

## Data Sheet

# High capacity valve body, type RA-G

### Application



The high capacity valves, type RA-G, are primarily used in one-pipe systems.

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.

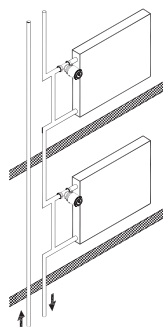
It is recommended that formulations containing mineral oil are avoided.

### Quality

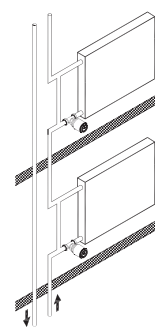


All Danfoss RA-G high capacity valves are manufactured to the highest standards, and are approved to the European Standard EN 027 215.

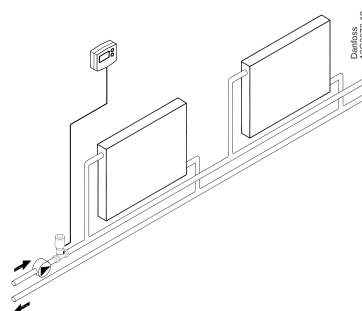
### Systems



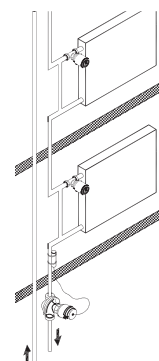
1. One-pipe system, flow from top



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**

Type	Design	Connection		k <sub>v</sub> -values [m <sup>3</sup> /h] P-Band [K] <sup>1)2)</sup>					Max. pressure [bar]			Max flow temp. °C	Code no.
		In	Out	0.5	1.0	1.5	2.0	k <sub>vs</sub>	Work.	Diff. <sup>3)</sup>	Test		
RA-G 15	Angle	R <sub>p</sub> ½	R ½	0.54	1.07	1.61	2.06	4.30	16	0.20	25	120	<b>013G1676</b>
	Straight	R <sub>p</sub> ½	R ½	0.51	0.94	1.35	1.63	2.30	16	0.20	25	120	<b>013G1675</b>
RA-G 20	Angle	R <sub>p</sub> ¾	R ¾	0.57	1.11	1.16	2.20	5.01	16	0.20	25	120	<b>013G1678</b>
	Straight	R <sub>p</sub> ¾	R ¾	0.54	1.07	1.61	2.06	3.81	16	0.20	25	120	<b>013G1677</b>
RA-G 25	Angle	R <sub>p</sub> 1	R 1	0.59	1.27	1.77	2.41	5.50	16	0.16	25	120	<b>013G1680</b>
	Straight	R <sub>p</sub> 1	R 1	0.57	1.16	1.71	2.27	4.58	16	0.16	25	120	<b>013G1679</b>

<sup>1)</sup> The k<sub>v</sub>-value indicates the water flow (Q) in m<sup>3</sup>/h at a pressure drop (Δp) across the valve of 1 bar.  $k_v = Q : \sqrt{\Delta p}$ .  
The k<sub>vs</sub>-values state the flow (Q) at a maximum lift, i.e. at fully open valve.

<sup>2)</sup> If a RAW/RAS-C/RAS-C2/RAS-D/RAX/RAE sensor or a remote sensor is used the P-band is extended by a factor 1.6.

<sup>3)</sup> 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.

**Accessories**

Product	Size	Code no.
Gland seal, 10 pcs. <sup>1)</sup>	-	<b>013G0290</b>
RTD-CB back-flow restrictor <sup>2)</sup>	DN 15	<b>013L1925</b>
RTD-CB back-flow restrictor <sup>2)</sup>	DN 20	<b>013L1926</b>
RTD-CB back-flow restrictor <sup>2)</sup>	DN 25	<b>013L1927</b>
RTD-BR bypass restrictor <sup>2)</sup>	DN 15/10	<b>013L1915</b>
RTD-BR bypass restrictor <sup>2)</sup>	DN 20/15	<b>013L1916</b>
Service insert <sup>3)</sup>	DN 15/20	<b>013G1706</b>
Service insert <sup>3)</sup>	DN 25	<b>013G1707</b>

<sup>1)</sup> The gland seal may be replaced with the heating system in operation.

<sup>2)</sup> 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.

<sup>3)</sup> Service inserts can only be replaced without water on the system.

RA-G solution in one pipe system

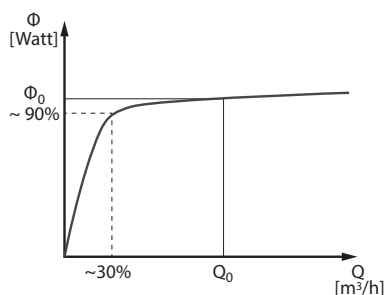


Fig. 1: Radiator curve for one-pipe installation

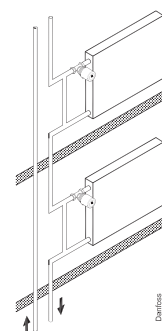


Fig. 2

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.

