

MOUNTING AND OPERATING INSTRUCTIONS



EB 2185 EN

Translation of original instructions



Type 2439 Safety Temperature Limiter (STL) Self-operated Regulators

Edition June 2022



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.

- 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).



The mounting and operating instructions for the devices are included in the scope of delivery. The latest documentation is 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 2439 Safety Temperature Limiter (STL) with valve is designed for temperature monitoring 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 limiter (STL) into a temperature regulator with safety temperature limiter (TR/STL).

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 other applications or conditions than 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 sizing 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 in these instructions

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.

Safety instructions and measures

Personal protective equipment

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

▶ GESTIS (CLP) hazardous substance database).

- Provide protective equipment (e.g. safety gloves, eye protection) appropriate for the process medium used.
- Wear hearing protection when working near the valve.
- 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. They must observe all hazard statements, warning and caution notes in these mounting and operating instructions, especially for installation, start-up and service work.

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

▶ GESTIS (CLP) hazardous substance database).

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

Responsibilities of the operator

The operator is responsible for proper operation 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, the operator must ensure that operating personnel or third persons are not exposed to any danger.

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, the operating personnel must be familiar with the applicable health, safety and accident prevention regulations and comply with them.

Referenced standards 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. This EU declaration of conformity is included in the Annex of these instructions (see section 9.3).

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 risk 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 Part 1).

Referenced documentation

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

- Mounting and operating instructions for valves, e.g.
 - Type 2431 and Type 2432** ▶ EB 2171
 - Types 2435, 2437 and 2436** ▶ EB 2172
 - Type 2433** ▶ EB 2173

- Mounting and operating instructions for the control thermostat, e.g.
 - Type 2430** ▶ EB 2430
 - ▶ EB 2430-3

- Mounting and operating instructions for the safety temperature monitor, e.g.
 - Type 2403** ▶ EB 2183

- Mounting and operating instructions for the accessories, e.g.
 - Double adapter Do3 and manual adjuster** ▶ EB 2176

1.1 Notes on possible severe personal injury

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 concerned as well as the valve.
- Drain the process medium from all the plant sections concerned as well as the valve.
- Wear personal protective equipment.

1.2 Notes on possible personal injury

WARNING

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

While working on the valve, residual process medium can escape and, depending on its properties, may lead to personal injury, e.g. (chemical) burns.

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

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 heat up.
- Wear protective clothing and safety gloves.

Damage to health relating to the REACH regulation.

If a SAMSON device contains a substance which is listed as being a substance of very high concern on the candidate list of the REACH regulation, this circumstance 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/

1.3 Notes on possible property damage

NOTICE

Risk of valve damage due to unsuitable medium properties.

The valve is designed for a process medium with defined properties.

- Only use the process medium specified for sizing.

Risk of irreparable regulator damage 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 regulator will be irreparably damaged and will no longer be able to fulfill its monitoring and control task.

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

Risk of valve damage due to contamination (e.g. solid particles) in the pipeline.

The plant operator is responsible for cleaning the pipelines in the plant.

- Flush the pipelines before start-up.
- Observe the maximum permissible pressure for valve and plant.

Safety instructions and measures

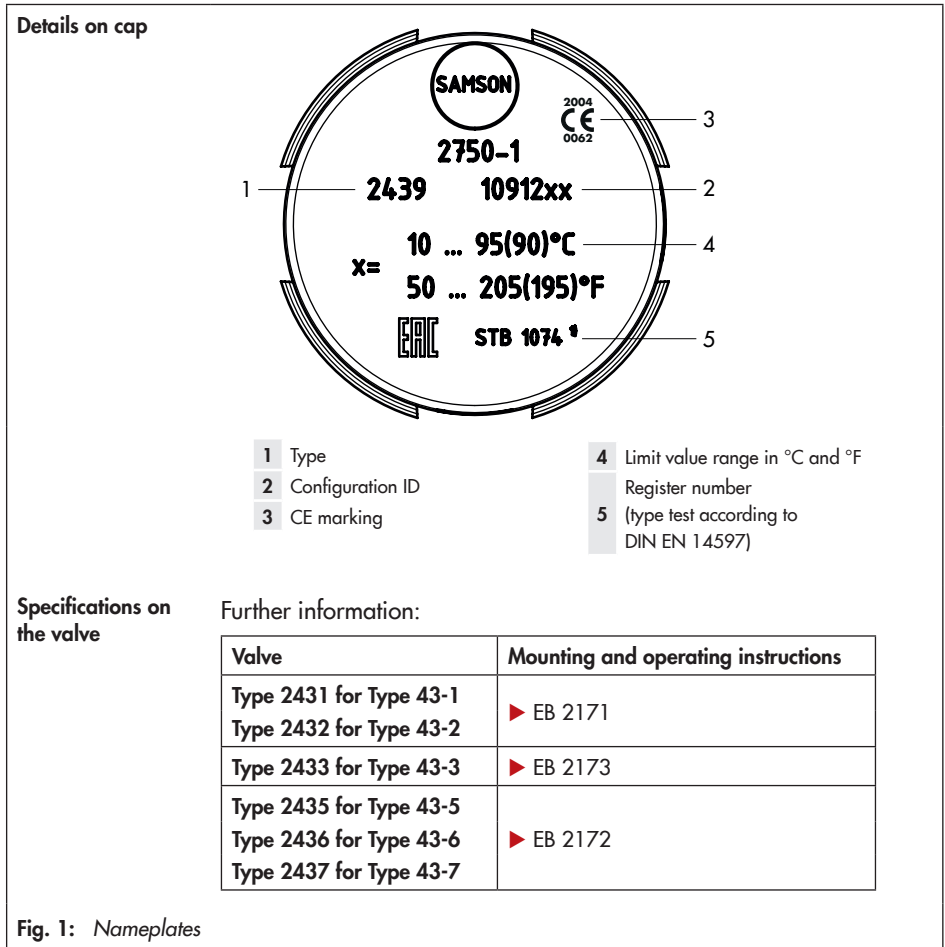
Risk of damage to the valve or safety temperature limiter due to excessively high or low tightening torques.

