

# MOUNTING AND OPERATING INSTRUCTIONS



## EB 8140 EN

Translation of original instructions



### Type 3354 Globe Valve · DIN version

For combination with a pneumatic piston actuator

Edition September 2021



## Note on these mounting and operating instructions

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

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



Documents relating to the device, such as the mounting and operating instructions, are available on our website at [www.samsongroup.com](http://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*

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# 1 Safety instructions and measures

## Intended use

The Type 3354 Globe Valve is designed for on/off service in process engineering and plants with industrial requirements. The valve is suitable for liquids, vapors and gases at temperatures from  $-10$  to  $+180$  °C and a nominal pressure of PN 16. The globe valve is combined with a pneumatic piston actuator.

The control valve 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.

## Safety instructions and measures

### 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 when working at height
  - Safety footwear, ESD (electrostatic discharge) footwear, if necessary
- ➔ 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

Upon supply air or control signal failure, the valve moves to a certain fail-safe position (see 'Design and principle of operation' section).

### 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, warning and caution notes in these mounting and operating instructions.

Hazards resulting from the special working conditions at the installation site of the valve must be identified in a risk assessment and prevented through the corresponding safety instructions drawn up by the operator.

### Responsibilities of the operator

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

Operators are additionally responsible for ensuring that the limits for the product defined in the technical data are observed. This also applies to the start-up and shutdown procedures. Start-up and shutdown procedures fall within the scope of the operator's duties and, as such, are not part of these mounting and operating instructions. SAMSON is unable to make any statements about these procedures since the operative details (e.g. differential pressures and temperatures) vary in each individual case and are only known to the operator.

### **Responsibilities of operating personnel**

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

### **Referenced standards, directives and regulations**

The control valves comply with the requirements of the European Pressure Equipment Directive 2014/68/EU and the Machinery Directive 2006/42/EC. Valves with a CE marking have a declaration of conformity which includes information about the applied conformity assessment procedure. The 'Certificates' section contains this declaration of conformity.

### **Referenced documentation**

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

- Mounting and operating instructions for mounted valve accessories (positioner, solenoid valve etc.), for example ► EB 8357 for Type 4740 Limit Switch
- 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](http://www.samsongroup.com) > About SAMSON > Material Compliance > REACH

If a device contains a substance which is listed as being a substance of very high concern on the candidate list of the REACH regulation, this circumstance 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.

## 1.2 Notes on possible personal injury

### WARNING

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

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

- Allow components and pipelines to cool down or warm up to the ambient temperature.
- Wear protective clothing and safety gloves.

#### **Risk of hearing loss or deafness due to loud noise.**

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

- Wear hearing protection when working near the valve.

#### **Risk of personal injury due to exhaust air being vented.**

While the valve is operating, air is vented from the actuator, for example, 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.



**⚠ WARNING**

**Risk of personal injury due to preloaded springs.**

Control valves fitted with preloaded springs are under tension.

- Only open the valve body/actuator following the instructions in this document (see the 'Servicing' section > 'Replacing the gaskets' or 'Replacing the packing').

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

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

- If possible, drain the process medium from all the plant sections affected and the valve.
- Wear protective clothing, safety gloves, respiratory protection and eye protection.

**Exposure to hazardous substances poses a serious risk to health.**

Certain lubricants and cleaning agents are classified as hazardous substances. These substances have a special label and a material safety data sheet (MSDS) issued by the manufacturer.

- Make sure that an MSDS is available for any hazardous substance used. If necessary, contact the manufacturer to obtain an MSDS.
- Inform yourself about the hazardous substances and their correct handling.

**Risk of personal injury 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 the 'Tightening torques' section 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.

#### **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.

## 2 Markings on the device

### 2.1 Valve nameplate

| Antrieb<br>Act. size |   | Stelldruck<br>Supply<br>(bar) | Max. Diff.druck/pressure $\Delta p$ in bar |                |
|----------------------|---|-------------------------------|--|----------------|
|                      |   |                               | 3  | 3              |
|                      |   |                               | 3  | 3              |
| 1                    | 2 |                               | 4  | 4              |
| 1                    | 2 |                               | 4  | 4              |
|                      |   |                               | 5  | Made in Europe |
| 6                    |   |                               |  | 7              |

**SAMSON 3354** **CE**

- 1 Actuator area and number of actuator springs (I or II)
- 2 Required signal pressure in bar
- 3 Valve size (DN and NPS)
- 4 Max. perm. differential pressure in bar
- 5 Configuration ID
- 6 Max. permissible medium temperature
- 7 Year of manufacture

Fig. 2-1: Nameplate

The nameplate is stuck on the pneumatic actuator.



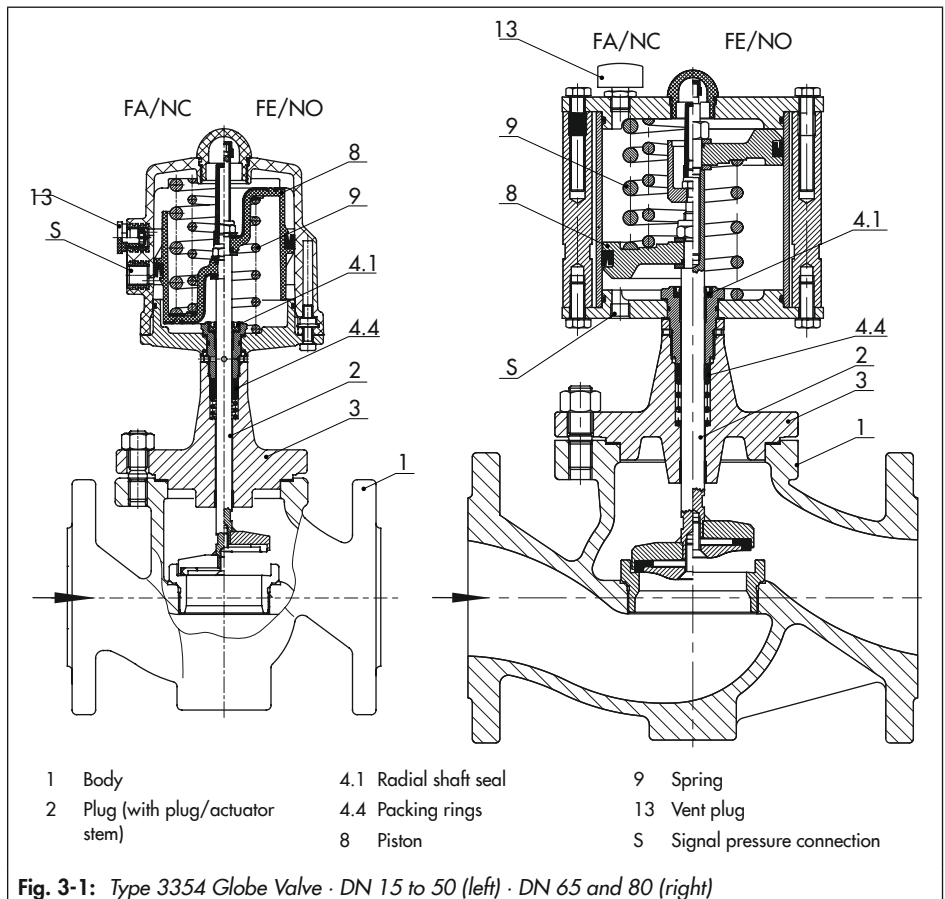
### 3 Design and principle of operation

The pneumatic control valve consists of a globe (T-pattern) valve with a soft-seated plug and a pneumatic piston actuator.

The medium flows through the valve in the direction indicated by the arrow. The signal

pressure applied to the piston actuator determines the position of the plug and thus the cross-sectional area of flow between the seat and plug.

The plug/actuator stem (2) is sealed by a self-adjusting PTFE V-ring packing (4.4) at the valve and by a radial shaft seal (4.1) at the actuator.



### 3.1 Fail-safe action

The fail-safe position of the valve upon supply air (signal pressure) failure is determined by how the piston and actuator spring are arranged in the pneumatic actuator.

#### Fail-close (FA/NC)

The actuator spring closes the valve upon air supply failure. The valve opens when the signal pressure increases.

#### Fail-open (FE/NO)

The actuator spring opens the valve upon air supply failure. The valve closes when the signal pressure increases.

