



# Installation and operating instructions



Hot water heat pump  
(indoor unit)

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(indoor unit)

English

EKHHP300A\*2V3  
EKHHP500A\*2V3

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## 1 Particular instructions for safe operation

### 1.1 Particular safety instructions



#### **WARNING!**

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

- This equipment 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 equipment. 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 customer must install a pressure relief device with rated over-pressure less than 0.6 MPa (6 bar). The connected drain line must have a continuous gradient and a free outlet in a frost-free environment (see chap. 2.4.1, 2.4.5 and 4.4 (fig. 4-5)).
- Water may drip out of the drain line of the pressure relief device. The drain opening must be left free to atmosphere.
- The pressure relief device must be operated regularly in order to remove scale deposits and to make sure it is not blocked.
- The storage tank and hot water circuit can be drained. The instructions in chap. 6.1.1 and 6.1.2 must be observed.
- All the work on the refrigerant circuit must only be carried out by refrigeration qualified experts and with consideration of the local and national regulations, and the instructions in this manual.
- Improperly executed work on the refrigeration circuit of the heat pump can endanger life and health of persons and can impair the function of the heat pump (see chap. 6.2).

### 1.2 Observing instructions

These instructions are a >> **translation of the original version** << in your language.

This manual describes all the necessary activities for installation, start-up and maintenance, as well as for operation and settings. All parameters needed for trouble-free operation have been configured at the factory. Please see the attached documents for a detailed description of operation and control.

- Please read this manual carefully and thoroughly before proceeding with the installation or modification of the heating system, operation of the heating system and making settings.
- Make a note of the preset values before you make any changes to the unit configuration.
- Comply strictly with warning instructions.

#### **Relevant documents**

- External unit for DAIKIN EKHHP: the associated installation and operating instructions.
- When connecting to a DAIKIN solar system: the associated installation and operating instructions.

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

## 2 Safety

### 2 Safety

#### 2.1 Warning signs and explanation of symbols

##### 2.1.1 Meaning of the warnings

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



#### **DANGER!**

Draws attention to imminent 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.



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 power



Risk of burning or scalding



Risk of environmental damage

##### 2.1.2 Validity

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



Exterior heat pump unit



Heat pump indoor unit



Pay attention to the stipulated tightening torque (see chap. 4.1).



Applies only to the depressurised solar system (DrainBack).



Applies only to the solar pressure system.

##### 2.1.3 Handling instructions

- Instructions on actions are shown as a list. Actions of which the sequential order must be maintained are numbered.
  - ➔ Results of actions are identified with an arrow.

#### 2.2 Avoid danger

The DAIKIN EKHHP 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 DAIKIN EKHHP 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.

#### 2.3 Intended use

The DAIKIN EKHHP system may only be used for the generation of hot water and only set up, connected and operated in accordance with the specifications in this manual.

Only use of a suitable external unit approved by DAIKIN is permitted. The following combinations are permissible in this respect:

External unit	Internal unit
ERWQ02AAV3	EKHHP300A*2V3
	EKHHP500A*2V3

Tab. 2-1 Permissible combinations of DAIKIN EKHHP internal units and DAIKIN heat pump external units

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 original spare parts.

### 2.4 Instructions for operating safety

#### 2.4.1 Before working on the hydraulic system

- Work on the DAIKIN EKHHP (such as setup, servicing, connection and initial start-up) is only to 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 appropriate responsible authorities for the specific activity. This, in particular, includes heating specialists and climate control technicians who have experience, as a result of their technical training and their knowledge of the subject, of proper and appropriate installation and maintenance of heating, climate control and cooling installations and heat pumps. Switch off the external main switch before starting any work on the DAIKIN EKHHP and secure it against unintentional switch-on.
- Seals must not be damaged or removed.
- The domestic water connection must comply with the requirements of EN 12897.
- Only original DAIKIN replacement parts may be used.

#### 2.4.2 Electrical installation

- Electrical installation must be carried out only by qualified electrical experts and in compliance with the valid electro-technical guidelines as well as the regulations of the relevant energy supply company (EVU).
- Make up the power supply in accordance with IEC 60335-1, overvoltage category III. Means with contact separation in all poles that provide full disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.
- Compare the mains voltage (~230 V, 50 Hz) indicated on the nameplate with the supply voltage before connecting to the mains.

- Before beginning work on live parts, disconnect all of the systems circuits from the power supply (switch off main switch, disconnect fuse) and secure against unintentional restart.
- Equipment covers and service panels must be replaced as soon as the work is completed.

#### 2.4.3 Working on cooling systems (heat pump)

The DAIKIN EKHHP requires fluorinated greenhouse gas for its function.

**i** For work on stationary refrigeration systems (heat pumps) and air conditioning systems, proof of expertise is required in the European Community according to the F-Gases Directive (EC) No. 303/2008.

- up to 3 kg coolant fill quantity: Expert certificate category II
- 3 kg coolant fill quantity or over: Expert certificate category I

- Always wear safety goggles and protective gloves.
- When working on the refrigerant circuit, ensure that the workplace is well ventilated.
- Never carry out work on the refrigerant circuit in closed rooms or work pits.
- Do not let coolant come into contact with open fire, embers or hot objects.
- Never allow coolant to escape into the atmosphere (high pressure at the point of the leak).
- When removing the service pipes from the filling connections, never hold the connections in the direction of your body. Residual refrigerant could escape.
- If you suspect leaks in the refrigerant circuit: Never pump the refrigerant back into the heat pump external unit with the internal compressor - always extract with a suitable recycling unit and recycle it.
- Components and spare parts must at least satisfy the technical requirements defined by the manufacturer.

#### 2.4.4 Site of installation

For safe and fault-free operation, it is necessary that the installation location of the DAIKIN EKHHP fulfils the safety-relevant criteria described exactly in chap. 4.3.

## 2 Safety

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

### 2.4.5 Sanitary connection

- You must comply with:
  - 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, as a supplement, the country-specific legal requirements.

A safety valve must be fitted in the domestic water feed to the DAIKIN EKHHP. There should be no isolating fitting between the safety valve and the DAIKIN EKHHP.

Any steam or heating water which may escape must be diverted by a suitable blow-off line with constant gradient in a frost-protected, safe and observable manner.

The storage tank temperature can exceed 60 °C if you connect a solar system.

- For this reason you should fit scalding protection (e.g. VTA32 + screw set 1") during installation.

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

### 2.4.6 Requirements for the depressurised storage tank water

Observe the current technological regulations to prevent 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) µS/cm
- Chloride: ≤ 250 mg/l
- Sulphate: ≤ 250 mg/l
- pH value: 6,5 - 8,5

Measures for desalination, softening or hardness stabilisation are necessary if the filling and top-up water have a high total hardness (>3 mmol/l - total of the calcium and magnesium concentrations, calculated as calcium carbonate). We recommend the use of Fernox KSK limescale and corrosion protector. For other properties deviating from the minimum requirements, suitable conditioning measures are necessary to maintain the required water quality.

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.

**i** If an optional external heat generator is connected via the corrugated pipe heat exchanger of the EKHHP500A\*2V3, these minimum requirements also apply for the filling and topping-up water of this heating circuit.

### 2.4.7 Operation

The DAIKIN EKHHP

- Do not operate until all installation and connection work is completed.
- Only operate with a completely full storage tank (level indicator).
- Only connect with a pressure reducer on the external water supply (supply line).
- Only operate with the specified quantity of coolant and the type of coolant specified.
- Only operate if the protective cover is installed.

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

### 2.4.8 Instructing the user/owner

- Before you hand over the DAIKIN EKHHP, explain to the user/owner how to operate and check the system.
- Provide the operator with the technical documentation (this documentation and all its references) and indicate that these documents must be available in the immediate vicinity of the unit at all times.
- Document the hand-over.

3 Product description

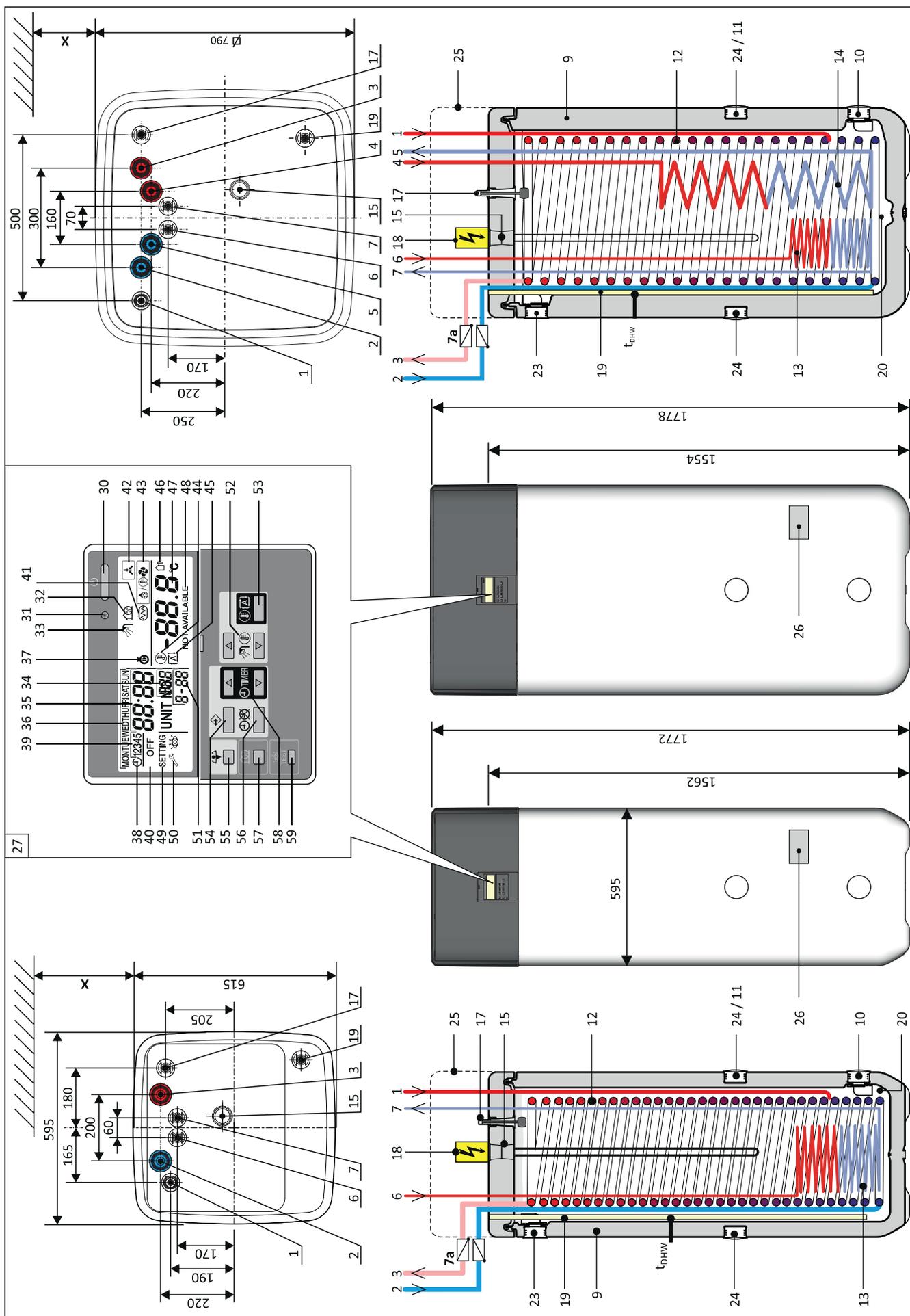


Fig. 3-1 Structure of the DAIKIN EKHP – legend see Tab. 3-1

### 3 Product description

Item	Name (Controller)
30	Key "On / Off"
31	Operating Display LED
32	Display operating mode "Low Noise Mode" active
33	Display operating mode "Hot Water Heating" active
34	Display of sensor number (see Tab. 7.1)
35	Display time
36	Display weekday
37	Display refrigerant compressor active
38	Display switching timer programme switched on
39	Display active switching times
40	Display off status in timer programme
41	Display Booster-Heater (BSH) switched on
42	Display external signal (HT/NT / Smart Grid)
43	Display operating mode "Start-up", "Defrost Mode" active
44	Display external temperature or temperature in hot water storage tank
45	Display operating mode "Automatic" active
46	Display external temperature active
47	Display of hot water temperature or other temperature values (in combination with Items 44 / 46)
48	Display "Function not available"
49	Display parameter setting mode active
50	Display service technician required
51	Display Parameter code or Fault code
52	Keys setting hot water temperature
53	Key "Automatic" operating mode
54	Key programming
55	Key "High Output" operating mode
56	Key activation/deactivation of timer programme
57	Key "Low Noise" operating mode
58	Keys Time setting
59	Key error code / parameter setting Brief push: Display last error code Push for 5 sec: Enter parameter settings

Item	Name (EKHHP)
1	$p=0$ Flow Solar or flow for additional heat source (1" female thread) 
2	Cold water connection (1" male thread) 
3	Hot water (1" male thread) 
4	Flow $p=0$ Solar or for additional heat source (3/4" female thread + 1" male thread) (only EKHHP500A*2V3)
5	Return $p=0$ Solar for additional heat source (3/4" female thread + 1" male thread) (only EKHHP500A*2V3)
6	Connection refrigerant gas line  Cu Ø 3/8" (9.5 mm)
7	Connection refrigerant liquid line  Cu Ø 1/4" (6.4 mm)
7a	Recommended accessory: non-return valves (2 pcs.)
9	Storage tank ( polypropylene double walled jacket with PUR hard foam heat insulation)
10	Filling and draining connection or return $p=0$ Solar or return for additional heat source
11	Mount for solar controller or handle
12	Heat exchanger (stainless steel) for domestic hot water heating
13	Heat exchanger (stainless steel) for storage tank charging by hot water heat pump (liquifier)
14	Heat exchanger (stainless steel) for storage tank charging by pressurised solar or alternative heat generator (only EKHHP500A*2V3)
15	Connection for integrated electrical Booster-Heater BSH (R 1½" female thread) 
17	Fill level indicator (tank water)
18	Integrated electrical Booster-Heater (BSH)
19	Sensor pocket for tank temperature sensor $t_{DHW}$
20	Pressure-free storage tank water
23	Connection safety overflow 
24	Mount for handle
25	Silencer hood
26	Type plate
27	Regulator hot water heat pump
	outer thread
	internal thread
	$t_{DHW}$
	Safety devices
	Observe tightening torque!

