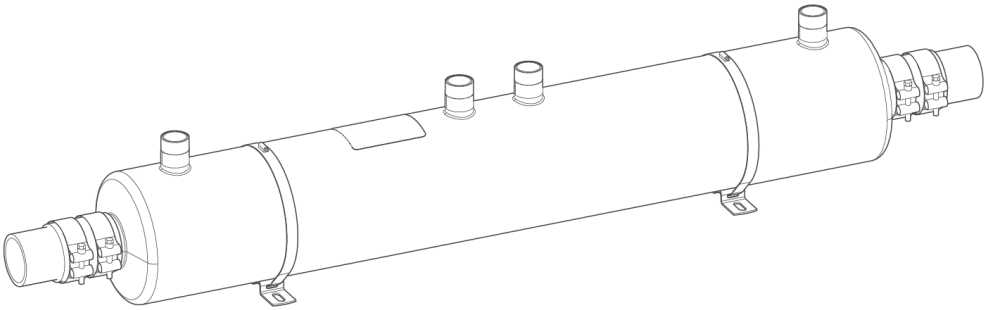
We understand water.



Accessories | Heat exchanger
GENO-WT 146/210

Operation manual

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Monday to Thursday
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Friday
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Table of contents

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 instructions contained within it on the components before you operate your product.
- ► Adhere to all safety instructions and instructions for action.
- ► Keep this instruction and all other applicable documents, so that they are available when needed.

Illustrations in this manual are for basic understanding and may differ from the actual version.

1.1 Validity of the manual

- Heat exchanger GENO-WT 146
- Heat exchanger GENO-WT 210
- Special versions which essentially correspond to the indicated standard products.

1.2 Other applicable documents

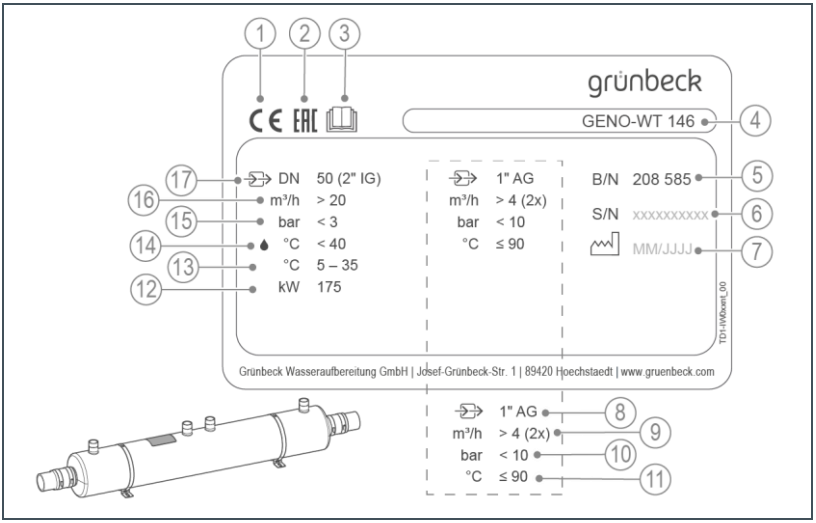
- Instructions for components from other manufacturers

1.3 Product identification

You can identify your product by means of the product designation and the order number on the type plate.

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

The type plate is located on the housing.



	Designation
1	CE mark
2	EAC test mark
3	Observe operation manual
4	Product designation
5	Order no.
6	Serial no.
7	Date of manufacture
8	Heating connection
9	Heating flow rate

	Designation
10	Heating pressure
11	Heating flow temperature
12	Heat transfer power
13	Ambient temperature
14	Water temperature
15	Swimming pool pressure
16	Swimming pool flow rate
17	Nominal connection diameter on the heat exchanger

1.4 Symbols used

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

1.5 Depiction of warnings

This manual contains information that you must comply with for your personal safety. The information is marked with a warning sign and has the following structure:

SIGNAL WORD Type and source of danger

- Possible consequences
- ► Preventive measures

The following signal words are defined depending on the degree of danger and may be used in this document:

Warning sign and signal word		Consequences when disregarding the information/instructions	
	**DANGER**	Personal injury	Death or serious injuries
	**WARNING**		Possible death or serious injuries
	**CAUTION**		Possible moderate or minor injuries
	NOTE	Damage to property	Possible damage to components, the product and/or its functions, or anything in its vicinity

1.6 Requirements for personnel

During the individual life cycle phases of the product, different people carry out work tasks on the product. The work tasks require different qualifications.

1.6.1 Qualification of personnel

Personnel	Prerequisites
Operator/user	• No special expertise • Knowledge of the tasks assigned • Knowledge of possible dangers in the case of incorrect behaviour • Knowledge of the necessary protective equipment and protective measures • Knowledge of residual risks
Owner/operating company	• Product-specific expertise • Knowledge of statutory regulations for safety and accident prevention
Qualified specialist • Electrical engineering • Sanitary engineering (SHK) • Transport	• Professional training • Knowledge of relevant standards and regulations • Knowledge of detection and prevention of possible risks • Knowledge of statutory regulations on accident prevention
Technical service (Grünbeck's technical service/authorised service company)	• Extended product-specific expertise • Trained by Grünbeck

1.6.2 Authorisations of personnel

The following table describes which activities are allowed to be performed by whom.

		Operator/user	Owner/operating company	Qualified specialist	Technical service
Transport and storage				X	X
Installation and mounting				X	X
Start-up				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		X
Repair				X	X
Shutdown and restart				X	X
Dismantling and disposal				X	X

1.6.3 Personal protective equipment

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

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


Protective gloves


Protective footwear


Protective overall


Protective goggles

2 Safety

2.1 Safety measures

- Only operate your product if all components are installed properly.
- Adhere to the applicable local guidelines on drinking water protection, accident prevention and occupational safety.
- Do not make any changes, conversions, extensions or program modifications to your product.
- Only use genuine spare parts for maintenance or repair.
- Keep the premises locked to prevent unauthorised access and to protect endangered/non-instructed people from residual risks.
- Observe the maintenance intervals (refer to chapter 8.2).

