

Data Sheet

Radiator Thermostats for Domestic 2-Pipe System RAS-D Range

Application



RAS-D built-in
sensor

RAS-D remote
sensor

RAS-D Combi
6150, 6155

RAS-D Combi
5146

RAS-D Combi 6101

RAS-D radiator thermostats are designed for use in 2-pipe domestic heating systems.

All RAS-D Combi Packs comprises either a RA-FS angled pattern bi-directional valve or a RA-FN straight valve and a RAS-D sensor designed for 2-pipe heating systems. Combi Packs are also available with a RLV-D lockshield valve. For further data on the lockshield valve please see separate RLV-D data sheet.

The RA-FS have a ½" BSP (R½") tail piece connection to the radiator and are available with 15mm, 10mm or 8mm compression fitting or an elbow with 10mm push-fit fitting to connect the valve to the pipe work.

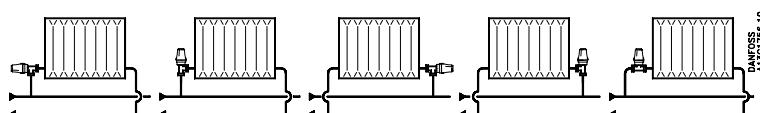
The RA-FS valve bodies are reversible and bi-directional and include a flow-selectable feature to ensure trouble free installation without any risk of water hammer. For optimum performance, Danfoss recommend the sensor be mounted horizontal where at all possible.

The straight RA-FN have a ½" BSP (R½") tail piece connection to the radiator and is available with 15mm compression fitting is not bi-directional.

All valves are supplied with a protective cap, which can be used for manual regulation during the construction phase. The cap must not be used as a manual shut of device.

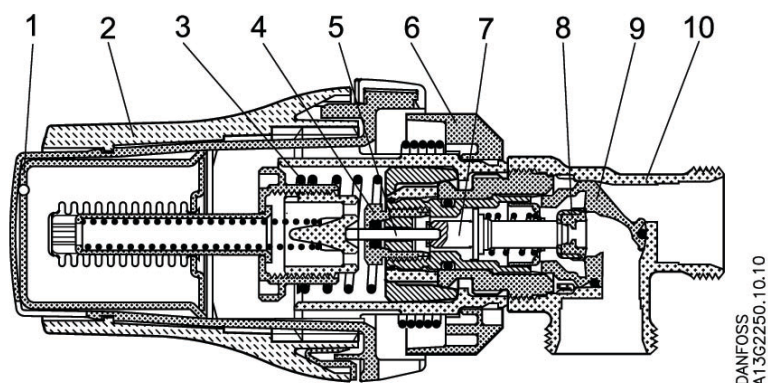
RAS-D sensors are equipped with a snap-lock mechanism, which ensures a quick, firm mounting to the valve without the need of tools. Both built-in and remote sensors are available in the RAS-D range. RAS-D incorporate a "Frost Protection" setting and a "Positive Off" feature for maximum user flexibility. Temperature range is from 8°C to 28°C.

System



Note: Remote sensors can be used in all applications.

Design

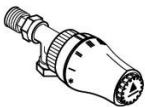

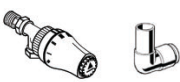


Valve bodies are manufactured from brass with nickel plating. The spindle in the gland seal is of chromium steel and works in a lifetime lubricated o-ring. The complete gland assembly can be replaced without draining down the system.

1. Actuator
2. Setting dial
3. Safety spring
4. Gland seal
5. Pressure pin
6. Snap-lock mechanism
7. Spindle
8. Bi-directional valve cone
9. Revolver
10. Valve body

Ordering

Valve bodies and RAS-D thermostatic sensors supplied complete in Combi-pack form:

Symbol	Type	Code no.	Comprising	Temp. range °C Xp = 2K
	RAS-D Combi 6150	013G6150	15 mm bi-directional angle valve body and thermostatic sensor (includes positive shut-off)	8 - 28
	RAS-D Combi 6155	013G6155	8/10 mm bi-directional angle valve body and thermostatic sensor (includes positive shut-off)	8 - 28
	RAS-D Combi 6160	013G6160	Bi-directional angle valve body, thermostatic sensor incl. positive shut-off and elbow with 10 mm push-fit fitting	8 - 28

Symbol	Type	Code no.	Comprising	Temp. range °C Xp = 2K
	RAS-D Combi 5146	013G5146	15 mm straight valve body and thermostatic sensor (includes positive shut-off)	8 - 28
	RAS-D Combi 6102	013G6102	15 mm bi-directional angle valve body, lockshield valve and thermostatic sensor (includes positive shut-off)	8 - 28
	RAS-D Combi 6103	013G6103	8/10 mm bi-directional angle valve body, lockshield valve and thermostatic sensor (includes positive shut-off)	8 - 28
	RAS-D Combi 6104	013G6104	Bi-directional angle valve body, lockshield valve, thermostatic sensor incl. positive shut-off and elbow with 10 mm push-fit fitting	8 - 28

RAS-D thermostatic sensors supplied in separate boxes:

Symbol	Type	Code no.	Sensor - Max sensor temperature 60°C	Temp. range °C Xp = 2K
	RAS-D	013G5120	Built-in (includes positive shut-off)	8 - 28
	RAS-D	013G5022	Remote, 0-2 m capillary tube ¹⁾ (no positive shut-off)	8 - 28

¹⁾ The remote sensor is delivered with all capillary tube coiled within the sensor. When mounting the sensor capillary should be pulled out to required length.

