User, Installations and Maintenance Manual

Domestic Hot Water Heat Pump
Monobloc type

EKHHEU200CV37
EKHHEU200PCV37
EKHHEU260CV37
EKHHEU260PCV37

UK version

kiwa approved KUK G3

kiwa approved KUKreg4 ATS 3

1. GENERAL SAFETY PRECAUTIONS

CAUTION:

- **This manual is an integral part of the product. Keep it with care with the appliance, and hand it on to the next user/owner in case of change of property.**
- **These instructions are also available from the manufacturer's customer service and its website: www.daikin.eu**
- **Read the instructions and warnings in this manual carefully, they contain important information regarding safe installation, use and maintenance.**

1.1 SAFETY WARNINGS

Do not use the appliance for any other than its specified use. The manufacturer is not liable for damage resulting from improper or incorrect use or failure to observe the instructions given in this manual.

This appliance is not intended for use by persons (including children) whose physical, sensory or mental capacities are reduced, or persons without experience or knowledge, unless they have been given instructions and monitored previously when using the appliance by a person responsible for their safety.

Children must be supervised to ensure they do not play with the appliance.

This appliance may be used by children 8 years of age or older, and those with reduced physical, sensory or mental capacity or lack of experience or knowledge, if they are properly supervised or if instructions for the safe use of the appliance have been given to them and the risks involved are clear to them.

Children are not permitted to play with the appliance.

Water heated to over 50°C can cause immediate serious burns if delivered directly to the taps. Children, disabled persons and the elderly are particularly at risk. It is recommended to install a thermostatic mixer valve on the water delivery line.

This appliance must not be cleaned or maintained by children without supervision.

Do not touch the appliance when barefoot or if any part of your body is wet.

Do not leave flammable materials in contact with or in the vicinity of the appliance.

The appliance must be emptied when it is out of service in an area subject to subzero emperatures. Drain as described in the appropriate chapter.

1.2 INSTALLATION CAUTION

The appliance must be installed and commissioned by a qualified technician in accordance with local legislation and health and safety regulations. All power circuits must be shut off before you open the terminal block.

Incorrect installation can result in damage to property and injury to persons and animals; the manufacturer is not liable for the consequences.

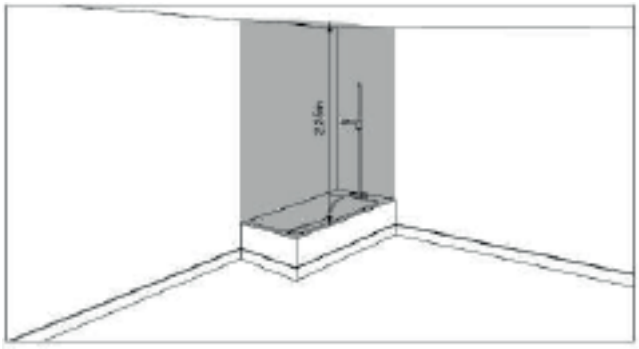
This product is heavy, handle with care and install the product in a frost-free room.

Ensure that the floor can support the weight of the water filled appliance.

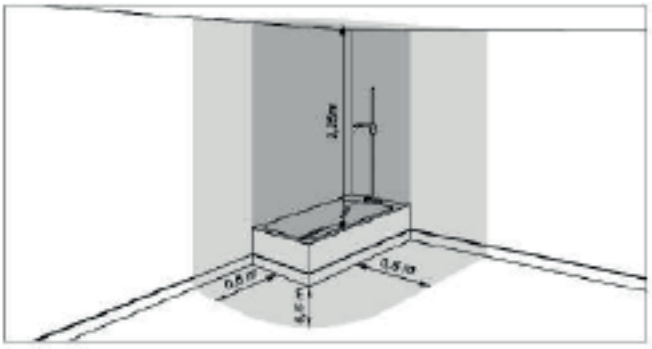
The destruction of the appliance by overpressure due to the blocking of the safety device inactivates the warranty.

1.3 INSTALLATION WARNINGS

When installing this product in a bathroom do not use the “Prohibited space” and respect, at least, the “Protected space” listed as shown below:



Prohibited space



Protected space

This product must be placed in an accessible location.

The water heater must be fixed to the ground using the fixing brackets provided for this purpose and adhesives are not considered to be a reliable fixing means.

This product is designed to be used at a maximum altitude of 2000 m.

Refer to description and illustrations in paragraphs “7.1 Preparation of place of installation" on page 14, “7.2 Securing to the floor" on page 15 and “7.4 Securing and connections of this appliance" on page 17.

1.4 AERAULIC CONNECTIONS WARNINGS

The simultaneous operation of an open-chamber hearth (e.g. open fireplace) and the heat pump causes a dangerous negative pressure in the room. The negative pressure can cause the return of exhaust gases into the room. Do not operate the heat pump together with an open-chamber hearth. Only use sealed-chamber hearths (approved) with separate combustion air supply. Seal the doors of boiler rooms that do not have the inflow of combustion air in common with living areas.

A suitable protection grille must be installed both at the air intake and outtake connections to prevent any foreign bodies from going inside the equipment.

Refer to description and illustrations in the “7.4 Securing and connections of this appliance" on page 17.

1.5 HYDRAULIC CONNECTIONS WARNINGS

It is mandatory that the installation complies with part G3 of the Building Regulations. For that the unit is factory equipped with a T/P safety relief valve (set = 90°C/7bar) and is supplied with a G3 kit composed by expansion vessel, PRSV device to be installed at the water inlet of the unit and that integrates a check-valve, a water pressure reducer (default set = 3,5bar), a water safety relief valve (set=6bar).

The outlet connection of both safety relief valves must be connected to a tundish. The discharge pipes from safety devices (tundish) must be installed to fully comply with Part G3 of the Building Regulations (latest edition).

The minimum inlet water pressure for the correct operation of the appliance is 0.15 MPa (1.5 bar).

Connect a rubber pipe to the condensate drain, taking care not to force too much so as not to break the drain pipe and refer to “7.6.1 Condensate drain connection" on page 20".

Use only connecting pipes (not supplied), rigid and resistant to electrolysis both at the inlet of cold water and at the outlet of hot water from the device.

For models that incorporate a heat exchanger (solar coil), the circuit must not exceed 1.0 MPa (10 bar) and its temperature must not exceed 80°C.

Refer to description and illustrations in the “7.5 Hydraulic connections" on page 17 and “7.7 Integration with solar thermal system (only for EKHHEU200PCV37 and EKHHEU260PCV37 models)" on page 20.

1.6 ELECTRICAL CONNECTIONS WARNINGS

The appliance shall be installed in accordance with national wiring regulations.

