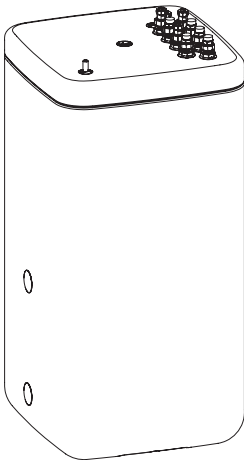




Installation and operating manual



Daikin Altherma ST (Hot water storage tank)



EKHWC300(P)B
EKHWC500B
EKHWC500(P)B
EKHWC500(P)B

EKHWDH500B
EKHWDB500B

EKHWP300(P)B
EKHWP500(P)B
EKHWP54419B

Installation and operating manual
Daikin Altherma ST (Hot water storage tank)

English

List of contents

1	General safety precautions	2
1.1	Particular safety instructions	2
1.1.1	Observing the instructions	3
1.1.2	Meaning of warnings and symbols	3
1.2	Safety instructions for installation and operation	4
1.2.1	General	4
1.2.2	Intended use	4
1.2.3	Device installation room	4
1.2.4	Electrical installation	4
1.2.5	Requirements of the heating and filling water	4
1.2.6	Heating and sanitary side connection	5
1.2.7	Operation	5
1.3	Handover to operator and warranty	5
1.3.1	Instructing the owner	5
1.3.2	Warranty conditions	5
2	Product description	6
2.1	Design and components	6
2.2	Brief description	11
2.3	Scope of delivery	12
2.4	Optional accessories	12
2.4.1	Electric immersion heaters	12
2.4.2	Non return valves	12
2.4.3	Dirt filter	12
2.4.4	Scalding protection	12
2.4.5	Solar storage tank extension kit	12
2.4.6	KFE filling connection	12
3	Set-up and installation	13
3.1	Set-up	13
3.1.1	Important information	13
3.1.2	Installing the hot water storage tank	13
3.2	Installation	14
3.2.1	Important Information (installation)	14
3.2.2	Hydraulic system connection	14
3.3	Filling / Topping up	15
3.3.1	Hot water-heat exchanger	15
3.3.2	Buffer tank	15
4	Start-up	16
5	Taking out of service	17
5.1	Temporary shutdown	17
5.2	Draining the storage tank	17
5.2.1	With pre-mounted KFE filling connection	18
5.2.2	With subsequently fitted KFE filling connection	18
5.2.3	Without KFE filling connection	18
5.2.4	Draining the heating circuit and hot water circuit	19
5.2.5	Drain the solar panel circuit (only pressurised system)	19
5.3	Final shutdown	19
6	Hydraulic	20
6.1	Connection schemata	20
6.1.1	Solution for low-temperature heat pumps	20
6.1.2	Solution for systems with high hot water demand	21
6.1.3	Solution for oil or gas condensing boilers	22
6.1.4	Solution for sanitary side connection	22
7	Service and maintenance	23
7.1	Periodic checks	23
7.2	Annual inspection	23
8	Technical data	24
8.1	Information on the type plate	24
8.2	Basic data	25
8.2.1	EKHWD	25

8.2.2	EKHWC	26
8.2.3	EKHWP	28
8.3	Performance diagrams	30
8.3.1	EKHWD / EKHWC	30
8.3.2	EKHWP	30
8.4	Tightening torque	31

List of keywords 32

1 General safety precautions

1.1 Particular safety instructions



WARNING

Devices that have not been set up and installed correctly can impair the function of the device and/or cause serious or fatal injury to the user.

- Work on the unit (such as setup, servicing, connection and initial commissioning) must only be carried out by persons who are authorised and who have successfully completed **qualifying technical or vocational training**, and who have taken part in advanced training sessions recognised by the relevant responsible authorities for the specific activity. These include, in particular, **certified heating engineers, qualified electricians and HVAC specialists** who, because of their **professional training and expert knowledge**, have experience in the professional installation and maintenance of heating, cooling and air conditioning systems as well as hot water storage tanks.



WARNING

Disregarding the following safety instructions may result in serious physical injury or death.

- This device must only be used by **children** aged 8 and above and by persons with restricted physical, sensory or mental capabilities or with a lack of experience and knowledge, if they are under supervision or if they have been instructed in the safe use of the equipment and understand the

dangers arising therefrom. **Children** must not play with the device. **Cleaning and user maintenance** must not be carried out by **children** without supervision.

- Make up the power supply in accordance with IEC 60335-1, via a separator device which exhibits contact separation in all poles with a contact opening distance that provide full disconnection in accordance with overvoltage category III.
- All the electrical work must only be carried out by electrically qualified experts and with consideration of the local and national regulations, and the instructions in this manual. Check that a suitable electrical circuit is being used. Inadequate capacity of the power circuit or improperly executed connections can cause electrocution or fire.
- The storage tank and hot water circuit can be drained. The instructions must be observed.

1.1.1 Observing the instructions

- The original documentation is written in English. All other languages are translations.
- Please read this manual carefully and thoroughly before proceeding with the installation or modification of the heating system.
- These instructions are intended for authorised and trained heating and sanitation experts who have experience in the proper installation and maintenance of heating systems and hot water storage tanks by virtue of their technical training and knowledge.
- This manual provides all the necessary information for installation, start-up and maintenance, as well as basic information on operation and settings. Please go through the attached documents for a detailed description of operation and control.

This manual is valid for models as listed on front page, hereinafter referred to as "Hot water storage tank". Subject to change and correction.

Documentation set

This document is part of a documentation set. The complete set consists of:

- Installation and operation manual (format: paper – included in the scope of delivery)
 - Installation and maintenance instructions
 - Operating instructions for the user / owner
- On connection of an external heat generator
 - the associated installation and operating manual.
- On connection of a solar system
 - the associated installation and operating manual.

The guides are included in the scope of supply for the individual units.

The digital documents and the latest editions of the supplied documentation are available on the regional Daikin website or, on request, from your dealer. The Daikin website is easy to access using the QR code on your device.

1.1.2 Meaning of warnings and symbols

Warnings in this manual are classified according into their severity and probability of occurrence.



DANGER

Indicates an immediate danger.

Disregarding this warning can lead to serious injury or death.



WARNING

Indicates a potentially dangerous situation.

Disregarding this warning may result in serious physical injury or death.



CAUTION

Indicates a situation which may cause possible damage.

Disregarding this warning can lead to damage to property and the environment.



INFORMATION

This symbol identifies user tips and particularly useful information, but not warnings or hazards.

Special warning signs

Some types of danger are represented by special symbols:



Electric current



Risk of burning or scalding

Validity

Some information in this manual has limited validity. The validity is highlighted by a symbol.



Comply with the stipulated tightening torque (see "8.4 Tightening torque" [▶ 31])



Only applicable for the unpressurised system (drain-back)



Only applicable for the pressurised system

Handling instructions

- 1 Handling instructions are shown as a list. Actions for which the sequential order must be maintained are numbered.

1 General safety precautions

1.2 Safety instructions for installation and operation

1.2.1 General

WARNING

Devices that have not been set up and installed correctly can impair the function of the device and/or cause serious or fatal injury to the user.

- Work on the unit (such as setup, servicing, connection and initial commissioning) must only be carried out by persons who are authorised and who have successfully completed **qualifying technical or vocational training**, and who have taken part in advanced training sessions recognised by the relevant responsible authorities for the specific activity. These include, in particular, **certified heating engineers, qualified electricians and HVAC specialists** who, because of their **professional training and expert knowledge**, have experience in the professional installation and maintenance of heating, cooling and air conditioning systems as well as hot water storage tanks.
- Switch off the external main switch before starting any work on the indoor unit and secure against being switched on inadvertently.
- Do not leave any tools or other objects below the hood of the unit after finishing installation or maintenance work.

Avoid Danger

The hot water storage tank is state-of-the-art and is built to meet all recognised technical requirements. However, improper use can lead to serious injuries or death, as well as causing material damage.

To prevent such risks, install and operate the hot water storage tank only:

- as stipulated and in perfect condition,
- with an awareness of the safety and hazards involved.

This assumes knowledge and use of the contents of this manual, the relevant accident prevention regulations and the recognised safety-related and occupational medical rules.

- Keep flammable materials away from the hot water storage tank.

Before working on the hot water storage tank and the heating system

- Work on the hot water storage tank and heating system (e.g. installation, connection and initial start-up) should only be carried out by authorised and trained heating experts.
- Switch off the main switch before starting any work on the domestic hot water storage tank and heating system and secure it against unintentional switch-on.
- Seals must not be damaged or removed.
- Make sure that the safety valves comply with the requirements of EN 12828 when connecting on the heating side, and with the requirements of EN 12897 when connecting on the domestic water side.
- Only original replacement parts may be used.

1.2.2 Intended use

The product may only be used as a hot water storage tank. The hot water storage tank must be installed, connected and operated only according to the information in this manual.

When connecting to the heat pump you must use only the storage tank connection kits (E-Pac) provided for the purpose.

Only those electric immersion heaters supplied by us may be used.

Any other use outside the intended use is considered as improper. The operator alone shall bear responsibility for any resulting damage.

Intended use also includes compliance with the maintenance and service conditions. Spare parts must at least satisfy the technical requirements defined by the manufacturer. This is the case, for example, with the use of original replacement parts.

1.2.3 Device installation room

For safe and fault-free operation, it is necessary that the installation location of the hot water storage tank fulfils certain criteria. Information about the installation location for the hot water storage tank can be found in "3.1 Set-up" [p 13].

Information on the installation site of other components can be found in the associated documentation supplied with them.

1.2.4 Electrical installation

- Electrical installations may only be carried out by electrical technicians and in compliance with valid electrical guidelines as well as the specifications of the responsible energy supply company.
- Compare the mains voltage indicated on the nameplate with the supply voltage before connecting to the mains.
- Before beginning work on live parts, disconnect them from the power supply (switch off main switch, remove fuse) and secure against unintentional restart.
- For each hard wired power connection, install a separate disconnecter system compliant with EN 60335-1 for all-pole disconnection from the power mains.

1.2.5 Requirements of the heating and filling water

Observe the relevant regulations of technology to prevent creation of corrosion products and deposits.

Minimum requirements regarding the quality of filling and supplementary water:

- Water hardness (calcium and magnesium, calculated as calcium carbonate): ≤ 3 mmol/l
- Conductivity: ≤ 1500 (ideal ≤ 100) $\mu\text{S/cm}$

- Chloride: ≤250 mg/l
- Sulphate: ≤250 mg/l
- pH value (heating water): 6.5 – 8.5

Using filling water and top-up water which does not meet the stated quality requirements can cause a considerably reduced service life of the equipment. The responsibility for this lies solely with the operator.

1.2.6 Heating and sanitary side connection

- Create a heating system according to the safety requirements of EN 12828.
- With sanitary connection, you must observe
 - EN 1717 – Protection against pollution of potable water installations and general requirements of devices to prevent pollution by backflow.
 - EN 806 – Specifications for installations inside buildings conveying water for human consumption.
 - and, in addition, the country-specific legal regulations.



INFORMATION

The domestic water quality must comply with the EU Guideline 98/83 EC and the regionally-applicable regulations.

The connection of a solar installation, an electric heating rod or an alternative heat generator may cause the storage temperature to exceed 60°C.

- For this reason you should fit scalding protection (e.g. VTA32 + Screw connection 1")
- Use a pressure reducer if the cold water connection pressure >6 bar.

If the hot water storage tank is connected to a heating system with steel pipes, radiators or non-diffusion-proof floor heating pipes, slurry and swarf could enter the hot water storage tank and cause blockages, local overheating or corrosion.

- To prevent possible damage, fit a dirt filter or sludge separator into the heating return flow of the system.
 - SAS 1



INFORMATION

To avoid heat losses caused by gravitational circulation, circulation brakes SKB shall be installed into the connections.

1.2.7 Operation

Only operate the hot water storage tank

- After all installation and connection work has been completed.
- With fully installed equipment covers and service accesses.
- With sanitary side pressure reducers installed (max. 6 bar).
- With heating side pressure reducers installed (max. 3 bar).
- With completely filled storage containers (fill level display).

The specified servicing intervals should be adhered to and inspection work must be carried out.

1.3 Handover to operator and warranty

1.3.1 Instructing the owner

- Before you hand over the device, explain to the owner how he/she can operate and check the device.
- Hand over the technical documentation (at least the operating instructions and operating manual) to the operator and advise him that these documents must be made available at all times and be stored in the immediate vicinity of the device.
- Document the handover by filling out the installation and instruction forms together with the owner and sign them.

1.3.2 Warranty conditions

The legal guarantee conditions fundamentally apply. Our more extensive warranty conditions can be found in the Internet. Ask your suppliers if necessary.

There is only an entitlement to warranty services when it can be certified that the annual maintenance work has been regularly completed.

2 Product description

2 Product description

The legend designation for the following graphics in this chapter is listed in "2-1 Legend" [p. 6].

The following graphics show the connections and dimensions.

