

## Data Sheet

# Radiator Valves with Integrated Presetting, Types RA-N, 013G3301\* and RA-U, 013G3302

### Application



RA-N and RA-U valve bodies are used with all types of thermostatic sensors with RA 2000 connection and with TWA-A thermal actuators.

Both valves are designed for two-pipe heating systems.

The valves features an integrated pre-setting of maximum water flow.

The setting range is:

RA-N, 013G3301:  $k_v = 0.16 - 1.02 \text{ m}^3/\text{h}$

RA-U, 013G3302:  $k_v = 0.03 - 0.73 \text{ m}^3/\text{h}$

The protective valve cap (red or yellow) may be used for manual regulation during the building period, until the sensor is fitted.

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

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.

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.

### Quality, approvals

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

\* RA-N, code 013G3301, is Keymarked certified according to EN215.

### Presetting

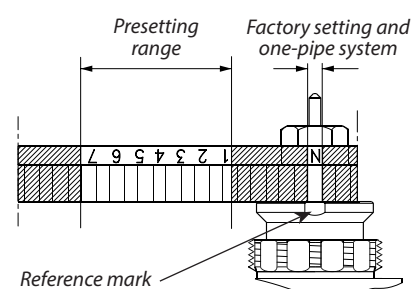
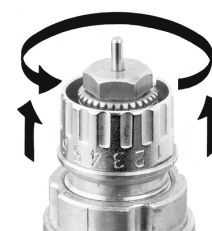
The presetting values of RA-N and RA-U valves can be adjusted easily and accurately without the use of tools (factory setting = N):

- Remove protective cap / thermostatic sensor
- Find reference mark
- Lift and turn setting ring until the required setting 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 is used when flushing or draining the system.

Settings other than the recommended range should be avoided.

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



**Data and ordering**

Type	Design	Connections		Max. work. press.	Max. diff. <sup>2)</sup> press.	Test	Max. work. temp.	Code no
		Inlet	Outlet					
		Rp	R	bar	bar	bar	°C	
RA-N 15	Horiz. angle	1/2	1/2	10	0.6	16	120	<b>013G3301</b>
RA-U 15	Horiz. angle	1/2	1/2	10	0.6	16	120	<b>013G3302</b>

Type	Design	Pre-setting									
		$k_v$ -max. <sup>1)</sup> (m <sup>3</sup> /h at $\Delta p = 1$ bar)									$k_{vs}$
		1	2	3	4	5	6	7	N	N	
RA-N 15	Horiz. angle	0.16	0.20	0.25	0.35	0.47	0.59	0.74	0.81	1.00	
RA-U 15	Horiz. angle	0.03	0.06	0.10	0.19	0.27	0.39	0.44	0.62	0.73	

<sup>1)</sup> 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.

<sup>2)</sup> The  $k_v$ -value indicates the water flow (Q) in m<sup>3</sup>/h at a pressure drop ( $\Delta p$ ) across the valve of 1 bar;

$$k_v = \frac{Q}{\sqrt{\Delta p}} \quad \text{At setting N the } k_v\text{-value is stated according to EN 215, at } X_p = 2K \text{ i.e. the valve is closed at } 2^\circ\text{C}$$

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. When using remote setting adjusters or RAE sensors  $k_v$  values are reduced for identical P-band

	$K_v$ ( $X_p=2$ )	$k_{vs}$
RA-N	0.62	1.00
RA-U	0.44	0.73

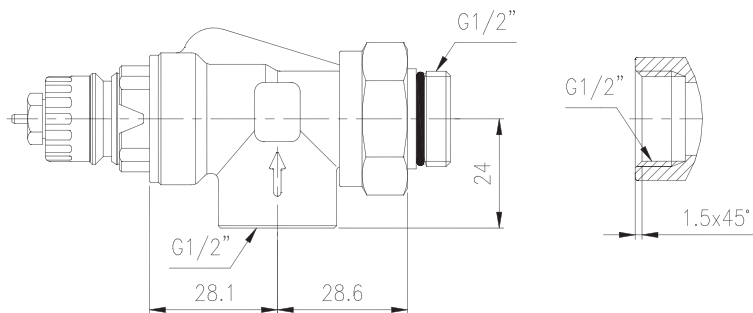
**Technical data**
**Parts in contact with water**

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

The valve bodies are nickel-plated.

