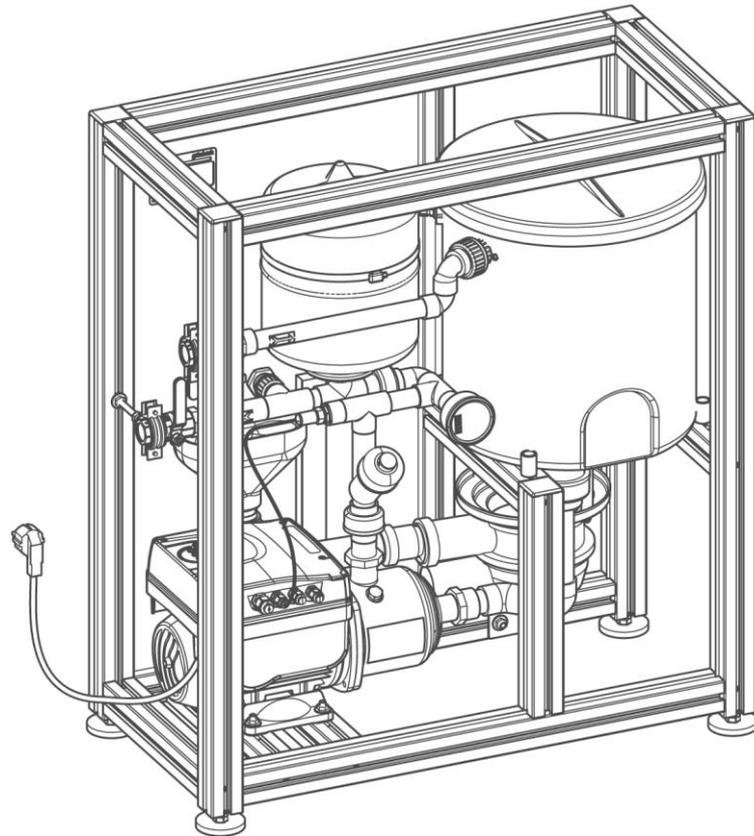


We understand water.



Euro system separation device | GENO-G5

Operation manual

grünbeck

General Contact
Germany

International Sales
☎ +49 9074 41-145

Service
☎ +49 9074 41-333
service@gruenbeck.de

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

Friday
7:00 am - 4:00 pm

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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 product below:

- Euro system separation device GENO-G5
- 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

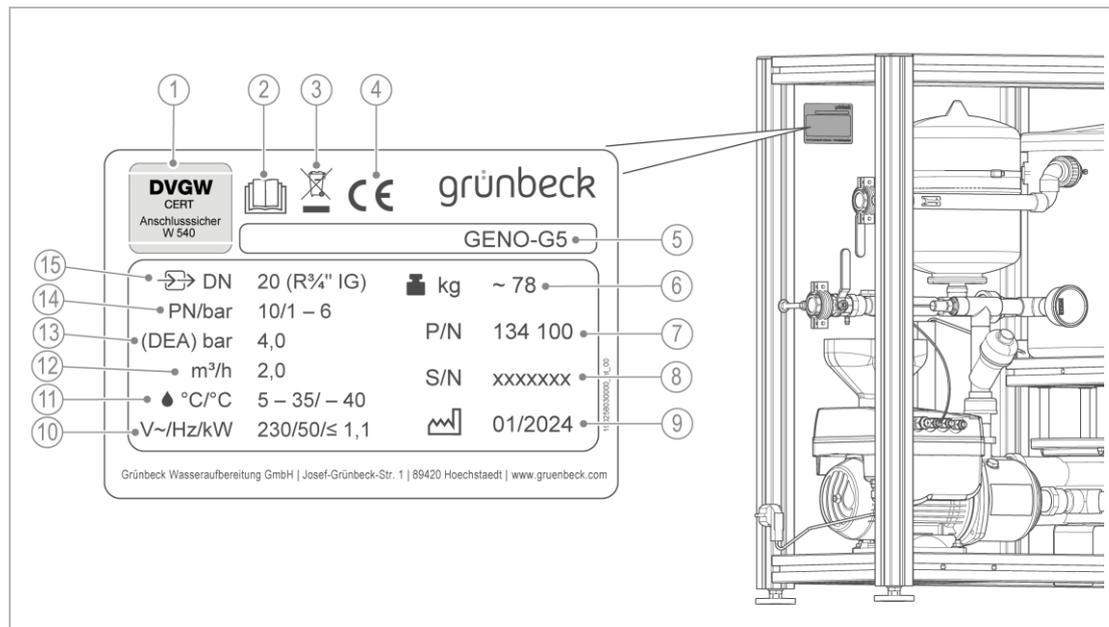
- Manuals for components from other manufacturers
- Safety data sheets for chemicals

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 rear.



Designation

1	DVGW test mark
2	Obey the operation manual
3	Disposal information
4	CE mark
5	Product designation
6	Operating weight
7	Order no.
8	Serial no.

Designation

9	Date of manufacture
10	Rated voltage/frequency/input
11	Water/ambient temperature
12	Nominal flow
13	Setting pressure of pressure booster pump (DEA)
14	Nominal pressure/operating pressure
15	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		Death or serious injuries
 WARNING	Personal injury	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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Product-specific expertise Knowledge of statutory regulations on work safety and accident prevention
Qualified specialist <ul style="list-style-type: none"> Electrical engineering Sanitary engineering (HVAC and plumbing) Transport 	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> 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
Operation and handling	X	X	X	X
Cleaning	X	X	X	X
Inspection		X	X	X
Maintenance			X	X
				semi-annually
				annually
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 8.4). Failure to comply can result in the microbiological contamination of your drinking water system.
- Be aware of a possible risk of slipping due to leaking water on the floor.

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.
- Make sure that the system is set up or fixed in a way that it cannot tip or fall 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 the 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 lethal.

- Only have a qualified electrician 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 voltage supply before working on electrical components.
- Before starting work on active system parts, make sure they are de-energised. Make sure they stay de-energised for the duration of the work. Obey the 5 safety rules below:
 - a Disconnect (pull the power plug)
 - b Secure against restart
 - c Verify that no voltage is present
 - d Ground and short-circuit
 - e Cover or block off adjacent live parts
- Make sure that the socket features a protective earth conductor (PE). Retrofit the socket with an adapter with protective earth contact, if necessary.
- 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

- Children must not play with the product.
- This product must not be used by persons (including children) with limited abilities, lack of experience or knowledge.
- Cleaning and maintenance must not be carried out by children.

2.2 Product-specific safety instructions

2.2.1 Safety devices

- Dry-run protection of centrifugal pump of pressure booster system
- Level switch in supply tank

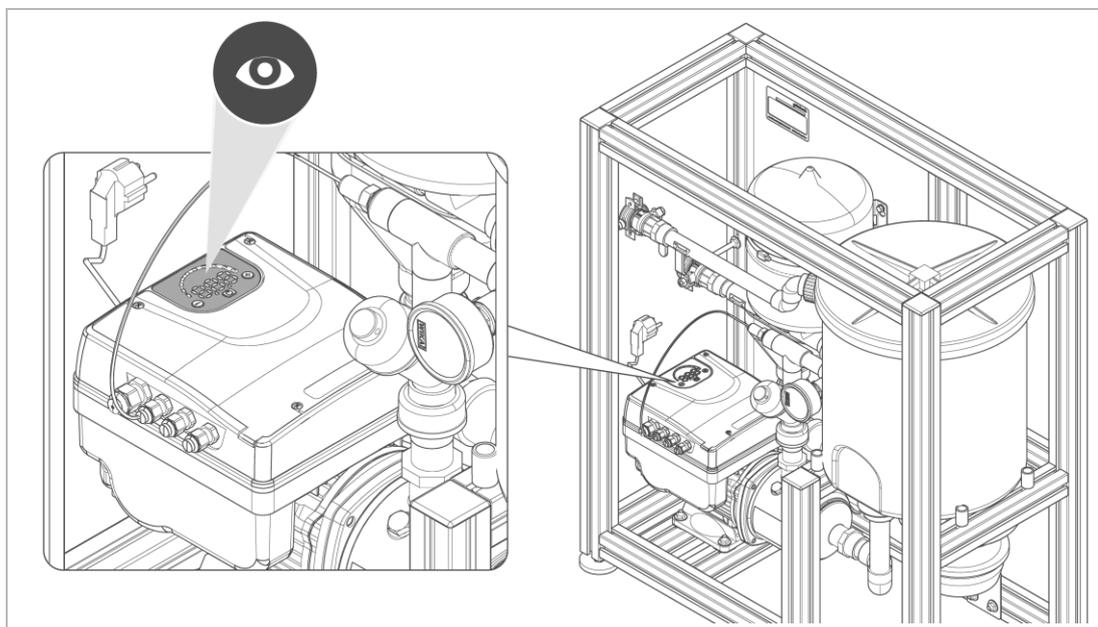
2.2.2 Safety-related components



Safety components must be replaced by genuine spare parts only.

- ▶ Have safety components and wearing parts replaced by a qualified specialist (refer to chapter 8.6).
- Solenoid valve of flushing device (optional)
- Float valve
- Level switch for dry-run protection
- Flow restrictor

2.2.3 Signals and warning devices



The operating panel of the pressure booster system indicates the system status and outputs error messages.

Labels on the product



Risk of electric shock



Risk of slipping



Hot surface



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.

2.3 Conduct in emergencies

2.3.1 In the event of water leaks

1. De-energise the product. Unplug the power plug.
2. Locate the leak.
3. Eliminate the cause of the water leak.

2.3.2 In the event of pressure booster pump failure

1. De-energise the pressure booster pump. Unplug the power plug.
2. Make sure that optional, external fault signal outputs or signal inputs (voltage-free contacts) are de-energised.
3. Contact technical service.

3 Product description

3.1 Intended use

- The Euro system separation device GENO-G5 is a safety device to protect the drinking water network against liquids up to and including hazard class 5 in accordance with DIN EN 1717.
- The system offers the highest class of protection and reliably prevents backflow, back pressure and back siphonage of modified drinking water into the drinking water network.
- The GENO-G5 system is particularly suited for use in the dental sector, supplying dental treatment units.

3.1.1 Classification of hazard classes



Classification of the liquids that come or could come into contact with the drinking water into liquid categories or hazard classes – definition according to EN 1717-5.2

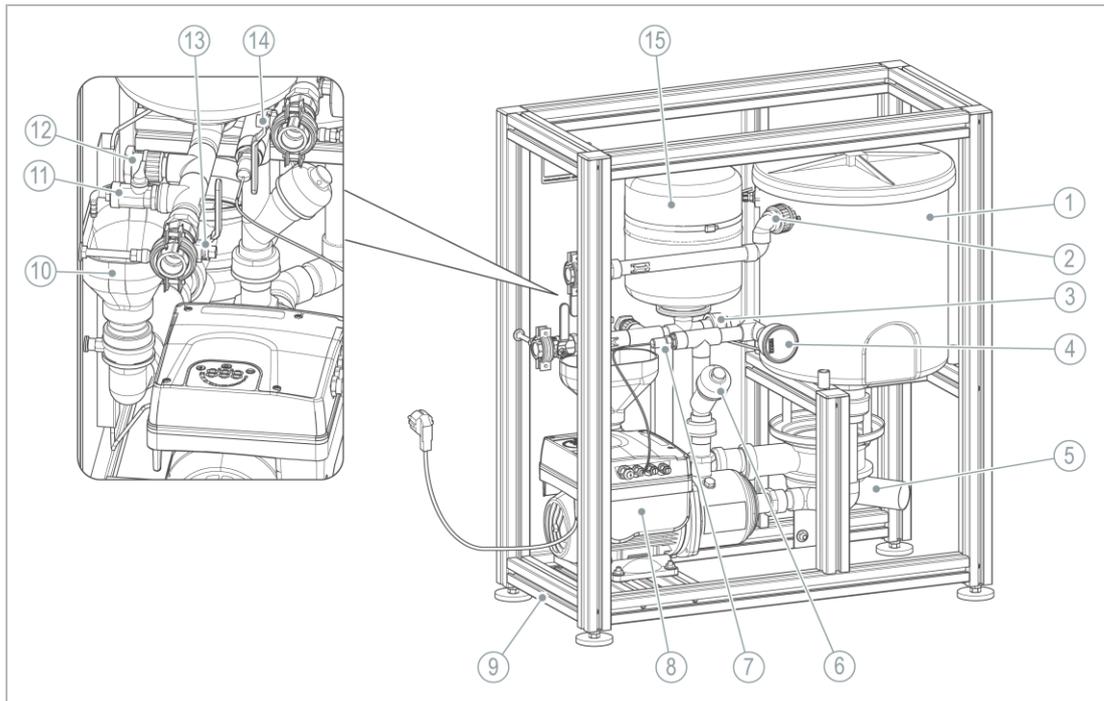
In case of standard use, the liquids that are or can come into contact with the drinking water are divided into 5 categories.

Category	Description
1	Water for human consumption that is withdrawn directly from a drinking water installation.
2	Liquid that does not pose a risk to human health. Liquids suitable for human consumption, including water originating from a drinking water installation, which may exhibit modifications with regard to taste, smell, colour or temperature (heating up or cooling down).
3	Liquid posing a health hazard to humans due to the presence of one or several less toxic substances ¹⁾ .
4	Liquid posing a health hazard to humans due to the presence of one or several toxic or highly toxic substances or one or several radioactive, mutagenic or carcinogenic substances.
5	Liquid posing a health hazard to humans due to the presence of microbial or viral pathogens of communicable diseases.

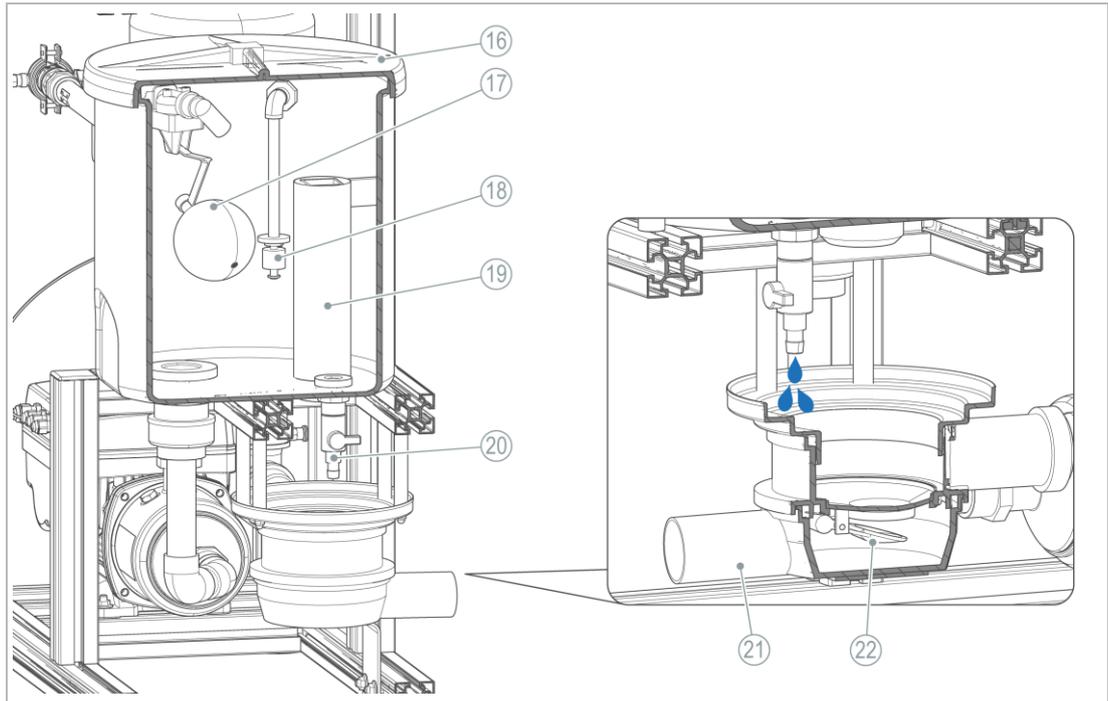
¹⁾ The borderline between category 3 and category 4 is defined as LD⁵⁰ = 200 mg/kg of body weight according to EU document 93121 EEC dated April 27, 1993.

