

# MOUNTING AND OPERATING INSTRUCTIONS



## EB 2546-2 EN

Translation of original instructions



## Type 36-8 Safety Excess Pressure Valve (SEV) Self-operated Pressure Regulators

Edition February 2025



## Note on these mounting and operating instructions

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

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



Documents relating to the device, such as the mounting and operating instructions, are available on our website at [www.samsongroup.com](http://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 36-8 Regulator is a pressure regulator.

The self-operated regulator is used to control the upstream pressure  $p_1$  in the pipeline to the adjusted set point. It controls liquids in process plants and district heating applications.

The regulators are designed to operate under exactly defined conditions (e.g. operating pressure, process medium, temperature). Therefore, operators must ensure that the regulators 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 regulators in applications or conditions other than those specified, contact SAMSON.

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

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

## Reasonably foreseeable misuse

The regulators are 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 accessories mounted on the regulator

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

- Use of non-original spare parts
- Performing service and repair work not described
- Modification of parts as well as service or repair work on the TÜV-tested Type 36-8

## Qualifications of operating personnel

The regulator must be mounted, started up, serviced and repaired 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.

## Safety instructions and measures

### Personal protective equipment

SAMSON recommends checking the hazards posed by the process medium being used (e.g. ► GESTIS (CLP) hazardous substances database).

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

### Revisions and other modifications

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

### Warning against residual hazards

To avoid personal injury or property damage, plant operators and operating personnel must prevent hazards that could be caused in the regulator 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 regulator 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 deal with the standard version of the device. Components of the device that differ to those used for the standard version described in this document can be exchanged with other certain SAMSON components. The residual hazards of these components are described in the associated mounting and operating instructions (see 'Referenced documents' chapter).

### Safety features

The Type 36-8 Regulator is type-tested by TÜV for water as a safety excess pressure valve (SEV). When relieved of pressure, the regulator is opened by the force of the set point springs.

### 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 regulators comply with the requirements of the European Pressure Equipment Directive 2014/68/EU. Regulators 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 Appendix of these instructions (see Chapter 11).

According to the ignition hazard assessment performed in accordance with Clause 5.2 of ISO 80079-36, the non-electrical regulators 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 as well as data sheets for additional components (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 or improper opening can lead to regulator components bursting.

- Observe the maximum permissible pressure for regulator and plant.
- If necessary, a suitable overpressure protection must be installed on site in the plant section.
- Before starting any work on the regulator, depressurize all plant sections affected as well as the regulator.
- Drain the process medium from the plant sections affected as well as from the regulator.
- Wear personal protective equipment.

## 1.2 Notes on possible personal injury

### WARNING

#### **Risk of personal injury due to preloaded springs.**

Regulators in combination with preloaded set point springs are under tension. These regulators can be identified by the red warning label on the actuator's set point springs.

- Before starting any work on the springs, relieve the compression from the preloaded springs.
- Only use the SAMSON disassembly tool (1280-4052).

#### **Crush hazard arising from moving parts.**

The regulator contains moving parts (actuator and plug stem as well as set point spring), which can injure hands or fingers if inserted into the valve.

- Do not insert hands or fingers between the set point springs while the regulator is in operation.
- Before performing any work on the regulator, depressurize the plant. Disconnect or shut off the external control line.

**⚠ 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. ► [www.samsongroup.com/en/about-samson/material-compliance/reach-regulation/](http://www.samsongroup.com/en/about-samson/material-compliance/reach-regulation/)

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

While working on the regulator, 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 the plant sections affected and from the regulator.
- Wear protective clothing, safety gloves and eye protection.

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

Depending on the process medium, regulator 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 personal injury due to loaded springs.**

The set point springs of regulators with adjusted set point are preloaded and are under tension.

- Before starting any work on the springs, relieve the compression from the preloaded springs.

## 1.3 Notes on possible property damage

### ! NOTICE

#### **Risk of regulator damage due to incorrectly attached slings.**

→ Do not attach load-bearing slings to the actuator housing.

#### **Risk of regulator damage due to unsuitable medium properties.**

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

→ Only use the process medium specified for sizing the equipment.

#### **Risk of regulator 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.

#### **Risk of regulator damage due to the use of unsuitable lubricants.**

The lubricants to be used depend on the regulator material. Unsuitable lubricants may corrode and damage surfaces.

→ Only use lubricants approved by SAMSON.  
When in doubt, consult SAMSON.

#### **Risk of leakage and regulator damage due to over- or under-torquing.**

Observe the specified torques when tightening regulator 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 Chapter 7.5).

#### **Risk of regulator damage due to the use of unsuitable tools.**

Certain tools are required to work on the regulator.

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

**!** NOTICE

**Incorrect control due to the formation of ice on the regulator.**

Medium temperatures below 0 °C may cause ice to form on the regulator, depending on the air humidity. This may affect, in particular, the functioning of the plug or diaphragm 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 Chapter 5.2.2).

