

PERMA-CYL® ZX VHP

PORTABLE HIGH-PERFORMANCE MICROBULK STORAGE

The Perma-Cyl® ZX VHP MicroBulk Storage System is designed and built for high pressure and high flow applications. The system features a top and bottom fill (FlexFill™) style tank housed within a rugged pallet frame. The internal ullage tank allows for a ventless, single hose fill auto shutoff when filled with the Orca™ MicroBulk Delivery System. The system is offered in 1500 and 3000 Liter capacities. With the on-board external aluminum process and pressure build vaporizers, the Perma-Cyl 1500 ZX skid is rated at a flow rate up to 3000 SCFH and the Perma-Cyl 3000 ZX skid is rated at a flow rate up to 5000 SCFH, while sustaining 420-450 psig under normal ambient conditions. The vessel and vaporizers are secured to a dedicated metal pallet frame which gives this piece of equipment a small footprint as well as full protection and transportability with a forklift. The portable design makes the Perma-Cyl ZX VHP skid the ideal quick response solution for demanding industrial gas applications, like laser-assist gas.



PRODUCT HIGHLIGHTS

- Perma-Cyl system is equipped with top and bottom fill (FlexFill™ Piping Option) for accurate pressure control during delivery
- High flow external aluminum vaporizer and pressure builder system provides up to 3000 SCFH and 5000 SCFH at 420 to 450 psig
- Separate pressure build and economizer regulators with isolation valves
- Dual relief valves and rupture discs with diverter valve
- Provides safe, single hose, no loss, auto shutoff fill when used with Orca™ MicroBulk Delivery System
- Metal pallet incorporates forklift slots while protecting plumbing and tank during transportation and application use
- Pallet has durable exterior coating for maximum corrosion resistance
- Courtesy valve, available on the Perma-Cyl 3000 ZX, allows utilization of the process vaporizers, from the delivery assist on Orca, during the fill of the main tank to keep the customer online during fill process.

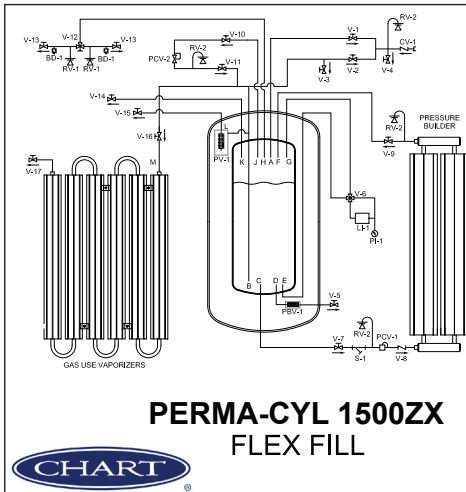


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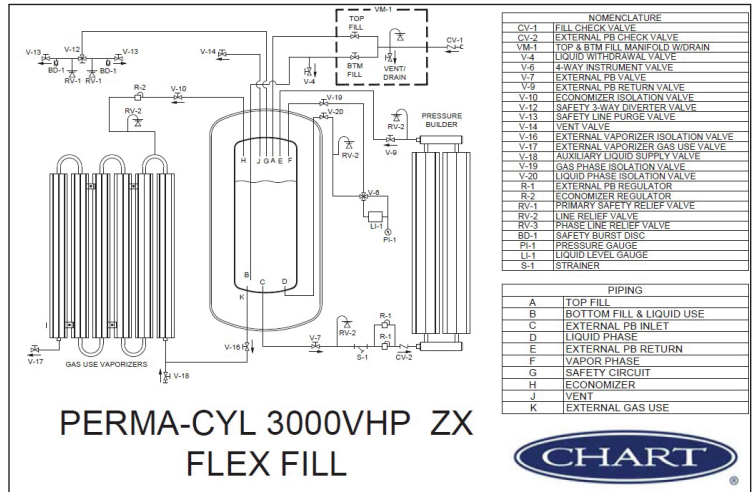
Capacity	1500 ZX VHP	3000 ZX VHP
Liquid (Gross) (liters)	1550	2911
Liquid (Net) (liters)	1455	2707
Gas (LIN) ft³/Nm³	35,790 / 1013	66,592 / 1750
Gas (LOX) ft³/Nm³	44,220 / 1250	82,239 / 2161
Gas (LAR) ft³/Nm³	43,220 / 1223	80,425 / 2115
Performance		
NER (LIN)% per day	1.0	1.0
NER (LAR/LOX)% per day	.62	.62
Gas Flow (LIN/LAR/LOX)* SCFH/Nm³/hr**	3000 / 85.0	5000 / 141.6
Dimensions & Pressure Ratings		
Diameter (cylinder) in/cm	48 / 121.9	58 / 147.3
Height (cylinder) in/cm	91 / 231.1	116.5 / 295.9
Base Width (frame) in/cm	61.5 / 156.2	85 / 215.9
Base Depth (frame) in/cm	61.5 / 156.2	85 / 215.9
Base Height (frame) in/cm	93 / 236.2	124.5 / 316.2
Tare Weight lbs/kg	3500 / 1587.6	8500 / 3856
Full Weight lbs/kg		
Nitrogen	6262 / 2840.4	13,687 / 6208
Oxygen	7401 / 3357.0	15,827 / 7179
Argon	8261 / 3747.1	17,443 / 7912
Relief Valve Setting psig/barg	500 / 34.5	500 / 34.5

