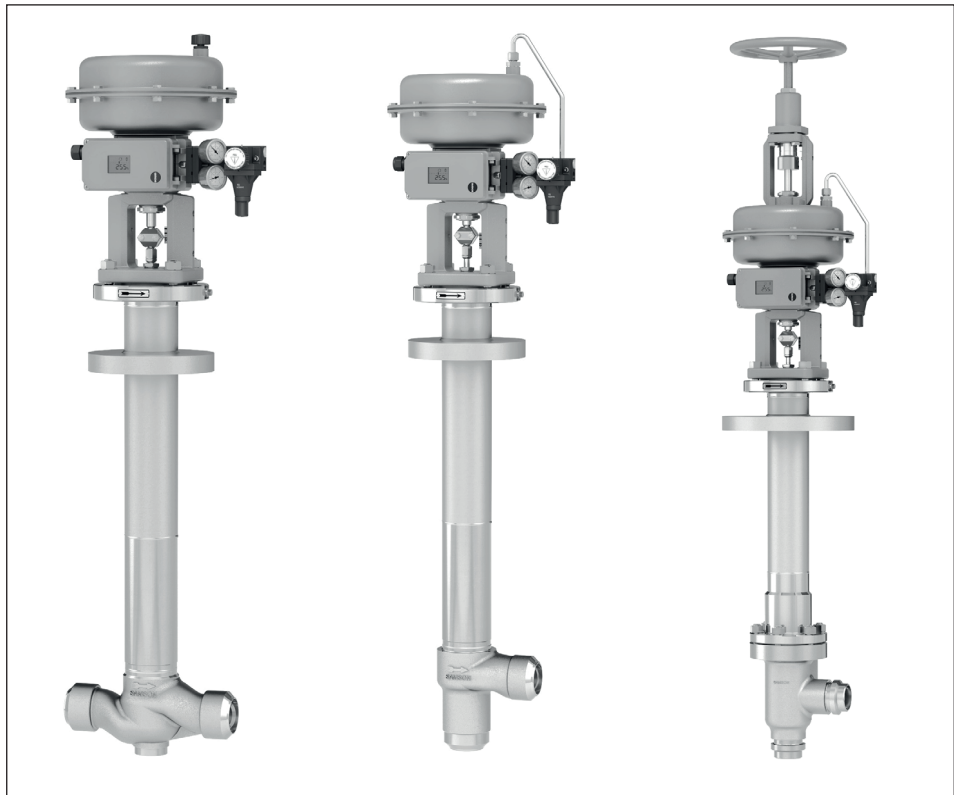


MOUNTING AND OPERATING INSTRUCTIONS



EB 8093 EN

Translation of original instructions



Type 3248 Valve · DIN version

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

Edition November 2022



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 (aftersaleservice@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

1	Safety instructions and measures	1-1
1.1	Notes on possible severe personal injury	1-5
1.2	Notes on possible personal injury	1-6
1.3	Notes on possible property damage	1-8
1.4	Notes on the use of an RFID tag	1-9
1.5	Warnings on the device	1-9
2	Markings on the device	2-1
2.1	Valve nameplate	2-1
2.2	Actuator nameplate	2-2
2.3	Material identification number	2-2
2.4	Optional RFID tag	2-3
3	Design and principle of operation	3-1
3.1	Fail-safe positions	3-4
3.2	Versions	3-4
3.3	Additional fittings	3-5
3.4	Valve accessories	3-5
3.5	Technical data	3-5
4	Shipment and on-site transport	4-1
4.1	Accepting the delivered goods	4-1
4.2	Removing the packaging from the valve	4-1
4.3	Transporting and lifting the valve	4-1
4.3.1	Transporting the valve	4-2
4.3.2	Lifting the valve	4-3
4.4	Storing the valve	4-8
5	Installation	5-1
5.1	Installation conditions	5-1
5.2	Preparation for installation	5-2
5.3	Mounting the device	5-3
5.3.1	Installing the valve into the pipeline	5-4
5.3.2	Removing the protective cover	5-4
5.3.3	Mounting the actuator onto the valve	5-7
5.4	Testing the installed valve	5-8
5.4.1	Leak test	5-9
5.4.2	Travel motion	5-10
5.4.3	Fail-safe position	5-10
5.4.4	Pressure test	5-10

Contents

6	Start-up	6-1
7	Operation	7-1
7.1	Normal operation	7-2
7.2	Manual operation	7-2
8	Malfunctions	8-1
8.1	Troubleshooting	8-1
8.2	Emergency action	8-2
9	Servicing	9-1
9.1	Periodic testing	9-3
9.2	Service work preparations	9-6
9.3	Installing the valve after service work.....	9-6
9.4	Service work.....	9-6
9.4.1	Replacing the gasket	9-7
9.4.2	Replacing the packing	9-9
9.4.3	Replacing the seat and plug.....	9-11
9.4.4	Replacing the bellows seal.....	9-11
9.5	Ordering spare parts and operating supplies	9-11
10	Decommissioning	10-1
11	Removal	11-1
11.1	Removing the valve from the pipeline.....	11-1
11.2	Removing the actuator from the valve	11-2
12	Repairs	12-1
12.1	Returning devices to SAMSON	12-1
13	Disposal	13-1
14	Certificates	14-1
15	Annex	15-1
15.1	Tightening torques, lubricants and tools	15-1
15.2	Spare parts	15-1
15.3	After-sales service	15-6
15.4	Information on the UK sales region.....	15-6

1 Safety instructions and measures

Intended use

The SAMSON Type 3248 Globe and Angle Valve in combination with an actuator (e.g. Type 3271 or Type 3277 Pneumatic Actuator) is designed to regulate the flow rate, pressure or temperature of liquids or gases in cryogenic applications. For this purpose, the valves can be welded into vacuum-insulated pipelines or cold boxes. 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 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.

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

We recommend checking the hazards posed by the process medium being used (e.g.

▶ GESTIS (CLP) hazardous substances database). Depending on the process medium and/or the activity, the protective equipment required includes:

- Protective clothing, 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 valve moves to a certain fail-safe position (see the 'Design and principle of operation' chapter) upon supply air or control signal failure. The fail-safe action of the actuator is the same as its direction of action and is specified on the nameplate of SAMSON actuators.

Warning against residual hazards

To avoid personal injury or property damage, plant operators and operating personnel must prevent hazards that could be caused in the control valve by the process medium, the operating pressure, the signal pressure or by moving parts by taking appropriate precautions. Plant operators and operating personnel must observe all hazard statements, warnings 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 safety instructions 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 control valves comply with the requirements of the European Pressure Equipment Directive 2014/68/EU, Machinery Directive 2006/42/EC, Directive 2016 No. 1105 Pressure Equipment (Safety) Regulations 2016 and Directive 2008 No. 1597 Supply of Machinery (Safety) Regulations 2008. Valves with a CE marking and/or UKCA marking have a declaration of conformity, which includes information about the applied conformity assessment procedure. The 'Certificates' chapter contains this declaration of conformity.

According to the ignition hazard assessment performed in accordance with Clause 5.2 of ISO 80079-36, the non-electrical control valves do not have their own potential ignition source even in the rare incident of an operating fault. As a result, they do not fall within the scope of Directive 2014/34/EU.

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

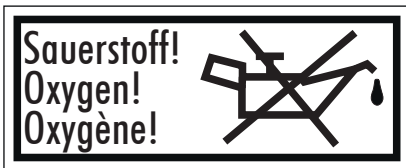
Safety instructions and measures

Referenced documentation

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

- Mounting and operating instructions for the mounted actuator, e.g. ► EB 8310-X for the SAMSON Type 3271 or Type 3277 Pneumatic Actuator
- Mounting and operating instructions for mounted valve accessories (positioner, solenoid valve etc.)
- ► AB 0100 for tools, tightening torques and lubricant
- Manual ► H 02: Appropriate Machinery Components for SAMSON Pneumatic Control Valves with a Declaration of Conformity of Final Machinery
- For oxygen service: Manual ► H 01

The packaging of valve constructed and sized for oxygen service has the following label on it:



- When a substance is used in the device, which is listed as being a substance of very high concern on the candidate list of the REACH regulation:

Information on safe use of the part affected ► www.samsongroup.com > About SAMSON > Environment, Social & Governance > Material Compliance > REACH

If a device contains a substance listed as a substance of very high concern on the candidate list of the REACH regulation, this is indicated on the SAMSON delivery note.

1.1 Notes on possible severe personal injury

DANGER

Risk of bursting in pressure equipment.

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 the control valve, 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.

Risk of injury due to incorrect handling of oxygen or cryogenic gases in applications.

The Type 3248 Valve is frequently used for oxygen service or applications with cryogenic gases. Oxygen is a hazardous substance, which reacts quickly, leading to combustion and explosions. Contact with cryogenic gases causes severe frostbite and cold burns (cryogenic burns). Operating personnel must be trained for these applications. Unqualified operating personnel expose themselves and others to an increased risk of injury.

- Operating personnel must be sufficiently trained and be made aware of the hazards in applications involving oxygen or cryogenic gases.
- Instructions and information on how to safely handle devices for oxygen service can be found in the Manual ► H 01.

Tip

All SAMSON staff receives appropriate training before performing any activities in connection with oxygen service. SAMSON's After-sales Service also offers such training courses for service staff to allow them to learn how to handle devices for the above listed applications correctly and safely.

1.2 Notes on possible personal injury

WARNING

Risk of burn injuries due to cold components and pipelines.

Depending on the process medium, valve components and pipelines may get extremely cold and cause cryogenic burns.

- Allow components and pipelines to reach ambient temperature.
- Wear protective clothing and safety gloves.

Risk of hearing loss or deafness due to loud noise.

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

- Wear hearing protection when working near the valve.

Risk of personal injury due to exhaust air being vented.

While the valve is operating, air is vented from the actuator, e.g. during closed-loop operation or 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 the control valve.

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 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.**

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

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

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

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

- 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.

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

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

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

Over time, markings, labels and nameplates on the 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.

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.

Risk of valve damage due to unsuitable medium properties.

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

→ Only use the process medium specified for sizing the equipment.

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

Observe the specified torques when tightening control valve components. Excessive tightening torques lead to parts wearing out more quickly. Parts that are too loose may cause leakage.

→ Observe the specified tightening torques (▶ AB 0100).

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

Certain tools are required to work on the valve.

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

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

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

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

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.

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

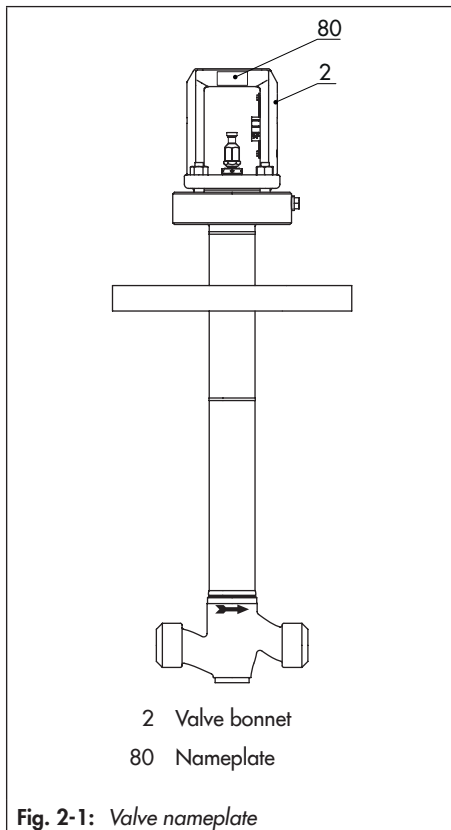
Warning symbols	Meaning of the warning	Location on the device
	<p>Warning against moving parts There is a risk of injury to hands or fingers due to the stroking movement of the actuator and plug stem if they are inserted into the yoke while the air supply is connected to the actuator.</p>	

2 Markings on the device

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

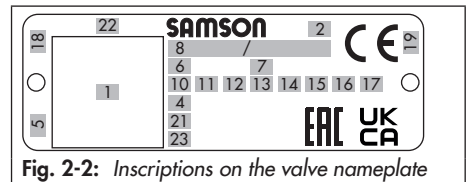
2.1 Valve nameplate

The nameplate is affixed to the valve bonnet (see Fig. 2-1).



i Note

Fig. 2-2 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 3248 Valve actually appear on the nameplate.



Item	Inscription meaning
1	Data Matrix code
2	Type designation
4	Material
5	Month and year of manufacture
6	Valve size: DIN: DN · ANSI: NPS · JIS: DN
7	Pressure rating: DIN: PN · ANSI: CL · JIS: K
8	Order number/item
10	Flow coefficient: DIN: KVS · ANSI: 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

Markings on the device

Item	Inscription meaning
14	Pressure balancing: DIN: D · ANSI/JIS: B 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 ST 3 · MHC1 : multi-hole cage · CC1 : Combi Cage · ZT1 : Zero Travel · LDB : Low dB
16	PSA version: PSA
17	Cage/seat style: CS : clamped-in seat · CG : guided cage · SS : screwed-in seat · SF : suspended cage, flanged seat
18	Country of origin
19	ID of the notified body (EU), for example: – 0062 for Bureau Veritas Services SAS, 8 Cours du Triangle, 92800 PUTEAUX – LA DEFENSE
21	PED : Pressure Equipment Directive G1/G2 : gases and vapors Fluid group 1 = hazardous Fluid group 2 = other L1/L2 : liquids Fluid group 1 = hazardous Fluid group 2 = other I/II/III : Category 1 to 3
22	Serial number
23	Hardware version (NE 53)



We recommend to include the device's serial number (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 identification number

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 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 included in the Data Matrix code on the electronic nameplate. It can be read using a smartphone, tablet or RFID reader.

