V-cone Flow Meter

FVM09

Measuring of gases, vapors, and liquids, low-pressure loss, high-temperature resistance, good stability.

| Feature |

NEWS
Product preview
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- Display immediate, cumulative flow.
- Automatic cleaning, maintenance-free, dirt-resistant, not easy to block.
- Good wear resistance, high temperature, and high-pressure resistance, good stability, long-term stable throttling area, stable signal.
- The permanent pressure loss is small, the output differential pressure is stable, and the negative pressure end of the V cone is small.
- Medium: gas, vapor, liquid, special fluid, complex working medium.
- Accuracy: ±0.5 %; measuring temperature up to 600 °C.
- Straight-Pipe Requirements : upstream : 0 ... 3D, downstream : 0 ... 1D.

| Introduction |

FVM09 The V-cone Flow Meter uses the throttling effect to measure flow and hangs in the center of the pipe with a linear cone.
The fluid is gradually shrinking to the inner wall of the pipe and has self-rectifying, self-cleaning and self-protecting properties.
High Accuracy, wide flow range, measurement of a variety of mediums, real-time display flow, cumulative flow, and other values, widely used in various industries.

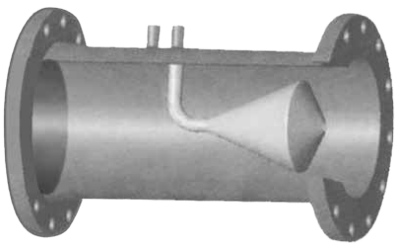
Application :
Pneumatic station / Machine room / Boiler room / Flue / Blower / Compressor / Vapor / Natural gas / Corrosive gas / Petroleum / Minsheng and Industrial Water / Organic solvents

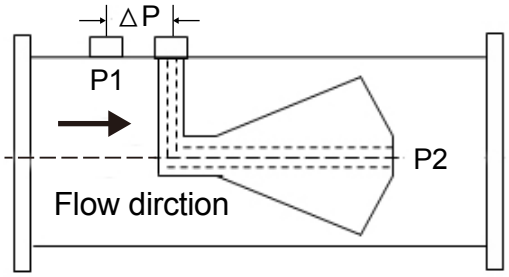
| Specification |

Item	Function & Parameter
Diameter	DN15 ... DN2000
Accuracy	± 0.5% of measured value
Temperature range	< 600℃
Turndown ratio	Typical 10 : 1 ; maximum 20 : 1
Repeatability	0.25%
Housing material	Carbon steel
	304
	316
	High temperature resistant alloy steel
	Lined with F4 or F46 (highly corrosive medium)
V-shaped material	304 ; 316
Temperature range	< 80°C ; 80 ... 180° C ; > 180°C
Pressure range	≦ 1.0MPa ... ≦ 25MPa

The Operational Principle of the V-Cone Flow Meter

A pressure difference at the two ends of the sharp cone is being generated while the fluid is flowing through the V-cone. The high-pressure (positive pressure) is a static pressure P1 measured at the tube wall before the upstream fluid contracts, while low pressure (negative pressure) is pressure P2 measured at the central axis of the cone toward the downstream end.





$$q_m = \frac{C}{\sqrt{1-B^4}} \varepsilon \frac{\pi}{4} (D^2-d^2)\sqrt{2P\Delta p}$$

q_m - Quality flow (kg/h)

P- Liquid density under working condition (kg/m³)

C - Outflow coefficient

B- Equivalent diameter ratio

D - Body diameter (mm)

d - V cone head diameter (mm)

△P- Output differential pressure (△P=P1 - P2)

ε- Gas expansion coefficient

After the measured medium and V-cone are determined, the practical formulas associated with the flow totalizer or computer are:

$$q_m = K\sqrt{P\Delta P} \quad \text{or} \quad q_v = K\sqrt{\Delta P / P \times 10^3}$$

In the formula:

P- Liquid density kg/m³ under working condition

△P- output differential pressure kpa K - flow calibration factor