

MOUNTING AND OPERATING INSTRUCTIONS

SAMSON

EB 8313-3 EN

Translation of original instructions



Type 3372 with 120 cm² actuator
area and Type 3725 Positioner



Type 3372 with 350 cm² actuator
area and Type 3725 Positioner

Type 3372 Electropneumatic Actuator

Actuator area: 120 and 350 cm²

with Type 3725 Positioner or Series 3730 Positioner

Note on these mounting and operating instructions

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

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



Documents relating to the device, such as the mounting and operating instructions, are available on our website at www.samsongroup.com > **Downloads** > **Documentation**.

Definition of signal words

DANGER

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

WARNING

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

NOTICE

Property damage message or malfunction

Note

Additional information

Tip

Recommended action

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1 Safety instructions and measures

Intended use

The SAMSON Type 372 Actuator is designed for operating a mounted globe valve. In combination with the valve, the actuator is used to shut off and control the flow of liquids, gases or vapors in the pipeline. The actuator is suitable for throttling service. In this case, the actuator is combined with the Type 3725 Positioner or a Series 3730 Positioner. The actuator can be used in processing and industrial plants.

The actuator is designed to operate under exactly defined conditions (e.g. thrust, travel). Therefore, operators must ensure that the actuator is only used in operating conditions that meet the specifications used for sizing the actuator at the ordering stage. In case operators intend to use the actuator 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 actuator 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 accessories connected to the actuator

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 actuator must be mounted, started up, serviced and repaired by fully trained and qualified personnel only; the accepted industry codes and practices must be observed. According to these mounting and operating instructions, trained personnel refers to individuals who are able to judge the work they are assigned to and recognize possible hazards due to their specialized training, their knowledge and experience as well as their knowledge of the applicable standards.

Safety instructions and measures

Explosion-protected versions of this device must 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 wearing the following personal protective equipment when handling the Type 3372 Electropneumatic Actuator:

- Safety gloves and safety footwear (if applicable ESD footwear) when mounting or removing the actuator
 - Eye protection and hearing protection while the actuator is operating
- ➔ 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 devices

The Type 3372 Electropneumatic Actuator does not have any special safety equipment.

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 actuator by the signal pressure, stored spring energy or moving parts by taking appropriate precautions. Plant operators and operating personnel must observe all hazard statements, warnings and caution notes in these mounting and operating instructions.

Hazards resulting from the special working conditions at the installation site of the actuator 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.

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.

Servicing explosion-protected devices

If a part of the device on which the explosion protection is based needs to be serviced, the device must not be put back into operation until a qualified inspector has assessed it according to explosion protection requirements, has issued an inspection certificate or given the device a mark of conformity. Inspection by a qualified inspector is not required if the manufacturer performs a routine test on the device before putting it back into operation and the passing of the routine test is documented by attaching a mark of conformity to the device. Replace explosion-protected components only with original, routine-tested components by the manufacturer.

Devices that have already been operated outside hazardous areas and are intended for future use inside hazardous areas must comply with the safety requirements placed on serviced devices. Before being operated inside hazardous areas, test the devices according to the specifications for servicing explosion-protected devices.

Maintenance, calibration and work on equipment

- ➔ Only use intrinsically safe current/voltage calibrators and measuring instruments for interconnection with intrinsically safe circuits to check or calibrate the equipment inside or outside hazardous areas.
- ➔ Observe the maximum permissible values specified in the certificates for intrinsically safe circuits.

Referenced standards, directives and regulations

The Type 3372 Electropneumatic Actuator fulfills the requirements of the Directive 2014/30/EU. Furthermore, the actuators are partly completed machinery as defined in the Machinery Directive 2006/42/EC. The declarations of conformity and incorporation are included in the 'Certificates' chapter.

Safety instructions and measures

Referenced documents

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

- ► EB 8394 for the mounted Type 3725 Positioner
- ► EB 8384-X or ► EB 8484-X for Series 3730 Positioners
- Mounting and operating instructions for the valve on which it is mounted
- Mounting and operating instructions for mounted valve accessories (e.g. ► EB 8367 for Type 4744 Limit Switch)
- ► AB 0100 for tools, tightening torques and lubricant
- 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 the actuator.

Actuators are pressurized. Improper opening can lead to actuator components bursting.

- ➔ Before starting any work on the actuator, depressurize all plant sections affected and the actuator.

Risk of fatal injury due to the ignition of an explosive atmosphere.

Incorrect installation, operation or servicing of the electropneumatic actuator in potentially explosive atmospheres may lead to ignition of the atmosphere and ultimately to death.

- ➔ The following regulations apply to installation in hazardous areas:
EN 60079-14 (VDE 0165, Part 1).
- ➔ Installation, operation or servicing of the electropneumatic actuator is to be performed only by personnel who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.

1.2 Notes on possible personal injury

WARNING

Crush hazard arising from moving parts.

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

- ➔ Do not touch the actuator stem or insert hands or finger into the yoke or beneath the actuator stem while the air supply is connected to the actuator.
- ➔ While working on the actuator, disconnect and lock the pneumatic air supply as well as the control signal.
- ➔ Do not impede the movement of the actuator stem by inserting objects into the yoke.
- ➔ Before unblocking the actuator stem after it has 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 section 'Relieving the spring compression in the actuator' in the 'Removal' chapter.

Risk of personal injury when the actuator vents.

The actuator is operated with air. As a result, air is vented during operation.

- ➔ 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 ¹⁾.
- ➔ Use suitable mufflers and vent plugs.
- ➔ Wear eye and hearing protection when working near the actuator.

Risk of personal injury due to preloaded springs.

Actuators with preloaded springs are under tension. These actuators can be identified by several longer bolts with nuts protruding from the bottom diaphragm case. These bolts allow the spring compression to be relieved evenly on disassembling the actuator. Actuators with considerably preloaded springs are also labeled correspondingly (see Chapter 1.4).

- ➔ Before starting any work on the actuator, relieve the compression from the preloaded springs. See section 'Relieving the spring compression in the actuator' in the 'Removal' chapter.

¹⁾ If not described otherwise in the valve documentation, the work position for the control valve is the front view looking onto the operating controls (including valve accessories).

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.

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

Over time, markings, labels and nameplates on the actuator 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.

1.3 Notes on possible property damage

i NOTICE

Risk of actuator damage due to excessively high supply pressure.

An excessively high supply pressure can lead to impermissible movements or forces which might damage the actuator.

- ➔ Observe supply pressure restrictions. See the 'Operation' chapter.
- ➔ Restrict the supply pressure by using a suitable supply pressure reducing station.

An incorrect electric signal will damage the electropneumatic actuator.

A current source must be used to power the actuator.

- ➔ Only use a current source and never a voltage source.

Incorrect assignment of the terminals will damage the electropneumatic actuator and will lead to malfunction.

The prescribed terminal assignment must be observed for the actuator to function properly.

- ➔ Connect the electrical wiring according to the prescribed terminal assignment.

Risk of actuator damage due to over- or under-torquing.

Observe the specified torques when tightening actuator parts. Excessive tightening torques lead to parts wearing out more quickly. Parts that are not tightened far enough may loosen.

- ➔ Observe the specified tightening torques (▶ AB 0100).

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

Certain tools are required to work on the actuator.

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


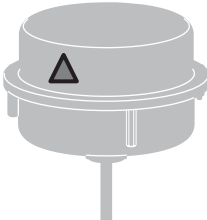






Risk of actuator damage due to the use of unsuitable lubricants.

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

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

1.4 Warnings on the device

The following warning is only affixed to the device on delivery when the actuator is fitted with preloaded springs in the delivered state:

Warning symbols		Meaning of the warning						
		<p>Warning to indicate that actuator parts are pressurized.</p> <p>The springs in the actuator are preloaded.</p> <p>Only open the actuator following the instructions in this document. See section 'Relieving the spring compression in the actuator' in the 'Removal' chapter.</p>						
<p>Actuators manufactured before April 2020 have the following warning affixed to them:</p>								
<table><tr><td></td><td>ACHTUNG! VORGESPANNTER ANTRIEB</td><td>ATTENTION! PRE-LOADED ACTUATOR</td><td>ATTENTION! SERVO-MOTEUR PRECONTRAINTE</td><td></td></tr></table>					ACHTUNG! VORGESPANNTER ANTRIEB	ATTENTION! PRE-LOADED ACTUATOR	ATTENTION! SERVO-MOTEUR PRECONTRAINTE	
	ACHTUNG! VORGESPANNTER ANTRIEB	ATTENTION! PRE-LOADED ACTUATOR	ATTENTION! SERVO-MOTEUR PRECONTRAINTE					

2 Markings on the device

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.

2.1 Actuator nameplate

The nameplate is stuck to the diaphragm casing. The nameplate of the Type 3372 with 120 cm² actuator area is located on the bottom diaphragm case. The nameplate of the Type 3372 with 350 cm² actuator area is located on the top diaphragm case. It includes all details required to identify the device.

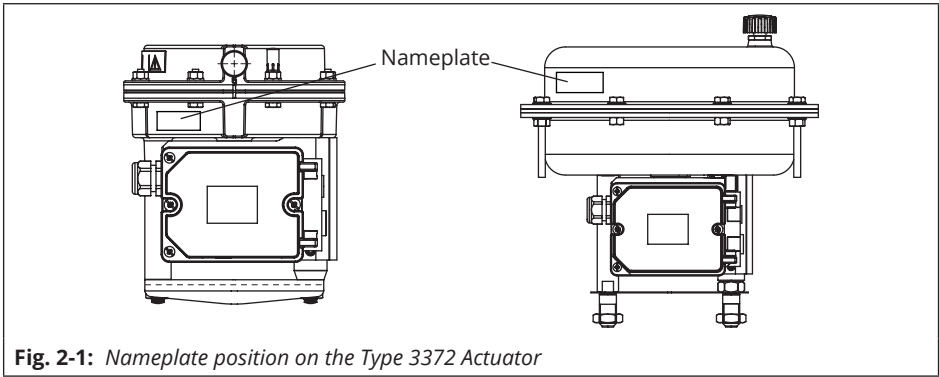


Fig. 2-1: Nameplate position on the Type 3372 Actuator

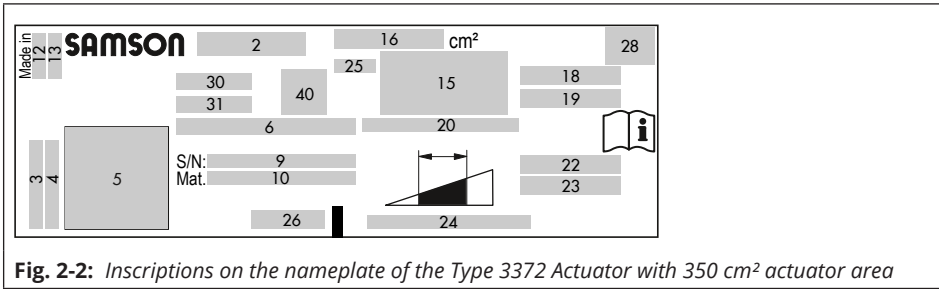
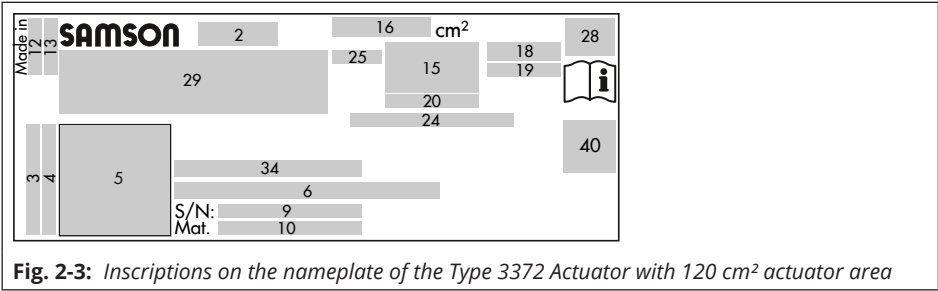


Fig. 2-2: Inscriptions on the nameplate of the Type 3372 Actuator with 350 cm² actuator area

Markings on the device



Item	Inscription meaning
2	Type designation
3	Company name
4	Company address (ZIP/postal code and city)
5	Data Matrix code
6	Device designation
9	Serial number
10	Material no.
12	Country of origin
13	Month and year of manufacture
15	Symbol indicating fail-safe action: <div> Actuator stem extends (FA) <div> Actuator stem retracts (FE) </div> </div>
16	Actuator area in cm²
18	Bench range in bar
19	Bench range in psi
20	Actuator travel in mm
22	Operating range in bar
23	Operating range in psi
24	Permissible operating pressure p _{max} in bar and/or psi
25	Diaphragm material
26	Type of connecting thread
28	Symbol for manual override: <div> (optional) </div>

Item	Inscription meaning
29	Explosion protection specifications
30	Version (optional), e.g. SAM001
31	Version (optional), e.g. HW xx.xx.xx
34	Model number
40	Certification (optional)

3 Design and principle of operation

The Type 3372 Electropneumatic Actuators have an actuator area of either 120 or 350 cm². They are mainly used for attachment to SAMSON Series V2001

Valves:

- Type 3321 Globe Valve
- Type 3323 Three-way Valve
- Type 3531 Globe Valve for Heat Transfer Oil
- Type 3535 Three-way Valve for Heat Transfer Oil

Table 3-1 and Table 3-2 provide an overview of the possible combinations and how the actuator is mounted on the valve.

