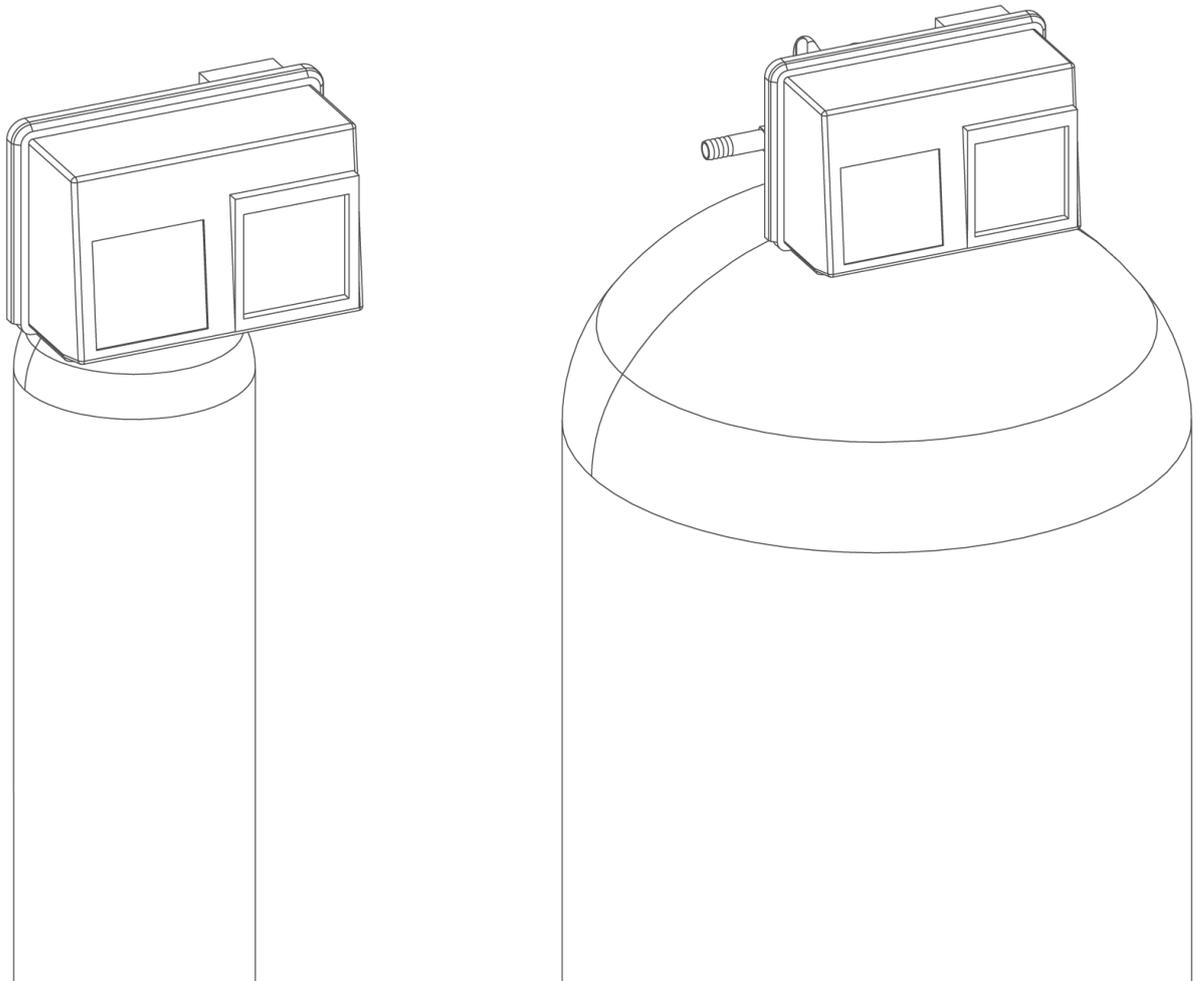


We understand water.



Deferrisation/demanganisation system | GENO-mat MN-Z

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

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

**Original operation manual**  
Edition: February 2024  
Order no.: 100061920000\_en\_164

# Table of contents

<b>1</b>	<b>Introduction</b> .....	<b>4</b>	6.3	Completing the system .....	27
1.1	Validity of the manual .....	4	6.4	Handing over the product to the owner/operator/operating company .....	28
1.2	Other applicable documents .....	4			
1.3	Product identification .....	5	<b>7</b>	<b>Operation</b> .....	<b>29</b>
1.4	Symbols used .....	6	7.1	Operating concept .....	29
1.5	Depiction of warnings .....	6			
	Demands on personnel .....	7	<b>8</b>	<b>Maintenance and repair</b> .....	<b>33</b>
<b>2</b>	<b>Safety</b> .....	<b>9</b>	8.1	Cleaning .....	33
2.1	Safety measures .....	9	8.2	Intervals .....	34
2.2	Product-specific safety instructions .....	11	8.3	Inspection .....	35
2.3	Conduct in emergencies .....	11	8.4	Maintenance .....	35
<b>3</b>	<b>Product description</b> .....	<b>12</b>	8.5	Consumables .....	37
3.1	Intended use .....	12	8.6	Spare parts .....	37
3.2	Product components .....	13	8.7	Wearing parts .....	38
3.3	Connections .....	14	<b>9</b>	<b>Troubleshooting</b> .....	<b>39</b>
3.4	Functional description .....	14	9.1	Other observations .....	39
3.5	Accessories .....	16	<b>10</b>	<b>Decommissioning</b> .....	<b>40</b>
<b>4</b>	<b>Transport, set-up and storage</b> .....	<b>17</b>	10.1	Temporary standstill .....	40
4.1	Shipping/Delivery/Packaging .....	17	10.2	Final shutdown .....	40
4.2	Transport/Set-up .....	17	<b>11</b>	<b>Dismantling and disposal</b> .....	<b>41</b>
4.3	Storage .....	18	11.1	Dismantling .....	41
<b>5</b>	<b>Installation</b> .....	<b>19</b>	11.2	Disposal .....	41
5.1	Requirements for the installation site .....	20	<b>12</b>	<b>Technical specifications</b> .....	<b>43</b>
5.2	Checking the scope of supply .....	21	<b>13</b>	<b>Operation log</b> .....	<b>45</b>
5.3	Preliminary work .....	21	13.1	Start-up/commissioning log .....	45
5.4	Water installation .....	24			
<b>6</b>	<b>Start-up/commissioning</b> .....	<b>27</b>			
6.1	Putting the system into operation .....	27			
6.2	Connecting the dosing system .....	27			

# 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:

- Deferrisation/demanganisation system GENO-mat MN-Z 25/13 – 60/20

## 1.2 Other applicable documents

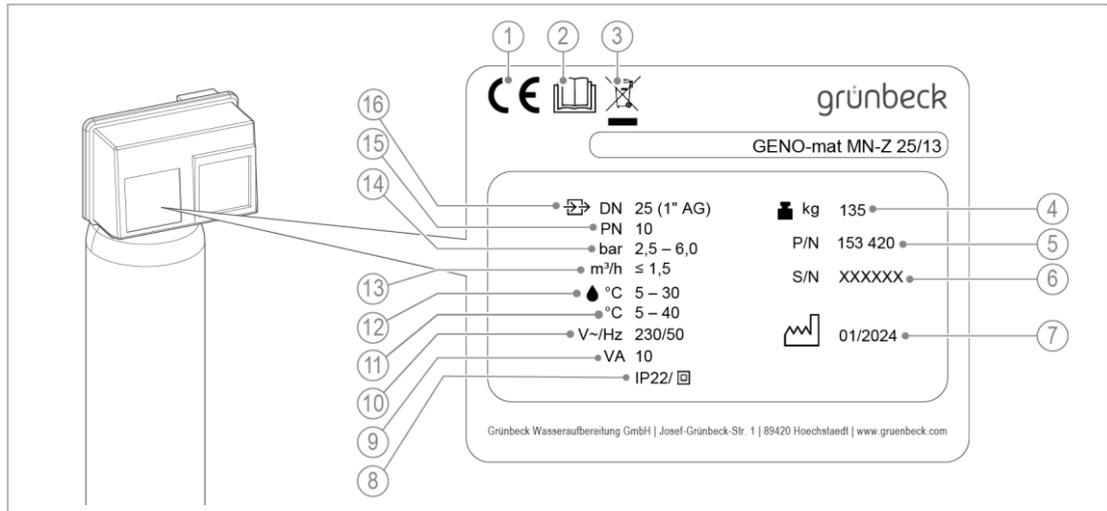
- Manuals for components from other manufacturers
- Safety data sheets for chemicals

## 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 control valve of the deferrisation/demanganisation system GENO-mat MN-Z.



