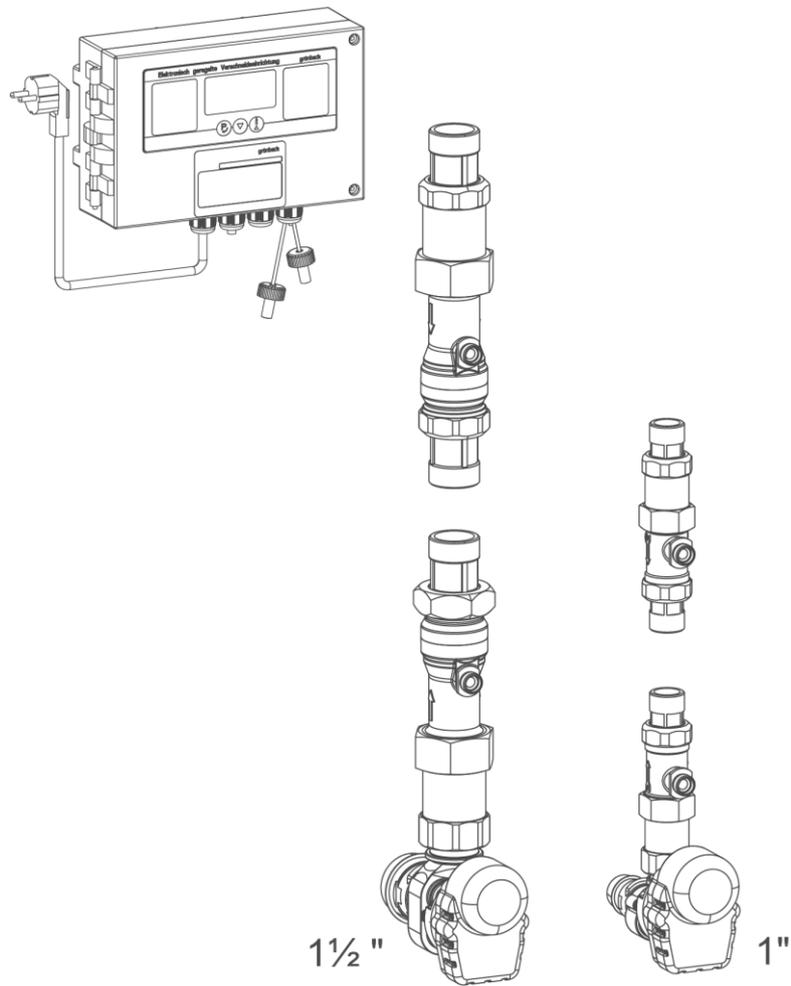


We understand water.



Accessories | Electronic blending unit

Operation manual

grünbeck

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1 About this manual

1.1 Other applicable documents

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

- Operation manual for water softener or reverse osmosis system
- The manuals of all accessories used shall apply.

1.2 Target group

This manual is intended for owners/operating companies 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 personal safety as well as to avoid damage to property.



This symbol identifies information and 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 is only allowed to be carried out by qualified specialists.



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



This symbol identifies work that must only be performed by electronically trained personnel in accordance with 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:

Description	Depiction
Handling instruction one-step or chronological sequence of steps does not matter	▶ Action
Handling instruction multi-step and chronological sequence of action steps important	<ol style="list-style-type: none"> 1. First action <ol style="list-style-type: none"> a first step b second step 2. Second action
Result after a handling instruction	» Result
Lists	<ul style="list-style-type: none"> • List item <ul style="list-style-type: none"> • List sub-item
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:

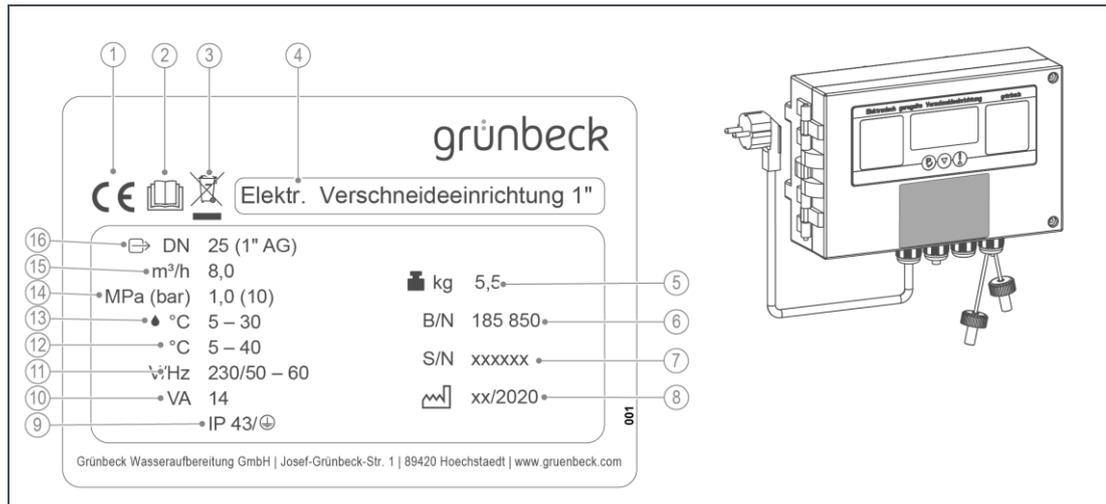
- 1" single electronic blending unit
- 1" double electronic blending unit
- 1½" single electronic blending unit
- 1½" double electronic blending unit

1.7 Type plate

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

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

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



Pos.	Designation	Pos.	Designation
1	CE mark	2	Observe 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	Electrical power consumption
11	Mains connection	12	Ambient temperature
13	Water temperature	14	Nominal pressure
15	Nominal flow	16	Nominal connection diameter

- Product designation: _____
- Order no.: _____
- Serial no.: _____

2 Safety



WARNING: Contamination of drinking water due to improper handling.