Application range according to the technical data (see the 'Design and principle of operation' chapter).

3 Design and principle of operation

The Type 3248 is available in the following versions:

- Globe valve with stainless steel body, DN 25 to 150, PN 16 to 100 (see Fig. 3-1)
- Angle valve with stainless steel body, DN 25 to 150, PN 40 to 100 (see Fig. 3-2)
- Angle valve with aluminum body, DN 25 to 150, PN 16 to 40 (see Fig. 3-3)

A top-entry design is used for these valves. As a result, the valve does not need to be removed from the pipeline for service work.

The seat (4) and plug with plug stem (5) are installed in the body (1). The plug stem is screwed to the plug stem with bellows seal (37) which is, in turn, screwed to the spacer stem (71). The stem connector clamps (A26/27) connect the actuator stem (A7) of the mounted actuator.

In the version with stainless steel body, the cryogenic extension bonnet is welded onto the body (1). Its bottom part consists of the bellows seal and insulated pipe. In the version with aluminum body, the bellows seal (22) is screwed to the body. A cover plate can be welded at a specific angle onto the pipe or bellows seal. The cover plate serves as orientation during installation into a cold box, for example.

The plug stem is sealed by the metal bellows and the packing (15). The metal bellows prevents direct contact of the packing with the process medium. As a result, the service life

is increased and icing up is prevented. The test connection at the valve bonnet can be used to monitor the sealing ability of the bellows. The packing consists of a spring-loaded PTFE-carbon V-ring packing.

In the PN 16 to 40 version, the valve bonnet (2) is designed as a yoke (see Fig. 3-1). In the PN 63 and 100 version, the valve bonnet (2) is designed as an intermediate piece. A yoke (3) is fastened onto the valve bonnet with a castellated nut (92) (see Fig. 3-2).

A protective cover can be mounted in place of the valve bonnet and actuator. This reduces the overall height of the valve and makes it easier to transport it. The protective cover also protects the inside of the bellows seal against moisture and dirt.

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

Design and principle of operation

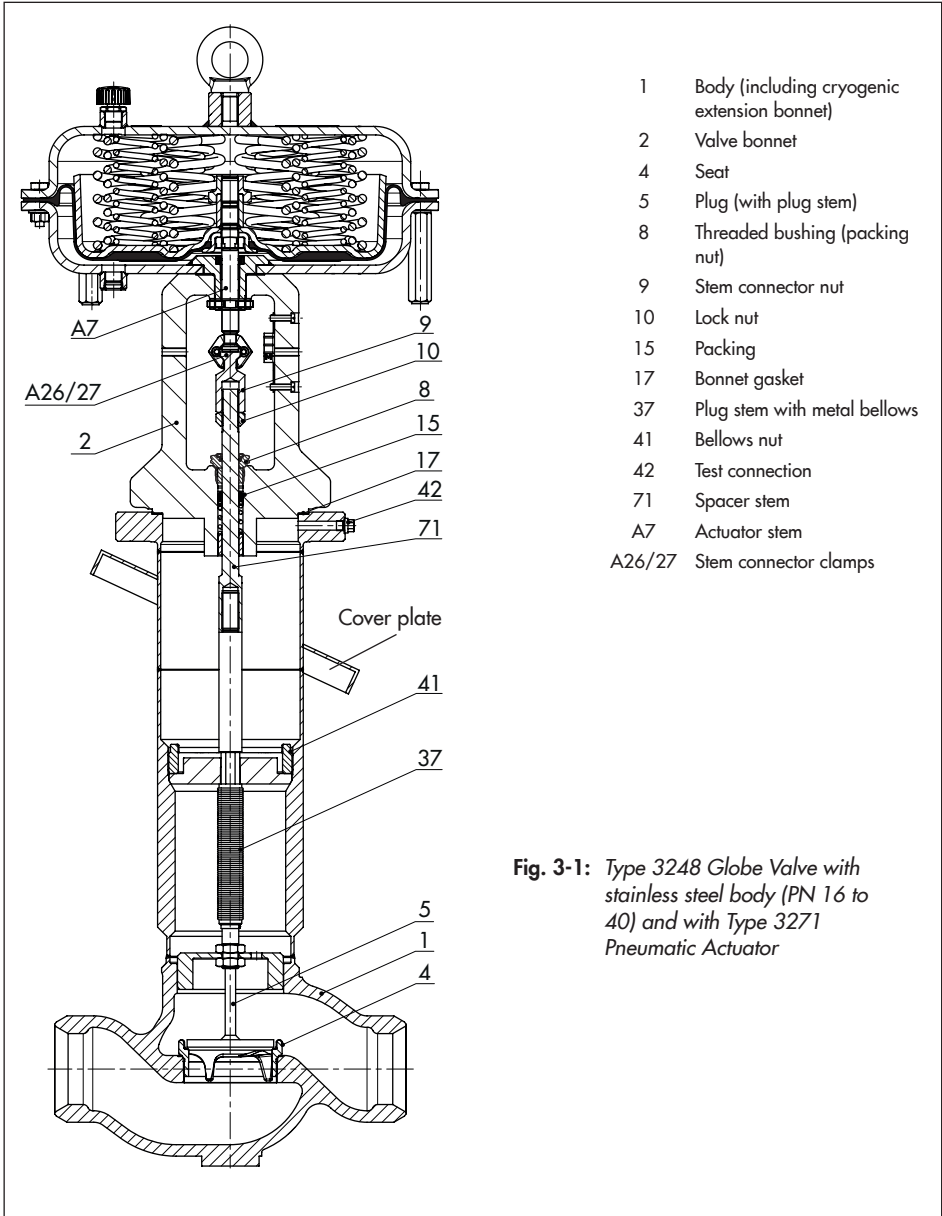


Fig. 3-1: Type 3248 Globe Valve with stainless steel body (PN 16 to 40) and with Type 3271 Pneumatic Actuator

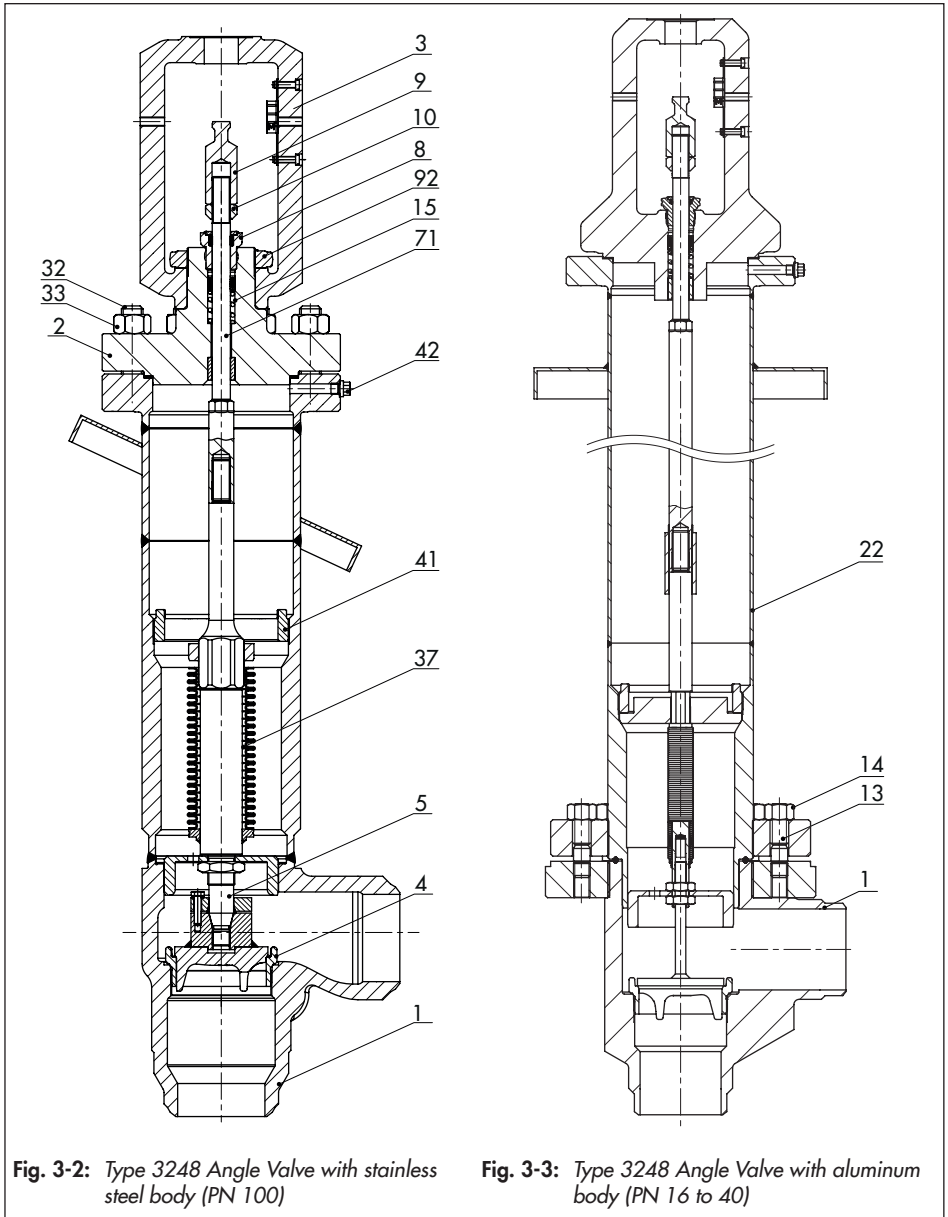


Fig. 3-2: Type 3248 Angle Valve with stainless steel body (PN 100)

Fig. 3-3: Type 3248 Angle Valve with aluminum body (PN 16 to 40)

Legend for Fig. 3-2 and Fig. 3-3

1	Body	10	Lock nut	37	Plug stem with metal bellows
2	Valve bonnet	13	Stud bolt	41	Bellows nut
3	Yoke	14	Body nut	42	Test connection
4	Seat	15	Packing	71	Spacer stem
5	Plug (with plug stem)	17	Bonnet gasket	92	Castellated nut
8	Threaded bushing (packing nut)	22	Bellows seal		
9	Stem connector nut	32	Bolt		
		33	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 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 upwards and open the valve. The valve closes when the signal pressure is increased enough to overcome the force exerted by the springs.

Tip

The actuator's direction of action can be reversed, if required. Refer to the mounting and operating instructions of the pneumatic actuator:

▶ *EB 8310-X for Type 3271 and Type 3277*

3.2 Versions

Tip

We recommend the use of positioners with integrated diagnostic firmware (see Chapter 3.4) for valves used for on/off service. The partial stroke test included in this software helps prevent a shut-off valve normally in its end position from seizing up or getting jammed.

Larger nominal sizes

The Type 3248 Valve is available up to nominal size DN 200.

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.

i 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.

3.3 Additional fittings

Strainers

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

Bypass and shut-off valves

We recommend installing a shut-off valve both upstream of the strainer and downstream of the 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.

Refer to the instructions in the 'Installation' chapter.

Test connection

The test connection at the valve bonnet can be used to monitor the sealing ability of the bellows. Particularly for liquids and vapors, we recommend installing a suitable leakage indicator (e.g. a contact pressure gauge, an outlet to an open vessel or an inspection glass).

Safety guard

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

3.4 Valve accessories

Information Sheet ► T 8350

3.5 Technical data

The nameplates on the valve and actuator provide information on the control valve version. See the 'Markings on the device' chapter.

i Note

More information is available in Data Sheet ► T 8093.

Design and principle of operation

Conformity

The Type 3248 Valve bears the CE, UKCA and EAC marks of conformity.



Temperature range

The Type 3248 Valve is designed for a temperature range from -196 to $+65$ °C. The use of an extended bellows seal extends the temperature range down to -273 °C.

The permissible temperature range at the (optional) RFID tag is between -40 and $+85$ °C.

Leakage class

Depending on the version, the following leakage class according to IEC 60534-4 applies:

Seal (12 on nameplate)	Leakage class
Metal seal (ME)	IV
High-performance metal seal, e.g. Stellite® facing (ST)	V
PTFE soft seal (PT)	VI

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 at ► www.samsongroup.com
> Products > Electronic nameplate.

Dimensions and weights

Table 3-1 to Table 3-5 provide an overview of the dimensions of the various versions of Type 3248 Valve. Table 3-6 lists the weights of the various versions of Type 3248 Valve. The lengths and heights in the dimensional drawings are shown on page 3-10.

i Note

Height H7 is the minimum clearance for service work. The actuator dimensions must also be observed. The largest value applies. Height H1 and the specified weights are reference values. The exact dimensions and weights depend on various factors, e.g. actuator size and overall height.