2.1.1 Mechanical dangers

- Safety devices must never be removed, bridged, or otherwise tampered with.
- For all work on the system that cannot be carried out from the ground, use stable, safe, independently standing climbing aids.
- Make sure that the system is installed so that it cannot tip over and that the stability of the system is guaranteed at all times.

2.1.2 Hazards relating to pressure

- Components can be under pressure. There is a risk of injuries and damage to property due to escaping water and unexpected movement of components. Check the pressure pipes on the system regularly.
- Before starting repair and maintenance work, make sure that all affected components are depressurised.

2.1.3 Group of persons requiring protection

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

2.2 Product-specific safety instructions

CAUTION

Thermal hazard due to contact with hot surfaces (up to 90°C).

- Burns

► Do not touch the hot surfaces of the heat exchanger and the heating-side components.

► Provide adequate insulation for the components on the heating side.

► Allow the components to cool down first before carrying out any work.

► Use suitable protective gloves when working on the system.

Identification marks on the product

Hot surface

The attached information/instructions and pictographs must be clearly legible.

They must not be removed, soiled, or painted over.

► Comply with all warnings and safety instructions.

► Immediately replace illegible or damaged symbols and pictograms.

2.3 Conduct in an emergency

2.3.1 In the event of pool or heating water discharge

1. De-energise the system.
2. Locate the leak.

CAUTION Hot heating water (up to 90°C)

- Scalding

► Wear personal protective equipment.

3. Eliminate the cause of the pool or heating water discharge.
4. Contact a qualified specialist or the technical service if required.

3 Product description

3.1 Intended use

- The GENO-WT heat exchanger is designed to heat pool water (fresh water) in private or public swimming pools and whirlpools.

3.1.1 Application limits

The GENO-WT heat exchanger is designed for counterflow operation in a dual-circuit system.

The following parameters apply for use as limit values for the approved substances contained in the water:

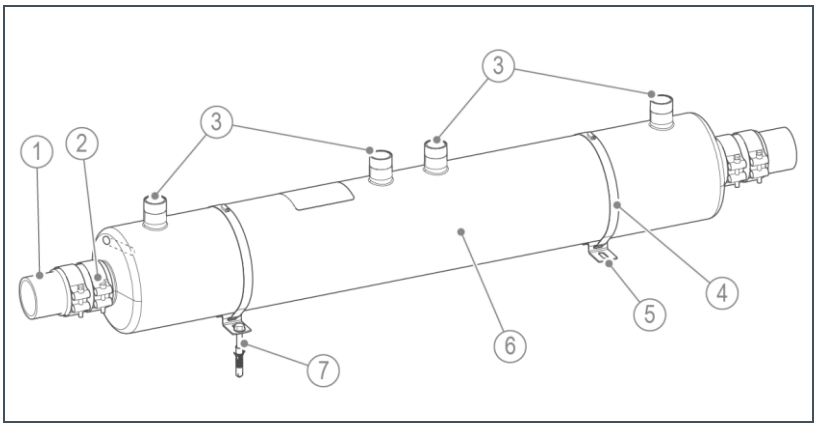
Parameters		Value
pH value	-	6.8 – 7.8
Free chlorine	mg/l	≤ 1.3 (short< 20)
Chloride content	mg/l	< 500
Bromine	mg/l	≤ 6
Total hardness	°dH	< 14

On the heating side, only heating water according to VDI 2035 or water/glycol mixes with maximum 50% glycol content may be pumped.

3.1.2 Foreseeable misuse

- Use in salt water, seawater or brine is not permissible.

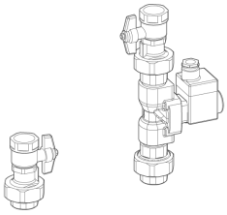
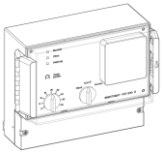
3.2 Product components



	Designation	Function
1	Hose connection	for pool water
2	Bolt clamps	for fixing the hose connections
3	Connections for supply and return	for connection to heating circuit 1 and heating circuit 2
4	Clamps	for fixing the heat exchanger
5	Clamp mounting bracket	for wall or floor mounting
6	Heat exchanger incl. thermowell	for heat transfer and fitting of a temperature sensor
7	Fastening material	4x Hexagon head bolt, disc, dowel

3.3 Accessories

Your product can be retrofitted with accessories. Please contact your local Grünbeck representative or Grünbeck's headquarters in Hoechstaedt for details.

Illustration	Product	Order no.
	**Heat exchanger shut-off set 1"**	**208 444**
	For the hydraulic shut-off of an on-site heating circulation system and for the protection of the on-site piping.	
	**Control unit BWH-W I17/1**	**208 607**
	Used for the semiautomatic operation of the filter system using a timer and for temperature control.	
	**Digital temperature controller**	**208 693**
	Required when the swimming pool control unit does not have a temperature control function.	
	Thermostat 10 – 60°C including stainless steel thermowell	**208 625**
	Application as a maximum temperature limiter. Product for monitoring the maximum pool water temperature and for the protection of the on-site piping.	

4 Transport and storage

4.1 Dispatch/delivery/packaging

The product is factory-packed in a cardboard box.

► Check immediately upon receipt for completeness and transport damages.

4.2 Transport

► Transport the product in its original packaging only.

4.3 Storage

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

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

5 Installation

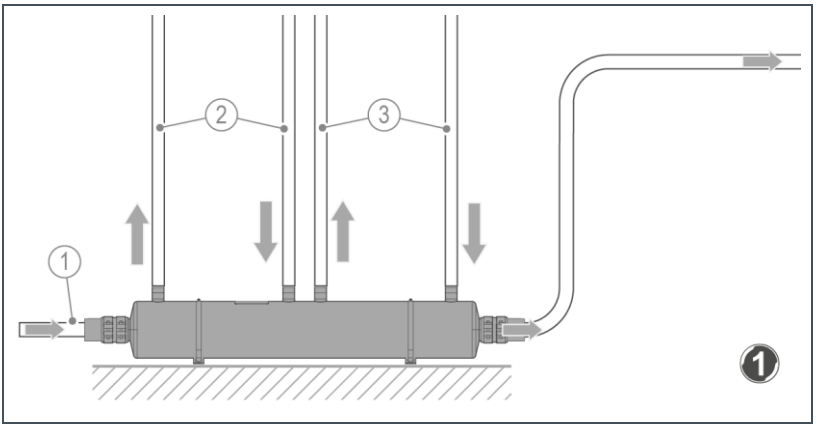
The system installation may only be carried out by a specialist.