The electropneumatic actuators mainly consist of two diaphragm cases, a diaphragm and internal springs. The actuator is connected to the valve bonnet using a rod-type yoke. The stem connector clamps connect the actuator stem with the plug stem of the valve.

The Type 3725 Electropneumatic Positioner is attached to the rod with the largest diameter using a support element. This positioner converts the control signal received from a control system (4 to 20 mA reference variable) into a proportional pressure signal.

The signal pressure p_{st} creates the force $F = p_{st} \cdot A$ at the diaphragm surface A , which is opposed by the springs in the actuator. The bench range is deter-

mined by the number of springs used and their compression, taking into account the rated travel. The travel is proportional to the signal pressure p_{st} .

3.1 Direction of action

The direction of action is determined by how the springs and diaphragm plate are arranged in the actuator. The direction of action is fixed at the ordering stage and cannot be changed.

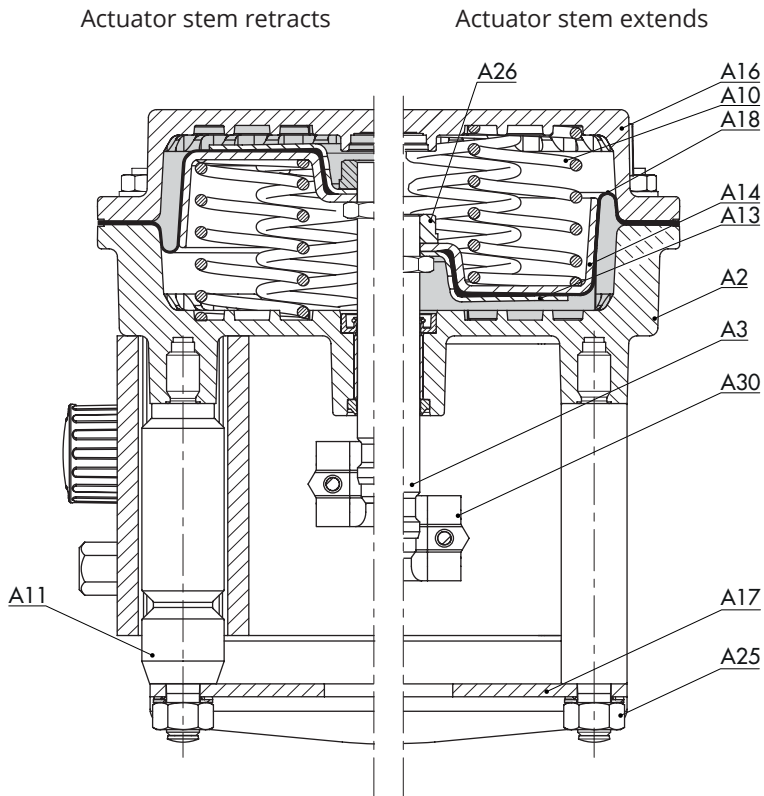
Actuator stem extends (FA)

With fail-safe action "actuator stem extends", the compressed air is applied to the signal pressure connection on the bottom diaphragm case.

Actuator stem retracts (FE)

With fail-safe action "actuator stem retracts", the compressed air is applied to the signal pressure connection on the top diaphragm case.

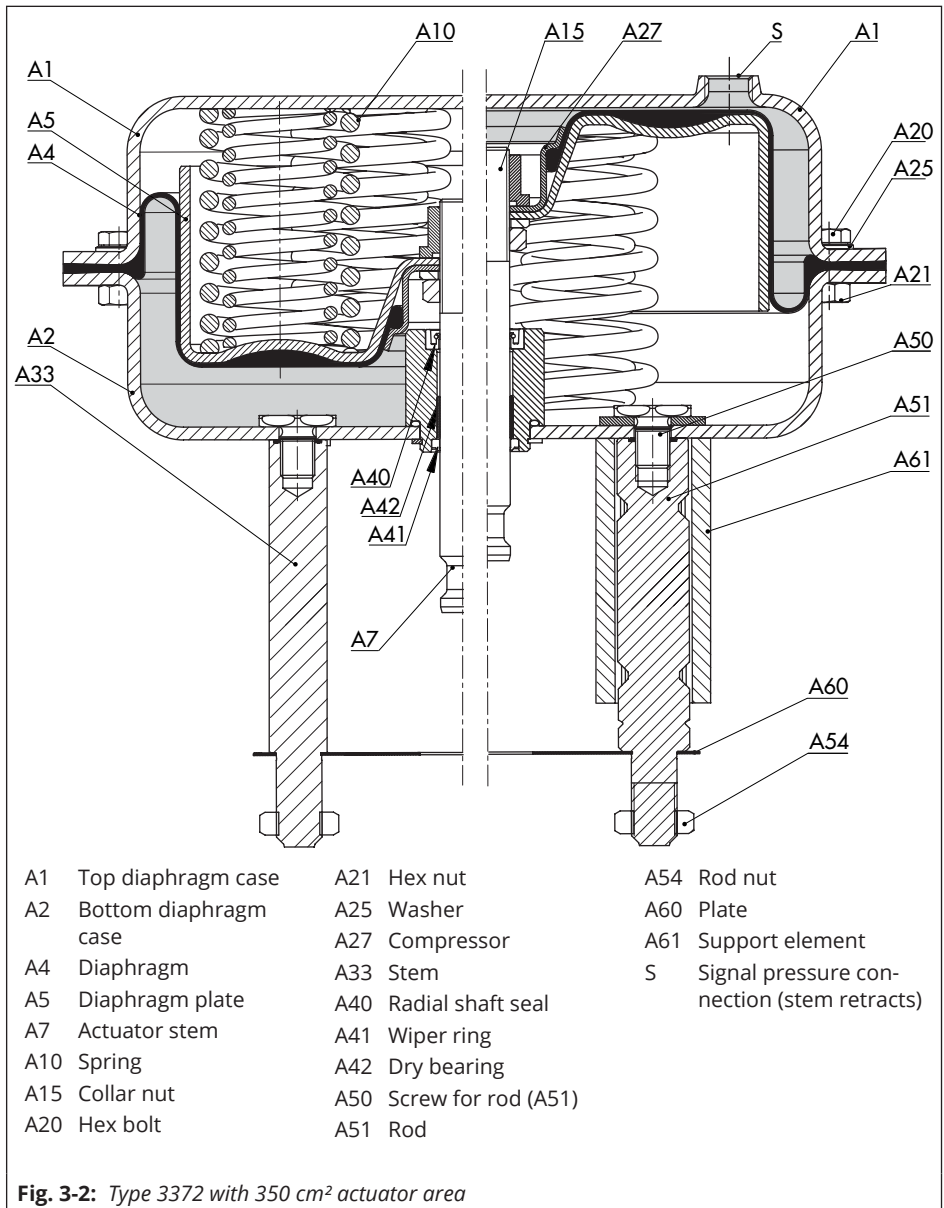
Design and principle of operation



A2 Bottom diaphragm case
 A3 Actuator stem
 A10 Spring
 A11 Rod
 A13 Diaphragm plate
 A14 Diaphragm plate
 A16 Top diaphragm case

A17 Crossbeam
 A18 Diaphragm
 A25 Rod nut
 A26 Collar nut
 A30 Stem connector clamps

Fig. 3-1: Type 3372 with 120 cm² actuator area and crossbeam



3.2 Signal pressure routing

The signal pressure of the mounted Type 3725 Positioner is routed through the corresponding port in the support element.

Actuator stem extends (FA)

In the "actuator stem extends" version, the signal pressure is routed directly through the support element to the bottom diaphragm chamber and moves the actuator stem upward opposing the spring force (see Fig. 3-3).

Actuator stem retracts (FE)

The support element of the version with fail-safe action "actuator stem retracts" has a borehole at the side. The signal pressure is routed to the top diaphragm chamber over external piping and

moves the actuator stem downward opposing the spring force (see Fig. 3-4).

3.3 Fail-safe action

When the signal pressure is reduced or the control signal fails, the fail-safe position of the control valve (see Chapter 3.1) depends on whether the springs are installed in the top or bottom diaphragm chamber.

3.3.1 Actuator stem extends

When the signal pressure is reduced or the air supply fails, the springs move the actuator stem downward and close the globe valve. The valve opens when the signal pressure is increased enough to overcome the spring force.

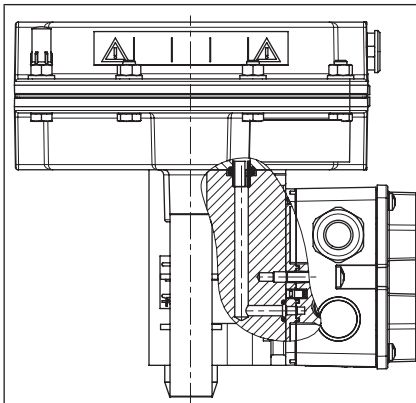


Fig. 3-3: Signal pressure routing for "actuator stem extends" (FA)

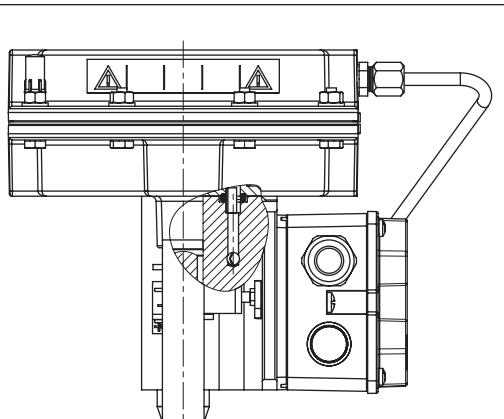


Fig. 3-4: Signal pressure routing for "actuator stem retracts" (FE)

3.3.2 Actuator stem retracts

When the signal pressure is reduced or the air supply fails, the springs move the actuator stem upward and open a mounted globe valve. The valve closes when the signal pressure is increased enough to overcome the spring force.

3.4 Mounting types

There are two types of mounting depending on the valve/actuator combination: mounting using a crossbeam or rods (see Table 3-1 and Table 3-2).

When the actuator is mounted to the valve using a crossbeam (form B, Fig. 3-5), the actuator is fastened to the valve bonnet using a central nut.

When the actuator is mounted using rods (form C, Fig. 3-6), the actuator is connected to the valve bonnet using rods. In this case, a crossbeam is not required for mounting the actuator. A plate keeps the correct distance between rods in the 350 cm² version.

Both mounting types are described in the 'Mounting and assembly' chapter.