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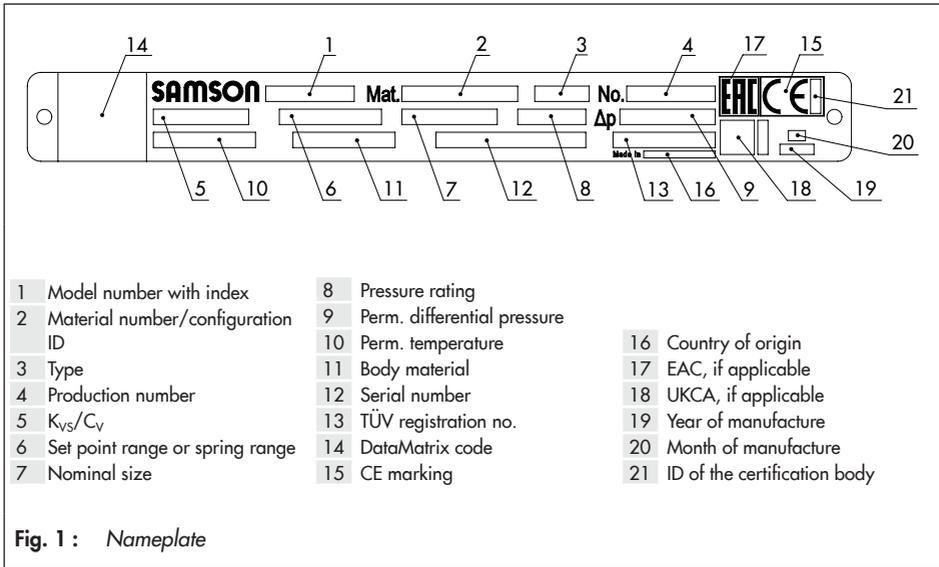
**i** Note

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

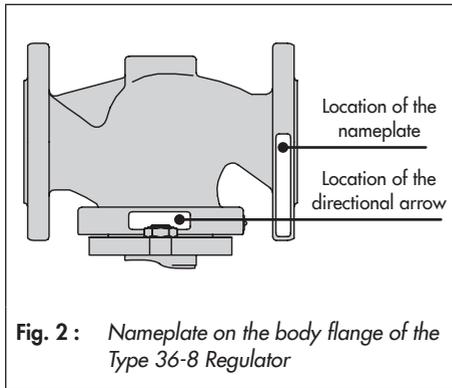
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## 2 Markings on the device

### 2.1 Regulator nameplate



## 2.2 Location of the nameplate



## 2.3 Warning

The red adhesive labels indicate hazards that may arise while working on the regulator. Risk of personal injury.

→ Observe the warnings.

## 2.4 Material identification number

The material designation can be found on the nameplate (12, body material) or you can contact us (the configuration ID specification is needed) to find out which material is used. The configuration ID is specified on the nameplate (3, configuration ID). For more details on the nameplate, see Chapter 2.1.

### 3 Design and principle of operation

→ See Fig. 3

The excess pressure valve mainly consists of the spring-loaded globe valve with balanced plug and the actuator with one operating diaphragm and one backup diaphragm.

The Type 36-8 Safety Excess Pressure Valve (SEV) is used to maintain the pressure upstream of the valve to an adjusted set point.

The process medium flows through the valve between seat (2) and plug (3) in the direction indicated by the arrow on the body. The position of the valve plug determines the flow rate and, as a result, the pressure ratio across the valve. The plug stem is sealed by a frictionless bellows (5.1). The upstream pressure  $p_1$  is transmitted over the control line (17) to the operating diaphragm (12) where it is converted into a positioning force. This force is used to move the valve plug depending on the force of the set point springs (7). The spring force is adjustable at the set point adjuster (6). The valves have a balancing bellows (5). The upstream pressure acts on the outside of the bellows and the downstream pressure on the inside of the bellows. As a result, the forces produced by the upstream and downstream pressures acting on the plug are balanced out.

The regulator is equipped with two independent operating diaphragms (12). As a result, the regulator can continue to function in the event that a diaphragm fails. To indicate the diaphragm failure, a diaphragm rupture in-

dicator (16) is installed in the intermediate piece (15).

The valve opens when the upstream pressure rises.

#### Legend for Fig. 3

1	Valve body
2	Seat
3	Plug
4	Plug stem
5	Balancing bellows
5.1	Bellows
6	Set point adjuster
7	Set point springs
7.1	Spring plate
8	Bracket
8.1	Stud bolt (view drawn turned by 90°)
8.2	Nuts for pillars
9	Fastening nuts
10	Actuator with two diaphragms
10.1	Nuts and bolts
11	Actuator stem
12	Operating diaphragm
13	Diaphragm plate
14	Diaphragm plate nut
15	Intermediate piece
16	Diaphragm rupture indicator
17	Control line (view drawn turned by 90°)



### 3.1 Technical data

The regulator's nameplates contain information on the regulator version (see Chapter 2.1).

#### Process medium and scope of application

The Type 36-8 Safety Excess Pressure Valve (SEV) is used to maintain the pressure upstream of the regulator to an adjusted set point.

- Suitable for **liquids**
- Max. temperature **150 °C**
- Set points from **2 to 11 bar**
- Nominal size **DN 15 to 100**
- Pressure ratings from **PN 16 to 40**

The regulator is closed when relieved of pressure. The valve **opens** when the **upstream** pressure rises.

#### Type test:

The device has been type tested as a safety excess pressure valve (SEV) by the German technical surveillance association TÜV according to the corresponding specification issued by AGFW (German District Heating Association).