- Risk of infectious diseases
- ▶ Have the installation, commissioning 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 who have read and understood this manual and that are qualified to do such work on account of their vocational training.
- Keep your product permanently connected to the power and water supply.
- Safety devices 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 power supply cables replaced without delay.
- Mains cables must be replaced by the manufacturer or an authorised and qualified electrician.
- Observe the maintenance intervals (refer to chapter 7.3). Failure to comply can result in microbiological contamination of your drinking water system.
- Children must not 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 personal safety as well as to avoid damage to property. The information and 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 are defined depending on the degree of danger and can be used in this document:

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

2.3 Regulations

- ▶ Comply with the following regulations and directives, amongst others, during installation and start-up:
 - statutory regulations on environmental protection
 - regulations of the employers' liability insurance association
 - 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 the installation, commissioning and maintenance.
- Have the product explained to you by a qualified specialist.
- Only perform activities described in this manual.
- Do not carry out any activities that are explicitly marked 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 the following impacts when storing it:
 - Moisture, wetness
 - Environmental impacts such as wind, rain, snow, etc.
 - Frost, direct sunlight, severe heat exposure
 - Chemicals, dyes, solvents and their vapours

3 Product description

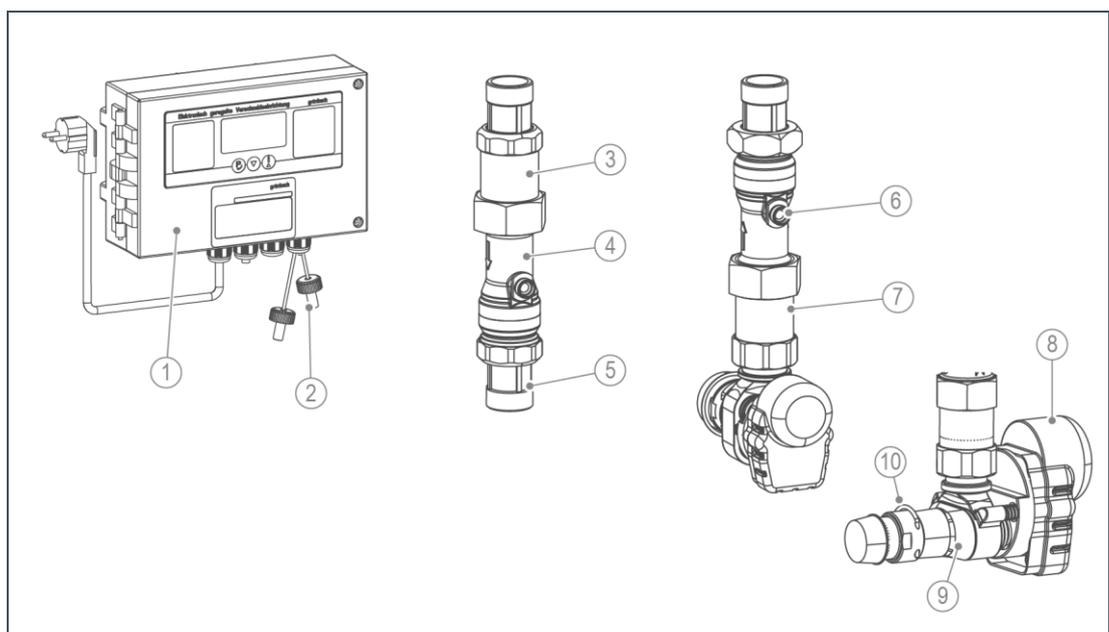
3.1 Intended use

- Downstream device for constant blending in proportion to quantity in industrial water softeners and reverse osmosis systems.
- The electronically controlled blending units are intended exclusively for use in industrial and commercial applications.



If the water blended with the electronic blending unit does not comply with the German Drinking Water Ordinance (e.g. permeate), a special version with corrosion-resistant components is required.

3.2 Product components



Pos.	Designation	Pos.	Designation
1	Control unit with LCD graphic display	2	Pulse cable for water meter
3	Built-in non-return valve for soft water/permeate	4	Turbine water meter for volume-based measurement of the soft water/permeate ratio
5	Water meter screw connection	6	Turbine water meter for volume-based measurement of the raw water ratio
7	Built-in non-return valve for raw water	8	Step motor
9	Blending valve with ceramic disc valves (driven by step motor)	10	Retaining clip for the quick release of the plug-in connection

The microprocessor-controlled controller can operate either one or two blending valves.

Each blending valve has two turbine water meters as flow meters. The proportion of "pure water" (hardness or conductivity) is determined via a water meter with a downstream non-return valve, while the proportion of "raw water" is determined via the other water meter and controlled via the blending valve.

On site, the "pure water" and "raw water" are then combined to form water blended in proportion to quantity (blended water).

3.3 Functional description

- The electronic blending unit records the flow rates of two different waters which have different hardness or conductivity.
- The water line through which the water with the high hardness/conductivity flows, "raw water", is controlled in the flow by the blending valve.
- The blending can occur in different ways:
 - Softened water (0 °dH) and water of greater hardness blended to a water of low hardness
 - (Fully) demineralised water and water of high conductivity blended to a water of low conductivity
 - Blending of different waters to a certain mixing ratio



The blending valve generates a pressure loss. This means that there can never flow as much or more water through the raw water pipe than through the pure water pipe.



The turbine water meters used have a start-up threshold, which means with low water consumption rates < approx. 150 l/h in the raw water line, there will be an operating behaviour in which the blending valve cannot be set exactly to the setpoint, but the actual value always fluctuates slightly around the setpoint.

4 Installation



The installation of a blending unit represents a major intervention into the drinking water system and be carried out by a qualified specialist/electrician.

4.1 Requirements for the installation site

Obey the 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.

