Installation instructions

REMKO storage tank systems

Storage tank for domestic hot water

EWS 200E, EWS 301E, EWS 500E



0310-2023-08 Edition 1, 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.

CE

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

Translation of the original

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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.

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.
- Work on the system may only ever be carried out when it is stationary.
- 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.

1.8 Unauthorised modification and changes

The operational safety of the supplied units/ components is guaranteed when used in line with intended use in accordance with section 1.9 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 storage tank is used to store domestic hot water.

Any different or additional use is a non-intended use. The manufacturer/supplier assumes no liability for damages arising from 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 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.

1.11 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!

1.12 Environmental protection and recycling

Disposal 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.



Disposal of equipment and components

Only recyclable materials are used in the manufacture of the devices and components. Help protect the environment by ensuring that the devices or components (for example batteries) are not disposed in household waste, but only in accordance with local regulations and in an environmentally safe manner, e.g. using certified firms and recycling specialists or at collection points.



2 Technical data

2.1 Technical data

Series		EWS 200E	EWS 301E	EWS 500E
Drinking water volume	l	168	264	440
Heat exchanger surface	m^2	2,0	3,4	6,2
Heat exchanger contents	l	---	19,4	43,0
Storage tank volume (gross)	l	200	300	500
Max. operating pressure	bar	10	10	10
Max. permissible operating temp.	°C	95	95	95
Max. drawing quantity when drawing continuously at 45 °C [1)]	l/min	---	37,0	22,8
Standby energy Consumption value [2)]	kWh/d	1,37	1,64	1,78
Standby losses 24h	kWh/24h	2,5	2,9	3,1
N_L count		8,0	7,0 [4)]	13,5 [3)] / 21,6 [4)]
Energy efficiency ratio		B	B	B
Max. installation length for flange heater	mm	200	450	450
Height	mm	1340	1420	1921
Tilt height	mm	1455	1562	2023
Diameter	mm	550	650	750
Weight	kg	90	120	222

[1)] te=10, Tv=55 °C, Tm=45 °C, Q=3000 l/h

[2)] Energy consumption in standby according to DIN 44 532 with 50 °C storage tank temperature and 45 °C tap temperature.

[3)] N_L count according to EN 12897 and DIN 4708 at 50 °C storage tank temperature, 55 °C inlet temperature, Q = 3000 l/h and 45 °C tap temperature

[4)] N_L count according to EN 12897 and DIN 4708 at 65 °C storage tank temperature, 80 °C inlet temperature, Q = 3000 l/h and 45 °C tap temperature

We reserve the right to make technical changes for the purpose of technical advancement.

REMKO storage tank systems

Throughputs EWS 200E

Throughputs		EWS 200E Preparation for domestic water			
Inlet temperature	°C	55	55	55	55
Hot water temperature	°C	45	45	45	45
Cold water temperature	°C	10	10	10	10
Heating cycle flow rate	l/h	600	1200	1800	2400
Throughput	kW	14,6	23,1	28,0	31,0

Throughputs		EWS 200E Preparation for domestic water			
Inlet temperature	°C	60	60	60	60
Hot water temperature	°C	50	50	50	50
Cold water temperature	°C	10	10	10	10
Heating cycle flow rate	l/h	600	1200	1800	2400
Throughput	kW	16,6	25,9	31,5	35,0

Throughputs		EWS 200E Preparation for domestic water			
Inlet temperature	°C	65	65	65	65
Hot water temperature	°C	55	55	55	55
Cold water temperature	°C	10	10	10	10
Heating cycle flow rate	l/h	600	1200	1800	2400
Throughput	kW	18,4	28,7	34,7	38,6

We reserve the right to make technical changes for the purpose of technical advancement.

Throughputs EWS 301E

Throughputs		EWS 301E Preparation for domestic water			
Inlet temperature	°C	55	55	55	55
Hot water temperature	°C	45	45	45	45
Cold water temperature	°C	10	10	10	10
Heating cycle flow rate	l/h	600	1200	1800	2400
Throughput	kW	16,8	25,3	30,1	33,2

Throughputs		EWS 301E Preparation for domestic water			
Inlet temperature	°C	60	60	60	60
Hot water temperature	°C	50	50	50	50
Cold water temperature	°C	10	10	10	10
Heating cycle flow rate	l/h	600	1200	1800	2400
Throughput	kW	18,7	28,1	33,7	37,0

Throughputs		EWS 301E Preparation for domestic water			
Inlet temperature	°C	65	65	65	65
Hot water temperature	°C	55	55	55	55
Cold water temperature	°C	10	10	10	10
Heating cycle flow rate	l/h	600	1200	1800	2400
Throughput	kW	20,6	30,9	36,9	40,9

We reserve the right to make technical changes for the purpose of technical advancement.

REMKO storage tank systems

Throughputs EWS 500E

Throughputs		EWS 500E Preparation for domestic water			
Inlet temperature	°C	55	55	55	55
Hot water temperature	°C	45	45	45	45
Cold water temperature	°C	10	10	10	10
Heating cycle flow rate	l/h	600	1200	1800	2400
Throughput	kW	22	34	44	51

Throughputs		EWS 500E Preparation for domestic water			
Inlet temperature	°C	60	60	60	60
Hot water temperature	°C	50	50	50	50
Cold water temperature	°C	10	10	10	10
Heating cycle flow rate	l/h	600	1200	1800	2400
Throughput	kW	25	42	55	63

Throughputs		EWS 500E Preparation for domestic water			
Inlet temperature	°C	65	65	65	65
Hot water temperature	°C	55	55	55	55
Cold water temperature	°C	10	10	10	10
Heating cycle flow rate	l/h	600	1200	1800	2400
Throughput	kW	30	49	63	75

We reserve the right to make technical changes for the purpose of technical advancement.

