MOUNTING AND
OPERATING INSTRUCTIONS

EB 2430 EN

Translation of original instructions

Type 2430 Thermostat (adsorption principle)
mounted on a Type 2432 Valve (Type 43-2 Temperature Regulator)

Type 2430-3 Thermostat (vapor pressure principle)

Type 2430 Control Thermostat

Series 43 Self-operated Temperature Regulators

Edition July 2026

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 (aftersalesservice@samsongroup.com).

Documents relating to the device, such as the mounting and operating instructions, are available on our website at ***www.samsongroup.com*** **>** ***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 SAMSON Type 2430 Control Thermostat is a control thermostat that functions according to the vapor pressure principle or the adsorption principle. It is used in combination with a valve (Series 43 Regulators).

The control thermostat functioning according to the adsorption principle is used for liquids, gases and steam. The control thermostat functioning according to the vapor pressure principle (Type 2430-3) is used in instantaneous water heaters. The control thermostats are used to control the temperature of a plant in district heating supply networks to an adjusted set point.

The control thermostat is designed to operate under exactly defined conditions (e.g. operating pressure, temperature etc.). Therefore, operators must ensure that the control thermostat is only used in operating conditions that meet the specifications used for sizing at the ordering stage. In case operators intend to use the control thermostat 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 inscription on the device for limits and fields of application as well as possible uses.

Reasonably foreseeable misuse

The control thermostat is not suitable for the following applications:

- Use outside the limits defined during sizing and by the technical data
- Use outside the limits defined by the additional fittings mounted on the control thermostat

Furthermore, the following activities do not comply with the intended use:

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

Safety features

The Type 2430 Control Thermostat does not have any special safety features.

Qualifications of operating personnel

The control thermostat must be mounted, started up and serviced by fully trained and qualified personnel only; the accepted industry codes and practices must 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

SAMSON recommends checking the hazards posed by the process medium being used (e.g. ▶ GESTIS (CLP) hazardous substances database). Depending on the process medium and/or the activity, the protective equipment required includes:

- ➔ Protective clothing, safety gloves and eye protection in applications with hot, cold and/or corrosive media
- ➔ 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 control thermostat 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.

Hazards resulting from the special working conditions at the installation site of the control thermostat must be identified in a risk assessment and prevented through the corresponding standard operating procedures drawn up by the operator.

SAMSON also recommends 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 cover the standard version of the devices and the standard mounting parts. Components that differ to those described in this document can be added or removed. Refer to the mounting and operating instructions of the components not covered in this document for the safety instructions and measures that need to be observed.

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 control thermostat complies with the requirements of the European Pressure Equipment Directive 2014/68/EU. Control thermostats 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 'Certificates' chapter.

According to the ignition hazard assessment performed in accordance with Clause 5.2 of ISO 80079-36, the non-electrical control thermostats 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.

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

Referenced documents

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

- Mounting and operating instructions for

e.g.	**Temperature regulators for heating applications (Types 43-1, 43-2, 43-5 and 43-7)**	▶ EB 2171
e.g.	**Temperature regulators for cooling applications (Type 43-6)**	▶ EB 2172
e.g.	**Temperature regulators for mixing/diverting service (Type 43-3)**	▶ EB 2173
e.g.	**Type 43-8 Temperature Regulator with Hydraulic Controller for instantaneous water heaters**	▶ EB 2178

- 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 severe personal injury

⚠ DANGER

Risk of bursting in the regulator.

Regulators and pipelines are pressure equipment. Impermissible pressure in the components or improper opening of the regulator or control thermostat can lead to the components bursting.

➔ Observe the maximum permissible pressure for the regulator, control thermostat and plant.

➔ Before starting any work on the regulator and control thermostat, depressurize all plant sections affected.

➔ Drain the process medium from the plant sections affected.

1.2 Notes on possible personal injury

⚠ WARNING

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 the safe use of the part affected. ▶ https://www.samsongroup.com/en/about-samson/environment-social-governance/material-compliance/reach-regulation/

⚠ WARNING

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

Over time, markings, labels and nameplates on the control thermostat 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 device 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, the control thermostat 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.

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

1.3 Notes on possible property damage

NOTICE

Risk of control thermostat damage due to incorrectly attached slings.

➔ Do not attach load-bearing slings to the control thermostat.

Risk of leakage and damage to the control thermostat due to over- or under-torquing.

Observe the specified torques when tightening control thermostat components. Excessive tightening torques lead to parts wearing out more quickly. Parts that are too loose may cause leakage.

➔ Observe the specified tightening torques (see the 'Tightening torques' chapter).

Risk of control thermostat damage due to the use of unsuitable tools.

Certain tools are required to work on the control thermostat.

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

Risk of the process medium being contaminated through the use of unsuitable lubricants and/or contaminated tools and components.

➔ Keep the control thermostat components and the tools used free from solvents and grease.

➔ Make sure that only suitable lubricants are used.

Incorrect control due to the formation of ice on the control thermostat.

Medium temperatures below 0 °C may cause ice to form on the control thermostat, depending on the air humidity. This may affect, in particular, the functioning of the plug or control thermostat stem guide.

➔ Prevent the formation of ice by taking appropriate precautions (e.g. enclosure, trace heater etc.). The plant operator is responsible for selecting and implementing appropriate precautions (see the 'Installation' chapter).

NOTICE

Risk of irreparable damage to the control thermostat caused by the thermostat components being taken apart.

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

➔ Do not dismantle the control thermostat.

➔ Only perform allowed activities on the control thermostat.

➔ Contact SAMSON's After-sales Service before replacing spare parts.

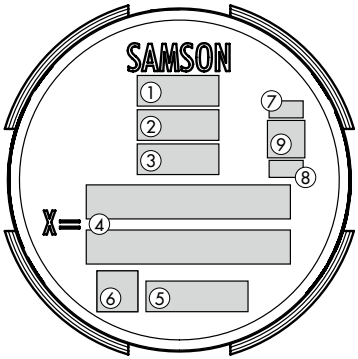
Note

SAMSON's After-sales Service can support you concerning lubricant, tightening torques and tools approved by SAMSON.

2 Markings on the device

The inscription shown was up to date at the time of publication of this document. The inscription on the device may differ from the one shown.

