MOUNTING AND OPERATING INSTRUCTIONS

EB 8257 EN

Translation of original instructions

Type 3286 Steam Conditioning Valve · ANSI version
In combination with an actuator, e.g. a Type 3271 or Type 3277 Pneumatic Actuator

Edition November 2023

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 this document, contact SAMSON's After-sales Service (aftersalesservice@samsongroup.com).

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

Note

Additional information

Tip

Recommended action

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1 Safety instructions and measures

Intended use

The SAMSON Type 3286 Steam Conditioning Valve in combination with an actuator (e.g. Type 3271 or Type 3277 Pneumatic Actuator) is designed to regulate the pressure and temperature of steam. The valve is intended for use in for process engineering applications and thermal plants.

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.

Welding operations are to be performed only by personnel who has the necessary qualification to perform the applied welding procedure and handle the materials used.

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

ing personnel must observe all hazard statements, warning and caution notes in these mounting and operating instructions.

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.

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 device fulfills the requirements of the following directives for the European Economic Area (EEA):

- Machinery Directive 2006/42/EC
- Pressure Equipment Directive 2014/68/EU (depending on version, see certificate)

Chapter 14 contains the declaration of conformity in compliance with Machinery Directive 2006/42/EC.

The declaration in compliance with Pressure Equipment Directive 2014/68/EU is available as a separate document for specific orders.

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:

- Order-specific declaration of conformity in compliance with Pressure Equipment Directive 2014/68/EU
- 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.
  Further information on material compliance at SAMSON is available 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 pneumatic linear actuators (e.g. Type 3271/3277 or Type 3371) 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 incorrect removal of the anti-rotation fixture under tension.

Once the actuator has been mounted on the valve and the assembly is ready for use, the clamps of the anti-rotation fixture on the plug stem are under tension.

⇨ Follow the instructions in this document during mounting or removal.

⇨ Remove the actuator from the valve or otherwise ensure that it cannot transmit any forces to the actuator stem before removing the anti-rotation fixture from the plug stem.

⚠ WARNING

Installed valves fitted with a bellows seal: 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.

⇨ Pickle and blow through the steam pipe.

NOTICE

Risk of valve damage due to unsuitable medium properties.

The valve is designed for steam and cooling water.

⇨ Make sure that the steam and cooling water are clean and free of mineral components.

⇨ Install strainers.

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 , keep the valve and the tools used free from solvents and grease.

⇨ Make sure that only suitable lubricants are used.

NOTICE

Risk of valve damage due to work being carried out by personnel not qualified for such tasks.

The plant operator or specialist company performing the welding is responsible for the selection of the welding procedure and the actual welding operations on the valve. This also applies to any required heat treatment to be performed on the valve.

⇨ Only allow qualified welding personnel to carry out welding operations.

⇨ Before welding painted valves into the pipeline and/or subject them to heat in any way, observe the temperature resistance of the paint coating system. The number of the coating system used can be found in the order documentation. The temperature resistance of all of our coating systems is specified in the Brochure ▶ WA 268.

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).

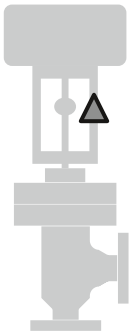
⇨ Observe the explosion protection certificates of the RFID tag when it is to be used on valves installed in potentially explosive atmospheres.

⇨ 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	
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.	

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.

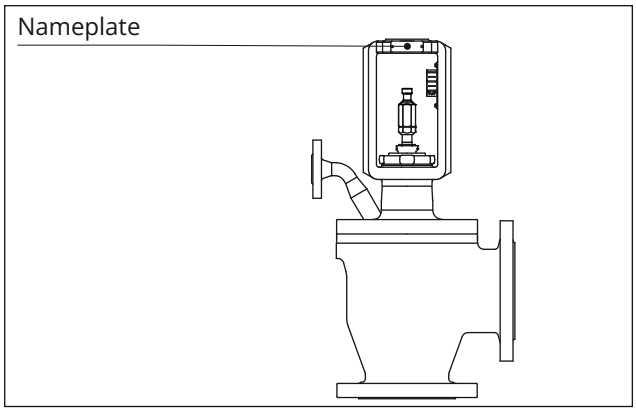


Fig. 1: *Valve nameplate (example shown)*

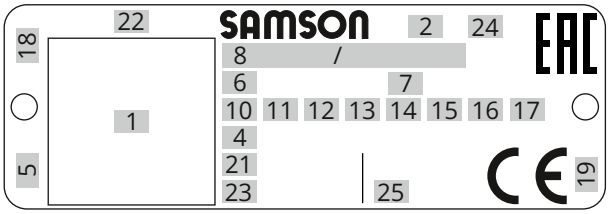


Fig. 2: *Inscriptions on the valve nameplate*

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
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 **CDST3/4/6**: 3-, 4- or 6-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, 4 place des Saisons, 92400 Courbevoie – France
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)

Item	Inscription meaning
24	Actuator type: Item 2**/3374-XX** (only when type-tested according to DIN EN 14597 and only with Type 3374 Electric Actuator)
25	**TSmin/TSmax**: Permissible min./max. temperatures for the valve **.../... °C**

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 3286 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.

2.2 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*

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).

3 Design and principle of operation

The Type 3286 is a single-seated angle valve, which functions as a steam conditioning valve. It is fitted with a flow divider ST 3. The Type 3286 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), flow divider (62) 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 V-ring 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 position of the plug in the seat changes and determines the flow rate through the valve and the pressure p_2 with it.

The cooling water is fed to the flow divider (62) through the connecting pipe on the bonnet (2) and holes in the clamping element (63). After flowing through the cross-sectional area between seat and plug, the steam flow reaches its maximum velocity and comes into contact with the cooling water at the inner wall of the flow divider.

The steam flow and the entrained water are mixed in the narrow wire mesh of the flow divider. At the same time, the steam velocity is reduced, releasing some of its heat to the water across the large surface of the wire mesh coil, which causes it to evaporate quickly.

The steam/water mixture leaves the flow divider as a fine mist with a high steam content. Evaporation is completed a short distance downstream of the steam conditioning valve. The water atomization described is ensured over the whole load range since the steam velocity at the throttling point is independent of the flow rate.

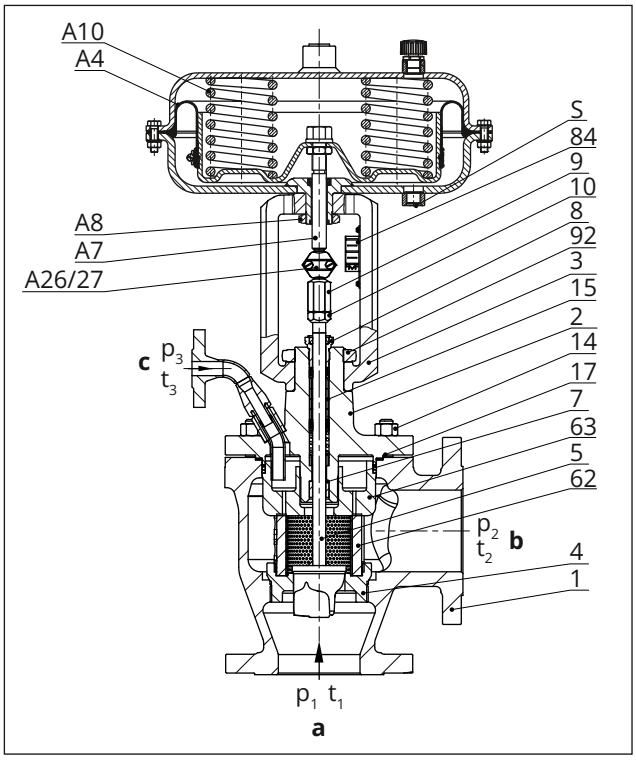


Fig. 4: *Type 3286-1 Pneumatic Steam Conditioning Valve with flanged connections and Type 3271 Actuator*

a	Superheated steam	15	Packing set
b	Throttled and cooled steam	17	Body gasket
		62	Flow divider ST 3
c	Water	63	Clamping element
1	Body	84	Travel indicator scale
2	Bonnet with connecting pipe	92	Castellated nut
		A4	Diaphragm
3	Yoke	A7	Actuator stem
4	Seat	A8	Ring nut
5	Plug with plug stem	A10	Spring
7	Guide bushing	A26/27	Stem connector clamps
8	Threaded bushing (packing nut)	S	Signal pressure connection
9	Stem connector nut		
10	Lock nut		
14	Body nut		

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 Variants

Insulating section

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

Installed valves may have a bellows seal fitted on them.

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).

The basic pneumatic actuator can be replaced by a pneumatic actuator with additional handwheel or by an electric actuator (see Information Sheet ▶ T 8300).

