Danfoss AVT Temperature Actuator

Danfoss AVT Temperature Actuator User Manual

Contents

Danfoss AVT Temperature Actuator

Product Information

Specifications

- **Product Name**: Temperature Actuator AVT
- **Model**: AVT/VG, AVT/VGU, AVT/VGS, AVT/VGF, AVT/VGUF
- **Manufacturer**: Danfoss

Product Usage Instructions

Safety Notes

Prior to assembly and commissioning, read and observe the instructions to prevent injury or device damage. Only qualified personnel should perform assembly, startup, and maintenance work.

Before Installation

Before starting any work on the controller:

- Depressurize the system.
- Cool down the system.
- Empty and clean the system.

Assembly

Follow these steps for assembly:

- Refer to the system manufacturer or operator instructions.
- Mount the temperature actuator according to the provided scheme.
- Ensure proper insulation to prevent heat loss.

Start-up

Steps to start up the system:

- Fill the system as per guidelines.
- Conduct leak and pressure tests.
- Adjust settings and temperature as required.

FAQ

- **Q: Who should perform assembly and maintenance work on the controller?**
  - **A**: Only qualified, trained, and authorized personnel should perform assembly, startup, and maintenance work on the controller.
- **Q: What precautions should be taken before starting any work on the controller?**
  - **A**: Before starting any work, ensure that the system is depressurized, cooled down, emptied, and cleaned to prevent accidents or damages.

Safety Notes

Prior to assembly and commissioning to avoid injury of persons and damage of the devices, it is absolutely necessary to carefully read and observe these instructions. Necessary assembly, startup, 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,

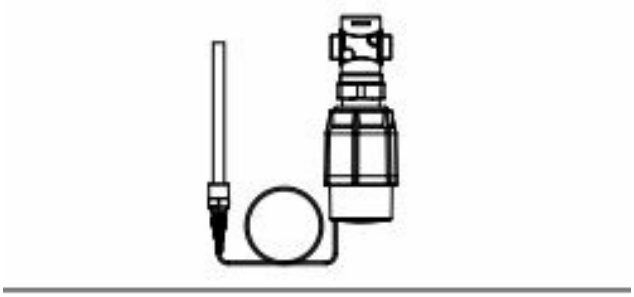
- cooled down,
- emptied and
- cleaned.

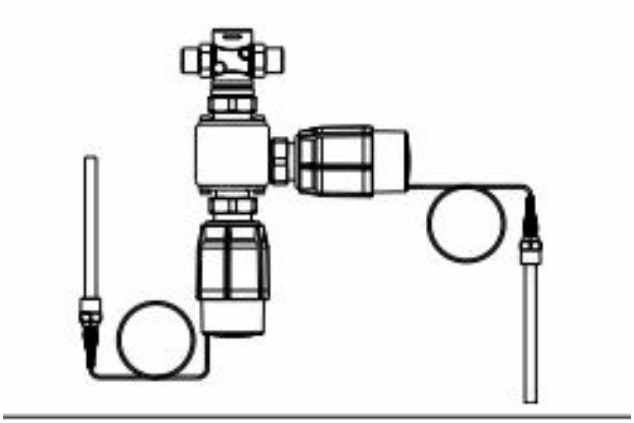
  Please comply with the instructions of the system manufacturer or system operator.