The electrical installation must include an all-pole disconnection with a separation of the contacts on all poles capable of guaranteeing complete disconnection in the overvoltage category III upstream of the appliance, complying with local installation rules in force .

The device must be protected by an adequate differential switch (max 30 mA). The type of differential switch should be selected by assessing the type of electrical devices used by the system as a whole.

Earth connection is mandatory. The manufacturer of the appliance shall not be held liable for any damage caused by failure to earth the system or due to anomalies in the electric power supply.

It is strictly forbidden to connect the appliance at the AC mains through extensions or by a power strip.

Before taking off the cover, make sure that the power is turned off to prevent injury or electric shock.

Refer to description and illustrations, respectively, in the “7.8 Electrical connections" on page 21 and “7.9 Wiring diagram" on page 23.

1.7 SERVICING - MAINTENANCE - TROUBLESHOOTING WARNINGS

Any repairs, maintenance, plumbing and electrical connections must be done by qualified technicians using original spare parts only. Failure to observe the above instructions can compromise the safety of the appliance and relieves the manufacturer of any liability for the consequences.

To empty the appliance: turn off the power supply and cold water, open the hot water taps and then operate the drain valve of the safety device.

The pressure relief valve must be operated regularly to remove scale deposits and to ensure that it is not blocked.

The appliance is equipped with a supply cord that if damaged, must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

The appliance incorporates a time-lag miniature fuse-link that if broken, it must be replaced with a fuse model “T5AL250V” in accordance with IEC 60127.

Refer to description and illustrations, respectively, in the “10. TROUBLESHOOTING" on page 33 and “11. MAINTENANCE" on page 35.

2. INTRODUCTION

This installation and maintenance manual is an integral part of the heat pump (hereinafter equipment).
The manual must be kept for future reference until dismantling.
It is intended for the specialist installer (installers - maintenance technicians) and the end user. The manual describes the installation procedures to be observed for correct and safe operation of the equipment, and the methods of use and maintenance.
In case of sale or transfer to another user, the manual must stay with the unit.
Before installing and/or using the equipment, read this instruction manual carefully and in particular chapter 5 on safety.
The manual must be kept with the unit and always be available to qualified installation and maintenance personnel.
The following symbols are used in the manual to highlight the most important information:

	**Caution**
	**Procedures to be followed**
	**Information / Suggestions**

2.1 Products

Dear Customer,
Thank you for purchasing this product.
Our company, always attentive to environmental issues, uses low environmental impact technologies and materials for its products, in compliance with EU WEEE standards (2012/19/EU – RoHS 2011/65/EU).

This product complies with EN12897:2016 standard - Water supply - Specification for indirectly heated unvented (closed) storage water heaters.

2.2 Disclaimer

The conformity of these operating instructions with the hardware and the software has been carefully checked. Nevertheless there may be differences; and no responsibility is assumed for total conformity.
In the interest of technical improvement, we reserve the right to make construction or technical data changes at any time. Any claim based on indications, figures, drawings or descriptions is therefore excluded. They are subject to possible errors.
The constructor declines any liability for damage due to command errors, improper or inappropriate use, or due to unauthorized repairs or modifications.

2.3 Language

The manual was written in Italian (IT), the original language of the manufacturer.
Any translations into additional languages must be made from the original instructions.
The Manufacturer is held responsible for the information contained in the original instructions; translations into different languages cannot be fully verified, therefore, if an inconsistency is found, it is necessary to follow the original language text or contact our Technical Documentation Office.

2.4 Copyright

These operating instructions contain information protected by copyright. No part of these operating instructions may be photocopied, duplicated, translated or recorded on storage media without prior permission from the supplier. Any violations will be subject to compensation for damage. All rights, including those resulting from the granting of patents or registration of utility models, are reserved.

2.5 Available versions and configurations

This appliance incorporates a 1.9 kW heat-pump unit and can be set up in different configurations, according to possible integration with additional heating sources (e.g. solar heating) or depending on boiler capacity.

Version	Configuration description
EKHHEU200CV37 **EKHHEU260CV37**	Air heat pump for domestic hot water (DHW) production
EKHHEU200PCV37 **EKHHEU260PCV37**	Air heat pump for DHW production prearranged for the solar thermal system.
EKUHWG3D24	MANDATORY OPTION: G3 kit 24l to comply with UK building regulation

3. HANDLING AND TRANSPORT

The equipment comes in a cardboard box(*).
It is secured to a pallet by means of three screws.
For unloading operations use a forklift or an adequate pallet truck.
The packed equipment can be placed horizontally and back down to facilitate undoing the anchoring screws.
Unpacking must done carefully so as not to damage the equipment casing if using knives or cutters to open the cardboard packaging.
After removing the packaging, check the integrity of the unit. If in doubt, do not use the unit; contact authorized technical personnel.
Before eliminating the packaging, according to the applicable environmental protection regulations, make sure all the accessories supplied have been removed.

(*) Note: The type of packaging may undergo variations at the discretion of the manufacturer.
For the entire period the equipment remains idle, awaiting commissioning, it is advisable to put it in a place protected from atmospheric agents

3.1 Receipt

In addition to the units, the packages contain accessories and technical documentation for use and installation. Check that the following are present:

- 1x user, installation and maintenance manual;
- 3x fastening brackets plus screws;
- 1x thermal cut-out (only for EKHHEU200PCV37 and EKHHEU260PCV37).

For the entire period the equipment remains idle, awaiting commissioning, it is advisable to put it in a place protected from atmospheric agents.

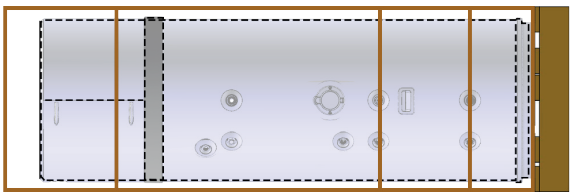
Positions <u>allowed</u> for transport and handling

fig. 1

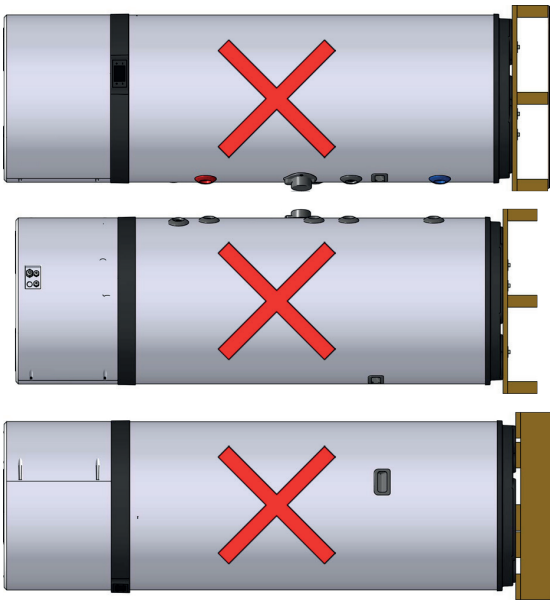
ATTENTION! During the product handling and installation phases the upper part must not be stressed in any way, as it is not structural.

