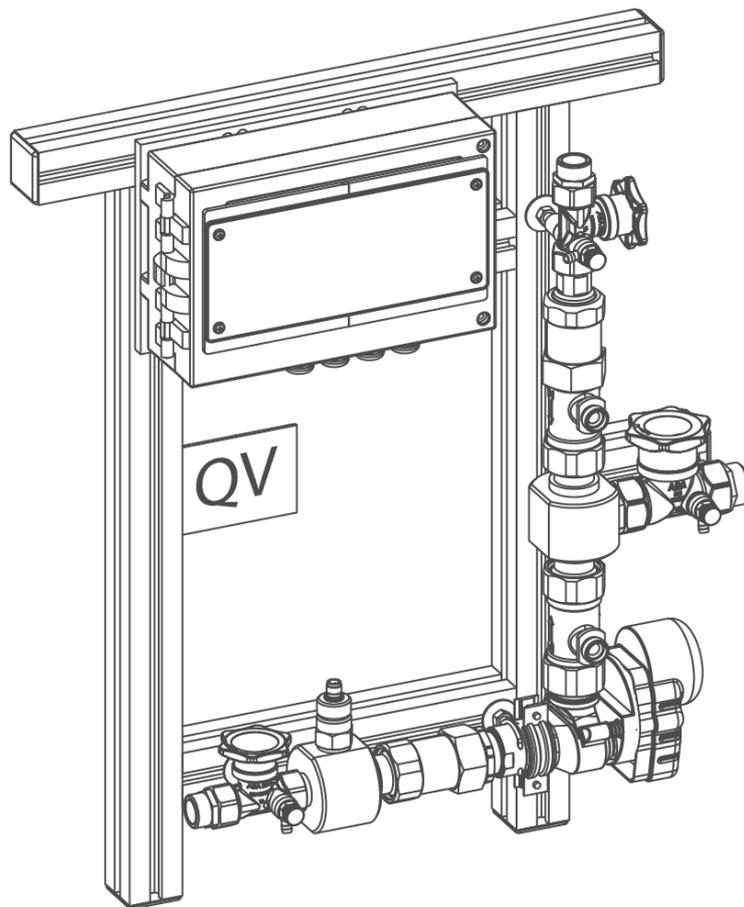


We understand water.



---

Blending unit |  
Quality-controlled (QV)  
Upgrade kit (AQV) for Delta-p

Operation manual

grünbeck

**General Contact  
Germany**

**International Sales**  
Phone +49 9074 41-145

**Technical Service**  
Phone +49 9074 41-333  
Fax +49 9074 41-120

**Availability**  
Monday to Thursday  
7:00 am - 6:00 pm

Friday  
7:00 am - 4:00 pm

**Copyright**

The manufacturer reserves the copyright to this operation manual. Without the written consent of Grünbeck Wasseraufbereitung GmbH, no part of this manual may be reproduced in any way, nor may any part be processed, duplicated or distributed using electronic systems. Non-compliance with the aforementioned stipulations shall be subject to compensation for damages.

We reserve the right to technical modifications.  
© by Grünbeck Wasseraufbereitung GmbH

**Original operation manual**

Edition of the operation manual: January 2022  
Order no.: TD3-BM003en\_034

# Table of contents

<b>Table of contents</b> .....	<b>3</b>	<b>5 Start-up</b> .....	<b>20</b>
<b>1 About this manual</b> .....	<b>4</b>	5.1 Handing over the product to the owner/user .....	20
1.1 Other applicable documents .....	4	<b>6 Operation</b> .....	<b>21</b>
1.2 Target group .....	4	6.1 Keypad film .....	21
1.3 Storage of documents.....	4	6.2 Setting the operating parameters .....	24
1.4 Symbols used .....	4	<b>7 Cleaning, inspection, maintenance</b> .....	<b>34</b>
1.5 Typographical conventions .....	5	7.1 Cleaning .....	34
1.6 Validity of the manual .....	5	7.2 Inspection .....	34
1.7 Type plate .....	6	7.3 Maintenance .....	35
<b>2 Safety</b> .....	<b>7</b>	7.4 Spare parts .....	35
2.1 Safety measures .....	7	7.5 Wearing parts .....	35
2.2 Technical safety instructions.....	8	<b>8 Troubleshooting</b> .....	<b>36</b>
2.3 Regulations .....	8	8.1 Display messages .....	36
2.4 Responsibilities of the qualified specialist and/or the specialist company .....	9	<b>9 Disposal</b> .....	<b>37</b>
2.5 Responsibilities of the owner/user .....	9	9.1 Packaging .....	37
2.6 Product-specific safety instructions .....	9	9.2 Product .....	37
2.7 Transport and storage .....	10	<b>10 Technical specifications</b> .....	<b>38</b>
<b>3 Product description</b> .....	<b>11</b>	<b>11 Operation log</b> .....	<b>39</b>
3.1 Intended use .....	11	11.1 Start-up log .....	39
3.2 Product components.....	11	11.2 Maintenance .....	40
3.3 Functional description .....	13		
<b>4 Installation</b> .....	<b>14</b>		
4.1 Requirements regarding the installation site.....	14		
4.2 Installation examples .....	15		
4.3 Checking the scope of supply.....	16		
4.4 Installing the product.....	17		

# 1 About this manual

## 1.1 Other applicable documents

The following documents shall be deemed as applicable documents for the blending units:

- Operation manual of Delta-p water softener  
Order no.: TD3-BM001
- For Grünbeck's technical service/authorised service company:  
Technical service manual of Delta-p water softener  
Order no.: TD4-BM002
- Electric circuit diagram QV  
Order no.: TDe-BM002
- Electric circuit diagram AQV  
Order no.: TDe-BM003
- The manuals of all accessories used shall apply.

## 1.2 Target group

This manual is intended for owners/users and mechanical and electrical specialists.

## 1.3 Storage of documents

Keep this manual and all other applicable documents, so that they are available when needed.

## 1.4 Symbols used



This symbol identifies instructions that you must comply with for your own personal safety as well as to avoid damage to property.

---



This symbol identifies instructions that you must comply with in order to avoid damage to property.

---



This symbol identifies important information about the product or its handling.

---



This symbol identifies work that may only be carried out by qualified specialists. In Germany, the installation company must be registered in an installation directory of a water supply company acc. to §12(2) AVB Wasser V (German Ordinance on General Conditions for the Supply of Water).

---



This symbol identifies work that may only be performed by Grünbeck's technical service/authorised service company or by a qualified specialist trained by Grünbeck.



This symbol identifies work that may only be carried out by qualified electronics experts according to the VDE guidelines or according to the guidelines of similar local institutions.



This symbol identifies information where an entry/written documentation is required.

## 1.5 Typographical conventions

The following typographical conventions are used in this manual:

Designation	Depiction
Instruction Single-step instruction or chronological sequence of actions does not matter	▶ Action
Instruction Multi-step instruction and chronological sequence of actions is important	<ol style="list-style-type: none"> <li>1. First action                             <ol style="list-style-type: none"> <li>a first step</li> <li>b second step</li> </ol> </li> <li>2. Second action</li> </ol>
Result following an instruction	» Result
Lists	<ul style="list-style-type: none"> <li>• Listed item                             <ul style="list-style-type: none"> <li>• Listed sub-item</li> </ul> </li> </ul>
Menu paths	Status level>Menu level>Submenu
Display texts	Display text
Operating elements	Button/key

## 1.6 Validity of the manual

This manual applies to the following products:

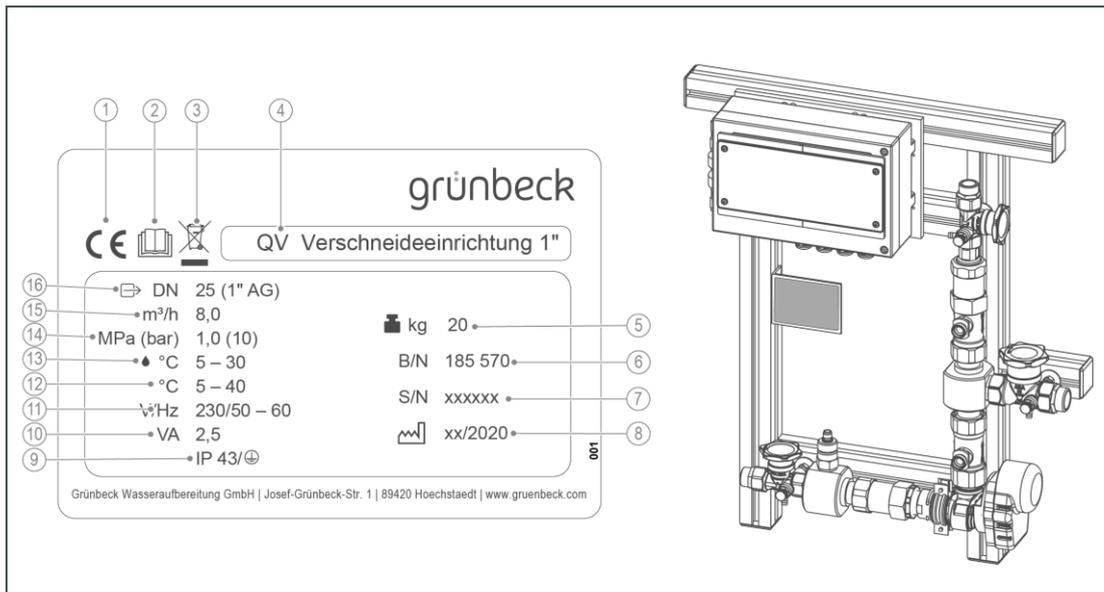
- Quality-controlled blending unit (QV)
- Upgrade kit Quality-controlled blending unit (AQV)

## 1.7 Type plate

The type plate is located on the rack of the blending unit.

Please specify the data shown on the type plate in order to speed up the processing of your inquiries or orders.

- ▶ Enter the necessary information in the table below to have it readily available whenever necessary.



Item	Designation	Item	Designation
1	CE mark	2	Obey the operation manual
3	Disposal information	4	Product designation
5	Operating weight	6	Order no.
7	Serial no.	8	Date of manufacture
9	Protection/protection class	10	Order no.
11	Power supply	12	Ambient temperature
13	Water temperature	14	Nominal pressure
15	Nominal flow		Nominal connection diameter of blended water

- Product designation: \_\_\_\_\_
- Order no.: \_\_\_\_\_
- Serial no.: \_\_\_\_\_

## 2 Safety



**WARNING:** Contamination of drinking water due to improper handling.

- Risk of infectious diseases.
- ▶ Have the installation, start-up and annual maintenance carried out by qualified specialists.

### 2.1 Safety measures

- Carefully read this manual before operating your product.
- Only operate the product if all components are installed properly.
- Only have persons working on your product that have read and understood the present manual and that are qualified to do such work due to their vocational training.
- Keep your product permanently connected to the power and water supply.
- Safety equipment must never be removed, bridged or otherwise tampered with.
- Do not operate any products which have a damaged mains cable. This can lead to injuries due to electric shock.
- Have damaged mains cables replaced without delay.
- Mains cables may only be replaced by the manufacturer or an authorised electrical specialist.
- Observe the maintenance intervals (refer to chapter 7.3). Failure to comply can result in microbiological contamination of your drinking water system.
- Children are not allowed to play with the product.
- This product can be used by children over 8 years of age and persons with limited abilities or lack of experience if they are supervised or instructed in the safe use of the product and understand the resulting hazards.
- Cleaning and maintenance must not be carried out by children.

## 2.2 Technical safety instructions

This manual contains instructions that you must comply with for your own personal safety as well as to avoid damage to property. The instructions are highlighted by a warning triangle and have the following structure:



---

**CAUTION:** Type and source of danger.

- Possible consequences
  - ▶ Preventive measures
- 

The following signal words were defined subject to the degree of danger and may be used in the present document:

- **DANGER** means that death or serious injury will result.
- **WARNING** means that death or serious injury may result.
- **CAUTION** means that minor bodily injuries may occur.
- **NOTE** (without warning triangle) means that damage to property may occur.

## 2.3 Regulations

- ▶ When installing and starting up the product, amongst others, comply with the following regulations and guidelines:
  - Statutory regulations on environmental protection
  - Provisions of the employers' liability insurance companies
  - DIN EN 806 Specifications for installations inside buildings conveying water for human consumption
  - VDI 6023 Part 5 - 7 Specifications for installations inside buildings conveying water for human consumption
- ▶ Check whether the retrofitting of accessories significantly changes the installed system in its function and mode of operation as well as in terms of the associated risks.



---

If a system is modified/converted, a renewed confirmation of conformity and marking according to the applicable directives/regulations (e.g. CE) is required.

---

## 2.4 Responsibilities of the qualified specialist and/or the specialist company

Comply with the following instructions to ensure the proper and safe functioning of the product:

- Only perform activities described in this manual.
- Perform all activities in accordance with all applicable standards and regulations.
- Brief the owner/user on the function and operation of the product.
- Advise the owner/user of the maintenance of the product.
- Inform the owner/user about possible dangers that can arise during the operation of the product.
- Fill in the operation log (refer to chapter 11).

## 2.5 Responsibilities of the owner/user

Comply with the following instructions to ensure the proper and safe functioning of the product:

- Arrange for a qualified specialist to carry out installation, start-up and maintenance.
- Have the product explained to you by the qualified specialist.
- Only perform activities described in this manual.
- Do not carry out any activities that are explicitly designated for a qualified specialist.
- Only use this product as intended.
- Make sure that the required inspection and maintenance work is carried out.
- Keep this manual.

## 2.6 Product-specific safety instructions

There are no product-specific risks.

## 2.7 Transport and storage

### Transport

- ▶ Transport the product in its original packaging only.

### Storage

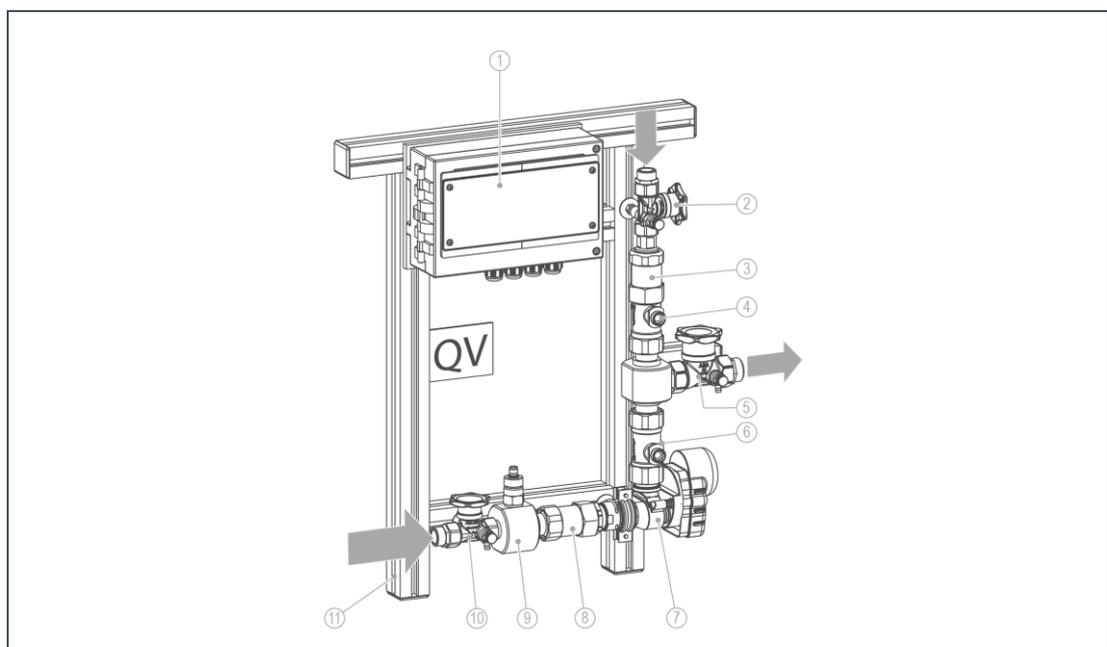
- ▶ Protect the product from:
  - Damp, moisture, environmental impacts such as wind, rain, snow, etc.
  - Frost, direct sunlight, severe heat exposure
  - Chemicals, dyes, solvents and their vapours