The connection between valve and safety temperature limiter must be tightened with a certain tightening torque.

Excessively tightened torques lead to parts wearing out quicker. Parts that are too loose may cause leakage.

→ Observe the specified tightening torques.

2 Markings on the device



2.1 Material number

Specifying the configuration ID, you can contact us to find out which material is used. The configuration ID is specified on the nameplate (2, configuration ID).

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

3 Design and principle of operation

See Fig. 2.

The safety temperature limiter limits the temperature by closing and locking a valve connected to the thermostat. The safety temperature limiter works according to the adsorption principle (gas expansion). The temperature sensor (12), capillary tube (10) and operating element (8) of the set point adjuster are filled with an expansion gas.

The temperature-dependent change in volume of the gas in the bulb sensor (12) causes the piston in the operating element (8) of the set point adjuster to move. As a result, the pin of the operating element moves the plug stem (4) with the plug (3).

The temperature limit can be adjusted by turning the set point adjuster (8). This limit value is indicated on the scale (11).

The valve is locked by a spring mechanism when the temperature reaches the adjustable limit, when the capillary tube ruptures or there is a leak in the sensor system.

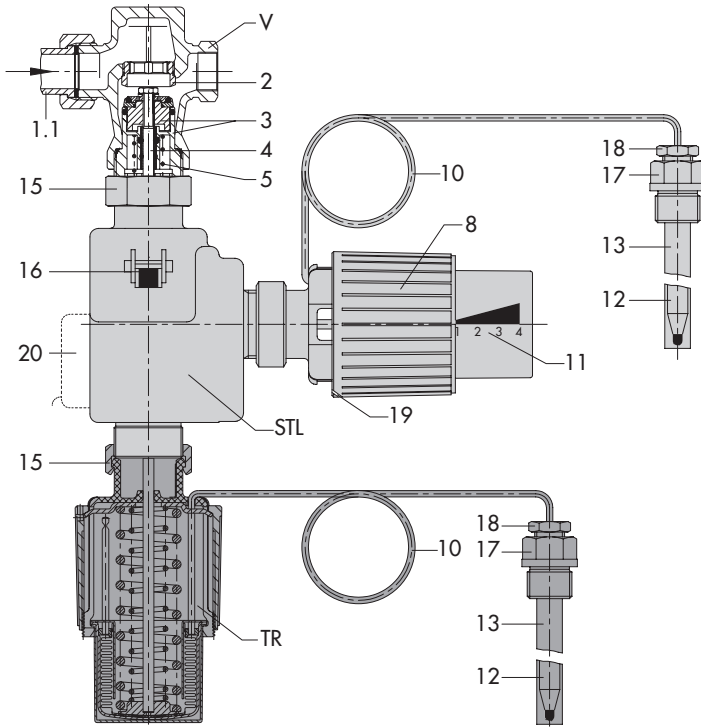
The device can only be reset and put back into operation when the fault has been remedied and the temperature has fallen below the limit (approx. 15 K below the adjusted temperature limit).

Fail-safe position

The spring mechanism in the operating element is released when the capillary tube breaks or when there is a leak in the sensor. It moves the plug stem (4) with the plug (3) over the pin of the operating element and closes and locks the valve. It is not possible to unlock the valve if the capillary tube has ruptured or there is a leak in the sensor system.

i Note

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



- | | | | |
|-----|---|----|--|
| V | Valve | 10 | Capillary tube |
| STL | Type 2439 Safety Temperature Limiter | 11 | Scale |
| TR | Type 2430 Control Thermostat (optional) | 12 | Temperature sensor |
| 1.1 | Threaded ends or welding ends (optional) | 13 | Thermowell |
| 2 | Valve seat | 15 | Coupling nut |
| 3 | Plug | 16 | Opening for indication/unlocking |
| 4 | Plug stem | 17 | Screw fitting |
| 5 | Plug spring | 18 | Packing |
| 8 | Operating element with set point adjuster | 19 | Opening for lead-sealing |
| | | 20 | Electric signal transmitter (optional) |

Fig. 2: Combination as temperature regulator with safety temperature limiter (TR/STL) and electric signal transmitter

3.1 Technical data

3.2 Process medium and scope of application

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

- Limit signals from **10 to 120 °C**
- Valve size **DN 15 to 50**
- **PN 16 to 25**
- Max. **200 °C**

The Type 2439 Safety Temperature Limiter (STL) 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 limiter can only be unlocked and put back into operation with a screwdriver after the fault has been remedied and the temperature has fallen below the limit.

Install the sensor together with the supplied thermowell.

When the safety temperature limiter is combined with a Type 2430 Control Thermostat, make sure that there is a minimum difference of approximately 15 K between the limit temperature of the temperature limiter and the set point temperature of the control thermostat.

Dimensions and weights

Fig. 3 provides a summary of the dimensions for the Type 2439 Safety Temperature Limiter and the Types 2431, 2432, 2433, 2435, 2436 and 2437 Valves. The lengths and heights in the dimensional drawings are shown on page 19 onwards.



The safety temperature limiter combined with the valve has been tested by the German Technical Inspectorate (TÜV) according to DIN EN 14597 under the type designation 2750-1.

The registration number is available on request.

i Note

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

See Referenced documentation on page 7.

