

### PRODUCT DESCRIPTION

VS Series Steam Vaporizers are designed and engineered to provide an economical and dependable source of NH<sub>3</sub> vapor for a wide range of applications from 90 LB/HR up to 20,000 LB/HR. Standard units are completely self-contained requiring connection of NH<sub>3</sub> inlet and outlet, steam inlet and condensate outlet.

### HOW THEY WORK

The VS Series Steam Vaporizer uses a thermally actuated control system to regulate the flow of steam into a shell and tube heat exchanger. The thermal system consists of a liquid filled diaphragm actuator connected by means of a filled, semi-flexible capillary tube to a partially filled sensing bulb inserted in the NH<sub>3</sub> vapor stream. As temperature at the sensing bulb increases (as would occur during a low NH<sub>3</sub> flow condition), the fluid in the bulb partially vaporizes, applies pressure to the diaphragm and closes the valve. As temperature at the sensing bulb decreases (during a higher NH<sub>3</sub> flow condition), the fluid would recondense, reducing pressure on the diaphragm and opening the valve. Depending on gas flow conditions, the valve will throttle the flow of steam to maintain the desired temperature range.



### LIMITS AND SAFETY FEATURES

- ASME Code Heat exchange pressure vessels. The shell is constructed of rugged carbon steel for high strength and good heat exchange characteristics.
- The removable, field replaceable tube bundle is constructed entirely of stainless steel to ensure long life and corrosion resistance.
- Ransome's unique liquid level float configuration. The high liquid level switch prevents liquid from entering the outlet.
- Inlet solenoid valve with bypass back check valve. The solenoid valve, in conjunction with the high liquid level switch, closes the inlet preventing the liquid from spilling over into the outlet.
- Bottom steam feed protects against freeze up. The condensate is constantly warmed by incoming hot steam. Even if the vaporizing temperature in the shell falls below freezing, there is no risk of the condensate freezing with the resultant bursting of the tube.
- ASME stamped safety relief valve. Each vaporizer unit is adequately protected in accordance with ANSI K61.1.
- All sizes are capable of infinite turndown and will maintain a ready supply of vapor from zero load to full capacity.
- Standard electrical configuration Class I, Division I.
- Vertical design provides maximum capacity in compact, rectangular unit.

## PERFORMANCE

Rated capacity in LB/HR of NH<sub>3</sub> @ 0 F with a minimum vapor outlet temperature of 100 F. For units operating on hot water (180 degrees F) capacity is reduced approximately 30%.