### 3.2 Versions

#### Additional actuator spring (changing the spring force)

Fail-close (FA/NC) valves with the valve sizes DN 40 and 50 (NPS 1½ and 2) and with 60 cm<sup>2</sup> actuators (Ø = 90 mm) can be fitted with one or two actuator springs (marked on the nameplate with I or II). See the 'Markings on the device' section).

By adding a spring or removing the internal spring, the permissible differential pressure and associated signal pressure can be changed.

| Actuator           | Version | Spring force | Quantity of springs | Signal pressure |
|--------------------|---------|--------------|---------------------|-----------------|
| 60 cm <sup>2</sup> | FA/NC   | 1440 N       | 1                   | 3.8 bar         |
|                    |         | 2160 N       | 2                   | 5.4 bar         |

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#### **i** Note

*It is not possible to change the fail-safe action.*

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### 3.3 Accessories

- Type 4740 Limit Switch with electric microswitches to indicate valve OPEN or valve CLOSED for fail-open or fail-close version, optionally with 3/2-way solenoid valve
- Type 4740 Limit Switch with inductive proximity switches for fail-open or fail-close version, optionally with 3/2-way solenoid valve
- Fixture for holding proximity switches with M12 thread
- NAMUR adapter to attach a solenoid valve for valves in DN 15 to 50
- 3/2-way solenoid valve with G ⅛ for direct attachment to the actuator (double nipple required for mounting) in DN 1½
- 0 to 12 bar; 24 V DC or 230 V AC, optional silencer
- Double nipple G ⅛ x G ¼ detachable, brass
- Elbow fitting (order no. 8582-2273) for valves in DN 65 and 80

### 3.4 Additional fittings

#### Strainers

We recommend installing a SAMSON strainer upstream of the valve. It prevents sol-

id 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.

## 3.5 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 8140.

### 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.

**Table 3-1:** Technical data

| Valve sizes                       | DN 15 to 80  |
|-----------------------------------|--|
| Material                          | Cast iron EN-GJL-250 (EN-JL1040)   |
| Type of connection                | Flange   |
| Pressure rating                   | PN 16  |
| Seat-plug seal                    | Soft seal  |
| Characteristic                    | Open/Close   |
| Conformity                        |           |
| <b>Actuator</b>                   | 30 cm <sup>2</sup> (Ø=63 mm) · 60 cm <sup>2</sup> (Ø=90 mm) · 120 cm <sup>2</sup> (Ø=125 mm) |
| Permissible signal pressure       | Minimum → See Table 3-5 · Maximum 8 bar  |
| Signal pressure connection        | G ¼  |
| <b>Temperature range</b>          |  |
| Perm. medium temperature          | -10 to +180 °C   |
| Perm. ambient temperature         | -10 to +60 °C  |
| <b>Permissible flow velocity</b>  |  |
| Max. velocity at the valve outlet | Liquids: 3 m/s · Gases: 0.3 Mach   |

## Design and principle of operation

**Table 3-2: Materials**

| Valve body         | Cast iron EN-GJL-250 (EN-JL1040)                      |                     |
|--------------------|---|---------------------|
| Intermediate piece | 1.0566  |                     |
| Actuator stem      | 1.4571  |                     |
| Flat plug          | 1.4571  |                     |
| Seal               | PTFE, 35 % carbon fiber reinforced                    |                     |
| Packing            | PTFE/carbon, spring-loaded                            |                     |
| Actuator           | 30/60 cm <sup>2</sup>                                 | 120 cm <sup>2</sup> |
| Actuator cover     | PA 66, glass fiber reinforced                         | Aluminum            |
| Piston             | PA 66, glass fiber reinforced                         | Aluminum            |
| Actuator base      | Spheroidal graphite iron EN-GJS-400-18-LT (EN-JS1049) | Aluminum            |

**Table 3-3: Valve sizes, flow coefficients and seat diameters**

| Valve size       | DN       | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 |
|------------------|----------|----|----|----|----|----|----|----|----|
| Flow coefficient | $K_{VS}$ | 6  | 9  | 18 | 20 | 36 | 44 | 65 | 90 |
| Seat Ø           | mm       | 20 | 20 | 24 | 48 | 48 | 48 | 74 | 74 |
| Travel           | mm       | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |

**Table 3-4: Dimensions and weights**

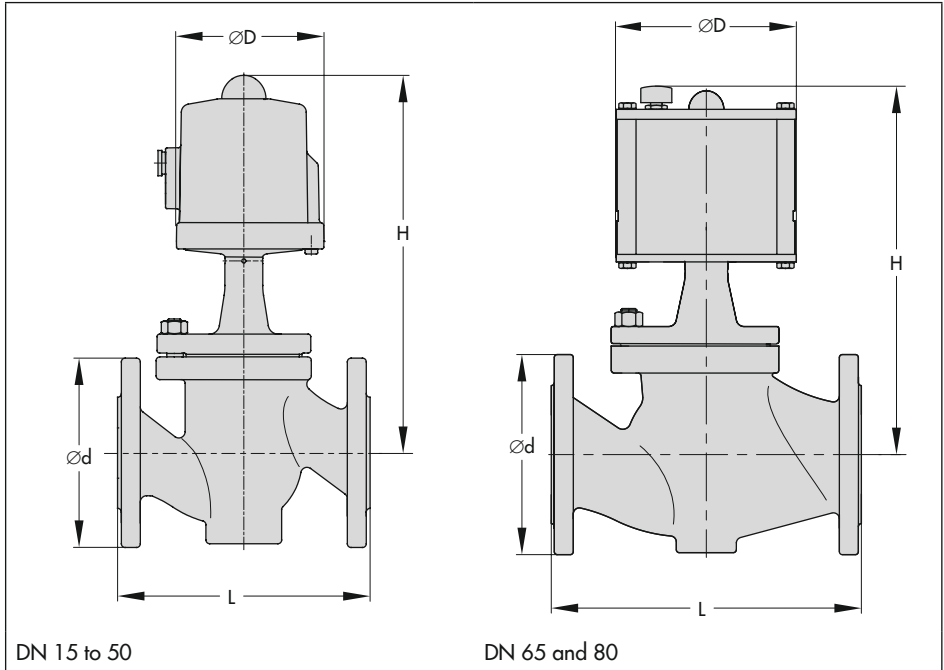
**Table 3-4.1: Type 3354 Valve**

| Version with flanges            |    |     |     |     |      |      |      |      |      |
|---------------------------------|----|-----|-----|-----|------|------|------|------|------|
| Valve size                      | DN | 15  | 20  | 25  | 32   | 40   | 50   | 65   | 80   |
| Face-to-face dimension L        | mm | 130 | 150 | 160 | 180  | 200  | 230  | 290  | 310  |
| Height including actuator H     | mm | 235 | 235 | 249 | 249  | 262  | 262  | 368  | 368  |
| Flange Ød                       | mm | 95  | 105 | 115 | 140  | 150  | 165  | 185  | 200  |
| Valve weight including actuator | kg | 5.4 | 6.0 | 7.3 | 12.3 | 13.0 | 15.7 | 30.5 | 33.5 |



**Table 3-4.2:** *Pneumatic piston actuator*

| Version                    | Actuator area<br>(piston $\varnothing$ ) | 30 cm <sup>2</sup><br>( $\varnothing = 63$ mm) | 60 cm <sup>2</sup> ( $\varnothing = 90$ mm) |           | 120 cm <sup>2</sup><br>( $\varnothing = 125$ mm) |
|----------------------------|--|--|---|-----------|--|
|                            |  |  | 1 spring                                    | 2 springs |  |
| Housing $\varnothing D$    | mm                                       | 100  | 127   |           | 180  |
| Signal pressure connection |  | G 1/4  | G 1/4                                       |           | G 1/4  |



## Design and principle of operation

**Table 3-5:** *Permissible differential pressures*

The specifications for the standard version have a dark gray background.