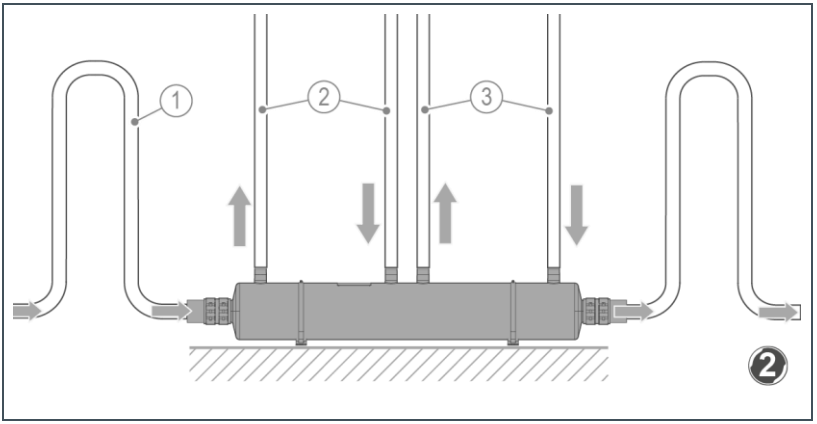
NOTE Leaks or system damage as a result of corrosion.

- Leakage, water loss, water damage, system failure.

► Position the dosing systems for chemicals or the dosing points/injection points in the pipe after the heat exchanger.

Installation example in the full flow (horizontal floor mounting)





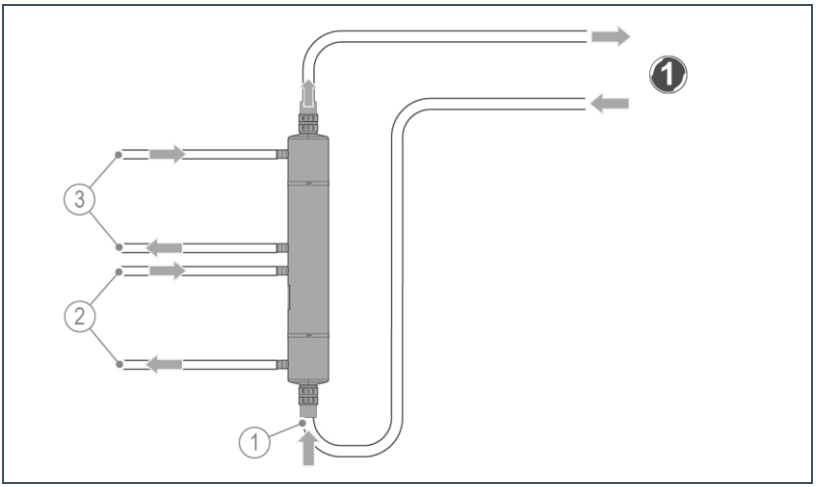
	Designation
1	Under the water level

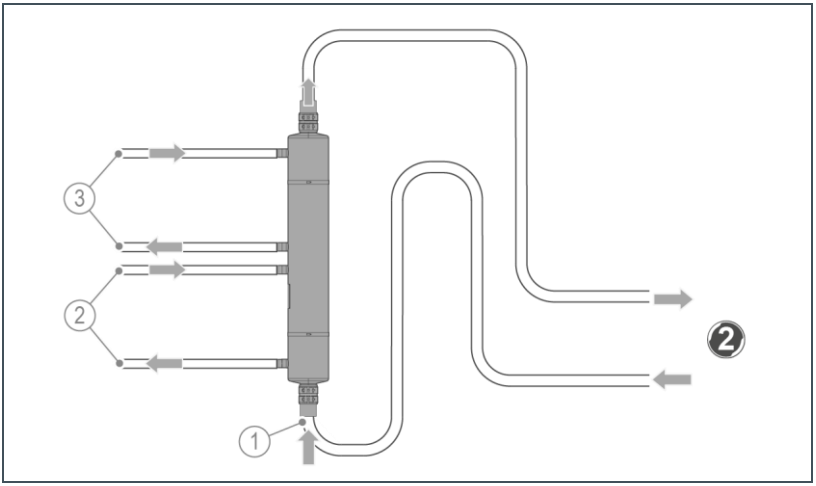
	Designation
2	Over the water level (with pipe loop)

	Designation
1	Main line pool water circuit
2	Heating circuit 1

	Designation
3	Heating circuit 2

Installation example in the full flow (vertical wall mounting)





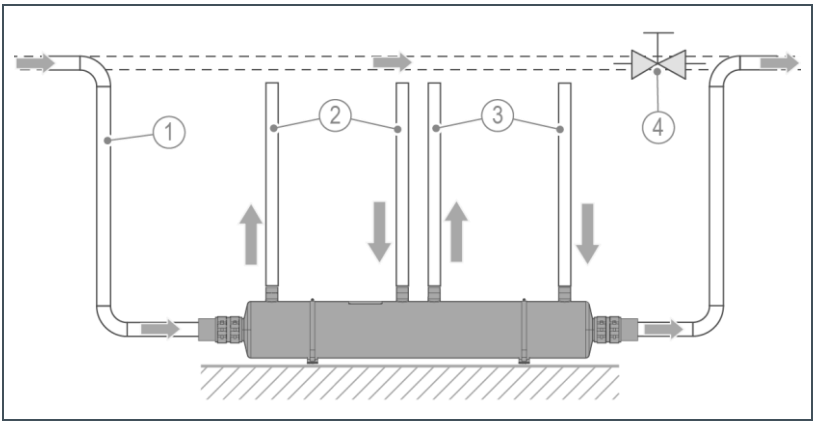
	Designation
1	Under the water level

	Designation
2	Over the water level (with pipe loop)

