

Data Sheet

RA-N Radiator Valves with Integrated Presetting and Self-Sealing Tailpiece

Application



All RA-N valve bodies can be used together with all types of thermostatic elements in the RA 2000 series and with TWA-A thermal actuators.

RA-N valve bodies are manufactured from brass with nickel plating.

RA-N valves are used in two-pipe heating systems and are available in series D and series F to fit local standards.

The pressure pin of the gland seal is of chromium steel and works in a lifetime lubricated O-ring. The complete gland seal assembly can be replaced without draining down the system.

The valve bodies are equipped with a self-sealing tailpiece featuring an O-ring seal.

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). It is recommended that formulations containing mineral oil are avoided.

RA-N valves are fitted with a k_v -limiting device for pre-setting of max. water flow and are available with the following setting ranges:

RA-N 15: $k_v = 0.04 - 0.73 \text{ m}^3/\text{h}$

A comprehensive range of compression fittings for PEX, AluPEX, copper and steel tubes are available - please require special data sheet for Danfoss compression fittings.

Each valve body is supplied with a red protective cap, which can be used for manual regulation during the construction phase.

The protective cap must not be used as a manual shut off device. A special manual shut off device is available as an accessory.

Approved to EN 215



RA-N radiator valves with integrated presetting and self-sealing tailpiece are manufactured to the highest standards, and are approved to the European standard EN 215.

Quality

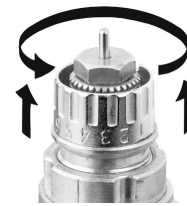
All Danfoss RA 2000 radiator thermostats are manufactured to the highest standards, and are approved to the European standard EN 215.

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

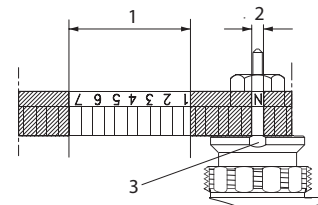
Presetting

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 aquired 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.

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

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

Data and Ordering

Type	Design	Connections		Max. work. press. bar	Max. diff. ¹⁾ press. bar	Test bar	Max. work. temp. °C	Code no.
		Inlet	Outlet					
		Rp	R					
RA-N 15	Angle, F	1/2	1/2	10	0.6	16	120	013G0113
	Straight, F							013G0114
	Angle, D							013G0115
	Straight, D							013G0116
	Horiz. angle, D							013G0117

Type	Design	Pre-setting								
		$k_{v-max.}^{2)}$ (m ³ /h at $\Delta p = 1$ bar)								k_{vs}
		1	2	3	4	5	6	7	N	N
RA-N 15	Angle, F	0.04	0.09	0.16	0.25	0.36	0.43	0.52	0.73	0.90
	Straight, F									
	Angle, D									
	Straight, D									
	Horiz. angle, D									

¹⁾ Working pressure = static + differential pressure. The maximum differential pressure specified is the maximum pressure at which the valves give satisfactory regulation. As with any device which imposes a pressure drop in the system, noise may occur under certain flow/pressure conditions. To ensure quiet operation, maximum pressure drop should not exceed 30 to 35 kPa. The differential pressure can be reduced by the use of the Danfoss differential pressure regulators types AVD, AVDL, AVDS, IVD or ASV-P.

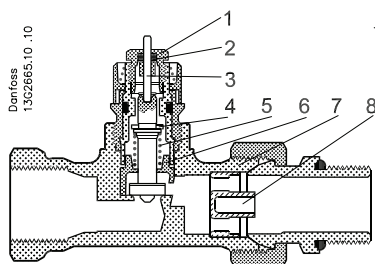
²⁾ The k_v -value indicates the water flow (Q) in m³/h at a pressure drop (Δp) across the valve of 1 bar;
 $k_v = \frac{Q}{\sqrt{\Delta p}}$. At setting N the k_v -value is stated according to EN 215, at $X_p = 2K$ i.e. the valve is closed at 2°C higher room temperature. At lower settings the X_p -value is reduced to 0.5K of the setting value 1. The k_{vs} -value states the flow Q at a maximum lift, i.e. at fully open valve at setting N.

Accessories

Product	Dimension	For valve body	Code no.
Gland seal		All RA valves	013G0290
Compression fittings for steel and copper tubes	R _p 1/2 x Ø 10	RA-N 15	013G4110
	R _p 1/2 x Ø 12		013G4112
	R _p 1/2 x Ø 15		013G4115

All accessories comes in boxes of 10 pcs.

