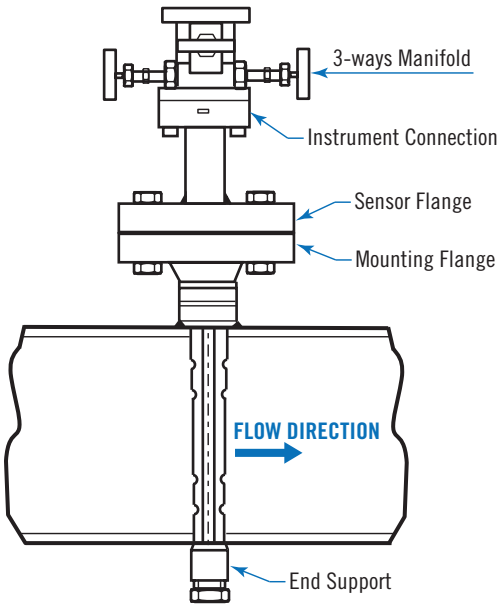
Model Selection Guide

Model	NFB-100	NFB-150	NFB-200	NFB-300	NFB-400A	NFB-400B
Picture	Standard version	Standard version	Standard version	Standard version	Standard version	Standard version
Service Fluid	1. Liquid 2. Gas 3. Mixture Gases	1. Liquid 2. Gas 3. Mixture Gases	1. Liquid 2. Gas 3. Mixture Gases	1. Liquid 2. Gas 3. Mixture Gases	1. Liquid 2. Gas 3. Mixture Gases	1. Liquid 2. Gas 3. Mixture Gases
Working Pressure Limit	100 Bar/ 1500 psig	100 Bar/ 1500 psig	56 Bar/ 800 psig	56 Bar/ 800 psig	56 Bar/ 800 psig	100 Bar/ 1500 psig
Working Temperature Limit	250˚C	250˚C	250˚C	250˚C	250˚C	300˚C
For Pipe Size	2" ~ 72" option available	2" ~ 72" option available	6" ~ 72" option available	6" ~ 72" option available	6" ~ 72" option available	6" ~ 72" option available
Sensor Size	10mm, 22mm or 32mm	10mm, 22mm or 32mm	10mm, 22mm or 32mm	10mm, 22mm or 32mm	22mm or 32mm	22mm, 32mm or 50mm

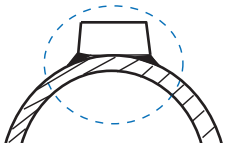
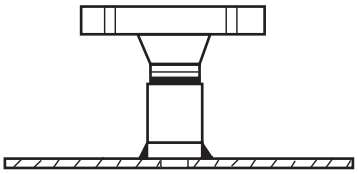
Instrument connection style

A.	B.	C.	D.	E.
Two Valve Type	Two Flange Type	Head Plate for 3-ways Manifold Direct-Mounting	With 3-ways Manifold valve	Thread Connection Only
				





Process Mounting Hardware Style

B. Branch Outlet Fitting	F. Flange Fitting
	

Ordering Information

NFB - 100 - 1 - _ - A - A - B - A - D

Model

100
150
200
300
400A
400B

Body Material

1	**SS316** standard

Pipe Size

Please directly fill out the request size 2" - 72"(option)

Intrument Connection Size

A	**Two** Valve Type
B	**Two** Flange Type
C	**Head** Plate for 3-ways Manifold Di-rect-Mounting
D	**With** 3-way Manifold Valve
E	**Thread** Con-nection Only

Intrument Connection Material

A	**Carbon** Steel
B	**SS316** Standard Steel
C	**Option**

Process Mounting Hardware Style

B	**Branch** Outlet Fitting
F	**Flange** Fitting

Process Mounting Hardware Material

A	**Carbon** Steel
B	**SS316** Stainless Steel
C	**Option**

End Support

D	**With**
N	**Without**