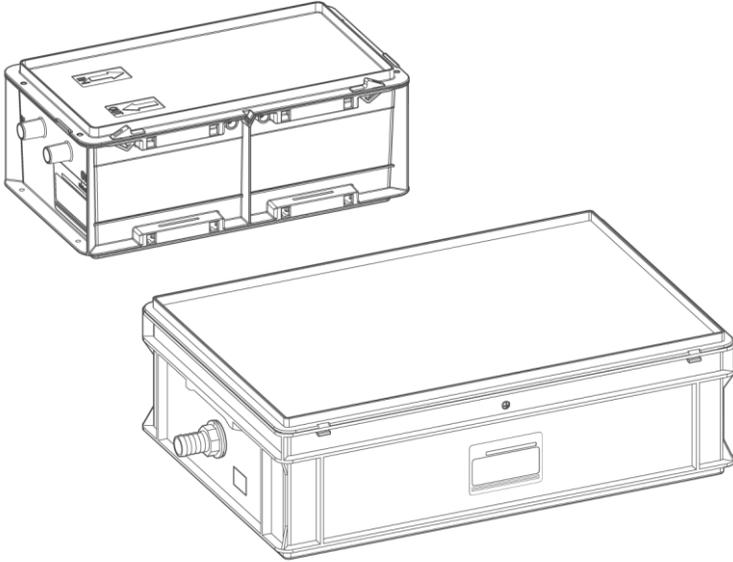




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We understand water.



Neutralisation system | GENO-Neutra N

Operation manual

grünbeck

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We reserve the right to technical modifications.
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Original operation manual

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Table of contents

1	Introduction	5			
1.1	Validity of the manual	5	6.1	Filling the box	37
1.2	Other applicable documents	5	6.2	Checking the product.....	40
1.3	Product identification	6	6.3	Handing over the product to the owner/ operating company	41
1.4	Symbols used	7	<hr/>		
1.5	Depiction of warnings	7	7	Operation	43
1.6	Demands on personnel.....	8	8	Maintenance and repair.....	44
<hr/>					
2	Safety	10	8.1	Cleaning	44
2.1	Safety measures.....	10	8.2	Intervals	45
2.2	Conduct in emergencies	13	8.3	Inspection	45
<hr/>					
3	Product description	14	8.4	Maintenance	47
3.1	Intended use	14	8.5	Consumables.....	50
3.2	Product components.....	15	8.6	Spare parts	50
3.3	Functional description	16	8.7	Wearing parts	50
3.4	Accessories	20	<hr/>		
<hr/>					
4	Transport, set-up and storage	22	9	Troubleshooting.....	51
4.1	Shipping/Delivery/Packaging	22	9.1	Observations	51
4.2	Transport/Set-up.....	22	<hr/>		
4.3	Storage	22	10	Decommissioning	53
<hr/>					
5	Installation	23	10.1	Temporary shutdown	53
5.1	Requirements for the installation site	26	10.2	Restart/recommissioning	53
5.2	Checking the scope of supply.....	27	<hr/>		
5.3	Water installation	29	11	Dismantling and disposal	54
<hr/>					
6	Start-up/commissioning.....	36	11.1	Dismantling.....	54
			11.2	Disposal.....	55
<hr/>					
			12	Technical specifications	57
			12.1	GENO-Neutra N-14/N-70.....	57
			12.2	GENO-Neutra N-210	59

13 Operation log..... 61

13.1 Start-up/commissioning log..... 61

13.2 Maintenance 62

1 Introduction

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

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

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

1.1 Validity of the manual

This manual applies to the products below:

- Neutralisation system GENO-Neutra N-14
- Neutralisation system GENO-Neutra N-70
- Neutralisation system GENO-Neutra N-210

1.2 Other applicable documents

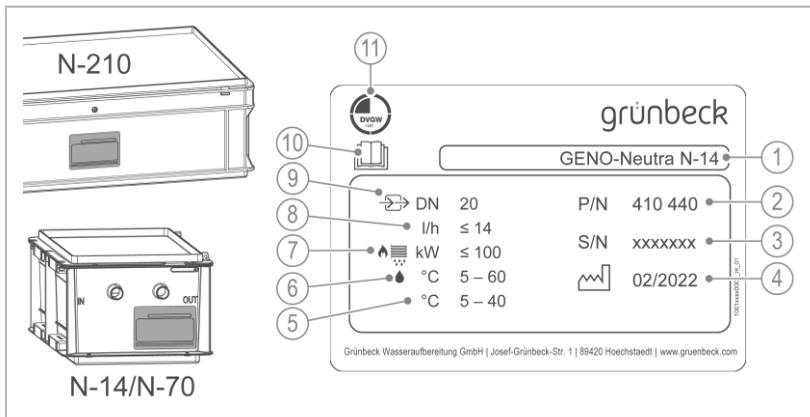
- Instructions of optional accessories
- Maintenance instructions of maintenance kit
- Safety data sheet of neutralisation granulate

1.3 Product identification

You can identify your product based on the product designation and the order no. indicated on the type plate.

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

The type plate is located on the front or side of the box.



Designation	
1	Product designation
2	Order no.
3	Serial no.
4	Date of manufacture
5	Ambient temperature
6	Condensate temperature

Designation	
7	Fuel: oil/condensing technology, max. boiler capacity
8	Neutralisation capacity
9	Nominal connection diameter
10	Obey the operation manual
11	DVGW test mark

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
Operator/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/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

Personnel	Requirements
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.

	Operator/ user	Owner/ operating company	Qualified specialist	Technical service
Transport and storage		X	X	X
Installation and mounting		X	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			X	X
Troubleshooting	X	X	X	X
Repair			X	X
Decommissioning and restart/recommissioning			X	X
Dismantling and disposal			X	X

1.6.3 Personal protective equipment

- ▶ As an owner/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



Safety goggles

2 Safety

2.1 Safety measures

- Obey the local regulations on accident prevention and occupational safety.
- Obey the following regulations on the treatment and discharge of condensate originating from condensing boilers into the public sewer system:
 - Work sheet DWA-A 251:2011 "Condensates from condensing boilers"
 - DVGW VP 114 „Neutralisation systems for gas firing systems; requirements and testing“

2.1.1 Obligation to neutralise in accordance with DWA-A 251:2011

Excerpt from the standard

Nominal heat output	Neutralisation for firing systems and motors without catalytic converter is required for			
	GAS	Fuel oil DIN 51603-1 low on sulphur	Alternative fuels DIN 51603-6	Fuel oil DIN 51603-1
< 25 kW	no ^{1), 2)}	no ^{1), 2)}	no ^{1), 2)}	yes
25 kW up to 200 kW	no ^{1), 2), 3)}	no ^{1), 2), 3)}	no ^{1), 2)}	yes
> 200 kW	yes	yes	yes	yes

However, a neutralisation is nevertheless required:

- ¹⁾ If the domestic waste water is discharged into small sewage treatment plants,
- ²⁾ in case of buildings and lots whose drainpipes do not meet the material requirements stipulated in paragraph 5.3,
- ³⁾ in case of buildings which do not meet the requirements for adequate mixing as per paragraph 4.1.1.

- Only operate your product if all components are installed properly.
- Do not make any changes, alterations or extensions 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).

2.1.2 Mechanical hazards

- You must never remove, bridge, or otherwise tamper with safety equipment.
- Make sure that the product is set up in a way that it cannot tip over and that stability is guaranteed at all times.

2.1.3 Danger due to condensate

- Non-neutralised condensate is acidic and can cause chemical burns and irritation when coming into contact with the skin or the eyes.
- Avoid any skin/eye contact with the condensate.
- Use personal protective equipment when working with condensate.
- The condensate may damage surfaces when covering them.

Cleaning/Disposal

- Immediately absorb leaked and non-neutralised condensate with disposable towels.
- Dispose of the absorbed condensate with residual waste in an environmentally sound manner.

2.1.4 Groups of persons requiring protection

- This product is not designed to be used by persons (including children) with reduced capabilities, lack of experience or lack of knowledge.
- Children should be supervised to make sure that they do not play with the product.

2.1.5 Neutralisation granulate (GENO-Neutralit Hz)

- The neutralisation granulate is not considered to be a dangerous good in the sense of the German Dangerous Goods Regulation.
- Keep the neutralisation granulate away from children.
- Only the genuine GENO-Neutralit Hz of the manufacturer may be used for the neutralisation systems.
- Neutralisation granulate is alkaline and can cause chemical burns and irritation when coming into contact with the skin or the eyes. Avoid any skin/eye contact with the neutralisation granulate.
- Use personal protective equipment when working on the product.
- Neutralisation granulate may damage surfaces when covering them.

