

## Venturi Nozzle DV 700

### Application

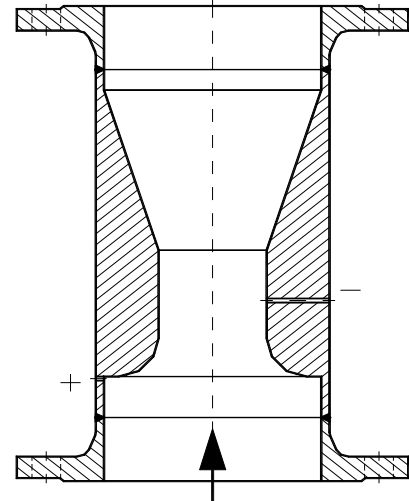
Venturi nozzles are used as flow elements for flow measurement of aggressive and non-aggressive gases, steam and liquids.

### Design

Venturi nozzles consist of a rounded inlet section, a cylindrical throat and an outlet cone. The upstream pressure tapping is usually manufactured as a single bore. The throat pressure tapping usually consists of four bore holes which lead to a ring chamber or annular ring. For some applications it is recommended to design the throat tapping as single bore.

### Advantages

Compared to orifice plates, nozzles are recommended for appliances which require low pressure losses. At similar flow values nozzles need less differential pressure which results in less permanent pressure loss. The rounded inlet profile is less susceptible to erosion in comparison to the sharp edge of an orifice plate. Hence, nozzles achieve higher service life times.



### Measuring Uncertainty

ca. 1,2% - 1,8% of the discharge coefficient  $C$ , depending on the use case

### Pressure Loss

The pressure loss depends on the diameter ratio  $\beta$  ( $d/D$ ) and amounts to ca. 5 - 20% of the differential pressure.

### Nominal Diameter (ISO 5167)

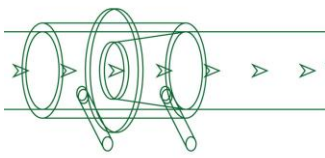
DN 65 to DN 500 / DN 2,5" to DN 20" (if requested other sizes are possible)

### Pressure Rating

PN 6 to PN 400 / 150# to 2500# (ASME)

### End Flanges

according to EN 1092-1 / ASME B16.5 / JIS- BS- or DIN-Standards / or other standards



## Flange Facing

according to EN 1092-1:

- flat (form B1 and B2)
- groove (form D)
- female (form E)

according to ASME B16.5:

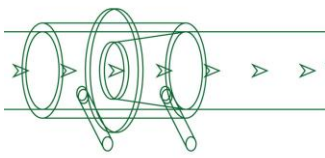
- flat (RF and SF)
- groove (small/large)
- female (small/large)
- RTJ female

or according to other flange standards specified by the customer.

## Installation Length „L“

The installation length depends on the diameter ratio  $\beta$  which needs to be calculated based on the respective process conditions. The following table presents an overview of typical installation lengths for an average diameter ratio.

Nominal Diameter DN	Installation length [mm] (*)
65	230
80	250
100	280
125	320
150	350
200	410
250	490
300	560
	(*) diameter ratio $\beta=0,6$ incl. flanges with pressure rating: PN 16 (EN 1092-1)



## ■ Bore Diameter "d"

The calculation of the bore diameter is based on the supplied process data. All relevant standards and regulations will be considered. The calculation is part of the scope of supply.

## ■ Pressure Taps

Pressure taps will be designed according to customer requirements. Typical tap designs are:

- plain ends for fittings
- butt weld ends
- threaded ends
- flanged ends

The typical tapping length is ca. 100 mm.

## ■ Marking

Tag no. of flow element

Pressure rating "PN"

Pipe inner diameter "D"

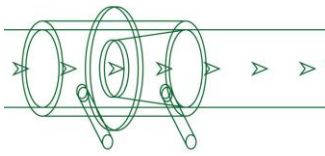
Bore diameter "d"

Material, direction of flow and tagging  
of pressure tappings with "+" and "-"

## ■ Materials

The following table shows a selection of typical materials utilized for nozzles. The material is chosen based on process medium, pressure and temperature.

Material venturi nozzle	short name	DIN material no.	ASTM / UNS
non-alloy steels	P250 GH (C22.8)	1.0460	~ A105
	A105	~1.0432	A105
heat resistant/alloyed steels	16Mo3	1.5415	A182 Gr. F1
stainless steels	X2CrNiMo17-12-2	1.4404	A182 Gr. 316L
	X6CrNiMoTi 17 12 2	1.4571	A182 Gr. 316Ti
high corrosion-resistant alloys	Hastelloy C276	2.4819	N 10276
	Monel 400	2.4360	N 04400
plastics	Polyvinylchloride	PVC	Polyvinylchloride
	Polyethylene	PE	Polyethylene
	PVDF (GRP 25%)	PVDF	PVDF



## Installation

For mounting between flanges according to EN 1092-1 / ASME B 16.5 or other standard such as DIN, JIS or BS. The pipe may be positioned horizontally, vertically or sloped.

## Quality Control

Manufacture and Test work is done according to the relevant codes and standards such as AD 2000, EN 13480, ASME Codes (without stamp) or customer specifications.

Inspection certificates according to EN 10204 3.1 and 3.2. may be furnished. Special inspections are also possible.

## Accessories

Pipe flanges, bolts/nuts, gaskets for installation, tap valves, condensate pots, manifolds, mounting accessories may be offered for additional charges.