Blue-White® Industries, Ltd.

DigiFlo Digital Paddlewheel Meters

Engineering and Technical Data

F-1000

Molded In-line Fitting

Three Model Variations:

- **Rate of flow display**
- **Total flow display**
- **Rate & Total display**

Features:

- **High accuracy digital paddlewheel technology.**
- **3/8", 1/2", 3/4", 1", 1-1/2", and 2" male pipe threads.**
- **Flow rate from .4 to 200 GPM**
- **Tamper proof factory programming.**
- **Easy to read 6 digit LCD display, up to 4 decimal places.**
- **Battery operated (2 AAA batteries included).**
- **Very low pressure drop.**
- **Total reset function can be disabled.**

Specifications:

Max. working pressure: .....300 PSI (20 bar) @ 70° F (21° C)
Max. fluid temperature: .....200° F (93° C) @ 0 PSI
Max. ambient temperature: ..14° to 110° F/ -10° to 43° C
Full scale accuracy: .....+/- 2%

Power requirement: .....2 AAA batteries (included)
Enclosure: .....NEMA 4X (IP56)
Maximum pressure drop: .....8 PSI (varies per model)
Approximate shipping wt: ...2 lb. (.91 kg)

Materials of Construction:

Pipe fitting: .....Polypropylene (options: PVDF)
Sensor, paddlewheel, axle: ..PVDF

Sensor O-ring seals: .....Viton® (optional EP)
Enclosure: .....ABS

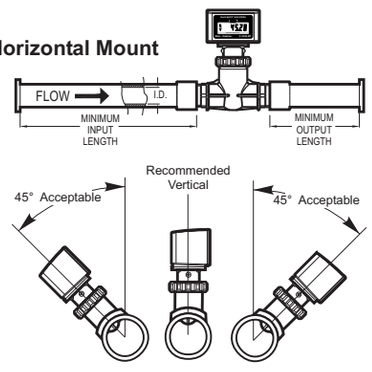
Installation Requirements:

Minimum Straight Pipe Length Requirements

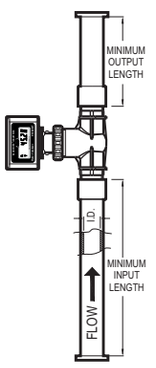
The meter's accuracy is affected by disturbances such as pumps, elbows, tees, valves, etc., in the flow stream. Install the meter in a straight run of pipe **as far as possible** from any disturbances. The distance required for accuracy will depend on the type of disturbance.

Type Of Disturbance	Minimum Inlet Pipe Length	Minimum Outlet Pipe Length
Flange	10 X Pipe I.D.	5 X Pipe I.D.
Reducer	15 X Pipe I.D.	5 X Pipe I.D.
90° Elbow	20 X Pipe I.D.	5 X Pipe I.D.
Two Elbows -1 Direction	25 X Pipe I.D.	5 X Pipe I.D.
Two Elbows -2 Directions	40 X Pipe I.D.	5 X Pipe I.D.
Pump Or Gate Valves	50 X Pipe I.D.	5 X Pipe I.D.

Horizontal Mount



Angle Mount on Horizontal Pipe



Vertical Mount

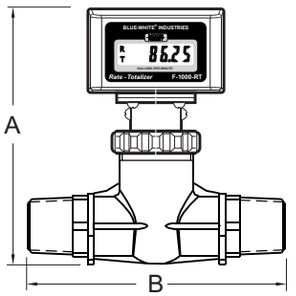
Mounting location

- The meter is designed to withstand outdoor conditions. A cool, dry location, where the unit can be easily serviced is recommended.
- The meter can be mounted on horizontal or vertical runs of pipe. Mounting at the vertical (twelve o'clock) position on horizontal pipe is recommended. Mounting anywhere around the diameter of vertical pipe is acceptable, however, the pipe must be completely full of water at all times. Back pressure is essential on downward flows. See the minimum straight length of pipe requirement chart above.
- The meter can accurately measure flow from either direction.

