	Instructions for installation and service	CHPF
	DESUPERHEATER DN 50 - 200 PN 16 - 400	

The instructions for installation and service of steam desuperheater (CHPF) 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.

1. TECHNICAL DESCRIPTION AND FUNCTION

1.1 Description

The CHPF desuperheater is device designed for the process steam temperature control. CHPF is equipped with one or more nozzles (according the desuperheater size and cooling capacity) with fixed geometry, which works on mechanical principle of water atomizing. There are used two types of nozzles. The H type serves for injection of higher water quantities; a full cone of relatively big droplets of cooling water is created. The M type utilizes pressure drop across the nozzle for very fine spraying of the injected water. Quantity of cooling water is controlled by separated control valve. Regarding to used technology of water atomizing, the CHPF is not recommended for control ranges higher than 1 : 4. The CHPF body is designed for installation between the flanges of steam pipeline; the cooling water pipe is connected through flange or butt-welded.

1.2 Application

The CHPF serves for precise and economical steam temperature control by a direct injection of cooling water into flow of steam. The CHPF is primary designed for industrial application, as low-pressure steam in district heating, steam circuits in power plants or steam for technological processes.

1.3 Technical data

Series	CHPF	
Execution	Installation between the flanges	
Nominal size DN (steam pipeline)	50 to 200	
Nominal size DN (cooling water)	15 to 25	
Nominal pressure PN	16 to 400	
Material of body (including flange / weld end)	1.0426 (P 280 GH)	20 to 500°C
	1.7335 (13CrMo4-5)	20 to 550°C
	1.7383 (11CrMo9-10)	20 to 600°C
	1.4922 (X20CrMoV11-1)	20 to 600°C
Flanges	Acc. to EN 1092-1 (07/2013)	
Weld ends	Acc. to EN 12627 (08/2000)	
Maximal permissible working pressures	Acc. to EN 12516-1 (08/2015)	

1.4 Process media

The water without mechanical impurities is intended as process medium, other medias please advice with CHPF manufacturer.

2. RULES FOR INSTALLATION AND OPERATING CHPF

2.1 Installation:

CHPF 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 CHPF is not damaged and dirty. Pay attention especially to inner space and flange's faces or welding ends.

Antirust agents are applied on the CHPF during the manufacturing process. The inner space is protected by protective oil (Coyote Konkor). In case there is danger of cooled medium contamination, the CHPF must be rinsed/cleaned by suitable cleaner. The cooling water weld end is protected by grease, it must be always degreased.

2.3 Conditions for proper function of CHPF

- 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 length of straight section of pipeline, indicated in the CHPF calculation, must be kept
- minimum inlet speed of steam must be higher than 8 m/s.

2.4 Installation the CHPF into pipeline

The CHPF can be installed in any position.

For proper function of CHPF, below-mentioned instructions must be obeyed:

- the arrow, indicated on the CHPF body must be in direction of cooled media flow.
- no excessive forces can be transferred from pipeline to CHPF.
- the pipeline must be cleaned from dirt before CHPF installation.
- it is recommended to keep free space around the CHPF for easy manipulation and maintenance.
- installation itself must be done precisely. Pipeline flange must be coaxial with CHPF flange.

2.5 Drainage of pipeline

The CHPF work principle requires the drainage of outlet pipeline. The presence of excessive quantity of water can cause the pipeline damage. It also negatively influences the precision of temperature measurement.

2.6 Temperature sensor

Minimum distance between the CHPF and temperature sensor is indicated in CHPF calculation. To place at least 1 bend ($R > 3x DN$) between the HPF and sensor is strictly recommended. The change of pipeline DN in this section is prohibited. The sensor shall be placed in upper half, in case of horizontally oriented pipeline. It's recommended to place the sensor into protective vessel to eliminate the influence of water.

2.7 Inspection after the installation

The pressure test of pipeline must be done after the CHF installation and the tightness of the system shall be checked. The CHPF is designed for test pressure $\leq 1.5x PN$ (temperature of test fluid 10 - 40°C) In case of higher test pressure, contact the CHPF manufacturer, please.

