MOUNTING AND
OPERATING INSTRUCTIONS

EB 8131/8132 EN

Translation of original instructions

Type 3531 Valve with mounted rod-type yoke (partial view)

Type 3531 Globe Valve for Heat Transfer Oil

Edition June 2012

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.

➔ 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 Department (aftersalesservice@samson.de).

The mounting and operating instructions for the devices are included in the scope of delivery. The latest documentation is available on our website at ***www.samson.de > Service & Support > Downloads > Documentation***.

Definition of signal words

⚠ DANGER

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

⚠ WARNING

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

NOTICE

Property damage message or malfunction

Note

Additional information

Tip

Recommended action

1 General safety instructions

– The control valve must be mounted, started up or serviced by fully trained and qualified personnel only. 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.

NOTICE

– 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 or power supply as well as the control signal are disconnected to prevent any hazards due to 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.

2 Design and principle of operation

The Type 3531 Globe Valve has a modular design and can be combined with pneumatic or electric actuators (as follows):

Valve		Type ... Actuator
V2001-P	Pneumatic	3372-01xx
V2001-PA		2780-2
V2001-IP	Electropneumatic	3372-03xx
V2001-E1	Electric	5824-30
V2001-E3		3374

The medium flows through the valve in the direction indicated by the arrow. The plug (3) is moved by changing the control signal applied to the actuator.

The plug stem is sealed by a bellows seal and an additional packing (4.2) and is connected to the actuator stem (8.1) by the stem connector (7).

Legend for Fig. 1

1 Valve body
1.1 Nuts
1.2 Gasket
2 Seat
3 Plug
4 Threaded bushing
4.1 Bushing
4.2 Packing
4.2 Washer
4.4 Spring (DN 65/80)
5 Bellows seal with plug stem and metal bellows
5.1 Coupling nut
5.2 Bellows housing
5.3 Gasket
5.4 Flange
6 Plug stem
6.1 Stem connector nut
6.2 Lock nut
6.3 Screw
6.4 Retaining washer
7 Stem connector
8.1 Actuator stem
8.2 Yoke
9 Nut
10 Washer
11 Spring
12 Washer
13 Bushing
14 Cover
15 Guide
X Position for open-end wrench