Designation	
1	CE mark
2	Obey the operation manual
3	Disposal information
4	Weight
5	Order no.
6	Serial no.
7	Date of manufacture
8	Protection/protection class

Designation	
9	Wattage
10	Power supply
11	Ambient temperature
12	Water temperature
13	Flow volume
14	Operating pressure
15	Nominal pressure
16	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	
 <b>DANGER</b>		Death or serious injuries
 <b>WARNING</b>	Personal injury	Possible death or serious injuries
 <b>CAUTION</b>		Possible moderate or minor injuries
<b>NOTE</b>	Damage to property	Possible damage to components, the product and/or its functions or an object in its vicinity

## 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.

### 1.5.2 Qualification of personnel

Personnel	Requirements
User	<ul style="list-style-type: none"> <li>• No special expertise required</li> <li>• Knowledge of the tasks assigned</li> <li>• Knowledge of possible dangers in case of incorrect behaviour</li> <li>• Knowledge of the required protective equipment and protective measures</li> <li>• Knowledge of residual risks</li> </ul>
Owner/operator/ operating company	<ul style="list-style-type: none"> <li>• Product-specific expertise</li> <li>• Knowledge of statutory regulations on work safety and accident prevention</li> </ul>
Qualified specialist <ul style="list-style-type: none"> <li>• Electrical engineering</li> <li>• Sanitary engineering (HVAC and plumbing)</li> <li>• Transport</li> </ul>	<ul style="list-style-type: none"> <li>• Professional training</li> <li>• Knowledge of relevant standards and regulations</li> <li>• Knowledge of detection and prevention of potential hazards</li> <li>• Knowledge of statutory regulations on accident prevention</li> </ul>
Technical service (Grünbeck's technical service/ authorised service company)	<ul style="list-style-type: none"> <li>• Extended product-specific expertise</li> <li>• Trained by Grünbeck</li> </ul>

### 1.5.3 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
Installation and mounting			X	X
Start-up/commissioning			X	X
Operation and handling	X	X	X	X
Cleaning	X	X	X	X
Inspection	X	X	X	X
Maintenance				
		semi-annually	X	X
		annually	X	X
Troubleshooting			X	X
Repair			X	X
Decommissioning and restart/recommissioning			X	X
Dismantling and disposal			X	X

## 1.5.4 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



---

Mask



---

Safety goggles

---

## 2 Safety

### 2.1 Safety measures

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

- Make sure that the socket features a protective earth conductor (PE). Retrofit the socket with an adapter, 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 Danger due to chemicals

- Chemicals can be hazardous to health and environment. They can cause chemical skin and eye burns as well as irritation of the respiratory tract, or allergic reactions.
- Avoid any skin/eye contact with chemicals.
- Use personal protective equipment.
- Read the safety data sheet before handling chemicals. Obey the instructions for different activities/situations.
- Current safety data sheets for chemicals are available for download at **[www.gruenbeck.de/en/info-centre/safety-data-sheets](http://www.gruenbeck.de/en/info-centre/safety-data-sheets)**.
- Obey in-house instructions when handling chemicals. Make sure that protective and emergency equipment such as emergency showers and eye wash are available where required, and functional.

##### **Mixing and residual amounts of chemicals**

- Do not mix different chemicals. Unforeseeable chemical reactions posing a lethal risk can occur.
- Dispose of residual amounts of chemicals in accordance with local regulations and/or in-house instructions.
- Residual amounts from used containers should not be transferred into containers with fresh chemicals in order not to impair the effectiveness of the chemicals.

##### **Labelling/Minimum shelf life/Storage of chemicals**

- Check the labelling of the chemicals. Chemical labels must not be removed or made illegible.
- Do not use any unknown chemicals.
- Comply with the use-by date (minimum shelf life) stated on the label.
- If stored incorrectly, chemicals could change their state of matter, crystallize, outgas, or lose their effectiveness. Store and use the chemicals at the indicated temperatures only.

##### **Cleaning/Disposal**

- Immediately absorb leaked chemicals with suitable binding agents.
- Collect and dispose of chemicals in such a way that they cannot pose any risks to people, animals, or the environment.

### 2.1.5 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. Unless they are supervised, have been instructed on the safe use of the product and understand the resulting hazards.
- Cleaning and maintenance must not be carried out by children.

## 2.2 Product-specific safety instructions

### 2.2.1 Safety-related components



Safety components must be replaced by genuine spare parts only.

- Control valve

## 2.3 Conduct in emergencies

### 2.3.1 In the event of water leaks

1. De-energise the system. Unplug the power plug.
2. Locate the leak.
3. Eliminate the cause of the water leak.
4. Contact technical service.

### 2.3.2 In the event of control unit failure

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

## 3 Product description

### 3.1 Intended use

- The deferrisation/demanganisation system GENO-mat MN-Z is designed for the reduction of iron and manganese.
- For demanganisation, a dosing system for oxidants is to be provided upstream of the deferrisation/demanganisation system GENO-mat MN-Z.  
Dosing is not required for deferrisation alone.
- If an ammonium concentration of more than 0.5 mg/l is detected in the raw water, an additional treatment stage or treatment by the oxidation filter system fermaliQ must be provided.
- If the well water contains humic acids or hydrogen sulphide, the pure water quality to be expected might be adversely affected.

#### 3.1.1 Application limits

- Iron content < 3.0 mg/l
- Manganese content < 1.0 mg/l
- TOC < 5.0 mg/l
- Al < 0.2 mg/l

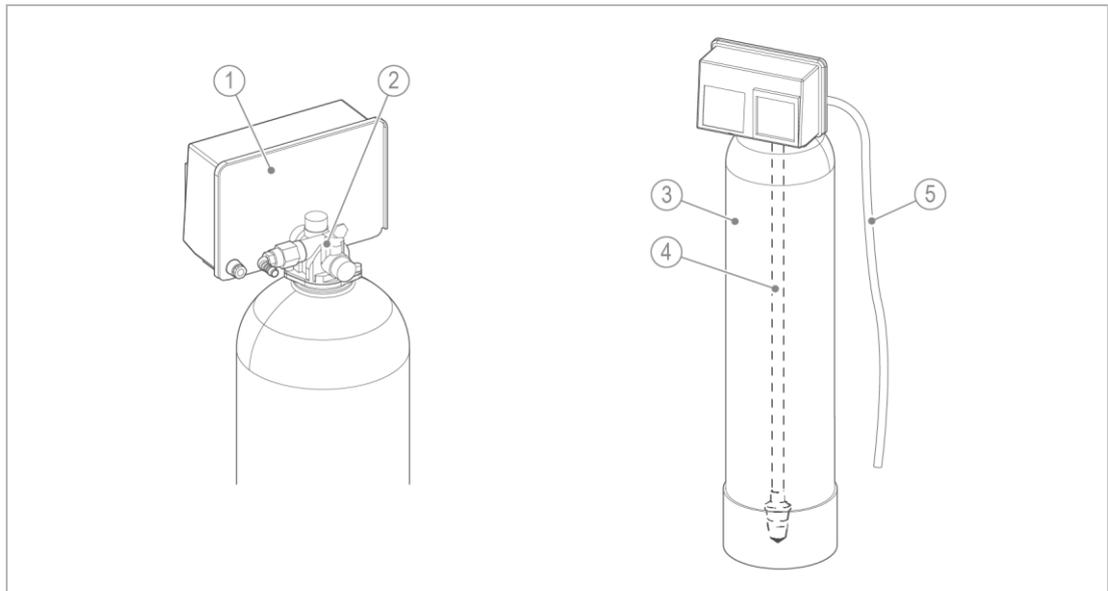
##### **For iron reduction**

- pH value > 7.0

##### **For manganese reduction**

- pH value > 7.2

## 3.2 Product components



### Designation

- 1 Control valve
- 2 Connection block
- 3 Filter bottle

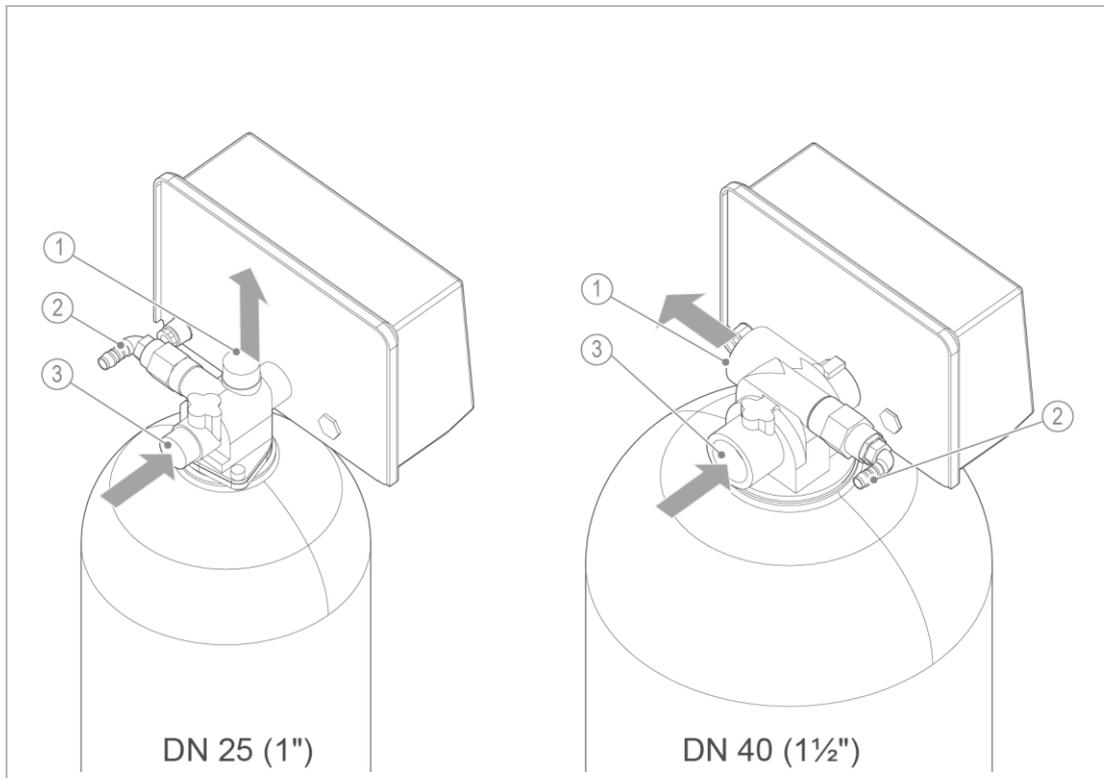
### Designation

- 4 Riser pipe
- 5 Drain hose

### 3.3 Connections



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



Designation	
1	Pure water outlet
2	Connection of drain hose

Designation	
3	Raw water inlet

### 3.4 Functional description

#### 3.4.1 Filtration

The raw water flows into the filter bottle via the raw water inlet and then, from top to bottom, through the catalytic filter material GENO-Fermanit. By means of an oxidation reaction, dissolved iron and manganese ions are transformed into insoluble oxides and are deposited on the GENO-Fermanit material.

During this oxidation process, the GENO-Fermanit releases electrons to the iron and manganese until the supply is exhausted.

During demanganisation, the electrons must be replaced continuously by dosing GENO-oxi plus.

By dosing oxidants, the oxidation and precipitation of manganese and the existing iron already starts prior their contact with the GENO-Fermanit material. Due to the catalytic properties of the GENO-Fermanit, full oxidation is achieved. Optimum filtration is achieved thanks to the filtration properties. The pure water is directed via the lower distributor nozzle and the riser pipe to the pure water outlet and into the pipe network.

