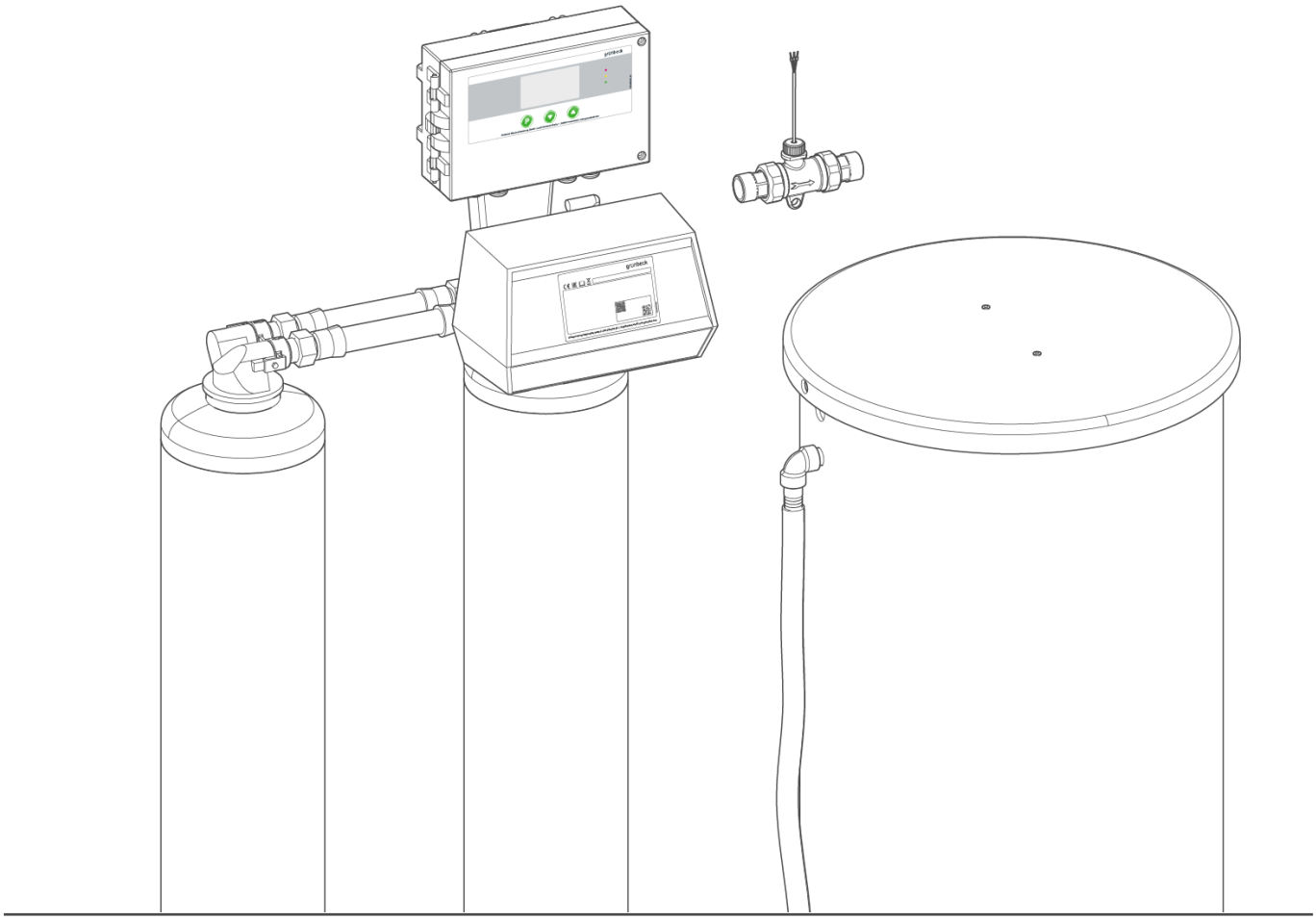
We understand water.



Water softener | GENO-mat duo WE-X/WEW-X

Operation manual

grünbeck

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Monday to Thursday
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Friday
7:00 am - 4:00 pm

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Table of contents

1 Introduction

This manual is intended for owners/operators/operating companies, users as well as qualified specialists and ensures the safe and efficient handling of the product. The manual is an integral part of the product.

- Carefully read this manual and the included manuals on the components before you operate your product.
- Obey all safety and handling instructions.
- Keep this manual and all other applicable documents, so that they are available when needed.

Illustrations in this manual are for basic understanding and can differ from the actual design.

1.1 Validity of the manual

This manual applies to the products below:

- Water softener GENO-mat duo WE-X 65 – 750 (full salting)
- Water softener GENO-mat duo WE-X 50 – 530 (economy salting)
- Water softener GENO-mat duo WEW-X 65/150 (warm water)

This manual applies to the control unit IONO-matic WE as of software **V2.34**.

- Special designs that essentially correspond to the standard products given above. For information on changes, please refer to the respective information sheet that is enclosed, if applicable.

1.2 Other applicable documents

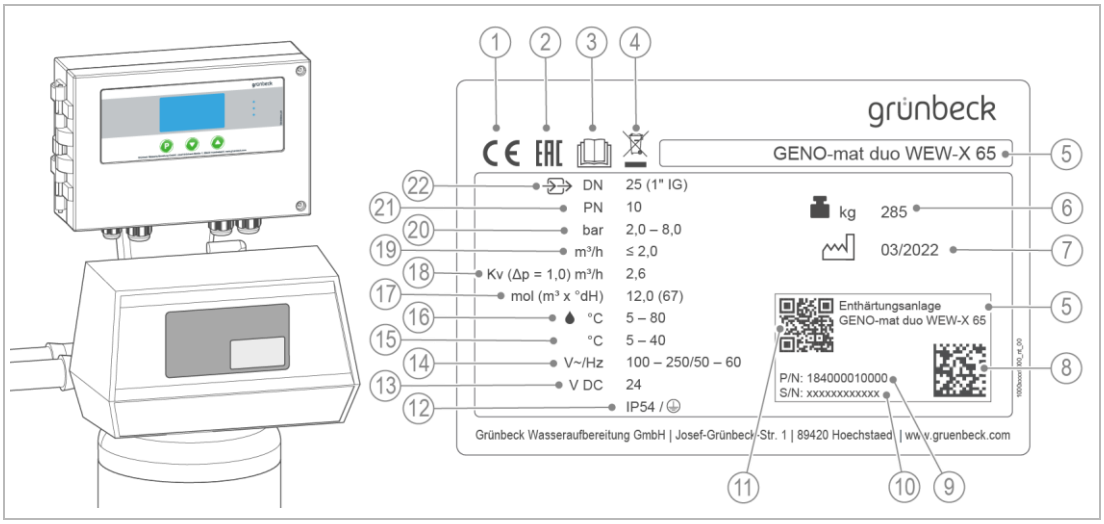
- Manuals of all accessories used
- Electric circuit diagram of reverse osmosis system installed downstream

1.3 Product identification

You can identify your product based on the product designation and the order number shown on the type plate.

► Check whether the products indicated in chapter 1.1 correspond to your product.

The type plate is located on the control valve.



	Designation
1	CE mark
2	EAC test mark
3	Obey the operation manual
4	Disposal information
5	Product designation
6	Operating weight
7	Date of manufacture
8	Data matrix code
9	Order no.
10	Serial no.
11	QR code

	Designation
12	Protection/protection class
13	Operating voltage
14	Rated voltage range/frequency
15	Ambient temperature
16	Water temperature
17	Nominal capacity
18	K_V value
19	Continuous flow
20	Operating pressure
21	Nominal pressure
22	Nominal connection diameter

1.4 Symbols used

Symbol	Meaning
	Danger and risk
	Important information or requirement
	Useful information or tip
	Written documentation required
	Reference to further documents
	Work that must be carried out by qualified specialists only
	Work that must be carried out by qualified electricians only
	Work that must be carried out by technical service personnel only

1.5 Depiction of warnings

This manual contains information and instructions that you must obey for your personal safety. The information and instructions are highlighted by a warning symbol and are structured as shown below:

SIGNAL WORD Type and source of hazard

- Possible consequences

► Preventive measures

The signal words below are defined subject to the degree of danger and might be used in the present document:

Warning symbol and signal word		Consequences if the information/ instructions are ignored
DANGER	Personal injury	Death or serious injuries
WARNING		Possible death or serious injuries
CAUTION		Possible moderate or minor injuries
NOTE	Damage to property	Possible damage to components, the product and/or its functions, or an object in its vicinity

1.6 Demands on personnel

During the individual life cycle phases of the product, different people carry out work on the product. This work requires different qualifications.

1.6.1 Qualification of personnel

Personnel	Requirements
User	• No special expertise required • Knowledge of the tasks assigned • Knowledge of possible dangers in case of incorrect behaviour • Knowledge of the required protective equipment and protective measures • Knowledge of residual risks
Owner/operator/ operating company	• Product-specific expertise • Knowledge of statutory regulations on work safety and accident prevention
Qualified specialist • Electrical engineering • Sanitary engineering (HVAC and plumbing) • Transport	• Professional training • Knowledge of relevant standards and regulations • Knowledge of detection and prevention of potential hazards • Knowledge of statutory regulations on accident prevention
Technical service (Grünbeck's technical service/ authorised service company)	• Extended product-specific expertise • Trained by Grünbeck

1.6.2 Authorisations of personnel

The table below describes which tasks may be carried out by whom.

	User	Owner/ operator/ operating company	Qualified specialist	Technical service
Transport and storage		X	X	X
Installation and mounting			X	X
Start-up/commissioning			X	X
Operation and handling	X	X	X	X
Cleaning	X	X	X	X
Inspection		X	X	X
Maintenance semi-annually		X	X	X
annually			X	X
Troubleshooting		X	X	X
Repair				X
Decommissioning and restart/recommissioning			X	X
Dismantling and disposal			X	X

1.6.3 Personal protective equipment

► As an owner/operator/operating company, make sure that the required personal protective equipment is available.

The components below fall under the heading of personal protective equipment (PPE):


Protective gloves


Protective footwear


Safety goggles

2 Safety

2.1 Safety measures

- Only operate your product if all components are installed properly.
- Obey the local regulations on drinking water protection, accident prevention and occupational safety.
- Do not make any changes, alterations, extensions or program changes on your product.
- Only use genuine spare parts for maintenance or repair.
- Keep the premises locked against unauthorised access to protect imperilled or untrained persons from residual risks.
- Comply with the maintenance intervals (refer to chapter 8.2). Failure to comply can result in the microbiological contamination of your drinking water system.

2.1.1 Mechanical hazards

- You must never remove, bridge, or otherwise tamper with safety equipment.
- For all work on the system that cannot be carried out from the ground, use stable, safe and self-standing access aids (e.g. stepladders).
- Make sure that the system is set up in a way that it cannot tip over and that the stability of the system is guaranteed at all times.

2.1.2 Pressure-related hazards

- Components can be under pressure. There is a risk of injuries and damage to property due to escaping water and unexpected movement of components. Check the system’s pressure lines for leaks at regular intervals.
- Before starting any repair and maintenance work, make sure that all affected components are depressurised.

2.1.3 Electrical hazards

There is an immediate danger of fatal injury from electric shock when touching live parts. Damage to the insulation or individual components can be life-threatening.

- Only have qualified electricians carry out electrical work on the system.
- In case of damage to live components, switch off the voltage supply immediately and arrange for repair.
- Switch off the supply voltage before working on electrical system parts. Discharge residual voltage.

- Never bridge electrical fuses. Do not disable fuses. Use the correct current ratings when replacing fuses.
- Keep moisture away from live parts. Moisture can cause short-circuits.

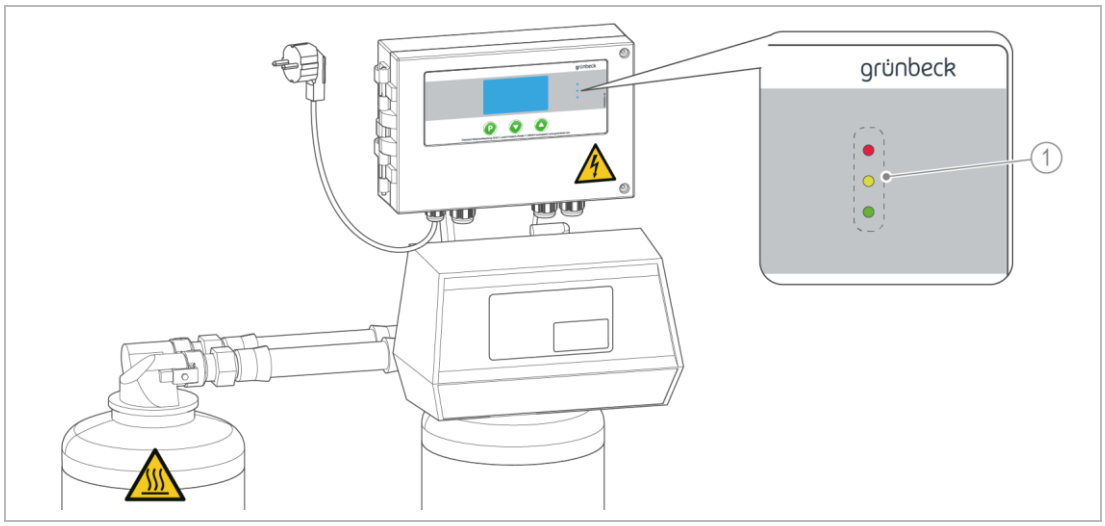
2.1.4 Groups of persons requiring protection

- This product must not be used by persons (including children) with limited abilities, lack of experience or knowledge.

2.2 Product-specific safety instructions

- Always route lines such as brine and flushing water hoses, mains cable, electrical connecting cable away from traffic routes in order to prevent tripping and tearing off.
- Mark possible tripping hazards, if necessary.
- Be aware of a possible risk of slipping due to leaking water on the floor.

2.2.1 Signals and warning devices



	Designation
23	LEDs for status display of the system

Labels on the product

	Risk of electric shock		Hot surfaces (for warm water version GENO-mat duo WEW-X)

The affixed information and pictograms must be clearly legible.
They must not be removed, soiled or painted over.

► Obey all warnings and safety instructions.

► Immediately replace illegible or damaged symbols and pictograms.

2.2.2 Safety-related components

Safety components must be replaced by genuine spare parts only.

- Control valve and control unit
- Brine valve
- Water meter
- Disinfection unit

2.3 Conduct in emergencies

2.3.1 In case of water leaks

1. De-energise the system – unplug the mains plug.
2. Locate the leak.
3. Eliminate the cause of the water leak.

2.3.2 In case of control failure

1. De-energise the system – unplug the mains plug.
2. Contact the technical service.

3 Product description

3.1 Intended use

3.1.1 Water softeners GENO-mat duo WE-X

The water softeners GENO-mat duo WE-X are designed for the continuous production of softened and partially softened water and can be used in these areas:

- Continuous soft water supply
- Softening and partial softening of the following kinds of water
  - Well water
  - Process water
  - Boiler feed water
  - Cooling water
  - Air-conditioning water
  - Cold drinking water
  - Industrial water

The GENO-mat duo WE-X is available in 2 designs:

- Full salting (fully softened water with a residual hardness of < 0.1 °dH for industry)
- Economy salting (partially softened water such as cooling water)

Only systems with full salting are suitable for softening to less than 0.1 °dH.

3.1.2 Water softeners GENO-mat duo WEW-X

The water softeners GENO-mat duo WEW-X are designed for the continuous production of softened warm water and can be used in these areas:

- Continuous soft water supply
- Softening and partial softening of the following kinds of water
  - Well water
  - Process water
  - Boiler feed water
  - Cooling water
  - Air-conditioning water
  - Industrial water

The water softeners are suitable for softening to less than 0.1 °dH.

3.1.3 Application limits

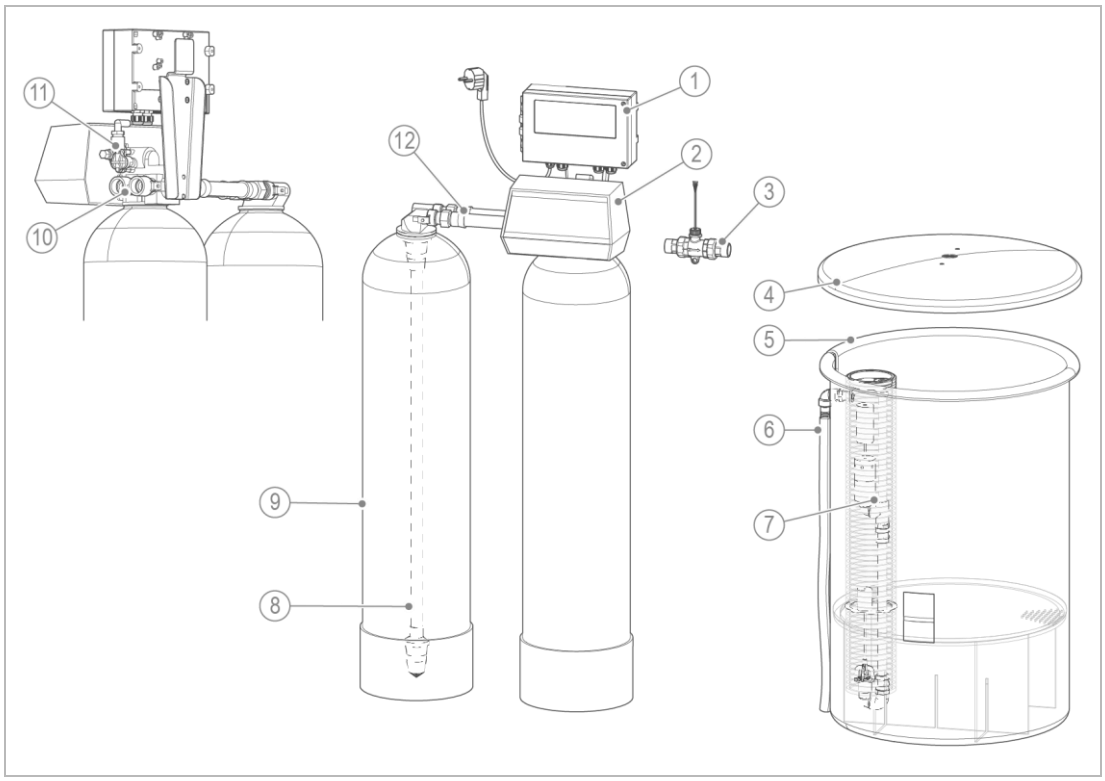
Observe the country-specific stipulations for soft water hardness in the drinking water sector.

- The water to be softened must be free of iron and manganese.
  - Iron < 0.2 mg/l
  - Manganese < 0.05 mg/l

3.1.4 Foreseeable misuse

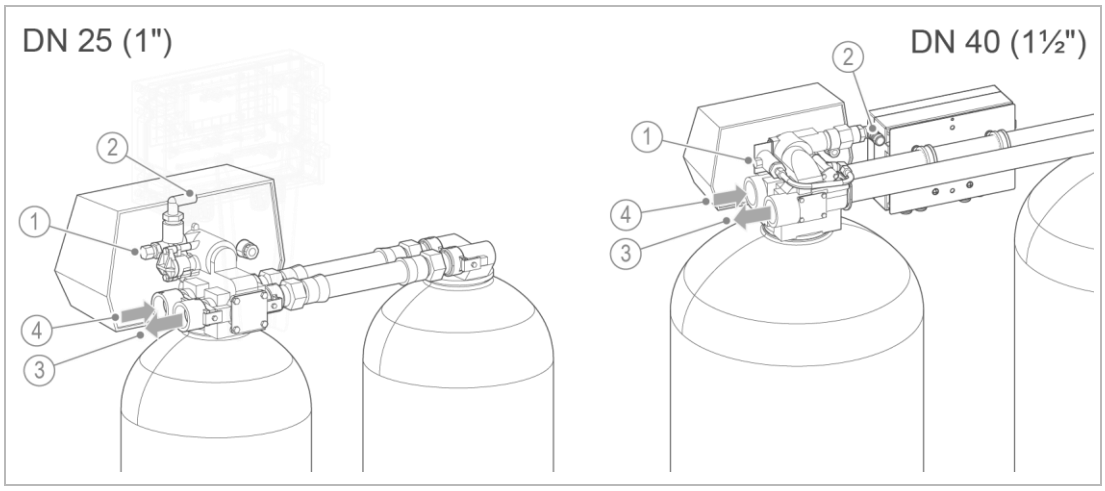
- The water softeners of the respective sizes are adjusted to the soft water demand expected at the time of installation and are not suitable for major deviations in capacities.
- The maximum continuous flow must not be exceeded under any circumstances.

3.2 Product components



	Designation		Designation
1	Control unit IONO-matic WE	7	Brine valve
2	Control valve	8	Riser pipe
3	Water meter	9	Exchanger tank for exchanger resin
4	Lid of salt dissolving tank	10	Connection block
5	Salt dissolving tank	11	Injector
6	Overflow hose (Ø 19 mm)	12	Connecting hoses

3.3 Connections



	Designation		Designation
1	Connection of brine hose	3	Soft water outlet
2	Connection of hose to drain	4	Raw water inlet

3.4 Functional description

3.4.1 Process

The water softeners GENO-mat duo WE-X/WEW-X work according to the ion exchange principle. The exchange of calcium and magnesium ions for sodium ions causes the water to become soft.

3.4.2 Function

The water softeners feature a control valve for both exchangers and are volume-controlled.

The regeneration is triggered when the pre-set water volume in an exchanger has been softened. The water softeners regenerate with soft water.

3.5 Permissible regenerant

The water softeners must only be operated with salt tablets according to DIN EN 973 type A as regenerant.

► Obey the requirements regarding storage and handling of the regenerant (refer to chapter 4.3).

3.6 Application in the drinking water sector

Country-specific requirements

- Czech Republic:
  According to the czech decree no. 252/2004 softened drinking water should not fall below a soft water hardness of 2 mmol/l (approx. 11°dH)
- Austria:
  In Austria, softened drinking water must have a soft water hardness of at least 8.4 °dH.

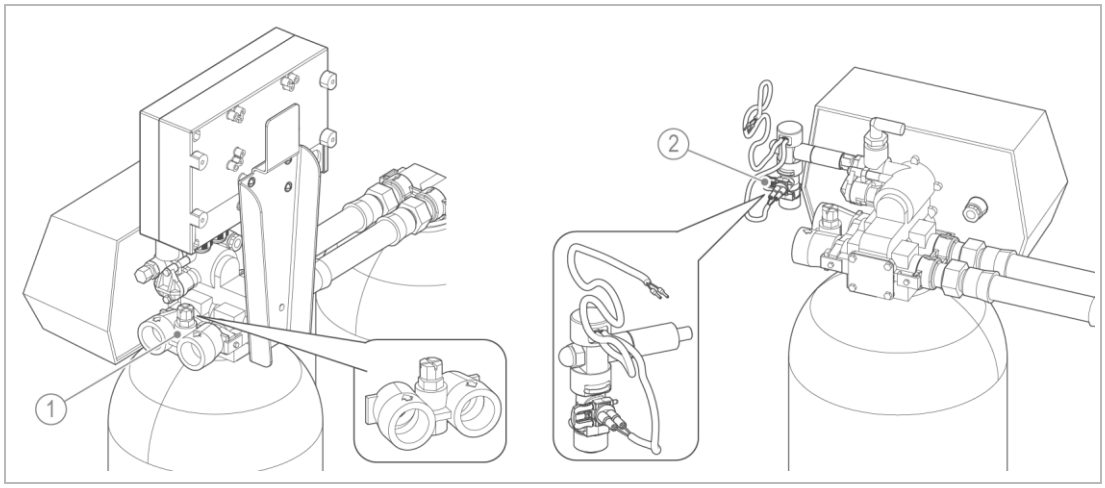
3.6.2 Blending unit

- In case of GENO-mat duo WE-X systems 50/130/230 with economy salting, the connection block with blending valve is supplied as standard.
- For GENO-mat duo WE-X systems 65/150/300 with full salting, this blending unit is available as an accessory.

When softening drinking water, the specifications of the German Drinking Water Ordinance must be adhered to.

- Residual hardness 3 °dH – 8 °dH
- Max. sodium content 200 mg/l

To achieve this, a blending valve to add inlet water is required (refer to chapter 6.3.1).