Table 1: Technical data · Type 2439 Safety Temperature Limiter (STL)

Type 2439 Safety Temperature Limiter	
Adjustment ranges of limit temperature	10 to 95 °C · 20 to 120 °C
Permissible ambient temperature range at the limit value adjuster	80 °C · With electric signal transmitter 60 °C
Permissible temperature at sensor	20 K above the adjusted limit
Permissible pressure at the sensor with thermowell	40 bar
Capillary tube length	2 m · 5 m
Switching cycles according to DIN EN 14597	500
Electric signal transmitter	Max. load 230 V~, 16 A with resistive load
Conformity	CE · EAC

Table 2: Technical data · Types 2431, 2432, 2433, 2435, 2436 and 2137 Valves

Valve		Types 2431, 2432, 2433, 2435, 2436 and 2137					
Pressure rating		PN 16 to 25					
Conformity		CE · EAC					
Connection size	G	$\frac{1}{2}$		$\frac{3}{4}$		1	
Type 2431				▶ T 2171			
Type 2433				▶ T 2173			
Type 2435 · Type 2436				▶ T 2172			
Valve size	DN	15	20	25	32	40	50
Type 2432				▶ T 2171			
Type 2433				▶ T 2173			
Type 2436 · Type 2437				▶ T 2172			

Design and principle of operation

Table 3: Female thread · Dimensions in mm and weights in kg · Type 2431/2439, Type 2433/2439, Type 2435/2439 and Type 2436/2439

Connection size	G	½	¾	1	½	¾	1
Valve body		CC499K			1.4408 · A351 CF8M		
Length	L	65	75	90	65	75	90
Type 2431/ 2439	Height H	180			180		
	Height H1	30			50		
Type 2433/ 2439	Height H	165			-		
	Height H1	40					
Type 2435/ 2439	Height H	255					
	Height H1	30					
Type 2436/ 2439	Height H	180			180		
	Height H1	30			50		
Type 2431/ 2439	kg (approx.)	1.9	2.0	2.1	2.0	2.1	2.3
Type 2433/ 2439	kg (approx.)	2.1	2.2	2.3	-		
Type 2435/ 2439	kg (approx.)	2.4	2.5	2.6			
Type 2436/ 2439	kg (approx.)	2.3	2.4	2.5	2.1	2.2	2.4

Table 4: Male thread · Dimensions in mm · Type 2432/2439, Type 2433/2439, Type 2436/2439 and Type 2437/2439

Valve size	DN	15	20	25	32	40	50
Valve body		CC499K					
Pipe Ø d		21.3	26.8	32.7	42.0	48.0	60.0
AF		30	36	46	59	65	82
Length	L	65	70	90	100	110	130
Length with welding ends	L1	210	234	244	268	294	330
Length with threaded ends	L2	129	144	159	180	196	228
Male thread	A	G ½	G ¾	G 1	G 1¼	G 1½	G 2

Table 4: Male thread · Dimensions in mm · Type 2432/2439, Type 2433/2439, Type 2436/2439 and Type 2437/2439

Valve size	DN	15	20	25	32	40	50
Type 2432/ 2439	Height H	175			225		
	Height H1	30			55		
Type 2433/ 2439	Height H	171			181		
	Height H2	112	122	124	144	157	165
	Height H3	72	77	82	105	110	115
Type 2436/ 2439	Height H	-			195		
	Height H1				95		
Type 2437/ 2439	Height H	255			305		
	Height H1	30			55		

Table 5: Male thread · Weights in kg · Type 2432/2439, Type 2433/2439, Type 2436/2439 and Type 2437/2439

Valve size	DN	15	20	25	32	40	50
Valve body		CC499K					
Type 2432/ 2439 with ...	Welding ends	2.2	2.5	2.8	4.9	5.5	7.3
	Threaded ends	2.1	2.4	2.7	4.7	5.4	7.3
Type 2433/ 2439 with ...	Welding ends	2.8	3.1	3.3	4.6	4.9	6.2
	Threaded ends	2.8	3.1	3.3	4.6	4.9	6.2
Type 2436/ 2439 with ...	Welding ends	-			3.8	4.2	4.6
	Threaded ends				3.8	4.2	4.6
Type 2437/ 2439 with ...	Welding ends	2.4	2.7	3.0	5.2	5.9	7.8
	Threaded ends	2.3	2.6	2.9	5.5	5.9	7.8

Design and principle of operation

Table 6: Flanges · Dimensions in mm · Type 2432/2439, Type 2433/2439, Type 2436/2439 and Type 2437/2439

Valve size	DN	15	20	25	32	40	50
Length	L3	130	150	160	180	200	230
Valve body		CC499K¹⁾					
Type 2433/2439	Height H	171			181		
	Height H4	72	80	82	105	110	115
Valve body		EN-GJS-400-18-LT²⁾					
Type 2432/2439	Height H	180			230		
Type 2436/2439	Height H	180			230		
Type 2437/2439	Height H	260			310		
Valve body		1.4408 · A351 CF8M²⁾					
Type 2432/2439	Height H	180	-	180	-		
Type 2436/2439	Height H	180		180			

¹⁾ With screwed-on flanges

²⁾ With flanged body

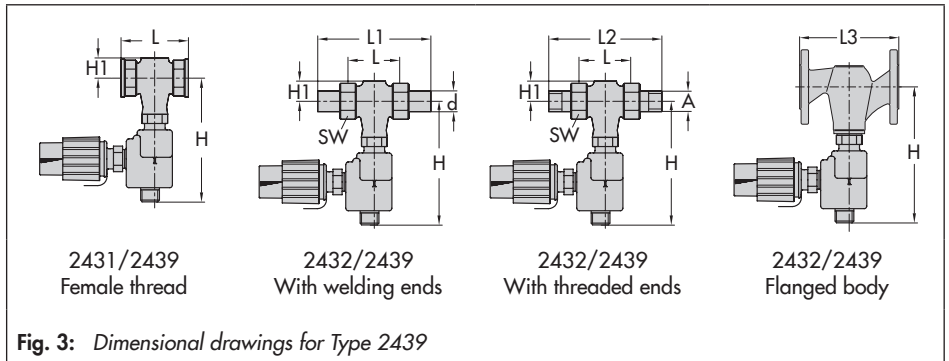
Table 7: Flanges · Weights in kg · Type 2432/2439, Type 2433/2439, Type 2436/2439 and Type 2437/2439

