

## Data Sheet

# VHS-DV Pressure independent radiator valve

### Application



VHS-DV straight



VHS-DV angle

The VHS-DV is the ideal control valve for modern base-connection radiators, as well as for universal or bathroom radiators with connection distances of 50mm between flow and return. Quick and easy to install, it will accept standard Danfoss click connection thermostat.

VHS-DV is a pressure independent radiator valve, designed for use in 2-pipe heating systems together with all types of thermostatic sensors with Danfoss RA coupling.

VHS-DV dynamic valves are fitted with a flow control device for presetting of the maximum water flow. The valves are available with maximum water flow of 10 - 135 l/h.

By use of the Danfoss DeltaP Tool commissioning and pump optimization can be done in a fast and efficient way.

VHS-DV has a built-in pressure regulator, which keeps the differential pressure at a constant level of 0.1 bar, thus maintaining the set flow.

VHS-DV is supplied with a protective cap, which can be used for manual regulation during the construction phase. The protective cap must not be used as manual shut off device. A special

manual shut off device (code no. 013G5002) should be used.

To be able to distinguish between other valve bodies of the Danfoss RA series the VHS-DV protective cap and presetting ring are green.

VHS-DV valve bodies are manufactured from brass with a nickel plating.

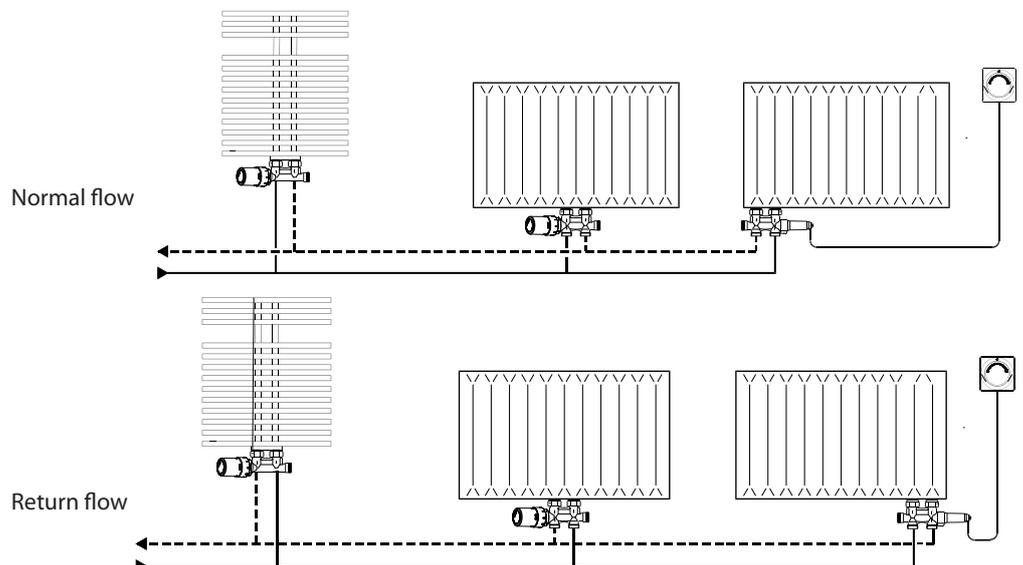
The gland seal pressure pin is chromium steel and works in a lifetime lubricated O-ring. The complete gland seal assembly can be replaced without draining down the system.

Should water treatment be used it is essential that the manufacturer's dosing instructions are strictly observed. Formulations containing mineral oil should be avoided.

In order to avoid scale and corrosion the composition of the hot water must be in accordance with the VDI 2035.

Valve covers are available in white (RAL 9016) or chrome.

### System layout



# Datasheet VHS-DV Pressure independent radiator valve

## Ordering

Variant	Pipe	Design	Connection		Code no.	Image		
			Radiator	System				
Right or left	Return	Straight	G 1/2		<b>013G7915</b>			
Right		Angle			<b>013G7916</b>			
Left		Angle			<b>013G7917</b>			
Right or left	Flow	Straight			G 3/4		<b>013G7876</b>	
Right		Angle					<b>013G7877</b>	
Left		Angle					<b>013G7878</b>	
Right or Left		Straight					<b>013G7879</b>	
Right		Angle					<b>013G7880</b>	
Left	Angle	<b>013G7881</b>						

