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# Installation and Repair Manual

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Bladder Accumulator SHBS/HBS

GB

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## Installation and Repair Order Bladder Accumulator SHBS/HBS

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### General remarks

This installation and repair manual for the bladder accumulator SHPS/HBS assumes that the operating instructions are taken into account. The installation and repair instruction only serves as additional information.

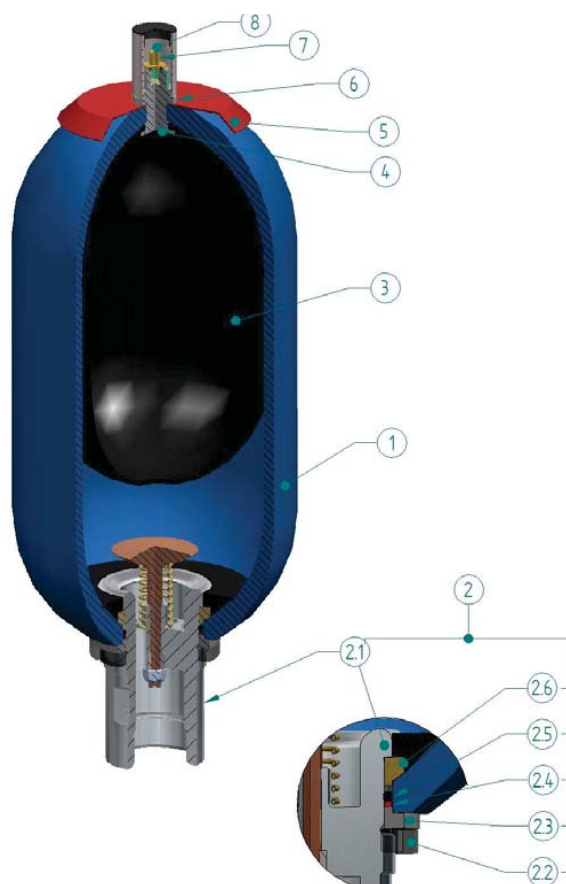
The standard bladder accumulator SHBS/HBS has been designed, manufactured and tested in accordance with the European Pressure Equipment Directive PED 2014/68 /EU. International regulations or special applications may require c.c. Special acceptances and / or further instructions (ATEX storage no. RL2014 / 34 / EU).

**Strict adherence to the instructions and recommendations are provided in this document and all other relevant documents are absolutely necessary to operate the accumulator. The supplier assumes no responsibility for direct or indirect property damage or other personal injury as well as for consequential damage, as follows: operational failure resulting from non-compliance with the following instructions.**

For commissioning and operation, all instructions must be followed and according to the valid, national requirements of the installation site. The adherence of the current instructions underlie the responsibility of the operator. The documentation supplied with the hydraulic accumulator must be stored carefully. They are necessary for operation, audits and inspections.

**Work on hydraulic accumulators may only be carried out by qualified personnel.** Improper handling can result serious or even fatal accidents.

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Pos.	Art. group	Designation	Pcs	Drawing	Material
1	HBS-K	Shell	1	EPU_100100_A	Carbon steel
2	HOV	Fluid valve complete	1	EPU_100102_A	Carbon steel /Stainless steel*/Elastomer
2.1	HOV-K	Valve corp assembled	1		Carbon steel /Stainless steel*
2.2	HOV-M	Lock nut	1		Carbon steel/Stainless steel*
2.3	HOV-Z	Spacer	1		Carbon steel/Stainless steel*
2.4	Typ 90	Backup ring	1		PTFE
2.5	R00_	O-Ring	1		Elastomer
2.6	HOV-R	Divided ring	1		Carbon steel /Stainless steel*/Elastomer
3	HBS-B	Bladder	1		Elastomer
4	HGV-K	Valve corp	1		Carbon steel/Stainless steel*
5	HBS-T	Name plate	1		Aluminum/Carbon steel
6	HGV-M	Holding nut	1		Carbon steel/Stainless steel*
7	HGV	Gas charging valve	1		Carbon steel/Stainless steel*
8	HGV-S	Protection cap	1		Carbon steel/Stainless steel*/Plastic

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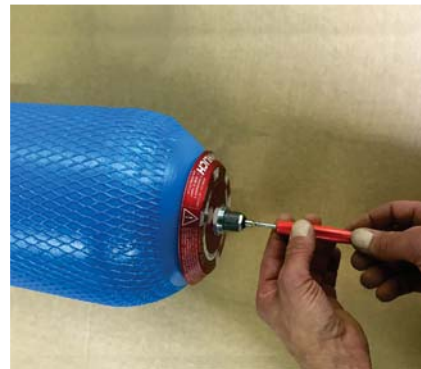
### a) Disassembly of the systematically removed bladder accumulator

1) Remove the outer protective cap and the protective cap of the gas filling valve. Release the pre-charge pressure in the bladder with the testing and filling device. (Fig. 1) Handling of the testing and filling device according to the accompanying operating instructions (!).