2.1 Design and components

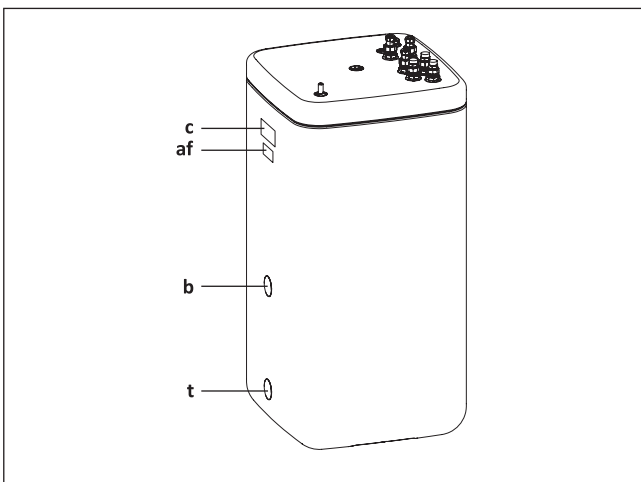
2-1 Legend

Item	Explanation	Applicable to model
a	Storage tank (polypropylene double walled jacket with PUR hard foam heat insulation)	all
b	Mount for handle or solar R4 controller	all
c	Type plate	all
d	Fill level indicator	all
e	Safety overflow connection (1¼" AG (outer thread), 1" IG (internal thread))	all
f	Pressureless storage tank water	all
g	Hot water zone	all
h	Solar zone	S#A / S#B / S#F / S#L / S#K
i	Connection for electric immersion heater (R 1½" IG (internal thread))	all
j	Optional: Electric immersion heater (designated as a booster heater in heat pump systems.)	all
o	Thermal insulation shell for heat exchanger to provide heating support (WT5)	S#A / S#B / S#F / S#H / S#I / S#L / S#K
q	Thermal insulation shell for pressurised solar heat exchanger (WT4)	S#F / S#K / S#L
r	Solar - flow layering pipe	S#A / S#B / S#D / S#H / S#I / S#J / S#Q
s	Sensor pocket for tank temperature sensor	all
t	Drain-back solar - return flow	S#A / S#B / S#D / S#H - S#J / S#Q
	Filling and draining connection for storage tank water	all
u	Drain-back solar - flow	S#A / S#B / S#D / S#H - S#J / S#Q
v	Pressurised solar - return flow	S#F / S#G / S#K - S#M
w	Pressurised solar - flow	S#F / S#G / S#K - S#M
x	Hot water connection ⁽¹⁾	all
y	Cold water connection ⁽¹⁾	all
z	Storage tank charging return flow (via 1st heat source) ⁽¹⁾	S#A / S#B / S#D / S#F / S#G / S#H - S#M / S#O / S#P
aa	Storage tank charging flow (via 1st heat source) ⁽¹⁾	S#A / S#B / S#D / S#F / S#G / S#H - S#M / S#O / S#P
ab	Storage tank charging return flow (via 2nd heat source) ⁽¹⁾	S#I / S#L / S#P
ac	Storage tank charging flow (via 2nd heat source) ⁽¹⁾	S#I / S#L / S#P
ad	Excluding Altherma RW and Altherma 3RW: Heating support outlet ↓ ⁽¹⁾ (connect to heating return!) Only Altherma RW and Altherma 3RW: Storage tank conditioning/heating support return flow ↑ (connect to flow for heating)	S#A / S#B / S#F / S#H / S#I / S#K / S#L
ae	Excluding Altherma RW and Altherma 3RW: Heating support inlet ↑ ⁽¹⁾ (connect to return flow heat generator!) Only Altherma RW and Altherma 3RW: Storage tank conditioning/heating support flow ↓ (connect to flow Altherma RW resp Altherma 3RW)	S#A / S#B / S#F / S#H / S#I / S#K / S#L
af	QR-code sticker – access to detailed documents on Daikin web-site	
WT1	Corrugated stainless steel pipe heat exchanger for domestic hot water using depressurised storage tank water for heating up	all
WT2	Stainless steel corrugated pipe heat exchanger for charging storage tank via 1st heat source	S#A / S#B / S#D / S#F / S#G / S#H - S#M / S#P / S#Q
WT3	Stainless steel corrugated pipe heat exchanger for charging storage tank via 2nd heat source	S#I / S#L / S#P
WT4	Stainless steel corrugated pipe heat exchanger for charging the hot water storage tank by pressurised solar system	S#F / S#G / S#K - S#M
WT5	Corrugated pipe stainless steel heat exchanger for heating support	S#A / S#B / S#F / S#H / S#I / S#L / S#K

⁽¹⁾ Recommended accessories (SKB (2 in number))

2 Product description

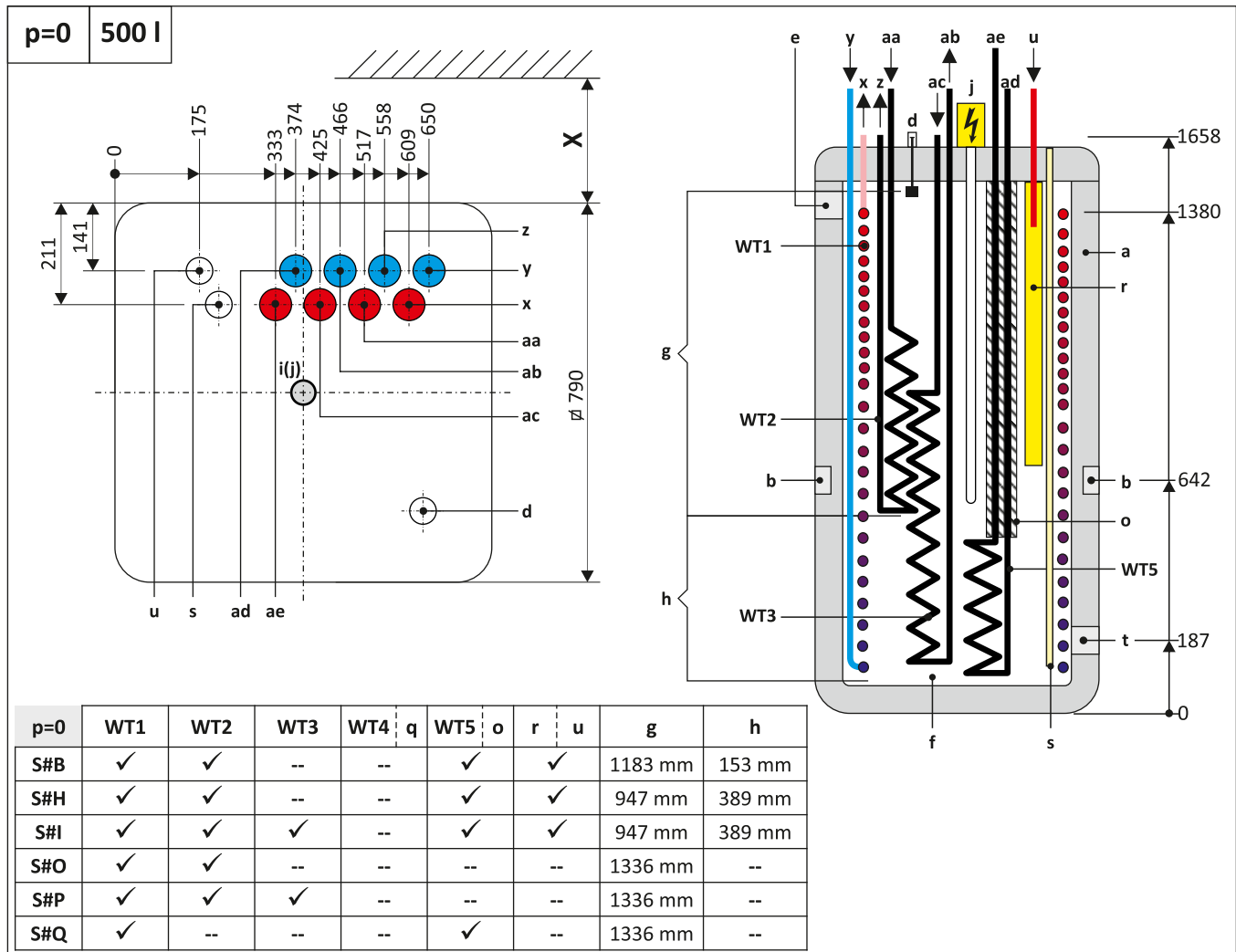
Item	Explanation	Applicable to model
S#A	Hot water storage tank EKHWP54419Bx	
S#B	Hot water storage tank EKHWP500Bx	
S#D	Hot water storage tank EKHWP300Bx	
S#F	Hot water storage tank EKHWP500PBx	
S#G	Hot water storage tank EKHWP300PBx	
S#Q	Hot water storage tank EKHWC500Bx	
S#H	Hot water storage tank EKHWC500Bx	
S#I	Hot water storage tank EKHWC500Bx	
S#J	Hot water storage tank EKHWC300Bx	
S#K	Hot water storage tank EKHWC500PBx	
S#L	Hot water storage tank EKHWC500PBx	
S#M	Hot water storage tank EKHWC300PBx	
S#O	Hot water storage tank EKHWDH500Bx	
S#P	Hot water storage tank EKHWD500Bx	
X	Recommended wall distance 200 mm	all



