Assembly and operating instructions

REMKO fresh water station EFS 25

Instructions for user and specialist

0039-2013-04 Edition 2, en_GB

Read the instructions prior to performing any task!

Read these operating instructions carefully before commissioning / using this device!

These instructions are an integral part of the system and must always be kept near or on the device.

Subject to modifications; No liability accepted for errors or misprints!

Installation and operating instructions (translation of the original)

Table of contents

1 Safety and usage instructions **4**
1.1 General safety notes 4
1.2 Identification of notes 4
1.3 Personnel qualifications 4
1.4 Dangers of failure to observe the safety notes 4
1.5 Safety-conscious working 4
1.6 Safety instructions for the operator 5
1.7 Safety notes for installation and inspection tasks 5
1.8 Unauthorised modification and changes 5
1.9 Intended use 6
1.10 Safety-conscious working 6
1.11 Warranty 6
1.12 Transportation and packaging 6
1.13 Environmental protection and recycling 6
2 Technical data **7**
2.1 Unit data 7
2.2 Pressure loss characteristic curve 8
3 Unit description **9**
4 Design and planning **10**
4.1 General Information 10
4.2 Design of the storage tank 11
4.3 Influence of water quality on corrosion resistance 12
5 Circulation operation **14**
6 Assembly and installation (Specialist) **14**
7 Commissioning (specialist) **16**
7.1 General Information 16
7.2 Filling the primary circuit 16
7.3 Commissioning the controller 17
7.4 Maximum dispensing medium flow rate 18
7.5 Setting the Temperature 20
7.6 Commissioning report 21
8 Maintenance **21**
9 Depiction of spare parts (specialist) **22**
10 Index **25**

1 Safety and usage instructions

1.1 General safety notes

Carefully read the operating manual before commissioning the units for the first time. It contains useful tips and notes such as hazard warnings to prevent personal injury and material damage. Failure to follow the directions in this manual not only presents a danger to people, the environment and the system itself, but will void any claims for liability.

Keep this operating manual and the refrigerant data sheet near to the units.

1.2 Identification of notes

This section provides an overview of all important safety aspects for proper protection of people and safe and fault-free operation.The instructions and safety notes contained within this manual must be observed in order to prevent accidents, personal injury and material damage.

Notes attached directly to the units must be observed in their entirety and be kept in a fully legible condition.

Safety notes in this manual are indicated by symbols. Safety notes are introduced with signal words which help to highlight the magnitude of the danger in question.

DANGER!

Contact with live parts poses an immediate danger of death due to electric shock. Damage to the insulation or individual components may pose a danger of death.

DANGER!

This combination of symbol and signal word warns of a situation in which there is immediate danger, which if not avoided may be fatal or cause serious injury.

WARNING!

This combination of symbol and signal word warns of a potentially hazardous situation, which if not avoided may be fatal or cause serious injury.

CAUTION!

This combination of symbol and signal word warns of a potentially hazardous situation, which if not avoided may cause injury or material and environmental damage.

NOTICE!

This combination of symbol and signal word warns of a potentially hazardous situation, which if not avoided may cause material and environmental damage.

This symbol highlights useful tips and recommendations as well as information for efficient and fault-free operation.

1.3 Personnel qualifications

Personnel responsible for commissioning, operation, maintenance, inspection and installation must be able to demonstrate that they hold a qualification which proves their ability to undertake the work.

1.4 Dangers of failure to observe the safety notes

Failure to observe the safety notes may pose a risk to people, the environment and the units. Failure to observe the safety notes may void any claims for damages.

In particular, failure to observe the safety notes may pose the following risks:

- The failure of important unit functions.
- The failure of prescribed methods of maintenance and repair.
- Danger to people on account of electrical and mechanical effects.

1.5 Safety-conscious working

The safety notes contained in this manual, the existing national regulations concerning accident prevention as well as any internal company working, operating and safety regulations must be observed.

1.6 Safety instructions for the operator

The operational safety of the units and components is only assured providing they are used as intended and in a fully assembled state.

- The units and components may only be set up, installed and maintained by qualified personnel.
- The existing regulations concerning accident prevention must be adhered to.
- Do not operate units or components with obvious defects or signs of damage.
- Contact with equipment parts or components can lead to burns or injury.
- Ensure that electrical energy does not pose a risk.
- Regulations of the VDE and the local energy supply company must be adhered to.

! NOTICE!

Material damage due to mineral oils!

Mineral oil products permanently damage EPDM seal elements; the sealing properties may therefore be lost. We do not take responsibility or provide warranty replacements for damage caused by seals that are damaged in this way.

- It is essential that you prevent EPDM from coming into contact with mineral oil substances.
- Use a lubricant that is free of mineral oil and has a silicone or polyalkylene basis, such as Unisilkon L250L and Syntheso Glep 1 made by Klüber, or a silicon spray.

1.7 Safety notes for installation and inspection tasks

- The operator must ensure that all inspection and installation work is carried out by authorised and qualified personnel who have thoroughly read the operating manual.
- Works on the pump/system may only be carried out whilst at a standstill as a matter of principle.
- Appropriate hazard prevention measures must be taken to prevent risks to people when performing installation, repair, maintenance or cleaning work on the units.
- The setup, connection and operation of the units and its components must be undertaken in accordance with the usage and operating conditions stipulated in this manual and comply with all applicable regional regulations.
- Regional regulations and laws as well as the Water Ecology Act must be observed.
- The power supply should be adapted to the requirements of the units.
- The units and components must be kept at an adequate distance from flammable, explosive, combustible, abrasive and dirty areas or atmospheres.
- Safety devices may not be modified or bypassed.

! NOTICE!

Malfunction!

The fresh water module must be integrated into the equipotential bonding system of the electrical installation. If this is not ensured by the pipe network, set up an approved potential equalisation connection to the main potential connection.

1.8 Unauthorised modification and changes

The operational safety of the fresh water module that was delivered is guaranteed only with intended use in accordance with section 1.8 of the operating instructions. Under no circumstances should the threshold values specified in the datasheet be exceeded.

Modifications or changes to units and components are not permitted and may cause malfunctions. Safety devices may not be modified or bypassed. Original replacement parts and accessories authorised by the manufacturer ensure safety. The use of other parts may invalidate liability for resulting consequences.

1.9 Intended use

The fresh water module is only permitted to be installed in heating systems between the buffer tank and the domestic water circuit. Depending on the design, it may only be installed and operated vertically!

Use only REMKO accessories in conjunction with the fresh water module.

Any different or additional use is a non-intended use. The manufacturer/supplier assumes no liability for damages arising from a non-intended use. The user bears the sole risk in such cases. Intended use also includes working in accordance with the operating and installation instructions and complying with the maintenance requirements.

The threshold values specified in the technical data must not be exceeded.

1.10 Safety-conscious working

The safety notes contained in this manual, the existing national regulations concerning accident prevention as well as any internal company working, operating and safety regulations must be observed.

1.11 Warranty

For warranty claims to be considered, it is essential that the ordering party or its representative complete and return the "certificate of warranty" to REMKO GmbH & Co. KG at the time when the units are purchased and commissioned.

The warranty conditions are detailed in the "General business and delivery conditions". Furthermore, only the parties to a contract can conclude special agreements beyond these conditions. In this case, contact your contractual partner in the first instance.