3.3 Additional fittings

Steam trap

Automatic steam traps must be installed at the lowest point in the upstream and downstream lines to ensure proper functioning of the plant.

Check valve

SAMSON recommends installing check valves between the steam conditioning valve and the cooling water valve to protect the condensate system.

Strainer

SAMSON recommends installing a SAMSON strainer upstream of the valve body and in the inlet pipe for the water supply. 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.

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.

Noise reduction

A further noise reduction can only be achieved by using additional insulation as the steam conditioning valve is already equipped with flow divider ST 3.

3.4 Valve accessories

See Information Sheet ▶ T 8350

Depending on the excessive heat that radiates from the steam conditioning valve, only mount valve accessories (e.g. positioners) on the inlet side of the cooling water valve.

3.5 Technical data

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

Note

More information on Type 3286 Valve is available in the following data sheets:

- ▶ *T 8256 (DIN version)*
- ▶ *T 8257 (ANSI version)*

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 permissible range for temperatures at the RFID tag is between -40 and +185 °F (-40 and +85 °C).

Table 1: *Technical data for Type 3286 · ANSI version*

Material			**Cast steel A216 WCC**	**Cast steel A217 WC6**
Nominal size		NPS	2 to 12	2 to 12
Pressure rating		Class	150 to 900	150 to 900
Type of end connections		Flanges	According to ASME B16.5	
		Welding ends	According to ASME B16.25	
Seat-plug seal			Metal seal or high-performance metal seal	
Characteristic			Equal percentage or linear	
Rangeability			50:1	
Conformity			CE	
Temperature ranges in °F (°C) · Permissible operating pressures according to pressure-temperature diagrams (see Information Sheet ▶ T 8000-2)				
Body without insulating section			14 to 428 (-10 to +220) · Up to +660 (+350) with high-temperature packing	
Body with insulating section			-20 to +800 (-29 to +425)	-20 to +932 (-29 to +500)
Valve plug	Standard	Metal seal	-20 to +932 (-29 to +500)	
	Balanced with PTFE ring		-20 to +428 (-29 to +220)	
	Balanced with graphite ring		-20 to +932 (-29 to +500)	
Leakage class according to ANSI FCI 70-2				
Valve plug	Metal seal		Standard: IV · High-performance metal seal: V	
	Balanced, metal seal		With PTFE ring (standard): IV · High-performance metal seal: V · With graphite ring: IV	

Dimensions

Specifications in inches and mm

Table 2: *Type 3286 Valve · ANSI version · Face-to face dimensions according to ANSI/ISA 75.08.01 up to* **≤***Class 600 and according to ASME B16.10 for* **≥***Class 900*

Valve	NPS		2	3	4	6	8	10	12
	DN		50	80	100	150	200	250	300
Length L2	Class 150	in	5.00	5.88	6.94	8.88	10.69	*)	*)
		mm	127	149	176	226	272	*)	*)
	Class 300	in	5.25	6.25	7.25	9.31	11.19	*)	*)
		mm	133	159	184	236	284	*)	*)
	Class 600	in	5.62	6.62	7.75	10.00	12.00	*)	*)
		mm	143	168	197	254	305	*)	*)
	Class 900	in	7.25	7.50	9.00	12.00	14.50	*)	*)
		mm	184	190	229	305	368	*)	*)
H8 for actuator	350 cm²	in	9.45	9.45	9.45	–	–	–	–
		mm	240	240	240	–	–	–	–
	350v2 cm²	in	9.45	9.45	9.45	–	–	–	–
		mm	240	240	240	–	–	–	–
	355v2 cm²	in	9.45	9.45	9.45	16.46	–	–	–
		mm	240	240	240	418	–	–	–
	750v2 cm²	in	9.45	9.45	9.45	16.46	16.46	16.46	–
		mm	240	240	240	418	418	418	–
	1000 cm²	in	11.61	11.61	11.61	16.46	16.46	–	–
		mm	295	295	295	418	418	–	–
	1400-60 cm²	in	11.61	11.61	11.61	16.46	16.46	19.81	19.81
		mm	295	295	295	418	418	503	503
	1400-120 cm²	in	18.90	18.90	18.90	19.81	19.81	25.60	25.60
		mm	480	480	480	503	503	650	650
	2800 cm²	in	18.90	18.90	18.90	19.81	19.81	25.60	25.60
		mm	480	480	480	503	503	650	650
	2 x 2800 cm²	in	18.90	18.90	18.90	19.81	19.81	19.81[1)]	25.60
		mm	480	480	480	503	503	503[1)]	650
With standard bonnet									
H4	Class 150 to 600	in	6.89	6.30	6.69	9.13	*)	*)	*)
		mm	217	222	242	314	*)	*)	*)
	Class 900	in	9.88	8.74	9.53	12.36	*)	*)	*)
		mm	251	222	242	314	*)	*)	*)
With insulating section									
H4	Class 150 to 600	in	17.52	16.93	17.32	22.05	*)	*)	*)
		mm	445	430	440	560	*)	*)	*)
	Class 900	in	19.13	16.93	17.32	22.05	*)	*)	*)
		mm	586	430	440	560	*)	*)	*)

*) On request

1) H8 = 25.60" (650 mm) with seat bore 9.84" (250 mm)

Dimensional drawings

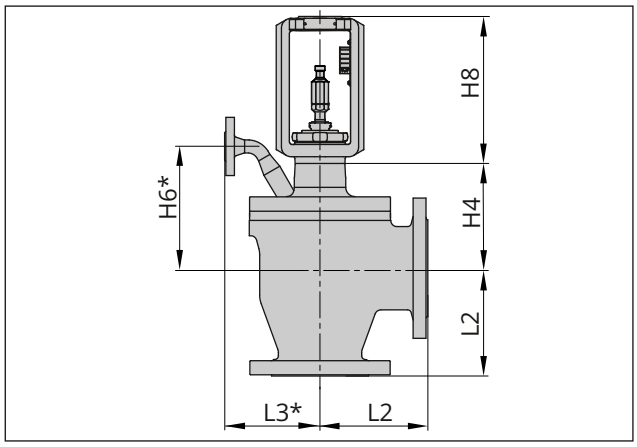


Fig. 5: *Type 3286 Valve with flanges*

* Dimensions H6 and L3 for cooling water connection on request

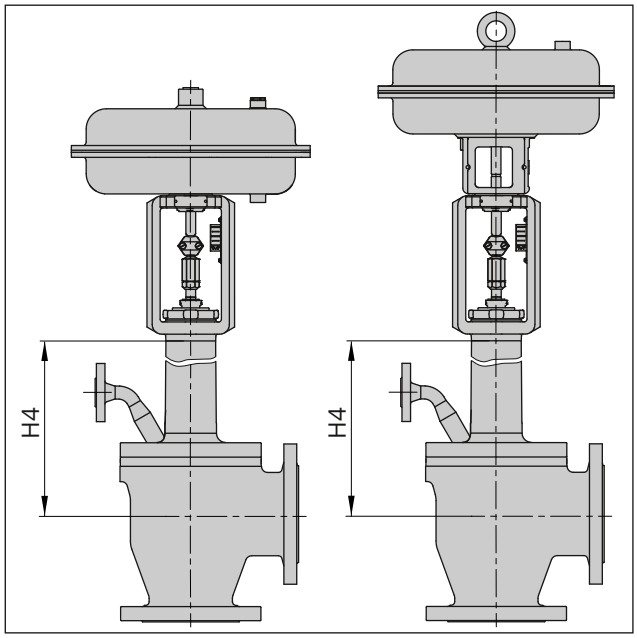


Fig. 6: *Left: Type 3286-1 with insulating section*
Right: Type 3286-7 with insulating section

Weights

Specifications in lbs and kg

Table 3: *Type 3286 Valve · ANSI version*

Valve		NPS	2	3	4	6	8	10	12
		DN	50	80	100	150	200	250	300
With standard bonnet									
Weight[1], approx. without actuator	Class 150	lbs	66	110	152	342	948	1892	2028
		kg	30	50	69	155	460	858	920
	Class 300	lbs	95	170	247	694	948	1892	2028
		kg	43	77	112	315	430	858	920
	Class 600	lbs	95	170	247	694	1096	2509	2535
		kg	43	77	112	315	497	1138	1150
	Class 900	lbs	95	170	247	694	1157	2844	3363
		kg	43	77	112	315	525	1290	1480
With insulating section									
Weight[1], approx. without actuator	Class 150 to 300	lbs	111	172	232	552	1048	*)	*)
		kg	50	78	105	250	475	*)	*)
	Class 600 to 900	lbs	166	254	353	838	1510	*)	*)
		kg	75	115	160	380	685	*)	*)

*) On request

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.).