The test mark is available on request.

#### Temperature range

Depending on how the regulator is configured, it can be used up to temperatures of 150 °C (see Table 1). The minimum temperature is limited by the accessories used and the actuator's diaphragm material.

#### Noise emissions

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

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#### WARNING

***Risk of hearing loss or deafness due to loud noise.***

*Wear hearing protection when working near the regulator.*

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#### Dimensions and weights

Table 4 provides a summary of the dimensions and weights. The lengths and heights in the dimensional drawings are shown on page 18.

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

Nominal size	DN 15 to 50	DN 65 to 80	DN 100
Pressure rating	PN 16, 25 or 40		
Max. perm. differential pressure $\Delta p$	25 bar	20 bar	16 bar
Overloading	12 bar (on one side)		
Max. permissible temperature	EPDM soft seal: <b>150 °C</b>		
Leakage class acc. to IEC 60534-4	$\leq 0.05$ % of $K_{VS}$ coefficient		
Actuator area	80 cm <sup>2</sup>		
Set point ranges	2 to 4.4 bar · 2.4 to 6.6 bar · 6.0 to 11.0 bar		
Conformity	<b>CE EAC</b>		

**Table 2:**  *$K_{VS}$  coefficients and  $x_{FZ}$  values · Terms for noise level calculation according to VDMA 24422 (edition 1.89)*

Nominal size	DN	15	20	25	32	40	50	65	80	100
$K_{VS}$		4.0	6.3	8.0	16	20	32	50	80	125
$x_{FZ}$		0.6		0.55		0.5	0.45	0.4	0.35	

**Table 3:** *Materials · Material numbers according to DIN EN*

Valve			
Pressure rating	PN 16	PN 25	PN 40
Body	Cast iron EN-GJL-250	Spheroidal graphite iron EN-GJS-400-18-LT	Cast steel 1.0619
Seat	Stainless steel		
Plug with PTFE soft seal	Stainless steel		
Balancing bellows and bellows seal	Stainless steel		
Actuator			
Diaphragm cases	Sheet steel S235JR (St 37-2)		
Diaphragm	EPDM with fabric reinforcement		

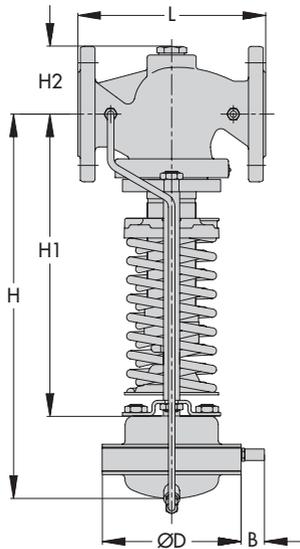
## Design and principle of operation

**Table 4:** Dimensions in mm and weights in kg

Nominal size	DN	15	20	25	32	40	50	65	80	100
Length L		130	150	160	180	200	230	290	310	350
Height H		415			470			600	615	
Height H1		335			390			510	525	
Height H2		44			72			98	118	
Height B		30 mm								
Diaphragm housing ØD		170 mm, A = 80 cm <sup>2</sup>								
Weight										
Weight, based on cast iron <sup>1)</sup> , approx. kg		13.0	14.0	14.5	20.0	22.0	25.5	41.5	48.5	57.5

<sup>1)</sup> +10 % for spheroidal graphite iron EN-GJS-400-18-LT (PN 25) and cast steel 1.0619 (PN 40)

## Dimensional drawings



**Fig. 4:** Dimensions

## 4 Measures for preparation before installation

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

#### **NOTICE**

**Risk of regulator damage due to foreign particles entering the valve.**

*The protective caps fitted on the valve's inlet and outlet prevent foreign particles from entering the valve and damaging it.*

*Do not remove the protective caps until immediately before installing the valve into the pipeline.*

#### **Note**

*Do not remove the packaging until immediately before installing the valve into the pipeline.*

Proceed as follows to lift and install the valve:

1. Remove the packaging from the regulator components.

2. Dispose of the packaging in accordance with the valid regulations.

### 4.2 Transport, lifting and storage

#### **! DANGER**

*Danger due to suspended loads falling.  
Stay clear of suspended or moving loads.*

#### **! WARNING**

**Risk of lifting equipment tipping over and risk of damage to lifting accessories due to exceeding the rated lifting capacity.**

- Only use approved lifting equipment and accessories whose minimum lifting capacity is higher than the weight of the regulator.
- Refer to Table 4 for weights.

#### **! WARNING**

**Risk of personal injury due to the regulator tipping.**

- Observe the regulator's center of gravity.
- Secure the regulator against tipping over or turning.

#### **i Note**

*Personnel must be trained to secure, transport and lift the regulator properly.*

## Measures for preparation before installation

### 4.2.1 Transport

The regulator can be transported using lifting equipment (e.g. crane or forklift).

- Leave the regulator in its transport container or on the pallet to transport it.
- Observe the transport instructions.

#### Transport instructions

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

### 4.2.2 Lifting

To install a large regulator into the pipeline, use lifting equipment (e.g. crane or forklift) to lift it.

#### Lifting instructions

- Secure slings against slipping.
- Make sure the slings can be removed from the device once it has been installed into the pipeline.
- Prevent the regulator from tilting or tipping.
- Do not leave loads suspended when interrupting work for longer periods of time.