Valve size	DN	15	20	25	32	40	50
Valve body							
Type 2432/ 2439	EN-GJS-400-18-LT	3.9	4.4	5.0	8.2	9.7	11.6
	1.4408 · A351 CF8M		-		-		
Type 2433/ 2439	CC499K	4.9	6.1	7.1	9.4	10.9	13.7
Type 2436/ 2439	EN-GJS-400-18-LT	4.0	4.6	5.1	8.3	9.8	11.7
	1.4408 · A351 CF8M		-		-		
Type 2437/ 2439	EN-GJS-400-18-LT	4.0	4.7	5.1	8.3	10.0	11.3

Table 8: Dimensions in mm · Weights in kg · Type 2439 and Type 2430

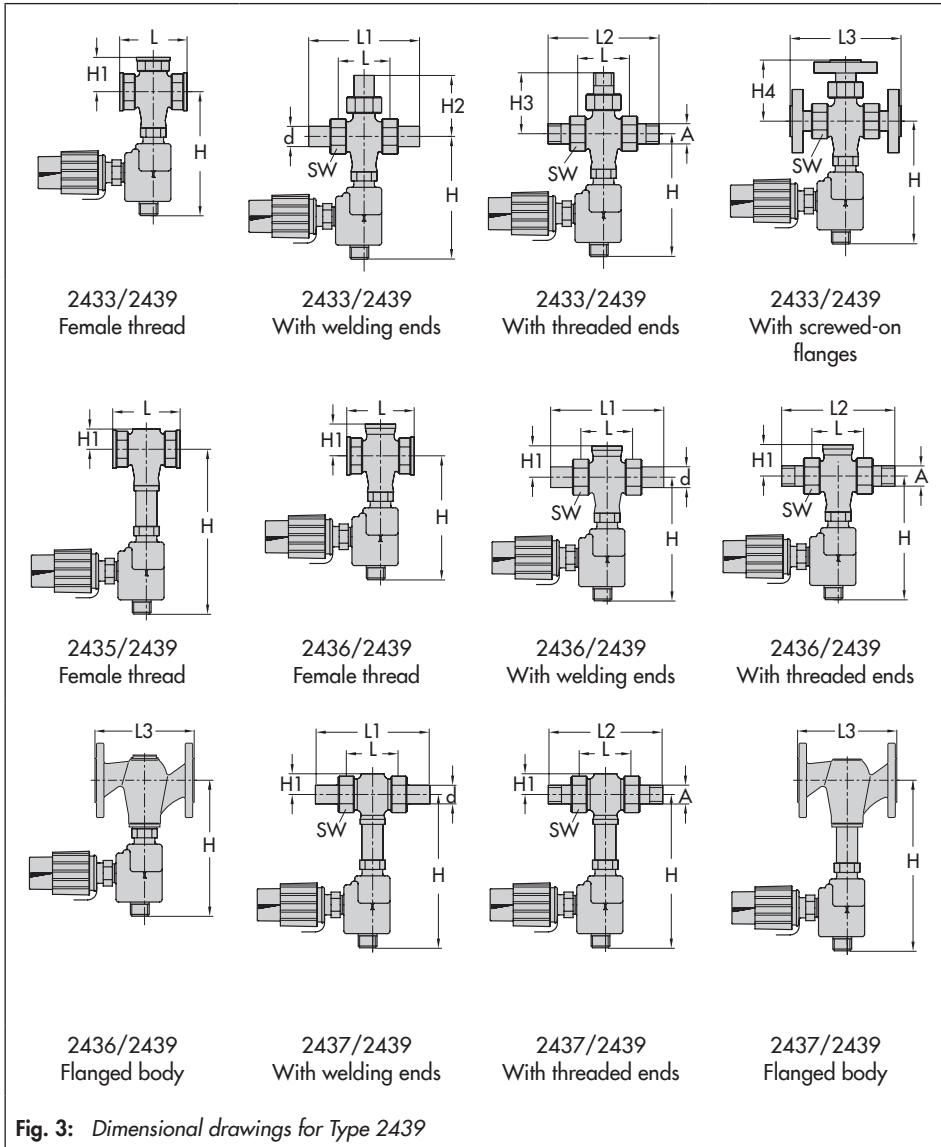
Type 2439 Safety Temperature Limiter · Type 2430 Control Thermostat			
Valve size	G ½ to G 1 · DN 15 to 25	DN 32 to 50	
Type 2439	Height H4	130	
	Length L5	185	
	Length B	210	
	Length B1	190	
	G	G ½	
	M	M32x1.5	
	ØT	12	
Type 2430	Height H6	130	
	Length L5	185	220
	G	G ½	G ¾
	ØT	12	19
Type 2439	kg (approx.)	1.2	
Type 2430	kg (approx.)	0.9	

