Installation guideline Explosion Isolation Valve VENTEX® ESI

For VENTEX ESI-E/-D and -C with housing material in mild steel and stainless steel

Function diagram VENTEX ESI-E & VENTEX ESI-D

Function diagram VENTEX ESI-C

Certified for

Zone inside:
Certificate CE (Ex II 1G D IIB / Zone 0, 1, 2, 20, 21, 22

Zone outside:
The outside zone is depending on the execution of the mounted parts (e.g. Switch)

Description

Technical data

The data for air speed 20m/s and 25m/s applies to optimal conditions. See the description of the optimal conditions on page two.

Maximum air speed in the opposite direction than the explosion direction for VENTEX ESI-E and VENTEX ESI-C = 35m/s

Organic dust up to K-Value 300

Gas, Gas group IIB

Hybride mixtures

Metallic dust (Aluminium)

VENTEX ESI-C only as pressure barrier (no flame barrier)

In case of an explosion, the pressure wave pushes the closing device (without external energy supply) against the valve gasket.

The valve is locked in this closed state, preventing the spread of flames and pressure waves.

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### Requirements on the installation situation

<table>
<thead>
<tr>
<th>Installation situation</th>
<th>Requirements and notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Providing of the functionality in case of an explosion (the valve must close)</strong></td>
<td>Important: The requirements in case of an explosion have priority compared to the requirements for normal operation.</td>
</tr>
<tr>
<td><strong>Min./max. installation distance</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Operating temperature &gt; +90°C</strong></td>
<td>Reduces the max. allowed explosion pressure. See details in the technical data sheet of the valve.</td>
</tr>
<tr>
<td><strong>Pipe elbow in front of the valve in explosion direction</strong></td>
<td>Does not influence the minimum needed explosion pressure.</td>
</tr>
<tr>
<td><strong>Change of the nominal diameter (DN) in front of the valve in explosion direction</strong></td>
<td>Influences the explosion pressure. (Attention: take account of burst strength/resistance and minimum required explosion pressure of the valve). If the nominal diameters of the pipe and the valve are different the cone has to be mounted directly in front of the valve. Recommended cone &lt;16°.</td>
</tr>
<tr>
<td><strong>Max./min. allowed change of the nominal diameter (DN) in explosion direction</strong></td>
<td>The maximum allowed deviation between the nominal diameters (DN) is double cross-section surface.</td>
</tr>
</tbody>
</table>

![Diagram of Installation Situation](image)

![Graph of Nominal Sizes](image)
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**Requirements and notes**

**Providing of the functionality in case of an explosion** (the valve must close)

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>Change of the nominal diameter (DN) after the valve in explosion direction</td>
<td>After the valve, the length of the pipe (min. PN1) has to be at least fivefold of the nominal diameter of the valve (5 x DN).</td>
</tr>
</tbody>
</table>

**Importar:** The requirements in case of an explosion have priority compared to the requirements for normal operation.

**Installation situation**

**Providing of functionality in normal operation** (valve must not close)

<table>
<thead>
<tr>
<th>Maximal allowed volume/air speed</th>
<th>Consider the technical data sheet of each valve.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipe in front of the valve in process direction</td>
<td>In front of the valve, the length of the pipe has to be at least tenfold of the nominal diameter of the valve (10 x DN). If necessary, in front of it a cone should be used, so the maximum achievable air speed can be achieved. Recommended cone &lt; 16°.</td>
</tr>
</tbody>
</table>

VENTEX ESI-D / VENTEX ESI-E (flow and explosion direction are identical)

VENTEX ESI-C / VENTEX ESI-E (Flow and explosion direction against each other)

**Elbow in front of the valve in operation/process direction**

The mean arc radius (r) of the elbow has to have at least the triple size of the nominal diameter (3 x DN) of the valve. Smaller arc radiuses reduce the maximum achievable air speed.

VENTEX ESI-D / VENTEX ESI-E (flow and explosion direction are identical)

VENTEX ESI-C / VENTEX ESI-E (Flow and explosion direction against each other)

**Allowed dust loading**

Limit values for operation (obligatory):
- air speed > 12 m/s
- particle size < 0.5mm
- dust concentration < 50g/m³
- dry air and no condensate
- VENTEX ESI-C allows no dust loading

No dust deposits are allowed which might prevent the tight closing of the valve. Danger exists due to the combination of dust and condensate.

**Ventilation**

Air flow

19.03.2019, Index f
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### Dimensions

#### Dimensions of flanges according DIN 1092-1

<table>
<thead>
<tr>
<th>Nominal diameter</th>
<th>DN100</th>
<th>DN150</th>
<th>DN200</th>
<th>DN300</th>
<th>DN400</th>
<th>DN500</th>
<th>DN600</th>
</tr>
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<td><strong>Dimensions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length</td>
<td>L</td>
<td>E:350</td>
<td>500</td>
<td>610</td>
<td>780</td>
<td>940</td>
<td>1300</td>
</tr>
<tr>
<td>a Middle flange</td>
<td>DM</td>
<td>215</td>
<td>315</td>
<td>417</td>
<td>550</td>
<td>682</td>
<td>814</td>
</tr>
<tr>
<td>a Connecting flange</td>
<td>DF</td>
<td>220</td>
<td>285</td>
<td>340</td>
<td>445</td>
<td>565</td>
<td>670</td>
</tr>
<tr>
<td>Thickness flange</td>
<td>S</td>
<td>22</td>
<td>24</td>
<td>24</td>
<td>26</td>
<td>32</td>
<td>36</td>
</tr>
<tr>
<td>Circle-ø</td>
<td>TK</td>
<td>180</td>
<td>240</td>
<td>295</td>
<td>400</td>
<td>515</td>
<td>620</td>
</tr>
<tr>
<td>Quantity x ø Hole</td>
<td>n x d</td>
<td>8 x 18</td>
<td>8 x 22</td>
<td>8 x 22</td>
<td>12 x 22</td>
<td>16 x 26</td>
<td>20 x 26</td>
</tr>
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#### Dimensions of flanges according ANSI #150

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<th>DN100</th>
<th>DN150</th>
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<td>417</td>
<td>550</td>
<td>682</td>
<td>814</td>
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<tr>
<td>a Connecting flange</td>
<td>DF</td>
<td>228.6</td>
<td>280</td>
<td>343</td>
<td>483</td>
<td>597</td>
<td>698.5</td>
</tr>
<tr>
<td>Thickness flange</td>
<td>S</td>
<td>20</td>
<td>25.4</td>
<td>24</td>
<td>26</td>
<td>32</td>
<td>36</td>
</tr>
<tr>
<td>Circle-ø</td>
<td>TK</td>
<td>190.5</td>
<td>241.3</td>
<td>298.4</td>
<td>431.8</td>
<td>540</td>
<td>635</td>
</tr>
<tr>
<td>Quantity x ø Hole</td>
<td>n x d</td>
<td>8 x 19</td>
<td>8 x 22</td>
<td>8 x 22</td>
<td>12 x 22</td>
<td>16 x 28.6</td>
<td>20 x 32</td>
</tr>
</tbody>
</table>

#### Weight

| Weight (net) | ca. kg | 30 | 35 | 53 | 84 | 133 | 213 | 305 |
| Weight (gross) | ca. kg | 34 | 43 | 61 | 94 | 153 | 241 | 354 |

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