Instruction manual

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Heaty Ferriline № 2

Processing unit

Index

1 Introduction

1.1 Heaty Ferriline № 2

The Heaty Ferriline № 2 treatment unit is a device for the initial filling of heating systems and cooling systems (without inhibitors) with water and for the treatment of water in heating systems and cooling systems (without inhibitors) using the bypass method. The unit also performs the following tasks:

- Magnetic filtration
- Sludge or fine filtering

NOTE

Heaty Ferriline № 2 Upgrade

In addition to the Heaty Ferriline № 2 unit, the Heaty Ferriline № 2 Upgrade unit is available. The Heaty Ferriline № 2 Upgrade unit can be used to upgrade an existing Heaty 100 Small HW unit to the Heaty Ferriline № 2.

Improper use of the unit may result in personal injury and poor quality process results.

Read these operating instructions carefully and take note of the information on safety, operation and maintenance.

1.2 Conditions of use

To use the unit properly, observe the following instructions:

- Before starting work, make sure that the heating or cooling system corresponds to the recognised state of the art.
- Observe the regulations on the construction, commissioning, design and filling of heating and cooling systems.
- When filling heating and cooling systems, operate the unit with a flow pressure of the drinking water pipe of at least 1.5 bar.
- If the unit is connected in the bypass for filtration or treatment, a system pressure of at least 1.2 bar is required.

- During water treatment or initial filling of a heating or cooling system without a bypass process, fully demineralised water (DI water) can cause existing deposits to be removed. Possible resulting damage is due to the already existing deposits.
- Always flush and clean heating and cooling systems according to EN 14336 if you do not use the unit in the bypass process.
- The manufacturer does not guarantee compliance with the guide values if there are additives such as glycols, acids and cleaners or bacteria in the system.
- Drain the residual water completely from the unit after work to protect it from frost damage.
- The installer is responsible for preparing and handing over the documentation in accordance with the relevant country-specific guidelines (e.g. VDI 2035, Ö-Norm H 5195-1 or SWKI BT 102-1). The operator is responsible for maintaining the documentation.

1.3 Target group

These operating instructions are intended for persons who work with or on the unit:

- Operating personnel
- Maintenance and servicing personnel

Qualifications of the target group

The target group of the operating instructions must have at least the following qualifications:

- Operating personnel: **Instructed person**

  An instructed person is someone who has been instructed about the tasks assigned and the possible dangers in the case of improper behaviour, who
  - instructed,
  - trained, if necessary, and
  - has been instructed about the necessary safety devices and protective measures.

- Maintenance and servicing personnel: **Skilled person**

  A skilled person is a person who is able to assess the assigned work and recognise possible hazards on the basis of technical training, knowledge and experience as well as knowledge of the relevant regulations.

1.4 Conventions

Warnings and other notes

In the operating instructions, notes are weighted differently and marked with a pictogram.

Warnings are structured as follows:

Symbol	Signal word	Meaning
	DANGER	**Warning:** Imminent danger. Death or serious injuries are the consequence.
	WARNING	**Warning:** Potentially dangerous situation. Death or very serious injuries may result.
	CAUTION	**Warning:** Possibly dangerous situation. Minor or slight injuries may result.
	NOTE	**Notice:** Notes that must be taken into account for optimum results and safe operation of the equipment.

- **Signal word**
  Indicates the severity of the hazard.
- **Type and source of danger**
  Indicates the hazard being warned about and where it may occur.
- **Cause and effect**
  Describes what caused the hazard or damage and its effect.
- **Remedy**
  Describes how the hazard can be prevented from occurring.

Example of a warning

DANGER

Risk of injury if not used as intended.

Improper use of the Heaty Ferriline № 2 can endanger persons and property.

- Only use the appliance for its intended purpose as described below.

Instructions for action

Instructions are numbered to indicate the sequence of the individual steps. steps. Results of the actions (if available) are written directly below.

Example:

1 This is the first step.

2 This is the second step.

▶ This is the result of the second step.

Operating and control elements

Operating elements, e.g. buttons and switches, and control elements, e.g. buttons on the control panel, are marked in **bold**.

Example: The **emergency stop button** is located on the control cabinet.

1.5 Manufacturer's address

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2 Safety instructions

The Heaty Ferriline № 2 appliance has been designed and manufactured in compliance with applicable legal regulations and in accordance with recognised safety rules. The appliance corresponds to the state of the art at the time of its initial commissioning. Nevertheless, dangers may arise for the operator, for other persons, for the appliance itself and for other material assets.

NOTE

For safe handling of the unit, observe the safety instructions in this section and the warnings in other sections of this operating manual.

2.1 General information

The unit may only be installed, operated and maintained by qualified personnel trained in safety technology.

Persons involved in the commissioning, operation, maintenance, repair, dismantling and disposal of the unit must have read and understood the operating instructions and in particular the safety instructions.

The operating instructions must be kept in a safe place and must be available at all times to persons working with or on the unit.

2.2 Intended use

In order to use the unit as intended, it is necessary to be familiar with the operating instructions and to comply with all the instructions, maintenance and inspection regulations contained therein.

DANGER

Danger to life or risk of serious injury

Mechanical and electrical hazards occur during operation of the unit. To prevent personal injury due to these dangers, you may only use the appliance as intended.

The unit may only be used as intended as follows:

For the initial filling of heating systems and cooling systems (without inhibitors) with water and for the treatment of water in heating systems and cooling systems (without inhibitors) using the bypass method.

The following further specifications apply:

- **Heating and cooling systems**

  The unit is intended for small heating systems or small cooling systems (without inhibitors) with buffer storage, e.g. in a detached house. The unit types must be selected depending on the system output (see section "8 Technical data" on page 43).

- **Other tasks**

  In addition to initial filling and treatment, the unit performs the following additional tasks:

  - Magnetic filtration
  - Sludge or fine filtering

- **Filling**

  The unit may only be filled with the mixed bed resin Vadion pH-Control. resin.

- **Operation**

  The unit may only be operated and maintained by persons who are sufficiently qualified and authorised.

- **Safety devices**

  The unit may only be operated with intact safety devices. Safety devices must be checked regularly for correct condition and proper function.

- **Maintenance and servicing**

  General inspection and cleaning work must be carried out by instructed persons. Maintenance, servicing and repair work may only be carried out by qualified specialists.

2.3 Non-intended use

The unit may only be used in the ways described in section "2.2 Intended use" on page 11. on page 11. Any other use may endanger persons and property and is prohibited.

Uses that are not intended include:

- Use for purposes other than the initial filling of heating systems and cooling systems (without inhibitors) with water and the treatment and filtering of water in heating systems and cooling systems (without inhibitors).
- Operation in potentially explosive atmospheres as defined by the ATEX Directive
- Operation with defective or missing safety devices
- Servicing and maintenance in the absence of safety devices without increased safety measures
- Operation by unqualified or insufficiently qualified personnel

2.4 Dangers during transport and installation

2.4.1 Transport

During transport and installation of the unit, dangers may arise due to heavy and tipping parts. To avoid this, observe the following safety instructions:

- Transport the unit free of impact and shocks.
- During transport, secure the unit with suitable means against tipping and falling over. Do not remove any transport locks until after the unit has been set up.

2.4.2 Installation

The unit may only be installed by authorised and trained specialists. Improper installation can cause injury to persons. To avoid this, observe the following safety instructions:

- Wear suitable personal protective equipment during work (see section "2.6 Personal protective equipment" on page 15).
- Do not place heavy objects on the unit.
- Set up the unit on a level and sufficiently load-bearing surface.

- When connecting the unit to the mains, make sure that the mains voltage corresponds to the specifications on the rating plate.
- Have the mains connection and the earthing of the unit carried out by qualified personnel in accordance with national regulations.
- Use an all-pole switch with a distance of at least 3 mm between the contacts to connect the unit to the power supply.
- Install a high-sensitivity differential switch (0.03 A) for additional protection against electric shock.
- Route cables and hoses so that there is no risk of tripping.
- If tripping hazards cannot be avoided, mark the tripping hazards clearly.
- Carry out adjustment work or simple repairs in consultation with the manufacturer.
- Do not make any modifications to the appliance or to the water and power lines.
- Position the unit so that the motor of the circulation pump is sufficiently ventilated.