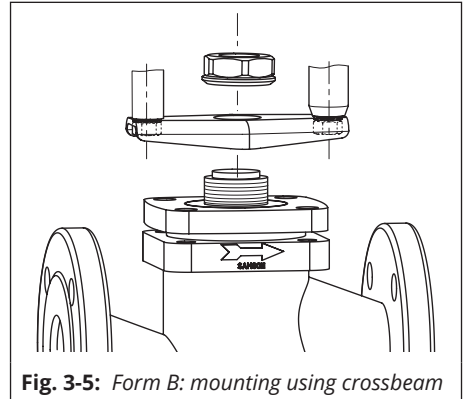


Fig. 3-5: Form B: mounting using crossbeam

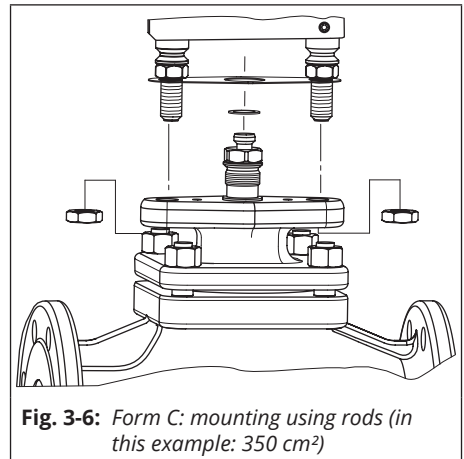


Fig. 3-6: Form C: mounting using rods (in this example: 350 cm²)

Table 3-1: Mounting onto HVAC valves

Type ... Valve	Actuator area	120 cm ²	350 cm ²
	Travel	15 mm	30 mm
	Nominal size DN		
3214	65 to 100	Form B	–
3214	125 to 250	–	On request
3260	65 to 80	Form B	–
3260	100 to 150	–	Form B

Design and principle of operation

Table 3-2: Mounting onto Series V2001 Valves

				120 cm ²			
				Stem extends (FA)		Stem retracts (FE)	
				2.1 to 3.3	1.4 to 2.3	0.4 to 1.4	1.4 to 2.3
Type	DN	K _{Vs}	Travel	15 mm			
3321	15 to 50	0.25 to 35	15 mm	B	B	B	B
3321	65 to 100	40 to 100		C	–	C	–
3323	15 to 50	4 to 32		–	B	–	B
3323	65 to 80	60 to 80		–	–	–	–
3321	100	160	30 mm	–	–	–	–
3323	100	160		–	–	–	–
3531	15 to 80	1.6 to 80	15 mm	B	B	B	B
3535	15 to 80	4 to 80		B	B	B	B

				350 cm ²			
				Stem extends (FA)	Stem retracts (FE)	Stem extends (FA)	Stem retracts (FE)
				2.1 to 2.7	1.5 to 2.1	2.2 to 3.8	1.5 to 2.7
Type	DN	K _{Vs}	Travel	15 mm		30 mm	
3321	15 to 50	0.25 to 35	15 mm	–	–	–	–
3321	65 to 100	40 to 100		C	C	–	–
3323	15 to 50	4 to 32		–	–	–	–
3323	65 to 80	60 to 80		C	C	–	–
3321	100	160	30 mm	–	–	C	C
3323	100	160		–	–	C	C
3531	15 to 80	1.6 to 80	15 mm	–	–	–	–
3535	15 to 80	4 to 80		–	–	–	–

3.5 Versions

- **Standard version of Type 3372 (120 cm²)**

The housings of Type 3372 Electropneumatic Actuators have an actuator area of 120 cm² and are made of die-cast aluminum.

- **Standard version of Type 3372 (350 cm²)**

The housings of Type 3372 Electropneumatic Actuators have an actuator area of 350 cm² and are made of sheet steel.

3.6 Accessories

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.

► AB 07

Lifting fixture

A special lifting tool is available to lift the electropneumatic actuator with 120 and 350 cm² actuator areas (► AB 0100).

Reducing station for supply air

The reducing station for supply air can be directly attached when combined with a Type 3730 Positioner. All other reducing stations must be attached with an external hook-up.

3.7 Technical data

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

Note

More information is available in Data Sheet ► T 8313.

Conformity

The Type 3372 Electropneumatic Actuator with Type 3725 Positioner (direct attachment) bears the CE mark of conformity.



Design and principle of operation

Table 3-3: *Explosion protection certificates for Type 3372 in combination with a positioner and any optionally mounted limit switch*

The listed technical data for actuators used in hazardous areas may be further restricted by the limits specified in the test certificates of the positioner and any optionally mounted limit switch.

See documentation of the positioner used and any optionally mounted limit switch for the explosion protection certificates.

Mounted device	See the mounting and operating instructions for explosion protection certificates
Type 3725 Positioner	► EB 8394
Type 3730-0 Positioner	► EB 8384-0
Type 3730-4 Positioner	► EB 8384-4
Type 3730-5 Positioner	► EB 8384-5
Type 3730-6 Positioner	► EB 8384-6
TROVIS SAFE 3730-6 Positioner	► EB 8384-6S
TROVIS 3730-1 Positioner	► EB 8484-1
TROVIS 3730-3 Positioner	► EB 8484-3
Type 4744 Limit Switch	► EB 8367

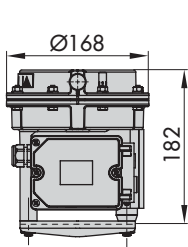


Fig. 3-7: *Dimensional drawing of 120 cm² version*

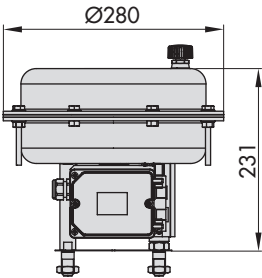


Fig. 3-8: *Dimensional drawing of 350 cm² version*

Table 3-4: Technical data

Actuator area	120 cm²				350 cm²			
Bench range in bar	0.4 to 1.4	1.4 to 2.3		2.1 to 3.3	1.5 to 2.1	2.1 to 2.7	1.5 to 2.7	2.2 to 3.8
Fail-safe action	Stem retracts (FE)	Stem retracts (FE)	Stem extends (FA)	Stem extends (FA)	Stem retracts (FE)	Stem extends (FA)	Stem retracts (FE)	Stem extends (FA)
Travel	15 mm						30 mm	
Supply pressure	Max. 6 bar ¹⁾							
Ambient temperature range	-35 to +90 °C ²⁾				-35 to +90 °C ²⁾			
Dimensions	See Fig. 3-7				See Fig. 3-8			
Weight, approx.	3.3 kg				15 kg			
Material								
Actuator housing	Aluminum, powder coating				1.0332			
Diaphragm	NBR				NBR			
Actuator stem	1.4305				1.4401/1.4404			
Electropneumatic positioner								
Type 3725	Refer to Data Sheet ► T 8394 and Mounting and Operating Instructions ► EB 8394							
Electric limit switch								
Type 4744-2	One electric limit contact · 15 mm travel range ► T 8367 and ► EB 8367						-	

¹⁾ See the 'Operation' chapter for restrictions in on/off service.

²⁾ Observe temperature limits of the mounted valve accessories.

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 actuator nameplate match the specifications in the delivery note. See the 'Markings on the device' chapter for nameplate details.
2. Check the shipment for transportation damage. Report any damage to SAMSON and the forwarding agent (refer to delivery note).
3. Determine the weight and dimensions of the units to be lifted and transported in order to select the appropriate lifting equipment and lifting accessories. Refer to the transport documents and the 'Technical data' chapter.

4.2 Removing the packaging from the actuator

Observe the following sequence:

- ➔ Do not open or remove the packaging until immediately before mounting the actuator.
- ➔ Leave the actuator in its packaging to transport it on site.
- ➔ Dispose and recycle the packaging in accordance with the local regulations.

4.3 Transporting and lifting the actuator

Due to the low service weight, lifting equipment is not required to lift and transport the actuator (e.g. to mount it onto a valve). If lifting equipment (e.g. crane or forklift) is to be used, SAMSON has a gripping device available for the actuator (see section 'Accessories' in the 'Design and principle of operation' chapter).

4.3.1 Transporting the actuator

- ➔ Leave the actuator in its packaging to transport it.
- ➔ Observe the transport instructions.

Transport instructions

- Protect the actuator against external influences (e.g. impact).

Shipment and on-site transport

- Do not damage the corrosion protection (paint, surface coatings). Repair any damage immediately.
- Protect the actuator against moisture and dirt.
- The permissible transportation temperature is between -20 and $+65$ °C.

4.3.2 Lifting the actuator

Note

See valve documentation for more information on lifting the entire control valve assembly.

4.4 Storing the actuator

NOTICE

Risk of actuator 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 actuator and the prevailing storage conditions during long storage times.

Storage instructions

- When the valve and actuator are already assembled, observe the storage conditions for control valves. See associated valve documentation.
- Protect the actuator against external influences (e.g. impact).
- Secure the actuator in the stored position against slipping or tipping over.
- Do not damage the corrosion protection (paint, surface coatings). Repair any damage immediately.
- Protect the actuator 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.
- Observe permissible temperatures (see section 'Technical data' in the 'Design and principle of operation' chapter).
- Do not place any objects on the actuator.

Special storage instructions for elastomers

Elastomer, e.g. actuator diaphragm

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



Tip

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

5 Installation

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

DANGER

Risk of fatal injury due to the ignition of an explosive atmosphere.

Incorrect installation, operation or servicing of the electropneumatic actuator in potentially explosive atmospheres may lead to ignition of the atmosphere and ultimately to death.

- ➔ *The following regulations apply to installation in hazardous areas:
EN 60079-14 (VDE 0165, Part 1).*
- ➔ *Work is to be performed only by personnel who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.*

5.1 Preparation for installation

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

- The actuator is not damaged.
- The type designation, material and temperature range of the actuator match the ambient conditions (temperatures etc.). See the 'Markings on the device' chapter for nameplate details.

Proceed as follows:

- ➔ Lay out the necessary material and tools to have them ready during installation work.
- ➔ Check that the vent plugs to be used are not blocked.
- ➔ Check pressure gauges on any mounted valve accessories to make sure they function properly.
- ➔ When the valve and actuator are already assembled, check the tightening torques of the bolted joints (► AB 0100). Components may loosen during transport.

5.2 Mounting the actuator

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. Proceed as follows to mount the actuator and before start-up.

WARNING

Risk of personal injury due to exhaust air being vented.

The actuator is operated with air. As a result, air is vented during operation.

- ➔ *During mounting make sure that vent openings are not located at eye level in the work position of the control valve and the actuator does not vent at eye level in the work position.*

Installation

- *Wear eye and hearing protection when working near the actuator.*

WARNING

Crush hazard arising from the moving actuator stem.

- *Do not touch the actuator stem or insert hands or finger into the yoke while the air supply is connected to the actuator.*
- *Before working on the actuator, disconnect and lock the pneumatic air supply as well as the control signal.*
- *Do not impede the movement of the actuator stem by inserting objects into the yoke.*
- *Before unblocking the actuator stem after it has 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 section 'Relieving the spring compression in the actuator' in the 'Removal' chapter.*

NOTICE

Risk of actuator damage due to over- or under-torquing.

Observe the specified torques when tightening actuator parts. Excessive tightening torques lead to parts wearing out more quickly. Parts that are not tightened far enough may loosen.

- *Observe the specified tightening torques (▶ AB 0100).*

NOTICE

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

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

5.2.1 Mounting the actuator onto the valve

If the positioner is already mounted on the actuator (on the support element), it must be removed before the actuator can be mounted onto the valve. See associated positioner documentation.

To mount the actuator on the valve, proceed as follows:

Tip

The valve and actuator are assembled with special attention paid to the actuator's bench range and direction of action. These details are specified on the actuator nameplate (see the 'Markings on the device' chapter).

a) 120 cm² version

Mounting using crossbeam (form B, see Fig. 5-1)

! NOTICE

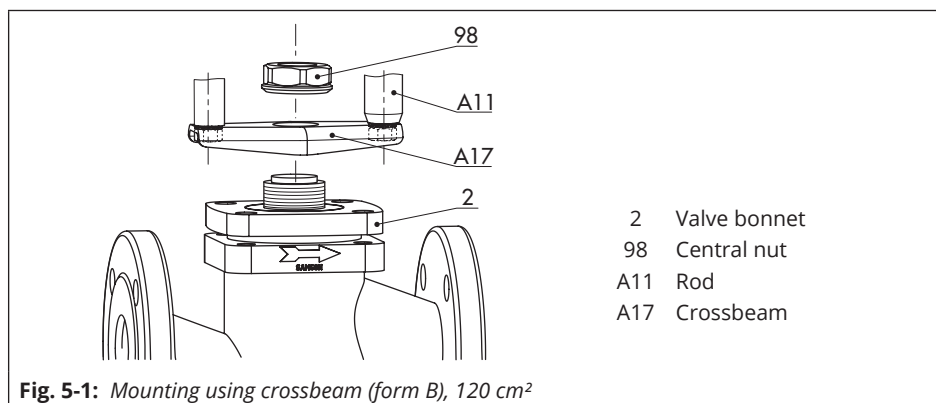
The actuator can be damaged.

