

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Seamless Gas Bottle

with type designation(s)
SB330

Issued to

HYDAC Technology GmbH
Sulzbach Saarland, Germany

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.7 Pressure equipment

DNVGL-OS-E101 – Drilling plant, Edition July 2015

DNV GL standard DNVGL-ST-0378 – Standard for offshore and platform lifting appliances

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: Mineral oil, synthetic and non-flammable fluid emulsions / Nitrogen

Test pressure: 472 bar

Filling ratio 1 - 50 l (depending on type)

Issued at **Høvik** on **2017-12-19**

This Certificate is valid until **2022-12-18**.

for **DNV GL**

DNV GL local station: **Essen CMC Southern Germany**

Approval Engineer: **Iselinn Vindstad**

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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.



Product description

Seamless gas bottle as bladder accumulator body designed according to EN14359:2017.

Type	Volume	Inner Diameter	Length	Min. shell thickness
SB330-1	1 l	100 mm	195±5 mm	6.3 mm
SB330-2.5	2.5 l	100 mm	400 +5/-10 mm	6.3 mm
SB330-5	5 l	100 mm	743±10 mm	6.3 mm
SB330-4	4 l	150 mm	283±5 mm	8 mm
SB330-6	6 l	150 mm	400±10 mm	8 mm
SB330-10s	10 l	150 mm	676±10 mm	8 mm
SB330-10	10 l	198 mm	410±12 mm	10.25 mm
SB330-13	13 l	198 mm	525±15 mm	10.25 mm
SB330-20	20 l	198 mm	715±20 mm	10.25 mm
SB330-24	24 l	198 mm	880±20 mm	10.25 mm
SB330-32	32 l	198 mm	1230±20 mm	10.25 mm
SB330-50	50 l	198 mm	1740±20 mm	10.25 mm

Part	Material
Body	34CrMo4* (1.7220) EN 10083-3
Gas valve body	1.8935** (DIN EN 10273) / 1.4313* (DIN EN 10272) / 1.4462 (DIN EN 10272)
Valve body	
Anti extrusion rings	

DNVGL Vessel class : I
Corrosion allowance : 1mm
Number of load cycles ($\Delta P = 155$ bar): 2 000 000
Design temperature: -40° C to +100° C

Application/Limitation

Each accumulator shall be hydraulically pressure tested to the above mentioned test pressures in the presence of a DNV GL Surveyor.

Each accumulator is to be certified by a DNV GL Surveyor.

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

For accumulators certified according to DNVGL-OS-E101 special attention to DNVGL-OS-E101 Ch. 2 Sec. 2 [2.8] is to be made.

All materials shall and be delivered with certificates as per DNVGL-RU-SHIP Pt. 4 Ch. 7 Sec. 1 Table 5. For accumulators certified according to DNVGL-ST-0378 and/or DNVGL-OS-E101, 3.1 material certificate is sufficient for pressurized parts.

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

Type Approval documentation

Tests carried out

N/A

Marking of product

Each pressure equipment shall be permanently and legibly marked on the pressure part or on a nameplate permanently attached to a principal pressure part to show its identity and origin.

The marking of pressure vessels shall show at least the following particulars:

- manufacturer's name and address
- type designation and serial number
- year of manufacture
- maximum allowable working pressure
- hydrostatic test pressure.

Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with.