2.5 Dangers during operation and maintenance

2.5.1 Mechanical hazards

The unit consists of moving or heavy components. This can cause injury to persons. To avoid this, observe the following safety instructions:

- Exercise caution when replacing heavy parts:
  - Wear suitable safety shoes
  - Secure the unit against tipping and slipping.
- When carrying out maintenance work on supplier components, observe the relevant documentation of the manufacturers concerned.
- Do not reach with your hand into rotating or moving parts of the unit when it is in operation.

2.5.2 Dangers due to hot surfaces

Parts of the unit heat up during operation. There is a risk of burns if there is direct contact with hot surfaces. To avoid this, observe the following safety instructions:

- Do not touch hot lines and the housing of the circulation pump when the unit is switched on, but only after it has been switched off and cooled down.
- Wear suitable protective gloves if you have to touch hot parts or carry out work on hot parts.

2.5.3 Dangers due to electric current

The unit is operated with electric current. Touching live components can result in dangerous injuries or death. To avoid this, observe the following safety instructions:

Disconnect the main power supply before working on electrical equipment

- Unplug the main power supply before working on electrical equipment.
- Ensure that the mains cable is equipped with an appropriate blocking device for maintenance protection (lockout tagout).

Liquids

- Be careful when handling liquids. Penetration of liquids may cause short circuit or electric shock..

Connection data

- Observe the specified electrical connection data (see section "8 Technical data" on page 43).

Covers of the electrical components

- Do not open the covers while the unit is switched on or in operation.
- Do not remove covers even when the unit is switched off when wiring work or checks are being carried out.

2.5.4 Hazards in handling the circulation pump

The unit uses a circulation pump, which poses various hazards. To avoid To avoid damage to property and injury, observe the following safety instructions:

- Only use the unit in accordance with the technical data (see section "8 Technical data").
- Do not use the unit to transport easily flammable or hazardous liquids.
- Do not leave the unit unattended during operation or ensure that unauthorised persons do not have access to the unit.
- Switch off the unit and disconnect the mains plug from the socket before carrying out maintenance and servicing work.
- Do not operate the unit with closed ball valves at the inlet and outlet of the unit or the composite container.
- Check the area around the unit for leaks and remove any leaking liquids.
- Protect the pump from environmental influences such as splash water or dust.

2.5.5 Dangers due to operating materials

The unit contains a mixed bed resin that must be replaced regularly. Skin or eye contact may cause irritation or even visual disturbances. To avoid this, observe the following safety instructions:

- Observe the information in the safety data sheet.
- Wear suitable personal protective equipment when working to avoid skin and eye contact with the mixed bed resin:
  - Safety goggles
  - Protective gloves

2.6 Personal protective equipment

To work safely with the unit, you must wear various personal protective equipment. In the following list and in the corresponding places in the document you will find information on the required personal protective equipment.

The following personal protective equipment is necessary when working with the appliance:

- Protective gloves
- Safety goggles
- Protective work shoes

2.7 Warning and information signs

Places where there is a potential danger under certain conditions are marked with warning and information signs.

- Do not remove warning and information signs.
- Replace damaged or removed warning and information signs immediately.

The following warning and information signs are located on the unit:

Character	Meaning	Character	Meaning
	Warning of electrical voltage		Warning of magnetic field
	Hot surface warning		No admission for persons with pacemakers or implanted defibrillators

3 Device description

The Heaty Ferriline № 2 treatment unit is a device for the initial filling of heating systems and cooling systems (without inhibitors) with water and for the treatment of water in heating systems and cooling systems (without inhibitors) using the bypass method.

The unit also performs the following tasks:

- Magnetic filtration
- Sludge or fine filtering of non-magnetic parts up to 1µ

NOTE

Heaty Ferriline № 2 Upgrade

In addition to the Heaty Ferriline № 2 unit, the Heaty Ferriline № 2 Upgrade unit is available. The Heaty Ferriline № 2 Upgrade unit can be used to upgrade an existing Heaty 100 Small HW unit to the Heaty Ferriline № 2.

The following section describes the unit with its components and operating elements.

3.1 The device at a glance

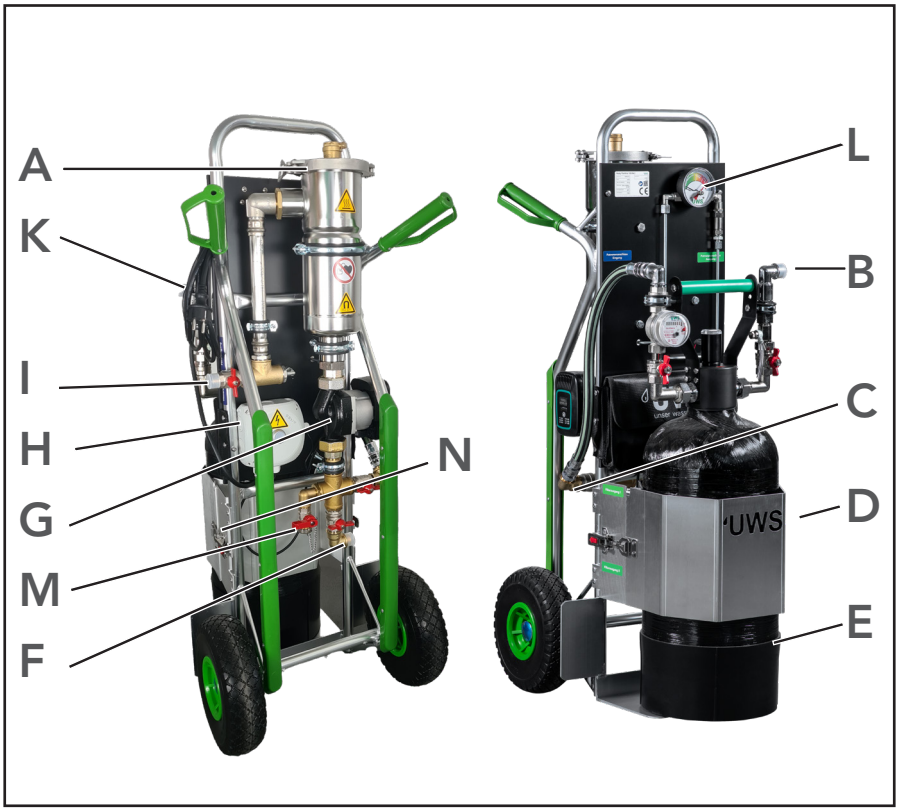


Fig. 3-1: Overview of the components of the unit

A	MAGella twister**5**: powerful magnetite separator and fine filter
B	Output for treatment unit
C	Output for reprocessing unit
D	Quick-release fastener for treatment unit
E	Preparation unit Heaty Small 100 HW
F	Filtration outlet
G	Circulation pump
H	Main switch for circulation pump
I	Filtration/processing input
K	Mains cable with mains plug
L	Fine filter capacity indicator
M	Additional sampling tap System
N	Quick-release fastener preparation unit

3.2 Preparation unit Heaty 100 Small HW

The Heaty Small 100 HW preparation unit essentially consists of a filling device containing the mixed bed resin. This is attached to the bag trolley with a quick-release fastener. The preparation unit can be dismantled and can also be used separately for the initial filling of a heating or cooling system.

Water treatment by ion exchange takes place in the mixed bed resin of the composite tank until the capacity of the mixed bed resin is exhausted.

