

# Assembly and operating instructions

REMKO storage tank systems HWS 1000 / HWS 1500 Hot water hygienic storage tanks



0166-2017-05 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.

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	
	1.6 Safety instructions for the operator	. 5
	1.7 Safety notes for installation and inspection tasks	. 5
	1.8 Unauthorised modification and changes	
	1.9 Intended use	. 5
	1.10 Warranty	
	1.11 Transportation and packaging	. 5
	1.12 Environmental protection and recycling	. 6
2	Technical data	7
	2.1 Unit data	. 7
	2.2 Unit dimensions	10
3	Unit description	12
4	Operation	12
5	Installation instructions for qualified personnel	13
6	Corrosion protection	14
7	Installation	16
8	Flange heating cartridge electrical wiring	19
9	Before commissioning	20
10	Commissioning	20
11	Care and maintenance	21
12	Shutdown	21
13	Index	22

## 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.

## A 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.

## A 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.

## 

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

## 

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 tanks are used to store heating 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.

### 

# 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 Unit data

Series		HWS 1000	HWS 1500
Heat exchanger drinking water volume	I	47	52
Heat exchanger surface	m <sup>2</sup>	6.8	7.5
Storage tank volume	I	865	1356
Max. operating pressure for hot water (storage tank)	bar	3	3
Max. operating pressure for drinking water	bar	6	6
Max. permissible operating temperature for hot water	°C	95	95
Heat losses	W	140	163
Standby losses 24h	kWh/24h	3.6	3.9
Flow rate			
10-45/55-10 l/min	l/min	290	416
10-45/60-10 l/min	l/min	377	546
10-45/65-10 l/min	l/min	495	737
N <sub>L</sub> count			
Weight	kg	173	241
Tilt height without insulation	mm	2172	2178
Height/diameter without insulation	mm	2135/790	2128/1000
Energy efficiency ratio		С	С
Height x diameter	mm	2265 x 1100	2286 x 1300
Max. installation length for flange heater	mm	700	890

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

## Throughputs HWS 1000

Throughputs		HWS 1000 Preparation for domestic water
Inlet temperature	°C	
Hot water temperature	°C	
Cold water temperature	°C	
Heating cycle flow rate	l/h	
Throughput	kW	

Throughputs		HWS 1000 Preparation for domestic water		
Inlet temperature	°C			
Hot water temperature	°C			
Cold water temperature	°C			
Heating cycle flow rate	l/h			
Throughput	kW			

Throughputs		HWS 1000 Preparation for domestic water		
Inlet temperature	°C			
Hot water temperature	°C			
Cold water temperature	°C			
Heating cycle flow rate	l/h			
Throughput	kW			

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



### Throughputs HWS 1500

Throughputs		HWS 1500 Preparation for domestic water		
Inlet temperature	°C			
Hot water temperature	°C			
Cold water temperature	°C			
Heating cycle flow rate	l/h			
Throughput	kW			

Throughputs		HWS 1500 Preparation for domestic water	
Inlet temperature	°C		
Hot water temperature	°C		
Cold water temperature	°C		
Heating cycle flow rate	l/h		
Throughput	kW		

Throughputs		HWS 1500 Preparation for domestic water		
Inlet temperature	°C			
Hot water temperature	°C			
Cold water temperature	°C			
Heating cycle flow rate	l/h			
Throughput	kW			

### 2.2 Unit dimensions

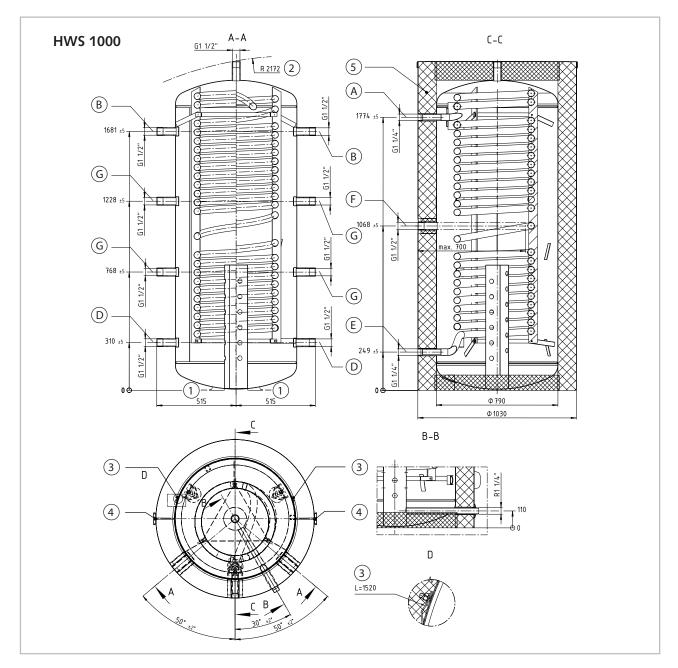


Fig. 1: Unit dimensions, view without packaging (all specifications in mm)

- 1: Adjustable feet
- 2: Tilt height without insulation
- 3: Terminal block
- 4: Strip
- 5: Insulation
- A: Hot water

- B: Inlet for heat pumps
- C: Circulation
- D: Return flow for heat pumps
- E: Cold water
- F: 1 1/2" auxiliary heater (EDP no.260063)
- We reserve the right to make technical changes for the purpose of technical advancement.