Blue-White® Industries, Ltd.

DigiFlo Digital Paddlewheel Meters

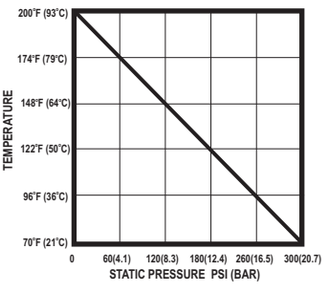
Dimensions:



Pipe Size	A	B
3/8”	5-3/8” (137)	4-3/4” (121)
1/2”	5-3/8” (137)	5-1/8” (130)
3/4”	5-5/8” (143)	5-1/4” (133)
1”	5-5/8” (143)	5-5/8” (143)
1-1/2”	6-1/8” (156)	6-1/2” (165)
2”	6-3/8” (162)	6-3/4” (171)

Inches (mm)

Maximum Temperature vs. Pressure



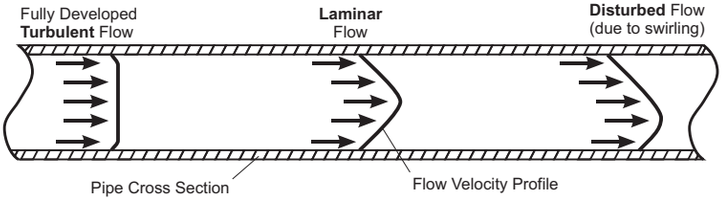
Flow Stream Requirements:

Measuring accuracy requires a fully developed ***turbulent*** flow profile. Pulsating, swirling and other disruptions in the flow stream will effect accuracy. Flow conditions with a ***Reynolds Number*** greater than 4000 will result in a fully developed ***turbulent*** flow. A Reynolds Number less than 2000 is ***laminar*** flow and may result in inaccurate readings.

REYNOLDS NUMBER EQUATION:

$$\text{REYNOLDS NUMBER} = \frac{3160 \times Q \times G}{D \times V}$$

Where:
Flow rate of the fluid in GPM = Q
Specific gravity of the fluid = G
Pipe inside diameter in inches = D
Fluid viscocity in centepoise = V



Pipe Size, Flow Range and Display Model Options:

Models with Polypropylene Pipe Fitting Material

Pipe Size M/NPT	GPM Range	GPM MODELS RATE ONLY Model Number	GPM MODELS TOTAL ONLY Model Number	GPM MODELS RATE & TOTAL Model Number	LPM Range	LPM MODELS RATE ONLY Model Number	LPM MODELS TOTAL ONLY Model Number	LPM MODELS RATE & TOTAL Model Number
3/8”	.8 to 8	RB-375MI-GPM1	TB-375MI-GPM1	RT-375MI-GPM1	3 to 30	RB-375MI-LPM1	TB-375MI-LPM1	RT-375MI-LPM1
3/8”	.4 to 4	RB-375MI-GPM2	TB-375MI-GPM2	RT-375MI-GPM2	1 to 10	RB-375MI-LPM2	TB-375MI-LPM2	RT-375MI-LPM2
1/2”	2 to 20	RB-500MI-GPM1	TB-500MI-GPM1	RT-500MI-GPM1	7 to 70	RB-500MI-LPM1	TB-500MI-LPM1	RT-500MI-LPM1
1/2”	.5 to 5	RB-500MI-GPM2	TB-500MI-GPM2	RT-500MI-GPM2	2 to 20	RB-500MI-LPM2	TB-500MI-LPM2	RT-500MI-LPM2
3/4”	3 to 30	RB-750MI-GPM1	TB-750MI-GPM1	RT-750MI-GPM1	11 to 110	RB-750MI-LPM1	TB-750MI-LPM1	RT-750MI-LPM1
3/4”	.8 to 8	RB-750MI-GPM2	TB-750MI-GPM2	RT-750MI-GPM2	3 to 30	RB-750MI-LPM2	TB-750MI-LPM2	RT-750MI-LPM2
1”	5 to 50	RB-100MI-GPM1	TB-100MI-GPM1	RT-100MI-GPM1	20 to 200	RB-100MI-LPM1	TB-100MI-LPM1	RT-100MI-LPM1
1”	2 to 20	RB-100MI-GPM2	TB-100MI-GPM2	RT-100MI-GPM2	7 to 70	RB-100MI-LPM2	TB-100MI-LPM2	RT-100MI-LPM2
1-1/2”	4 to 40	RB-150MI-GPM1	TB-150MI-GPM1	RT-150MI-GPM1	15 to 150	RB-150MI-LPM1	TB-150MI-LPM1	RT-150MI-LPM1
1-1/2”	6 to 60	RB-150MI-GPM2	TB-150MI-GPM2	RT-150MI-GPM2	25 to 250	RB-150MI-LPM2	TB-150MI-LPM2	RT-150MI-LPM2
1-1/2”	10 to 100	RB-150MI-GPM3	TB-150MI-GPM3	RT-150MI-GPM3	40 to 400	RB-150MI-LPM3	TB-150MI-LPM3	RT-150MI-LPM3
2”	4 to 40	RB-200MI-GPM1	TB-200MI-GPM1	RT-200MI-GPM1	15 to 150	RB-200MI-LPM1	TB-200MI-LPM1	RT-200MI-LPM1
2”	6 to 60	RB-200MI-GPM2	TB-200MI-GPM2	RT-200MI-GPM2	25 to 250	RB-200MI-LPM2	TB-200MI-LPM2	RT-200MI-LPM2
2”	10 to 100	RB-200MI-GPM3	TB-200MI-GPM3	RT-200MI-GPM3	40 to 400	RB-200MI-LPM3	TB-200MI-LPM3	RT-200MI-LPM3
2”	20 to 200	RB-200MI-GPM4	TB-200MI-GPM4	RT-200MI-GPM4	70 to 700	RB-200MI-LPM4	TB-200MI-LPM4	RT-200MI-LPM4