	Designation
1	Main line pool water circuit
2	Heating circuit 1

	Designation
3	Heating circuit 2

Installation example in the partial flow



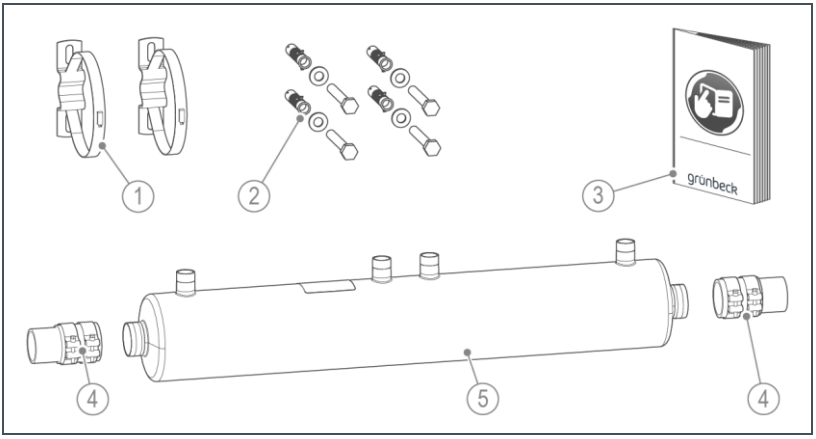
	Designation
1	Bypass line pool water circuit
2	Heating circuit 1

	Designation
3	Heating circuit 2
4	On-site shut-off valve in the main line pool water circuit

5.1 Requirements with regard to the installation site

- The adequately dimensioned installation surface of the system must be level and provide sufficient strength and load-bearing capacity to support the system's operating weight.
- The installation site must be frost-proof and ensure the system's protection from direct sunlight, chemicals, dyes, solvents and their vapours, etc.
- The installation location must be provided with chemically stable floor drain. If none is available, an appropriate safety device has to be installed to prevent water damage.
- The installation site must be adequately illuminated as well as aerated and ventilated and not in danger of flooding.
- The system must be easily accessible for maintenance and repair work. To this end, a free space of at least 1 metre upstream of the system is required.
- The system must be shut off for maintenance and repair work, be depressurised and drained. To this end, appropriate fittings are to be provided by client.
- On-site obstacles/restrictions must be indicated in advance and taken into account in the design of the system.
- The installation site should be below water level (pool level).
- If the installation site is above the water level (pool level), pipe loops must be provided on the pool water side.

5.2 Checking the scope of supply



	Designation
1	Fixing clamps
2	Fastening material
3	Operation manual

	Designation
4	Hose connection with PVC-U nipple
5	Heat exchanger

► Check the scope of supply for completeness and damage.

5.3 Installing the heat exchanger

Installation under the pool level

► Install the heat exchanger after the filter system in partial or full flow under pool level.

Installation above pool level (optional)

The heat exchanger must never run idle.

► When installing the heat exchanger after the filter system above pool level, observe the following:

1. Lay pipe loops on the pool water side.

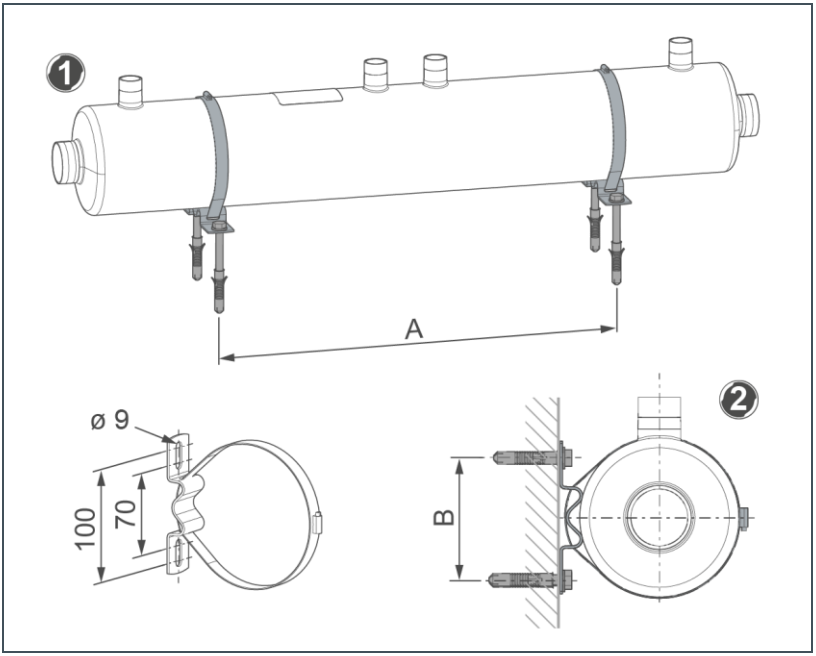
5.3.1 Fixing the heat exchanger

The heat exchanger can be fixed horizontally to the wall or to the floor.

► Recommendation: To ensure solid attachment to the wall, use a wall bracket provided by the client.

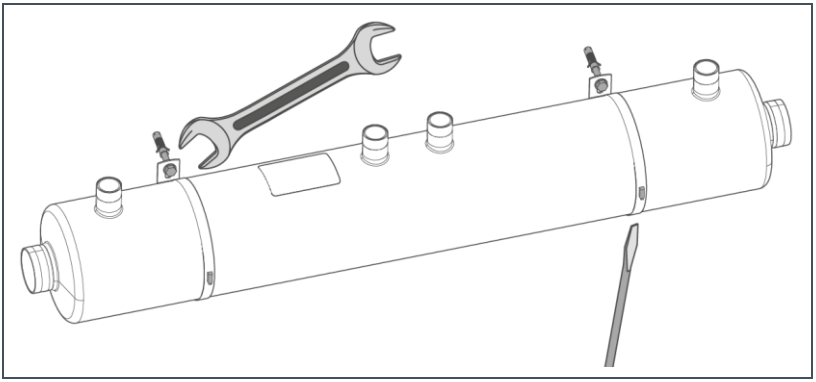
► Check the on-site installation situation for space conditions.

