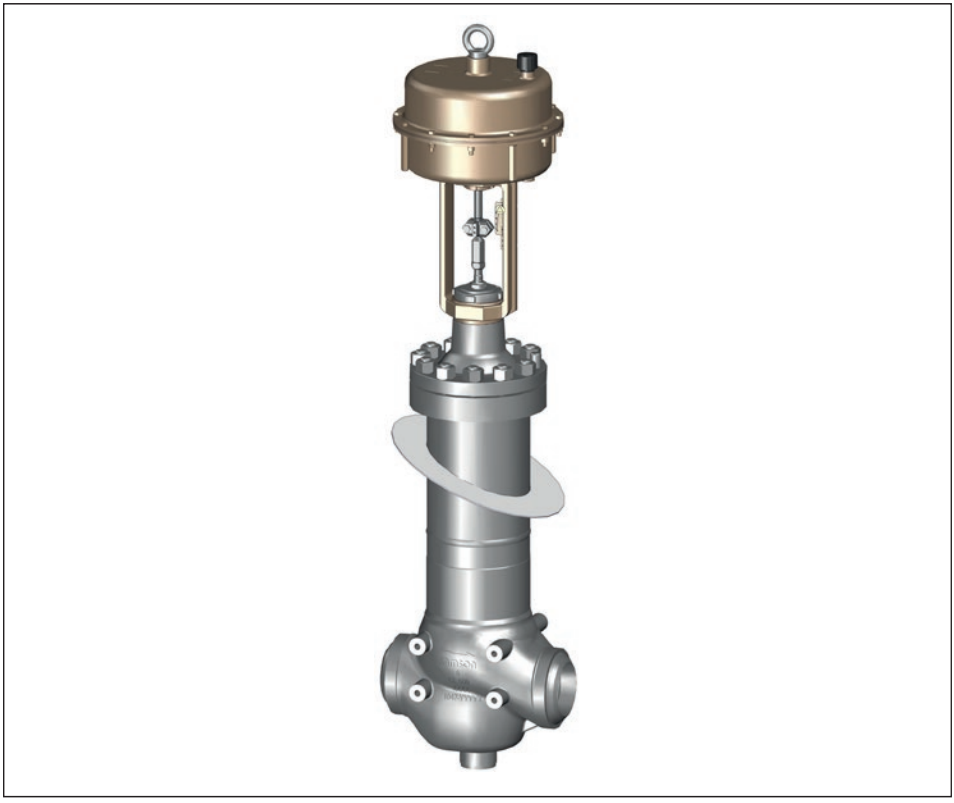
MOUNTING AND OPERATING INSTRUCTIONS

EB 8076 EN

Translation of original instructions



Type 3598 Valve · ANSI version

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

Edition March 2023

Note on these mounting and operating instructions

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

➔ For the safe and proper use of these instructions, read them carefully and keep them for later reference.

➔ If you have any questions about these instructions, contact SAMSON's After-sales Service (aftersalesservice@samsongroup.com).

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

Intended use

The SAMSON Type 3598 Globe Valve in combination with an actuator (e.g. SAMSON 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.

The operating personnel must be specially trained for the correct and safe handling of oxygen when valves are used for oxygen service.

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

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' section) 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.

➔ Observe safety measures for handling the device as well as fire prevention and explosion protection measures.

Hazards resulting from the special working conditions at the installation site of the valve must be identified in a risk assessment and prevented through the corresponding 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 regulators comply with the requirements of the European Pressure Equipment Directive 2014/68/EU and the European Machinery Directive 2006/42/EC as well as Directive 2016 No. 1105 Pressure Equipment (Safety) Regulations 2016. 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' section contains this EU 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).

Referenced documentation

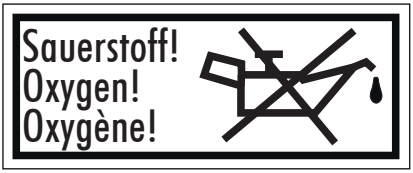
The following documents apply in addition to these mounting and operating instructions:

– Mounting and operating instructions for the mounted actuator, e.g. ▶ EB 8310-X for Type 3271 or Type 3277 Pneumatic Actuator

– Mounting and operating instructions for mounted valve accessories (positioner, solenoid valve etc.)

– 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 > 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. Impermissible pressure 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 all the plant sections concerned as well as the valve.

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

The valve can be 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.

1.2 Notes on possible personal injury

⚠ WARNING

Crush hazard arising from moving parts.

The control valve contains moving parts (actuator and piston 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 piston stem by inserting objects into the yoke.

➔ Before unblocking the actuator and piston 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.

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 silencers and vent plugs.

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

Risk of personal injury due to preloaded springs.

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

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

⚠ WARNING

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

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

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

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

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 through 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 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 (see 'Tightening torques' in Annex).

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 (see 'Tools' in Annex).

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 (see 'Lubricants and cleaning agents' in Annex).

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

➔ Keep the valve and the tools used free from solvents and grease.

➔ Make sure that only suitable lubricants are used.

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.

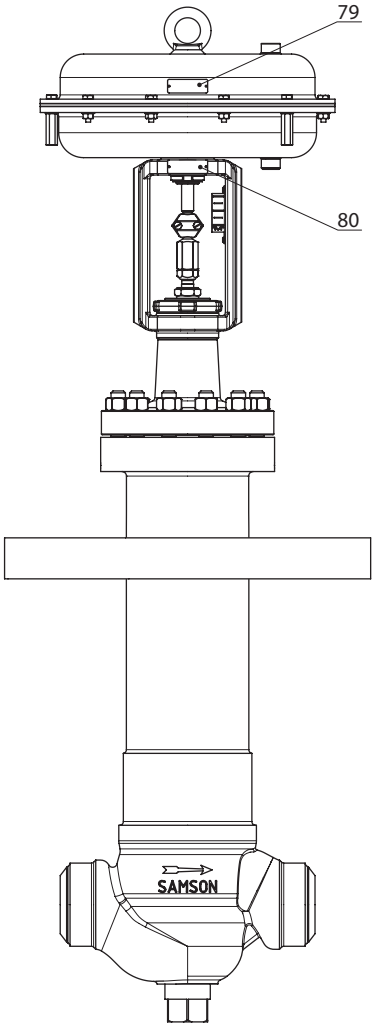
2.1 Valve nameplate

The nameplate (80) is affixed to the valve bonnet (see Fig. 2-1).

