

# Electric Control Valves

Type 3222 N/5857, Type 3222 N/5757-3 and  
Type 3222 N/5757-7

**SAMSON**



Type 3222 N/5857 Electric Control Valve  
Type 3222 N Globe Valve with soldering ends and Type 5857 Actuator

## Mounting and Operating Instructions

**EB 5867 EN**

Edition August 2016

**CE**

## 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

Follow these instructions concerning the mounting, start up and operation of the control valve:

- The control valves 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.
- To ensure appropriate use, only use the 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.
- 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.
- The electric actuators are designed for use in low voltage installations. For wiring and maintenance, observe the relevant safety regulations.
- Only use power interruption devices that are protected against unintentional reconnection of the power supply.
- Be careful while performing adjustment work on live parts. Do not remove any covers.

**To avoid damage to any equipment, the following also applies:**

- Proper shipping and storage are assumed.



**Note:**

*The control valves comply with the requirements of the European Pressure Equipment Directive 2014/68/EU. Valves with a CE marking have a declaration of conformity which includes information about the applied conformity assessment procedure.*

*The declaration of conformity can be viewed and downloaded at*

▶ <http://www.samson.de>.

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## 2 Design and principle of operation

See Fig. 1

The medium flows through the single-seated globe valve in the direction indicated by the arrow. The position of the plug (3) determines the flow rate across the area released between plug and valve seat (2).

The linear actuating force is transmitted directly over the actuator stem (7) to the plug stem (5). When the actuator stem extends, the valve plug (3) is moved in the closing direction. The plug stem follows the actuator stem owing to the force of the valve spring (4) as the actuator stem retracts, causing the valve to open.

The valve (1) and actuator have a force-locking connection.

An intermediate insulating piece is available for insulated pipes.

### Electric actuator

The Type 5857 Electric Actuator can either be controlled using a three-step signal or, in the version with positioner, with continuous signals which can be adjusted in ranges from 0 to 20 mA or 0 to 10 V.

### Electric actuators with process controllers

The electric actuator with process controller consists of a linear actuator with an integrated digital controller. TROVIS 5757-3 is suitable for domestic hot water heating, whereas TROVIS 5757-7 is suited for heating and cooling applications.

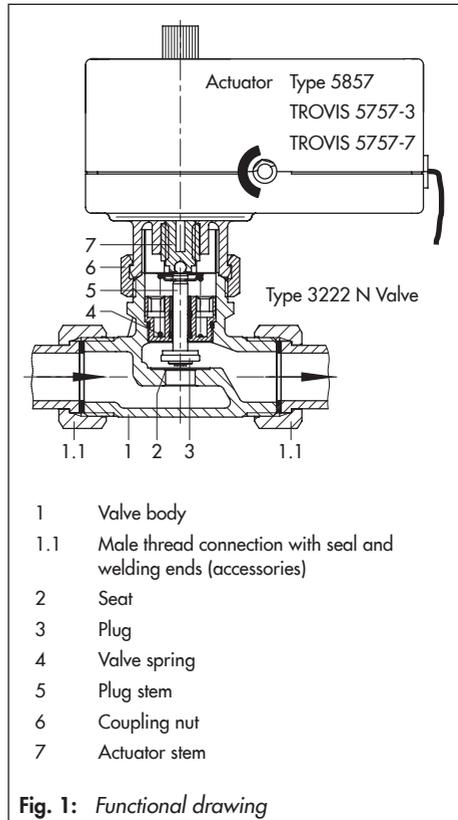


Fig. 1: Functional drawing

## 2.1 Technical data

**Table 1:** *Technical data*

Single-seated Type 3222 N Globe Valve		
Nominal size	DN 15	
Connection	ISO 228/1-G $\frac{3}{4}$ B	
End connections (optional)	Threaded ends G $\frac{1}{2}$ · Welding ends · Soldering ends	
Nominal pressure	PN 16	
K <sub>VS</sub> coefficient	Standard	2.5
	Special version	0.25 · 0.4 · 0.63 · 1 · 1.6
Valve travel	6 mm	
Characteristic	Equal percentage	
Pressure balancing	None	
Max. perm. differential pressure $\Delta p$	6 bar	
Type of sealing	K <sub>VS</sub> ≤ 1	Metal seal
	K <sub>VS</sub> = 1.6 and 2.5	Soft seal
Leakage class according to IEC 60534-4	Class I (<0.05 % of K <sub>VS</sub> coefficient)	
Max. permissible temperature	120 °C	
Max. perm. medium temperature	Treated water	120 °C
	Non-flammable gases	80 °C
z value	0.43	