→ Do not unscrew the rods (A11) from the crossbeam (A17).

1. Remove the stem connector clamps (A30) from the actuator.
2. Unscrew the central nut (98) from the valve bonnet (2).
3. Firmly press the plug together with the plug stem into the seat ring.
4. Place the actuator with the cross-beam (A17) onto the thread of the valve bonnet (2), making sure that the central nut (98) is placed over the plug stem and fasten it to the valve bonnet. Observe tightening torques.

5. **Fail-safe action "stem extends":**
position the stem connector clamps (A30) and fasten them tight with screws. Observe tightening torques.

Fail-safe action "stem retracts":
apply pressure to the top diaphragm chamber until the actuator stem touches the plug stem. Position the stem connector clamps (A30) and fasten tight with screws. Observe tightening torques.



Installation

Mounting using rods (form C, see Fig. 5-2)

1. Remove the stem connector clamps (A29) from the actuator.
2. Insert the rods (A11) into the bushings (A9) and place them in the corresponding holes on the valve bonnet (2).
3. Tighten the rod nuts (A119) in alternating sequence. Observe tightening torques.

4. **Fail-safe action "stem extends":** position the stem connector clamps (A29) and fasten them tight with screws. Observe tightening torques.

Fail-safe action "stem retracts": apply pressure to the top diaphragm chamber until the actuator stem touches the plug stem. Position the stem connector clamps (A29) and fasten tight with screws. Observe tightening torques.

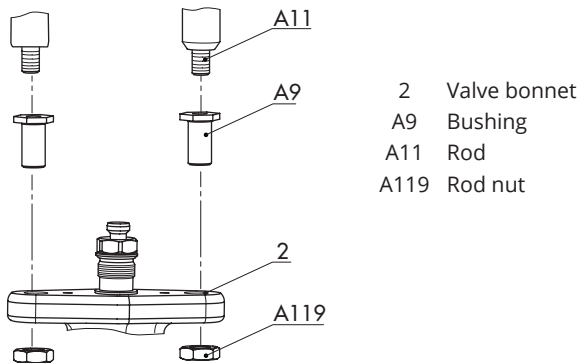


Fig. 5-2: Mounting using rods (form C), 120 cm²

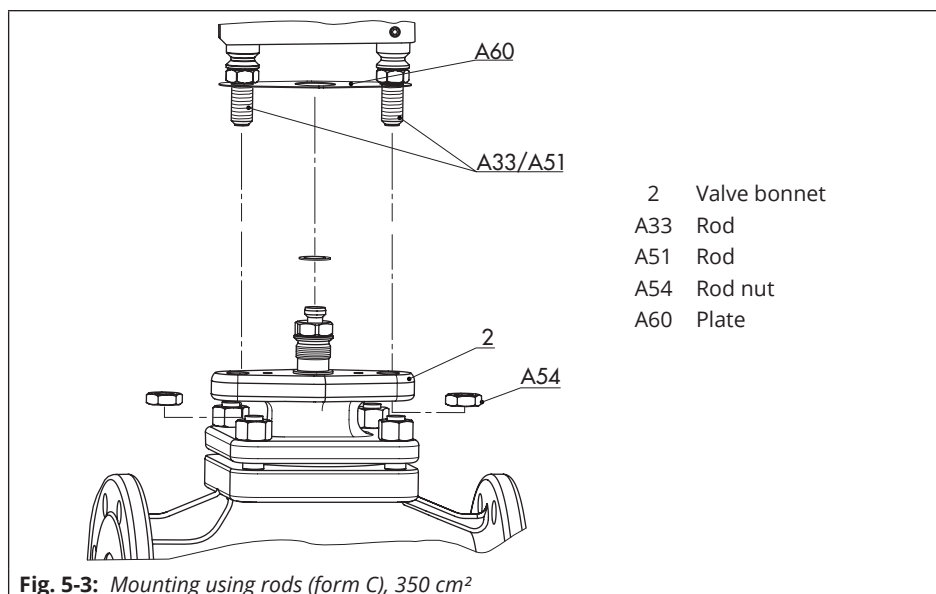
b) 350 cm² version

Mounting using rods (form C, see Fig. 5-3)

1. Remove the stem connector clamps (A12) from the actuator.
2. Unscrew the rod nuts (A54) from the rods (A33, A51). Leave the plate (A60) attached to the rods.
3. Place the actuator with the rod ends on the valve bonnet (2).
4. Tighten the rod nuts (A54) in alternating sequence. Make sure that the rods on the bottom case do not turn. Observe tightening torques.

5. **Fail-safe action "stem extends":**
position the stem connector clamps (A12) and fasten them tight with screws. Observe tightening torques.

Fail-safe action "stem retracts":
apply pressure to the top diaphragm chamber until the actuator stem touches the plug stem. Position the stem connector clamps (A12) and fasten tight with screws. Observe tightening torques.



5.3 Connections

The actuator is fitted with M20x1.5 black plastic cable glands and a pneumatic connecting plate G ¼ as standard.

- If other connections are required, use the accessories listed in the mounting and operating instructions of the positioner (e.g. ► EB 8394 for Type 3725).

6 Start-up

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

DANGER

Risk of fatal injury due to the ignition of an explosive atmosphere.

Incorrect installation, operation or servicing of the electropneumatic actuator in potentially explosive atmospheres may lead to ignition of the atmosphere and ultimately to death.

- ➔ *The following regulations apply to installation in hazardous areas:
EN 60079-14 (VDE 0165, Part 1).*
- ➔ *Work is to be performed only by personnel who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.*

DANGER

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

Pneumatic actuators are pressure equipment that may burst when handled incorrectly. Flying projectile fragments or components can cause serious injury or even death.

Before working on the actuator:

- ➔ *Depressurize all plant sections concerned and the actuator. Release any stored energy.*

WARNING

Risk of personal injury due to preloaded springs.

Actuators with preloaded springs are under tension. These actuators can be identified by several longer bolts with nuts protruding from the bottom diaphragm case. Actuators with considerably preloaded springs are also labeled correspondingly (see the 'Warnings on the device' chapter).

- ➔ *Only open the actuator following the instructions in this document. See section 'Relieving the spring compression in the actuator' in the 'Removal' chapter.*

WARNING

Risk of personal injury due to exhaust air being vented.

The actuator is operated with air. As a result, air is vented during operation.

- ➔ *Wear eye and hearing protection when working near the actuator.*

WARNING

Crush hazard arising from the moving actuator stem.

- ➔ *Do not insert hands or finger into the yoke while the air supply is connected to the actuator.*
- ➔ *Before working on the actuator, disconnect and lock the pneumatic air supply as well as the control signal.*

Start-up

- ➔ Do not impede the movement of the actuator stem by inserting objects into the yoke.
 - ➔ Before unblocking the actuator stem after it has 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 section 'Relieving the spring compression in the actuator' in the 'Removal' chapter.
-

! NOTICE

Risk of actuator damage due to over- or under-torquing.

Observe the specified torques when tightening actuator parts. Excessive tightening torques lead to parts wearing out more quickly. Parts that are not tightened far enough may loosen.

- ➔ Observe the specified tightening torques (▶ AB 0100).
-

! NOTICE

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

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

6.1 Spring compression

See Fig. 6-1

By preloading the springs in the actuator, the following can be achieved:

- The thrust is increased (only actuators with "stem extends")
- In combination with a SAMSON valve: The actuator travel range can be adapted to a smaller valve travel range

6.1.1 Tensioning the springs

! NOTICE

Risk of actuator damage due to the springs being tensioned unevenly.

- ➔ Distribute clamping bolts and nuts evenly around the circumference.
 - ➔ Tighten the nuts gradually in a criss-cross pattern.
-

i Note

Only the springs in actuators with 350 cm² area can be preloaded.

1. Distribute the long bolts (A22) evenly around the circumference.
2. Screw the nuts (A21) with washers (A25) onto the clamping bolts (A22) until they rest on the bottom diaphragm case (A2).
3. To tension the springs evenly, tighten the nuts (A21) gradually in a criss-

cross pattern until both diaphragm cases (A1, A2) rest on the diaphragm (A4). Hold the bolt head stationary with a suitable tool and apply the tightening torque to the nuts. Observe tightening torques.

4. Insert the short bolts (A20) through the intended holes in the diaphragm cases (A1, A2).
5. Screw the short nuts (A21) with washers (A25) onto the bolts (A20). Observe tightening torques.

6.1.2 Increasing the actuator thrust

The thrust can only be increased in actuators with "stem extends" direction of action. To achieve this, the springs of the actuators can be preloaded by up to 25 % of their travel or bench range.

Example: Preloading is required for a bench range of 1.5 to 2.1 bar. 25 % of this span is 0.15 bar. Therefore, the signal pressure range is shifted by 0.15 bar to 1.65 to 2.25 bar. The new lower signal pressure range value is 1.65 bar and the new upper signal pressure range value 2.25 bar.

- ➔ Write the new signal pressure range of 1.65 to 2.25 bar on the actuator nameplate as the operating range with preloaded springs.

6.1.3 Adapting the travel range

In some cases, the valve and actuator have different rated travels. Depending on the direction of action, proceed as follows:

"Actuator stem extends" direction of action

Always use actuators with preloaded springs when the valve's rated travel is smaller than the rated travel of the actuator.

Example: DN 25 valve with 15 mm rated travel and 350 cm² actuator with 30 mm rated travel; 1.5 to 2.7 bar bench range.

The signal pressure for half the actuator travel (15 mm) is 2.1 bar. Adding it to the lower signal pressure range value of 1.5 bar results in a signal pressure of 3.6 bar required for preloading the springs. The new lower signal pressure range value is 3.6 bar and the new upper signal pressure range value 4.8 bar.

- ➔ Write the new signal pressure range of 3.6 to 4.8 bar on the actuator nameplate as the operating range with preloaded springs.

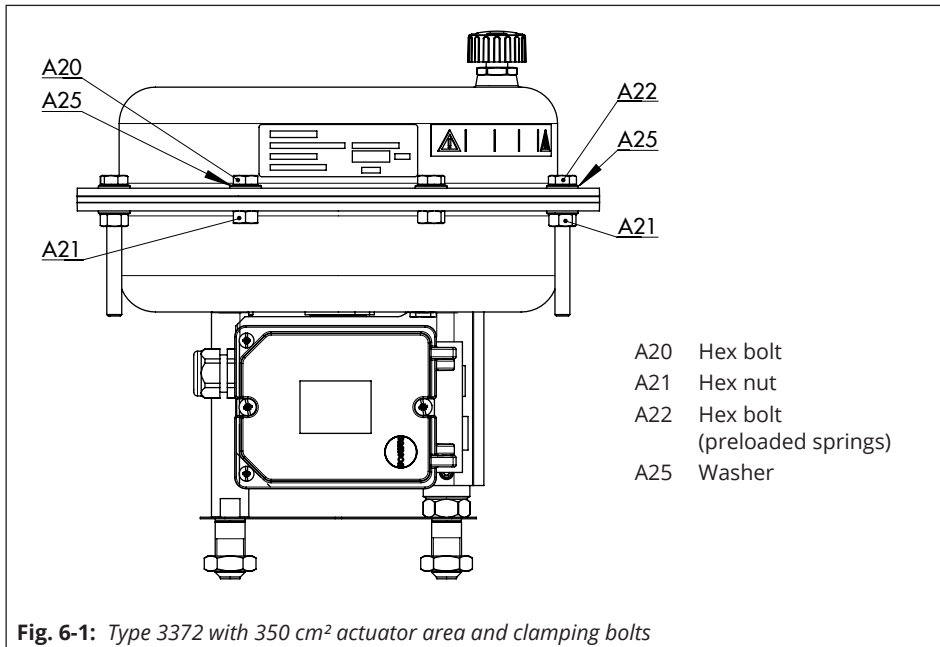
Start-up

"Actuator stem retracts" direction of action

The springs of actuators with "stem retracts" direction of action cannot be preloaded. When a SAMSON valve is combined with an oversized actuator (e.g. the rated travel of the actuator is larger than the rated travel of the valve), only the first half of the actuator's bench range can be used.

