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1. ERIKS operating companies

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

- size (DN)
- pressure rating class
- body material marking
- arrow, indicating the medium flow direction
- 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

Transport and storage should always be carried out with the ball completely closed and the valve should be protected against external forces. 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 type check valves with spring are designed to prevent back flow. The ball check valve comes with a spring on the ball. The flowing medium presses against the ball, thereby pushing it open. Opening pressure approx. 0,35 bar. The ball type check valve can be installed horizontal and vertical (upward flow) one side flow direction.

6. Application

ECON ball type check valves are used in clean viscous liquids, oils. The installation designer is responsible for the check 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 assembly of the ECON ball type check valves, the following rules should be observed:

- make sure before an assembly that the valves were not damaged during the transport or storage.
- make sure that the applied valves are suitable for the working conditions, medium used in the plant and the right system connections, according to pressure and temperature limits.
- the ball type check valve (Fig.501/501RVS) can be installed horizontal and vertical (upward flow) one side flow direction.
- during fitting, the proper flow direction has to be considered.
- during fitting the location of the valve, after a bend or pump, must be at least 5xDN in a straight line. Also, after the valve, a straight line of 2xDN is recommended. This to avoid too much turbulence in the check valve, which may cause malfunctioning and or rattling of the ball.
- the interior of the valve and pipeline must be free from foreign particles.
- the valves with threaded ends should be assembled in the pipeline in closed position, make sure the wire ends of the pipe and the valve according to the same standard, and also free from pollution. Clamp the valve only on the hex clamping surfaces at the connection ports during assembly.
- when necessary, use a thread sealant, PTFE tape for low temperature applications and Grafoil for high temperature applications.
- steam line systems should be designed to prevent water accumulation.
- install pipelines so that damaging transverse, excessive vibrations, bending and tensional forces are avoided.
- before plant startup, especially after repairs carried out, flash out the pipeline.
- after installation it is necessary to check the valve operation and tightness of all connections. A tightness test should be carried out.

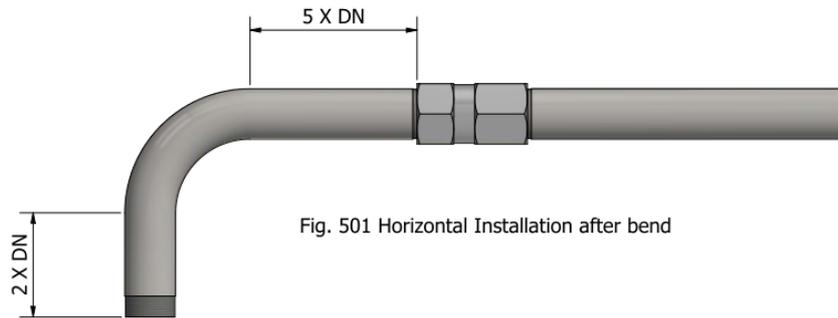


Fig. 501 Horizontal Installation after bend

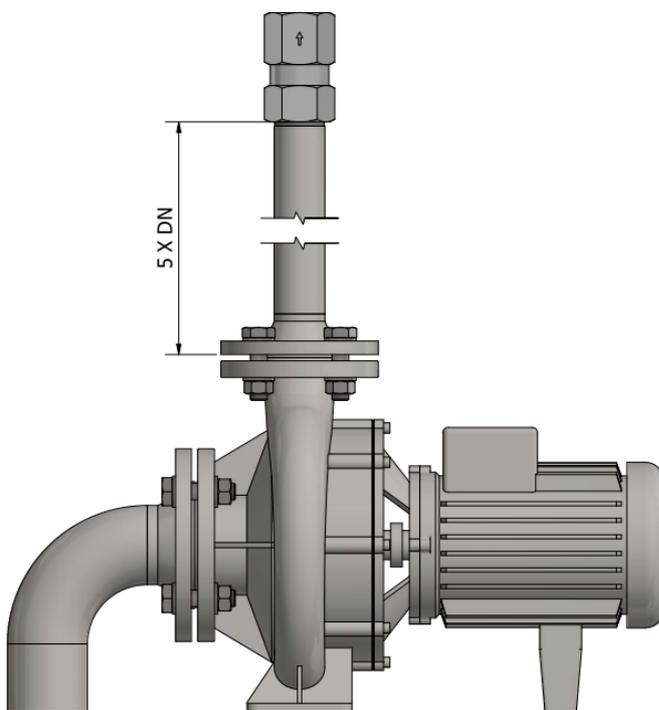


Fig. 501 Vertical Installation after pump

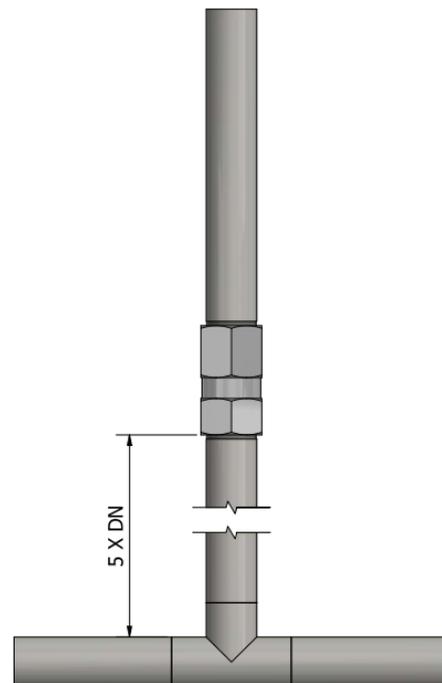


Fig. 501 Vertical Installation after bend

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 in mind and take all personal safety precautions.

During maintenance, the following rules should be observed:

- always keep personal safety precautions in mind 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.
- check the valve on all possible leaking possibilities.
- check if the ball still opens and closes in a proper manner.
- the thickness of the body must be checked to ensure safety operation.

9. Service and repair

All service and repair jobs should be carried out by authorized staff, using suitable tools and user shall use thread sealant, PTFE or Grafoil depending on the working conditions.

- weld repair and drilling of the valve is forbidden.
- Due to the design of the check valve, it is not possible to disassemble and replace any parts.
- after replacement of the ball check valve, it is necessary to check the valve operation and tightness of all connections. A tightness test should be carried out.
- after installation, the valve should be checked periodically at least every 3 months.

10. Troubleshooting

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

Problem	Possible cause	Corrective measures
No flow	Valve is installed in the wrong way	Arrow of flow direction has to run in the same direction as the flow itself
Little flow	Ball does not completely open	Check ball opening function
	Piping system clogged	Check piping system
Leakage across valve seat	Ball not properly closed	Check ball opening function
	Metal seat damaged by foreign particles	Replace the ball check valve
	Deformation of ball by hammer blow	Replace the ball check valve
Rattling/banging of the ball	Nominal diameter of the valve in relation to the flow rate is too big.	Choose smaller nominal diameter
	High flow speed	Change the system
	To close after a 90 ° bend in the pipeline	
	Expansion joints are missing	
	There is no stabilizing pipe length	
	There is no start-up bypass line	
Body broken and leaking	Water hammer	Replace the valve
	Broken because of freezing	Replace the valve and drain the water in the winter when the valve is not used

11. Removal

All 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.

General warning:

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.