## 3 Product description

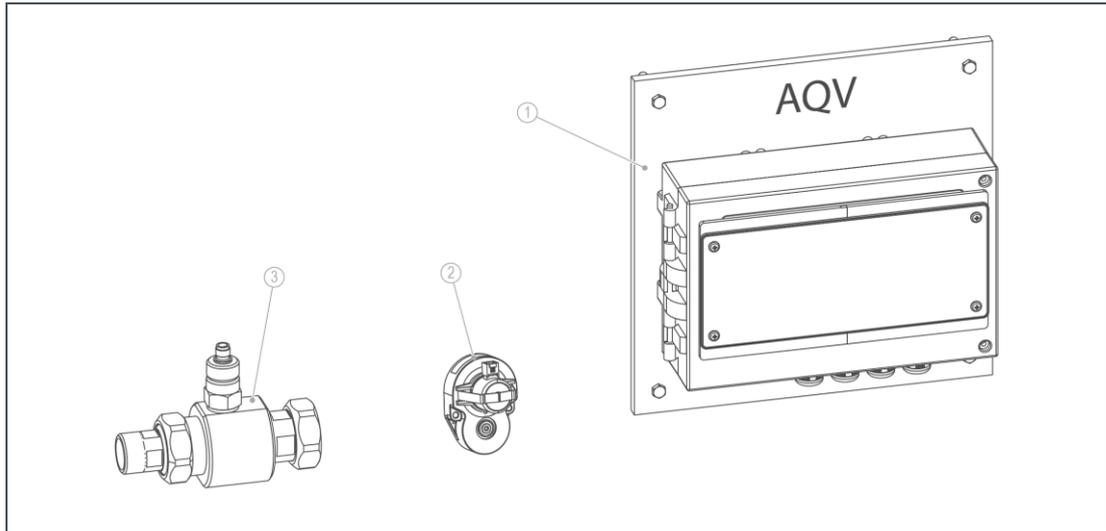
### 3.1 Intended use

- Device installed downstream for volume-based, constant blending.
- The quality-controlled blending unit (QV) as well as the upgrade kit (AQV) are designed for exclusive use in the industrial and commercial field.

### 3.2 Product components



Item	Designation	Item	Designation
1	Control unit with LCD graphic display	2	Shut-off valve soft water with sampling valve
3	Non-return valve soft water	4	Turbine water meter for volume-based measurement of the soft water
5	Shut-off valve for blended water, with sampling valve raw water conductivity	6	Turbine water meter for volume-based measurement of the raw water ratio
7	Blending valve with ceramic disc valves (driven by step motor)	8	Built-in non-return valve (as safeguard according to DIN 1717 - liquid category 2)
9	Calibration of conductivity measuring cell in the control unit (to detect fluctuating raw water)	10	Raw water shut-off valve with sampling valve
11	Aluminium rack		



Item	Designation	Item	Designation
1	Control unit with 5 m cable for water meter of blending valve and step motor	2	Step motor for installation in the Delta-p water softener (built-in synchronous motor has no more use)
3	Installation fitting with conductivity measuring cell calibrated via the control unit to detect fluctuating raw water hardness (installation fitting with water meter screw connection)		

## 3.3 Functional description

### 3.3.1 Quality-controlled blending unit (QV)

- With the conductivity meter (temperature-compensated) previously calibrated by means of the control unit, the present salt concentration for the determination of the total hardness is measured.
- By means of two turbine flow meters and a blending valve (motor-controlled), the blending ratio is controlled subject to the soft water volume withdrawn, taking into account the raw water hardness.

### 3.3.2 Upgrade kit Quality-controlled blending unit (AQV)

- The upgrade kit (AQV) is an integrable variant of the QV – For its function, please refer to the QV.
- For the upgrade kit Quality-controlled blending unit (AQV), the 0 °dH water volume of the Delta-p water softener provided by the EXAccount output is applied.



This option requires the connection of the electrical output „EXAccount” of the IONO-matic<sub>3</sub> of the Delta-p control unit.

Dual use of dosing/quality-controlled blending is not possible.

---

## 4 Installation



---

The installation of a blending unit represents a major intervention into the drinking water system and may only be performed by a qualified specialist/electrical specialist.

---

### 4.1 Requirements regarding the installation site

Observe local installation directives, general guidelines and technical specifications.

- The installation site must be frost-proof and ensure the product's protection from chemicals, dyes, solvents and their vapours.
- The installation site must be adequately illuminated and ventilated.
- The installation site must provide adequate space – for dimensions, refer to chapter 10.

#### 4.1.1 Requirements regarding the water connection

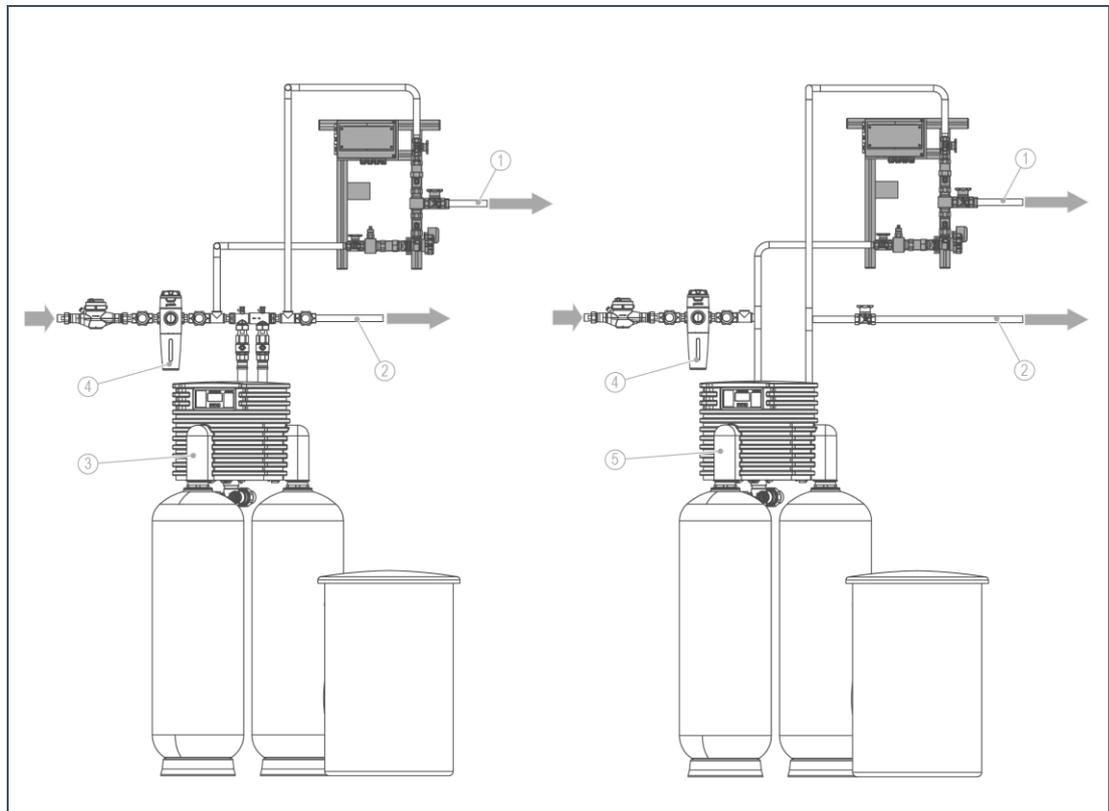
- All required connections must be implemented prior to the start of the installation work – For connection data, refer to chapter 10.
- The flow pressure via the blending valve (refer to chapter 3.2 Product components) must at least be 1 bar higher than the soft water/permeate pressure.

#### 4.1.2 Requirements regarding the electrical wiring

- Schuko socket within approx. 1.2 m of the control unit
- Schuko socket must carry continuous voltage.

