

02 - 03.6
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Steam cooling unit CHPE





**Steam cooling unit
DN 40 to 200
PN 16 to 320**

Description

Steam cooling unit (further the CHPE only) is a device designed to control the temperature of steam. CHPE consists of a body which it is a part of a steam pipeline and of an inlet port used for supply of cooling water. Internal shape is formed as a Venturi tube where there is a significant increasing of speed. This increased speed positively influences the quality of water atomization as well as evaporation velocity of water injected. The orifice plate is included in the output port of CHPE to increase the cooling effect. The throat followed by extended part in which there is the gap used to supply of cooling water. For better secession of the water stream there is tear-off edge provided.

A quantity of injection water is controlled by separate water control valve. Due to construction of CHPE it is capable of injecting water from zero values. The minimal water quantity is limited on its control valve only and maximal value is limited by the ratio between the mass of water and steam. The shape of Venturi tube causes low pressure drop in the stem pipeline for the recommended speed ranges of cooled steam. In these cases the pressure drop can be ignored in the calculations. CHPE is supplied with flanged or welded connection possibly with their combination.

Application

CHPE serves for precise and economical temperature regulation by a direct intalling of cooling water into steam flow. CHPE is designed especially for industrial applications such as low-pressure steam production in heating, steam circuits in power plants or technological processes.

Process media

CHPE is designed to inject cooling water without mechanical impurities. Application of CHPE for other process media must be considered to the used material that is in contact with the medium and it is recommended to consult with the manufacturer.

For proper function of CHPE it is recommended to install strainer in front of the water control valve.

Installation

CHPE must be installed into pipeline always the way so that the process medium flow will coincide with the arrows indicated on the body. As far as the dismantling is considered, it is recommended to leave free space of him. CHPE can be installed in horizontal, vertical or inclined pipeline in any position.

Technical data

Series	CHPE		
Execution	Flanged or weld ends		
Nominal size DN (steam pipeline)	40 to 200		
Nominal size DN (water)	15 to 50		
Nominal pressure PN	16 to 320		
Temperature range	-20 to +400°C	-20 to +550°C	-20 to +600°C
Material of body	Cast Steel 1.0425 (P265GH) 1.0426 (P280GH)	Alloy steel 1.7335 (13CrMo4-5)	Alloy steel 1.4922 (X20CrMoV11-1)
Material of flanges / weld ends	Cast Steel 1.0425 (P265GH) 1.0426 (P280GH)	Alloy steel 1.7335 (13CrMo4-5)	Alloy steel 1.4922 (X20CrMoV11-1)
Flanges	Acc. to ČSN EN 1092-1 (03/2008)		
Weld ends	Acc. to ČSN EN 12627 (08/2000)		
Maximal permissible pressures	Acc. to ČSN EN 12516-1 (01/2006)		

Connection dimensions (weld ends)

DN	PN										
	16	25	40	63	100	160	250	320	16 - 160	250	320
	t					D					
	[mm]										
15	2					2.6	3.2	21.3			
20	2.3				---			26.9	---		
25	2.6				2.9	3.6	5	33.7			
32	2.6				---			42.4	---		
40	2.6	2.9	3.2	3.6	5	6.3	48.3				
50	2.9	3.2	3.6	4	6.3	8	60.3	60	64		
65	2.9	3.6	4	5	8	11	76.1	76	89		
80	3.2	4	5	6.3	11	13	88.9	101.6			
100	3.6	4.5	5.6	8	14	16	114.3	127	133		
125	4	5.6	6.3	10	16	20	139.7	152	168		
150	4.5	6.3	8	13	18	25	168.3	178	194		
200	6.3	7.1	8.8	16	25	30	219.1	244.5			

Connection dimensions

DN	L	L1	H	
			Flanges	Weld ends
	[mm]			
40	200		Acc. to flange PN	110
50	230	95		
65	290			
80	310			
100	350	156		
125	400	170		
150	480	205		
200	600	230	177	
				200

Connection dimensions (flanges)

