SCC Inc.

Technical Instructions

Document No. M2-1000

January 27, 2022

M2 Series

Magnetic Water Flow Meters

Product Description

M2... series water flow meters accurately measure flow rate without moving parts. The system consists of a flow section and a transmitter, and can be ordered with the transmitter mounted on the flow section (local) or separate from the flow section (remote).

Features

- Supports 4-20 mA or pulse outputs
- Pressure drop of the meter is equivalent to straight pipe
- Excellent accuracy at low flow rates
- Allows mounting with zero upstream/downstream pipe diameters while maintaining an accuracy of ±1% of flow when flow velocity ≥ 0.5 ft/s
- Grounding hardware included with meter

Product Part Numbers

For flow meter part number identification only. Not all possible part number combinations are available. See table 1 for available M2... flow meter part number combinations.

M2 005 - P1 - A - L - 15 - S - XX - G - F

Model

Diameter

005	= 1/2"
007	= 3/4"
010	= 1"
012	= 1-1/4"
015	= 1-1/2"
020	= 2"
025	= 2-1/2"
030	= 3"
040	= 4"

Flange Material

P1	= Carbon Steel, ANSI 150
P2	= Carbon Steel, ANSI 300
P4	= Stainless Steel, ANSI 150

Electrode

A	= Alloy C & Grounding Rings

Transmitter Mounting

E	= Local (Max 212°)
F	= Remote (Max 302°)

Cable Length*

WW	= None (Choose for local mounting)
AC	= 15 feet
AF	= 30 feet
AR	= 75 feet
BW	= 100 feet

Communication/Output

S	= Standard

Wiring Method

XX	= None

Units

G	= GPM

Testing/Tagging

F	= Factory

**Cable cannot be cut during installation*

Note: the maximum water temperature through a meter with a locally mounted transmitter is 212° F, and through a meter with a remote mounted transmitter is 302° F.

Product Part Numbers (continued)

Table 1: Available Product Part Numbers

Pipe Size	Min Flow for Accurate Measurement*		Max Flow			Flange Material	ANSI Flange Class	Mounting	Part Number
	GPM	lb/hr	GPM	lb/hr	BHP				
1/2"	0.08	42.06	33.6	16,824	498	Carbon Steel	150	Local	M2-005-P1-A-E-WW-S-XX-G-F
								Remote	M2-005-P1-A-F-☐☐-S-XX-G-F
						Stainless Steel		Local	M2-005-P4-A-E-WW-S-XX-G-F
								Remote	M2-005-P4-A-F-☐☐-S-XX-G-F
						Carbon Steel	300	Local	M2-005-P2-A-E-WW-S-XX-G-F
								Remote	M2-005-P2-A-F-☐☐-S-XX-G-F
3/4"	0.15	74.61	60	30,043	889	Carbon Steel	150	Local	M2-007-P1-A-E-WW-S-XX-G-F
								Remote	M2-007-P1-A-F-☐☐-S-XX-G-F
						Stainless Steel		Local	M2-007-P4-A-E-WW-S-XX-G-F
								Remote	M2-007-P4-A-F-☐☐-S-XX-G-F
						Carbon Steel	300	Local	M2-007-P2-A-E-WW-S-XX-G-F
								Remote	M2-007-P2-A-F-☐☐-S-XX-G-F
1"	0.23	116.67	93	46,567	1,378	Carbon Steel	150	Local	M2-010-P1-A-E-WW-S-XX-G-F
								Remote	M2-010-P1-A-F-☐☐-S-XX-G-F
						Stainless Steel		Local	M2-010-P4-A-E-WW-S-XX-G-F
								Remote	M2-010-P4-A-F-☐☐-S-XX-G-F
						Carbon Steel	300	Local	M2-010-P2-A-E-WW-S-XX-G-F
								Remote	M2-010-P2-A-F-☐☐-S-XX-G-F

*Minimum flow required for less than 1% measurement error

Notes: (1) On remote-mount transmitter orders, replace "☐☐" with AC, AF, AR, or BW to specify the length of the cable in feet (see product part number tree)

(2) Also see "Flow Considerations" section for additional sizing information

Product Part Numbers (continued)

Table 1: Available Product Part Numbers (Continued)