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 -4 to +149 °F (-20 to +65 °C).

Note

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

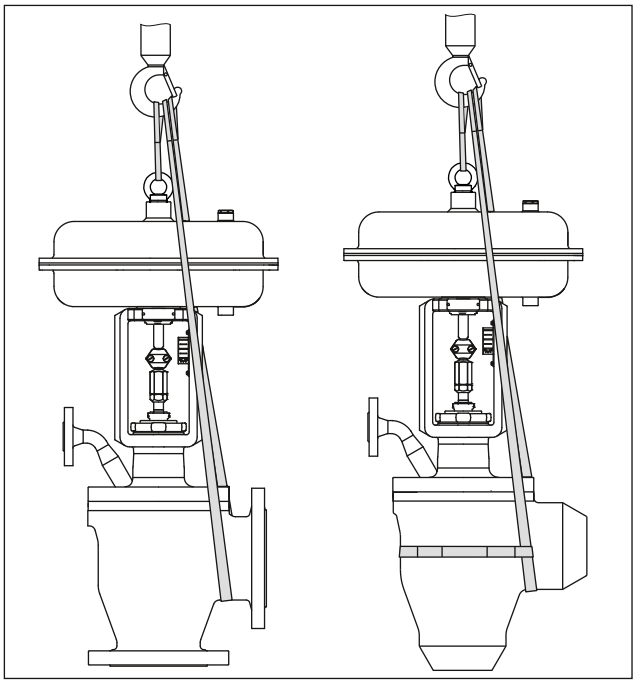


Fig. 7: *Lifting points on the control valve: with flanges (left) · With welding ends (right)*

4.3.2 Lifting the valve

See Fig. 7

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.
- 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.
- Make sure that the cooling water connection on the bonnet is not bent by the slings.

Version with flanges

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

Version with welding ends

1. Attach one sling to each welding end of the body and 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, check whether the weld seams hold.
8. Remove 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 -4 to +149 °F (-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.
- For storage periods longer than 4 months, SAMSON recommends storing the following valves upright with the actuator on top:
  - ≥NPS 4 in versions with pressure balancing
  - ≥NPS 6 in versions without pressure balancing

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 59 °F (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

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

⇨ To determine the required inlet and outlet lengths as well as how the pipeline is to be routed, contact SAMSON.

⇨ 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.

Tip

Fig. 8 shows a sample assembly of a steam pressure/temperature control with steam conditioning valve.

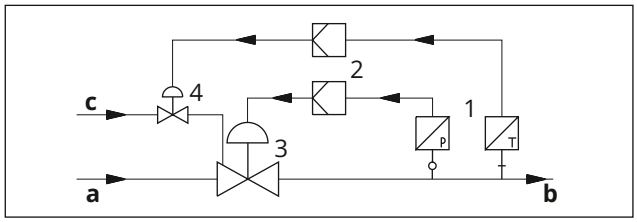


Fig. 8: *Steam pressure/temperature control with steam conditioning valve*

a Superheated steam
b Throttled and cooled steam
c Water
1 Transmitter
2 Controller
3 Steam conditioning valve
4 Control valve for cooling water

Mounting position

The control valve must always be installed with the actuator upright on top.

Support and suspension

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.

Flanges

– The flanges of the cooling water valve as well as the inlet and outlet flanges of the steam conditioning valve must be designed for the same pressure rating.
– To facilitate the separation of the steam conditioning valve and cooling water valve for repair and servicing work, a flange must be used to connect the cooling water valve to the steam conditioning valve. If necessary, fit a blind flange.

Temperature sensor

⇨ Install a temperature sensor at least 10 m downstream of the valve.

Note

The exact distance is determined at the valve sizing stage based on the operating data.

Valve accessories

⇨ If excessive heat radiates from the steam conditioning valve, only mount valve accessories (e.g. positioners) on the inlet side of the cooling water valve.

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

Vent plugs

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 32 °F (0 °C) or above 428 °F (220 °C). If the insulating section is insulated, it will not function properly.*

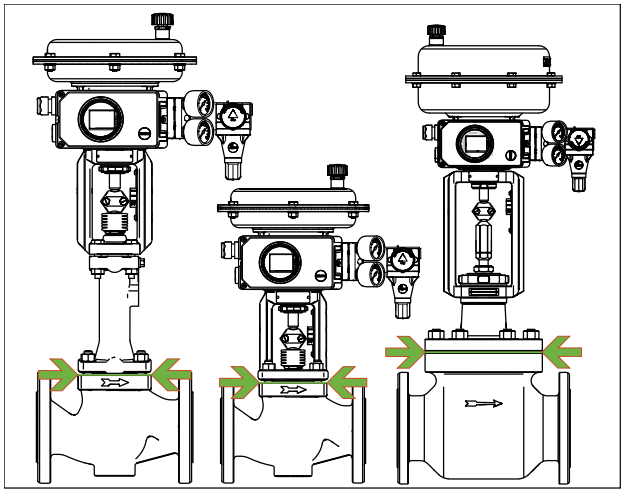


Fig. 9: *Limit of insulation for control valves (example shown)*

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.

⇨ Pickle and blow through the steam pipe.

⇨ 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).*

5.3.1 Mounting the external anti-rotation fixture

Before mounting the actuator, the external anti-rotation fixture must be mounted onto the plug stem in some cases. The valve must be closed beforehand. For SAMSON Type 3271 and Type 3277 Actuators with Type 3273 Hand-operated Actuator, observe the mounting and operating instructions of the hand-operated actuator (handwheel) to mount the anti-rotation fixture (▶ EB 8312-X).

Standard version for Series 280 Valves, DN 125/ NPS 6 and larger

See Fig. 10 and Fig. 11

1. Insert ball bearings (310) into the recesses in the bonnet.
2. Place the yoke (3) on the bonnet in such a way that the ball bearings fit into the recesses of the yoke.
3. Fasten the yoke (3) using the castellated nut (92).
4. Fasten the hanger (83) and warning label (255), if applicable, to the yoke using the screws (82).
5. Position the travel indicator scale (84) on the hanger (83) with the screws (85) according to Table 6.
6. Use a soft-faced hammer or lever press to press the sliding washers (309) with their beveled part first (without using any lubricant) into the recesses of the clamps (301) as far as they will go. Remove any excess material.
7. Apply a thin film of lubricant (114) to the threads of the stem (9) and screws (303).

NOTICE

Impaired functioning due to incorrectly applied lubricant.

⇨ *Do not apply any lubricant to the threads of the clamps (301) or the plug stem.*

8. Position the clamps (301) and stem (9) on the plug stem according to Table 6 and tighten screws (303) and washers (304) by hand.
9. Mount the actuator (see Chapter 5.3.2).
10. Thread the stem (9) upwards until the head of the stem rests on the extended actuator stem.
11. Retract the actuator stem to relieve the stem (9).
12. Gradually tighten the screws (303) in a criss-cross pattern. Observe the tightening torques specified in Table 4.

Table 4: *Tightening torques*

Bolt size	Tightening torque [Nm]
M12	50
M16	121

13. Check and ensure the following:
   - There is a nominal clearance of 0.5 to 1 mm between the sliding washers and their contact surface on the yoke on each side (see detailed view Y in Fig. 11).
   - The anti-rotation fixture does not get stuck on the yoke and can move freely in the direction of travel.
14. Extend the actuator stem again and mount the stem connector clamps.

