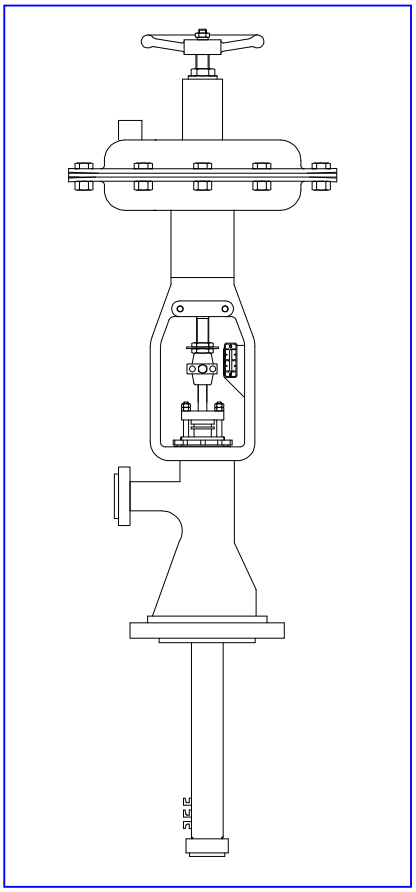
`DESUPERHEATER SERIES - 800

INTRODUCTION

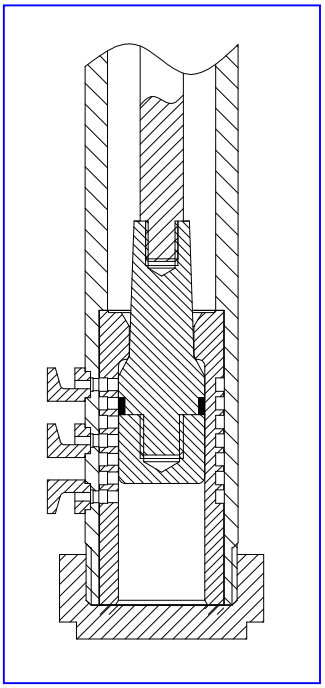
The evolutionary series 800 Desuperheater i.e. Varitrol variable spray nozzles unit can be used in many application to efficiently reduce the superheated steam or other vapours to temperature approaching saturation.
The superheated vapour is passed through a section of pipe into which is fitted a spray nozzle that produces dispersed droplets from a supply of pressurized condensate.
These finely atomized particles promote almost immediate evaporation. The required heat being absorbed from the superheated vapour, thus reducing the temperature.

SPECIFICATIONS

DESIGN	:	ASME B16-34
VALVE SIZE	:	2" (50mm)
RATING	:	150 to 1500 ANSI.
NOZZLE SIZE	:	Refer to Table 1.
RANGEABILITY	:	Maximum 45 to 1.
VALVE TRAVEL	:	38mm.
MATERIAL		
BODY	:	ASME A216 Gr. WCB (<425º C)
	:	ASME A217 Gr. WC6/9 (<550º C)
BODY TUBE	:	Stainless Steel.
GUIDE /SEAT	:	Stellited 6
PLUG/STEM	:	Stellited 6/316L
SEALING RINGS	:	Carbon
ATOMISERS	:	316 Stainless Steel (CF8m)
PACKING	:	Grafoil
END CONNECTION	:	Refer Table No. 2.
FLOW CHARACTERISTICS.	:	Refer Figure No. 3
ACTUATOR	:	Pneumatic Diaphragm as Standard,
DIAPHRAGM	:	Nitrile / Neoprene.
SPRING RANGE	:	3 – 15 PSIG (0.2 – 1.0 Kg/cm²)
	:	6 – 30 PSIG (0.4 – 2.0 Kg/cm²)
AIR SUPPLY	:	20 – 35 PSIG (1.4 – 2.5 Kg/cm²)
AIR CONNECTION	:	1/ 4" or 1/ 2" NPT
ACCESSORIES OPTIONAL	:	Valve Positioner - Pneumatic , Electro Pneumatic, Smart Positioner, Airset, Solenoid Valve, Air Lock, Volume Booster, I/P Converter, Position Transmitter, Limit – Proximity Switches etc. Top or Side Mounted Handwheel.