1.12 Transportation and packaging

The units are shipped in sturdy transport packaging or within the heat pump housing. Immediately check the units on delivery and make a note of any damage or missing parts on the delivery note. Inform the forwarding agent and contractual partner. Claims under guarantee made at a later date will not be accepted.

⚠ WARNING!

Plastic films and bags etc. are dangerous toys for children!

Why:

- Leave packaging material are not around.

- Packaging material may not be accessible to children!

1.13 Environmental protection and recycling

Disposing of packaging

All products are packed for transport in environmentally friendly materials. Make a valuable contribution to reducing waste and sustaining raw materials. Only dispose of packaging at approved collection points.

Disposing of the units and their components

For the manufacture of the units and components, only recyclable materials have been used. Help protect the environment by ensuring that the units or components (for example batteries) are not disposed of in household waste, but only in accordance with local regulations and in an environmentally safe manner, e.g. using authorised disposal and recycling specialists or council collection points.

2 Technical data

2.1 Unit data

Series		EFS 25
Operating data		
Maximum permitted pressure, primary	bar	3
Maximum permitted pressure, secondary	bar	10
Operating temperature	°C	2-95
Pipe connections		
Primary circuit (tank circuit)	Inches	3/4" inside thread
Secondary circuit (domestic water circuit)	Inches	3/4" outside thread, flat-sealing
Equipment		
Gravity brake	mmWS	200
Primary pump		HE pump with PWM control, 5-63 watts
Secondary pump		(optional) HE pump with PWM control, 5-63 watts
Heat exchanger		30 Plates
Medium flow rate probe		1 x VFS 2.40
Temperature probe		Pt 1000, fast
Materials		
Valves		Brass
Seals: O-rings		EPDM
Flat seals		AFM 34, asbestos-free
Plate heat exchanger		Stainless steel 1.4400/solder: 99.99% Cu
Insulation		EPP
Gravity brake		Hostaform

Unit data (continued)

Series		EFS 25
Dimensions		
Height (with insulation)	mm	645
Width (with insulation)	mm	344
Depth (with insulation)	mm	249
Top axis-centre distance	mm	86
Bottom axis-centre distance	mm	47
Height (with circulation, vertical installation)	mm	1115
Height (with circulation, horizontal installation)	mm	943

2.2 Pressure loss characteristic curve

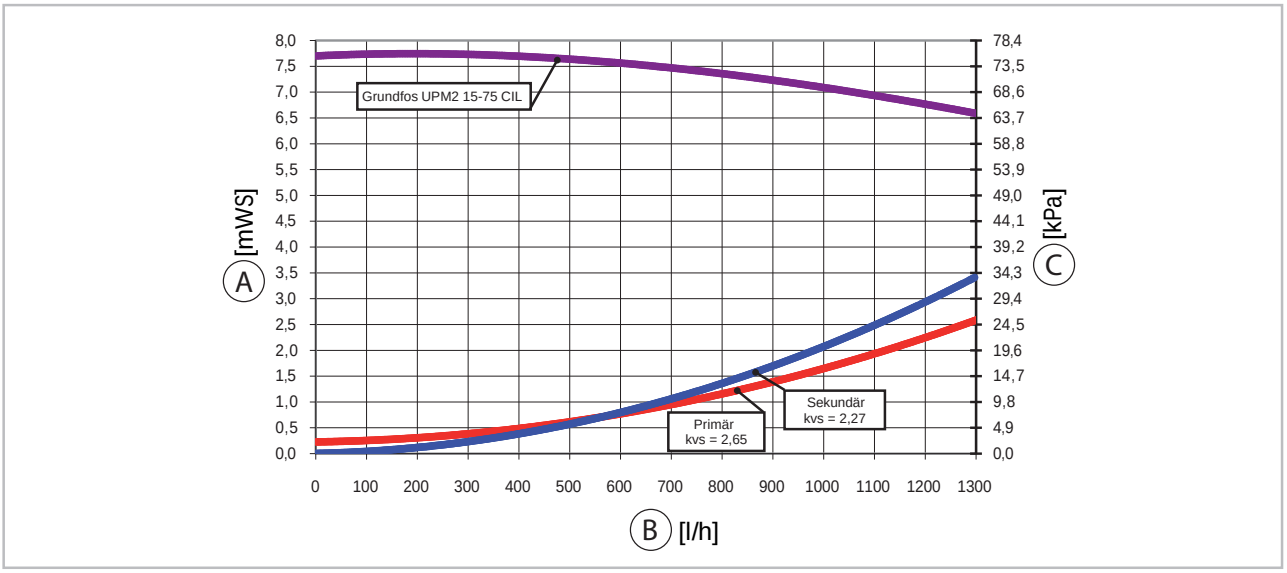

Fig. 1: Pressure loss characteristic curve

A: Pressure [mWS]
B: Medium flow rate [l/h]
C: Pressure [kPa]

3 Unit description

The fresh water station is a pre-installed valve group that was checked for leak tightness; it is used to transfer heat between the buffer tank and the domestic water circuit. It contains a pre-set controller and important valves for operating the system:

- Ball valves in the primary circuit
- Piston valves in the secondary circuit
- Safety valve in the secondary circuit
- Pre-installed controller
- Temperature probe on the cold water supply
- Temperature probe on the heating supply
- Ultrasonic flow rate meter on the domestic hot water outlet
- Primary pump that can be shut off
- Ball valve for filling/drainage, for bleeding the heat exchanger and the pump

! NOTICE!

A check for pressure and leak tightness after successful installation must always be performed before commissioning

REMKO GmbH & Co. KG herewith confirms that the supplied product corresponds to the UBA (German Environment Agency) positive list.

