

# VS-01 SERIES

## PREMIER VERTICAL STORAGE SYSTEMS

Chart's VS-01 Series Storage Systems, available in liquid nitrogen, oxygen or argon service are offered in a wide range of sizes for applications requiring Maximum Allowable Working Pressure of 175 and 250 psig (12 and 17 barg) as standard.

Our proprietary Composite Super Insulation™ system gives you the competitive edge with high thermal performance, extended hold times, low life-cycle costs and lower weight to reduce operational and installation costs. Chart leads the industry with an innovative modular piping system designed for performance, durability and low maintenance.

### MODULAR PIPING ADVANTAGES

- Reduces your life-cycle costs by reducing the number of external piping joints, minimizing the risk of external piping leaks and the cost to repair.
- Simple by design yet robust and able to support a broad range of customer applications.
- Combination pressure building/economizer regulator for easy pressure adjustment and extended bonnet bronze control valves for ease of operation.
- Piping modules designed for ease-of-access to all operational control valves with stainless steel interconnecting piping for improved durability.

### PRODUCT ADVANTAGES

- Sizes, pressures and configurations to meet most applications
- Backed by an industry-leading 5-year vacuum warranty
- Leg design provides better access to anchor bolts for quicker installation
- Plumbing built in accordance with ASME B31.3 code and leak tested at 1.1 times the MAWP
- Long-life urethane paint system
- Inner vessel designed and built to ASME Section VIII Division 1 code
- Tank mounted vaporizer optional on the 525, 900 and 1500 gallon models (2000 SCFH)



Cooler By Design. ®

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### Specifications

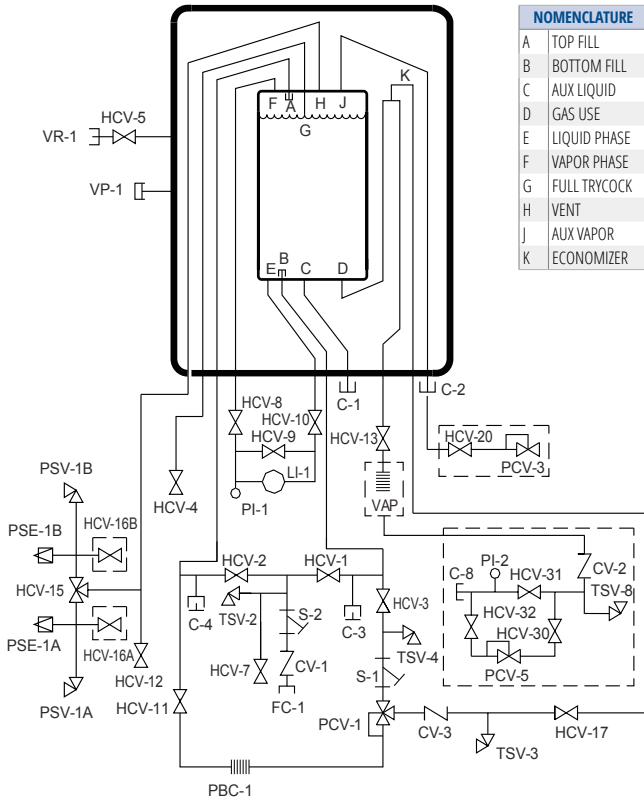
Model	Gross Capacity		Net Capacity		MAWP*		Flow Capacity**		Diameter		Height		Weight**		NER %/day	NER %/day
	Gal	Liters	Gal	Liters	psig	bar	SCFH	Nm <sup>3</sup> /hr	in	mm	in	mm	(lbs)	(kg)	O <sub>2</sub> /AR	N <sub>2</sub>
VS 1500SC	1,640	6,208	1,580	5,981	250	17.2	9,000	237	66	1,676	196	4,978	6,200	2,818	.35	.56
VS 3000SC	3,150	11,924	3,030	11,470	175 250	12.1 17.2	18,000	473	86	2,184	228	5,791	11,100 12,800	4,990 5,806	.25	.40
VS 6000SC	6,010	22,750	5,770	21,842	175 250	12.1 17.2	18,000	473	86	2,184	383	9,728	19,900 21,500	9,026 9,752	.15	.24
VS 9000SC	9,360	35,431	8,990	34,031	175 250	12.1 17.2	42,000	1,104	114	2,896	348	8,840	29,400 32,300	13,364 14,682	.10	.16
VS 11000SC	11,410	43,192	10,960	41,488	175 250	12.1 17.2	42,000	1,104	114	2,896	407	10,338	35,200 38,700	16,000 17,591	.10	.16
VS 13000SC	13,470	50,989	13,060	49,437	175 250	12.1 17.2	42,000	1,104	114	2,896	466	11,837	41,700 45,700	18,955 20,773	.10	.16
VS 15000SC	15,520	58,750	15,060	57,008	175 250	12.1 17.2	42,000	1,104	114	2,896	525	13,335	48,000 52,600	21,818 23,909	.10	.16

\*MAWP - Maximum Allowable Working Pressure. 400, 500 psig tanks are available upon request

\*\*Flow capacity rating down to a 20% contents level with a maximum fall of in tank operating pressure of 15 psig (bar)

\*\*\*Weights are for ASME design.

