

MOUNTING AND OPERATING INSTRUCTIONS



EB 8059 EN

Translation of original instructions



Type 3259 Angle Valve

In combination with an actuator, e.g. a Type 3271 or Type 3277 Pneumatic Actuator



Note on these mounting and operating instructions

These mounting and operating instructions (EB) assist you in mounting and operating the device safely. The instructions are binding for handling SAMSON devices. The images shown in this document 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 additional questions not related to the contents of these instructions, contact SAMSON's After-sales Service (aftersaleservice@samsongroup.com).



Documents relating to the device, such as the mounting and operating instructions, are available on our website:

▶ <https://www.samsongroup.com/en/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

i Note

Additional information

💡 Tip

Recommended action

1	Safety instructions and measures.....	5
1.1	Notes on possible severe personal injury.....	6
1.2	Notes on possible personal injury.....	7
1.3	Notes on possible property damage.....	8
1.4	Notes on the use of an RFID tag.....	9
1.5	Warnings on the device.....	9
2	Markings on the device.....	10
2.1	Valve nameplate.....	10
2.2	Actuator nameplate.....	11
2.3	Material numbers.....	11
2.4	Label when an adjustable packing is installed.....	11
2.5	Optional RFID tag.....	11
3	Design and principle of operation.....	12
3.1	Fail-safe positions.....	13
3.2	Versions.....	13
3.3	Additional fittings.....	13
3.4	Valve accessories.....	13
3.5	Technical data.....	14
4	Shipment and on-site transport.....	17
4.1	Accepting the delivered goods.....	17
4.2	Removing the packaging from the valve.....	17
4.3	Transporting and lifting the valve.....	17
4.3.1	Transporting the valve.....	18
4.3.2	Lifting the valve.....	19
4.4	Storing the valve.....	20
5	Installation.....	21
5.1	Installation conditions.....	21
5.2	Preparation for installation.....	23
5.3	Mounting the device.....	23
5.4	Mounting the actuator onto the valve.....	23
5.5	Installing the valve into the pipeline.....	25
5.6	Testing the installed valve.....	25
5.6.1	Leak test.....	26
5.6.2	Travel motion.....	27
5.6.3	Fail-safe position.....	27
5.6.4	Pressure test.....	27
6	Start-up.....	28
7	Operation.....	30
7.1	Normal operation.....	30
7.2	Manual operation.....	30
8	Malfunctions.....	31
8.1	Troubleshooting.....	31
8.2	Emergency action.....	32
9	Servicing.....	33
9.1	Periodic testing.....	34
9.2	Service work preparations.....	36
9.3	Installing the valve after service work.....	37
9.4	Service work.....	37
9.4.1	Replacing the body gasket.....	38

Contents

9.4.2	Replacing the packing.....	39
9.4.3	Replacing the seat and plug.....	41
9.5	Ordering spare parts and operating supplies.....	43
10	Decommissioning.....	44
11	Removal.....	46
11.1	Removing the valve from the pipeline.....	46
11.2	Removing the actuator from the valve.....	46
12	Repairs.....	47
12.1	Returning devices to SAMSON.....	47
13	Disposal.....	48
14	Certificates.....	49
15	Appendix.....	53
15.1	Tightening torques, lubricants and tools.....	53
15.2	Spare parts.....	53
15.3	After-sales service.....	55

1 Safety instructions and measures

Intended use

The SAMSON Type 3259 Angle Valve in combination with an actuator (e.g. Type 3271 or Type 3277 Pneumatic Actuator) is designed to regulate the flow rate, pressure or temperature of liquids, gases or vapors in industrial high-pressure plants according to the IG standard.

The valve with its actuator is designed to operate under exactly defined conditions (e.g. operating pressure, process medium, temperature). Therefore, operators must ensure that the control valve is only used in operating conditions that meet the specifications used for sizing the valve at the ordering stage. In case operators intend to use the control valve 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 control valve is not suitable for the following applications:

- Use outside the limits defined during sizing and by the technical data
- Use outside the limits defined by the valve accessories connected to the control valve

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 control valve 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.

Explosion-protected versions of this device are to be operated only by personnel who has under-

gone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.

Personal protective equipment

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

Depending on the process medium and/or the activity, the protective equipment required includes:

- Protective clothing, gloves, eye protection and respiratory protection in applications with hot, cold and/or corrosive media
 - Wear hearing protection when working near the valve
 - Hard hat
 - Safety harness, e.g. when working at height
 - Safety footwear, if applicable ESD (electrostatic discharge) footwear
- ⇒ 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.

Safety features

The fail-safe position of the control valve upon air supply or control signal failure depends on the actuator used (see associated actuator documentation). When the valve is combined with a SAMSON Type 3271 or Type 3277 Pneumatic Actuator, the control valve moves to a certain fail-safe position upon supply air or control signal failure (see Chapter 3.1). The fail-safe action of the actuator is the same as its direction of action and is specified on the nameplate of SAMSON actuators.

Warning against residual hazards

To avoid personal injury or property damage, plant operators and operating personnel must prevent hazards that could be caused in the control valve by the process medium, the operating pressure, the signal pressure or by moving parts by taking appropriate precautions. Plant operators and operating personnel must observe all hazard statements, warning and caution notes in these mounting and operating instructions.

Safety instructions and measures

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

- ⇒ 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.

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

Responsibilities of operating personnel

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

Referenced standards, directives and regulations

The control valves comply with the requirements of the European Pressure Equipment Directive 2014/68/EU and the European Machinery Directive 2006/42/EC. Valves with a CE marking have a declaration of conformity, which includes information about the applied conformity assessment procedure. Chapter 14 contains this declaration of conformity.

Non-electric valve versions whose bodies are not lined with an insulating material coating do not have their own potential ignition source according to the risk assessment stipulated in Clause 5.2

of DIN EN ISO 80079-36, even in the rare incident of an operating fault. Therefore, such valve versions do not fall within the scope of ATEX Directive 2014/34/EU.

- ⇒ For connection to the equipotential bonding system, observe the requirements specified in Clause 6.4 of DIN 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 mounted valve accessories (positioner, solenoid valve etc.)
- Mounting and operating instructions for the mounted actuator, for example:
 - ► EB 8310-X for Type 3271 and Type 3277 Pneumatic Actuators
- ► AB 0100 for tools, tightening torques and lubricants
- Manual ► H 02: Appropriate Machinery Components for SAMSON Pneumatic Control Valves with a Declaration of Conformity of Final Machinery
- If a device contains a substance listed as a substance of very high concern (SVHC) on the candidate list of the REACH regulation, the document "Additional Information on Your Inquiry/Order" is added to the SAMSON order documents. 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.
More information on material compliance at SAMSON can be found at ► www.samsongroup.com > About SAMSON > Environment, Social & Governance > Material Compliance

1.1 Notes on possible severe personal injury

▲ DANGER

Risk of bursting in pressure equipment.

Control valves and pipelines are pressure equipment. Excessive pressurization or improper opening can lead to valve components bursting.

- ⇒ Observe the maximum permissible pressure for valve and plant.
- ⇒ Before starting any work on pressure-bearing or pressure-retaining parts belonging to the valve assembly, depressurize all plant sections affected as well as the valve.
- ⇒ Drain the process medium from the plant sections affected as well as from the valve.

1.2 Notes on possible personal injury

⚠ WARNING

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

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

- ⇒ Follow the standard operating procedures provided by the plant operator.

In the event of a potential risk:

- ⇒ 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. Additionally, a loud noise may briefly occur through the sudden venting of the pneumatic actuator or pneumatic valve accessories not fitted with noise-reducing elements. Both can damage hearing.

- ⇒ Follow the standard operating procedures provided by the plant operator.

In the event of a potential risk:

- ⇒ Wear hearing protection when working near the valve.

⚠ WARNING

Risk of personal injury due to exhaust air being vented or compressed air escaping from pneumatically operated components.

When the valve is operated with a pneumatic actuator or pneumatic valve accessories, exhaust air is vented from the actuator, for example, while the valve is operating and when the valve opens or closes.

- ⇒ Install the control valve in such a way that vent openings are not located at eye level and the actuator does not vent at eye level in the work position.
- ⇒ Use suitable mufflers and vent plugs.
- ⇒ Wear eye protection when working in close proximity to pneumatic fittings and in the danger zone of the vent openings.

⚠ WARNING

Crush hazard arising from moving parts.

The control valve contains moving parts (actuator and plug stem), which can injure hands or fingers if inserted into the valve.

- ⇒ Do not insert hands or finger into the yoke while the air supply is connected to the actuator.
- ⇒ Before working on the pneumatic control valve, disconnect and lock the pneumatic air supply as well as the control signal.
- ⇒ Do not impede the movement of the actuator and plug stem by inserting objects into the yoke.
- ⇒ Before unblocking the actuator and plug stem after they have become blocked (e.g. due to seizing up after remaining in the same position for a long time), release any stored energy in the actuator (e.g. spring compression). See associated actuator documentation.

⚠ WARNING

Risk of personal injury due to preloaded springs in pneumatic actuators.

Valves in combination with pneumatic actuators with preloaded springs are under tension. These control valves with SAMSON Type 3271 or Type 3277 Pneumatic Actuators can be identified

Safety instructions and measures

by the long bolts protruding from the bottom of the actuator.

- ⇒ Before starting any work on the actuator, which requires the actuator to be opened, or when the actuator stem has become blocked, relieve the compression from the preloaded springs (see associated actuator documentation).

⚠ WARNING

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

Valves with a bellows seal have a test connection at the top on the intermediate piece.

- ⇒ Do not loosen the screw on the test connection while the valve is pressurized.

⚠ WARNING

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

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

- ⇒ Follow the standard operating procedures provided by the plant operator.

In the event of a potential risk:

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

⚠ WARNING

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

Over time, markings, labels and nameplates on the control valve 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.

⚠ WARNING

Exposure to hazardous substances poses a serious risk to health.

Certain lubricants and cleaning agents are classified as hazardous substances. These substances have a special label and a material safety data sheet (MSDS) issued by the manufacturer.

- ⇒ Make sure that an MSDS is available for any hazardous substance used. If necessary, contact the manufacturer to obtain an MSDS.
- ⇒ Inform yourself about the hazardous substances and their correct handling.

1.3 Notes on possible property damage

ⓘ NOTICE

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

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

- ⇒ Flush the pipelines before start-up.

ⓘ NOTICE

Risk of valve damage due to unsuitable medium properties.

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

- ⇒ Only use the process medium specified for sizing the equipment.

ⓘ NOTICE

Risk of leakage and valve damage due to over- or under-torquing.

Observe the specified torques when tightening control valve components. Over-torquing leads to parts wearing out more quickly. Under-torquing may cause leakage.

- ⇒ Observe the tightening torques specified in **▶ AB 0100.**

NOTICE

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

Certain tools are required to work on the valve.

- ⇒ Only use tools approved by SAMSON (▶ AB 0100).

NOTICE

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

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

- ⇒ Only use lubricants approved by SAMSON (▶ AB 0100).

NOTICE

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


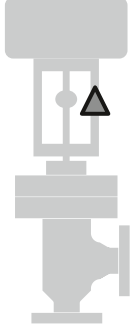
- ⇒ If necessary (e.g. for oxygen service), keep the valve and the tools used free from solvents and grease.
- ⇒ Make sure that only suitable lubricants are used.

1.4 Notes on the use of an RFID tag

The RFID tag is subject to certain restrictions due to its application range (technical specifications).

- ⇒ Observe the explosion protection certificates of the RFID tag when it is to be used on valves installed in potentially explosive atmospheres.
- ⇒ Do not expose the RFID tag to strong electric fields.
- ⇒ Avoid electrostatic charging.
- ⇒ Observe the application range (technical specifications) of the RFID tag.

1.5 Warnings on the device

Warning symbols	Location on the device
	
Meaning of the warning	
<p>Warning against moving parts There is a risk of injury to hands or fingers due to the stroking movement of the actuator and plug stem if they are inserted into the yoke while the air supply is connected to the actuator.</p>	

2 Markings on the device

2.1 Valve nameplate

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

The nameplate is affixed to the yoke of the valve.

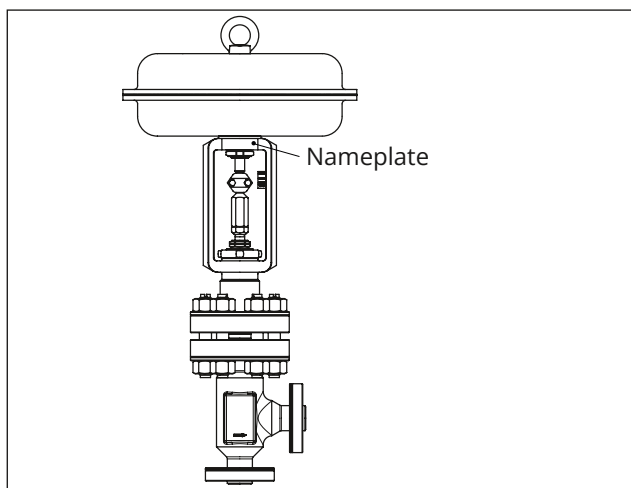


Fig. 1: Location of the nameplate on the valve

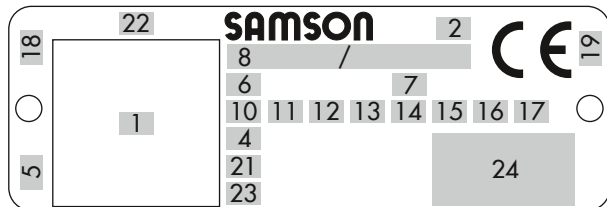


Fig. 2: Inscriptions on the valve nameplate

Item	Inscription meaning
1	Identification code (scannable)
2	Type designation
4	Material
5	Month and year of manufacture
6	Nominal size: DIN: DN · ANSI: NPS · JIS: DN
7	Pressure rating: DIN: PN · ANSI: CL · JIS: K
8	Order number/item
10	Flow coefficient: DIN: KV · ANSI/JIS: CV
11	Characteristic: % : Equal percentage LIN : Linear mod-lin : Modified linear NO/NC : On/off service

Item	Inscription meaning
12	Seat-plug seal: ME : Metal HA : Carbide metal ST : Metal base material with Stellite® facing KE : Ceramic PT : PTFE soft seal PK : PEEK soft seal
13	Seat code (trim material): On request
14	Pressure balancing: D : DIN · B : ANSI/JIS Version: M : Mixing valve V : Diverting valve
15	Noise reduction: 1 : Flow divider (ST) 1 2 : ST 2 3 : ST 3 1/PSA : ST 1 standard and integrated in seat for PSA valve AC-1/AC-2/AC-3/AC-5 : Anti-cavitation trim, versions 1 to 5 LK : Perforated plug LK1/LK2/LK3 : Perforated plug with flow divider ST 1 to 3 MHC1 : Multi-Hole Cage CC1 : Combi Cage ZT1 : Zero Travel LDB : Low dB CDST : Multi-stage trim (cavitation dirty service trim)
16	PSA version: PSA
17	Cage/seat style: RT : Seat with retainer CG : Guided cage TH : Screwed-in seat SF : Suspended cage, flanged seat
18	Country of origin
19	ID of the notified body (EU), for example: – 0062 for Bureau Veritas Services SAS, 8 Cours du Triangle, 92800 PUTEAUX – LA DEFENSE
21	PED : Pressure Equipment Directive G1/G2 : Gases and vapors Fluid group 1 = Hazardous Fluid group 2 = Other L1 : Liquids Fluid group 1 = Hazardous Fluid group 2 = Other I/II/III : Category 1 to 3
22	Serial number
23	NE 53 (NAMUR Recommendation)
24	Other marks of conformity

i Note

Fig. 2 and the inscription table list all possible characteristics and options that may appear on a valve nameplate. Only the inscriptions relevant to the ordered Type 3259 Valve actually appear on the nameplate.

