

Data Sheet

Presetting Valve Type RA-N with Soldering Connection

Application



The RA-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. RA-N has a built-in facility for setting max. flow through the radiator.

The setting options range from $k_v = 0.04 - 0.73 \text{ m}^3/\text{h}$. $K_{vs} = 0.90 \text{ m}^3/\text{h}$.

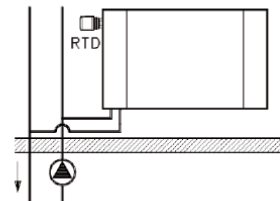
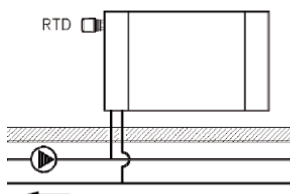
The valve (013G8821) is delivered unassembled as four separate items:

- valve housing (013G8820)
- valve top assembly (013L3417)
- throttle unit (013G0186)
- protective cap, red (013G0276)

All Danfoss thermostatic sensors in the RA series can be combined with the RA-N valve. A patented snap connection 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



Quality

All Danfoss RA 2000 radiator thermostats are manufactured to the highest standards, and are approved to the European standard EN 215.

All Danfoss radiator thermostats are manufactured in factories, assessed and certified by BSI (British Standards Institution) against ISO 9000 and ISO14001.

Presetting

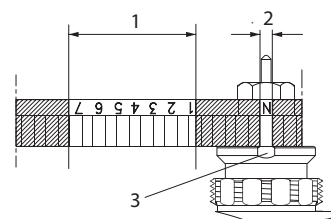
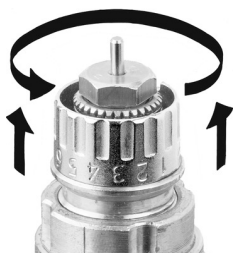
The presetting values of RA-N valves can be adjusted easily and accurately without the use of tools (factory setting = N):

- Remove protective cap / thermostatic sensor
- Find reference mark
- Lift and turn setting ring until the acquired presetting aligns with the reference mark.

Presetting can be selected in steps from 1 to 7. At setting N the valve is fully open. This setting can be used as a flushing position, if the system has to be flushed out because of dirt problems. In one-pipe installations, the setting N must be used.

Settings outside 1 to 7 and N should be avoided.

When the thermostatic sensor has been installed, the presetting is protected against unintended regulation.



1. Presetting range
2. Factory setting and one-pipe system
3. Reference mark

Technical Data

Setting	k_v -value ¹⁾
N	0.73
7	0.52
6	0.43
5	0.35
4	0.25
3	0.16
2	0.09
1	0.04

$K_{vs} = 0.90 \text{ m}^3/\text{h}$

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 m^3/h at a given lift and a pressure drop (Δp) across the valve at 1 bar; $k_v = \frac{Q}{\sqrt{\Delta p}}$. At setting „N“ the k_v -value is stated according to EN 215, at $X_p = 2 \text{ K}$. At lower presetting values X_p is reduced to setting 1, $X_p = 0.5$. At presettings between „1“ and „N“, X_p is between 0.5 and 2 K. $X_p = 2 \text{ K}$ means that the valve is closed at 2 °C higher room temperature. The k_{vs} -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.

Accessories

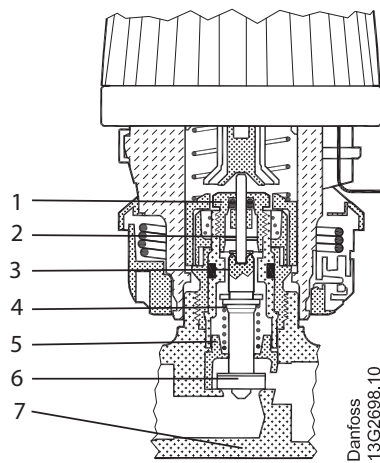
Gland seal

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.