**Table 3-5.1:** *Fail-close (FA/NC) version*

| Valve size                | DN                        | 15 · 20    | 25 | 32 · 40 · 50 | 65 · 80 |
|---------------------------|---------------------------|------------|----|--------------|---------|
| Actuator<br>Actuator area | Signal pressure in<br>bar | $\Delta p$ |    |              |         |
| 30 cm <sup>2</sup>        | 5.0                       | 20         | 10 | 4            | –       |
| 60 cm <sup>2</sup>        | 4.0                       | 16         | 16 | 6            | –       |
|                           | 5.4                       | –          | 16 | 10           | –       |
| 120 cm <sup>2</sup>       | 5.8                       | –          | –  | –            | 10      |

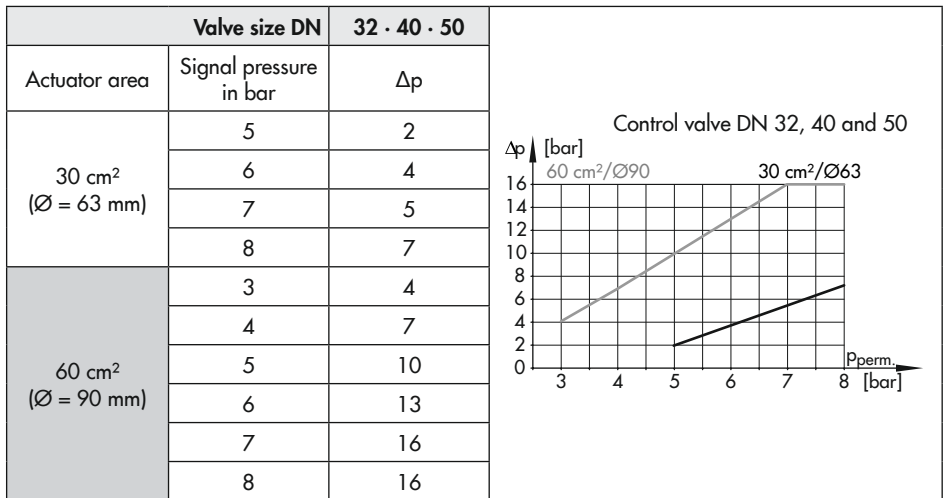
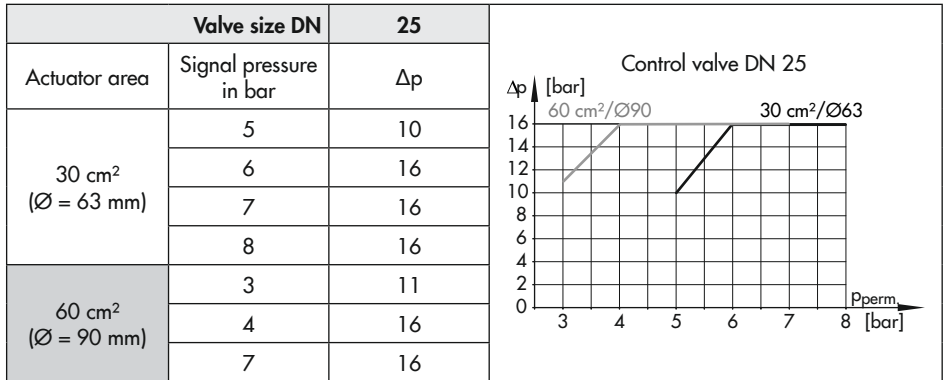
**Table 3-5.2:** *Fail-open (FE/NO) version*

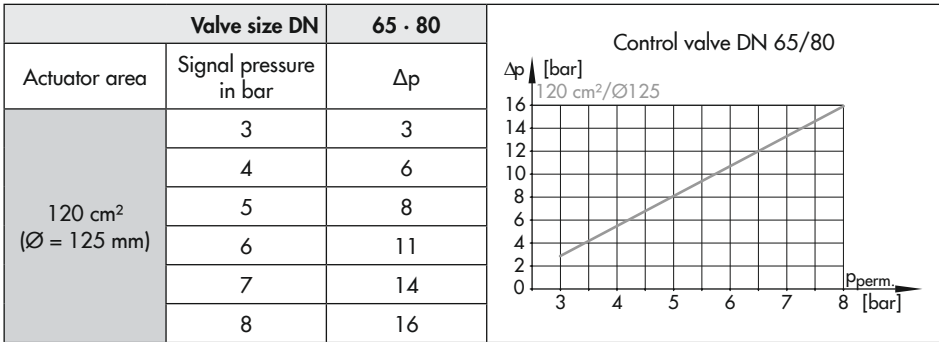
Required actuators and signal pressures to close the valve at the specified differential pressure. Assigned according to valve size and actuator area.

| Valve size DN                                  |                           | 15 · 20    |
|--|---------------------------|------------|
| Actuator area                                  | Signal pressure<br>in bar | $\Delta p$ |
| 30 cm <sup>2</sup><br>( $\varnothing = 63$ mm) | 4                         | 6          |
|  | 5                         | 14         |
|  | 6                         | 16         |
|  | 7                         | 16         |
|  | 8                         | 16         |
| 60 cm <sup>2</sup><br>( $\varnothing = 90$ mm) | 4                         | 16         |

Control valve DN 15/20

The graph plots differential pressure  $\Delta p$  [bar] on the vertical axis (0 to 16) against permissible differential pressure  $p_{perm}$  [bar] on the horizontal axis (3 to 8). Two data series are shown:   
 - For 60 cm<sup>2</sup>/∅90: A line starts at  $p_{perm} = 4.5$  bar,  $\Delta p = 8$  bar and rises to  $\Delta p = 16$  bar at  $p_{perm} = 5.5$  bar.   
 - For 30 cm<sup>2</sup>/∅63: A line starts at  $p_{perm} = 4.5$  bar,  $\Delta p = 16$  bar and remains constant at  $\Delta p = 16$  bar up to  $p_{perm} = 8$  bar.





## 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, if required. 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

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#### **⚠ 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 actuator (including any packaging).*
-

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### 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.
- 

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### WARNING

**Risk of injury due to incorrect lifting without the use of lifting equipment.**

Lifting the control valve without the use of lifting equipment may lead to injuries (back injury in particular) depending on the weight of the control valve.

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

---

### NOTICE

**Risk of valve damage due to incorrectly attached slings.**

- 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 or any other parts.
  - Observe lifting instructions (see section 4.3.2).
- 

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### Tip

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

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## 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 any mounted valve accessories against damage.
  - Protect the control valve against moisture and dirt.
  - Observe the permissible ambient temperature (see 'Technical data' in the 'Design and principle of operation' section).
- 

### Note

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

---

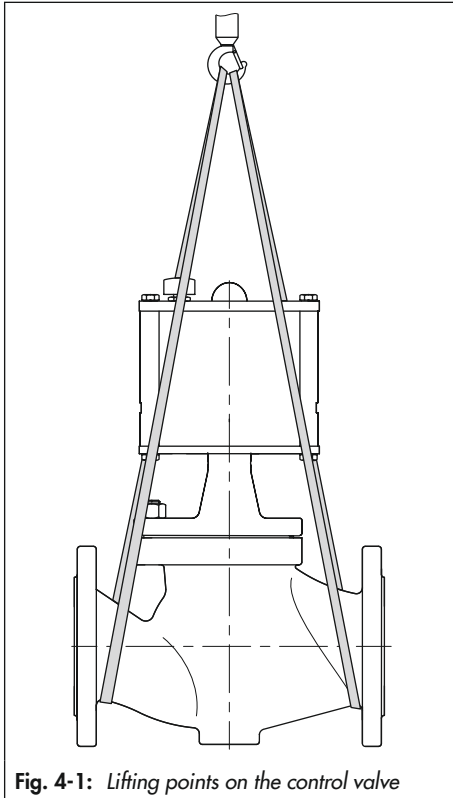


Fig. 4-1: Lifting points on the control valve

### 4.3.2 Lifting the valve

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

#### Lifting instructions

- Use a hook with safety latch (see Fig. 4-1) to secure the slings from slipping off the hook during lifting and transporting.
- Secure slings against slipping.

- Make sure the slings can be removed from the valve once it has been installed into the pipeline.
- Prevent the control valve from tilting or tipping over.
- Do not leave loads suspended when interrupting work for longer periods of time.
- Make sure that the axis of the pipeline is always horizontal during lifting and the axis of the plug stem is always vertical.

#### Lifting the control valve

1. Attach one sling to each flange of the body and to the rigging equipment (e.g. hook) of the crane or forklift (see Fig. 4-1).
2. Carefully lift the control valve. Check whether the lifting equipment and accessories can bear the weight.
3. Move the control valve at an even pace to the site of installation.
4. Install the valve into the pipeline (see the 'Installation' section).
5. After installation in the pipeline, check whether the flanges are bolted tight and the valve in the pipeline holds.
6. Remove 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.
- Observe the permissible ambient temperature (see 'Technical data' in the 'Design and principle of operation' section).