2.2 Unit dimensions

EWS 200E

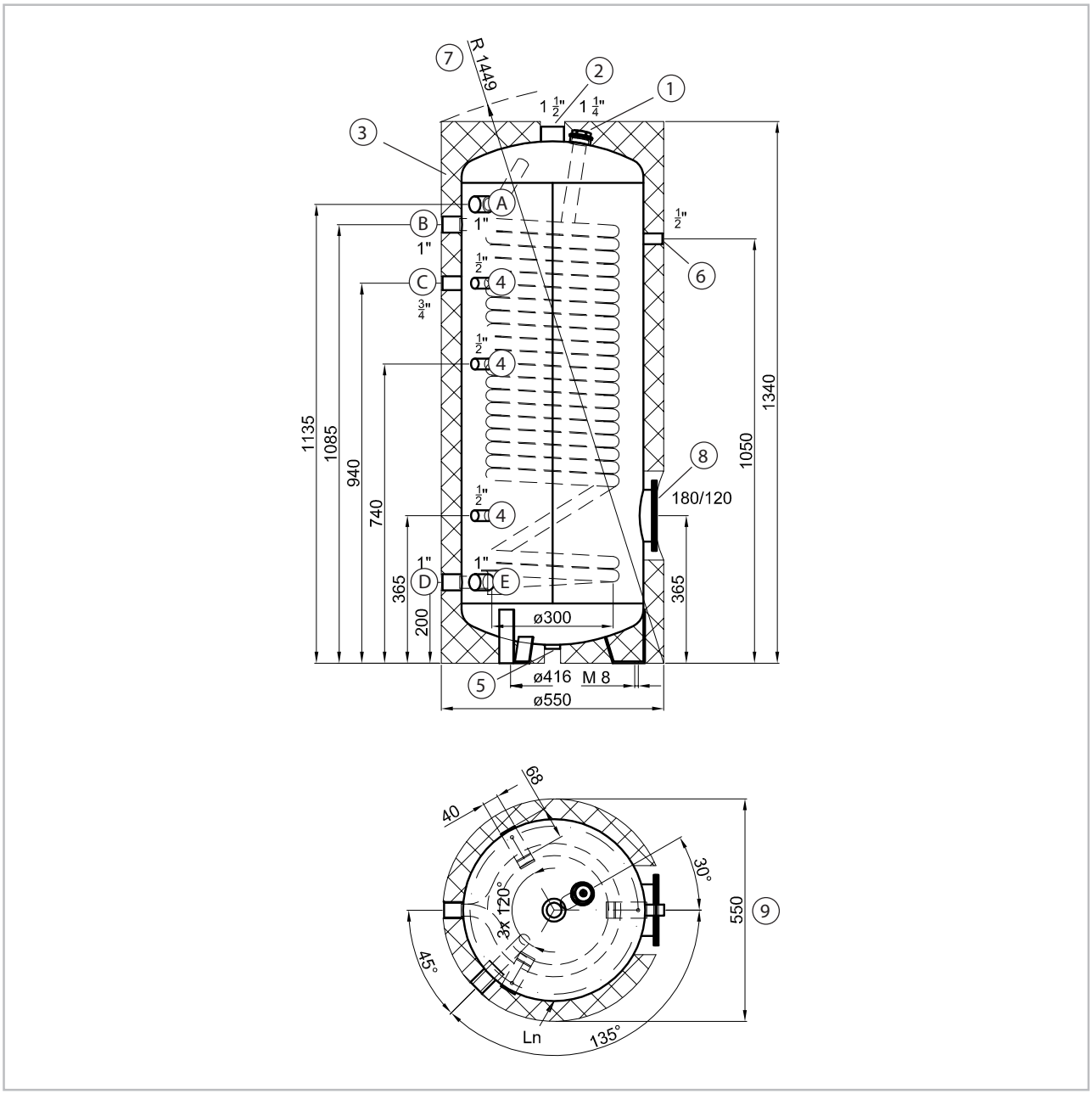


Fig. 1: Unit dimensions (all measurements in mm)

1: Magnesium anode
2: Venting
3: PU insulation
4: Probe sleeve
5: Sealing plug
6: Thermometer
7: Tilt height
8: Cleaning opening
9: Insertion dimension
A: Hot water
B: Inlet
C: Circulation
D: Return flow
E: Cold water

We reserve the right to make technical changes for the purpose of technical advancement.