2.1 Inscription



1	Model number
2	Type designation
3	Material number/configuration ID
4	Temperature range in °C and °F
5	Register number (device function)
6	DIN-tested marking
7	Year of manufacture
8	–
9	CE marking

Fig. 2-1: *Inscription on the control thermostat*

2.2 Location of the inscription

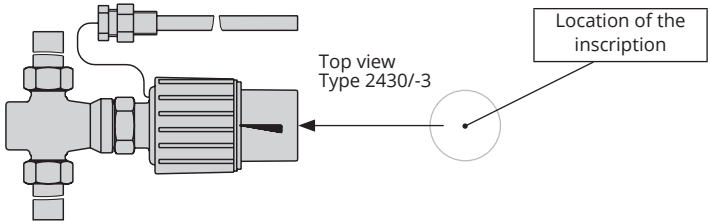


Fig. 2-2: *Location of the inscription on the control thermostat*

2.3 Material identification number

Specifying the configuration ID, you can contact SAMSON to find out which material is used. The material number is included in the inscription (Material number/configuration ID, 3).

For more details on the inscription (see Chapter 2.1).

3 Design and principle of operation

➔ See Fig. 3-1

The Type 2430 Control Thermostat with set point adjuster, capillary tube and temperature sensor is mounted to a valve (Series 43 Regulators). The control thermostat for standard temperature control operates according to the adsorption principle. The control thermostat for instantaneous water heating operates according to the vapor pressure principle.

The temperature of the medium creates a pressure in the sensor (19) which is proportional to the measured temperature. This pressure is transferred through the capillary tube (10) to the operating element (13) and converted into a positioning force. The valve stem is moved by the operating bellows (9) and pin of the operating element (12).

By turning the set point adjuster (8), the point of response and the set point are changed over the spring (7).

The control thermostat operating according to the adsorption principle is filled with CO_2, whereas the control thermostat operating according to the vapor pressure principle contains a hydrocarbon mixture.

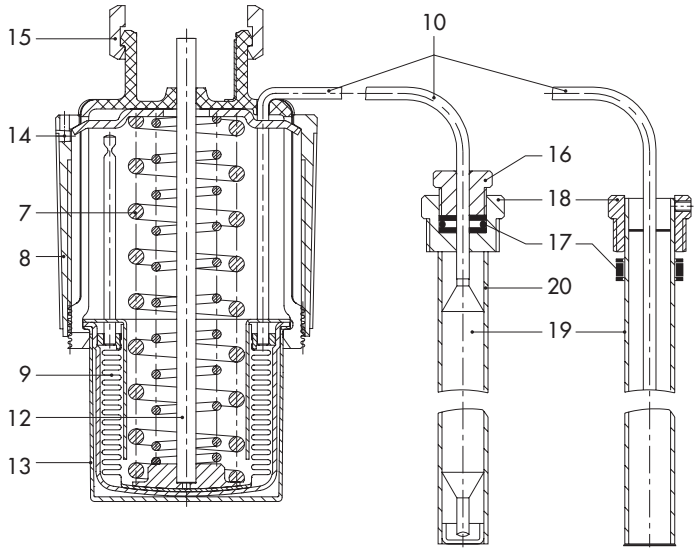
Due to their design, control thermostats functioning according to the adsorption principle can be mounted in any position. The design of vapor pressure thermostats necessitates a certain mounting position of the sensor and use without thermowell.

Version with safety thermostat

When a Type 2439 or Type 2403 Safety Thermostat is attached to the control thermostat, this combination functions as a safety temperature limiter (TR/STL) or a safety temperature monitor (TR/STM).

Details in mounting and operating instructions

▶ EB 2185 (STL); ▶ EB 2083 (STM).



7	Set point spring	12	Pin of operating element	16	Screw
8	Set point adjuster	13	Operating element	17	Seal with clamping rings
9	Operating bellows	14	Lead-seal hole	18	Packing
10	Capillary tube	15	Coupling nut	19	Temperature sensor
				20	Thermowell (optional)

Fig. 3-1: *Functional diagram of Type 2430 Control Thermostat*

3.1 Additional fittings

Thermometer

Install a thermometer (4) downstream of the regulator to monitor the temperature prevailing in the plant.

Insulation

Control thermostats can be insulated to reduce heat energy transfer. Refer to the instructions in the 'Installation' chapter.

3.2 Technical data

The inscription on the control thermostat includes information on the device version (see the 'Markings on the device' chapter).

Process medium and scope of application

Temperature regulators for district heating systems, heat generators, heat exchangers and other HVAC and industrial applications. The Type 2430 Control Thermostat is designed to maintain the temperature to the adjusted set point.

- Suitable for **liquids, gases and steam**
- Temperature set points **from 0 to 150 °C/32 to 300 °F**

Conformity

The Type 2430 Control Thermostat bears the CE mark of conformity.

Noise emissions

SAMSON is unable to make general statements about noise emissions. The noise emissions depend on the regulator version, plant facilities, process medium and operating conditions.

Temperature range

Depending on how the Type 2430 Control Thermostat is configured, it can be used up to max. 150 °C/300 °F. Permissible ambient temperature -20 to +80 °C/-4 to +176 °F (see Table 3-1).

Dimensions and weights

Table 3-4 provides a summary of the dimensions and weights. The lengths and heights in the dimensional drawings are shown on page 3-5.

Table 3-1: *Technical data · All pressures in bar (gauge)*

Type 2430 Control Thermostat		
Set point range [1] (continuously adjustable)	DIN	0 to 35 °C · 25 to 70 °C · 40 to 100 °C 50 to 120 °C · 70 to 150 °C
	ANSI	32 to 95 °F · 77 to 158 °F · 104 to 212 °F 122 to 248 °F · 158 to 302 °F
Capillary tube		2 m · 5 m [2]/6.56 ft · 16.4 ft [2]
Max. perm. temperature at the sensor		50 K above the adjusted set point
Permissible ambient temperature range		-20 to +80 °C [3]/-4 to +176 °F [3]
Perm. pressure at sensor		PN 25/Class 150
Permissible pressure at thermowell		PN 40 or 100 [2]/Class 300 or 600 [2]
Conformity		CE

1) Further set point ranges on request
2) Special version
3) At temperatures below freezing: ice formation may damage the plant and especially the valve

Table 3-2: *Materials · Material number according to DIN EN*

Type 2430 Control Thermostat		
Set point adjuster		PTFE, glass fiber reinforced
Packing		EPDM soft seal for water · NBR soft seal for oil
Temperature sensor	Capillary tube	Copper
	Thermowell	Copper or stainless steel 1.4310