Tab. 3-1 Legend for fig. 3-1

## 4 Set-up and installation



### WARNING!

If you operate the DAIKIN EKHP when the storage tank is not completely full, damage to the equipment may occur.

- Fill the DAIKIN EKHP only after all the hydraulic installation work has been completed.
- Observe the sequence during the filling process.

Commissioning only after all the installation work has been completed and only after filling the storage tank completely.



### WARNING!

Cooling systems (heating pumps), climate control systems and heating devices that have been set up and installed incorrectly can both endanger life and health of people and be impaired in their function.

- Work on the DAIKIN EKHP (such as setup, servicing, connection and initial start-up) is only to 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 and heat pumps.

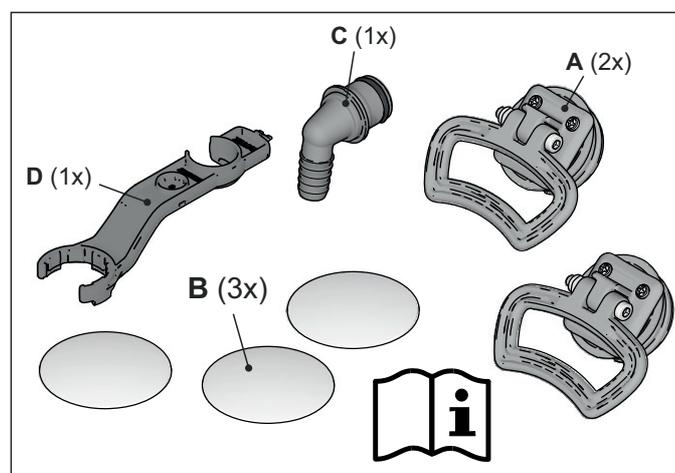
### 4.1 Tightening torque

Component	Thread size	Tightening torque
Hydraulic line connections (water)	1"	25 to 30 Nm
Liquid line connections (Coolant)	1/4"	15 to 17 Nm
Gas line connections (Coolant)	3/8"	33 to 40 Nm
Booster-Heater	1.5"	max. 10 Nm (hand-tight)

Tab. 4-1 Tightening torque

### 4.2 Scope of delivery

- DAIKIN EKHP
- Bag of accessories (see fig. 4-1)



- A Handles (only required for transport)
- B Cover screen
- C Hose connection piece for safety overflow
- D Spanner

Fig. 4-1 Contents of bag of accessories

## 4 Set-up and installation

### 4.3 Set-up



#### CAUTION!

- Only erect the DAIKIN EKHHP when a sufficient **ground load-bearing capacity**, of **1050 kg/m<sup>2</sup>** plus safety margin, has been assured. The ground must be flat and level.
- Outdoor installation is not permitted.
- Erection in explosion-risk environments is not permitted.
- The DAIKIN EKHHP must only be set up in **non-hermetically closed** rooms.
- The electronic control system must not be subjected to atmospheric factors under any circumstances.
- 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 DAIKIN EKHHP must be installed in a manner **protected from frost**.
- Make sure that the supply company **does not provide corrosive domestic water**.
  - Suitable water treatment may be required.



#### WARNING!

The plastic wall of the storage tank of the DAIKIN EKHHP can melt under the effects of external heat (>80 °C) and, in the extreme case, can catch fire.

- Erect the DAIKIN EKHHP only at a minimum distance of 1 m to other heat sources (>80 °C) (e.g. electric heater, gas heater, chimney) and flammable materials.

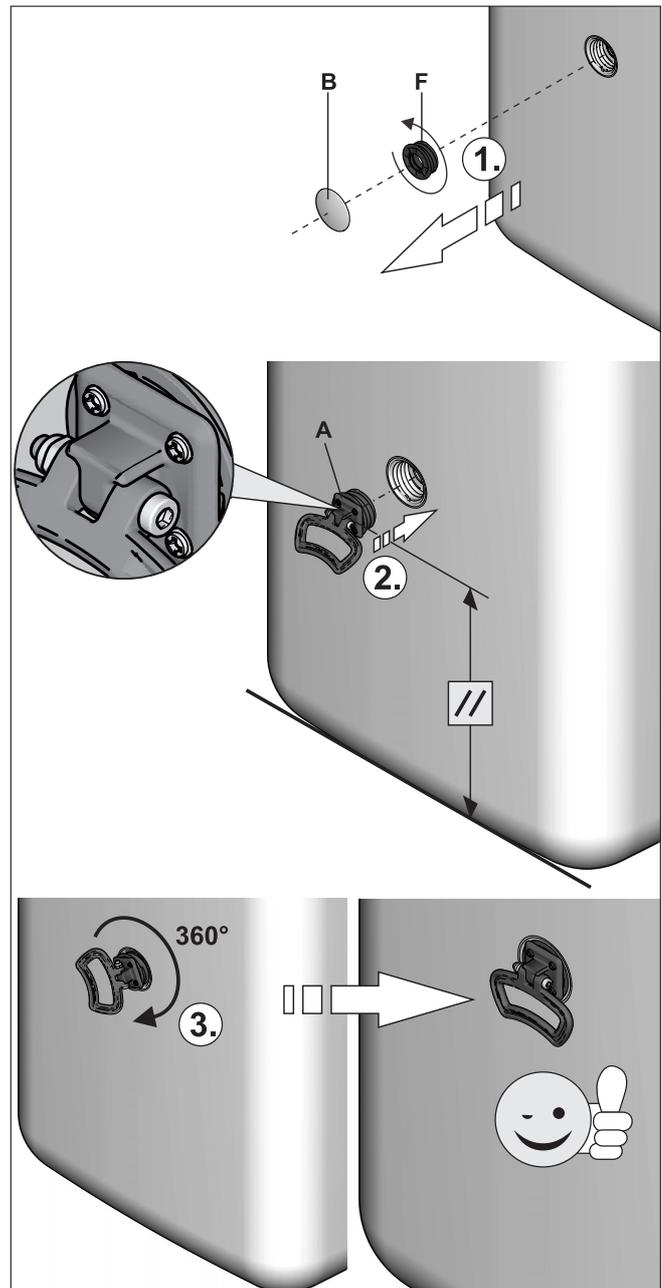


#### CAUTION!

 If the DAIKIN EKHHP is not erected **adequately lower** the flat solar panels (the top edge of the of the storage tank is higher than the bottom edge of the solar panels), the unpressurised solar system in the outdoor area will be unable to drain completely.

- Erect the DAIKIN EKHHP with a DrainBack solar connection at a sufficient depth to the flat solar panels (observe the minimum gradient in the solar connecting lines).

- Remove packing and dispose of it in an environment-friendly manner.
- Remove the cover plates on the storage tank (fig. 4-2, item B) and unscrew the threaded pieces (fig. 4-2, item F) from the apertures on which the handles are to be mounted.
- Screw handles (fig. 4-2, item A) into the threaded holes that are now free.



A Handle  
B Cover screen  
F Threaded piece

Fig. 4-2 Attach handles

- Install the DAIKIN EKHHP at the installation site.
  - Recommended distances:
    - To the wall (rear):  $\geq 200$  mm.
    - To the ceiling:  $\geq 200$  mm.
  - Observe the tilt dimension (see chap. 10).
  - Carefully transport the DAIKIN EKHHP, use the handles.
  - 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.
  - To avoid a circulation line, install DAIKIN EKHHP close to the draw-off location.

### 4.4 Hydraulic connection



#### CAUTION!

If the DAIKIN EKHHP is connected to a cold water line, where **steel pipes** are used, chips can enter the special steel corrugated pipe heat exchanger and remain there. This can lead to **contact corrosion damage** and subsequently to leakage.

- Flush the feed pipes before filling the heat exchanger.
- Install contamination filter in the cold water feed (see chap. 2.4.5).



#### **ONLY DAIKIN EKHHP500A\*2V3**

#### CAUTION!

If the **heat exchanger** for charging the **pressurised solar** system (see overview image on fig. 3-1, items 4+5) has an **external heating unit** (e.g. wood-burning boiler) connected to it, an excessive flow temperature at these connections can damage or destroy the DAIKIN EKHHP.

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

Requirement: Optional accessories (e.g. Solar) mounted on the DAIKIN EKHHP according to the specifications in the instructions included with the delivery.

- Check the cold water connection pressure (maximum 6 bar).
  - At higher pressure in the drinking water line, a pressure reducer must be installed.
- Remove the cover on the DAIKIN EKHHP.

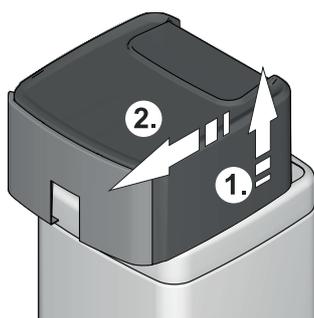


Fig. 4-3 Remove the protective cover.

- When using **circulation brakes**, fit them into the pipe connections on the DAIKIN EKHHP.
- Create hydraulic connections on the DAIKIN EKHHP (see fig. 4-5).
  - Fig. 3-1 and tab. 3-1 give the position and dimensions of the connections.



If the installation conditions require the hydraulic connection to be directly upwards, the cover hood can be cut out along the broken line.

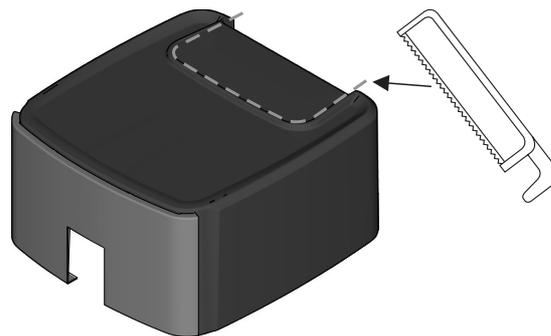


Fig. 4-4 Creating the hood cut-out

- Pay attention to the stipulated tightening torque (see chap. 4.1).
- Design the lines as such that the sound attenuation cowl can be applied without any problem following assembly.



#### WARNING!

There is a danger of scalding at hot water temperatures over 60 °C. This is possible, when solar energy is used, with a connected external heating device, when the Legionella protection is activated or when the domestic hot water target temperature is set higher than 60 °C.

- Install scald protection (hot water mixer (e.g. VTA32)).

- **Water shortage protection:** The temperature monitoring of the controller safely switches off the DAIKIN EKHHP in the event of a water shortage. No additional water shortage protection is needed in the construction. Nevertheless, regular checking of the fill level is necessary in order to ensure function as intended.
- **Avoid damages caused by deposits and corrosion:** Observe the requirements for storage tank water (see chap. 2.4.6).

## 4 Set-up and installation

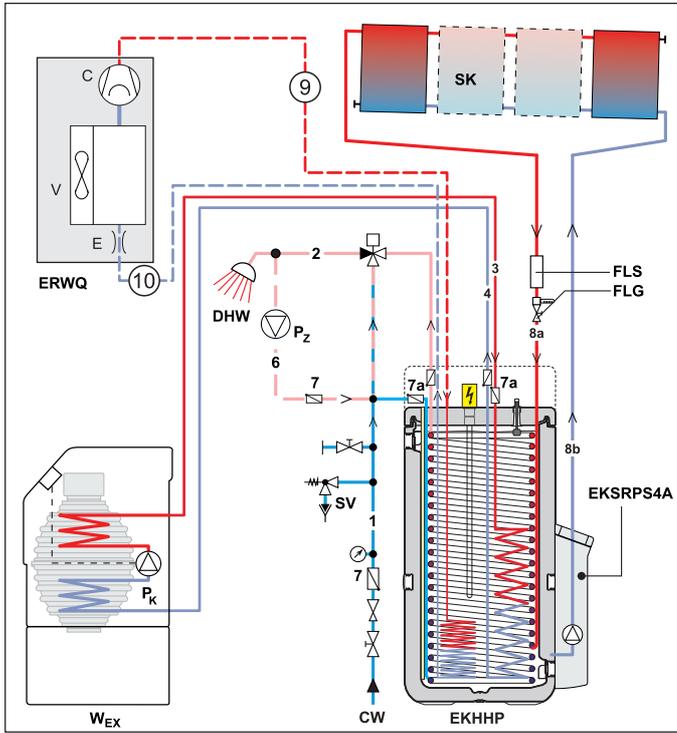


Fig. 4-5 Hydraulic connection - legend see tab. 4-2  
(Example EKHHP500A\*2V3 with  $p=0$  Solar and optional external heat generator)

- 1 Cold water connection
- 2 Hot water distribution network
- 3 Feed  $p=0$  Solar or for other heat source\*
- 4 Return  $p=0$  Solar or for other heat source\*
- 6 Circulation
- 7 Customer's side: Check valve, return valve
- 7a Circulation brakes (2 in number) Recommended accessory
- 8a Feed  $p=0$  Solar or for other heat source\*
- 8b Return  $p=0$  Solar or for other heat source\*
- 9 Gas line (refrigerant)
- 10 Liquid line (refrigerant)

CW Cold water  
DHW Hot water  
EKHHP DAIKIN heat pump internal unit  
EKSRRPS4A  $p=0$  DAIKIN solar regulation and pump unit\*  
FLG FlowGuard - solar regulating valve with flow indicator\*  
ERWQ DAIKIN Heat pump external unit  
FLS FlowSensor - solar flow and feed temperature measurement  
Pk Boiler circulation pump\*  
Pz Circulation pump\*  
SK Solar panel field\*  
SV Customer's side: Safety over-pressure valve  
W<sub>EX</sub> External heat generator\*

\* Optional

Tab. 4-2 Legend for fig. 4-5

- Carefully insulate pipe lines against heat loss and so as to avoid the formation of condensation (insulation thickness at least 20 mm).

