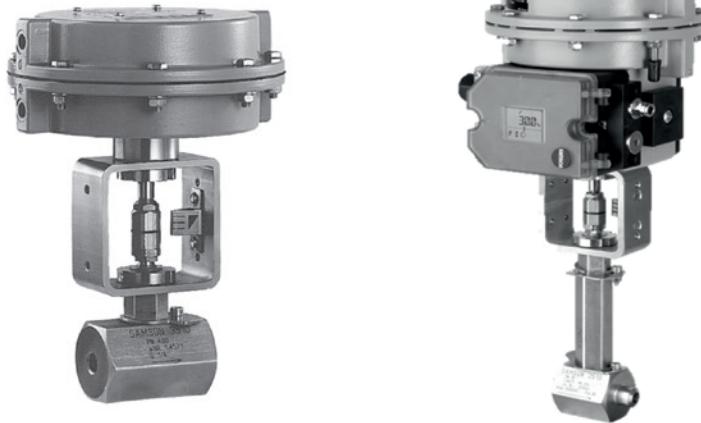


Type 3510 Micro-flow Valve

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

ANSI version



Type 3510-1 (left) and Type 3510-7 (right) Pneumatic Control Valves

Mounting and Operating Instructions

EB 8091-1 EN

Edition March 2018

Translation of original instructions

Note on these mounting and operating instructions

These mounting and operating instructions assist you in mounting and operating the device safely. The instructions are binding for handling SAMSON devices.

- For the safe and proper use of these instructions, read them carefully and keep them for later reference.
- If you have any questions about these instructions, contact SAMSON's After-sales Service Department (aftersalesservice@samson.de).



The mounting and operating instructions for the devices are included in the scope of delivery. The latest documentation is available on our website (www.samson.de) > Product documentation. You can enter the document number or type number in the [Find:] field to look for a document.

Definition of signal words

DANGER

Hazardous situations which, if not avoided, will result in death or serious injury

NOTICE

Property damage message or malfunction

WARNING

Hazardous situations which, if not avoided, could result in death or serious injury

Note

Additional information

Tip

Recommended action

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1 Safety instructions and measures

Intended use

The SAMSON Type 3510 Micro-flow 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. The micro-flow valve is suitable for controlling low flow rates, e.g. in pilot plants and technical research facilities. 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 applications that meet the specifications used for sizing the valve at the ordering stage. In case operators intend to use the control valve in other applications or conditions than specified, SAMSON must be contacted.

SAMSON does not assume any liability for damage resulting from the failure to use the valve 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 in the technical data
- Use outside the limits defined by the valve accessories mounted on 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 in these instructions

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 are to be observed. According to these mounting and operating instructions, trained personnel refers to individuals who are able to judge the work they are assigned to and recognize possible hazards due to their specialized training, their knowledge and experience as well as their knowledge of the applicable standards.

Personal protective equipment

We recommend wearing the following protective equipment depending on the process medium:

- Protective clothing, gloves and eyewear in applications with hot, cold, and/or corrosive media
 - Wear hearing protection when working near the valve.
- Check with the plant operator for details on further protective equipment.

Rewards and other modifications

Rewards, conversions or other modifications to 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 devices

Upon supply air or control signal failure, the valve moves to its fail-safe position (see section 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 (see actuator documentation).

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. They must observe all hazard statements, warning and caution notes in these mounting and operating instructions, especially for installation, start-up, and service work.

Responsibilities of the operator

The operator is responsible for proper operation and compliance with the safety regulations. Operators are obliged to provide these mounting and operating instructions as well as the referenced documents to the operating personnel and to instruct them in proper operation. Furthermore, the operator must ensure that operating personnel or third persons are not exposed to any danger.

Responsibilities of operating personnel

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

Referenced standards and regulations

The control valves comply with the requirements of the European Pressure Equipment Directive 2014/68/EU.

According to the ignition risk assessment performed in accordance with EN 13463-1:2009, section 5.2, the non-electrical control valves do not have their own potential ignition source even in the rare incident of an operating fault. As a result, they do not fall within the scope of Directive 2014/34/EU.

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

Referenced documentation

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

- Mounting and operating instructions for mounted actuator, e.g. ► EB 8310-1 for Type 3271 and Type 3277 Pneumatic Actuator with 120 cm² actuator area
- Mounting and operating instructions for mounted valve accessories (positioner, solenoid valve etc.)
- ► AB 0100 for tools, tightening torques, and lubricant
- For oxygen service: Manual ► H 01

1.1 Notes on possible severe personal injury

DANGER

Risk of bursting in pressure equipment.

Control valves and pipelines are pressure equipment. Improper opening can lead to valve components bursting.

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

1.2 Notes on possible personal injury

⚠ WARNING

Crush hazard arising from moving parts.

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

- Do not insert hands or finger into the yoke while the valve is in operation.
- While working on the control valve, disconnect and lock the pneumatic air supply as well as the control signal.

Risk of personal injury when the actuator vents.

While the valve is operating, the actuator may vent during closed-loop control or when the valve opens or closes.

- Install the control valve in such a way that the actuator does not vent at eye level.
- Use suitable silencers and vent plugs.
- Wear eye protection when working in close proximity to the control valve.

Risk of personal injury due to preloaded springs.

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

- Before starting any work on the actuator, relieve the compression from the preloaded springs (see associated actuator documentation).

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

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

- If possible, drain any process medium residues from the plant sections concerned as well as from the valve and any dead cavities.
- Thoroughly flush the pipelines. The plant operator is responsible for cleaning the pipelines.
- Wear protective clothing, safety gloves, and eyewear.

 **WARNING**

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

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

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

1.3 Notes on possible property damage

 **NOTICE**

Incorrect control due to a combination of trim parts that do not match each other.

The trim parts (seat, plug, anti-rotation fixture, and body gasket) are matched to exactly fit each other. The trim parts are delivered together and marked accordingly (see section 2.3).

- ➔ Only install matching trim parts.

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

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

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

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 valve.

Risk of leakage and valve damage due to excessively high or low tightening torques.

Observe the specified torques on tightening control valve components. Excessively tightened torques lead to parts wearing out quicker. Parts that are too loose may cause leakage.

- ➔ Observe the specified tightening torques (► 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).

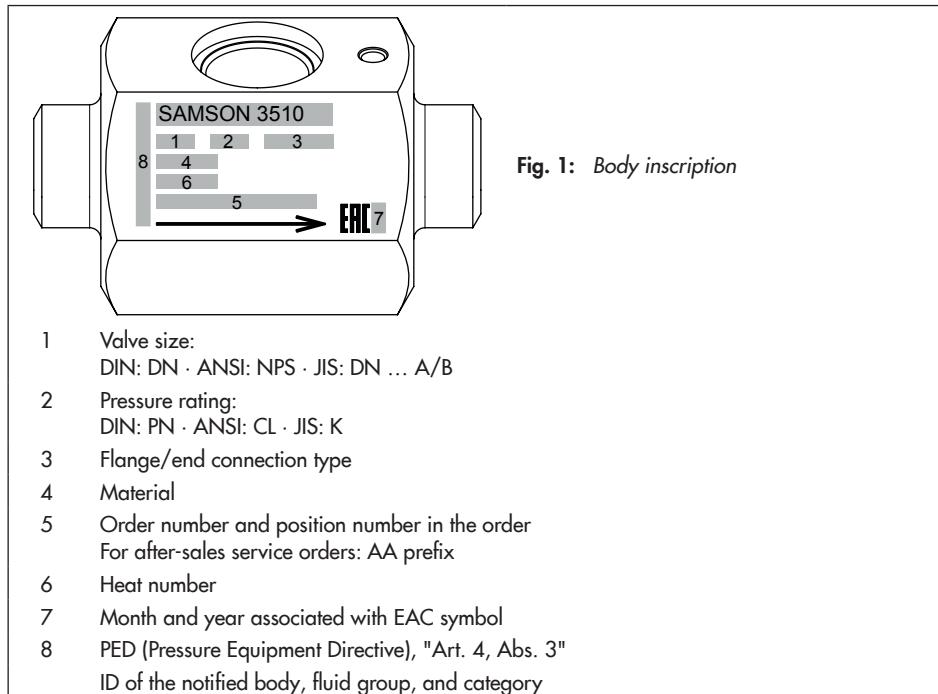
Risk of valve damage due to the use of unsuitable lubricants.

