Type 3244 Valve · DIN and ANSI versions

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

ℹ️ Note
Additional information

☀️ Tip
Recommended action
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1 Safety instructions and measures

Intended use
The SAMSON Type 3244 Three-way Valve in combination with an actuator, e.g. Type 3271 or Type 3277 Pneumatic Actuator, is designed as a mixing or diverting valve for use in process engineering and industrial applications. 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 other applications or conditions than 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 in these instructions

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.

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:
Safety instructions and measures

- 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

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, 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

The operator is responsible for proper operation 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, the operator must ensure that operating personnel or third parties are not exposed to any danger.
The operator is 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.

Qualifications 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, the operating personnel must be familiar with the applicable health, safety and accident prevention regulations and comply with them.

Referenced standards 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.

According to the ignition risk assessment performed in accordance with EN 13463-1:2009, section 5.2, 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 section 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.)
− ► AB 0100 for tools, tightening torques and lubricant
− For oxygen service: Manual ► H 01
− Manual ► H 02: Appropriate Machinery Components for SAMSON Pneumatic Control Valves with a Declaration of Conformity of Final Machinery
Safety instructions and measures

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 heat up.

➤ 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, the actuator, for example, may vent during closed-loop operation or when the valve opens or closes.

➤ Install the control valve in such a way that vent holes 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**

**Crush hazard arising from moving parts.**

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

- Do not insert hands or finger into the yoke while the air supply is connected to the actuator.
- Before working on the control valve, disconnect and lock the pneumatic air supply as well as the control signal.
- Do not impede the movement of the actuator and plug stem by inserting objects into the yoke.
- Before unblocking the actuator and plug stem after they have become blocked (e.g. due to seizing up after remaining in the same position for a long time), release any stored energy in the actuator (e.g. spring compression). See associated actuator documentation.

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

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

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

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

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

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

⚠️ WARNING

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.

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 (▶ AB 0100).

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

Certain tools are required to work on the valve.

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

Risk of valve damage due to the use of unsuitable lubricants.
The lubricants to be used depend on the valve material. Unsuitable lubricants may corrode and damage surfaces.

➤ Only use lubricants approved by SAMSON (AB 0100).

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

➤ If necessary, keep the valve and the tools used free from solvents and grease.
➤ Make sure that only suitable lubricants are used.
### 1.4 Warnings on the device

<table>
<thead>
<tr>
<th>Warning</th>
<th>Meaning of the warning</th>
<th>Location on the device</th>
</tr>
</thead>
</table>
| ![Warning symbol](image) | Warning against moving parts  
There is a risk of injury to hands or fingers through the stroking movement of the actuator and plug stem if they are inserted into the yoke while the air supply is connected to the actuator. | ![Device diagram](image) |
2 Markings on the device

2.1 Valve nameplate

Fig. 2-1: Inscriptions on the valve nameplate

![Inscriptions on the valve nameplate]

<table>
<thead>
<tr>
<th>Item</th>
<th>Inscription meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Data Matrix code</td>
</tr>
<tr>
<td>2</td>
<td>Type designation</td>
</tr>
<tr>
<td>3</td>
<td>Material</td>
</tr>
<tr>
<td>4</td>
<td>Month and year of manufacture</td>
</tr>
<tr>
<td>5</td>
<td>Valve size:</td>
</tr>
<tr>
<td></td>
<td>DIN: DN · ANSI: NPS · JIS: DN</td>
</tr>
<tr>
<td>6</td>
<td>Pressure rating:</td>
</tr>
<tr>
<td></td>
<td>DIN: PN · ANSI: CL · JIS: K</td>
</tr>
<tr>
<td>7</td>
<td>Order number/item</td>
</tr>
<tr>
<td>8</td>
<td>Flow coefficient:</td>
</tr>
<tr>
<td></td>
<td>DIN: KVS · ANSI: CV</td>
</tr>
<tr>
<td>9</td>
<td>Characteristic:</td>
</tr>
<tr>
<td></td>
<td>LIN: linear · NO/NC: on/off service</td>
</tr>
<tr>
<td>10</td>
<td>Seat-plug seal:</td>
</tr>
<tr>
<td></td>
<td>ME: metal seal · ST: metal base material with Stellite® facing · PT: PTFE soft seal · PK: PEEK soft seal</td>
</tr>
<tr>
<td>11</td>
<td>Seat code (trim material): on request</td>
</tr>
<tr>
<td>12</td>
<td>Pressure balancing:</td>
</tr>
<tr>
<td></td>
<td>DIN: D · ANSI/JIS: B</td>
</tr>
<tr>
<td>13</td>
<td>Version:</td>
</tr>
<tr>
<td></td>
<td>M: mixing valve · V: flow-diverting valve</td>
</tr>
<tr>
<td>14</td>
<td>Not assigned</td>
</tr>
<tr>
<td>15</td>
<td>Country of origin</td>
</tr>
<tr>
<td>16</td>
<td>Not assigned</td>
</tr>
<tr>
<td>17</td>
<td>Not assigned</td>
</tr>
<tr>
<td>18</td>
<td>Not assigned</td>
</tr>
</tbody>
</table>

**Note**

Fig. 2-1 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 3244 Valve actually appear on the nameplate.

<table>
<thead>
<tr>
<th>Item</th>
<th>Inscription meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>CE marking</td>
</tr>
<tr>
<td>20</td>
<td>ID of the notified body</td>
</tr>
<tr>
<td></td>
<td>PED: Pressure Equipment Directive</td>
</tr>
<tr>
<td></td>
<td>G1/G2: gases and vapors</td>
</tr>
<tr>
<td></td>
<td>Fluid group 1 = hazardous</td>
</tr>
<tr>
<td></td>
<td>Fluid group 2 = other</td>
</tr>
<tr>
<td></td>
<td>L1: liquids</td>
</tr>
<tr>
<td></td>
<td>Fluid group 1 = hazardous</td>
</tr>
<tr>
<td></td>
<td>Fluid group 2 = other</td>
</tr>
<tr>
<td></td>
<td>I/II/III: Category 1 to 3</td>
</tr>
<tr>
<td>21</td>
<td>Serial number</td>
</tr>
<tr>
<td>22</td>
<td>NE 53 (NAMUR Recommendation)</td>
</tr>
</tbody>
</table>
Markings on the device

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

Fig. 2-2: Nameplate on the flange

2.2 Actuator nameplate

See associated actuator documentation.

2.3 Material numbers

The seat and plug of the valves have an item number written on them. You can contact us stating this item number to find out which material is used. Additionally, a seat code is used to identify the trim material. This seat code is specified on the nameplate.

2.4 Label when an adjustable packing is installed

An instructional label is affixed to the valve when an adjustable packing is installed (see Fig. 2-3).

Fig. 2-3: Label when an adjustable packing is installed
3 Design and principle of operation

See Fig. 3-1 and Fig. 3-2 on page 3-2.

The Type 3244 is a three-way valve which can be used either as a mixing or diverting valve. The design of the mixing and diverting valves in sizes DN 15 to 25 (NPS ½ to 1) is identical. The Type 3244 Valve is preferably combined with a SAMSON Type 3271 or Type 3277 Pneumatic Actuator. It can also be combined with other actuators.

The two seats (4 and 141) and plug with plug stem (5) are installed in the body (1). The plug stem is connected to the actuator stem (A7) by the stem connector clamps (A26/27) and is sealed by a spring-loaded V-ring packing (15). The springs in the pneumatic actuator (A) 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 plug to move. The actuator size is determined by the diaphragm area.

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

In mixing valves, the process media to be mixed enter at valve ports A and B. The combined flow exits the valve at port AB (see Fig. 3-1).

In diverting valves, the process medium enters at the valve port AB and the partial flows exit at ports A and B (see Fig. 3-2).

