

## Data Sheet

# Valve Bodies Type RA-UN and RA-UR with Delta Gland Seal

### Application



RA-UN, Straight



Angle



UK-angle



RA-UR

All RA-UN/UR 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.

RA-UN is for mounting in the flow and RA-UR in the return. An arrow on the valve body indicates the direction of flow.

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

RA-UN  $k_v = 0.02 - 0.48 \text{ m}^3/\text{h}$

RA-UR  $k_v = 0.02 - 0.47 \text{ m}^3/\text{h}$

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 yellow.

Compression fittings for 15 mm, 10 mm or 8 mm copper tube are available for valve body RA-UN/UR 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 chromium 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

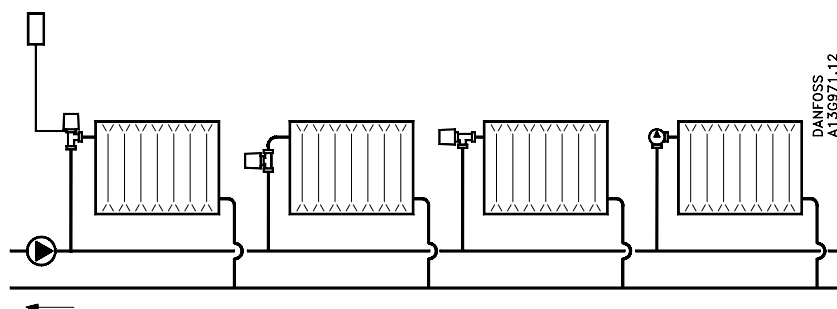


All Danfoss RA 2000 radiator thermostats are manufactured to the highest standards, and are approved to the European standard EN 215 and dimension standard HD 1215-2, which supersedes BS 6284 1983.

### Quality Standards

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

Principles



Data and Ordering

Type	Design	Connections		Max. work. press. bar	Max. diff. <sup>1)</sup> press. bar	Test bar	Max. work. temp. °C	Code no.																
		Inlet R <sub>p</sub>	Outlet R																					
RA-UN 10	Angle	3/8	3/8	10	0.6	16	120	013G3721																
	Straight							013G3722																
	UK							013G3741																
RA-UN 15	Angle	1/2	1/2					10	0.6	16	120	013G3723												
	Straight											013G3724												
	UK											013G3043												
RA-UN 20	Angle	3/4	3/4									10	0.6	16	120	013G3005								
	Straight															013G3006								
RA-UR 10	Angle	3/8	3/8													10	1.0	16	120	013G3299				
	Straight																			013G3298				
	UK																			013G3297				
RA-UR 15	Angle	1/2	1/2																	10	1.0	16	120	013G3229
	Straight																							013G3228

Type	Design	Pre-setting																										
		k <sub>v-max.</sub> <sup>2)</sup> (m <sup>3</sup> /h at Δp = 1 bar)									k <sub>vS</sub>																	
		1	2	3	4	5	6	7	N	N																		
RA-UN 10	Angle	0.02	0.04	0.07	0.12	0.19	0.27	0.33	0.48	0.57																		
	Straight																											
	UK																											
RA-UN 15	Angle										0.02	0.04	0.07	0.12	0.19	0.27	0.33	0.48	0.57									
	Straight																											
	UK																											
RA-UN 20	Angle																			0.02	0.04	0.07	0.12	0.19	0.27	0.33	0.48	0.57
	Straight																											
RA-UR 10	Angle																											
	Straight																											
	UK																											
RA-UR 15	Angle	0.02	0.03	0.06	0.08	0.14	0.20	0.27	0.47	0.53																		
	Straight																											

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.

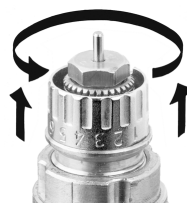
2) The  $k_v$ -value indicates the water flow (Q) in m<sup>3</sup>/h at a pressure drop ( $\Delta p$ ) across the valve of 1 bar;  
 $k_v = \frac{Q}{\sqrt{\Delta p}}$ . At setting N the  $k_v$ -value is stated according to EN 215, at  $X_p = 2K$  i.e. the valve is closed at 2°C higher room temperature. 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. When using remote setting adjusters or RAE sensors  $k_v$ -values are reduced for identical P-band

Accessories

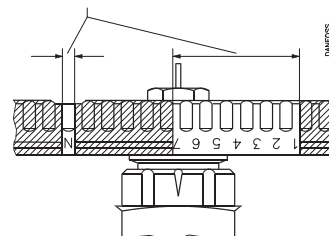
Product	Dimension	For valve body	Code no.
Delta seal		All RA valves	013G0297
Compression fittings for steel and copper tubes, incl. compression ring and nipple	R <sub>p</sub> 3/8 x Ø 10	RA-UN/RA-UR 10	013G4100
	R <sub>p</sub> 3/8 x Ø 12		013G4102
	R <sub>p</sub> 1/2 x Ø 10	RA-UN/RA-UR 15	013G4110
	R <sub>p</sub> 1/2 x Ø 12		013G4112
	R <sub>p</sub> 1/2 x Ø 15		013G4115

Accessories are sold in boxes of 10.