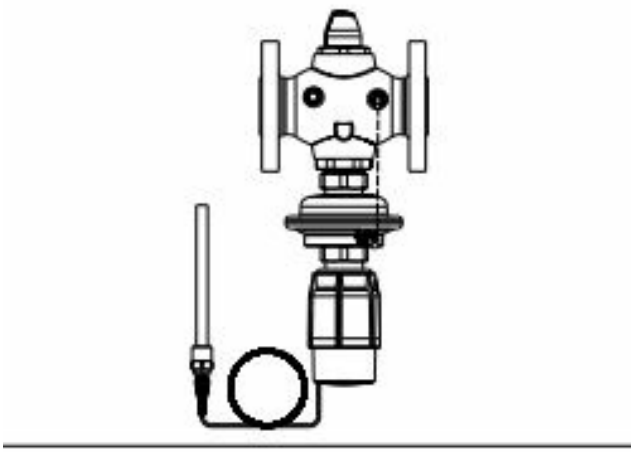
Definition of Application

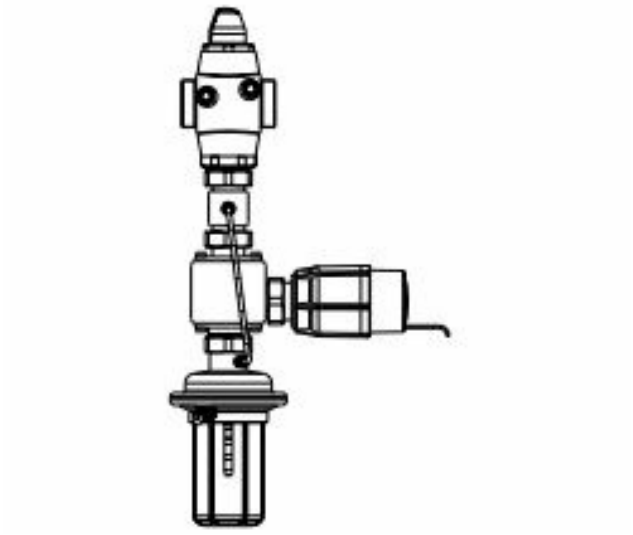
The temperature actuator AVT is, in combination with Danfoss valves and Danfosscontroller combinations,used for temperature control of water and water-glycol mixtures for heating, district heating and cooling systems.
The temperature controllers (temperature actuators with valves) with the temperature 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





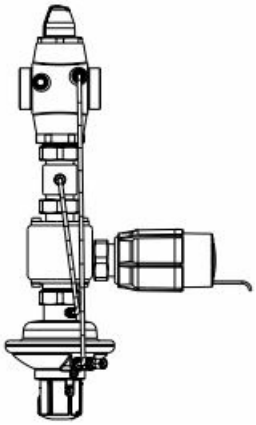




Temperature actuator AVT can be combined with:

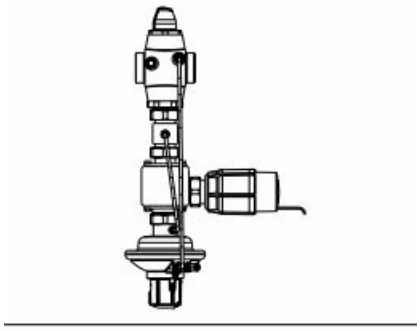
- VG(F), VGU(F), and VGS valves.
- Combination pieces K2, K3 and valves mentioned above
- Flow and temperature controller AVQT and Flow and temperature controller with integrated control valve AVQMT

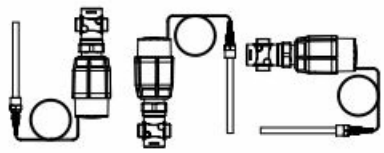
- Differential pressure and temperature controller with flow limitation (and fixed setting) AVPBT(-F)
-



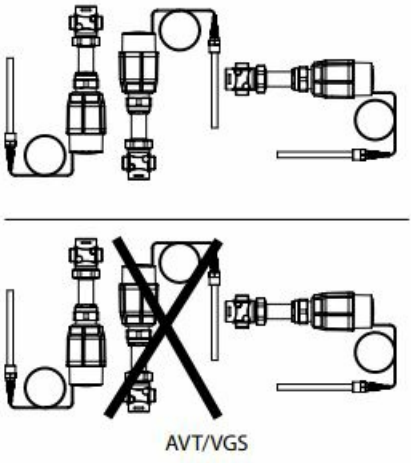
- Differential pressure, flow, and temperature controller AVPQT