Valve bodies for two-pipe systems type RA-FS (Bi-directional) and RA-FN with RAS-D sensors:

Type	Code no.	Design	Connections		kv-value (m ³ /h at $\Delta p = 1$ bar) P-band (K)				
			Inlet	Outlet	0.5	1.0	2.0	3.0	k _{vs}
RA-FS 15 ¹⁾	013G6281 013G6283	Rev. angle	15 mm 8/10 mm	1/2" BSP	0.13	0.27	0.50	0.64	0.73
RA-FN 15	013G0084	Straight	15 mm/ 1/2" BSP	1/2" BSP	0.14	0.27	0.52	0.70	0.90
RA-FS 15 ¹⁾³⁾ with push-fit elbow		Rev. angle	10 mm push-fit	1/2" BSP	0.13	0.27	0.50	0.64	0.73

Type	Code no.	Max. pressure			Max. working temp. °C
		Working bar	Diff.(Δp) bar 2)	Test bar	
RA-FS 15 ¹⁾	013G6281 013G6283	10	0.6	16	120
RA-FN 15	013G0084	10	0.6	16	120
RA-FS 15 ¹⁾³⁾ with push-fit elbow		3	0.6	6	92

¹⁾ RA-FS valves must only be used with RAS-C2 or RAS-D sensors.

²⁾ To ensure quiet operation, maximum pressure drop over the valve should not exceed 0.45bar (45 kPa). The differential pressure can be reduced using Danfoss automatic by-pass valve AVDO.

³⁾ Only available in Combi Packs.

The push-fit fitting is suitable for 10mm copper pipes manufactured in accordance to BS 2871 part 1 /BS EN 1057 : 1996 and suitable for 10mm polybuthelene (PB) including Hep2O, Polyplumb, OsmaGold and 10mm cross linked polyethylene (PEX) pipes including Speedfit and Equator, made in accordance to BS 7291 part 1 : 1990 or part 3 : 1990.

Always use plastic pipe inserts of the same brand as the pipe used.

Approved to EN 215



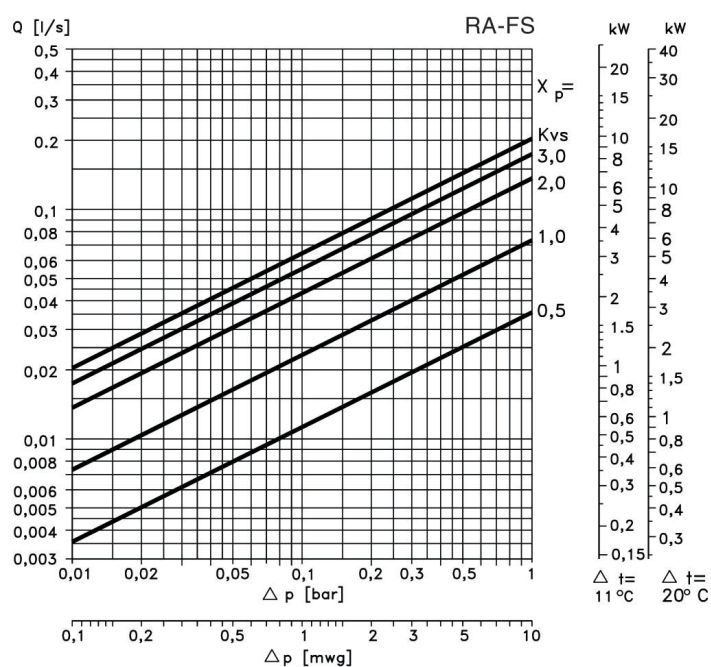
All Danfoss RAS-D sensors and RA-FS & RA-FN valves are manufactured to the highest standards and are approved to the European standard EN215, which supersedes BS 6284, 1983.

