LDM, spol. s r.o. Czech Republic	Instructions for installation and service **STEAM DESUPERHEATER** **DN 40 - 200 PN 16 - 320**	**CHPE** PM - 092/12/08/GB

The instructions for installation and service of steam desuperheater (CHPE) are binding for users to ensure proper function of steam desuperheater . The user must keep the rules said here while servicing, installation and using. Technical details of individual execution are specified in catalogue data sheets. If the usage of the valves is different from mentioned herein, the guarantee terms are not valid any more.

I. TECHNICIAL DESCRIPTION AND FUNCTION:

1.1Description:

Steam desuperheater, type CHPE is equipment, designed for control of steam temperature. CHPE consists from the body, which is inserted into steam pipeline and side inlet for cooling water supply. The inner shape of body is designed as Venturi tube, where, in the vena contracta, the speed of steam considerably increases. This has positive influence to atomization of water and speed of it's vaporization. To increase the efficiency of cooling there is orifice plate in the outlet. Behind vena contracta, the slot for cooling water delivery is placed. For better mixing, the tear-off edge is part of slot.

Quantity of cooling water is controlled by separated control valve, placed on inlet water pipeline. Regarding CHPE design, the minimum quantity of cooling water is only control valve function. the maximum quantity of cooling water is limited by mass proportion between steam and water. Pressure drop in Venturi tube is very low, in case, the speed of steam is in recommended speed range, so, it can be neglected during steam pipeline pressure drop calculation.

CHPE can be delivered with flanged or welded connection.

1.2 Aplication:

CHPE is designed for precise and economic temperature control by direct injection of cooling water into steam stream. It's determined primarily for industrial application such as conditioning of low-pressure steam for heating purposes, steam conditioning in power plants or conditioning of steam for technological purposes.

1.3 Technical data:

Series	CHPE		
Type	Flanged, welded		
Nominal diameter DN (steam line)	40 to 200		
Nominal diameter DN (water)	15 to 50		
Nominal pressure PN	16 to 320		
Proces mediumtemperature 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 flange / 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 EN 1092-1 (03/2008)		
Weld ends	Acc. to EN 12627 (08/2000)		
Operating overpressure	Acc. to EN 12516-1 (01/2006)		

2. RULES FOR INSTALLATION AND OPERATING CHPE:

2.1 Installation:

CHPE has to be installed and put into operation by qualified person! Qualified person is a person acquainted with installation, putting into operation and manipulation herewith product, and which is qualified in enclosure. As well he must be for-educated about health protection and safety at work.

2.2 Preparation before installation:

Before installation into pipeline you must check the data on the name-plate with data mentioned in accompanying documentation. Then check if the CHPE is not damaged and dirty. Pay attention especially to inner space and flange's faces or welding ends.

2.3 Conditions for proper function of CHPE:

- The filter must be placed into cooling water pipeline prior the control valve, or other suitable provision must be done to assure that the water is free of mechanical particles.
- The steam temperature after cooling must be 5°C above the saturation at least.
- The straight pipeline of length min. 15x DN has to follow CHPE.
- The temperature sensor has to be placed in the area, where all cooling water is evaporated. It's recommended to place it behind the pipe bend, in the distance min. 20x DN downstream to CHPE. In case of some doubts, ask CHPE producer.
- Minimum inlet speed of steam must be higher than 10 m/s.

2.4 Installation the CHPE into pipeline:

The CHPE can be installed in any position.
For proper function of CHPE, below-mentioned instructions must be obeyed:

- no excessive forces can be transfered from pipeline to CHPE.
- the pipeline must be cleaned from dirt before CHPE installation .
- it is recommended to keep free space around the CHPE for easy manipulation and maintenance.
- installation itself must be done precisely. Pipeline flange must be coaxial with CHPE flange.

2.5 Checking after installation:

After installation, piping system should be pressured and checked if there is no leak.

2.6 Spare parts:

Spare parts are not part of CHPE delivery. They must be ordered separately. When the spare parts are ordered, following data must be given: type of a CHPE, CHPE production number and name of a spare part.

2.7 Guarantee conditions:

The producer does not guarantee the product operation and safety if the product was used in other way than stipulated in this instructions for installation and service and catalogue data sheet. Any use of the product under different conditions must be consulted with the producer.
The producer does not take over the guarantee if the user makes any change or modification to it without prior written permission from the producer.