2.2 Conduct in emergencies

2.2.1 In case of water leaks

1. Switch off the heat generator.
2. Locate the leak.
3. Eliminate the cause of the water leak.

3 Product description

3.1 Intended use

- The neutralisation system GENO-Neutra N is suitable for the neutralisation (increase of the pH-value to > 6.5) of gas condensate originating from gas-fired heat generators (condensing boilers) and/or exhaust systems made of stainless steel, plastic, glass, graphite and ceramics according to work sheets DWA-A 251:2011 and DVGW VP 114 up to the specified capacity.

3.1.1 Possible applications

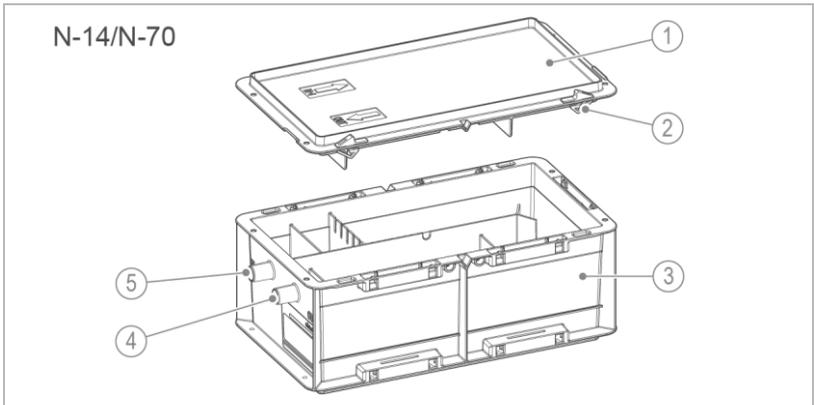
- The neutralisation system GENO-Neutra N can be used for the neutralisation of condensate containing iron, manganese, aluminium and zinc particles. It is possible that the neutralisation granulate might clog and considerably impair the function of the neutralisation system. Suitability must be checked by own tests, if necessary, and regular cleaning of the neutralisation system with replacement of the granulate must be provided for.
- In case of condensate containing an extremely high amount of dirt, we recommend installing an activated carbon filter upstream. This increases the service life of the filter material of the neutralisation system.



The neutralisation system can be equipped with an optional overflow warning switch (refer to chapter 3.4).

In the event of a malfunction, this alarm device must visibly indicate the alarm and, if necessary by switching off the heat generator, prevent the system from overflowing and causing consequential damage.

3.2 Product components

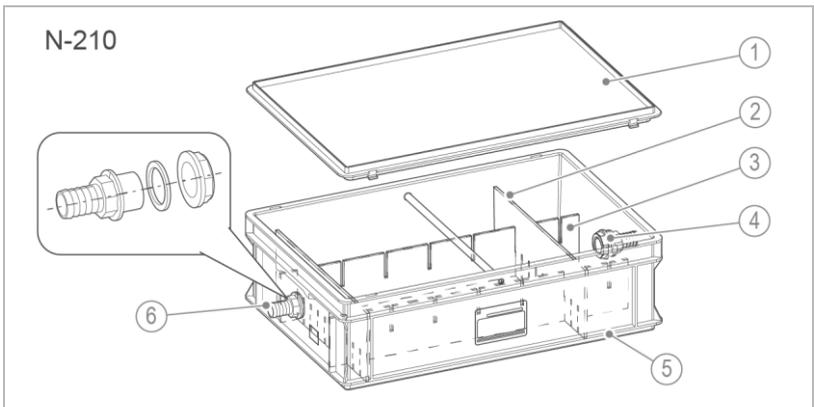


Designation

- 1 Lid
- 2 Snap lock
- 3 Box

Designation

- 4 Hose connection DN 20 (outlet)
- 5 Hose connection DN 20 (inlet)



Designation

- 1 Lid
- 2 Plug-in plates
- 3 Dividers

Designation

- 4 Hose connection DN 25 (outlet)
- 5 Box
- 6 Connection nozzle DN 25 or DN 20 (inlet)

3.3 Functional description

The condensate flows unpressurised into the settling area of the neutralisation system. The condensate is then distributed via the integrated dividers and flows through the neutralisation granulate.

Condensate by-products such as combustion residue or unburnt hydrocarbons are retained.

The neutralisation granulate is dissolved and the condensate neutralised. Afterwards, the condensate flows to the drain.

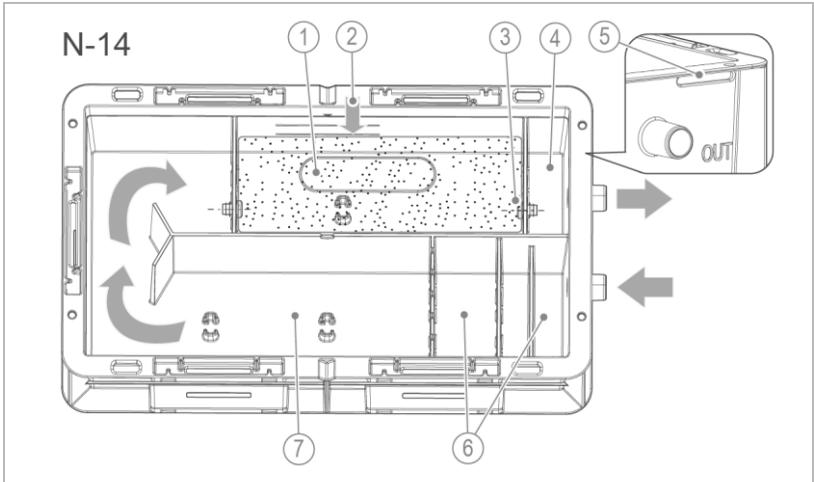
The amount of neutralisation granulate included in the scope of supply corresponds to the initial filling required for 12 months at maximum capacity.

The pH value of the discharged condensate can be checked by means of pH indicator strips.

Neutralisation granulate should be refilled before the pH value falls below 6.5.

The neutralisation system can be equipped with an optional overflow warning switch (refer to chapter 3.4). When the maximum filling level is reached, a fault signal is triggered.

GENO-Neutra N-14

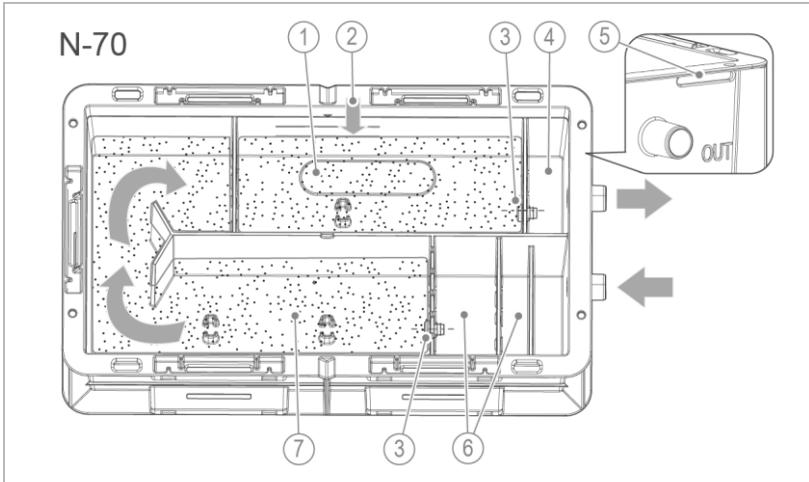


Designation	
1	Filling area 1 with granulate filling
2	Marking for max. filling level
3	Plug
4	Condensate collection area in the outlet

Designation	
5	Overflow orifice
6	Settling area in the inlet
7	Filling area 2 without granulate filling

In case of Neutra N-14 and N-70, an overflow orifice is mounted above the outlet piece so that the condensate may exit the system at a predefined place if the condensate outlet is clogged.

