

Data Sheet

High Capacity Valve Body, Type RA-G

Application



The high capacity valves, type RA-G, are used in one-pipe systems with flow from top and bottom respectively, zone control applications with TWA and Danfoss Renovation⁺ with AB-QM and AB-QT.

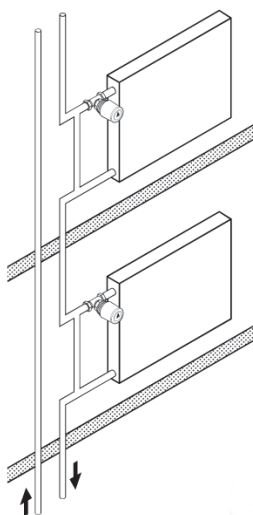
All RA-G valves can be combined with all thermostatic sensors in the RA-series.

The RA-G valves are fitted with a grey protective cap. This protective cap must not be used as a manual shut off device. A special manual shut off device is available (code no. 013G3300).

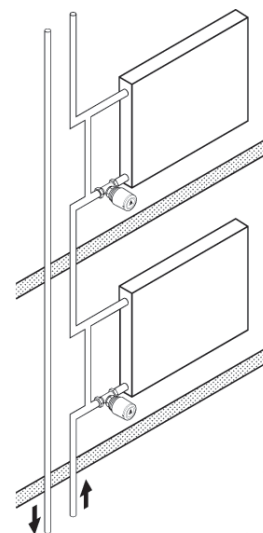
The pressure pin in the gland seal is of chromium steel and works in a lifetime lubricated O-ring. The complete gland seal assembly can be replaced without draining the system.

In order to avoid depositions and corrosion the composition of the hot water must be in accordance with the VDI 2035 Guidelines. It is recommended that formulations containing mineral oil are avoided.

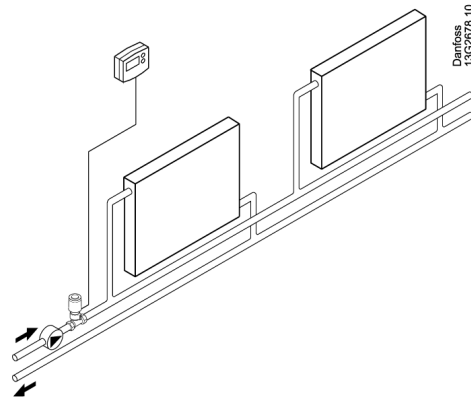
Systems



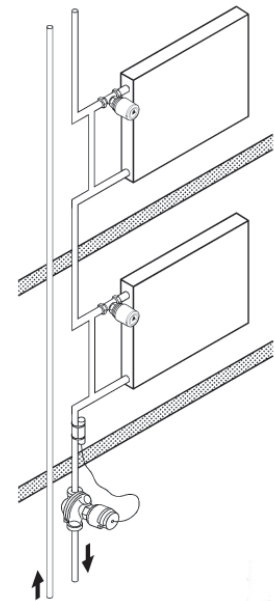
1. One-pipe system, flow from top



2. One-pipe system, flow from bottom



3. Zone control application. Thermal actuator TWA in combination with room thermostat/programmer.



4. Danfoss Renovation+ with AB-QM and AB-QT

Ordering and Specifications

RA-G

Type	Design	Max. pressure ²⁾				Test bar	Max. flow temp. °C	Code no.
		Working bar	Diff. bar					
			RTW	TWA NC	TWA NO			
RA-G 20	Straight	16	0.20	1.5	1.9	25	120	013G1708
RA-G 25	Straight		0.16	1.5	1.9			013G1709

Type	Connection ISO 7-1		k _v -values ¹⁾ [m ³ /h] P-Band [K]					
	Inlet	Outlet	0.5	1.0	1.5	2.0	3.0	k _{vs}
RA-G 20	R _p 3/4	R 3/4	0.36	0.72	1.09	1.43	2.07	3.81
RA-G 25	R _p 1	R 1	0.38	0.74	1.11	1.47	2.13	4.58

¹⁾ The k_v-value indicates the water flow (Q) in m³/h at a pressure drop (Δp) across the valve of 1 bar;

$$K_v = V : \sqrt{\Delta p}. \text{ The } k_{vs}\text{-values state the flow (Q) at a maximum lift, i.e. at fully open valve.}$$

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.

