



COPES-VULCAN
AN SPX BRAND

SA-35

Steam Atomizing Desuperheater



SPX[®]

SA-35 Steam Atomizing Desuperheater

The Copes-Vulcan SA-35 was developed to obtain a more uniform spray pattern under varying load conditions where no pressure drop in the steam header can be tolerated. Steam atomizing allows for higher turndown (up to 25:1) with varying load conditions.

Operational Features

Cooling liquid is introduced into the steam header through a stainless steel nozzle assembly, which uniquely divides one large jet of liquid into many small jets. Just prior to entrance into the main header, each jet is bombarded by a higher pressure steam jet, creating a fine mist which enters the stream flow without the need of a thermal liner inside the main header.

The SA-35 Desuperheater thus reduces the size of the liquid particles so that the droplets can be quickly and efficiently evaporated. Downstream temperatures can be controlled to within 15°F (9°C) of saturation.

The stainless steel nozzle is machined from one piece and shoulders into the nozzle head so that it becomes completely trapped after assembly of the nozzle clamp which is screwed and seal welded to the nozzle head. Hard faced overlay in the nozzle head minimizes erosion wear.

The thermal sleeve around the liquid tube insures uniform expansion with the steam tube, thereby minimizing thermal stresses due to unequal elongation of the liquid and atomizing steam tubes.

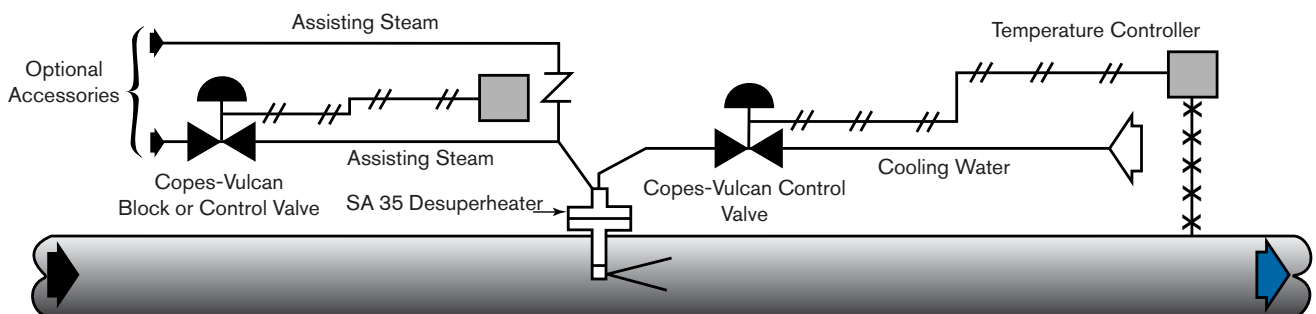
Due to its narrow silhouette, the SA-35 Desuperheater causes no appreciable restriction in the header.

This desuperheater is made in four sizes, in pressures classes up to and including class 1500. The cooling liquid is introduced through a series of small orifices which are drilled circumferentially into the nozzle. Small rectangular slots are milled ninety (90) degrees to the drilled holes. Atomizing steam passes through each of the slots and blasts each of the cooling liquid jets. Liquid pressure of only 10-40 psi (70–280 kPa) above header pressure is all that is necessary to introduce the cooling medium.

Atomizing steam flow is constant as the flow in the header decreases from maximum rate, until only atomizing steam is flowing. This results in improved atomization at low flows to offset the decreasing benefit obtained from the mixing and transporting capacity of the steam in the header at a reduced rate of flow.

This characteristic is unique, and is the reverse of most other types of desuperheaters.

Principle of Operation



Temperature impulse signal from controller actuates cooling water valve flow to desuperheater. Atomizing steam may require a pressure reducing valve and pressure controller or check valve only, depending upon atomizing steam source conditions.

