

MOUNTING AND OPERATING INSTRUCTIONS



EB 2183 EN

Translation of original instructions



Type 2403 Safety Temperature Monitor (STM) Self-operated Temperature Regulators

Edition May 2023



Note on these mounting and operating instructions

These mounting and operating instructions assist you in mounting and operating the device safely. The instructions are binding for handling SAMSON devices. The images shown in these instructions are for illustration purposes only. The actual product may vary.

- For the safe and proper use of these instructions, read them carefully and keep them for later reference.
- If you have any questions about these instructions, contact SAMSON's After-sales Service (aftersaleservice@samsongroup.com).



Documents relating to the device, such as the mounting and operating instructions, are available on our website at www.samsongroup.com > **Service & Support > Downloads > Documentation.**

Definition of signal words

DANGER

Hazardous situations which, if not avoided, will result in death or serious injury

WARNING

Hazardous situations which, if not avoided, could result in death or serious injury

NOTICE

Property damage message or malfunction

Note

Additional information

Tip

Recommended action

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1 Safety instructions and measures

Intended use

The Type 2403 Safety Temperature Monitor (STM) with valve is designed for temperature monitoring and control of the energy supply to heat generators (e.g. heat exchangers) by closing the valve. The connection of an additional Type 2430 Control Thermostat converts the safety temperature monitor (STM) into a temperature regulator with safety temperature monitor (TR/STM).

The devices are designed to operate under exactly defined conditions (e.g. operating pressure, process medium, temperature). Therefore, operators must ensure that the devices are only used in operating conditions that meet the specifications used for sizing the devices at the ordering stage. In case operators intend to use the devices in applications or conditions other than those specified, contact SAMSON.

SAMSON does not assume any liability for damage resulting from the failure to use the device for its intended purpose or for damage caused by external forces or any other external factors.

→ Refer to the technical data and nameplate for limits and fields of application as well as possible uses.

Reasonably foreseeable misuse

The devices are not suitable for use outside the limits defined during configuration and by the technical data. Furthermore, the following activities do not comply with the intended use:

- Use of non-original spare parts
- Performing service and repair work not described

Qualifications of operating personnel

The devices must be mounted, started up, serviced and repaired by fully trained and qualified personnel only; the accepted industry codes and practices are to be observed. According to these mounting and operating instructions, trained personnel refers to individuals who are able to judge the work they are assigned to and recognize possible hazards due to their specialized training, their knowledge and experience as well as their knowledge of the applicable standards.

Personal protective equipment

We recommend checking the hazards posed by the process medium being used (e.g.

▶ GESTIS (CLP) hazardous substances database).

- Provide protective equipment (e.g. safety gloves, eye protection) appropriate for the process medium used.
- Wear hearing protection when working near the regulator. Follow the instructions given by the plant operator.
- Check with the plant operator for details on further protective equipment.

Revisions and other modifications

Revisions, conversions or other modifications of the product are not authorized by SAMSON. They are performed at the user's own risk and may lead to safety hazards, for example. Furthermore, the product may no longer meet the requirements for its intended use.

Warning against residual hazards

To avoid personal injury or property damage, plant operators and operating personnel must prevent hazards that could be caused in the device by the process medium, the operating pressure or by moving parts by taking appropriate precautions. Plant operators and operating personnel must observe all hazard statements, warnings and caution notes in these mounting and operating instructions, especially for installation, start-up and service work. Hazards resulting from the special working conditions at the installation site of the device must be identified in a risk assessment and prevented through the corresponding safety instructions drawn up by the operator.

We also recommend checking the hazards posed by the process medium being used (e.g.

▶ GESTIS (CLP) hazardous substances database).

- Observe safety measures for handling the device as well as fire prevention and explosion protection measures.

These mounting and operating instructions deals with the standard version of the device. Components of the device that differ to those used for the standard version described in this document can be exchanged with other certain SAMSON components. The residual hazards of these components are described in the associated mounting and operating instructions (see documents listed under 'Referenced documentation').

Safety instructions and measures

Responsibilities of the operator

Operators are responsible for proper use and compliance with the safety regulations.

Operators are obliged to provide these mounting and operating instructions as well as the referenced documents to the operating personnel and to instruct them in proper operation.

Furthermore, operators must ensure that operating personnel or third parties are not exposed to any danger.

Operators are additionally responsible for ensuring that the limits for the product defined in the technical data are observed. This also applies to the start-up and shutdown procedures. Start-up and shutdown procedures fall within the scope of the operator's duties and, as such, are not part of these mounting and operating instructions. SAMSON is unable to make any statements about these procedures since the operative details (e.g. differential pressures and temperatures) vary in each individual case and are only known to the operator.

Responsibilities of operating personnel

Operating personnel must read and understand these mounting and operating instructions as well as the referenced documents and observe the specified hazard statements, warnings and caution notes. Furthermore, operating personnel must be familiar with the applicable health, safety and accident prevention regulations and comply with them.

Referenced standards, directives and regulations

The devices comply with the requirements of the European Pressure Equipment Directive 2014/68/EU. Devices with a CE marking have an EU declaration of conformity, which includes information about the applied conformity assessment procedure. The EU declaration of conformity is included in the annex of these instructions (see section 11).

Non-electric valve versions whose bodies are not lined with an insulating material coating do not have their own potential ignition source according to the hazard assessment stipulated in Clause 5.2 of ISO 80079-36, even in the rare incident of an operating fault. Therefore, such valve versions do not fall within the scope of Directive 2014/34/EU.

➔ For connection to the equipotential bonding system, observe the requirements specified in Clause 6.4 of EN 60079-14 (VDE 0165-1).

Referenced documentation

The following documents apply in addition to these mounting and operating instructions:

- Mounting and operating instructions for

e.g.	Type 2430 Control Thermostat	▶ EB 2430
e.g.	Type 2403 Safety Temperature Monitor (STM)	▶ EB 2183
e.g.	Type 2439 Safety Temperature Limiter (STL)	▶ EB 2185
e.g.	Type 1 NI Strainer	▶ EB 1010
e.g.	Type 2 NI Strainer	▶ EB 1015

Plus all mounting and operating instructions of the components on which the Type 2403 Safety Temperature Monitor is mounted (e.g. valve).

