

**Series V2001 Valves**  
**Type 3321 Globe Valve**

**SAMSON**



Type 3321 Globe Valve with rod-type yoke and Type 3372 Electropneumatic Actuator (350 cm<sup>2</sup>)

**Mounting and  
Operating Instructions**

**EB 8111/8112 EN**

Edition June 2013

## Definition of signal words



### **DANGER!**

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



### **WARNING!**

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



### **NOTICE**

*Property damage message or malfunction*



### **Note:**

*Additional information*



### **Tip:**

*Recommended action*

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### 1 General safety instructions

- The control valve must be mounted, started up or serviced by fully trained and qualified personnel only; the accepted industry codes and practices are to be observed. Make sure employees or third persons are not exposed to any danger.
- All safety instructions and warnings given in these mounting and operating instructions, particularly those concerning installation, start-up and maintenance, must be strictly observed.
- The control valves comply with the requirements of the European Pressure Equipment Directive 97/23/EC. Valves with a CE marking have a declaration of conformity which includes information about the applied conformity assessment procedure. The Declaration of Conformity is available on request.
- To ensure appropriate use, only use the control valve in applications where the operating pressure and temperatures do not exceed the specifications used for sizing the valve at the ordering stage.
- The manufacturer does not assume any responsibility for damage caused by external forces or any other external factors. Any hazards that could be caused in the valve by the process medium, the operating pressure, the signal pressure or by moving parts are to be prevented by taking appropriate precautions.
- Proper shipping and storage are assumed.



#### **WARNING!**

- *For installation and maintenance, make sure the relevant section of the pipeline is depressurized and, depending on the process medium, drained as well. Depending on the field of application, allow the valve to cool down or heat up to reach ambient temperature before starting any work on it.*
  - *When working on the valve, make sure that the pneumatic air supply as well as the control signal are disconnected to prevent any hazards caused by moving parts.*
  - ***Be particularly careful if the actuator springs of pneumatic control valves are preloaded.*** *Such actuators are labeled correspondingly and can also be identified by three long bolts protruding from the bottom of the actuator. Before starting any work on the valve, relieve the compression from the preloaded springs.*
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**Note:**

According to the ignition risk assessment performed in accordance with EN 13463-1, section 5.2, the non-electrical actuators and 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 94/9/EC.

For connection to the equipotential bonding system, observe the requirements specified in section 6.3 of EN 60079-14: 2011 (VDE 0165 Part 1).

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## 2 Design and principle of operation

The Type 3321 Globe Valve has a modular design and can be combined with pneumatic or electric actuators (as described in the next section).

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

tion of the plug (5) determines the cross-sectional area across the seat (4).

The position of the plug is changed by the control signal acting on the actuator.

The plug stem (36) is sealed by a spring-loaded PTFE V-ring packing (16) and is connected to the actuator stem by the stem connector (7).

