BÖHMER

OUR EXPERIENCE – YOUR SAFETY

OPERATING INSTRUCTIONS

for ball valves

Please read these operating instructions carefully, in order to guarantee safe operation, and store them for further usage.

CE

Foreword

These operating instructions help you to use the ball valve in a *proper, safe and cost-effective* manner.

Target group of these operating instructions

These operating instructions are intended for the users of ball valves. They are expressly not intended for persons who plan the use of ball valves. Information for designing and selecting suitable ball valves can be found in the Böhmer ball valves catalogue.

The choice of material is predominantly influenced by the flow medium, the operating temperature, the rated width and the rated pressure. The information contained in these operating instructions is intended to be used by authorized, trained and familiarized personnel. We insist that these persons be equipped with general technical knowledge.

Each person who
- *transports,*
- *installs,*
- *removes,*
- *operates,*
- *services or*
- *disposes of*

the ball valve must have perused and understood all of the information contained in these operating instructions.

If you do not understand any of the information contained in these operating instructions, or if information is missing, please obtain this information from Böhmer GmbH.



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Introduction to the operating instructions

Explanation of the safety instructions

The operating instructions contain the following categories of instructions:

DANGER

Instructions containing the word DANGER provide warnings against personal injury.

ATTENTION

Instructions containing the word ATTENTION provide warnings against possible material or environmental damage.

These instructions contain special information regarding the cost-effective use of the ball valves.

Availability

If these operating instructions become lost or unusable, a new copy can be requested from Böhmer GmbH.

Supplements

Regularly supplement the operating instructions with instructions based on

- *legal regulations regarding accident prevention,*
- *legal regulations regarding environmental protection and*
- *employer's liability insurance association stipulations*

at the relevant point of usage.

The European Union and German safety regulations have been taken into consideration in these operating instructions

Presentation features

Various elements within the operating instructions have been marked with specified presentation features. This enables you to determine whether this involves a

standard text,

- *Lists*

or

■ action steps.

Fundamental safety instructions

Proper usage, operating ranges

Only use Böhmer ball valves for their intended application. Please refer to the Böhmer catalogue and the rating plate for the operating ranges and conditions.

The improper usage of a ball valve may lead to its becoming damaged and even to personal injury. An excessively weak ball valve design may, for example, lead to the ball valve‘s bursting. Proper usage also includes adherence to all of the information contained in these operating instructions. Böhmer accepts no liability for damage caused as a result of improper usage.

Note that the service life of the ball valve is influenced by the type of medium and impurities in the medium. For more detailed information, please refer to the Böhmer catalogue or speak to our customer service department (see page 23).

The planner is responsible for the
- *design,*
- *position,*
- *installation and operation*

of the fittings. In the event of inconsistencies, speak to your planning engineer or contact our customer service department.

Only install the ball valve in the “open” position (see position indication or switching spindle marking). In the case of ball valves with a switching handle, this points in the direction of the housing axis.

ATTENTION

Do not operate the ball valve in an intermediate position. The ball valve gaskets may otherwise become damaged.

Duties involved in handling these operating instructions

The owner of the ball valve is responsible for the constant availability of these operating instructions during operations involving the ball valve. Store the operating instructions in the vicinity of the ball valve.

CE identification

All Böhmer ball valves correspond to the valid EU stipulations. The CE identification can be found on the rating plate. For precise specifications, please refer to the Böhmer catalogue.

Safety instructions

ATTENTION

Note the specifications on the rating plate with regard to the application, pressure and media.

Further information in this regard can be found in the Böhmer ball valves catalogue.

DANGER

Risk of crushing!
Wear protective gloves during transportation and lifting operations!

DANGER

Certain media may lead to a risk of fire and explosion! Note the valid regulations and extinguishing instruction.

DANGER

Risk of burning!
Surfaces may become heated as a result of welding operations or hot media!

DANGER

Risk of corrosion and intoxication!

Inquire whather the media wich are being used are aggressive or toxic (poisonous)! If in doubt, notify your company‘s technical safety specialist.

DANGER

Warning: Possible damage to ears!
Wear ear protectors. A high level of noise may occur in the case of open systems or gaseous media.