- Do not place any objects on the control valve.



## 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

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

- 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 and repair work on them.

#### Mounting position

Generally, we recommend installing the valve horizontally in the pipeline with the actuator in the upright position on top of the valve.

- 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.

#### Valve accessories

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

#### Vent plugs

Vent plugs are screwed into the exhaust air ports of pneumatic and electropneumatic devices. They ensure that any exhaust air that forms can be vented to the atmosphere (to avoid excess pressure in the device). Furthermore, the vent plugs allow air intake to prevent a vacuum from forming in the device.

- Locate the vent plug on the opposite side to the work position of operating personnel.

### 5.2 Preparation for installation

Before installation, make sure the following conditions are met:

- The valve is clean.

## Installation

- 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 'Additional fittings' in the 'Design and principle of operation' section) have been installed or prepared as necessary before installing the valve.
- The permissible ambient temperature is in the permissible range (see 'Technical data' in the 'Design and principle of operation' section).

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.

## 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.*
- 

### 5.3.1 Installing the valve into the pipeline

---

### **!** NOTICE

#### **Premature wear and leakage due to insufficient support or suspension.**

- *Support or suspend the valve sufficiently at suitable points.*
- 

1. Close the shut-off valves in the pipeline at the inlet and outlet of the plant section while the valve is being installed.

2. Prepare the relevant section of the pipeline for installing the valve.
3. Remove the protective caps from the valve ports before installing the valve.
4. Lift the valve using suitable lifting equipment to the site of installation (see information under 'Lifting the valve' in the 'Shipment and on-site transport' section). Observe the flow direction through the valve. The arrow on the valve indicates the direction of flow.
5. Make sure that the correct flange gaskets are used.
6. Bolt the pipe to the valve free of stress.
7. Attach a support or suspension on the valve, if necessary.

### 5.3.2 Connecting the signal pressure

#### **⚠ WARNING**

***Risk of personal injury due to exhaust air being vented.***

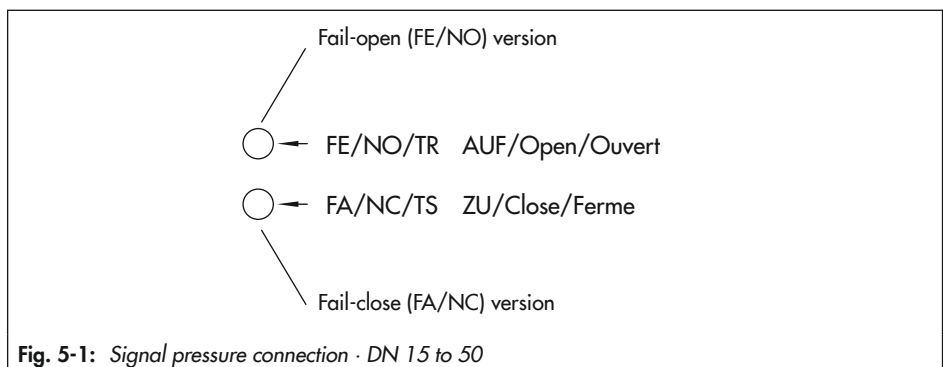
*While the valve is operating, air is vented from the actuator, for example, during closed-loop operation or when the valve opens or closes.*

➔ *Wear eye and hearing protection when working near the control valve.*

Signal pressure connection and venting are designed as boreholes with a G 1/4 female thread.

The venting hole in valves up to DN 50 is fitted with a replaceable filter (13.1) with order no. 0550-0213. This filter can be removed by first unscrewing the vent plug (13).

The signal pressure connection on valves in DN 15 to 50 also allows an adapter plate to



## Installation

be attached that complies with VDI/VDE 3845 for mounting a solenoid valve.

- Turn the actuator as required to connect the signal pressure line.
- Use the customary fittings for metal or copper tubing or plastic hoses.
- Blow through all air pipes and hoses thoroughly before connecting them.

## 5.4 Testing the installed valve

### **⚠ DANGER**

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

Valves and pipelines are pressure equipment that may burst when handled incorrectly. Flying projectile fragments or the release of process medium under pressure can cause serious injury or even death.

Before working on the control valve:

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

### **⚠ WARNING**

**Risk of 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**

**Risk of personal injury due to exhaust air being vented.**

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

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

### **⚠ WARNING**

**Risk of personal injury due to preloaded springs.**

Control valves fitted with preloaded springs are under tension.

- Only open the valve body/actuator following the instructions in this document (see the 'Servicing' section > 'Replacing the gaskets' or 'Replacing the packing').

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

### 5.4.1 Leak test

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



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

---

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

### 5.4.2 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).

### 5.4.3 Pressure test

The plant operator is responsible for performing the pressure test.



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

---

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

- Retract the plug stem to open the valve.
- Observe the maximum permissible pressure for both the valve and plant.



## 6 Start-up

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

### **⚠ WARNING**

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

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

- Allow components and pipelines to cool down or warm up to the ambient temperature.
- Wear protective clothing and safety gloves.

### **⚠ WARNING**

#### **Risk of hearing loss or deafness due to loud noise.**

Noise emission (e.g. cavitation or flashing) may occur during operation caused by the process medium and the operating conditions. Additionally, a loud noise may briefly occur through the sudden venting of the pneumatic actuator or pneumatic valve accessories not fitted with noise-reducing fittings. Both can damage hearing.

- Wear hearing protection when working near the valve.

### **⚠ 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 'Testing the installed valve' in the 'Installation' 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

## Start-up

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 hot or cold components and pipeline.***

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

- Allow components and pipelines to cool down or warm up to the ambient temperature.
  - Wear protective clothing and safety gloves.
- 

---

### **⚠ WARNING**

#### ***Risk of hearing loss or deafness due to loud noise.***

Noise emission (e.g. cavitation or flashing) may occur during operation caused by the process medium and the operating conditions. Additionally, a loud noise may briefly occur through the sudden venting of the pneumatic actuator or pneumatic valve accessories not fitted with noise-reducing fittings. Both can damage hearing.

- Wear hearing protection when working near the valve.
- 

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### **⚠ 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.
-



## 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 plug stem does not move on demand.                  | Actuator is blocked.   | Check attachment.<br>Remove the blockage.<br><b>WARNING!</b> A blocked actuator or plug stem (e.g. due to seizing up after remaining in the same position for a long time) can suddenly start to move uncontrollably. Injury to hands or fingers is possible if they are inserted into the actuator or valve.<br>Before trying to unblock the actuator or plug stem, disconnect and lock the pneumatic air supply as well as the control signal. Before unblocking the actuator, release any stored energy in the actuator. Only open the valve body/actuator following the instructions in this document (see the 'Servicing' section > 'Replacing the gaskets' or 'Replacing the packing'). |
|  | Signal pressure too low  | Check the signal pressure.<br>Check the signal pressure line for leakage.   |
| Actuator and plug stem does not stroke through the entire range. | Signal pressure too low  | Check the signal pressure.<br>Check the signal pressure line for leakage.   |
| Increased flow through closed valve (seat leakage)               | Dirt or other foreign particles deposited between the seat and plug. | Shut off the section of the pipeline and flush the valve.   |
|  | Valve trim is worn out.  | 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.   |
|  | Flanged joint loose or gasket worn out                               | Check the flanged joint.<br>Replace gasket at the flanged joint (see the 'Servicing' section) or contact our after-sales service.   |

**i Note**

*Contact our after-sales service for malfunctions not listed in the table.*

---

## 8.2 Emergency action

Plant operators are responsible for emergency action to be taken in the plant.

In the event of a valve malfunction:

1. Close the shut-off valves upstream and downstream of the control valve to stop the process medium from flowing through the valve.
2. Perform troubleshooting (see section 8.1).
3. Rectify those malfunctions that can be remedied based on the instructions provided here. Contact our after-sales service in all other cases.

### **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.

### **⚠ 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 hot or cold components and pipeline.**

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

- Allow components and pipelines to cool down or warm up to the ambient temperature.
- Wear protective clothing and safety gloves.

