Fresh Hot Water Module
FHWM-30

Manual

Contents

1 Preface

Prior to operation, please read the instructions in chapter 1 to 5 for installing and initiating your new Fresh Hot Water Module. Please pay particular attention to the warnings in chapter 1.3.
Instructions for the heating and electric professional are written down in chapter 2.

1.1 Usage

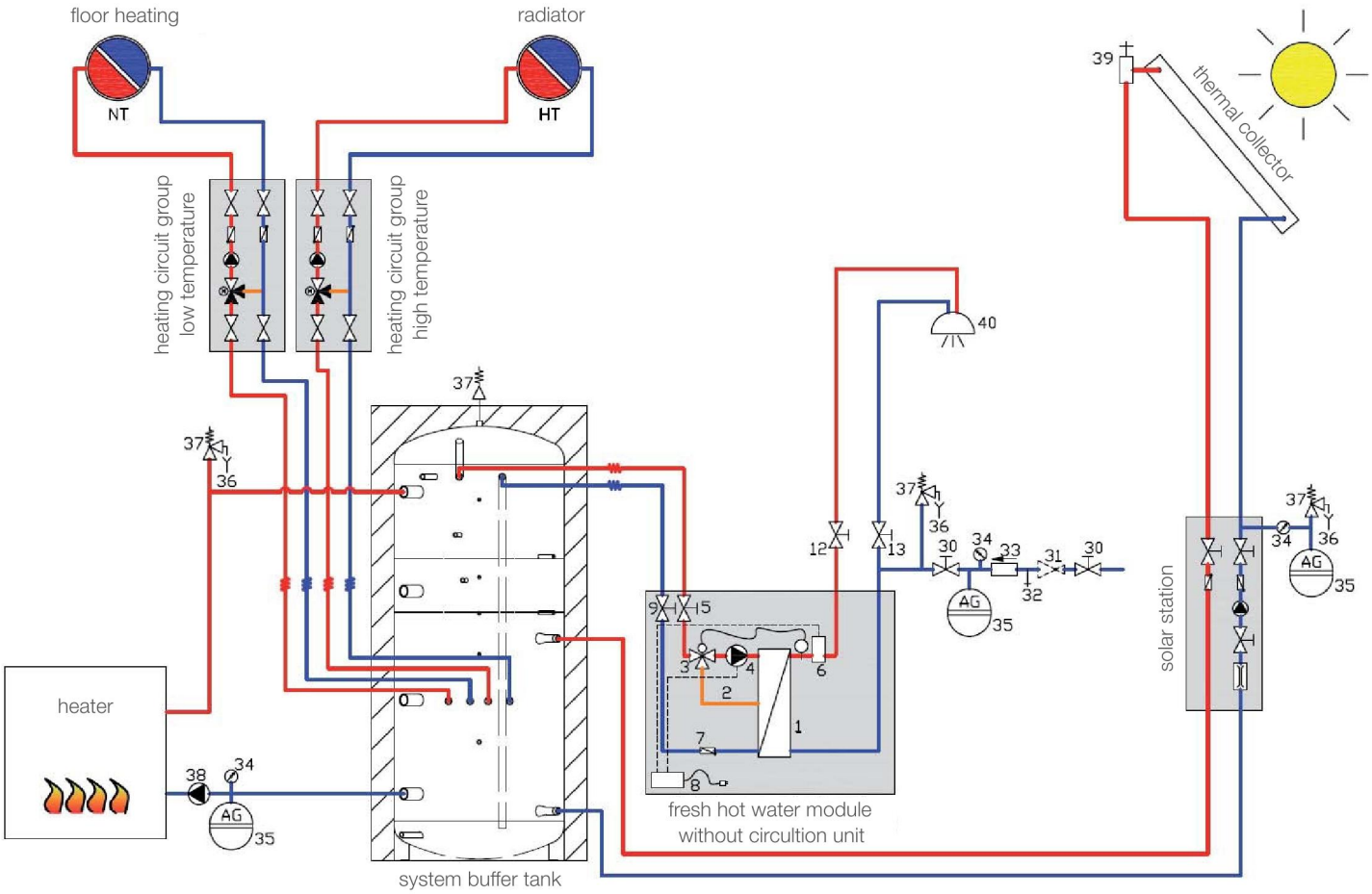
The Fresh Hot Water Module is used to heat up tap water in connection with a buffer tank. Another use or installation is not intended. Do not connect the Fresh Hot Water Module directly to any heat generator.
The Fresh Hot Water Module includes a self-sufficient regulation and can be upgraded with an optional circulation unit. For operating the Fresh Hot Water Module the following specific values have to be adhered:

Dissolved matter + specific values	unit	heat exchanger, copper brazed plates
pH-value		7-9 (considering Saturation index)
Saturation index (delta pH-value)		-0,2 < 0 < +0,2
Degree of hardness	°dH	6-15
conductivity	µS/cm	10...500
Filterable matter	mg/l	<30
Free chlorine	mg/l	<0,5
Hydrosulfide (H2S)	mg/l	<0,05
Ammoniac (NH3/NH4+)	mg/l	<2
Sulfate	mg/l	<100
Hydrocarbonate/Sulfate	mg/l	<300
Sulfide	mg/l	>1,0
Nitrate	mg/l	<1
Nitrite	mg/l	<100
Iron, solute	mg/l	<0,1
manganese	mg/l	<0,2
Free aggressive carbonic acid	mg/l	<0,1
Freie aggressive Kohlensäure	mg/l	<20

The above values are guideline values which can deviate under certain operating conditions.

