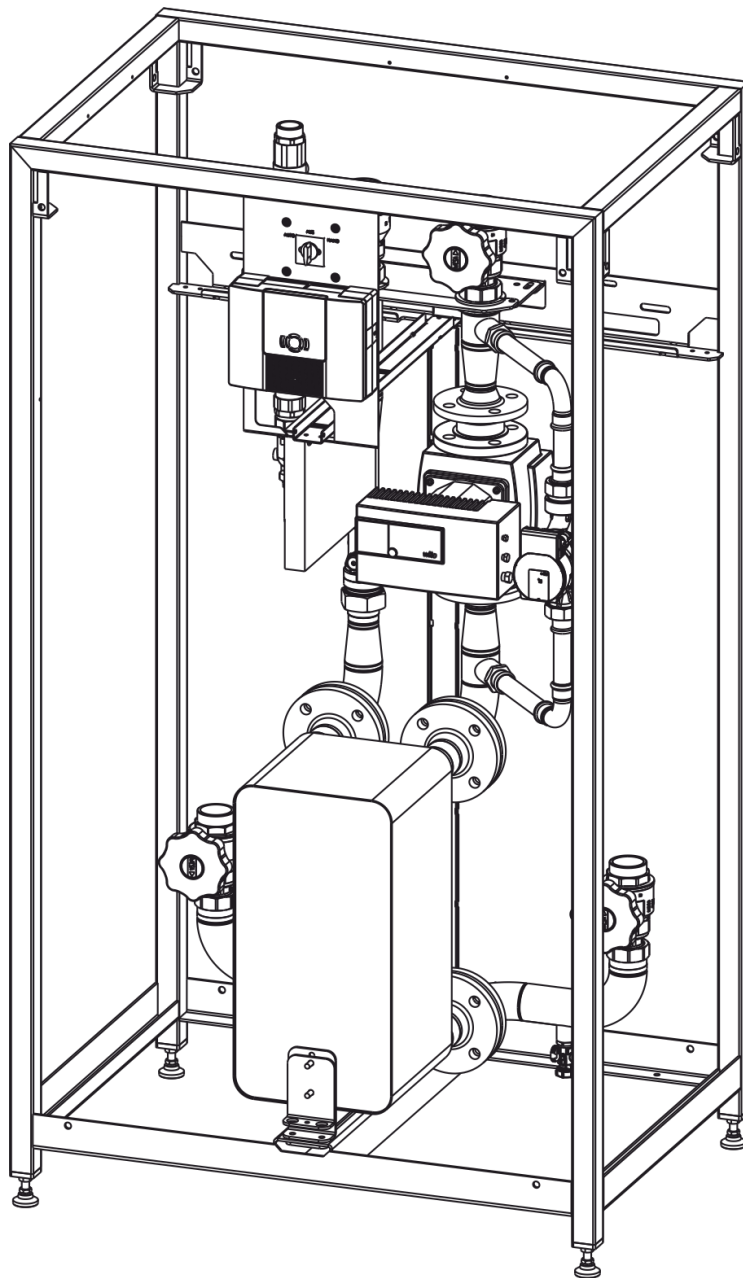


# Installation and Maintenance Instructions



## FRIWASTA-PLUS 120-400 I/min

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# 1 Using these instructions

## 1.1 The function of these instructions

These instructions provide information on the product FRIWASTA-PLUS 120-400 l/min.

They include, among other items, the following information:

- Safety
- Functionality
- Operation
- Technical data

## 1.2 The target group for these instructions

These instructions are intended for the operator and installer of the system.

## 1.3 The validity of these instructions

These instructions are valid for the following items:

Description	Item number
FRIWASTA-PLUS 120	110.0120.10 and 110.0120.10-E
FRIWASTA-PLUS 150	110.0150.10 and 110.0150.10-E
FRIWASTA-PLUS 175	110.0175.10 and 110.0175.10-E
FRIWASTA-PLUS 200	110.0200.01 and 110.0200.01-E
FRIWASTA-PLUS 225	110.0225.01 and 110.0225.01-E
FRIWASTA-PLUS 250	110.0250.10 and 110.0250.10-E
FRIWASTA-PLUS 300	110.0300.10 and 110.0300.10-E
FRIWASTA-PLUS 350	110.0350.10 and 110.0350.10-E
FRIWASTA-PLUS 400	110.0400.10 and 110.0400.10-E

## 1.4 Storing the documents






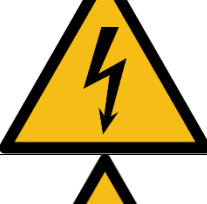


This document is part of the product.

Important: Before installation, read through and observe the information in the installation instructions! This document must be hung in a visible place on the system, or included in the system documentation and handed to the new operator if the system is handed over.

## 1.5 Symbols used

The following symbols are used within this document.

Please observe the mandatory action and warning signs.

	<b>General mandatory action sign</b>
	<b>Follow operating instructions</b>
	<b>Wear protective gloves</b>
	<b>Wear eye protection</b>
	<b>General warning sign</b>
	<b>Electricity</b>
	<b>Hot surface</b>
	<b>Corrosive substance</b>

## 2 For your safety

### 2.1 Hazards and safety measures

The product must only be assembled, installed, serviced and maintained by a specialist business.



#### **Electric shock**

Work on the electrical installation must only be performed by a qualified specialised business.



#### **Damage to the product and resulting hazards**

Do NOT under any circumstances make any modifications to system parts or devices if such modifications could impair operational safety.

#### **Safe operation of the product**

Only use the product in a technically fault-free condition, according to its intended use, in a safe, hazard-free manner in accordance with the installation and operating instructions. Look out for any visible damage and inform the specialist business or manufacturer if necessary.



- Never remove or cover the safety instructions stickers on the product.
- The stickers must remain legible throughout the entire service life of the product.
- Replace the safety instructions stickers immediately if they become damaged or illegible.
- The device must not be used or maintained by children or by individuals with limited physical, sensory or mental capabilities, or a lack of experience and knowledge.

## 2.2 Warning notices

The warning notices in this document are highlighted by the use of pictograms and signal words.

The pictogram and signal word provide information on the type, source and consequences of a specific action.

The necessary measures or need for action are stated.

These warning notices refer to the types of misuse of the system which experience has proven may occur.

There will also be residual risks. These residual risks remain:

- despite measures to integrate safety within the design,
- despite the safety precautions,
- despite the supplementary protective measures.

Recommendations and instructions for the use of safety measures, including personal protective equipment (PPE), are also included for certain points.

## 2.3 Regulations

### Standards and guidelines

Compliance with these regulations is a prerequisite for protecting the warranty.

The following regulations, rules and guidelines must be observed for the installation:

- DVGW Worksheet:
  - DVGW W 551: Technical measures for reducing the growth of Legionella
  - DVGW W 553: Dimensioning of circulation-systems in central drinking water heating systems
  - VDI/DVGW 6023: Hygiene in drinking-water installations
- DIN standards:
  - DIN 1988: Codes of practice for drinking water installations
  - EN 12828: Heating systems in buildings - Design for water-based heating systems
  - DIN EN 1717: Protection against pollution of potable water installations and general requirements of devices to prevent pollution by backflow
  - VDI 2035: Prevention of damage in water heating installations
  - DIN 4708: Central heat-water-installations
  - DIN 4753: Water heaters, water heating installations and storage water heaters for drinking water
  - DIN 18380: German construction contract procedures (VOB) - Part C: General technical specifications in construction contracts



(ATV) - Installation of central heating systems and hot water supply systems

- DIN EN 12977: Thermal solar heating systems and components
- VDI 2050: Requirements for technical equipment rooms
- DIN VDE 0100: Erection of low voltage installations
- VDE 0105: Calibration of measuring equipment for electrical quantities

**For installation in Austria, the following also apply:**

- ÖVE regulations
- The provisions of the ÖVGW and the relevant Ö-Normen (Austrian Standards)
- Provisions and regulations of the local energy supply companies
- Provisions of the regional building regulations
- The minimum requirements for heating water in accordance with ÖNORM H 5195-1 must be complied with.

**For installation in Switzerland, the following also apply:**

- SVGW regulations
- SIA 385/1 & 385/2: Systems for domestic hot water in buildings
- VKF regulations
- Please observe the BAFU (Swiss Environment Office) and local regulations.

## **2.4 Product modifications**

In order to ensure continued safe use, no modifications or other changes to the product are permitted.

### **3 Disclaimer**

Neither compliance with these instructions nor the conditions and methods used during the installation, operation, use and maintenance of the station can be monitored by the manufacturer. Improper installation can result in material damage and subsequently jeopardise the safety of individuals. For this reason the manufacturer does not accept any responsibility or liability for losses, damage or costs that result from or are associated in any way with incorrect installation, performance of the installation work, improper operation or incorrect use or maintenance. The manufacturer reserves the right to make changes without prior notification to the product, the technical data or the installation and operating instructions.

## **4 Product description**

### **4.1 Intended use**

The FRIWASTA-PLUS 120-400 l/min is manufactured according to the state of the art and the recognised safety rules and regulations. However, its improper or unintended use could lead to dangers to life and limb of the operator or third parties, or impairment of the device and other material assets. The intended use stipulates a fixed installation in combination with system-specific and authorised components.

Any other use of the device over and above this is prohibited and regarded as unintended. Any claims made against the manufacturer and/or the manufacturer's representative for loss or damage caused by the unintended use of the device are excluded. The operator and/or owner alone are liable for all loss or damage incurred due to unintended use.

### **4.2 Functional description**

The FRIWASTA-PLUS 120-400 l/min is used for the hygienic treatment of domestic water. Using a plate heat exchanger, heat is transferred from the primary circuit (heating/buffer water) to the secondary circuit (drinking water). The pump is in the primary return. Media to be used are heating water (VDI 2035) and drinking water – in the event of extremely hard water  $\geq 15^{\circ}\text{dH}$ , upstream water softening treatment is recommended.

