



Valve for return layering with actuator DN 25

## Operating instructions





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# 1. General information

The original operating instructions were drafted in German.

The operating instructions in other languages have been translated from German.

## 1.1 Validity of the operating instruction

These operating instructions are valid for the Oventrop valve for return layering with actuator DN 25.

## 1.2 Type plate

The type plate is located on the front face of the product.



Illust. 1: Type plate

## 1.3 Extent of supply

- Actuator
- Cable, length 1.7m
- Three-way ball valve
- Operating instructions

## 1.4 Contact

### Contact address

OVENTROP GmbH & Co. KG  
Paul-Oventrop-Straße 1  
59939 Olsberg  
GERMANY  
[www.omentrop.com](http://www.omentrop.com)

### Technical services

Phone: +49 (0) 29 62 82-234

# 1.5 Declaration of conformity

Oventrop GmbH & Co. KG hereby declares that this product complies with the basic requirements and other relevant provisions of the EU Directives concerned. The declaration of conformity can be obtained from the manufacturer.

## 1.6 Symbols used

|    |                                                            |
|----|------------------------------------------------------------|
|    | Highlights important information and further explanations. |
|    | Action required                                            |
|    | List                                                       |
| 1. | Fixed order. Steps 1 to X.                                 |
| 2. |                                                            |
|    | Result of action                                           |

## 2. Safety-related information

### 2.1 Correct use

Operating safety is only guaranteed if the product is used correctly.

This product is designed for the control of return layering in the storage cylinder circuit in combination with the Oventrop fresh water station. Any other use of the product will be considered incorrect use.

Claims of any kind against the manufacturer and/or its authorised representatives due to damage caused by incorrect use will not be accepted.

Observance of the operating instructions is part of compliance with correct use.

### 2.2 Warnings

Each warning contains the following elements:

| Warning symbol SIGNAL WORD                                                         |                                                                                                                                          |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>Type and source of danger</b><br>Possible consequences if the danger occurs or the warning is ignored.<br>► Ways to avoid the danger. |

The signal words identify the severity of the danger arising from a situation.

|  DANGER |                                                                                                                 |
|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
|         | Indicates an imminent danger with high risk. The situation will lead to death or serious injury if not avoided. |

|  WARNING |                                                                                                                   |
|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
|          | Indicates a possible danger with moderate risk. The situation may lead to death or serious injury if not avoided. |

|  CAUTION |                                                                                                                     |
|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
|          | Indicates a possible danger with lower risk. The situation will lead to minor and reversible injury if not avoided. |

| NOTICE                                                                              |                                                                           |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
|  | Indicates a situation that may lead to damage to property if not avoided. |

### 2.3 Safety notes

We have developed this product in accordance with current safety requirements.

Please observe the following notes concerning safe use.

#### 2.3.1 Danger caused by inadequately qualified personnel

Any work on this product must only be carried out by qualified tradespeople.

As a result of their professional training and experience as well as their knowledge of the relevant legal regulations, qualified tradespeople are able to carry out any work on the described product professionally.

##### User

The user must be informed how to operate the product by qualified tradespeople.

#### 2.3.2 Danger to life due to electric current

Any work on the power supply must only be carried out by a qualified electrician.

- Do not put the product into operation if there are visible signs of damage.
- Completely disconnect the product from the power supply.
- Check that no voltage is present.
- Secure the product against switching back on.
- Only install the product in dry indoor areas.

#### 2.3.3 Risk of injury from pressurised components

- Only carry out work when the system is depressurised.
- Observe the permissible operating pressures during operation.

#### 2.3.4 Risk of burns due to an inadvertent discharge of hot fluids

- Only carry out work when the system is depressurised.
- Allow the product to cool down before working on it.
- Check that the product is not leaking after work is complete.
- Wear safety goggles.

### 2.3.5 Risk of burns due to hot components and surfaces

- ▶ Allow the product to cool down before working on it.
- ▶ Wear suitable protective clothing to avoid unprotected contact with hot system components and fittings.

### 2.3.6 Risk of injury in case of improper work

Stored energies, angular components, protrusions and edges both inside and outside the product may cause injuries.

- ▶ Before starting work, make sure that there is enough space.
- ▶ Handle open and hard-edged components with care.
- ▶ Make sure that the work place is tidy and clean to avoid accidents.