Table 3-1: Dimensions of globe valve with stainless steel body, PN 16 to 40

Valve	DN	25	40	50	80	100	150
L	mm	210	251	286	337	394	508
H1	mm	854	864	864	1052	1147.5	1188.5
H2	mm	44	71	71	93	111	174
H4 ¹⁾	mm	600	600	600	700	800	800
H5	mm	708	714	714	824	933.5	974.5
H7	mm	1050	900	900	900	1100	1100
Ød	mm	282	282	282	282	282	282
Welding ends/ pipe connection ¹⁾		Ø33.7 x 2.3	Ø48.3 x 2.6	Ø60.3 x 3.2	Ø88.9 x 4	Ø114.3 x 5	Ø168.3 x 5.6

¹⁾ Deviating dimensions on request

Table 3-2: Dimensions of globe valve with stainless steel body, PN 63 and 100

Valve	DN	25	40	50	80	100	150
L	mm	210	251	286	337	394	508
H1 ¹⁾	mm	822	817	817	832	984	1298
H2	mm	44	71	71	93	111	174
H4 ²⁾	mm	600	600	600	600	650	800
H5	mm	734	734	734	734	770	923
H7	mm	1050	900	900	900	1100	1100
Ød	mm	282	282	282	282	282	282
Welding ends/ pipe connection ²⁾		Ø33.7 x 3.2	Ø48.3 x 3.6	Ø60.3 x 4	Ø88.9 x 5.6	Ø114.3 x 6.3	Ø168.3 x 7.1

¹⁾ Dimension H1 + 85 mm applies when 1400-120 cm² actuators are used

²⁾ Deviating dimensions on request

Design and principle of operation

Table 3-3: Dimensions of angle valve with stainless steel body, PN 40

Valve	DN	25	40	50	80	100	150
L	mm	98	133	133	159	184	236
H1	mm	830	845	845	1017	1108	1101
H4	mm	600	600	600	650	750	750
H5	mm	684	695	695	788	893	887
H7	mm	1050	900	900	900	1100	1100
Ød	mm	282	282	282	282	282	282
Welding ends/ pipe connection		Ø33.7 x 2.3	Ø48.3 x 2.6	Ø60.3 x 3.2	Ø88.9 x 4	Ø114.3 x 5	Ø168.3 x 5.6

Table 3-4: Dimensions of angle valve with stainless steel body, PN 100

Valve	DN	25	40	50	80	100	150
L	mm	98	133	133	159	184	236
H1 ¹⁾	mm	798	798	798	795.5	943	1210
H4 ²⁾	mm	400/600	400/600	400/600	400/600	500/600	550/600
H5 ²⁾	mm	510/710	515/715	515/715	498/698	645/745	649/699
H7	mm	1050	900	900	900	1100	1100
Ød	mm	282	282	282	282	282	282
Welding ends/ pipe connection		Ø33.7 x 3.2	Ø48.3 x 3.6	Ø60.3 x 4	Ø88.9 x 5.6	Ø114.3 x 6.3	Ø168.3 x 7.1

¹⁾ Dimension H1 + 85 mm applies when 1400-120 cm² actuators are used

²⁾ Different overall height possible

Table 3-5: Dimensions of angle valve in stainless steel version with aluminum body, PN 16 to 40¹⁾

Valve	DN	25	40	50	80	100	150
L	mm	98	133	133	159	184	236
H1	mm	825	827	827	1035	1120	1149
H4	mm	600	600	600	700	800	800
H5	mm	679	677	677	807	906	935
H7	mm	1050	900	900	900	1100	1100
Ød	mm	282	282	282	282	282	282
Welding ends/ pipe connection		Ø35 x 3.5	Ø50 x 4	Ø60 x 4	Ø89 x 5	Ø114 x 6	Ø162 x 8

¹⁾ Higher pressure ratings on request

Table 3-6: Weights of Type 3248 Valve without actuator

Valve	DN	25	40	50	80	100	150
Globe valve with stainless steel body, PN 16 to 40							
Weight ¹⁾	kg	16	26	26	55	96	148
Globe valve with stainless steel body, PN 63 and 100							
Weight ¹⁾	kg	17	30	30	59	106	186
Angle valve with stainless steel body, PN 40							
Weight ¹⁾	kg	16.5	27	27	57	98	127
Angle valve with stainless steel body, PN 100							
Weight ¹⁾	kg	18	31	31	61	107	186
Angle valve in stainless steel version with aluminum body, PN 16 to 40							
Weight ¹⁾	kg	18	37	37	²⁾ 68	107	130.5

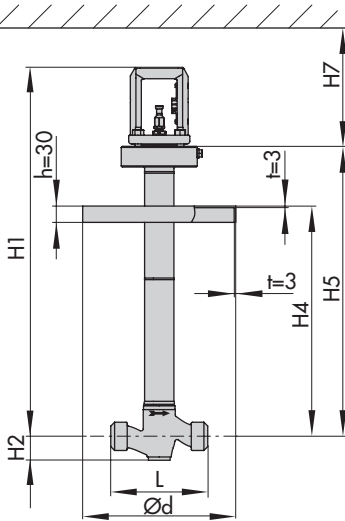
¹⁾ The weights specified apply to a specific standard device configuration. Weights of other valve configurations may differ depending on the version (material, trim etc.).

i Note

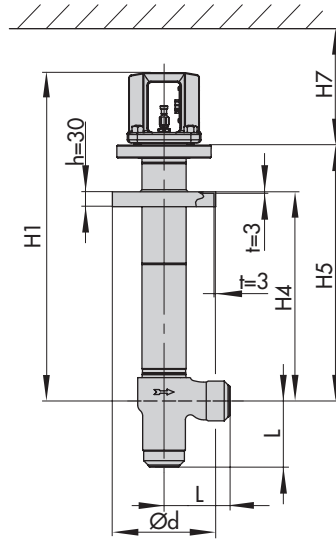
Refer to the following data sheets for dimensions and weights of the SAMSON pneumatic actuators:

- ▶ T 8310-1 for Type 3271 or Type 3277 Pneumatic 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

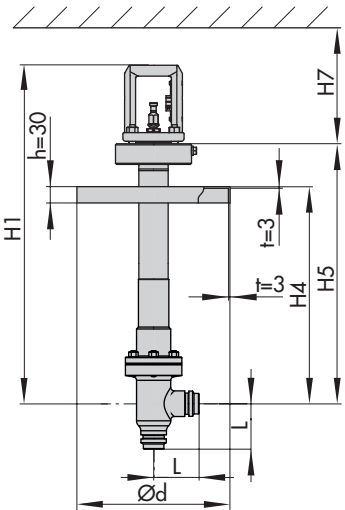
Dimensional drawings



Globe valve with stainless steel body



Angle valve with stainless steel body



Angle valve with aluminum body

4 Shipment and on-site transport

The work described in this chapter is only to be performed 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 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, if required. Refer to the transport documents and the 'Technical data' chapter.

4.2 Removing the packaging from the valve

Observe the following sequence:

- Do not open or remove the packaging until immediately before lifting to install the valve 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 valve's center of gravity.
 - Secure the 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 injury in particular) depending on the weight of the control valve.

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

NOTICE

Risk of valve damage due to incorrectly attached slings.

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

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

Tip

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

In contrast to the lifting eyelet/eyebolt, the swivel hoist is designed for setting a control valve assembly upright.

The sling between the swivel hoist and rigging equipment (hook, shackle etc.) must not bear any load when lifting a control valve assembly. The sling only protects the control valve from tilting while being lifted.

Tip

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

4.3.1 Transporting the valve

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

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

Transport instructions

- Protect the control valve against external influences (e.g. impact).
- Do not damage the corrosion protection (paint, surface coatings). Repair any damage immediately.

- Protect the piping and any mounted valve accessories against damage.
- Protect the control valve against moisture and dirt.
- The permissible transportation temperature of standard control valves is -20 to $+65$ °C.

i Note

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

4.3.2 Lifting the valve

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

Lifting instructions

- Use a hook with safety latch (see Fig. 4-1) to secure the slings from slipping off the hook during lifting and transporting.
- **Angle valves with aluminum bodies:** there are threaded holes in the body in which swivel lifting hooks can be screwed for lifting the control valve.
- Secure slings against slipping.
- Make sure the slings can be removed from the valve 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.

a) Lifting with the actuator mounted

The control valve can be lifted in the horizontal position either using one hook (Fig. 4-1) or using several hooks on a beam (Fig. 4-2).

1. Attach one sling to the valve body, cryogenic extension bonnet and valve bonnet or yoke as well as to the rigging equipment (e.g. hook) of the crane or forklift (see Fig. 4-1).
2. **With beam, DN 100 and larger:** attach additional sling to support the valve at the body.
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 valve into the pipeline (see the 'Installation' chapter).
6. After installation in the pipeline, check whether the welding joints hold and the valve in the pipeline holds.
7. Remove slings.

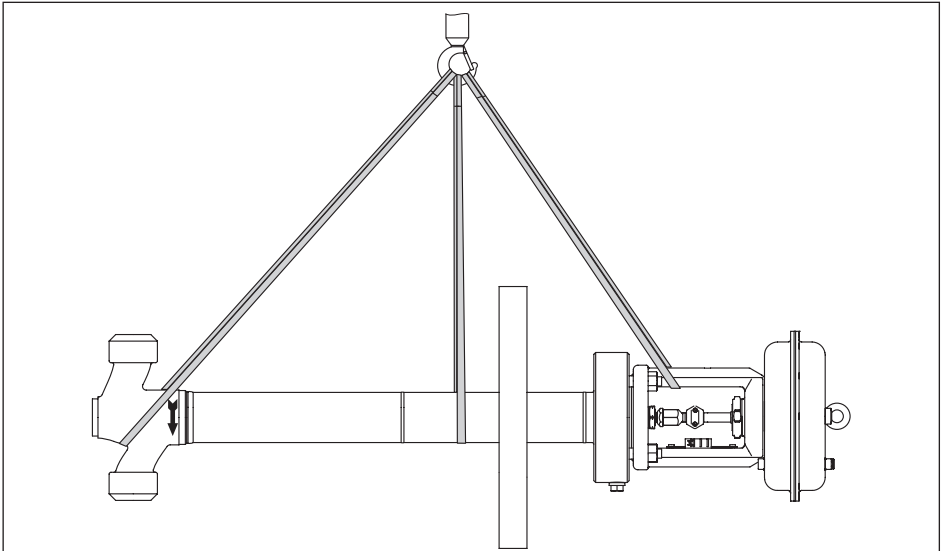


Fig. 4-1: Lifting points on the control valve: lifting in the horizontal position using one hook

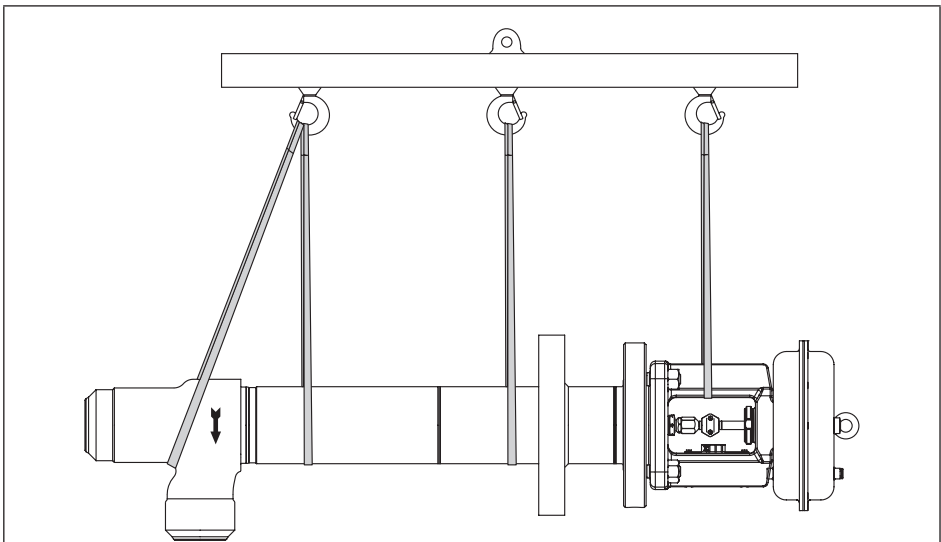
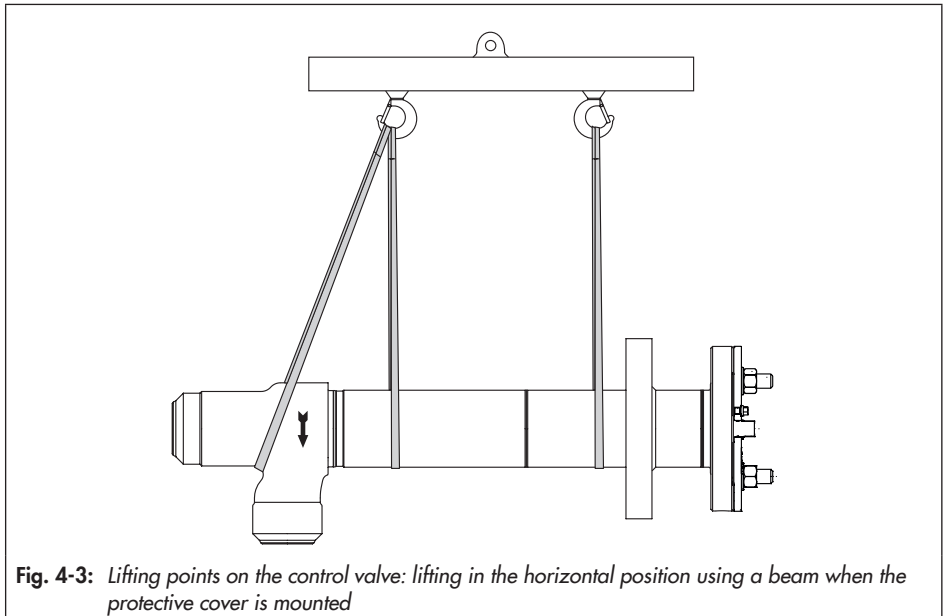