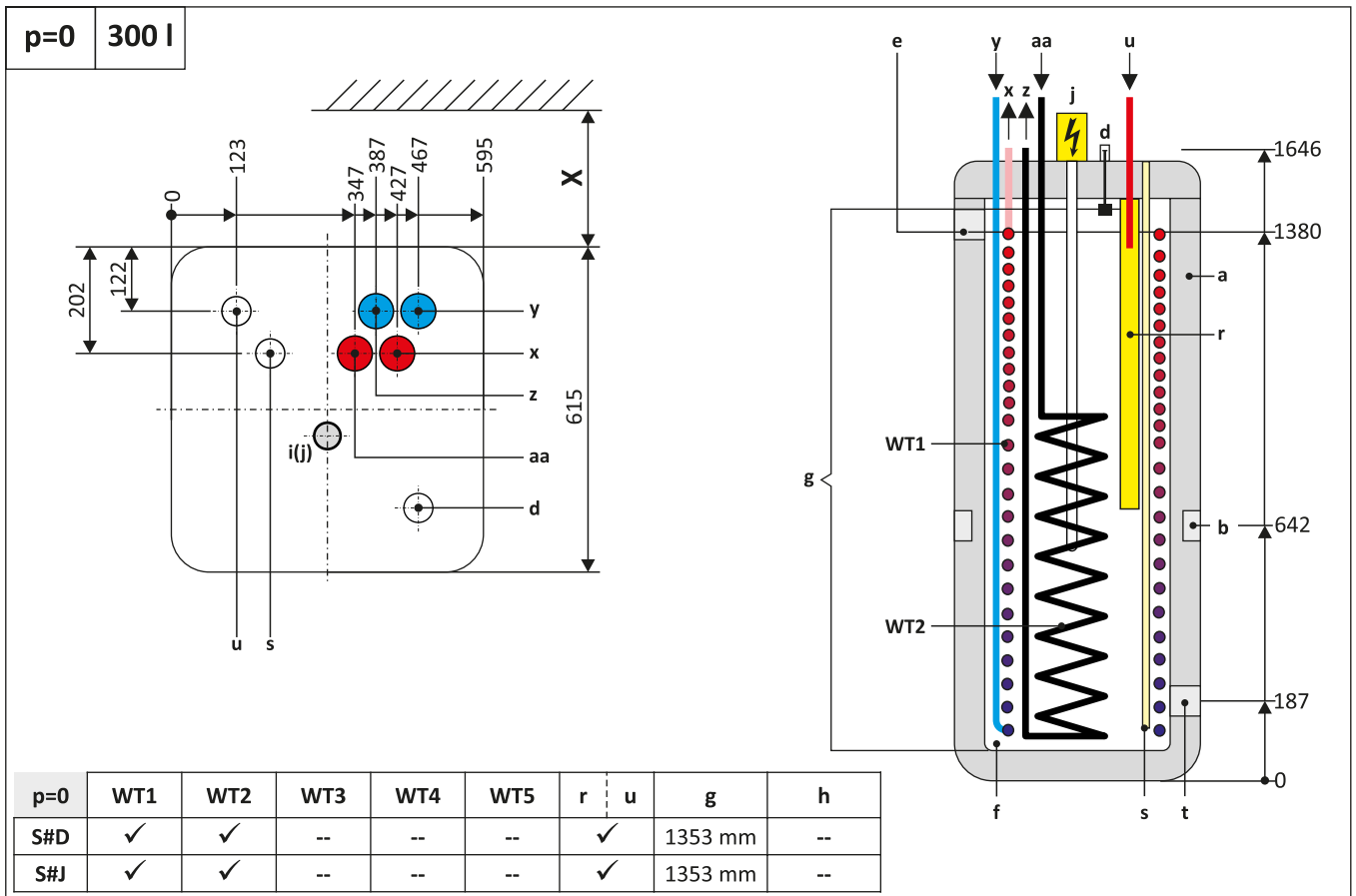
2-1 Hot water storage tank – general

2 Product description

Unpressurised system - DrainBack p=0




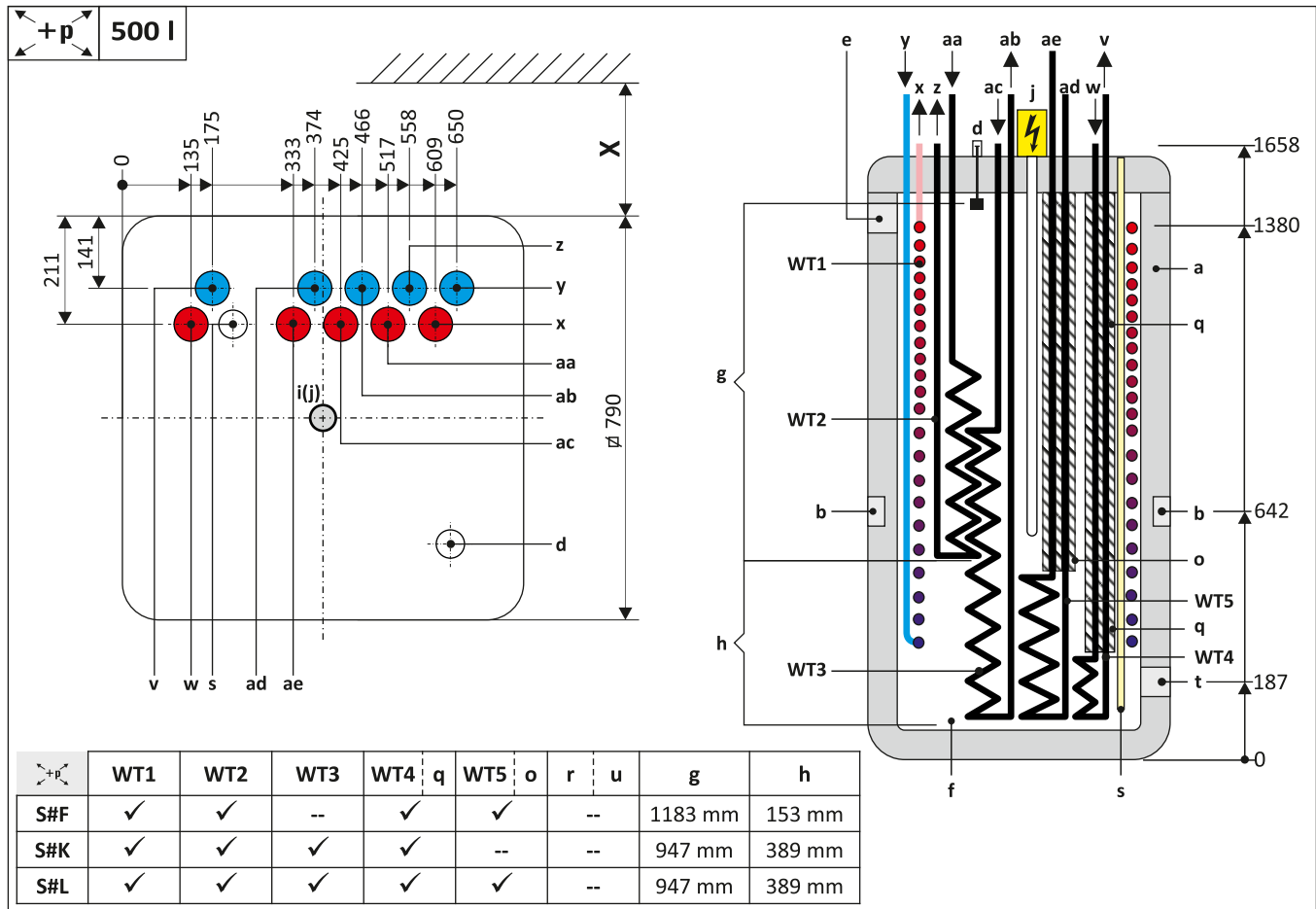
2-2 500 l models



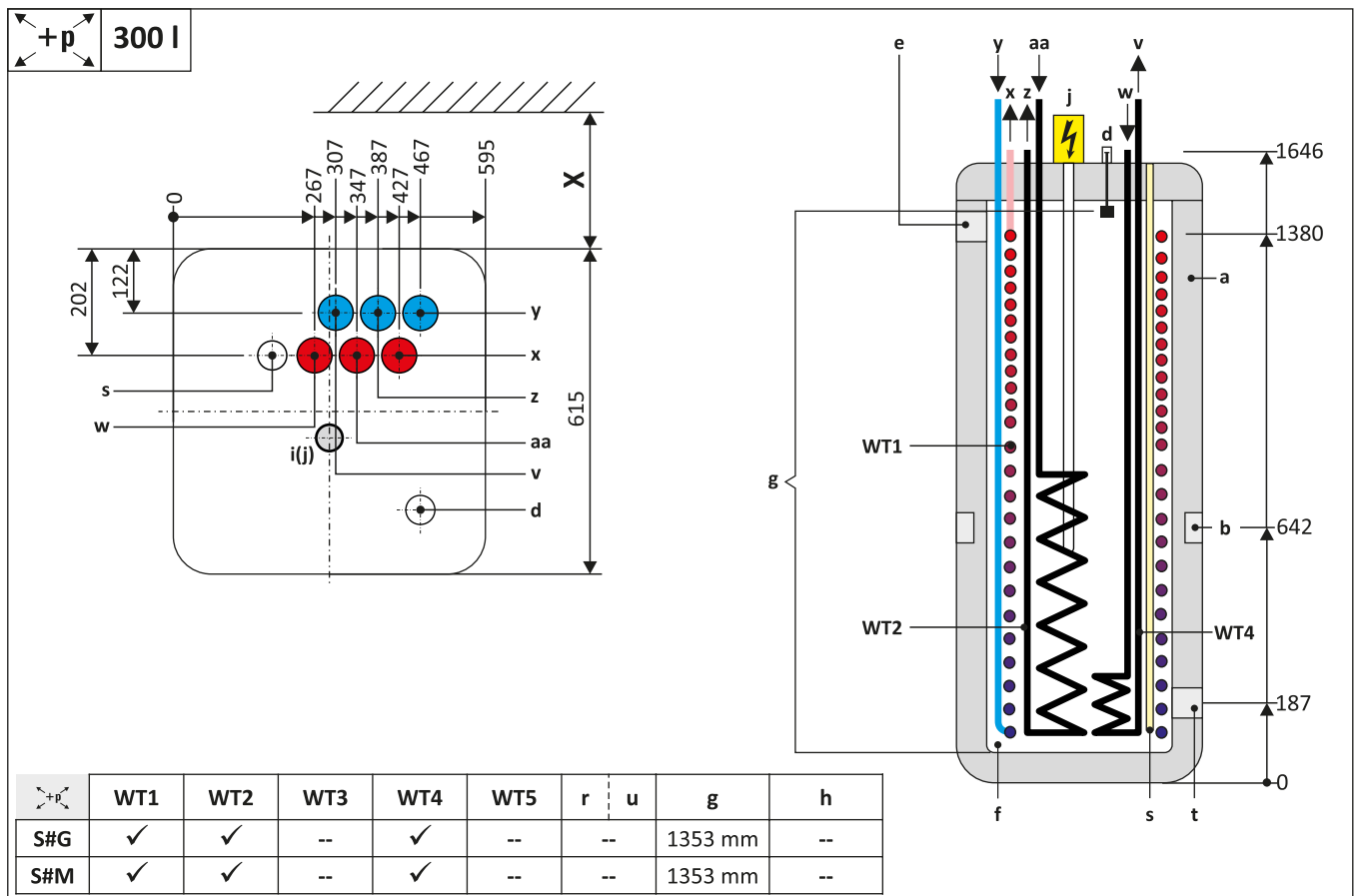
2-3 300 l models

2 Product description

Pressurised system 



 2-4 500 l P-models



2-5 300 I P-models

2.2 Brief description

The hot water storage tank is a combination of heat storage tank and instantaneous water heater.

The pressureless storage water serves as heat storage medium. Useful heat is supplied and removed via the spiral corrosion-resistant heat exchanger, which is made from a corrugated stainless steel pipe (1.4404), and is completely immersed in the storage tank water. In the heat exchanger for domestic hot water generation, domestic hot water is stored at the temperature level of the preparation zone.

The cold water which flows in when the hot water is drawn off is first routed to the storage tank at the very bottom of the heat exchanger (WT1), where it cools the lower zone of the storage tank down as much as possible. The readiness zone is heated by an external heat generator (condensing boiler, heat pump, solar system, electric immersion heater). Water flows through the heat exchanger for storage charging (WT2) from top to bottom.

On its way to the top, the domestic water continuously absorbs the heat of the storage tank water. The flow direction, operating on the principle of counter-flow, and the coil-shaped heat exchanger create a pronounced temperature layering in the hot water storage tank. As high temperatures can be maintained for a very long time in the upper section of the storage tank, a high hot water output is achieved even if water is drawn off over a long period of time.

The hot water storage tank listed in "2.1 Design and components" [▶ 6] can be heated by solar in addition to the external heat generator. Depending on the available heat from the sun, the entire hot water storage tank can be heated up.

The stored heat is now used both for hot water generation and for heating support. The high total storage capacity also temporarily allows time without sunshine to be bridged.

If a heat pump system is used as an external heat generator, the primary hot water storage tank can only be one of the EKHWP-models.

Optimum water hygiene

Low flow or unheated zones on the domestic water side are completely excluded with the hot water storage tank. It is impossible for sludge, rust or other sediments to be deposited, as can be the case with other large volume tanks. The water which is fed into the system first is also discharged first (first in, first out principle).

Low maintenance and corrosion

The hot water storage tank is made of plastic and is completely corrosion free. No sacrificial anode or similar corrosion protection system is necessary. This means that associated maintenance work, e.g. changing the protective anodes or cleaning the storage tank, does not need to be carried out on the hot water storage tank. Only the fill level of the storage tank water needs to be checked.

The corrugated stainless steel pipe heat exchangers on the heating and potable water side are made from high quality stainless steel (1.4404).

Low calcification

On the pressureless storage tank side only once deposition of limescale is possible. The immersion heater therefore remains clean, as do all the stainless steel heat exchanger pipes in the storage tank water. This means that no limescale can build up which would continuously reduce the efficiency of heat transfer in the course of operation (as is the case with other storage tank designs).

The thermal and pressure expansion and high flow rates in the domestic water heat exchanger release any possible limescale deposits, which are then flushed away.

2 Product description

Economical operation

The full area heat insulation of the storage tank ensures very low heat losses in use and means that the best use is made of the heat energy being applied.

Modular extension facility

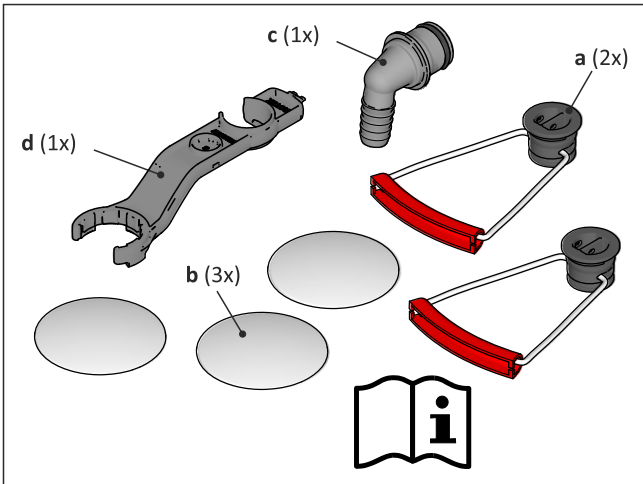
If the heat output of a single hot water storage tank is not adequate, you can interconnect several storage tanks in a modular manner.

Electronic control

A control system integrated in the heat generator controls all heating and hot water functions for the direct heating circuit, a mixed heating circuit which can be connected as an option and a storage tank charging circuit.

2.3 Scope of delivery

- Hot water storage tank
- Bag of accessories



2-6 Content of bag of accessories

- a Carrier loops (only required for transport)
- b Cover screen
- c Hose connection piece for safety overflow
- d Fitting spanner

2.4 Optional accessories

2.4.1 Electric immersion heaters

In addition to the heating possibilities via the corrugated stainless steel pipe heat exchanger from various different heat sources and energy carriers, the hot water storage tank can also be charged using an electric immersion heater.

Electric immersion heaters applicable for all Altherma ST models:

2-2 Overview and technical data

Type	EKBU2C	EKBU6C
Operating voltage	230 V / 50 Hz	230/400 V / 50 Hz
Heating output	2 kW	2, 4, 6 kW
Temperature range ⁽¹⁾	30-78°C	
Cable length	2 m	
Heating element length	1.10 m	

⁽¹⁾ Temperature control and a safety temperature limiter (STB) are already integrated in the electric immersion heater. The electric immersion heater is delivered ready for fitting.

Electric immersion heater sets applicable for EKHWP in combination with heat pumps are available. Please look into the technical data book of the heat pump for the appropriate set and for technical details.

2.4.2 Non return valves

To prevent heat losses through the connection lines when the circulation pump is turned off and during periods without drinking water draw-off (gravitational circulation), circulation brakes should be built into the connections to the hot water storage tank (see "2-1 Legend" ▶ 6]).

2.4.3 Dirt filter

If the hot water storage tank is connected to a heating system with steel pipes, radiators or non-diffusion-proof floor heating pipes, slurry and swarf could enter the hot water storage tank and cause blockages, local overheating or corrosion. This can be prevented by fitting a dirt filter or sludge trap (see price list).

2.4.4 Scalding protection

There is a danger of scalding at hot water temperatures over 60°C. Fitting scalding protection enables the hot water temperature to be varied continuously and limited from 35 - 60°C.

- Scalding protection VTA32
- Screw connection set 1"
- Circulation set with scalding protection VTR300

2.4.5 Solar storage tank extension kit

If the heat output of a single hot water storage tank is not adequate you can interconnect several hot water storage tank modules.

This means that both the stainless steel heat exchangers for post-heating and the hot water heat exchangers are interconnected in accordance with the Tichelmann principle "6 Hydraulic" ▶ 20].

With seasonal variations in demand these individual units can be added or taken out of service accordingly. In this way the total hot water output can be manually matched to the actual demand.

The following components are offered:

- Solar storage tank extension kit CON SX
- Solar storage tank kit 2 CON SXE
- FlowGuard FLG

The installation and operation of this accessory component is described in detail in the individual operating and installation instructions provided.

2.4.6 KFE filling connection

For convenient filling and draining of the hot water storage tank, you can connect the KFE filling connection (KFE BA).

3 Set-up and installation

3.1 Set-up

3.1.1 Important information



WARNING

The storage tank plastic wall on the hot water storage tank can melt under the effects of external heat (>90°C) and, in the extreme case, can catch fire.

- Install the hot water storage tank only at a minimum distance of 1 m to other heat sources (>90°C) (e.g. electric heater, gas heater, chimney) and flammable materials.



CAUTION

- Install the hot water storage tank only if an adequate **ground load-bearing capacity of (1050 kg/m² plus a safety factor)** is guaranteed. The ground must be flat and level.
- Outdoor installation is only possible to a limited extent. The storage tank must **not be exposed to continuous direct sunlight**, as the UV radiation and the effects of the weather will damage the plastic.
- The hot water storage tank must be **protected from frost**.
- Make sure that the supply company **does not provide corrosive domestic water**. Suitable water treatment may be required.



CAUTION: $p=0$

If the difference in height between the hot water storage tank and the solar panels is not great enough, the pressureless solar system cannot drain fully in the exterior section.

- On pressureless solar systems, observe the minimum gradient of the solar connection lines.



INFORMATION: EKHWP

- Observe the permitted lengths of pipes between the hot water storage tank and the hydraulic connections on the heat pump (see installation and operating manual of the heat pump and the relevant storage tank connecting kit "E-Pac").

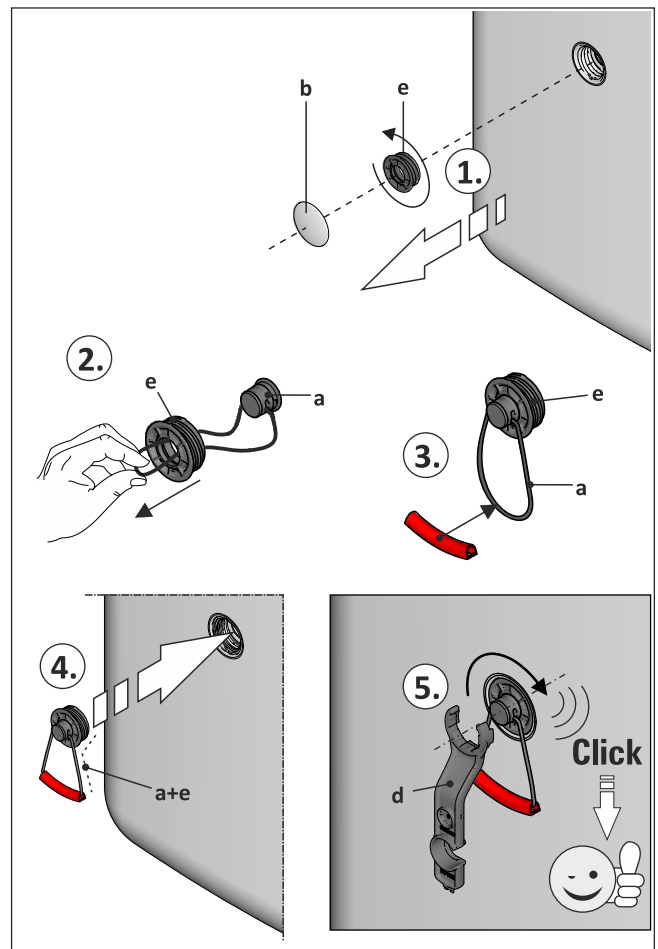
Requirement: The installation site meets the applicable country-specific requirements.

Incorrect set-up and installation would render the manufacturer's guarantee for the unit void. If you have questions, please contact our Technical Customer Service.