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

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

2 Markings on the control valve

2.1 Body inscription



The details on the valve version are lasered onto the valve body (see Fig. 1).

2.2 Actuator nameplate

See associated actuator documentation.

2.3 Material number

The valve are marked as follows:

Seat

- Material number
- SAMSON consecutive number

Plug

- Material number
- SAMSON consecutive number
- K_{VS} coefficient and characteristic

Anti-rotation fixture (on the trim)

➔ See Fig. 2

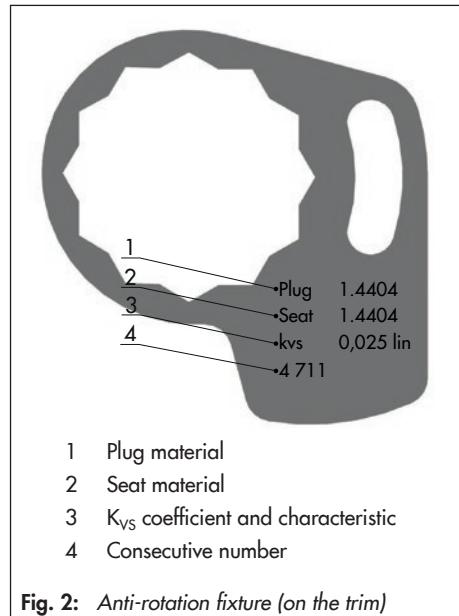
- Plug material
- Seat material
- K_{VS}/C_V
- Characteristic
- SAMSON consecutive number

Anti-rotation fixture (on the bellows seal)

- Bellows material
- Nominal pressure

The trim parts (seat, plug, anti-rotation fixture, and body gasket) are matched to exactly fit each other.

Only install matching trim parts.



⚠ NOTICE

Incorrect control due to a combination of trim parts that do not match each other.

3 Design and principle of operation

The Type 3510 Micro-flow Valve is available as either a globe or angle valve and is preferably combined with a SAMSON

Type 3271 or Type 3277 Pneumatic Actuator with 120 cm² actuator area. It can also be combined with other actuators.

The seat (2.2) and plug (2.1) are installed in the body (1). The plug stem is connected to the actuator stem (A7) by the stem connector and is sealed by an adjustable packing with PTFE seal rings (34).

The anti-rotation fixture (2.4) prevents a loosening of the screw connection between the valve body and intermediate piece (4). Two anti-rotation fixtures are used for versions with an insulating section or bellows seal: one anti-rotation fixture between the body and insulating section/bellows seal as well as one anti-rotation fixture between the insulating section/bellows seal and intermediate piece.

The springs in the pneumatic actuator are located either above or below the diaphragm depending on the selected fail-safe action (see section 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.

3.1 Fail-safe positions

The fail-safe position depends on the actuator used.

Depending on how the compression springs are arranged in the pneumatic actuator, the valve has 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 upwards and open the valve. The valve closes when the signal pressure is increased enough to overcome the force exerted by the springs.



The actuator's direction of action can be reversed, if required. Refer to the operating and mounting instructions of the pneumatic actuator, e.g. ► EB 8310-1 for Type 3271 and Type 3277 with 120 cm² actuator area.

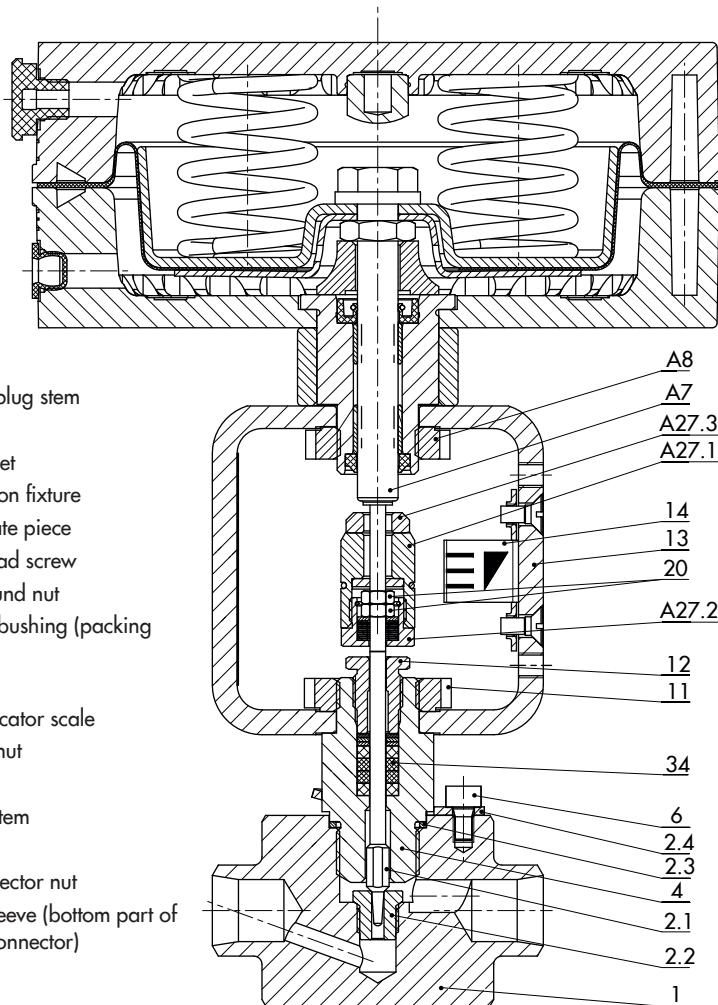


Fig. 3: Type 3510 Micro-flow Valve as globe valve with Type 3271 Pneumatic Actuator

3.2 Versions

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



If valve accessories (e.g. positioner, limit switch etc.) are to be mounted to the valve version with flanges, we recommend mounting an insulating section or bellows seal. This provides more space to mount valve accessories.

Actuators

In these instructions, the preferable combination with a 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.



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.

The basic pneumatic actuator can be replaced by a pneumatic actuator with additional handwheel or by an electric actuator.

3.3 Technical data

The nameplates on the valve and actuator provide information on the control valve version. See section 2.1 and the actuator documentation.



*More information is available in Data Sheet
► T 8091-1.*

Compliance

The Type 3510 Valve bears the EAC mark of conformity:



Temperature range

Depending on the version, the control valve is designed for a temperature range from 14 to 428 °F (-10 to +220 °C). The use of an insulating section or bellows seal extends the temperature range from -325 to +842 °F (-196 to +450 °C). Special materials are available for temperatures up to 1200 °F (650 °C).

Leakage class

Depending on the version, the following leakage class according to ANSI/FCI 70-2 or IEC 60534-4 applies:

- Leakage class IV with metal seal
- Leakage class V for high-performance metal seal

Noise emission

SAMSON is unable to make general statements about noise emission as it depends on the valve version, plant facilities, and process medium. On request, SAMSON can perform calculations according to IEC 60534, Part 8-3 and Part 8-4 or VDMA 24422 (edition 89).

WARNING

Risk of hearing loss or deafness due to loud noise.

Wear hearing protection when working near the valve.

Dimensions and weights

Dimensions (in inch and mm) and weights (in lbs and kg)

The lengths and heights in the dimensional drawings are shown on p. 18.

i Note

Dimensions and weights for Type 3271 and Type 3277 Pneumatic Actuators with 120 cm² actuator area can be found in the Data Sheet ► T 8310-1.