## Datasheet

## VHS-DV Pressure independent radiator valve

### Ordering cont.

Cover with collar is mainly used for VHS with G 1/2 radiator connection.		Code no.
	VHS-DV Collar cover straight pattern with sensor on the right in white RAL 9016	013G7956
	VHS-DV Collar cover straight pattern with sensor on the left in white RAL 9016	013G7950
	VHS-DV Collar cover straight pattern with sensor on the left in chrome	013G7954
	VHS-DV Collar cover straight pattern with sensor on the right in chrome	013G7963
	VHS-DV Collar cover angle pattern with sensor on the left in white RAL 9016	013G7966
	VHS-DV Collar cover angle pattern with sensor on the right in white RAL 9016	013G7973
	VHS-DV Collar cover angle pattern with sensor on the left in chrome	013G7972
	VHS-DV Collar cover angle pattern with sensor on the right in chrome	013G7975
Cover without collar is mainly used for VHS with G 3/4 radiator connection		Code no.
	VHS-DV cover straight pattern with sensor on the right in white RAL 9016	013G7961
	VHS-DV cover straight pattern with sensor on the left in white RAL 9016	013G7964
	VHS-DV cover straight pattern with sensor on the left in chrome	013G7965
	VHS-DV cover straight pattern with sensor on the right in chrome	013G7962
	VHS-DV cover angle pattern with sensor on the left in white RAL 9016	013G7970
	VHS-DV cover angle pattern with sensor on the right in white RAL 9016	013G7955
	VHS-DV cover angle pattern with sensor on the left in chrome	013G7971
	VHS-DV cover angle pattern with sensor on the right in chrome	013G7968

### Accessories

Accessories	Code no.
Gland seal, 10 pcs.	013G0290
Δp tool for pump optimization	013G7861
Valve insert with Regulator (5 sets)	013G7831
PFM100 measuring instrument	003L8260
Service Insert, RA-DV reverse (5 sets)	013G7980
Fill-and-drain fitting, not nickel-plated, with 3/4" ext. thread and hose nozzle	003L0152
Sealing cone incl. seal for valve radiator with 3/4" ext. thread (20 pcs.)	003L0294
Self-sealing connection nipple for valve radiator with G½ int. thread (20 pcs.)	003L0295
Manual handwheel for all RA type valves (valve diff. pressure max. 0.6 bar)	013G5002

## Datasheet

## VHS-DV Pressure independent radiator valve

### Presetting

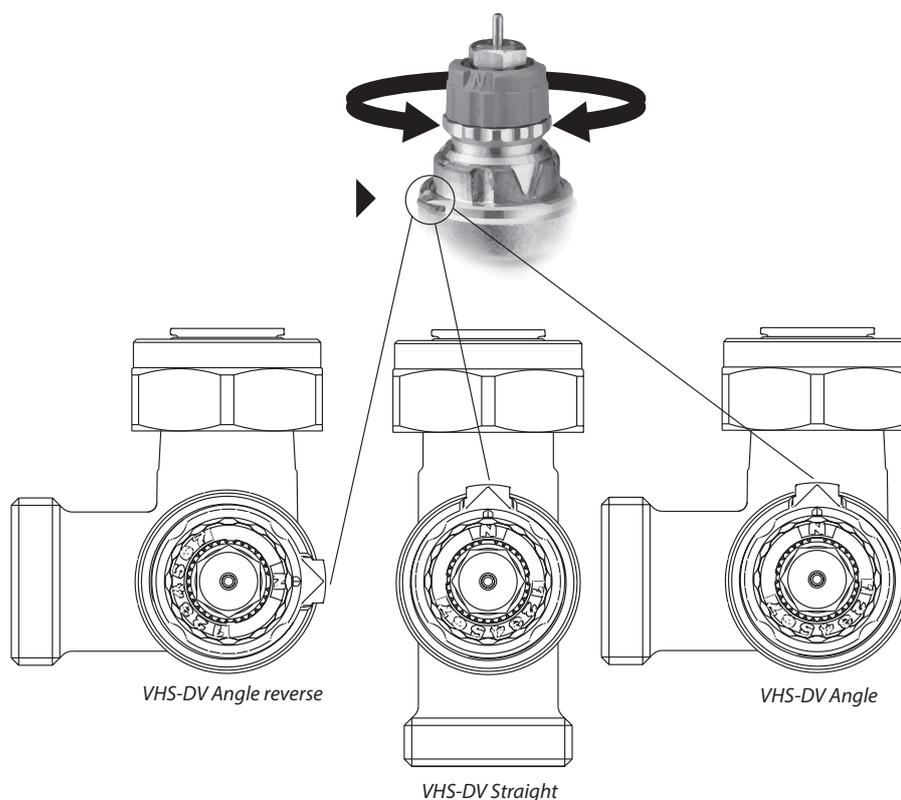
The presetting values of VHS-DV valves can be adjusted easily and accurately without the use of tools (default setting = N).