- Data sheets for

e.g.	Accessories: Double adapter · Manual adjuster · Intermediate insulating piece	▶ T 2176
e.g.	Typetested safety devices	▶ T 2181
- Mounting and operating instructions as well as data sheets for additional fittings (e.g. shut-off valves, pressure gauges etc.).

1.1 Notes on possible personal injury

WARNING

Risk of personal injury due to incorrect operation, use or installation as a result of information on the safety temperature limiter being illegible.

Over time, markings, labels and nameplates on the device may become covered with dirt or become illegible in some other way. As a result, hazards may go unnoticed and the necessary instructions not followed. There is a risk of personal injury.

- Keep all relevant markings and inscriptions on the safety temperature limiter in a constantly legible state.
- Immediately renew damaged, missing or incorrect nameplates or labels.

Risk of burn injuries due to hot or cold components and pipelines.

Depending on the process medium, valve components and pipelines may get very hot or cold and cause burn injuries.

- Allow components and pipelines to cool down or warm up to the ambient temperature.
- Wear protective clothing and safety gloves.

Damage to health relating to the REACH regulation.

If a SAMSON device contains a substance listed as a substance of very high concern on the candidate list of the REACH regulation, this is indicated on the SAMSON delivery note.

- Information on safe use of the part affected
 - ▶ www.samsongroup.com/en/about-samson/material-compliance/reach-regulation/.

Risk of fire or explosion as a result of hydrocarbons escaping due to leakage in the Type 2430-3 Control Thermostat or Type 2403 Safety Temperature Monitor.

A small quantity of a flammable mixture of hydrocarbons is used as the operating medium in the Type 2430-3 Control Thermostat (vapor pressure principle) and the Type 2403 Safety Temperature Monitor (STM).

- Mount the safety temperature monitor in such a way that in the event any operating medium escapes as a result of leakage, it cannot come into contact with hot surfaces, sparks, open flames or other ignition sources.

1.2 Notes on possible property damage

! NOTICE

Risk of irreparable damage to the safety temperature limiter caused by the regulator components being taken apart.

The safety temperature limiter is an inseparable hydraulic unit consisting of a safety thermostat, capillary tube and temperature sensor. If these components are dismantled (e.g. removal of the capillary tube), the safety temperature limiter will be irreparably damaged and will no longer be able to fulfill its control task.

- Do not dismantle the safety temperature limiter.
- Only perform allowed activities on the safety temperature limiter.
- Contact SAMSON's After-sales Service before replacing spare parts.

Risk of leakage and valve damage due to excessively high or low tightening torques.

Observe the specified torques when tightening valve components.

Excessive tightening torques lead to parts wearing out more quickly. Parts that are too loose may cause leakage.

- Observe the specified tightening torques.

Risk of damage to the safety temperature limiter due to the use of unsuitable tools.

Certain tools are required to work on the safety temperature limiter.

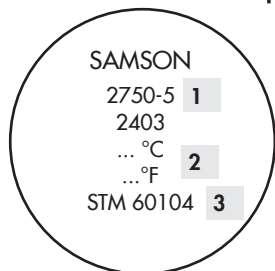
- Only use tools approved by SAMSON.
When in doubt, consult SAMSON.

Risk of damage to the safety temperature limiter due to incorrectly attached slings.

- Do not attach load-bearing slings to the safety temperature limiter.

2 Markings on the device

Specifications on the scaled cap on the adjustment knob to adjust the limit



- 1** Model number and type designation
- 2** Limit range in °C and °F
- 3** Register number (type test according to DIN EN 14597)

Specifications on the valve

SAMSON		1
2710 -	2	3
4		5
6		7

- 1** Type designation (valve)
- 2** Material number
- 3** Date of manufacture
- 4** K_{VS}/C_V
- 5** Max. permissible temperature
- 6** Pressure rating (valve)
- 7** Max. perm. differential pressure Δp

Fig. 1: Nameplate

2.1 Material identification number

Specifying the material number, you can contact us to find out which material is used. It is specified on the nameplate in the 'Mat.-No.' field (2).

For more details on the nameplate, see Fig. 1.

3 Design and principle of operation

The Type 2403 Safety Temperature Monitor (STM) with a valve operates without auxiliary energy and is designed for extended safety according to DIN EN 14597. The safety temperature monitor is used to limit the temperature by closing a SAMSON Series 43 Valve connected to the safety thermostat.

The safety temperature monitor mainly consists of a valve and safety thermostat with capillary tube (8) and bulb sensor (9).

The connection of an additional Type 2430 Control Thermostat (20) converts the safety temperature monitor (7) into a temperature regulator with safety temperature monitor (TR/STM). See Fig. 2.

The valve is closed by a spring mechanism when the temperature reaches the adjusted limit, when the capillary tube breaks or when leakage occurs in the sensor system.

The safety temperature monitor works according to the vapor pressure principle. The temperature of the medium creates a pressure in the temperature sensor (9) which is proportional to the measured temperature. This pressure is transferred through the capillary tube (8) to the operating bellows (10) and converted into a positioning force. The force is transferred over the pin (11) of the operating element to the plug stem (4) and plug (3). The position of the plug determines the flow rate of the heat transfer medium across the area released between the seat (2) and plug.

The safety temperature monitor closes the valve when the temperature reaches the adjusted limit temperature. The safety temperature monitor resets itself automatically when the temperature has fallen to a value of approx. 5 K below the adjusted limit temperature.

Fail-safe position

When the capillary tube ruptures or there is a leak in the sensor, the spring mechanism reacts to the reduced system pressure and the pin of the operating element (11) closes the valve. The valve cannot be reset. In this case, the Type 2403 Safety Temperature Monitor must be replaced.

i Note

The adjusted limit temperature must have a minimum temperature difference of 15 K to the set point of the temperature regulator.