- ▶ Redetermine the safety measures if insignificant concentrations or significant quantities of substances do occur.

3.2 Product components



Designation	Functions/characteristics
1 Supply tank (25 l)	With make-up water feed (float valve) and built-in overflow
2 Flow restrictor	In the water inlet, to restrict the inlet volume
3 Flow restrictor	In the water outlet, to restrict the withdrawal volume
4 Pressure gauge	Display of pressure in the inlet
5 Waste water discharge	To the drain connection
6 Non-return valve	Prevents the water from flowing back to the pump
7 Pressure sensor	For automatic regulation of the pressure booster pump
8 Pressure booster system	Frequency-controlled pump with pressure control, dry-run protection and fault signal output
9 Aluminium rack	To house all system components, with levelling feet to compensate for uneven floors
10 Funnel	To discharge the water originating from the optional flushing device
11 Sampling valve	To take water samples and to vent the system
12 Flushing device (optional)	Connection point for the solenoid valve with electronic timer pulser, to automatically flush off the water to prevent stagnation
13 Shut-off valve	In the water inlet
14 Shut-off valve	In the water outlet
15 Diaphragm expansion tank	Flown through (8 l) To moderate pressure fluctuations in case of major changes in the flow rate and to reduce the switching frequency if only small amounts are withdrawn

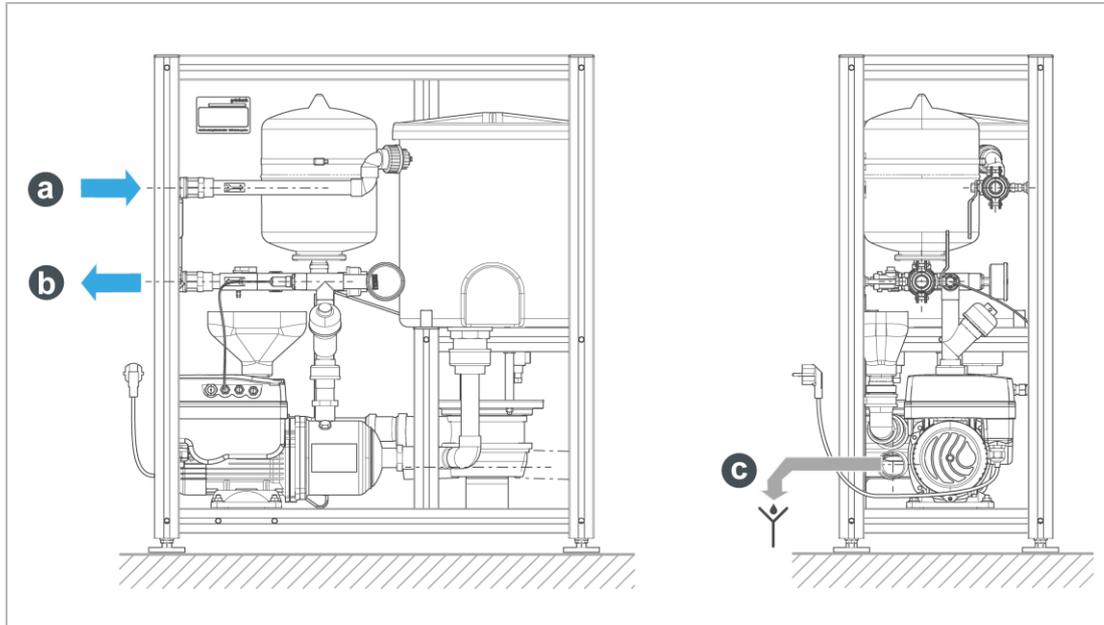


Designation	Functions/characteristics
16 Lid of supply tank	For cleaning and maintenance purposes
17 Float valve	To protect the pump from running dry
18 Level switch	To actuate the pump for make-up water feed
19 Overflow	As a safety feature in the event of float valve failure
20 Draining valve	To drain the supply tank
21 Outlet (HT-DN 50)	For drain connection (rotatable connection direction)
22 Flap	As waterless odour and vermin barrier

3.3 Connections



For connection dimensions, refer to the Technical Specifications in chapter 12.



Designation

- a** Raw water inlet
- b** Outlet to consumer

Designation

- c** Waste water to drain



A drain connection (at least DN 50) must be available, which is able to discharge the maximum inlet volume in the event of a malfunction.

The installation room must have a floor drain. If no floor drain is available, a corresponding water stop device must be installed.

3.4 Functional description

The system offers the highest class of protection (refer to chapter 3.1.1) and prevents backflow, back pressure and back siphonage of modified drinking water into the drinking water network. The safety device features a free outlet in accordance with DIN EN 13077, Family A, Type B.

3.4.1 Function

Via a float valve with "free outlet", the water flows into the supply tank. The volume-proportional make-up water feed with flow restrictor to a large extent prevents the entry of air into the water. The supply tank is dirt-proof, as it does not feature any orifices at the top or on the side.

The pressure booster pump is frequency-controlled via a pressure sensor and keeps the set pressure stable. In addition, the diaphragm expansion tank moderates pressure fluctuations in case of major changes in the flow rate and reduces the switching frequency if only small amounts are withdrawn.

The float switch protects the pump from running dry. The flow restrictor on the outlet side prevents the withdrawal volume from exceeding the make-up water volume and thus prevents supply interruptions due to the dry-run protection responding.

LEDs on the pump controller inform on voltage supply, operating mode and alarm status. A voltage-free fault signal output (NCC) is available.

3.4.1.1 Optional flushing device

When the power supply is switched on, the optional flushing device flushes the stagnating water to the drain. The duration of the flushing process can be set at the potentiometer (1 – 100 seconds).

In dental practices, automatic flushing after periods of standstill, e.g. over night, after weekends or holidays, can thus take place when mains is switched on (switch-on of the dental practices' main switch).

In other fields of application, the flushing can, for example, be activated by means of a timer provided by others on site.

3.5 Accessories

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

Illustration	Product	Order no.
	<p>Flushing device for GENO-G5</p> <p>Solenoid valve with electronic timer pulser and 1.5 m connection cable with Schuko power plug as adapter plug</p>	<p>134 805</p>
	<p>Connection kit for GENO-G5</p> <p>2 Corrugated connection pipes (800 mm) made of stainless steel with seals and connection pieces R$\frac{3}{4}$" male thread</p>	<p>134 810</p>



Be aware that the availability of accessories can differ from country to country.

4 Transport, set-up and storage

4.1 Shipping/Delivery/Packaging

The product is 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 components due to falling components
- The system does not feature any lifting points for lifting by a crane and lifting strap.
- ▶ Do not lift the system with a crane or lifting device.
- ▶ Load/unload the system secured on a pallet with a forklift or lift truck with suitable pallet forks.

4.2 Transport/Set-up

- ▶ Transport the product in its original packaging only.
- ▶ Obey the symbols and instructions on the packaging.
- ▶ Place the system on a level and stable surface. Take the weight of the system into account.



CAUTION

Unhandy size of the system during transport

- Crushing due to slipping and falling system
- ▶ Transport or lift the system with two people.
- ▶ Keep unauthorised persons away when transporting and setting up system.



CAUTION

Transport over stairs and inclines

- Crushing due to slipping and falling system
- ▶ Use suitable transport equipment (e.g. a forklift) when transporting the system to the installation site via inclines.
- ▶ Do not use any self-rolling transport equipment (e.g. lift trucks, trolleys).

4.3 Storage

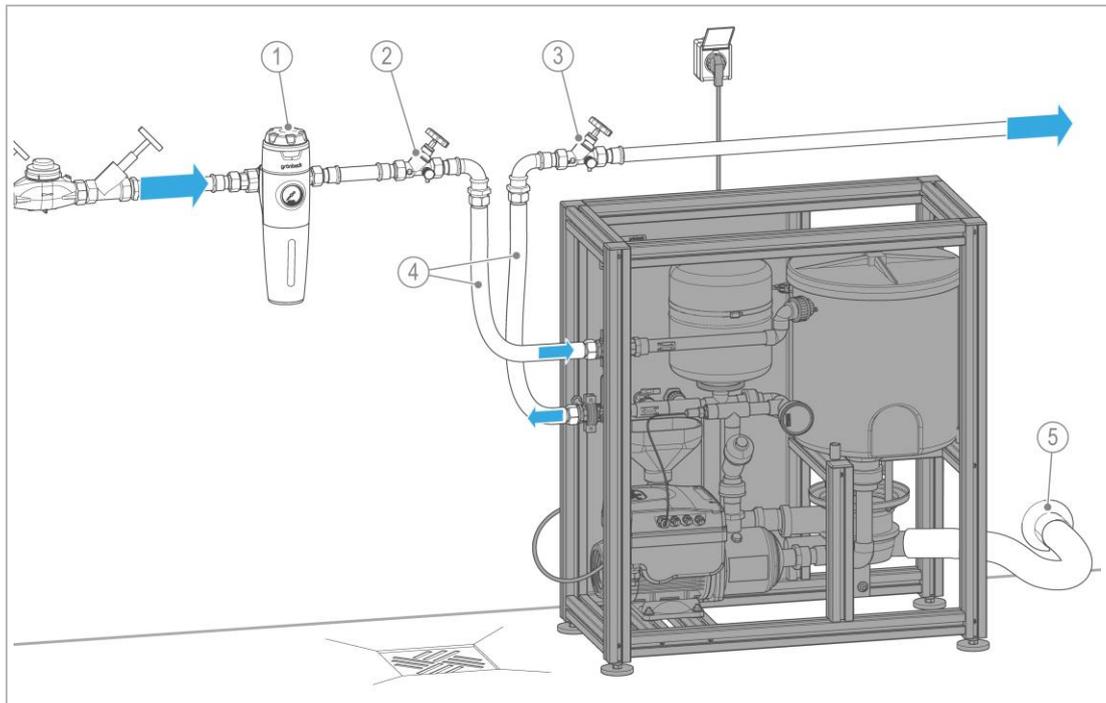
- ▶ Protect the product from the impacts below when storing it:
 - Dampness, moisture
 - Environmental impacts such as wind, rain, snow, etc.
 - Frost, direct sunlight, severe heat exposure
 - Chemicals, dyes, solvents and their vapours
 - Protection from dust, acids, corrosive and explosive gases

5 Installation



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

Installation example



Designation

- 1 Drinking water filter pureIQ:KD
- 2 Inlet shut-off valve
- 3 Outlet shut-off valve

Designation

- 4 Connection kit GENO-G5
- 5 Drain connection

5.1 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
- Protection from dust, acids, corrosive and explosive gases
- Ambient temperature and radiation temperature in the immediate vicinity
 - ≤ 25 °C for applications in the drinking water sector
- Protection from heat sources (e.g. heating systems, boilers and hot water pipes)
- Access for maintenance work (take required space into account)
- Sufficiently illuminated and ventilated
- Horizontal installation surface with sufficient load-bearing capacity to support the operating weight of the product

Space required

- There must be a clearance of at least 800 mm in front of the system for operation purposes.
- There must be a clearance of at least 500 mm above the system for maintenance purposes.
- For set-up/installation and maintenance of the system, take the recommended dimensions (refer to chapter 12) into account.

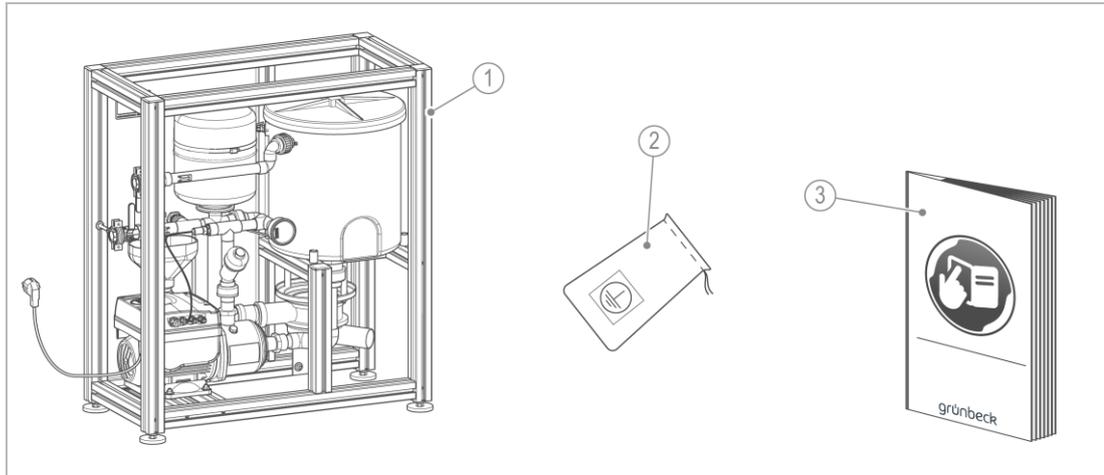
Water installation

- Drinking water filter installed upstream and pressure reducer, if necessary (e.g. fine filter pureliQ:KD)
- 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 \geq DN 50
- Shut-off valves and possibility of sampling upstream and downstream of the product
- Recommendation: Installation of a GENODOS DM-B dosing system downstream for automatic disinfection

Electrical installation

- Schuko socket (type F, CEE 7/3) with permanent power supply (approx. 1.2 m max. from the control unit). The socket must not be coupled with light switches, emergency heating switches or the like.
- The optional flushing device requires a second socket (e.g. if the fault signal output of the pump is evaluated during a power failure).

5.2 Checking the scope of supply



Designation

- 1 Pre-assembled GENO-G5 system
- 2 Bag with connection material for "Potential equalisation of aluminium rack"

Designation

- 3 Operation manual

► Check the scope of supply for completeness and damage.

5.3 Water installation

NOTE

Impurities and corrosion particles in the water supply line

- Damage to and malfunctions of the system
- Thoroughly flush the water supply line prior to installation.

5.3.1 Preliminary work



Obey the safety instructions regarding local transport (refer to chapter 4.2).

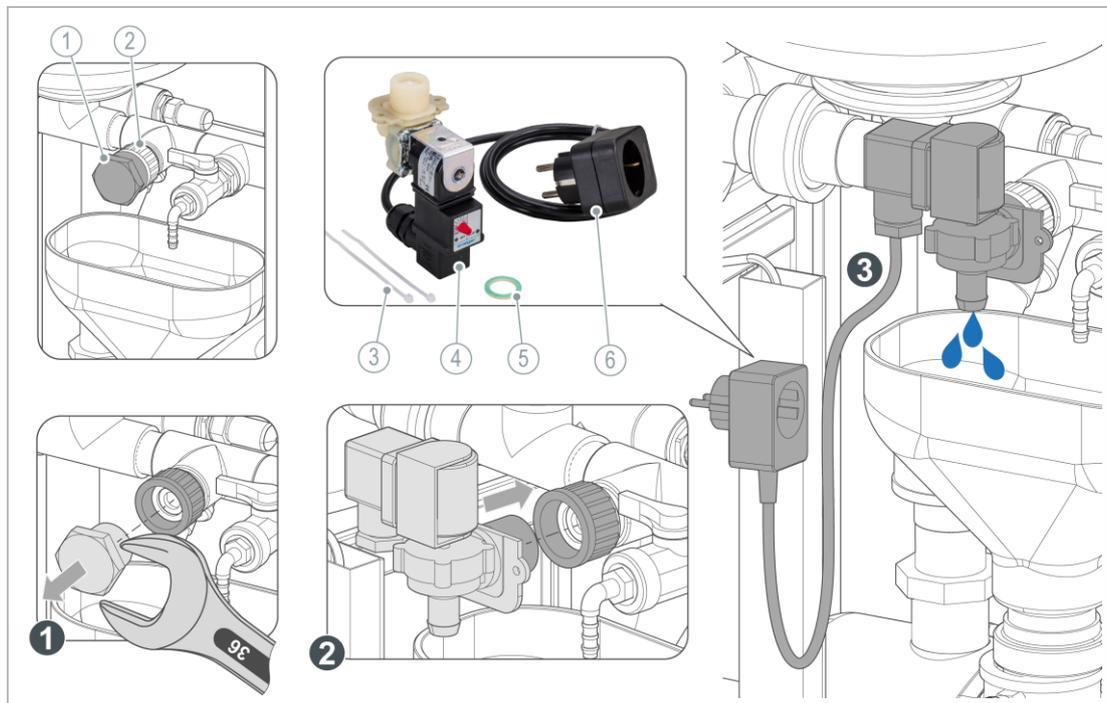
The system is pre-assembled and ready for connection and only needs to be connected to the water supply and the drain.

