

## Data Sheet

# Fixed Capacity Valves Type RA-FN (Series F)

## Application



RA-FN straight



RA-FN angle



RA-FN horizontal angle

The RA-FN valve bodies are used in two-pipe heating systems.

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

The valves are supplied with a grey protective cap, which can be used for manual regulation during the construction phase. The protective cap must not be used as a manual shut off device. A special manual shut off device (code no. 013G3300) should be used.

Compression fittings for 15 mm, 10 mm or 8 mm copper tube are available for RA-FN with 3/8" and 1/2" connections.

In order to avoid deposition and corrosion, the composition of the hot water must be in accordance with the VDI 2035 guideline (Verein Deutscher Ingenieure).

It is recommended that formulations containing mineral oil are avoided.

All RA-FN valve bodies can be used together with all types of thermostatic elements in the Danfoss RA2000 series.

## Approved to EN 215



All Danfoss RA-FN fixed capacity valves, series F, are certified according to the European Standard EN 215.

## Code Nos. and Technical Data

### Valve bodies for two-pipe systems type RA-FN (series F)

Type	Design	Connections		k <sub>v</sub> -value <sup>1)</sup> (m <sup>3</sup> /h at 1 bar pressure drop), P-band = K					Max. working temp.	Code no.
		Inlet	Outlet	0.5K	1.0K	1.5K	2.0K	k <sub>vs</sub>		
RA-FN 10	angle	Rp 3/8	R 3/8	0.17	0.34	0.47	0.56	0.65	120 °C	013G0001
RA-FN 10	straight	Rp 3/8	R 3/8	0.17	0.34	0.47	0.56	0.65	120 °C	013G0002
RA-FN 10	horizontal	Rp 3/8	R 3/8	0.17	0.34	0.47	0.56	0.65	120 °C	013G0141
RA-FN 15	angle	Rp 1/2	R 1/2	0.22	0.43	0.57	0.73	0.90	120 °C	013G0003
RA-FN 15	straight	Rp 1/2	R 1/2	0.22	0.43	0.57	0.73	0.90	120 °C	013G0004
RA-FN 15	horizontal	Rp 1/2	R 1/2	0.22	0.43	0.57	0.73	0.90	120 °C	013G0143

RA-FN 20	angle	Rp 3/4	R 3/4	0.30	0.58	0.83	1.04	1.40	120 °C	<b>013G0005</b>
RA-FN 20	straight	Rp 3/4	R 3/4	0.30	0.58	0.83	1.04	1.40	120 °C	<b>013G0006</b>
RA-FN 20	horizontal	Rp 3/4	R 3/4	0.25	0.50	0.67	0.80	1.00	120 °C	<b>013G0145</b>
RA-FN 25	angle	Rp 1	R 1	0.30	0.58	0.83	1.04	1.40	120 °C	<b>013G0027</b>
RA-FN 25	straight	Rp 1	R 1	0.30	0.58	0.83	1.04	1.40	120 °C	<b>013G0028</b>

Max. working pressure<sup>2)</sup>: 10 bar.

Max. differential pressure: 0.6 bar

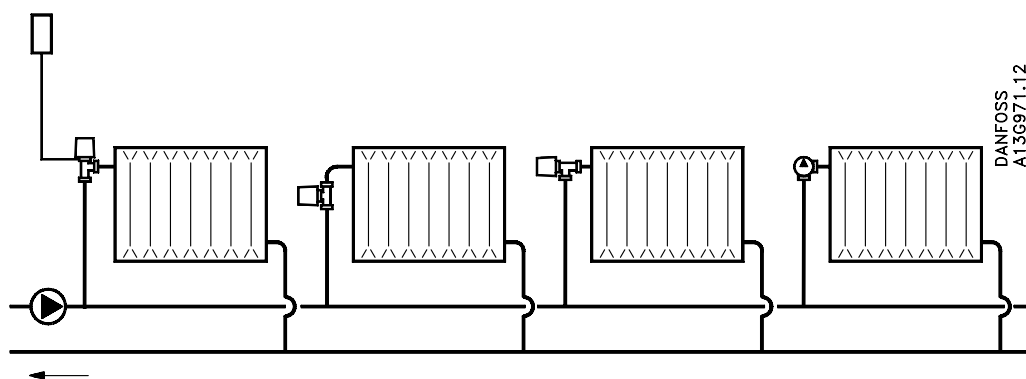
Test pressure: 16 bar

<sup>1)</sup> The  $k_v$ -value indicates the water flow (Q) in m<sup>3</sup>/h at a pressure drop ( $\Delta p$ ) across the valve of 1 bar;