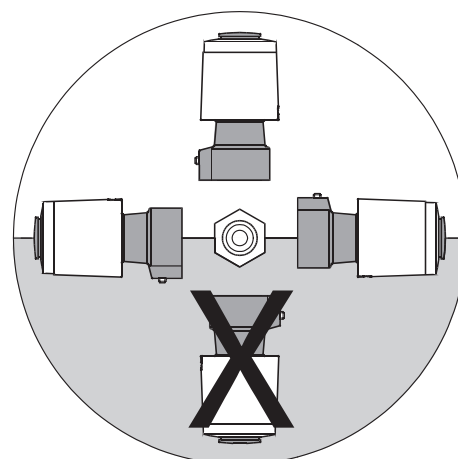
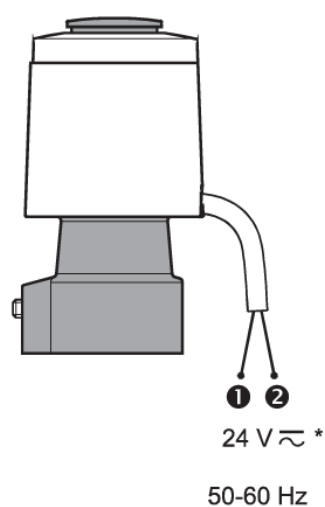
TWA-A

Actuator	Supply Voltage	Function	Code no.
TWA-A	24 V AC/DC	NC	088H3108
TWA-A	24 V AC/DC	NO	088H3109

Supply voltage	24 V (Class II (SELV)) and 230 V (3 A pre-fuse)
Max. inrush current	24 V: 350 mA, 230 V: 250 mA
Frequency	50-60 Hz
Running power consumption	2 W
Spindle travel time	~3 min.
Ambient temperature	0-60° C
Enclosure	IP 41
Cable length	1200 mm

Electrical Connection

* 24 V Class II transformer (SELV)



- ① Blue
- ② Brown

Please note: All NC-versions are equipped with a red mounting split on the position indicator to secure easy valve connection. When mounted this split must be removed for correct operation.

Accessories

Product	Units	Code no
Gland seal	10 pcs.	013G0290

The **gland seal** may be replaced with the heating system in operation.

Product	Size	Code no.
RTD-CB back-flow restrictor	DN 20	013L1926
RTD-CB back-flow restrictor	DN 25	013L1927
RTD-BR bypass restrictor	DN 20/15	013L1916
Service insert	DN 15/20	013G1706
Service insert	DN 25	013G1707

To avoid unintended heat emission from the radiator, it is recommended to install a **flow restrictor**, see further details on flow restrictors in separate data sheet.

Service inserts can only be replaced without water on the system.

RA-G Solution in One Pipe System

Radiator curve for a one-pipe installation

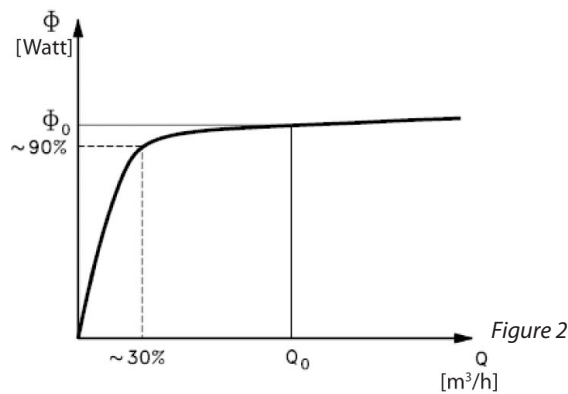
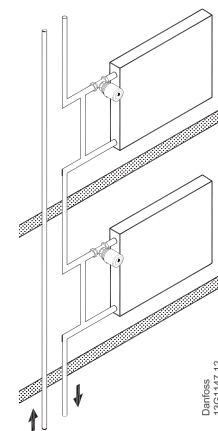


Figure 1

Because of low dT across radiator in one-pipe system, the scope for regulation of heat emission is narrow (flat radiator curve) as figure 1 shows. This means that in a one-pipe installation extra water in addition to the sized volume does not really lead to any extra heat transmission.

A water quantity of 30% of the previous level means that heat emission is reduced by ~ 10%.

A reduction of 10% of the heat emission will give no problems in practice, since radiator surfaces are often oversized.



