

# FLOW METER INSTRUCTIONS

## GENERAL INFORMATION

Inspect instrument for possible visible damage resulting from shipping. Notify UPS or other carrier as well as the distributor where the flow meter was purchased of any claims.

Flow meters always must be installed in a vertical position, any significant deviation from vertical will affect the readings.

Valves should be closed before installation and opened gradually after all connections are carefully inspected. A leak test is highly recommended especially when hazardous fluids are involved.

**CAUTION:** Excessive tightening of valves may damage the orifice.

It is important that all lines to be connected to the flow meter are purged of any dust or other residual contamination prior to installing the meter. All P and S style flow meters are equipped with a filter in the inlet port. In some applications an additional filter should be installed at the inlet of the flow meter.

## STICKING FLOATS

Before installing open the valve of the flow meter and check to make sure that the float or floats are moving freely in the flow tube. This is best done by slowly tilting the flow meter from horizontal to vertical while observing if the float is rolling freely.

All meters are thoroughly inspected at the factory prior to shipping and are sealed in polyethylene bags to prevent dirt from entering into the flow passages. Certain small bore flow tubes have a clearance between the float and the inside walls of the flow tube of only a few ten thousandths of an inch. In some cases these flow tubes are found to have floats that are sluggish or not moving due to condensation resulting from temperature changes during shipping.

**It is advisable to blow a dry clean gas through the meter to free float.**

## SAFETY INFORMATION

P and S style flow meters are designed to be operated at pressures not exceeding 200 psig (13.6 bars), or temperatures not exceeding 250 degrees F (121deg.C).

T style flow meters are designed to be operated at pressures not exceeding 100 psig (6.8 bars), or temperatures not exceeding 150 degrees F (65.5deg.C).

**NOTE:** When using a T style PTFE flow meter, at a pressure and/or temperature greater than standard the leak integrity approaches 1x10. Standard conditions are considered to be 14.7 psia (1 bar) and 70 degrees F (21deg.C).

All meters are factory tested for leakage prior to shipping. For hazardous fluids the flow meter must be re-tested at the time of installation in the system, prior to usage. It is also important that a leak integrity test is performed periodically to maintain safe operating conditions.

Flow meters must be protected from breakage due to external conditions such as objects bumping into or hitting the instrument, extreme vibrations, or attack by corrosive materials. It is the responsibility of the customer to acquaint the operator(s) of this flow meter with all appropriate safety information.

## VALVE ALIGNMENT

The built-in needle valve may be positioned at either the inlet or the outlet of the flow meter. Valves are factory installed at the inlet of the flow meter unless otherwise requested.

APPLICATION	VALVE POSITION
Exhaust pressure at Atmospheric conditions	Valve at Inlet
Exhaust pressure other than Atmospheric conditions *	Valve at Outlet
Vacuum	Valve at Outlet
Liquid flow	Valve at Inlet or Outlet

\* When using a flow meter with exhaust pressure greater than atmospheric conditions the standard calibrations can not be used. A calibration for the operating pressure must be obtained.

## OPERATING INSTRUCTIONS

Close valve (if applicable) before initial use, then pressurize the system.

Slowly open the valve until the float is at the desired flow rate. The flow rate is read at the center of the float.

## FLOW TUBE INSTALLATION OR REMOVAL

Remove the Front Shield and Back Plate. **Do not** remove the side panels from the flow meter.

To remove the flow tube:

**P style meters:** insert a 5/32" hex wrench into the Pressure Nut at the top of the flow meter. While holding the flow tube between your thumb and forefinger, turn the wrench counter clockwise to release the flow tube. Carefully remove the flow tube as not to damage it.

**S and T style meters:** insert a 3/32" diameter rod in the holes of the Lock Nut at the top of the flow tube. While holding the flow tube between your thumb and forefinger, turn the tool clockwise to release the flow tube. It may be necessary to push the Tube Adapter into the upper block to remove the flow tube.

To reinstall the flow tube reverse the above procedure. Take care to assure that the flow tube is centered, in the meter, at the top and bottom before tightening.

T style meters require additional tightening to insure proper sealing at the flow tube ends. The flow meter should be tightened again 24 hours after the initial tightening.

A leak integrity test is recommended after disassembling any flow meter.

## FLOW TUBE CLEANING

If necessary, remove the flow tube from the frame as explained above, and clean as follows:

Insert a plastic rod that will fit into the flow tube with no obstruction, into the bottom of the flow tube and push the retaining plugs and float out of the flow tube. Use tweezers to handle the float and store the float and the plugs in a lint free container. Before removing note the position of the plugs for reference when reassembling.

Using a suitable solvent clean all the parts including the flow tube, dry them by means of a clean stream of air or gas.

To reassemble the flow tube use the push rod to first install the lower plug, next insert the float and then the upper plug.

Test by slowly tilting the flow tube from horizontal to vertical to assure that the float is moving freely. If the float is free follow the instructions above to reinstall the flow tube in the frame.

## MAINTENANCE

Under normal operating conditions no special maintenance is required. Dirt or contamination may create problems within the flow tube by causing a restriction in the flow passage. Such conditions can be diagnosed by examining the flow tube. The most obvious indication of obstruction is the float being stuck in the flow tube. If the existence of the contamination is determined the condition may be rectified in a number of ways. The easiest being (if possible), to disconnect the inlet and the outlet of the flow meter and purge the instrument by using a clean and dry stream of gas. The action of the float within the bore of the flow tube very often causes particles to be dislodged through the outlet of the flow meter.

# TRIPOD ASSEMBLY INSTRUCTIONS

1. A Tripod includes the following:

Model #	Leveling Screws	Mounting Brackets	Mounting Screws
TP1	3	BK1	1
TP2	3	BK2	2
TP3	3	BK3	2
TP5	3	BK1 (3)	3
TPG	3	NONE	2
TPH	3	NONE	2

2. Carefully remove the protective paper form both sides of the Tripod.
3. Install the three Leveling Screws into the threaded holes in each corner of the Tripod.

**NOTE:** The Leveling Screws can be installed with the red caps on top of the Tripod, for ease of adjustment, or underneath, for protection of the base surface.

4. Insert the Mounting Screw(s), from the bottom of the Tripod, through the mounting Hole(s).
5. Attach the Mounting Bracket to the Mounting Screw(s) and tighten. Do not over tighten, the Tripod will be damaged.
6. Remove the Panel Nut(s) from the Inlet Port(s) of the Flow meter
7. Install the Flowmeter so the bottom of the frame rests squarely on the short leg of the Mounting bracket
8. Install the Panel Nut(s) on the Inlet port(s) and tighten until flowmeter is secure. The Flowmeter must be perpendicular to the Tripod.
9. Place Tripod/Flowmeter on a flat surface and adjust leveling screws until the bubble in the level is centered.