Operating Temperature Range: 80-140 F

NH<sub>3</sub> Safety Relief Valve Setting: 265 psig

Steam Relief Valve Setting (15 psig steam): 50 psig

Design pressure, NH<sub>3</sub> side: 265 psig

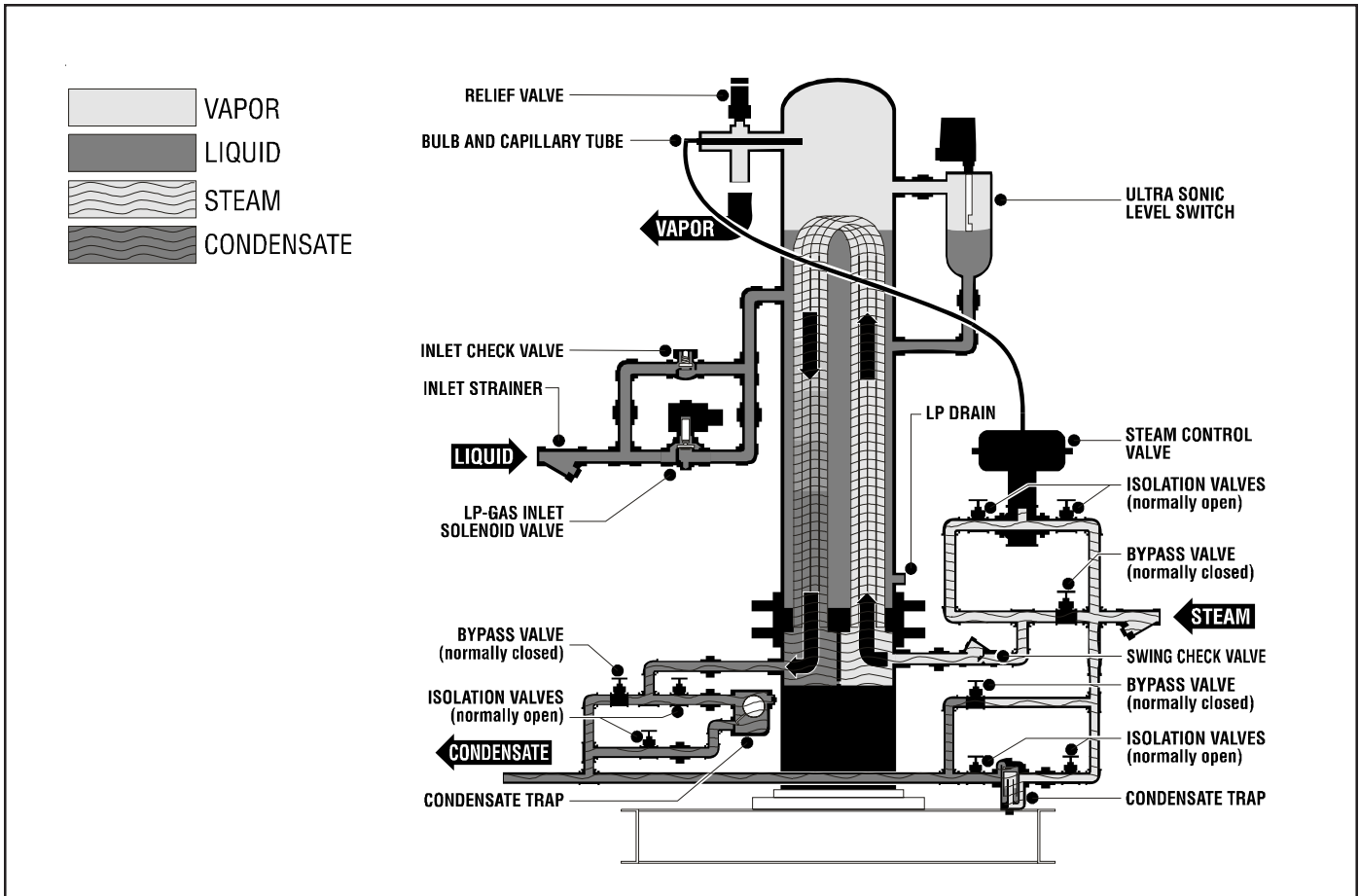
Design pressure, Steam side: 100 psig

Design Temperature: 650 F

## CONSTRUCTION

**Base and Frame:** Carbon Steel structural channel  
**Vap. Vessel Shell:** Carbon Steel  
**Vap. Tube Bundle:** Stainless Steel  
**Connections:** Carbon Steel

The high liquid level switch breaks on liquid rise.



## Selection Chart

NH <sub>3</sub> Capacity		Approximate Steam Required LB/HR	Standard Steam Pressure PSI	Approximate Shipping Weight		Ransome Model
NH <sub>3</sub> LB/HR	GAL/HR			LB	KG	
90	17	55	15	890	404.5	VS 55
165	32	100	15	1,000	454.5	VS 100
258	50	160	15	1,050	477.3	VS 160
550	107	330	15	1,125	511.4	VS 330
1,100	214	660	15	1,250	568.2	VS 660
1,665	323	1,000	15	1,500	681.8	VS 1000
2,500	485	1,500	15	1,805	820.5	VS 1500
4,000	777	2,400	25	2,360	1072.7	VS 2400
6,300	1,223	3,780	25	2,915	1325	VS 3780
9,100	1,767	5,460	25	3,470	1577.3	VS 5460
12,830	2,491	7,700	50	4,025	1829.5	VS 7700
19,665	3,818	11,800	50	4,580	2081.8	VS 11800