4.1.1 Requirements with regard to the water installation

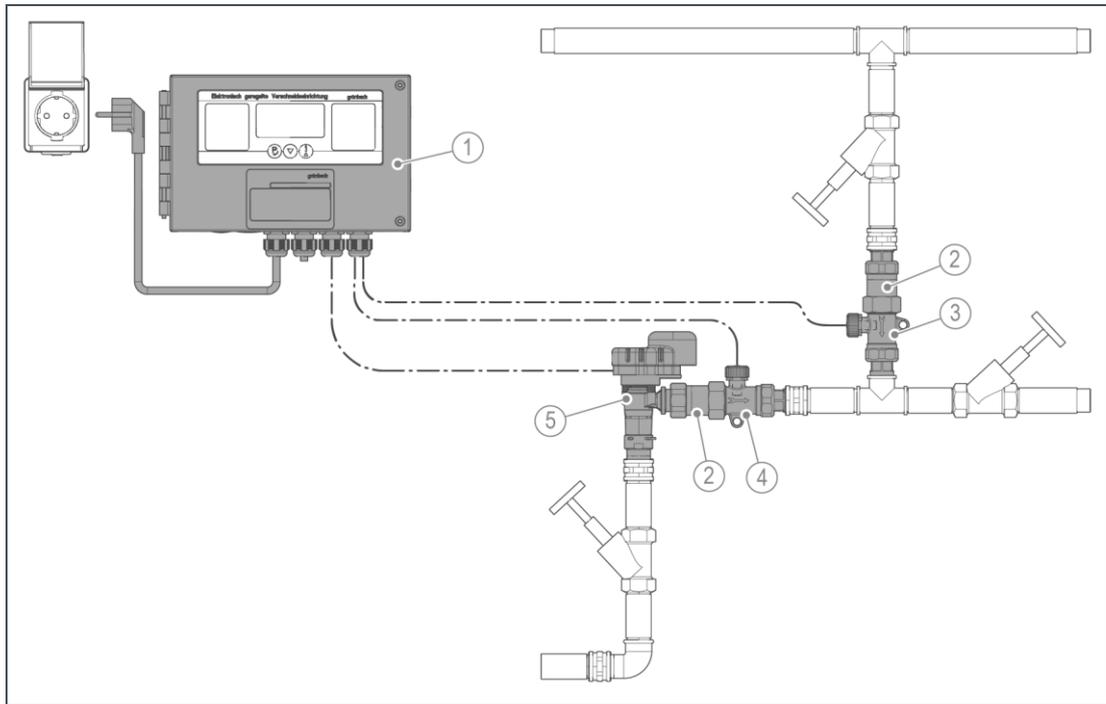
- All required connections must be implemented prior to the start of the installation work (for connection data, please refer to chapter 10).
- The flow pressure via the blending valve must at least be 1 bar higher than the soft water/permeate pressure.

4.1.2 Requirements for electrical wiring

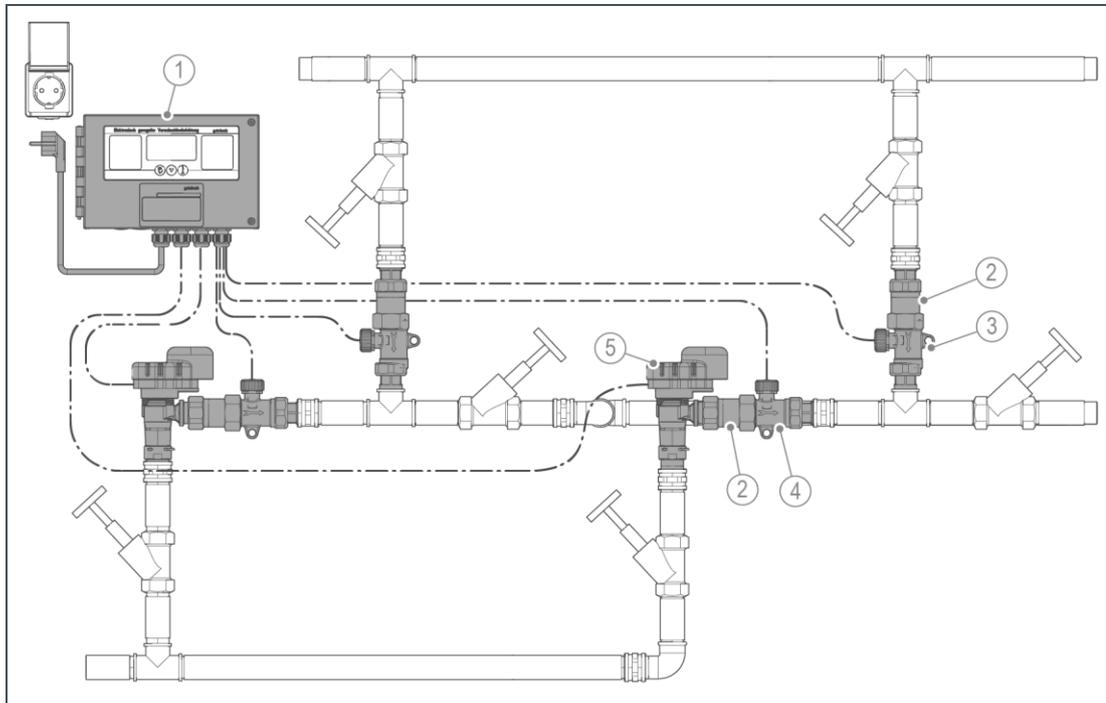
- Schuko socket within approx. 1.2 m of the control unit
- Schuko socket must carry continuous voltage.

4.2 Installation examples

Single electrical blending unit

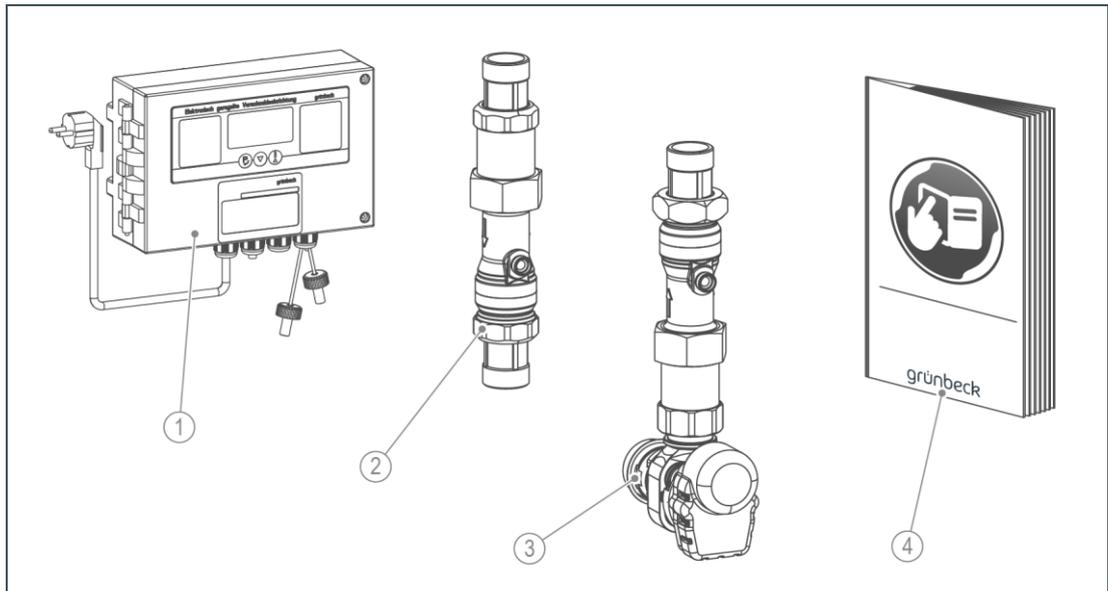


Double electronic blending unit



Pos.	Designation	Pos.	Designation
1	Control electronics	2	Non-return valve
3	Water meter	4	Water meter blending valve
5	Ceramic disc valve with actuator		

