MPSO - SUBSONIC PRIMARY METERS

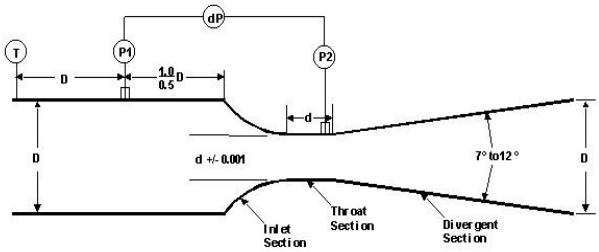
Range of instruments to the Venturi principle that include ASME nozzle, orifice flowmeters for accurate flow of gases and liquids.

The mass flow through the meter is proportional to the square root of the density for the measured differential pressure. So you can measure different fields of flow with constant density. This feature makes it advantageous application in low pressure systems.

The Venturi meters are not affected by noise and turbulence, while the orifices are to a greater extent, the nozzles are ASME average influenced. The second topic is the increase of uncertainty in the measurement of flow due to the differential pressure range. On request, the technical specifications are available explanatory concerning the effects of differential pressure range on the determination of the uncertainty in the flow measurement. Assuming a constant density, a variation DP / P1 from 0.1 to 0,005 equal to 20: 1, the uncertainty in the flow rate to the minimum differential pressure will be 10 times higher than that at full scale.

APPLICATIONS

- » Calibration of flowmeters
- » PTC Applications
- » Flow rate measures
- » Calibration of turbine engines
- » Calibrations of Automotive components
- » **A**ir flow, atomizers measures
- » Boilers, exhaust gas, incinerators
- » Compressors and pumps discharge tests
- » CV-kw Valves tests
- » Limitation of flow rate and cavitation
- » Protection from over-flow of gas meters



MPSOV - VENTURI METER

They offer the best guarantees repeatability and low pressure losses in the family of subsonic. Thanks to the continuous geometry between the three sections of contraction, shrinkage and divergence. The low pressure drop feature reduces costs by improving the efficiency. Another advantage is represented by the more reduced the required lengths for the rectilinear sections upstream and downstream of the primary instrument.

These devices are designed and manufactured tailored to application requirements and project data available for each application. In this regard, our technical department is available to study the best performance, considering among other the best geometry and the relationship Beta "Relationship between the orifice diameter and the internal diameter of the inlet pipe."

Among the available versions, the classic venturi Herschell consists of an entrance to the conical section, a section of narrowing cylindrical and a conical section diverging outlet.

The instruments with an inlet pipe of less than 8 "are turned, while for the larger size are obtained from fusion.

Beta reports are realized in the range 0.4 to 0.75.

The Venturi circular arc have a radial converging section, a section of restriction cylindrical and a conical section diverging output. This geometry is applied for smaller sizes 8 " to realize low ratios Beta.

It can also provide a Venturi hybrid version which consists Asme nozzle with elliptical converging section, a section of the conical narrowing combined with a conical section diverging output. This geometry allows excellent performance for any Beta ratio and is used in pipes larger than 20 ".

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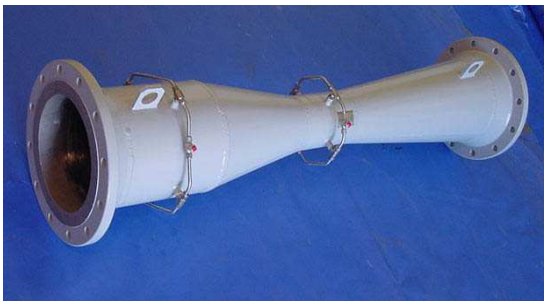
MPSOU - ASME NOZZLES

Constituted by a converging section and a section of elliptical cylindrical narrowing. This instrument has a higher pressure drop and consequently, less performance, but offer lower installation costs.

The repeatability is better than the measuring orifice, but in turn may be lower in comparison to the Venturi. The installation requirements are more stringent than the venturi, but lower than the measuring orifice. The embodiment provides both pressure taps on the narrowing that on the walls of the pipe.

