Danfoss STM Safety Temperature Monitor Actuator User Guide

Contents

Danfoss STM Safety Temperature Monitor Actuator

Specifications

- Product Name: Safety Temperature Monitor (Actuator) STM STW871
- Model Variants: STM/VG, STM/VGF, STM/VGS
- Available Sizes: DN 15 – 50
- Dimensions: Refer to product manual for detailed dimensions

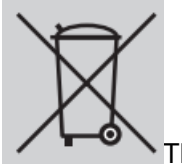
Safety Notes

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

Safety temperature monitor (actuator) STM is, in combination with Danfoss valves (STM/VG(F), VGS) and Danfoss controller combinations (STM/AVT/VG(F), VGS), used for temperature control and temperature monitoring of drinking water, water and water glycol mixtures for heating and district heating systems.
The controllers STM/VG(F), VGS and STM/AVT/VG(F), VGS are:

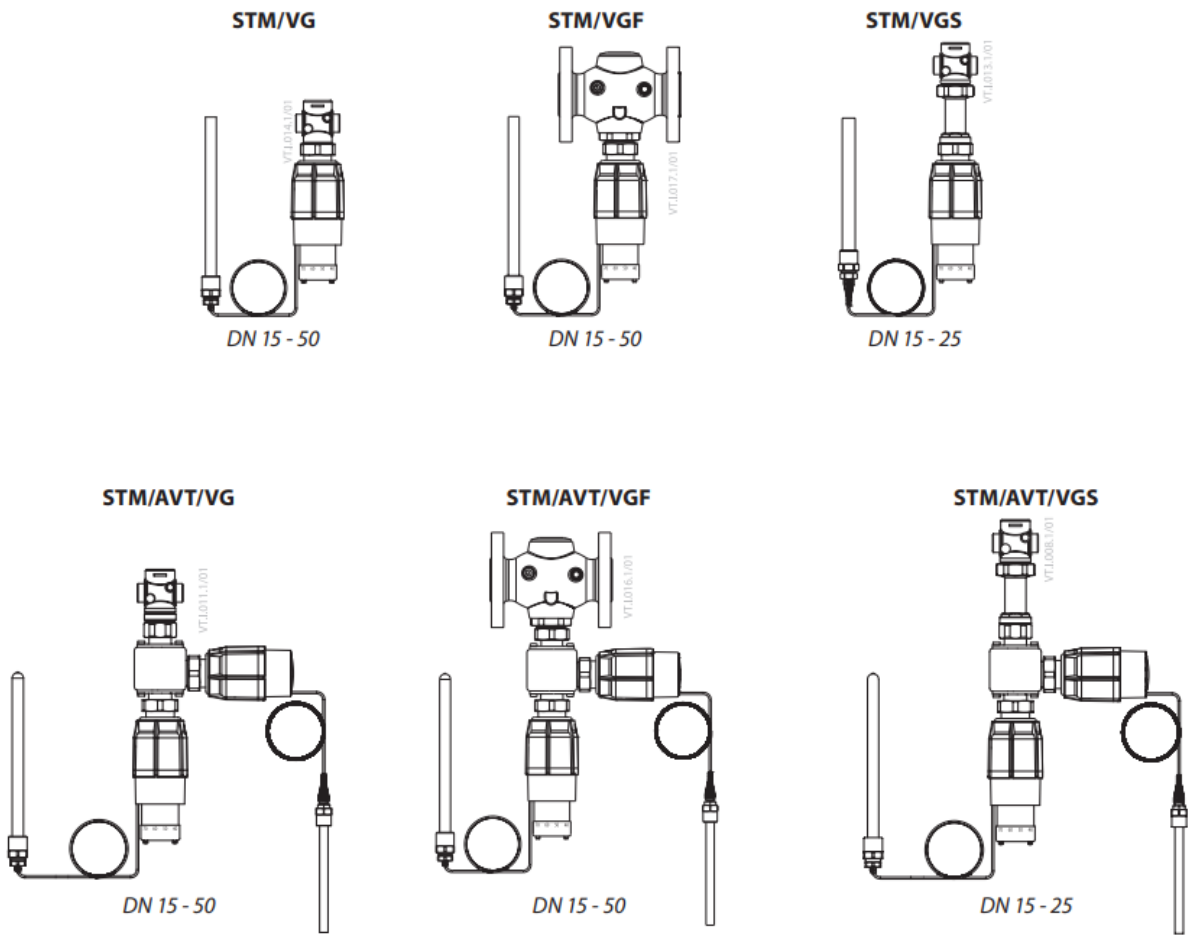
- Type-tested acc. to EN 14597 and protect against exceeding temperatures:
- District heating systems acc. to DIN 4747
- Heating systems acc. to EN 12828 (DIN 4751) and EN 12953-6 (DIN 4752)
- Water heating systems for drinking and industrial waters acc. to DIN 4753