GENO-Neutra N-70



Designation

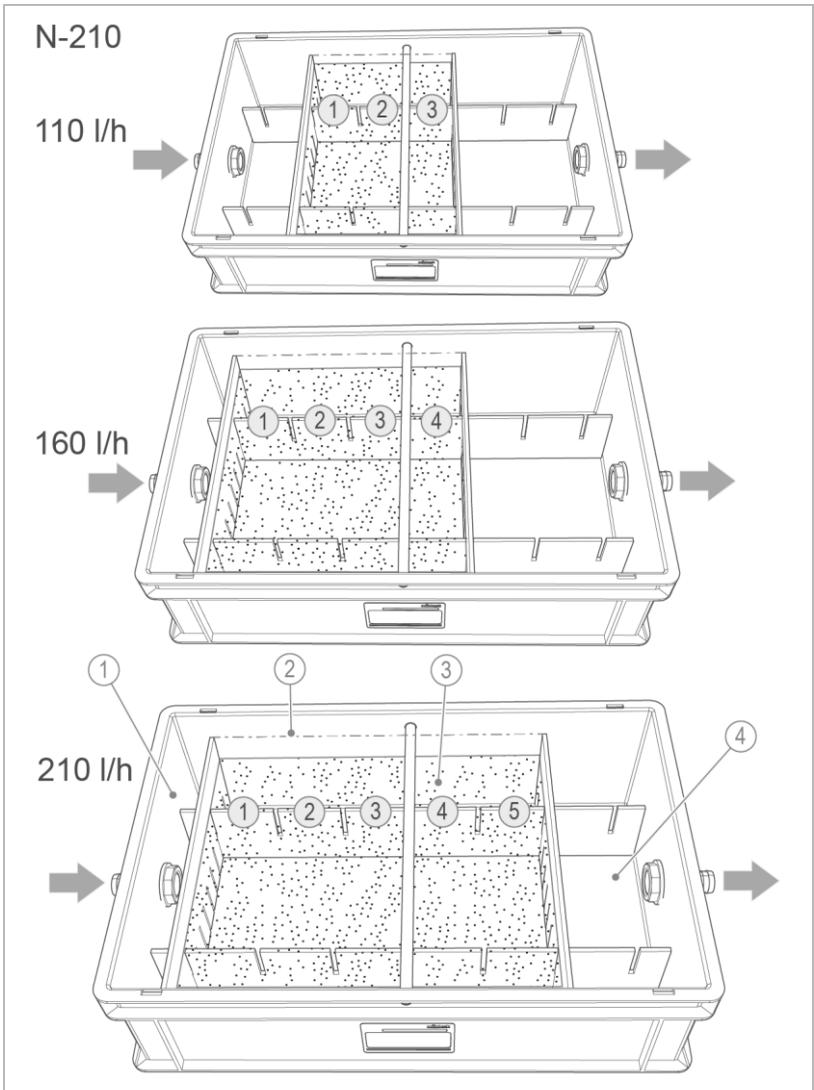
- 1 Filling area 1 with granulate filling
- 2 Marking for max. filling level
- 3 Plug
- 4 Condensate collection area in the outlet

Designation

- 5 Overflow orifice
- 6 Settling area in the inlet
- 7 Filling area 2 with granulate filling

In case of GENO-Neutra N-70, additional neutralisation granulate is filled into the filling area 2, thus increasing the neutralisation capacity.

GENO-Neutra N-210



Designation

- 1 Settling area in the inlet
- 2 Max. filling level

Designation

- 3 Filling area with granulate filling
- 4 Condensate collection area in the outlet

In case to GENO-Neutra N-210, you can adapt the filling area for the neutralisation granulate according to the capacity of the condensing boiler to be connected.

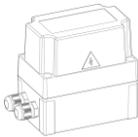
This is done by repositioning the plug-in plates.

In addition, the hose connection for the inlet can be converted from DN 25 to DN 20 with the connection nozzle included in the scope of supply

3.4 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>Waste water lifting system AH-300</p> <p>Lifting system for condensates originating from neutralisation systems of gas- or oil-fired condensing boilers as well as non-neutralised gas condensates > pH 3, clear water or slightly polluted industrial water</p>	<p>420 150</p>
	<p>Overflow warning switch for GENO-Neutra</p> <p>Level switch with voltage-free changeover contact for generating a fault signal; for installation in the lid of the box</p>	<p>410 680</p>

Illustration	Product	Order no.
	GENO-alarm delay relay To execute a delayed shutdown of the boiler after an alarm signal has been triggered. With voltage-free fault signal output as normally open contact or changeover contact. The alarm delay can only be used in combination with the overflow warning switch	410 285
	Hose DN 20 (5 m) To bridge distances of up to 5 m on the inlet and outlet side	410 764e
	Hose DN 25 (5 m) To bridge distances of up to 5 m on the inlet and outlet side	410 774e
	GENO-Neutralit Hz (8 kg) Refill pack for neutralisation	410 011
	pH indicator strips 3 Strips to determine pH 4.5 - 10.0	170 173
	Maintenance kits for GENO-Neutra	
	1 Foil bag to dispose of the used neutralisation granulate, 1 pack (3 strips) of indicator strips	
	1 Bag of GENO-Neutralit Hz, 3 kg	N-14 410 801
	1 Bag of GENO-Neutralit Hz, 8 kg	N-70 410 802
	3 Bag of GENO-Neutralit Hz, 8 kg	N-210 410 803

4 Transport, set-up and storage

4.1 Shipping/Delivery/Packaging

The product is packed in a cardboard box at the factory.

The neutralisation granulate is packed separately in a bag.

- ▶ Upon receipt, immediately check for completeness and transport damage.

4.2 Transport/Set-up

- ▶ Transport the product in its original packaging only.
- ▶ The neutralisation granulate is not considered to be a dangerous good in the sense of the regulation. Comply with the current safety data sheet.

4.3 Storage

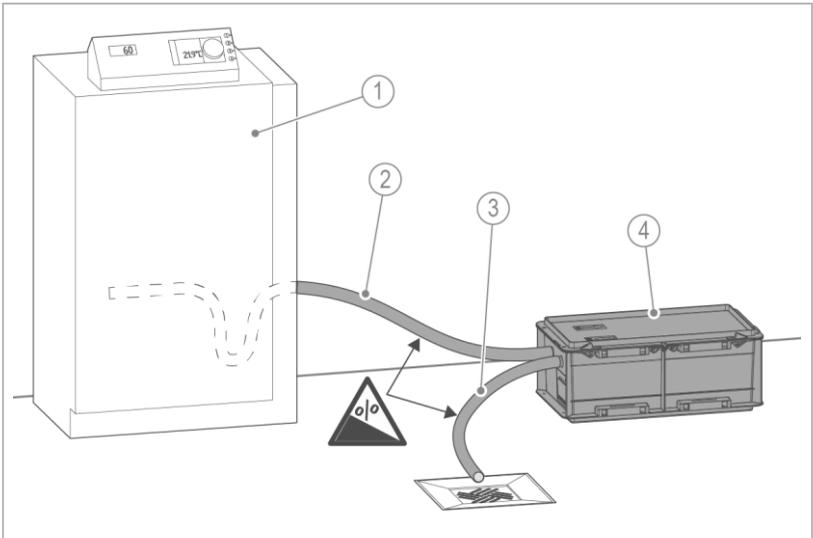
- ▶ Protect the product from the impacts below when storing it:
 - Dampness, moisture
 - Environmental impacts such as wind, rain, snow, etc.
 - Frost, direct sunlight, severe heat exposure
 - Chemicals, dyes, solvents and their vapours

5 Installation



The installation of the product must be carried out by a qualified specialist only.

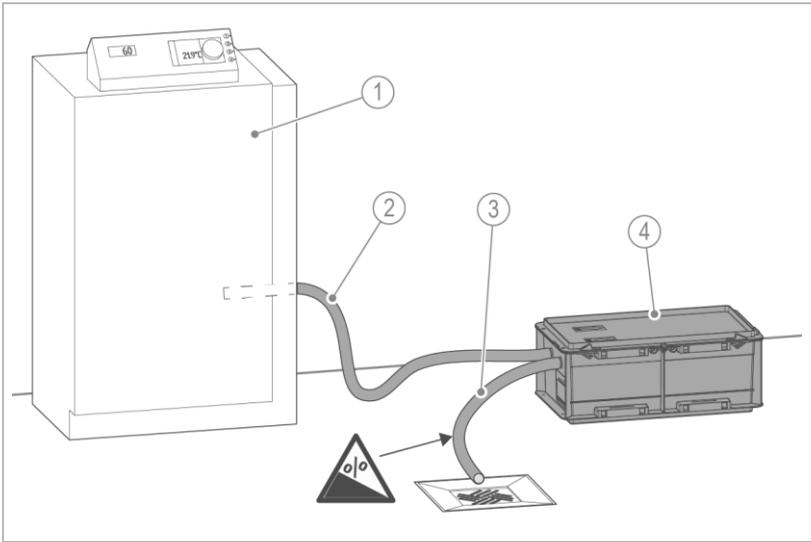
Installation example I (with siphon in the heat generator)



Designation	
1	Heat generator with siphon
2	Inlet hose

Designation	
3	Outlet hose
4	Neutralisation system GENO-Neutra N-14/N-70

Installation example II
(without siphon in the heat generator)

