

## Type 2012

Globe valve, pneumatically operated

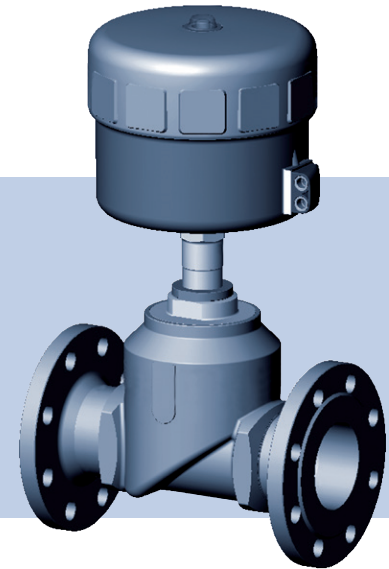
Actuator sizes 175 mm and 225 mm, Nominal diameter DN65 to DN100

Kolbengesteuertes Geradsitzventil

Antriebsgrößen 175 mm und 225 mm, Nennweiten DN65 bis DN100

Vanne à siège droit commandée par piston

Tailles d'actionneur 175 mm et 225 mm, Diamètre nominal DN65 à DN100



## Operating Instructions

Bedienungsanleitung

Manuel d'utilisation

We reserve the right to make technical changes without notice.  
Technische Änderungen vorbehalten.  
Sous réserve de modifications techniques.

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Operating Instructions 1709/15\_EU-ML\_00804396 / Original DE

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# 1 OPERATING INSTRUCTIONS

The operating instructions describes the entire life cycle of the device. Keep these instructions in a location which is easily accessible to every user, and make these instructions available to every new owner of the device.

## **WARNING!**

**The operating instructions contain important safety information.**

Failure to observe these instructions may result in hazardous situations.

- ▶ The operating instructions must be read and understood.

## 1.1 Symbols

### **DANGER!**

**Warns of an immediate danger.**

- ▶ Failure to observe the warning may result in a fatal or serious injury.

### **WARNING!**

**Warns of a potentially dangerous situation.**

- ▶ Failure to observe the warning may result in serious injuries or death.

### **CAUTION!**

**Warns of a possible danger.**

- ▶ Failure to observe this warning may result in a moderate or minor injury.

### **NOTE!**

**Warns of damage to property.**

- ▶ Failure to observe the warning may result in damage to the device or the equipment.



Indicates important additional information, tips and recommendations.



Refers to information in these operating instructions or in other documentation.

- ▶ designates instructions for risk prevention.

→ designates a procedure which you must carry out.

## 1.2 Definition of term

The term “device” used in these instructions always stands for the globe valve Type 2012.

## 2 AUTHORIZED USE

**Non-authorized use of the device may be a hazard to people, nearby equipment and the environment.**

**The globe valve Type 2012 is designed for the controlled flow of liquid and gaseous media.**

- ▶ In the potentially explosion-risk area the device may be used only according to the specification on the separate Ex type label. For use observe the additional information enclosed with the device together with safety instructions for the explosion-risk area.
- ▶ Devices without a separate Ex type label may not be used in a potentially explosive area.
- ▶ The admissible data, the operating conditions and conditions of use specified in the contract documents, operating instructions and on the type label are to be observed during use. These are described in the chapter entitled "[Technical Data](#)".
- ▶ The device may be used only in conjunction with third-party devices and components recommended and authorized by Bürkert.
- ▶ Correct transportation, correct storage and installation and careful use and maintenance are essential for reliable and faultless operation.
- ▶ Use the device only as intended.

## 3 BASIC SAFETY INSTRUCTIONS

These safety instructions do not make allowance for any

- contingencies and events which may arise during the installation, operation and maintenance of the devices.
- local safety regulations, whereby the operator is responsible for their compliance, by the installation personnel too.



### **Danger – high pressure.**

- ▶ Before dismantling the lines and valves, turn off the pressure and vent the lines.

### **Risk of electric shock.**

- ▶ Before reaching into the device, switch off the power supply and secure to prevent reactivation.
- ▶ Observe applicable accident prevention and safety regulations for electrical equipment.

### **Risk of injury when opening the actuator.**

The actuator contains a tensioned spring. If the actuator is opened, there is a risk of injury from the spring jumping out.

- ▶ The actuator must not be opened.