The technical parameters on the product labels determine the use.

Application examples ❶
Safety temperature monitor (actuator) STM can be combined with:

- VG(F) and VGS valves.
- Combination pieces K2, K3, AVT actuators and valves mentioned above

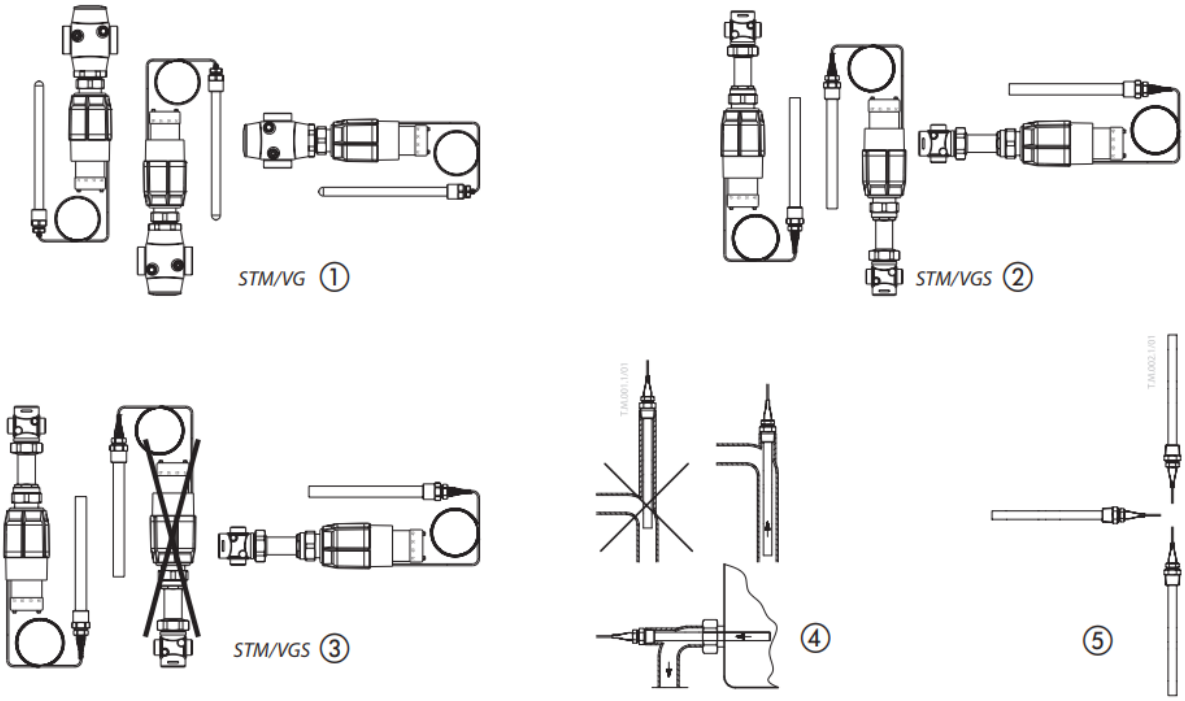
❶



Assembly

Admissible Installation Positions ❷

❷



Safety temperature monitor (actuator)with valves
In combination with VG(F) valves:

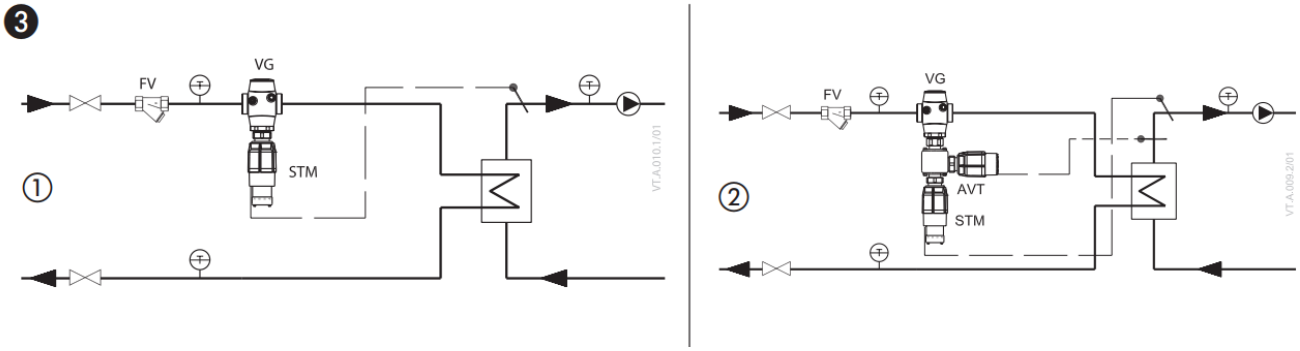
- Can be installed in any position ①.

  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.

Temperature sensor

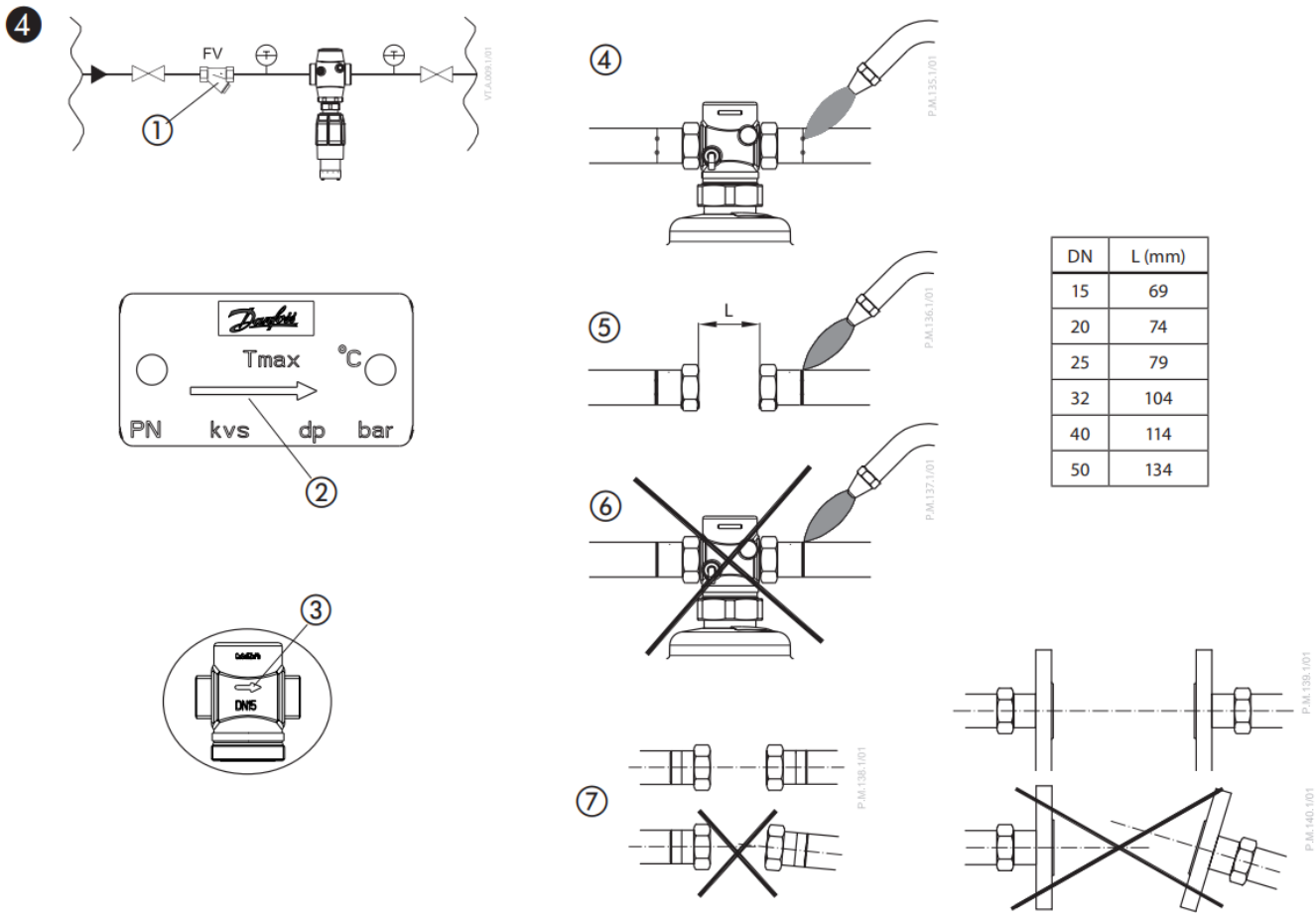
- The capillary tube may not be twisted or buckled. The minimum bending radius is 50 mm.
- The place of installation must be chosen in a way that the temperature of the medium is directly taken without any delay. Avoid overheating of temperature sensor.
- The temperature sensor must be immersed into the medium in its full length ④.
- The temperature sensor may be installed in any position ⑤.

