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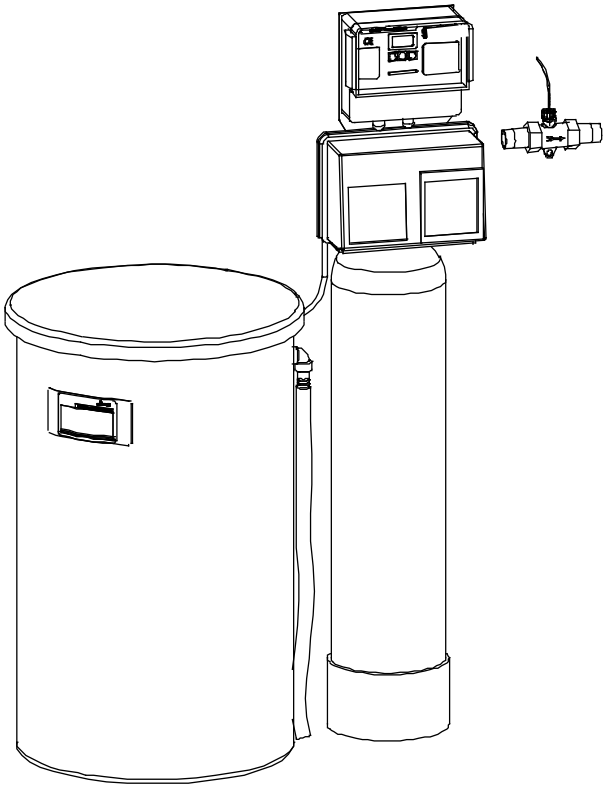
Operation manual
Water softener GENO-mat WFW
Warm water version



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Grünbeck Wasseraufbereitung GmbH
Josef-Grünbeck-Str. 1 · 89420 Hoechstaedt
GERMANY
✆ +49 9074 41-0 · 🖷 +49 9074 41-100
www.gruenbeck.com · info@gruenbeck.com

Table of contents

The operation manual consists of several parts, listed in this overview. You may find more information about the contents on the cover sheets of the individual components.

Publisher's information

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Responsible for contents:
Grünbeck Wasseraufbereitung GmbH
Josef-Grünbeck-Str. 1 • 89420 Hoechstaedt; Germany
Phone +49 9074 41-0 • Fax +49 9074 41-100
www.gruenbeck.com • service@gruenbeck.com

Printing: Grünbeck Wasseraufbereitung GmbH
Josef-Grünbeck-Str. 1, 89420 Hoechstaedt; Germany

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CE

EU Declaration of Conformity

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

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

Manufacturer:	Grünbeck Wasseraufbereitung GmbH Josef-Grünbeck-Str. 1 89420 Hoechstaedt;Germany
Responsible for documentation:	Markus Poepperl
System designation:	GENO-mat
System type:	WFW
System number:	Refer to type plate
Applicable guidelines:	Low Voltage (2014/35/EU) EMC (2014/30/EU)
Applied harmonised standards, in particular:	DIN EN 61000-6-2:2006-03 DIN EN 61000-6-3:2011-09
Applied national standards and technical specifications, in particular:	DIN 19636-100:2008-02
Location, date and signature	Hoechstaedt; Germany, 13.05.2019 i. V. M. Pöpperl Dipl.-Ing. (FH)
Function of signatory:	Head of Technical Product Design

A General

Table of contents

1 | Preface

Thank you for opting for a Grünbeck product. Backed by decades of experience in the area of water treatment, we provide solutions for all kind of processes.

Drinking water (raw water) is classified as food and requires particular care. Therefore, always ensure the required hygiene in operating and maintaining systems for drinking water treatment. This also applies to the treatment of water for industrial use if repercussions for the drinking water (raw water) cannot completely be excluded.

All Grünbeck systems and devices are made of high-quality materials. This ensures reliable operation over many years, provided you treat the systems with the required care. This operation manual assists you with important information. Therefore, read the complete manual before installing, operating or maintaining your system.

Customer satisfaction is our prime objective and providing customers with qualified advice is crucial. If you have any questions concerning this system, possible extensions or general water and waste water treatment, our technical service staff, as well as the experts at our headquarters in Hoechstaedt, is available to help you.

Advice and assistance

For advice and assistance please contact your local representative (www.gruenbeck.com).

Our service hotline is available for emergencies on +49 (0)9074 / 41-333.

We can connect you with the appropriate expert more quickly if you provide the required system data. To ensure that this information is to hand at all times, please keep the precise equipment data to hand (refer to the type plate in chapter C-1).

2 | How to use this operation manual

This operation manual is intended for the operators of our systems. It is divided into several chapters (a letter is assigned to each of them) which are listed in the “Table of contents” on page 1 in alphabetical order. In order to find the specific information you are looking for, check for the corresponding chapter on page 1.

The headers and page numbers with chapter information make it easier to find your way around in the manual. In case of larger chapters, first check out page 1 of said chapter (e. g. H-1) where you will find more information on the contents of this chapter.

3 | General safety information

3.1 Symbols and notes

Important notes in this operation manual are characterised by symbols. Please pay particular attention to these notes in order to ensure a danger-free, safe and productive system operation.

Danger! Failure to adhere to these notes will cause serious or life-threatening injury, extreme damage to property or inadmissible contamination of drinking water.

Warning! Failure to adhere to these notes may cause injury, damage to property or contamination of the drinking water.

Attention! Failure to adhere to these notes may result in damage to the system or other objects.

Note: This symbol characterises notes and tips to make your work easier.

Tasks with this symbol may only be performed by Grünbeck's technical service or by persons expressly authorised by Grünbeck.

Tasks with this symbol may only be performed by qualified electrical experts according to the VDE guidelines or according to the guidelines of a similar local institution.

Tasks with this symbol may only be performed by water companies or approved installation companies. In Germany, the installation company must be registered in a water company installation directory as per §12(2) AVBWasserV (German Ordinance on General Conditions for the Supply of Water).

3.2 Operating personnel

Only persons who have read and understood this operation manual are permitted to work with the system. The safety guidelines are to be strictly adhered to.

3.3 Designated application

The system may only be used for the purpose outlined in the product description (chapter C). The guidelines in this operation manual as well as the applicable local guidelines concerning the drinking water protection, accident prevention and occupational safety must be adhered to.

In addition, appropriate application also implies that the system may only be operated when it is in proper working order. Any malfunctions must be repaired at once.

3.4 Protection from water damage

Warning! In order to properly protect the installation site from water damage:

a) a sufficient floor drain system must be available or

b) a water stop device (see chapter C Accessories) must be installed.

Warning! Floor drains that are channelled off to the lifting system do not function in case of a power failure.

3.5 Indication of specific dangers

Danger due to electricity! → Do not touch electrical parts with wet hands! Disconnect the system from mains before starting work on electrical parts of the system. Have qualified experts replace damaged cables immediately.

Danger due to mechanical energy! System parts may be subject to overpressure. Danger of injury and damage to property due to escaping water and unexpected movement of system parts. → Check pressure pipes regularly. Depressurise the system before starting repair or maintenance work on the system.

Hazardous to health due to contaminated drinking water! → The system may only be installed by a qualified company. The operation manual must be strictly adhered to! Ensure that there is sufficient flow. The pertinent guidelines must be followed for starting-up after long periods of standstill. Inspections and maintenance must be performed at the intervals specified!

Note: By concluding a maintenance contract, you ensure that all of the required tasks are performed on time. You may perform the interim inspections yourself.

4 | Shipping and storage

Attention! The system may be damaged by frost or high temperatures. In order to avoid damage of this kind:

Protect from frost during transportation and storage! Do not install or store system next to objects which radiate a lot of heat.

The system may only be transported and stored in its original packing. Ensure that it is handled with care and placed the right side up (as indicated on the packing).

5 | Disposal

Comply with the applicable national regulations.

5.1 Packaging

Dispose of the packaging in an environmentally sound manner.

5.2 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.

B Basic information (water softeners)

Content

1 | Laws, regulations, standards

In the interest of good health, rules cannot be ignored when it comes to the processing of drinking water (raw water). This operation manual takes into consideration the current regulations and stipulates information that you will need for the safe operation of your water treatment system.

Among other things, the regulations stipulate that

- only approved companies are permitted to make major modifications to water supply facilities
- and that tests, inspections and maintenance on installed devices are to be performed at regular intervals.

2 | Water, scaling, softening

The water works provide us with pure water (raw water) that is suitable for drinking. However, this water is much more often used for washing machines, heating systems, water heaters, commercial devices, etc., where it can lead to problems if it is "hard".

