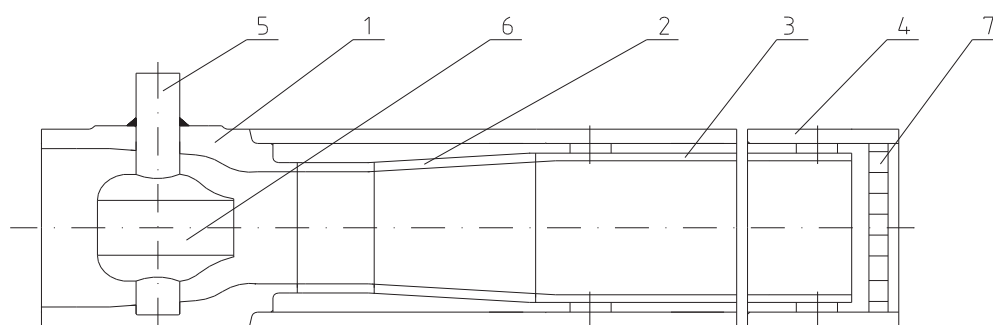
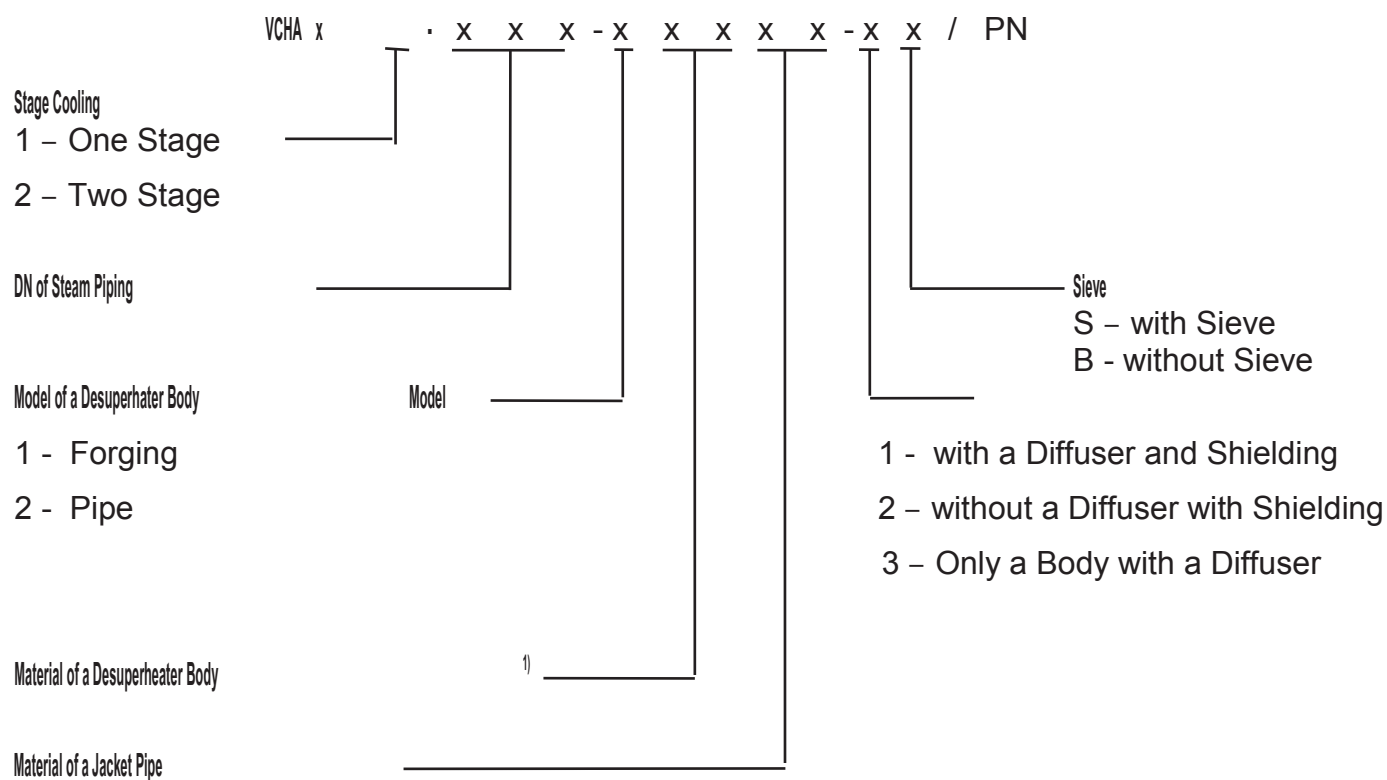




Type	Abbreviation	Name	Labelling
Venturi cooler	VCHA	Venturi cooler with a torus	VCHA xxx-xxxxx-x/PN

