MOUNTING AND
OPERATING INSTRUCTIONS

EB 2626-1 EN

Translation of original instructions

Type 44-0 B Steam Pressure Reducing Valve, body with screwed ends, red brass

Type 44-1 B Pressure Reducing Valve, body with screwed ends, stainless steel

Type 44-0 B and Type 44-1 B Pressure Reducing Valves

Self-operated Pressure Regulators

Edition November 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 (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

Contents

1 Safety instructions and measures

Intended use

The SAMSON Type 44-0 B Regulator is suitable for pressure control of vapors and the Type 44-1 B Regulator is suitable for pressure control of liquids and gases.

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 additional fittings 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

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 features

The Type 44-0 B and Type 44-1 B Regulators do not have any special safety features. When relieved of pressure, the regulators are opened by the force of the set point springs.

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 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.

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.

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. 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 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 for

  e.g. **Type 1 NI Strainer** ▶ EB 1010

- Data sheets for

  e.g. **Type 1 NI Strainer** ▶ T 1015

- 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 pressure equipment.

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

➔ Observe the maximum permissible pressure for regulator and plant.

➔ 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.

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 (▶ www.samsongroup.com/en/about-samson/environment-social-governance/material-compliance/reach-regulation/.

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

Over time, markings, labels and nameplates on the regulator 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, 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 hearing loss or deafness due to loud noise.

The noise emissions depend on the valve version, plant facilities and process medium.

➔ Wear hearing protection when working near the valve.

⚠ 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.

➔ If possible, drain the process medium from the plant sections affected and from the regulator.

➔ Wear protective clothing, safety gloves and eye protection.

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 regulator.

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 device.

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.

NOTICE

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 the 'Tightening torques' chapter).

Risk of excess pressure damaging plant sections due to construction-related seat leakage through the regulator.

➔ Always install a safety device (e.g. safety excess pressure valve or safety relief valve) in the plant.

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.

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

➔ Keep the regulator and the tools used free from solvents and grease.

➔ Make sure that only suitable lubricants are used.

Risk of regulator damage due to the installation of solenoid valves.

If solenoid valves are installed downstream of the regulator when the regulator is used to control liquids, pressure peaks may occur when the solenoid valves close quickly. These pressure peaks can damage the regulator.

➔ The installation of solenoid valves downstream of the regulator is not permitted when the regulator is used to control liquids.

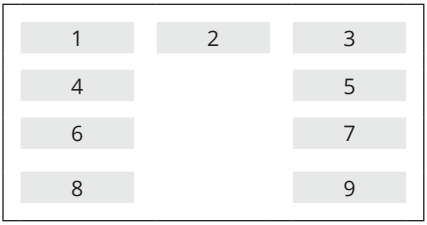
Note

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

2 Markings on the device

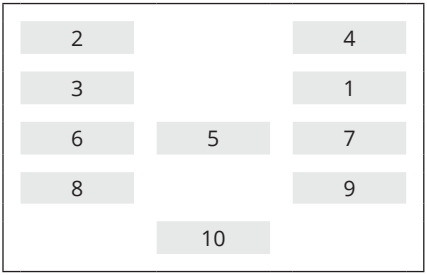
2.1 Nameplates

Nameplate on red brass body



1 Model number
2 Configuration ID (Var.-ID) and device index
3 Order number or year of manufacture
4 Type designation
5 Thread size/nominal size
6 K_{VS}/C_V
7 Perm. temperature in °C/°F
8 Set point range in bar/psi
9 Max. perm. differential pressure Δp in bar/psi

Nameplate on bodies made of stainless steel or spheroidal graphite iron



1 Pressure rating:
DIN: PN · ANSI: CL · JIS: K
2 Configuration ID (Var.-ID) and device index
3 Order number or year of manufacture
4 Type designation
5 Thread size/nominal size:
DIN: DN · ANSI: NPS · JIS: DN ... A/B
6 Flow coefficient:
DIN: K_{VS} · ANSI: C_V · JIS: C_V
7 Perm. temperature:
DIN: °C · ANSI: °F · JIS: °C/°F
8 Set point range:
DIN: bar · ANSI: psi · JIS: bar/psi
9 Max. perm. differential pressure Δp:
DIN: bar · ANSI: psi · JIS: bar/psi
10 Arrow indicating the direction of flow

Fig. 2-1: *Regulator nameplates*

2.2 Location of the nameplates

The nameplate of all nominal sizes is affixed to the body (see Fig. 2-2).

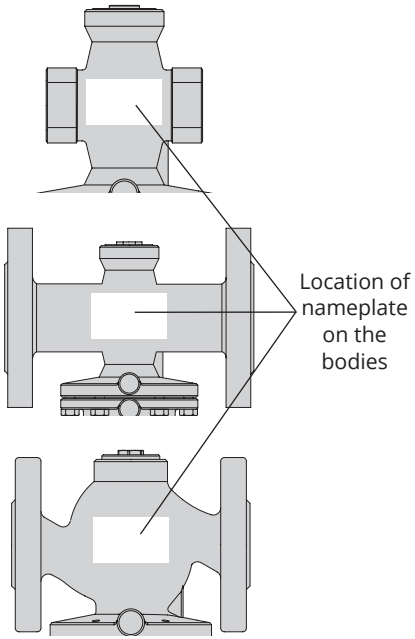


Fig. 2-2: *Nameplate on the bodies*

2.3 Material identification number

The material is indicated on the cast body. Specifying the configuration ID, you can contact us to find out more details. The configuration ID is specified on the nameplate (item 2).

For more details on the nameplate, see Chapter 2.2.

3 Design and principle of operation

➔ See Fig. 3-1

The Type 44-0 B and Type 44-1 B Pressure Reducing Valves consist of a single-seated globe valve with integrated actuator unit.

The regulators mainly consist of the valve (1) with seat (3), plug (2) and balancing bellows (6) as well as a spring housing with operating bellows (5), set point spring (7) and set point adjuster (8)/set point screw (9).

The pressure reducing valves are used to maintain the pressure downstream of the valve to an adjusted set point.

The regulator is open when relieved of pressure. It closes when the downstream pressure rises above the adjusted set point. The process medium flows through the valve between seat and plug 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 downstream pressure.

The downstream pressure p_2 to be controlled is transmitted through a borehole (4) in the valve body to the operating bellows (5) where it is converted into a positioning force. This force is used to move the valve plug according to the force of the set point spring (7). The spring force is adjustable at the set point adjuster (8/9).

Legend for Fig. 3-1

1	Valve body
1.1	Body gasket
1.2	Seal
2	Plug
3	Seat
4	Borehole in body for downstream pressure p_2
5	Operating bellows
6	Balancing bellows
7	Set point spring
8	Set point adjuster
9	Set point screw with stainless steel/ spheroidal graphite iron version (DN 40/50) as well as 8 to 20 bar set point range
10	Screws
11	Stopper
12	Spring housing