Example: DN 25 valve with 15 mm rated travel and 350 cm² actuator with 30 mm rated travel; 1.5 to 2.7 bar bench range.

At half the valve travel, the operating range is between 1.5 and 2.1 bar.



7 Operation

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

DANGER

Risk of fatal injury due to the ignition of an explosive atmosphere.

Incorrect installation, operation or servicing of the electropneumatic actuator in potentially explosive atmospheres may lead to ignition of the atmosphere and ultimately to death.

- ➔ *The following regulations apply to installation in hazardous areas:
EN 60079-14 (VDE 0165, Part 1).*
- ➔ *Work is to be performed only by personnel who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.*

WARNING

Risk of personal injury due to exhaust air being vented.

The actuator is operated with air. As a result, air is vented during operation.

- ➔ *Wear eye and hearing protection when working near the actuator.*

WARNING

Crush hazard arising from the moving actuator stem.

- ➔ *Do not insert hands or finger into the yoke while the air supply is connected to the actuator.*
- ➔ *Before working on the actuator, disconnect and lock the pneumatic air supply as well as the control signal.*
- ➔ *Do not impede the movement of the actuator stem by inserting objects into the yoke.*
- ➔ *Before unblocking the actuator stem after it has 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 section 'Relieving the spring compression in the actuator' in the 'Removal' chapter.*

Note

See associated mounting and operating instructions for additional instructions on operation, e.g. ► EB 8394 for Type 3725 Positioner or ► EB 8367 for Type 4744 Limit Switch.

7.1 Throttling service

In throttling service, the Type 3372 Electropneumatic Actuator can be used for a maximum supply pressure of 6 bar.

7.2 On/off service

In on/off service, the supply pressure must be limited depending on the bench range or operating range of the actuator. The applicable bench range or operating range which the actuator can move through is written on the nameplate (see the 'Markings on the device' chapter).

Actuator stem retracts

With fail-safe action "actuator stem retracts", the permissible supply pressure must not exceed the upper bench range value by more than 3 bar:

Bench range	Fail-safe action	Max. supply pressure
0.2 to 1.0 bar	Actuator stem retracts	4 bar
0.4 to 2.0 bar		5 bar
0.6 to 3.0 bar		6 bar

Actuator stem extends

With "actuator stem extends" fail-safe action, the supply pressure must not exceed the upper signal range value by more than 1.5 bar.

7.3 Additional notes concerning operation

- ➔ Label actuators with reduced supply pressure with a sticker ("Max. supply pressure limited to ... bar").
- ➔ Only apply the signal pressure to the signal pressure connection (S) on the

diaphragm chamber of the actuator which does not contain any springs (see Fig. 3-1 and Fig. 3-2 in the 'Design and principle of operation' chapter).

- ➔ Only use vent plugs that let air through them.

8 Malfunctions

Read hazard statements, warnings and caution notes in the 'Safety instructions and measures' chapter.

8.1 Troubleshooting

Malfunction	Possible reasons	Recommended action
Actuator stem does not move on demand.	Actuator is blocked.	Check attachment. Remove the blockage. WARNING! A blocked actuator (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 stem, disconnect and lock the pneumatic air supply as well as the control signal. Before unblocking the actuator stem, release any stored energy in the actuator (e.g. spring compression). See section 'Relieving the spring compression in the actuator' in the 'Removal' chapter.
	Insufficient signal pressure	Check the signal pressure. Check the signal pressure line for leakage.
	Signal pressure not connected to the correct diaphragm chamber.	See the 'Installation' chapter.
	Diaphragm in the actuator defective	See 'Replacing the diaphragm' in the 'Servicing' chapter.
Actuator stem does not stroke through its complete travel range.	Insufficient signal pressure	Check the signal pressure. Check the signal pressure line for leakage.
	Incorrect setting of valve accessories.	Check the actuator without valve accessories. Check the settings of the valve accessories.

Note

Contact our 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.

9 Servicing and conversion

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:

- ► AB 0100 for tools, tightening torques and lubricant

DANGER

Risk of fatal injury due to the ignition of an explosive atmosphere.

Incorrect installation, operation or servicing of the electropneumatic actuator in potentially explosive atmospheres may lead to ignition of the atmosphere and ultimately to death.

- *The following regulations apply to installation in hazardous areas:
EN 60079-14 (VDE 0165, Part 1).*
- *Work is to be performed only by personnel who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.*

DANGER

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

Pneumatic actuators are pressure equipment that may burst when handled incorrectly. Flying projectile fragments or components can cause serious injury or even death.

Before working on the actuator:

- *Depressurize all plant sections concerned and the actuator. Release any stored energy.*

WARNING

Risk of personal injury due to preloaded springs.

Actuators with preloaded springs are under tension. These actuators can be identified by several longer bolts with nuts protruding from the bottom diaphragm case. Actuators with considerably preloaded springs are also labeled correspondingly (see the 'Warnings on the device' chapter).

- *Only open the actuator following the instructions in this document. See section 'Relieving the spring compression in the actuator' in the 'Removal' chapter.*

WARNING

Risk of personal injury due to exhaust air being vented.

The actuator is operated with air. As a result, air is vented during operation.

- *Wear eye and hearing protection when working near the actuator.*

WARNING

Crush hazard arising from the moving actuator stem.

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

Servicing and conversion

- ➔ Before working on the actuator, disconnect and lock the pneumatic air supply as well as the control signal.
- ➔ Do not impede the movement of the actuator stem by inserting objects into the yoke.
- ➔ Before unblocking the actuator stem after it has 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 section 'Relieving the spring compression in the actuator' in the 'Removal' chapter.

WARNING

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

After any adjustment or conversion work, the details on the actuator nameplate may no longer be correct. This may apply, for example, to the configuration ID or the symbol after reversal of the direction of action.

- ➔ Immediately renew any nameplates or labels with incorrect or outdated information.
- ➔ Add any new values to the nameplate. If necessary, contact SAMSON to obtain a new nameplate.

NOTICE

Risk of actuator damage due to over- or under-torquing.

Observe the specified torques when tightening actuator parts. Excessive tightening torques lead to parts wearing out more quickly. Parts that are not tightened far enough may loosen.

- ➔ Observe the specified tightening torques (▶ AB 0100).

NOTICE

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

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

NOTICE

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

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

Note

- 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 actuator 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.

9.2 Service work preparations

1. Lay out the necessary material and tools to have them ready for the intended work.
2. Put the actuator out of operation (see the 'Decommissioning' chapter).
3. Remove the actuator from the valve (see the 'Removal' chapter).



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 the 'Removal' chapter). Once the work is completed, the signal pressure must be removed and the air supply disconnected again and locked.

4. Relieve the compression from the preloaded springs. See section 'Re-

lieving the spring compression in the actuator' in the 'Removal' chapter.

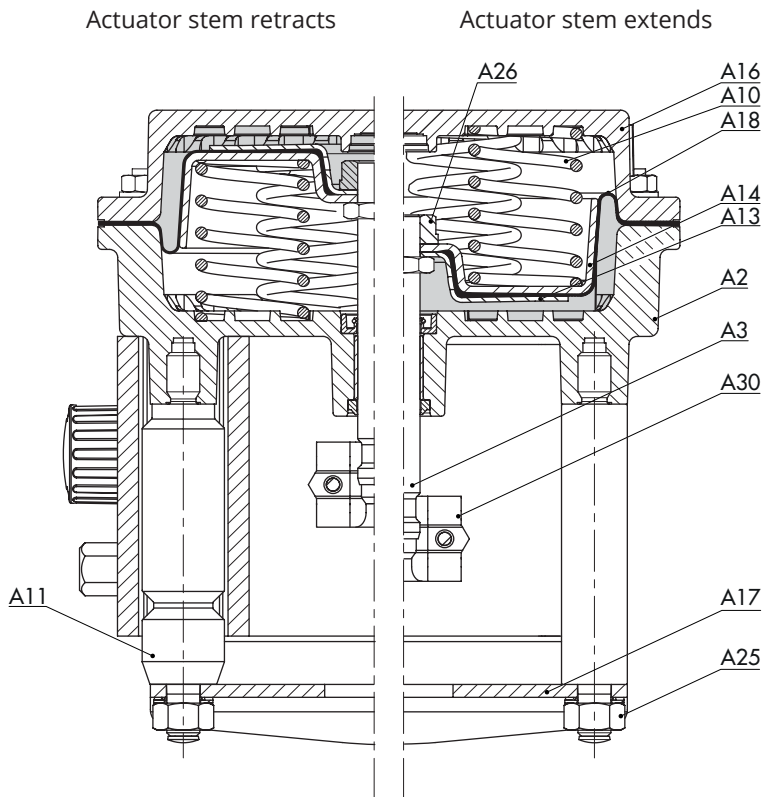
5. Unthread and remove the bolts and nuts including washers from around the diaphragm case. Keep the parts in a safe place for later use.

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

- Replace the diaphragm (see Chapter 9.4.1).
- Replace the actuator stem seals (see Chapter 9.4.2).

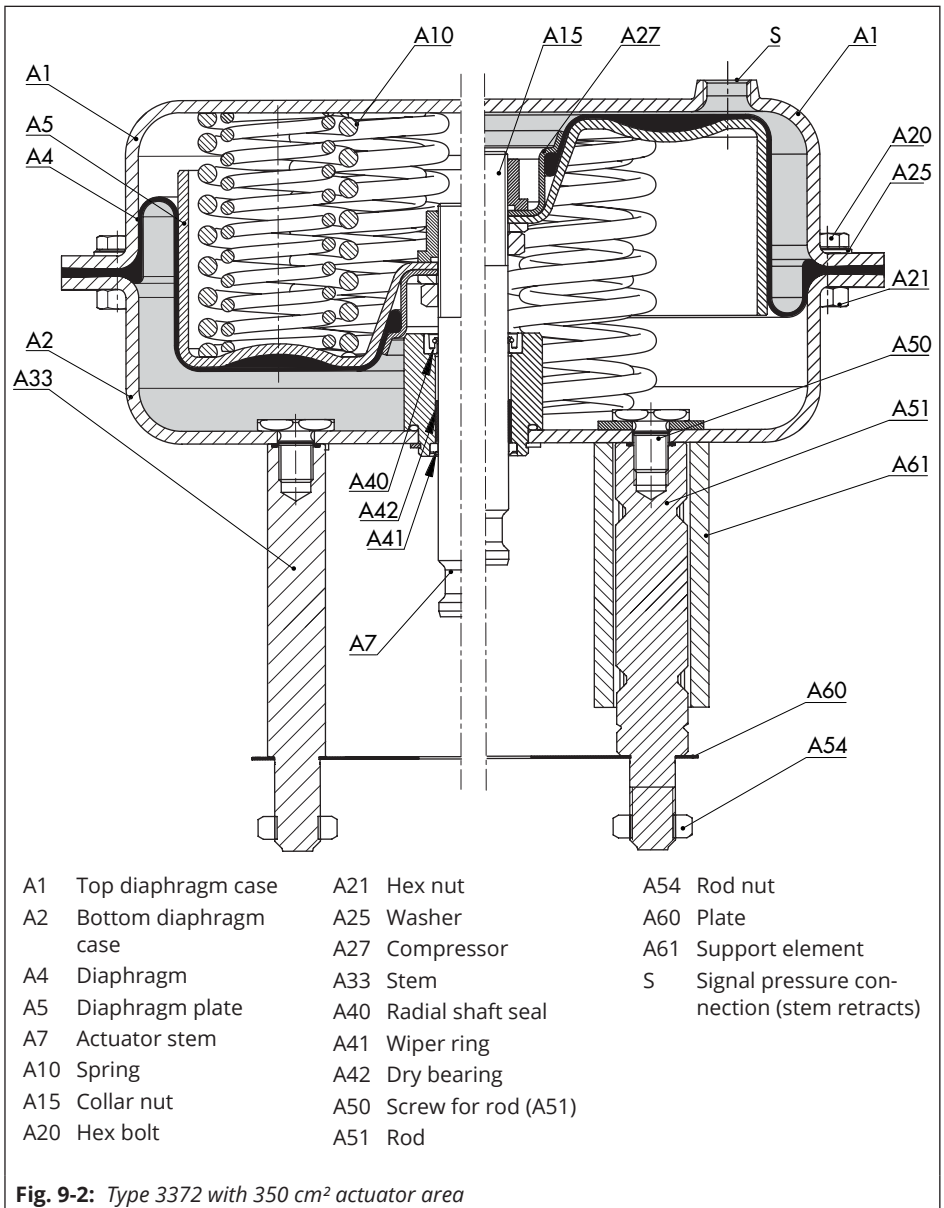
9.3 Installing the valve after service work

1. Mount the actuator onto the valve (see the 'Installation' chapter).
2. Adjust the upper or lower signal pressure range value (see the 'Start-up chapter').