1. Release the pallet of the system from the transport lock.
2. Remove the pallet.
3. Set up the system at the intended site.
 - a Take the minimum space required into account.
4. If necessary, adjust the levelling feet to compensate for uneven floors.

5.3.2 Installing the (optional) flushing device



Regarding the setting of the timer pulser, refer to the instructions of the manufacturer.



Designation	
1	Blind plug
2	Union nut
3	Cable tie

Designation	
4	Solenoid valve with electronic timer pulser
5	Seal
6	Connection cable with Schuko power plug as adapter plug

1. Unscrew the union nut and remove the blind plug.
2. Install the flushing device.
 - a Make sure to correctly position the solenoid valve.
 - b Check that the seal is inserted.
3. Route the connection cable downwards next to the outlet funnel.
 - a Fasten the connection cable on the cable fastening plate using cable ties.

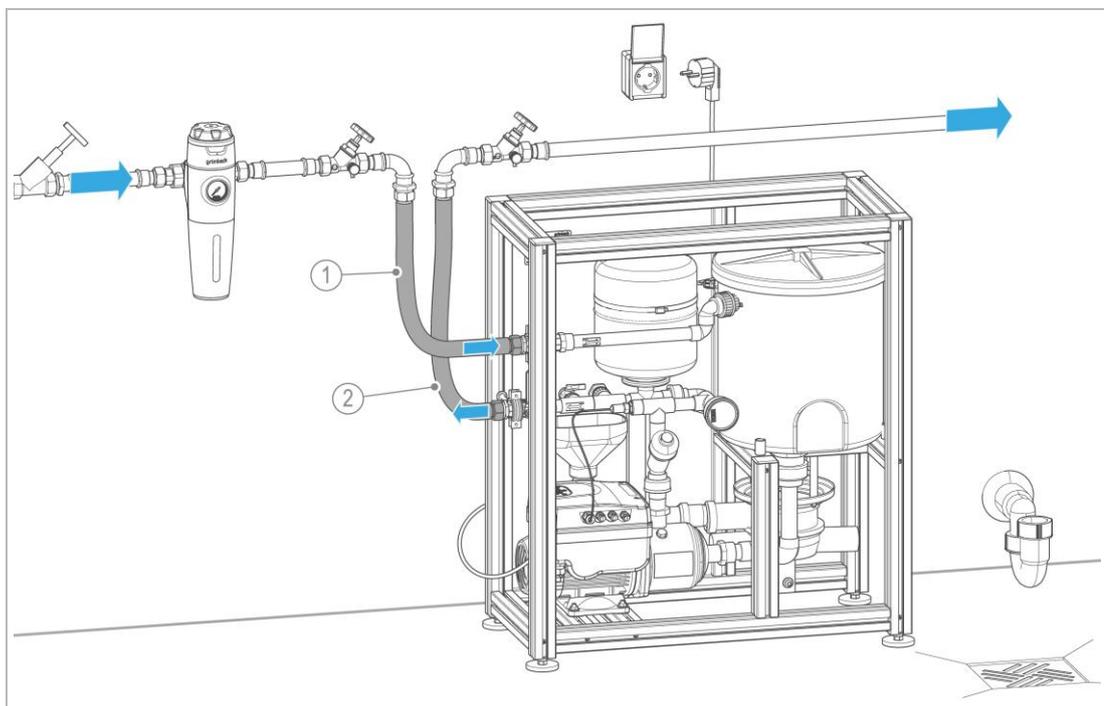
5.3.3 Connecting the product to the water pipes



WARNING Contaminated drinking water due to stagnation

- Infection due to bacterial growth
- ▶ Do not connect the product to the drinking water system until immediately before start-up/commissioning.
- ▶ Only fill the system with raw water immediately before operation.
- ▶ Only carry out the leak test during start-up/commissioning.

5.3.3.1 Installation with optional connection kit



Designation

1 Corrugated connection pipes (800 mm) with seals and connection pieces (double nipple R1" male thread x R¾" male thread)

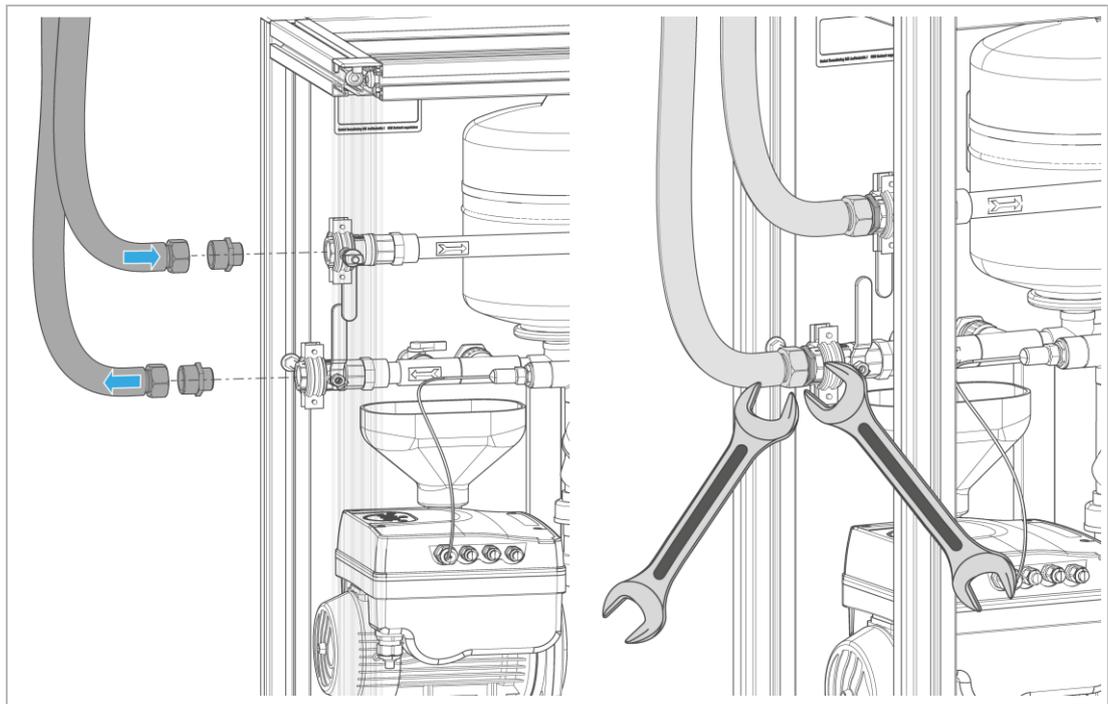
Designation

2 Corrugated connection pipes (800 mm) with seals and connection pieces (double nipple R1" male thread x R¾" male thread)

- ▶ Connect the system to the water inlet and water outlet.
- ▶ Comply with the flow direction indicated on the system.

NOTE Incorrect installation of the corrugated connection pipes

- Risk of damage/impairment of the system function in case of incorrect installation
- Make sure that the corrugated connection pipes are not squeezed or kinked when connecting them.
- ▶ Firmly hold the corrugated connection pipes when tightening the union nuts.
- ▶ Make sure that the bending radius of the corrugated connection pipes is not too small (at least 10 x corrugated pipe Ø).



1. Install the connection pieces on the connection points of the system.
2. Install the corrugated connection pipes with inserted seals on the connection pieces.
3. Install the corrugated connection pipes on the connection points of the water pipes.
 - a Insert the seals and install the connection pieces, if necessary.

5.3.4 Establishing the waste water connection

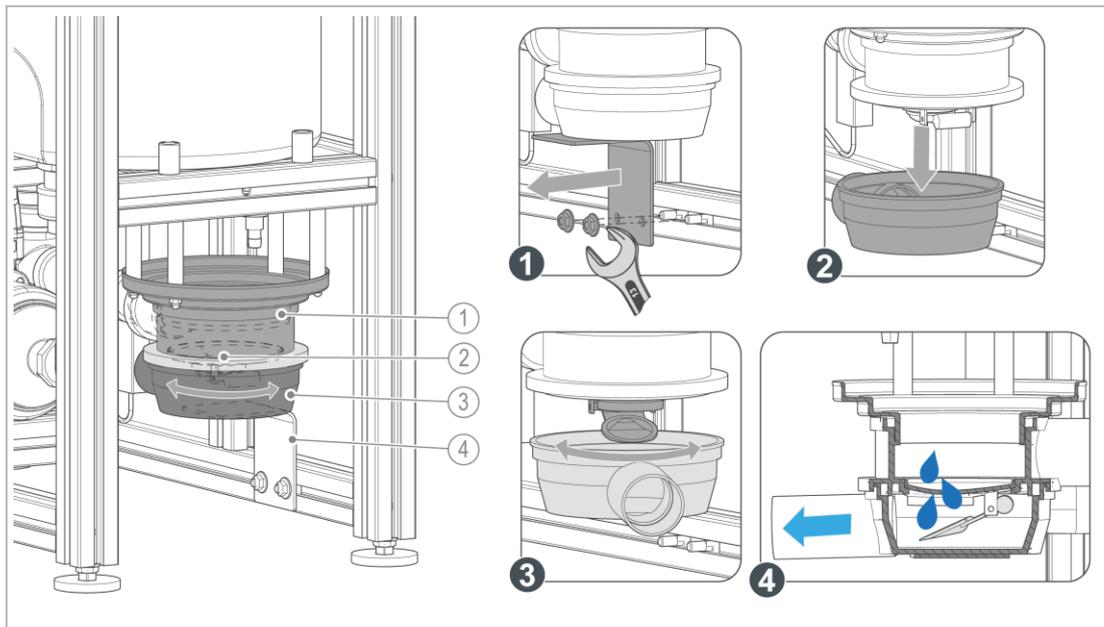
NOTE Waste water backing up due to incorrect connection

- Water damage
- ▶ Route the waste water line with a downward slope to the drain.



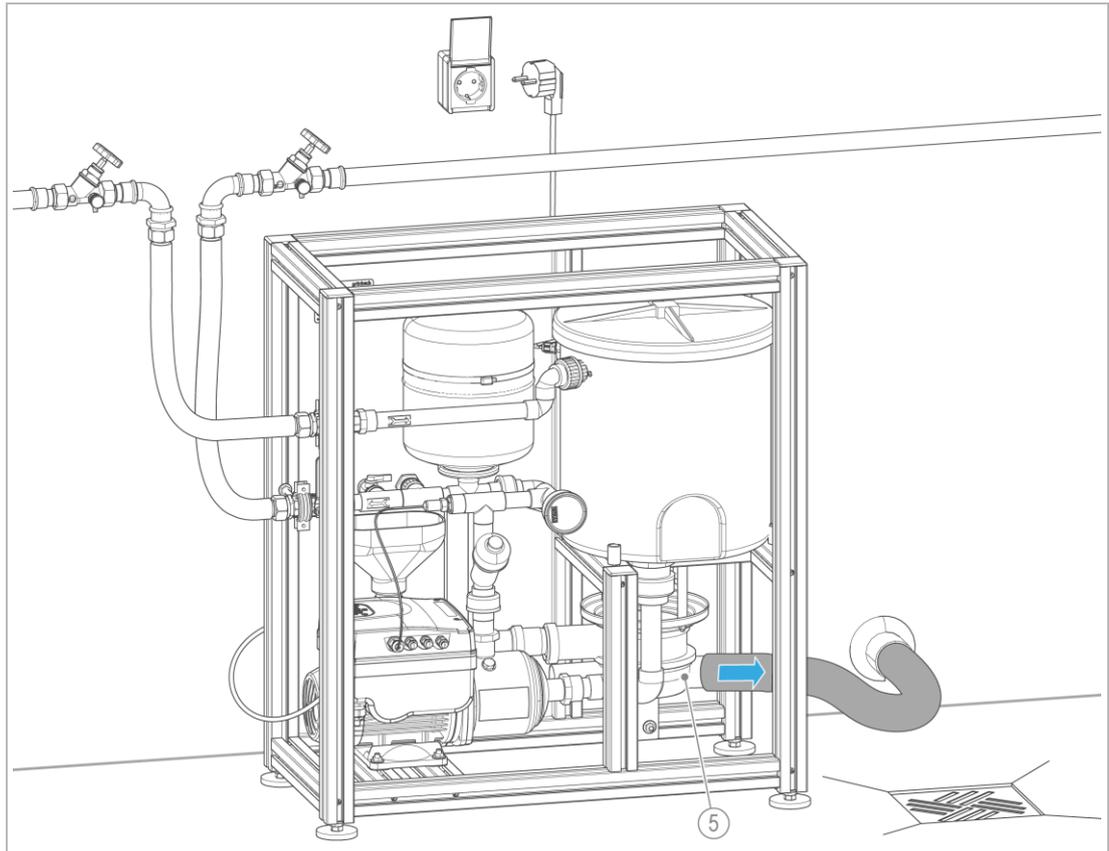
According to DIN EN 1717, a free outlet and a backflow-free discharge of the waste water must be guaranteed.

- ▶ Re-install the waste water connection according to the on-site situation.



Designation	Designation
1 Upper part	3 Lower part with flexible outlet
2 Odour trap	4 Angle bracket

1. Remove the angle bracket.
2. Remove the lower part, if necessary.
3. Swivel the lower part into the required direction.
 - a Slightly lift the odour trap and turn it around, so that the opening of the flap points into the direction of the outlet.
4. Install the lower part and the angle bracket.
5. Check that the water is properly flushed to the waste water connection.
 - a Use a collection vessel for the waste water.
 - b Fill in water from above and check that the water is discharged properly.



Designation

- 5 Waste water discharge HT-DN 50 (connection direction can be swivelled variably)

► Route the on-site waste water line with a downward slope to the drain.

5.4 Electrical installation



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



DANGER Lethal voltage

- Severe burns, cardiovascular failure, fatal electric shock
- Voltage may be present at terminals L, N and PE as well as at the feed lines to voltage-free contacts.
- ▶ Only have qualified electricians carry out electrical work on the system.
- ▶ Prior to starting the electrical installation, establish potential equalisation (grounding) of the pressure booster systems.
- ▶ Prior to any work on the system's electrical or mechanical components, disconnect the centrifugal pump's frequency converter from the mains supply – unplug the power plug.
- ▶ After disconnecting the power supply, wait for at least **5** minutes before working on the frequency converter (e-SM drive system) in order to ensure that the capacitors of the internal circuit are discharged.

NOTE

The frequency converter of the pump can cause malfunctions of the residual current circuit breaker installed in the mains supply line.

- ▶ Use an AC/DC sensitive RCCB with a response threshold of **30 mA**.
- ▶ For the on-site power supply of the system, use a socket with a protective earth conductor (230 V/50 Hz/L/N/PE).