Presetting can be selected in steps from 1 to 7:

- Remove protective cap / thermostatic sensor.
- Find reference mark (▶).
- Turn setting ring until the aquired presetting aligns with the reference mark.

At setting N the valve is fully open. This setting can be used as a flushing position, if the system has to be flushed out because of dirt problems.

When the thermostatic sensor has been installed, the presetting is protected against unintended regulation.



### Technical Data

Max. working pressure <sup>1)</sup>	10 bar								
Max. differential pressure	0.6 bar								
Min. differential pressure	0.1 bar								
Test pressure	16 bar								
Max. working temperature	95° C								
Min. working temperature	2° C								
Presetting	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>N</b>	
• Max <sup>2)</sup>	10 l/h	15 l/h	20 l/h	35 l/h	50 l/h	80 l/h	100 l/h	135 l/h	
• with Danfoss Aveo®/ Aero®	Xp1	10 l/h	15 l/h	20 l/h	35 l/h	48 l/h	69 l/h	78 l/h	97 l/h
	Xp2	10 l/h	15 l/h	20 l/h	35 l/h	50 l/h	80 l/h	99 l/h	130 l/h
• with Danfoss React™/ Radia® or RAX sensor	Xp1	10 l/h	14 l/h	19 l/h	31 l/h	40 l/h	50 l/h	57 l/h	65 l/h
	Xp2	10 l/h	15 l/h	20 l/h	35 l/h	49 l/h	74 l/h	85 l/h	110 l/h

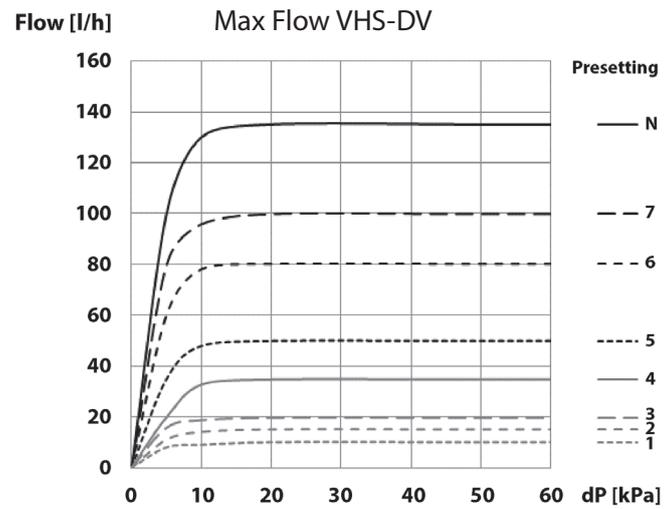
<sup>1)</sup> Working pressure = static + differential pressure. The maximum differential pressure specified is the maximum pressure at which the valves give satisfactory regulation.

<sup>2)</sup> The value states the max. flow at maximum lift, i.e. at fully open valve at 0.1 bar.