### 3.4.2 Backwash

During the backwash process, the filter material is flushed from bottom to top. The filter material is loosened up and impurities are flushed out via the drain outlet. For hygienic reasons, a backwash should take place every 6 days (factory-setting).

### 3.4.3 First filtrate

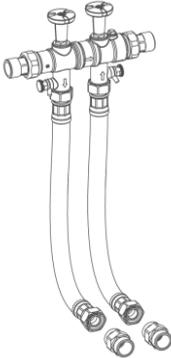
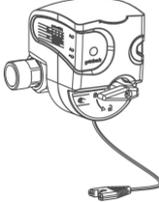
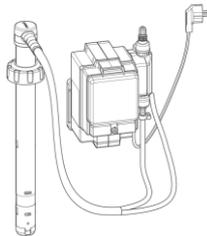
In the step First filtrate, the filter material is flushed from top to bottom to remove particulate matter. The first filtrate is discharged to the drain.

### 3.4.4 Control unit

An electrical timer controls the deferrisation/demanganisation system GENO-mat MN-Z.

### 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.
	<b>Connection kit 1"-I (up to type 30/14)</b>	<b>185 505</b>
	<b>Connection kit 1½"-I (from type 40/18)</b>	<b>185 540</b>
	For hydraulic connection Compact valve block, shut-off valves, bypass valve, raw water outlet, flexible connection hoses	
	<b>Safety device protectliQ:A20</b>	<b>126 400</b>
	Product to protect against water damage in one and two-family homes. For other sizes, please inquire	
	<b>Dosing system GENODOS DM-oxi 1" (type 25/13 – 30/14)</b>	<b>163 420</b>
	<b>Dosing system GENODOS DM-oxi 1½" (type 40/18 – 60/20)</b>	<b>163 430</b>
	Complete dosing system consisting of dosing pump GP-/40, contact water meter, suction lance for 20 kg transport dosing containers, dosing valve 3/6 and 4 m dosing line	
Without illustration	<b>Dosing point GENODOS DM-oxi 1" (MN-Z 25/13 – MN-Z 30/14)</b>	<b>163 860</b>
	<b>Dosing point GENODOS DM-oxi 1½" (MN-Z 40/18 – MN-Z 60/20)</b>	<b>163 880</b>
Without illustration	<b>Overflow valve GENODOS DM-oxi 1", 1½"</b>	<b>163 790</b>



Be aware that 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 or system components secured on a pallet with a forklift and 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 components/packages on a level and stable surface. Take the weight of the system components/packages into account.



**CAUTION** Unhandy size of system components during transport

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



**CAUTION** Transport over stairs and inclines

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

## 4.3 Storage

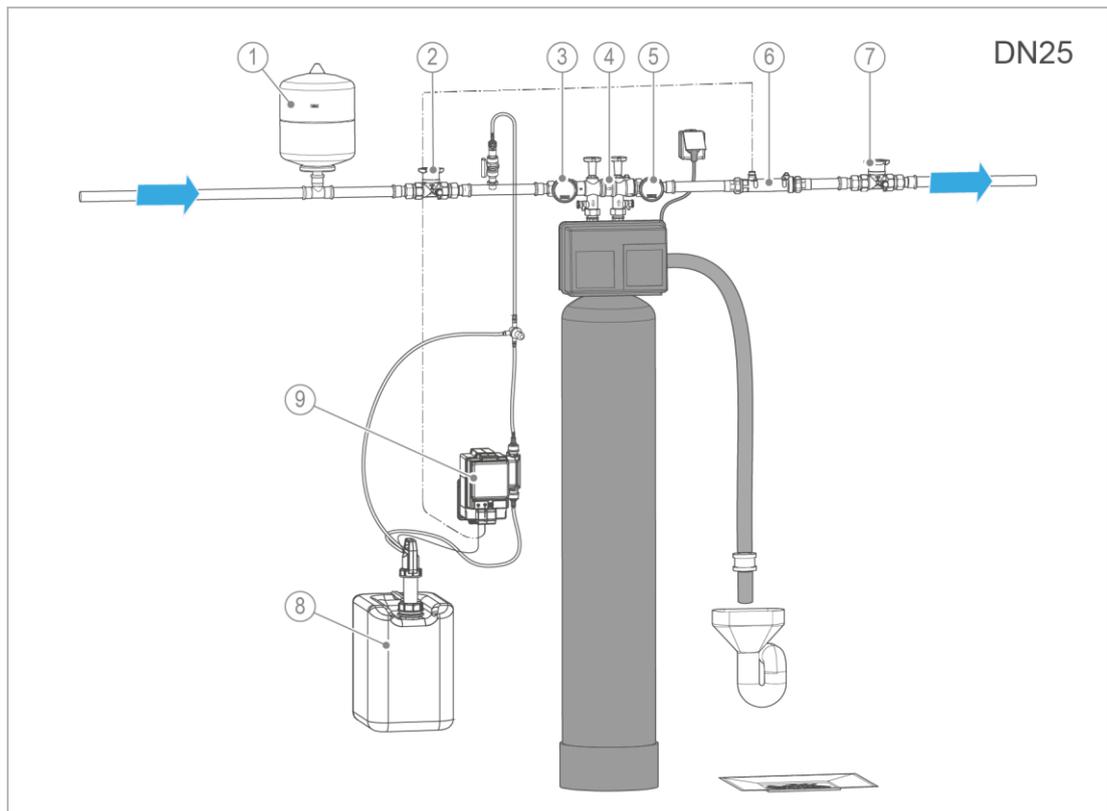
- ▶ Protect the product from the impacts below when storing it:
  - Dampness, moisture
  - Environmental impacts such as wind, rain, snow, etc.
  - Frost, direct sunlight, severe heat exposure
  - Chemicals, dyes, solvents and their vapours

## 5 Installation



System installation in a public water supply system must be carried out by a qualified specialist only.

### Installation example



#### Designation

- |   |                                    |
|---|------------------------------------|
| 1 | Diaphragm expansion tank           |
| 2 | Shut-off valve with sampling point |
| 3 | Pressure gauge Inlet pressure      |
| 4 | Connection kit                     |
| 5 | Pressure gauge Outlet pressure     |

#### Designation

- |   |                                    |
|---|------------------------------------|
| 6 | Contact water meter                |
| 7 | Shut-off valve with sampling point |
| 8 | Dosing canister                    |
| 9 | Dosing system GENODOS DM-oxi       |

## 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
- Ambient temperature and radiation temperature in the immediate vicinity
  - $\leq 25\text{ °C}$  for applications in the drinking water sector
  - $\leq 40\text{ °C}$  for purely technical applications
- Protection from heat sources (e.g. heating systems, boilers and hot water pipes)
- Access for maintenance work (take required space into consideration)
- Sufficiently illuminated and ventilated
- Horizontal installation surface with sufficient load-bearing capacity to support the operating weight of the product

### Space required

- For operation, there must be a clearance of at least 800 mm in front of the product.
- For set-up/installation and maintenance of the product, take the recommended dimensions (refer to chapter 12) into consideration.

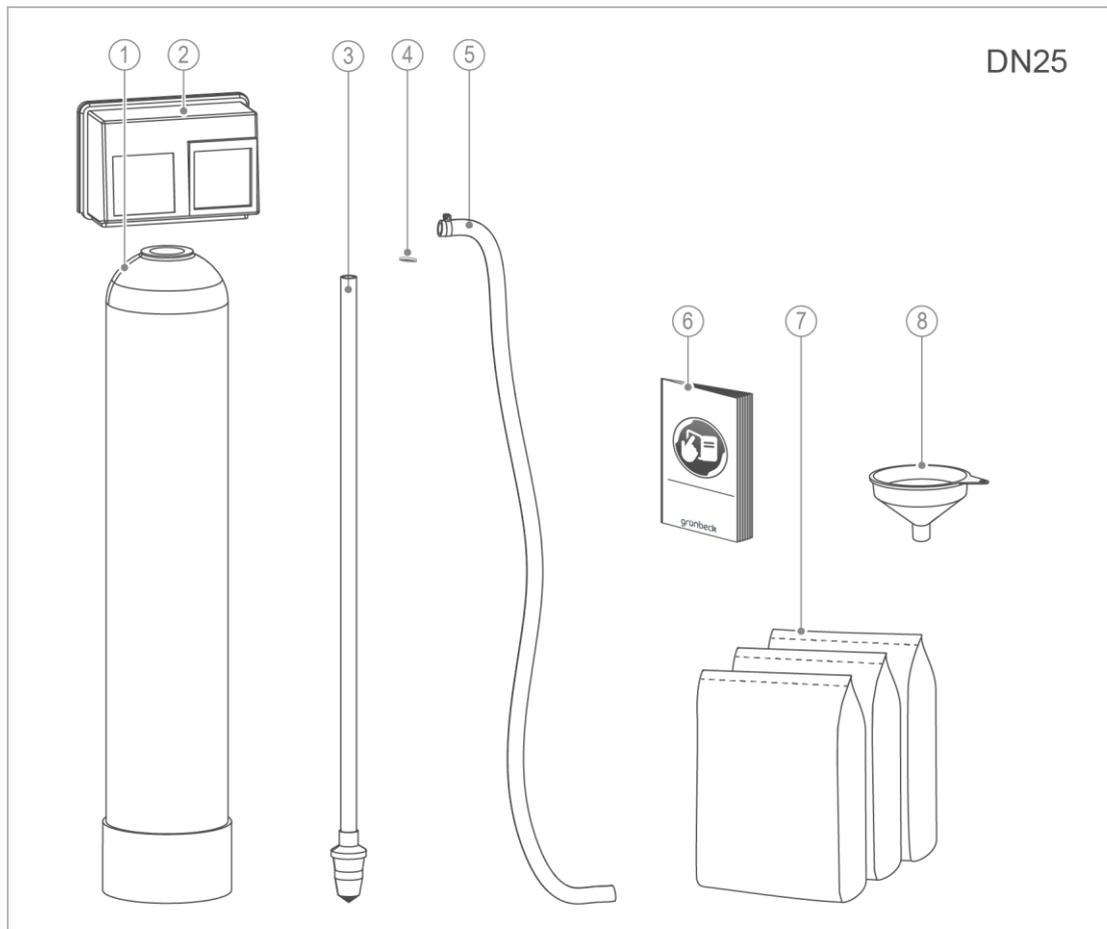
### Water installation

- Floor drain or corresponding safety device with water stop function (e.g. safety device protectliQ)
- Lifting system for drain connection located at a higher level
- For drain connection refer to chapter 12
- Shut-off valves and sampling valves upstream and downstream of the product

### 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.

## 5.2 Checking the scope of supply



Designation
1 Filter bottle
2 Control valve
3 Riser pipe
4 Protective pipe cap

Designation
5 Drain hose
6 Operation manual
7 Quartz gravel, filter sand, GENO-Fermanit
8 Funnel

## 5.3 Preliminary work

**NOTE** Impurities and corrosion particles in the water supply line

- Damage to the control valve
- ▶ Thoroughly flush the water supply line prior to start-up/commissioning.