Installation Location and Installation Scheme ❸



- STM/valve ①,
- STM/AVT/valve flow mounting ②

Valve Installation ❹



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

1. Clean pipeline system prior to assembly.
2. Install a strainer in front of the controller ①. Max. mesh width:
   - DN 15-25: 0,5 mm
   - DN 32-50: 0,8 mm
3. Install temperature indicators in the system part to be controlled.
4. **Install valve ❹**

   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.

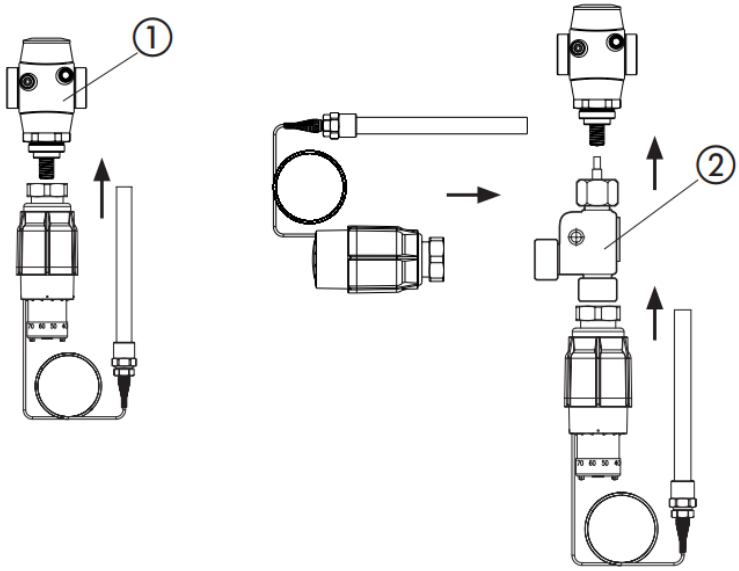
  Tighten screws in flanges crosswise in 3 steps up to the maximum torque (50 Nm).