Pipe Size	Min Flow for Accurate Measurement*		Max Flow			Flange Material	ANSI Flange Class	Mounting	Part Number
	GPM	lb/hr	GPM	lb/hr	BHP				
1-1/4"	0.38	191.28	153	76,610	2,267	Carbon Steel	150	Local	M2-012-P1-A-E-WW-S-XX-G-F
								Remote	M2-012-P1-A-F-☐☐-S-XX-G-F
						Stainless Steel		Local	M2-012-P4-A-E-WW-S-XX-G-F
								Remote	M2-012-P4-A-F-☐☐-S-XX-G-F
						Carbon Steel	300	Local	M2-012-P2-A-E-WW-S-XX-G-F
								Remote	M2-012-P2-A-F-☐☐-S-XX-G-F
1-1/2"	0.60	300.43	239	119,672	3,541	Carbon Steel	150	Local	M2-015-P1-A-E-WW-S-XX-G-F
								Remote	M2-015-P1-A-F-☐☐-S-XX-G-F
						Stainless Steel		Local	M2-015-P4-A-E-WW-S-XX-G-F
								Remote	M2-015-P4-A-F-☐☐-S-XX-G-F
						Carbon Steel	300	Local	M2-015-P2-A-E-WW-S-XX-G-F
								Remote	M2-015-P2-A-F-☐☐-S-XX-G-F
2"	0.93	465.67	373	186,769	5,526	Carbon Steel	150	Local	M2-020-P1-A-E-WW-S-XX-G-F
								Remote	M2-020-P1-A-F-☐☐-S-XX-G-F
						Stainless Steel		Local	M2-020-P4-A-E-WW-S-XX-G-F
								Remote	M2-020-P4-A-F-☐☐-S-XX-G-F
						Carbon Steel	300	Local	M2-020-P2-A-E-WW-S-XX-G-F
								Remote	M2-020-P2-A-F-☐☐-S-XX-G-F

*Minimum flow required for less than 1% measurement error

Notes: (1) On remote-mount transmitter orders, replace "☐☐" with AC, AF, AR, or BW to specify the length of the cable in feet (see product part number tree)

(2) Also see "Flow Considerations" section for additional sizing information

Product Part Numbers (continued)

Table 1: Available Product Part Numbers (Continued)

Pipe Size	Min Flow for Accurate Measurement*		Max Flow			Flange Material	ANSI Flange Class	Mounting	Part Number
	GPM	lb/hr	GPM	lb/hr	BHP				
2-1/2"	1.58	791.14	631	315,954	9,348	Carbon Steel	150	Local	M2-025-P1-A-E-WW-S-XX-G-F
								Remote	M2-025-P1-A-F-☐☐-S-XX-G-F
						Stainless Steel		Local	M2-025-P4-A-E-WW-S-XX-G-F
								Remote	M2-025-P4-A-F-☐☐-S-XX-G-F
						Carbon Steel	300	Local	M2-025-P2-A-E-WW-S-XX-G-F
								Remote	M2-025-P2-A-F-☐☐-S-XX-G-F
3"	2.39	1,196.72	956	478,688	14,162	Carbon Steel	150	Local	M2-030-P1-A-E-WW-S-XX-G-F
								Remote	M2-030-P1-A-F-☐☐-S-XX-G-F
						Stainless Steel		Local	M2-030-P4-A-E-WW-S-XX-G-F
								Remote	M2-030-P4-A-F-☐☐-S-XX-G-F
						Carbon Steel	300	Local	M2-030-P2-A-E-WW-S-XX-G-F
								Remote	M2-030-P2-A-F-☐☐-S-XX-G-F
4"	3.73	1,867.69	1,494	748,076	22,132	Carbon Steel	150	Local	M2-040-P1-A-E-WW-S-XX-G-F
								Remote	M2-040-P1-A-F-☐☐-S-XX-G-F
						Stainless Steel		Local	M2-040-P4-A-E-WW-S-XX-G-F
								Remote	M2-040-P4-A-F-☐☐-S-XX-G-F
						Carbon Steel	300	Local	M2-040-P2-A-E-WW-S-XX-G-F
								Remote	M2-040-P2-A-F-☐☐-S-XX-G-F

*Minimum flow required for less than 1% measurement error

Notes: (1) On remote-mount transmitter orders, replace "☐☐" with 15, 30, 75, or 100 to specify the length of the cable in feet.