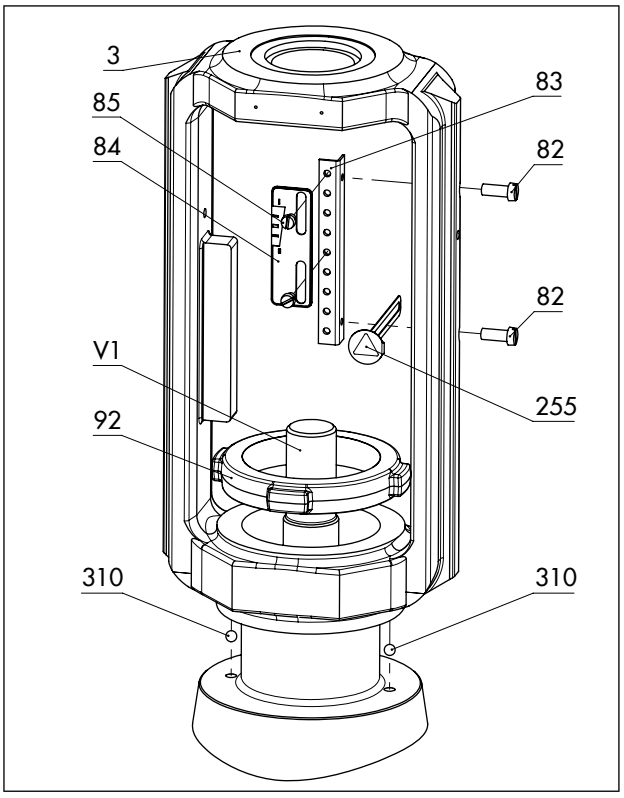


Fig. 10: *Overview of yoke assembly with travel indicator scale in the standard version*

3	Yoke	92	Castellated nut
82	Screws	255	Warning label
83	Hanger	310	Ball bearing
84	Travel indicator scale	V1	Plug stem
85	Screws		

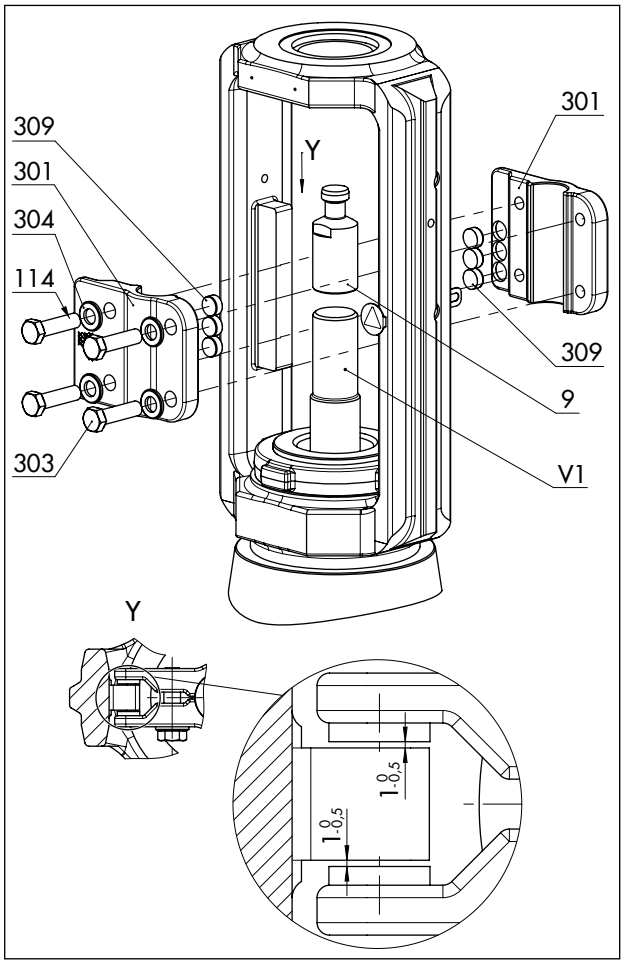


Fig. 11: *Overview of anti-rotation fixture assembly in the standard version*

9	Stem	304	Washers
114	Lubricant Gleitmo 1763 V	309	Sliding washers
301	Clamps	V1	Plug stem
303	Screws		

Special version for Series 280 Valves, DN 50 to 100/NPS 2 to 4

See Fig. 12 and Fig. 13

1. Fasten the travel indicator scale (84) with hanger (83) and warning label (255), if applicable, to the yoke using the screws (82). While fastening it, position the travel indicator scale (84) on the hanger (83) according to Table 6.
2. Screw tight the holder (302) using the screws (306) and washers (308). Observe the tightening torques specified in Table 5.
3. Fasten the yoke (3) using the castellated nut (92).
4. Use a soft-faced hammer or lever press to press the sliding washers (309) (without using any lubricant) into the holes of the clamps (301) as far as they will go. Remove any excess material.
5. Apply a thin film of lubricant (114) to the threads of the stem (9) and screws (303).

NOTICE

Impaired functioning due to incorrectly applied lubricant.

⇨ *Do not apply any lubricant to the threads of the clamps (301) or the plug stem.*

6. Position the clamps (301) and stem (9) on the plug stem according to Table 6 and tighten screws (303) and washers (304) by hand.
7. Mount the actuator (see Chapter 5.3.2).
8. Thread the stem (9) upwards until the head of the stem rests on the extended actuator stem.
9. Retract the actuator stem to relieve the stem (9).
10. Gradually tighten the screws (303) in a criss-cross pattern. Observe the tightening torques specified in Table 5.

Table 5: *Tightening torques*

Item	Bolt size	Tightening torque [Nm]
306	M10	30
303	M8	15

11. Check and ensure the following:
    - There is a nominal clearance of 0.5 to 1 mm between the sliding washers and their contact surface on the yoke on each side (see detailed view Y in Fig. 13).
    - The anti-rotation fixture does not get stuck on the yoke and can move freely in the direction of travel.
12. Extend the actuator stem again and mount the stem connector clamps.

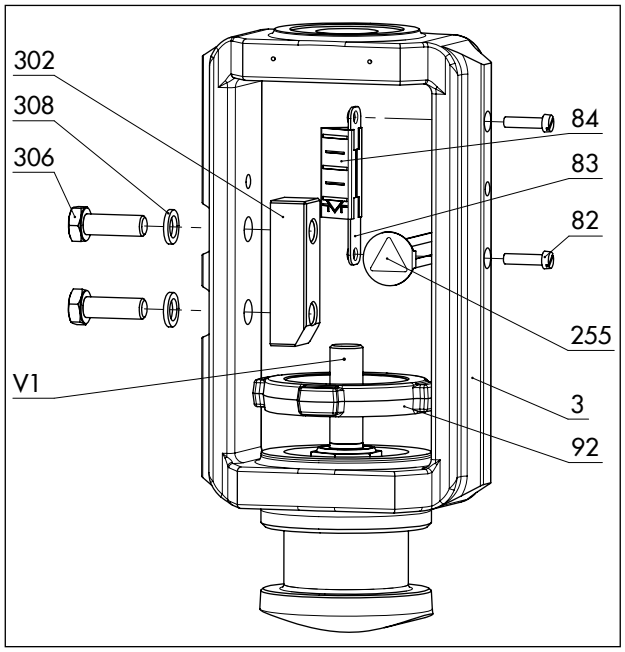


Fig. 12: *Overview of yoke assembly with travel indicator scale in the special version*

3	Yoke	255	Warning label
82	Screws	302	Holder
83	Hanger	306	Screws
84	Travel indicator scale	308	Washers
92	Castellated nut	V1	Plug stem

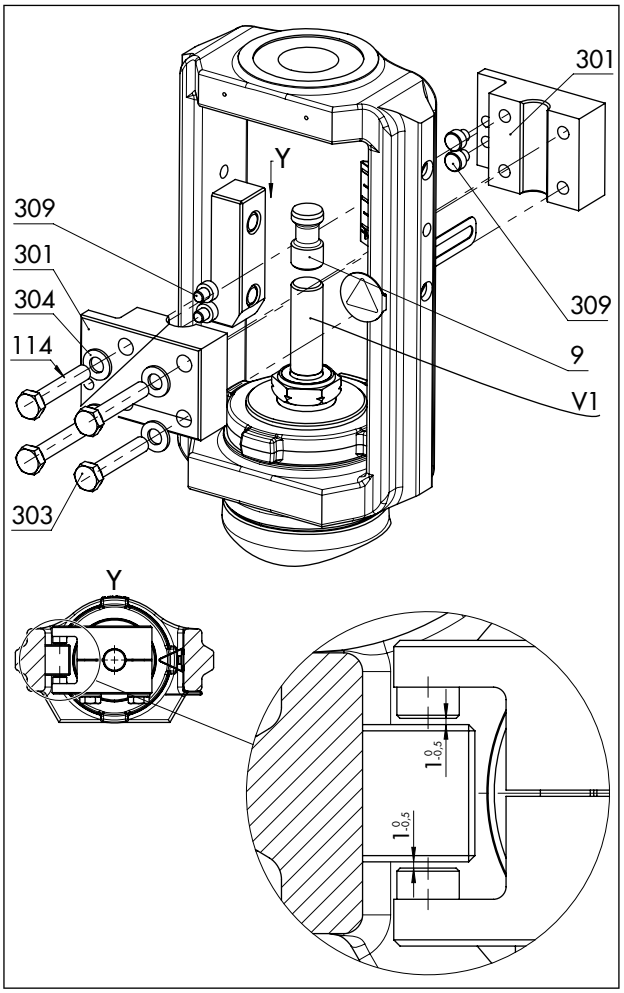


Fig. 13: *Overview of anti-rotation fixture assembly in the special version*

9	Stem	304	Washers
114	Lubricant Gleitmo 1763 V	309	Sliding washers
301	Clamps	V1	Plug stem
303	Screws		

Table 6: *Mounting dimensions for Types 3271 and 3277 Pneumatic Actuators · See Fig. 14 for dimensional drawing*