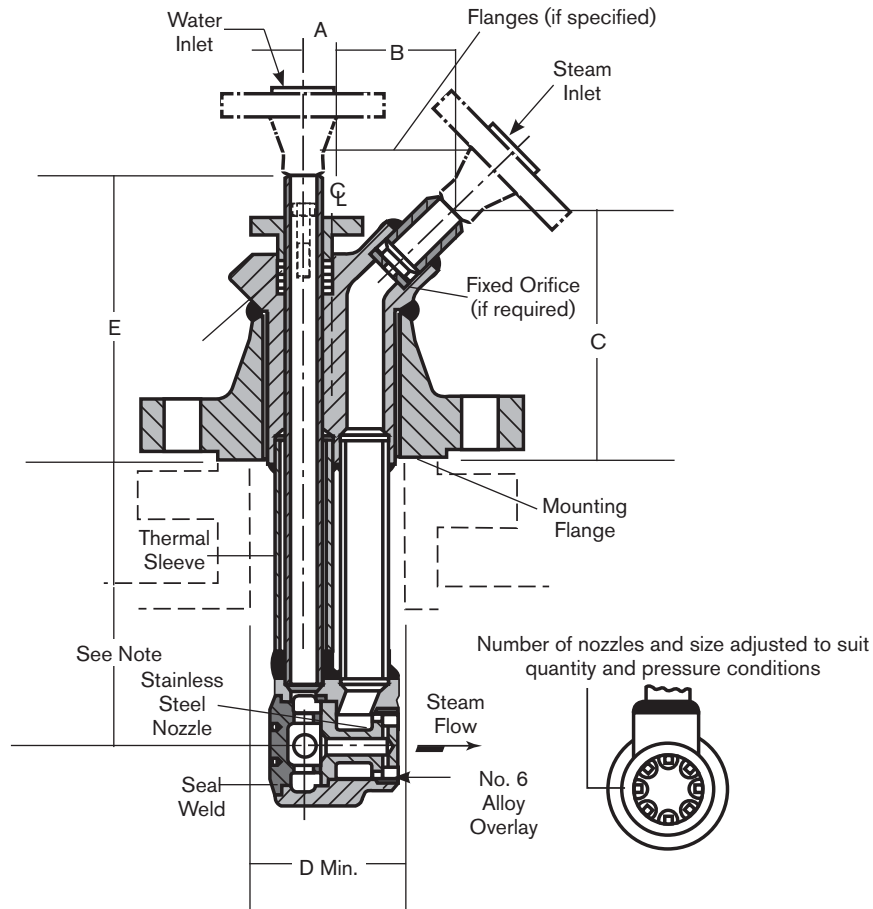
Specifications





Desuperheater Size	Dimensions (Inches) - All Header Sizes																
	Mounting Flange	Water Conn.	Steam Conn.	A	B	C				D Min.	To 600 Std.			900 & 1500 Std.			
						150	300	400	600		E	H	Conn. Pipes Schedule	C	E	H	Conn. Pipes Schedule
3-4	3	.5	.5	.5	3.875	6.25	6.625	—	7	3	7	6	80	7	8	7	—
4-6	4	.75	1	.8125	4.25	6.75	7	7.5	8	4	9	6	80	8	10	7	160
6-8	6	1.25	1.5	1.125	5	7.875	8.25	8.75	9.25	6	10	6.5	80	10	11	8.5	160
8-10	8	2	2	1.375	6	8.5	8.875	9.375	10	8	11	7	80	11	13	9	160

NOTE: Any size desuperheater may be mounted on any header size larger than minimum size listed below. Extension pipe lengths are varied to locate sprayhead at center of header up to maximum size listed. No increase is made for larger headers causing head to be slightly off center.

Desuperheater Size	Header Size
3-4	4-16" (100-400mm)
4-6	6-18" (150-450mm)
6-8	8-20" (200-500mm)
8-10	10-24" (250-600mm)

Dimensions



	<h3 style="text-align: center;">SPECIAL APPLICATION GLOBE STYLE CONTROL VALVES</h3> <ul style="list-style-type: none"> ▪ General Service application ▪ Severe Duty application ▪ High turndown ▪ .75 - 24" Sizes ▪ 150 - 4500 ANSI Ratings ▪ Special ANSI Ratings ▪ Meets ASTM/ASME Standards ▪ Threaded, Butt/Socket Weld, Flanged Ends
	<h3 style="text-align: center;">STEAM CONDITIONING EQUIPMENT (DESUPERHEATERS)</h3> <ul style="list-style-type: none"> ▪ 7 Styles ▪ Mechanical Atomizing ▪ Variable Orifice ▪ Integral Cooling Water function available ▪ High turndowns ▪ 150 - 2500 ANSI Ratings ▪ Special ANSI Ratings ▪ Meets ASTM/ASME Standards
	<h3 style="text-align: center;">TRIM TYPES</h3> <ul style="list-style-type: none"> ▪ 13 types ▪ RAVEN™ ▪ HUSH™ ▪ CAV B9© ▪ One Stage Hush© ▪ Noise control ▪ Cavitation elimination ▪ Velocity & Erosion control
	<h3 style="text-align: center;">ACTUATORS</h3> <ul style="list-style-type: none"> ▪ Diaphragm Style. Model 700 ▪ Diaphragm Style. Model 1000 ▪ Manual Style 820 ▪ Electric available ▪ Electro/Hydraulic available ▪ Piston ▪ Reverse acting ▪ Direct acting
	<h3 style="text-align: center;">NUCLEAR CONTROL VALVES</h3> <ul style="list-style-type: none"> ▪ Pneumatic, Motor, Manual Operators ▪ Metal & Resilient Seats ▪ Widest Selection of Trim in the Industry ▪ Size Range: 3/8" - 20" class 150 - 2500 ▪ Globe, Angle, Isolation & Three Way Body Configurations ▪ ASME Section III "N" & "NPT" Stamp Certified
	<h3 style="text-align: center;">NUCLEAR HIGH PERFORMANCE BUTTERFLY AND BALL VALVES</h3> <ul style="list-style-type: none"> ▪ Bi-Directional Class VI Shut off ▪ Metal & Resilient Seats ▪ Pneumatic, Motor, Manual Operators ▪ Modulating or Isolation ▪ Two & Three Piece Ball Valve design ▪ Torque Seated/Position Seated (Butterfly only) ▪ ASME Section III "N" & "NPT" Stamp Certified
	<h3 style="text-align: center;">AFTERMARKETS AND REFURBISHMENTS</h3> <ul style="list-style-type: none"> ▪ Reduce Outage Cycle Times ▪ Maximize Years/Life Cycle ▪ Recondition the OEM parts, while minimizing lead times and costs.

Common Applications: Power, Pulp & Paper, Water, Oil & Gas, Petrochemical.
Manufacturing Standards: Certifications - ISO-9001, ASME SECTION III "N" & "NPT" Stamps, ASME SECTION I "S" Stamp, CSA-Z299.2, .3 & .4, 97/23/EC-PED-CE



FLOW CONTROL



Your local contact:



SPX Flow Control
5620 West Rd.
McKean, PA 16426
Phone: (814)476-5800 Fax: (814)476-5848
E-mail: cv@spx.com

For more information about our worldwide locations, approvals, certifications, and local representatives, please visit www.spxfc.com.

SPX reserves the right to incorporate our latest design and material changes without notice or obligation.

Design features, materials of construction and dimensional data, as described in this bulletin, are provided for your information only and should not be relied upon unless confirmed in writing. Certified drawings are available upon request.