

SIPHON ZERO

BULK FILL PLANT SYSTEM WITH ZERO STORAGE LOSS

The Siphon Zero Bulk Storage System is engineered for the efficient storage of argon or oxygen liquid with zero losses at fill plants. The key design feature is a heat exchanger located in the inner vessel gas space. Liquid nitrogen is passed through the heat exchanger to control the tank pressure, preventing any gas losses, regardless of the Siphon Zero usage patterns. Because the heat exchanger can accommodate liquid nitrogen at any time, the operator can easily control the tank pressure – and, ultimately, the saturation pressure of the liquid as desired. Lower saturation pressure in a fill plant tank has many advantages, from a more efficient HP fill pump operation to reducing liquid cylinder filling losses.

Built on the Siphon 100® Bulk Storage Tank platform, the Zero model offers all the same features as our standard Siphon 100 model. These key features are: Composite Super Insulation™ for ultra-low heat leak, thermal-siphoning internal piping and a vacuum insulated pod for quick pump operation and reduced heat transfer to the Siphon tank. With the Siphon Zero model in your fill plant operation, you can save expensive gas molecules and improve your filling operation, every day.

PRODUCT ADVANTAGES

- Replace expensive argon and oxygen gas losses with low cost sacrificial nitrogen
- Control tank pressure and liquid condition as desired
- Control tank sub-cool as desired for HP pump prime uptime
- Reduce HP pump lifetime cold-end costs and pump down time
- Reduce HP cylinder fill time labor by pumping lower saturated (denser) liquid per stroke
- Reduce liquid cylinder and other liquid transfer losses from highly saturated liquid
- Increase storage tank liquid capacity with colder liquid
- Improve gas storage inventory accuracy
- Inner vessel designed and built to ASME Section VIII Division 1 code
- Includes all the benefits of the Siphon 100 design, see spec sheet P/N 14399405

