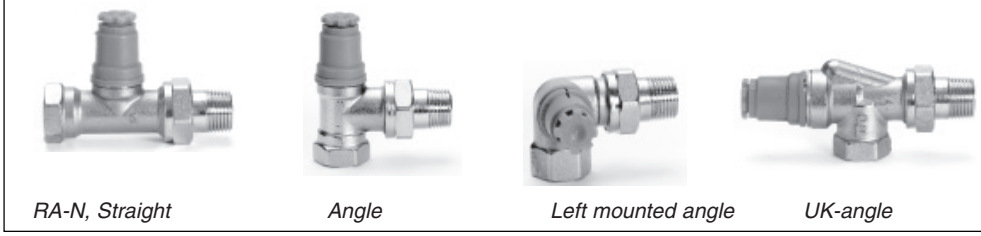
Data sheet

Valve bodies type RA-N with integrated presetting

EN 215-1
HD 1215-2

Application



RA-N, Straight *Angle* *Left mounted angle* *UK-angle*

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

The valve bodies are fitted with a k_v limiting device for pre-setting of max. water flow.

The valve body RA-N is used in two-pipe heating systems and is available with the following setting ranges for max. water flow:

RA-N 10: k_v = 0.04 - 0.56 m³/h
RA-N 15: k_v = 0.04 - 0.73 m³/h
RA-N 20/25: k_v = 0.10 - 1.04 m³/h

The valve bodies are supplied with a protective cap and adjusting screw 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 (code no. 013G5000) should be used.

To be able to distinguish between other valve bodies of the RA 2000 series the protective cap is equipped with a red setting screw.

Compression fittings for 15 mm, 10 mm or 8 mm copper tube are available for valve body RA-N with 3/8" and 1/2" BSP connections.

Valve bodies are manufactured from brass with nickel plating. The pressure pin of the gland seal is of chrominium steel and works in a lifetime lubricated O-ring. The complete gland assembly can be replaced without draining down the system.

Should water treatment be used it is essential that dosing instructions of the manufacturer are strictly observed. It is recommended that formulations containing mineral oil are avoided.

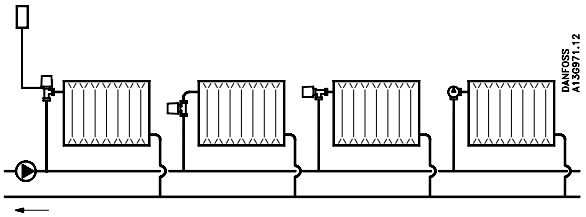
Approved to EN 215

All Danfoss RA 2000 radiator thermostats are manufactured to the highest standards, and are approved to the European standard EN 215 and dimension standard HD 1215-2, which superseeds BS 6284 1983.

Quality standards

All Danfoss radiator thermostats are manufactured in factories, assessed and certified by BSI against BS 5750 (ISO 9000).

Principles



Datasheet **Valve body type RA-N with integrated presetting**

Data and ordering

Type	Code nr.	Design	Connections		Pre-setting									Max. Pressure			Max. working temp.
			In-let	Out-let	k_v-max. [1] (m^3/h at Δp = 1 bar)								k_{vs}	Wor-king	Diff. (Δp)	Test	
			R_p	R	1	2	3	4	5	6	7	N	N	bar	bar [2]	bar	°C
RA-N 10	**013G0031** L **013G0032** = **013G0151** L (UK) **013G0231** L-right **013G0232** L-left		3/8	3/8	0,04	0,08	0,12	0,19	0,25	0,33	0,38	0,56	0,65				
RA-N 15	**013G0033** L **013G0034** = **013G0153** L (UK) **013G0233** L-right **013G0234** L-left		1/2	1/2	0,04	0,08	0,12	0,20	0,30	0,40	0,51	0,73	0,90	10	0.6	16	120
RA-N 20	**013G0035** L **013G0036** =		3/4	3/4	0,10	0,15	0,17	0,26	0,35	0,46	0,73	1,04	1,40				
	013G0155 L (UK)		3/4	3/4	0,16	0,20	0,25	0,35	0,47	0,60	0,73	0,80	1,00				
RA-N 25	**013G0037** L **013G0038** =		1	1	0,10	0,15	0,17	0,26	0,35	0,46	0,73	1,04	1,40	.			