5. **Caution:**

   Mechanical loads of the valve body by the pipelines are not permitted.

Mounting of safety temperature monitor (actuator) ❺

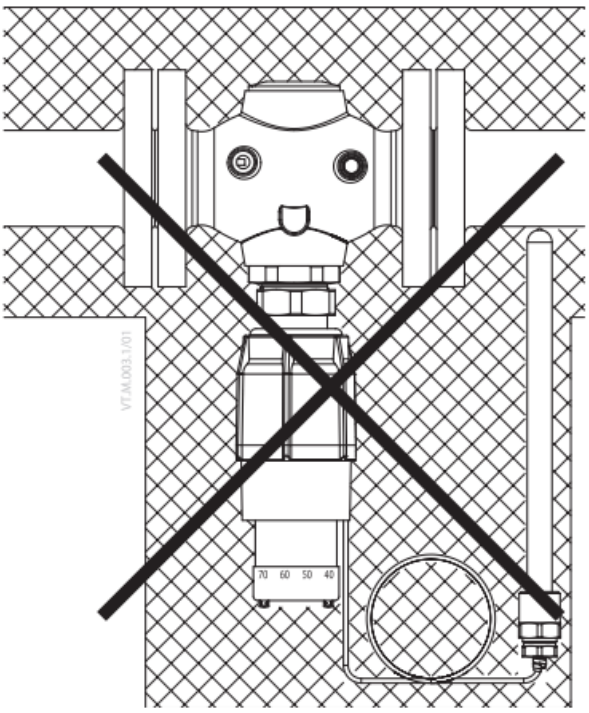
❺



Before mounting the actuator, carry out Filling the system, First start-up and Leak and pressure tests, ❽❾.
Place temperature actuator at the valve ① or combination piece ② and tighten union nut with wrench SW 50.
Torque 35 Nm.

Insulation ❻

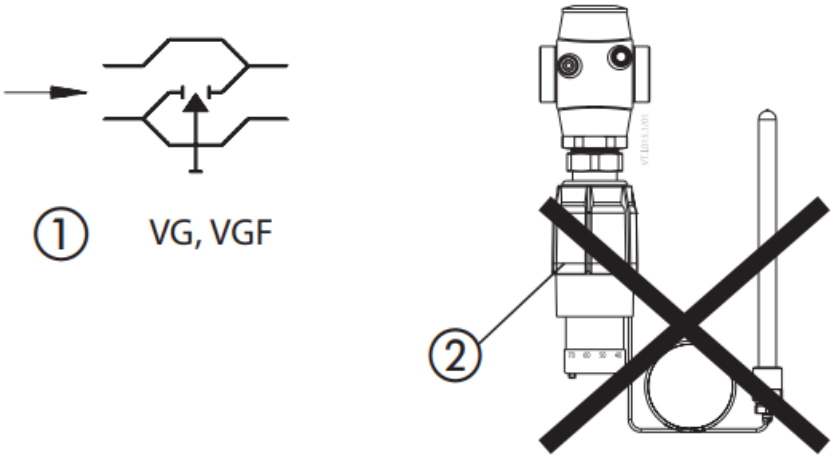
6



Do not insulate the safety temperature monitor (actuator) and the valve as well.