# Datasheet

## VHS-DV Pressure independent radiator valve

### Capacities

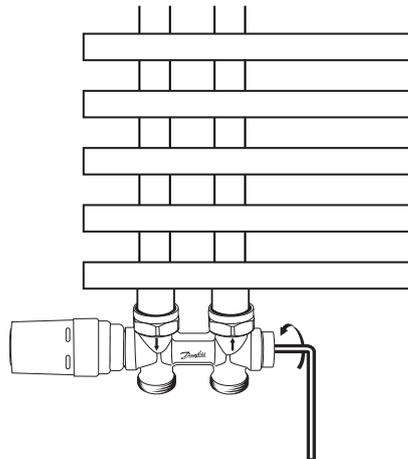


### Sizing example

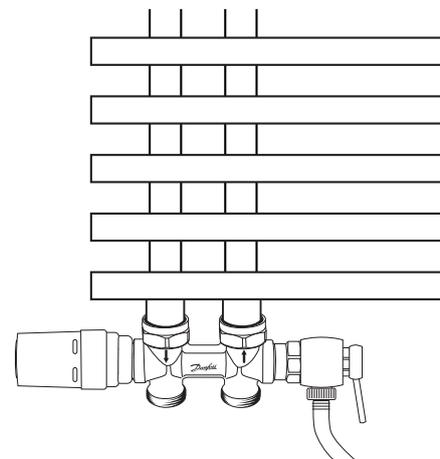
Required heat	700 W
Cooling across radiator	20 °C
Flow through radiator	$Q = \frac{700}{20 \times 1.16} = 30 \text{ l/h}$
Min. pressure for constant flow	0.1 bar
Valve setting*	4

\*Alternatively the setting can be read directly in the table "Technical Data".

## Draining the Radiators



A



B

**Shut-off and draining**

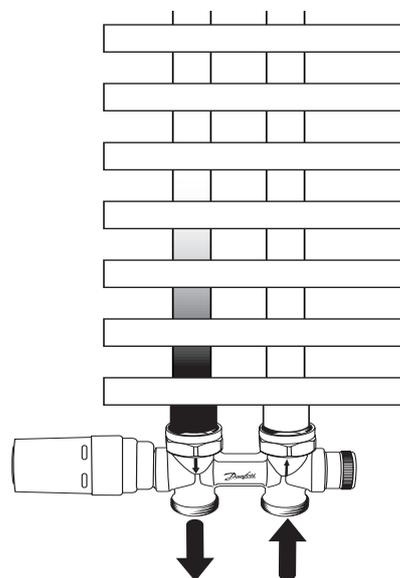
If the sensor element is removed temporarily while the system is under pressure, it should be replaced by an appropriate handwheel – available from Danfoss – to ensure positive and safe shut-off.

To drain the radiator, first unscrew and remove the valve's metal cover. Then firmly shut off the return with an Allen key (see A).

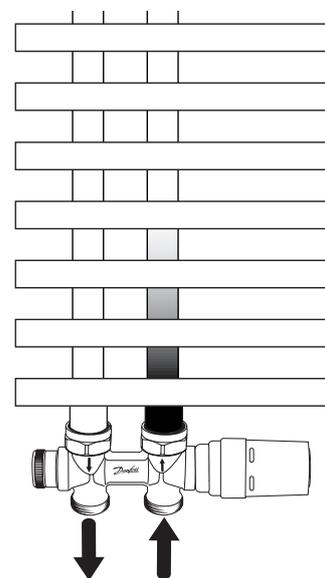
Fix the drain fitting in position. Drain by turning the square headed drain screw to the left (see B).

**Please note:**

The static pressure must not exceed 10 bar.  
Not all radiator types can be drained.

**Reverse flow:**

Radiator **not** drained / Riser drained

**Normal flow:**

Radiator drained / Riser **not** drained

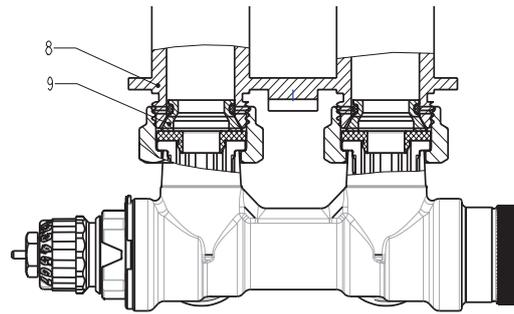
**Please note:**

Not all water is removed by draining.