REMKO storage tank systems

EWS 301E

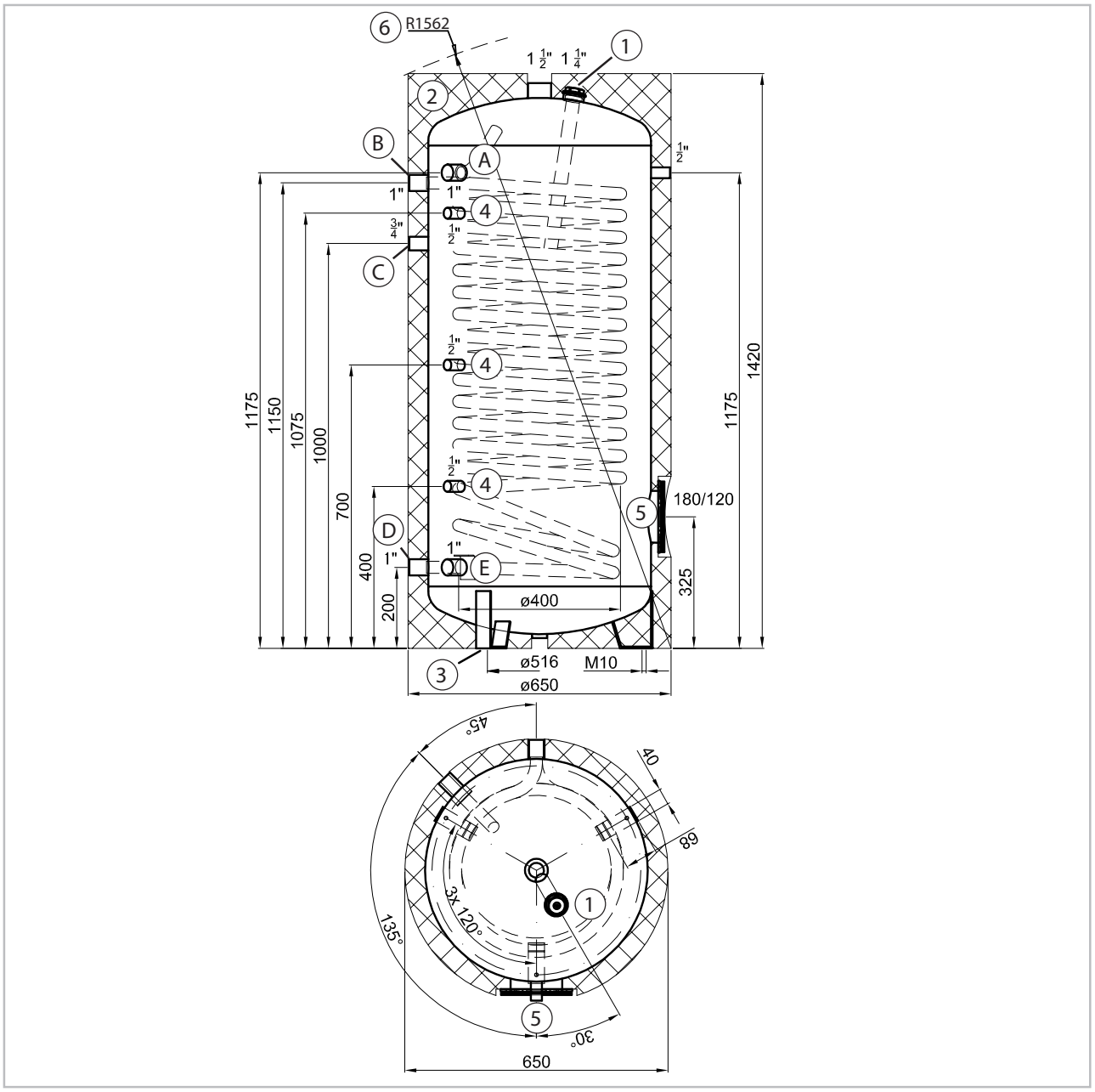


Fig. 2: Unit dimensions (all measurements in mm)

1: Magnesium anode
2: PU insulation
3: Adjustable feet
4: Probe connection 1/2”
5: Flange
6: Tilt height

A: Hot water
B: Inlet
C: Circulation
D: Return flow
E: Cold water

Dimensions without the adjustable feet supplied as standard!

We reserve the right to make technical changes for the purpose of technical advancement.

EWS 500E

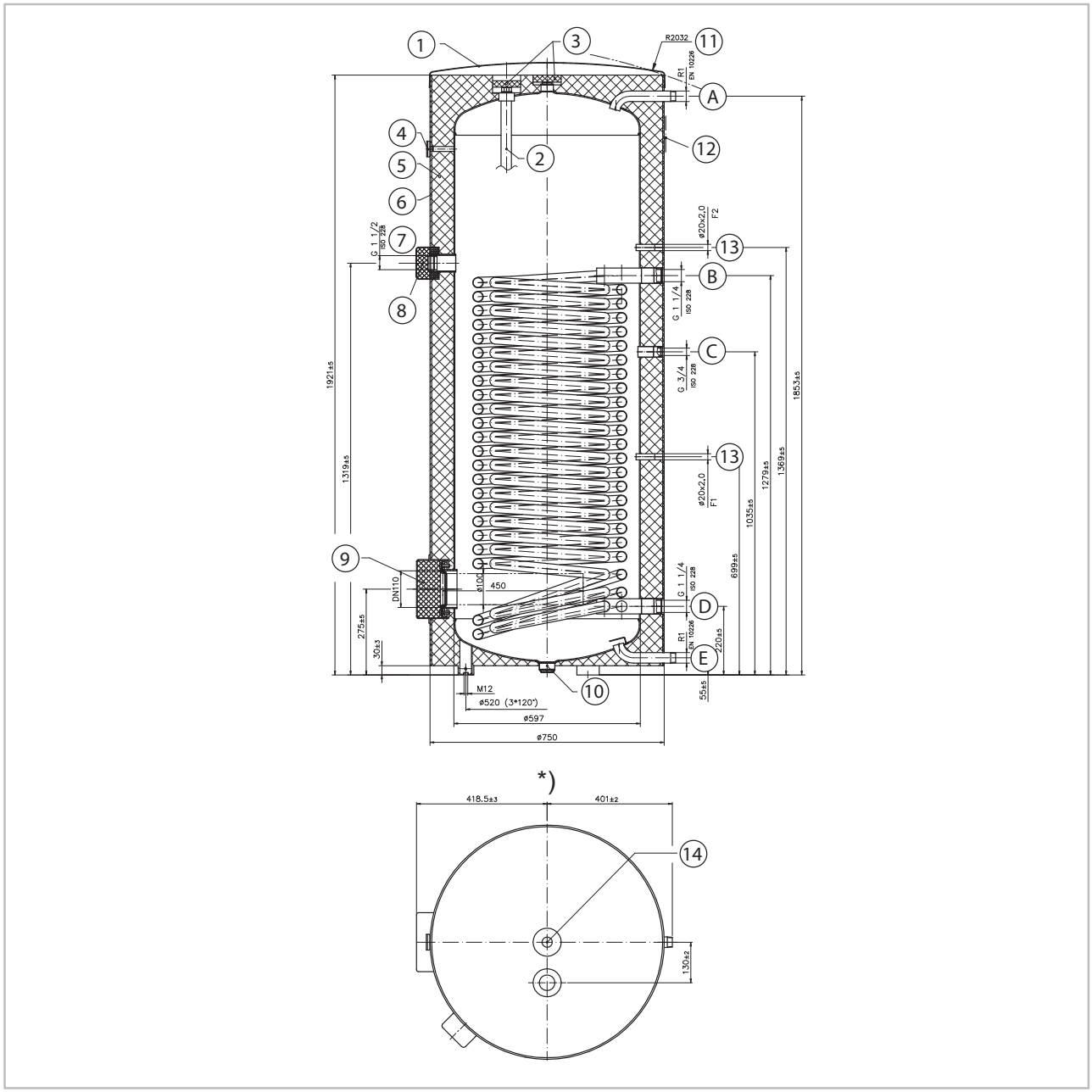


Fig. 3: Unit dimensions (all measurements in mm)

1: Storage tank cover
2: Anode (rotated in the sectional drawing)
3: Fleece insulation (2x)
4: Thermometer
5: PU insulation
6: Exterior cladding
7: Optional heater cartridge installation
8: 1 1/2” stopper, fleece insulation, cover cap
9: Membrane seal, painted blank flange, fleece insulation, flange cover for DN110
10: 1 1/4” stopper
11: Tilt height without storage tank cover
12: Name plate, anode instructions, installation instructions
13: F1,F2 probe
14: 1” stopper
A: Hot water
B: Inlet
C: Circulation
D: Return flow
E: Cold water

*) Illustrated without storage tank cover and fleece insulation

We reserve the right to make technical changes for the purpose of technical advancement.