Start-up ❼

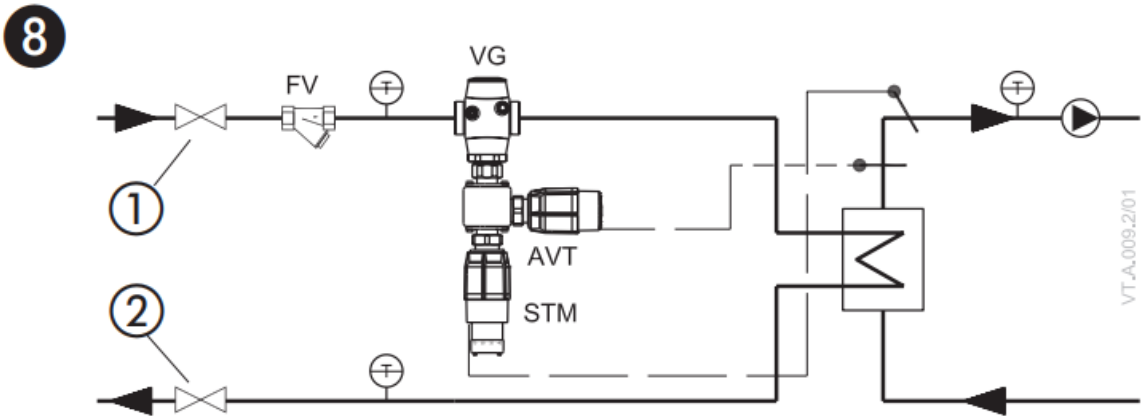
7



Note
Valves ① VG(F) and VGS are normally opened (NO) valves.

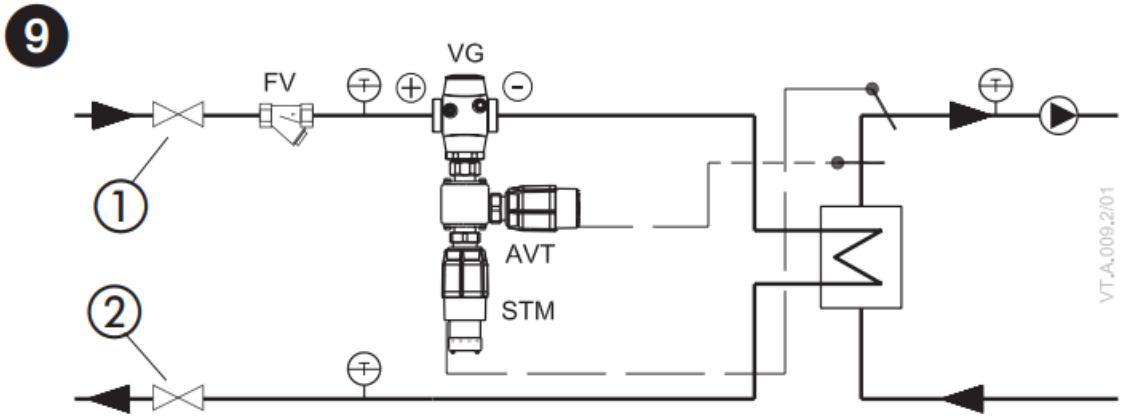
Filling the system and Leak and pressure test should be done without mounted temperature actuator ② – valve has to be open.

Filling the system, first start-up ❽



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

Leak and Pressure Tests ❾
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.

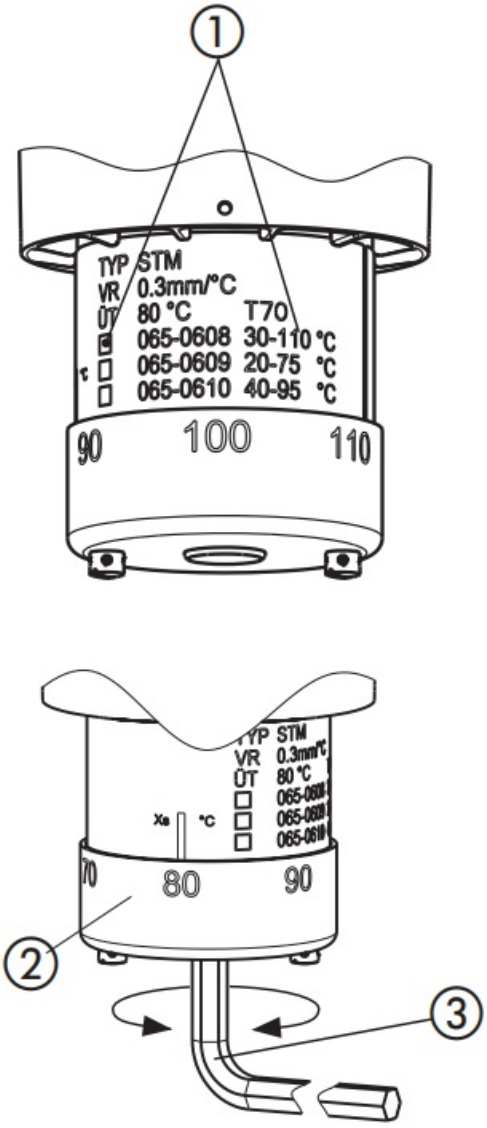
A pressure test of the entire system must be carried out in accordance with anufacturer's instructions.
The maximum test pressure for the valves is: 1,5 × PN