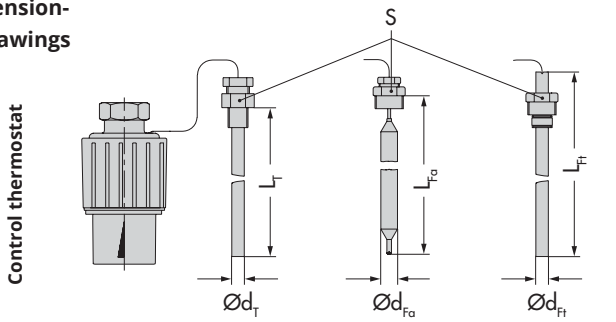
Table 3-3: *Weights in kg*

Type 2430 Control Thermostat	
Control thermostat (approx.)	0.7 kg/1.5 lb
Thermowell (approx.)	0.2 kg/0.4 lb

Table 3-4: *Dimensions in mm*

Type 2430 Control Thermostat		Adsorption principle			Vapor pressure principle	
		DIN		ANSI	DIN	
For nominal valve size		DN 15 to 25	DN 32 to 50	½ to 1 NPT	DN 15 to 50	
Screw gland S		G ½	G ¾	½ NPT	G ½ · G ¾	G ½ · G ¾
Length	L_F and L_{Fa}	185 mm	220 mm	7.28 inch	–	170 mm
	L_{Ft}	190 mm		7.48 inch	190 mm · 160 mm	–
Ø d_T		12 mm	19 mm	0.47 inch	–	–
Ø d_{Fa}		9.5 mm	16 mm	0.37 inch	–	10 mm
Ø d_{Ft}		12 mm		0.47 inch	12 mm	–

Dimensional drawings



➔ Thermostats for shell-and-tube or coaxial heat exchangers for instantaneous water heating: sensor with Ø10x170 mm

➔ Thermostats for horizontal mounting position for plate heat exchanger in combination with Type 43-8 for instantaneous water heating: sensor Ø12x190 mm or Ø12x160 mm

Fig. 3-2: *Dimensions in mm*

4 Shipment and on-site transport

The work described in this chapter is to be performed only by personnel appropriately qualified to carry out such tasks.

4.1 Accepting the delivered goods

After receiving the shipment, proceed as follows:

1. Check the scope of delivery. Check that the specifications on the inscription match the specifications in the delivery note. See the 'Markings on the device' chapter for inscription details.
2. Check the shipment for transportation damage. Report any damage to SAMSON and the forwarding agent (refer to delivery note).
3. Determine the weight and dimensions of the units to be lifted and transported in order to select the appropriate lifting equipment and lifting accessories. Refer to the transport documents and the 'Design and principle of operation' chapter.

4.2 Removing the packaging from the control thermostat

The control thermostat is delivered as single component.

➔ Do not open or remove the packaging until immediately before lifting to install the control thermostat into the pipeline.

➔ Leave the control thermostat in its transport container or on the pallet to transport it on site.

➔ Dispose and recycle the packaging in accordance with the local regulations.

4.3 Transporting and lifting the control thermostat

Due to the low service weight, lifting equipment is not required to lift and transport the control thermostat (e.g. to install it into the pipeline).

➔ Leave the control thermostat in its transport container or on the pallet to transport it.

➔ Observe the transport instructions.

Transport instructions

➔ Protect the control thermostat against external influences (e.g. impact).

➔ Do not damage the corrosion protection (paint, surface coatings). Repair any damage immediately.

➔ Protect the control thermostat against moisture and dirt.

➔ The permissible ambient temperature of the control thermostat is between -20 and +80 °C/-4 to +175 °F.

4.4 Storing the control thermostat

NOTICE

Risk of damage to the control thermostat due to improper storage.

➔ *Observe the storage instructions.*

➔ *Avoid longer storage periods.*

➔ *Contact SAMSON in case of different storage conditions or longer storage times.*

Storage instructions

➔ Protect the control thermostat against external influences (e.g. impact).

➔ Secure the control thermostat in the stored position against slipping or tipping over.

➔ Do not damage the corrosion protection (paint, surface coatings). Repair any damage immediately.

➔ Protect the control thermostat 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.

➔ The permissible storage temperature of the control thermostat is between -20 and +65 °C/-4 to +150 °F.

➔ Do not place any objects on the control thermostat.

Note

SAMSON recommends to regularly check the control thermostat and the prevailing storage conditions during long storage periods.

Tip

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

5 Installation

The work described in this chapter is to be performed only by personnel appropriately qualified to carry out such tasks.

Valve and control thermostat can be assembled before or after the valve has been installed in the pipeline. SAMSON recommends first installing the valve without the control thermostat into the pipeline.

5.1 Installation conditions

Work position

The work position for the control thermostat is the front view onto the operating controls on the regulator (including any additional fittings) seen from the position of operating personnel.

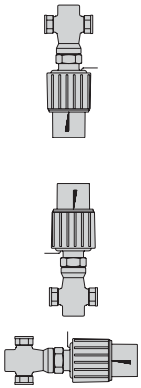
Plant operators must ensure that, after installation of the device, the operating personnel can perform all necessary work safely and easily access the device from the work position.

Pipeline routing

➔ Observe the recommended inlet and outlet lengths (see the mounting and operating instructions of the corresponding regulator as listed under 'Referenced documents' in the 'Safety instructions and measures' Chapter).

➔ Install the regulator and control thermostat free of stress and with the least amount of vibrations as possible. Read information under “Mounting position”, “Temperature sensor (adsorption principle) for Type 2430”, “Temperature sensor (vapor pressure principle) for Type 2430-3” and “Installation with thermowell”.

➔ Install the regulator allowing sufficient space to remove the control thermostat and valve or to perform service work on them.



Mounting position
For gases and liquids **above 80 °C/175 °F** and steam

Mounting position
for gases and liquids for a medium temperature up to 80 °C/175 °F.

Fig. 5-1: *Mounting position*

Mounting position

To ensure that the control thermostat and regulator function properly, proceed as follows:

i *Note*

As of 1 March 2025, the sensor of the control thermostat can only be used with a thermowell for DHW applications.

➔ The control thermostat can be mounted in any position on the valve when the medium temperature is up to 80 °C/175 °F.

➔ At medium temperatures above 80 °C/175 °F and with steam, install the valve with the control thermostat suspended downward in horizontal pipelines (see Fig. 5-1).

➔ Contact SAMSON if the mounting position is not as specified above.