Transportation, delivery, storage

Provide Böhmer ball valves with adequate protection against falling or tilting during transportation. Protect the ball valves against damage via suitable belts or wedges.

ATTENTION

During loading and unloading, the ball valves must not be thrown or subjected to hard impact.

Beware of the weight, especially in the case of larger ball valves.

Carefully attach the ball valve to lifting gear and secure it. Only use suitable and technically flawless lifting gear and lifting equipment with sufficient load-bearing capacity.

Ball valves as of a rated width of DN300 are equipped with lifting eyes for transportation using cranes. Use these to secure the ball valves during transportation. When using a crane, note its swiveling range.

DANGER

NEVER remain under suspended loads.
Also pay attention to your colleagues!

DANGER

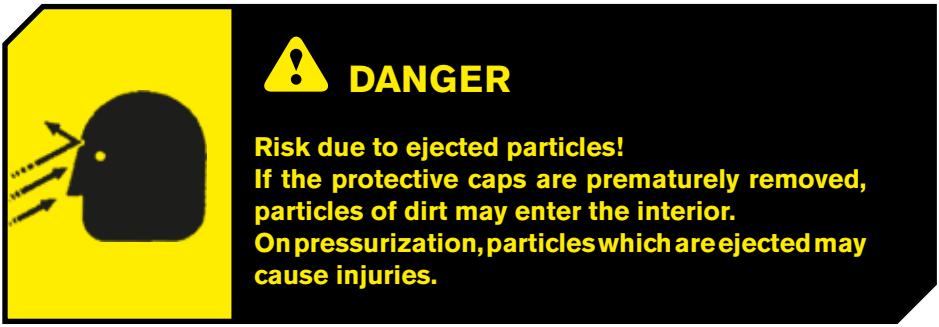
Transportation and lifting operations!
During these operations, always wear a safety hat for your own protection.

Store all ball valves in the “open” switching position (delivery status, see position indication or switching spindle marking). The ball valve switching positions are shown in the “Operation” Chapter.

The ends of all ball valves are equipped with protective caps.

ATTENTION

The unpainted surfaces in the interior of the ball valve are coated with a film of oil in order to provide protection against corrosion. Before welding or flange mounting this film must be removed.



DANGER

Risk due to ejected particles!
If the protective caps are prematurely removed, particles of dirt may enter the interior.
On pressurization, particles which are ejected may cause injuries.

Retain the protective caps for subsequent storage.

ATTENTION

The maximum storage period is two years. In the event of longer storage, we cannot offer any guarantee of the safe usage of the ball valves. Store the ball valves in a dirt-free, dry and temperaturecontrolled environment with the supplied protective caps fitted.

Flange gaskets, nuts, bolts and union nuts are not included in the scope of delivery. Ensure that these components are of the correct design for the intended application.

Design features and functional principle

All Böhmer ball valves are comprised of a housing, into which a ball with a cylindrical bore hole has been inlet. The ball is mounted in bilaterally pretensioned sealing seats. In the case of greater rated widths, the ball is centrally mounted.

Depending on the version, the ball valve can be opened or closed

- **manually** *via a switching handle or a handwheel*
- **mechanically** *via an assembly such as a hydraulic drive, a pneumatic drive, or an electrical drive.*