- Connect the drain hose to the connector for the safety overflow (fig. 4-6 to fig. 3-1, item 23).
  - 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.

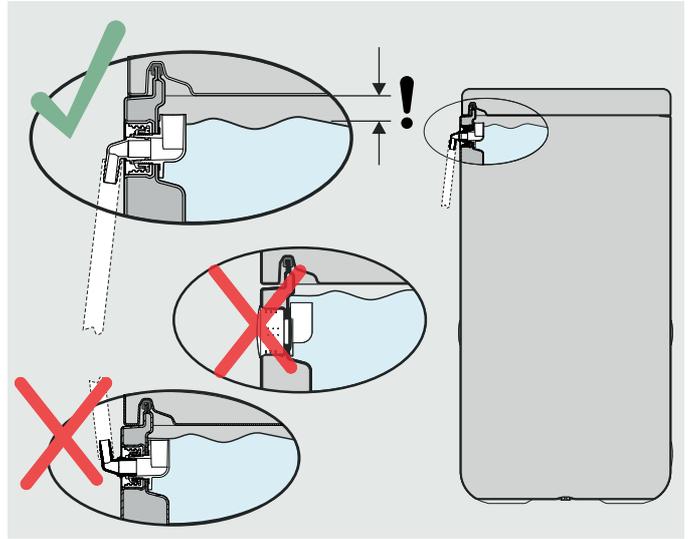


Fig. 4-6 Installation of drain hose at safety overflow

### 4.4.1 Optional: Connection of an external heat generator

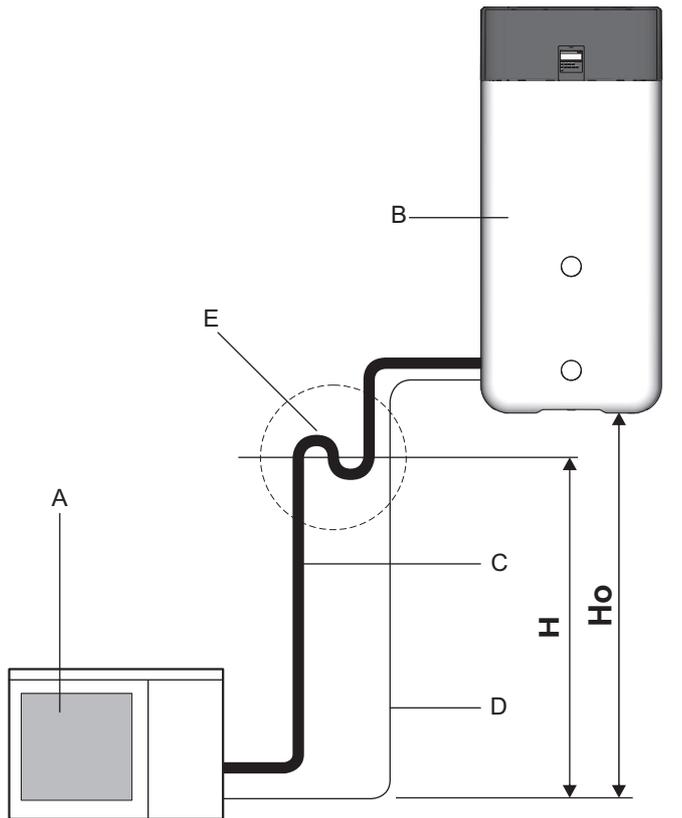
For support or as an alternative for heating by the heat pump you can connect external heat generators (e.g. Solar, gas or oil boiler) to the DAIKIN EKHHP.

The heat supplied by the external heat generator must be added to the unpressurised storage tank water in the DAIKIN EKHHP hot water storage tank.

- Carry out hydraulic connection in accordance with one of the two following possibilities:
  - a) DAIKIN EKHHP:  $p=0$  unpressurised via connections (solar infeed and solar return) of the hot water tank or
  - b) Only EKHHP500A\*2V3:  $p=0$  via the integrated pressurised solar heat exchanger.
    - Fig. 3-1 and tab. 3-1 give the position and dimensions of the connections.
    - Carry out hydraulic system incorporation in accordance with fig. 4-5.
    - Pay attention to the stipulated tightening torque (see chap. 4.1).
    - Design the lines as such that the sound attenuation cowl can be applied without any problem following assembly.

### 4.5 Laying coolant lines

- Check whether oil trap arc necessary.
  - Required if DAIKIN EKHHP is not installed at ground level with the heat pump exterior unit (fig. 4-7,  $H_0 \geq 10$  m).
  - At least one oil trap arc must be installed every 10 m difference in height (fig. 4-7,  $H$  = clearance from oil trap arc to oil trap arc).
  - Oil trap arc only required in gas line.
- Install lines with bending unit and an adequate clearance to electrical lines.
- Only solder with light nitrogen flow (hard soldering only).
- Do not apply heat insulation to joints until after start-up (for purposes of leakage search).
- Establish flange connections and connect to the units. (🔧) Pay attention to the tightening torque, see chap. 4.1).



- A DAIKIN ERWQ  
 B DAIKIN EKHHP  
 C Gas line  
 D Liquid line  
 E Oil trap arc  
 H Height to 1st oil trap (max. 10 m)  
 $H_0$  Height difference between heat pump exterior unit and heat pump interior unit.

Fig. 4-7 Oil trap arc coolant line

### 4.6 Pressure test and filling the coolant circuit



#### RISK OF ENVIRONMENTAL DAMAGE!

Important information regarding the coolant used.

The complete heat pump system contains refrigerant with fluorinated greenhouse gases which damage the environment if released.

Coolant type: R410A  
 GWP\* value: 2087,5

\* GWP = Global Warming Potential

- Work on fixed cooling systems (heat pumps) and air-conditioning systems can only be performed by persons who hold a certificate of competence for the European Region, in accordance with the F-Gas Regulation (Ec) No. 303/2008.
- Fill in the total coolant filling quantity on the supplied label on the heat pump exterior unit (for information consult the installation instructions for the heat pump exterior unit).
- Never allow coolant to be released into the atmosphere - always suction it off and recycle using a suitable recycling device.



No additional coolant is required for the basic filling. This is independent of the line length between the internal unit and external unit.

- Perform pressure test with nitrogen.
  - Use nitrogen 4.0 or higher.
  - Maximum 40 bar.
- After leak search is complete, completely drain.
- Evacuate the lines (see installation instructions of the heat pump external unit).
- Open stop valve on exterior unit completely until the stop. Tighten loosely.
- Reassemble valve caps.

## 4 Set-up and installation

### 4.7 Filling the system with water



#### WARNING!

If you operate the DAIKIN EKHHP when the storage tank is not completely full, damage to the equipment may occur.

- Fill the DAIKIN EKHHP only after all the hydraulic installation work has been completed.
- Observe the sequence during the filling process.
- Commissioning only after all the installation work has been completed and only after filling the storage tank completely.



The corrugated pipe heat exchangers must be filled before the storage tank.

The heat exchanger for connecting an optional heat generator (fig. 3-1, item 14, only EKHHP500A\*2V3) also needs to be filled if no optional heat generator is connected to it. This heat exchanger, and the heating circuit of the external heat generator connected to it, should be filled first.



UK only!

#### CAUTION!

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.

Observe the information on the water connection and water quality in accordance with Chap. 2.4.5 and 4.4.

#### 4.7.1 Filling the 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.

#### 4.7.2 Filling the storage tank

See chap. 9.2.

### 4.8 Electrical connection



#### WARNING!

Touching live parts can result in an **electric shock** and lead to potentially fatal injuries and burns.

- Before beginning work on live parts, **disconnect** all of the systems circuits **from the power supply** (switch off main switch, disconnect fuse) and secure against unintentional restart.
- The electrical connection and working on the electrical components should only be performed by **qualified electrical engineers** in compliance with valid standards and guidelines as well as the specifications of the energy supply company and the instructions given in this manual.
- Never carry out any structural changes to plug sockets or other electrical equipment components.
- The **equipment covers and maintenance opening covers** must be **re-fitted** immediately after completion of the work.



#### CAUTION!

In the controller housing of the DAIKIN EKHHP, in continuous running, **elevated temperatures** can be generated. This can result in **currently-carrying wires** from reaching higher temperatures during operation due to self-heating. For this reason, these **lines need to have a continuous use temperature of 90 °C**.

- For the following connections, use only cables with a long-term use temperature  $\geq 90$  °C:
  - Exterior heat pump unit
  - Voltage supply Booster-Heater
  - Contacts (connection HT/NT/Smart Grid)
- Network connections need to be executed as independent power circuits.
- Ensure power cables, sensor cables and data bus cables are laid separately from each other.
- Use only cable trunking with separate trays or cable trunking with separators that ensure at least 2 cm spacing.
- Cable cross-overs are not permissible.
- For all the cables connected to the DAIKIN EKHHP effective tension relief must be ensured in the controller housing using cable ties (see fig. 4-8 to 4-10).

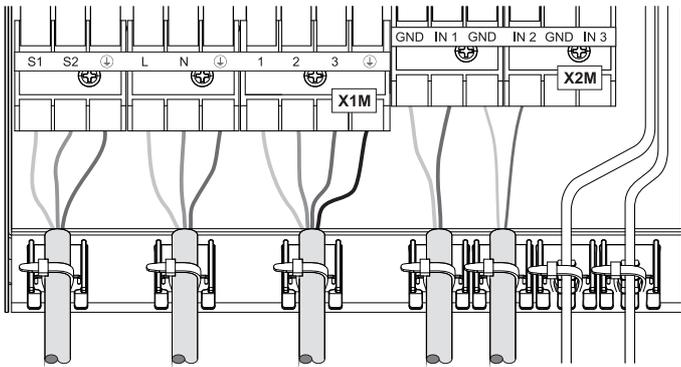


Fig. 4-8 Tension relief using cable ties

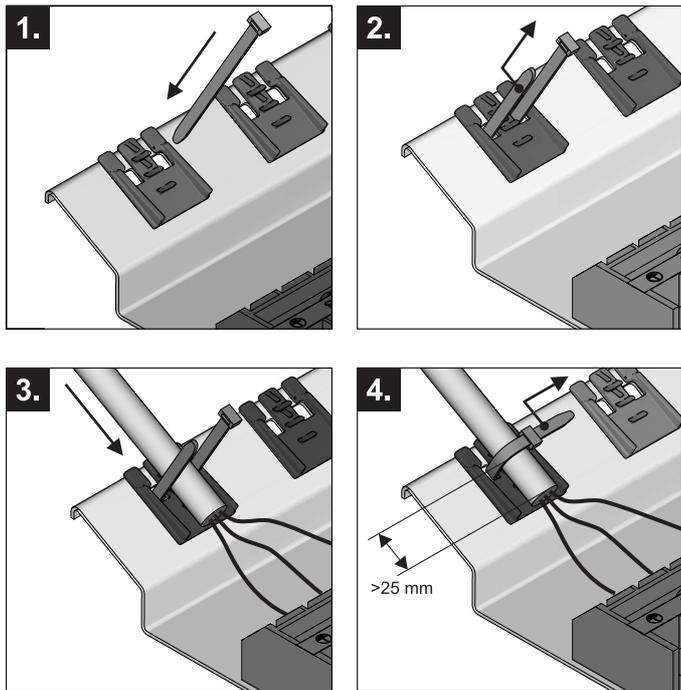


Fig. 4-9 Click the holding clip in place and retain the cables with the cable ties

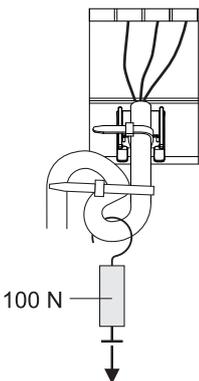
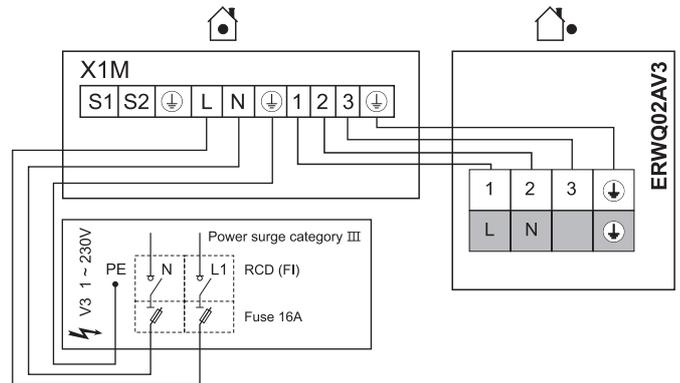


Fig. 4-10 Check the holding force of the tension relief

## 4.8.1 Connection EKHHP on heat pump external unit, mains connection Booster-Heater (BSH)

- Check the supply voltage (~230 V, 50 Hz).
- Disconnect the junction box of the domestic installation.
- Install the heat pump external unit.
- Lay the mains and communication cable (4 core, 0.75 mm<sup>2</sup>) between heat pump external unit and DAIKIN EKHHP.
- Connect mains and communication cable to heat pump external unit (see relevant installation instructions).
- Connect DAIKIN EKHHP to the heat pump external unit (see fig. 4-11).
- Lay the cable (3 core, >1.5 mm<sup>2</sup>) for the power supply to the Booster Heater between distributor box of the house installation and the DAIKIN EKHHP.
- Connect the cable for power supply on the Booster Heaters to the DAIKIN EKHHP (see fig. 4-11).
- Connect the cable for power supply to the Booster Heater on the distributor box of the house installation (see fig. 4-11).



ERWQ02AAV3 Exterior heat pump unit  
X1M Terminal rail on EKHHP

Fig. 4-11 Mains connection DAIKIN EKHHP



When switching off the heat pump external unit using a switching system prescribed by the energy supply company (EVU), the DAIKIN EKHHP is switched off as well.

This complete switch-off of the heat pump external unit is an optional installation and must only be carried out by experts.

