

Model

SVT

Venturi Tube

Description

The Venturi tube, is characterized by its tapered inlet and diverging outlet. This design greatly reduces head loss to the system when compared to an orifice plate. In fact, the Venturi can handle 25% to 50% more flow than an orifice for comparable larger line size.

The Venturi is well suitable for dirty fluids since there are no places for dirt to build up in the tube. Traditionally, the Venturi tube has been used on low pressure gas flow, water and waste applications.

Venturi tubes are generally constructed with a system of pressure taps which project radially into the pipe and feed into a common chamber known as a piezometer ring. This multiple tap arrangement provides an average pressure reading over the entire circumference of the element. As a result, the need for long pipe runs is eliminated. A general rule is that a venturi tube requires only half the upstream and downstream runs of an orifice plate.

The discharging coefficient of the Venturi is constant and predictable to $\pm 1\%$ for pipe Reynolds Numbers greater than 100,000. Venturi elements are not as reliable at lower Reynolds Numbers. The Venturi tube is a relatively high cost device. However, low pumping costs and reduced piping requirements can make it cost effective.



Specifications

VENTURI TYPE

Fabricated flange type,
Fabricated weld-on type,
Machined flange type, Rectangular type

FLOW CALCULATION STANDARDS

ISO 5167, ASME MFC-3M

FLANGE RATINGS

JIS 20, ANSI 300LB

NOMINAL PIPE SIZES AVAILABLE

50mm to 1200mm (2 to 48 inch)

MATERIAL

Carbon Steel, 304SS, 316SS

Features

Can be used on slurries and dirty fluids.

Short upstream piping required.

Low installation costs.

Lower susceptibility to erosion.

High pressure recovery.

Low permanent pressure loss.

Extended product life with no moving parts.

Vertical or horizontal installation.

No moving parts, simple configuration,
maintenance-free.

Availability in 2 to 48 inch sizes, larger sizes
available upon request.

Available in all ANSI ratings. (depending on line size)

Available in wide variety of materials.

Applications

Power Plants
Chemical Plants
Water Treatment Plants

End Connections

Venturis are available with ends prepared for welding into the pipeline, or fitted with flanges.



Pressure Tappings

Venturis can be supplied with a wide variety of pressure tapplings, including threaded connections, socket weld connections and welding nipples. We can also supply isolation valves, condensate chambers and manifolds, as the application demands.

Examples of Pressure Tappings



Required Straight Lengths

Upstream straight pipe requirements for classical Venturi tube are less than those required for orifice plates, flow nozzles and Venturi nozzle-the convergent portion of the classical Venturi is designed to obtain a more uniform velocity profile at the throat of the device.

The lengths shown in the table below, in terms of pipe diameters, are measured from the plane of the upstream pressure tapping. Fittings located more than four throat diameters downstream of the plane of the throat tapping do not affect the accuracy of the measurement.

Diameter ratio β	Single 90°	Two or more 90° bends in the same plane	Reducer 3D to D over a length of 3.5D	Expander 0.75D over a length of D	Full bore ball or gate valve fully open
0.30	8	8	2.5	2.5	2.5
0.35	8	8	2.5	2.5	2.5
0.40	8	8	2.5	2.5	2.5
0.50	9	10	5.5	2.5	3.5
0.60	10	10	8.5	3.5	4.5
0.70	14	18	10.5	5.5	5.5
0.75	16	22	11.5	6.5	5.5

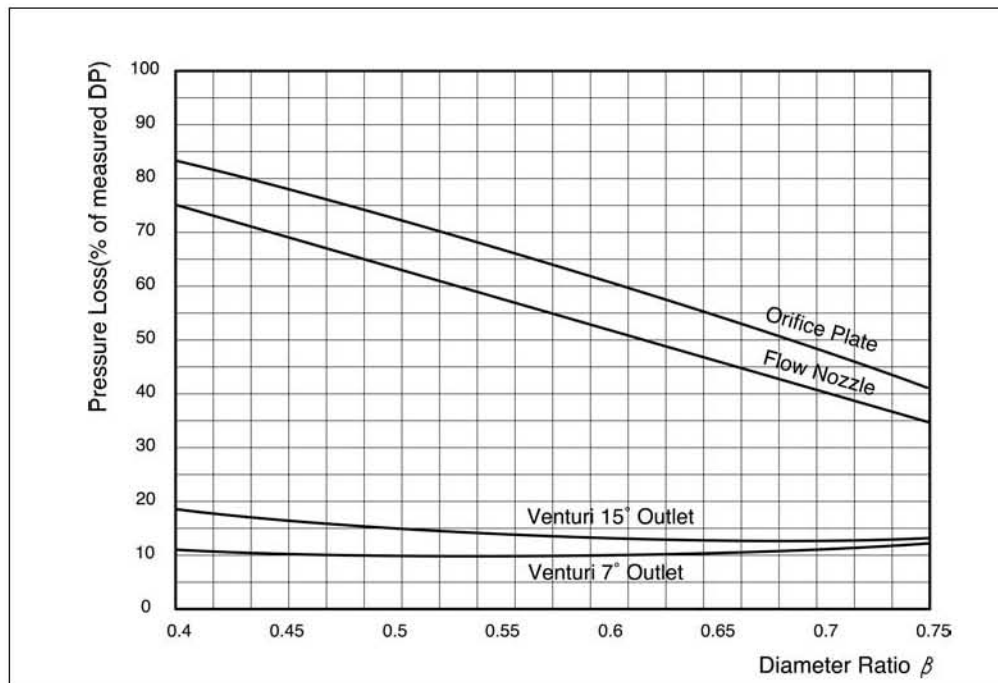
Limitations

Pipe size and Reynolds Number limitations are shown in the table below, in accordance with BS EN ISO 5167:1