The Heaty Small 100 HW preparation unit consists of the following additional components:

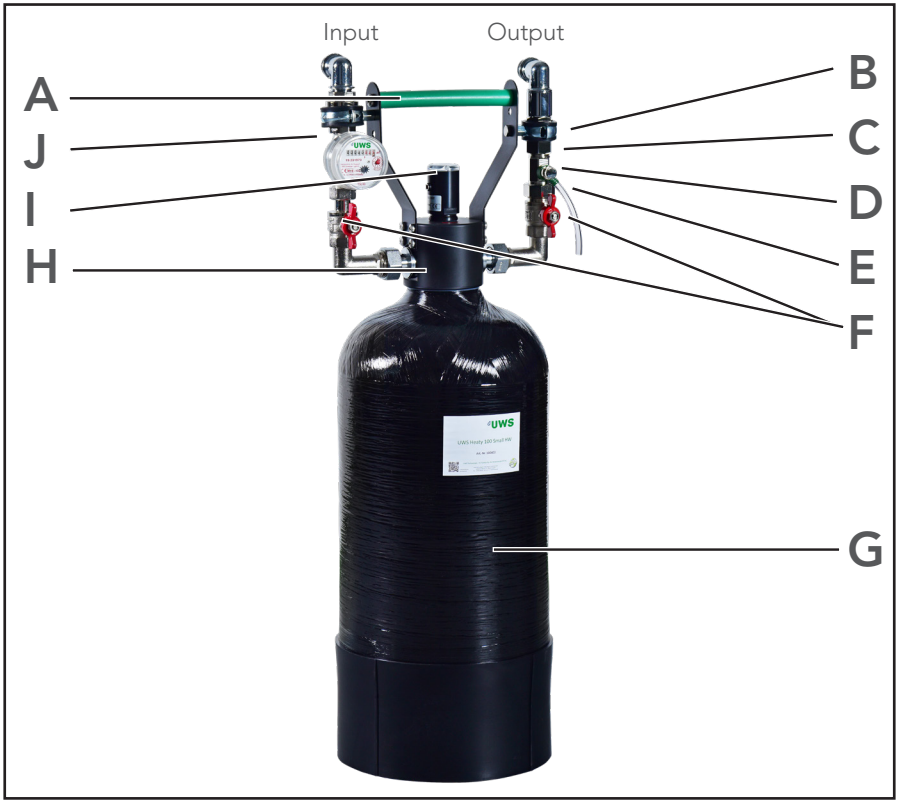
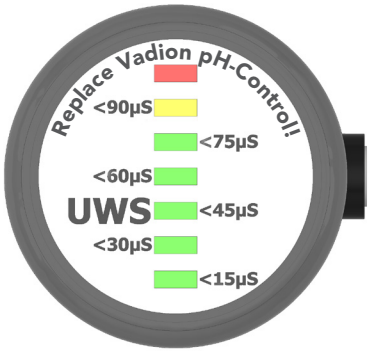


Fig. 3-2: Components of the Heaty Small 100 HW preparation unit

A	Handle
B	Flow regulator
C	Check valve
D	Extraction tap
E	Strainer seal
F	Shut-off valve
G	Composite container with mixed bed resin
H	3-way head with suction lance (concealed)
I	Capacity indicator Vadion pH Control
J	Water meter

The measuring cell with LED display shows the remaining capacity of the mixed bed resin. The colours of the LED display have the following meanings:



Colour of the LED display	Conductivity (µS/cm)	Meaning
Green	<15	Capacity very good
	<30	Capacity good
	30 - <75	Capacity sufficient
Yellow	<90	Capacity insufficient, replace mixed bed resin **promptly** (see p. 36)
Rot	>90	Capacity exhausted, replace mixed bed resin **immediately** (see p. 36)

NOTE

LED function

At the beginning of the process, the individual LEDs are checked (light organ). If the Vadion pH-Control has been replaced, the LED display of the measuring cell may light up red. In this case, continue the process for approx. 5 minutes. If the display of the LED measuring cell does not change, bleed the measuring cell or check the measuring cell with a manual measuring device to rule out a fault. If there is no error, the capacity of the mixed-bed resin is exhausted and the mixed-bed resin must be replaced.

3.3 Filtration output

Via the filtration output, filtered water flows out of the unit back into the circuit of the heating or cooling system.

3.4 Circulation pump

The circulation pump conveys the water through the unit. For more information on the For more information on the circulation pump, refer to the manufacturer's documentation (see section "9 Other applicable documents" on page 45).

3.5 Main switch for circulation pump

The main switch Circulation pump is used to switch the circulation pump on or off to start or stop preparation and filtration.

3.6 Filtration/processing input

Via the filtration/treatment input, the water flows into the treatment unit where it is treated. The filtration/treatment input is equipped with a water meter to read the water quantity when a heating or cooling system is filled for the first time.

3.7 Magnetite separator MAGella twister5

The dual filter of the MAGella twister**5** is a unique, highly efficient system filter for magnetic and non-magnetic contaminants in heating systems. It includes an absolute fine filter up to 1 µ and one of the most powerful magnetite separators on the market. For more information on the MAGella twister, see section "9.3 MAGella twister" on page 50.

3.8 Treatment output

Via the treatment output, treated water flows from the treatment unit back into the circuit of the heating or cooling system.

3.9 Filter capacity display

The display shows the degree of contamination of the filter. As soon as a filter change is due, this is shown directly on the display.

4 Transport, installation and commissioning

4.1 Transport

Use lifting equipment such as a crane or forklift to transport the unit. The lifting equipment must be suitable, tested and approved. On level ground, you can use the wheels of the bag trolley to move the unit.

Observe the following instructions when transporting:

- Secure the device against slipping and tipping over with suitable aids.
- Only move the bag trolley when the quick-release fastener of the reprocessing unit is closed.
- When transporting the unit, only load it at suitable points.
- Remove the transport devices after transport.

4.2 Installation and commissioning

To avoid damage to the unit or injury to persons, observe the following instructions the following instructions during installation and commissioning:

- Installation and commissioning may only be carried out by instructed specialists from a recognised specialist trade company in the sanitary, heating and air-conditioning industry, taking into account the necessary safety measures.
- Inspect the unit for completeness and possible transport damage before starting installation. The following components are included in the scope of delivery:
  - Unit as per order, pre-assembled
  - Hose set
  - Operating instructions
  - Maintenance key Magnetite separator
- Set up the unit on a firm and level surface.
- Do not install the unit in areas where there is a risk of frost.
- Lay cables, hoses and lines in such a way that there are no tripping hazards. Mark unavoidable tripping hazards.
- Connect the unit properly to the power supply and observe the electrical connection data (see section "8 Technical data" on page 43).

The unit is intended for temporary connection to a heating or cooling system. intended. Observe the following instructions when connecting the unit:

- Before connecting the unit, familiarise yourself with the specific structure of the heating or cooling system. Contact the manufacturer if you need assistance.
- Ensure that the installation work is carried out professionally and that the result complies with the relevant rules and regulations.

In the bypass process, a partial volume flow of the water from a heating or cooling system is routed through the unit.
During preparation, we recommend switching on the system pumps to achieve the fastest possible mixing.

The following illustration shows an example of the connection of the unit in bypass mode:

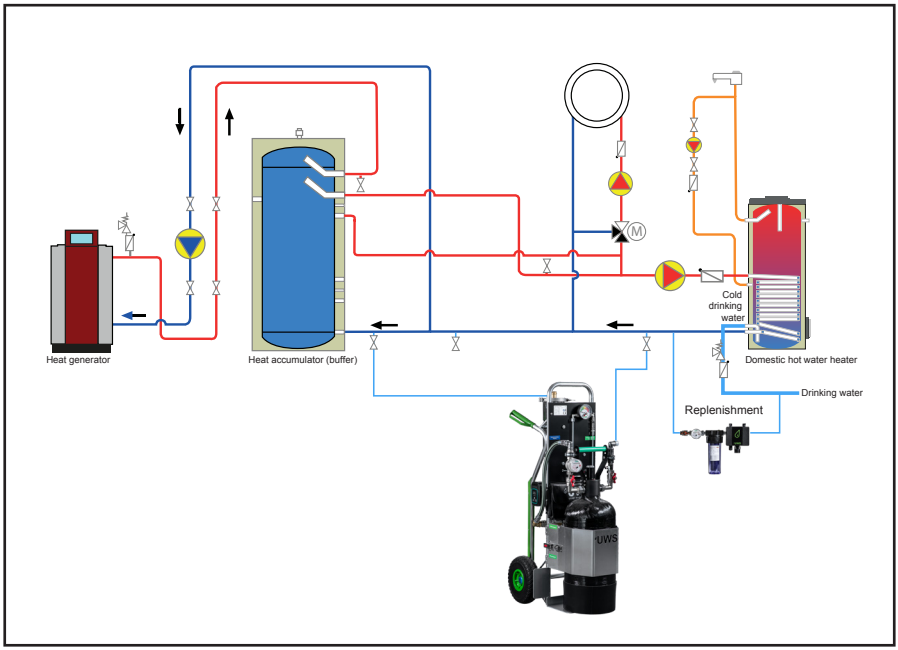


Fig. 4-4: Connection diagram bypass method

5 Operation

In the following section you will find instructions on how to operate the unit.