1. Unpack all product components.
2. Keep the protective pipe cap.
3. Check the scope of supply for completeness and perfect condition.
4. Set up the filter bottle at the intended site.

### 5.3.1 Filling the filter bottle



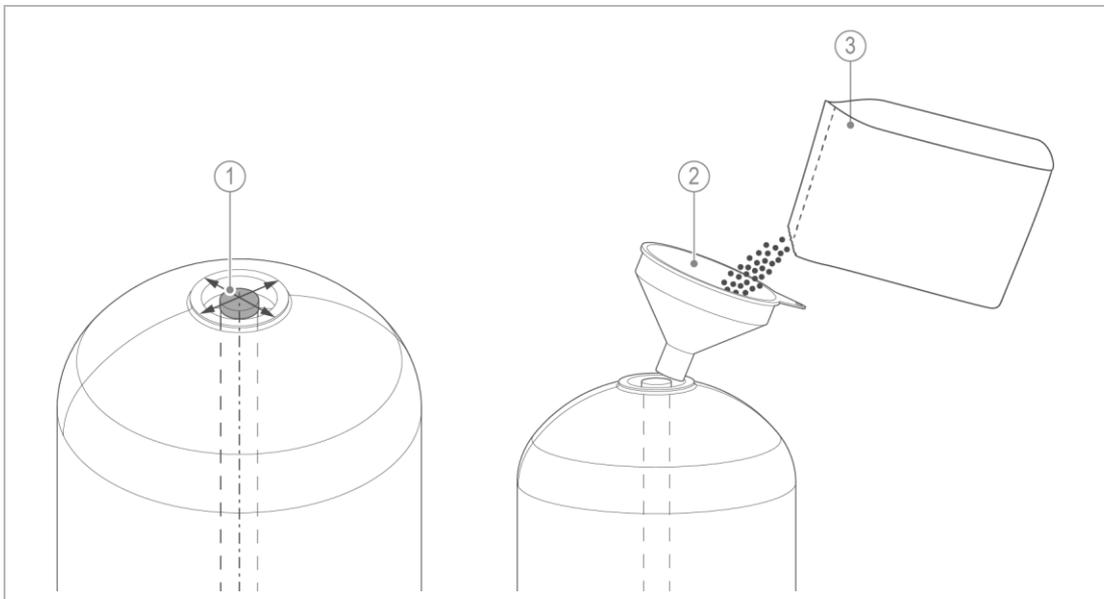
- ▶ Use the personal protective equipment.
- ▶ Carry out the filling process with 2 people.



**CAUTION** Working at heights (approx. 2 m) during filling

- Risk of falling
- ▶ Use a stable access aid with platform for the filter material.

1. Centre the riser pipe in the filter bottle.
2. Check that the riser pipe is covered by a protective pipe cap.
3. If necessary, put the protective pipe cap onto the riser pipe.
4. Use the funnel supplied with the product.



**Designation**

- 1 Protective pipe cap
- 2 Funnel

**Designation**

- 3 Filter material



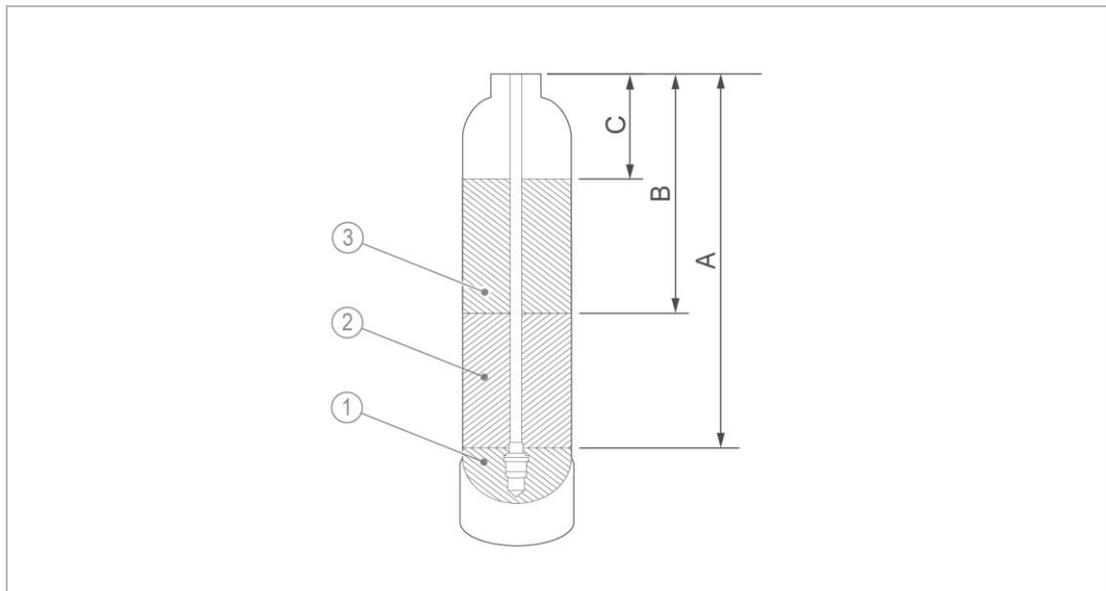
**CAUTION** Spilled filter material on the floor

- Risk of slipping and falling
- ▶ Use personal protective equipment. Wear sturdy footwear.
- ▶ Collect spilled filter material immediately.

5. Fill the filter bottle halfway with water.  
The water prevents the formation of dust during filling.
6. Fill in the filter material.

Filling volume Deferrisation/demanganisation system GENO-mat MN-Z							
			25/13	30/14	40/18	50/19	60/20
1	Quartz gravel 3.15 – 5.6	kg	10	25	25	50	50
		l	7	18	18	35	35
2	GENO-Fermanit 0.5 – 1.0	kg	50	50	125	200	325
		l	25	25	63	100	163
3	Filter sand 0.4 – 0.8	kg	25	50	75	150	250
		l	17	33	50	100	167

7. Fill the filter bottle with water up to the overflow.
8. Let the system soak for 24 h.



Freeboard Deferrisation/demanganisation system GENO-mat MN-Z							
			25/13	30/14	40/18	50/19	60/20
A	Freeboard Filter layer 1	mm	1170	1100	1430	1320	1570
B	Freeboard Filter layer 2	mm	690	810	950	900	1020
C	Freeboard Filter layer 3	mm	370	430	560	490	450
		l	12	30	40	74	71

### 5.3.2 Installing the control valve

1. Clean any adhering filter material from the thread on the filter bottle and the sealing surface of the control valve connection.
2. Remove the protective pipe cap from the riser pipe.
3. Place the control valve on the filter bottle from above over the riser pipe.
4. Secure the control valve on the filter bottle by turning it clockwise.

