The valve works as an automatic pressure releasing regulator activated by the static pressure existing at the entrance to the valve and is characterized by its ability to open instantly and totally. Design in accordance with "ASME code section VIII". Materials according ASME code section II and ASTM. Connections according ASME B1.20.1 standard.

In accordance with the requirements of the pressure equipment directive 2014/68/EU. EC valve verification certified by: TÜV Rheinland Industrie Service GmbH, Notified Body for Pressure Equipment ID-No. 0035. Type (Module B) EC examination report n° 33530455 certified by: TÜV Rheinland Ibérica ICT, S.A. In compliance with the ATEX 2014/34/EU directive “Protective equipment and systems for use in potentially explosive atmospheres”. Other authorisations: ISCIR, ITI, NASTHOL,EAC,...etc.

Specifications
— 90° angular flow.
— Activated by direct action helicoid spring.
— Simplicity of construction ensuring minimum maintenance.
— Materials carefully selected for their resistance to corrosion.
— Internal body designed to offer favourable flow profile.
— Sealing surfaces balanced and making them extremely tightness, even exceeding API-527 requirements.
— Great discharge capacity. For liquids typically used with openings similar to proportional safety valves.
— Auto-centering plug.
— Totally precise open and close.
— All the valves are supplied sealed at the set pressure requested, simulating operational conditions, and are vigorously tested.
— All components are numbered, registered and checked. If requested in advance, material, casting, test and efficiency certificates will be enclosed with the valve, and the instruction manual, in accordance with P.E.D. 2014/68/EU.

IMPORTANT
1. Fluorelastomer (Viton) seals, Silicone’s rubber, PTFE (Teflon) o Perfluorelastomer (FFKM).

Achieving leakage levels less than: \(0.3 \times 10^{-6} \text{Pa cm}^2 / \text{sec}\)

RANGE OF APPLICATION FOR THE SEALS

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<thead>
<tr>
<th>FLUID</th>
<th>SET PRESSURE IN bar</th>
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<td>MAXIMUM</td>
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<td>Silicone’s rubber</td>
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<td>-50</td>
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<tr>
<td>Fluorelastomer (Viton)</td>
<td>V</td>
<td>-20</td>
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<tr>
<td>PTFE (Teflon)</td>
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<td>-195</td>
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<tr>
<td>Perfluorelastomer (FFKM)</td>
<td>K</td>
<td>-10</td>
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</table>

Depending on demand:
1. Buna-nitrils seals, Butyl, Natural rubber, E.P.D.M., Chlorosulphonate polyethylene (Hypalon), Neoprene, etc.
2. Possibility of manufacture in other types of material, for use in special working conditions (high temperatures, fluids, etc.).
<table>
<thead>
<tr>
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<th>MATERIAL</th>
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<tbody>
<tr>
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<td>2</td>
<td>Plug</td>
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<td>4</td>
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<td>5</td>
<td>Limiter ring</td>
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<td>6</td>
<td>End-stop</td>
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<td>Spring press</td>
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<td>Spring</td>
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<td>9</td>
<td>Clip</td>
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<td>10</td>
<td>Lever</td>
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<td>22</td>
<td>Screw cap</td>
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**MODEL 685**

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<td>MAX. TEMPERATURE IN °C</td>
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**MODEL 885**

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**MODEL 985**

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<tr>
<td>MAX. TEMPERATURE IN °C</td>
</tr>
<tr>
<td>MIN. TEMPERATURE IN °C</td>
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</tbody>
</table>

(1) Mod. 885; Fluorelastomer (FFKM)

---

![Diagram of the components](image-url)
Full lift safety valve with spring loading (AIT) version EP.

1. Disassembly and assembly

1.1 Disassembly
To replace the spring (8) or clean any of the internal components of the valve, proceed in the following manner:
A - Cut the seal thread (11) with pliers.
B - Withdraw the fastener (9), using a punching tool, until the lever (10) comes free.
C - Unscrew and extract the hood (14).
D - Unscrew the piston (16) from the rod (3) and then the screw cap (22).
E - Holding the rod (3), unscrew the spring press (7) until you note a releasing of the spring (8).
F - Extract the spring (8).

1.2 Assembly
A - Enter the spring (8) through the upper part of the rod (3).
B - Screw the spring press (7) holding the rod (3) and the screw cap (22).
C - Adjust the set pressure with the spring press (7).
D - Screw the piston (16) to the rod (3).
E - Screw the hood (14).
F - Place the lever (10) and fix it with the fastener (9).

2. Adjusting the firing pressure
A - Proceed according to points 1.1.A, 1.1.B, 1.1.C, 1.1.D, 1.1.E.
B - Proceed according to points 1.2.C, 1.2.D, 1.1.E, 1.1.F.

Full lift safety valve with spring loading (AIT) version AP.

1. Disassembly and assembly

1.1 Disassembly
To replace the spring (8) or clean any of the internal components of the valve, proceed in the following manner:
A - Cut the seal thread (11) with pliers.
B - Withdraw the clip (9), using a punching tool, until the lever (10) comes free.
C - Unscrew and extract the hood (14).
D - Holding the rod (3), unscrew the spring press (7) until you note a releasing of the spring (8).
E - Extract the spring (8).

1.2 Assembly
A - Enter the spring (8) through the upper part of the rod (3).
B - Screw the spring press (7) holding the rod (3).
C - Adjust the set pressure with the spring press (7).
D - Screw the hood (14).
E - Place the lever (10) and fix it with the fastener (9).