(NER) = Normal Evaporation Rate



NOMENCLATURE	
A	TOP FILL
B	BOTTOM FILL
C	AUX LIQUID
D	GAS USE
E	LIQUID PHASE
F	VAPOR PHASE
G	FULL TRYCOCK
H	VENT
J	AUX VAPOR
K	ECONOMIZER

NOMENCLATURE			
Tag	Description	Tag	Description
C-1	CONNECTION, AUX LIQUID	S-1	STRAINER, PRESSURE BUILDING
C-2	CONNECTION, AUX VAPOR	S-2	STRAINER, FILL
C-3	CONNECTION, SECONDARY AUX LIQUID	TSV-2	THERMAL SAFETY VALVE, FILL
C-4	CONNECTION, SECONDARY AUX VAPOR	TSV-3	THERMAL SAFETY VALVE, ECONOMIZER
CV-1	CHECK VALVE, FILL	TSV-4	THERMAL SAFETY VALVE, PB CIRCUIT
CV-3	CHECK VALVE, ECONOMIZER	VP-1	VACUUM PORT
FC-1	CONNECTION, FILL	VR-1	VACUUM READOUT, OUTER VESSEL
HCV-1	VALVE, BOTTOM FILL		
HCV-2	VALVE, TOP FILL		
HCV-3	VALVE, PB INLET		
HCV-4	VALVE, FULL TRYCOCK		
HCV-5	VALVE, VACUUM GAUGE TUBE		
HCV-7	VALVE, FILL LINE DRAIN		
HCV-8	VALVE, LI-1 VAPOR PHASE		
HCV-9	VALVE, LI-1 EQUALIZATION		
HCV-10	VALVE, LI-1 LIQUID PHASE		
HCV-11	VALVE, PB OUTLET		
HCV-12	VALVE, VAPOR VENT		
HCV-13	VALVE, PRODUCT SUPPLY		
HCV-15	VALVE, SAFETY RELIEF SELECTOR		
HCV-17	VALVE, ECONOMIZER		
LI-1	LI-1, LEVEL INDICATOR, INNER VESSEL		
PBC-1	PRESSURE BUILDING COIL, INNER VESSEL		
PCV-1	PRESSURE CONTROL VALVE		
PI-1	PRESSURE INDICATOR, INNER VESSEL		
PSE-1A	PRESSURE SAFETY ELEMENT, INNER VESSEL		
PSE-1B	PRESSURE SAFETY ELEMENT, INNER VESSEL		
PSV-1A	PRESSURE SAFETY VALVE, INNER VESSEL		
PSV-1B	PRESSURE SAFETY VALVE, INNER VESSEL		
S-1	CONNECTION, CUSTOMER HOUSELINE		
CV-2	CHECK VALVE, HOUSELINE		
HCV-16A	VALVE, RELIEF LINE PURGE		
HCV-16B	VALVE, RELIEF LINE PURGE		
HCV-20	VALVE, ECONOMIZER VENT		
HCV-30	VALVE, INLET HOUSELINE		
HCV-31	VALVE, BYPASS HOUSELINE		
HCV-32	VALVE, OUTLET HOUSELINE		
PCV-3	PRESSURE CONTROL VALVE, ECONO VENT		
PCV-5	PRESSURE CONTROL VALVE, HOUSELINE		
PI-2	PRESSURE INDICATOR, HOUSELINE		
TSV-8	THERMAL SAFETY VALVE, HOUSELINE		
VAP	VAPORIZER, PRODUCT WITHDRAWAL		

**NOTE: OPTIONAL VALVES (NOT SHOWN)**

HCV-18	VALVE, LIQUID WITHDRAWAL (FROM C-1)
HCV-19	VALVE, VAPOR RETURN (FROM C-2)
HCV-21	VALVE, SEC AUX LIQUID (FROM C-3)
HCV-22	VALVE, SEC AUX VAPOR (FROM C-4)

*\*dashed lines represent optional components*

Your Local Representative



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