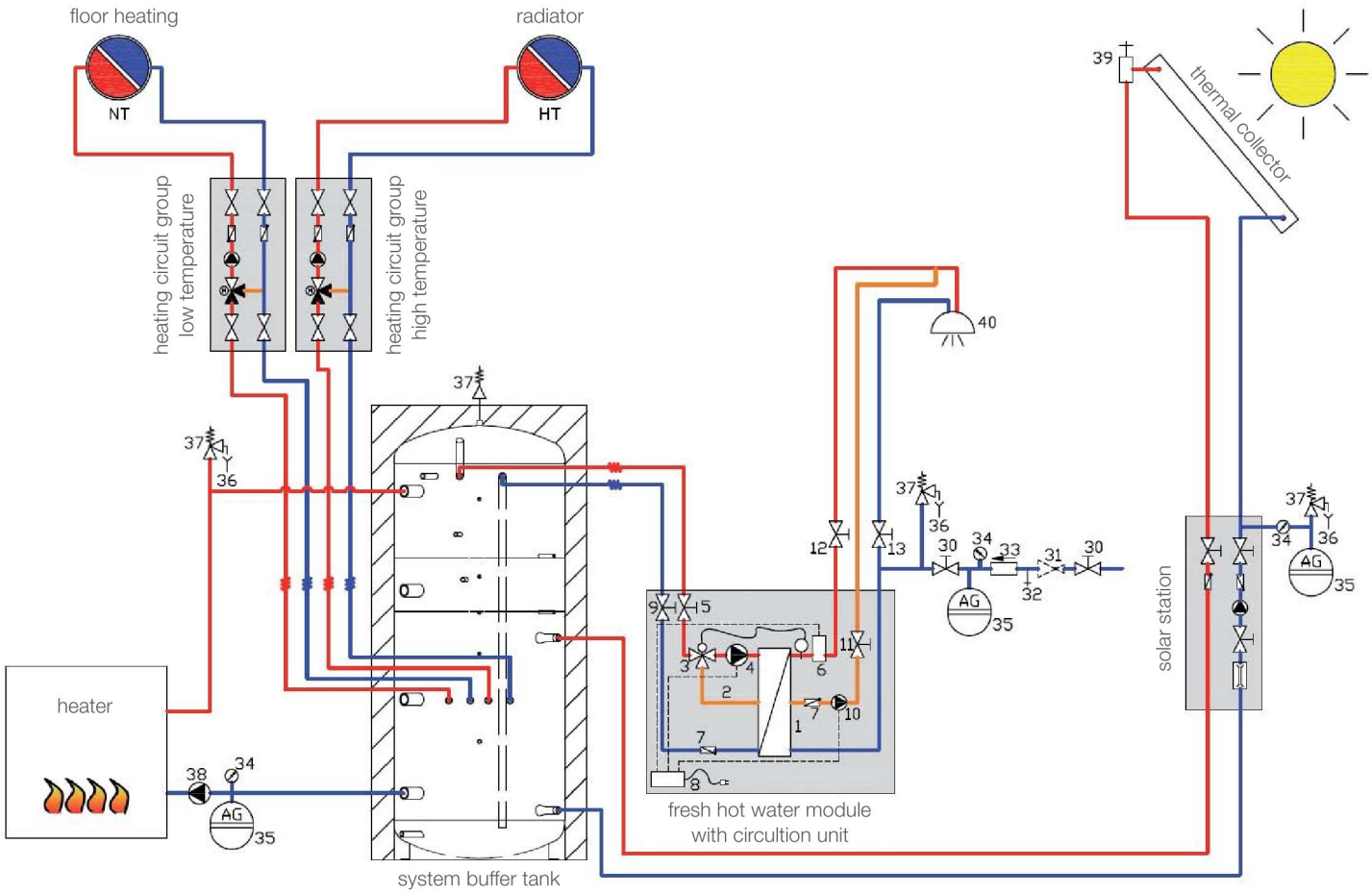
Caution! Exceeding of this specific values leads to damages of the Fresh Hot Water Module and inevitably to loss of guarantee.

1.1.1 Usage example Fresh Hot Water Module



1	Plate heat exchanger	30	Lock valve
2	Bypass pipe	31	Pressure-reducing valve
3	Thermostatic 3-way valve	32	Drain valve
4	charge pump	33	Backflow preventer
5	Stop valve buffer flow	34	Manometer
6	Flow-Switch	35	Expansion vessel
7	Non-return valve	36	Drain
8	Regulation	37	Safety relief valve
9	Stop valve buffer return	38	Heating pump heating device
12	Stop valve hot water	39	Bleeding vessel
13	Stop valve cold water	40	Tap connection

1.1.2 Usage example Fresh Hot Water Module with optional circulation unit



1 Plate heat exchanger
2 Bypass pipe
3 Thermostatic 3-way valve
4 charge pump
5 Stop valve buffer flow
6 Flow-Switch
7 Non-return valve
8 Regulation
9 Stop valve buffer return
10 Circulation pump
11 Stop valve circulation
12 Stop valve hot water
13 Stop valve cold water
30 Lock valve
31 Pressure-reducing valve
32 Drain valve
33 Backflow preventer
34 Manometer
35 Expansion vessel
36 Drain
37 Safety relief valve
38 Heating pump heating device
39 Bleeding vessel
40 Tap connection