- Make sure that the axis of the pipeline is always horizontal during lifting and the axis of the plug stem is always vertical.

#### Lifting

1. Attach one sling to the body flange and one sling to the rigging equipment (e.g. hook) of the crane or forklift (see Fig. 5).
2. Carefully lift the regulator. Check whether the lifting equipment and accessories can bear the weight.
3. Move the regulator at an even pace to the site of installation.
4. Install the regulator into the pipeline (see Chapter 6.1.1).
5. After installation in the pipeline, check whether the regulator flanges are bolted tight.
6. Remove slings.



#### Tip

*We recommend using a hook with safety latch (see Fig. 5). The safety latch prevents the slings from slipping during lifting and transporting.*

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### 4.2.3 Storage

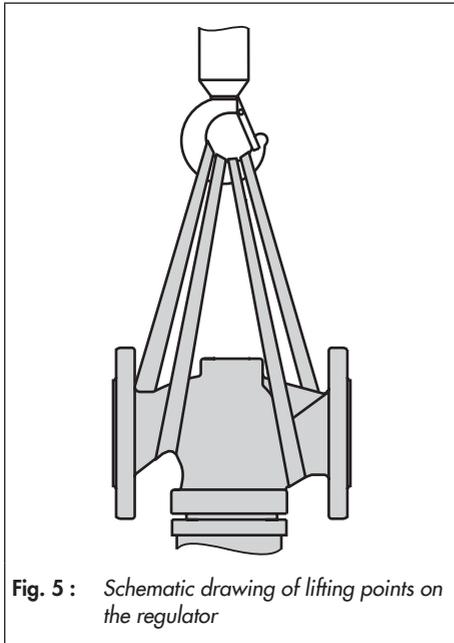
**NOTICE**

**Risk of regulator damage due to improper storage.**

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

**Note**

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



**Fig. 5 :** Schematic drawing of lifting points on the regulator

#### Storage instructions

- Protect the regulator against external influences (e.g. impact).
- Do not damage the corrosion protection (paint, surface coatings). Repair any damage immediately.
- Protect the regulator 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 standard regulators is  $-20$  to  $+65$  °C.
- Do not place any objects on the regulator.

#### Special storage instructions for elastomers

Elastomer, e.g. operating diaphragm

- To keep elastomers in shape and to prevent cracking, do not bend them or hang them up.
- SAMSON recommends a storage temperature of  $15$  °C for elastomers.
- Store elastomers away from lubricants, chemicals, solutions and fuels.

**Tip**

Our after-sales service can provide more detailed storage instructions on request.

# 5 Installation

Proceed as follows:

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### **i** Note

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

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- Check the valve to make sure that it is clean and not damaged.
- Flush and clean the pipeline thoroughly **before** installing the regulator.
- Check to make sure that the type designation, nominal size, material, pressure rating and temperature range of the regulator match the plant conditions (nominal size and pressure rating of the pipeline, medium temperature etc.).
- Check any mounted pressure gauges to make sure they function.

## 5.1 Checking the installation conditions

### 5.1.1 Mounting orientation

- Install the actuator housing with the set point springs suspended downward in horizontal pipelines (see Fig. 6).
- Make sure the direction of flow matches the direction indicated by the arrow on the body.
- Install the regulator free of stress.
- Make sure that the regulator remains freely accessible after the plant has been completed.

#### NOTICE

##### **Damage due to freezing.**

Protect the regulator from icing up when controlling media that can freeze. Unless the regulator is installed in locations where no frost occurs, remove the regulator from the pipeline when the plant is shut down.

#### NOTICE

Do not attach supports directly to the valve or actuator.