Hard water is generated if water containing carbon dioxide* flows through layers of calcium. It dissolves the calcium until the so-called calcium - carbon dioxide - equilibrium has been reached.

If this equilibrium is unsettled (e.g. by heating $\rightarrow CO_2$ escapes) more calcium ($CaCO_3$) is precipitated (scaling).

Note: Calcium ions and magnesium ions exist side by side in nature, e.g. in the mineral dolomite.

Hardness ranges according to the German Act on Environmental Sustainability of Detergents and Cleaning Agents (WMRG):

The total hardness of the water is the sum of the concentrations of calcium ions and magnesium ions.

From hardness range 3 on, it is advisable to soften the water for usage. Additional measures may be necessary depending on the original quality of the water and its intended use.

* CO_2 from the air dissolves in water, causing a low concentration of carbon dioxide.

Hardness range	°dH	°f	mmol/l = mol/m³
1 (soft)	< 8.4	< 15.0	< 1.50
2 (medium)	8.4 - 14.0	15.0 - 25.0	1.50 - 2.50
3 (hard)	> 14.0	> 25.0	> 2.50

3 | Ion exchange

Fig. B-1: Initial state

The exchange of calcium and magnesium ions for sodium ions causes the water to become soft.

Principle

The hard raw water flows through an exchanger tank. This tank is filled with a resin, to which sodium ions are bonded at certain positions (see fig. B-1).

Since these bonding positions prefer calcium and magnesium ions, these ions are retained while the resin discharges sodium ions into the water (exchange reaction). This way, all substances causing hardness remain in the exchanger tank. Soft water with sodium ions leaves the exchanger tank (fig. B-2). This process continues until a major part of the sodium ions is exhausted.

Fig. B-2: Operation

The exchange reaction can be reversed if a large amount of sodium ions (salt solution = brine) is added (fig. B-3). By their sheer number, the sodium ions displace the calcium and magnesium ions at the docking positions of the resin.

This process restores the initial state. The ion exchanger is regenerated and is again ready for softening.

Drinking water (raw water)

As protection against corrosion, we recommend a soft water hardness of at least 3 °dH (5,3 °f, 0,53 mmol/l). According to the German Drinking Water Ordinance, the limit value for sodium ions (200 mg/l) should not be exceeded. This hardness is achieved by adding untreated drinking water (raw water) which is also called blending.

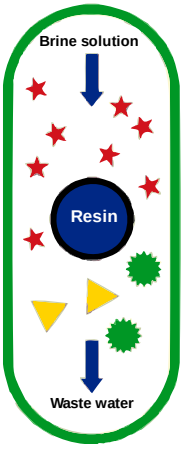


Fig. B-3: Regeneration

Note: Many popular mineral waters contain significantly more sodium ions. Check for yourself by reading the analysis results on the labels.

Warning! Risk of infection due to germs in drinking water. Germs can reproduce in stagnant water to the point where they pose a threat. Work with drinking water systems requires special hygienic measures. Ensure that there is sufficient flow. Disinfect the systems if required.

Single/Twin/Triple systems

In case of a single system, no soft water is available during the regeneration phase.
Twin systems have two parallel ion exchangers that alternate operation. As a result, soft water is available at all times.
Triple water softeners consist of three exchanger units. Two exchangers are flown through in parallel while the third is being regenerated.

★ Sodium ions ✹ Calcium ions ▲ Magnesium ions

C Product Description (GENO-mat WFW)

Content

1 Type designation plate

The type designation plate is located on the control head of the water softener. In order to speed up the processing of your inquiries or orders, please specify the data shown on the type plate of your system when contacting Grünbeck. Please copy the indicated information to the table below in order to have it handy whenever necessary.

Water softener GENO-mat WFW

WFW: ☐ ☐ ☐ **Serial number:** ☐ ☐ ☐ ☐ ☐ ☐ / ☐

Order number: ☐ ☐ ☐ ☐ ☐ ☐

2 Technical data

The GENO-mat WFW water softener is a single system with a built-in bypass (bypass pipe) to supply raw water during regeneration. They feature a volume-controlled control unit. The regeneration is released when the pre-set water volume has been softened.

All system data are summarised on the reverse in table C-1. The data given refers to standard water softeners. Possible deviations in case of special versions are communicated separately, if applicable.

Warning! Extended periods of standstill may cause bacterial growth in the drinking water. Automatic regeneration counteracts this effect. Therefore, do not disconnect the system from the water and power supply when you are absent for longer periods of time.

Caution! Electrically operated valves. In the event of a power failure during the regeneration, water may flow into the drain or the brine tank. In case of a power failure, check the system and shut off the water supply, if necessary.

Table C-1: Technical specifications		Water softener GENO-mat WFW	
		65	**150**
Connection data			
Nominal connection diameter		DN 25 (1" male thread)	
Min. drain connection		DN 50	
Mains connection	[V]/[Hz]	230/50-60 (system operation by means of protective low voltage 24/50-60)	
Connected load	[VA]	10	
Protection/protection class		IP 54 / ⧈	
Performance data			
Nominal pressure (PN)	[bar]	10	
Min./max. operating pressure	[bar]	2.0/8.0	
Peak flow *** at a residual hardness of < 0.1 °dH	[m³/h]	2.0	3.0
Pressure loss at max. continuous flow	[bar]	0.7	1.1
k_V value (at Δp = 1.0 bar)	[m³/h]	2.7	2.8
Nominal capacity	[mol] [m³ x °dH]	12.0 67	26.6 149
Capacity per kg of regeneration salt	[mol/kg]	3.33	3.32
Time capacity	[m³x°dH/h]	72	84
Duration of regeneration	[min.]	48.5	92.5
Dimensions and weights			
Total height	[mm]	1340	1560
Total height (without control electronics) ****	[mm]	1070	1290
Exchanger tank ∅	[mm]	208	257
Brine tank ∅ *	[mm]	500	570
Overall height of brine tank *	[mm]	810	880
Height of safety overflow of brine tank *	[mm]	700	780
Connection height of control head (raw water)	[mm]	940	1160
Min. depth of foundation *	[mm]	600	700
Min. length of foundation *	[mm]	1000	1100
Operating weight, approx. *	[kg]	255	375
Filling volumes and consumption data **			
Resin volume	[l]	18	40
Freeboard (resin in form of sodium), approx.	[mm]	270	230
Salt consumption per regeneration, approx.	[kg]	3.6	8.0
Max. regeneration salt supply *	[kg]	130	190
Total waste water volume per regen., approx.	[l]	112	211
Operating water volume	[l]	36	47
Minimum filling height of salt *	[mm]	—	—
Ambient data			
Max. water temperature	[°C]	80	
Max. ambient temperature	[°C]	40	
Control unit			
Data record in Code 290 (single/twin)		2754 E	2755 E

* with standard brine tank

** 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 as a means for a rough determination.

*** The indicated peak flows might decrease in case of high levels of raw water hardness.

**** In case of systems with a nominal connection diameter of DN 40, the control electronics must be fastened in place by others on site.

Order no.	**182 110**	**182 130**

3 Intended use

Water softeners of the GENO-mat WFW series are designed for the softening and partial softening of cold drinking and process water. As single systems, they are intended for applications in which soft water is not always needed. There are system types available with regeneration with full salting or economy salting. The type of regeneration is type-specific and must not be changed arbitrarily.

The water to be softened has to be free of iron and manganese (less than 0.2 mg of iron or 0.05 mg of manganese per litre). Its temperature must not exceed 30 °C. The maximum ambient temperature is 40 °C.

The systems can be used for the (partial) softening of well, process, boiler feed, cooling and air-conditioning water.

When softening drinking water, the provisions of the German Drinking Water Ordinance are binding (residual hardness of 3 °dH - 8 °dH, max. sodium content of 200 mg/l (refer to chapter E, paragraph 2.1). A blending valve for mixing inlet water is also needed

The system is adjusted to the soft water requirements to be expected at the installation site, it is not suitable for major deviations. Do not exceed the peak flow under any circumstances.

The system may only be operated if all components are installed properly. Safety devices and equipment must NEVER be removed, bridged or tampered with.

Intended use of the device also implies that the information contained in this operation manual and all safety guidelines applying at the installation site be observed. Furthermore, the maintenance and inspection intervals must be respected.

Water softeners of the GENO-mat WFW series are designed exclusively for use in industrial and commercial applications.