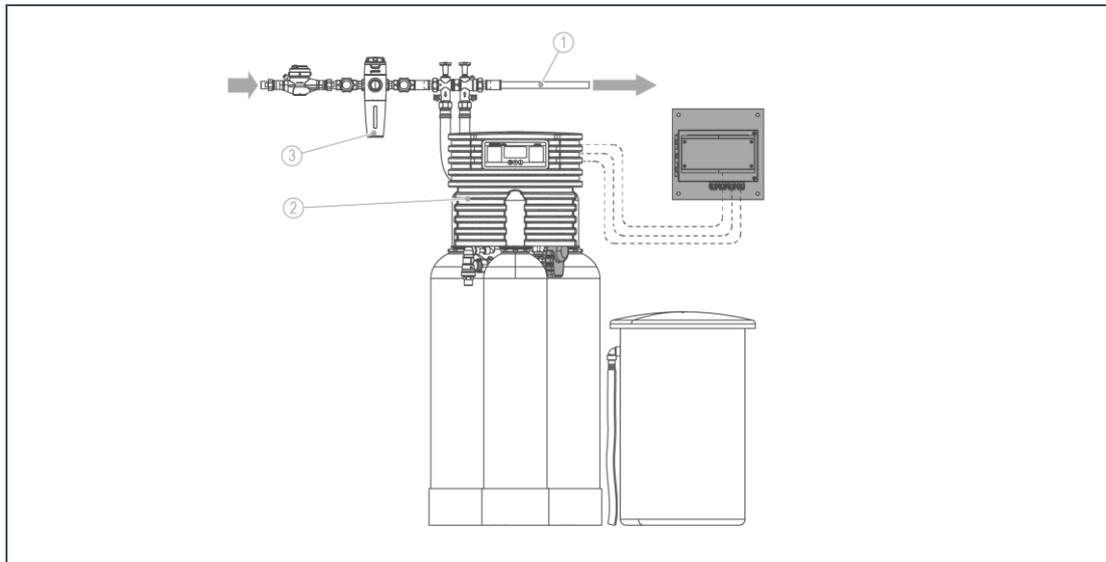
## 4.2 Installation examples

### 4.2.1 QV with connection block & fixed piping



Item	Designation	Item	Designation
1	Blended water	2	0 °dH
3	Delta-p with connection block	4	Filter (e.g. pureliQ)
5	Delta-p with fixed piping		

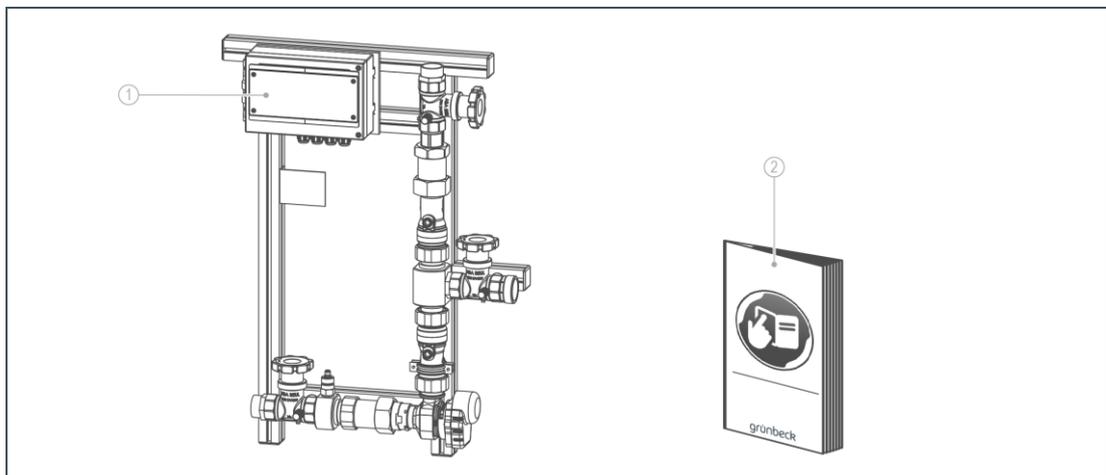
## 4.2.2 AQV with connection block



Item	Designation	Item	Designation
1	Blended water	2	Delta-p converted with upgrade kit
3	Filter (e.g. pureliQ)		

## 4.3 Checking the scope of supply

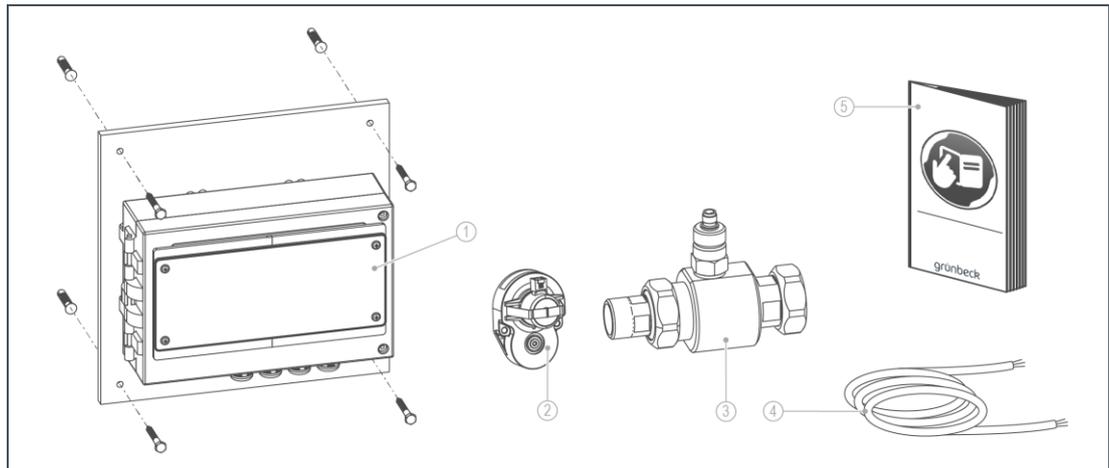
### 4.3.1 QV



Item	Designation	Item	Designation
1	Blending unit on aluminium rack	2	Operation manual

► Check the scope of supply for completeness and damage.

### 4.3.2 AQV



Item	Designation	Item	Designation
1	Control electronics on fastening plate for wall mounting including fastening material	2	Step motor (for conversion of Delta-p's blending valve)
3	Installation fitting with conductivity measuring cell (for installation on the Delta-p in the raw water inlet)	4	Cable: 5 m for water meter of blending valve, 5 m for control valve of step motor, 5 m for connection to IONO-matic <sub>3</sub> EXAccount
5	Operation manual		

- ▶ Check the scope of supply for completeness and damage.

## 4.4 Installing the product



The exact individual steps for installation are not described in detail here.

The qualified specialist for water treatment systems is expected to have the know-how required for assembly/installation.

The installation/retrofitting of a water treatment system may only be carried out in compliance with national guidelines/regulations.



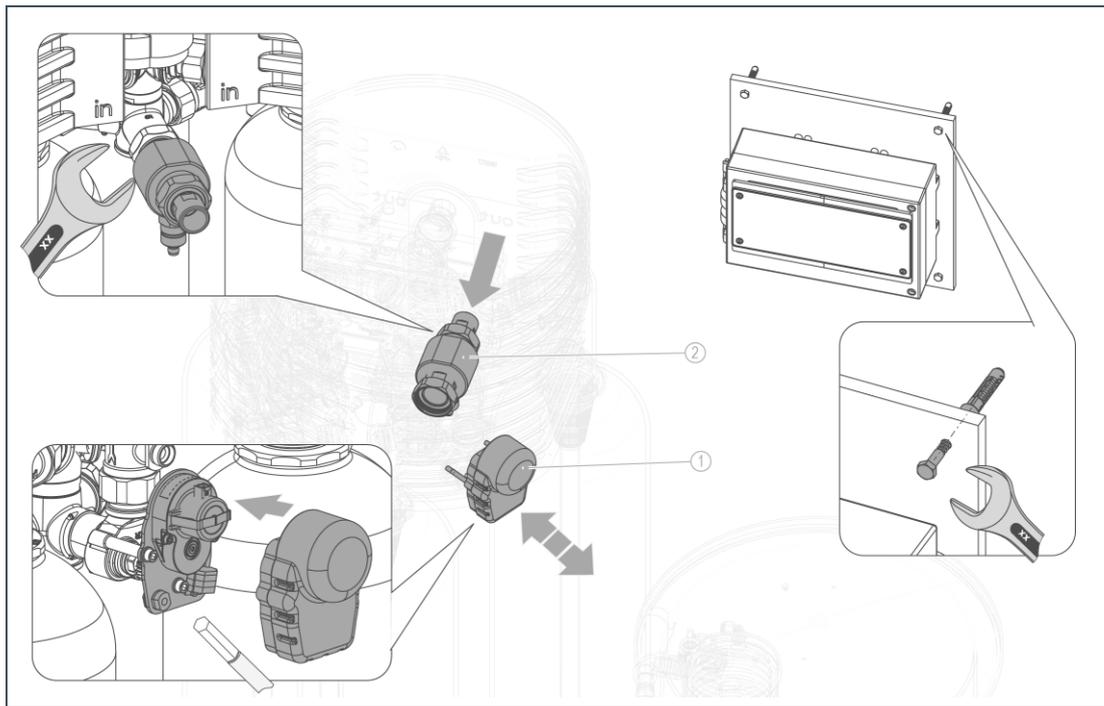
Electrical work may only be carried out by qualified electrical specialists or authorised personnel.

