Data Sheet

RA-C Valves
For Cooling & Heating Circuits

Applications:

RA-C 15

RA-C 20

RA-C is a high capacity two-port valve used in the regulation of hot or chilled water in hydronic systems. The RA-C's actuator mounting connection is identical to the RA2000 family, allowing a wide selection of thermostatic and electric actuators to suit hydronic applications such as chilled ceilings, chilled beams, fan coils and induction units for heating/cooling, and radiators.

RA-C valve features:

- Four pre-settings ensure correct water flow through the valve.
- Easy and exact presetting without using special tools.
- Designed for low velocity noise for cooling and heating systems.
- Corrosion resistant brass.
- External threads that allow tailpieces for either threaded male NPT or solder female piping connections.

Ordering Information:

Code Number	Valve	Valve Size	Connection Size
013G3094	**RA-C 15**	1/2"	2 x G ¾ A [1]
013G3096	**RA-C 20**	3/4	2 x G 1 A [2]

[1] Requires two union nuts and two tailpieces for the appropriate sized valve. Order separately.

Tail Pieces and Union Nuts – Requires two of each	
013U0496	½" Union Nut
013U8608	½" Female Solder Tail Piece
013U0476	½" Male NPT Tail Piece
013U0499	¾" Union Nut
013U8609	¾" Female Solder Tail Piece
013U0479	¾" Male NPT Tail Piece

Spare Parts	
013G0554	Packing Gland for RA-C

Technical Specifications:

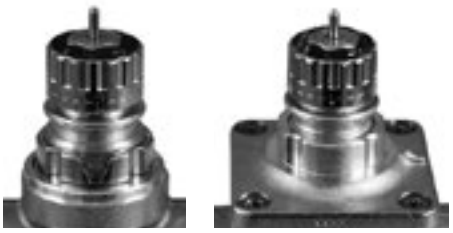
RA-C Valve	Presettings: C_V - value[2], US gpm				C_{VS}[3]
	1	2	3	N	
RA-C 15	0.35	0.64	0.88	1.05	1.39
RA-C 20	0.94	1.29	1.99	3.04	3.82

[2] The Cv-values show the flow (Q) in US gal/min at a differential pressure (delta p) of 1 psi through the valve at ring pre-settings 1, 2, 3, and N. The recommended setting is determined from the capacity diagrams. (Refer to Capacity section) A setting of N would be considered as the maximum flow typically experienced with using a modulating actuator such as the RA2000 series of actuators.

[3] The Cvs-value states the flow (Q) at a maximum lift, i.e. fully open with a setting of N. Unlike the Cv value of N, the flow from the Cvs is experienced when an on/off electronic actuator (such as a TWA) utilizes the full open range of the valve.

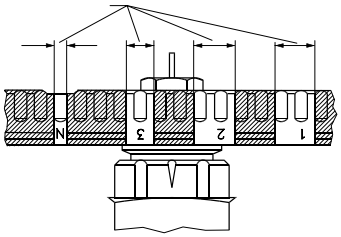
Maximum working pressure	145 psi (10 bar)
Maximum differential pressure	8.7 psi (0.6 bar)
Test pressure	232 psi (16 bar)
Allowable water temperature	50-248°F (10-120°C)
Valve body material	Corrosion-resistant brass

Presetting:



RA-C 15 RA-C 20

Presetting Range



The incorporated pre-settable option on the RA-C valve body has an easy setting adjustment ring with clearly engraved setting markers scaled 1-2-3 and N, with N being the completely open position. Setting the appropriate value is quick and precise, without the need for a special tool. A setting in the shaded areas should be avoided. Refer to Capacity charts for proper pre-setting values. To pre-set the valve:

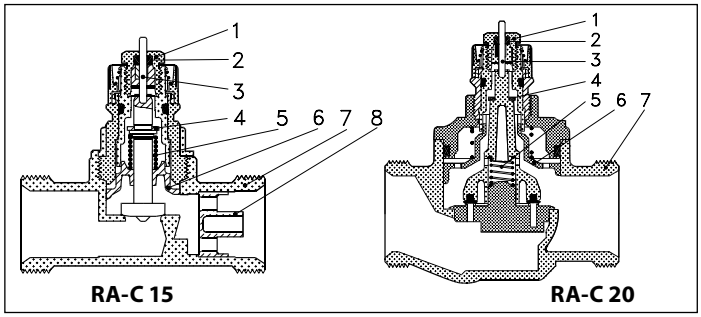
1. Remove the protective cap, sensor element, or electric actuator
2. Lift setting ring
3. Rotate ring to the desired flow setting, and align position with the indicator located on the collar of the valve
4. Allow setting ring to drop down into position

Design:

The RA-C valve has been specially designed to minimize velocity noise that tends to originate from the relatively large differential pressures and water flow demands experienced in cooling systems. Additional factors that place heavy demands on various components of chilled ceilings and fancoils/ induction systems include water temperature conditions, the chosen pipe types and dimensions, and the structure of the cooling circuits. The RA-C is adept at performing at very low noise levels when these conditions are experienced.