## 4 Set-up and installation

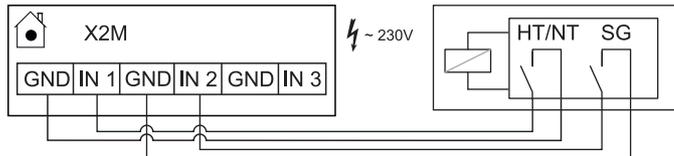
### 4.8.2 High/low tariff mains connection (HT/NT)

if the external unit is connected to a high/low tariff mains connection, the **potential-free switch contact HT/NT** of the receiver that evaluates the signal emitted by the electrical supply company (EVU) (i.e. the HT/NT signal) must be connected to the **connections GND/IN1** of the DAIKIN EKHHP (see fig. 4-12).

When the **parameter [7-00] > 0** is set, certain system components are switched off in high tariff times (see chap. 7.5).

The potential-free switching contact **GND/IN1** can be designed as a **normally-closed or a normally-open switching contact**.

- If it is **configured as a normally-open** switching contact, then the **parameter [7-00] = 1** must be set. When the EVU sends out the HT/NT signal, the switching contact HT/NT is closed. The installation switches to "Reduced Mode". If the signal is sent again, the potential-free switching contact HT/NT opens and the system resumes operation.
- If it is **configured as a normally-closed** switching contact, then the **parameter [7-00] = 2** must be set. When the EVU sends out the HT/NT signal, the switching contact HT/NT is opened. The installation switches to "Reduced Mode". If the signal is sent again, the potential-free switching contact HT/NT closes and the system resumes operation.



HT/NT High/low tariff mains connection (EVU receiver)  
 SG Smart Grid connection (EVU receiver)  
 GND+IN1 Connection HT/NT switching contact on EKHHP  
 GND+IN2 Connection Smart Grid switching contact on EKHHP  
 X2M Terminal rail on EKHHP

Fig. 4-12 Electrical connection HT/NT - and Smart Grid switching contact

### 4.8.3 Connection EVU receiver (intelligent regulator Smart Grid - SG)

Once the function is activated by the parameter [7-00] = 3 (see chap. 7.5.2), the heat pump is changed to Stand-By, Normal or an operating mode with higher temperatures, depending on the signal from the energy supply company.

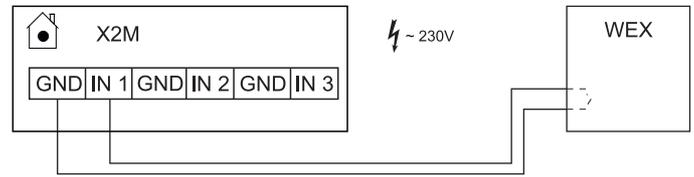
To do this, the **potential-free switching contacts HT/NT + SG** of the EVU receiver need to be connected to the **terminal rail connections (GND+IN1) / (GND+IN2)** of the DAIKIN EKHHP (see fig. 4-12).

As soon as the function Smart Grid is active, the HT/NT function is deactivated automatically. Depending on the value of the parameter [7-00], the heat pump is operated differently (see tab. 7-3).

### 4.8.4 Optional: Connection of an external heat generator

When using an external heat generator, this can be connected using a potential-free switching contact (HT/NT) on the DAIKIN EKHHP.

If the potential-free switching contact is closed by an external heat generator, the DAIKIN EKHHP reduces its own heat generation in order to favour the external heat generator (settings see chap. 7.5.2).



GND + IN1 Connection potential-free switching contact on EKHHP  
 WEX External heat generator  
 X2M Terminal rail on EKHHP

Fig. 4-13 External heat generator electrical connection

## 5 Start-up



### WARNING!

A DAIKIN EKHHP that is installed or started incorrectly may not operate properly and is dangerous for the health and safety of individuals. The DAIKIN hot water heat pump may only be started up by authorised and trained heating experts.



### CAUTION!

A DAIKIN EKHHP not put into operation properly can lead to damage to property and the environment.

- 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):  $\leq 3$  mmol/l
  - Conductivity:  $\leq 1500$  (ideal:  $\leq 100$ )  $\mu\text{S}/\text{cm}$
  - Chloride:  $\leq 250$  mg/l
  - Sulphate:  $\leq 250$  mg/l
  - pH value: 6.5 - 8.5.
- If the above-mentioned minimum water quality requirements set by the local water supply company cannot be guaranteed, suitable water treatment measures must be taken.
- The domestic water quality must comply with the EU Guideline 98/83 EC and the regionally-applicable regulations.



### CAUTION!

If the DAIKIN EKHHP is started when the **storage tank is not completely full** a reduction in output may arise when heating, or to destruction of the integrated Booster Heater (BSH) and may cause an electrical fault.

- DAIKIN EKHHP only to be operated with full storage tank.

## 5.1 Start-up

### 5.1.1 Requirements:

- The DAIKIN EKHHP system is set up and completely connected.
- The coolant system is dehumidified and filled with the specified amount of coolant.
- The hot water distribution network is bled and has the correct pressure applied (see chap. 4.7).
- The storage tank is filled up to the overflow (see chap. 9.2).
- Optional accessories have been mounted on and connected up.

After the DAIKIN EKHHP was installed and connected completely, it will need to be undergo a one-time adaptation to the installation environment to be carried out by technical personnel (configuration of optional accessories, setting the parameters).

After this configuration is complete, the installation is ready for operation and the operator can make additional custom configurations on it.

The heating expert must instruct the user, generate the commissioning report and fill it in.

### 5.1.2 Start the system

- Check all the points on the enclosed checklist. Document the test result.
- Switch on the power supply at the distributor box of the house installation for the DAIKIN hot water heat pump.
- Switching DAIKIN EKHHP on.
- Perform a test run:
  - Allow the temperatures to be displayed (see chap. 7.2.3).
  - Test the hot water generation function. Select a higher set hot water temperature so that the heating function is activated (see chap. 7.3.1).
- Sign the check list, together with the operator.

Only if it is possible to answer **all items** on the check list by **Yes**, is it allowed to commission and hand over the DAIKIN hot water heat pump to the operator.

## 5 Start-up

Check list for start-up		
1st.	DAIKIN EKHHP erected in accordance with the requirements and instructions in chap. 4 and shows no damage?	<input type="checkbox"/> Yes
2.	Minimum distance between the DAIKIN EKHHP and other sources of heat (>80 °C) of 1 m?	<input type="checkbox"/> Yes
3.	Booster-Heater: – Does the mains connection comply with the regulations and is the mains voltage 230 volts at 50 Hz? – Has the residual current device been fitted in accordance with the individual country-specific regulations?	<input type="checkbox"/> Yes <input type="checkbox"/> Yes
4.	Is the heat exchanger for domestic hot water heating in the DAIKIN EKHHP full and has it been bled?	<input type="checkbox"/> Yes
4.1	Only EKHHP500A*2V3: Is the heat exchanger filled for the connection of an optional heat generator?	<input type="checkbox"/> Yes
5.	Is the storage tank full with water to the overflow point?	<input type="checkbox"/> Yes
6.	Is the safety overflow connection connected to an open drain?	<input type="checkbox"/> Yes
7.	Is the water pressure on the sanitary side < 6 bar?	<input type="checkbox"/> Yes
8.	Are all hydraulic connections tight (no leaks)?	<input type="checkbox"/> Yes
9.	Have the parameters been set on the controller in accordance with the structural conditions, possibly connected accessories and the user stipulations?	<input type="checkbox"/> Yes
10.	Is the parameter [7-02] set to the value 0?	<input type="checkbox"/> Yes
11.	Does the installation operate without faults?	<input type="checkbox"/> Yes
12.	Has the operating manual been handed over, and has the owner been instructed?	<input type="checkbox"/> Yes

Location and Date: \_\_\_\_\_

Signature of installer: \_\_\_\_\_

Signature of operator: \_\_\_\_\_

## 6 Decommissioning

**WARNING!**

**Danger of scalding and flooding** when opening the solar return flow coupling or hot water connections due to escaping hot water.

- Draining the storage tank only
  - after it has cooled down for a long enough period,
  - with a suitable device for the safe draining or catching of escaping water,
  - wearing appropriate protective clothing.

## 6.1 Temporary shutdown

**CAUTION!**

A shutdown hot water heat pump can freeze in the event of frost and may suffer damage as a result.

- Drain the water out of the shutdown hot water heat pump if there is a risk of frost.
- If the hot water heat pump is not drained and there is a risk of frost, the power supply must be ensured and the external main switch must remain switched on.

If the DAIKIN EKHHP is not needed for a long time, it can be temporarily decommissioned.

However, DAIKIN recommends not disconnecting the system from the power supply, but just switching it off (actuate button ).

The system is then protected from frost.

If it is not possible to guarantee the power supply when there is danger of frost,

- the DAIKIN EKHHP must be fully drained of water.



If there is a danger of frost and the power supply cannot be guaranteed for just a few days, the unit's excellent heat insulation means that the DAIKIN EKHHP does not have to be drained, provided that the storage tank

temperature is monitored regularly and does not fall below +3 °C.

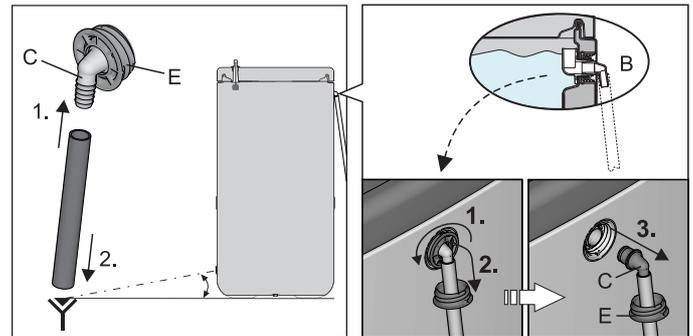
However, this does not provide frost protection for the connected heat distribution system.

## 6.1.1 Draining the storage tank

- DAIKIN Disconnect the EKHHP from the power supply.
- Remove connection piece (fig. 6-1, item C) from safety overflow (fig. 6-1, item B).
- Connect the drain hose to the hose connection piece (item C) and to a waste water drainage point which is at least at ground level.



Alternatively, you can use the optional **KFE filling connection (KFE BA)**.



B Safety overflow

C Hose connection piece for safety overflow  
E Threaded piece

Fig. 6-1 Connecting the drainage hose

Optional: Removing the connection piece from the safety overflow

- Remove the cover plate from the filling and emptying fitting.

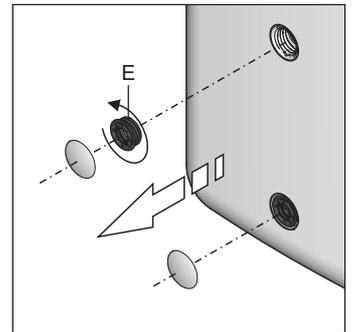


Fig. 6-2 Unscrew threaded piece

- Place a suitable collection trough beneath the filling and emptying fitting.
- Unscrew the threaded piece (fig. 6-3, item E) at the filling and draining connection, and remove the plug (fig. 6-3, item F) **and immediately screw in** the pre-assembled hose connector (fig. 6-1, item C) into the filling and draining connection (fig. 6-3) again.

**CAUTION!**

Storage water will gush out as soon as the sealing plug is removed.

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

## 6 Decommissioning

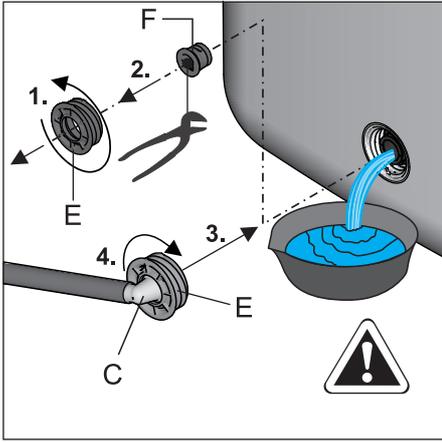


Fig. 6-3 Screwing pre-assembled connector into the filling and draining connection

### 6.1.2 Draining the hot water circuit

- Close the cold water supply to the DAIKIN EKHHP.
- Separate the cold water supply pipe to the DAIKIN EKHHP and allow the hot water distribution network to empty out.
- Isolate the cold water supply and hot water outlet from the DAIKIN EKHHP.
- Connect the drain hoses to cold water supply and hot water outlet so that the end of the hose is located just above ground level.
- Allow heat exchanger to drain according to the siphon principle.

### 6.2 Final shutdown



#### WARNING!

Cooling systems (heat pumps), climate control systems and heating devices that are incorrectly dismantled can both endanger the life and health of people and exhibit impaired function during start-up.

At normal atmospheric pressure and ambient temperatures, **liquid coolant** vapourises so suddenly that on **contact with skin or eyes** it can cause the **tissue to freeze** (danger of going blind).

- Work on the DAIKIN EKHHP (such as dismantling components, temporary or final shutdown of system) is only to be carried out by persons who are authorised and who have successfully completed **qualifying technical or vocational training** for the specific activity and who have taken part in advanced training sessions recognised by the relevant responsible authorities. These include, in particular, **certified heating engineers, qualified electricians and HVAC specialists**, who on account of their **professional training and expert knowledge**, have experience in the professional installation and maintenance of heating, cooling and air conditioning systems and heat pumps.
- You **must observe the warning and safety instructions** in the installation manual on working in the coolant system.

A final shutdown may be necessary if

- the system is defective and is being dismantled and disposed of.
- components of the system are defective, are being dismantled and replaced.
- the system or parts of the system are being dismantled and reassembled in another location.

The DAIKIN EKHHP is designed to be environmentally friendly and easy to install: the jobs described above can therefore be carried out in an efficient and environmentally-friendly manner.

When changing location or replacing parts on the coolant system pipework:

- Pump the coolant back into the external heat pump unit (see installation and operating guide for the particular external heat pump unit).

When disposing of the machine or replacing parts in the coolant system:

- Suction the coolant from the machine and recycle (see installation and operating guide for the particular external heat pump unit).

**CAUTION!**

Coolant escaping from the system causes long-term damage to the environment.

Mixing different kinds of coolant can result in hazardous toxic gases being released. Mixing with oils when coolant escapes can lead to the soil being contaminated.

