General operating instructions for high-pressure valve for use in zones 1 and 2 of area with explosion hazard

Purpose: When work is being carried out in areas subject to explosion hazard the safety of personnel and equipment is dependent on adherence to all relevant safety regulations. The installation and maintenance personnel working in such installations therefore bear a special responsibility. Prerequisite to the fulfillment of this responsibility is an exact knowledge of the applicable codes and regulations.

Designation: Valve with actuator for areas subject to explosion hazard of equipment category 2
Classification: Valve (high-pressure part) \(\rightarrow\) component (non-electrical) of equipment category 2
Actuator \(\rightarrow\) component (non-electrical) of component category 2

Equipment category: 2 G for use in areas subject to explosion hazard (gas) of zones 1 and 2

Ex mark: \(\text{Ex II 2G Ex h IIC T6...T3 Gb X}\)

Product marking: \(\text{NV... or CV.....}\) Nameplate with serial number

1. General Safety Instructions and Warnings

The provisions of this master operating manual govern points which are to be adhered to particularly in the handling of our products when used in zones subject to explosion hazard.

Electrostatic charges on metal parts must be avoided. Hazardous electrostatic charges on metal parts can be avoided by integration of these metal parts into the voltage grounding system.

To exclude the risk of explosion, no work on the products may be carried out in the presence of an explosive atmosphere.

After the installation the products are to be adequately flushed with suitable, non-explosive, non-toxic media and checked for correct functioning and leakage to prevent the creation of an explosive environment.

Prior to dismantling, the products are to be adequately flushed with suitable non-explosive, non-toxic media to prevent the creation of an explosive environment.

For additional information please refer to the attached product-specific operating manual.

If the products are used for purposes other than those mentioned, or if the instructions given in the operating manual are not observed, the manufacturer or supplier shall not be held liable for damages resulting therefrom. Such risks shall be borne by the user alone.

Our products are designed for a maximum service life of 10 years.

2. Product Description, Correct Use

Admissible media: please refer to operating manual and additionally to the NOVA order confirmation.

The products are approved for use in zone 1 and zone 2; either a zone 2 or an explosion-less-zone inside the product is allowed. Depending on maximum temperature of the high-pressure medium, with adherence of an ambient temperature limit value ranging the products fulfill the conditions for the following temperature classes:

<table>
<thead>
<tr>
<th>Ambient temperature</th>
<th>Temperature of the high-pressure medium</th>
<th>Max. allowed surface temperature in °C on</th>
<th>Temperature class</th>
</tr>
</thead>
<tbody>
<tr>
<td>NV.... CVP....</td>
<td>-20°C to +40°C</td>
<td>-40°C to +150 °C</td>
<td>190 °C</td>
</tr>
<tr>
<td></td>
<td>-20°C to +40°C</td>
<td>-40°C to +90 °C</td>
<td>130 °C</td>
</tr>
<tr>
<td></td>
<td>-20°C to +40°C</td>
<td>-40°C to +55 °C</td>
<td>95 °C</td>
</tr>
<tr>
<td></td>
<td>-20°C to +40°C</td>
<td>-40°C to +40 °C</td>
<td>80 °C</td>
</tr>
<tr>
<td>NV...-ET-</td>
<td>-20°C to +40°C</td>
<td>-40°C to +150 °C</td>
<td>190 °C</td>
</tr>
<tr>
<td></td>
<td>-20°C to +40°C</td>
<td>-40°C to +90 °C</td>
<td>130 °C</td>
</tr>
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<td>95 °C</td>
</tr>
<tr>
<td></td>
<td>-20°C to +40°C</td>
<td>-40°C to +40 °C</td>
<td>80 °C</td>
</tr>
</tbody>
</table>

Note: During normal operation our products produce only slight temperature increases. The maximum surface temperatures are hence influenced / governed principally by the high-pressure medium (temperature, flow rate etc.).

At increased high-pressure medium temperature the maximum operating pressure is to be reduced according to the instructions given in the attached operating manuals.

Pneumatically actuated valves are to be used indoors. Outdoor installation is not allowed.

The products may be operated in the undamaged and clean condition only.
For supplementary data on the function and on correct use please refer to the attached product-specific operating manuals.

3. **Ex-Zone-specific differences**

Zone 1: An Ex-zone 0 or zone 1 inside pneumatically actuated valves is prohibited, therefore the actuator must be vented via pressure-tight lines either into Ex-zone 2 or an explosion-less-zone.

Zone 2: For use in zone 2, this ventilation line of the actuator is not needed.

4. **Specifications**

<table>
<thead>
<tr>
<th>Property</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life of packing / valve seat:</td>
<td>Approx. 8,000 strokes at room temperature</td>
</tr>
<tr>
<td>Life of valve spring:</td>
<td>Approx. 24,000 strokes at room temperature</td>
</tr>
<tr>
<td>Pneumatic valve closing and opening time:</td>
<td>0.5 to 10 seconds</td>
</tr>
<tr>
<td>Number of actuations per minute:</td>
<td>Max. 12</td>
</tr>
<tr>
<td>Tightness of high-pressure connections:</td>
<td>≤ 1 bubble per minute at rated pressure with nitrogen</td>
</tr>
<tr>
<td>Tightness of valve seat and packing</td>
<td>≤ 1 bubble per 10 sec. at rated pressure with nitrogen</td>
</tr>
</tbody>
</table>

For the remaining data please refer to the attached product-specific operating manual.

The valve materials can be inquired from NOVA. The test on whether these materials react in a hazardous manner with the handled materials must be carried out by the user.

5. **Installation**

To exclude the risk of an explosion no work may be done on the products in the presence of an Ex atmosphere.

The position indicator on the pneumatic actuator may never collide with adjoining parts, which must be assured in all operational situations by means of appropriate installation of the valve.

After the installation the products are to be adequately flushed with suitable, non-explosive, non-toxic media and tested for correct functioning and leaking to ensure that an explosive environment is not created.

The user must connect and ground the products for the purpose of preventing static electricity. For further data, please refer to the attached product-specific operating manual.

6. **Operation**

For information please refer to the attached product-specific operating mechanism.

7. **Dismantling**

To exclude the risk of an explosion no work may be done on the products in the presence of an Ex atmosphere.

Before the dismantling the products are to be adequately flushed with suitable, non-explosive, non-toxic media and tested for correct functioning and leaking to ensure that an explosive environment is not created.

On removal of the products connecting line jumpers with adequate cross-section are required to the extent that by the removal the adequate electrical connection can be released (voltage equalization).

For further information please refer to the attached product-specific operating mechanism.

8. **Cleaning**

For the cleaning of the product, water with a hand detergent added is recommended.

9. **Maintenance**

Valves have to be checked periodically for malfunctions (leakage). The valves are designed for 8,000 cycles (open/closing) at room temperature. When this time has elapsed, the maintenance must be performed by an instructed technician on the basis of the repair instructions.

**Important note:** The life (opening/closing) can vary strongly depending on operating conditions (pressure, temperature, fluid). The plant builder/operator must establish and define his operating conditions accordingly. If this is neglected, the plant builder/operator bears the sole responsibility for all risks and hazards arising therefrom.

“Post-Explosion” test: After an explosion, the products may under no circumstances be used anymore.

For further information please refer to the attached product-specific operating mechanism.

10. **Disposal**

For information please refer to the attached product-specific operating mechanism.