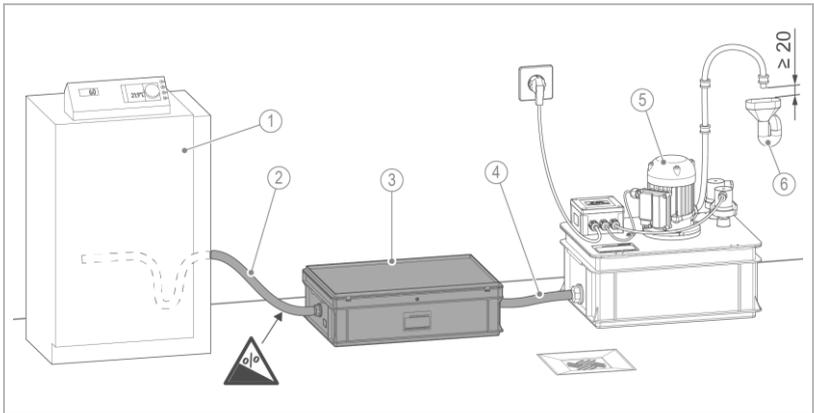


Designation	
1	Heat generator without siphon
2	Inlet hose with backwater loop

Designation	
3	Outlet hose
4	Neutralisation system GENO-Neutra N-14/N-70

Installation example III

(with drain connection and waste water lifting system)



Designation

- | | |
|---|--|
| 1 | Heat generator with siphon |
| 2 | Inlet hose |
| 3 | Neutralisation system
GENO-Neutra N-210 |

Designation

- | | |
|---|--------------------------------------|
| 4 | Connecting hose |
| 5 | Waste water lifting system
AH-300 |
| 6 | Drain connection |

5.1 Requirements for the installation site

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

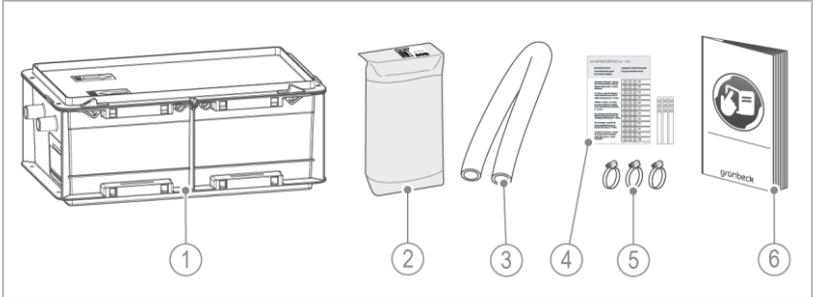
- Protection from frost, severe heat exposure and direct sunlight
- Protection from high radiation temperatures in the immediate vicinity (≤ 40 °C)
- Protection from chemicals, dyes, solvents and their vapours
- Access for maintenance work (take note of space required)
- Sufficiently illuminated as well as aerated and ventilated
- Horizontal installation surface with sufficient load-bearing capacity to support the operating weight of the product

Water installation

- Inlet hose with downward slope and siphon in heat generator
 - Alternatively with backwater loop
- Outlet hose with a downward slope to the floor drain
- Floor drain or an alarm device which, in the event of a malfunction, clearly indicates the alarm and switches off the heat generator, if necessary
- Waste water lifting system in case the drain connection is located at a higher level
- Drain connection \geq DN 40 with possibility of backflow-free discharge of the condensate

5.2 Checking the scope of supply

5.2.1 GENO-Neutra N-14/N-70



Designation

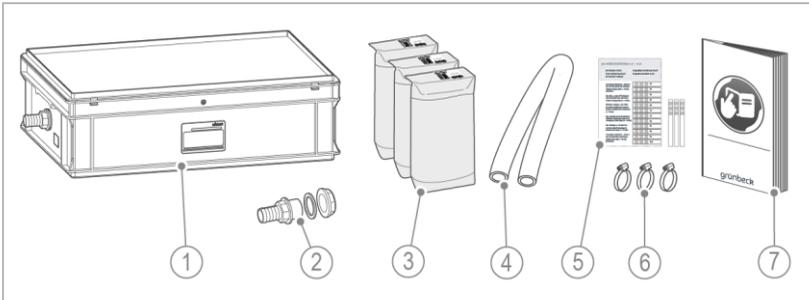
- | | |
|----------|---|
| 1 | Neutralisation system GENO-Neutra N-14 or N-70 as compact system (partly pre-assembled) |
| 2 | Neutralisation granulate GENO-Neutralit Hz
3 kg for N-14, 8 kg for N-70 |

Designation

- | | |
|----------|-------------------------------|
| 3 | Hose, 5 m in length (DN 20) |
| 4 | 1 Pack of pH indicator strips |
| 5 | 3 Hose clamps |
| 6 | Operation manual |

- Check the scope of supply for completeness and damage.

5.2.2 GENO-Neutra N-210



Designation

- | | |
|---|--|
| 1 | Neutralisation system GENO-Neutra N-210 as compact system (partly pre-assembled) |
| 2 | Inlet hose connection DN 20 with locknut and seal |
| 3 | Neutralisation granulate GENO-Neutralit Hz (3x 8 kg = 24 kg) |

Designation

- | | |
|---|-------------------------------|
| 4 | Hose, 5 m in length (DN 25) |
| 5 | 1 Pack of pH indicator strips |
| 6 | 3 Hose clamps |
| 7 | Operation manual |

► Check the scope of supply for completeness and damage.

5.3 Water installation

5.3.1 Setting up the neutralisation system

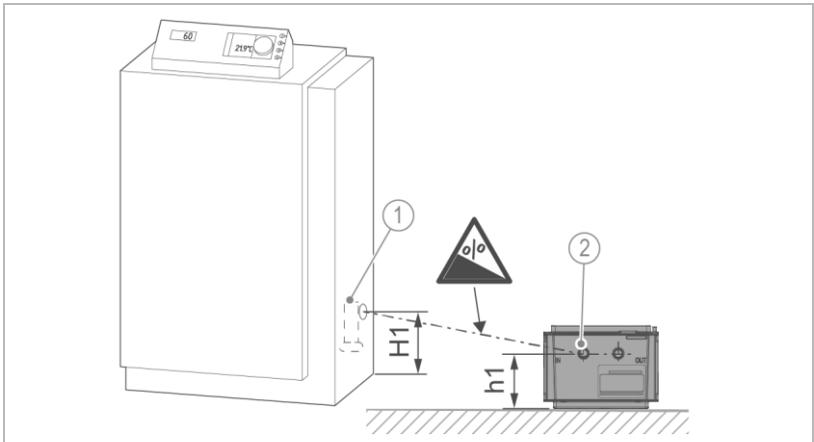


Take into consideration that in standard operation the condensate is accumulated to a level of the height of the outlet connection. If the condensate from the heat generator or the exhaust system is to drain off completely, the installation surfaces and the condensate outlets must be provided for accordingly



The neutralisation system does not feature a siphon at the inlet connection.

An additional siphon must therefore either be present on the heat generator or the inlet hose must be laid with a backwater loop. Avoid a double siphon design.



Designation

1 Siphon at the heat generator

Designation

2 Inlet connection of neutralisation

- ▶ Set up the neutralisation system close to the boiler in a horizontal position – but away from traffic routes.



Select an installation site where the inlet and outlet hose can be as short as possible.

- ▶ Check that the connection on the heat generator has a downward slope to the inlet connection on the neutralisation system of approximately 3 %.

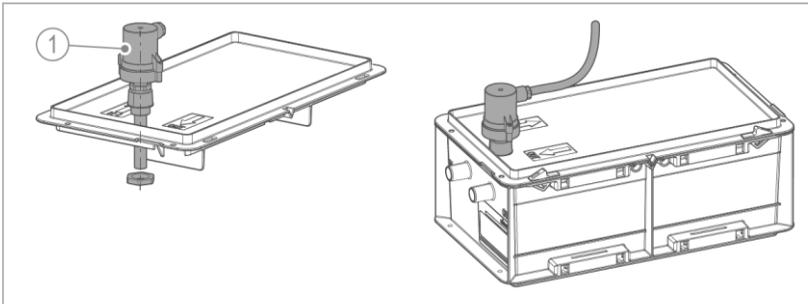
5.3.2 Connecting the neutralisation system

5.3.2.1 Installing the (optional) overflow warning switch



Obey the mounting instructions of the accessory overflow warning switch (refer to chapter 3.4).