### **Risk of injury from moving parts in the device.**

- ▶ Do not reach into openings.

#### **Risk of burns.**

The surface of the device may become hot during long-term operation.

- ▶ Do not touch the device with bare hands.

#### **General hazardous situations.**

To prevent injury, ensure:

- ▶ That the system cannot be activated unintentionally.
- ▶ Installation and repair work may be carried out by authorized technicians only and with the appropriate tools.
- ▶ After an interruption in the power supply or pneumatic supply, ensure that the process is restarted in a defined or controlled manner.
- ▶ The device may be operated only when in perfect condition and in consideration of the operating instructions.
- ▶ The general rules of technology apply to application planning and operation of the device.

To prevent damage to property of the device, ensure:

- ▶ Supply the media connections only with those media which are specified as flow media in the chapter entitled "[7 Technical Data](#)".
- ▶ Do not put any loads on the valve (e.g. by placing objects on it or standing on it).
- ▶ Do not make any external modifications to the valves.
- ▶ Do not paint the body parts or screws.

## **4 GENERAL INFORMATION**

### **4.1 Contact address**

#### **Germany**

Bürkert Fluid Control Systems  
Sales Center  
Christian-Bürkert-Str. 13-17  
D-74653 Ingelfingen  
Tel. + 49 (0) 7940 - 10 91 111  
Fax + 49 (0) 7940 - 10 91 448  
E-mail: [info@burkert.com](mailto:info@burkert.com)

#### **International**

Contact addresses are found on the final pages of the printed operating manual.

You can also find information on the Internet under:

[www.burkert.com](http://www.burkert.com)

### **4.2 Warranty**

The warranty is only valid if the device is used as authorized in accordance with the specified application conditions.

### **4.3 Information on the Internet**

The operating instructions and data sheets for Type 2012 can be found on the Internet at: [www.burkert.com](http://www.burkert.com)

## 5 PRODUCT DESCRIPTION

### 5.1 General description

The 2/2-way globe valve Type 2012 is suitable for liquid and gaseous media. It uses neutral gases or air (control media) to control the flow of water, alcohol, oil, fuel, hydraulic fluid, saline solution, lye, organic solvent and steam (flow media).

A particular feature of the globe valves are screwed in seats which can be changed if required.

#### 5.1.1 Restrictions



#### WARNING!

**Risk of injury from water hammer.**

A water hammer could crack the lines and device. Due to the risk of water hammer, **valves with a flow direction above seat must not be used for liquid media.**

- ▶ Consider the type of flow direction and the type of medium for operation of the device.

## 6 STRUCTURE AND FUNCTION

### 6.1 Structure

The globe valve consists of a pneumatically actuated piston actuator and a 2/2-way globe valve body.

The actuator is manufactured from PA or, for special operating conditions, from PPS. The self-adjusting packing gland ensures a high degree of tightness. The valve body, made of stainless steel, enables high flow values.

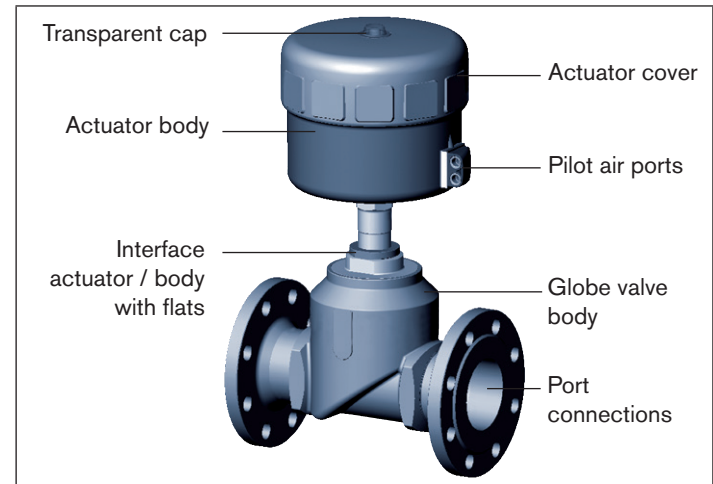


Fig. 1: Globe valve Type 2012, Structure and description

## 6.2 Function

Depending on the version, the seat of the valve is closed with or against the medium flow.