Actuator	Travel	Actuator preloading		Dimension when the valve is closed [mm]							
[cm²]	[mm]	[%]	[mm]	H_F	H_G	H_I	H_K	H_L	H_N	H_O	H_T
DN 50 to 100/NPS 2 to 4 · Special version											
350	15	0	0	111	75	192	54	–	66	42	–
	15	25	3.75	115	71			–			–
355 750	15	50	15	111	75			–			–
	15	75	22.5	118.5	67.5			–			–
	30	0	0	96	90			34.5			30
	30	25	7.5	103.5	82.5			34.5			30
1000 1400-60	15	100	60	136	105			–			–
	30	75	45	121	120			–			–
1400-120	30	75	90	231	195			–			–
2800	30	100	120	231	195			–			–
Actuator	**Travel**	**Actuator preloading**		**Dimension when the valve is closed [mm]**							
[cm²]	**[mm]**	**[%]**	**[mm]**	**H_F**	**H_G**	**H_I**	**H_K**	**H_L**	**H_N**	**H_O**	**H_T**
DN 125 to 150/NPS 6 · Standard version											
355 750	15	0	0	263.5	67.5	192	87	48	105	70	145
	15	50	15	256	75			48			145
	15	75	22.5	263.5	67.5			48			145
	30	0	0	241	90			48			120
	30	25	7.5	248.5	82.5			48			120
1000 1400-60	15	100	60	226	105			48			103
	30	0	0	211	120			48			88
	30	75	45	211	120			48			88
	60	0	0	166	165			48			58
	60	25	15	181	150			48			58
1400-120	15	87.5	105	236	180			63			105
	30	0	0	191	225			48			75
	30	75	90	221	195			48			105
	60	0	0	308	255			63			FE[2)]=175
	60	50	60	191	225			48			FA[1)]=75
2800 5600	30	0	0	191	225			48			75
	30	100	120	221	195			48			105
	60	0	0	308	255			63			FE[2)]=175
	60	75	90	191	225			48			FA[1)]=75

Actuator	Travel	Actuator preloading		Dimension when the valve is closed [mm]							
[cm²]	[mm]	[%]	[mm]	H_F	H_G	H_I	H_K	H_L	H_N	H_O	H_T
DN 200 to 250/NPS 8 to 10 up to seat bore 200 · Standard version											
355 750	30	0	0	241	90	195	87	61	108	65	120
1000 1400-60	30	0	0	211	120			66			83
	30	75	45	211	120			66			83
	60	0	0	166	165			52			55
	60	25	15	181	150			52			55
1400-120	15	87.5	105	236	180			61			115
	30	0	0	191	225			48			76
	30	75	90	221	195			61			100
	60	0	0	308	255			61			185
	60	50	60	191	225			48			76
2800 5600	30	0	0	191	255			48			76
	30	100	120	221	195			61			100
	60	0	0	308	255			61			185
	60	75	90	191	225			48			76
Actuator	**Travel**	**Actuator preloading**		**Dimension when the valve is closed [mm]**							
[cm²]	**[mm]**	**[%]**	**[mm]**	**H_F**	**H_G**	**H_I**	**H_K**	**H_L**	**H_N**	**H_O**	**H_T**
DN 250/NPS 10, seat bore 250 and DN 300 to 500/NPS 12 to 20 · Standard version											
1000 1400-60	30	0	0	281	135	237	87	100	150	110	121
	30	75	45	296	120						135
	60	0	0	251	165						91
	60	25	15	266	150						91
1400-120	60	0	0	308	255						145
	60	50	60	338	225						175
	120	0	0	278	285						FA[1)]=115 FE[2)]=86
2800 5600	60	0	0	308	255						145
	60	75	90	338	225						175
	120	0	0	248	315						FE[2)]=86
	120	25	30	278	285						115

1) FA = Actuator stem extends (fail-close)

2) FE = Actuator stem retracts (fail-open)

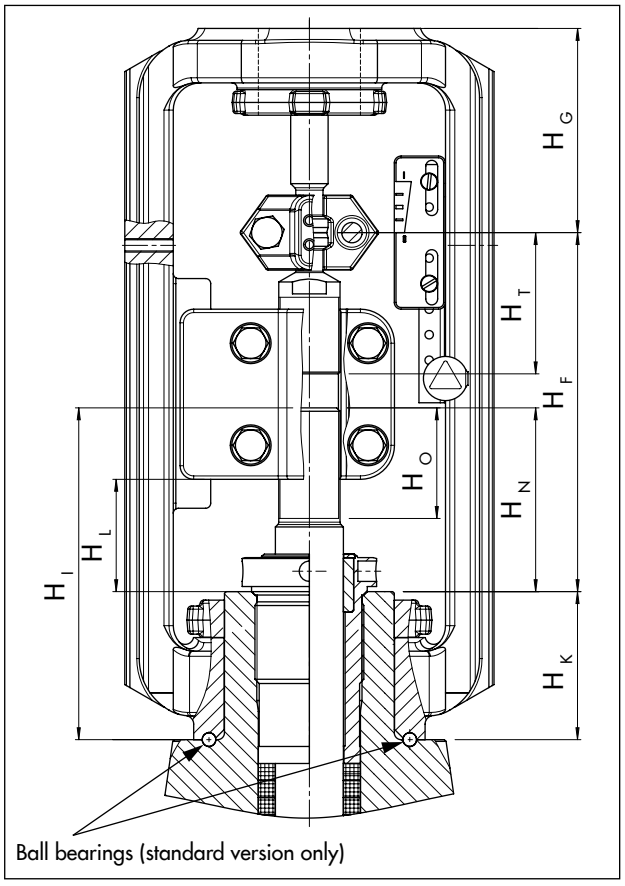


Fig. 14: *Dimensional drawing with mounting dimensions for Types 3271 and 3277 Pneumatic Actuators*

5.3.2 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 pneumatic linear actuators (e.g. Type 3271/3277 or Type 3371) 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 incorrect removal of the anti-rotation fixture under tension.

Once the actuator has been mounted on the valve and the assembly is ready for use, the clamps (301) of the anti-rotation fixture on the plug stem are under tension.

⇨ *Follow the instructions in this document during mounting or removal.*

⇨ *Do not loosen the screws (303) of the anti-rotation fixture while the force generated by the supply air and/or the actuator springs is transmitted to the actuator stem and the stem (9).*

⇨ *Remove the actuator from the valve or otherwise ensure that it cannot transmit any forces to the actuator stem before removing the anti-rotation fixture from the plug stem.*

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. 15).

⇨ 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.

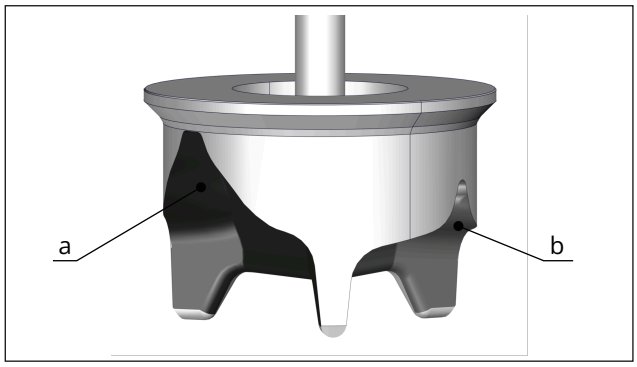


Fig. 15: *V-port plug (example shown)*

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. 16).

⇨ 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.

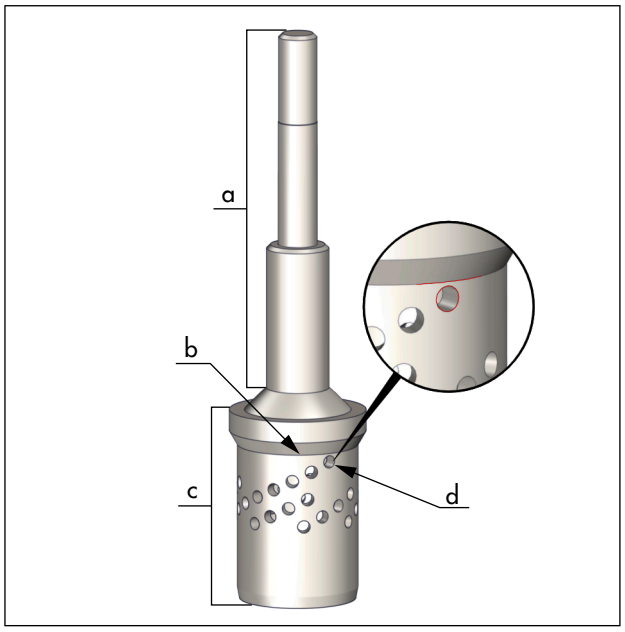


Fig. 16: *Perforated plug (example shown)*

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.

