

# OPERATING MANUAL

## INDUSTRIAL FLOW METER



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### **DAKOTA INSTRUMENTS®**

20 Corporate Drive, Oranburg NY 10962 USA

Website: <http://dakotainstruments.com>

E-mail: [info@dakotainstruments.com](mailto:info@dakotainstruments.com)

Toll Free USA and Canada: 1(800) 879-7713

Tel. 1+(845) 770-3200 Fax. 1+(845) 770-3210

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*NOTE:* Dakota reserves the right to change designs and dimensions at its sole discretion at any time without notice. For certified dimensions please contact Dakota.

## **(a) UNPACKING THE FLOW METER**

### **a.1 Inspect Package for External damage**

Your new flow meter was carefully packed in a sturdy cardboard carton, with cushioning materials to withstand shipping shocks. Upon receipt, please inspect the package for possible external damage. In case of external damage to the package contact the shipping company immediately.

### **a.2 Returning Merchandise for Repair**

If you require service or calibration, please contact your distributor, or DAKOTA® if you purchased the flow meter directly. Request a Return Authorization Number (RAN). Equipment returned without an RAN will not be accepted.

## **(b) INSTALLATION INSTRUCTIONS**

Handle the flow meter carefully during installation. Prior to connecting the flow meter, shut the flow upstream and ensure that pressure and temperature conditions are within the limitations listed for this model. Do not install in a line carrying gases or liquids that are not compatible with the wetted construction materials and O-ring seals of the meter.

### **Selection of Site of Installation:**

In selecting the site for installing the flow meter, ensure properly aligned piping and avoid stresses due to the weight of unsupported connecting piping.

Install in lines sufficiently remote from hot gas or liquid passages.

### **Connections:**

#### **Inlet and outlet ports for:**

MJ and MK NPT are: 1/2", 1" or 2" FNPT (see appendix).

**Inlet and outlet ports for:** MJ and MK Flanged are: 3/4" nominal, 1-1/2", 2-1/2" (see appendix).

Use only PTFE tape to seal threaded pipe connections or appropriate gasket for flange connection.

Install meter vertically and connect the inlet flow at the bottom port.

To prevent damage to installed meters, fasten the meter housing to bulkhead, panel or stanchion.

Protect from possible “water hammer” effects usually associated with sudden opening or shutting of flow, such as with solenoid-operated valves.

After connecting meter vertically in-line, open the “throttling” valve at the inlet gradually to prevent pressure surges resulting in undue stress on the glass flow tube.

### **Flow Meters to be Used for Gas Service.**

Appropriately selected valves must be installed at the inlet and outlet of each flow meter used for metering gases. Valves are to be installed at a distance not exceeding 1-1/2 times the pipe diameters of the meter measured from the inlet and outlet ports respectively.

To prevent bouncing, or unstable float conditions, the valve installed at the outlet port of the flow meter is adjusted to suitable back pressure. Before starting up, both valves must be closed. Next, open the inlet valve approximately a ¼ turn and then the outlet valve a full turn. Adjust the combination of the two valves to the desired flow rate by opening both valves very slowly. When bouncing of the float occurs close both valves and start the procedure again.

The inlet and outlet valves should be adjusted to the minimal setting necessary to achieve the desired flow. Repeat this procedure carefully for each subsequent startup.

### **Calibrations**

**Important Note:** Flow meters are calibrated at 14.7 psia, which is equal to 0 psig. To be able to use standard calibrations, a pressure gauge is installed between the outlet port and the “back pressure” related valve to verify standard or near standard pressure conditions. For applications at higher pressures, calculate the correction factor as shown below or request quotations for discretely calibrated meters.

$$K = \text{Pressure correction coefficient} = \{ (14.7 + \text{gauge pressure}) / 14.7 \}^{-1/2}$$

$$\text{Actual Flow at non-standard pressure} = K \times \text{Indicated Flow.}$$