### 4.3 Type plate

The type plate for the Sailer Friwasta-P250 contains the following information:

- 1** Type designation: **FRIWASTA-P250**
- 2** Tap capacity: **250** l/min
- 3** Design temperature - primary: **60/25** °C
- 4** Design temperature - secondary: **10/45** °C
- 5** Serial number: **21.KM.1225.XXXX.XXX**
- 6** Maximum permissible operating pressure: **10** bar
- 7** Maximum permissible operating temperature: **5 - 95** °C

Additional information on the plate includes: Spannungsversorgung 230 V, 50Hz (+/-10%), Sailer GmbH, Zementwerkstraße 17, 89584 Ehingen, Tel.: 07391 / 5002-0, Fax: 07391 / 5002-29, www.sailermbh.de, and the CE mark.

Fig. 1 Type plate

#### Serial number key

**21** = Year of construction

**K** = Copper-soldered heat exchanger (E= stainless steel welded heat exchanger)

**M** = FRIWASTA Manager controller (R= FRIWASTA Master controller)

**1225** = FRIWASTA-PLUS 120-250 l/min series (3040= 300-400 l/min)

## 5 Installation and application



### Hazards with installation/commissioning!

- Installation must only be performed by specialist personnel and in accordance with the applicable legislation
- Accident prevention legislation must be observed!

### 5.1 Assembly

#### 1. Removal of the doors (optional)

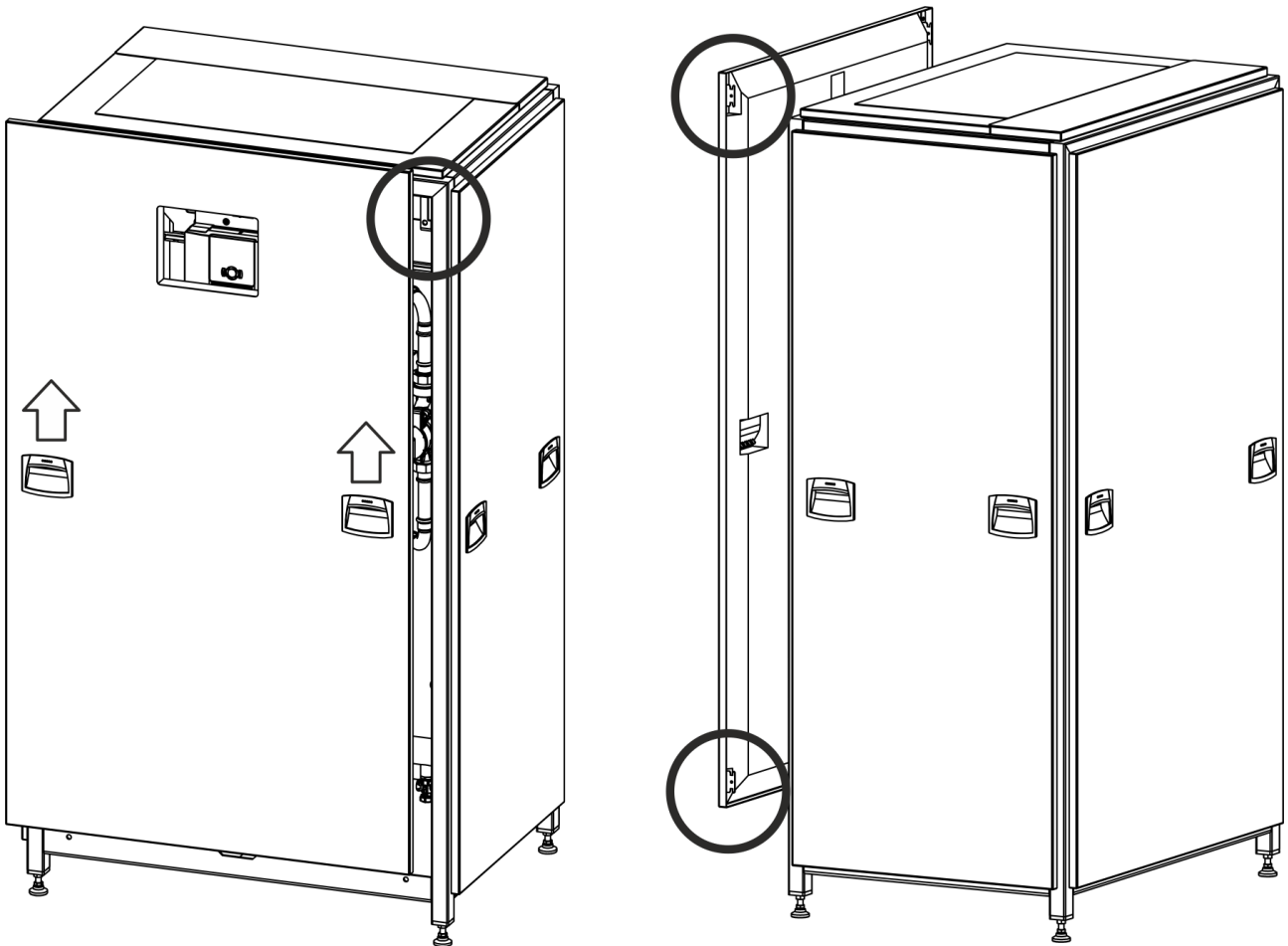


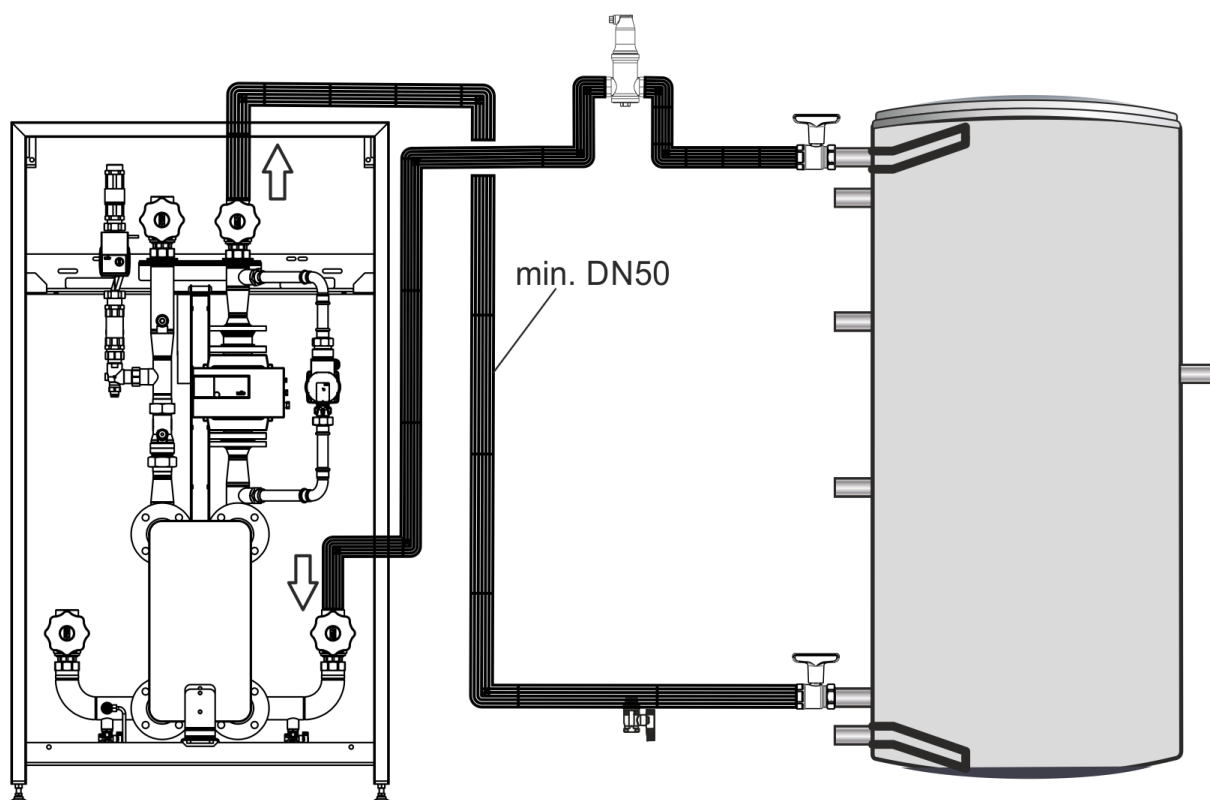
Fig. 2 Removing the doors

## 2. Installing the station



The station must be positioned immediately next to a buffer tank, i.e. the flow should be as short as possible (low inertia after longer dispensing break). Use the screw-in feet to compensate for any unevenness of the substrate.

### 3. Hydraulic connection – heating side



*Fig. 3 Ventilation and drainage*

A vent valve must be provided at the highest point of the heating flow for ventilation.



It must be possible to drain the heating return line at the lowest point.

Shut-off devices on the buffer tank simplify maintenance and repair work.