Table 1: Dimensions for Type 3510 Valve

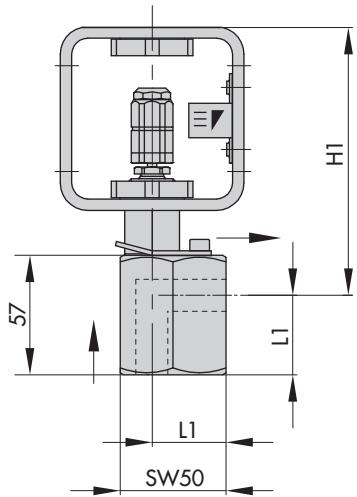
Connection	Female thread G/NPT/ Rc 1/8 to 3/4	Welding ends		Flanges		
		NPS 1/2	NPS 1	NPS 1/2	NPS 3/4	NPS 1
L ¹⁾	Class 150 in	2.91" 74 mm	7.25	7.25	7.25	7.25
	mm		184	184	184	184
	Class 300 in		7.50	7.75	7.50	7.62
	mm		190	197	190	194
	Class 600 in		8.00	8.25	8.00	8.12
	mm		203	210	203	206
	Class 900/ Class 1500 in		8.50	10.00	8.50	9.00
	mm		216	254	216	229
	Class 2500 in		10.38	12.12	10.38	10.75
	mm		264	308	264	273
L1 ¹⁾	Class 150 in	1.33" 34 mm	3.62	3.62	3.62	3.62
	mm		92	92	92	92
	Class 300 in		3.75	3.88	3.75	3.81
	mm		95	99	95	97
	Class 600 in		4.00	4.12	4.00	4.06
	mm		101	105	101	103
	Class 900/ Class 1500 in		4.25	5.00	4.25	4.50
	mm		108	127	108	114
	Class 2500 in		5.19	6.06	5.19	5.38
	mm		132	154	132	137

Connection	Female thread G/NPT/ Rc 1/8 to 3/4	Welding ends		Flanges			
		NPS 1/2	NPS 1	NPS 1/2	NPS 3/4	NPS 1	
H1	120 cm ²	in			4.80		
		mm			122		
	Insulating section up to Class 2500				10.35"/263 mm		
H4	Bellows seal up to Class 600				10.35"/263 mm		
	Bellows seal up to Class 1500				14.37"/365 mm		
H2 or flange Ø D1	Class 150	0.90" ²⁾ 23 mm ²⁾	0.90" ²⁾ 23 mm ²⁾	0.90" ²⁾ 23 mm ²⁾	3.54	3.94	4.33
	Class 300				90	100	110
	Class 600				3.74	4.53	4.91
	Class 900/				95	115	125
	Class 1500				3.74	4.53	4.91
	Class 2500				95	115	125
					4.72	5.12	5.91

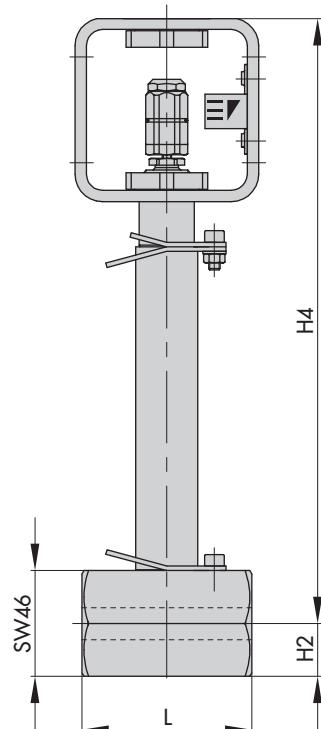
¹⁾ Face-to-face dimensions of flanges according to DIN EN 558

²⁾ H2 = 1.10" (28 mm) with body material B 574 N06455

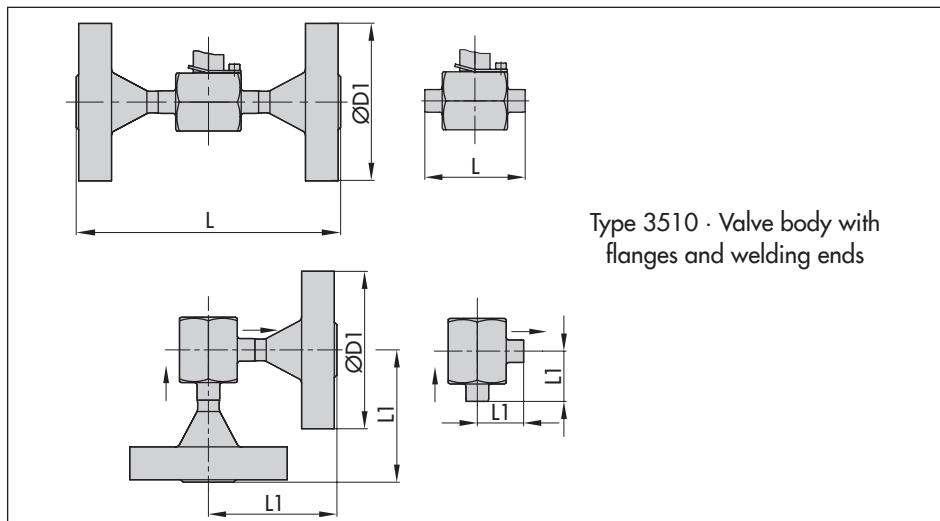
Dimensional drawings



Type 3510 as angle valve with
female thread



Type 3510 as globe valve with
female thread, with bellows seal or insulat-
ing section

**Table 2:** Weights for Type 3510 Valve

Connection	Female thread G/NPT/Rc ½ to ¾	Welding ends NPS ½, NPS 1	Flanges		
			NPS ½	NPS ¾	NPS 1
Valve without actuator	Class 150	lbs	3.74	4.0	5.8
		kg	1.7	1.8	2.6
	Class 300	lbs	3.74	4.0	7.1
		kg	1.7	1.8	3.2
Valve with actuator	Class 600	lbs	3.74	4.0	7.5
		kg	1.7	1.8	3.4
	Class 900/ Class 1500	lbs	3.74	4.0	14.4
		kg	1.7	1.8	5.2
Option- al	Class 2500	lbs	–	–	14.4
		kg	–	–	6.5
	Insulating section	lbs			1.2
	Bellows seal	kg			0.5
		lbs			1.4
		kg			0.6

4 Measures for preparation

After receiving the shipment, proceed as follows:

1. Check the scope of delivery. Compare the shipment received against the delivery note.
2. Check the shipment for transportation damage. Report any damage to SAMSON and the forwarding agent (refer to delivery note).

4.1 Unpacking

i Note

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

Proceed as follows to lift and install the valve:

1. Remove the packaging from the valve.
2. Dispose of the packaging in accordance with the valid regulations.

4.2 Transporting and lifting

Tip

SAMSON's After-sales Service department can provide more detailed transport and lifting instructions on request.

4.2.1 Transporting

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 control valve against moisture and dirt.
- The permissible transportation temperature of standard control valves is -4 to $+149$ °F (-20 to $+65$ °C).

i Information

Contact SAMSON's After-sales Service department for the transportation temperatures of other valve versions.

4.2.2 Lifting

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

4.3 Storage

NOTICE

Risk of valve damage due to improper storage.

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

Note

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

Storage 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 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 –4 to +149 °F (–20 to +65 °C).

Information

Contact SAMSON's After-sales Service department 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.
- We recommend a storage temperature of 59 °F (15 °C) for elastomers.
- Store elastomers away from lubricants, chemicals, solutions, and fuels.

Tip

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

4.4 Preparation for installation

Proceed as follows:

- Flush the pipelines.

Note

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

- Check the valve to make sure it is clean.
- Check the valve for damage.

Measures for preparation

- Check to make sure that the type designation, valve size, material, pressure rating and temperature range of the valve match the plant conditions (size and pressure rating of the pipeline, medium temperature etc.).
- For steam applications, make sure that the pipelines are dry. Moisture will damage the inside of the valve.
- Check any mounted pressure gauges to make sure they function.
- When the valve and actuator are already assembled, check the tightening torques of the bolted joints (► AB 0100). Components may loosen during transport.