Aligning the travel indicator scale

After mounting the actuator, the travel indicator scale must be aligned. To do so, align '0' on the travel indicator scale with the tip of the stem connector clamp (see Fig. 14).

1. Move the valve to the closed position.
2. Loosen the screws on the travel indicator scale.
3. Align the travel indicator scale.
4. Fix the travel indicator scale into place by tightening the screws.

5.4 Installing the valve into the pipeline

! *NOTICE*

Risk of valve damage due to work being carried out by personnel not qualified for such tasks.

The plant operator or specialist company performing the welding is responsible for the selection of the welding procedure and the actual welding operations on the valve. This also applies to any required heat treatment to be performed on the valve.

⇨ *Only allow qualified welding personnel to carry out welding operations.*

⇨ *Before welding painted valves into the pipeline and/or subject them to heat in any way, observe the temperature resistance of the paint coating system. The number of the coating system used can be found in the order documentation. The temperature resistance of all of our coating systems is specified in the Brochure ▶ WA 268.*

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. Connect the cooling water pipeline and cooling water valve.
8. Attach a support or suspension on the valve, if necessary.

Version with welding ends

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. Completely retract the actuator stem to protect the plug from sparks during welding.
6. Weld the valve free of stress into the pipeline.
7. Connect the cooling water pipeline and cooling water valve.
8. Attach a support or suspension on the valve, if necessary.

5.5 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 pneumatic linear actuators (e.g. Type 3271/3277 or Type 3371) 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:

5.5.1 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.

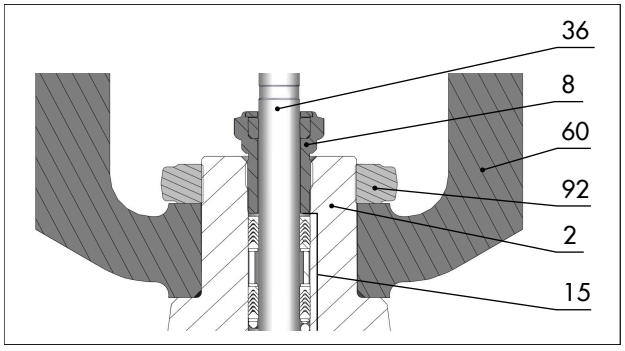


Fig. 17: *Packing with threaded bushing (centrally fastened) (example shown)*

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

5.5.2 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.

5.5.3 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).

5.5.4 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 5.5).
– 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. Set the controller (2) to 'manual' to ensure that the plant can slowly warm up by slightly opening the steam conditioning valve.
3. Set the controller (3) for the water supply to 'automatic' to ensure it can react quickly to changes at the temperature sensor of the transmitter.
4. 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.
5. 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

Malfunction	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 5.5.1).
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.
	Sealing parts, weld spatter and other impurities carried along by the steam have accumulated.	Pickle and blow through the steam pipe.
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 5.5.1). 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 pneumatic linear actuators (e.g. Type 3271/3277 or Type 3371) 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 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).*

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.	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 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.	Version with adjustable packing [2]: Adjust the packing (see section 'Adjusting the packing' in Chapter 5.5.1) 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] (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 5.5.1).
	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.
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

9.2 Service work preparations

⚠ WARNING

Risk of personal injury due to incorrect removal of the anti-rotation fixture under tension.

Once the actuator has been mounted on the valve and the assembly is ready for use, the clamps (301) of the anti-rotation fixture on the plug stem are under tension.

⇨ *Follow the instructions in this document during mounting or removal.*

⇨ *Do not loosen the screws (303) of the anti-rotation fixture while the force generated by the supply air and/or the actuator springs is transmitted to the actuator stem and the stem (9).*

⇨ *Remove the actuator from the valve or otherwise ensure that it cannot transmit any forces to the actuator stem before removing the anti-rotation fixture from the plug stem.*

---

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).
3. Undo the flange joint between the cooling water valve and steam conditioning valve.
4. Remove the control valve from the pipeline (see Chapter 11).
5. Remove the actuator from the valve (see associated actuator documentation).

i *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.

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

1. Mount the actuator (see associated actuator documentation and Chapter 5).
2. Adjust lower or upper signal bench range (see associated actuator documentation).
3. Re-install the valve into the pipeline (see Chapter 5).
4. 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 5.5).

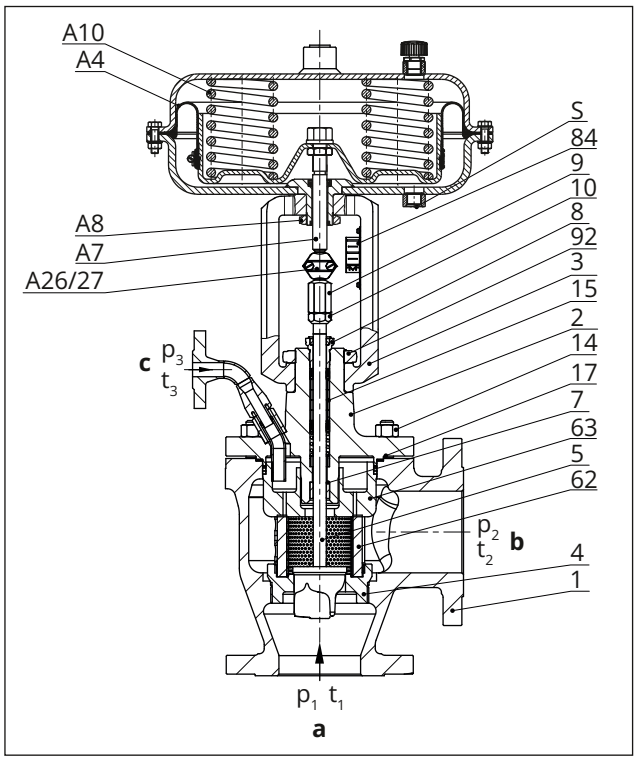


Fig. 18: *Type 3286-1 Pneumatic Steam Conditioning Valve with flanged connections and Type 3271 Actuator*

a	Superheated steam	15	Packing set
b	Throttled and cooled steam	17	Body gasket
		62	Flow divider ST 3
c	Water	63	Clamping element
1	Body	84	Travel indicator scale
2	Bonnet with connecting pipe	92	Castellated nut
		A4	Diaphragm
3	Yoke	A7	Actuator stem
4	Seat	A8	Ring nut
5	Plug with plug stem	A10	Spring
7	Guide bushing	A26/27	Stem connector clamps
8	Threaded bushing (packing nut)	S	Signal pressure connection
9	Stem connector nut		
10	Lock nut		
14	Body nut		

9.4.1 Replacing gaskets

NOTICE

Risk of control valve damage due to incorrect servicing.

⇨ *The gaskets can only be replaced when all the following conditions are met:*

- *The nominal size is ≤NPS 6.*
- *The valve does not have a balanced plug.*
- *The valve does not have a bellows seal.*
- *The valve does not have an insulating section.*

⇨ *To replace the gaskets in other valve versions, contact our after-sales service.*

The following gaskets are installed and must be exchanged:

- Body gasket (17)
- Shims 0.5 mm (64)
- Shims 2 mm (65)
- Graphite fiber packing (67)

Note

Measure how many shims (64, 65) are required (see Chapter 9.4.4).

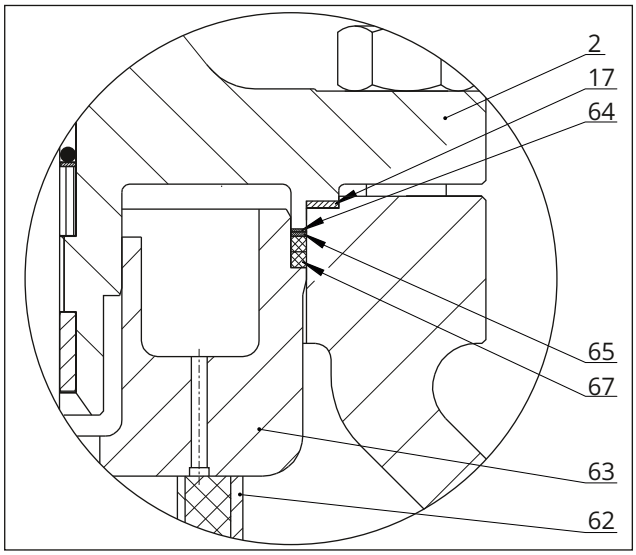


Fig. 19: *Gaskets (Type 3281 and Type 3286 Valves)*

2	Bonnet	64	Shim
17	Body gasket	65	Shim
62	Flow divider	67	Graphite fiber packing
63	Clamping element		

1. Undo the body nuts (14) gradually in a criss-cross pattern.
2. Lift the bonnet (2), yoke (3) and plug with plug stem (5) off the body (1).
3. Remove the gaskets (17, 64, 65) and graphite fiber packing (67). Carefully clean the sealing faces in the valve body (1), on the bonnet (2) and clamping element (63).
4. Insert the new gasket (17) into the body.
5. Place the new graphite fiber packing (67) on the clamping element (63).
6. Place the new shims (64, 65) on the graphite fiber packing. For this purpose, measure how many shims are required as described in Chapter 9.4.4.
7. Make sure that the flow divider (62) is still clamped correctly on the seat (4).
8. Place the bonnet (2) together with the plug stem and plug (5) onto the body.