Quality Standards

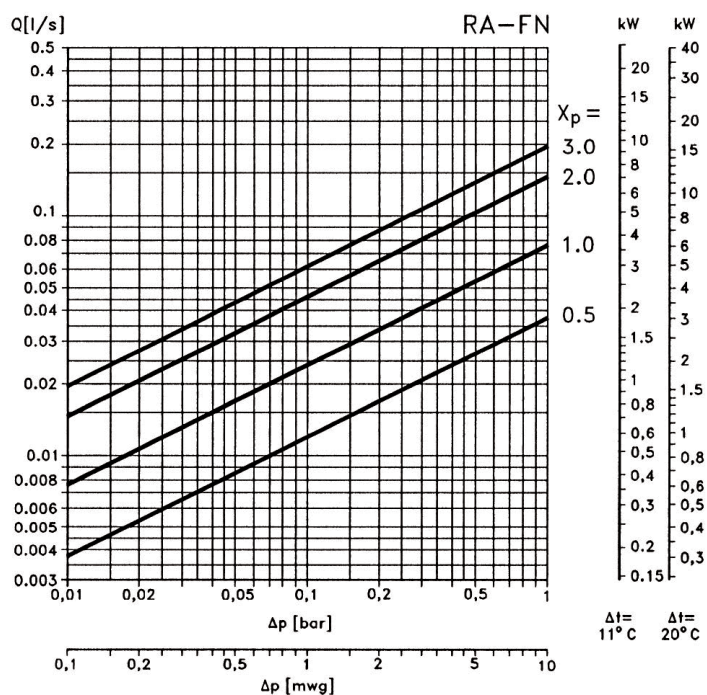
All Danfoss radiator thermostats and valves are manufactured in factories, assessed and certified by BSI against ISO 9001 / BS 5750.

Capacities

RAS-D with angled pattern valve

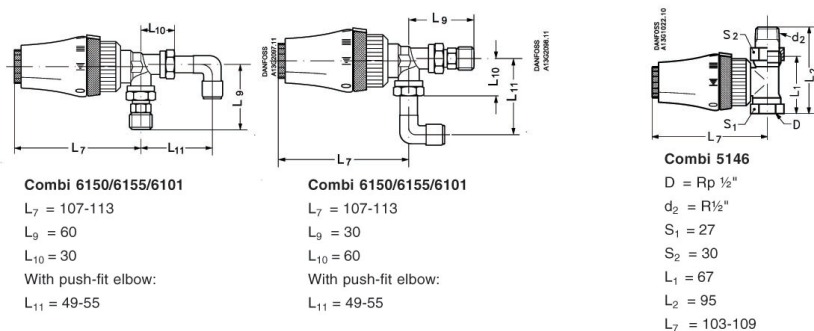


RAS-D with straight valve



All RAS-D Combi: capacity with P-band between 0.5K and 3K

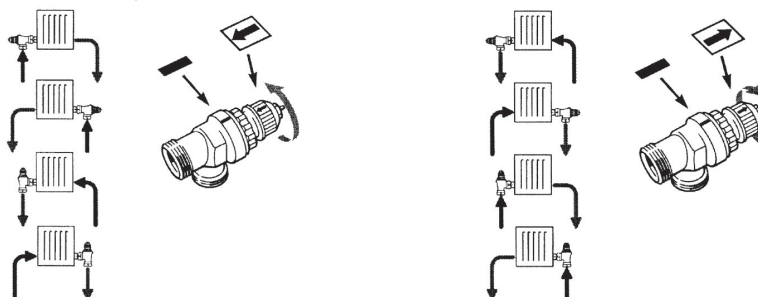
Dimensions



Add 32 mm to allow for sensor removal/fitting.

For RLV-D lockshield valve dimensions please see separate data sheet.

Valve Setting



Commissioning the valve

The valve is a bi-directional valve with a flow direction selection feature. This feature does not have to be used, although we recommend that it is set during system commissioning.

- Establish the flow direction through the valve using the diagrams above, turning the setting ring as necessary to ensure that water flow

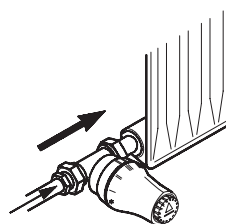
through the valve is always in the correct direction and the risk of water hammer is eliminated.

- If the flow direction needs to be changed there is no need to remove the valve, simply turn the setting ring.

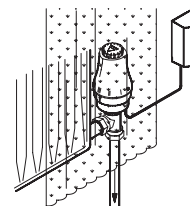
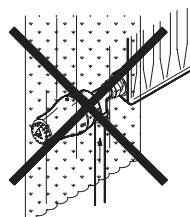
Mounting



For best performance fit valve in flow with sensor horizontal.



When using straight pattern valves, observe flow direction stamped on body.



Do not cover sensor with curtains or expose to extraneous heat gain, if in doubt fit remote sensor.

Accessories

Symbol	Code no.	Description
	013G0290	RA 2000 gland seals (sold in boxes of 10)
	013G5001	Blanking cap (sold singly)
	013G5242	Theft protection devices (sold in bags of 20)
	013G4912	Collet cover for push-fit connection (10pcs.)
	013G4913	Collet clip for push-fit connection (10pcs.)

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