

VT SERIES

Vertical Cryogenic Storage Tanks for Atmospheric Gases

■ Inner vessel

Stainless steel for cryogenic temperatures with optimized design for lower weight.

■ Outer jacket

A system consisting of 4 legs with transport supports & lifting lugs for safe transport, easy lifting and low cost erection using a single crane.

■ Insulation

A proven high quality vacuum perlite system with absorbent to ensure long holding time and low evaporation rate.

■ Piping

Stainless steel piping for reliability and long life, ergonomically arranged workplace, flow diagram and gauges at eye level.

■ Valves

Stainless / bronze valves.

■ Pressure control

An easy adjustable multifunctional regulator serves as pressure regulator, economizer and thermal relief valve. An aluminum flat fin PBU coil as standard.

■ Instrumentation

A high quality cryogenic pressure gauge and differential pressure content gauge are standard with optional switches, transmitter and / or telemetry unit.

■ Safety

Tanks are equipped with dual relief system with a variety of options, accommodating relief valves and / or rupture discs. Easily accessible relief valves with outlets directed away from the operating area.

■ Cleanliness

All tanks and their components are cleaned and certified for oxygen service.

■ Outer finish

High-gloss white paint with excellent corrosion resistance, patented engineered Siloxan coating with low VOC content.

■ Transport

Rugged internal supports for safe transportation by road, rail or container.

Chart Ferox, a.s. VT series of cryogenic tanks are designed in accordance with the requirements for safe, easy and economical operation. Many of the features have been incorporated in close collaboration with leading industrial gas companies.

VT series tanks are vertical, stationary, pressure vessels with perlite insulation for long term storage of cryogenic liquefied gases under pressure such as nitrogen (LIN), oxygen (LOX), and argon (LAR), and/or carbon dioxide (LCO₂) or nitrous oxide (LN₂O) and their withdrawal in gaseous or liquid state.

VT series are available in capacities from 3,000 to 60,000 litres with pressures of 12,6; 16,5; 19; 26 and 37 bar in accordance with and conforming to EC directive 97/23/EC (PED - pressure equipment directive).

Tank design is in accordance with AD 2000 Merkblatt and EN 13458-2.

In addition to 57 standard models, the VT series also offers wide range of options for special applications. Chart Ferox's other series of tanks, the VTC series, provides high-efficiency, economical vacuum-insulated storage of liquefied carbon dioxide or nitrous oxide.

Chart Ferox also offer specialized range of tanks for liquefied natural gas VT - LNG Series.

The newest Chart Ferox series, EVT series, are super-insulated tanks with 3 legs design in capacities 3,000 and 6,000 liters capacities.

Tanks outside VT, EVT and VTC range are also available upon request. Finally, Ferox manufactures customized vertical and horizontal storage tanks with capacities up to 700.000 liters, as well as supplies vaporizers, vacuum insulated pipeline and other components needed to create a complete "customer" installation.



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Chart Ferox, a.s., a Chart Industries Company

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VT SERIES

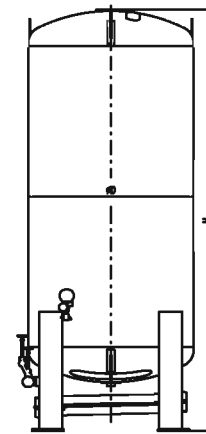
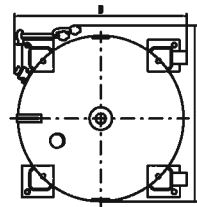
Specifications

Type		VT3	VT6	VT9	VT11	VT16	VT21	VT25	VT26	VT31	VT37	VT43	VT32	VT41	VT50	VT60	
Gross volume	Liters	3400	6100	8800	11200	16000	20900	25700	26000	32000	37900	43800	32200	41500	50800	60100	
Net capacity (95% filling) ¹⁾	Liters	3200	5800	8400	10600	15200	19900	24400	24700	30400	36000	41600	30600	39400	48300	57100	
	kg	2610	4690	6760	8640	12340	16040	19740	19970	24540	29100	33660	24750	31880	39010	46150	
	kg	3680	6620	9550	12210	17440	22670	27900	28220	34680	41130	47580	34980	45060	55140	65220	
	kg	4530	8150	11750	15030	21460	27900	34330	34730	42680	50620	58550	43050	55460	67860	80270	
	kg	3410	6120	8830	10190	16130	20960	25800	26100	32040	38040	44000	32350	41670	50990	60310	
	kg	3560	6410	9250	11820	16880	21940	27000	27320	33570	39820	46050	33860	43620	53370	63130	
Daily evaporation rate LOX ²⁾	%d	0,39	0,29	0,26	0,23	0,21	0,19	0,18	0,15	0,14	0,14	0,14	0,14	0,13	0,12	0,11	
Max. withdrawal rate LOX ³⁾	Nm3/h	470			590				670				860				
Max. withdrawal rate LCO ⁴⁾	Nm3/h	902			902				902				902				
Weight, empty	19 barg	kg	3400	4800	6200	7000	8900	10700	12700	15000	17500	19900	22400	16600	19700	22900	26100
	26 barg	kg	3600	5100	6600	7600	9600	11600	13700	16200	18900	21600	24900	18100	21600	25100	28700
	37 barg	kg	3900	5500	7200	8200	10900	13200	15600	18300	21500	24600	27800	20900	25100	29400	33700
Diameter (D)	mm	1800			2200				2500				3000				
Overall width (A)	mm	2000			2350				2650				3050				
Overall depth (B)	mm	2050			2300				2600				3050				
Height ⁷⁾ (H)	mm	3990	5820	7650	6150 ⁸⁾	7980	9810	11640	9930	11770	13590	15420	8380	10210	12040	13870	