► Check the static condition of the masonry for wall mounting.



Designation	Designation
1 Floor mounting	2 Wall mounting

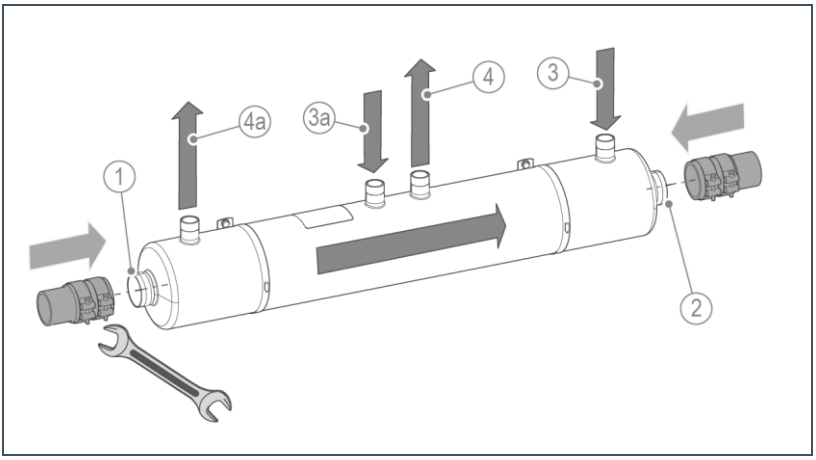
1. Determine the mounting type: Wall or floor.
2. Determine distance A between the fixing clamps – as far apart as possible.
   - **a** Recommended distance A:
     GENO-WT 146 ~ **600** mm
     GENO-WT 210 ~ **800** mm
3. Determine distance B.
4. Provide a secure fastening according to on-site conditions.



5. Insert the heat exchanger.
6. Clamp the heat exchanger firmly - tighten the clamps.
    a. Ensure that the heating outputs point vertically upwards.
7. Check all connections for secure hold.

5.3.2 Connecting the lines

The flow directions are to be observed on the heating and pool water side.



	Designation		Designation
1	Pool water inlet	3a	Supply from heating 1
2	Outlet to the pool	4	Return to heating 2
3	Supply from heating 2	4a	Return to heating 1

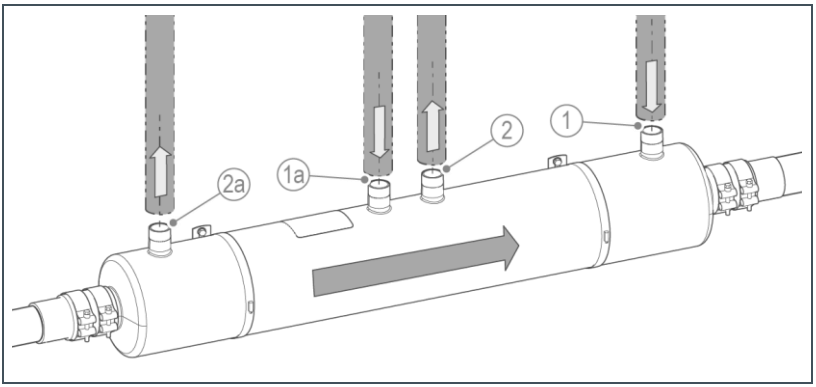
1. Push the hose connections on the right and left onto the heat exchanger connections.
2. Hand-tighten all bolt clamps.

5.3.3 Connecting the heating

The on-site connections to the heating circuits must be detachable.

The two heating circuits must be connected in parallel to ensure economical energy transfer.

The performance curves are not achieved with only one heating circuit (series connection) (refer to Section 12.1).



	Designation		Designation
1	Supply heating 2	**1a**	Supply heating 1
2	Return heating 2	**2a**	Return heating 1

1. Fasten the supply heating line from heating circuit 1 and heating circuit 2.
2. Fasten the return heating line from heating circuit 1 and heating circuit 2.
3. Install on-site shut-off valves in the supply and return lines.

5.3.4 Install on-site components/water lines.

NOTE

Increase in the temperature on the pool water side at the heat exchanger above 40°C.

- Damage and failure of the system or the PVC-U piping.

► Install a maximum temperature limiter after the heat exchanger, which switches off the heating circulation pump if the temperature is exceeded.

6 Start-up

The initial start-up of the product is only allowed to be carried out by the customer service.

CAUTION

Thermal hazard due to contact with hot surfaces (up to 90°C).

- Burns

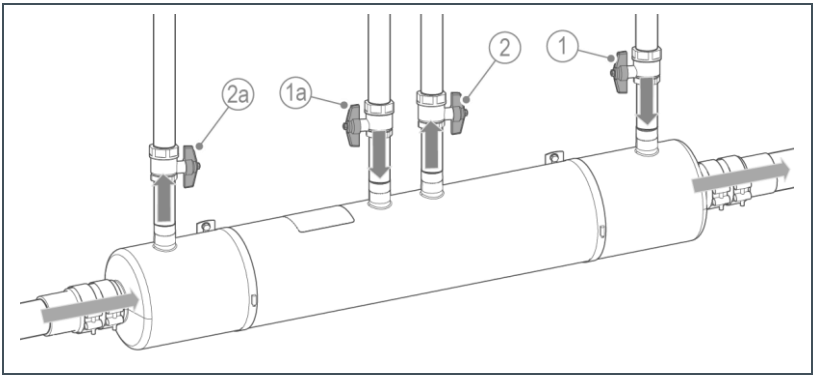
► Do not touch the hot surfaces of the heat exchanger and the heating-side components.

► Provide adequate insulation for the components on the heating side.