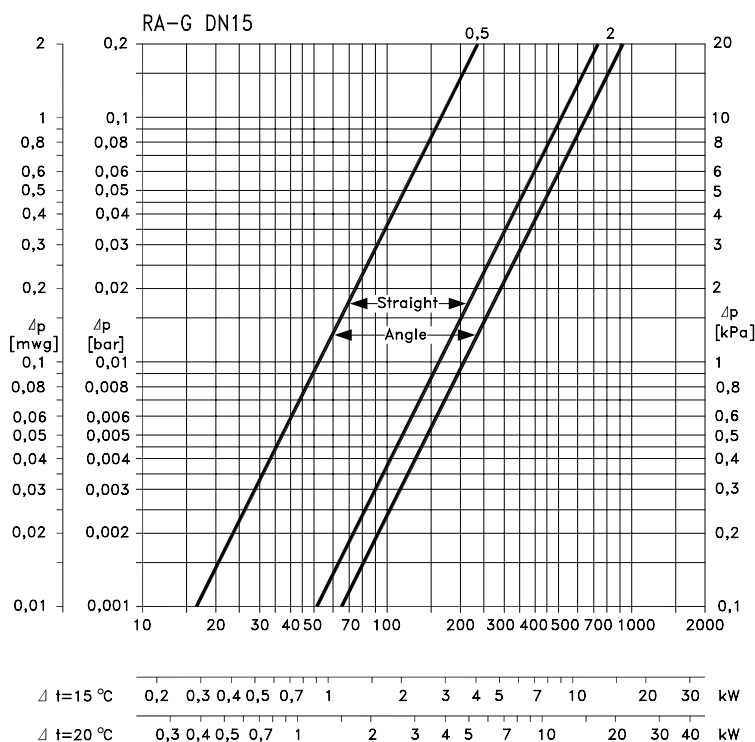
1. A bypass must be established (figure 2). The size of the bypass pipe must normally be one dimension smaller than the dimension of the main pipe system.

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.

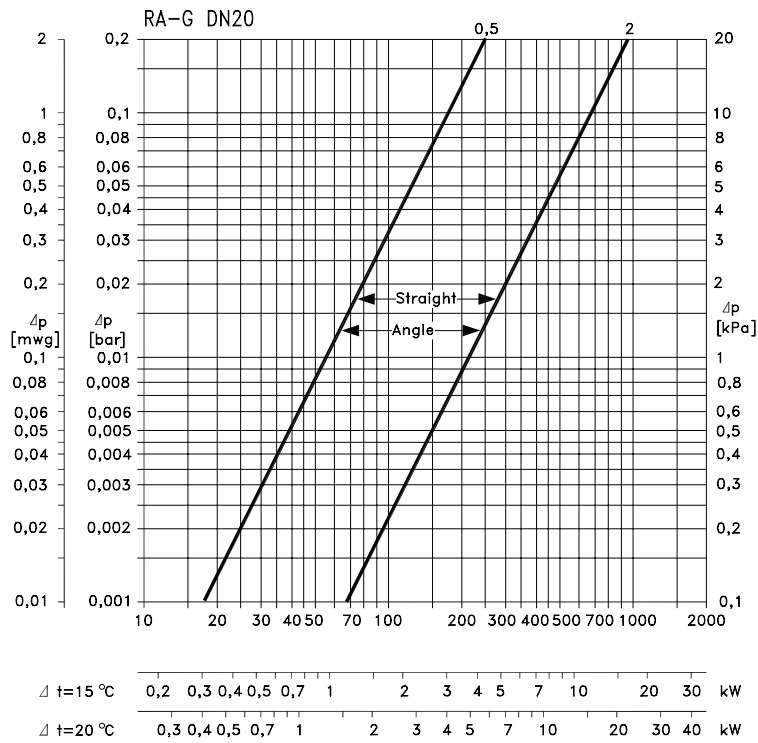
In case the bypass has the same diameter as the supply pipe to the radiator, it is recommended to use flow restrictors to provide a suitable flow share to the radiator.