Assembly





AVT/VG, AVT/VGU



AVT/VGS

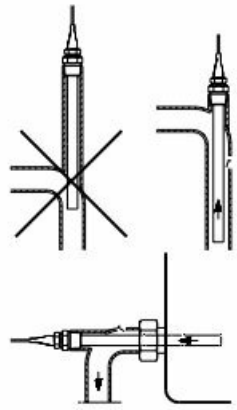
Admissible Installation Positions

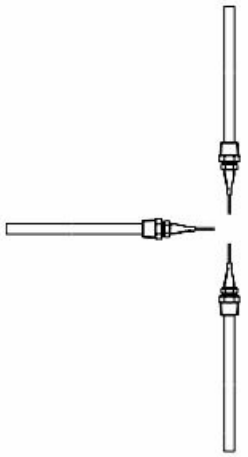
- Temperature actuator with valves

- – In combination with VG(F) or VGU(F) valves:
- – Can be installed in any position.
- – In combination with VGS valves:

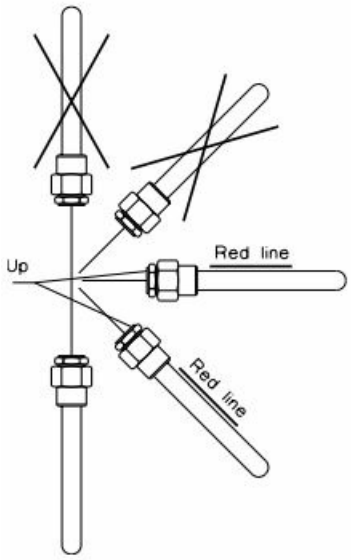
- Medium temperatures up to 160 °C:
  - Can be installed in any position.
  - Medium temperatures
  - > 160 °C:
- Can be installed horizontally and in horizontal pipelines with the actuator oriented downwards.
- Admissible installation positions in combination with AVQT, AVQMT, AVPBT(-F) and AVPQT

Temperature sensor





- The capillary tube may not be twisted or buckled. The minimum bending radius is 50 mm.
- The place of installation must be chosen in a way that the temperature of the medium is directly taken without any delay.
- Avoid overheating temperature sensor
- The temperature sensor must be immersed into the medium in its full length.
- Temperature sensors 170 mm R½” and 210 mm R¾”:
- The temperature sensor may be installed in any position.

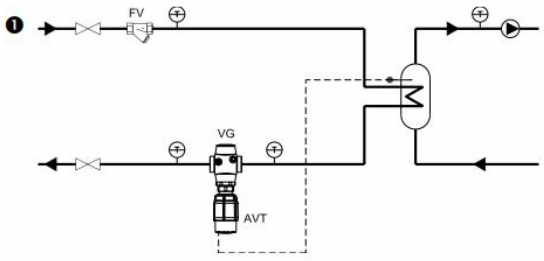


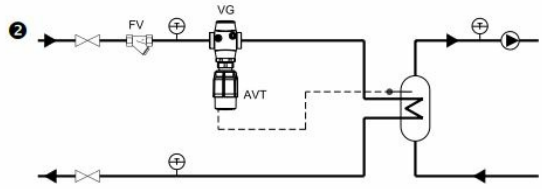
- Temperature sensor 255 mm R¾”:
  - The temperature sensor must be installed as shown on the picture

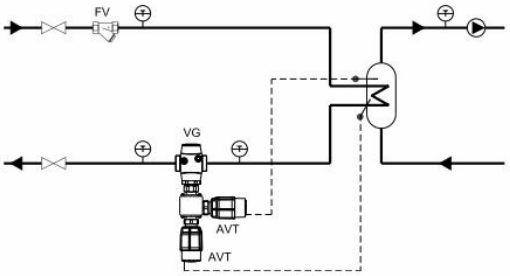
Installation

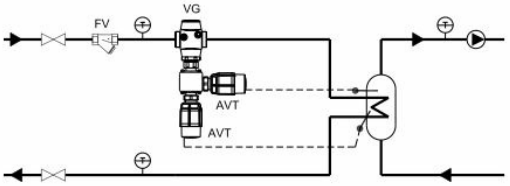
Installation Location and Installation Scheme