Temperature sensor (adsorption principle) for Type 2430

➔ See Fig. 5-2 and Table 5-1

NOTICE

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

On installing the sensor or thermowell, only combine the same kind of materials (e.g. stainless steel with stainless steel or copper together with other copper materials).

The temperature sensor (19), even together with a thermowell (20), can be installed in any position as required. 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.

Note

If the sensor is to be used with a thermowell, only use original SAMSON thermowells.

Weld a welding socket with G ½ or G ¾ female thread (to match the screw gland) at the place of installation.

➔ Seal the screw gland of the sensor.

Temperature sensor (vapor pressure principle) for Type 2430-3

– See Fig. 5-3 and Table 5-1

WARNING

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

The mounting position of the temperature sensor (19) depends on the installation situation. The sensor must be immersed in the process medium up to the marking on it. It must be installed in a location where overheating or considerable idling times cannot occur. Additionally, observe the mounting position of the sensor (see Fig. 5-3).
Weld a welding socket with G ½ or G ¾ female thread (to match the screw gland) at the place of installation or screw in a sensor pocket (when installed in a heat exchanger).

➔ Seal the screw gland of the sensor.

Installation with thermowell

When a thermowell is used, a welding socket with G 1 female thread must be used.

1. Seal the thermowell into the welding socket.
2. Insert the sensor and tighten it with the clamping screw.

i *Note*

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

Dynamic behavior of Type 2430 and Type 2430-3 Control Thermostats

The dynamics of the regulator are mainly determined by the response of the sensor with its characteristic time constant. Table 5-1 shows the dynamic behavior of the Type 2430 and Type 2430-3 Control Thermostats measured in water.

Capillary tube

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

i *Note*

Do not damage or shorten the capillary tube. Roll up any capillary tube that is not used. The smallest permissible bending radius is 50 mm.

Support and suspension

i *Note*

The plant engineering company is responsible for selecting and implementing a suitable support or suspension of the installed regulator with control thermostat and the pipeline.

Depending on the regulator version and mounting position, the regulator and pipeline must be supported or suspended.

! *NOTICE*

Do not attach supports directly to the regulator or control thermostat.

5.2 Preparation for installation

Before installation, make sure that the following conditions are met:

- The control thermostat is clean.
- The control thermostat is not damaged.
- The data of the control thermostat on the inscription (type designation and temperature range) match the plant conditions (medium temperature etc.). See the 'Markings on the device' chapter for inscription details.
- The requested or required additional fittings have been installed or prepared as necessary before installing the valve and control thermostat (see the 'Design and principle of operation' chapter).

Proceed as follows:

➔ Lay out the necessary material and tools to have them ready during installation work.

➔ Flush the pipeline **before** installing the regulator.
The plant operator is responsible for cleaning the pipelines in the plant.

➔ Check any mounted thermometers to make sure they function properly.

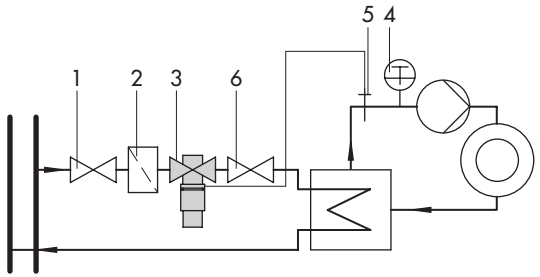
i *Note*

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

Table 5-1: *Dynamic behavior and mounting position of Type 2430 and Type 2430-3 Control Thermostats*

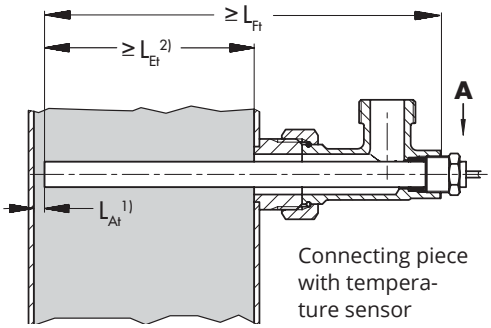
Type	Principle of operation	Sensor mounting position	Sensor Ø	Time constant [s]	
				Without thermowell	With thermowell
2430	Adsorption principle	**Any mounting position possible**	9.5 mm/0.37 in	15	40
			16 mm	30	80
			Air sensor	8	– [1]
2430-3	Vapor pressure principle	– **Horizontal mounting position** – **Vertical mounting position** with: Sensor tip pointing upwards or Sensor tip pointing downwards	10 mm/0.39 in	3	
			12 mm/0.47 in		

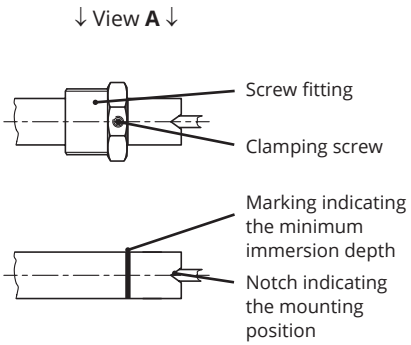
[1] Thermowell not possible

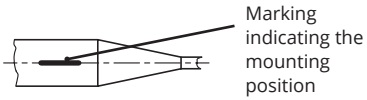


1 Shut-off valve
2 Strainers
3 Valve with control thermostat
4 Thermometer
5 Temperature sensor
6 Shut-off valve

Fig. 5-2: *Installation example: Type 2430 Control Thermostat with Type 2436 Valve (Type 43-6 Regulator) in a cooler*







Installation dimensions of the sensor pocket with heat exchanger		
Length	L_{Ft}	≥140 mm
	L_{Et}	≥125 mm 2)
	L_{At}	5 mm 1)

1) Plate heat exchanger <130 mm
2) Plate heat exchanger >130 mm

Fig. 5-3: *Installing the Type 2430-3 Control Thermostat (vapor pressure principle)*

5.3 Installation

The control thermostat is delivered as single component. The activities listed below are necessary for installation and before start-up of the regulator with control thermostat.

Note

As of 1 March 2025, the sensor of the control thermostat can only be used with a thermowell for DHW applications.

NOTICE

Risk of damage to the control thermostat due to over- or under-torquing.

Observe the specified torques when tightening control thermostat components. Excessive tightening torques lead to parts wearing out more quickly.

➔ *Observe the specified tightening torques (see the 'Tightening torques' chapter).*

NOTICE

Risk of control thermostat damage due to the use of unsuitable tools.