5.4.1 Pressure booster system GENO-FU-X with pressure control

The pressure booster system with e-SM drive system consists of the components below:

- 1 Horizontal centrifugal pump with permanent magnet motor IE5 (3HME05S05M02)
- 1 Frequency converter e-SM drive
- 1 Pressure sensor

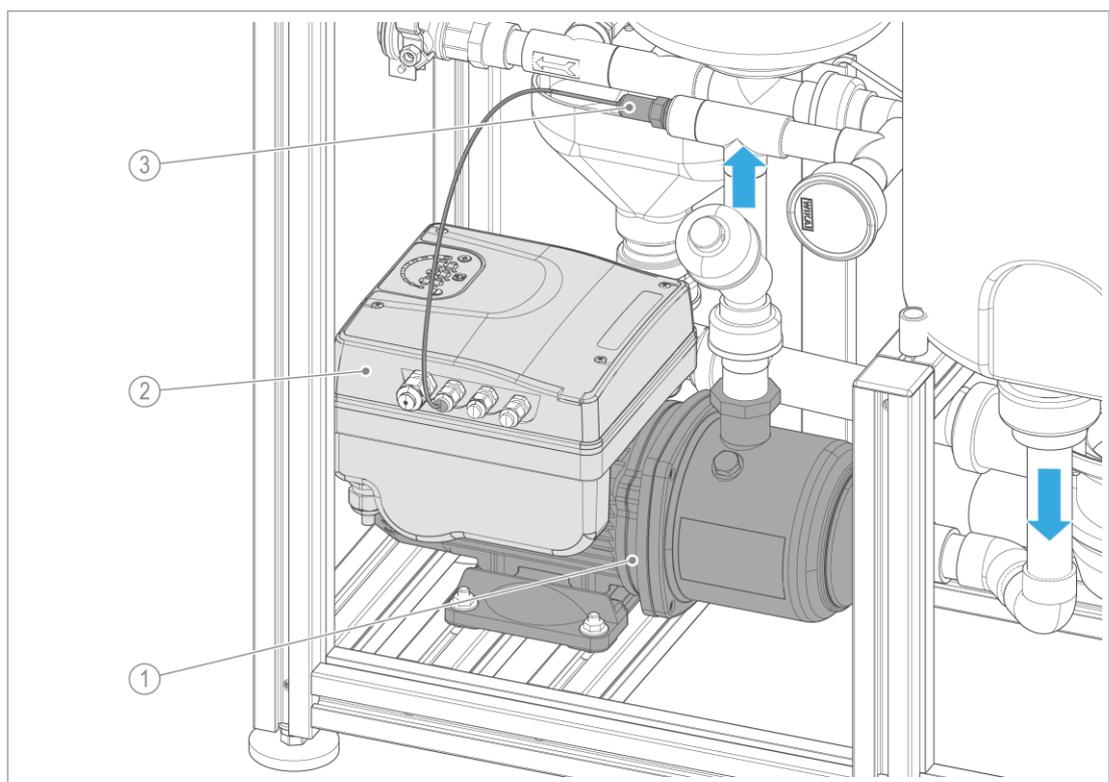


The e-SM drive system is supplied with AC; the pump motor is connected to 230 V three-phase current.

The missing phases are generated by the frequency converter.

Function of the centrifugal pump

- Start and stop of the centrifugal pump depend on the adjustable setpoint (operating pressure) of the frequency converter.
- Upon request by the consumer (opened water tap), water flows from the diaphragm expansion tank.
- If the line pressure drops below the start setting, the centrifugal pump starts. The motor speed is controlled in such a way that the pressure remains constant even when consumer demand increases.
- If consumer demand decreases, the centrifugal pump runs slower at first, fills the diaphragm expansion tank and then stops when the setpoint (operating pressure) is reached.



Designation		Designation	
1	Centrifugal pump with permanent magnet motor IE5	2	Frequency converter
		3	Pressure sensor

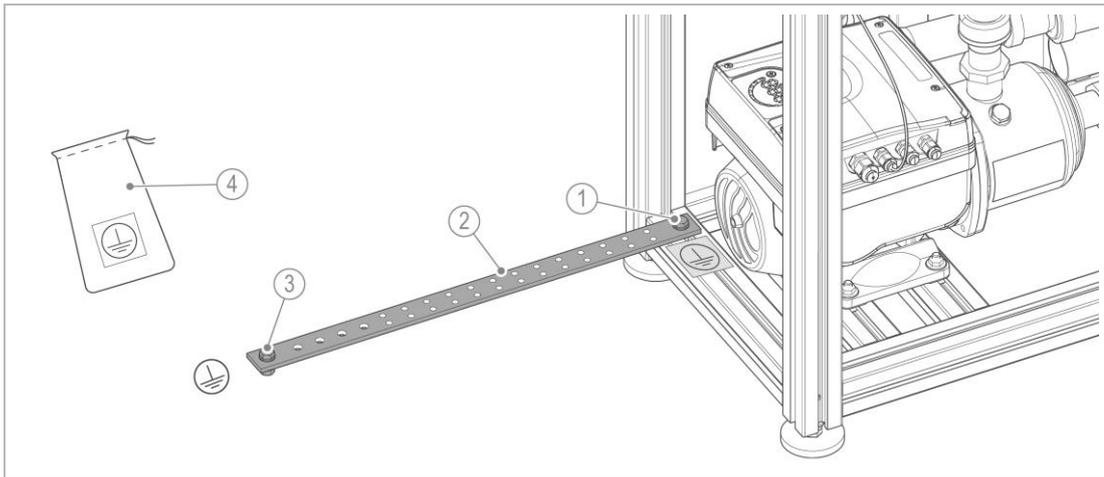
5.4.2 Establishing potential equalisation

During operation as intended, the speed-controlled centrifugal pump can have a ground leakage current of > 10 mA.



- Connection to the potential equalisation provided by the client is required.

The protective earth conductor must have a minimum cross-section of 6 mm² Cu or 10 mm² Al.



Designation

- | | |
|---|---------------------------------------|
| 1 | Grounding point on the aluminium rack |
| 1 | Grounding tape |

Designation

- | | |
|---|---|
| 2 | Grounding point for potential equalisation provided by the client on site |
| 3 | Bag with connection material |

1. Remove the bag with the connection material for potential equalisation.
2. Connect the grounding point to the aluminium rack.
 - a Use the following connection material: hammer nut, hexagon head screw M8x25 and serrated washer.
3. Attach the “Grounding” label.
4. Connect the protective earth conductor to the potential equalisation provided by the client on site.
 - a Use the following connection material below: hexagon head screw M8x20, washer and spring washer.

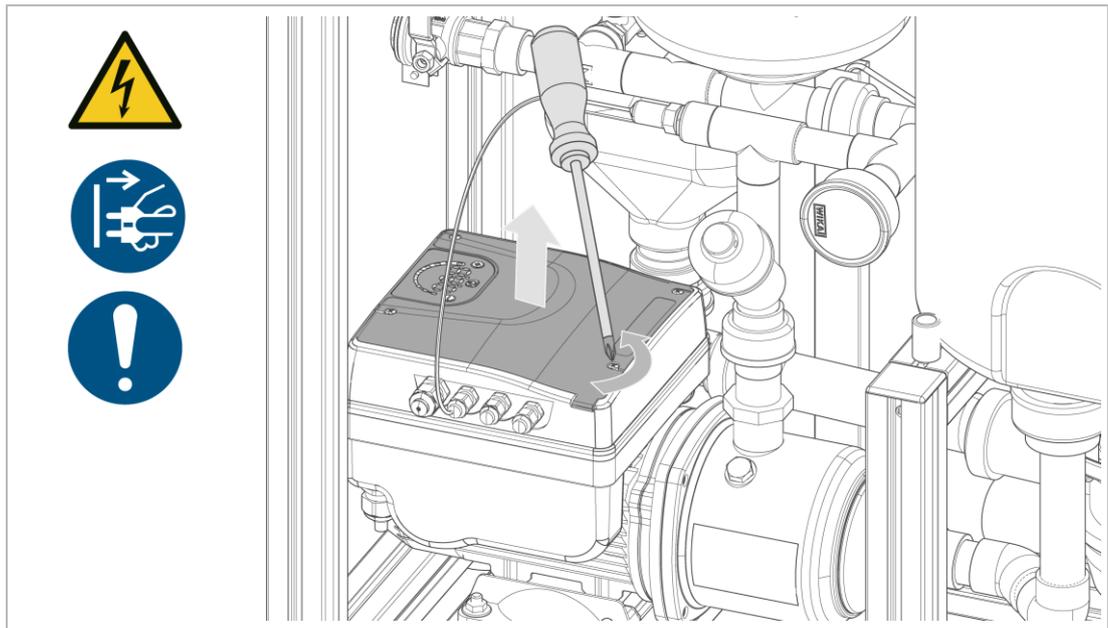
5.4.3 Connection terminals on the frequency converter



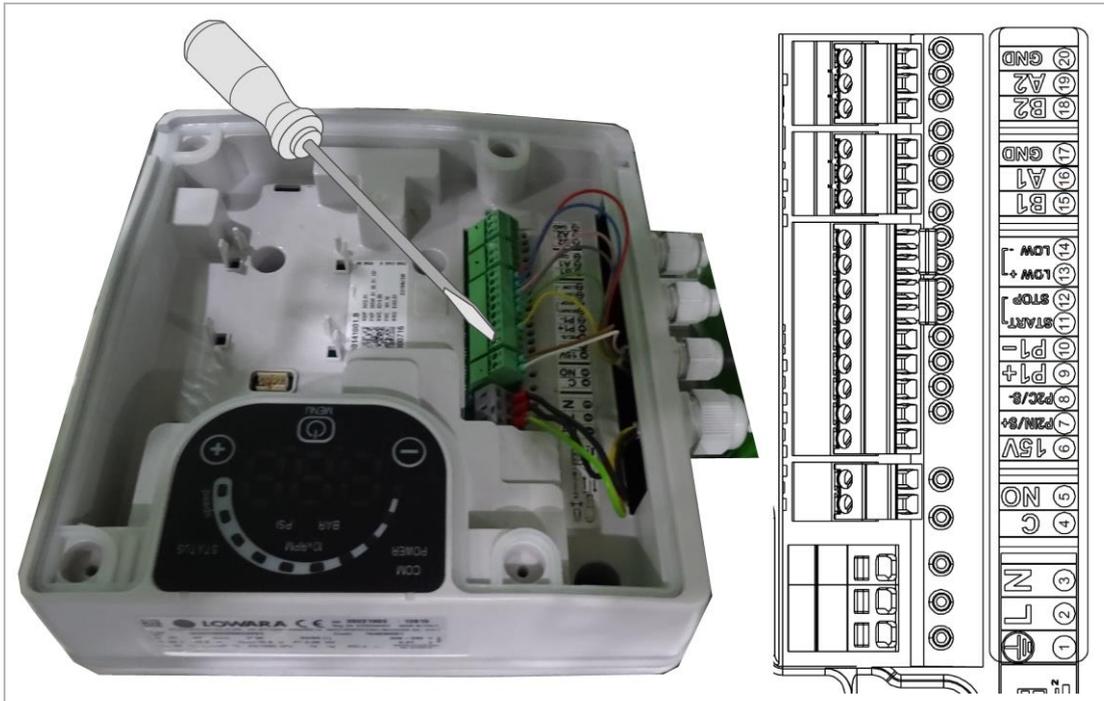
WARNING External voltage on voltage-free contacts



- Risk of electric shock
- ▶ Do not open any switch boxes or other parts of the electrical equipment if you are not a qualified electrician.
- ▶ Unplug the system's power plug before working on electrical components.
- ▶ Obey the warning labels in the control unit and the general safety information (refer to chapter 2.1.3).



1. Make sure that the frequency converter is de-energised.
 - a Wait for at least 5 minutes for the residual voltage to be discharged.
2. Remove the cover of the frequency converter.
 - a Loosen the four screw connections.
3. Check the wiring and terminal configuration.
 - a Connect the optional, external connections, if necessary.



Connection	Des.	Terminal	Description	Comments
Error signal	4	C	COM – Error status relay	
	5	NO	NO – Error status relay	
External pressure sensor (differential pressure)	9	P1+	External power supply sensor +15 VDC	15 VDC, Σ max. 100 mA
	10	P1-	External sensor 4-20 mA input	
External Start/Stop	11	START	External ON/OFF input	Presetting of short-circuit, centrifugal pump ready to RUN
	12	STOP	Grounding for external ON/OFF input	
External Lack of water	13	LOW+	Input Water low	Presetting of short-circuit, detection of lack of water: activated
	14	LOW-	Grounding for input Water low	

4. Check that all cables are properly routed and undamaged.
5. Close the cover of the frequency converter.
 - » The system is in a de-energised state.



For further information on the electrical connections, refer to the instruction manual of the manufacturer of the pressure booster pump.

6 Start-up/commissioning



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

6.1 Checking and presetting the system



Risk of centrifugal pump running dry due to entrapped air

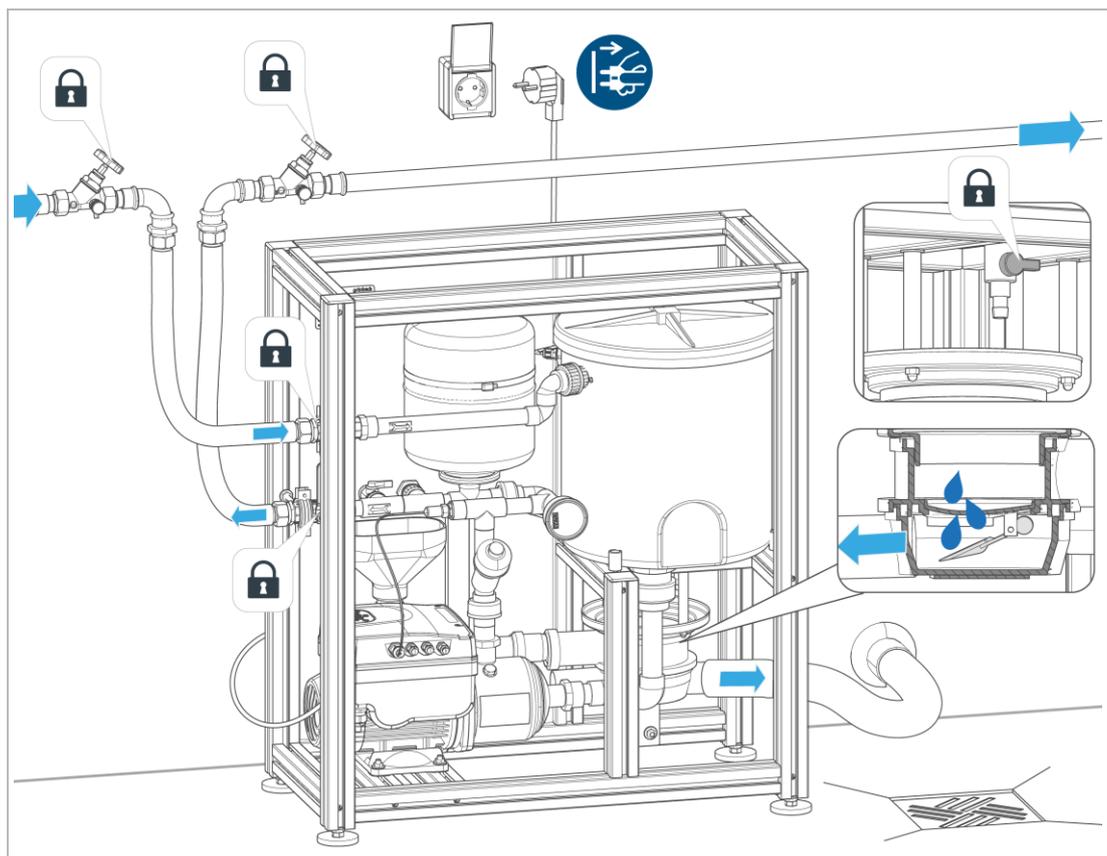
- The system's power plug must only be plugged in after the system has been filled with water and the centrifugal pump has been vented.



CAUTION Escaping water on the floor



- Risk of slipping at points with leaks
- ▶ Use personal protective equipment. Wear sturdy footwear.
- ▶ Immediately mop up escaped liquids.