5 Mounting and start-up

SAMSON valves are delivered ready for use. In special cases, the valve and actuator are delivered separately and must be assembled on site. The procedure to mount and start up the valve are described in the following.

! NOTICE

Risk of valve damage due to excessively high or low tightening torques.

Observe the specified torques on tightening control valve components. Excessively tightened torques lead to parts wearing out quicker. Parts that are too loose may cause leakage.

*Observe the specified tightening torques
(► AB 0100).*

! NOTICE

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

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

5.1 Mounting the actuator onto the valve

Proceed as described in the actuator documentation if the valve and actuator have not been assembled by SAMSON:

i Note

- Remove the mounted actuator before mounting the other actuator (see associated actuator documentation).
- Preloading the actuator springs increases the thrust of a pneumatic actuator and reduces the travel range of the actuator (see associated actuator documentation).

5.2 Installing the valve into the pipeline

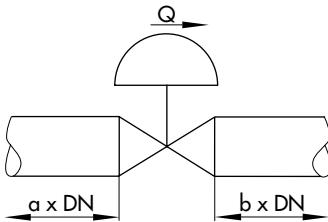
5.2.1 Checking the installation conditions

Pipeline routing

The inlet and outlet lengths vary depending on the process medium. To ensure the control valve functions properly, follow the installation instructions given below:

- Observe the inlet and outlet lengths (see Table 3). Contact SAMSON if the valve conditions or states of the medium properties deviate.
- Install the valve free of stress and with the least amount of vibrations as possible. If necessary, attach supports to the valve.
- Install the valve allowing sufficient space to remove the actuator and valve or to perform service and repair work on them.

Table 3: Inlet and outlet lengths



The diagram shows a valve assembly with a flow rate Q indicated by an arrow pointing upwards. Below the valve body, two dimensions are labeled: $a \times DN$ for the inlet length and $b \times DN$ for the outlet length.

State of process medium	Valve conditions	Inlet length a	Outlet length b
Gas	$Ma \leq 0.3$	2	4
	$0.3 \leq Ma \leq 0.7$	2	10
Vapor	$Ma \leq 0.3$ ¹⁾	2	4
	$0.3 \leq Ma \leq 0.7$ ¹⁾	2	10
	Saturated steam (percentage of condensate > 5 %)	2	20
Liquid	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

¹⁾ No saturated steam

Mounting position

Generally, we recommend installing the valve with the actuator upright and on top of the valve.

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). Further-

more, 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 workplace of operating personnel.
- On mounting valve accessories, make sure that they can be operated from the workplace of the operating personnel.

i Note

The workplace of operating personnel is the location from which the valve, actuator and any mounted valve accessories can be accessed to operate them.

5.2.2 Additional fittings

Filters

We recommend installing a filter with a certain mesh size depending on the C_v coefficient upstream of the valve. It prevents solid particles in the process medium from damaging the valve.

C_v coefficient	Mesh size
0.00012 to 0.0075	<1 µm
0.012 to 0.5	<10 µm
0.75 to 2.0	≤20 µm

Bypass and shut-off valves

We recommend installing a shut-off valve both upstream of the filter and downstream of the valve and setting up 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

Only insulate control valves with insulating section or bellows seal up to the bonnet flange of the valve body for medium temperatures below 32 °F (0 °C) and above 428 °F (220 °C).

Do not insulate valves mounted to comply with NACE MR 0175 requirements.

Test connection

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

Particularly for liquids and vapors as well as explosive or hazardous substances, we recommend installing a suitable leakage indicator (e.g. a contact pressure gauge, an outlet to an open vessel or an inspection glass).

⚠ WARNING

Risk of personal injury due to pressurized components and process medium escaping under pressure.

Do not loosen the screw of the test connection while the valve is in operation.

Safety guard

To reduce the crush hazard arising from moving parts (actuator and plug stem), a safety guard can be installed.

Valve accessories

A mounting kit is required to mount positioners, limit switches, solenoid valves or other valve accessories. The mounting kit (item no. 1400-9031) can be ordered from SAMSON. Refer to the mounting and operating instructions of the corresponding device for a description on how to mount it.

5.2.3 Installing the control valve

Version with female thread or flanges

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

NOTICE

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

Slowly open the shut-off valve in the pipeline during start-up.

8. Check the valve to ensure it functions properly.

Version with welding ends

1. Proceed as described for Version with female thread or flanges (steps 1 to 3).
2. Completely retract the actuator stem to protect the plug from sparks during welding.
3. Weld the valve free of stress into the pipeline.
4. Proceed as described for Version with female thread or flanges (steps 6 to 8).

5.3 Quick check

SAMSON valves are delivered ready for use. To test the valve's ability to function, the following quick checks can be performed:

Tight shut-off

1. Close the valve.
2. Slowly open the shut-off valve in the pipeline.

NOTICE

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

Slowly open the shut-off valve in the pipeline during start-up.

3. Check the valve for leakage (visual inspection).

Travel motion

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

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

Fail-safe position

- Shut off the signal pressure line.
- Check whether the valve moves to the fail-safe position.

Adjustable packing

1. Tighten the threaded bushing gradually (by turning it clockwise) until the packing seals the valve.

① NOTICE

Risk of valve damage due to the threaded bushing tightened too far.

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

2. Open and close the valve several times.
3. Check the valve for leakage to the atmosphere (visual inspection).
4. Repeat steps 1 and 2 until the packing completely seals the valve.

i Note

If the adjustable packing does not seal properly, contact SAMSON's After-sales Service department.

Pressure test

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 valve and plant.

i Note

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

6 Operation

Immediately after completing mounting and start-up (see section 5), the valve is ready for use.

⚠ WARNING

Crush hazard arising from moving parts (actuator and plug stem).

Do not insert hands or finger into the yoke while the valve is in operation.

⚠ WARNING

Risk of personal injury when the actuator vents.

Wear eye protection when working in close proximity to the control 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 and cause burn injuries.

Wear protective clothing and safety gloves.

⚠ NOTICE

Operation disturbed by a blocked actuator or plug stem.

Do not impede the movement of the actuator or plug stem by inserting objects into their path.

6.1 Supply pressure

⚠ NOTICE

A signal pressure above the maximum permissible limit will damage the valve.

Do not allow the supply pressure to exceed the maximum permissible limit.

Fail-safe position: actuator stem retracts

(specifications in bar)

Signal pressure range	Adjusted to	Max. perm. supply pressure
0.2 to 1	0.4 to 0.8	2.5
0.4 to 2.0	0.8 to 1.6	3.3
1.4 to 2.3	1.7 to 2.1	3.8
2.1 to 3.3	2.4 to 3.0	4.7

Fail-safe position: actuator stem extends

Maximum permissible supply pressure: 4 bar

6.2 Working in manual mode

Valves fitted with actuators with a handwheel can be manually closed or opened in case of supply air failure.

→ For normal closed-loop operation, move the handwheel to the neutral position.

7 Servicing

The control valve is subject to normal wear, especially at the seat, plug, and packing. Depending on the operating conditions, check the valve at regular intervals to prevent possible failure before it can occur.



SAMSON's After-sales Service department can support you to draw up an inspection plan for your plant.

We recommend removing the valve from the pipeline for service or repair work (see section 9.2).

⚠ DANGER

*Risk of bursting in pressure equipment.
Control valves and pipelines are pressure equipment. Improper opening can lead to bursting of the valve.*

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

⚠ WARNING

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

- If possible, drain any process medium residues from the plant sections concerned as well as from the valve and dead cavities.*
- Thoroughly flush the pipelines. The plant operator is responsible for cleaning the pipelines.*
- Wear protective clothing, safety gloves, and eyewear.*

⚠ WARNING

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

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

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

⚠ NOTICE

Risk of valve damage due to incorrect servicing or repair.

Service and repair work must only be performed by trained staff.

⚠ NOTICE

Risk of valve damage due to excessively high or low tightening torques.