Additionally, a label (79) is affixed to the actuator housing to indicate the valve version (e.g. for oxygen or industrial gas service).

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 3598 Valve actually appear on the nameplate.



79 Label (oxygen, industrial gases)

80 Nameplate

Fig. 2-1: *Markings on the valve*

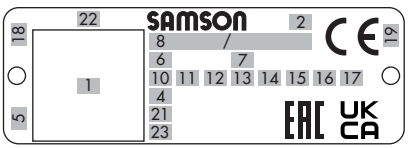


Fig. 2-2: *Inscriptions on the valve nameplate*

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: **KV**S · 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
14	Pressure balancing: DIN: **D** · ANSI/JIS: **B**
	Version: **M**: mixing valve · **V**: diverting valve

Item	Inscription meaning
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)

Tip

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 > Service & Support > Electronic nameplate.
For example, you can also use the associated information to order a new nameplate from our After-sales Service, if required.

2.2 Actuator nameplate

See associated actuator documentation.

2.3 Material numbers

The seat and piston 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.

3 Design and principle of operation

See Fig. 3-1

The Type 3598 Globe Valve is preferably combined with a SAMSON Type 3271 or Type 3277 Pneumatic Actuator. It can also be combined with other actuators.

The top-entry design facilitates service work since the valve does not need to be removed from the enclosure or insulation beforehand. The valve seat, piston and circulation inhibitor can be accessed directly after removing the actuator.

The cage (124), seat (4) and piston (5) are installed in the body (1). The piston is connected to the piston stem (5.1), which is screwed to the spacer stem (71). The spacer stem is sealed by a spring-loaded packing (15). The stem connector clamps (A26/27) connect the actuator stem (A7) of the mounted actuator.

A circulation inhibitor (86) is installed in the lower part of the cryogenic extension bonnet which is welded to the body (1). It prevents the cold process medium from circulating in the body.

A cover plate can be welded at a specific angle onto the cryogenic extension bonnet. The cover plate serves as orientation during installation, for example when the valve is insulated or installed into a cold box.

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

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

Tip

We recommend the use of positioners with integrated diagnostic firmware (see section 3.3) 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.

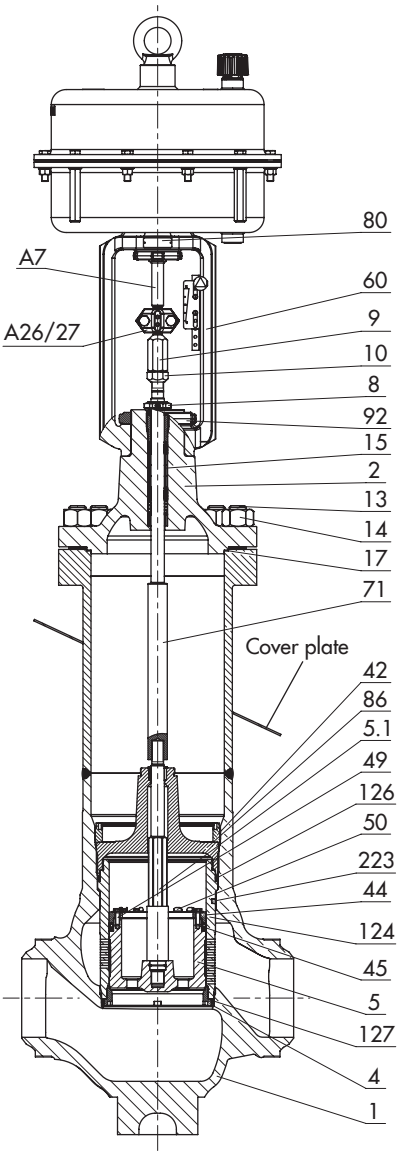
Fail-safe action

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



1 Body (including cryogenic extension bonnet)
2 Valve bonnet
4 Seat
5 Piston
5.1 Piston stem
8 Threaded bushing (packing nut)
9 Stem connector nut (belonging to 60)
10 Lock nut
13 Stud
14 Body nut
15 Packing
17 Gasket (body gasket)
42 Nut (to fasten the circulation inhibitor)
44 Ring
45 Gasket
49 Hex screw
50 Retaining washer
60 Yoke assembly
71 Spacer stem
80 Nameplate
86 Circulation inhibitor
92 Castellated nut
124 Cage
126 Gasket
127 Gasket
223 Pin functioning as anti-rotation fixture on top of the cage
A7 Actuator stem
A26/27 Stem connector clamps

Fig. 3-1: *Type 3598 Globe Valve with Type 3271 Pneumatic Actuator*

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*

3.1 Versions

Actuators

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

➔ Observe the maximum permissible actuator force.

Note

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

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

3.2 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' section.

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 piston 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.

3.3 Valve accessories

Information Sheet ▶ T 8350

3.4 Technical data

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

Note

More information is available in Data Sheet ▶ T 8076.

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.

Dimensions and weights

Table 3-2 provides an overview of the dimensions and weights of the Type 3598 Valve.

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

Table 3-1: *Technical data*

Version	ANSI
Valve size	NPS 3, 4, 6, 8
Pressure rating	Class 300 to 900
Type of connection	Butt weld ends ASME B16.25
Seat-piston seal	Metal seal · High-performance metal seal
Characteristic	Equal percentage
Rangeability	60 : 1
Temperature range	–325 to +149 °F (–196 to +65 °C)
Leakage class according to ANSI/ FCI 70-2	Metal seal: IV High-performance metal seal: V
Conformity	CE · UKCA · EAC