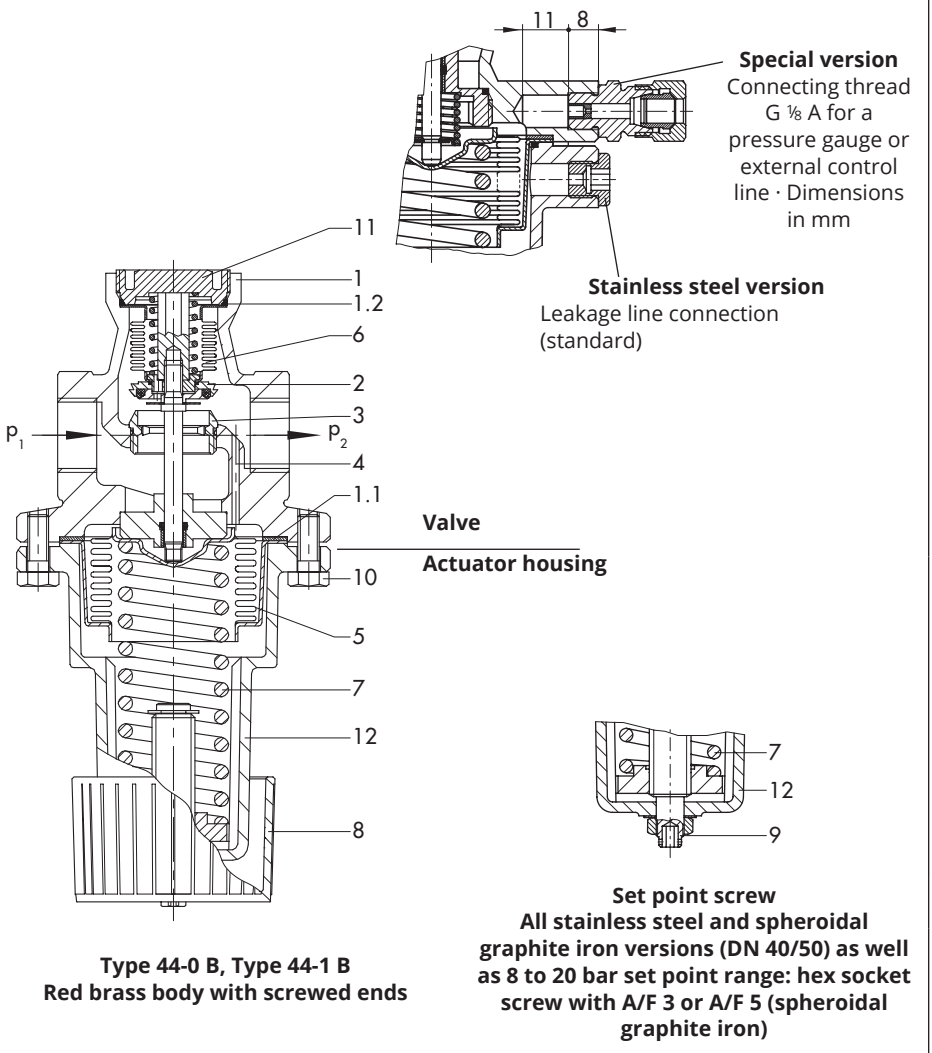


Fig. 3-1: *Functional diagram of Type 44-0 B and Type 44-1 B Pressure Reducing Valves*

3.1 Additional fittings

➔ See Fig. 3-2

Strainer

SAMSON recommends installing a SAMSON strainer (3) upstream of the valve. It prevents solid particles in the process medium from damaging the regulator.

➔ Do not use the strainer to permanently filter the process medium.

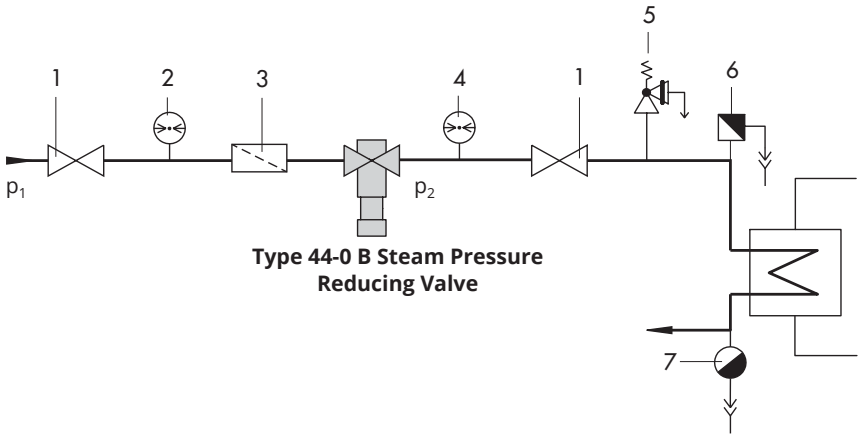
➔ Select a strainer (mesh size) suitable for the process medium.

Note

Any impurities carried along by the process medium may impair the proper functioning of the regulator. SAMSON recommends installing a strainer (e.g. SAMSON Type 1 NI) upstream of the pressure reducing valve (▶ EB 1010).

Pressure gauges

Install a pressure gauge (2 and 4) both upstream and downstream of the regulator to monitor the pressures prevailing in the plant.



1 Shut-off valve
2 Upstream pressure gauge
3 Strainer
4 Downstream pressure gauge
5 Safety valve
6 Vent plug
7 Steam trap

Fig. 3-2: *Steam control with Type 44-0 B (installation example)*

Bypass line and shut-off valves

SAMSON recommends installing a shut-off valve (1) both upstream of the strainer and downstream of the regulator and installing a bypass line. The bypass line ensures that the plant does not need to be shut down for service and repair work on the regulator.

Insulation

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

Note

The Types 44-0 B and 44-1 B Regulators are not safety valves. If necessary, a suitable overpressure protection must be installed on site in the plant section.

3.2 Technical data

The regulator nameplate provides information on the regulator version (see the 'Markings on the device' chapter).

Note

More information is available in Data Sheet ▶ T 2626.

Process medium and scope of application

The Type 44-0 B and Type 44-1 B Pressure Reducing Valves are used to maintain the pressure downstream of the valve to an adjusted set point.

- Type 44-0 B for **vapors**
- Type 44-1 B for **gases and liquids**
- Max. temperature of Type 44-0 B **200 °C/390 °F**
- Max. temperature of Type 44-1 B **150 °C/300 °F**
- Set points from **0.2 to 20 bar/3 to 290 psi**
- Nominal sizes **G ½ to G 1/½ NPT to 1 NPT** and **DN 15 to 25/NPS ½ to 1**
- Pressure ratings **PN 25/Class 150 and 300/JIS 20K**

The regulator is open when relieved of pressure. The valve **closes** when the **downstream** pressure rises.

Leakage class

The regulators have the leakage class I according to IEC 60534-4.

Temperature range

Depending on how the regulator is configured, it can be used up to max. 200 °C. The minimum temperature is limited by the seal material used in the regulator (see Table 3-2).

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.

Conformity

The Types 44-0 B and 44-1 B Regulators bear the CE mark of conformity.

CE

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 3-9.

Table 3-1: *Materials · Material numbers according to DIN EN*

Body		Red brass CC499K [4]	Spheroidal graphite iron EN-GJS-400-18-LT [4]	Stainless steel 1.4408 · A351 CF8M
Seat		1.4305		1.4404
Plug	Type 44-1 B	Brass (free of dezincification), soft seal [1]		1.4404 metal or soft seal [2]
	Type 44-0 B	Brass (resistant to dezincification) with PTFE soft seal or metal seal [1]		1.4404 with PTFE/EPDM/FKM soft seal or metal seal
Balancing bellows		1.4571		1.4571
Plug spring		1.4310		1.4310
Set point spring		1.7104 (55SiCr6)		1.4310
Operating bellows		1.4571		1.4571
Spring housing		EN AC-44300-DF (die-cast aluminum)		1.4408
Set point adjuster		Manual adjuster made of PTFE with 30 % glass fiber [3]		Hexagonal socket head screw made of 1.4571

1) For spheroidal graphite iron body with internal parts free of non-ferrous metal: plug made of 1.4404, metal or soft seal
2) EPDM, FKM or PTFE
3) 8 to 20 bar set point range in stainless steel 1.4571: hexagonal socket head screw made of 1.4571
4) Only selectable for DIN and JIS versions