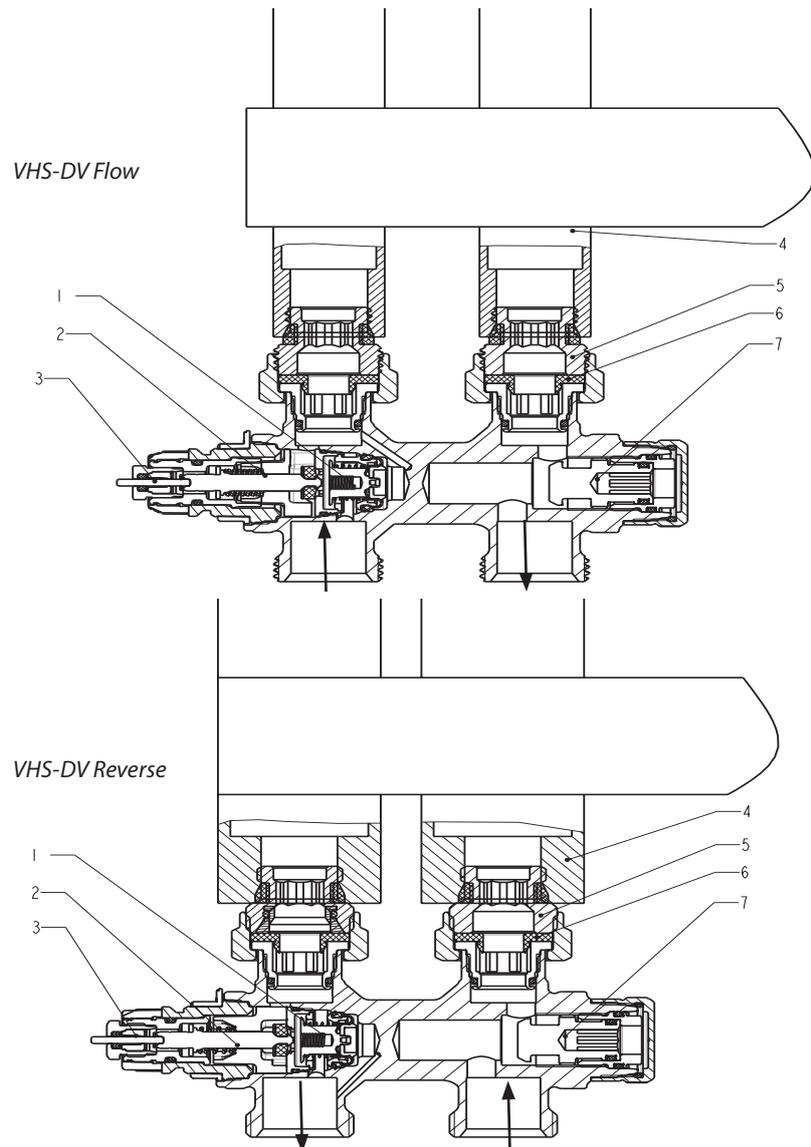
# Datasheet

## VHS-DV Pressure independent radiator valve

### Design



1. Regulator
2. Presetting Unit
3. Stuffing Box
4. Radiator G $\frac{1}{2}$
5. Self sealing connection cone G $\frac{1}{2}$
6. Sealing Cone G $\frac{1}{2}$
7. Shut off and drain unit
8. Radiator G $\frac{3}{4}$
9. Self sealing connection cone G $\frac{3}{4}$



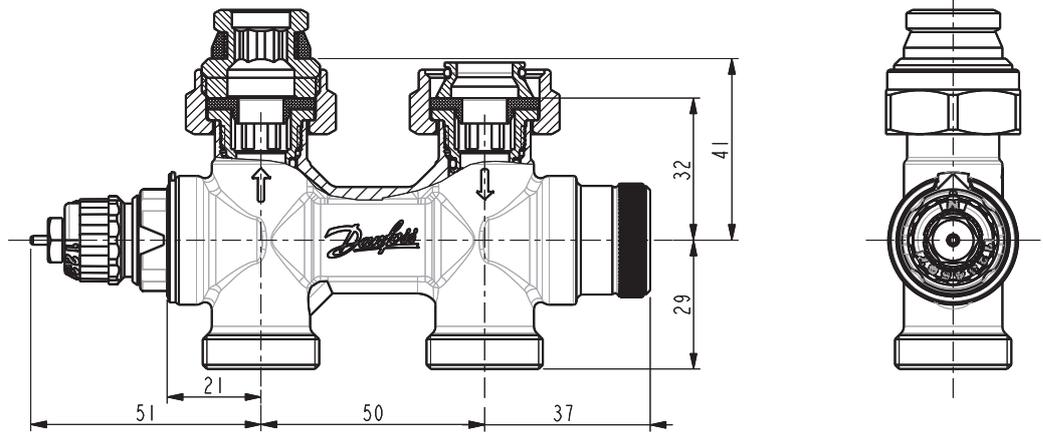
### Materials in contact with water

Valve housing and other metal parts	MS 58
O-rings	EPDM & NBR
Springs	Stainless Steel
Some insert and regulator components	PPS