3.1.2 Installing the hot water storage tank

- Remove the packaging and dispose of it in an environmentally sound manner.
- Remove the cover plates on the storage tank ("3-1 Mounting the handles" [p. 13], item b) and unscrew the threaded pieces ("3-1 Mounting the handles" [p. 13], item e) from the apertures on which the handles are to be mounted.
- Pull the carrier loops ("3-1 Mounting the handles" [p. 13], item a) through the threaded pieces.

- Screw the threaded pieces with the fitted carrier loops ("3-1 Mounting the handles" [p. 13], item a+e) using a fitting spanner ("3-1 Mounting the handles" [p. 13], item d) into the openings.



3-1 Mounting the handles

- a Carrier loop
- b Cover screen
- d Fitting spanner
- e Threaded piece

- Transport the hot water storage tank carefully to the site of installation, using the carrier loops provided.

- Install the domestic hot water storage tank at the installation site. Recommended distance to the wall (s1): ≥ 200 mm ("3-2 Installing the hot water storage tank (shown on the EKHWP)" [p. 14]).



INFORMATION

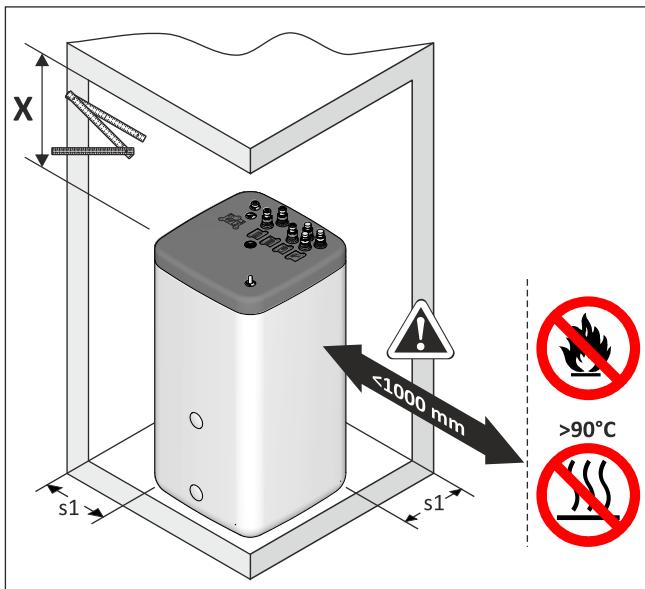
For the installation of an optional **electric immersion heater** (see "2.4 Optional accessories" [p. 12]) you will need a **minimum distance "X" of ≥ 1200 mm to the ceiling**.



INFORMATION

When setting up the unit in a cabinet, behind panels or in other restricted conditions, sufficient ventilation (e.g., using ventilation gratings) must be ensured.

3 Set-up and installation



3-2 Installing the hot water storage tank (shown on the EKHWP)

3.2 Installation

3.2.1 Important Information (installation)



DANGER: RISK OF BURNING/SCALDING

There is a danger of scalding at water temperatures $>60^{\circ}\text{C}$. This can arise with solar energy utilisation, if the Legionella protection is activated or if the target temperature is set to $>60^{\circ}\text{C}$.

- Fit scalding protection (see "2.4.4 Scalding protection" [p 12]).



CAUTION

If the hot water storage tank is connected to a heating system with **steel pipes**, **radiators** or non-diffusion-proof underfloor heating pipes, sludge and swarf could enter the hot water storage tank and cause **blockages**, **local overheating** or **corrosion**.

- Flush the feed pipes before filling the heat exchanger.
- Rinse out the heat distribution network (in the existing heating system).
- Fit a dirt filter or sludge catcher in the heating return pipe (see "2.4.3 Dirt filter" [p 12]).



CAUTION:

If an external heating unit (e.g. pressurised solar system, wood-burning boiler) will be connected to the heat exchanger WT4 ("2-4 500 I P-models" [p 10] / "2-5 300 I P-models" [p 11], item v+w), a too high flow temperature can cause damage to or destroy the hot water storage tank.

- The **feed flow temperature** of the external heater shall be **limited to max. 95°C** .

- For domestic water pipes observe the stipulations of EN 806 and EN 1717.
- The position and dimensions of the connections can be taken from "2-2 500 I models" [p 8] to "2-5 300 I P-models" [p 11].
- Check the cold water connection pressure (maximum 10 bar).
- At higher pressure in the drinking water line, a pressure reducer must be installed.

- Connect the pressure relief line to the safety pressure relief valve (customer supply) and connect the diaphragm expansion tank as per EN 12828.
- Note tightening torque (see "8.4 Tightening torque" [p 31]).
- Observe the requirements for the heating and filling water (see "1.2.5 Requirements of the heating and filling water" [p 4]).

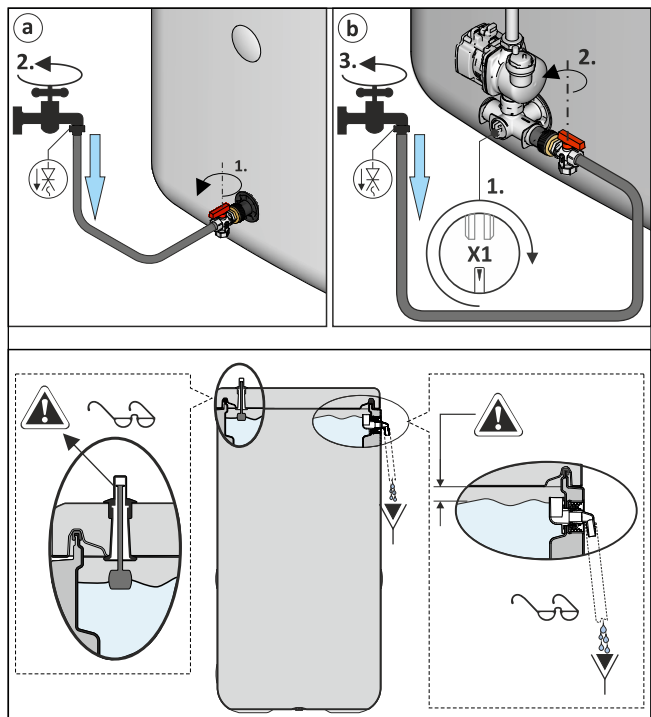


INFORMATION

To prevent heat loss from the connection pipes when the heating pump is switched off and during periods when no domestic water is drawn off (gravity circulation), you should fit **circulation brakes** (see "2.4.2 Non return valves" [p 12]) in the connections to the hot water storage tank.

3.2.2 Hydraulic system connection

- Only with connection of a EKHWP hot water storage tank to a heat pump: Mount the storage tank kit "E-Pac" for the heat pump to the EKHWP hot water storage tank (see the individual installation and operating instructions included for the storage tank connection kit).
- When using circulation brakes, fit them into the pipe connections on the hot water storage tank.
- Connect the drain hose to the connector of the safety overflow ("2-2 500 I models" [p 8] to "2-5 300 I P-models" [p 11], item e) on the hot water storage tank.
 - Use transparent drain hose (draining water must be visible).
 - Connect the drain hose to an adequately dimensioned waste water installation.
 - Drain should not be lockable.



3-3 Installation of drain hose at safety overflow

- Check the water pressure at the cold water connection (<10 bar).

Result: If the pressure in the domestic water supply is greater then fit a pressure reducer and limit the water pressure to <10 bar.
- Create connection of the cold water inlet to the hot water storage tank ("2-2 500 I models" [p 8] to "2-5 300 I P-models" [p 11], item y).

INFORMATION

In order to be able to flush out the stainless steel corrugated heat exchanger for domestic hot water heating in the event of bad water quality, install a removal facility to each of the cold water and hot water connections on the storage tank (T-piece with draw-off cock).

Above a hardness level of >3 mmol/l we recommend also fitting a dirty water filter that can be backflushed into the cold water connection.

6 Connect the connections to the hot water distribution network ("[2-2 500 l models](#)" [p 8] to "[2-5 300 l P-models](#)" [p 11], item x).

7 Establish connections to the heating circuit.

You must always ensure proper de-aeration of the storage tank lines ("[2-2 500 l models](#)" [p 8] to "[2-5 300 l P-models](#)" [p 11], items z-ae)

- **EKHWD/EKHWC:** De-aerating connection to be connected by customer.

- **EKHWP:** Use storage tank connection kit (E-Pac, see price list).

8 Establish connections to the heat generator.

- **EKHWD/EKHWC:** Create the connections to the heat generator in accordance with the suitable plant schematic ("[6.1 Connection schemata](#)" [p 20].)

- **EKHWP:** In combination with a heat pump, the heating side connection of the hot water storage tank must be carried out in accordance with the installation and operating instructions of the individual storage tank connection kit (E-Pac).

- **With bivalent combustion,** the connections need to be carried out in accordance with the connection schematic in the installation and operating instructions of the individual controllers.

- **Optional:** Create the connections to the **solar system** (see solar installation and maintenance instructions).

9 Insulate the hot water pipes carefully against heat loss. Install heat installation in accordance with country-specific guidelines. We recommend an insulation thickness of at least 20 mm.

3.3 Filling / Topping up

INFORMATION

Any optional accessories must be fitted before filling.

INFORMATION

The heat exchangers must be filled before the buffer storage tank.

3.3.1 Hot water-heat exchanger

- 1 Open the shutoff valve for the cold water supply pipe.
- 2 Open the hot water tap connections so that the draw-off volume can be set as high as possible.
- 3 Once water has been discharged from the tap connections, do not interrupt the cold water flow; this will ensure that the heat exchanger will be fully vented and that any impurities or residue will be discharged.

3.3.2 Buffer tank



DANGER: RISK OF ELECTROCUTION

Live parts can cause an electric shock on contact and cause fatal burns or injuries.

- If there is an electric immersion heater or control and pump unit installed in the hot water storage tank then these components must be isolated from the power supply before starting the work (e.g. fuse, main switch switched off and secured against inadvertent switching on again).



CAUTION: UK only

If filling or topping up the storage tank is done by means of the boiler filling and drain valve, a temporary filling loop must be used with the appropriate backflow prevention device in accordance with clause G24.2, Guidance to the Water Supply (Water Fittings) Regulations 1999.



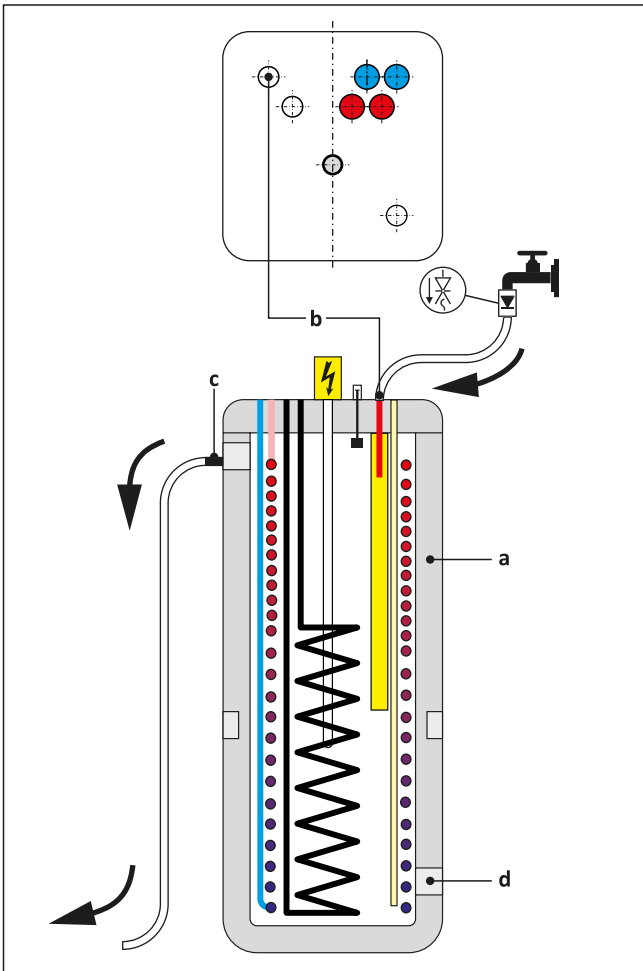
INFORMATION

Fill the solar circuit, heating system and storage tank charging circuit in accordance with the operating instructions for the individual components.

EKHWC/EKHWP hot water storage tank without solar system and without KFE filling connection (KFE BA):

- 1 Connect the filling hose with backflow prevention (1/2") to the connection "DrainBack solar - feed" ("[3-4 Filling the buffer storage tank \(1\)](#)" [p 16], item b).
- 2 Fill the storage tank on the EKHWC/EKHWP until water comes out of the safety overflow ("[3-4 Filling the buffer storage tank \(1\)](#)" [p 16], item c).
- 3 Disconnect the filling hose with backflow prevention (1/2") again.

4 Start-up



3-4 Filling the buffer storage tank (1)

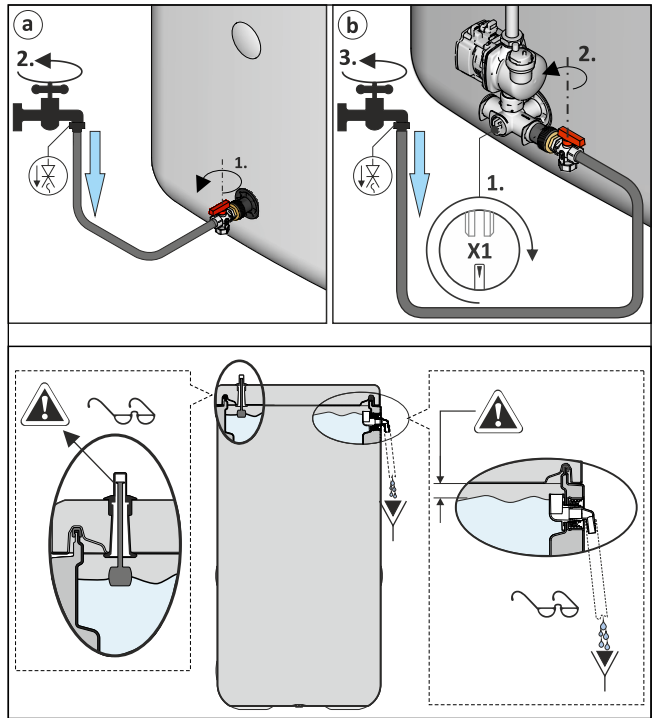
- a Hot water storage tank
- b Drain-back solar – flow connection
- c Safety overflow connection
- d Drain-back solar – return flow connection

All EKHWD hot water storage tanks:

- 1 Mount the KFE filling connection (accessory KFE BA) to the filling and draining connection on the EKHWD ("3-4 Filling the buffer storage tank (1)" [p 16], item d).
- 2 Connect the filling hose with backflow prevention (1/2") to the previously installed KFE filling connection.
- 3 Fill the storage tank on the EKHWD until water comes out of the safety overflow ("3-4 Filling the buffer storage tank (1)" [p 16], item c).

