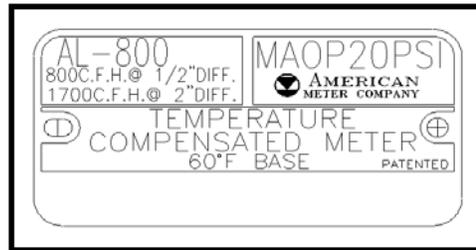


# Medium/Large Diaphragm Meter Installation Instructions

ISSUED July, 2000

## METER IDENTIFICATION

The inlet and outlet of the meter are plainly marked on the top. The maximum working pressure of the meter is given on the manufacturer's badge. It is extremely important that the maximum working pressure not be exceeded at any time. The rated capacity of the meter at 1/2" and 2" water column differential pressure is also marked on the badge. When any particular information is desired regarding this meter, please refer to the serial number of the meter, which is embossed on the bottom of the manufacturer's badge.



Manufacturer's Badge

## GAS PURITY

In cases where condensation may collect in the line on the upstream side of the meter, the line should be supplied with suitable drips to collect the condensate and prevent it from entering the meter. This precaution will eliminate difficulties due to liquid entering the meter and eliminate the possibility of damage, which may occur due to freezing of the liquids.

American Meter Company produces meters suitable for measuring high purity gases. Prior to system startup, the meter should be purged with the gas and its outlet stream monitored until the required purity level is achieved. After such point, further component out-gassing will be at a diminishing rate. The primary absorbed or volatilized gases would be water vapor, air, and smaller amounts of hydrocarbons. The flow rate, temperature, and required purity level of each process is unique and the purchaser must determine a satisfactory purge period.

## INSTALLATION

The pipe leading to the inlet of the meter should be blown clean before the meter is connected to it. In many cases, after meters are connected, pipe turnings, scale, dirt, liquids and other foreign materials are blown into the meter when the gas is admitted. This material will collect in the top of the meter, on the valves, and in the bearings. If it does not create serious damage, it will increase wear, causing the meter to lose its accuracy.

Care should be exercised in blowing drips. In some cases, blowing drips on the outlet side of the meter has damaged the internal mechanisms of meters. A sudden reduction in pressure due to blowing the drips or opening the outlet valve too quickly may increase the velocity through the meter to an excessive rate, which may strain or break some of the working parts.

**CAUTION:** *Extreme care should be taken when pressuring this high capacity meter on start-up. Excessive differential pressures across diaphragms, channels and partitions can result in serious damage or deformation. The following procedure should be used in order to prevent damage to the meter.*

### INSTALLATION WITH BY-PASS

WITH GAS FLOWING THROUGH THE BY-PASS, **VERY SLOWLY** ON ALL OPERATIONS:

1. CRACK THE METER OUTLET VALVE TO PRESSURIZE THE METER.
2. CRACK THE METER INLET VALVE UNTIL THE METER IS REVOLVING.
3. OPEN FULLY THE METER OUTLET VALVE.
4. OPEN FULLY THE METER INLET VALVE.
5. CLOSE THE BY-PASS VALVE.

### INSTALLATIONS WITHOUT BY-PASS

1. OPEN METER OUTLET VALVE, SLOWLY.
2. **VERY SLOWLY**, CRACK METER INLET VALVE UNTIL THE METER IS REVOLVING.
3. **VERY SLOWLY**, OPEN FULLY THE METER INLET VALVE.

### USE OF ORIFICES

To reduce the possibility of damage to positive displacement meters due to rapid opening of the valves, it is suggested that orifices be installed, close to the meter, and on the downstream side of the meter. The meter should be protected from damage due to pressurization by slowly opening (cracking open) the block valve until the system is pressurized. Orifices and nozzles provide protection from meter over-speeding. The following table gives the approximate diameter of orifices which experience has indicated may be satisfactorily used with various sizes of meters.

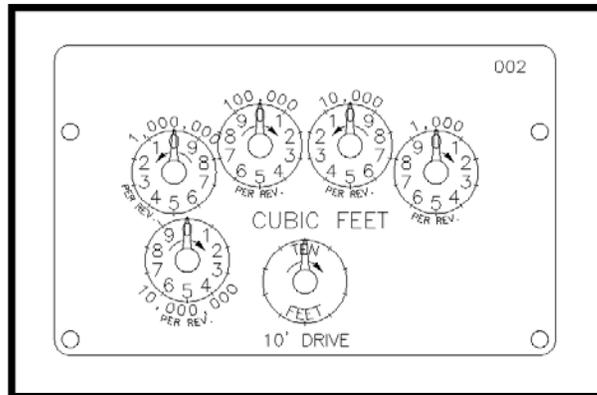
### ORIFICES FOR POSITIVE DISPLACEMENT METERS