IDEAL APPLICATIONS

- Argon Fill Plant Storage
- Oxygen UHP Fill Plant Storage



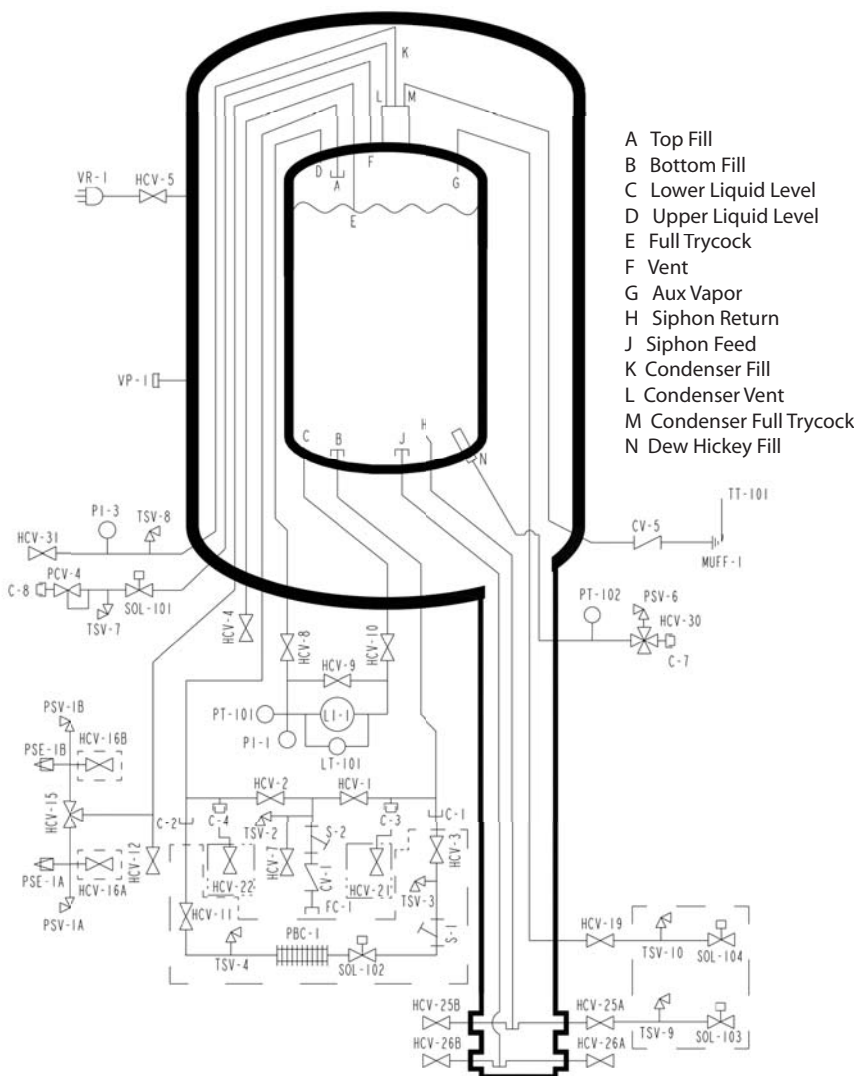
Innovation. Experience. Performance.™

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Model	Gross Capacity		Net Capacity		MAWP*		Diameter		Height		Weight**		NER % /day in O ₂ / Ar
	Gal	Liters	Gal	Liters	psig	bar	in	mm	in	mm	lbs.	Kg	
VS 1500SC	1,640	6,208	1,580	5,981	250	17.2	66	1,676	240	6,096	6,200	2,818	.35

* MAWP - Maximum Allowable Working Pressure. ** Weights are for ASME design. (NER) = Normal Evaporation Rate



Nomenclature

C-1	CONNECTION, AUX LIQUID
C-2	CONNECTION, AUX VAPOR
C-3	CONNECTION, SECONDARY AUX LIQUID
C-4	CONNECTION, SECONDARY AUX VAPOR
C-7	CONNECTION, DEW HICKEY FILL
C-8	CONNECTION, CONDENSER FILL
CV-1	FILL LINE CHECK VALVE
CV-5	CONDENSER FULL TRYCOCK CHECK VLV
FC-1	FILL CONNECTION
HCV-1	BOTTOM FILL VALVE
HCV-2	TOP FILL VALVE
HCV-4	FULL TRYCOCK VALVE
HCV-5	VACUUM GAUGE TUBE VALVE
HCV-7	FILL LINE DRAIN VALVE
HCV-8	LI-1 VAPOR PHASE VALVE
HCV-10	LI-1 LIQUID PHASE VALVE
HCV-12	VAPOR VENT VALVE
HCV-15	SAFETY RELIEF SELECTOR VALVE
HCV-19	AUX VAPOR VALVE
HCV-25A	SIPHON RETURN VALVE
HCV-25B	SIPHON RETURN VALVE
HCV-26A	SIPHON FEED VALVE
HCV-26B	SIPHON FEED VALVE
HCV-30	DEW HICKEY FILL VALVE
HCV-31	CONDENSER VENT VALVE
PCV-4	REGULATOR CONDENSER FILL
PSE-1A	PRESSURE SAFETY ELEMENT, INNER
PSE-1B	
PSV-1A	PRESSURE SAFETY VALVE, INNER
PSV-1B	
S-2	FILL STRAINER
SOL-101	CONDENSER FILL AUTO VALVE
TSV-2	FILL LINE THERMAL RELIEF
TSV-6	DEW HICKEY THERMAL RELIEF
TSV-7	CONDENSER FILL THERMAL RELIEF
TSV-8	CONDENSER VENT THERMAL RELIEF
TT-101	RTD CONDENSER
VP-1	VACUUM PORT
VR-1	VACUUM READOUT

OPTIONAL VALVES (Dashed Lines)

HCV-3	PB INLET VALVE
HCV-11	PB OUTLET VALVE
HCV-16A	RELIEF LINE PURGE VALVE
HCV-16B	RELIEF LINE PURGE VALVE
PBC-1	PRESSURE BUILD COIL
S-1	STRAINER, PRESSURE BUILDING
TSV-3	PB CIRCUIT THERMAL RELIEF VALVE
TSV-4	PB CIRCUIT THERMAL RELIEF VALVE
HCV-21	SEC AUX LIQ. VALVE
HCV-22	SEC AUX VAP. VALVE
SOL-102	PB FEED CONTROL VALVE
SOL-103	SIPHON RETURN CONTROL VALVE
SOL-104	SIPHON VENT RETURN CONTROL VALVE
TSV-9	SIPHON RETURN THERMAL RELIEF
TSV-10	SIPHON VENT RETURN RELIEF