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:

Legend for Fig. 3-1 and Fig. 3-2

<p>| | | | | | | | |</p>
<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>10</td>
<td>Lock nut</td>
<td>A8</td>
<td>Ring nut</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Flange</td>
<td>14</td>
<td>Nuts</td>
<td>A26/27</td>
<td>Stem connector clamps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Top seat</td>
<td>15</td>
<td>Packing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Plug (with plug stem)</td>
<td>17</td>
<td>Body gasket</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Threaded bushing (packing nut)</td>
<td>84</td>
<td>Travel indicator scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Stem connector nut</td>
<td>141</td>
<td>Bottom seat</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>A7</td>
<td>Actuator stem</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Design and principle of operation

Fig. 3-1: Type 3244 Valve (as mixing valve) with Type 3271 Pneumatic Actuator

Fig. 3-2: Type 3244 Valve (as diverting valve)
Actuator stem extends (FA)
When the signal pressure is reduced or the air supply fails, the springs move the actuator stem downward. In mixing valves, port B is closed. In diverting valves, port A is closed.

Actuator stem retracts (FE)
When the signal pressure is reduced or the air supply fails, the springs move the actuator stem upward. In mixing valves, port A is closed. In diverting valves, port B is closed.

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
With insulating section/bellows seal
The modular design allows an insulating section or bellows seal to be fitted to the standard valve version.

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

Observe the maximum permissible actuator force.

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

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

3.2 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 'Assembly and installation' section.

Test connection
Versions with bellows seal fitted with a test connection (G ¼") at the top flange allow the
Design and principle of operation

sealing ability of the bellows to be monitored.
Particularly for liquids and vapors, we recommend installing a suitable leakage indicator (e.g. a contact pressure gauge, an outlet to an open vessel or an inspection glass).

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

3.3 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 8026.

Compliance
The Type 3244 Valve bears both the CE and EAC marks of conformity.

Temperature range
Depending on the version, the control valve is designed for a temperature range from -10 to +220 °C (14 to 428 °F). The use of an insulating section or bellows seal can extend the temperature range from -196 to +450 °C (-325 to +842 °F) depending on the properties of the materials used.

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 3-1 to Table 3-4 provide an overview of the dimensions and weights of the standard version of Type 3244 Valve as well as the version with insulating section or bellows seal. The lengths and heights in the dimensional drawings are shown on page 3-6.

### Table 3-1: Dimensions of the standard version of Type 3244 Valve (DIN version)

<table>
<thead>
<tr>
<th>Valve</th>
<th>DN</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>32</th>
<th>40</th>
<th>50</th>
<th>65</th>
<th>80</th>
<th>100</th>
<th>125</th>
<th>150</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>mm</td>
<td>130</td>
<td>150</td>
<td>160</td>
<td>180</td>
<td>200</td>
<td>230</td>
<td>290</td>
<td>310</td>
<td>350</td>
<td>400</td>
<td>480</td>
</tr>
<tr>
<td>H1</td>
<td>mm</td>
<td>235</td>
<td>270</td>
<td>360</td>
<td>375</td>
<td>360</td>
<td>375</td>
<td>360</td>
<td>375</td>
<td>360</td>
<td>375</td>
<td>360</td>
</tr>
<tr>
<td>H2</td>
<td>mm</td>
<td>70</td>
<td>80</td>
<td>85</td>
<td>100</td>
<td>105</td>
<td>120</td>
<td>130</td>
<td>140</td>
<td>150</td>
<td>200</td>
<td>210</td>
</tr>
</tbody>
</table>

### Table 3-2: Dimensions of the standard version of Type 3244 Valve (ANSI version)

<table>
<thead>
<tr>
<th>Valve</th>
<th>DN</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>40</th>
<th>50</th>
<th>65</th>
<th>80</th>
<th>100</th>
<th>150</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>NPS</td>
<td>½</td>
<td>¾</td>
<td>1</td>
<td>1½</td>
<td>2</td>
<td>2½</td>
<td>3</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>mm</td>
<td>184</td>
<td>184</td>
<td>184</td>
<td>222</td>
<td>254</td>
<td>276</td>
<td>298</td>
<td>352</td>
<td>451</td>
</tr>
<tr>
<td></td>
<td>in</td>
<td>7.25</td>
<td>7.25</td>
<td>7.25</td>
<td>8.75</td>
<td>10.00</td>
<td>10.88</td>
<td>11.75</td>
<td>13.88</td>
<td>17.75</td>
</tr>
<tr>
<td></td>
<td>mm</td>
<td>190</td>
<td>194</td>
<td>197</td>
<td>235</td>
<td>267</td>
<td>292</td>
<td>318</td>
<td>368</td>
<td>473</td>
</tr>
<tr>
<td></td>
<td>in</td>
<td>7.50</td>
<td>7.62</td>
<td>7.75</td>
<td>9.25</td>
<td>10.50</td>
<td>11.50</td>
<td>12.50</td>
<td>14.50</td>
<td>18.62</td>
</tr>
<tr>
<td>H1</td>
<td>mm</td>
<td>235</td>
<td>270</td>
<td>360</td>
<td>375</td>
<td>360</td>
<td>375</td>
<td>360</td>
<td>375</td>
<td>360</td>
</tr>
<tr>
<td>H2</td>
<td>mm</td>
<td>92</td>
<td>92</td>
<td>92</td>
<td>111</td>
<td>127</td>
<td>138</td>
<td>149</td>
<td>176</td>
<td>225.50</td>
</tr>
<tr>
<td></td>
<td>in</td>
<td>3.62</td>
<td>3.62</td>
<td>3.62</td>
<td>4.37</td>
<td>5.00</td>
<td>5.43</td>
<td>5.87</td>
<td>6.93</td>
<td>8.88</td>
</tr>
<tr>
<td></td>
<td>mm</td>
<td>95</td>
<td>97</td>
<td>98.50</td>
<td>117.50</td>
<td>133.50</td>
<td>146</td>
<td>159</td>
<td>184</td>
<td>236.50</td>
</tr>
<tr>
<td></td>
<td>in</td>
<td>3.76</td>
<td>3.82</td>
<td>3.88</td>
<td>4.63</td>
<td>5.26</td>
<td>5.75</td>
<td>6.26</td>
<td>7.24</td>
<td>9.31</td>
</tr>
</tbody>
</table>
Design and principle of operation

Table 3-3: Dimensions for version with insulating section or bellows seal

<table>
<thead>
<tr>
<th>Valve</th>
<th>DN</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>32</th>
<th>40</th>
<th>50</th>
<th>65</th>
<th>80</th>
<th>100</th>
<th>125</th>
<th>150</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPS</td>
<td></td>
<td>½</td>
<td>¾</td>
<td>1</td>
<td>–</td>
<td>1½</td>
<td>2</td>
<td>2½</td>
<td>3</td>
<td>4</td>
<td>–</td>
<td>6</td>
</tr>
<tr>
<td>Ins. section or bellows seal</td>
<td>mm</td>
<td>420</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>455</td>
<td>645</td>
<td>655</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>in</td>
<td>16.54</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>17.91</td>
<td>25.39</td>
<td>25.79</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long ins. section or bellows seal</td>
<td>mm</td>
<td>725</td>
<td></td>
<td></td>
<td></td>
<td>760</td>
<td>895</td>
<td>900</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>in</td>
<td>28.54</td>
<td></td>
<td></td>
<td></td>
<td>29.92</td>
<td>35.24</td>
<td>35.43</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dimensional drawings