4.3 Checking the scope of supply



Pos.	Designation	Pos.	Designation
1	Control electronics with fastening material	2	Water meter with non-return valve
3	Water meter with non-return valve and motor-controlled blending valve	4	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 must only be carried out in compliance with national guidelines/regulations.



Note: Damage due to incorrect installation of the blending valve

- Accumulation of condensed water in the motor cover in case of overhead installation.
- Preferably mount the blending valve in a horizontal position with the motor facing upwards (refer to installation diagram in chapter **Fehler! Verweisquelle konnte nicht gefunden werden.**).
- Alternatively, the blending valve can be mounted vertically with the motor facing towards the left or right.

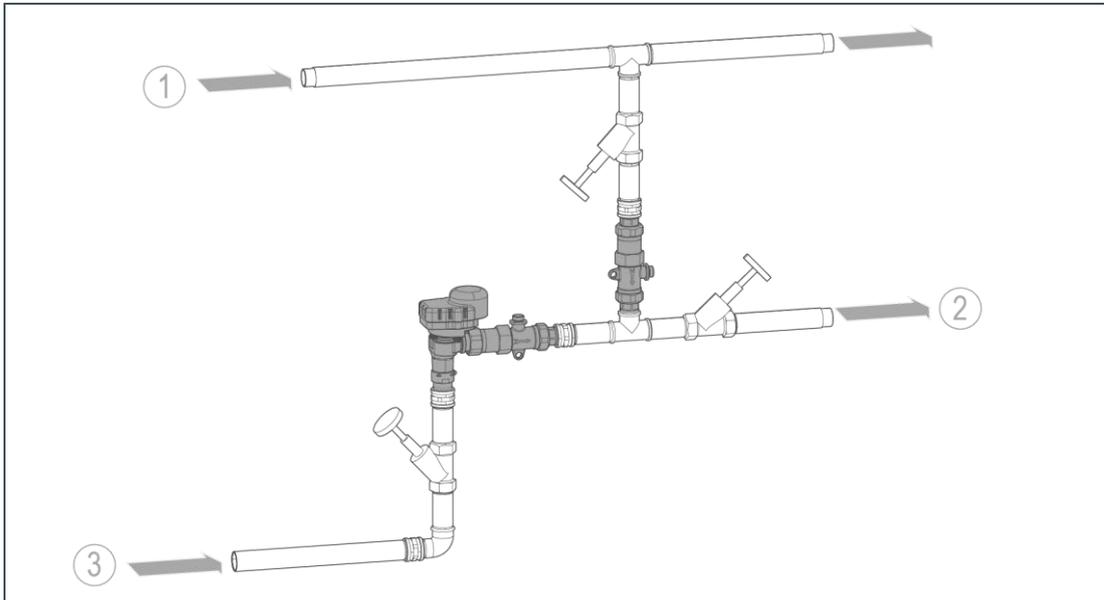


Electrical work must only be carried out by qualified electricians or authorised personnel.

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

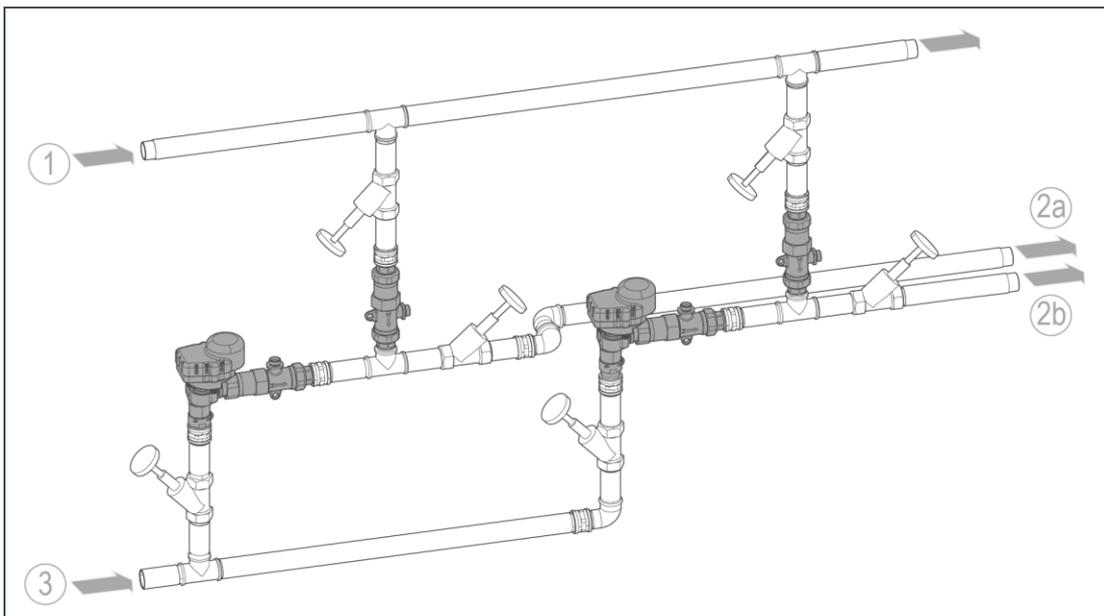
4.4.1 Water installation

Installation diagram single



Pos.	Designation	Pos.	Designation
1	0 °dH or permeate	2	Blended water
3	Raw water		

Installation diagram double



Pos.	Designation	Pos.	Designation
1	0 °dH or permeate	2a	Blended water 1
2b	Blended water 2	3	Raw water

1. Establish the water connection according to the installation diagram - note the flow direction on the water meters.
2. Install a shut-off valve before and after each water meter.