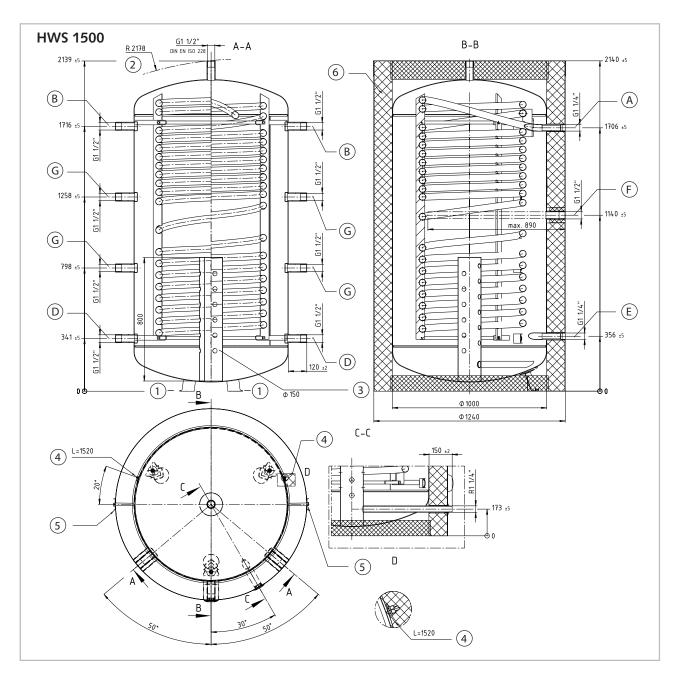


Fig. 2: Unit dimensions, view without corrugated tube spiral and without packaging (all specifications in mm)

- 1: Adjustable feet
- 2: Tilt height
- 3: Stratification tube Ø 150 mm
- 4: Terminal block
- 5: Strip
- 6: Insulation

- A: Hot water
- B: Inlet for heat pumps
- C: Circulation
- D: Return flow for heat pumps
- E: Cold water
- F: 1 1/2" auxiliary heater (EDP no.260063)

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

# 3 Unit description

The storage tanks are used to store heating water. The storage tank volume must be selected according to the necessary flow rate depending on the requirements.

The storage tank is designed for closed hot water heating systems to store heating water for hygienic preparation for domestic hot water in the throughput principle with a large stainless steel heat exchanger.

The buffer part contains an internal return flow stratification tube. It is a robust, easy to install design with a terminal block to position the probe.

The hot water hygienic storage tank's insulation comprises RG 18 fleece, head insulation 120 mm; jacket insulation 120 mm; base insulation 100 mm. The plastic jacket's colour is similar to RAL 9006; white aluminium. The poly parts are made of plastic, colour RAL 9005; jet black.

The storage tank is encased in a foil casing. A blank flange cover D180 is installed to retrofit a fine-tube heat exchanger or flange heating car-tridge (legionella protection).

The storage tank has eight connections for circulation  $(1 \ 1/4")$  as well as a cold water supply and hot water outlet  $(1 \ 1/4")$ .

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

# 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 nonstandard 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 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 metallic plug-in (built-in) components with a large metallic surface (e.g. flange heating cartridge, finetube heat exchangers, electric heaters) must be installed so that they are electrically insulated from the storage tank. To protect the aforementioned plug-in (built-in) components against current-induced corrosion, we recommend installing a defined contact resistor of approx. 600 Ohm (unless already 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 ≥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.

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

	Initial filling	Year 2	Year 3	Year 4	
Filled on					
<b>System volume</b> [litres]					
dH value					
oH value					
Conductivity [µS/cm]					
<b>Conditioning agent</b> (name and quantity)					
Molybdenum content [mg/l]					
Signature					
Your heating cont	tractor:		VD Per con	01 directive 20 form annual strol measurem	)35 hent!

Fig. 3: Form for logging filling with completely deionised water

Filling of heating system with

#### 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  $\vartheta = 1 \text{ mm2/s}$  (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  $^{\circ}$ 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!

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.
- Appropriate drinking water quality is required to operate the hygienic storage tank.

#### Domestic hot water-side connection (pressuretight)

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 pressuretight 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 the current regulations for closed hot water heaters must be installed in the water connection for the cold water line (cold water supply).