Dimensional drawings



Design and principle of operation

Dimensional drawings



Dimensional drawings

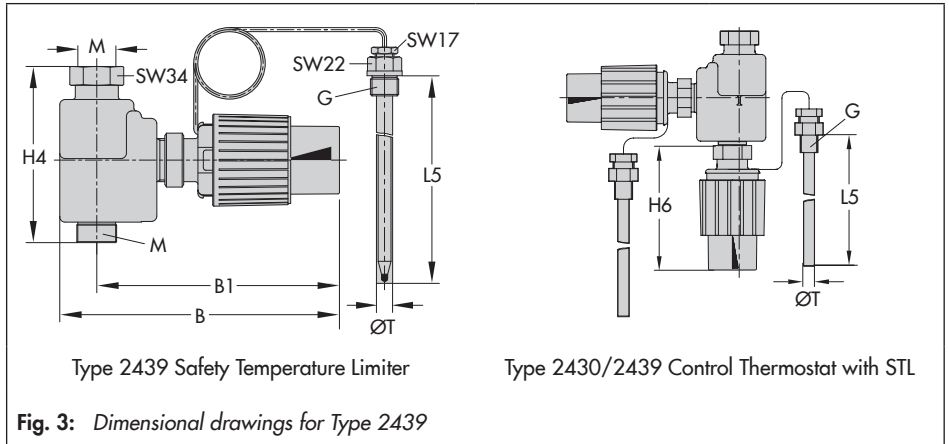


Fig. 3: Dimensional drawings for Type 2439

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 mount 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 limiter (e.g. to mount it onto the valve).

Transport instructions

- Protect the device against external influences (e.g. impact).
- Protect the device against moisture and dirt.

- Observe the permissible ambient temperatures (see section 3.2).

4.3 Storage

! NOTICE

Risk of damage to the safety temperature limiter due to improper storage.

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

i Note

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

Storage instructions

- Protect the safety temperature limiter 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 3.2).
- 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 limiter at the valve is clean.
- Check the safety temperature limiter for damage.
- Check to make sure that the type designation, pressure rating and temperature range of the safety temperature limiter 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 limiter in the insulation of the pipeline.

5.1 Assembling the safety temperature limiter and valve

See Fig. 2.

The Type 2439 Safety Temperature Limiter is always installed in combination with a valve as a safety temperature regulator (STL). The operating element with the spring mechanism (STL) can be attached to the valve body using the coupling nut (15) either before or after the valve is installed in the pipeline.

The following points must be observed during installation:

- Observe the permissible ambient temperature range from 0 to 80 °C (0 to 60 °C when an signal transmitter is used).
- Make sure that the regulator remains freely accessible after the plant has been completed.
- Install the valve in a horizontal pipeline with the operating element connection suspended downward (see Table 2).

i Note

Do not put the safety temperature regulators (STL) into operation before mounting the valve and control thermostat.

! NOTICE

Risk of damage to the valve or safety temperature limiter due to excessively high or low tightening torques.

The connection between valve and safety temperature limiter must be tightened with a certain tightening torque. Excessively tightened torques lead to parts wearing out quicker. Parts that are too loose may cause leakage.

Observe the specified tightening torques.

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 during installation of 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 cover facing upward.

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 both upstream and downstream of the regulator to monitor the temperatures prevailing in the plant.

5.3 Temperature sensor and capillary tube

! NOTICE

Risk of irreparable regulator damage caused by the regulator components being taken apart.

Do not separate the safety thermostat from the capillary tube or temperature sensor.

Temperature sensor

The temperature sensor may be installed in either a horizontal or vertical position. However, make sure its entire length is immersed in the process medium to be controlled. It must be installed in a location where overheating or considerable idling times cannot occur.

For temperature regulators with safety temperature limiter (TR/STL), install the sensor of the limiter near the temperature sensor of the regulator.

- Weld a welding socket with G ½ female thread at the place of installation.
- For better heat transmission, we recommend filling the free space between sensor and thermowell with oil or, when installed horizontally, with grease or any other heat transfer medium. This prevents heat transfer delays. Observe the thermal expansion of the filling medium. Allow some space for expansion and do not fill the entire free space or slightly loosen sensor nut for pressure compensation.

- Seal the thermowell into the welding socket.

! NOTICE

Galvanic corrosion due to incorrectly selected materials of the mounting parts.

On installing the thermowell in the pipeline, only use similar materials (e.g. stainless steel with stainless steel or copper together with other copper materials).

Capillary tube

Carefully run the capillary tube (10) without bending or twisting it. Avoid locations with considerable ambient temperature fluctuations along the entire length of the tube.

! NOTICE

Do not damage or shorten the capillary tube. Roll up excess tube to form a ring. The smallest permissible bending radius is 50 mm.

5.4 Electric signal transmitter

The safety temperature limiter can be delivered with an electric signal transmitter (20) already fitted. The signal transmitter contains a microswitch (max. load 10 A, 125 V, 250 V) which generates a signal if the temperature limit is exceeded or if the sensor fails (capillary tube is broken).

Wire the microswitch according to Fig. 4.

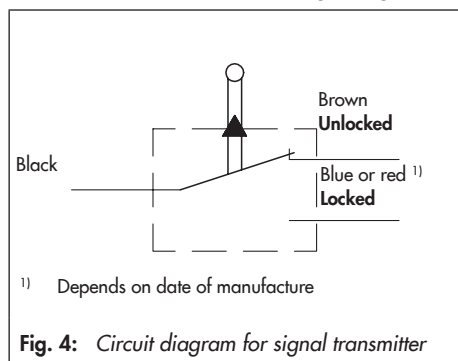


Fig. 4: Circuit diagram for signal transmitter

5.4.1 Retrofitting a signal transmitter

It is not possible to retrofit the electric signal transmitter (20).

5.5 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 heat up.
- Wear protective clothing and safety gloves.

ⓘ NOTICE

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

Do not install the safety temperature limiter 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 limiter 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 Steam

- 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

The safety temperature limiter is adjusted to the limit value specified in the order.