### Type Number Diagram



- 1 – Desuperheater Body
- 2 – Diffuser
- 3 – Shielding
- 4 – Jacket Pipe
- 5 – Water Inlet
- 6 – Injection Ring (Torus)

Fig. 1

Description:

A Venturi tube is a separate body placed into a steam piping. The entry of a Venturi tube is shaped continuously and for increase of rate, a reduction against the inside diameter of a steam piping is designed. Considering nominal steam parameters, the rate in a Venturi tube flare is several times higher than in a steam piping. A conical diffuser with a vertex angle of  $6\div 30^\circ$  follows and then there is a cylindrical part forming a protective shielding of a steam piping. The loss in pressure of a Venturi tube is approx. 0,3 percent of the initial pressure to a cooler. The total loss in pressure of a cooler (Venturi tube, shielding and injection device) is approx. 0,5 percent. This cooler shows the quality atomising of supplied cooling water starting from the minimal steam rate of flow.

Further, it is possible to make the so-called shortened version (inner arrangement 3 – body with a diffuser (created at the body of the cooler), is made without slip conduit and screening, shortened diffuser is made in the body of the desuperheater at the output part of the torus. (fig. 2)

*Supply and injection of water* is carried out through an injection ring (torus) located in an inlet part of a Venturi tube. The injection ring is washed by steam from both inside and outside. While entering a water chamber, the cooling water is rotating. Then it creates a water film on a surface of inside cylindrical duct of a torus and the water film is decomposed on its trailing edge. The inlet piping doesn't allow maximal water rate to exceed 4,5 m/s.

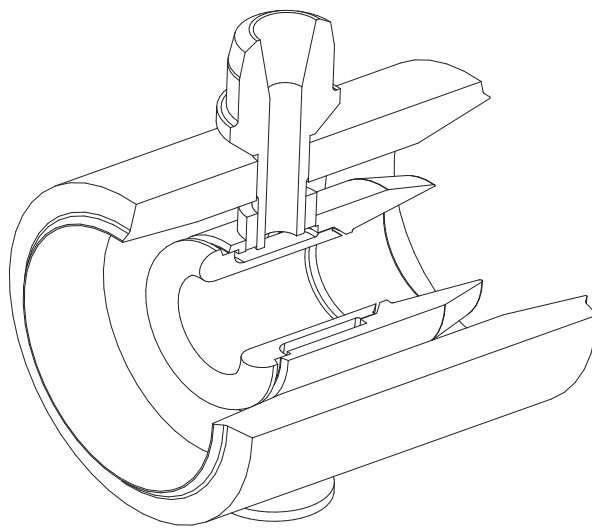


Fig. 2



There is a sieve welded at the desuperheater outlet. Inserting of sieve as an aerodynamic resistance leads to gradual pressure drop behind the by-pass valve to lower steam velocity and lower noise level. Higher pressure in cooling water inlet causes smoother dispersion of water and generally its better evaporating and cooling of steam. Cooling water which has not evaporated in front of sieve impinges on sieve and is draw in holes of sieve. Cooling water falls to very smooth dispersion in holes of sieve or at their following edges as a result of considerable acceleration of steam. This dispersion evaporates more quickly.

#### Labelling of used materials

Material Quality (acc. to ČSN)	Equivalent acc. to DIN	Labelling	Material Quality (acc. to ČSN)	Equivalent acc. to DIN	Labelling	Material Quality (acc. to ČSN)	Equivalent acc. to DIN	Labelling
11 416.1	P265GH	16	15 020.1, .5	15 Mo 3 16 Mo 3	50	17 134.3	X20CrMoV121	14
11 523.1	St 52-3	13	15 121.5	13 CrMo 44 13 CrMo 45	51	17 248.4	X6 CrNiTi 810	28
12 021.1	St 35.8	21	15 128.5, .9	14 MoV 63	58	17 348.4	X6 CrNiMoTi 17-12-2	38
12 022.1	St 45.8	22	15 313.5	10 CrMo 910 11 CrMo 910	53			

Material Quality (acc. to ČSN)	Equivalent acc. to ASTM	Labelling	Material Quality (acc. to ČSN)	Equivalent acc. to ASTM	Labelling	Material Quality (acc. to ČSN)	Equivalent acc. to ASTM	Labelling
11 416.1	A 662	16	15 020.1, .5	A 204-74	50	17 134.3	-	14
11 523.1	A 572	13	15 121.5	A 335 A 213	51	17 248.4	A 240	28
12 021.1	A 106	21	15 128.5, .9	A 405-76	58	17 348.4	A 276	38
12 022.1	A 106-85	22	15 313.5	A 335-75 A 336-75	53			

**NOTE:** A range of operating temperatures and pressures for materials are specified in the following standard:  
ČSN 13 0010 - Nominal pressures and working overpressures.

This standard is valid only for materials acc. to ČSN.  
The labelling is valid only for materials acc. to ČSN.