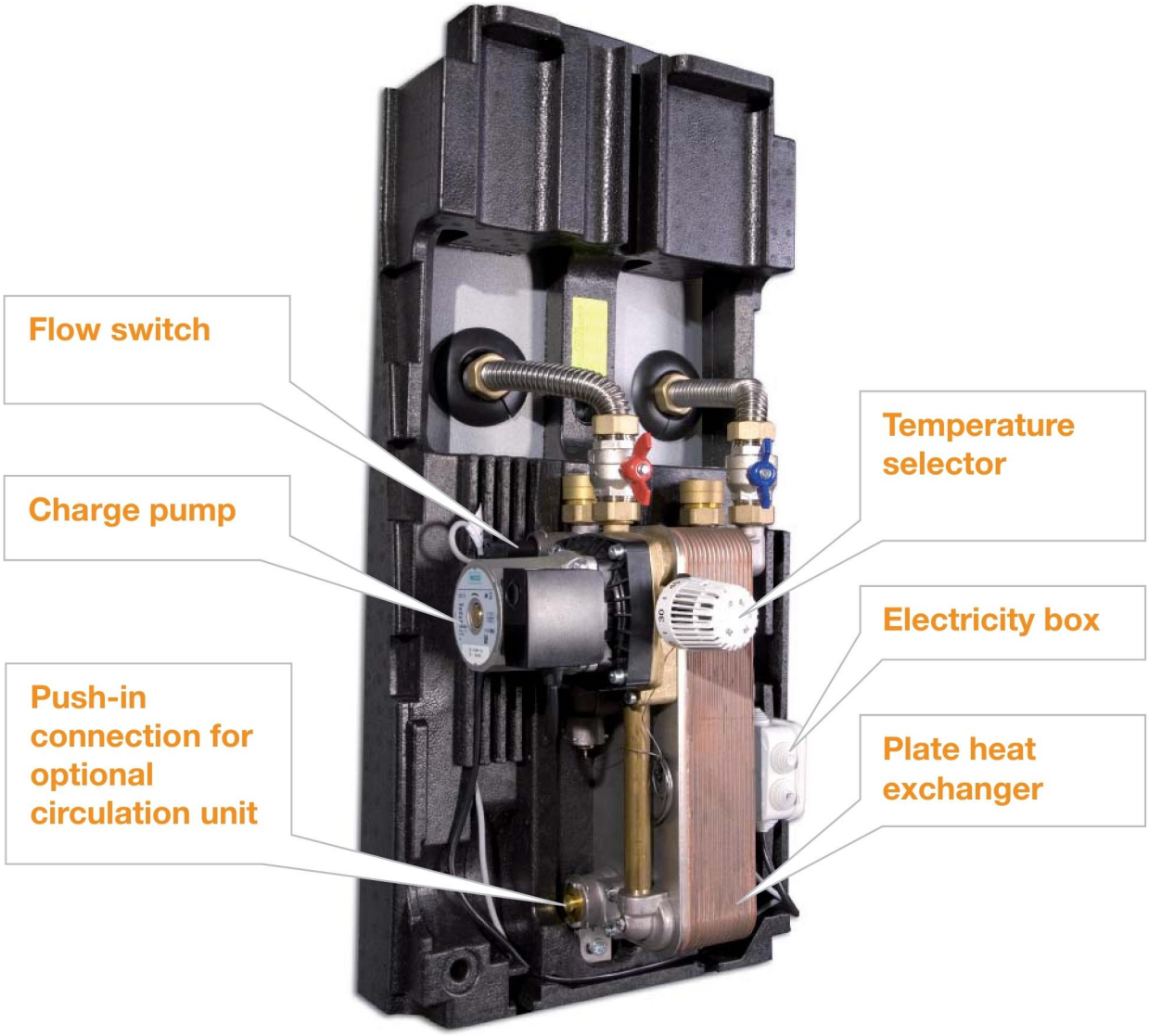
1.2 Description

The Fresh Hot Water Module is used to heat up tap water in connection with a buffer tank. Another use or installation is not intended. The manufacturer is not liable for damages due to inappropriate use and the operator bears the risk. Do not connect the Fresh Hot Water Module directly to any heat generator.

1.3 Warning notices

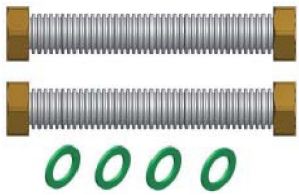
- The FHWM can heat up and burns are possible
- Power outages can lead to blocking of motor valves in open position such that burns due to contact with the FHWM are possible.
- Operations on electrical parts must be conducted by a professional.
- The Station has to be connected to an external circuit breaker to allow a shutdown at any time.
- The water in the FHWM can be very hot and under high pressure. The water has to be drained and the stop valves closed on both sides of the station prior to disassembly.
- At the removal of the bleeder screw, hot water under high pressure can gush out.
- Installation and operation must be performed according to regional regulations and common practice.
- At the occurrence of malfunctions – regardless of nature – please contact your installer for heating systems. Please do not perform any unauthorized repairing, it is forbidden and can lead to unexpected dangers.

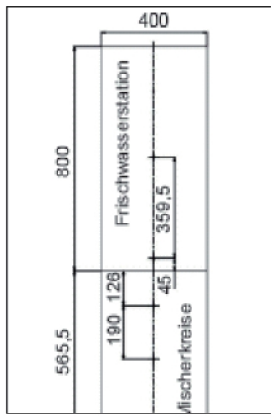
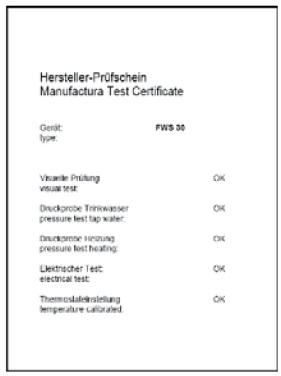
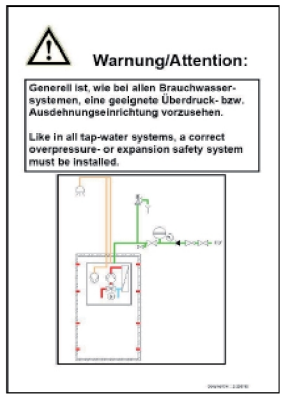
1.4 Design of the Fresh Hot Water Module



The above depicted picture is symbolic and can marginally differ from your Fresh Hot Water Module.

1.5 Scope of delivery

Description	Illustration
Fresh Hot Water Module Ready for plug-in installation	
Connection set, containing: - 2x flexible hoses, length 205mm incl. swivel nuts - 4x flat sealings	
Mounting set, containing: - 1x socket wrench SW17 - 2x thread bolt M10x-120mm - 4x washer A10,5 - 2x dowel S12, length 60mm - 6x hex-nut M10 - 2x stair bolt M10x-120mm	

Description	Illustration
Drilling plan	
Test certificate	
Warning notices Concerning overpressure and expansion equipment	

1.6 Safety precautions

The assembly, maintenance and cleaning must only be accomplished by qualified technical professionals. The installation and operation must be performed according to regional regulations and laws, common practice and according to the directives of the local water utility.

- **DIN 1988**
  Drinking water supply systems
- **DIN 4708**
  Central heat- water-installations; terms and calculation-basis
- **DIN EN 12828**
  Heating systems in buildings - design of water-based heating systems
- **DIN 4753**
  Water heaters and water heating installations for drinking water and service water
- **DIN 4757**
  Solar heating plants operating on organic heat transfer media; requirements relating to safe design and construction
- **DIN 18380**
  German construction contract procedures - Systems for heating and central water heating
- **DIN 18381**
  German construction contract procedures - Gas, water and sewage plumbing works inside of buildings
- **DIN 18382**
  Contract procedures for buildings works - low-voltage installation and medium-voltage installation with nominal voltages up to including 36 kV
- **DIN EN 12975**
  Thermal solar systems and their components
- **VDE 0100**
  Low-voltages electrical installations
- **VDE 0185**
  Lightning protection components (LPC)
- **VDE 0190**
  Main equipotential bonding of electrical systems
- **ÖNORM EN ISO 9488**
  Solar energy – vocabulary (ISO 9488:1999)
- **ÖNORM ENV 12977-1**
  Thermal solar systems and components - custom built systems - part 1: general requirements
- **ÖNORM M7700**
  Solar energy - therms with definitions
- **ÖNORM M7701**
  Solar energy installations; approximative calculation method for the dimensioning of flat collectors in domestic hot water systems
- **ÖNORM M7731**
  Solar heating systems for heating of water - requirements and tests

2 Installation and initiation

Before you install your new Fresh Hot Water Module, please pay attention to the following points:

- Read chapter 1 and especially the warning notices in chapter 1.3.
- The Fresh Hot Water Module is used to heat up tap water in connection with a buffer tank. Another use or installation is not intended. Do not connect the Fresh Hot Water Module directly to any heat generator.
- The operation of this device is not allowed to persons with limited physical, sensory or intellectual abilities.
- Uninformed or unacquainted persons may operate the device only under the supervision or at the trained person's disposition.
- Replacements of electrical parts like the power cord must be conducted by a professional electrician.
- Installation and operation must be performed according to regional regulations and laws.