During repair work, the wearing parts can be quickly replaced by closing the shut-off valves.

4.4.2 Installation and connection of the controller



The cables are pre-wired in the control electronics at the factory.

1. Mount the control electronics onto the wall by means of the fastening material supplied with the system – flat and horizontally aligned.
2. Connect the pulse cables to the water meters.
 - » The blending unit is installed.

Terminal configuration plan

Terminal	Wire colour/number	Function	Remarks
1	1 Motor blue wire	Motor of blending valve 1	
2	2 Motor black wire		
3	3 Motor red wire		
4	White	Water meter pulse cable	+12 VDC
5	Green		Pure water meter "3" Only for blending units
6	Green		Raw water meter "4" 185 855 and 185 865
7	White		+12 VDC
8	White		+12 VDC
11	Brown		Ground
12	Green		Pure water meter "1"
13	Green		Raw water meter "2"
14	---		
15	Brown		Ground
16	Brown		Ground
34	1 Motor blue wire	Motor blending valve 2	Only for blending units
35	3 Motor red wire		185 855 and 185 865
36	2 Motor black wire		
37		NCC (normally closed contact)	Signal contact 37/39 opens when a maintenance interval has expired or in case of power failure
38		NOC (normally open contact)	
39		Common root	
40		NCC (normally closed contact)	Fault signal contact 39/40 opens in case of fault or power failure
41		NOC (normally open contact)	

Fuses

- Transformer primary side = slow 0.4 A
- F1 (electronics) = slow 0.4 A
- F2 (source voltage 12 V= and motors 24 V~) = slow 0.63 A

5 Start-up



The start-up must 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 in Operation (refer to chapter 6).
- ▶ 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/operating company

- ▶ Explain to the owner/operating company how the corresponding system works in conjunction with the blending unit.
- ▶ Use the manual to brief the owner/operating company and answer any questions.
- ▶ Inform the owner/operating company about the need for inspections and maintenance.
- ▶ Hand over all documents to the owner/operating company 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 might cause personal injury.
- ▶ Only make the settings described in this chapter.



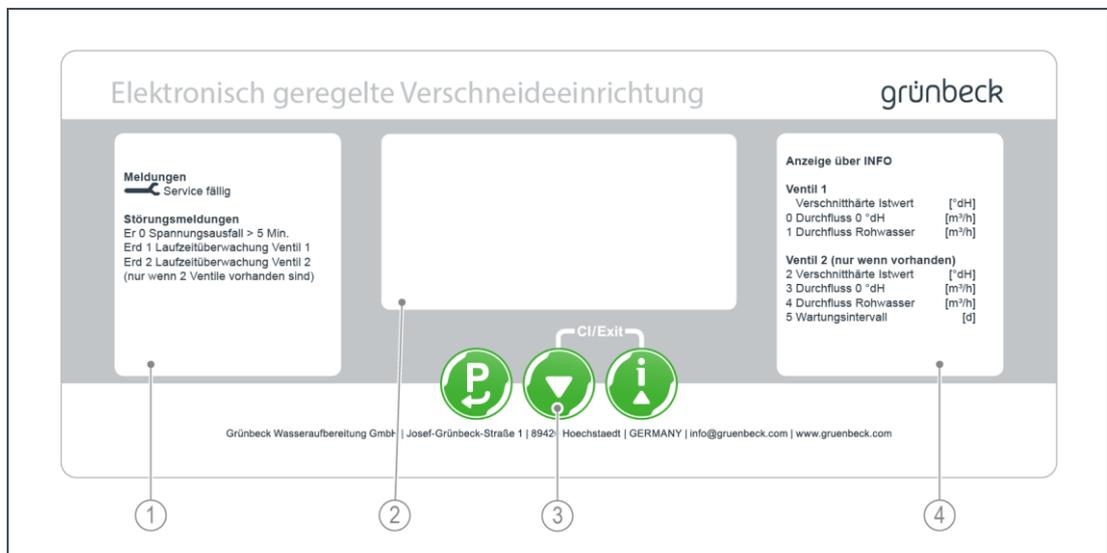
Data records in the code-protected level (installer level) must only be altered by Grünbeck's technical service/authorised service company or by a qualified specialist trained by Grünbeck.

6.1 Operating principle

The controller of the electronic blending unit regulates the blending hardness of up to two blending valves supplied from a pure water line (0 °dH or alternatively low conductivity < 100 µS/cm) and a raw water line.

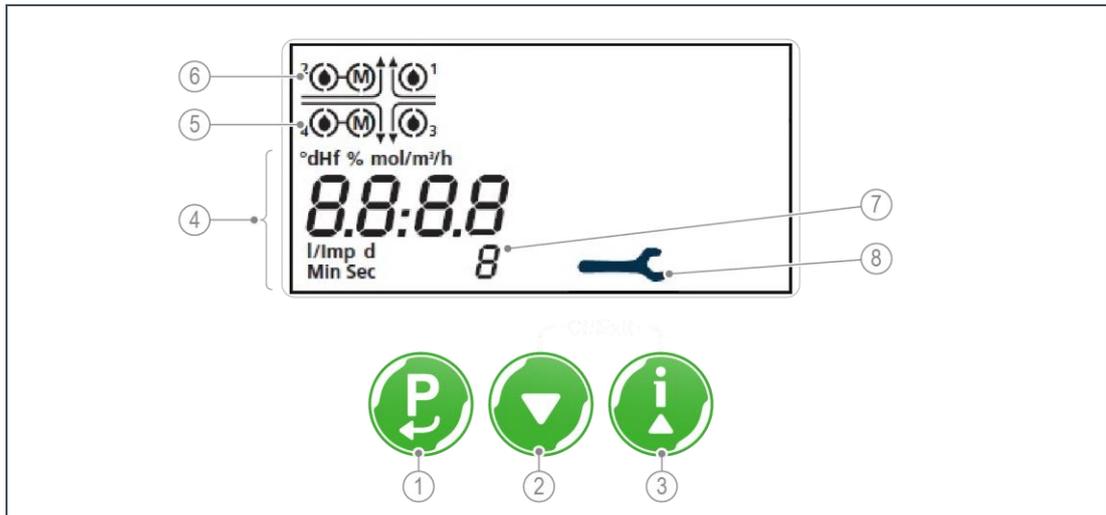
The different system parameters are stored in the programming levels and can be set with code protection via the menu navigation.

