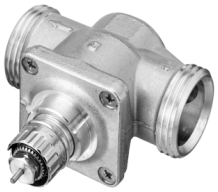
Data Sheet

RA-C Valves for Cooling and Heating Circuits

Products

RA-C 15 cooling valve



RA-C 20 cooling valve

Together with Danfoss selfacting and electronic controls, RA-C valves make up a perfect combination for control of cooling and heating circuits.

The RA-C valve is a normally open valve. In an application with self-acting sensors type FEK or FED it is ensured that the cooling valve opens when the room temperature is rising above the set temperature.

The RA-C valve has 4 presettings, thus the correct quantity of water is ensured for each cooling circuit and it is PN16 approved.

The valve has two external threads thus fittings for various pipe types may be mounted.

Moreover, Danfoss can also offer a comprehensive range of fittings (see back page).

Ordering and Specifications

Valve	Con-nec-tions	Presettings: k_v-value [1], m^3/h				k_{vs}	Max. work. press. [3]	Max. diff. press.[2]	Test press.	Water temp.	Code no.
		1	2	3	N						
RA-C 15	2 x G ¾ A	0.30	0.55	0.75	0.90	1.20	16 bar	0.6 bar	24 bar	-10 - 120 °C	**013G3094**
RA-C 20	2 x G 1 A	0.80	1.10	1.70	2.60	3.30					**013G3096**

[1] *The k_v-values show the flow (Q) in m^3/h at a differential pressure (Δp) of 1 bar through the valve. At presetting N the k_v-value is shown at X_p = 3 K. The X_p-value decreases at lower presettings thus the k_v-value at presetting 1 is shown at X_p = 1 K.*

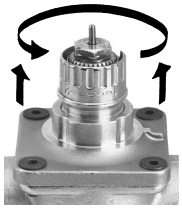
[2] *The max. differential pressure specified is the maximum pressure at which the valves give satisfactory regulation. As with any device which imposes a pressure drop on the system, noise may occur under certain flow/pressure conditions. A differential pressure between 0.1 and 0.3 bar across the valves is recommended. The differential pressure can be reduced using Danfoss differential pressure regulators.*

[3] *Shut-off PN10 approved.*

Presetting

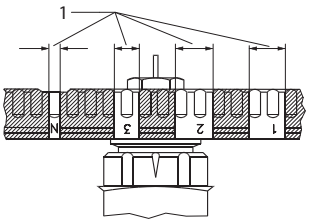
With the valve body type RA-C the calculated setting can be set easily and exactly without using special tools:

- 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 presetting can be set at the values: 1- 2 - 3 and N. At setting N, the valve is completely open.

A setting in the shaded areas should be avoided. When the sensor element is mounted, the presetting is hidden, and is thus protected against alteration.



1. Presetting range

Pressure and Noise Conditions

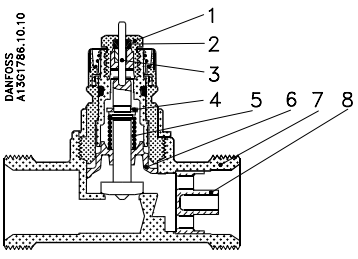
Special demands are made on the various components of the system. This is due to water temperature conditions, the chosen pipe types and pipe dimensions of both chilled ceilings and fancoils/induction units and the structure of the cooling circuits.

In chilled ceilings and fancoils/induction-units relatively large differential pressure and water flow are often used compared to normal heating systems. This may lead to noise nuisance.

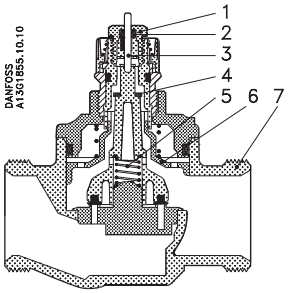
The RA-C valve has especially been designed to correspond to these demands, no matter whether selfacting or electronic controls are used.

Design

RA-C 15



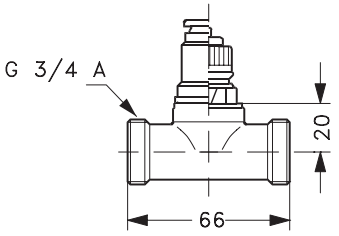
RA-C 20



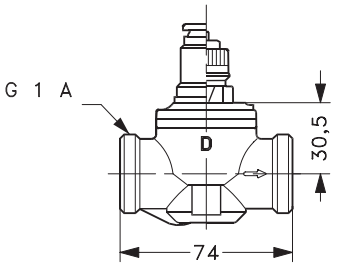
1. Gland seal
2. O-ring
3. Pressure pin
4. Seal
5. Regulation spring
6. Presetting bush
7. Valve body
8. k_v-nozzle

