Disturbed Flow Measurement

±1% Accuracy with No Straight-Run Pipe

Why Do I Need It?

When the readings the balancing contractor is getting from the Manual Balance Valve are anything less than ±1% accurate, the engineer's system design is costing someone money. In many retrofit installations, contractors may sacrifice accuracy for space considerations. This is no longer a problem with Griswold's Disturbed Flow Measurement QuickSet Manual Balance Valves. When the engineer specifies a 2-1/2"–18" QuickSet, he can count on the balancing contractor getting a ±1% test accuracy no matter what the space the contractor has to install the valve. The engineer's QuickSet specification guarantees the energy efficiency and lower operating cost desired by the owner.

What is it?

Disturbed Flow Measurement is a new design strategy which allows installation of 2-1/2"–18" QuickSet manual balance valves with no straight-run pipe required at inlet or outlet. Resulting flow measurement consistently accurate to ±1%.

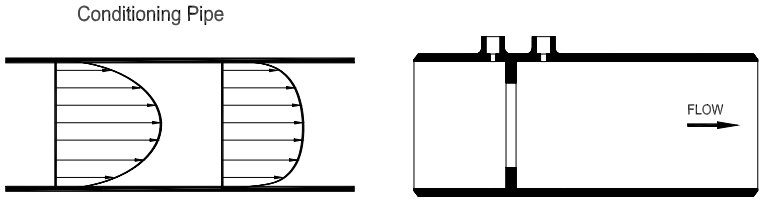
How do other flow measurement methods work?

Pitot Tube

The Pitot tube is a tube inserted into a pipe or valve. One reads the pressure difference from the front and back side of the tube. Drawbacks: requires 10 diameters straight pipe minimum at inlet to condition flow. May clog.

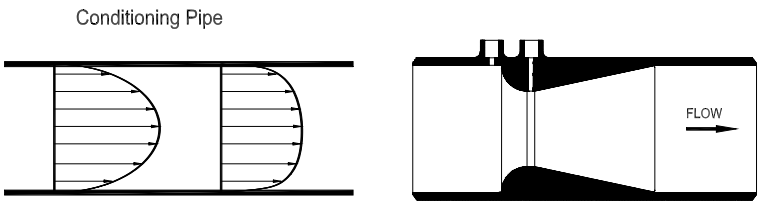
Orifice Plate

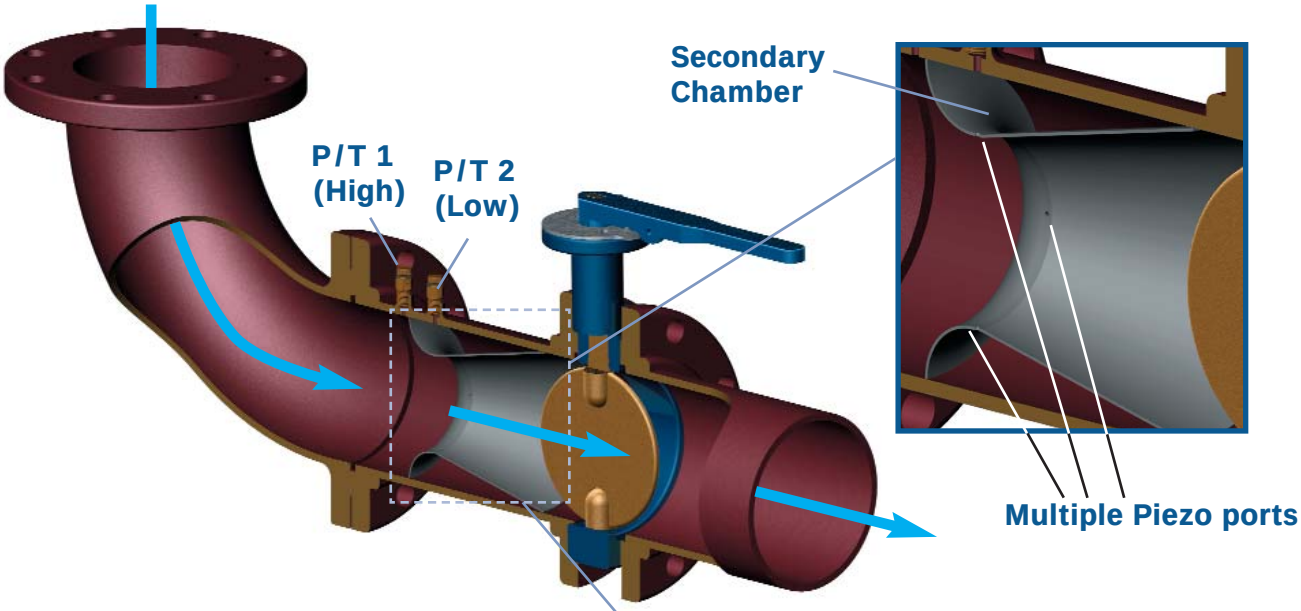
The Orifice plate is merely a plate in the valve with an orifice in the middle through which the flow must travel. Flow is measured both before the orifice plate (high pressure) and after (low pressure) Drawbacks: requires 10 diameters straight pipe minimum at inlet to condition flow. Sudden contraction/expansion causes high permanent psid/ low Cv. Poor accuracy



