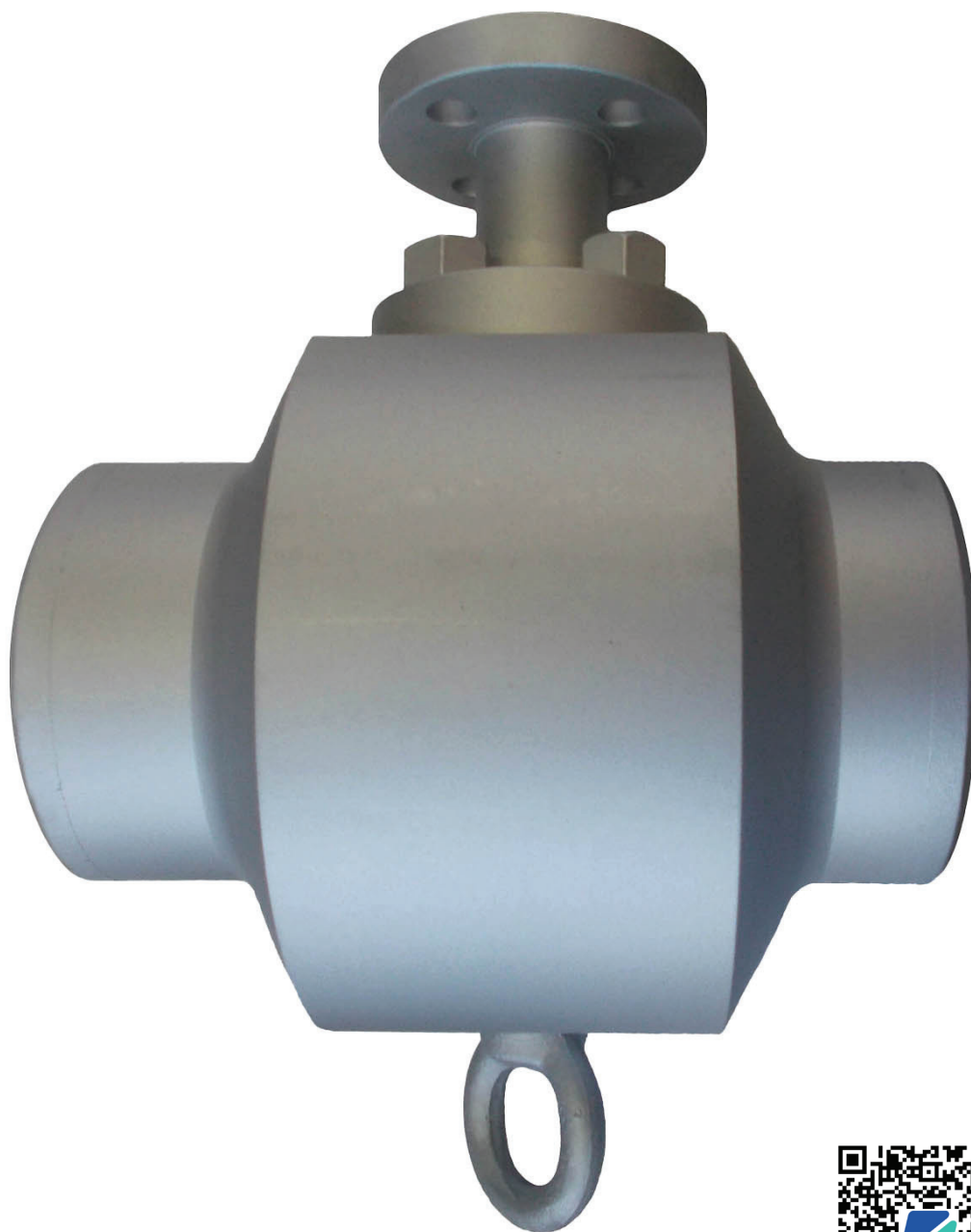




OpDSH™ VVent
DESUPERHEATER

TECHNICAL BROCHURE



OpDSH™ VVent Desuperheater

INTRODUCTION

The OpDSH VVent desuperheater is a fixed area nozzle spraying device which injects water in the outlet of a venturi-shaped section. The excellent and rapid atomizing of sprayed water is obtained through the combination of increased velocity of steam in the throat section with the same high efficiency nozzles of VFlow variable area desuperheaters. Additionally, the intense turbulence is enhanced by the sudden interruption of the venturi profile after the injection point and improves the mixing of water and steam, which results in quick evaporation of water.