L Indicates angle type valve body - vertical sensor
= Indicates straight type valve body
L (UK) Indicates UK-angle type valve body - horizontal sensor
L-right Indicates right mounted angle type valve body
L-left Indicates left mounted angle type valve body

[1] The k_v-value indicates the water flow (Q) in m^3/h at a pressure drop (Δp) across the valve of 1 bar;
$k_v = Q: \sqrt{\Delta p}$. 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.

[2] Working pressure = static + differential pressure. The maximum differential pressure specified is the maximum pressure at which the valves give satisfactory regulation.

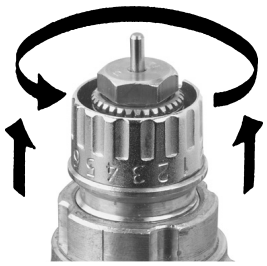
As with any device which imposes a pressure drop in the system, noise may occur under certain flow/pressure conditions. To ensure quiet operation, maximum pressure drop should not exceed 30 to 35 kPa. The differential pressure can be reduced by the use of the Danfoss differential pressure regulators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

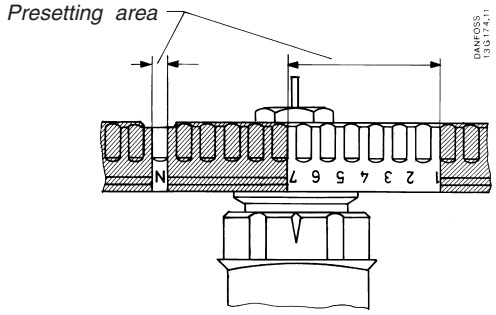
Accessories

Product	Code no.	Dimension	For valve body
Gland seal	**013G0290**		All RA valves
Compression fitting for steel- and copper tubes include a compression ring and a nipple	**013G4100**	R_p 3/8 x Ø 10	RA-N 10
	013G4102	R_p 3/8 x Ø 12	
	013G4110	R_p 1/2 x Ø 10	RA-N 15
	013G4112	R_p 1/2 x Ø 12	
	013G4115	R_p 1/2 x Ø 15	

Accessories are sold in boxes of 10.

Setting





With valve body type RA-N the calculated setting value can be set easily and exactly without using special tools.

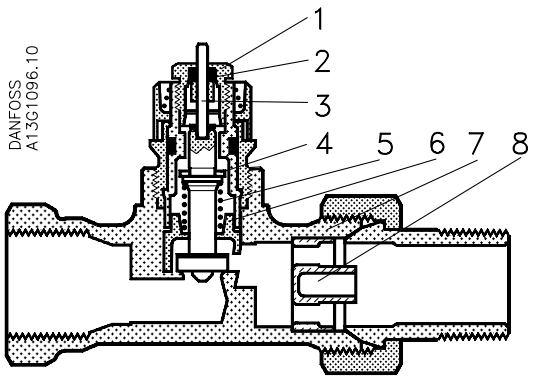
- remove the protective cap or sensor element
- raise the setting ring
- turn the scale on the setting ring until the required scale value faces the reference mark
- release the setting ring

The pre-setting can be set between the values:

1 - 1.5 - 2 - 2.5 ····· 6.5 - 7 - N.

At setting N, the valve is completely open. A setting in the shaded area should be avoided. When the sensor element is mounted, the presetting is hidden, and is thus protected against alteration.