Table 3-4: Weights of Type 3244 Valve: Without actuator

<table>
<thead>
<tr>
<th>Valve</th>
<th>DN</th>
<th>15</th>
<th>20</th>
<th>25</th>
<th>32</th>
<th>40</th>
<th>50</th>
<th>65</th>
<th>80</th>
<th>100</th>
<th>125</th>
<th>150</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPS</td>
<td></td>
<td>½</td>
<td>¾</td>
<td>1</td>
<td>–</td>
<td>1½</td>
<td>2</td>
<td>2½</td>
<td>3</td>
<td>4</td>
<td>–</td>
<td>6</td>
</tr>
<tr>
<td>Standard version</td>
<td>kg</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>13</td>
<td>15</td>
<td>17</td>
<td>31</td>
<td>37</td>
<td>49</td>
<td>95</td>
<td>135</td>
</tr>
<tr>
<td></td>
<td>lbs</td>
<td>13</td>
<td>15.5</td>
<td>17.5</td>
<td>28.7</td>
<td>33</td>
<td>37.5</td>
<td>68</td>
<td>82</td>
<td>108</td>
<td>210</td>
<td>298</td>
</tr>
<tr>
<td>Ins. section or bellows seal</td>
<td>kg</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>19</td>
<td>21</td>
<td>23</td>
<td>40</td>
<td>45</td>
<td>68</td>
<td>120</td>
<td>165</td>
</tr>
<tr>
<td></td>
<td>lbs</td>
<td>20</td>
<td>22</td>
<td>24</td>
<td>42</td>
<td>46.3</td>
<td>50.7</td>
<td>88</td>
<td>99</td>
<td>150</td>
<td>265</td>
<td>364</td>
</tr>
<tr>
<td>Version with</td>
<td>kg</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>23</td>
<td>25</td>
<td>27</td>
<td>44</td>
<td>49</td>
<td>76</td>
<td>128</td>
<td>173</td>
</tr>
<tr>
<td>Long ins. section or bellows seal</td>
<td>lbs</td>
<td>28.7</td>
<td>30.9</td>
<td>33</td>
<td>50.7</td>
<td>55</td>
<td>59.5</td>
<td>97</td>
<td>108</td>
<td>168</td>
<td>282</td>
<td>382</td>
</tr>
</tbody>
</table>
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).
Shipment and on-site transport

**WARNING**

Risk of personal injury due to the control valve tipping over.
- Observe the valve’s center of gravity.
- Secure the valve against tipping over or turning.

**WARNING**

Risk of injury due to incorrect lifting without the use of lifting equipment.
Lifting the control valve without the use of lifting equipment may lead to injuries (back injury in particular) depending on the weight of the control valve.
- Observe the occupational health and safety regulations valid in the country of use.

**NOTICE**

Risk of valve damage due to incorrectly attached slings.
The lifting eyelet/eyebolt on SAMSON actuators is only intended for mounting and removing the actuator as well as lifting the actuator without valve. Do not use this lashing point to lift the entire control valve assembly.
- When lifting the control valve, make sure that the slings attached to the valve body bear the entire load.
- Do not attach load-bearing slings to the actuator, handwheel or any other parts.
- Observe lifting instructions (see 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.
Shipment and on-site transport

- Protect the piping and any mounted valve accessories against damage.
- Protect the control valve against moisture and dirt.
- The permissible transportation temperature of standard control valves is –20 to +65 °C (–4 to +149 °F).

**Note**

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

---

**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.
- Make sure that the additional sling between the lashing point on the actuator and rigging equipment (hook, shackle etc.) does not bear any load when lifting valves larger than NPS 6. The sling only protects the control valve from tilting while being lifted. Before lifting the control valve, tighten the sling.

**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. If necessary, attach others sling to the lashing point on the actuator and to the rigging equipment.

---

**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.
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 in the pipeline, check whether the flanges are bolted tight and the valve in the pipeline holds.

7. 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 long storage periods.

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

Storage instructions
- Protect the control valve against external influences (e.g. impact).
- Secure the valve in the stored position against slipping or tipping over.
- Do not damage the corrosion protection (paint, surface coatings). Repair any damage immediately.
- Protect the control valve against moisture and dirt. Store it at a relative humidity of less than 75 %. In damp spaces, prevent condensation. If necessary, use a drying agent or heating.
- Make sure that the ambient air is free of acids or other corrosive media.
- The permissible storage temperature of standard control valves is −20 to +65 °C (−4 to +149 °F). Contact our after-sales service for the storage temperatures of other valve versions.
- Do not place any objects on the control valve.

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

💡 Tip
SAMSON’s After-sales Service can provide more detailed storage instructions on request.
5 Installation

The work described in this 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:

- Observe the inlet and outlet lengths (see Table 5-1). Contact SAMSON if the valve conditions or states of the medium process deviate.
- Install the valve free of stress and with the least amount of vibrations as possible. Read ‘Mounting position’ and ‘Work position’ in this section.

Table 5-1: Inlet and outlet lengths

<table>
<thead>
<tr>
<th>State of process medium</th>
<th>Valve conditions</th>
<th>Inlet length a</th>
<th>Outlet length b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas</td>
<td>$Ma \leq 0.3$</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Vapor</td>
<td>$Ma \leq 0.3^{11}$</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Liquid</td>
<td>Free of cavitation/$w &lt; 10\ m/s$</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Cavitation producing noise/$w \leq 3\ m/s$</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Cavitation producing noise/$3 &lt; w &lt; 5\ m/s$</td>
<td>2</td>
<td>10</td>
</tr>
</tbody>
</table>

$^{11}$ No saturated steam
Installation

➢ Install the valve allowing sufficient space to remove the actuator and valve or to perform service work on them.

➢ In heating or cooling applications, the valve can be installed in the flow pipe or return flow pipe (see Fig. 5-1).

Mounting position
Generally, we recommend installing the valve with the actuator upright and on top of the valve.

In the following versions, the valve must be installed with the actuator on top:
- Valves in DN 100/NPS 4 and larger
- Valves with insulating section for low temperatures below –10 °C (14 °F)

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

Support or suspension

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

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

Valves, which are not installed in the pipeline in the upright position with the actuator on top, 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.
**Mixing service**  
Temperature control $Q = \text{constant}$

**Diverting service**  
Flow control $Q = 0 \text{ to } 100\%$

Fail-safe action: FA = "Actuator stem extends", FE = "Actuator stem retracts"

In heating applications with FA, the heating medium (flow) is shut off in the fail-safe position, in cooling applications with FE, cooling is maintained in the fail-safe position.

Heating with mixing valve (FA) or cooling with mixing valve (FE)

Installation in flow pipe  
Installation in return flow pipe

---

Heating with diverting valve (FA) or cooling with diverting valve (FE)

Installation in return flow pipe  
Installation in flow pipe

---

Fig. 5-1: Typical installations
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.*

⇒ Only insulate control valves with insulating section or bellows seal up to the bonnet flange of the valve body for medium temperatures below 0 °C (32 °F) and above 220 °C (428 °F). If the insulating section is insulated, it will not function properly.

⇒ 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.

**Note**

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

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

5.3 Installing the device

The activities listed below are necessary to install the valve and before it can be started up.

**NOTICE**

*Risk of valve damage due to excessively high or low tightening torques.*

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

⇒ Observe the specified tightening torques (⇒ AB 0100).
5.3.1 Mounting the actuator onto the valve

⚠️ **NOTICE**

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

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

⚠️ **WARNING**

Risk of personal injury due to preloaded springs.

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

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

Depending on the version, SAMSON control valves are either delivered with the actuator already mounted on the valve or the valve and actuator are delivered separately. When delivered separately, the valve and actuator must be assembled together on site.

**Versions with V-port plug**

In mixing valves in sizes larger than DN 25, the bottom plug is designed as V-port plug.

To achieve the best flow conditions inside the valve, the V-port plug must always be installed with the port that releases the flow first when the valve opens facing toward the valve outlet. This is the largest of the three V-shaped ports (see Fig. 5-2).

- Before mounting the actuator, determine which V-shaped port is uncovered first when the plug is lifted out of the seat.
- On mounting the actuator, make sure that the V-shaped port uncovered first faces toward the valve outlet (AB) at the side.
- To mount the actuator, proceed as described in the associated actuator documentation.
5.4 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 the 'Lifting the valve' 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.