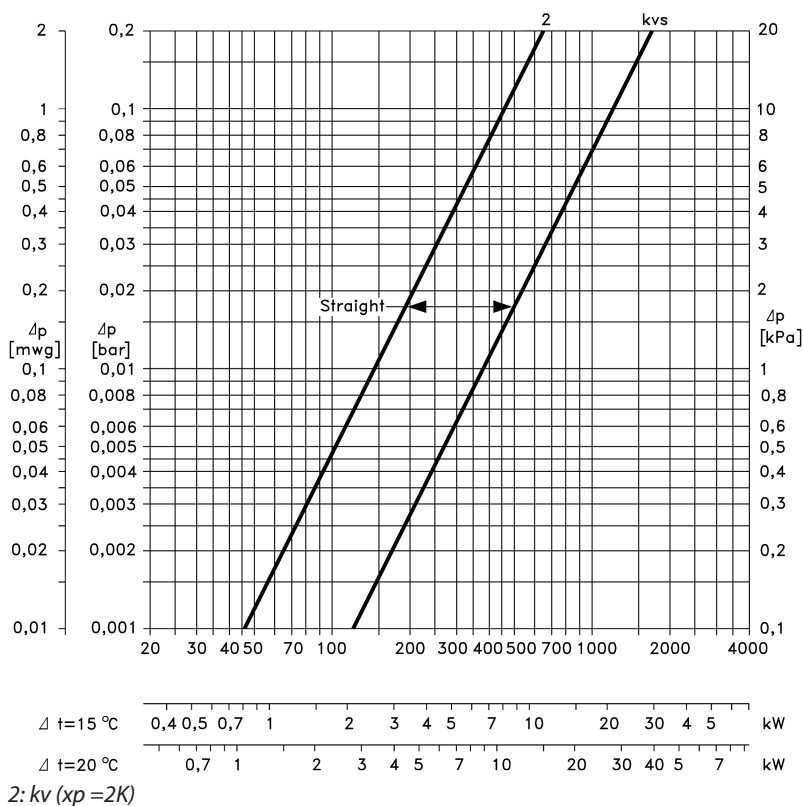
1. A bypass must be established (figure 2). The size of the bypass pipe must normally be one dimension smaller than the dimension of the main pipe system.
2. The RA-G - with the same dimension as the main pipe system - is then mounted at the inlet to the radiator.

According to this rules, the flow share into the radiator could reach 30% of the previous level because of the high capacity of the RA-G valve.

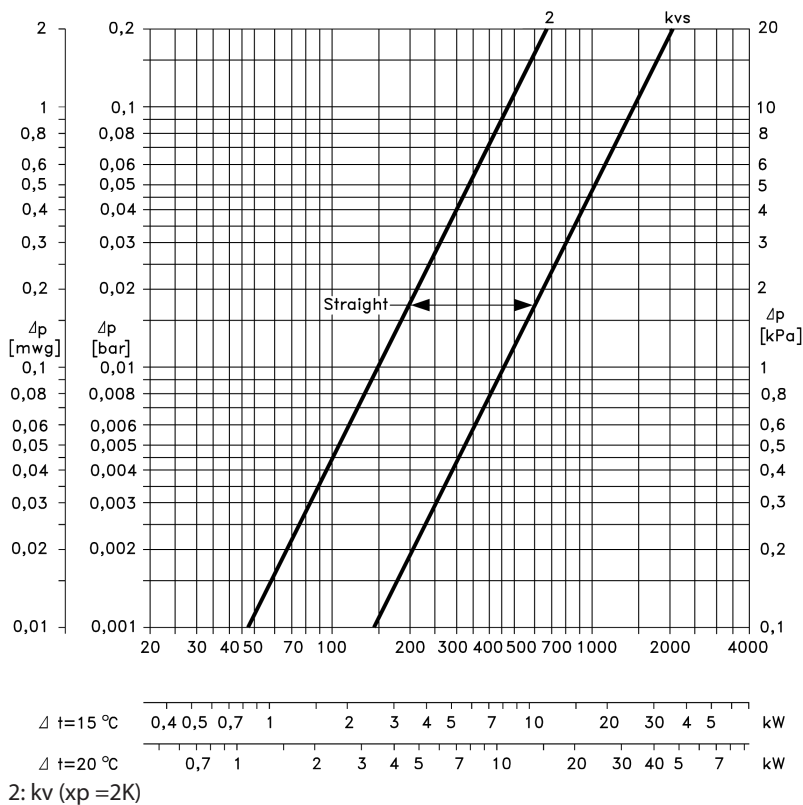
In case the bypass has the same diameter as the supply pipe to the radiator, it is recommended to use flow restrictors to provide a suitable flow share to the radiator.