Fig. 4-2: Lifting points on the control valve: lifting in the horizontal position using a beam

b) Lifting with the protective cover mounted

1. Attach two slings to the cryogenic extension bonnet and to the rigging equipment (e.g. hook) of the crane or forklift (see Fig. 4-3).
2. **DN 100 and larger:** attach additional sling to support the valve at the body.
3. Proceed as described in 'Lifting with the actuator mounted', steps 3 to 7.



c) Lifting the control valve with mounted actuator in the upright position

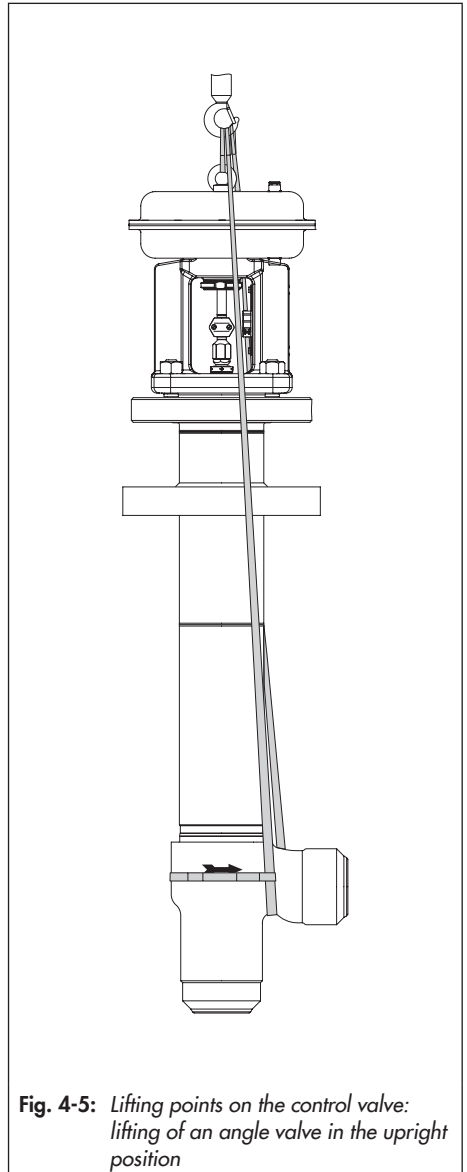
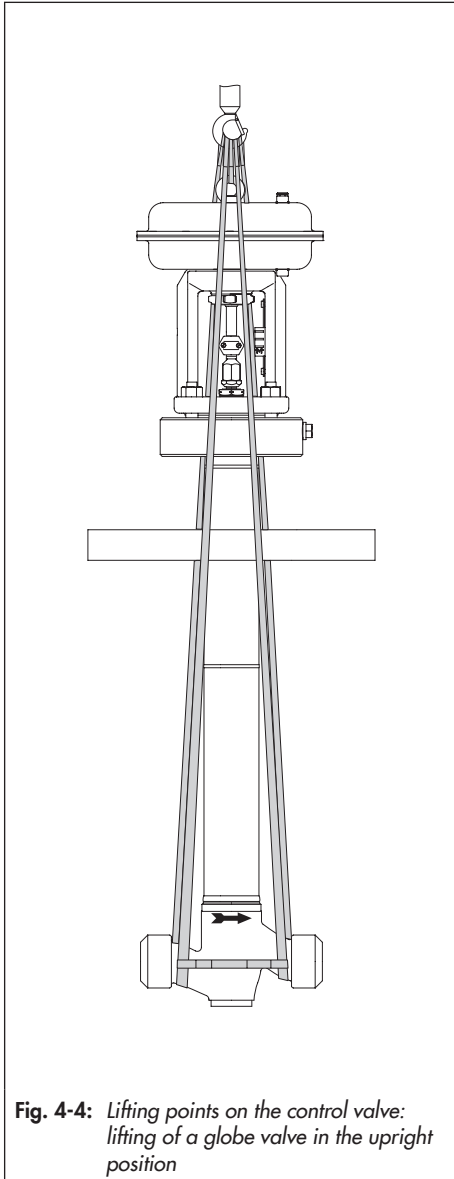
Optionally, the valve can be lifted in the upright position (see Fig. 4-4 and Fig. 4-5).

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

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

For lifting in the upright position, proceed as follows:

1. Attach one sling to each welding end of the body and to the rigging equipment (e.g. hook) of the crane or forklift (see Fig. 4-4 and Fig. 4-5).
2. Secure the slings attached to the body against slipping using a connector.
3. **700 cm² actuator area and larger:** attach another sling 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 valve into the pipeline (see the 'Installation' chapter).
7. After installation in the pipeline, check whether the welding joints hold and the valve in the pipeline holds.
8. Remove connectors and slings.



4.4 Storing the valve

NOTICE

Risk of valve damage due to improper storage.

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

Note

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

Storage instructions

- Protect the control valve against external influences (e.g. impact).
- Secure the valve in the stored position against slipping or tipping over.
- Do not damage the corrosion protection (paint, surface coatings). Repair any damage immediately.
- Protect the control valve against moisture and dirt. Store it at a relative humidity of less than 75 %. In damp spaces, prevent condensation. If necessary, use a drying agent or heating.
- Make sure that the ambient air is free of acids or other corrosive media.
- The permissible storage temperature of standard control valves is -20 to $+65$ °C. Contact our after-sales service for the

storage temperatures of other valve versions.

- Do not place any objects on the control valve.
- For storage periods longer than 4 months, we recommend storing the valves in sizes \geq DN 150 upright with the actuator on top.

Special storage instructions for elastomers

Elastomer, e.g. actuator diaphragm

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

Tip

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

5 Installation

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

5.1 Installation conditions

Work position

The work position for the control valve is the front view looking onto the operating controls (including valve accessories).

Plant operators must ensure that, after installation of the device, the operating personnel

can perform all necessary work safely and easily access the device from the work position.

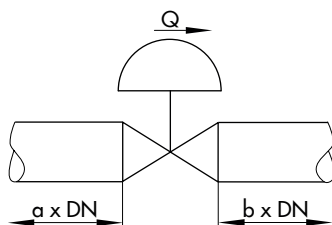
Pipeline routing

The inlet and outlet lengths (see Table 5-1) vary depending on several variables and process conditions and are intended as recommendations. Contact SAMSON if the lengths are significantly shorter than the recommended lengths.

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

Table 5-1: *Inlet and outlet lengths*

State of process medium	Valve conditions	Inlet length a	Outlet length b
Gas	$Ma \leq 0.3$	2	4
	$0.3 \leq Ma \leq 0.7$	2	10
Liquid	Free of cavitation/ $w < 10$ m/s	2	4
	Cavitation producing noise/ $w \leq 3$ m/s	2	4
	Cavitation producing noise/ $3 < w < 5$ m/s	2	10
	Critical cavitation/ $w \leq 3$ m/s	2	10
	Critical cavitation/ $3 < w < 5$ m/s	2	20
Flashing	–	2	20



Q Flow rate
a Inlet length
b Outlet length

Installation

- Observe the recommended inlet and outlet lengths (see Table 5-1). Contact SAMSON if the valve conditions or states of the medium process deviate.
- Install the valve free of stress and with the least amount of vibrations as possible. Read information under 'Mounting position' and 'Support or suspension' in this chapter.
- Install the valve allowing sufficient space to remove the actuator and valve or to perform service and repair work on them.

Mounting position

We recommend mounting the valve at an angle between 15 and 25° to the horizontal plane.

- Contact SAMSON if the mounting position is not as specified above.

Support or suspension

i Note

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

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

- For versions with side-mounted hand-wheel which are installed at an angle of <45° to the horizontal plane, the control valve **must** be supported or suspended:

- Avoid supporting or suspending in the area around bellows nut (41).

Valve accessories

- 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, valve size, material, pressure rating and temperature range) match the plant conditions (size and pressure rating of the pipeline, medium temperature etc.). See the 'Markings on the device' chapter for nameplate details.

- The requested or required additional pipe fittings (see 'Additional fittings' in the 'Design and principle of operation' chapter) have been installed or prepared as necessary before installing the valve.

! NOTICE
Risk of control valve damage due to incorrect insulation.

The insulation will not have any effect if it is fitted incorrectly.

- Control valves with cover plates can be insulated up to the cover plate.
 - Control valves without cover plates must only be insulated up to the bonnet flange of the body.
-

Proceed as follows:

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

i Note

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

- For steam applications, dry the pipelines. Moisture will damage the inside of the valve.
- Check any mounted pressure gauges to make sure they function properly.
- When the valve and actuator are already assembled, check the tightening torques of the bolted joints (▶ AB 0100).

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 valve damage due to excessively high or low tightening torques.

Observe the specified torques when tightening control valve components. Excessive tightening torques lead to parts wearing out more quickly. Parts that are too loose may cause leakage.

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

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

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

5.3.1 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.

! NOTICE

Premature wear and leakage due to insufficient support or suspension.

→ Support or suspend the valve sufficiently at suitable points.

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 information under 'Lifting the valve' in the 'Shipment and on-site transport' chapter). 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.

With mounted protective cover: turn the adjustment bolt (95.2) clockwise.

With mounted actuator, "stem extends" direction of action: apply a signal pressure to the actuator.

With mounted actuator, "stem retracts" direction of action: the valve is open without any signal pressure being applied.

6. Weld the valve free of stress into the pipeline.
7. Attach a support or suspension on the valve, if necessary.

5.3.2 Removing the protective cover

To keep the overall height of valves for cold-box applications during transportation, the actuator and valve body can be removed from the body (cryogenic extension bonnet). In this case, the plug stem with bellows seal (37) is secured by a protective cover. The valve can be installed into the pipeline with the protective cover still mounted. The protective cover can remain mounted on the valve also during a pressure test (see Chapter 5.4.4).

Upon delivery with the protective cover, the valve is open: the thread of the plug stem

with bellows seal (37) is completely screwed into the adjustment bolt (95.2).

Moving the plug stem

- ➔ To close the valve, turn the adjustment bolt (95.2) counterclockwise.
- ➔ To open the valve, turn the adjustment bolt (95.2) clockwise.



Tip

A plate on the protective cover indicates the turning direction (see Fig. 5-1).

Removing the protective cover

1. Remove nuts (33) and washers (95.9).
2. Turn the adjustment bolt (95.2) counterclockwise. The plug is lowered and the protective cover is lifted off the body.
3. As soon as the end of the thread is reached, remove the protective cover from the body.

i Note

The nuts (33) are required to mount the valve bonnet. The washers (95.9) are no longer required.

Mounting the valve bonnet

i Note

For PN 63 and 100 versions, mount the valve bonnet (2) together with the yoke (3).

1. Insert a new gasket (17) into the body (1).

2. Carefully place the valve bonnet (2) together with the spacer stem (71) on the valve body (1). Place the spacer stem over the thread of the plug stem (37) and tighten by hand. Make sure that the position of the stem connector nut (9) and lock nut (10) on the spacer stem is not changed.
3. Fasten the valve bonnet (2) using the nuts (33) and bolts (32). Gradually tighten the nuts in a crisscross pattern. Observe tightening torques.
4. Tighten the spacer stem (71) and plug stem (37) over the stem connector nut (9). Observe tightening torques.
5. Mount the actuator. See Chapter 5.3.3.
6. In case the position of the stem connector nut and lock nut has been changed during mounting (step 2): adjust lower or upper signal bench range. See associated actuator documentation.