Models with PVDF Pipe Fitting Material

3/8”	.8 to 8	RB-375FI-GPM1	TB-375FI-GPM1	RT-375FI-GPM1	3 to 30	RB-375FI-LPM1	TB-375FI-LPM1	RT-375FI-LPM1
3/8”	.4 to 4	RB-375FI-GPM2	TB-375FI-GPM2	RT-375FI-GPM2	1 to 10	RB-375FI-LPM2	TB-375FI-LPM2	RT-375FI-LPM2
1/2”	2 to 20	RB-500FI-GPM1	TB-500FI-GPM1	RT-500FI-GPM1	7 to 70	RB-500FI-LPM1	TB-500FI-LPM1	RT-500FI-LPM1
1/2”	.5 to 5	RB-500FI-GPM2	TB-500FI-GPM2	RT-500FI-GPM2	2 to 20	RB-500FI-LPM2	TB-500FI-LPM2	RT-500FI-LPM2
3/4”	3 to 30	RB-750FI-GPM1	TB-750FI-GPM1	RT-750FI-GPM1	11 to 110	RB-750FI-LPM1	TB-750FI-LPM1	RT-750FI-LPM1
3/4”	.8 to 8	RB-750FI-GPM2	TB-750FI-GPM2	RT-750FI-GPM2	3 to 30	RB-750FI-LPM2	TB-750FI-LPM2	RT-750FI-LPM2
1”	5 to 50	RB-100FI-GPM1	TB-100FI-GPM1	RT-100FI-GPM1	20 to 200	RB-100FI-LPM1	TB-100FI-LPM1	RT-100FI-LPM1
1”	2 to 20	RB-100FI-GPM2	TB-100FI-GPM2	RT-100FI-GPM2	7 to 70	RB-100FI-LPM2	TB-100FI-LPM2	RT-100FI-LPM2
1-1/2”	4 to 40	RB-150FI-GPM1	TB-150FI-GPM1	RT-150FI-GPM1	15 to 150	RB-150FI-LPM1	TB-150FI-LPM1	RT-150FI-LPM1
1-1/2”	6 to 60	RB-150FI-GPM2	TB-150FI-GPM2	RT-150FI-GPM2	25 to 250	RB-150FI-LPM2	TB-150FI-LPM2	RT-150FI-LPM2
1-1/2”	10 to 100	RB-150FI-GPM3	TB-150FI-GPM3	RT-150FI-GPM3	40 to 400	RB-150FI-LPM3	TB-150FI-LPM3	RT-150FI-LPM3
2”	4 to 40	RB-200FI-GPM1	TB-200FI-GPM1	RT-200FI-GPM1	15 to 150	RB-200FI-LPM1	TB-200FI-LPM1	RT-200FI-LPM1
2”	6 to 60	RB-200FI-GPM2	TB-200FI-GPM2	RT-200FI-GPM2	25 to 250	RB-200FI-LPM2	TB-200FI-LPM2	RT-200FI-LPM2
2”	10 to 100	RB-200FI-GPM3	TB-200FI-GPM3	RT-200FI-GPM3	40 to 400	RB-200FI-LPM3	TB-200FI-LPM3	RT-200FI-LPM3
2”	20 to 200	RB-200FI-GPM4	TB-200FI-GPM4	RT-200FI-GPM4	70 to 700	RB-200FI-LPM4	TB-200FI-LPM4	RT-200FI-LPM4

Blue-White Industries, Ltd.
5300 Business Drive, Huntington Beach, CA 92649
Tel: 714-893-8529 **Fax:** 714-894-9492
www.blue-white.com **Email:** sales@blue-white.com

Technical data sheet #85000-022 rev.080106

Blue-White Industries, Ltd.

Technical Data Sheet

F-1000 Series - Digital Paddlewheel Flowmeter with Saddle & Tee Fittings

F-1000 Features:

- Easy to read 6 digit LCD, up to 4 decimal positions.
- Tamper proof.
- Battery operated (2 AAA batteries included).
- 3 model variations:
  - RB = RATE ONLY
  - TB = TOTAL ONLY
  - RT = RATE & TOTALIZER
- Total reset function can be disabled.
- Display update time: Rate 1.5 sec., Total 0.5 sec.
- Factory calibrated - nothing to program.
- Custom calibration units available. Contact the factory.
- Weather resistant ABS enclosure. NEMA 4X
- LCD is not recommended for direct sunlight applications.

F-1000 Specifications:

Max. Working Pressure ..... 300 psig (20 bar) @ 70° F (21° C)
Max. Fluid Temperature ..... 200° F (93° C) @ 0 PSI (**all PVDF saddles and SS Tee fittings**)
140° F (60° C) @ 0 PSI (**all PVC saddles and PVC Tee fittings**)
Note: *Temperature rating of F-1000 only. Actual pipe rating may vary.*
Full scale accuracy ..... +/- 2%
Saddle material..... PVDF (**1-1/2", 2", 3", 50mm, 63mm, 90mm sizes**)
PVC (**all other sizes**)
Sensor/Paddle/Axle material . PVDF
O-ring seals: ..... Viton
Max. pressure drop: ..... 0 psi (no significant pressure drop)
Approximate shipping weight. 2 lb. (.91 kg)

Saddle Mount
RT-300S8-GPM1

316 Stainless Steel Tee
RT-100ST-GPM1

PVC Tee
RT-200AT-GPM1

Models for Saddle mounting on U.S. IPS Pipe (ASTM 1785)