💡 Tip

SAMSON recommends to include the device's serial number (item 22 on the nameplate) and/or its material number (as specified in the order confirmation) in the plant documentation for the associated tag number.

The serial number enables you to view the device's current technical data as configured by SAMSON. The material number enables you to view the device's technical data as configured by SAMSON upon delivery of the device. To view these data, go to our website at:

▶ www.samsongroup.com > Products > Electronic nameplate

For example, you can also use the associated information to order a new nameplate from our after-sales service, if required.

2.5 Optional RFID tag

The RFID tag is located directly next to the nameplate on valves ordered with the RFID tag option. It contains the same data as the identification code on the electronic nameplate. It can be read using a smartphone, tablet or RFID reader. Application range according to the technical data (see Chapter 3.5).

2.2 Actuator nameplate

See associated actuator documentation.

2.3 Material numbers

The seat and plug of the valves have an item number written on them. You can contact us stating this item number to find out which material is used. Additionally, a seat code is used to identify the trim material. This seat code is specified on the nameplate.

2.4 Label when an adjustable packing is installed

An instructional label is affixed to the valve when an adjustable packing is installed (see Fig. 3).



Fig. 3: Label when an adjustable packing is installed

3 Design and principle of operation

The Type 3259 Valve is a high-pressure angle valve. The Type 3259 Valve is preferably combined with a SAMSON Type 3271 or Type 3277 Pneumatic Actuator. It can also be combined with other actuators.

The seat (4) and plug with plug stem (5) are installed in the body (1). The plug stem is connected to the actuator stem (A7) by the stem connector clamps (A26/27) and is sealed by a spring-loaded double PTFE packing (15). Alternatively, an adjustable high-temperature packing can be used.

The springs in the pneumatic actuator are located either above or below the diaphragm depending on the selected fail-safe action (see Chapter 3.1). A change in the signal pressure acting on the diaphragm causes the plug to move. The actuator size is determined by the diaphragm area.

The medium flows through the valve in the direction indicated by the arrow. A rise in signal pressure causes the force acting on the diaphragm in the actuator to increase. The springs are compressed. Depending on the selected direction of action, the actuator stem retracts or extends. As a result, the plug position in the seat changes and determines the flow rate through the valve and the pressure p_2 as well.

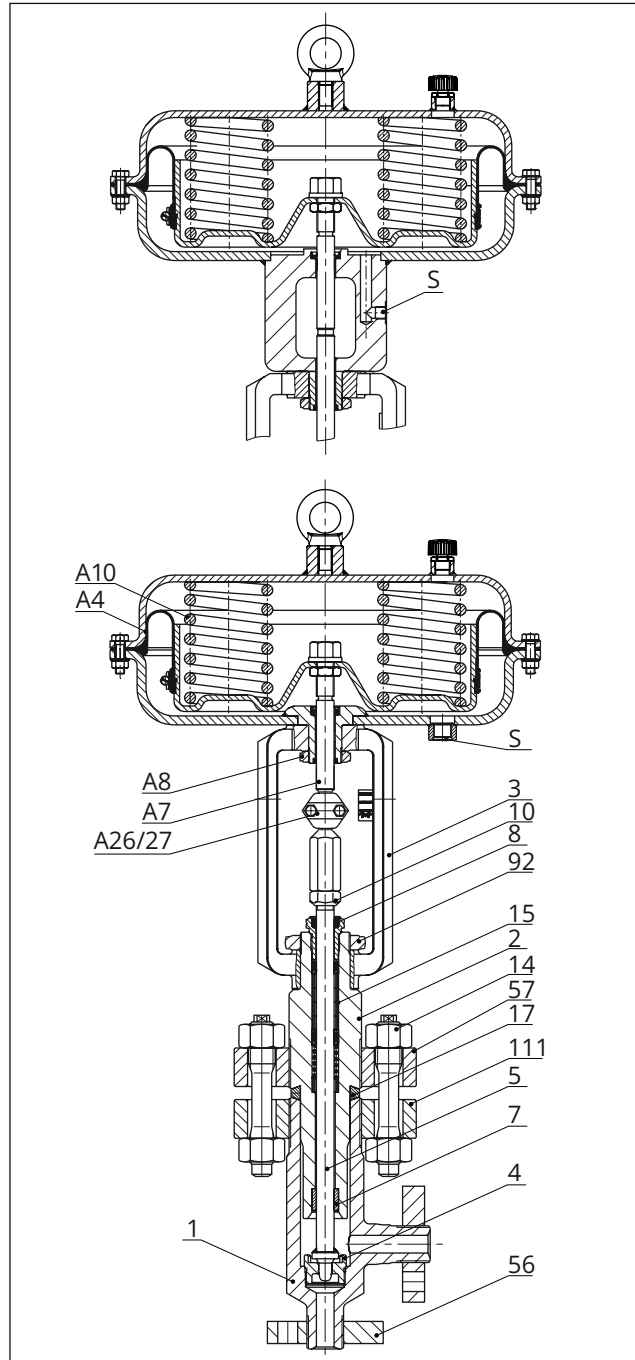


Fig. 4: Type 3259 Valve with Type 3271 Pneumatic Actuator (bottom) and Type 3277 Pneumatic Actuator (top)

1	Body	56	Threaded flange
2	Intermediate piece	57	Threaded flange
3	Yoke	92	Castellated nut
4	Seat	111	Threaded flange
5	Plug	A4	Diaphragm
7	Guide bushing	A7	Actuator stem
8	Threaded bushing (packing nut)	A8	Ring nut
10	Lock nut	A10	Spring
14	Body nut		

15	Packing set	A26/ Stem connector clamp
17	Body gasket (lens ring gasket)	27 S Signal pressure connection

3.1 Fail-safe positions

The fail-safe position of the control valve upon air supply or control signal failure depends on the actuator used (see associated actuator documentation).

Depending on how the compression springs are arranged in the SAMSON Type 3271 and Type 3277 Pneumatic Actuator, the control valve has one of two different fail-safe positions:

- **Actuator stem extends (FA)**
When the signal pressure is reduced or the air supply fails, the springs move the actuator stem downward and close the valve. The valve opens when the signal pressure is increased enough to overcome the force exerted by the springs.
- **Actuator stem retracts (FE)**
When the signal pressure is reduced or the air supply fails, the springs move the actuator stem upward and open the valve. The valve closes when the signal pressure is increased enough to overcome the force exerted by the springs.

Tip

The actuator's direction of action can be reversed, if required. Refer to the mounting and operating instructions of the pneumatic actuator: ► EB 8310-X for Type 3271 and Type 3277

3.2 Versions

With insulating section/bellows seal

The modular design allows an insulating section or bellows seal to be fitted to the standard valve version.

Actuators

In these instructions, the preferable combination with a SAMSON Type 3271 or Type 3277 Pneumatic Actuator is described. The pneumatic actuator (with or without handwheel) can be replaced by another pneumatic actuator in a different size, but with the same travel.

- ⇒ Observe the maximum permissible actuator force.

Note

If the travel range of the actuator is larger than the travel range of the valve, the spring assembly in the actuator must be preloaded so that the travel ranges match (see associated actuator documentation).

3.3 Additional fittings

Strainer

SAMSON recommends installing a SAMSON strainer upstream of the valve. It prevents solid particles in the process medium from damaging the control valve.

Bypass and shut-off valves

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

Insulation

Control valves can be insulated to reduce heat energy transfer.

If applicable, read the instructions in Chapter 5.

Test connection

Versions with bellows seal fitted with a test connection (G 1/8) at the top of the intermediate piece allow the sealing ability of the bellows to be monitored.

Particularly for liquids and vapors, SAMSON recommends installing a suitable leakage indicator (e.g. a contact pressure gauge, an outlet to an open vessel or an inspection glass).

Safety guard

For operating conditions that require increased safety (e.g. in cases where the control valve is freely accessible to untrained staff), a safety guard must be installed to rule out a crush hazard arising from moving parts (actuator and plug stem). Plant operators are responsible for deciding whether a guard is to be used. The decision is based on the risk posed by the plant and its operating conditions.

3.4 Valve accessories

See Information Sheet ► T 8350

3.5 Technical data

The nameplates on the valve and actuator provide information on the control valve version (see Chapter 2).

i Note

More information on Type 3259 Valve is available in the following data sheet:

- ▶ T 8059

Noise emissions

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

Optional RFID tag

Application range according to the technical specifications and the explosion protection certificates. These documents are available on our website:

▶ www.samsongroup.com > Products > Electronic nameplate

The maximum permissible temperature at the RFID tag is 85 °C.

Table 1: Technical data for Type 3259

Nominal size	DN	10 · 16 · 24 · 30 · 45 · 58 · 70 · 90
Pressure rating	PN	325
Type of end connections	Threaded flanges with lens ring gaskets according to the IG standard	
Seat-plug seal	Metal seal or high-performance metal seal	
Characteristic	Equal percentage or linear	
Rangeability	50:1 for $K_{VS} \geq 1$ or 30:1 for $K_{VS} < 1$	
Conformity	CE	
Temperature ranges in °C · Permissible operating pressures according to pressure-temperature diagram		
Body without insulating section with	PTFE packing	-10 to +220 °C
	High-temperature packing	-10 to +350 °C
Body with	Insulating section	-10 to +450 °C
	Bellows seal	-10 to +450 °C
Leakage class according to DIN EN 60534-4		
Valve plug	Metal seal	IV · High performance metal seal: V

Table 2: Materials for Type 3259

Standard version Body	1.4404/1.0460 (S2)/1.4571 (RA4)
Flanges	1.7218 (K2)
Screws	1.7218 (K2)

Standard version Body	1.4404/1.0460 (S2)/1.4571 (RA4)
Seat and plug	1.4404 Seat: 1.4404 Stellite®-faced • Plug: Stellite® 6 Hardened 1.4112
Guide bushing	2.4610/1.4112
Packing	V-ring packing, PTFE-carbon compound
Body gasket	Lens ring gaskets 1.4571/1.0460
Insulating section	1.4404/1.0460 (S2)
Bellows seal	
Intermediate piece	1.4404/1.0460 (S2)
Metal bellows	2.4819

Dimensions and weights

Table 3: Dimensions for Type 3259 Angle Valve

Valve	DN	10	16	24	30	45	58	70	90
Length L		85	95	110	120	150	170	200	235
Standard bonnet									
H1 for actuator	350 cm ²	470	470	470	470	560	560	-	-
	350v2 cm ²	470	470	470	470	560	560	-	-
	355v2 cm ²	470	470	470	470	560	560	-	-
	750v2 cm ²	470	470	470	470	560	560	820	820
	1000 cm ²	525	525	525	525	615	615	820	820
	1400-60 cm ²	525	525	525	525	615	615	820	820
	1400-120 cm ²	-	-	-	-	800	800	905	905
	2800 cm ²	-	-	-	-	800	800	905	905
2 x 2800 cm ²	-	-	-	-	-	-	905	905	
With insulating section									
H4 for actuator	350 cm ²	735	735	735	735	810	810	-	-
	350v2 cm ²	735	735	735	735	810	810	-	-
	355v2 cm ²	735	735	735	735	810	810	-	-
	750v2 cm ²	735	735	735	735	810	810	1175	1175
	1000 cm ²	790	790	790	790	865	865	1175	1175
	1400-60 cm ²	790	790	790	790	865	865	1175	1175
	1400-120 cm ²	-	-	-	-	1050	1050	1260	1260
	2800 cm ²	-	-	-	-	1050	1050	1260	1260
2 x 2800 cm ²	-	-	-	-	-	-	1260	1260	
With bellows seal									
H4 for actuator	350 cm ²	885	885	885	885	875	875	-	-
	350v2 cm ²	885	885	885	885	875	875	-	-
	355v2 cm ²	885	885	885	885	875	875	-	-
	750v2 cm ²	885	885	885	885	875	875	1485	1485
	1000 cm ²	940	940	940	940	930	930	1485	1485
	1400-60 cm ²	940	940	940	940	930	930	1485	1485
	1400-120 cm ²	-	-	-	-	1115	1115	1570	1570
	2800 cm ²	-	-	-	-	1115	1115	1570	1570
2 x 2800 cm ²	-	-	-	-	-	-	1570	1570	

Design and principle of operation

Table 4: Weight (approx.) in kg for Type 3259 Angle Valve

Valve	DN	10	16	24	30	45	58	70	90
Weight ¹⁾ without actuator		33	35	40	45	85 ²⁾	90 ²⁾	220 ²⁾	230 ²⁾
With insulating section									
Weight ¹⁾ without actuator		43	45	48	53	100 ²⁾	105 ²⁾	295 ²⁾	305 ²⁾
With bellows seal									
Weight ¹⁾ without actuator		On req.	On req.	On req.	On req.	On req.	On req.	On req.	On req.

¹⁾ The weights specified apply to a specific standard device configuration. Weights of other valve configurations may differ depending on the version (material, trim etc.).

²⁾ The weight of the valve with a 2800 cm² or 2 x 2800 cm² actuator increases by 30 kg.

