

**Danfoss**

**AVT Series  
Temperature  
Actuator**



## Danfoss AVT Series Temperature Actuator Installation Guide

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**Danfoss**

**Danfoss AVT Series Temperature Actuator**



## Specifications

- **Model:** AVT TR(TW)700
- **Available Variants:** AVT/VG, AVT/VGU, AVT/VGS, AVT/VGF, AVT/VGUF
- **Length Options:** 15mm, 20mm, 25mm, 32mm, 40mm, 50mm
- **Admissible Installation Positions:** Various, depending on the combination with other components

## Product Usage Instructions

### • Safety Notes

Prior to assembly and commissioning, it is vital to carefully read and follow all safety instructions to prevent injury and damage to devices. Only qualified personnel should perform assembly, start-up, and maintenance work.

### • Disposal Instruction

When disposing of the product, dismantle it and sort its components for recycling. Always adhere to local disposal regulations.

### • Definition of Application

The AVT temperature actuator can be combined with various valves and controllers for different applications. Always follow the system manufacturer's instructions.

## Assembly

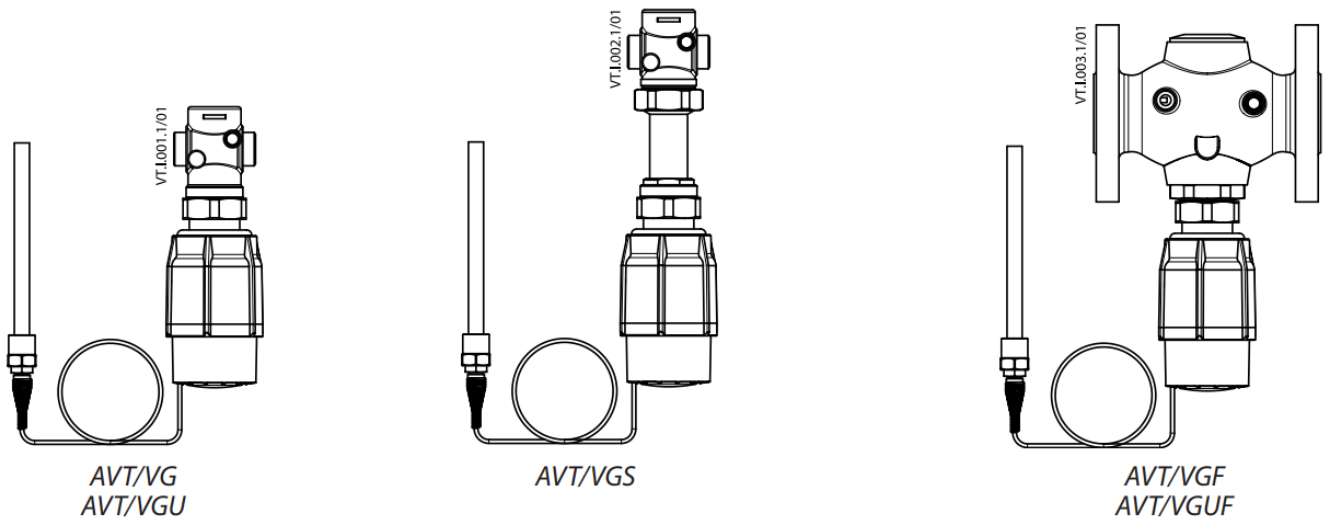
### Admissible Installation Positions:

- Temperature actuator with valves: Install in combination with specific valves as per relevant instructions.
- Temperature sensor: Ensure proper installation without twisting or buckling the capillary tube. Immersion into the medium should be full-length.

## Valve Installation:

1. Clean the pipeline system before assembly.
2. Install a strainer in front of the controller.
3. Place temperature indicators in the system part to be controlled.
4. Install the valve carefully without applying mechanical loads to the valve body by pipelines.

