

MEASUREMENT CONTROLS, INC.

RO T A R Y M E T E R S

Rotary meters are positive displacement flow meters used in natural gas applications in commercial and industrial installations.

Capacity	up to 56,000 cfh, MAOP: 175 PSI, High rangeability
Connection:	from 1-1/2" threaded nipple to 4" flange, vertical/horizontal changeable installation, piping accessories
Read out:	easy large display, actual reading, temperature compensated reading, configurable Instrument drive, Pulse output, volume corrector, data logging, Automatic Meter Reading, communication devices,
Calibration:	traceable to NIST, ISO17025

For over 50 years, Measurement Controls, Inc.'s products and services have been the preferred choice for performance and quality solutions for gas meters and accessories for utility, commercial, industrial, manufacturing, and transmission companies. MCI is committed to the continuous improvement of our products, processes, or services in order to meet or exceed our customers' requirements.

The meter refurbishing and calibration service is in accordance with ANSI, AGA and ISO standards, and the calibration is traceable to N.I.S.T and ISO17025. We offer calibration of various types of meters from ½ LPM to 35,000 CFH flow rate.

MCI is a member of many trade organizations and is approved by several governmental agencies such as State PUC, US-SBA, NMSDC, and US Customs C-TPAT. MCI is also a registered supplier to the US Military, the US Government, and the Gen. Service Administration (GSA).



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Imperial Sizing Charts

Line Mounted														
Model	8C175*	11C175*	15C175*	2M175*	3M175*	5M175*	7M175	11M175	16M175	23M175	23M232	38M175	56M175	102M125
*Also available in 200 PSIG Rating														
Rating	800	1100	1500	2000	3000	5000	7000	11000	16000	23000	23000	38000	56000	102000
PSIG	Corrected Capacity at Metering Pressure – in MSCFH													
1	0.84	1.15	1.57	2.09	3.1	5.2	7.3	11.5	16.7	24.0	24.0	39.7	58.5	106.6
3	0.95	1.30	1.77	2.36	3.5	5.9	8.3	13.0	18.9	27.2	27.2	44.9	66.2	120.5
5	1.05	1.45	1.98	2.63	4.0	6.6	9.2	14.5	21.1	30.3	30.3	50.0	73.8	134.3
10	1.33	1.82	2.48	3.31	5.0	8.3	11.6	18.2	26.5	38.1	38.1	62.9	92.8	168.9
15	1.60	2.20	2.99	3.99	6.0	10.0	14.0	22.0	31.9	45.9	45.9	75.8	111.8	203.6
20	1.87	2.57	3.50	4.67	7.0	11.7	16.3	25.7	37.4	53.7	53.7	88.7	130.8	238.2
25	2.14	2.94	4.01	5.35	8.0	13.4	18.7	29.4	42.8	61.5	61.5	101.6	149.8	272.9
30	2.41	3.32	4.52	6.03	9.0	15.1	21.1	33.2	48.2	69.3	69.3	114.5	168.8	307.4
40	2.95	4.06	5.54	7.39	11.1	18.5	25.9	40.6	59.1	84.9	84.9	140.3	206.8	376.7
50	3.50	4.81	6.56	8.74	13.1	21.9	30.6	48.1	70.0	100.6	100.6	166.1	244.8	445.9
60	4.04	5.56	7.58	10.10	15.2	25.3	35.4	55.6	80.8	116.2	116.2	191.9	282.9	515.2
70	4.58	6.30	8.59	11.46	17.2	28.6	40.1	63.0	91.7	131.8	131.8	217.7	320.9	584.5
80	5.13	7.05	9.61	12.82	19.2	32.0	44.9	70.5	102.5	147.4	147.4	243.5	358.9	653.7
90	5.67	7.80	10.63	14.18	21.3	35.4	49.6	78.0	113.4	163.0	163.0	269.3	396.9	723.0
100	6.21	8.54	11.65	15.53	23.3	38.8	54.4	85.4	124.3	178.6	178.6	295.1	434.9	792.1
110	6.76	9.29	12.67	16.89	25.3	42.2	59.1	92.9	135.1	194.2	194.2	320.9	472.9	861.4
120	7.30	10.04	13.69	18.25	27.4	45.6	63.9	100.4	146.0	209.9	209.9	346.7	511.0	930.6
125	7.57	10.41	14.2	18.93	28.4	47.3	66.2	104.1	151.4	217.7	217.7	359.6	530.0	965.3
135	8.11	11.16	15.21	20.29	30.4	50.7	71.0	111.6	162.3	233.3	233.3	385.4	568.0	
150	8.93	12.28	16.74	22.32	33.5	55.8	78.1	122.8	178.6	256.7	256.7	424.1	625.0	
175	10.29	14.14	19.29	25.72	38.6	64.3	90.0	141.4	205.7	295.7	295.7	488.6	720.1	
200	11.64	16.01	21.83	29.11	43.7	72.8					334.8			
232											384.7			