2. Adjusting the firing pressure
A - Proceed according to points 1.1.A, 1.1.B, 1.1.C, 1.1.D.
B - Proceed according to points 1.2.C, 1.2.D, 1.1.E.

Full lift safety valve with spring loading (AIT) version ES.

1. Disassembly and assembly

1.1 Disassembly
To replace the spring (8) or clean any of the internal components of the valve, proceed in the following manner:
A - Cut the seal thread (11) with pliers and extract the characteristic plate (12).
B - Unscrew and extract the hood (14).
C - Holding the rod (3), unscrew the spring press (7) until you note a releasing of the spring (8).
D - Extract the spring (8).

1.2 Assembly
A - Enter the spring (8) through the upper part of the rod (3).
B - Screw the spring press (7) holding the rod (3).
C - Adjust the set pressure with the spring press (7).
D - Screw the hood (14).

2. Adjusting the firing pressure
A - Proceed according to points 1.1.A, 1.1.B.
B - Proceed according to points 1.2.C, 1.2.D.

Full lift safety valve with spring loading (AIT) version AS.

1. Disassembly and assembly

1.1 Disassembly
To replace the spring (8) or clean any of the internal components of the valve, proceed in the following manner:
A - Cut the seal thread (11) with pliers and extract the characteristic plate (12).
B - Holding the rod (3), unscrew the spring press (7) until you note a releasing of the spring (8).
C - Extract the spring (8).

1.2 Assembly
A - Enter the spring (8) through the upper part of the rod (3).
B - Screw the spring press (7) holding the rod (3).
C - Adjust the set pressure with the spring press (7).

2. Adjusting the firing pressure
A - Proceed according to points 1.1.A, 1.1.B.
B - Proceed according to points 1.2.C.
### Model 685/885/985

#### Connections

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#### Diagram

![Model Diagram](image-url)
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Male thread x Female thread NPT ASME B1.20.1

CODE

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## Recommended Ranges of Application

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<th>CLOSURE PRESSURE IN % OF THE SET PRESSURE</th>
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<td>+10%</td>
<td>-10%</td>
</tr>
</tbody>
</table>

### Overpressure Factors

Multiply the discharge capacity obtained from the tables, by the correction factor, in order to obtain the discharge capacity at required overpressure.

### Diagrams

- **kd**
  - **Liquids**
  - **Saturated Steam**
  - **Gases**

- **Overpressure factors**
  - Air
  - Saturated steam
  - Water

[Graph showing kd values and overpressure factors.]
### DISCHARGE CAPACITY

<table>
<thead>
<tr>
<th>MODEL</th>
<th>685-885</th>
<th>985</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTRY CONNECTION</td>
<td>MINPT1</td>
<td>3/8&quot;</td>
</tr>
<tr>
<td>EXIT CONNECTION</td>
<td>FNPT2</td>
<td>1/2&quot;</td>
</tr>
<tr>
<td>( \Delta P = 2 \cdot \Delta \rho \cdot g \cdot d^2 / 4 )</td>
<td>0.26</td>
<td>74.66</td>
</tr>
</tbody>
</table>

\[ \begin{align*}
V_1 &= \frac{p}{\rho} \cdot V_2 \\
V_2 &= V_c \cdot \frac{p}{\rho} \\
V_c &= \text{Water flow rate according to table.}
\end{align*} \]

\( \Delta P = \text{Liquid flow.} \)

\( \rho \) = Liquid density.

\( \rho \) = Water density at a 20°C C.

\( \rho \) = Liquid density.

<table>
<thead>
<tr>
<th>SET PRESSURE in bar</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>I</th>
<th>II</th>
<th>III</th>
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<tbody>
<tr>
<td>0.5</td>
<td>31</td>
<td>41</td>
<td>109</td>
<td>46</td>
<td>61</td>
<td>162</td>
<td>94</td>
<td>122</td>
<td>288</td>
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<td>53</td>
<td>142</td>
<td>65</td>
<td>79</td>
<td>212</td>
<td>121</td>
<td>166</td>
<td>377</td>
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<tr>
<td>1.5</td>
<td>48</td>
<td>68</td>
<td>170</td>
<td>93</td>
<td>114</td>
<td>250</td>
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<td>77</td>
<td>193</td>
<td>119</td>
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<td>287</td>
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<td>235</td>
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<td>1015</td>
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<td>7.5</td>
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<td>293</td>
<td>324</td>
<td>549</td>
<td>331</td>
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### CONNECTION COEFFICIENT

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<tr>
<th>CONNECTION</th>
<th>685/885</th>
<th>985</th>
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</thead>
<tbody>
<tr>
<td>( c_d )</td>
<td>685/885</td>
<td>8.00</td>
</tr>
<tr>
<td>( h )</td>
<td>985</td>
<td>2.00</td>
</tr>
<tr>
<td>( h/d )</td>
<td>985</td>
<td>0.51</td>
</tr>
</tbody>
</table>

### COEFFICIENT OF DISCHARGE

<table>
<thead>
<tr>
<th>( d_0 )</th>
<th>685/885</th>
<th>985</th>
</tr>
</thead>
<tbody>
<tr>
<td>( 0.6 )</td>
<td>0.62</td>
<td>0.62</td>
</tr>
</tbody>
</table>

### SATURATED STEAM GASES

| \( \rho \) | 0.68 | 0.69 | 0.70 |

### LIQUIDS

| \( \rho \) | 0.51 | 0.52 | 0.60 |

*(For other, not so dense liquids, other than water at 20°C apply:)*

*(Consult according to ASME section VIII Div.1)*

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