

REMKO TANK SYSTEMS

*Tank for process hot water
EWS 300*

Operation · Technology



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

These instructions are an integral part of the unit and must always be kept in the vicinity of the installation location or on the unit itself.

This operating manual is a translation of the German original.



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



Made by REMKO

REMKO EWS 300

Safety notes

Carefully read the operating manual before placing the unit in service for the first time. It contains useful tips  and notes  such as hazard warnings to prevent injury and material damage. Failure to follow the directions in this manual can result in endangerment to persons, the environment and the equipment itself and will void any claims for liability.

- Keep this manual in the vicinity of the units.
- The units and components should be set up and installed only by qualified personnel.
- The set-up, connection, and operation of the unit and its components must be in accordance with the operating conditions stipulated in this manual and comply with all applicable local regulations.
- Modification of units and components supplied by REMKO is not permitted and can cause malfunctions.
- Units and components may not be operated in areas where there is an increased risk of damage. Observe the minimum clearances.
- The electrical supply is to be adapted to the requirements of the units.
- The operational safety of units and components is only assured if they are fully assembled and used as intended. Safety devices may not be modified or bypassed.
- Do not operate units or components with obvious defects or signs of damage.
- The units and components must be kept an adequate distance from flammable, explosive, combustible, abrasive and dirty areas or atmospheres.
- Installation, repair and maintenance work may be carried out only by authorised specialists. Visual inspections and cleaning can be performed by the operator as long as power is disconnected from the equipment.
- To preclude any danger from the unit, take appropriate hazard-prevention measures when performing installation, repair or maintenance work or cleaning the units.

Environmental protection and recycling

Disposing of packaging

All products are packed for transport in environmentally friendly materials. You can make a valuable contribution to reducing waste and sustaining raw materials by only disposing of packaging at approved collection points.



Disposal of components

The manufacturing process for the units is subject to continuous quality control. Only high-grade materials are processed, the majority of which are recyclable. You can also contribute to environmental protection by only disposing of components in accordance with local regulations and in an environmentally safe manner, e.g. through authorised disposal and recycling specialists or at collection points.

Warranty

The warranty conditions are listed in the "General terms and conditions". Please contact your contractual partner in the first instance.

Intended use

The tanks are used for the storage of hot water. Any different or additional use shall be classed as non-intended use. The manufacturer/supplier assumes no liability for damages arising from such use. The user bears the sole risk in such cases.

Intended use also includes working in accordance with the operating manual and installation instructions and complying with the maintenance requirements.

Description

The tanks are used for the storage of hot water.

The tank volume can be adapted to your particular needs by connecting several tanks to form batteries.

The tank is enamelled and has a double-wound, smooth-pipe heat exchanger with an especially large heat exchanger surface area of 3.5m².

In the inside tank a magnesium false anode is installed in accordance with DIN 4753.

The insulation of the hot water storage tank EWS 300 is comprised of a 50 mm thick PUR insulation (CFC, HCFC and HFC free).

The tank is encased in a foil casing (delivered separately for transport protection).

A blank flange cover D180 is installed for the retrofitting of a finned tube heat exchanger or flange heating cartridge (legionella protection).

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The tank has connections for circulation (3/4" IG) as well as a cold water supply and hot water outlet (1" IG).

Operation

Manual operation is not necessary.

Decommissioning

Temporary shutdown

1. Disconnect all poles of the electrical connection of the flange heating cartridge if applicable.
2. Drain the 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 water is drained through the drain valve of the safety combination while all the hot water valves of the service water fixtures are open.
Partial emptying is also possible through the safety valve in the expansion water funnel (drip catcher). For this purpose the safety valve is turned to the "Test" position.



ATTENTION

When emptying the tank, hot water may escape!



ATTENTION

When placing the 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 decommissioning

Ensure that equipment 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 near you.

Care and maintenance

Care

- Only clean the units with a damp cloth (adding, for instance, a liquid household cleaner).
Do not use any harsh, scouring or solvent-based cleaners.

Maintenance

- We recommend concluding a maintenance contract with a specialist firm, which includes annual maintenance services.



NOTE

This ensures the operational reliability of your equipment!

- Regularly check the function of the safety valve.