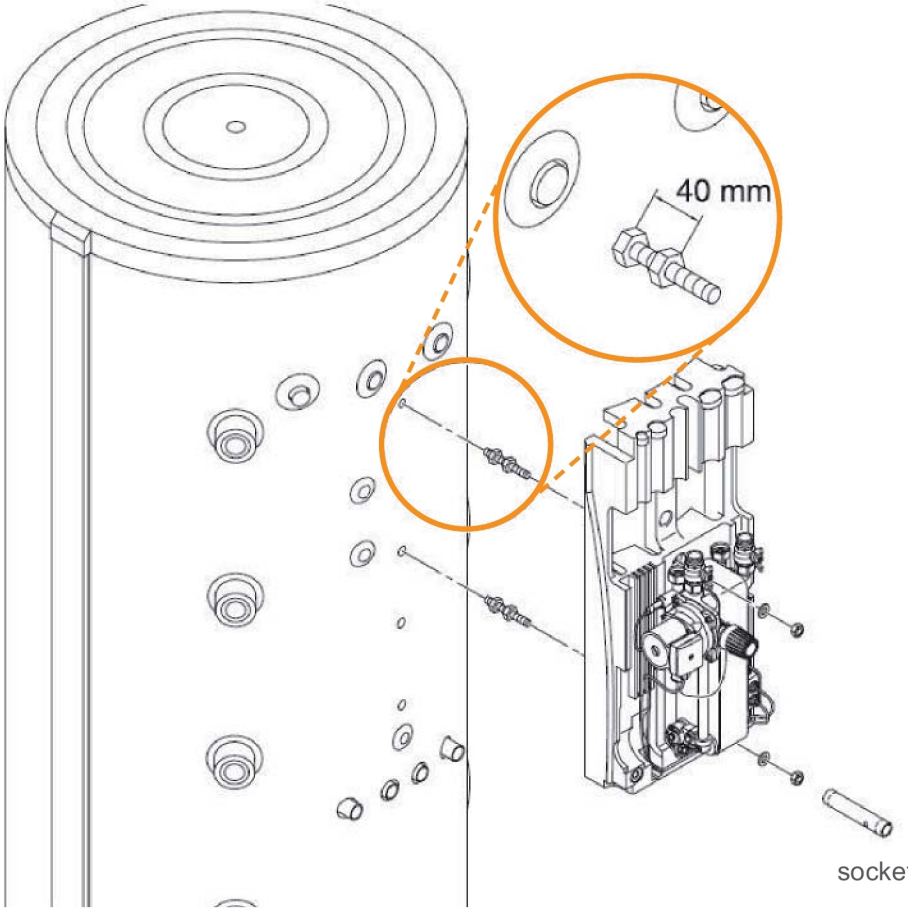
2.1 Installation

The setting up and installation must be carried out by an approved professional crafts enterprise. It is also responsible for a proper installation and initiation.

As a location for installation the device requires a frost-free room and the Fresh Hot Water Module needs to be installed splash-proof and may only be operated at room temperatures under 40°C.

2.1.1 Installation on buffer tank

2.1.1.1 Positioning on buffer tank



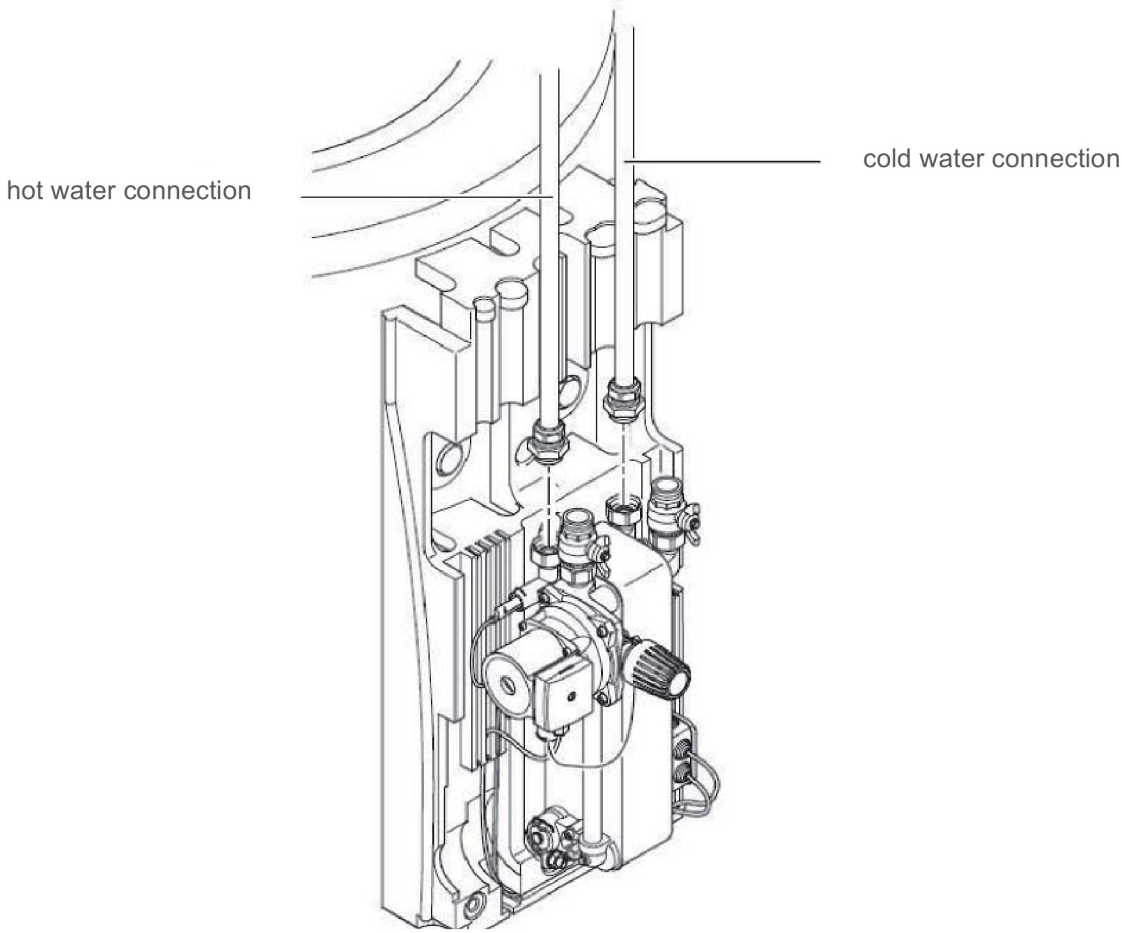
socket wrench

The mounting of the unit onto the buffer tank is carried out using the enclosed mounting material.