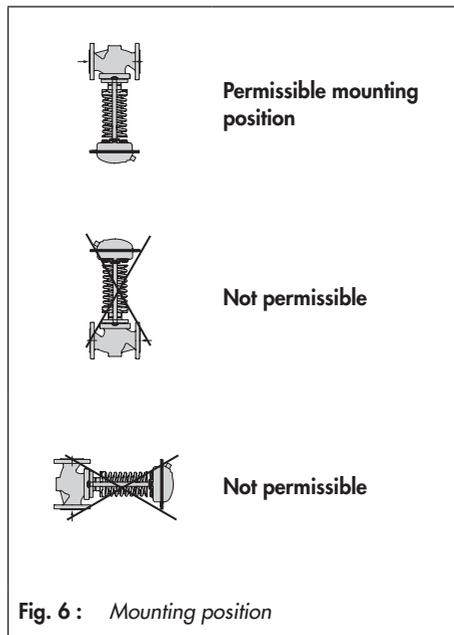


Fig. 6 : Mounting position

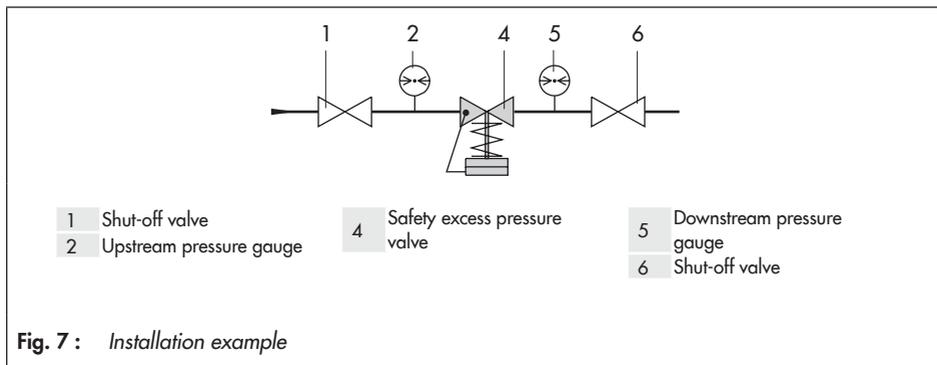


Fig. 7 : Installation example

## 5.2 Additional fittings

→ See Fig. 7

### 5.2.1 Shut-off valves

- Install a hand-operated shut-off valve (1 and 6) both upstream and downstream of the regulator to be able to shut down the plant for cleaning and maintenance and when the plant is not used for longer periods of time.

### 5.2.2 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.

1. Start up the plant and adjust the set point.
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 a 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.

### 5.2.3 Pressure gauges

- Install a pressure gauge (2 and 5) both upstream and downstream of the regulator to monitor the pressures prevailing in the plant.

## 6 Start-up and operation

### 6.1 Start-up

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#### **⚠ DANGER**

***Risk of personal injury due to process medium escaping.***

*– Do not start up the regulator until all parts have been mounted.*

---

#### **⚠ WARNING**

***Crush hazard arising from moving parts.***

*Do not insert hands or fingers into the set point springs while the regulator is in operation.*

---

#### **⚠ WARNING**

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

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

*Wear protective clothing and safety gloves.*

---

Once installed in the pipeline, the regulator can be put into operation.

### 6.1.1 Installing the regulator

➔ See Fig. 3

1. Close the shut-off valves in the pipeline while the valve is being installed.
2. Remove the protective caps from the valve ports before installing the valve.
3. Lift the regulator using suitable lifting equipment to the site of installation. Observe the flow direction through the valve. The arrow on the valve indicates the direction of flow.
4. Make sure that the correct flange gaskets are used.
5. Bolt the pipe to the valve free of stress.
6. Depending on the field of application, allow the valve to cool down or warm up to reach ambient temperature before start up.
7. Slowly open the shut-off valves in the pipeline after the valve has been installed.

### 6.1.2 Pipeline flushing

SAMSON recommends additionally flushing the pipeline with installed regulator before start-up.

- See Fig. 3
- Unscrew the control line (17).
- Seal the valve body with G ¼ stoppers.

If the regulator malfunctions due to clogging after flushing the pipeline, proceed as described in Table 6.

---

#### **! NOTICE**

*After removing the control line, seal the opening at the valve body.*

- Screw plug (accessories: stopper 8323-0030 and seal 8412-0771)
- 

### 6.1.3 Pressure test

---

#### **! NOTICE**

***Risk of the operating diaphragm bursting due to excessive pressure during pressure testing.***

- *The pressure must not exceed the maximum permissible pressure by 1.5 times the pressure rating.*
  - *Remove the control line from the regulator and seal the open connection with a blanking plug (accessories: blanking plug 8323-0030 and seal 8412-0771).*
- 

---

#### **i 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.*

---

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#### **! NOTICE**

***Risk of valve damage due to a sudden pressure increase and resulting high flow velocities.***

- *Slowly open the shut-off valves.*
-

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

- Detach the control line and seal the opening in the valve body and the pipeline with suitable screw plugs. Alternatively, install a shut-off valve in the control line.
- Make sure that the pressure rises simultaneously upstream and downstream of the regulator to avoid damaging the balancing bellows.
- Do not allow the pressure to exceed the 1.5 times the pressure rating of the valve body.
- The valve must remain open. Therefore, set the maximum set point to ensure that the regulator does not close. Detach the control line and seal the opening at the valve body with a G ¼ blanking plug.

## 6.2 Operation

The regulator is ready for use when mounting and start-up have been completed.

---

### **⚠ WARNING**

***Crush hazard arising from moving parts.***

*Do not insert hands or fingers into the set point springs while the regulator is in operation.*

---



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### **⚠ WARNING**

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

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

*Wear protective clothing and safety gloves.*

---

### 6.3 Starting up the plant

- See Fig. 3
- Start up the regulator after mounting all parts. Make sure the control line is open and correctly connected.
- Open the shut-off valves slowly preferably starting from the upstream pressure side. Afterwards, open all the valves on the consumer side (downstream of the regulator).
- Fill the plant **slowly** with the process medium. Avoid pressure surges.
- Make sure that the pressure rises simultaneously upstream and downstream of the regulator to avoid damaging the balancing bellows.

### 6.4 Adjusting the set point

- See Fig. 3
- The required downstream pressure is set by turning the set point adjuster (6) using an open-end wrench:
  - DN 15 to 50 with width across flats A/F 19
  - DN 65 to 100 with width across flats A/F 24
- Turn the set point adjuster clockwise (↻) to increase the pressure set point.
- Turn the set point adjuster counterclockwise (↺) to reduce the pressure set point.

The pressure gauge located on the upstream pressure side allows the adjusted set point to be monitored.