If no value is specified, the following limit value is ready adjusted:

- 10 to 95 °C range to 90 °C
- 20 to 120 °C range to 110 °C

Note

When the safety temperature limiter is combined with a Type 2430 Control Thermostat, make sure that there is a minimum difference of approximately 15 K between the limit temperature of the temperature limiter and the set point temperature of the control thermostat.

6.1.1 Adjusting the temperature limit without using a heating bath

If another temperature limit is to be adjusted without using a heating bath, turn the black plastic ring according to the scale (see Table 9). To do this, proceed as follows:

1. If a sealing wire (19) exists, remove it.
2. Adjust the new limit value (see Table 9) at the set point adjuster (8).
Turn clockwise (↻) to reduce the temperature
Turn counterclockwise (↺) to increase the temperature
3. Lead-seal the safety temperature limiter (optional).
4. Make sure the minimum temperature difference is observed for the TR/STL.

i Note

Before adjusting the limit value, the safety temperature limiter must be mounted on the valve.

The setting is continuously adjustable. A turn corresponds to approx. 3.2 K or 3.9 K depending on the limit range (see Table 9).

6.1.2 Adjusting the temperature limit using a heating bath

If the temperature limit of the safety temperature limiter is to be adjusted precisely using a heating bath or a deviation in the limit value exists, proceed as follows:

1. Remove the sensor from the thermowell.
2. When a Type 2430 Control Thermostat or double adapter is used, unscrew it from the safety temperature limiter.
3. Remove the safety temperature limiter from the valve.
4. If a sealing wire (19) is used, remove it.
5. Turn the set point adjuster (8) counterclockwise (↺) to adjust the maximum possible limit value (see section 6.1).
6. Immerse the sensor of the safety temperature limiter completely (for at least five minutes) into the heating bath with the correct temperature.
7. Check whether the safety temperature limiter has been triggered.

8. When the safety temperature limiter has not been triggered:

Reduce the limit value by slowly turning (1/4 turn at a time) the set point adjuster (8) clockwise (↻) until the safety temperature limiter is triggered.

9. When the safety temperature limiter has been triggered:

10. Let the safety temperature limiter cool down again, unlock it and mount it back onto the valve.

11. Install the sensor again into the thermowell.

12. Lead-seal the safety temperature limiter (optional).


13. When a Type 2430 Control Thermostat or double adapter is used, screw it onto the safety temperature limiter.

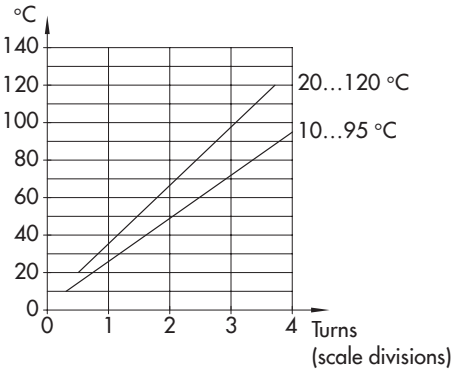
14. Make sure the minimum temperature difference is observed for the TR/STL.

i Note

When the safety temperature limiter is combined with a Type 2430 Control Thermostat, make sure that there is a minimum difference of approximately 15 K between the limit temperature of the temperature limiter and the set point temperature of the control thermostat.

Table 9: Limit adjustment · Adjustment diagram

Scale marking	Limit value range		
	10 to 95 °C	20 to 120 °C	
	0	~5 °C	~5 °C
	1	~25 °C	~35 °C
	2	~50 °C	~65 °C
	3	~75 °C	~95 °C
	4	~95 °C	~130 °C
Change of limit range in K/turn	~3.2	~3.9	



The diagram is a line graph with temperature in degrees Celsius on the vertical axis (0 to 140) and Turns (scale divisions) on the horizontal axis (0 to 4). Two parallel lines are plotted. The lower line starts at approximately 10 °C at 0 turns and reaches 95 °C at 4 turns. The upper line starts at approximately 20 °C at 0 turns and reaches 120 °C at 4 turns. The lines are labeled '10...95 °C' and '20...120 °C' respectively.

6.2 Unlocking after a fault

A red cam visible in the opening (16 in Fig. 2) indicates that the valve is locked.

After the fault has been remedied, a screwdriver is required to unlock the safety temperature limiter (Fig. 5).

Place the screwdriver through the opening onto the cam and lever the cam to unlock it. A clicking noise can be heard and the red cam disappears.

i Note

The valve can only be unlocked after the limit temperature has fallen below the adjusted limit value by at least 15 K.

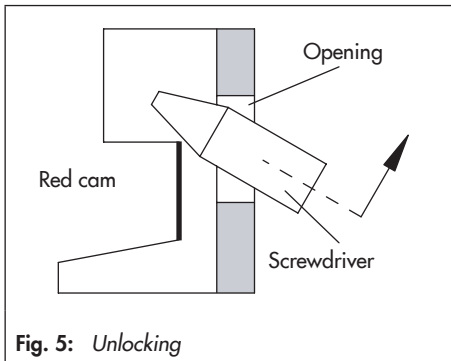


Fig. 5: *Unlocking*

6.3 Sensor failure

Indication of a defective sensor

When the sensor is defective (e.g. a leak in the sensor system), a red cam becomes visible in the opening (16) and the valve is locked. The valve cannot be unlocked when the sensor system is defective. The device must be replaced.

i Note

If the hydraulic system of the Type 2212 is defective (pressure loss), the STL cannot be unlocked and must be replaced with a new device.

6.4 Maintenance

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

WARNING

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

Valve components and the pipeline may become very hot or cold. Risk of burn injuries.

- Allow components and pipelines to cool down or heat up.
- Wear protective clothing and safety gloves.