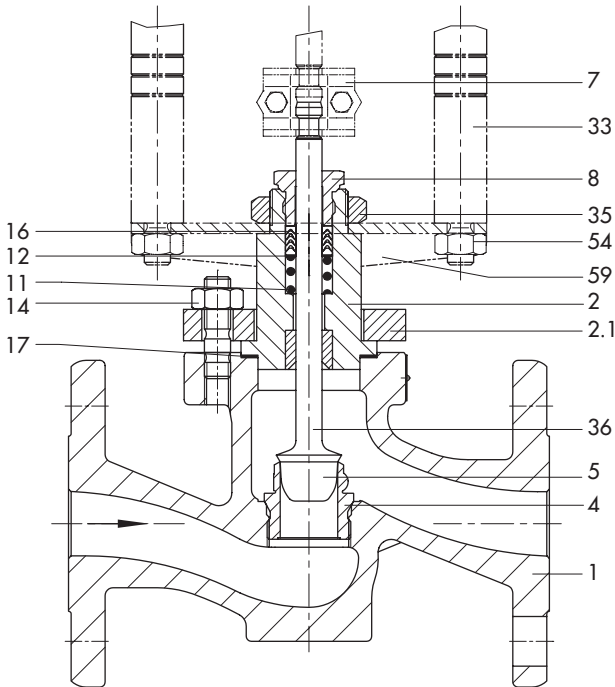
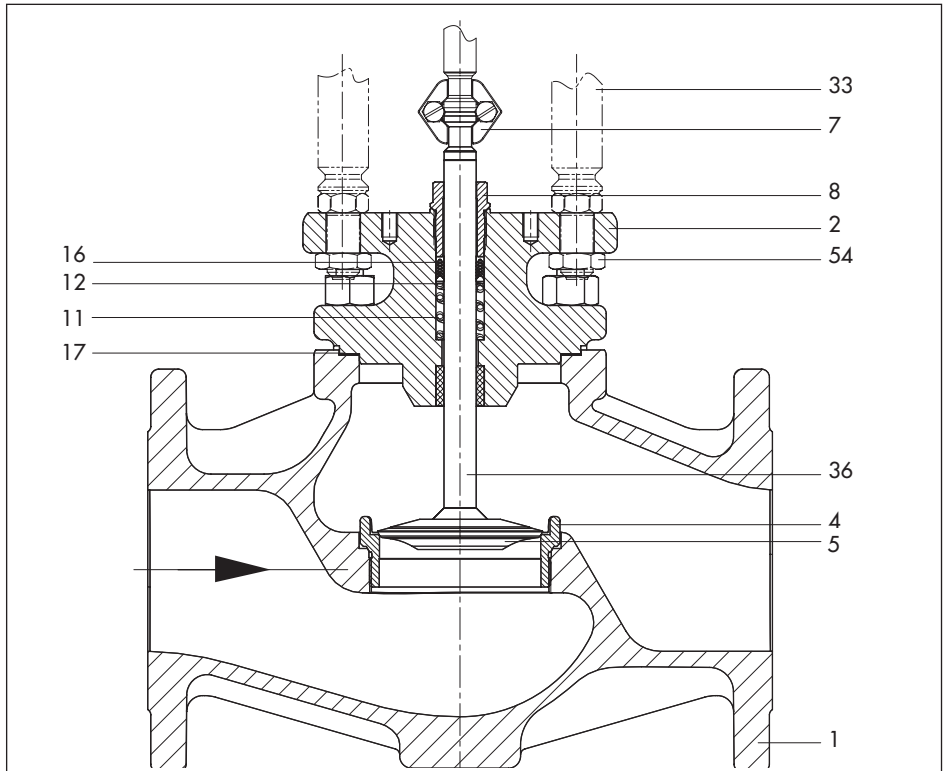


Fig. 1: Type 3321 Valve, sectional diagram showing version DN 15 to 50 (NPS ½ to 2), Form B attachment (mounted using a central nut)



Legend for Fig. 1 and Fig. 2

- |     |                            |    |   |
|-----|----------------------------|----|---|
| 1   | Valve body                 | 14 | Nut (up to DN 50/NPS 2)                     |
| 2   | Valve bonnet               | 16 | Packing                                     |
| 2.1 | Flange (up to DN 50/NPS 2) | 17 | Gasket                                      |
| 4   | Seat                       | 33 | Rod   |
| 5   | Plug                       | 35 | Central nut (up to DN 50/NPS 2)             |
| 7   | Stem connector             | 36 | Plug stem                                   |
| 8   | Threaded bushing           | 54 | Nut   |
| 11  | Compression spring         | 59 | Crossbeam (up to DN 50/NPS 2)               |
| 12  | Washer                     | 60 | Plate (DN 65/NPS 2½ and higher), see Fig. 3 |

**Fig. 2:** Type 3321 Valve, sectional diagram showing version DN 65 to 100 (NPS 2½ to 4), Form C attachment (mounted using rods)

### 3 Installation

#### 3.1 Assembling valve and actuator

The valve and actuator are delivered separately and must be partly assembled on site.

There are different ways to assemble the valve and actuator depending on the actuator model and the nominal valve size.

The following list shows the actuators that can be used and the associated Mounting and Operating Instructions (EB).

#### Types 3371, 3372, 5824 and 3374 Actuators on Type 3321 Valve up to DN 50 (NPS 2)

Form B attachment (mounting using a central nut). Refer to Fig. 3.

Actuator	For control valve	Associated instructions
Type 3371	Type 3321-PP	EB 8317 EN
Type 3372	Type 3321-IP	EB 8313-1 EB 8313-3 EN <sup>1)</sup>
Type 5824	Type 3321-E1	EB 5824-1 EB 5824-2 EN <sup>2)</sup>
Type 3374	Type 3321-E3	EB 8331-3 EB 8331-4 EN <sup>2)</sup>

<sup>1)</sup> Version with Type 3725 Positioner

<sup>2)</sup> Version with integrated positioner

#### Types 3371 and 3372 Actuators on Type 3321 Valve in DN 65 (NPS 2½) and larger

Form C attachment (mounting using rods).