(2) Also see "Flow Considerations" section for additional sizing information

Accessories

Grounding Rings	Installation of grounding rings is required to ensure accuracy of M2... meter. These are included with each flowmeter.
67079-001 HART communication module for M2... meter	The M2... meter can optionally be fitted with a HART or Modbus communication card to enable digital or bus communications.
67079-003 Modbus communication module for M2... meter	The communication card is easily installed in the communication interface connector on the main board of the transmitter, shown in Figure 1 below.
67354-006 Parameter set store/restore token for M2...meter	Optional store/restore token used to make parameter backups and restore them to the meter, or to copy the parameter set to another meter.

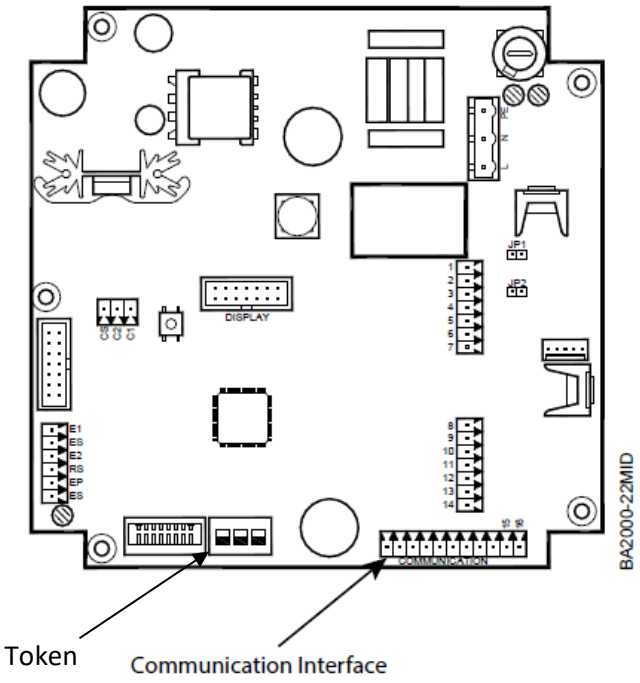


Figure 1: Transmitter Circuit Board Diagram

Specifications

Physical Characteristics	Operating voltage	10 … 36 V DC
	Rated accuracy	Flow error ± 0.2% of rate, at or above 6.56 ft/s* Flow error ± 1% of rate, at or above 0.1 ft/s
	Minimum water conductivity for rated accuracy	5 µS/cm
	Velocity Range	0.10 . . . 39.4 ft/s
	Materials	
	Liner	
	¼" thru 3/8"	PFA
	½" and above	PTFE
	Housing	Stainless or carbon steel
	Flanges	Stainless or carbon steel
	Electrodes	Hastelloy C
	NEMA rating	NEMA 4X (IP67)
	Process connection	ANSI class 150 or 300 flanged
	Electrical connection	3 x M20 cable glands
Operating Environment	Straight length requirement*	
	Upstream	5 pipe diameters
	Downstream	3 pipe diameters
	Maximum water temperature	
	Local mounting	212° F
	Remote mounting	302° F
	Ambient temperature	-4 to 140° F

*With velocity ≥ 0.5 ft/s, accuracy of ±1% of flow is maintained even with 0 upstream/downstream straight run length. Accuracy is higher when straight length requirements are followed.

Pressure and Temperature Considerations

Table 2: Maximum Pressure for Given Water Temperatures, In Accordance with ANSI B16.5

Temperature	Maximum allowable pressure in PSIG	
	ANSI Class 150	ANSI Class 300
-32 to 100°F	285	740
150°F	273	710
200°F	260	680
250°F	245	668
300°F*	230	655

Note: the maximum water temperature through a meter with a locally mounted transmitter is 212° F, and through a meter with a remote mounted transmitter is 302° F.

The relationship between pressure and temperature can be interpolated between points given in the chart above.

Flow Considerations

When there is no change in diameter, head loss across the flow meter is taken as a straight pipe section. In cases where the pipe size needs to be reduced for the measurement section to have the proper velocity for measurement, the pressure drop will need to be considered. There is a minimum flow rate of 1.65 ft/s (0.5 m/s) across the flow meter for accurate measurement, as shown in the chart below.