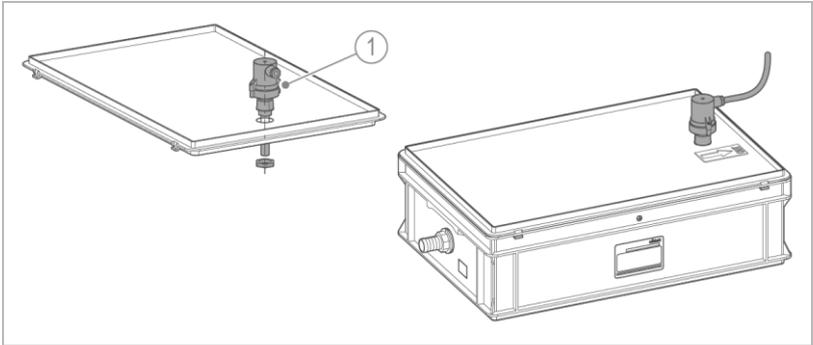
GENO-Neutra N-14/N-70



Designation

- 1 Overflow warning switch (optional)

GENO-Neutra N-210



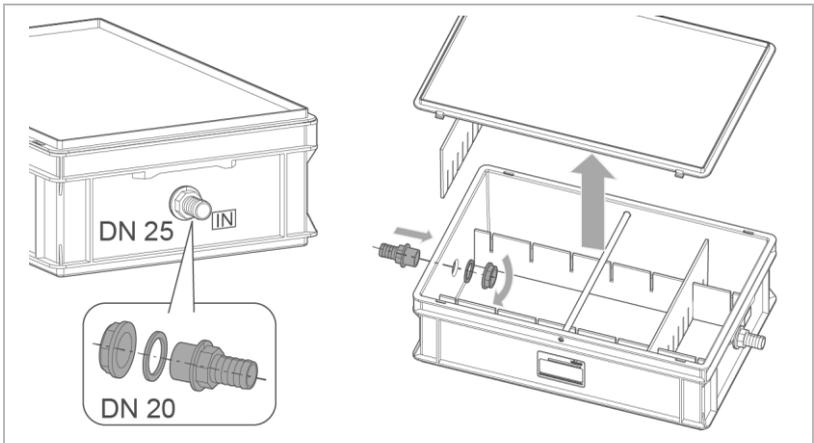
Designation

- 1 Overflow warning switch (optional)

5.3.2.2 Converting the connection to DN 20 (for GENO-Neutra N-210 only)



Converting the inlet to DN 20 is only required if the inlet hose has a nominal diameter of DN 20.



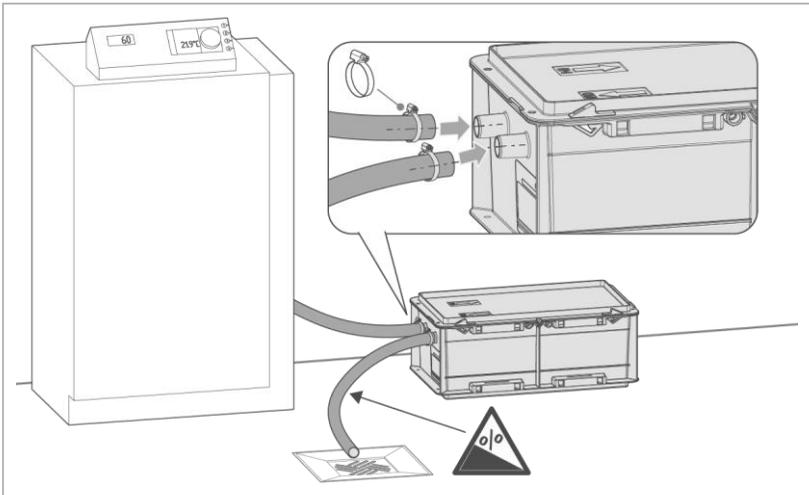
1. Unlock and open the lid.
2. Remove the connection pre-assembled at the factory.

3. Install the connection with a nominal diameter of DN 20.
4. Insert the seal from the inside and tighten the locknut firmly from the inside.

5.3.2.3 Connecting the inlet and outlet hose

Use the hose supplied with the system to connect the neutralisation system.

GENO-Neutra N-14/N-70



1. Shorten the hose to the required length for inlet and outlet.
2. Connect the inlet hose to the inlet of the box. Make sure that a downward slope is maintained from the heat generator to the neutralisation system.
3. Fix the inlet hose by means of the hose clamp.
4. Connect the outlet hose to the outlet of the box.
5. Fix the inlet hose by means of the hose clamp.
6. Lay the outlet hose with a downward slope to the floor drain – do not kink the hose.

7. Secure the outlet hose against mechanical damage, if needed. Do not step on the outlet hose.



The end of the outlet hose must be freely visible in order to be able to check the functioning of the neutralisation system at any time.



Should additional hoses and fittings be needed, only approved, corrosion-resistant materials according to worksheet DWA A251:2011 (e.g. made of PP, PE, PVC) must be used. No brass, copper or steel components must be used.

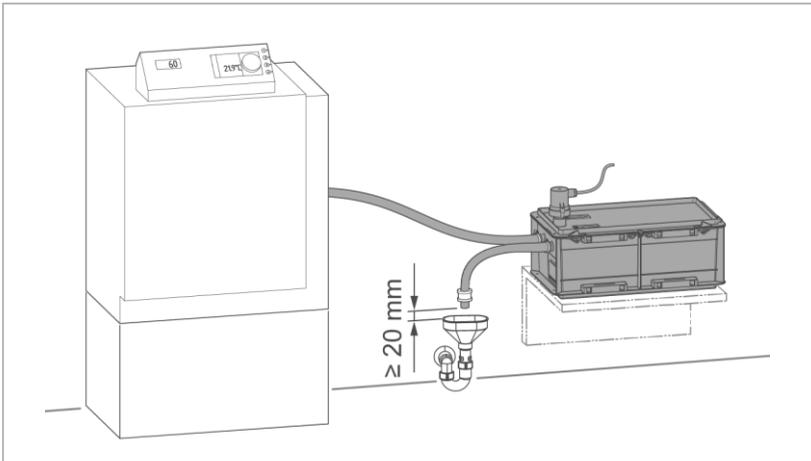


Additional condensing boilers or/and exhaust systems may be integrated up to the max. capacity of the neutralisation system by using corresponding T pieces.

5.3.2.4 Connecting the outlet to the drain connection

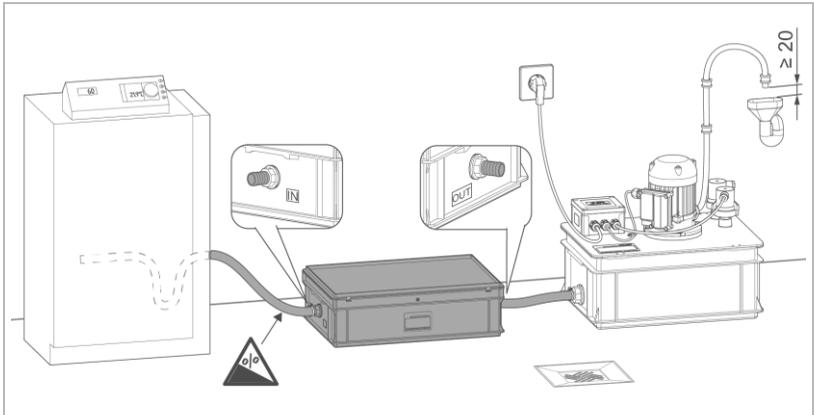
Comply with the following if you connect the outlet hose to the drain connection:

- The drain connection must at least have a nominal diameter of DN 40. The drain connection must allow for backflow-free discharge.
- The outlet hose must not be connected directly to the drain pipe in order to prevent a retroactive bacterial contamination from the drain to the system.
- If no floor drain or drain connection close to the floor is available, a waste water lifting system can be installed downstream of the system (refer to chapter 3.4).



- ▶ Fix the outlet hose at the drain connection with a distance of at least 20 mm.
- ▶ Make sure that the box is securely set up and fastened.

GENO-Neutra N-210 with waste water lifting system AH-300



- ▶ Connect the inlet hose to the inlet connection **IN**.
- ▶ Connect the outlet hose to the outlet connection **OUT** and to the waste water lifting system.



When installing the waste water lifting system AH-300, obey the operation manual of the waste water lifting system.