## MODELS



## Safety

### Notes

- Prior to assembly and commissioning to avoid injury of persons and damages of the devices, it is absolutely necessary to carefully read and observe these instructions.
- Necessary assembly, start-up, and maintenance work must be performed only by qualified, trained and authorized personnel.
- Prior to assembly and maintenance work on the controller, the system must be:
  - depressurized,
  - cooled down,
  - emptied and
  - cleaned.

Please comply with the instructions of the system manufacturer or system operator.

### Disposal instruction

This product should be dismantled and its components sorted, if possible, in various groups before recycling or disposal. Always follow the local disposal regulations.

### Definition of Application

- The temperature actuator AVT is, in combination with Danfoss valves and Danfoss controller combinations, used for temperature control of water and water glycol mixtures for heating, district heating and cooling

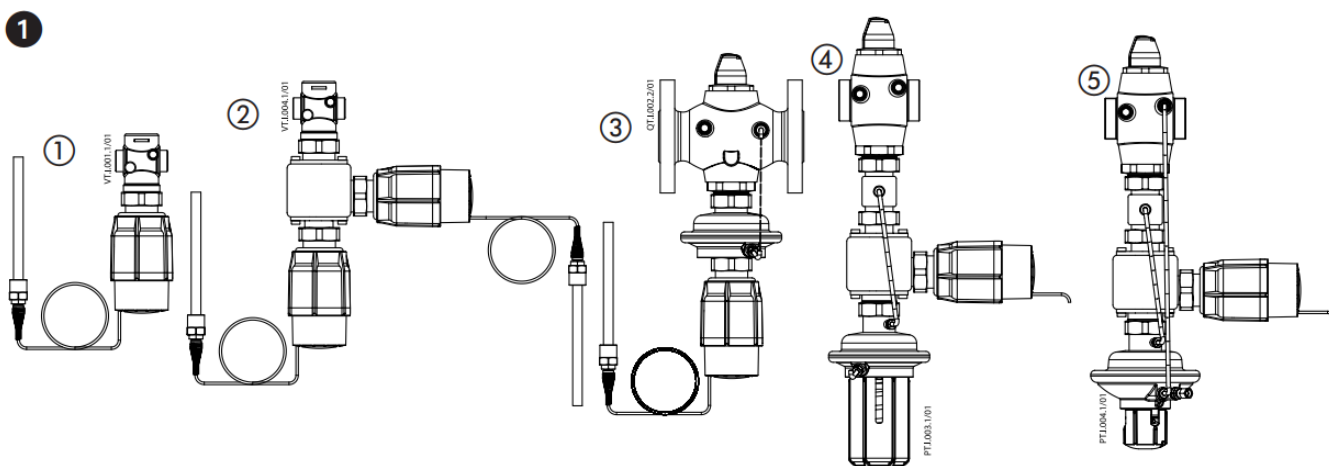
systems.

- The temperature controllers (temperature actuators with valves) with the temperature actuator AVT are type-tested acc. to EN 14597 and comply with the safety requirements for temperature control and temperature limiting units in heat systems.
- The technical parameters on the product labels determine the use.

## Application examples 1

Temperature actuator AVT can be combined with:

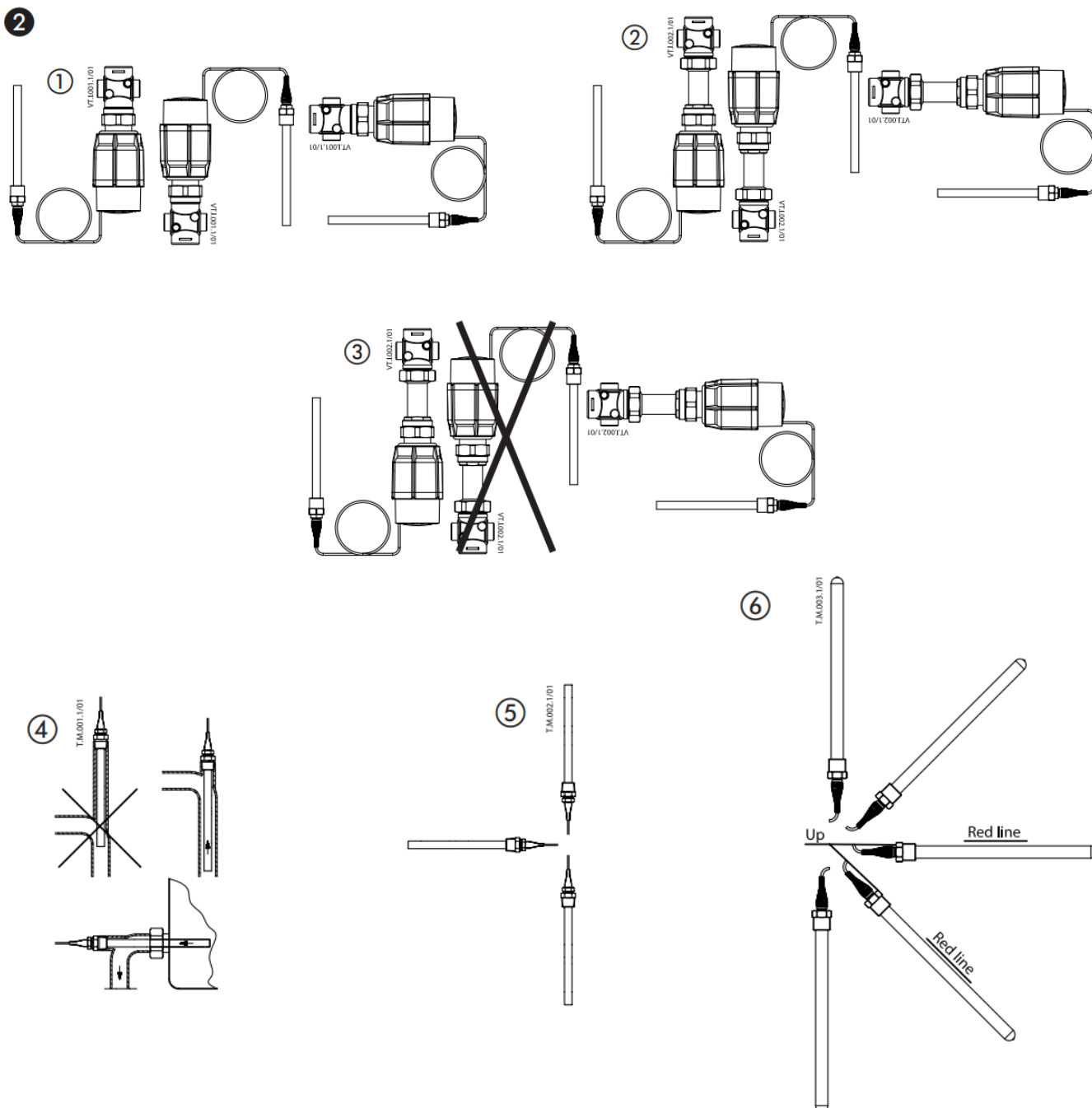
1. VG(F), VGU(F) and VGS valves.
2. Combination pieces K2, K3 and valves mentioned above.
3. Flow and temperature controller AVQT and Flow and temperature controller with integrated control valve AVQMT.
4. Differential pressure and temperature controller with flow limitation (and fixed setting) AVPBT(-F).
5. Differential pressure, flow and temperature controller AVPQT.



## Assembly

### Admissible Installation Positions 2

Temperature actuator with valves



- **In combination with VG(F) or VGU(F) valves:**

- Can be installed in any position ①.

- **In combination with VGS valves:**

- **Medium temperatures up to 160 °C:** Can be installed in any position ②.
- **Medium temperatures > 160 °C:** Can be installed horizontal and in horizontal pipelines with the actuator oriented downwards ③.

Admissible installation positions in combination with AVQT, AVQMT, AVPBT(-F), and AVPQT – see relevant instructions.