3 Unit description

The EWS storage tank's domestic hot-water heating area to heat the domestic hot water is enamelled and has a double-wound, smooth-pipe heat exchanger with an especially large heat exchanger surface area. A magnesium false anode is installed in the inside tank in accordance with DIN 4753.

The insulation of the EWS storage tank comprises a PUR insulation (CFC, HCFC and HFC free). The storage tank is encased in a foil casing.

A blank flange cover is installed to retrofit a fine-tube heat exchanger or a flange heating cartridge (legionella protection).

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

NOTICE!

The **EWS 200E** storage tank may only be operated with the following REMKO heat pumps:

- WKF 70, WKF 120, WKF 180
- HTS 80, HTS 90, HTS 110,
- HTS 130, HTS 200

4 Operation

Manual operation is not necessary.

5 Installation instructions for qualified personnel

General instructions prior to installation

- Ensure that the area in which the unit is to be operated is free of frost and easily accessible for required maintenance, repairs and even for the possible replacement of the unit (e.g. avoid narrow passageways and doorways).
- When installing the storage tank in non-standard locations, such as in lofts, residential units with floors that are sensitive to water, storerooms, etc., take account of the possibility of leaking water, and ensure that a facility is in place to collect the water, including appropriate drainage methods.
- The unit may only be installed and operated on level surfaces.
- When planning the unit's installation surface and selecting the installation location, note the total weight of the buffer tanks, including the weight of the water (the nominal capacity), in order to ensure that the load-bearing capacity of the support surface is not exceeded.
- Ensure proper clearance from furnace systems.
- Make sure that the connection block (water and electric connections and heater installation) of units with enclosures, which are installed in small, confined spaces or in suspended ceilings are still freely accessible and that there us no build-up of heat.
- Leave at least 500mm of space free for the removal of the cleaning/heating flange.

Assembly

- Check the contents of the packaging for completeness and check the unit for visible transport damage. Immediately notify your contract partner of any deficiencies.
- The storage tank may not be transported with the fine-tube heat exchanger installed.
- The unit must be assembled on site.
- For all connection ports, ensure that the threading is fully engaged.
- In the selection and/or sequence of the installation materials used for the plant, any possible electrochemical processes must be taken into consideration in accordance with the recognised good practices (mixed-metal installations!).
- The potential equalisation of the piping must take place in accordance with DIN 50927. This type of corrosion results in the formation of corrosion cells. Voltage is present in corrosion cells between the anode and cathode area. The processes are dependent on one another, however, their separation from one another can vary greatly. Corrosion cells can appear as a result of different potentials, as the case is with contact corrosion. Different metals are in conductive contact with one another through an ion-conducting medium (water). All metal plug-in (built-in) components with large metal surfaces (e.g. flange heating cartridge, fine-tube heat exchangers, electric heaters) must be electrically insulated from the storage tank. For the protection of the above-mentioned plug-in (built-in) components against the current-induced corrosion, we recommend installing a defined contact resistance of approx. 600 Ohm (insofar as it has not already been installed in the components at the factory).

6 Corrosion protection

Oxygen always plays a role if metal materials in a heating system corrode. pH values and the salt content also play a major role. The challenge: A licenced plumber who would like to be able to guarantee his customers a hot water heating system not at risk of corrosion from oxygen - without the use of chemicals - must pay attention to the following:

- Correct system design by the heating contractor/planner and
- subject to the installed materials: filling the heating system with demineralised softwater or fully deionised water, checking the pH value after 8 to 12 weeks.

VDI 2035 applies for the system types listed below. If the guide values for filling, replenishment and circulation water are exceeded, the water must be pre-conditioned.

Scope of application of VDI 2035:

- Domestic hot-water heating systems as per DIN 4753 (sheet 1 only)
- Water heating systems as per DIN EN 12828 inside the building up to an inlet temperature of 100°C
- Systems that serve building complexes and with a replenishment water volume during their service life that is a maximum of twice the filling water volume

See the following table for the requirements in accordance with VDI 2035 Part 1 with regard to total hardness.

	Total hardness [°dH] subject to the specific system volume		
Overall output in kW	<20 l/kW	≥20 l/kW and <50 l/kW	≥50 l/kW
to 50 kW	≤16,8 °dH	≤11,2 °dH	≤0,11 °dH

The following table provides the allowed oxygen content in connection with the salt content.

Reference values for the hot water in accordance with VDI 2035 Part 2			
		low-salt	salline
Electrical conductivity at 25°C	µS/cm	< 100	100-1500
Oxygen content	mg/l	< 0,1	< 0,02
pH value at 25°C		8,2 - 10,0 *)	

*) For aluminium and aluminium alloys the pH value range is limited: the pH value at 25°C is 8.2-8.5 (max. 9.0 for aluminium alloys)

Water treatment with chemicals

Adding chemicals to treat water should only be done as an exception. VDI 2035 Part 2 requires explicitly under Point 8.4.1 that all water treatment be explained and documented in the system log book. This has reasons:

- The improper use of chemicals often leads to the failure of elastomer materials
- To blockages and deposits because of sludge formation
- To defective floating seals in pumps
- To the formation of biofilm which can cause microbial influenced corrosion or significantly impair heat transfer.



In low-salt water and the correct pH for a short time even to oxygen concentrations up 0.5 mg / l are tolerated.

! NOTICE!

Heat pump systems and components from REMKO must be filled and operated with deionised water (completely desalinated). We also recommend the use of the complete heating protection unit available from us. Full protection with glycol should be used in cooling systems. The system water should be tested each time the plant is serviced, but at least once a year. Damage that results from non-compliance is not covered by the guarantee. Below you will find a suitable form for documenting the filling of the system.

Filling of heating system with completely deionised water

	Initial filling	Year 2	Year 3	Year 4
Filled on				
System volume [litres]				
°dH value				
pH value				
Conductivity [µS/cm]				
Conditioning agent (name and quantity)				
Molybdenum content [mg/l]				
Signature				

Your heating contractor:

VDI directive 2035

Perform annual control measurement!