Classic Venturi

The venturi is a cast or machined shape in the valve through which the flow must travel. Flow is measured both before the venturi (high pressure) and at the throat diameter of the single cavity chamber (low pressure). Gradual contraction/expansion generates a lower permanent psid and regain to a higher pressure or Cv. Drawbacks: requires 4 diameters straight pipe minimum at inlet to condition flow.

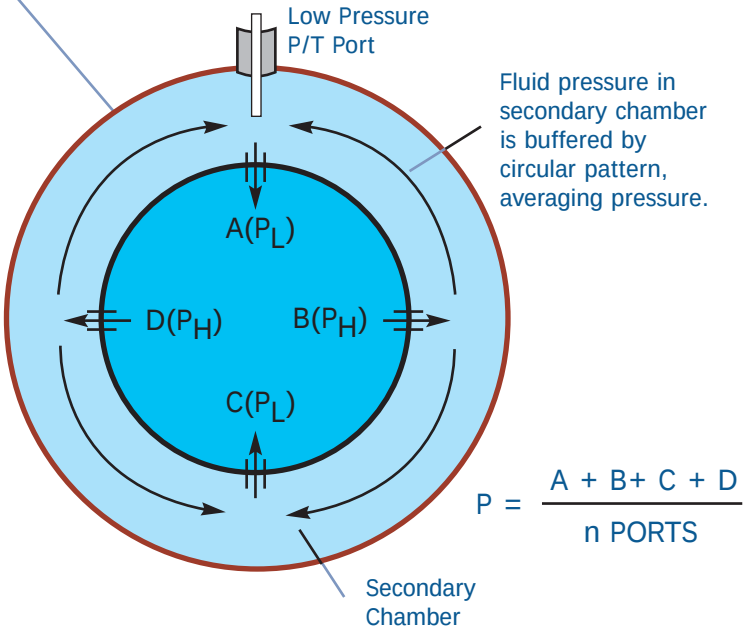




How does Disturbed Flow Measurement work?

Griswold Controls welds a spun steel venturi into a pipe. Disturbed fluid is channeled through the throat of a venturi with a multi-port Piezo Ring.

Since different velocities create different pressures, the fluid passes from high pressure to low pressure through the Piezo ports into the hollow secondary chamber between the pipe wall and the venturi. This creates a buffered circular flow in the secondary chamber which averages the low pressure readings, enabling an accurate ±1% PSID reading through the second P/T port.



Is the high pressure reading affected?

At the entrance to the venturi, there is a region where fluid velocity is zero, creating a static pressure zone (highest possible pressure). This eliminates the need to regularize the velocity and pressure, as in the secondary chamber.

Get ±1% Accuracy with no straight-run pipe — Specify QuickSet today!

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