EKHWC/EKHWP hot water storage tank with solar system:

- 1 Install KFE filling connection (accessory KFE BA)
 - (a) With solar system: on the filling and draining connection of the EKHWC/EKHWP.
 - (b) With solar system: on the connection bracket of the control and pump unit (EKSRS4A).
- 2 Connect the filling hose with backflow prevention (1/2") to the previously installed KFE filling connection.
- 3 Only with solar system: Adjust the valve insert X1 on the connecting angle so that the path to the filling hose is opened ("3-5 Filling the buffer storage tank (2)" [p 16]).
- 4 Open the valve on the KFE filling connection and the cold water inlet and fill the storage tank on the EKHWC/EKHWP until water comes out of the safety overflow ("3-5 Filling the buffer storage tank (2)" [p 16]).



3-5 Filling the buffer storage tank (2)

4 Start-up



WARNING

- Units which have been set-up and installed incorrectly can be a health and safety risk endangering human life and may not operate properly.
- Installation commissioning may only be carried out by authorised and trained heating technicians following the provided installation and maintenance manual.
- Only original replacement parts may be used.



CAUTION

- A hot water storage tank commissioned improperly can lead to property damage.
- Observe the regulations in VDI 2035 in order to avoid corrosion and deposits.
 - **If the filling and top-up water has a high degree of hardness, measures must be taken to stabilise this hardness or soften the water.**
 - Set the pressure reducer on the cold water connection to a **maximum of 6 bar**.



CAUTION

- If the electric immersion heater is started with the storage tank empty or not completely full, it can lead to a reduction in performance of the electric heating (tripping of the safety temperature limiter).
- Operate the electric immersion heater only with the storage tank completely full.

Incorrect start-up makes the manufacturer's guarantee for the unit void. If you have questions, please contact our Technical Customer Service.

- Check all the points on the enclosed checklist. Make a record of the test results and sign it, together with the operator.
- If an electric immersion heater is fitted, set the desired storage tank water temperature.

- Switch on the mains supply switch on the heat generator. Wait for the start phase.

Only if **all points** on the checklist can be answered with **Yes** the hot water storage tank may be started up.

4-1 Check list

Check list for start-up		
1	Is the hot water storage tank correctly set up according to an admissible set up variant and without visible damages?	<input type="checkbox"/> Yes
2	Minimum distance between the hot water storage tank and other heat sources (>90°C) of 1 m?	<input type="checkbox"/> Yes
3	Hot water storage tank fully connected, including optional accessories?	<input type="checkbox"/> Yes
4	With a fitted electric immersion heater: <ul style="list-style-type: none"> Does the mains connection comply with the regulations and is the mains voltage 230 volts or 400 volts, 50 Hz? Has the residual current device been fitted in accordance with the individual country-specific regulations? Only when not using non-flammable power supply cable: Has the electric cable not been laid directly to the hot water storage tank? 	<input type="checkbox"/> Yes
5	The storage tank is filled with water to the overflow point?	<input type="checkbox"/> Yes
6	On restoration: Has the heat distribution network been cleaned? Is a dirt filter installed in the heating return flow?	<input type="checkbox"/> Yes
7	Is the safety overflow connection connected to an open drain?	<input type="checkbox"/> Yes
8	Heating system and hot water system filled completely?	<input type="checkbox"/> Yes
9	Is the water pressure on the sanitary side <10 bar?	<input type="checkbox"/> Yes
10	Is the water pressure on the heating side <3 bar?	<input type="checkbox"/> Yes
11	Are the heat generator and heating system vented?	<input type="checkbox"/> Yes
12	Are all hydraulic connections tight (leaks)?	<input type="checkbox"/> Yes
13	Does the installation operate without faults?	<input type="checkbox"/> Yes
14	In the case of new installations: Has the operating manual been handed over, and has the owner been instructed?	<input type="checkbox"/> Yes

<i>Location and Date:</i>	<i>Signature of installer:</i> <i>Signature of owner:</i>
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5 Taking out of service

INFORMATION

If installed: Switch off the power supply to the electric immersion heater.

5.1 Temporary shutdown

CAUTION

A heating system which is shut down can freeze in the event of frost and may suffer damage.

- In the event of a danger of frost, start the entire heating system up again and activate the frost protection function or take the appropriate frost protection measures for the hot water storage tank (e.g. by draining).

INFORMATION

If the danger of freezing will only last for a few days, the very good heat insulation of the hot water storage tank means that it need not be drained, as long as the storage tank temperature is observed regularly and not permitted to fall below +3°C. This does not, however, provide any protection against frost for the connected heat distribution system!

If the storage tank temperature decreases below +3°C, the STB of the electric immersion heater automatically triggers. This prevents consequential damage to the electric immersion heater caused by frost when starting up again.

5.2 Draining the storage tank

DANGER: RISK OF BURNING/SCALDING

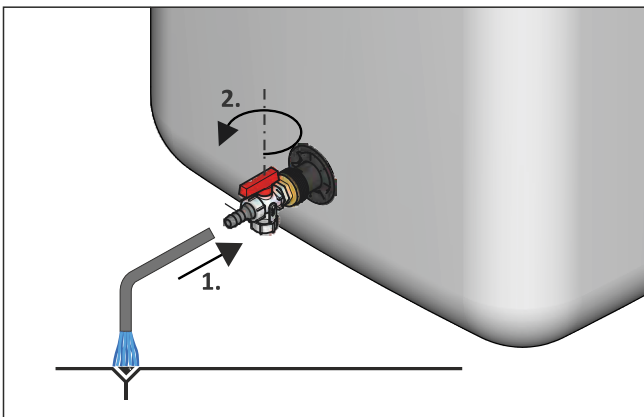
Danger of scalding caused by leakage hot water from the storage tank.

- Let the hot water storage tank cool down adequately before any installation work.
- Wear protective gloves.

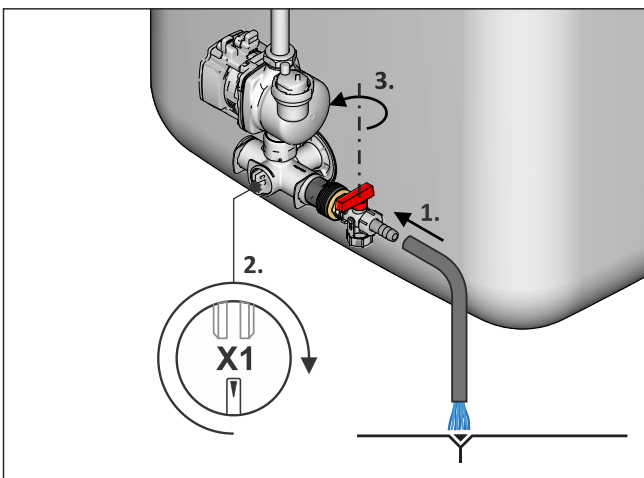
5 Taking out of service

5.2.1 With pre-mounted KFE filling connection

- 1 Connect the drain hose to the **KFE filling connection**
 - no $p=0$ solar system connected
("5-1 Draining process (1)" ▶ 18]
 - $p=0$ solar system connected
("5-2 Draining process (2)" ▶ 18]
 - and to a waste water drainage point which is at least at ground level.
- 2 Only with $p=0$ solar system: Adjust the valve insert X1 on the connecting angle so that the path to the drain hose is opened ("5-2 Draining process (2)" ▶ 18).
- 3 Open the valve of the **KFE filling connection** and drain the water out of the storage tank.



5-1 Draining process (1)



5-2 Draining process (2)

5.2.2 With subsequently fitted KFE filling connection

- 1 Install the **KFE filling connection** (accessory KFE BA) subsequently.
- 2 Drain the storage tank content as described in "5.2.1 With pre-mounted KFE filling connection" ▶ 18].

5.2.3 Without KFE filling connection

With $p=0$ solar system

i INFORMATION

Draining possible only with KFE filling connection (accessory KFE BA) (see "5.2.1 With pre-mounted KFE filling connection" ▶ 18])

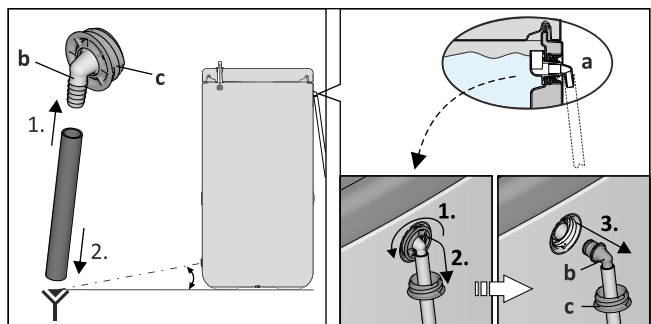
Without $p=0$ solar system

i INFORMATION

Draining with KFE filling connection (accessory KFE BA) is recommended.

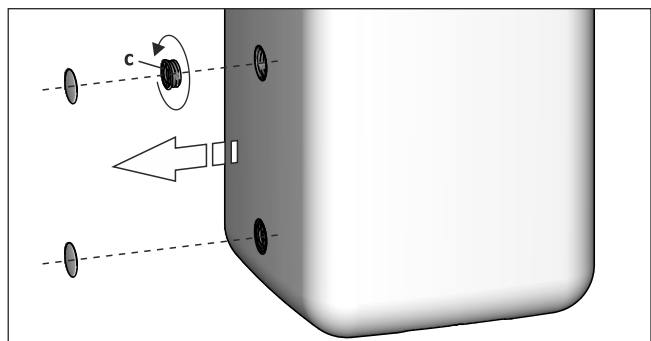
Alternative:

- 1 Remove hose connection piece ("5-3 Work step 1" ▶ 18], item b) from safety overflow ("5-3 Work step 1" ▶ 18], item a). Keep care that the connected drain hose keeps connected to an adequately dimensioned waste water installation.



5-3 Work step 1

- 2 Remove the cover plate from the filling and emptying fitting.
- 3 Remove the cover plate from the handle and unscrew the threaded piece ("5-4 Working steps 2 + 3" ▶ 18], item c) from the storage tank container.



5-4 Working steps 2 + 3

- 4 Place a suitable collection trough beneath the filling and emptying fitting.

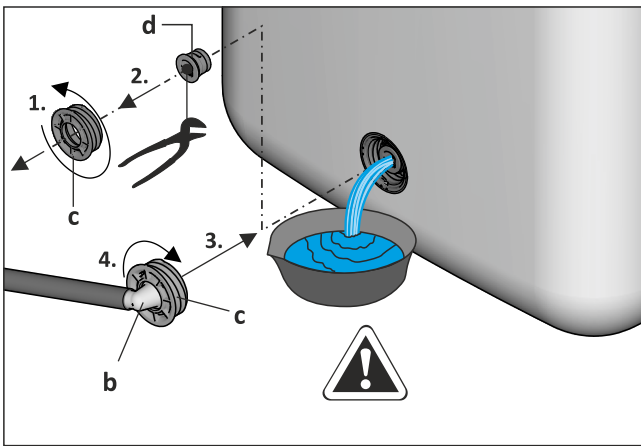


DANGER: RISK OF BURNING/SCALDING

Storage water will flow out in a surge as soon as the sealing plug is removed.

There is no valve and no non-return flap on the filling and draining connection.

- 5 Unscrew the threaded piece ("5-5 Working steps 4 + 5" ▶ 19], item c) at the filling and draining connection, and remove the plug ("5-5 Working steps 4 + 5" ▶ 19], item d) and immediately screw in the pre-assembled drain hose connector ("5-5 Working steps 4 + 5" ▶ 19], item b) into the filling and draining connection again.



▲ 5-5 Working steps 4 + 5

5.2.4 Draining the heating circuit and hot water circuit

- 1 Connect the drain hose to the heat generator.
- 2 Allow the heating and hot water circuits to drain using the suction lifter method.
- 3 Disconnect the pipes for heating flow and return, the cold water feed and hot water outlet from the hot water storage tank.
- 4 Connect discharge hoses on the heating flow and return flow as well as on the cold water inlet and hot water outlet so that the hose openings are at ground level.
- 5 Allow the individual heat exchangers to run empty one after the other, using the suction lifter method.

5.2.5 Drain the solar panel circuit (only pressurised system)



CAUTION

If heat transfer media containing glycol are exposed to temperatures above 170°C over an extended period, they will decompose or form silt. This may reduce the frost protection, affect the output of the solar system and damage components of the system.

- In the event of extended standstill of the solar panel circuit drain in accordance with the installation instructions of the regulating and pump unit.

5.3 Final shutdown

- 1 Disconnect hot water storage tank from all electrical and water connections.
- 2 Dismantle the hot water storage tank in accordance with the instruction manual ("[3 Set-up and installation](#)" | 13]) in reverse order.
- 3 Dispose of hot water storage tank in accordance with regulations.

Recommendations for disposal



Thanks to the environmentally friendly design of the product, we have established requirements to ensure environmentally friendly disposal. Proper disposal in compliance with the respective national regulations of the country of use is the responsibility of the user/owner.



The designation of the product means that electrical and electronic products may not be disposed of together with unsorted domestic waste.

Proper disposal in compliance with the respective national regulations of the country of use is the responsibility of the user/owner.

- Disassembly of the system, handling of coolant, oil and other parts may only be carried out by a qualified fitter.
- Disposal may only be carried out by an organization that specialises in reuse, recycling and recovery.