175 PSIG Standard MAOP on sizes 8C175-56M175
 * 200 PSIG MAOP Rating Optional. Contact Factory.

High Pressure Meters									
Model	1M300	1M740	1M1480	3M300	3M740	3M1480	5M1480	7M1480	11M480
Rating	1000	1000	1000	3000	3000	3000	5000	7000	11000
PSIG	Corrected Capacity at Metering Pressure - MSCFH								
125	9.5	9.5	9.5	28.4	28.4	28.4	47.3	66.2	104.1
150	11.2	11.2	11.2	33.5	33.5	33.5	55.8	78.1	122.8
175	12.9	12.9	12.9	38.6	38.6	38.6	64.3	90.0	141.4
200	14.6	14.6	14.6	43.7	43.7	43.7	72.8	102	160.1
250	18.0	18.0	18.0	53.9	53.9	53.9	89.8	126	197.4
300	21.3	21.3	21.3	64.0	64.0	64.0	107	149	234.8
350		24.7	24.7		74.2	74.2	124	173	272.1
500		34.9	34.9		105	105	175	244	384.1
600		41.7	41.7		125	125	209	292	458.8
740		51.2	51.2		154	154	256	359	563.4
800			55.3			166	276	387	608.2
900			62.1			186	310	435	682.9
1200			82.4			247	412	577	906.9
1480			102			305	508	711	1116.0

NOTE: All capacities listed are Standard Cubic Feet per Hour (SCFH) and based upon Average Atmospheric Pressure (14.4 PSIA), Base Pressure (14.73 PSIA), and Base Temperature (60°F). Tables do not take into account Supercompressibility. Please refer to RM-135 for further information on the Application of Temperature and/or Pressure Correction Factors in Gas Measurement.

Energy Value	
Gas	BTU/Cu. Ft.
Acetylene	1498
Butane	3200
Ethane	1758
Ethylene	1606
Methane	997
Natural	965/1055
Propane	2550

SIZING INSTRUCTIONS

To select the proper meter size, use the Minimum Operating Pressure and the Maximum Instantaneous Hourly Flow Rate. Do not exceed meter's maximum allowable operating pressure.

To prevent oversizing of a meter, sizing should be based upon the total connected load giving consideration to the load diversity. When using this method to size a meter, a selected diversity factor times the total connected load will be used as the Maximum Instantaneous Flow Rate for sizing purposes.

A diversity factor of 0.85 is commonly used for a single application where two or more major appliances are in use (i.e. boilers, furnaces, space heaters, etc.).

As the number of appliances considered when determining a connected load increases, the diversity factor will typically decrease. For applications such as multiple ranges and water heaters, some examples of commonly used diversity factors are:

Qty	Factor	Qty	Factor*
0-5	1	6	0.9
7	0.85	8	0.83

*The diversity factors listed above are estimates. For proper sizing, consult your company or industry standards for determining accepted values.

