The proper size of a magmeter is an important issue in terms of performance and longevity. It is often better to calculate the ideal meter size rather than simply match the existing pipe size in order to ensure an appropriate liquid velocity to achieve optimal accuracy, reduce abrasion or settling, and prevent cavitation. Use the following velocity equation and design for optimal velocity ranges based on the specific application.

Recommendations

1. Minimum full-scale velocity should be above 1.5 ft/sec depending on accuracy requirements, and maximum full scales should be less than 40 ft/sec

2. For normal conditions design for a full-scale flow rate of 3-10 ft/sec

3. If liquid has solids, velocity should be between 9 and 15 ft/sec to prevent coating or settling of the solids

4. If liquid is abrasive, limit full scale velocity to 5 ft/sec

Equations

$$V = \frac{0.4085 \times GPM}{D^2} \quad \text{or} \quad GPM = 2.448 \times V \times D^2 \quad \text{or} \quad D = \sqrt{\frac{0.4085 \ x \ GPM}{V}}$$

V = Velocity in Feet/Second
GPM = Flow rate in Gallons Per Minute
D = Meter diameter in Inches

Table for TOSHIBA magmeters

Meter Size	Ranges-GPM		GPM @ 1 ft/s	GPM @ 5 ft/s	GPM @ 10 ft/s
¼	0-0.5	0-5	0.2	1	2
½	0-1	0-50	0.6	3	6
1	0-5	0-100	3	12	24
1.5	0-10	0-200	6	28	55
2	0-15	0-300	10	48	97
3	0-25	0-800	22	110	220
4	0-40	0-1,200	39	195	391
6	0-100	0-3,000	88	440	881
8	0-200	0-5,000	156	783	1,566
10	0-300	0-8,000	244	1,224	2,448
12	0-400	0-11,000	352	1,762	3,525
14	0-500	0-15,000	479	2,399	4,798
16	0-700	0-19,900	626	3,133	6,266
18	0-800	0-25,000	794	3,965	7,932
20	0-1,000	0-30,000	979	4,896	9,792
24	0-1,500	0-45,000	1,410	7,050	14,100