Applicaton

The RTD-N valve is specially designed to be soldered in the radiator by the radiator manufacturer.

The valve body is designed for two-pipe pumped systems in commercial or domestic heating systems. RTD-N has a built-in facility for setting max. flow through the radiator.

The setting options range from \( k_v = 0.04 \) - 0.60 m\(^3\)/h. \( K_{vs} = 0.90 \) m\(^3\)/h.

The valve is delivered unassembled as four separate items:
- valve housing (013L4820)
- valve top assembly (013L3417)
- throttle unit (013G0186)
- protective cap, red (013L3395)

All Danfoss thermostatic sensors in the RTD series can be combined with the RTD-N valve.

A union nut ensures a simple, firm connection between sensor and valve body.

In order to avoid deposition and corrosion, the composition of the hot water must be in accordance with the VDI 2035 guideline (Verein Deutscher Ingenieure).

System

A = Presetting area

The calculated setting value can be set easily and accurately without using special tools:
- remove the protective cap or sensor,
- raise the setting ring,
- turn the scale on the setting ring until the desired setting faces the reference mark (\( ! \)),
- release the setting ring.

The presetting can be chosen from values between 1 and 7 with intervals of 0.5. At setting N the valve is completely open. A setting in the shaded area must be avoided.

When the sensor is mounted, the presetting is hidden and thus protected against unauthorized alteration.
Data sheet  Presetting valve type RTD-N with soldering connection

Technical data

<table>
<thead>
<tr>
<th>Setting</th>
<th>kv-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>0.60</td>
</tr>
<tr>
<td>7</td>
<td>0.45</td>
</tr>
<tr>
<td>6</td>
<td>0.36</td>
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<tr>
<td>5</td>
<td>0.27</td>
</tr>
<tr>
<td>4</td>
<td>0.20</td>
</tr>
<tr>
<td>3</td>
<td>0.12</td>
</tr>
<tr>
<td>2</td>
<td>0.08</td>
</tr>
<tr>
<td>1</td>
<td>0.04</td>
</tr>
</tbody>
</table>

k_v = Q / Δp

K_v = 0.90 m³/h

Max differential pressure  0.6 bar
Max working pressure  10 bar
Test pressure  16 bar
Max medium temperature  120 °C

Accessories

Gland seal
Should the valve body gland seal show signs of leaking, the gland can be replaced quickly without draining down the system.
Gland seals are delivered in boxes of 10 units complete with instructions.
Code no.: 013G0290

Important
After mounting the gland seal, press pin firmly to ensure proper contact to the valve spindle.

Construction

Materials in contact with water

- Valve body and other metal parts: Ms 58 brass
- Throttle nozzle and spindle: PPS
- O-ring: EPDM
- Valve cone: NBR
- Pressure pin in gland seal: Chrome steel

Gland seal
Pressure pin
O-ring seal
Spindle
Throttle nozzle
Valve cone
Valve body

Dimensions

Max differential pressure  2) 0.6 bar
Max working pressure  10 bar
Test pressure  16 bar
Max medium temperature  120 °C

1) The k_v-value indicates the water flow (Q) in m³/h at a given lift and a pressure drop (Δp) across the valve at 1 bar. k_v = Q / Δp. At setting „N“ the k_v-value is stated according to EN 215, at Xp = 2 K. At lower presetting values Xp is reduced to setting 1, Xp = 0.5. At presettings between „1“ and „N“, Xp is between 0.5 and 2 K.
Xp = 2 K means that the valve is closed at 2 °C higher room temperature. The k_v-value states the flow Q at a maximum lift, i.e. at fully open valve.

2) The max. differential pressure specified is the maximum pressure at which the valve gives satisfactory regulation. As with any device which imposes a pressure drop on the system, noise may occur under certain flow/pressure conditions. A differential pressure between 0.1 and 0.3 bar across the valve is recommended. The differential pressure can be reduced using Danfoss differential pressure regulators.
Sizing example

**Known values**

- Heat demand: \( \Phi = 1500 \text{ kcal/h} \)
- System temperature drop: \( \Delta t = 20 ^\circ \text{C} \)
- Differential pressure: \( \Delta p = 0.10 \text{ bar} \)

**Calculation**

Water quantity \( Q (\Phi/\Delta t) = 1500/20 = 75 \text{ l/h} \)

\[
 k_v = \frac{Q}{\sqrt{\Delta p}} = \frac{0.075}{\sqrt{0.1}} = 0.23 \text{ m}^2/\text{h}
\]

The setting is found in the capacity diagramme below: Presetting 3.

If the sizing point found is between two settings, the highest setting is chosen.

Alternatively, the settings can be found directly in the table "Ordering and specifications".

**Capacity diagramme**

(without radiator and tubing)

![Capacity Diagram](image)

Capacities with \( P \)-band between 0.5 K and 2 K.
Fitting the valve in the radiator

1) The valve housing is soldered to the radiator pipework. It is important to observe the flow arrow on the valve.

Before fitting the valve top and throttle unit the housing must be clean and free of all dirt and the temperature should not exceed 120 degrees C.

2) The two-part insert is assembled as shown. Asymmetric design demands correct assembly. By hand the insert is secured in the valve housing.

3) Using the supplied nut the insert is tightened to 25-28 Nm.

4) The protective cap is fitted last. The cap should not be tightened, but secured about \( \frac{1}{2} \) to \( \frac{3}{4} \) turns.

5) Check spindle operation.

Mounting the thermostatic sensor

The valve cap protects the radiator valve during transportation and in the construction period, before the sensor is mounted. The heating can be manually adjusted using the cap.

All Danfoss RTD thermostatic sensors can be used. They are mounted using just an open ended spanner. The reference mark on the sensor should point up for easy visibility.

The sensor should always be placed where the room air can circulate freely around it.