One or more nozzles are available to fulfill a wide range of flowrates as outlined in the Cv table. Low velocity steam flows can be thoroughly handled as well with a minimum approach temperature of 41°F over saturation. They are primarily intended for moderate load changes and where accurate temperature control is essential.

Main applications:

- Steam process
- Heat exchangers
- Ejectors
- Pressure reducing stations - Drum dryers
- Gas process

Functional features

Steam pipe size: 3", 4", 6", 8", 10", 12", 14", 16", 18", 20" other sizes on request. Water connections: 1/2", 1", 1-1/2", 2".

Ratings: up to ANSI 2500 depending on size as outlined in the table.

Connection types: steam: SW - BW - RF | water: RF - other on request.

Nozzle sizes: from DV1 to DV10 as per table list.

Flow capacity: one to three nozzle assemblies can provide a lot of combinations with Cv's available from 0.017 through 7.3. (see Cv table)

Mounting: steam - straight-in-line | water - in vertical upwards position unless different orientation was agreed.

Materials: see part list table.

MAIN CHARACTERISTICS

Approach temperature: min 41°F over saturation.

Max Δp water-to-steam: 580psi between inlet pressures.

Min Δp water-to-steam: 72.5psi between inlet pressures.

Max water/steam ratio: 20% - by weight at inlet conditions. Min inlet steam velocity: 13.12 ft/s.

Max water flow rate: 141.26 ft³/h.

Min downstream straight run: 9.8ft or 0.5 inch.

Temperature sensor distance: 16.4-23 ft.

Rangeability: up to 7:1 depending on Δp water-to-steam.

Flow Coefficients	
DV1	0.0176
DV2	0.0308
DV3	0.0638
DV4	0.119
DV5	0.233
DV6	0.394
DV7	0.546
DV8	1.24
DV9	1.57
DV10	2.70

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Body Size	Water Connection	Nozzle Size	Cv of Water			Cvs of Steam Flow Passage	Water Flow Rate (m³/h)
			Number of Nozzles				
			1	2	3		
3"	0.5"	DV1 - DV5	Max Cv = 0.22	//	//	120	1.2
4"	0.5"	DV1 - DV5	Max Cv = 0.22	//	//	200	1.2
6"	0.5"	DV1 - DV5	Max Cv = 0.22	//	//	450	1.2
8"	1.0"	DV1 - DV8	Max Cv = 1.3	//	//	800	7
10"	1.5"	DV1 - DV10	Max Cv = 2.7	//	//	1250	15
12"	1.5"	DV1 - DV10	Max Cv = 2.7	//	//	1750	15
14"	1.5"	DV1 - DV10	Max Cv = 2.7	Max Cv = 5.2	//	2100	28
16"	1.5"	DV1 - DV10	Max Cv = 2.7	Max Cv = 5.2	Max Cv = 7.3	2800	40
18"	2.0"	DV1 - DV10	Max Cv = 2.7	Max Cv = 5.2	Max Cv = 7.3	3500	40
20"	2.0"	DV1 - DV10	Max Cv = 2.7	Max Cv = 5.2	Max Cv = 7.3	4300	40

Rating	Size									
	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"
ANSI 150/300/600										
ANSI 900/1500										
ANSI 2500										

