

Operating instruction for KLINGER SCHÖNEBERG ball valves, type INTEC and type Chemoball KH2F-CI

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1 Validity

This operating instruction is valid for the below listed ball valve series :

INTEC K100, K200, K400, K500, K600, K700, K800
Chemoball KH2F-CI

2 Predefined application and maximum load

Ball valves are valves with the function "open-closed". They may only be used at the permitted pressure and temperature for suitable media.



No safety can be guaranteed in the case of non-compliance of the allowed technical parameter as pressure or temperature or if media are used which are not appropriate for the material involved. The limits for pressure and temperature which are fixed in the respective technical data sheets must be kept, otherwise the operation leads to overload, which the valves do not withstand. The manufacturer doesn't take any responsibility in this case. Any appearing water impact mustn't exceed the at most permitted pressure. Corresponding protection measures have to be carried out!

The specified connected load, as well as the mounting- and maintenance instruction (including the instruction for actuators) must be met for valves with actuators.

3 Type and design

Operation: Ball valves are operated with hand lever, gear box or with pneumatic or electric actuator.

Connection: Possible connections of ball valves: flange connection, threaded ends or welded ends (see also the respective data sheet)



Special design: Please use a special design: at danger of an electrical charging, at contact with oxygen, on request of the leakage inspection; at freezing danger, at fire risk or at increased temperature requests.

4 Safety

4.1 Safety notes

- The non-compliance of these safety notes leads to the loss of any claim for damages.
- Beside our safety notes, national rules and regulations regarding the accident prevention, working-, operating and safety rules of the operator must be kept.
- For the use of valves, the recognized rules of the technology must be kept e.g. standards, code of practice, VDI- and VDE guide lines etc. Plants which must be observed are subject to decisive laws, instructions and technical rules.
- The operation of the ball valves should be carried out constantly and not too fast as jerky and fast movement (water impact) can lead to an overload of the system. Standard value for the closing time is $t(\text{sec.}) = \text{DN}(\text{mm})$.
- Heating or cooling should not be carried out too fast to avoid an overload of the material caused by an uneven distribution of the temperature.
- At the use of pneumatic or electromechanical actuators, the maintenance personnel must safeguard themselves as there is the danger of cramping and squeezing. Protection facilities shall be installed if necessary.

4.2 Working at valves

- Working at valves has only to be carried out in unpressurized and cooled condition. The evaporation temperature of the medium must fall below in every space coming into touch with the medium.
- Working at valves with actuator has only to be carried out in standstill condition. The procedure described in the operating instruction regarding the shut down, must absolutely be kept. Valves, coming in touch with media which are detrimental to health must be decontaminated.
- All safety- and protective devices must be installed or taken to function immediately after the work has been finished.

4.3 Staff

Technically trained staff is the prerequisite for operating the valves. KLINGER SCHÖNEBERG ball valves are manufactured according to the current state of the art and operationally reliable. However, if they are operated or not proper installed by untrained staff it can be dangerous, as the valves are comparable with pressure vessels. The following points must be taken into consideration.

- The staff must be technically trained.
- The operator must assure that the content of the operating instructions is fully understood by the staff.
- The staff for operation, inspection and assembly must be aware of the mutual reaction between valve and plant.
- Operating error of a valve can lead to emphatic consequences e.g.:
 - outflow of the medium
 - machine/plant down time
 - impairment (decrease/increase of the effect/function) of the plant/machine
 - fail of important functions of the valve/plant
 - fail of specified methods for maintenance
 - endangering of persons because of thermal, electric, mechanical and chemical influences
 - endangering of the environment due to leakage of dangerous substances.



Due to the wrong handling, leaving media can lead to injury to persons, to damage and alteration of the environment. Therefore, beside this operating instruction, relevant regulations of rules for prevention of accidents and technical rules must be taken into consideration.

4.4 Notes for the operator

- If hot or cold parts of the valve (e.g. parts of the body or hand lever) are a danger for the user, these parts must be safeguarded by customers against touch from the operator.
- Leakages (e.g. of the stem packing) of dangerous material to be conveyed (explosive, poisonous, hot), must be drained in that way that no endangering arises for persons and environment. Legal regulations have to be kept.
- Endangering due to electrical energy is to be excluded (details can be taken e.g. from the regulation of the VDE and the local electric supply company).

The KLINGER SCHÖNEBERG company will not take any responsibility for damage or plant disturb arising from the improper handling or non-compliance of this operating instruction and for amendments carried out without the agreement of the manufacturer.

5 Installation

5.1 Generals

With the help of a method of a pipe installation which is usual in the trade, the ball valves can be installed at any position. Please take care that the ball valves are accessible for the operation.