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



ATTENTION

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

If the tank is not heated or when warm water is removed, no water should be dripping from the safety valve. If this does occur, either the pressure in the water pipe 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 in the tank internal boiler and the floating deposits of limescale must be removed by a specialist after one to two years of operation. Cleaning is performed through the flange opening.

1. Remove the heating flange.
2. Clean the tank.
3. Refit the flange, using a new seal. Tighten the bolts in a crosswise pattern to a torque of 20 Nm.

The special enamelled inner tank of the water heater must not come into contact with scaling solvent. Do not use a descaling pump!

4. Thoroughly rinse out the unit.
5. Observe the heating process as per initial operation.

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 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.

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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 overly narrow thoroughfares and doorways).
- When installing the tank in unusual 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 catch the water, including appropriate drainage methods.
- The unit may only be positioned and operated on level surfaces.
- When planning the unit's installation surface and selecting the installation location, note the total weight of the tank, including the weight of the water (the nominal capacity), in order to ensure that the statics of the load-bearing surface are not exceeded.
- Ensure proper clearance from firing systems.

- Make sure that units with enclosures, which are installed in small, tight spaces or in suspended ceilings have the connection block (water and electric connections and heater installation) still freely accessible and that there is no buildup of heat.
- Leave at least 500mm of space free for the removal of the heating flange.

Installation



NOTE

Installation may only be performed by authorised specialists. Preparation of the hot water must be in compliance with the applicable standards.

- Check the contents of the packaging for completeness and check the unit for visible transport damage. Immediately notify your contractual partner of any deficiencies.
- 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 (mixing 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. condenser plug-in heat pumps, fin-tube heat exchangers, electric heaters) must be electrically insulated from the 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).

- The hot water tanks may not be transported with the fin-tube heat exchanger installed.
- The unit must be assembled on site.
- For all connecting sockets, ensure that the thread is fully engaged.
- When installing a fin-tube heat exchanger it must be absolutely ensured that the corrosion protection in the tank remains intact. Therefore, an appropriate external current anode or magnesium anode must be installed if the magnesium anode is removed with the flange plate from the tank.

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Installation

General Information

- If aggressive water is an issue, please note that special models of the tank can be tested (address all queries to your contractual partner)
- In hard water areas, connect a standard descaling device upstream of the tank.
- Drinking water quality is required for the proper operation of the hot water tank.

Operating units with electric flange heating cartridges

If such units are equipped with a safety temperature limiter which stops heating the storage tank at a temperature of max. 130°C. The choice of connection components (connecting pieces, circulation, safety valve combination, etc.) must be such that, in the event of a malfunction of the temperature control, the connection components will maintain temperatures of 130°C, avoiding possible damage.

Water-side connection (pressure-tight)

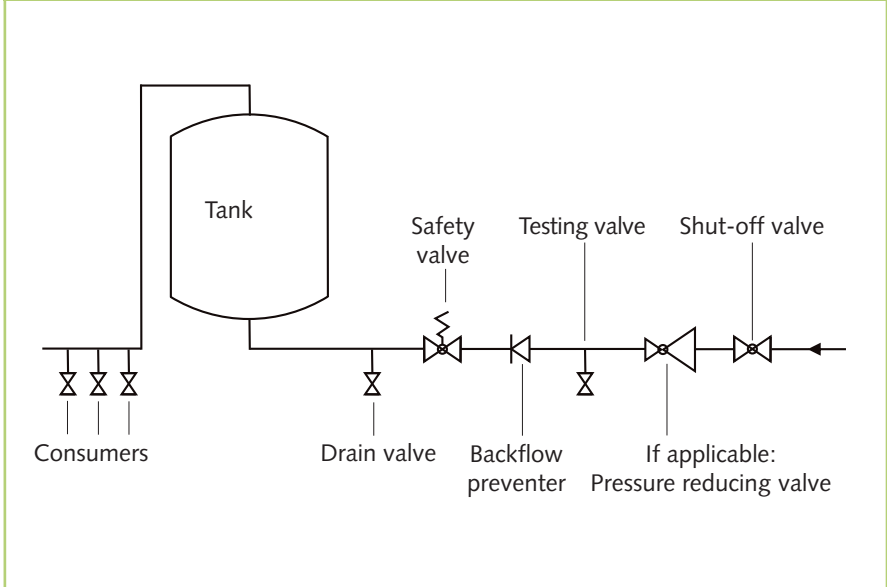
The hot water heaters are pressure-tight tanks for which pressure-tight connections can be made. If the line pressure is higher, a customer-provided pressure reducing valve must be installed in the cold water supply. Only pressure-tight fittings may be used.