Spring force (CFA) or pneumatic pilot pressure (CFB and CFI) generates the closing force on the swivel plate. The force is transferred via a spindle which is connected to the actuator piston.

### 6.2.1 Control functions (CF)



#### WARNING!

#### For control function I – Danger if pilot pressure fails.

For control function I control and resetting occur pneumatically. If the pressure fails, no defined position is reached.

- ▶ To ensure a controlled restart, first pressurise the device with pilot pressure, then switch on the medium.

<p><b>A</b> (CFA)</p>		<p>Normally closed by spring action</p>
<p><b>B</b> (CFB)</p>		<p>Normally open by spring action</p>
<p><b>I</b> (CFI)</p>		<p>Actuating function via reciprocal pressurisation</p>

### 6.2.2 Flow direction below seat

Depending on the version, the valve is closed against the medium flow with spring force (control function A, CFA) or with pilot pressure (control function B or I, CFB or CFI).

As the medium pressure is under the swivel plate, this pressure contributes to the opening of the valve.



#### WARNING!

**Medium may be discharged if minimum pilot pressure is too low or medium pressure too high.**

If the minimum pilot pressure is too low (for CFB and CFI) or the permitted medium pressure is exceeded, leaks may occur.

- ▶ Observe minimum pilot pressure.
- ▶ Do not exceed medium pressure.
- ▶ See chapter entitled [“7.4.2”](#).

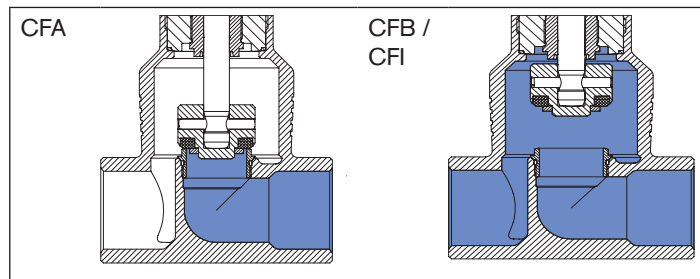


Fig. 2: Flow direction below seat (closing against medium)



### 6.2.3 Flow direction above seat


The valve is closed by spring force (control function A, CFA) with the medium flow. As the medium pressure is over the swivel plate, it supports the closing process of the valve and also contributes to the sealing of the valve seat. The valve is opened by the pilot pressure.

#### **WARNING!**

##### Risk of injury from water hammer.

A water hammer could crack the lines and device. Due to the risk of water hammer, **valves with a flow direction above seat must not be used for liquid media.**

- ▶ Consider the type of flow direction and the type of medium for operation of the device.

 To ensure complete opening, the minimum pilot pressure must be applied.

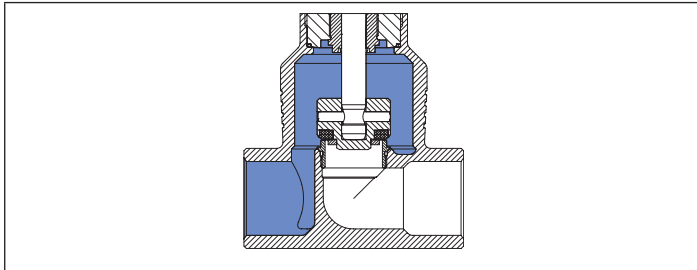


Fig. 3: Flow direction above seat (closing with medium)

## 7 TECHNICAL DATA

### 7.1 Conformity

The globe valve Type 2101 conforms with the EU Directives according to the EU Declaration of Conformity.

### 7.2 Standards

The applied standards, which verify conformity with the EU Directives, can be found on the EU-Type Examination Certificate and / or the EU Declaration of Conformity.

### 7.3 Type label

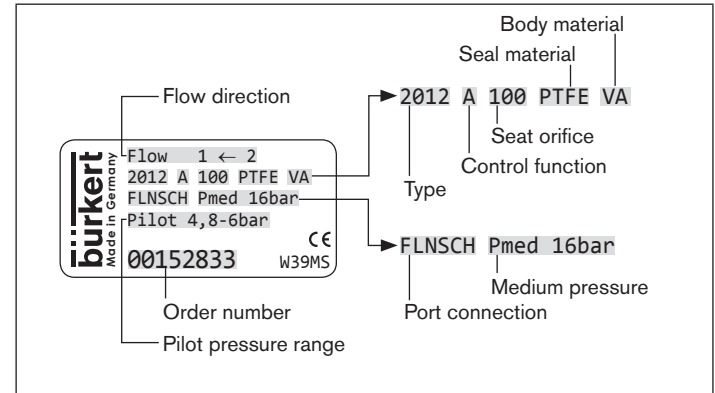


Fig. 4: Description of type label

## 7.4 Operating conditions

### 7.4.1 Temperature ranges

Actuator size [mm]	Actuator material	Medium temperature (for PTFE seal)	Ambient temperature
175, 225	PA	-10...+180 °C	-10...+50 °C