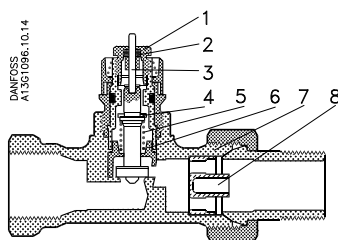
Setting



Presetting area



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 a thermostatic element of the RA 2000 series and a valve body.

The element and the valve body are ordered separately.

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

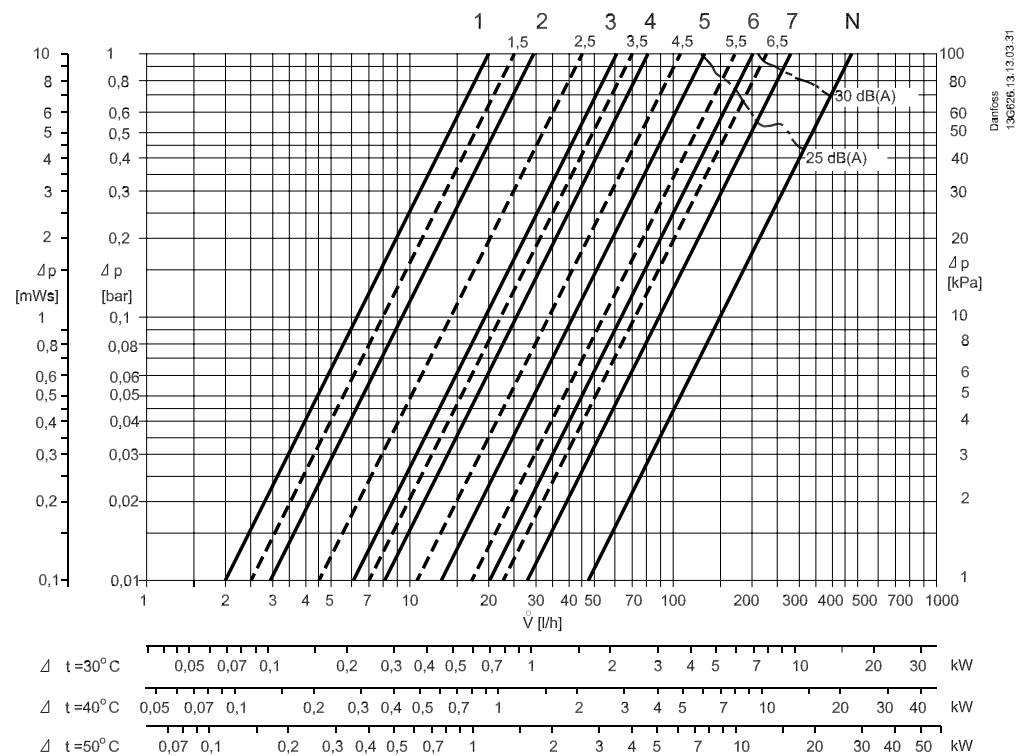
Max. ambient temperature	60 °C
Max. medium temperature	120 °C
Max. working pressure	10 bar
Test pressure	16 bar

The valve bodies are nickle-plated on the outside.

