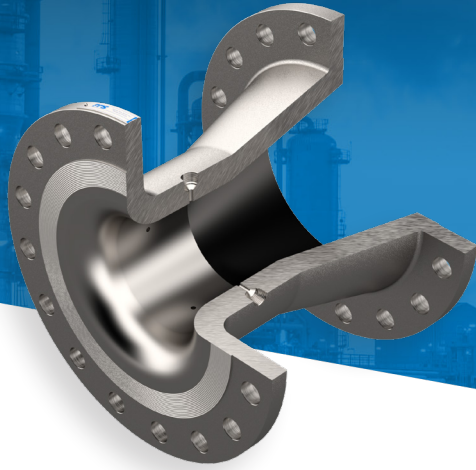


# Venturi Nozzle



## Description

The Venturi Nozzle is a hybrid device having an inlet, convergent section identical to the ISA 1932 nozzle and an outlet, divergent section similar to a Venturi tube flowmeter. This results in a unique location for the low pressure tap in the throat. This design has a lower pressure loss than the ISA 1932 nozzle and the long radius nozzle. They are generally used for the measurement of liquid or gas flows including steam, erosive, high-velocity and non-viscous media. They do not rely on a sharp edge (which can deteriorate over time) to maintain accuracy and therefore offer excellent long-term accuracy with less wear, reducing the possibility of distortion. They are often used for high accuracy flow measurement in power plant applications.

## Common Materials

- Carbon Steel
- 304 / 316SS
- Chrome Moly

## Other Available Materials

- Aluminum
- Tantalum
- Duplex S/S
- Hastelloy B & C
- Monel
- Zirconium
- 321 SS
- Titanium
- SS

## Design Standards

- ASME PTC-19.5
- ASME MFC-3M
- ISO-5167

## Construction Standards

- ASME Section I
- ASME B31.1 – Power Piping
- ASME B31.3 – Process Piping

## Applications

- Power generation
- Hydrocarbon, Liquids and Gas Process
- Water Treatment and distribution
- Erosive Fluids
- Oil production and refining
- Steam Process
- High Velocity Process
- Erosive Fluids

## Special Features

- Improved, lower, permanent pressure loss when compared to an equivalent ASME long radius nozzle
- In some cases, improved uncalibrated uncertainty compared to an equivalent ASME long radius nozzle
- Extended product life with no moving parts
- Low Installation and operation costs
- Lower susceptibility to erosion
- Widely used for high pressure and/or high temperature steam and water flow
- Useful for flow measurement at high velocities
- Turndown ratio of 10:1, 20:1, 50:1 and greater can be achieved depending on the specific model and design of the meter as well as the type of secondary instrumentation system utilized
- Repeatability of  $\pm 0.1\%$
- Mounts in any position

## Specifications

**Line Size:** 2.5 to 20 inches

**Head Loss (permanent pressure loss) in % of Differential:** 5% to 20%

**Basic Accuracy (% of Total):** [Calibrated  $\pm 0.25\%$ ] [Uncalibrated  $\pm 1.21\%$  to  $\pm 1.74\%$ , Beta Dependent]

**Recommended Pipe Reynolds Number:** Greater than 150,000 for basic accuracy

**Required Straight Piping:** Consult PFS for required US & DS piping based on your specific application

**Beta Range:** 0.316 through 0.775

**Useful Service Life:** Medium to Long

**Service Functional Limits:** Clear Liquids, Gas and Steam