HANSA FLEX

TECHNICAL INFORMATION
BALL VALVES

REV. A / 09 / 2024

Technical information Ball valves

Table of contents

1. General information

This technical information relates to high-pressure ball valves. Many parts of it, however, can also be applied to low-pressure ball valves.

The instructions and guidance are to be observed and their implementation checked. They describe precautionary measures that, if not adopted, can lead to severe injury or risk to life for users or third parties or to material damage to plant and equipment or adversely impact the environment.

All work must be performed by suitably qualified and knowledgeable personnel. National accident prevention regulations or local safety rules imposed by the operator must also be observed.

Ball valves are used to allow or stop the through flow of media under pressure. The materials of the ball valves and seals are selected by the manufacturer appropriate to the information provided by the customer relating to e.g. medium, pressure and temperature as well as any other customer specifications (e.g. technical or performance specifications).

The use of media not identified in the order leads to shortening of the service life or to failure of the ball valve. The temperature and pressure values must be observed.

Any possible occurrences of pressure shocks and impulse pressures must be taken into account when planning and designing systems with ball valves. The pressure values in the catalogue relate to static loads (Load case I). For dynamic or alternating loads (Load cases II and III), an appropriate reduction must be applied to the pressure values in the catalogue.

Ball valves are intended exclusively for installation into pipeline systems with connections having the same pressure rating and corresponding connection type or between flanges having the same pressure rating and the same flange connection type. The following principle applies here: the weakest component determines the operating pressure of the system.

Ball valves are always to be turned fully clockwise or anticlockwise as far as they will go. They may be used only in either the completely closed or completely open setting.

Ball valves are opened and closed by turning the operating shaft through 90°. The closing direction is clockwise in accordance with EN ISO 5211. A notch on the end face of the operating shaft shows the current setting of the ball valve. Ball valves can be operated either manually by a handle or by a driven actuator. This must be specified when ordering ball valves.

Do not use ball valves to restrict or regulate flow rates! Intermediate settings, i.e. neither fully open nor fully closed, lead to seal damage in the ball area. As a result, ball valves start to leak or cannot be opened and closed. This is accompanied by an increase in the ball valve surface temperature, which must be taken into account.

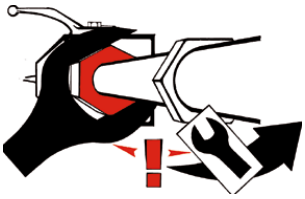
Always observe the manufacturer's operating instructions for attachments such as drives and position switches. When used in potentially explosive atmospheres, ball valves are considered as non-electrical equipment and are not subject to ATEX because there is no potential source of ignition in accordance with 2014/34/EU.

2. Safety instructions

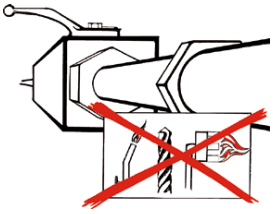
This technical information must be noted and observed. The ball valve manufacturer accepts no liability if the technical information is not observed. Ball valves must be used only for the purpose stated by the manufacturer.

The ball valve manufacturer similarly accepts no liability in the event of damage due to faulty installation or improper use of the ball valves, or incorrect operation by unqualified personnel. Ball valves are always to be turned fully clockwise or anticlockwise as far as they will go.

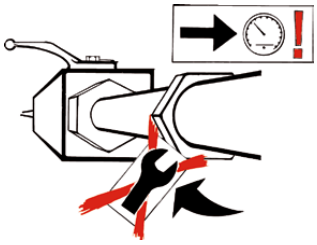
Tools (e.g. pliers, hammers, open-ended spanners, extensions etc.) must not be used to actuate ball valves. The use of such tools can lead to damage to the actuating elements and housings. Do not use force to actuate ball valves.



Counterhold during installation

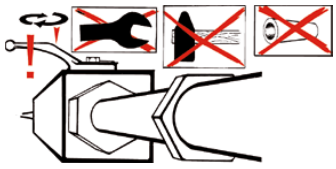


No welding, drilling etc.