1. Screw the thread bolts approx. 10 mm into the threaded sleeves on the buffer tank.
2. Apply the counter nuts and fix them.
3. Screw the hex-nuts on the bolt until the distance to the insulation is 40 mm.
4. Fit the Fresh Hot Water Module onto the bolts and secure it with the washers and hex-huts.

Caution! Tightening the screws too much can cause damage to the insulation!

2.1.1.2 Installation of hot and cold water connections



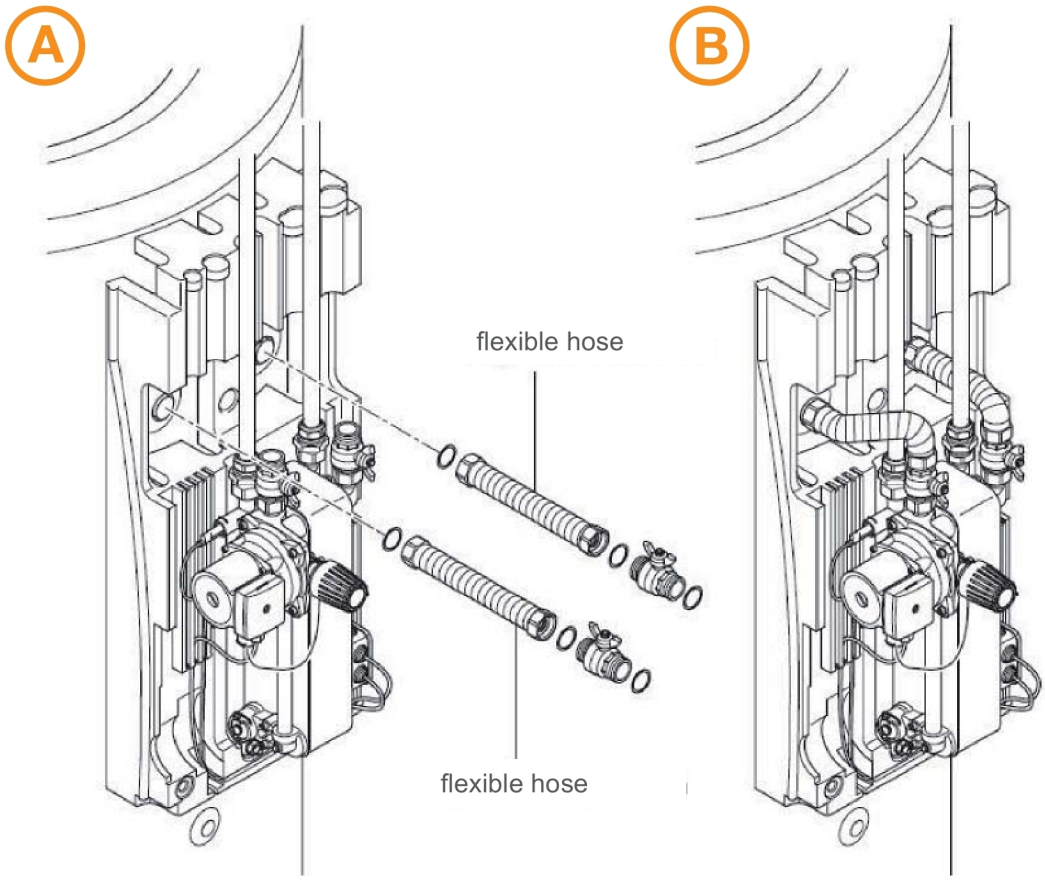
5. Install the hot and cold water pipes according to the above depicted scheme and run the pipes through the upside of the insulation.

Caution!

Tighten the flat-sealing connections only after sealing the piping. Avoid tightening torque and force effects on already installed parts and connections of the device at all costs!

Additionally, check the tightening torques of the flat-sealing swivel nuts (some loosening can happen during transport).

2.1.1.3 Installation of flexible hoses



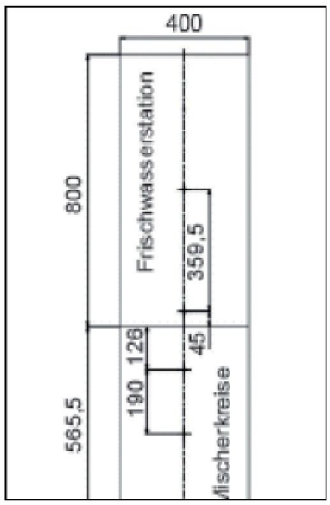
6. Detach the ball valves from the Fresh Hot Water Module mount them according to Figure Ⓐ with flat seals to the flexible hoses and with flat seals to the buffer tank.

7. Bend the flexible hoses with mounted ball valves into the right position, according to Figure Ⓑ, and connect them with flat seals to the Fresh Hot Water Module

Caution! Bending of the flexible hoses has to be done in such a way that there are no force effects onto the Fresh Hot Water Module in working order.

2.1.2 Installation on wall

The mounting of the unit onto the wall is carried out using the enclosed mounting material. The piping from and to the buffer tank should be at least dimensioned in Cu28 to assure a flow rate of approx. 2800 l/h. The length of piping ought to be as short as possible.



1. Transfer the drilling plan onto the wall and drill the marked holes with a 12mm drill approx. 7cm deep.

2. Insert the dowels into the holes and screw the stair bolts into the wall until the threads aren't visible any more.

3. Fit the Fresh Hot Water Module onto the bolts and secure it with the washers and hex-huts.

Caution! Tightening the screws too much can cause damage to the insulation!

2.2 Hydraulic connection

Installation of the piping has to follow the instructions on the labeling (inside the upper part of the insulation) or the figure in the manual, respectively. The piping to the buffer tanks ought to be as short as possible! When using zinc coated pipes and fittings, take care of the installation sequence to avoid electrochemical corrosion.

According to DIN 4753, part 1, a safety relief valve has to be included into the cold water supply pipe. The safety relief valve has to be dimensioned for a valving pressure that is in accordance with the allowed operating pressure. At a pressure of 6 bar and above, a pressure-reducing device has to be installed in the water pipe behind the water flow meter. A shutoff between the safety relief valve and the Fresh Hot Water Module is not allowed. According to DIN 4753, the operation of the safety relief valve has to be tested regularly 1-2 times a month by bleeding the valve.

The exhaust opening must not be closed or constricted. A state-of-the-technology water filter has to be installed and commissioned in the cold water

pipe. Additionally, it is advisable to install a drinking water expansion vessel depending on the faucets. At hot and cold water connections it is recommended to include rinsing ports.