Dimensional drawings

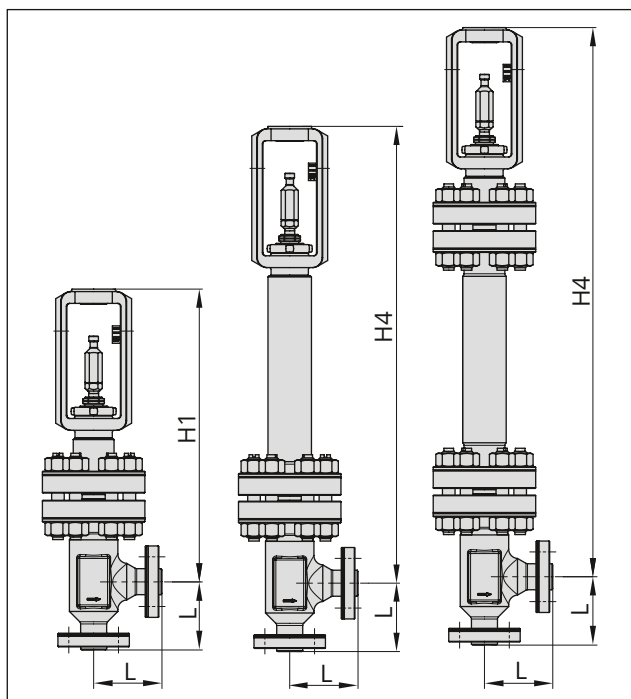


Fig. 5: Type 3259 · Standard version (left) · With insulating section (middle) · With bellows seal (right)

i Note

The associated actuator documentation applies to actuators, e.g. SAMSON pneumatic actuators:

- ▶ T 8310-1 for Type 3271 and Type 3277 Actuators up to 750 cm² actuator area
- ▶ T 8310-2 for Type 3271 Actuator with 1000 cm² actuator area and larger
- ▶ T 8310-3 for Type 3271 Actuator with 1400-60 cm² actuator area

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 valve nameplate match the specifications in the delivery note. See Chapter 2 for more details on the nameplate.
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 Chapter 3.5.

4.2 Removing the packaging from the valve

Observe the following sequence:

- ⇒ Do not open or remove the packaging until immediately before lifting the control valve to install it into the pipeline.
- ⇒ Leave the control valve 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 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 valve

⚠ DANGER

Danger due to suspended loads falling.

- ⇒ Stay clear of suspended or moving loads.
- ⇒ Close off and secure the transport paths.

⚠ 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 valve (including actuator and packaging, if applicable).

⚠ WARNING

Risk of personal injury due to the control valve tipping over.

- ⇒ Observe the control valve's center of gravity.
- ⇒ Secure the control valve against tipping over or turning.

⚠ WARNING

Risk of injury due to incorrect lifting without the use of lifting equipment.

Lifting the control valve without the use of lifting equipment may lead to injuries (back injuries in particular) depending on its weight.

- ⇒ Observe the occupational health and safety regulations valid in the country of use.

ⓘ NOTICE

Risk of control valve damage due to incorrectly attached slings.

The lifting eyelet/eyebolt on SAMSON actuators is only intended for mounting and removing the actuator as well as lifting the actuator without valve. Do not use this lashing point to lift the entire control valve assembly.

- ⇒ When lifting the control valve, make sure that the slings attached to the valve body bear the entire load.
- ⇒ Do not attach load-bearing slings to the actuator, handwheel or any other parts.
- ⇒ Observe lifting instructions (see Chapter 4.3.2).

Tip

A swivel hoist can be screwed into SAMSON actuators with a female thread on the top diaphragm case in place of the eyebolt (see associated actuator documentation).

In contrast to the lifting eyelet/eyebolt, the swivel hoist is designed for setting a control valve assembly upright. The sling between the swivel hoist and rigging equipment (hook, shackle etc.) must not bear any load when lifting a control valve assembly. The sling only protects the control valve from tilting while being lifted.

Tip

Our after-sales service can provide more detailed transport and lifting instructions on request.

4.3.1 Transporting the valve

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

- ⇒ Leave the control valve in its transport container or on the pallet to transport it.
- ⇒ Observe the transport instructions.

Transport instructions

- Protect the control valve against external influences (e.g. impact).
- Do not damage the corrosion protection (paint, surface coatings). Repair any damage immediately.
- Protect the piping and any mounted valve accessories against damage.
- Protect the control valve against moisture and dirt.
- The permissible transportation temperature of standard control valves is -20 to +65 °C.

Note

Contact our after-sales service for the transportation temperatures of other valve versions.

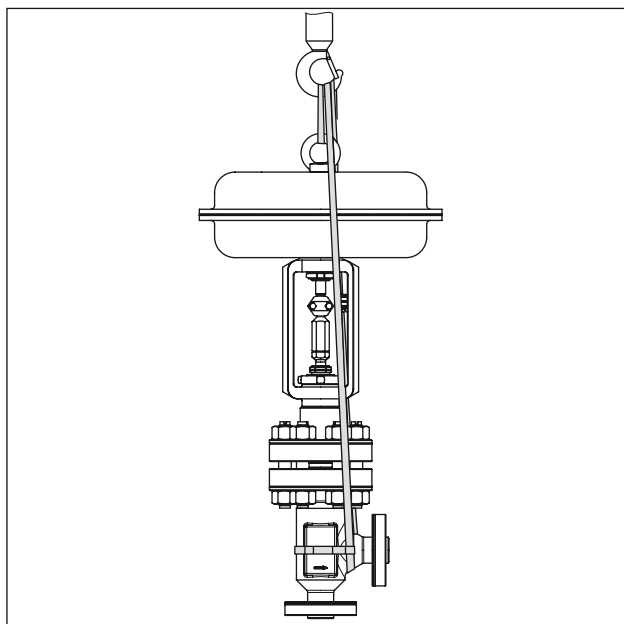


Fig. 6: Lifting points on the control valve when lifting the control valve in the upright position

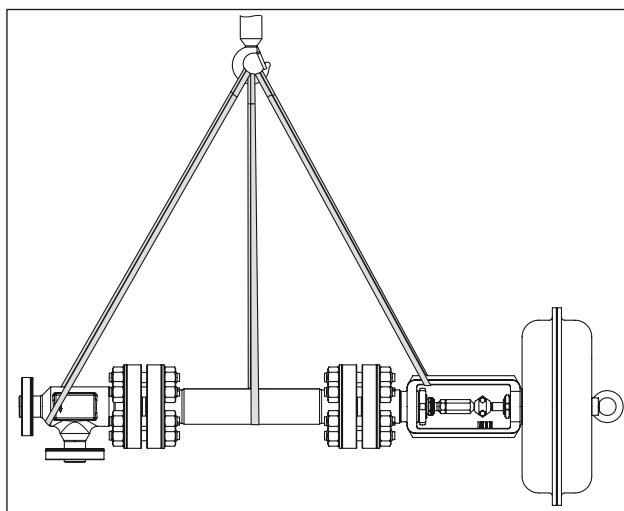


Fig. 7: Lifting using one hook

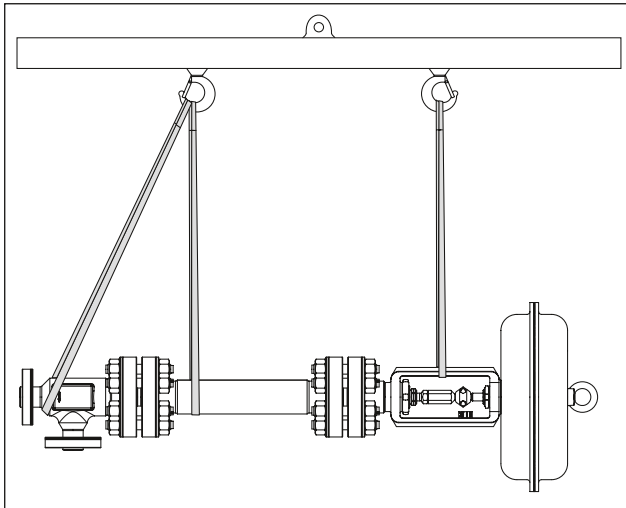


Fig. 8: Lifting using a beam

4.3.2 Lifting the valve

See Fig. 6 to Fig. 8

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

Lifting instructions

- Use a hook with safety latch to secure the slings from slipping off the hook during lifting and transporting.
- Secure slings against slipping.
- Make sure the slings can be removed from the device once it has been installed into the pipeline.
- Prevent the control valve from tilting or tipping over.
- Do not leave loads suspended when interrupting work for longer periods of time.

Lifting the control valve in the horizontal position

The control valve can be lifted in the horizontal position either using one hook (see Fig. 7) or using several hooks on a beam (see Fig. 8).

1. Attach one sling to the valve body, bonnet and actuator yoke as well as to the rigging equipment (e.g. hook) of the crane or forklift.
2. Carefully lift the control valve. Check whether the lifting equipment and accessories can bear the weight.
3. Move the control valve at an even pace to the site of installation.
4. Install the control valve into the pipeline (see Chapter 5).

5. After installation in the pipeline, check whether the flanges are bolted tight and the valve in the pipeline holds.
6. Remove slings.

Lifting the control valve in the upright position

The control valves can also be lifted in the upright position (see Fig. 6).

On lifting the control valve in the upright position, make sure the following conditions are met:

- Make sure that the axis of the pipeline is always horizontal during lifting and the axis of the plug stem is always vertical.
- Make sure that the additional sling between the lashing point on the actuator and rigging equipment (hook, shackle etc.) does not bear any load when lifting valves with an actuator that has a lifting eyelet/eyebolt on it. The sling only protects the control valve from tilting while being lifted. Before lifting the control valve, tighten the sling.

For lifting in the upright position, proceed as follows:

1. Attach one sling to the body flange and one sling to the rigging equipment (e.g. hook) of the crane or forklift.
2. Secure the slings attached to the body against slipping using a connector.
3. **Mounted actuator with lashing point:** Attach other slings to the lashing point on the actuator and to the rigging equipment.
4. Carefully lift the control valve. Check whether the lifting equipment and accessories can bear the weight.
5. Move the control valve at an even pace to the site of installation.
6. Install the control valve into the pipeline (see Chapter 5).
7. After installation in the pipeline, check whether the flanges are bolted tight and the valve in the pipeline holds.
8. Remove connectors and slings.

4.4 Storing the valve

NOTICE

Risk of valve 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 control valve and the prevailing storage conditions during long storage periods.

Storage instructions

- Protect the control valve against external influences (e.g. impact).
- Secure the control valve assembly in the stored position against slipping or tipping over.
- Do not damage the corrosion protection (paint, surface coatings). Repair any damage immediately.
- Protect the control valve 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 control valves is -20 to +65 °C. Contact our after-sales service for the storage temperatures of other valve versions.
- Do not place any objects on the control valve.

Special storage instructions for elastomers

Elastomer, e.g. actuator 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

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 control valve is the front view looking onto the operating controls (including valve accessories).

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

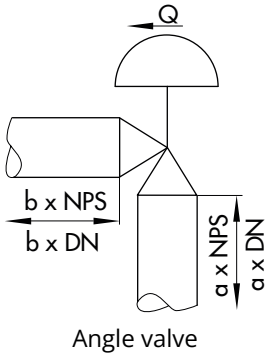
The inlet and outlet lengths (see Table 5) vary depending on several variables and process conditions and are intended as recommendations. Contact SAMSON if the lengths are significantly shorter than the recommended lengths.

To ensure that the control valve functions properly, proceed as follows:

- ⇒ Observe the recommended inlet and outlet lengths (see Table 5). Contact SAMSON if the valve conditions or state of the process medium are different from those specified.
- ⇒ Install the control valve free of stress and with the least amount of vibrations as possible. Read sections 'Mounting position' and 'Support and suspension' in this chapter.
- ⇒ Install the control valve allowing sufficient space to remove the actuator and valve or to perform service and repair work on them.

Installation

Table 5: Inlet and outlet lengths

			
		Q Flow rate a Inlet length b Outlet length	
State of process medium	Valve conditions	Inlet length a	Outlet length b
Gases	$Ma \leq 0.3$	2	4
	$0.3 \leq Ma \leq 0.7$	2	10
Vapor	$Ma \leq 0.3$	2	4
	$0.3 \leq Ma \leq 0.7$	2	10
	Wet steam (percentage of condensate >5 %)	2	20
Liquids	Free of cavitation/ $w < 10$ m/s	2	4
	Cavitation producing noise/ $w \leq 3$ m/s	2	4
	Cavitation producing noise/ $3 < w < 5$ m/s	2	10
	Critical cavitation/ $w \leq 3$ m/s	2	10
	Critical cavitation/ $3 < w < 5$ m/s	2	20
Flashing	-	2	20
Multi-phase	-	10	20

Mounting position

Generally, SAMSON recommends installing the valve with the actuator upright and on top of the valve.

In the following versions/applications, the valve **must** be installed with the actuator on top:

- Valves with insulating section or bellows seal for low temperatures below -10 °C
- ⇒ Contact SAMSON if the mounting position is not as specified above.

Support and suspension

i Note

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

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

In the following versions, the control valve must be supported or suspended with the appropriate support or suspension:

- Valves that are not installed with the actuator in the upright position on top of the valve.
- Valves with insulating section or bellows seal
- For actuators weighing >50 kg

Valve accessories

- ⇒ During connection of valve accessories, make sure that they are easily accessible and can be operated safely from the work position.

Vent plug

Vent plugs are screwed into the exhaust air ports of pneumatic and electropneumatic devices. They ensure that any exhaust air that forms can be vented to the atmosphere (to avoid excess pressure in the device). Furthermore, the vent plugs allow air intake to prevent a vacuum from forming in the device.

- ⇒ Locate the vent plug on the opposite side to the work position of operating personnel.

5.2 Preparation for installation

Before installation, make sure the following conditions are met:

- The valve is clean.
- The valve and all valve accessories (including piping) are not damaged.
- The valve 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 Chapter 2 for more details on the nameplate.
- The requested or required additional pipe fittings (see Chapter 3.3) have been installed or prepared as necessary before installing the valve.

NOTICE

Risk of control valve damage due to incorrect insulation.

- ⇒ Only insulate control valves up to the bonnet flange of the valve body (see Fig. 9). This also applies to versions with bellows seal or insulating section at medium temperatures below 0 °C or above 220 °C. If the insulating section is insulated, it will not function properly.

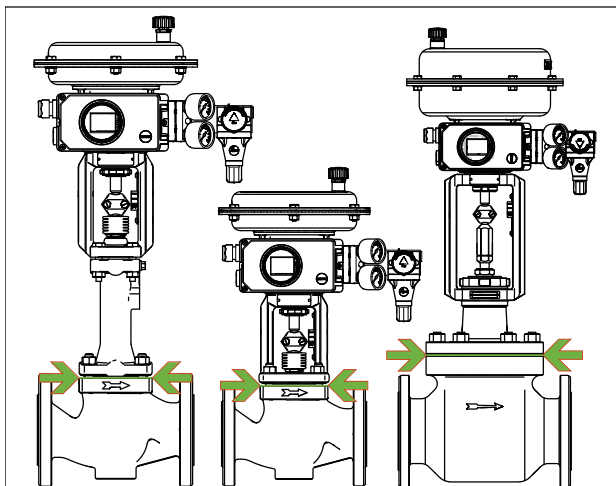


Fig. 9: Limit of insulation for control valves (example shown)

Proceed as follows:

- ⇒ Lay out the necessary material and tools to have them ready during installation work.
- ⇒ Flush the pipelines.

