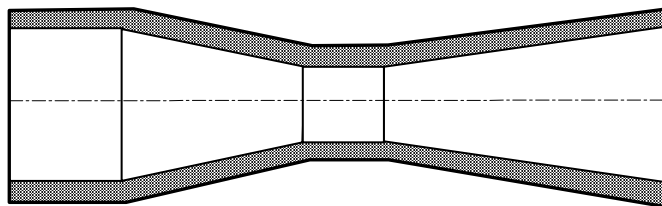


Classical Venturi Tubes H

Application

For flow-rate measurement of aggressive and non-aggressive gases, steams and fluids especially if low pressure loss is indicated.



Construction

It consists of an inlet cylinder, an outlet cone which is being followed by a cylindrical neck and the outlet cone. Classical venturi tubes are being carried out in several types of construction corresponding to the make of their inner surface. You differentiate between either venturi tubes with treated inlet cone, inlet cylinder and neck or venturi tubes with rough, with welded (steel panel) inlet cone. Depending on the nominal diameter the neck is either treated or not.

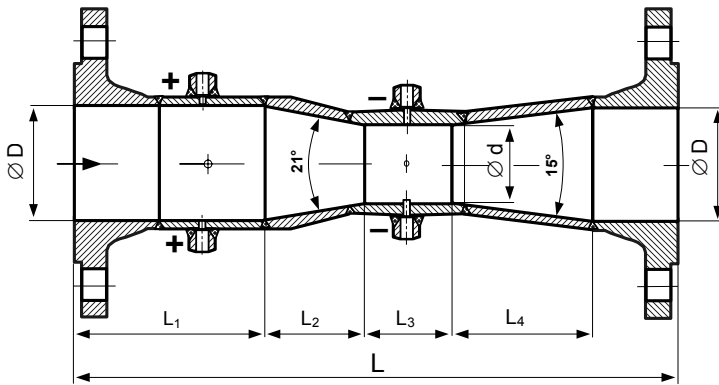
Venturi tubes are welded constructions out of steel or high-grade steel with predominantly rounded cross section. In particular cases angular cross sections are possible; those are exclusively manufactured out of rolled plate. Positive and negative pressure tapping takes place in the tube wall each through one or several single bores. When having bigger nominal diameters it is recommendable to connect them with a circuit. The calculation is accorded to ISO 5167-3.

Advantages

Classical venturi tubes have little pressure losses depending on the make of the inlet cone and the opening angle. In contrary to all other DP-flow elements only short upstream paths are needed. When having venturi tubes which are big and completely out of steel panel the weight is much lower than comparable venturi tubes.

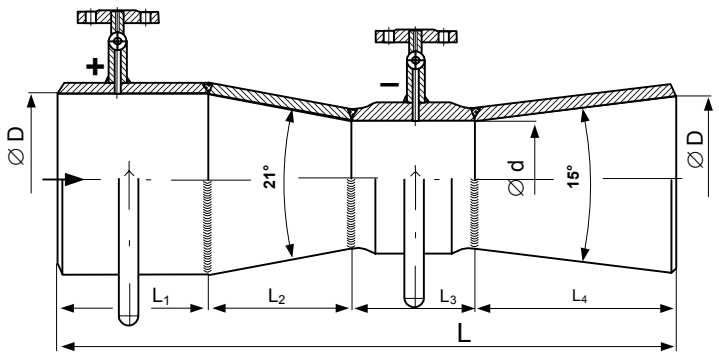
Technical Details

Nominal pressure:	PN 6 up to PN 400 (ANSI xx lbs up to xxxx lbs)
Nominal diameter:	DN 50 up to DN 1000 (ANSI DN 2" up to DN xx")
Restriction-Ø:	The Ø is carefully calculated by us from the data supplied considering the relevant standards and regulations. As a standard the neck will be treated mechanically to achieve the required coarse values and accuracy.
Pressure Loss:	The remaining pressure loss depends on the opening ratio and the opening angle and is approx. 5-15% of dP.
Pressure Taps:	According to customer specifications or as described on sheet A6.
Installation:	Between flanges and welded in on horizontal, vertical or diagonal pipelines.
Quality Assurance:	Production and check according to our quality management manual go along with the relevant guidelines such as TRD, "AD-Merkblatt" and customer-specifications.