► Allow the components to cool down first before carrying out any work.

► Use protective gloves.

6.1 Venting the system/checking for leaks



	Designation		Designation
1	On-site shut-off valve heating supply 2	1a	On-site shut-off valve heating supply 1
2	On-site shut-off valve heating return 2	2a	On-site shut-off valve heating return 1

1. Open the on-site shut-off valves.
2. Vent the pipe the lines on the pool water and heating side.
3. Perform a visual check of the installation for leaks.

6.2 Checking the system function

1. Check the heat input into the swimming pool.
2. Check the locking of the on-site heat supply (e.g. heating circulation pump) when the pool water circulation pump is switched off.

6.3 Handing over the product to the owner/user

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

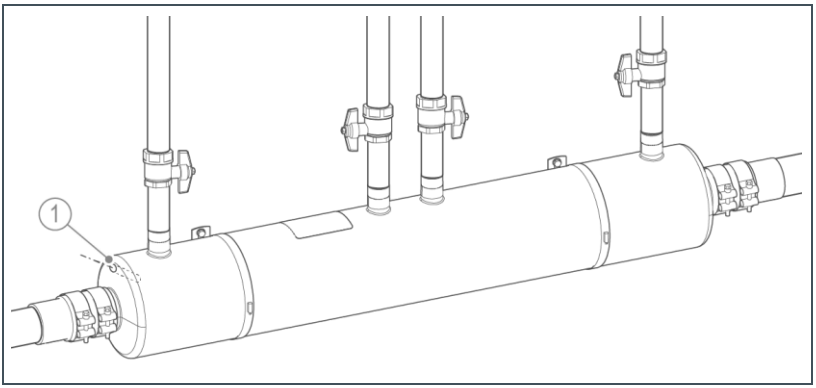
7 Operation/handling

CAUTION Exceeding the maximum temperature

- Failure of the system and risk of water damage
- ► Ensure by means of control technology, or mechanically, that the flow on the heating side is also stopped or interrupted when the pool water circulation pump stops.

The heat exchanger has a thermowell.

An on-site temperature sensor can be inserted into the thermowell. In conjunction with a control unit, the pool water temperature can be measured via the temperature sensor.



	Designation
1	Thermowell

8 Maintenance and repair

Maintenance includes cleaning, inspection and servicing of the product.

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

By concluding a maintenance contract you ensure that all maintenance work will be performed in due time.

► Only use genuine spare and wearing parts from Grünbeck.

WARNING

Mechanical hazard due to pressurised components.

- Splashing by medium, shock, scalding in the case of hot media.

► Depressurise the system before removing components and drain the entire system.

CAUTION

Thermal hazard due to the unexpected supply of heating water when the heat exchanger or components have been removed.

- Discharge of heating water with temperatures up to 90°C
- Scalding

► Close the on-site shut-off valves and ball valves before removing the components.

8.1 Cleaning

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

- ► Use personal protective equipment.
- ► Only clean the outside of the system.
- ► Do not use any strong or abrasive cleaning agents.
- ► Regularly clean the system to remove dirt and chemical residues.
- ► Wipe the components using a damp cloth only.

8.2 Intervals

Faults can be detected in time by regular inspection and maintenance, and system failures can be avoided.

- ► As owner/operating company, determine which components have to be inspected and maintained at which intervals (load-dependent). This is subject to the actual conditions: Water condition, degree of impurities, environmental influences, consumption, etc.

The following interval table shows the minimum intervals for the activities to be performed.

Task	Interval	Activities
Inspection	Monthly	• Check function of the heat exchanger • Check the locking of the on-site heat supply (e.g. heating circulation pump) when the pool water circulation pump is switched off. • Check all components for leak tightness
Maintenance	semi-annually	• Check all product components for impurities and clean them if required • Check all product components for leak tightness and function • Check product components for unusual noises or vibrations • Check that connections are undamaged and firmly seated • Check heat input into the pool • Check the locking of the on-site heat supply (e.g. heating circulation pump) when the pool water circulation pump is switched off. • Check function of the maximum temperature limiter (optional accessories)
	Annually	• Check the system for scale deposits
Repair	5 years	• Recommendation: Replace wearing parts

8.3 Inspection

You as owner/operating company may perform the regular inspections yourself.

► Conduct an inspection at least once a month as follows.

1. Check the function of the heat exchanger.
2. Check the locking of the on-site heat supply (e.g. heating circulation pump) when the pool water circulation pump is switched off.
3. Check the leak tightness of all components.

8.4 Maintenance

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

8.4.1 Semi-annual maintenance

1. Check all product components for impurities and clean them if necessary.
2. Check all product components for leaks and function.
3. Check product components for unusual noises or vibrations.
4. Check all connections for damage and a firm seat.
5. Check the heat input into the swimming pool.
6. Check the locking of the on-site heat supply (e.g. heating circulation pump) when the pool water circulation pump is switched off.
7. Check the function of the maximum temperature limiter (optional accessories)
8. Record the data and work performed in the operation log, including repairs (refer to Chapter 13).

8.4.2 Annual maintenance

Annual maintenance work requires expert knowledge. This maintenance work is only allowed to be performed by Grünbeck's technical service or by qualified specialists trained by Grünbeck.

In addition to the semi-annual maintenance, the following work needs to be done:

9. Check the system for scale deposits.

8.4.2.1 Checking the heat exchanger for scale deposits

The higher the heating temperatures and the total hardness of the pool water, the more scale deposits in the heat exchanger.

Scale is an extremely poor conductor of heat, and even thin layers of it must be removed.

To check the heat exchanger for scale deposits when installed, an access point on the pool water side can be used, e.g. the hose connection on the pool water side.

1. Ensure that the system is depressurised.
2. Dismantle a hose connection on the pool water side.
3. Check the inside of the heat exchanger for scale deposits.
4. If scale deposits are visible, clean the heat exchanger with scale remover (refer to Section 8.4.3).
5. Mount the hose connection on the pool water side.
   a. Use a new hose if necessary.
6. Check all product components for leaks and function.

