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1. **ERIKS operating companies**
   ECON swing 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 swing type check valves are designed according to the information in our latest catalogue or see our website [www.eriks.com](http://www.eriks.com) and should be used in accordance with the applicable pressure-temperature rating as stated on this website. ECON swing 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 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 disc 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 swing type check valves are designed to prevent back flow. The flowing medium presses against the disc, thereby pushing it open. The swing type check valve can be installed horizontal and vertical (upward flow).

6. **Application**
   ECON swing type check valves are used in cold and hot water, air, gases, steam and other neutral media. 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 swing 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 swing type check valves (Fig.505) must be installed in a horizontal or vertical pipeline, but only with a rising flow.
- 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 causes malfunctioning and or rattling of the disc.
- 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.
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 open and close 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.

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

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.