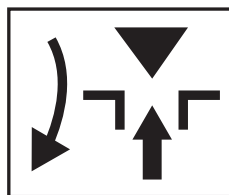
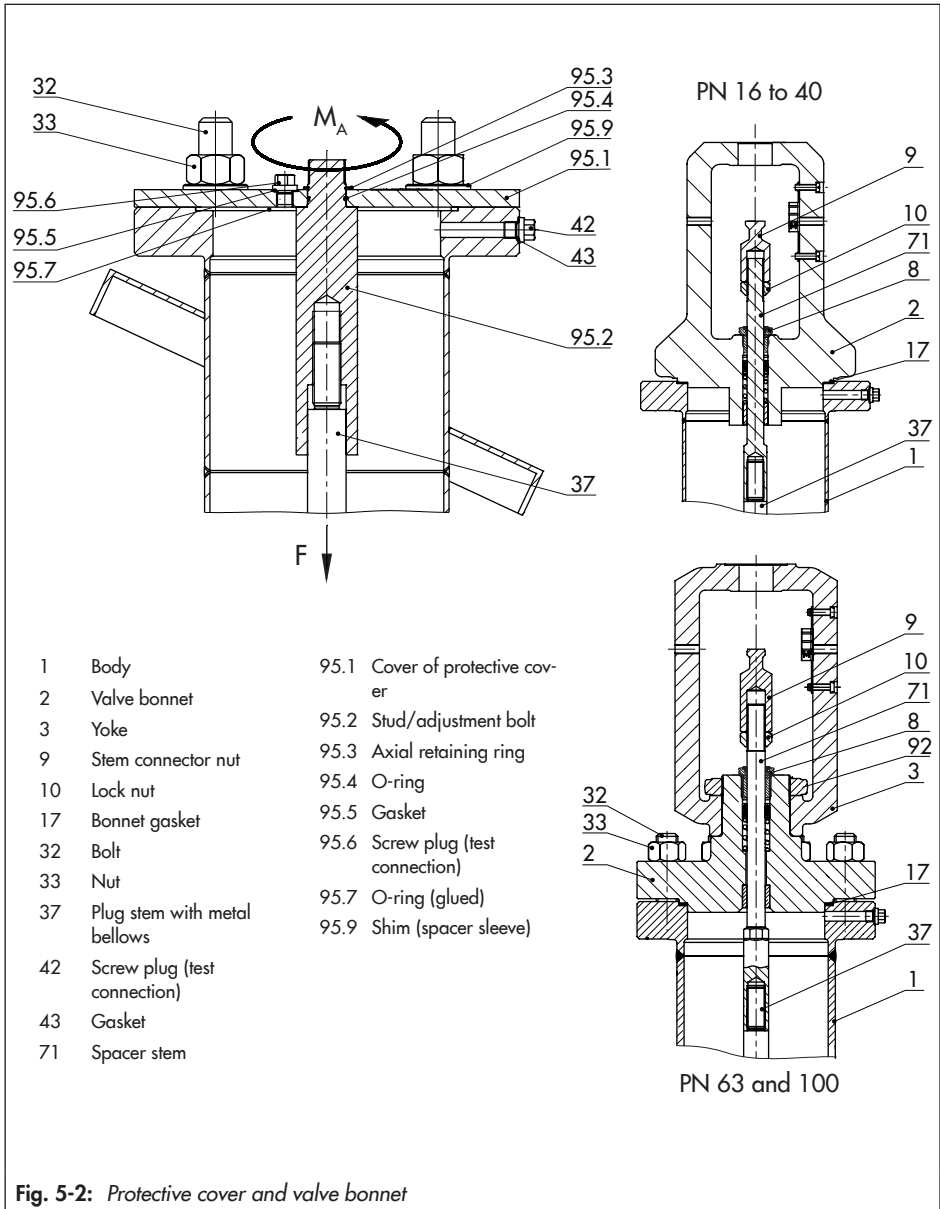


Fig. 5-1: Plate indicating the turning direction of the adjustment bolt



5.3.3 Mounting the actuator onto the valve

⚠ WARNING

Risk of personal injury due to preloaded springs.

Actuators with preloaded springs are under tension. They can be identified by the long bolts protruding from the bottom of the actuator.

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

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.

If a protective cover is mounted, first remove it and mount the valve bonnet (see Chapter 5.3.2).

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. 5-3).

→ 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:

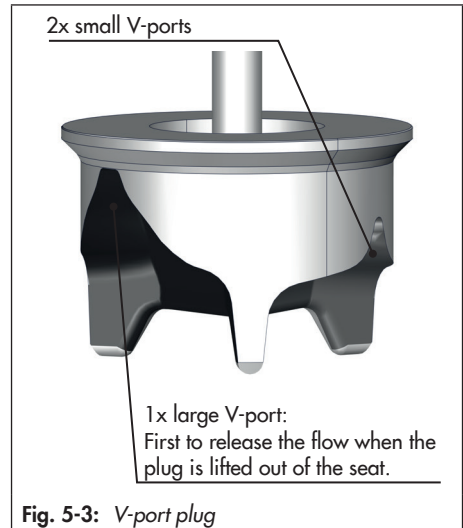


Fig. 5-3: V-port plug

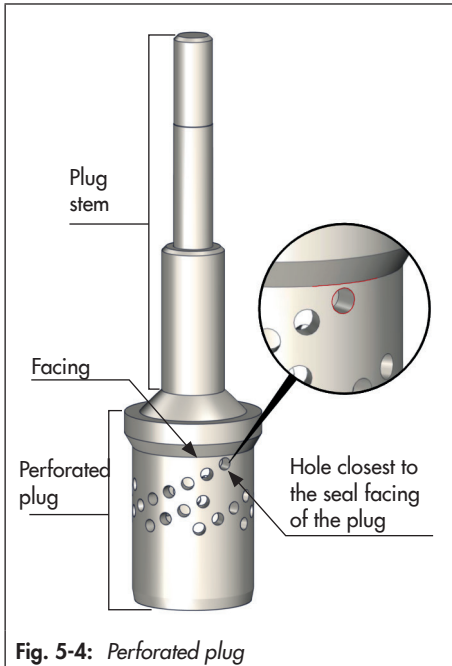
Versions with perforated plug

Only one hole is located near the seal facing of perforated plugs with equal percentage characteristic. Depending on the valve 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. 5-4).

→ Before mounting the actuator, check the hole pattern of the perforated plug and determine which hole is the closest to the facing and is uncovered first when the

plug is lifted out of the seat. It is first 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:



Mounting the actuator

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

5.4 Testing the installed valve

⚠ DANGER

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

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 working on the control valve:

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

⚠ WARNING

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

- Do not loosen the screw of 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 ac-

cessories not fitted with noise-reducing fittings. Both can damage hearing.

- Wear hearing protection when working near the valve.

WARNING

Crush hazard arising from actuator and plug stem moving.

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

While the valve is operating, air is vented from the actuator, for example, during closed-loop operation or when the valve opens or closes.

- Wear eye protection when working in close proximity to the control valve.

WARNING

Risk of personal injury due to preloaded springs.

Actuators with preloaded springs are under tension. They can be identified by the long bolts protruding from the bottom of the actuator.

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

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

5.4.1 Leak test

The plant operator is responsible for performing the leak test and selecting the test method. The leak test must comply with the requirements of the national and international standards that apply at the site of installation.

Tip

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.

Installation

5. Check the valve for leakage to the atmosphere.
6. Depressurize the pipeline section and valve.
7. Rework any parts that leak and repeat the leak test.

5.4.2 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.

5.4.3 Fail-safe position

- Shut off the signal pressure line.
- Check whether the valve moves to the fail-safe position (see the 'Design and principle of operation' chapter).

5.4.4 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:

- Observe the maximum permissible pressure for both the valve and plant.

Pressure test with mounted actuator

1. Retract the plug stem to open the valve.
2. Perform the pressure test.

Pressure test with mounted protective cover

With a mounted protective cover, perform the test pressure with an open valve as well as with a closed valve.

1. To open the valve, turn the adjustment bolt (95.2) clockwise.
2. Perform the pressure test.
3. To close the valve, turn the adjustment bolt (95.2) counterclockwise.
4. Perform the pressure test.

6 Start-up

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

⚠ WARNING

Risk of burn injuries due to cold components and pipelines.

Depending on the process medium, valve components and pipelines may get extremely cold and cause cryogenic burns.

- Wear protective clothing and safety gloves.

⚠ WARNING

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

- Do not loosen the screw of 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 fittings. Both can damage hearing.

- Wear hearing protection when working near the valve.

⚠ WARNING

Crush hazard arising from actuator and plug stem moving.

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

While the valve is operating, air is vented from the actuator, for example, during closed-loop operation or when the valve opens or closes.

- Wear eye protection when working in close proximity to the control valve.

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

- The valve is properly installed into the pipeline (see the 'Installation' chapter).

Start-up

- The leak and function tests have been completed successfully (see 'Testing the installed valve' in the 'Installation' chapter).
- The prevailing conditions in the plant section concerned meet the valve sizing requirements (see information under 'Intended use' in the 'Safety instructions and measures' chapter).

Start-up/putting the valve back into operation

1. Allow the valve to cool down or warm up to reach ambient temperature before start-up when the ambient temperature and process medium temperature differ greatly or the medium properties require such a measure.
2. Slowly open the shut-off valves in the pipeline. Slowly opening these valves prevents a sudden surge in pressure and high flow velocities which can damage the valve.
3. Check the valve to ensure it functions properly.

7 Operation

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

⚠ WARNING

Risk of burn injuries due to cold components and pipelines.

Depending on the process medium, valve components and pipelines may get extremely cold and cause cryogenic burns.

- Wear protective clothing and safety gloves.

⚠ WARNING

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

- Do not loosen the screw of 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 fittings. Both can damage hearing.

- Wear hearing protection when working near the valve.

⚠ WARNING

Crush hazard arising from actuator and plug stem moving.

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

While the valve is operating, air is vented from the actuator, for example, during closed-loop operation or when the valve opens or closes.

- Wear eye protection when working in close proximity to the control valve.

Operation

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 case of supply air failure.

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 and plug stem does not move on demand.	Actuator is blocked.	Put the control valve out of operation (see the 'Decommissioning' chapter) 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.
	Diaphragm in the actuator defective	See associated actuator documentation.
	Signal pressure too low	Check the signal pressure. Check the signal pressure line for leakage.
Actuator and plug stem does not stroke through the full range.	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, particularly with soft seat, is worn.	Contact our after-sales service.

Malfunctions

Malfunction	Possible reasons	Recommended action
The valve leaks to the atmosphere (fugitive emissions).	Defective packing	Contact our after-sales service.
	Defective bellows seal	Contact our after-sales service.
	Flanged joint loose or gasket worn out	Check the flanged joint. Replace gasket at the flanged joint (see the 'Servicing' chapter) or contact our after-sales service.
Icing up of the packing chamber.	Defective bellows seal	Contact our after-sales service.

i 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.

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 the 'Start-up' chapter.

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 valve:

- Mounting and operating instructions for the mounted actuator, e.g. ► EB 8310-X for Type 3271 or Type 3277 Pneumatic Actuator
- ► AB 0100 for tools, tightening torques and lubricant

! DANGER

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

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 working on the control valve:

- 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 cold components and pipelines.

Depending on the process medium, valve components and pipelines may get extremely cold and cause cryogenic burns.

- Allow components and pipelines to reach ambient temperature.
- Wear protective clothing and safety gloves.

! WARNING

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

- Do not loosen the screw of 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 fittings. Both can damage hearing.

- Wear hearing protection when working near the valve.

! WARNING

Crush hazard arising from actuator and plug stem moving.

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

Servicing

- 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.

While the valve is operating, air is vented from the actuator, e.g. during closed-loop operation or when the valve opens or closes.

- Wear eye protection when working in close proximity to the control valve.

WARNING

Risk of personal injury due to preloaded springs.

Actuators with preloaded springs are under tension. They can be identified by the long bolts protruding from the bottom of the actuator.

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

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.

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

NOTICE

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

Observe the specified torques when tightening control valve components. Excessive tightening torques lead to parts wearing out more quickly. Parts that are too loose may cause leakage.

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

NOTICE

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

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

NOTICE

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

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

i Note

The control valve was checked by SAMSON before 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 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.