### 2.3.7 Availability of the operating instructions

Any person working on the product has to read and apply these operating instructions and all other valid documents.

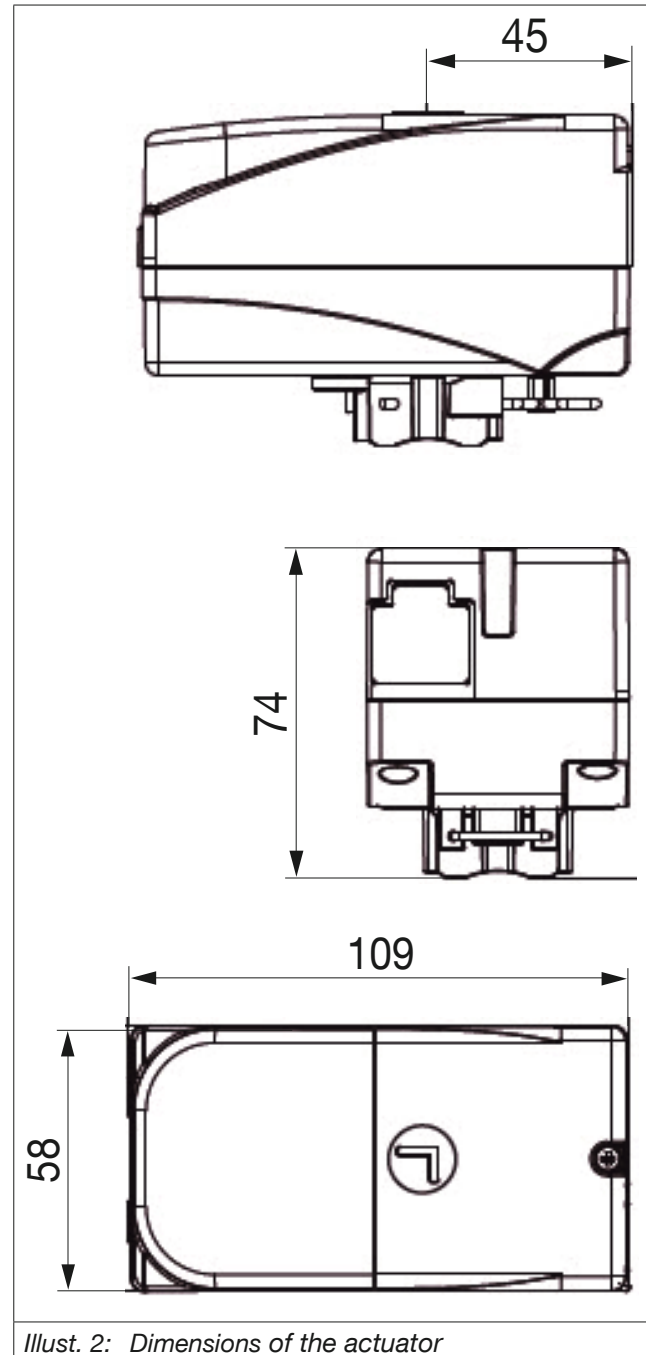
The operating instructions must be available at the installation location of the product.

- ▶ Hand these operating instructions and all other relevant documents over to the user.