Table 3-2: *Technical data · All pressures in bar (gauge)*

Regulator			Pressure reducing valve	
			44-0 B	44-1 B
Connection	Stainless steel/red brass body		Female thread G ½, G ¾, G 1 ½ NPT, ¾ NPT, 1 NPT	
	Stainless steel body		Flanges DN 15 and 25/NPS ½ and 1	
	Spheroidal graphite iron body [1]		Flanges DN 15, 25, 40 and 50	
Pressure rating			PN 25/Class 150 [2] and Class 300 [3]/JIS 20K	
Max. permissible temperature [6]	Liquids		–	–10 to +150 °C 14 to 300 °F
	Non-flammable gases, air		–	–10 to +80 °C 14 to 175 °F
	(air and nitrogen) [9]		–	–10 to +150 °C 14 to 300 °F
	Steam		200 °C 390 °F	–
Max. permissible differential pressure Δp	G ½, ¾, 1 · DN 15 and 25		10 bar [8] · 16 bar 145 psi [8] · 230 psi	10 bar [4] · 16 bar 145 psi [4] · 230 psi
	DN 40 and 50		8 bar	
Set point range (continuously adjustable)		DIN	0.2 to 2 bar [7] · 1 to 4 bar · 2 to 6 bar 4 to 10 bar · 8 to 20 bar [5]	
		ANSI	3 to 30 psi [7] · 15 to 60 psi · 30 to 90 psi 60 to 145 psi · 120 to 290 psi	
Leakage class according to IEC 60534-4			Class I (≤0.05 % of K_{VS} coefficient)	
Conformity			CE	
Max. perm. ambient temperature			60 °C 140 °F	

1) DIN body only
2) Flanged valve body made of stainless steel A351 CF8M
3) Body with screwed ends made of stainless steel A351 CF8M
4) With K_{VS} 1.0 and 2.5 · C_V 1.2 and 3.0
5) Set point range not for DN 40 and 50
6) The maximum permissible temperature is limited to 60 °C with FDA compliance. DIN only
7) Without balancing bellows
8) With K_{VS} 1.0, 1.6, 2.0 and 2.5/C_V 1.2, 1.9, 2.4 and 3.0
9) FKM seal

Table 3-3: *K_{VS} coefficients and x_{FZ} values · Terms for noise level calculation according to VDMA 24422 (edition 1.89)*

Body with screwed ends					
Connection size			**G ½ · ½ NPT**	**G ¾ · ¾ NPT**	**G 1 · 1 NPT**
K_{VS}	Type 44-1 B	Standard version	3.2	4.0	5.0
		Special version	0.25 [1) 3)] · 1.0 [1) 3)] · 2.5 [1) 3)]		
	Type 44-0 B	Standard version	1.6 [2) 3)] · 3.2 [1)]	2.0 [2) 3)] · 4.0 [1)]	2.5 [2) 3)] · 5.0 [1)]
		Special version	1.0 [1) 3)]		
C_V	Type 44-1 B	Standard version	4.0	5.0	6.0
		Special version	0.3 [1) 3)] · 1.2 [1) 3)] · 3.0 [1) 3)]		
	Type 44-0 B	Standard version	1.9 [2) 3)] · 4.0 [1)]	2.4 [2) 3)] · 5.0 [1)]	2.9 [2) 3)] · 6.0 [1)]
		Special version	1.2 [1) 3)]		
x_{Fz} values			0.60		0.55

Flanged body						
Nominal size			**DN 15/NPS ½**	**DN 25/NPS 1**	**DN 40**	**DN 50**
K_{VS}	Type 44-1 B	Standard version	3.2	5.0	16.0	20.0
		Special version	0.25 [1) 3)] · 1.0 [1) 3)] · 2.5 [1) 3)]		8.0 [2) 3)]	
	Type 44-0 B	Standard version	1.6 [2) 3)] · 3.2 [1)]	2.5 [2) 3)] · 5.0 [1)]	16.0 [1)]	20.0 [1)]
		Special version	1.0 [1) 3)]		8.0 [2) 3)]	
C_V	Type 44-1 B	Standard version	4.0	6.0	–	–
		Special version	0.3 [1) 3)] · 1.2 [1) 3)] · 3.0 [1) 3)]			
	Type 44-0 B	Standard version	1.9 [2) 3)] · 4.0 [1)]	2.9 [2) 3)] · 6.0 [1)]		
		Special version	1.2 [1) 3)]			
x_{Fz} values			0.60	0.55	0.40	

1) Soft seal. Seal material: EPDM or FKM. Additionally Type 44-6 B: PTFE gasket material
2) Metal seal
3) Unbalanced
4) Soft seal. Seal material: EPDM or FKM. Additionally Type 44-6 B: PTFE gasket material

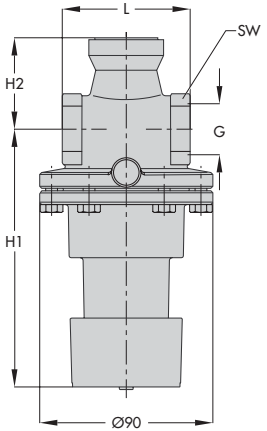
Table 3-4: *Dimensions in mm/in · Weights in kg/lb*

Regulator		DN	15	–	25	40	50
		G/NPT	½	¾	1	–	–
		NPS	½	–	1	–	–
Length L	G · NPT [1) 2)]	mm	65	75	90	–	–
		in	2.6	3.0	3.5	–	–
	DN	mm	130	–	160	200	230
	NPS [1) 3)]	mm	184	–	184	–	–
		in	7.2	–	7.2	–	–
Width across flats (A/F)	G	mm	34	34	46	–	–
	NPT	in	1.3	1.3	1.8	–	–
Height H1 [4) 8)]	G [5)]	mm	132 (199)			–	–
	G [6)] · NPT [2) 6)]	mm	155 (222)			–	–
		in	6.1 (8.8)			–	–
	DN [6) 7)]	mm	155 (205)	–	155 (205)	245 (290)	245 (290)
	NPS [3) 6)]	mm	155 (205)	–	155 (205)	–	–
		in	6.1 (8.1)	–	6.1 (8.1)	–	–
Height H2	G [5)]	mm	48	48	48	–	–
	G [6)] · NPT [2) 7)]	mm	46	46	46	95	95
	NPT [2)]	in	1.8	1.8	1.8	–	–
Ø spring housing	G · DN	mm	90				
	NPT · NPS	in	3.5			–	–
Weight, approx.	Body with screwed ends	kg	1.0	1.1	1.5	–	–
		lb	2.2	2.4	3.3	–	–
	Flanged body	kg	2.6	–	4.2	7.0	8.0
		lb	5.7	–	9.3	–	–

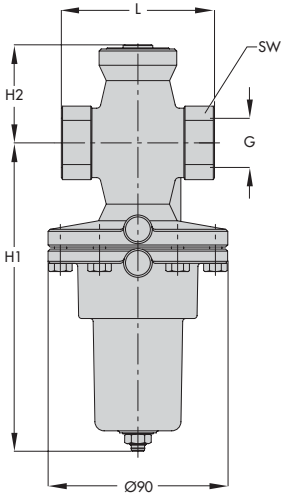
1) Face-to-face dimensions according to ANSI/ISA 75.08.01
2) NPT in Class 300 (A351 CF8M)
3) NPS in Class 150 (A351 CF8M)
4) Dimensions in parentheses apply to values with 8 to 20 bar/120 to 290 psi set point range
5) Red brass CC499K
6) Stainless steel·1.4408/A351 CF8M
7) Spheroidal graphite iron EN-GJS-400-18-LT
8) + min. 50 mm distance for set point adjustment