Dimensions and weights

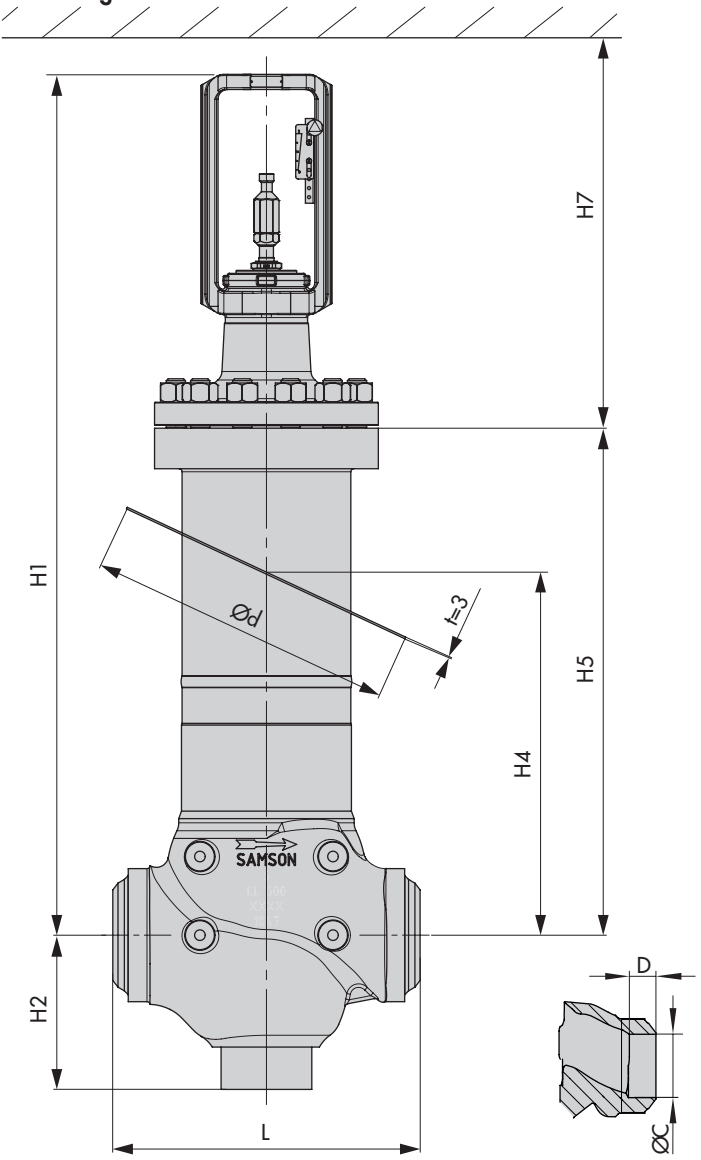
i ***Note***

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 3-2: *Dimensions and weights*

Valve	NPS	3		4		6		8		
	Class	600	900	600	900	600	900	300	600	900
L	in	13.3	18.1	15.5	20.9	20.0	30.2	24.0	24.0	32.8
	mm	337	460	394	530	508	768	610	610	832
H1	in	41.9	43.9	47	50	65.4	69.4	70.8	74.8	80.9
	mm	1064	1115	1194	1270	1661	1763	1798	1900	2054
H2	in	5.7	5.7	6.7	6.7	10	11	11.6	11.6	12.2
	mm	145	145	170	170	255	280	295	295	310
H4	in	17.4	17.4	21.7	21.7	23.6	23.6	27.2	27.2	32.7
	mm	441	441	551	551	600	600	690	690	831
H5	in	25	27	29	32	33	37	35	39	45.1
	mm	635	686	737	813	838	940	889	991	1145
H7	in	78.7	78.7	78.7	78.7	98.4	98.4	98.4	98.4	98.4
	mm	2000	2000	2000	2000	2500	2500	2500	2500	2500
Butt weld ends (BWE)	Schedule	40	80	40	80	40	80	10	40	80
ØC	in	2.9	2.9	3.8	3.8	5.8	5.8	8.0	7.6	7.6
	mm	73.5	73.5	97	97	146.5	146.5	202.7	193.7	193.7
D	in	1.2	1.2	1.6	1.6	2.0	2.0	2.0	2.0	2.0
	mm	30	30	40	40	50	50	50	50	50
Ød	in	14.6	14.6	16.9	16.9	20	20	24	24	24
	mm	370	370	430	430	508	508	610	610	610
Weight without actuator	lbs	191	287	397	485	750	1036	1257	1521	2139
	kg	86.5	130	180	220	340	470	570	690	970

Dimensional drawing



4 Shipment and on-site transport

The work described in this section 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' section for nameplate details.
2. Check the shipment for transportation damage. Report any damage to SAMSON and the forwarding agent (refer to delivery note).
3. Determine the weight and dimensions of the units to be lifted and transported in order to select the appropriate lifting equipment and lifting accessories. Refer to the transport documents and the 'Technical data' section.

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.*

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 section 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 control valve against moisture and dirt.

– The permissible transportation temperature of standard control valves is –4 to +149 °F (–20 to +65 °C).

Note

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

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 and Fig. 4-2) to secure the slings from slipping off the hook during lifting and transporting.
- Secure slings on the object to be transported 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.