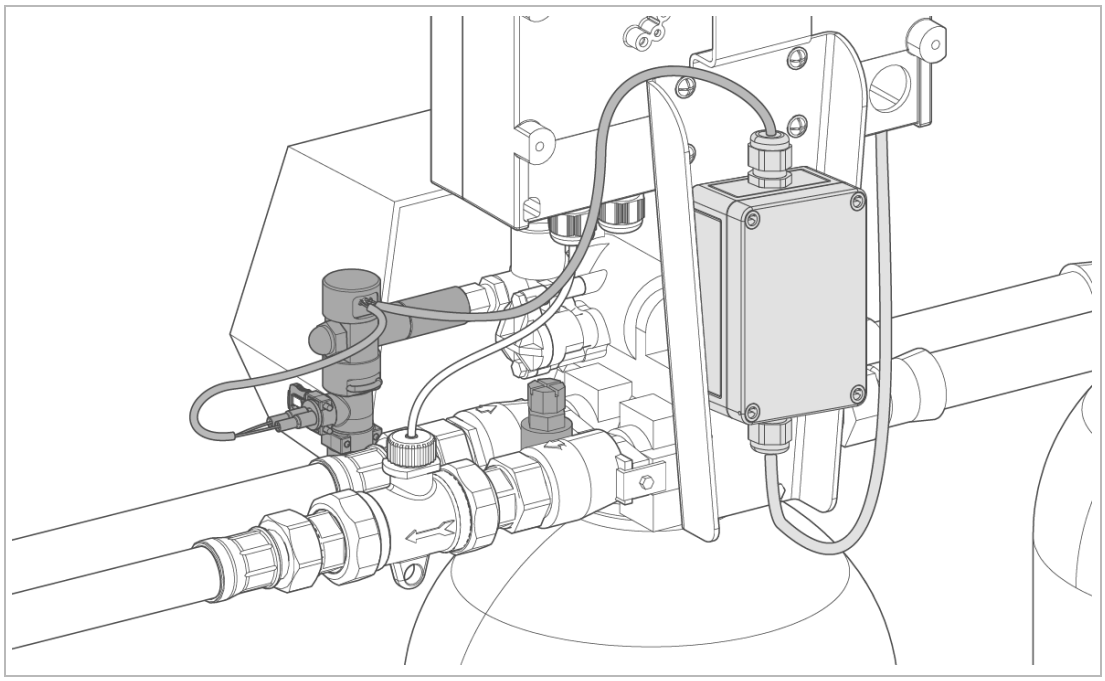
	Designation		Designation
1	Blending unit	2	Disinfection unit (optional)

3.6.3 Disinfection unit (optional for systems with economy salting)

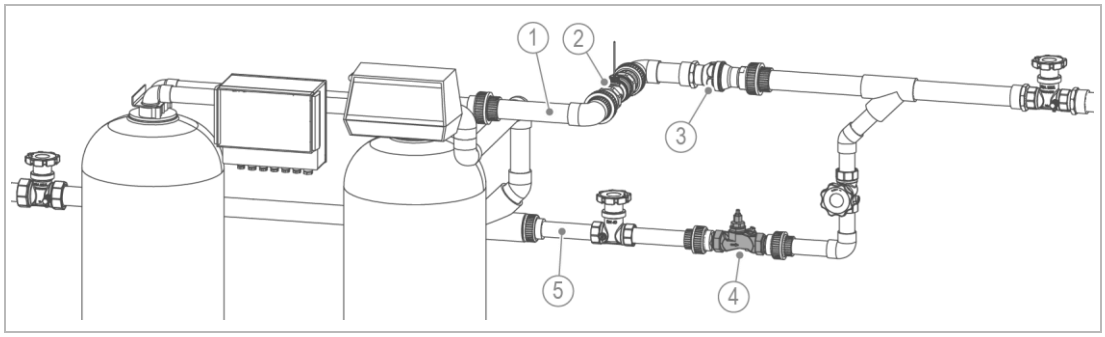
WARNING Contaminated drinking water due to stagnation

- Infectious diseases due to bacterial growth
- ► Make sure that there is a continuous flow and avoid prolonged periods of standstill.
- ► Keep the system connected to the power and water supply, even during longer absences.
- ► Install a disinfection unit which triggers chlorine disinfection with every regeneration.

Installation example with blending unit and optional disinfection unit



Installation example with DN 40 blending (fixed piping)



	Designation
1	Soft water line
2	Water meter
3	Non-return valve

	Designation
4	Mechanical blending valve 1¼"
5	Bypass line (blending line)

3.7 Accessories

You can retrofit your product with accessories. Please contact your local Grünbeck representative or Grünbeck's headquarters in Hoechstaedt/Germany for details.

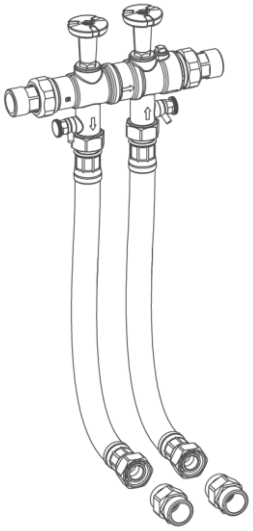
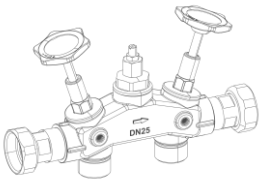
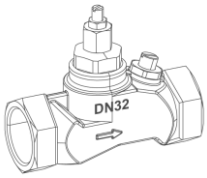
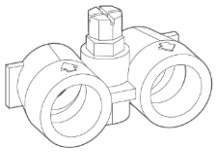
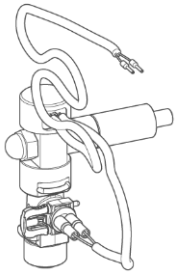
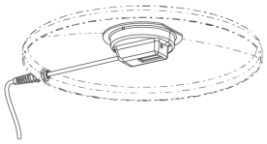
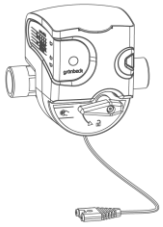
Illustration	Product		Order no.
	**Connection kit**		
		1"	**185 515**
		1¼"	**185 530**
		1½"	**185 545**
	Industrial version	**1"-I**	**185 505**
		1¼"-I	**185 520**
		1½"-I	**185 540**
	For quick connection without mechanical stress of water softeners of the GENO-mat duo series. • Connection block with overflow valve (industrial version without overflow valve) • 2 Shut-off valves for raw and soft water • 2 Sampling valves for raw and soft water • 2 Flexible stainless steel braided hoses		
	**Mechanical blending valve 1"**		**126 010**
	To set a constant residual hardness by blending raw water, irrespective of withdrawal volumes and pressure fluctuations. • 2 Shut-off valves for raw water inlet and blended water outlet • For connection with flexible connection hoses • With water meter screw connections		
	**Mechanical blending valve 1¼"**		**126 015**
	To set a constant residual hardness by blending raw water, irrespective of withdrawal volumes and pressure fluctuations. • Without shut-off valves		

Illustration	Product	Order no.
	**Blending valve 1" with DVGW blending**	**125 809**
	Adapter connection with integrated blending unit R 1" • Included in the scope of supply of duo WE-X 50/130/230 with economy salting • Available as an option for duo WE-X 65/150/300 with full salting.	
	**Disinfection unit duo WE-X 50 – 450 V2**	**182 505**
	Disinfection unit duo WE-X 530 – 750 V2	**182 515**
	For automatic disinfection (chlorine flushing) during each regeneration process according to the NaCl electrolysis principle. • With external power supply unit in the switch box for wiring with control unit GENO-IONO-matic WE • Suitable for GENO-mat duo WE-X systems with economy salting (not suitable for use with GENO-mat duo WEW-X)	
Without illustration	**Voltage-free signal**	**126 890**
	To relay the operating states below to the building management system or systems installed downstream: • Operation Exchanger 1 • Operation Exchanger 2 • Regeneration • Operation	
	**Pre-alarm salt supply**	**185 335**
	For monitoring the salt supply by means of a light sensor. If the salt level in the salt dissolving tank falls below the minimum height, a signal is sent to the water softener and a voltage-free fault signal is triggered. • Mounted on the underside of the lid.	
	**Safety device protectliQ:A25**	**126 405**
	For permanent monitoring of the desired locations in damp rooms. If it detects a water leak, the product automatically closes its valve and shuts off the entire water pipe. • With wired water sensor of 2 m in length • A maximum of up to 2 water sensors can be connected • Battery-operated, optionally with power supply unit at 230 V For other sizes, please inquire.	

4 Transport, set-up and storage

4.1 Shipping/Delivery/Packaging

The system parts/packages are fixed on a pallet at the factory and secured against tipping.

► Upon receipt, immediately check for completeness and transport damage.

NOTE Improper transport

- Damage to system parts due to components falling down.
- The system does not feature any lifting points for lifting by crane and lifting strap – do not lift the system with a crane or lifting device.

► Load/unload the system parts secured on a pallet with a forklift and suitable pallet forks.

4.2 Transport/Set-up

► Transport the product in its original packaging only.

CAUTION Unhandy size of system parts during transport

- Crushing due to slipping and falling system parts

► Transport or lift the system parts with two people.

► Note that the exchanger tanks must only be transported upright (refer to warning notice on the packaging).

► Keep unauthorised persons away when transporting and setting up system parts.

CAUTION Transport over stairs and inclines

- Crushing due to slipping and falling system parts

► Use suitable transport equipment (e.g. a forklift) when transporting the system parts to the installation site via inclines.

► Do not use any self-rolling transport equipment (e.g. lift trucks, trolleys).

► Place the system parts/packages on a level and stable surface. Take the weight of the system parts/packages into account.

4.3 Storage

► Protect the product from the impacts below when storing it:

- Dampness, moisture
- Environmental impacts such as wind, rain, snow, etc.
- Frost, direct sunlight, severe heat exposure
- Chemicals, dyes, solvents and their vapours

4.3.1 Regenerant

► Store the salt tablets in dry and clean rooms only.

► Do not use opened packages.

► Clean the outside of the package before opening it.

5 Installation

The installation of the system represents a major intervention into the drinking water system and must be carried out by a qualified specialist only.

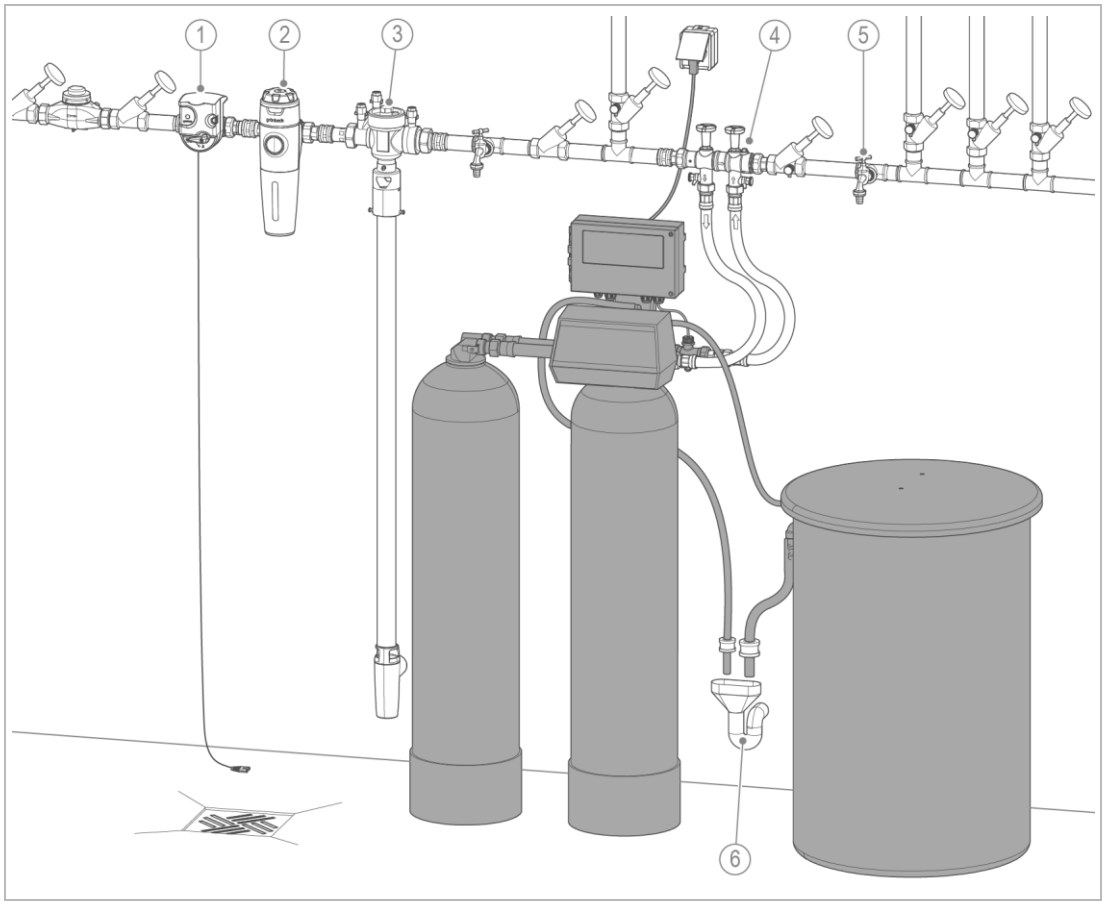
WARNING Contaminated drinking water due to stagnation

- Infection due to bacterial growth
- ► Do not connect the system to the drinking water system until immediately before start-up/commissioning.
- ► Only fill the system with raw water immediately before operation.

NOTE Impurities and corrosion particles in the water supply line

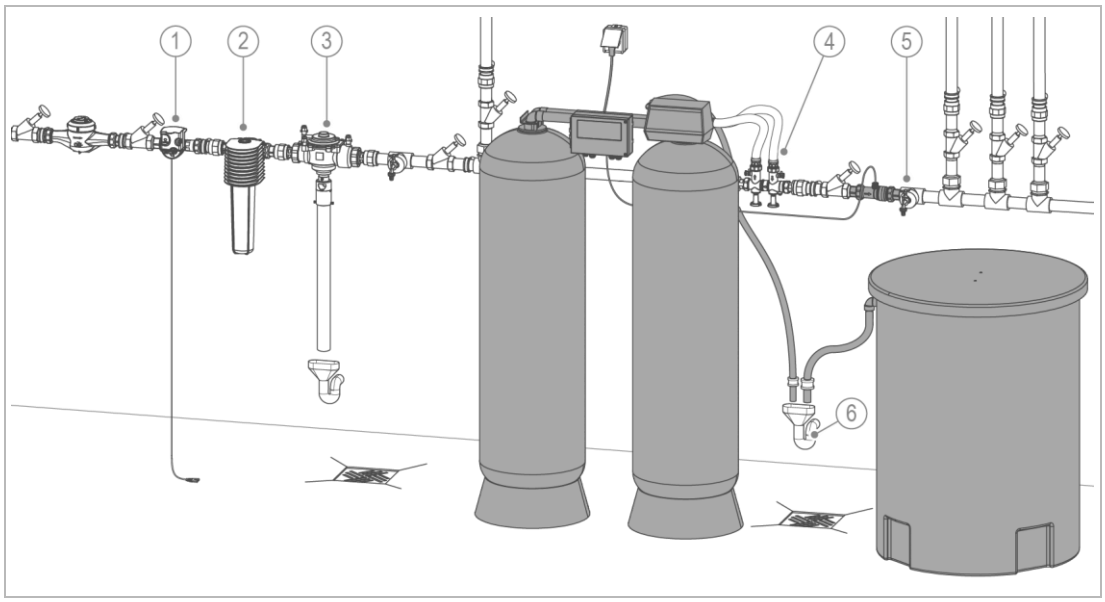
- Damage to the control valve and the exchange resin
- ► Thoroughly flush the water supply line prior to start-up/commissioning.

Installation example I (GENO-mat duo WE-X in DN 25 version)



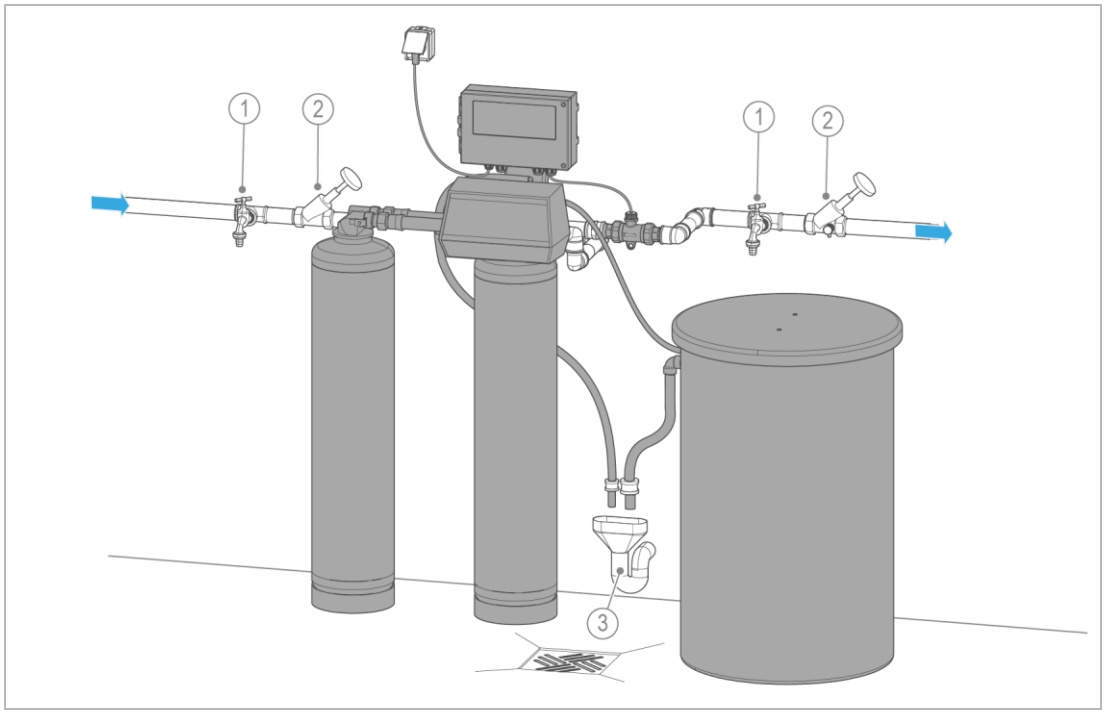
	Designation		Designation
1	Safety device protectliQ	4	Connection kit 1"
2	Drinking water filter pureliQ	5	Water withdrawal point
3	Euro system separator GENO-DK 2	6	Drain connection DN 50 acc. to DIN EN 1717

Installation example II (GENO-mat duo WE-X in DN 40 version)



	Designation		Designation
1	Safety device protectliQ	4	Connection kit 1½"
2	Drinking water filter BOXER	5	Water withdrawal point
3	Euro system separator GENO-DK 2	6	Drain connection DN 50 acc. to DIN EN 1717

Installation example III (GENO-mat duo WEW-X)



	Designation		Designation
1	Water withdrawal point	3	Drain connection DN 50 acc. to DIN EN 1717
2	Shut-off valve		

5.2 Requirements for the installation site

Obey the local installation directives, general guidelines and technical specifications.

- Protection from frost, severe heat exposure and direct sunlight
- Protection from chemicals, dyes, solvents and their vapours
- Ambient temperature and radiation temperature in the immediate vicinity of the GENO-mat duo WE-X
  - ≤ 25 °C for applications in the drinking water sector
  - ≤ 40 °C for purely technical applications
- Protection from heat sources (e.g. heating systems, boilers and warm water pipes) for GENO-mat duo WE-X
- Access for maintenance work (take note of space required)
- Sufficiently illuminated as well as aerated and ventilated
- Horizontal installation surface with sufficient load-bearing capacity to support the operating weight of the product

- The soft water pipe downstream of the system must be made of corrosion-resistant material or a corrosion inhibitor must be used.

- If you require a constant soft water hardness (e.g. boiler feed water), we recommend installing a hardness control measuring device such as softwatch or GENO-control.

Space required

- There must be a clearance of at least 800 mm in front of the system for operation.
- To set up the system, comply with the recommended foundation dimensions (refer to chapter 12).

Water installation

- Drinking water filter installed upstream as well as pressure reducer, if necessary (e.g. fine filter pureliQ:KD or BOXER KDX), for GENO-mat duo WE-X
- Warm water filter installed upstream as well as pressure reducer, if necessary, for GENO-mat duo WEW-X
- Floor drain or corresponding safety device with water stop function (e.g. safety device protectliQ)
- Salt water resistant lifting system in case the drain connection is located at a higher level
- Drain connection ≥ DN 50
- Euro system separator (e.g. GENO-DK 2) upstream of the product
- Shut-off valves and possibility of sampling upstream and downstream of the product

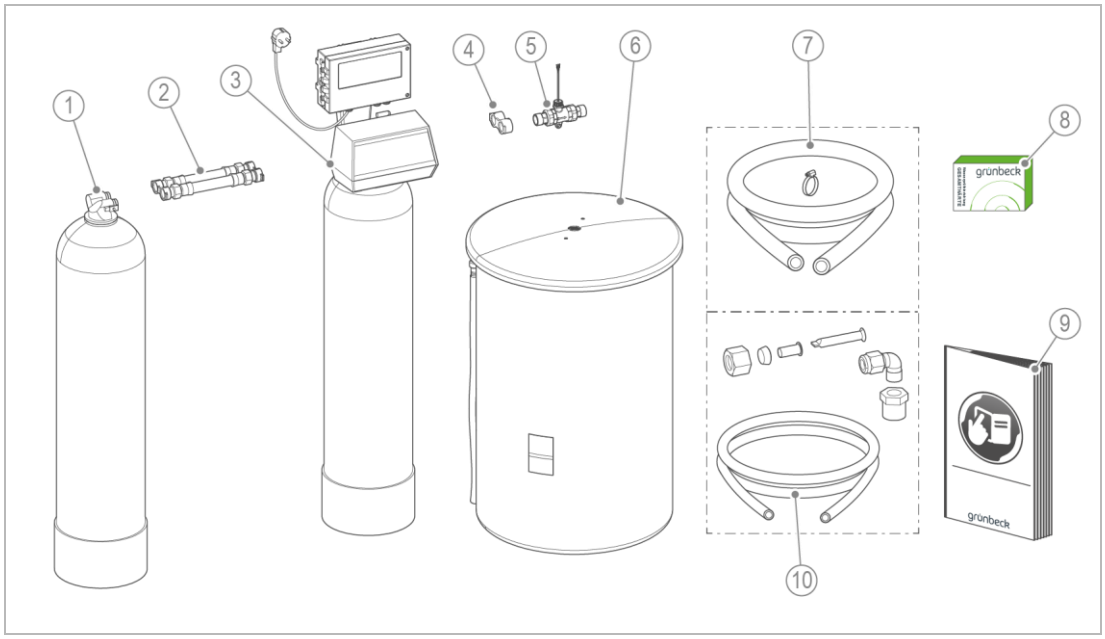
Electrical installation

- Schuko socket with continuous power supply (max. about 1.2 m from the control unit)

5.3 Checking the scope of supply

5.3.1 GENO-mat duo WE-X/WEW-X in DN 25 version

The exchangers are filled with ion exchange resin at the factory.

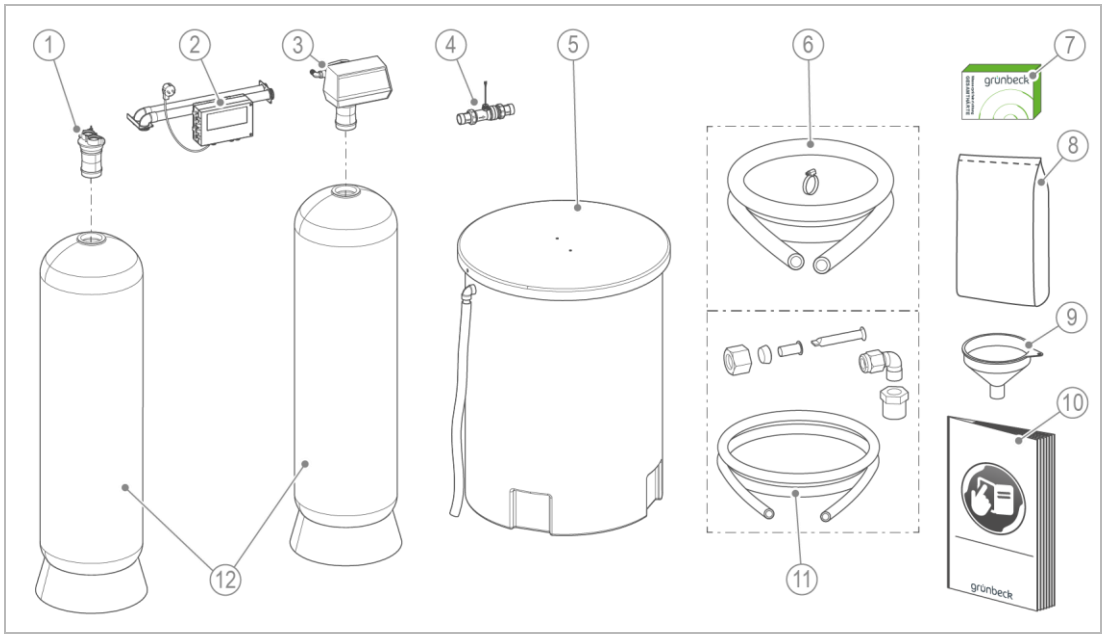


	Designation
1	Exchanger tank 2
2	Connecting hoses with connection adapters
3	Exchanger tank 1 with control valve and control unit
4	Connection block (for full salting) Blending valve 1" with DVGW blending (in case of economy salting)
5	Water meter

	Designation
6	Salt dissolving tank with brine valve and overflow hose
7	Flushing water hose, 3 m in length
8	Water test kit “Total hardness”
9	Operation manual
10	Brine hose for brine valve including connecting accessories

► Check the scope of supply for completeness and damage.