Note

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 valve.
- ⇒ Check any mounted pressure gauges to make sure they function properly.
- ⇒ When the valve and actuator are already assembled, check the tightening torques of the bolted joints. Components may loosen during transport.

5.3 Mounting the device

The activities listed below are necessary to install the valve and before it can be started up.

NOTICE

Risk of leakage and valve damage due to over- or under-torquing.

Observe the specified torques when tightening control valve components. Over-torquing leads to parts wearing out more quickly. Under-torquing may cause leakage.

- ⇒ Observe the tightening torques specified in ► AB 0100.

NOTICE

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

Certain tools are required to work on the valve.

- ⇒ Only use tools approved by SAMSON (► AB 0100).

5.4 Mounting the actuator onto the valve

WARNING

Risk of personal injury due to preloaded springs in pneumatic actuators.

Valves in combination with pneumatic actuators with preloaded springs are under tension. These control valves with SAMSON Type 3271 or Type 3277 Pneumatic Actuators can be identified by the long bolts protruding from the bottom of the actuator.

Installation

⇒ Before starting any work on the actuator, which requires the actuator to be opened, or when the actuator stem has become blocked, relieve the compression from the preloaded springs (see associated actuator documentation).

Depending on the version, SAMSON control valves are either delivered with the actuator already mounted on the valve or the valve and actuator are delivered separately. When delivered separately, the valve and actuator must be assembled together on site.

Versions with V-port plug

To achieve the best flow conditions inside the valve, the V-port plug must always be installed with the port that releases the flow first when the valve opens facing toward the valve outlet. This is the largest of the three V-shaped ports (see Fig. 10).

- ⇒ Before mounting the actuator, determine which V-shaped port is uncovered first when the plug is lifted out of the seat.
- ⇒ On mounting the actuator, make sure that the V-shaped port uncovered first faces toward the valve outlet.

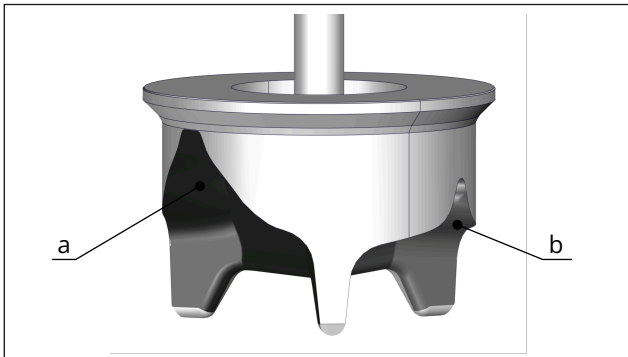


Fig. 10: V-port plug (example shown)

- a 1x large V-port:
First to release the flow when the plug is lifted out of the seat.
- b 2x small V-ports

i Note

In contrast to unsymmetrical plugs (e.g. V-port plug or perforated plug), the parabolic plug does not need to be aligned in any special way.

Versions with perforated plug

Only one hole is located near the seal facing of perforated plugs with equal percentage characteristic. Depending on the nominal size, the hole pattern

varies and is partly unsymmetrical. The process medium in the valve flows through the holes as soon as the plug is lifted out of the seat. To achieve the best flow conditions inside the valve, the perforated plug must always be installed with the hole that releases the flow first when the valve opens facing toward the valve outlet (see Fig. 11).

- ⇒ Before mounting the actuator, check the hole pattern of the perforated plug and determine which hole is the closest to the seal facing. This hole is the first hole to release the flow when the plug is lifted out of the seat.
- ⇒ On mounting the actuator, make sure that the hole uncovered first faces toward the valve outlet.

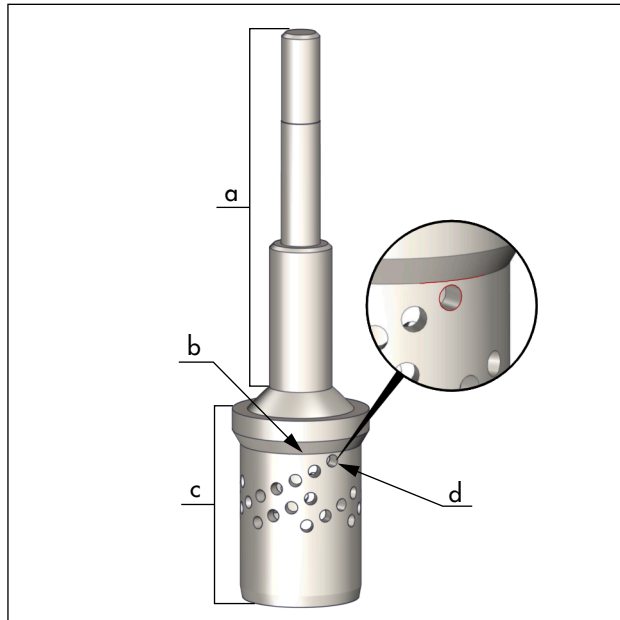


Fig. 11: Perforated plug (example shown)

- a Plug stem
- b Seal facing
- c Perforated plug
- d Hole closest to the seal facing of the plug

Mounting the actuator

- ⇒ To mount the actuator, proceed as described in the associated actuator documentation.

5.5 Installing the valve into the pipeline

NOTICE

Premature wear and leakage due to insufficient support or suspension.

⇒ Support or suspend the valve sufficiently at suitable points.

Version with flanges

1. Close the shut-off valves in the pipeline at the inlet and outlet of the plant section while the valve is being installed.
2. Prepare the relevant section of the pipeline for installing the valve.
3. Remove the protective caps from the valve ports before installing the valve.
4. Lift the valve using suitable lifting equipment to the site of installation (see Chapter 4.3.2). Observe the flow direction through the valve. The arrow on the valve indicates the direction of flow.
5. Make sure that the correct flange gaskets are used.
6. Bolt the pipe to the valve free of stress.
7. Attach a support or suspension on the valve, if necessary.

5.6 Testing the installed valve

DANGER

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

Control valves and pipelines are pressure equipment that may burst when handled incorrectly. Flying projectile fragments or the release of process medium under pressure can cause serious injury or even death. Before starting any work on pressure-bearing or pressure-retaining parts belonging to the valve assembly:

- ⇒ Depressurize all plant sections affected and the valve (including the actuator). Release any stored energy.
- ⇒ Drain the process medium from the plant sections affected as well as from the valve.

WARNING

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

Valves with a bellows seal have a test connection at the top on the intermediate piece.

- ⇒ Do not loosen the screw on the test connection 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. Additionally, a loud noise may briefly occur through the sudden venting of the pneumatic actuator or pneumatic valve accessories not fitted with noise-reducing elements. Both can damage hearing.

- ⇒ Follow the standard operating procedures provided by the plant operator.

In the event of a potential risk:

- ⇒ Wear hearing protection when working near the valve.

WARNING

Crush hazard arising from moving parts.

The control valve contains moving parts (actuator and plug stem), which can injure hands or fingers if inserted into the valve.

- ⇒ Do not insert hands or finger into the yoke while the air supply is connected to the actuator.
- ⇒ Before working on the pneumatic control valve, disconnect and lock the pneumatic air supply as well as the control signal.
- ⇒ Do not impede the movement of the actuator and plug stem by inserting objects into the yoke.
- ⇒ Before unblocking the actuator and plug stem after they have become blocked (e.g. due to seizing up after remaining in the same position for a long time), release any stored energy in the actuator (e.g. spring compression). See associated actuator documentation.

⚠ WARNING

Risk of personal injury due to exhaust air being vented or compressed air escaping from pneumatically operated components.

When the valve is operated with a pneumatic actuator or pneumatic valve accessories, exhaust air is vented from the actuator, for example, while the valve is operating and when the valve opens or closes.

⇒ Wear eye protection when working in close proximity to pneumatic fittings and in the danger zone of the vent openings.

⚠ WARNING

Risk of personal injury due to preloaded springs in pneumatic actuators.

Valves in combination with pneumatic actuators with preloaded springs are under tension. These control valves with SAMSON Type 3271 or Type 3277 Pneumatic Actuators can be identified by the long bolts protruding from the bottom of the actuator.

⇒ Before starting any work on the actuator, which requires the actuator to be opened, or when the actuator stem has become blocked, relieve the compression from the preloaded springs (see associated actuator documentation).

To test the valve functioning before start-up or putting back the valve into operation, perform the following tests:

5.6.1 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

Our after-sales service can support you to plan and perform a leak test for your plant.

1. Close the valve.
2. Slowly apply the test medium to the inlet space upstream of the valve. A sudden surge in pressure and resulting high flow velocities can damage the valve.
3. Open the valve.

4. Apply the required test pressure.
5. Check the valve for leakage to the atmosphere.
6. Depressurize the pipeline section and valve.
7. Rework any parts that leak (see section 'Adjusting the packing') and repeat the leak test.

Adjusting the packing

A label on the yoke indicates whether an adjustable packing is installed (see Chapter 2).

ⓘ NOTICE

Impaired valve functioning due to increased friction as a result of the threaded bushing being tightened too far.

⇒ Make sure that the plug stem can still move smoothly after the threaded bushing has been tightened.

1. Tighten the threaded bushing gradually (by turning it clockwise) until the packing seals the valve.
 2. Open and close the valve several times.
 3. Check the valve for leakage to the atmosphere.
 4. Repeat steps 1 and 2 until the packing completely seals the valve.
- ⇒ If the adjustable packing does not seal properly, contact our after-sales service.

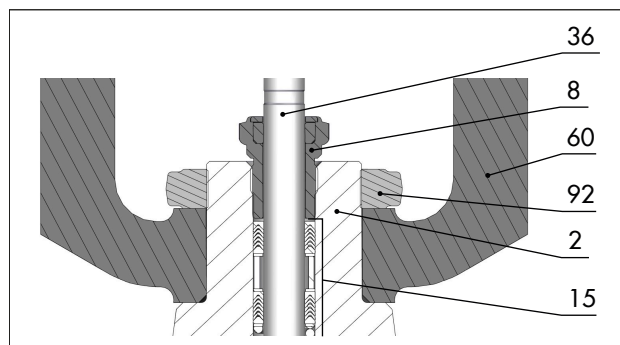


Fig. 12: Packing with threaded bushing (centrally fastened) (example shown)

2	Valve bonnet	36	Plug or piston stem
8	Threaded bushing	60	Yoke
15	Packing set	92	Castellated nut

5.6.2 Travel motion

The movement of the actuator stem must be linear and smooth.

- ⇒ Apply the maximum and minimum control signals to check the end positions of the valve while observing the movement of the actuator stem.
- ⇒ Check the travel reading at the travel indicator scale.

5.6.3 Fail-safe position

The fail-safe position of a valve can only be checked when the valve is combined with an actuator that moves to the fail-safe position upon air supply or control signal failure.

Fail-safe position with pneumatic actuators with integrated springs

- ⇒ Shut off the signal pressure line.
- ⇒ Check whether the valve moves to the fail-safe position (see Chapter 3.1).

5.6.4 Pressure test

The plant operator is responsible for performing the pressure test.

**Tip**

Our after-sales service can support you to plan and perform a pressure test for your plant.

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

- Retract the plug stem to open the valve.
- Observe the maximum permissible pressure for both the valve and plant.

6 Start-up

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 pipelines.

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

⇒ Follow the standard operating procedures provided by the plant operator.

In the event of a potential risk:

⇒ 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.

Valves with a bellows seal have a test connection at the top on the intermediate piece.

⇒ Do not loosen the screw on the test connection 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. Additionally, a loud noise may briefly occur through the sudden venting of the pneumatic actuator or pneumatic valve accessories not fitted with noise-reducing elements. Both can damage hearing.

⇒ Follow the standard operating procedures provided by the plant operator.

In the event of a potential risk:

⇒ Wear hearing protection when working near the valve.

⚠ WARNING

Crush hazard arising from moving parts.

The control valve contains moving parts (actuator and plug stem), which can injure hands or fingers if inserted into the valve.

⇒ Do not insert hands or finger into the yoke while the air supply is connected to the actuator.

⇒ Before working on the pneumatic control valve, disconnect and lock the pneumatic air supply as well as the control signal.

⇒ Do not impede the movement of the actuator and plug stem by inserting objects into the yoke.

⇒ Before unblocking the actuator and plug stem after they have become blocked (e.g. due to seizing up after remaining in the same position for a long time), release any stored energy in the actuator (e.g. spring compression). See associated actuator documentation.

⚠ WARNING

Risk of personal injury due to exhaust air being vented or compressed air escaping from pneumatically operated components.

When the valve is operated with a pneumatic actuator or pneumatic valve accessories, exhaust air is vented from the actuator, for example, while the valve is operating and when the valve opens or closes.

⇒ Wear eye protection when working in close proximity to pneumatic fittings and in the danger zone of the vent openings.

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

- The control valve is properly installed into the pipeline (see Chapter 5).
 - The leak and function tests have been completed successfully (see Chapter 5.6).
 - The prevailing conditions in the plant section affected meet the valve sizing requirements (see section 'Intended use' in Chapter 1).
-

Start-up/putting the device back into operation

1. Allow the valve to cool down or warm up to reach ambient temperature before start-up when the ambient temperature and process medium temperature differ greatly or the medium properties require such a measure.
2. 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.
3. Check the valve to ensure it functions properly.

7 Operation

Immediately after completing start-up or putting the valve back into operation, the valve is ready for use.

⚠ WARNING

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

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

⇒ Follow the standard operating procedures provided by the plant operator.

In the event of a potential risk:

⇒ 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.

Valves with a bellows seal have a test connection at the top on the intermediate piece.

⇒ Do not loosen the screw on the test connection 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. Additionally, a loud noise may briefly occur through the sudden venting of the pneumatic actuator or pneumatic valve accessories not fitted with noise-reducing elements. Both can damage hearing.

⇒ Follow the standard operating procedures provided by the plant operator.

In the event of a potential risk:

⇒ Wear hearing protection when working near the valve.

⚠ WARNING

Crush hazard arising from moving parts.

The control valve contains moving parts (actuator and plug stem), which can injure hands or fingers if inserted into the valve.

⇒ Do not insert hands or finger into the yoke while the air supply is connected to the actuator.

⇒ Before working on the pneumatic control valve, disconnect and lock the pneumatic air supply as well as the control signal.

⇒ Do not impede the movement of the actuator and plug stem by inserting objects into the yoke.

⇒ Before unblocking the actuator and plug stem after they have become blocked (e.g. due to seizing up after remaining in the same position for a long time), release any stored energy in the actuator (e.g. spring compression). See associated actuator documentation.