## Temperature sensor

- The capillary tube may not be twisted or buckled. The minimum bending radius is 50 mm ④.
- The place of installation must be chosen in a way that the temperature of the medium is directly taken without any delay. Avoid overheating of temperature sensor

- The temperature sensor must be immersed into the medium in its full length.

**Temperature sensors 170 mm R $\frac{1}{2}$ " and 210 mm R $\frac{3}{4}$ ":**

The temperature sensor may be installed in any position ⑤.

**Temperature sensor 255 mm R $\frac{3}{4}$ ":**

The temperature sensor must be installed as shown on the picture ⑥.

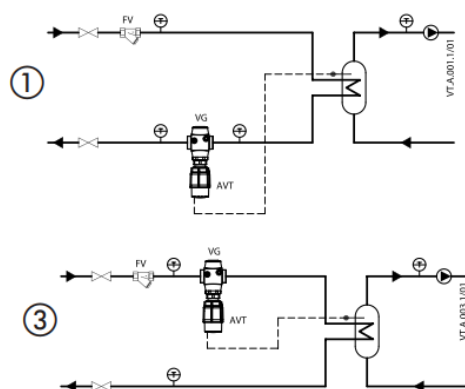
### **Installation Location and Installation Scheme 3**

- AVT/valve ①, AVT/AVT/valve ② return mounting
- AVT/valve ③, AVT/AVT/valve ④ flow mounting

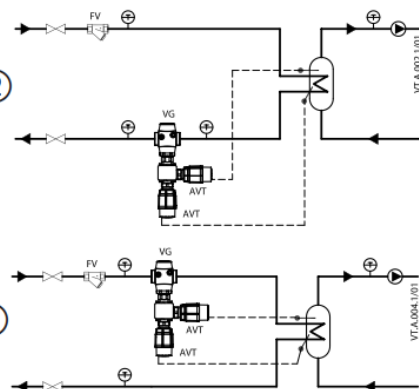
### **Valve Installation 4**

1. Clean pipeline system prior to assembly.
2. The installation of a strainer in front of the controller is strongly recommended ①.
3. Install temperature indicators in the system part to be controlled.
4. **Install valve**
  - The flow direction indicated on the product label ② or on the valve ③ must be observed.
  - The valve with mounted weld-on tailpieces may only be spot welded to the pipeline ④.
  - The weld-on tailpieces may be welded only without the valve and seals! ⑤⑥
  - If these instructions are not observed, high welding temperatures may destroy the seals.
  - Flanges ⑦ in the pipeline must be in parallel position and sealing surfaces must be clean and without any damage. Tighten screws in flanges crosswise in 3 steps up to the maximum torque (50 Nm).
5. **Caution:** Mechanical loads of the valve body by the pipelines are not permitted ⑧.

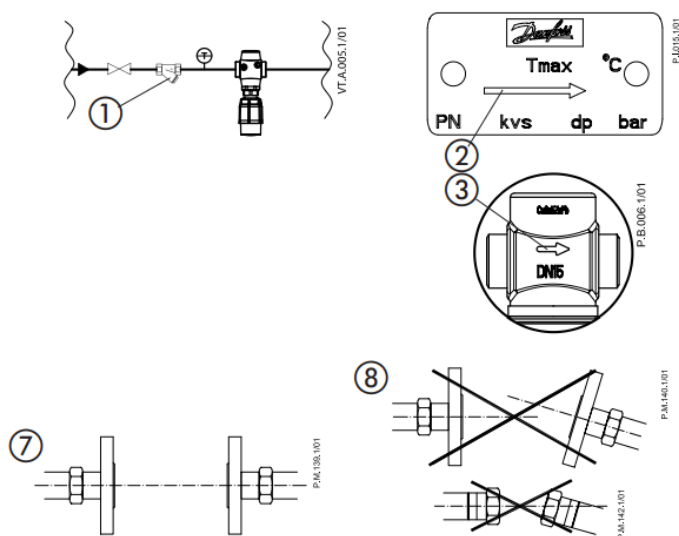
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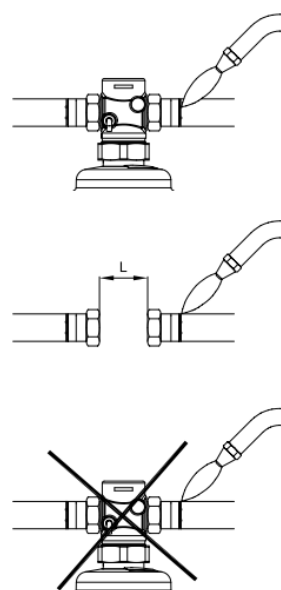
2