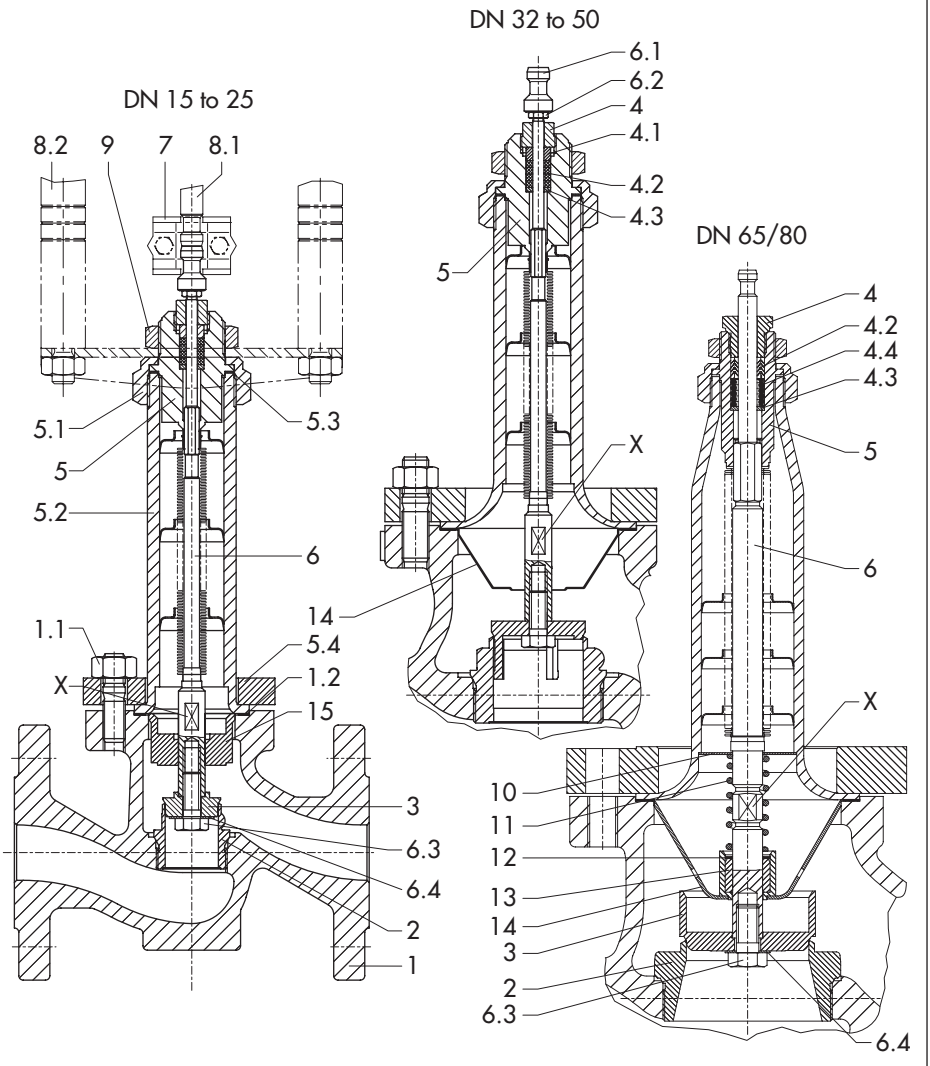


Fig. 1: *Sectional drawings*

2.1 Technical data

The technical data are included in the following referenced documents:

– Data Sheet ▶ T 8131 for Type 3531 Globe Valve for Heat Transfer Oil with pneumatic or electric actuator, DIN version
– Data Sheet ▶ T 8132 for Type 3531 Globe Valve for Heat Transfer Oil with pneumatic or electric actuator, ANSI version

3 Installation

Refer to the corresponding mounting and operating instructions for more details on the actuator used.

3.1 Mounting position

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

⚠ WARNING

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.

NOTICE

Flush the pipeline thoroughly before installation of the valve.

3.2 Strainer and bypass

We recommend installing a strainer (SAMSON Type 2) 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, bellows and packing.

Depending on the operating conditions, check the valve at regular intervals to prevent possible failure before it can occur.

External leakage can indicate that the bellows seal or 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.

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

⚠ WARNING

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.

i *Note*

Suitable seat wrenches and special tools as well as the associated tightening torques are listed in Table 1 on page 10.
Contact your nearest SAMSON subsidiary or the SAMSON After-sales Service department for information on suitable lubricants.

! *NOTICE*

Before performing any repair work, remove the actuator from the valve.
Unscrew the screws on the stem connector (7) and the nut (9). Lift the actuator off the valve.

5.1 Replacing the bellows seal

If the packing leaks, this is due to a defective bellows seal.

The entire bellows seal assembly must be replaced together with the packing (4.2).

We recommend renewing the top gasket (5.3) and bottom gasket (1.2) at the bellows housing as well.

Disassembly:

1. DN 15 to 50: Unscrew the lock nut (6.2) and stem connector nut (6.1).
2. First unscrew the coupling nut (5.1) and then the nuts (1.1) and lift off the flange (5.2). Remove the entire bonnet assembly from the valve body.
3. Unscrew the screw (6.3), while holding the plug stem (X) stationary at the flattened part with an open-end wrench (width across flats 10 mm for DN 15 to 50 and 13 mm for DN 65/80).
4. First remove the plug (3) followed by
   DN 15 to 25: guide (15),
   DN 32 to 50: cover (14) or
   DN 65/80: cover (14) bushing (13), washer (12), spring (11) and washer (10).
   Pull the bellows seal (5) out of the bellows housing (5.2) and remove the gasket (5.3).
5. Carefully clean all the parts and check them for damage. Replace the plug stem together with the bellows seal and packing with new parts.

Assembly:

1. Apply a suitable lubricant to the gasket (5.3) and thread on the bellows housing. Insert the gasket (5.3). Push in the bellows seal (5) together with plug stem and place on the flange (5.3). Tighten the coupling nut (5.1) by hand at first.
2. DN 15 to 50: Push the guide (15) or cover (14) onto the plug stem.
   DN 65/80:Push the washer (10), spring (11), washer (12), bushing (13) and cover (14) onto the plug stem.
   Apply a suitable lubricant to the screw thread. Insert the retaining washer (6.4) and plug (3) onto the screw (6.3) and screw it tight into the plug stem.

! *NOTICE*

It is absolutely necessary to place an open-end wrench on the flattened area of the plug stem (X) to ensure that the metal bellows cannot be twisted.

