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1. ERIKS operating companies

ECON ball valves are being delivered by several ERIKS operating companies on a worldwide basis. In this manual these will be referred to as 'ERIKS', the individual terms of delivery of the ERIKS operating company having executed the order are applicable.

2. Product description

The ECON ball valves are designed according the information published in our latest catalogue or on our website www.eriks.com and should be used in accordance with the applicable pressure-temperature rating as stated in the catalogue or on this website. Ball valves are provided with marking, according to EN 19. The marking makes the identification of the valve easier and contains:

- size (inch)
- pressure rating class
- body material marking
- ECON logo

3. Requirements for maintenance staff

The staff assigned to assembly, operating and maintenance tasks should be qualified to carry out such jobs and in any circumstance, ensure personal safety

4. Transport and storage

During transport and storage the valves should be in open position and protected against external forces and influences. The valves should be stored in an unpolluted space and should also be protected against all atmospheric circumstances. There should be taken care of the temperature and humidity in the room, in order to prevent condensate formation.

5. Function

ECON ball valves are designed to stop the flow of a medium. The valve is closed by turning the lever clockwise; don't use tools to increase the torque on the lever.

6. Application

The ECON ball valves are used for industrial systems (clean gasses and liquids). The valves are designed for standard operating conditions. For the use in extreme conditions e.g. aggressive or abrasive media, it is recommended to mention this at the ordering stage, to verify whether the valve is suitable. The installation designer is responsible for the valve selection, suitable for the working conditions. The valves are unsuitable, without written permission of an ERIKS company, to apply for hazardous media as referred into Regulation (EC) No 1272/2008.

7. Installation

During the installation of the ball valves, following rules have to be considered:

- check before assembly if the ball valves are not damaged during transport or storage.
- Check if the applied ball valves are suitable for working conditions, medium, the system connections and according to pressure and temperature limits.
- remove the protective plastic cap on the threaded ends when applicable.
- the valve may be fitted in any position.
- the internals of the ball valve and pipeline must be free from foreign particles.
- The valve must be fitted in the pipeline with the ball in open position, check if the threaded ends of the pipe and the valve are according the same standard. Clamp the valve only on the hexagon ports during the installation.
- the valve may be fitted in any position on the pipeline with the ball in open position.
- to avoid leakage, use professional sealant (e.g. PTFE tape) on the threads.
- install the pipeline in such a way that thrust forces, bending forces, tension forces and intensive vibrations will be avoided.
- before start-up of the installation, certainly after repairs, the pipeline must be flushed, of course with open valve.
- during use, don't partially open the ball valve (regulation function): the pressure drop and/or flow of the medium can bring damage to the seat rings and/or ball.
- when in use do not open or close the ball valve too fast: this can cause water hammer.
- for any further information please contact the ERIKS company that has supplied the valves. Contact information can be found on www.eriks.com

8. Maintenance

Before starting any service jobs, make sure that the medium supply to the pipeline is cut off, pressure was decreased to ambient pressure, the pipeline is completely cleaned and ventilated and the plant is cooled down. Always keep safety instructions into account and take all personal safety precautions.

During maintenance, the following rules should be observed:

- keep always personal safety precautions into account and always use appropriate protection e.g. clothing, masks, gloves etc.
- be alert that the temperature still can be very high or low and can cause burns.
- be alert that the ball valve can trap pressurized fluids in the ball cavity, when in closed position.
- check the valve on all possible leaking possibilities.
- dust, grease and medium residual, must be frequently cleaned of the valve body and all moving parts, such as stem to maintain all operating functions.
- the valve must be checked regularly to ensure safe operation. An interval of three months is to be advised.

Long life and maintenance-free of valves can be maintained under normal working conditions and in accordance with pressure/temperature and corrosion data chart.

9. Service and repair

All service and repair jobs should be carried out by authorized staff, using suitable tools. Original spare parts must be used.

- welding repair and drilling on the valve is forbidden.
- it's not possible to replace the seat rings or stem sealing, because of the design of the ball valves.
- after installation it is necessary to check the ball valve operation and tightness of all connections. Leakage test should be carried out.
- in use, the valve should be checked and maintained periodically at least every 3 months, depending on the medium.

10. Troubleshooting

It is essential that the safety regulations are observed when identifying the fault.

| Problem | Possible cause | Corrective measures |
|----------------------------|-------------------------------------|---|
| No flow | The ball valve is closed | Open the ball valve |
| | Dust caps were not removed | Remove dust caps |
| Little flow | Valve not completely open | Open valve completely |
| | Piping system clogged | Check piping system |
| Valve difficult to operate | Stuffing box seal too tight | Loosen nut |
| | Wrong direction of rotation | Turn counter clockwise to open |
| | Seats damaged by foreign particles. | Replace the ball valve |
| | Expanded medium behind the ball | Cool down the ball valve |
| Leakage along the stem | Stuffing box gland not tight enough | Tighten stuffing box gland, if necessary replace the ball valve |
| Leakage along valve seat | Valve not properly closed | Pull lever tight without tools |
| | Seat damaged by foreign particles | Replace the ball valve |
| | Medium contaminated | Clean valve and install strainer |

11. Disposal

Dismantled and rejected valves cannot be disposed with household waste. The valves are made of materials which can be re-used and should be delivered to designated recycling centers.

Remark:

General note for products which may be used for seawater:

Although our products can be used in seawater systems it should always be noted that, in case of installation in a piping system made of materials which are frequently used because of their excellent seawater resistance (e.g. Cunifer), large potential differences may occur possibly causing corrosion which could permanently damage the proper functioning and integrity of our product.

A combination of different materials should always be mentioned prior to the purchase of our products in order for us to give the best possible advise on a safe functioning.