4



4



DN	L (mm)
15	69
20	74
25	79
32	104
40	114
50	134

## Mounting of temperature actuator 5

- Before mounting the actuator, carry out Filling the system, First start-up and Leak and pressure tests, see 8.
- Place temperature actuator AVT at the valve 2 or combination piece 3 and tighten union nut with wrench SW 50. Torque 35 Nm.

## Insulation 6

Do not insulate the temperature actuator and the valve as well.

## Start-up 7

- Valves VG, VGF and VGS 1 are normally opened (NO) valves.
- Filling the system and Leak and pressure test should be done without mounted temperature actuator 2 – valve has to be open.
- Valves VGU and VGUF 3 are normally closed (NC) valves.
- Filling the system and Leak and pressure test should be done with open valve. Temperature actuator 4 could be mounted and set in a way that the valve is open.

## Filling the system, first start-up 8

1. Slowly open shut-off devices in the flow pipeline ①.
2. Slowly open shut-off devices ② in the return pipeline.

## **Leak and Pressure Tests**

- Pressure must be gradually increased at the +/- side of the valve . Do not test with closed valve.
- Non-compliance may cause damages at the actuator or the valve.
- A pressure test of the entire system must be carried out in accordance with manufacturer's instructions.
- The maximum test pressure for the valves is:  $1.5 \times PN$
- PN – see product label!

## **Putting out of operation**

1. Slowly close shut-off devices ① in the flow pipeline.
2. Slowly close shut-off devices ② in the return pipeline.

## **Settings 9**

- **Temperature Setting**

The temperature setting range is indicated on product label ①.