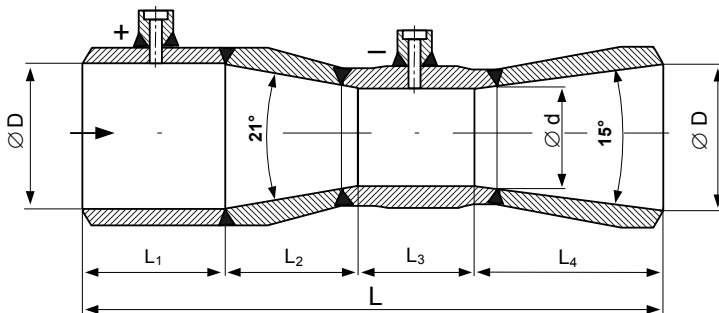


Dimensional Sketches

Classical Venturi Tube Type H 800
for flanging in with treated inlet cone, 4 tapping bores.



Classical Venturi Tube Type H 800
for welding-in with rough, out of steel panel welded inlet cone. Neck treated. Pressure tapping with ring circuit.



Classical Venturi Tube Type H 800
for welding-in; all inner surfaces treated; 1 tapping bore.

- D= pipe inner Ø
- d= restriction Ø
- L₁= inlet cylinder
- L₂= inlet cone
- L₃= neck
- L₄= outlet cone
- L= length (total)

Installation Lengths

Due to the determined opening angles of inlet- and outlet cones the overall-length depends mainly on the restriction diameter d. Following table of installation lengths are guiding data and refer to a mean opening ratio $\beta = 0,6$.

Nominal diameter DN	Overall-length L	
	weld-in	flange-in
50	250	300
100	500	550
200	950	1050
300	1400	1550
400	1900	2050
500	2400	2600
600	2800	3000
700	3300	3500
800	3800	4000
900	4250	4500
1000	4700	5000

Identification

On the outer Ø of neck, additionally with charge no. and inspector's stamp.

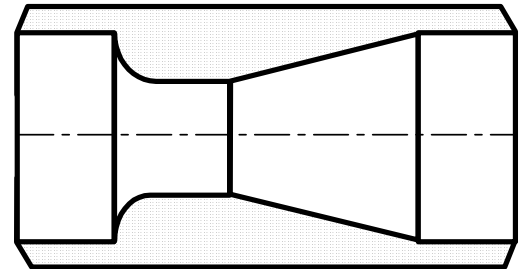
Accessories

Condense vessels, shut-off valves and Manifolds.

Welded-In DP-Flow Element E

Application

For flow-rate measurement for gases, steams and fluids especially for high pressures and temperatures.



Construction

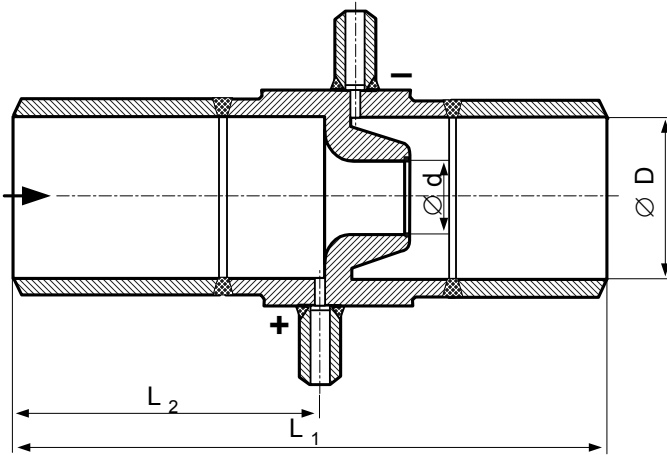
Welded-in DP-flow elements will predominantly be carried out as orifice plates, nozzles or venturi-nozzles. Orifice plates and nozzles are also possible to get delivered with ring-chamber tapping. They are manufactured according to the valid regulations and supplementary guidelines. The used materials correspond to the pipe material to assure a similar welding. The DP-flow-element is welded before resp. before and behind a tube section to assure the required undisturbed inlet- and outlet-lengths for orifice plates and nozzles. The tube section is normally supplied from customer. Venturi-nozzles are usually delivered without welded-on pipes. The calculation is accorded to ISO 5167-3.