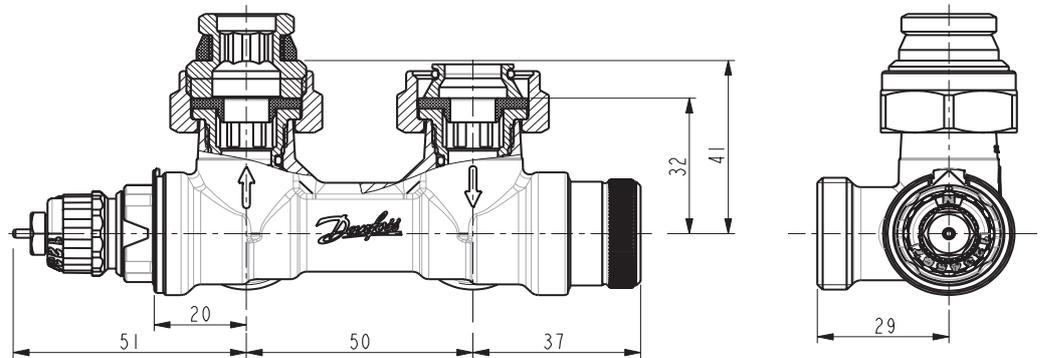
# Datasheet

# VHS-DV Pressure independent radiator valve

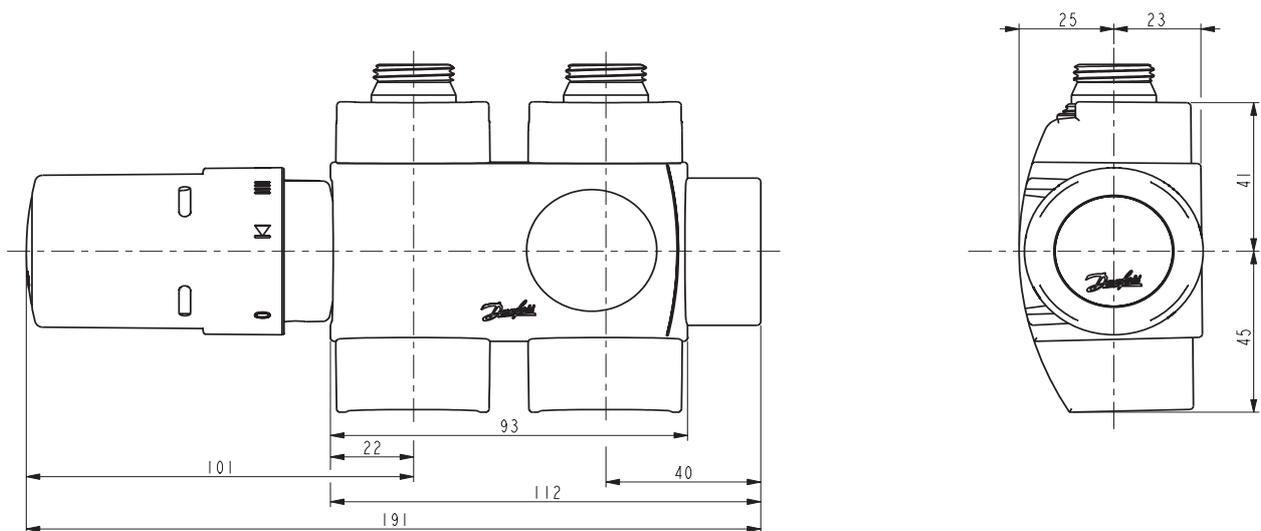
## Dimensions



VHS-DV Straight



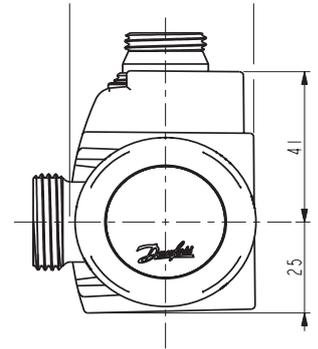
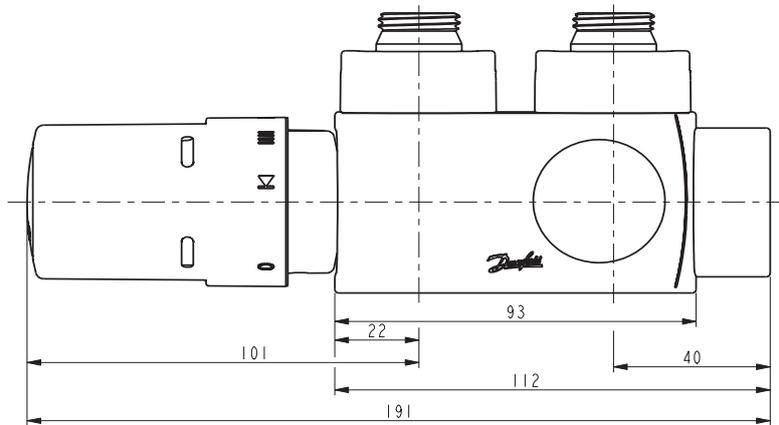
VHS-DV Angle



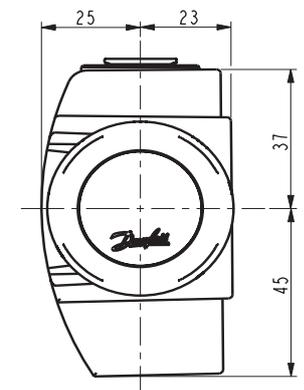
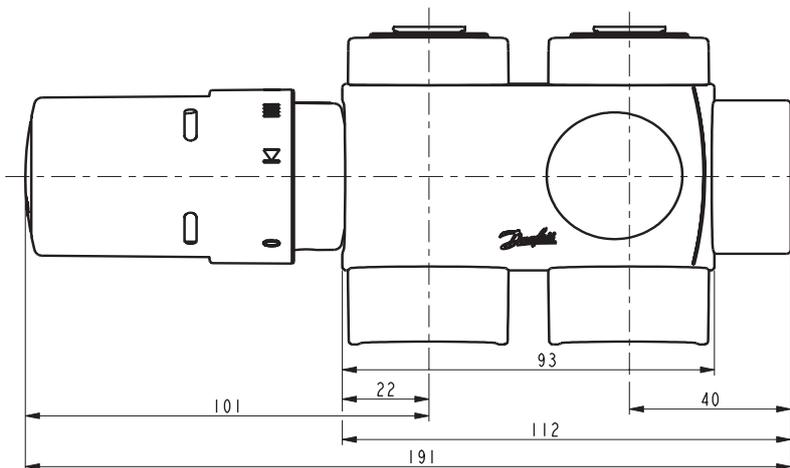
VHS-DV Straight with collar cover (RAX Sensor, at position 3)

