

Ball valves

General Instructions & Operations Manual

1. General reference

Ball valves are used to shut-off pressurised media in pipes or hoses.

According to the user's indication of medium, pressure, temperature and other details the manufacturer selects the material of the housing, the seats and the seals of the ball valve (requirement specification).

The use of media other than stated in the order leads to a reduced service life of the ball valve or to its failure. The limit values of pressure and temperature must be observed (see also marking on the ball valve.)

When planning or determining ball valves, emerging working pressures (pressure peaks / impulse pressures) must be taken into consideration by the user.

Ball valves are intended for assembly in pipe systems with identical pressure ratings in between the fittings or in between the flanges.

Ball valves open and close by turn operations. According to EN ISO 5211.8 the handle must be turned clockwise in order to close the ball valve. The notch on the face of the spindle square indicates the current position of the ball.

Ball valves can be operated either by handle or by actuator. The operation method has to be mentioned when ordering the ball valve.

Attachments such as actuators and limit switches always refer to the operating manual of the respective manufacturer.

When ball valves come into operation in explosive zones they are considered as non-electrical equipment, because there is no ignition source acc. to EC directive 94/9EG and therefore ball valves are not subject to ATEX.

2. Fitting guidelines

Before installing the ball valve, an appropriate check whether the ball valve meets all necessary requirements regarding version and application is advisable.

The installation of ball valves may be done only by qualified personnel and only when pipe and ball valve are depressurised. Pipe must be free of traction when being connected to the ball valve.

Ball valves must be reviewed for damage before installing.

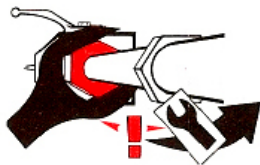
Damaged ball valves must not be installed.

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All pipes and hoses must be rinsed thoroughly before the installation of the valves.

Residues in the pipe system damage the sealing elements of the ball valve and lead to leaks and disfunctions.



When tightening the fittings (pipe end), it is absolutely necessary that the end-adaptor of the ball valve is counter-secured with an adequate tool.

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The ends of the ball valve must not be turned in any further or unscrewed because this leads to an increase of the breakaway torque or to leakage.

After the installation of the ball valve a functional test must be carried out.

No components of the ball valve such as adaptors or top flanges may be dismantled or unscrewed.

The ball valve and the entire pipe system has to be drained completely, when dealing with noxious, combustible and explosive media.

Possibly dropping residues must be taken into account!

Appropriate protective clothing is necessary.

Ball valves with flange connection must be centred with the bell of the counter flanges before the screws are tightened crosswise. Where necessary, the valve has to be lifted into the pipe system with a hoist.

An undamaged seal that meets the respective norm has to be fitted in between the flanges.

Screws or dowel pins must be selected according to the flanges considering the size and the strength category.

The length of engagement has to be respected especially for tapped holes.

Ball valves with welding ends must be welded in without any welding particles left in the internal space of the ball valve.

Residues from welding must be eliminated unconditionally. It must be pointed out that the cavity of the ball valve does not exceed the tolerable temperature limits. Crossing the limits can cause damage of the seats and seals.

The operating position of the ball valve must be in accordance to the layout of the pipe system.

Pressure rating, connection and overall length of the pipe system must correspond with the ball valve.

For optional attachments such as actuators always refer to the operating manual of the respective manufacturer.

3. Initial operation

Before the initial operation, all instructions must be read and taken into consideration and all conditions of operating and installing have to be approved.

The initial operation of an installation should be effected **by qualified personnel only**.

After a long-time storage or an extended shutdown in one operating position the operating torque for the first operation is noticeably higher compared to the real breakaway torque.

The piping system must be **ventilated** before the initial operation. Air bubbles in the piping system might lead to **explosions** when pressurised abruptly. Therefore, a successive establishing of the pressure is advisable.

When ball valves are installed as pipe-line-ends the open adaptor must be closed properly - due to handling errors, torn-out components can lead to an operational failure or even lethal injuries.

4. Maintenance and surveying

When draining the depressurised pipe system in order to prevent it from frost damage or for a cleaning process, the cavity of the ball valve has to be drained by opening the valve to the mid-position (45°).