- Never allow coolant to be released into the atmosphere - always suction it off and recycle using a suitable recycling device.
- Always recycle coolant, in so doing keeping it separated from oils and other additives.
- Only store different types of coolant separately, in suitable pressure vessels.
- Dispose of coolants, oils and additives properly and in accordance with the applicable national regulations of the country it is being used in.

- 
- Decommissioning a DAIKIN EKHHP (see chap. 6.1).
  - Disconnect the DAIKIN EKHHP from all electrical connections, refrigerant and water connections.
  - Dismantle the DAIKIN EKHHP or components in accordance with the installation guide in reverse order.
  - DAIKIN EKHHP disposed off in a professional manner.

**Recommendations for disposal**

The DAIKIN EKHHP has an environmentally friendly design. During the disposal process, the only waste created is that which can be used for material or thermal recycling. The materials used that are suitable for recycling can be sorted into individual types.



DAIKIN has complied with the standards for environmentally-friendly disposal as a result of the environmentally-friendly design of the DAIKIN EKHHP. 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.

# 7 Operation, Parameters

## 7 Operation, Parameters

You can switch the system off and on at the controller for the DAIKIN EKHP, you can also set the hot water generation and timer programmes, carry out settings for the operating mode of the heat pump external unit and change parameter settings.

The available parameters and their setting possibilities are described in chap. 7.5.1 and 7.5.2.

Settings for a solar system connected to the EKHP of a DAIKIN type must be carried out on the controller of the solar system.

### 7.1 Displays and function of the operating elements



#### CAUTION!

Never operate the operating elements on the controller with a hard, pointed object. This can cause damage and can cause the control unit to malfunction.

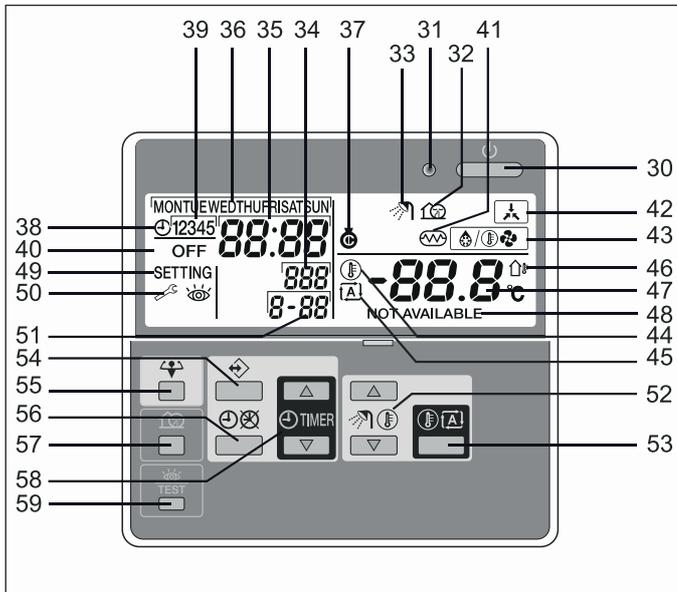


Fig. 7-1 For display and operating elements of the control - legend see tab. 3-1 and the following description

#### 30 - Key "On / Off"

Switch on and off the DAIKIN EKHP. When the hot water heat pump is switched on, the operating display LED lights up red.

Pressing the key too often repeatedly can cause the system to malfunction (maximum of 20x per hour).

#### 31 - Operating display LED

The operating display LED lights up during hot water heating operation. The LED flashes if there is a malfunction. If the LED is switched off, the DAIKIN EKHP is switched off.

#### 32 - Display operating mode "Low Noise"

This icon indicates that the heat pump external unit is running in low noise mode.

In this operating mode the output of the system is reduced so that the operating noise of the external heat pump unit is reduced.

#### 33 - Display hot water generation active

This icon indicates that the hot water heating mode is active.

If the hot water generation is operating in "High Output" mode , the icon flashes .

The symbol flashes more quickly during thermal disinfection (Legionella mode).

#### 34 - Sensor number display 888

This code refers to the temperature displays (see chap. 7.2.3).

#### 35 - Display Time 88:88

The clock display shows the current time. The set switching time is indicated in the display in the programming mode.

#### 36 - Display Weekday

This display shows the current day of the week. The set day is indicated in the display in the programming mode.

#### 37 - Display refrigerant compressor active

This icon shows that the refrigerant compressor is active in the external heat pump unit.

#### 38 - Display switching time programme switched on

This icon shows that the timer function is switched on.

#### 39 - Display active switching times

These icons indicate the active switching times of the current day of the week.

#### 40 - Display off status in timer programme

This icon shows that the current switching time has switched the system off.

#### 41 - Display Booster-Heater (BSH) connected

This icon indicates that the support in hot water heating is active by the Booster-Heater (BSH).

#### 42 - Display external signal (HT/NT/Smart Grid)

This icon indicates that the DAIKIN EKHP is influenced in its operating mode by closed switching contacts (see Parameter [7-00]).

#### 43 - Display function "defrost" active

This icon shows that the operating mode "defrost" or start-up is active.

#### 44 - Display storage tank temperature

This symbol appears if the hot water temperature in the integrated storage tank is displayed.

The icon is also shown if the temperature target value is set in programming mode.

#### 45 - Display operating mode "Automatic"

This icon indicates that the heat pump is running in the "Automatic" mode.

#### 46 - Display external temperature active

If this icon flashes, the outside temperature is shown in the temperature display (47) (see chap. 7.2.3).

#### 47 - Display hot water temperature or other temperature values -88.8°C

The display shows various temperature values (see chap. 7.2.3).

#### 48 - Display "Function not available"

This icon is always shown if an option that has not been installed is selected or if a function is not available.

#### 49 - Display parameter setting mode active

The display indicates that the user can see and change the parameter settings.

**50 - Display Service technician required** 

This icon shows that the system must be checked. Get in touch with your heating specialist or nearest DAIKIN contractual partner.

**51 - Display Parameter code or Fault code 8-88**

This display represents the code from the parameter setting (see chap. 7.5) or the error code (see chap. 8.2).

**52 - Keys Setting hot water temperature** 

These keys are used to adjust the set temperature for hot water generation.

**53 - Key operating mode "Automatic"** 

This key activates and deactivates the automatic mode. In this operating mode, the integrated Booster-Heater (BSH) in the storage tank of the DAIKIN EKHP can be added in for the heating up process if required.

**54 - Key Programming** 

This multifunction key is used to program the switching times.

**55 - Key operating mode "High Output"** 

This key activates and deactivates the accelerated heating mode. Heating up is by heat pump and integrated Booster-Heater (BSH).

**56 - Key activation/deactivation of timer programme**

The main function of this multifunction key is to activate/deactivate the timer programme. The key is also used to programme the parameters.

**57 - Key operating mode "Low Noise"** 

This key activates and deactivates the low noise mode. In this operating mode the output of the system is reduced so that the operating noise of the external heat pump unit is reduced.

**58 - Key Time setting** 

These keys have several functions such as:

- Setting the time.
- Switching between the display of outside temperature and the storage tank temperature (see chap. 7.2.3).
- Setting the switching times for the timer programme.

**59 - Key error code / parameter setting** 

This key has several functions:

- Extended key push (>5 sec.): Setting the parameters
- Brief key push: Display of last fault code

**7.2 Basic functions**

Certain menu items in the controller are only accessible to the specialist heating technician. This security measure ensures that no undesirable malfunctions arise through incorrect configuration.

**7.2.1 Switching the system on and off**

- Press the  key.
  - ➔ The operation LED lights up red.
  - ➔ During start-up, the icon  is shown in the display of the controller.

After start-up, the current operating mode is shown in the display of the controller.

When you press the key  again, the system is shut down and the Operation LED goes out.

**7.2.2 Setting the clock****Setting the time**

- Press  key for at least 5 s.
  - ➔ The time and display of the weekday starts flashing.
- Use the keys  and  to set the time.
  - ➔ The time is increased/decreased by 1 min. Holding the key  or  pressed increases/reduces the time by 10 min.
- Press the  key to save or press the  key again to cancel the setting.

**Setting the weekday**

- Press  key for at least 5 s.
  - ➔ The time and display of the weekday starts flashing.
- Use the keys  and  to set the weekday.
  - ➔ The weekday is increased/decreased by 1 min.
- Press the  key to save or press the  key again to cancel the setting.

**7.2.3 Display of the current Temperature**

- Press the key  for 5 s.
  - ➔ The icon  and the outside temperature are displayed.
  - ➔ The icons  +  flash in the display on the controller.
  - ➔ The display (fig. 7-1, item 34) shows the sensor number 001.
- Use the keys  and  to select the following temperatures:

Sensor No.	Temperature sensor	Icon flashes
001	External temperature	
002	—	—
003	—	—
004	Storage tank temperature	
005	—	—

Tab. 7-1 Temperature displays

If no button is pressed within 30 s, the control leaves display mode.

**7.2.4 Defrost** 

At low outdoor temperatures and corresponding humidity values, the external heat pump unit may ice up. This icing impairs efficient operation. The system detects this condition automatically and starts the melting operation .

During the melting operation the heat pump internal unit (EKHP) has heat extracted from it and the Booster-Heater (BSH) is added in, if required.

After 8 minutes at most, the system returns to normal mode.

# 7 Operation, Parameters

## 7.3 Operating modes



### MAXIMUM ENERGY UTILISATION

The most effective energy utilisation is achieved by the DAIKIN at the lowest possible hot water temperatures.

At temperatures in excess of 50 °C, the effectiveness (COP) of the DAIKIN hot water heat pump could be made worse by the support of the electric immersion heater (Booster-Heater), depending on the outdoor temperature.

### 7.3.1 ECO

In order to increase the efficiency, we try not to use the integrated electric Booster-Heater (BSH) in this operating mode (simultaneous operation of hot water heat pump and Booster-Heater (BSH) is not permitted, other than with activated "Low-Noise Operation").

In addition, most individual settings can be made in order to guarantee convenient and efficient operation. The settings are carried out using the parameters, as described in chap. 5.6.

If the installation is switched on, it regulates the hot water generation fully-automatically, based on the stipulations set in the controller.

- Icon is shown in the display of the controller.
- Icon is not shown in the display of the controller.

- Use the and keys to set the desired hot water temperature.



The hot water set temperature should be selected so that, in combination with the setting for the hysteresis (parameter [6-00]), the tank storage of the DAIKIN EKHHP is not cooled excessively before hot water generation.

The hot water generation can be affected by additional functions:

- Low-noise operation
- Switching times programming
- Automatic defrosting function
- Thermal disinfection (Legionella protection)
- HT/NT Function
- Smart Grid Function

If the user enters a value manually, this setting remains active until the user changes it or until set special functions affect it. At the end of the special function, we again use the set value.

Setting the switching times for the hot water generation is described in chap. 7.4.

If the set temperature value for hot water generation is not achieved by the heat pump external unit, the controller switches over to the integrated Booster-Heater (BSH).

The Booster-Heater (BSH) is only switched on if the hot water temperature has been set above the maximum temperature value achievable by the heat pump ( $T_{HP\ MAX}$ ) and the value measured by the temperature sensor has reached the temperature ( $T_{HP\ Max}$ ).

### 7.3.2 AUTOMATIC

This operating mode is similar to the operating mode "ECO", but, after 60 minutes, the integrated electric Booster-Heater (BSH) is automatically added in for heating and other settings are carried out automatically in order to achieve convenient operation.

- Press the key.
  - Icon is shown in the display of the controller.
- Press the key or briefly.
  - The current target temperature for hot water is displayed for 5 s on the display of the controller.
- Within the 5 s, use the and keys to set the required hot water temperature.



Higher power costs can be generated than with other operating modes when using this operating mode.

When you press the key again, the operating mode "automatic" is switched off and the icon goes out.

### 7.3.3 Low Noise

Low noise mode means that the exterior heat pump unit is operating at reduced output. This reduces the operating noise caused by the exterior heat pump unit.



The operating mode "Low noise operation" reduces the output in DHW heating operation with the result that it may no longer be possible to reach the preset target temperatures.

- Press the key.
  - Icon is shown in the display of the controller.

### 7.3.4 High Output

It is heated to the set hot water temperature as quickly as possible using a heat pump and integrated electric Booster Heaters (BSH).

The operating mode "High Output" can be activated if larger hot water draw-off volumes are required for a short period.

- Press the key.
  - Icon flashes in the controller display.

The output support is automatically deactivated again once the specified target temperature for hot water is reached.

## 7.4 Setting the timer programme

The DAIKIN EKHHP can be controlled according to manual settings or according to a freely-programmable timer programme.

A timer programme is not included at the factory.

The user can programme up to 5 switching points for each day to control the hot water generation and the operating mode (normal, low noise).

The timer programme is switched on and off using the key. Saved time switching points can be changed or deleted at any time. To have a better overview, we recommend making a record of the programmed switching times and keeping this in a safe place.

The user can carry out manual setting changes even if the timer programme is switched on. The controller always only works according to the most recent user parameters set until new parameters are set. In this way, manually executed settings are cancelled by the timer programme at the next active switch time.

The integrated Booster-Heater (BSH) is also controlled fully-automatically by the controller integrated in the DAIKIN EKHHP. The switching limits and switching time periods are defined in the parameter settings. If the Booster-Heater (BSH) is added in, the controller display shows the symbol .



If the DAIKIN EKHHP is in an "OFF" period, the tariff contacts HT/NT and SG can no longer be evaluated and thus have no influence on the operation of the installation.

### 7.4.1 Display switching times

1. Press the  key.
  - The current operating mode flashes.
2. Use the  and  keys to select the operating mode to be programmed.
  - The selected operating mode flashes.
3. Use the  key to confirm the selection.
  - The first weekday "MON" is displayed.
4. Use the  and  keys to select the weekday to be programmed.
5. Use the  key to confirm the selection.
  - The first switching time programmed for the selected operating mode is displayed.
6. Use the  and  keys to move to the other switching times for this operating mode. Empty switching times are not displayed.
  - This key  moves you back by one step.