- ▶ Check whether retrofitting the existing system with these accessories significantly changes the system in its function, mode of operation and in terms of the associated risks.

### 4.4.1 Connecting the AQV switch box

- ▶ Wire the AQV switch box to the control unit of the Delta-p or to system components of the Delta-p according to the electric circuit diagram, order no. TDe-BM003

## 4.4.2 Installing AQV components



Item	Designation	Item	Designation
1	Step motor	2	Installation fitting with conductivity measuring cell



The cables in the AQV's switch cabinet are pre-wired at the factory.

1. Mount the control electronics on the fastening plate onto the wall by means of the fastening material supplied with the system – flat and horizontally aligned.
2. Dismantle the synchronous motor mounted at the Delta-p's blending valve.
3. Install the step motor delivered with the system.
4. Re-establish a strain relief via the fitting.
5. Plug in the Molex plug.

### 4.4.3 Electrical installation AQV

1. Dismantle the Hall cable from the turbine water meter of the Delta-p.



---

The cable of the blending unit's water meter (IONO-matic<sub>3</sub> – green, white, brown wires) can be disconnected from the IONO-matic<sub>3</sub>.

---

2. Install the Hall cable of the AQV controller in the turbine water meter of the Delta-p's blending unit.



---

The motor cable of the blending valve (IONO-matic<sub>3</sub> – terminal 1,2,3) can be disconnected from the IONO-matic<sub>3</sub>.

---

3. Connect the 2-wire cable from the AQV controller to the EXAccount output of the IONO-matic<sub>3</sub> controller (refer to electric circuit diagram 185191).



---

The output needs to be parametrised - refer to chapter 6 Operation.

---

4. Install the cable of the conductivity meter (plug M12) at the conductivity measuring cell.

## 5 Start-up



---

The start-up may only be carried out by Grünbeck's technical service/authorised service company or by a qualified specialist trained by Grünbeck.

---

- ▶ Start up the system by setting/parametrising the operating parameters - refer to chapter 6 Operation.
- ▶ Following the successful installation and start-up of the accessories, check the entire system for compliance with safety and health protection regulations.
- ▶ Confirm compliance with applicable guidelines/directives, if necessary.

### 5.1 Handing over the product to the owner/user

- ▶ Explain to the owner/user how the water softener and the blending unit work.
- ▶ Use the manual to brief the owner/user and answer any questions.
- ▶ Inform the owner/user about the need for inspections and maintenance.
- ▶ Hand over all documents to the owner/user for keeping.

## 6 Operation

The component is operated by means of the keypad film at the control unit.



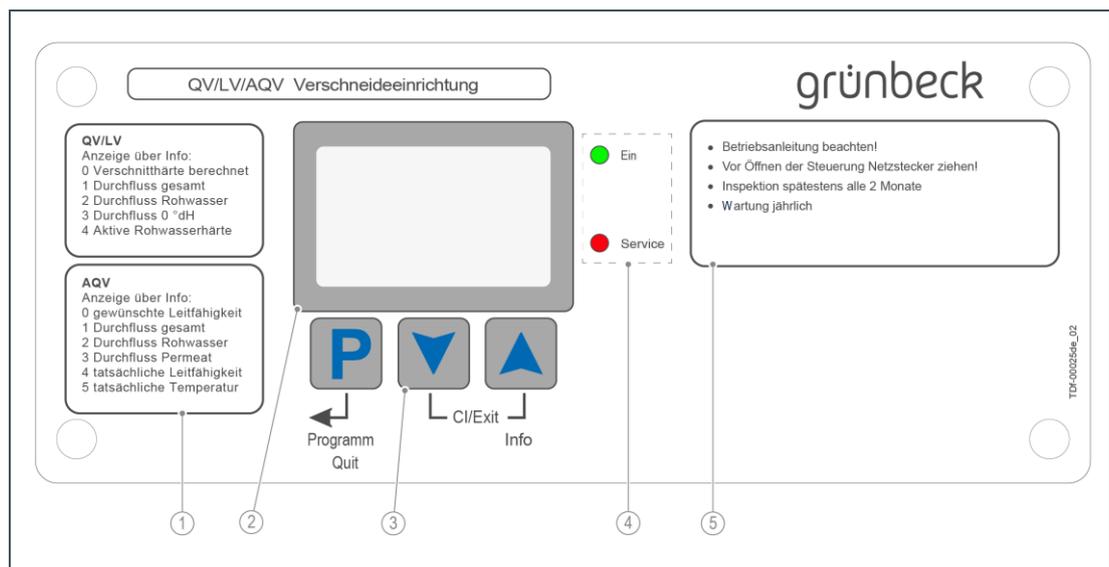
**NOTE:** Making incorrect setting at the control unit.

- Incorrect operation can lead to dangerous operating states and may cause personal injury.
- ▶ Only make the settings described in this chapter.



Data records in the code-protected level (installer level) may only be altered by Grünbeck's technical service/authorised service company or by a qualified specialist trained by Grünbeck.

### 6.1 Keypad film

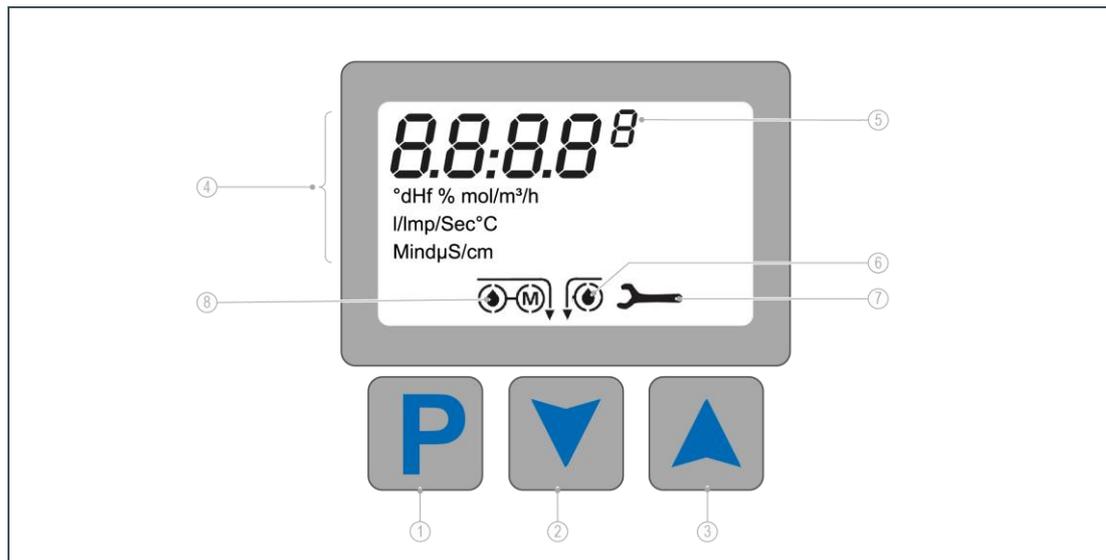


Item	Designation	Item	Designation
1	Display via Info level	2	Display indication
3	Operating keys	4	Monitoring LEDs:
5	Important information		Green LED: System is working properly. Red LED: Service, flashing display illumination, technical service/authorised service company required

#### 6.1.1 Operating principle

The different system parameters are stored in data records and can be set using codes and menu navigation. The operating data (step times, capacity figure, operating mode, monitoring times, special functions) is stored in the respective data record, so that the system is ready to use once the data record has been selected.