➔ *Only use tools approved by SAMSON (see the 'Tools' chapter).*

Installing the control thermostat

1. Close the shut-off valves upstream and downstream of the point where the sensor is installed while the control thermostat is being installed. Drain the process medium from this pipe section, if necessary.
2. Fasten the sensor with packing flange or thermowell in the pipeline. When installed in a heat exchanger, use a sensor pocket to fasten the sensor with packing flange.
3. Make sure that the correct gaskets are used.
4. Slowly open the shut-off valves in the pipeline after the control thermostat has been installed.

5.4 Testing the control thermostat

⚠ DANGER

Risk of personal injury due to process medium escaping.

➔ *Do not start up the regulator and control thermostat until all parts have been mounted.*

⚠ DANGER

Risk of bursting due to incorrect opening of pressurized equipment or components.

Regulators and pipelines are pressure equipment that may burst when handled incorrectly. Flying projectile fragments or the release of process medium under pressure can cause serious injury or even death.

Before working on the regulator:

➔ *Depressurize all plant sections concerned and the regulator.*

➔ *Drain the process medium from the plant sections affected as well as from the valve.*

⚠ WARNING

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

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

➔ *Wear protective clothing and safety gloves.*

SAMSON control thermostats are delivered ready for use. To test the functioning of the regulator and control thermostat before start-up or putting back the regulator and control thermostat into operation, perform the following tests:

5.4.1 Leak test

The plant operator is responsible for performing the leak test and selecting the test method. The leak test must comply with the requirements of the national and international standards that apply at the site of installation.

Tip

SAMSON's After-sales Service can support you to plan and perform a leak test for your plant.

1. Slowly open the shut-off valve installed upstream of the sensor.
2. Apply the required test pressure.
3. Check the screw gland of the sensor or thermowell for leakage.
4. Depressurize the pipeline section where the sensor is installed.
5. Rework any parts that leak and repeat the leak test.

5.4.2 Pressure test

Note

The plant operator is responsible for performing the pressure test. SAMSON's After-sales Service can support you to plan and perform a pressure test for your plant.

During the pressure test, make sure the following conditions are met:

➔ Do not allow the pressure to exceed 1.5 times the pressure rating of the sensor or thermowell.

5.5 Insulation

To insulate cold systems, SAMSON recommends first filling the plant and carefully rinsing it. The regulator must not yet be insulated at this stage.

NOTICE

Risk of regulator damage due to incorrect insulation.

➔ *Only insulate the regulator up to the control thermostat for medium temperatures below 0 °C/32 °F or above 80 °C/175 °F.*

1. Start up the plant and adjust the set point (see the 'Start-up' chapter).
2. Shut down the plant again and let it heat up until the condensation water has dried off.
3. Insulate the regulator and pipes conveying the process medium using insulation material with a water vapor barrier. If an external control line is to be routed through the insulation, special care must be taken with the sealing since slight changes in shape may occur. The insulation thickness depends on the medium temperature and the ambient conditions. 50 mm is a typical thickness.

6 Start-up

The work described in this chapter is to be performed only by personnel appropriately qualified to carry out such tasks.

⚠ DANGER

Risk of personal injury due to process medium escaping.

➔ *Do not start up the regulator and control thermostat until all parts have been mounted.*

⚠ WARNING

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

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

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

➔ *Wear protective clothing and safety gloves.*

NOTICE

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

– *Do not include the control thermostat in the insulation of the pipeline.*

Before start-up or putting the device back into service, make sure the following conditions are met:

– The regulator and control thermostat are properly installed in the pipeline (see the 'Installation' chapter).

– The leak and function tests have been completed successfully (see the 'Testing the control thermostat' chapter).

– The prevailing conditions in the plant section concerned meet the sizing requirements of the control thermostat (see section 'Intended use' in the 'Safety instructions and measures' chapter).

6.1 Start-up and putting the device back into operation

1. Depending on the field of application, allow the regulator and control thermostat to cool down or warm up to reach ambient temperature before start up.
2. Check the control thermostat to ensure it functions properly.

6.1.1 Starting up the plant when gases and liquids are controlled

1. Open the shut-off valves slowly preferably starting from the upstream pressure side of the regulator and control thermostat. Afterwards, open all the valves on the consumer side (downstream of the regulator).
2. Fill the plant **slowly** with the process medium. Avoid pressure surges.
3. Make sure that the pressure rises simultaneously upstream and downstream of the regulator and control thermostat.
4. To start up the regulator and control thermostat, open shut-off valves **slowly**.
5. Check the adjusted temperature set point at the thermometer installed near the temperature sensor.

6.1.2 Starting up the plant when vapors are controlled

1. Completely drain and dry steam lines to prevent water hammering.
2. Slowly allow the steam to enter the plant to ensure that the pipes and valves warm up evenly and to avoid excessive flow velocities.
3. Before the full capacity is reached, drain off the start-up condensate.
4. Make sure that the air contained in the plant escapes as quickly as possible.
5. Open the shut-off valves slowly preferably starting from the upstream pressure side of the regulator.
6. Avoid pressure surges.
7. Check the adjusted temperature set point at the thermometer installed near the temperature sensor.

7 Operation

Immediately after completing start-up or placing the regulator and control thermostat back into service (see the 'Start-up' chapter), the regulator is ready for use.

⚠ WARNING

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

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

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

➔ *Wear protective clothing and safety gloves.*

7.1 Adjusting the temperature set point

Adjust the required set point by turning the set point adjuster (43) by hand. The adjustment diagrams (see Fig. 7-4) can be used as a guide to find the first approximate value.

Set point adjuster

➔ Turn the set point adjuster clockwise (↻) to reduce the temperature set point.

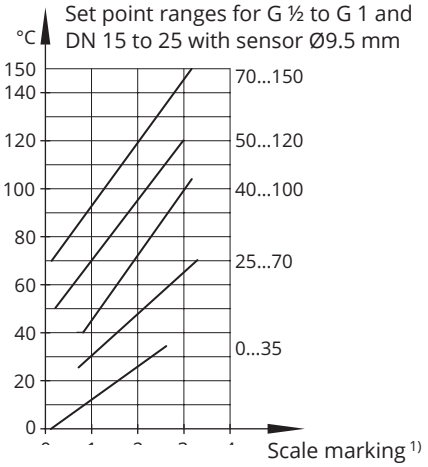
➔ Turn the set point adjuster counterclockwise (↺) to increase the temperature set point.