## 3. Technical description

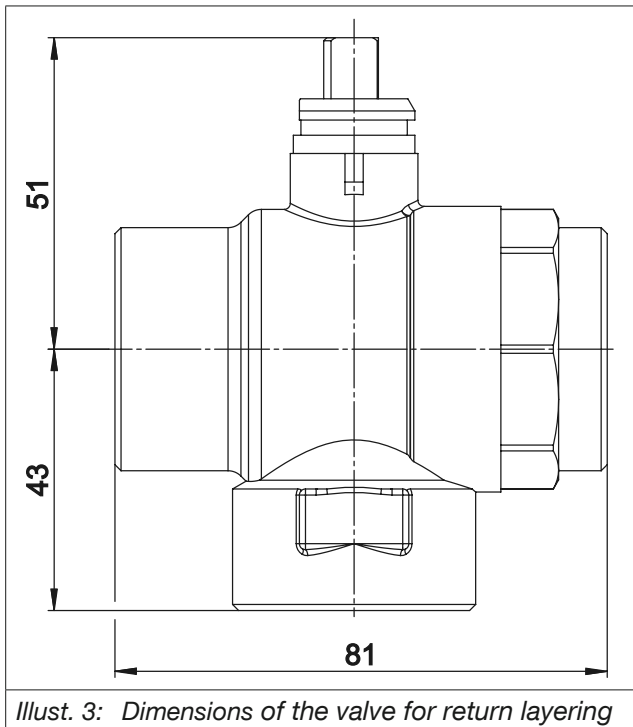
### 3.1 Design

#### 3.1.1 Dimensions of the actuator



Illust. 2: Dimensions of the actuator

### 3.1.2 Dimensions of the valve for return layering



*Illust. 3: Dimensions of the valve for return layering*

### 3.2 Functional description

The return temperature from the fresh water station to the storage cylinder can vary considerably depending on the operating status. When drawing off hot potable water, very low return temperatures may be reached. Whereas considerably higher return temperatures can be expected during circulation operation without hot potable water consumption.

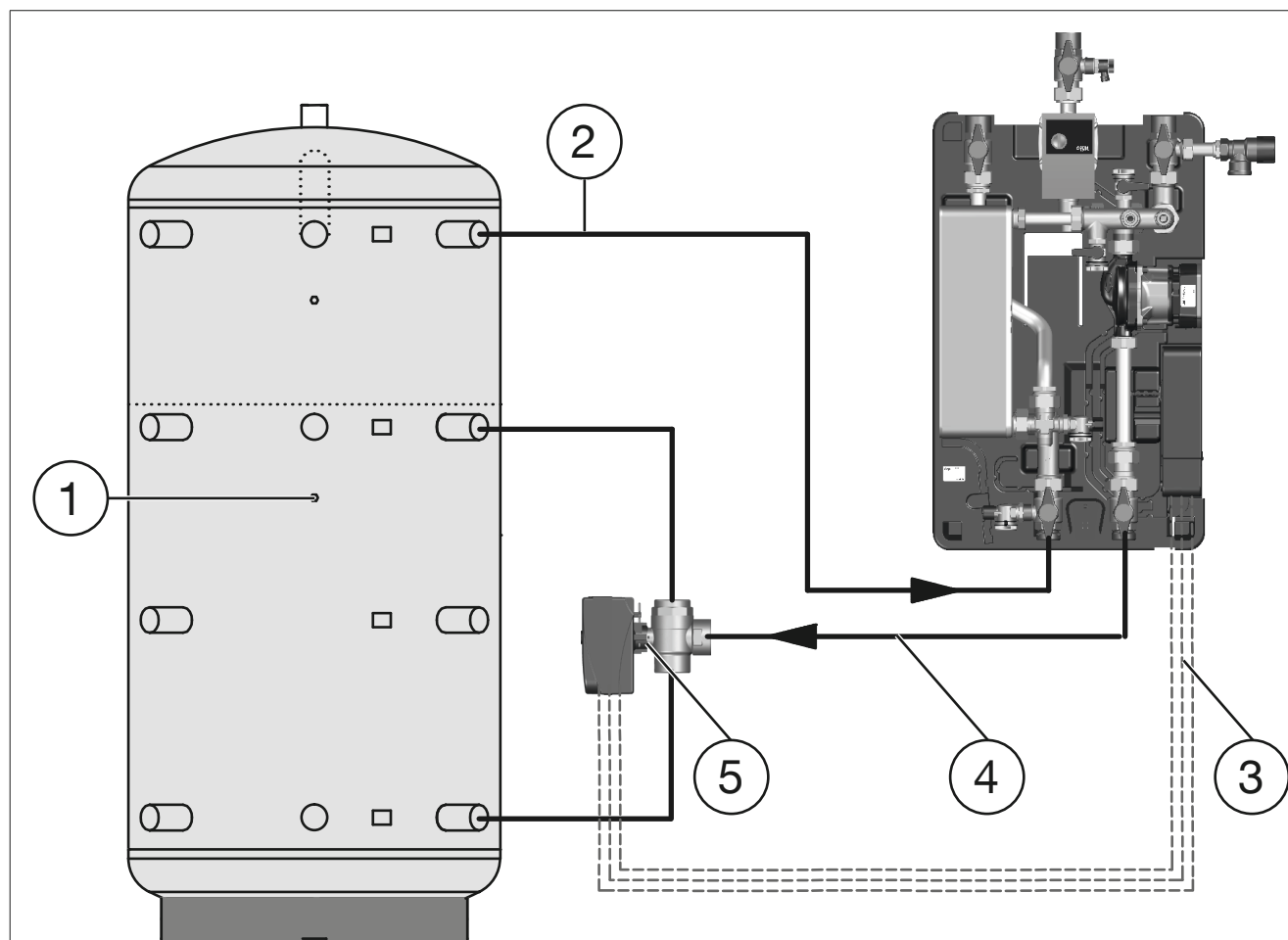
The temperature of the water in the upper section of the storage cylinder section is higher than in the lower section. This temperature layering is necessary for efficient operation of the storage cylinder.