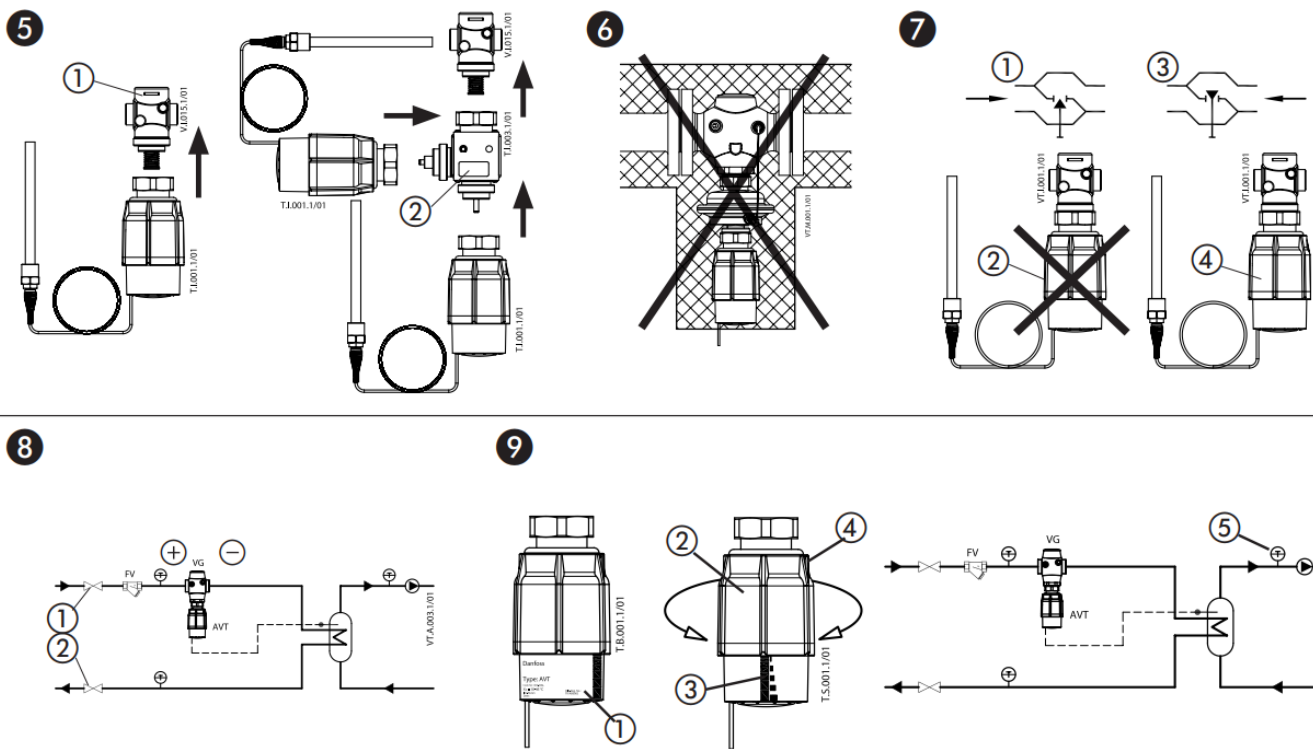
- **Pre-conditions:**

The system must be opened and the flow of the medium guaranteed.

### **Procedure:**

- Set desired setpoint by turning the setting adjuster ②.
  - Turning to the left (counter-clockwise) increases the setpoint.
  - Turning to the right (clockwise) reduces the setpoint.
- **The position of the setpoint adjuster on a scale value ③ means:**
  - 1 minimum setpoint
  - 5 maximum setpoint
- Observe temperature indicator ⑤.
- Wait for about 3 to 5 minutes. until the temperature indicator shows the final value.
- If the device is used as a temperature monitor, the setting adjuster ② must be sealed by a sealing wire ④.





## Adjustment diagram 10

### Temperature setting

Relation between scale numbers 1-5 and closing temperature.

The values given are approximate

10

AVT ... 170 mm, 210 mm

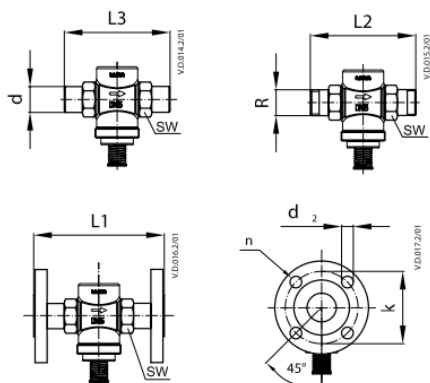
I	II	III	IIII	IIIII	
-10	3	15	28	40	°C
20	33	45	58	70	
40	53	65	78	90	
60	73	85	98	110	

AVT ... 255 mm

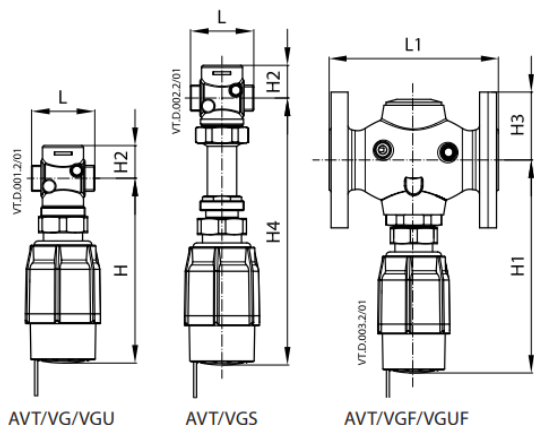
I	II	III	IIII	IIIII	
10	19	28	36	45	°C
35	44	53	61	70	
60	70	80	90	100	
85	95	105	115	125	

