Safety Temperature Monitor (STW) with Safety Thermostat Type 2403

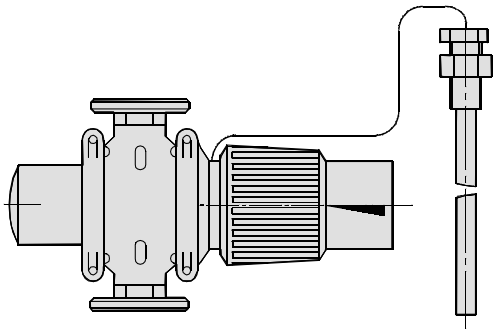


Fig. 1 · Type 2403 Safety Thermostat

1. Design and principle of operation

The **Safety Temperature Monitor (STW)** is used for limiting the temperature by closing a SAMSON Series 43 Control Valve which is connected to the respective thermostat.

This Safety Temperature Monitor basically consists of the housing and the thermostat with capillary tube, bulb sensor and thermowell. The Safety Temperature Monitor can be converted to a **Temperature Controller "with Safety Temperature Monitor" (TR/STW)** by additionally connecting a second thermostat. Moreover, the pressure can additionally be limited by attaching a Type 2400 Pressure Limiter.

Typetest

These Safety Temperature Monitors have been typetested in accordance with DIN 3440 by the German Technical Inspectorate;
register numbers are available on request.

Only use a sensor when combined with a SAMSON thermowell.

Edition November 1994

Mounting and operating instructions

EB 2083 E

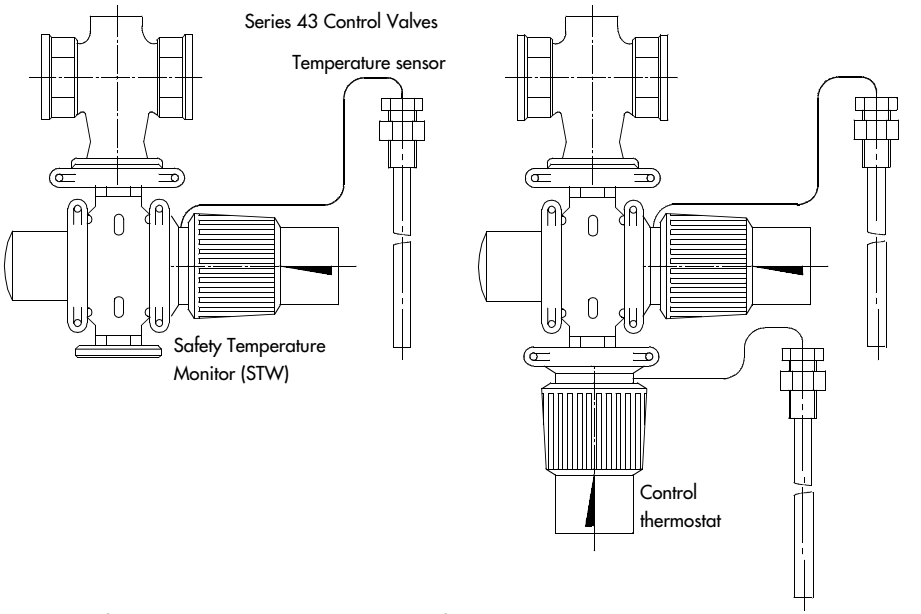


Fig. 2 · Safety Temperature Monitor (STW) left,
Temperature Controller/Safety Temperature Monitor (TR/STW) right

Two clamp halves connect control valve to the housing of the Safety Temperature Monitor. When the limit temperature adjusted on the setpoint adjuster is reached, the thermostat closes the associated valve. Automatic resetting is initiated whenever the temperature falls below the adjusted limit value by approximately 5 K.
In the case of a capillary tube rupture or a sensor system which is untight, the valve is closed and locked in place; a reset function is not possible anymore.

2. Installation

The Safety Temperature Monitor (STW) is always installed in the system in combination with a control valve or an additional Temperature Controller (TR/STW). Its housing can be connected to the control valve either before or after the associated valve has been installed. For this purpose, the housing must be placed on the valve body and subsequently screwed tight using the two clamp halves.
When performing the installation procedure, keep in mind that the permissible ambient temperature of +50 °C must **not** be exceeded.

2.1 Installing the valve

The valve is to be installed in horizontal pipelines. In this arrangement, the thermostat must hand downwards.
Note that the direction of flow must coincide with the arrow on the body.

2.2 Strainer

Since proper functioning of the valve, especially tight valve shut-off, can be impaired by items such as parts of the sealing carried in the process medium, globule and other contaminants, a strainer (SAMSON Type 1 NI Strainer) is recommended upstream of the

control valve. The filter element of the strainer must be vertically suspended. Make sure that sufficient space is available to disassemble the filter.