### **⚠ WARNING**

#### **Risk of hearing loss or deafness due to loud noise.**

Noise emission (e.g. cavitation or flashing) may occur during operation caused by the process medium and the operating conditions. Additionally, a loud noise may briefly occur through the sudden venting of the pneumatic actuator or pneumatic valve accessories not fitted with noise-reducing fittings. Both can damage hearing.

- Wear hearing protection when working near the valve.

### **⚠ WARNING**

#### **Risk of personal injury due to exhaust air being vented.**

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

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

### **⚠ WARNING**

#### **Risk of personal injury due to preloaded springs.**

Control valves fitted with preloaded springs are under tension.

- Only open the valve body/actuator following the instructions in this document (see section 9.4.1 or 9.4.2).

---

### **⚠ 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.

---

### **⚠ NOTICE**

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

→ Only use lubricants approved by SAMSON.

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### **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.

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### **💡 Tip**

Our after-sales service can support you in drawing up an inspection and test plan for your plant.

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We recommend the following inspection and testing which can be performed while the process is running:

| Inspection and testing  | Action to be taken in the event of a negative result:  |
|---|--|
| Check the markings, labels and name-plates on the valve for their readability and completeness. | Immediately renew damaged, missing or incorrect name-plates 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).  |
|   | Put the control valve out of operation (see the 'Decommissioning' section) and replace gaskets (see section 9.4).  |
| 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 seat and plug.                              |
| 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.  |
| 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). |

## 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).



**Tip**

We recommend removing the valve from the pipeline before performing any service work (see the 'Removal' section).

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

- Replace the gaskets (see section 9.4.1)
- Replace the packing (see section 9.4.2)

## 9.3 Installing the valve after service work

1. If the valve has been removed, re-install the valve into the pipeline (see the 'Installation' section).
2. Put the control valve back into operation (see the 'Start-up' section). Observe the

## Servicing

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 gaskets

1. Undo the body nuts (1.1) gradually in a crisscross pattern.
2. Lift the valve bonnet (3) together with the plug (2) off the body (1).

3. Remove the body gasket (3.1). Carefully clean the sealing faces in the valve body and seat bore.
4. Unscrew the countersunk screw (2.1) using a 3 mm hex screwdriver, while holding the plug/actuator stem (2) stationary at the flattened part with an open-end wrench.
5. Remove the PTFE seal (2.2) and plug disk (2.3). Thoroughly clean the plug disk.
6. Insert a new PTFE seal (2.2).
7. Insert the plug disk (2.3).
8. Tighten the countersunk screw (2.1) using a 3 mm hex screwdriver, while holding the plug/actuator stem (2) stationary at the flattened part with an open-end wrench.

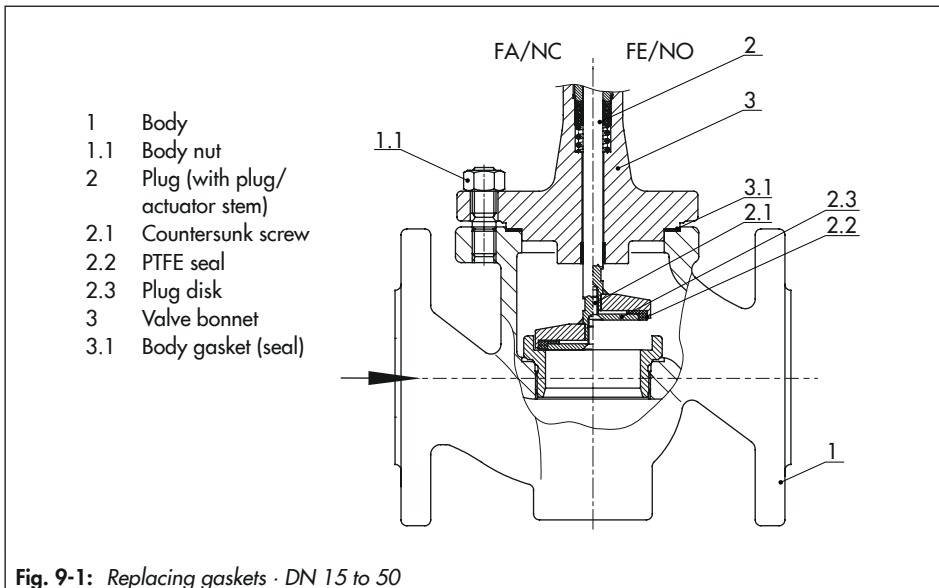


Fig. 9-1: Replacing gaskets · DN 15 to 50



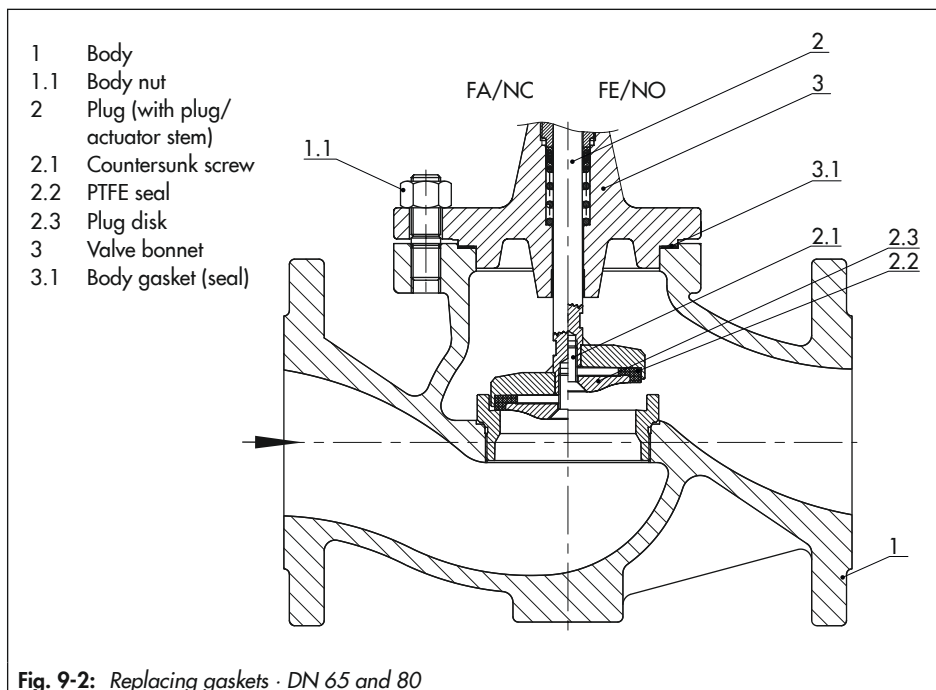


Fig. 9-2: Replacing gaskets · DN 65 and 80

9. Insert a new body gasket (3.1).
10. Place the valve bonnet (3) with plug (2) onto the body (1).
11. Tighten the body nuts (1.1) gradually in a crisscross pattern. Observe tightening torques.

2. Lift the valve bonnet (3) together with the plug (2) off the body (1).
3. Undo the screws (6) gradually in a crisscross pattern.
4. Lift off the actuator housing (7).
5. Lift off the spring (9).
6. Remove the travel indicator (10).
7. Use a socket wrench to unscrew the nut (11) from the plug/actuator stem, while holding the plug/actuator stem (2) stationary at the flattened part with an open-end wrench.