Dimensional drawings

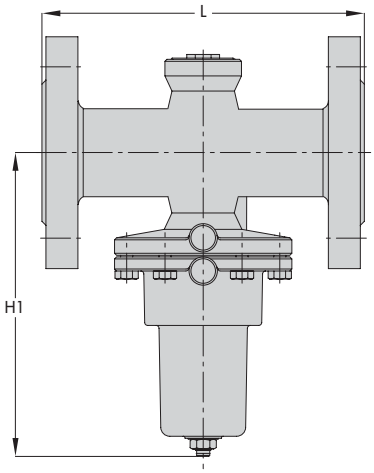
Body: red brass (DIN version only)



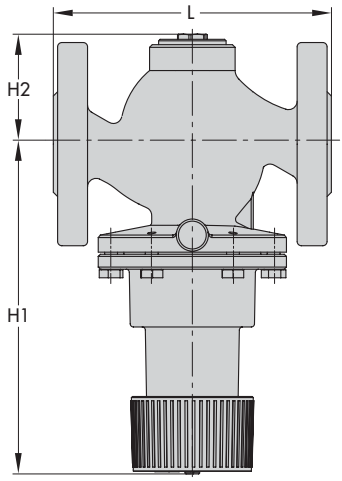
Body: stainless steel



Body: stainless steel



Body: spheroidal graphite iron [1] (DIN version only)



[1] DN 15 and 25 w/ manual adjuster, DN 40 and 50 as well as 8 to 20 bar set point range with set point screw

Fig. 3-3: *Dimensions*

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 nameplate and on the regulator itself match the specifications in the delivery note. See the 'Markings on the device' chapter for nameplate 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 regulator

The regulator is delivered as an assembled unit.

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

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

➔ Do not remove the protective caps from the inlet and outlet until immediately before installing the valve with flanges into the pipeline. They prevent foreign particles from entering the valve.

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

4.3 Transporting and lifting the regulator

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

➔ 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.

➔ The permissible ambient temperature of standard regulators is –20 to +80 °C.

4.4 Storing the regulator

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.*

Storage instructions

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

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

➔ 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.

Note

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

Special storage instructions for elastomers

Elastomer, e.g. O-rings

➔ 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

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.

5.1 Installation conditions

Work position

The work position for the regulator is the front view onto all 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

The inlet and outlet lengths vary depending on several variables and process conditions and are intended as recommendations. Contact SAMSON if the lengths are significantly shorter than the recommended lengths.

To ensure that the regulator functions properly, proceed as follows:

- ➔ Observe the inlet and outlet lengths (see Table 5-1). Contact SAMSON if the regulator conditions or state of the process medium are different from those specified.
- ➔ Install the regulator free of stress and with the least amount of vibrations as possible. Read sections "Mounting position" and "Support or suspension" in this chapter.
- ➔ For media with a tendency to condensate, install the pipeline with a slight downward slope on both sides so that the condensate can drain properly. If the pipeline upstream and downstream of the regulator run vertically upwards, an automatic drainage is required.
- ➔ Install the regulator allowing sufficient space to remove the actuator and valve or to perform service work on them.

Mounting position

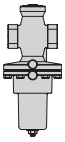
To ensure that the regulator functions properly, proceed as follows:

- ➔ Install the actuator housing of **Type 44-0 B** suspended downward in horizontal pipelines (see Fig. 5-1).
- ➔ Install **Type 44-1 B** at medium temperatures below 60 °C in any position. At medium temperatures above 60 °C, install it with the actuator housing suspended downward in horizontal pipelines (see Fig. 5-1).
- ➔ Make sure the direction of flow matches the direction indicated by the arrow on the body.
- ➔ Contact SAMSON if the mounting position is not as specified above.

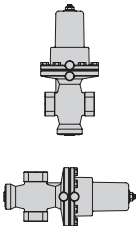
NOTICE

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.



Standard mounting position of Type 44-0 B and Type 44-1 B
For gases, liquids and steam



Mounting position of Type 44-1 B,
alternative for gases and liquids for medium temperatures up to 60 °C.

Fig. 5-1: *Mounting position*

Support or suspension

Note

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

5.2 Preparation for installation

NOTICE

Damage due to pressure peaks.

If solenoid valves are installed downstream of the regulator when the regulator is used to control liquids, pressure peaks may occur when the solenoid valves close quickly. The installation of solenoid valves is not permitted when the regulator is used to control liquids.

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

- The regulator is clean.
- The regulator is not damaged.
- Install a strainer upstream of the regulator.
- The regulator data on the nameplate (type designation, nominal size, material, pressure rating and temperature range) match the plant conditions (nominal size and pressure rating of the pipeline, medium temperature etc.). See the 'Markings on the device' chapter for nameplate details.
- The requested or required additional fittings (see the 'Design and principle of operation' chapter) have been installed or prepared as necessary before installing the valve.

Proceed as follows:

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

➔ Flush the pipeline **before** installing the regulator (see Chapter 5.2.1). The plant operator is responsible for cleaning the pipelines in the plant.

➔ For steam applications, dry the pipelines. Moisture will damage the inside of the regulator.

➔ Check any mounted pressure gauges to make sure they function properly.

5.2.1 Cleaning the pipeline

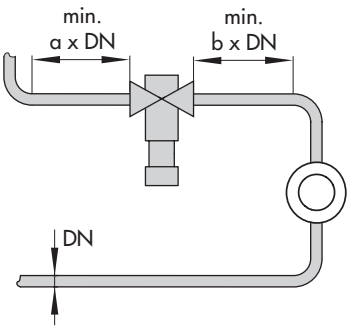
SAMSON recommends additionally flushing the pipeline without an installed regulator over a time period of several minutes before start-up. In this case, install a suitable length of pipe into the pipeline in place of the regulator.

➔ Before flushing the plant with the process medium, read the 'Starting up the plant' chapter.

➔ Observe the mesh size of the upstream strainer for the maximum particle size. Use strainers to suit the process medium.

➔ Check the strainer for dirt each time the pipeline is flushed and clean it, if necessary.

Table 5-1: *Inlet and outlet lengths*



a Inlet length
b Outlet length

State of process medium	Valve conditions	Inlet length a	Outlet length b
Gas	Ma ≤ 0.3	2	4
Vapors [1)]	Ma ≤ 0.3	2	4
Liquid	Free of cavitation/w < 3 m/s	2	4
	Cavitation producing noise/w ≤ 3 m/s	2	4

1) No wet steam

5.3 Installation

SAMSON regulators are delivered as assembled units. The activities listed below are necessary for installation and before start-up of the regulator.

NOTICE

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

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

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 (see the 'Tightening torques' chapter).*

NOTICE

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

➔ *Only use lubricants approved by SAMSON (see the 'Lubricants' chapter).*

5.3.1 Installing the regulator

1. Close the shut-off valves upstream and downstream of the regulator while the regulator is being installed.
2. Remove the protective caps from the valve ports of regulators with flanges before installation.
3. Observe the flow direction through the valve. The arrow on the valve indicates the direction of flow.
4. Make sure that the correct gaskets are used.
5. Bolt the pipe to the valve free of stress.
6. Slowly open the shut-off valves in the pipeline after the regulator has been installed.

5.3.2 Filling the plant

With liquids and gases

Open the shut-off valves slowly over a time period of several minutes preferably starting from the upstream pressure side to fill the plant (all consumers are open).

➔ Make sure that the pressure rises simultaneously upstream and downstream of the regulator to avoid damaging the balancing bellows.

➔ Avoid pressure surges.

For steam and vapors

NOTICE

Risk of regulator damage due to steam hammering.

Steam hammering is possible when the process medium is a liquid with a boiling point at atmospheric pressure.

➔ *Open the shut-off valves slowly preferably starting from the downstream side to fill the plant over a time period of several minutes.*

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

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

➔ Drain off any condensate that has collected in the pipeline during start-up.

➔ Avoid pressure surges.

5.4 Testing the regulator

⚠ 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.*

➔ *Disconnect the control line.*

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

⚠ DANGER

Risk of personal injury due to process medium escaping.