Tighten the flat-sealing connections only after sealing the piping. The piping from and to the buffer tank should be at least dimensioned in Cu28 to assure a flow rate of approx. 2800 l/h. The length of piping ought to be as short as possible to allow fast heating of the heat exchanger when opening a faucet. It is not allowed to install the device in gravitational heating systems!
A de-aeration has to be included in the system at the highest point of the buffer circulation.

Caution! Avoid tightening torque and force effects on already installed parts and connections of the device at all costs!

2.3 Electric connection

The internal wiring of the electric parts is factory-provided. The connection to the electricity network (230 V/AC, 50Hz) happens with the connected power cord. Operations at the electrical parts of the device must be conducted according to regional regulations and laws.

Caution! Before working on the electrical parts of the Fresh Hot Water Module make sure to disconnect it from the electricity network!

2.4 Initiation

The initiation must be carried out by an approved professional crafts enterprise. During the initiation process the unproblematic operation and leak-tightness of the whole installation, including the preinstalled connections, has to be tested.

Slow opening of the ball valves at the entries and exits of the Fresh Hot Water Module avoids pressure blows during the rinsing process. The filling and rinsing of the system needs to be continued until it is sure that the system is completely de-aerated! Stream noises during operating the charge pump indicate that there is still air left in the system, which needs to be discharged over the pump.

Before taking the installation into operation, it makes sense to rinse the tap water and heating water circuits with completely opened valves to remove sludge and other contaminations. This should avoid clogging of valves, heat exchangers

and other parts of the installations. Due to vibrations during transports and thermal expansion the tightening torques of the flat-sealing swivel nuts and piping have to be checked, after installation and initiation.

2.5 Mode of operation

When hot water is tapped, the flow-switch turns on the charge pump.

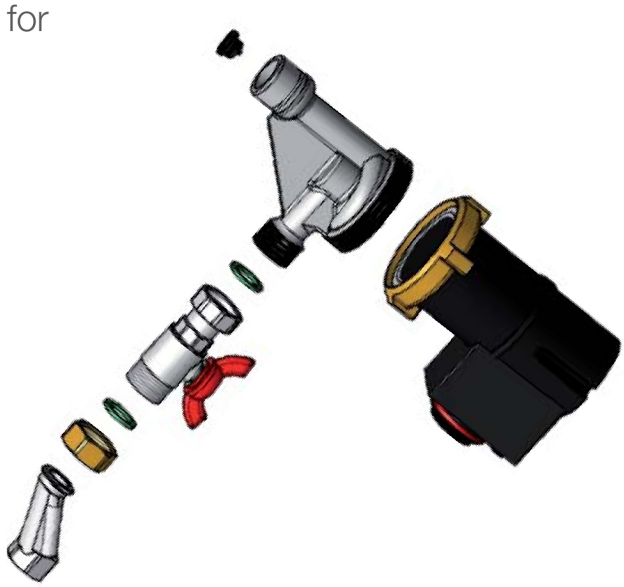
2.6 Adjustment of tap water temperature

Changing of the preset tap water temperature happens with the thermostatic temperature regulator. The most economical temperature range is between 45° and 55°C (equals factory setting). The temperature range can be changed, narrowed and fixed with the red and blue Memory-Clips on the temperature regulator. Clockwise turning reduces the tap water temperature. To avoid thermal furring (see DIN 1988), an increase of temperature is not advisable.

Buffer tank temperature recommendation:
The buffer tank temperature should be at least 10K above the desired tap water temperature.

3 Usage of circulation unit

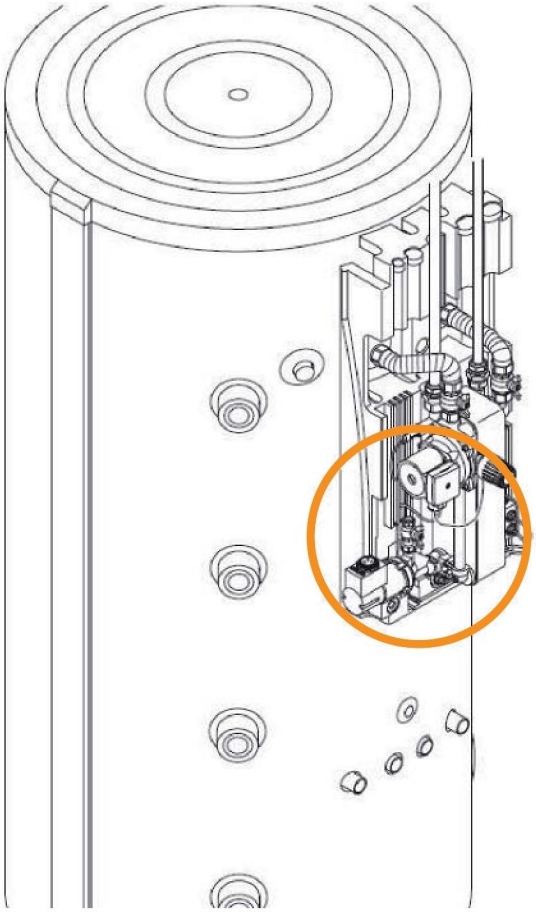
The Fresh Hot Water Module is prepared for an optional circulation unit. The circulation unit consists of a circulation pump with a Push-In connection, a ball valve and a circulation eccentric tappet.

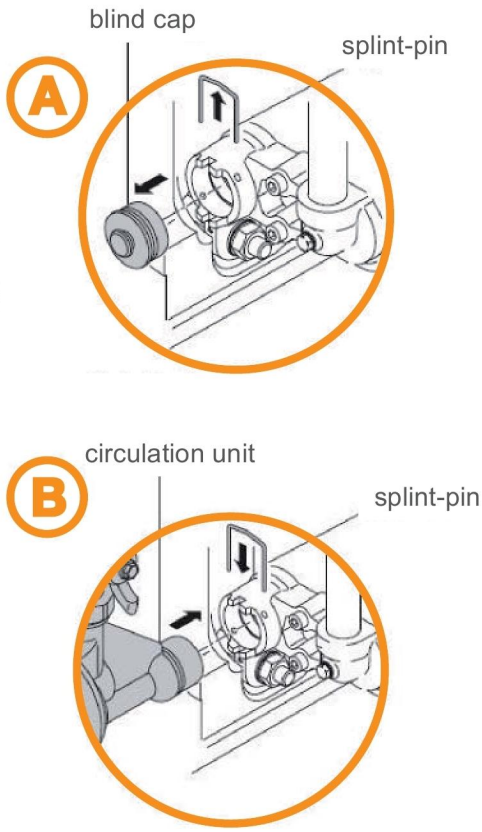


3.1 Installation of circulation unit

Ⓐ Remove splint-pin from the Push-In connection on the Fresh Hot Water Module and remove blind cap.

Ⓑ Push in the circulation unit as far as it will go into the Push-In connection and secure it with the splint-pin.