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

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 tanks! A safety valve combination is comprised of a shut-off, testing, return, drain and safety valve with expansion water drain and is installed between the cold water supply and cold water feed of the tank in the sequence shown on the following page:

Tank connection according to DIN 1988



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 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 fault.

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 tank.

After the conclusive connection of the tank, the cold water supply line must be rinsed out.

After the water connection is made and the bubble-free filling of the tank takes place, the connected fitting must be tested for function.

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.

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The operation of the tank takes place through the hot water valve of the service water fixture (mixing tap). Therefore, the tank is under continuous line pressure. In order to protect the inner tank against 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 boiler from heating up without water.

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

Circulation connect

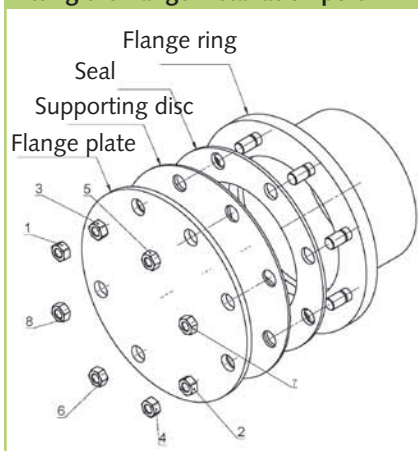
Due to significant energy loss, a circulation connection should be avoided when possible. If a highly branched service water network requires a circulation line, this must be well insulated and the circulation pump controlled via a timer and thermostat. The switching temperature of the thermostat should be kept low (45°C). The circulation connection piece has an external thread.

Flange installation port

Depending on the system design, flange heating cartridges or fin-tube heat exchangers can be attached at the boiler flange $\text{Ø}180$ (clear diameter $\text{Ø}117$ mm, hole circle $\text{Ø}150$ mm, $8 \times M12$).

- Install the flange heating cartridges in such a way that the sensor of the temperature regulator is positioned at the top.
- First tighten the nuts by hand.
- Then tighten the nuts, in the sequence specified below, to a torque of 20 Nm to max. 25 Nm.

Fitting the flange installation port



Central heating connection

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

Tanks with registers

The registers (heat exchangers) built into the tank are suitable for connecting to a water heater at any pressure and temperature shown on the specification label of the hot water tank.

Forced circulation through a pump is required.

When installing a tank with a register, a shut-off member must be installed in the flow line 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.



ATTENTION

However, under no circumstances may the supply and return lines 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!

Corrosion protection

The enamelled boiler is protected with a standard magnesium rod-type anode. This anode is self-consuming and therefore must be inspected every 2 years and replaced as necessary (for this purpose, see DIN 4753). A maintenance-free external current anode (accessory) can be installed on some models using a reducing threaded connector IG 5/4" -IG 3/4" (accessory).

Temperature display, temperature regulation for charging pump

With the installation of third-party control units it must be ensured that the boiler temperature cannot exceed 95°C during operation.



NOTE

Installation may only be performed by authorised specialists.

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Electrical connection Flange heating cartridge

- The hot water heater 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 ground fault circuit interrupter switch with a tripping current of $I_{\Delta N} \leq 30\text{mA}$ must be located upstream from the supply circuit.
- All cables and wires to and from the unit must be fixed in place.
- The electrical installation must have an isolating device for all conductors with contact opening of at least 3mm. (e.g. with a circuit breaker)
- Details concerning the electrical protection of the equipment are provided in the technical data.



ATTENTION

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

Before commissioning

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

The smooth pipe heat exchanger (register) must be rinsed out properly before the initial installation is carried out (we also recommend the installation of 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 condensation 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.

Commissioning



NOTE

Commissioning should only be performed and documented by specially trained personnel.

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, fix them.
3. Test the safety module and valves between the cold water supply and hot water tank for function.

During initial filling, the discharge valve must be open. The warm water tank is fully filled, when water which is free of bubbles starts to run out of the discharge pipe of the valve.

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 tank causes its volume to increase.