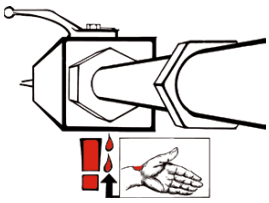


Do not detach under pressure

Do not take apart



Do not use tools to switch setting



Risk of injury from residues

Special operating or ambient conditions (humidity, vibrations, switching frequency, electromagnetic fields, potentially explosive atmospheres or statically charged environments etc.) must be clearly specified when ordering ball valves. Ball valves may be used only for the specified media.

Viscous media or media that harden or cure may not be used.

Contamination must always be avoided. Contaminated media lead to damage of the sealing elements. This gives rise to leaks, which can lead to failure of the ball valve.

The temperature limits of -20 °C to +80 °C must be observed, otherwise premature failure of the ball valve may occur. Ball valves must be stored dry and dirt-free in the delivery condition. Protective caps are not to be removed until installation. Ball valves removed from their packaging must be protected from direct UV and/or solar radiation. Maximum storage temperature 40 °C. Solvents, chemicals, acids, fuels etc. may not be stored in the same room as ball valves or their replacement parts. Ball valves are to be stored in the open setting.

In potentially explosive atmospheres, ball valves must not be actuated more than 10 times per minute, in order to avoid the valves heating up. For further information relating to the use of ball valves in potentially explosive atmospheres, please contact HANSA-FLEX.

A small quantity of the medium is trapped in the ball valve cavity when the valve is in the open or closed setting. If external heat is able to affect this enclosed, sealed cavity and raise the temperature of the medium, then this can lead to an unacceptable rise in pressure.

Exceeding the specified working pressure or going above or below the specified operating temperature causes leaks and irreparable damage to the ball valve.

Caution: Risk to life!

Special warnings, e.g. need to wear gloves when changing the valve setting, must be followed (the ball valve increases the temperature of the medium).

Making any physical changes to the ball valve construction, in particular drilling holes or welding on objects (plates, mountings etc.), is strictly prohibited.

If the ball valve does not function properly, it must be replaced by suitably qualified personnel after depressurising and emptying the pipeline system. If necessary, the system must be switched off and taken out of operation.

Repairs may be performed only by the manufacturer. Unauthorised dismantling of the ball valve by unqualified

personnel voids the manufacturer's warranty and any claims for damages against the manufacturer.

These operating instructions do not replace any national accident prevention regulations or local safety rules imposed by the operator, which take priority in every case.

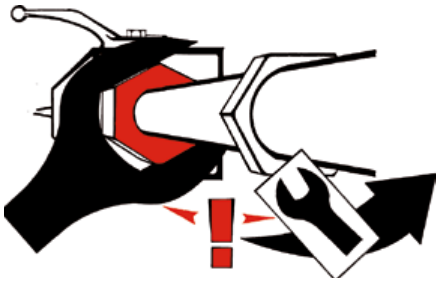
The following instructions must be observed before performing any repair work:

- For automated valves, always disconnect the power supply to the drives before performing repair and maintenance work (risk of crushing!)
- Ensure that the system cannot be started by a third party
- Drain the pipeline and depressurise any pressure buffers in the system
- Be informed about possible dangers that may be posed by residues of the operating medium and take appropriate measures such as wearing safety gloves, safety glasses etc.
- Allow the valves to cool down, if necessary
- Do not exceed the limits for pressure, temperature or the medium.

3. Assembly instructions

3.1 Installation instructions

Before installation, check that the ball valve characteristics correspond with the requirements and that the ball valve is suitable for the intended purpose.



When tightening fittings (on customer connections), always counterhold using a suitable tool.

Ball valves may be installed only by qualified personnel and with the ball valve and pipeline system in the depressurised state. The installed valve must not place any imposed strains on the pipelines. Check the ball valves for transport damage before installation. Damaged ball valves must not be installed.

