

Flow Control Equipment

Introduction

Variable Area Flowmeters

Variable area flowmeters consist of a frame, tapered metering tube, and a float. They are designed to indicate rates of flow for various liquids and gases.

How They Work

Fluid enters the inlet of the metering tube exerting a force on the float. As the force overcomes the weight of the float, the float rises in the tube. When the forces of gravity, float weight, and the fluid force reach an equilibrium, the float stabilizes in the tube (see right). The position of the float at equilibrium corresponds directly to the flow rate. The flow rate is indicated on a scale etched directly onto the metering tube. This scale may be either a direct reading scale or a reference scale. A reference scale requires the use of a calibration data chart.

Variable area flowmeters must be mounted vertically with the flow moving upward through the metering section to assure accuracy. Within this restriction, they offer the flexibility of being bench-mounted or mounted directly in a pipeline, control panel, bypass system, or backup system for electronic controllers.

Selecting the Proper Flowmeter

Glass Tubes

Glass tube variable area flowmeters are economical and allow the user to see float movement. They offer the greatest variety of styles, sizes, and materials of construction and also offer tube interchangeability.

Plastic Tubes

Plastic tubes are also used in some variable area flowmeters because of their low cost and high impact strength.

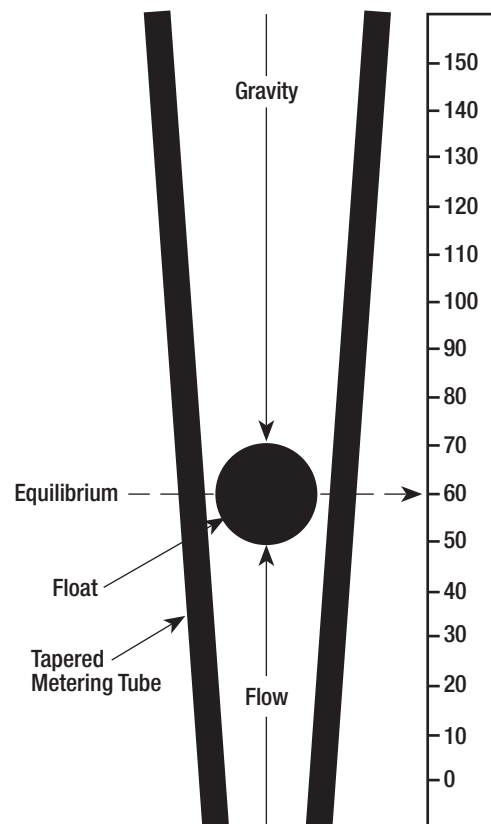
Scale Length

Scale length affects the accuracy and ease of use of the meter. A variety of scale lengths are available to satisfy a full range of

needs. These vary from 37 millimeter scales for general flow indication up to 150 millimeter scales for high accuracy requirements.

Materials of Construction

Materials of construction are an important consideration. End fitting materials are available in brass, stainless steel, and PTFE material. Brass units may be used with inert and noncorrosive media. Stainless steel and PTFE units are recommended for nontoxic, corrosive service applications.



How Flowmeters Work