The aim of return temperature layering is to disturb the temperature layering in the storage cylinder as little as possible. The returning water should ideally be layered in the section of the storage cylinder where the stored water has the same temperature.

The valve for return temperature layering with actuator DN 25 ensures the temperature-controlled layering of the returning water in the lower or central storage cylinder section. Temperature sensors in the storage cylinder and in the fresh water station provide the controller of the fresh water station with the necessary data for calculating the appropriate valve position.

The controller of the fresh water station takes over the control of the actuator according to the required layering position.

### 3.3 Installation scheme



Illust. 4: Installation scheme

|     |                                               |
|-----|-----------------------------------------------|
| (1) | Temperature sensor                            |
| (2) | Supply                                        |
| (3) | Electrical connection of the actuator         |
| (4) | Return                                        |
| (5) | Valve for return layering with actuator DN 25 |



### 3.4 Technical data

#### 3.4.1 Actuator

| General information                 |                         |
|-------------------------------------|-------------------------|
| Weight                              | 0.33 kg                 |
| Ambient temperature                 | 0 °C to +55 °C          |
| Ambient humidity                    | max. 85% not condensing |
| Pollution degree of the environment | 3                       |

| Electrical data                |                               |
|--------------------------------|-------------------------------|
| Nominal voltage                | 230 V AC                      |
| Nominal voltage frequency      | 50 Hz                         |
| Power consumption dimensioning | 9 VA                          |
| Connection supply / control    | Plug                          |
| Connecting plug                | Molex Mini-Fit Jr. 39-01-2060 |

| Functional data         |            |
|-------------------------|------------|
| Torque actuator         | max. 5 Nm  |
| Manual setting          | No         |
| Operating time actuator | 20 S / 90° |

| Protection                           |                             |
|--------------------------------------|-----------------------------|
| Protection class IEC/EN              | II reinforced insulation    |
| Protection IEC/EN                    | IP40                        |
| Operation mode                       | Type 1<br>(EN 60730-1:2016) |
| Rated surge voltage supply / control | 2.5 kV                      |

#### 3.4.2 Three-way ball valve

| General information |         |
|---------------------|---------|
| Weight              | 0.35 kg |

| Functional data             |                                                                              |
|-----------------------------|------------------------------------------------------------------------------|
| Fluids                      | Cold and hot water, potable water, water with a glycol proportion up to 50 % |
| Fluid temperature           | -20 to + 125°C                                                               |
| Permissible pressure ps     | 1600 kPa                                                                     |
| Differential pressure Δpmax | 600 kPa                                                                      |
| Differential pressure note  | 200 kPa for silent operation                                                 |

|                       |                                                 |
|-----------------------|-------------------------------------------------|
| Leakage rate          | Leakage rate B<br>(EN 12266-1)                  |
| Pipe connections      | Female thread Rp1                               |
| Angle of rotation     | 90°                                             |
| Installation position | Vertical to horizontal<br>(related to the stem) |

| Materials                |                   |
|--------------------------|-------------------|
| Body, closing body, stem | Brass             |
| Stem seal                | EPDM              |
| Stem seat                | PTFE              |
| Ball seat                | PTFE, O-ring EPDM |

### 4. Storage

|                       |                                                       |
|-----------------------|-------------------------------------------------------|
| Temperature range     | -10 °C to +70 °C                                      |
| Relative air humidity | max. 85% not condensing                               |
| Particles             | Store dry and free from dust                          |
| Mechanical influences | Protected from mechanical agitation                   |
| Weather influences    | Do not store outdoors<br>Protect from direct sunlight |
| Chemical influences   | Do not store together with aggressive fluids          |