**Table 2:** *Materials*

Single-seated Type 3222 N Globe Valve		
Valve body	CW602N (brass)	
Plug	Up to K <sub>VS</sub> = 1	1.4305
	K <sub>VS</sub> = 1.6 and 2.5	1.4305 with EPDM seal
Plug stem	1.4305	
Seat	Up to K <sub>VS</sub> = 1	1.4305
	K <sub>VS</sub> = 1.6 and 2.5	CW602N (brass)
Valve spring	1.4310 K	
Welding ends	1.0254 (St 37)	
Threaded ends	Brass	
Soldering ends	CC491K (red brass, Rg 5)	
Intermediate insulating piece (1990-1712)	1.4305, CW617N (brass), PTFE, EPDM, FPM	

## 2.2 Possible combinations (valve/actuator)

Type 3222 N Globe Valve/actuator		
Type/TROVIS	Fail-safe action	Nominal size
<b>Electric actuators</b>		
5857	Without	DN 15
<b>Electric actuator with process controller for domestic hot water heating</b>		
5757-3	Without	DN 15
<b>Electric actuator with process controller for heating and cooling applications</b>		
5757-7	Without	DN 15

## 2.3 Nameplate

<b>SAMSON</b>		1
2		3
4		5
K <sub>VS</sub> 6	Δp	7

- 1 Type designation
- 2 Configuration ID
- 3 Date of manufacture
- 4 Model number
- 5 Maximum permissible temperature
- 6 K<sub>VS</sub> coefficient
- 7 Max. permissible differential pressure Δp

## 2.4 Customer inquiries

Please submit the following details:

- Type designation
- Configuration ID
- Date of manufacture

## 3 Installation

In case, the valve and actuator are delivered separately, we recommend first installing the valve into the pipeline and mounting the actuator afterwards.

### 3.1 Notes on installation

- The control valve can be installed in the pipeline in any desired position. However, a suspended mounting position of the actuator is not permissible (see Fig. 2).
- Install versions for water above 150 °C and for steam with the actuator installed upright in a horizontal pipeline.
- Choose a place of installation that allows you to freely access the control valve even after the entire plant has been completed.
- Make sure that the permissible limits for the actuator used are observed.
- Flush the pipeline thoroughly before installation.
- Install the valve free of stress and with the least amount of vibrations as possible.

- If necessary, support the pipelines near the connections.

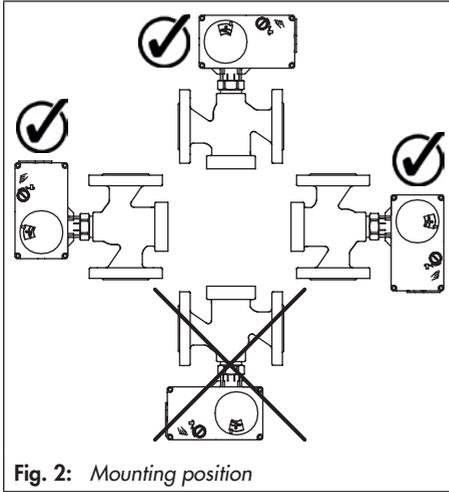


Fig. 2: Mounting position

### Insulation of cold systems

To insulate cold systems, we recommend to proceed as follows:

1. Fill the plant and carefully rinse it.
2. Shut down the plant and let it heat up until all the condensation water has dried off.
3. Mount and insulate the intermediate insulating piece (1990-1712).

Observe the following on installing the control valve:

- Make sure that the electric actuator remains accessible after installation.
- Make sure that the plug stem can move freely and does not touch the insulation.
- Make sure that the actuator stem does not touch the insulation.



#### Note:

The insulation thickness depends on the medium temperature and the ambient conditions. 50 mm is a typical thickness.

## 3.2 Strainer

- Install a strainer (e.g. SAMSON Type 2 NI, ► T 1015) upstream of the valve to prevent any sealing parts, weld spatter, and other impurities carried along by the process medium impairing the proper functioning of the valve, above all the tight shut-off.
- Install the strainer with the filter element facing downwards.
- Choose the place of installation to allow enough space to remove the filter.
- Install the strainer with the flow direction as indicated by the arrow on the body.

## 3.3 Additional mounting instructions

We recommend installing a hand-operated shut-off valve upstream of the strainer and downstream of the control valve to be able to shut down the plant for cleaning and maintenance, and when the plant is not used for longer periods of time.

## 4 Mounting, connecting and configuring the actuator

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### **!** NOTICE

*The instructions on how to mount the valve onto the actuator, perform electrical connection as well as configure the actuator are described in detail in the mounting and operating instructions (EB) of the actuator:*

- ▶ EB 5857 for Type 5857 Electric Actuator
  - ▶ EB 5757 for TROVIS 5757-3 Electric Actuator with Process Controller
  - ▶ EB 5757-7 for TROVIS 5757-7 Electric Actuator with Process Controller
- Read the actuator's mounting and operating instructions.*
- 

### 4.1 Attachment

Mount the actuator onto the valve connection or intermediate insulating piece as described in the corresponding mounting and operating instructions.