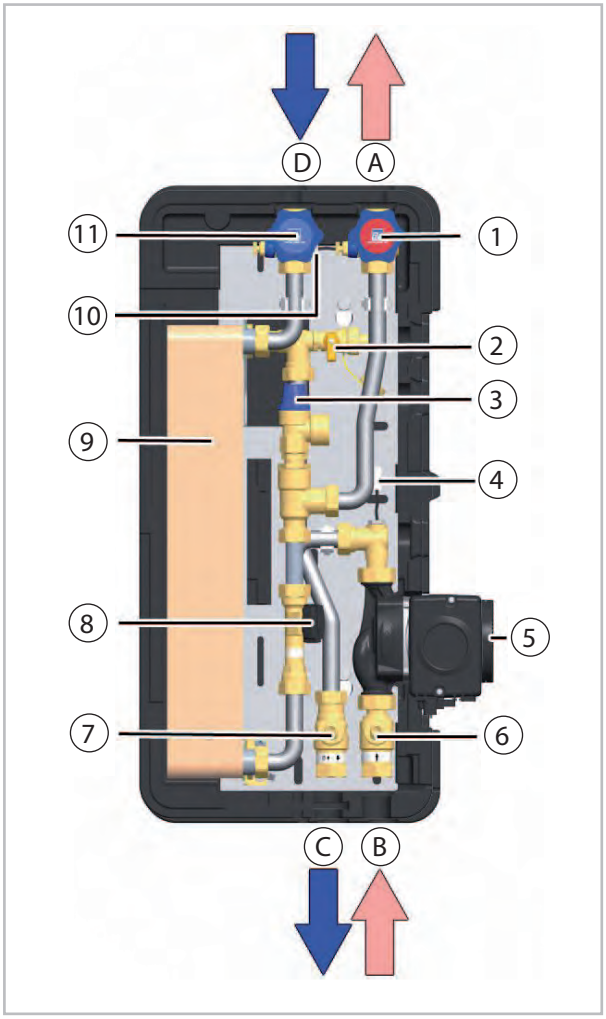

Fig. 2: Product description

A: Secondary side: Hot water outlet
B: Primary side: Inlet from the buffer tank
C: Primary side: Return flow to the buffer tank
D: Secondary side: Cold water inlet
1: Piston valve (hot water outlet)
2: Fill/drain valve
3: Safety valve, 10 bar
4: Temperature probe, fast
5: Primary pump
6: Ball valve
7: Ball valve with gravity brake
8: Analogue medium flow rate temperature probe VFS 2-40
9: Heat exchanger
10: Temperature probe, fast
11: Piston valve (cold water inlet)

4 Design and planning

4.1 General Information

The fresh water station is a fresh water module that heats domestic water according to the continuous flow heater principle. In order to ensure fault-free operation of the fresh water station, the system must fulfil certain prerequisites. Before installation, take some time for planning.

⚠ CAUTION!

Danger of scalding due to hot water!

Due to external circulation in the primary circuit, water with a temperature of up to 90 °C can leak out at the dispensing connection.

- No external pumps are permitted to be installed between the fresh water module and the buffer tank.
- The fresh water module is not permitted to be connected to a heating cycle distributor.

Installation example

The operating mode can be bivalent alternative.

This hydraulic diagram serves merely to assist in planning activities; the hydraulic system on site must be planned and laid out by the installer! Subject to technical changes!

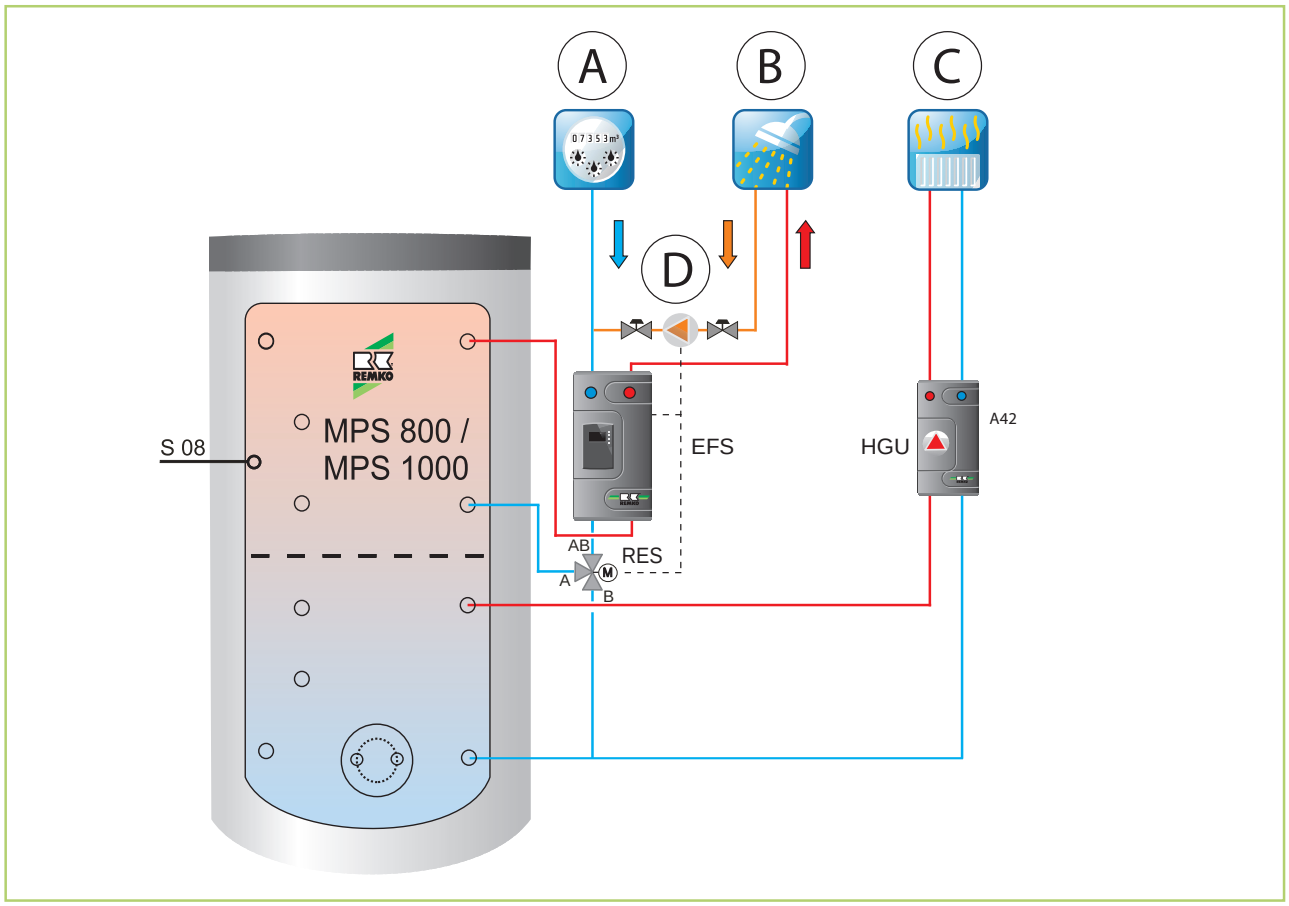

Fig. 3: Fresh water station with optional circulation set and optional return distribution

A: Cold water
B: Hot water
C: Heater heating cycle
D: Circulation

4.2 Design of the storage tank

You can use the following table to calculate the approximate required volume of the buffer tank.

Temperature in buffer tank [°C]	HW temperature [°C] set in controller	Reqd. Storage tank volume per litre of HW [Litre]
50	45	1.5
60	45	0.9
	50	1.2
	55	1.6
70	45	0.7
	50	0.9
	55	1.0
80	45	0.6
	50	0.7
	55	0.8

Sample calculation for the design of the buffer tank:

Temperature of buffer tank: 60 °C, required dispensing medium flow rate at water valve: 20 l/min

DHW temperature set on the controller: 45 °C

How large must the Storage tank be if a 20-minute dispensing operation is to take place without reheating?

20 l/min x 20 min = 400 l

400 l x 0,9 = 360 l ⇨ The heated part of the buffer tank must be 360 litres in size.

The hot water volume depends on the position of the installed S 08 probe (Smart Control hot water probe). The higher this is installed on the buffer tank, the lower the hot water volume.

4.3 Influence of water quality on corrosion resistance

This chapter is intended to provide an overview of the corrosion resistance of stainless steels and soldering materials in tap water at room temperature. The table lists several important chemical components, but the actual corrosion is a very complex process that is influenced by many different components in combination with each other. This table is therefore a considerable simplification.