Operating Principle



1. Gland seal
2. O-Ring
3. Pressure pin
4. Seal
5. Regulation spring
6. Setting dial
7. Valve body
8. k_v-nozzle

The radiator thermostats consist of the thermostatic elements of the RA 2000 series and the valve body RA-N. The element and the valve body are ordered separately.

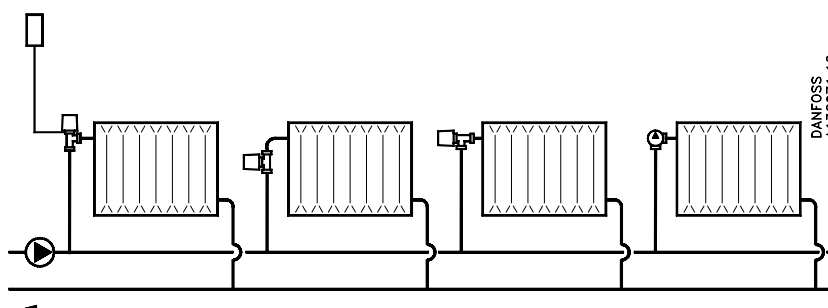
A clamping band with Allen screw ensures a simple, firm connection between element and valve body. The gland seal of the valve can be changed in operation, i.e. with water and pressure on the system.

Valve body and other metal parts	Ms 58, brass
K _v -limiter	PPS
O-ring	EPDM
Valve cone	NBR
Pressure pin and valve spring	Chrome steel
Nozzle	PP

Max. ambient temperature	60 °C
Max. medium temperature	120 °C
Max. working pressure	10 bar
Test pressure	16 bar

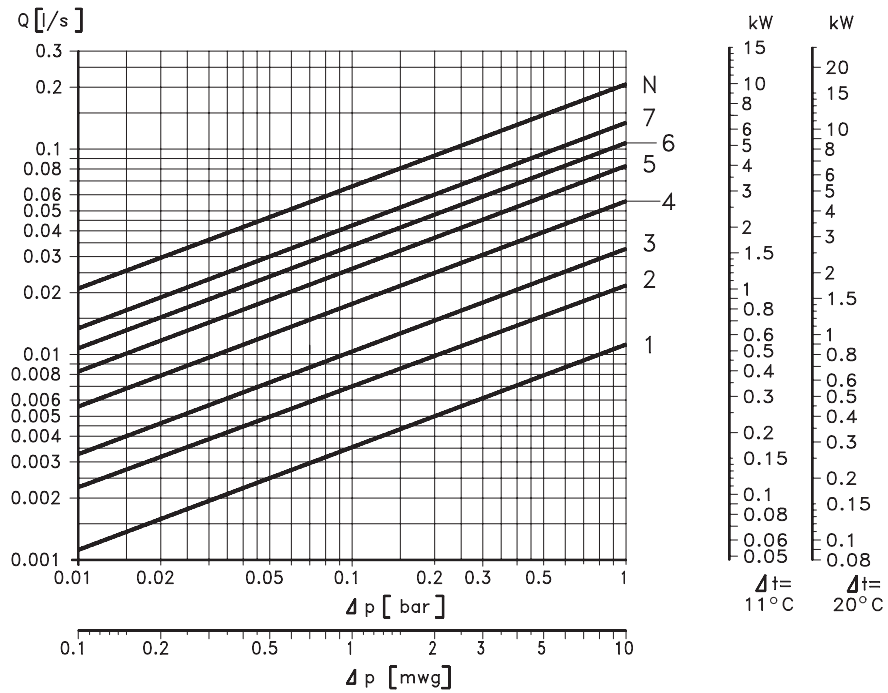
The valve bodies are nickle-plated on the outside.

Principles



Capacities

RA-N 15, R_p 1/2 connection



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:	$\Delta p = 1 \text{ mwig}$
Valve setting:	RA-N 15 2

To ensure quiet operation, maximum pressure drop should not exceed 30-35 kPa (3-3.5 mwig).

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

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

Note:
As with any device which imposes a pressure drop in the system, noise may occur under certain flow/ pressure conditions.

Dimensions