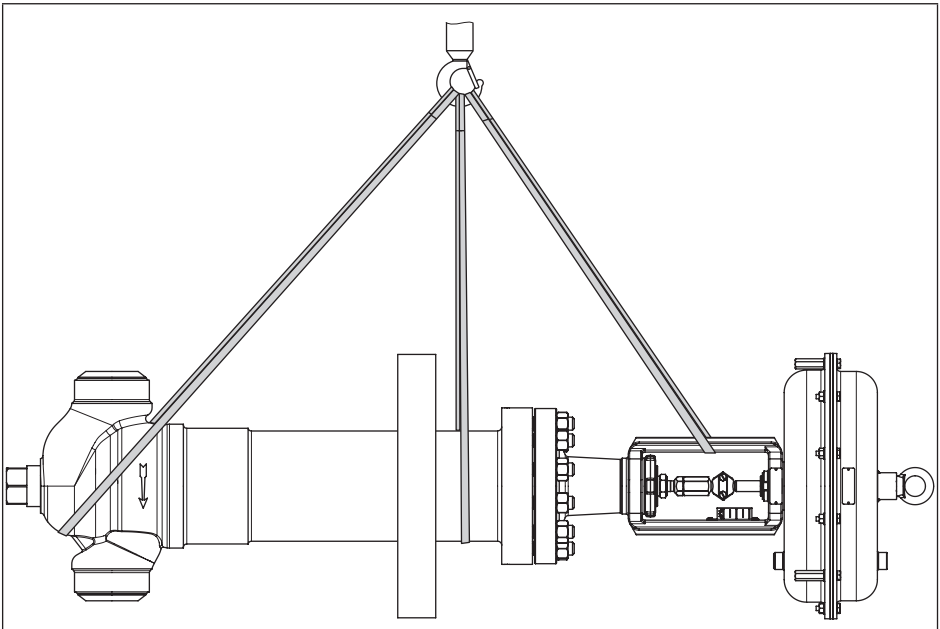


Fig. 4-1: *Lifting the control valve in the horizontal position*

a) Lifting the control valve in the horizontal position

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 yoke as well as to the rigging equipment (e.g. hook) of the crane or forklift (see Fig. 4-1).
2. **When using a beam for valves in NPS 4 or larger:** attach additional sling to support the valve at the body (see Fig. 4-2).
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' section).
6. After installation, check whether the weld seams hold.
7. Remove slings.

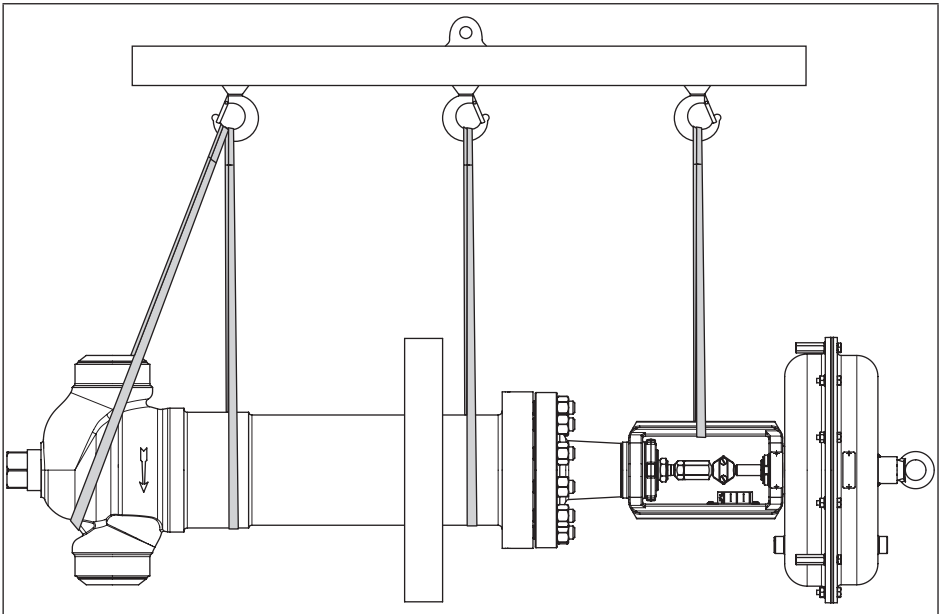


Fig. 4-2: *Lifting the control valve using a lifting beam*

b) Lifting the control valve in the upright position

Optionally, the valve can be lifted in the upright position (see Fig. 4-3). On lifting the control valve in the upright position, make sure the following additional conditions are met:

– The axis of the pipeline must always be horizontal during lifting and the axis of the piston stem vertical.
– The additional sling between the eyebolt and rigging equipment (hook, shackle etc.) must not bear any load when lifting actuators with an actuator area of 700 cm² or larger. 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 lifting beam (see Fig. 4-3).
2. Secure the slings attached to the body against slipping using a connector.
3. **700 cm² and larger:** attach another sling to the eyebolt 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.

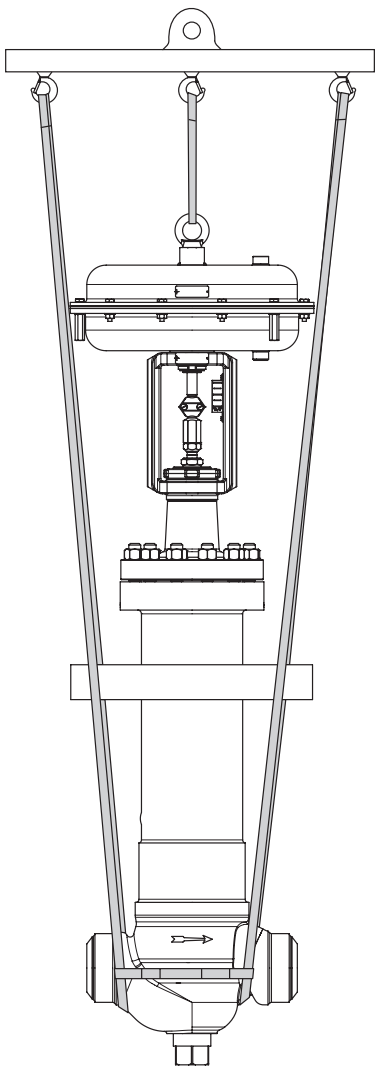


Fig. 4-3: *Lifting in the upright position using a lifting beam*

6. Install the valve into the pipeline (see the 'Installation' section).
7. After installation, check whether the weld seams hold.
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 –4 to +149 °F (–20 to +65 °C). Contact our after-sales service for the storage temperatures of other valve versions.
– Do not place any objects on the control valve.
– For storage periods longer than 4 months, we recommend storing the following valves upright with the actuator on top:
  – ≥NPS 4 for versions with pressure balancing
  – ≥NPS 6 for versions without pressure balancing

Special storage instructions for elastomers

Elastomer, e.g. actuator diaphragm

– To keep elastomers in shape and to prevent cracking, do not bend them or hang them up.
– We recommend a storage temperature of 59 °F (15 °C) for elastomers.
– Store elastomers away from lubricants, chemicals, solutions and fuels.

Tip

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

5 Installation

The work described in this section 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).

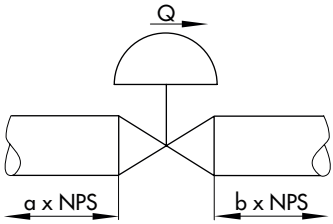
Plant operators must ensure that, after installation of the device, the operating personnel can perform all necessary work safely and easily access the device from the work position.