## 7 Servicing

The regulators do not require much maintenance. Nevertheless, they are subject to natural wear, particularly at the seat, plug, operating diaphragm and balancing bellows. Depending on the operating conditions, check the regulator 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 Table 6.

SAMSON recommends removing the regulator from the pipeline before performing any maintenance or service work.

### **⚠ DANGER**

#### ***Risk of bursting in pressure equipment.***

*Regulators and pipelines are pressure equipment. Improper opening can lead to bursting of the regulator.*

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

### **⚠ WARNING**

#### ***Risk of personal injury due to residual process medium in the regulator.***

*While working on the regulator, residual process medium can escape and, depending on its properties, may lead to personal injury, e.g. burns.*

*Wear protective clothing, safety gloves and eye protection.*

### **⚠ WARNING**

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

*Regulator 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 TÜV approval (based on AGFW worksheet FW 506) for Type 36-8 becoming void.***

*Consult SAMSON's After-sales Service before you change parts or perform service or repair work on TÜV-tested Type 36-8 Regulators.*

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### NOTICE

#### ***Risk of regulator damage due to incorrect servicing.***

Only let properly trained staff perform service work.

---

### NOTICE

#### ***Risk of regulator damage due to the use of unsuitable tools.***

Only use tools approved by SAMSON.

---

### NOTICE

#### ***Risk of regulator damage due to over- or under-torquing.***

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

Observe the specified tightening torques.

---

### NOTICE

#### ***Risk of regulator damage due to the use of unsuitable lubricants.***

Only use lubricants approved by SAMSON.

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### Note

The regulator was checked by SAMSON before delivery.

- Certain test results certified by SAMSON lose their validity when the regulator is opened. Such testing includes seat leakage and leak tests.
  - 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.
- 

### Note

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

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### Tip

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

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## 7.1 Replacing the actuator

### ⚠ NOTICE

**Risk of TÜV approval (based on AGFW worksheet FW 506) for Type 36-8 becoming void.**

Consult SAMSON's After-sales Service before you change parts or perform service or repair work on TÜV-tested Type 36-8 Regulators.

### ⚠ NOTICE

**Risk of regulator damage due to over- or under-torquing.**

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

Observe the specified tightening torques.

### **i** Note

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

## 7.2 Replacing the set point springs

### ⚠ NOTICE

**Risk of TÜV approval (based on AGFW worksheet FW 506) for Type 36-8 becoming void.**

Consult SAMSON's After-sales Service before you change parts or perform service or repair work on TÜV-tested Type 36-8 Regulators.

### ⚠ NOTICE

**Risk of regulator damage due to over- or under-torquing.**

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

Observe the specified tightening torques.

### **i** Note

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

### **i** Note

Change the nameplate and configuration ID after changing the set point range.

## 7.3 Replacing the seat and plug

### NOTICE

**Risk of TÜV approval (based on AGFW worksheet FW 506) for Type 36-8 becoming void.**

Consult SAMSON's After-sales Service before you change parts or perform service or repair work on TÜV-tested Type 36-8 Regulators.

### NOTICE

**Risk of regulator damage due to over- or under-torquing.**

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

Observe the specified tightening torques.

### Note

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

## 7.4 Replacing the operating diaphragm

### NOTICE

**Risk of TÜV approval (based on AGFW worksheet FW 506) for Type 36-8 becoming void.**

Consult SAMSON's After-sales Service before you change parts or perform service or repair work on TÜV-tested Type 36-8 Regulators.

### NOTICE

**Risk of regulator damage due to over- or under-torquing.**

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

Observe the specified tightening torques.

### Note

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

### Tip

The associated order number is written on the actual operating diaphragm.

## 7.5 Tightening torques

→ See Fig. 3

**Table 5:** Tightening torque

Part	Width across flats	Nominal size or actuator area	Tightening torque in Nm
Set point adjuster (6)	A/F 19	DN 15 to 50	–
	A/F 24	DN 65 to 100	
Nuts for pillars (8.2)	A/F 24	All	60
Fastening nuts (9)	A/F 16	All	25
Control line (17)	–	All	22

## 7.6 Lubricants and sealants

### **i** Note

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

## 7.7 Prepare the regulator for return shipment

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

1. Put the regulator out of operation (see Chapter 9.1).
2. Decontaminate the regulator (valve with actuator). 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](http://www.samsongroup.com) > SERVICE > After-sales Service.
4. Continue as described on our website at  
▶ [www.samsongroup.com](http://www.samsongroup.com) > Service > After-sales Service > Returning goods.

### 7.8 Ordering spare parts and operating supplies

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#### NOTICE

**Risk of TÜV approval (based on AGFW worksheet FW 506) for Type 36-8 becoming void.**

*Consult SAMSON's After-sales Service before you change parts or perform service or repair work on TÜV-tested Type 36-8 Regulators.*

---

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

### 8 Malfunctions

The malfunctions listed in Table 6 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 Chapter 10.1.

SAMSON recommends removing the regulator from the pipeline before repairing it.