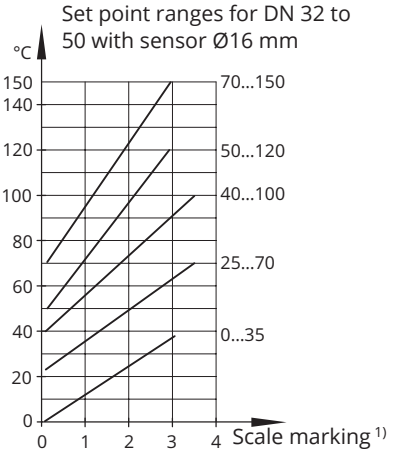
The thermometer (4) installed on the downstream side on site allows the adjusted set point to be monitored.

i *Note*

Control thermostats (adsorption principle): higher set point temperatures can be adjusted in increments as required. However, to lower the set point temperature, proceed in steps of 10 to 20 °C/50 to 68 °F. When doing so, wait for the process medium to cool down before continuing. Watch the thermometer.

Type 2430 (adsorption principle, DIN) in combination with closing valves





Type 2430 (adsorption principle, ANSI)

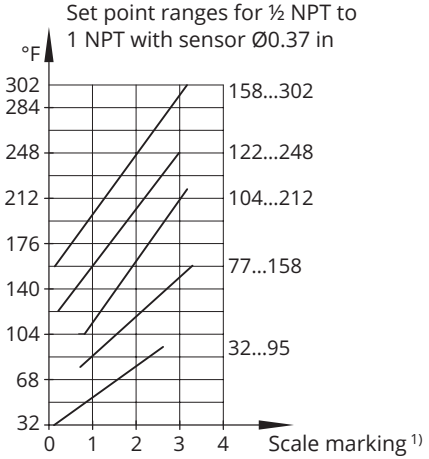


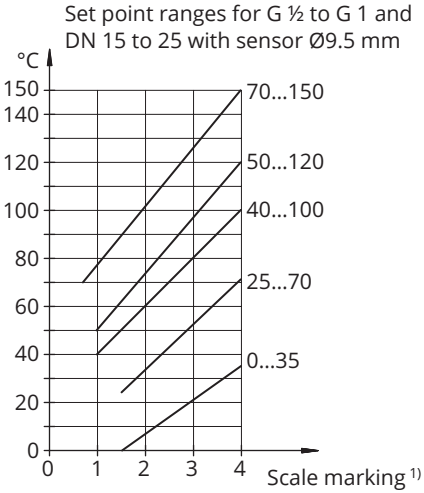
Table 7-2: *Set point ranges for Type 2430 Control Thermostat (adsorption principle)*

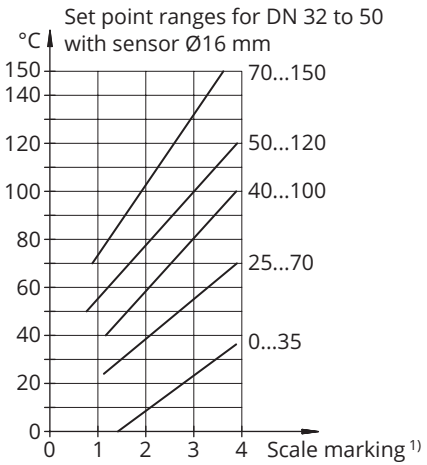
Set point range	Set point change per turn	Sensor Ø
0 to 35 °C 32 to 95 °F	2.5 °C/4.5 °F	9.5 mm/0.37 in
	2 °C	16 mm
25 to 70 °C 77 to 158 °F	3 °C/5.4 °F	9.5 mm/0.37 in
	2 °C	16 mm
40 to 100 °C 104 to 212 °F	4 °C/7.2 °F	9.5 mm/0.37 in
	3 °C	16 mm
50 to 120 °C 122 to 248 °F	4 °C/7.2 °F	9.5 mm/0.37 in
	4.5 °C	16 mm
70 to 150 °C 158 to 302 °F	4.5 °C/8.1 °F	9.5 mm/0.37 in
	5 °C	16 mm

Fig. 7-4: *Adjustment diagrams for Type 2430 Control Thermostat (adsorption principle) in combination with Type 2431/2432/2433/2435/2437 Valve*

1) On the thermostat head

Type 2430 (adsorption principle, DIN) in combination with opening valves





Type 2430 (adsorption principle, ANSI)

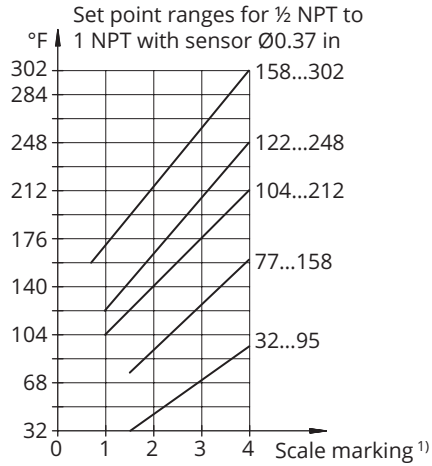


Table 7-3: *Set point ranges for Type 2430 Control Thermostat (adsorption principle)*

Set point range	Set point change per turn	Sensor Ø
0 to 35 °C 32 to 95 °F	2.5 °C/4.5 °F	9.5 mm/0.37 in
	2 °C	16 mm
25 to 70 °C 77 to 158 °F	3 °C/5.4 °F	9.5 mm/0.37 in
	2 °C	16 mm
40 to 100 °C 104 to 212 °F	4 °C/7.2 °F	9.5 mm/0.37 in
	3 °C	16 mm
50 to 120 °C 122 to 248 °F	4 °C/7.2 °F	9.5 mm/0.37 in
	4.5 °C	16 mm
70 to 150 °C 158 to 302 °F	4.5 °C/8.1 °F	9.5 mm/0.37 in
	5 °C	16 mm

Fig. 7-5: *Adjustment diagrams for Type 2430 Control Thermostat (adsorption principle) in combination with Type 2436 Valve*

[1] On the thermostat head

Type 2430 (vapor pressure, DIN)