Operating principle



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

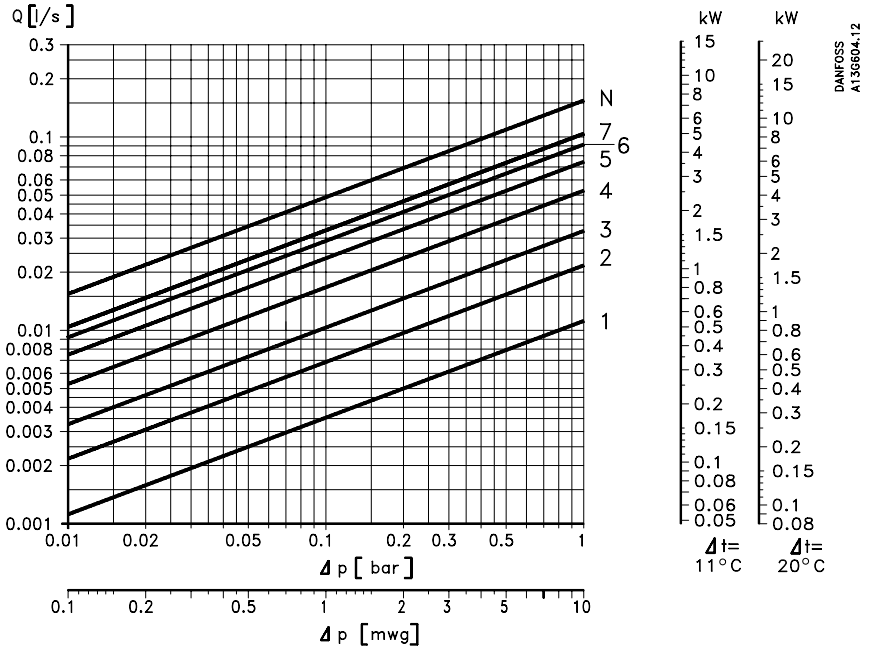
Valve body and other metal parts	Ms 58, brass
K_V-limiter	PPS
O-ring	EPDM
Valve cone	NBR
Pressure pin and valve spring	Chrome steel
Nozzle	PP

The valve bodies are nickle-plated on the outside.

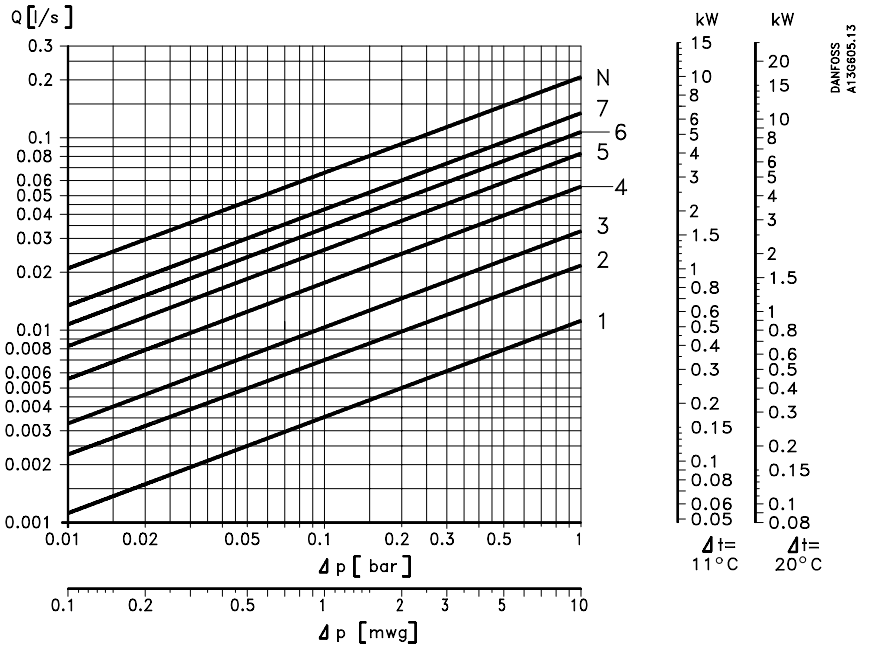
Max. ambient temperature	60 °C
Max. medium temperature	120 °C
Max. working pressure	10 bar
Test pressure	16 bar