5.3.2 GENO-mat duo WE-X in DN 40 version



	Designation
1	Bottle adapter
2	Connecting pipes with control unit and screw connection
3	Control valve
4	Water meter
5	Salt dissolving tank with brine valve and overflow hose
6	Flushing water hose, 3 m in length

	Designation
7	Water test kit “Total hardness”
8	Ion exchange resin
9	Filling funnel
10	Operation manual
11	Brine hose for brine valve including connecting accessories
12	Exchanger tanks 1 and 2

► Check the scope of supply for completeness and damage.

5.4 Water installation

The system only functions if it is set up correctly.

► Always place the exchanger tank with control valve on the right-hand side (seen from the front).

CAUTION Exchanger tanks can tip and fall over

- Pushing/crushing people

► Transport the exchanger tanks in their original packaging to the installation site.

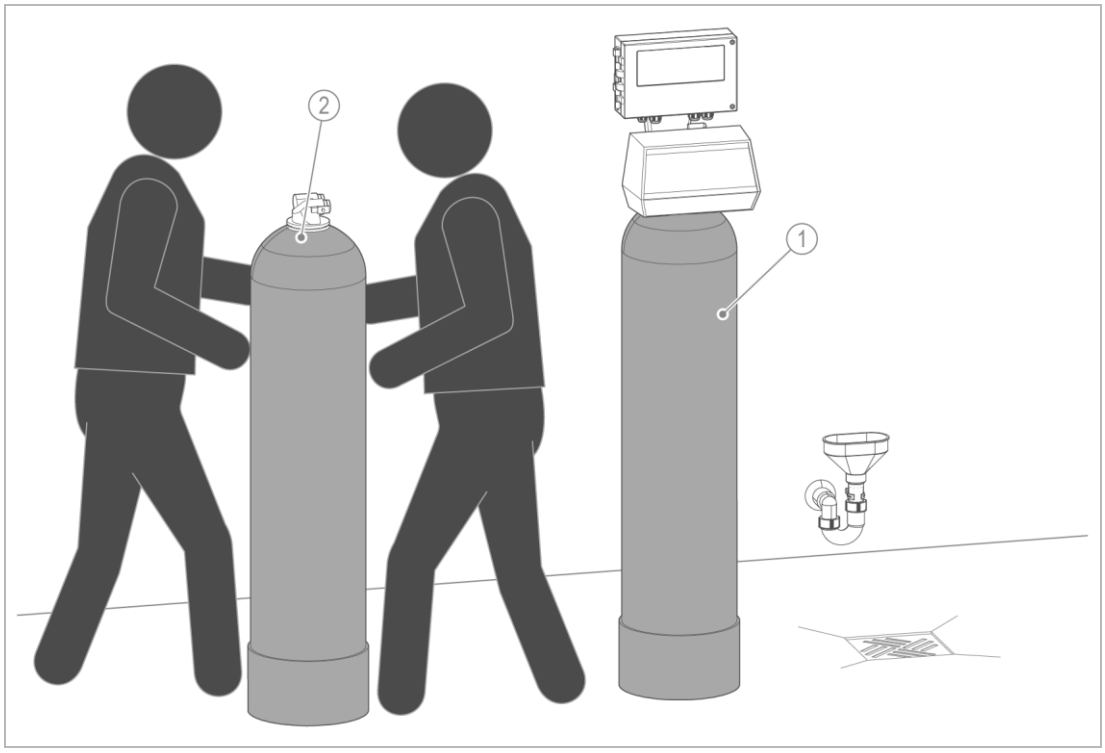
► Always set up the exchanger tank with at least two people.

► Move the exchanger tank in an upright position – do not tilt it.

► Place the exchanger tank on a level surface.

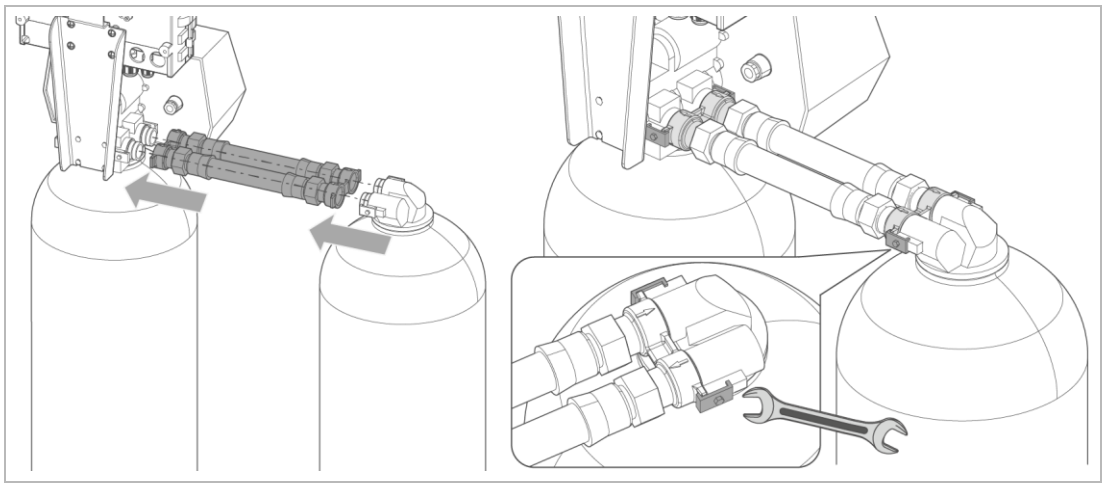
► Secure the exchanger tank against tipping over, if necessary.

5.4.1 GENO-mat duo WE-X/WEW-X in DN 25 version

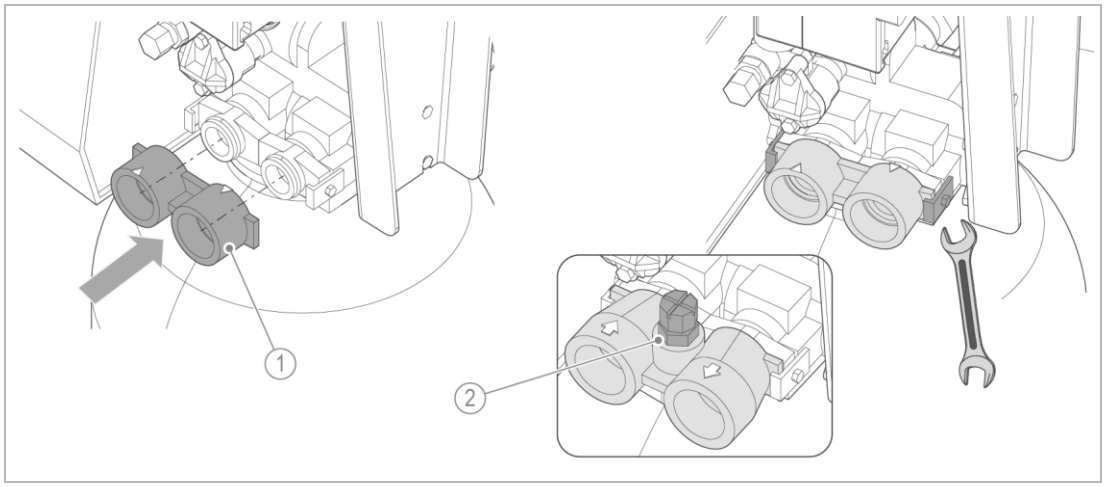


	Designation		Designation
1	Exchanger tank 1 with control valve and control unit	2	Exchanger tank 2

3. Set up exchanger tank 1 with control valve on the right-hand side.
4. Set up exchanger tank 2 on the left-hand side.
5. Position the two exchanger tanks in such way that the space required to operate the system is maintained.



6. Install the connecting hoses between the control valve and the bottle adapter
   - **a** Undo the metal clamps.
   - **b** Plug on the coupling elements.
   - **c** Clamp the coupling elements with metal clamps.



	Designation		Designation
1	Connection block	2	Blending valve 1"

In case of GENO-mat duo WE-X 65/150/300 with full salting, the standard connection block is to be installed.

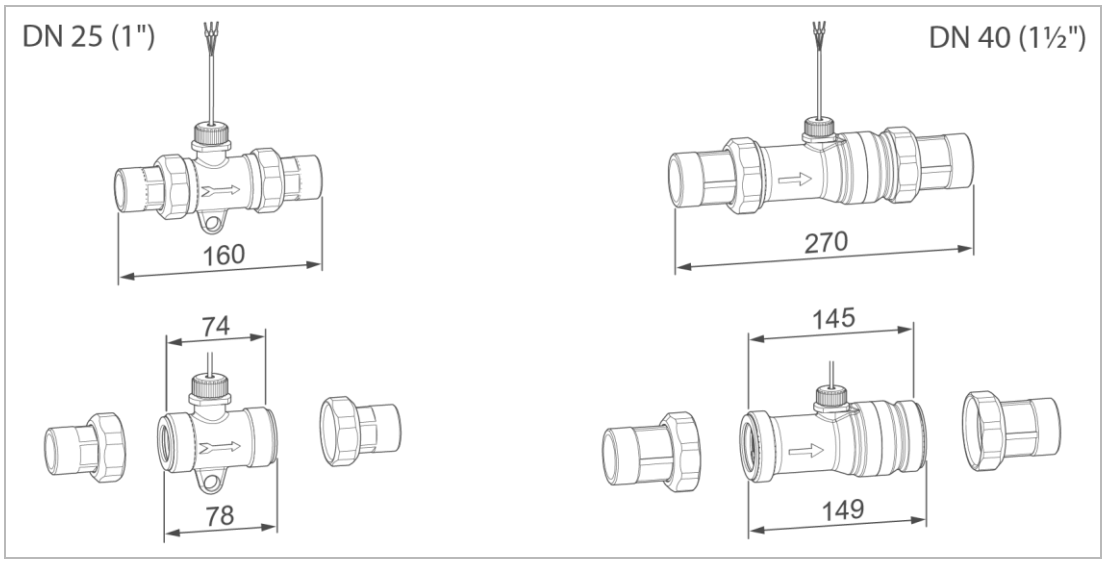
In case of GENO-mat duo WE-X 50/130/230 with economy salting, the connection block with blending valve is to be installed.

7. Install the connection block on the water connection. Make sure that the adjustment sleeve on the blending valve points upwards.
   - **a** Undo the metal clamps.
   - **b** Plug on the connection block.
   - **c** Clamp the connection block with metal clamps.

5.4.1.1 Connecting the water lines and installing the water meter

► Thoroughly flush the water supply line to flush out dirt and corrosion particles from the supply line.

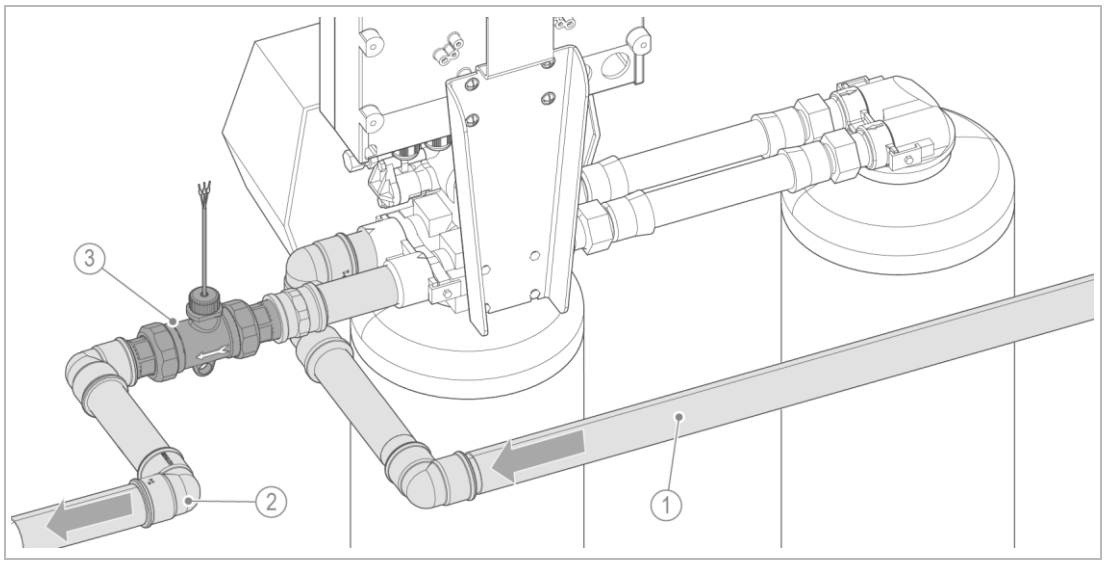
Installing the water meter



1. Prepare the soft water line for the installation of the water meter.
2. Comply with the flow direction and take the installation dimensions into account.

» The Hall sensor must point upwards.

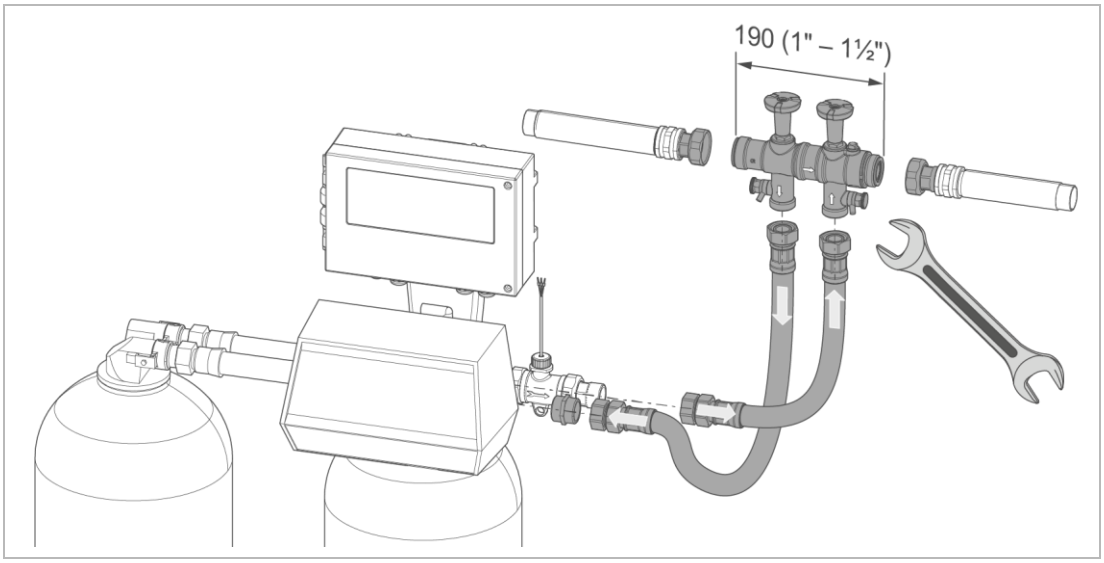
Installation with fixed piping by client on site



	Designation		Designation
1	Raw water pipe (inlet)	3	Water meter
2	Soft water line (outlet)		

1. Connect the raw water and soft water line.
2. Install the water meter in the soft water line.

Installation with connection kit



1. Install the screw connection into the pipe.
2. Install the connection block of the connection kit – comply with the flow direction.
3. Install the water meter on the connection of the soft water outlet.

NOTE Incorrect installation of connection hoses

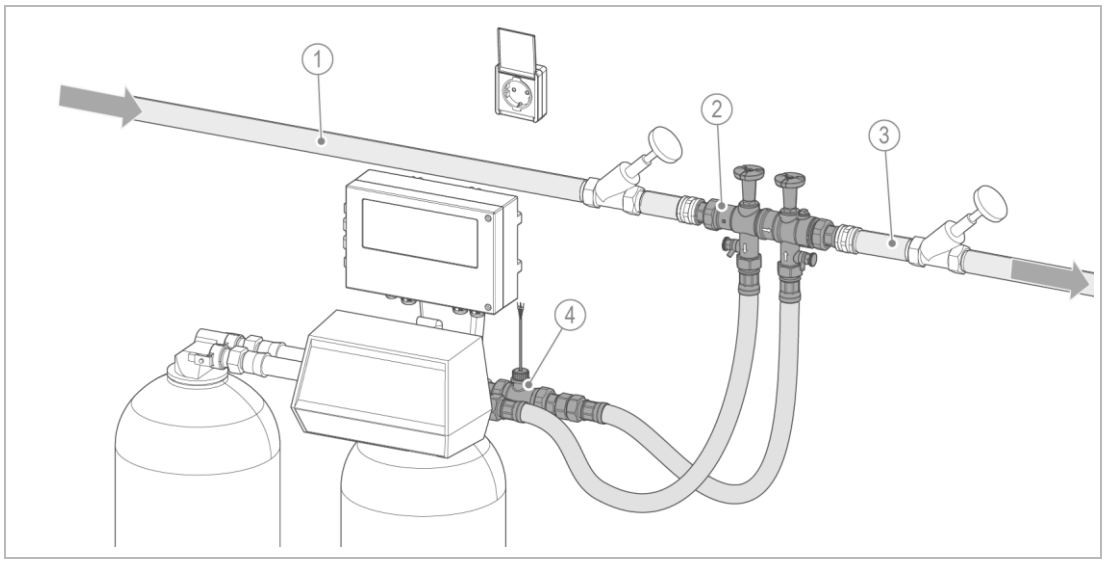
- Risk of damage/impairment of the system function in case of incorrect installation.

► Make sure that the connection hoses are not squeezed, kinked or twisted when connecting them.

► Firmly hold the connection hoses when tightening the union nuts.

► Make sure that the bending radius of the connection hoses is not too small (at least 10 x hose Ø).

4. Install the connection hoses on the connection block and on the connections of the water softener.



	Designation		Designation
1	Raw water line	3	Soft water sample
2	Connection kit	4	Water meter

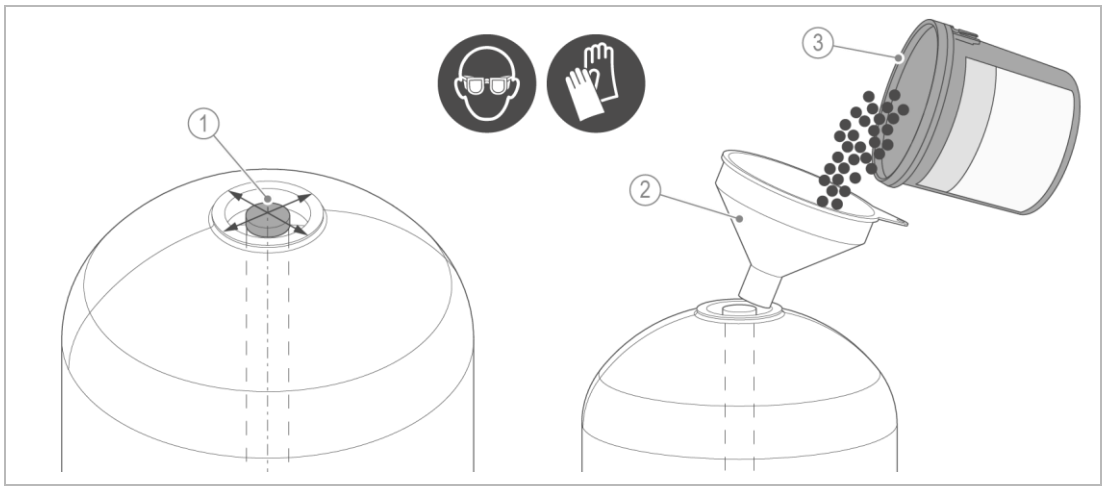
5.4.2 GENO-mat duo WE-X in DN 40 version

5.4.2.1 Filling the exchanger tanks

The exchangers tanks must be filled with exchange resin by the client on site.

System	WE-X 330 and WE-X 450	WE-X 530 and WE-X 750
Resin volume per exchanger	115 l	200 l

► Fill the exchanger tanks one after the other and proceed as follows:



	Designation		Designation
1	Cap of riser pipe	3	Exchange resin
2	Funnel		

1. Check that the riser pipe is closed by the cap.

The cap prevents the exchange resin from entering the riser pipe.

The riser pipe must be centred, so that the bottle adapter and the control valve can be installed.

2. Centre the riser pipe in the exchanger tank.
3. Carefully fill in the exchange resin using the funnel.

CAUTION Spilled exchange resin

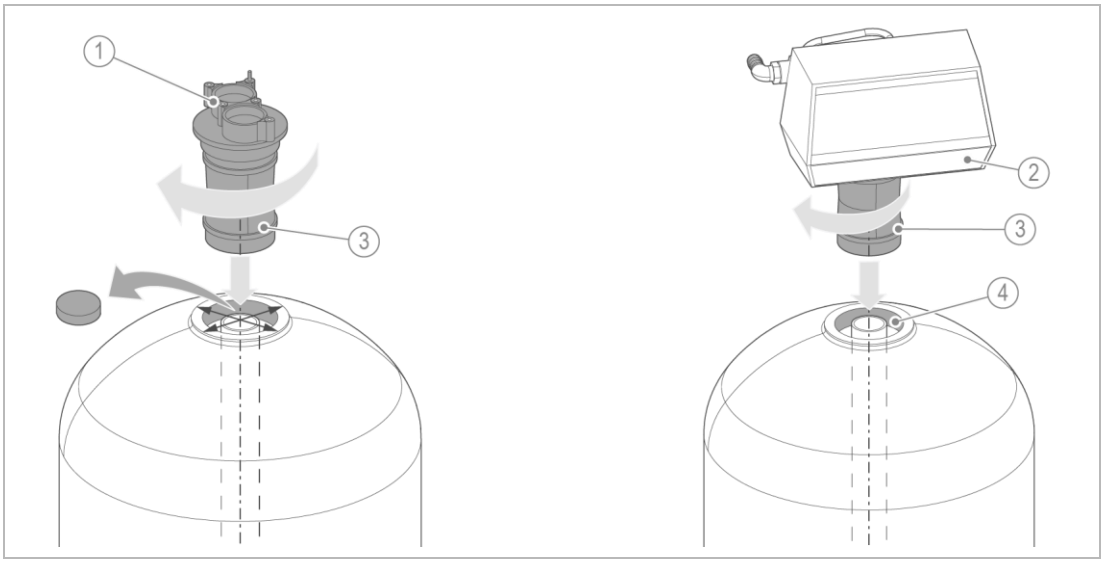
- Bruises/bumps due to slipping

► Collect spilled exchange resin immediately.

4. Remove the funnel.
5. Clean the sealing surfaces and the thread of each exchanger tank from adhering exchange resin.

5.4.2.2 Installing the control valve and the bottle adapter

► Install the control valve and the bottle adapter one after the other.