If the softened water is intended for human consumption as defined by the German Drinking Water Ordinance, the ambient temperature must not exceed 25 °C. For applications that are purely technical, the ambient temperature must not exceed 40 °C.

4 Scope of supply

4.1 Basic equipment

- Exchanger tank in double walled plastic housing
- Food-compatible ion-exchange resin
- Red brass control head
- Brine tank made of PE incl. sieve bottom (which separates the salt supply chamber and the brine chamber) and brine valve made of PP with safety float (controls the brine flow). With brine buffer technology.
- Microprocessor controller with LC display (controls all system functions and indicates operating states and disturbances).
- Turbine water meter (TWZ) (can be replaced by water meter with counter, refer to 4.2)
- Water test kit (refer to 4.3)
- Operation manual

4.2 Optional features

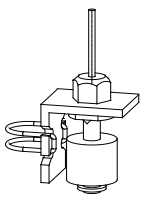
Note: It is possible to retrofit existing systems with optional components. Please contact your local Grünbeck representative or Grünbeck's headquarters in Hoechstaedt for more information.

- Blending valve (to adjust the residual hardness by adding raw water)
  Connection R 1" 126 010
  Connection R 1 ¼" 126 015
- Mounting kit 1: (for easy connection to the water installation) 125 845
  Compact valve block R 1", female thread, integrated bypass with shut-off valve, shut-off valves for hard and soft water, outlet for raw water (e.g. garden hose), 2 flexible stainless steel fabric hoses* (connection R 1", female thread, length 600 mm)

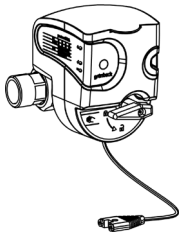
Other connection sets for water softeners 1", 1¼", 2"

- Please inquire

- Voltage-free signal (display of operating status) 126 885



- Automatic empty signal for the brine tank 181 880



- Safety device protectliQ:A20 — 126 400

Product for protection against water damage in one- and two-family homes.

For other sizes, please inquire.

Drawings with different scale
* not shown

4.3 Consumables

Only use genuine consumables in order to ensure the reliable operation of the system.

- Regeneration salt (25 kg) — 127 001
- Water test kit "Total hardness" — 1 piece 170 187; 10 pieces 170 100

4.4 Wearing parts

In case of heavy duty, seals and control pistons are subject to a certain wear and tear. Wearing parts are listed below.

Note: Although these parts are wearing parts, we grant a limited warranty period of 6 months for these parts. The same applies for electrical components.

a) Seals, control piston, injector, actuator

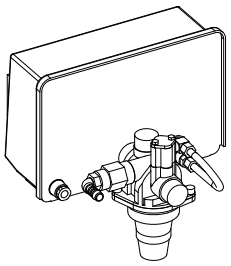


Fig. C-1: Control head nominal connection diameter DN 25

b) Flat seals, backflow preventer

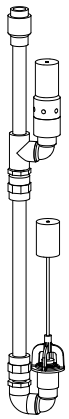


Fig. C-3: Brine valve

D Installation (GENO-mat WFW)

Content

1 General installation instructions

The installation site must provide adequate space. A foundation of a sufficient size and adequate load carrying capacity has to be provided. The required connections must be provided prior to the installation of the system. For dimensions and connection data, please refer to table D-1.

Table D-1: Installation data		**Water softener GENO-mat WFW**	
		65	**150**
Connection data			
Nominal connection diameter		DN 25 (1" female thread)	
Min. drain connection		DN 50	
Mains connection	[V]/[Hz]	230/50 (system operation with protective low voltage 24/50)	
Connected load	[VA]	10	
Protection / protection class		IP 54 / ⧈	
Dimensions and weights			
Total height	[mm]	1070	1290
Exchanger tank ∅	[mm]	208	257
Brine tank ∅ *	[mm]	500	570
Overall height of brine tank *	[mm]	810	880
Height of safety overflow of brine tank *	[mm]	700	780
Connection height of control head (raw water)	[mm]	940	1160
Min. depth of foundation *	[mm]	600	700
Min. length of foundation *	[mm]	1000	1100
Operating weight, approx. *	[kg]	255	375
* with standard brine tank			

Note: Also observe the operation manuals that have been supplied with the optional features (see chapter C, 4.2) for your system.

1.1 Sanitary installation

It is imperative that you comply with certain regulations when installing the water softener GENO-mat WF. Additional recommendations are given in order to facilitate the handling of the system. The installation instructions described below are also illustrated in fig. D-1.

Mandatory regulations

The installation of a water softener represents a major interference with the drinking water system. Therefore, only authorised experts may install such systems.

- Observe local and general installation guidelines.
- Install a fine filter upstream (e.g. BOXER, pureliQ).
- Use corrosion-resistant material for soft water lines
  OR
  Meter corrosion inhibitor downstream of the water softener.
- Provide a drain connection (minimum DN 50) to discharge the regeneration water.

Informations: If the regeneration water is directed to a lifting system, said system must be salt water resistant.

The unit does not have a DVGW test mark. According to DIN EN 1717, additional safety devices to protect the drinking water are required (e,g, system separator GENO DK 2).

Informations: The filter as well as the system separator must be warm water resistant or can be installed in the cold water line as pretreatment.

Recommendations

- Provide a sampling valve immediately downstream of the softener. This facilitates the sampling for the regular hardness tests (functional check).

1.2 Electrical installation

A Schuco socket is adequate for the electrical connection. However, it must comply with the specifications given in table D-1, may not be further away from the softener than 1.20 m and must carry constant voltage (do not couple with light switch).

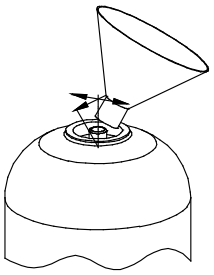
2 Preliminary works

1. Unpack all system components.
2. Check for completeness and proper condition.
3. Set up exchanger tank at the intended site

2.1 How to fill the exchanger tank

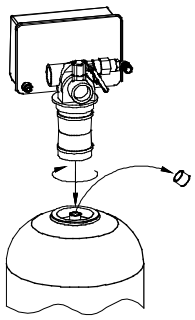
The work described here is only needed with the large systems (GENO-mat WF 450, GENO-mat WF 750, GENO-mat WF 330, GENO-mat WF 530). Smaller units are supplied with filled exchanger tanks.

Table D-1: Filling in resin		
	WF 330 / WF 450	WF 530 / WF 750
Resin volume	115 l	200 l



Centre riser pipe, fill with resin

1. Check whether the riser pipe is covered by a protective cap, plug on the protective cap, if necessary.
   The protective cap prevents material from entering the riser pipe.
2. Centre the riser pipe in the exchanger tank.
3. Pour ion exchange resin into the tank. Use the funnel provided.



Remove the protective cap, fix the control head in place

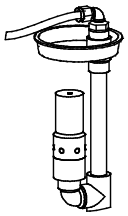
4. Fill up the exchanger tank with drinking water.
5. Centre the riser pipe precisely.
6. Clean the exchanger tank's screw thread and sealing surface for the connection of the control head to remove any ion exchange resin that might be clinging to them.
7. Remove the protective cap from the riser pipe.
8. Fill the exchanger tank with water.
9. Put the control head onto the rising pipe from above with the head nozzle and fasten it by turning it to the right.

2.2 How to fit the brine line

See Fig. D-1 (b), position 7.

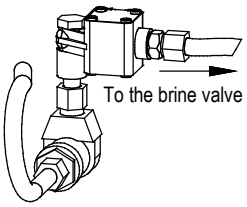
1. Set up the brine tank at its intended site.
2. Remove cover from the brine tank.

Note: Remove the brine valve to make installing the brine line easier. To do so, remove the yellow lid and pull the brine valve upwards.



Brine valve

3. Fit the transition nipple (not needed with WF 530, WF 750) and angle piece onto the brine valve.
4. Cut the brine hose to the required length and insert reinforcing sleeves at both ends.
5. Fit the brine hose onto the brine valve
6. Only if removed: Insert the brine valve and replace the yellow cover.



Disinfection unit (pre-assembled)

Only for systems with disinfection unit:

7. Mount the disinfection unit on the BVO valve of the control head (not necessary for small systems, as it is pre-assembled).
8. Connect the brine hose to the disinfection unit.

For all other systems:

7. Connect the brine hose to the BVO valve of the control head.

3 How to connect the system

3.1 Water connection

1. Make the water connection as indicated in the installation drawing (Fig. D-1 (a) and (b); pages D-6, D-7).
   Observe the guidelines and recommendations given in section 1.