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

⚠ WARNING

Risk of hearing loss or deafness due to loud noise.

Noise emission (e.g. cavitation or flashing) may occur during operation caused by the process medium and the operating conditions.

➔ *Wear hearing protection when working near the regulator.*

⚠ 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 regulators are delivered ready for use. To test the regulator functioning before start-up or putting back the regulator 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. Install the regulator into the pipeline (see Chapter 5.3.1).
2. Apply the required test pressure.
3. Check the regulator for leakage to the atmosphere.
4. Depressurize the pipeline section and regulator.
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.

NOTICE

Risk of regulator 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:

➔ Do not allow the pressure to exceed 1.5 times the pressure rating of the valve body.

➔ The regulator must remain open. Therefore, adjust the lowest set point to ensure that the regulator does not close.

➔ Make sure that the pressure rises simultaneously upstream and downstream of the regulator to avoid damaging the balancing bellows.

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 actuator housing 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 until all parts have been mounted.*

⚠ 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.*

⚠ WARNING

Risk of hearing loss or deafness due to loud noise.

Noise emission (e.g. cavitation or flashing) may occur during operation caused by the process medium and the operating conditions.

➔ *Wear hearing protection when working near the valve.*

⚠ WARNING

Risk of personal injury due to pressurized components and as a result of process medium being discharged.

➔ *Do not unscrew the control line while the valve is pressurized.*

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

- The regulator is properly installed in the pipeline (see the 'Installation' chapter).
- The leak and function tests have been completed successfully (see the 'Testing the regulator' chapter).
- The prevailing conditions in the plant section concerned meet the regulator sizing requirements (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 to cool down or warm up to reach ambient temperature before start up.
2. All consumer valves are open.
3. Slowly open the shut-off valves in the pipeline. Slowly opening these valves prevents a sudden surge in pressure and high flow velocities which may damage the valve.
4. Check the regulator to ensure it functions properly (see the 'Adjusting the set point chapter).

6.1.1 Starting up the plant when gases and liquids are controlled

1. The plant is filled with the process medium (see the 'Filling the plant' chapter).

➔ To start up the pressure regulator, open shut-off valves **slowly**.

2. Slowly open the shut-off valves upstream of the pressure regulator.
3. Slowly open all the valves downstream of the regulator (consumer side).
4. Avoid pressure surges.
5. Put the pressure regulator into operation.

6.1.2 Starting up the plant when vapors are controlled

1. The plant is filled with the process medium (see the 'Filling the plant' chapter).

➔ To start up the pressure regulator, open shut-off valves **slowly**.

2. Slowly open the shut-off valves upstream of the pressure regulator.
3. Slowly open all the valves downstream of the regulator (consumer side).
4. Make sure that the air contained in the plant escapes as quickly as possible.
5. Before the full capacity is reached, drain off the start-up condensate.
6. Avoid pressure surges.
7. Put the pressure regulator into operation.

7 Operation

Immediately after completing start-up or placing the regulator 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.

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.*

⚠ WARNING

Risk of personal injury due to pressurized components and as a result of process medium being discharged.

➔ *Do not unscrew the control line while the valve is pressurized.*

⚠ WARNING

Risk of hearing loss or deafness due to loud noise.

Noise emission (e.g. cavitation or flashing) may occur during operation caused by the process medium and the operating conditions.

➔ *Wear hearing protection when working near the valve.*

7.1 Adjusting the set point

Adjust the required set point by turning the set point adjuster (8) by hand or the set point screw (9) using an Allen key [1] (A/F 3 or A/F 5).

Set point adjuster

➔ Turn the set point adjuster clockwise (↻) to increase the pressure set point.

➔ Turn the set point adjuster counterclockwise (↺) to reduce the pressure set point.

Set point screw

➔ Loosen the lock nut.

➔ Turn the set point screw clockwise (↻) to increase the pressure set point.

➔ Turn the set point screw counterclockwise (↺) to reduce the pressure set point.

➔ Tighten the lock nut.

The pressure gauge installed on the downstream side on site allows the adjusted set point to be monitored.

i *Note*

The set point range can be changed by exchanging the set point spring (see the 'Replacing the set point spring' chapter).

[1] Versions with bodies made of spheroidal graphite iron (DN 40 and 50), stainless steel bodies and all regulators with 8 to 20 bar set point range.

8 Malfunctions

8.1 Troubleshooting

Malfunction	Possible reasons	Recommended action
Downstream pressure exceeds the adjusted set point.	Insufficient pressure pulses on the operating bellows.	➔ Clean the borehole in the body. ➔ Connect the control line on site for regulators with external control line. Clean the control line and screw fittings.
	Foreign particles blocking the plug	➔ Remove foreign particles. ➔ Replace damaged parts. ➔ Contact SAMSON's After-sales Service.
	Seat and plug are worn or leak.	➔ Replace the damaged seat and plug. ➔ Contact SAMSON's After-sales Service.
	Pressure tapped at the wrong place (regulator with external control line)	➔ Reconnect the control line at another point. ➔ Do not connect the control line at pipe bends or necks.
	Regulator or K_{VS}/C_V coefficient too large	➔ Check the sizing. ➔ Change K_{VS}/C_V coefficient, if necessary or install a different sized regulator. ➔ Contact SAMSON's After-sales Service.
	Operating bellows defective	➔ Replace the damaged operating bellows.
Downstream pressure drops below the adjusted set point.	Regulator installed against the flow	➔ Install the regulator so that the direction of flow matches the direction indicated by the arrow on the body.
	Regulator or K_{VS}/C_V coefficient too small	➔ Check the sizing. ➔ Change K_{VS}/C_V coefficient, if necessary or install a different sized regulator. ➔ Contact SAMSON's After-sales Service.
	Pressure tapped at the wrong place (regulator with external control line)	➔ Reconnect the control line at another point. ➔ Do not connect the control line at pipe bends or necks.
	Foreign particles blocking the plug	➔ Remove foreign particles. ➔ Replace damaged parts. ➔ Contact SAMSON's After-sales Service.
	Strainer blocked	➔ Clean the strainer.
Downstream pressure hunts	Regulator or K_{VS}/C_V coefficient too large	➔ Check the sizing. ➔ Change K_{VS}/C_V coefficient, if necessary or install a different sized regulator. ➔ Contact SAMSON's After-sales Service.
	Pressure tapped at the wrong place (regulator with external control line)	➔ Reconnect the control line at another point. ➔ Do not connect the control line at pipe bends or necks.

Malfunction	Possible reasons	Recommended action
Jerky control response	Increased friction, e.g. due to foreign particles between seat and plug	➔ Remove foreign particles. ➔ Replace damaged parts. ➔ Contact SAMSON's After-sales Service.
Loud noises	High flow velocity, cavitation	➔ Check the sizing. ➔ Install larger regulator, if necessary. ➔ Install flow divider with gases and steam.
Leakage at the regulator	Operating bellows defective	➔ Replace the operating bellows. ➔ Contact SAMSON's After-sales Service.

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 from the pipeline before repairing it.

In the event of a regulator malfunction:

1. Close the shut-off valves upstream and downstream of the regulator 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 following the information given in this document. 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 regulator does not require much maintenance. Nevertheless, it is subject to natural wear, particularly at the seat, plug and operating diaphragm/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 the 'Malfunctions' chapter.