1. Check that the shut-off valves for water inlet and outlet are closed.
2. Check that the draining valve at the bottom of the supply tank is closed.
3. Check that the waterless odour trap installed in the collecting sump of the waste water discharge is aligned with the outlet direction towards the drain connection

4. Check whether the supply tank is empty.
 - a Open the lid and check.

6.1.1 Check the preload pressure of the diaphragm expansion tank

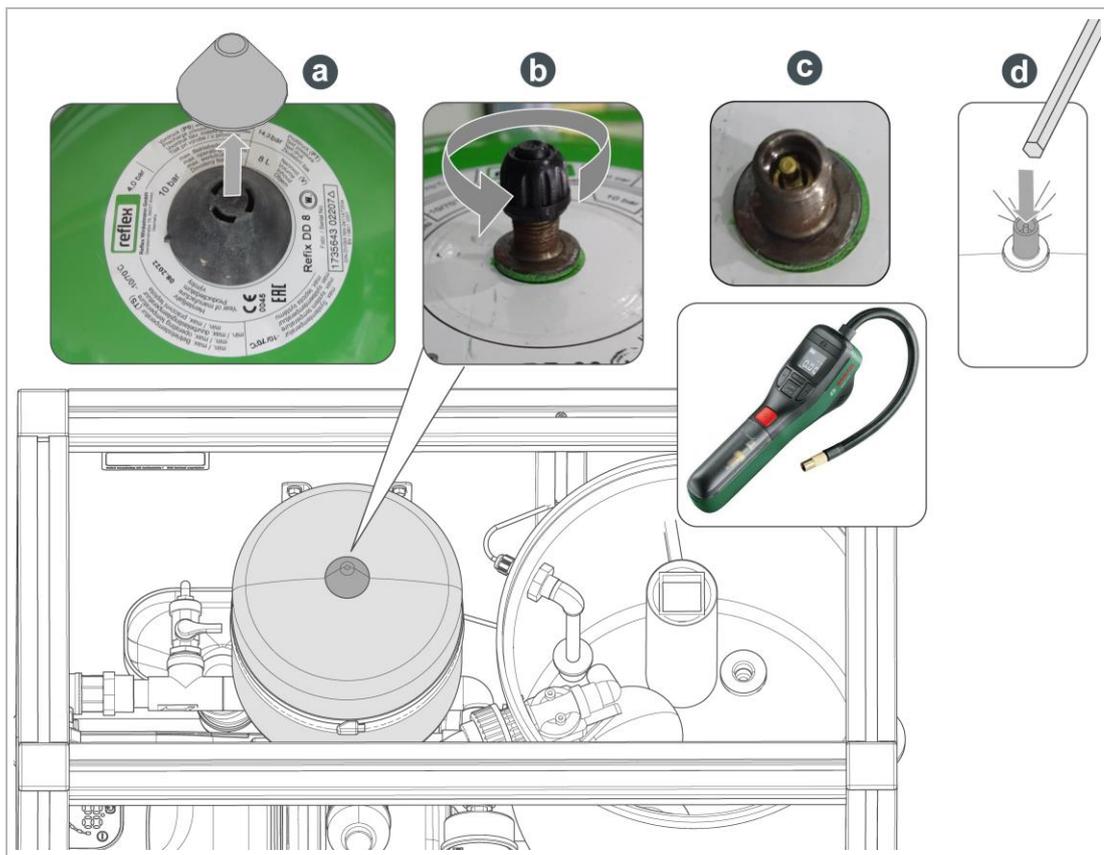


The target pressure is **2.5 bar** (default pressure setting).

The pressure was preset at the factory. As a longer period of time might have passed between manufacturing and start-up, however, the pressure needs to be checked.



The water side must be depressurised. Use nitrogen for gas filling.

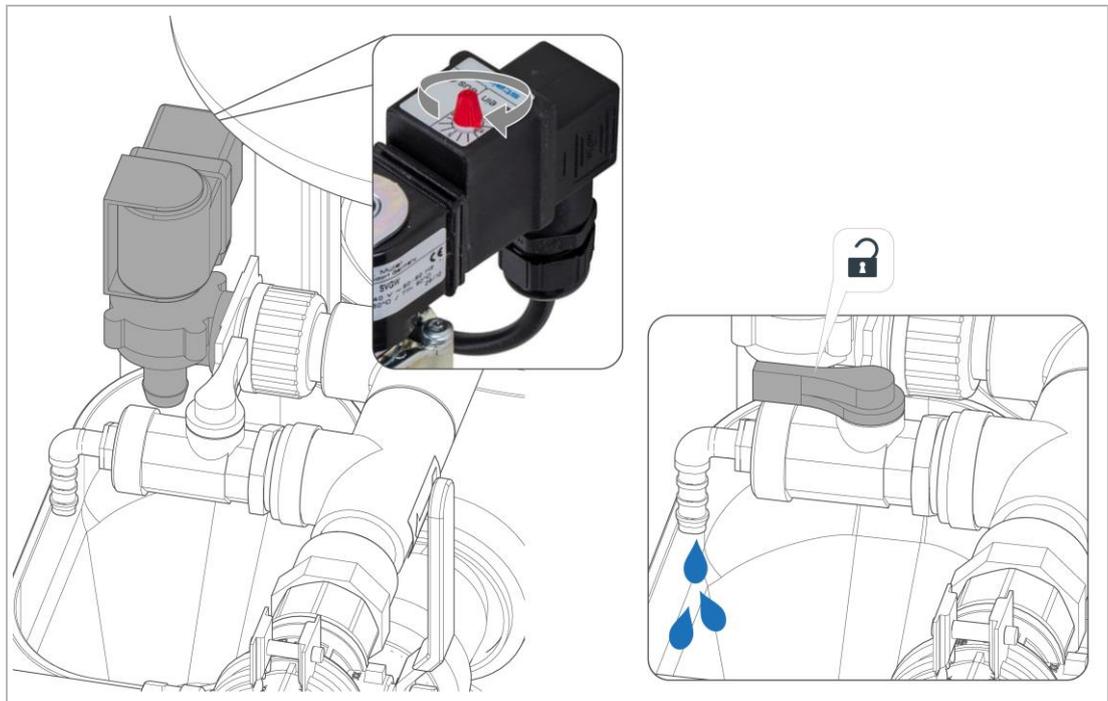


1. Check the pressure in the diaphragm expansion tank.
 - a Remove the cover of the filling valve.
 - b Unscrew the cap.
 - c Use a battery-operated pump or a hand-held instrument (order no. 100075560001) to check the pressure.

Adjusting the pressure

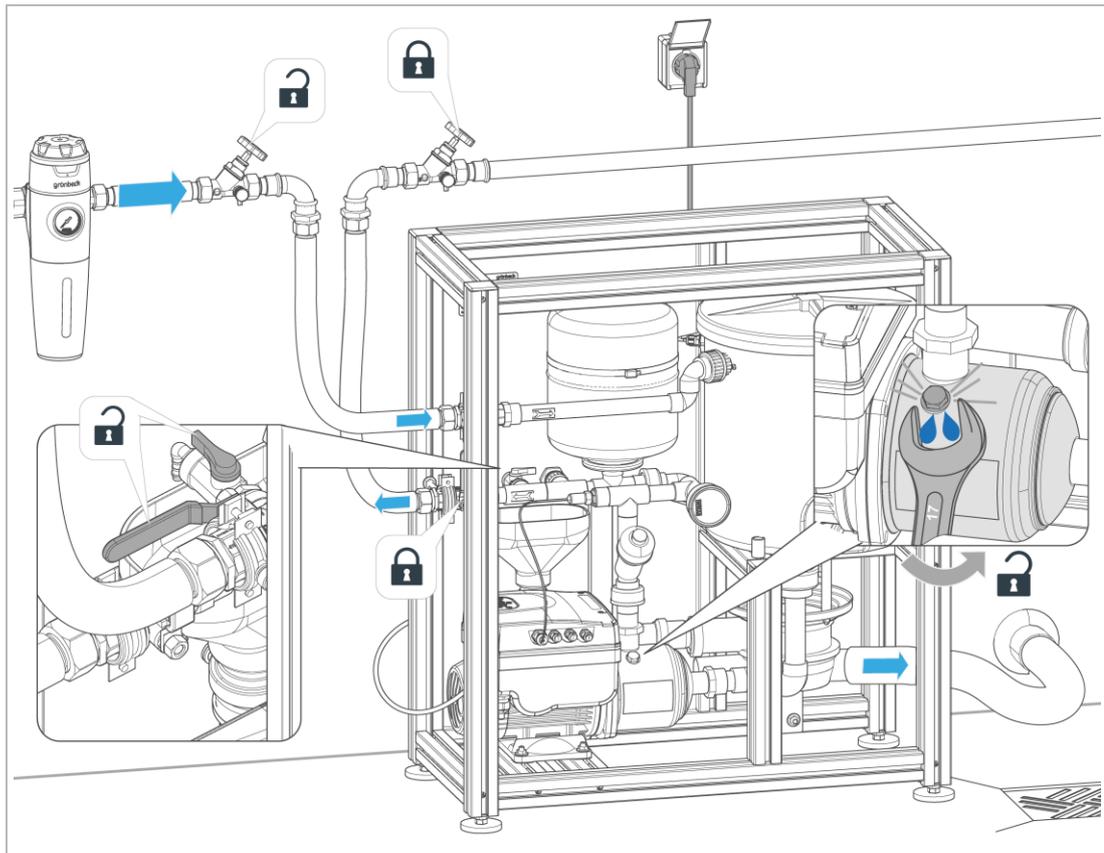
- ▶ If the pressure in the diaphragm expansion tank is too high (> 2.5 bar):
 - d Depressurise to the target pressure of 2.5 bar. Carefully press the pin in the filling valve using a narrow object/tool.
 - e Check the pressure again.
 - ▶ If the pressure in the diaphragm expansion tank is too low (< 2.5 bar):
 - f Increase the pressure to the target pressure of **2.5 bar** using a battery pump or a suitable pressure device.
2. Screw on the cap.
 3. Put the cover of the filling valve back on.

6.1.2 Setting the optional flushing device

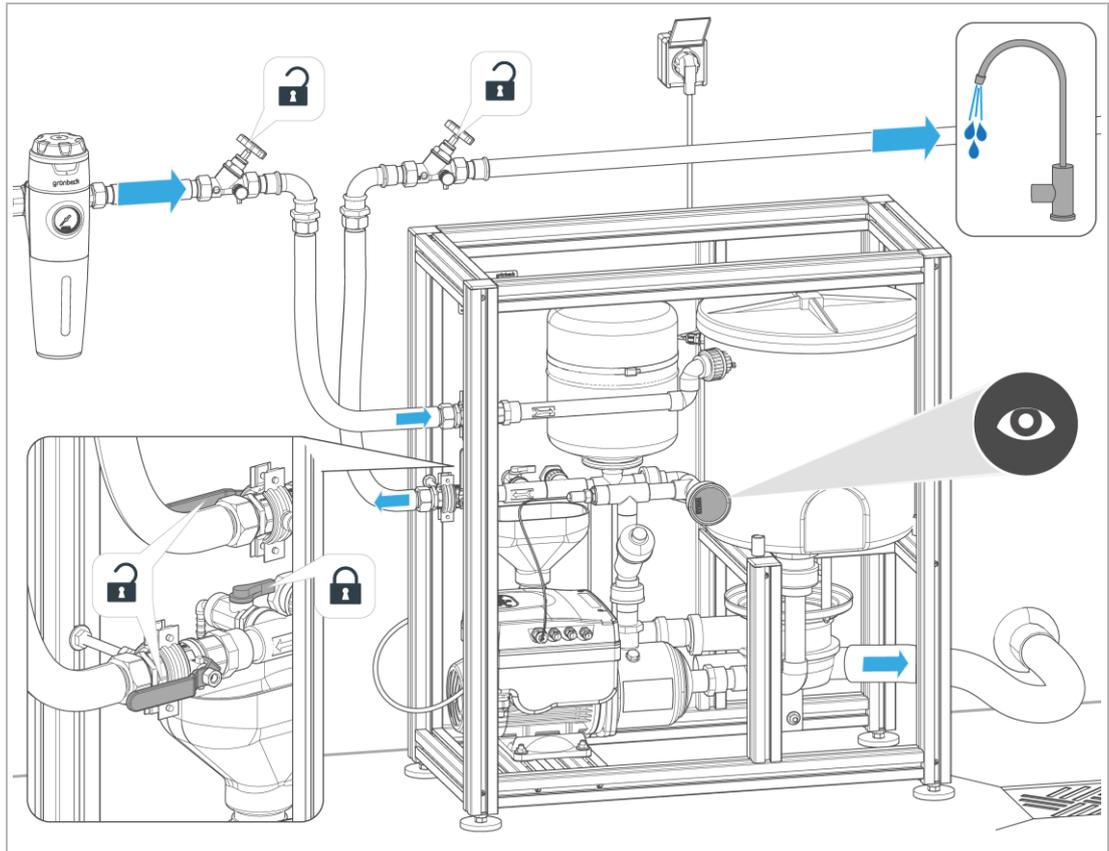


- ▶ If necessary, set the flushing time on the potentiometer of the optional flushing device:
 - Setting range 1 – 100 seconds
 - The recommended flushing time is 100 seconds (flushing volume approx. 14 l/min)
- ▶ Open the sampling valve.

6.1.3 Filling the system with water and venting it



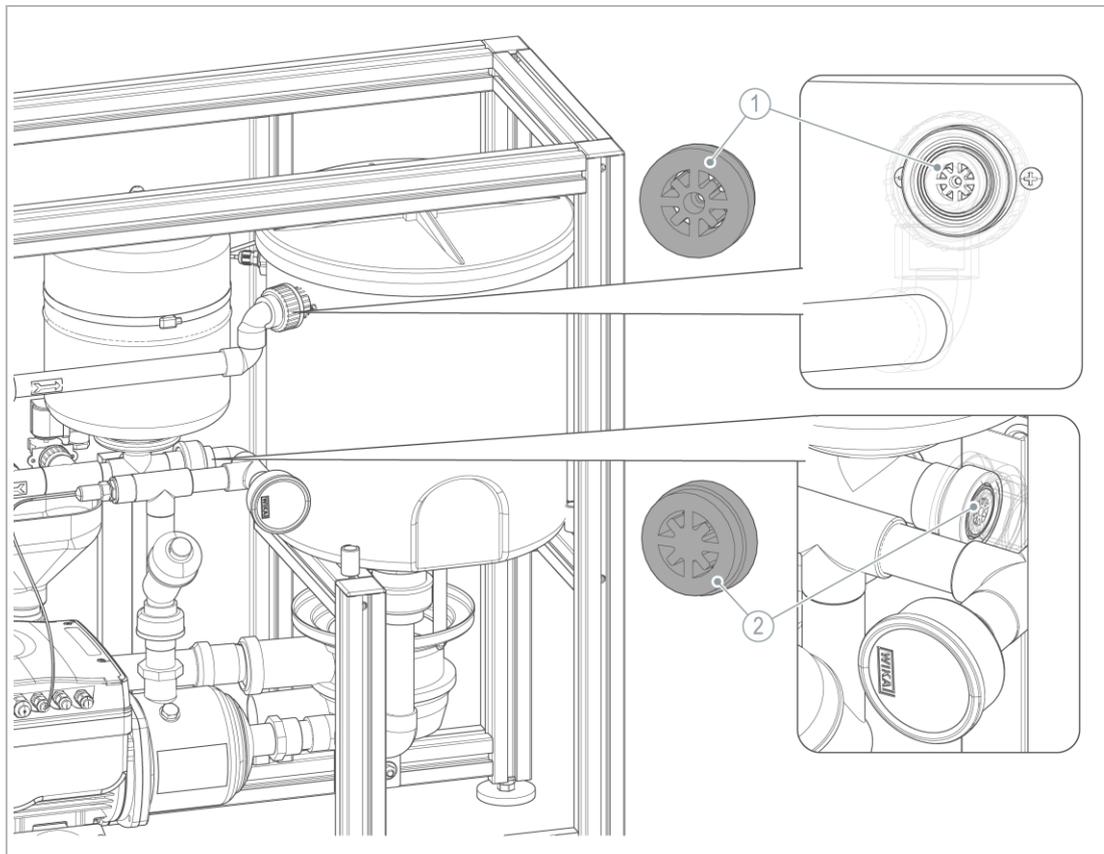
1. Slowly open the shut-off valves in the water inlet of the system.
 - » The supply tank is filled via the float valve.
2. Fill the system and the pump until the water emerging from the sampling valve is free of bubbles.
 - a If necessary, also open the vent screw on the pump until water emerges – close it again after water has emerged.
 - b Close the sampling valve.
3. Plug the power plug of the system into the socket.
 - » The pump starts running and pressure is being built up.
 - a Plug in the power plug of the optional flushing device.
 - » Flushing towards the drain takes place.
4. Slowly open the sampling valve.
 - a Check the setting pressure (operating pressure) of the pressure control (factory setting 4 bar) on the pressure gauge.
 - b Reset the operating pressure, if necessary.