### 7.4.2 Pressure ranges

Actuator material	Actuator size [mm]	Max. pilot pressure [bar]
PA	175, 225	6

Medium and pilot pressure for control function A, flow direction below the seat (standard):

Orifice	Maximum medium pressure / Minimum pilot pressure	
	Actuator size $\varnothing$ [mm]	
	175	225
65	16 (15*)/4.5	-
80	10/4.5	16 (12.5*)/3.3
100	7/4.5	16 (10*)/4.8

\* Medium pressure max. 15 bar acc. to Pressure Equipment Directive 2014/68/EU for compressible fluids in Group 1 (hazardous gases and vapors in accordance with Article 4 paragraph (1) c) i) first dash).

### Required minimum pilot pressure depending on medium pressure

The following graphs illustrate the required minimum pilot pressure depending on the medium pressure for control functions B and I (only actuator size 175).

#### Control functions B and I, flow direction below seat\*

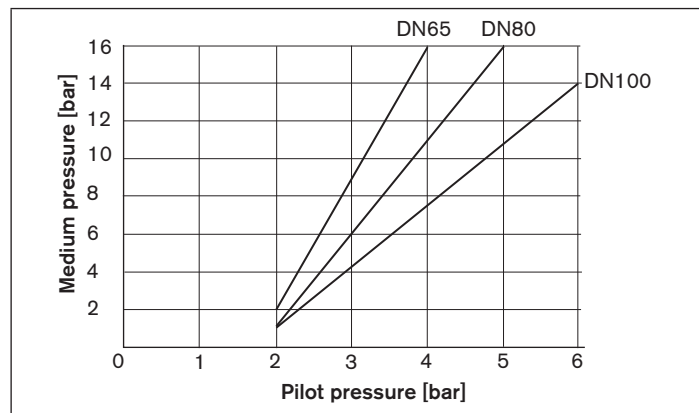


Fig. 5: Pressure graph, control functions B and I, flow direction below seat



The actuator  $\varnothing$  225 is not intended for control function B and I, as the performance data of the actuator  $\varnothing$  175 to DN100 are adequate here.

### 7.4.3 Media

Control medium	neutral gases, air
Flow medium	water, alcohol, fuel, hydraulic liquids, saline solutions, lye, organic solvents

### 7.5 Control functions

Control function A	Normally closed by spring action
Control function B	Normally open by spring action
Control function I	Actuating function via reciprocal pressurization

### 7.6 Mechanical data

#### Materials

Valve body	Stainless steel 316L
Actuator	PA
Seals materials	PTFE (NBR, FKM and EPDM on request)
Packing gland	PTFE (carbon-filled)

## 8 INSTALLATION

### 8.1 Safety instructions



#### **DANGER!**

##### **Risk of injury from high pressure.**

- ▶ Before loosening the lines and valves, turn off the pressure and vent the lines.



#### **WARNING!**

##### **Risk of injury from improper installation.**

- ▶ Installation may be carried out by authorized technicians only and with the appropriate tools.

##### **Risk of injury from unintentional activation of the system and an uncontrolled restart.**

- ▶ Secure system from unintentional activation.
- ▶ Following installation, ensure a controlled restart.

##### **For control function I – Danger if pilot pressure fails.**

For control function I control and resetting occur pneumatically. If the pressure fails, no defined position is reached.

- ▶ To ensure a controlled restart, first pressurize the device with pilot pressure, then switch on the medium.

##### **Risk of injury from moving parts in the device.**

- ▶ Do not reach into openings.

## 8.2 Before installation

**Installation position:** any, preferably with the actuator face up.

- Ensure the lines are flush.
- Observe direction of flow.
- Clean pipelines.