5.5 Testing the installed valve

**WARNING**

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

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

**WARNING**

Risk of hearing loss or deafness due to loud noise.

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

- Wear hearing protection when working near the valve.

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.

**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.
**WARNING**

**Crush hazard arising from actuator and plug stem moving.**

- Do not insert hands or finger into the yoke while the air supply is connected to the actuator.
- Before working on the control valve, disconnect and lock the pneumatic air supply as well as the control signal.
- Do not impede the movement of the actuator and plug stem by inserting objects into the yoke.
- Before unblocking the actuator and plug stem after they have become blocked (e.g. due to seizing up after remaining in the same position for a long time), release any stored energy in the actuator (e.g. spring compression). See associated actuator documentation.

**WARNING**

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

While the valve is operating, the actuator, for example, may vent during closed-loop operation or when the valve opens or closes.

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

**WARNING**

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

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

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

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

### 5.5.1 Leak test

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

**Tip**

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

1. Slowly apply the test medium to the valve until the test pressure is reached. Avoid sudden surges in pressure since the resulting high velocities may damage the valve.
2. Check the valve for leakage to the atmosphere.
3. Depressurize the pipeline section and valve.
4. Rework any parts that leak (see information below under ‘Adjusting the packing’) and repeat the leak test.
Adjusting the packing

A label on the flange indicates whether an adjustable packing is installed (see the 'Markings on the device' section).

**NOTICE**

*Impaired valve functioning due to increased friction as a result of the threaded bushing being tightened too far.*

➔ Make sure that the plug stem can still move smoothly after the threaded bushing has been tightened.

1. Tighten the threaded bushing gradually (by turning it clockwise) until the packing seals the valve.
2. Open and close the valve several times.
3. Check the valve for leakage to the atmosphere.
4. Repeat steps 1 and 2 until the packing completely seals the valve.

➔ If the adjustable packing does not seal properly, contact our after-sales service.

### 5.5.2 Travel motion

The movement of the actuator stem must be linear and smooth.

➔ Apply the maximum and minimum control signals to check the end positions of the valve while observing the movement of the actuator stem.

➔ Check the travel reading at the travel indicator scale.

### 5.5.3 Fail-safe position

➔ Shut off the signal pressure line.

➔ Check whether the valve moves to the fail-safe position (see the 'Design and principle of operation' section).

### 5.5.4 Pressure test

The plant operator is responsible for performing the pressure test.

**Tip**

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

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

- Move the plug to the mid-position 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 heat up.
- Wear protective clothing and safety gloves.

⚠️ WARNING
Risk of personal injury due to pressurized components and process medium being discharged.
- Do not loosen the screw of the test connection while the valve is pressurized.

⚠️ WARNING
Risk of hearing loss or deafness due to loud noise.
Noise emission (e.g. cavitation or flashing) may occur during operation caused by the process medium and the operating conditions. Additionally, a brief loud noise may occur through the sudden venting of the pneumatic actuator (see 'Fail-safe position') or pneumatic valve accessories not fitted with noise-reducing fittings. Both can damage hearing.
- Wear hearing protection when working near the valve.

⚠️ WARNING
Crush hazard arising from actuator and plug stem moving.
- Do not insert hands or finger into the yoke while the air supply is connected to the actuator.
- Before working on the control valve, disconnect and lock the pneumatic air supply as well as the control signal.
- Do not impede the movement of the actuator and plug stem by inserting objects into the yoke.
- Before unblocking the actuator and plug stem after they have become blocked (e.g. due to seizing up after remaining in the same position for a long time), release any stored energy in the actuator (e.g. spring compression). See associated actuator documentation.

⚠️ WARNING
Risk of personal injury due to exhaust air being vented.
While the valve is operating, the actuator, for example, may vent during closed-loop operation or when the valve opens or closes.
- Wear eye protection when working in close proximity to the control valve.
Start-up

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 device back into operation

1. Allow the valve to cool down or warm up to reach ambient temperature before start-up when the ambient temperature and process medium temperature differ greatly or the medium properties require such a measure.

2. 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 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 heat up.
- Wear protective clothing and safety gloves.

**WARNING**

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

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

**WARNING**

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

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

- Wear hearing protection when working near the valve.

---

**WARNING**

*Crush hazard arising from actuator and plug stem moving.*

- Do not insert hands or finger into the yoke while the air supply is connected to the actuator.
- Before working on the control valve, disconnect and lock the pneumatic air supply as well as the control signal.
- Do not impede the movement of the actuator and plug stem by inserting objects into the yoke.
- Before unblocking the actuator and plug stem after they have become blocked (e.g. due to seizing up after remaining in the same position for a long time), release any stored energy in the actuator (e.g. spring compression). See associated actuator documentation.

---

**WARNING**

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

While the valve is operating, the actuator, for example, may vent 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

<table>
<thead>
<tr>
<th>Malfunction</th>
<th>Possible reasons</th>
<th>Recommended action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actuator and plug stem does not move on demand.</td>
<td>Actuator is blocked.</td>
<td>Check attachment. Remove the blockage. <strong>WARNING!</strong> A blocked actuator or plug stem (e.g. due to seizing up after remaining in the same position for a long time) can suddenly start to move uncontrollably. Injury to hands or fingers is possible if they are inserted into the actuator or valve. Before trying to unblock the actuator or plug stem, disconnect and lock the pneumatic air supply as well as the control signal. Before unblocking the actuator, release any stored energy in the actuator (e.g. spring compression). See associated actuator documentation.</td>
</tr>
<tr>
<td>Diaphragm in the actuator defective</td>
<td></td>
<td>See associated actuator documentation.</td>
</tr>
<tr>
<td>Signal pressure too low</td>
<td></td>
<td>Check the signal pressure. Check the signal pressure line for leakage.</td>
</tr>
<tr>
<td>Jolting movement of the actuator and plug stem</td>
<td>Version with adjustable packing 1): packing not tightened correctly</td>
<td>Tighten the packing correctly (see information under 'Adjusting the packing' in the 'Testing the installed valve' section).</td>
</tr>
<tr>
<td>Actuator and plug stem does not stroke through the entire range.</td>
<td>Signal pressure too low</td>
<td>Check the signal pressure. Check the signal pressure line for leakage.</td>
</tr>
<tr>
<td></td>
<td>Travel stop active</td>
<td>See associated actuator documentation.</td>
</tr>
<tr>
<td></td>
<td>Incorrect setting of valve accessories</td>
<td>Check the settings of the valve accessories.</td>
</tr>
<tr>
<td>Increased flow through closed valve (seat leakage)</td>
<td>Dirt or other foreign particles deposited between the seat and plug.</td>
<td>Shut off the section of the pipeline and flush the valve.</td>
</tr>
<tr>
<td></td>
<td>Valve trim is worn out.</td>
<td>Contact our after-sales service.</td>
</tr>
</tbody>
</table>
### Malfunctions

<table>
<thead>
<tr>
<th>Malfunction</th>
<th>Possible reasons</th>
<th>Recommended action</th>
</tr>
</thead>
<tbody>
<tr>
<td>The valve leaks to the atmosphere (fugitive emissions).</td>
<td>Defective packing</td>
<td>Replace packing (see the 'Servicing' section) or contact our after-sales service.</td>
</tr>
<tr>
<td>Version with adjustable packing 1): packing not tightened correctly</td>
<td>Adjust the packing (see information under 'Adjusting the packing' in the 'Testing the installed valve' section). Contact our after-sales service when it continues to leak.</td>
<td></td>
</tr>
<tr>
<td>Version with bellows seal: the bellows seal is defective.</td>
<td>Contact our after-sales service.</td>
<td></td>
</tr>
<tr>
<td>Flange joint loose or gasket worn out</td>
<td>Check the flange joint. Replace gasket at the flanged joint (see the 'Servicing' section) or contact our after-sales service.</td>
<td></td>
</tr>
</tbody>
</table>

1) See the 'Markings on the device' section

---

**Note**

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

---

### 8.2 Emergency action

The plant operator is 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.