   Version with V-port plug: Place the bonnet (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 bonnet (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 5.3.2.
9. Firmly press the plug (5) into the seat (4). Fasten down the bonnet (2) with the body nuts (14). Tighten the body nuts gradually in a crisscross 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 nominal size is ≤NPS 6.*
- *The valve does not have a balanced plug.*
- *The valve does not have a bellows seal.*
- *The valve does not have an insulating section.*
- *The standard packing, form H or form HT packing is installed in the valve.*

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

NOTICE

Damage to the packing (form H or form HT) through the use of lubricant.

The form H and form HT packings contain graphite.

⇨ *Do not use any lubricant during the installation of this packing.*

Note

The number of spacers (19) varies depending on the nominal size of the valve.

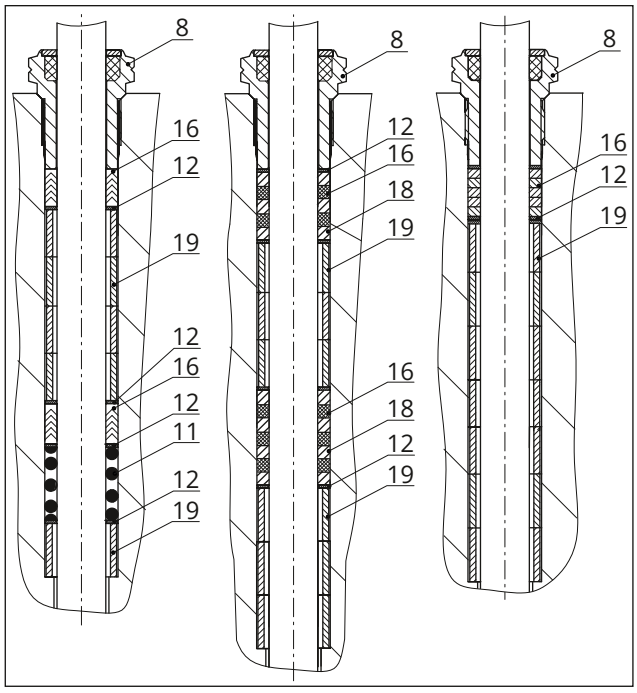


Fig. 20: *Packing: Standard (left) · Form H (middle) · Form HT (right)*

8	Threaded bushing	16	Packing rings
11	Spring	18	Spacer
12	Washer	19	Spacer

a) Standard and form H packings

1. Unscrew the castellated nut (92) and lift the yoke (3) off the bonnet (2).
2. Undo the body nuts (14) gradually in a crisscross pattern.
3. Lift the bonnet (2) and plug with plug stem (5) off the body (1).
4. Replace the gaskets 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 bonnet (2).
8. Use a suitable tool to pull all packing parts out of the packing chamber.
9. Renew damaged parts. Clean the packing chamber thoroughly.
10. **Standard packing:** Apply a suitable lubricant to all packing parts and the plug stem (5).

    Form H packing: Do not use any lubricant.
11. Slide the plug with plug stem (5) into the bonnet (2).
12. Make sure that the flow divider (62) is still clamped correctly on the seat (4).
13. Place the bonnet (2) together with the plug stem and plug (5) onto the body.

    Version with V-port plug: Place the bonnet (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 bonnet (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 5.3.2.
14. Carefully slide the packing parts over the plug stem into the packing chamber using a suitable tool. Observe the proper sequence (see Fig. 20).
15. Firmly press the plug (5) into the seat (4). Fasten down the bonnet (2) with the body nuts (14). Tighten the body nuts gradually in a crisscross pattern. Observe tightening torques.
16. Screw in the threaded bushing (8) and tighten it. Observe tightening torques.
17. Place yoke (3) on the bonnet (2) and fasten using the castellated nut (92).
18. Loosely screw the lock nut (10) and stem connector nut (9) onto the plug stem.

b) Form HT packing

1. Proceed as described in previous section 'Standard and form H packings', steps 1. to 15.. Do not use any lubricant.
2. To compress the packing, tighten the packing until reaching the metal stop using a suitable tool.
3. Remove the tool.
4. Proceed as described in previous section 'Standard and form H packings', steps 16. to 18..

⇨ After mounting the actuator, stroke the plug stem (5) up and down around ten times to allow the packing to settle.

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 nominal size is ≤NPS 6.*
- *The valve does not have a balanced plug.*
- *The valve does not have a bellows seal.*
- *The valve does not have an insulating section.*
- *The standard packing, form H or form 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.*

1. Unscrew the castellated nut (92) and lift the yoke (3) off the bonnet (2).
2. Undo the body nuts (14) gradually in a crisscross pattern.
3. Lift the bonnet (2) and plug with plug stem (5) off the body (1).
4. Replace the gasket (see 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 bonnet (2).
8. Replace the packing (see Chapter 9.4.2).
9. Make sure that the guide bushing (7) is not damaged. If necessary, replace the guide bushing using a suitable tool.
10. Remove clamping element (63) and flow divider (62).
11. Unscrew the seat (4) using a suitable tool.
12. Apply a suitable lubricant to the thread and sealing cone of the new seat.
13. Screw in the seat (4). Observe tightening torques.
14. Clamp the flow divider (62) on the seat. Mount the clamping element (63).
15. Slide the new plug with plug stem (5) into the bonnet (2).
16. Place the bonnet (2) together with the plug stem and plug (5) onto the body (1).

    Version with V-port plug: Place the bonnet (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 bonnet (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 5.3.2.
17. Firmly press the plug (5) into the seat (4). Fasten down the bonnet (2) with the body nuts (14). Tighten the body nuts gradually in a crisscross pattern. Observe tightening torques.
18. Screw in the threaded bushing (8) and tighten it. Observe tightening torques.
19. Place yoke (3) on the bonnet (2) and fasten using the castellated nut (92).
20. Loosely screw the lock nut (10) and stem connector nut (9) onto the plug stem.

9.4.4 Determining the number of shims required

Determine the number of shims required every time the bonnet (2) is opened. Two different shim sizes are available:

- Shims 0.5 mm (64)
- Shims 2 mm (65)

After inserting the new gasket (17) as described in Chapter 9.4.1, proceed as follows:

1. Determine dimension **A**.
2. Determine dimension **B**.
3. Refer to Table 7 for dimensions **P** and **S**.
4. Calculate dimension **X**: **X = (A + P – B) – 2 * S**
5. Fill out dimension **X** up to +0.5 mm with the appropriate number of shims (64/65). If dimension **X** ≥ dimension **S**, insert an additional graphite fiber packing (67).

Table 7: *Dimensions for graphite fiber packing*

Dimension		Up to NPS 4	NPS 6 to 10	NPS 12
S	mm	4	8	10
P	mm	1.8	3	3.5

i ***Note***

The dimension P is the height of the double-layered graphite fiber packing (67) in the compressed state.

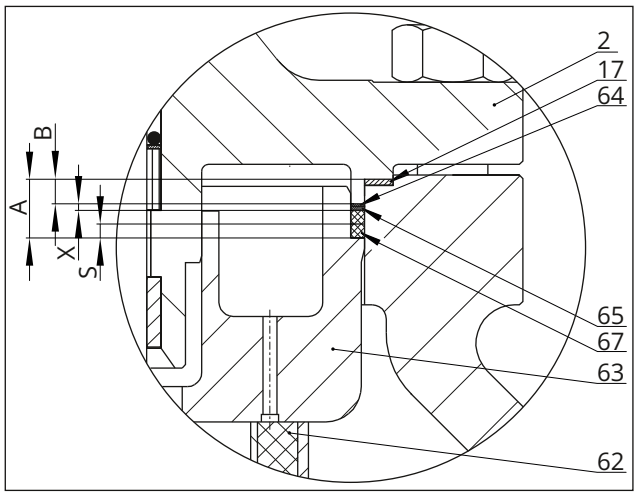


Fig. 21: *Shims at the flow divider*

Dim. **A**	Bottom of the graphite fiber packing (67) up to the top of the gasket (17)	2	Bonnet
		17	Body gasket
Dim. **B**	Top of the shim (64/65) up to the top of the gasket (17)	62	Flow divider
		63	Clamping element
Dim. **S**	Height of the double-layered graphite fiber packing (67) (before compression)	64	Shim
		65	Shim
Dim. **X**	Height of the shims (64/65)	67	Graphite fiber packing

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.
6. Remove the cooling water pipeline.