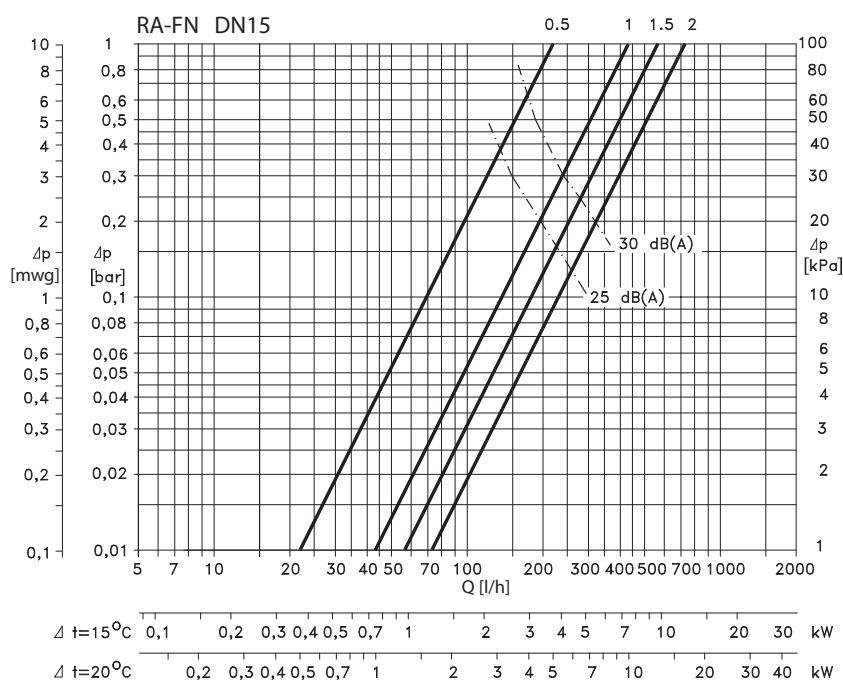
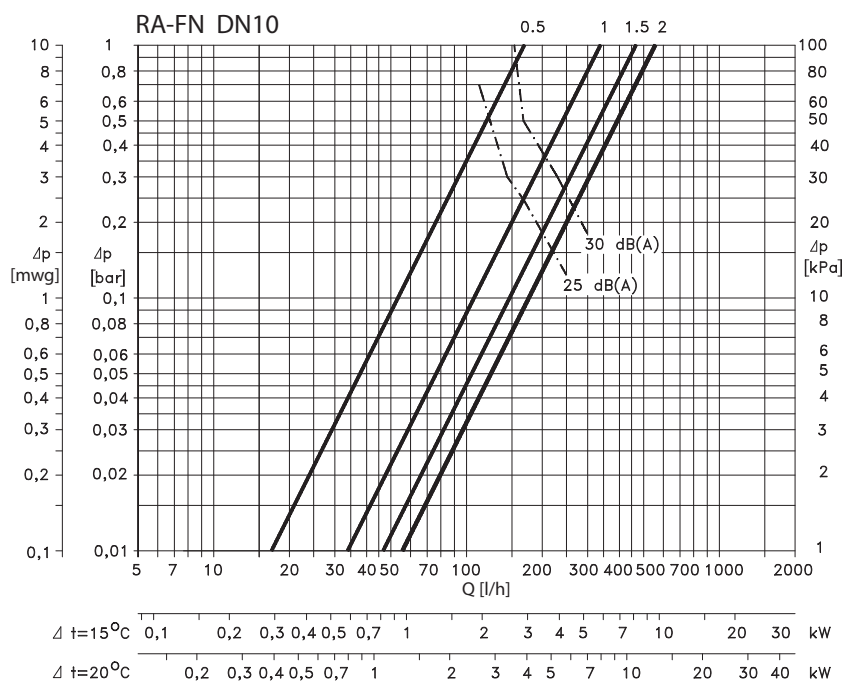
$K_v = Q : \sqrt{\Delta p}$  The  $k_v$ -value is stated according to EN 215, at  $X_p = 2K$  i.e. the valve is closed at 2°C higher room temperature. At lower settings the  $X_p$  value is reduced to 0.5K. The  $k_{vs}$ -value states the flow Q at a maximum lift, i.e. at fully open valve.