---

Put 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 necessary for servicing the valve:

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

⚠️ DANGER

Risk of bursting due to incorrect opening of pressurized equipment or components.
Valves and pipelines are pressure equipment that may burst when handled incorrectly. Flying projectile fragments or the release of process medium under pressure can cause serious injury or even death.

Before working on the control valve:

- Depressurize all plant sections affected and the valve (including the actuator). Release any stored energy.
- Drain the process medium from 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 heat up.
- Wear protective clothing and safety gloves.

⚠️ WARNING

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

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

⚠️ WARNING

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

- Wear hearing protection when working near the valve.

⚠️ WARNING

Crush hazard arising from actuator and plug stem moving.

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

- Do not impede the movement of the actuator and plug stem by inserting objects into the yoke.
- Before unblocking the actuator and plug stem after they have become blocked (e.g. due to seizing up after remaining in the same position for a long time), release any stored energy in the actuator (e.g. spring compression). See associated actuator documentation.

**WARNING**

Risk of personal injury due to exhaust air being vented.
While the valve is operating, the actuator, for example, may vent 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).

**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 (AB 0100).

**NOTICE**

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

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

**NOTICE**

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

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

i Note
The control valve was checked by SAMSON before it left the factory.
- 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 a possible failure before it can occur. 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.

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

<table>
<thead>
<tr>
<th>Inspection and testing</th>
<th>Action to be taken in the event of a negative result:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check the markings, labels and name-plates on the valve for their readability and completeness.</td>
<td>Immediately renew damaged, missing or incorrect name-plates or labels.</td>
</tr>
<tr>
<td>Check the markings, labels and name-plates on the valve for their readability and completeness.</td>
<td>Clean any inscriptions that are covered with dirt and are illegible.</td>
</tr>
<tr>
<td>Check the pipe connections and gaskets on the valve and actuator for leakage.</td>
<td>Check the bolted joint (tightening torque).</td>
</tr>
<tr>
<td>Check the pipe connections and gaskets on the valve and actuator for leakage.</td>
<td>Replace the gasket on the flanged joint as described in section 9.4.1.</td>
</tr>
<tr>
<td>Check the pipe connections and gaskets on the valve and actuator for leakage.</td>
<td>Version with adjustable packing 11: adjust the packing (see information under ‘Adjusting the packing’ in the ‘Testing the installed valve’ section) or replace the packing (see section 9.4.2).</td>
</tr>
</tbody>
</table>
## Servicing

<table>
<thead>
<tr>
<th>Inspection and testing</th>
<th>Action to be taken in the event of a negative result:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check the test connection and bellows seal (if used) for external leakage. <strong>WARNING!</strong> Risk of personal injury due to pressurized components and process medium being discharged. Do not loosen the screw of the test connection while the valve is pressurized.</td>
<td>Put the control valve out of operation (see the 'Decommissioning' section). To repair the bellows section, contact our after-sales service (see the 'Repairs' section).</td>
</tr>
<tr>
<td>Check the valve’s seat leakage.</td>
<td>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.</td>
</tr>
<tr>
<td>Check the valve for external damage (e.g. corrosion).</td>
<td>Remove any damage immediately. If necessary, put the control valve out of operation (see the 'Decommissioning' section).</td>
</tr>
<tr>
<td>Check the valve accessories to ensure they are mounted properly.</td>
<td>Tighten the connections of the valve accessories.</td>
</tr>
<tr>
<td>Check to ensure that the actuator and plug stem move smoothly.</td>
<td>Version with adjustable packing ¹: tighten the packing correctly (see information under 'Adjusting the packing' in the 'Testing the installed valve' section). Unblock a blocked actuator and plug stem. <strong>WARNING!</strong> A blocked actuator or plug stem (e.g. due to seizing up after remaining in the same position for a long time) can suddenly start to move uncontrollably. Injury to hands or fingers is possible if they are inserted into the actuator or valve. Before trying to unblock the actuator or plug stem, disconnect and lock the pneumatic air supply as well as the control signal. Before unblocking the actuator, release any stored energy in the actuator (e.g. spring compression). See associated actuator documentation.</td>
</tr>
<tr>
<td>If possible, check the valve’s fail-safe position by briefly interrupting the air supply.</td>
<td>Put the control valve out of operation (see the 'Decommissioning' section). Identify the cause for the malfunction and rectify it (see the 'Troubleshooting' section).</td>
</tr>
</tbody>
</table>

¹ See the 'Markings on the device' 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).
3. Remove the actuator from the valve. See associated actuator documentation.

---

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.

---

*Note*

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

The following service work can be performed after preparation is completed:
- Replacing the gasket (see section 9.4.1)
- Replacing the packing (see section 9.4.2)

9.3 Mounting 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).
Fig. 9-1: Standard version of Type 3244 (as mixing valve) with Type 3271 Actuator (left) and Type 3244 (as diverting valve) in version with insulating section (right)
9.4.1 Replacing the gasket

**NOTICE**
**Risk of control valve damage due to incorrect servicing.**

- Only exchange the gasket in valves without pressure balancing.
- To replace the gasket in valve versions with pressure balancing, contact our after-sales service.

---

**a) Standard version**

1. Undo the body nuts (14) gradually in a crisscross pattern.
2. Lift the flange (2) and plug with plug stem (5) off the body (1).
3. Remove the gasket (17). Carefully clean the sealing faces in the valve body (1) and on the flange (2).
4. Insert a new gasket (17) into the body.
5. Place the flange (2) onto the body. **Mixing valve with V-port plug:** place the flange (2) onto the valve body, making sure that the largest V-shaped port of the V-port plug faces toward the side valve outlet (AB). See 'Mounting the actuator onto the valve' in the 'Installation' section.
6. **Diverting valve:** firmly press the plug (5) into the top seat (4). **Mixing valve:** firmly press the plug (5) into the bottom seat (141). Fasten down the flange (2) with the body nuts (14). Tighten the nuts gradually in a crisscross pattern. Observe tightening torques.

---

**b) Version with insulating section or bellows seal**

1. Undo the body nuts (14) gradually in a crisscross pattern.
2. Lift the insulating section (21) or bellows seal (22) together with flange (2) and plug with plug stem (5) off the body (1).
3. Remove the gasket (17). Carefully clean the sealing faces in the valve body (1) and on the insulating section (21) or bellows seal (22).
4. Insert a new gasket (17) into the body.
5. Place the insulating section (21) or bellows seal (22) together with the flange (2) and plug with plug stem (5) onto the body. **Mixing valve with V-port plug:** place the assembly onto the valve body, making sure that the largest V-shaped port of the V-port plug faces toward the side valve outlet (AB). See 'Mounting the actuator onto the valve' in the 'Installation' section.
6. **Diverting valve:** firmly press the plug (5) into the top seat (4). **Mixing valve:** firmly press the plug (5) into the bottom seat (141). Fasten down the insulating section (21) or bellows seal (22) with the body nuts (14). Tighten the nuts gradually in a crisscross pattern. Observe tightening torques.
9.4.2 Replacing the packing

Risk of control valve damage due to incorrect servicing.

The packing can only be replaced when all the following conditions are met:
- The valve does not have a balanced plug.
- The valve does not have a bellows seal.
- The standard or ADSEAL packing is installed in the valve.

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

a) Standard version

Standard packing (PTFE)

1. Undo the body nuts (14) gradually in a crisscross pattern.
2. Lift the flange (2) and plug with plug stem (5) off the body (1).
3. Unthread the stem connector nut (9) and lock nut (10) from the plug stem.
4. Unscrew the threaded bushing (8).
5. Pull the plug with plug stem (5) out of the flange (2).
6. Pull the entire packing out of the packing chamber using a suitable tool.
7. Renew damaged parts. Clean the packing chamber thoroughly.
8. Apply a suitable lubricant to all the packing parts and to the plug stem (5).
9. Slide the plug with plug stem (5) into the valve body (1).
10. Place the flange (2) onto the body.