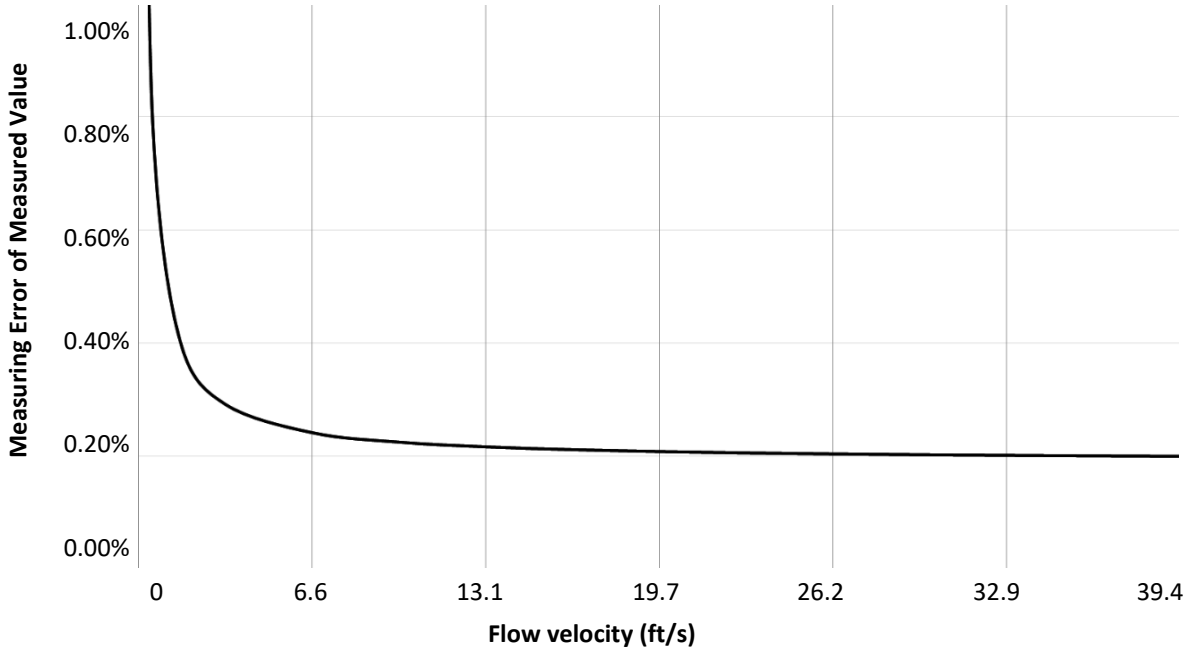


Figure 2: Meter Accuracy as a Function Of Flow Velocity

Flow Considerations (continued)

In larger piping, pipe reducers can be mounted to reduce the diameter and increase the flow rate across the metering section, which may increase low-flow measurement accuracy. Flow rate, turndown, and total PSID drop should be taken into consideration when sizing the flow meter. Figure 3 below shows a common type of pipe reducer/expander than can be used for this application.

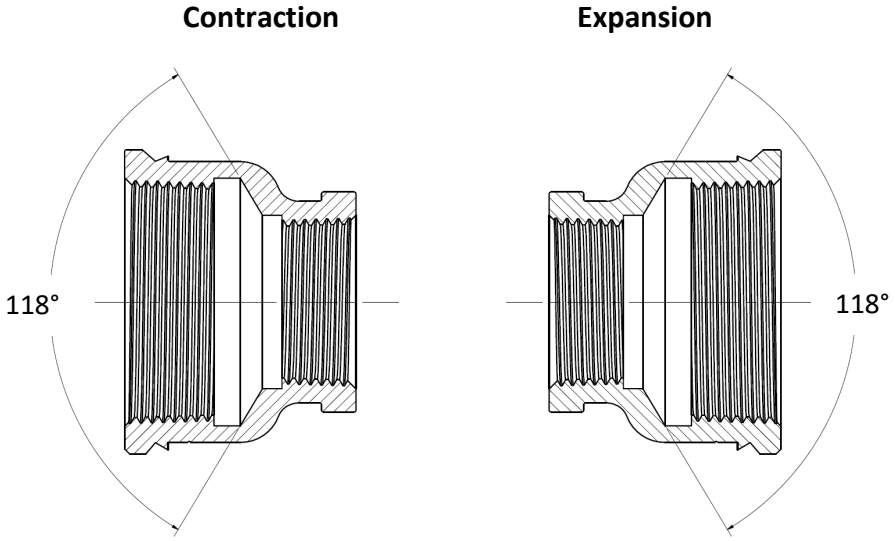


Figure 3: Threaded Bell Reducers

These threaded bell reducers are the worst-case for pressure drop due to the large angle. Welded reducers with a smaller angle will result in less pressure drop. The tables on the following pages can be used to find the approximate head loss across a reduced section for common pipe sizes using threaded bell reducers. Equations for calculation of pressure loss are provided on page 12 if a more precise pressure drop value is required.