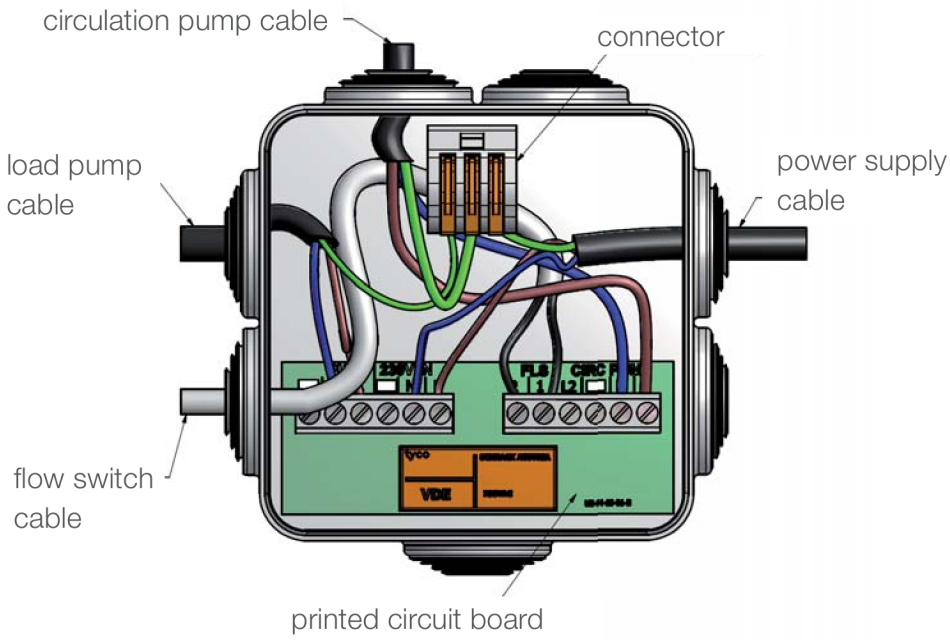
Advice! A rinsing port needs to be installed in the circulation pipes in front of the pump. Please make sure to read and understand the instructions enclosed in the circulation unit and the country-specific norms and regulations according drinking water!

Caution! Like in all tap water circulation systems, sufficient expansion and overpressure safety devices have to be included.

3.2 Operating modes of circulation unit

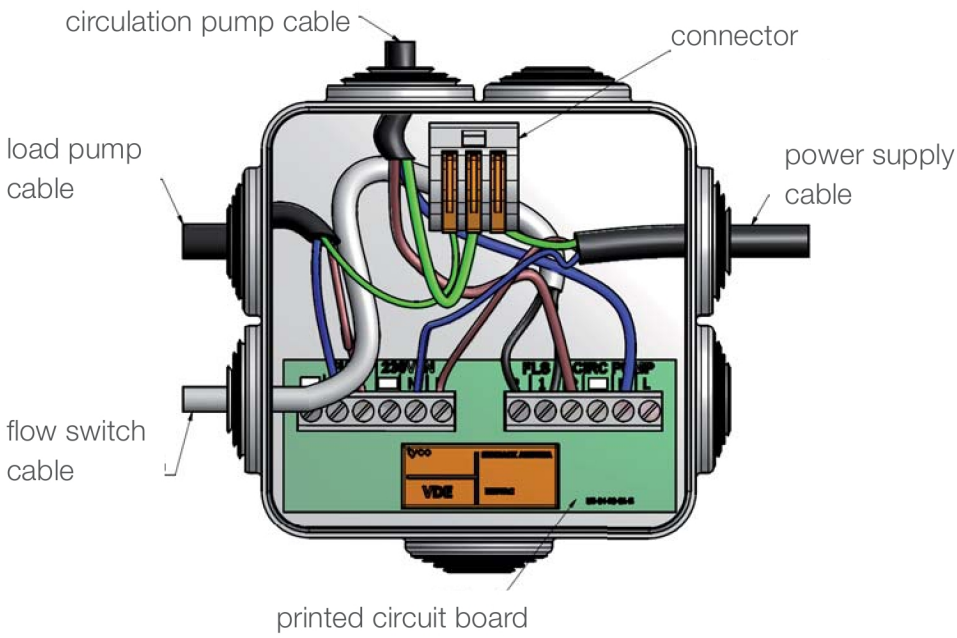
3.2.1 Time-independent circulation – Circuitry A

The circulation pump is enabled by a short actuation of a warm water point of usage and deactivated by the integrated return-thermostat when the preset circulation return temperature is reached. During this mode of operation, the clock timer has no relevant function and must be set to “Continuous Mode” (ON).



3.2.2 Time-dependent circulation – Circuitry B

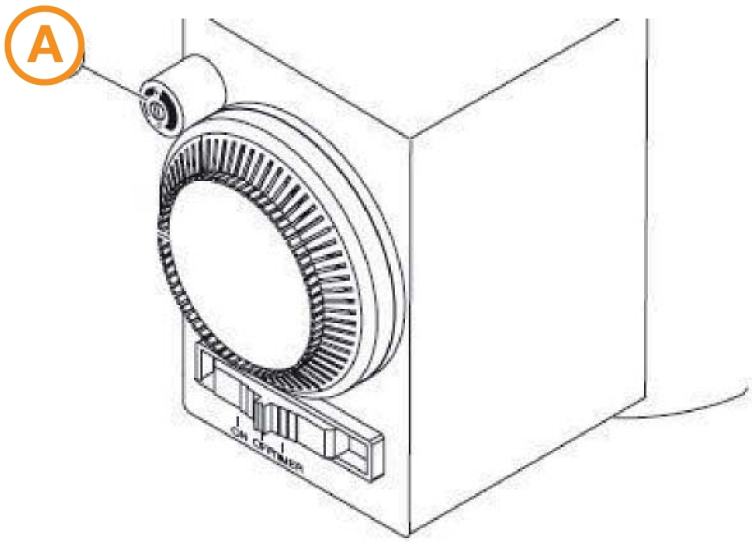
The circulation pump is activated by the individually adjustable clock timer and deactivated when the preset circulation return temperature is reached. A thermostat takes care for the synchronized operation of the pump. There is no cir-



culation beyond the preset times. The clock timer must be set to “Timer Mode” (TIMER).

3.3 Adjustment of return thermostat

Set the arrow on the temperature setting switch Ⓐ with a screwdriver to the desired temperature. The starting temperature is 5°C below the set value.



Caution! The preset circulation return temperature is 40°C. When changing this temperature, the thermostat has to be set 10°C below the hot water temperature!