Design and principle of operation

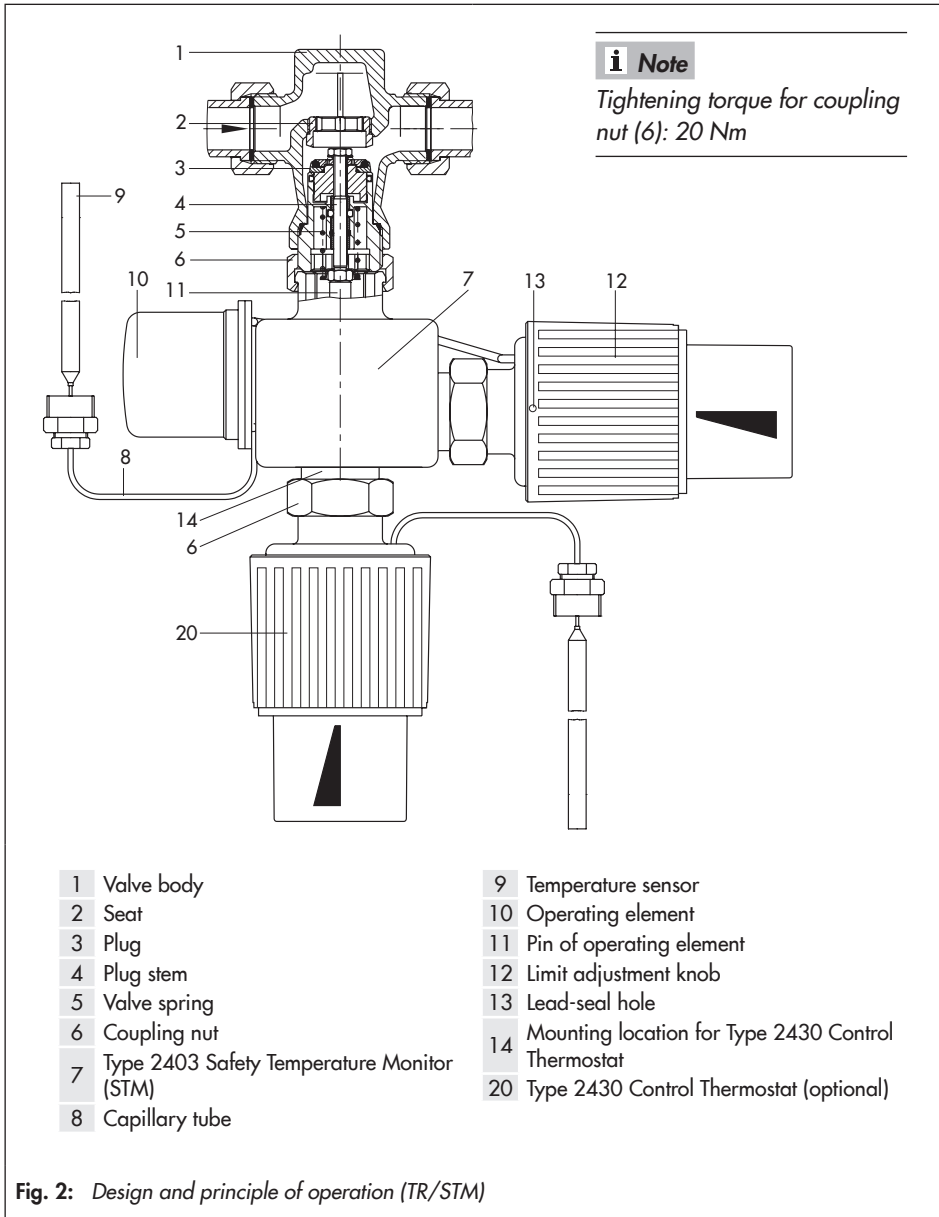


Fig. 2: Design and principle of operation (TR/STM)

3.1 Technical data

3.2 Process medium and scope of application

Safety temperature monitoring of the energy supply to heat generators or heat exchangers by closing the valve.

For limit signals from **60 to 120 °C** · Valves **G ½ to G 1** · **DN 15 to 50** · Pressure rating **PN 16** or **25** · Max. **200 °C**

The Type 2403 Safety Temperature Monitor (STM) with a valve operates without auxiliary energy and is designed for extended safety according to DIN EN 14597. The valve is closed by a spring mechanism when the temperature reaches the adjusted limit, when the capillary tube breaks or when leakage occurs in the sensor system. The devices are automatically reset and put back into operation after the temperature has fallen below the limit and the fault has been remedied.

i Note

Further details and technical data of the valves and control thermostats are listed in the following mounting and operating instructions:

- *Mounting and operating instructions for valves, e.g. ▶ EB 2171, ▶ EB 2172 and and ▶ EB 2173*
 - *Mounting and operating instructions for the control thermostats, e.g. ▶ EB 2430 and ▶ EB 2430-3*
 - *Mounting and operating instructions for the safety temperature limiter, e.g. ▶ EB 2185*
-

Dimensions and weights

Table 2 and Table 3 provide an overview of the dimensions and weights. The lengths and heights are shown in the dimensional drawings (Fig. 3 to Fig. 5).



The safety temperature monitor is tested by the German technical surveillance association TÜV according to DIN EN 14597 under the type designation 2750-5. The registration number is available on request.

Design and principle of operation

Table 1: *Technical data · All pressures (gauge)*


Type 2403 Safety Temperature Monitor	
Port	M32x1.5
Adjustment range of limit value	60 to 75 °C · 75 to 100 °C
Permissible ambient temperature	Max. 50 °C
Perm. temperature at the sensor	25 K above the adjusted limit
Perm. pressure at sensor	25 bar
Capillary tube length	5 m
Conformity	

Table 2: *Dimensions in mm*

Table 2.1 *Type 2432/2403 · Type 2433/2403 · Type 2436/2403 · Type 2437/2403*

Valve size	DN	15	20	25	32	40	50
Pipe Ød	d	21.3	26.8	32.7	42	48	60
AF		30	36	46	59	65	82
Length	L	65	70	75	100	110	130
With welding ends	L1	210	234	244	268	294	330
With threaded ends	L2	129	144	159	180	196	228
With flanges	L3	130	150	160	180	200	230
Male thread	A	G ½	G ¾	G 1	G 1¼	G 1½	G 2
Type 2432/2403	H	140			190		
	H1	30			55		
Type 2433/2403	H	135			145		
	H2	112	122	124	144	157	165
	H3	72	77	82	100	108	114
	H4	72	80	82	105	110	115
Type 2436/2403	H	–			160		
	H1	–			95		
Type 2437/2403	H	220			270		
	H1	30			55		