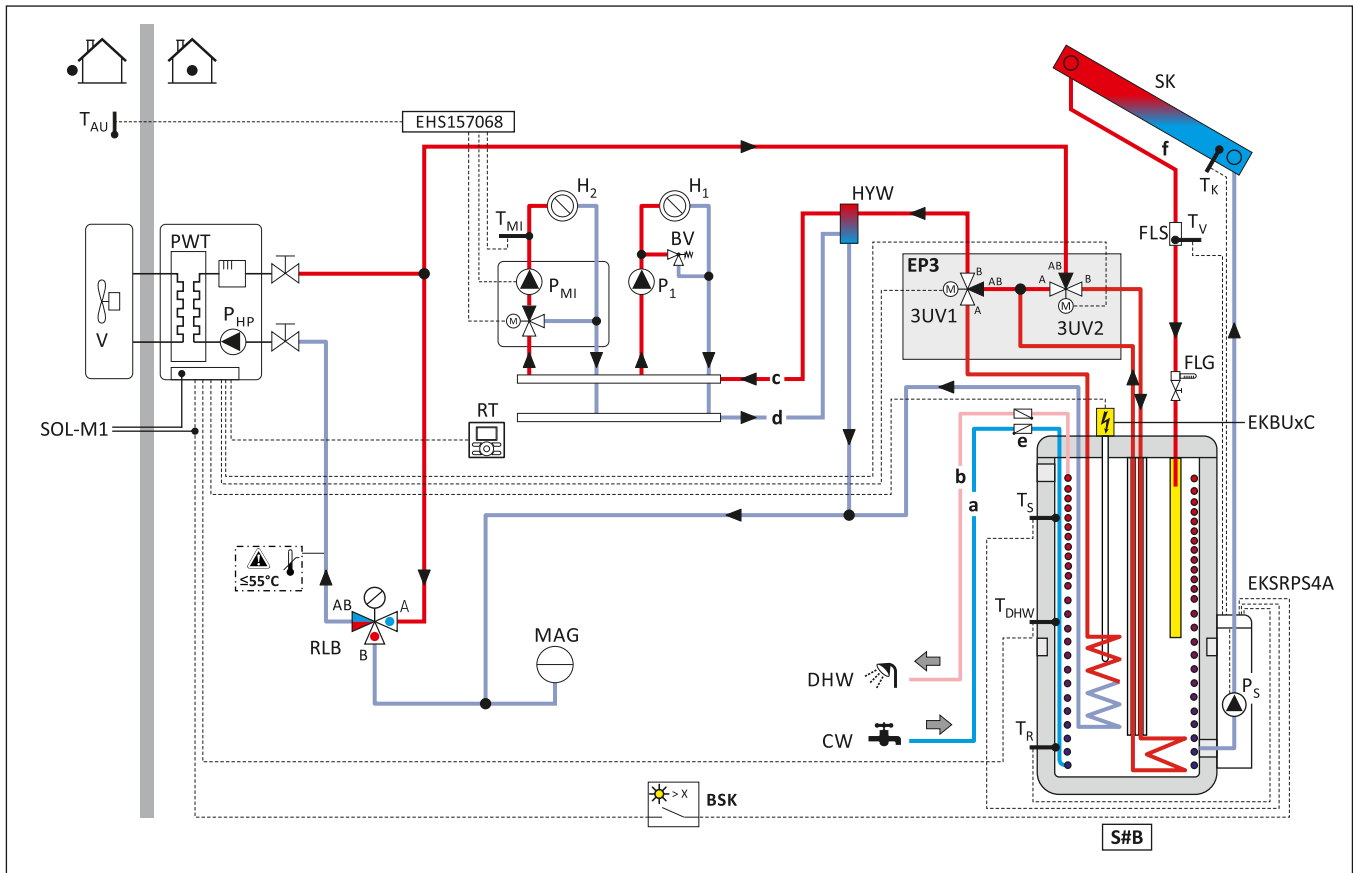
Further information is available from the installation company or the responsible local authorities.

6 Hydraulic

6 Hydraulic

6.1 Connection schemata

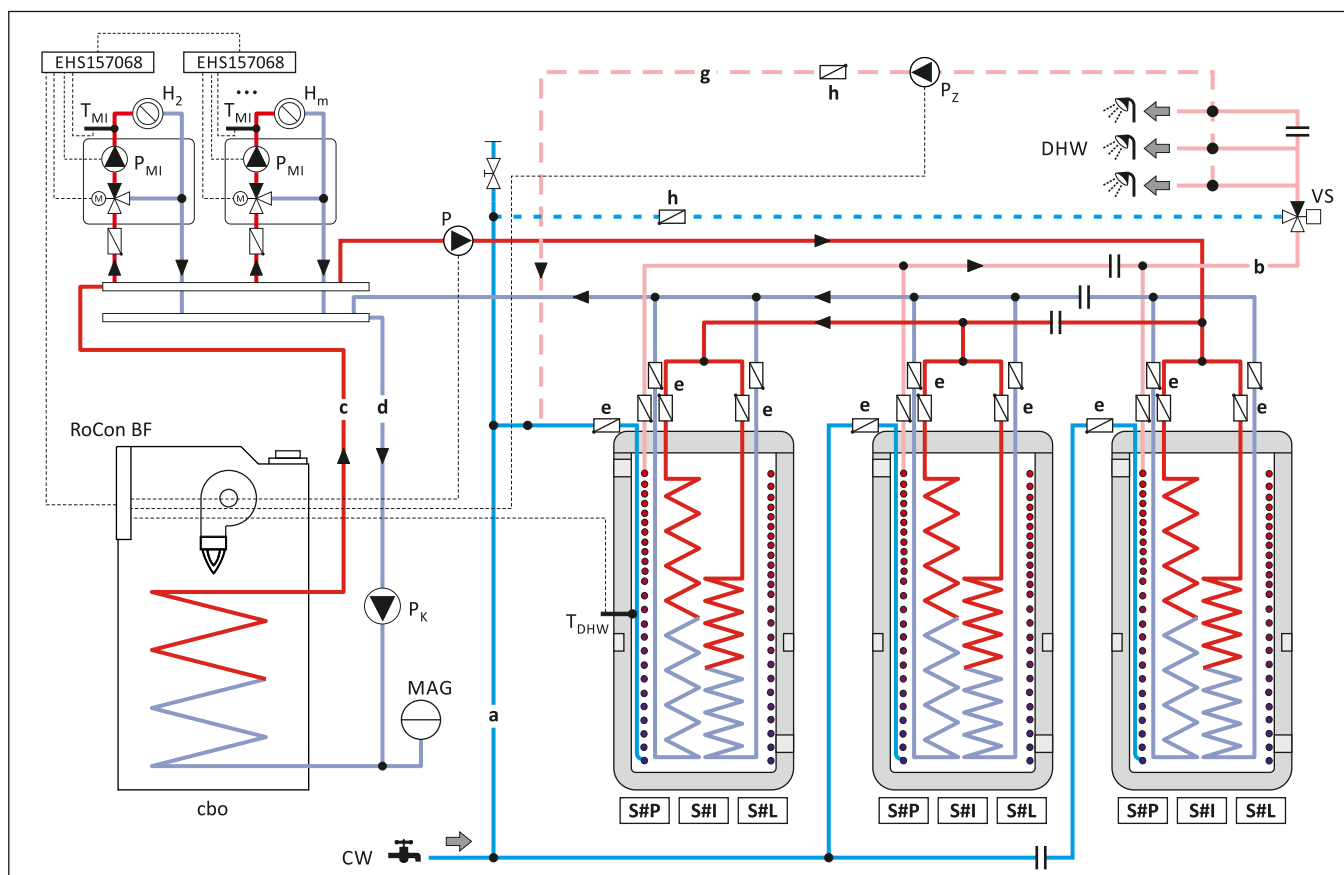
6.1.1 Solution for low-temperature heat pumps



6-1 Standard connection schematic with heat pump and drain-back solar system p=0 ⁽¹⁾

⁽¹⁾ The displayed system schematic do not claim to be complete and do not replace careful system planning.
Legend see "6-1 Short names in hydraulic drawings" [p.22].

6.1.2 Solution for systems with high hot water demand

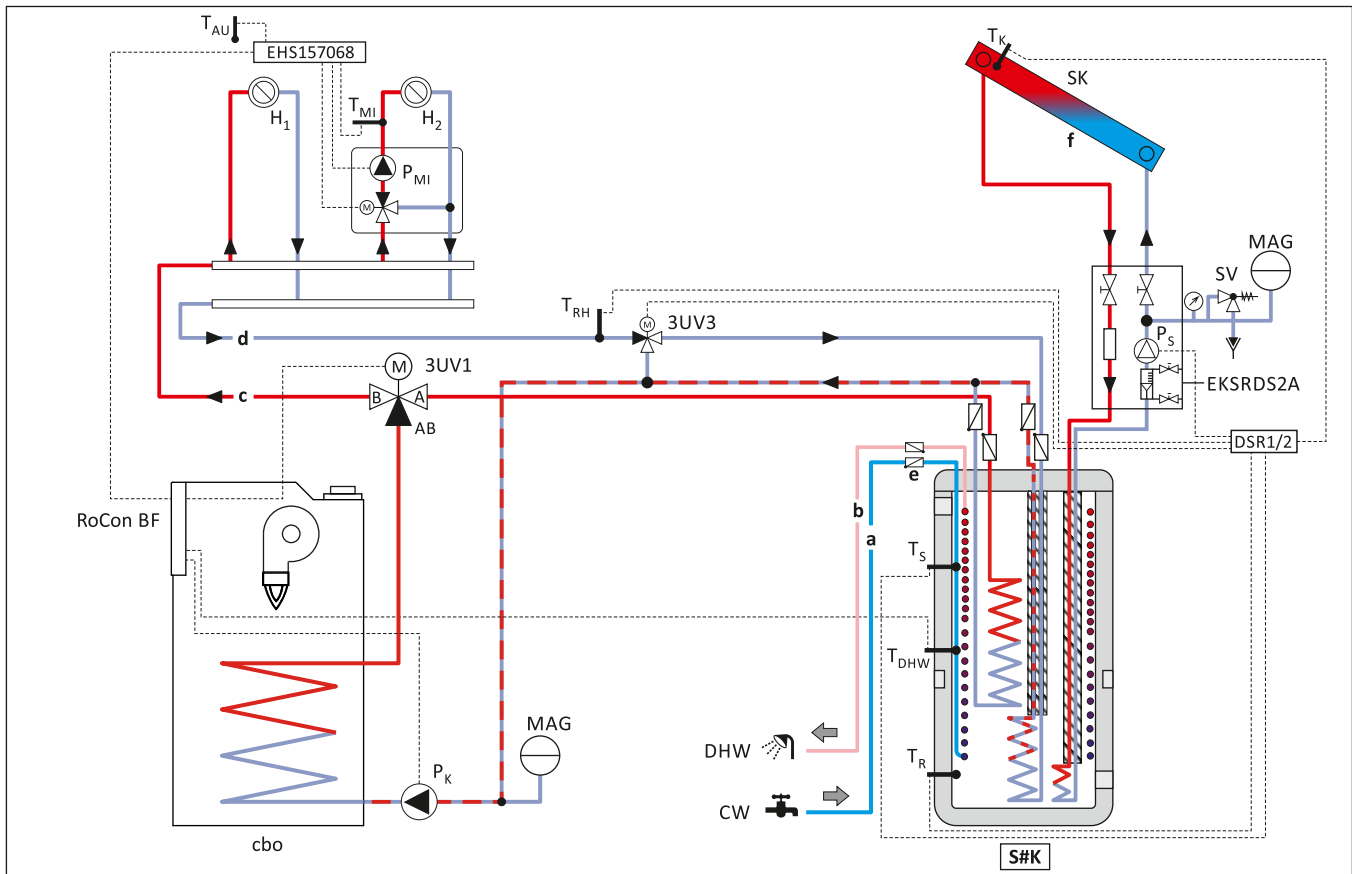


6-2 Standard connection schematic for the incorporation of several hot water storage tanks (large installations) ⁽¹⁾

⁽¹⁾ The displayed system schematic do not claim to be complete and do not replace careful system planning.
Legend see "6-1 Short names in hydraulic drawings" [p. 22].

6 Hydraulic

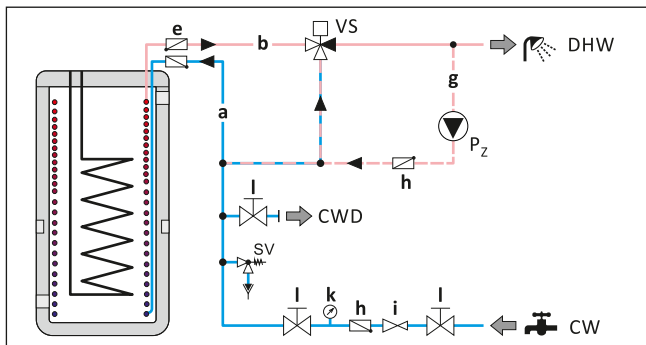
6.1.3 Solution for oil or gas condensing boilers



6-3 Standard connection schematic with condensing boiler and pressurised solar system ⁽¹⁾

6.1.4 Solution for sanitary side connection

Observe legal regulations according to "1.2.6 Heating and sanitary side connection" ^[5]



6-4 Standard connection schematic for sanitary side

6-1 Short names in hydraulic drawings

Short name	Meaning
a	Cold water distribution network
b	Hot water distribution network
c	Heating flow
d	Heating return flow
e	Non return valve (circulation brakes e.g. SKB)
f	Solar circuit
g	Circulation (optional, if permitted according to local legislation)

Short name	Meaning
h	Non return valve
i	Pressure reducer
k	Manometer
l	Shut-off valve
3UV1	3-way switch valve (DHW)
3UV2	3-way switch valve (cooling)
3UV3	3-way switch valve (heating support)
cbo	Oil or gas condensing boiler (Daikin Altherma C Oil shown as example)
BSK	Burner blockage contact in EKSRS4A
BV	Overflow valve
CW	Cold water
CWD	Cold water distribution
DHW	Domestic hot water
DSR1/2	Solar differential temperature control unit
EHS157068	Mixer circuit control unit
EKBUxC	Electric immersion heater
EKSRS2A	Pressure station ^[+p]
EKSRS4A	Solar control and pump unit ^[p=0]
EP3	Hot water module E-Pac LT (heating/cooling)
FLG	FlowGuard - solar regulating valve
FLS	FlowSensor - solar flow and flow temperature measurement
H ₁ , H ₂ ... H _m	Heating circuits

⁽¹⁾ The displayed system schematic do not claim to be complete and do not replace careful system planning.
Legend see "6-1 Short names in hydraulic drawings" ^[p 22].

Short name	Meaning
HYW	Hydraulic shunt
MAG	Diaphragm expansion vessel
P	High-efficiency pump
P ₁	Central heating pump
P _{HP}	Heating circulation pump
P _K	Boiler circuit pump
P _{Mi}	Mixing circuit pump
P _S	Solar operating pump $\boxed{p=0}$ + $\boxed{+R}$
P _Z	Circulation pump
PWT	Plate heat exchanger (condenser)
RLB	Return temperature limiter
RoCon BF	Boiler controller
RT	Room thermostat
S#B	Hot water storage tank EKHWP500Bx
S#I	Hot water storage tank EKHWCB500Bx
S#K	Hot water storage tank EKHWC500PBx
S#L	Hot water storage tank EKHWCB500PBx
S#P	Hot water storage tank EKHWD500Bx
SOL-M1	Solar communication module SOL-PAC LT/HT
SK	Solar panel field
SV	Safety overpressure valve
T _{AU}	Outside temperature sensor
T _{DHW}	Storage tank temperature sensor (heat generator)
T _K	Solar collector temperature sensor
T _{Mi}	Mixer circuit flow temperature sensor
T _R	Solar return flow temperature sensor
T _{RH}	Return flow temperature sensor heating circuit
T _S	Solar storage tank temperature sensor
T _V	Solar flow temperature sensor
V	Fan (vaporiser)
VS	Protection against scalding VTA32

7 Service and maintenance

The hot water storage tank is practically maintenance free as a result of its design. No corrosion protection equipment is required (such as sacrificial anodes). This means there is no need for maintenance work such as changing the protective anodes or cleaning the inside of the storage tank.

