

7470 - 7480 INSTALLATION INSTRUCTIONS

This is important information. Read it carefully before beginning work.

- 1) Inspect the meter for damage that may have occurred during shipping. If container is damaged report it to the freight carrier immediately.
- 2) Make sure your pressure, temperature, fluid and other requirements are compatible with the meter.
- 3) Select a suitable location for installation to prevent excess stress on the meter which may result from:
 - a) Misaligned pipe.
 - b) The weight of related plumbing.
 - c) "Water Hammer" which is most likely to occur when flow is suddenly stopped as with quick closing solenoid operated valves. (If necessary a surge chamber should be installed. This will also be useful in pressure start-up situations.)
 - d) Thermal expansion of liquid in a stagnated or valve isolated system. (If necessary install valving which will allow the meter to be drained when not in use.)
 - e) Instantaneous pressurization which will stress the meter and could result in tube failure.
Note: In closed thermal transfer or cooling systems install the meter in the cool side of the line to minimize meter expansion and contraction and possible fluid leaks at the threaded connections.
- 4) Handle the meter carefully during installation.
 - a) Use an appropriate amount of Teflon tape on external pipe threads before making connections. Do not use paste or stick type thread sealing products.
- 5) Install the meter vertically with the inlet port at the bottom. No piping runs are required.
- 6) Standard connections are vertical, NPT type.
- 7) Meters with stainless steel fittings will support several feet of pipe as long as significant vibration or stress resulting from misaligned pipe are not factors.
- 8) Meters with plastic fittings must be installed so that fittings are not made to support any part of the associated plumbing. In addition meter cases should be fastened to bulkhead, panel or stanchion.
- 9) Meters used in gas service should have suitable valves plumbed in at the inlet and outlet of the meter. These valves should be no more than 1 1/2 pipe diameters from the meter ports. The valve at the outlet should be used to create back pressure as required to prevent float bounce. It should be set during installation and then left alone. The inlet valve should be used for throttling purposes. Valves may not be essential, but they are most useful in many installations. Remember: To get a correct indication of flow rate in gas service it is necessary to know the pressure right at the outlet of the meter (before the valve). Standard gas calibrations are for air at 14.7 psia (0 psig).

CAUTION:

- 7480 Series meters have O-ring seals. Use with incompatible fluids will cause O-rings to swell which may cause glass metering tube to fail.
- Plastic fittings are not suitable for gas applications.
- Glass tube meters should not be used with strong or hot alkalis, fluorines, hydrofluoric acid, steam or water above 200 °F (93 °C). Meters can be used in Air service up to 220 °F (104°C). Meters with PVC fittings are rated for 100 °F (38 °C).
- Extra caution must be exercised when meters are used in high pressure gas cylinder applications. Pressure regulators should be installed at the cylinder and at the inlet of the meter.
- Serious property damage and great personal injury could occur as the result of a meter misused or used in an unsuitable application.

CLEANING

1) **Carefully remove meter from the plumbing system.** Before this is done make certain that the system is properly secured, that the system pressure is 0 psi, and that the system is properly drained down. In addition take whatever precautions are necessary to prevent injury to personnel in contact with system fluid. See "**WARNING**" at bottom of this page.

2) **If the tube is plain taper** (has a rod guided float) thread the extractor tool onto the threaded guide extension in the outlet fitting. Remove the float stop retainers, and carefully withdraw the float and guide assembly from the tube. The tube is now fully accessible for cleaning with a bottle brush and an appropriate mild soap solution*. (It is normally not necessary to remove the inlet float stops when tubes have rod guided floats.) The guide and float assembly may be cleaned with the same fluid. (This is not meant to be disassembled.) To reassemble the meter, carefully guide the float assembly back into the tube.** Line up the dimples on the float stop with threaded holes, insert and thread the float stop retainers into the fitting. Tighten them down. Disengage the extractor tool. Remove and replace the Teflon tape on the fittings. Reinstall meter into plumbing system.

3) **If the tube is ribbed** (i.e. fluted or beaded) thread the extractor tool onto the inlet float stop assembly and remove the inlet float stop retainer screws. Gently extract the float stop from the fitting cavity. Use care. The float will follow the stop out of the cavity. Remove the top float stop in the same fashion. The tube is now ready for cleaning (as indicated above). When reassembling use caution as the float enters the tube. The tube will be easily damaged if a cocked float is forced against the glass tube. When the float and inlet stop are reinserted in the meter rotate the extractor tool to line up the float stop dimples and the threaded float stop retainer holes. Reinsert the retainer screws and tighten. Disengage the extractor tool. Repeat this last step on the outlet float stop assembly. Change the Teflon tape on the fittings and reinstall meter into plumbing system.