## 5. Installation



**Also consult the operating instructions of your fresh water station!!**

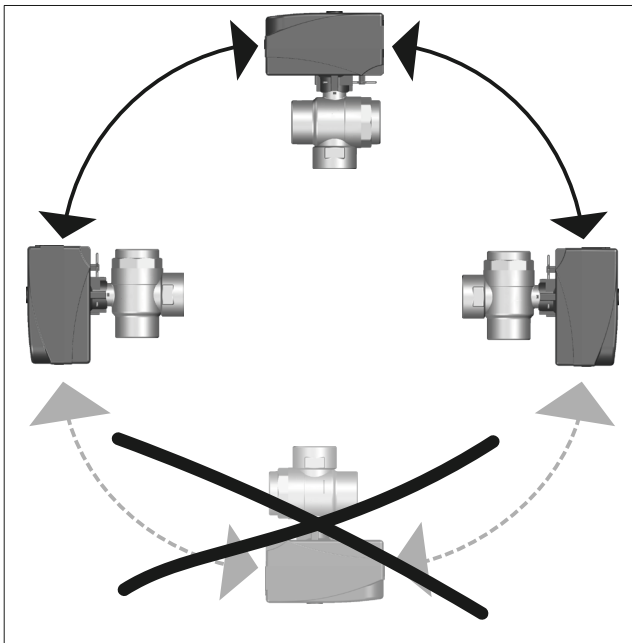
### 5.1 Installation of the valve for return layering

#### NOTICE

##### **Malfunctions and damage to the actuator due to a wrong installation position**

The actuator can be damaged and its function be impaired if it is installed in a vertical downward position.

- ▶ Do not install the valve for return layering with actuator DN 25 in a vertical downward position.



*Illust. 5: Installation position*



#### WARNING

##### **Risk of injury from pressurised fluids**

Fluids escaping under pressure may lead to injuries.

- ▶ Only carry out installation work when the system is depressurised.
- ▶ When retrofitting an existing installation: Drain the system or close the supply pipes of the section of the system and depressurise it.
- ▶ Wear safety gloves.



#### CAUTION

##### **Risk of scalding due to hot fluids**

If the installation has been in operation, there is a risk of scalding due to the unintentional discharge of hot water or water steam.

- ▶ Allow the system to cool down.
- ▶ Wear safety goggles.



#### CAUTION

##### **Risk of burns due to hot components**

Any unprotected contact with hot components may lead to burns.

- ▶ Wear safety gloves.



Ensure that the product remains easily accessible.

#### NOTICE

##### **Risk of damage to property due to foreign bodies (e.g. shavings, dirt), sealants and lubricants**

Valves can be damaged and their function be impaired by foreign bodies, greasing agents or oil.

- ▶ Do not use any greasing agents or oil during installation.
- ▶ Flush any dirt particles or grease or oil residues out of the pipework before installing the product.
- ▶ Consider the latest technical status (e.g. VDI 2035) when choosing the operating fluid.

#### NOTICE

##### **Risk of damage due to pressure surges**

Sudden filling of the station with water may lead to damage, for instance to the sensors or sealing points.

- ▶ Always open and close the ball valves slowly.

1. Completely disconnect your fresh water station from the power supply.
2. Slowly close the isolating ball valve for storage cylinder circuit return.
3. Slowly close the isolating ball valve for storage cylinder circuit supply.
4. Drain the water from the storage cylinder circuit at the lower connection of the storage cylinder.
5. Install the valve for return layering as shown in Illust. 4 auf Seite 8.

## 5.2 Installation of the actuator



Make sure that there is enough space for the installation of the actuator.



Install the actuator before you connect the power supply!



### CAUTION

#### Risk of burns due to hot components

Any unprotected contact with hot components may lead to burns.

- ▶ Allow the valve to cool down working on it.
- ▶ Wear safety gloves.