Explanations:

"+" = Good resistance under normal conditions

"0" = Corrosion can occur, especially if other factors are rated as 0

"-" = Use not recommended

			Plate material			Soldering material		
Water content	**Concentration (mg/l or ppm)**	**Time limits for analysis**	**AISI 304**	**AISI 316**	**254 SMO**	**Copper**	**Nickel**	**Stainless**
Alkalinity (HCO_3)	< 70	Within 24 hrs.	+	+	+	0	+	+
	70-300		+	+	+	+	+	+
	> 300		+	+	+	0/+	+	+
Sulphate [1] (SO_4^{2-})	< 70	No limit	+	+	+	+	+	+
	70-300		+	+	+	0/-	+	+
	> 300		+	+	+	+	+	+
HCO_3^- / SO_4^{2-}	> 1.0	No limit	+	+	+	+	+	+
	< 1.0		+	+	+	0/-	+	+
Electrical conductivity	< 10 µS/cm	No limit	+	+	+	0	+	+
	10-500 µS/cm		+	+	+	+	+	+
	> 500 µS/cm		+	+	+	0	+	+
pH [2]	< 6.0	Within 24 hrs.	0	0	0	0	0	+
	6.0-7.5		+	+	+	0	+	+
	7.5-9.0		+	+	+	+	+	+
	> 9.0		+	+	+	0	+	+
Ammonium (NH_4^+)	< 2	Within 24 hrs.	+	+	+	+	+	+
	2-20		+	+	+	0	+	+
	> 20		+	+	+	-	+	+
Chloride (Cl^-)	< 100	No limit	+	+	+	+	+	+
See also table "Chloride content" *on page 13*	100-200		0	+	+	+	+	+
	200-300		-	+	+	+	+	+
	> 300		-	-	+	0/+	+	+
Free chlorine (Cl_2)	< 1	Within 5 hrs	+	+	+	+	+	+
	1-5		-	-	0	0	+	+
	> 5		-	-	-	0/-	+	+

			Plate material			Soldering material		
Water content	**Concentration (mg/l or ppm)**	**Time limits for analysis**	**AISI 304**	**AISI 316**	**254 SMO**	**Copper**	**Nickel**	**Stainless**
Hydrogen sulphide (H_2S)	< 0.05	No limit		+	+	+	+	+
	> 0.05			+	+	0/-	+	+
Free (aggressive) Carbon dioxide (CO_2)	< 5	No limit	+	+	+	+	+	+
	5-20		+	+	+	0	+	+
	> 20		+	+	+	-	+	+
Overall hardness (°dH)	4.0-8.5	No limit	+	+	+	+	+	+
Nitrate [1] (NO_3^-)	< 100	No limit	+	+	+	+	+	+
	> 100		+	+	+	0	+	+
Iron [3] (Fe)	< 0.2	No limit	+	+	+	+	+	+
	> 0.2		+	+	+	0	+	+
Aluminium (Al)	< 0.2	No limit	+	+	+	+	+	+
	> 0.2		+	+	+	0	+	+
Manganese [3] (Mn)	< 0.1	No limit	+	+	+	+	+	+
	> 0.1		+	+	+	0	+	+

[1] Sulphates and nitrates act as inhibitors for pitting corrosion caused by chlorides in pH-neutral environments

[2] Generally, a low pH (below 6) increases the risk of corrosion and a high pH (over 7.5) reduces the risk of corrosion

[3] Fe^{3+} and Mn^{4+} are strong oxidisers and can increase the risk of local corrosion in stainless steels

SiO_2 over 150 ppm increases the risk of calcification

	Highest temperature			
Chloride content	**60 °C**	**80 °C**	**120 °C**	**130 °C**
= 10 ppm	SS 304	SS 304	SS 304	SS 316
= 25 ppm	SS 304	SS 304	SS 316	SS 316
= 50 ppm	SS 304	SS 316	SS 316	Ti / 254 SMO
= 80 ppm	SS 316	SS 316	SS 316	Ti / 254 SMO
= 150 ppm	SS 316	SS 316	Ti / 254 SMO	Ti / 254 SMO
= 300 ppm	SS 316	Ti / 254 SMO	Ti / 254 SMO	Ti / 254 SMO
> 300 ppm	Ti / 254 SMO	Ti / 254 SMO	Ti / 254 SMO	Ti / 254 SMO

5 Circulation operation

The fresh water station is (optionally) equipped with a circulation pump. Three possible operating modes are stored in the controller to operate the circulation pump (also see the operating instructions of the controller).

- **Pulse-controlled operation** (as necessary / requirement):
  Actuating a hot water dispensing connection for a short time (dispensing impulse: ~2 seconds) starts the circulation pump. The circulation pump then runs for a few minutes (adjustable).
- **Time-dependent operation:**
  Operation of the circulation pump can be adjusted on a weekly timer within a freely-selectable period. In this operating mode, circulation begins at the start of the period that is set. Circulation is deactivated after the set period expires.
- **Temperature-dependent operation:**
  In this operating mode, circulation is only started if the temperature falls below the minimum temperature that can be set on the circulation temperature probe within the operation period. Circulation is deactivated after the adjustable target temperature is reached or after the set period expires.

Any of the operating modes can be combined, e.g. time-dependent and temperature-dependent operation. In this case, circulation is only active if the temperature falls below the temperature on the circulation temperature probe and the time window is active. Outside this time window, the circulation pump can be activated via a dispensing pulse if pulse-controlled operation is also activated.

! NOTICE!

In the delivered state, circulation is not activated (see the operating instructions of the controller). If the REMKO circulation pump is installed, the operating mode must be activated urgently. The speed of the circulation pump must be specified via the PWM signal. (Factory setting: 0 %).

6 Assembly and installation (Specialist)

⚠ DANGER!

Danger due to electric shock!

– Remove the power plug before carrying out electrical work on the controller!
– Plug the power plug of the controller back in to a socket only after completing all installation works. In this way, you can prevent the motors from starting up accidentally.

! NOTICE!

To avoid damage to the system, the installation location must be dry, capable of carrying the load and frost-free.

If the fresh water station is not installed directly on the storage tank, note the following points:

1. Determine the installation location of the fresh water module near to the buffer tank. On the heating side, the pipes must not exceed a length of 4 m for DN 20.
2. Transfer the dimensions for the holes to the wall. A corresponding drilling template is provided on the board under the fresh water module
3. Drill the holes and insert the enclosed wall plugs.
4. Turn the screws into the wall plugs until around 40 mm is sticking out of the wall.
5. Remove the front insulation jacket.