## 9.4.2 Replacing the packing

### a) DN 15 to 50

#### Fail-close (FA)

1. Undo the body nuts (1.1) gradually in a crisscross pattern.

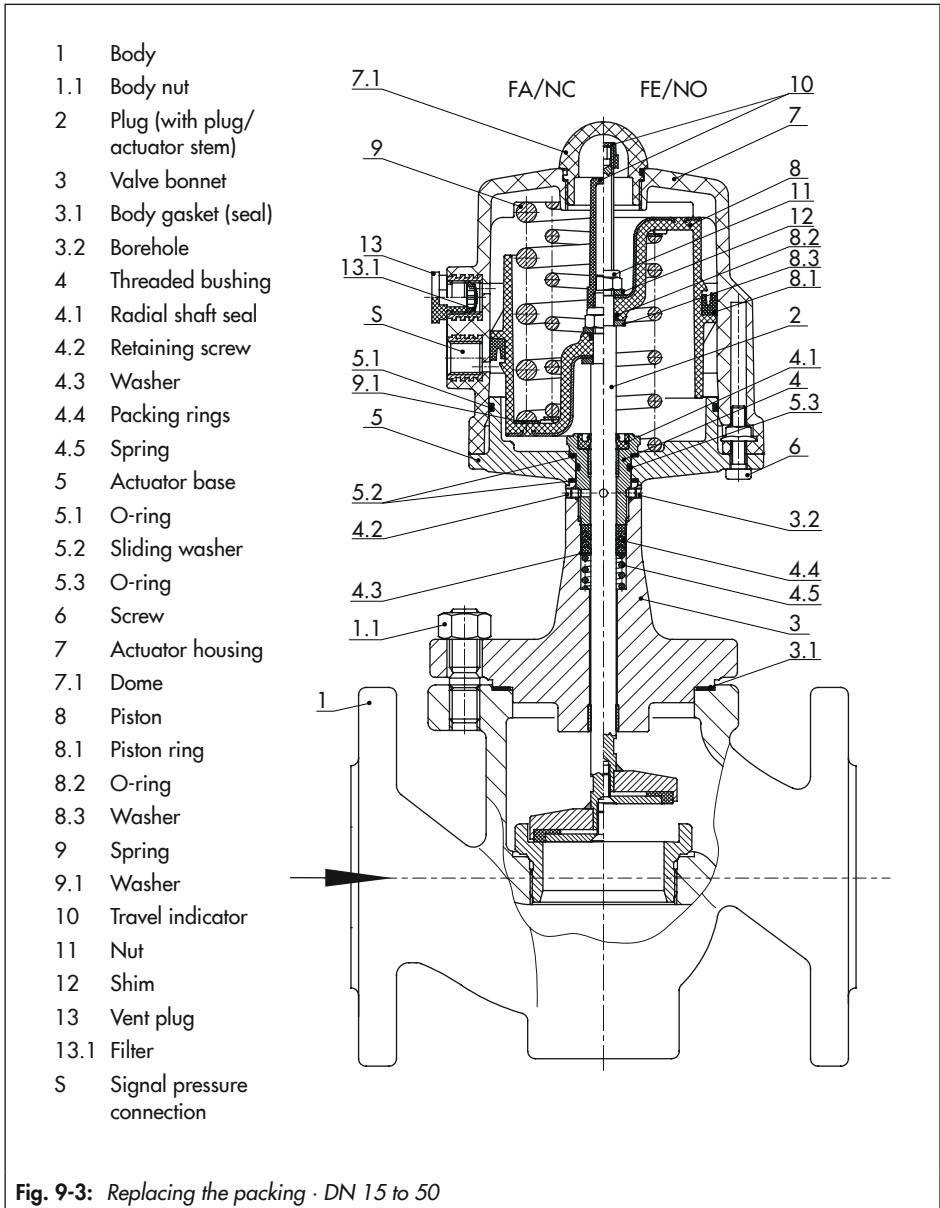
## Servicing

8. Remove the shim (12), piston (8) together with the piston ring (8.1) and washer (9.1).
9. Remove the O-ring (8.2) and washer (8.3) from the plug/actuator stem (2).
10. Unscrew the retaining screw (4.2) at the side using a 2 mm hex screwdriver.
11. Unscrew the threaded bushing (4) together with the actuator base (5) from the valve bonnet (3) using an open-end wrench (width across flats 24).
12. Press the threaded bushing (4) out of the actuator base (5). Replace the slip washers (5.2) with new ones.
13. Pull the actuator/plug stem (2) down out of the valve bonnet (3).
14. Pull the entire packing out of the packing chamber using a suitable tool. Clean the packing chamber thoroughly. Renew the packing.
15. Slide the plug/actuator stem (2) into the valve bonnet (3).
16. Carefully slide the packing parts over the plug/actuator stem into the packing chamber using a suitable tool. Observe the correct sequence:
  - Spring (4.5)
  - Washer (4.3)
  - V-ring packing (4.4)
17. Place the top slip washer (5.2) into the actuator base (5).
18. Push the threaded bushing (4) into the actuator base (5). Make sure that the O-ring (5.3) is correctly seated in the threaded bushing.
19. Place the bottom slip washer (5.2) on the valve bonnet (3).
20. Screw the threaded bushing (4) together with the actuator base (5) over the plug/actuator stem (2) onto the valve bonnet (3).

Tighten the threaded bushing only to the point where the actuator base (5) can still rotate on the slip washers (5.2).
21. Screw tight the retaining screw (4.2) at the side to fix the threaded bushing in place.
22. Slide the washer (8.3) and O-ring (8.2) onto the plug/actuator stem (2).
23. Place on the piston (8) with piston ring (8.1) and shim (12).
24. Insert the washer (9.1) and spring (9) into the piston (8).
25. Tighten the nut (11) intended for fastening the piston, while holding the plug/actuator stem (2) stationary at the flattened part with an open-end wrench.
26. Fasten the travel indicator (10).
27. Put on actuator housing (7) and fasten it tight onto the actuator base (5) by tightening the screws (6) gradually in a criss-cross pattern.
28. Replace the body gasket (3.1). See section 9.4.1.
29. Place the valve bonnet (3) with plug (2) onto the body (1).
30. Tighten the body nuts (1.1) gradually in a crisscross pattern. Observe tightening torques.

**Fail-open (FE)**

1. Undo the body nuts (1.1) gradually in a crisscross pattern.
2. Lift the valve bonnet (3) together with the plug (2) off the body (1).
3. Undo the screws (6) gradually in a crisscross pattern.
4. Lift off the actuator housing (7).
5. Use a socket wrench to unscrew the nut (11) from the plug/actuator stem, while holding the plug/actuator stem (2) stationary at the flattened part with an open-end wrench.
6. Remove the shim (12), piston (8) together with the piston ring (8.1) and washer (9.1).
7. Remove the O-ring (8.2) and washer (8.3) from the plug/actuator stem (2).
8. Lift off the spring (9).
9. Remove the travel indicator (10).
10. Unscrew the retaining screw (4.2) at the side using a 2 mm hex screwdriver.
11. Unscrew the threaded bushing (4) together with the actuator base (5) from the valve bonnet (3) using an open-end wrench (width across flats 24).
12. Press the threaded bushing (4) out of the actuator base (5). Replace the slip washers (5.2) with new ones.
13. Pull the actuator/plug stem (2) down out of the valve bonnet (3).
14. Pull the entire packing out of the packing chamber using a suitable tool. Clean the packing chamber thoroughly. Renew the packing.
15. Slide the plug/actuator stem (2) into the valve bonnet (3).
16. Carefully slide the packing parts over the plug/actuator stem into the packing chamber using a suitable tool. Observe the correct sequence:
  - Spring (4.5)
  - Washer (4.3)
  - V-ring packing (4.4)
17. Place the top slip washer (5.2) into the actuator base (5).
18. Push the threaded bushing (4) into the actuator base (5). Make sure that the O-ring (5.3) is correctly seated in the threaded bushing.
19. Place the bottom slip washer (5.2) on the valve bonnet (3).
20. Screw the threaded bushing (4) together with the actuator base (5) over the plug/actuator stem (2) onto the valve bonnet (3).  
Tighten the threaded bushing only to the point where the actuator base (5) can still rotate on the slip washers (5.2).
21. Screw tight the retaining screw (4.2) at the side to fix the threaded bushing in place.
22. Slide the washer (8.3) onto the plug/actuator stem (2).
23. Place the spring (9) together with the washer (9.1) onto the actuator base (5).



24. Slide the piston (8) with piston ring (8.1) over the plug/actuator stem (2).
25. Mount the O-ring (8.2) and shim (12).
26. Tighten the nut (11) intended for fastening the piston, while holding the plug/actuator stem (2) stationary at the flattened part with an open-end wrench.
27. Fasten the travel indicator (10).
28. Put on actuator housing (7) and fasten it tight onto the actuator base (5) by tightening the screws (6) gradually in a crisscross pattern.
29. Replace the body gasket (3.1). See section 9.4.1.
30. Place the valve bonnet (3) with plug (2) onto the body (1).
31. Tighten the body nuts (1.1) gradually in a crisscross pattern. Observe tightening torques.
7. Use a socket wrench to unscrew the nut (11) from the plug/actuator stem, while holding the plug/actuator stem (2) stationary at the flattened part with an open-end wrench.
8. Remove the shim (12), piston (8) and piston ring (8.1).
9. Remove the O-ring (8.2) and washer (8.3) from the plug/actuator stem (2).
10. Unscrew the retaining screw (4.2) at the side using a 2 mm hex screwdriver.
11. Unscrew the threaded bushing (4) together with the actuator base (5) from the valve bonnet (3) using an open-end wrench (width across flats 41).
12. Press the threaded bushing (4) out of the actuator base (5). Replace the slip washers (5.2) with new ones.
13. Pull the actuator/plug stem (2) down out of the valve bonnet (3).