Pipe Size	GPM Flow Range	SCHEDULE 40 MODELS RATE ONLY Model Number	TOTAL ONLY Model Number	RATE & TOTAL Model Number	SCHEDULE 80 MODELS RATE ONLY Model Number	TOTAL ONLY Model Number	RATE & TOTAL Model Number
1-1/2"	15 to 150	RB-150S4-GPM1	TB-150S4-GPM1	RT-150S4-GPM1	RB-150S8-GPM1	TB-150S8-GPM1	RT-150S8-GPM1
2"	30 to 300	RB-200S4-GPM1	TB-200S4-GPM1	RT-200S4-GPM1	RB-200S8-GPM1	TB-200S8-GPM1	RT-200S8-GPM1
2-1/2"	40 to 400	RB-250S4-GPM1	TB-250S4-GPM1	RT-250S4-GPM1	RB-250S8-GPM1	TB-250S8-GPM1	RT-250S8-GPM1
3"	60 to 600	RB-300S4-GPM1	TB-300S4-GPM1	RT-300S4-GPM1	RB-300S8-GPM1	TB-300S8-GPM1	RT-300S8-GPM1
4"	100 to 1000	RB-400S4-GPM1	TB-400S4-GPM1	RT-400S4-GPM1	RB-400S8-GPM1	TB-400S8-GPM1	RT-400S8-GPM1
6"	250 to 2500	RB-600S4-GPM1	TB-600S4-GPM1	RT-600S4-GPM1	RB-600S8-GPM1	TB-600S8-GPM1	RT-600S8-GPM1
8"	400 to 4000	RB-800S4-GPM1	TB-800S4-GPM1	RT-800S4-GPM1	RB-800S8-GPM1	TB-800S8-GPM1	RT-800S8-GPM1
10"	600 to 6000	RB-1000S4-GPM1	TB-1000S4-GPM1	RT-1000S4-GPM1	RB-1000S8-GPM1	TB-1000S8-GPM1	RT-1000S8-GPM1
12"	800 to 8000	RB-1200S4-GPM1	TB-1200S4-GPM1	RT-1200S4-GPM1	RB-1200S8-GPM1	TB-1200S8-GPM1	RT-1200S8-GPM1

Models for mounting on Solvent Weld PVC TEE

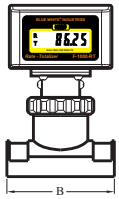
Pipe Size	GPM Flow Range	GPM MODELS RATE ONLY Model Number	TOTAL ONLY Model Number	RATE & TOTAL Model Number	LPM Flow Range	LPM MODELS RATE ONLY Model Number	TOTAL ONLY Model Number	RATE & TOTAL Model Number
1"	6 to 60	RB-100AT-GPM1	TB-100AT-GPM1	RT-100AT-GPM1	25 to 250	RB-100AT-LPM1	TB-100AT-LPM1	RT-100AT-LPM1
1-1/2"	15 to 150	RB-150AT-GPM1	TB-150AT-GPM1	RT-150AT-GPM1	60 to 600	RB-150AT-LPM1	TB-150AT-LPM1	RT-150AT-LPM1
2"	30 to 300	RB-200AT-GPM1	TB-200AT-GPM1	RT-200AT-GPM1	100 to 1000	RB-200AT-LPM1	TB-200AT-LPM1	RT-200AT-LPM1
3"	60 to 600	RB-300AT-GPM1	TB-300AT-GPM1	RT-300AT-GPM1	230 to 2300	RB-300AT-LPM1	TB-300AT-LPM1	RT-300AT-LPM1

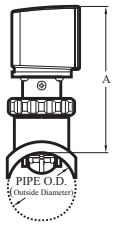
Models for mounting on F/NPT 316 Stainless Steel TEE