Meter Type	Rated Gas* Capacity at ½" Differential	Rated Gas* Capacity at 2" Differential	Orifice Diameter
AL-800	800 CFH	1,700 CFH	0.52"
AL-1000	1,000 CFH	2,200 CFH	0.58"
AL-1400	1,400 CFH	3,000 CFH	0.68"
AL-2300	2,300 CFH	5,000 CFH	0.88"
AL-5000	5,000 CFH	11,000 CFH	1.28"

### READING YOUR GAS METER

Your gas meter is an accurate automatic measuring instrument. After your meter is read, the consumption is determined by subtracting the previous reading from the current reading. The part of a meter that shows the amount of gas used is called an index. There are two basic types of indexes as shown on the next page.

If your meter has round dials (as shown below) and the pointer is between two numbers, always record the lower number. The one exception is if the point is between 9 & 0 (zero). You then read 9 because the zero represents the completion of a cycle. When the pointer is directly on a number, check the dial to the right. If the dial to the right has not passed zero, record the lower number for the dial on the left. To obtain a reading, read the dials right to left, recording the numbers in the same order, right to left.



The other type of meter index you may see is called a direct read. This type of index works much like an odometer on your car. To take a reading, simply read the odometer wheels as they're shown. At the right of the odometer wheels, there is generally a multiplier. For example, a reading of '482176' with a multiplier of "x100" would correlate to a meter reading of 48,217,600 cubic feet.

On either type of index, the dial marked "FIVE FEET", "TEN FEET", "100 FEET" or "1,000 FEET", depending on meter size, are not used in the meter reading. These dials are only used for test purposes.

## PRESSURE FACTORS

All meters, unless otherwise specified, are furnished with indexes that indicate the quantity of gas passing them in cubic feet at the pressure and temperature at which the gas passes through the meter. If the meter measures the gas, at a gage pressure of 14.7 psig (absolute pressure 29.4 psi), then the index reading should be multiplied by 2.00 if the volume of gas is to be expressed in cubic feet at an atmospheric pressure of 14.7 psia. If the gage pressure at the meter is 44.1 psig (absolute pressure 58.8 psi), the reading should be multiplied by 4.00 to express the quantity in cubic feet at an atmospheric pressure of 14.7 psia.

When the meters are used for the measurement of gases other than natural gas where the standard cubic foot of gas is the amount contained in a cubic foot at an atmospheric pressure of 14.73 psia absolute, the table shown on page 4 should be used.

Pressure factors shown in table are used for converting readings obtained from meters at various pressures into quantities at a base pressure of 14.73 psi and with an atmospheric pressure of 14.4 psia.

Gage Pressure (psig)	Pressure Factor	Gage Pressure (psig)	Pressure Factor	Gage Pressure (psig)	Pressure Factor
0	0.98	34	3.29	68	5.59
1	1.05	35	3.35	69	5.66
2	1.11	36	3.42	70	5.73
3	1.18	37	3.49	71	5.80
4	1.25	38	3.57	72	5.87
5	1.32	39	3.63	73	5.93
6	1.39	40	3.70	74	6.00
7	1.45	41	3.76	75	6.07
8	1.52	42	3.83	76	6.14
9	1.59	43	3.90	77	6.21
10	1.66	44	3.97	78	6.27
11	1.72	45	4.03	79	6.34
12	1.81	46	4.10	80	6.41
13	1.86	47	4.17	81	6.48
14	1.93	48	4.24	82	6.54
15	2.00	49	4.30	83	6.61
16	2.06	50	4.37	84	6.68
17	2.13	51	4.44	85	6.75
18	2.20	52	4.51	86	6.82
19	2.27	53	4.58	87	6.88
20	2.34	54	4.64	88	6.95
21	2.40	55	4.71	89	7.02
22	2.47	56	4.78	90	7.09
23	2.54	57	4.85	91	7.16
24	2.61	58	4.92	92	7.22
25	2.68	59	4.98	93	7.29
26	2.74	60	5.05	94	7.36
27	2.81	61	5.12	95	7.43
28	2.88	62	5.19	96	7.50
29	2.95	63	5.26	97	7.56
30	3.01	64	5.32	98	7.63
31	3.08	65	5.39	99	7.70
32	3.15	66	5.46	100	7.77
33	3.22	67	5.53		

### **PRESSURE-COMPENSATING INDEXES**

American Meter supplies optional pressure-compensating indexes for various gage, atmospheric, and base pressures that eliminate the need to use the pressure factors shown in the table. Contact your sales representative for a listing of available pressure-compensating indexes.