Flow Considerations (continued)

Table 3A: Pressure Loss for Common Pipe Diameter Changes At 100% (Maximum) Flow for Meter

Pipe Size	Meter Size	Water Flow		Contraction Loss	Expansion Loss	Total Drop
		GPM	BHP	PSID	PSID	PSID
3/4"	1/2"	37	526	22.65	30.73	53.38
1"	1/2"	37	526	74.94	125.18	200.12
1"	3/4"	65	922	9.38	9.92	19.30
1 1/4"	3/4"	65	922	40.25	61.27	101.52
1 1/4"	1"	106	1,495	8.58	8.81	17.39
1 1/2"	1"	106	1,495	20.57	27.29	47.85
2"	1"	106	1,495	70.14	116.16	186.31
1 1/2"	1 1/4"	184	2,587	5.45	4.67	10.12
2"	1 1/4"	184	2,587	23.81	32.68	56.49
2"	1 1/2"	250	3,521	8.58	8.81	17.39
2 1/2"	2"	412	5,804	3.99	2.97	6.96

Table 3B: Pressure Loss for Common Pipe Diameter Changes At 75% Flow for Meter

Pipe Size	Meter Size	Water Flow		Contraction Loss	Expansion Loss	Total Drop
		GPM	BHP	PSID	PSID	PSID
3/4"	1/2"	28	395	12.74	17.29	30.03
1"	1/2"	28	395	42.15	70.41	112.57
1"	3/4"	49	692	5.27	5.58	10.86
1 1/4"	3/4"	49	692	22.64	34.46	57.10
1 1/4"	1"	80	1,121	4.83	4.95	9.78
1 1/2"	1"	80	1,121	11.57	15.35	26.92
2"	1"	80	1,121	39.46	65.34	104.80
1 1/2"	1 1/4"	138	1,940	3.06	2.63	5.69
2"	1 1/4"	138	1,940	13.39	18.38	31.78
2"	1 1/2"	188	2,641	4.83	4.95	9.78
2 1/2"	2"	309	4,353	2.25	1.67	3.92

NOTE: Internal diameters for Schedule 40 pipe are used for calculations in tables above

Flow Considerations (continued)

Table 3C: Pressure Loss for Common Pipe Diameter Changes At 50% Flow for Meter

Pipe Size	Meter Size	Water Flow		Contraction Loss	Expansion Loss	Total Drop
		GPM	BHP	PSID	PSID	PSID
3/4"	1/2"	19	263	5.66	7.68	13.34
1"	1/2"	19	263	18.74	31.30	50.03
1"	3/4"	33	461	2.34	2.48	4.82
1 1/4"	3/4"	33	461	10.06	15.32	25.38
1 1/4"	1"	53	748	2.15	2.20	4.35
1 1/2"	1"	53	748	5.14	6.82	11.96
2"	1"	53	748	17.54	29.04	46.58
1 1/2"	1 1/4"	92	1,294	1.36	1.17	2.53
2"	1 1/4"	92	1,294	5.95	8.17	14.12
2"	1 1/2"	125	1,761	2.15	2.20	4.35
2 1/2"	2"	206	2,902	1.00	0.74	1.74

Table 3D: Pressure Loss for Common Pipe Diameter Changes At 25% Flow for Meter

Pipe Size	Meter Size	Water Flow		Contraction Loss	Expansion Loss	Total Drop
		GPM	BHP	PSID	PSID	PSID
3/4"	1/2"	9	132	1.42	1.92	3.34
1"	1/2"	9	132	4.68	7.82	12.51
1"	3/4"	16	231	0.59	0.62	1.21
1 1/4"	3/4"	16	231	2.52	3.83	6.34
1 1/4"	1"	27	374	0.54	0.55	1.09
1 1/2"	1"	27	374	1.29	1.71	2.99
2"	1"	27	374	4.38	7.26	11.64
1 1/2"	1 1/4"	46	647	0.34	0.29	0.63
2"	1 1/4"	46	647	1.49	2.04	3.53
2"	1 1/2"	63	880	0.54	0.55	1.09
2 1/2"	2"	103	1,451	0.25	0.19	0.44

NOTE: Internal diameters for Schedule 40 pipe are used for calculations in tables above

Flow Considerations (continued)

Sizing Example

Application

A flowmeter is to be installed on the feedwater for a 500 BHP steam boiler. Maximum feedwater flow is calculated to be 45 GPM. Feedwater piping where the flowmeter is to be installed is 1 ½" schedule 40 pipe.