Imperial and Metric Technical Data

Technical Data	Units	8C175*	11C175*	15C175*	2M175*	3M175*	5M175*	7M175	8.8M175	11M175	16M175	23M175	23M232
Base Rating (Q Max.)	acfh m ³ /h	800 22.6	1100 31.0	1500 42.5	2000 56.6	3000 85.0	5000 141.5	7000 200.0	N/A 250.0	11000 310.0	16000 450.0	23000 650.0	23000 650.0
Max. Operating Pressure (MAOP)*	psig kPa	175 1200	175 1200	175 1200	175 1200	175 1200	175 1200	175 1200	N/A 1200	175 1200	175 1200	175 1200	232 1600
Rangeability +/- 1%	ratio	26:01:00	31:01:00	40:01:00	68:01:00	76:01:00	120:01:00	67:01:00	70:01:00	124:01:00	116:01:00	40:01:00	169:01:00
Start Rate	cfh m ³ /h	2.8 0.0790	2.3 0.0651	1.9 0.0549	1.01 0.0538	2.1 0.0595	1.2 0.0340	5.3 0.1509	N/A 0.1510	3.9 0.1099	3.2 0.0917	23 0.6513	10.33 0.2926
Stop Rate	cfh m ³ /h	2 0.0575	1.7 0.0493	1.6 0.0445	0.82 0.0311	1.8 0.0510	0.8 0.0227	3.4 0.096	N/A 0.0960	3.2 0.0915	1.9 0.0535	18 0.5097	5.75 0.1628
Avg. Differential, 100% Flow	in. w.c. mbar	0.5 1.1	0.6 1.5	0.8 1.9	0.7 1.6	1.1 2.6	1.1 2.6	1.6 4.0	N/A 2.8	1.6 4.0	2.1 5.2	1.3 3.1	2.08 5.18
Drive Rate CTR, CD	cf/rev m ³ /rev	10 0.1	10 0.1	10 0.1	10 0.1	10 0.1	10 0.1	10 0.1	N/A 1	10 0.1	10 0.1	10 0.1	100 1
Drive Rate TC, TD	cf/rev m ³ /rev	100 1	100 1	100 1	100 1	100 1	100 1	100 1	N/A 10	100 10	100 10	N/A N/A	N/A N/A
Nominal Pipe Size	in. mm	2 50	2 50	2 50	2 50	2 50	3 80	3 80	N/A 80 or 100	4 100	4 100	6 150	4 100
Flange-to-Flange	in. mm	6/3/04 172	6/3/04 172	6/3/04 172	6/3/04 172	6/3/04 172	6/3/04 172	9/1/02 241	N/A 241	9/1/02 241	9/1/02 241	16 406.4	9/1/02 241
Flange Connection	ANSI	150#FF	150#FF	150#FF	150#FF	150#FF	150#FF	150#FF	150#FF	150#FF	150#FF	150#FF	150#FF
Net Weight - CTR Version	lbs. kg	18 8.2	22 10.0	24 10.9	26 11.8	29 13.2	35 15.9	52 23.6	N/A 29.0 or 31.0	60 27.2	85 38.6	202 91.6	100 45.4