Refer to Fig. 3.

Actuator	For control valve	Associated instructions
Type 3371	Type 3321-PP	EB 8317 EN
Type 3372	Type 3321-IP	EB 8313-1 EB 8313-3 EN <sup>1)</sup>

<sup>1)</sup> Version with Type 3725 Positioner

#### Type 3374 Actuator on Type 3321 Valve in DN 65 (NPS 2½) and larger

The actuator yoke is attached to the valve bonnet using two M8 hexagon socket screws. See page 10.

Actuator	For control valve	Associated instructions
Type 3374	Type 3321-E3	EB 8331-3 EB 8331-4 EN <sup>2)</sup>

<sup>2)</sup> Version with integrated positioner



**Form B attachment (mounting using a central nut)**



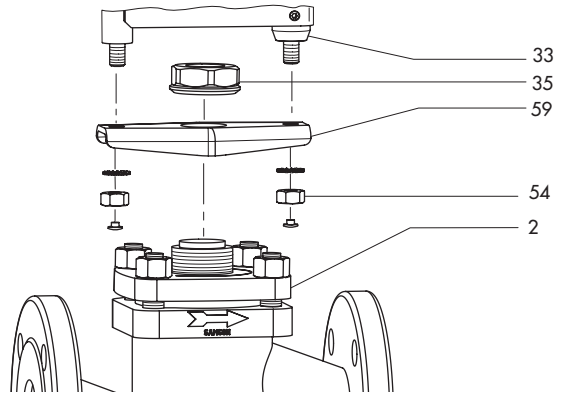
Type 3321-PP

Type 3321-IP



Type 3321-E1

Type 3321-E3

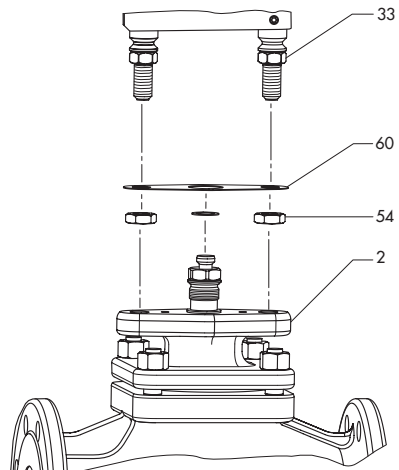


**Form C attachment (mounting using rods)**



Type 3321-PP

Type 3321-IP



- 2 Valve bonnet
- 33 Rod
- 35 Central nut
- 36 Plug stem
- 54 Nut
- 59 Crossbeam (up to DN 50/NPS 2)
- 60 Plate (DN 65/NPS 2½ and higher)

**Fig. 3:** Form B attachment (mounting using a central nut) and Form C attachment (mounting using rods)

**Mounted on yoke of Type 3374, DN 65 (NPS 2½) and larger**

1. Place the actuator yoke (2) on the valve bonnet and fasten using two M8 hexagon socket screws.
2. Extend the actuator stem using the manual override until the actuator stem touches the plug stem.
3. Position the clamps of the stem connector (7) and fasten with screws.

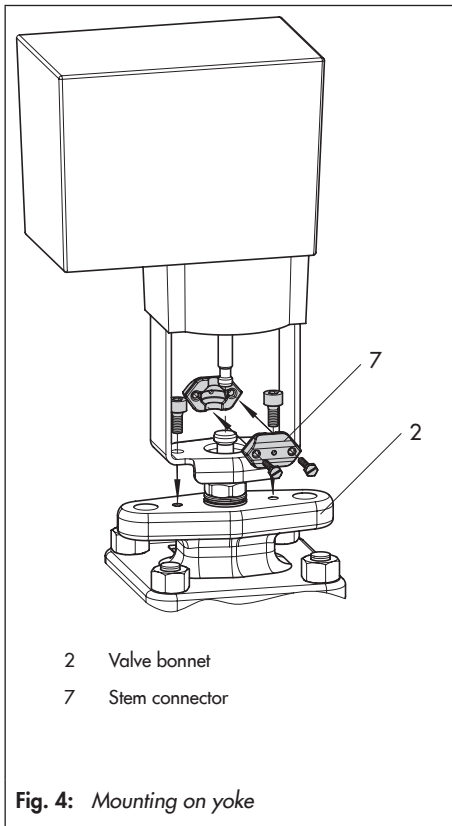


Fig. 4: Mounting on yoke

### 3.2 Mounting position

The valve can be mounted in any desired position. However, the restrictions for the actuator used must be strictly observed.