Table 2.2 Type 2431/2403 · Type 2433/2403 · Type 2435/2403 · Type 2436/2403

Connection size		G ½	G ¾	G 1
Face-to-face dimensions	L	65	75	90
Type 2431/2403	H	140		
Type 2433/2403	H	140		
	H1	40		
Type 2435/2403	H	220		
Type 2436/2403	H	145		
	H1	46		

Table 3: Weights in kg

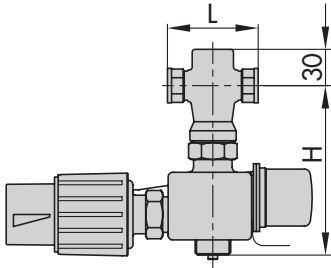
Table 3.1 Type 2432/2403 · Type 2433/2403 · Type 2436/2403 · Type 2437/2403

Valve size		DN	15	20	25	32	40	50
Type 2432/2403	kg (approx.)	With welding ends	2.5	2.8	3.1	5.1	5.8	7.6
		With threaded ends	2.4	2.7	3.0	5.0	5.7	7.5
		With flanges	3.9	4.8	5.6	8.3	9.8	11.6
Type 2433/2403	kg (approx.)	With welding ends	2.9	3.2	3.4	4.8	5.1	6.4
		With threaded ends	2.9	3.2	3.4	4.8	5.1	6.4
		With flanges	5.0	6.2	7.1	9.6	11	14
Type 2436/2403	kg (approx.)	With welding ends	-			3.8	4.2	4.6
		With threaded ends				3.8	4.2	4.6
		With flanges				7.0	8.2	9.6
Type 2437/2403	kg (approx.)	With welding ends	2.7	3.0	3.3	5.5	6.2	8.1
		With threaded ends	2.6	2.9	3.2	5.5	6.2	8.1
		With flanges	4.1	5.0	5.8	8.5	10	12

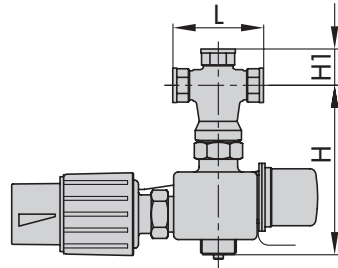
Table 3.2 Type 2431/2403 · Type 2433/2403 · Type 2435/2403 · Type 2436/2403

Connection size		G ½	G ¾	G 1
Type 2431/2403	kg (approx.)	2.0	2.1	2.2
Type 2433/2403	kg (approx.)	2.2	2.3	2.4
Type 2435/2403	kg (approx.)	2.5	2.6	2.7
Type 2436/2403	kg (approx.)	2.4	2.5	2.6

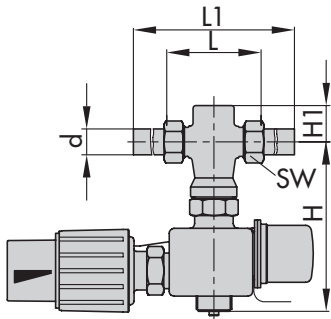
Dimensional drawings of safety temperature monitors (STM)



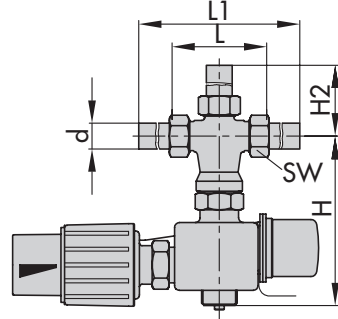
Type 2431/2403 · Type 2435/2403



Type 2433/2403 · Version with female thread



Type 2432/2403 · Type 2436/2403



Type 2433/2403 · Version with welding ends

Fig. 3: Dimensional drawings

Dimensional drawings of safety temperature monitors (STM)