⚠ WARNING

Risk of personal injury due to exhaust air being vented or compressed air escaping from pneumatically operated components.

When the valve is operated with a pneumatic actuator or pneumatic valve accessories, exhaust air is vented from the actuator, for example, while the valve is operating and when the valve opens or closes.

⇒ Wear eye protection when working in close proximity to pneumatic fittings and in the danger zone of the vent openings.

7.1 Normal operation

The handwheel of valves with actuators fitted with a handwheel must be in the neutral position during normal operation.

7.2 Manual operation

Valves with actuators fitted with a handwheel can be manually closed or opened in the event of failure of the auxiliary energy supply.

8 Malfunctions

Read hazard statements, warnings and caution notes in Chapter 1.

8.1 Troubleshooting

Error	Possible reasons	Recommended action
Actuator and plug stem does not move on demand.	Actuator is blocked.	Put the control valve out of operation (see Chapter 10) and remove the blockage. WARNING! A blocked actuator or plug stem (e.g. due to seizing up after remaining in the same position for a long time) can suddenly start to move uncontrollably. Injury to hands or fingers is possible if they are inserted into the actuator or valve. Before trying to unblock the actuator or plug stem, disconnect and lock the pneumatic air supply as well as the control signal. Before unblocking the actuator, release any stored energy in the actuator (e.g. spring compression). See associated actuator documentation.
	Pneumatic actuators: Diaphragm in the actuator defective	See associated actuator documentation.
	Pneumatic actuator: Signal pressure too low	Check the signal pressure. Check the signal pressure line for leakage.
Jolting movement of the actuator and plug stem	Version with adjustable packing ¹⁾ : Packing tightened too far	Tighten the packing correctly (see section 'Adjusting the packing' in Chapter 5.6.1).
Actuator and plug stem do not stroke through the full range.	Pneumatic actuator: Signal pressure too low	Check the signal pressure. Check the signal pressure line for leakage.
	Travel stop active	See associated actuator documentation.
	Incorrect setting of valve accessories	Check the settings of the valve accessories.
Increased flow through closed valve (seat leakage)	Dirt or other foreign particles deposited between the seat and plug.	Shut off the section of the pipeline and flush the valve.
	Valve trim is worn out.	Replace valve trim (see Chapter 9) or contact our after-sales service.
The valve leaks to the atmosphere (fugitive emissions).	Defective packing	Replace packing (see Chapter 9) or contact our after-sales service.
	Version with adjustable packing ¹⁾ : Packing not tightened correctly	Adjust the packing (see section 'Adjusting the packing' in Chapter 5.6.1). Contact our after-sales service when it continues to leak.
	Version with bellows seal: the metal bellows is defective	Contact our after-sales service.
	Flanged joint loose or body gaskets worn out	Check the flanged joint. Replace gaskets at the flanged joint (see Chapter 9) or contact our after-sales service.

¹⁾ See Chapter 2

i Note

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

8.2 Emergency action

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

In the event of a valve malfunction:

1. Close the shut-off valves upstream and downstream of the control valve to stop the process medium from flowing through the valve.
2. Perform troubleshooting (see Chapter 8.1).
3. Rectify those malfunctions that can be remedied following the information given in this document. Contact our after-sales service in all other cases.

Putting the device back into operation after a malfunction

See Chapter 6.

9 Servicing

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

The following documents are also required for servicing the control valve:

- Mounting and operating instructions for the mounted actuator, for example:
 - ► EB 8310-X for Type 3271 and Type 3277 Pneumatic Actuators
- ► AB 0100 for tools, tightening torques and lubricants

⚠ DANGER

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

Control valves and pipelines are pressure equipment that may burst when handled incorrectly. Flying projectile fragments or the release of process medium under pressure can cause serious injury or even death. Before starting any work on pressure-bearing or pressure-retaining parts belonging to the valve assembly:

- ⇒ *Depressurize all plant sections affected and the valve (including the actuator). Release any stored energy.*
- ⇒ *Drain the process medium from the plant sections affected as well as from the valve.*

⚠ WARNING

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

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

- ⇒ *Follow the standard operating procedures provided by the plant operator.*
- In the event of a potential risk:*
 - ⇒ *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.

Valves with a bellows seal have a test connection at the top on the intermediate piece.

- ⇒ *Do not loosen the screw on the test connection 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. Additionally, a loud noise may briefly occur through the sudden venting of the pneumatic actuator or pneumatic valve accessories not fitted with noise-reducing elements. Both can damage hearing.

- ⇒ *Follow the standard operating procedures provided by the plant operator.*
- In the event of a potential risk:*
 - ⇒ *Wear hearing protection when working near the valve.*

⚠ WARNING

Crush hazard arising from moving parts.

The control valve contains moving parts (actuator and plug stem), which can injure hands or fingers if inserted into the valve.

- ⇒ *Do not insert hands or finger into the yoke while the air supply is connected to the actuator.*
- ⇒ *Before working on the pneumatic control valve, disconnect and lock the pneumatic air supply as well as the control signal.*
- ⇒ *Do not impede the movement of the actuator and plug stem by inserting objects into the yoke.*
- ⇒ *Before unblocking the actuator and plug stem after they have become blocked (e.g. due to seizing up after remaining in the same position for a long time), release any stored energy in the actuator (e.g. spring compression). See associated actuator documentation.*

⚠ WARNING

Risk of personal injury due to exhaust air being vented or compressed air escaping from pneumatically operated components.

When the valve is operated with a pneumatic actuator or pneumatic valve accessories, exhaust air is vented from the actuator, for example, while the valve is operating and when the valve opens or closes.

- ⇒ Wear eye protection when working in close proximity to pneumatic fittings and in the danger zone of the vent openings.

⚠ WARNING

Risk of personal injury due to preloaded springs in pneumatic actuators.

Valves in combination with pneumatic actuators with preloaded springs are under tension. These control valves with SAMSON Type 3271 or Type 3277 Pneumatic Actuators can be identified by the long bolts protruding from the bottom of the actuator.

- ⇒ Before starting any work on the actuator, which requires the actuator to be opened, or when the actuator stem has become blocked, relieve the compression from the preloaded springs (see associated actuator documentation).

⚠ WARNING

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

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

- ⇒ Follow the standard operating procedures provided by the plant operator.
In the event of a potential risk:
 - ⇒ If possible, drain the process medium from the plant sections affected and from the valve.
 - ⇒ Wear protective clothing, safety gloves, respiratory protection and eye protection.

ⓘ NOTICE

Risk of leakage and valve damage due to over- or under-torquing.

Observe the specified torques when tightening control valve components. Over-torquing leads to parts wear-

ing out more quickly. Under-torquing may cause leakage.

- ⇒ Observe the tightening torques specified in ► AB 0100.

ⓘ NOTICE

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

Certain tools are required to work on the valve.

- ⇒ Only use tools approved by SAMSON (► AB 0100).

ⓘ NOTICE

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

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

- ⇒ Only use lubricants approved by SAMSON (► AB 0100).

i Note

The control valve was checked by SAMSON before delivery.

- Certain test results certified by SAMSON lose their validity when the valve 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.

9.1 Periodic testing

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

💡 Tip

Our after-sales service can support you in drawing up an inspection and test plan for your plant.

SAMSON recommends the following inspections and tests:

Inspection and testing	Recommended action to be taken in the event of a negative result
Check the markings, labels and nameplates on the control valve for their readability and completeness.	Immediately renew damaged, missing or incorrect nameplates or labels. Clean any inscriptions that are covered with dirt and are illegible.
External leakage ¹⁾ : Inspect the control valve at the possible points of leakage to ensure there is no leakage (see following image). Version with bellows seal: WARNING! Risk of personal injury due to pressurized components and as a result of process medium being discharged. Do not loosen the screw on the test connection while the valve is pressurized.	Check the bolted joint (tightening torque). Replace the gaskets at the flanged joints. To do so, put the control valve out of operation (see Chapter 10). Version with adjustable packing ²⁾ : Adjust the packing (see section 'Adjusting the packing' in Chapter 5.6.1) or replace the packing (see Chapter 9.4). If the bellows seal is defective, put the control valve out of operation (see Chapter 10). Contact our after-sales service to repair the bellows seal (see Chapter 12).
Seat leakage ¹⁾ (see following image) (without testing to check that the leakage class requirements are met)	Shut off the section of the pipeline and flush the valve to remove any dirt and/or deposited foreign particles between the seat and plug. Renew seat and plug, if necessary (see Chapter 9.4). To do so, put the control valve out of operation (see Chapter 10).
Check the control valve for external damage that could impair the proper functioning of the control valve or even its safe operation.	Repair any damage immediately. If necessary, put the control valve out of operation to do so (see Chapter 10).
Check the valve accessories to ensure they are firmly mounted.	Tighten the connections of the valve accessories.
Check to ensure that the actuator and plug stems move smoothly.	Version with adjustable packing ²⁾ : Tighten the packing correctly (see section 'Adjusting the packing' in Chapter 5.6.1). If the actuator stem or plug stem is blocked, put the control valve out of operation (see Chapter 10) and remove the blockage. WARNING! A blocked actuator or plug stem (e.g. due to seizing up after remaining in the same position for a long time) can suddenly start to move uncontrollably. Injury to hands or fingers is possible if they are inserted into the actuator or valve. Before trying to unblock the actuator or plug stem, disconnect and lock the pneumatic air supply as well as the control signal. Before unblocking the actuator, release any stored energy in the actuator (e.g. spring compression). See associated actuator documentation. SAMSON recommends the use of positioners with integrated diagnostic firmware for control valves used for on/off service. The partial stroke test included in this software helps prevent a shut-off valve normally in its end position from seizing up or getting jammed.
If possible, check the valve's fail-safe position by briefly interrupting the air supply.	Put the control valve out of operation (see Chapter 10). Identify the cause for the malfunction and rectify it (see Chapter 8).

¹⁾ EXPERTplus valve diagnostics can help identify external leakage at dynamic sealing systems as well as seat leakage in valve versions without balanced plugs while the valve is in use. EXPERTplus comes as standard in the digital positioners (Type 3730, TROVIS 3730, Type 3731, TROVIS 3793, TROVIS 3797).

²⁾ See Chapter 2

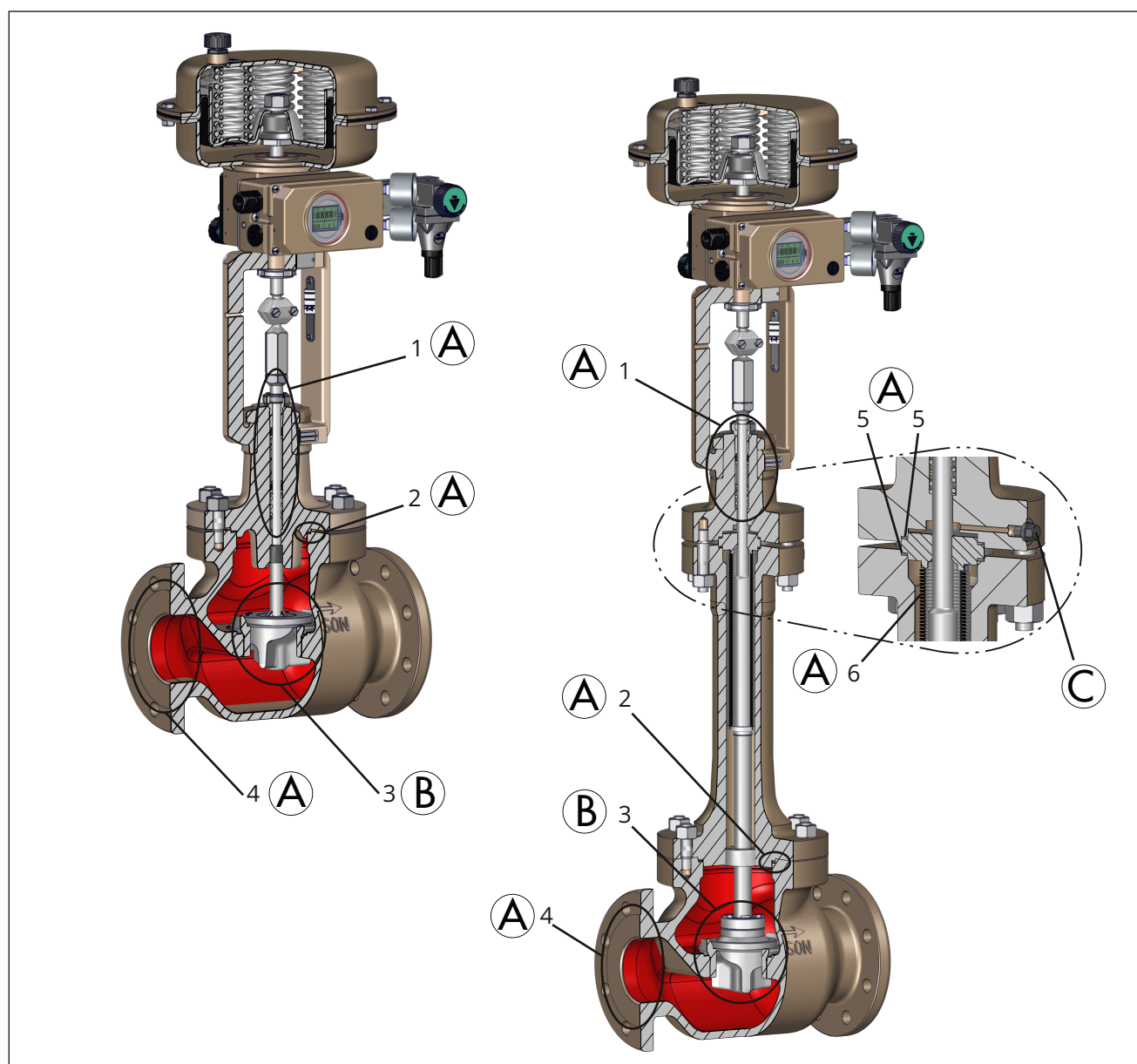


Fig. 13: Possible points of leakage on the control valve: Version with standard bonnet (left) and version with bellows seal (right), which also applies to versions with insulating section or intermediate piece.

- | | |
|--|---|
| Ⓐ External leakage | 3 Seat/body and plug/seat |
| Ⓑ Seat leakage | 4 Connection to the pipeline
(static sealing) |
| Ⓒ Test connection to monitor bellows for leakage | 5 Body gaskets at bellows seal/insulating section/intermediate
piece
(static sealing) |
| 1 Plug stem guide (packing)
(dynamic sealing) | 6 Metal bellows
(dynamic sealing) |
| 2 Body gaskets
(static sealing) | |

9.2 Service work preparations

1. Lay out the necessary material and tools to have them ready for the service work.
2. Put the control valve out of operation (see Chapter 10).