**Mixing valve with V-port plug:** place the flange (2) onto the valve body, making sure that the largest V-shaped port of the V-port plug faces toward the side valve outlet (AB). See 'Mounting the actuator onto the valve' in the 'Installation' section.

11. Carefully slide the packing parts over the plug stem into the packing chamber using a suitable tool. Observe the proper sequence (see Fig. 9-2).
12. **Diverting valve:** firmly press the plug (5) into the top seat (4).

**Mixing valve:** firmly press the plug (5) into the bottom seat (141). Fasten down the flange (2) with the body nuts (14). Tighten the nuts gradually in a crisscross pattern. Observe tightening torques.

13. Screw in the threaded bushing (8) and tighten it. Observe tightening torques.
14. Loosely screw the lock nut (10) and stem connector nut (9) onto the plug stem.

**ADSEAL packing**

1. Proceed as described in ‘Standard packing (PTFE)’, steps 1 to 10.
2. Slide the parts of the packing over the plug stem in the specified order:
   - Spring (11)
   - Washer (12)
   - Packing rings (16)
3. Slide the seals (15.2) over the plug stem. Insert the wire of the red spacer ring (15.1) into the groove of the retaining ring. Slide the retaining ring over the plug stem.
4. Insert the red spacer ring (15.1) between the threaded bushing (8) and retaining ring. See Fig. 9-2.
5. Proceed as described in ‘Standard packing (PTFE)’ , steps 12 to 14.

**b) Version with insulating section**

**Standard packing (PTFE)**

1. Unthread the stem connector nut (9) and lock nut (10) from the plug stem extension (25).
2. Unscrew the threaded bushing (8).
3. Remove nuts (33) and bolts (32).
4. Carefully lift the flange (2) over the plug stem extension (25).
5. Pull the entire packing out of the packing chamber using a suitable tool.
6. Renew the damaged parts and carefully clean the packing chamber.
Servicing

7. Apply a suitable lubricant to all the packing parts and to the plug stem extension (25).

8. Carefully place the flange (2) over the plug stem extension (25) onto the insulating section (21).

Mixing valve with V-port plug: place the flange (2) onto the insulating section, making sure that the largest V-shaped port of the V-port plug faces toward the side valve outlet (AB). See 'Mounting the actuator onto the valve' in the 'Installation' section.

9. Carefully slide the packing parts over the plug stem extension into the packing chamber using a suitable tool. Observe the proper sequence (see Fig. 9-2).

10. Fasten the flange with nuts (33) and bolts (32). Observe tightening torques.

11. Screw in the threaded bushing (8) and tighten it. Observe tightening torques.

12. Loosely screw the lock nut (10) and stem connector nut (9) onto the plug stem.

ADSEAL packing
1. Proceed as described in ‘Standard packing (PTFE)’, steps 1 to 8.

2. Slide the parts of the packing over the plug stem extension in the specified order:
   – Spring (11)
   – Washer (12)
   – Packing rings (16)

3. Slide the seals (15.2) over the plug stem extension.

9.4.3 Replacing the seat and plug

**NOTICE**

Risk of control valve damage due to incorrect servicing.

♫ To replace seat and plug in the three-way valve, contact our after-sales service.

9.5 Ordering spare parts and operating supplies

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

Spare parts

See Annex for details on spare parts.

Lubricant

See document ▶ AB 0100 for details on suitable lubricants.

Tools

See document ▶ AB 0100 for details on suitable tools.
10 Decommissioning

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

**WARNING**

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.

**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 heat up.
- 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 actuator and plug stem moving.

- Do not insert hands or finger into the yoke while the air supply is connected to the actuator.
- Before working on the control valve, disconnect and lock the pneumatic air supply as well as the control signal.
- Do not impede the movement of the actuator and plug stem by inserting objects into the yoke.
- Before unblocking the actuator and plug stem after they have become blocked.
**Decommissioning**

(e.g. due to seizing up after remaining in the same position for a long time), release any stored energy in the actuator (e.g. spring compression). See associated actuator documentation.

---

**WARNING**

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

While the valve is operating, the actuator, for example, may vent 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 cool down or heat 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 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 heat up.
- Wear protective clothing and safety gloves.

**WARNING**

**Crush hazard arising from actuator and plug stem moving.**

- Do not insert hands or finger into the yoke while the air supply is connected to the actuator.
- Before working on the control valve, disconnect and lock the pneumatic air supply as well as the control signal.
- Do not impede the movement of the actuator and plug stem by inserting objects into the yoke.
- Before unblocking the actuator and plug stem after they have become blocked (e.g. due to seizing up after remaining in the same position for a long time), release any stored energy in the actuator (e.g. spring compression). See associated actuator documentation.

**WARNING**

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

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

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

**WARNING**

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

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

- Before starting any work on the actuator, relieve the compression from the pre-loaded 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. Unbolt the flange joint.
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 repair work.

- Do not perform any repair work on your own.
- Contact SAMSON's After-sales Service for repair work.

12.1 Returning devices to SAMSON

Defective devices can be returned to SAMSON for repair.

Proceed as follows to return devices:

1. Exceptions apply concerning some special device models
   - [www.samsongroup.com > Service & Support > After-sales Service]

2. Send an e-mail to 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 > 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.

请注意

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

The declarations of conformity are included on the next pages:

- Declaration of conformity in compliance with Pressure Equipment Directive 2014/68/EU on pages 14-2 to 14-4

- Declaration of conformity in compliance with Machinery Directive 2006/42/EC for Types 3244-1 and 3244-7 Control Valves on page 14-5