- | | | | |
|-----|-----------------------|-----|-----------------------|
| A2 | Bottom diaphragm case | A17 | Crossbeam |
| A3 | Actuator stem | A18 | Diaphragm |
| A10 | Spring | A25 | Rod nut |
| A11 | Rod | A26 | Collar nut |
| A13 | Diaphragm plate | A30 | Stem connector clamps |
| A14 | Diaphragm plate | | |
| A16 | Top diaphragm case | | |

Fig. 9-1: Version with 120 cm² actuator area



9.4 Service work

See Fig. 9-1 and Fig. 9-2

9.4.1 Replacing the diaphragm



Tip

Before dismantling the actuator, mark both diaphragm cases (A16, A2) to ensure that the pneumatic connections are mounted correctly later on reassembling the actuator.

a) 120 cm² version

Actuator stem extends

1. Lift off the top diaphragm case (A16) and remove springs (A10).
2. Pull the actuator stem (A3) together with the diaphragm plate (A14), diaphragm (A18) and diaphragm plate (A13) out of the bottom diaphragm case (A2).
3. Unscrew and remove the collar nut (A26).
4. Remove the diaphragm plate (A14), diaphragm (A18) and diaphragm plate (A13) from the actuator stem (A3).
5. Place the new diaphragm on the diaphragm plate (A13). Place on the diaphragm plate (A14).

6. Check the sealing element on the collar nut (A26). If necessary, renew it.
7. Tighten the collar nut (A26). Observe tightening torques.
8. Apply a suitable lubricant to the actuator stem (A3).
9. Place the actuator stem (A3) together with the diaphragm plate (A14), diaphragm (A18) and diaphragm plate (A13) in the bottom diaphragm case (A2). Make sure that the radial shaft seal (A2.2) is not damaged.
10. Place the springs (A10) into the bottom diaphragm case, centering them in the intended recesses.
11. Place on the top diaphragm case (A16).
12. Fasten the top and bottom diaphragm cases (A16, A2) together using the nuts (A24) and bolts (A22). Place on the screw-on cap (A21). Observe tightening torques.

Actuator stem retracts

1. Lift off the top diaphragm case (A16).
2. Pull the actuator stem (A3) together with the diaphragm plate (A14), diaphragm (A18) and diaphragm plate (A13) out of the bottom diaphragm case (A2).
3. Unscrew and remove the collar nut (A26).
4. Remove the diaphragm plate (A14), diaphragm (A18) and diaphragm

- plate (A13) from the actuator stem (A3).
5. Place the new diaphragm on the diaphragm plate (A13). Place on the diaphragm plate (A14).
6. Check the sealing element on the collar nut (A26). If necessary, renew it.
7. Tighten the collar nut (A26). Observe tightening torques.
8. Check whether the springs (A10) rest correctly in the bottom diaphragm case (A2).
9. Apply a suitable lubricant to the actuator stem (A3).
10. Place the actuator stem (A3) together with the diaphragm plate (A14), diaphragm (A18) and diaphragm plate (A13) in the bottom diaphragm case (A2). Make sure that the radial shaft seal (A2.2) is not damaged.
11. Place on the top diaphragm case (A16).
12. Fasten the top and bottom diaphragm cases (A16, A2) together using the nuts (A24) and bolts (A22). Place on the screw-on cap (A21). Observe tightening torques.
2. Pull the actuator stem (A7) together with the diaphragm plate (A5) and diaphragm (A4) out of the bottom diaphragm case (A2).
3. Unscrew and remove the collar nut (A15).
4. Take the compressor (A27), diaphragm plate (A5) and diaphragm (A4) off the actuator stem (A7).
5. Place the new diaphragm on the diaphragm plate (A5).
6. Place the compressor (A27) onto the actuator stem (A7).
7. Check the sealing element on the collar nut (A15). If necessary, renew it.
8. Tighten the collar nut (A15). Observe tightening torques.
9. Apply a suitable lubricant to the actuator stem (A7).
10. Insert the actuator stem (A7) together with the diaphragm plate (A5) and diaphragm (A4) into the bottom diaphragm case (A2). Make sure that the radial shaft seal (A40) is not damaged.
11. Place the springs (A10) into the bottom diaphragm case, centering them in the intended recesses.
12. Place on the top diaphragm case (A1).
13. If necessary, preload the springs (see the 'Start-up' chapter).
14. Fasten the top and bottom diaphragm cases (A1, A2) together using

b) 350 cm² version

Actuator stem extends

1. Lift off the top diaphragm case (A1) and remove springs (A10).

Servicing and conversion

the nuts (A21) and bolts (A20). Observe tightening torques.

Actuator stem retracts

1. Lift off the top diaphragm case (A1).
2. Pull the actuator stem (A7) together with the diaphragm plate (A5) and diaphragm (A4) out of the bottom diaphragm case (A2).
3. Unscrew and remove the collar nut (A15).
4. Take the compressor (A27), diaphragm plate (A5) and diaphragm (A4) off the actuator stem (A7).
5. Place the new diaphragm on the diaphragm plate (A5).
6. Place the compressor (A27) onto the actuator stem (A7).
7. Check the sealing element on the collar nut (A15). If necessary, renew it.
8. Tighten the collar nut (A15). Observe tightening torques.
9. Check whether the springs (A10) rest correctly in the bottom diaphragm case (A2).
10. Apply a suitable lubricant to the actuator stem (A7).
11. Insert the actuator stem (A7) together with the diaphragm plate (A5) and diaphragm (A4) into the bottom diaphragm case (A2). Make sure that the radial shaft seal (A40) is not damaged.

12. Place on the top diaphragm case (A1).

13. Fasten the top and bottom diaphragm cases (A1, A2) together using the nuts (A21) and bolts (A20). Observe tightening torques.

9.4.2 Replacing the actuator stem seals



Tip

Before dismantling the actuator, mark both diaphragm cases (A16, A2) to ensure that the pneumatic connections are mounted correctly later on reassembling the actuator.

a) 120 cm² version

Actuator stem extends

1. Lift off the top diaphragm case (A16) and remove springs (A10).
2. Pull the actuator stem (A3) together with the diaphragm plate (A14), diaphragm (A18) and diaphragm plate (A13) out of the bottom diaphragm case (A2).
3. Use a suitable tool to remove the radial shaft seal (A2.2) from the bottom case (A2).
4. Check the dry bearing (A2.4) and wiper ring (A2.3) and renew them, if necessary.

5. Apply a suitable lubricant to the seal lip of the new radial shaft seal.
6. Use a suitable tool to mount the radial shaft seal. Observe the correct alignment of the radial shaft seal (see Fig. 9-3).
7. Fill the cavity of the radial shaft seal, in which the spring is seated, with lubricant.
8. Apply a suitable lubricant to the actuator stem (A3).
9. Place the actuator stem (A3) together with the diaphragm plate (A14), diaphragm (A18) and diaphragm plate (A13) in the bottom diaphragm case (A2). Make sure that the radial shaft seal (A2.2) is not damaged.
10. Place the springs (A10) into the bottom diaphragm case, centering them in the intended recesses.
11. Place on the top diaphragm case (A16).
12. Fasten the top and bottom diaphragm cases (A16, A2) together using the nuts (A24) and bolts (A22). Place on the screw-on cap (A21). Observe tightening torques.
3. Use a suitable tool to remove the radial shaft seal (A2.2) from the bottom case (A2).
4. Check the dry bearing (A2.4) and wiper ring (A2.3) and renew them, if necessary.
5. Apply a suitable lubricant to the seal lip of the new radial shaft seal.
6. Use a suitable tool to mount the radial shaft seal. Observe the correct alignment of the radial shaft seal (see Fig. 9-3).
7. Fill the cavity of the radial shaft seal, in which the spring is seated, with lubricant.
8. Check whether the springs (A10) rest correctly in the bottom diaphragm case (A2).
9. Apply a suitable lubricant to the actuator stem (A3).
10. Place the actuator stem (A3) together with the diaphragm plate (A14), diaphragm (A18) and diaphragm plate (A13) in the bottom diaphragm case (A2). Make sure that the radial shaft seal (A2.2) is not damaged.
11. Place on the top diaphragm case (A16).
12. Fasten the top and bottom diaphragm cases (A16, A2) together using the nuts (A24) and bolts (A22). Place on the screw-on cap (A21). Observe tightening torques.

Actuator stem retracts

1. Lift off the top diaphragm case (A16).
2. Pull the actuator stem (A3) together with the diaphragm plate (A14), diaphragm (A18) and diaphragm plate (A13) out of the bottom diaphragm case (A2).

b) 350 cm² version

Actuator stem extends

1. Lift off the top diaphragm case (A1) and remove springs (A10).
2. Pull the actuator stem (A7) together with the diaphragm plate (A5) and diaphragm (A4) out of the bottom diaphragm case (A2).
3. Use a suitable tool to remove the radial shaft seal (A40) from the bottom case (A2).
4. Check the dry bearing (A2.4) and wiper ring (A2.3) and renew them, if necessary.
5. Apply a suitable lubricant to the seal lip of the new radial shaft seal.
6. Use a suitable tool to mount the radial shaft seal. Observe the correct alignment of the radial shaft seal (see Fig. 9-4).
7. Fill the cavity of the radial shaft seal, in which the spring is seated, with lubricant.
8. Apply a suitable lubricant to the actuator stem (A7).
9. Insert the actuator stem (A7) together with the diaphragm plate (A5) and diaphragm (A4) into the bottom diaphragm case (A2). Make sure that the radial shaft seal (A40) is not damaged.
10. Place the springs (A10) into the bottom diaphragm case, centering them in the intended recesses.
11. Place on the top diaphragm case (A1).