#### 4. Hydraulic connection – sanitation side

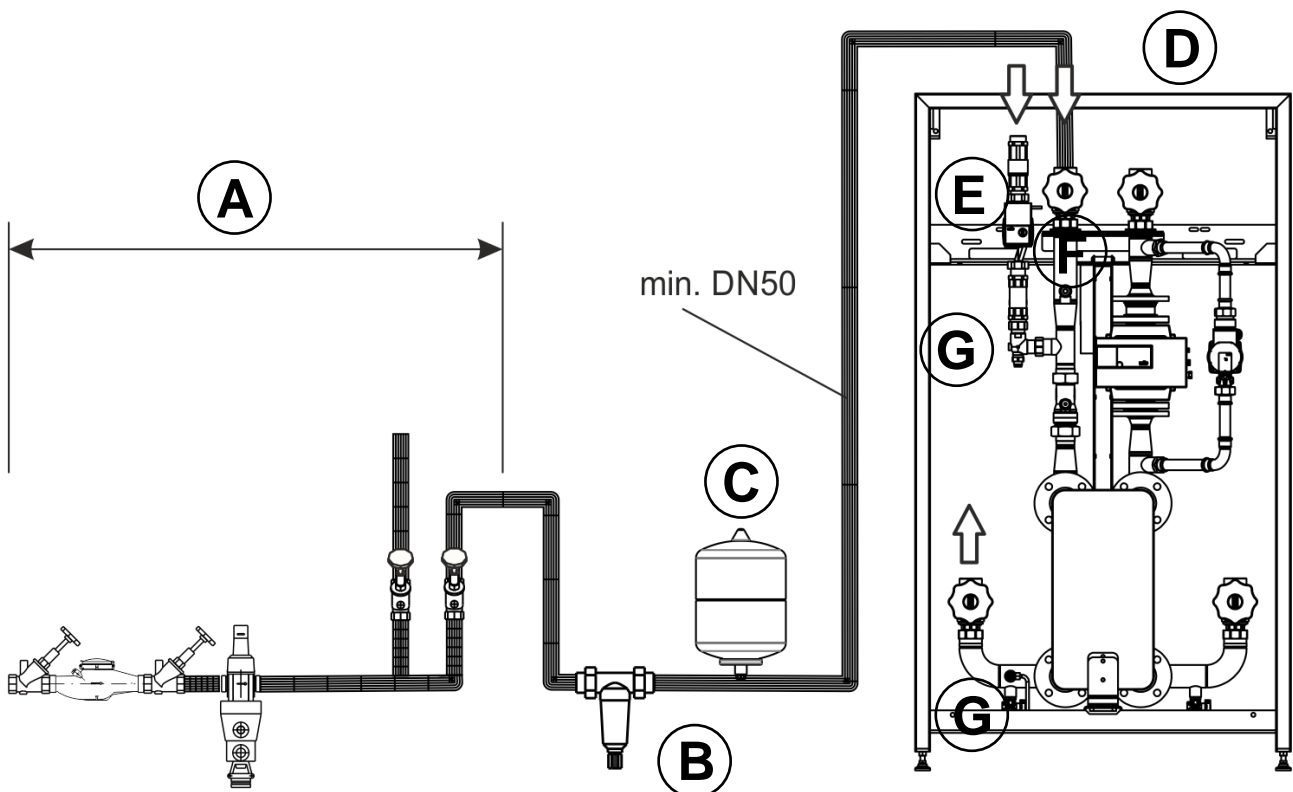


Fig. 4 Domestic water connection according to DIN 1988

- (A)** Domestic water connection according to DIN 1988
- (B)** Fine filter FF 100-150 l/min Item no. 110.9970.00  
 Fine filter FF 175-300 l/min Item no. 110.9980.00  
 Fine filter FF 350-800 l/min Item no. 110.9990.00
- (C)** Membrane pressure expansion tank through which drinking water flows
- (D)** FRIWASTA-PLUS 120-400 l/min
- (E)** circulation unit Z-60 120-400 Item no. 110.9110.02  
 circulation unit Z-120 120-400 Item no. 110.9110.03
- (F)** Drinking water safety valve 8 bar already included
- (G)** Sampling valve set 120-400 Item no. 110.9003.64



**(B), (E), (G)** Optional accessories



## 5. Electrical connection



Only supply electrical power to the system if it is ensured that the system is entirely filled with water and the pump is washed out.



### **WARNING!**

**The device must only be connected by a qualified electrician!**

For the electrical connection, an earthed socket (230 V/50 Hz) with a 16 A fuse must be provided in the immediate vicinity (max. 1 m).



### **DANGER!**

In the event of an electrical fault, the lack of equipotential bonding can lead to serious injuries. The device must be connected to the building's equipotential bonding system.

An appropriate connection point is available on the device.

- The connection must be performed in accordance with the local regulations.
- The mains plug must remain freely accessible after installation.
- If the power supply is not fitted with a 16 A fuse, have a qualified electrician install a 16 A fuse.
- Damaged power cables must be replaced by a qualified electrician.
- Ensure that no splash water can reach the control device and there is no likelihood of damage by flying foreign objects.
- **CAUTION: Only connect the mains plug to the power supply once the points listed above have been met.**

## 5.2 Commissioning

Before filling the system, the pipelines must be thoroughly flushed through according to DIN 1988-200. The filter upstream of the FRIWASTA-PLUS should be checked for contamination and cleaned. Slowly fill the system with water and carefully vent.

**Leak inspection: The pipe screw connections of the FRIWASTA-PLUS 120-400 l/min may loosen during transport. In the event of leaks, the screw connections must be carefully retightened.**

Only supply electrical power to the pump when it is ensured that the system is completely filled with water and the pump is flooded.

### **Please note:**



- In the case of extremely hard water, upstream water softening treatment is recommended.
- The limit values for water constituents given in the Appendix must be taken into account based on the corrosion resistance.
- Install upstream shock absorbers as necessary against shocks.
- In order to prevent corrosion damage resulting from old pipeline distribution networks, we recommend using a filter (0.08...0.8 mm mesh size).



Exceeding the permitted operating pressure can result in leaks and destruction. Max. 10 bar operating pressure!  
(Safety valve 8 bar.)

All pipe screw connections in the FRIWASTA-PLUS must be checked and retightened. Screw connections may have become loose as a result of transport vibrations.

### 5.3 Operation

	<p>To operate and adjust the controller, please observe the separate operating instructions for the controller</p>
	<p>Ensure scald protection is in place while the system is in operation.</p>

#### 5.3.1 Main switch

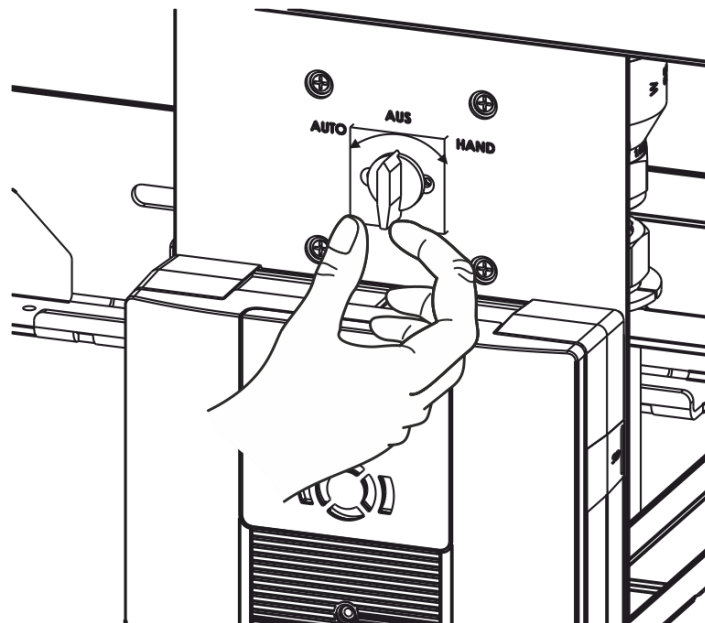





Fig. 5 Main switch, FRIWASTA-PLUS 120-400 l/min

The FRIWASTA-PLUS 120-400 l/min has a main switch with the following functions:

- **AUTO:** System is in controlled operation
- **OFF:** System is deactivated; no hot water operation.
- **HAND:** The system is in manual mode. The primary pump runs in constant partial operation; the circulation pump runs permanently. In the event of a fault (e.g. the flow sensor is faulty), the HAND setting ensures that the system can be operated in an emergency.  
CAUTION: Protection against scalding not guaranteed!

## 5.4 Maintenance

### 5.4.1 Cleaning the product

	<b>Wear protective gloves</b>
	<b>Wear eye protection</b>
	<b>Corrosive substance</b>

#### General recommendations:

- Service the fresh water station at least once a year.
- Before starting, disconnect the power to the fresh water station.
- Check the fresh water station for leaks.
- Check the fresh water station for calcification.

If you need spare parts for individual components, you can find a detailed list of these in the Appendix.

### 5.4.2 Cleaning the flow sensor

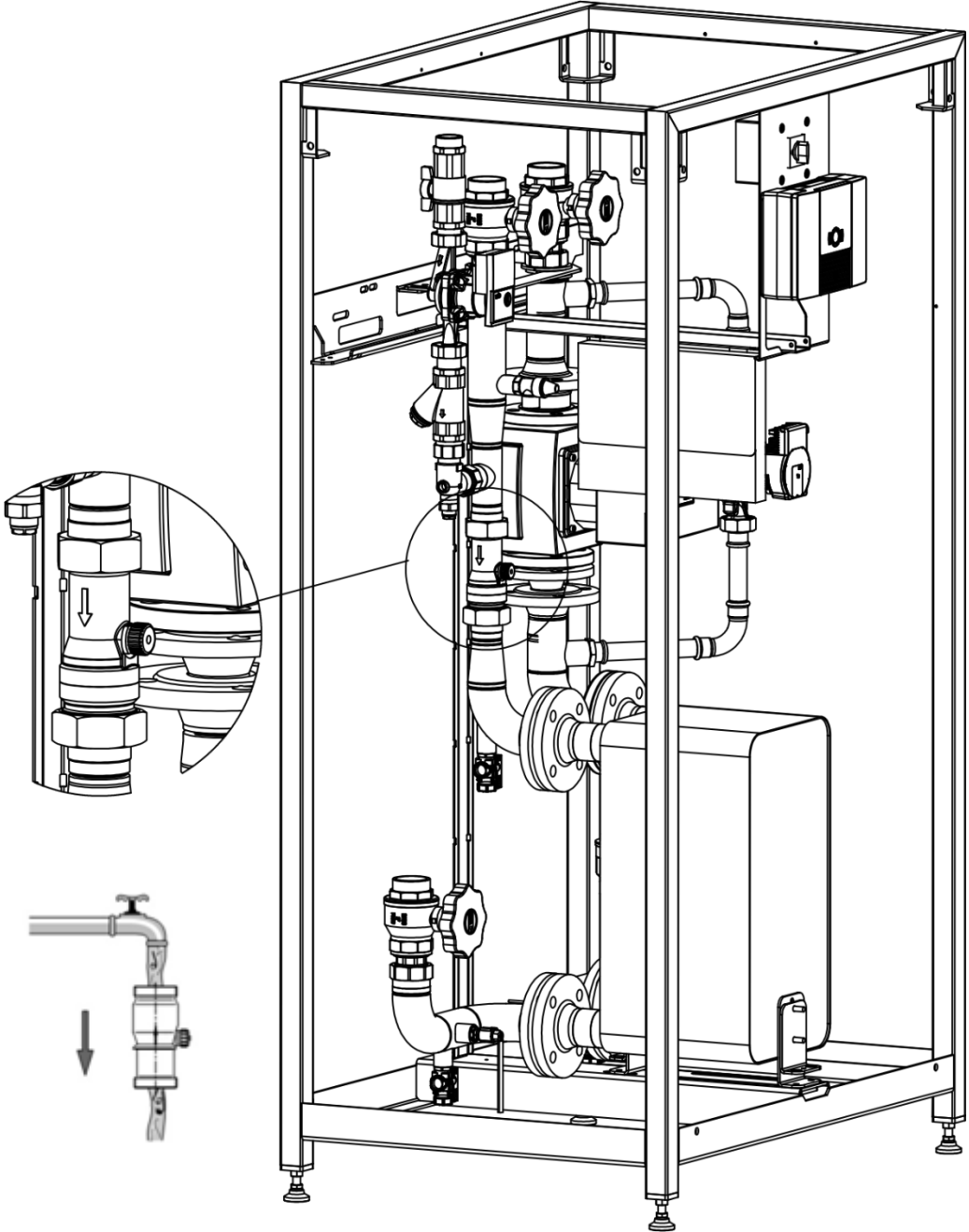


Fig. 6 Flow sensor



To get rid of contamination from the flow sensor, this should be flushed with water against the flow direction. In addition, the flow sensor must **not** be blown out using compressed air or a high-pressure cleaner (water).