6 Start-up/commissioning



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



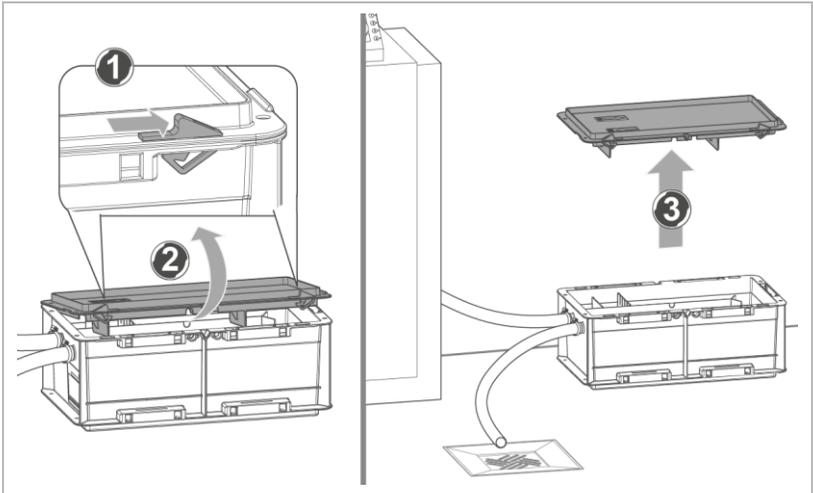
WARNING

Acidic condensate

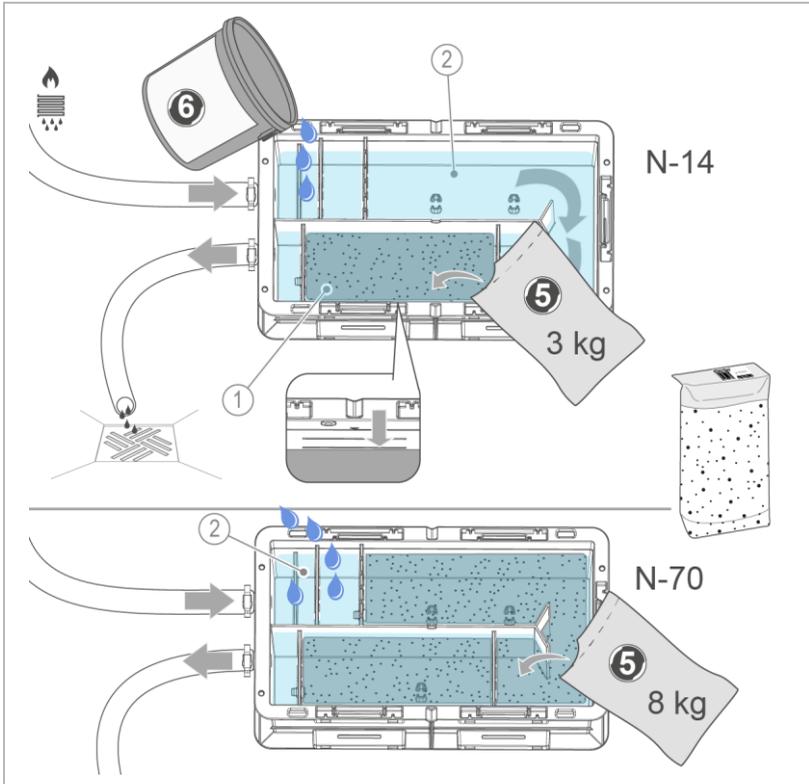
- Chemical burns of eyes and body parts
- ▶ Use personal protective equipment (refer to chapter 1.6.3).
- ▶ Avoid any skin and eye contact with the condensate.
- ▶ Thoroughly rinse your eyes with water if condensate gets into your eyes.

6.1 Filling the box

GENO-Neutra N-14/N-70



1. Unlock the locks on both sides of the lid.
2. Lift the lid a little.
3. Remove the lid and place it safely away from damage.
4. Remove any transport protection from the box (e.g. cardboard packaging).



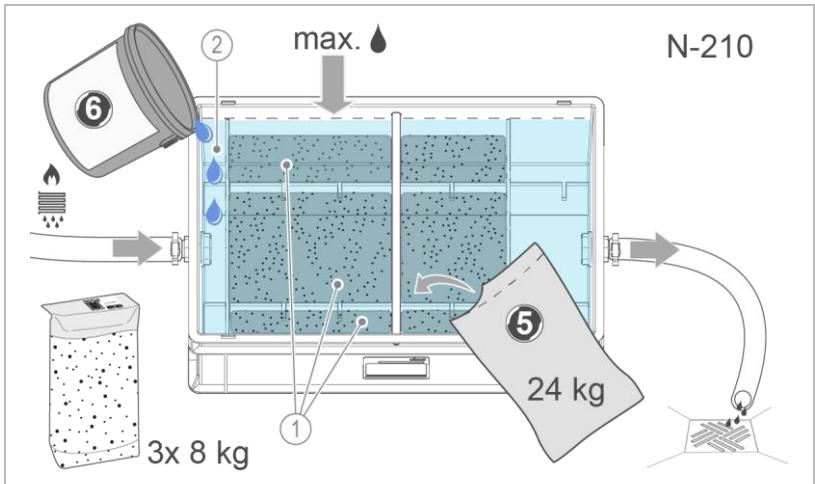
Designation	Designation
-------------	-------------

1 Filling area for neutralisation granulate

2 Settling area

5. Carefully fill the neutralisation granulate into the respective chambers.
6. Fill water into the settling area in the inlet – pay attention to the max. marking.

GENO-Neutra N-210



Designation

- 1 Filling areas for neutralisation granulate

Designation

- 2 Settling area

1. Unlock and open the lid.
2. Remove the lid and place it safely away from damage.
3. Remove any transport protection from the box (e.g. cardboard packaging).
4. Insert the plug-in plates for the required filling area (refer to chapter 3.3).

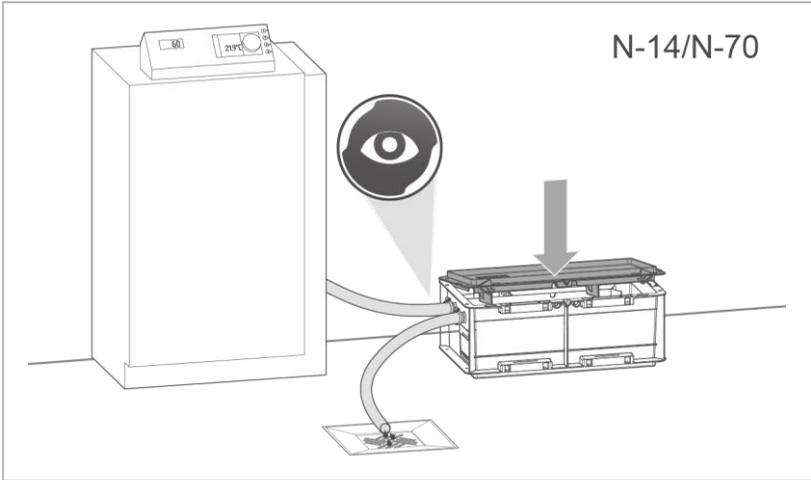


Neutralisation capacity:

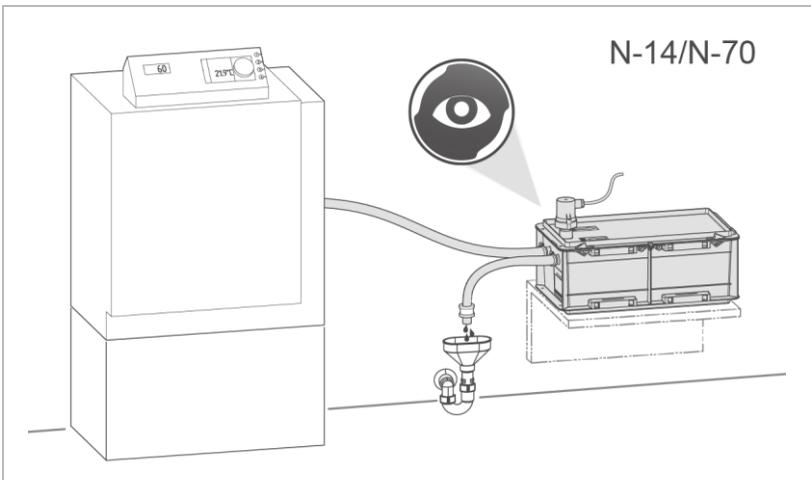
3 sections up to 110 l/h, 4 sections up to 160 l/h, 5 sections up to 210 l/h

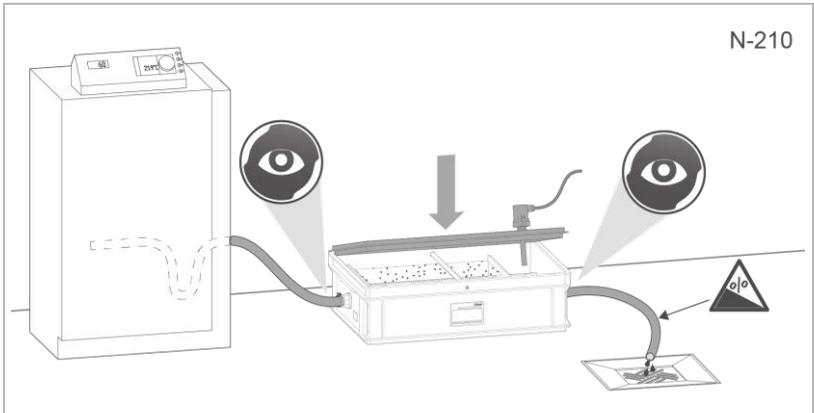
5. Carefully fill the neutralisation granulate into the respective chambers.
6. Fill water into the settling area in the inlet – pay attention to the max. filling volume.

6.2 Checking the product



1. Check the inlet and outlet hoses for leaks.
2. Close the box with the lid.
3. Put the heat generator into operation.
4. Check the entire installation for leaks.





5. Check the optional overflow warning switch for function (refer to the instructions of the accessories).
6. Check that the condensate flows freely into the drain or floor drain.