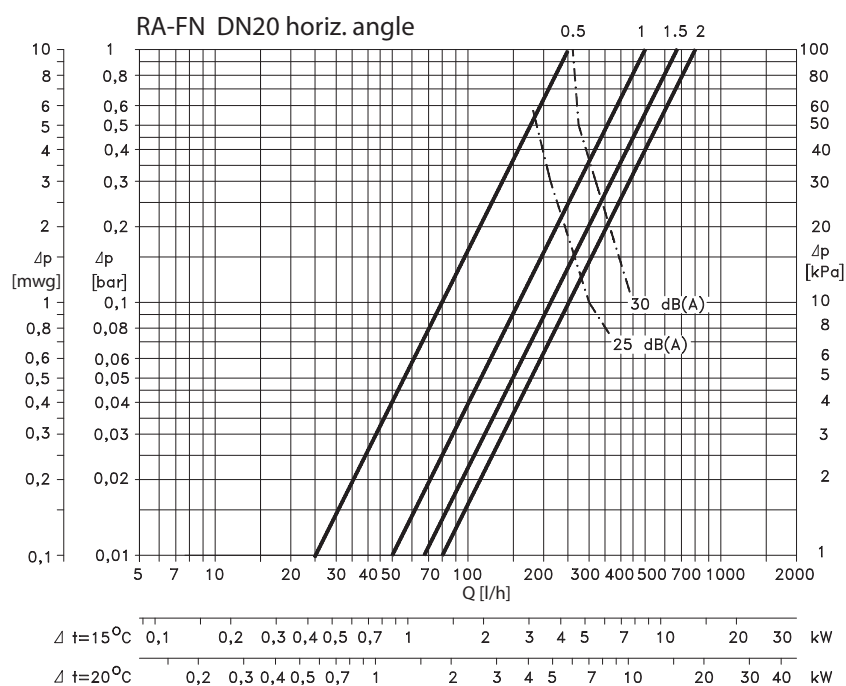
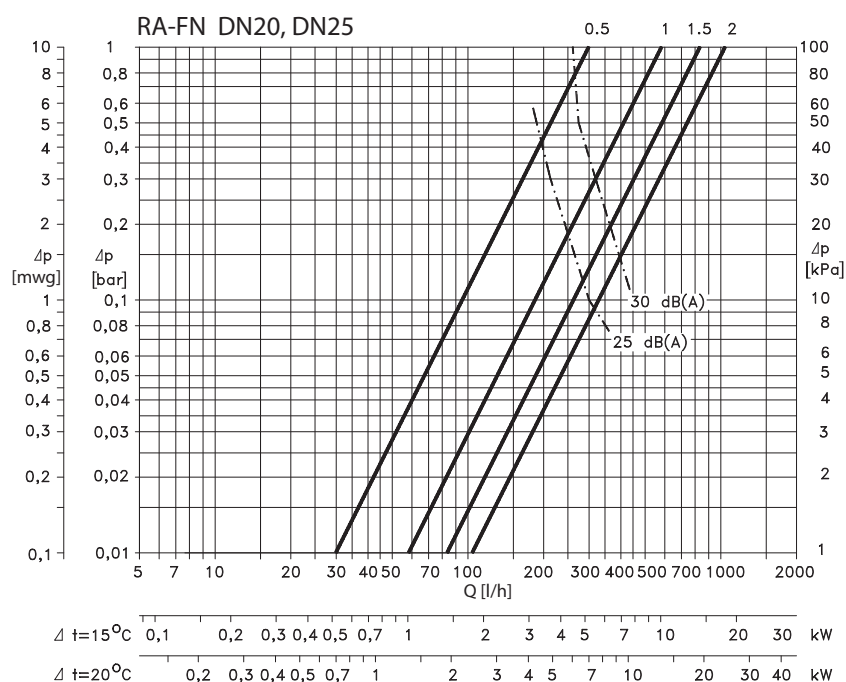
<sup>2)</sup> Working pressure = static + differential pressure. The maximum differential pressure specified is the maximum pressure at which the valves give satisfactory regulation. As with any device which imposes a pressure drop in the system, noise may occur under certain flow/pressure conditions. 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 types AVD, AVDL, AVDS, IVD or ASV-P.

## System



# Capacities





All curves: capacity with p-band of 0.5K, 1K, 1.5K and 2K with RA 2000 sensor.

