

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Seamless Gas Bottle

with type designation(s)
LA 2-0887/a

Issued to

VÍTKOVICE CYLINDERS a.s.
Ostrava-Vítkovice, Czech Republic

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.7 Pressure equipment
Offshore Standard DNV-OS-D101, Marine and Machinery Systems and Equipment

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Loading pressure: 330 bar
Operating media: Oil / Nitrogen
Test pressure: 495 bar
Filling ratio

This Certificate is valid until **2021-06-30**.

Issued at **Høvik** on **2016-07-15**

DNV GL local station: **Czechia**

Approval Engineer: **Zeinab Sharifi**

for **DNV GL**

Marianne Spæren Marveng
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Job Id: **262.1-013078-2**
Certificate No: **TAP00000E2**

Product description

LA2-0887/a

Gas-loaded accumulators, designed according to EN14359.

Water capacity (Liter)	External Diameter (mm)	Length (mm)	Minimum cylindrical shell thickness (mm)
10 to 50	226.2±1%	410 to 1740	10.5

Material:

Chrome-molybdenum steel 34CrMo4 with minimum guarantee values 755 MPa and 860 MPa for yield strength and tensile strength at room temperature respectively.

Application/Limitation

Design Data :

- Design Pressure: 330 bar
- Test Pressure: 495 bar
- Design Temperature: - 50°C / 150°C
- Corrosion Allowance: 1 mm
- DNV GL Pressure Equipment Class: I
- Maximum Load Cycles: 3159 cycles between 0 – 330 bar
More than 2000000 cycles between 0 – 90 bar.

Only strength of accumulator bodies is evaluated. Strength and performance of oil (gas) ports, split collar and diaphragm are not assessed in this Type Approval Certificate.

All used material shall fulfil requirements in EN 14359 clauses 4.1 & 4.2.

The material used shall have material certificates according to DNV GL Rules Pt.4 Ch.7 Sec.2 Table 1.

Each seamless gas bottle shall be hydraulically pressure tested to 495 bar.

Each seamless gas bottle is to be certified by a DNV GL Surveyor.

All manufacturing, workmanship and testing shall be done in accordance with EN 14359.

Each seamless gas bottle shall be protected on both sides by a safety device such as relief valve, fuse plug or rupture disc to prevent excess pressure if overheated. When it is an integral part of a system with such a safety device, the seamless bottle itself need not be supplied with a safety device.

Type Approval documentation

Drawing/doc. No.	Drawing/doc. title	Rev. no.	Date	Status
LA 2-0887	GA-drawing of body, Tye approval 10-50L	-	2012.01	Type Approved
Draw.Nr.: LA2-0887	Calculation according to EN 14359:2006	-	2012.02.14	Used for information

Marking of product

Each cylinder is to be permanently marked on the shoulder or on a reinforced part of the cylinder or on a permanently fixed collar or neck ring, in accordance with ISO 13769.

Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform a survey - every second year and before the expiry date of this certificate - to verify that the conditions for the type approval are complied with.