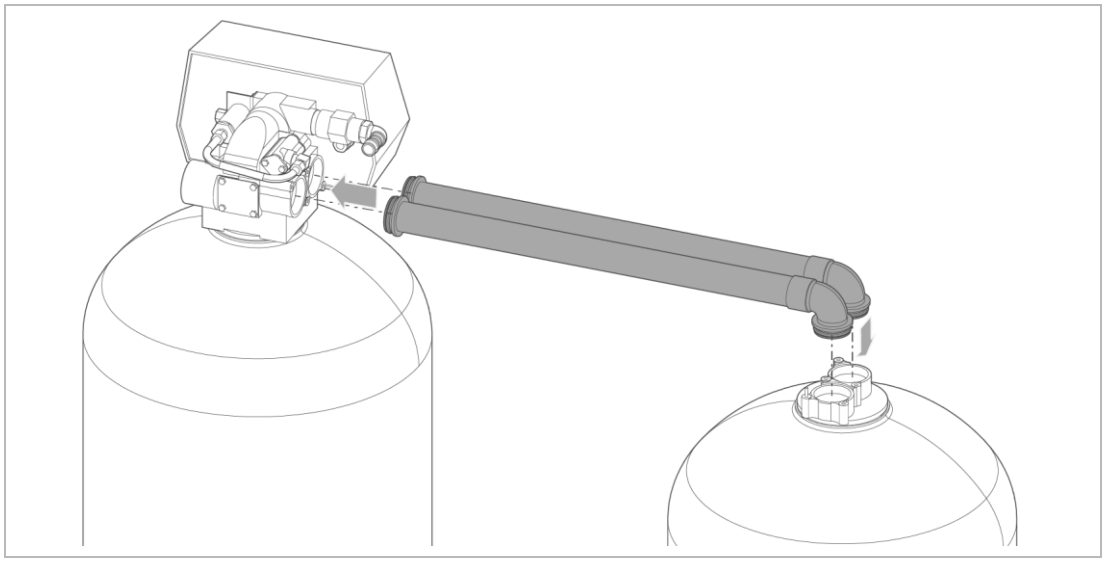


	Designation		Designation
1	Bottle adapter	3	Head nozzle
2	Control valve	4	Thread/sealing surfaces

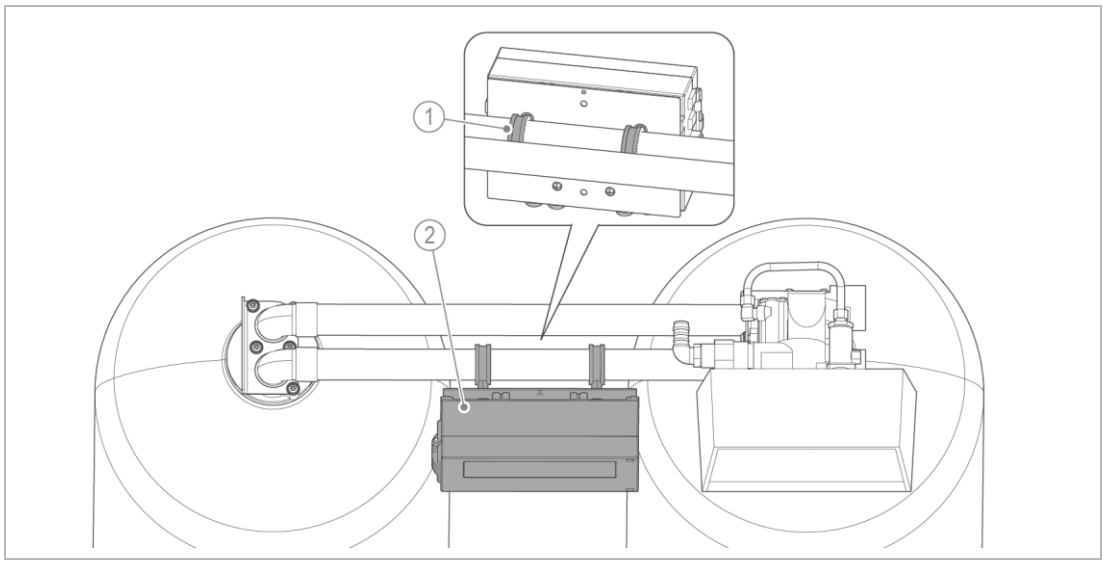
1. Check that the riser pipe is accurately centred.
2. Remove the cap from the riser pipe.
3. Push the head nozzle of the control valve from above over the riser pipe of the exchanger tank on the right.
4. Fix the control valve on the exchanger tank by turning it clockwise

5. Push the head nozzle of the bottle adapter from above over the riser pipe of the exchanger tank on the left.
6. Fix the bottle adapter on the exchanger tank by turning it clockwise.

Obey the attached mounting instructions for the installation of the connecting pipes.



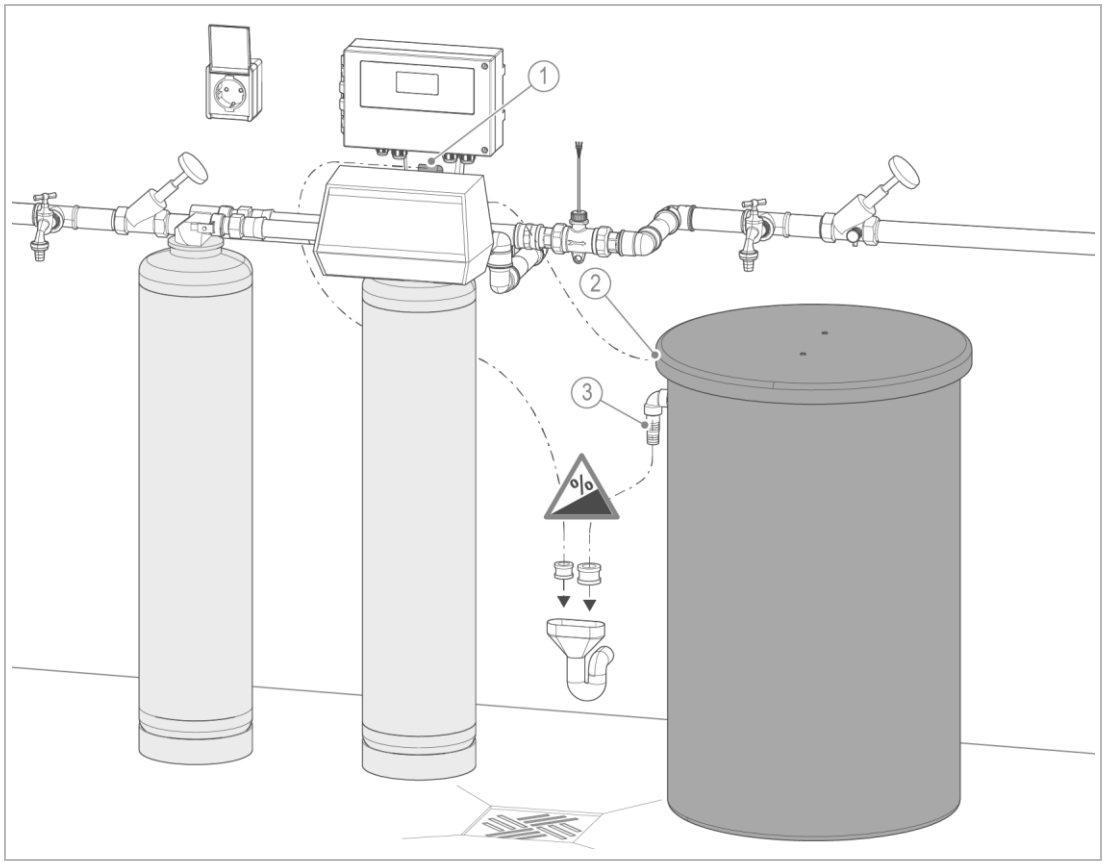
7. Install the connecting pipes between the control valve and the bottle adapter.
8. Fix the connecting pipes using the screw connections.



	Designation		Designation
1	Pipe clamp	2	Control unit

9. Fix the control unit on the connecting pipe using the pipe clamps.

5.5 Setting up and connecting the salt dissolving tank

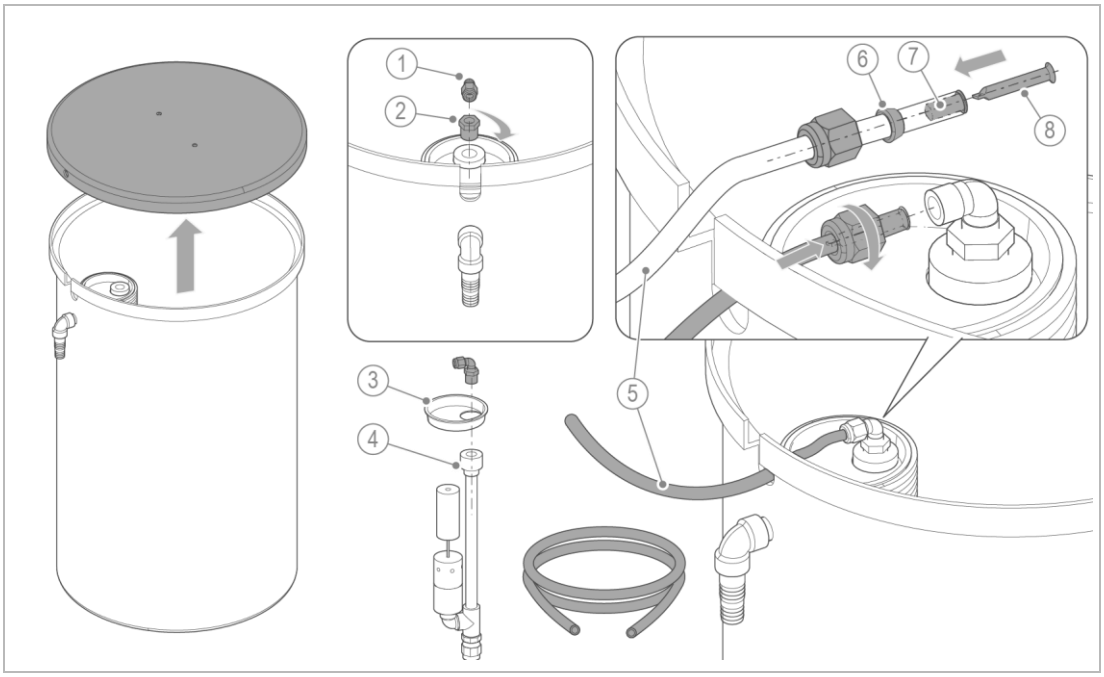


	Designation		Designation
1	Flushing water pipe	3	Overflow hose
2	Brine hose		

1. Place the salt dissolving tank in the immediate vicinity of the water softener.
   a. Take the length of the hoses of the salt dissolving tank and of the water softener into account.
   b. Take the space required to fill the salt dissolving tank with salt tablets into account.

5.5.1.1 Connecting the brine hose

Fastening the brine hose on the brine valve



	Designation		Designation
1	Elbow union	5	Brine hose
2	Transition nipple	6	Crimp ring
3	Lid of brine valve	7	Support sleeve
4	Brine valve	8	Filter

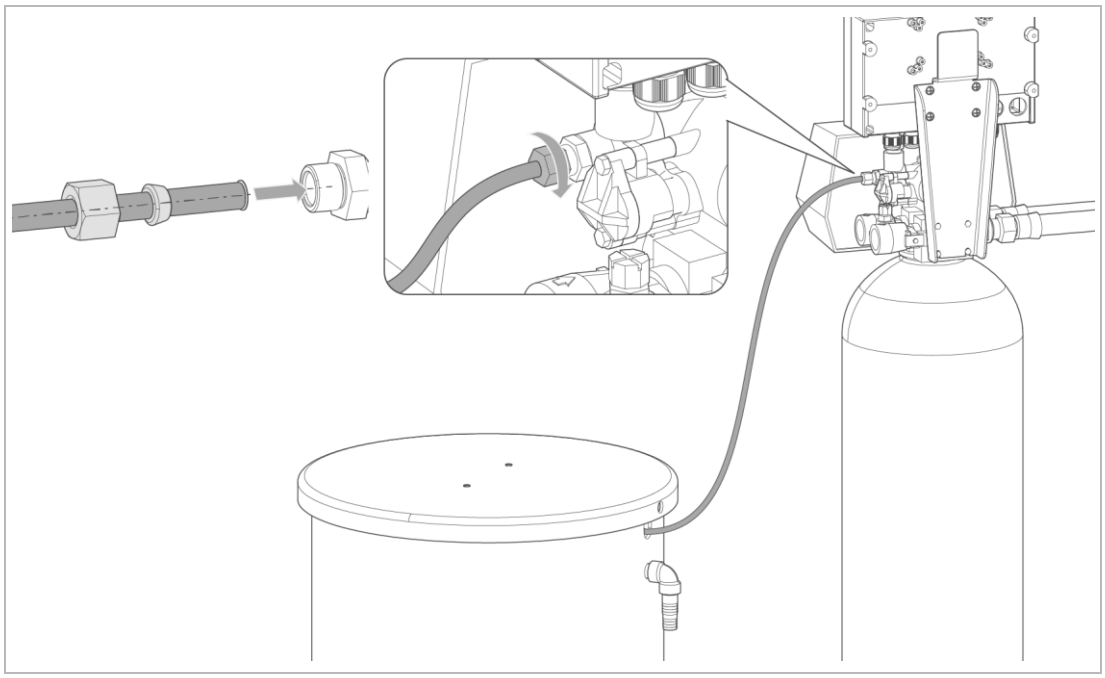
1. Remove the lid of the salt dissolving tank.

You can remove the brine valve to make installing the brine hose easier.

► Remove the yellow lid and pull out the brine valve upwards.

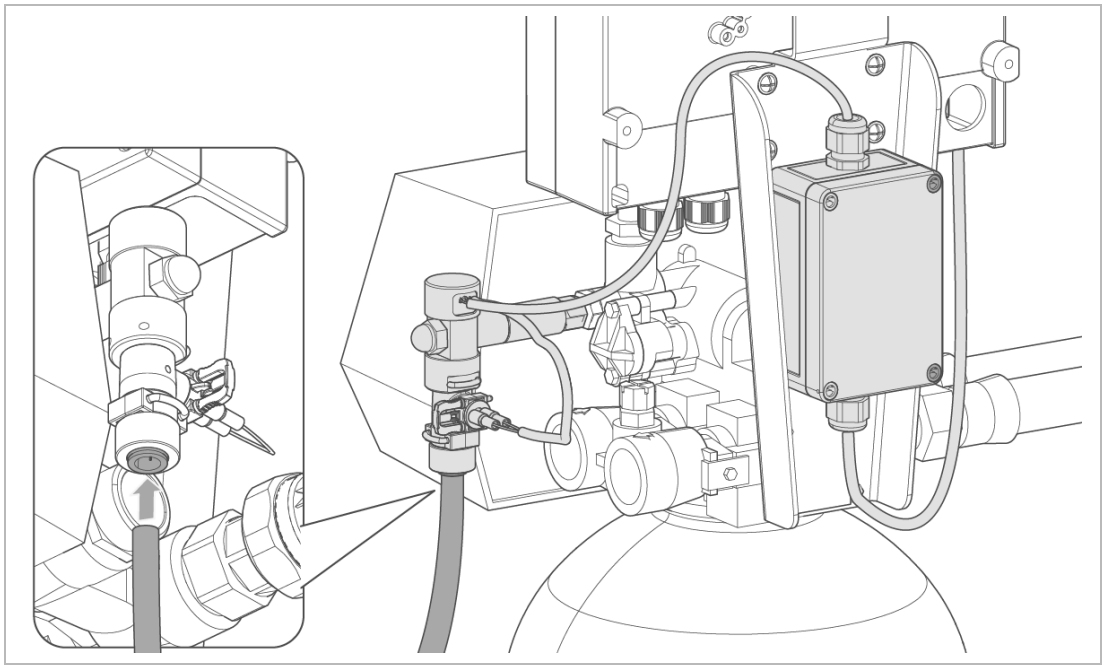
2. Screw the transition nipple and the elbow union into the brine valve.
   a The GENO-mat duo WE-X systems 530/750 do not require the transition nipple.
3. Shorten the brine hose to the required length, if necessary.
4. Push in the support sleeves on both ends of the brine hose.
5. Push the filter into the brine hose.
6. Fasten the brine hose with inserted crimp ring and union nut on the brine valve.
7. Put the brine valve and the yellow lid back in again, if removed.

Fastening the brine hose on the injector



8. Fasten the brine hose on the injector with crimp ring, inserted support sleeve and union nut on the injector.

Fastening the brine hose on the (optional) disinfection unit



9. Insert the brine hose into the plug-in connection as far as it will go.
10. Check the brine hose for a tight fit – briefly pull on the brine hose.

» The ring of the plug-in connection blocks the brine hose against being pulled out.

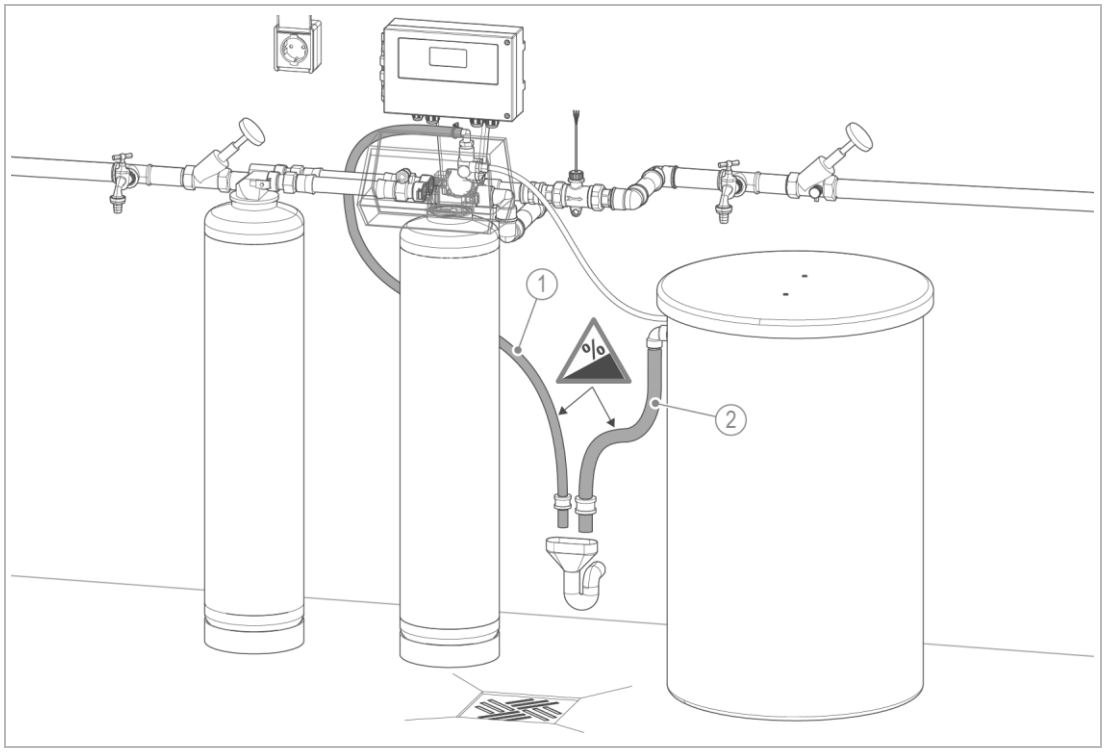
► To disengage the plug-in connection, press and hold the ring and pull on the brine hose at the same time.

5.5.1.2 Establishing the waste water connection

NOTE Build-up of waste water in the flushing water hose

- Damage to the system and malfunction
- ► Make sure not to bend the flushing water hose or not to route it higher than the system height.

According to DIN EN 1717, a free outlet and a backflow-free discharge of the flushing water must be guaranteed.



	Designation		Designation
1	Flushing water hose	2	Overflow hose

1. Fix the flushing water hose on the connection of the control head using the clamp.
2. Shorten the flushing water hose to the required length, if necessary.
3. Route the flushing water hose with a downward slope to the drain and fix it.
4. Route the overflow hose of the salt dissolving tank to the drain and fix it.

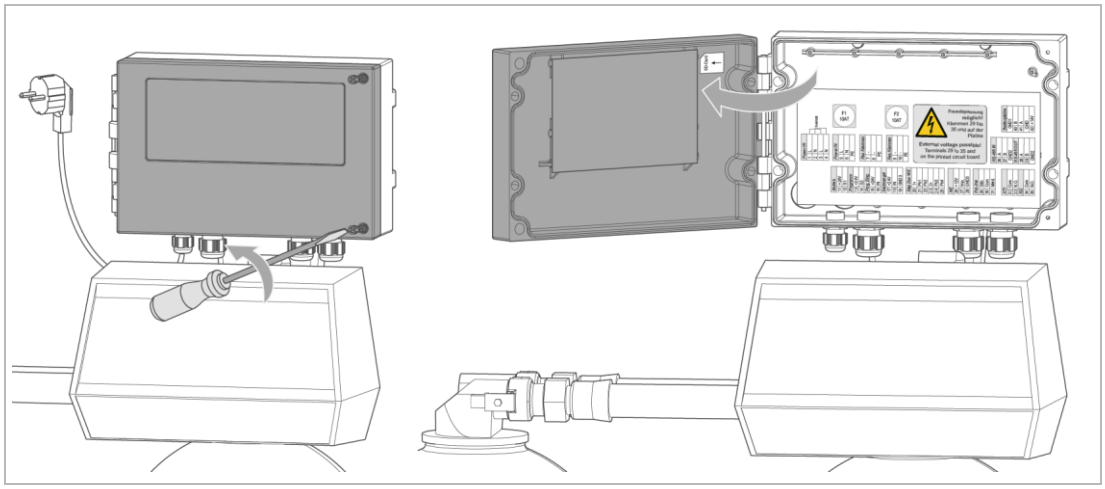
5.6 Electrical installation

The electrical installation must be carried out by a qualified electrician only.

DANGER Life-threatening voltage

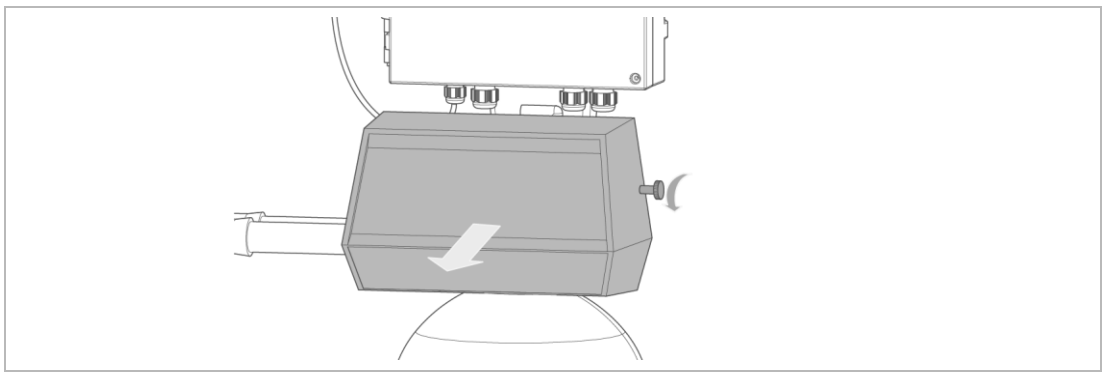
- Severe burns, cardiovascular failure, fatal electric shock
- ► Only have qualified electricians carry out electrical work on the system.

5.6.1 Opening the control unit



1. Make sure that the system is de-energised.
2. Unscrew both screws of the cover.
3. Swing open the cover.

5.6.2 Opening the control valve



1. Unscrew the two knurled screws on the sides
2. Remove the cover of the control valve – pull it off towards the front.

5.6.3 Terminal strip of main circuit board

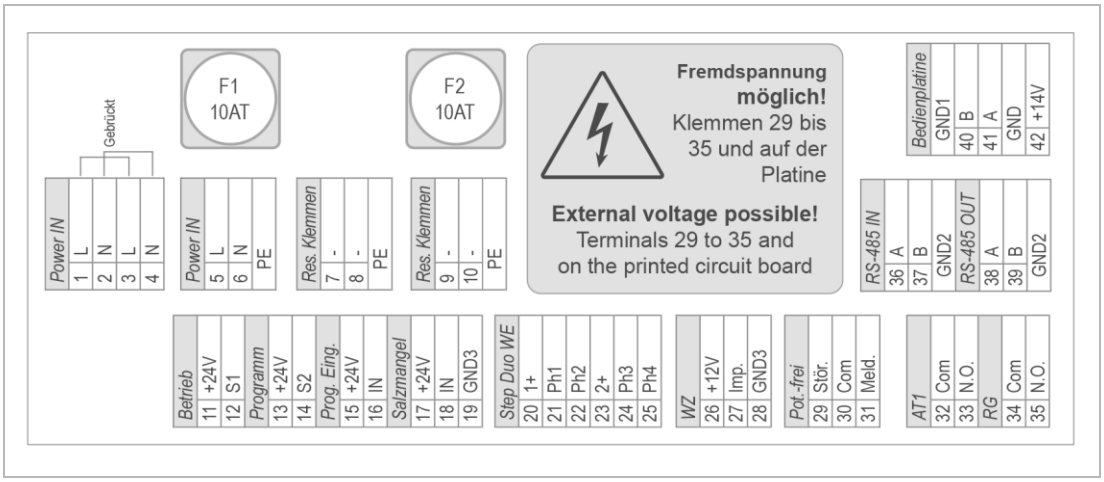
WARNING External voltage possible at voltage-free contacts and on the main circuit board.

