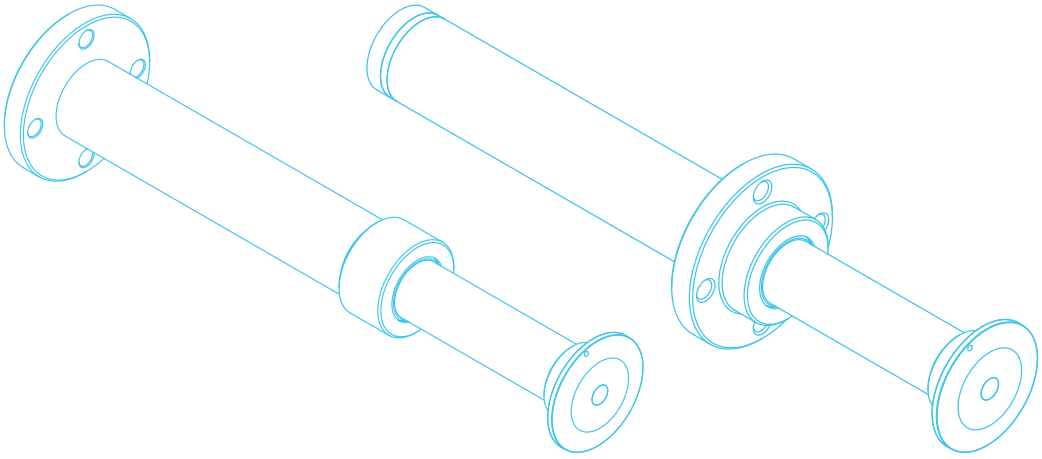
Installation and Maintenance Instructions

CERTUS

HYDRAULIC BUFFER



KHP 75 - 175

KARL GEORG

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1. Applications

The hydraulic buffers were designed for use in all applications in general engineering, the iron and steel industry, the material handling industry and can also be used on railways applications.

The KHP is an entirely closed hydraulic buffer system and can therefore be used in any orientation on an application.

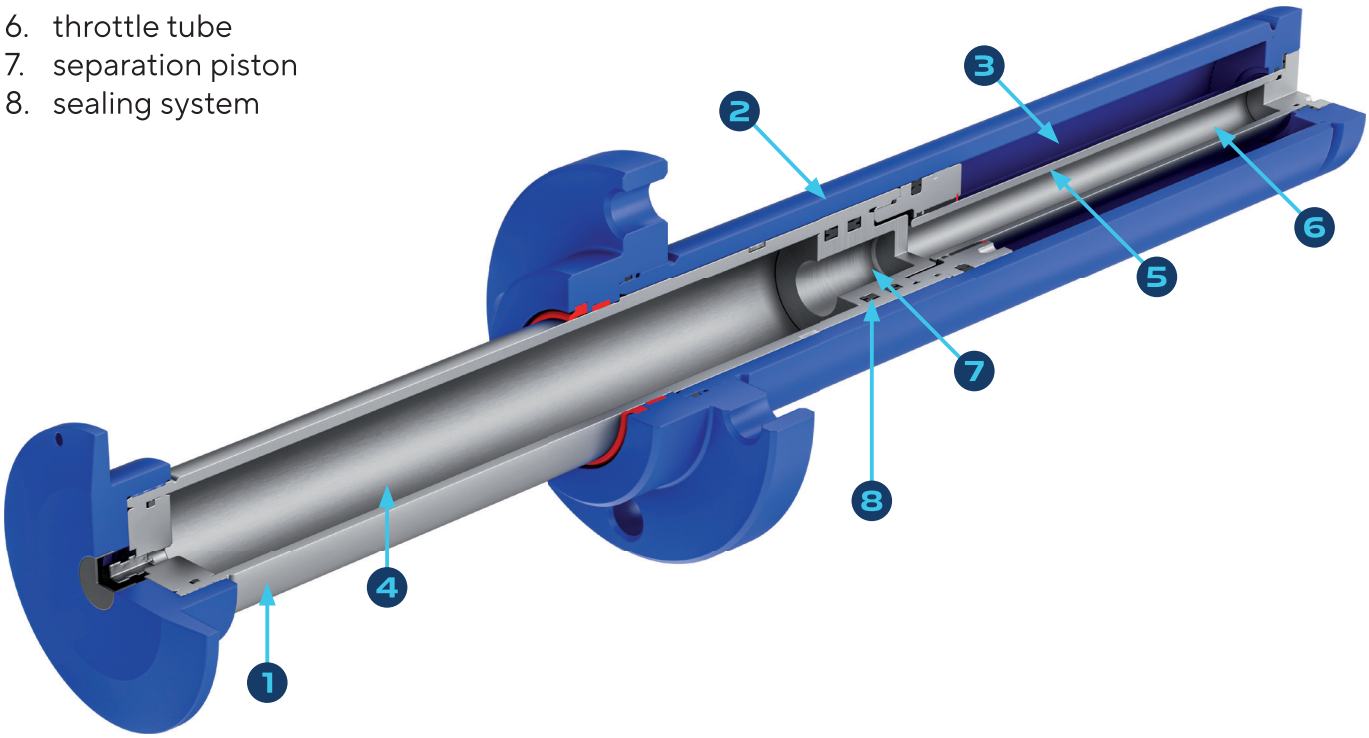
The KHP will arrest moving masses in the shortest possible distance with minimum force. One of the special features of the buffer of this series is their heavy duty construction. Another is the ability of the KHP to universally adapt its performance to match the energy in the impacting mass. The modular design of this series makes it possible to select precisely the right buffer to suit the application conditions.