The flow direction is arbitrary (with exception of the variants with relief well). The ball valves can also be installed by changing the direction of the flow. Ball valves with specified flow direction have an indication via a direction sign.

Valves and pipes which are operated at high ($> 50^{\circ}\text{C}$) or deep ($< 0^{\circ}\text{C}$) temperatures must be protected from touch by an insulation, or corresponding warning plates must show the danger of touch.

For melting water or danger of icing in air conditioning plants, cooling- and refrigerating plants, a special and diffusion tight insulation of the complete valve possibly including the hand lever is necessary. If the ball valve gets covered by ice, there is the danger that the valve can not be operated anymore. Special types for low temperatures must be required in the inquiries.



If a ball valve is installed in the pipe as an end valve, the valve must be safeguarded with suitable measures against unauthorized or unintended opening, as there is danger of injury when closing the valve and damage or injury to persons shall be avoided.

During the installation no static or dynamic power may affect the ball valves. The ball valves may not be used as a fixed point of the pipe. Harmful tie force, force of pressure of lateral power must be kept away from the valves to avoid leakages and break of the body. The plastic caps have to be removed shortly before the installation of the ball valves. The pipe must be washed to remove dirt, forge, wire edges, zinc- and welding residues, since otherwise the ball or the sealing can be damaged.

5.1.1 Ball valves with flange connection

During the installation one must keep a special eye on the parallelism of the pipe flange as well as on an exact snug fit. Only suitable screws, nuts and sealing should be used. If necessary, current installation notes as well as media- and temperature compatibility have to be taken into consideration when the sealings will be installed. The sealings must be well centred. The screws must be tightened cross-



wise with specified torque.

5.1.2 Ball valves with threaded ends

Connection according to EN 10226-1: The connection to the pipe will be achieved by a cylindrical Whitworth – female thread according to EN 10226-1. It is a system at which the sealing is in the thread of the pipe thread. Fittings or pipes with a tapered male thread and a suitable sealing shall be used as a counterpart.

Connection according to EN ISO 228-1: The threaded joints have a cylindrical Whitworth – female thread according to EN ISO 228-1. This is a system at which the sealing is not in the thread of the pipe thread. Fittings or pipes with a cylindrical male thread and a sealing are required as counterparts. The sealing has to be installed between the bearing surface of the flange sleeve and the plain fore part of the counter part and must be pressed. The sealing surface must be metallically clean and dry. Suitable sealings have to be used (please follow the media- and temperature compatibility) and the applicable installation notes have to be taken into account.



The body of the ball valves has a mounted hexagon on both sides. Because of that, the ball valves must be kept in the required installation position with a suitable tool and the screwing force can be reversed laterally.

5.1.3 Ball valves with welded ends

The ball valves are suitable for gas welding process and arc welding. The tightness can only be guaranteed when the welding is carried out professionally.

Extended welded ends

The face to face dimension has been selected in that way that by professional welding the complete valve can be welded. The following points must be taken into consideration:



- Installing the ball valves with at least 3 welding spots (staggered by 120 °) into the pipe.
- Welding process – colour changing pencils are recommended. The temperature during pre-heating and welding process must not exceed 200°C in the area of the body edge. A cooling during the welding is useful.
- After the weld seam is cooled down, the body screwing must be tightened with the defined torque (see corresponding data sheet)
- Functional testing

Short welding ends:



- Installing the ball valve with at least 3 welding spots per connection (staggered by 120°) into the pipe.
- Dismantling the ball valve and mounting a spacer block instead of it.
- Connections must be welded completely and cooled down
- Remove spacer block and assemble the ball valve, please take the defined torque of the body connecting bolt into account. (see technical data sheet)
- Functional testing

5.2 Valves with actuators

5.2.1 General notes



The connection of electrical cable may only be carried out by trained staff. The regulations according to VDE 0100 and VDE 0165 (explosion proofness) must be taken into consideration. All electrical equipment like actuator, switch box, solenoid valve, limit switches etc. must be installed safe against flooding in dry rooms. Voltage and frequency must correspond to the details on the name plate. Should the user want to fit a self automation, the mechanic stopper of the valves must be removed.

5.2.2 Functional testing

The turning off function must be tested by repeated operation. The regulating distance (mechanical stopper) and regulating power (torque limiting) must be adjusted at valves with electrical and pneumatic actuators. The operating manual of the manufacturer of actuators shall be noticed here.