NOTE

Operating elements

The operating elements referred to in the text are explained in section "3 Unit description" on page 17.

5.1 Preparing the unit for operation

To prepare the unit for operation, proceed as follows:

1 Rinse the unit after a longer standstill period. To do this, open all valves, connect the unit to a drinking water pipe and open the drinking water pipe.

NOTE

Flushing over a drain

Rinse the appliance over a drain to allow the escaping water to drain off.

2 Connect the unit to the power supply by inserting the mains plug into a socket.

NOTE

When connecting, observe the electrical connection data (see section "8 Technical data" on page 43).

▶ The unit is ready for operation.

5.2 Connecting and operating the unit

CAUTION

Risk of injury due to improper connection.

Improper connection may result in hot liquids escaping or damage to the unit.

- Make connections to the heating or cooling system in a depressurised state. To do this, connect the corresponding fittings to the heating or cooling system.
- Select the connection points in the pipe system of the heating or cooling system so that they are far enough apart to avoid a short circuit.
- Install a 3/4" size connection spigot at each of the connection points in the heating or cooling system's piping system.
- Only use hoses that are designed for the pressure of the heating or cooling system. The hoses provided are designed for a pressure of up to 8.0 bar

The connection method of the unit depends on the specific purpose. In the following sections, you will learn how to connect and operate the unit for the various tasks.

5.2.1 Filtration

To use the unit for filtration of the water of a heating or cooling system, proceed as follows:

Prerequisites

- The unit is prepared for operation as described in section "5.1 Preparing the unit for operation" on page 25. Also observe the instructions in section "4 Transport, installation and commissioning" on page 23.
- The MAGella twister has been checked and, if necessary, replaced or cleaned (see section "6 Maintenance and servicing" on page 35).

Procedure

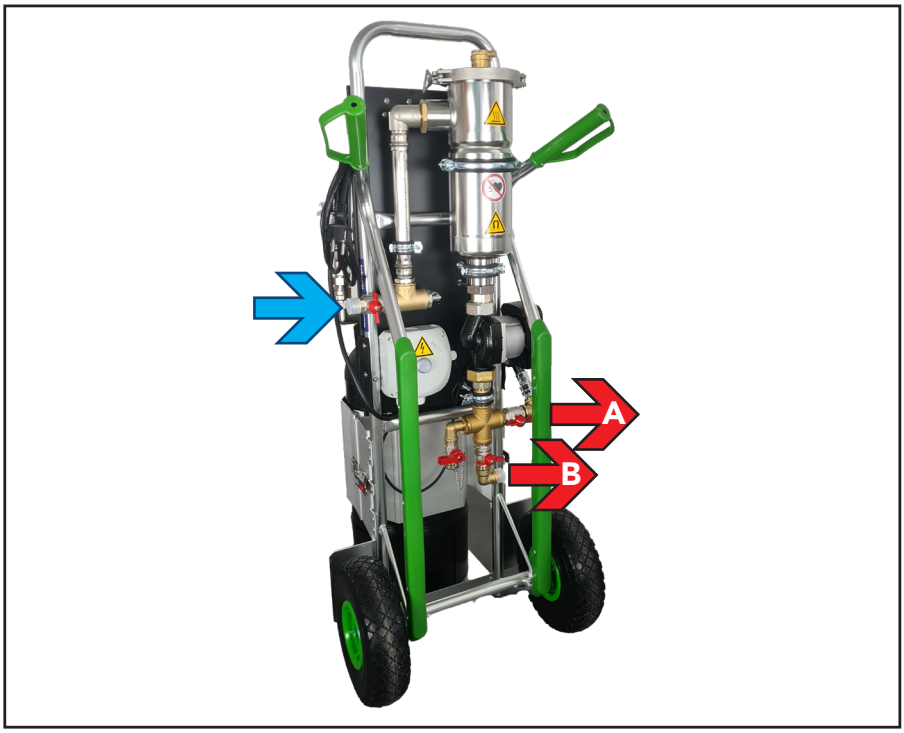


Fig. 5-5: Filtration connection diagram

1 If the conditioner is to be used elsewhere during filtration, dismantle it as follows:

- Disconnect the hoses from the preparation unit.
- Open the quick-release fastener on the reprocessing unit.
- Remove the reprocessing unit from the bag trolley.

NOTE

Separating the unit

It makes sense to separate the treatment unit from the unit if you want to work on several heating or cooling systems at the same time. During filtration on one heating or cooling system, you can prepare or fill another heating or cooling system in parallel.

2 Connect the filtration/treatment input to a point in the return flow of the heating or cooling system using a suitable hose.

3 Use a suitable hose to connect the filtration outlet to a point in the remote return line of the heating or cooling system. If there is no further return, a forward can also be used. A
To increase the filtration performance in the bypass, a second hose can be connected to the outlet. B

4 Open the valve at the filtration outlet.

5 Ensure that the system temperature of the heating or cooling system is 80 °C or less.

6 Open the fittings on the connections of the heating or cooling system.

▶ A partial volume flow of the heating or cooling system flows over the device.

7 Make sure that the valve on the filtration outlet is open.

8 Press the Circulation **Pump Master Switch** to turn on the circulating pump.

▶ The water from the heating or cooling system runs through the device and is filtered.

9 Take water samples regularly to assess the result of the filtration.

10 If the filtration result is satisfactory, turn off the circulation pump. To do this, press the **circulation pump main switch**.

NOTE

With pure filtration operation, the system volume is filtered at high speed, which also increases the contamination of the fine filter.

5.2.2 Filling

NOTE

Checking the heating or cooling system before the first filling

Before you fill a heating or cooling system with the device for the first time, note the following information:

- Flush and clean the heating or cooling system in accordance with EN 14336 and record the flushing and cleaning.
- Measure the conductivity and water hardness of the raw water and enter the values in the system book.
- If the raw water is softened, measure the conductivity and use the conversion tables to estimate the capacity of the device (see section "9 Other applicable documents" on page 45).
- Please note that the use of a softening system can lead to increased conductivity of the drinking water.
- Make sure that the drinking water line has a flow pressure of at least 1.5 bar when filling heating or cooling systems. If the value falls below this value, the capacity of the device can be impaired.
- The drinking water must be free of suspended matter. Install an appropriate filter system, if necessary.
- Observe the information on reducing the conductivity during operation.
- Ensure that a filling combination is installed on the device before the filtration/treatment inlet. Observe the regulations of the responsible water supply company.
- The use of a system separator can lead to a pressure loss of approx. 1 bar. Use a suitable pressure boosting system if the system pressure has to be higher than the flow pressure of the drinking water line.