### 7.4.2 Programming switching times

7. Hold the  key pressed for 5 s.
8. Use the  key to select the switching time number.
9. Use the  and  keys to set the starting time.
10. By pressing the  key, you can select the type of switching  for this switching time number.
11. Confirm the switching time and switching type using the  key (press briefly).
12. Repeat steps 8 to 11 to program the other switching times or to change to the highest switching time of the current day (see step 6). Then continue with step 13 to complete programming.
13. Hold the  key pressed for 5 s.
  - The switching time set is displayed, saved and all switching times below that are also saved. All switching times above the current switching time are deleted.
  - It automatically returns to step 6.

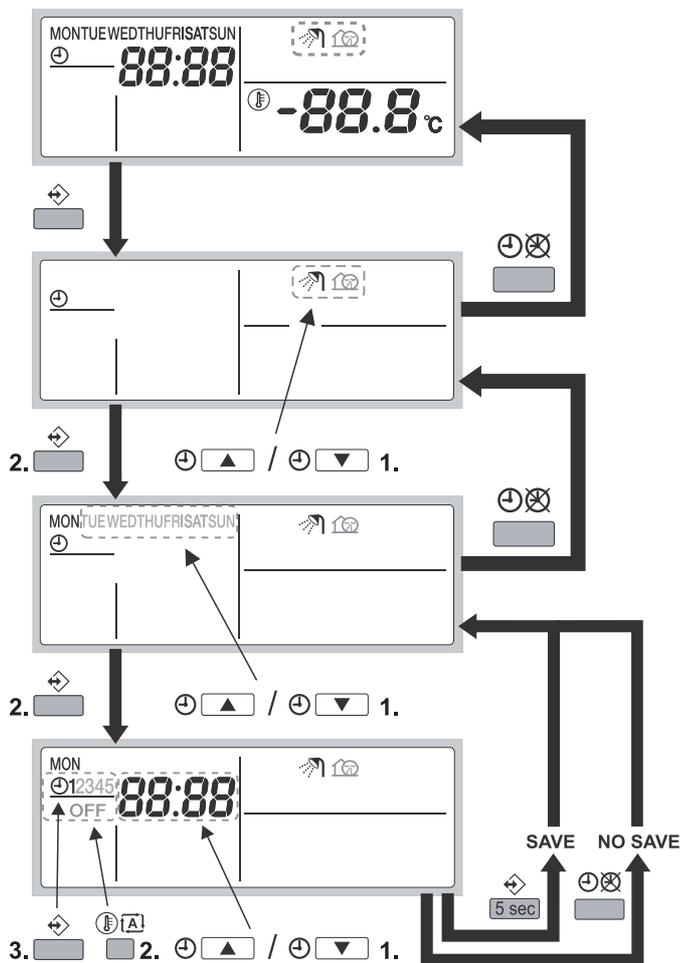


Fig. 7-2 Display and programme switching times

### 7.4.3 Delete switching time

#### Delete individual switching times

Deleting one or more programmed switching times is carried out at the same time as saving the programmed switching times. The following table explains the procedure.

For example:

- At least 4 switching times were programmed for Monday.
- Switching times 1 to 3 are set.
- After the third switching time, the key  (hold for 5 secs.) confirms the end of the programming.
- The fourth switching time and, if there is one, the fifth switching time will be deleted.

## 7 Operation, Parameters

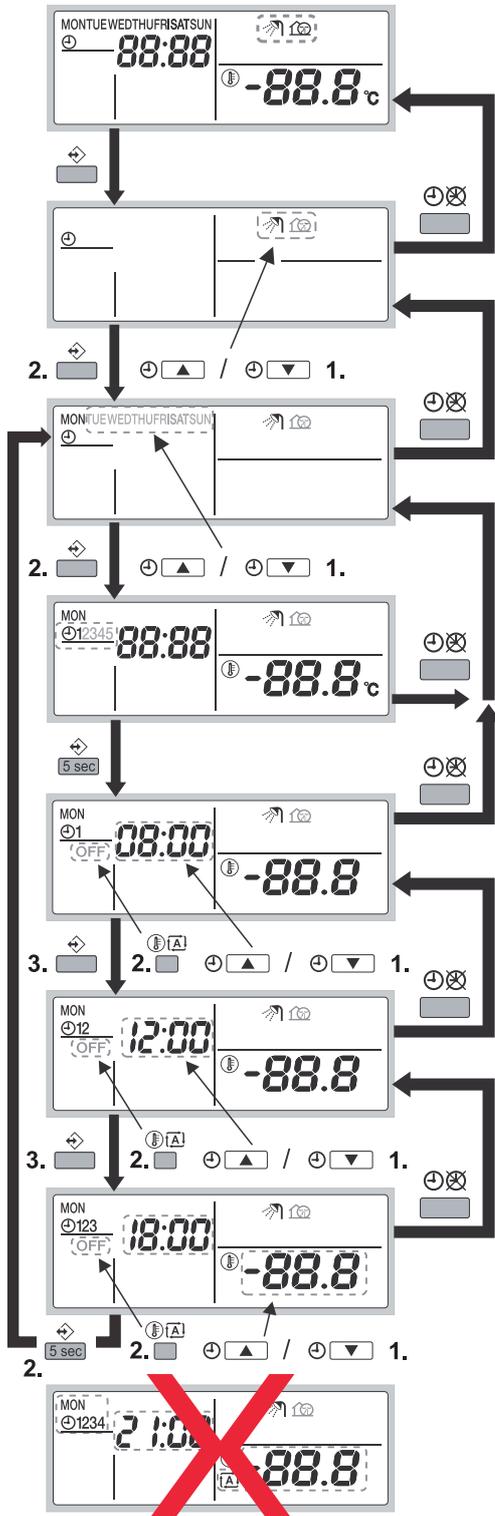


Fig. 7-3 Delete individual switching times

### Deleting all switching times of an operating mode

Only all switching times for a weekday of a certain operating mode can be deleted per delete operation.

To do this, proceed as described in Section "Delete individual switching times", but, after selecting the weekday, hold down the key twice, one after the other, for 5 sec.

## 7.5 Parameter settings

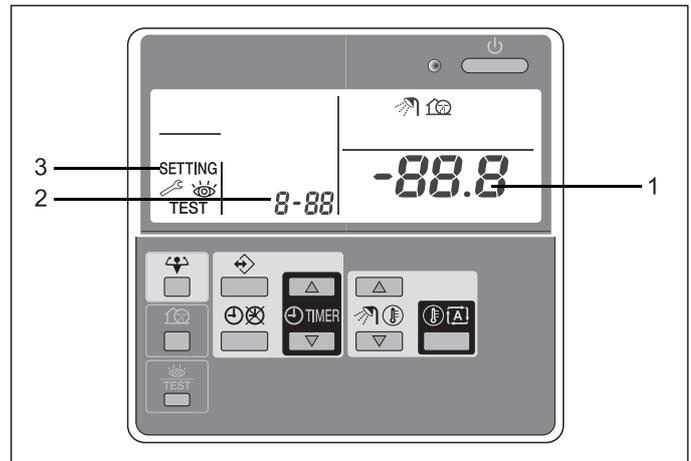
All parameters of the control are described in detail in this section. An overview of all parameters, their factory settings and setting ranges are listed in tab. 7-4.

**i** DAIKIN recommends you note all changes to the parameters and switching times in the tables in chap. 7.5.4 and chap. 7.5.5.

### 7.5.1 Setting parameters

Each parameter/function is allocated a 3-digit code (e.g. [0-03]), which is displayed on the controller display (fig. 7-4, item 2).

The first number [0] shows the parameter group (Code 1 in tab. 7-4). The second and third number [03] show the relevant parameter in this group of parameters (Code 2 in tab. 7-4).



- 1 Parameter value
- 2 Parameter code
- 3 Display parameter setting mode active

Fig. 7-4 Parameter setting on the controller

1. Press key for at least 5 s.
  - The icon is displayed.
  - The current parameter code **8-88** is displayed (fig. 7-4, item 2).
  - The set parameter value **-88.8°C** of the relevant parameter code is displayed (fig. 7-4, item 1).

**i** In order to set the parameter groups 2 to C (area marked in grey in tab. 7-4) ("Advanced Mode") you need to push the key again for at least 10 sec.

2. Use the key to select the parameter group.
3. Use the key to select the parameter to be set.
4. Use one of the or keys to change the setting of the parameter selected.
5. Press the key to save the value.
6. Repeat steps 2 to 5 to set other parameters or press the key briefly to exit the parameter setting mode.

**i** Changes to parameters are only saved if the key is pressed. Changing to a new parameter code or pressing the key rejects the changes made.

## 7.5.2 Parameter description

### [0] - Temperature settings operating modes

The following setting options are available:

- [0-00] Hot water set temperature for the operating mode "High Output".
- [0-01] Hot water set temperature for the thermal disinfection of the hot water storage tank (Legionella protection).



### WARNING!

The settings of the Legionella protection must always be configured in accordance with the country-specific laws.



If no hot water is used for several days and the storage temperature of the DAIKIN does not reach at least 60 °C, for hygiene reasons (Legionella protection) it is periodically heated up to above 60 °C once.

- [0-02] Set value heat retention function. This set value is taken up as soon as the DAIKIN is in an "OFF" period and serves to maintain a minimum storage tank temperature. The DAIKIN hot water heat pump starts as soon as the water temperature in the storage tank has fallen below the temperature hysteresis (depending on the operating mode and setting).
- [0-03] Switch-off temperature heat retention function: Temperature at which the DAIKIN hot water heat pump stops the reheating procedure.
- [0-04] Activation temperature heat retention function: Determines whether automatic reheating takes place if the temperature falls below the parameter value [0-02].
  - 0 = Function is switched off
  - 1 = Function is switched on

### [2] - Thermal disinfection (Legionella protection)



An ON temperature > 45 °C makes sure that only the electric Booster-Heater (BSH) is used and not the heat pump. This increases the usage duration of the refrigerant compressor.

The following setting options are available:

- [2-00] Start day: Day of the week on which the function should be started.
- [2-01] Automatic disinfection with switched on hot water heat pump:
  - 0 = No disinfection
  - 1 = Automatic disinfection
- [2-02] Starting time: Time of day at which the function should be started.
- [2-03] Automatic disinfection in "Stand-by Mode":
  - 0 = No disinfection
  - 1 = Automatic disinfection
- [2-04] Holding time: Length of time the disinfection temperature must be maintained.



If the temperature in the storage tank falls because of a draw-off, the thermal disinfection will be restarted.

If thermal disinfection is prevented, e.g. by the high-tariff signal, (Booster-Heater (BSH) blocked), this is carried out as soon as the DAIKIN hot water heat pump is in the normal mode again (see tab. 7-3).

### [3] - Other points

The following setting options are available:

- [3-00] Automatic restart after a power failure:
  - 0 = DAIKIN hot water heat pump starts in "Stand-by" mode. The timer function is not active.
  - 1 = DAIKIN hot water heat pump restarts with the previously stipulated user settings.



If the DAIKIN hot water heat pump is connected to a high/low tariff mains connection, where the power supply is interrupted, this parameter must be set to "1".

- [3-01] Access authorisation: Do not change the set value.
- [3-02] Hot water set temperature > 60 °C:
  - 0 = Setting > 60 °C not possible.
  - 1 = Setting > 60 °C possible.



The maximum hot water set temperature is limited to 55°C when working exclusively with a heat pump.

A hot water set temperature >55 °C is only possible when using an electrical Booster Heater (BSH).

### [4] - Operation electrical Booster-Heater (BSH)

The following setting options are available:

- [4-03] Simultaneous operation of the electrical Booster Heater (BSH) and the heat pump.
  - 0 = Not possible.
  - 1 = Is possible only when in operating mode "Low Noise".
  - 2 = Is possible only when in operating mode "High Output".
  - 3 = Is possible when in operating mode "Low Noise" and operating mode "High Output".

### [6] - Hysteresis for hot water heating

These parameter settings determine the temperature thresholds at which heating the hot water is started and stopped by the heat pump (ON temperature and OFF temperature of the heat pump).

If the water temperature falls below the ON temperature of the heat pump ( $T_{HP\ ON}$ ), heating the hot water with the heat pump is started.

As soon as the hot water temperature reaches the OFF temperature of the heat pump ( $T_{HP\ OFF}$ ) or the hot water set temperature ( $T_U$ ), the heating of the hot water by the heat pump is stopped.

The following setting options are available:

- [6-00] Start: Temperature difference (switching hysteresis) that determines the ON temperature of the heat pump ( $T_{HP\ ON}$ ). The set value is only evaluated in the "ECO" operating mode.

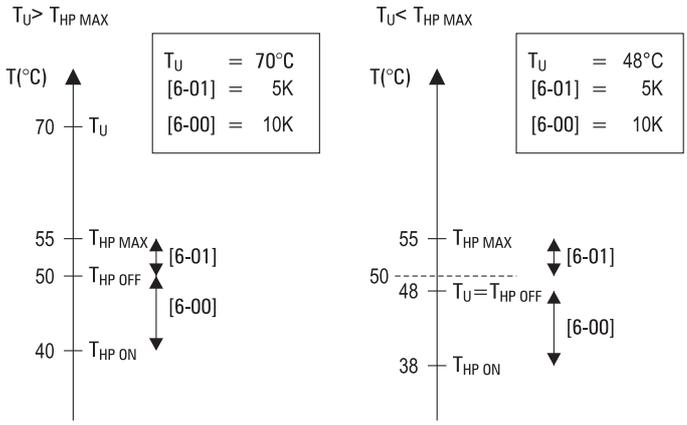


An ON temperature > 45 °C makes sure that only the electric Booster-Heater (BSH) is used and not the heat pump. This increases the usage duration of the refrigerant compressor.

In the operating modes "ECO" and "Automatic" the hot water heating mode only starts when the measured hot water temperature falls below 45 °C.

- [6-01] Stop: Temperature difference that determines the OFF temperature of the heat pump ( $T_{HP\ OFF}$ ).