6 Operation

Opening as well as closing is carried out by a turning of the hand lever or the stem by 90°. The valve closes with a turning to the right side (clockwise). The ball valve is open if the hand lever is in parallel to the pipe. If the hand lever will be removed, the double "D" shows the condition. (Ball valve is open when the double "D" is in parallel to the pipe) Ball valves are not applicable to control the volume flow. The operation of the hand lever should be carried out very slowly.



Using a highly expanded medium due to changes in the temperature, a relief from pressure must be carried out. Please take also the corresponding instructions into account. If you make a bore for relief from pressure, the ball valve can only be used in one flow direction.

If you have an application which is not provided like e.g. the permanent use in a throttling position, the consequence will be an increased wear. If the hand lever will be handled in an inappropriate way, e.g. by using a lever prolongation or the lever is used as a climbing help, the operability can not be guaranteed. An increased torque can be required if the valve is not operated for a long time. Regular operational checks are recommended to remedy this matter.

If the surface is damaged by beat or friction, corrosion and thus an impairment of the durability can be the consequence.

7 Storage and transport

Ball valves should be stored dry and protected against soiling. While loading/unloading as well as during the transport, the ball valves may not be thrown or pushed to avoid damages. Fallen covers must be cleaned and put on again. The ball valves are protected against corrosion from the manufacturer.



The ball valves must be stored in open position. The plastic protecting caps should not be removed. The ball valves must be protected against environmental influences like moisture, humidity, rain, dust, dirt, sand, mud, saliferous air or drizzle and salt water. During the storage the limit of the temperature of - 20°C till + 50°C should not fall below or exceed. Fast changes in temperatures should be avoided (volume of condensation water).

After a long storage, greasing is recommended (attention! Not for the oxygen type). Afterwards, the ball valves should be opened and closed at least twice.

Ball valves with single-acting actuators with safety position "fail safe closed" can be delivered in closed position. If necessary the valve must be cleaned before the assembly.



Special actuated valves with mounted solenoid valves and limit switches must be handled with special care. It is recommendable to remove the packing shortly before the installation. Weighty valves should not be bounded on hand lever or brackets and mounting kits.

8 Maintenance

At proper use the KLINGER SCHÖNEBERG ball valves are maintenance-free. A supervision of the operability and tightness should be carried out in regular intervals.

If a maintenance need is required, the following shall be taken into account:



Maintenance work has only to be carried out from trained staff. During the maintenance work, no remaining pressure should be on pipe and on ball valves in line. The ball valves must be opened and closed at least once to make sure that the clearance volume is not under pressure anymore.

In the case of leakage the screws must be tightened. Moreover, it is to be checked whether the ball valve is closed to 100%. If that is not the cause for the leakage, the ball valve must be dismantled (see our repair instructions).

9 Stopping and dismantling of ball valves

9.1 Generals

Liquids which change their condition due to the alteration of the concentration, polymerization, efflorescence, solidification or such things must be drained from the line system during longer stationary periods. When required, the line system including the ball valve must be washed.



Before the removal of the complete ball valve from the pipe or before repairs and maintenance work on the ball valve itself, the complete ball valves must be depressurized and cooled down in that way that the evaporating temperature of the medium fall below in all spaces coming in touch with the medium and scalds are excluded.

Dismantling on valves which are under pressure is hazardous!

If poisonous or easily inflammable media were used or media whose residues together with air moisture lead to corrosion damage, the valves must be drained off and washed or aerated.

Because of the fitting position, residual fluid in the valves must eventually be caught and disposed.

If necessary, protection suit as well as protecting mask must be worn.

Before the transport the valves must be washed and drained off carefully. If the ball valves were sent back, it must be free of contamination.

9.2 Actuators

If actuators, supplied with bulk supply, must be dismantled from the valves or even dismantled itself, the bulk supply must be switched off before starting with the work and the notes of the operating instruction of the actuator must be taken into account.

10 Inspection



Abrasion can damage the sealing. For that reason, the tightness of the ball valve must be checked regularly.

Please take the corresponding KLINGER SCHÖNEBERG repair instruction into account if the ball valve should be dismantled.

We reserve the right for design- and construction modifications which are necessary for the technical progress.

11 Marking of the ball valves (serial number marking)

All ball valves are marked with size DN, pressure PN, manufacturer and a year code letter followed by a running number. These letters are dedicated to the listed manufacturing date.

Z ⇒ 1996

Y ⇒ 1997

X ⇒ 1998

W ⇒ 1999

V ⇒ 2000

U ⇒ 2001

T ⇒ 2002

S ⇒ 2003

R ⇒ 2004

Q ⇒ 2005

P ⇒ 2006

N ⇒ 2007

M ⇒ 2008

L ⇒ 2009

K ⇒ 2010

I ⇒ 2011

H ⇒ 2012

G ⇒ 2013