8.4.3 Cleaning with scale remover

Follow the safety and application instructions for the scale remover used.

The heat exchanger may only be cleaned indoors when it has been removed.

1. Ensure that the system is depressurised.
2. Dismantle the heat exchanger.
3. Clean the heat exchanger inside with a special scale remover.
4. Rinse the heat exchanger thoroughly with clear water.
   The scale remover used must not get into the pool water.
5. Reassemble the cleaned heat exchanger.
   a. If necessary, use new hoses and seals.
6. Check all product components for leaks and function.

8.5 Spare parts

You can find an overview of the spare parts in the spare parts catalogue at www.gruenbeck.de. You can obtain the spare parts from the Grünbeck representative responsible for your area.

8.6 Wearing parts

Wearing parts are only allowed to be changed out by a qualified specialist.

Wearing parts are listed below:

- Seals, hoses

9 Fault

9.1 Observations

Observation	Explanation	Remedy
The pool water does not heat	Heat exchanger is not operated in counterflow mode	► Check direction of flow and change if necessary
	Air in the heating water circuit	► Thoroughly vent heating water circuit
	Heating capacity of the on-site heating system too low	► Check the heat capacity of the on-site heating system and increase if necessary
	Heat transfer capacity of the heat exchanger is too low for the existing on-site heating capacity or operating mode (low supply temperatures)	► Use a suitable heat exchanger

If a fault cannot be rectified, further measures can be taken by the technical service.

► Contact technical service (for contact details, refer to inside cover sheet).

10 Shut down

The following operations may only be carried out by the technical service.

10.1 Temporary standstill

► If a longer downtime of the system is planned, a system shutdown must be carried out.

The following tasks have to be carried out:

1. Flush the system with clear water to remove chemical and salt residues.
2. Drain and clean the system completely.
3. Completely empty all lines that are at risk of freezing.

» The system is out of service.

10.2 Restart

► Put the system into operation (refer to chapter 6).

11 Dismantling and disposal

11.1 Dismantling

The operations described herein represent an intervention in pool water and heating water system.

► Have this work performed by qualified specialists only.

1. Flush the system with clean pool water on the pool water side.
2. Close the on-site shut-off valves (pool water and heating water).
3. Depressurise the system and drain it.
4. Disconnect the hydraulic connections of the pool water and heating water system.
5. Remove individual components such as accessories, if necessary.
6. Transport the system secured in a suitable cardboard box or on a pallet.

11.2 Disposal

► Comply with the applicable national regulations.

Packaging

► Dispose of the packaging in an environmentally sound manner.

NOTE Risk to the environment due to incorrect disposal

- Packaging materials are valuable raw materials and can be reused in many cases.
- Incorrect disposal can cause environment pollution.

► Dispose of packaging material in an environmentally sound manner.

► Observe the locally applicable disposal regulations.

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

Product

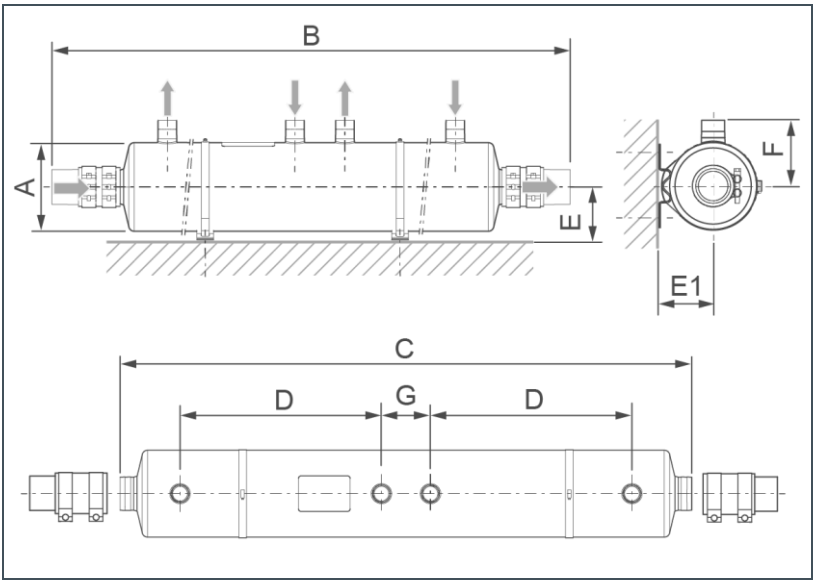
If this symbol (crossed-out wheelie bin) is on the product, it means that this product or its electrical and electronic components must not be disposed of as household waste.

► Find out about local regulations on the separate collection of electrical and electronic products.

► Use the available collection points for the disposal of your product.

For information on collection points for your product, contact your municipality, the public waste disposal authority, an authorised body for the disposal of electrical and electronic products or your waste collection service.

12 Technical specifications



Dimensions and weights			HE 146	HE 210
A	Diameter	mm	160	
B	Total length	mm	1245	1565
C	Housing length	mm	1050	1370
D	Distance between the lines on the heating side	mm	370	530
E	Floor distance	mm	96	
E1	Distance to wall	mm	96	
F	Height		~ 120	
G	Distance between heating circuits	mm	90	
	Weight	kg	~ 12.2	~ 16.2

Connection data		HE 146	HE 210
Nominal connection diameter PW (heat exchanger thread)		DN 50 (2" IG)	
Heating connection		1" male thread	
Swimming pool pressure	bar	< 3	
Heating pressure	bar	< 10	
Heating flow temperature	°C	≤ 90	
Floor drain		DN ≥ 100	

Performance data		HE 146	HE 210
Heat transfer power (Supply 90°C, PW 20°C)	kW	175	259
Swimming pool flow rate	m³/h	> 20	> 25
Swimming pool pressure loss (with flow)	bar m³/h	~ 0.5 (20)	~ 0.8 (25)
Heating flow rate	m³/h	> 4 (2x)	> 4.3 (2x)
Heating pressure loss * (with flow)	bar m³/h	~ 0.27 (4)	~ 0.44 (4.3)
Heating surface	m²	0.8	1.0