- AVT / valve, AVT / AVT / valve-return mounting
- AVT / valve, AVT / AVT / valve flow mounting

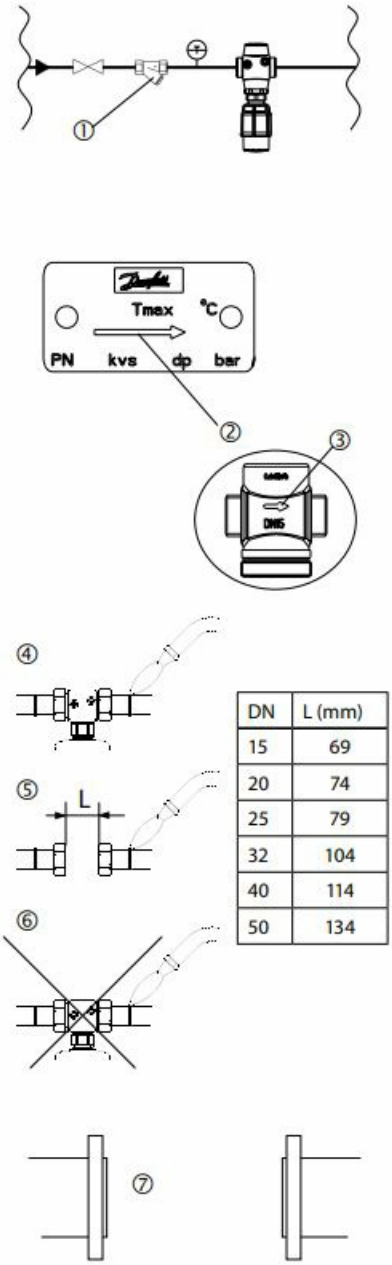








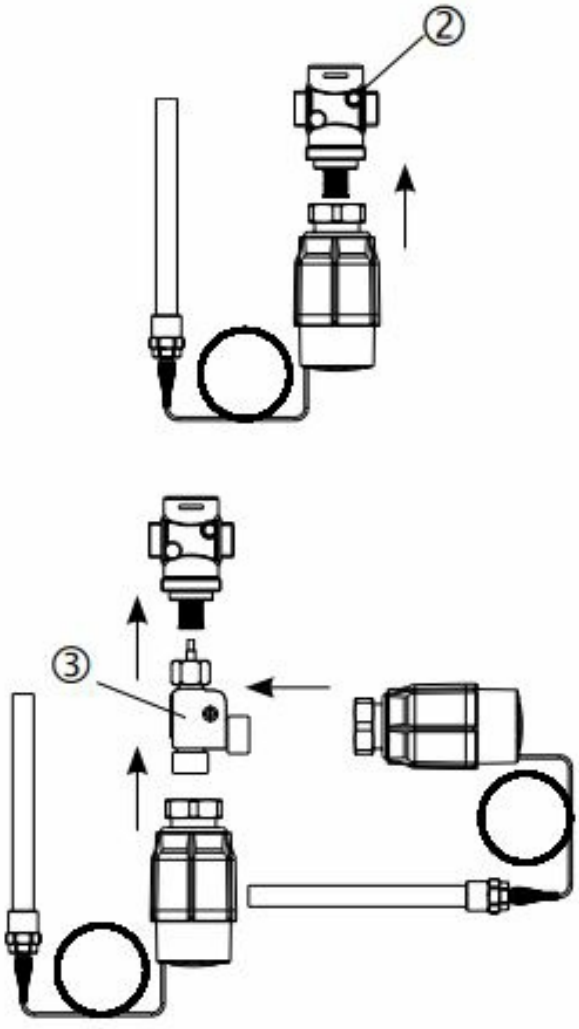
Valve Installation



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

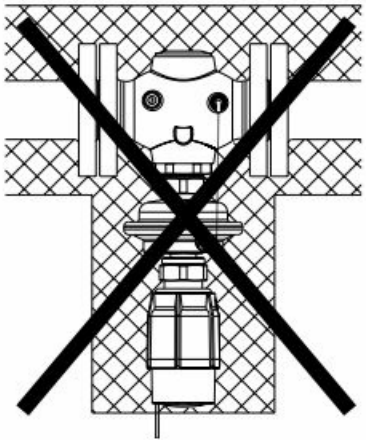
1. Clean pipeline system prior to assembly.
2. The installation of a strainer in front of the controller is strongly recommended 1.
3. Install temperature indicators in the system part to be controlled
4. Install valve
    - The flow direction indicated on the product label 2 or on the valve 3 must be 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! 5,6
