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1. ERIKS operating companies

ECON wafer 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 omschrijving

ECON wafer type check valve 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 wafer type check valves are provided with casted markings according to EN 19. The marking makes the identification of the valve easier and contains:

- size (DN)
- pressure rating class
- body material
- year of fabrication
- charge number (when applicable)
- CE-marking and Notified body (when applicable)
- 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 disc completely closed and the valve should be protected against external forces, influence and destruction. The valves should be stored in an unpolluted space and should also be protected against all atmospheric circumstances. These valves which are provided with a soft-sealing, should be protected against sunlight, that might hit this soft sealing or any other UV-radiation in order to avoid ageing. Lifting tools for transport are only to be fastened on the valve body. Inner parts may not be misused as "carrying devices".

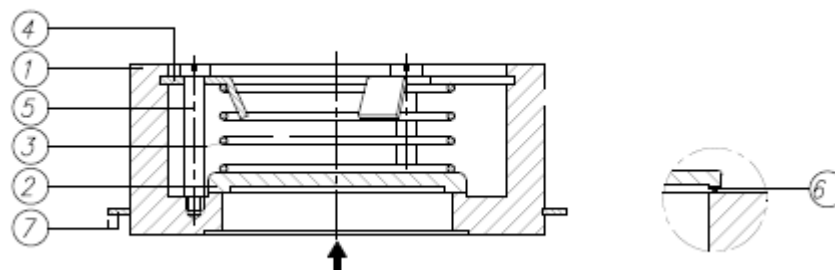
5. Function

ECON wafer type check valves are solely destined for installation within a pipeline system in consideration of the admitted pressure and temperature limits to avoid a backflow of the media. The minimum opening pressure is about 20 mbar, when the valve is installed in a horizontal pipeline. When the valve is installed in a vertical pipeline with upstream flow, the minimum opening pressure is about 24-32 mbar depending on the nominal diameter etc.. The disc close when the pressure drops below the opening pressure, because of the weight and spring of the disc, this prevents the medium which has passed the disc from flowing back.

6. Application

ECON wafer type check valves are used in the general industry to avoid the medium from flowing back. The valves are designed for standard operating conditions. For the use of 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 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.



Section of wafer type check valve

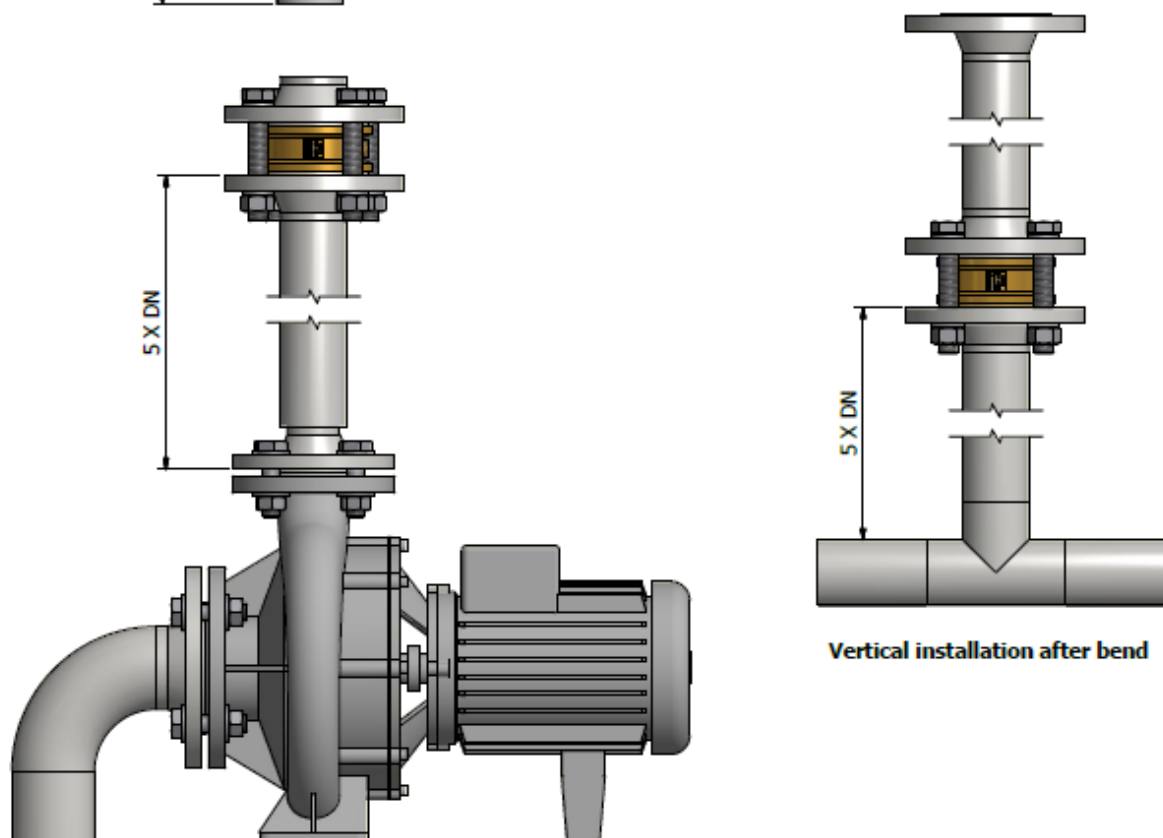
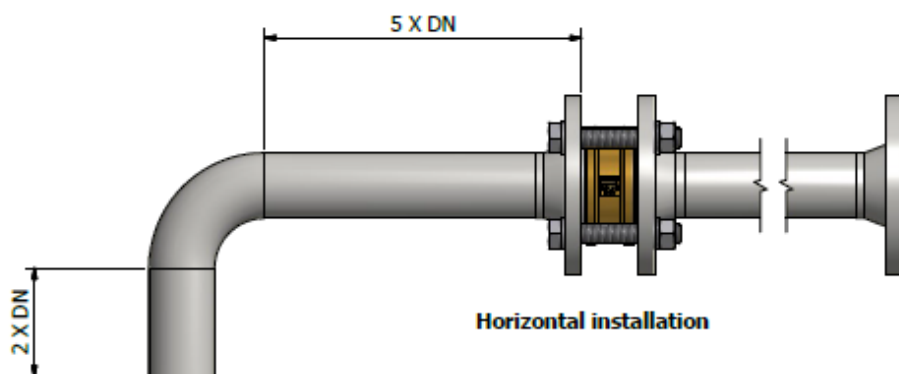
Item Number	Valve part
1	Body
2	Plate / disc
3	Spring
4	Guide plate for spring
5	Guide screw
6	O-ring (on request)
7	Centering ring