- Risk of electric shock when connected to 230 V.
- ► Do not open any switch boxes or other parts of the electrical equipment if you are not a qualified electrician.
- ► Unplug the system's mains plug before working on electrical components.
- ► Obey the warning labels in the control unit.

If the chlorine cell is connected to terminals 30 and 31, no fault signal must be connected.

- ► Connect the components below to the terminal strip:

- Water meter (terminals 26 – 28)
- Microswitch of control valve (terminals 11 – 14)
- Step motor of control valve (terminals 20 – 25)



5.6.3.1 Line connections within the water softener

The line connections below are pre-installed in the system at the factory and must not be modified:

► Connect cables marked with * on site.

Term.	Signal	Colour	Function		Line	Comments
1	L	BN	Mains supply Control unit L		0.75 mm²	Terminals 1 and 3 bridged
2	N	BU				
3	L	BN	Mains supply Control unit N		0.75 mm²	Terminals 2 and 4 bridged
4	N	BU				
5	L	BN	Power supply 230 V~		H05VV-F 3G0.75 mm²	Mains supply line
6	N	BU				
PE		GN/YE				Protective conductor
7	L	BN	Switching contact Power relay K800			For connection of chlorine cell (power supply unit in switch box, 125 098)
8	N	BU				
PE		GN/YE				
9			Reserved terminals			
10						
PE						
11	+ 24 V=	BK	Microswitch Control valve*	1	ÖVPC-OZ 3x0.5 mm²	3 Terminals on the right of the terminal strip on the brine valve
12	S1	YE		2		
13	+ 24 V=			–		
14	S2	OG		3		
20	+ 24 V=	GN	Step motor Control valve*	BU	LiYY 7x0.25 mm²	3 Terminals on the left on the brine valve
21	Ph1	BN		YE/BK or BR/RD		
22	Ph2	GY		BK		
23	+ 24 V=	WH		BU		3 terminals in the middle on the brine valve
24	Ph3	YE		YE		
25	Ph4	PK		RD		
26	+12 V=	WH	Water meter *		LiYY 3x0.25 mm²	
27	Pulse	GN				
28	GND	BN				
32	COM		Voltage-free contact, closed when exchanger tank 1 is in operation			Switching capacity max. 30 V~/1 A
33	NOC					
34	COM		Voltage-free contact, closed during regeneration			
35	NOC					
	GND1	WH	Connection to operating board of control unit		LiYY 5x0.34 mm²	Plug
40	B	GY				
41	A	GN				
	GND	YE				
42	+14 V=	BN				

5.6.3.2 Line connections to external or optional components

Term.	Signal	Colour	Function	Line	Comments
15	+24 V=		Programmable input		
16	IN				
17	+24 V=	BN	Optional pre-alarm salt supply	LiYY 4x0.25 mm²	
18	IN	BK			
19	GND3	BU			
29	Fault		Collective fault		Each max. 250 V~ / max. 3 A
30	Com		Common root		
31	Sign.		Signal contact		

5.6.3.3 Line connections to interconnected GENO-OSMO-X reverse osmosis

Term.	Signal	Function		Line	Comments
36	RS -485 A	Bus line to control unit OSMO-X	93	LiYcY 3x0.25 mm² (*)	
37	RS -485 B		94		
	GND2		95		
38	RS -485 A	Bus line to control unit Pressure booster system GENO-FU (HR)-X	96	LiYcY 3x0.25 mm² (*)	
39	RS -485 B		97		
	GND2		98		

(*) A shielded line is required in case the length of the line is > 20 m. The shield must be connected to a vacant PE terminal on one side.

5.6.3.4 Interface RS-485
Data line to interconnected subsystems Water softener and/or Pressure booster

Connecting terminating resistors

If more than two subsystems are interconnected or if the length of the line between the two is > approx. 20 m, the so-called terminating resistors have to be connected to the two "endpoints" by means of DIP switches.

RS485 interconnection between	Terminating resistors to be connected in case of	
GENO-mat duo WE-X + GENO-OSMO-X	GENO-mat duo WE and GENO-OSMO-X (*)	
GENO-OSMO-X + pressure booster	GENO-OSMO-X + pressure booster (*)	
GENO-mat duo WE-X + GENO-OSMO-X + pressure booster GENO-FU (HR)-X	GENO-mat duo WE	Pressure booster

(*) For length of line RS-485 > approx. 20 m

In case of GENO-OSMO-X:

The terminating resistors are aligned below the sheet cover of the main circuit board.

- Near terminal 43 (connection to water softener GENO-mat duo WE-X)
- Near terminal 47 (connection to pressure booster)

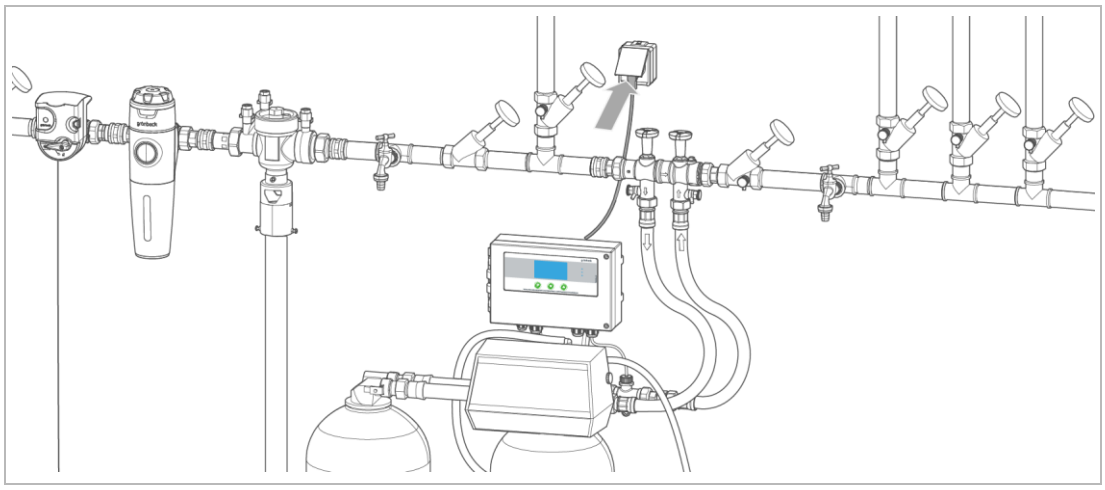
In case of control unit IONO-matic WE or PBS (pressure booster) controller:

- Near terminal 36

6 Start-up/commissioning

The initial start-up/commissioning of the product must be carried out by technical service personnel only.

6.1 Connecting the product to the power supply



1. Close the cover of the control valve.
2. Close the cover of the control unit.
3. Check that all current-carrying lines are properly routed and not damaged.
4. Plug the mains plug into the socket.

» The control unit switches on.

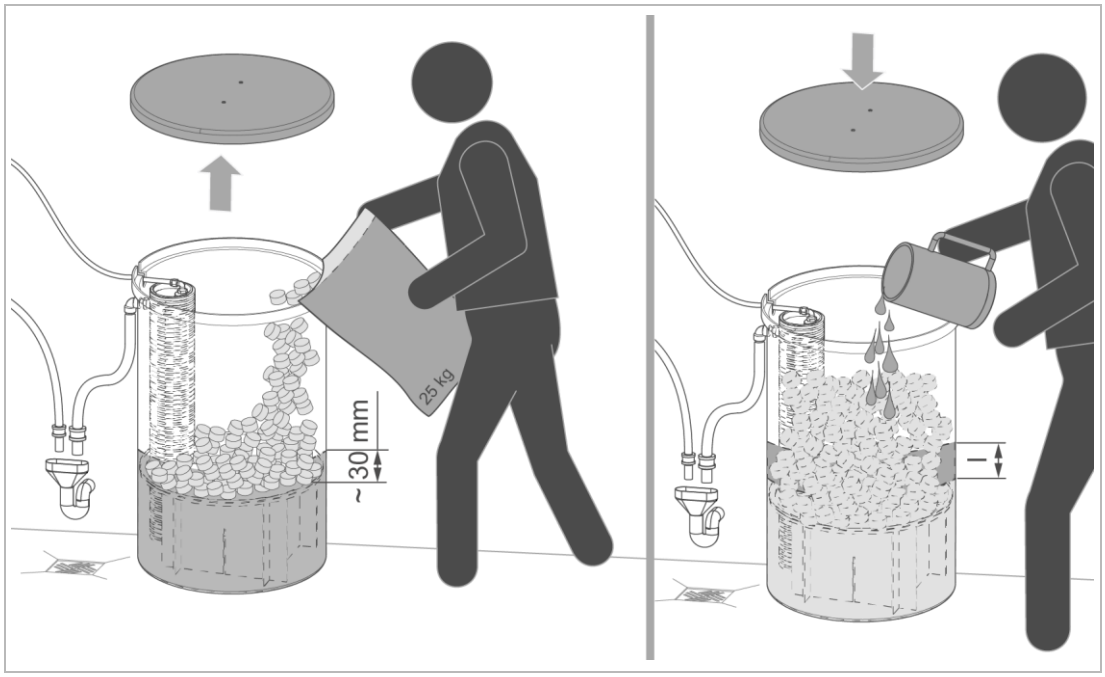
6.2 Filling the salt dissolving tank

NOTE Contaminated salt

- Malfunctions on the brine valve and the injector of the control valve.

► Use pure salt tablets according to DIN EN 973 A only.

► Prevent contamination by storing the salt tablets properly (refer to chapter 4.3.1).



1. Remove the lid of the salt dissolving tank.
2. Fill the salt dissolving tank with raw water until the water level is about 30 mm above the sieve bottom.
3. Fill the entire salt dissolving tank with salt tablets.

GENO-mat duo WE-XU/WEW-X (full salting)		65	150	300	450	750
Max. salt supply of standard salt dissolving tank	kg	130	190	285	485	760

GENO-mat duo WE-X (economy salting)		50	130	230	330	530
Max. salt supply of standard salt dissolving tank	kg	65	130	190	285	285

4. Fill in the operating water volume (raw water).

GENO-mat duo WE-XU/WEW-X (full salting)		65	150	300	450	750
Operating water volume, approx.	l	10	22	45	70	111

GENO-mat duo WE-X (economy salting)		50	130	230	330	530
Operating water volume, approx.	l	5	11	23	32	44

5. Close the lid of the salt dissolving tank.

► Dispose of the dust-like fine fraction from the bag with your residual waste.

6.3 Setting the product

6.3.1 Blending hardness/sodium concentration in the water

When softening drinking water, a sodium concentration of max. **200** mg/l must not be exceeded.

When softening water by 1 °dH, the sodium concentration increases by approx. **8.2** mg/l.

The permitted blending hardness results from the limit value for the sodium concentration and the hardness of the inlet water.

► Proceed as follows to calculate the maximum possible softening of the inlet water:

- **200** mg/l **– x** mg/l (sodium concentration in the raw water inlet) **= y** mg/l (permitted addition of sodium during softening)

$$\frac{\textbf{y}\ \text{mg/l}}{\textbf{8.2}\ \text{mg/l}} = \textbf{Z}\ °\text{dH (maximum softening permitted)}$$

- The inlet water can be softened by a maximum of Z °dH.

Sample calculation

Raw water hardness: 28 °dH
Sodium concentration in the raw water inlet: 51.6 mg/l

Permitted addition of sodium during softening: 200 mg/l – 51.6 mg/l = **148.4** mg/l

This results in the maximum softening permitted:

$$\frac{\textbf{148.4}\ \text{mg/l}}{\textbf{8.2}\ \text{mg/l}} \sim \textbf{18}\ °\text{dH}$$

- The raw water hardness (28 °dH – 18 °dH) can be reduced to **10** °dH.

Hardness ranges

Hardness range	°dH	°f
Soft	< 8.4	< 15
Medium	8.4 – 14	15 – 25
Hard	> 14	> 25

Recommendation for soft water hardness

Soft water hardness	Remarks
3 °dH / 5.3 °f / 0.53 °mmol/l	Minimum value as per DIN 12502 (corrosion protection)
4 – 6 °dH / 7.1 – 10.7 °f / 0.71 – 1.07 mmol/l	Optimum soft water

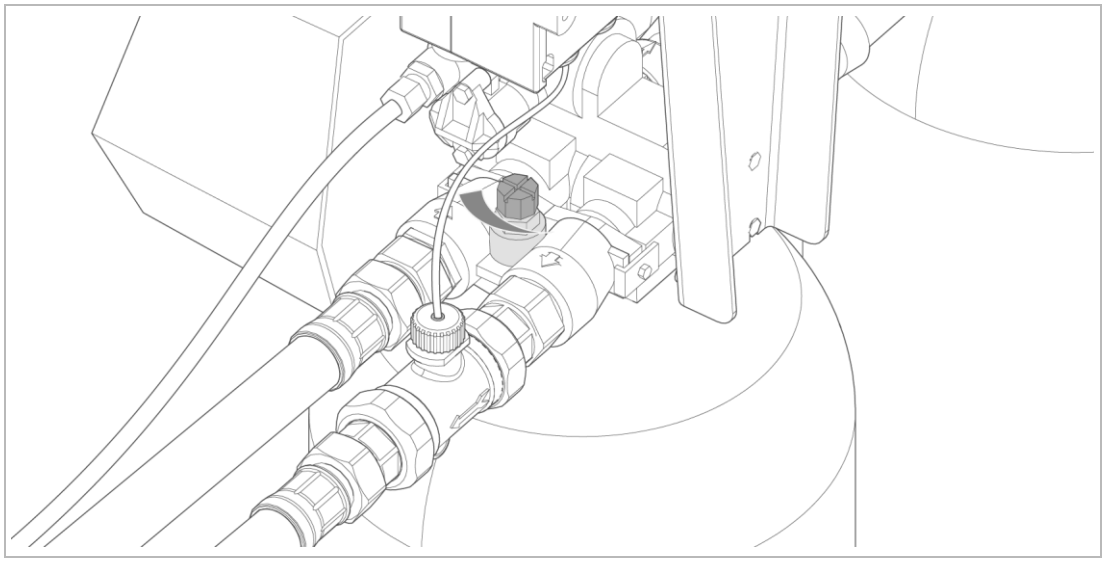
If the water softener is installed upstream of a reverse osmosis system, the supply line to the reverse osmosis system must not be designed as a blending line.

6.3.2 Setting the blending unit

Systems of size DN 40 can include a blending valve R 1¼" as additional equipment (refer to chapter 3.7).

If both soft water with 0 °dH and blended water are needed, we recommend using this blending valve for system sizes DN 25 as well.

Comply with the operating manual of the optional blending valve R 1¼” when setting the blending hardness.



1. Open the on-site shut-off valve at the raw water inlet.
2. Open the on-site shut-off valve at the soft water outlet
3. Set the adjustment sleeve on the blending valve to a midscale value.
4. Take a water sample at a water withdrawal point downstream of the system.
5. Determine the water hardness using the water test kit (refer to chapter 7.3).
6. Proceed as follows to set the blending hardness:
   - **a** Turn the adjustment sleeve to the left (close) – decreasing the blending hardness.
   - **b** Turn the adjustment sleeve to the right (open) – increasing the blending hardness.
7. Repeat steps 4 – 6 until the required blending hardness has been achieved.
   - The soft water hardness should be between 3 °dH – 8 °dH.

In Austria, softened drinking water must have a soft water hardness of at least 8.4 °dH.

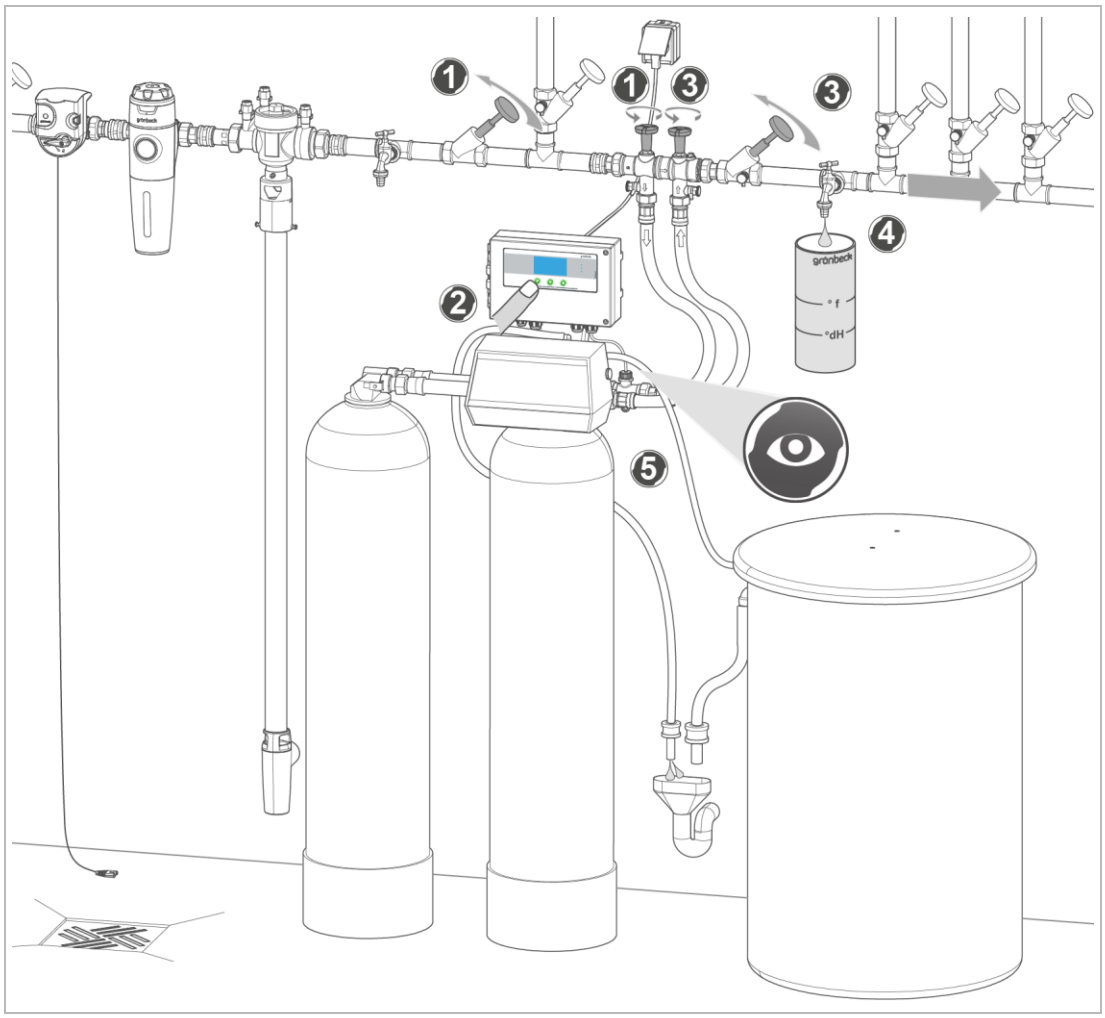
6.4 Venting and checking the product

CAUTION Escaping water on the floor

- Risk of slipping at the sampling points
- You might slip/fall and injure yourself.

► Use personal protective equipment - wear sturdy shoes.

► Immediately mop up escaped liquids.



1. Open the shut-off valves on the raw water inlet.
2. Start a manual regeneration (refer to chapter 7.1.4).

» One exchanger is being regenerated.

a Wait until the regeneration process has been completed.

b Start another manual regeneration.

» The second exchanger is being regenerated.

All systems featuring a low-salt alarm have a set delay time between 2 regenerations (factory setting: 0.2 h = 12 minutes)

► Wait for this period of time after the first regeneration before you start another manual regeneration.

3. Open the shut-off valves on the soft water inlet.
4. Take a water sample at a water withdrawal point downstream of the system.
   a Determine the water hardness using the water test kit (refer to chapter 7.3).

» The system is working properly if the analysis of the water taken directly downstream of the system is 0 °dH.

5. Check the installation for leaks.
6. Check the soft water meter for pulse output.
7. Fill in the start-up/commissioning log (refer to chapter 13.1).

» Start-up is completed.

6.5 Setting the control unit

The operating parameters are already stored in the control unit GENO-IONO-matic WE.

During start-up/commissioning, all parameters must be entered which are required for the automatic calculation of the regeneration interval (refer to chapter 7.1.4).

► Set the time.

► Set the raw water hardness.

► Set the blending hardness, if necessary.

6.6 Handing over the product to the owner/operator/ operating company

- ► Explain to the owner/operator/operating company how the product works.
- ► Use the manual to brief the owner/operator/operating company and answer any questions.
- ► Inform the owner/operator/operating company about the need for inspections and maintenance.
- ► Hand over all documents to the owner/operator/operating company for keeping.

6.6.1 Disposal of packaging

- ► Dispose of packaging material as soon as it is no longer needed (refer to chapter 11.2).

6.6.2 Storage of accessories

- ► Keep the accessories supplied with the system in a safe place near the system.

7 Operation

The water softeners GENO-mat duo WE-X/WEW-X are volume-controlled. They are operated and monitored by means of the control unit GENO-IONO-matic WE.

The operating and regeneration operations are automatically controlled depending on the selected operating mode, the water consumption, the daily interval and the time.

In the control unit, the different parameters for the different system types are stored in data records. The operating data is stored in the respective data record.

The stored data records must be changed by technical service personnel only.

7.1 Operating concept

The system is operated via control panel of the IONO-matic WE control unit.

7.1.1 Menu structure

The control unit has the menu structure below:

- **Info level** for users (refer to chapter 7.1.4)
  - Reading the operating data
  - Setting the operating parameters
  - Starting a manual regeneration
- **Programming level** for installers (refer to chapter 7.1.5)
  - Setting the system parameters (Code: `113, 290, 999`)
- **Technical service level** (refer to chapter 7.1.6)
  - Changing extended system parameters (Code: 1)

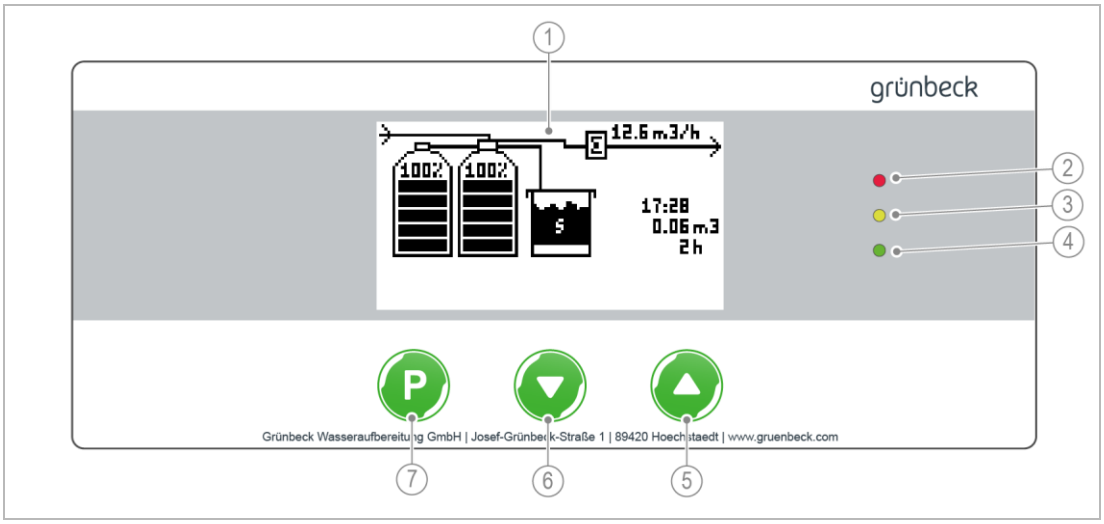
By default, the display is switched off.

- Pressing any key activates the display.
- If there is no operation for 5 minutes, the control unit returns to the basic display.

» Parameters that have not been saved are discarded.

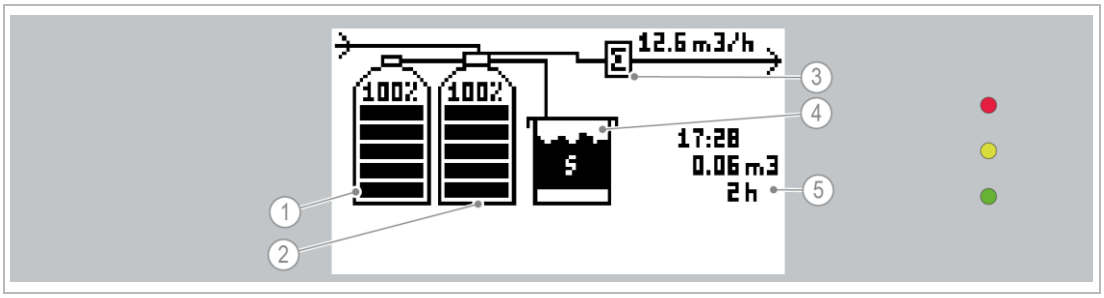
- If there is no operation for 10 minutes, the display switches off.