## 6.1.2 Display indication



### Operating elements

Item	Button	Designation
1	 	<p><b>In standard mode:</b></p> <ul style="list-style-type: none"> <li>• Switches to the operator programming level (press for &gt; 2 sec.).</li> <li>• Acknowledges malfunctions</li> </ul> <p><b>In the operator programming level:</b></p> <ul style="list-style-type: none"> <li>• Accesses parameters for editing (numeric display is flashing)</li> <li>• Saves and closes the parameter (numeric display stops flashing)</li> </ul>
2	 	<p><b>In the operator programming level:</b></p> <ul style="list-style-type: none"> <li>• Returns to the previous parameter</li> <li>• Decreases numerical values while the numerical display is flashing</li> </ul>
3	 	<p><b>In standard mode:</b></p> <ul style="list-style-type: none"> <li>• Calls up the Info level and switches to the next Info value</li> </ul> <p><b>In the operator programming level:</b></p> <ul style="list-style-type: none"> <li>• Switches to the next parameter</li> <li>• Increases numerical values while the numerical display is flashing</li> </ul>

Item	Button	Designation
	 	<ul style="list-style-type: none"> <li>Closes open parameters without saving them (numeric display stops flashing). The previously set value is retained.</li> <li>Exits the operator programming level or code level</li> </ul>
	 	<ul style="list-style-type: none"> <li>Abortion of regeneration steps in the service program</li> </ul>

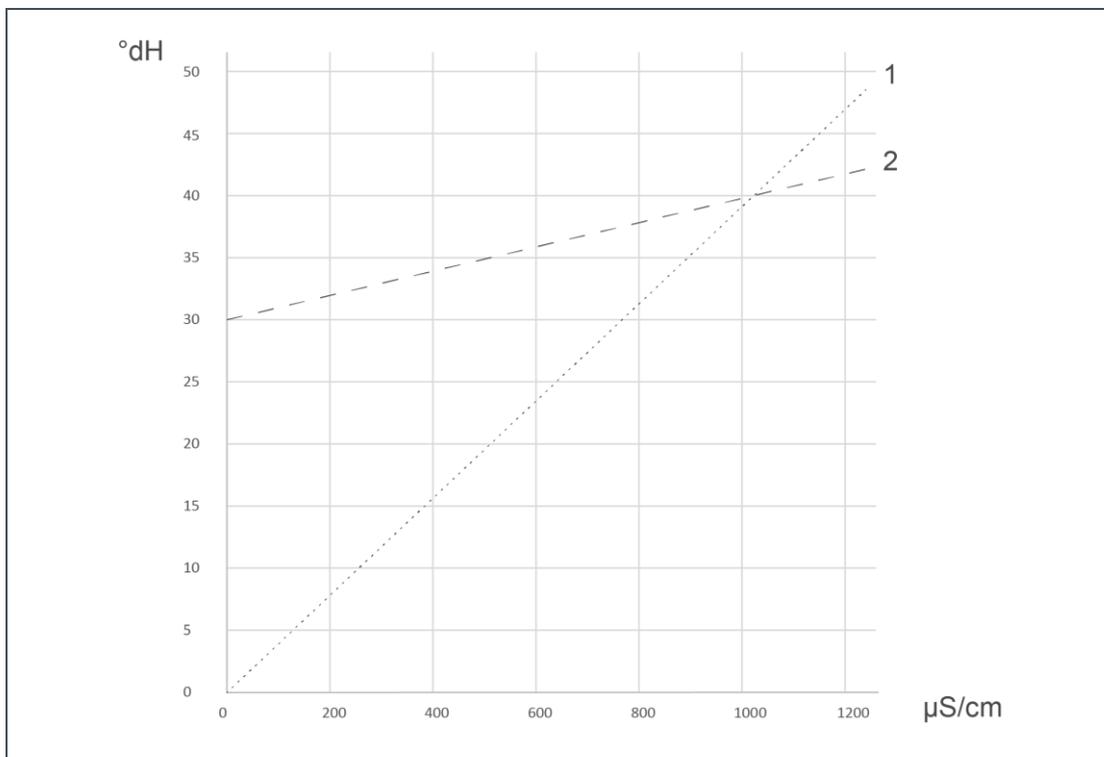
### Display elements

Item	Display	Designation
4		<p><b>In standard mode:</b></p> <ul style="list-style-type: none"> <li>Displays the time</li> </ul> <p><b>In the Info level or operator programming level:</b></p> <ul style="list-style-type: none"> <li>Displays the operating parameters; the corresponding unit appears, if available.</li> </ul> <p><b>In the case of malfunctions / warnings:</b></p> <ul style="list-style-type: none"> <li>Indicates the pending error or warning Er x.</li> </ul>
5		<p><b>In standard mode:</b></p> <ul style="list-style-type: none"> <li>Calls up the Info level and switches to the next Info value</li> </ul> <p><b>In the operator programming level:</b></p> <ul style="list-style-type: none"> <li>Switches to the next parameter</li> <li>Increases numerical values while the numerical display is flashing</li> </ul>
6		<ul style="list-style-type: none"> <li>Drop symbol is flashing when water is withdrawn (ratio 0 °dH, 0 °f, 0 mmol/l - soft water).</li> </ul>
7		<ul style="list-style-type: none"> <li>Symbol appears if maintenance interval has expired (only if activated).</li> </ul>
8		<ul style="list-style-type: none"> <li>Drop symbol is flashing when water is withdrawn (ratio of raw water)</li> <li>Blending motor runs (M) in order to maintain a constant blending hardness in case of fluctuating withdrawal volumes and/or raw water qualities</li> </ul>

Item	Display	Designation
	<b>Display illumination</b>	<ul style="list-style-type: none"> <li>• Remains on for 10 minutes after the last keystroke</li> <li>• Each press of a button first activates the illumination</li> <li>• Flashes during malfunctions/warnings</li> </ul>

## 6.2 Setting the operating parameters

### 6.2.1 Correlation between raw water hardness and conductivity



- For 1-point calibration (only raw water hardness 1 is entered, e.g. at 40 °dH), the dotted line through origin (1) does apply. It is assumed that with fluctuating raw water hardness, the conductivity moves along the dotted line through origin.
- For 2-point calibration (raw water hardness 1 and 2 are entered, e.g. at 35 °dH and 40 °dH), the dashed straight line (2) does apply. Since the various kinds of feed water are not on the line through origin, a correlation must be established via the dashed straight line as an alternative here.



At the moment of calibration, the corresponding conductivity is measured and saved for the respective characteristic curve.

Display	Designation
---------	-------------

4025<sup>0</sup>

°dH

**Standard case: 1-point calibration**

- The display indicates the raw water hardness stored.

At this point, enter the actual raw water hardness at the place of operation which can either be determined by means of the water test kit "total hardness" or checked with the relevant water supplier (factory setting 25 °dH, 14 °f, 2.5 mmol/l).

▶ Enter the respective value.

**Special case: 2-point calibration**

- The display indicates the stored raw water hardness of the lower of the two value pairs.

The raw water hardness of the water analysis in which the degree of hardness and the conductivity have the lowest values is entered here.

▶ Enter the respective value.



The device automatically detects fluctuating raw water hardness and the valve position at the blending valve accordingly. For raw water hardness that is not on the calibration line, the blending hardness deviates from the desired blending hardness.

0005<sup>1</sup>

°dH

- The display indicates the blending hardness stored.

The desired water hardness is entered here.

▶ Enter the desired value.

Display	Designation
	<p><b>Standard case: 1-point calibration</b></p> <ul style="list-style-type: none"> <li>The display indicates the raw water conductivity measured during start-up.</li> </ul>

**Special case: 2-point calibration**

- The display indicates the stored conductivity of the lower value pair.

The conductivity of the water analysis in which the degree of hardness and the conductivity have the lowest values is entered here.

- ▶ Enter the respective value.



The following parameters only appear if the 2-point calibration was selected.