Observe the specified torques on tightening control valve components. Excessively tightened torques lead to parts wearing out quicker. Parts that are too loose may cause leakage.

Observe the specified tightening torques (▶ AB 0100).

! NOTICE

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

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

! NOTICE

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

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

i Note

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

- Certain test results (seat leakage and leak test) certified by SAMSON lose their validity when the valve body or actuator housing is opened.
- 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 department.
- Only use original spare parts by SAMSON, which comply with the original specifications.

2. Loosen the slotted nut (11) at the valve. Remove the yoke (13) from the intermediate piece (4).
3. Unscrew the fillister head screw (6) on the anti-rotation fixture (2.4). Remove the anti-rotation fixture (2.4) from the intermediate piece (4).
4. Unscrew the intermediate piece (4) from the body (1). Remove the intermediate piece (4) together with plug (2.1) from the body (1).
5. Remove gasket (2.3). Carefully clean the sealing faces in the body (1) and on the intermediate piece (4).
6. Insert a new gasket (2.3) into the body.
7. Apply a suitable lubricant to the thread of the intermediate piece.
8. Place the intermediate piece (4) together with the plug (2.1) onto the body. Use a suitable tool to screw it into the body (1). Observe tightening torques.
9. Push the anti-rotation fixture (2.4) over the intermediate piece (4) and lock it in place with the fillister head screw (6).
10. Place the yoke (13) onto the intermediate piece (4) and secure with slotted nut (11). Observe tightening torques.
11. Mount actuator. See associated actuator documentation.

7.1 Replacing the gasket

7.1.1 Standard version

1. Remove the actuator from the valve. See associated actuator documentation.

7.1.2 Version with insulating section

1. Remove the actuator from the valve. See associated actuator documentation.

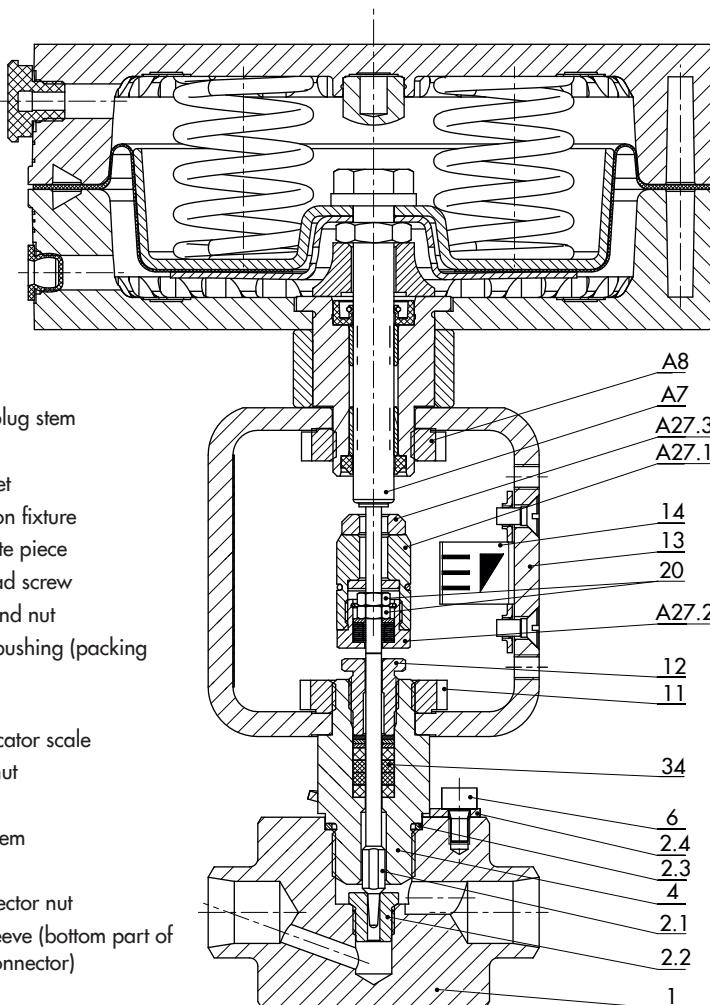


Fig. 4: Type 3510 Micro-flow Valve as globe valve with Type 3271 Pneumatic Actuator

2. Loosen the slotted nut (11) at the valve. Remove the yoke (13) from the intermediate piece (4).
3. Loosen the fillister head screw (23) and hexagon nut (26).
4. Remove the top section of the top anti-rotation fixture (24.2) from the intermediate piece (4).
5. Unscrew the intermediate piece (4) out of the insulating section (7) and carefully lift it off the plug stem extension (22).
6. Remove the washer (27) from the insulating section (7).
7. Remove the bottom section of the top anti-rotation fixture (24.2) from the insulating section (7).
8. Remove the seal (5). Carefully clean the sealing faces in the intermediate piece (4) and insulating section (7).
9. Loosen the fillister head screw (6) on the bottom anti-rotation fixture (24.1). Remove the anti-rotation fixture from the insulating section (7).

Legend for Fig. 5

4	Intermediate piece
5	Seal
7	Insulating section
22	Plug stem extension
23	Fillister head screw
24.1	Bottom anti-rotation fixture
24.2	Top anti-rotation fixture (two-piece)
25	Washer
26	Hexagon nut
27	Washer

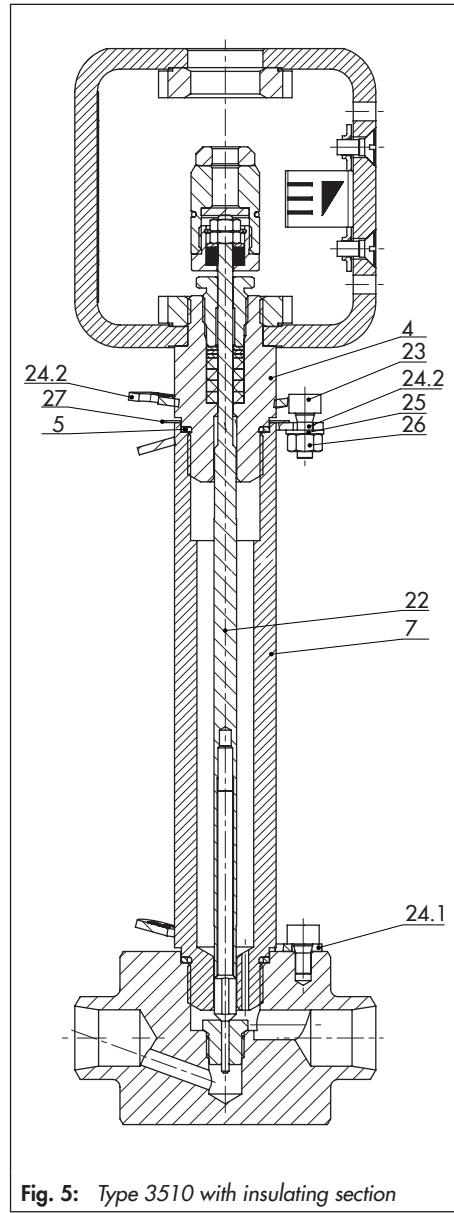


Fig. 5: Type 3510 with insulating section

10. Unscrew the insulating section (7) from the body (1). Remove the insulating section (7) together with the plug (2.1) and plug stem extension (22) from the body (1).
 11. Remove gasket (2.3). Carefully clean the sealing faces in the valve body (1) and on the insulating section (7).
 12. Insert a new gasket (2.3) into the body.
 13. Apply a suitable lubricant to the thread of the insulating section (7).
 14. Place the insulating section (7) together with the plug (2.1) and plug stem extension (22) onto the body. Use a suitable tool to screw it into the body (1). Observe tightening torques.
 15. Push the anti-rotation fixture (24.1, with 'insulating section' inscribed on it) from the top over the insulating section (7) and lock it in place with the fillister head screw (6).
 16. Push the bottom section of the top anti-rotation fixture (24.2, without inscription) with its bent end facing downward onto the insulating section (7).
 17. Insert the new seal (5) into the insulating section (7).
 18. Place the washer (27) on the insulating section (7).
 19. Apply a suitable lubricant to the thread of the intermediate piece (4).
 20. Carefully place the intermediate piece (4) over the plug stem extension (22) onto the insulating section (7). Use a suitable tool to screw it in. Observe tightening torques.
-
- i Note**
- It must be possible to turn the washer (27) easily after the intermediate piece is fastened tight. It must not be clamped down.*
-
21. Push the top section of the top anti-rotation fixture (24.2, with 'plug, seat' etc. inscribed on it) with the bent end facing upward over the intermediate piece (4).
 22. Insert the fillister head screw (23) through both parts of the anti-rotation fixture (24.2). Push the washer (25) from below onto the screw and lock in place with the hexagon nut (26).
 23. Place the yoke (13) onto the intermediate piece (4) and secure with slotted nut (11). Observe tightening torques.
 24. Mount actuator. See associated actuator documentation.

