

## VELOCITY TO GPM CONVERSIONS

in standard wall pipes\*

Flow Velocity (ft/sec) x Factor (1 ft/sec) = GPM

Typical HVAC Design Maximum Flow = 4 to 8 ft/sec



Nominal Pipe Size	GPM @ 1 ft/sec	GPM @ 2 ft/sec	GPM @ 4 ft/sec	GPM @ 8 ft/sec	GPM @ 10 ft/sec	GPM @ 12 ft/sec
0.50*	0.9	1.9	3.8	7.6	9.5	11.4
0.75*	1.7	3.3	6.6	13	17	20
1*	2.7	6	12	24	30	36
1.25*	4.7	9.3	19	37	47	56
1.5*	6.4	13	25	51	64	76
2*	11	21	42	84	105	126
2.5*	15	30	60	119	149	179
3*	23	46	92	184	230	279
4*	40	79	159	318	397	476
6*	90	180	360	720	900	1,080
8*	156	312	624	1,248	1,560	1,872
10*	246	492	984	1,968	2,460	2,952
12	353	706	1,412	2,824	3,530	4,236
14	430	860	1,720	3,440	4,300	5,160
16	569	1,138	2,276	4,552	5,690	6,828
18	728	1,456	2,912	5,824	7,280	8,736
20	907	1,814	3,628	7,256	9,070	10,884
24	1,323	2,646	5,292	10,584	13,230	15,876
30	2,094	4,188	8,378	16,755	20,940	25,133
36	3,042	6,084	12,168	24,336	30,420	36,504
42	4,165	8,330	16,660	33,320	41,650	49,980
48	5,465	10,930	21,861	43,722	54,650	65,583

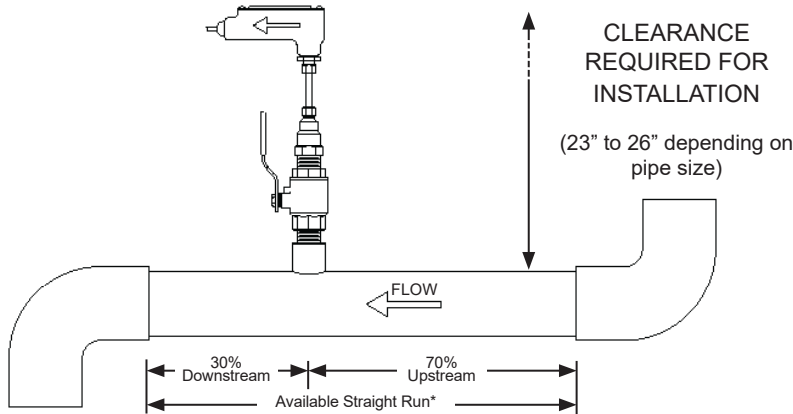
\* Standard Wall and Schedule 40 are the same up to 10"

# Turbine Flow Meter Site Selection General Guidelines

- Acceptable to install in vertical pipe
- Position meter anywhere in the upper 240° for horizontal pipe



## Evaluating Upstream Piping Conditions



- ↑ BETTER  
↓ WORSE
- Straight Pipe
  - Single Bend
  - Pipe Reduction or Enlargement
  - Outflowing Tees
  - Multiple Bends in Same Plane
  - Multiple Bends Out of Plane
  - Inflowing Tees
  - Control Valve

\* Contact ONICON for model specific straight run requirements.

## Helpful Formulae

### Energy Calculations

$$\text{BTU/Hr} = 500 * \text{Flow Rate (GPM)} \times \text{Delta-T (}^{\circ}\text{F)}$$

$$1 \text{ Ton} = 12,000 \text{ BTU/Hr}$$

### ONICON Specific Flow Calculations

#### Calculate Flow Rate from Frequency Output

$$\text{GPM} = \frac{(\text{Measured Frequency (Hz)} \times 60)}{\text{Meter Factor}^{**} \text{ (PPG)}}$$

#### Calculate Flow Rate from Current Output (4-20 mA)

$$\text{GPM} = \frac{(\text{Measured Current (mA)} - 4)}{16 \text{ mA}} \times \boxed{\text{Full Scale Flow Rate}^{**}}$$

#### Calculate Flow Rate from Voltage Output (0-10 VDC)

$$\text{GPM} = \frac{\text{Measured Voltage (DC)}}{10} \times \boxed{\text{Full Scale Flow Rate}^{**}}$$

\* Approximation for water.

\*\* Refer to calibration tag or certificate.