### 5.4.3 Cleaning the heat exchanger

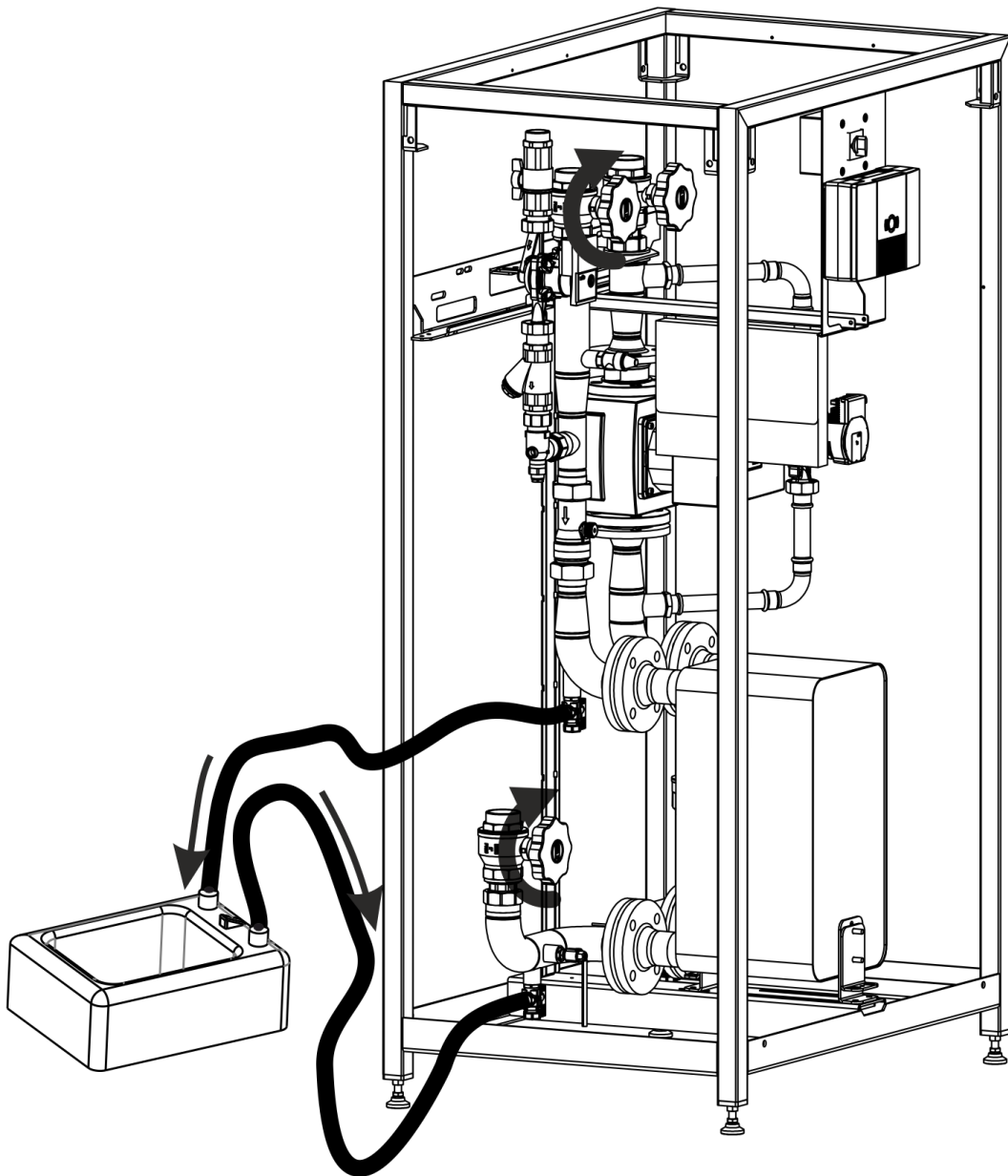


Fig. 7 Removing limescale from the heat exchanger



1. Disconnect the power to the fresh water station
2. Close all isolation valves in the drinking water section of the fresh water station
3. Flush the heat exchanger against the flow direction
4. Always flush the cleaned heat exchanger with lots of clear water before recommissioning

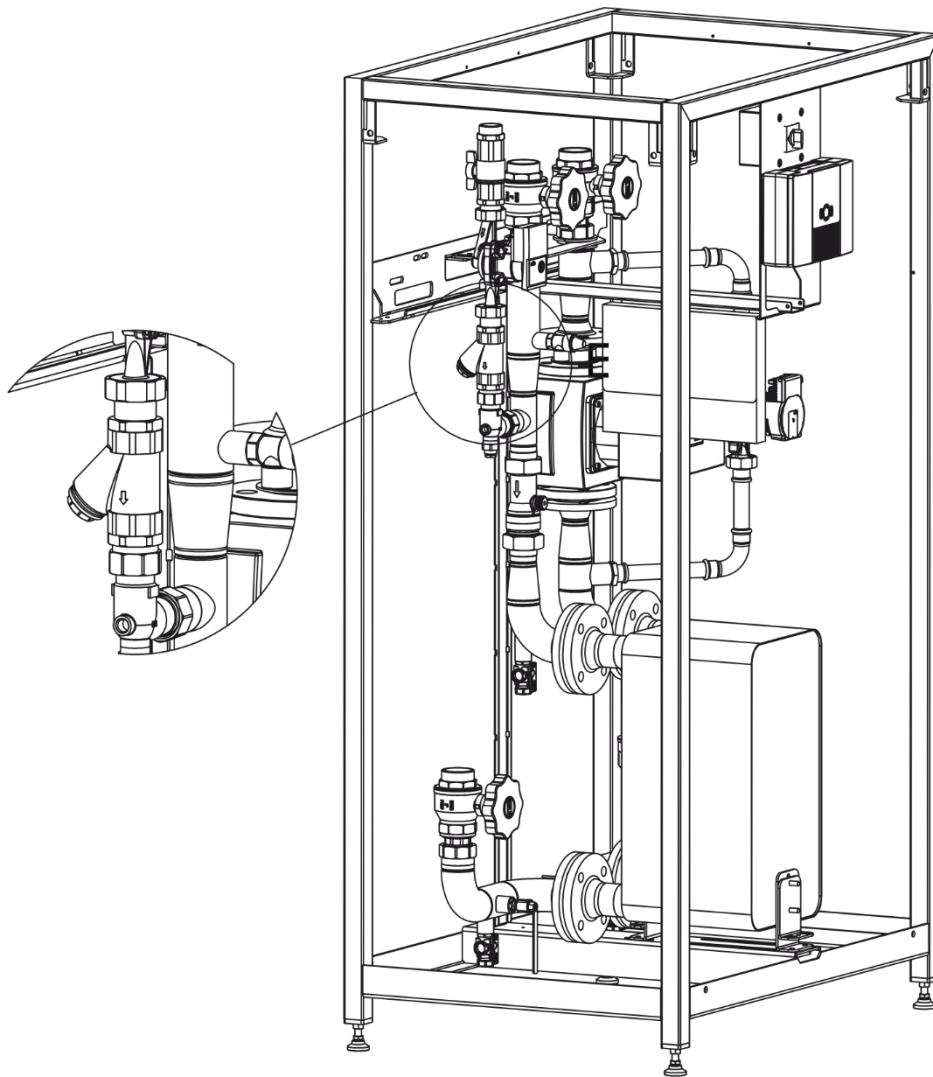
If, based on the water quality (e.g. high level of hardness or heavy contamination), a film is expected to form, cleaning must be performed at regular intervals. It is possible to clean by flushing. Flush the heat exchanger against the normal flow direction with a suitable cleaning solution. If chemicals are used for cleaning, ensure that these are compatible with stainless steel, copper and nickel. Non-compliance can destroy the heat exchanger! The safety instructions and recommendations of the cleaning agent manufacturer **MUST** be observed. Select the cleaning agent according to the type of contamination to be removed and according to the resistance of the heat exchanger plates. You must have confirmation from the cleaning agent manufacturer that the cleaning agent does not attack the plate heat exchanger being cleaned. Clean the heat exchanger in accordance with the work instructions of the cleaning agent manufacturer. Always flush the cleaned heat exchanger with lots of clear water before recommissioning.

After commissioning, check that there are no pressure pulsations acting on the fresh water station. In general, ensure that the heat exchanger cannot be operated in any way that contravenes the installation, operation and maintenance instructions.

### **Contamination/fouling of the heat exchanger:**

Compliance with the DIN guidelines for drinking and heating water, Vd-TÜV guidelines, guidelines of the AGFW and the Sailer GmbH guidelines for water constituents must be complied with (see Appendix). Many different factors can influence fouling and contamination. These include: temperature, flow speed, turbulence, distribution and water quality. The media must be operated at the greatest possible mass flows. At mass flows that are too low (part load), the turbulence in the heat exchanger can decline and the tendency for contamination increase. Limescale deposits in the heat exchanger can occur at temperatures greater than 50°C, depending on the water quality. Turbulent flow and low temperatures reduce the risk of calcification.