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

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

⚠ 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.*

⚠ 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.*

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 (see the 'Tightening torques' chapter).*

NOTICE

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

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

NOTICE

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

➔ *Only use lubricants approved by SAMSON (see the 'Lubricants' chapter).*

Note

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

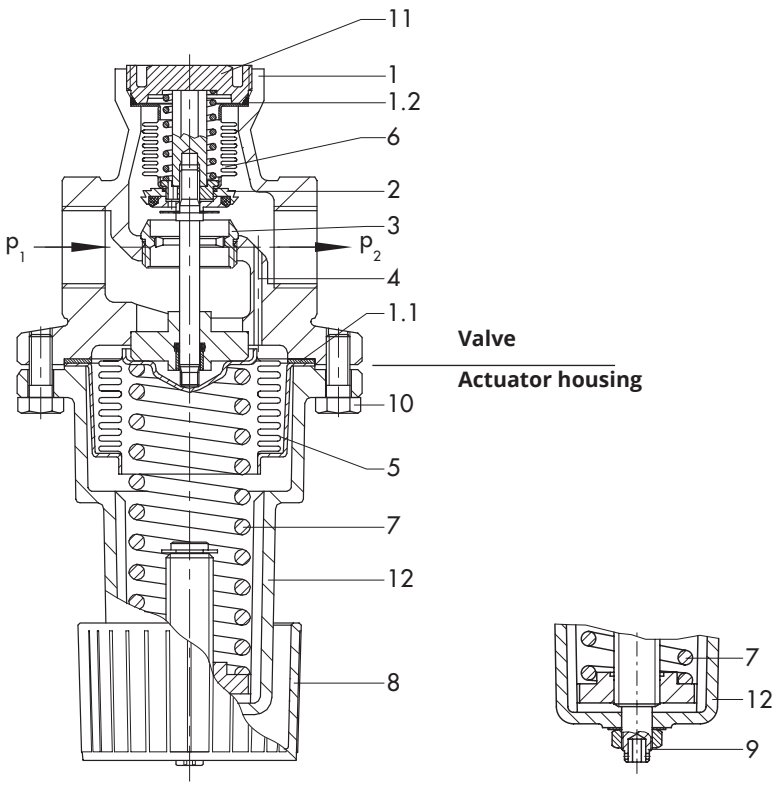
- *Certain test results certified by SAMSON lose their validity when the regulator is opened. Such testing includes seat leakage and leak tests.*
- *The product warranty becomes void if service or repair work not described in these instructions is performed without prior agreement by SAMSON's After-sales Service.*
- *Only use original spare parts by SAMSON, which comply with the original specifications.*

Tip

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

Legend for Fig. 9-1

1	Valve body
1.1	Body gasket
1.2	Seal
2	Plug
3	Seat
4	Borehole in body for downstream pressure p_2
5	Operating bellows
6	Balancing bellows
7	Set point spring
8	Set point adjuster
9	Set point screw with stainless steel/ spheroidal graphite iron version (DN 40/50) as well as 8 to 20 bar set point range
10	Screws
11	Stopper
12	Spring housing



Type 44-0 B, Type 44-1 B
Red brass body with screwed ends

Set point screw
All stainless steel and spheroidal graphite iron versions (DN 40/50) as well as 8 to 20 bar set point range: hex socket screw with A/F 3 or A/F 5 (spheroidal graphite iron)

Fig. 9-1: *Functional diagram of Type 44-0 B and Type 44-1 B Pressure Reducing Valves*

9.1 Service work preparations

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

Tip

SAMSON recommends removing the regulator from the pipeline before performing any service work (see the 'Removing the regulator from the pipeline' chapter).

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

- Clean and exchange the seat and plug (see Chapter)
- Replace the operating bellows (see Chapter 9.3.1)
- Replace the set point spring (see Chapter 9.3.2)

9.2 Installing the regulator after service work

➔ Put the regulator 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 (see Chapter 9.1).

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

➔ Cleaning and exchanging the seat and plug

NOTICE

Risk of damage to the facing of the seat and plug due to incorrect service or repair.

Always replace both the seat and plug.

➔ See Fig. 9-1

Disassembly

1. Completely relieve the tension from the set point spring (7) by turning the set point adjuster/set point screw (8/9) counterclockwise (↺).
2. Unscrew the stopper (11) (socket wrench A/F 13).
3. Remove the seal (1.2).
4. Pull out the plug (2) together with the balancing bellows (6) and plug stem.
5. Thoroughly clean the seat and plug. If the plug or balancing bellows is damaged, replace the entire unit with a new one.

6. Unscrew the seat using a seat wrench if the seat facing is damaged.

Assembly

1. Screw in the seat using a seat wrench. Observe the specified tightening torques (see the 'Tightening torques' chapter).
2. Insert the plug (2) together with the balancing bellows (6) and plug stem.
3. Renew the seal (1.2) and insert it into the body.
4. Screw in the stopper (11) (socket wrench A/F 13). Observe the specified tightening torques (see the 'Tightening torques' chapter).

9.3.1 Replacing the operating bellows

➔ See Fig. 9-1

Disassembly

1. Completely relieve the tension from the set point spring (7) by turning the set point adjuster/set point screw (8/9) counterclockwise (↺) as far as it will go.
2. Undo the screws (10).
3. Remove the spring housing with set point spring (7) and operating bellows (5).
4. Remove the operating bellows and replace with a new one.

Assembly

1. Replace the body gasket (1.1) with a new one.
2. Place the spring housing with spring (7) and operating bellows (5) onto the valve body.
3. Screw in the screws (10). Observe the specified tightening torques (see the 'Tightening torques' chapter).

9.3.2 Replacing the set point spring

➔ See Fig. 9-1

Disassembly

1. Completely relieve the tension from the set point spring (7) by turning the set point adjuster/set point screw (8/9) counterclockwise (↺) as far as it will go.
2. Undo the screws (10).
3. Remove the spring housing with set point spring (7) and operating bellows (5).
4. Remove the set point spring and replace with a new one.

Assembly

1. Replace the body gasket (1.1) with a new one.
2. Place the spring housing with spring (7) and operating bellows (5) onto the valve body.

3. Screw in the screws (10). Observe the specified tightening torques (see the 'Tightening torques' chapter).

i ***Note***

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

9.4 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

See the Appendix for details on spare parts.

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 working on the regulator:

- ➔ *Depressurize all plant sections concerned and the regulator.*
- ➔ *Shut off an external control line.*
- ➔ *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.

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.*

⚠ WARNING

Risk of personal injury due to pressurized components and as a result of process medium being discharged.

- ➔ *Do not unscrew the external control line while the valve is pressurized.*

⚠ WARNING

Risk of hearing loss or deafness due to loud noise.

Noise emission (e.g. cavitation or flashing) may occur during operation caused by the process medium and the operating conditions.

- ➔ *Wear hearing protection when working near the regulator.*

⚠ 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.*

To put the regulator out of operation for service work or before removing it from the pipeline, proceed as follows:

1. Close the shut-off valve (1) on the downstream and upstream side of the regulator.
2. Completely drain the pipelines and regulator.
3. Depressurize the plant.
4. Shut off or disconnect any external control line.
5. If necessary, allow the pipeline and regulator 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.

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.*

⚠ 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.*

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

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

11.1 Removing the regulator from the pipeline

1. Support the regulator to hold it in place when separated from the pipeline (see the 'Shipment and on-site transport' chapter).
2. Undo any externally mounted control line.
3. Unbolt the pipe/flanged joint.
4. Remove the regulator from the pipeline (see the 'Shipment and on-site transport' chapter).

11.2 Removing the actuator

See the 'Servicing' chapter.

12 Repairs

If the regulator does not function properly according to how it was originally sized or does not function at all, it is defective and must be repaired or exchanged.

NOTICE

Risk of regulator damage due to incorrect service or repair work.

➔ Do not perform any repair work on your own.

➔ Contact SAMSON's After-sales Service for service and repair work.