## 5.4 Water installation

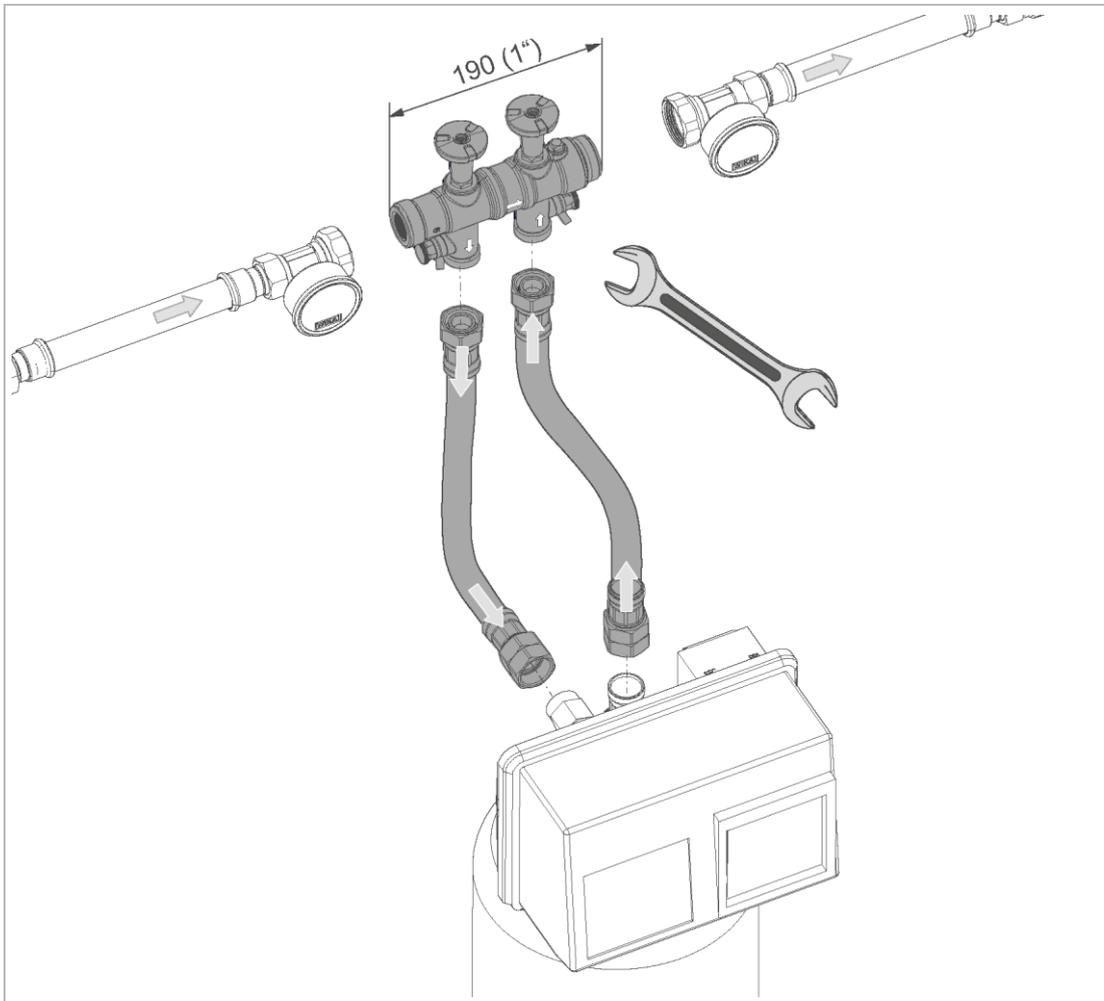


**CAUTION** Filter bottles can tip and fall over

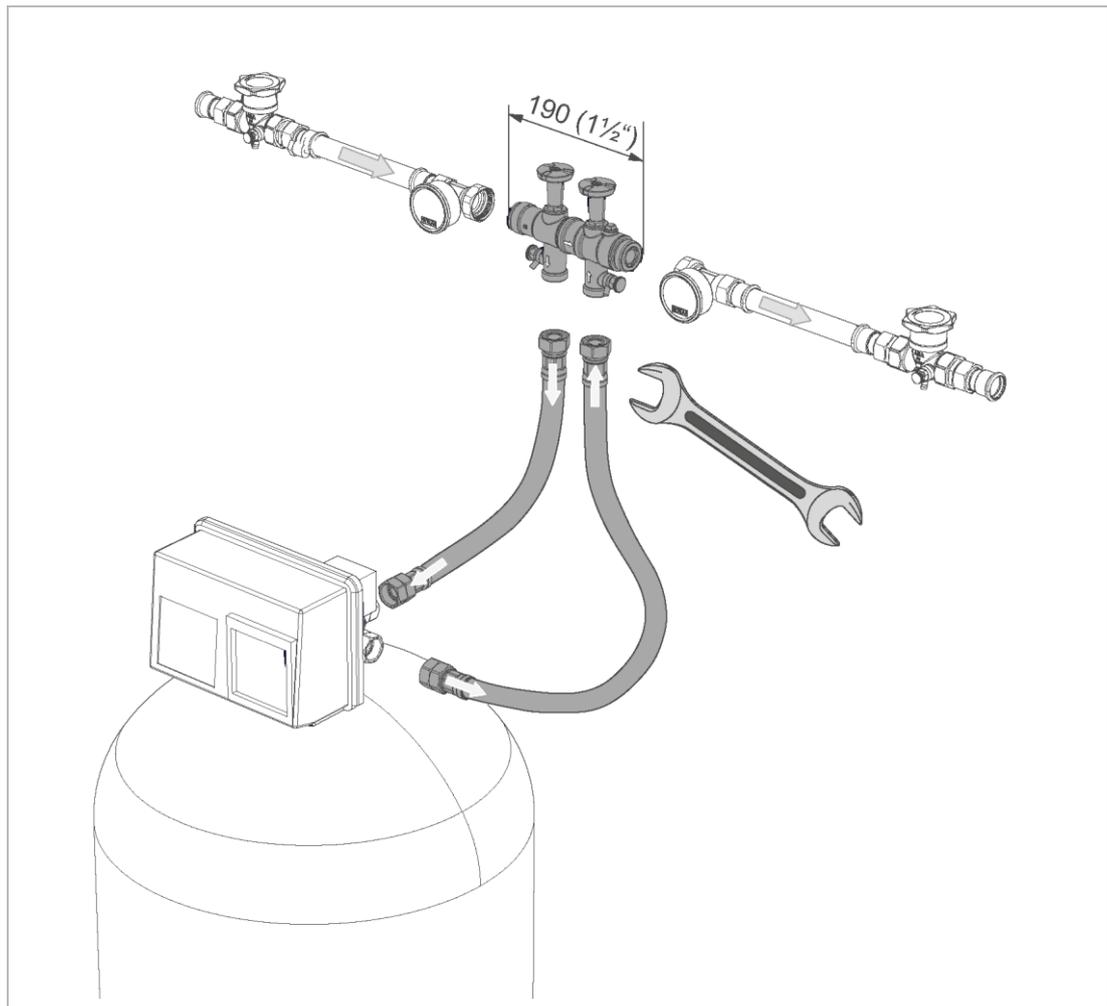
- Pushing/crushing people
- ▶ Transport the filter bottle to the installation site in its original packaging.
- ▶ Set up the filter bottle with at least two people.
- ▶ Move the filter bottle in an upright position – do not tilt it.
- ▶ Place the filter bottle on a level surface.
- ▶ Secure the filter bottle against toppling over, if necessary.

### 5.4.1 Connecting the product

Installation of deferrisation/demanganisation systems  $\leq 30/14$  (DN 25) with connection kit 1"



### Installation of deferrisation/demanganisation systems DN 40 with connection kit 1½"



1. Install the screw connection in the pipe.
2. Install the connection block of the connection kit. Comply with the flow direction marked by arrows while doing so.

**NOTE** Incorrect installation of connection hoses

- Risk of damage/impairment of the system function in case of incorrect installation
  - Make sure that the connection hoses are not squeezed, kinked or twisted when connecting them
  - ▶ Firmly hold the connection hoses when tightening the union nuts.
  - ▶ Make sure that the bending radius of the connection hoses is not too small (at least 10 x hose Ø).
3. Install the connection hoses on the connection block of the connection kit and on the connection block of the deferrisation/demanganisation system.

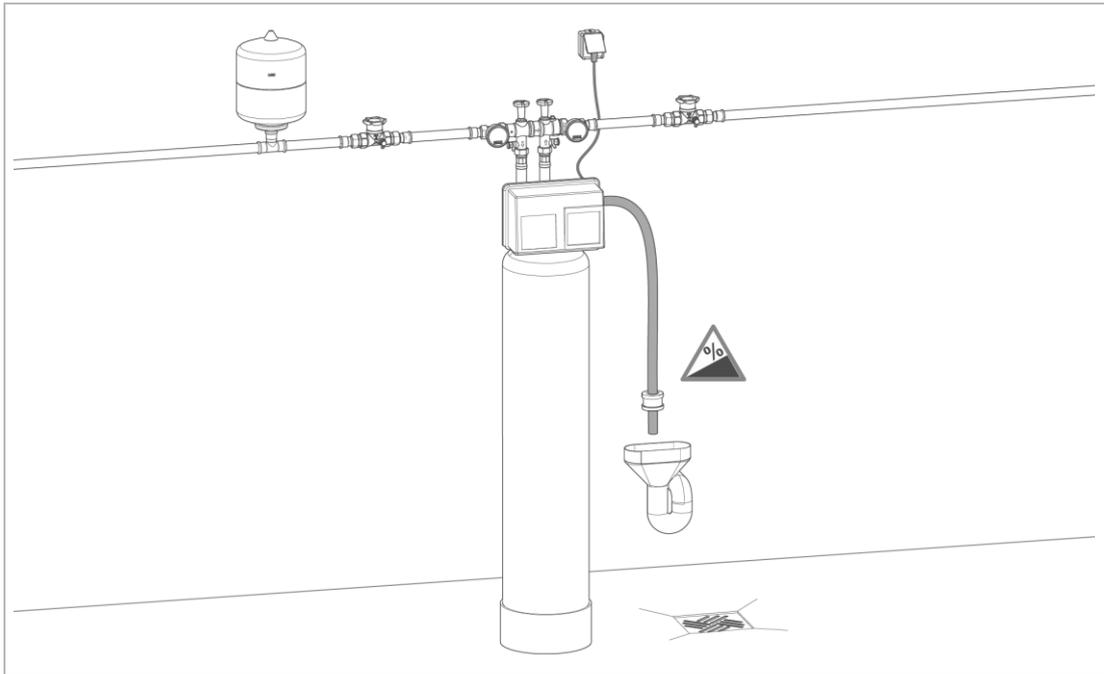
## 5.4.2 Establishing the waste water connection

**NOTE** Waste water backing up due to kinked hoses.

- Water damage and malfunction of the product
- ▶ Run the hoses to the drain with a downward slope and without any kinks.



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



1. Secure the flushing water hose on the connection of the control valve using the clamp.
2. Shorten the flushing water hose to the required length, if necessary.
3. Run the flushing water hose with a downward slope to the drain and secure it.

## 6 Start-up/commissioning



The initial start-up/commissioning of the system must be carried out by a qualified specialist only.



Record the start-up work in the start-up/commissioning log.

### 6.1 Putting the system into operation

1. Check that the control piston is in the “First filtrate” position.
2. Plug in the power plug.
3. Open the valve at the raw water inlet.
4. Carry out a visual check. Make sure that no water leaks from any part of the system.



The filter materials contain fines that must be washed out.

5. Flush the first filtrate until the flushing water flowing to the drain is clear.

### 6.2 Connecting the dosing system



If a dosing system DM-oxi is provided on the deferrisation/demanganisation system, the installation and adjustment of the dosing system must be carried out by Grünbeck's technical service only.

### 6.3 Completing the system

1. Open the valve at the pure water outlet.
2. Set the control unit to the operating position.
3. Take a water sample at the sampling valve downstream of the product.
4. Check the sample for possible residues.
5. Determine iron and manganese.
6. Fill in the operation log.

## 6.4 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.



Depending on the quality of the raw water quality, filter systems for the removal of iron and manganese might require a run-in period of several weeks.