### 5.4.4 Cleaning the circulation unit dirt trap (optional)



*Fig. 8 Cleaning the dirt trap*

The dirt trap **Ⓔ** of the Z-60/Z-120 circulation unit (accessory) must be checked for contamination and cleaned during maintenance.



### **5.4.5 Leak-tightness test**

Once maintenance is complete, a leak-tightness test must be performed as the pipe screw connections in the station may loosen during the maintenance process. In the event of leaks, the screw connections must be retightened. Faulty seals must be replaced.

### **5.4.6 Sailer maintenance service**

Combined with the SAILER maintenance contract, you will receive a manufacturer's warranty extension of 2 to 5 years for the fresh water station.

The annual maintenance of a FRIWASTA-PLUS fresh water station comprises the following services:

Visual inspection and functional check of hydraulic and electrical components such as:

- Removal of limescale from plate heat exchanger
- Visual inspection of plate heat exchanger
- Check and clean the flow sensor
- Check any built-in pumps
- Check basic control functions
- Check set control parameters
- Issue of a maintenance record

## 5.5 Faults

### 5.5.1 Malfunctions

#### Controller shows no function:

Condition	Possible cause	Action
<ul style="list-style-type: none"> <li>• Display shows nothing; display illumination is off</li> </ul>	<ul style="list-style-type: none"> <li>• Power supply to the controller is interrupted</li> <li>• Display faulty</li> </ul>	<ul style="list-style-type: none"> <li>• Check the mains supply line to the controller</li> <li>• Check the power supply fuse</li> <li>• Check the controller fuse</li> <li>• Replace display</li> </ul>

#### No hot drinking water

Condition	Possible cause	Action
<ul style="list-style-type: none"> <li>• LED water extraction illuminated</li> </ul>	<ul style="list-style-type: none"> <li>• Power supply to the pump is interrupted</li> <li>• Pump is stuck</li> <li>• Air in the heating system</li> </ul>	<ul style="list-style-type: none"> <li>• Check the mains supply line to the pump</li> <li>• Check the controller fuse</li> <li>• Release the pump; potentially replace</li> <li>• Vent the heating system</li> </ul>
<ul style="list-style-type: none"> <li>• LED water extraction not illuminated</li> </ul>	<ul style="list-style-type: none"> <li>• Flow sensor is stuck</li> </ul>	<ul style="list-style-type: none"> <li>• Release the flow sensor</li> <li>• Replace the flow sensor</li> </ul>

#### Temperature fluctuations in the hot water:

Condition	Possible cause	Action
<ul style="list-style-type: none"> <li>• LED water extraction illuminated</li> </ul>	<ul style="list-style-type: none"> <li>• Air in the heating system</li> <li>• Non-return valve in the circulation defective</li> </ul>	<ul style="list-style-type: none"> <li>• Vent the heating system</li> <li>• Release the non-return valve; potentially replace</li> </ul>

### 5.5.2 Safety instructions



**WARNING!**

The improper rectification of a fault can lead to severe personal injury and/or material damage. Faults must therefore only be dealt with by trained and authorised specialist personnel.

### 5.5.3 Conduct in the event of a fault

The following always applies:

- In the event of faults that present an immediate danger to individuals, property and/or operational safety, take the system out of operation immediately.
- Immediately inform the responsible on-site person about the fault.
- Have authorised specialist personnel identify the nature and extent of the fault, determine the cause and rectify the fault.

## 5.6 Decommissioning

### 5.6.1 Temporary decommissioning

If the FRIWASTA-PLUS 120-400 l/min is to remain out of operation for a longer period of time in a room at risk of frost, the power supply must be disconnected and the system completely emptied.



#### **WARNING! Not drinking water!**

Drinking water that has been left in unused system components for a long period of time may no longer be of drinking water quality. Prevent its use by emptying the system components and disposing of the water.

### 5.6.2 Final decommissioning

If the FRIWASTA-PLUS 120-400 l/min is to be permanently withdrawn from service, the power supply to all system components concerned must be disconnected and all lines and system components completely emptied. The final decommissioning, disassembly and disposal must only be performed by trained specialist personnel.

### 5.6.3 Disassembly



#### **WARNING! Risk of injury!**

Stored residual energy, sharp edges, points and corners on and within the device or on the required tools can cause injuries. All disassembly work performed on the device must therefore only be undertaken by specialist personnel.

Before starting disassembly:

- Switch off connected devices and secure against unintentional restart.
- Physically disconnect the entire device from the energy supply and de-energise all stored residual energy properly.
- Dispose of all operating and auxiliary materials, as well as any residual processing materials, in an environmentally friendly manner.

### 5.6.4 Disposal

Components and materials must be disposed of according to the current legislation.

In the absence of any return or disposal agreement, dismantled components must be sent for recycling following proper disassembly:

- Scrap metal parts.
- Send plastic elements for plastic recycling.
- Sort and dispose of other components according to their material characteristics.
- Dispose of residual media properly. If additives have been used (e.g. solar fluids, etc.), the applicable legislation must be observed.



Electrical waste, electronic components, lubricants and other auxiliary materials are classified as hazardous waste and must only be disposed of by licensed specialist businesses.

Operating materials such as greases, oils, preserving agents and cleaning agents must be removed unmixed from the device and disposed of in an environmentally friendly manner. Use suitable collection and storage containers permitted for the operating material in question. Clearly label the containers with information regarding the content, fill level and date, and store until final disposal in a manner that prevents any misuse.

## 6 Spare parts

Only use original Sailer spare parts.



Regular maintenance and the exclusive use of original Sailer spare parts are key to the fault-free operation and long service life of your device.

Please refer to the following spare parts list.