DESUPERHEATER WITH ACTUATOR



VARITROL SPRAY UNIT

PERFORMANCE AND DESIGN FEATURES

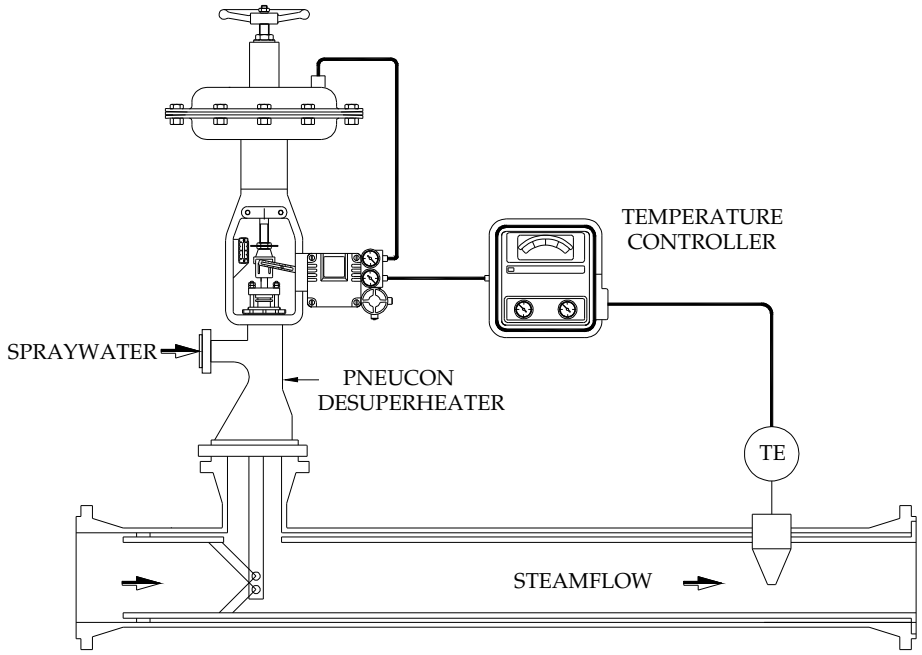
- >> High efficient atomization.
- >> Accurate and repeatable control fluid temperature.
- >> Tight shut off variable spray unit.
- >> High rangeability variable area spray unit.
- >> Erosion resistance materials of selection.
- >> Ease of installation.
- >> Low maintenance features.
- >> High integrity stem sealing arrangement.
- >> Thoroughly checked at factory to ensure that it meets the specified performance on site with high integrity.
- >> Quality assurance at every stage of manufacturing.
- >> Comprehensively designed and tested to ensure its optimum performance for the tough process parameters specified.

QUALITY AND PERFORMANCE GUARANTEE

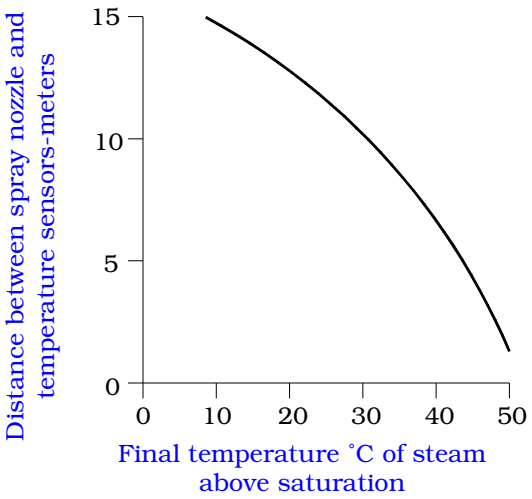
- >> Produced with Quality Systems accredited to ISO 9001 : 2000 (Certificate No. 208920.) by Bureau Veritas.
- >> Full material certification available for all major component Parts.
- >> Full guarantee on design and Performance.
- >> All testing performed to the requirements of ANSI B16.34.

PRINCIPLE OF OPERATION

For the most efficient use of heat energy from steam, it is necessary to reduce the temperature of superheated steam to near the saturation temperature. The high temperature of superheated steam provides the large amount of energy that is used for water vaporization resulting in an increased flow of steam at a lower temperature. By having the amount of water added the temperature is controlled. The rate of cooling depending on spray water drop size, distribution and velocity.

