



VT SERIES

PERFORMER LINE
VERTICAL STORAGE TANKS





Innovation. Experience. Performance.®

Performer Line

Performer Line is the latest addition to Chart's range of vacuum perlite insulated vertical cryogenic storage vessels for the long term storage of liquid gases in industry, science and leisure. Ultimately engineered to combine the highest levels of performance with low cost, the tanks have been designed in consultation with the world's leading gas companies and feedback from many of Chart's highly satisfied customers.

Designed according to EN 13458 and in conformance with directive 2014/68/EU.

Principal Technical Features and Benefits:

- Modular options for easy configuration
- Four legs for compliance with the most stringent seismic requirements and maximum geographic deployment
- Pickled and passivated stainless steel outer plumbing for maximum durability and zero corrosion
- Stainless steel inner vessel
- Lifting lugs for maximum longevity and zero corrosion
- Easily accessible relief valves for optimum safety
- Zero product loss under normal operation
- Economizer circle line eliminates gas venting
- Durable coating that meets the highest environmental compliance standards
- Fill cluster with non-return valve protects the tanker from high pressure back flow

Why choose Performer?

- Reduced delivery lead time
- Lowest operational cost
- Covers 95% of customer applications

Providing the industry's best insulation system and 5 years vacuum warranty.





Innovation. Experience. Performance.®

Performer Line - Definition

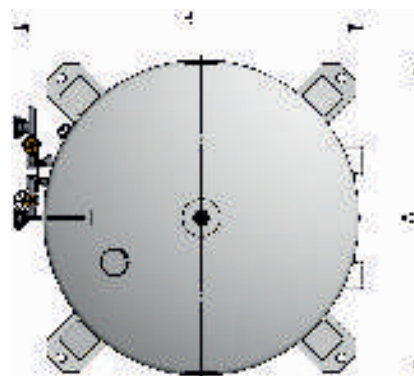
Pre-designed cryogenic vessels combining the highest levels of performance and lowest operational cost with reduced manufacturing lead time.

Provides storage capacities from 3 000 to 60 000 litres at set pressure levels of 18, 22 and 37 bar with a number of modular options that keeps delivery times short and covers the majority of customer application requests.

Suitable for liquid nitrogen, oxygen and argon.

Features supplied as standard include:

- Fill cluster with non-return valve, TRV and purge valve
- Liquid withdrawal FLD (VT3-VT9) or „R“ (VT11 –VT60)
- Needle valves to isolate level/pressure manifold
- Valve & vacuum gauge – Hoke+Hastings
- Economizer circle – line „J“
- Shut off valve and TRV – on line „J“ – Economizer circle
- Shut off valve and TRV – on line „H“ - Inlet to PBU
- Double flat fin PBU for 37 bar tanks
- Additional trycock for 37 bar tanks



Vertical Performer Line - VT

Type		VT 3	VT 6	VT 9	VT 11	VT 16	VT 21
Gross volume	Litres	3 420	6 150	8 870	10 810	15 530	20 250
Volume (95% filling)	Litres	3 250	5 840	8 430	10 270	14 750	19 240
Storage Capacity LIN ¹	Kg	2 630	4 730	6 810	8 300	11 930	15 550
Storage Capacity LOX ¹	Kg	3 720	6 680	9 630	11 730	16 850	21 970
Storage Capacity LAR ¹	Kg	4 570	8 220	11 850	14 440	20 740	27 040
Daily evap. rate LOX ² for tanks: 18 bar	%/d	0,37	0,26	0,23	0,21	0,19	0,17
22 bar	%/d	0,37	0,27	0,24	0,22	0,2	0,18
37 bar	%/d	0,39	0,29	0,26	0,23	0,21	0,19
Max. withdrawal rate LOX-single flat fin ³	Nm ³ /h	470			590		
Max. withdrawal rate LOX-double flat fin ³	Nm ³ /h	940			1 180		
Weight, empty 18 bar	Kg	2 980	4 320	5 750	6 440	8 310	10 160
22 bar	Kg	3 090	4 500	5 980	6 720	8 690	10 640
37 bar	Kg	3 520	5 160	6 880	7 830	10 190	12 530
Diameter (D)	mm	D1 = 1 800			D2 = 2 100		
Overall width (A)	mm	2 000			2 100		
Overall depth (B)	mm	2 150			2 350		
Height (H)	mm	3 990	5 830	7 660	6 440	8 400	10 440

Notes:

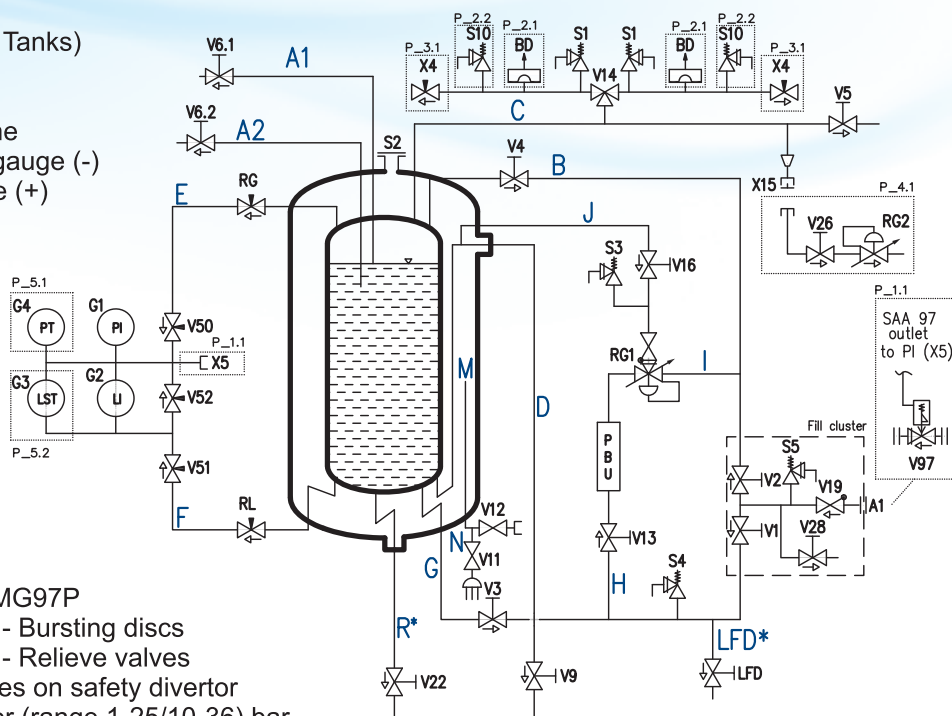
1) Filling 95 % (equilibrium state at 1,013 bar) for 18 bar tanks

2) Based on EN12213 (pressure 1,013 bar and 15°C ambient temperature)

Performer Line - Flow Diagram

Line Description

- A1 - Trycock line-95%
- A2 - Trycock line-80% (37 bar Tanks)
- B - Top fill line
- C - Safety relief line
- D - Product vaporizer feed line
- E - Gas phase to pi and DP gauge (-)
- F - Liquid phase to DP gauge (+)
- G - Bottom fill line
- H - PBU feed line
- I - PBU outlet line
- J - Economizer line
- M - Evacuation port
- N - Vacuum gauge port
- LFD - Liquide withdrawal
*(Tanks VT3-VT9)
- R - Liquide withdrawal
*(Tanks VT11-VT60)



Options

- P_1.1 Safety shutt-off device - MG97P
- P_2.1 Additional safety devices - Bursting discs
- P_2.2 Additional safety devices - Relieve valves
- P_3.1 Maintenance needle valves on safety diverter
- P_4.1 Vent economizer regulator (range 1-25/10-36) bar
+ isolation valve DN25
- P_5.1 Pressure transmitter 4-20 mA
- P_5.2 Differential pressure transmitter 4-20 mA including
mechanical contacts (H,L)

VT 25	VT 20	VT 26	VT 31	VT 37	VT 43	VT 32	VT 41	VT 50	VT 60
24 970	20 130	26 110	32 080	38 060	44 030	32 290	41 630	50 960	60 300
23 720	19 120	24 800	30 480	36 160	41 830	30 680	39 550	48 410	57 290
19 170	15 460	20 050	24 630	29 220	33 800	24 790	31 960	39 120	46 290
27 090	21 840	28 330	34 810	41 300	47 770	35 040	45 170	55 290	65 420
33 350	26 880	34 870	42 840	50 820	58 790	43 120	55 590	68 050	80 520
0,17	0,15	0,14	0,13	0,13	0,13	0,13	0,12	0,11	0,1
0,17	0,15	0,14	0,13	0,13	0,13	0,13	0,12	0,11	0,1
0,18	0,16	0,15	0,14	0,14	0,14	0,14	0,13	0,12	0,11
670					860				
1 340					1 720				
12 150	11 580	14 010	16 460	18 840	21 290	15 490	18 580	21 740	24 900
12 730	12 070	14 640	17 210	19 730	22 310	16 220	19 520	22 870	26 230
15 010	14 290	17 440	20 580	23 680	26 820	19 940	24 120	28 380	32 610
D3 = 2 500					D4 = 3 000				
2 500					3 000				
2 800					3 280				
12 440	8 090	9 930	11 760	13 590	15 420	8 380	10 210	12 040	13 870

3) Stated withdrawal rates are for short term withdrawal (up to 3 hrs) at tank pressure 10 barg and 10 °C ambient temperature
For N₂ and Ar stated withdrawal rates to be multiplied by: N₂=0,88 / Ar=1,01



Innovation. Experience. Performance.®

About Chart

Our focus is cryogenics. Chart is a recognized global brand for the design and manufacture of highly engineered cryogenic equipment used from the beginning to the end in the liquid gas supply chain.