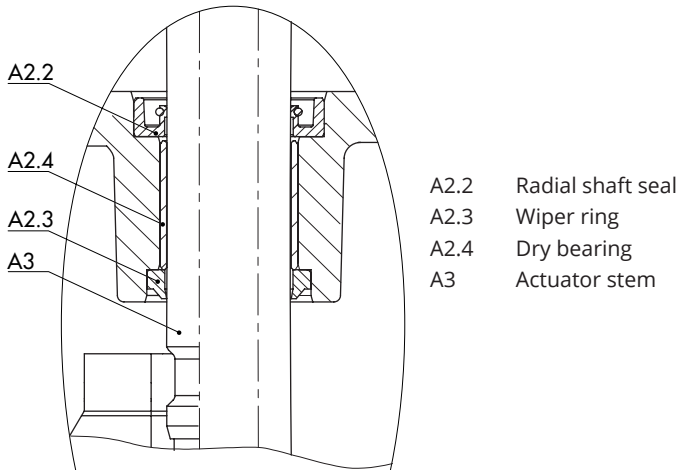
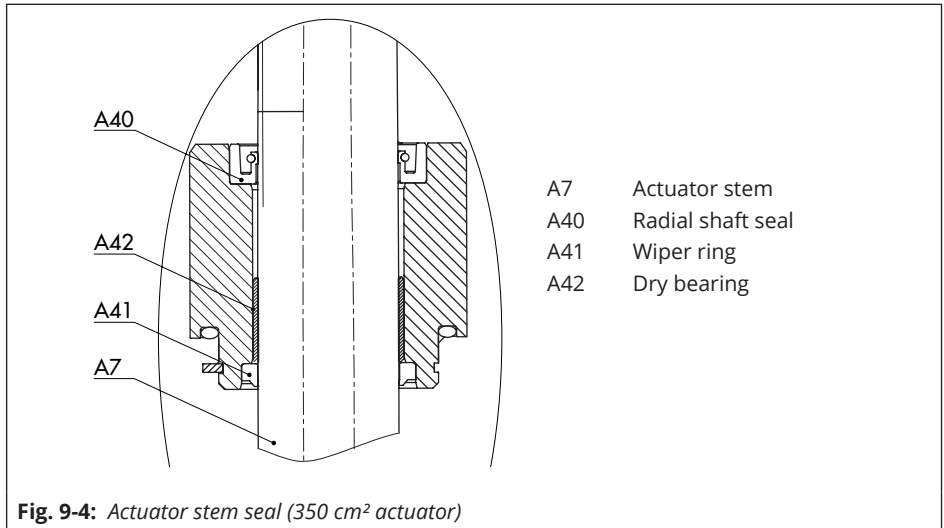


Fig. 9-3: Actuator stem seal (120 cm² actuator)



12. If necessary, preload the springs (see the 'Start-up' chapter).
13. Fasten the top and bottom diaphragm cases (A1, A2) together using the nuts (A21) and bolts (A20). Observe tightening torques.

Actuator stem retracts

1. Lift off the top diaphragm case (A1).
2. Pull the actuator stem (A7) together with the diaphragm plate (A5) and diaphragm (A4) out of the bottom diaphragm case (A2).
3. Use a suitable tool to remove the radial shaft seal (A40) from the bottom case (A2).
4. Check the dry bearing (A2.4) and wiper ring (A2.3) and renew them, if necessary.

5. Apply a suitable lubricant to the seal lip of the new radial shaft seal.
6. Use a suitable tool to mount the radial shaft seal. Observe the correct alignment of the radial shaft seal (see Fig. 9-4).
7. Fill the cavity of the radial shaft seal, in which the spring is seated, with lubricant.
8. Check whether the springs (A10) rest correctly in the bottom diaphragm case (A2).
9. Apply a suitable lubricant to the actuator stem (A7).
10. Insert the actuator stem (A7) together with the diaphragm plate (A5) and diaphragm (A4) into the bottom diaphragm case (A2). Make sure that

Servicing and conversion

the radial shaft seal (A40) is not damaged.

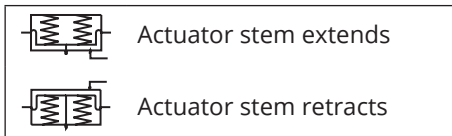
11. Place on the top diaphragm case (A1).
12. Fasten the top and bottom diaphragm cases (A1, A2) together using the nuts (A21) and bolts (A20). Observe tightening torques.

9.5 Conversion work

9.5.1 Reversing the direction of action

The direction of action (and fail-safe action) of the Type 3372 Electropneumatic Actuator with 120 and 350 cm² actuator areas is determined at the ordering stage and cannot be changed.

The fail-safe action is indicated on the nameplate by a symbol:



9.6 Ordering spare parts and operating supplies

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

Spare parts

See the Appendix for details on spare parts.

Lubricants

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 fatal injury due to the ignition of an explosive atmosphere.

Incorrect installation, operation or servicing of the electropneumatic actuator in potentially explosive atmospheres may lead to ignition of the atmosphere and ultimately to death.

- ➔ *The following regulations apply to installation in hazardous areas:
EN 60079-14 (VDE 0165, Part 1).*
- ➔ *Work is to be performed only by personnel who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.*

DANGER

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

Pneumatic actuators are pressure equipment that may burst when handled incorrectly. Flying projectile fragments or components can cause serious injury or even death.

Before working on the actuator:

- ➔ *Depressurize all plant sections concerned and the actuator. Release any stored energy.*

WARNING

Risk of personal injury due to preloaded springs.

Actuators with preloaded springs are under tension. These actuators can be identified by several longer bolts with nuts protruding from the bottom diaphragm case. Actuators with considerably preloaded springs are also labeled correspondingly (see the 'Warnings on the device' chapter).

- ➔ *Only open the actuator following the instructions in this document. See section 'Relieving the spring compression in the actuator' in the 'Removal' chapter.*

WARNING

Risk of personal injury due to exhaust air being vented.

The actuator is operated with air. As a result, air is vented during operation.

- ➔ *Wear eye and hearing protection when working near the actuator.*

WARNING

Crush hazard arising from the moving actuator stem.

- ➔ *Do not insert hands or finger into the yoke while the air supply is connected to the actuator.*
- ➔ *Before working on the actuator, disconnect and lock the pneumatic air supply as well as the control signal.*

Decommissioning

- ➔ *Do not impede the movement of the actuator stem by inserting objects into the yoke.*
 - ➔ *Before unblocking the actuator stem after it has 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 section 'Relieving the spring compression in the actuator' in the 'Removal' chapter.*
-

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

1. Put the valve and positioner out of operation. See associated valve and positioner documentation.
2. Disconnect the pneumatic air supply to depressurize the actuator.
3. Release any stored energy.

11 Removal

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

DANGER

Risk of fatal injury due to the ignition of an explosive atmosphere.

Incorrect installation, operation or servicing of the electropneumatic actuator in potentially explosive atmospheres may lead to ignition of the atmosphere and ultimately to death.

- ➔ *The following regulations apply to installation in hazardous areas:
EN 60079-14 (VDE 0165, Part 1).*
- ➔ *Work is to be performed only by personnel who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.*

DANGER

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

Pneumatic actuators are pressure equipment that may burst when handled incorrectly. Flying projectile fragments or components can cause serious injury or even death.

Before working on the actuator:

- ➔ *Depressurize all plant sections concerned and the actuator. Release any stored energy.*

WARNING

Risk of personal injury due to preloaded springs.

Actuators with preloaded springs are under tension. These actuators can be identified by several longer bolts with nuts protruding from the bottom diaphragm case. Actuators with considerably preloaded springs are also labeled correspondingly (see the 'Warnings on the device' chapter).

- ➔ *Only open the actuator following the instructions in this document. See section 'Relieving the spring compression in the actuator' in the 'Removal' chapter.*

WARNING

Risk of personal injury due to exhaust air being vented.

The actuator is operated with air. As a result, air is vented during operation.

- ➔ *Wear eye and hearing protection when working near the actuator.*

WARNING

Crush hazard arising from the moving actuator stem.

- ➔ *Do not touch the actuator stem or insert hands or finger into the yoke while the air supply is connected to the actuator.*
- ➔ *Before working on the actuator, disconnect and lock the pneumatic air supply as well as the control signal.*

Removal

- ➔ *Do not impede the movement of the actuator stem by inserting objects into the yoke.*
 - ➔ *Before unblocking the actuator stem after it has 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 section 'Relieving the spring compression in the actuator' in the 'Removal' chapter.*
-

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

- The actuator is put out of operation (see the 'Decommissioning' chapter).

11.1 Removing the actuator

See drawings in the 'Installation' chapter.

a) 120 cm² version

For mounting using crossbeam (form B)

1. Remove the clamps of the stem connector (A30) from the actuator.
2. **For "stem extends" action with/without preloaded springs:** to undo the central nut (98), apply approx. 50 % signal pressure to open the valve.
3. Unscrew the central nut (98) from the plug stem.

4. Disconnect the signal pressure again.
 5. **In the "actuator stem retracts" version:** detach the external piping.
 6. Lift the central nut (98) and actuator off the valve.
 7. Screw tight the central nut (98) on the valve.
 8. Screw tight the stem connector clamps (A30) onto the actuator. Observe tightening torques.
-

NOTICE

The actuator can be damaged.

- ➔ *Do not unscrew the rods (A11) from the crossbeam (A17).*
-

For mounting using rods (form C)

1. Remove the stem connector clamps (A29) from the actuator.
2. Undo the rod nuts (A119) in alternating sequence.
3. Pull the rods (A11) with bushings (A9) out of the holes in the valve bonnet (2).
4. Remove the bushings (A9) from the actuator and thread the rod nuts (A119) onto the rods (A11).
5. Screw tight the stem connector clamps (A29) onto the actuator. Observe tightening torques.

b) 350 cm² version

1. In the "actuator stem retracts" **version**: detach the external piping.
2. Remove the stem connector clamps (A12) from the actuator.
3. Undo the rod nuts (A54) in alternating sequence.
4. Pull the rods (A33, A51) out of the holes in the valve bonnet (2).
5. Thread the rod nuts (A54) onto the rods (A33, A51) on the actuator.
6. Screw tight the stem connector clamps (A12) onto the actuator. Observe tightening torques.

11.2 Relieving the spring compression in the actuator

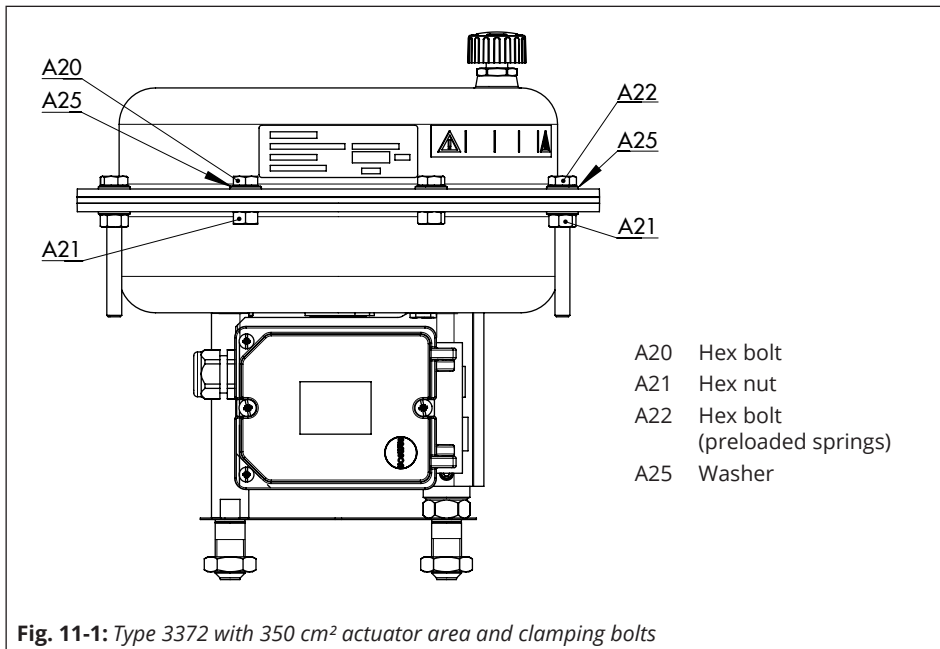
See Bild 11-1

The long clamping bolts with clamping nuts and the short bolts with nuts are arranged evenly around the circumference of the actuator housing to fasten the top and bottom diaphragm cases together. The springs in the actuator are compressed using the long clamping bolts with the associated nuts.

To relieve the compression of the springs in the actuator, proceed as follows:

1. Unthread and remove the short nuts and bolts (including the washers) on the diaphragm cases.
2. Loosen the long clamping nuts and bolts on the diaphragm cases evenly in a crisscross pattern to gradually relieve the spring compression. Hold the bolt head stationary with a suitable tool and apply the torque to the nuts.

Removal



12 Repairs

If the actuator 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 actuator 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 number
 - Configuration ID
 - Original order

- Completed Declaration on Contamination, which can be downloaded from our website at
 - ▶ www.samsongroup.com > Service > After-sales Service > Returning goods.

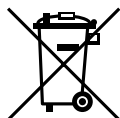
After checking your registration, we will send you a return merchandise authorization (RMA).