Notes:

- 1) Filling 95% (equilibrium state at 1,013 bar).
- 2) Filling 95% (equilibrium state at 10 barg).
- 3) Based on pressure 100 kPa and 15 °C ambient temperature.
- 4) For N2 and Ar stated withdrawal rates to be multiplied by: N2=0,88 / Ar=1,01.
- 5) Stated withdrawal rates are for short term withdrawal (up to 3 hrs) at tank pressure 10 barg.
- 6) Stated withdrawal rates are with the 6 kW electrical heater at tank pressure 15 barg.
- 7) Tanks with thermosiphon are approx. 790 mm higher.
- 8) In case of container transport 250 mm shorter.
- 9) Design and specifications are subject to change without prior notice.

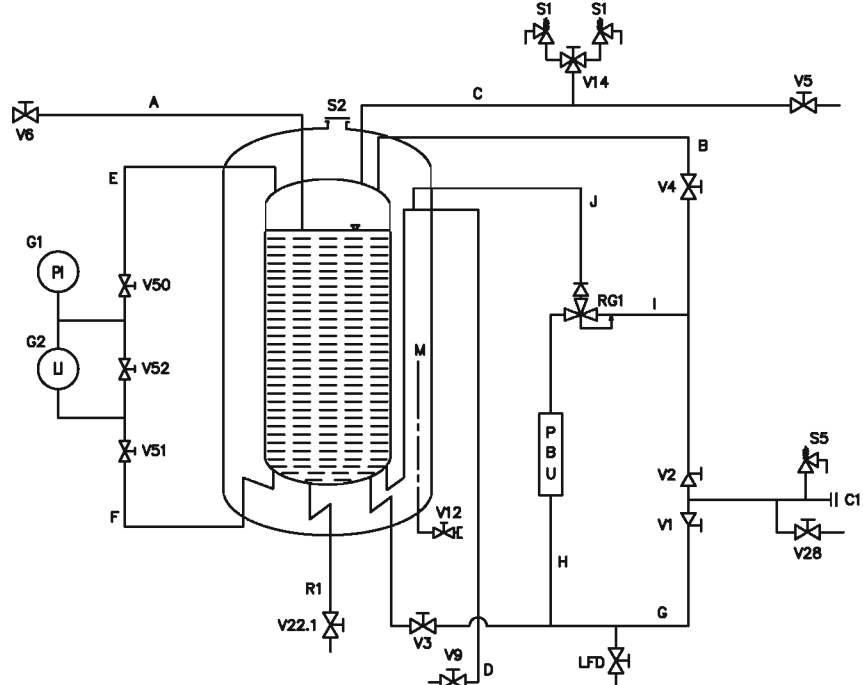
BASIC DIMENSIONS



Nomenclature*

- A1** Fill connection
- LFD** Liquid outlet (VT3 - VT9)
- LI** Level indicator
- PBU** Pressure building vaporizer
- PI** Pressure indicator
- RG1** Pressure control valve / Economizer
- S1** Safety valves, inner vessel
- S2** Vacuum safety valve
- S5** Thermal relief valve
- V1** Bottom fill valve
- V2** Top fill valve
- V3** Isolation valve, bottom filling
- V4** Isolation valve, top filling
- V5** Valve, vapor vent, gas outlet
- V6** Valve, trycock
- V9** Valve, external vaporizer
- V12** Vacuum pump down
- V14** Valve, safety relief section
- V22.1** Valve, liquid outlet (VT11 - VT60)
- V28** Valve, fill line drain
- V50** Valve, LI vapor phase
- V51** Valve, LI liquid phase
- V52** Valve, LI equalization

* standard model - not all options shown



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