## b) DN 65 and 80

### Fail-close (FA/NC)

1. Undo the body nuts (1.1) gradually in a crisscross pattern.
2. Lift the valve bonnet (3) together with the plug (2) off the body (1).
3. Undo the top screws (6) gradually in a crisscross pattern.
4. Lift off the dome (7.1) and actuator housing (7).
5. Lift off the spring (9).
6. Remove the travel indicator (10).
14. Pull the entire packing out of the packing chamber using a suitable tool. Clean the packing chamber thoroughly. Renew the packing.
15. Slide the plug/actuator stem (2) into the valve bonnet (3).
16. Carefully slide the packing parts over the plug/actuator stem into the packing chamber using a suitable tool. Observe the correct sequence:
  - Spring (4.5)
  - Washer (4.3)
  - V-ring packing (4.4)
17. Place the top slip washer (5.2) into the actuator base (5).

## Servicing

18. Push the threaded bushing (4) into the actuator base (5). Make sure that the O-ring (5.3) is correctly seated in the threaded bushing.
19. Place the bottom slip washer (5.2) on the valve bonnet (3).
20. Screw the threaded bushing (4) together with the actuator base (5) over the plug/actuator stem (2) onto the valve bonnet (3).

Tighten the threaded bushing only to the point where the actuator base (5) can still rotate on the slip washers (5.2).
21. Screw tight the retaining screw (4.2) at the side to fix the threaded bushing in place.
22. Slide the washer (8.3) and O-ring (8.2) onto the plug/actuator stem (2).
23. Place on the piston (8) with piston ring (8.1) and shim (12).
24. Insert the spring (9) into the piston (8).
25. Tighten the nut (11) intended for fastening the piston, while holding the plug/actuator stem (2) stationary at the flattened part with an open-end wrench.
26. Fasten the travel indicator (10).
27. Put on actuator housing (7) and dome (7.1) and fasten them tight onto the actuator base (5) by tightening the top screws (6) gradually in a crisscross pattern.
28. Replace the body gasket (3.1). See section 9.4.1.
29. Place the valve bonnet (3) with plug (2) onto the body (1).

30. Tighten the body nuts (1.1) gradually in a crisscross pattern. Observe tightening torques.

### Fail-open (FE/NO)

1. Undo the body nuts (1.1) gradually in a crisscross pattern.
2. Lift the valve bonnet (3) together with the plug (2) off the body (1).
3. Undo the top screws (6) gradually in a crisscross pattern.
4. Lift off the dome (7.1) and actuator housing (7).
5. Use a socket wrench to unscrew the nut (11) from the plug/actuator stem, while holding the plug/actuator stem (2) stationary at the flattened part with an open-end wrench.
6. Remove the shim (12), piston (8) and piston ring (8.1).
7. Remove the O-ring (8.2) and washer (8.3) from the plug/actuator stem (2).
8. Lift off the spring (9).
9. Remove the travel indicator (10).
10. Unscrew the retaining screw (4.2) at the side using a 2 mm hex screwdriver.
11. Unscrew the threaded bushing (4) together with the actuator base (5) from the valve bonnet (3) using an open-end wrench (width across flats 41).
12. Press the threaded bushing (4) out of the actuator base (5). Replace the slip washers (5.2) with new ones.
13. Pull the actuator/plug stem (2) down out of the valve bonnet (3).

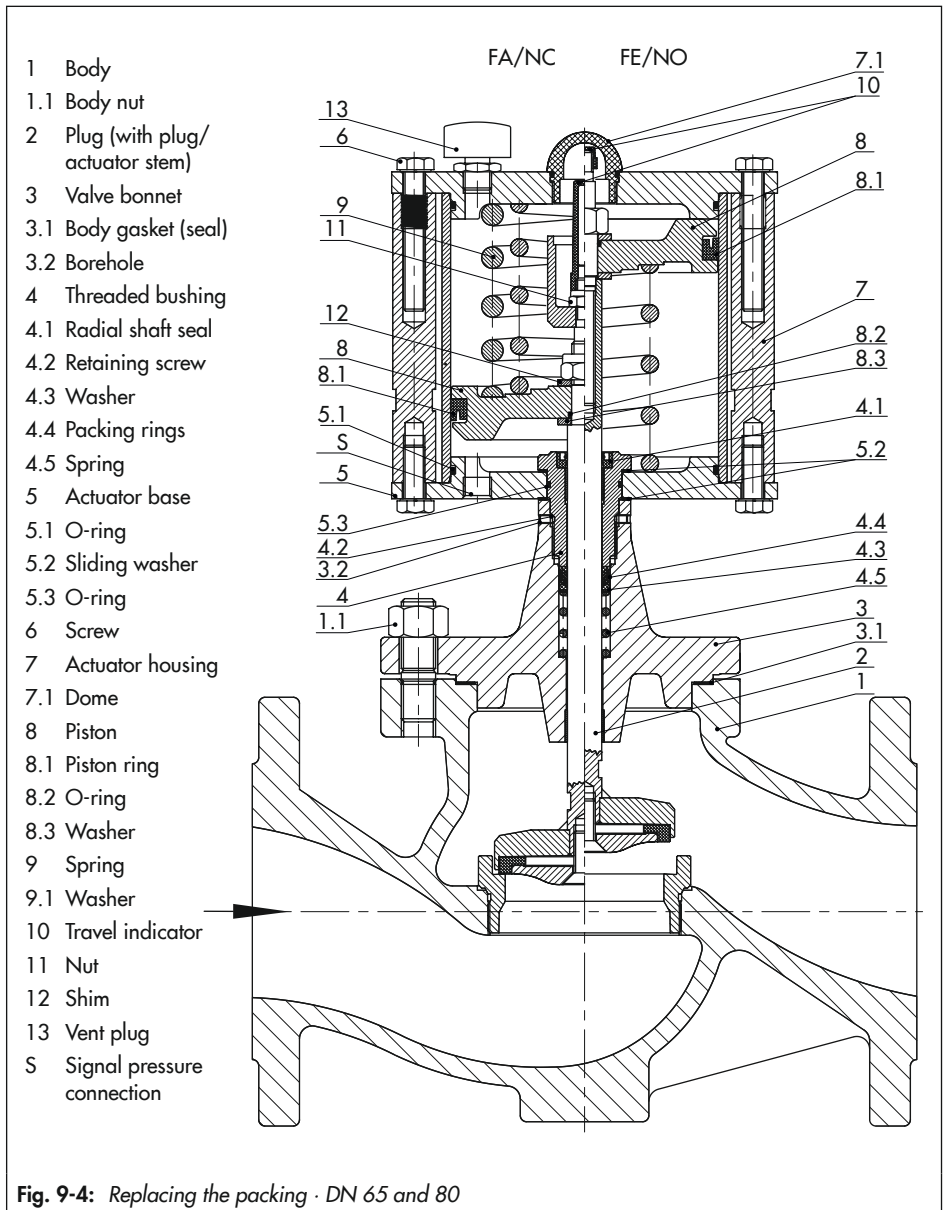


Fig. 9-4: Replacing the packing · DN 65 and 80

## Servicing

14. Pull the entire packing out of the packing chamber using a suitable tool. Clean the packing chamber thoroughly. Renew the packing.
15. Slide the plug/actuator stem (2) into the valve bonnet (3).
16. Carefully slide the packing parts over the plug/actuator stem into the packing chamber using a suitable tool. Observe the correct sequence:
  - Spring (4.5)
  - Washer (4.3)
  - V-ring packing (4.4)
17. Place the top slip washer (5.2) into the actuator base (5).
18. Push the threaded bushing (4) into the actuator base (5). Make sure that the O-ring (5.3) is correctly seated in the threaded bushing.
19. Place the bottom slip washer (5.2) on the valve bonnet (3).
20. Screw the threaded bushing (4) together with the actuator base (5) over the plug/actuator stem (2) onto the valve bonnet (3).