6.2 Keypad film



Pos.	Designation	Pos.	Designation
1	Explaining messages	2	Display
3	Operating keys	4	Display via Info level

6.2.1 Display indication



Control elements

Pos.	Button	Description
1	 	<p>In standard mode:</p> <ul style="list-style-type: none"> • Switches to the operator programming level (press for > 5 sec.) • Acknowledges malfunctions <p>In the operator programming level:</p> <ul style="list-style-type: none"> • Accesses parameters for editing (numeric display is flashing) • Saves and closes the parameter (numeric display stops flashing)
2	 	<p>In the operator programming level:</p> <ul style="list-style-type: none"> • Returns to the previous parameter • Decreases numerical values while the numerical display is flashing
3	 	<p>In standard mode:</p> <ul style="list-style-type: none"> • Calls up the Info level and switches to the next Info value <p>In the operator programming level:</p> <ul style="list-style-type: none"> • Switches to the next parameter • Increases numerical values while the numerical display is flashing
	  +  	<ul style="list-style-type: none"> • Closes open parameters without saving them (numeric display stops flashing). The previously set value is retained. • Exits the operator programming level or code level
	  +  	<ul style="list-style-type: none"> • Abortion of regeneration steps in the service program

Display elements

Pos.	Display	Description
4		<p>In standard mode:</p> <ul style="list-style-type: none"> Displays the actual blending hardness value of valve 1 <p>In the Info level and operator programming level:</p> <ul style="list-style-type: none"> Displays the operating parameters; the corresponding unit appears, if available <p>In the case of malfunctions / warnings:</p> <ul style="list-style-type: none"> Indicates the pending error or warning Er x.
5	 <p>(only if available)</p>	<p>Drop symbols flash when flow is detected at the corresponding water meter:</p> <ul style="list-style-type: none">  Flashes at every 5th pulse from water meter 0 °dH  Flashes at every 5th pulse from raw water meter  appears when the motor of valve 2 is activated
6		<p>Drop symbols flash when flow is detected at the corresponding water meter:</p> <ul style="list-style-type: none">  Flashes at every 5th pulse from water meter 0 °dH  Flashes at every 5th pulse from raw water meter  appears when the motor of valve 1 is activated
7		<p>In standard mode:</p> <ul style="list-style-type: none"> Calls up the Info level and switches to the next Info value <p>In the operator programming level:</p> <ul style="list-style-type: none"> Switches to the next parameter Increases numerical values while the numerical display is flashing
8		<ul style="list-style-type: none"> Symbol appears if maintenance interval has expired (only if activated).
	<p>Display illumination</p>	<ul style="list-style-type: none"> Remains on for 10 minutes after the last keystroke Each press of a key initially activates the illumination Flashes during malfunctions/warnings

6.3 Setting the operating parameters

6.3.1 Basic settings (user programming level)

Display	Description
^{°dH} 	<ul style="list-style-type: none"> The basic display shows the actual value of the blending hardness of valve 1. <ol style="list-style-type: none"> Call up the operator programming level. <ol style="list-style-type: none"> Press and hold  for more than 5 seconds.
^{°dH} 	<ul style="list-style-type: none"> The display indicates the hardness unit. If the display corresponds to the required hardness unit, you can ignore the next steps. <ol style="list-style-type: none"> Press . <ul style="list-style-type: none"> » The hardness unit is flashing. Set the hardness unit (code 290/index 0). <ul style="list-style-type: none"> Regulation to blending hardness (data records 1 ... 6) 0 = °dH / 1 = °f / 2 = mol/m³ Regulation to conductivity (data records 11 and 12) 3 = µS/cm Regulation to flow ratio (data records 11 and 12) 4 = % (mixing ratio of raw water to pure water) <ol style="list-style-type: none"> Decrease numerical value using . Increase numerical value using . Save the setting using . <ul style="list-style-type: none"> » The hardness unit stops flashing. Press , to go to the next menu item.
^{°dH} 	<ul style="list-style-type: none"> The display shows the raw water quality (hardness or conductivity). If no change is required, continue with 9. <ol style="list-style-type: none"> Press . <ul style="list-style-type: none"> » The menu is flashing. Set the raw water quality. <ol style="list-style-type: none"> Decrease numerical value using . Increase numerical value using . Save the setting using . <ul style="list-style-type: none"> » The raw water quality stops flashing. Switch to the next menu item using .

Display	Description
	<ul style="list-style-type: none"> The following display only appears if "Conductivity" has been programmed as the hardness unit (steps 2 - 4). <p>10. Enter the respective value.</p> <p style="padding-left: 20px;">a Repeat steps 6 – 8 in the same way.</p> <p>11. Switch to the next menu item using .</p> <hr/> <p> If the pure water conductivities vary, the highest occurring value must be programmed or regularly correction must be made to the current value.</p> <hr/>
<p>°dH</p> 	<ul style="list-style-type: none"> For valve 1, the display shows the Blending hardness, Conductivity or Flow ratio menu item (depending on the programmed hardness unit). The desired blending hardness, conductivity or raw water/pure water flow ratio must be set here (setting range depends on the programmed hardness unit). <hr/> <p> When softening drinking water, the stipulations indicated in the German Drinking Water Ordinance are to be complied with.</p> <hr/> <p>12. Enter the respective value.</p> <p style="padding-left: 20px;">a Repeat steps 6 – 8 in the same way.</p> <p>13. Switch to the next menu item using .</p> <hr/>
<p>°dH</p> 	<ul style="list-style-type: none"> The following display only appears if two blending valves are present: For valve 2, the display shows the Blending hardness, Conductivity or Flow ratio menu item (depending on the programmed hardness unit). The desired blending hardness, conductivity or raw water/pure water flow ratio must be set here (setting range depends on the programmed hardness unit). <hr/> <p> When softening drinking water, the stipulations indicated in the German Drinking Water Ordinance are to be complied with.</p> <hr/> <p>14. Enter the respective value.</p> <p style="padding-left: 20px;">a Repeat steps 6 – 8 in the same way.</p> <p>15. Switch back to the basic display by pressing  +  at the same time.</p> <p>» The display now shows the actual blending hardness value of valve 1.</p> <hr/>

6.3.2 Reading the operating status (Info level)

The display continuously gives information about the operating status of the system.