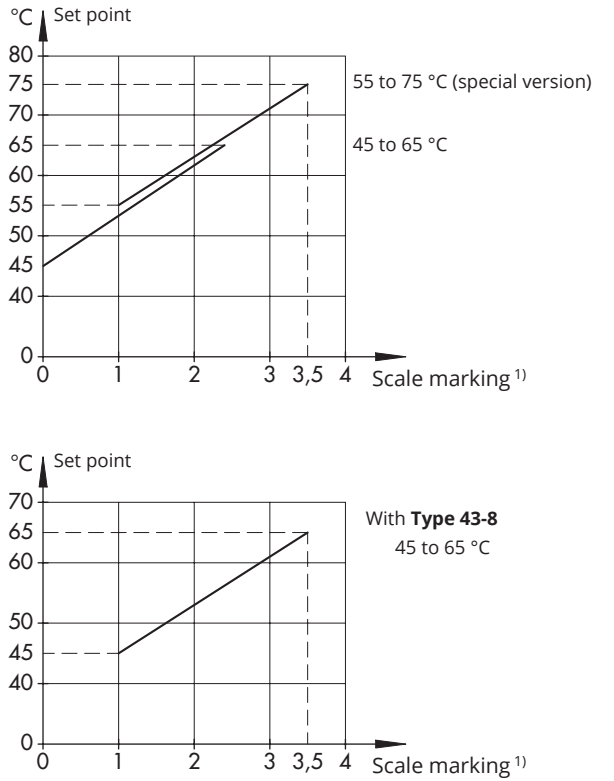


Fig. 7-6: *Adjustment diagrams for Type 2430 Control Thermostat (vapor pressure principle)*

1) On the thermostat head

8 Malfunctions

8.1 Troubleshooting

To identify the exact cause for the malfunction and to rectify it, the associated valve must also be taken into account. Full troubleshooting is described in the corresponding mounting and operating instructions of the regulator (see section 'Referenced documents' in the 'Safety instructions and measures' chapter).

Malfunction	Possible reasons	Recommended action
Temperature at the sensor exceeds or falls below the set point.	Sensor installed in the wrong location.	➔ Change the mounting position.
	Sensor installed incorrectly.	➔ Immerse the temperature sensor with its entire immersion depth in the process medium. ➔ Avoid an installation site where idle times or heat buildup can occur.
	Control thermostat defective	➔ Replace the control thermostat.
Temperature at the sensor fluctuates.	Sensor installed in the wrong location.	➔ Change the mounting position.
	Sensor installed incorrectly.	➔ Immerse the temperature sensor with its entire immersion depth in the process medium. ➔ Avoid an installation site where idle times or heat buildup can occur.
Slow control response	Time constant is too large for the control loop.	➔ Fill the thermowell with thermal paste or remove the thermowell. ➔ Use a sensor with smaller time constant (e.g. vapor pressure thermostat).
	Sensor installed incorrectly.	➔ Immerse the temperature sensor with its entire immersion depth in the process medium. ➔ Avoid an installation site where idle times or heat buildup can occur.
Leak between control thermostat and valve	Valve seal defective	➔ Contact SAMSON's After-sales Service.

i *Note*

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

The malfunctions listed in Chapter 8.1 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 to rectify the fault.

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.

Tip

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

8.2 Emergency action

Plant operators are responsible for emergency action to be taken in the plant.

SAMSON recommends removing the regulator and control thermostat from the pipeline before repairing them.

In the event of a regulator or control thermostat malfunction:

1. Close the shut-off valves upstream and downstream of the regulator and control thermostat to stop the process medium from flowing through the regulator.
2. Perform troubleshooting (see Chapter 8.1).
3. Rectify those malfunctions that can be remedied based on the instructions provided here and in the documents listed under 'Referenced documents' in the 'Safety instructions and measures' chapter. Contact SAMSON's After-sales Service in all other cases.

Putting the device back into operation after a malfunction

See the 'Start-up' chapter.

9 Servicing

The control thermostat does not require any maintenance. Nevertheless, it is subject to natural wear. Depending on the operating conditions, check the control thermostat at regular intervals to avoid possible malfunctions. Plant operators are responsible for drawing up an inspection and test plan. Details on faults and how to remedy them can be found in the 'Malfunctions' chapter.

The work described in this chapter is to be performed only by personnel appropriately qualified to carry out such tasks.

We recommend removing the regulator and control thermostat from the pipeline before performing any maintenance or service work.

⚠ WARNING

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

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

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

➔ *Wear protective clothing and safety gloves.*

! *NOTICE*

Risk of damage to the control thermostat due to over- or under-torquing.

Observe the specified torques when tightening control thermostat components. Excessive tightening torques lead to parts wearing out more quickly. Parts that are too loose may cause leakage.

➔ *Observe the specified tightening torques (see the 'Tightening torques' chapter).*

! *NOTICE*

Risk of control thermostat damage due to the use of unsuitable tools.

➔ *Only use tools approved by SAMSON (see the 'Tools' chapter).*

i *Note*

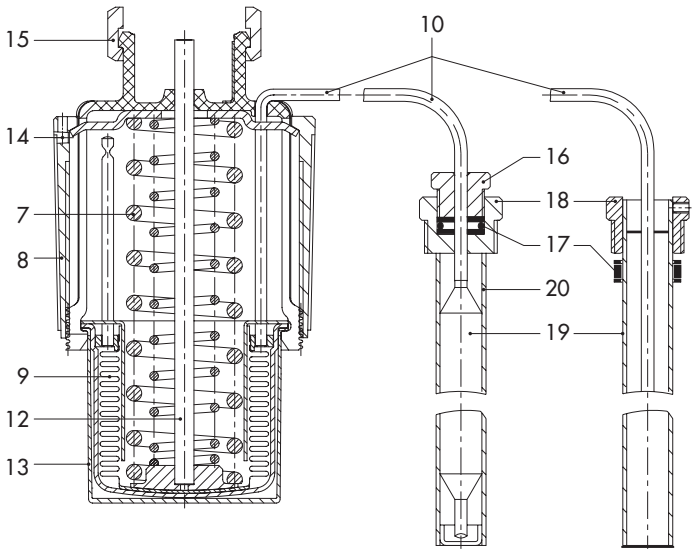
The control thermostat was checked by SAMSON before it left the factory.

– *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.*

Tip

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



Type 2430 Control Thermostat | Sensor (adsorption principle) (standard) | Sensor (vapor pressure principle)

7	Set point spring	12	Pin of operating element	16	Screw
8	Set point adjuster	13	Operating element	17	Seal with clamping rings
9	Operating bellows	14	Lead-seal hole	18	Packing
10	Capillary tube	15	Coupling nut	19	Temperature sensor
				20	Thermowell (optional)

Fig. 9-1: *Functional diagram of Type 2430 Control Thermostat*

9.1 Service work preparations

1. Lay out the necessary material and tools to have them ready for the service work.
2. Put the control thermostat out of operation (see the 'Decommissioning' chapter).