    - 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.

Mounting of temperature actuator



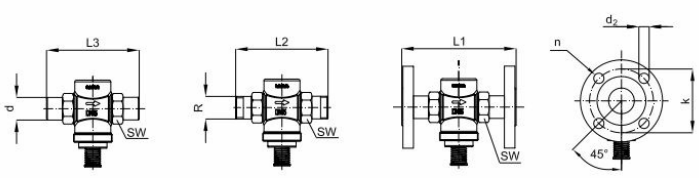
- Before mounting the actuator, carry out Filling the system, First start-up and Leak and pressure tests, see
- **Caution:** Valid for valves VGU, and VGUF It is necessary to count the distance ring 1 before mounting the actuator. Non-compliance cause that the valve can not be completely closed.
- Place temperature actuator AVT at the valve 2 combination piece 3 and tighten the union nut with wrench SW 50. Torque 35 Nm.

Insulation

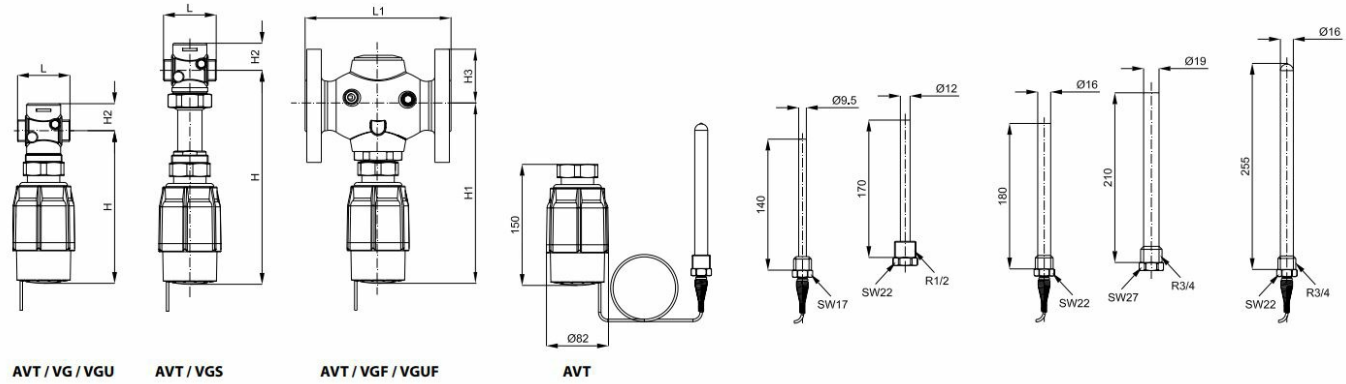


Do not insulate the temperature actuator and the valve as well.