5. Slowly open the shut-off valves in the system's water outlet.
6. Vent the system via one of the water withdrawal points.
 - a Fully open the water tap and let the water run for a few minutes until no more air escapes.
7. Check the system for leaks.

6.1.4 Checking the system for function and safety

6.1.4.1 Flow restrictor



Designation

- 1 Flow restrictor in the water inlet
(with black bypass bore)

Designation

- 2 Flow restrictor in the water outlet
(without black bypass bore)

Flow restrictor in the water inlet



The flow restrictor installed in the water inlet must not be removed.

It limits the amount of inlet water to the max. water volume that can be discharged via the overflow, thus preventing an inadmissible increase of the water level in the supply tank.

Flow restrictor in the water outlet



The flow restrictor installed in the water outlet prevents the withdrawal volume from exceeding the make-up water volume and thus prevents supply interruptions due to the dry-run protection responding.

It may only be removed if the sum of the withdrawals is limited to a maximum of 2 m³ by on-site measures.

This might be reasonable in case of high performance losses on site – refer to the system characteristic in chapter 12.1.

6.1.4.2 Function and setting of frequency converter

- ▶ Check the setting of the frequency converter, if necessary (refer to chapter 7.1).
- ▶ Check the optional flushing device for function.

6.1.4.3 Safety

- ▶ Check that the electric lines are protected against high temperatures, vibrations and mechanical damage.
- ▶ Check that the cap on the filling valve of the diaphragm expansion tank is tightened – this has a sealing function and prevents the nitrogen from escaping.
- ▶ Make sure that the pressure booster system is grounded.
- ▶ Make sure that the system's control unit is easily accessible and that it can be switched off quickly, if necessary.

6.2 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.

6.2.1 Disposal of packaging

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

6.2.2 Storage of accessories

- ▶ Store the accessories for the product in a safe place.

7 Operation

The operation of the system is automatic and does not require any manual operation.

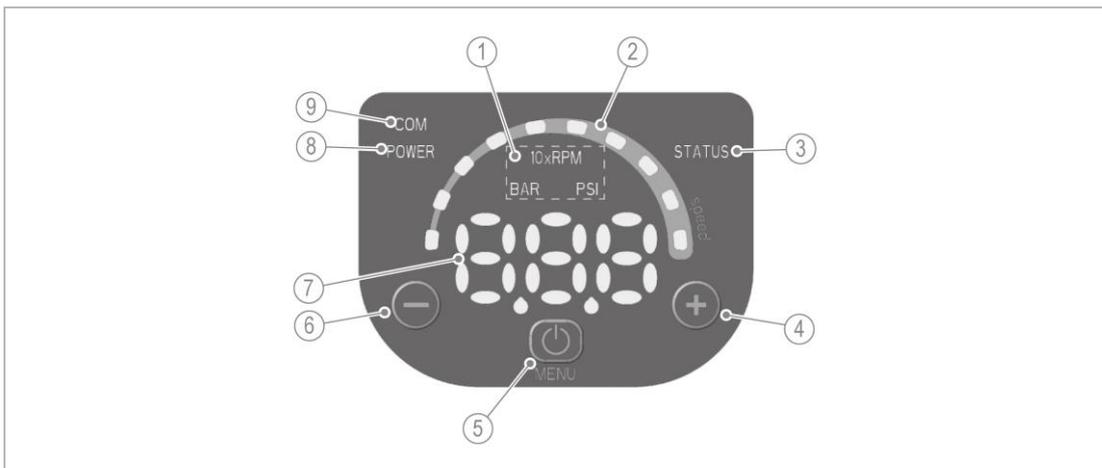
The display and the LEDs on the control/operating panel of the frequency converter provide information on the voltage supply, the status of the centrifugal pump and the operating state.

- Inspect the system at regular intervals (refer to chapter 8.3).
- Carry out the semi-annual maintenance at regular intervals (refer to chapter 8.4.1).
- Have the annual maintenance carried out by a qualified specialist (refer to chapter 8.4.2).

7.1 Setting the frequency converter (GENO-FU-X)



Only Grünbeck's technical service personnel must make settings on pressure booster pump.



Designation	Function
1 Measuring unit LEDs	Information on the unit of the rotational speed LED strip and the display
2 Rotational speed LED strip	Display of the current rotational speed in steps of 10 % (depending on the min./max. rotational speed set)
3 Status LED	Indication of the operating state
4 Plus key 	<ul style="list-style-type: none"> • To increase values • Navigation in the menu
5 START/STOP key 	<ul style="list-style-type: none"> • To start/stop the pumps • Pressing and holding the key to call up the parameter menu • Confirmation of a selection in the parameter menu
6 Minus key 	<ul style="list-style-type: none"> • To decrease values • Navigation in the menu
7 Display	Display of parameters/menu
8 POWER LED	Information on power supply
9 Communication LED	Information on communication

7.1.1 Status LED

The status LED indicates the operating state of the pump and signals any faults.

LED	Description
 OFF	Pump stopped
 Steady green light	Pump in operation
 Flashing green/orange light	Non-locking alarm during operation of the pump
 Steady orange light	Non-locking alarm when pump is stopped
 Steady red light	Locking error – the pump cannot be started

7.1.2 Rotational speed LED strip

The rotational speed LED strip consists of 10 LEDs.

In steps of 10 to 100 %, the LEDs represent the rotational speed range between parameter P27 (min. speed) and parameter P26 (max. speed)

LED	Description
ON	Motor in operation – the speed corresponds to the percentage stages that are indicated by the switched-on LEDs on the strip (e.g.: 3 LEDs OM = rotational speed 30 %).
First LED flashes	Motor in operation – the speed is below the absolute minimum value (parameter P27)
OFF	Motor stopped

7.1.3 Measuring unit LED

The measuring unit LED indicates which measurement is active.

LED ON	Measurement	Description
10xRPM	Impeller rotational speed	The display shows the rotational speed in 10xRPM
BAR	Hydraulic delivery head	The display shows the value of the delivery head in bar
PSI		The display shows the value of the delivery head in psi

7.1.4 Display

The display indicates operating state, operating values, menu and error codes. The OFF mode has a lower display priority than the STOP mode.

Display	Mode	Description
OFF	OFF	Pump is off Contacts 11 and 12 are not short-circuited
StP	STOP	Pump stopped manually
ON	ON	Pump is on The motor starts depending on the selected control mode – appears for a few seconds, then the operating pressure is displayed

Alarm and error display



Explanation of alarm and error codes (refer to chapter 9.3)

Display (examples)	Mode	Description
A01 → 3.56 (BAR) A02 → 285 (e.g. 10xRPM) ...	Alarm	In the event of an alarm, the corresponding code is displayed alternately with the main display.
E01 E02 ...	Error	If an error occurs, the display shows the corresponding code number.

7.2 Software parameters



The software parameters are preset at the factory.



Designation	Key	Function
1 Plus	+	Main display
		<ul style="list-style-type: none"> To increase the selected control mode
		Parameter menu <ul style="list-style-type: none"> To increase the indicated parameter directory
2 START/STOP MENU		Parameter indication/editing
		<ul style="list-style-type: none"> To increase the parameter value
		Zero pressure auto-calibration (P44) <ul style="list-style-type: none"> To automatically calibrate the pressure sensor
Kombi	+	Main display
		<ul style="list-style-type: none"> To start/stop pump
Kombi (combination)	+	Parameter menu
		<ul style="list-style-type: none"> To switch to parameter indication/editing
3 Minus	-	Parameter indication/editing
		<ul style="list-style-type: none"> To save the parameter value
		Main display <ul style="list-style-type: none"> To switch to the parameter menu
Kombi	(5 s)	Parameter menu
		<ul style="list-style-type: none"> To switch to the main display
3 Minus	-	Main display
		<ul style="list-style-type: none"> To switch between rotational speed and delivery head
		Main display <ul style="list-style-type: none"> To reduce the value for the selected control mode
3 Minus	-	Parameter menu
		<ul style="list-style-type: none"> To reduce the indicated parameter directory
		Parameter indication/editing <ul style="list-style-type: none"> To reduce the parameter value
3 Minus	-	Zero pressure auto-calibration (P44)
		<ul style="list-style-type: none"> To automatically calibrate the pressure sensor

7.2.1 Parameters of sensor configuration

You can set and adjust the following parameters of the pressure sensor:

G = global parameter

No.	Parameters	Unit	Description
P41	Pressure Sensor Unit Of Measure [BAR, PSI] G Measuring unit of pressure sensor	bar/psi	To set the measuring unit (BAR, PSI) of the pressure sensor <ul style="list-style-type: none"> • It affects the parameter for the LED display • Standard: BAR
P42	Pressure Sensor Full Scale 4 – 20 mA G Full scale value of pressure sensor [0.0 – 25.0BAR] [0.0 – 363PSI]	bar/psi	Parameter for the full scale value of the pressure sensor 4 – 20 mA <ul style="list-style-type: none"> • Connected with analogue inputs 9 and 10 • Standard: depending on the type of centrifugal pump used
P44	Zero Pressure Auto-Calibration	bar/psi	The user can auto-calibrate the pressure sensor. <ul style="list-style-type: none"> • Used to compensate the offset signal of the sensor at zero pressure due to the tolerance of the sensor <p>Procedure: In the event of 0 pressure of the hydraulic system (no water contained) or if the pressure sensor is disconnected from the pipes:</p> <ul style="list-style-type: none"> ▶ Switch to parameter P44 • The actual value for 0 pressure is indicated ▶ Start auto-calibration by operating the + or - key • When the auto-calibration is completed, the 0 (zero) pressure or the message "---" (---) is displayed if the sensor signal is outside the permissible tolerance range

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 or control units.
- ▶ Do not use any high-pressure equipment for cleaning and do not blast electric/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.

8.1.1 Exterior cleaning

- ▶ 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.

8.1.2 Special cleaning/disinfection

As a "Free outlet" always constitutes an open system, additional cleaning and disinfection might be necessary subject to the hygiene requirements and the use of the water provided.



Recommendation:

For automatic disinfection, a GENODOS DM-B dosing system can be installed downstream.

- ▶ Clean the components of the waste water discharge, if necessary.
- ▶ Disinfect the supply tank, if necessary.

8.2 Intervals



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

- ▶ 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 contamination, environmental impacts, consumption, etc.

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

Activity	Interval	Tasks
Inspection	2 months	<ul style="list-style-type: none"> • Visually check the installation for leaks • Check the solenoid valve of the optional flushing device for leaks • Check the frequency converter for function and error messages
Maintenance	semi-annually	<ul style="list-style-type: none"> • Check the outside of the entire system for damage and corrosion • Check the diaphragm extension tank for escaping water on the filling valve • Check the setting pressure (inlet pressure) of the diaphragm expansion tank and correct it, if necessary. • Check the connection hoses and/or connection points for leaks • Check the hose or pipe connections for leaks and damage • Check the power cable, power plug and electrical lines for damage and a tight fit • Check the setting of the frequency controller
	annually	<ul style="list-style-type: none"> • Check the setting pressure (operating pressure) of the centrifugal pump on the pressure gauge and readjust it, if necessary. • Test the dry-run protection of the centrifugal pump • Check that the fan and the vent slots of the centrifugal pump are free from dust • Read the error memory of the centrifugal pump • Check the non-return valve for leaks • Replace the flow restrictor in the water inlet • Replace the flow restrictor in the water outlet • Clean the cap sieve in the inlet of the float valve • Optional flushing device: <ul style="list-style-type: none"> · Clean the sieve in the inlet of the flushing valve · Check the flushing valve for leaks and clean the outlet nozzle, if necessary (remove scale deposits) • Clean the supply tank • Check the waste water discharge • Check the float valve for function
	load-dependent	<ul style="list-style-type: none"> • Refer to “annually”
Repair	5 years	<ul style="list-style-type: none"> • Recommendation: replace wearing parts

8.3 Inspection

You as owner/operator/operating company can carry out 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.
 - a Pay attention to leaks and puddles on the floor.
- 2. Check the frequency converter for function and read out possible error messages.
- 3. Check the solenoid valve of the optional flushing device for leaks.
 - a Visually check whether water escapes when no flushing takes place.

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.



DANGER

Lethal voltage

- Severe burns, cardiovascular failure, fatal electric shock
- ▶ Only have qualified electricians carry out electrical work on the system.
- ▶ Prior to any work on the system's electrical or mechanical components, disconnect the centrifugal pump's frequency converter from the mains supply.
- ▶ After disconnecting the power supply, wait for at least **5** minutes before working on the frequency converter (e-SM drive system) in order to ensure that the capacitors of the internal circuit are discharged.
- ▶ Prior to any work on electrical and electronic systems, make sure that all electrical connections (even those without potential) are de-energised.

8.4.1 Semi-annual maintenance

1. Check the outside of the entire system for damage and corrosion.
2. Check the diaphragm expansion tank for escaping water on the filling valve.
 - a Briefly operate the filling valve.
 - b Replace the diaphragm expansion tank if water escapes from the filling valve.
3. Check the setting pressure (inlet pressure) of the diaphragm expansion tank.
 - a Refill nitrogen, if necessary – the water side must be depressurised while doing so.
4. Check the connection hoses and/or the connection points for leaks.
5. Check all hose or pipe connections for leaks and damage.
6. Check the power cable, power plug and all electrical lines for damage and a tight fit.
7. Check the setting of the frequency converter.

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.

- ▶ Carry out the work below in addition to the semi-annual maintenance work:
 1. Check the setting pressure (operating pressure) of the centrifugal pump on the pressure gauge – readjust it, if necessary.
 2. Test the dry-run protection of the centrifugal pump
 3. Check that the fan and the ventilation slots of the centrifugal pump are free of dust.
 - a Clean the fan impeller of the centrifugal pump, if necessary.
 4. Read out the error memory of the centrifugal pump.
 5. Check the non-return valve for leaks.
 - a Replace the seal, if necessary.
 6. Replace the flow restrictor in the water inlet (version with bypass bore)
 7. Replace the flow restrictor in the water outlet (version without bypass bore)
 8. Clean the cap sieve in the inlet of the float valve.
 - a Remove the screw connection piece and remove the cap sieve.
 9. Optional flushing device:
 - a Clean the sieve in the inlet of the solenoid valve.
 - b Check the solenoid valve for leaks – clean the outlet nozzle, if necessary (remove scale deposits).
 - c Replace the solenoid valve, if leaky.
 - d Check the flushing function – unplug the power plug, wait briefly and then plug it in again.
 10. Clean the inside of the supply tank.
 - a Drain the supply tank.
 - b Check the waste water discharge when draining the supply tank.
 11. Check the float valve for function.
 - a Fill the supply tank with water.
- ▶ Record the maintenance work in the operation log (refer to chapter 13).