Technical changes and errors reserved.

Fig. 4: Form for logging filling with completely deionised water

Media conveyed by the pumps

Grundfos pump

The pump is suitable for conveying the following media:

- Clean, thin, non-aggressive and non- explosive media without any solid or long-fibred components
- Cooling liquids that are free of mineral oil
- Soft water

The kinematic viscosity of water is ϑ = 1 mm2/s (1 cSt) at 20 °C. If the pump is used to convey liquids that have a different viscosity, the conveying capacity of the pump is reduced.

Example:

A water-glycol mixture with a 50 % glycol ratio has a viscosity of approx. 10 mm2/s (10 cSt) at 20 °C. This reduces the conveying capacity by approx. 15 %. Additives that could impair the functionality of the pump must not be added to the water. The viscosity of the conveyed medium must be taken into consideration when designing the pump.

Wilo pump

The pump can be used to convey water- glycol mixtures with a glycol ratio of up to 50 %. Example of a water-glycol mixture:

Maximum permissible viscosity: 10 to 50 cSt. This corresponds to a water-ethylene glycol mixture with a glycol ratio of approx. 50 % at -10 °C. The pump is controlled by a performance-limiting function that protects against overloading.

The conveyance of glycol mixtures has an impact on the MAX characteristic curve because the conveying performance is reduced in line with the glycol content and the temperature of the media. Temperatures above the nominal temperature specified for the medium in question should be avoided so that the effect of the glycol is not diminished.

As a general rule, operating times should be kept to a minimum if media temperatures are high. It is essential that the plant be cleaned and rinsed before adding the glycol mixture.

To prevent corrosion or precipitates, the glycol mixture must be checked regularly and replaced if necessary. If the glycol mixture needs to be thinned out, follow the instructions of the glycol manufacturer.

7 Installation

General notes

! NOTICE!

The **EWS 200E** storage tank may only be operated with the following REMKO heat pumps:

- WKF 80, WKF 100, WKF 130, WKF 170
- HTS 90, HTS 130,
- LWM 80, LWM 110

! NOTICE!

Preparation of the hot water must be in compliance with the applicable standards.

- Do not continually top up the water level in the storage tank. This will prevent corrosion damage to the storage tank.
- If corrosive water is a problem, please note that special models of the storage tanks can be tested. (Address all queries to your contractual partner).
- In hard water areas, connect a standard descaling device upstream.
- Drinking water quality is required to operate the drinking water storage tank.

Units with electrically-operated flange heating cartridges

If such units are equipped with a safety temperature limiter which stops heating the storage tank at a temperature of max. 85 °C. The choice of connection components (connecting pipes, circulation, safety valve combination, etc.) must be such that, in the event of a malfunction of the temperature control, the connection components will withstand temperatures of 85 °C, avoiding possible damage.

Domestic hot water-side connection (pressure-tight)

Hot water heaters are pressure-tight storage tanks with which pressure-tight connections can be established. If the line pressure is higher than the permissible operating pressure, a pressure reducing valve provided by the customer must be installed in the cold water supply. Only pressure-tight fittings may be used.

The component-tested safety equipment must be installed in the cold water line (see the following diagram).

A type-examination tested safety group in accordance with DIN 1988 must be installed in the water connection of the cold water line (cold water supply) for closed hot water heaters.

The water connection may only take place through a tested diaphragm safety valve or a diaphragm safety valve/connection fitting combination (not a piston valve) for pressure-tight storage tanks! A safety valve combination comprises a shut-off, testing, return flow, drainage and safety valve with expansion water drain and is installed between the cold water supply and cold water feed of the storage tank in the sequence shown in the following diagram:

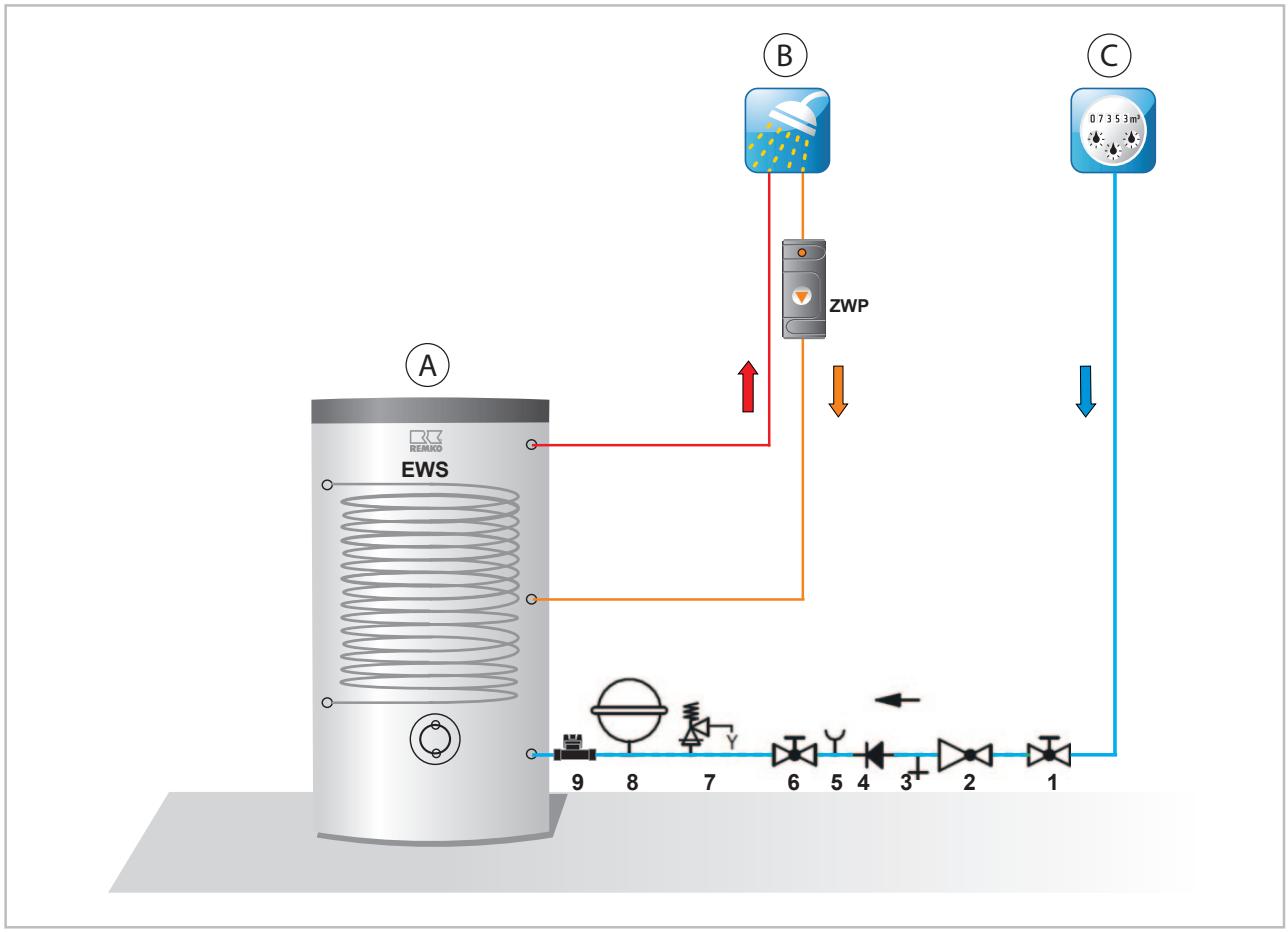


Fig. 5: Tank connection according to DIN 1988

1: Shut-off valve
2: Pressure reducer
3: Test device
4: Backflow preventer
5: Connection point for measuring device
6: Shut-off valve
7: Safety valve with drainage line and funnel trap
8: Through-flow diaphragm expansion vessel (recommended if pressure fluctuations are anticipated on the domestic connection side)
9: Flow sensor for dynamic hygiene function
A: Storage tank
B: Hot water
C: Cold water

In order to ensure the faultless function of the connection fitting, it may only be installed in frost-protected rooms. The discharge of the safety valve must be open and observable and the discharge line from the drip catcher (expansion water funnel) must be routed to the sewer so that neither frost nor back-ups from dirt or the like can cause a malfunction.

There may not be a shut-off valve or any other type of flow restrictor installed between the safety valve and the cold water feed of the tank.

The safety valve must be set to a triggering pressure which is below the nominal pressure of the storage tank. After the conclusive connection of the tank, the cold water supply line must be rinsed out.

After the water connection is made and bubble-free filling of the tank takes place, the connected fitting must be tested to ensure it is functioning. When lifting or turning (venting) the safety valve test knob, the water must be able to flow out properly without being hindered by the expansion tank drain funnel.

In order to check the return flow valve the shut-off valve is closed and no water may flow out of the open testing valve. The testing of the safety valve must take place in accordance with DIN 1988-8. The operation of the tank takes place through the hot water valve of the service water fixture (mixing tap). Therefore, the storage tank is under continuous line pressure. In order to protect the storage tank from excessive pressure when heating up, the accumulating expansion water is discharged through the safety valve.

The return flow valve prevents the return flow of the hot water into the cold water network during a pressure drop in the line and thereby protects the storage tank heating up without water.

With the shut-off valve, the storage tank can be disconnected from the cold water network and thus its pressure, and can be emptied through the drain valve if necessary.

Circulation connection

Due to significant energy loss, a circulation connection should be avoided when possible. If a highly branched domestic hot water network requires a circulation line, this must be well insulated and controlled via a time program and/or depending on the temperature. The switching temperature of one of the thermostats present should be kept low (45°C).

Flange installation port

Depending on the design of your system, a flange heating cartridge or a fine-tube heat exchanger can be installed on the flange that is present.

- Install the flange heating cartridges in such a way that the probe of the temperature regulator is positioned at the top.
- First tighten the screws by hand.
- Then tighten the screws in the order specified below to a torque of 42 Nm.

! NOTICE!

Installation and commissioning should only be performed by trained specialists.

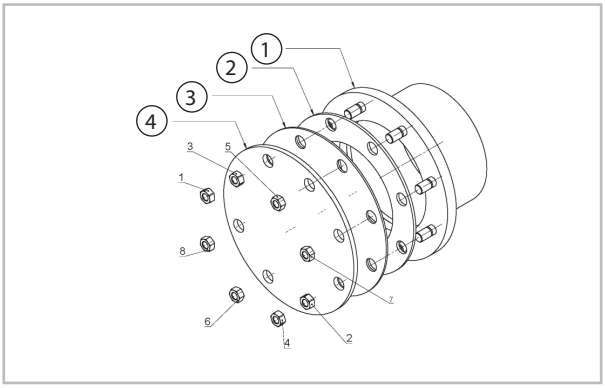


Fig. 6: Fitting the flange installation port

1: Flange ring
2: Seal
3: Support plate (only present on unit range EWS 301E)
4: Flange plate

Central heating connection for hot water preparation

Before being placed into service, the register must be flushed in order to remove any soiling (e.g. scale) from the heating cycle.

Storage tanks with registers

The register (heat exchanger) built into the storage tank is suitable for connecting to a water heater at any pressure and temperature shown on the specification label of the hot water tank.

The circulation pump for storage tank must be used here.

When installing a tank with a register, a circulation lock/gravity brake must be installed in the register's inlet or return flow to prevent back-heating into the heating circuit when the central heating and heat pumps are turned off or in the case of electrical operation.

! NOTICE!

However, under no circumstances may the inlet and return flow be blocked, as otherwise the water in the register will not have room to expand and there is a risk of damage to the heat exchanger!