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

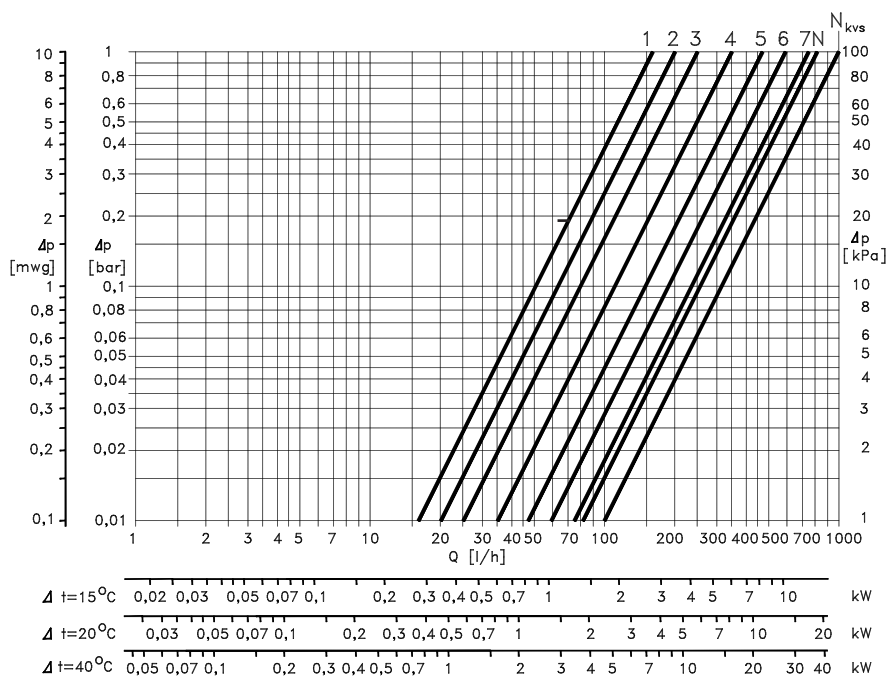
Dimensions



The valve tailpiece features an o-ring seal to ensure easy and safe mounting. The mating part of the radiator must be chamfered 45° in order to prevent damage of the seal. See illustration.

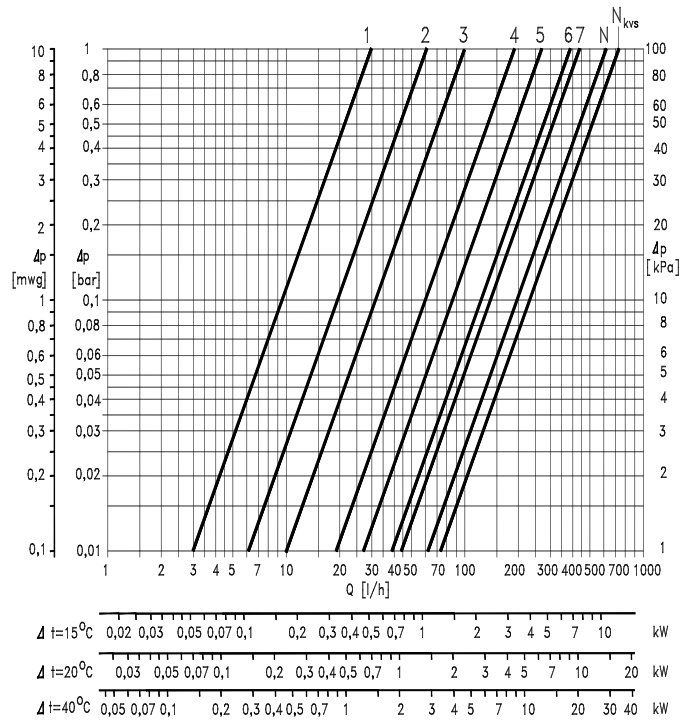
Capacities

RA-N, 013G3301



40%

RA-U, 013G3302



**Sizing example:**

Required heat:	1.5 kW
Cooling across radiator:	20° C
Flow through radiator:	$Q = \frac{1.5}{20 \times 1.16} = 0.064 \text{ m}^3/\text{h} = 0.018 \text{ l/s}$
Pressure drop across valve:	$\Delta p = 1 \text{ mwg}$
Valve setting:	RA-N, 013G3301      2
	RA-U, 013G3302      5

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

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

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