6.3 Handing over the product to the owner/ operating company

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

6.3.1 Disposal of packaging

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

6.3.2 Storage of accessories/consumables

- ▶ Store accessories and consumables properly (refer to chapter 4.3).

7 Operation

The product is operated automatically and does not require any manual operation.



WARNING

Acidic condensate

- Chemical burns of eyes and body parts
- ▶ Use personal protective equipment (refer to chapter 1.6.3).
- ▶ Avoid any skin and eye contact with the condensate.
- ▶ Thoroughly rinse your eyes with water if condensate gets into your eyes.

- ▶ Inspect the product at regular intervals (refer to chapter 8.3).
- ▶ Have maintenance work carried out in good time (refer to chapter 8.4).

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/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



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

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.
- ▶ Use personal protective equipment.
- ▶ Only clean the outside of the product.
- ▶ Do not use any strong or abrasive cleaning agents.
- ▶ Wipe the surfaces with a damp 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/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: degree of impurities, environmental impacts, consumption, etc.

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

Task	Interval	Activities
Inspection	6 months	<ul style="list-style-type: none"> • Check the pH value at the condensate outlet • Check inlet and outlet hoses for deposits • Check the water level in the box • Check the box and the hoses for leaks
Maintenance	annually	<ul style="list-style-type: none"> • Check the box and the hoses for their condition and for leaks • Clean the box • Replace the neutralisation granulate • Check the pH value at the condensate outlet • Check the optional accessories (overflow warning switch) 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

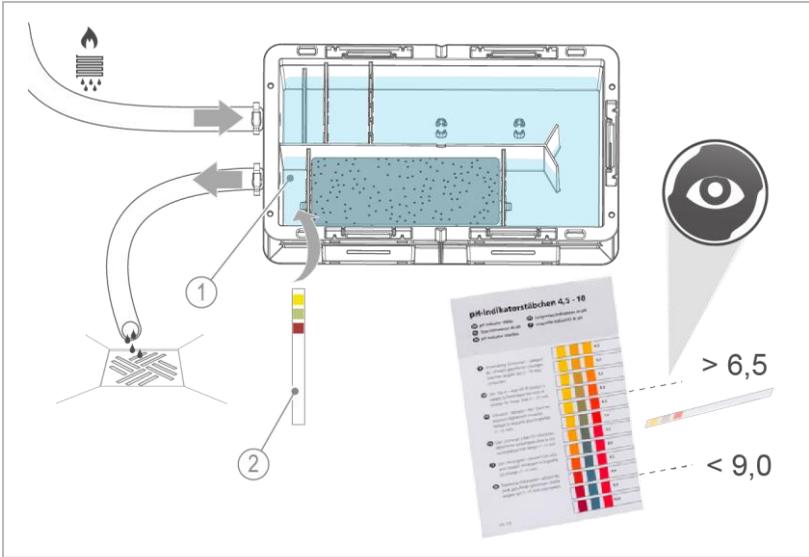
You as owner/operating company can carry out the regular inspections yourself. Initially, we recommend inspecting the product at shorter intervals and later on as required, but at least every 6 months.



► Use personal protective equipment (refer to chapter 1.6.3).

► Carry out an inspection at least every 6 months.

1. Open the lid of the box.



Designation

1 Condensate outlet

Designation

2 pH indicator strips

2. Check the pH value at the condensate outlet using the indicator strips.

» The pH value must be between 6.5 and 9.0.

3. If you measure a pH value < 6.5 , refill neutralisation granulate.

4. Replace the neutralisation granulate, if needed.

5. Check the inlet and outlet hoses for deposits – clean them, if needed.

6. Check the water level in the box – refill water up to the outlet height, if needed.
7. Check the box and the hoses for leaks.
8. Close and lock the box with the lid.
9. Record the inspection carried out in the operation log (refer to chapter 13.2).

8.4 Maintenance

Regular work is required in order to ensure the proper functioning of the product in the long term.

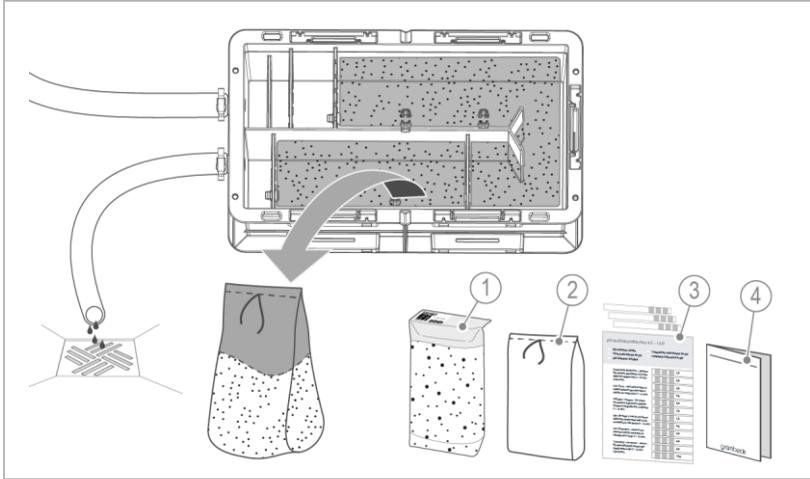
Maintenance must be carried out at regular intervals depending on the volume and the contamination of the condensate, but at least once a year.

8.4.1 Annual maintenance



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

- ▶ Use the corresponding maintenance kit for GENO-Neutra N-14/N-70/N-210 (refer to chapter 8.5).



Designation

- 1 Neutralisation granulate
GENO-Neutralit Hz
- 2 Foil bag to dispose of the used
neutralisation granulate

Designation

- 3 pH indicator strips
- 4 Maintenance instructions

1. Stop the inflow of condensate or divert it into a suitable collection tank.
2. Switch off the power supply to the overflow warning switch (optional accessory) – de-energise it.
3. Open the lid of the box.
4. If necessary, collect hydroxide sludge separately in a suitable container.
5. Remove the used neutralisation granulate from the box – e.g. using a wet vacuum cleaner
 - a Fill the used neutralisation granulate into the foil bag (included in the maintenance kit).
 - b Dispose of the used neutralisation granulate (refer to chapter 11.2).
6. Clean the box.

7. Check the inlet and outlet hoses for deposits – clean them, if needed.
8. Fill new neutralisation granulate into the box (refer to chapter 6.1).
9. Fill the box with water up to the outlet height.
10. Check the box and the hoses for leaks.
11. Replace worn components, if needed.
12. Close the box with the lid.
13. Put the overflow warning switch (optional accessory) into operation and check the fault signal for function (refer to the operation manual of the accessory).
14. Put the system into operation and check the pH value at the condensate outlet using the indicator strips.
 - » The pH value must be between 6.5 and 9.0.
15. Record the maintenance carried out in the operation log (refer to chapter 13.2).

8.5 Consumables



Depending on the operating conditions (season, operating hours of the burner, temperature of heat supply and return, ...), the consumption of neutralisation granulate may vary considerably.

This is normal and due to technical reasons.

Product	Quantity	Order no.
pH indicator strips (1 package)	3 strips	170 173
GENO-Neutralit Hz	8 kg	410 011
Maintenance kit for GENO-Neutra N-14		410 801
Maintenance kit for GENO-Neutra N-70		410 802
Maintenance kit for GENO-Neutra N-210		410 803

8.6 Spare parts

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

8.7 Wearing parts



Wearing parts must be replaced by qualified specialists only.

Wearing parts are listed below:

- Seals

9 Troubleshooting

9.1 Observations

Observation	Explanation	Remedy
Deposits of condensate by-products on the surface of the condensate	Poor combustion in the condensing boiler	<ul style="list-style-type: none"> ▶ Clean the box more frequently and replace the neutralisation granulate ▶ Check the setting of the burner ▶ Inform a specialist for the condensing boiler
pH value at the outlet > 10 for a short time	Longer period of standstill	<ul style="list-style-type: none"> ▶ No immediate action required ▶ Repeat the check of the pH value after a longer period of continuous operation
pH value at the outlet decreases to values < 6.5 after a longer period of operation	The neutralisation granulate is used up	<ul style="list-style-type: none"> ▶ Clean the neutralisation system in case of high amounts of sludge deposits ▶ Refill neutralisation granulate
	Dividers or plug-in plates dirty	<ul style="list-style-type: none"> ▶ Thoroughly clean the plates
pH value at the outlet is permanently > 10 or < 6.5	Boiler and exhaust systems can produce highly varying amounts of condensate, deviating from the design guide value	<ul style="list-style-type: none"> ▶ Adapt the filling volume of the neutralisation granulate • pH > 10: less neutralisation granulate • pH < 6.5: more neutralisation granulate

Observation	Explanation	Remedy
Neutralisation granulate stuck together or clogged	Due to a large amount of deposits from condensate by-products	<ul style="list-style-type: none"> ▶ Loosen up the neutralisation granulate by adding water ▶ Check whether an activated carbon filter needs to be installed upstream
Neutralisation granulate is dried out or caked	Due to a longer period of standstill, e.g. during the summer months	<ul style="list-style-type: none"> ▶ Loosen up the neutralisation granulate by adding water ▶ Carry out maintenance, if needed
Condensate does not flow out	Box or outlet hose clogged	<ul style="list-style-type: none"> ▶ Check box for clogging ▶ Check outlet hose for free outlet
	Capacity of neutralisation system exceeded	<ul style="list-style-type: none"> ▶ Check condensate volume produced ▶ Adapt system size to condensate feed volume, if needed
	Optional overflow warning switch does not work	<ul style="list-style-type: none"> ▶ Check the overflow warning switch for function



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

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

10 Decommissioning

If a longer period of standstill is planned for the heat generator, the neutralisation system must be shut down.