7.1.3 Version with bellows seal

1. Remove the actuator from the valve. See associated actuator documentation.
2. Loosen the slotted nut (11) at the valve. Remove the yoke (13) from the intermediate piece (4).
3. Loosen the fillister head screw (23) and hexagon nut (26).
4. Remove the top section of the top anti-rotation fixture (24.2) from the intermediate piece (4).

5. Unscrew the intermediate piece (4) out of the bellows seal (7) and carefully lift it off the plug stem (3.1).
 6. Remove the washer (27) from the bellows seal (7).
 7. Remove the bottom section of the top anti-rotation fixture (24.2) from the bellows seal (7).
 8. Remove the seal (3.4). Carefully clean the sealing faces in the intermediate piece (4) and bellows seal (7).
 9. Loosen the fillister head screw (6) on the bottom anti-rotation fixture (3.5).
 10. **Version without test connection:** remove the anti-rotation fixture (3.5) from the bellows seal (7).
 11. Unscrew the bellows seal (7) from the body (1). Remove the bellows seal (7) including plug (2.1) from the body (1).
- Version with test connection:** pull the anti-rotation fixture (3.5) downward to remove it.

Legend for Fig. 6

3.1	Plug stem with bellows
3.4	Seal (on intermediate piece)
3.5	Bottom anti-rotation fixture
4	Intermediate piece
7	Bellows seal
23	Fillister head screw
24.2	Top anti-rotation fixture (two-piece)
25	Washer
26	Hexagon nut
27	Washer
30	Test connection

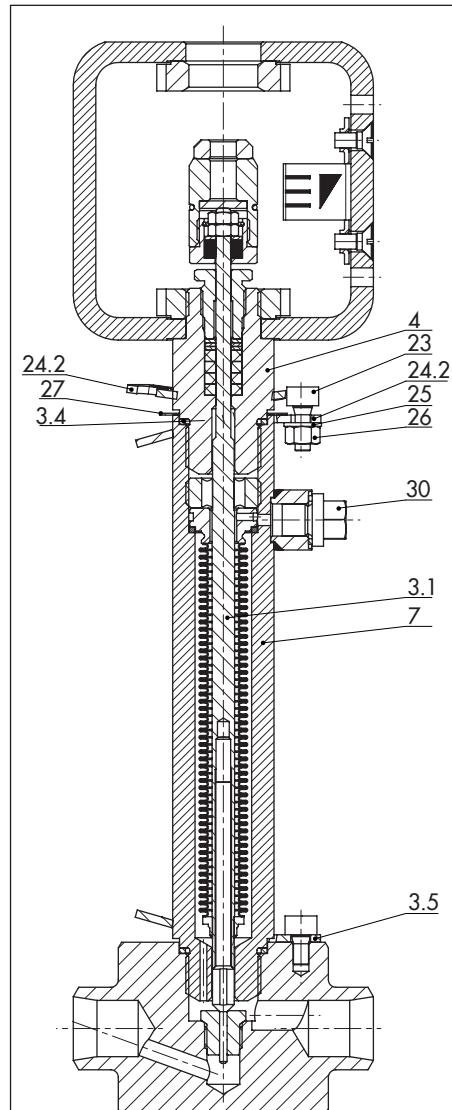


Fig. 6: Type 3510 with bellows seal and test connection

12. Remove gasket (2.3). Carefully clean the sealing faces in the valve body (1) and on the bellows seal (7).
13. Insert a new gasket (2.3) into the body.
14. Apply a suitable lubricant to the thread of the bellows seal (7).
15. **Version with test connection:** slide the bottom anti-rotation fixture (3.5, with 'bellows' inscribed on it) downward onto the bellows seal (7).

i Note

The anti-rotation fixture must be pushed onto the bellows seal in such a way that its fastening hole is located directly over the threaded hole in the body after the bellows seal is bolted on.

16. Place the bellows seal (7) together with the plug (2.1) onto the body. Use a suitable tool to screw it into the body (1). Observe tightening torques.
17. Lock the anti-rotation fixture (3.5) in place with the fillister head screw (6).
18. Push the bottom section of the top anti-rotation fixture (24.2, without inscription) with its bent end facing downward onto the bellows seal (7).
19. Insert the new seal (3.4) into the bellows seal (4).
20. Place the washer (27) on the bellows seal (7).

21. Apply a suitable lubricant to the thread of the intermediate piece (4).
22. Carefully place the intermediate piece (4) over the plug stem (3.1) onto the bellows seal (7). Use a suitable tool to screw it in. Observe tightening torques.

i Note

It must be possible to turn the washer (27) easily after the intermediate piece is fastened tight. It must not be clamped down.

23. Push the top section of the top anti-rotation fixture (24.2, with 'plug, seat' etc. inscribed on it) with the bent end facing upward over the intermediate piece (4).
24. Insert the fillister head screw (23) through both parts of the anti-rotation fixture (24.2). Push the washer (25) from below onto the screw and lock in place with the hexagon nut (26).
25. Place the yoke (13) onto the intermediate piece (4) and secure with slotted nut (11). Observe tightening torques.
26. Mount actuator. See associated actuator documentation.

7.2 Replacing the packing

! NOTICE

Risk of control valve damage due to incorrect service or repair.

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

- The valve does not have a bellows seal.*

To replace the packing in other valve versions, contact SAMSON's After-sales Service department.

1. Remove the actuator from the valve. See associated actuator documentation.
2. Loosen the slotted nut (11) at the valve. Remove the yoke (13) from the intermediate piece (4).
3. Unscrew hex nuts (20) and remove the stem connector parts.
4. Unscrew the threaded bushing (12).
5. Pull all the packing parts out of the packing chamber using a suitable tool.
6. Renew damaged parts. Clean the packing chamber thoroughly.
7. Apply a suitable lubricant to all the packing parts.
8. Carefully slide the packing parts over the plug stem into the packing chamber using a suitable tool. Observe the proper sequence (see Fig. 7).
9. Screw in the threaded bushing (12) and tighten it. Observe tightening torques.
10. **Version without insulating section:** place the sleeve (A27.2) on the plug stem (2.1).
Version with insulating section: place the sleeve (A27.2) on the plug stem extension (22).
11. Thread on the hex nuts (20) and tighten them. Observe tightening torques.
12. Place the yoke (13) onto the intermediate piece (4) and secure with slotted nut (11). Observe tightening torques.
13. Mount actuator. See associated actuator documentation.