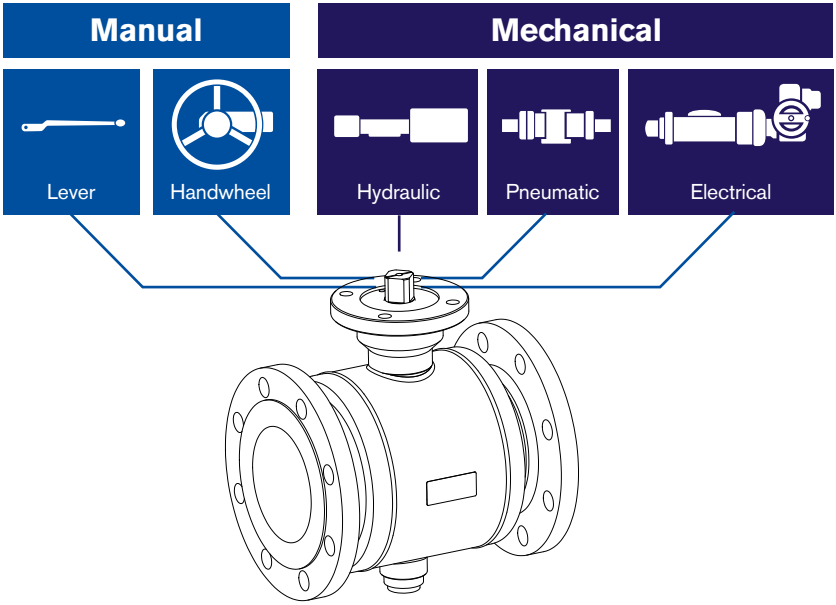


Figure 1: Ball valve with various actuating elements

All Böhmer ball valves are available in various designs for different media and applications.

Please refer to the Böhmer catalogue for the individual equipment features and designs.

Installation and removal

Installation

DANGER

Prior to installation, secure the shut-off point against unintentional re-activation, and affix a sign warning against re-activation in this location.

DANGER

Risk of crushing!
Wear protective gloves during transportation and lifting operations!

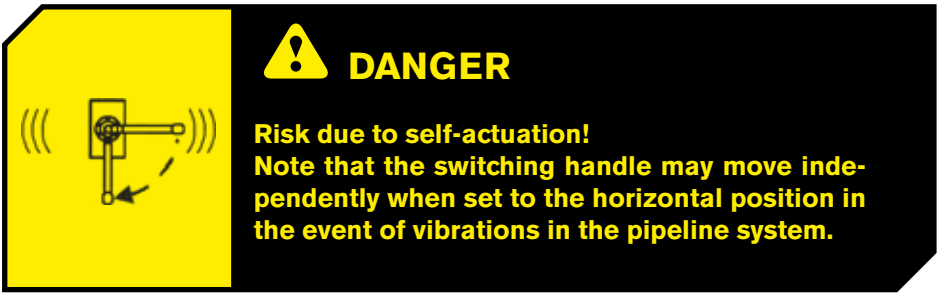
- Immediately prior to installation, remove the protective caps from the ends of the ball valve.

ATTENTION

During installation, ensure sufficient spatial conditions for freedom of movement for the spindle crown, the switching handle, the handwheel or the electric, pneumatic or hydraulic drive.

ATTENTION

Only install the ball valve in the “open” position. In the case of ball valves with a switching handle, this points in the direction of flow. Use only new gaskets!



DANGER

Risk due to self-actuation!
Note that the switching handle may move independently when set to the horizontal position in the event of vibrations in the pipeline system.

- Flush the pipe system out before actuating the ball valve for the first time. Solid residues in the pipe system may otherwise damage the ball valve’s gaskets.

ATTENTION

When welding to pipelines, the temperature of the ball valve housing must not exceed 150 °C!

In order not to exceed this temperature,

- the ball valve housing must be cooled and/or
- electric welding must be used instead of gas welding.

ATTENTION

During installation, pay attention to possible damage to the flange or threads. Damage may impede imperviousness and lead to risks.

ATTENTION

If the pipe system is drained, e.g. if there is a risk of frost, ensure that the ball valve has also been completely drained by switching it. In the event of frost, this prevents the ball valve or its gaskets from becoming damaged.

Install flanged or threaded ball valves with larger rated widths into the pipe system without tension.

In the case of ball valves which are bolted on at the flange, it must be ensured that the bolts are firmly seated.

Water pressure test

Only clean water of drinking water quality shall be used as the pressure medium. Carry out the measures in the sequence given below:

- Prior to carrying out the water pressure test, clean the line of pipes and the ball valves in order to completely remove all dirt, rust and assembly residues.

- After filling the pipe with water, move the ball to the closed position and then open it again a little (10-20 degrees). In this way you equalize the pressure on the sealing rings and ball and protect these in this way from being overloaded by the test pressure which will be well in excess of the nominal pressure.

ATTENTION

The test pressure must not exceed 1.1 times the rated pressure or 1.1 times the admissible operating pressure.