To fill a heating or cooling system with water for the first time without using the by-pass procedure, proceed as follows:

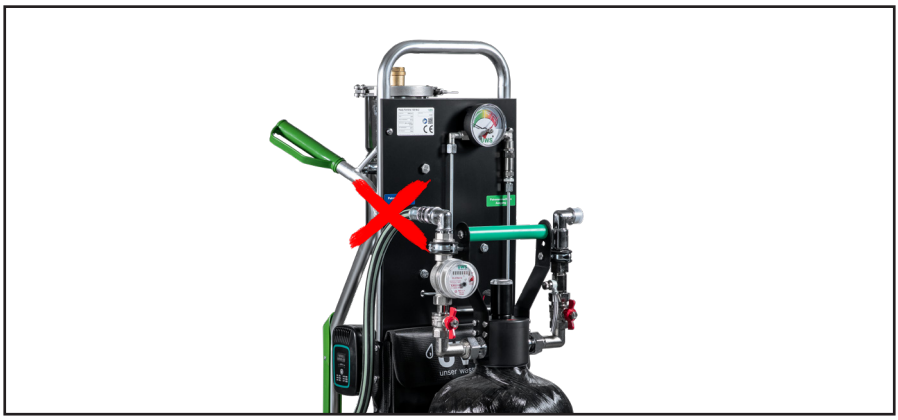
Pre-condition

- The device is prepared for operation as described in section "5.1 Preparing the device for operation" on page 25. Also observe the information in section "4 Transport, installation and commissioning" on page 23.

method

Fig. 5-6: Filling connection diagram

1 Open the quick-release fastener at the inlet of the treatment device and disconnect the connection hose to the filters from the treatment device.



2 Connect the inlet of the treatment device to the drinking water line using a suitable hose.
3 Connect the outlet of the conditioner to the heating or cooling system using a suitable hose.
4 Open the drinking water line.

NOTE

flow rate and temperature

The volume flow through the device is limited by the integrated flow limiter. You can fully open the drinking water pipe.

The drinking water must not exceed a temperature of 25°C.

▶ The heating or cooling system is filled with treated water.

5 Check the amount of water on the water meter and close the drinking water line when the desired amount of water is reached. Enter the amount of water in the system book.
6 Close all valves and disconnect hoses from the heating or cooling system.
7 Start up the heating or cooling system.
8 Measure the conductivity and pH of the water and apply enter the measured values in the system book.

5.2.3 Treatment and filtration

For combined treatment and filtration of the water in the heating or cooling system using the bypass method, proceed as follows:

Requirements

- The device is prepared for operation as described in section "5.1 Preparing the device for operation" on page 25. Also observe the information in section "4 Transport, installation and commissioning" on page 23.
- The magnetite separator has been checked and replaced if necessary (see section "6 Maintenance and servicing" on page 35).

Method

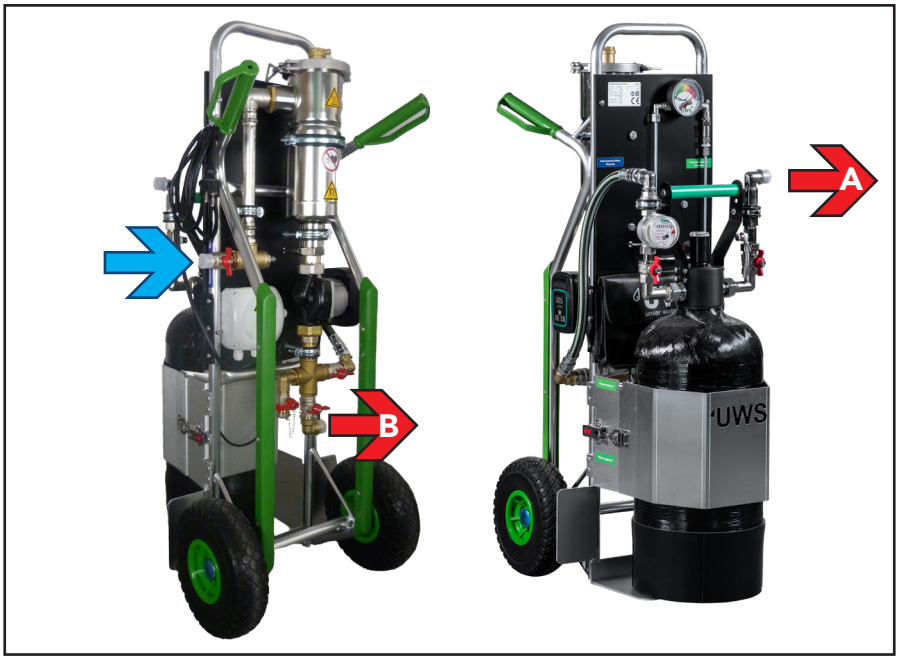


Fig. 5-7: Connection diagram for treatment and filtration

1 If the conditioner has been separated from the device, mount it as follows:
   - Place the processing device on the sack trolley.
   - Connect the hoses to the conditioner.
   - Close the quick-release reprocessor.
2 Connect the filtration/treatment inlet to a point in the return line of the heating or cooling system using a suitable hose.
3 Use a suitable hose to connect the treatment output to a point in the remote return of the heating or cooling system.
If there is no further return, a forward can also be used.
4 If the second output is connected, the filtration performance can be increased and the filtration speed can be influenced.
5 Make sure that the following valves are open:
   - Inlet and outlet valve on the magnetite separator (see section "9.3 MAGella twister" on page 50)
   - Shut-off valves on the treatment device (2 pieces)

6 Press the Circulation Pump Master Switch to turn on the circulating pump.

▶ The water in the heating or cooling system is treated and filtered using the bypass process.

NOTE

Controlled processing

For a controlled treatment, connect one hose at the inlet and two hoses at the outlet.

In this way, a system volume of approx. 1,200 l/h can be filtered. The processing speed can be influenced by regulating the second output. The system water is thus filtered several times.

5.3 Switch off the device in an emergency

To switch off the device in an emergency, proceed as follows:

1 Press the circulation pump main switch
or
Pull the mains plug out of the socket
▶ The device is switched off.

2 Eliminate all reasons that caused the device to turn off.

To switch the device back on after an emergency, proceed as described in sections "5.1 Preparing the device for operation" on page 25 and "5.2 Connecting and operating the device" on page 26.

5.4 Switch off the device and disconnect it from the heating or cooling system

To switch off the device after the filtration or treatment is complete and to disconnect it from the heating or cooling system, proceed as follows:

1 Press the circulation pump main switch to turn off the circulation pump.

2 Allow the device to cool down.

3 Close the fittings on the heating or cooling system, depressurize the device and disconnect the hoses of the device from the heating or cooling system.

4 Empty the residue from the hoses into a drain.

5 If you want to store the device or take it out of service, open the valve at the filtration outlet and drain the device.

6 Maintenance and servicing

In order to ensure trouble-free operation of the device, the device must be kept in a clean and functional condition. Furthermore, regular visual and functional checks must be carried out in order to be able to identify and rectify any damage at an early stage.

CAUTION

Risk of injury due to improperly performed maintenance work

The device may only be serviced by safety-trained specialists.

Carry out the following steps before any maintenance and servicing work:

- Turn off the device.
- Disconnect the device from the mains.
- Take appropriate measures to secure the device against being switched on again.
- Also observe the safety instructions in section "2 Safety instructions" on page 10.

6.1 Maintenance Schedule

The following table contains an overview of the maintenance work to be carried out regularly:

Interval	Aktivity	Jurisdiction
Daily before starting work or on a new construction site	Check the MAGella twister and change it depending on how dirty it is	operating personnel
	Check suction lance nozzles for damage and blockage and clean or replace if necessary	operating personnel
	Check flow restrictor for clogging	operating personnel

Interval	Aktivity	Jurisdiction
Monthly	Check hoses for leaks and damage and replace, if required	operating personnel
	Cleaning the pre-filter of the filter capacity indicator (see 6.2.3 on page 39)	operating personnel
Half-yearly	Check attachment and position of the device as well as welded and screwed connections	operating personnel
Yearly	Check warnings and markings on the device	operating personnel
	Check strainer gasket (right hand, outlet union nut) and replace if required	operating personnel

6.2 Maintenance work

6.2.1 Change mixed-bed resin

NOTE

Handling of mixed bed resin

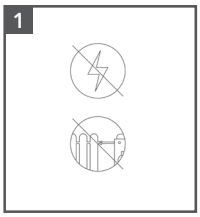
Observe the following points when handling the mixed-bed resin:

- Do not store the mixed-bed resin openly, otherwise it will lose capacity.
- Use the outer packaging of the refill pack to dispose of the replaced mixed-bed resin.
- Change the mixed-bed resin over a drain so that the water separated from the changed mixed-bed resin can drain away.
- Wear suitable personal protective equipment (goggles, gloves).