Pipe Size	GPM Flow Range	GPM MODELS RATE ONLY Model Number	TOTAL ONLY Model Number	RATE & TOTAL Model Number	LPM Flow Range	LPM MODELS RATE ONLY Model Number	TOTAL ONLY Model Number	RATE & TOTAL Model Number
1"	6 to 60	RB-100ST-GPM1	TB-100ST-GPM1	RT-100ST-GPM1	25 to 250	RB-100ST-LPM1	TB-100ST-LPM1	RT-100ST-LPM1
1-1/2"	15 to 150	RB-150ST-GPM1	TB-150ST-GPM1	RT-150ST-GPM1	60 to 600	RB-150ST-LPM1	TB-150ST-LPM1	RT-150ST-LPM1
2"	30 to 300	RB-200ST-GPM1	TB-200ST-GPM1	RT-200ST-GPM1	100 to 1000	RB-200ST-LPM1	TB-200ST-LPM1	RT-200ST-LPM1

Saddle Dim.

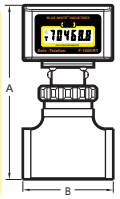
PIPE SIZE IN.(MM)	A	B
150(050)	4-5/16"	3-3/16"
200(063)	4-5/16"	3-3/16"
250 (75)	4-5/16"	3-3/16"
300(090)	4-5/16"	3-3/16"
400(110)	4-5/16"	3-3/16"
600(160)	4-1/4"	3-3/16"
800(200)	4-1/4"	3-3/16"
1000(250)	4-1/4"	4-1/2"
1200(315)	4-1/4"	4-1/2"





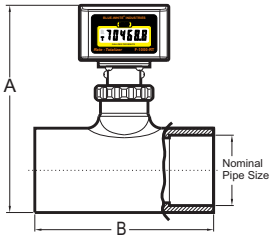
316 SS Tee Dimensions

MODEL	A	B
RB-100	5-1/2"	3"
RB-150	6-1/4"	3-13/16"
RB-200	6-3/4"	4-7/16"



PVC Tee Dimensions

MODEL	A	B
RB-100	4"	6"
RB-150	4-1/2"	6-5/8"
RB-200	4-3/4"	7-1/8"



5300 Business Drive, Huntington Beach, CA 92649 ● (ph) 714-893-8529 ● (fx) 714-894-9492 ● (em) sales@blue-white.com
View Technical Data at www.blue-white.com

Technical data sheet #85000-024 rev.060816

Blue-White Industries, Ltd.

Blue-White Industries, Ltd.

Installation Guidelines

F-1000 Series - Digital Paddlewheel Flowmeter with Saddle & Tee Fittings

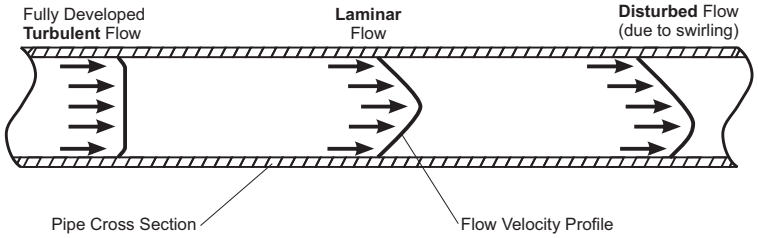
Fluid Flow Stream Requirements

Measuring accuracy requires a fully developed ***turbulent*** flow profile. Pulsating, swirling and other disruptions in the flow stream will effect accuracy. Flow conditions with a ***Reynolds Number*** greater than 4000 will result in a fully developed ***turbulent*** flow. A Reynolds Number less than 2000 is ***laminar*** flow and may result in inaccurate readings.