We express our brand promise through our tagline.

Innovation. Experience. Performance.®

Innovation – We are passionate about what we do and dedicated to continuous, innovative development.

Experience – Customers rely on our knowledge because we are experts in our field.

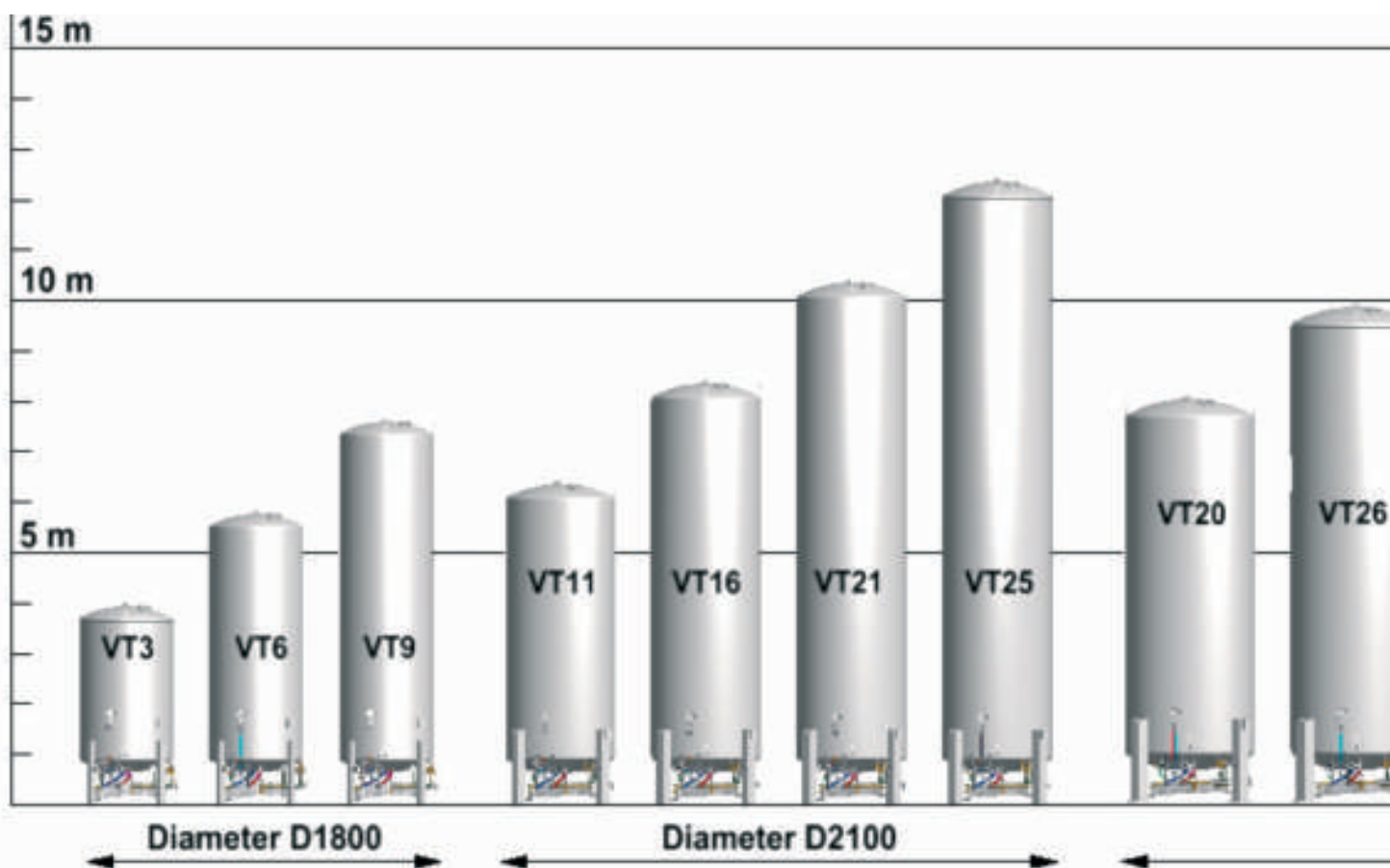
Performance – We fulfil expectations. We respect our customers and are committed to meeting their needs.

Chart Vacuum Technology®

Providing the best insulation system to protect your valuable gases from harsh ambient conditions results in lower pressure rise and lower losses, yielding better gas utilization.

Chart Vacuum Technology® incorporates a number of proprietary features and is at the core of why Chart is recognized around the world as the premier supplier of cryogenic equipment.

Chart's production facilities are fully compliant with international quality and environmental systems ISO 9001:2008 and ISO 14001:2005 respectively.





Your cryogenic partner



Chart Ferox, a.s.
Ústecká 30, 405 30 Děčín
Czech Republic
Tel.: +420 412 507 111
ferox-sales@chartindustries.com
www.chart-ferox.com