Regular inspection of the domestic hot water storage tank guarantees a long working life and fault-free operation.



DANGER: RISK OF ELECTROCUTION

Live parts can cause an electric shock on contact and cause fatal burns or injuries.

- If there is an electric immersion heater or control and pump unit installed in the hot water storage tank then these components must be isolated from the power supply before starting the work (e.g. fuse, main switch switched off and secured against inadvertent switching on again).



DANGER: RISK OF ELECTROCUTION

All work performed on live components must be carried out in accordance with the proper procedures, otherwise there may be a danger to the life and health of individuals and the function may be impaired.

- Repair of damage to current-carrying components only by heating specialists authorised and recognised by the energy supply company.

7.1 Periodic checks

The filling water can evaporate slightly over a period of time as a result of the design. This process does not represent a technical fault, but is rather a physical property which requires periodic checking and correction of the water level by the operator if necessary.

- Visual check of the water storage tank level (filling level indicator)
 - Refill water if necessary (see "3.3.2 Buffer tank" ▶ 15) and also determine the cause of the low water level and rectify it.

7.2 Annual inspection

- Carry out a functional inspection of the electric immersion heater by checking the temperature display and the switching states in the individual modes: see the associated installation and operating instructions.
- If a solar system is connected and is in operation, switch it off.
- Visual inspection of the general condition of the domestic hot water storage tank.
- Visual check of the water storage tank level (filling level indicator)
 - If a drain-back solar system $\boxed{p=0}$ is installed, wait until solar panels are drained completely.
 - Refill the water if necessary (see "3.3.2 Buffer tank" ▶ 15) and also determine the cause of the low water level and rectify it.
- Check the connection of the safety overflow and drain hose for leaks, free drainage and gradient.
 - If necessary, clean the safety overflow and drain hose and reinstall it; replace damaged parts.
- Visual check of connections and pipes. In the event of damage, determine the cause.
 - Replace defective parts.
- Check all electrical components, connections, and cables.
 - Repair damaged parts or replace them.
- Check the water pressure of the cold water supply (<10 bar)
 - and if necessary the fitting or adjustment of the pressure reducer.
- Clean the plastic storage tank **with soft cloths and a mild cleaning agent**. Do not use cleaning agents containing aggressive solvents, as this will damage the plastic surface.

8 Technical data

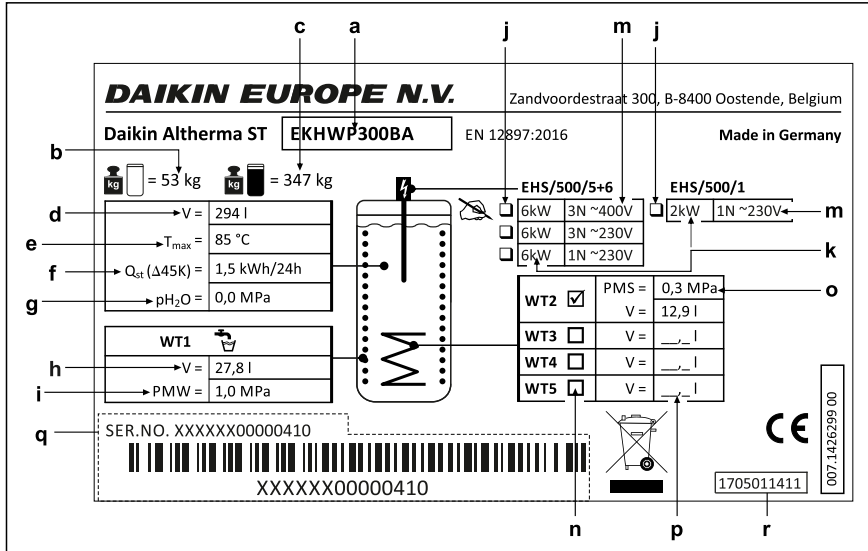
8 Technical data



INFORMATION

Several hot water storage tanks listed here are probably not offered in certain countries.

8.1 Information on the type plate



8-1 Type plate

- a Model identifier
- b Empty weight
- c Total filled weight
- d Total storage capacity V
- e Max. permissible operating temperature T_{max}
- f Standby heat expenditure in 24 hours at 65°C (storage tank temp.) Q_{st}
- g Operating pressure of storage water p_{H_2O}
- h Nominal capacity of drinking water
- i Max. operating pressure (plumbing)
- j Marking of the installed immersion heater type (optional)
- k Immersion heater heat output (optional)
- m Immersion heater power supply (optional)
- n Marking of the integrated heat exchanger
- o Max. permissible operating pressure PMS (heating)
- p Water capacity heat exchanger
- q Serial number (specify in the event of complaints or inquiries)
- r Date of production

8.2 Basic data

8.2.1 EKHW

8-1 Basic data EKHW

Model Identifier (x=A, B, C, ...)		EKHWDH500Bx	EKHWD500Bx
	Unit		
Product data related to regulation (EU) 812/2013 and regulation (EU) 814/2013			
Energy efficiency class	—	B	
Standing loss S	W	72	
Hot water storage tank volume V	litres	477	
Specific standing loss (EN 12977) (UA) _{sb, s, a}	W/K	1.59	
Volume of the non-solar heat storage V _{bu}	litres	467	
Basic data			
Empty weight	kg	66	82
Total filled weight	kg	543	559
Dimensions (L×W×H)	cm	79×79×165.8	
Tilt dimension	cm	184	
Maximum permissible storage water temperature	°C	85	
Standby heat expenditure at Δ45 K	kWh/24 h	1.7	
Drinking water heat exchanger (stainless steel 1.4404)			
Water capacity heat exchanger	litres	24.5	
Maximum operating pressure	bar	10	
Domestic water heat exchanger surface	m ²	4.9	
1st storage tank charging heat exchanger (stainless steel 1.4404)			
Water capacity heat exchanger	litres	10.6	
Heat exchanger surface area	m ²	2.14	
2nd storage tank charging heat exchanger (stainless steel 1.4404)			
Water capacity heat exchanger	litres	—	10.9
Heat exchanger surface area	m ²	—	2.2
Thermal output data			
Efficiency characteristic N _L acc. to DIN 4708 ⁽¹⁾	—	4.1	4.4 / 4.8 ⁽²⁾
Continuous output Q _D according to DIN 4708	kW	35	50 / 50 ⁽²⁾
Maximum draw-off rate for the duration of 10 min (reheating with 35 kW) ⁽³⁾	l/min	30	31 / 34 ⁽²⁾
Hot water quantity without reheating at 15 l/min draw-off rate ⁽³⁾	litres	420	
Hot water volume with reheating with 20 kW at 15 l/min draw-off rate ⁽³⁾	litres	970	
Short-term water quantity in 10 min ⁽³⁾	litres	300	310 / 340 ⁽²⁾
Pipe connections			
Cold and hot water	Inches	1" AG (outer thread)	
Heating feed and return flow	Inches	1" AG (outer thread)	

⁽¹⁾ With post-charging at 35 kW, 80°C flow temperature, 65°C storage tank temperature (T_{SP}), 45°C hot water temperature (T_{WW}), 10°C cold water temperature (T_{KW}).

⁽²⁾ With parallel connection of both storage tank charging heat exchangers.

⁽³⁾ With 40°C hot water temperature, 10°C cold water temperature and 60°C storage tank temp. at draw-off start.

8 Technical data

8.2.2 EKHWC

8-2 Unpressurised (DrainBack) - DB $p=0$

Model Identifier (x=A, B, C, ...)		EKHWC300Bx	EKHWC500Bx	EKHWC300Bx	EKHWC500Bx
	Unit				
Product data related to regulation (EU) 812/2013 and regulation (EU) 814/2013					
Energy efficiency class	—	B			
Standing loss S	W	64	72		
Hot water storage tank volume V	litres	294	477		
Specific standing loss (EN 12977) (UA) _{sb, s, a}	W/K	1.43	1.59	1.59	1.59
Volume of the non-solar heat storage V _{bu}	litres	288	0	322	322
Basic data					
Empty weight	kg	49	65	70	76
Total filled weight	kg	343	542	547	553
Dimensions (L×W×H)	cm	59.5×61.5×164.6	79×79×165.8	79×79×165.8	79×79×165.8
Tilt dimension	cm	175	184	184	184
Maximum permissible storage water temperature	°C	85	85	85	85
Standby heat expenditure at Δ45 K	kWh/24 h	1.5	1.7	1.5	1.7
Drinking water heat exchanger (stainless steel 1.4404)					
Water capacity heat exchanger	litres	18.6	24.5		
Maximum operating pressure	bar	10			
Domestic water heat exchanger surface	m ²	3.8	4.9		
1st storage tank charging heat exchanger (stainless steel 1.4404)					
Water capacity heat exchanger	litres	9.7	—	10	
Heat exchanger surface area	m ²	1.9	—	1.95	
2nd storage tank charging heat exchanger (stainless steel 1.4404)					
Water capacity heat exchanger	litres	—	—	—	10.9
Heat exchanger surface area	m ²	—	—	—	2.2
Pressurised solar heat exchanger (stainless steel 1.4404)					
Water capacity heat exchanger	litres	—	—	—	—
Heat exchanger surface area	m ²	—	—	—	—
Solar heating backup (stainless steel 1.4404)					
Water capacity heat exchanger	litres	—	3.8		—
Heat exchanger surface area	m ²	—	0.74		
Thermal output data					
Efficiency characteristic N _L acc. to DIN 4708 ⁽¹⁾	—	2.2	—	2.3	2.3 / 2.5 ⁽²⁾
Continuous output Q _D according to DIN 4708	kW	27	—	35	35 / 45 ⁽²⁾
Maximum draw-off rate for the duration of 10 min (reheating with 35 kW) ⁽³⁾	l/min	21	—	22	22 / 24 ⁽²⁾
Hot water quantity without reheating at 15 l/min draw-off rate ⁽³⁾	litres	200	230		230 / 405 ⁽²⁾
Hot water volume with reheating with 20 kW at 15 l/min draw-off rate ⁽³⁾	litres	400	—	500	500 / 858 ⁽²⁾
Short-term water quantity in 10 min ⁽³⁾	litres	210	—	220	220 / 240 ⁽²⁾
Pipe connections					
Cold and hot water	Inches	1" AG (outer thread)			
Heating feed and return flow	Inches	1" AG (outer thread)			
Solar connections	Inches	1" IG (internal thread) / DN25			

⁽¹⁾ With post-charging at 35 kW, 80°C flow temperature, 65°C storage tank temperature (T_{SP}), 45°C hot water temperature (T_{HW}), 10°C cold water temperature (T_{KW}).

⁽²⁾ With parallel connection of both storage tank charging heat exchangers.

⁽³⁾ With 40°C hot water temperature, 10°C cold water temperature and 60°C storage tank temp. at draw-off start.

8-3 Pressurised system – P 

Model Identifier (x=A, B, C, ...)		EKHWCH300PBx	EKHWCH500PBx	EKHWCB500PBx
	Unit			
Product data related to regulation (EU) 812/2013 and regulation (EU) 814/2013				
Energy efficiency class	—	B		
Standing loss S	W	64	72	
Hot water storage tank volume V	litres	294	477	
Specific standing loss (EN 12977) (UA) _{sb, s, a}	W/K	1.43	1.59	
Volume of the non-solar heat storage V _{bu}	litres	288	322	
Basic data				
Empty weight	kg	52	78	83
Total filled weight	kg	346	555	560
Dimensions (L×W×H)	cm	59.5×61.5×164.6	79×79×165.8	
Tilt dimension	cm	175	184	
Maximum permissible storage water temperature	°C	85		
Standby heat expenditure at Δ45 K	kWh/24 h	1.5	1.7	
Drinking water heat exchanger (stainless steel 1.4404)				
Water capacity heat exchanger	litres	18.6	26.5	
Maximum operating pressure	bar	10		
Domestic water heat exchanger surface	m ²	3.8	5.32	
1st storage tank charging heat exchanger (stainless steel 1.4404)				
Water capacity heat exchanger	litres	9.69	10	
Heat exchanger surface area	m ²	1.9	1.95	
2nd storage tank charging heat exchanger (stainless steel 1.4404)				
Water capacity heat exchanger	litres	—	—	10.9
Heat exchanger surface area	m ²	—	—	2.2
Pressurised solar heat exchanger (stainless steel 1.4404)				
Water capacity heat exchanger	litres	3.9	8.7	
Heat exchanger surface area	m ²	0.76	1.69	
Solar heating backup (stainless steel 1.4404)				
Water capacity heat exchanger	litres	—	3.8	
Heat exchanger surface area	m ²	—	0.74	
Thermal output data				
Efficiency characteristic N _L acc. to DIN 4708 ⁽¹⁾	—	2.2	2.3	2.3 / 2.5 ⁽²⁾
Continuous output Q _D according to DIN 4708	kW	27	35	35 / 45 ⁽²⁾
Maximum draw-off rate for the duration of 10 min (reheating with 35 kW) ⁽³⁾	l/min	21	22	22 / 24 ⁽²⁾
Hot water quantity without reheating at 15 l/min draw-off rate ⁽³⁾	litres	200	230	230 / 405 ⁽²⁾
Hot water volume with reheating with 20 kW at 15 l/min draw-off rate ⁽³⁾	litres	400	500	500 / 858 ⁽²⁾
Short-term water quantity in 10 min ⁽³⁾	litres	210	220	220 / 240 ⁽²⁾
Pipe connections				
Cold and hot water	Inches	1" AG (outer thread)		
Heating feed and return flow	Inches	1" AG (outer thread)		
Solar connections	Inches	1" AG (outer thread)		

⁽¹⁾ With post-charging at 35 kW, 80°C flow temperature, 65°C storage tank temperature (T_{sp}), 45°C hot water temperature (T_{ww}), 10°C cold water temperature (T_{kw}).

⁽²⁾ With parallel connection of both storage tank charging heat exchangers.

⁽³⁾ With 40°C hot water temperature, 10°C cold water temperature and 60°C storage tank temp. at draw-off start.