Note: It is imperative to install the water meter supplied with the system on the soft water side (downstream of the system).

Caution! Dirt and corrosion particles may damage the system (control head, ion exchanger resin). Flush the feed pipe prior to start-up.

2. Make the waste water connection. Direct the drain hose to the outlet and secure it.

Caution! Danger of damage and malfunctions due to waste water backing up. Therefore, do not bend the hose and do not lead it higher than the system height.

3. Route the brine tank overflow hose with a gradient to the channel. Do not connect to the drain hose!

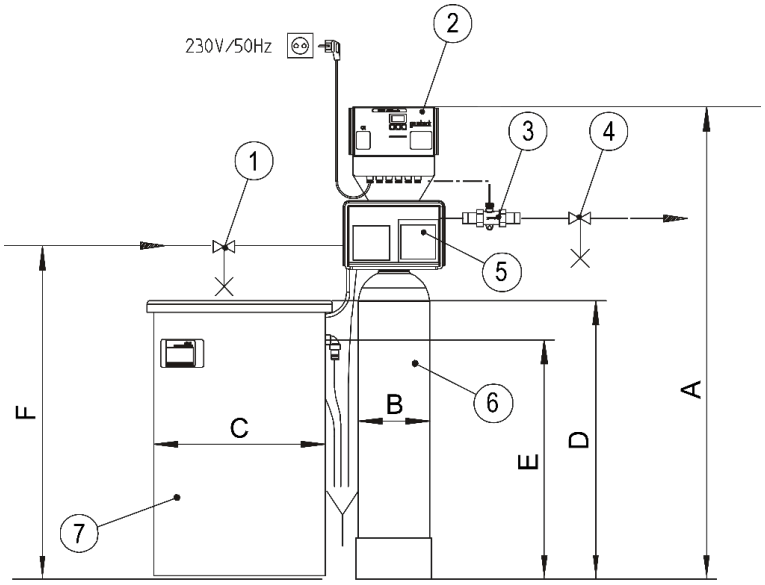
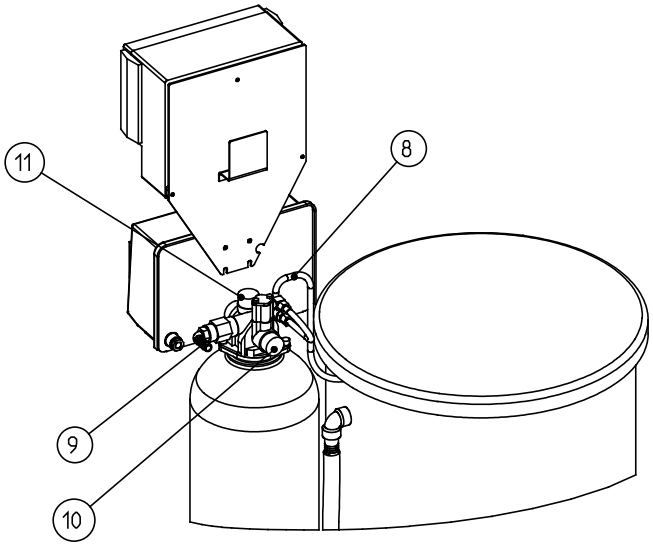


Fig. D-1: (a) Installation drawing water softener GENO-mat-WF

Dimensions in Fig. D-1 (a); extract from table D-1			
Water softeners GENO-mat-WFW		**65**	**150**
A Total height	[mm]	1070	1290
B Exchanger tank ∅	[mm]	208	257
C Brine tank ∅ *	[mm]	500	570
D Total height of brine tank *	[mm]	810	880
E Height of safety overflow of brine tank *	[mm]	700	780
F Connection height of control valve (raw water)	[mm]	940	1160

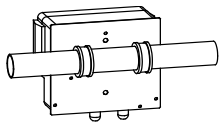
* In systems with standard brine tank

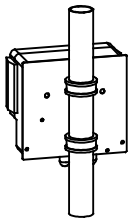


① Sampling valve
② Control electronics GENO-IONO-matic
③ Water meter for soft water
④ Sampling valve
⑤ Control head
⑥ Exchanger tank
⑦ Brine tank
⑧ Brine line
⑨ Drain connection
⑩ Raw water inlet
⑪ Soft water outlet

Fig. D-1: (b) Water softener GENO-mat-WF; rear view

3.2 How to connect the control electronics





The work described in 1. to 2. is only needed with the large systems (GENO-mat WF 450, GENO-mat WF 750 and GENO-mat WF 330, GENO-mat WF 530). Smaller systems are supplied pre-assembled.

1. Fasten the control electronics to the pipeline close to the control head using the fastening set supplied.

The following work here is only allowed to be performed by trained electricians or electronics experts.

Danger due to electrical energy!
Mains voltage present at terminals L, N and PE.
Do not connect system to mains before you have finished this work

2. Lay a 7-core cable between the control head and control electronics and connect according to the terminal diagram (Fig. D-2).
3. Only for systems with disinfection unit:
   Connect the supply cable to terminals C+ and C-.
4. Connect the water meter according to the terminal diagram (chapter D-2).
5. Connect the mains plug to the socket (refer to 1.2).

Turbine water meter	Water meter with counter
U_W = white H_W = green G_W = brown	R_W = green G_W = brown

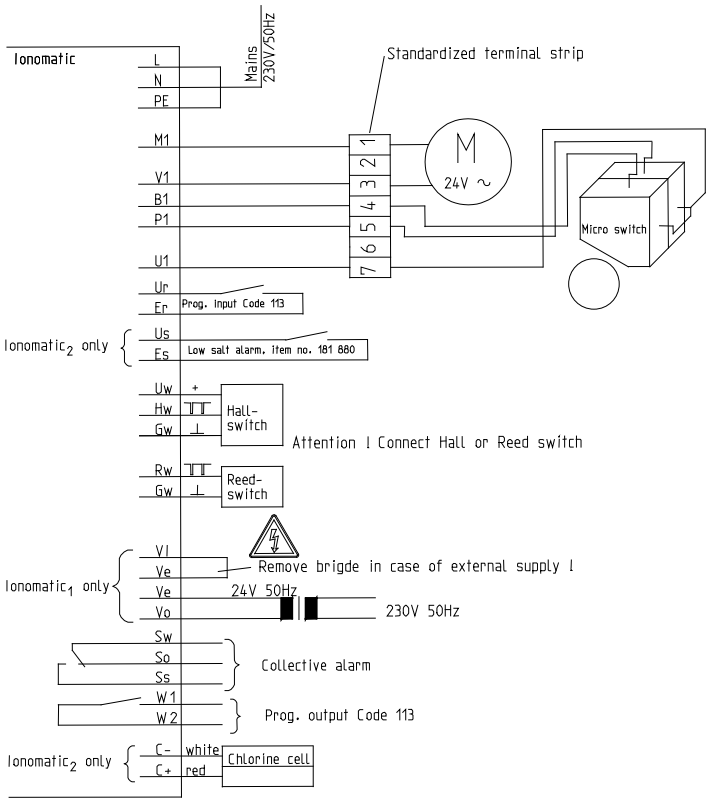


Fig. D-2: Terminal connection diagram GENO-mat-WF

E Commissioning (GENO-mat WF)

Content

The work described below is only permitted to be performed by trained qualified personnel. We recommend having Grünbeck's technical service/authorised service company commission the system.

1 How to fill the brine tank

1. Remove the lid of the brine tank
2. Carefully add water until the water level is about 30 mm above the sieve base.

Caution! Impurities in the salt may cause malfunctions at the brine valve and at the injector of the control valve. A defined salt quality is required for the reliable function of the system.

Only use salt tablets as per DIN EN 973 A.

3. Insert salt tablets into the brine tank. The brine tank can be fully filled.
4. Add the operating water volume (Table E-1).
5. Close the brine tank lid .

Table E-1: Filling the brine tank		**Water softener GENO-mat WF**				
Systems with full salting		**65**	**150**	**300**	**450**	**750**
Max. regeneration salt supply *	[kg]	130	190	285	485	760
Operating water volume	[l]	10	22	45	70	111
Systems with economy salting		**50**	**130**	**230**	**330**	**530**
Max. regeneration salt supply *	[kg]	65	130	190	285	285
Operating water volume	[l]	5	11	23	32	44
* In systems with standard brine tank						

2 How to set the system

2.1 How to set the blending hardness

In case of systems featuring a blending valve (optional feature), the blending hardness must be set. Open the valve on the raw water inlet. Before making any adjustments, refer to the operation manual of the blending valve.