	<ul style="list-style-type: none"> <li>The display indicates the stored raw water hardness of the higher value pair.</li> </ul> <p>The raw water hardness of the water analysis in which the degree of hardness and the conductivity have the highest values is entered here.</p> <ul style="list-style-type: none"> <li>▶ Enter the respective value.</li> </ul>
--	---

## 6.2.2 Basic settings (operator programming level)

Display	Designation
	<ul style="list-style-type: none"> <li>The basic display indicates the time (colon is flashing).</li> </ul> <ol style="list-style-type: none"> <li>Call up the operator programming level.</li> <li>Press and hold  for more than 2 seconds.</li> </ol>
	<ul style="list-style-type: none"> <li>The display indicates the hours.</li> </ul> <ol style="list-style-type: none"> <li>Press . <ul style="list-style-type: none"> <li>The hour display is flashing.</li> </ul> </li> <li>Set the current time (hour). <ol style="list-style-type: none"> <li>Decrease the hours with .</li> <li>Increase the hours with .</li> </ol> </li> <li>Save the setting with . <ul style="list-style-type: none"> <li>The hour display stops flashing.</li> </ul> </li> </ol> <p>▶ Press  to go to the next menu item.</p>
	<ul style="list-style-type: none"> <li>The display indicates the minutes.</li> </ul> <ol style="list-style-type: none"> <li>Press . <ul style="list-style-type: none"> <li>The minute display is flashing.</li> </ul> </li> <li>Set the current time (minutes). <ol style="list-style-type: none"> <li>Decrease the minutes with .</li> <li>Increase the minutes with .</li> </ol> </li> <li>Save the setting with . <ul style="list-style-type: none"> <li>The minute display stops flashing.</li> </ul> </li> </ol> <p>Press  to go to the next menu item.</p>

### 6.2.3 Reading the operating status (Info level)

#### Data records CA71/CA72

Index	Parameter/Unit	Display format	Remarks	
0	Calculated blending hardness	°dH	XX.XX	-
1	Total flow via blending unit	m <sup>3</sup> /h	XX.XX	-
2	Flow via raw water meter	m <sup>3</sup> /h	XXXX	Raw water
3	Flow via 0° dH water meter	m <sup>3</sup> /h	XX.XX	0 °dH
4	Active raw water hardness	d	XXX	Only if a service interval is programmed in code 142, par. 0

#### Data records CA73/CA74

Index	Parameter/Unit	Display format	Remarks	
0	Desired conductivity	µS/cm	XX	-
1	Total flow via blending unit	m <sup>3</sup> /h	X.XX	-
2	Flow via raw water meter	m <sup>3</sup> /h	X.XX	Raw water
3	Flow via permeate water meter	m <sup>3</sup> /h	X.XX	-
4	Actually measured conductivity	µS/cm	XX	-
5	Actually measured temperature	°C	XXX	-

## 6.2.4 Indicating the software version (Code 999)

The software version programmed in the control unit can be called up in code level 999.

## 6.2.5 Installer level (Code 290)



Requirement: The control unit must show the basic time display.

► Press **P** + **▼** simultaneously until the display changes.

In contrast to the Info level, it is possible to move backwards and forwards between the individual parameters in the installer level using **▲** and **▼**.

Display	Designation
	<ul style="list-style-type: none"> <li>• The installer programming level is active.</li> <li>1. Select the required menu.                             <ul style="list-style-type: none"> <li>» The figures (000) are flashing.</li> </ul> </li> <li>2. Set Code 290 as follows.                             <ul style="list-style-type: none"> <li>a Use <b>▲</b> to move upwards or <b>▼</b> to move downwards until <b>C.290</b> appears in the display.</li> </ul> </li> </ul>
	<ul style="list-style-type: none"> <li>» Hold down <b>▲</b> or <b>▼</b> for the figures to run faster; press the buttons for fine tuning.</li> <li>3. Press <b>P</b> to accept Code 290.</li> </ul>

Index	Parameter/Unit		Factory setting	Setting range	Remarks
0	Hardness unit		L1	1 = °dH 2 = °f 3 = mol/m <sup>3</sup>	Applies to the raw and soft water hardness as well as to the capacity figure. For CA73/74, programming the hardness unit is omitted is not displayed either.
1	System data record CA	[m <sup>3</sup> /h]	CA71	CA70 ... 74	CA71: Quality-controlled (QV) blending 1" CA72: Quality-controlled (QV) blending 2" CA73 and CA74 temporarily not in use CAX0: freely programmable data records; the factory settings of the previously active data records do apply. AQV: For the upgrade kit, the data record CA71 or CA72 – subject to the size of the Delta-p system – must be used.
2	Calibration method		1	1 ... 2	1 = 1-point calibration 2 = 2-point calibration
3	Turbine water meter constant raw water meter	[l/pulse]	0300	Display only	0750 – Display for CA72/75
4	Green LED ok		1	0 ... 1	0 = LED OFF; 1 = LED ON;
5	Turbine water meter constant 0 °dH water meter	[l/pulse]	0300	Display only	0750 – Display for CA72
6	Cell constant of conductivity measuring cell		1.0	0.1/0.6/1.0	-

## 6.2.6 Extended installer level (Code 113)

Index	Parameter/Unit	Factory-setting	Setting range	Remarks
0	Function programmable output (voltage-free relay contact) SA	S A 0	SA 0 ... SA 2	<p>0 = Active collective fault signal to central control station (contact open in case of a power failure or if a malfunction does occur).</p> <p>1 = Contact closed in case of malfunction only (e.g. horn).</p> <p>2 = Contact closed in case of conductivity-controlled blending (as soon as the water meter for soft water does not supply any pulses).</p>

## 6.2.7 Technical service level (Code 142)

Index	Parameter/Unit		Factory Setting		Remarks
			setting	range	
0	Duration of service interval	[d]	0	0... 365	0 = Service interval switched off. Restart by reprogramming the value.
1	Reaction to return of power – Er 0 (> 5 min.)		E0	0... 3	0 = No signal/reaction. 1 = Emitting Er0 - no reaction + yellow LED. 2 = Emitting Er0 - opening fault signal contact + switching on red LED.
2	Threshold for switching the raw water hardness	[µS/cm]	20	20 - 100	Conductivity threshold value (the basis being the greater hardness programmed and the conductivity measured with it) in case of which a change in hardness is signalled to the IONO-matic <sub>3</sub> via the output (regeneration motor) (for 2-point calibration only).
3	Monitoring of blending valve Er d		0 ... 1	0	0 = Malfunction deactivated 1 = Malfunction appears if the programmed blending hardness cannot be regulated.

## 6.2.8 AQV setting (IONO-matic<sub>3</sub> of Delta-p)

### Setting the water hardness

- ▶ Set the blending hardness of the Delta-p to 0 °dH - refer to the operation manual of the Delta-p water softener, chapter Operation "Setting the water hardness".

### Parameterising EXAccount pulse output



Refer to the technical service manual of the Delta-p water softener (IONO-matic<sub>3</sub> controller) in the chapter „Extended installer level” (Code 113).

Index	Parameter/Unit	Factory setting	Setting range	Remarks
5	Pulse divider for EXAccount pulse output 1: ...	1	0/1/12/18/31/42	Pulse output must be parametrised to setting 1 (pulse: 0.031 l/pulse)

## 7 Cleaning, inspection, maintenance



**WARNING:** Danger of contaminated drinking water if the work is not carried out properly.

- Risk of infectious diseases.
  - ▶ Pay attention to hygiene when working on the product.
- 

Inspection and maintenance of a water softener is stipulated in DIN standard EN 806-5. Regular maintenance ensures troublefree and hygienic operation. At least once a year, the water softener must be serviced by Grünbeck's technical service/authorised service company or by a qualified specialist trained by Grünbeck.

---



By concluding a maintenance contract, you ensure that all maintenance work is carried out on time.

---

- ▶ Only use genuine spare and wearing parts from Grünbeck.

### 7.1 Cleaning

- ▶ Only clean the outside of the product.
  - ▶ Do not use any strong or abrasive cleaning agents.
  - ▶ Wipe the outside of product with a damp cloth.
- 



**NOTE:** Do not clean the product with cleaning agents containing alcohol or solvents!

- These substances will damage components.
  - ▶ Use a mild/pH-neutral soap solution.
- 

### 7.2 Inspection

Regular inspection increases the operational reliability of your product.

- ▶ Conduct an inspection at least every 2 months.

To conduct an inspection, proceed as follows:

4. Check the display of the control unit for indication of possible malfunctions.
5. Read the system's operating state on the Info level.

## 7.3 Maintenance

Some regular work is necessary in order to ensure the proper functioning of the product in the long term. For this purpose, DIN EN 806-5 recommends a semi-annual and an annual maintenance.

### 7.3.1 Semi-annual and annual maintenance

1. Carry out all work on the Delta-p water softener required in the scope of maintenance work - refer to the Delta-p's operation manual.

## 7.4 Spare parts

For spare parts and consumables please contact your local representative who you may find on the Internet at [www.gruenbeck.com](http://www.gruenbeck.com).

## 7.5 Wearing parts

Wearing parts are listed below:

- Seals
- Drive motor
- Turbine water meter

## 8 Troubleshooting



**WARNING:** Danger of contaminated drinking water due to stagnation.

- Risk of infectious diseases.
- ▶ Have malfunctions remedied immediately.

- 
- ▶ If you cannot remedy malfunctions with the instructions given below, contact Grünbeck's technical service/authorised service company.
  - ▶ Have your system data (refer to chapter 1.7) handy.
  - ▶ Indicate the error message on the display.