### 6.4.1 Disposal of packaging

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

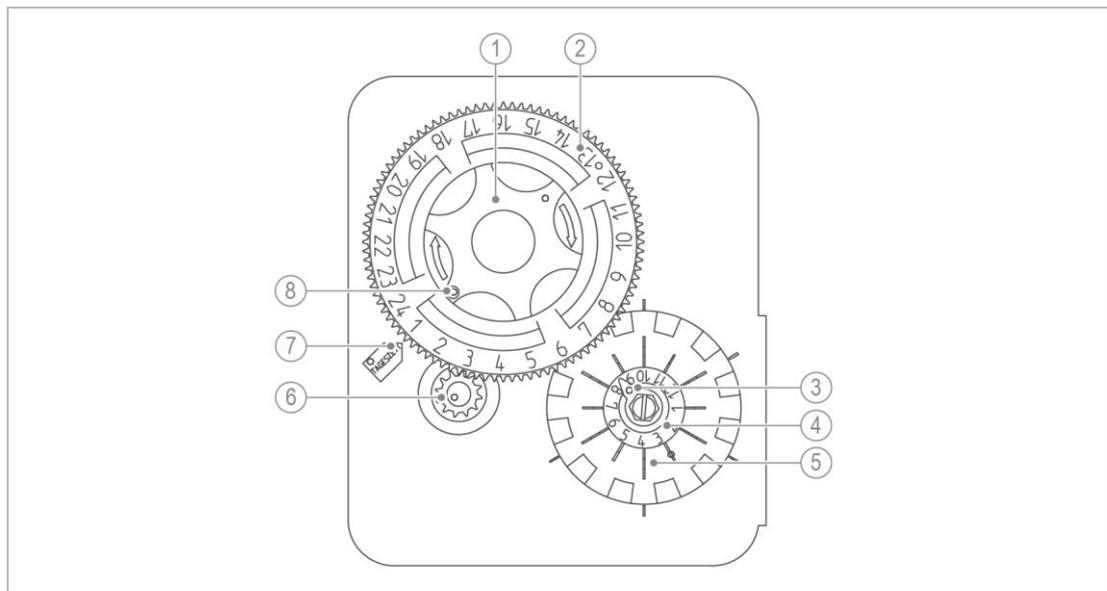
### 6.4.2 Storage of accessories and consumables

- ▶ Store the accessories supplied with the product in a safe place.
- ▶ Keep consumables in stock.
  - a Order consumables in good time (refer to chapter 8.5).

# 7 Operation

## 7.1 Operating concept

The control unit regulates the operating processes of the deferrisation/demanganisation system.



Designation	
1	Backwash dial
2	Hour dial
3	Reference arrow (red)
4	Day dial

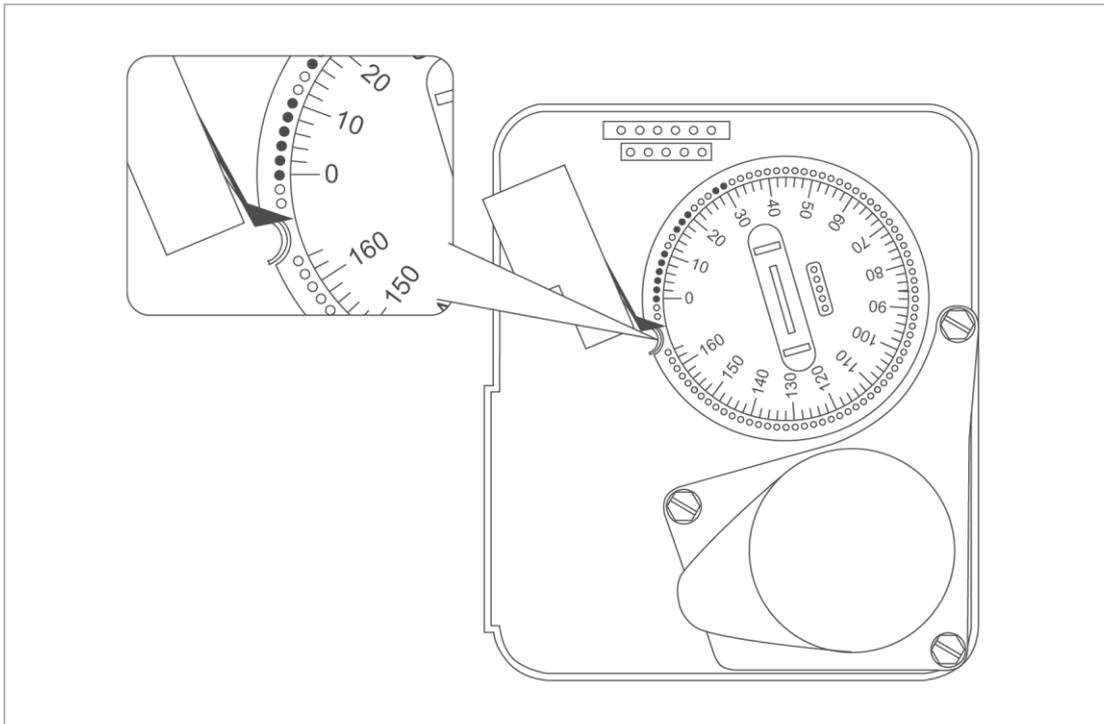
Designation	
5	Steel switching pin (in home position moved to centre point, in switch position moved outwards)
6	Button to set the time
7	Reference arrow for time and operating state (black)
8	Reference point for operating state (white)

The day dial (8) turns counterclockwise once in 12 days.

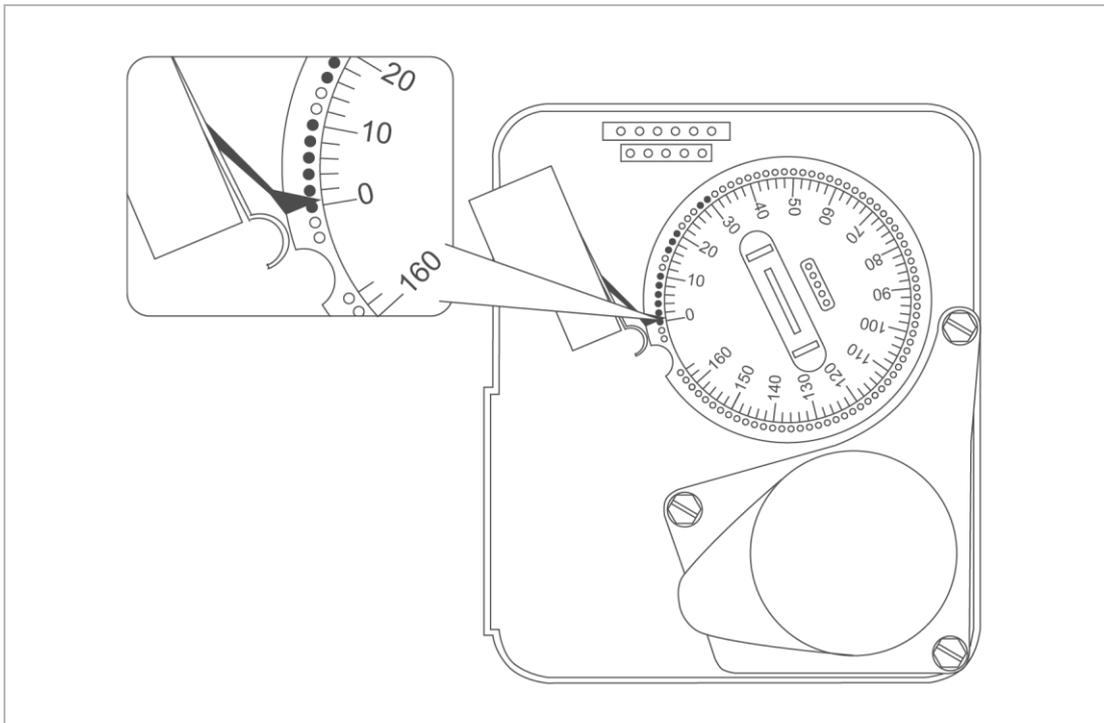
The red reference arrow points to the position where a switching pin turned outwards releases a backwash.

In the operating position, the distance between the red reference arrow and the following switching pin which is turned outwards is an indication for the number of the days until the next backwash takes place.

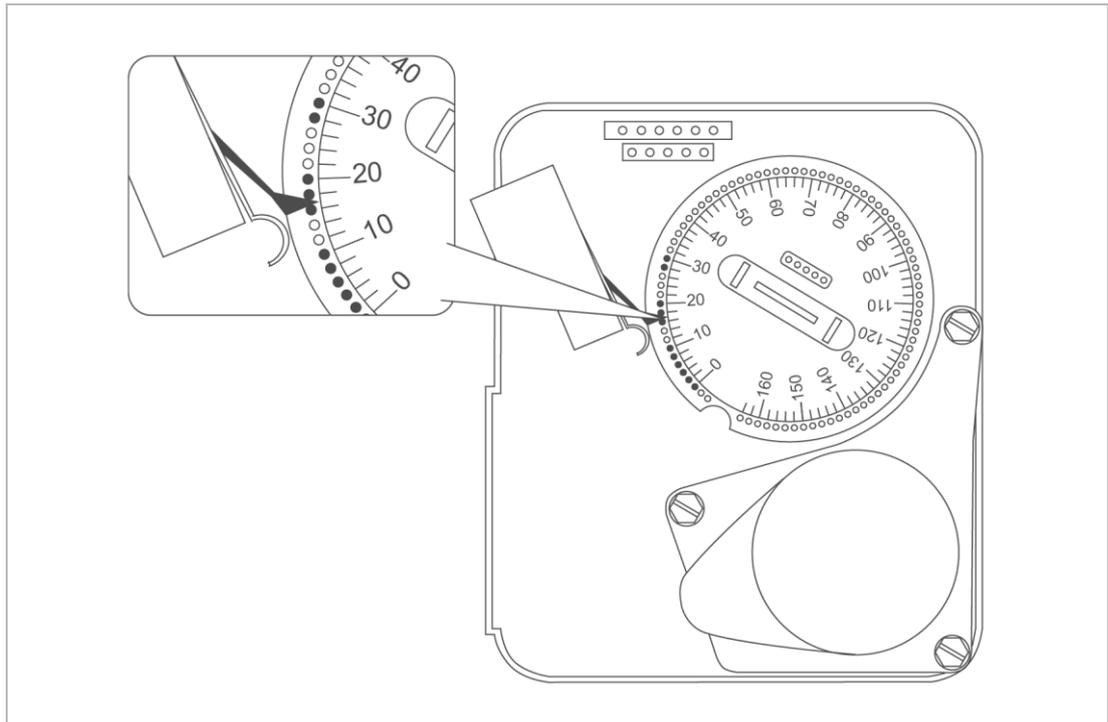
### Control valve in operating position



### Control valve during backwash



## Control valve during first filtrate



### 7.1.1 Setting the time

The deferrisation/demanganisation systems are factory-set in a way that the automatic backwash is always released at 2:00 am (at night). During start-up/commissioning or after a power failure, the current time must be set.