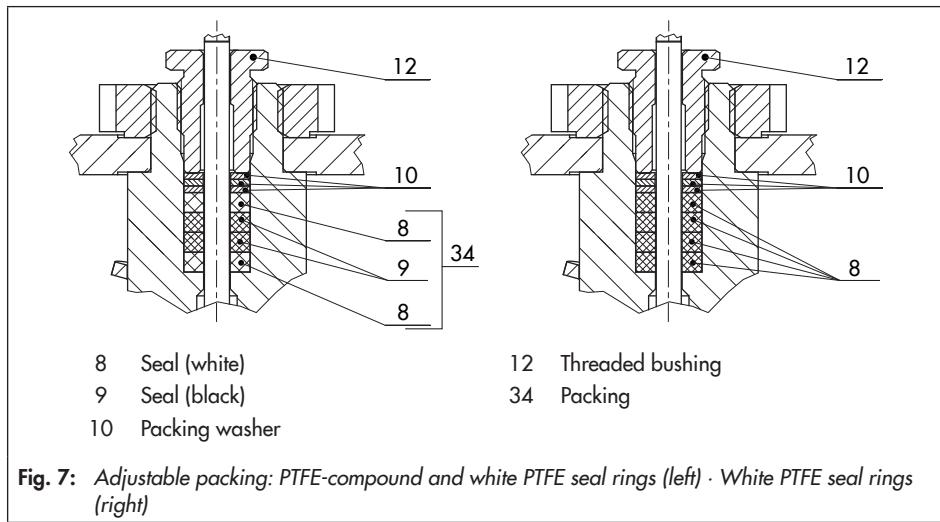


Fig. 7: Adjustable packing: PTFE-compound and white PTFE seal rings (left) · White PTFE seal rings (right)

7.3 Replacing the seat and plug

! NOTICE

Risk of control valve damage due to incorrect service or repair.

Seat and plug can only be replaced when all the following conditions are met:

- The valve does not have a bellows seal.

To replace seat and plug in other valve versions, contact SAMSON's After-sales Service department.

! NOTICE

Incorrect control due to a combination of trim parts that do not match each other.

The trim parts (seat, plug, anti-rotation fixture, and body gasket) are matched to exactly fit each other. The anti-rotation fixture must also be exchanged on replacing the seat and plug. The trim parts are delivered together and marked accordingly (see section 2.3).

Only install matching trim parts.

! NOTICE

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

- Always replace both the seat and plug.

- Only install matching trim parts (see section 2.3).

7.3.1 Standard version

1. Remove the actuator from the valve. See associated actuator documentation.
2. Loosen the slotted nut (11) at the valve. Remove the yoke (13) from the intermediate piece (4).
3. Unscrew the fillister head screw (6) on the anti-rotation fixture (2.4). Remove the anti-rotation fixture (2.4) from the intermediate piece (4).
4. Unscrew the intermediate piece (4) from the body (1). Remove the intermediate piece (4) together with plug (2.1) from the body (1).
5. Replace gasket as described in section 7.1.1.
6. Unscrew the hex nuts (20) from the plug stem (2.1). Remove the stem connector parts.
7. Unscrew the threaded bushing (12).
8. Replace the packing. See section 7.2.
9. Unscrew the seat (2.2) using a suitable tool.
10. Apply a suitable lubricant to the thread and the sealing cone of the new seat.
11. Screw in the seat (2.2) using a suitable tool. Observe tightening torques.
12. Pull the plug with plug stem (2.1) out of the intermediate piece (4).
13. Apply a suitable lubricant to the new plug stem (2.1) and thread of the intermediate piece (4).
14. Slide the new plug with plug stem (2.1) into the intermediate piece (4).

15. Place the intermediate piece (4) together with the plug (2.1) onto the body. Use a suitable tool to screw it into the body (1). Observe tightening torques.
16. Push the anti-rotation fixture (2.4) over the intermediate piece (4) and lock it in place with the fillister head screw (6).
17. Place the yoke (13) onto the intermediate piece (4) and secure with slotted nut (11). Observe tightening torques.
18. Screw in the threaded bushing (12) and tighten it. Observe tightening torques.
19. Place sleeve (A27.2) on the plug stem (2.1).
20. Thread on the hex nuts (20) and tighten them. Observe tightening torques.
21. Mount actuator. See associated actuator documentation.
6. Remove the washer (27) from the insulating section (7).
7. Remove the bottom section of the top anti-rotation fixture (24.2) from the insulating section (7).
8. Replace the packing. See section 7.2.
9. Replace seal as described in section 7.1.2.
10. Loosen the fillister head screw (6) on the bottom anti-rotation fixture (24.1). Remove the anti-rotation fixture from the insulating section (7).
11. Unscrew the insulating section (7) from the body (1). Remove the insulating section (7) together with the plug (2.1) and plug stem extension (22) from the body (1).
12. Replace gasket as described in section 7.1.2.
13. Unscrew the seat (2.2) using a suitable tool.
14. Apply a suitable lubricant to the thread and the sealing cone of the new seat.
15. Screw in the seat (2.2) using a suitable tool. Observe tightening torques.
16. Unscrew the plug with plug stem (2.1) from the plug stem extension (22) and pull it out of the insulating section (7).
17. Apply a suitable lubricant to the end of the plug stem of the new plug (2.1).
18. Slide the new plug with plug stem (2.1) into the insulating section (7) and screw it onto the plug stem extension (22). Observe tightening torques.

7.3.2 Version with insulating section

1. Remove the actuator from the valve. See associated actuator documentation.
2. Loosen the slotted nut (11) at the valve. Remove the yoke (13) from the intermediate piece (4).
3. Loosen the fillister head screw (23) and hexagon nut (26).
4. Remove the top section of the top anti-rotation fixture (24.2) from the intermediate piece (4).
5. Unscrew the intermediate piece (4) out of the insulating section (7) and carefully lift it off the plug stem extension (22).

19. Apply a suitable lubricant to the thread of the insulating section (7).
20. Place the insulating section (7) together with the plug (2.1) and plug stem extension (22) onto the body. Use a suitable tool to screw it into the body (1). Observe tightening torques.
21. Push the anti-rotation fixture (24.1, with 'insulating section' inscribed on it) from the top over the insulating section (7) and lock it in place with the fillister head screw (6).
22. Push the bottom section of the top anti-rotation fixture (24.2, without inscription) with its bent end facing downward onto the insulating section (7).
23. Place the washer (27) on the insulating section (7).
24. Apply a suitable lubricant to the thread of the intermediate piece (4).
25. Carefully place the intermediate piece (4) over the plug stem extension (22) onto the insulating section (7). Use a suitable tool to screw it in. Observe tightening torques.
27. Insert the fillister head screw (23) through both parts of the anti-rotation fixture (24.2). Push the washer (25) from below onto the screw and lock in place with the hexagon nut (26).
28. Place the yoke (13) onto the intermediate piece (4) and secure with slotted nut (11). Observe tightening torques.
29. Mount actuator. See associated actuator documentation.

7.4 Preparation for return shipment

Defective valves can be returned to SAMSON for repair.

Proceed as follows to return valves to SAMSON:

1. Put the control valve out of operation (see section 9).
2. Decontaminate the valve. Remove any residual process medium.
3. Fill in the Declaration on Contamination, which can be downloaded from our website at ► www.samson.de > Services > Check lists for after sales service > Declaration on Contamination.
4. Send the valve together with the filled-in form to your nearest SAMSON subsidiary. SAMSON subsidiaries are listed on our website at ► www.samson.de > Contact.

i Note

It must be possible to turn the washer (27) easily after the intermediate piece is fastened tight. It must not be clamped down.

26. Push the top section of the top anti-rotation fixture (24.2, with 'plug, seat' etc. inscribed on it) with the bent end facing upward over the intermediate piece (4).

7.5 Ordering spare parts and operating supplies

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

Spare parts

See section 10.2 for details on spare parts.

Lubricant

Details on suitable lubricants can be found in the document ► AB 0100.

Tools

Details on suitable tools can be found in the document ► AB 0100.

8 Malfunctions

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



SAMSON's After-sales Service department can support you to draw up an inspection plan for your plant.