Design

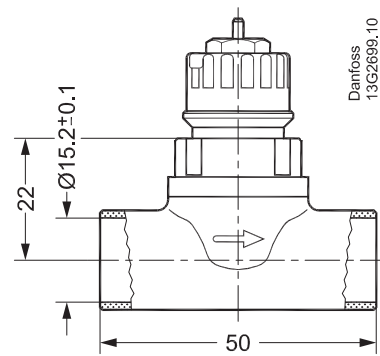


1. Gland seal
2. Pressure pin
3. O-ring seal
4. Spindel
5. Throttle nozzle
6. Valve cone
7. Valve body

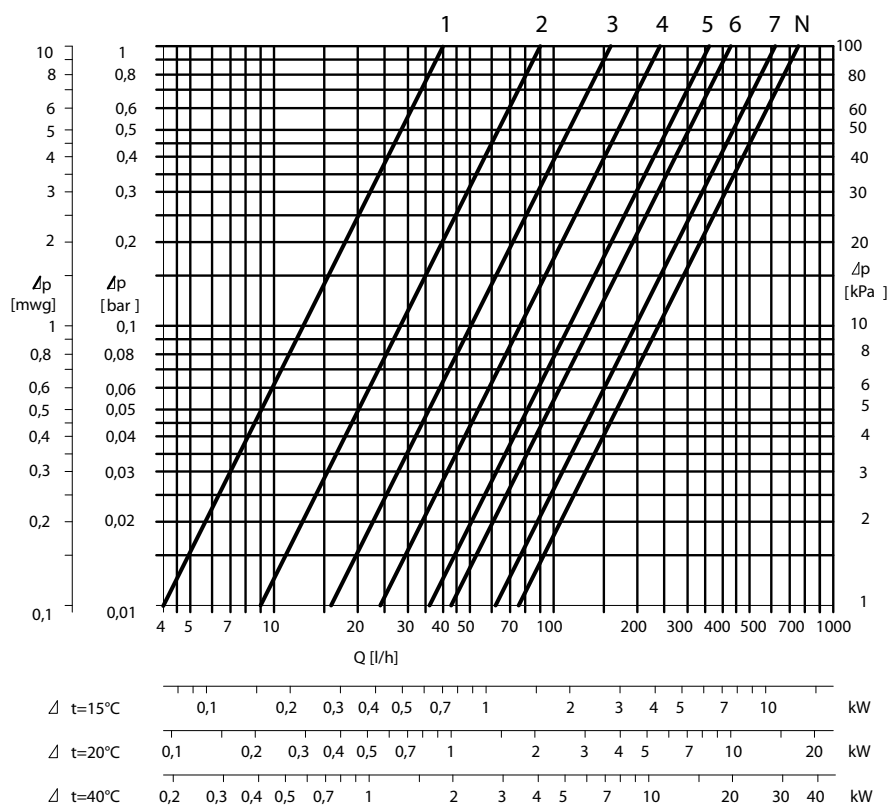
Materials in contact with water

Valve body	Ms 58
O-rings	EPDM
Valve plate	NBR
Pressure pin	Chrome steel
Spindle guide	Tin bronze