- Remove the actuator from the valve (see associated actuator documentation).

Note

To remove an actuator with “stem extends” fail-safe action and/or with preloaded springs, a certain signal pressure must be applied to the actuator (see associated actuator documentation). Once the work is completed, the signal pressure must be removed and the air supply disconnected again and locked.

Tip

SAMSON recommends removing the valve from the pipeline before performing any service work (see Chapter 11).

Once preparation is completed, the service and/or conversion work can be performed as described in the subchapters of Chapter 9.4.

9.3 Installing the valve after service work

- Mount actuator. See associated actuator documentation.
- Adjust lower or upper signal bench range (see associated actuator documentation).
- If the valve has been removed, re-install the valve into the pipeline (see Chapter 5).
- Put the control valve back into operation (see Chapter 6). Observe the requirements and conditions for start-up or putting the device back into operation.

9.4 Service work

- ⇒ Before performing any service work, preparations must be made to the control valve (see Chapter 9.2).
- ⇒ After all service work is completed, check the control valve before putting it back into operation (see Chapter 5.6).

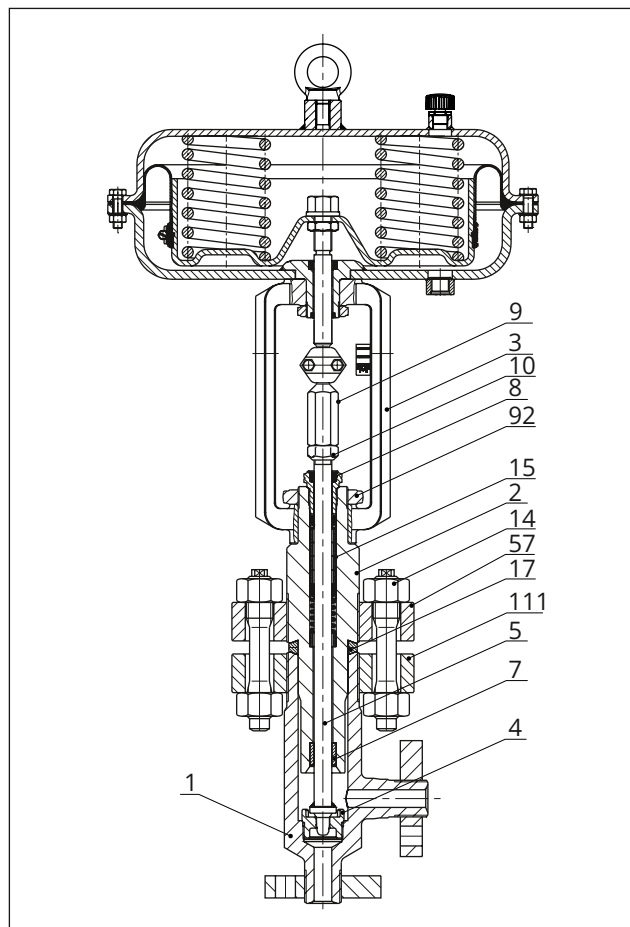


Fig. 14: Standard version of Type 3259

1	Body	10	Lock nut
2	Intermediate piece	14	Body nut
3	Yoke	15	Packing set
4	Seat	17	Body gasket (lens ring gasket)
5	Plug	57	Threaded flange
7	Guide bushing	92	Castellated nut
8	Threaded bushing (packing nut)	111	Threaded flange
9	Stem connector nut		

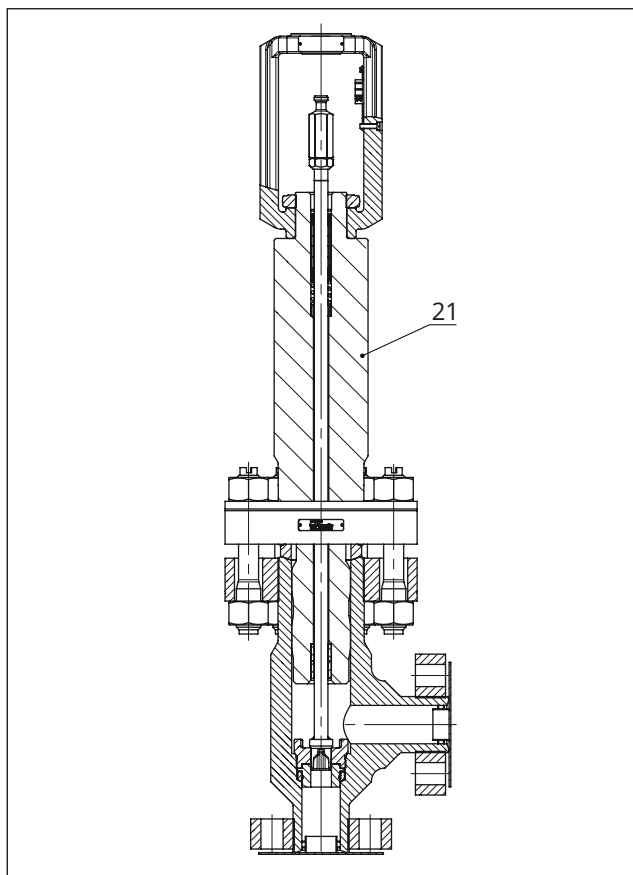


Fig. 15: Type 3259, version with insulating section

21 Insulating section

9.4.1 Replacing the body gasket

a) Standard version

1. Undo the body nuts (14) gradually in a criss-cross pattern. Remove the bolts (13).
2. Unscrew the intermediate piece (2) together with the plug (5) from the body (1).
3. Remove the body gasket (17). Carefully clean the sealing faces in the body (1) and on the intermediate piece (2).
4. Apply a suitable lubricant to the new body gasket (17) and insert it into the body.
5. Push the intermediate piece (2) together with the plug (5) into the body (1).

Make sure that the threaded flanges (57, 111) are positioned parallel to each other and that their bolt holes are aligned exactly above one another.

Version with V-port plug: Place the intermediate piece (2) onto the valve body, making sure that the largest V-shaped port of the V-port plug faces towards the valve outlet.

Version with perforated plug: Place the intermediate piece (2) onto the valve body, making

sure that the hole of the plug that releases the flow first faces toward the valve outlet.

See Chapter 5.4.

6. Insert the bolts (13) through the threaded flanges (57, 111) and tighten them. Observe tightening torques.
7. Tighten the body nuts (14) gradually in a criss-cross pattern. Observe tightening torques.

b) Version with insulating section

1. Undo the body nuts (14) gradually in a criss-cross pattern. Remove the bolts (13).
2. Pull the insulating section (21) together with the plug (5) out of the body (1).
3. Remove the body gasket (17). Carefully clean the sealing faces in the valve body (1) and on the insulating section (21).
4. Apply a suitable lubricant to the new body gasket (17) and insert it into the body.
5. Push the insulating section (21) together with the plug (5) into the body (1).

Make sure that the threaded flanges (57, 111) are positioned parallel to each other and that their bolt holes are aligned exactly above one another.

Version with V-port plug: Place the insulating section (21) onto the body, making sure that the largest V-shaped port of the plug faces towards the valve outlet.

Version with perforated plug: Place the insulating section (21) onto the valve body, making sure that the hole of the plug that releases the flow first faces toward the valve outlet.

See Chapter 5.4.

6. Insert the bolts (13) through the threaded flanges (57, 111) and tighten them. Observe tightening torques.
7. Tighten the body nuts (14) gradually in a criss-cross pattern. Observe tightening torques.

c) Version with bellows seal

NOTICE

Risk of leakage due damage of the metal bellows.

The metal bellows at one end is fixed to the plug stem and is not designed to accommodate any radial loads.

⇒ While mounting, make sure that no torque is transferred to the metal bellows and that the plug stem and metal bellows are not twisted against each other.

1. Undo the body nuts (14) gradually in a criss-cross pattern. Remove the bolts (13).
2. Pull the bellows seal (22) together with plug (29) and plug stem (37) out of the body (1).
3. Remove the body gasket (17). Carefully clean the sealing faces in the valve body (1) and on the bellows seal (22).
4. Apply a suitable lubricant to the new body gasket (17) and insert it into the body.
5. Push the bellows seal (22) together with plug (29) and plug stem (37) into the body (1).

Make sure that the threaded flanges (57, 111) are positioned parallel to each other and that their bolt holes are aligned exactly above one another.

Version with V-port plug: Place the bellows seal (22) onto the valve body, making sure that the largest V-shaped port of the V-port plug faces towards the valve outlet.

Version with perforated plug: Place the bellows seal (22) onto the valve body, making sure that the hole of the plug that releases the flow first faces toward the valve outlet.

See Chapter 5.4.

6. Insert the bolts (13) through the threaded flanges (57, 111) and tighten them. Observe tightening torques.
7. Tighten the body nuts (14) gradually in a criss-cross pattern. Observe tightening torques.

9.4.2 Replacing the packing

NOTICE

Risk of control valve damage due to incorrect servicing.

⇒ The packing can only be replaced when all the following conditions are met:

- The valve does not have a bellows seal.
- The standard or high-temperature (HT) packing is installed in the valve.

⇒ To replace the packing in other valve versions, contact our after-sales service.

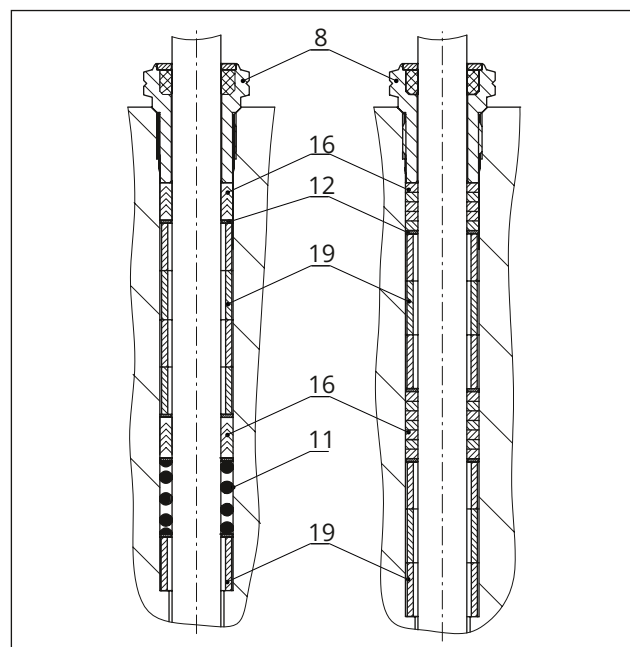


Fig. 16: Packing: Standard (left) · High-temperature (right)

- | | | | |
|----|------------------|----|--------------|
| 8 | Threaded bushing | 16 | Packing ring |
| 11 | Spring | 19 | Bushing |
| 12 | Washer | | |

a) Standard version

1. Unscrew the castellated nut (92) and lift the yoke (3) off the intermediate piece (2).
2. Undo the body nuts (14) gradually in a criss-cross pattern. Remove the bolts (13).
3. Unscrew the intermediate piece (2) together with the plug (5) from the body (1).
4. Replace body gasket (17) as described in Chapter 9.4.1.
5. Unscrew the stem connector nut (9) and lock nut (10) from the plug stem.
6. Unscrew the threaded bushing (8).
7. Pull the plug with plug stem (5) out of the intermediate piece (2).
8. Make sure that the guide bushing (7) is not damaged. If necessary, replace the guide bushing using a suitable tool.
9. Pull the entire packing out of the packing chamber using a suitable tool.

Servicing

10. Renew damaged parts. Clean the packing chamber thoroughly.
11. Apply a suitable lubricant to all packing parts and the plug stem (5).
12. Slide the plug with plug stem (5) into the intermediate piece (2).
13. Push the intermediate piece (2) together with the plug (5) into the body (1).

Make sure that the threaded flanges (57, 111) are positioned parallel to each other and that their bolt holes are aligned exactly above one another.

Version with V-port plug: Place the intermediate piece (2) onto the valve body, making sure that the largest V-shaped port of the V-port plug faces towards the valve outlet.

Version with perforated plug: Place the intermediate piece (2) onto the valve body, making sure that the hole of the plug that releases the flow first faces toward the valve outlet.

See Chapter 5.4.

14. Carefully slide the packing parts over the plug stem into the packing chamber using a suitable tool. Observe the proper sequence (see Fig. 16).
15. Insert the bolts (13) through the threaded flanges (57, 111) and tighten them. Observe tightening torques.
16. Tighten the body nuts (14) gradually in a criss-cross pattern. Observe tightening torques.
17. Screw in the threaded bushing (8) and tighten it. Observe tightening torques.
18. Place yoke (3) on the intermediate piece (2) and fasten using the castellated nut (92).
19. Loosely screw the lock nut (10) and stem connector nut (9) onto the plug stem.

b) Version with insulating section

1. Unscrew the castellated nut (92) and lift the yoke (3) off the insulating section (21).
2. Undo the body nuts (14) gradually in a criss-cross pattern. Remove the bolts (13).
3. Pull the insulating section (21) together with the plug (5) out of the body (1).
4. Replace body gasket (17) as described in Chapter 9.4.1.
5. Unscrew the stem connector nut (9) and lock nut (10) from the plug stem.
6. Unscrew the threaded bushing (8).

7. Pull the plug with plug stem (5) out of the insulating section (21).
8. Make sure that the guide bushing (7) is not damaged. If necessary, replace the guide bushing using a suitable tool.
9. Pull the entire packing out of the packing chamber using a suitable tool.
10. Renew damaged parts. Clean the packing chamber thoroughly.
11. Apply a suitable lubricant to all packing parts and the plug stem (5).
12. Slide the plug with plug stem (5) into the insulating section (21).
13. Push the insulating section (21) together with the plug (5) into the body (1).

Make sure that the threaded flanges (57, 111) are positioned parallel to each other and that their bolt holes are aligned exactly above one another.

Version with V-port plug: Place the insulating section (21) onto the body, making sure that the largest V-shaped port of the plug faces towards the valve outlet.

Version with perforated plug: Place the insulating section (21) onto the valve body, making sure that the hole of the plug that releases the flow first faces toward the valve outlet.

See Chapter 5.4.

14. Carefully slide the packing parts over the plug stem into the packing chamber using a suitable tool. Observe the proper sequence (see Fig. 16).
15. Insert the bolts (13) through the threaded flanges (57, 111) and tighten them. Observe tightening torques.
16. Tighten the body nuts (14) gradually in a criss-cross pattern. Observe tightening torques.
17. Screw in the threaded bushing (8) and tighten it. Observe tightening torques.
18. Place yoke (3) onto the insulating section (21) and fasten using the castellated nut (92).
19. Loosely screw the lock nut (10) and stem connector nut (9) onto the plug stem.