Flush through all the pipelines before installing the ball valves. Residues in the pipelines damage the sealing elements of the ball valves and can lead to leaks and malfunctions.

The ball valve connections must not be screwed further into the housing, nor must they be screwed out of the housing. Otherwise the actuating torque may be increased or leaks may occur.

After installation, switch the ball valve setting and check that it is working properly. No part of the ball valve, e.g. cover, connection sockets, may be detached or further screwed down. Media that are hazardous to health, inflammable or explosive must be fully emptied from the pipeline system and the ball valve.

Observe the following when pressure testing a section of pipeline:

- Thoroughly flush the pipeline system to remove all foreign bodies
- Housing strength: place the ball valve into the half-open setting (45° setting).
  The test pressure must not exceed the value 1.5 x PN
- Sealing performance: place the ball valve in the closed setting. The test pressure must not exceed the value 1.1 x PN.

Beware that residues may flow into the valve from the pipeline. Always wear appropriate protective clothing. Ensure that the switching settings of the ball valve are in accordance with the pipeline circuit drawings. The

pressure rating, connection and installed lengths of the pipeline system must match those given for the ball valve.

Ball valves with flange connections must be centred using the counter flange screws before all screws in the flange connection are tightened crosswise. If necessary, position the valve in the pipeline using lifting gear. An undamaged seal as prescribed in the standard must be used between the flanges. Stud bolts or connection bolts must be selected to suit the flanges, taking into account size and strength class. Ensure that the maximum screw-in depth is not exceeded with blind threaded holes.

Always ensure that no weld particles enter the ball valve cavity when installing (welding) ball valves with welding ends. Any welding residues must always be removed. At the same time, ensure that the temperature of the ball valve cavity does not exceed the permissible limit. The sealing elements may be damaged if this limit is exceeded.

Always observe the manufacturer's operating instructions for attachments such as drives.

3.2 Commissioning

Before initial commissioning, read and ensure compliance with all operating instructions and check again that the operating conditions are as required and the installation work has been done correctly.

Commissioning a plant or system may be performed only by qualified personnel.

It is recommended that the valve is actuated at regular intervals (at least every six months). Depending on the period of non-actuation, the torque for the first switching operation may be considerably higher than the normal torque (breakaway torque).

Any air must be bled from the pipeline system before it is commissioned. Air bubbles in the pipeline system can lead to explosions if there is a sudden pressure build-up. Therefore, the operating pressure should be built up in stages.

If ball valves are fitted as end valves at the ends of pipes in a pipeline system, any unused ball valve connections must be sealed in a proper manner, since there is a risk to life from parts of the connections breaking off and becoming projectiles in the event of user error.

3.3 Removal instructions

Ball valves may be removed only by qualified personnel and with the ball valve and pipeline system in the depressurised state.

Before removal, release the pressure in the pipeline. Include the ball valve in this operation by placing it in the half-open setting (45° setting), so that the pressure in the housing cavity is also relieved. Media that are hazardous to health, inflammable or explosive must be fully emptied from the pipeline system and the ball valve.

Beware that residues may flow into the valve from the pipeline. Always wear appropriate protective clothing.

4. Maintenance

When the pipeline system is emptied, e.g. if there is a risk of frost or for cleaning, it is also necessary to drain the ball valves by turning them to the 45° setting (housing cavity).

Ball valves must never be taken apart (dismantled). The use of emergency seals of any kind is forbidden.

Valves must be checked at regular intervals for leaks, proper functioning and damage. In extreme conditions the checking interval should be shortened.

To ensure that the valve continues to function properly if the valve is not used for a prolonged period, it is necessary to switch the valve at least once every six months. If faulty ball valves are found when carrying out maintenance work or inspections, e.g. leaking ball valves, valves that no longer switch correctly or corroded valves, they must be replaced immediately.

5. Disposal information

Observe the local waste disposal regulations.