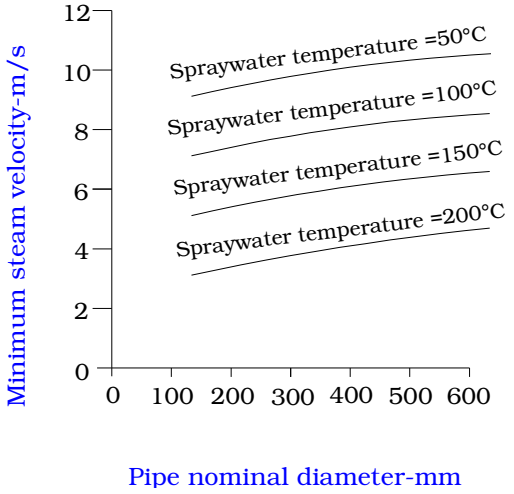


Drawing No. 1



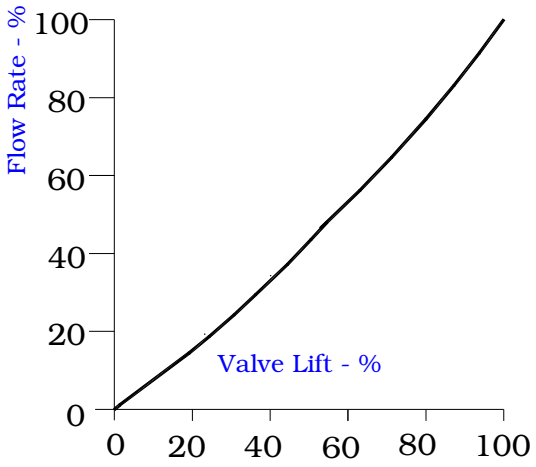
MINIMUM DISTANCES FOR TEMPERATURE SENSOR POINTS

Figure No. 1



MINIMUM STEAM VELOCITY FOR PIPE DESUPERHEATING UNITS

Figure No. 2



VARITROL SPRAY UNIT INHERENT CHARACTERISTIC

Figure No. 3

NOZZLE NUMBER	Cv VALUE
0	0.25
1	0.5
2	1.0
3	2.0
4	4.0
5	6.5
6	9.0

STANDARD NOZZLE Cv VALUES

Table No. 1

INSTALLATION GUIDE

Satisfactory desuperheating is dependant on the correct selection and installation of unit for a particular application. The following guidelines detail the installation requirements to achieve maximum efficiency from an desuperheating unit.

1) The installation of Desuperheater unit should be with the flange orientation as in Drawing No. 1.

2) Units may be located in suitable horizontal or vertical down pipe work.

3) Minimum length of straight pipe work following Desuperheating unit should be 6 to 8 pipe diameters.

4) Steam pipe work to fall in direction of flow by minimum 20mm in 1000mm.

5) Condensate supply to be free of debris and effectively filtered to less than 0.25mm.

6) Efficient drainage of Desuperheater pipe work is essential. Large condensate traps for 10% maximum flow are required to facilitate start-up and shut down of plant.

7) Lagged pipe work assist successful Desuperheating.

8) Controlled temperature to be higher than 6°C (11°F) above saturation point.

9) To achieve satisfactory evaporation the percentage ratio of water to steam should not exceed 15%. The exact value is dependant on each application and the factory should be consulted if this figure is to be exceeded.

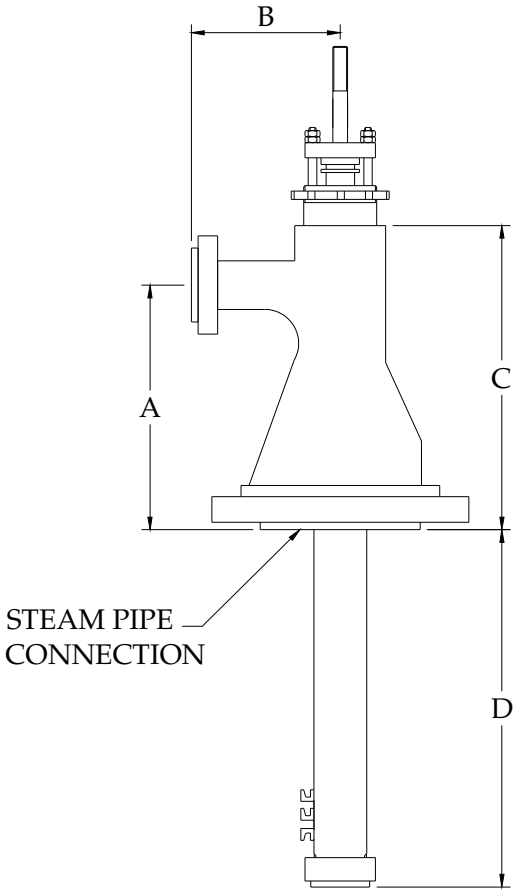
10) Where the Variatrol unit is required to shut off for long periods it is recommended that an upstream motorized isolating valve is incorporated into the system.

11) The temperature pocket should extend into the pipe 1/3 to 1/2 pipe diameter for steam pipes up to ø300mm and 1/4 to 1/3 on steam pipe diameters above ø300mm.

12) The minimum distance of the temperature sensor point from the desuperheating unit shown in figure 1.

13) For maximum steam turndown applications, a high superior pressure of condensate is necessary.

14) Maximum recommended liner velocity 330 ft/s (100 m/s). The minimum liner velocity is taken from the graph shown in figure 2.



DESUPERHEATER MOUNTING DIMENSIONS

Table No. 2

Nozzle Numbers	Travel	'A'	'B'	'C'	'D' Based on pipe dia		'øE'	'F'	Condensate Connection	Steam Connection	Rating	Standard Actuator
					>150 <250	> 250						
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	ANSI	
0 – 6	38	152	171	197	305	457	286	800	40	80	150-600	PDO - 55
0 – 6	38	216	229	276	305	457	286	800	50	100	900-1500	PDO - 55

The Company's policy is one of continuous product improvement and the right is reserved to modify the specifications contained herein without notice.

ISO - 9001 : 2000
Certificate No. 208920

PNEUCON VALVES PVT. LTD.

Plot No: A-35, Road No. 10,Wagle Industrial Estate,
Thane – 400 604, India.

Phone: (+91 22) 2583 8371, 2583 8372 Fax : 2583 8373
E-Mail: info@pneuconvalves.com Web: www. pneuconvalves.com

BUILT IN RELIABILITY