8.5 Spare parts

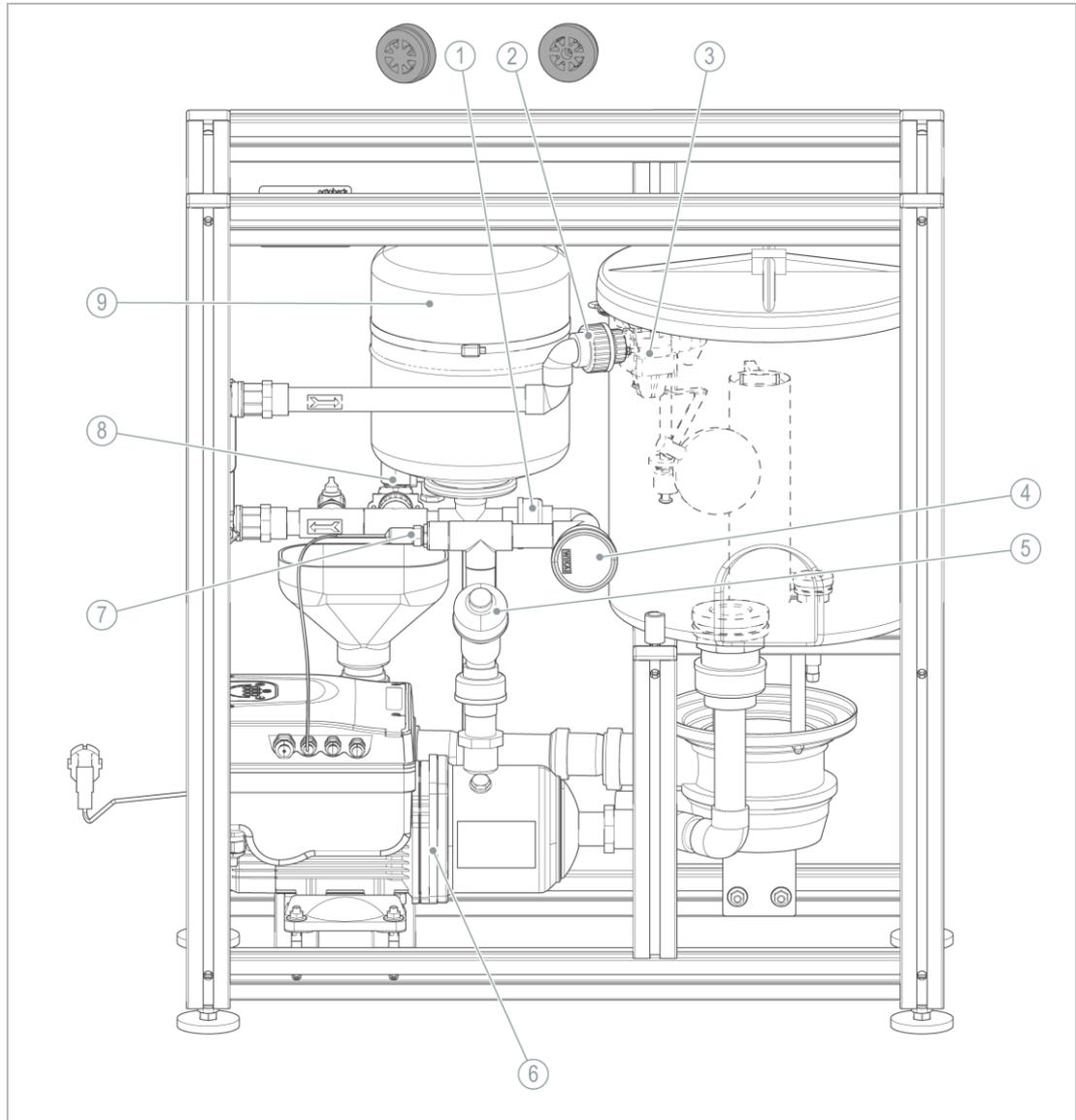
For an overview of the spare parts, refer to our spare parts catalogue at www.gruenbeck.com. You can order the spare parts from your local Grünbeck representative.

8.6 Wearing parts



Wearing parts must be replaced by qualified specialists only.

The wearing parts are listed below:

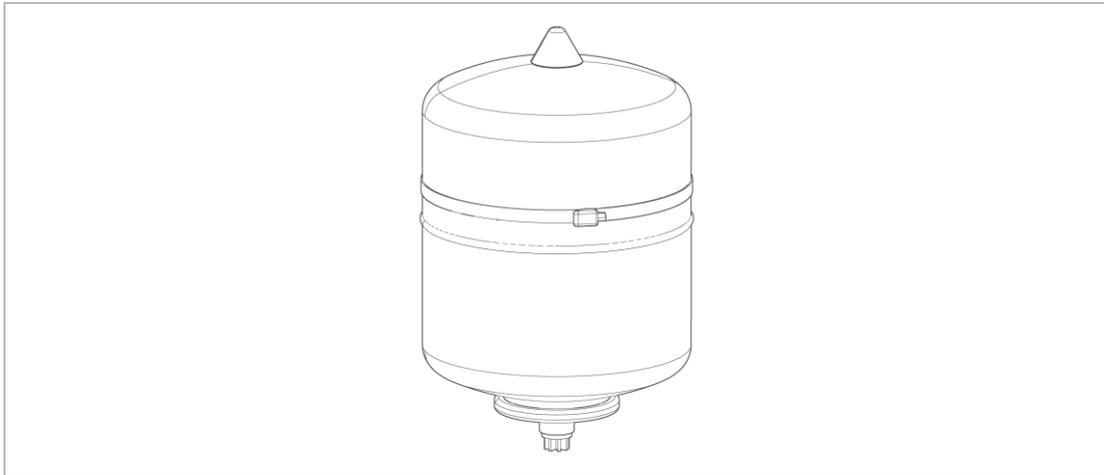


Designation	
1	Flow restrictor in the water outlet
2	Flow restrictor in the water inlet
3	Float valve
4	Pressure gauge
5	Seal of non-return valve

Designation	
6	Sealing elements of circulation pump
7	Pressure sensor
8	Solenoid valve of flushing device (optional)
9	Diaphragm expansion tank

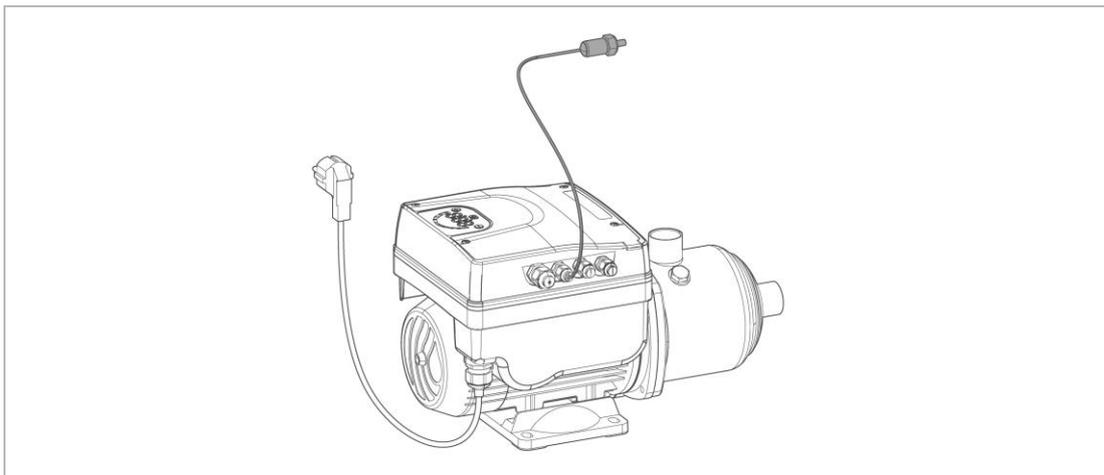
- ▶ Have the seals replaced in the event of leaks, damage or deformations.
- ▶ Have defective or worn components replaced.

Diaphragm expansion tank



- ▶ Replace the diaphragm expansion tank in case of damage and corrosion.

Centrifugal pump with pressure control



- ▶ Replace the entire unit in case of an error or wear and tear on the centrifugal pump. Send in the centrifugal pump for repair.
- ▶ Replace the pressure sensor of the centrifugal pump individually – only if the error can be clearly assigned, however.

9 Troubleshooting



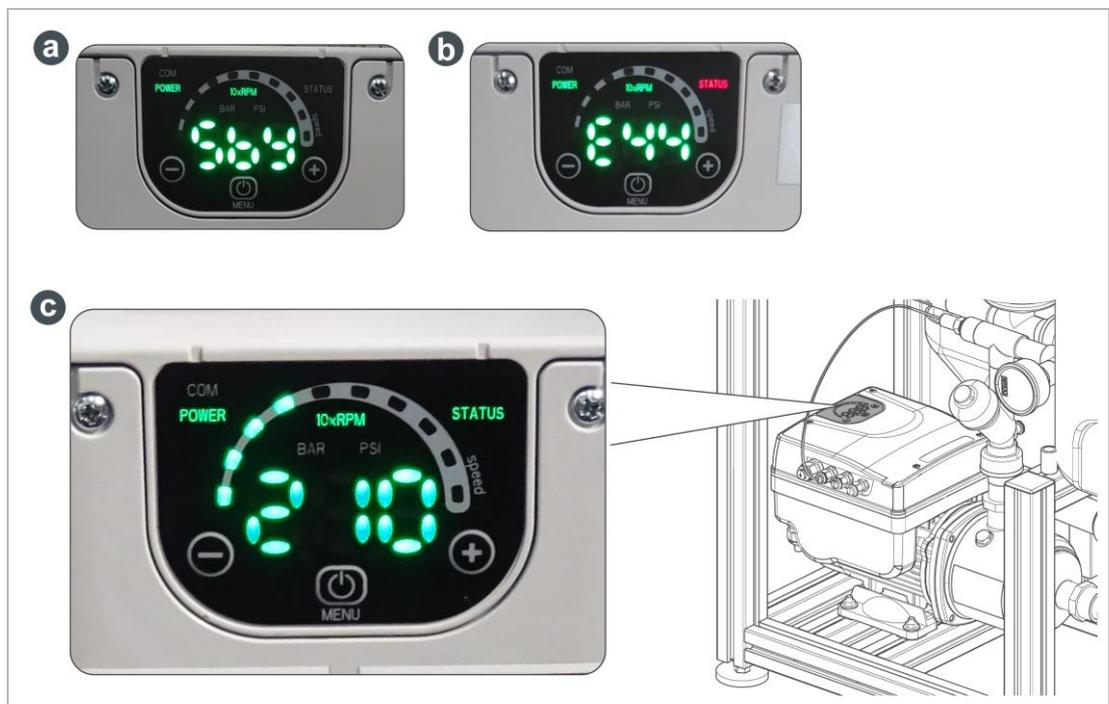
WARNING

Contaminated drinking water due to stagnation

- Infectious diseases
- ▶ Have faults eliminated immediately.

9.1 Messages

The product displays faults in the display of the frequency converter. The fault display remains active until the condition has been rectified.



Designation/meaning

- | | |
|---|---|
| a | Standby mode – the status LED is off |
| b | Error (Error: EXX) – the Status LED is red |
| c | In operation (display of the performance as rotational speed) – the status LED is green |

1. Eliminate the fault (refer to display screens).
2. Acknowledge the fault if it does not acknowledge itself automatically.
3. Watch the display.
4. If the fault occurs again, compare the display message with the tables for alarm codes and error codes below.

9.2 Other observations

Observation	Explanation	Remedy
Water withdrawal is closed.	Water leaks on the non-return valve or within the system	<ul style="list-style-type: none"> ▶ Check the system for leaks ▶ Repair or replace defective/worn components
Pump is in operation with cyclical increase/decrease of speed <ul style="list-style-type: none"> • The green light is on • The yellow light is on • The red light is off 	Existing pressure tank too small	▶ Check the operating conditions of the pump
	Defective membrane in the on-site pressure vessel	▶ Replace the membrane
	The operating point set is not suitable for the system <ul style="list-style-type: none"> • Value that the pump can deliver is too high 	▶ Readjust the system
Water withdrawal is open.	The operating point set is not suitable for the system <ul style="list-style-type: none"> • Value is zero 	▶ Readjust the system
Pump does not start. <ul style="list-style-type: none"> • The green light is on • The yellow light is off • The red light is off 		
Pump in operation Vibrations at the pump or in its vicinity	The operating point set is not suitable for the system <ul style="list-style-type: none"> • The value is lower than the minimum pressure the pump can deliver 	▶ Readjust the system
Pump in operation Pump starts and stops frequently	Possible problems with the float switch in the suction tank	▶ Check the float switch and the tank
Pump always runs at maximum speed	Possible problems with the pressure transmitter (pressure sensor)	▶ Check the hydraulic connection between the transmitter and the system
General system fuse responds	Short circuit	▶ Check the connecting cables
The system's residual current circuit breaker responds at maximum speed	Loss of grounding	▶ Check the insulation of the pump and of the cables



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).

9.3 Display screens of the frequency converter

In the event of an alarm or error, the display of the pressure booster pump indicates a code, and the status LED lights up.

- Alarms and errors are saved with the date and time.
- Alarms and errors can be reset by switching the pressure booster pump off for at least one minute.

9.3.1 Alarm codes

Code	Meaning	Causes	Remedy
A03	Loss of performance	Temperature too high	<ul style="list-style-type: none"> ▶ Lower the room temperature ▶ Lower the water temperature ▶ Reduce the load
A05	Data memory alarm	Data memory corrupted	▶ Contact technical service
A06	LOW alarm	Detection of lack of water (if P48 = ALR)	▶ Check the water level in the tank
A15	EEPROM	Data memory corrupted	▶ Stop the pump for 5 minutes and restart it
A20	Internal alarm		If the problem persists: ▶ Contact technical service
A30	Multi-pump connection alarm	Faulty multi-pump connection	<ul style="list-style-type: none"> ▶ Check the condition of the connection cables ▶ Check that there are no discrepancies in the addresses
A31	Loss of multi-pump connection	Loss of multi-pump connection	▶ Check the condition of the connection cables

9.3.2 Error codes

Code	Meaning	Causes	Remedy
E01	Internal communication error	Lack of internal communication	▶ Stop pump for 5 minutes and restart it
E02	Motor overload error	High motor voltage • Power consumption too high	If the problem persists: ▶ Contact technical service
E03	DC-bus overvoltage error	DC-bus overvoltage • External causes condition • pump operation via generator	<ul style="list-style-type: none"> ▶ Check system configuration ▶ Check the position of the non-return valves ▶ Check the non-return valves for damage
E04	Rotor blocked	Motor stands still • No rotor synchronicity or rotor is blocked by foreign matter	<ul style="list-style-type: none"> ▶ Check the pump impeller for foreign objects and remove them ▶ Stop pump for 5 minutes and restart it ▶ Check the rotation function of the impeller If the problem persists: ▶ Contact technical service
E05	EEPROM data memory error	EEPROM data memory corrupted	▶ Stop pump for 5 minutes and restart it If the problem persists: ▶ Contact technical service

E06	Grid voltage error	Voltage supply outside the operating range	<ul style="list-style-type: none"> ▶ Check voltage ▶ Check electrical connection
E07	Error Motor winding temperature	Thermal contactor of motor tripped	<ul style="list-style-type: none"> ▶ Check whether there are impurities near the impeller and the rotor – remove them, if necessary ▶ Check the condition of the installation as well the water and air temperature ▶ Wait until the motor has cooled down <p>If the problem persists:</p> <ul style="list-style-type: none"> ▶ Stop pump for 5 minutes and restart it <p>If the problem persists:</p> <ul style="list-style-type: none"> ▶ Contact technical service
E08	Power module temperature error	Thermal contactor of frequency converter tripped	<ul style="list-style-type: none"> ▶ Check the condition of the installation and the air temperature
E09	General hardware error	Hardware error	<ul style="list-style-type: none"> ▶ Stop pump for 5 minutes and restart it <p>If the problem persists:</p> <ul style="list-style-type: none"> ▶ Contact technical service
E11	LOW error	Detection of lack of water (if P48 = ERR)	<ul style="list-style-type: none"> ▶ Check the water level in the tank
E12	Pressure sensor error	Missing pressure sensor (not available for ACT mode)	<ul style="list-style-type: none"> ▶ Check the condition of the sensor's connection cable
E14	Low-pressure error	Pressure below minimum limit (not available for ACT mode)	<ul style="list-style-type: none"> ▶ Check settings of parameters P45 and P46
E15	Loss of phase	Loss of one of the three phases (only in case of three-phase version)	<ul style="list-style-type: none"> ▶ Check the connection to mains
E30	Multi-pump protocol error	Incompatible multi-pump protocol	<ul style="list-style-type: none"> ▶ Update all pumps to the same firmware

10 Decommissioning

It is not necessary to take your product out of operation.