Note: When softening drinking water, the stipulations indicated in the German Drinking Water Ordinance are binding:

Sodium content (max.): 200 mg/l. Note paragraph 3.1 with regard to the blending hardness!

Sodium content

You may learn the sodium content of the inlet water from your water supplier. When softening water by 1 °dH, the sodium content increases by approx. 8.2 mg/l. If the stipulations of the German Drinking Water Ordinance must be adhered to, the water cannot be softened indefinitely. The permissible blending hardness results from the limit value for the sodium content and the inlet water hardness.

Example

Softening of drinking water

Inlet water (22 °dH)
contains sodium (51.6 mg/l)

Possible addition of sodium during softening:

200 mg/l - 51.6 mg/l = 148.4 mg/l

This results in maximum permissible softening of:

$\frac{148,4}{8,2} \approx 18°dH$

Conclusion:
Blend to at least 22 – 18 = 4 °dH!

200 mg/l (limit value according to the German Drinking Water Ordinance)
– x mg/l (sodium content in the inlet water)
y mg/l (possible addition of sodium during softening)

$\frac{y}{8,2}$ = Z °dH (maximum permissible softening)

The inlet water can be softened to a maximum of Z °dH. Depending on the sodium content of the inlet water, a blending hardness needs to be selected which is below the permissible maximum value of 200 mg/l.

2.1.1 Recommendations Blending hardness

Blending hardness	Result
3 – 5 °dH	Very soft water – ideal for thermal equipment – possible problems when washing off soap
6 – 8 °dH	Optimum soft water

2.2 How to set the control unit

The water softener GENO-mat WF is volume-controlled. The operating parameters are already stored in the control unit GENO-IONO-matic. During start-up, all parameters must be entered which are required for the automatic calculation of the regeneration interval. Furthermore, the factory-set data record must be checked.

Note: For detailed information on handling the control unit GENO-IONO-matic, refer to chapter F.

1. Set the time.
2. Set the raw water hardness.
3. Set the "blending hardness" (hardness of the water at the water meter).

Note: Irrespective of the selected blending hardness, 0 °dH has to be entered here if the water meter is installed upstream of the blending valve.

4. Check the factory-set data record (operating parameter). To do so, call up Code 290 and adjust the value displayed according to table E-2.

Table E-2: Data record in code 290		**Water softener GENO-mat WF**				
Systems with full salting		**65**	**150**	**300**	**450**	**750**
Data record in Code 290 (single/twin)	[kg]	2754 E	2755 E	2756 E	2866 E	2867 E
Systems with economy salting		**50**	**130**	**230**	**330**	**530**
Data record in code 290 (single/twin) *	[kg]	2751 E	2752 E	2753 E	2864 E	2865 E

Note: Control electronics and control head are now harmonised (synchronised) automatically. The electronics identifies both exchangers as being completely regenerated.

5. Check the pre-set "water meter pulse" (control unit, code 290).
   The required setting depends on the water meter used. The display must show the value corresponding to the water meter installed and indicated in table E-3.

Table E-3: Interval of the water meter pulses (setting Code 290)			
Standard equipment for:	Water meter	Pulse interval	Display
Small systems	TWZ 1"	0.029 l/pulse	F 2
Medium and large systems	TWZ 1½", TWZ 2"	0.075 l/pulse	F 10
—	with counter	100.0 l/pulse	F 9

3 How to start up the system

1. Open the valve on the raw water inlet.
2. Release a manual regeneration (refer to chapter F). One exchanger is now being regenerated.
3. Release a manual regeneration. Now, the other exchanger - if present - is being regenerated.

Note: All systems with low-salt alarm have a delay time set between 2 regenerations (factory setting: 0.2 hours (= 12 minutes)). At the end of the regeneration, it is necessary to wait for this time to elapse before a manual regeneration can be triggered again.

4. Open the valve on the soft water outlet after regeneration has finished.
5. Perform a visual check.
   Ensure that no water leaks from the system at any point.
6. Take a water sample at the sampling valve downstream of the system.
7. Perform a hardness test using the "Total hardness" water analysis kit.
   The system is working correctly if the analysis of the water taken just downstream of the exchanger tank gives 0 °dH.
8. Complete the cover sheet and check list / column 1 of the operating log. To do this, carry out the necessary measurements and tests.

F Operation (GENO-IONO-matic)

Content

1 Preface

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

Note: Chapter F in the operation manual for GENO-OSMO-MSR and GENO-KWA 50k/60i and GENO-LUWADES$_2$ applies to the water softeners GENO-mat duo WE version GENO-mat duo WE-MSR and WE-KWA.

Operating elements

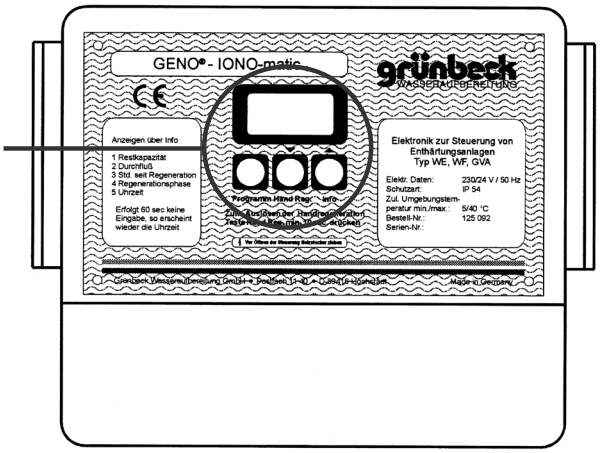


Fig. F-1: Control unit GENO-IONO-matic

Warning! Incorrect operation and settings may lead to hazardous operating conditions which cause injury, illness or damage to property.

Only make the settings described in this chapter!

All other work at the control unit, in particular modifications to the data records, are only allowed to be performed by Grünbeck's customer service/authorised service company.

2 How to operate the control unit

2.1 Operating panel and display

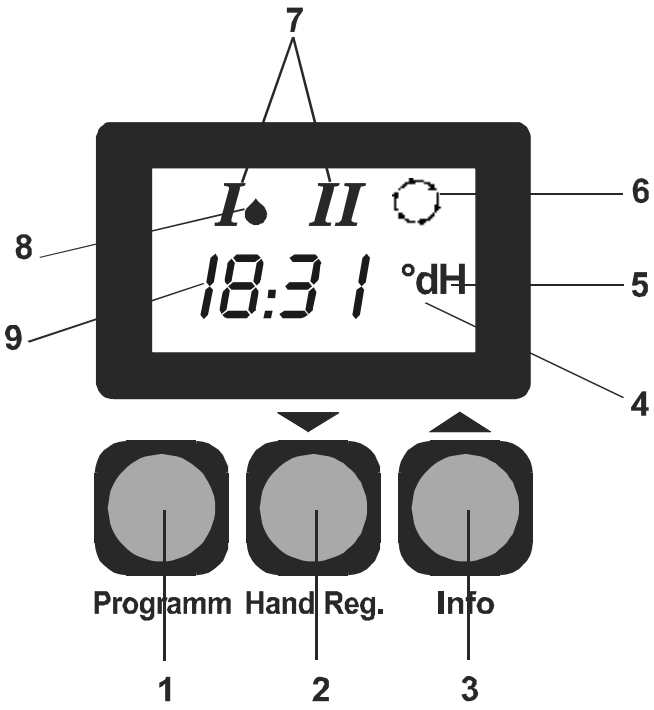


Fig. F-2: Control unit GENO-IONO-matic; operating elements and display

1 "Program" key
In standard operation:
- Switches to the programming level (keep pressed for more than 5 s).

On the programming level:
- Opens menu items.
- Saves the setting and closes menu items.

2 "Hand-Reg" key
In standard operation:
- Releases the manual regeneration (keep pressed for more than 10 s).

On the programming level:
- Switches to the previous menu item
- Decreases numerical values.

3 "Info" key
In standard operation:
- Activates the info level and switches to the next screen

On the programming level:
- Switches to the next menu item
- Increases the numerical values.

4 Display
- Indicates the operating parameters (see 5 - 10).

5 Indication of "Unit"
- Indicates the unit of the adjacent numerical value (e.g. °dH, °f, mol, m^3 ....).

6 Indication of "Regeneration"
- Indicates the progress of the regeneration of the exchanger tank indicated next to it. Each arrow represents one regeneration step. When the arrows form a circle, the regeneration is completed.