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*



Q Flow rate
a Inlet length
b Outlet length

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

➔ 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 section.

➔ Install the valve allowing sufficient space to remove the actuator and valve or to perform service 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.

Vent plugs

Vent plugs are screwed into the exhaust air ports of pneumatic 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.

Valve accessories

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

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' section for nameplate details.
– The requested or required additional pipe fittings (see the 'Additional fittings' section) have been installed or prepared as necessary before installing the valve.

! ***NOTICE***

Risk of control valve damage due to incorrect insulation.

➔ *Control valves with cover plates can be insulated up to the cover plate (see 'Technical data' and 'Dimensions and weights' table in the 'Design and principle of operation' section).*

➔ *Do not insulate valves mounted to comply with NACE MR0175 requirements and which have nuts and bolts that are not suitable for sour gas environments.*

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 (see the 'Tightening torques' section in Annex). 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 (see 'Tightening torques' in Annex).*

! *NOTICE*

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

➔ *Only use tools approved by SAMSON (see 'Tools' in Annex).*

5.3.1 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, control valves are either delivered with the actuator already mounted on the valve or the valve and actu-

ator are delivered separately. When delivered separately, the valve and actuator must be assembled together on site.

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

5.3.2 Installing the valve into the pipeline

NOTICE

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

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

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

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

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 the 'Lifting the valve' section). Observe the flow direction through the valve. The arrow on the valve indicates the direction of flow.
5. Completely retract the piston to protect it from sparks during welding:
   "Stem extends" direction of action: apply a signal pressure to the 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.

5.1 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 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 moving parts (actuator and piston stem).

- ➔ *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 piston stem by inserting objects into the yoke.*
- ➔ *Before unblocking the actuator and piston 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 pre-loaded springs (see associated actuator documentation).*

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

5.3.3 Leakage

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

Tip

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

1. Close the valve.
2. Slowly apply the test medium to the inlet space upstream of the valve. A sudden surge in pressure and resulting high flow velocities can damage the valve.
3. Open the valve.
4. Apply the required test pressure.
5. Check the valve for leakage to the atmosphere.
6. Depressurize the pipeline section and valve.
7. Rework any parts that leak and repeat the leak test.

5.3.4 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.

➔ Check the travel reading at the travel indicator scale.

5.3.5 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' section).

5.3.6 Pressure test

The plant operator is responsible for performing the pressure test.

Tip

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

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

– Retract the piston to open the valve.

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

6 Start-up

The work described in this section 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 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 moving parts (actuator and piston stem).

➔ *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 piston stem by inserting objects into the yoke.*

➔ *Before unblocking the actuator and piston 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' section).
– The leak and function tests have been completed successfully (see the 'Testing the installed valve' section).
– The prevailing conditions in the plant section concerned meet the valve sizing requirements (see information under 'Intended use' in the 'Safety instructions and measures' section).

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 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 moving parts (actuator and piston stem).

➔ *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 piston stem by inserting objects into the yoke.*

➔ *Before unblocking the actuator and piston 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.*

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' section.

8.1 Troubleshooting

Malfunction	Possible reasons	Recommended action
Actuator and piston stem does not move on demand.	Actuator is blocked.	Check attachment. Remove the blockage. **WARNING!** A blocked actuator or piston 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 piston 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.
	Signal pressure too low	Check the signal pressure. Check the signal pressure line for leakage.
Actuator and piston stem does not stroke through the entire range.	Signal pressure too low	Check the signal pressure. Check the signal pressure line for leakage.
Increased flow through closed valve (seat leakage).	Dirt or other foreign particles deposited between the cage, seat and piston.	Shut off the section of the pipeline and flush the valve.
	Valve trim is worn out.	Contact our after-sales service.
The valve leaks to the atmosphere (fugitive emissions).	Defective packing	Replace packing (see the 'Servicing' section) or contact our after-sales service.
	Flange joint not tight.	Check the flange joint.
	Gasket worn out.	Replace body gasket (see the 'Servicing' section) or contact our after-sales service.

Malfunction	Possible reasons	Recommended action
Icing up of the packing chamber.	Circulation inhibitor defective.	Contact our after-sales service.
	Insulation not properly mounted.	Change the insulation (see the 'Installation' section).
	Mounting angle too flat	Change the mounting angle (see the 'Installation' section).

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. Check the valve for damage. Contact our after-sales service.
3. Rectify those malfunctions that can be remedied based on the instructions provided here. Contact our after-sales service in all other cases.

8.3 Putting the valve back into operation after a malfunction

See the 'Start-up' section.

9 Servicing

The work described in this section is only to be performed 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

⚠ 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 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 moving parts (actuator and piston stem).

➔ *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 piston stem by inserting objects into the yoke.*

➔ *Before unblocking the actuator and piston 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 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 (see 'Tightening torques' in Annex).*

! NOTICE

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

➔ *Only use tools approved by SAMSON (see 'Tools' in Annex).*

! NOTICE

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

➔ *Only use lubricants approved by SAMSON (see 'Lubricants and cleaning agents' in Annex).*

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.

Testing	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 pipe connections and gaskets on the valve and actuator for leakage.	Check the bolted joint (tightening torque).
	Replace the gasket on the flanged joint as described in section 9.4.1.
	Replace the packing (see section 9.4.2)
Check the valve's seat leakage.	Shut off the section of the pipeline and flush the valve to remove any dirt and/or deposited foreign particles between the cage, seat and piston.
	When the valve trim (cage, seat and piston) is worn out, contact our after-sales service.
Check the valve for external damage (e.g. corrosion).	Repair any damage immediately. If necessary, put the control valve out of operation (see the 'Decommissioning' section).
Check the valve accessories to ensure they are mounted properly.	Tighten the connections of the valve accessories.
Check to ensure that the actuator and piston stem move smoothly.	Unblock a blocked actuator and piston stem. **WARNING!** A blocked actuator or piston 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 piston stem, disconnect and lock the pneumatic air supply as well as the control signal. Before unblocking the actuator, release any stored energy in the actuator (e.g. spring compression). See associated actuator documentation.
If possible, check the valve's fail-safe position by briefly interrupting the air supply.	Put the control valve out of operation (see the 'Decommissioning' section). Identify the cause for the malfunction and rectify it (see the 'Troubleshooting' section).