ATTENTION! Horizontal transport is allowed only for the last km according to that indicated (see "Positions not allowed for transport and handling"), making sure supports are positioned in such a way at the bottom of the boiler so as not to stress the upper part, as it is not structural. During horizontal transport the display must face upwards.

Position allowed only for the last km



Positions not allowed for transport and handling



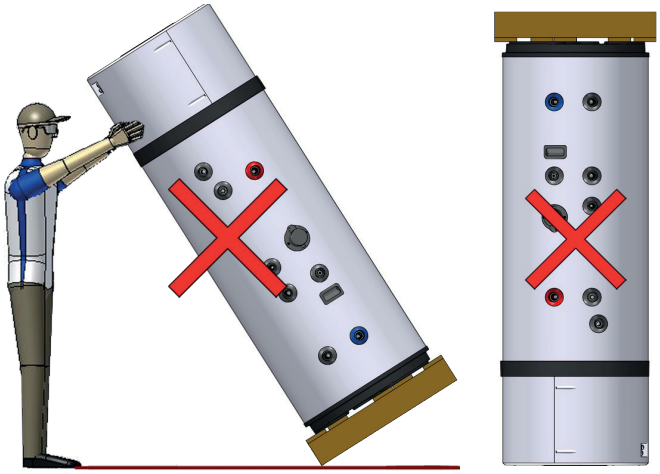


fig. 2

4. G3 KIT ACCESSORY

It is mandatory that the installation complies with part G3 of the Building Regulations. For that the unit is factory equipped with a T/P safety relief valve (set = 90°C/7bar) and is supplied with a G3 kit composed by:

- **a)** 1x PRSV: Pressure reducing valve/pressure relief valve combination (check valve, water pressure regulator default =3,5 bar, water pressure safety valve set=6bar), water inlet and water outlet 22 mm connection, discharge piping connection 15 mm
- **b)** 1x Adaptor (22 mm×3/4" Female BSP)
- **c)** 1x Tee piece (22 mm×22 mm×22 mm)
- **d)** 2x tundishes (15 mm inlet, 22 mm outlet)
- **e)** Wall mounting set for expansion vessel
- **f)** 1x expansion vessel 24 liters preset=3,5bar male connection 3/4" BSP

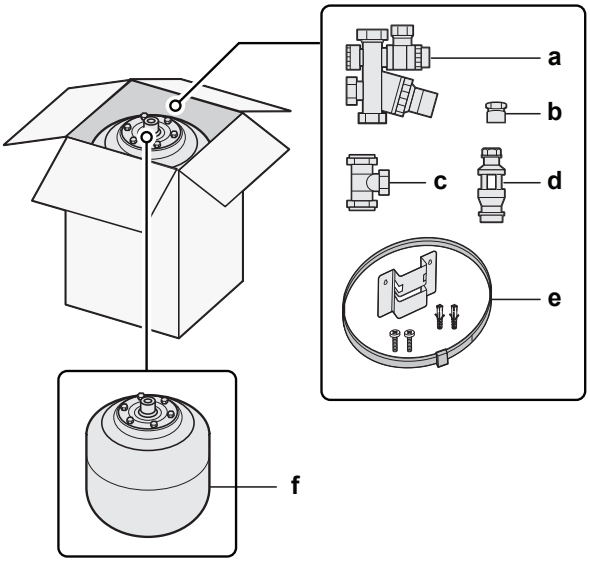


fig. 3

NOTE: All piping MUST be installed according to section G3 of the Building Regulations.

5. CONSTRUCTION CHARACTERISTICS

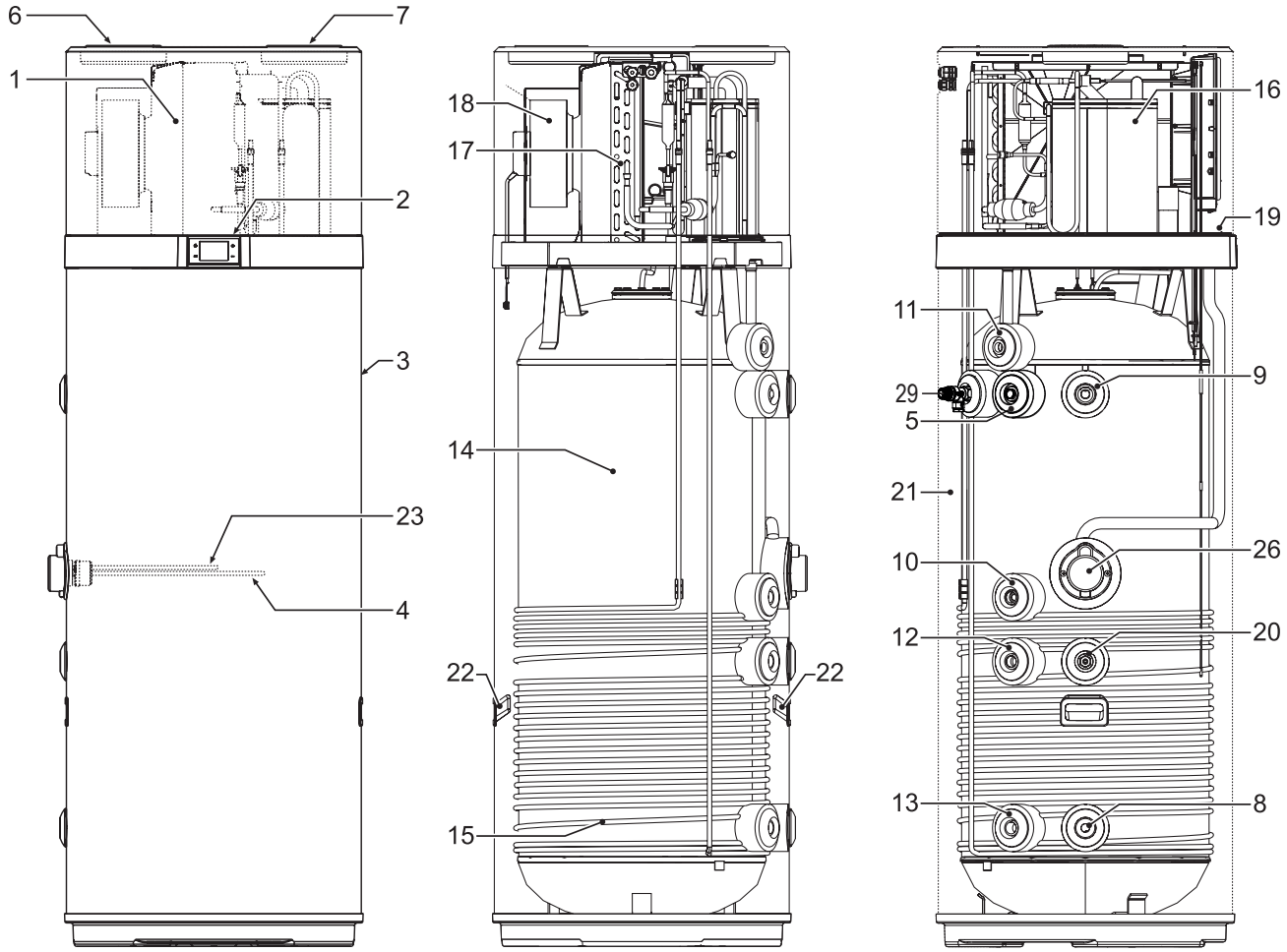
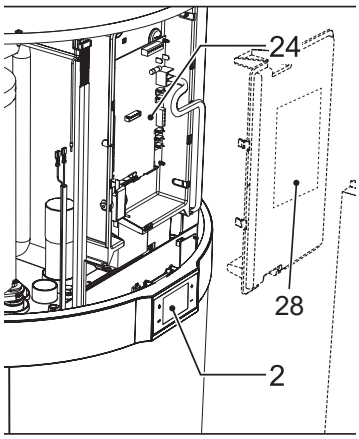