7 Indication of "Exchanger tank"
- Indicates the operating state of exchanger tanks I and II (for twin systems only). The active exchanger tank is indicated on the left; the exchanger tank in regeneration or standby is indicated on the right.

8 Indication of "Water flow pulses"
- Indicates the water flow.

9 Indication of "Numerical values"
- Indicates the time in the basic mode.
- Indicates the operating parameters on the info level
- Indicates the values in the menu on the programming level. Open menu items are flashing.

2.2 How to set the operating parameters

Principle

In order to make settings, a programming level must be called first (user programming level: key 1, technical service programming level: keys 1 + 2).

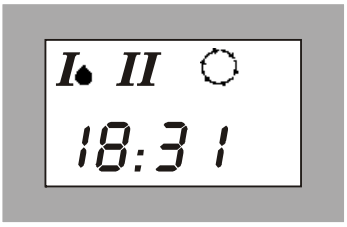
On the programming level, key 3 switches to the next, key 2 to the previous menu item. When the parameter which is to be changed is reached, you can access the menu by pressing key 1, the display is flashing. In the open menu (flashing display), keys 2 and 3 switch to lower of higher values respectively. When the correct value (flashing) appears in the display, it may be saved by pressing key 1. Thereby, the menu items will be closed and the set value is displayed permanently.

When all required settings have been made, the programming level is closed by pressing keys 2 + 3 simultaneously and the display returns to the basic function (time). The system also returns to the basic mode if no entry is made for more than 1 minute. Entries which had not been saved are lost.

Note: Instructions in bold are absolutely essential to ensure that work can continue. All other instructions can be ignored if the value shown on the display remains unchanged.

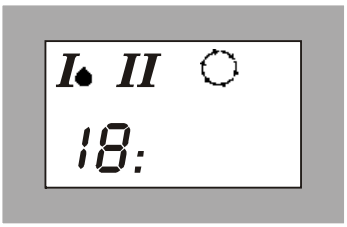
Basic settings (user programming level)

The basic settings must be adjusted to the local conditions when starting up the system. In case of varying raw water quality, the value has to be adapted.



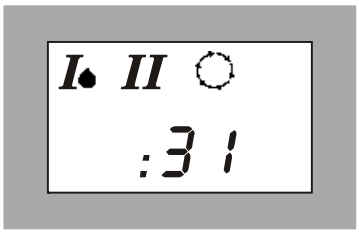
In basic mode, the display indicates the operating status of the exchanger tank/s and the time stored in the system. First, call up the user programming level.

1. **Press and hold the "Program" key (1) for more than 2.5 seconds.**



The display indicates the hour. If the display corresponds with the current time, steps 2. – 4. can be omitted.

2. Tap the "Program" key (1).
   The display starts flashing.
3. Set the current time (hour). In order to do so:
   Use the "Hand Reg." key (2) to decrease the hours.
   OR
   Use the "Info" key (4) to increase the hours.
4. Save the setting by pressing key (1).
   The display shows the hour without flashing.
5. **Press the "Info" key (3) to switch to the next menu item.**

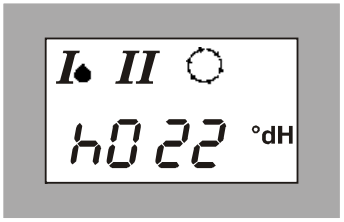


The display indicates the minutes. If no change is required, continue with 9.

6. Press the "Program" key (1) to access the menu.
7. When the display is flashing, increase or decrease the value with keys (3) or (2) respectively.
8. As soon as the correct value is set, press key (1).

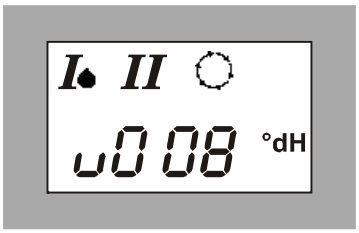
The flashing display changes to a permanent display.

9. **Press the "Info" key (3) to switch to the next menu item.**



The display indicates the raw water hardness stored. At this point, enter the actual raw water hardness at the place of operation. You can either determine the hardness by means of the water test kit "Total hardness" or inquire at your local water supplier.

10. Enter the appropriate value. To do so, repeat steps 6. – 8. accordingly.
11. **Press the "Info" key (3) to switch to the next menu item.**



The display indicates the menu item "Blending hardness". In case of systems that do not have a blending valve or feature a water meter installed upstream of the blending unit, 0 °dH (0 °f, 0 mmol/l) must be entered here. In all other cases the blending hardness must be set which is predetermined by the setting of the blending valve (between 0 °dH (0 °f, 0 mmol/l) and raw water hardness). When softening drinking water, the stipulations of the German Drinking Water Ordinance must be observed (also refer to chapter E).

12. Enter the correct value. To do so, repeat steps 6. – 8. accordingly.
13. **Press "Info" (3) and "Hand Reg." (2) keys simultaneously in order to return to the basic mode.** The display now indicates the current time.

Basic settings (technical service programming level)

All relevant system parameters are stored in data records. The system is ready for operation if the correct data record was selected. Check the factory-setting during start-up. In addition, you may chose the operating mode.

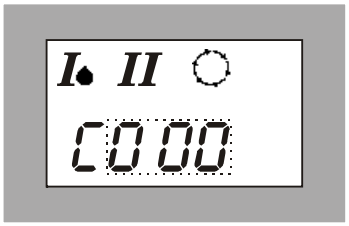
Settings in the technical service programming level may only be performed by Grünbeck's technical customer service/authorised service company or by authorised experts.

Warning! Incorrect settings may lead to hazardous operating conditions which cause injury, illness or damage to property.

Strictly adhere to the operation manual! Only make the settings described there!

Precondition: The system is in basic mode. The display indicates the current time.

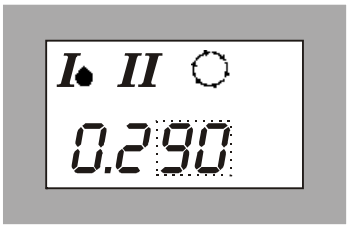
1. **Press "Program" (1) and "Hand Reg." (2) keys simultaneously until the display changes.**



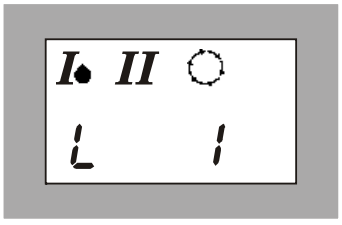
The technical service programming level is active. First, the required menu must be selected.

The figures (000) are flashing. They need to be modified, so that they display the Code for the menu to be edited. The Code for the menu "System settings" required here is 290.

2. **Use the "Info" key (3) to count upwards until C. 290 is displayed.**
   OR
   Use the "Hand Reg." key (2) to count downwards until C. 290 is displayed.
   When holding down keys (2) or (3), the figures run faster; for fine tuning, tap the keys.



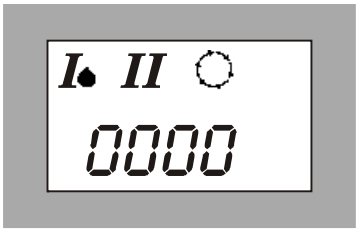
3. **Tap the "Program" key (1) to accept Code 290.**



First, the "Language" may be selected, i.e. the unit in which the system will calculate and indicate the operating parameters from now on. The following selections are available:
L 1: °dH, L 2: °f and L 3: mol/l (displayed as mol). If no modification is required, continue with step 7.

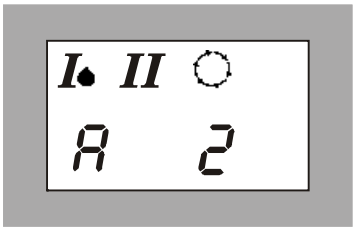
4. Tap the "Program" key (1) to access the menu.
   The display starts flashing.

5. Use the "Info" key (3) to set the desired value (infinite loop L 1→ L 2→ L 3 → L 1..).
   OR
   Use the "Hand Reg." key (2) to set the desired value. (infinite loop L 1→ L 3→ L 2 → L 1..).
6. Press key (1) to accept the entry.
   The display stops flashing and the unit field displayed indicates the selected unit.
7. **Press the "Info" key (3) to switch to the next parameter.**



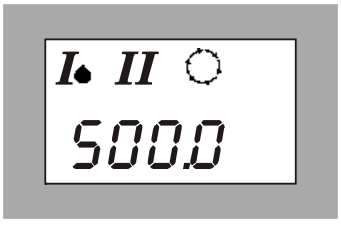
The number of the factory-set data record (standard operating parameter) is indicated. If the setting does not correspond to the data record of your system (refer to chapter E), it must be adjusted.