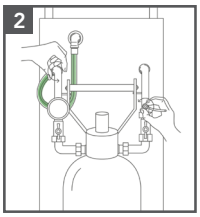
When the mixed-bed resin is used up, proceed as follows:

NOTE

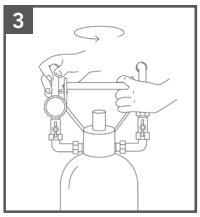
The resin change can be done anywhere. Thus, an immediate further filling is possible.



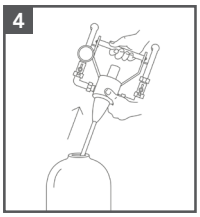
1.
Ensure that the device is switched off and disconnected from the mains and heating or cooling system.



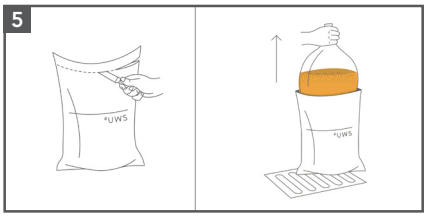
2.
Disconnect the hoses from the device and open all valves to drain the device.



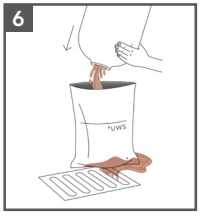
3.
Rotate the 3-way head counterclockwise on the handle to loosen the 3-way head.



4.
Use the suction lance to pull the 3-way head out of the composite container.

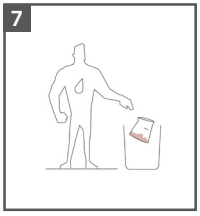


5.
Remove the mixed-bed resin refill pack from the outer packaging and place the outer packaging over a drain.



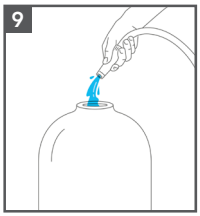
6.
Empty the exhausted mixed-bed resin from the composite container into the outer packaging:

►The spent mixed-bed resin is retained by the overwrap while the water flows down the drain.

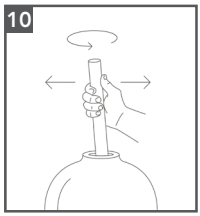


7.
Discard the mixed bed resin and empty the remaining water down a drain.

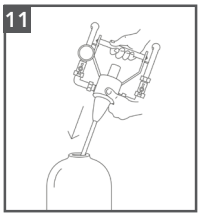
8.
Open the mixed-bed resin refill pack and pour it into the composite container using a funnel. If necessary, compact the mixed-bed resin by shaking or rotating the composite container.



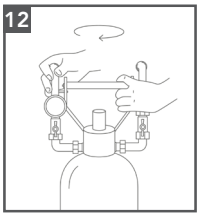
9.
Fill the composite reservoir with water to a level of approximately 2 cm below the threads.



10.
Stir the mixed bed resin with a tube or another suitable tool to lighten the 3-way head with suction lance to be able to introduce.



11.
Reinsert the 3-way head with suction lance into the composite container.



12.
Screw the 3-way head clockwise hand-tight.

Video instruction resin change

▶ The mixed-bed resin has been changed and the processing device is again working at full capacity.

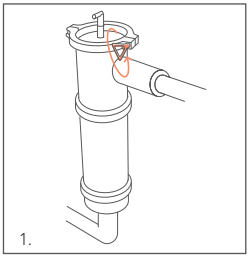
NOTE

Close the packaging

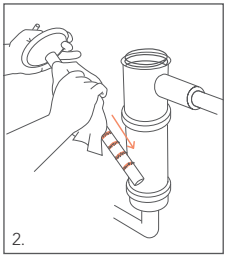
Storing the resin in the open will greatly reduce its capacity!

6.2.2 MAGella twister5 maintenance/cleaning

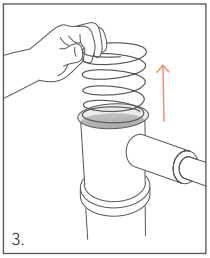
This section describes how to clean the built-in dual filter.



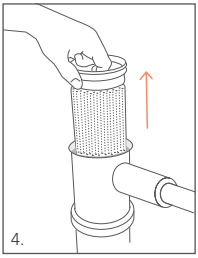
Close the inlet and outlet fittings. Open the KFE tap to release the pressure. Then open the bleed cock on top of the filter. Unscrew the wing nut and remove the cap.



Remove the magnetic rod and clean it with a cloth, for example.



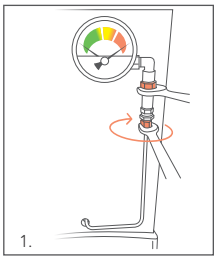
Then remove the pressure spring and clean it with water if necessary.



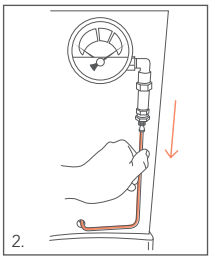
Now you can remove and replace the basket with the fine filter bag.
(spare part number 100454)

Assembly is carried out in reverse order.
The twister insert on the magnetic rod should be directed towards the input to achieve the highest capacity.

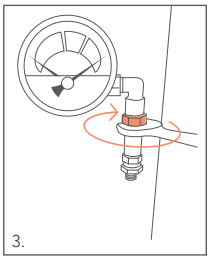
6.2.3 Cleaning the pre-filter of the filter capacity indicator



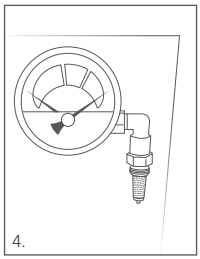
Loosen the lower screw connection. Secure the upper union nut with a spanner.



Remove the pipe by pulling gently.



Loosen the union nut on the O-ring and unscrew it.



Clean the 20 µm filter with compressed air. Blow out the union nut. You can also clean the protruding magnetic separator with a cloth.
Reassemble the pre-filter in reverse order.

6.3 Regular in-house inspection

Certain parts of the appliance are additionally checked and serviced at regular intervals:

- Circulation pump

The inspection dates must be coordinated by the operator

6.4 Spare parts and accessories

The following spare parts for the unit are available from the manufacturer:

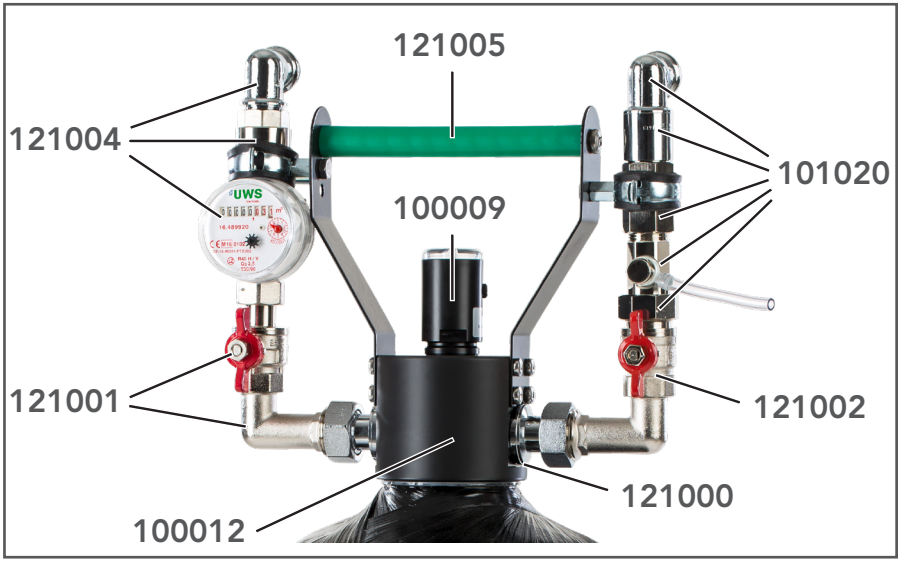


Fig. 6-8: Heaty Small 100 HW spare parts

Article no.	Designation	Article no.	Designation
100009	LED measuring cell	100012	3-way head for composite containers
100012-10	Gasket 3-way head	100013-10	Stand for composite containers
100013-12-100	Distributer pipe with nozzle 100er lance	100013-19	Hose set suitable for all UWS treatment devices, 6 m
101015	composite container Heaty 100 without 3-way head	101016	Composite container Heaty 100 HW without 3-way head
101020	Flow Restrictor Set 20 liters	120515	Sieve seal 1"
121000	Connection fitting 3-way head	121001	Input side conditioning device
121002	Output side processing device	121004	Water meter connection set WW
121005	Carry handle with attachment		