Temperature display, temperature regulation for circulation pump

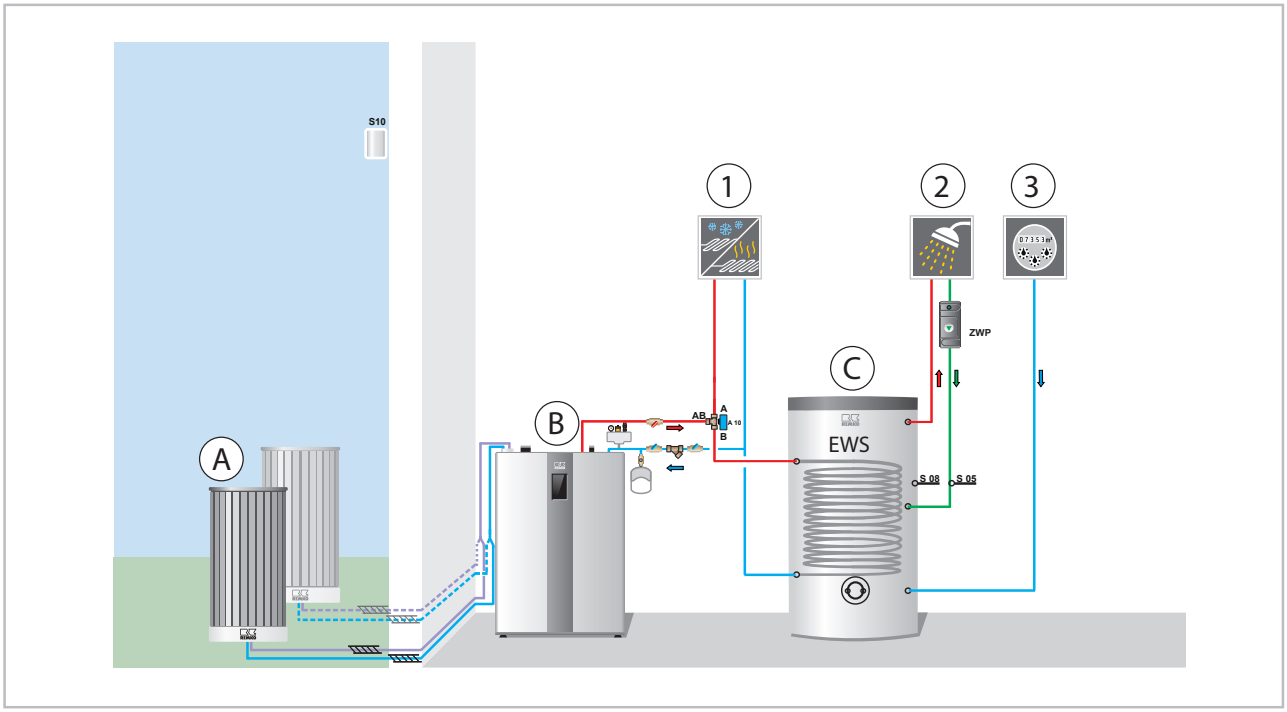
When installing third-party control units, ensure that the storage tank temperature cannot exceed 95°C during operation.

Installation example - hydraulic circuit diagram heat pump package HTS Stuttgart

The following hydraulic circuit diagrams are only to be used as a planning aid, and do not replace an installation drawing! The design and planning of customer-provided hydraulic systems must be performed by a specialist installer!

NOTICE!

This diagram is not suitable for the units HTS 80 and HTS 110!



A: Outdoor unit(s)
B: Indoor unit
C: EWS Storage tank

1: Mixed heating cycle
2: Hot water
3: Cold water

8 Flange heating cartridge electrical wiring

- The hot water tank must be filled with water before being put into service.
- A mains connection must be installed and appropriately fused according to the circuit diagram affixed in the terminal box for the unit.
- A residual current circuit breaker with a tripping current of $I_{\Delta N} \leq 30mA$ must be located upstream of the supply circuit.
- All cables and wires to and from the unit must be fixed in place.
- The unit must have an upstream-connected isolating device for all poles, with a contact opening of at least 3 mm (e.g. a circuit breaker).
- The unit's electrical protection must be implemented in accordance with the technical data.

DANGER!

All electrical installation work is to be performed by specialist companies. Disconnect the power supply when connecting the electrical terminals.

9 Before commissioning

Before being placed into service, the register must be flushed in order to remove any soiling (e.g. scale) from the heating cycle.

The smooth pipe heat exchanger (register) must be rinsed out properly before the initial installation is carried out (we also recommend installing a dirt filter). If the smooth pipe heat exchanger is not used while operating the tank (e.g. only electric heating), it must be filled completely with an appropriate glycol mixture in order to prevent corrosion from the accumulating condensate water. The filled glycol heat exchanger may not be closed on both sides after filling (temperature-based pressure expansion).

Before the warm water tank is connected to the mains electricity supply and put into service for the first time, it is vital that it is filled with water. During initial filling, the discharge valve must be open. The storage tank is fully filled when water which is free of bubbles starts to run out of the discharge pipe of the valve.

10 Commissioning

! NOTICE!

Commissioning should only be performed by specially trained personnel and documented after the certificate has been issued.

1. Check all connections, even those which were sealed at the factory (flange, anode sleeve), for leak-tightness.
2. Then check all pipes for any leaks and, if necessary, eliminate these.
3. Test the safety group and valves between the cold water supply and hot water tank to ensure that they are functioning properly.

   When filling the drinking water storage tank for the first time, the discharge valve must be open. The warm water tank is completely full when water runs out of the valve's discharge pipe without bubbles.

   Once the water has been heated successfully, the set temperature, the actual temperature of the water produced and that shown on any temperature indicator should be approximately the same.

   Heating the water in the storage tank causes its volume to increase. While heating up, the expansion water generated in the storage tank should drip out of the safety valve. This dripping is necessary to the function of the unit, and must not be prevented by retightening the valves.
4. Test the system's automatic shut-off, any installed electrical heating attachments and/or the heat generator.

⚠ WARNING!

The warm water drain pipe as well as parts of the safety equipment may become hot.

11 Care and maintenance

Care

- Only clean the units with a damp cloth. (by adding, for instance, a liquid household cleaner). Do not use any caustic, abrasive or solvent-based cleaning products.

Maintenance

! NOTICE!

According to VDI 6023 and DIN 1988- Part 8, hot water storage tanks must be subjected to a yearly inspection and must be maintained regularly. We recommend cleaning the hot water boiler every two years. It makes sense to perform this work at the same time as performing maintenance on the heat pump in order to reduce costs. Regular, thorough and specialist maintenance and cleaning on the hot water storage tank must always be performed by trained specialists. The on-site specialist can best decide when and how often the hot water storage tank must be maintained and cleaned. Using sacrificial anodes has proven helpful in protecting an enamelled hot water storage tank. Due to the electrical voltage difference from iron, the sacrificial anode does not require an additional power source. Inspect the anode visually when maintaining and cleaning the storage tank. We recommend performing this work every 2 years. Once 2/3 of the anode has been used up, it must be replaced with a new one.