8. Tap the "Program" key (1) to access the menu.
   The display starts flashing.
9. Increase the numerical value displayed with the "Info" key (3).
   OR
   decrease the numerical value displayed with the "Hand Reg." key (2).
   When holding down keys (2) or (3) respectively, the value changes quickly; for fine tuning, tap keys (2) or (3).
10. When the data record of your system is flashing in the display, press key (1) to accept the setting.
11. **Press the "Info" key (3) to switch to the next menu item.**



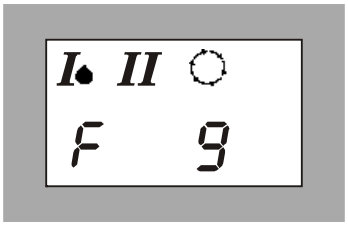
A 2 in the display indicates a system with two exchanger tanks. In case of systems with only one exchanger tank, A 1 is displayed. Modify the setting, if necessary.

12. Tap key (1) to access the menu (the display is flashing).
13. Switch to the other respective value by tapping on key (2) or key (3).
14. Press key (1) to accept the new value.
15. Press the "Info" key (3) to switch to the next menu item**.**



The nominal capacity of the data record is indicated. This setting cannot be modified.

16. **Press the "Info" key (3) to switch to the next menu item.**



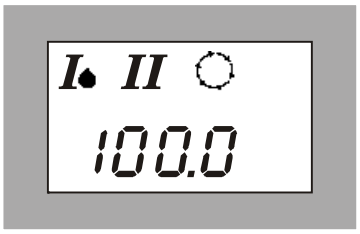
The setting "Water meter pulse" is indicated. Table F-1 indicates the meaning of the Codes displayed.

The required setting depends on the water meter installed in your system (also refer to chapter E).

17. Change the setting, if required. Proceed as indicated in 8. - 10.

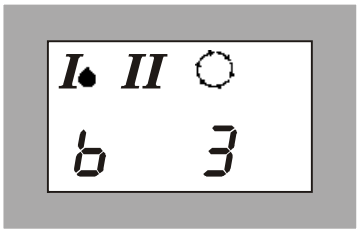
Table: F-1: Display in Code 290 and pulse intervals of the water meter											
	F 00	F 01	F 02	F 03	F 04	F 05	F 06	F 07	F 08	F 09	F 10
l/pulse	variable	0.012	0.029	0.33	0.5	0.93	1.33	3.8	5.3	100.0	0.075

18. **Press the "Info" key (3) to switch to the next menu item.**



The display indicates the water meter pulse (l/pulse) programmed just now.

19. **Press the "Info" key (3) to switch to the next menu item.**



The menu "Operating mode" is displayed. The standard setting is operating mode 3 (b 3 is displayed): A regeneration takes place immediately as soon as the calculated soft water volume has been reached or after a pre-set number (1 - 99) of days at the latest .
Factory setting for GENO-mat duo WE 50, 130, 230:
Regeneration after 4 days at the latest, at 03:00 am at night (in line with DIN 19636).
Factory setting for all other systems:
Regeneration after 14 days at the latest, at 03:00 am at night.
Grünbeck's technical service/authorised service company is in the position to adapt the factory-settings to the requirements prevailing on site.

Other operating modes:

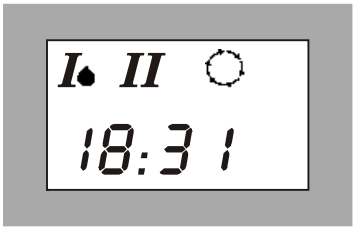
b 1: Time-dependent control. Regeneration after 1 - 99 days.

b 2: Volume-dependent control. Regeneration immediately when total capacity has been reached. No superimposed timer control.

b 4, b 5, b 6: Special cases (for more detailed information, contact Grünbeck's technical service/authorised service company).

20. Press key (1) to select a different operating mode. The display is flashing.
21. Set the desired operating mode (b1, b2 or b 3) with keys (2) or (3).
22. Press key (1) to save the setting.
23. **Press keys (2) and (3) simultaneously to return to the basic mode.**
    The display indicates the time and the system is ready for operation.

2.3 Reading the operating status



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

- The active exchanger is indicated at the top on the left (in the example: I).
- Water flow is indicated by the drop next to it (flashes in the rhythm of 5 water meter pulses).
- The second exchanger tank is indicated on the right (II).
- Its operating status may be read from the circle of arrows: Each arrow represents one regeneration step. If the circle is closed, the regeneration has been completed and the exchanger tank is in standby as reserve.

Additional operating parameters may be called at any time.

1. Press the "Info" key (3).
   The remaining soft water volume until the next regeneration is indicated (in m^3).
2. Press the "Info" key (3).
   The current flow is indicated (m^3/h). The value will be adapted every 5 s as long as at least 2 water meter pulses are registered during this period.
3. Press the "Info" key (3).
   The time (hours) since the last regeneration is indicated.
4. Press the "Info" key (3).
   The display indicates the operating status and the remaining time required for the step in progress.
5. Press the "Info" key (3).
   The display switches to the basic display (time).

2.4 How to release a manual regeneration

A manual regeneration has to be released if

- systems are run in operating mode b 1 and the maximum soft water volume is reached before the set regeneration interval has been reached.
- systems are restarted after a long period of standstill.
- maintenance or repair work was carried out.

Only in operating position; the time is displayed:

1. Press the "Hand Reg." key (2) for at least 10 seconds.

The softener starts the regeneration. The progress of the regeneration is indicated by the circle of arrows in the display.

G Faults (GENO-mat WF / GENO-mat duo WE)

Even carefully designed and manufactured technical systems that are operated properly, may experience malfunctions. Table G-1 provides an overview of possible problems that may occur during the operation of water softener GENO-mat WF and GENO-mat duo WE and indicates possible causes and their elimination.

The water softeners GENO-mat WF and GENO-mat duo WE are equipped with an error detection and reporting system.
If an error message is displayed:

1. Press the "Program" key (= acknowledge malfunction).
2. Watch the display.
   If the message reappears, compare it with table G-1.
3. If necessary, notify Grünbeck's technical customer service/authorised service company.

Note: The error detection and reporting system in chapter G of the operation manual for GENO-OSMO-MSR and GENO-KWA 50k/60i and GENO-LUWADES$_2$ applies to the water softeners GENO-mat duo WE version GENO-mat duo WE-MSR and WE-KWA.

Note: Grünbeck's technical customer service/authorised service company must always be notified in the event of faults that cannot be eliminated with the information given in table G-1! When contacting the technical customer service, please indicate the system designation, serial number and the error message displayed.

Table G-1: Eliminating errors

This is what you observe	This is the cause	This is what to do
a) Error messages displayed		
Er 1	Step time monitoring regeneration motor. Defective motor connection cable or switch	Notify Grünbeck's technical service/authorised service company
Er 2	Step time monitoring transfer motor. Defective motor connection cable or switch	Notify Grünbeck's technical service/authorised service company
Er 4	Low-on-salt alarm	Check salt level in the brine tank and refill salt tablets as per DIN EN 973 A, if necessary

This is what you observe	This is the cause	This is what to do
b) "Service" is displayed		
SEr	Maintenance interval is reached (is displayed after 1 year at the latest). For information only. No malfunction	Press "Program" key (= acknowledge). Reappears after one hour. Will be reset by Grünbeck's technical service/authorised service company after maintenance has been performed.

Table G-1 (continued)		
This is what you observe	**This is the cause**	**This is what to do**
c) Other malfunctions		
Increased hardness in blending or soft water	• **System overrun**	
	– Unit does not have continuous current (coupled with light switch)	Check power supply and adjust, if necessary.
	– No water meter pulses at control electronics	Check water meter, check control line, replace defective parts, if necessary.
	– Incorrect settings of electronics	Check parameters in electronics unit and readjust, if necessary.
	– System does not draw brine	Clean injector; check primary pressure and increase, if necessary.
	– No salt in brine tank	Refill salt.
	– Not enough water in brine tank	Check BVO valve and brine valve for impurities and clean them, if necessary.
	• **Other causes**	
	– Setting at blending valve	Check inlet hardness and/or blending hardness. Check setting of blending valve and readjust, if necessary.
	– Water supply interrupted	Shut-off valves closed
	– Water withdrawal too high (higher than peak flow indicated on type plate)	Reduce water withdrawal
	– Not enough salt in brine tank	Check salt level as per mark and refill, if necessary.
Resin in discharge pipe	Defective nozzle system	Notify Grünbeck's technical service/authorised service company
Pressure loss too high	Exchanger resin contaminated by undissolved substances	Notify Grünbeck's technical service/authorised service company
	The second exchanger regenerates and is in regeneration step "Backwash"	Wait for the regeneration to be completed and check the pressure loss once again.
System does not draw brine	– Water pressure too low	Increase flow pressure to at least 2.0 bar
	– Injector clogged	Clean injector
	– Injector sieve clogged	Clean injector sieve
	– Brine valve clogged	Remove brine valve and clean thoroughly
Control head regenerates continuously	Incorrectly adjusted, defective or short-circuited switch	Notify Grünbeck's technical service/authorised service company

H Maintenance and care (water softeners)

Content

1 | General information

In order to guarantee the reliable function of water softeners over a long period of time, some maintenance work has to be performed at regular intervals. This applies in particular to the softening of drinking water where the required measures are defined in the pertinent regulations and guidelines. All regulations and guidelines which apply at the installation site must be strictly adhered to.