8.1 Troubleshooting

Malfunction	Possible reasons	Recommended action
Actuator or plug stem does not move on demand.	Actuator is blocked.	Check attachment. Unblock the actuator.
	Signal pressure too low	Check the signal pressure. Check the signal pressure line for leakage.
Actuator or plug stem does not move through the whole range.	Signal pressure too low	Check the signal pressure. Check the signal pressure line for leakage.
The valve leaks to the atmosphere (fugitive emissions).	The packing is defective.	Replace packing (see section 7.2) or contact SAMSON's After-sales Service department.
	Packing tightened incorrectly.	See section 5.3, Adjustable packing. Contact SAMSON's After-sales Service department when it continues to leak.
	Version with bellows seal: the metal bellows seal is defective.	Contact SAMSON's After-sales Service department.
	Gasket worn out.	Replace body gasket (see section 7.1) or contact SAMSON's After-sales Service department.
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, particularly with soft seat, is worn.	Replace seat and plug (see section 7.3 or contact SAMSON's After-sales Service department).

i Note

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

8.2 Emergency action

Upon supply air or control signal failure, the valve moves to its fail-safe position (see section 3.1).

The plant operator is 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. Check the valve for damage. If necessary, contact SAMSON's After-sales Service department.

Putting the valve back into operation after a malfunction

- Slowly open the shut-off valves. Allow the process medium to slowly flow into the valve.

9 Decommissioning and disassembly

⚠ DANGER

*Risk of bursting in pressure equipment.
Control valves and pipelines are pressure equipment. Improper opening can lead to bursting of the valve.*

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

⚠ WARNING

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

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

- If possible, drain any process medium residues from the plant sections concerned as well as from the valve and dead cavities.
- Thoroughly flush the pipelines. The plant operator is responsible for cleaning the pipelines.
- Wear protective clothing, safety gloves, and eyewear.

⚠ WARNING

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

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

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

9.1 Decommissioning

To decommission the control valve for service and repair work or disassembly, 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. If necessary, allow the pipeline and valve components to cool down or heat up.

9.2 Removing the valve from the pipeline

Version with female thread or flanges

1. Put the control valve out of operation (see section 9.1).

2. Unfasten the valve or unbolt the flange joint.
3. Remove the valve from the pipeline (see section 4.2).

Version with welding ends

1. Put the control valve out of operation (see section 9.1).
2. Cut the pipeline in front of the weld seam.
3. Remove the valve from the pipeline (see section 4.2).

9.3 Removing the actuator from the valve

See associated actuator documentation.

9.4 Disposal

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

10 Appendix

10.1 After-sales service

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

E-mail

You can reach the After-sales Service Department at aftersaleservice@samson.de.

Addresses of SAMSON AG and its subsidiaries

The addresses of SAMSON AG, its subsidiaries, representatives, and service facilities worldwide can be found on the SAMSON website, in all SAMSON product catalogs or on the back of these Mounting and Operating Instructions.

Required specifications

Please submit the following details:

- Order number and position number in the order
- Type, model number, nominal size, and valve version
- Consecutive number of installed trim
- Pressure, density, viscosity and temperature of the process medium
- Flow rate in cu.ft/min or m³/h
- Direction of flow
- Bench range of the actuator (e.g. 0.2 to 1 bar)
- Is a filter installed?
- Installation drawing

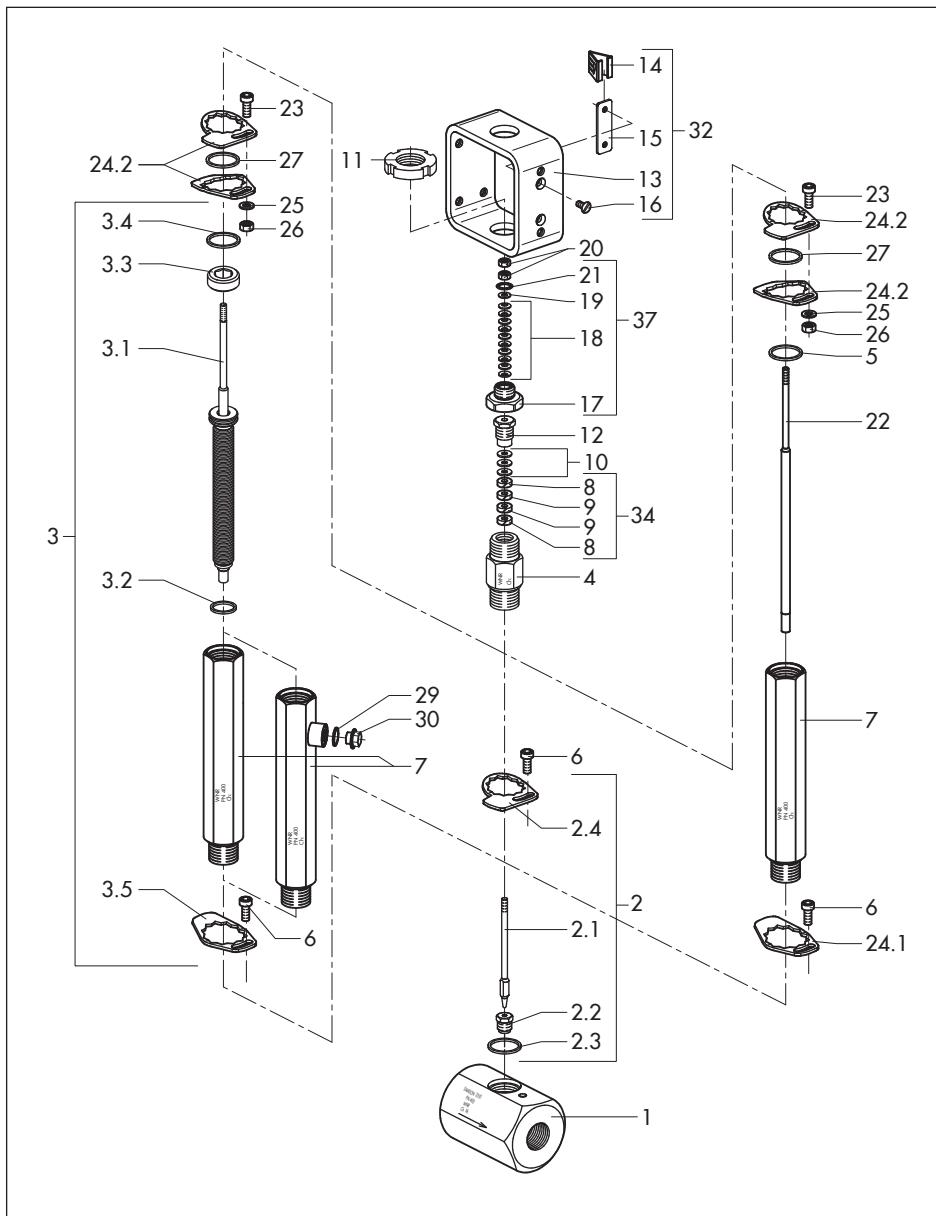
10.2 Spare parts

1	Body	26	Hexagon nut
2	Trim	27	Washer
2.1	Plug with plug stem	29	Seal for test connection
2.2	Seat	30	Screw plug
2.3	Body gasket	32	Yoke (ready mounted)
2.4	Anti-rotation fixture	34	Packing
3	Bellows (assembly)	37	Lower part of the stem connector (assembly)
3.1	Plug stem with bellows		
3.2	Seal		
3.3	Bellows nut		
3.4	Seal (on intermediate piece)		
3.5	Bottom anti-rotation fixture		
4	Intermediate piece		
5	Seal		
6	Fillister head screw		
7	Bellows seal or insulating section		
8	Seal		
9	Seal		
10	Packing washer		
11	Slotted round nut		
12	Threaded bushing (packing nut)		
13	Yoke		
14	Travel indicator scale		
15	Retaining plate		
16	Countersunk screw		
17	Bearing sleeve		
18	Disk spring		
19	Packing washer		
20	Hexagon nut		
21	Snap ring		
22	Plug stem extension		
23	Fillister head screw		
24.1	Bottom anti-rotation fixture		
24.2	Top anti-rotation fixture (two-piece)		
25	Washer		

Note

Trims (2.1 to 2.4) and metal bellows (3.1 to 3.5) are only available as spare parts as assemblies (2 and 3).

The seal rings (2.3 and 3.4) are also available separately.





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