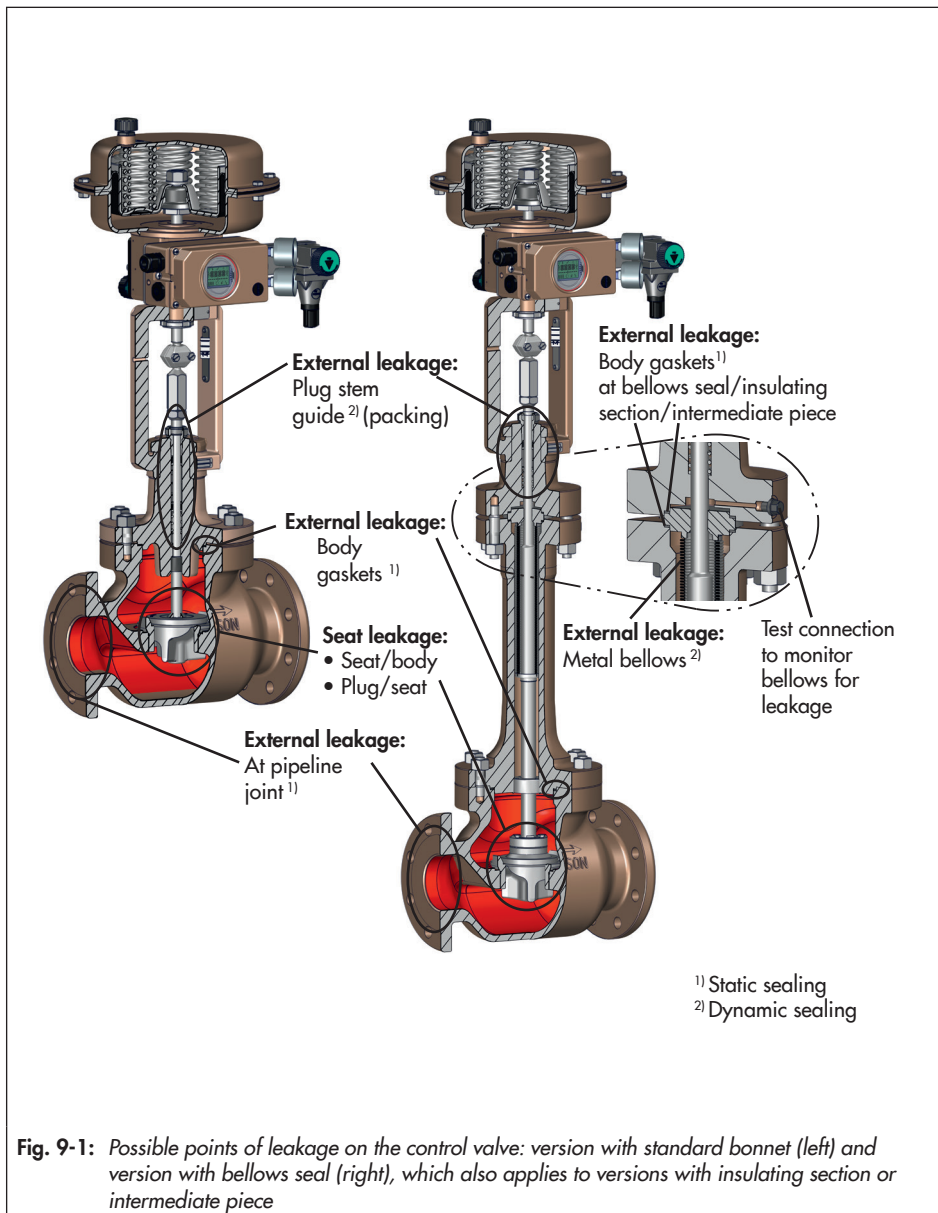
SAMSON recommends the following inspections and tests:

Inspection and testing	Recommended action to be taken in the event of a negative result
Check the markings, labels and nameplates on the 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.
Check the 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 (see the 'Decommissioning' chapter).
Check the valve accessories to ensure they are mounted properly.	Tighten the connections of the valve accessories.
Seat leakage ¹⁾ (see Fig. 9-1) (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.

Inspection and testing	Recommended action to be taken in the event of a negative result
<p>External leakage (fugitive emissions)¹⁾: Inspect the control valve at the possible points of leakage to ensure there is no leakage (see Fig. 9-1).</p> <p>WARNING! Risk of personal injury due to pressurized components and as a result of process medium being discharged.</p> <p>Do not loosen the screw of the test connection while the valve is pressurized.</p>	<p>Check the bolted joint (tightening torque).</p> <p>Replace the gasket on the flanged joint. For this purpose, put the control valve out of operation (see the 'Decommissioning' chapter).</p> <p>Replace the packing. For this purpose, put the control valve out of operation (see the 'Decommissioning' chapter).</p> <p>If the bellows seal is defective, put the control valve out of operation (see the 'Decommissioning' chapter). To repair the bellows seal, contact our after-sales service (see the 'Repairs' chapter).</p>
<p>Check to ensure that the actuator and plug stem move smoothly.</p>	<p>If the actuator and plug stem is blocked, put the control valve out of operation (see the 'Decommissioning' chapter) and remove the blockage.</p> <p>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.</p> <p>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.</p> <p>SAMSON recommends the use of positioners with integrated diagnostic firmware for valves used for on/off service. The partial stroke test included in this software helps prevent a shut-off valve normally in its end position from seizing up or getting jammed.</p>
<p>If possible, check the valve's fail-safe position by briefly interrupting the air supply.</p>	<p>Put the control valve out of operation (see the 'Decommissioning' chapter). Identify the cause for the malfunction and rectify it (see the 'Troubleshooting' chapter).</p>

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 the 'Markings on the device' chapter



9.2 Service work preparations

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

Note

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

Tip

Provided the valve installation conditions permit it, the valve can remain installed in the pipeline during service work. If this is not the case, SAMSON recommends removing the valve from the pipeline before performing such work (see the 'Removal' chapter).

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

- Replace the gasket (see Chapter 9.4.1)
- Replace the packing (see Chapter 9.4.2)

9.3 Installing the valve after service work

1. Mount actuator. See associated actuator documentation and the 'Installation' chapter.
2. Adjust lower or upper signal bench range. See associated actuator documentation.
3. If the valve has been removed, re-install the valve into the pipeline (see the 'Installation' chapter).
4. Put the control valve back into operation (see the 'Start-up' chapter). Observe the requirements and conditions for start-up or putting the valve 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 section 'Testing the installed valve' in the 'Installation' chapter).

9.4.1 Replacing the gasket

a) Globe or angle valve, PN 16 to 40

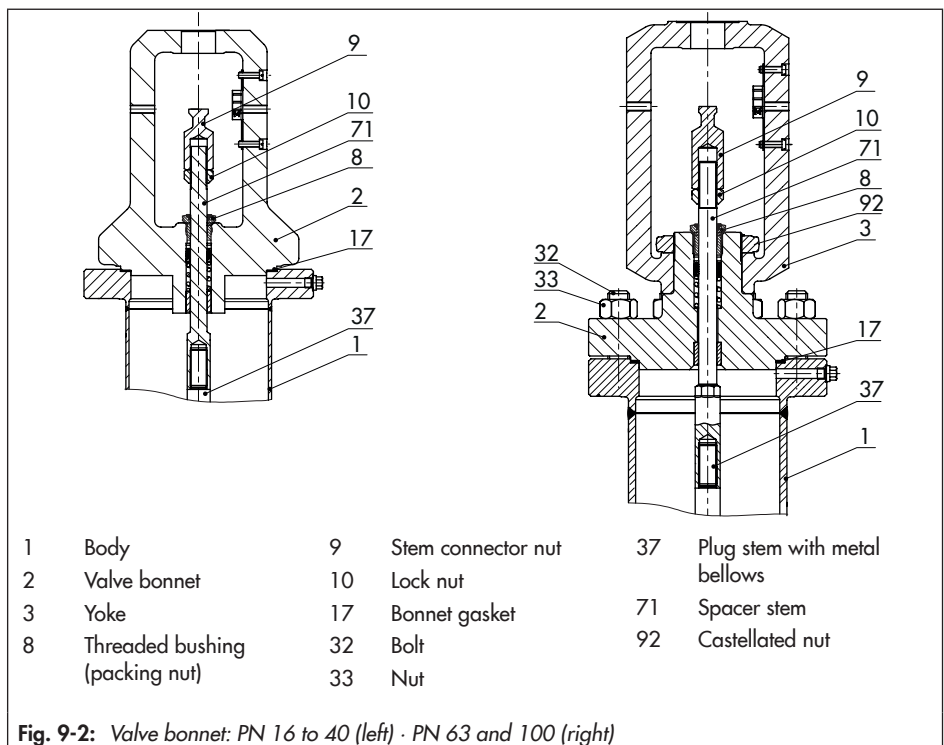
1. Undo the nuts (33) gradually in a criss-cross pattern. Remove the nuts and bolts (32).
2. Carefully lift the valve bonnet (2) off the valve body (1) over the spacer stem (71).
3. Remove the gasket (17). Carefully clean the sealing faces in the valve bonnet (2) and on the body (1).

4. Insert a new gasket (17) into the body (1).
5. Carefully place the valve bonnet (2) on the valve body (1) over the spacer stem (71).

The following points must be observed:

Version with V-port plug: align the plug (5), making sure that the largest V-shaped part of the V-port plug faces toward the valve outlet.

Versions with perforated plug: align the plug (5), making sure that the hole closes



est to the seal facing of the plug faces toward the valve outlet.

See relevant section 'Mounting the actuator onto the valve' in the 'Installation' chapter.

6. Fasten the valve bonnet (2) using the nuts (33) and bolts (32). Gradually tighten the nuts in a crisscross pattern. Observe tightening torques.

b) Globe or angle valve, PN 63 and 100

1. Unthread the stem connector nut (9) and lock nut (10) from the spacer stem (71).
2. Loosen the threaded bushing (8) to relieve the tension from the packing.

i Note

The threaded bushing does not need to be completely unscrewed to replace the gasket.

3. Undo the nuts (33) gradually in a crisscross pattern. Remove the nuts and bolts (32).
4. Carefully lift the valve bonnet (2) together with the yoke (3) off the valve body (1) and the spacer stem (71).
5. Remove the gasket (17). Carefully clean the sealing faces in the valve bonnet (2) and on the body (1).
6. Insert a new gasket (17) into the body (1).
7. Carefully place the valve bonnet (2) together with the yoke (3) on the valve body (1) over the spacer stem (71).

The following points must be observed:

Version with V-port plug: align the plug (5), making sure that the largest V-shaped port of the V-port plug faces toward the valve outlet.

Versions with perforated plug: align the plug (5), making sure that the hole closest to the seal facing of the plug faces toward the valve outlet.

See relevant section 'Mounting the actuator onto the valve' in the 'Installation' chapter.

8. Fasten the valve bonnet (2) using the nuts (33) and bolts (32). Gradually tighten the nuts in a crisscross pattern. Observe tightening torques.
9. Tighten the threaded bushing (8). Observe tightening torques.
10. Loosely screw the lock nut (10) and stem connector nut (9) onto the spacer stem (71).

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 \leq DN 150.
 - The standard or form D (for oxygen) packing is installed in the valve.
- To replace the packing in other valve versions, contact our after-sales service.

a) Globe or angle valve, PN 16 to 40

1. Unthread the stem connector nut (9) and lock nut (10) from the spacer stem (71).
2. Unscrew the threaded bushing (8).
3. Undo the nuts (33) gradually in a crisscross pattern. Remove the nuts and bolts (32).
4. Carefully lift the valve bonnet (2) over the spacer stem (71).
5. Pull the entire packing out of the packing chamber using a suitable tool.
6. Renew the damaged parts and carefully clean the packing chamber.
7. Replace the gasket (see Chapter 9.4.1)
8. Apply a suitable lubricant to all the packing parts.
9. Carefully slide the packing parts over the spacer stem (71) into the packing cham-

ber using a suitable tool. Observe the proper sequence (see Fig. 9-3).

10. Carefully place the valve bonnet (2) on the valve body (1) over the spacer stem (71).

The following points must be observed:

Version with V-port plug: align the plug (5), making sure that the largest V-shaped part of the V-port plug faces toward the valve outlet.

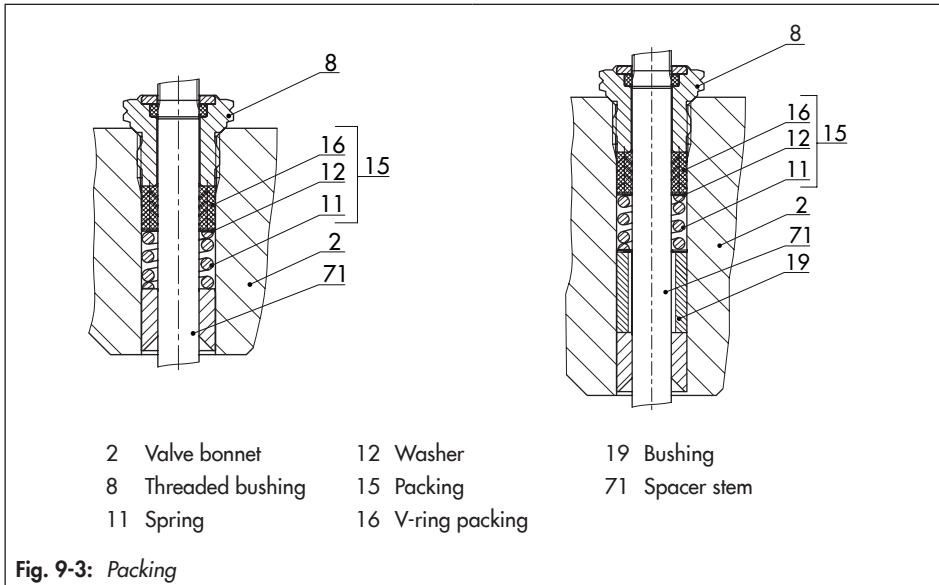
Versions with perforated plug: align the plug (5), making sure that the hole closest to the seal facing of the plug faces toward the valve outlet.

See relevant section 'Mounting the actuator onto the valve' in the 'Installation' chapter.

11. Fasten the valve bonnet (2) using the nuts (33) and bolts (32). Gradually tighten the nuts in a crisscross pattern. Observe tightening torques.
12. Screw in the threaded bushing (8) and tighten it. Observe tightening torques.
13. Loosely screw the lock nut (10) and stem connector nut (9) onto the spacer stem (71).

b) Globe or angle valve, PN 63 and 100

1. Unscrew the castellated nut (92) and lift the yoke (3) off the valve bonnet (2).
2. Unthread the stem connector nut (9) and lock nut (10) from the spacer stem (71).
3. Unscrew the threaded bushing (8).



4. Pull the entire packing out of the packing chamber using a suitable tool.
5. Renew the damaged parts and carefully clean the packing chamber.
6. Apply a suitable lubricant to all the packing parts.
7. Carefully slide the packing parts over the spacer stem (71) into the packing chamber using a suitable tool. Observe the proper sequence (see Fig. 9-3).
8. Screw in the threaded bushing (8) and tighten it. Observe tightening torques.
9. Place yoke (3) on the valve bonnet (2) and fasten using the castellated nut (92).
10. Loosely screw the lock nut (10) and stem connector nut (9) onto the plug stem (5).

