DCV4
Disc Check Valve

Description
The DCV4 stainless steel disc check valve is of the wafer pattern designed to be sandwiched between ASME flanges. It is suitable for use on a wide range of fluids for applications in process lines, hot water systems, steam and condensate systems etc.

Face-to-face dimensions conform to EN 558 part 2, series 52.

As standard it will be supplied with a metal-to-metal seat for use on steam applications. Where it will be used on oil, air, gas and water applications, alternative seat material is available - see 'Optional extras'.

Optional extras
High temperature springs for temperatures up to 400 °C.
Viton soft seats for oils, air and gas applications.
EPM soft seats for water applications.

Standards
This product fully complies with the requirements of the Pressure Equipment Directive (PED).

Standard shut-off
Standard valves conform to EN 12266-1 rate E.
Valves conforming to EN 12266-1 rate D are available on request.
Soft seated versions meet EN 12266-1 rate A, providing a differential pressure exists.

Certification
This product is available with certification to EN 10204 3.1.
Note: All certification/inspection requirements must be stated at the time of order placement.

Sizes and pipe connections
DN15, DN20, DN25, DN40, DN50, DN80 and DN100
Suitable for installation between ASME 150 or ASME 300 flanges.

Operation
Disc check valves are opened by the pressure of the fluid and closed by the spring as soon as the flow ceases and before the reverse flow occurs.

Materials

<table>
<thead>
<tr>
<th>No.</th>
<th>Part</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>Austenitic stainless steel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ASTM A351 CF3M</td>
</tr>
<tr>
<td>2</td>
<td>Disc</td>
<td>Austenitic stainless steel</td>
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<tr>
<td></td>
<td></td>
<td>ASTM A276 316</td>
</tr>
<tr>
<td>3</td>
<td>Spring retainer</td>
<td>Austenitic stainless steel</td>
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<tr>
<td></td>
<td></td>
<td>BS 1449 316 S11</td>
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<tr>
<td>4</td>
<td>Standard spring</td>
<td>Austenitic stainless steel</td>
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<tr>
<td></td>
<td></td>
<td>BS 2056 316 S42</td>
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<tr>
<td></td>
<td>High temperature spring</td>
<td>Nickel alloy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nimonic 90</td>
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</table>
Pressure/temperature limits

Body design conditions for saturated steam service

- **PMA** Maximum allowable pressure: 49 bar g @ 37 °C
- **TMA** Maximum allowable temperature: 400 °C @ 29 bar g
- **Minimum allowable temperature**: -29 °C
- **PMO** Maximum operating pressure for saturated steam service: 49 bar g @ 37 °C
- **TMO** Maximum operating temperature:
  - Standard spring: 300 °C @ 31.5 bar g
  - High temperature spring: 400 °C @ 29 bar g
  - Without spring: 400 °C @ 29 bar g

**Temperature limits**
- Viton seat: -25 °C to +205 °C
- EPDM seat: -40 °C to +120 °C

**Pressure/temperature limits**
The product must not be used in this region.

- **A-B-D**: High temperature spring and without spring.
- **E-C-D**: Standard spring.

**Please note**: The figures displayed are only relevant when a metal-to-metal seat is used. If Viton or EPDM seats are used the product is restricted to the limits of the seat material chosen.

**Dimensions/weights (approximate) in mm and kg**

<table>
<thead>
<tr>
<th>Size</th>
<th>ASME 300</th>
<th>ASME 150</th>
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<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>DN15</td>
<td>54</td>
<td>47</td>
</tr>
<tr>
<td>DN20</td>
<td>67</td>
<td>57</td>
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<td>DN25</td>
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<td>DN80</td>
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<td>136</td>
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<tr>
<td>DN100</td>
<td>181</td>
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</table>
KV values

<table>
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<tr>
<th>DN</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>40</th>
<th>50</th>
<th>80</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>KV</td>
<td>4.4</td>
<td>7.5</td>
<td>12</td>
<td>26</td>
<td>39</td>
<td>84</td>
<td>150</td>
</tr>
</tbody>
</table>

For conversion:

\( C_v (UK) = KV \times 0.963 \)

\( C_v (US) = KV \times 1.156 \)

Opening pressures in mbar

Differential pressures with zero flow for standard and high temperature springs.

Flow direction

<table>
<thead>
<tr>
<th>DN</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>40</th>
<th>50</th>
<th>80</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>↑</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>28</td>
<td>29</td>
<td>31</td>
<td>33</td>
</tr>
<tr>
<td>→</td>
<td>22.5</td>
<td>22.5</td>
<td>22.5</td>
<td>24</td>
<td>24.5</td>
<td>25.5</td>
<td>26.5</td>
</tr>
<tr>
<td>↓</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

Where lowest opening pressures are required, valves without springs can be installed in vertical pipes with bottom-to-top flow.

Without spring

| ↑  | 2.5 | 2.5 | 2.5 | 4.0 | 4.5 | 5.5 | 6.5 |

Pressure loss diagram

Pressure loss diagram with open valve at 20 °C. The values indicated are applicable to spring loaded valves with horizontal flow. With vertical flow, insignificant deviations occur only within the range of partial opening.

The curves given in the chart are valid for water at 20 °C. To determine the pressure for other fluids the equivalent water volume flowrate must be calculated and used in the graph.

\[ \dot{V}_w = \sqrt{\frac{\rho}{1000}} \times \dot{V} \]

Where:

\( \dot{V}_w = \) Equivalent water volume flow in l/s or m³/h

\( \rho = \) Density of fluid kg/m³

\( \dot{V} = \) Volume of fluid l/s or m³/h

Pressure loss information for steam, compressed air and gases is available from Spirax Sarco.

How to order

Example: 1 off Spirax Sarco DN40, DCV4 stainless steel disc check valve for fitting between ASME 300 flanges.
**Safety information, installation and maintenance**

For full details see the Installation and Maintenance Instructions (IM-P144-02-EN-ISS1) supplied with the product. DCV4 disc check valves must be fitted in accordance with the direction of flow arrow indicating correct fluid flow direction. When fitted with a spring they can be installed in any plane. When supplied without a spring they must be fitted in a vertical flow line with the flow from bottom-to-top.

*Note:* Flanges, bolts (or studs), nuts and joint gaskets are to be provided by the installer. Disc check valves are non-maintainable (no spares are available). Disc check valves are not suitable for use where heavily pulsating flow exists, such as close to a compressor.

Various options are denoted by a marking on the valve body:

- **'N'** - High temperature spring
- **'W'** - Without spring
- **'V'** - Standard spring
- **'E'** - Standard spring
- **'VW'** - Without spring
- **'WE'** - Without spring
- **'T'** - Valves tested to EN 12266-1 Rate D

No identification indicates a standard spring with a metal disc.

**Disposal**

If a product which contains a Viton component has been subjected to a temperature approaching 315 °C or higher, then it may have decomposed and formed hydrofluoric acid. Avoid skin contact and inhalation of any fumes as the acid will cause deep skin burns and damage to the respiratory system. Viton must be disposed of in a recognised manner as stated in the Installation and Maintenance Instructions (IM-P144-02-EN-ISS1). No other ecological hazard is anticipated with the disposal of this product providing due care is taken.