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#### Tip

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

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#### Note

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

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Table 6: Troubleshooting

Malfunction	Possible reasons	Recommended action
Downstream pressure exceeds the adjusted set point.	Foreign particles blocking the plug	<ul style="list-style-type: none"> <li>→ Remove foreign particles.</li> <li>→ Replace damaged parts.</li> <li>→ Contact SAMSON's After-sales Service.</li> </ul>
	Seat and plug are worn or leak.	<ul style="list-style-type: none"> <li>→ Replace the damaged seat and plug.</li> <li>→ Contact SAMSON's After-sales Service.</li> </ul>
	Control line blocked	<ul style="list-style-type: none"> <li>→ Clean the control line and screw fittings.</li> </ul>
	Regulator or $K_{VS}/C_V$ coefficient too large	<ul style="list-style-type: none"> <li>→ Check the sizing.</li> <li>→ Change <math>K_{VS}/C_V</math> coefficient, if necessary or install a different sized regulator.</li> <li>→ Contact SAMSON's After-sales Service.</li> </ul>
	Defective operating diaphragm	<ul style="list-style-type: none"> <li>→ Replace damaged diaphragm.</li> <li>→ Contact SAMSON's After-sales Service.</li> </ul>
Downstream pressure drops below the adjusted set point.	Regulator installed against the flow.	<ul style="list-style-type: none"> <li>→ Install the regulator so that the direction of flow matches the direction indicated by the arrow on the body.</li> </ul>
	Regulator or $K_{VS}/C_V$ coefficient too small	<ul style="list-style-type: none"> <li>→ Check the sizing.</li> <li>→ Change <math>K_{VS}/C_V</math> coefficient, if necessary or install a different sized regulator.</li> <li>→ Contact SAMSON's After-sales Service.</li> </ul>
	Foreign particles blocking the plug	<ul style="list-style-type: none"> <li>→ Remove foreign particles.</li> <li>→ Replace damaged parts.</li> <li>→ Contact SAMSON's After-sales Service.</li> </ul>
	Control line blocked	<ul style="list-style-type: none"> <li>→ Clean the control line and screw fittings.</li> </ul>
Downstream pressure hunts	Regulator or $K_{VS}/C_V$ coefficient too large	<ul style="list-style-type: none"> <li>→ Check the sizing.</li> <li>→ Change <math>K_{VS}/C_V</math> coefficient, if necessary or install a different sized regulator.</li> <li>→ Contact SAMSON's After-sales Service.</li> </ul>
Slow control response	Dirt in the control line.	<ul style="list-style-type: none"> <li>→ Clean the control line.</li> </ul>
Jerky control response	Increased friction, e.g. due to foreign particles between seat and plug.	<ul style="list-style-type: none"> <li>→ Remove foreign particles.</li> <li>→ Replace damaged parts.</li> <li>→ Contact SAMSON's After-sales Service.</li> </ul>
Loud noises	High flow velocity, cavitation.	<ul style="list-style-type: none"> <li>→ Check the sizing.</li> <li>→ Install larger regulator, if necessary.</li> </ul>

## Malfunctions

**Table 6:** *Troubleshooting*

Malfunction	Possible reasons	Recommended action
Leakage at the actuator.	Defective operating diaphragm	→ Replace damaged diaphragm. → Contact SAMSON's After-sales Service.
Leakage at the bellows seal.	Defective bellows seal	→ Replace bellows seal. → Contact SAMSON's After-sales Service.
Red mark appears at the diaphragm rupture indicator.	Defective operating diaphragm	→ Replace damaged operating diaphragm. → Contact SAMSON's After-sales Service.

---

### NOTICE

*Risk of TÜV approval (based on AGFW worksheet FW 506) for Type 36-8 becoming void. Consult SAMSON's After-sales Service before you change parts or perform service or repair work on TÜV-tested Type 36-8 Regulators.*

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## 9 Decommissioning and removal

### DANGER

#### **Risk of bursting in pressure equipment.**

Regulators and pipelines are pressure equipment. Improper opening can lead to bursting of the regulator.

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

### WARNING

#### **Risk of personal injury due to residual process medium in the regulator.**

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

Wear protective clothing, safety gloves and eye protection.

### WARNING

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

Regulator 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.

## 9.1 Decommissioning

To decommission the regulator before removing it, proceed as follows:

➔ See Fig. 7

1. Close the shut-off valve (1) on the upstream side of the regulator.
2. Close the shut-off valve (6) on the downstream side of the regulator.
3. Completely drain the pipelines and regulator.
4. Depressurize the plant.
5. If necessary, allow the pipeline and device to cool down or warm up to the ambient temperature.
6. Unbolt the flanged joint.
7. Remove the regulator from the pipeline.

### 9.2 Disposal



SAMSON is a producer registered in Europe, agency in charge ► <https://www.samsongroup.com/en/about-samson/environment-social-governance/material-compliance/waste-electrical-and-electronic-equipment-weee-and-its-safe-disposal/>.  
WEEE reg. no.: DE 62194439

Information on substances listed as substances of very high concern (SVHC) on the candidate list of the REACH regulation can be found in the document "Additional Information on Your Inquiry/Order", which is added to the order documents, if applicable. This document includes the assigned SCIP number, which can be entered into the database on the European Chemicals Agency (ECHA) website (► <https://www.echa.europa.eu/scip-database>) to find out more information on the SVHC.