2.3 Additional assembly steps

We recommend that a manually operated shut-off valve be installed both preceding the strainer and after the limiter or controller. This will allow the plant to be isolated in order to perform cleaning or maintenance work, or during extended unoccupied periods.
To check the adjusted setpoint value (limit temperature), installation of a thermometer immersed in the medium to be controlled (near the sensor) is recommended.

2.4 Installing a temperature sensor

NOTE

Never remove the thermostat with capillary tube and temperature sensor from its housing!

The mounting location of the temperature sensor depends on the respective sensor version:

If the label **"horizontally on the top"** is located on the **tip of the sensor**, then the tip of the sensor must be installed at least at the same height as the end of the sensor; i.e., upwards in the **top 90° quadran**t (Fig. 3, left side).

If the label **"horizontally on the top"** is located at the **end of the sensor**, then the tip of the sensor is to be installed not higher than at the same elevation as the end of the sensor; i.e., downwards in the **bottom 90° quadrant** (Fig. 3, right side).
Always turn the sensor such that the label is located on the top side of the sensor tube.
A welding-type sleeve with G 1/2" female thread is to be welded at the mounting location.
Seal the thermowell in the welded socket. Slide in the sensor and secure using terminal screw.

NOTE

Installing the thermowell:

In order to prevent damage caused by corrosion, always use similar materials. A thermowell of non-ferrous metal should <u>not</u> be placed in a Niro heat exchanger. If this <u>cannot</u> be avoided, provide a thermowell constructed of Niro.

2.4.1 Capillary tube

The capillary tube is to be installed such that mechanical damage is prohibited. Always make sure the smallest bending radius is above 50 mm. Any excess length of the capillary tube must be rolled in a ring and must **never** be shortened. No considerable temperature deviations should occur on the capillary tube.

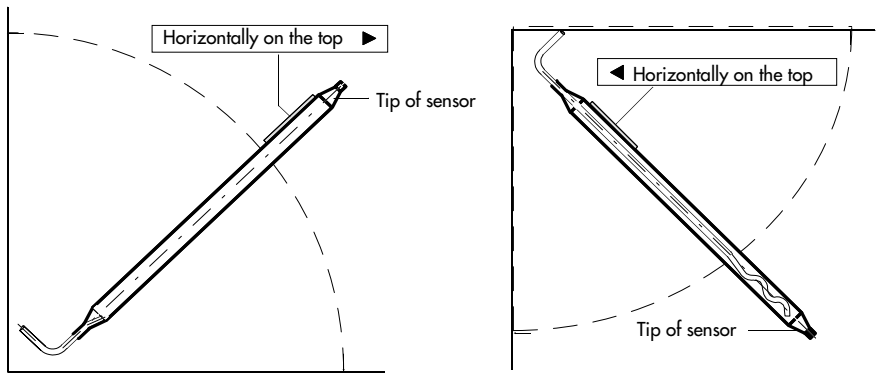


Fig. 3 · Filter mounting position

3. Operation

3.1 Setpoint adjustment

Adjust the desired limit temperature in accordance with the scale (Fig. 4) using the black plastic ring.

Clockwise direction results in a lower temperature; counter-clockwise direction results in a higher temperature. Adjustment can be made continuously.

One turn corresponds to approximately
2 K for low temperature range 60 to 75 °C
3 K for middle temperature range 75 to 100 °C and
2.5 K for high temperature range 100 to 120 °C.

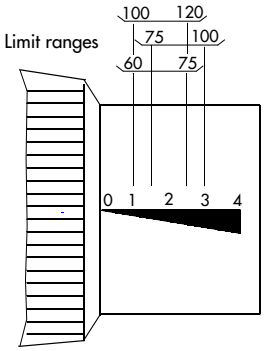
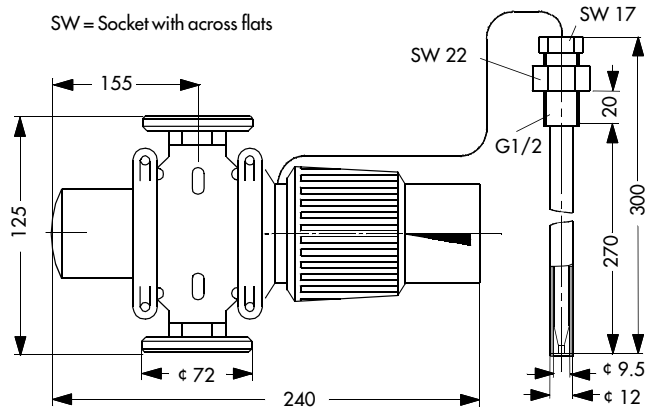


Fig. 4 · Limit temperature

4. Dimensions in mm



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