The following accessories are available for the device from the manufacturer:

Article no.	Designation	Article no.	Designation
100454	Replacement filter for fine filter	100055	Refill pack mixed bed resin (Vadion pH Control 23l)
100047	Measuring case "PROFI"	300900	UWS filling combination 1/2" incl. system separator
100041	funnel		

7 Dismantling and disposal

CAUTION

The device may only be dismantled by authorized and qualified personnel who are familiar with the hazards.

NOTE

Regulations and laws

Observe the local regulations and laws for the disposal of environmentally harmful substances.

- The device may only be dismantled by authorized specialist personnel.
- Observe the safety instructions in the operating instructions in section "2 Safety instructions" on page 10.
- Do not touch any live components.
- Wear appropriate personal protective equipment.
- Only use suitable and tested lifting gear.

Injuries can result from:

- Voltage-bearing components
- Heavy components that fall down after loosening
- Sharp edges

7.1 Professional staff

The qualified personnel must take the following points into account:

- Observe the safety instructions in these operating instructions.
- Wear appropriate personal protective equipment.
- Only use suitable and tested lifting gear.
- Use suitable means of transport and keep the transport routes clear.
- Before starting work, switch off the device and disconnect it from the power supply.

7.2 Disassembly

To dismantle the device, proceed as follows:

1. Switch off the device and disconnect the power supply from the mains.
2. Discharge energy stores such as springs or capacitors, if present.
3. Make sure that any residual pressure has been relieved.
4. Dismantle the device into its component groups using suitable tools.

7.3 Disposal

Dispose of assemblies and operating materials professionally and in an environmentally friendly manner.

Observe the legal and company regulations.

8 Technical data

In this section you will find technical data on the device in general, as well as on the applications and components used.

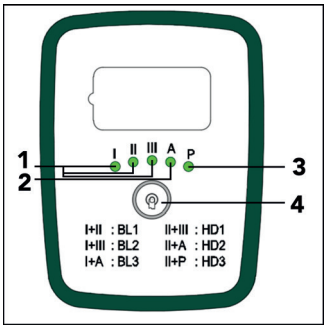
8.1 General data

	Heaty Ferriline № 2	Heaty Ferriline № 2 Upgrade
item number	100413-FL	100413-UP-FL
Max. filling capacity*	1,200 l/h	1,200 l/h
Max working pressure	6 bar	6 bar
Ø Circulation capacity in the bypass process	approx. 700 l/h	approx. 700 l/h
Ø Treatment performance with filtration in the bypass process	approx. 1,200 l/h	approx. 1,200 l/h
Capacitance at 420 µS/cm to < 100 µS/cm**	3,420 l	3,420 l
power supply	230 V / 50/60 Hz	230 V / 50/60 Hz
Weight	approx. 57 kg (incl. mixed-bed resin filling)	approx. 29 kg
Content mixed bed	23 l	–
Suitable for hot water up to 80 °C	✓	–
bypassable	✓	–
Free on-site instruction	✓	
connectable device	–	Heaty 100 Small HW

8.2 Components

8.2.1 Circulation pump

Maximum operating pressure	8 bar
ambient temperature	–20 °C to 40 °C
Maximum media temperature	95 °C
Maximum relative humidity	95 %
Maximum throughput	4.8 m³/h



Circulation pump control panel

1 Electric pump stage indicator
2 Stage with automatic volume control
3 PWM signal control function (is not used)
4 Electric pump switch button

9 Applicable Documents

These operating instructions apply together with the following documents:

- Safety Data Sheet Vadion pH Control
- Capacity calculator for processing devices, see the manufacturer's website: http://uws-technologie.de/services/rechnertool/
- Measured values and conversion tables, see "9.1 Measured values and conversion tables" on page 45
- Determining the capacity, see "9.2 Determining the capacity" on page 48
- Information on the MAGella twister**5**, see "9.3 MAGella twister**5**" on page 50

9.1 Measured values and conversion tables

9.1.1 Corrosion rate

Oxygen, acids and dissolved salts cause corrosion in the heating or cooling system. The rate of corrosion depends on the amount of substances dissolved in the water, which can be assessed by measuring the conductivity.

The following guideline values apply when estimating the rate of corrosion using conductivity:

Conductivity [µS/cm]	Corrosion rate
0–100	braked
100–350	very slowly
350–500	slow
500–1,000	accelerated
1.000–2,000	greatly accelerated
>2,000	very much accelerated

9.1.2 Lime content and water hardness

By measuring the conductivity, the lime content and water hardness can be roughly estimated. The following table clarifies the relationships:

Conductivity [µS/cm]	Lime content [g/1,000 l]	Classification of water hardness
<100	<35	desalted
100	50	very soft
200–300	100-150	soft
400–500	200-250	medium hard
600–800	300-400	hard
900–1,000	450-500	very hard

The following table is used to determine the exact water hardness:

NOTE

This conversion is only applicable if the water is not softened and does not contain any chemical additives.

In the case of softened water, measurement using the hardness drop method is necessary. Hand-held measuring devices do not provide any meaningful values for softened water.

Conductivity [µS/cm]	Hardness [°dH]	Hardness [°fH]	Lime content [g/1,000 l]	Conductivity [µS/cm]	Hardness [°dH]	Hardness [°fH]	Lime content [g/1,000 l]
<100	<1	<2	<35	1,120	32	57	560
105	2	5	53	1,155	33	59	578
140	4	7	70	1,190	34	61	595
175	5	9	88	1,225	35	62	613
210	6	11	105	1,260	36	64	630
245	7	12	123	1,295	37	66	648
280	8	14	140	1,330	38	68	665
315	9	16	158	1,365	39	69	683
350	10	18	175	1,400	40	71	700
385	11	20	193	1,435	41	73	718
420	12	21	210	1,470	42	75	735
455	13	23	228	1,505	43	77	753
490	14	25	245	1,540	44	78	770
525	15	27	263	1,575	45	80	788
560	16	28	280	1,610	46	82	805
595	17	30	298	1,645	47	84	823
630	18	32	315	1,680	48	85	840
665	19	34	333	1,715	49	87	858
700	20	36	350	1,750	50	89	875
735	21	37	368	1,785	51	91	893
770	22	39	385	1,820	52	93	910
805	23	41	403	1,855	53	94	928
840	24	43	420	1,890	54	96	945
875	25	45	438	1,925	55	98	963
910	26	46	455	1,960	56	100	980
945	27	48	473	1,995	57	101	998
980	28	50	490	2,030	58	103	1,015
1,015	29	52	508	2,065	59	105	1,033
1,050	30	53	525	2,100	60	107	1,050
1,085	31	55	543	2,100	60	107	1,050

9.2 Determination of capacity

The capacity of the device indicates the amount of water with a specific conductivity that can be treated with a 23-liter mixed-bed resin filling. The capacity depends on various factors such as the water temperature, the chemical composition or the flow pressure.