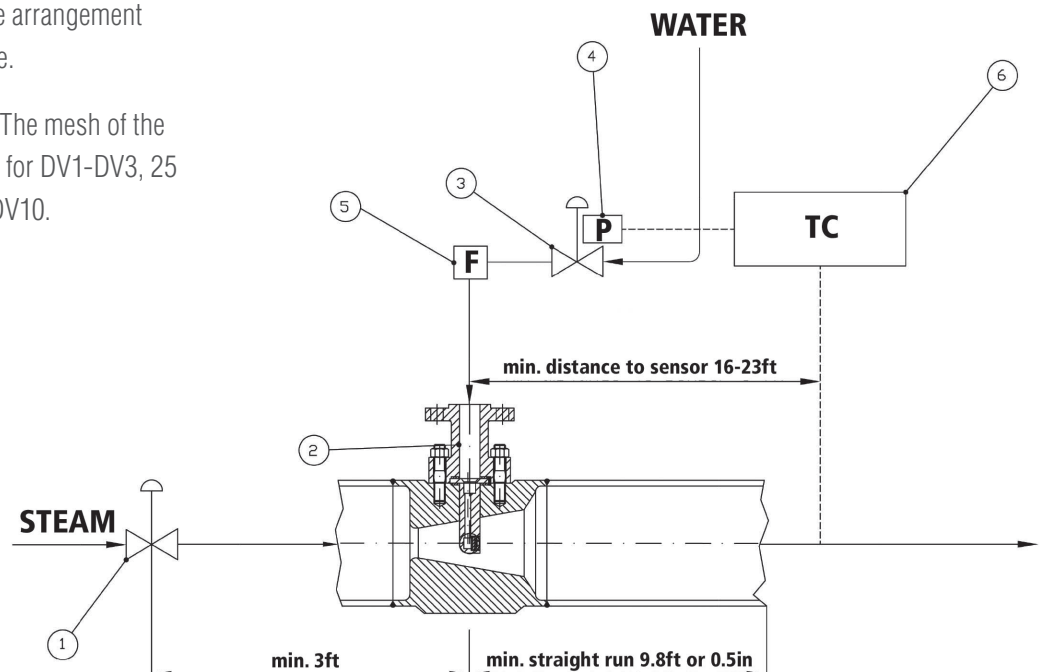
ENGINEERING PRACTICE FOR EFFICIENT DESUPERHEATING

For efficient desuperheating the arrangement of installation is shown in figure.

Filter is highly recommended. The mesh of the sieve must be not less than 35 for DV1-DV3, 25 for DV4-DV6 and 16 for DV7-DV10.