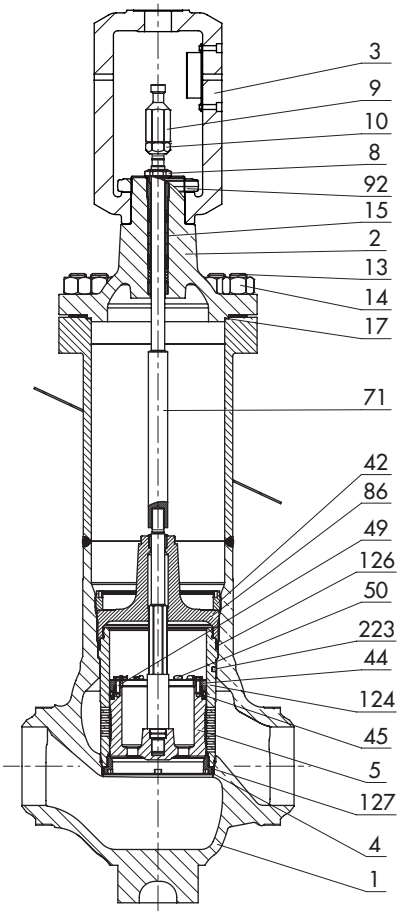


Fig. 9-5: *Type 3598 Valve*

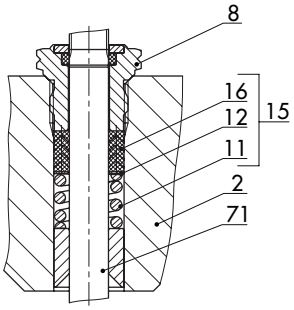


Fig. 9-4: *Packing*

1 Body (including cryogenic extension bonnet)
2 Valve bonnet
3 Yoke (belonging to 60)
4 Seat
5 Piston (including piston rod)
8 Threaded bushing (packing nut)
9 Stem connector nut (belonging to 60)
10 Lock nut
11 Spring
12 Washer
13 Stud
14 Body nut
15 Packing (entire)
16 V-ring packing
17 Body gasket
42 Nut
44 Ring
45 Gasket
49 Hex screw
50 Retaining washer
71 Spacer stem
86 Circulation inhibitor
92 Castellated nut
124 Cage
126 Gasket
127 Gasket
223 Pin functioning as anti-rotation fixture

9.2 Preparing the valve for service work

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' section).
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.

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

– Replace the gasket (see section 9.4.1)
– Replace the packing (see section 9.4.2)

9.3 Installing the valve after service work

1. Mount actuator. See associated actuator documentation.
2. Adjust lower or upper signal bench range. See associated actuator documentation.
3. Put the control valve back into operation (see the 'Start-up' section). 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 section 9.2).

➔ After all service work is completed, check the control valve before putting it back into operation (see 'Testing the installed valve' in the 'Installation' section).

9.4.1 Replacing the gasket

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.

Note

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

3. Undo the nuts (14) and bolts (13) gradually in a crisscross pattern.
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).
8. Fasten the valve bonnet (2) using the nuts (14) and bolts (13). 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 valve size is ≤NPS 6.*
- *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.*

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. Remove nuts (14).
5. Carefully lift the valve bonnet (2) over the spacer stem (71).
6. Pull the entire packing out of the packing chamber using a suitable tool.
7. Renew the damaged parts and carefully clean the packing chamber.
8. Replace the gasket (see section 9.4.1)
9. Carefully place the valve bonnet (2) on the valve body (1) over the spacer stem (71).
10. Fasten the valve bonnet (2) with nuts (14). Observe tightening torques.
11. Apply a suitable lubricant to all the packing parts.
12. Carefully slide the packing parts over the spacer stem (71) into the packing chamber using a suitable tool. Observe the proper sequence (see Fig. 9-4).
13. Screw in the threaded bushing (8) and tighten it. Observe tightening torques.
14. Place yoke (3) on the valve bonnet (2) and fasten using the castellated nut (92).
15. Loosely screw the lock nut (10) and stem connector nut (9) onto the spacer stem (71).

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 Annex for details on spare parts.

Lubricant

See Annex for details on suitable lubricants.

Tools

See document ▶ AB 0100 for details on suitable tools and the annex of this document.

10 Decommissioning

The work described in this section 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 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 moving parts (actuator and piston stem).

- ➔ *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 piston stem by inserting objects into the yoke.*
- ➔ *Before unblocking the actuator and piston 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 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 section 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 moving parts (actuator and piston stem).

- ➔ *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 piston stem by inserting objects into the yoke.*
- ➔ *Before unblocking the actuator and piston 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' section).

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' section).
2. Cut the pipeline in front of the weld seam.
3. Remove the valve from the pipeline (see the 'Shipment and on-site transport' section).

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 valves can be returned to SAMSON for repair.

Proceed as follows to return devices:

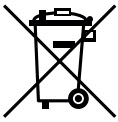
1. Exceptions apply concerning some special device models
   ▶ *www.samsongroup.com > Service & Support > After-sales Service.*
2. Send an e-mail
   ▶ *retouren@samsongroup.com* to register the return shipment including the following information:
   – Type
   – Article no.
   – Configuration ID
   – Original order
   – Completed Declaration on Contamination, which can be downloaded from our website at ▶ *www.samsongroup.com > Service & Support > 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.

Note

Further information on returned devices and how they are handled can be found at ▶ www.samsongroup.com > Service & Support > 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.

Note

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

Tip

On request, 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 the 2016 Regulations No. 1105 Pressure Equipment (Safety) Regulations 2016, see page 14-3
- Declaration of conformity in compliance with Machinery Directive 2006/42/EC for Type 3598-1 and Type 3598-7 Control Valves on page 14-4

The certificates shown were up to date at the time of publishing. Other optional certificates are available on request.

EU DECLARATION OF CONFORMITY
TRANSLATION

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

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

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)

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 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, 15th November 2022

Dr. Andreas Widl
Chief Executive Officer (CEO)

Dr. Thomas Steckenreiter
Chief Technology Officer (CTO)

Revision 10

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 resposibility:

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

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 3598-1/-7 Pneumatic Control Valves consisting of the Type 3598 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 3598 Valve (ANSI): Mounting and Operating Instructions EB 8076
- 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, 11 July 2023

i.V.