*Do not use cleaning agents that will damage float, tube or O-rings.

** When installing float/guide assembly make certain that the end of the guide fully engages the inlet float stop before retainer screws are replaced.

WARNING:

Pressure and temperature ratings are based on a study of the engineering data for particular materials used in construction and on the design of individual models. This information is supplemented by destructive test results. Meters with stainless enclosures must never be operated without shields securely in place. Meters exposed to difficult environments such as those created by certain chemicals, excessive vibration or other stress inducing factors could fail at or below the suggested maximums. Never operate meters above pressure and temperature maximums. It is strongly recommended that all meter installations utilize an appropriate pressure relief valve and/or rupture disc. The pressure settings and locations of these devices should be such that meters cannot be overpressurized. Meter failure could result in damage to equipment and serious personal injury. Always use suitable safety gear, including OSHA approved eye protection when working around meters in service. We are happy to pass along chemical compatibility information that has been published by the manufactures of raw materials used in our products; however, this information should not be construed as a recommendation made by King Instrument Company, Inc. for a specific application.

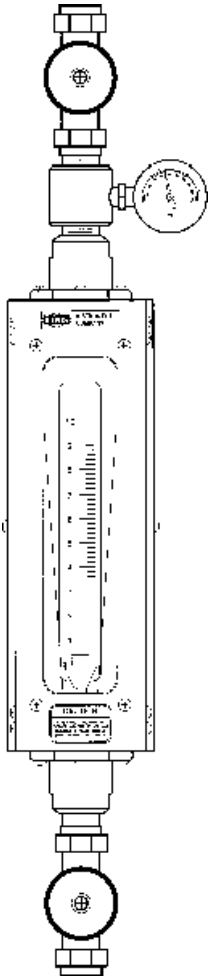
**Meters are not specifically recommended for service other than water or air.
The user must determine meter suitability for use with other fluids.**

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METERS FOR GAS SERVICE



Meters used in gas service may be susceptible to float bounce. (This is especially true in low density gas applications.) To reduce the possibility of float bounce, valves should be installed at both ends of the meter. Make sure there is minimum piping between the valve and the meter body.

During start up (with both valves closed) open the inlet 1/2 turn, then slowly open the outlet two turns. Return to the inlet and open another two turns. Now adjust a combination of the valves to achieve desired flow. Make sure to open the valves slowly. If the float begins to bounce, close the valves immediately and begin procedure again.

Both the inlet and outlet valves should be opened to the minimum required to achieve the desired flow. Follow this procedure during each start up.

A pressure gage installed between the outlet of the meter and the downstream piping will show the pressure in the meter and will allow the exact flow to be calculated by deriving a multiplier (x) using the formula shown below.

$$x = \sqrt{\frac{14.7 + \text{operating pressure}}{14.7}}$$

(Multiply the indicated flow by the value of "x" to obtain the actual flow at the corrected pressure.)

FLOWMETER LIMITED WARRANTY

Meters are warranted against defects in materials and workmanship to the original user for a period of thirteen (13) months from the date of factory shipment, provided the meter is installed, operated and maintained in accordance with the Company's instructions and recommendations.

This warranty does not apply if the failure is caused or contributed to 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 maximums, improper packaging for return, or repairs made or attempted to be made by other than the Company.

THE COMPANY MAKES NO WARRANTY AS TO THE FITNESS OF ITS PRODUCTS FOR SPECIFIC APPLICATIONS.

This warranty is valid for the original end-user only and does not apply to products that have been damaged or modified. This warranty is nontransferable and is limited to replacement or repair. The liability of the Company arising out of its supply of the products, or their use, shall not in any case exceed the cost of correcting defects in the products as above set forth.

THIS WARRANTY IS A LIMITED WARRANTY AND SHALL BE IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO OTHER WARRANTIES WHICH EXIST BEYOND THE DESCRIPTION OR FACE HEREOF.

IN NO EVENT SHALL THE COMPANY BE LIABLE FOR LOSS OF PROFITS, INDIRECT, CONSEQUENTIAL OR INCIDENTAL DAMAGES.

Products should be returned, prepaid, to the Company with proof of purchase.

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