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 ❿

10



Temperature Setting
The temperature setting range is indicated on product label ①.

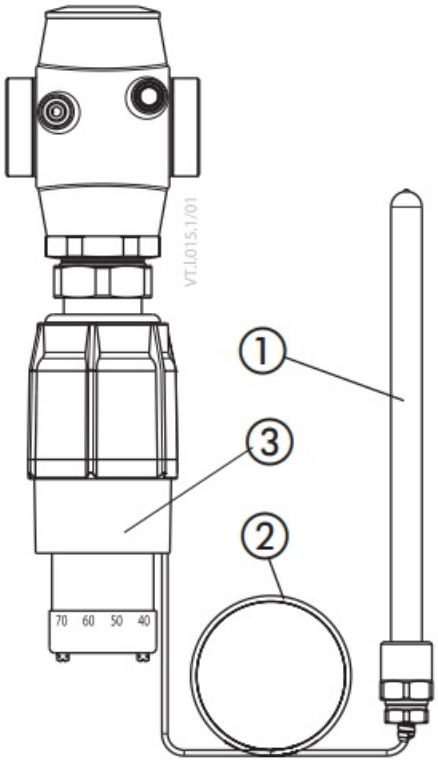
Pre-conditions
The system must be opened and the flow of the medium guaranteed.

Procedure

- Set desired set point by turning the setting adjuster ② with the delivered Allan key SW 5 ③.
- You may only adjust within the marked range, see ①.
- Turning to the left (couter-clockwise) increases the set point.
  Turning to the right (clockwise) reduces the set point.
- Observe temperature indicator.
- 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 ⑤ must be sealed by a sealing wire ④.

Temperature setting – AVT
(relevant only at STM/AVT/VG(F), VGS controllers) See instructions for temperature actuator AVT.

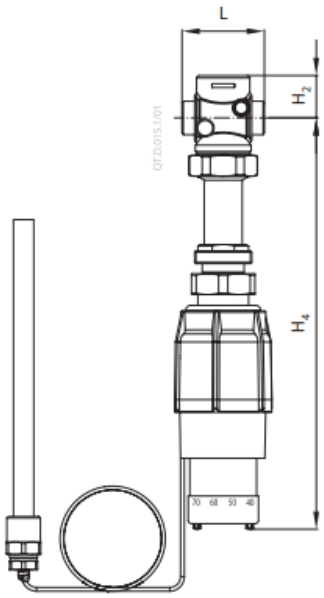
Safety function



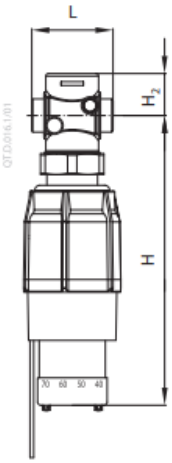
If there is a leakage in the area of the temperature sensor ①, the capillary tube ②, or the thermostat ③, the valve is closed by a pressure spring in the safety thermostat. In this case safety temperature monitor (actuator) must be replaced.