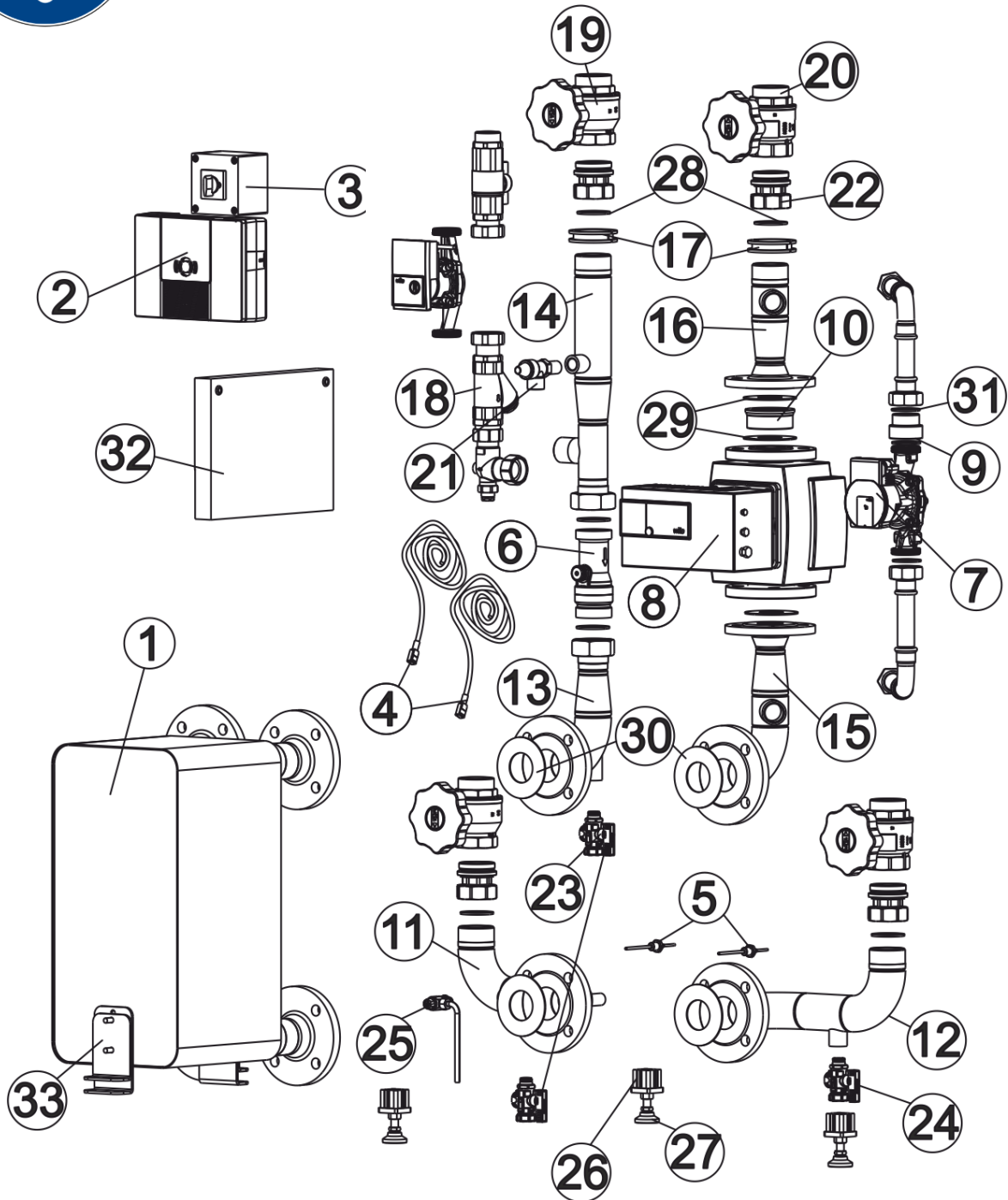


Fig. 9 Spare parts

Item	Description	Item no.
<b>1</b>	GBS P120 heat exchanger, stainless steel, copper-soldered	111.0100.01
	GBS P125 heat exchanger, stainless steel, copper-soldered	111.0100.02
	GBS P150 heat exchanger, stainless steel, copper-soldered	111.0100.03
	GBS P175 heat exchanger, stainless steel, copper-soldered	111.0100.04
	GBS P200 heat exchanger, stainless steel, copper-soldered	111.0100.05
	GBS P225 heat exchanger, stainless steel, copper-soldered	111.0100.06
	GBS P250 heat exchanger, stainless steel, copper-soldered	111.0100.07
	GBS P300 heat exchanger, stainless steel, copper-soldered	111.0100.08
	GBS P325 heat exchanger, stainless steel, copper-soldered	111.0100.09
	GBS P350 heat exchanger, stainless steel, copper-soldered	111.0100.10
	GBS P400 heat exchanger, stainless steel, copper-soldered	111.0100.11
	GVH P120 heat exchanger, stainless steel, welded	150.0120.30
	GVH P125 heat exchanger, stainless steel, welded	150.0125.30
	GVH P150 heat exchanger, stainless steel, welded	150.0150.34
	GVH P175 heat exchanger, stainless steel, welded	150.0175.40
	GVH P200 heat exchanger, stainless steel, welded	150.0200.50
	GVH P225 heat exchanger, stainless steel, welded	150.0225.60
	GVH P250 heat exchanger, stainless steel, welded	150.0250.70
	GVH P300 heat exchanger, stainless steel, welded	150.0300.70
	GVH P325 heat exchanger, stainless steel, welded	150.0325.80
GVH P350 heat exchanger, stainless steel, welded	150.0350.90	
GVH P400 heat exchanger, stainless steel, welded	150.0400.10	
<b>2</b>	FRIWASTA Manager	190.2002.01
<b>3</b>	Main switch 120-400 l/min	191.1103.82
<b>4</b>	Contact sensor	110.9001.03
<b>5</b>	TF-80 screw-in sensor, 2m	190.0080.02
<b>6</b>	FRIWASTA flow sensor 120-400 l/min	190.2005.00
<b>7</b>	Heating circulation pump 120-400 l/min, small	190.2015.00
<b>8</b>	Heating circulation pump 120-250 l/min, large	190.2012.00
	Heating circulation pump 300-400 l/min, large	190.2013.00
<b>9</b>	Non-return valve DN 25 P 120-400	192.0003.01
<b>10</b>	Non-return valve DN 50 P 120-400	192.0003.02

## Spare parts

<b>11</b>	Hot water line P120-400 l/min	191.1103.98
<b>12</b>	Heating flow 120-400 l/min	191.1104.01
<b>13</b>	Cold water elbow 120-400 l/min	191.1103.97
<b>14</b>	Cold water straight pipe section 120-400 l/min	191.1103.96
<b>15</b>	Heating return elbow 120-250 l/min	191.1103.99
	Heating return elbow 300-400 l/min	191.1104.23
<b>16</b>	Heating return straight pipe section 120-250 l/min	191.1104.00
	Heating return straight pipe section 300-400 l/min	191.1104.22
<b>17</b>	Pipe protection	191.1104.16
<b>18</b>	Circulation line 120-400 l/min	192.0001.45
<b>19</b>	Ball valve, drinking water 2" 120-400 l/min	191.1103.83
	Hand wheel for ball valve 120-400 l/min	191.1103.85
<b>20</b>	Ball valve, heating 2" 120-400 l/min	191.1103.84
	Hand wheel for ball valve 120-400 l/min	191.1103.85
<b>21</b>	Safety valve, drinking water 1/2" x 3/4" 8bar	191.1101.23
<b>22</b>	Screw connection 2"	190.0012.01
<b>23</b>	Fill-and-drain valve, drinking water	192.0001.40
<b>24</b>	Fill-and-drain valve, heating	191.1100.89
<b>25</b>	Sampling valve set 120-400 l/min	110.9003.64
<b>26</b>	Insert bushing for adjustable foot 120-400 l/min	191.1104.20
<b>27</b>	Adjustable foot 120-400 l/min	191.1104.21
<b>28</b>	Gasket 42 x 55	191.1100.83
<b>29</b>	Flange seal DN40 120-250 l/min	191.1100.79
	Flange seal DN50 300-400 l/min	191.1100.80
<b>30</b>	Flange seal DN 50 120-400 l/min	191.1100.80
<b>31</b>	Gasket 32 x 44	191.1100.82



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<b>32</b>	Document wallet 120-400 l/min	190.6001.18
<b>33</b>	Bracket, large, heat exchanger	191.1104.12
	Bracket, small, heat exchanger	191.1104.13

## 7 Technical data

### 7.1 Technical data sheet

<b>FRIWASTA-PLUS</b>	<b>Type</b>	<b>120</b>	<b>150</b>	<b>175</b>	<b>200</b>	<b>225</b>
	Unit					
<b>Width</b>	mm	1000				
<b>Depth</b>	mm	734				
<b>Height</b>	mm	1787-1810				
<b>Weight</b>	kg	161	164	169	172	178
<b>Tap capacity*</b>	l/min	120	150	175	200	225
<b>Connections, male thread</b>	Inch	2" male thread				
<b>Connection, circulation</b>	Inch	1 ¼" male thread, flat sealing				
<b>Pressure loss (cold water/hot water) with continuous output at 60°C/45°C (70% nominal power)</b>	mbar	142	204	247	285	330
<b>Permitted positive operating pressure</b>	bar	10				
<b>Safety valve blow-off pressure</b>	bar	8				
<b>Permitted operating temperature</b>	°C	5-95				
<b>Permitted temperature, circulation</b>	°C	Max. 85				
<b>Water content</b>	Litres	3.5	3.9	4.6	5.8	6.9
<b>Power supply</b>	V/Hz	230/50				
<b>Max. electrical input power</b>	W	555	555	555	555	555
<b>Protection rating, controller</b>	-	IP20				
<b>Electrical fuse, controller outputs</b>	A	3.15				
<b>Material, drinking water pipes</b>		Stainless steel				
<b>Material, heating pipes</b>		S235JR				
<b>Material, heat exchanger</b>		1.4401, filler material copper, further information on request				
<b>Housing/cover, optional</b>		Sheet metal housing RAL 9006, powder-coated				

\* Basic design: primary 60°C/25°C and secondary 10°C/45°C

<b>FRIWASTA-PLUS</b>	<b>Type</b>	<b>250</b>	<b>300</b>	<b>350</b>	<b>400</b>
	Unit				
<b>Width</b>	mm	1000			
<b>Depth</b>	mm	734			
<b>Height</b>	mm	1787-1810			
<b>Weight</b>	kg	183	185	194	199
<b>Tap capacity*</b>	l/min	250	300	350	400
<b>Connections, male thread</b>	Inch	2" male thread			
<b>Connection, circulation</b>	Inch	1 ¼" male thread, flat sealing			
<b>Pressure loss (cold water/hot water) with continuous output at 60°C/45°C (70% nominal power)</b>	mbar	390	569	722	930
<b>Permitted positive operating pressure</b>	bar	10			
<b>Safety valve blow-off pressure</b>	bar	8			
<b>Permitted operating temperature</b>	°C	5-95			
<b>Permitted temperature, circulation</b>	°C	Max. 85			
<b>Water content</b>	Litres	8.1	8.1	10.4	11.5
<b>Power supply</b>	V/Hz	230/50			
<b>Max. electrical input power</b>		555	675	675	675
<b>Protection rating, controller</b>	-	IP20			
<b>Electrical fuse, controller outputs</b>	A	3.15			
<b>Material, drinking water pipes</b>		Stainless steel			
<b>Material, heating pipes</b>		S235JR			
<b>Material, heat exchanger</b>		1.4401, filler material copper, further information on request			
<b>Housing/cover, optional</b>		Sheet metal housing RAL 9006, powder-coated			