1. Loosen the screw at the housing cover.
2. Open the housing cover.
3. Press and hold the red button.
4. Turn the hour dial until the reference arrow shows the current time.
5. Release the red button.



If the preset time for the backwash is not suitable for internal reasons, set a time other than the current time on the hour dial to adjust the starting time for the backwash.

#### Example

Desired starting time of the backwash: 10:00 pm

- ▶ Put the clock 4 hours forward.

## 7.1.2 Determining the backwash interval

The maximum backwash interval is 12 days. Furthermore, an automatic backwash can be carried out after 6, 4, 3, 2 or 1 day(s) (divisor of 12).



For hygienic reasons, a backwash should take place every 6 days (factory-setting).

If the differential pressure of the filter is > 0.3 bar above normal after 6 days due to a higher concentration of dirt in the water, a backwash must be set after 4 days or even less.

## 7.1.3 Setting the backwash interval

1. Push the switching pin for the first day outwards.
2. Set the other switching pins as necessary.  
On all days where the switching pins are pushed outwards, the backwash is initiated.

### **Example**

In order to set, for example, a backwash interval of 3 days, the switching pins in positions 1, 4, 7 and 10 on the day dial must be pushed outwards.

## 7.1.4 Starting a manual backwash

Irrespective of the set backwash interval and the time, the backwash can be initiated manually at any time.

In the cases below, a manual backwash must be initiated:

- The differential pressure of the deferrisation/demanganisation system is more than 0.3 bar above normal before the timer control initiates the backwash
- Maintenance or repair work was done

A backwash can only be started in operating position (refer to chapter 3.4.1)

- ▶ Turn the backwash dial one notch to the right (note the click).
  - » The deferrisation/demanganisation system starts the backwash process, the backwash dial slowly turns clockwise. After three hours, the backwash is completed.

## 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 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 product with cleaning agents containing alcohol/solvents

- Plastic components are damaged
- Varnished surfaces are affected
- ▶ Use a mild/pH-neutral soap solution.

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

## 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"> <li>• Check the iron and/or manganese content</li> <li>• Check the differential pressure</li> <li>• Visually check the installation for leaks</li> <li>• Check the setting of the control unit</li> </ul>
Maintenance	semi-annually	<ul style="list-style-type: none"> <li>• Check the outside of the entire system for damage and corrosion</li> <li>• Check the control valve for leaks during operation</li> <li>• Check the connection hoses and the connection points for leaks</li> <li>• Check the drain hose for leaks and damage</li> <li>• Check the power cable, power plug and electrical lines for damage and a tight fit</li> <li>• Check the iron and/or manganese content</li> <li>• Check the setting of the control unit</li> <li>• Release a manual backwash</li> </ul>
	annually	<ul style="list-style-type: none"> <li>• Read the static and the flow pressure</li> <li>• Clean the drain connection</li> <li>• Check the wearing parts and replace them, if necessary.</li> <li>• Check the freeboard and replace/refill filter material, if necessary</li> </ul>
	load-dependent	<ul style="list-style-type: none"> <li>• Replace/refill filter material</li> </ul>

## 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. Determine the iron and/or manganese content of the raw water.
- 2. Determine the iron and/or manganese content of the pure water.
- 3. Check the differential pressure of the system.



Minor deviations are normal and cannot be prevented technically. In the event of major deviations, call technical service.

- 4. Check the installation for leaks.
  - a Pay attention to leaks and puddles on the floor.
  - b Check the control valve for leaks (during operation).
- 5. Check the setting of the control unit.
  - a Check the set backwash interval.
  - b Check the set time.

## 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.



Record the maintenance work in the maintenance report.

### 8.4.1 Semi-annual maintenance



Maintenance work requires expert knowledge. This maintenance work must be carried out by qualified specialists only.

- 1. Check the outside of the entire system for damage and corrosion.
- 2. Check the control valve for leaks during operation.
- 3. Check the connection hoses and the connection points for leaks.
- 4. Check the drain hose for leaks and damage.
- 5. Check the power cable, power plug and all electrical lines for damage and a tight fit.
- 6. Check the iron and/or manganese content of the raw water.

7. Check the iron and/or manganese content of the pure water.
8. Check the setting of the control unit.
  - a Check the set backwash interval.
  - b Check the set time.
9. Release a manual backwash.
10. Record the maintenance work in the operation log (refer to chapter 13).

## 8.4.2 Annual maintenance

1. Read the static and the flow pressure of the water pressure.
2. Clean the drain connection, if necessary.
  - a Remove any deposits mechanically.
  - b Clean the components with a scale and rust remover (e.g. GENO-clean M, order no. 170 047).
3. Check the wearing parts and replace them, if necessary (refer to chapter 8.7).
4. Check the level of the freeboard and replace or refill filter material, if necessary (refer to chapter 8.4.2.1 – 8.4.2.2).

### Final work

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

### 8.4.2.1 Refilling filter material

You can refill filter material if the freeboard is below the value indicated in chapter 5.3.1.

1. Check that the system is de-energised.
2. Close the shut-off valve at the water inlet.
3. Check that the water pipe is depressurised.
  - a To do so, open the sampling points.
4. Close the shut-off valve at the water outlet.
5. Unscrew the control valve.
6. Measure the current freeboard of the filter bottle.
7. Cover the riser pipe using the protective pipe cap.
8. Using the funnel, refill filter material according to the table in chapter 5.3.1.

### 8.4.2.2 Replacing the filter material

You must replace the filter material if the scenarios below do occur:

- Freeboard too large
- Filter material clogged
- Differential pressure higher than 3.0 bar above normal despite backwash
- Iron and/or manganese value deviates despite adjustment of dosing
- Bacterial growth in the system

Proceed as follows to replace the filter material:

1. Check that the system is de-energised.
2. Close the shut-off valve at the raw water inlet.
3. Check that the water pipe is depressurised.
4. To do so, open the sampling points.
5. Close the shut-off valve at the pure water outlet.
6. Disconnect the product from the water supply pipe.
7. Unscrew the control valve.
8. Drain the entire content of the filter bottle using a wet vacuum cleaner.
9. Clean the riser pipe and the filter bottle.
10. Fill the filter bottle again (refer to chapter 5.3.1).

## 8.5 Consumables

Product	Order no.
Filter filling GENO-mat MN-Z 25/13	153 022
Filter filling GENO-mat MN-Z 30/14	153024
Filter filling GENO-mat MN-Z 40/18	153028
Filter filling GENO-mat MN-Z 50/19	153030
Filter filling GENO-mat MN-Z 60/20	153032
Water test kit for iron 0 – 0.8 mg/l and 1 – 10 mg/l	30 determinations 170 150
Water test kit for manganese 0.03 – 0.5 mg/l	100 determinations 170 097

## 8.6 Spare parts

For an overview of the spare parts, refer to our spare parts catalogue at [www.gruenbeck.com](http://www.gruenbeck.com). You can order the spare parts from your local Grünbeck representative.

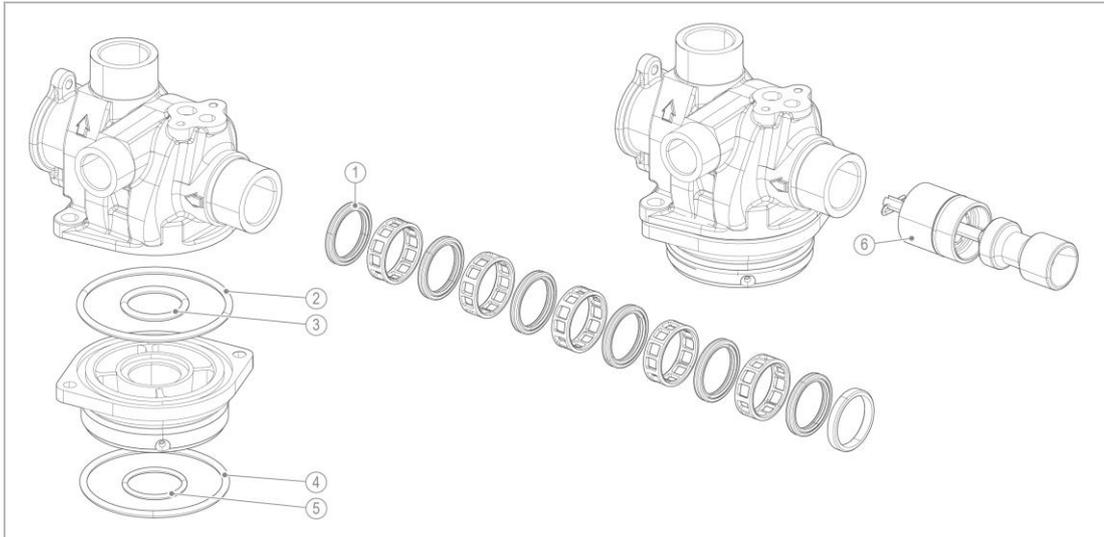
## 8.7 Wearing parts



The work below must be carried out by Grünbeck's technical service personnel only.

The wearing parts are listed below:

- Seals
- Control piston



Designation		Designation	
1	Seal kit	4	O-ring for distributor pipe
2	Exterior O-ring	5	Seal of control valve
3	Interior O-ring	6	Upper control piston

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

### Essential steps prior to maintenance and repair work

1. Check that the system is de-energised.
2. Close the shut-off valve at the raw water inlet.
3. Check that the water pipe is depressurised.
4. Close the shut-off valve at the pure water outlet.

### Final steps after maintenance and repair work

1. Open the shut-off valves.
2. Connect the filter system to the power supply.
3. Put the filter system into operation and check it for function.