### 8.1 Display messages

Malfunction	LED	Meaning	Remedy
Er 0	- /yellow/red	Power failure > 5 minutes	Refer to Code 142  In the event of a power failure during a regeneration, the current step time in general is still executed after return of power (provided the Gold cap is not yet exhausted)
Er d	red	Monitoring of blending valve	Refer to Code 142
Er E	red	Potential internal electronic fault	Optional: The "read-back" transmitter voltage of the water meter is short-circuited externally
Er 1	red	Conductivity exceeded	Upper conductivity measured during 2-point calibration exceeded by 5 %, open fault signal contact
Er 2	red	Conductivity undershot	Lower conductivity measured during the 2-point calibration undershot by 10 %, open fault signal contact
	yellow	Service interval has elapsed	No text on display, open fault signal contact

## 9 Disposal

- ▶ Comply with the applicable national regulations.

### 9.1 Packaging

- ▶ Dispose of the packaging in an environmentally sound manner.

### 9.2 Product



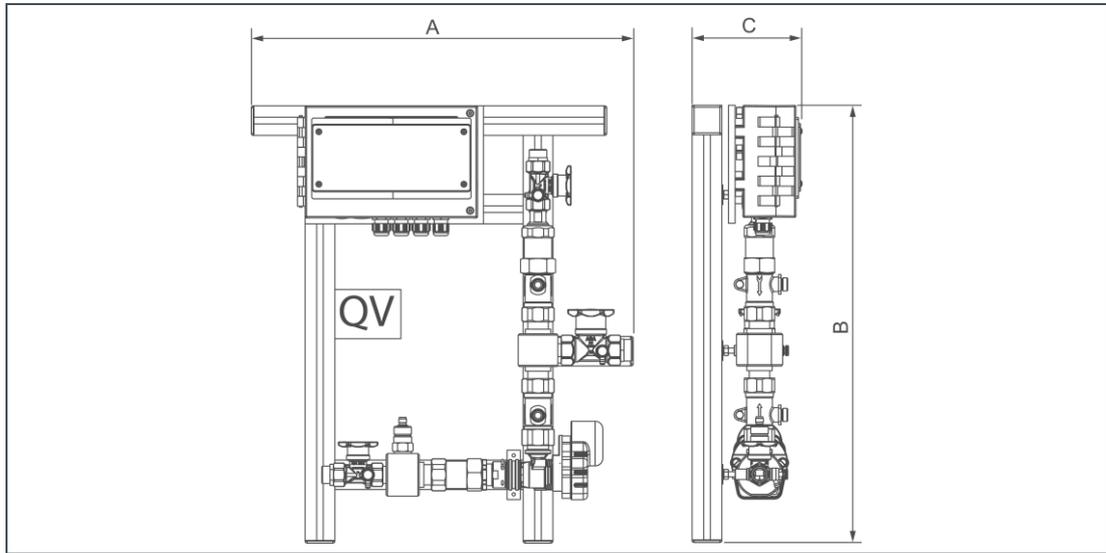
If this symbol (crossed out waste bin) is on the product, this product and the electrical and electronic components must not be disposed of as household waste.

- ▶ Dispose of electrical and electronic products or components in an environmentally sound manner.
- ▶ If your product contains batteries or rechargeable batteries, dispose of them separately from your product.



For more information on take-back and disposal, go to [www.gruenbeck.com](http://www.gruenbeck.com).

# 10 Technical specifications



		QV		AQP	
Dimensions and weights		1"	2"	1" / 1¼"	1½" - 2"
A System width QV	mm	575/640	675/	-	-
B System height	mm	665	900	-	-
C System depth	mm	180	180	-	-
Operating weight, approx.	kg	20	25	-	-
Shipping weight, approx.	kg				

Connection data					
Nominal connection diameter of blended water		DN 25/1" (male thread)	DN 50/2" (male thread)	-	-
Nominal connection diameter of raw water		DN 20/¾" (male thread)	DN 40/1½" (male thread)	-	-
Nominal connection diameter of soft water/permeate		DN 20/¾" (male thread)	DN 40/1½" (male thread)	-	-
Connection data of installation fitting		-	-	1½"	2"
Rated voltage range	V	85 – 265			
Rated frequency	Hz	50 – 60			
Power input (standby)	VA	1.5			
Power input (operation = max)	VA	2.5			
Protection/protection class		IP 43/⊕			

Performance data					
Nominal pressure		PN 10			
Min. raw water flow	l/h	50	100	-	-
Nominal flow rate of blended water	m³/h	8	20	- 1)	- 1)

General data					
Water temperature	°C	5 - 30			
Ambient temperature	°C	5 - 40			
Order no. QV		185 570	185 575		
Order no. AQP				189 511	189 512

1) For nominal flows (following DIN 19363-100), please refer to Delta-p water softener

# 11 Operation log

Blending unit | \_\_\_\_\_

Serial no.: \_\_\_\_\_



► Document the start-up and all maintenance activities.

## 11.1 Start-up log

### Customer

Name: \_\_\_\_\_

Address: \_\_\_\_\_

### Installation/Accessories

Water softener (make, type): \_\_\_\_\_

### Operating values

Water pressure bar

Residential water meter reading m<sup>3</sup>

Raw water hardness 1 °dH

Raw water hardness 2 °dH

Conductivity 1 °dH

Conductivity 2 °dH

### Remarks

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

### Start-up

Company: \_\_\_\_\_

Service technician: \_\_\_\_\_

Work time certificate (no.): \_\_\_\_\_

Date/signature: \_\_\_\_\_

## 11.2 Maintenance

Work performed	
<input type="checkbox"/> Maintenance	Company: _____
<input type="checkbox"/> Repair	Name: _____
	Date, signature _____
<input type="checkbox"/> Maintenance	Company: _____
<input type="checkbox"/> Repair	Name: _____
	Date, signature _____
<input type="checkbox"/> Maintenance	Company: _____
<input type="checkbox"/> Repair	Name: _____
	Date, signature _____
<input type="checkbox"/> Maintenance	Company: _____
<input type="checkbox"/> Repair	Name: _____
	Date, signature _____
<input type="checkbox"/> Maintenance	Company: _____
<input type="checkbox"/> Repair	Name: _____
	Date, signature _____
<input type="checkbox"/> Maintenance	Company: _____
<input type="checkbox"/> Repair	Name: _____
	Date, signature _____
<input type="checkbox"/> Maintenance	Company: _____
<input type="checkbox"/> Repair	Name: _____
	Date, signature _____
<input type="checkbox"/> Maintenance	Company: _____
<input type="checkbox"/> Repair	Name: _____
	Date, signature _____
<input type="checkbox"/> Maintenance	Company: _____
<input type="checkbox"/> Repair	Name: _____
	Date, signature _____
<input type="checkbox"/> Maintenance	Company: _____
<input type="checkbox"/> Repair	Name: _____
	Date, signature _____

**Work performed**

Repair Date, signature

Maintenance Company:

Repair Name:

Date, signature

# EU Declaration of Conformity

In accordance with the EU Low-Voltage Directive 2014/35/EU, Appendix IV



This is to certify that the system designated below meets the safety and health requirements of the applicable European guidelines in terms of its design, construction and execution.

If the system is modified in a way not approved by us, this certificate is void.

**Blending unit | Quality-controlled (QV) 1"-1¼" and 1½" - 2"**

**Blending unit | Upgrade kit Quality-controlled (AQV) 1"-1¼" and 1½" - 2"**

**Serial no.: Refer to type plate**

Furthermore, we confirm compliance with the essential requirements of the EMC Directive 2014/30/EU.

The following national standards and regulations have been applied:

- DIN EN ISO 12100:2011-03

Responsible for documentation:

Peter Hoess

Manufacturer

Grünbeck Wasseraufbereitung GmbH  
Josef-Grünbeck-Str. 1  
89420 Hoechstädt/Germany

Hoechstädt, September 2019

A handwritten signature in black ink, appearing to be 'P. Hoess', written over a horizontal line.

Peter Hoess  
Head of Technical Systems & Equipment



Grünbeck Wasseraufbereitung GmbH  
Josef-Grünbeck-Str. 1  
89420 Hoechstädt/Germany

 +49 9074 41-0

 +49 9074 41-100

[info@gruenbeck.com](mailto:info@gruenbeck.com)  
[www.gruenbeck.com](http://www.gruenbeck.com)



For more information go  
to [www.gruenbeck.com](http://www.gruenbeck.com)