\* Basic design: primary 60°C/25°C and secondary 10°C/45°C

## 7.2 Dimensions

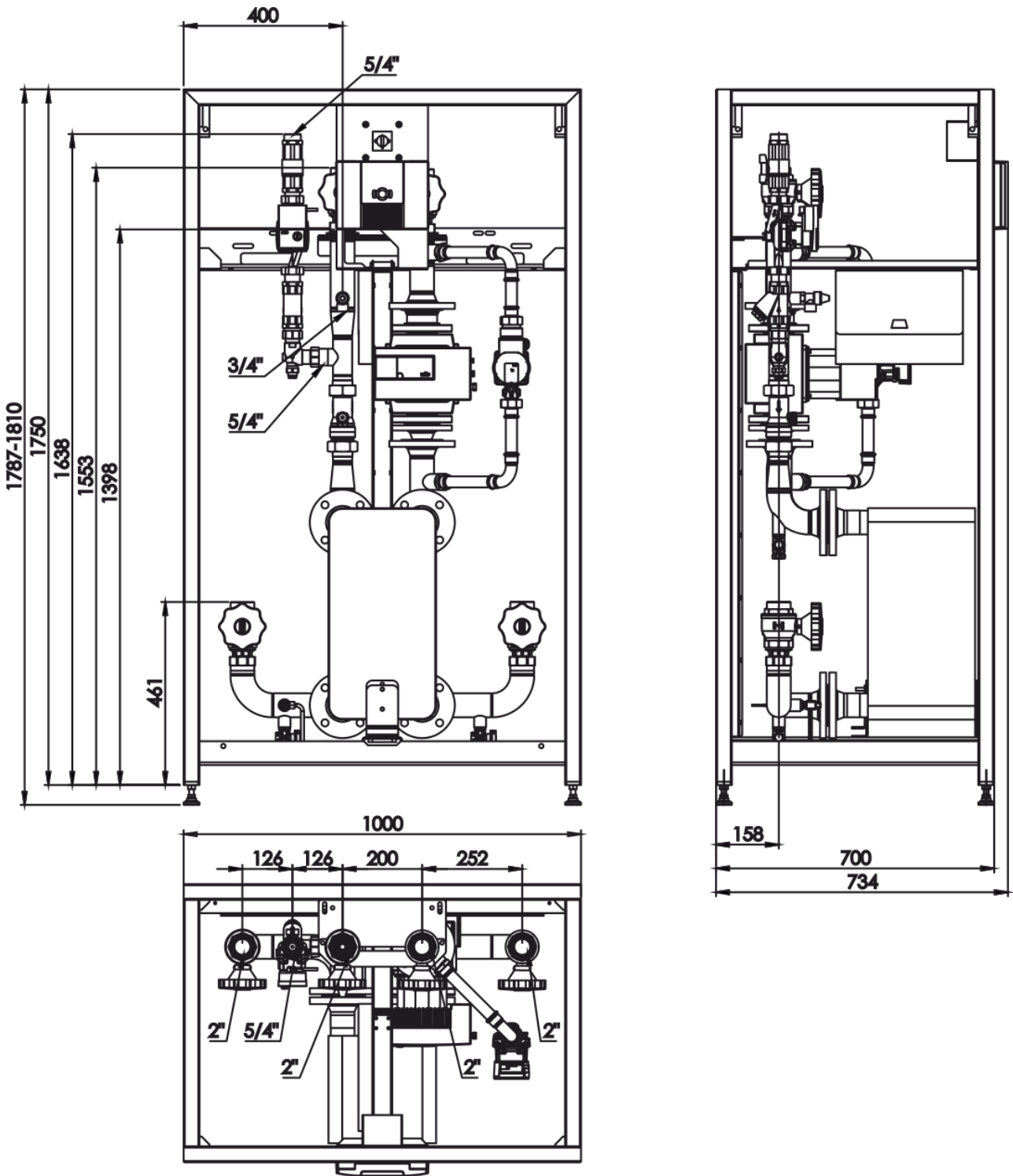


Fig. 10 Housing external dimensions without metal housing

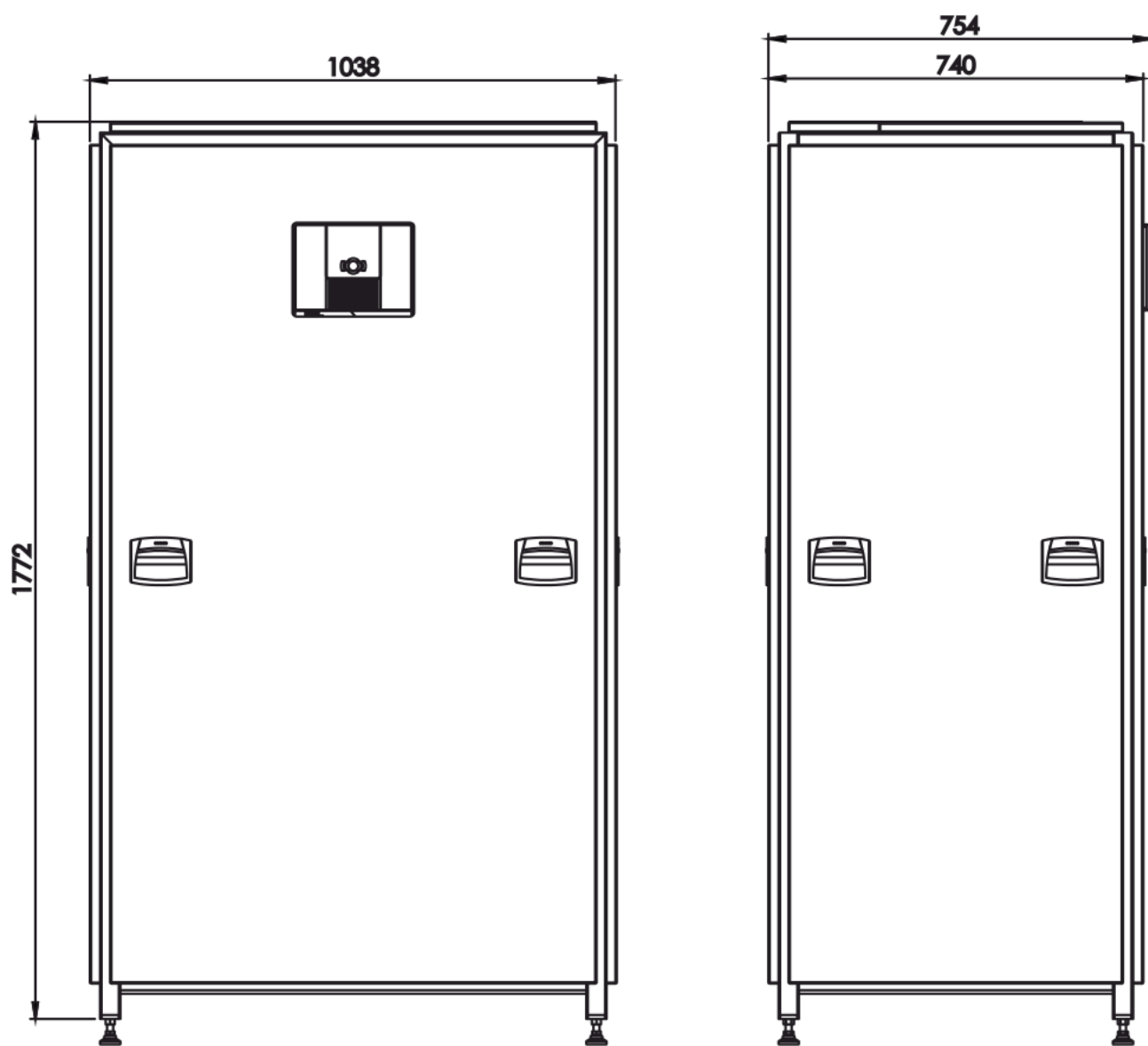


Fig. 11 Housing external dimensions with metal housing

### 7.3 Connections and outflow options

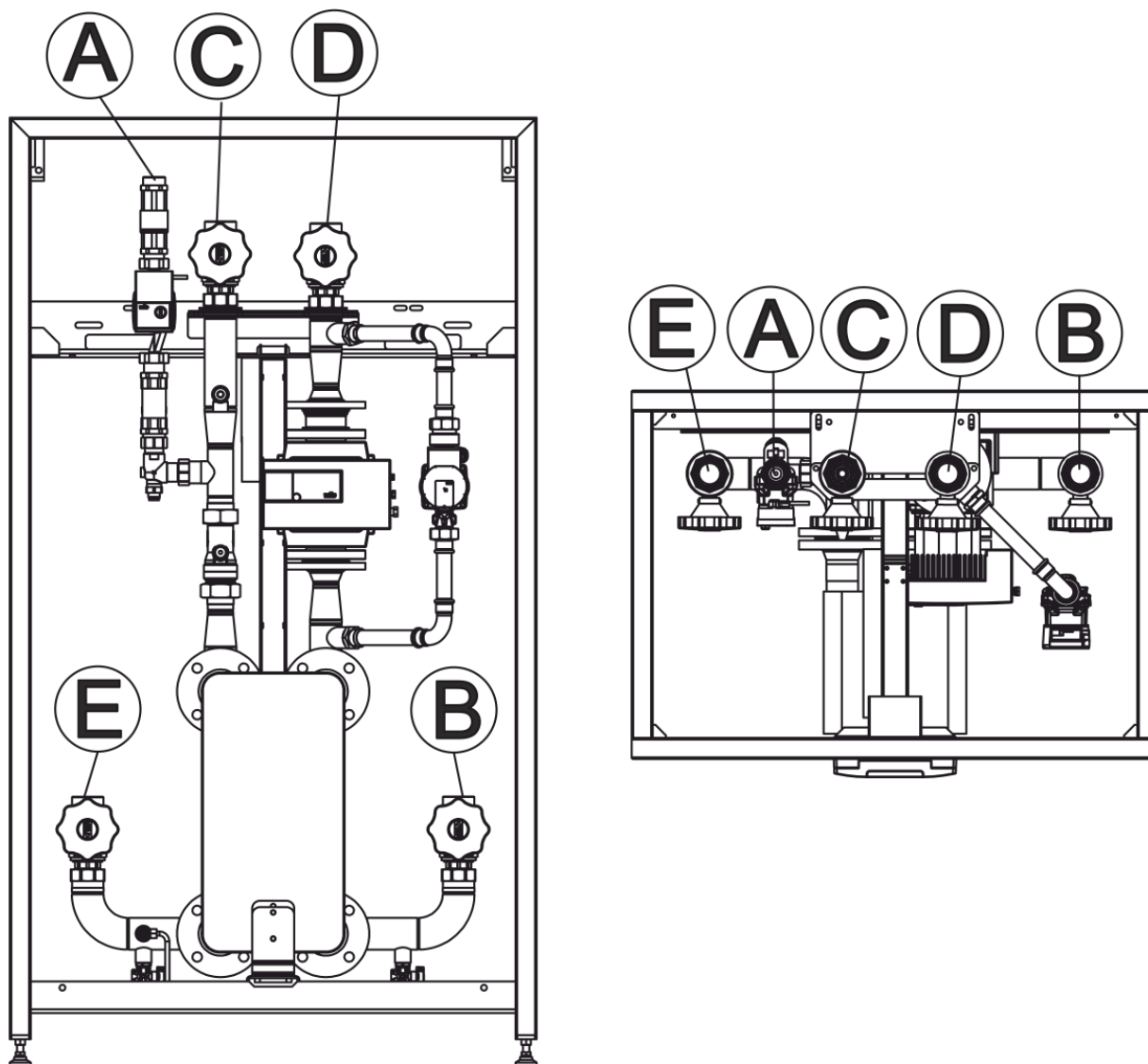


Fig. 12 Front view of connections

- Ⓐ Circulation, optional
- Ⓑ Heating flow
- Ⓒ Cold water
- Ⓓ Heating return
- Ⓔ Hot water