The operating parameters can be called up by pressing the ▲ key.

Display	Description
	<p>In standard mode:</p> <ul style="list-style-type: none"> Depending on whether 1 or 2 blending valves are present, the corresponding flow arrows appear and the drop symbols flash for the water meter pulses from the 0 °dH line (arrows come from the right) and the raw water line (arrows come from the left).

Operating parameters

Index	Parameter/Unit	Display format	Remarks
	Actual blending hardness value valve 1	°dH °f mol/m ³ µS/cm %	XXX Standard display: according to programmed hardness unit
0	Flow rate 0 °dH line valve 1	m ³ /h	1 XX or Last two digits = flow rate
1	Flow rate blending valve 1	m ³ /h	1 X.X • 0.0...9.9 m ³ /h with one decimal place • > 9.9 m ³ /h without decimal place
2	Actual blending hardness value valve 2	°dH °f mol/m ³ µS/cm %	XXX according to programmed hardness unit (Display only if 2 blending valves are present)
3	Flow rate 0° dH line valve 2	m ³ /h	2 XX or Last two digits = flow rate
4	Flow rate blending valve 1	m ³ /h	2 X.X • 0.0...9.9 m ³ /h with one decimal place • > 9.9 m ³ /h without decimal place (Display only if 2 blending valves are present)
5	Time until service is due	d	XXX Only if the maintenance interval has been activated

6.3.3 Indicating the software version (Code 999)

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

6.4 Deviating settings



The parameters described below are only allowed to be changed by trained experts as incorrect values can lead to the overrunning of the upstream water softener/reverse osmosis system or to malfunctions.



Precondition: The controller shows the basic display of the actual blending hardness value at valve 1.

► Press **P** + **▼** at the same time 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 **▼**.

6.4.1 Installer level (Code 290)

Display	Description
	<ul style="list-style-type: none"> • The installer programming level is active. <ol style="list-style-type: none"> 1. Select the required menu. <ul style="list-style-type: none"> » The figures (000) are flashing. 2. Set the Code 290 as follows. <ol style="list-style-type: none"> a Move up using ▲ or down using ▼ until C.290 appears on the display.
	<ul style="list-style-type: none"> » Hold down ▲ and ▼ for the figures to run faster; press the keys for fine adjustment. 3. Press P to accept Code 290.

Index	Parameter/Unit	Factory setting	Setting range	Remarks
0	System data record (refer to chapter 6.3.1 Index 0 "Hardness unit")	3	1 ... 6, 11, 12	1 = 1 blending valve, water meter pulse rate freely programmable 2 = 2 blending valves, water meter pulse rate freely programmable 3 = 1 blending valve, water meter pulse rate = 2x 0.0300 l/pulse 4 = 2 blending valves, water meter pulse rate = 4x 0.0300 l/pulse 5 = 1 blending valve, water meter pulse rate = 2x 0.075 l/pulse 6 = 2 blending valves, water meter pulse rate = 4x 0.075 l/pulse 11 = 1 blending valve, water meter pulse rate freely programmable * 12 = 2 blending valves, water meter pulse rate freely programmable *
1	Length of maintenance interval	d 0	0 ... 365	0 = Maintenance interval deactivated · Restart by reprogramming the parameter

Index	Parameter/Unit	Factory setting	Setting range	Remarks
2	Reaction to power failure > 5 minutes	0	0 ... 1	0 = No reaction 1 = Fault signal on the display + open fault signal contact
3	Monitoring of blending hardness	0	0 ... 1	0 = No fault signal 1 = Fault signal if the programmed blending setting cannot be set by the control system

* Applies to hardness unit µS/cm or % (mixing ratio of raw water to pure water)

6.4.2 Technical service level (Code 142)



Can only be changed if a freely programmable data record 1, 2, 11 or 12 is selected in Code 290, parameter 0.

In code level 142, only the decimal places are shown.

Index	Parameter/Unit	Factory setting	Setting range	Remarks
0	Water meter pulse rate 0 °dH valve 1	l/pulse 0.0300	0 ... 0.9999	
1	Water meter pulse rate raw water line valve 1	l/pulse 0.0300	0 ... 0.9999	
2	Water meter pulse rate 0 °dH valve 2	l/pulse 0.0300	0 ... 0.9999	Only displayed if 2 blending valves are selected.
3	Water meter pulse rate raw water line valve 2	l/pulse 0.0300	0 ... 0.9999	

6.4.3 Error memory/water volumes (Code 245)

Index	Parameter/Unit	Display	Remarks
0	Water volume blending valve 1	m ³ 0 ... 0.9999	
1	Water volume 0° dH line valve 1	m ³ 0 ... 0.9999	
2	Water volume raw water line valve 1	m ³ XXXX	Indication only
3	Water volume blending valve 2	m ³ XXXX	Only displayed if 2 blending valves are selected.
4	Water volume 0° dH line valve 2	m ³ XXXX	
5	Water volume raw water line valve 2	m ³ XXXX	
	Memory of the 10 most recent errors	XXXX	
6...F	Memory of the last parameter change	(Er X) (XXXX)	Only display and time counter indicating how many operating hours ago the error occurred 6 = most recent error F = least recent error
G	Water volume blending valve 1	m ³	with time counter, indicating how many hours ago the change was made

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 trouble-free, 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.



A maintenance contract ensures that all the required maintenance work will be performed in due 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 inspections increase the operational reliability of your product.

- ▶ Conduct an inspection at least every 2 months.

To carry out an inspection, proceed as follows:

1. Check the display of the control unit for indication of possible malfunctions.
2. Read the system's operating state on the Info level.
3. Check the system for leaks.

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 semi-annual and annual maintenance.

7.3.1 Semi-annual and annual maintenance

- ▶ Perform all necessary work within the scope of the maintenance work for the corresponding system (see operation manual for the water softener or reverse osmosis system).

7.4 Spare parts

For spare parts and consumables please contact your local Grünbeck representative. You can find them on the Internet at www.gruenbeck.de.