- Declaration of incorporation in compliance with Machinery Directive 2006/42/EC for the Type 3244 Valve with other actuators other than Types 3271 and 3277 Actuators on page 14-6
<table>
<thead>
<tr>
<th>Appareils / Devices / Geräte</th>
<th>Type / Typ</th>
<th>Exécution / Version / Ausführung</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vanne de décharge / back pressure reducing valve / Überströmventil</td>
<td>2371-0</td>
<td>DIN &amp; ANSI - corps en acier forgé / body of forged steel / Gehäuse Schmiedestahl DN 32 = 100 $\frac{1}{4}$ $P_{max} = 10$ bar NPS 1 ¼ = 150 psi Tout type de fluides / all fluids / alle Fluide</td>
</tr>
<tr>
<td>Vanne de décharge / back pressure reducing valve / Druckminderventil</td>
<td>2371-1</td>
<td>DIN 32 = 100 $P_{max} = 10$ bar NPS 1 ¼ = 150 psi Tout type de fluides / all fluids / alle Fluide</td>
</tr>
<tr>
<td>Vanne de régulation passage droit / globe valve / Durchgangsventil</td>
<td>3241</td>
<td>DIN - corps en fonte grise / body of cast iron / Gehäuse Grauguss: GJL-250 DN 65 = 150 % $P_{max} = 240$ psi Fluide Gruppe 2 (2)</td>
</tr>
<tr>
<td>Vanne de régulation passage droit / globe valve / Durchgangsventil</td>
<td>3241</td>
<td>DIN - corps en fonte sphéroïdale / body of spheroidal graphite iron / Gehäuse Sphäroguss: GJS-400-18-LT DN 50 % PN25 Fluides groupe 2 / fluids group 2 / Fluide Gruppe 2 (2)</td>
</tr>
<tr>
<td>Vanne de régulation 3 voies / 3-way Valve / Drei-Wege-Stellventil</td>
<td>3241</td>
<td>ANSI - corps en fonte grise / body of cast iron / Gehäuse Grauguss: A126 B Cl 250 NPS 1 ½ = 150 psi Fluides groupe 2 / fluids group 2 / Fluide Gruppe 2 (2)</td>
</tr>
<tr>
<td>Vanne de régulation 3 voies / 3-way Valve / Drei-Wege-Stellventil</td>
<td>3244</td>
<td>DIN - corps en fonte sphéroïdale / body of spheroidal graphite iron / Gehäuse Sphäroguss: GJS-400-18-LT DN 50 % PN25 Fluides groupe 2 / fluids group 2 / Fluide Gruppe 2 (2)</td>
</tr>
<tr>
<td>Vanne aseptique / Aseptic valve / Aseptisches Ventil</td>
<td>3249</td>
<td>DIN &amp; ANSI - corps en acier mouillé / body of cast steel / Gehäuse Grauguss: A126 B Cl 125 NPS 2 ½ = 150 psi Fluides groupe 2 / fluids group 2 / Fluide Gruppe 2 (2)</td>
</tr>
<tr>
<td>Vanne de régulation passage droit / globe valve / Durchgangsventil</td>
<td>3321</td>
<td>DIN - corps en fonte grise / body of cast iron / Gehäuse Grauguss: GJL-250 DN 65 = 150 % $P_{max} = 240$ psi Fluide Gruppe 2 (2)</td>
</tr>
<tr>
<td>Vanne de régulation passage droit / globe valve / Durchgangsventil</td>
<td>3321</td>
<td>ANSI - corps en fonte grise / body of cast iron / Gehäuse Grauguss: A126 B Cl 125 NPS 2 ½ = 150 psi Fluides groupe 2 / fluids group 2 / Fluide Gruppe 2 (2)</td>
</tr>
<tr>
<td>Vanne de régulation 3 voies / 3-way Valve / Drei-Wege-Stellventil</td>
<td>3323</td>
<td>ANSI - corps en fonte grise / body of cast iron / Gehäuse Grauguss: A126 B Cl 125 NPS 2 ½ = 150 psi Fluides groupe 2 / fluids group 2 / Fluide Gruppe 2 (2)</td>
</tr>
<tr>
<td>Vanne à membrane / Diaphragm valve / Membran-Ventil</td>
<td>3346</td>
<td>DIN &amp; ANSI corps en fonte spheroidale, acier mouillé &amp; forge / body of spheroidal graphite iron, cast &amp; forged steel / Gehäuse Sphäroguss, Gussstahl &amp; Schmiedestahl DN 32 = 100 % NPS 1 ¼ = 150 psi Fluides groupe 2 / fluids group 2 / Fluide Gruppe 2 (2)</td>
</tr>
<tr>
<td>Vanne alimentaire / Sanitary valve / Hygienisches Ventil</td>
<td>3347</td>
<td>DIN &amp; ANSI corps en acier mouillé et forge / body of, cast &amp; forged steel / Gehäuse Gussstahl &amp; Schmiedestahl DN 65 = 125 % $P_{max} = 10$ bar NPS 1 ¼ = 150 psi Fluides groupe 2 / fluids group 2 / Fluide Gruppe 2 (2)</td>
</tr>
<tr>
<td>Vanne aseptique / Aseptic valve / Aseptisches Ventil</td>
<td>3349</td>
<td>DIN &amp; ANSI - corps en acier forgé / body of forged steel / Gehäuse Schmiedestahl DN 32 = 100 % $P_{max} = 240$ psi Fluide Gruppe 2 (2)</td>
</tr>
<tr>
<td>Vanne alimentaire / Sanitary valve / Hygienisches Ventil</td>
<td>3351</td>
<td>DIN &amp; ANSI corps en acier mouillé &amp; forge / body of, cast &amp; forged steel / Gehäuse Gussstahl &amp; Schmiedestahl DN 65 = 125 % $P_{max} = 10$ bar NPS 1 ¼ = 150 psi Fluides groupe 2 / fluids group 2 / Fluide Gruppe 2 (2)</td>
</tr>
<tr>
<td>Vanne tout ou Rien / On-Off Valve / Auf-Zu Ventil</td>
<td>3351</td>
<td>DIN - corps en fonte spheroidale / body of spheroidal graphite iron / Gehäuse Sphäroguss: GJS-400-18-LT DN 50 % PN25 Fluides groupe 2 / fluids group 2 / Fluide Gruppe 2 (2)</td>
</tr>
<tr>
<td>Bride de mesure / Measure flange / Messflansch</td>
<td>5090</td>
<td>DIN &amp; ANSI - corps en acier forgé / body of forged steel / Gehäuse Schmiedestahl DN 40 – 500 % NPS 1 ¼ – 20 1/1</td>
</tr>
<tr>
<td>Tube de mesure / Measure tube / Messrohr</td>
<td>5091</td>
<td>DIN &amp; ANSI - corps en acier forgé / body of forged steel / Gehäuse Schmiedestahl DN 40 – 500 % NPS 1 ¼ – 20 1/1</td>
</tr>
</tbody>
</table>

1) les dimensions plus petites répondent à l'article 4 point 3 / smaller dimensions correspond to Article 4 (3) / Die kleineren Abmessungen entsprechen Artikel 4 Nummer 3.

2) Typos erratiques visées à l'article 4 points 1.c)(i) et ii) / Acc. to piping article 4 paragraphs 1.c)(i) and ii) / Rohrleitung Artikel 4 Nummer 1.c)(i) und ii)
SAMSON REGULATION S.A.S.

DECLARATION UE DE CONFORMITE
EU DECLARATION OF CONFORMITY
EU-KONFORMITÄTSERklärUNG

Module A / Modul A

DC014
2019-02

la conformité avec le règlement suivant : / the conformity with the following requirement: / die Konformität mit nachfolgender Anforderung:


2014/68/UE
Du / of / vom
2014/68/EU
15.05.2014

Module A / Modul A

Normes techniques appliquées / Technical standards applied / Angewandte technische Spezifikation:
DIN EN 12516-2, DIN EN 12516-3, ASME B16.34, DIN-EN 60534-4, DIN-EN 1092-1

Fabricant / manufacturer / Hersteller: Samson Régulation SAS, 1, rue Jean Corona, FR-69120 VAULX-EN-VELIN

Vaulx-en-Velin, le 07/02/19

Joséphine SIGNOLES-FONTAINE
Responsable QSE / QSE Manager
# EU Declaration of Conformity