Dimensions, Weights

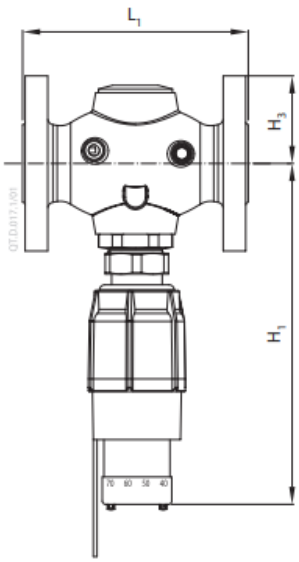
⑫



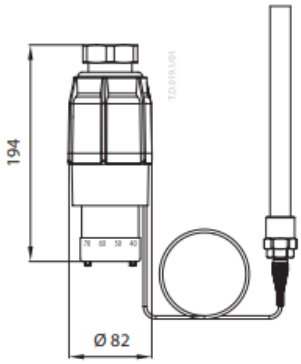
STM/VG (DN 15-25)



STM/VG (DN 15-50)

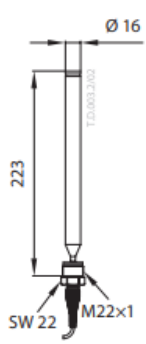


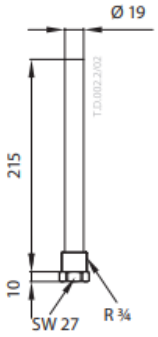
STM/VG (DN 15-50)

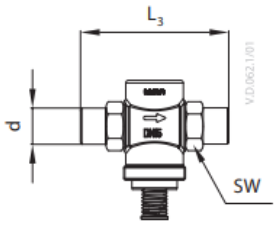


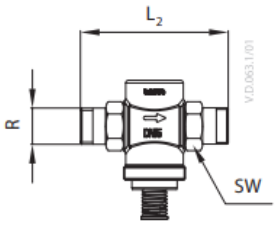
STM/VG (DN 15-50)

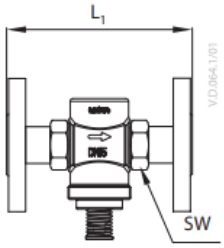
DN	L	L_1	H	H_1	H_2	H_3	H_4
	mm						
15	65	130	224	274	34	47	301
20	70	150	224	274	34	52	301
25	75	160	224	274	37	57	301
32	100	180	266	266	62	70	-
40	110	200	266	266	62	75	-
50	130	230	266	266	62	82	-

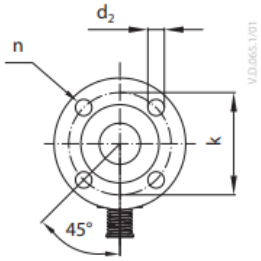












DN	R [1]	SW	d	L_1 [2]	L_2	L_3	k	d_2	n
		mm							
15	½	32 (G ¾A)	21	130	131	139	65	14	4
20	¾	41 (G 1A)	26	150	144	154	75	14	4
25	1	50 (G 1¼A)	33	160	160	159	85	14	4
32	1¼	63 (G 1¾A)	42	-	177	184	100	18	4
40	1 ½	70 (G 2A)	47	-	195	204	110	18	4
50	2	82 (G 2½A)	60	-	252	234	125	18	4

Disposal instruction

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

FAQ

- **Q: What are the application examples of the Safety Temperature Monitor (Actuator) STM?**

  A: The STM is used with Danfoss valves and controllers for temperature control in heating and district heating systems, as well as water heating systems for drinking and industrial waters.
- **Q: How should I dispose of the product?**

  A: Disassemble the product and sort its components before recycling or disposal according to localregulations.

Documents / Resources

	Danfoss STM Safety Temperature Monitor Actuator [pdf] User Guide STW871, STM-VG, STM-VGF, STM-VGS, STM-AVT-VG, STM-AVT-VGF, STM-AVT-VGS, STM Safety Temperature Monitor Actuator, STM, Safety Temperature Monitor Actuator, Temperature Monitor Actuator, Monitor Actuator, Actuator

References

- User Manual