## 8.3 Remove the actuator from the valve body (welded body)

→ Clamp the valve body in a holding device.

### NOTE!

#### Damage to the seat seal or the seat contour.

- ▶ When removing the actuator, ensure that the valve is open.

#### → Control function A and I:

pressurize the lower control air connection with compressed air (6 bar): valve opens.

- Using a suitable open-end wrench, place the wrench flat on the tube and unscrew the actuator from the valve body.
- Do **not** loosen screw above the nipple.

## 8.4 Install of the valve body



### WARNING!

#### Risk of injury from improper installation.

- ▶ Installation may only be performed by qualified and trained personnel.
- ▶ For installation use an open-end wrench.
- ▶ Observe the tightening torque.

### Dirt trap for devices with authorization in accordance with DIN EN 161

In accordance with DIN EN 161 "Automatic shut-off valves for gas burners and gas appliances" a dirt trap must be connected upstream of the valve and prevent the insertion of a 1 mm plug gauge.

→ If the authorisation also applies to stainless steel bodies, the same type of dirt trap must be attached in front of the globe valve.

### Welded bodies:

→ Weld valve body in pipeline system.

### Other bodies:

→ Connect body to pipeline.

## 8.5 Install actuator (welded body)

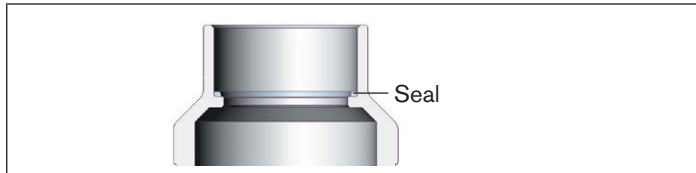


Fig. 6: Seal

→ Check the seal and if required, replace it.

### **WARNING!**

#### **Danger if incorrect lubricants used.**

Unsuitable lubricant may contaminate the medium. In oxygen applications there is a risk of an explosion.

- ▶ In specific applications, e.g. oxygen or analysis applications, use appropriately authorised lubricants only.

→ Grease nipple thread before re-installing the actuator (e.g. with Klüber paste UH1 96-402 from Klüber).

### **NOTE!**

#### **Damage to the seat seal or the seat contour.**

- ▶ When installing the actuator, ensure that the valve is open.
- Control function A and I: pressurize lower control air connection with compressed air (6 bar).
- Screw actuator into the valve body.

## Tightening torques of valve body / nipples

Nominal diameter	65	80	100
Tightening torques (Nm)	100 ± 5	120 ± 5	150 ± 5

Tab. 1: Tightening torques of valve body / nipples

## 8.6 Rotating the actuator

The position of the connections can be aligned steplessly by rotating the actuator through 360°.

### **NOTE!**

#### **Damage to the seat seal or the seat contour.**

- ▶ When rotating the actuator, ensure that the valve is open.

- Clamp the valve body in a holding device (applies only to valves which have not yet been installed).
- Control function A and I: pressurize the lower control air connection with compressed air (6 bar): valve opens.
- Counter on the flats of the nipple with a suitable open-end wrench.

### **WARNING!**

#### **Risk of injury from discharge of medium and pressure.**

If the direction of rotation is wrong, the body interface may become detached.

- ▶ Rotate the actuator module in the specified direction only.

- Loosen screw above the nipple by a half turn and turn it clockwise (as seen from above) to move the actuator to the required position.
- Retighten screw (Tightening torque  $100 \pm 5$  Nm).

## 8.7 Pneumatic connection



### WARNING!

#### Risk of injury from unsuitable connection hoses.

Hoses which cannot withstand the pressure and temperature range may result in hazardous situations.

- ▶ Use only hoses which are authorised for the indicated pressure and temperature range.
- ▶ Observe the data sheet specifications from the hose manufacturers.

#### For control function I – Danger if pilot pressure fails.

For control function I control and resetting occur pneumatically. If the pressure fails, no defined position is reached.

- ▶ To ensure a controlled restart, first pressurize the device with pilot pressure, then switch on the medium.



If the position of the pilot air ports for installation of the hoses is unfavorable, these can be aligned steplessly by rotating the actuator through  $360^\circ$ .

### Control function A

- Connect the control medium to the lower control air connection of the actuator.

### Control function B

- Connect the control medium to the upper control air connection of the actuator.