7.1.2 Control panel



	Designation		Meaning/Function
1	Display		Basic display • Time, remaining capacity, time since last regeneration
2	LED	red	Malfunction (refer to chapter 9.1.2).
3	LED	yellow	Warning (refer to chapter 9.1.1).
4	LED	green	Everything OK (normal operation)
5	Operating key	▲	• In the basic display: · Activating the Info level • In the Info level: · Going to the previous parameter • In the programming level: · Going to the previous parameter · Increasing the numerical value of a parameter (display value is flashing)
6	Operating key	▼	• In the basic display: · Starting a manual regeneration (press and hold key for > 5 sec) • In the Info level: · Going to the next parameter. • In the programming level: · Going to the next parameter · Decreasing the numerical value of a parameter (display value is flashing)
7	Operating key	P	• In the Info level: · Programming parameters (press and hold key for > 1 sec) · Acknowledging malfunctions · Suppressing maintenance signal for 2 weeks • In the programming level: · Opening parameter for editing (display value is flashing) · Saving parameter (display value stops flashing)
	Key combination	P + ▼	• In the Info level: · Access to the programming level (Code request C 000)
	Key combination	▼ + ▲	• In the programming level: · Closing open parameter without saving (previous display value is retained) • Returning to the basic display

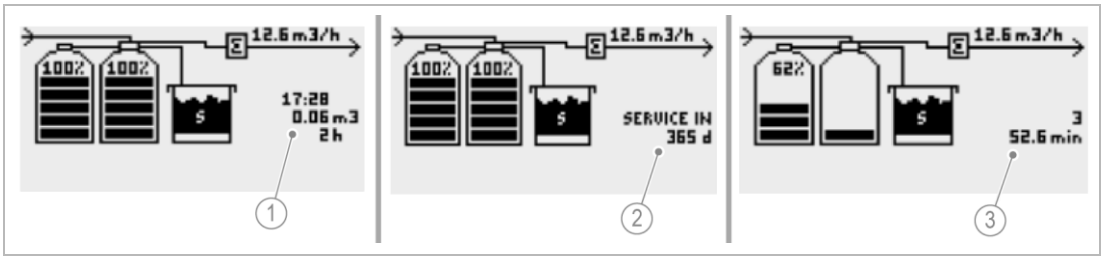
7.1.3 Basic display



	Designation	Meaning/Function
1	Exchanger on the left	• The remaining capacity of the exchanger in operation is displayed in %. • The current flow direction for the exchanger that is undergoing regeneration is indicated by arrow symbols.
2	Exchanger on the right	
3	Water meter	• Next to the water meter symbol, the current 0 °dH flow from the system is displayed in m³/h.
4	Salt dissolving tank	In case of pre-alarm salt supply (optional) • The salt dissolving tank is depicted empty when salt tablets need to be refilled.
5	Operating parameters	• Time • Remaining capacity of the exchanger in operation • Time since last regeneration

7.1.4 Info level

Reading the operating data



	Designation
1	• Time in hh:mm (hours : minutes • Remaining capacity of the exchanger in operation in m³ • Time since last regeneration in h (hours)
2	• Remaining time of maintenance interval in d (days)
3	• Current regeneration step • Remaining duration of the current regeneration step in min (minutes)

► Switch between the parameters by pressing the keys and .

● If no key is operated for a period of 5 minutes, the basic display reappears automatically.

Setting the operating parameters

In this user menu level, at least the basic parameters below must be set:

- Time
- Raw water hardness
- Blending hardness (for economy salting with blending)

► Press the key P in the basic display for > 1 sec.

In the tables below, the factory settings are greyed out.

Parameters		Setting range	Remarks
Raw water hardness	°dH	1 … 25 … 250	Raw water hardness determined on site
Blending hardness	°dH	0 … 250	Only displayed in case of systems with blending unit (refer to table of data records)
Data logging		No/Yes	On internal SD card (card slot on operating board)
Interval	min	1 … 60 … 999	
Time	hh:mm	00:00 – 23:59	
Date		xx.xx.xx	

1. Use the keys ▼ and ▲ to navigate to the respective parameter.
2. Press and hold the P key > 2.5 sec.

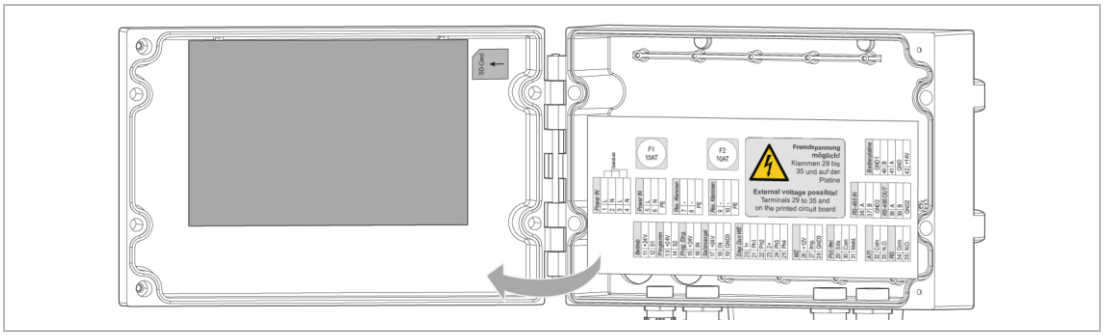
» The value starts flashing.

3. Change the value using ▼ and ▲.
4. Save the value using P.

» The value stops flashing.

5. Return to the basic display – simultaneously press ▼ and ▲.

Data logging on SD card



The SD card socket is integrated in the operating unit of the IONO-matic WE control unit.

The measured values are logged on the SD card as a *.txt file, the values are separated from one another by semicolons.

You can read the file with MS-Excel, for instance.

► End the data logging with No first before you remove the SD card.

The SD card used must be FAT32 formatted.
Recommendation: Do thorough formatting, no quick formatting.

If set to Yes, the information below is recorded at the set interval:

- Remaining capacity of the exchanger in operation (C XX.XX m³).
- Current flow (Q XX.XX m³/h).
- Time since last regeneration (T XXX h)
- Current regeneration step
  - 0 = No regeneration
  - 1 = Backwash
  - 2 = Salting
    (During the step Salting, the power relay K800 (terminals 7, 8, PE) is switched on, otherwise it is switched off.
  - 3 = Slow rinse
  - 4 = Washing out
  - 5 = Filling brine tank (filling salt dissolving tank)
- Time until service is due (S XXX d)
- Counter reading Regeneration (XXXXXX)
- Counter reading Soft water volume (XXXXXX m³)

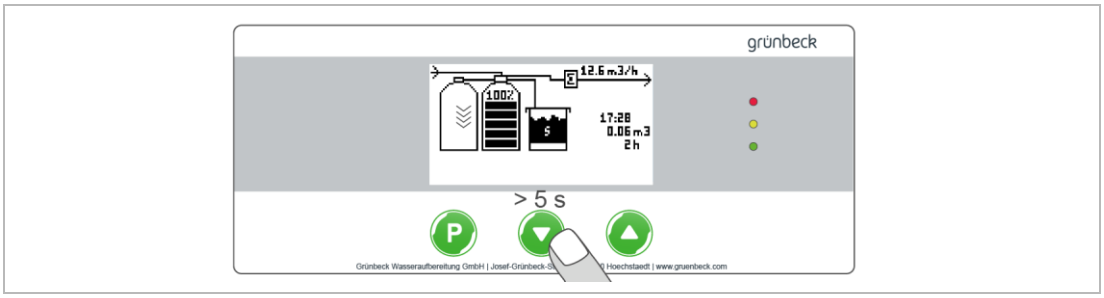
Starting a manual regeneration

Manual regeneration of the exchanger is required during start-up, for instance.

In the situations below, it is not possible to start a manual regeneration:

- If a regeneration is already in progress (the key command is not stored)
- If a regeneration lock is active (either via programmable input or in the form of an interval between two regenerations)

You can start a manual regeneration as follows:



► Press the key P in the basic display for > 1 sec.

» The exchanger currently in operation is being regenerated.

After completion of the first regeneration, you can start another manual regeneration for the second exchanger.

By pressing the key combination P + ▼, the current regeneration step can be aborted. The previous remaining capacity of the exchanger is retained.

7.1.5 Programming level

Access to the programming level is started from the basic display. You need a code for access.

The programming level contains parameters that might have to be adapted to the conditions on site during start-up/commissioning.
The settings described here must be made by a qualified specialist (installer) only.

The parameters marked with (*) must not be changed.

In the tables below, the factory settings are greyed out.

1. Activate the programming level.
   a Simultaneously press the two keys P and ▼ in the basic display.
2. Enter the respective code XXX using ▼ and ▲.
3. Confirm with P.

7.1.5.1 Installer level (Code 113)

Parameters	Setting range	Remarks
Prog. Input Text OSMO-X programmable input	0 / 1 / 2	Function of programmable input • 0 = No function • 1 = External initiation of regeneration • 2 = External lock of regeneration.
Function of programmable output or signal contact Text OSMO-X programmable output	0 / 1 / 2 / 3	Function of programmable output • 0 = No function • 1 = Output Maintenance interval + Low salt • 2 = Enabling hardness control measuring device (in this case, Maintenance message and Low salt run via the collective fault contact) [1)] • 3 = Active during regeneration step "Salting"
Delay Low-on-s. min Text OSMO-X Lack of salt delay	0 / L / -1 / 1 … 999	Function Low-salt message • 0 = Deactivated • L = Option Pre-alarm salt supply (185 335) [2)] • -1 = If the water softener does not feature a display, „-1“ must be set on the IONO-matic WE • 1…999 = Option Low-salt alarm (181 880) [3)]
Abort cur. reg.	0 / 1	Aborting regeneration function • 0 = Deactivated • 1 = Aborting the current regeneration step
Operating language	German English French Dutch Italian Spanish Russian	

1) Open during a malfunction or between the initiation of a regeneration (motor start) and reaching the position Salting.
2) As soon as the switching distance between light sensor and salt filling is exceed for > 5 minutes, the Low-salt message is output.
3) At the end of the step “Filling brine tank” (filling salt dissolving tank), the delay time starts counting down. Within the delay time, the float switch must have floated up (contact closed). Between two regenerations, the Low-salt message is only output once.

1. Navigate to the respective parameter using and .
2. Press and hold the key for > 2.5 sec.

» The value starts flashing.

3. Change the value using and .
4. Save the value using .

» The value stops flashing.

5. Return to the basic display – simultaneously press and .

7.1.5.2 Changing system parameters (Code 290)

In this level, different hardness units can be set, for instance.

Parameters		Setting range	Remarks
Hardness unit		°dH / °f / mol/m³	Applies to raw water hardness and capacity figure
Data record *		Preset (according to system size)	The default value must not be changed (only by technical service personnel)
Capacity	m³x°dH	Display only	Display values cannot be changed
Water meter pulse rate	l/pulse		
Release time	hh:mm	00:00 – 23:59	Only applies to operating mode b3 (regeneration when capacity is exhausted or at the set daily interval at the set time (whichever occurs first).

7.1.5.3 Software version (Code 999)

Display of the software version of the main circuit board and operating board (display) of the IONO-matic WE control unit.

- Display of software version **2.34**
- Software version of main circuit board **2.34**

A software update must be carried out by technical service personnel only (refer to technical service manual).

7.1.6 Technical service level ( )

Settings in the technical service level must be done by Grünbeck's technical service or by a qualified specialist trained by Grünbeck only (refer to technical service manual).

7.2 Refilling salt tablets

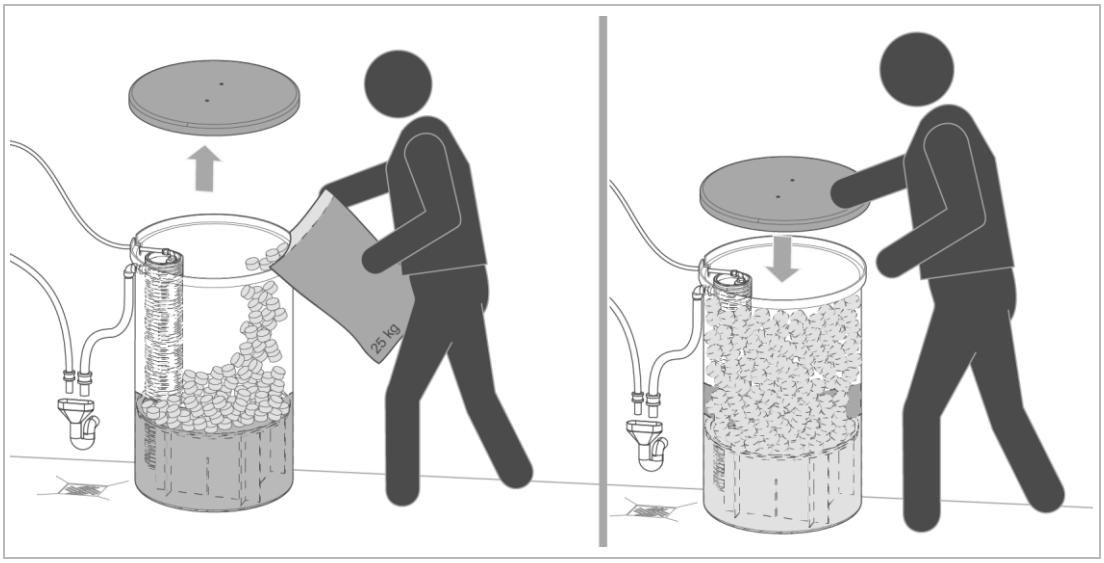
The salt supply in the salt dissolving tank must always be higher than the water level.

► Take note of the label “Min. salt filling level” on the salt dissolving tank.

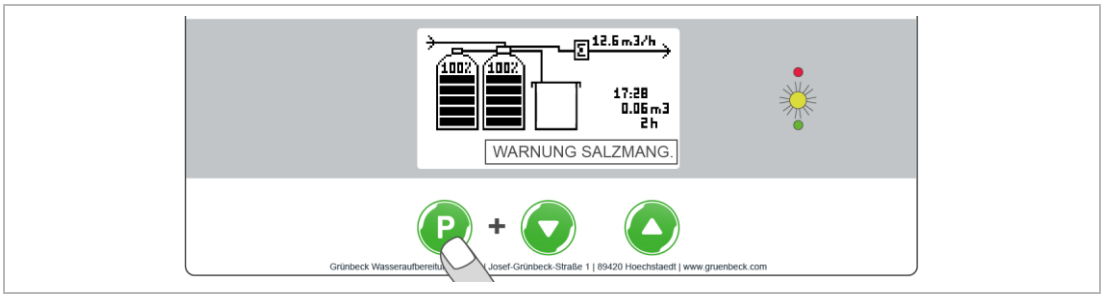
- Only if the optional low-salt alarm is connected:

A yellow LED on the control unit indicates when the salt level in the salt dissolving reaches the minimum level, and a warning message Low salt is output (refer to chapter 9.1). In the display, the salt dissolving tank is shown as Empty.

► Proceed as follows to refill the salt dissolving tank:



1. Open the lid of the salt dissolving tank.
2. Fill the entire salt dissolving tank with salt tablets.
3. Dispose of the dust-like fine fraction from the bag with your residual waste.
4. Close the lid of the salt dissolving tank.

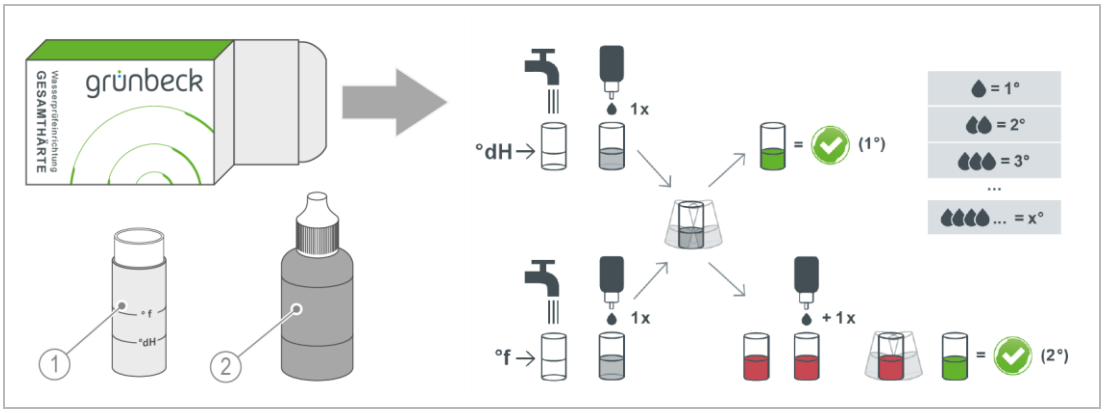


5. Acknowledge the warning Low salt on the control unit using the key P.
6. Document the refill in Documentation of salt consumption (refer to chapter 13).

7.3 Determining the water hardness

The water test kit is designed to determine the water hardness in °dH or in °f. The unit mol/m³ (= mmol/l) can be determined from °f.

► Carry out a quick water test using the water test kit “Total hardness”.
You will find the corresponding quick reference guide on the back of the packaging.



	Designation		Designation
1	Test tube	2	Titration solution

7.3.1 Taking a water sample

1. Open a water withdrawal point.
   a Use the raw water sampling valve upstream of the system to take a raw water sample.
   b Use the sampling valve downstream of the system to take a soft water sample (0 °dH test).
   c For blended water, use the sampling valve downstream of the blending unit.
2. Let the water run for at least 30 seconds.
3. Take a water sample using the test tube:
   a Fill the test tube up to the required marking **°dH** to determine the water hardness in °dH.
   b Fill the test tube up to the **°f** mark (x 0.1 = mol/m³) in order to determine the water hardness in °f, mol/m³ (mmol/l).

7.3.2 Determining the water hardness in °dH/°f

1. Add one drop of titration solution (1 drop = 1 °dH or 1 °f).
2. Shake the test tube until the titration solution is mixed with the water.
3. In case of red colouring, repeat steps 1 and 2 and count the drops until the colour changes to green.

» When the colour changes from red to green, the water hardness has been determined.

The number of drops corresponds to the degree of hardness in °dH or °f.

- Test tube filled up to the **°dH** mark: 6 Drops = **6 °dH**
- Test tube filled up to the **°f** mark: 6 Drops= 6 **°f**

7.3.3 Determining the water hardness in mol/m³ (mmol/l)

1. Determine the water hardness in °f as described.
2. Divide the value in °f by 10.

The water hardness in °f divided by 10 corresponds to the degree of hardness in mol/m³ (= mmol/l).

- 6 Drops = 6 °f = 0.6 mol/m³ = **0.6 mmol/l**

» You get the water hardness in mol/m³.

7.3.4 Entering the raw water hardness on the control unit.

► Enter the determined raw water hardness in the control unit (refer to chapter 7.1.4).

► Enter the blending hardness for the version with blending valve in the control unit (refer to chapter 7.1.4).

Take the sodium concentration in the water into consideration for the blending hardness (refer to chapter 6.3.1).

8 Maintenance and repair

Maintenance and repair includes cleaning, inspection and maintenance of the product.

The responsibility for inspection and maintenance is subject to local and national requirements. The owner/operator/operating company is responsible for compliance with the prescribed maintenance and repair work.

By concluding a maintenance contract you make sure that all maintenance work will be carried out on time.

► Only use genuine spare and wearing parts from Grünbeck.

8.1 Cleaning

Only have the cleaning work carried out by persons who have been instructed in the risks and dangers that can arise from the product.

WARNING Damp cleaning of live components

- Risk of electric shock
- Sparking due to short circuit

► Switch off the voltage supply – as well as any external voltage – before starting the cleaning work.

► Wait for 15 minutes and make sure that the components do not carry any voltage.

► Do not open any switch cabinets.

► Do not use any high-pressure equipment for cleaning and do not blast electrical/electronic devices with water.

CAUTION Climbing onto system components

- Risk of falling when climbing onto system components

► Do not climb onto system components such as pipes, racks, etc.

► Use stable, safe and self-standing access aids such as stepladders, platforms, etc. when cleaning components that are located at high levels.

NOTE Do not clean the system with cleaning agents containing alcohol/solvents.

- Plastic components are damaged.
- Varnished surfaces are affected.

► Use a mild/pH-neutral soap solution.

► Use personal protective equipment.

► Only clean the outside of the system.

► Do not use any strong or abrasive cleaning agents.

► Wipe the surfaces with a damp cloth.

► Dry the surfaces with a cloth.

The technical service personnel clean the salt dissolving tank once a year during maintenance.

8.2 Intervals

By way of regular inspections and maintenance, malfunctions can be detected in time and system failures might be avoided.

► As owner/operator/operating company determine which components must be inspected and maintained at which intervals (load-dependent). These intervals are subject to the actual conditions such as: water condition, degree of impurities, environmental impacts, consumption, etc.

The interval table below shows the minimum intervals for the activities to be carried out.

Task	Interval	Tasks
Inspection	2 months	• Visual check of the installation for leaks • Check the salt level in the salt dissolving tank • Check the water hardnesses • Check the control unit for function and setting
Maintenance	6 months	• Check the entire system on the outside for damage and corrosion • Check the control valve in operating condition and the flushing water connection to the drain for leaks • Check the connection hoses and/or the connection points for leaks • Check the hose connections for leaks and damage • Check mains cable, mains plug and electrical lines for damage and a tight fit • Evaluate the consumption and the state of the salt • Read the water pressure and flow pressure • Read the water meter reading • Check the water hardnesses
	annually	**Functional check on control unit and control valve** • Check the setting of the control unit • Check the initiation of a regeneration • Check the water meter for pulse output • Clean the injector and injector sieve • Check the control valve for leaks • Check the drive motor for function

Task	Interval	Tasks
		Work on salt dissolving tank and brine valve • Clean the salt dissolving tank and the brine valve • Check the brine valve for function and setting • Clean/replace the filter for the brine valve • Check the brine hose for leaks during operation • Check the low-salt alarm for function **Optional accessories** • Check and clean the chlorine cell of the disinfection unit • Test the safety fitting against backflow • Check the pre-alarm salt supply for salt incrustations and damage
	load-dependent	• Refer to “annually” • Replace the exchange resin • Replace the chlorine cell
Repair	5 years	• Recommendation: Replace wearing parts

8.3 Inspection

You as owner/operator/operating company can do the regular inspections yourself. Initially, we recommend inspecting the product at shorter intervals and later on as required.

► Carry out an inspection at least every 2 months.

1. Check the installation for leaks.
2. Check that there are enough salt tablets in the salt dissolving tank.
3. Check the water hardnesses below (refer to chapter 7.3).
   - **a** Raw water hardness
   - **b** Soft water hardness (0 °dH (°f, mmol/l))
   - **c** Blending hardness for systems with blending valve
4. Check the control unit for function and setting
   - **a** Time
   - **b** Raw water hardness set
   - **c** Soft water hardness with blending valve (optional)

8.4 Maintenance

Regular work is required in order to ensure the proper functioning of the product in the long term. DIN EN 806-5 recommends regular maintenance to ensure trouble-free and hygienic operation of the product.

WARNING External voltage at voltage-free contacts and on the circuit board

- Risk of electric shock when connected to 230 V
- ► Unplug the system's mains plug before working on electrical components.
- ► Obey the warning labels in the control unit.

8.4.1 Semi-annual maintenance

Proceed as follows to carry out semi-annual maintenance:

1. Check the outside of the entire system for damage and corrosion.
2. Check the control valve in operating state and the flushing water connection to the drain for leaks.

» The system must not regenerate. No water must drip from the flushing water connection during operation.

3. Check the connection hoses and/or the connection points for leaks.
4. Check all hose connections for leaks and damage.
5. Check the mains cable, the mains plug and all electrical lines for damage and a tight fit.
6. Check the water level in the salt dissolving tank.

NOTE Undershooting the minimum salt filling level

- Hardness breaking through
- ► Make sure that the minimum salt filling level in the salt dissolving tank is maintained.

a Refill salt tablets, if necessary (refer to chapter 6.2).

b Check the state of the salt – no salt clumps.
Loosen possible incrustations with a tool – do not use any pointed objects.

c Evaluate the salt consumption and document the salt consumption as a function of the water consumed (refer to chapter 13).

Minor deviations are normal and cannot be prevented technically.

- ► In case of considerable fluctuations, contact the technical service personnel.

7. Read the water and flow pressure.
8. Read the water meter reading.

9. Check the water hardnesses below (refer to chapter 7.3).
   a Raw water hardness
   b Soft water hardness (0 °dH (°f, mmol/l))
   c Blending hardness for systems with blending valve
10. Readjust the blending valve, if necessary, and check the blending hardness again.