12.1 Returning devices to SAMSON

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

1. Put the regulator out of operation (see the 'Decommissioning' chapter).
2. Decontaminate the valve. Remove any residual process medium.
3. Fill in the Declaration on Contamination. The declaration form can be downloaded from our website at ▶ www.samsongroup.com > SERVICE > After-sales Service.
4. Continue as described on our website at ▶ www.samsongroup.com > SERVICE > After-sales Service > Returning goods.

13 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 SCIP number assigned to the devices concerned. This number 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 contained in the device.

Note

SAMSON can provide you with a recycling passport 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 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.

14 Certificates

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

- EU declaration of conformity in compliance with Pressure Equipment Directive 2014/68/EU on page 14-2.

EU DECLARATION OF CONFORMITY
TRANSLATION

Module A

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

Devices	Series	Type	Version
Self-operated Regulators	43	2432	DIN EN, body, CC499K and EN-GJS-400-18-LT, DN 50, PN 25, fluids G2, L2, L1[1)]
	43	2436	DIN EN, body, CC499K and EN-GJS-400-18-LT, DN 50, PN 25, fluids G2, L2, L1[1)]
	43	2437	DIN EN, body, CC499K and EN-GJS-400-18-LT, DN 50, PN 25, fluids G2, L2, L1[1)]
	---	2111	DIN EN, body, EN-GJS-400-18-LT, DN 50, PN 25, fluids G2, L2, L1[1)]
			DIN EN, body, 1.0619 and 1.4408, DN 40-50, PN 40, fluids G2, L2, L1[1)]
			ANSI, body, A216 WCC and A351 CF8M, NPS 1½-2, Class 300, fluids G2, L2, L1[1)]
Three-way valve	---	2119	DIN EN, body, EN-GJL-250 and 1.0619, DN 65-125, PN 16, fluids G2, L2, L1[1)]
			DIN EN, body, 1.0619, DN 50-80, PN 25, fluids G2, L2, L1[1)]
			DIN EN, body, 1.0619 and 1.4408, DN 40-50, PN 40, fluids G2, L2, L1[1)]
			ANSI, body, A216 WCC and A351 CF8M, NPS 2½-4, Class 150, fluids G2, L2, L1[1)]
			ANSI, body, A216 WCC and A351 CF8M, NPS 1½, Class 300, fluids G2, L2, L1[1)]
Control valve	---	3222	DIN EN, body, EN-GJS-400-18-LT, DN 50, PN 25, fluids G2, L2, L1[1)]
			DIN EN, body, CC499K, DN 32-40, PN 25, all fluids
Three-way valve	---	3226	DIN EN, body, CC499K, DN 50, PN 25, fluids G2, L2[2)]
Three-way valve	---	3260	DIN EN, body, EN-GJL-250, DN 65-200, PN 16, fluids G2, L2[2)]
Globe valve Three-way valve	V2001	3531 3535	DIN EN, body, EN-GJS-400-18-LT, DN 50-80, PN 25, fluids G2, L2, L1[1)]
			DIN EN, body, 1.0619 and 1.4408, DN 32-40, PN 25, all fluids
			ANSI, body, A216 WCC and A351 CF8M, NPS 1½-2, Class 150, all fluids
Control valve	---	3214	DIN EN, body, EN-GJL-250, DN 65-125, PN 16, fluids G2, L2, L1[1)]
			DIN EN, body, EN-GJS-400-18-LT, DN 50-80, PN 25, fluids G2, L2, L1[1)]
			ANSI, body, A126 B, NPS 3-4, Class 125, fluids G2, L2, L1[1)]
			ANSI, body, A216 WCC and A351 CF8M, NPS 1½-2, Class 150, all fluids
Self-operated Regulators	42	2423	DIN EN, body, EN-GJL-250 and EN-GJS-400-18-LT, DN 65-125, PN 16, fluids G2, L2, L1[1)]
			DIN EN, body, EN-GJS-418-LT, DN 50-80, PN 25, fluids G2, L2, L1[1)]
			DIN EN, body, 1.0619 and 1.4408, DN 32-50, PN 16, all fluids
			DIN EN, body, 1.0619 and 1.4408, DN 32-40, PN 25, all fluids
			ANSI, body, A126 B, NPS 3-4, Class 125, fluids G2, L2, L1[1)]
			ANSI, body, A216 WCC and A351 CF8M, NPS 1½-2, Class 150, all fluids
	42	2422	DIN EN, body, EN-GJL-250 and EN-GJS-400-18-LT, DN 65-125, PN 16, fluids G2, L2, L1[1)]
			DIN EN, body, EN-GJS-400-18-LT, DN 50-80, PN 25, fluids G2, L2, L1[1)]
			DIN EN, body, 1.0619, 1.4408 and 1.6220+QT, DN 32-50, PN 16, all fluids
			ANSI, body, A126 B, NPS 3-4, Class 125, fluids G2, L2, L1[1)]
			ANSI, body, A216 WCC, A351 CF8M and A352 LCC, NPS 1½-2, Class 150, all fluids
Strainers	1N/1NI	2601	DIN EN, body, CB752S, G 2 (DN50), PN25, fluids G2, L2[2)]
Strainers	2N/2NI	2602	DIN EN, body, EN-GJL-250, DN 200-250, PN 10, fluids G2, L2, L1[1)]
			DIN EN, body, EN-GJL-250, DN 65-125, PN 16, fluids G2, L2, L1[1)]
			DIN EN, body, EN-GJS-400-18-LT, DN 100-125, PN 16, fluids G2, L2, L1[1)]
			DIN EN, body, EN-GJS-400-18-LT, DN 50-80, PN 25, fluids G2, L2, L1[1)]
			DIN EN, body, 1.4408, DN 32-50, PN 16, all fluids
Self-operated Regulators	---	2373/2375	ANSI, body, A995 4A and A995 5A, NPS 1½-2, Class 150, all fluids
	44	2440 (44-0B) 2441 (44-1B) 2446 (44-6B)	DIN EN, body, EN-GJS-400-18-LT, DN 50, PN 25, fluids G2, L2, L1[1)]
		2442 (44-2) 2443 (44-3) 2444 (44-4) 2447 (44-7) 2449 (44-9)	DIN EN, body, EN-GJS-400-18-LT and CC499K, DN 50, PN 25, fluids G2, L2, L1[1)]