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. ► <https://www.samsongroup.com> > About SAMSON > Environment, Social & Governance > Material Compliance > Waste electrical and electronic equipment (WEEE) WEEE reg. no.: DE 62194439

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

i Note

SAMSON can provide you with a recycling passport according to PAS 1049 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.

14 Certificates

These declarations and certificates are included on the next pages:

- Declaration of conformity in compliance with Directive 2014/30/EU on page 14-2
- Declaration of incorporation in compliance with Machinery Directive 2006/42/EC, see page 14-3

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* > *Actuators* > 3372

Other optional certificates are available on request.



SAMSON

EU Konformitätserklärung / EU Declaration of Conformity / Déclaration UE de conformité

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller /
This declaration of conformity is issued under the sole responsibility of the manufacturer /
La présente déclaration de conformité est établie sous la seule responsabilité du fabricant.

Für das folgende Produkt / For the following product / Nous certifions que le produit

Pneumatischer und elektropneumatischer Stellantrieb / Pneumatic and Electropneumatic Actuators / Servomoteur pneumatique et électropneumatique Typ/Type/Type 3372-0

wird die Konformität mit den einschlägigen Harmonisierungsrechtsvorschriften der Union bestätigt /
the conformity with the relevant Union harmonisation legislation is declared with /
est conforme à la législation d'harmonisation de l'Union applicable selon les normes:

EMC 2014/30/EU

EN 61000-6-2:2005, EN 61000-6-3:2007
+A1:2011, EN 61326-1:2013

RoHS 2011/65/EU

EN 50581:2012

Hersteller / Manufacturer / Fabricant:

SAMSON AKTIENGESELLSCHAFT
Weismüllerstraße 3
D-60314 Frankfurt am Main
Deutschland/Germany/Allemagne

Frankfurt / Francfort, 2017-07-29

Im Namen des Herstellers/ On behalf of the Manufacturer/ Au nom du fabricant.

i.v. Gert Nahler

Gert Nahler
Zentralabteilungsleiter/Head of Department/Chef du département
Entwicklung Automation und Integrationstechnologien/
Development Automation and Integration Technologies

i.v. H. Zager

Hanno Zager
Leiter Qualitätssicherung/Head of Quality Management/
Responsable de l'assurance de la qualité

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DECLARATION OF INCORPORATION TRANSLATION



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

For the following products:

Type 3372 Actuators

We certify that the Type 3372 Actuators are partly completed machinery as defined in the Machinery Directive 2006/42/EC and that the safety requirements stipulated in Annex I, 1.1.2, 1.1.3, 1.1.5, 1.3.2, 1.3.4 and 1.3.7 are observed. The relevant technical documentation described in Annex VII, part B has been compiled.

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

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

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

For product descriptions of the valve, refer to:

- Type 3372 Actuator: Mounting and Operating Instructions EB 8313-X

Referenced technical standards and/or specifications:


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

Comments:


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

Persons authorized to compile the technical file:

SAMSON AG, Weismüllerstraße 3, 60314 Frankfurt am Main, Germany
Frankfurt am Main, 04 March 2021



Peter Arzbach
Director
Product Management



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

Revision no. 00

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15 Appendix

15.1 Tightening torques, lubricants and tools

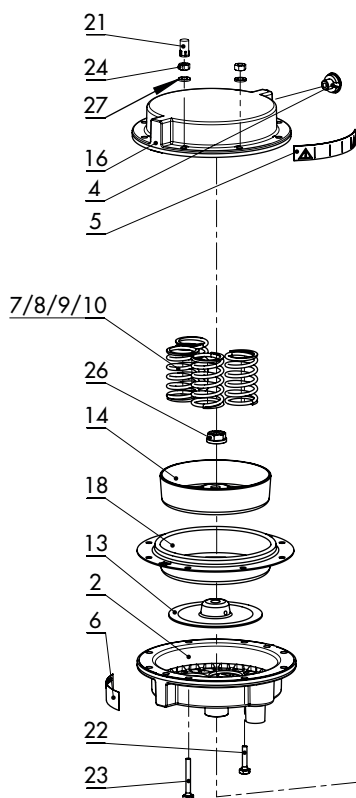
► AB 0100 for tools, tightening torques and lubricants

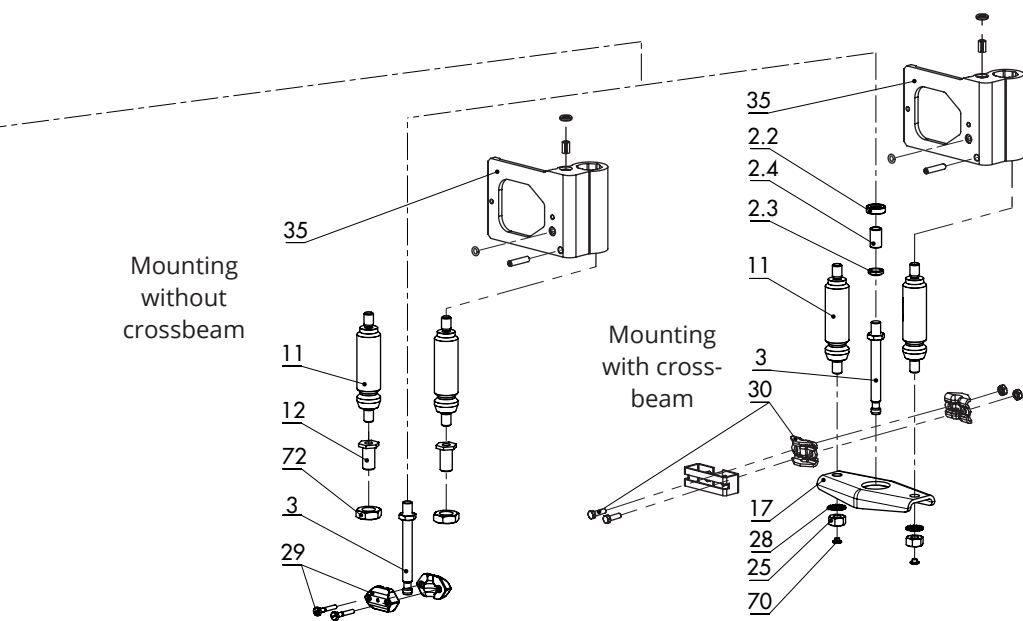
15.2 Spare parts

Type 3372 Actuator with 120 cm² actuator area

2	Bottom diaphragm case	37	Rod
2.2	Radial shaft seal	70	Protective cap
2.3	Wiper ring	72	Rod nut (hex nut)
2.4	Dry bearing		
3	Actuator stem		
4	Stopper		
5	Label		
6	Nameplate		
7/8/9/10	Spring		
11	Rod		
12	Bushing		
13	Diaphragm plate		
14	Diaphragm plate		
16	Top diaphragm case		
17	Crossbeam		
18	Diaphragm		
21	Screw-on cap		
22	Hex bolt		
23	Hex bolt		
24	Hex nut		
25	Rod nut		
26	Collar nut		
27	Washer		
28	Serrated lock washer		
29/30	Stem connector clamps		
35	Pneumatic connection		

**Type 3372 Actuator
with 120 cm² actuator
area**



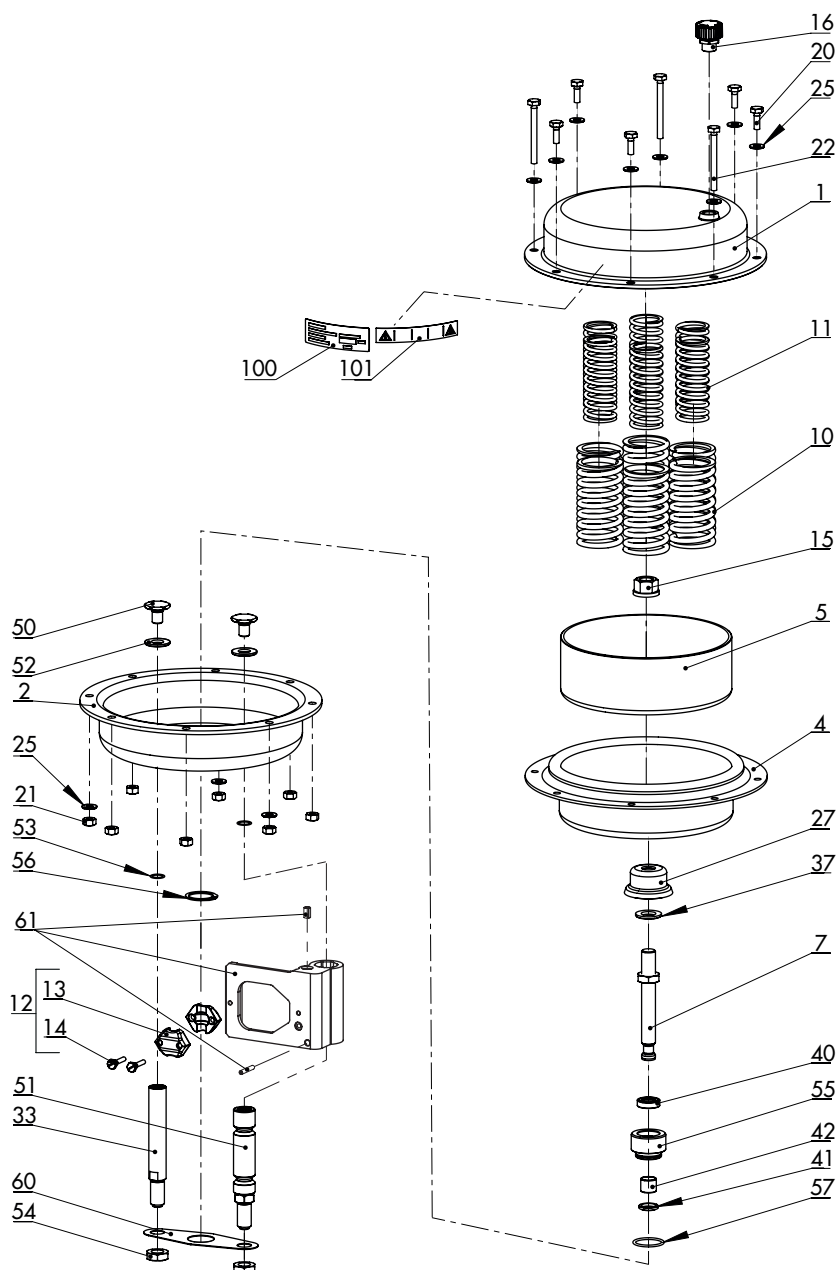


Appendix

Type 3372 Actuator with 350 cm² actuator area

- 1 Top diaphragm case
- 2 Bottom diaphragm case
- 4 Diaphragm
- 5 Diaphragm plate
- 7 Actuator stem
- 10/11 Spring
- 12 Stem connector clamp
- 13 Stem connector clamp
- 14 Screw
- 15 Collar nut
- 16 Vent plug
- 20 Hex bolt
- 21 Hex nut
- 22 Hex bolt (preloaded springs)
- 25 Washer
- 27 Compressor
- 33 Rod
- 37 Washer
- 40 Radial shaft seal
- 41 Wiper ring
- 42 Dry bearing
- 50 Screw for rod (51)
- 51 Rod
- 52 Washer (version with "actuator stem retracts" only)
- 53 O-ring
- 54 Rod nut
- 55 Bushing
- 56 Retaining ring
- 57 O-ring
- 60 Plate
- 61 Pneumatic connection
- 100 Nameplate
- 101 Label (preloaded springs)

Type 3372 Actuator with 350 cm² actuator area



15.3 After-sales service

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

E-mail address

You can reach our after-sales service at aftersalesservice@samsongroup.com.

Addresses of SAMSON AG and its subsidiaries

The addresses of SAMSON AG, its subsidiaries, representatives and service facilities worldwide can be found on our website (www.samsongroup.com) or in all SAMSON product catalogs.

Required specifications

Please submit the following details:

- Order number and position number in the order
- Type, model number, actuator area, travel, direction of action and bench range (e.g. 0.2 to 1 bar) or the operating range of the actuator
- Type designation of mounted valve (if applicable)
- Type designations of mounted valve accessories (if applicable)
- Installation drawing



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