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 pneumatic linear actuators (e.g. Type 3271/3277 or Type 3371) 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 incorrect removal of the anti-rotation fixture under tension.

Once the actuator has been mounted on the valve and the assembly is ready for use, the clamps (301) of the anti-rotation fixture on the plug stem are under tension.

⇨ *Follow the instructions in this document during mounting or removal.*

⇨ *Do not loosen the screws (303) of the anti-rotation fixture while the force generated by the supply air and/or the actuator springs is transmitted to the actuator stem and the stem (9).*

⇨ *Remove the actuator from the valve or otherwise ensure that it cannot transmit any forces to the actuator stem before removing the anti-rotation fixture from the plug stem.*

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).

Version with welding ends

1. Support the control valve to hold it in place when separated from the pipeline (see Chapter 4).
2. Cut the pipeline in front of the weld seam.
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. Send an e-mail returns-de@samsongroup.com to register the return shipment including the following information:
   - Type
   - Article no.
   - Configuration ID
   - Original order
   - Completed Declaration on Contamination, which can be downloaded from 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.

Note

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

Tip

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

⇨ Observe local, national and international refuse regulations.

⇨ Do not dispose of components, 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 Machinery Directive 2006/42/EC for Types 3286-1 and 3286-7 Control Valves

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 > 3286

Other optional certificates are available on request.

EU DECLARATION OF CONFORMITY

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 3281-1/-7 Pneumatic Control Valves consisting of the Type 3281 Valve and Type 3271/Type 3277 Pneumatic Actuator

Types 3286-1/-7 Pneumatic Control Valves consisting of the Type 3286 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 3281 Valve (DIN): Mounting and Operating Instructions EB 8251
- Type 3281 Valve (ANSI): Mounting and Operating Instructions EB 8252
- Type 3286 Valve (DIN): Mounting and Operating Instructions EB 8256
- Type 3286 Valve (ANSI): Mounting and Operating Instructions EB 8257
- 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 Controls, Inc., 4111 Cedar Boulevard, Baytown, Texas, USA
Baytown, 14 November 2023

James Evans

Chief Operating Officer

David Tamm

Product Manager

15 Appendix

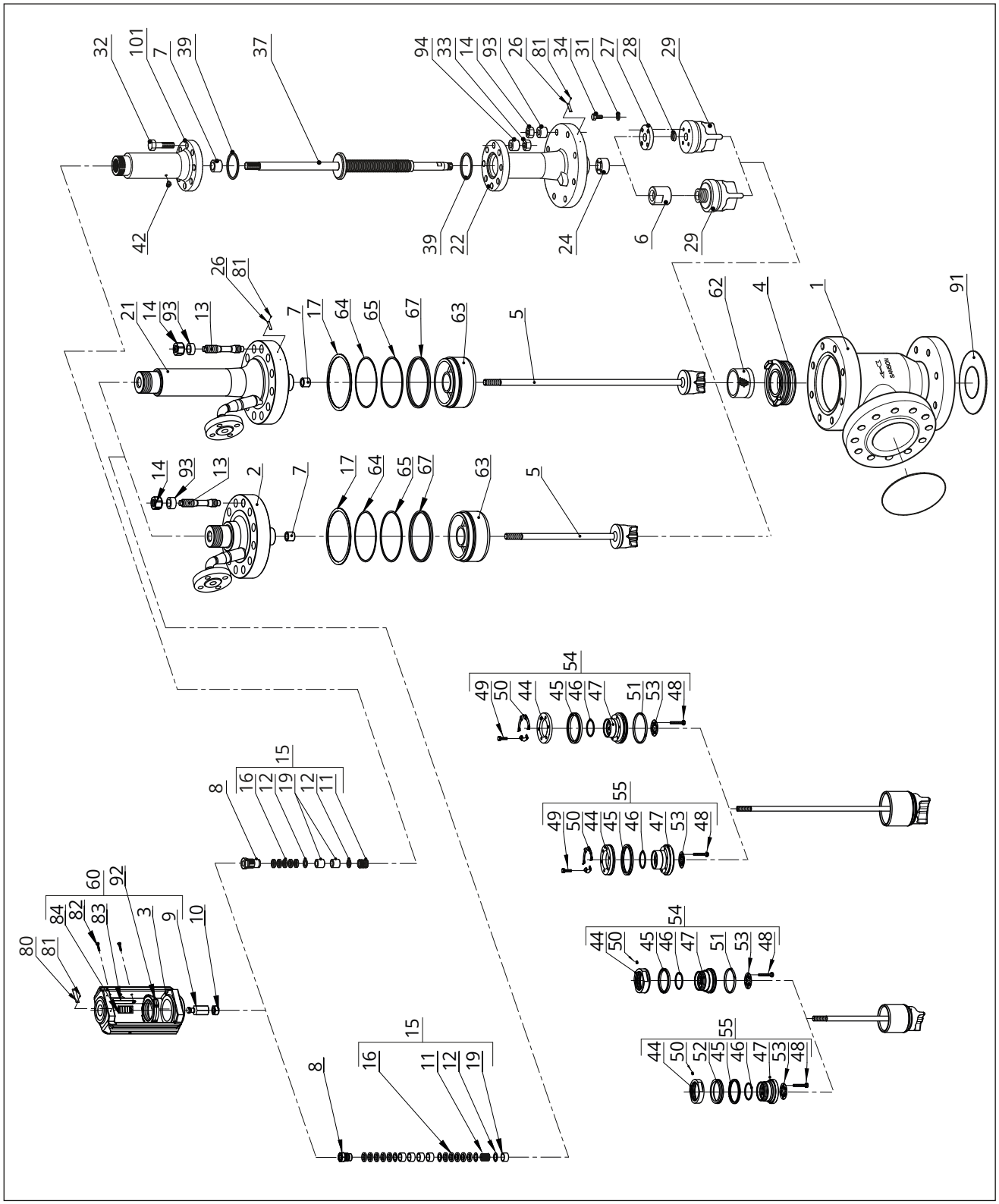
15.1 Tightening torques, lubricants and tools

▶ AB 0100 tools, tightening torques and lubricants

15.2 Spare parts

1 Body
2 Bonnet (with connecting pipe)
3 Yoke
4 Seat
5 Plug
6 Nut
7 Guide bushing
8 Threaded bushing (packing nut)
9 Stem connector nut
10 Lock nut
11 Spring
12 Washer
13 Stud bolt or expansion bolt
14 Body nut
15 Packing set
16 V-rings
17 Body gasket
19 Bushing
21 Insulating section
22 Intermediate piece (version with bellows seal)[1)]
24 Guide bushing
26 Label (bellows seal or insulating section)
27 Flange
28 Clamping ring
29 Plug (version with bellows seal)[1)]
31 Washer
32 Screw
33 Nut
34 Screw
37 Plug stem with metal bellows[1)]
39 Gasket
42 Screw plug (test connection)[1)]
43 Seal (not shown) for item 42[1)]
44 Ring/ring nut
45 Seal
46 Gasket
47 Support
48 Hex screw
49 Hex screw
50 Threaded pin
51 Guide ring
52 Ring
53 Retaining ring
54 Pressure balancing (PTFE)
55 Pressure balancing (graphite)
60 Yoke assembly
62 Flow divider ST 3
63 Clamping element
64 Gasket (shim)
65 Gasket (shim)
67 Graphite fiber packing
80 Nameplate
81 Grooved pin
82 Screw
83 Hanger
84 Travel indicator scale
91 Protective caps on valve inlet/outlet
92 Castellated nut
93 Expansion sleeve
94 Expansion sleeve
101 Valve bonnet (version with bellows seal)[1)]

[1)] Only possible for devices already in use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14 93 13 2 7 17 64 65 67 63 5
54 49 50 44 45 46 47 51 53 48
15 8 16 12 19 12 11
55 49 50 44 45 46 47 53 48
60 92 84 82 83 3 9 10 80 81
54 44 50 45 46 47 51 53 48
15 8 16 11 12 19
55 44 50 52 45 46 47 53 48

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 the following e-mail address:
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 m^3/h or cu.ft/min
- Bench range of the actuator (e.g. 0.2 to 1 bar)
- Is a strainer installed?
- Installation drawing

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

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