4. Malfunctions

Prior to malfunction diagnostics, make sure that the following parameters are met:

- Flow temperature sufficient, min. 55°C at max. 45°C tap water temperature.
- Faultless electrical connection

4.1 No hot water preparation

Cause	Relief
Buffer tank not hot enough	⇨ Increase temperature in buffer tank
Charge pump doesn't convey buffer water	⇨ Check water level in buffer tank (extraction of buffer water for the Fresh Hot Water Module happens at the highest point of the tank). ⇨ De-aerate buffer circuit and check system pressure. ⇨ Check, if all shutoffs (flow and return, hot and cold water) are open. If not, open them. ⇨ Check hydraulic resistance between buffer tank and Fresh Hot Water Module and reduce it, if necessary. ⇨ Check at initiation if the Fresh Hot Water Module is correctly connected to the buffer circuit and drinking water system. ⇨ Check Flow-Switch and electricity box. ⇨ Replace broken charge pump.
Flow-Switch sends no signal to charge pump	1. Remove Flow-Switch 2. Clean Flow-Switch housing 3. Reintegrate Flow-Switch 4. If the Flow-Switch still sends no signal to the charge pump, replace Flow-Switch.
Electricity box broken (relay doesn't switch)	1. Check if power cord is connected to the electricity network. 2. Close shutoff valves 3. Remove Flow-Switch 4. Activate Flow-Switch manually. A working relay causes a switching noise in the electricity box. 5. If there is no switching noise, replace electricity box.
Thermostatic temperature regulator misaligned	⇨ Tap hot water ⇨ Turn the thermostatic temperature regulator to max. temperature for a short time. ⇨ If hot water is prepared again, set the regulator again. ⇨ If no hot water is prepared, check the heat exchanger for thermal furring. ⇨ Stop tapping hot water.

Thermal furring of plate heat exchanger	⇨ Clean plate heat exchanger

4.2 No circulation

Cause	Relief
Circulation pump doesn't convey tap water	1. Check if shutoff at circulation connection is open. 2. Circulation pump is not set properly. To check that, set the switch on the pump to "ON". → If the pump conveys water, check settings on the pump and eventually switch to "Timer Mode" → If no water is conveyed, replace circulation pump.
hydraulic resistance of tap water piping is too big for circulation pump	⇨ Check dimensioning of tap water piping.

4.3 Circulation pump conveys time-independent

Cause	Relief
Circulation unit was switched to time-independent circulation	⇨ Reconnect wiring of circulation pump for time-dependent circulation

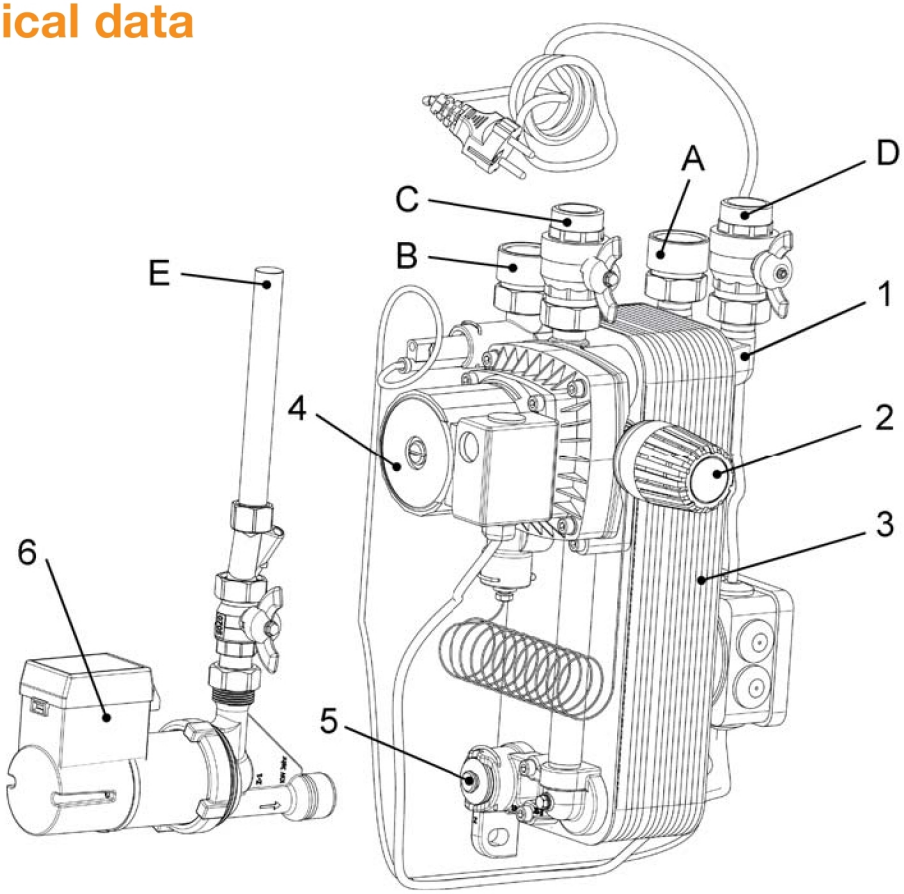
4.4 Constant circulation mode

Cause	Relief
Circulation unit is not set properly	1. Check settings of circulation pump, check for possible false temperature settings and the right timer setting 2. The set temperature on the circulation pump is not below the set temperature on the thermostatic temperature regulator. Adjust the temperature setting on the circulation pump.

4.5 Leaking of Fresh Hot Water Module

Cause	Relief
Fresh hot Water module is leaking	⇨ Check connection of pipes and sealings at the running device. Replace broken sealings.

5 Technical data



	FHWM-30	
Dimensions		
Width	400 mm	
Height	820 mm	
Depth	290 mm	
Insulation	EPP	
Weight	20 kg	
Connections		
Fresh water (A)	G1" IT	
Hot water (B)	G1" IT	
From system tank (C)	G1" ET	
To system tank (D)	G1" ET	
Circulation (E)	G½" IT	
Main components	1 Check valve 2 Temperature selector 3 Heat exchanger 4 Charge pump 5 Push-in-connection for circulation unit (incl. blind cap) 6 Optional circulation unit with pump and electronic return thermostat (suitable for timer or impulse mode)	
Output	30 l/min	

Min. operating temperature Max. operating temperature	2°C 95°C	
Max. operating pressure Fresh water Heating	 10 bar 3 bar	
Charge Pump Rpm Power input Nominal current	230 V / 50 Hz 2200 U/min 95 W 0,4 A	
Circulation pump Power input Nominal current	230 V / 50 Hz 25 W 0,1 A	

6 Terms of guarantee

The manufacturer issues a guarantee of 2 years from the invoice date on the device and its constituent parts.

Without proper installation and use of the device the guarantee is void.

Contact

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