Operating Instructions for Smith Equipment Pipeline Flow Meters and Flow Meter / Regulators

These instructions are provided with Smith Equipment pipeline Flow Meters and Flow Meter / Regulators to assist the user in operating them safely and effectively. There are numerous hazards associated with the use of compressed gases. These hazards vary with each gas, with the equipment utilized and with the particular application. It is, therefore, impossible to list all the hazards and associated precautions. In addition to adhering to the operating instructions and safety rules listed in these instructions, the user should be aware of additional hazards and safe operating practices peculiar to his/her equipment and application and should consult with the equipment manufacturer and compressed gas supplier. These instructions are applicable to Pipeline Flow Meters and Flow Meter / Regulators used with oxygen, nitrogen, helium, hydrogen, argon, carbon dioxide and compressed air.

Smith Equipment Flow Meter / Regulators consist of a single or two-stage pressure regulator and a pressure compensated Flow Meter. The pressure regulator is designed for connection to a compressed gas cylinder, whose pressure is 3000 psig or less. Most regulators are similar in appearance, with the principal difference being at the inlet connection. Inlet connection standards are established by the Compressed Gas Association. It is important that the inlet connection of the regulator be properly mated with the supply valve connection as specified by the established standards for the service intended. Checking proper mating will avoid putting the regulator in the wrong service. The regulator adjusting screw has been preset and locked to deliver the correct operating pressure. As the cylinder pressure changes, the regulator holds the operating pressure within a narrow range for accurate Flow Meter readings. The pipeline Flow Meter is supplied without a Regulator for use on a regulated gas pipeline with gas supply delivered at the pressure for which the Flow Meter is calibrated. Each flow tube is calibrated to indicate volume flow rate with a particular gas, pressure, and float at 70º F (21.1º C). Accurate indication requires use with the gas for which the flow tube was calibrated. The correct operating gas and pressure are printed on each flow tube.

General Operating Instructions

NOTE: The internal safety relief valve is only designed to protect the Flow Meter / Regulator, NOT the downstream equipment. A separate valve should be used to protect systems which could be damaged by overpressure.

Putting the Flow Meter / Regulator into service

1. Be certain the Regulator is proper for the gas and the service.

2. Inspect the Regulator and Flow Meter for evidence of damage. If there is evidence of dirt, oil, or grease at the Regulator or Flow Meter inlet or outlet connections, wipe with a clean, lint-free cloth. Be certain material does not enter the regulator. If material does enter the regulator, send it to a qualified repair station for cleaning. If excessive oil or grease is apparent, do not attempt to clean but send to a qualified repair station for cleaning.

3. Inspect the supply connection for evidence of dirt, oil or grease. If evident, clean as in (2). Open supply valve to blow out any loose, foreign material then close the supply source valve before attaching the Regulator or Flow Meter. This instruction is applicable to oxygen, compressed air and inert gases. Never blow out a hydrogen cylinder valve since friction from the flow of the gas can ignite hydrogen/air mixtures.

4. There are general safety rules for all gases and special safety rules for certain gases. Refer to those before proceeding to operate the Flow Meter / Regulator.

5. For combination units, attach the Regulator to the source supply valve and tighten inlet nut with a close-fitting wrench. For Pipeline units, connect the Flow Meter inlet to a properly regulated source. NEVER ATTACH TO A CYLINDER. For accuracy, the Flow Meter tube must be in the vertical position.

6. Close the Flow Meter flow control valve by turning the Flow Meter knob clockwise. Slowly open the supply valve.

7. Adjust desired flow by turning the Flow Meter knob counter-clockwise to increase flow and clockwise to decrease the flow. The indicated flow is read at the center of the float. Flow adjustment must never be made by turning the preset regulator adjusting screw as this will change the operating pressure and give inaccurate readings. If this adjustment screw has been tampered with, return the unit to a qualified repair facility for calibration.

Removing the Flow Meter / Regulator from service

1. Close the supply source valve.

2. Vent the gases in the flow meter and regulator to the atmosphere as follows:

3. Turn the Flow Meter control knob fully clockwise.

4. Vent the system and remove the hose from the Flow Meter outlet.

5. Slowly, open the Flow Meter flow control valve until all gas is vented from the Flow Meter and Regulator

6. Disconnect the Flow Meter / Regulator from the supply source if necessary.

7. If the unit is to remain out of service, protect the inlet nipple and outlet fitting from dirt, contamination or mechanical damage by installing cap plugs.