In case of longer absences, e.g. holidays, precautionary hygiene measures according to VDI 3810-2 and VDI 6023-2 must be taken in order to maintain drinking water hygiene after downtimes.

The installation of an optional flushing device prevents stagnation of the water by regularly flushing the water to the drain (refer to chapter 5.3.2).

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.

- ▶ Keep your product connected to electricity and water.

If a longer standstill of the system is planned, you must carry out the tasks below:

1. Close the shut-off valves for the water outlet on the system.
2. Make sure that the shut-off valves for the water inlet are open.
3. Keep the system connected to the power supply.
4. If an optional dosing system is connected, unplug the power plug of the dosing system.
 - » The system is shut down temporarily and remains in the permissible operating state.

10.1.1 Restart/recommissioning

After a temporary standstill, you must carry out the activities below:

- ▶ Open the shut-off valves for the water outlet on the system.
- ▶ Put the optional dosing system into operation.
- ▶ Check whether system disinfection must take place – depending on the duration of the standstill.



WARNING

Contaminated drinking water due to stagnation

- Infectious diseases due to bacterial growth
- ▶ Disinfect the system, if necessary.

10.2 Decommissioning

If a longer standstill of the system is planned, the system must be decommissioned.



The work below must be carried out by a qualified specialist only.

1. Completely drain the system.
 - a Let the supply tank drain and clean it inside.
2. Disconnect the system from the power supply.
3. Disconnect the optional flushing device and the dosing system from the power supply.
4. Disconnect the system hydraulically from the water supply.
5. Disconnect the system from the drain connection.

10.3 Restart/recommissioning

- ▶ Put the system into operation again (refer to chapter 6).

10.4 Final shutdown

The final shutdown of the system represents an intervention into your drinking water system.

- ▶ Check whether shutting down the system has an effect on the functional integrity of your drinking water system.
- ▶ Have a qualified specialist dismantle the system (refer to chapter 11).

11 Dismantling and disposal

11.1 Dismantling



The work below must be carried out by a qualified specialist only.

1. Close the shut-off valves of the water inlet.
2. Open a water withdrawal point downstream of the product and wait a few minutes.
 - » The pressure in the product and the pipe network is being relieved.
3. Close the water withdrawal point.
4. Disconnect the product from mains.
 - a Wait for approx. 15 minutes for the residual voltage to be discharged.
5. Drain the supply tank.
6. Remove the individual components.
 - a Disconnect the system from the drain connection.
 - b Disconnect the system hydraulically from the water inlet and water outlet.
 - c Remove the optional flushing device.
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



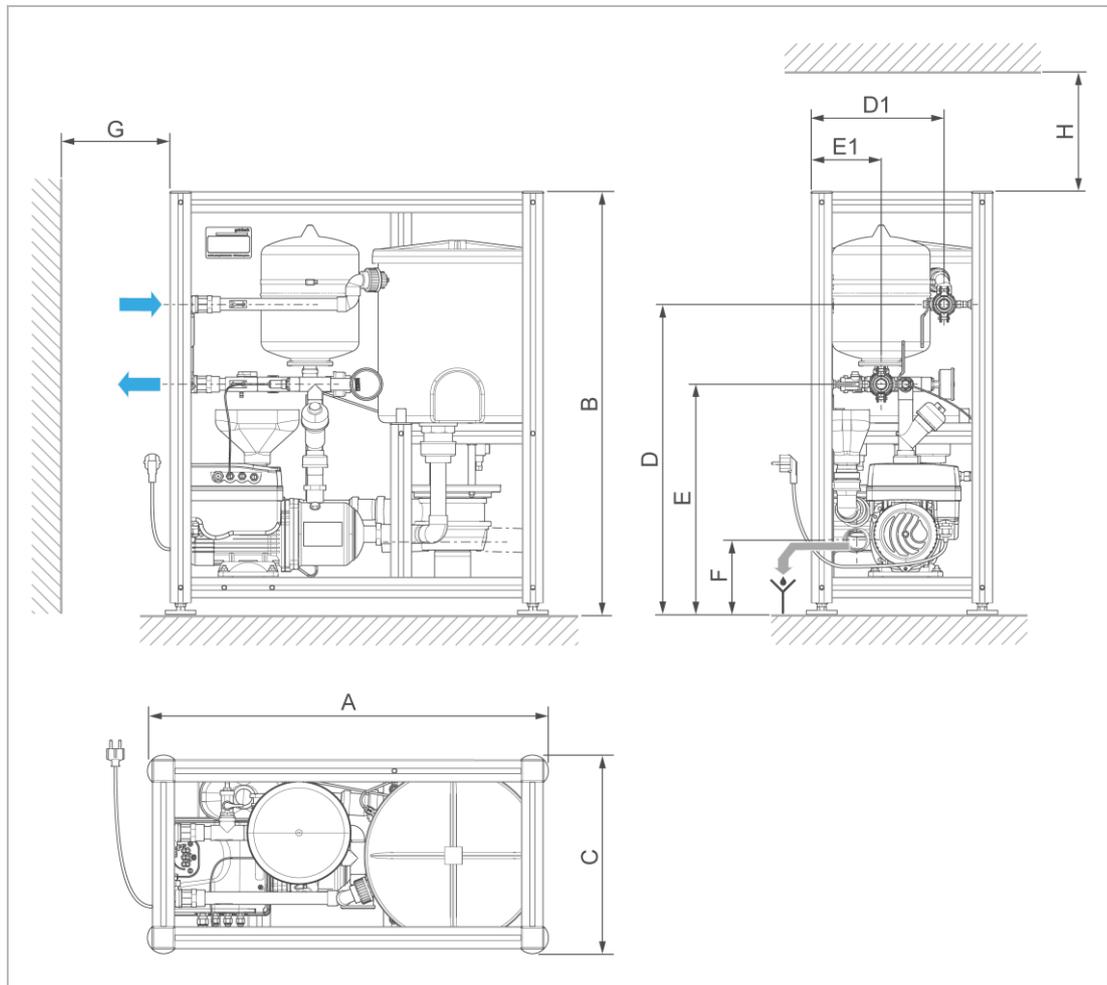
If this symbol (crossed-out wheellie bin) is on the product, this product or its electrical and electronic components must not be disposed of as household waste.

- ▶ 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



Dimensions and weights			GENO-G5
A	System width	mm	800
B	System height	mm	890 (885 – 900)
C	System depth	mm	390
D	Connection height Raw water inlet	mm	650
D1	Connection depth Raw water inlet	mm	280
E	Connection height Outlet to consumer	mm	480
E1	Connection depth Outlet to consumer	mm	150
F	Connection height Waste water to drain (rotatable connection direction)	mm	160
G	Clearance for motor fan and connections	mm	~ 200
H	Clearance above the system (for maintenance purposes)	mm	~ 500
Operating weight		kg	~ 78
Empty weight		kg	~ 46
Shipping weight		kg	~ 54

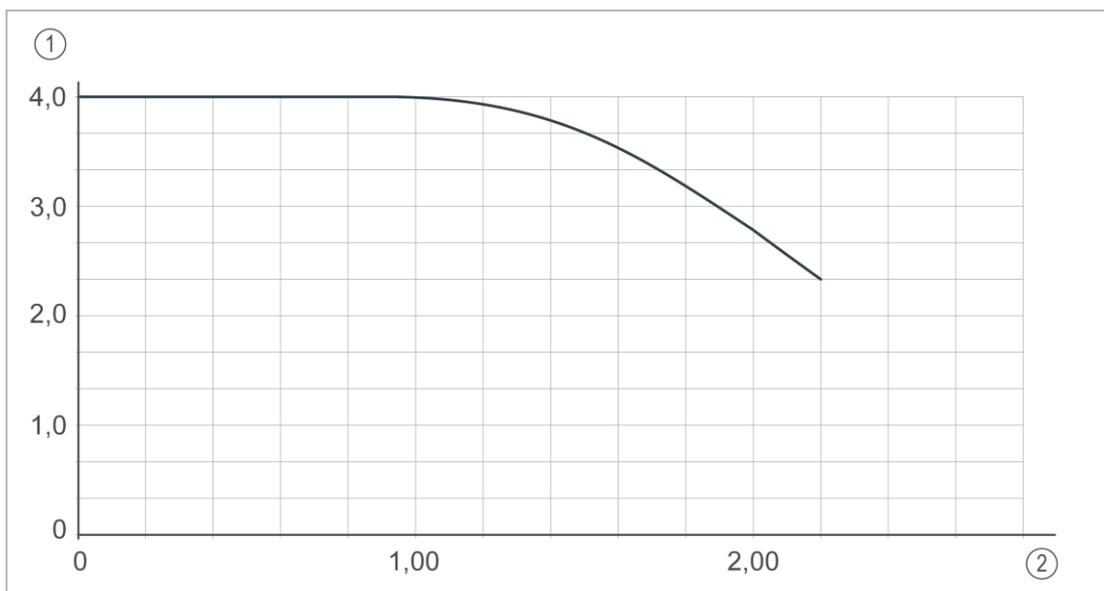
Connection data		GENO-G5
Nominal connection diameter Raw water inlet		DN 20 (R $\frac{3}{4}$ " female thread)
Nominal connection diameter Outlet to consumer		DN 20 (R $\frac{3}{4}$ " female thread)
Drain connection		DN 50
Rated voltage	V	210 – 240
Rated frequency	Hz	50 – 60
Rated input (operation)	kW	≤ 1.1
Power supply	V/Hz	230/50
Protection/protection class		IP 55/⊕

Performance data		GENO-G5
Nominal pressure	PN	10
Rated pressure	MPa/bar	1.0/10
Operating pressure (flow pressure)	bar	1.0 – 6.0
Setting pressure of pressure booster pump	bar	4.0
Nominal flow	m ³ /h	2.0

Consumption data (optional flushing device)		GENO-G5
Flushing water volume	l/min	≤ 14
Adjustable flushing duration	s	1 – 100

General data		GENO-G5
Water temperature	°C	5 – 35
Ambient temperature	°C	5 – 40
Humidity (non-condensing)	%	≤ 70
DVGW registration number		AS-0398BS0294
Order no.		134 100

12.1 System characteristic GENO-G5



Designation	Designation
Pressure in bar	Flow rate in m ³ /h

Note: Valid with built-in flow restrictor in the water outlet (as delivered)

13 Operation log



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

Euro system separation device | GENO-G5

Serial no.: _____

13.1 Start-up/commissioning log

Customer			
Name			
Address			
Installation/Accessories			
Drinking water filter (make/type)			
Drain connection (size)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Floor drain available	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Safety device (water stop)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Water lifting system (make)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Dosing system (for disinfection)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Flushing device (optional)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Grounding available with metal lines	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
Water pipes (material)	<input type="checkbox"/> Galvanised steel	<input type="checkbox"/> Copper	<input type="checkbox"/> Plastic
			<input type="checkbox"/> Stainless steel
Operating values			
Water pressure (flow pressure)	bar		
Target pressure (operating pressure) of pressure booster system	bar psi		
Flow direction through the system (directional arrows)		<input type="checkbox"/> Correct	
Socket checked for continuous voltage		<input type="checkbox"/> Yes	
Room temperature	°C		
Water meter reading	m ³		
Flow rate (peak value)	m ³ /h		
Start-up/commissioning			
Company			
Service technician			
Work time certificate (no.)			
Date/signature			

Maintenance No.: _____



Record the measured values and operating data.
 Confirm the checks with **OK** or record any repairs done.

Operating values	
Target pressure (operating pressure) of pressure booster system	bar
Setting pressure (inlet pressure) of diaphragm expansion tank	bar
Water meter reading	m ³

Error memory of frequency converter			
	Error	Date	Time
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

Semi-annual maintenance work	OK (Yes)	NO
System checked on the outside for damage, corrosion and stability	<input type="checkbox"/>	
System checked for leaks	<input type="checkbox"/>	
Hose/pipe connections and connection points checked for leaks and damage	<input type="checkbox"/>	
Power cable, power plug and electrical lines checked for damage and a tight fit	<input type="checkbox"/>	
Hygienic condition complied with (hygienic condition given?)	<input type="checkbox"/>	<input type="checkbox"/>
Diaphragm extension tank checked for escaping water on the filling valve	<input type="checkbox"/>	
Setting pressure (inlet pressure) of diaphragm expansion tank checked	<input type="checkbox"/>	
Diaphragm expansion tank refilled with nitrogen	<input type="checkbox"/>	<input type="checkbox"/>
Setting of the frequency controller checked	<input type="checkbox"/>	

Annual maintenance work	OK (Yes)	NO
Setting pressure (operating pressure) of centrifugal pump checked on the pressure gauge	<input type="checkbox"/>	
Setting pressure (operating pressure) of the centrifugal pump readjusted	<input type="checkbox"/>	<input type="checkbox"/>
Dry-run protection of the centrifugal pump tested	<input type="checkbox"/>	
Fan and ventilation slots of the centrifugal pump checked to make sure they are free of dust	<input type="checkbox"/>	
Fan impeller of centrifugal pump cleaned	<input type="checkbox"/>	<input type="checkbox"/>
Diaphragm expansion tank replaced in case of leaks	<input type="checkbox"/>	<input type="checkbox"/>
Non-return valve checked for leaks	<input type="checkbox"/>	
Seal of the non-return valve replaced	<input type="checkbox"/>	<input type="checkbox"/>
Flow restrictor in the water inlet (version with bypass bore) replaced	<input type="checkbox"/>	
Flow restrictor in the water outlet (version without bypass bore) replaced	<input type="checkbox"/>	
Cap sieve in the inlet of the float valve cleaned	<input type="checkbox"/>	
Inside of supply tank cleaned	<input type="checkbox"/>	
Supply tank disinfected	<input type="checkbox"/>	<input type="checkbox"/>
Waste water discharge checked when draining the supply tank	<input type="checkbox"/>	
Float valve checked for function	<input type="checkbox"/>	
Optional flushing device		
Sieve in the inlet of the solenoid valve cleaned	<input type="checkbox"/>	
Solenoid valve checked for leaks and outlet nozzle cleaned, if necessary (scale deposits removed)	<input type="checkbox"/>	<input type="checkbox"/>
Solenoid valve replaced in case of leaks	<input type="checkbox"/>	<input type="checkbox"/>
Flushing function checked	<input type="checkbox"/>	

Remarks

Carried out by

Company	
Service technician (date/signature)	

EU Declaration of Conformity

In accordance with the EC Machinery Directive 2006/42/EC



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.

Euro system separation device GENO-G5

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 61000-6-1:2007-10
- DIN EN 61000-6-3:2011-09
- DIN EN 809:2012-10
- DIN EN 60335-2-41:2010-11

The following national standards and regulations have been applied:

- DIN EN 1717:2011-08
- DIN EN 14743:2007-09
- DIN EN 13077:2008-09

Responsible for documentation:

Mirjam Müller

Manufacturer:

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

Hoechstädt, 24/07/2019

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

By power of attorney M. Pöpperl
Dipl.-Ing. (FH)
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

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

 +49 9074 41-0

 +49 9074 41-100

info@gruenbeck.com
www.gruenbeck.com



For more information go to
www.gruenbeck.com