## Dimensions, Weights 11

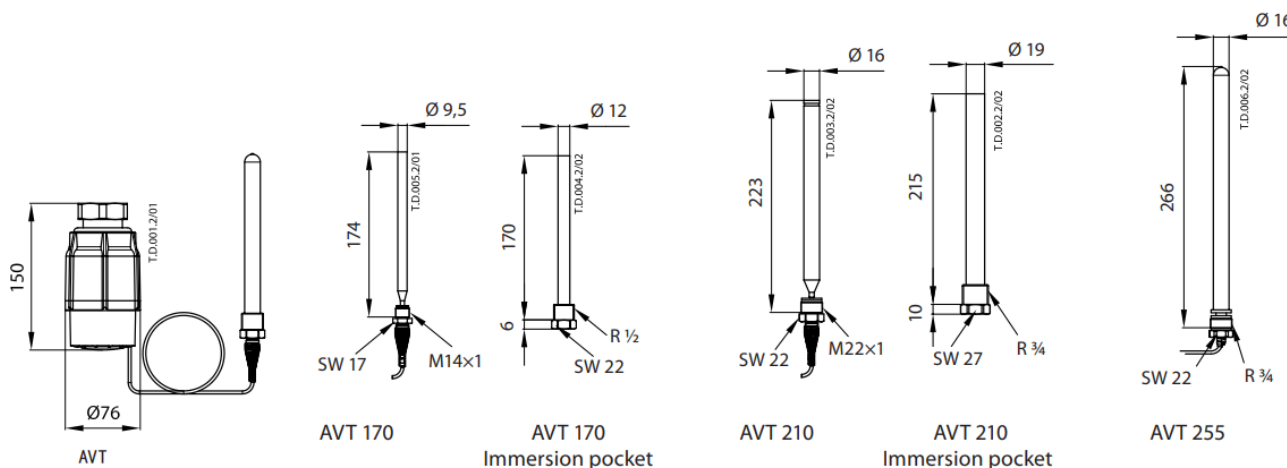
1. Conical ext. thread acc. to EN 10226-1
2. Flanges PN 25, acc. to EN 1092-2



DN	15	20	25	32	40	50
SW	32 (G ¾A)	41 (G 1A)	50 (G 1¼A)	63 (G 1¼A)	70 (G 2A)	82 (G 2½A)
d	21	26	33	42	47	60
R <sup>1)</sup>	½	¾	1	1¼	-	-
L1 <sup>2)</sup>	130	150	160	-	-	-
L2	131	144	160	177	-	-
L3	139	154	159	184	204	234
k	65	75	85	100	110	125
d <sub>2</sub>	14	14	14	18	18	18
n	4	4	4	4	4	4



DN	15	20	25	32	40	50
L	65	70	75	100	110	130
L1	130	150	160	180	200	230
H (VG)	180	180	180	222	222	222
H (VGU)	183	183	183	225	225	225
H (VGS)	257	257	257	-	-	-
H1	130	230	230	222	222	222
H2	34	34	37	62	62	62
H3	47	52	57	70	75	82



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## FAQ

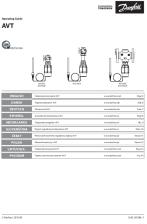
### Q: Can the AVT temperature actuator be used with other types of valves?

A: Yes, the AVT can be combined with VG(F), VGU(F), and VGS valves as well as other mentioned components for various applications.

### Q: What are the recommended safety measures before assembly and maintenance work?

A: Ensure that the system is depressurized, cooled down, emptied, and cleaned before performing any assembly or maintenance tasks to prevent accidents.

## Documents / Resources



### [Danfoss AVT Series Temperature Actuator](#) [pdf] Installation Guide

TR TW 700, AVT-VG, AVT-VGU, AVT-VGS, AVT-VGF, AVT-VGUF, AVT Series Temperature Actuator, AVT Series, Temperature Actuator, Actuator

References

-  [Danfoss España: Soluciones innovadoras y ahorro de energía | Danfoss](#)
- [User Manual](#)

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