fig. 4



1 Heat pump
2 User interface
3 Steel casing
4 Heating element
5 Magnesium anode
6 Ventilation air inlet (Ø 160 mm)
7 Ventilation air outlet (Ø 160 mm)
8 Cold water inlet connection Ø 1"G
9 Hot water outlet connection Ø 1"G
10 Prearrangement for recirculation Ø 3/4"G
11 Condensate drain Ø 1/2"G - Plastic outlet connection
12 Prearrangement for solar coil Inlet Ø 3/4"G
Only for models **EKHHEU200PCV37**
EKHHEU260PCV37
13 Prearrangement for solar coil outlet Ø 3/4"G
Only for models **EKHHEU200PCV37**
EKHHEU260PCV37
14 Steel tank with vitreous enamel coating according to DIN 4753-3
15 Condenser
16 Rotary compressor
17 Finned pack evaporator
18 Electronic fan
19 Boiler probes
20 Probe holder pocket for solar Ø int =6mm, L=90mm
Only for models **EKHHEU200PCV37**
EKHHEU260PCV37
21 Polyurethane insulation
22 Carrying handles
23 Tube for safety thermostat bulb
24 Power board
26 Compartment for accessing heating element and safety thermostat bulb
28 Wiring diagram
29 T/P relief safety valve