# 7 Operation, Parameters



$T$  Water temperature  
 $T_{HP\ MAX}$  Maximum water temperature of the heat pump at the temperature sensor in the hot water storage tank (55°C)  
 $T_{HP\ OFF}$  OFF temperature of the heat pump  
 $T_{HP\ ON}$  ON temperature of heat pump  
 $T_U$  Hot water temperature (as set on the controller)

Fig. 7-5 Illustration of the control system for hot water generation by the heat pump

- [6-02] GCO (BSH): determines when the Booster-Heater (BSH) can be started after the heat pump is switched on. This setting is only effective if simultaneous operation of the Booster Heater (BSH) and the heat pump is permitted ([4-03] is not set to 0).
- [6-03] Priority of "High Output" operating mode: stipulates the priority if the operating modes "Low Noise" and "High Output" are active at the same time.

Settings					
[6-03]	Operating mode	Operating mode			
		Off	[6-04] = 1	[6-04] = 2	[6-04] = 3
0	OFF	normal	Low Noise 1	Low Noise 2	Low Noise 3
	ON	High output	normal	Low Noise 1	Low Noise 2
1	OFF	normal	Low Noise 1	Low Noise 2	Low Noise 3
	ON	High output	High output	High output	High output

Tab. 7-2 Overview of operating modes "Low Noise" and "High Output" with simultaneous activation

**i** If [6-03] is set to "1", the operating mode "High Output" has priority over the operating mode "Low Noise".

- [6-04] Stages in the operating mode "Low Noise":
  - 1 = Lowest noise reduction.
  - 2 = Medium noise reduction.
  - 3 = Highest noise reduction.

## [7-00] - High/low tariff mains connections (HT/NT) / Smart Grid connection (SG)

These parameters facilitate the configuration of the DAIKIN hot water heat pump with an existing high/low tariff mains connection and Smart Grid connection.

As soon as the function is activated by the parameter [7-00] > 0, the operation of the DAIKIN hot water heat pump is changed, depending on the switch position of the connected potential-free external switching contact.

The following setting options are available:

- [7-00]: Stipulation as to whether the heat pump is connected to a high/low tariff mains connection / Smart Grid connection.
  - 0 = Normal mains connection (default setting).
  - 1 = Evaluation HT/NT mains connection.
  - 2 = Evaluation HT/NT mains connection.
  - 3 = Evaluation HT/NT mains connection and Smart Grid connection.

[7-00]	Assessment contact		Behaviour of heat pump	Icon
	HT/NT	Smart Grid		
0 (default)	—	—	Normal operating mode	
1	○	—	Normal mode (low tariff)	
	●	—	Reduced mode (high tariff)	
2	○	—	Reduced mode (high tariff)	
	●	—	Normal mode (low tariff)	
3	○	○	Normal operating mode	
	●	○	Reduced mode, expensive power	
	○	●	Switch-on recommendation, cheap power	(+  after 60 minutes, at the earliest)
	●	●	Switch-on command, cheap power	+

○ open  
 ● closed

Tab. 7-3 Configuration table parameter [7-00]

Explanations of behaviour of the heat pump as per tab. 7-3:

**Normal operating mode:** Heat pump operating works in the set operating mode, as described in chap. 7.3.

**Reduced mode:** Heat pump works only in heat retention function with a fixed target value of 40 °C. The Booster-Heater (BSH) is never added in parallel. This function is also carried out if the parameter [0-04] = 0 is set.

**Switch-on recommendation:** Heat pump works with increased set value and reduced switch-on hysteresis. The Booster-Heater (BSH) is added in after 60 minutes at the earliest in accordance with the settings of parameter [4-03].

**Switch-on command:** The heat pump works in high-performance mode with a greatly increased set value. The Booster-Heater (BSH) is always added in immediately.

## [7-02] - Emergency operation

The parameter [7-02] is set to "0" in the factory. If there is a fault in the heat pump external unit, the parameter [7-02] = 1 can be set. In addition, the unit must be set to the operating mode "Automatic".

This is used for the hot water generation if the error is detected just by the electric Booster-Heater (BSH).



Inform the DAIKIN Service Expert.

Please use this function only in the event of a fault and you should always reset as soon as the repairs have been carried out, since otherwise elevated costs will be incurred.

The electric Booster-Heater (BSH) is activated if a fault in the heat pump external unit has occurred and has been detected for longer than 1 hour.

### [7-04] - Minimum ambient temperature

This parameter defines the minimum external temperature at which the heat pump is still operated.

### [E] - Display unit information

These parameters allow the display of various different unit information in the heat pump inside unit DAIKIN EKHHP.

No settings can be made for this parameter.

### 7.5.3 Parameter factory settings

Code 1	Code 2	Parameter name	Standard factory settings			
			Value	Range	Increment	Unit
0	00	Hot water set temperature for the operating mode "High Output"	55	40 - 60	1	°C
	01	Hot water set temperature for thermal disinfection	65	50 - 75	1	°C
	02	Heat retention function switch-on temperature	40	35 - 55	1	°C
	03	Heat retention switch-off temperature	45	35 - 55	1	°C
	04	Activation / deactivation of heat retention function	0	0 - 1	1	—
2	00	Start day thermal disinfection (Legionella protection)	FR	every day	—	—
	01	Automatic thermal disinfection with hot water heat pump switched on	0	0 - 1	0	—
	02	Start time thermal disinfection	23:00	0:00 - 23:00	1:00	h
	03	Automatic thermal disinfection in "Stand-by" mode	0	0 - 1	1	—
	04	Holding time thermal disinfection temperature [0-01]	10	5 - 60	1	Min.
3	00	Automatic restart after a power failure	1	0 - 1	1	—
	01	Access authorisation	3	2, 3	1	—
	02	Hot water set temperature >60 °C	0	0 - 1	1	—
4	03	Simultaneous operation of the electrical Booster Heater (BSH) and heat pump	0	0 - 3	1	—
6	00	Switching hysteresis of heat pump	14	2 - 20	1	K
	01	Heat pump switch-off temperature difference	0	0 - 15	1	K
	02	ECO-Timer (BSH)	120	5 - 120	1	Min.
	03	Priority of operating mode "High Output"	1	0 - 1	1	—
	04	Steps in the operating mode "Low Noise"	1	1 - 3	1	—
7	00	Behaviour in high/low tariff (HT/NT) - / Smart Grid (SG) mode	0	0 - 3	1	—
	01	Not used	2	—	—	—
	02	Setting Emergency mode (use of BSH permitted or not)	0	0 - 1	1	—
	04	Lower external temperature limit for heat pump operation	-15	-25 - 10	1	°C
C	00	Not used	0	—	—	—
E	Display unit information					
	00	Software version	Information value, cannot be changed.			
	01	EEPROM version	Information value, cannot be changed.			
	02	Model ID	Information value, cannot be changed.			

These parameters are only accessible in the "Advanced Mode" (see chap. 7.5.1).

Tab. 7-4 Overview parameter settings

## 7 Operation, Parameters

### 7.5.4 Individual parameter settings

Parameter no.	Value		Date	Comments
	Old	NEW		

Tab. 7-5 Individual changes to the parameters

### 7.5.5 Individual switching time settings

#### Operating modes "ECO" / "Automatic"

Day	Switching time No.	1	2	3	4	5
MON	switching time	:	:	:	:	:
	Action (On / Off)	ON / OFF				
	feed temperature	°C	°C	°C	°C	°C
TUE	switching time	:	:	:	:	:
	Action (On / Off)	ON / OFF				
	feed temperature	°C	°C	°C	°C	°C
WED	switching time	:	:	:	:	:
	Action (On / Off)	ON / OFF				
	feed temperature	°C	°C	°C	°C	°C
THU	switching time	:	:	:	:	:
	Action (On / Off)	ON / OFF				
	feed temperature	°C	°C	°C	°C	°C
FRI	switching time	:	:	:	:	:
	Action (On / Off)	ON / OFF				
	feed temperature	°C	°C	°C	°C	°C
SAT	switching time	:	:	:	:	:
	Action (On / Off)	ON / OFF				
	feed temperature	°C	°C	°C	°C	°C
SUN	switching time	:	:	:	:	:
	Action (On / Off)	ON / OFF				
	feed temperature	°C	°C	°C	°C	°C

Tab. 7-6 Individual settings operating modes "ECO" / "Automatic"

#### "Low Noise" operating mode

Day	Switching time No.	1	2	3	4	5
MON - SUN	switching time	:	:	:	:	:
	Action (On / Off)	ON / OFF				

Tab. 7-7 Individual settings operating mode "Low Noise"



The operating mode "High Output" cannot be activated via the switching times.

## 8 Malfunctions and fault codes

**WARNING!**

Touching live parts can result in an **electric shock** and lead to potentially fatal injuries and burns.

- Before beginning work on live parts, **disconnect** all of the systems circuits **from the power supply** (switch off main switch, disconnect fuse) and secure against unintentional restart.
- The electrical connection and working on the electrical components should only be performed by **electrical engineers** in compliance with valid standards and guidelines as well as the specifications of the energy supply company.
- The **equipment covers and maintenance opening covers** must be **re-fitted** immediately after completion of the work.

## 8.1 Failures

Malfunction	Possible cause	Possible solution
System not working (nothing on display, operation LED off)	No mains voltage	<ul style="list-style-type: none"> <li>• Switch on the external main switch of the machine.</li> <li>• Switch on system fuse(s).</li> <li>• Replace system fuse(s).</li> </ul>
Switching time program is not working or programmed switching times are being carried out at the wrong time.	Day of the week and time are not correctly set.	<ul style="list-style-type: none"> <li>• Set the weekday</li> <li>• Set time.</li> <li>• Check week day-switching time allocation.</li> </ul>
	Switching time function deactivated	<ul style="list-style-type: none"> <li>• Activate switching time function (Key <math>\oplus</math> <math>\otimes</math>).</li> </ul>
During a switching time the user made a manual setting (e.g. changed the target temperature, changed the operating mode)		<ul style="list-style-type: none"> <li>• Activate switching time function again (Key <math>\oplus</math> <math>\otimes</math>).</li> </ul>
Control unit does not respond to entries	Operating system of control unit crashed.	<ul style="list-style-type: none"> <li>• Carry out RESET of control unit. Disconnect the system from the power supply for at least 10 s and then switch on again.</li> </ul>
Displayed values are not updated	Operating system of control unit crashed.	<ul style="list-style-type: none"> <li>• Carry out RESET of control unit. Disconnect the system from the power supply for at least 10 s and then switch on again.</li> </ul>
Hot water does not heat up enough.	Water flow too low.	<ul style="list-style-type: none"> <li>• Check that all stop valves of the water circuit are completely open.</li> <li>• Air in hot water delivery circuit, bleed.</li> </ul>
	Target value range is too low.	<ul style="list-style-type: none"> <li>• Check parameter [0-00], increase if necessary.</li> <li>• Set hot water temperature too low, increase manually.</li> <li>• Check parameter [6-00], reduce if necessary.</li> </ul>
	Draw-off rate too high.	<ul style="list-style-type: none"> <li>• Reduce the draw-off rate, limit throughput.</li> <li>• Check operating mode, select a different operating mode, if necessary (e.g. "High Output").</li> </ul>

## 8 Malfunctions and fault codes

Malfunction	Possible cause	Possible solution
Hot water does not heat up enough.	Integrated electrical Booster-Heater (BSH) not switched in.	<ul style="list-style-type: none"> <li>Operating mode "ECO" selected, select a different operating mode, if necessary (e.g. "Automatic", "High Output").</li> <li>Check parameter [4-03], adjust if necessary.</li> <li>Check mains supply to Booster Heater (BSH).</li> <li>Thermal protection switch (STB) of the Booster Heater (BSH) has triggered. Testing and repair by a DAIKIN heating expert.</li> </ul>
	Timer programme settings	<ul style="list-style-type: none"> <li>Check the switching times, provide adequately long active times.</li> <li>Activate the heat retention function to prevent complete cooling down.</li> <li>Increase the heat retention function set value (hot water heat pump starts at parameter [0-02] - Hysteresis).</li> </ul>
	The power company has sent the high-cost signal.	<ul style="list-style-type: none"> <li>Wait for the next low-tariff signal which will switch the hot water heat pump to normal operating mode again.</li> </ul>
	Only with external heat generator: External heat generator has been set with priority over the heat pump, but cannot deliver adequate heat supply.	<ul style="list-style-type: none"> <li>Check parameter [7-00], adjust if necessary.</li> <li>Check settings of external heat generator.</li> </ul>
	Only with EKHHP500A*2V3 with optional external heat generator: Optional external heat generator switched in, but cannot guarantee adequate heat delivery.	<ul style="list-style-type: none"> <li>Check heat delivery by the optional auxiliary heater, increase if necessary.</li> </ul>
	Incorrect sensor values transmitted to the controller.	<ul style="list-style-type: none"> <li>Testing and repair by a DAIKIN heating expert.</li> </ul>
Hot water does not warm up	System switched off (nothing on display, operation LED on)	<ul style="list-style-type: none"> <li>Switch system on (button ).</li> </ul>
	Draw-off rate too high.	<ul style="list-style-type: none"> <li>Reduce the draw-off rate, limit throughput.</li> <li>Check operating mode, select a different operating mode, if necessary (e.g. "High Output").</li> </ul>
	Installation is in standby because of the switch timer programming	<ul style="list-style-type: none"> <li>Check programmed switch times.</li> <li>Deactivate switch timer programme.</li> </ul>
	Settings for high/low tariff mains connection do not correspond to the electrical connections.	<ul style="list-style-type: none"> <li>HT/NT function is active and the parameter [7-00] is set incorrectly. Other configurations are also possible. However, these must match the type of high/low mains connection present at the installation location.</li> <li>The [Smart Grid] function is active and the connections are set incorrectly.</li> <li>Have the hot water heat pump checked by a DAIKIN heating expert.</li> </ul>
	Fault in heat pump external unit	<ul style="list-style-type: none"> <li>Check heat pump external unit.</li> <li>For a short period: activate the emergency stop mode, [7-02] = 1, Operating mode "Automatic".</li> <li>Testing and repair by a DAIKIN heating expert.</li> </ul>

Tab. 8-1 Possible malfunctions of the EKHHP

## 8.2 Fault code

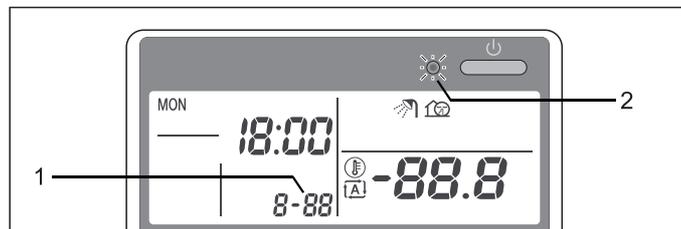
The electronic controller of the DAIKIN EKHHP shows error codes on the display. In addition to the error code, the LED on the controller flashes (see fig. 8-1).