Sizing Procedure

Looking at Table 1 in the Product Part Numbers section, a 1" flowmeter has more than enough capacity for this application (106 GPM) and still has better than 1% accuracy at a flow of 0.27 GPM, allowing a turndown ratio on the feedwater flow of over 166 to 1 (45 GPM / 0.27 GPM = 166.66).

Looking at table 3C, 50% of maximum flowrate through a 1" meter yields 53 GPM, at which the pressure drop due to the piping reducer (contraction) and enlarger (expansion) is approximately 12 PSID:

Flowrate %	Water Flow		Loss for Contraction			Loss for Expansion			Total Drop
	GPM	BHP	Pipe	Meter	PSID	Meter	Pipe	PSID	PSID
50%	53	748	1 1/2"	1"	5.14	1"	1 1/2"	6.82	11.96

If this pressure drop is excessive for the system, the next size larger meter could be selected. If this were done, a 1 ¼" meter would yield a maximum of 184 GPM and a minimum of 0.47 GPM, allowing for a turndown ratio on the feedwater flow of about 96 to 1. With a 1 ¼" meter, a 45 GPM flowrate is achieved at 25% flowrate, which yields a pressure drop of just 0.63 PSID.

Flowrate %	Water Flow		Loss for Contraction			Loss for Expansion			Total Drop
	GPM	BHP	Pipe	Meter	PSID	Meter	Pipe	PSID	PSID
25%	46	647	1 1/2"	1 1/4"	0.34	1 1/4"	1 1/2"	0.29	0.63

The larger meter still offers more than adequate turndown performance with significantly less pressure drop; however, the cost of the larger meter will be higher.

Flow Considerations (continued)

Variables for finding head loss in a pipe contraction or expansion are defined below.

$W = flow\ rate\ of\ water\ in\ lb/hr$

$h_g = total\ heat\ of\ steam\ in\ BTU/lb$ (1189.6 @ 230°F, 100 $PSIG$)

$h_f = total\ heat\ of\ water\ in\ BTU/lb$ (309.3 @ 230°F)

$\rho = density\ of\ water$ (59.347 lb/ft^3 @ 230°F)

$v = velocity\ of\ water\ in\ pipe$

$Q = volume\ flow\ rate$

$d = pipe\ inner\ diameter$

$\beta = ratio\ of\ small\ to\ large\ diameter$

$g = acceleration\ due\ to\ gravity$ (32.2 ft/sec)

$\theta = pipe\ reducer/enlarger\ angle$

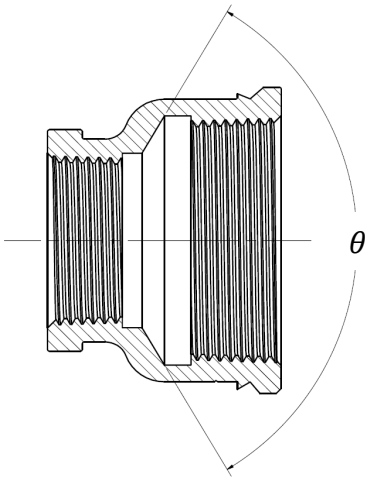


Figure 4: Included Angle Theta

Flow Considerations (continued)

The following equations can be used to calculate the head loss in feet for any given pipe reduction with the temperature and pressure assumptions defined on the previous page.

Beta ratio:

$$\beta = {d_{small}}/{d_{large}}$$

Flow Rate, lb/h:

$$W = \frac{970.3 * 34.5 * BHP}{(h_g - h_f)}$$

Flow Rate, CFH:

$$Q_{ft^3/hr} = \frac{W}{\rho}$$

Flow Rate, GPM:

$$Q_{GPM} = \frac{Q_{ft^3/hr}}{8.02}$$

Velocity:

$$v_{ft/s} = \frac{Q_{ft^3/hr}}{3600 * \pi \left(\frac{d}{24}\right)^2}$$

Contraction Coefficient:

$$K_c = \frac{0.5(1-\beta^2)\sqrt{\sin\frac{\theta}{2}}}{\beta^4}$$

Expansion Coefficient:

$$K_e = \frac{(1-\beta^2)^2}{\beta^4}$$

Head Loss in Feet:

$$h_L = K\frac{v^2}{2g} \; for \; K = \; K_e or \; K_C$$

Flow Considerations (continued)