Capacities

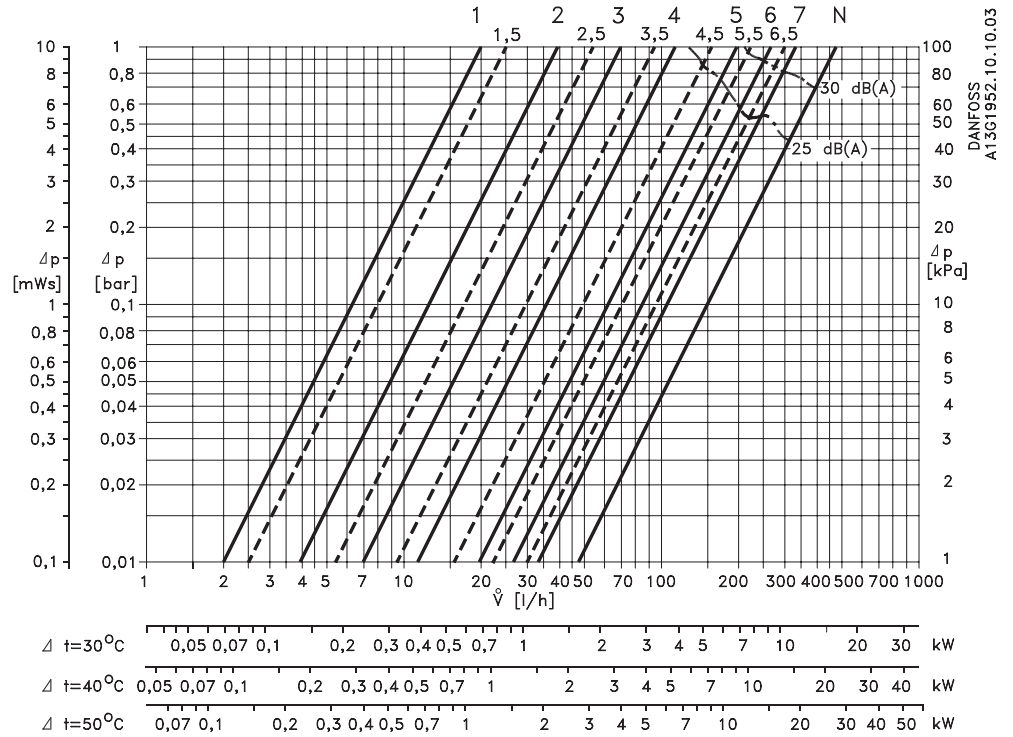
RA-UN presetting diagram

Capacities with RA2000 sensor with a P-band between 0,5K and 2K



RA-UR presetting diagram

Capacities with RA2000 sensor with a P-band between 0,5K and 2K



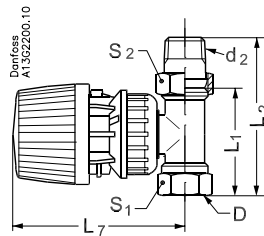
Sizing example

Required heat:	0.7 kW = 700 W	
Cooling across radiator:	30° C	
Flow through radiator:	$Q = \frac{700 \text{ W}}{30 \times 1.16} = 20 \text{ l/h}$	
Pressure drop across valve:	$\Delta p = 1 \text{ mwg}$	
Valve setting:	RA-UN/RA-UR	2

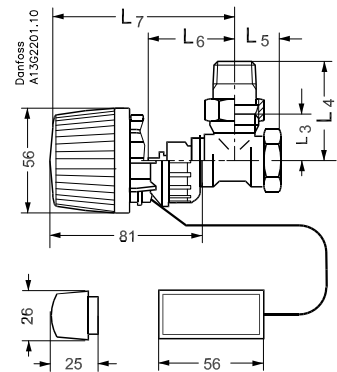
Alternatively the setting can be read directly in the table "Data and Ordering":

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

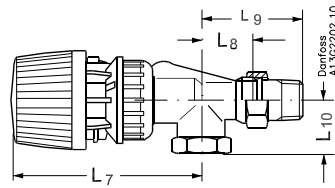
Dimensions



Straight valve body with thermostatic sensor RA 2990



Angle valve body with thermostatic sensor RA2992



UK-angle valve body with thermostatic sensor RA 2990

Type	D	d <sub>2</sub>	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	L <sub>5</sub>	L <sub>6</sub>	L <sub>7</sub>	L <sub>8</sub>	L <sub>9</sub>	L <sub>10</sub>	Arc. flats	
	ISO 7-1												S1	S2
RA-UN 10	R <sub>p</sub> 3/8	R 3/8	60	85	27	52	22	47	96				22	27
RA-UN 10 UK	R <sub>p</sub> 3/8	R 3/8						59	108	26	51	22	22	27
RA-UN 15	R <sub>p</sub> 1/2	R 1/2	67	95	30	58	26	47	96				27	30
RA-UN 15 UK	R <sub>p</sub> 1/2	R 1/2						60	109	29	57	27	27	30
RA-UN 20	R <sub>p</sub> 3/4	R 3/4	74	106	34	66	29	47	96				32	37
RA-UR 10	R <sub>p</sub> 3/8	R 3/8	60	85	28	53	22	47	96				22	27
RA-UR 10 UK	R <sub>p</sub> 3/8	R 3/8						47	96	28	53	27	22	27
RA-UR 15	R <sub>p</sub> 1/2	R 1/2	67	95	28	53	27	47	96				22	27



Danfoss A/S  
Heating Solutions  
Haarupvaenget 11  
8600 Silkeborg  
Denmark  
Phone: +45 7488 8000  
Fax: +45 7488 8100  
Email: [heating.solutions@danfoss.com](mailto:heating.solutions@danfoss.com)  
[www.heating.danfoss.com](http://www.heating.danfoss.com)

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