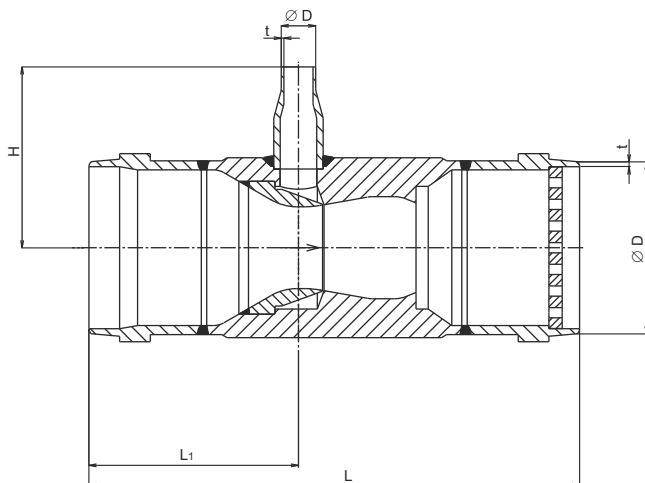
DN	PN 16					PN 25					PN 40					PN 25				
	D1	D2	a	d	n	D1	D2	a	d	n	D1	D2	a	d	n	D1	D2	a	d	n
	[mm]					[mm]					[mm]					[mm]				
	[pcs]					[ks]					[pcs]					[pcs]				
15	95	65	16	14	4	95	65	16	14	4	95	65	16	14	4	105	75	20	14	4
20	105	75				105	75				105	75				130	90	22	18	
25	115	85				115	85				115	85				140	100	24	18	
32	140	100				140	100				140	100				155	110		24	
40	150	110		150	110		150	110		170	125		22							
50	165	125		165	125	20	165	125	20	180	135	26	22							
65	185	145		185	145	22	185	145	22	205	160		22							
80	200	160		200	160	24	200	160	24	215	170	28								
100	220	180	20	235	190	24	235	190	24	250	200	30	26							
125	250	210	22	270	220	26	270	220	26	295	240	34	30							
150	285	240	22	300	250	28	300	250	28	345	280	36	33							
200	340	295	24	360	310	30	360	310	30	415	345	42	36							

DN	PN 100					PN 160					PN 250					PN 320					PN16		PN 40-320	
	D1	D2	a	d	n	D1	D2	a	d	n	D1	D2	a	d	n	D1	D2	a	d	n	D3	f		
	[mm]					[mm]					[mm]					[mm]					[mm]	[mm]		
	[pcs]					[pcs]					[pcs]					[pcs]								
15	105	75	20	14	4	105	75	20	14	4	130	90	26	18	4	130	90	26	18	4	45	2		
20	130	90	22	18		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	58			
25	140	100	24	24		140	100	24	18	4	150	105	28	22	4	160	115	34	22	4	68			
32	155	110		22		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	78			
40	170	125	26	26	170	125	28	22	4	185	135	34	26	4	195	145	38	26	4	88				
50	195	145	28	26	195	145	30			200	150	38			210	160	42			102				
65	220	170	30	26	220	170	34	26		230	180	42			255	200	51	30	8	122				
80	230	180	32	26	230	180	36			255	200	46	30	8	275	220	55			138				
100	265	210	36	30	265	210	40	30	8	300	235	54	33		335	265	65	36		158	162			
125	315	250	40	33	315	250	44	33		340	275	60			380	310	75			188				
150	355	290	44	36	355	290	50			390	320	68	36	12	425	350	84	39	12	212	218			
200	430	360	52	36	430	360	60	36	12	485	400	82	42		525	440	103	42	16	268	285			

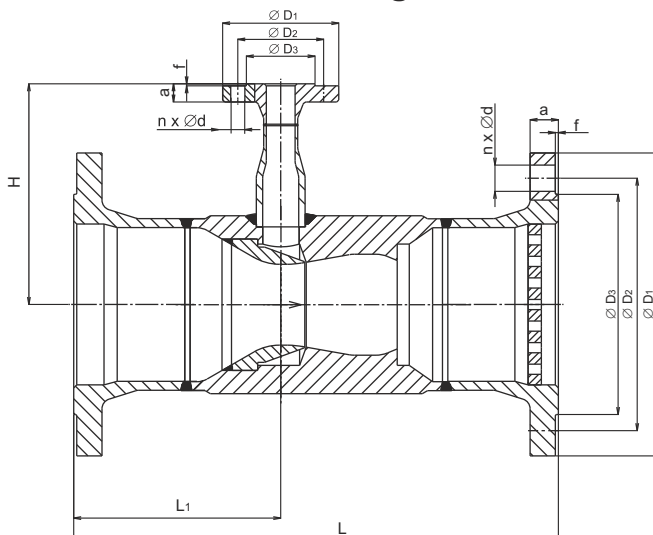
Note: **DN 15 - 50** applies to injection water connection.