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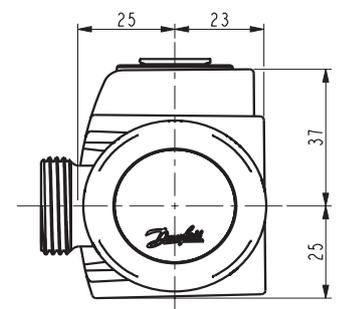
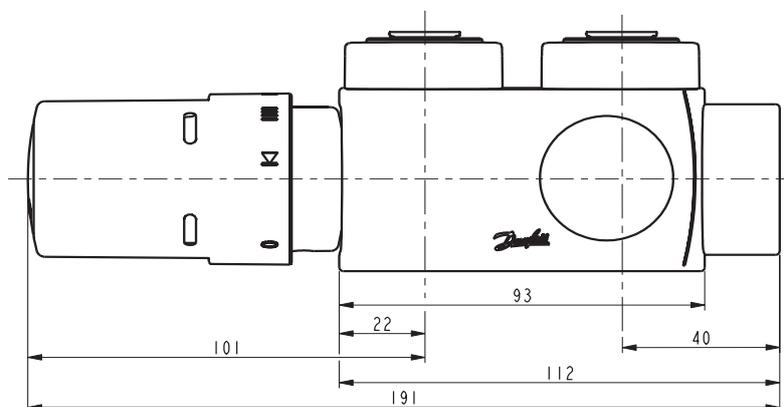
# VHS-DV Pressure independent radiator valve



VHS-DV Angle with collar cover (RAX Sensor, at position 3)



VHS-DV Straight with cover (RAX Sensor, at position 3)



VHS-DV Angle with cover (RAX Sensor, at position 3)

**Danfoss A/S**

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