**Caution!**  
All connections must be guided vertically upwards out of the station.

## 7.4 Hydraulics

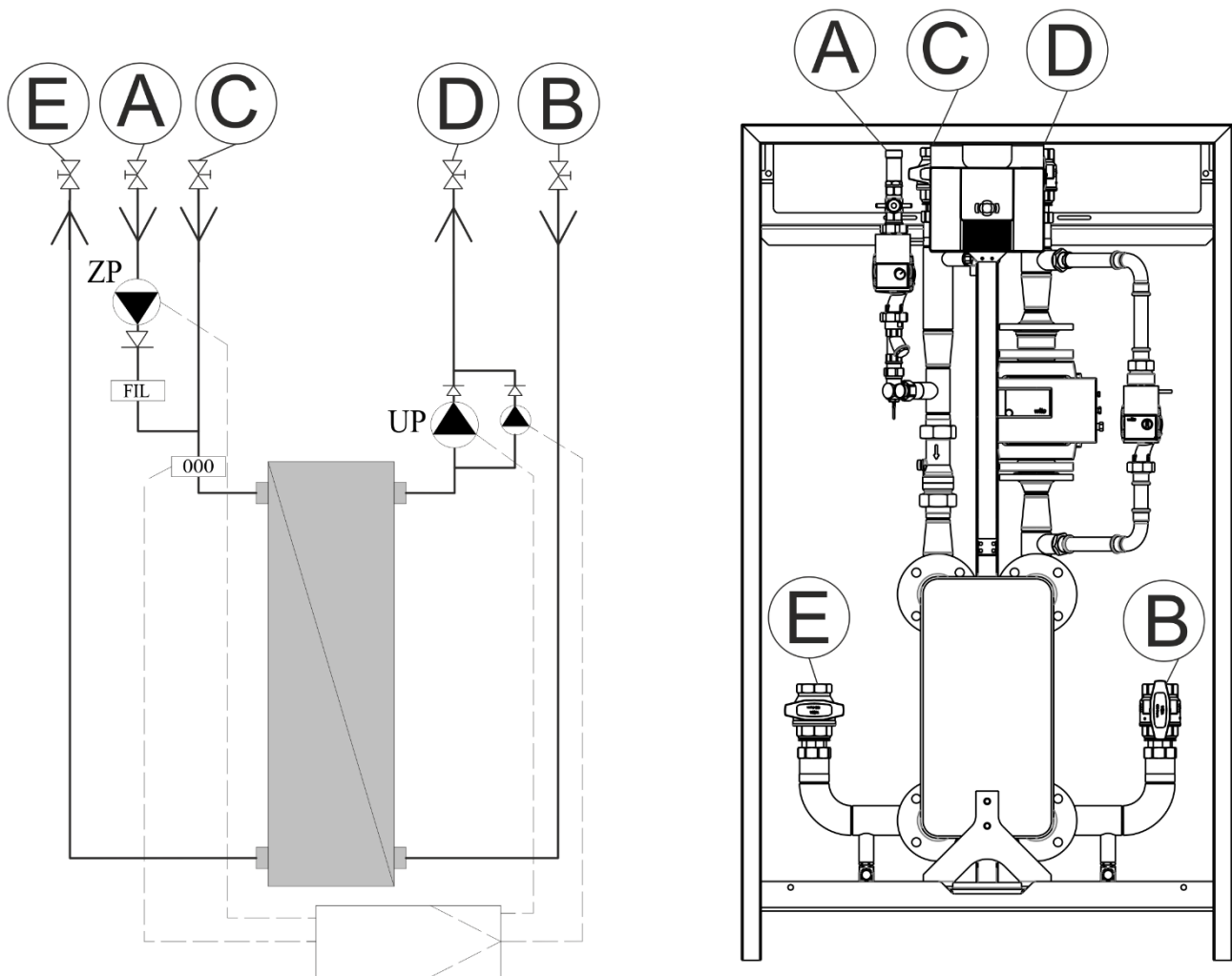


Fig. 13 Hydraulic set-up

Ⓐ Circulation, optional

Ⓑ Heating flow

UP Primary pump

FIL Dirt trap

Ⓒ Cold water

Ⓓ Heating return

Ⓔ Hot water

ZP Circulation pump

000 Flow sensor

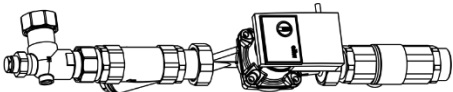
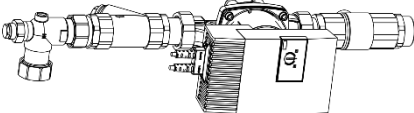
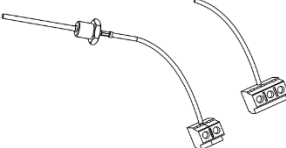
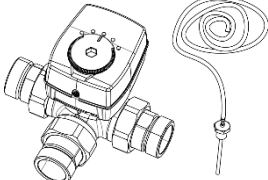
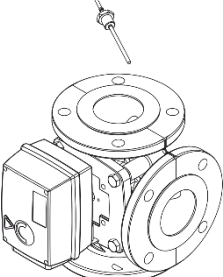


## 7.5 Water limit values

The brazed plate heat exchangers are made from embossed stainless steel plates 1.4404/1.4401 or SA240 316L/SA240 316. The corrosion behaviour of stainless steel and the brazing agent copper should therefore be taken into account.

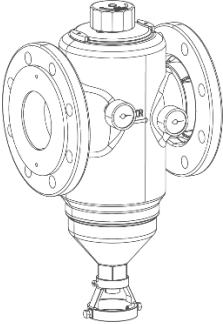
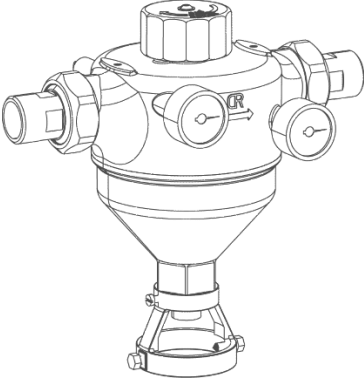

Water constituents	Unit	Heat exchanger, copper-brazed	Heat exchanger, free from non-ferrous metal
pH value	-	7...9 (conforming to the SI index)	6...10
Saturation index SI (delta pH values)	-	-0.2 < 0 < +0.2	No specification
Overall hardness	°dH	6...15	6...15
Conductivity	µS/cm	10...500	No specification
Filterable substances	mg/l	< 30	< 30
Free chlorine	mg/l	< 0.5	< 0.5
Hydrogen sulphide (H <sub>2</sub> S)	mg/l	< 0.05	No specification
Ammonia (NH <sub>3</sub> /NH <sub>4</sub> <sup>+</sup> )	mg/l	< 2	No specification
Sulphate	mg/l	< 100	< 400
Hydrogen carbonate	mg/l	< 300	No specification
Hydrogen carbonate/sulphate	mg/l	> 1.0	No specification
Sulphide	mg/l	< 1	< 7
Nitrate	mg/l	< 100	No specification
Nitrite	mg/l	< 0.1	No specification
Iron, dissolved	mg/l	< 0.2	No specification
Manganese	mg/l	< 0.1	No specification
Free aggressive carbon dioxide	mg/l	< 20	No specification
Chloride	mg/l	At 20°C: max. 800 mg/l At 25°C: max. 600 mg/l At 50°C: max. 200 mg/l At 100°C: max. 0 mg/l	



## 8 Accessories

Item image	Description	Item no.
	Z-60 circulation unit 120-400 l/min	110.9110.02
	Z-120 circulation unit 120-400 l/min	110.9110.03
	Z - circulation cable set	110.9108.00
	VTB TD 120-400 l/min (supply temperature restriction) (flow temperature restriction)	110.9004.00
	VTB TD 450-800 l/min (supply temperature restriction) (flow temperature restriction)	110.9005.00
	Software extension for thermal disinfection	180.0011.11
	FF 100-150 l/min (cold water side micro-filter) FF 175-300 l/min (cold water side micro-filter) (fine filter cold water side)	110.9970.00 110.9980.00

Accessories

	<p>FF 350-800 l/min (cold water side micro-filter) (fine filter cold water side)</p>	<p>110.9990.00</p>
	<p>FF-WW-1" FF-WW-1 1/4" FF-WW-1 1/2" FF-WW-2" (fine filter hot water circulation)</p>	<p>110.9925.01 110.9932.01 110.9940.01 110.9950.01</p>
	<p>Sampling valve set 120-400 l/min</p>	<p>110.9003.64</p>

# Conformity

## EU KONFORMITÄTSERKLÄRUNG DECLARATION OF CONFORMITY

Der Hersteller            Sailer GmbH  
                                  Zementwerkstraße 17  
                                  DE-89584 Ehingen

erklärt in alleiniger Verantwortung, dass die folgenden Produkte

**FRIWASTA-PLUS, FRIWASTA-BASIC, CENTRASTA**

die Bestimmungen folgender Richtlinien erfüllen

**RICHTLINIE 2014/35/EU DES EUROPÄISCHEN PARLAMENTS UND DES RATES vom 26. Februar 2014 zur Harmonisierung der Rechtsvorschriften der Mitgliedstaaten über die Bereitstellung elektrischer Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen auf dem Markt**

Die Übereinstimmung der bezeichneten Produkte mit der Richtlinie ist durch die Überprüfung durch folgende harmonisierte Normen nachgewiesen worden:

DIN EN 60730-1 VDE 0631-1:2021-06  
DIN EN 60335-1 VDE 0700-1:2020-08

**RICHTLINIE 2014/30/EU DES EUROPÄISCHEN PARLAMENTS UND DES RATES vom 26. Februar 2014 zur Harmonisierung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit**

Die Übereinstimmung der bezeichneten Produkte mit der Richtlinie ist durch die Überprüfung durch folgende harmonisierte Norm nachgewiesen worden:

DIN EN 61326-1 VDE 0843-20-1:2013-07  
DIN EN 61326-2-2 VDE 0843-20-2-2:2013-08  
DIN EN 55011 VDE 0875-11:2011-04  
DIN EN 61000-3-2 VDE 0838-2:2015-03

**RICHTLINIE 2011/65/EU DES EUROPÄISCHEN PARLAMENTS UND DES RATES vom 08. Juni 2011 zur Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten**

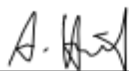
Die Übereinstimmung der bezeichneten Produkte mit der Richtlinie ist durch die Überprüfung durch folgende harmonisierte Norm nachgewiesen worden:

DIN EN IEC 63000 VDE 0042-12:2019-05

**RICHTLINIE 2014/68/EU DES EUROPÄISCHEN PARLAMENTS UND DES RATES vom 15. Mai 2014 zur Harmonisierung der Rechtsvorschriften der Mitgliedstaaten über die Bereitstellung von Druckgeräten auf dem Markt**

Die Übereinstimmung der bezeichneten Produkte mit der Richtlinie ist durch die Überprüfung nach Artikel 4 Absatz 3 gewährleistet. Die Druckgeräte sind nach der geltenden guten Ingenieurpraxis ausgelegt und hergestellt worden. Druckgeräte, welche unter Artikel 4 Absatz 3 fallen sind von der CE-Kennzeichnung ausgeschlossen. Die CE-Kennzeichnung des Produkts betrifft somit nicht die Konformität mit der Richtlinie 2014/68/EU.

Ehingen, 24.01.2022



Andreas Heinzl  
Geschäftsführung





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