DN 40 to 200 applies to steam pipeline connection. Welded and flanged connection can be combined.

CHPE execution with weld ends



CHPE execution with flanges



Valve complete specification No. for ordering CHPE

		XXXX	XXX /	XXX -	XXX /	XXX	X	X	X
Series	Steam cooling unit	CHPE							
DN stem pipeline	DN - acc. to design		XXX						
DN water	DN - acc. to design			XXX					
PN steam pipeline	PN - acc. to design				XXX				
PN water	PN - acc. to design					XXX			
Connection - steam pipeline	Flange with raised face								1
	Flange with female face								2
	Flange with plain face								3
	Weld ends								4
Connection - water	Flange with raised face								1
	Flange with female face								2
	Flange with plain face								3
	Weld ends								4
Material	Cast steel 1.0425/1.0426 (-20 to 400°C)								1
	Alloy steel 1.7335 (-20 to 550°C)								2
	Alloy steel 1.4922 (-20 to 600°C)								7
	Other material								9

Order example: Steam cooling unit CHPE with welded connection into steam pipeline DN150 PN 100, flanged connection of injection water DN 25 PN160 type B1, body material alloy steel 1.7335 is marked as follows: **CHPE 150/80-040 1**

Maximal permissible operating pressures [MPa]

Material	PN	Temperature [°C]									
		RT ^{a)}	100	200	300	350	400	450	500	550	600
Cast steel 1.0425/1.0426	16	1.56	1.36	1.14	0.94	0.88	0.84				
	25	2.44	2.13	1.78	1.47	1.37	1.32				
	40	3.9	3.41	2.84	2.35	2.19	2.11				
	63	6.14	5.37	4.48	3.71	3.45	3.33				
	100	9.74	8.53	7.11	5.89	5.48	5.28				
	160	15.6	13.6	11.4	9.4	8.8	8.4				
	250	24.4	21.3	17.8	14.7	13.7	13.2				
	320	31.2	27,2	22.8	18.8	17.6	16.8				
Alloy steel 1.7335	16	1.63	1.63	1.49	1.33	1.23	1.15	1.07	0.89	0.35	
	25	2.55	2.54	2.33	2.08	1.93	1.8	1.67	1.39	0.55	
	40	4.08	4.07	3.74	3.33	3.09	2.89	2.67	2.23	0.88	
	63	6.43	6.41	5.88	5.24	4.86	4.55	4.2	3.51	1.39	
	100	10.21	10.17	9.34	8.32	7.71	7.22	6.67	5.57	2.21	
	160	16.3	16.3	14.9	13.3	12.3	11.5	10.7	8.9	3.5	
	250	25.5	25.4	23.3	20.8	19.3	18	16.7	13.9	5.5	
	320	32.6	32,6	29.8	26.6	24.6	23	21.4	17.8	7	
Alloy steel 1.4922	16	1.63	1.63	1.54	1.35	1.27	1.15	1.07	0.89	0.79	0.43
	25	2.55	2.54	2.41	2.11	1.98	1.8	1.67	1.39	1.23	0.67
	40	4.08	4.07	3.85	3.38	3.18	2.89	2.67	2.23	1.97	1.06
	63	6.43	6.41	6.06	5.33	5	4.55	4.2	3.51	3.1	1.68
	100	10.21	10.17	9.63	8.46	7.94	7.22	6.67	5.57	4.92	2.66
	160	16.3	16.3	15.4	13.5	12.7	11.5	10.7	8.9	7.9	4.3
	250	25.5	25.4	24.1	21.1	19.8	18	16.7	13.9	12.3	6.7
	320	32.6	32,6	30.8	27	25.4	23	21.4	17.8	15.8	8.6

a) -10°C to 50°C



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