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EU DECLARATION OF CONFORMITY
TRANSLATION

Devices	Series	Type	Version
Self-operated Regulators	45	2451 (45-1) 2452 (45-2) 2453 (45-3) 2454 (45-4) 2456 (45-6) 2459 (45-9)	DIN EN, body, EN-GJS-400-18-LT and CC499K, DN 50, PN 25, fluids G2, L2, L1[1)]
	46	2465 (46-5) 2466 (46-6) 2467 (46-7) 2469 (46-9)	DIN EN, body, EN-GJS-400-18-LT and CC499K, DN 50, PN 25, fluids G2, L2, L1[1)]
	47	2471 (47-1) 2474 (47-4) 2475 (47-5) 2479 (47-9)	DIN EN, body, EN-GJS-400-18-LT and CC499K, DN 50, PN 25, fluids G2, L2, L1[1)]
	48	2488 2489	DIN EN, body, EN-GJS-400-18-LT and CC499K, DN 50, PN 25, fluids G2, L2, L1[1)]
	40	2405	DIN EN, body, EN-GJS-400-18-LT, DN 50, PN 25, fluids G2, L2, L1[1)]
			ANSI, body, A216 WCC and A351 CF8M, NPS 1½-2, Class 150, all fluids
		2406	DIN EN, body, EN-GJL-250, DN 65-125, PN 16, fluids G2, L2, L1[1)]
			DIN EN, body, EN-GJS-400-18-LT, DN 50, PN 25, fluids G2, L2, L1[1)]
			ANSI, body, A126 B, NPS 3-4, Class 125, fluids G2, L2, L1[1)]
			ANSI, body, A216 WCC and A351 CF8M, NPS 1½-2, Class 150, all fluids
	41	2412 2417	DIN EN, body, EN-GJL-250, DN 65-100, PN 16, fluids G2, L2, L1[1)]
			DIN EN, body, EN-GJS-400-18-LT, DN 50-80, PN 25, fluids G2, L2, L1[1)]
			ANSI body, A126 B, NPS 3-4, Class 125, fluids G2, L2, L1[1)]
			ANSI, body, A216 WCC and A351 CF8M, NPS 1½-2, Class 150, all fluids
	42	2421 RS	DIN EN, body, 1.0619, 1.4408, 1.4571 and 1.4401/1.4404, DN 32-50, PN 16, all fluids
			DIN EN, body, 1.0619, 1.4408, 1.4571 and 1.4401/1.4404, DN 32-40, PN 25, all fluids
			ANSI, body, A216 WCC, A351 CF8M and A182 F316/A182 F316L, NPS 1½-2, Class 150, all fluids
	---	2331	DIN EN, body, EN-GJL-250, DN 65-200, PN 16, fluids G2, L2[2)]
			DIN EN, body, EN-GJS-400-18-LT, DN 65-150, PN 16, fluids G2, L2[2)]
			DIN EN, body, EN-GJS-400-18-LT, DN 65-125, PN 25, fluids G2, L2[2)]
			DIN EN, body 1.0619, DN 65-200, PN 16, fluids G2, L2[2)]
			DIN EN, body 1.0619, DN 65-100, PN 40, fluids G2, L2[2)]
	---	2337	DIN EN, body 1.0619, DN 250, PN 25, fluids L1[1)]
			DIN EN, body 1.0619, DN 250, PN 40, fluids L1[1)]
	---	2333 2335	DIN EN, body, EN-GJL-250, DN 65-125, PN 16, fluids G2, L2, L1[1)]
			DIN EN, body, EN-GJS-400-18-LT, DN 65-80, PN 25, fluids G2, L2, L1[1)]
			ANSI body, A126 B, NPS 3-4, Class 125, fluids G2, L2, L1[1)]
	---	2334	DIN EN, body, EN-GJL-250, DN 65-125, PN 16, fluids G2, L2, L1[1)]
			DIN EN, body, EN-GJS-400-18-LT, DN 65-125, PN 16, fluids G2, L2, L1[1)]
			DIN EN, body, EN-GJS-400-18-LT, DN 65-80, PN 25, fluids G2, L2, L1[1)]
			ANSI, body, A126 B, NPS 3-4, Class 125, fluids G2, L2, L1[1)]
	---	2404-1	DIN EN, body, EN-GJL-250, DN 65-125, PN16, fluids G2, L2, L1[1)]
			ANSI body, A126 B, NPS 3-4, Class 125, fluids G2, L2, L1[1)]
			ANSI, body, A216 WCC und A351 CF8M, NPS 1½-2, Class 150, all fluids
	---	2404-2	DIN EN, body, EN-GJL-250, DN 65-125, PN 16, fluids G2, L2, L1[1)]
			ANSI, body, A126 B, NPS 3-4, Class 125, fluids G2, L2, L1[1)]

[1)] Gases according to Article 4(1)(c.i), second indent
Liquids according to Article 4(1)(c.ii)

[2)] Gases according to Article 4(1)(c.i), second indent
Liquids according to Article 4(1)(c.ii), second indent

EU DECLARATION OF CONFORMITY
TRANSLATION

That the products mentioned above comply with the requirements of the following standards:

Directive of the European Parliament and of the Council on the harmonization of the laws of the Member States relating to the making available on the market of pressure equipment	**2014/68/EU**	**of 15. May 2014**
Applied conformity assessment procedure for fluids according to Article 4(1)	**Module A**	

Technical standards applied: DIN EN 12516-2, DIN EN 12516-3, ASME B16.34

Manufacturer: SAMSON AG, Weismüllerstraße 3, 60314 Frankfurt am Main, Germany

Frankfurt am Main, 05. June 2024

ppa. Norbert Tollas
Senior Vice President
Global Operations

i.V. Peter Scheermesser
Director
Product Maintenance & Engineered Products

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15 Appendix

15.1 Tightening torques

Table 15-1: *Tightening torque*

Part	Width across flats	Nominal size or actuator area	Tightening torque in Nm
Seat (3)	–	G ½ to 1/½ to 1 NPT DN 15 to 25/NPS ½ to 1	45
		G 1½ and 2/1½ and 2 NPT DN 40 and 50/NPS 1½ and 2	110
Set point screw (9)	A/F 3	G ½ to 1/½ to 1 NPT DN 15 to 25/NPS ½ to 1	–
	A/F 5	G 1½ and 2/1½ and 2 NPT DN 40 and 50/NPS 1½ and 2	
Screws (10)	–	All	10
Stopper (11)	–	All	40

15.2 Lubricants

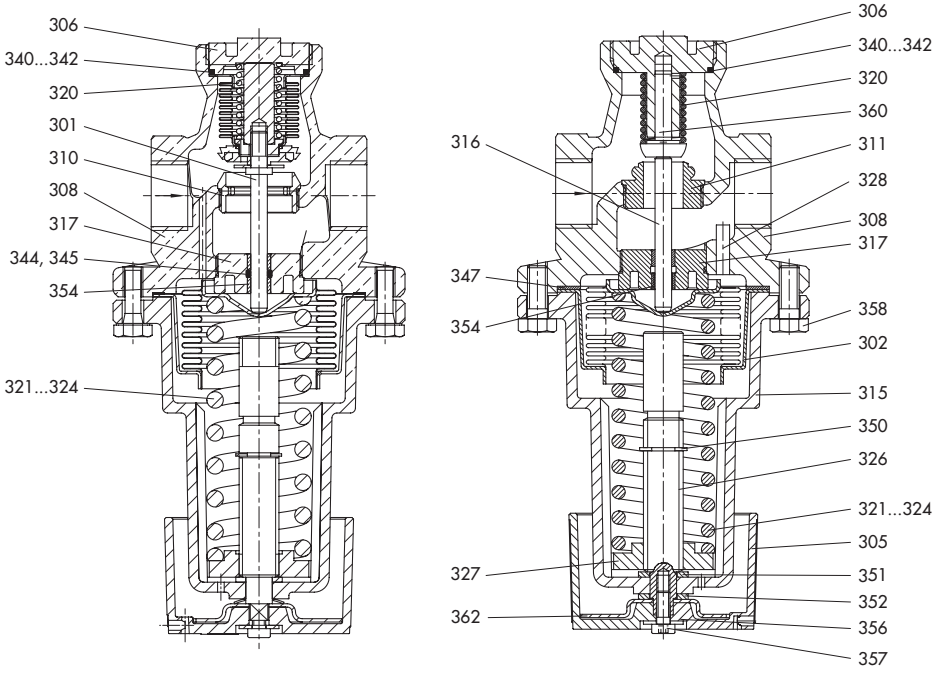
SAMSON's After-sales Service can support you concerning lubricants and sealants approved by SAMSON.

15.3 Tools

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

15.4 Spare parts

301	Plug assembly
302	Bellows assembly
305	Handwheel
306	Stopper
308	Body
309	Seal
310	Threaded seat
311	Seat
315	Spring housing
316	Pin
317	Nipple
320	Compression spring
321 ... 324	Set point spring
326	Spindle
327	Spring plate
328	Pipe
340 ... 342	O-ring
344/345	O-ring
347	Gasket
350	Retaining washer
351	Shim
352	Spring washer
354	Dry bearing
356	Washer
357	Cap screw
358	Hex screw
360	Plug
362	Reinforcement plate



15.5 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.

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:

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

EB 2626-1 EN

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