Stephan Giesen
Director Product Management

i.V.

Sebastian Krause
Vice President Product Development

Revision no. 00

15 Annex

15.1 Tightening torques

15.1.1 Tightening torques to install the seat

Valve size NPS	Tightening torque for seat (4) in Nm
3	210
4	
6	740
8	

15.1.2 Tightening torques for nuts on body

Valve size NPS	Class	Tightening torque for body nut (14) in Nm
3	600	130
	900	650
4	600	310
	900	465
6	600	700
	900	1100
8	300	440
	600	1200
	900	1900

15.1.3 Tightening torques for nut to fasten the circulation inhibitor

Valve size NPS	Tightening torque for nut (42) (to fasten the circulation inhibitor) in Nm
3	470
4	550
6	1300
8	1750

15.1.4 Tightening torques for hex screw

Valve size NPS	Tightening torque for hex screw (49) in Nm
3	10
4	
6	
8	

15.2 Lubricants and cleaning agents

⚠ WARNING

Damage to health after contact with hazardous substances.

Certain lubricants and cleaning agents (e.g. 8150-4009 and 8170-0219) are classified as hazardous substances. These substances have a special label and a material safety data sheet (MSDS) issued by the manufacturer.

➔ *Make sure that an MSDS is available for any hazardous substance used. If necessary, contact the manufacturer to obtain an MSDS.*

➔ *Inform operating personnel about the hazardous substances and their correct handling.*

15.2.1 Recommended lubricant

Application	Quantity [g]	Temperature range in °C	Color	Material no.
High-performance lubricant (paste) for oxygen valves [1) 2)]	1000	–60 to +250	White	8150-4009
	60			8150-0116

1) Components that are to be lubricated and tools used for lubrication must be free of oil and grease.
2) The lubricant must not be mixed with other lubricants.

15.2.2 Recommended cleaning agents

Cleaning agents	Quantity in liter	Material no.
Acetone	1	8170-0219

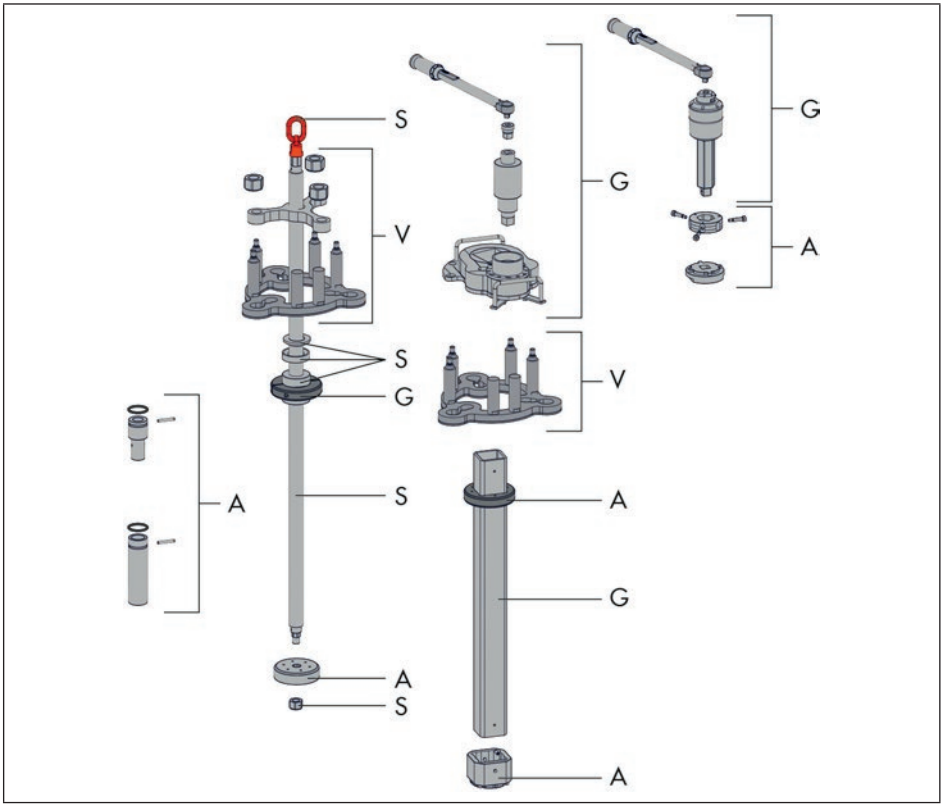
15.3 Tools

In addition to the standard tool, special tools are required to assemble and remove some parts. Use adjustable torque wrenches with a stop signal or that indicate the torque being applied to achieve the right tightening torques. Valves in large valve sizes often require tightening torques that can only be achieved through additional torque multiplication by using a torque multiplier or hydraulic power tool. Contact SAMSON's After-sales Service concerning the tools required. Contact our after-sales service.

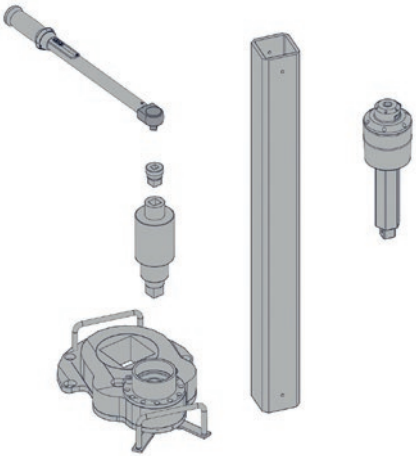
Note

Work on the Type 3598 Valve must only be performed by trained specialized staff using the tools listed below. Training courses by our after-sales service are held on request.