Tighten the threaded bushing only to the point where the actuator base (5) can still rotate on the slip washers (5.2).
21. Screw tight the retaining screw (4.2) at the side to fix the threaded bushing in place.
22. Place the spring (9) together with the washer (9.1) onto the actuator base (5).
23. Slide the piston (8) with piston ring (8.1) over the plug/actuator stem (2).
24. Mount the O-ring (8.2) and shim (12).
25. Tighten the nut (11) intended for fastening the piston, while holding the plug/actuator stem (2) stationary at the flattened part with an open-end wrench.
26. Fasten the travel indicator (10).
27. Put on actuator housing (7) and dome (7.1) and fasten them tight onto the actuator base (5) by tightening the top screws (6) gradually in a crisscross pattern.
28. Replace the body gasket (3.1). See section 9.4.1.
29. Place the valve bonnet (3) with plug (2) onto the body (1).
30. Tighten the body nuts (1.1) gradually in a crisscross pattern. Observe tightening torques.

## 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.







## 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 hot or cold components and pipeline.**

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

- Allow components and pipelines to cool down or warm up to the ambient temperature.
- Wear protective clothing and safety gloves.

### **⚠ WARNING**

#### **Risk of hearing loss or deafness due to loud noise.**

Noise emission (e.g. cavitation or flashing) may occur during operation caused by the process medium and the operating conditions. Additionally, a loud noise may briefly occur through the sudden venting of the pneumatic actuator or pneumatic valve accessories not fitted with noise-reducing fittings. Both can damage hearing.

- Wear hearing protection when working near the valve.

### **⚠ 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.

## Decommissioning

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 cool down or warm up to the ambient temperature.

## 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 hot or cold components and pipeline.**

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

- Allow components and pipelines to cool down or warm up to the ambient temperature.
- Wear protective clothing and safety gloves.

### **⚠ 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.**

Control valves fitted with preloaded springs are under tension.

- Only open the valve body/actuator following the instructions in this document (see the 'Servicing' section > 'Replacing the gaskets' or 'Replacing the packing').

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. Unbolt the flanged joint.
3. Remove the valve from the pipeline (see the 'Shipment and on-site transport' section).



## 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 service and repair work.

### 12.1 Returning devices to SAMSON

Defective devices can be returned to SAMSON for repair.

Proceed as follows to return devices:

1. Exceptions apply concerning some special device models
  - ▶ [www.samsongroup.com](http://www.samsongroup.com) > Service & Support > After-sales Service.
2. Send an e-mail
  - ▶ [retouren@samsongroup.com](mailto:retouren@samsongroup.com) to register the return shipment including the following information:
    - Type
    - Article number
    - Configuration ID
    - Original order

- Completed Declaration on Contamination, which can be downloaded from our website at
  - ▶ [www.samsongroup.com](http://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.

### i Note

*Further information on returned devices and how they are handled can be found at*

- ▶ [www.samsongroup.com](http://www.samsongroup.com) > Service & Support > After-sales Service.





## 13 Disposal

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



## 14 Certificates

These declarations are included on the next pages:

- Declaration of conformity in compliance with Pressure Equipment Directive 2014/68/EU:
  - Country of origin: Turkey, see page 14-2
- Declaration of conformity in compliance with Machinery Directive 2006/42/EC for Types 3354 Control Valves on page 14-3

The certificates shown were up to date at the time of publishing. The latest certificates can be found on our website:

▶ [www.samsongroup.com](http://www.samsongroup.com) > *Products & Applications* > *Product selector* > *Valves* > *3354*

Other optional certificates are available on request.



## EU DECLARATION OF CONFORMITY Module H, Nr./No. / N° CE- 0035

### Type 3354 Pneumatic On-Off Globe Valve

The conformity with the following requirement.

Pressure Equipment Directive of the European Parliament and of the Council on the harmonization 2014/68/EU of 15 May 2014 of the laws of the Member States relating of the making available on the market of pressure equipment.

Machinery Directive of the European Parliament and of the Council on the harmonization 2006/42/EC of 17 May 2006 of the laws of the Member States relating of the making available on the market of machinery..

Conformity assessment procedure applied for fluids according to Article 4(1)(c.ii) and (c.i) second indent.

certified by  
TÜV Rheinland  
Industrie Service GmbH  
( 0035 )

For type of module, see table;

| Nenndruck<br>Pressure rating | DN<br>NPS | 15<br>½    | 20<br>¾ | 25<br>1 | 32<br>1¼ | 40<br>1½ | 50<br>2 | 65<br>- | 80<br>3 |
|------------------------------|-----------|------------|---------|---------|----------|----------|---------|---------|---------|
| PN 16                        |           | Without(1) |         |         |          |          |         | A(2)    |         |
| PN 25                        |           | Without(1) |         |         |          |          |         | A(2)    |         |
| PN 40                        |           | Without(1) |         |         |          | A(2)     |         | H       |         |
| Class 150                    |           | Without(1) |         |         |          | A(2)     |         |         |         |
| Class 300                    |           | Without(1) |         |         |          | A(2)     |         | H       |         |

(1) The CE marking affixed to the control valve is not permitted in the sense of the 2014/68/EU.

(2) The identification number 0035 of TÜV Rheinland. Industrie Service GmbH Am Grauen Stein 51105 Köln is not affixed for those products.

Devices whose conformity has been assessed based on Module H refer to the certificate of approval for the quality management system issued by the notified body.

The design is based on the procedures specified in the following standards: DIN EN 12516-2, DIN EN 12516-3 bzw./or ASME B16.1, ASME B16.24, ASME B16.34, ASME B16.42

The manufacturer's quality management system is monitored by the following notified body:  
**TÜV Rheinland. Industrie Service GmbH Am Grauen Stein 51105 Köln , Certificate CE-0035-01 202 TR/Q-19-2022 covers only products of Category II and III under Module H**  
**Manufacturer: SAMSON A.Ş / Hadımköy Mah. Alparslan Cad. Niyaz sok.No:16-18 34212 Arnavutköy / İSTANBUL - TÜRKİYE. www.samson.com.tr**  
**İSTANBUL / 04.11.2019**

Orkan ARIKAN  
Factory Manager

Sakine YILMAZ  
Sales Manager

**SAMSON ÖLÇÜ ve OTOMATİK KONTROL SİSTEMLERİ SANAYİ ve TİCARET A.Ş.**  
Merkez adresi: Hadımköy Mahallesi, Alparslan Caddesi, Niyaz Sokak No:16-18 34555 Arnavutköy/İstanbul, TÜRKİYE  
Ticaret Sicil No : 210522  
Tel.: +90 212 651 87 46 (Pbx) , Fax: +90 212 651 87 50 , e-mail: samson@samson.com.tr , web : www.samson.com.tr



## Declaration of Conformity of Final Machinery

2020-01

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

For the following products:

### Type 3354 Pneumatic On-Off Globe Valve

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 refer to:

- Type 3354 Valve: Mounting and Operating Instructions EB 8140

Referenced technical standards and/or specifications:

- VCI, VDMA, VGB: "Leitfaden Maschinenrichtlinie (2006/42/EG) — Bedeutung für Armaturen, Mai 2018"
- VCI, VDMA, VGB: "Zusatzdokument zum „Leitfaden Maschinenrichtlinie (2006/42/EG) — Bedeutung für Armaturen vom Mai 2018" , based on DIN EN ISO 12100:201 1-03

Comment:

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

Persons authorized to compile the technical file:

**SAMSON A.Ş / Hadımköy Mah. Alparslan Cad. Niyaz sok.No:16-18 34212 Arnavutköy  
İSTANBUL – TÜRKİYE**

**Orkan ARIKAN**  
Factory Manager

**Sakine YILMAZ**  
Sales Manager



## 15 Annex

### 15.1 Tightening torques

**Table 15-1:** *Tightening torques for body nuts (1.1)*

| Valve size         | Tightening torque |
|--------------------|-------------------|
| DN 15 to 25 (M10)  | 30 Nm             |
| DN 32 to 50 (M12)  | 50 Nm             |
| DN 65 and 80 (M16) | 100 Nm            |

### 15.2 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](mailto: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](http://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 m<sup>3</sup>/h
- Supply pressure of the actuator
- Is a strainer installed?
- Installation drawing











**EB 8140 EN**



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