Dimensions, Weights



DN		15	20	25	32	40	50
SW	mm	32 (G ¾A)	41 (G 1A)	50 (G 1¼A)	63 (G 1¾A)	70 (G 2A)	82 (G 2½A)
d		21	26	33	42	47	60
R [1]		½	¾	1	1 ¼	-	-
L1 [2]		130	150	160	-	-	-
L2		131	144	160	177	-	-
L3		139	154	159	184	204	234
k		65	75	85	100	110	125
d_2		14	14	14	18	18	18
n		4	4	4	4	4	4

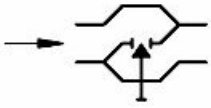


DN		15	20	25	32	40	50
L	mm	65	70	75	100	110	130
L1		130	150	160	180	200	230
H (VG)		180	180	180	222	222	222
H (VGU)		183	183	183	225	225	225
H (VGS)		257	257	257	-	-	-
H1		230	230	230	222	222	222
H2		34	34	37	62	62	62
H3		47	52	57	70	75	82

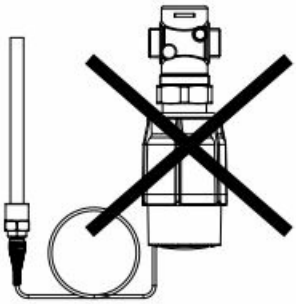
Note: other flange dimensions - see table for tailpieces

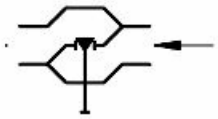
1. Conical ext. thread acc.
2. Flanges PN 25, acc.

Start-up

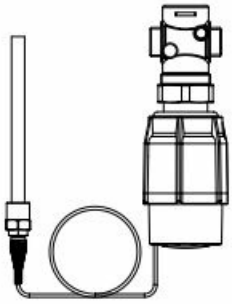


VG, VGF, VGS





VGU, VGUF



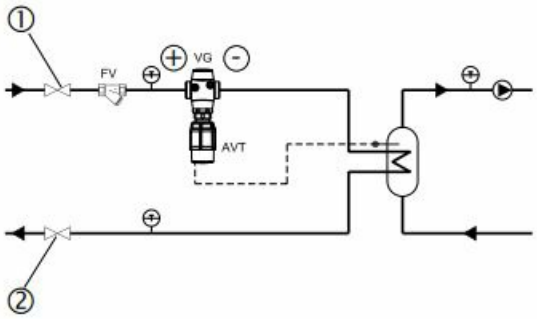
Note

- Valves VG, VGF, and VGS are normally opened (NO) valves. Filling the system and Leak and pressure test should be done without a mounted temperature actuator – the valve has to be open.

- Valves VGU and VGUF are normally closed (NC) valves.

- Filling the system and Leak and pressure test should be done with open valve.
- The temperature actuator could be mounted and set in a way that the valve is open.