8 Technical data

8.2.3 EKHWP

8-4 Unpressurised (DrainBack) – DB $p=0$

Model Identifier (x=A, B, C, ...)		EKHWP300Bx	EKHWP54419Bx	EKHWP500Bx
	Unit			
Product data related to regulation (EU) 812/2013 and regulation (EU) 814/2013				
Energy efficiency class	—	B		
Standing loss S	W	64	72	
Hot water storage tank volume V	litres	294	477	
Specific standing loss (EN 12977) (UA) _{sb, s, a}	W/K	1.43	1.59	
Volume of the non-solar heat storage V _{bu}	litres	290	393	
Basic data				
Empty weight	kg	53	71	76
Total filled weight	kg	347	548	553
Dimensions (L×W×H) without switching unit from E-Pac	cm	59.5×61.5×164.6	79×79×165.8	
Tilt dimension	cm	175	184	
Maximum permissible storage water temperature	°C	85		
Standby heat expenditure at Δ45 K	kWh/24 h	1.5	1.7	
Domestic hot water (stainless steel 1.4404)				
Potable water capacity	litres	27.76	28.92	
Maximum operating pressure	bar	6		
Domestic water heat exchanger surface	m ²	5.6	5.8	
Storage tank charging heat exchanger (stainless steel 1.4404)				
Water capacity heat exchanger	litres	12.85	10	18.1
Heat exchanger surface area	m ²	2.66	1.95	3.7
Solar heating backup (stainless steel 1.4404)				
Water capacity heat exchanger	litres	—	3.9	
Heat exchanger surface area	m ²	—	0.76	
Thermal output data⁽¹⁾				
Volume of hot water without reheating at draw-off rate (8 l/min / 12 l/min) (T _{KW} = 10°C / T _{WW} = 40°C / T _{SP} = 50°C)	litres	— 184 ⁽²⁾ / 153 ⁽²⁾	364 ⁽³⁾ / 318 ⁽³⁾ 328 ⁽²⁾ / 276 ⁽²⁾	
Volume of hot water without reheating at draw-off rate (8 l/min / 12 l/min) (T _{KW} = 10°C / T _{WW} = 40°C / T _{SP} = 60°C)	litres	282 ⁽²⁾ / 252 ⁽²⁾		540 ⁽³⁾ / 494 ⁽³⁾
Volume of hot water without reheating at draw-off rate (8 l/min / 12 l/min) (T _{KW} = 10°C / T _{WW} = 40°C / T _{SP} = 65°C)	litres	352 ⁽²⁾ / 321 ⁽²⁾		612 ⁽³⁾ / 564 ⁽³⁾
Reheating time (Wh) after a draw-off quantity (bathtub: 140 l / shower: 90 l) (T _{KW} = 10°C / T _{WW} = 40°C / T _{SP} = 50°C)	min	45 ⁽⁴⁾ / 30 ⁽⁴⁾		25 ⁽⁵⁾ / 17 ⁽⁵⁾
Pipe connections				
Cold and hot water	Inches	1" AG (outer thread)		
Heating feed and return flow	Inches	1" IG (internal thread) / 1" AG (outer thread)		
Solar connections	Inches	1" IG (internal thread) / DN25		

⁽¹⁾ T_{KW} = cold water temperature, T_{WW} = hot water temperature, T_{SP} = storage tank temperature at draw-off start.

⁽²⁾ Charging before tapping only by heat pump without electric immersion heater.

⁽³⁾ Charging before tapping by heat pump and electric immersion heater.

⁽⁴⁾ With heat pump 8 kW.

⁽⁵⁾ With heat pump 16 kW.

8-5 Pressurised System – P 

Model Identifier (x=A, B, C, ...)		EKHWP300PBx	EKHWP500PBx
	Unit		
Product data related to regulation (EU) 812/2013 and regulation (EU) 814/2013			
Energy efficiency class	—	B	
Standing loss S	W	64	72
Hot water storage tank volume V	litres	294	477
Specific standing loss (EN 12977) (UA) _{sb, s, a}	W/K	1.43	1.59
Volume of the non-solar heat storage V _{bu}	litres	290	393
Basic data			
Empty weight	kg	56	82
Total filled weight	kg	350	559
Dimensions (L×W×H) without switching unit from E-Pac	cm	59.5×61.5×164.6	79×79×165.8
Tilt dimension	cm	175	184
Maximum permissible storage water temperature	°C	85	
Standby heat expenditure at Δ45 K	kWh/24 h	1.5	1.7
Domestic hot water (stainless steel 1.4404)			
Potable water capacity	litres	27.8	29
Maximum operating pressure	bar	10	
Domestic water heat exchanger surface	m ²	5.6	5.9
Storage tank charging heat exchanger (stainless steel 1.4404)			
Water capacity heat exchanger	litres	12.85	18.1
Heat exchanger surface area	m ²	2.66	3.7
Pressurised solar heat exchanger (stainless steel 1.4404)			
Water capacity heat exchanger	litres	3.9	8.7
Heat exchanger surface area	m ²	0.76	1.69
Solar heating backup (stainless steel 1.4404)			
Water capacity heat exchanger	litres	—	3.9
Heat exchanger surface area	m ²	—	0.76
Thermal output data⁽¹⁾			
Volume of hot water without reheating at draw-off rate (8 l/min / 12 l/min) (T _{KW} = 10°C / T _{WW} = 40°C / T _{SP} = 50°C)	litres	184 ⁽²⁾ / 153 ⁽²⁾	324 ⁽³⁾ / 282 ⁽³⁾ 288 ⁽²⁾ / 240 ⁽²⁾
Volume of hot water without reheating at draw-off rate (8 l/min / 12 l/min) (T _{KW} = 10°C / T _{WW} = 40°C / T _{SP} = 60°C)	litres	282 ⁽²⁾ / 252 ⁽²⁾	495 ⁽³⁾ / 444 ⁽³⁾
Volume of hot water without reheating at draw-off rate (8 l/min / 12 l/min) (T _{KW} = 10°C / T _{WW} = 40°C / T _{SP} = 65°C)	litres	352 ⁽²⁾ / 321 ⁽²⁾	560 ⁽³⁾ / 516 ⁽³⁾
Reheating time (Wh) after a draw-off quantity (bathtub: 140 l / shower: 90 l) (T _{KW} = 10°C / T _{WW} = 40°C / T _{SP} = 50°C)	min	45 ⁽⁴⁾ / 30 ⁽⁴⁾	25 ⁽⁵⁾ / 17 ⁽⁵⁾
Pipe connections			
Cold and hot water	Inches	1" AG (outer thread)	
Heating feed and return flow	Inches	1" IG (internal thread) / 1" AG (outer thread)	
Solar connections	Inches	1" AG (outer thread)	

⁽¹⁾ T_{KW} = cold water temperature, T_{WW} = hot water temperature, T_{SP} = storage tank temperature at draw-off start.

⁽²⁾ Charging before tapping only by heat pump without electric immersion heater.

⁽³⁾ Charging before tapping by heat pump and electric immersion heater.

⁽⁴⁾ With heat pump 8 kW.

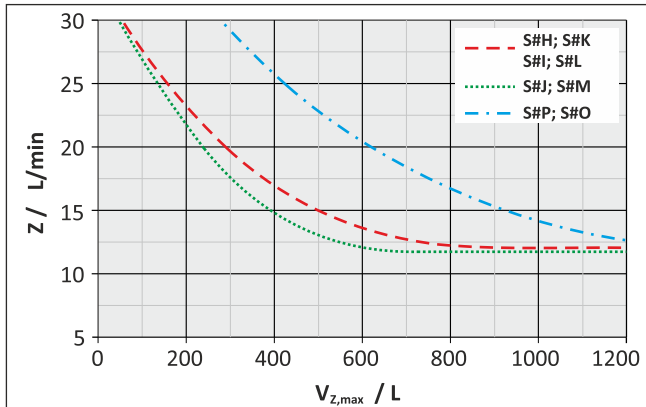
⁽⁵⁾ With heat pump 16 kW.

8 Technical data

8.3 Performance diagrams

8.3.1 EKHW / EKHC

Maximal available hot water volume at 40°C is shown as a function of the draw-off rate in "8-2 Hot water performance with reheating" [p. 30] for 10°C cold water entry temperature and 60°C storage tank temperature at draw-off start and reheating with 20 kW.



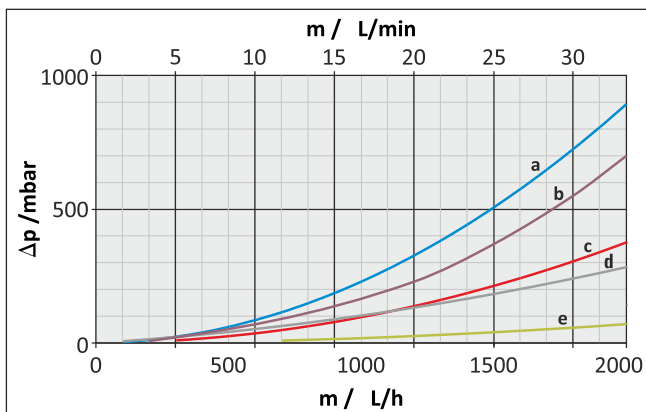
8-2 Hot water performance with reheating

S#Q	EKHWC500Bx
S#H	EKHWC500Bx
S#I	EKHWC500Bx
S#J	EKHWC300Bx
S#K	EKHWC500PBx
S#L	EKHWC500PBx
S#M	EKHWC300PBx
S#O	EKHWDH500Bx
S#P	EKHWDH500Bx
Z / L/min	Draw-off rate in litres per minute
Vz,max / L	Maximum draw-off capacity in litres



INFORMATION

Draw-off rates >36 l/min can, in certain rare circumstances, lead to noises in the domestic water heat exchanger of the hot water storage tank.



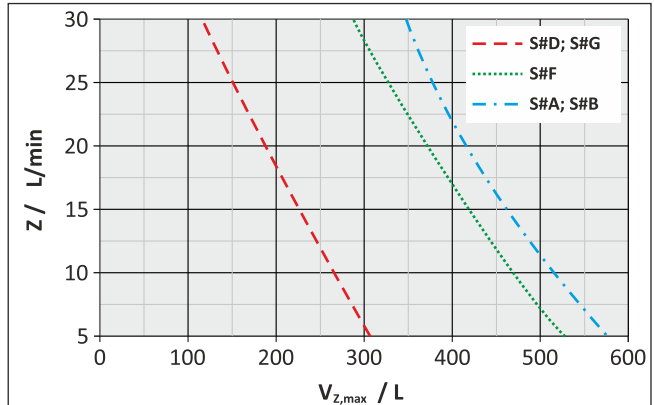
8-3 Pressure drop characteristic for the heat exchanger

- a Drinking water heat exchanger (EKHW54419Bx, EKHW500Bx, EKHW500PBx)
- b Drinking water heat exchanger (EKHW300Bx, EKHW300PBx)
- c Storage tank charging heat exchanger 1 or 2 (EKHW54419Bx, EKHW500Bx, EKHW500PBx)
- d Storage tank charging heat exchanger 1 (EKHW300Bx, EKHW300PBx)
- e Heating support heat exchanger (EKHW54419Bx, EKHW500Bx, EKHW500PBx)

Δp/mbar	Pressure drop in millibar
m / L/h	Flow rate in litres per hour
m / L/min	Flow rate in litres per minute

8.3.2 EKHP

Maximal available hot water volume at 40°C is shown as a function of the draw-off rate in "8-4 Hot water performance without reheating" [p. 30] for 10°C cold water entry temperature and 60°C storage tank temperature at draw-off start without reheating.



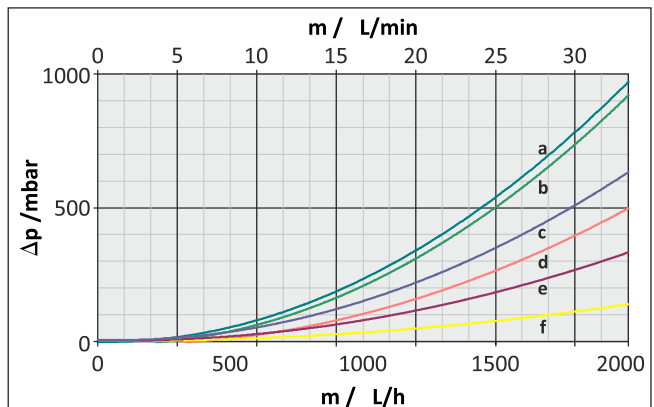
8-4 Hot water performance without reheating

S#A	EKHWP54419Bx
S#B	EKHWP500Bx
S#D	EKHWP300Bx
S#F	EKHWP500PBx
S#G	EKHWP300PBx
Z / L/min	Draw-off rate in litres per minute
Vz,max / L	Maximum draw-off capacity in litres



INFORMATION

Draw-off rates >36 l/min can, in certain rare circumstances, lead to noises in the domestic water heat exchanger of the hot water storage tank.



8-5 Pressure drop characteristic for the heat exchanger

- a Drinking water heat exchanger (EKHW54419Bx, EKHW500Bx, EKHW500PBx)
- b Drinking water heat exchanger (EKHW300Bx, EKHW300PBx)
- c Storage tank charging heat exchanger 1 (EKHW500Bx, EKHW500PBx)
- d Storage tank charging heat exchanger 1 (EKHW300Bx, EKHW300PBx)
- e Storage tank charging heat exchanger 1 (EKHW54419Bx)
- f Heating support heat exchanger (EKHW54419Bx, EKHW500Bx, EKHW500PBx)

Δp/mbar	Pressure drop in millibar
m / L/h	Flow rate in litres per hour
m / L/min	Flow rate in litres per minute

8.4 Tightening torque

8-6 Tightening torque

Designation	Thread size	Tightening torque
Hydraulic line connections (water)	1"	25 to 30 Nm
Electric immersion heater	1.5"	max. 10 Nm (hand-tight)
Cabling on terminal rail K1 (EHS)	all	0.5 - 1.5 Nm
Tension release (EHS)	M20	6 Nm
Cover flap fixing screws (EHS)	4.2×19	1.5 Nm

8 List of keywords

List of keywords

Numerics

3-way switch valve 22

A

Annual inspection 23

C

Check list for start-up 17

Cleaning 23

Corrosion protection 4, 14, 16

D

Design and components 6

Device installation room 4, 13

Dirt filter 12, 14

Distance from ceiling 13

Documentation set 3

Domestic water pipes 14

Draw-off rate 30

E

Electric immersion heater 4, 12, 16, 23

Electrical installation 4

Electronic control 12

E-Pac 4, 14, 22

F

Filling 15

Filling water 4, 16

Freezing 17

H

Hydraulic system 14, 20

I

Intended use 4

K

KFE filling connection 12, 18

L

Large installations 21

Load-bearing capacity 13

M

Minimum distance 13

P

Periodic checks 23

Pressure drop characteristic 30

S

Sacrificial anode 11, 23

Safety overflow connection 6, 14, 17

Sanitary connection 5

Scalding protection 5, 12, 18

Scope of delivery 12

Service 23

Set up 13

Solar storage tank extension kit 12

Start-up

 Check list 17

Storage tank connection kit 4, 14

T

Technical data

 Basic storage tank data 25

Tightening torque 31

Topping up 15

Type plate 6, 24

W

Warning signs 3

Warranty 5

Water hardness 4

Water pressure 14, 17

Water quality 4