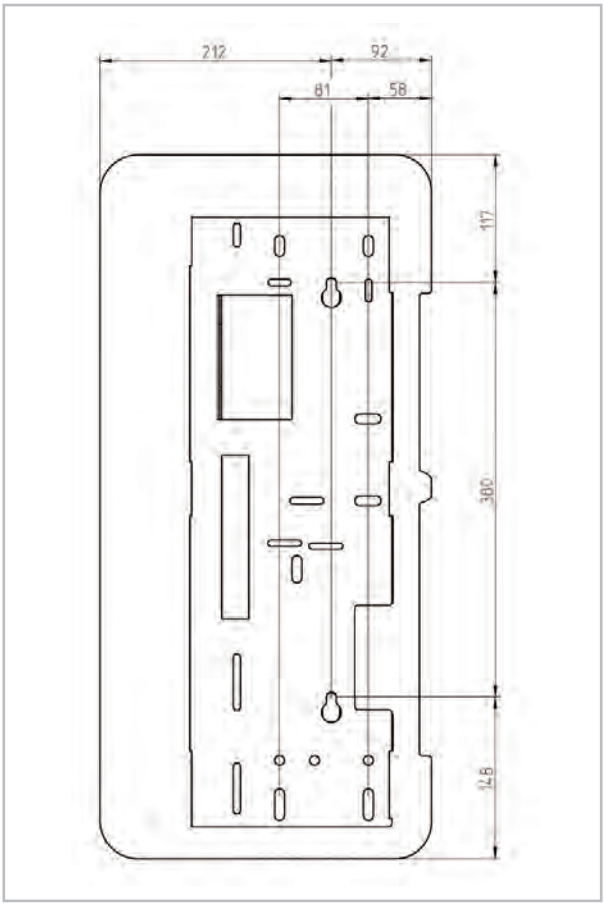

Fig. 4: Distance between the holes

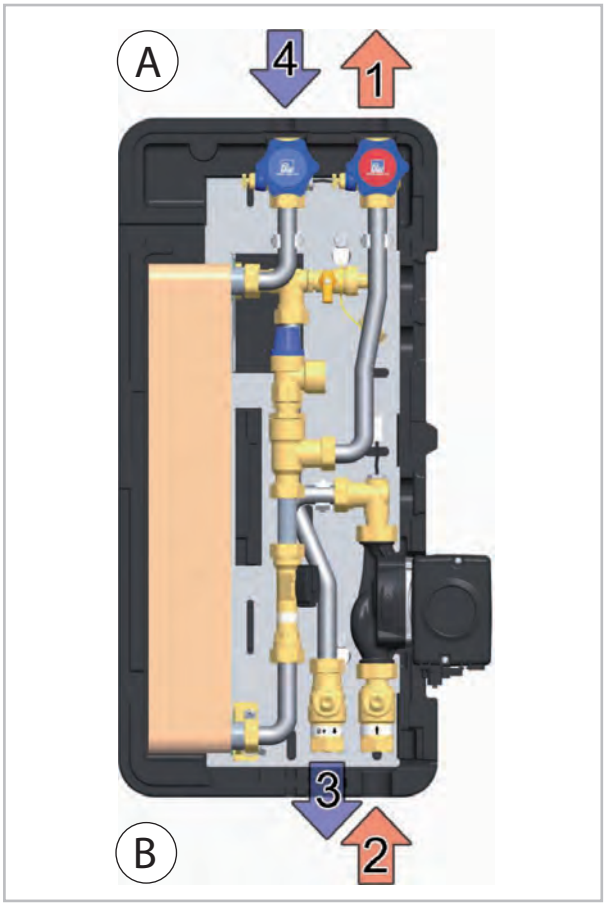

Fig. 5: Piping of the fresh water station

A: Pipe distance from the wall (secondary) = 107 mm
B: Pipe distance from the wall (primary) = 67 mm

6. Hang the fresh water module onto the screws. Tighten the screws so that the insulation on the sides is flush to the wall.

7. Connect the pipes of the fresh water module to the system in accordance with Fig. 5.

1. Secondary side:

Hot water outlet,

Connection ¾" AG, flat-sealing

2. Primary side:

Inlet from buffer tank, ¾" IG,

Piping at least DN 20 22 x 1 mm,

recommended DN 25 28 x 1.5 mm

3. Primary side:

Return flow to buffer tank, ¾" IG,

Piping at least DN 20 22 x 1 mm,

recommended DN 25 28 x 1.5 mm

4. Secondary side:

Cold water inlet,

Connection ¾" AG, flat-sealing

7 Commissioning (specialist)

7.1 General Information

NOTE:

Open the valves in the pipes and the fresh water station **slowly**, in order to prevent pressure shocks.

Function of the gravity brake

The primary circuit is equipped with a gravity brake in the ball valve, in order to prevent undesired gravity circulation.

The gravity brake must be opened to bleed and clean the system. To do this, turn the ball valve to the **45°** position. The gravity brake is out of operation.

All ball valves and valves must be opened **completely** (0°) in order to operate the system.

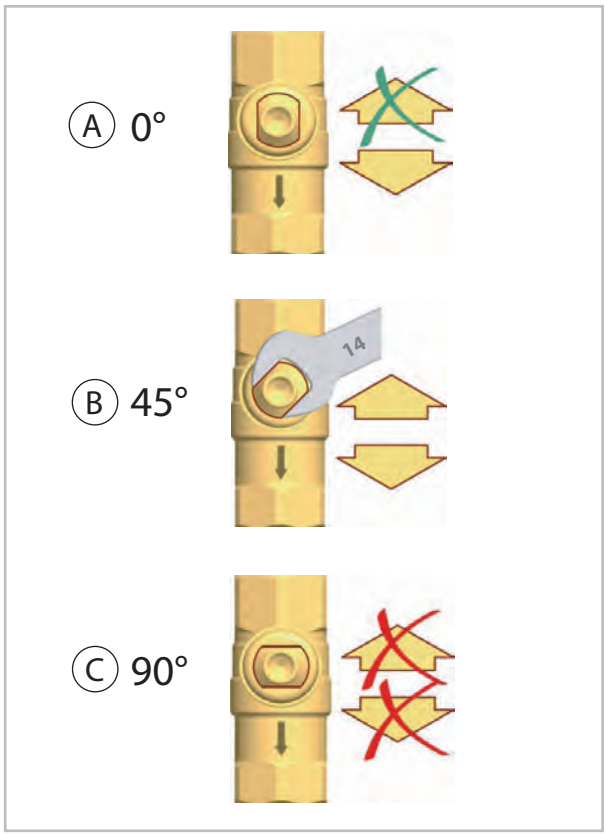

Fig. 6: Setting the gravity brake

A: 0° position - Gravity brake in Operation, only flowing in flow direction.
B: 45° position - Gravity brake out of Operation, flowing in both directions.
C: 90° position - Ball valve closed, no flow.

7.2 Filling the primary circuit

If the storage tank is (partially) filled

⚠ CAUTION!

Danger of scalding due to hot water!

The system is under pressure. By opening the ball valve for filling/drainage, water of up to 90 °C can leak out of the ball valve for filling/drainage, which may cause bodily injury.

– Open the ball valve for filling/drainage slowly and from a safe distance.

1. Open the ball valve (F) by turning it to the **0°** position.
2. Fill the storage tank using the filling valves provided by the customer until you reach an operating pressure of 1.5 bar*. Use the heating water in accordance with VDI 2035 / ÖNorm H5195-1.
3. Connect a hose to the ball valve for filling/drainage (B). Carefully actuate the ball valve for filling/drainage (B) and allow the air to bleed out.
4. Connect the ball valve for filling/drainage (B).
5. Close the ball valve (F) by turning it to the **90°** position.
6. Open the ball valve (G) slowly by turning it to the **45°** position.
7. Carefully actuate the ball valve for filling/drainage (B) and allow the air to bleed out.
8. Connect the ball valve for filling/drainage (B).
9. After bleeding, check the operating pressure of the storage tank and increase it if necessary.
10. Open the ball valves (F) and (G) completely by turning them to the **0°** position.