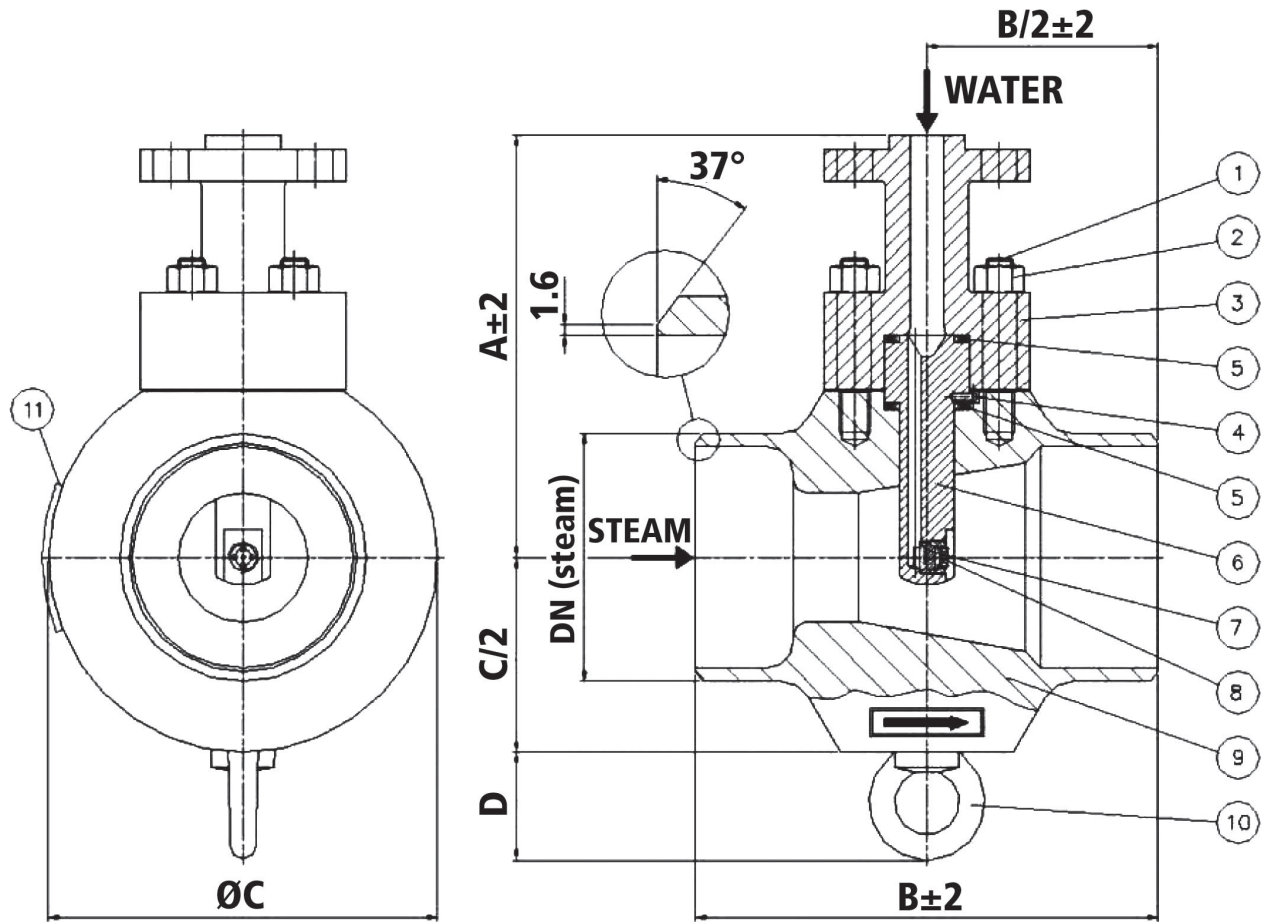
LEGEND

- 1) Pressure reducing valve
- 2) Trimteck desuperheater
- 3) Water control valve
- 4) Positioner
- 5) Filter
- 6) Temperature controller



OpDSH™ VVent Desuperheater

OVERALL DIMENSIONS AND PART LIST



Number	Item	Material
1	Stud	A193 B7
2	Nut	A194 2H
3	Water Flange	Carbon-, Cr-Mo Steels
4	Pin	SS 304
5	Gasket (*)	St. St. / Graphite
6	Nozzle Pipe	Carbon-, Cr-Mo Steels
7	Vortex Ring	SS 410
8	Nozzle	SS 410
9	Body	Carbon-, Cr-Mo Steels
10	Eyebolt	C 15
11	Nameplate	SS 304

LEGEND

(*) Recommended spare parts.

NOTE

In nozzle pipe 6 items 7 and 8 are fitted and supplied.

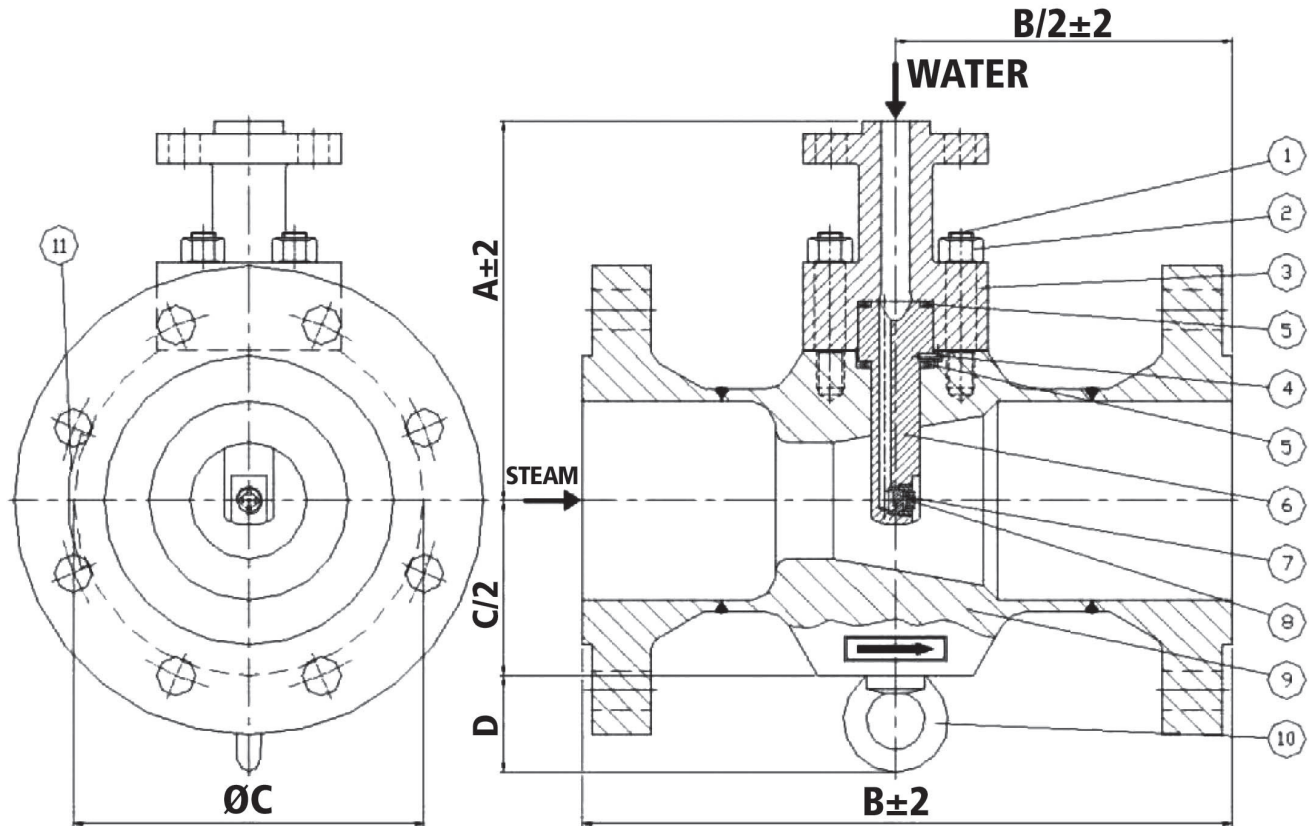
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DN Steam	DN Water	Rating	OD	Sch.	A	B (BW)	C (BW)	D	A	B (BW)	C (BW)	D	
					Millimeters				Inch				
3"	0.5"	#600	3.5"	40	185	180	156	50	7.30	7.10	6.15	2	
		#1500		160	235		190		9.25		7.50		
		#2500		XXS									
4"		#600	4.5"	40	200	210	179		7.90	8.30	7.05		
		#1500		160	250		196		9.85		7.70		
		#2500		XXS									
6"		#600	6.6"	40	220	230	215		8.65	9.05	8.45		
		#1500		160	270		230		10.60		9.05		
		#2500		XXS									
8"	1.0"	#600	8.6"	40	270	300	256		10.60	11.80	10.10		
		#1500		160	320		268		12.60		10.55		
		#2500		XXS									
10"	1.5"	#600	10.8"	40	330	380	314	62	13.00	14.95	12.35	2.5	
		#1500		160	400		328		15.75		12.90		
		#2500		XXS									
12"		#600	12.8"	40	330	420	340		13.00	16.55	13.40		
		#1500		160	400		354		15.75		13.95		
14"		#600	14.0"	40	400	480	376		15.75	18.90	14.80		
16"			16.0"	40	400	520	406.4		15.75	20.50	16.00		
18"			18.0"	40	450	620	457.2		17.70	24.40	18.00		
20"	2"	#600	20.0"	40	450	680	508		17.70	26.80	20.00		