9.4.3 Replacing the seat and plug

NOTICE

Risk of control valve damage due to incorrect servicing.

- ⇒ Seat and plug can only be replaced when all the following conditions are met:
 - The valve does not have a bellows seal.
 - The standard or high-temperature (HT) packing is installed in the valve.
- ⇒ To replace seat and plug in other valve versions, contact our after-sales service.

NOTICE

Risk of damage to the facing of the seat and plug due to incorrect servicing.

- ⇒ Always replace both the seat and plug.

Tip

When replacing the seat and plug, SAMSON also recommends replacing the packing (see Chapter 9.4.2).

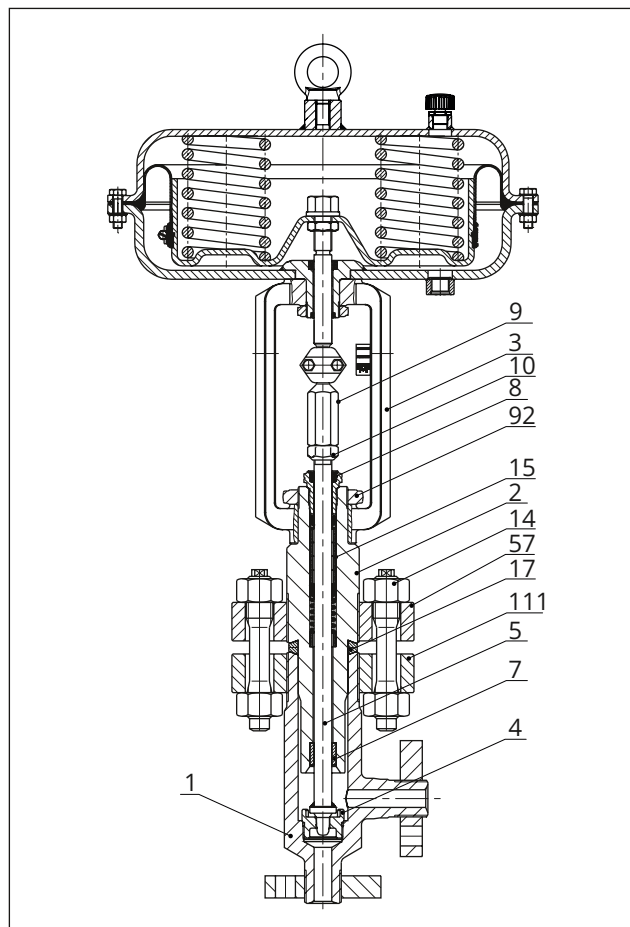


Fig. 17: Standard version of Type 3259

1	Body	10	Lock nut
2	Intermediate piece	14	Body nut
3	Yoke	15	Packing set
4	Seat	17	Body gasket (lens ring gasket)
5	Plug	57	Threaded flange
7	Guide bushing	92	Castellated nut
8	Threaded bushing (packing nut)	111	Threaded flange
9	Stem connector nut		

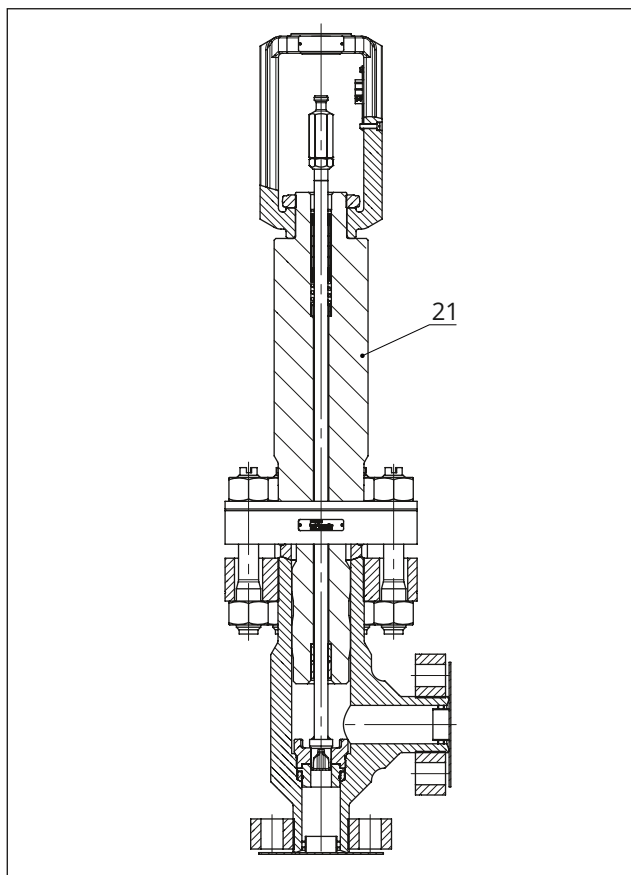


Fig. 18: Type 3259, version with insulating section

21 Insulating section

a) Standard version

1. Unscrew the castellated nut (92) and lift the yoke (3) off the intermediate piece (2).
2. Undo the body nuts (14) gradually in a criss-cross pattern. Remove the bolts (13).
3. Unscrew the intermediate piece (2) together with the plug (5) from the body (1).
4. Replace body gasket (17) as described in Chapter 9.4.1.
5. Unscrew the stem connector nut (9) and lock nut (10) from the plug stem.
6. Unscrew the threaded bushing (8).
7. Pull the plug with plug stem (5) out of the intermediate piece (2).
8. Make sure that the guide bushing (7) is not damaged. If necessary, replace the guide bushing using a suitable tool.
9. Pull the entire packing out of the packing chamber using a suitable tool.
10. Unscrew the seat (4) using a suitable tool.
11. Apply a suitable lubricant to the thread and sealing cone of the new seat.

12. Screw in the seat (4). Observe tightening torques.
13. Apply a suitable lubricant to all packing parts and the plug stem (5). SAMSON recommends replacing the packing as well (see Chapter 9.4.2).
14. Slide the new plug with plug stem (5) into the intermediate piece (2).
15. Push the intermediate piece (2) together with the plug (5) into the body (1).

Make sure that the threaded flanges (57, 111) are positioned parallel to each other and that their bolt holes are aligned exactly above one another.

Version with V-port plug: Place the intermediate piece (2) onto the valve body, making sure that the largest V-shaped port of the V-port plug faces towards the valve outlet.

Version with perforated plug: Place the intermediate piece (2) onto the valve body, making sure that the hole of the plug that releases the flow first faces toward the valve outlet.

See Chapter 5.4.

16. Carefully slide the packing parts over the plug stem into the packing chamber using a suitable tool. Observe the proper sequence (see Fig. 17).
17. Insert the bolts (13) through the threaded flanges (57, 111) and tighten them. Observe tightening torques.
18. Tighten the body nuts (14) gradually in a criss-cross pattern. Observe tightening torques.
19. Screw in the threaded bushing (8) and tighten it. Observe tightening torques.
20. Place yoke (3) on the intermediate piece (2) and fasten using the castellated nut (92).
21. Loosely screw the lock nut (10) and stem connector nut (9) onto the plug stem.

b) Version with insulating section

1. Unscrew the castellated nut (92) and lift the yoke (3) off the insulating section (21).
2. Undo the body nuts (14) gradually in a criss-cross pattern. Remove the bolts (13).
3. Pull the insulating section (21) together with the plug (5) out of the body (1).
4. Replace body gasket (17) as described in Chapter 9.4.1.
5. Unscrew the stem connector nut (9) and lock nut (10) from the plug stem.
6. Unscrew the threaded bushing (8).

7. Pull the plug with plug stem (5) out of the insulating section (21).
8. Make sure that the guide bushing (7) is not damaged. If necessary, replace the guide bushing using a suitable tool.
9. Pull the entire packing out of the packing chamber using a suitable tool.
10. Unscrew the seat (4) using a suitable tool.
11. Apply a suitable lubricant to the thread and sealing cone of the new seat.
12. Screw in the seat (4). Observe tightening torques.
13. Apply a suitable lubricant to all packing parts and the plug stem (5). SAMSON recommends replacing the packing as well (see Chapter 9.4.2).
14. Slide the new plug with plug stem (5) into the insulating section (21).
15. Push the insulating section (21) together with the plug (5) into the body (1).

Make sure that the threaded flanges (57, 111) are positioned parallel to each other and that their bolt holes are aligned exactly above one another.

Version with V-port plug: Place the insulating section (21) onto the body, making sure that the largest V-shaped port of the plug faces towards the valve outlet.

Version with perforated plug: Place the insulating section (21) onto the valve body, making sure that the hole of the plug that releases the flow first faces toward the valve outlet.

See Chapter 5.4.

16. Carefully slide the packing parts over the plug stem into the packing chamber using a suitable tool. Observe the proper sequence (see Fig. 17).
17. Insert the bolts (13) through the threaded flanges (57, 111) and tighten them. Observe tightening torques.
18. Tighten the body nuts (14) gradually in a criss-cross pattern. Observe tightening torques.
19. Screw in the threaded bushing (8) and tighten it. Observe tightening torques.
20. Place yoke (3) onto the insulating section (21) and fasten using the castellated nut (92).
21. Loosely screw the lock nut (10) and stem connector nut (9) onto the plug stem.

9.5 Ordering spare parts and operating supplies

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

Spare parts

See Appendix for details on spare parts.

Lubricants

See document ► AB 0100 for details on suitable lubricants.

Tools

See document ► AB 0100 for details on suitable 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.

Control valves and pipelines are pressure equipment that may burst when handled incorrectly. Flying projectile fragments or the release of process medium under pressure can cause serious injury or even death. Before starting any work on pressure-bearing or pressure-retaining parts belonging to the valve assembly:

- ⇒ Depressurize all plant sections affected and the valve (including the actuator). Release any stored energy.
- ⇒ Drain the process medium from the plant sections affected as well as from the valve.

⚠ WARNING

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

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

- ⇒ Follow the standard operating procedures provided by the plant operator.
- In the event of a potential risk:
- ⇒ 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.

Valves with a bellows seal have a test connection at the top on the intermediate piece.

- ⇒ Do not loosen the screw on the test connection 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. Additionally, a loud noise may briefly occur through the sudden venting of the pneumatic actuator or pneumatic valve accessories not fitted with noise-reducing elements. Both can damage hearing.

- ⇒ Follow the standard operating procedures provided by the plant operator.

In the event of a potential risk:

- ⇒ Wear hearing protection when working near the valve.

⚠ WARNING

Crush hazard arising from moving parts.

The control valve contains moving parts (actuator and plug stem), which can injure hands or fingers if inserted into the valve.

- ⇒ Do not insert hands or finger into the yoke while the air supply is connected to the actuator.
- ⇒ Before working on the pneumatic control valve, disconnect and lock the pneumatic air supply as well as the control signal.
- ⇒ Do not impede the movement of the actuator and plug stem by inserting objects into the yoke.
- ⇒ Before unblocking the actuator and plug stem after they have become blocked (e.g. due to seizing up after remaining in the same position for a long time), release any stored energy in the actuator (e.g. spring compression). See associated actuator documentation.

⚠ WARNING

Risk of personal injury due to exhaust air being vented or compressed air escaping from pneumatically operated components.

When the valve is operated with a pneumatic actuator or pneumatic valve accessories, exhaust air is vented from the actuator, for example, while the valve is operating and when the valve opens or closes.

- ⇒ Wear eye protection when working in close proximity to pneumatic fittings and in the danger zone of the vent openings.

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

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

⇒ *Follow the standard operating procedures provided by the plant operator.*

In the event of a potential risk:

⇒ *If possible, drain the process medium from the plant sections affected and from the valve.*

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

To put the control valve out of operation for service work or to remove it from the pipeline, proceed as follows:

1. Close the shut-off valves upstream and downstream of the control valve to stop the process medium from flowing through the valve.
2. Completely drain the pipelines and valve.
3. Disconnect and lock the pneumatic air supply to depressurize the actuator.
4. Release any stored energy.
5. If necessary, allow the pipeline and valve 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 pipelines.

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

⇒ Follow the standard operating procedures provided by the plant operator.

In the event of a potential risk:

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

⇒ Wear protective clothing and safety gloves.

⚠ WARNING

Crush hazard arising from moving parts.

The control valve contains moving parts (actuator and plug stem), which can injure hands or fingers if inserted into the valve.

⇒ Do not insert hands or finger into the yoke while the air supply is connected to the actuator.

⇒ Before working on the pneumatic control valve, disconnect and lock the pneumatic air supply as well as the control signal.

⇒ Do not impede the movement of the actuator and plug stem by inserting objects into the yoke.

⇒ Before unblocking the actuator and plug stem after they have become blocked (e.g. due to seizing up after remaining in the same position for a long time), release any stored energy in the actuator (e.g. spring compression). See associated actuator documentation.

⚠ WARNING

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

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

⇒ Follow the standard operating procedures provided by the plant operator.

In the event of a potential risk:

⇒ If possible, drain the process medium from the plant sections affected and from the valve.

⇒ Wear protective clothing, safety gloves, respiratory protection and eye protection.

⚠ WARNING

Risk of personal injury due to preloaded springs in pneumatic actuators.

Valves in combination with pneumatic actuators with preloaded springs are under tension. These control valves with SAMSON Type 3271 or Type 3277 Pneumatic Actuators can be identified by the long bolts protruding from the bottom of the actuator.

⇒ Before starting any work on the actuator, which requires the actuator to be opened, or when the actuator stem has become blocked, relieve the compression from the preloaded springs (see associated actuator documentation).

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

- The control valve is put out of operation (see Chapter 10).

11.1 Removing the valve from the pipeline

Version with flanges

1. Support the control valve to hold it in place when separated from the pipeline (see Chapter 4).
2. Unbolt the flanged joint.
3. Remove the valve from the pipeline (see Chapter 4).

11.2 Removing the actuator from the valve

See associated actuator documentation.

12 Repairs

If the control valve 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 valve 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:

1. Exceptions apply concerning some special device models ► www.samsongroup.com > SERVICE > After-sales Service > Returning goods.
2. Register the return shipment and include the following information by e-mail returns-de@samsongroup.com:
 - Type
 - Article no.
 - Configuration ID
 - Original order
 - Completed Declaration on Contamination, which can be downloaded from the Internet at: ► www.samsongroup.com > SERVICE > After-sales Service > Returning goods

After checking your registration, we will send you a return merchandise authorization (RMA).

3. Attach the RMA (together with the Declaration on Decontamination) to the outside of your shipment so that the documents are clearly visible.
4. Send the shipment to the address given on the RMA.