**NOTICE!**

*Install the valve free of stress and with the least amount of vibrations as possible. If necessary, support the pipelines near the connections. Do not attach supports to the valve or actuator.*

*Since sealing parts, weld spatter and other impurities carried along by the medium may impair the tight shut-off of the seat and plug, flush out the pipeline thoroughly before installing the valve in the pipeline.*

#### Pipeline routing

To ensure that the control valve functions properly, the pipeline must be straight and without any manifolds or disturbances for a distance of at least 6 times the valve size (DN) upstream and downstream of the valve. Contact SAMSON if this distance cannot be observed.

### 3.3 Strainer, bypass

We recommend installing a SAMSON Type 2 Strainer upstream of the valve.

We recommend installing a shut-off valve both upstream of the strainer and downstream of the valve to ensure that the plant does not need to be shut down for maintenance. In addition, install a bypass line.

## 4 Operation

The operating instructions only apply in conjunction with the actuator. Refer to the corresponding mounting and operating instructions.

## 5 Maintenance – Replacing parts

The control valve is subject to normal wear, especially at the seat, plug and packing. Depending on the operating conditions, check the valve at regular intervals to prevent possible failure before it can occur.

External leakage indicates that the packing is defective.

If the valve does not close tightly, tight shut-off may be impaired by dirt stuck between the seat and plug or by damaged facings.

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### ! NOTICE!

*Before performing any work on the control valve, make sure the relevant plant section has been depressurized and, depending on the process medium, drained as well.*

*When used at high temperatures, allow the plant section to cool down to ambient temperature.*

*Make sure the electrical or pneumatic control signal for the actuator is switched off. Remove the signal pressure line of a pneumatic actuator.*

*As valves are not free of cavities, remember that residual process medium might still be contained in the valve. We recommend removing the valve from the pipeline.*

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We recommend removing the parts, cleaning them, and, if necessary, replacing them with new ones.

## 5.1 Removing the actuator

Before performing any repair work on the valve, remove the actuator from the valve.

### Valve up to DN 50 (NPS 2) – Form B attachment (mounting using a central nut)

→ Refer to Fig. 1 and Fig. 3

1. Undo the screws on the stem connector (7) and remove the stem connector.
2. Unscrew the nut (35) and lift the actuator off the valve bonnet (2).

### Valve in DN 65 (NPS 2½) and larger – Form C attachment (mounting using rods)

→ Refer to Fig. 2 and Fig. 3

1. Undo the screws on the stem connector (7) and remove the stem connector.
2. Undo nuts (54) while holding the rods (33) stationary with an open-end wrench (width across flats 22) to prevent them from turning.
3. Lift the actuator including the plate (60) off the valve bonnet (2).

### Valve in DN 65 (NPS 2½) and larger – mounting on yoke

→ Refer to Fig. 2 and Fig. 4

1. Undo the screws on the stem connector (7) and remove the stem connector.
2. Unscrew the two hexagon socket screws and lift actuator together with the yoke off the valve bonnet.

## 5.2 Replacing the packing



### Note:

Contact your nearest SAMSON subsidiary or the SAMSON After-sales Service department for information on suitable lubricants.

### 5.2.1 Standard valve bonnet

In case of leakage at the packing, the packing (16) must be renewed.

#### Removing the valve bonnet

##### Valve up to DN 50

→ Refer to Fig. 1 and Fig. 5

1. Unscrew the threaded bushing (8).
2. Remove nuts (14) and lift off flange (2.1).

##### Valve in DN 65 and larger

→ Refer to Fig. 2 and Fig. 5

1. Unscrew the threaded bushing (8).
2. Remove nuts (14).
3. Lift the valve bonnet (2) off the valve body over the plug stem.
4. Check the body gasket (17) located in the valve body for damage. We recommend renewing the body gasket.

Use a suitable tool to pull the damaged packing (16) out of the valve bonnet. Remove washer (12) and compression spring (11) and clean the packing chamber.