5.1 Dimensional data

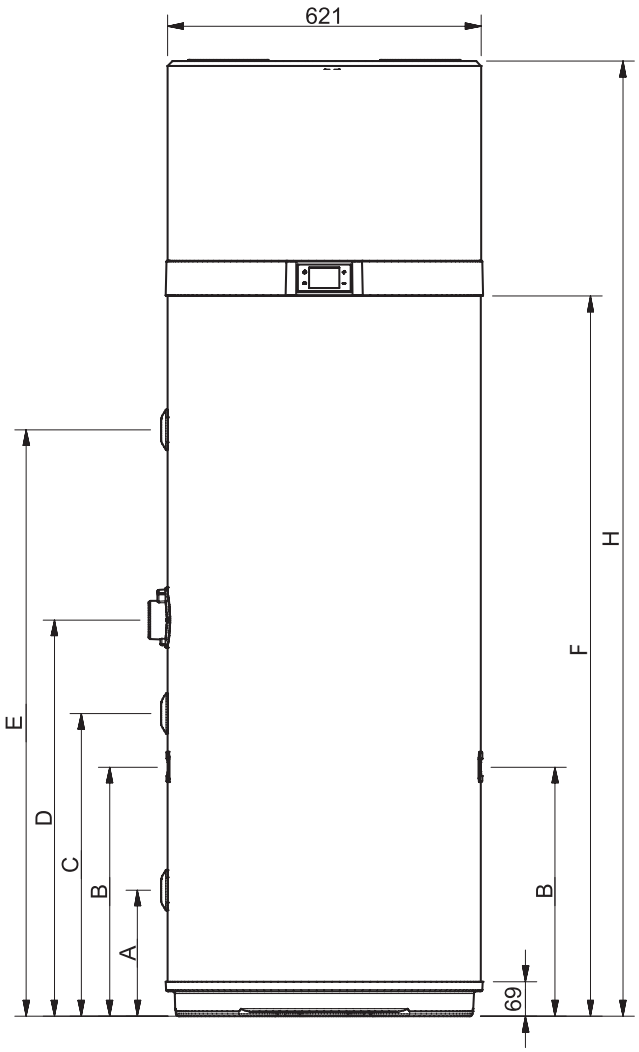


fig. 5

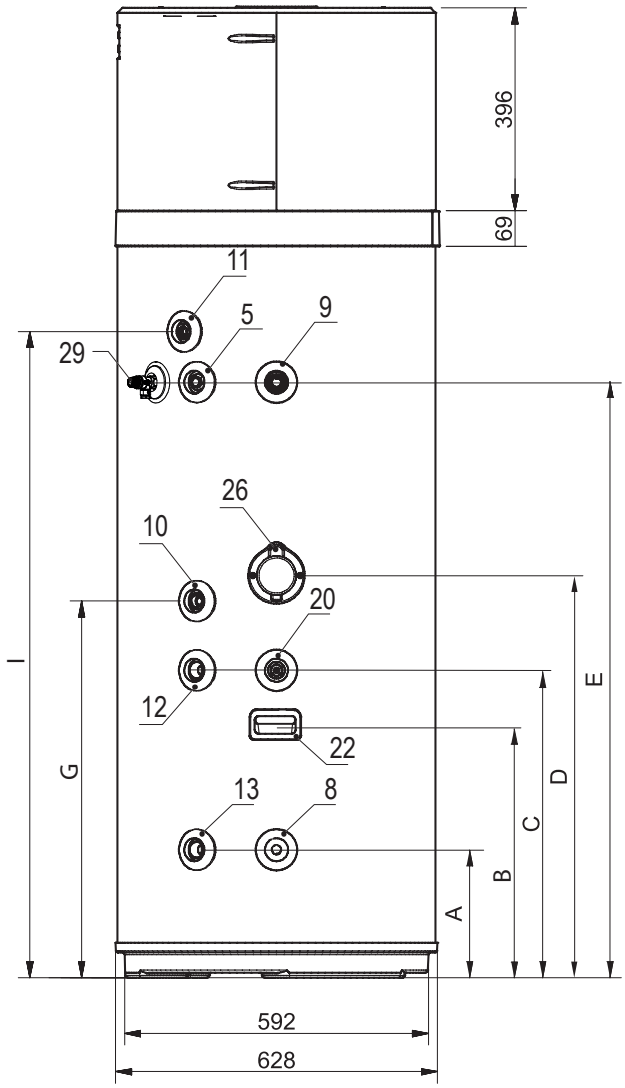


fig. 6

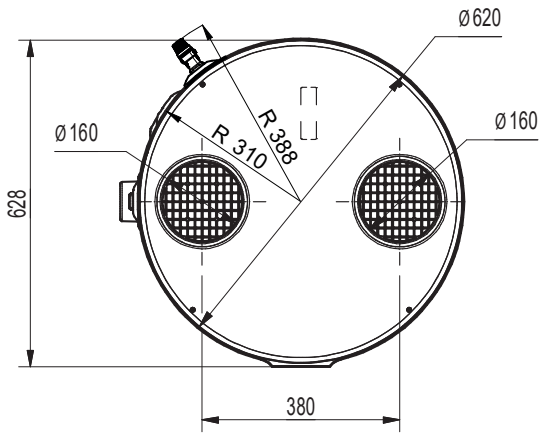


fig. 7

MODEL	EKHHEU200PCV37	EKHHEU260PCV37	EKHHEU200CV37	EKHHEU260CV37	UM
A	250	250	250	250	mm
B	490	490	490	490	mm
C	600	600	/	/	mm
D	705	785	705	785	mm
E	877	1162	877	1162	mm
F	1142	1427	1142	1427	mm
G	705	735	705	735	mm
H	1607	1892	1607	1892	mm
I	976	1261	976	1261	mm

Legend on previous page.

5.2 Technical characteristics

Models		EKHHEU200CV37	EKHHEU260CV37	EKHHEU200PCV37	EKHHEU260PCV37	U.m.
General data	Voltage supply	230Vac-50Hz-1PH				-
	Tank water content - Vnom	192	250	187	247	l
	Maximum inlet water pressure	0,7	0,7	0,7	0,7	MPa
	Empty weight	85	97	96	106	kg
	Operating weight	277	347	283	353	kg
	Dimensions (ϕxh)	621 x 1607	621 x 1892	621 x 1607	621 x 1892	mm
	Max. Hot water temperature with heat pump	62	62	62	62	°C
	Max. Hot water temperature with additional electric heater	75	75	75	75	°C
Tank	Material	Enameled steel				-
	Cathodic protection	Mg rod anode				-
	Insulating type	Polyurethane				-
	Insulation thickness	50	50	50	50	mm
	T/P relief safety valve	90 / 7				°C / bar
Heat pump electrical data	Average power input in heating	430	430	430	430	W
	Maximum power input	530	530	530	530	W
	Maximum current input	2,43	2,43	2,43	2,43	A
Electric heater electrical data	Supply voltage	230Vac-50Hz				
	Power input	1500	1500	1500	1500	W
	Current input	6,5	6,5	6,5	6,5	A
Electrical data Heat pump + electric heater	Maximum power input	1960	1960	1960	1960	W
	Maximum current input	8,5	8,5	8,5	8,5	A
Air circuit	Fan type	Centrifugal				-
	Air volume flow rate	450	450	450	450	m^3/h
	Available external static pressure	117	117	117	117	Pa
	Ducts diameter	160	160	160	160	mm
Refrigerant circuit	Compressor	Rotary				-
	Refrigerant	R134a				-
	Refrigerant charge	1	1	1	1	kg
	Evaporator	Copper-aluminum finned coil				-
	Condenser	Aluminum tube wound outside tank				-
Solar coil	Material	-	-	Enameled steel	Enameled steel	-
	Surface	-	-	0,72	0,72	m^2
	Max pressure	-	-	1	1	MPa
	Rated volume	-	-	3,5	3,5	l
	Rated flow rate	-	-	15	15	l/min
	Pressure drop	-	-	34	34	mbar
Data according to EN 16147: 2017 standard for AVERAGE climate (unit in ECO mode, Hot water setpoint = 55 ° C; Inlet water = 10 ° C; Inlet air temp = 7 ° C DB / 6 ° C WB) * according to European regulation 812/2013	Load profile	L	XL	L	XL	-
	Water heating energy efficiency class *	A+	A+	A+	A+	-
	Water heating energy efficiency - η_{wh}	135	138	135	138	%
	COP_{DHW}	3,23	3,37	3,23	3,37	-
	Maximum volume of mixed water at 40 °C - V_{40}	247	340	241	335	l
	Reference hot water temperature - θ'_{wh}	52,5	53,2	52,5	53,2	°C
	Rated heat output - Prated	1,339	1,249	1,339	1,249	kW
	Heating up time - t_h	06:27	09:29	06:27	09:29	h:min
	Annual electricity consumption - AEC	761	1210	761	1210	kWh
	Stand-by power input (P_{es})	26	28	26	28	W
Data according to EN 12102-2: 2019 ECO mode with Inlet air temp = 7 ° C DB / 6 ° C WB	Indoor sound power level	53	51	53	51	dB(A)
	Outdoor sound power level	45	44	45	44	dB(A)
Data according to EN 12897: 2016	Hot water capacity	-	-	160,4	219,2	l
	Standing heat loss 24 hours*	1,60	2,01	1,56	1,99	kWh/24h

6. IMPORTANT INFORMATION

6.1 Compliance with European regulations

This heat pump is a product intended for domestic use in compliance with the following European directives:

- Directive 2012/19/EU (WEEE)
- Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)
- Directive 2014/30/EU electromagnetic compatibility (EMC)
- Directive 2014/35/EU low voltage (LVD)
- Directive 2009/125/EC eco-friendly design
- Regulation 2017/1369/EU energy labeling

6.2 Casing protection rating

The equipment protection rating is: **IP24**.

6.3 Operating limits

PROHIBITION! This product is not designed or intended for use in hazardous environments (due to the presence of potentially explosive atmospheres - ATEX or with required IP level higher than that of the unit) or in applications requiring safety features (fault-tolerant, fail-safe) which may be systems and/or technologies to support life or any other context in which the malfunction of an application can lead to death or injury to people or animals, or serious damage to property or the environment.