2.8 Waste handling:

Packaging material and the CHPE shall be disposed of in the common way such as by handing over to a specialized enterprise for disposal of (body and metal parts - metal waste, other non-metal parts - communal waste).

Dimensions of CHPE:

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

Weld ends connection dimensions :

	PN										
DN	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 flanges dimensions :

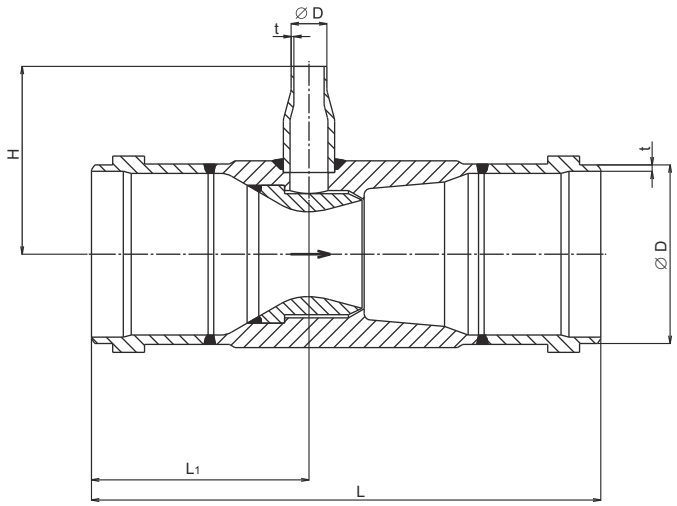
	PN 16					PN 25					PN 40					PN 25				
DN	D1	D2	a	d	n	D1	D2	a	d	n	D1	D2	a	d	n	D1	D2	a	d	n
	[mm]				[ks]	[mm]				[ks]	[mm]				[ks]	[mm]				[ks]
15	95	65	16	14	4	95	65	16	14	4	95	65	16	14	4	105	75	20	14	4
20	105	75	18			105	75	18			105	75	18			130	90	22	18	
25	115	85				115	85				115	85				140	100	24		
32	140	100		18		140	100		18		140	100		18		155	110		22	
40	150	110				150	110				150	110				170	125	26		
50	165	125				165	125	20			165	125	20			180	135			
65	185	145		18	8	185	145	22		8	185	145	22		8	205	160			8
80	200	160	20			200	160	24			200	160	24			215	170	28		
100	220	180				235	190		22		235	190		22		250	200	30	26	
125	250	210	22			270	220	26	26		270	220	26	26		295	240	34	30	
150	285	240		22		300	250	28			300	250	28			345	280	36	33	
200	340	295	24		12	360	310	30		12	375	320	34	30	12	415	345	42	36	12

	PN 100					PN 160					PN 250					PN 320					PN16	PN 40-320
DN	D1	D2	a	d	n	D1	D2	a	d	n	D1	D2	a	d	n	D1	D2	a	d	n	D3	f
	[mm]				[ks]	[mm]				[ks]	[mm]				[ks]	[mm]				[ks]	[mm]	[mm]
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			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			170	125	28	22	4	185	135	34	26	4	195	145	38	26	4	88	3
50	195	145	28			195	145	30			200	150	38		8	210	160	42		8	102	
65	220	170	30	26	8	220	170	34	26	8	230	180	42			255	200	51	30		122	
80	230	180	32			230	180	36			255	200	46	30		275	220	55			138	
100	265	210	36	30		265	210	40	30		300	235	54	33		335	265	65	36		158	162
125	315	250	40	33		315	250	44	33		340	275	60		12	380	310	75		12	188	
150	355	290	44		12	355	290	50		12	390	320	68	36		425	350	84	39		212	218
200	430	360	52	36		430	360	60	36		485	400	82	42		525	440	103	42	16	268	285