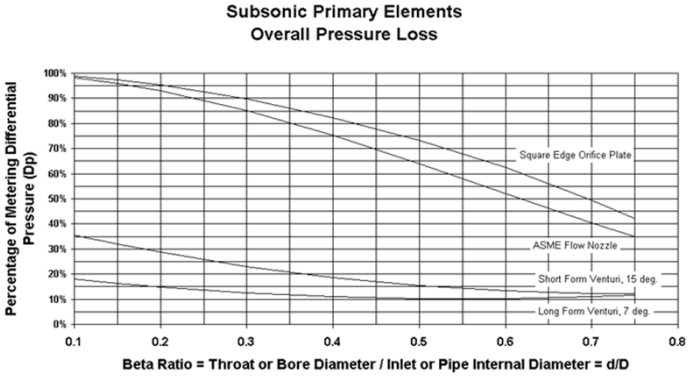


MPSOO - ORIFICE METERS

Represent the most economical solution compared to the costs of installation, but have the highest pressure drop than the previous.

Are more affected by noise and turbulence of the fluid, thereby providing a lower repeatability. Even more stringent are the requirements installation than for Venturi nozzles or to Asme.

The chain of flow measurement these instruments envisages the adoption of a primary meter (Venturi nozzle Asme or orifice), a liner (tube inlet and outlet pipe, to be inserted in the pipe), a differential and relative pressure transmitters and temperature transmitter. A flow computer process the data collected from the sensors to calculate the volumetric and/or mass flow rate. At the same time are displayed and recorded instantaneous flow rate, totalized, consumption, loss, etc.



PROJECT OPTIONS

Orifices: manufactured from 0.508

Resolution: standard +/- 0.0254, on request from 0 to +0.0254 (x size less than 19 mm)

The ASME and ISO standards limit the maximum differential pressure measured until 25% of the absolute inlet pressure P1, so that the ratio DP / P1 should not exceed 0.1 in order to avoid the increase of uncertainty or a decline of repeatability.

The scale range, compared to the instantaneous flow rate, is proportional to the square root of the differential pressure measurement, whereas the constant density. If you want a turndown 3:1 then the measured differential pressure should be reduced by a factor of 9.

Once you determine the turndown, and the scale factor, we can consider two aspects of the differential pressure:

- disturbances or turbulence in the flow can cause phase shifts in the differential pressure;

- small differences are more influenced by disturbances and a minimum ratio DP / P1 0.005 is recommended for good repeatability.

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MPSO - SUBSONIC PRIMARY METERS

Diameters:	from ½ "
Connections:	AN ogive, NPT, ANSI flange, Swagelok ™, VCO ™, VCR ™, CPV ™, butt welding or pocket. Flanges with O-rings (with or without V-Clamps) on request. Versions insertion for insertion between flanges.
Materials:	S.S. 304 standard. Aluminum, carbon steel, plastic material on request. Other materials on specific customer. For Venturi with sizes greater than 6 "you can combine multiple materials such as: restriction of stainless steel with carbon steel body. The nozzles ASME and the orifices are usually made with stainless steel and the orifice body, flanges and pipe carbon steel.
Sections of input and output:	Completing the system of measurement, guaranteeing the necessary length of the straight pipe input and output also mounting connections for the outlet pressure and temperature. Additional taken or annular chambers, straightening vanes are available upon specific.
Accuracy:	Without calibration, accuracy is expected in the range of +/- 1.5% of reading. With traceable NIST calibration, in conjunction with the electronic instrumentation (transmitters DP, P, T, Flow computer, etc.), will be +/- 0.77% or +/- 0.50% of reading.

SPECIAL VERSIONS

Bi-Directional Venturi

Liquid or gaseous bi-directional flows applications

Cavitation Venturi

Used to restrict the flow of liquids enabling a low pressure loss in the normal flow.

Divergent Venturi

Designed to minimize pressure losses and increase efficiency. The standard version to diverging section has a total taper of 15 ° and is comparable to a Venturi short. In option can be used to form an angle of 7 ° of conical diverging section called Venturi long.

An alignment of multiple meters can be mounted in cascade between a manifold to a common entrance and another output. This solution increases the working range of the measurement scale and reduces installation costs.

TRMV - MULTIVARIABLE TRANSMITTER

TRMV multivariable transmitter combines in a single instrument a probe RTD, a temperature transmitter, a differential pressure transmitter and a static pressure transmitter. The electronics of the transmitter allows the calculation of the real characteristics of the gas used and the discharge coefficients calibrated.

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