Dimensions

RA-C 15



RA-C 20

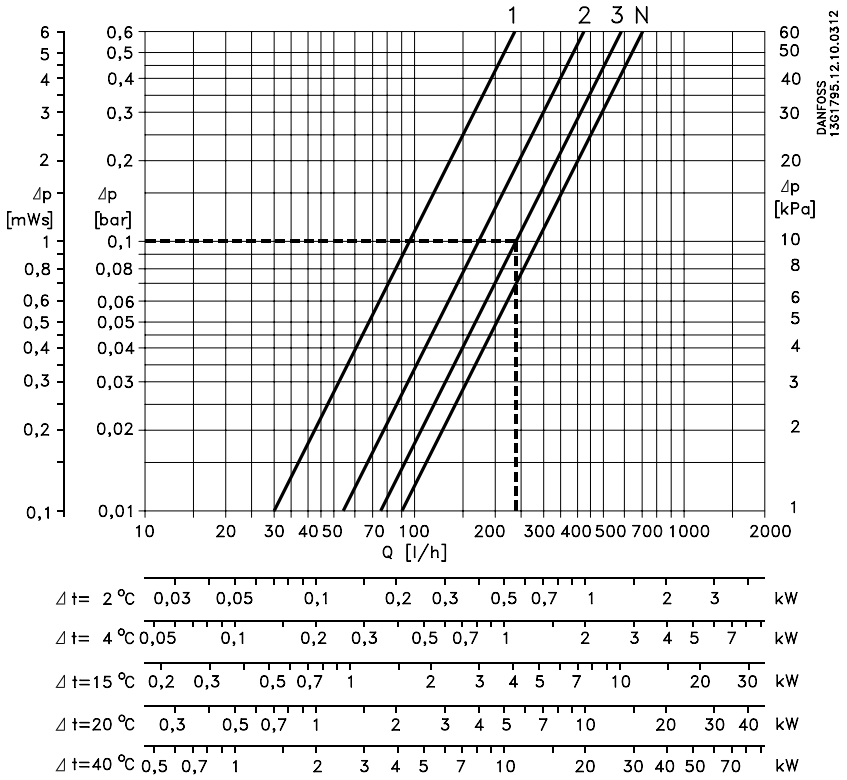


Materials in contact with water

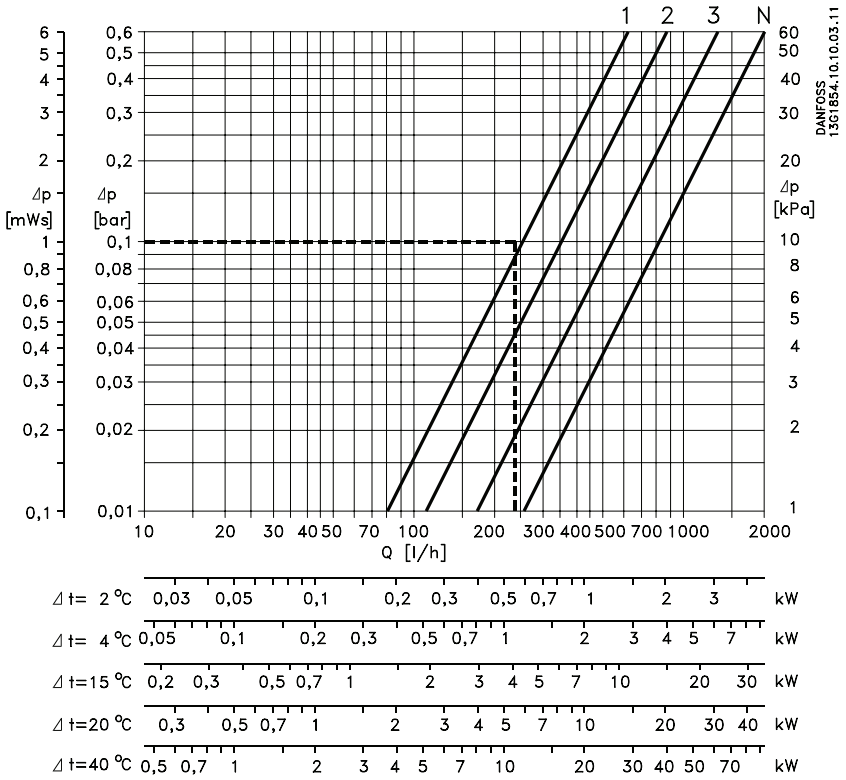
Valve body and other metal parts	Corrosion resistant brass
Spindle	Corrosion resistant brass
Throttle nozzle	PPS
O-ring	EPDM
Valve cone	NBR
Gland seal pressure pin	Chrome steel
k_v-nozzle	PP