2.8 Spare parts

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

2.9 Guarantee conditions

The producer does not guarantee the operation and safety of the product under conditions different from data given in the catalogue data sheet. Any using of the valve under different conditions shall be consulted with the producer.

Defects of CHPF caused by impurities in process medium shall be considered as out of guarantee terms.

The producer does not take over the guarantee if any change was made by the user without prior written consent from the producer.

2.10 Transportation and storage

During transport and storage, the CHPH must not be exposed to water or placed in environment with relative humidity exceeding 90 %.

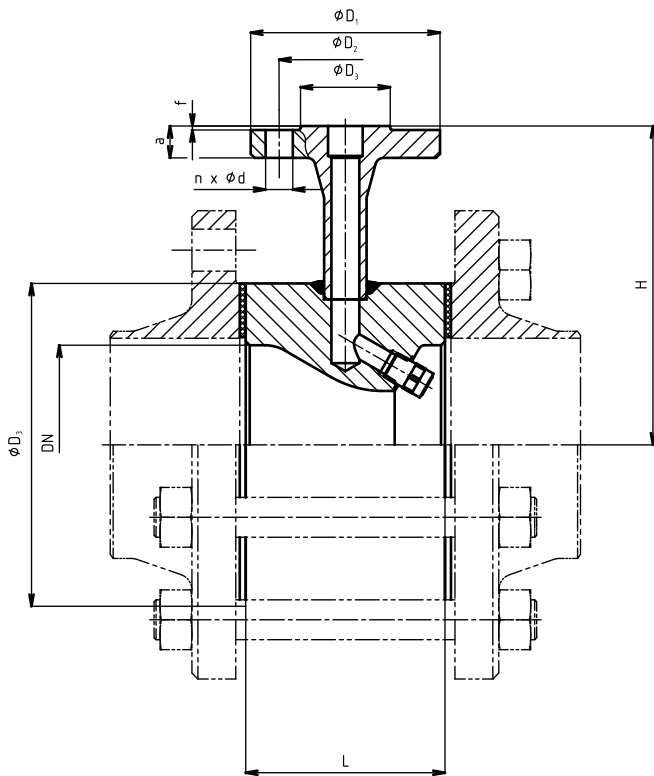
Weld ends must be protected with blinds (these are part of delivery).

2.11 Waste disposal

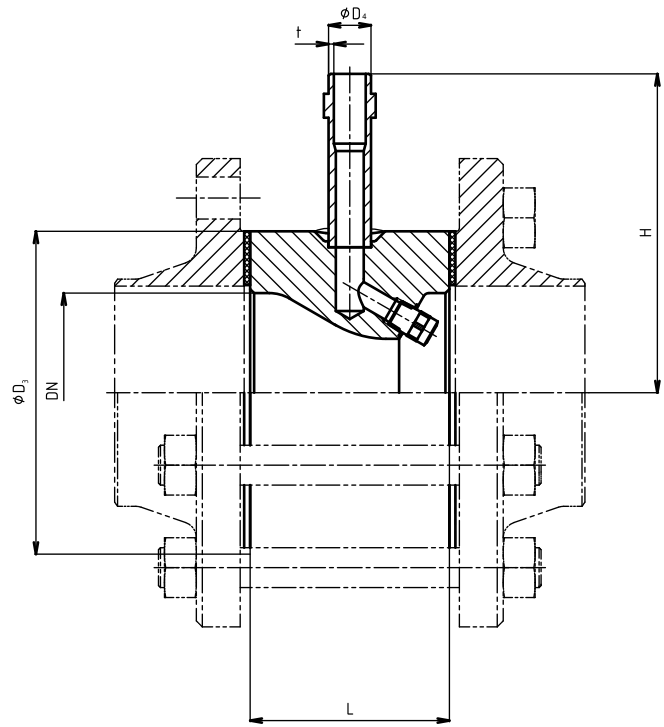
Packaging and the CHPF (after their scrapping) shall be disposed off in the common way, e.g. by handing over to a specialized company for a disposal (metal parts - metal scrap, packaging + other non-metallic parts - communal waste).