1.5 bar in the primary circuit = recommended minimum value.

The system pressures that depend on the design and the components of the heating system are also crucial for the pressure

7.3 Commissioning the controller

⚠ DANGER!

Danger due to electric shock!

Check whether the probes and pumps to the controller are connected and whether the controller housing is closed. Only then should you insert the power plug into the socket.

1. Remove the controller's front panel (see the controller instructions).
2. In the selection menu of the controller, select manual operation ("H1"). Switch the PWM signal of the pump on ("100 %").
3. Allow the pump to run for a few minutes in order to bleed the FriwaMini.
4. If you continue to hear air noises after this, connect a hose to the ball valve for filling/drainage (B). Carefully actuate the ball valve for filling/drainage (B) while the pump is still running and allow the air to bleed out.
5. If you no longer hear any air noises, switch the pump off. To do this, select manual operation ("H1") in the selection menu of the controller.
6. Set the pump to automatic operation ("A").
7. Slowly open the piston valves on the secondary side (A and L).
8. Open a domestic hot water dispensing connection (e.g. water valve) with a flow of at least 10 l per minute and allow the water to run for around 2 minutes, in order to bleed the secondary circuit. Then close all dispensing connections in the secondary circuit.
9. Use the pre-assembled power supply cable to connect the fresh water station to the mains (230 V, 50 Hz).
10. Ensure that the fresh water station is correctly included in the equipotential bonding of the system.
11. Set the required domestic hot water temperature on the controller (see the following page).
12. The fresh water station is now ready for operation.

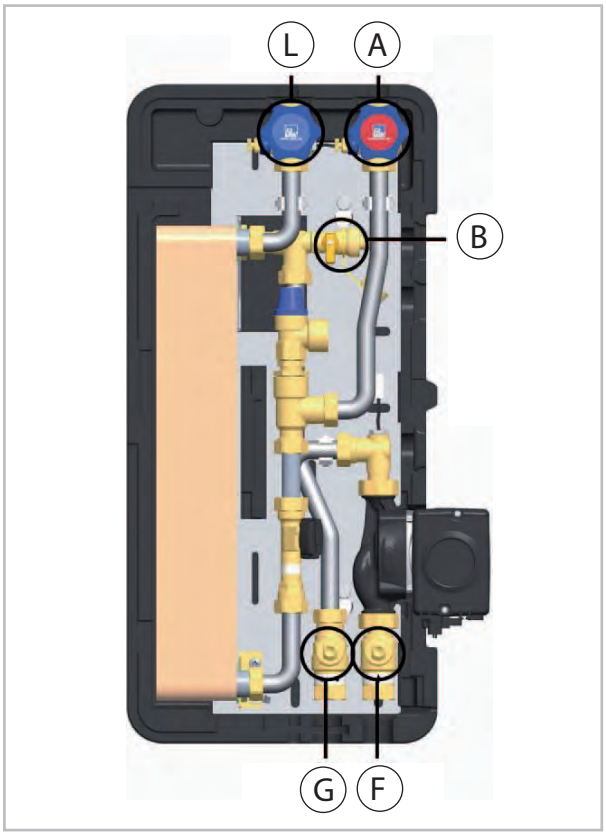

Fig. 7: Commissioning the controller

7.4 Maximum dispensing medium flow rate

The following diagram shows the maximum dispensing medium flow rate depending on the storage tank temperature; this assumes a pre-set hot water temperature of 45 °C at the dispensing connection. The integrated controller prevents the temperature from decreasing as long as the maximum medium flow rate is not exceeded.

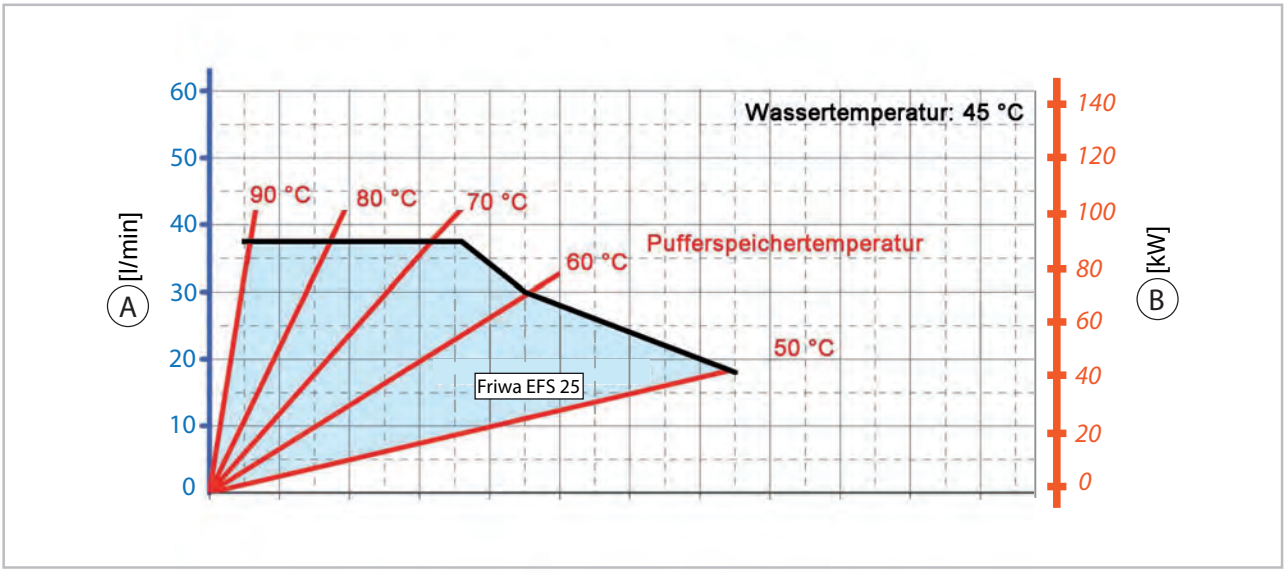

Fig. 8: Maximum dispensing medium flow rate

A: Dispensing medium flow rate [l/min]
B: Power [kW]

Boundary conditions:

Cold water temperature: 10 °C,

Maximum pressure loss on the domestic water side of the fresh water station: 1000 mbar

The following examples explain the relationships between the individual variables of the hot water temperature, the dispensing medium flow rate and the buffer tank temperature, and show how these affect the transmission capacity of the fresh water station.

The hot water temperature that is set in the Smart Control controller (S 08 probe) is the reference temperature for the buffer tank. Factory setting: 45 °C.

Example 1

Hot water temperature at the dispensing connection: 45 °C

Temperature in the buffer tank: 50 °C

⇨ Maximum dispensing medium flow rate: 18 l/min, transmission capacity: 44 kW

Example 2

Hot water temperature at the dispensing connection: 45 °C

Maximum dispensing medium flow rate: 25 l/min

⇨ Temperature in the buffer tank: 60 °C, transmission capacity: 62 kW

The following diagram shows the maximum dispensing medium flow rate if the hot water temperature is 45 °C at the dispensing connection, after being mixed with cold water with a temperature of 10 °C. The hot water temperature set on the controller is 60 °C.