Device	Pipe Inside Diameter (mm)		Reynolds Number	
	Min	Max	Min	Max
Fabricated Venturi	200	1200	2×10^5	2×10^6
Machined Venturi	50	250	2×10^5	1×10^6
Fabricated Nozzle	65	500	1.5×10^5	2×10^6

Unrecovered Pressure Loss

The graph below shows the advantage of Venturi tubes and Venturi nozzles over orifice plates and flow nozzles. Pressure loss is expressed as a percentage of the measured differential pressure.

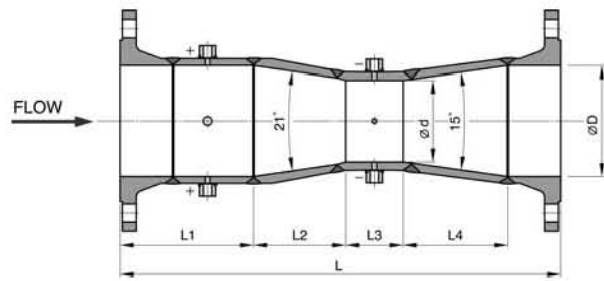


Special Requirements

For applications requiring high accuracy flow measurement, Venturi tubes can be individually calibrated, using water, air or natural gas, to obtain accurate discharge coefficients for the device over a range of Reynolds Number.

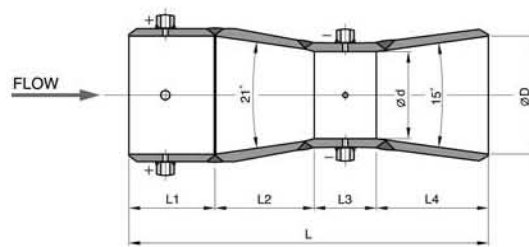
We can also offer 'in-house' testing including dye-penetrant inspection, hydrostatic pressure testing, radiographic inspection, magnetic particle inspection and positive material identification.

Fabricated Flange Type
 Available in size 6" and larger



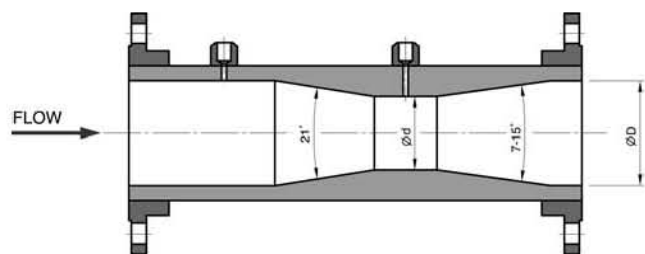
SVT-A

Fabricated Weld-On Type
 Available in size 6" and larger



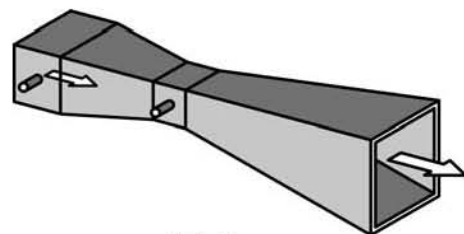
SVT-B

Machined Flange Type
 Available in size 6" and smaller



SVT-C

Rectangular Type
 Available in size 6" and larger



SVT-F

Ordering Informations

■ VEVTURI TUBE

SVT - A 1 A 1 A 1 A

OPTION

A = Other
B = None

BOSS MATERIAL

1 = Carbon Steel
2 = 304 SS
OP = etc.

FLANGE MATERIAL

A = Carbon Steel
B = 304 SS
C = 316 SS
OP = etc.

FLANGE RATING

1 = JIS 10K
2 = JIS 20K
3 = JIS 30K
4 = ANSI #150
5 = ANSI #300
6 = ANSI #600
7 = ANSI #900
OP = etc.

BODY MATERIAL

A = Carbon Steel
B = 304 SS
C = 316 SS
D = 316L SS

LINE SIZE

1 = 15A(1/2")
2 = 20A(3/4")
3 = 25A(1")
4 = 32A(1-1/2")
5 = 50A(2")
6 = 65A(2-1/2")
7 = 80A(3")
8 = 100A(4")
9 = 125A(5")
10 = 150A(6")
11 = 200A(8")
OP = etc.

TYPE

A = Fabricated Flanged
B = Fabricated Weld-On
C = Machined Flanged
D = Machined Weld-On
E = Rectangular Flanged
F = Rectangular Weld-On

■ When placing an order, selected ordering number should be indicated on the purchase order sheet.