Tip

We recommend removing the regulator and control thermostat from the pipeline before performing any service work (see the 'Removing the control thermostat from the pipeline' chapter).

The following service work can be performed after preparation is completed:

– Replacing the control thermostat (see Chapter 9.4)

9.2 Installing the control thermostat after service work

➔ Put the control thermostat back into operation (see the 'Start-up' chapter). Make sure the requirements and conditions for start-up or putting the device back into operation are met.

9.3 Service work

➔ Before performing any service work, preparations must be made to the regulator and control thermostat (see Chapter 9.1).

➔ After all service work is completed, check the regulator and control thermostat before putting it back into operation (see the 'Testing the control thermostat' chapter).

9.4 Replacing the control thermostat

NOTICE

Risk of damage to the control thermostat due to over- or under-torquing.
Observe the specified torques when tightening control thermostat components. Excessive tightening torques lead to parts wearing out more quickly.

➔ *Observe the specified tightening torques (see the 'Tightening torques' chapter).*

NOTICE

Risk of control thermostat damage due to the use of unsuitable tools.

Only use tools approved by SAMSON (see the 'Tools' chapter).

➔ See Fig. 9-1.

Removing the control thermostat

1. Unscrew the coupling nut (15) from the valve and remove the control thermostat.
2. Pull the sensor out of the thermowell. In cases where a thermowell is not used or a sensor pocket is used, unscrew the screw gland and pull out the sensor.

Mounting the control thermostat

1. Insert the sensor into the thermowell. In cases where a thermowell is not used or a sensor pocket is used, insert the sensor and tighten the screw gland.
2. Fasten the control thermostat on the valve using the coupling nut (15). Observe the specified tightening torques (see the 'Tightening torques' chapter).

9.5 Ordering spare parts and operating supplies

Contact your nearest SAMSON subsidiary or SAMSON's After-sales Service for information on spare parts, lubricants and tools.

Spare parts

There are no spare parts available for the control thermostats.

Lubricants

Contact SAMSON's After-sales Service for more information on lubricants.

Tools

Contact SAMSON's After-sales Service for more information on tools.

10 Decommissioning

The work described in this chapter is to be performed only by personnel appropriately qualified to carry out such tasks.

⚠ DANGER

Risk of bursting due to incorrect opening of pressurized equipment or components.

Regulators and pipelines are pressure equipment that may burst when handled incorrectly. Flying projectile fragments or the release of process medium under pressure can cause serious injury or even death.

Before starting any work on the regulator and control thermostat:

➔ *Depressurize all plant sections concerned and the regulator.*

➔ *Drain the process medium from the plant sections affected as well as from the regulator.*

⚠ WARNING

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

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

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

➔ *Wear protective clothing and safety gloves.*

To put the control thermostat out of operation for service work or before removing it from the valve, proceed as follows:

1. Close the shut-off valve (1) installed on the downstream and upstream side of the sensor if a thermowell is not used.
2. Completely drain the pipelines and regulator.
3. Depressurize the plant.
4. If necessary, allow the pipeline and control thermostat components to cool down or warm up to the ambient temperature.

11 Removal

The work described in this chapter is to be performed only by personnel appropriately qualified to carry out such tasks.

⚠ WARNING

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

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

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

➔ *Wear protective clothing and safety gloves.*

Before removing, make sure that the following conditions are met:

– The control thermostat is put out of operation (see the 'Decommissioning' chapter).

11.1 Removing the control thermostat

1. Pull the sensor out of the thermowell. In cases where a thermowell is not used or a sensor pocket is used, unscrew the screw gland and pull out the sensor.
2. Unscrew the coupling nut (15) from the valve and remove the control thermostat.

12 Repairs

If the control thermostat does not function properly according to how it was originally configured or does not function at all, it is defective and must be exchanged.

12.1 Returning devices to SAMSON

Defective devices can be returned to SAMSON for repair.

Proceed as follows to return devices:

1. Exceptions apply concerning some special device models ▶ www.samsongroup.com > Service & Support > After-sales Service.
2. Send an e-mail ▶ retouren@samsongroup.com to register the return shipment including the following information:
   - Type
   - Article no.
   - Configuration ID
   - Original order
   - Completed Declaration on Contamination, which can be downloaded from our website at ▶ www.samsongroup.com > Service > After-sales Service.

   After checking your registration, we will send you a return merchandise authorization (RMA).
3. Attach the RMA (together with the Declaration on Decontamination) to the outside of your shipment so that the documents are clearly visible.
4. Send the shipment to the address given on the RMA.

i ***Note***

Further information on returned devices and how they are handled can be found at ▶ www.samsongroup.com > Service > After-sales Service.

13 Disposal

SAMSON is 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.

Note

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

Tip

On request, SAMSON can appoint a service provider to dismantle and recycle the product.

14 Certificates

The EU declarations of conformity are listed in the corresponding mounting and operating instructions (see section 'Referenced documents' in the 'Safety instructions and measures' chapter).

15 Appendix

15.1 Tightening torques

Table 15-1: *Tightening torque*

Part	Width across flats	Nominal size	Tightening torque in Nm
Coupling nut (15)	A/F 36	All	20

15.2 Tools

SAMSON's After-sales Service can support you concerning tools approved by SAMSON.

15.3 Lubricants

SAMSON's After-sales Service can support you concerning lubricants and sealants approved by SAMSON.

15.4 Spare parts

There are no spare parts available for the control thermostats.

15.5 After-sales service

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

E-mail

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

Addresses of SAMSON AG and its subsidiaries

The addresses of SAMSON AG, 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:

- Valve type and nominal size
- Type … Control Thermostat
- Model number or material number
- Temperature and process medium
- Installation drawing showing the exact location of the regulator, sensor of the control thermostat and all the additionally installed components (shut-off valves, pressure gauge etc.)

EB 2430 EN

SAMSON AKTIENGESELLSCHAFT
Weismüllerstraße 3 · 60314 Frankfurt am Main, Germany
Phone: +49 69 4009-0 · Fax: +49 69 4009-1507
samson@samsongroup.com · www.samsongroup.com

2026-08-18 · English