You can use the following diagrams to estimate the approximate capacity of the device:

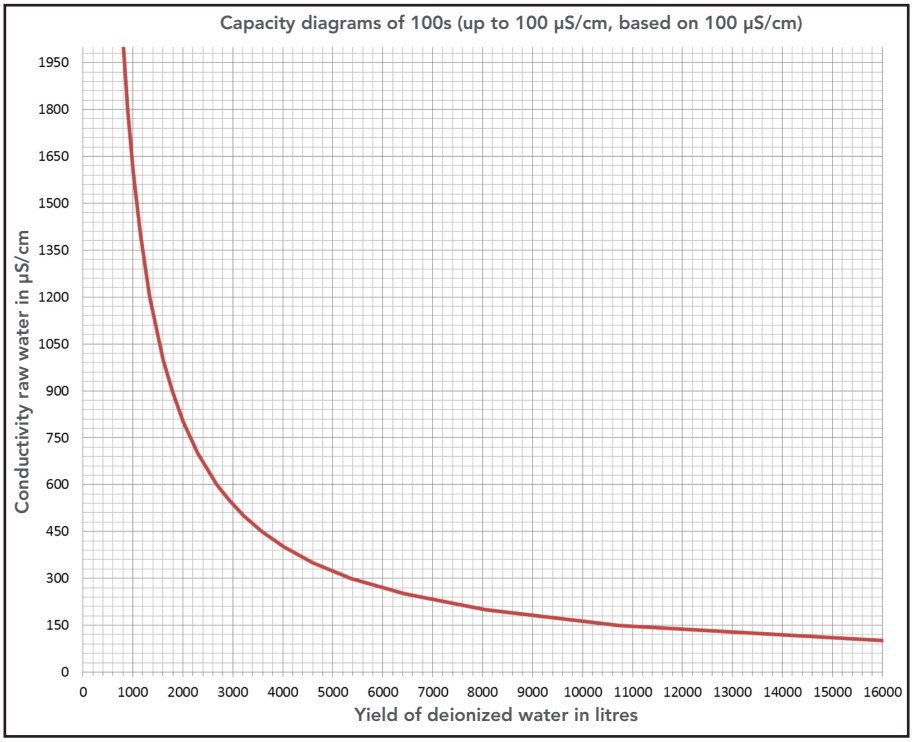


Bild 9-9: Diagram for determining the capacitance from the conductivity

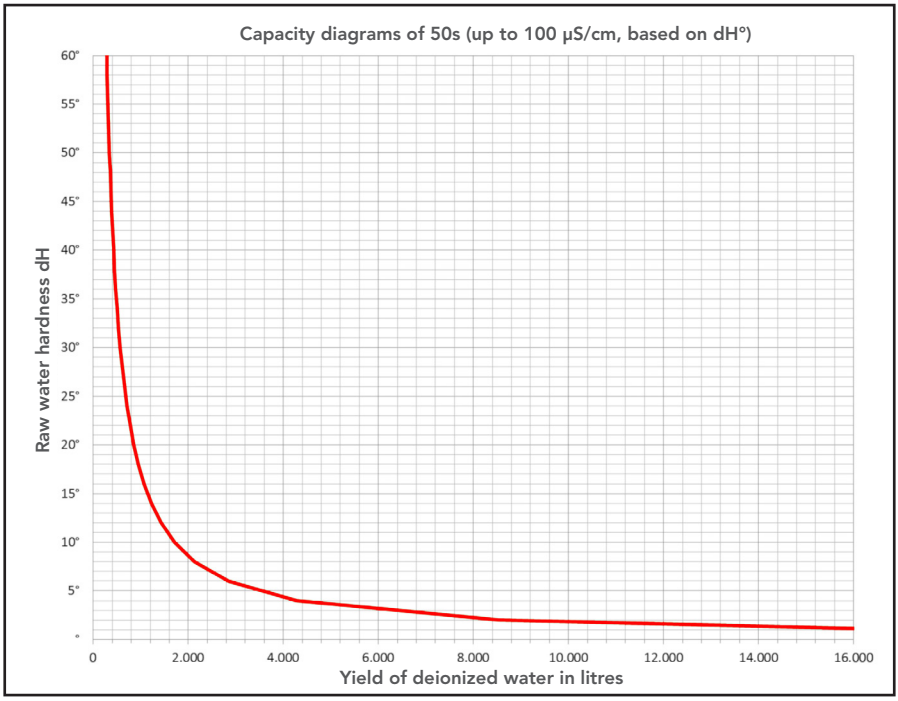


Bild 9-10: Diagram for determining the capacity from the raw water hardness

Example:

With a hardness of the raw water of 10 °dH, the capacity is 4,100 l.

If you have the full 23 liters of mixed-bed resin at your disposal, you can treat around 4,100 liters of water.

NOTE

Online Capacity Calculator

As an alternative to the diagrams provided, you can use the capacity calculator for treatment devices on the manufacturer's website: http://uws-technologie.de/services/berechnungstool/

10 List of Figures

EG-Konformitätserklärung

CE

EG-Konformitätserklärung

gemäß der EG-Maschinen-Richtlinie 2006/42/EG vom 17. Mai 2006, Anhang II A
Hiermit erklären wir, dass die nachstehend bezeichnete Maschine in ihrer Konzeption und Bauart sowie in der von uns in Verkehr gebrachten Ausführung den grundlegenden Sicherheits- und Gesundheitsanforderungen der EG-Richtlinie 2006/42/EG entspricht. Bei einer mit uns nicht abgestimmten Änderung der Maschine verliert diese Erklärung ihre Gültigkeit.

Hersteller:
UWS Technologie GmbH
Sudetenstraße 6
91610 Insingen
Telefon: 09869 919100
E-Mail: info@uws-technologie.de

Beschreibung der Maschine:

• Funktion:	Heizwasserfüllgerät
• Typ:	Heaty Ferriline 100 № 2
• Artikel Nr.:	100413
• Masse:	ca. 55 kg
• Baujahr:	2022
• Elektroanschluss:	230V - 50/60 Hz

Es wird die Übereinstimmung mit weiteren, ebenfalls für das Produkt geltenden Richtlinien/Bestimmungen erklärt:
- EMV-Richtlinie (2014/30/EU) vom 26. Februar 2014
- RoHS-Richtlinie (2011/65EU) vom 08. Juni 2011
- Niederspannungs-Richtlinie (2014/35/EU) vom 26. Februar 2014

Angewandte harmonisierte Normen insbesondere:

• DIN EN ISO 12100	Sicherheit von Maschinen – Grundbegriffe, allgemein Gestaltungsleitsätze, Risikobeurteilung und Risikominderung
• DIN EN ISO 13854	Sicherheit von Maschinen; Mindestabstände zur Vermeidung des Quetschens von Körperteilen
• DIN EN 809	Pumpen und Pumpenaggregate für Flüssigkeiten — Allgemeine sicherheitstechnische Anforderungen
• DIN EN ISO 14118	Sicherheit von Maschinen – Vermeidung von unerwartetem Anlauf
• DIN EN ISO 13849-1	Sicherheit von Maschinen – Sicherheitsbezogene Teile von Steuerungen- Teil 1: Allgemeine Gestaltungsleitsätze
• DIN EN ISO 13857	Sicherheit von Maschinen – Sicherheitsabstände gegen das Erreichen von Gefährdungsbereichen mit den oberen und unteren Gliedmaßen
• DIN EN ISO 14120	Sicherheit von Maschinen – Trennende Schutzeinrichtungen – Allgemeine Anforderungen an Gestaltung, Bau und Auswahl von feststehenden und beweglichen trennenden Schutzeinrichtungen
• DIN EN 60335-1	Sicherheit elektrischer Geräte für den Hausgebrauch und ähnliche Zwecke — Teil 1: Allgemeine Anforderungen

Bevollmächtigter für die Zusammenstellung der Technischen Dokumentation:
Steffen Breitmoser, siehe Herstelleradresse

Ort/Datum: Insingen 25.11.2021

Angabe zur Person des Unterzeichners:
Hans-Georg Breitmoser, Geschäftsführer

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OUR WATER. SAFE.

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