NOTICE

Risk of damage to the valve or safety temperature limiter due to excessively high or low tightening torques.

The connection between valve and safety temperature limiter must be tightened with a certain tightening torque. Excessively tightened torques lead to parts wearing out quicker. Parts that are too loose may cause leakage.

Observe the specified tightening torques.

Note

The safety temperature limiter was checked by SAMSON before it left the factory.

- Certain test results certified by SAMSON lose their validity when the safety temperature limiter is opened.
- The certification according to DIN EN 14597 loses its validity when the safety temperature limiter is opened.

Tip

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

6.5 Preparation for return shipment

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

1. Put the device out of operation. See section 8.1.
2. Decontaminate the valve. Remove any residual process medium.
3. Fill in the Declaration on Contamination. The declaration form can be downloaded from our website at
▶ www.samsongroup.com > Service & Support > After-sales Service.
4. Proceed as described on our website at
▶ www.samsongroup.com > Service & Support > After-sales Service > Returning goods.

7 Malfunctions

The malfunctions listed in Table 10 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.

Exceptional operating and installation conditions may lead to changed situations that may affect the control response and lead to malfunctions. For troubleshooting, the conditions, such as installation, process medium, temperature and pressure conditions, must be taken into account.

SAMSON's After-sales Service can help during troubleshooting. Further information is available in section 9.

Note

If the hydraulic system of the Type 2212 is defective (pressure loss), the STL cannot be unlocked and must be replaced with a new device.

Tip

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

Note

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

Table 10: Troubleshooting

Malfunction	Possible reasons	Recommended action
Temperature exceeds the adjusted limit.	Temperature sensor installed in the wrong location.	→ Install the temperature sensor into the pipeline in such a way that the heat flow is correctly measured.
	Foreign particles blocking the valve plug	→ Remove foreign particles. → Replace damaged parts.
	Valve trim is worn.	→ Replace damaged parts.
The temperature adjusted at the control thermostat reaches the adjusted limit temperature.	Control thermostat defective	→ Replace the control thermostat.
Temperature drops below the set point adjusted at the control thermostat.	Valve installed against the flow.	→ Install the valve so that the direction of flow matches the direction indicated by the arrow on the body.
	Foreign particles blocking the valve plug	→ Remove foreign particles. → Replace damaged parts.
	Temperature sensor installed in the wrong location.	→ Install the temperature sensor into the pipeline in such a way that the heat flow is correctly measured.
	Valve or K_{VS}/C_V coefficient too small	→ Check the sizing. → Change K_{VS}/C_V coefficient, if necessary or install a different sized regulator.
	Strainer blocked	→ Clean strainer.
	The safety temperature limiter has been triggered.	→ Check temperature regulator to ensure it functions. → Check the set point of the control thermostat. → Replace the defective STL, if necessary.
Jerky control response.	Increased friction, e.g. due to foreign particles between seat and plug.	→ Remove foreign particles. → Replace damaged parts.
Temperature fluctuates.	Valve too large	→ Check the sizing. → Change K_{VS}/C_V coefficient, if necessary or install a different sized regulator.
	Temperature sensor installed in the wrong location.	→ Install the temperature sensor into the pipeline in such a way that the heat flow is correctly measured (avoid dead times).
Leak at the joint between the valve and safety temperature limiter.	Seal is defective	→ Replace damaged parts. → Contact SAMSON's After-sales Service.

8 Decommissioning and removal

⚠ DANGER

Risk of bursting in pressure equipment.

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

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

⚠ WARNING

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

Valve components and the pipeline may become very hot or cold. Risk of burn injuries.

- Allow components and pipelines to cool down or heat up.*
 - Wear protective clothing and safety gloves.*
-

8.1 Decommissioning

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

Steps 1 to 6 only apply when the thermowell is also removed.

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.
5. If necessary, allow the pipeline and device to cool down or heat up.
6. Remove the thermowell from the pipeline and, if necessary, seal the opening.
7. Pull the sensor out of the thermowell.
8. Remove the safety temperature limiter from the valve.

8.2 Disposal



We are registered with the German national register for waste electric equipment (stiftung ear) as a producer of electrical and electronic equipment, WEEE reg. no.: DE 62194439

- 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.

9 Annex

9.1 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 the After-sales Service at aftersaleservice@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.

To assist diagnosis and in case of an unclear mounting situation, specify the following details (so far as possible). See section 2:

- Device type
- Model number and configuration ID
- Temperature and process medium
- Is a strainer installed?
- Installation drawing showing the exact location of the regulator and all the additionally installed components (shut-off valves, pressure gauge etc.)

Spare parts

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

9.2 Tightening torques

Part	Valve size	Tightening torque in Nm
Coupling nut (15)	All	20

9.3 Certificates

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



EU-KONFORMITÄTSERKLÄRUNG EU DECLARATION OF CONFORMITY

Modul D/Module D, Nr./No. / N° CE-0062-PED-D-SAM 001-16-DEU-rev-A

SAMSON erklärt in alleiniger Verantwortung für folgende Produkte:/For the following products, SAMSON hereby declares under its sole responsibility:

Sicherheitstemperaturbegrenzer STB 2439 (2750-1) / Safety Temperature Limiter STL 2439 (2750-1)

in Kombination mit Ventilen/combined with valves

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

die Konformität mit nachfolgender Anforderung/the conformity with the following requirement.