8.4.2 Annual maintenance

Annual maintenance work requires expert knowledge. This kind of maintenance work must be carried out by technical service personnel only.

In addition to the semi-annual maintenance, the following work must be carried out as well:

8.4.2.1 Functional check on control unit and control valve

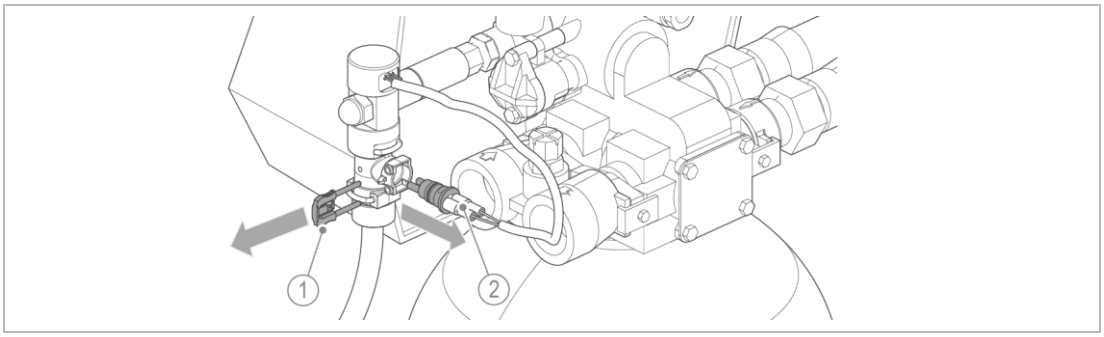
1. Check the settings of the control unit – compare the determined water hardness values with the settings in the control unit.
2. Check the initiation of a regeneration – start a manual regeneration (refer to chapter 7.1.4).
3. Check the water meter for pulse output.
4. Clean the injector and the injector sieve – replace the injector sieve, if necessary.
5. Check the control valve for leaks – replace the seals, if necessary.
6. Check the drive motor of the control valve for function.

8.4.2.2 Work on salt dissolving tank and brine valve

7. Clean the salt dissolving tank and the brine valve.
8. Check the brine valve for function – check the setting for the brine control in the control unit (salting, filling salt dissolving tank)
9. Check the brine hose for leaks during operation.
10. Clean or replace the filter for the brine valve.
11. Check the low-salt alarm for function.

8.4.2.3 Work on accessories/optional equipment

12. Check the disinfection unit for function.



	Designation		Designation
1	Retaining clip	2	Chlorine cell

a Remove and clean the chlorine cell.

b Check the chlorine current during salting.

We recommend replacing the chlorine cell after 2 years at the latest.

13. Check the function of the safety fitting against backflow.

14. Check the pre-alarm salt supply for function, incrustations and damage.

a Clean the optical interface of the pre-alarm salt supply.

b Readjust the switching distance of the pre-alarm salt supply, if necessary.

Final work

Depending on the operation, it might be necessary to replace the exchange resin. The replacement interval depends on the raw water quality.

► Replace the exchange resin in the exchanger tank, if necessary.

► Read out the regeneration counter, the total soft water volume and the error memory, if necessary.

► Reset the maintenance interval.

► Record the maintenance in the operation log (refer to chapter 13).

8.5 Consumables

Product	Quantity	Order no.
Regeneration salt tablets (25 kg) acc. to DIN EN 973 type A	25 kg	**127 001**
Water test kit “Total hardness”	1 pc	**170 187**
	10 pcs	**170 100**

8.6 Spare parts

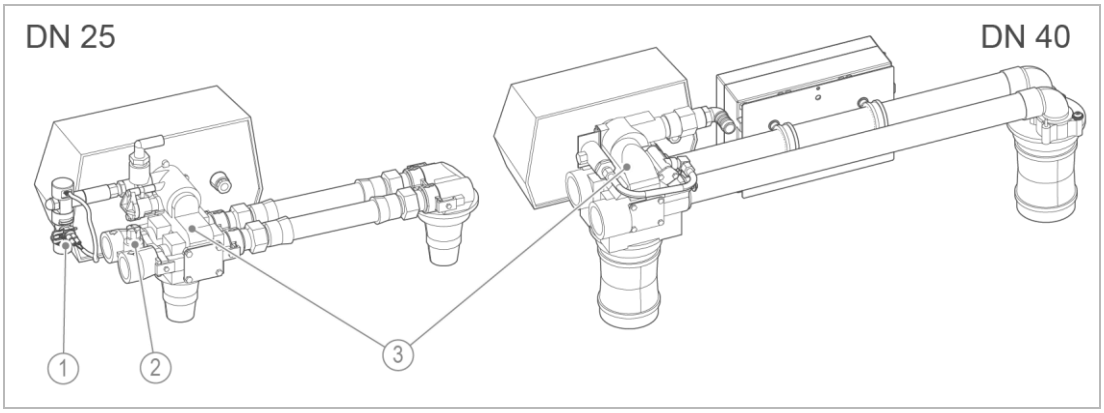
For an overview of the spare parts, refer to our spare parts catalogue at www.gruenbeck.com. You can order the spare parts from your local Grünbeck representative.

8.7 Wearing parts

Wearing parts must be replaced by qualified specialists only.

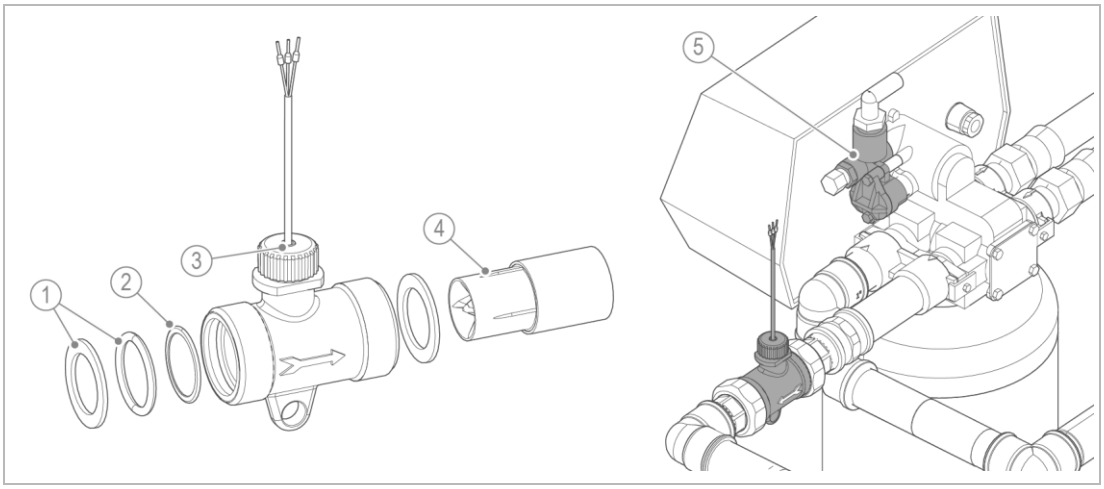
Wearing parts are listed below:

- Seals
- Piston



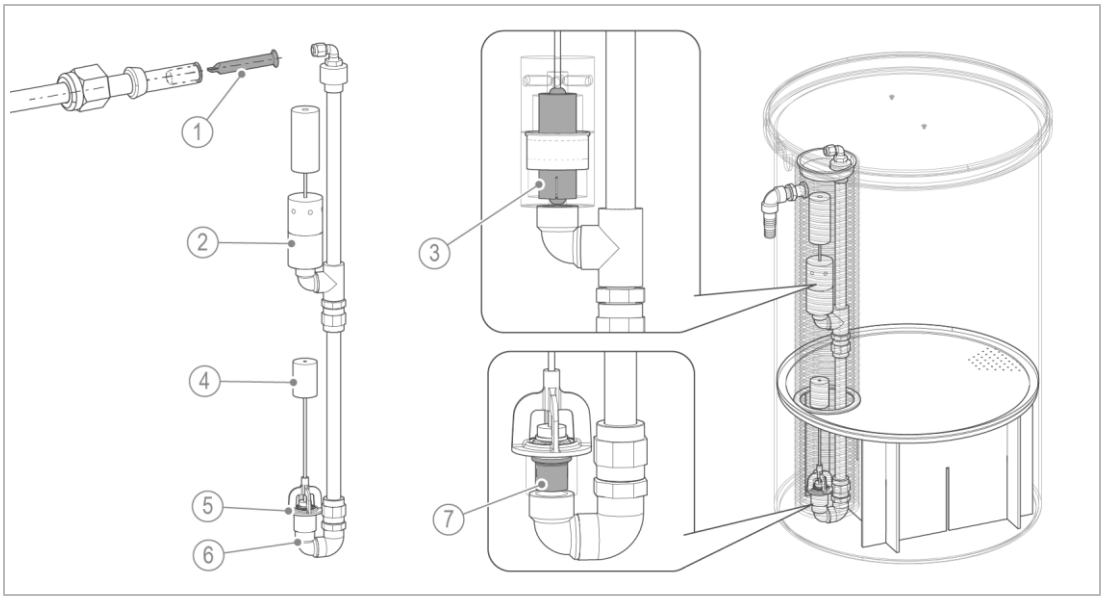
	Designation
1	Chlorine cell
2	Blending valve

	Designation
3	Control valve, control piston and actuator



	Designation
1	Seals
2	Strainer insert
3	Pulse cable with Hall element

	Designation
4	Push-in turbine
5	Injector



	Designation
1	Filter for brine valve
2	Filling unit
3	Float valve
4	Closing valve with valve disc

	Designation
5	Valve seat of brine float
6	Suction unit
7	Non-return valve

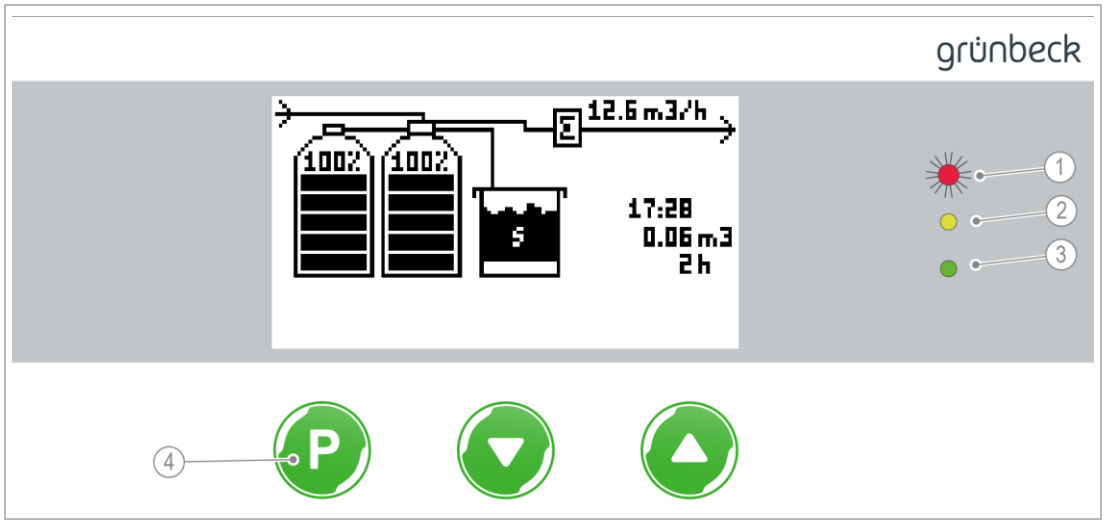
9 Troubleshooting

WARNING Contaminated drinking water due to stagnation

- Infectious diseases

► Have malfunctions eliminated immediately.

9.1 Messages



	Designation		Meaning/Function
1	LED	red	Malfunction • Red LED lights up • Fault signal contact of the control unit (terminals 29/30) opens
2	LED	yellow	Warning • Yellow LED lights up • Signal contact of the control unit (terminals 30/31) opens
3	LED	green	No malfunction (normal operation)
4	Operating key	P	In the basic display: • Acknowledging malfunctions • Suppressing maintenance message for 2 weeks

- As long as the power supply is on and no warning/fault is pending, the signal contact and the fault signal contact are closed.
- You can read out the error memory in the code level for counter readings.

1. Eliminate the fault (refer to fault table).
2. Acknowledge the malfunction.
3. Monitor the display of the control unit.
4. If the fault reoccurs, compare the display message with the fault table below.

9.1.1 Warnings (yellow)

Warnings	Explanation	Remedy
Service due	Maintenance interval of the system has expired	► Contact technical service
Low salt (Er A)	Not enough salt in the salt dissolving tank	► Check the salt level in the salt dissolving tank and refill salt tablets, if necessary.
Incorrect time	After a power failure of > 24 hours	► Reset the time

9.1.2 Faults (red)

Faults	Explanation	Remedy
Power failure fault	Power failure > 1 minute	► In case of a longer power failure, start a manual regeneration. The water that in the meantime has flown through the system was not measured, and the exchanger in operation might have exceeded the limits of its capacity
Valve motor fault	The next step position on the control valve has not been reached within the required time	► Acknowledge the fault. ► If the fault reappears within 5 minutes after acknowledgement, contact technical service
Hard water fault	While one exchanger has not yet been fully regenerated, the capacity of the other exchanger tank is exhausted already	• The fault is acknowledged automatically as soon as a regenerated exchanger tank is available again ► Reduce the system flow to the maximum continuous flow (refer to Technical specifications)
Microswitch fault	Outside of a regeneration, the signal from microswitch S2 is present at terminal 14	► Check wiring and function of the microswitch ► Contact technical service, if necessary
Motor current fault	Monitoring of step motor current tripped	► Acknowledge the fault ► If the fault reappears within 5 minutes after acknowledgement, contact technical service

9.2 Other observations

Observation	Explanation	Remedy
Increased hardness in blended or soft water	**System exceeded its limits of capacity**	
	System does not carry continuous current	► Check power supply
	No water meter pulses at control electronics	► Check the water meter with pulse cable ► Replace defective parts
	Incorrect setting of the control unit	► Check the parameters in the control unit and readjust, if necessary
	System does not draw brine	► Clean the injector ► Clean the filter for the brine valve ► Check the inlet pressure and adjust it, if necessary
	No salt in salt dissolving tank	► Refill salt tablets
	Not enough water in salt dissolving tank	► Check the float switch in the salt dissolving tank
	Other causes	
	Incorrect setting of blending valve	► Check the raw water hardness or blending hardness ► Check the setting of the blending valve and readjust it, if necessary
	Water supply interrupted	► Open the shut-off valves
	Water flow too high (refer to type plate for data)	► Reduce the water flow
	Not enough salt in the salt dissolving tank	► Check the salt level according to the mark on the salt dissolving tank ► Refill salt tablets, if necessary
Resin in discharge pipe	Defective nozzle system	► Contact technical service
Pressure loss too high (water pressure at the withdrawal point too low)	Exchange resin contaminated by undissolved substances	► Contact technical service
	The second exchanger regenerates and is in regeneration step “Backwash”	► Wait for the regeneration to be completed and check the pressure loss again
System does not draw brine (salt dissolving tank is full)	Water pressure too low	► Increase flow pressure to at least 2.0 bar.
	Injector clogged	► Clean the injector
	Injector sieve clogged	► Clean or replace the injector sieve
	Filter for brine valve clogged	► Clean or replace the filter
	Brine valve clogged	► Remove the brine valve and clean it

If a malfunction cannot be eliminated, the technical service personnel can take further measures.

► Contact technical service (refer to inner cover sheet for contact data).

10 Decommissioning

10.1 Temporary standstill

In order to prevent the water from stagnating, the system regenerates after 4 days (in accordance with DIN EN 19636-100), even if the softening capacity has not yet been exhausted.

► Leave your product connected to electricity and water.

If a longer standstill of the system is planned, the tasks below must be carried out:

1. Close the soft water valve downstream of the system.
2. Make sure that the raw water shut-off valve is open.
3. Keep the system connected to the power supply.

» The system is shut down temporarily and remains in the permissible operating state.

10.1.1 Restart/recommissioning

► Carry out the task below to restart the system after a temporary shutdown:

1. Open the soft water shut-off valve downstream of the system.

Operating breaks of up to four days

2. Carry out a manual regeneration on each exchanger.

Operating breaks of more than four days

3. Contact technical service and have the system disinfected.

10.2 Decommissioning

Decommissioning the system represents a major intervention into the water system.

► Have this work carried out by qualified specialists only.

WARNING Contaminated drinking water due to stagnation

- Infection due to bacterial growth

► Have the system disinfected by technical service personnel when it is put back into operation.

11 Dismantling and disposal

11.1 Dismantling

The work described herein represents an intervention into your water system.

► Have this work carried out by qualified specialists only.

1. Close the raw water shut-off valve.
2. Open the water withdrawal point downstream of the system.
3. Wait for a few seconds.

» The pressure in the product and the pipe network is being relieved.

4. Close the water withdrawal point.
5. Disconnect the product from mains.
6. Remove the individual components.
7. Transport the product secured on a pallet.

11.2 Disposal

► Obey the applicable national regulations.

Packaging

► Dispose of the packaging in an environmentally sound manner.

NOTE Danger to the environment due to incorrect disposal

- Packaging materials are valuable raw materials that can be reused in many cases.
- Incorrect disposal can cause hazards to the environment.

► Dispose of packaging materials in an environmentally sound manner.

► Obey the local disposal regulations.

► If necessary, commission a specialist company with the disposal.

Product

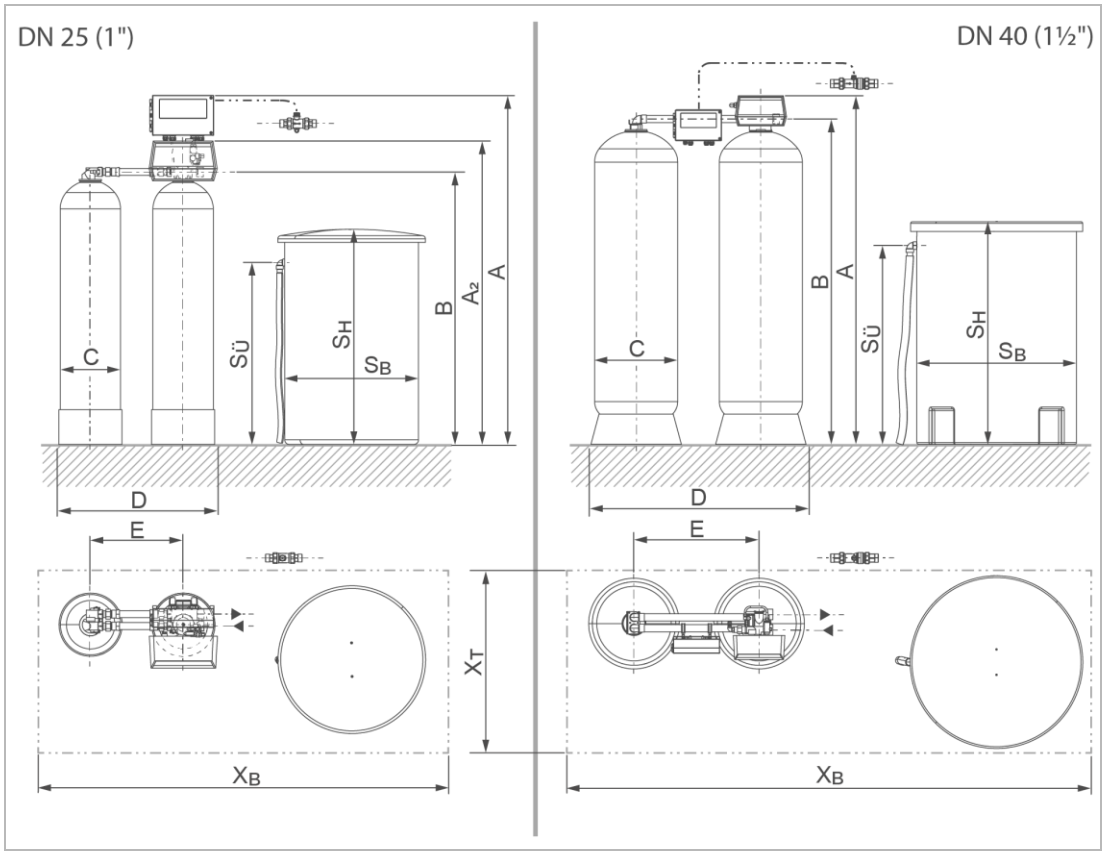
If this symbol (crossed-out wheelie bin) is on the product, this product or its electrical and electronic components must not be disposed of as household waste.

- ► 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.de.

12 Technical specifications

12.1 GENO-mat duo WE-X with full salting



Dimensions and weights			GENO-mat duo WE-X (full salting)				
			65	150	300	450	750
			DN 25 (1")			DN 40 (1½")	
A	System height	mm	1310	1530	1790	1840	1970
A_2	System height (without control unit)	mm	1080	1300	1560	--	--
B	Connection height of control valve	mm	940	1160	1420	1710	1830
C	Ø Exchanger	mm	208	257	334	369	469
D	System width	mm	640	665	735	1070	1210
E	Distance between centres of exchangers	mm	400			700	
S_B	Ø Salt dissolving tank (standard)	mm	500	570	700	780	900
S_H	Height of salt dissolving tank (standard)	mm	810	880	870	1100	1250
$S_Ü$	Height of safety overflow	mm	700	780	770	980	1120
X_T	Depth of foundation	mm	≥ 600	≥ 700	≥ 800	≥ 900	≥ 1000
X_B	Length of foundation	mm	≥ 1460	≥ 1500	≥ 1700	≥ 2100	≥ 2400
Operating weight, approx.		kg	285	435	730	1110	1745

Connection data		65	150	300	450	750
Nominal connection diameter		DN 25 (1" female thread)			DN 40 (1½" female thread)	
Drain connection		DN ≥ 50				
Rated voltage range	V	100 – 250				
Rated frequency	Hz	50 – 60				
Power supply for Taiwan		110 V/60 Hz or 230 V/60 Hz				
Operating voltage	V DC	24				
Power input in standby	VA	10				
Protection/protection class		IP 54/⏚				

Performance data		65	150	300	450	750
Nominal pressure	bar	PN 10				
Operating pressure	bar	2.0 – 8.0				
Continuous flow at a residual hardness < 0.1 °dH	m³/h	≤ 2.0	≤ 3.0	≤ 5.0	≤ 6.0	≤ 9.5
Pressure loss at continuous flow	bar	≥ 0.6	≥ 1.1	≥ 2.1	≥ 1.5	≥ 2.3
kV value (at Δp = 1.0 bar)	m³/h	2.6	2.7	3.1	4.5	5.6
Nominal capacity	mol	12.0	26.6	53.9	80.2	133.2
	m³x°dH	67	149	302	449	746
Capacity per kg of regeneration salt	mol/kg	3.33	3.32	3.32	3.16	3.33
Time capacity	m³ x °dH/h	72	84	145	214	269

Filling volumes and consumption data		65	150	300	450	750
Resin volume (exchanger)	l	18	40	81	115	200
Freeboard (resin in form of sodium), approx.	mm	270	230	290	390	300
Salt consumption per regeneration, approx.	kg	3.6	8.0	16.2	25.3	40.0
Flushing water volume	m³/h	≤ 0.340	≤ 0.545	≤ 0.910	≤ 1.135	≤ 1.590
Regeneration salt supply	kg	≤ 130	≤ 190	≤ 285	≤ 485	≤ 760
Total waste water volume per regeneration, approx.	l	112	211	451	693	1020
Operating water volume	l	10	22	45	70	111
Minimum filling height of salt	mm	--	--	--	--	50

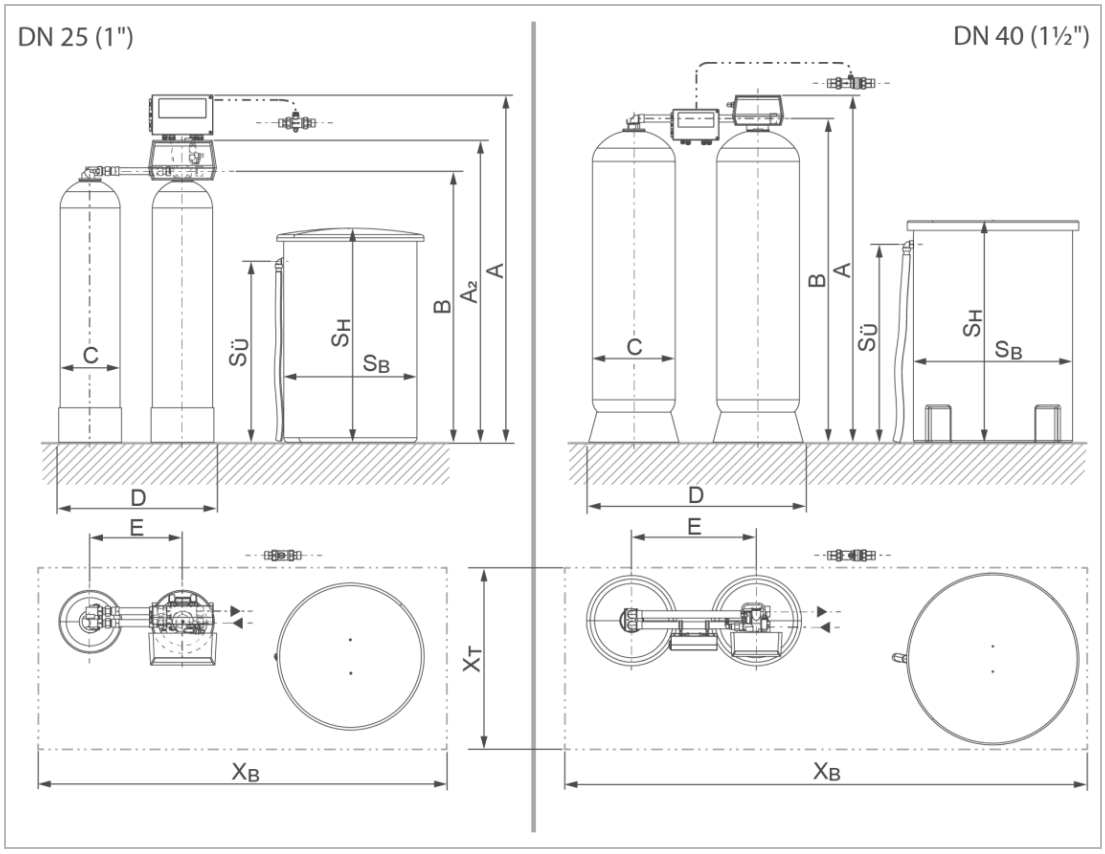
General data		65	150	300	450	750
Water temperature	°C	5 – 30				
Ambient temperature (drinking water)	°C	5 – 25				
Ambient temperature (technical application)	°C	5 – 40				
Humidity (non-condensing)	%	90				
Iron concentration in raw water	mg/l	< 0.2				
Manganese concentration in raw water	mg/l	< 0.05				
ÜA registration number *The Office of the Vienna Provincial Government – City of Vienna*		R-15.2.3-21-17496				
Order no.		**186 100**	**186 110**	**186 120**	**186 130**	**186 140**

Data refers to standard salt dissolving tanks. The waste water volume and salt consumption refer to an inlet pressure of 3 bar.