Ball valves must not be detached. All types of provisional sealants are prohibited.

Ball valves must be inspected at regular intervals for tightness, function and damage. In case of a heavy duty application the inspection interval has to be abbreviated.

Ball valves, that are installed for long-term periods without being operated, must be turned every six months at least in order to preserve their function.

When surveying of ball valves results in defective ball valves e.g. leakage, immovable or corroded they must be replaced without delay.

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5. Removal instructions

The removal of ball valves should be done by qualified personnel and only, when the **ball valve and the pipe system are depressurised.**

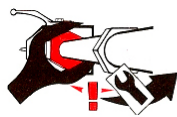
Before removal, the pressure in the pipe system must be relieved. The ball valve must be in mid-position (45°) in order to relieve the pressure in the cavity as well.

The ball valve and the entire pipe system has to be drained completely, when dealing with noxious, combustible and explosive media.

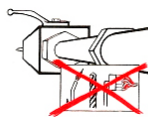
Possibly dropping residues must be taken into account!

Appropriate protective clothing is necessary.

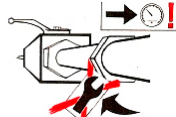
6. Warning



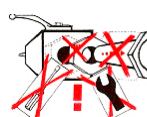
Secure adaptor during installation



No welding, drilling etc.



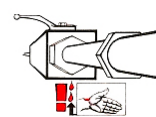
Don't remove under pressure



Don't dismantle



Don't operate with tool or extension



Residues might bear risk of injuries

This operating manual has to be adhered to. The manufacturer of the ball valves assumes no liability when this operating manual is not taken in to consideration!

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**. They must be operated in either **fully open or completely closed position** only.

Ball valves are not approved for controlling or throttling of flow.

Intermediate positions cause damage of the ball seats. This leads to leaking ball valves or to non-turnable spindles.

Furthermore flow reduction leads to a considerable **rise of temperature** on the surface of the ball valve.

Tools (e.g. gripper, hammer, wrench, extensions, etc.) are inapplicable for ball valve operations. The use of such tools might cause damage to the spindle and on the body.

Special applications or ambient conditions (humidity, vibrations, Operation frequency, electromagnetic fields, explosive zones, antistatic, etc.) must be well-defined when ordering ball valves!

Ball valves must be used for indicated media, only!

Semi fluid or hardening media must not be used.

Contamination must be avoided. Contaminated media lead to damage of the sealing elements. Consequently, leakage will lead to the breakdown of the ball valve.

Temperature limits must not be exceeded or undercut otherwise the ball valve might fail at an early stage.

Ball valves must be stored as supplied dry and free of contamination. Only before installation the protective taps shall be removed. Unpacked ball valves must be protected from ultraviolet and solar radiation.

When installed in explosive zones the operation frequency should be limited to 10/min, in order to prevent the ball valves from self warming.

Exceeding of the nominal pressure and exceeding or undercutting of the working temperature respectively, leads to leakage and destruction of the ball valve.

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Caution! Danger of life!

Certain warnings, e.g. wearing gloves when turning the handle, must be obeyed. (The ball valve adopts the temperature of the fluid.)

Any modification of the ball valve design especially the drilling of mounting holes or the attachment of plates by welding is strictly forbidden.

In case of malfunctioning the ball valve must be replaced by qualified personnel after depressurising and draining the pipe system. If necessary, the system must be put out of operation.

A repair is realisable by the manufacturer only when ball valves are dismantled improperly by unqualified personnel any claim of guarantee and damage against the manufacturer are null and void.

National regulations for accident prevention such as local safety regulations of the operating company are not replaced by this manual, they should rather be considered with priority.

Before any maintenance is performed, the following has to be adhered to :

- power supply of actuators must be disconnected (risk of squeezing)
- start-up by third party must be excluded
- draining of the pipe system and relieve of pressure
- be aware of possible residues of media and the risks they are bearing (where required,
- protective clothing (gloves, glasses) is necessary)
- where applicable, cool down installation.
- do not exceed limits regarding pressure, temperature and media.

Last update August 2005