Filling the system, the first start-up



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

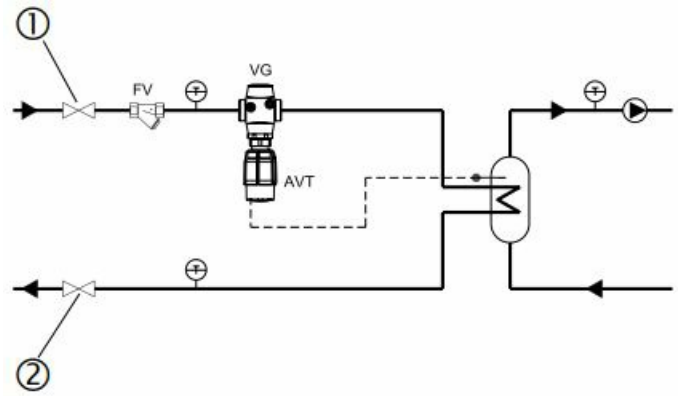
Leak and Pressure Tests

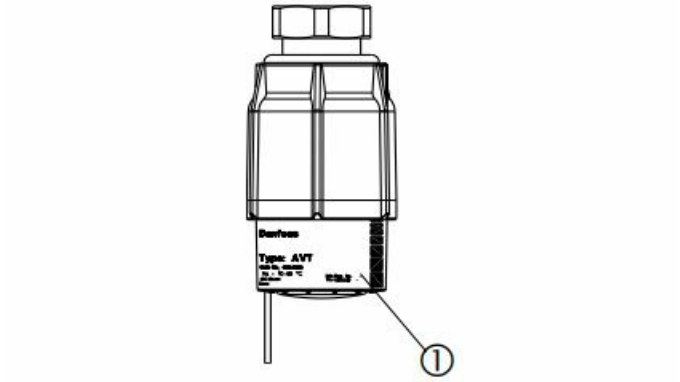
Pressure must be gradually increased at the +/- side of the valve . Do not test with a closed valve

- Non-compliance may cause damage at the actuator or the valve.
- A pressure test of the entire system must be carried out in accordance with the manufacturer’s instructions.
- The maximum test pressure for the valves is:

1.5 x PN
PN – see product label

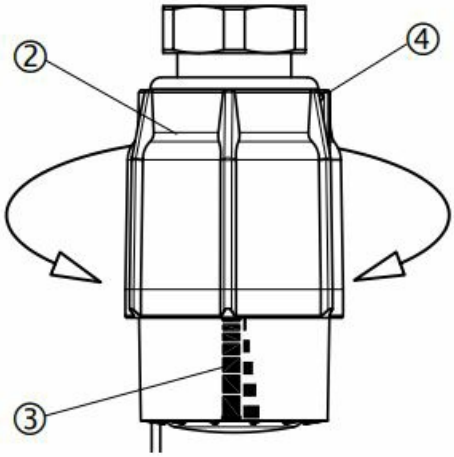
Putting out of operation

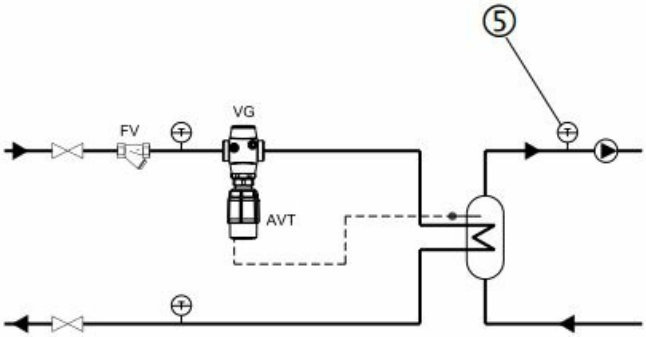




1. Slowly close and shut off device 1 in the flow pipeline.
2. Slowly close shut-off device 2 in the return pipeline.
    - **Settings**
    - **Temperature Setting**
    - The temperature setting range is indicated on the product label 1.

Pre-conditions



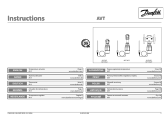


The system must be opened and the flow of the mediumguaranteed.

Procedure:

- Set the desired setpoint by turning the setting adjuster
- Turning to the left (counter-clockwise)increases the setpoint. Turning to the right(clockwise) reduces thesetpoint. The position of the setpoint adjuster on a scale value 3 means:
  - 1 minimum setpoint
  - 5 maximum setpoint
- Observe the temperature indicator 5.
- Wait for about 3 to 5 min. 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.
- www.danfoss.com

Documents / Resources



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AVT Temperature Actuator, AVT, Temperature Actuator, Actuator

References

- Engineering Tomorrow | Danfoss
- Danfoss Deutschland | Klima | Kälte | Heizung | Antriebe | Hydraulik | Danfoss
- Danfoss Salg Danmark | Danfoss
- Danfoss España: Soluciones innovadoras y ahorro de energía | Danfoss
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- User Manual