Note

Further information on returned devices and how they are handled can be found at:

► www.samsongroup.com > Service > After-sales Service

13 Disposal



SAMSON is a producer registered in Europe, agency in charge

► www.samsongroup.com > About SAMSON > Environment, Social & Governance > Material Compliance > Waste electrical and electronic equipment (WEEE)
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.

i Note

SAMSON can provide you with a recycling passport on request. Simply e-mail us at aftersaleservice@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, lubricants and hazardous substances together with your other household waste.

14 Certificates

These declarations are included on the next pages:

- Declaration of conformity in compliance with Pressure Equipment Directive 2014/68/EU:
 - Country of origin: Germany
- Declaration of conformity in compliance with Machinery Directive 2006/42/EC for Types 3259-1 and 3259-7 Control Valves
- Declaration of incorporation in compliance with Machinery Directive 2006/42/EC for Type 3259 Valve with other actuators other than the Type 3271 or Type 3277 Actuator

The certificates shown were up to date at the time of publishing. The latest certificates can be found on our website: ► www.samsongroup.com > Products > Valves > 3259

Other optional certificates are available on request.

EU DECLARATION OF CONFORMITY TRANSLATION



Module H / N° CE-0062-PED-H-SAM 001-22-DEU-rev-B

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

Devices	Series	Type	Version
Globe valve	240	3241	EN, body of gray cast iron from DN 150, body of spheroidal-graphite iron, from DN 100, fluids G2, L1, L2 ¹⁾
			EN/ANSI, body of steel, etc., all fluids
Three-way valve	240	3244	EN, body of gray cast iron from DN 150, body of spheroidal-graphite iron, from DN 100, fluids G2, L1, L2 ¹⁾
			EN/ANSI, body of steel, etc., all fluids
Cryogenic valve	240	3248	EN/ANSI, all fluids
Globe valve	250	3251	EN/ANSI, all fluids
Globe valve	250	3251-E	EN/ANSI, all fluids
Three-way valve	250	3253	EN/ANSI, body of steel, etc., all fluids
Globe valve	250	3254	EN/ANSI, all fluids
Angle valve	250	3256	EN/ANSI, all fluids
Split-body valve	250	3258	EN, all fluids
Angle valve (IG standards)	250	3259	EN, all fluids
Globe valve	V2001	3321	EN, body of steel, etc., all fluids
			ANSI, all fluids
Three-way valve	V2001	3323	EN, body of steel, etc., all fluids
			ANSI, all fluids
Angle seat valve	---	3353	EN, body of steel, etc., all fluids
Silencer	3381	3381-1	EN/ANSI, single attenuation plate with welding ends, all fluids
		3381-3	EN/ANSI, all fluids
		3381-4	EN/ANSI, single attenuation plate multi-stage with welding ends, all fluids
Globe valve	240	3241	ANSI, body of gray cast iron, Class 125, from NPS 5, fluids G2, L1, L2 ¹⁾
Cryogenic valve	240	3246	EN/ANSI, all fluids
Three-way valve	250	3253	EN, body of gray cast iron from DN200 PN16, fluids G2, L1, L2 ¹⁾
Globe valve	290	3291	ANSI, all fluids
Angle valve	290	3296	ANSI, all fluids
Cryogenic valve	---	3588	ANSI, up to NPS 6, Class 600, all fluids
Globe valve	590	3591	ANSI, all fluids
Angle valve	590	3596	ANSI, all fluids
Cryogenic valve	590	3598	ANSI, NPS 3 to NPS 8, Class 900, all fluids
Control valve	590	3595	ANSI, all fluids
Globe valve	SMS	241GR	EN/ANSI, all fluids
Globe valve	SMS	251GR	EN/ANSI, all fluids
Globe valve	SMS	261GR	EN/ANSI, all fluids

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

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 H	Certificate-No.: N°CE-0062-PED-H-SAM 001-22-DEU-rev-B by Bureau Veritas 0062

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

Bureau Veritas Services SAS, 4 place des Saisons, 92400 Courbevoie, France
Applied harmonised standards and technical specifications:
EN 16668 (incl. EN 12516-2, EN 12516-3, EN 12266-1), ASME B16.34

Manufacturer: SAMSON AKTIENGESELLSCHAFT, Weismüllerstrasse 3, 60314 Frankfurt am Main, Germany

Frankfurt am Main, February 17, 2025

Dr. Andreas Widl
Chief Executive Officer (CEO)

Sebastian Krause
Vice President Product Development

EU DECLARATION OF CONFORMITY TRANSLATION



Declaration of Conformity of Final Machinery

in accordance with Annex II, section 1.A. of the Directive 2006/42/EC

For the following products:

Types 3259-1/-7 Pneumatic Control Valves consisting of the Type 3259 Valve and Type 3271/Type 3277 Pneumatic Actuator

We hereby declare that the machinery mentioned above complies with all applicable requirements stipulated in Machinery Directive 2006/42/EC.

For product descriptions of the valve and actuator, refer to:

- Type 3259 Valve: Mounting and Operating Instructions EB 8059
- Types 3271 and 3277 Actuators: Mounting and Operating Instructions EB 8310-X

Valve accessories (e.g. positioners, limit switches, solenoid valves, lock-up valves, supply pressure regulators, volume boosters and quick exhaust valves) are classified as machinery components in this declaration of conformity and do not fall within the scope of the Machinery Directive as specified in § 35 and § 46 of the Guide to Application of the Machinery Directive 2006/42/EC issued by the European Commission. In the SAMSON Manual H 02 titled "Appropriate Machinery Components for SAMSON Pneumatic Control Valves with a Declaration of Conformity of Final Machinery", SAMSON defines the specifications and properties of appropriate machinery components that can be mounted onto the above specified final machinery.

Referenced technical standards and/or specifications:

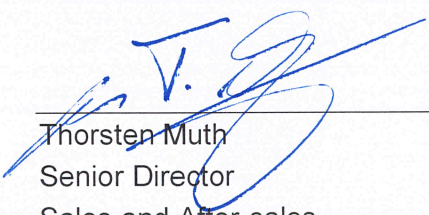
- VCI, VDMA, VGB: "Leitfaden Maschinenrichtlinie (2006/42/EG) – Bedeutung für Armaturen, Mai 2018" [German only]
- VCI, VDMA, VGB: "Zusatzdokument zum „Leitfaden Maschinenrichtlinie (2006/42/EG) – Bedeutung für Armaturen vom Mai 2018" [German only], based on DIN EN ISO 12100:2011-03

Comment:

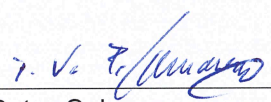
Information on residual risks of the machinery can be found in the mounting and operating instructions of the valve and actuator as well as in the referenced documents listed in the mounting and operating instructions.

Persons authorized to compile the technical file:

SAMSON AG, Weismüllerstraße 3, 60314 Frankfurt am Main, Germany
Frankfurt am Main, 19 Mai 2020



Thorsten Muth
Senior Director
Sales and After-sales



Peter Scheermesser
Director
Product Life Cycle Management and ETO
Development for Valves and Actuators

DECLARATION OF INCORPORATION TRANSLATION



Declaration of Incorporation in Compliance with Machinery Directive 2006/42/EC

For the following products:

Type 3259 Pneumatic Control Valve

We certify that the Type 3259 Pneumatic Control Valves are partly completed machinery as defined in the Machinery Directive 2006/42/EC and that the safety requirements stipulated in Annex I, 1.1.2, 1.1.3, 1.1.5, 1.3.2, 1.3.4 and 1.3.7 are observed. The relevant technical documentation described in Annex VII, part B has been compiled.

Products we supply must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of the Machinery Directive 2006/42/EC.

Operators are obliged to install the products observing the accepted industry codes and practices (good engineering practice) as well as the mounting and operating instructions. Operators must take appropriate precautions to prevent hazards that could be caused by the process medium and operating pressure in the valve as well as by the signal pressure and moving parts.

The permissible limits of application and mounting instructions for the products are specified in the associated data sheets as well as the mounting and operating instructions; the documents are available in electronic form on the Internet at www.samsongroup.com.

For product descriptions of the valve, refer to:

- Type 3259 Valve: Mounting and Operating Instructions EB 8059

Referenced technical standards and/or specifications:

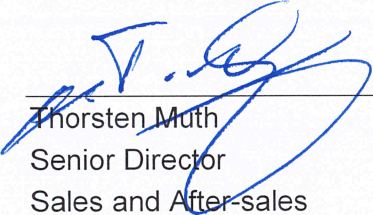
- VCI, VDMA, VGB: Leitfaden Maschinenrichtlinie (2006/42/EG) – Bedeutung für Armaturen, May 2018 [German only]
- VCI, VDMA, VGB: Zusatzdokument zum „Leitfaden Maschinenrichtlinie (2006/42/EG) – Bedeutung für Armaturen“ vom Mai 2018 [German only], based on DIN EN ISO 12100:2011-03

Comments:

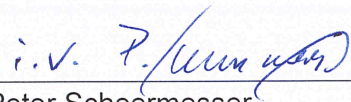
- See mounting and operating instructions for residual hazards.
- Also observe the referenced documents listed in the mounting and operating instructions.

Persons authorized to compile the technical file:

SAMSON AG, Weismüllerstraße 3, 60314 Frankfurt am Main, Germany
Frankfurt am Main, 20 May 2020



Thorsten Muth
Senior Director
Sales and After-sales



Peter Scheermesser
Director
Product Life Cycle Management and ETO
Development for Valves and Actuators

15 Appendix

15.1 Tightening torques, lubricants and tools

► AB 0100 tools, tightening torques and lubricants

15.2 Spare parts

1	Body
2	Intermediate piece
3	Yoke
4	Seat
5	Plug (with plug stem)
7	Guide bushing
8	Threaded bushing (packing nut)
9	Stem connector nut
10	Lock nut
11	Spring
12	Washer
13	Stud bolt
14	Body nut
15	Packing set
16	V-rings
17	Body gasket (lens ring gasket)
19	Bushing
21	Insulating section
22	Bellows seal
24	Guide bushing
26	Label (bellows seal or insulating section)
27	Flange
28	Clamping ring
29	Plug for version with bellows seal
31	Washer
32	Bolt
33	Nut
34	Bolt
37	Plug stem with metal bellows
39	Gasket
42	Screw plug (test connection)
43	Gasket
56	Threaded flange
57	Threaded flange
58	Threaded flange
80	Nameplate
81	Grooved pin
82	Screw
83	Hanger
84	Travel indicator scale
85	Screw
91	Protective caps on valve inlet/outlet
92	Castellated nut
99	Threaded flange
101	Bellows bonnet
111	Threaded flange

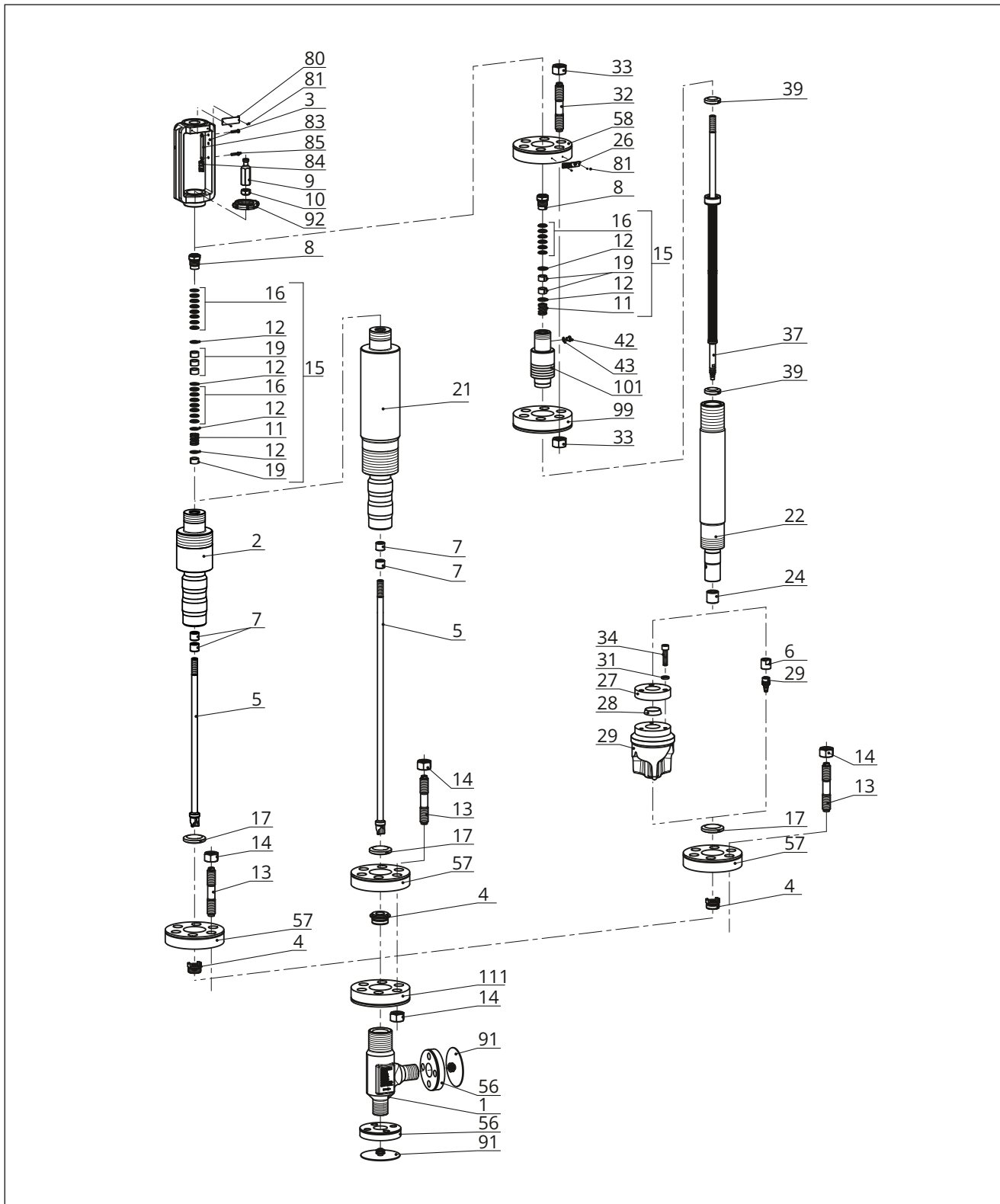


Fig. 19: Spare parts for Type 3259 Valve

15.3 After-sales service

Contact our after-sales service for support concerning service or repair work or when malfunctions or defects arise.

E-mail contact

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 in all SAMSON product catalogs or on our website (► www.samsongroup.com).

Required specifications

Please submit the following details:

- Order number and position number in the order
- Type, model number, nominal size and valve version
- Pressure and temperature of the process medium
- Flow rate in m³/h
- Bench range of the actuator (e.g. 0.2 to 1 bar)
- Is a strainer installed?
- Installation drawing



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