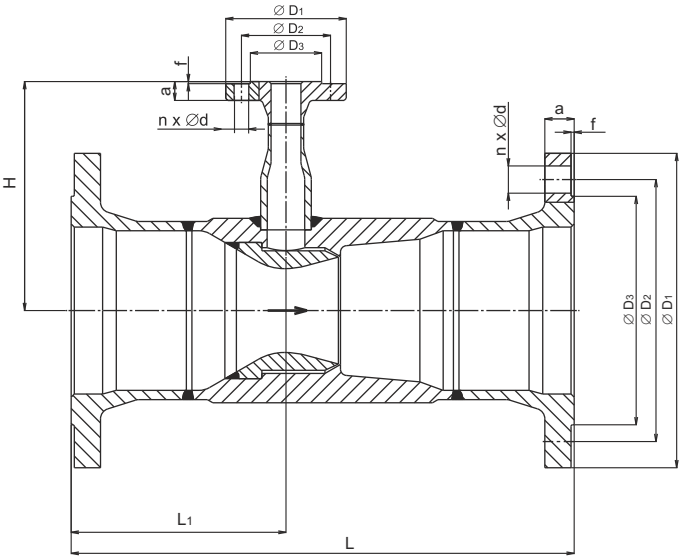
Note: **DN 15 to 50** - for connecting the injection of water. **DN 40 to 200** - for CHPE connecting to steam line.
Weld and flange can be combined.

DIMENSIONAL SKETCH:

Connection - weld:



Connection - flange:



Valve complete specification No. for ordering CHPE:

			XXXX		XXX	/	XXX	-	XXX	/	XXX		X	X	X
Series	Steam desuperheater		CHPE												
DN steam line	DN - acc. to execution				XXX										
DN water	DN - acc. to execution						XXX								
PN steam line	PN - acc. to execution								XXX						
PN water	PN - acc. to execution										XXX				
Connection - steam line	Flange with raised face												1		
	Flange with female face												2		
	Flange with plain face												3		
	Weld ends												4		
Connection - water	Flange with raised face type B1													1	
	Flange with female face													2	
	Flange with raised face type B2													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 400°C)													7
	Other material														9

Order example: CHPE with welded connection into steam pipeline DN 150 PN 100, flanged connection of injection water DN 25 PN 160 type B1, body material alloy steel 1.7335 is marked as follows: **CHPE 150/80-040 1**

Maximal permissible working overpressures according to EN 12516-1 [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	2.33	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

ADDRESS OF FACTORY

LDM, spol. s r.o.
Litomyšlská 1378
560 02 Česká Třebová
Czech Republic

tel.: +420 465 502 511
fax: +420 465 533 101
E-mail: sale@ldm.cz
http://www.ldmvalves.com

REGIONAL OFFICES

LDM, spol. s r.o.
Office in Prague
Podolská 50
147 01 Praha 4
Czech Republic

tel.: +420 241087360
fax: +420 241087192
E-mail: tomas.suchanek@ldm.cz

LDM, spol. s r.o.
Office in Ústí nad Labem
Ladova 2548/38
400 11 Ústí nad Labem - Severní Terasa
Czech Republic

tel.: +420 602708257
E-mail: tomas.kriz@ldm.cz

SERVICE ORGANIZATION

LDM servis, spol. s r.o.
Litomyšlská 1378
560 02 Česká Třebová
Czech Republic

tel: +420 465502411-13
fax: +420 465531010
E-mail: servis@ldm.cz

LDM SUBSIDIARIES ABROAD

OOO "LDM Promarmatura"
Jubilejniy prospekt, dom.6a, of. 601
141407 Khimki
Moscow Region
Russia

tel.: +7 495 7772238
fax: +7 495 7772238
mobile: +7 9032254333
e-mail: inforus@ldmvalves.com

TOO “LDM”
Shakirova 33/1, kab. 103
100012 Karaganda
Kazachstan

tel.: +7 7212566936
fax: +7 7212566936
mobile: +7 7017383679
e-mail: sale@ldm.kz

LDM, Bratislava s.r.o.
Mierová 151
821 05 Bratislava
Slovakia

tel: +421 243415027-8
fax: +421 243415029
E-mail: ldm@ldm.sk
http://www.ldm.sk

LDM Armaturen GmbH
Wupperweg 21
D-51789 Lindlar
Deutschland

tel: +49 2266 440333
fax: +49 2266 440372
mobile: +49 1772960469
E-mail: ldmarmaturen@ldmvalves.com

LDM, Polska Sp. z o.o.
ul. Modelarska 12
40-142 Katowice
Polska

tel: +48 327305633
fax: +48 327305233
mobile: +48 601354999
E-mail: ldmpolska@ldm.cz

LDM Bulgaria Ltd.
z.k.Mladost 1
bl.42, floor 12, app.57
1784 Sofia
Bulgaria

tel: +359 2 9746311
fax: +359 2 8771344
mobile: +359 888925766
E-mail: ldm.bg@ldmvalves.com

www.ldmvalves.com