**Calculation of the valve flow coefficient KV**

The procedure specified in the IEC 60534 standard is applied to determine the valve flow coefficient KV. The relevant device-specific data can be found in the associated data sheets.

The equations below are given to allow a preliminary, simplified calculation of the valve flow coefficient to be performed. Please note that these equations do not take account of the influence of the connection fittings and the flow limitation in case of critical flow velocities.

**Selection of the valve flow coefficient KVs**

On the basis of the calculated valve flow coefficient KV, the appropriate valve flow coefficient KVs for the relevant valve type can be selected from the associated data sheet.

If realistic operating values have been used for the calculation, the following applies in general:

- For **self-operated regulators**: \( KV_{\text{max}} = 0.75 \cdot KVs \)
- For **motor-operated valves**: \( KV_{\text{max}} = 0.9 \cdot KVs \)

### Medium

<table>
<thead>
<tr>
<th>Pressure drop</th>
<th>Liquids</th>
<th>Gases</th>
<th>Steam</th>
</tr>
</thead>
<tbody>
<tr>
<td>( p_2 &gt; \frac{p_1}{2} )</td>
<td>( KV = \frac{\sqrt{V\cdot\frac{p}{1000\cdot\Delta p}}}{\sqrt{1000\cdot\Delta p}} )</td>
<td>( KV = \frac{W}{519 \sqrt{\frac{T_1}{\rho}} \cdot p_2} )</td>
<td>( KV = \frac{W}{3162 \sqrt{\frac{T_2}{\rho}} \cdot p_2} )</td>
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where:

- \( p_1 \) [bar] Absolute pressure \( p_{\text{abs}} \)
- \( p_2 \) [bar] Absolute pressure \( p_{\text{abs}} \)
- \( \Delta p \) [bar] Absolute pressure \( p_{\text{abs}} \) (differential pressure \( p_1 - p_2 \))
- \( T_1 \) [K] \( 273 + \vartheta_1 \)
- \( V_G \) [m³/h] Flow rate of gases, related to \( 0 \, ^\circ \text{C} \) and 1013 mbar
- \( \varrho \) [kg/m³] Density of liquids
- \( \varrho_G \) [kg/m³] Density of gases at \( 0 \, ^\circ \text{C} \) and 1013 mbar
- \( \varrho_1 \) [kg/m³] Density of gases at \( 0 \, ^\circ \text{C} \) and 1013 mbar
- \( \varrho_2 \) [kg/m³] Density of gases at \( 0 \, ^\circ \text{C} \) and 1013 mbar
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