General Instructions & Operating Manual for

Stroke-Limiter HBKH

1. General

- The General Instructions & Operating Manual for Ball Valves (No. 75-007-074) have to be observed!
- These instructions are designed to assist the user (=operator) during installation, operation and maintenance of ball valves. These instructions apply only to the ball valve itself, not for other mounted parts (actuator, solenoids, position switch etc.). Refer to the instructions of the respective manufacturer.
- The instructions and safety warnings of the Operation Manual have to be read carefully. Retain the operating manual. Questions to installation and handling will be answered by the manufacturer. For damage caused by incorrect handling, the manufacturer assumes no liability or warranty.
- Ball valves are to be used only for the application declared by the manufacturer! For damage caused by incorrect installation or implementation as well as incorrect handling by unqualified personnel, the manufacturer of the ball valve assumes no liability. The operating distance of ball valves is strictly from stop-pin to stop-pin.
- Follow and control the instructions of this manual to avoid physical or material or environmental damages and personal injury or death.
- Qualified personnel are necessary to the application of this manual. It is the responsibility of the operator or planner to ensure that national regulations for accident prevention such as local safety regulations of the operating company has to be observed.
- Safety warnings:

Danger!
Ignoring this information may cause physical or material damages and could cause personal injury or death.

2. Technical Information, Safety Warnings

Danger!
Follow the instructions below to avoid property damage and personal injury.

- The standard stroke-limiters are designed for temperatures between –20°C and +60°C. Semifluid or hardening media must not be used. Contaminated media lead to damage of the sealing elements. Leakage will lead to breakdown of the stroke-limiter. Exceeding the nominal pressure and exceeding or undercutting the working temperature leads to leakage and destruction of the stroke-limiter.
- The operator or planner must take into account different operating pressures. The pressure values listed in the catalogue are static pressures (loading case I). The operating pressures must be reduced for turgescent and alternated pressures (loading cases II and III). The operator or planner must take into account that the operating pressure of the stroke-limiter decreases with increasing temperature.
- When stroke-limiters come into operation in explosive zones, they are considered as non-electrical equipment, because there is no ignition source acc. to EC directive 2014/34EU and therefore stroke-limiters are not subject to ATEX. In explosive zones the number of duty cycles is limited to 10 per minute to avoid self-heating.
- In case of malfunction the stroke-limiter has to be replaced by qualified personnel.
- When draining the depressurised pipe system, in order to prevent it from frost damage or for a cleaning process, the cavity of the stroke-limiter has to be drained by opening the valve to the mid-position (45°).

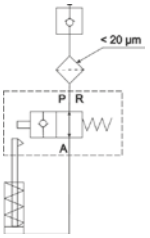
3. Transportation and Storage

- Protect against external forces (shock, vibration etc.).
- Do not damage the surface (corrosion-protection).
- Storage– and transport-temperature: -20°C to +60°C, dry and free of dirt.
- Bulk stroke-limiters must be protected against direct UV-rays and/or solar radiation.

4. Intended use

Danger!
Follow the instructions below and in the other chapters to ensure proper function of the stroke-limiter.

Typical applications are i.e. tip cylinders on trucks, agricultural machinery, lifting platforms. The stroke-limiter consists of a check valve operated in reverse direction and in parallel of a stroke-limiter with spring return function. In the initial position the stroke-limiter opens port P/R to A. Energising the pump the piston extends. The stroke-limiter is connected with its handle to the piston-rod. Energising the pump the piston extends and closes the port A. If port A is closed the piston will stop.
Shut-off the pump will unload the pipe to port P/R and, caused by the differential pressure on port A, the swimming ball opens to the tank (opening pressure <= 5 bar). The piston retracts and the spring returns the stroke-limiter to its initial position.



Operating Requirements, Installation Instructions

Danger!
To avoid damages of the stem and leakages, the operating angle has to be limited to 90°.
Operating elements installed by the customer must avoid overtravel and resulting forces to the handle in the end positions.

- To avoid damages of the spring and the stop-detent it is forbidden to operate the ball valve without pressure.
- Allowable working temperature: -20°C to +60°C.
- The maximum allowable working pressure is 350 bar.
- Allowable media are hydraulic oils HLP 30-46. The maximum particle diameter is limited to 20µm. We recommend strictly to use a filter!
- Avoid shearing forces on the handle!
- Pay attention to the position of the valve relative to the flow direction. Note arrows on stroke-limiter body.
- Protect the stroke-limiter against environmental impact.
- Ensure that additional safety devices are installed to avoid physical or material damages and personal injury or death caused by malfunction of the stroke-limiter.
- Consider the guideline 2006/42EU when operating an application with this stroke-limiter.
- The stroke-limiter is not designed for permanent, high cycles of operation. For applications and operating conditions not described contact the manufacturer.
- Parts subject to wear as i.e. spring, ball seats, o-rings, and other sealing materials are not covered by the warranty.
- The safety related design of any application of the stroke-limiter, i.e. breakdown of the spring, is under the responsibility of the user.