**Module H / N° CE-0062-PED-H-SAM 001-20-DEU**

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

<table>
<thead>
<tr>
<th>Devices</th>
<th>Series</th>
<th>Type</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Globe valve</td>
<td>240</td>
<td>3241</td>
<td>DIN, body of cast iron, from DIN 156, body of spherical-graphite iron, from DIN 100, fluids G2, L1, L2^3</td>
</tr>
<tr>
<td>Three-way valve</td>
<td>240</td>
<td>3244</td>
<td>DIN, body of cast iron, from DIN 156, body of spherical-graphite iron, from DIN 100, fluids G2, L1, L2^3</td>
</tr>
<tr>
<td>Cryogenic valve</td>
<td>240</td>
<td>3246</td>
<td>DIN/ANSI, all fluids</td>
</tr>
<tr>
<td>Globe valve</td>
<td>250</td>
<td>3251</td>
<td>DIN/ANSI, all fluids</td>
</tr>
<tr>
<td>Three-way valve</td>
<td>250</td>
<td>3252</td>
<td>DIN/ANSI, body of steel, etc., all fluids</td>
</tr>
<tr>
<td>Globe valve</td>
<td>250</td>
<td>3254</td>
<td>DIN/ANSI, all fluids</td>
</tr>
<tr>
<td>Angle valve</td>
<td>250</td>
<td>3256</td>
<td>DIN/ANSI, all fluids</td>
</tr>
<tr>
<td>Full-body valve</td>
<td>250</td>
<td>3256</td>
<td>DIN, all fluids</td>
</tr>
<tr>
<td>Angle valve (ISO standards)</td>
<td>250</td>
<td>3256</td>
<td>DIN, all fluids</td>
</tr>
<tr>
<td>Steam-converting valve</td>
<td>250</td>
<td>3256</td>
<td>DIN/ANSI, all fluids</td>
</tr>
<tr>
<td>Globe valve V2001</td>
<td>3321</td>
<td>ANSI, all fluids</td>
<td></td>
</tr>
<tr>
<td>Three-way valve V2001</td>
<td>3323</td>
<td>ANSI, all fluids</td>
<td></td>
</tr>
<tr>
<td>Angle seat valve</td>
<td>3333</td>
<td>ANSI, all fluids</td>
<td></td>
</tr>
<tr>
<td>Blowout 3331-1</td>
<td>3331-1</td>
<td>ANSI, all fluids</td>
<td></td>
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<tr>
<td>Blowout 3331-3</td>
<td>3331-3</td>
<td>ANSI, all fluids</td>
<td></td>
</tr>
<tr>
<td>Blowout 3331-4</td>
<td>3331-4</td>
<td>ANSI, all fluids</td>
<td></td>
</tr>
<tr>
<td>Globe valve 240</td>
<td>3241</td>
<td>ANSI, body of cast iron, Class 125, from NPS 5, fluids G2, L1, L2^3</td>
<td></td>
</tr>
<tr>
<td>Cryogenic valve 240</td>
<td>3246</td>
<td>ANSI, all fluids</td>
<td></td>
</tr>
<tr>
<td>Three-way valve 250</td>
<td>3250</td>
<td>ANSI, all fluids</td>
<td></td>
</tr>
<tr>
<td>Globe valve 250</td>
<td>3251</td>
<td>ANSI, all fluids</td>
<td></td>
</tr>
<tr>
<td>Angle valve 250</td>
<td>3256</td>
<td>ANSI, all fluids</td>
<td></td>
</tr>
<tr>
<td>Globe valve 650</td>
<td>3591</td>
<td>ANSI, all fluids</td>
<td></td>
</tr>
<tr>
<td>Angle valve 650</td>
<td>3591</td>
<td>ANSI, all fluids</td>
<td></td>
</tr>
<tr>
<td>Cryogenic valve 650</td>
<td>3596</td>
<td>ANSI, NPS 3 to NPS 8, Class 900, all fluids</td>
<td></td>
</tr>
<tr>
<td>Control valve 650</td>
<td>3596</td>
<td>ANSI, all fluids</td>
<td></td>
</tr>
</tbody>
</table>

^3-Gases according to Article 4(1)(c), second indent.

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


<table>
<thead>
<tr>
<th>Directive</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014/68/EU</td>
<td>Module H</td>
</tr>
</tbody>
</table>

**Applied conformity assessment procedure for fluids according to Article 4(1):**

- by Bureau Veritas

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

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

Technical standards applied: DIN EN 12816-2, DIN EN12816-3, ASME B16.34

Manufacturer: SAMSON AG, Welsnuehlerstrasse 3, 60314 Frankfurt am Main, Germany

Date: 15 May 2020

Dr. Andreas Weil
Chief Executive Officer (CEO)

Dr. Thomas Stockenhuber
Chief Technology Officer (CTO)

Revision 07

Classification: Public · SAMSON AKTIENGESELLSCHAFT · Welsnuehlerstrasse 3 · 60314 Frankfurt am Main, Germany
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 3244-1/7 Pneumatic Control Valves consisting of the Type 3244 Valve and 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 3244 Valve (DIN): Mounting and Operating Instructions EB 8026
- Type 3244 Valve (ANSI): Mounting and Operating Instructions EB 8026
- Types 3271 and 3277 Actuators: Mounting and Operating Instructions EB 8310-X

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

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

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

Persons authorized to compile the technical file:
SAMSON AG, Weismüllerstraße 3, 60314 Frankfurt am Main, Germany
Frankfurt am Main, 19 May 2020

Thorsten Mutz
Senior Director
Sales and After-sales

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

Revision no. 90

Classification: Public - SAMSON AKTIENGESELLSCHAFT - Weismüllerstraße 3 - 60314 Frankfurt, Germany
Page 1 of 1
Declaration of Incorporation in Compliance with Machinery Directive 2006/42/EC

For the following products:
Type 3244 Pneumatic Control Valve

We certify that the Type 3244 Pneumatic Control Valves are partly completed machinery as defined in the Machinery Directive 2006/42/EC and that the safety requirements stipulated in Annex I, 1.1.2, 1.1.3, 1.1.5, 1.3.2, 1.3.4 and 1.3.7 are observed. The relevant technical documentation described in Annex VII, part B has been compiled.

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

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

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

For product descriptions of the valve, refer to:
- Type 3244 Valve (DIN): Mounting and Operating Instructions EB 8026
- Type 3244 Valve (ANSI): Mounting and Operating Instructions EB 8026

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

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

Persons authorized to compile the technical file:

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

Thorsten Math
Senior Director
Sales and After-sales

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

Revision no. 00

Classification: Public
SAMSON AKTIENGESELLSCHAFT - Weismüllerstraße 3 - 60314 Frankfurt am Main, Germany
15 Annex

15.1 Tightening torques, lubricants and tools

- AB 0100 for tools, tightening torques and lubricants

15.2 Spare parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>24</td>
<td>Guide bushing (bellows seal)</td>
</tr>
<tr>
<td>2</td>
<td>Flange</td>
<td>25</td>
<td>Plug stem extension</td>
</tr>
<tr>
<td>4</td>
<td>Top seat</td>
<td>26</td>
<td>Label (bellows seal or insulating section)</td>
</tr>
<tr>
<td>5</td>
<td>Plug (with plug stem)</td>
<td>30</td>
<td>Retaining washers</td>
</tr>
<tr>
<td>7</td>
<td>Guide bushing (flange)</td>
<td>32</td>
<td>Bolt</td>
</tr>
<tr>
<td>8</td>
<td>Threaded bushing (packing nut)</td>
<td>33</td>
<td>Nut</td>
</tr>
<tr>
<td>9</td>
<td>Stem connector nut</td>
<td>37</td>
<td>Plug stem with bellows seal</td>
</tr>
<tr>
<td>10</td>
<td>Lock nut</td>
<td>39</td>
<td>Gasket</td>
</tr>
<tr>
<td>11</td>
<td>Spring</td>
<td>41</td>
<td>Nut</td>
</tr>
<tr>
<td>12</td>
<td>Washer</td>
<td>42</td>
<td>Screw plug with seal</td>
</tr>
<tr>
<td>13</td>
<td>Stud bolt</td>
<td>80</td>
<td>Nameplate</td>
</tr>
<tr>
<td>14</td>
<td>Body nut</td>
<td>81</td>
<td>Grooved pin</td>
</tr>
<tr>
<td>15</td>
<td>Packing</td>
<td>82</td>
<td>Screw</td>
</tr>
<tr>
<td>16</td>
<td>V-ring packing</td>
<td>83</td>
<td>Hanger</td>
</tr>
<tr>
<td>17</td>
<td>Body gasket</td>
<td>84</td>
<td>Travel indicator scale</td>
</tr>
<tr>
<td>19</td>
<td>Bushing</td>
<td>85</td>
<td>Screw</td>
</tr>
<tr>
<td>21</td>
<td>Insulating section</td>
<td>91</td>
<td>Protective cap</td>
</tr>
<tr>
<td>22</td>
<td>Bellows seal</td>
<td>141</td>
<td>Bottom seat</td>
</tr>
<tr>
<td>23</td>
<td>Guide bushing (insulating section)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
15.3 After-sales service

Contact our after-sales service for support concerning service or repair work or when malfunctions or defects arise.

E-mail address

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

Addresses of SAMSON AG and its subsidiaries

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

Required specifications

Please submit the following details:

- Order number and position number in the order
- Type, model number, nominal size and valve version
- Pressure and temperature of the process medium
- Flow rate in cu.ft/min or m³/h
- Bench range of the actuator (e.g. 0.2 to 1 bar)
- Is a strainer installed?
- Installation drawing