Calculation example

Assume a customer has a 500 BHP boiler with 1½" schedule 40 pipe for feedwater. The allowable pressure drop across the metering section is 20 PSID. Find an appropriate water meter and reduction option for the scenario:

1. Find water flow based on BHP

Plugging in 500 BHP and values for h_g and h_f from page 13:

$$W = \frac{970.3 * 34.5 * BHP}{(h_g - h_f)} = 19{,}013.60\ lb/hr$$

2. Find volume flow rate based on water flow:

With our answer from (1) and water density value from page 13 ($\rho = 59.347\ lb/ft^3$)

$$Q_{ft^3/hr} = \frac{W}{\rho} = 320\ ft^3/hr$$

3. Find GPM

Converting the answer from (2):

$$Q_{GPM} = \frac{Q_{ft^3/hr}}{8.02} = 39.95\ GPM$$

4. Use tables 3-A – 3-D with 1½" pipe, select a meter with reducers/enlargers that do not exceed allowable pressure drop.

From table 3-C, at 50% flow, a 1½" pipe reduced to 1" provides 53 GPM flow with a PSID that is within the acceptable range.

***Table 3-C Section:** Example Pipe & Meter Selection*

Water Flow		Loss for Contraction			Loss for Expansion			Total Drop
GPM	BHP	Pipe	Meter	PSID	Meter	Pipe	PSID	PSID
53	748	1 1/2"	1"	5.14	1"	1 1/2"	6.82	11.96

Flow Considerations (continued)

5. Find the beta ratio

Divide 1" (meter diameter) by 1.61" (Schedule 40 pipe inner diameter)

$$\beta = {}^{d_{small}}\Big/_{d_{large}} = 0.621$$

6. Calculate contraction coefficient, assuming pipe reducer included angle (θ) of 118°

$$K_c = \frac{0.5(1-\beta^2)\sqrt{\sin\frac{\theta}{2}}}{\beta^4} = 1.912$$

7. Calculate expansion coefficient, assuming pipe reducer included angle (θ) of 118°

$$K_e = \frac{(1-\beta^2)^2}{\beta^4} = 2.538$$

8. Find velocity of water in meter section:

$$v_{ft/s} = \frac{Q_{ft^3/hr}}{3600 * \pi\left(\frac{d}{24}\right)^2} = 16.3\ ft/s$$

9. Find head loss in feet by adding head loss of contraction and expansion:

$$h_L = K_C\frac{v^2}{2g} + K_e\frac{v^2}{2g} = 18.36\ ftH2O$$

10. Convert to PSID:

$$2.31\ ftH2O = 1\ PSID \therefore 18.36\ ftH2O = \mathbf{7.95\ PSID}$$

11. Check turndown ratio for meter:

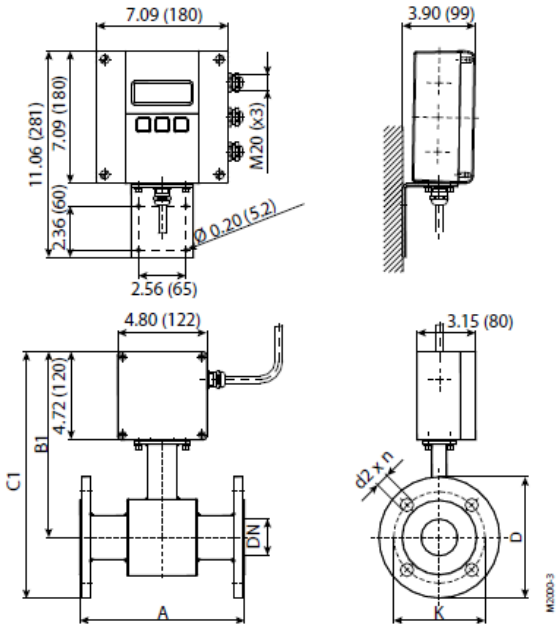
From Table 1, a 1" meter has a minimum flow rate of 0.27 GPM. With our desired flow rate of 39.95 GPM, this gives us a turndown ratio of

$$\frac{39.95\ GPM}{0.27\ GPM} = \mathbf{147.9}$$

Dimensions

Dimensions in inches (mm)