### Control function I

- Connect the control medium to the lower and upper control air connection of the actuator.



If used in an aggressive environment, we recommend conveying all free pneumatic connections into a neutral atmosphere with the aid of a pneumatic hose.

### Control air hose:

6 mm, 4 mm or 1/4" control air hoses can be used.

## 8.8 Removal



### DANGER!

#### Risk of injury from discharge of medium and pressure.

It is dangerous to remove a device which is under pressure due to the sudden release of pressure or discharge of medium.

- ▶ Before removing a device, switch off the pressure and vent the lines.

→ Loosen the pneumatic connection.

→ Remove the device.

## 9 MAINTENANCE, CLEANING

### 9.1 Safety instructions



### DANGER!

#### Danger – high pressure in the equipment.

- ▶ Before loosening the lines and valves, turn off the pressure and vent the lines.

#### Risk of injury due to electrical shock.

- ▶ Before reaching into the system, switch off the power supply and secure to prevent reactivation.
- ▶ Observe applicable accident prevention and safety regulations for electrical equipment.



### WARNING!

#### Risk of injury from improper maintenance.

- ▶ Maintenance may be performed by authorised technicians only.
- ▶ To screw on or unscrew valve body or actuator, use an open-end wrench, never a pipe wrench, and observe tightening torques.

#### Risk of injury from unintentional activation of the system and an uncontrolled restart.

- ▶ Secure system from unintentional activation.
- ▶ Following maintenance, ensure a controlled restart.



**WARNING!**

**For control function I – Danger if pilot pressure fails.**

For control function I control and resetting occur pneumatically. If the pressure fails, no defined position is reached.

- ▶ To ensure a controlled restart, first pressurize the device with pilot pressure, then switch on the medium.

**Risk of injury from moving parts in the device.**

- ▶ Do not reach into openings.

## 9.2.1 Cleaning

Commercially available cleaning agents can be used to clean the outside.

**NOTE!**

**Avoid causing damage with cleaning agents.**

- ▶ Before cleaning, check that the cleaning agents are compatible with the body materials and seals.

## 9.2 Maintenance work

**Actuator:**

The actuator of the globe valve is maintenance-free provided it is used according to these operating instructions.

**Wearing parts of the globe valve:**

Parts which are subject to natural wear:

- Valve seat,
- Seals.

→ If leaks occur, replace the particular wearing part with an appropriate spare part.

**Visual inspection:**

Perform regular visual inspections according to the application conditions:

- Check media connections for leaks.
- Check release bore on the tube for leaks.



### 9.3 Replacing the valve seat

#### Remove the actuator from the valve body

→ Clamp the valve body in a holding device.

#### NOTE!

##### Damage to the seat seal or the seat contour.

▶ When removing the actuator, ensure that the valve is in open position.

- Control function A and I: pressurize the lower control air connection with compressed air (6 bar): valve opens.
- Using a suitable open-end wrench, place the wrench flat on the tube.
- Unscrew the actuator from the valve body.

#### Replacing valve seat

- Select tool insert and screw into the installation tool.
- Unscrew old valve seat using the installation tool and open-end wrench.
- Clean thread and sealing surface in the body using compressed air.
- Attach new valve seat to the installation tool.
- Grease thread with a lubricant (e.g. Klüber paste UH1 96-402).
- Place attached valve seat on the body thread and screw on by hand.
- Using a torque wrench, tighten to the specified tightening torque (see ["Tab. 2"](#)).

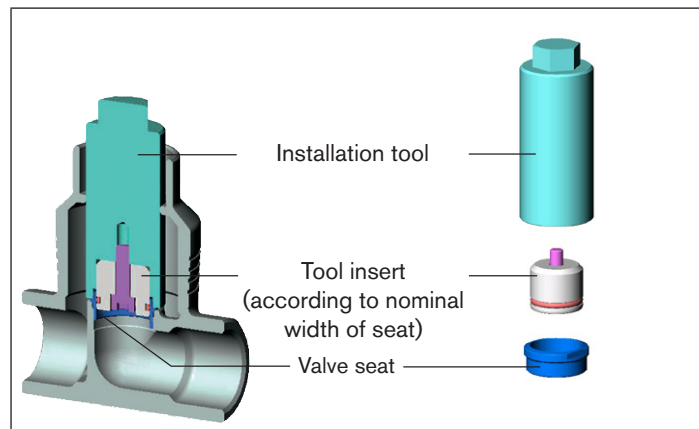


Fig. 7: Replacing the valve seat

#### Tightening torque for installation of seat

Screw connection		Tightening torques (Nm)		Tolerance
Seat	Body	Uncoated seats	Coated seats	
DN65	DN65	150	150	+10
DN80	DN80	180	180	+10
DN100	DN100	220	220	+10