During the heating process, the expansion water generated in the internal boiler 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 self-actuating shut-off of the system, any installed electrical heating attachments and/or the boiler.

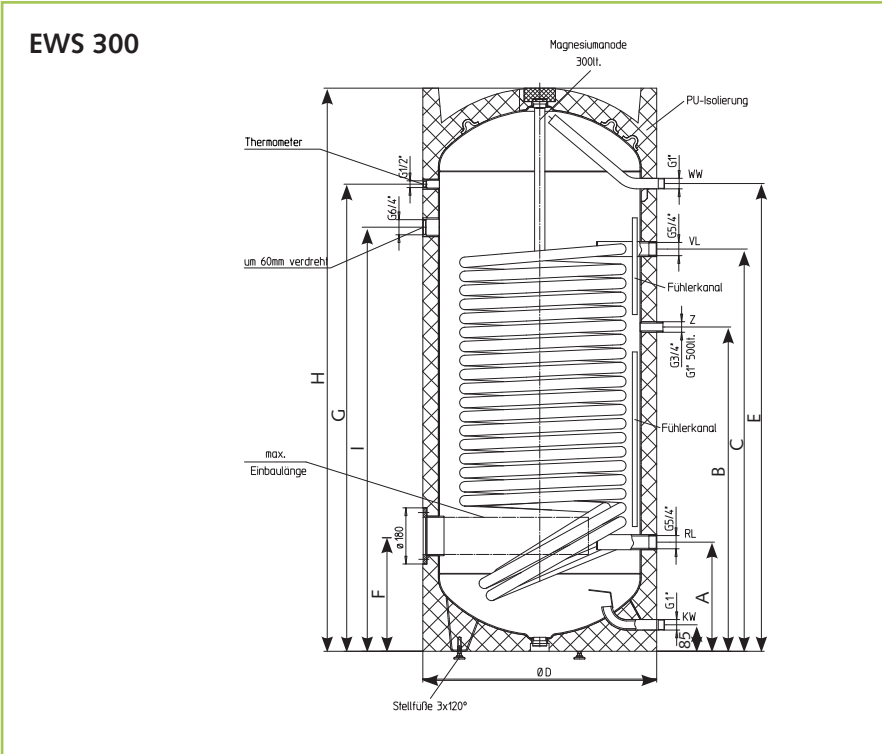


ATTENTION

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

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Unit dimensions



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

Unit type	Dimensions in mm								
	H	Ø D	A	B	C	E	F	G	I
EWS 300	1435	680	320	840	990	1160	345	1156	1050

Unit type	Tip dimension [mm]	max. installation length [mm]	Register heating surface [m²]	Contents tube register [l]	Weight [kg]	BEVB* [kWh/d]	Nlcount according to DIN 4708 [-]	ETE** [mm]
EWS 300	1595	450	3,5	22,6	170	2,2	5	590

* Energy consumption in standby according to DIN 44 532 with 50°C tank temperature and 45°C tap temperature

** Screw-in heater installation depth

Technical data

Unit type	EWS 300	
Heat exchanger surface	m ²	3,5
Max. operating pressure	bar	10
Max. permissible temp.	°C	95
Max. issue quantity with drawing at 45°C	l/min	37

Cycle outputs	EWS 300				
Supply temperature	°C	55	55	55	55
Hot water temperature	°C	45	45	45	45
Cold water temperature	°C	10	10	10	10
Heating circuit flow rate	l/h	600	1200	1800	2400
Cycle output	kW	16,0	22,7	26,4	28,8

Supply temperature	°C	60	60	60	60
Hot water temperature	°C	50	50	50	50
Cold water temperature	°C	10	10	10	10
Heating circuit flow rate	l/h	600	1200	1800	2400
Cycle output	kW	17,7	25,1	29,1	31,7

Supply temperature	°C	65	65	65	65
Hot water temperature	°C	55	55	55	55
Cold water temperature	°C	10	10	10	10
Heating circuit flow rate	l/h	600	1200	1800	2400
Cycle output	kW	20,7	29,7	34,8	38,1

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Notes

A series of 15 horizontal light green bars, stacked vertically, intended for taking notes. Each bar is approximately 100 pixels high and spans most of the width of the page.



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*... and also right in your neighbourhood!
Benefit from our experience and advice*



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