- Carry out the water pressure test.
- After the water pressure test, move the ball to the fully open position again (or where necessary to the fully closed position) and drain the line.
- If there is a test connection on the ball valve, drain the inside of the housing of the ball valve via this connection.
- Actuate the ball valve once or twice with the test connection open. Then close the test connection again.
- If there is not a test connection, the ball valve should be actuated once or twice.

Removal

Only remove the ball valve in a pressure-free and cooled condition (hot surfaces!).

- Switch the ball valve once in order to relieve clearance volume in the ball valve

DANGER

Risk of injury when pressurized!

DANGER

Prior to removal, secure the shut-off point against unintentional re-activation, and affix a sign warning against re-activation in this location.

ATTENTION

Following removal, replace all loosened gaskets with new ones.

Operation

Manual actuation involves various types of actuation, which are explained in the following.

Ball valve with switching handle

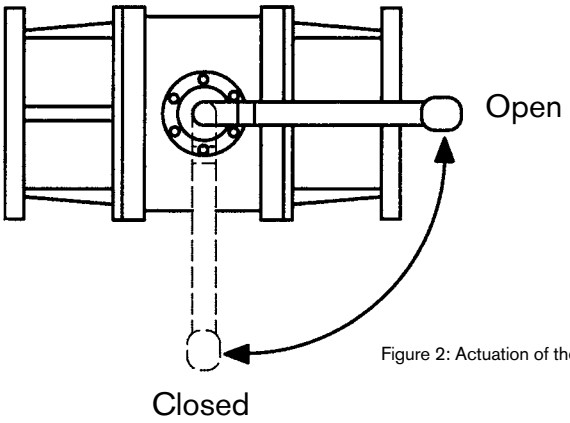


Figure 2: Actuation of the ball valve with switching handle

In the case of ball valves with a switching handle, the switching position can be seen
- *on the upper spindle marking*
- *on the position indicator*
- *from the position of the switching handle.*

Two stops limit the 90° switching travel.
In its delivered condition, the switching handle is open.

Closing the ball valve with the switching handle

- In order to close the ball valve, turn the switching handle to stop in a clockwise direction.
- In its closed condition, the switching handle is **transverse to the direction of flow.**

Opening the ball valve with the switching handle

- In order to open the ball valve, turn the switching handle in an anti-clockwise direction. The switching handle is now positioned in the direction of flow.

ATTENTION

Do not extend the switching handle with a tool or a pipe. This may lead to damage to the switching handle or the ball valve!

Ball valve with handwheel

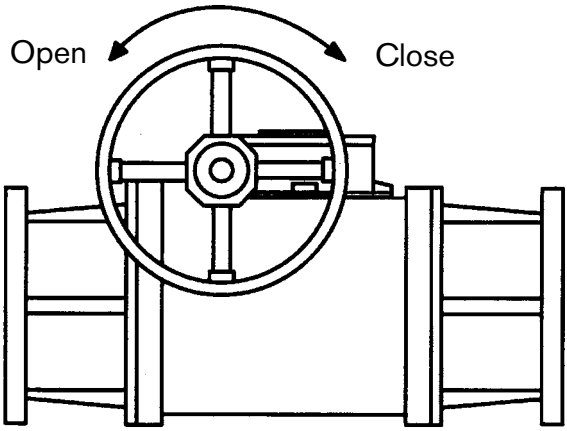


Figure 3: Actuation of the ball valve with handwheel

Closing the ball valve with the handwheel

In order to close the ball valve, carefully turn the handwheel to stop in a clockwise direction.

Opening the ball valve with the handwheel

To open the ball valve, carefully turn the handwheel counterclockwise until the stop.

Ball valve with mechanical actuation

Please refer to the operating instructions pertaining to the relevant drive modules for the switching positions, operation and safety instructions for ball valves with pneumatic, hydraulic or electric drives.

ATTENTION

Böhmer does not accept any liability for any kind of damages caused by wrong mounting or initiation of ball valves with actuators by buyer or any third party if:

- **a ball valve is subsequently equipped with an own actuator or an actuator provided by Böhmer**
- **they remove an actuator that was supplied mounted to the ball valve (i.e. for easier installation of the ball valve at site). In this case it has to be taken care of that the actuator is mounted in the exact position as it was when delivered.**

Re-commissioning

ATTENTION

Prior to re-commissioning, check the ball valve for any possible damage or corrosion. This leads to the avoidance of malfunctions and safety defects.