DIN EN 806-5 stipulates:

- An inspection must be performed at least every two months.
- Maintenance must be carried out twice a year.
  However, annual maintenance is sufficient for water softeners that carry the DVGW-mark of conformity!
- Maintenance must be performed by Grünbeck's technical service/authorised service company or by a specialised company.
- An operation log must be kept in order to record the maintenance work performed.

Notes: A maintenance contract ensures that all the required maintenance work will be performed in due time.

The operation log is attached to this operation manual.

2 | Inspection (functional check)

You may perform the regular inspections yourself. We recommend inspecting the water softener at shorter intervals after installation and then switching to inspect them as required. However, an inspection is compulsory at least every two months.

Please refer to the following summary for the tasks to be performed within the framework of an inspection.

Summary: Inspection work

- Determine the raw water hardness.
  (water test kit „total hardness“)
- Determine the soft water hardness (0 °dH (°f, mmol/l)) resp. in case of water softeners with blending valve the softwater with 3
- Check the controller settings:
  a) time
  b) raw water hardness (not ZF)
  c) soft water hardness (not ZF, WINNI-mat® VGX and Weichwassermeister 2 GSX)
- Check the salt level in the brine tank.
  Refill salt, if necessary (see 2.1)

Attention! If the salt level falls below the minimum filling level, hardness may break through.
Observe the minimum salt filling level (see Technical Specifications, chapter C). In case of water softeners where no specific value is indicated, refill the system as soon as the level has fallen to just a few centimetres.

- Evaluate the salt consumption with reference to the water volume consumed.

Note: Minor deviations are normal and cannot be prevented technically. If you detect major deviations, please contact Grünbeck’s technical service/authorised service company.

- Check control valve to drain for tightness (in operating mode).

2.1 How to refill salt

Warning! Impurities in the salt tank may adversely affect the water quality.

For hygienic reasons be very careful when refilling salt.

Attention! Insoluble impurities in the salt may cause malfunctions at the brine valve and at the injector of the control valve. A defined salt quality is required for the reliable function of the water softener.

Only use salt tablets as per DIN EN 973 type A.

A few precautionary measures ensure hygienically and technically perfect conditions:

- Only store the salt in dry and clean areas.
- Do not use salt from packages that are already open.
- Clean the outside of the packages before opening them.
- Fill the regeneration salt directly from the package into the brine tank.
- Close the brine tank immediately after filling.

3 | Maintenance

According to DIN EN 806-5, maintenance work at water softeners may only be performed by Grünbeck's technical service/authorised service company or a specialised company.

An operation log must be kept for water softeners. In this operation log, the service technician records all maintenance and repair work performed. In case of an operational disturbance this log helps to identify possible sources of error. In addition the log documents the proper system maintenance.

Make sure that all maintenance work is recorded in the operation log.

Summary: Maintenance work

- Read the water pressure, flow pressure and water meter value.
- Determine the hardness:
  raw water hardness, soft water hardness, 0 °dH (°f, mmol/l) test
- Re-adjust the blending valve and check the blending hardness again, if necessary. In case of Delta-p, program the desired soft water hardness in the control unit.
- Compare the measured hardness with the settings at the control unit and adjust, if necessary.
- Check the programming of the control unit.
- Check the brine regulation (salting, filling of brine tank) and program settings; re-adjust them, if necessary.
- Check release of regeneration.
- Check start of turbine water meters.
- Check control valve for tightness, replace wearing seals if necessary, check the function of the drive motor of the control valve, clean injector and sieve – typical hydraulic values.
- Clean brine tank and brine valve.
- Check regeneration salt supply (quantity and quality).
- Check hose connections and seals for tightness and replace them, if necessary.

Observe continuation on page H-4!

- Check the non-return function of the safety fitting (e.g. system separator).
  Not required for intrinsically safe water softeners, in particular water softeners with DVGW-test mark!
- For water softeners with disinfection unit: functional check of the disinfection unit (determine electric current).
  - In case of Delta-p only possible via Code.
- If necessary, read regeneration counter, total soft water volume, error memory.
  - In case of Delta-p, system data print possible via serial interface.
- If necessary, re-set service interval.
- Record all data and activities, including repair work, in the operation log.
- Hand over the water softener and the filled out operation log to the operator.

3.1 Operation log

The operation log is attached to this operation manual. At start-up of the water softener, make sure to enter all data on the cover sheet of the operation log and to fill in the first column of the check list.

The service technician will fill in another column of the checklist whenever further maintenance is carried out. This document provides evidence of proper maintenance.

4 | Spare parts

For spare parts and consumables, please contact your local Grünbeck representative (refer to www.gruenbeck.de).

Note: For detailed specifications regarding the wearing parts, please refer to chapter C.

Operation log

Customer

Name: .....

Address: .....

.....

.....

Water softener GENO-mat WF

(Please check appropriate box)

Serial number .....

Installed by .....

Filter: Make/Type ..... / .....

.....

50	☐
130	☐
230	☐
330	☐
530	☐
65	☐
150	☐
300	☐
450	☐
750	☐

Connection data:

(Please check appropriate box)

Drain connection acc. to DIN EN 1717	☐	Yes	☐	No
Floor drain available	☐	Yes	☐	No
Line upstream of water softener	☐	Galvanised		
	☐	Copper		
	☐	Plastic		

Grünbeck Wasseraufbereitung GmbH
Josef-Grünbeck-Str. 1 · 89420 Hoechstaedt
GERMANY
✆ +49 9074 41-0 · 🖷 +49 9074 41-100
www.gruenbeck.com · info@gruenbeck.com

Maintenance work on the water softener GENO-mat WF **Checklist**			
Please enter measured values. Confirm checks with OK or enter repair work performed.			
Maintenance performed (date)	Start-up		
Measured values			
Water pressure [bar]			
Flow pressure [bar]			
Water meter reading [m³]			
Inlet hardness °dH (measured)			
Blending hardness °dH (measured)			
0 °dH test			
Inspections and checks on control unit and control head			
Controller setting checked			
Regeneration release checked			
Injector and sieve cleaned			
Control head checked for leaks			
Function of drive motor checked			
Work on brine tank and brine valve			
Brine tank and brine valve cleaned			
Operation and setting of brine valve checked			
Connections, hose connections, gaskets			
Gaskets and hose connections checked			
Safety fitting (e.g. system separator) checked for backflow			
Miscellaneous			
Remarks			
Customer service technician			
Company			
Work time certificate (no.)			
Signature			

Maintenance work on the water softener GENO-mat WF Checklist			
Please enter measured values. Confirm checks with OK or enter repair work performed.			
Maintenance performed (date)	Start-up		
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Water pressure [bar]			
Flow pressure [bar]			
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Inlet hardness °dH (measured)			
Blending hardness °dH (measured)			
0 °dH test			
Inspections and checks on control unit and control head			
Controller setting checked			
Regeneration release checked			
Injector and sieve cleaned			
Control head checked for leaks			
Function of drive motor checked			
Work on brine tank and brine valve			
Brine tank and brine valve cleaned			
Operation and setting of brine valve checked			
Connections, hose connections, gaskets			
Gaskets and hose connections checked			
Safety fitting (e.g. system separator) checked for backflow			
Miscellaneous			
Remarks			
Customer service technician			
Company			
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Control head checked for leaks			
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Operation and setting of brine valve checked			
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Gaskets and hose connections checked			
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Please enter measured values. Confirm checks with OK or enter repair work performed.			
Maintenance performed (date)	Start-up		
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Water pressure [bar]			
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