# 9 Troubleshooting



## WARNING

Contaminated drinking water due to stagnation

- Infectious diseases
- ▶ Have malfunctions remedied immediately.



## CAUTION

Pink colouring of the drinking water with upstream dosing system GENODOS DM-oxi

- Health hazard with long-term oral intake
- Chemical burns and irritation of skin and respiratory tract
- ▶ Have malfunctions remedied immediately.

## 9.1 Other observations

Observation	Explanation	Remedy
Differential pressure too high	• Filter material clogged	▶ Manual backwash
	• Hose kinked	▶ Remove kinks
Iron content in raw water too high		▶ Contact a qualified specialist
Manganese content in pure water too high		▶ Contact a qualified specialist
Water escaping at the system	• Seals defective	▶ Contact technical service
Pink colouring of the drinking water with upstream dosing system GENODOS DM-oxi	• Dosing system set incorrectly	▶ Contact technical service



If a malfunction cannot be eliminated, a qualified specialist can take further measures.

- ▶ Contact a qualified specialist.

## 10 Decommissioning

### 10.1 Temporary standstill



In order to prevent the stagnation of water, the system is backwashed after 6 days at the latest.

- ▶ Leave your product connected to electricity and water.

It is not necessary to temporarily shut down your product. If you still want to temporarily shut down your product, contact Grünbeck's technical service.

### 10.2 Final shutdown

- ▶ Have a qualified specialist dismantle the system components (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 raw water shut-off valve.
2. Open a water withdrawal point downstream of the product
3. Wait for a few seconds.
  - » The pressure in the product and the pipe network is being relieved.
4. Close the water withdrawal point.
5. Disconnect the product from mains.
6. Keep a collecting vessel (e.g. a bucket) handy to catch escaping water.
7. Disconnect the product from the water supply pipe.
8. Remove the individual components.
9. Drain the filter bottle (using a wet vacuum cleaner)
10. 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.

### Filter materials

- ▶ Do not dispose of the filter materials with your household waste.
- ▶ Do not let the filter materials get into the sewer system.
- ▶ Dispose of the filter materials in accordance with official regulations.

### Product



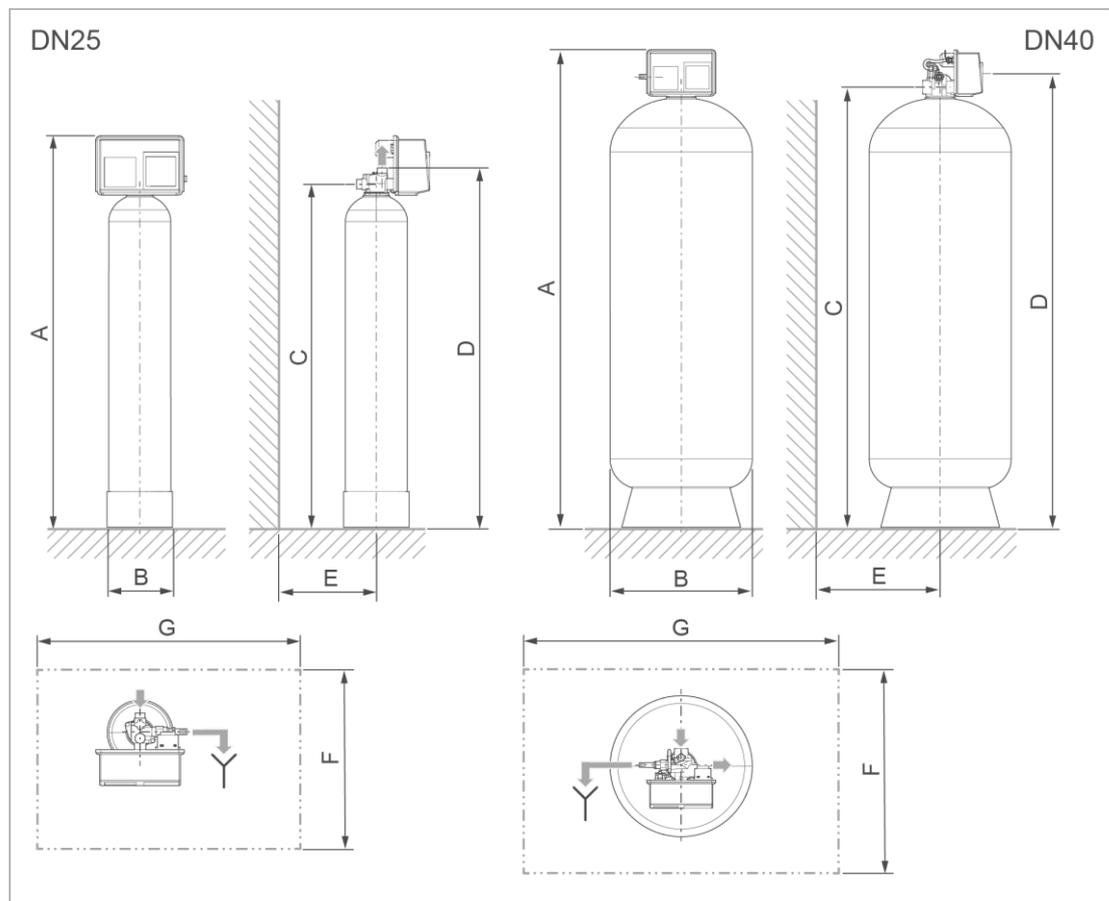
If this symbol (crossed-out wheeled bin) is on the product, this product or its electrical and electronic components must not be disposed of as household waste.

- ▶ Dispose of electrical and electronic products or components in an environmentally sound manner.
- ▶ Find out about the local regulations on the separate collection of electrical and electronic products.
- ▶ Make use of the collection points available to you for the disposal of your product.
- ▶ 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](http://www.gruenbeck.de).

## 12 Technical specifications



Dimensions and weights			25/13	30/14	40/18	50/19	60/20
A	Total height	mm	1620	1620	1900	1870	2100
B	Bottle diameter	mm	260	340	420	550	620
C	Connection height Raw water	mm	1420	1420	1710	1680	1910
D	Connection height Pure water	mm	1470	1470	1735	1705	1935
E	Distance to wall	mm	230	280	300	365	405
F	Depth of foundation	mm	450	500	550	600	650
G	Length of foundation	mm	755	860	900	1030	1110
	Operating weight (incl. water)	kg	135	213	361	642	947

<b>Connection data</b>		<b>25/13</b>	<b>30/14</b>	<b>40/18</b>	<b>50/19</b>	<b>60/20</b>
Nominal connection diameter	DN	25 (1")		40(1½")		
Drain connection	DN	≥ 50		≥ 70		
Power supply	V/Hz	230/50 (system operation with protective low voltage 24/50)				
Protection/protection class		IP22 / 				
Connected load	VA	10				
<b>Performance data</b>		<b>25/13</b>	<b>30/14</b>	<b>40/18</b>	<b>50/19</b>	<b>60/20</b>
Nominal pressure	PN	10				
Operating pressure (recommended)	bar	2.5 – 6.0				
Nominal flow	m³/h	2.0	3.0	5.0	6.0	8.0
Backwash capacity	m³/h	2.3		3.4	5.7	
<b>Filling volumes and consumption data</b>		<b>25/13</b>	<b>30/14</b>	<b>40/18</b>	<b>50/19</b>	<b>60/20</b>
Quartz gravel SB 3.15 – 5.6	kg	10	25	25	50	50
GENO-Fermanit, grain size 0.5 – 1.0	kg	50	50	125	200	325
Filter sand SB 0.4 – 0.8	kg	25	50	75	150	250
<b>General data</b>		<b>25/13</b>	<b>30/14</b>	<b>40/18</b>	<b>50/19</b>	<b>60/20</b>
Water temperature	°C	5 – 30				
Ambient temperature	°C	5 – 40				
Humidity (non-condensing)	%	90				
<b>Order no.</b>		<b>153 420</b>	<b>153 430</b>	<b>153 450</b>	<b>153 460</b>	<b>153 470</b>

# 13 Operation log



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

## Deferrisation/demanganisation system | GENO-mat MN-Z

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

### 13.1 Start-up/commissioning log

Customer				
Name				
Address				
Installation/Accessories				
Drain connection with free outlet (DIN EN 1717)	<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
Dosing (active agent)	<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		
Flow direction through the system (directional arrows)			<input type="checkbox"/> Correct	
Socket checked for continuous voltage			<input type="checkbox"/> Yes	
Room temperature		°C		
Flow rate (peak value)		m³/h		
Iron content upstream of the system		mg/l		
Manganese content upstream of the system		mg/l		
Iron content downstream of the system		mg/l		
Manganese content downstream of the system		mg/l		
Time set	<input type="checkbox"/> Current time	<input type="checkbox"/> Deviating time	+/-	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	
Operating pressure	bar

Semi-annual maintenance work	OK (Yes)	NO
System checked on the outside for damage, corrosion and fastening	<input type="checkbox"/>	<input type="checkbox"/>
Control valve checked for leaks during operation	<input type="checkbox"/>	<input type="checkbox"/>
Connection hoses and connection points checked for leaks	<input type="checkbox"/>	<input type="checkbox"/>
Drain hose checked for leaks and damage	<input type="checkbox"/>	<input type="checkbox"/>
Power cable, power plug and electrical lines checked for damage and a tight fit	<input type="checkbox"/>	<input type="checkbox"/>
Iron content checked	<input type="checkbox"/>	<input type="checkbox"/>
Manganese content checked	<input type="checkbox"/>	<input type="checkbox"/>
Setting of control unit checked	<input type="checkbox"/>	<input type="checkbox"/>
Manual backwash released	<input type="checkbox"/>	<input type="checkbox"/>

Annual maintenance work	OK (Yes)	NO
Static and flow pressure read	<input type="checkbox"/>	<input type="checkbox"/>
Drain connection checked for incrustations/cleaned	<input type="checkbox"/>	<input type="checkbox"/>
Wearing parts checked/replaced	<input type="checkbox"/>	<input type="checkbox"/>

Remarks

Carried out by	
Company	
Service technician (date/signature)	

## **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](mailto:dokumentation@gruenbeck.de)

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

 +49 9074 41-0

 +49 9074 41-100

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



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