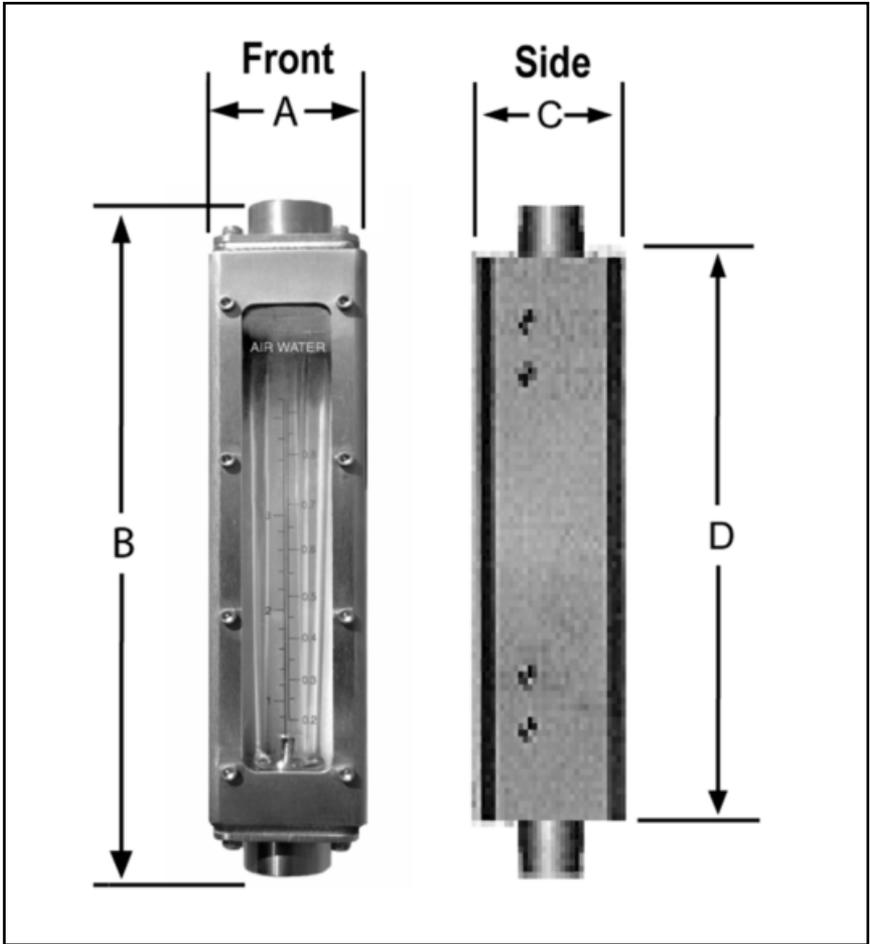


## CAUTION

1. Do not use plastic fittings for gas applications.
2. Do not use meters with strong or hot alkalis, fluorine, hydrofluoric acid, steam, or air or water service above 200°F (93°C).
3. When meters are used in conjunction with high-pressure gas cylinders, it is **MANDATORY** to install properly selected pressure regulators both at the cylinder and at the inlet connection of the flow meter.
4. Flow meters are supplied with two layers of 1/8" thick clear plastic front shields. For the safety of the operator and the installation it is **MANDATORY to operate meters only with both shields in place!**
5. It is the responsibility of the user to determine whether the gases or liquids used in conjunction with the flow meter are suitable and safe when in contact with wetted construction materials and seals or O-rings of the instrument!
6. Excessive vibration, thermal or other stress inducing conditions could create conditions that render the pressure and temperature limitations invalid, and must always be guarded against. Installations should include appropriately selected relief valves, and/or rupture discs to avoid unsafe conditions and damage to equipment due to inadvertent over pressurization and other undesirable stress inducing conditions.
7. Users must use safety gear, including OSHA certified eye protection when operating or servicing flow meters.