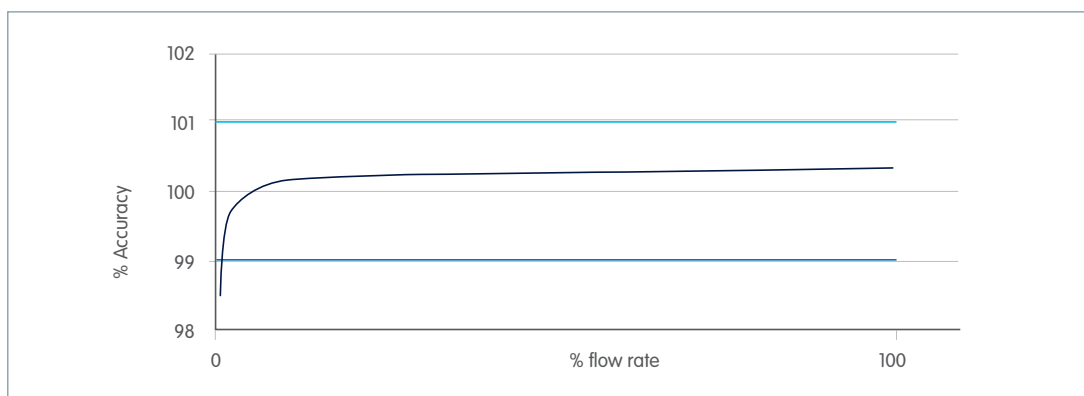
Technical Data	Units	38M175	56M175	102M125	1M300	1M740	1M1480	3M300	3M740	3M1480	5M1480	7M1480	11M1480
Base Rating (Q Max.)	acfh m ³ /h	38000 1050.0	56000 1575.0	102000 2875.0	1000 28.3	1000 65.0	1000 65.0	3000 85.0	3000 85.0	3000 85.0	5000 141.5	7000 200.0	11000 310.0
Max. Operating Pressure (MAOP)*	psig kPa	175 1200	175 1200	125 860	300 2065	740 5100	1480 10200	300 2065	740 5100	1480 10200	1480 10200	1480 10200	1480 10200
Rangeability +/- 1%	ratio	90:1	53:1	38:1	30:1	18:1	18:1	50:1	77:1	77:1	28:1	60:1	55:1
Start Rate	cfh m ³ /h	27 0.7646	40 11.327	120 33.980	1.9 0.0538	2.5 0.0708	2.5 0.0708	2.1 0.0595	3 0.0850	3 0.0850	7.6 0.133	5.8 0.1642	12.83 0.363
Stop Rate	cfh m ³ /h	20 0.5663	29 0.0283	110 31.149	1.1 0.0311	2 0.0566	2 0.0566	1.8 0.0510	2.5 0.0708	2.5 0.0708	4.6 0.057	4.6 0.1303	4.65 0.132
Avg. Differential, 100% Flow	in. w.c. mbar	1.9 4.7	2.2 5.5	2 5.0	0.2 0.5	0.4 1.0	0.3 0.7	1 2.5	1.3 3.2	1.35 3.4	0.9 2.24	2 4.26	1.04 0.029
Drive Rate CTR, CD	cf/rev m ³ /rev	100 1	100 1	100 1	10 0.1	10 0.1	10 0.1	10 0.1	10 0.1	10 0.1	10 0.1	10 0.1	10 0.1
Drive Rate TC, TD	cf/rev m ³ /rev	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
Nominal Pipe Size	in. mm	6 150	8 200	10 250	1-1/2 40	2 50	2 50	2 50	2 50	2 50	3 80	3 80	4 100
Flange-to-Flange	in. mm	18 457.2	21 533.4	28 711.2	6/3/04 172	10/3/04 273	10/3/04 273	6/3/04 172	10/3/04 273	10/3/04 273	14-3/4 374.65	14-3/4 374.65	14-3/4 374.65
Flange Connection	ANSI	150#FF	150#FF	125#FF	300#FF	300#FF	600#FF	300#FF	300#FF	600#FF	600#FF	600#FF	600#FF
Net Weight - CTR Version	lbs. kg	244 110.7	284 128.8	2390 1084.1	26.5 12.0	107 48.5	107 48.5	29 13.2	107 48.5	107 48.5	215 97.52	220 99.79	277 125.65