KHP hydraulic buffers are available with diameters of 75mm to 175mm and strokes of 50 mm right up to 1600 mm. The buffer can be equipped as standard with different flange types. Optionally front mounted flange or back mounted flange. Special mounting systems can be supplied if required!

2. Operating Principle

In case of collision a hollow piston rod (1) with integrated gas reservoir (4) is compressed into a heavy duty cylinder (2) containing hydraulic oil. The hydraulic oil is thereby forced through a series of choke (5) into the throttle tube (6). The oil flowing forward into the hollow piston rod forces a separating piston (7), which seals the gas from the oil, along the inside of the hollow piston rod thus compressing the gas.

1. hollow piston rod
2. hydraulic cylinder
3. hydraulic oil
4. gas reservoir
5. choke
6. throttle tube
7. separation piston
8. sealing system



The resistance of the flow of the oil through the choke, and thus the pressure in the cylinder, is a function of velocity. As the piston rod is compressed into the cylinder the choke are progressively closed off in such a way that the pressure in the cylinder is maintained at a constant or predetermined level.

At the end of the stroke the buffer recoils under the influence of the compressed gas acting on the separating piston which forces the oil back through the choke into the hydraulic cylinder while piston rod moves into the end position.

The static resistance force of the buffer is proportional to the gas pressure - it is a function of distance by which the piston has been pushed into the cylinder.

While acting the buffer with slow speed, the approach can be extended by the stroke exceptionally. At this range of the buffer stroke the impact works just against the static resistance which results from the compressed gas.

The normal operating temperatures range is from -30 °C to 100 °C but the operating conditions of the buffer must also be taken into consideration.

Buffers for higher impact velocity and operating temperatures are available if required!

For reasons of corrosion and wear protection the piston rod is double hard chrome plated with a deposition thickness of 40 µm. The buffer itself is usually protected by priming and finish coat with approx. 80 µm film thickness.

Standard colour RAL 5009. Another painting is suppliable on request.

3. Installation

KHP buffers are delivered ready for installation. The orientation of the buffer is optional since the buffer is a completely closed system.

Before installing the buffer the construction data and the location should be checked and compared with the data on the buffer identity plate. In case of deviation do not install the buffer!
Further the buffer should be examined for transport damage, particularly the range of the piston rod, and oil leakage.

It is essential that the buffers are aligned precisely to avoid exceeding the allowable levels of component forces at right angles to the axis of the buffer during impact. For more detailed information, please take a look at the buffer data sheet.

After installation the buffer should be examined one more time for damages resulting from installation.

4. Operation

We recommend that the first impact should not be made at maximum speed or maximum load. After several impacts the recoil of the piston should be checked as for gas leakage and tightness of the mounting bolts.

If there are no abnormalities seen, the buffer can be used with full load and speed.

After an unintentional or overloaded impact, the buffer should always be examined once again.

A permanent load, such as occurs when pushing a crane, is inadmissible and can damage the hydraulic buffer!

5. Maintenance

KHP hydraulic buffers are virtually maintenance free. However, the recoil and the surface of the piston rod should be examined regularly for damages. To check the recoil, the buffer should be impacted (50% of max. stroke). After impact the actual recoil must be measured. The distance “X” has to be conform with buffer stroke in mm.

If the piston fails to re-extend fully (“X”) after an impact, the gas pressure in the reservoir should be checked and compared with the pressure data on the buffer identity plate.

In case of an oil leak the buffer should be changed immediately.

A damage of the piston rod surface, such as grooves, would indicate an unintentional resp. not permitted buffer impact.

6. Checking and adjusting the gas pressure

WARNING:
THE GAS RESERVOIR IS FILLED WITH NITROGEN!

Under no circumstance should be oxygen or another inflammable gas be used
- Danger of explosion! -

If the piston rod does not fully re-extend following procedure has to be made:

- set free the gas filling valve, which is protected by a plastic cap located in the centre of the buffer head
- remove the protection cap from valve
- in case of need use an extension onto the valve.
- the gas pressure can then be measured with a suitable pressure gauge.

If the gas pressure is lower than the pressure indicted on the buffer identity plate (usually 5 bar), the gas reservoir should be recharged with Nitrogen.

7. Spare parts

Buffers are safety elements and therefore they should be replaced completely if there is any doubt on their correct operation.

KHP buffer which are returned to us for overhaul will be repaired when economically reasonable.

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Änderungen im Zuge der technischen Weiterentwicklung vorbehalten!

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