Remote Mount



Local Mount

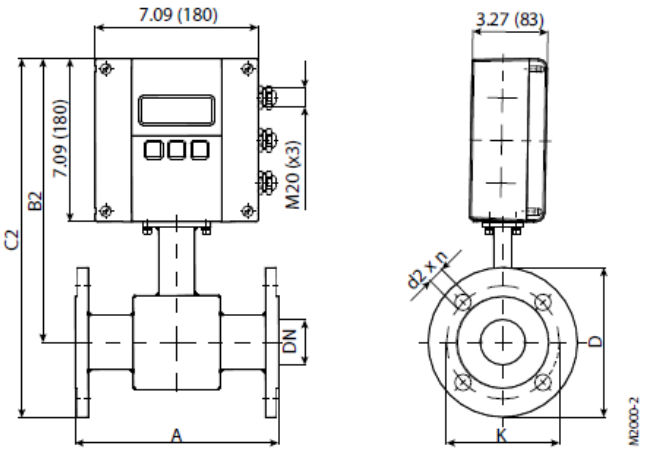


Table 4: Meter Dimensions

Size		A* in. (mm)	B1	B2	C1	C2	With ANSI Flanges		
in.	DN						ØD in. (mm)	ØK	Ø d2xn
1/2	15	6.7 (170)	9.37 (238)	11.73 (298)	11.4 (288)	14.0 (356)	3.50 (88.9)	2.37 (60.3)	0.63 x 4 (15.9 x 4)
3/4	20	6.7 (170)	9.37 (238)	11.73 (298)	11.5 (293)	14.2 (361)	3.87 (98.4)	2.75 (69.8)	0.63 x 4 (15.9 x 4)
1	25	8.9 (225)	9.37 (238)	11.73 (298)	11.7 (298)	14.4 (366)	4.25 (107.9)	3.13 (79.4)	0.63 x 4 (15.9 x 4)
1-1/4	32	8.9 (225)	9.96 (253)	12.32 (313)	12.5 (318)	15.2 (386)	4.63 (117.5)	3.50 (88.9)	0.63 x 4 (15.9 x 4)
1-1/2	40	8.9 (225)	9.96 (253)	12.32 (313)	12.7 (322)	15.4 (390)	5.00 (127)	3.87 (98.4)	0.63 x 4 (15.9 x 4)
2	50	8.9 (225)	9.96 (253)	12.32 (313)	13.2 (335)	15.9 (403)	6.00 (152.4)	4.75 (120.6)	0.75 x 4 (19 x 4)
2-1/2	65	11 (280)	10.67 (271)	13.05 (331)	14.4 (366)	17.1 (434)	7.00 (177.8)	5.50 (139.7)	0.75 x 4 (19 x 4)
3	80	11 (280)	10.67 (271)	13.05 (331)	14.7 (372)	17.3 (440)	7.50 (190.5)	6.00 (152.4)	0.75 x 4 (19 x 4)
4	100	11 (280)	10.94 (278)	13.31 (338)	15.7 (398)	18.4 (466)	9.00 (228.6)	7.50 (190.5)	0.75 x 4 (19 x 4)

*Note: Dimension **A** does not account for gaskets and grounding rings, and therefore should not be used as the installation section dimension. See next page for installation dimensions.

Dimensions

Grounding Rings

The grounding rings are supplied with the M2... meter when purchased. The standard thickness of one ring is 0.135”. For the proper pipe section installation dimension, the sum of dimension A, two grounding rings, and four gaskets should be used. Select gaskets suitable for the temperature and pressure of the application. In the example below, G represents the thickness of one gasket.

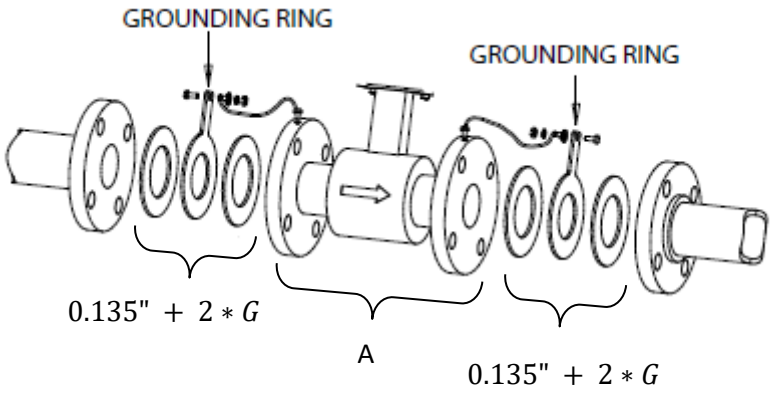


Figure 5: Installation Section Length Diagram

Total installation section width = $0.27” + 4 * G + A$

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