5. Installation

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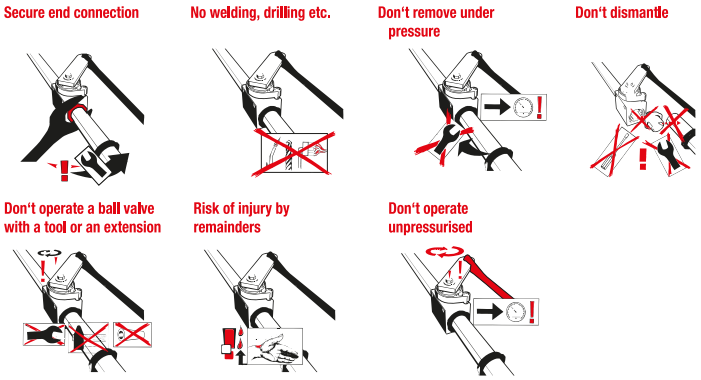
See also chapter Technical Information, Safety Warnings.

- Stroke-limiters must be reviewed for damage before installing. Damaged stroke-limiters must not be installed.
- Check, if the stroke-limiter meets all the requirements regarding version and application (see also marking on stroke-limiter).
- The installation of stroke-limiters has to be done by qualified personnel only when pipe (and stroke-limiter) are depressurized. Start-up by third party must be excluded.
- The pipe system and the stroke-limiter has to be drained completely, when dealing with noxious, combustible or explosive media. If necessary vent the pipe system.
  Danger of poisoning, burns danger, corrosive fluids danger caused by dropping residues! Wear protective clothes! Cool down pipe system.
- Remove protection caps from stroke-limiter connections.
- The stroke-limiter must be free of dirt.
- All pipes and hoses must be rinsed before installing the stroke-limiter. Impurities in the pipe system damage the sealing elements and cause leakage and malfunction of the stroke-limiter.
- Ensure installation of stroke-limiter in pipe system without tension and torque. Do not use the valve as a step or fixation point. Only piping supports it.
- The stroke-limiter and the accessories (spring and handle) must not be used as a fixing point of external forces (e.g. stair, fixing point for hoisting devices).
- The operating position of the stroke-limiter must be in accordance to the layout of the pipe system.
- Pressure rating, connections and overall-length of the pipe system must be in accordance with the stroke-limiter.
- When tightening the fittings (customer connections) it is absolutely necessary that the end connection of the stroke-limiter is counter-secured with an adequate tool, see figures.
- The end connections of the stroke-limiter must not be tightened or unscrewed, because this will increase the operating torque or will cause leakage.
- Any modification of the stroke-limiter design as drilling of mounting holes or attachments of plates by welding etc. is strictly forbidden! Such modifications could cause leakage and malfunction of the stroke-limiter.
- Tools such as gripper, hammer, wrench, extensions etc. are inapplicable for stroke-limiter operation. The use of such tools might cause damage to the stem and housing of the stroke-limiter. It is strictly forbidden to operate stroke-limiters with brute force.



6. Initial Operation, Operation

Danger!
Ignoring this information may cause physical or material damages and could cause personal injury or death. See also chapter Technical Information, Safety Warnings and Installation.

- Before the initial operation and after each inspection the proper function of the stroke-limiter has to be checked by qualified personnel only.
- Before the initial operation all instructions must be read. Check the installation work done and that the stroke-limiter meets the requirements of the application.
- The pipe system must be vent. Air bubbles in the pipe system might cause explosions when pressurised abruptly, so decrease pressure slowly.
- If stroke-limiters are installed as pipe-line-ends the open stroke-limiter connection must be closed properly to avoid the danger of flying shrapnel due to handling errors.
- Burns danger when operating stroke-limiter with high or deep media temperatures. Check allowed operating temperature, observe security warnings and wear protective clothes. If necessary cool down pipe system and stroke-limiter.
- After a long-time storage or long shutdown-time in one operating position, the operating torque for the first operation could be much higher compared to the real breakaway torque.
- When installed in explosive zones the operation frequency is limited to 10 cycles per minute to prevent the valve from self warming.
- Danger of flying shrapnel! Exceeding or undercutting the allowed working pressure and temperature could cause leakage and destruction of the stroke-limiter.
- Check proper function of the stroke-limiter by at least one full operating cycle. Refer to the operation manual of the respective manufacturer if an actuator is mounted onto the stroke-limiter.

7. Maintenance, Inspection

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Check stroke-limiters periodically of function, leakage and damages (at least every 2 months). At extreme stress inspections have to be carried out in shorter time intervals. Stroke-limiters are maintenance-free.
Defective stroke-limiters (leakage, immovable or corroded) must be replaced immediately by qualified personnel.
Dismantling and repair of stroke-limiters are not allowed. A repair is realisable by the manufacturer only! Provisionary seals at stroke-limiters are not allowed!

8. Removal Instructions

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The stroke-limiter must be removed by qualified personnel at depressurised and drained stroke-limiter and pipe system.

- Shut-off the application. Start-up of the application by third party must be excluded.
- The stroke-limiter must be in mid-position (45°) in order to drain the pressure and remainders in the stroke-limiter housing.
- Burns danger when operating stroke-limiter with high or deep media temperatures. Check allowed operating temperature, observe security warnings and wear protective clothes. Cool down pipe system and stroke-limiter.
- The pipe system and the stroke-limiter has to be drained completely, when dealing with noxious, combustible or explosive media.
  Danger of poisoning, explosion, corrosive fluids danger caused by dropping residues! Wear protective clothes! Decrease pressure slowly. If necessary vent pipe system.

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