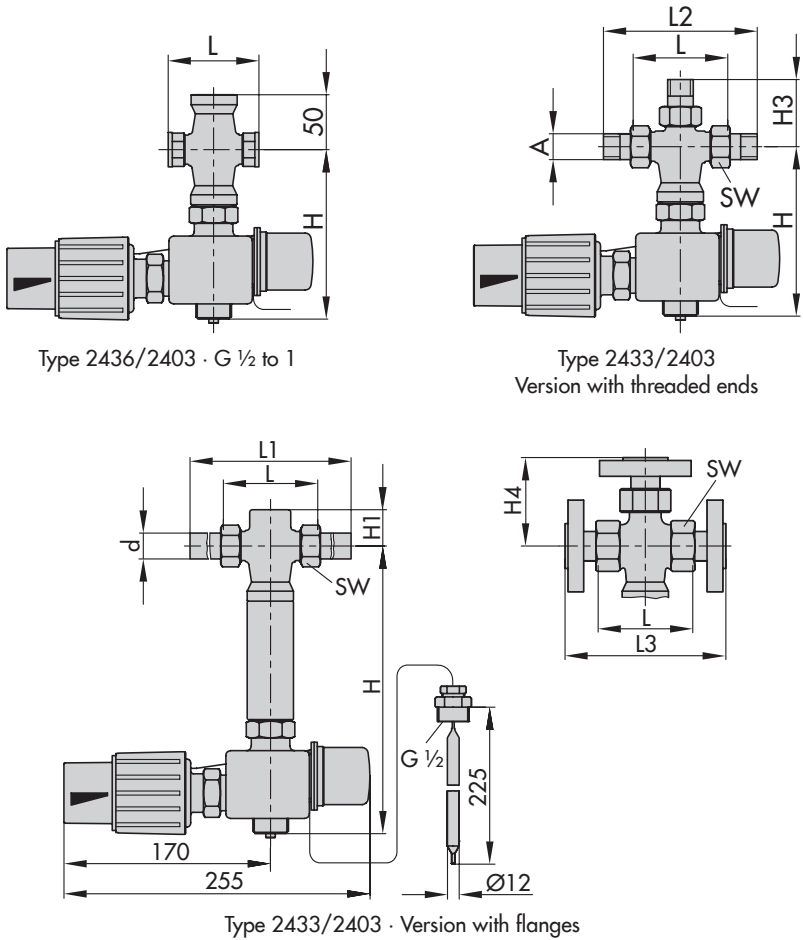


Fig. 4: Dimensional drawings

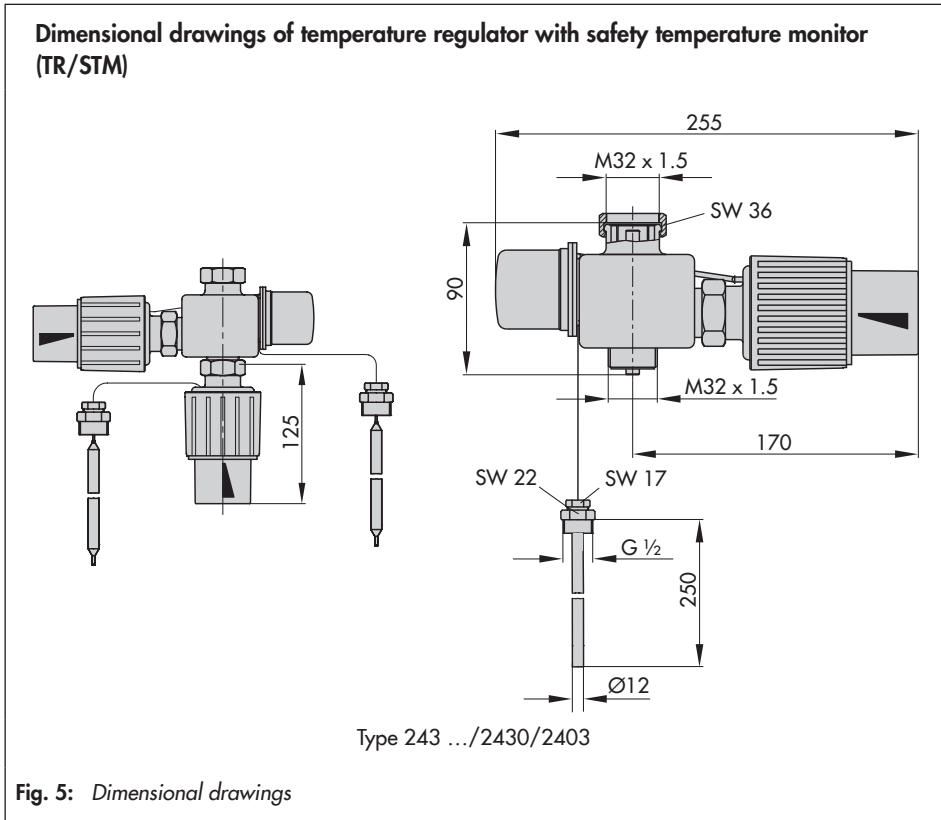


Fig. 5: Dimensional drawings

4 Measures for preparation

After receiving the shipment, proceed as follows:

1. Check the scope of delivery. Compare the shipment received with the delivery note.
2. Check the shipment for transportation damage. Report any damage to SAMSON and the forwarding agent (refer to delivery note).

4.1 Unpacking

i Note

Do not remove the packaging until immediately before mounting it onto the valve.

Proceed as follows to lift and install the device:

1. Remove the packaging from the device.
2. Dispose of the packaging in accordance with the valid regulations.

4.2 Transporting and lifting

Due to the low service weight, lifting equipment is not required to lift and transport the safety temperature monitor (e.g. to mount it onto the valve).

Transport instructions

- Protect the device against external influences (e.g. impact).
- Do not damage the corrosion protection (paint, surface coatings). Repair any damage immediately.
- Protect the device against moisture and dirt.
- Observe the permissible ambient temperatures (see section 3.1).

4.3 Storage

! NOTICE

Risk of safety temperature monitor damage due to improper storage.

- *Observe the storage instructions.*
 - *Avoid long storage times.*
 - *Contact SAMSON in case of different storage conditions or longer storage times.*
-

i Note

We recommend to regularly check the device and the prevailing storage conditions during long storage periods.

Mounting and start-up

Storage instructions

- Protect the safety temperature monitor against external influences (e.g. impact).
- Protect the device against moisture and dirt. Store it at a relative humidity of less than 75 %. In damp spaces, prevent condensation. If necessary, use a drying agent or heating.
- Make sure that the ambient air is free of acids or other corrosive media.
- Observe the permissible ambient temperatures (see section 3.1).
- Do not place any objects on the device.



Tip

SAMSON's After-sales Service can provide more detailed storage instructions on request.

4.4 Preparation for installation

Proceed as follows:

- ➔ Check to ensure that the connection for the safety temperature monitor at the valve is clean.
- ➔ Check the safety temperature monitor for damage.
- ➔ Check to make sure that the type designation, pressure rating and temperature range of the safety temperature monitor match the plant conditions (size and pressure rating of the pipeline, medium temperature etc.).
- ➔ Check any mounted thermometers to make sure they function.

5 Mounting and start-up

! NOTICE

Risk of overheating due to excessive ambient temperatures or insufficient heat dissipation when components are insulated.

- Do not include the safety temperature monitor in the insulation of the pipeline.

5.1 Mounting the safety temperature monitor onto the valve

The safety temperature monitor is always installed in the plant in combination with a valve. The Type 2403 Safety Temperature Monitor can be attached to the valve body either before or after the valve is installed in the pipeline.

- ➔ Connect the safety temperature monitor (7) to the valve body (1) by tightening the coupling nut (6) with 20 Nm.

i Note

The Type 2403 is installed without thermowell.

5.2 Additional fittings

Strainer

A strainer installed upstream in the flow pipe holds back any dirt or other foreign particles carried along by the medium. For example, the SAMSON Type 1 NI Strainer is suitable (► T 1010).