3. Insert the gasket (1.1) into the valve body and place the entire bonnet assembly into the body.
4. Align the flange (5.2) and tighten the nuts (1.1). See tightening torque in Table 1 on page 10.
5. Tighten coupling nut (5.1). See tightening torque in Table 1 on page 10.
6. DN 15 to 50: Thread the lock nut (6.2) and stem connector nut (6.1) onto the top end of the plug stem again. Adjust the stem connector nut (6.1) to keep the dimension of 50 mm from the top of the bellows seal assembly (5) to the top of the stem connector nut (6.1).

5.2 Replacing the seat and plug

When replacing the seat and/or plug, we recommend renewing the top gasket (5.3) and bottom gasket (1.2) on the bellows housing as well.

Replace the plug (3) as follows:

➔ Proceed as described in section 5.1. However, replace the old plug with a new plug.

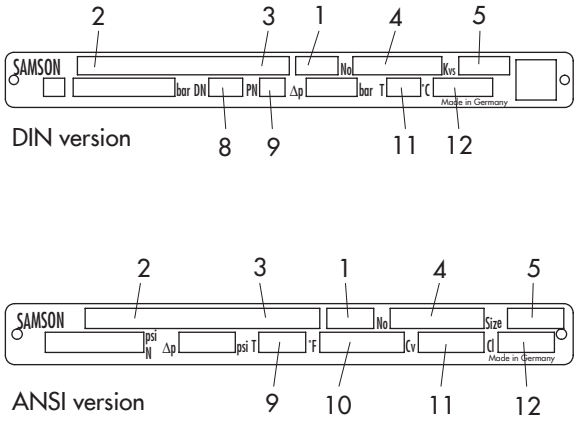
Replace the seat (2) as follows:

➔ Proceed as described in section 5.1. However, replace the old seat with a new seat. To do so, use a suitable seat wrench (see Table 1 on page 10) to unscrew the seat (2). Apply a suitable lubricant to the thread and the sealing cone of the new seat. Screw in the seat.

Table 1: *Tightening torques*

DN NPS	15 to 25 ½ to 1	32 to 50 1½ to 2	65 to 80 2½ to 3
Seat wrench Order no.	1280-3030	1280-3009	9110-2467
Tightening torques ±10 %			
Seat thread	M32x1.5 120 Nm	M58x1.5 500 Nm	M90x1.5 1050 Nm
Coupling nut (5.1)	80 Nm		
Body nuts (1.1)	M10 10 Nm	M12 30 Nm	M16 90 Nm

6 Description of the nameplate



DIN version

1 Valve type
2 Model number
3 Model number index
4 Order number or date
5 K_{VS} coefficient
8 Valve size
9 Nominal pressure
11 Permissible temperature (°C)
12 Body material

ANSI version

1 Valve type
2 Model number
3 Model number index
4 Order number or date
5 Valve size
9 Permissible temperature (°F)
10 Body material
11 C_V coefficient (K_{VS} x 1.17)
12 Class

Fig. 2: *Nameplate*

8 Dimensions in mm

DIN DN	L mm		H mm
15	130		284
20	150		
25	160		
32	180		296
40	200		
50	230		
65	290		396
80	310		
ANSI NPS	**L (inch) Class 150**	**300 [1]**	**H inch**
½	7.25	7.50	11.2
¾		7.62	
1		7.75	11.65
1½	8.75	9.25	
2	10.00	10.50	
2½	10.90	11.50	15.6
3	11.75	12.50	

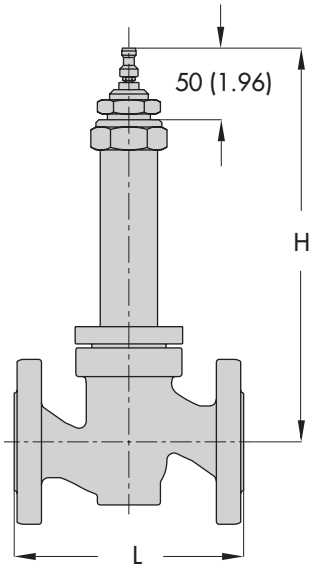


Fig. 3: *Dimensional drawing*

[1] Max. operating pressure 25 bar

7 Customer inquiries

Submit the following details when making inquiries:

- Type designation and order number (entered on the nameplate)
- Serial number, nominal size and valve version
- Pressure and temperature of the process medium
- Flow rate in m^3/h
- Bench range (bench range)
- (e.g. 1.4 to 2.3 bar with a pneumatic actuator)
- Installation drawing

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