Illust. 6: Factory settings

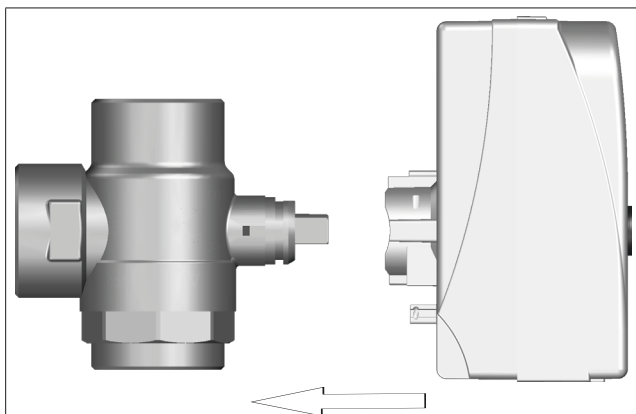
(1) Factory setting of the valve for return layering

(2) Factory setting of the actuator



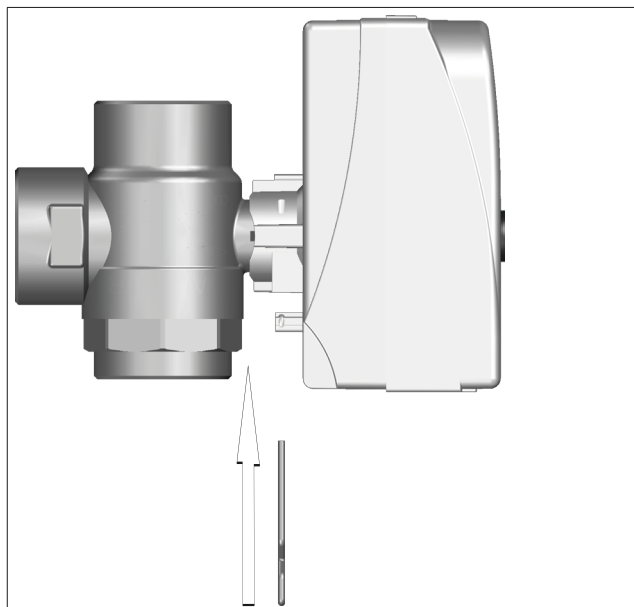
The marking on the actuator indicates the current flow direction.

1. Fit the actuator to the connection of the valve for return layering.



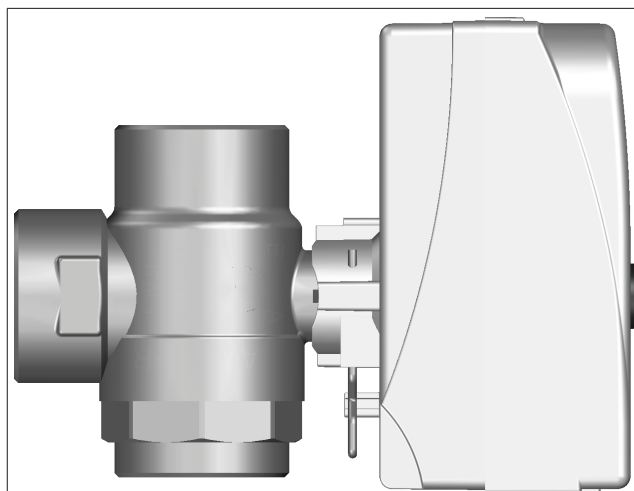
Illust. 7: Fitting of the actuator

2. Fix the actuator with the supplied clip.



Illust. 8: Fixing of the actuator

- ▷ The actuator is installed.



Illust. 9: Actuator in the installed state

5.3 Electrical connection of the actuator



Also consult the operating instructions of your fresh water station!!