**Installing the packing**

5. Apply a suitable lubricant to each part of the new packing as well as to the plug stem.
6. Insert the compression spring (11) and then the washer (12) into the packing chamber.
7. Carefully slide the parts of the new packing (16) into the packing chamber.
8. Apply a suitable lubricant to the thread of the threaded bushing (8). Lightly screw in the threaded bushing, but do not tighten it yet.

**Mounting the valve bonnet****Valve up to DN 50**

9. Insert the plug stem (36) from below, while turning it, into the valve bonnet (2). Place the valve bonnet onto the valve body. Make sure that the body gasket (17) is seated properly.
10. Place flange (2.1) on the valve bonnet and fasten with the nuts (14) (observe tightening torque specified in section 5.5). Tighten the threaded bushing (8).

**Valve in DN 65 and larger**

9. Insert the plug stem (36) from below, while turning it, into the valve bonnet (2). Place the valve bonnet onto the valve body. Make sure that the body gasket (17) is seated properly.
10. Fasten the bonnet with the nuts (14) (observe tightening torque listed in section 5.5). Tighten the threaded bushing (8).

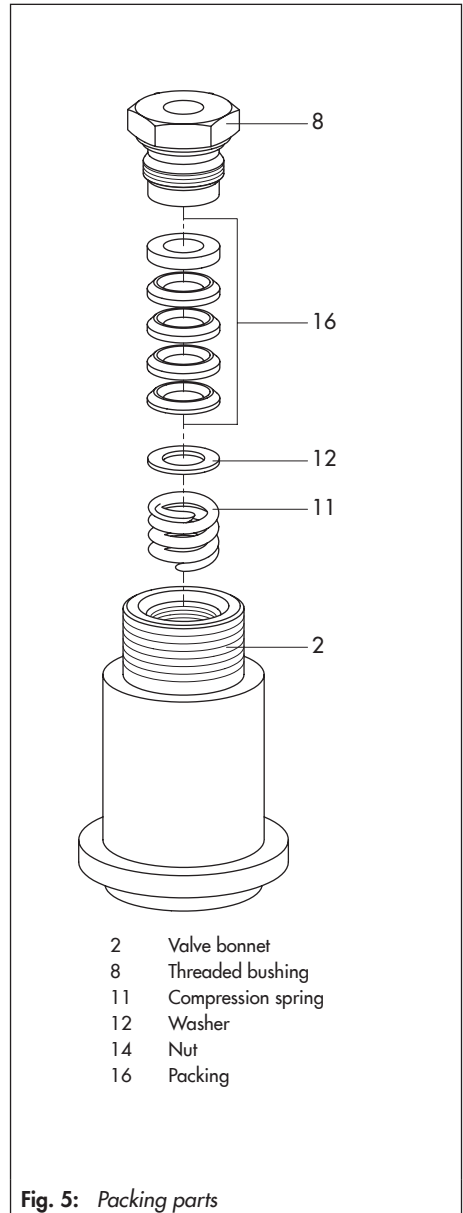


Fig. 5: Packing parts

## 5.2.2 Insulating section

→ See Fig. 6

The insulating section is used to extend the distance between the packing and the valve as well as the process medium. This results in a wider temperature range of the valve.

The arrangement of the packing in the insulating section is the same as in the standard bonnet. To replace the packing, proceed as described in section 5.2.1.

## 5.3 Plug

→ Refer to Fig. 1 and Fig. 2

When replacing the plug (5), we also recommend replacing the V-ring packing (16) and gasket (17).

1. To replace the plug, proceed as described in section 5.2.
2. Apply a suitable lubricant to the plug stem (36) before inserting the plug.

## 5.4 Seat

→ Refer to Fig. 1 and Fig. 2

1. Unscrew the nuts (14) and lift the valve bonnet (2) off the valve body (1) including the flange (2.1) in valves up to DN 50.
2. Unscrew the seat (4) using a suitable seat wrench.
3. Apply a suitable lubricant to the thread and the sealing cone of the new or re-machined seat. Screw in the seat. Observe tightening torques specified in section 5.5.