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:



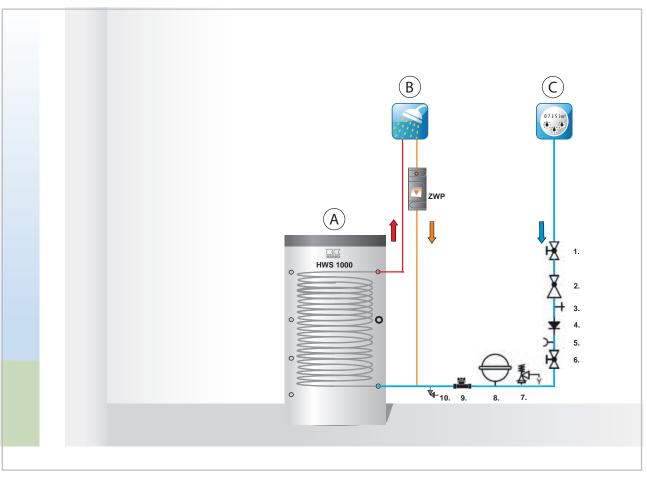


Fig. 4: Tank connection according to DIN 1988

- 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
- Through-flow diaphragm expansion vessel (recommended if pressure fluctuations are anticipated on the domestic connection side)

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.

- 9: Flow sensor for dynamic hygiene function
- 10: Drainage
- A: Storage tank
- B: Hot water
- C: Cold water

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 bubblefree 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 the REMKO Smart Control depending on the impulse or temperature. The switching temperature of one of the thermostats present should be kept low (45°C).

# Central heating connection for hot water preparation

Before being placed into service, the storage tank and the fresh water coil must be rinsed out in order to remove any soiling (e.g. scale) from the heating cycle or fresh water line.

# 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.

## NOTICE!

Installation and commissioning should only be performed by trained specialists.

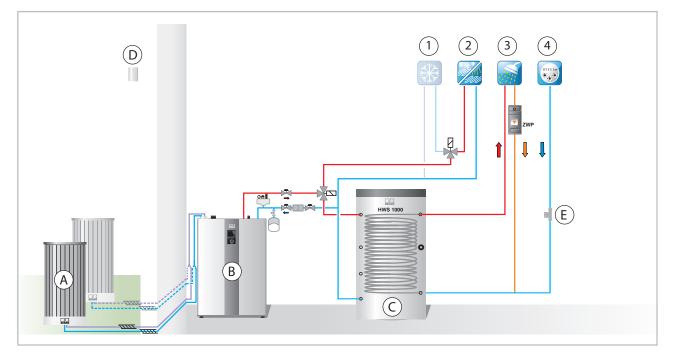


#### Installation example - hydraulic circuit diagram heat pump package HTS

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!

### 0

Use of the HWS storage tank is only recommended in conjunction with heat pumps WKF 180, WKF 120 Duo, WKF 180 Duo, HTS 200, HTS 260 and SQW 400.



1:

2:

- A: Outdoor unit(s)
- B: Indoor unit
- C: HWS 1000 Storage tank
- D: External probe
- E: Flow probe

### 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<sub>∆N</sub> ≤ 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.

## A DANGER!

Cooling cycle

3: Hot water

4: Cold water

Mixed heating cycle

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 stainless steel pipe heat exchanger (register) must be rinsed out properly before the initial installation is carried out (we also recommend installing a dirt filter).

Before the hot water hygienic storage tank is connected to the mains electricity supply and put into service for the first time, it is vital that it is filled with deionised 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.

- 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 heat exchanger for the first time, the discharge valve must be open. The heat exchanger 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 heating 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.

## \Lambda 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

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

#### $\frac{\circ}{1}$

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.

### 

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 heat exchanger must be removed by a specialist after one to two years of operation. Cleaning is performed by rinsing the system.

## 12 Shutdown

#### Temporary shutdown

Temporarily shutdown the plant as follows:

- **1.** Drain the storage tank in areas where it is at risk from frost and before the onset of winter.
- 2. 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 is to be 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.

### 

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 Index

	_	
		1
1		,
	_	

Care Central heating connection for hot water prepa- ration Circulation connection	18
D Description of the storage tank Dimensions	11 . 6
E Environmental protection	. 6
	19 19
Installation	
M Maintenance	21
O Operating pressure	7

# **S** Safetv

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

## Т

Technical data7Temperature display18Temperature regulation for circulation pump18Throughput8,9Tilt height7, 10, 11
<b>U</b> Unit data
W

••	
Warranty	5
Weight	7

# **REMKO INTERNATIONAL**

## ... and also right in your neighbourhood! Make use of our experience and advice



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#### Consulting

Thanks to intensive training, our consultants are always completely up-to-date in terms of technical knowledge. This has given us the reputation of being more than just an excellent, reliable supplier: REMKO, a partner helping you find solutions to your problems.

#### Distribution

REMKO offers not just a well established sales network both nationally and internationally, but also has exceptionally highlyqualified sales specialists. REMKO field staff are more than just sales representatives: above all, they must act as advisers to our customers in air conditioning and heating technology. SFIb**Customer Service** 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.