* At 450 psig sustained pressure, 8 hours, 70° ambient. **Higher flows can be achieved with reduced duty cycles and/or additional vaporization.



NOMENCLATURE	
CV-1	FILL CHECK VALVE
V-1	TOP FILL VALVE
V-2	BOTTOM FILL VALVE
V-3	LIQUID WITHDRAWAL VALVE
V-4	FILL DRAIN VALVE
V-5	PISTON ISO VALVE
V-6	4-WAY VALVE
V-7	EXTERNAL PB VALVE
V-8	EXTERNAL PB CHECK VALVE
V-9	EXTERNAL RETURN PB VALVE
V-10	ECONOMIZER INLET ISO VALVE
V-11	ECONOMIZER VALVE
V-12	SAFETY 3-WAY DIVERTER VALVE
V-13	SAFETY LINE PURGE VALVE
V-14	VENT VALVE
V-15	INTERNAL GAS USE VALVE
V-16	EXTERNAL VAPORIZER ISO VALVE
V-17	EXTERNAL VAPORIZER GAS USE VALVE
PCV-1	EXTERNAL PB REGULATOR (475 PSI)
PCV-2	ECONOMIZER REGULATOR (475 PSI)
PBV-1	INTERNAL PB VAPORIZER COIL
PV-1	INTERNAL PROCESS VAPORIZER COIL
RV-1	SAFETY RELIEF VALVE
RV-2	LINE RELIEF VALVE
BD-1	SAFETY BURST DISC
PI-1	PRESSURE INDICATOR
S-1	STRAINER

PIPING	
A	TOP FILL
B	BOTTOM FILL & LIQUID USE
C	EXTERNAL PB INLET
D	LIQUID PHASE
E	EXTERNAL PB RETURN
F	VAPOR PHASE
G	SAFETY CIRCUIT
H	ECONOMIZER
J	VENT
L	INTERNAL GAS USE
M	EXTERNAL GAS USE



NOMENCLATURE	
CV-1	FILL CHECK VALVE
CV-2	EXTERNAL PB CHECK VALVE
VM-1	TOP & BTM FILL MANIFOLD WITHDRAWAL
V-1	LIQUID WITHDRAWAL VALVE
V-2	4-WAY INSTRUMENT VALVE
V-3	EXTERNAL PB VALVE
V-4	EXTERNAL PB RETURN VALVE
V-5	ECONOMIZER ISOLATION VALVE
V-6	SAFETY 3-WAY DIVERTER VALVE
V-7	SAFETY LINE PURGE VALVE
V-8	VENT VALVE
V-9	EXTERNAL VAPORIZER ISOLATION VALVE
V-10	EXTERNAL VAPORIZER GAS USE VALVE
V-11	AUXILIARY LIQUID SUPPLY VALVE
V-12	GAS PHASE ISOLATION VALVE
V-13	LIQUID PHASE ISOLATION VALVE
R-1	EXTERNAL PB REGULATOR
R-2	ECONOMIZER REGULATOR
RV-1	PRIMARY SAFETY RELIEF VALVE
RV-2	LINE RELIEF VALVE
RV-3	PHASE LINE RELIEF VALVE
BD-1	SAFETY BURST DISC
PI-1	PRESSURE GAUGE
LI-1	LIQUID LEVEL GAUGE
S-1	STRAINER

PIPING	
A	TOP FILL
B	BOTTOM FILL & LIQUID USE
C	EXTERNAL PB INLET
D	LIQUID PHASE
E	EXTERNAL PB RETURN
F	VAPOR PHASE
G	SAFETY CIRCUIT
H	ECONOMIZER
J	VENT
K	EXTERNAL GAS USE