The indicated values change at different inlet pressures and only serve for rough determination.

The indicated maximum continuous flows might decrease in case of high raw water hardness (> 20 °dH).

12.2 GENO-mat duo WE-X with economy salting



Dimensions and weights			GENO-mat duo WE-X (economy salting)				
			50	130	230	330	530
			DN 25 (1")			DN 40 (1½")	
A	System height	mm	1310	1530	1790	1840	1970
A_2	System height (without control unit)	mm	1080	1300	1560	--	--
B	Connection height of control valve	mm	940	1160	1420	1710	1830
C	Ø Exchanger	mm	208	257	334	369	469
D	System width	mm	640	665	735	1070	1210
E	Distance between centres of exchangers	mm	400			700	
S_B	Ø Salt dissolving tank (standard)	mm	410	500	570	700	700
S_H	Height of salt dissolving tank (standard)	mm	670	810	880	870	870
$S_Ü$	Height of safety overflow	mm	570	700	780	770	770
X_T	Depth of foundation	mm	≥ 500	≥ 600	≥ 700	≥ 800	≥ 800
X_B	Length of foundation	mm	≥ 1300	≥ 1500	≥ 1600	≥ 2100	≥ 2200
Operating weight, approx.		kg	190	340	555	825	1080

Connection data		50	130	230	330	530
Nominal connection diameter		DN 25 (1" female thread)			DN 40 (1½" female thread)	
Drain connection		DN ≥ 50				
Rated voltage range	V	100 – 250				
Rated frequency	Hz	50 – 60				
Power supply for Taiwan		110 V/60 Hz or 230 V/60 Hz				
Operating voltage	V DC	24				
Power input in standby	VA	10				
Protection/protection class		IP 54/⏚				

Performance data		50	130	230	330	530
Nominal pressure		PN 10				
Operating pressure	bar	2.0 – 8.0				
Continuous flow at a residual hardness < 0.1 °dH	m³/h	≤ 2.0	≤ 3.0	≤ 5.0	≤ 6.0	≤ 9.5
Peak flow at blending to 8 °dH and a raw water hardness of 20 °dH	m³/h	3.3	5.0	8.3	10.0	15.8
Pressure loss at continuous flow	bar	≥ 0.6	≥ 1.1	≥ 2.1	≥ 1.5	≥ 2.3
kV value (at Δp = 1.0 bar)	m³/h	2.6	2.7	3.1	4.5	5.6
kV value at blending to 8 °dH and a raw water hardness of 20 °dH	m³/h	4.3	4.5	5.2	7.5	9.3
Nominal capacity	mol	9.5	20.9	42.3	60.0	95.2
	m³x°dH	53	117	237	336	533
Capacity per kg of regeneration salt	mol/kg	5.27	5.22	5.22	5.20	5.90
Time capacity	m³ x °dH/h	68	81	143	207	243

Filling volumes and consumption data		50	130	230	330	530
Resin volume (exchanger)	l	18	40	81	115	200
Freeboard (resin in form of sodium), approx.	mm	270	230	290	390	300
Salt consumption per regeneration, approx.	kg	1.8	4.0	8.1	11.5	16.0
Flushing water volume	m³/h	≤ 0.340	≤ 0.545	≤ 0.910	≤ 1.135	≤ 1.590
Regeneration salt supply	kg	≤ 65	≤ 130	≤ 190	≤ 285	≤ 285
Total waste water volume per regeneration, approx.	l	98	181	376	583	865
Operating water volume	l	5	11	23	32	44
Minimum filling height of salt	mm	--	--	--	--	--

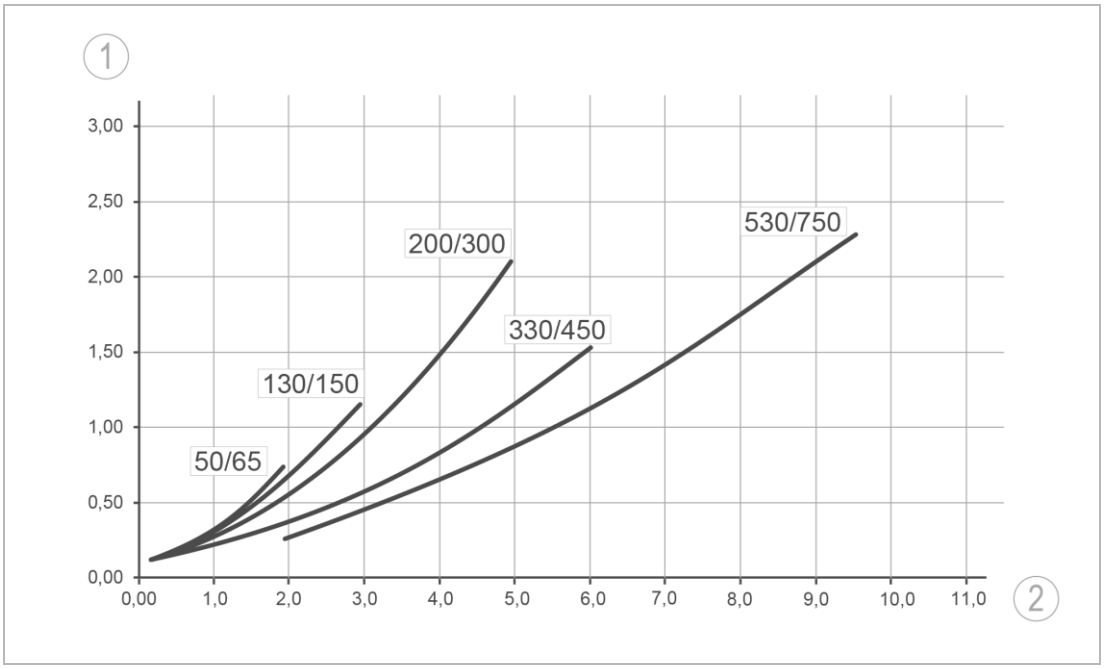
General data		50	130	230	330	530
Water temperature	°C	5 – 30				
Ambient temperature (drinking water)	°C	5 – 25				
Ambient temperature (technical application)	°C	5 – 40				
Humidity (non-condensing)	%	90				
Iron concentration in raw water	mg/l	< 0.2				
Manganese concentration in raw water	mg/l	< 0.05				
ÜA registration number *The Office of the Vienna Provincial Government – City of Vienna*		R-15.2.3-21-17496				
Order no.		**186 200**	**186 210**	**186 220**	**186 230**	**186 240**

Data refers to standard salt dissolving tanks. The waste water volume and salt consumption refer to an inlet pressure of 3 bar.

The indicated values change at different inlet pressures and only serve for rough determination.

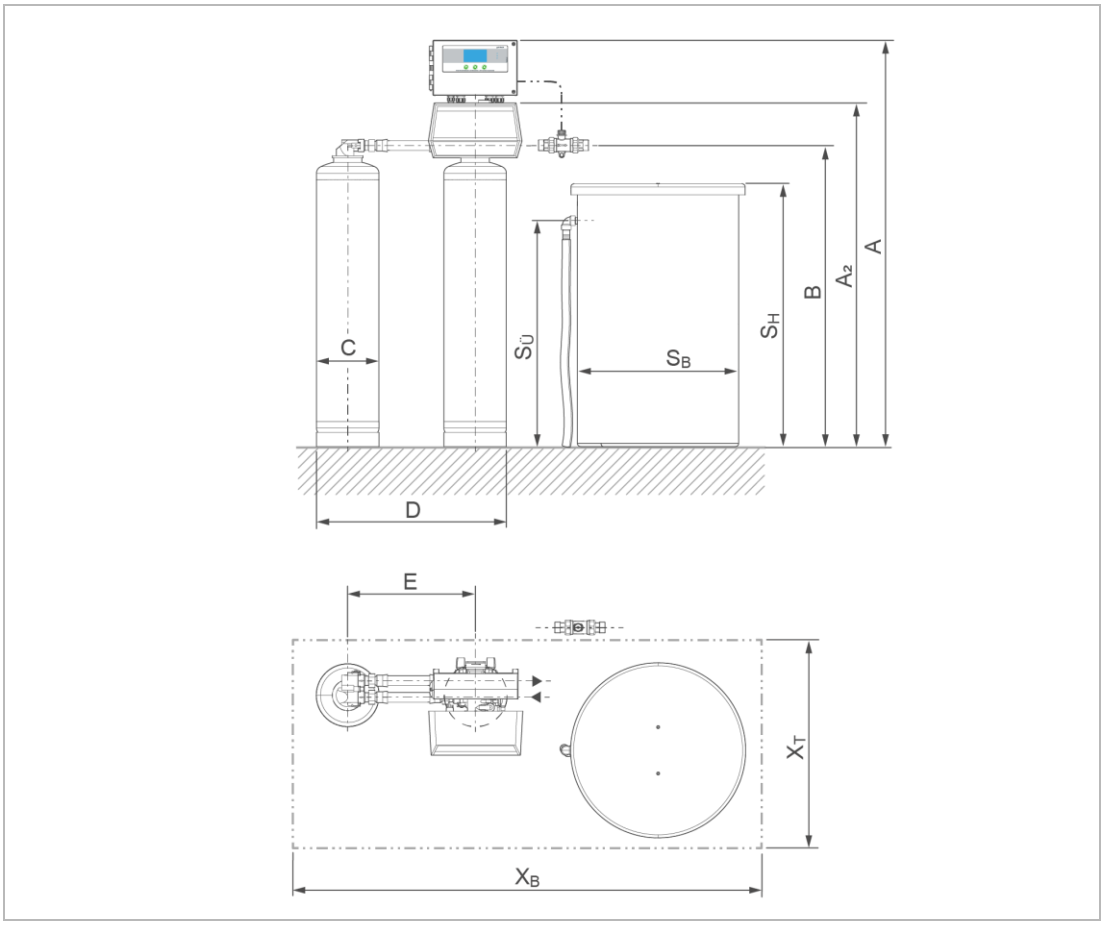
The indicated maximum continuous flows might decrease in case of high raw water hardness (> 20 °dH).

12.3 Pressure loss curve GENO-mat duo WE-X



	Designation		Designation
1	Pressure loss in bar	2	Flow in m³/h

12.4 GENO-mat duo WEW-X



Dimensions and weights		GENO-mat duo WEW-X	
		65	150
A System height	mm	1310	1530
A_2 System height (without control unit)	mm	1080	1300
B Connection height of control valve	mm	940	1160
C Ø Exchanger	mm	208	257
D System width	mm	640	665
E Distance between centres of exchangers	mm	400	
S_B Ø Salt dissolving tank (standard)	mm	500	570
S_H Height of salt dissolving tank (standard)	mm	810	880
$S_Ü$ Height of safety overflow	mm	700	780
X_T Depth of foundation	mm	≥ 600	≥ 700
X_B Length of foundation	mm	≥ 1460	≥ 1500
Operating weight, approx.	kg	285	435

Connection data		65	150
Nominal connection diameter		DN 25 (1" female thread)	
Drain connection		DN ≥ 50	
Rated voltage range	V	100 – 250	
Rated frequency	Hz	50 – 60	
Operating voltage	V DC	24	
Power input in standby	VA	10	
Protection/protection class		IP 54/⏚	

Performance data		65	150
Nominal pressure		PN 10	
Operating pressure	bar	2.0 – 8.0	
Continuous flow at a residual hardness < 0.1 °dH	m³/h	≤ 2.0	≤ 3.0
Pressure loss at continuous flow	bar	≥ 0.6	≥ 1.1
kV value (at Δp = 1.0 bar)	m³/h	2.6	2.7
Nominal capacity	mol	12.0	26.6
	m³x°dH	67	149
Capacity per kg of regeneration salt	mol/kg	3.33	3.32
Time capacity	m³ x °dH/h	72	84

Filling volumes and consumption data		65	150
Resin volume (exchanger)	l	18	40
Freeboard (resin in form of sodium), approx.	mm	270	230
Salt consumption per regeneration, approx.	kg	3.6	8.0
Flushing water volume	m³/h	≤ 0.340	≤ 0.545
Regeneration salt supply	kg	≤ 130	≤ 190
Total waste water volume per regeneration, approx.	l	112	211
Operating water volume	l	10	22
Minimum filling height of salt	mm	--	--

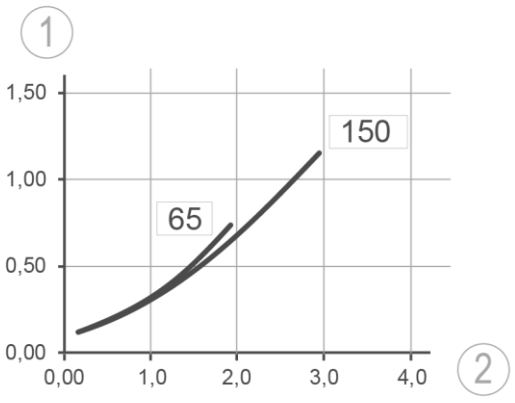
General data		65	150
Water temperature	°C	5 – 80	
Ambient temperature	°C	5 – 40	
Humidity (non-condensing)	%	90	
Iron concentration in raw water	mg/l	< 0.2	
Manganese concentration in raw water	mg/l	< 0.05	
Order no.		**184000010000**	**184000020000**

Data refers to standard salt dissolving tanks. The waste water volume and salt consumption refer to an inlet pressure of 3 bar.

The indicated values change at different inlet pressures and only serve for rough determination.

The indicated maximum continuous flows might decrease in case of high raw water hardness (> 20 °dH).

12.5 Pressure loss curve GENO-mat duo WEW-X



	Designation		Designation
1	Pressure loss in bar	2	Flow in m³/h

13 Operation log

- ► Document the initial start-up/commissioning and all maintenance activities.
- ► Copy the maintenance report.

Water softener | GENO-mat duo _____

Serial no.: _____

13.1 Start-up/commissioning log

Customer				
Name:				
Address:				
Installation/Accessories				
Drinking water filter (make/type):				
System separator	☐ Yes		☐ No	
Drain connection acc. to DIN EN 1717	☐ Yes		☐ No	
Floor drain present	☐ Yes		☐ No	
Safety device	☐ Yes		☐ No	
Water pipe upstream of the system	☐ Galvanised steel	☐ Copper	☐ Plastic	☐ Stainless steel

Operating values					
Water pressure (flow pressure)	bar				
Water meter reading	m³				
Hardness unit	☐ °dH	☐ °f	☐ mol/m³	☐ °e	☐ °ppm
Raw water hardness (measured)					
Raw water hardness (set)					
Soft water hardness (set)					

Remarks

Start-up/commissioning	
Company:	
Service technician:	
Work time certificate (no.):	
Date/signature:	

Maintenance no.: ____

Enter the measured values and operating data.

Confirm the checks with **OK** or record any repairs carried out.

Operating values	
Raw water hardness determined/set	/
Soft water hardness or blending hardness determined/set	/
Soft water hardness 0 °dH test	☐ OK
Operating pressure	bar
Water meter reading	m³
Counter reading Soft water volume	m³
Counter reading Regeneration	

Reading out the error memory			
	Error	**Date**	**Time**
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Maintenance work	OK (YES)	NO
Visual check		
Hose connections checked for leaks and damage	☐	
Mains cable, mains plug and electrical lines checked for damage and a tight fit	☐	
Entire system checked on the outside for damage, corrosion and leaks	☐	
Functional check on control unit and control valve		
Control setting checked	☐	
Initiation of regeneration checked	☐	
Water meter checked for pulse output	☐	
Injector and injector sieve cleaned/checked	☐	
Control valve checked for leaks	☐	
Drive motor checked for function	☐	
Flushing water hose checked for leaks during operation	☐	
Low-salt alarm checked for function	☐	
Work on salt dissolving tank and brine valve		
Salt dissolving tank and brine valve cleaned	☐	☐
Brine valve checked for function and setting	☐	
Brine hose checked for leaks during operation	☐	
Filter for brine valve cleaned or replaced	☐	
Seals replaced	☐	☐
Work on accessories		
Disinfection unit, chlorine cell checked/cleaned	☐	☐
Safety fitting tested against backflow	☐	☐
Pre-alarm salt supply checked for function/cleaned/set	☐	☐

Carried out by	
Company	
Service technician (date/signature)	

Maintenance no.: ____

Enter the measured values and operating data.

Confirm the checks with **OK** or record any repairs carried out.

Operating values	
Raw water hardness determined/set	/
Soft water hardness or blending hardness determined/set	/
Soft water hardness 0 °dH test	☐ OK
Operating pressure	bar
Water meter reading	m³
Counter reading Soft water volume	m³
Counter reading Regeneration	

Reading out the error memory			
	Error	**Date**	**Time**
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Maintenance work	OK (YES)	NO
Visual check		
Hose connections checked for leaks and damage	☐	
Mains cable, mains plug and electrical lines checked for damage and a tight fit	☐	
Entire system checked on the outside for damage, corrosion and leaks	☐	
Functional check on control unit and control valve		
Control setting checked	☐	
Initiation of regeneration checked	☐	
Water meter checked for pulse output	☐	
Injector and injector sieve cleaned/checked	☐	
Control valve checked for leaks	☐	
Drive motor checked for function	☐	
Flushing water hose checked for leaks during operation	☐	
Low-salt alarm checked for function	☐	
Work on salt dissolving tank and brine valve		
Salt dissolving tank and brine valve cleaned	☐	☐
Brine valve checked for function and setting	☐	
Brine hose checked for leaks during operation	☐	
Filter for brine valve cleaned or replaced	☐	
Seals replaced	☐	☐
Work on accessories		
Disinfection unit, chlorine cell checked/cleaned	☐	☐
Safety fitting tested against backflow	☐	☐
Pre-alarm salt supply checked for function/cleaned/set	☐	☐

Carried out by	
Company	
Service technician (date/signature)	

Maintenance no.: ____

Enter the measured values and operating data.

Confirm the checks with **OK** or record any repairs carried out.

Operating values	
Raw water hardness determined/set	/
Soft water hardness or blending hardness determined/set	/
Soft water hardness 0 °dH test	☐ OK
Operating pressure	bar
Water meter reading	m³
Counter reading Soft water volume	m³
Counter reading Regeneration	

Reading out the error memory			
	Error	**Date**	**Time**
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Maintenance work	OK (YES)	NO
Visual check		
Hose connections checked for leaks and damage	☐	
Mains cable, mains plug and electrical lines checked for damage and a tight fit	☐	
Entire system checked on the outside for damage, corrosion and leaks	☐	
Functional check on control unit and control valve		
Control setting checked	☐	
Initiation of regeneration checked	☐	
Water meter checked for pulse output	☐	
Injector and injector sieve cleaned/checked	☐	
Control valve checked for leaks	☐	
Drive motor checked for function	☐	
Flushing water hose checked for leaks during operation	☐	
Low-salt alarm checked for function	☐	
Work on salt dissolving tank and brine valve		
Salt dissolving tank and brine valve cleaned	☐	☐
Brine valve checked for function and setting	☐	
Brine hose checked for leaks during operation	☐	
Filter for brine valve cleaned or replaced	☐	
Seals replaced	☐	☐
Work on accessories		
Disinfection unit, chlorine cell checked/cleaned	☐	☐
Safety fitting tested against backflow	☐	☐
Pre-alarm salt supply checked for function/cleaned/set	☐	☐

Carried out by	
Company	
Service technician (date/signature)	

Maintenance no.: ____

Enter the measured values and operating data.

Confirm the checks with **OK** or record any repairs carried out.

Operating values	
Raw water hardness determined/set	/
Soft water hardness or blending hardness determined/set	/
Soft water hardness 0 °dH test	☐ OK
Operating pressure	bar
Water meter reading	m³
Counter reading Soft water volume	m³
Counter reading Regeneration	

Reading out the error memory			
	Error	**Date**	**Time**
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Maintenance work	OK (YES)	NO
Visual check		
Hose connections checked for leaks and damage	☐	
Mains cable, mains plug and electrical lines checked for damage and a tight fit	☐	
Entire system checked on the outside for damage, corrosion and leaks	☐	
Functional check on control unit and control valve		
Control setting checked	☐	
Initiation of regeneration checked	☐	
Water meter checked for pulse output	☐	
Injector and injector sieve cleaned/checked	☐	
Control valve checked for leaks	☐	
Drive motor checked for function	☐	
Flushing water hose checked for leaks during operation	☐	
Low-salt alarm checked for function	☐	
Work on salt dissolving tank and brine valve		
Salt dissolving tank and brine valve cleaned	☐	☐
Brine valve checked for function and setting	☐	
Brine hose checked for leaks during operation	☐	
Filter for brine valve cleaned or replaced	☐	
Seals replaced	☐	☐
Work on accessories		
Disinfection unit, chlorine cell checked/cleaned	☐	☐
Safety fitting tested against backflow	☐	☐
Pre-alarm salt supply checked for function/cleaned/set	☐	☐

Carried out by	
Company	
Service technician (date/signature)	

Documentation of salt consumption

1. Read the counter reading Soft water volume in the control unit.
2. Enter the value read.
3. Enter the amount of salt refilled.
4. Evaluate the salt consumption subject to the water volume consumed.

Date	Counter reading Soft water volume	Amount of salt refilled in kg	Salt consumption OK	
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No
			☐ Yes	☐ No

EU Declaration of Conformity

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

CE

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 becomes void if the system is modified in any way not approved by us.

Water softener

GENO-mat duo WE-X

GENO-mat duo WEW-X

Serial no.: Refer to type plate

The aforementioned system also complies with the following directives and provisions:

- EMC (2014/30/EU)

The following harmonised standards have been applied:

- DIN EN 61000-6-2:2006-03
- DIN EN 61000-6-3:2011-09
- DIN EN 60335-1:2012-10

The following national standards and regulations have been applied:

Responsible for documentation: Markus Poepperl

Manufacturer:

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

Hoechstaedt/Germany, 24.04.2019

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

Publisher's information

Technical documentation

Should you have any questions or suggestions regarding this operation manual, please contact Grünbeck Wasseraufbereitung GmbH's Department for Technical Documentation directly.

Email: dokumentation@gruenbeck.de

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