9.4.3 Replacing the seat and plug

⚠ NOTICE

Risk of control valve damage due to incorrect servicing.

→ To replace seat and plug in the Type 3248 Valve, contact our after-sales service.

Tools

See document ► AB 0100 for details on suitable tools.

9.4.4 Replacing the bellows seal

⚠ NOTICE

Risk of control valve damage due to incorrect servicing.

→ To replace the bellows seal in the Type 3248 Valve, contact our after-sales service.

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.

10 Decommissioning

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

⚠ DANGER

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

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 working on the control valve:

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

⚠ WARNING

Risk of burn injuries due to cold components and pipelines.

Depending on the process medium, valve components and pipelines may get extremely cold and cause cryogenic burns.

- Wear protective clothing and safety gloves.

⚠ WARNING

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

- Do not loosen the screw of 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 fittings. Both can damage hearing.

- Wear hearing protection when working near the valve.

⚠ WARNING

Crush hazard arising from actuator and plug stem moving.

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

Decommissioning

(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.

While the valve is operating, air is vented from the actuator, for example, during closed-loop operation or when the valve opens or closes.

→ Wear eye protection when working in close proximity to the control valve.

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.

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

To decommission the control valve 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 warm up.

11 Removal

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

⚠ WARNING

Risk of burn injuries due to cold components and pipelines.

Depending on the process medium, valve components and pipelines may get extremely cold and cause cryogenic burns.

- Allow components and pipelines to reach ambient temperature.
- Wear protective clothing and safety gloves.

⚠ WARNING

Crush hazard arising from actuator and plug stem moving.

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

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

⚠ WARNING

Risk of personal injury due to preloaded springs.

Actuators with preloaded springs are under tension. They can be identified by the long bolts protruding from the bottom of the actuator.

- Before starting any work on the actuator, relieve the compression from the preloaded springs.

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

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

11.1 Removing the valve from the pipeline

1. Support the valve to hold it in place when separated from the pipeline (see the 'Shipment and on-site transport' chapter).
2. Cut the pipeline in front of the weld seam.

Removal

3. Remove the valve from the pipeline (see the 'Shipment and on-site transport' chapter).

11.2 Removing the actuator from the valve

See associated actuator documentation.

12 Repairs

If the 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 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.
2. Send an e-mail ▶ retouren@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 our website at
 - ▶ www.samsongroup.com > Service > After-sales Service.

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.

i 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 at the following European institution
▶ <https://www.ewrn.org/national-registers/national-registers>.
WEEE reg. no.: DE 62194439/
FR 02566

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

i Note

We can provide you with a recycling passport according to PAS 1049 on request. Simply e-mail us at offersaleservice@samsongroup.com giving details of your company address.

💡 Tip

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

14 Certificates

These declarations are included on the next pages:

- Declaration of conformity in compliance with Pressure Equipment Directive 2014/68/EU on page 14-2
- Declaration of conformity in compliance with Machinery Directive 2006/42/EC for Types 3248-1 and 3248-7 Control Valves on page 14-3
- Declaration of incorporation in compliance with Machinery Directive 2006/42/EC for the Type 3248 Valve with other actuators other than Types 3271 and 3277 Actuators on page 14-4
- Declaration of conformity in compliance with the 2016 Regulations No. 1105 Pressure Equipment (Safety) Regulations 2016, see page 14-5
- Declaration of conformity in compliance with the 2008 Regulations No. 1597 Supply of Machinery (Safety) Regulations 2008:
 - Final machinery, see page 14-6
 - Partly completed machinery, see page 14-7

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* > *3248*

Other optional certificates are available on request.

EU DECLARATION OF CONFORMITY TRANSLATION



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

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

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

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

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

Directive of the European Parliament and of the Council on the harmonization of the laws of the Member States relating to the making available on the market of pressure equipment	2014/68/EU	of 15 May 2014
Applied conformity assessment procedure for fluids according to Article 4(1)	Module H	Certificate No.: N°CE-0062-PED-H-SAM 001-22-DEU-rev-A by Bureau Veritas 0062

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

Bureau Veritas Services SAS, 8 Cours du Triangle, 92800 PUTEAUX – LA DEFENSE

Applied harmonised standards and technical specifications: EN 12516-2, EN 12516-3, EN 12266-1, ASME B16.34

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

Frankfurt am Main, November 21, 2023


Dr. Andreas Wild
Chief Executive Officer (CEO)


Dr. Thomas Steckenreiter
Chief Technology Officer (CTO)

Revision 11

Classification: Public · SAMSON AKTIENGESELLSCHAFT · Weismüllerstrasse 3 · 60314 Frankfurt am Main, Germany

Page 1 of 1

EU DECLARATION OF CONFORMITY TRANSLATION



Declaration of Conformity of Final Machinery

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

For the following products:

Types 3248-1/-7 Pneumatic Control Valves consisting of the Type 3248 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 3248 Valve (DIN): Mounting and Operating Instructions EB 8093
- Type 3248 Valve (ANSI): Mounting and Operating Instructions EB 8093-1
- Types 3271 and 3277 Actuators: Mounting and Operating Instructions EB 8310-X

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

Referenced technical standards and/or specifications:

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

Comment:

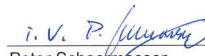
Information on residual risks of the machinery can be found in the mounting and operating instructions of the valve and actuator as well as in the referenced documents listed in the mounting and operating instructions.

Persons authorized to compile the technical file:

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



Thorsten Muth
Senior Director
Sales and After-sales



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

Revision no. 00

Classification: Public · SAMSON AKTIENGESELLSCHAFT · Weismüllerstraße 3 · 60314 Frankfurt, Germany

Page 1 of 1

DECLARATION OF INCORPORATION TRANSLATION



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

For the following products:

Type 3248 Pneumatic Control Valve

We certify that the Type 3248 Pneumatic Control Valves are partly completed machinery as defined in the Machinery Directive 2006/42/EC and that the safety requirements stipulated in Annex I, 1.1.2, 1.1.3, 1.1.5, 1.3.2, 1.3.4 and 1.3.7 are observed. The relevant technical documentation described in Annex VII, part B has been compiled.

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

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

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

For product descriptions of the valve, refer to:

- Type 3248 Valve (DIN): Mounting and Operating Instructions EB 8093
- Type 3248 Valve (ANSI): Mounting and Operating Instructions EB 8093-1

Referenced technical standards and/or specifications:

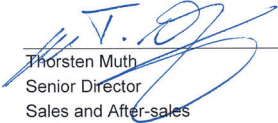
- VCI, VDMA, VGB: Leitfaden Maschinenrichtlinie (2006/42/EG) – Bedeutung für Armaturen, May 2018 [German only]
- VCI, VDMA, VGB: Zusatzdokument zum „Leitfaden Maschinenrichtlinie (2006/42/EG) – Bedeutung für Armaturen“ vom Mai 2018 [German only], based on DIN EN ISO 12100:2011-03

Comments:

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

Persons authorized to compile the technical file:

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



Thorsten Muth
Senior Director
Sales and After-sales



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

Revision no. 00



UK DECLARATION OF CONFORMITY
ORIGINAL



The Pressure Equipment (Safety) Regulations 2016 Module H / N° CE-0062-PED-H-SAM 001-22-DEU

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

Devices	Series	Type	Version
Globe valve	240	3241	EN, body of gray cast iron from DN 150, body of spheroidal-graphite iron, from DN 100, fluids G2, L1, L2 ¹⁾ EN/ANSI, body of steel, etc., all fluids
Three-way valve	240	3244	EN, body of gray cast iron from DN 150, body of spheroidal-graphite iron, from DN 100, fluids G2, L1, L2 ¹⁾ EN/ANSI, body of steel, etc., all fluids
Cryogenic valve	240	3248	EN/ANSI, all fluids
Globe valve	250	3251	EN/ANSI, all fluids
Globe valve	250	3251-E	EN/ANSI, all fluids
Three-way valve	250	3253	EN/ANSI, body of steel, etc., all fluids
Globe valve	250	3254	EN/ANSI, all fluids
Angle valve	250	3256	EN/ANSI, all fluids
Split-body valve	250	3258	EN, all fluids
Angle valve (IG standards)	250	3259	EN, all fluids
Steam-converting valve	280	3281	EN/ANSI, all fluids
		3284	EN/ANSI, all fluids
		3286	EN/ANSI, all fluids
		3288	EN, all fluids
Globe valve	V2001	3321	EN, body of steel, etc., all fluids ANSI, all fluids
Three-way valve	V2001	3323	EN, body of steel, etc., all fluids ANSI, all fluids
Angle seat valve	---	3353	EN, body of steel, etc., all fluids
Silencer	3381	3381-1	EN/ANSI, single attenuation plate with welding ends, all fluids
		3381-3	EN/ANSI, all fluids
		3381-4	EN/ANSI, single attenuation plate multi-stage with welding ends, all fluids
Globe valve	240	3241	ANSI, body of gray cast iron, Class 125, from NPS 5, fluids G2, L1, L2 ¹⁾
Cryogenic valve	240	3246	EN/ANSI, all fluids
Three-way valve	250	3253	EN, body of gray cast iron from DN200 PN16, fluids G2, L1, L2 ¹⁾
Globe valve	290	3291	ANSI, all fluids
Angle valve	290	3296	ANSI, all fluids
Cryogenic valve	---	3588	ANSI, up to NPS 6, Class 600, all fluids
Globe valve	590	3591	ANSI, all fluids
Angle valve	590	3596	ANSI, all fluids
Cryogenic valve	590	3598	ANSI, NPS 3 to NPS 8, Class 900, all fluids
Control valve	590	3595	ANSI, all fluids

¹⁾ Gases according to Article 4(1)(c.i), second indent // Liquids according to Article 4(1)(c.ii) acc. to PE(S)R 2016

that the object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

Legislation: STATUTORY INSTRUMENTS - 2016 No. 1105 - CONSUMER PROTECTION HEALTH AND SAFETY - The Pressure Equipment (Safety) Regulations 2016	PE(S)R 2016	2022
Applied conformity assessment procedure for fluids according to Article 4(1)	Module H	Certificate-No.: N° CE-0062-PED-H-SAM 001-22-DEU by Bureau Veritas 0062

The manufacturer's quality management system is monitored by the following notified body:
Bureau Veritas Services SAS, 8 Cours du Triangle, 92800 PUTEAUX – LA DEFENSE (No. 0062)
Applied designated standards and technical specifications: EN 12516-2, EN 12516-3, EN 12266-1, ASME B16.34

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

Frankfurt am Main, 16th November 2022


Dr. Andreas Widl
Chief Executive Officer (CEO)


Dr. Thomas Steckenreiter
Chief Technology Officer (CTO)

Revision 00

Classification: Public · SAMSON AKTIENGESELLSCHAFT · Weismüllerstrasse 3 · 60314 Frankfurt am Main, Germany

Page 1 of 1



Declaration of Conformity of Final Machinery

in accordance with Schedule 2 Part 2 Annex II, section 1.A. of the Directive 2008 No. 1597 Supply of Machinery (Safety) Regulations 2008

For the following products:

Types 3248-1/-7 Pneumatic Control Valves consisting of the Type 3248 Valve and Type 3271/Type 3277 Pneumatic Actuator

We hereby declare that the machinery mentioned above complies with all applicable requirements stipulated in Directive 2008 No. 1597 Supply of Machinery (Safety) Regulations 2008.

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

- Type 3248 Valve (DIN): Mounting and Operating Instructions EB 8093
- Type 3248 Valve (ANSI): Mounting and Operating Instructions EB 8093-1
- 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. Machinery components can be mounted onto the above specified final machinery if they comply with the specifications and properties defined by SAMSON Manual H 02 "Appropriate Machinery Components for SAMSON Pneumatic Control Valves with a Declaration of Conformity of Final Machinery".

Referenced technical standards and/or specifications:

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

Comment:

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

Persons authorized to compile the technical file:

SAMSON AG, Weismüllerstraße 3, 60314 Frankfurt am Main, Germany
Frankfurt am Main, 13 December 2021

i.V. Stephan Giesen
Director
Product Management

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

Revision 00



Declaration of Incorporation of Partly Completed Machinery

in accordance with Schedule 2 Part 2 Annex II, section 1.B. of the Directive 2008 No. 1597 Supply of Machinery (Safety) Regulations 2008

For the following product:

Type 3248 Pneumatic Control Valve

We certify that the Type 3248 Pneumatic Control Valves are partly completed machinery as defined in the in Directive 2008 No. 1597 Supply of Machinery (Safety) Regulations 2008 and that the safety requirements stipulated in Annex 1, 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 7 of Schedule 2) 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 Directive 2008 No. 1597 Supply of Machinery (Safety) Regulations 2008.

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 mounting and operating instructions; the documents are available in electronic form on the Internet at www.samsongroup.com.