The following points must be observed when installing the strainer:

- Do not use the strainer to permanently filter the process medium.
- Install the strainer upstream of the regulator.
- Allow sufficient space to remove the filter.
- Observe the flow direction.
- In horizontal pipelines with gases or liquids, the filter element faces downward. The filter element faces sideways in applications with steam.
- Install strainers in vertical pipelines with the medium flowing upward with the drain plug facing upward.



Tip

Remember to leave enough space to remove the filter element for cleaning.

Shut-off valve

Install a hand-operated shut-off valve both upstream of the strainer and downstream of the regulator. This allows the plant to be shut down for cleaning and maintenance, and when the plant is not used for longer periods of time.

Thermometer

Install a thermometer downstream of the temperature sensor to monitor the temperatures prevailing in the plant (see Fig. 8).

5.3 Combination with control thermostat

An additional Type 2430 Control Thermostat is mounted in the TR/STM version.

Note

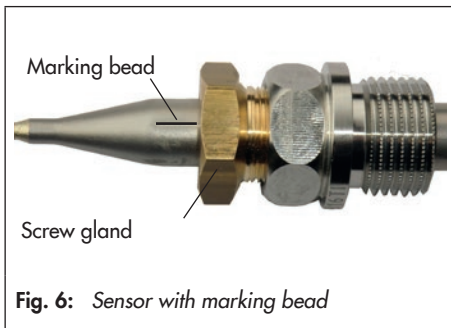
If the limit temperature has not yet been adjusted, adjust it before mounting the control thermostat (see section 6.1).

- ➔ Connect the Type 2430 Control Thermostat to the safety temperature monitor (7) by tightening the coupling nut (6) with 20 Nm.

5.4 Installing the valve into the pipeline

5.4.1 Installation conditions

- Choose a place of installation that allows you to freely access the regulator even after the entire plant has been completed.
- Make sure the direction of flow matches the direction indicated by the arrow on the body.
- Install the regulator free of stress and with the least amount of vibrations as possible.



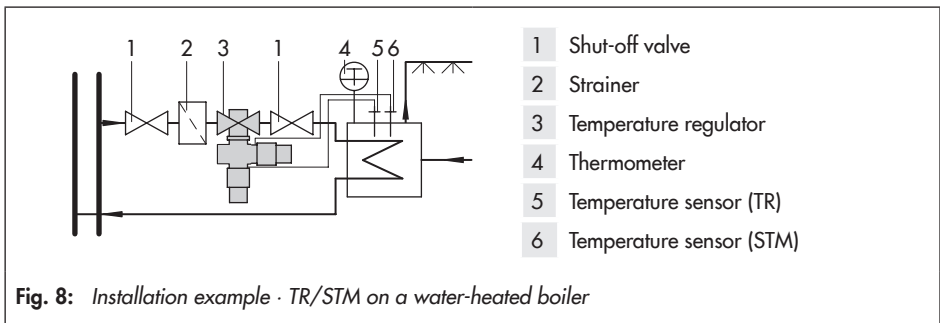
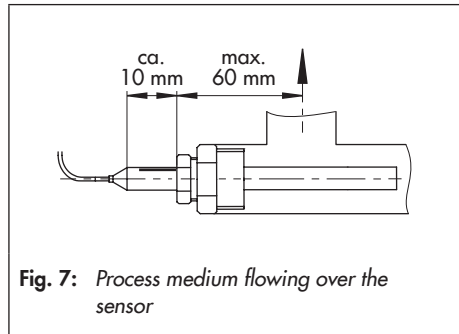
- Observe the permissible ambient temperature of max. 50 °C.

5.4.2 Installing the temperature sensor

Mounting orientation

The mounting position of the temperature sensor depends on the sensor version:

Sensor in horizontal position or with sensor tip pointing up · Marked by an embossed 'o' on the screw gland.



To help align the sensor in the horizontal position, a marking bead (see Fig. 6) is located on the sensor. This marking must face upward.

Sensor in horizontal position or with sensor tip pointing down · Marked by an embossed 'u' on the screw gland.

To help align the sensor in the horizontal position, a marking bead (see Fig. 9) is located on the sensor. This marking must face upward.

The screw gland seals off the sensor.

- Weld a welding socket with G ½ female thread at the place of installation.
- Make sure that almost all of the process medium being monitored flows around the sensor (of Type 2403). See Fig. 7.

- Select the site of installation where overheating or considerable idling times cannot occur.

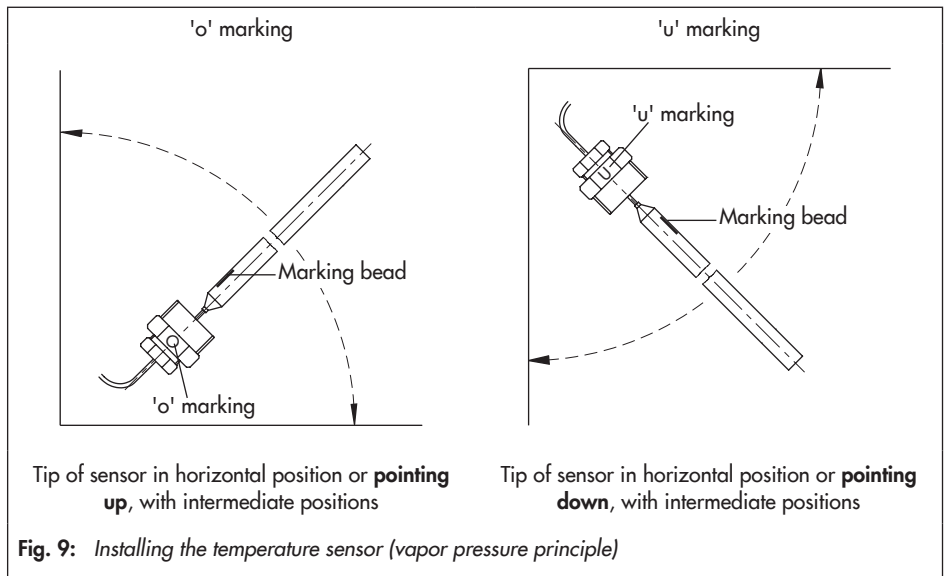
Capillary tube

- Carefully run the capillary tube (8) without bending or twisting it. Make sure that the capillary tube is not damaged.