10.1 Temporary shutdown

If the heat generator is to be switched off temporarily (e.g. for 3 months in summer), carry out the following activities on the neutralisation system:

1. Open the box.
2. Check whether deposits have formed on the surfaces in the box.
3. Remove the deposits, if needed.
4. Check that the box is filled with enough water.
5. Refill water, if needed.
6. Close the box.

10.2 Restart/recommissioning

1. Check the condition of the granulate filling – loosen it up or refill, if needed (e.g. after a longer period of standstill).
2. Put the neutralisation system into operation again (refer to chapter 6).

11 Dismantling and disposal

11.1 Dismantling



- ▶ Have this work carried out by qualified specialists only.
1. Check that the heat generator is out of operation and no condensate is produced.
 2. Remove the condensate from the box.
 3. Remove the granulate filling from the box.
 4. Remove optional accessories (such as the overflow warning switch).
 5. Disconnect the neutralisation system from the water installation – dismantle the inlet, outlet and connecting hoses.

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.

Neutralisation granulate

- ▶ Dispose of the used neutralisation granulate via local waste disposal companies using waste code number 19 02 99 – do not dispose of it with residual waste or household waste.

Hydroxide sludge/used neutralisation granulate

During system cleaning, hydroxide sludge containing metal might be produced and must be disposed of as hazardous waste.

- ▶ Collect hydroxide sludge separately in a suitable container.
- ▶ Dispose of the hydroxide sludge and the neutralisation granulate contaminated with hydroxide sludge via local waste

disposal companies using waste code number 10 01 21 – do not dispose of it with residual waste or household waste.

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.

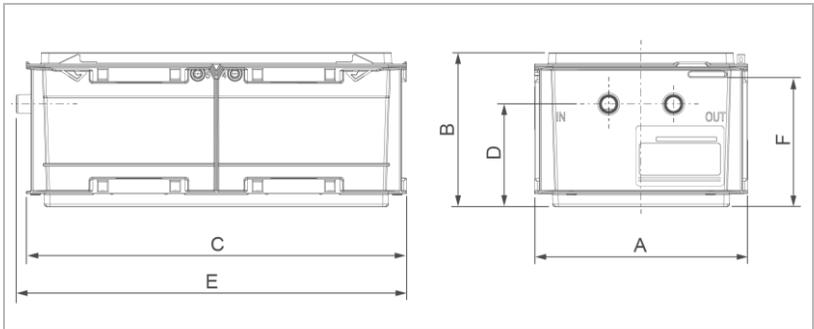
- ▶ Find out about the local regulations on the separate collection of electrical and electronic products.
- ▶ Make use of the collection points available to you for the disposal of your product.
- ▶ If your product contains batteries or rechargeable batteries, dispose of them separately from your product.



For more information on take-back and disposal, go to www.gruenbeck.de.

12 Technical specifications

12.1 GENO-Neutra N-14/N-70

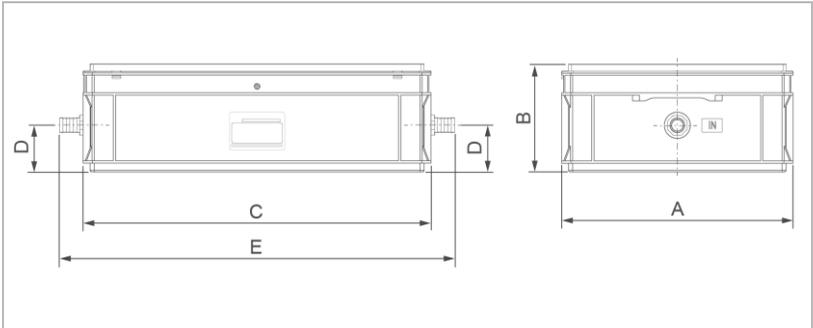


Dimensions and weights		N-14	N-70
A	Width	mm	230
B	Height	mm	165
C	Length	mm	410
D	Connection height of inlet and outlet	mm	110
E	Total length with connections	mm	421
F	Height Overflow/lower edge	mm	140
	Operating weight	kg	~ 12
	Empty weight	kg	~ 7

Connection data		N-14	N-70
Nominal connection diameter of inlet and outlet		DN 20	
Drain connection		≥ DN 40	

Performance data		N-14	N-70
Fuel/process (generation of condensate)		gas/condensing technology	
Neutralisation capacity	l/h	≤ 14	≤ 70
At 0.14 l/kWh, this corresponds to a boiler capacity of	kW	≤ 100	≤ 500
Filling volumes and consumption data		N-14	N-70
Neutralisation granulate GENO-Neutralit Hz	kg	3.0	8.0
Service life in case of standard condensate as per DVGW VP114, pH 3		12 months	
Neutralisable condensate volume	m ³	16	63
This corresponds to ... hours of full use of the boiler	bVH	1100	900
Service life in case of standard condensate, but at least pH 3.2		12 months	
Neutralisable condensate volume	m ³	25	105
This corresponds to ... hours of full use of the boiler	bVH	1800	1500
General data		N-14	N-70
Condensate temperature	°C	5 – 60	
Ambient temperature	°C	5 – 40	
DVGW registration number		DG-4586CM0231	
Order no.		410 440	410 450

12.2 GENO-Neutra N-210



Dimensions and weights			N-210
A	Width	mm	400
B	Height	mm	185
C	Length	mm	600
D	Connection height of inlet and outlet	mm	80
E	Total length with connections	mm	680
	Operating weight	kg	~ 45
	Empty weight	kg	~ 33
Connection data			N-210
	Nominal connection diameter of inlet and outlet		DN 25
	Drain connection		≥ DN 40

Performance data		N-210
Fuel/process (generation of condensate)		gas/condensing technology
Neutralisation capacity	l/h	≤ 210
At 0.14 l/kWh, this corresponds to a boiler capacity of	kW	≤ 1500
Filling volumes and consumption data		N-210
Neutralisation granulate GENO-Neutralit Hz	kg	24.0
Service life in case of standard condensate as per DVGW VP 114, pH 3		12 months
Neutralisable condensate volume	m ³	190
This corresponds to ... hours of full use of the boiler	bVH	900
Service life in case of standard condensate, but at least pH 3.2		12 months
Neutralisable condensate volume	m ³	315
This corresponds to ... hours of full use of the boiler	bVH	1500
General data		N-210
Condensate temperature	°C	5 – 60
Ambient temperature	°C	5 – 40
DVGW registration number		DG-4586CM0231
Order no.		410 320

13 Operation log



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

Neutralisation system GENO-Neutra N-_____

Serial no.: _____

13.1 Start-up/commissioning log

Customer	
Name	
Address	
Installation/Accessories	
Manufacturer of condensing boiler	
Type of condensing boiler	
Fuel	
Capacity of condensing boiler	kW
Accessories	
Materials	
Material(s) of boiler	
Material(s) of heat exchanger	
Material(s) of exhaust system	
Remarks	
Start-up/commissioning	
Company	
Service technician	
Work time certificate (no.)	
Date/signature	

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13.2 Maintenance

Work performed		
<input type="checkbox"/> Inspection	<input type="checkbox"/> Maintenance	<input type="checkbox"/> Repair

Description

Execution confirmed	
Company:	
Name:	
Date:	Signature:

Work performed		
<input type="checkbox"/> Inspection	<input type="checkbox"/> Maintenance	<input type="checkbox"/> Repair

Description

Execution confirmed	
Company:	
Name:	
Date:	Signature:

Work performed

Inspection

Maintenance

Repair

Description

Execution confirmed

Company:

Name:

Date:

Signature:

Work performed

Inspection

Maintenance

Repair

Description

Execution confirmed

Company:

Name:

Date:

Signature:

Work performed

Inspection

Maintenance

Repair

Description

Execution confirmed

Company:

Name:

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Work performed

Inspection

Maintenance

Repair

Description

Execution confirmed

Company:

Name:

Date:

Signature:

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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.

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