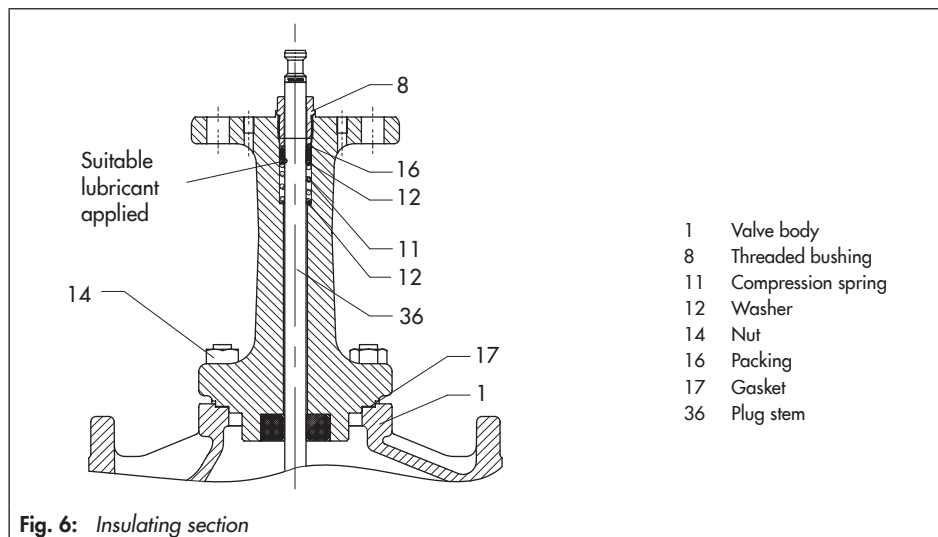


Fig. 6: Insulating section

4. Place the valve bonnet including the flange onto the valve body again and fasten tight using the nuts (14). Observe tightening torques.

## 5.5 SAMSON seat wrench and tightening torques

Contact the SAMSON After-sales Service for more details on mounting.

**Table 1:** SAMSON seat wrench and tightening torques

Nominal size	DN 15 to 25 NPS ½ to 2	DN 32 to 50 NPS 1½ to 2	DN 65 to 80 NPS 2½ to 3	DN 100 NPS 4
Seat wrench Order no.	1280-3030	1280-3009 (socket only)	9110-2467	9110-2471
Additionally required	–	Supporting flange 1490-6707	9932-3800 9932-3814	9932-3800 9932-3814
Seat thread Tightening torque $\pm 10\%$	M32x1.5 170 Nm	M58x1.5 500 Nm	M90x1.5 1050 Nm	M110 x 1.5 <sup>1)</sup> 1550 Nm
Body nuts (14) Tightening torque $\pm 10\%$	M10 10 Nm	M12 30 Nm	M16 60 Nm	M20 100 Nm

<sup>1)</sup> Not required when body is made of stainless steel

## 6 Nameplate

The nameplate includes all details required to identify the valve.

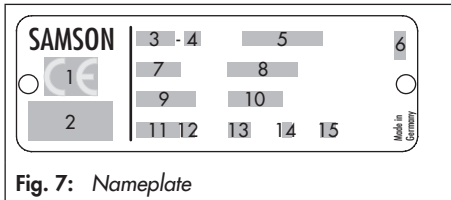


Fig. 7: Nameplate

- 1 CE marking or "Art. 3, Abs. 3", where applicable
- 2 ID of the notified body, fluid group and category, where applicable
- 3 Type designation
- 4 Device modification index
- 5 Material
- 6 Year of manufacture
- 7 Valve size: DIN: DN, ANSI: NPS
- 8 Perm. operating gauge pressure at room temperature  
DIN: bar, ANSI: Class
- 9 Order number with modification index
- 10 Order position
- 11 Flow coefficient  
DIN:  $K_{VS}$ , ANSI:  $C_v$
- 12 Characteristic  
%: equal percentage, Lin: linear,  
DIN: A/Z  
ANSI: O/C (quick opening)
- 13 Seal  
ME metal, ST Stellite plated, Ni nickel plated,  
PT PTFE soft seal  
PK PEEK soft seal
- 14 –
- 15 Flow divider St I

## 7 Dimensions and weights

The dimensions for the DIN and ANSI versions can be found in the associated Data Sheets ► T 8111 EN and ► T 8112 EN.



## 8 Customer inquiries

Please submit the following details:

- Order number and item in the order  
(written on the nameplate)
- Type, nominal size and nominal pressure  
of the valve
- Pressure and temperature of the process  
medium
- Flow rate in  $\text{m}^3/\text{h}$
- Bench range of the mounted actuator  
(e.g. 1.4 to 2.3 bar)
- Strainer used
- Installation drawing







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