NOTICE

Risk of capillary tube damage due to incorrect handling.

- Do not shorten the capillary tube.
- Roll up excess tube to form a ring. The smallest bending radius is 50 mm.
- Observe the permissible ambient temperature of max. 50 °C over the entire length of the capillary tube.



5.5 Start-up

Fill the plant very slowly with the process medium on start-up.

⚠ WARNING

Risk of burn injuries due to hot or cold components and pipelines.

Depending on the process medium, valve components and pipelines may get very hot or cold and cause burn injuries.

– Allow components and pipelines to cool down or warm up to the ambient temperature.

– Wear protective clothing and safety gloves.

ⓘ NOTICE

Malfunction and damage due to adverse weather conditions (temperature, humidity).

Do not install the safety temperature monitor outdoors or in rooms prone to frost. If such a location cannot be avoided, protect the regulator against freezing up if the process medium flowing through the valve can freeze up. Either heat the regulator or remove it from the plant and completely drain the residual medium.

ⓘ NOTICE

Risk of the valve being destroyed by steam hammering.

– Drain off any condensate in the pipeline.

– Vent the plant.

→ Fill the plant very slowly with the process medium on start-up.

Once the safety temperature monitor is mounted onto the valve, it can be put into operation.

5.5.1 Gases and liquids

→ Open the shut-off valves slowly preferably starting from the upstream pressure side.

→ Avoid pressure surges.

5.5.2 Vapors

→ Completely drain and dry steam lines to prevent water hammering.

→ Slowly allow the steam to enter the plant to ensure that the pipes and valves warm up evenly and to avoid excessive flow velocities.

→ Before the full capacity is reached, drain off the start-up condensate.

→ Make sure that the air contained in the plant escapes as quickly as possible.

→ Open the shut-off valves slowly preferably starting from the upstream pressure side.

→ Avoid pressure surges.

6 Operation

See Fig. 2.

6.1 Adjusting the limit temperature

1. If necessary, unscrew the Type 2430 Control Thermostat.
2. Set the target limit temperature by turning the black adjustment knob (12, see Fig. 2) according to the scale (see Table 4).
Turn the adjustment knob clockwise (↻) to reduce the limit temperature.
Turn the adjustment knob counterclockwise (↺) to increase the limit temperature.
3. Pull the wire through the lead-seal hole (13) and lead-seal it to fix the adjusted limit.

4. Mount the Type 2430 Control Thermostat onto the valve (see section 5.3).

The limit temperature is continuously adjustable.

The limit can be changed roughly by turning the adjuster according to the specifications (limit change per turn). After reaching the limit temperature, the Type 2403 Safety Temperature Monitor must close the valve completely (leakage rate 0.05 % of the K_{VS} coefficient).

i Note

When the Type 2403 Safety Temperature Monitor is combined with a Type 2430 Control Thermostat, make sure that there is a minimum difference of approximately +1.5 K between the adjusted limit temperature of the safety temperature monitor and the set point temperature of the control thermostat.

Table 4: Rough limit adjustment¹⁾

Limit range	Scale intervals					Limit change per turn (approx.)
	0	1	2	3	4	
60 to 75 °C						2.6 °C
75 to 100 °C						2.2 °C

¹⁾ Precise adjustment is only possible using a thermometer (see "Fine adjustment of the limit temperature").

6.2 Fine adjustment of the limit temperature

⚠ DANGER

Risk of bursting in pressure equipment.

Valves and pipelines are pressure equipment. Improper opening can lead to valve components bursting.

- Before starting any work on the valve, depressurize all plant sections affected as well as the valve.
- Drain the process medium from all the plant sections affected as well as the valve.
- Wear personal protective equipment.

⚠ WARNING

Risk of personal injury due to residual process medium in the valve.

While working on the valve, residual medium can flow out of the valve and, depending on its properties, cause personal injury, e.g. (chemical) burns.

- If possible, drain the process medium from all the plant sections affected and the valve.
- Wear protective clothing, safety gloves and eye protection.

⚠ WARNING

Risk of burn injuries due to hot or cold components and pipelines.

Depending on the process medium, valve components and pipelines may get very hot or cold and cause burn injuries.

- Allow components and pipelines to cool down or warm up to the ambient temperature.
- Wear protective clothing and safety gloves.

In case you want to make fine adjustments to the safety temperature monitor or the limit value deviates, proceed as follows:

Fine adjustment using a thermometer installed in the plant

1. Adjust the limit temperature of the safety temperature monitor to approx. 10 K below the required limit (see section 6.1).
2. When a control thermostat is mounted on the safety temperature monitor, adjust the limit temperature to approx. 10 °C above the limit temperature.
3. Read the resulting temperature at the thermometer installed in the plant (after approx. 5 min.).
4. **When the limit temperature is still too low:**
slowly turn the rotary knob (12) at the safety temperature monitor clockwise to increase the limit until the temperature at the thermometer reaches and remains at the limit temperature.

After the temperature reaches the limit temperature:

turn the rotary knob clockwise (↻) one more turn.

- When a control thermostat is mounted, readjust it to the required set point.

7 Servicing

The safety temperature monitor does not require much maintenance. Nevertheless, it is subject to natural wear, particularly at the soldered joints.

i Note

The device was checked by SAMSON before it left the factory.

- *The product warranty becomes void if service or repair work not described in these instructions is performed without prior agreement by SAMSON's After-sales Service.*
 - *Only use original spare parts by SAMSON, which comply with the original specifications.*
-

7.1 Preparation for return shipment

Defective devices can be returned to SAMSON for repair. Proceed as follows to return devices to SAMSON:

- Put the device out of operation. See section 9.1.
- Decontaminate the valve. Remove any residual process medium.