- It is recommended that you take out a maintenance contract with an annual service from an appropriate specialist firm.

This enables you to ensure the operational reliability of the plant at all times!

- Regularly check the function of the safety valves.

The expansion water amount at maximum heat (approx. 80°C) represents approx. 3.5% of the storage tank capacity. When the safety valve test knob is lifted or in the “Test” position, the water must flow unhindered out of the safety valve body into the drainage funnel.

⚠ CAUTION!

This can cause the cold water supply and parts of the storage tank connection fitting to become hot!

If the storage tank is not heated or when hot water is removed, no water should be dripping from the safety valve. If this does occur, either the pressure in the water pipe or the system-side heating pressure is greater than the permitted value or the safety valve is defective. If the pressure in the water pipe is higher than permitted, a pressure relief valve must be used.

In hard water areas, the limescale which forms inside the storage tank must be removed by a specialist after one to two years of operation. Cleaning is performed through the flange opening.

1. Drain the storage tank
2. Remove the heating flange
3. Clean the storage tank
4. Refit the flange with a new seal. Tighten the screw crosswise to a torque of 42 Nm

   The special enamelled inner tank of the water heater must not come into contact with scaling solvent. Do not use a descaling pump!
5. Thoroughly rinse out the unit
6. Fill and bleed the storage tank again after cleaning
7. Observe the heating process as per initial commissioning. The installed false anode must be checked by a specialist at least once every 2 years of operation and this inspection must be documented. If servicing tasks are performed, the cleaning and servicing flange should be opened, and the storage tank inspected for any infiltration or soiling.

Only with the use of an external current anode:

The control lamp of the external current anode must be monitored regularly.

In the process, the following applies:

green = system OK

red flashing = malfunction (in this case contact customer service).

For a faultless function, the tank must be filled with water.

12 Shutdown

Temporary shutdown

Temporarily shutdown the plant as follows:

1. If necessary, disconnect the electrical connection of the flange heating cartridge at all poles
2. Drain the storage tank in areas where it is at risk from frost and before the onset of winter
3. After closing the shut-off valve in the cold water supply, the domestic hot water is drained through the drain valve in the cold water inlet, which was installed by the customer, while all of the hot water valves of the service water fixtures are open. Partial draining is also possible through the safety valve in the expansion water funnel (drip catcher). The safety valve is turned to the "Test" position to do this.

⚠ CAUTION!

During drainage of the storage tank, hot water may escape!

! NOTICE!

When putting the storage tank back into service, ensure that it is filled with water and that water which is free of bubbles is escaping from the valves!

Permanent shutdown

Ensure that units and components are disposed of in accordance with local regulations, e.g. through authorised disposal and recycling specialists or at collection points. REMKO GmbH & Co. KG or your contractual partner will be pleased to provide a list of certified firms in your area.

13 Spare parts list

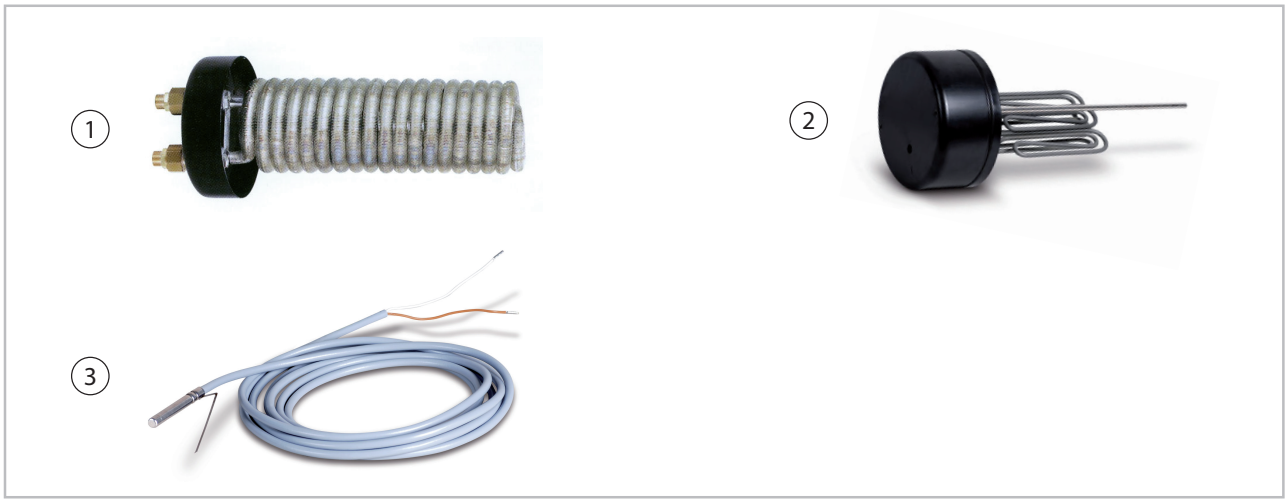


Fig. 7: Spare parts

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

Spare parts list

No	Designation	EWS 200E	EWS 301E	EWS 500E
			EDP no.	
1	Fine-tube heat exchanger	---	260200	260200
2	Flange heating cartridge	---	260175	260175
3	Immersion probe	1120930	1120930	1120930
	Spare parts not illustrated			
	Flange seal	1120236	1120236	1125548
	Magnesium anode	1110777	1110781	1125549
	Magnesium chain anode	1120121	1120121	1120121
	Flange cover/hood	1110780	1110787	1125517
	Flange	1110788	1110788	1125521
	Foil lining	1110778	1110786	1120234
	Cover	1110779	1110783	1125546
	Thermometer	---	1125600	---
	Adjustable feets	---	1125601	---

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

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REMKO QUALITY WITH SYSTEMS

Air-Conditioning | Heating | New Energies

REMKO GmbH & Co. KG
Klima- und Wärmetechnik

Im Seelenkamp 12
32791 Lage

Telephone +49 (0) 5232 606-0
Telefax +49 (0) 5232 606-260

E-mail info@remko.de
URL www.remko.de

Hotline within Germany
+49 (0) 5232 606-0

Hotline International
+49 (0) 5232 606-130



We reserve the right to make technical changes, and provide no guarantee as to the accuracy of this data!