Capacities - DN 15



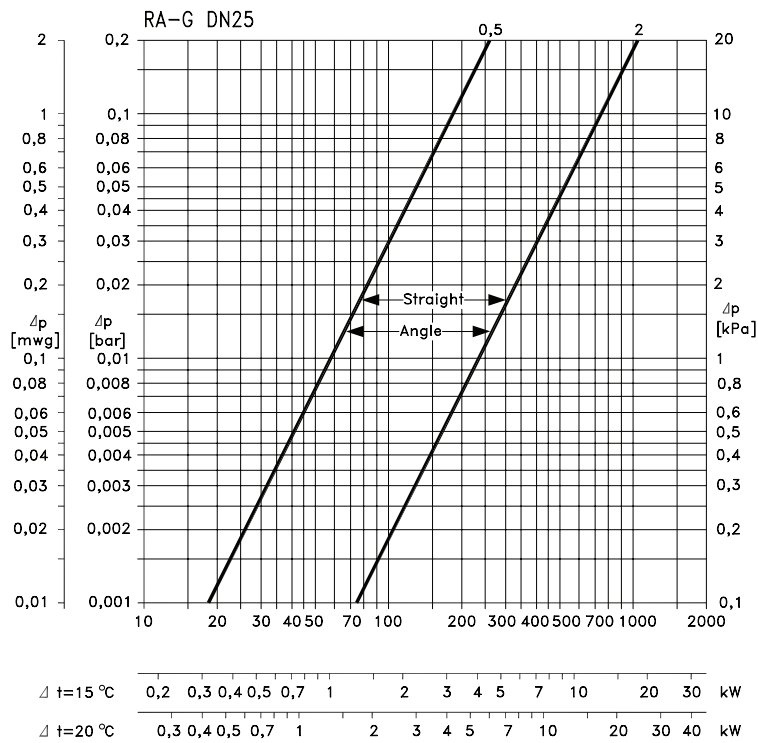
Valve capacities in combination with RA-2000 thermostatic sensor.

Capacities  
- DN 20



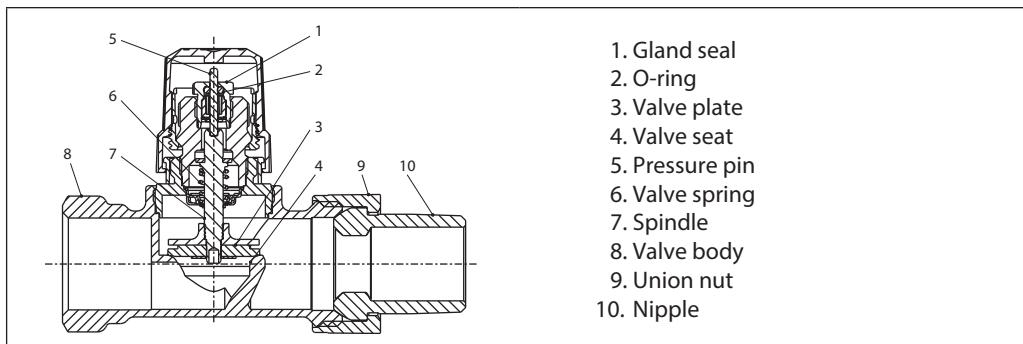
Valve capacities in combination with RA-2000 thermostatic sensor.

Capacities  
- DN 25



Valve capacities in combination with RA-2000 thermostatic sensor.

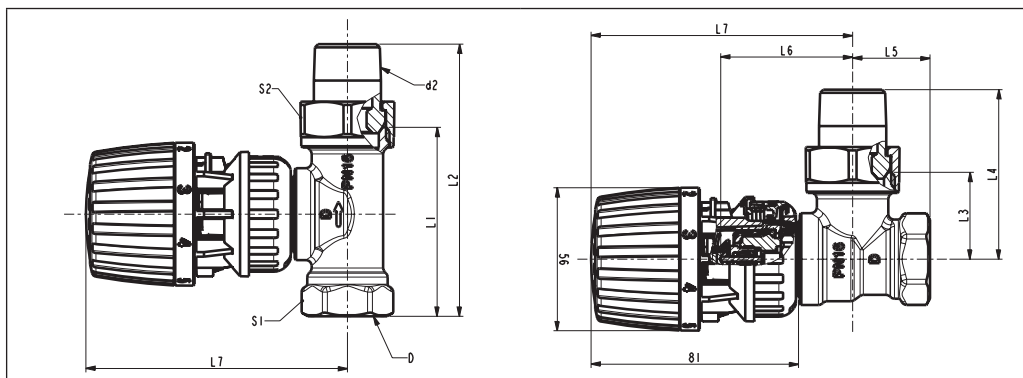
Design



Materials in contact with water

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

Dimensions



Type	Connection ISO 7-1			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>	Spanner	
	DN	D	d <sub>2</sub>								S <sub>1</sub>	S <sub>2</sub>
RA-G 15	15	Rp 1/2	R 1/2	68	96	30	58	27	52	103	27	30
RA-G 20	20	Rp 3/4	R 3/4	74	106	34	66	30	54	103	32	37
RA-G 25	25	Rp 1	R 1	90	126	42	78	34	57	106	41	46