Capacities

RA-N 10, R_p 3/8 connection



RA-N 15, R_p 1/2 connection



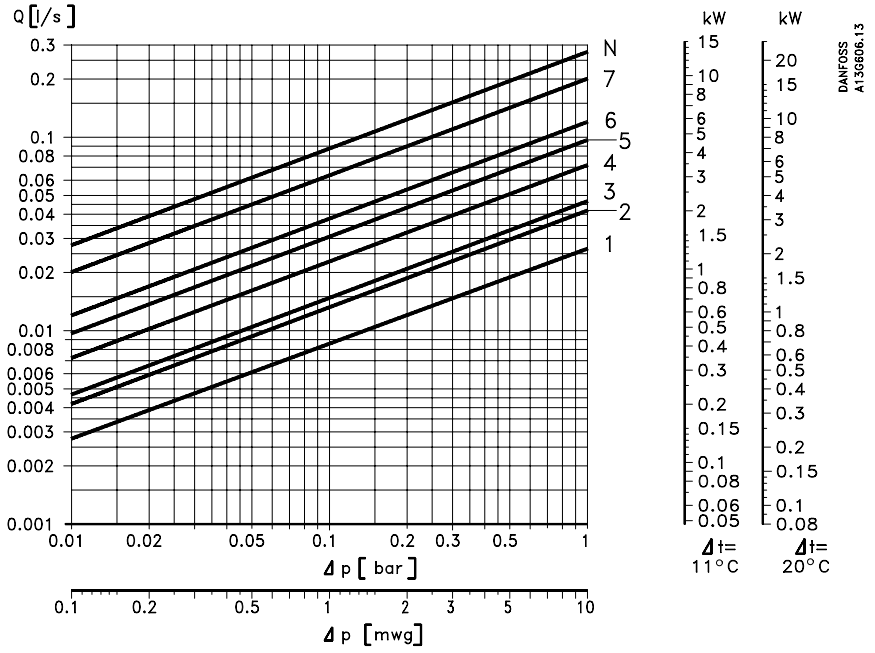
Note:
As with any device which imposes a pressure drop in the system, noise may occur under certain flow/pressure conditions. To ensure quiet operation, maximum pressure drop should not exceed 30-35 kPa (3-3,5 mwg).

Sizing example:
Required heat: 0.7 kW
Cooling across radiator: 20° C.
Flow through radiator:
$Q = \frac{0.7}{20 \times 1.16} = 0.03$ m³/h = 0.0083 l/s.
Pressure drop across valve: Δp = 1 mwg.
Valve setting: RA-N 10 2
RA-N 15 2
RA-N 20/25 1

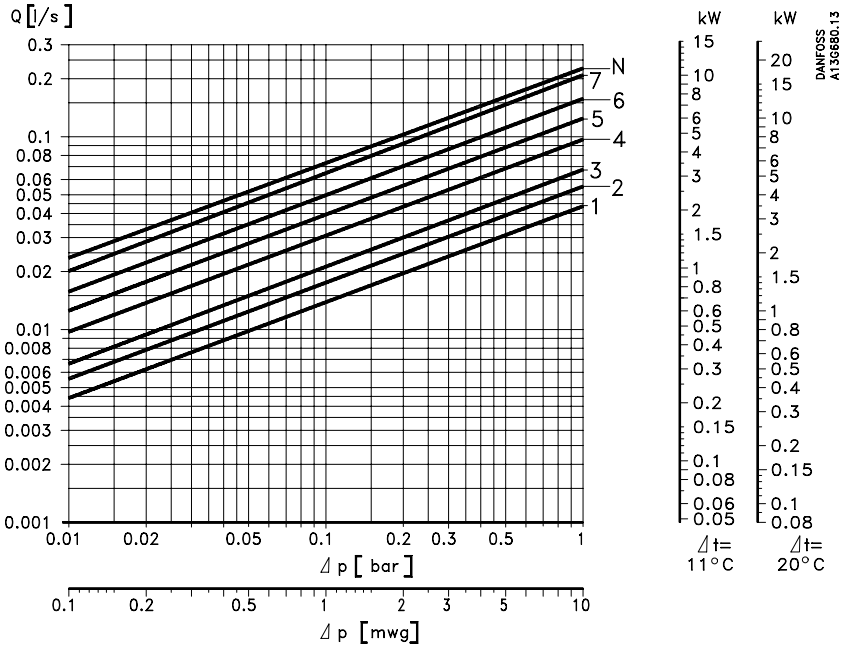
Alternatively the setting can be read directly in the table »Data and ordering«:

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

RA-N 20/25, R_p 3/4 - R_p 1 connection

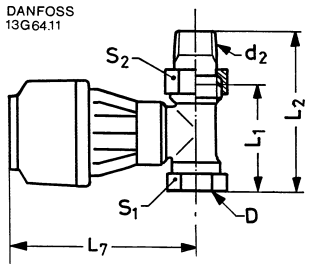


RA-N 20 UK, R_p 3/4 connection

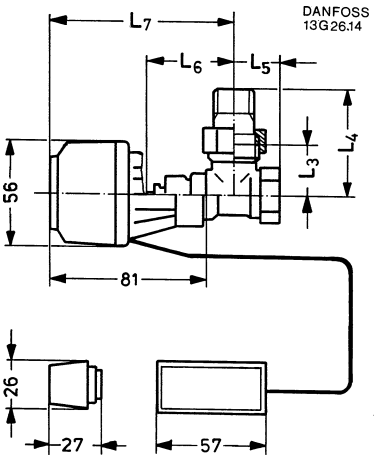


Note:
As with any device which imposes a pressure drop in the system, noise may occur under certain flow/ pressure conditions. To ensure quiet operation, maximum pressure drop should not exceed 30-35 kPa (3-3,5 mwg).

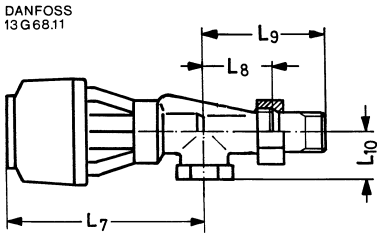
Dimensions



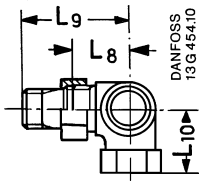
Straight valve body



Angle valve body



UK-angle valve body



Right mounted angle

L Indicates angle valve body.
= Indicates straight valve body.
L (UK) Indicates UK-angle valve body.
L-angle indicates right/left mounted angle valve body

DN	Type	D	d_2	L_1	L_2	L_3	L_4	L_5	L_6	L_7	L_8	L_9	L_{10}	Arc.flats	
		ISO 7-1												S_1	S_2
10	RA-N 10 L, =	R_p 3/8	R 3/8	60	85	27	52	22	47	96				22	27
10	RA-N 10 L (UK)	R_p 3/8	R 3/8						59	108	26	51	22	22	27
10	RA-N 10 L-angle	R_p 3/8	R 3/8						47	103	27	52	27	22	27
15	RA-N 15 L, =	R_p 1/2	R 1/2	67	95	30	58	26	47	96				27	30
15	RA-N 15 L (UK)	R_p 1/2	R 1/2						60	109	29	57	27	27	30
15	RA-N 15 L-angle	R_p 1/2	R 1/2						47	96	30	58	33	27	30
20	RA-N 20 L, =	R_p 3/4	R 3/4	74	106	34	66	29	52	101				32	37
20	RA-N 20 L (UK)	R_p 3/4	R 3/4						61	110	34	66	30	32	37
25	RA-N 25 L, =	R_p 1	R 1	90	126	40	75	34	52	101				41	46