Capacities

RA-C 15



RA-C 20



Sizing example, chilled ceiling

Cooling demand:	Φ = 0.55 kW
System temperature rise:	Δt = 2 °C
Differential pressure:	Δp = 0.1 bar
Calculated water quantity:	$Q = \frac{550}{2 \times 1.16} = 237\ l/h$

The setting is found in the capacity diagramme:

RA-C 15: Presetting value 3
RA-C 20: Presetting value 1

Capacities with P-band between 1 and 3 K.

Accessories: Compression Fittings

Compression fittings for PEX plastic tubing

Compression fittings are for connecting Danfoss valves to circuits in heating systems only.
Compression fittings are used for connecting PEX plastic tubings in accordance with DIN 16892/16893.
Maximum operating pressure and temperature are given by the tubing manufacturer. However, 10 bar and 95° C must not be exceeded.
One set consists of one olive, one supporting bush and one union nut.

External thread

Internal thread

For PEX plastic tubing Connection	Tube dimension	Max. working pressure	Test pressure	Max. flow temperature	Code no.
G ¾", internal thread	12 x 2 mm	6 bar	10 bar	95 °C	**013G4152**
	13 x 2 mm	6 bar	10 bar	95 °C	**013G4153**
	14 x 2 mm	6 bar	10 bar	95 °C	**013G4154**
	15 x 2.5 mm	6 bar	10 bar	95 °C	**013G4155**
	16 x 1.5 mm	6 bar	10 bar	95 °C	**013G4157**
	16 x 2 mm	6 bar	10 bar	95 °C	**013G4156**
	16 x 2.2 mm	6 bar	10 bar	95 °C	**013G4163**
	17 x 2 mm	6 bar	10 bar	95 °C	**013G4162**
	18 x 2 mm	6 bar	10 bar	95 °C	**013G4158**
	18 x 2.5 mm	6 bar	10 bar	95 °C	**013G4159**
	20 x 2 mm	6 bar	10 bar	95 °C	**013G4160**
	20 x 2.5 mm	6 bar	10 bar	95 °C	**013G4161**

Compression fittings for Alupex tubing

Compression fittings are for connecting Danfoss valves to circuits in heating systems only.
When connecting circuits with compression fittings for Alupex tubing, always observe the maximum operating pressure and temperature which are given by the tubing manufacturer. However, 10 bar and 95° C must not be exceeded.
One set consists of one olive, one supporting bush, one insulation washer and one union nut.

External thread

Internal thread

For Alupex tubing Connection	Tube dimension	Max. working pressure	Test pressure	Max. flow temperature	Code no.
G ¾", internal thread	12 x 2 mm	6 bar	10 bar	95 °C	**013G4182**
	14 x 2 mm	6 bar	10 bar	95 °C	**013G4184**
	15 x 2.5 mm	6 bar	10 bar	95 °C	**013G4185**
	16 x 2 mm	6 bar	10 bar	95 °C	**013G4186**
	16 x 2.25 mm	6 bar	10 bar	95 °C	**013G4187**
	18 x 2 mm	6 bar	10 bar	95 °C	**013G4188**
	20 x 2 mm	6 bar	10 bar	95 °C	**013G4190**
	20 x 2.5 mm	6 bar	10 bar	95 °C	**013G4191**

Compression fittings for steel and copper tubing

Compression fittings are for connecting Danfoss valves to circuits in heating systems only.
Compression fittings are used for connecting steel and copper pipes in accordance with DIN 1786/2391.
One set consists of one olive and one union nut.
It is recommended to use supporting bushes with soft pipes.

External thread

Internal thread

For steel and copper tubing Connection	Tube dimension	Max. working pressure	Test pressure	Max. flow temperature	**Code no.**
G ¾", internal thread	10 mm	16 bar	24 bar	120 °C	**013G4120**
	12 mm	16 bar	24 bar	120 °C	**013G4122**
	14 mm	16 bar	24 bar	120 °C	**013G4124**
	15 mm	16 bar	24 bar	120 °C	**013G4125**
	16 mm	16 bar	24 bar	120 °C	**013G4126**
	18 mm	16 bar	24 bar	120 °C	**013G4128**
G 1"	18 mm	16 bar	24 bar	120 °C	**013U0134**
	22 mm	16 bar	24 bar	120 °C	**013U0135**

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