- Fill in the Declaration on Contamination. The declaration form can be downloaded from our website at
▶ www.samsongroup.com > SERVICE & SUPPORT > After-sales Service.
- Continue as described on our website at
▶ www.samsongroup.com > Service & Support > After-sales Service > Returning goods.

8 Malfunctions

The malfunctions listed in Table 5 are caused by mechanical faults and incorrect regulator sizing. In the simplest case, the functioning can be restored following the recommended action. Special tools may be required for repair work.

Depending on the operating conditions, check the valve at certain intervals to prevent a possible failure before it can occur. Plant operators are responsible for drawing up an inspection and test plan.

i Note

Contact SAMSON's After-sales Service for malfunctions not listed in the table.

Tip

SAMSON's After-sales Service can support you in drawing up an inspection and test plan for your plant.

Decommissioning and removal

Table 5: Troubleshooting

Malfunction	Possible reasons	Recommended action
The temperature adjusted at the control thermostat reaches the adjusted temperature limit.	Control thermostat defective	→ Replace the control thermostat.
Temperature exceeds the adjusted limit.	Foreign particles blocking the valve plug	→ Remove foreign particles. → Replace damaged parts.
	Valve trim is worn out.	→ Replace damaged parts.
Increased flow through closed valve (seat leakage).	Foreign particles blocking the valve plug	→ Remove foreign particles. → Replace damaged parts.
	Valve trim, particularly with soft seat, is worn.	→ Replace damaged parts.
Heat supply has been interrupted.	STM is defective and has moved to the fail-safe position.	→ Replace the STM.
	Temperature sensor not correctly installed.	→ Check installation. Observe notes on installation (see section 5.4).
	Strainer blocked	→ Clean the strainer.

9 Decommissioning and removal

DANGER

Risk of bursting in pressure equipment.

Valves and pipelines are pressure equipment. Improper opening can lead to valve components bursting.

- Before starting any work on the valve, depressurize all plant sections affected as well as the valve.
- Drain the process medium from all the plant sections affected as well as the valve.
- Wear personal protective equipment.

WARNING

Risk of personal injury due to residual process medium in the valve.

While working on the valve, residual medium can flow out of the valve and, depending on its properties, cause personal injury, e.g. (chemical) burns.

- If possible, drain the process medium from all the plant sections affected and the valve.
- Wear protective clothing, safety gloves and eye protection.

⚠ WARNING***Risk of burn injuries due to hot or cold components and pipelines.***

Depending on the process medium, valve components and pipelines may get very hot or cold and cause burn injuries.

- Allow components and pipelines to cool down or warm up to the ambient temperature.*
- Wear protective clothing and safety gloves.*

9.1 Decommissioning

To decommission the safety temperature monitor before removing it, proceed as follows:

1. Close the shut-off valve on the upstream side of the valve.
2. Close the shut-off valve on the downstream side of the valve.
3. Completely drain the pipelines and valve.
4. Depressurize the plant. Shut off or disconnect the control line, if installed.
5. If necessary, allow the pipeline and device to cool down or warm up to the ambient temperature.
6. Remove the sensor from the pipeline and, if necessary, seal the opening.
7. Remove the safety temperature monitor from the valve.

9.2 Disposal

SAMSON is a producer registered at the following European institution
 ▶ <https://www.ewrn.org/national-registers/national-registers>.
 WEEE reg. no.:
 DE 62194439/FR 025665

- ➔ Observe local, national and international refuse regulations.
- ➔ Do not dispose of components, lubricants and hazardous substances together with your other household waste.

i Note

We can provide you with a recycling passport according to PAS 1049 on request. Simply e-mail us at aftersaleservice@samsongroup.com giving details of your company address.

💡 Tip

On request, we can appoint a service provider to dismantle and recycle the product as part of a distributor take-back scheme.

10 Annex

10.1 After-sales service and spare parts

After-sales service

Contact SAMSON's After-sales Service for support concerning service or repair work or when malfunctions or defects arise.

E-mail address

You can reach our after-sales service at aftersalsservice@samsongroup.com.

Addresses of SAMSON AG and its subsidiaries

The addresses of SAMSON, its subsidiaries, representatives and service facilities worldwide can be found on our website (▶ www.samsongroup.com) or in all SAMSON product catalogs.

Required specifications

Please submit the following details:

- Order number and position number in the order
- Type and nominal size (valve)
- Material number (Type 2403 STM)
- Material number (Type 2430 TR)
- Limit range
- Temperature and process medium
- Is a strainer installed?
- Installation drawing showing the exact location of the regulator and all the additionally installed components (Type 2430 Control Thermostat, shut-off valves, pressure gauge etc.)

Spare parts

There are no spare parts available for the safety temperature monitor.

11 Certificates

The EU declarations of conformity are included on the next pages.

EU DECLARATION OF CONFORMITY
TRANSLATION



Module D, No. / N° CE-0062-PED-D-SAM 001-22-DEU

For the following products, SAMSON hereby declares under its sole responsibility:

Safety Temperature Monitor STM 2403 (2750-5)

combined with valves

2431, 2432, 2433, 2435, 2436, 2437, 2479, 2488 (2710, 2720, 2730)

the conformity with the following requirement.

Directive of the European Parliament and of the Council on the harmonization of the laws of the Member States relating of the making available on the market of pressure equipment. 2014/68/EU of 15 May 2014

EC Type Examination Certificate Module B Certificate no. 01 202 969/B-22-0014-01

Conformity assessment procedure applied Module D Certificate no. CE-0062-PED-D-SAM-001-22-DEU

The design is based on the procedures specified in the following standards:
DIN EN 12516-2, DIN EN 12516-3 or ASME B16.1, ASME B16.24, ASME B16.42

The manufacturer's quality management system is monitored by the following notified body:

Bureau Veritas Services SAS, 8 Cours du Triangle, 92800 PUTEAUX – LA DEFENSE, France
Manufacturer: SAMSON AG, Weismüllerstraße 3, 60314 Frankfurt am Main, Germany

Frankfurt am Main, 01. December 2022

Norbert Tollas
Senior Vice President
Global Operations

Peter Scheermesser
Director
Product Maintenance & Engineered Products

Revision 05

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EB 2183 EN



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