* Available with 200 PSIG Rating.

Performance

	Units	3.5M/G65		5.5M/G100		9M/G160		14M/G250	
Rangeability		90:1		160:1		160:1		160:1	
Start Rate	acfh [am ³ /h]	1.3	[0.04]	0.9	[0.03]	2.5	[0.07]	2.5	[0.07]
Stop Rate	acfh [am ³ /h]	1.1	[0.03]	0.8	[0.02]	1.9	[0.05]	2.3	[0.07]
Flow Rate at ½" w.c. DP	acfh [am ³ /h]	2,715	[77]	4,074	[115]	5,722	[162]	6,740	[191]
Differential Pressure at 100% Flow Rate	in. w.c. [mBar]	1.46	[3.64]	1.23	[3.06]	1.70	[4.23]	2.65	[6.60]

Accuracy Curve



Sizing Chart

Using the chart below, select the appropriate meter by using the Maximum Instantaneous Flow Rate (scfh) and the Minimum Operating Pressure (psig) at any given point in time.

Example: A flow rate of 25,000 scfh and an operating pressure range of 75–100 psig would require a 5.5M meter based on a 75 psig minimum inlet pressure.

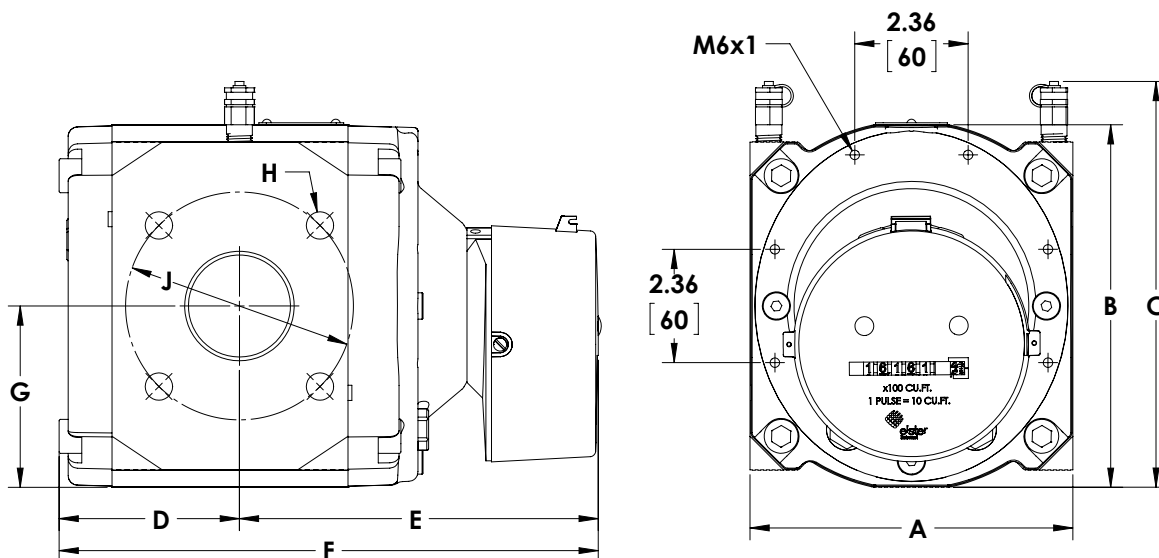
Model	3.5M/G65		5.5M/G100		9M/G160		14M/G250	
psig [Barg]	Corrected Capacity in scfh [sm ³ /h]							
0.25 [0.0]	3,500	[100]	5,500	[160]	9,000	[250]	14,000	[400]
2 [0.1]	3,900	[110]	6,100	[170]	10,000	[280]	15,600	[440]
5 [0.3]	4,600	[130]	7,200	[200]	11,900	[340]	18,400	[520]
10 [0.7]	5,800	[160]	9,100	[260]	14,900	[420]	23,200	[660]
20 [1.4]	8,200	[230]	12,800	[360]	21,000	[590]	32,700	[930]
30 [2.1]	10,500	[300]	16,600	[470]	27,100	[770]	42,200	[1,190]
40 [2.8]	12,900	[370]	20,300	[570]	33,200	[940]	51,700	[1,460]
50 [3.4]	15,300	[430]	24,000	[680]	39,300	[1,110]	61,200	[1,730]
60 [4.1]	17,700	[500]	27,800	[790]	45,500	[1,290]	70,700	[2,000]
75 [5.2]	21,200	[600]	33,400	[950]	54,600	[1,550]	85,000	[2,410]
100 [6.9]	27,200	[770]	42,700	[1,210]	69,900	[1,980]	108,700	[3,080]
150 [10.3]	39,100	[1,110]	61,400	[1,740]	100,400	[2,840]	156,300	[4,430]
175 [12.1]	45,000	[1,270]	70,700	[2,000]	115,700	[3,280]	180,000	[5,100]
250 [17.2]	62,800	[1,780]	98,700	[2,790]	161,500	[4,570]	251,300	[7,120]
290 [20.0]	72,300	[2,050]	113,700	[3,220]	186,000	[5,270]	289,300	[8,190]

Note: All capacities are based on 14.4 psia atmospheric pressure, 14.73 psia base pressure, and 60° F base temperature.

Dimensions and Weights

	Units	3.5M/G65		5.5M/G100		9M/G160		14M/G250	
A	in. [mm]	6.75	[171]	6.75	[171]	9.5	[241]	9.5	[241]
B	in. [mm]	7.56	[192]	7.56	[192]	10.08	[256]	10.08	[256]
C	in. [mm]	8.63	[219]	8.63	[219]	10.75	[273]	10.75	[273]
D	in. [mm]	3.78	[96]	5.43	[138]	5.16	[131]	6.14	[156]
E	in. [mm]	7.52	[191]	9.17	[233]	10.67	[271]	11.65	[296]
F	in. [mm]	11.26	[286]	14.61	[371]	15.83	[402]	17.76	[451]
G	in. [mm]	3.78	[96]	3.78	[96]	5.04	[128]	5.04	[128]
Nom. Pipe Size*	in. [mm]	2		3		3		4	
Bolt Size, H		5/8" - 11		5/8" - 11		5/8" - 11		5/8" - 11	
# Bolts / Flange		4		4		4		8	
Bolt Circle, J	in. [mm]	4.75	[121]	6.00	[152]	6.00	[152]	7.50	[191]
Shipping Weight	lbs. [kg]	29.8	[14]	37.7	[17]	73.9	[34]	82.3	[37]
Carton Size	in.	18.3L x 1.6W x 12.6H				23.6L x 13.0W x 13.4H			
	[mm]	465L x 270W x 320H				600L x 330W x 340H			

*ANSI Class 125/150 flat face flange connection



Ordering Information

- Meter Model
- Index Masking
- AMR Mounting
 - Horizontal or Vertical Flow
- Special Badge
- Options
 - Thermowell
 - Pulser
 - Gasket Strainer
 - Gasket and Bolt Installation Kit