Use only new gaskets in the event of re-installation.

If flawless function is not guaranteed, our customer service department may be of assistance.

Maintenance, malfunctions, customer service department

Maintenance

All BÖHMER ball valves are generally maintenance-free. This property of being maintenance-free does not apply for any optional attachments like actuators. Special operating and maintenance instructions may be applicable.

Check the ball valve for possible leakages or loose flange bolts every two to three weeks.

DANGER

Risk of bursting!
In the case of bolted ball valves, no bolts may be loosened or tightened! The ball valve may otherwise burst or its imperviosness become impeded.

ATTENTION

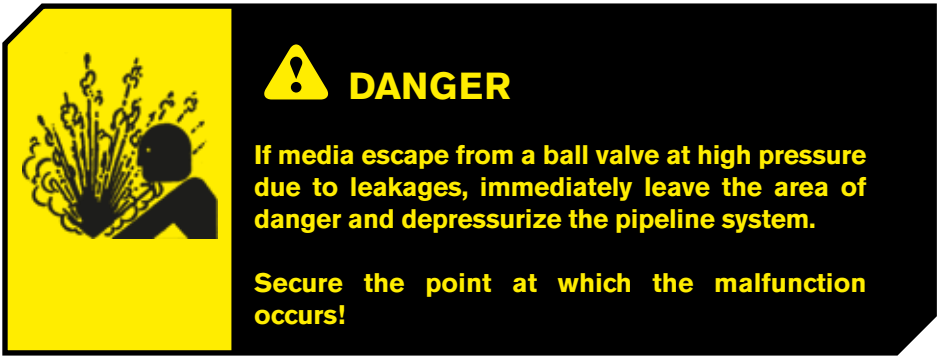
Ball valves may only be repaired by personnel specially trained by Böhmer GmbH with the approval by Böhmer GmbH in each individual case.

Any other repairs, e.g. due to damage caused by external forces or conditions outside normal operation, may only be carried out by Böhmer GmbH.

A pressure and functional check must be carried out following each repair in order to guarantee the safety of the ball valve during operation.

The ball valve may burst following improper repair. Carrying repairs out yourself may place both you and other persons at risk.

Malfunctions



DANGER

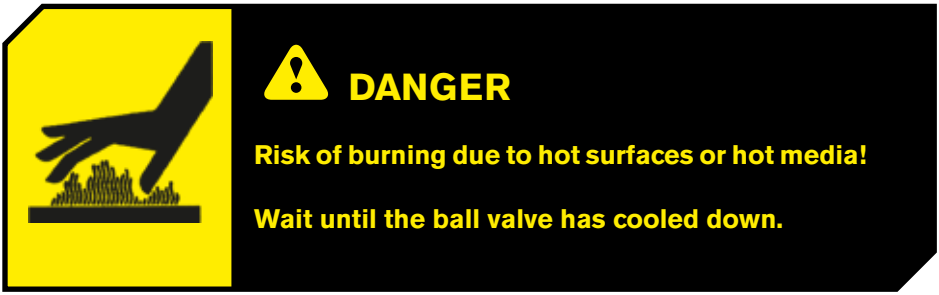
If media escape from a ball valve at high pressure due to leakages, immediately leave the area of danger and depressurize the pipeline system.

Secure the point at which the malfunction occurs!

DANGER

When using aggressive media, wear personal protective equipment in order to avoid injuries.

Immediately inform your company‘s technical safety specialist.



DANGER

Risk of burning due to hot surfaces or hot media!

Wait until the ball valve has cooled down.

If there is no danger, remove the defective ball valve from the pipeline system. Refer to the “Installation and removal” Chapter for details.

Customer service department

Böhmer GmbH, Customer service department

Phone: +49 (0) 2324 7001-0
E-Mail: boehmer@boehmer.de

Disposal

Dispose of the ball valve via a registered waste disposal company or the public waste disposal facility. If there is a possibility of toxic or aggressive substance residues‘ remaining in the ball valve, comply with the relevant, applicable regulations.

Pass this information on to your waste disposal facility.

BÖHMER

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