7. Installation

During the assembly of the ECON wafer 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.
- when sizing the check valve, please note, that a particular volume flow is necessary to bring the valve into a stable full-opened position, if a full-opened position is not achieved, the valve is oversized and will give chattering noises. This means a higher abrasion and may causes malfunctioning.
- before plant startup, especially after repairs carried out, flash out the pipeline, before installing the wafer type check valves.
- the valves should be installed in the pipeline, with the arrow in the medium flow direction.
- the installation position for the check valves in a horizontal pipeline, is with the disc in vertical position, or in a vertical pipeline with the disc closed and the flow in upstream direction.
- wafer type check valves are designed for installation between two pipeline flanges, including appropriate flange sealing. The outer diameter of the valve centers itself by the flange bolts. For a good stable functioning, the distance between pipe elbows, pumps etc and the valve, should be 5x DN in a straight way.
- the interior of the valve and pipeline must be free from foreign particles.

- the valve should be assembled in the pipeline in closed position, for a correct functioning, the valve must be stress free mounted between the flanges, supports must be arranged to prevent any additional stress, caused by the weight of the valve or the pipeline.
- install pipelines so that damaging transverse, excessive vibrations, bending and tensional forces are avoided.
- bolted joints on the pipeline must not cause additional stress resulted from excessive tightening, user shall select proper bolts and gaskets according the working temperature, working pressure and medium.
- after installation it is necessary to check the valve operation and tightness of all connections. A tightness test should be carried out.



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 all bolts and nuts, are still fastened.
- check if the disc still opens and closes in a proper manner.
- the thickness of the body must be checked to ensure safety operation at an interval of at least three months.

9. Service and repair

All service and repair jobs should be carried out by authorized staff, using suitable tools and user shall use valve gasket, bolt and nut of the same size and material as the original one.

- weld repair and drilling of the valve is forbidden.
- it is forbidden to replace the bolt, nut or packing when the valve is under pressure.
- tighten the hexagon nuts evenly crosswise in the there for standard order.
- after replacement of the gasket, bolts or nuts, 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 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	Valve is installed in the wrong way	Arrow of flow direction has to run in the same direction as the flow itself
Little flow	Disc do not completely open	Check disc opening function
	Piping system clogged	Check piping system
Leakage across valve seat	Disc not properly closed	Check disc opening function
	Seat damaged by foreign particles	Replace the valve
	O-ring or spring damaged	Replace O-ring or spring
	Medium contaminated	Clean the valve and install a dirt screen
Rattling/banging of the disc	Nominal diameter of the valve in relation to the flow rate is too big	Choose smaller nominal diameter
	High flow turbulence	Alter the system
	The check valve is mounted directly by a centrifuged pump	
	Behind pressure reduction stations	
	Behind pipe elbows	
	Expansion joints are missing	
	The pump is not mounted on a damper	
	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.