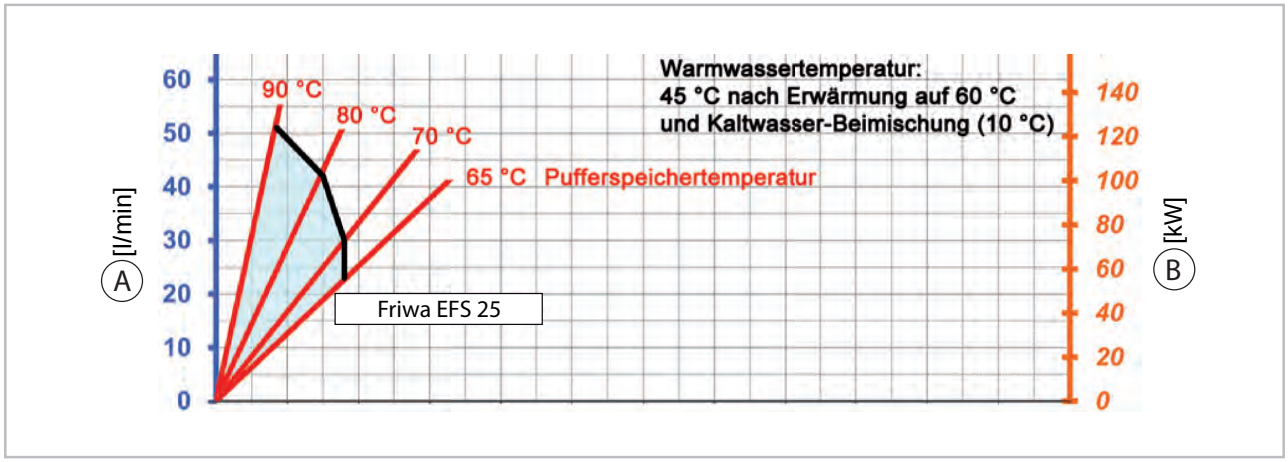

Fig. 9: Maximum dispensing medium flow rate

A: Dispensing medium flow rate [l/min]
B: Power [kW]

Boundary conditions:

Cold water temperature: 10 °C,

Example 1

Hot water temperature on the controller: 60 °C

Temperature in the buffer tank: 70 °C

⇨ Maximum dispensing medium flow rate: 31 l/min, transmission capacity: 74 kW

Example 2

Hot water temperature on the controller: 60 °C

Maximum dispensing medium flow rate: 25 l/min

⇨ Temperature in the buffer tank: ~65 °C, transmission capacity: 60 kW

7.5 Setting the Temperature

Set the required (maximum) domestic hot water temperature on the controller under "Para".

To ensure that scalding cannot occur at the water valve, the maximum hot water temperature must not exceed 60 °C.

Primary side

The temperature required in the buffer tank on the primary side depends on the desired hot water temperature and the required dispensing quantity. The temperature in the buffer tank must be at least 5 K above the required hot water temperature.

Secondary side

The possible dispensing medium flow rate [l/min] on the water valve depends on the hot water temperature that is set in the controller and the temperature that is available in the storage tank.

The recommended maximum domestic water medium flow rate through the fresh water module is 25 l/min.

The following table shows the relationship between the storage tank temperature and the maximum dispensing medium flow rate that is connected when the temperature on the valve is 45°C (e.g. single-lever mixer). If the hot water temperature that is set on the Controller is higher than 45 °C, the dispensing medium flow rate consists of a mixture of hot and cold water.

The transmission capacity that is specified for this is required to warm the water quantity of the dispensing medium flow rate [l/min] from 10 °C to 45 °C.

Temperature in buffer tank probe S08 [°C]	HW temperature set on the controller [°C]	Maximum medium flow rate from the fresh water station with the set HW temperature [l/min]	Maximum dispensing medium flow rate at the water valve for an HW Temperature of 45 °C [l/min]	Transmission capacity of the fresh water station [kW]
50	45	17	-	41
60	45	28	30	67
	50	21	24	60
	55	16	19	49
70	45	36*	-	78
	50	30	34	72
	55	25	31	64
	60	20	28	53
80	45	38*	-	93
	50	38*	42	105
	55	32	40	100
	60	27	38	95

Reheating is not considered if the cold water temperature is 10 °C

* maximum medium flow rate: 25 l/min, pressure loss of the fresh water station is 1000 mbar in this case (higher values are possible in a limited way hydraulically).

7.6 Commissioning report

System operator							
System location							
Serial numbers							
REMKO EFS25							
- Medium flow rate probes							
- Controller							
- Software version							
Primary piping	Ø =		mm		l =		m
Secondary piping	Ø =		mm		l =		m
Other installations	❑	Circulation set			❑	Return distribution set	
	❑	Miscellaneous:					

Are both circuits cleaned and bled properly? (no air noises in the pump)	❑	Bled
Are all shut-off valves in the cold water supply opened?	❑	Opened
Is pressure of at least 1.5 bar present on the primary side?	❑	Checked
Is pressure of at least 2.5 bar present on the secondary side?	❑	Checked
Is an error message shown on the display?	❑	No message
Installation operation		Date, Signature

8 Maintenance

After each retroactive structural modification to the primary side (e.g. installing a dirt separator, a dirt trap or a mixing valve), you must start a new commissioning procedure in the controller to ensure optimum regulation.

You should also carry out commissioning again after adjusting the mixing valve temperature.

A specialist must check that the safety valve is functioning correctly when commissioning and at least once per year.