NB!: If the possibility of a product fault or failure can cause damage (to people, animals and property) it is necessary to provide for a separate functional surveillance system equipped with alarm functions in order to exclude such damage. It is also necessary to arrange the replacement operation!

Appliance is not designed for installation outdoors but in a "closed" place not exposed to the elements.

6.4 Operating limits

The product in question is designed exclusively for heating hot water for sanitary uses within the limits described below. For this purpose, it must be connected to the domestic water supply and the power supply (see chapter "7. INSTALLATION AND CONNECTIONS").

6.4.1 Temperature range

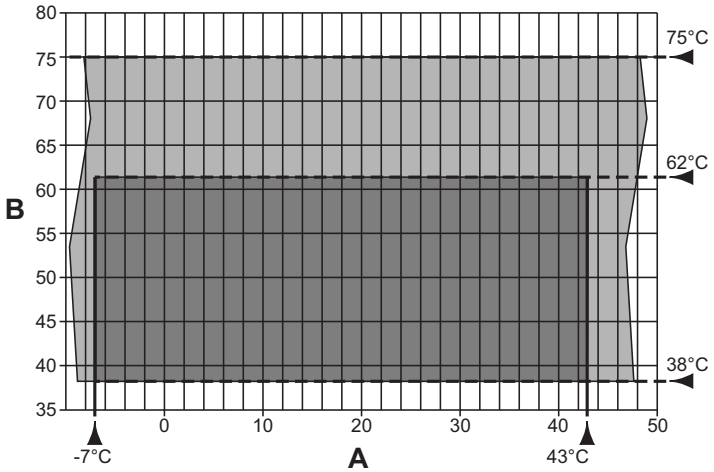


fig. 8- Chart

A = Inlet air temperature (°C)
B = Hot water temperature (°C)
= Operating range for heat pump (HP)
= Integration with heating element only

6.4.2 Water hardness

The unit must not operate with water of hardness under 12°F; however, with particularly hard water (above 25°F), it is advisable to use a properly calibrated and monitored water softener, in this case the residual hardness must not fall below 15°F.

NB!: In the design and construction phase of the plants, the applicable local regulations and provisions must be respected.

6.5 Basic safety rules

- The product must be used by adults;
- Do not open or disassemble the product when it is electrically powered;
- Do not touch the product if barefoot or with wet or damp parts of the body;
- Do not pour or spray water on the product;
- Do not climb, sit and/or place any type of object on the product.

6.6 Information on the refrigerant used

This product contains fluorinated greenhouse gases included in the Kyoto protocol. Do not release these gases into the atmosphere.
Type of refrigerant: HFC-R134a.

NB!: Maintenance and disposal operations must only be carried out by qualified personnel.

7. INSTALLATION AND CONNECTIONS

7.1 Preparation of place of installation

The product must be installed in a suitable place, i.e. to allow normal use and adjustment operations as well as routine and extraordinary maintenance.
The necessary operating space must therefore be prepared by referring to the dimensions given in fig. 9 and fig. 10.

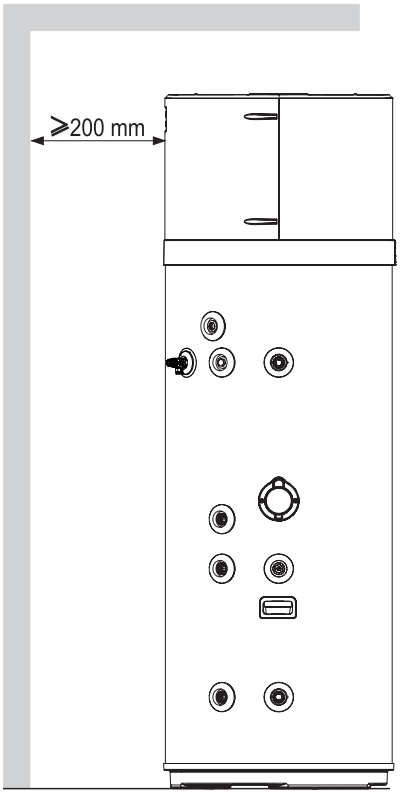


fig. 9- Minimum spaces

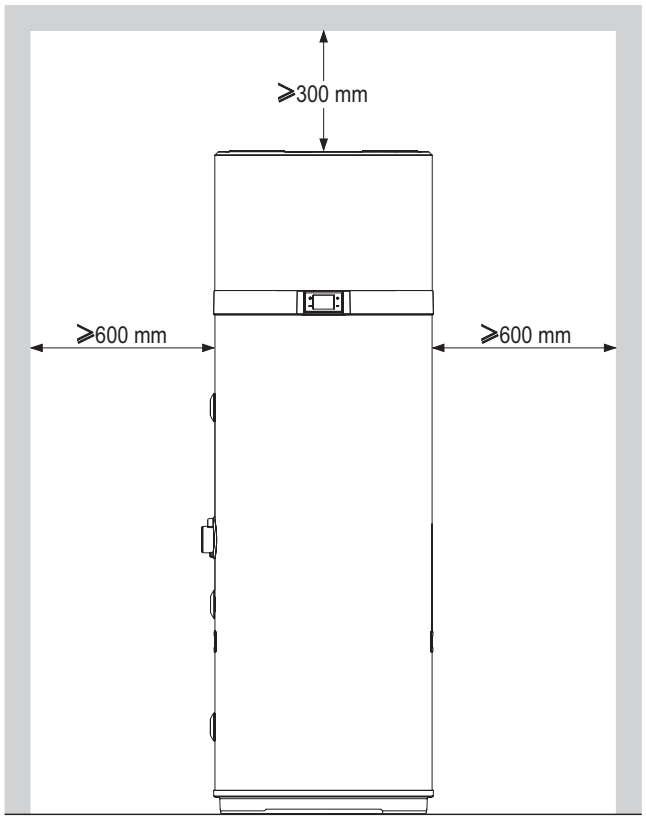


fig. 10- Minimum spaces

The room must also be:

- Equipped with adequate water and electricity supply lines;
- Prearranged for the condensation water discharge connection;
- Prearranged with adequate water drains in case of boiler damage or safety valve intervention or the breakage of pipes/connections;
- Equipped with possible containment systems in case of serious water leakage;
- Sufficiently illuminated (where required);
- Not less than 20 m3 in volume;
- Protected against frost and be dry.

ATTENTION! To avoid the propagation of mechanical vibrations, do not install the equipment on floors with wooden beams (e.g. in the attic).

7.2 Securing to the floor

To secure the product to the floor, fasten the supplied brackets as shown in fig. 11.

