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.
**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

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### Vertical Performer Line - VT

<table>
<thead>
<tr>
<th>Type</th>
<th>VT 3</th>
<th>VT 6</th>
<th>VT 9</th>
<th>VT 11</th>
<th>VT 16</th>
<th>VT 21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross volume</td>
<td>Litres</td>
<td>3,420</td>
<td>6,150</td>
<td>8,870</td>
<td>10,810</td>
<td>15,530</td>
</tr>
<tr>
<td>Volume (95% filling)</td>
<td>Litres</td>
<td>3,250</td>
<td>5,840</td>
<td>8,430</td>
<td>10,270</td>
<td>14,750</td>
</tr>
<tr>
<td>Storage Capacity LIN¹</td>
<td>Kg</td>
<td>2,630</td>
<td>4,730</td>
<td>6,810</td>
<td>8,300</td>
<td>11,930</td>
</tr>
<tr>
<td>Storage Capacity LOX¹</td>
<td>Kg</td>
<td>3,720</td>
<td>6,680</td>
<td>9,630</td>
<td>11,730</td>
<td>16,850</td>
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<tr>
<td>Storage Capacity LAR¹</td>
<td>Kg</td>
<td>4,570</td>
<td>8,220</td>
<td>11,850</td>
<td>14,440</td>
<td>20,740</td>
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<tr>
<td>Daily evap. rate LOX² for tanks: 18 bar</td>
<td>%/d</td>
<td>0,37</td>
<td>0,26</td>
<td>0,23</td>
<td>0,21</td>
<td>0,19</td>
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</tr>
<tr>
<td></td>
<td>22 bar</td>
<td>%/d</td>
<td>0,37</td>
<td>0,27</td>
<td>0,24</td>
<td>0,22</td>
</tr>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>37 bar</td>
<td>%/d</td>
<td>0,39</td>
<td>0,29</td>
<td>0,26</td>
<td>0,23</td>
</tr>
<tr>
<td>Max. withdrawal rate LOX-sinle flat fin³</td>
<td>Nm³/h</td>
<td>470</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Max. withdrawal rate LOX-double flat fin³</td>
<td>Nm³/h</td>
<td>940</td>
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<tr>
<td>Weight, empty</td>
<td>18 bar</td>
<td>Kg</td>
<td>2,980</td>
<td>4,320</td>
<td>5,750</td>
<td>6,440</td>
</tr>
<tr>
<td></td>
<td>22 bar</td>
<td>Kg</td>
<td>3,090</td>
<td>4,500</td>
<td>5,980</td>
<td>6,720</td>
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<tr>
<td></td>
<td>37 bar</td>
<td>Kg</td>
<td>3,520</td>
<td>5,160</td>
<td>6,880</td>
<td>7,830</td>
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<tr>
<td>Diameter (D)</td>
<td>mm</td>
<td>D1 = 1,800</td>
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<tr>
<td>Overall width (A)</td>
<td>mm</td>
<td>2,000</td>
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<tr>
<td>Overall depth (B)</td>
<td>mm</td>
<td>2,150</td>
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<td></td>
</tr>
<tr>
<td>Height (H)</td>
<td>mm</td>
<td>3,990</td>
<td>5,830</td>
<td>7,660</td>
<td>6,440</td>
<td>8,400</td>
</tr>
</tbody>
</table>

**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)
**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
K - Evacuation port
L - Vacuum gauge port
LFD - Liquide withdrawal *(Tanks VT3-VT9)*
* - Liquide withdrawal *(Tanks VT11-VT60)*

**Options**

P.1.1 Safety shut-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 divertor
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)

<table>
<thead>
<tr>
<th>VT 25</th>
<th>VT 20</th>
<th>VT 26</th>
<th>VT 31</th>
<th>VT 37</th>
<th>VT 43</th>
<th>VT 32</th>
<th>VT 41</th>
<th>VT 50</th>
<th>VT 60</th>
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<tr>
<td>24 970</td>
<td>20 130</td>
<td>26 110</td>
<td>32 080</td>
<td>38 060</td>
<td>44 030</td>
<td>32 290</td>
<td>41 630</td>
<td>50 960</td>
<td>60 300</td>
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<tr>
<td>23 720</td>
<td>19 120</td>
<td>24 800</td>
<td>30 480</td>
<td>36 160</td>
<td>41 830</td>
<td>30 680</td>
<td>39 550</td>
<td>48 410</td>
<td>57 290</td>
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<tr>
<td>19 170</td>
<td>15 460</td>
<td>20 050</td>
<td>24 630</td>
<td>29 220</td>
<td>33 800</td>
<td>24 790</td>
<td>31 960</td>
<td>39 120</td>
<td>46 290</td>
</tr>
<tr>
<td>27 090</td>
<td>21 840</td>
<td>28 330</td>
<td>34 810</td>
<td>41 300</td>
<td>47 770</td>
<td>35 040</td>
<td>45 170</td>
<td>55 290</td>
<td>65 420</td>
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<tr>
<td>33 350</td>
<td>26 880</td>
<td>34 870</td>
<td>42 840</td>
<td>50 820</td>
<td>58 790</td>
<td>43 120</td>
<td>55 590</td>
<td>68 050</td>
<td>80 520</td>
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<td>0.17 0.15 0.14 0.13 0.13 0.13 0.13 0.12 0.11 0.11</td>
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<td>0.18 0.16 0.15 0.14 0.14 0.14 0.14 0.13 0.12 0.11</td>
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</tbody>
</table>

670 |
1 340 |
3 400 |
3 1200 |

D3 = 2 500 |
D4 = 3 000 |

2 500 |
2 800 |
2 800 |

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
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 – 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