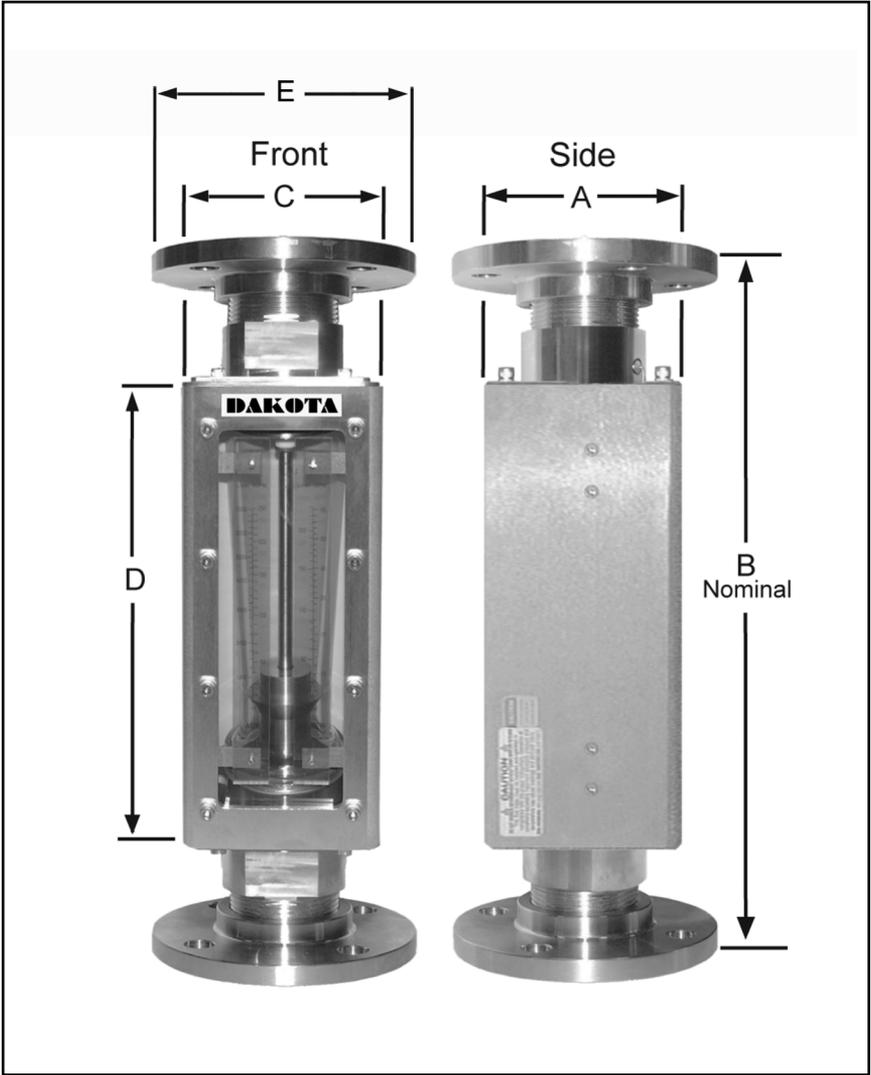
# APPENDIX

## DIMENSIONAL DRAWING



**DIMENSIONS FOR 6AM6 STYLE METERS**

TUBE SIZE	CONNECTIONS NPT (F)	DIMENSIONS			
		A	B	C	D
3 and 4	1/2"	2	9.54	2.25	8.04
5 and 6	1"	3.5	13.69	3.75	10.50
8 and 9	2"	5	15.59	5.25	11.55



**DIMENSIONS FOR FLANGED 6AM6 STYLE METERS ANSI 16.5 #150**

FLANGE SIZE	A	B (NOMINAL)	C	D	E	BOLT CIRCLE DIAMETER
3/4"	2	9.58	2.25	8.04	3.88	2.75
1.5"	3.5	14.15	3.75	10.50	5.00	3.88
2.5"	5	17.98	5.25	11.55	7.00	5.50

## LIMITED WARRANTY

**No warranty or claims are made by DAKOTA® relating to the fitness of this product to any specific application.**

Meters are warranted against defects in materials and workmanship to the original user for a period of one year from the date of shipment. The company shall at its discretion, repair or replace flow meters covered by valid warranty claims. Warranty is non-transferable and applies only to the original end-user. The liability of the company arising out of its supply of the product, or their use, shall not in any case exceed the cost of correcting defects in the products as set forth herewith.

The Warranty will not apply if failure is due to or contributed by any of the following: improper handling, improper storage, improper installation, abuse, unsuitable application of the product, lack of reasonable and necessary maintenance, use exceeding suggested pressure and temperature limitations, improper packaging for return, or repairs made or attempted to be made by anyone other than DAKOTA® or company authorized technicians.

In no event shall DAKOTA® or its distributors be liable for loss of profits, indirect, consequential or incidental damages.