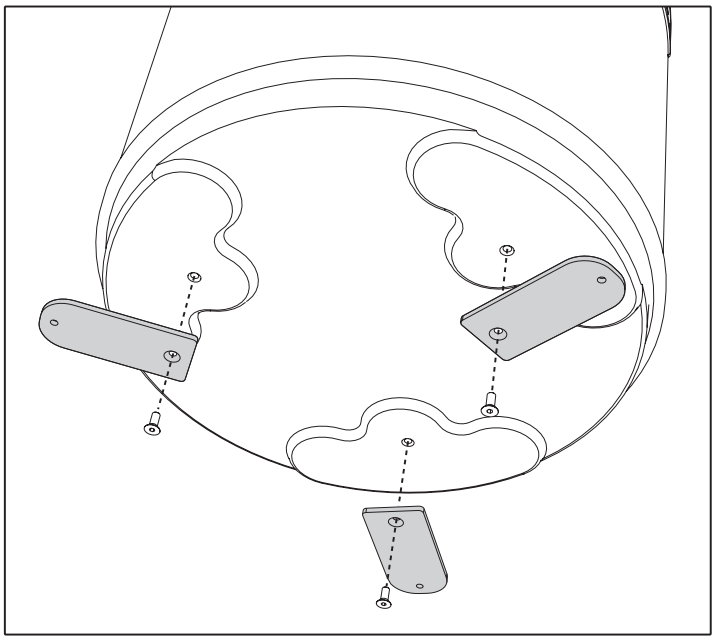


fig. 11- Fastening brackets

Then secure the unit to the floor with the aid of suitable plugs, not supplied, as shown in fig. 12.

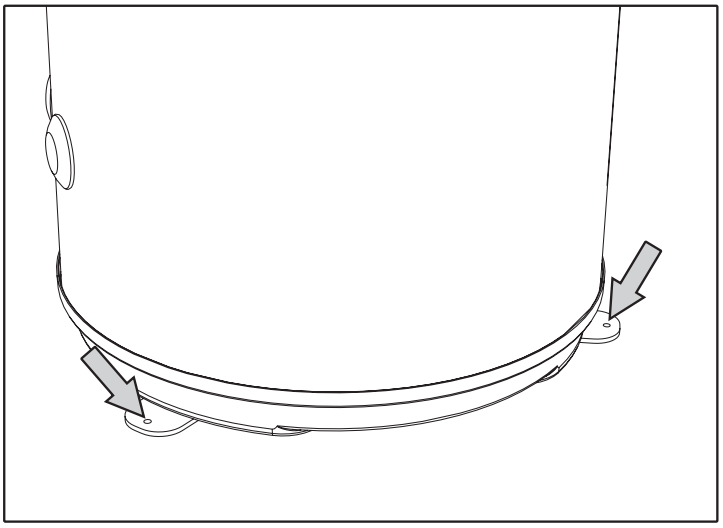


fig. 12- Securing to the floor

7.3 Aeraulic connections

In addition to the spaces indicated in 7.1, the heat pump.requires adequate air ventilation.
Create a dedicated air channel as indicated in fig. 13.

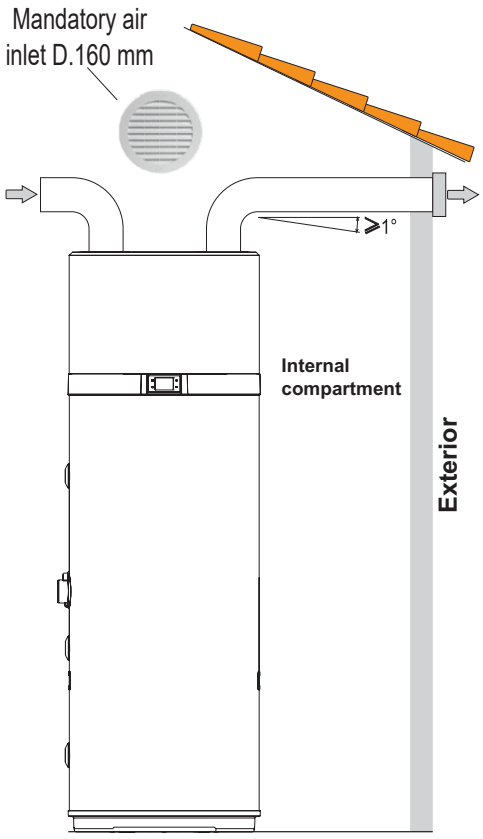


fig. 13- Example of air outlet connection

It is also important to ensure adequate ventilation of the room containing the unit. An alternative solution is shown in the figure below (fig. 14): it provides for a second ducting that takes air from the outside instead of directly from the inside room.

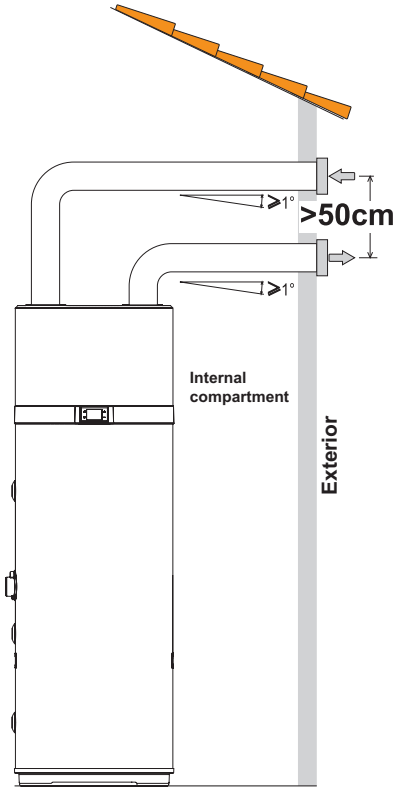
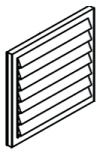


fig. 14– Example of air outlet connection

Install each air channel, making sure:

- It does not weigh down on the equipment.
- It allows maintenance operations.
- It is adequately protected to prevent the accidental intrusion of materials inside the equipment.
- The connection to the outside must be done with suitable, non-flammable piping.
- The total equivalent length of the extraction pipes plus the delivery, including grilles, must not exceed 12 m.

The table gives the characteristic data of commercial ducting components with reference to nominal air flows and diameters 160 mm.

Data	Smooth straight pipe	Smooth 90 ° curve	Grille	UM
Type				
Effective length	1	\	\	m
Equivalent length	1	2	2	m

During operation, the heat pump tends to lower the room temperature if the air ducting is not to the outside.

A suitable protection grille must be installed at the air extraction pipe to the outside to prevent any foreign bodies from entering inside the equipment. To ensure maximum product performance, the grille must be selected from those with low pressure loss.

To avoid the formation of condensation water: insulate the air extraction pipes and the ducted air cover connections with a steam-tight thermal covering of adequate thickness.