Advantages

Due to the welding sealing problems are avoided which may arise especially when flanging-in with high pressures and temperatures.

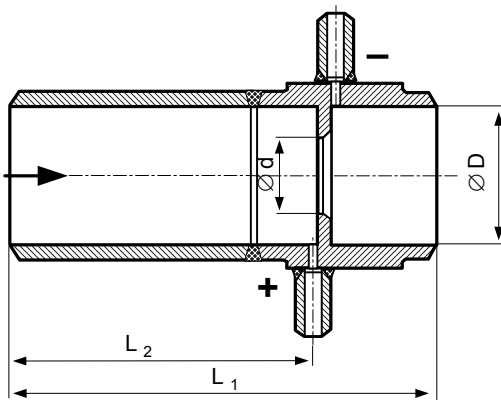
Technical Details

Nominal pressure:	up to PN 400	(ANSI up to xxxx lbs)
Nominal diameter:	orifice plates and nozzles	DN 50 up to DN 1000 (ANSI DN 2" up to DN xx")
	Venturi-nozzles	DN 65 up to DN 500 (ANSI DN 2,5" up to DN xx")
Temperatures:	depending on material up to 630°C	
Installation Length:	according to DIN 19215 (see table 1)	
Materials:	same as pipe material, i.e.	
	C22.8	10CrMo911
	16Mo3	X20CrMoV12.1
	13CrMo45	15NiCuMoNb5
	stainless steels	
Taps:	welded joint for pipe 24 x 7,1 / 21,3 x 6,3 / 21,3 x 4 and according to customer specifications Position and mounting according to sheet A7	
Welded Grooves:	according to DIN 2559 sheet 1 or customer specification	
Quality Assurance:	Production and check go along with the relevant guidelines such as TRD, "AD-Merkblatt" and customer-specifications. Material certificates according to EN 10204 3.1 A (TÜV) and B	

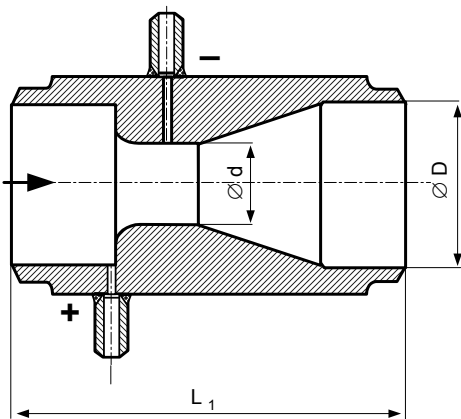


Dimensional Sketches

Welded-In Nozzle Type EDUB 800
with welded-on pipes in inlet and outlet.
Construction also as orifice plate possible.



Welded-In Orifice Type EBLB 800
with welded-in pipe in inlet. Due to cost reasons
-in individual cases- it **may** be possible that the
inlet is provided with a butt weld for orifices and
for nozzles. In these cases it is necessary for
production that the length L2 must be increased
compared to the table.



Welded-In Venturi Nozzle Type EDV 800
without welded-on pipe-ends. L1 is identical
according to DIN 19215. In individual cases
also orifice plates and nozzles may be
manufactured this way. The installation lengths
L1 are therefore in the range from 100 and
200mm.

- D= pipe inner Ø
- d= restriction Ø
- L1= Installation length
- L2= Inlet length

Identification

On the outer Ø of DP-Flow element according to DIN 19215, additionally with charge no. and inspector's stamp.

Accessories

Condense vessels and shut-off valves will –if required- either be welded-on or added separately .

Nominal diameter DN	Diameter D	Orifice Plate and Nozzle		Venturi Nozzle
		Installation length L1	Inlet L2	Installation length L1
50	> 47 - 57	250	150	
65	> 57 - 72	300	180	200
80	> 72 - 90	350	230	200
100	> 90 - 112	400	280	200
125	> 112 - 137	500	350	250
150	> 137 - 162	600	400	250
200	> 187 - 225	800	570	300
250	> 225 - 275	1000	690	350
300	> 275 - 325	1200	820	400
350	> 325 - 375	1400	950	450
400	> 375 - 425	1500	1050	500
500	> 475 - 550	2000	1370	600

Table 1 Installation lengths acc. to DIN 19215