REYNOLDS NUMBER EQUATION:

$$\text{REYNOLDS NUMBER} = \frac{3160 \times Q \times G}{D \times V}$$

Where:
Flow rate of the fluid in GPM = Q
Specific gravity of the fluid = G
Pipe inside diameter in inches = D
Fluid viscocity in centepoise = V



Minimum Straight Pipe Length Requirements

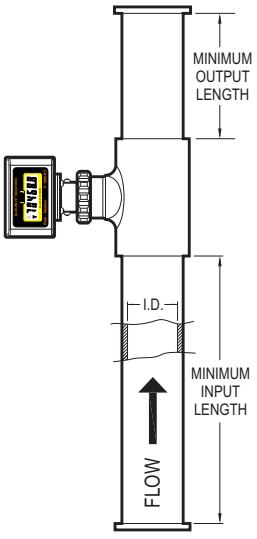
The meter's accuracy is affected by disturbances such as pumps, elbows, tees, valves, etc., in the flow stream. Install the meter in a straight run of pipe **as far as possible** from any disturbances. The distance required for accuracy will depend on the type of disturbance.

Type Of Disturbance	Minimum Inlet Pipe Length	Minimum Outlet Pipe Length
Flange	10 X Pipe Inside Diameter	5 X Pipe Inside Diameter
Reducer	15 X Pipe Inside Diameter	5 X Pipe Inside Diameter
90° Elbow	20 X Pipe Inside Diameter	5 X Pipe Inside Diameter
Two 90° Elbows -1 Direction	25 X Pipe Inside Diameter	5 X Pipe Inside Diameter
Two 90° Elbows -2 Directions	40 X Pipe Inside Diameter	5 X Pipe Inside Diameter
Pump Or Gate Valves	50 X Pipe Inside Diameter	5 X Pipe Inside Diameter

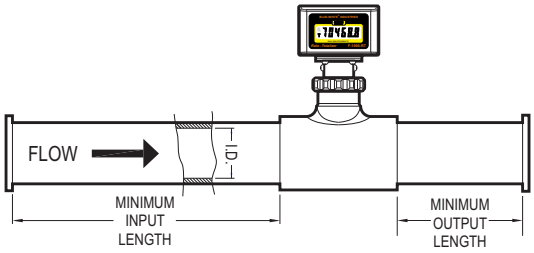
Mounting location and pressure/temperature requirements

- The meter is designed to withstand outdoor conditions. A cool, dry location, where the unit can be easily serviced is recommended.
- The meter can be mounted on horizontal or vertical runs of pipe. Mounting at the vertical (twelve o'clock) position on horizontal pipe is recommended. Mounting anywhere around the diameter of vertical pipe is acceptable, however, the pipe must be completely full of water at all times. Back pressure is essential on downward flows. See the minimum straight length of pipe requirement chart above.
- The meter can accurately measure flow from either direction.

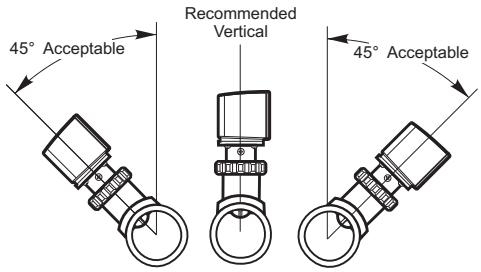
Vertical Mount



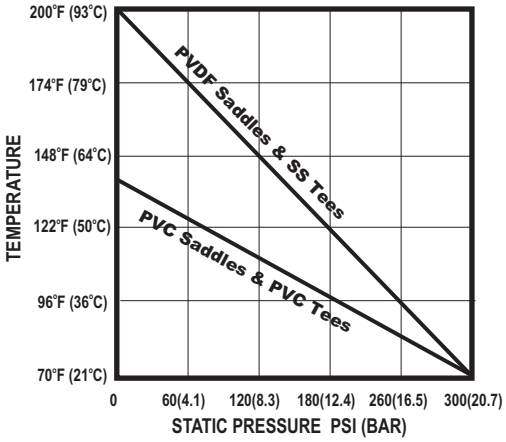
Horizontal Mount



Angle Mount on Horizontal Pipe



Maximum Temperature vs. Pressure



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