Design (Cont.):

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

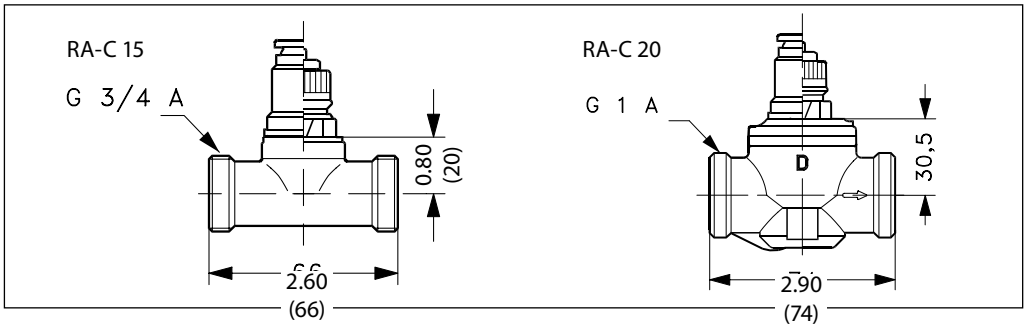


Materials:

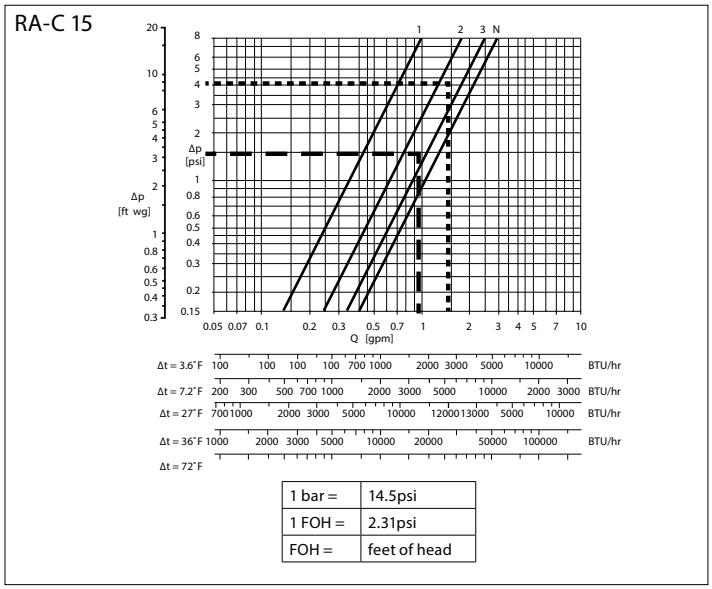
Materials in contact with water

Valve body and other metal parts	Corrosion resistant brass
Spindle	Corrosion resistant brass
Throttle nozzle	PPS
O-ring	EPDM
Valve cone	NBR
Pressure pin in gland seal	Chrome steel
Nozzle	PP

Dimensions in (mm):



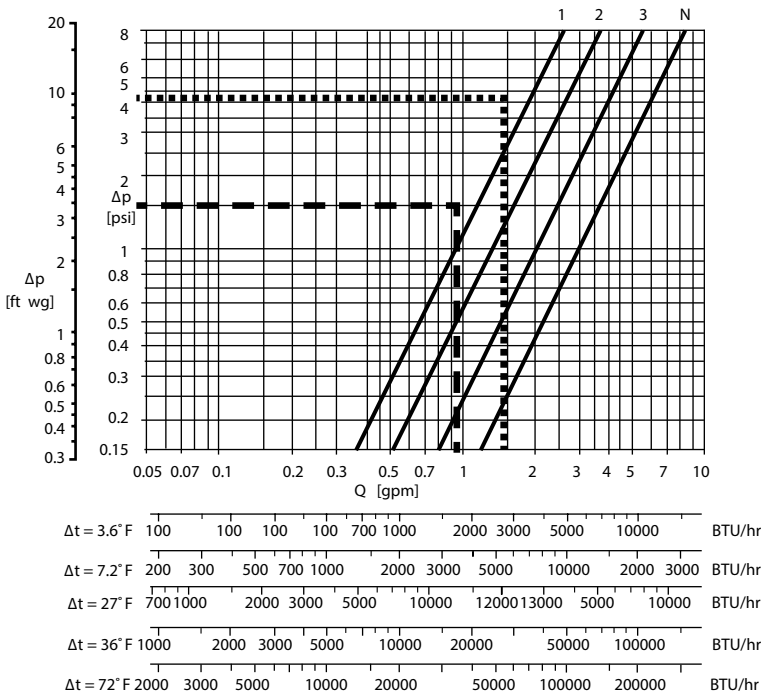
Capacity :



1 bar =	14.5psi
1 FOH =	2.31psi
FOH =	feet of head

Capacity (Cont.):

RA-C 20



Sizing example, chilled ceiling:
Cooling demand: 1879 BTU/hr
Change in temperature: Δt = ~4°F
Differential pressure: Δp = 1.5psi (3.5 ft wg)
Calculated flow = f = $\frac{Q}{\Delta t\ 500} = \frac{1879}{4.500} =$ 0.94 gpm
Q = demand, Δt = change in temperature
Resulting setting (dashed line):
RA-C 15: Presetting value 3
RA-C 20: Presetting value 1

Sizing example, heating radiator:
Heating demand: 5700 BTU/hr
Change in temperature: Δt = ~7.5°F
Differential pressure: Δp = 3.9psi (9 ft wg)
Calculated flow = f = $\frac{Q}{\Delta t\ 500} = \frac{5700}{7.5 - 500} =$ 1.52 gpm
Q = demand, Δt = change in temperature
Resulting setting (dotted line):
RA-C 15: Presetting value 2
RA-C 20: Presetting value 1

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