Tab. 2: Tightening torque for installation of seat

## 10 MALFUNCTIONS

Malfunction	Reason	Remedial action
Actuator does not switch	Pilot air port interchanged	Connect lower (CFA, CFI) or upper (CFB, CFI) control air connection
	Pilot pressure too low	Observe pressure specifications on the type label
	Medium pressure too high	
	Flow direction reversed	Observe direction arrow on the body
Valve is not sealed	Dirt between seal and valve seat	Installing dirt trap
	Seat seal worn	Installing new seat seal
	Flow direction reversed	Observe direction arrow on the type label
	Medium pressure too high	Observe pressure specifications on the type label
	Pilot pressure too low	
Valve is leaking on the release bore	Packing gland worn	Renew packing gland or replace actuator

Tab. 3: Malfunctions

## 11 REPLACEMENT PARTS



### CAUTION!

**Risk of injury and/or damage by the use of incorrect parts.**

Incorrect accessories and unsuitable replacement parts may cause injuries and damage the device and the surrounding area.

- ▶ Use only original accessories and original replacement parts from Bürkert.

### 11.1 Replacement part sets

The following replacement part sets are available for the globe valve Type 2012:

- seal set packing gland,
- valve set,
- valve fittings (valve set and valve seat),
- seal set swivel plate.



The order numbers of the spare parts and the installation instructions can be found in the spare parts operating instructions on our website: [www.burkert.com](http://www.burkert.com) → Type 2012

## 11.2 Overview of replacement parts

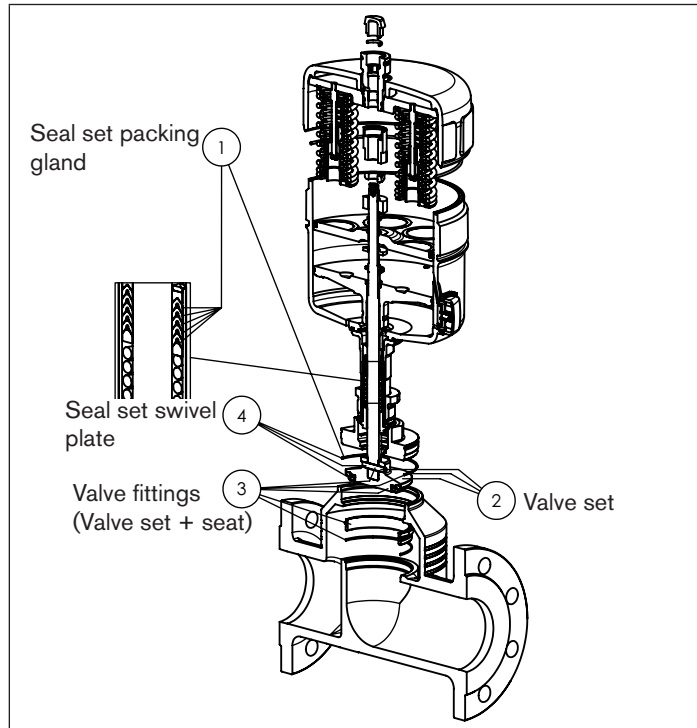


Fig. 8: Overview of replacement parts

## 12 TRANSPORT, STORAGE, DISPOSAL

### NOTE!

#### Transport damages.

Inadequately protected equipment may be damaged during transport.

- During transportation protect the device against wet and dirt in shock-resistant packaging.
- Avoid exceeding or dropping below the permitted storage temperature.

#### Incorrect storage may damage the device.

- Store the device in a dry and dust-free location.
- Storage temperature -20 – +65 °C.

#### Damage to the environment caused by device components contaminated with media.

- Dispose of the device and packaging in an environmentally friendly manner.
- Observe applicable regulations on disposal and the environment.



#### Note:

Observe national waste disposal regulations.





[www.burkert.com](http://www.burkert.com)