For product descriptions refer to:

- Type 3248 Valve (DIN): Mounting and Operating Instructions EB 8093
- Type 3248 Valve (ANSI): Mounting and Operating Instructions EB 8093-1

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

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, 13 December 2021

Stephan Giesen
Director
Product Management

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

Revision 00

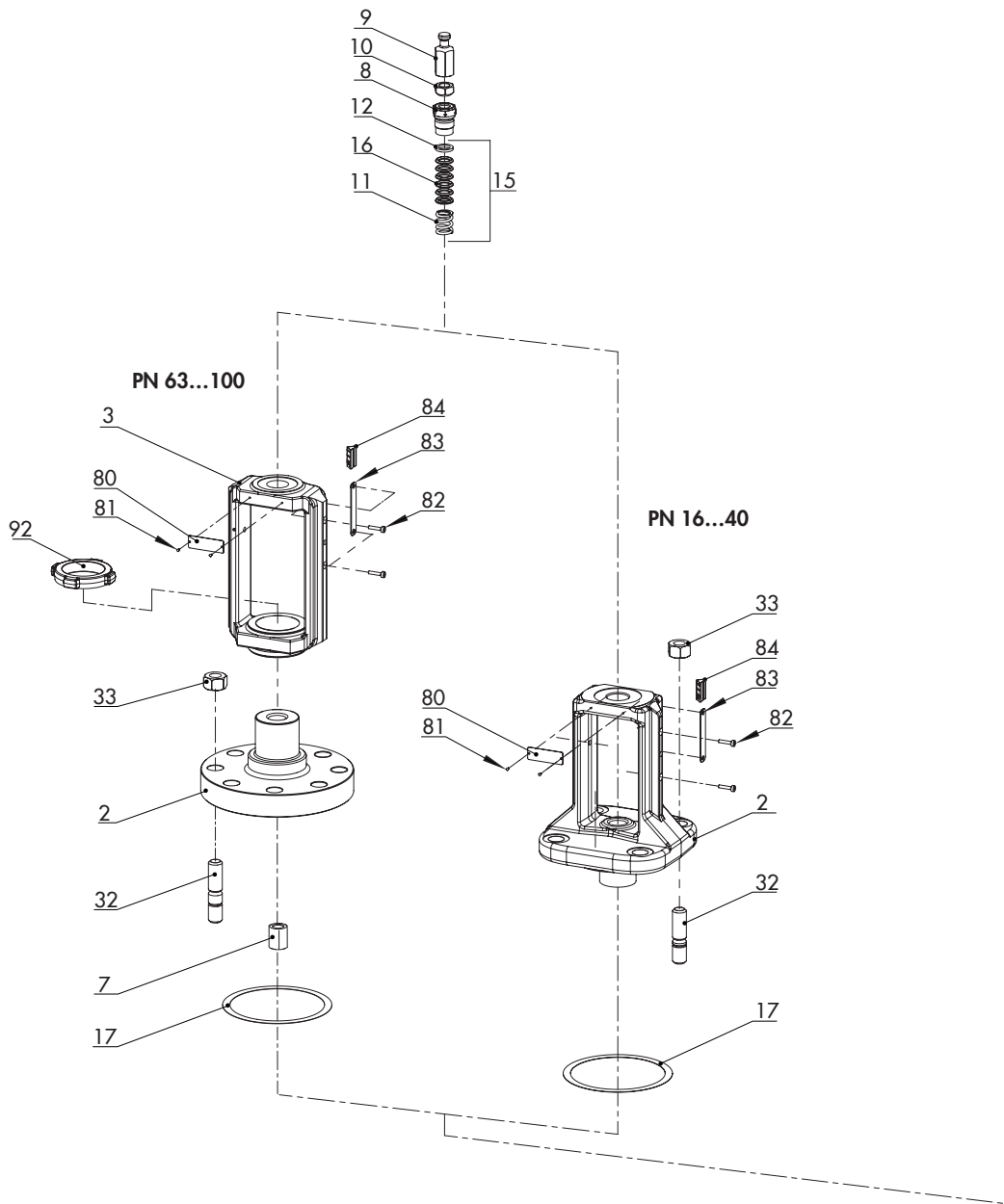
15 Annex

15.1 Tightening torques, lubricants and tools

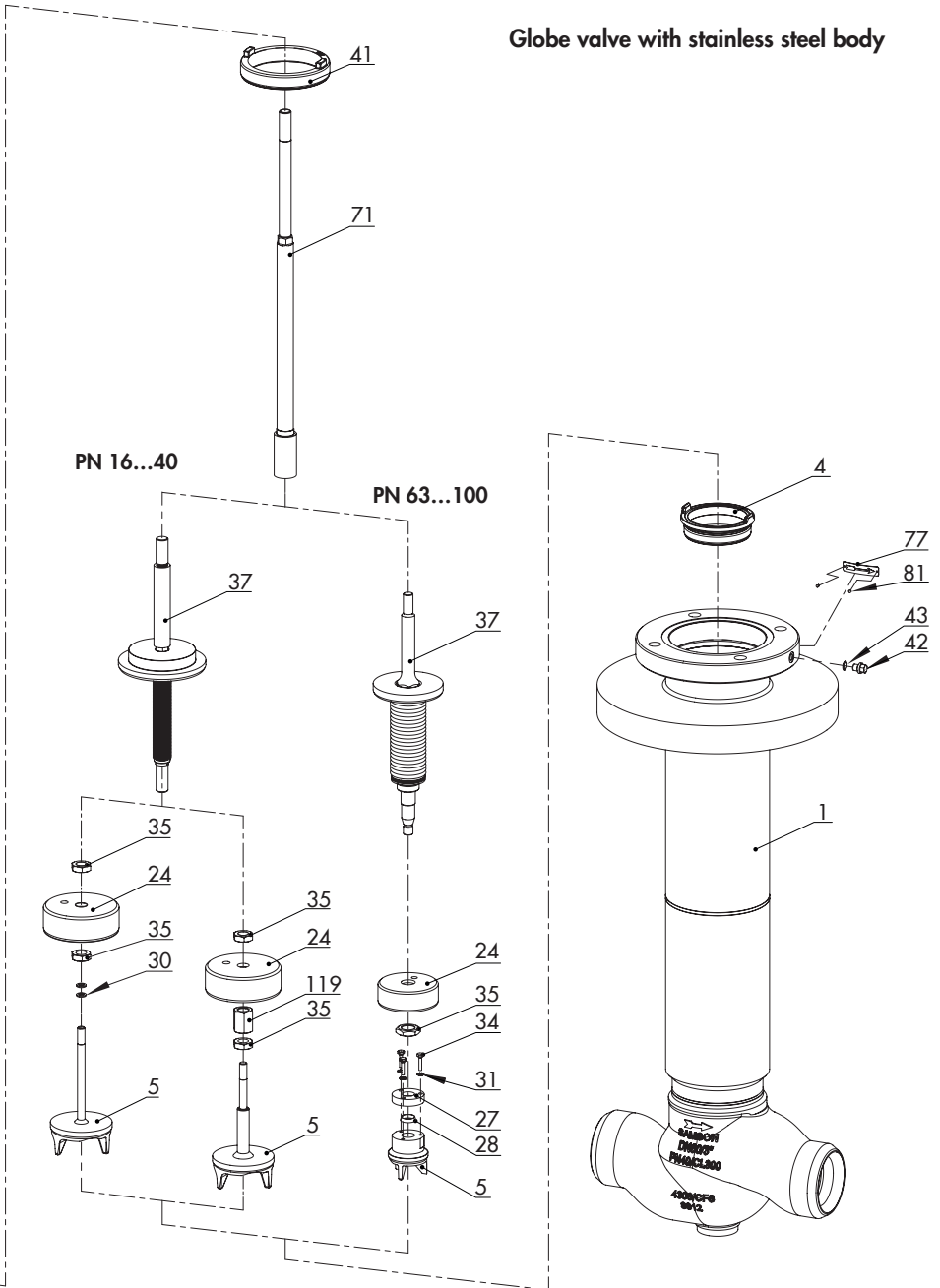
► AB 0100 for tools, tightening torques and lubricants

15.2 Spare parts

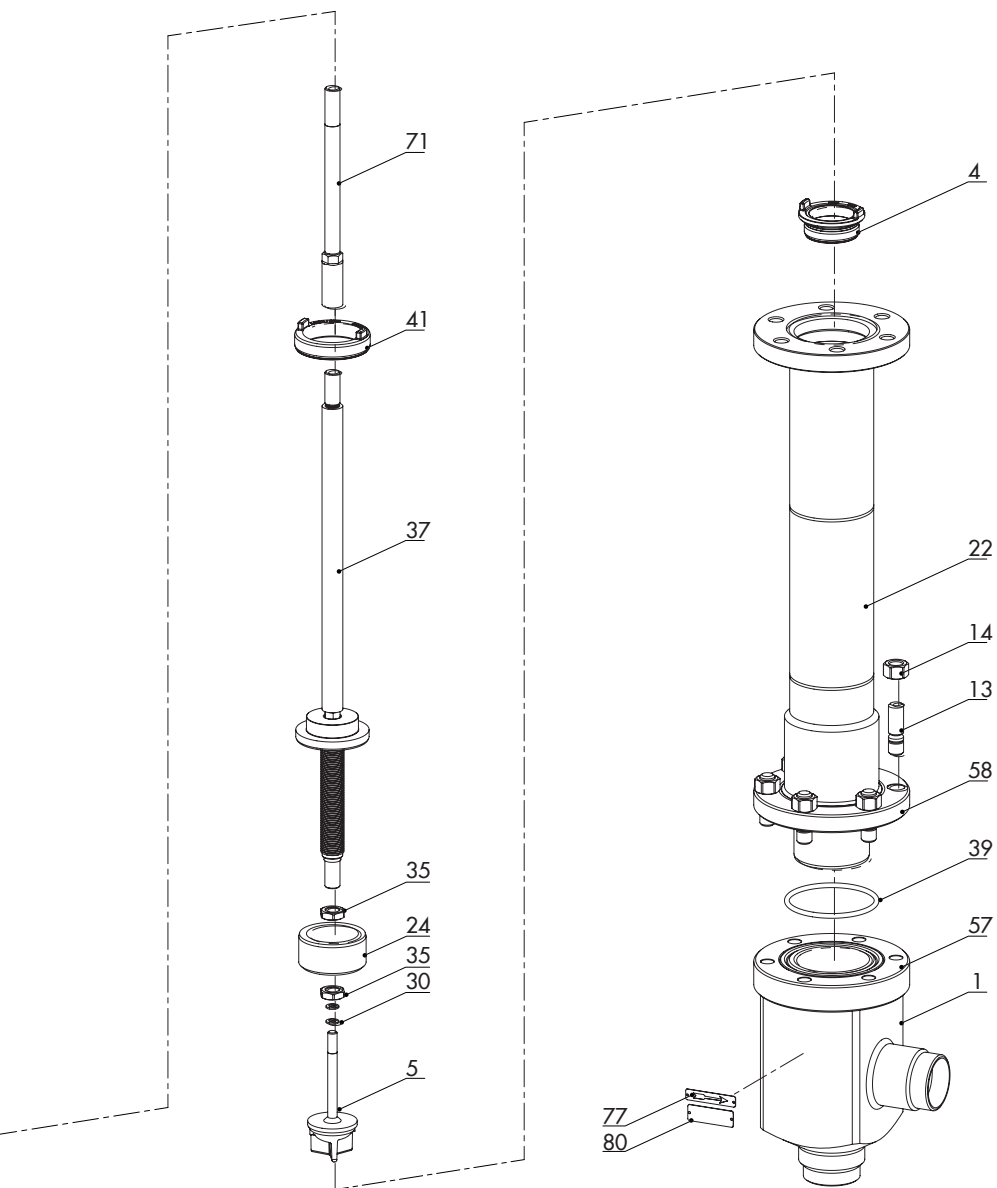
1	Body	35	Lock nut
2	Valve bonnet	37	Plug stem with metal bellows
3	Yoke	39	Seal
4	Seat	41	Slotted nut
5	Plug (with plug stem)	42	Screw plug (test connection)
7	Guide bushing	43	Seal
8	Threaded bushing (packing nut)	57	Flange
9	Stem connector nut	58	Flange
10	Lock nut	71	Spacer stem
11	Spring	77	Plate (direction of flow)
12	Washer	80	Nameplate
13	Stud bolt	81	Grooved pin
14	Body nuts	82	Cap screw
15	Packing	83	Hanger
16	V-ring packing	84	Travel indicator scale
17	Bonnet gasket	92	Castellated nut
22	Bellows seal	119	Support nut
24	Guide bushing		
27	Flange		
28	Clamping ring		
30	Retaining washers		
31	Washer		
32	Hex bolt		
33	Nut		
34	Screw		



Globe valve with stainless steel body



Angle valve with aluminum body



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

15.4 Information on the UK sales region

The following information corresponds to the 2016 Regulations No. 1105 Pressure Equipment (Safety) Regulations 2016, STATUTORY INSTRUMENTS, 2016 No. 1105 (UKCA marking). It does not apply to Northern Ireland.

Importer

SAMSON Controls Ltd
Perrywood Business Park
Honeycrock Lane
Redhill, Surrey RH1 5JQ
Phone: +44 1737 766391
E-mail: sales-uk@samsongroup.com
Website: uk.samsongroup.com

EB 8093 EN



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samson@samsongroup.com · www.samsongroup.com