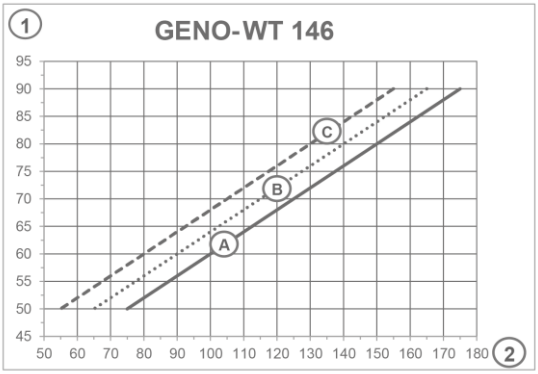
* Heating pressure loss from HE without heating circulation pump and ball valves

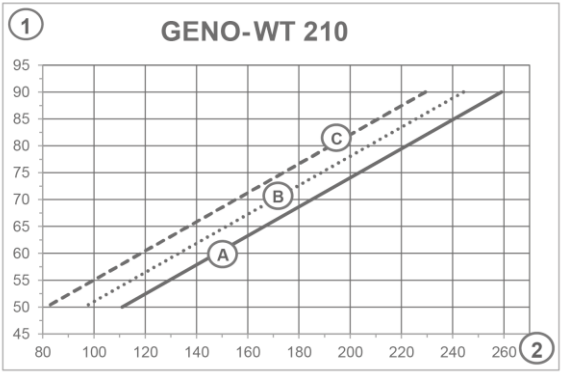
General data		HE 146	HE 210
Housing material		1.4404	
Water temperature	°C	< 40	
Ambient temperature	°C	5 – 35	
Order no.		**208 585**	**208 590**

HE = Heat exchanger
PW = Pool water

12.1 GENO-WT Performance curves

The heat exchanger performance in kW refers to the maximum possible transfer capacity at stated minimum flow rates.





	Designation
1	Supply temperature Heating in °C
2	Heat exchanger performance in kW at water temperature

	Designation
A	20°C Water temperature
B	24°C Water temperature
C	28°C Water temperature

13 Operation log

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

GENO-WT Heat exchanger _____

Serial no.: _____

13.1 Start-up log

Customer		
Name		
Address		

Pool version		
Design	☐ Indoor swimming pool	☐ Open-air pool
Pool size	Volume in m³	
Disinfection product	☐ Sodium hypochlorite GENO-Chlor A	
	☐ GENO-Brom	
	☐ Others	

Technology/mechanical room		
Below water level	☐ yes	☐ no
Floor drain available	☐ yes	☐ no

Installation/accessories		
Installation type	☐ Partial flow	☐ Full flow
Maximum temperature limiter available	☐ yes	☐ no
Heat exchanger shut-off set 1"	☐ yes	☐ no

Installation/accessories		
Control unit used	☐ GENO-BW-tronic	☐ BWH-W
	☐ Digital temperature control-ler	☐ Others

Pool water	
Water temperature	° C
Total hardness water	°dH
pH value	–
Conductivity	µS
Pool disinfection product value (Free chlorine, bromine, etc.)	mg/l

Remarks

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

Maintenance no.: ___

Enter the measured values and operating data.
Confirm the tests with **OK** or record any repairs carried out.

Operating values

Pool water	before maintenance	after maintenance
Water temperature	°C	°C
Total hardness water	°dH	°dH
pH value	-	-
Conductivity	µS	µS
Pool disinfection product value (Free chlorine, bromine, etc.)	mg/l	mg/l

Maintenance work

Preliminary maintenance work	OK
Product components checked for cleanliness, cleaned or renewed if necessary.	☐
Product components checked for function and leak tightness. Faulty components repaired	☐
Product components checked for unusual noises or vibrations.	☐
Connections checked for being undamaged and firmly seated. Defective or worn components replaced. Loose connections tightened.	☐
Heat input into the pool checked.	☐
Heat exchanger checked for scale deposits and if necessary scale deposits removed.	☐
Locking of the on-site heat supply (e.g. heating circulation pump) checked when the pool water circulation pump is switched off.	☐
Maximum temperature limiter function checked.	☐

Remarks

Performed by	
Company:	
Service technician:	

Maintenance no.: ____

Enter the measured values and operating data.
Confirm the tests with **OK** or record any repairs carried out.

Operating values

Pool water	before maintenance	after maintenance
Water temperature	°C	°C
Total hardness water	°dH	°dH
pH value	-	-
Conductivity	µS	µS
Pool disinfection product value (Free chlorine, bromine, etc.)	mg/l	mg/l

Maintenance work

Preliminary maintenance work	OK
Product components checked for cleanliness, cleaned or renewed if necessary.	☐
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Locking of the on-site heat supply (e.g. heating circulation pump) checked when the pool water circulation pump is switched off.	☐
Maximum temperature limiter function checked.	☐

Remarks

Performed by	
Company:	
Service technician:	

Maintenance no.: ___

Enter the measured values and operating data.
Confirm the tests with **OK** or record any repairs carried out.

Operating values

Pool water	before maintenance	after maintenance
Water temperature	°C	°C
Total hardness water	°dH	°dH
pH value	-	-
Conductivity	µS	µS
Pool disinfection product value (Free chlorine, bromine, etc.)	mg/l	mg/l

Maintenance work

Preliminary maintenance work	OK
Product components checked for cleanliness, cleaned or renewed if necessary.	☐
Product components checked for function and leak tightness. Faulty components repaired	☐
Product components checked for unusual noises or vibrations.	☐
Connections checked for being undamaged and firmly seated. Defective or worn components replaced. Loose connections tightened.	☐
Heat input into the pool checked.	☐
Heat exchanger checked for scale deposits and if necessary scale deposits removed.	☐
Locking of the on-site heat supply (e.g. heating circulation pump) checked when the pool water circulation pump is switched off.	☐
Maximum temperature limiter function checked.	☐

Remarks

Performed by	
Company:	
Service technician:	

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