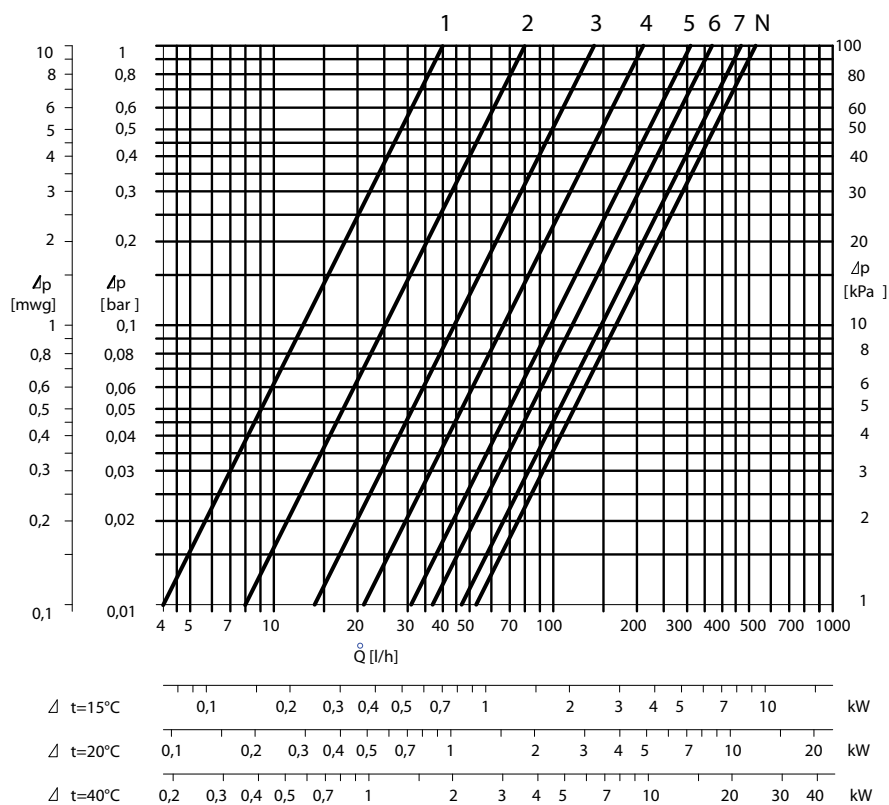
Dimensions



Capacities



Valve capacities in combination with gas filled RA2000 thermostatic sensor



Valve capacities in combination with liquid filled RAE thermostatic sensor

Sizing

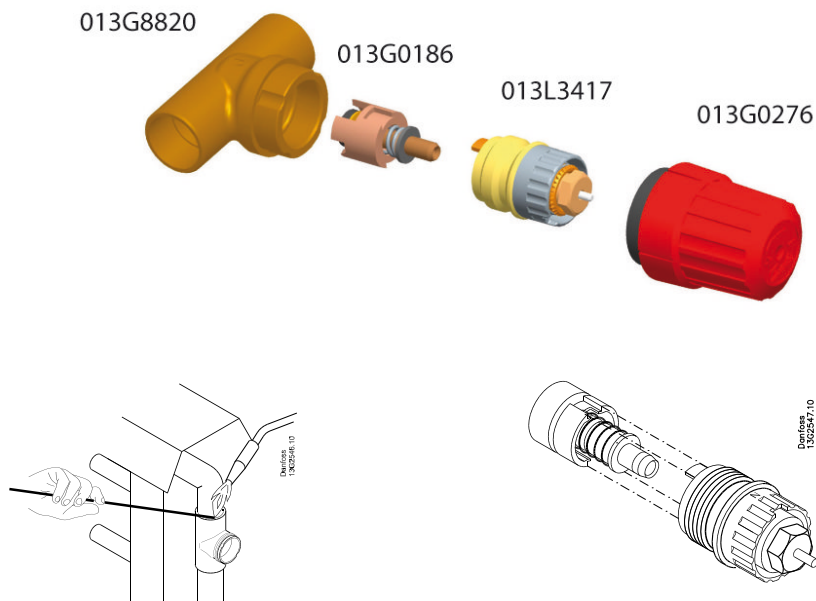
Sizing example:

Required heat:	0.7 kW
Cooling across radiator:	20° C
Flow through radiator:	$Q = \frac{0.7}{20 \cdot 1.16} = 0.03 \text{ m}^3/\text{h} = 0.0083 \text{ l/s}$
Pressure drop across valve:	$\Delta p = 1 \text{ mwg}$
Valve setting:	1

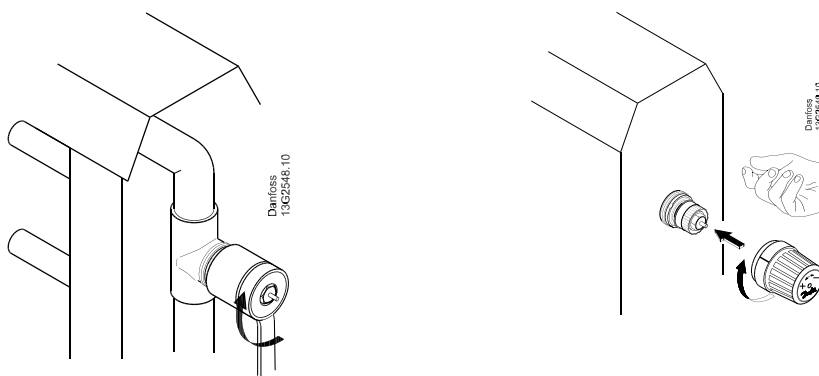
Alternatively the setting can be read directly in the table "Data and Ordering":

$$k_v = \frac{Q (\text{m}^3/\text{h})}{\sqrt{\Delta p (\text{bar})}}$$

Fitting the Valve in the Radiator

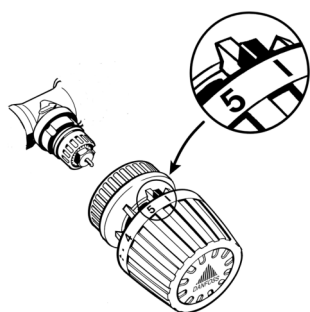


- 1) The valve housing is soldered to the radiator pipework. It is important to observe the flow arrow on the valve. Before fitting the valve top and throttle unit the housing must be clean and free of all dirt and the temperature should not exceed 120 degrees C.
- 2) The two-part insert is assembled as shown. Asymmetric design demands correct assembly. By hand the insert is secured in the valve housing.

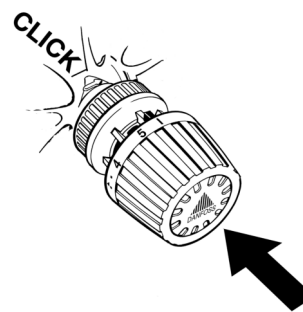


- 3) Using the supplied nut the insert is tightened to 25-28 Nm.
- 4) The protective cap is fitted last. The cap should not be tightened, but secured about 1/2 - 3/4 turns.
- 5) Check spindle operation.

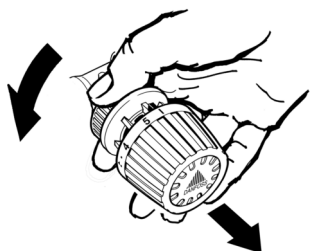
Installation



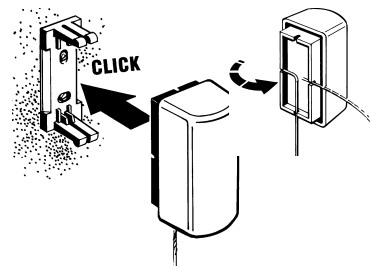
- 1) Remove the valve cover. Check that thermostat is set at the factory setting of 5.



- 2) Push the thermostat firmly onto the valve until an audible "click" is heard.



- 3) To remove the thermostat turn the base counter-clockwise. This will also reset the snap-action mechanism when an audible "click" is heard.



- 4) The remote sensor must not be in a drafty location or be covered. Do not install above a heat source. Attach the sensor bracket to the desired location. Pull out the required length of capillary tube and secure to the sensor as shown. Push the sensor onto the base.

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