Capacities

RA-G DN20

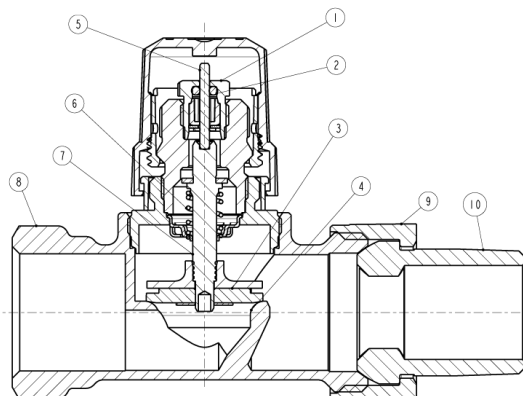


RA-G DN25



Valve capacities in combination with RTW thermostatic sensors.

Design

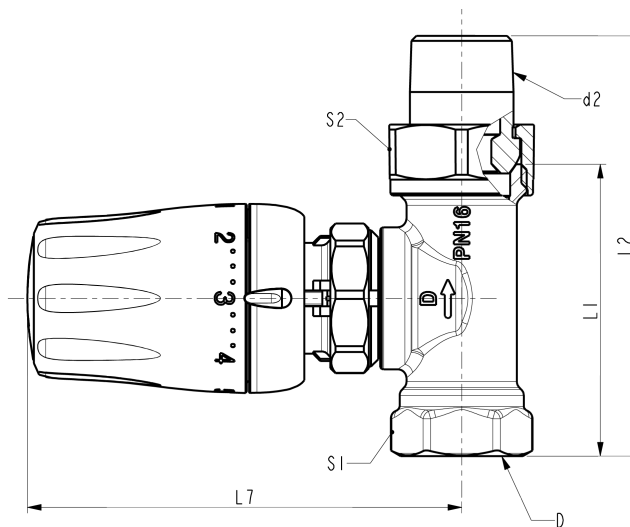


- 1. Gland seal
- 2. O-ring
- 3. Valve plate
- 4. Valve seat
- 5. Pressure pin
- 6. Valve spring
- 7. Spindel
- 8. Valve body
- 9. Union nut
- 10. Nipple

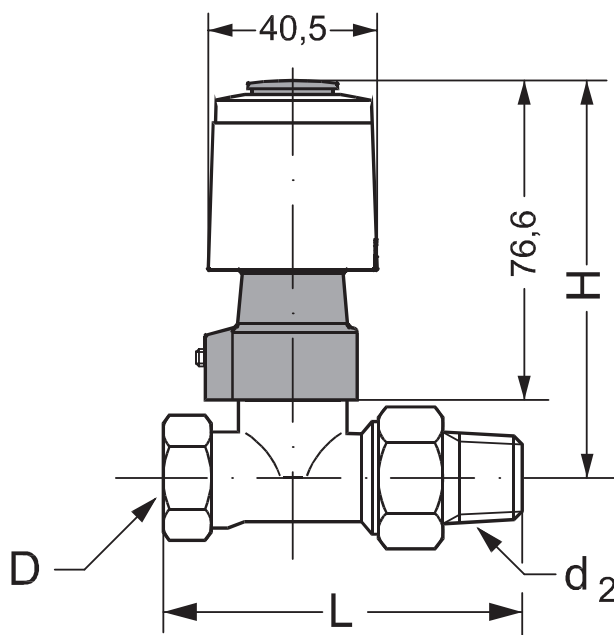
Materials in contact with water

Valve body	Ms 58 brass
O-rings	EPDM
Valve plate	NBR
Pressure pin	Chrome steel
Spindle guide	Tin bronze

Dimensions



Type	Connection ISO 7-1			L ₁	L ₂	L ₇	Spanner	
	DN	D	d ₂				S ₁	S ₂
RA-G 20	20	R _p 3/4	R 3/4	74	106	110	32	37
RA-G 25	25	R _p 1	R 1	90	126	113	41	46



<i>TWA-A / RA-G valves</i>	DN	D	d ₂	H, mm	L, mm
	ISO 7/1				
	20	R _p 3/4	R 3/4	95	106
	25	R _p 1	R 1	99	126

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