Richtlinie des Europäischen Parlaments und des Rates zur Harmonisierung der Rechtsvorschriften der Mitgliedstaaten über die Bereitstellung von Druckgeräten auf dem Markt. 2014/68/EU vom 15.05.2014

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

EG-Baumusterprüfbescheinigung
EC Type Examination Certificate

Modul B
Module B

Zertifikat-Nr./Certificate no.
01 202 931-B-11-0016

Angewandtes Konformitätsbewertungsverfahren
Conformity assessment procedure applied

Modul D
Module D

Zertifikat-Nr./Certificate no.
CE-0062-PED-D-SAM-001-16-DEU-rev-A

Dem Entwurf zu Grunde gelegt sind Verfahren aus:/The design is based on the procedures specified in the following standards:

DIN EN 12516-2, DIN EN 12516-3 bzw./or ASME B16.1, ASME B16.24, ASME B16.42

Das Qualitätssicherungssystem des Herstellers wird von folgender benannter Stelle überwacht:

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

Bureau Veritas S.A. Nr./No. 0062, Newtime, 52 Boulevard du Parc, Ile de la Jatte, 92200 Neuilly sur Seine, France
Hersteller/Manufacturer: SAMSON AG, Weismüllerstraße 3, 60314 Frankfurt am Main, Germany

Frankfurt am Main, 08. Februar 2017/08 February 2017

Klaus Hörschken
Zentralabteilungsleiter/Head of Central Department
Entwicklung Ventile und Antriebe/R&D, Valves and Actuators

Dr. Michael Heß
Zentralabteilungsleiter/Head of Central Department
Product Management & Technical Sales



EU Konformitätserklärung / EU Declaration of Conformity / Déclaration UE de conformité

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller/
This declaration of conformity is issued under the sole responsibility of the manufacturer/
La présente déclaration de conformité est établie sous la seule responsabilité du fabricant.
Für das folgende Produkt / For the following product / Nous certifions que le produit

Sicherheitstemperaturbegrenzer / Safety Temperatur Limiter / Limiteur de température de sécurité Typ/Type/Type 2439

wird die Konformität mit den einschlägigen Harmonisierungsrechtsvorschriften der Union bestätigt /
the conformity with the relevant Union harmonisation legislation is declared with/
est conforme à la législation d'harmonisation de l'Union applicable selon les normes:

EMC 2014/30/EU	EN 61000-6-2:2005, EN 61000-6-3:2007 +A1:2011, EN 61326-1:2013
LVD 2014/35/EU	EN 60730-1:2016, EN 61010-1:2010
RoHS 2011/65/EU	EN 50581:2012

Hersteller / Manufacturer / Fabricant:

SAMSON AKTIENGESELLSCHAFT
Weismüllerstraße 3
D-60314 Frankfurt am Main
Deutschland/Germany/Allemagne

Frankfurt / Francfort, 2017-07-29

Im Namen des Herstellers/ On behalf of the Manufacturer/ Au nom du fabricant.

i.V. Gert Nahler

Gert Nahler
Zentralabteilungsleiter/Head of Department/Chef du département
Entwicklung Automation und Integrationstechnologien/
Development Automation and Integration Technologies

i.V. H. Zager

Hanno Zager
Leiter Qualitätssicherung/Head of Quality Management/
Responsable de l'assurance de la qualité



HERSTELLERERKLÄRUNG

Für folgende Produkte

Temperaturregler mit/ohne Sicherheits-temperaturwächter oder -begrenzer

Nach der Zündgefahrenbewertung nach DIN EN 13463-1 wird hiermit bestätigt, dass die oben angegebenen Regler ohne Hilfsenergie keine eigene potenzielle Zündquelle besitzen und damit nicht der Gerätedefinition nach der Richtlinie 2014/34/EU entsprechen.

Die Geräte fallen damit nicht unter die Richtlinie 2014/34/EU und können somit auch nicht als Geräte nach dem Verfahren der EG-Baumusterprüfung nach Anhang III der Richtlinie zertifiziert werden.

Diese Erklärung gilt für die Gerätetypen nach Tabelle 1 die entsprechend den bauartmäßigen Unterlagen gefertigt sind.

Begründung:

Die vorgenannten nichtelektrischen RoH-Ausführungen haben nach der Zündgefahrenbewertung, entsprechend DIN EN 13463-1, Absatz 5.2 auch bei selten auftretenden Betriebsstörungen keine eigene potenzielle Zündquelle und fallen somit **nicht** unter die Richtlinie 2014/34/EU

Hinweis:

Diese Erklärung gilt für den Einsatz der genannten Betriebsmittel nur in den Ausführungen **ohne elektrische Komponenten** für allgemeine technische Anwendungen innerhalb des Ex-Bereiches.

Die Verwendung als Komponenten nach der Definition der Richtlinie 2014/34/EU wird ausdrücklich ausgeschlossen.

MANUFACTURER'S DECLARATION

For the following products

Temperature regulators with/without safety temperature monitors/limiters

According to the ignition risk assessment based on DIN EN 13463-1, we hereby certify that the self-operated regulators mentioned above do not have their own potential ignition source, and as a result, they are not classified as "equipment" in the sense of Directive 2014/34/EU.

Since the devices do not fall within the scope of Directive 2014/34/EU, they cannot be certified as "equipment" according to the EC type examination procedure specified in Annex III of the Directive.

This declaration applies to the device types listed in Table 1 manufactured in compliance with the production documents.

Reason:

According to the ignition risk assessment performed in accordance with DIN EN 13463-1, section 5.2, the non-electrical self-operated regulator versions do not have their own potential ignition source even in the rare incident of an operating fault. As a result, they **do not** fall within the scope of Directive 2014/34/EU.

Note:

This declaration applies to the use of the mentioned device versions **without electrical components only** for general technical applications in hazardous areas.

The use as "components" as defined by Directive 2014/34/EU is explicitly prohibited.

Manufacturer's Declaration: V/HE-1233-1 DE-EN Changed on: 2016-05-11 Changed by: E37/pg/V74/tny/V73/sid

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