DN Steam	FLANGED (ANSI) Quote B											
	Millimeters						Inch					
	#150	#300	#600	#900	#1500	#2500	#150	#300	#600	#900	#1500	#2500
3"	316	336	346	384	414	516	12.44	13.23	13.62	15.12	16.30	20.31
4"	360	378	414	438	458	590	14.17	14.88	16.30	17.24	18.03	23.23
6"	404	424	464	510	572	776	15.91	16.69	18.27	20.08	22.52	30.55
8"	500	520	566	624	726	936	19.69	20.47	22.28	24.57	28.58	36.85
10"	580	612	684	748	888	1218	22.83	24.09	26.93	29.45	34.96	47.95
12"	646	678	732	820	986	//	25.43	26.69	28.82	32.28	38.82	//
14"	730	762	810	//	//	//	28.74	30.00	31.89	//	//	//
16"	770	808	876	//	//	//	30.31	31.81	34.49	//	//	//
18"	896	934	988	//	//	//	35.28	36.77	38.90	//	//	//
20"	966	1000	1060	//	//	//	38.03	39.37	41.73	//	//	//

OpDSH™ VVent Desuperheater

FLANGED VERSION



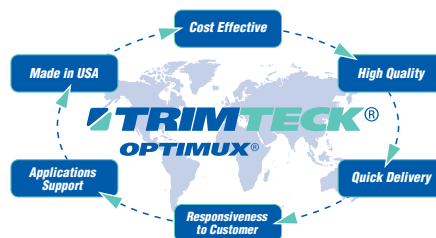
About Trimteck

Trimteck® is a NASA VDB-approved, ISO 9001-2016-registered U.S. company (Registration No. 2012-98243) with over thirty years of experience engineering, manufacturing, and marketing high-quality, cost-effective flow, pressure, and temperature control solutions and equipment for critical processes. Our products are currently helping customers safely improve quality, optimize throughput, and reduce emissions and energy costs across an array of industries in more than 50 countries.

We manufacture a comprehensive line of control valves – and variety of actuators, positioners, severe service trims, and other accessories – that our applications engineers and representatives use to solve even the most complex flow control problems quickly and economically.



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Products in compliance with:

ASME B16.34
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