2) After ensuring that the accumulator is depressurised (!) on the gas and system side, the gas valve insert is turned out with a valve wrench. (Fig. 2)



(Fig. 1)



(Fig. 2)

3) Release the nut of the gas filling valve body and remove the company nameplate. (Fig. 3)

4) Attachments (flanges, adapters, etc.) are to be disassembly on the liquid side.

**Optional:** On liquid valves with bleeder screw (special version!) the bleed screw including the sealing ring must be disassembly. (Fig. 4)



(Fig. 3)



(Fig.4)

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5) With completely discharged accumulator (discharge of the gas and liquid side) the liquid valve plate is opened. (Fig. 5)

If this situation does not exist, the liquid valve could still be pressurized (Caution - danger!). If necessary, the repair should be carried out by the manufacturer.

6) Release the locknut and remove the spacer (Fig. 6).



(Fig. 5)



(Fig. 6)

7) Gently push the liquid valve into the accumulator body and remove the O-ring.(Fig. 7)

8) Release the split retaining ring (rubber-steel ring) from the liquid valve body, gently fold and pull out of the container.(Fig. 8)



(Fig. 7)



(Fig. 8)

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9) Remove the fluid port from the accumulator body. Carefully remove the bladder through the opening of the liquid side. (Fig. 9)



(Fig. 9)

### Cleaning and inspection:

- Thoroughly clean all metal parts of the accumulator and dry with compressed air.
- Check the inside of the shell for damage.
- Press the poppet valve to check the functionality of the valve.
- Check that the locknut of the valve lifter is tight.
- Check that the O-rings are worn or otherwise damaged. Replace.
- Check if the bladder is damaged, replace if necessary.
- Under no circumstances try to repair the bladder.
- All worn or damaged parts must be replaced with original parts.
- As a general rule, it is recommended to change out the bladder and seals during service.

### b) Assembly of the bladder accumulator:

#### Preparation of parts:

- Configure of the part-specific components acc. the underlying bill of material.
- The accumulator shell, bladder and all assembled parts have to be checked for cleanliness before installation.
- The poppet valve shell of the oil valve must be checked for functionality and movement by pressing
- The accumulator body have to be checked visually for contamination, scoring and rough unevenness, as well as corrosion inside the body and at the sealing surfaces (connections gas / oil side).
- In addition, the bladder have to be visually inspected to check its general condition

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### c) Assembly process:

1) After visual inspection, the accumulator shell is wetted inside with plenty of hydraulic oil, or fluid compatible with system fluid.

2) Thereafter, the bladder is slightly folded in the upper range and inserted through the oil-side connecting passage. (Fig. 1)

Especially for accumulator bodies with larger volumes, the use of a suitable pulling rod is recommended as an assembling aid.

3) After the gas valve body of the bladder has been passed through the connection passage gas-side, the bladder is first loosely attached by means of a union nut including the nameplate on the gas valve body. (Fig. 2)



(Fig. 1)



(Fig. 2)

By compressed air, the bladder is gently unfolded to ensure that the bladder does not twisted or folded (!).

4) Thereafter, the fluid port (oil valve) will be squeezed into the oil valve opening of the accumulator body. (Fig. 3)

Subsequently, the split ring (retaining ring consisting of 2 metal rings + rubber ring) will be inserted into the shell and pushed onto the liquid valve. The fluid port must be pulled outwards so that it fits snug against the inside shell wall.



(Fig. 3)



(Fig. 4)

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5) The fluid port is completed with the O-ring, support ring, spacer ring and locknut (please keep the order!). After screwing on the locknut, center the parts by carefully slapping the fluid valve from different sides with a plastic hammer and at the same time screwing the locknut on the external thread of the fluid valve by hand. (Fig. 4)  
Then tighten the locknut with a suitable tool.

Optional: For fluid ports with bleed screw:  
Install bleed screw with sealing ring on the fluid valve. (Fig. 5)



(Fig. 5)



(Fig. 6)

6) Secure the nameplate and retaining nut on the gas valve body with a suitable and calibrated torque wrench. The tightening torque of the retaining nut is 100 Nm.  
Then the gas filling insert should be screwed in with a valve wrench and fixed appropriately (0.45 Nm). (Fig. 6)

7) Screw on the testing and filling device and carefully fill the bladder with nitrogen under a pressure of about 1 - 1.5 bar until the poppet valve in the fluid port is closed.  
(Handling of the testing and filling device according to the operating instructions!)

8) Check the tightness of the gas valve by using a leakage search spray. Install small protection cap for gas valve body and install outer protective cap.

9) In order to avoid contamination of the accumulator interior, a protective cap at the internal thread of the fluid port, must be installed if the accumulator shall be stored.

### Final inspection:

- Visual inspection, regarding the completeness of the hydraulic accumulator