#### **i Note**

*SAMSON can provide you with a recycling passport on request. Simply e-mail us at [aftersalesservice@samsongroup.com](mailto:aftersalesservice@samsongroup.com) giving details of your company address.*

#### **Tip**

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

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

## 10 Appendix

### 10.1 After-sales service

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

#### **E-mail address**

You can reach our after-sales service at [aftersalesservice@samsongroup.com](mailto:aftersalesservice@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](http://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 Chapter 2.1:

- Device type and nominal size
- Model number and configuration ID
- Upstream and downstream pressure
- Temperature and process medium
- Min. and max. flow rate
- Installation drawing showing the exact location of the regulator and all the additionally installed components (shut-off valves, pressure gauge etc.)

## 10.2 Spare parts

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### **!** NOTICE

***Risk of TÜV approval (based on AGFW worksheet FW 506) for Type 36-8 becoming void.***

*Consult SAMSON's After-sales Service before you change parts or perform service or repair work on TÜV-tested Type 36-8 Regulators.*

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

## 11 Certificates

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



# MANUFACTURER'S DECLARATION



**Translation of original document**

For the following products

**Pressure regulators (pressure reducing valves and pressure limiters)**

We hereby certify that according to the ignition risk assessment based on ISO 80079-36, the self-operated regulators mentioned above do not have their own potential ignition source, and as a result, they are not classified as "equipment" as specified in the Directive 2014/34/EU.

The devices do not fall within the scope of Directive 2014/34/EU and cannot be certified as "equipment" according to the EU-type examination procedure specified in Annex III of the directive.

This declaration applies to the device types listed in Tables 1 and 2 manufactured in compliance with the production documents.

**Reason:**

According to the ignition risk assessment performed in accordance with ISO 80079-36, Clause 5.2, the mentioned non-electrical self-operated regulators 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.

**Table 1: Pressure regulators**

Type	Valve	Actuator	Designation
2111/2424	2111	2424	Pressure reducing valve
2111/2425		2425	Excess pressure valve
2422/2424	2422	2424	Pressure reducing valve
2422/2425		2425	Excess pressure valve
2421/2424	2421	2424	Differential pressure regulator
2421/2425		2425	Differential pressure regulator
2422/2424	2422	2424	Pressure reducing valve
2422/2425		2425	Excess pressure valve
2405			Pressure reducing valve
2406			Excess pressure valve
36-3			Safety shut-off valve (SSV)
36-8			Safety excess pressure valve (SEV)
39-2			Steam pressure reducing valve
41-23	2412	2413	Pressure reducing valve
41-73	2417		Excess pressure valve
2333			Pilot-operated pressure reducing valve
2334	2422		Pilot-operated pressure reducing valve or excess pressure valve
2335			Pilot-operated excess pressure valve
33-1			Pilot-operated safety shut-off valve (SSV)

Manufacturer's Declaration: S/HE-1235-7 EN      Changed on: 2024-02-01      Changed by: E34/pon/S-C13/pmr

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33-7		Pilot-operated safety excess pressure valve (SEV)
44-0 B		Steam pressure reducing valve
44-1 B		Pressure reducing valve
44-2		Pressure reducing valve
44-3		Safety shut-off valve (SSV)
44-4		Safety excess pressure valve (SEV)
44-6 B		Excess pressure valve
44-7		Excess pressure valve
44-8		Safety excess pressure valve (SEV)
44-9		Safety shut-off valve (SSV)
50 ES/EM		Pressure reducing valve
2357-1/-6		Pressure build-up regulator for cryogenic media
2357-2/-7		Excess pressure valve for cryogenic media
2357-3/-31		Pressure build-up regulator with integrated excess pressure valve for cryogenic media
2357-11		Pressure build-up regulator
2357-21		Excess pressure valve
2371-00/01		Excess pressure valves for the food and pharmaceutical industries
2371-10/11		Pressure reducing valve for the food and pharmaceutical industries
2336		Pressure reducing valve with pilot valve
2373		Pressure reducing valve for corrosive media
2375		Excess pressure valve for corrosive media

**Table 2: Pressure limiters**

Type	Valve	Actuator	Designation
2111/2401 (PL)	2111	2401 (PL)	Pressure limiter with globe valve
2422/2401 (PL)	2422		
2422/2401 (PL)	2422		
2119/2401 (PL)	2119		
2111/2401 (SPL)	2111	2401 (SPL)	Safety pressure limiter with globe valve
2422/2401 (SPL)	2422		
2119/2401 (SPL)	2119		

Manufacturer's Declaration: S/HE-1235-7 EN

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**Note:**

This declaration applies to the use of the listed 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.

This declaration is based on the ignition risk assessment of the devices. Further requirements to be fulfilled by the operators can result from the operating conditions of the devices. These may include:

- Degree of mechanical strength depending on group and zone
- Required degree of protection, connection to equipotential bonding system according to Clause 6.4 of DIN EN 60079-14 (VDE 0165-1) and others
- Within the hazardous area, the temperature rise caused by the medium determines the permissible temperature class and ambient temperature

The requirements are met by compliance with the following standard:

**ISO 80079-36**                      **Explosive atmospheres – Part 36: Non-electrical equipment for explosive atmospheres – Basic method and requirements**

SAMSON AKTIENGESELLSCHAFT

Peter Scheermesser  
Director  
Product Maintenance & Engineered Products

Stephan Giesen  
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**EB 2546-2 EN**



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