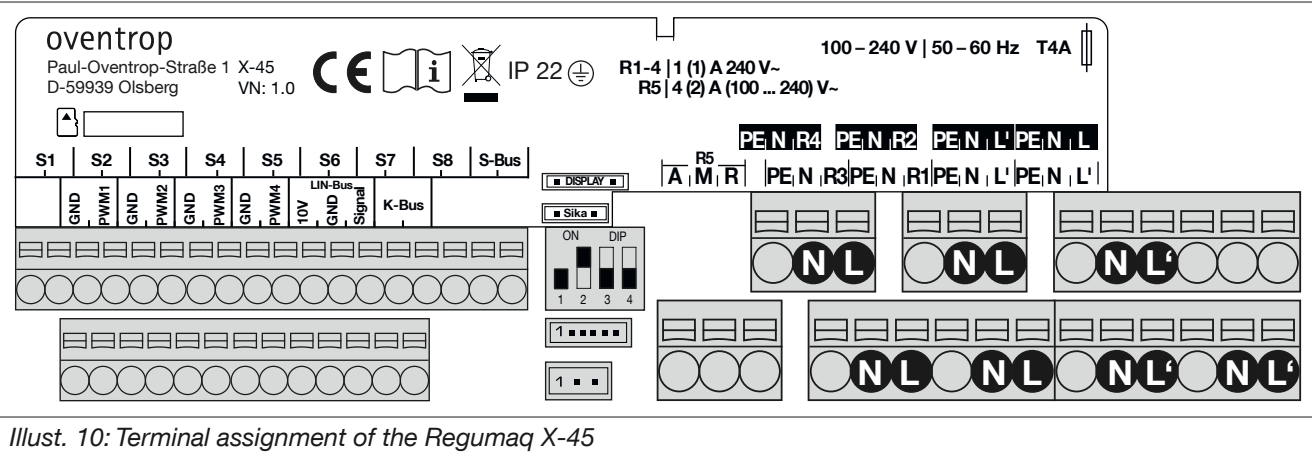
**DANGER**  
**Danger to life due to electric current**  
Danger to life due to contact with live components.

- ▶ Completely disconnect the product from the power supply.
- ▶ Check that no voltage is present.
- ▶ Secure the product against switching back on.
- ▶ Only install the product in dry indoor areas.

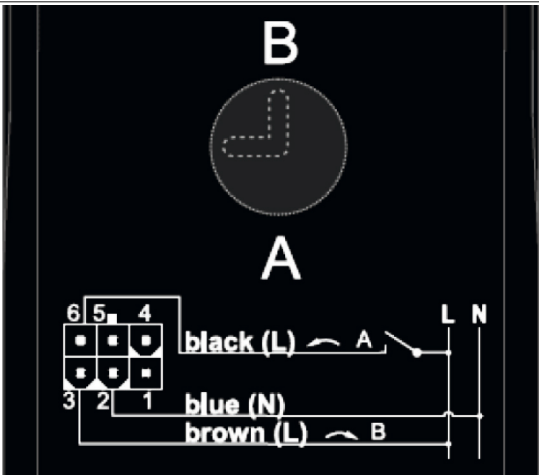
**NOTICE**

**Damage to electronic components due to electrostatic discharge**

- ▶ Before touching the inside of the housing, take suitable equipotential bonding measures. Touch an earthed component such as a tap or radiator.



Illust. 10: Terminal assignment of the Regumaq X-45



Illust. 11: Connection diagram of the actuator

|    | Colour | Function                |
|----|--------|-------------------------|
| L' | brown  | Outer conductor (phase) |
| L  | black  | Phase switched          |
| N  | blue   | Neutral conductor       |

1. Connect the phase to a terminal marked **L'** in Illust. 10.
2. Connect the switched phase to the terminal marked **L** of the desired relay in Illust. 10.

|                                                                                   |                                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>The connections <b>L</b> are the switching outputs of the respective relay (R1 to R4).</p> <p>During the subsequent configuration of your controller, set the corresponding relay as switching relay for the actuator of the valve for return layering.</p> |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

3. Connect the neutral conductor to a terminal marked **N** in Illust. 10.

## 6. Commissioning

1. Slowly open the isolating ball valve for storage cylinder circuit return.
2. Slowly open the isolating ball valve for storage cylinder circuit supply.
3. Connect your fresh water station to the power supply.
4. Configure the controller of your fresh water station for the control of the actuator.
5. Check all couplings for leaks.

## 7. Maintenance

The product is maintenance-free.

## 8. Disposal

### Directive 2012/19/UE WEEE:

|                                                                                   |                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>Waste electrical and electronic components (WEEE) must not be disposed of with domestic waste, but must be dropped off at a collection point of the recycling of electrical and electronic appliances.</p> |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### NOTICE

#### Risk of environmental pollution

Incorrect disposal (for instance with domestic waste) may lead to environmental damage.

- ▶ Dispose of packaging material in an environmentally friendly manner.
- ▶ Dispose of the components appropriately.

If no return or disposal agreement has been made, dispose of the product yourself.

- ▶ If possible, recycle the components.
- ▶ Dispose of components which cannot be recycled according to the local regulations. Disposal with domestic waste is not permitted.