9 Depiction of spare parts (specialist)

Depiction of spare parts EFS 25

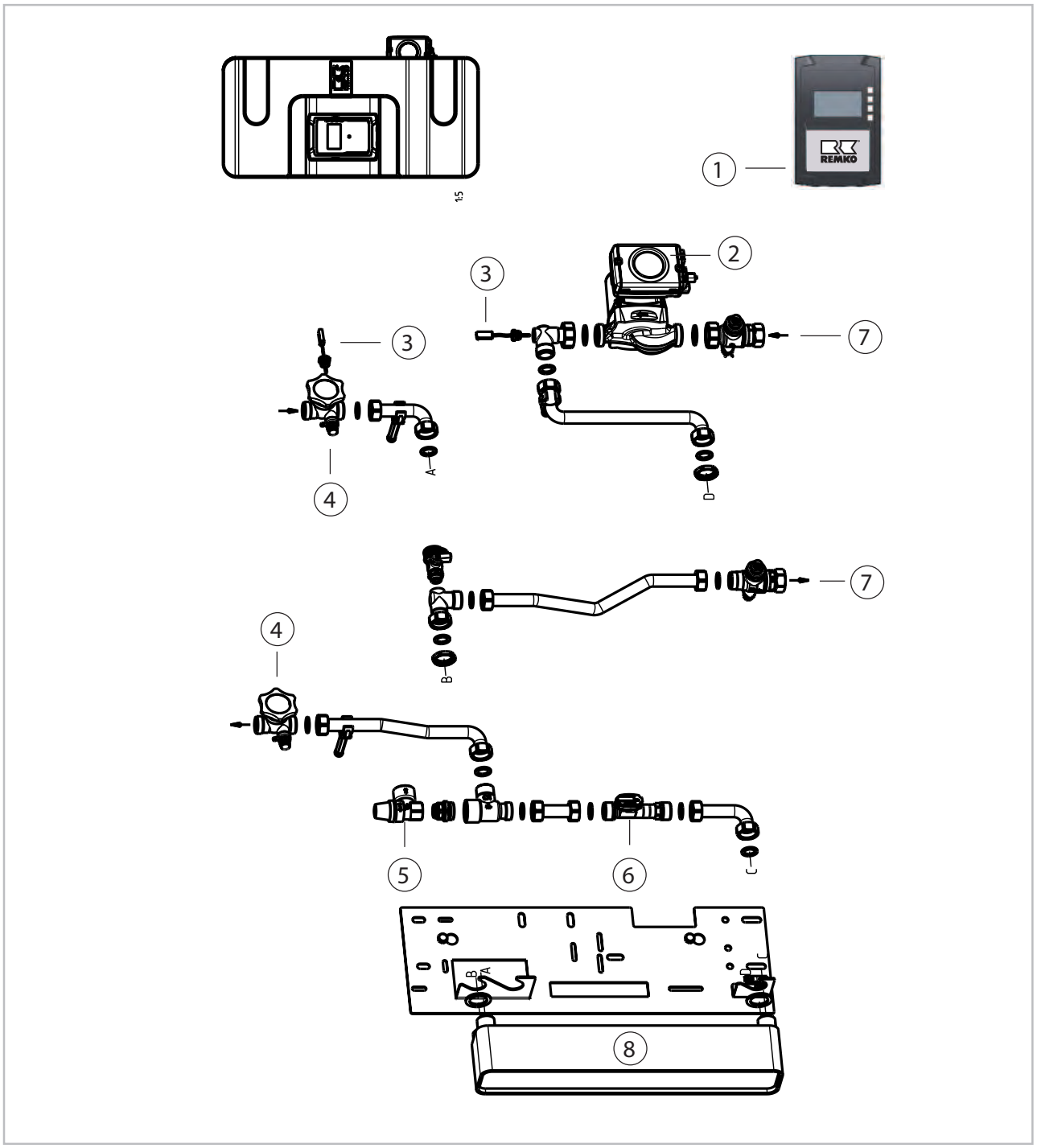

Fig. 10: Spare parts EFS 25

We reserve the right to modify the dimensions and design as part of the ongoing technical development process

When ordering spare parts, please always state the EDP no., unit number and unit type (see name plate)!

Spare parts list EFS 25

No.	Description	EFS 25
1	Controller	260156-9
2	Grundfoss circulation pump UPM 2-15/75 CIL 2	260155-2
3	Screw-in probe 15 mm G 1/4	260155-3
4	Piston valve DN 15	260155-6
5	Safety valve (1/2" x 3/4") 10 bar	260155-5
6	Medium flow rate probe (analogue)	260155-1
7	Thermo ball valve DN 20 (3/4")	260155-4
8	Plate heat exchanger	260155-8

When ordering spare parts, please always state the EDP number, unit number and unit type (see name plate)!

Depiction of circulation pump spare parts

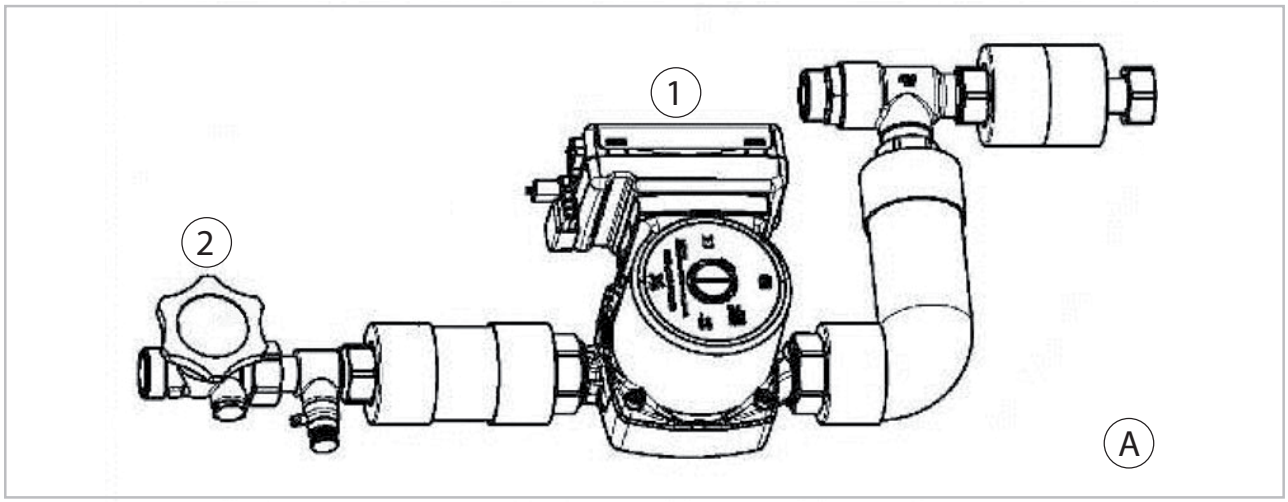

Fig. 11: Circulation pump spare parts

REMKO fresh water station

Circulation pump spare parts list

No.	Description	Circulation pump
A	Circulation pump (complete with pipe assembly)	259052
1	Circulation pump	260155-9
2	Piston valve	260155-6
	Spare parts not illustrated	
	Control cable	260155-10
	Powerline cable	260155-11

When ordering spare parts, please always state the EDP number, unit number and unit type (see name plate)!

10 Index

C

Circulation operation 14
Commissioning the controller 17
Controller, commissioning 17

D

Design of the storage tank 11
Dimensions 8
Dispensing medium flow rate, maximum 18

E

Environmental protection 6
Equipment 8

F

Filling the primary circuit 16
Function of the gravity brake 16

G

Gravity brake, function 16

I

Intended use 6

M

Maintenance 21
Materials 8
Maximum dispensing medium flow rate 18

O

Operating data 8
Ordering spare parts 23, 24

P

Packaging, disposal 6
Pipe connections 8
Pressure loss characteristic curve 8

R

Recycling 6

S

Safety
- Dangers of failure to observe the safety notes 4
- General 4
- Identification of notes 4
- Instructions for the operator 5
- Note for inspection work 5
- Note for installation work 5
- Personnel qualifications 4
- Safety-conscious working 4, 6
- Unauthorised modification 5
- Unauthorised replacement part manufacture . 5

Set the temperature 20
Setting the Temperature 20
Spare parts 22
Storage tank, design 11

U

Unit disposal 6

W

Warranty 6

REMKO fresh water station

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Distribution
REMKO offers not just a well established sales network both nationally and internationally, but also has exceptionally highly-qualified sales specialists.
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Our equipment operates precisely and reliably. However, in the event of a fault, REMKO customer service is quickly at the scene. Our comprehensive network of experienced dealers always guarantees quick and reliable service.

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Air conditioning and heating technology

Im Seelenkamp 12	D-32791 Lage
Postfach 1827	D-32777 Lage
Telephone	+49 5232 606-0
Telefax	+49 5232 606-260
E-mail	info@remko.de
Website	www.remko.de