### 4.2 Connection

Perform the electrical connection of the actuator as described in the corresponding mounting and operating instructions.

## 4.3 Configuration

The electric actuator version with digital positioner as well as electric actuators with process controllers can be adapted to the control task.

Configure the actuator as described in the corresponding mounting and operating instructions.



### **Note:**

*When electric control valves are fitted with a positioner, this positioner must be initialized before the first start-up. See the associated documentation.*

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## 5 Maintenance

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### **WARNING!**

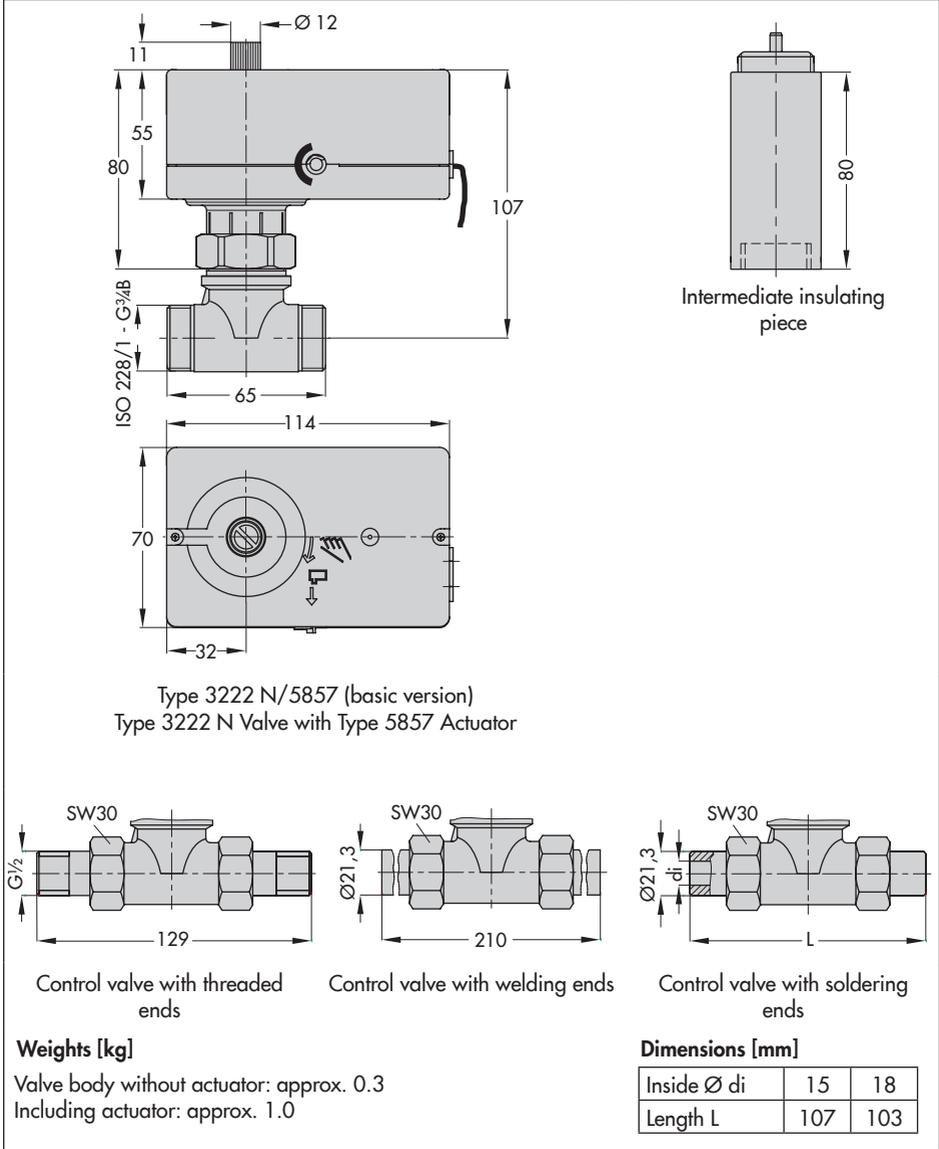
*Before performing any work on the control valve, depressurize the relevant plant section and, depending on the process medium, drain it as well. When used at high temperatures, allow the plant section to cool down to ambient temperature. Switch off the control signal for the actuator.*

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The control valve is subject to natural wear. Depending on the operating conditions, check the valve at regular intervals.

If leakage to the atmosphere occurs, remove the valve from the pipeline and replace damaged parts.

## 6 Dimensions and weights





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2016-10-27 · English