Dimensional sketch CHPF

Execution with cooling water flange connection



Execution with cooling water butt-weld connection



Note: The bolts, nuts and flange sealinds for connection into steam pipeline are scope of delivery. The flanges can be delivered as option.

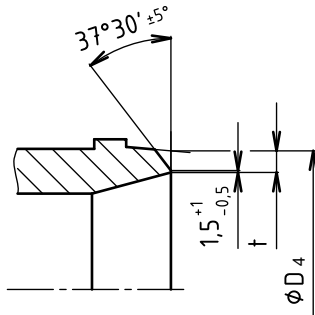
CHPF dimensions :

DN	L	H		D ₃
		PN16-160	PN250-400	
		[mm]		
50	100	170	210	102
65		180	220	122
80		188	228	138
100		238	307	162
125		251	320	188
150		266	335	218
200		300	369	285

Cooling water flange dimensions

DN	PN 16-40					PN 63-100					PN 160					PN 250				
	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]					[pcs]					[pcs]					[pcs]				
15	95	65	16	14	4	105	75	20	14	4	105	75	20	14	4	130	90	26	18	4
20	105	75	18			130	90	22	18		---	---								
25	115	85	18			140	100	24	18		140	100	24	18	4	150	105	28	22	4
DN	PN 320					PN 400					PN16-400									
	D1	D2	a	d	n	D1	D2	a	d	n	D3	f								
	[mm]					[mm]					[mm]	[mm]								
	[pcs]					[pcs]														
15	130	90	26	18	4	145	100	30	22	4	45	2								
20	---					---					58									
25	160	115	34	22	4	180	130	38	26	4	68									

Weld end shape according to EN 12627



Other shapes of weld ends can be modified according to customers demand.

Cooling water weld-end dimensions

DN	PN												
	16	25	40	63	100	160	250	320	400	16 - 160	250	320	400
	t						D ₄						
	[mm]												
15	2				2.6	3.2	5	21.3			26.9		
20	2.3			---			26.9			---			
25	2.6			2.9	3.6	5	7.1	33.7			42.4		

Dimensions of weld ends can be modified according to customers demand.

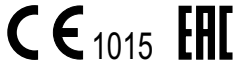
CHPF type number specification

		XXXX	X	XXX	/	XXX	-	XXX	/	XXX	X	X	X	X	XX
Series	Desuperheater	CHPF													
Number of nozzles	Acc. to water quantity		X												
DN steam pipeline	DN40 to 200			XXX											
DN cooling water	DN15 to 25				XXX										
PN steam pipeline	PN16 to 400					XXX									
PN cooling water	PN16 to 400						XXX								
Connection - steam pipeline	Flange with raised face										1				
	Flange with recess										2				
	Flange with plain face										3				
Connection - water	Flange with raised face											1			
	Flange with recess											2			
	Flange with plain face											3			
	Weld ends											4			
Material	Carbon steel 1.0426 (20 to 500°C)													1	
	Alloy steel 1.7335 (20 to 550°C)													2	
	Alloy steel 1.7383 (20 to 600°C)													6	
	Stainless steel 1.4922 (20 to 600°C)													7	
	Other material													9	
Nozzle type	Type H or M														X
Nozzle size	According to table „Nozzle data”														XX

Order example: Desuperheater CHPF with 1 nozzle type H, dimension of nozzle 3; connection to the steam pipeline DN150 PN 100, flanged connection of cooling water, flange DN 25 PN160 type B1; material 1.7335; is marked as follows: **CHPF1 150/025-100/160 112 H03**

Maximum permissible working pressure according to EN 12516-1[MPa]:

Material	PN	Temperature [°C]										
		100	150	200	250	300	350	400	450	500	550	600
Cast steel 1.0426	16	1,6	1,6	1,6	1,55	1,42	1,31	1,19	7,3	0,35	---	---
	25	2,5	2,5	2,5	2,42	2,22	2,04	1,86	1,13	0,55	---	---
	40	4,0	4,0	4,0	3,88	3,55	3,26	2,98	1,81	0,87	---	---
	63	6,3	6,3	6,3	6,11	5,59	5,14	4,69	2,86	1,38	---	---
	100	10,0	10,0	10,0	9,70	8,88	8,16	7,44	4,53	2,19	---	---
	160	16,0	16,0	16,0	15,5	14,2	13,0	11,9	72,6	3,50	---	---
	250	25,0	25,0	25,0	24,2	22,2	20,4	18,6	11,3	5,47	---	---
	320	32,0	32,0	32,0	31,0	28,4	26,1	23,8	14,5	7,0	---	---
	400	40,0	40,0	40,0	38,8	35,5	32,6	29,7	18,1	8,75	---	---
Alloy steel 1.7335	16	1,6	1,6	1,6	1,6	1,6	1,49	1,37	1,26	1,0	0,47	---
	25	2,5	2,5	2,5	2,5	2,5	2,33	2,13	1,97	1,56	0,73	---
	40	4,0	4,0	4,0	4,0	4,0	3,73	3,41	3,15	2,5	1,17	---
	63	6,3	6,3	6,3	6,3	6,3	5,87	5,38	4,97	3,93	1,85	---
	100	10,0	10,0	10,0	10,0	10,0	9,31	8,53	7,89	6,24	2,93	---
	160	16,0	16,0	16,0	16,0	16,0	14,9	13,6	12,6	9,99	4,70	---
	250	25,0	25,0	25,0	25,0	25,0	23,2	21,3	19,7	15,6	7,34	---
	320	32,0	32,0	32,0	32,0	32,0	29,8	27,3	25,2	19,9	9,39	---
	400	40,0	40,0	40,0	40,0	40,0	37,2	34,1	31,5	24,9	11,7	---
Alloy steel 1.7383	16	1,6	1,6	1,6	1,6	1,6	1,5	1,37	1,26	1,05	0,56	0,24
	25	2,5	2,5	2,5	2,5	2,5	2,35	2,13	1,97	1,65	0,88	0,37
	40	4,0	4,0	4,0	4,0	4,0	3,75	3,41	3,15	2,63	1,41	0,6
	63	6,3	6,3	6,3	6,3	6,3	5,91	5,38	4,97	4,15	2,22	0,94
	100	10,0	10,0	10,0	10,0	10,0	9,38	8,53	7,89	6,58	3,52	1,49
	160	16,0	16,0	16,0	16,0	16,0	15,0	13,6	12,6	10,5	5,63	2,39
	250	25,0	25,0	25,0	25,0	25,0	23,4	21,3	19,7	16,4	8,80	3,73
	320	32,0	32,0	32,0	32,0	32,0	30,0	27,3	25,2	21,0	11,2	4,78
	400	40,0	40,0	40,0	40,0	40,0	37,5	34,1	31,5	26,3	14,0	5,98
Stainless steel 1.4922	16	1,6	1,6	1,6	1,6	1,6	1,5	1,37	1,26	1,05	0,9	0,42
	25	2,5	2,5	2,5	2,5	2,5	2,35	2,13	1,97	1,65	1,46	0,65
	40	4,0	4,0	4,0	4,0	4,0	3,75	3,41	3,15	2,63	2,33	1,05
	63	6,3	6,3	6,3	6,3	6,3	5,91	5,38	4,97	4,15	3,67	1,65
	100	10,0	10,0	10,0	10,0	10,0	9,38	8,53	7,89	6,58	5,82	2,61
	160	16,0	16,0	16,0	16,0	16,0	15,0	13,6	12,6	10,5	9,32	4,18
	250	25,0	25,0	25,0	25,0	25,0	23,4	21,3	19,7	16,4	14,5	6,54
	320	32,0	32,0	32,0	32,0	32,0	30,0	27,3	25,2	21,0	18,6	8,37
	400	40,0	40,0	40,0	40,0	40,0	37,5	34,1	31,5	26,3	23,3	10,4



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