7.5 Wearing parts

Wearing parts are listed below:

- Seals
- Drive motor
- Turbine water meter

8 Fault



WARNING: Risk of contaminated drinking water due to stagnation

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

- ▶ If malfunctions cannot be remedied by the instructions given below, contact Grünbeck's technical service/authorised service company.
- ▶ Keep your equipment data ready (see chapter 1.7).
- ▶ Indicate the error message on the display.

8.1 Display signals

Fault	Meaning	Remedy
Er 0	Power failure > 5 minutes (only if reaction to power failure has been programmed)	The error message is primarily intended as information for the owner/user: <ul style="list-style-type: none"> • Due to the power failure, the mains may have been supplied with an unwanted blending quality. • It is also possible that the power supply of the controller is connected to a light switch or similar, so that no continuous voltage is available.
Erd1 and/or Erd2	The controller cannot regulate the respective blending hardness of valve 1 (>> Erd1) or of valve 2 (>> Erd2).	
	the controller receives the wrong flow rate signals	Install the water meter pulse cables on the correct water meters or connect the correct terminals.
	the valve is connected incorrectly	Connect the valve connecting line(s) to the correct terminals.
	the blending hardness is programmed incorrectly	Correct the settings of the raw water and blending hardness.
	fuse F2 has blown the valve is defective	Have the fuse or the valve replaced by Grünbeck's technical service/authorised service company.
	Maintenance interval has elapsed	No text on the display <ul style="list-style-type: none"> • Contact Grünbeck's technical service

9 Disposal

- ▶ Comply with the applicable national regulations.

9.1 Packaging

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

9.2 Product



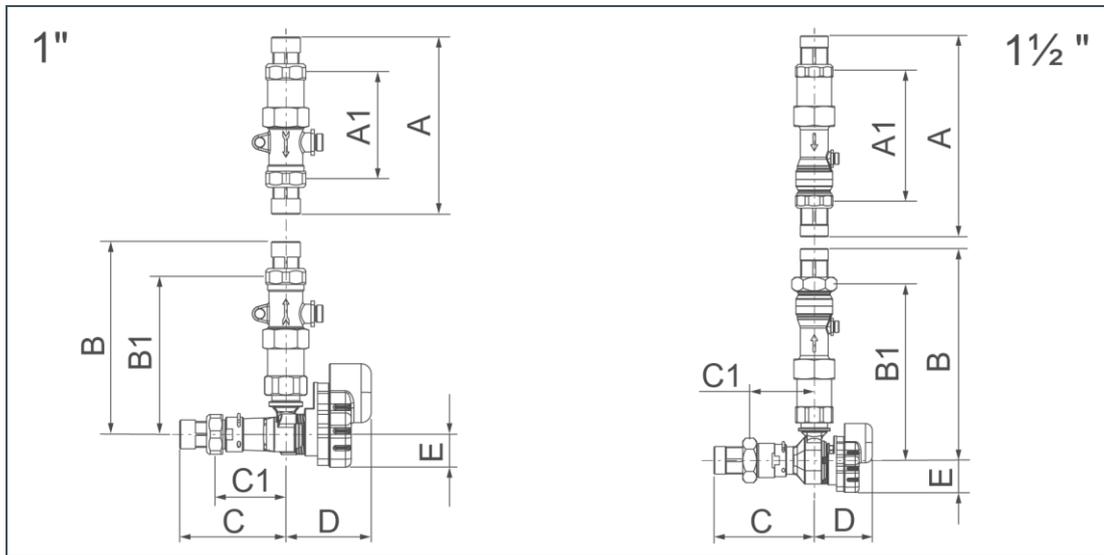
If this symbol (crossed out waste bin) is on the product, this product is subject to the European Directive 2012/19/EU. This means that this product or the electrical and electronic components are not allowed to be disposed of in the household waste.

- ▶ Find out about the local regulations on the separate collection of electrical and electronic products.
- ▶ Make use of the collection points available to you for the disposal of your product.



For information on collection points for your product, contact your municipality, the public waste management authority, an authorised body for the disposal of electrical and electronic products or your waste disposal service.

10 Technical specifications



Dimensions and weights		DN 25 (1")		DN 40 (1½")	
		single	double	single	double
A	mm	205		348	
A1	mm	123		225	
B	mm	225		268	
B1	mm	184		306	
C	mm	125		160	
C1	mm	84		98	
D	mm	98		100	
E	mm	38		56	
Operating weight, approx.	kg	5.5	9	11	19
Controller (W x H x D)	mm	270 x 170 x 92			

Connection data		single	double	single	double
Nominal connection diameter		DN 25 (1" male thread)		DN 40 (1½" male thread)	
Rated voltage	V	230			
Rated frequency	Hz	50 – 60			
Power input (standby)	VA	14			
Power input (operation = max)	VA	16			
Protection/protection class		IP 43/☉			

Performance data		single	double	single	double
Nominal pressure		PN 10			
Nominal flow for blended water (with max. open blending valve)	m³/h	8	2 x 8	20	2 x 20
Max. control deviation from the setpoint:	°dH				
Blending hardness		+/- 1			
Conductivity	µS/cm	+/- 10			
Raw water/pure water ratio	%	+/- 2			

General data		single	double	single	double
Water temperature	°C	5 – 30			
Ambient temperature	°C	5 – 40			
Order no.		185 850	185 855	185 860	185 865

11 Operation log

Electronic blending unit type: _____

Serial no.: _____



► Document the start-up and all maintenance activities.

11.1 Start-up log

Customer

Name: _____

Address: _____

Installation/Accessories

Water softener (make, type): _____

Reverse osmosis system (make, type): _____

Operating values

Water pressure bar

Residential water meter reading m³

Raw water hardness 1 °dH

Raw water hardness 2 °dH

Conductivity 1 °dH

Conductivity 2 °dH

Remarks

Start-up

Company: _____

Customer 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: _____
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	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

<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
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	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

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 protection requirements of the applicable EU guidelines in terms of its design, construction and execution.

This certificate will become invalid if the system is modified in a way not approved by us.

1" electronic blending unit - single and double
1½" electronic blending unit - single and double

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:

Dipl. Ing. (FH) Markus Pöpperl

Manufacturer

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

Hoechstädt, 06.02.2019

A handwritten signature in blue ink, appearing to be 'M. Pöpperl', written in a cursive style.

Dipl. Ing. (FH) Markus Pöpperl
Head of Technical Product Design

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