The following tools are required for installation or removal:



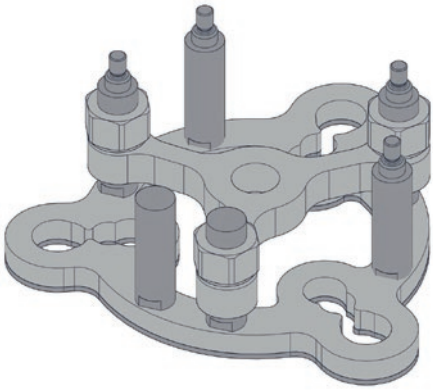
15.3.1 Multiplier tools (G)

Tool	Material no.	Image
20 to 120 Nm torque wrench	9932-3812	
60 to 320 Nm torque wrench	9932-3814	
SX30 torque multiplier	9932-3808	
Torque multiplier for tool 3248 (1280-3047)	1990-5139	
Gear	1990-5125	
NPS ½ to ¾ adapter	9932-2502	
80×80×850 mm square pipe for DN 100 to 150	0400-7827	

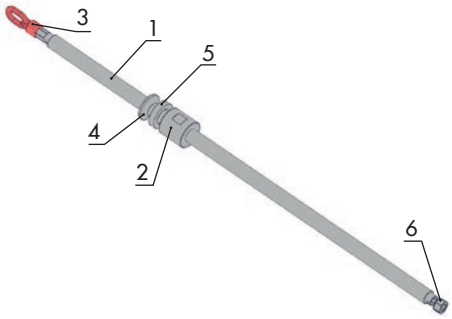
i ***Note***

Total gear ratio 1:20 with torque multiplier (material no. 1990-5139) and gear (material no. 1990-5125).

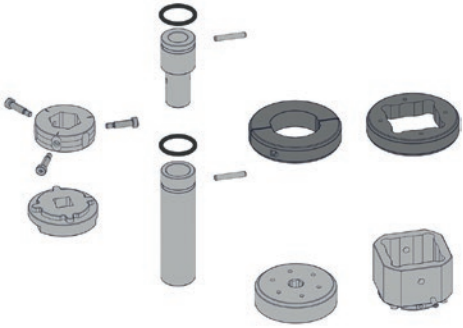
15.3.2 Fixture tool for installation forces, NPS 3 to 6 (V)

Tool	Material no.	Image
070130 Fixture for installation forces, NPS 3 to 6	100037020	

15.3.3 Spindle tool (S)

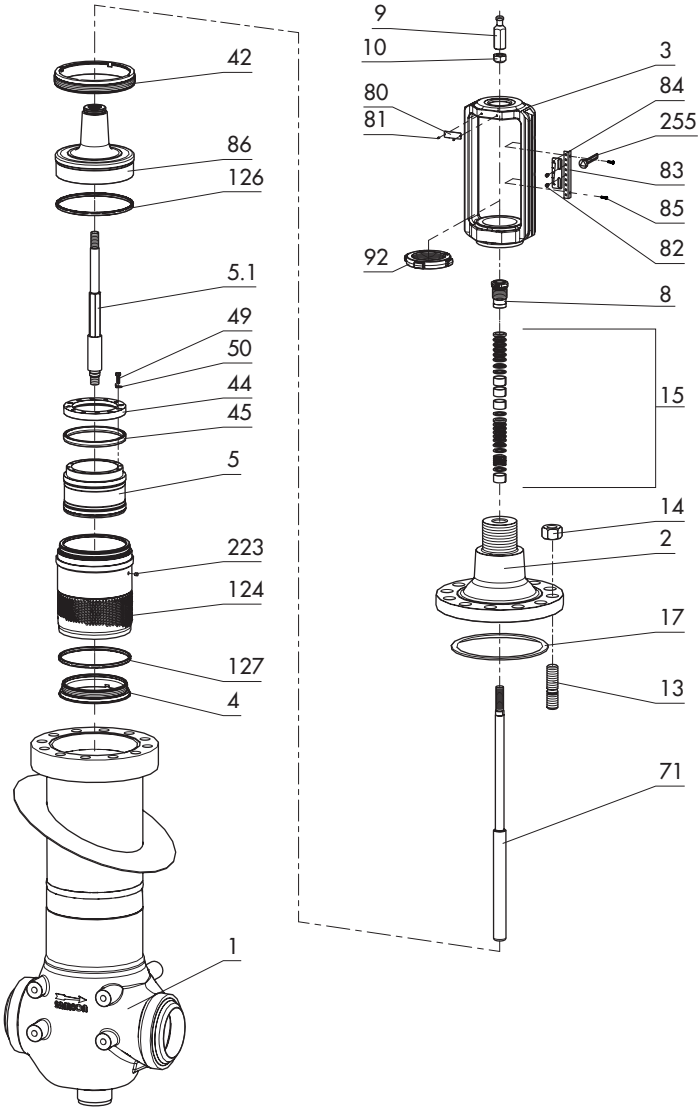
Tool	Material no.	Image
Mounting spindle (1), L = 1000 mm	100013770	
Mounting spindle (1), L = 1500 mm	100037045	
Mounting nut (2)	100037093	
Transport eyelet (3)	8320-1254	
Spherical washer (4) DIN 6319	100036154	
Conical seat (5) DIN 6319	100036401	
M2 hex nut (6)	8350-2783	

15.3.4 Tool adapter kits (A)

Tool	Material no.	Image
Adapter kit NPS 3	100044385	 Example
Adapter kit NPS 4	100044390	
Adapter kit NPS 6	100045980	

15.4 Spare parts

1 Body (including cryogenic extension bonnet)
2 Valve bonnet
4 Seat
5 Piston
5.1 Piston stem
8 Threaded bushing (packing nut)
10 Lock nut
13 Stud bolt
14 Body nut
15 Packing
17 Body gasket
42 Nut (to fasten the circulation inhibitor)
44 Ring
45 Gasket (pressure balancing)
49 Hex screw
50 Retaining washer
60 Yoke assembly
3 Yoke
9 Stem connector nut
82 Screw
83 Hanger
84 Travel indicator scale
85 Screw
71 Spacer stem
80 Nameplate
81 Grooved pin
86 Circulation inhibitor
92 Castellated nut
124 Cage
126 Gasket (body neck)
127 Gasket (seat bridge)
223 Pin functioning as anti-rotation fixture on the cage
255 Warning label


42
86
126
5.1
49
50
44
45
5
223
124
127
4
1
9
10
80
81
92
3
84
255
83
85
82
8
15
14
2
17
13
71

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

15.6 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 8076 EN

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

2023-10-11 · English