To delete the error code:

- Press  key for at least 5 s.

If the error arises again:

- Testing and repair by a DAIKIN heating expert.



1 Error code

2 Flashing LED

Fig. 8-1 Error display

Fault code	Component/description
A1	PCB fault EKHHP
A5	Refrigerant temperature too high
AC	STB Booster-Heater (BSH) has triggered
E1	PCB fault heat pump external unit
E6	Refrigerant compressor blocked
E7	Fan block in the external heat pump unit
E8	Flow rate too high in heat pump external unit
EC	Temperature in internal hot water tank is too high
F3	The discharge temperature from the heat exchanger of the external heat pump unit is too high
H0	Sensor refrigerant circuit
H6	Sensor refrigerant compressor
H9	Outside temperature sensor
HC	Components
J3	Temperature sensor discharge refrigerant compressor
L3	Electrical components
L4	Temperature heat exchanger heat pump external unit too high
L5	Electrical components
P4	Sensor heat exchanger heat pump external unit defective
U0	Refrigerant loss
U2	Power supply interrupted
U4	Faulty communication heat pump internal unit / heat pump external unit
U5	Communication error regulator
UA	No communication heat pump internal unit / heat pump external unit

Tab. 8-2 Possible error codes on the controller of DAIKIN EKHHP

## 9 Service and maintenance

### 9 Service and maintenance

#### 9.1 General

Regular inspection and maintenance of the DAIKIN EKHHP reduces energy consumption and ensures a long life and smooth operation.



#### RISK OF ENVIRONMENTAL DAMAGE!

Important information regarding the coolant used.

The complete heat pump system contains refrigerant with fluorinated greenhouse gases which damage the environment if released.

Coolant type: R410A  
GWP\* value: 2087,5

\* GWP = Global Warming Potential

- Work on fixed cooling systems (heat pumps) and air-conditioning systems can only be performed by persons who hold a certificate of competence for the European Region, in accordance with the F-Gas Regulation (Ec) No. 303/2008.
- Fill in the total coolant filling quantity on the supplied label on the heat pump exterior unit (for information consult the installation instructions for the heat pump exterior unit).
- Never allow coolant to be released into the atmosphere - always suction it off and recycle using a suitable recycling device.



Have the inspection and maintenance carried out by authorised and trained HVAC engineers once a year, ideally **before the heating period**. This can prevent faults during the heating period.

DAIKIN recommends an inspection and maintenance contract to ensure regular inspection and maintenance.

#### Legal requirements

In accordance with the F-Gases Directive (EU) No. 517/2014 Article 3 and 4, operators (owners) must service their fixed refrigeration units, check them for leaks and rectify any leaks without delay.

All installation, maintenance and repair work on the cooling circuit must be documented e.g. in the operating manual.

**Operators of DAIKIN heat pump systems are subject to the following obligations:**



The European statutory investigation period applies for heat pumps from a total system coolant filling quantity of 3 kg or, as of 01.01.2017 from a total filling quantity of 5 t CO<sub>2</sub>-equivalent (in the case of R410A from 2.4 kg).

DAIKIN nonetheless recommends the conclusion of a maintenance contract, including documentation of the work carried out in the operating manual in order to preserve the right to guarantee, including for systems for which there is not legal obligation to monitor impermeability.

- With a system coolant **total filling quantity of 3 kg – 30 kg** or from **6 kg** in hermetic systems and from 01.01.2017 with a total filling quantity of 5-50 t CO<sub>2</sub>-equivalent or from 10 t CO<sub>2</sub>-equivalent in hermetic systems:
  - ➔ **Inspections** carried out by certified personnel at intervals of no more than **12 months** and documentation of the work performed in accordance with valid regulations. This documentation must be retained for at least 5 years.



Certified people are those who have proof of expertise for the European Community for work on stationary refrigeration systems (heat pumps) and air conditioning systems, according to the F-Gases Directive (EC) 303/2008.

- up to 3 kg coolant fill quantity: Expert certificate category II
- 3 kg coolant fill quantity or over: Expert certificate category I

#### 9.2 Periodic Checks

Depending on the design, a part of the depressurised storage tank water can evaporate over a certain period of time. This process does not represent a technical fault, but is rather a physical property which requires periodic checking and correction, if necessary, by the operator.

- Remove the protective cover (see chap. 4.4).
- Visual check of the water storage tank level (filling level indicator)
  - ➔ Top up the water if necessary (see chap. 9.2.1 and 9.2.2), and determine the cause for the incorrect filling level and rectify.



#### CAUTION!

Filling the storage tank container with excessive water pressure or with too high a flow speed can cause damage to the DAIKIN EKHHP.

- Only fill with a water pressure <6 bar and a flow speed <15 l/min.



### CAUTION!

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.

#### 9.2.1 Filling, topping up storage tank - without installed solar system



Observe the information on the water connection and water quality in accordance with Chap. 2.4 and 4.7.

- Connect the **filling hose** with backflush prevention (1") to the  connection "**DrainBack Solar - feed**" (see fig. 9-1, **item 1**).
- **Fill** the storage tank on the DAIKIN EKHHP **until water comes out of** the connection (fig. 9-1, **item 23**), that has **been connected as the safety overflow**.
- Disconnect the filling hose with backflush prevention (1") again.

#### 9.2.2 Filling, topping up storage tank - with optional KFE filling connection or with installed DrainBack solar system DrainBack

- Without solar system: **KFE filling connection (accessory KFE BA)** on the filling and draining connection on the DAIKIN EKHHP (see fig. 3-1, item 10)  
or  
without solar system: Mount the **KFE filling connection (accessory KFE BA)** to the connection bracket of the  control and pump unit (EKS4RPS4A).
- Connect the **filling hose** with backflush preventer (1/2") to the previously installed **KFE cock**.
- **Fill** the storage tank on the DAIKIN EKHHP **until water comes out of** the connection (fig. 9-1, **item 23**), that has **been connected as the safety overflow**.
- Disconnect the filling hose with backflush prevention (1/2") again.

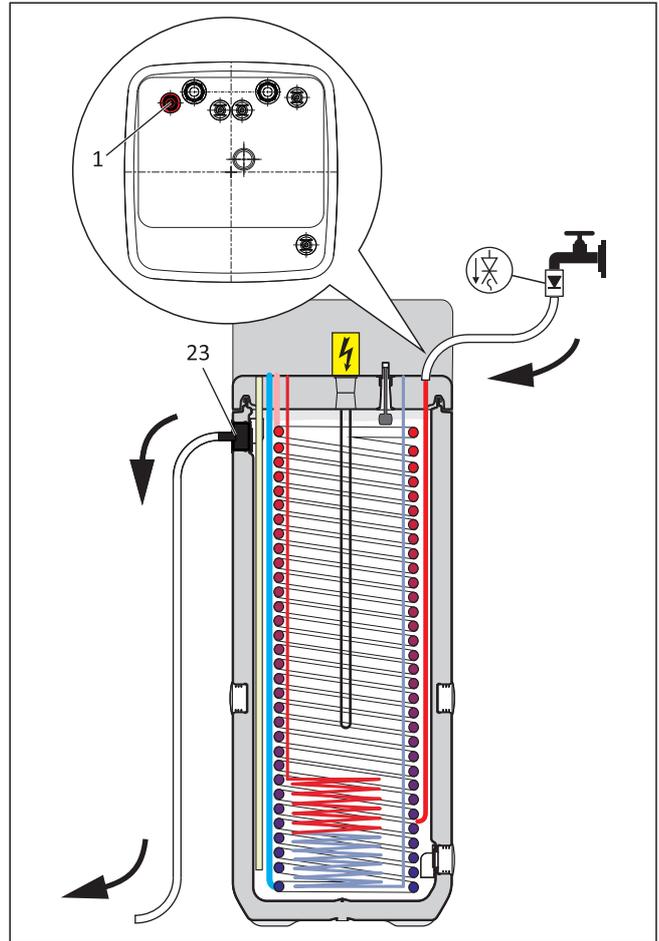


Fig. 9-1 Filling the storage tank - without solar system

# 10 Technical data

## 10 Technical data

Type		EKHHP300A*2V3	EKHHP500A*2V3	
Can be used with an external heat pump unit		ERWQ02AAV3		
Dimensions and weights		Unit		
Dimensions (H x W x D)		cm	177.5 x 59.5 x 61.5	
Tilt dimension		cm	190.0	
Empty weight		kg	70	
Storage tank				
Maximum permissible storage water temperature		°C	85	
Total storage capacity		litres	294	
Domestic water heat exchanger (stainless steel 1.4404)	Water capacity heat exchanger	litres	25.6	
	Maximum operating pressure PMW	bar	6	
	Domestic water heat exchanger surface	m <sup>2</sup>	5.1	
Pressurised solar heat exchanger (stainless steel 1.4404)	Water capacity heat exchanger	litres	—	
	Heat exchanger surface area	m <sup>2</sup>	—	
Thermal performance data <sup>1)</sup>	Hot water quantity without re-heating at a draw-off rate of 10 l/min (T <sub>S</sub> =45 °C)	litres	98 <sup>2)</sup>	
	Hot water quantity without re-heating at a flow rate of 10 l/min (T <sub>S</sub> =50 °C)	litres	169 <sup>2)</sup>	
	Hot water quantity without re-heating at a flow rate of 10 l/min (T <sub>S</sub> =55 °C)	litres	229 <sup>2)</sup>	
Pipe connections <sup>3)</sup>	Cold and hot water	inches	1" AG	
	Solar connections		inches	1" IG
			inches	—
<b>Refrigerant circuit</b>				
Number of circuits		—	1	
Storage tank charging heat exchanger (stainless steel 1.4404)	Volume	litres	1.01	
	Heat exchanger surface area	m <sup>2</sup>	2.5	
Pipe connections <sup>3)</sup>	Number		—	
	Liquid line	Type	—	
		External Ø	inches	1/4" AG
	Gas lines	Type	—	
		External Ø	inches	3/8" AG
<b>Operating data</b>				
Operating range	Hot water generation without / with Booster-Heater (min/max)	°C	40 to 55 / 75	
Ambient temperature installation room		°C	2 - 35	
Heating output	Just heat pump (T <sub>A</sub> = 7 °C / T <sub>S</sub> = 10 - 55 °C)	kW	2.2	
	Only Booster-Heater (BSH)	kW	2	

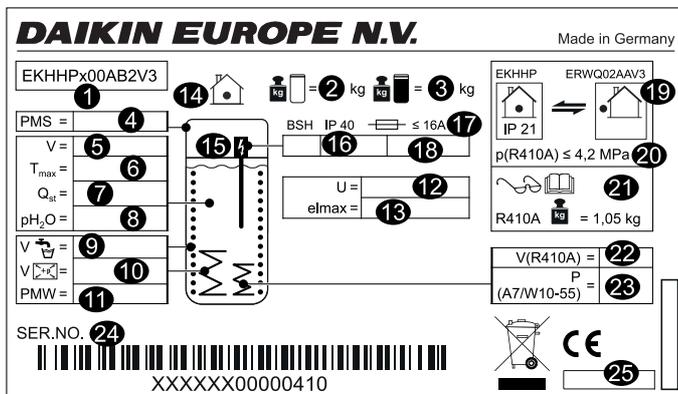
Type		EKHHP300A*2V3	EKHHP500A*2V3
<b>Electrical data:</b>			
Protection type		—	IP XOB
Voltage supply EKHHP	Phases	—	1
	Voltage	V	230
	Voltage range	V	Voltage ±10%
	Frequency	Hz	50
Mains connection <sup>4)</sup>	Exterior heat pump unit for EKHHP	—	4G
	Booster-Heater(BSH)	—	3G (1 phase)

- 1)  $T_{CW}$  Cold water input temperature = 10 °C  
 $T_{DHW}$  Hot water draw-off temperature = 40 °C  
 $T_S$  Storage target temperature (charge state before drawing off)
- 2) Charge hot water storage tank only with heat pump (without Booster-Heater).

- 3) AG Male thread  
 IG Female thread
- 4) Number of individual wires in the connection cable, including protective earth. The cross-section of the individual lines is dependent on the current load, the length of the connection cable and the respective legal provisions.

Tab. 10-1 Basic data DAIKIN EKHHP

### 10.1 Information on the type plate



- 1 Equipment type
- 2 Net weight
- 3 Total weight filled
- 4 Max. permissible operating pressure PMS (heating)
- 5 Total storage capacity
- 6 Max. permissible operating temperature  $T_{max}$
- 7 Standby heat expenditure in 24 hours with 60 °C (Storage tank)  $Q_{st}$
- 8 Operating pressure of storage water  $p_{H_2O}$
- 9 Nominal capacity of drinking water
- 10 Pressurised solar heat exchanger - nominal content (only EKHHP500A\*2V3)
- 11 Max. operating pressure PMW (plumbing)
- 12 Nominal voltage U
- 13 Electrical power consumption  $e_{lmax}$
- 14 Heat pump indoor unit
- 15 Booster-Heater BSH
- 16 Protection class Booster-Heater BSH
- 17 Fuse Booster-Heater BSH
- 18 Output / power supply Booster-Heater BSH
- 19 Refrigerant circuit
- 20 Max. operating pressure (refrigerant circuit)
- 21 Total coolant filling quantity
- 22 Storage tank charging heat exchanger - nominal content
- 23 Nominal output / A 7/W10-55
- 24 Serial number (specify for complaints and inquiries)
- 25 Date of production

Fig. 10-1 Type plate



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