**Note:**

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 30-35 kPa (3-3.5 mwg).

## Design

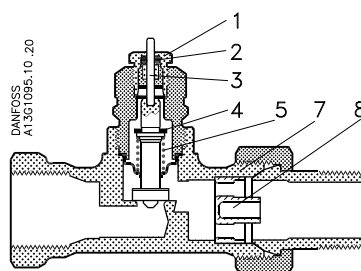
A radiator thermostat consists of a thermostatic element of the RA 2000 series and an RA-FN valve.

The element and the valve body are ordered separately.

### Materials in contact with water

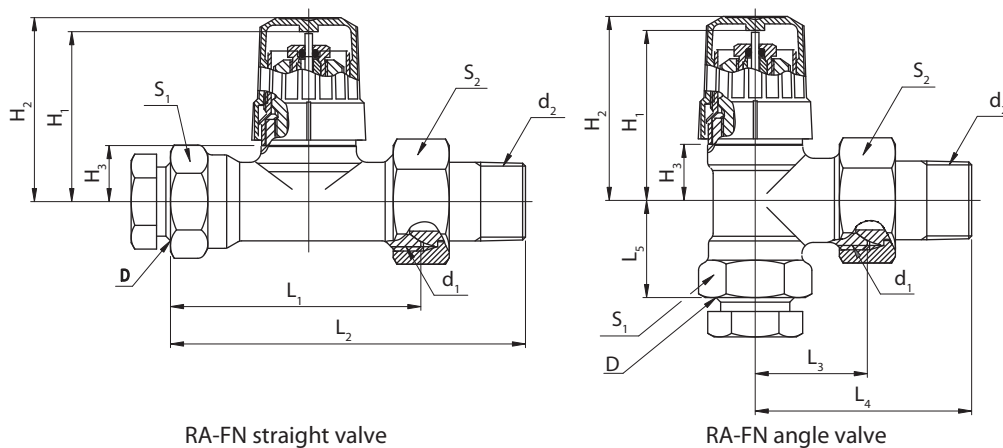
Valve body and other metal parts	Ms 58, brass
O-ring	EPDM
Valve cone	NBR
Pressure pin and valve spring	Chrome/Steel
Nozzle	PP

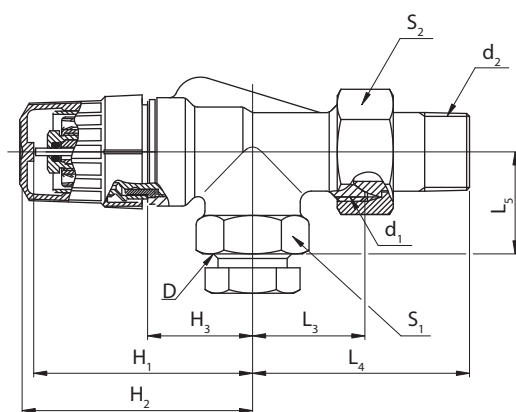
1. Gland seal
2. O-Ring
3. Pressure Pin
4. Seal
5. Regulation spring
7. Valve body
8.  $k_v$ -nozzle



The RA-FN valves are nickel-plated on the outside.

## Dimensions





RA-FN horizontal angle valve

Series F	ISO 7-1			$L_1$	$L_2$	$L_3$	$L_4$	$L_5$	$H_1$	$H_2$	$H_3$	Arc. flats	
	D	$d_1$	$d_2$									$S_1$	$S_1$
RA-FN 10	G 3/8	G 5/8 A	R 3/8	50	75	24	49	20	47	50	15	22	27
RA-FN 10 horiz.	G 3/8	G 5/8 A	R 3/8	-	-	26	51	22	61	64	29	22	27
RA-FN 15	G 1/2	G 3/4 A	R 1/2	55	82	26	53	23	47	50	15	27	30
RA-FN 15 horiz.	G 1/2	G 3/4 A	R 1/2	-	-	29	57	27	62	65	30	27	30
RA-FN 20	G 3/4	G 1 1/4 A	R 3/4	65	98	30	63	26	47	50	15	32	37
RA-FN 20 horiz.	G 3/4	G 1 1/4 A	R 3/4	-	-	34	66	30	63	66	31	32	37
RA-FN 25	G 1 1/2	G 2 A	R 1 1/2	90	125	40	75	34	47	50	15	41	46



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