Install silencers if deemed necessary to prevent noise due to the flow. Equip the pipes, wall outlets and connections to the heat pump with vibration-damping systems.

7.3.1 Special installation

One of the peculiarities of the heat pump heating systems is that these units considerably lower the air temperature, generally expelled to the outside of the house. As well as being colder than the ambient air, the expelled air is also completely dehumidified, therefore the air flow can be returned inside for the summer cooling of specific rooms or areas.
Installation provides for splitting of the extraction pipe, which is fitted with two dampers ("A" and "B") for directing the air flow to the outside (fig. 16) or the inside of the house (fig. 15).

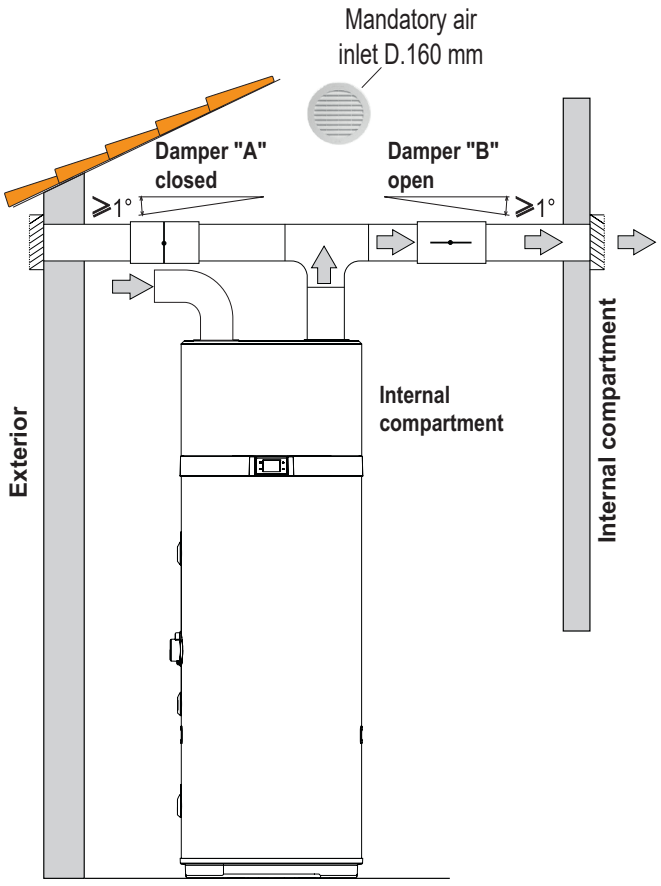


fig. 15- Example of installation in the summer period

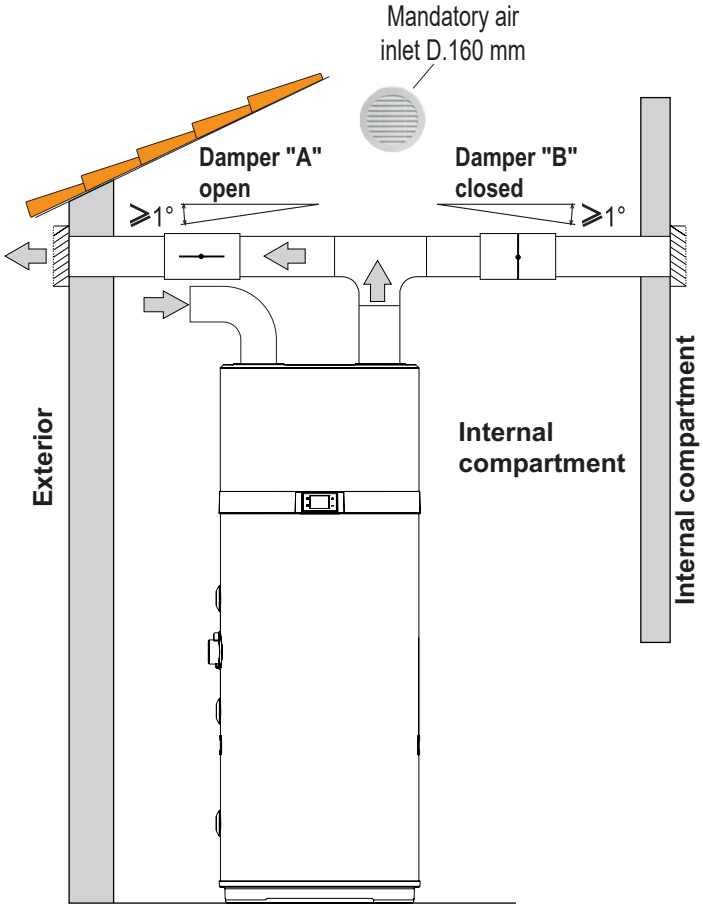


fig. 16- Example of installation in the winter period

7.4 Securing and connections of this appliance

The product must be installed on a stable, flat floor that is not subject to vibrations.

7.5 Hydraulic connections

Connect the cold water supply line and the outlet line to the appropriate connection points (fig. 17).
The table below gives the characteristics of the connection points.

Ref.	Function	Hydraulic connection
8	Cold water inlet	1"G
9	Hot water outlet	1"G
10	Recirculation	3/4"G
11	Condensate drain	1/2"G
12 *	Solar coil inlet	3/4"G
13 *	Solar coØoil outlet	3/4"G
20 *	Socket for solar probe and thermal cut-out bulb	1/2"G
29	T/P relief safety valve	Ø 15mm

*: only for EKHHEU200PCV37 and EKHHEU260PCV37 models.

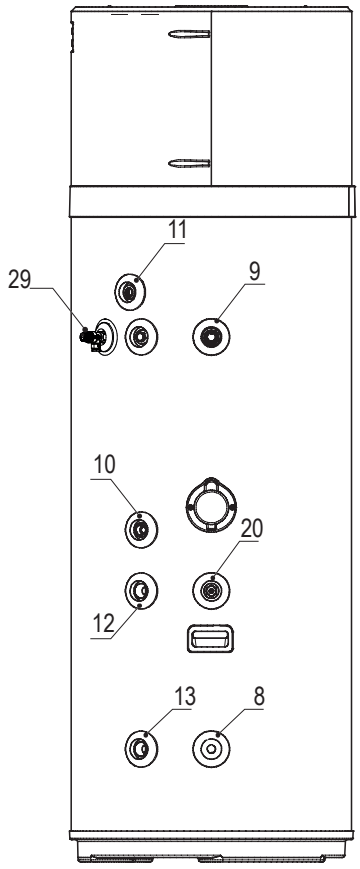


fig. 17

7.6 Connection the piping for domestic hot water

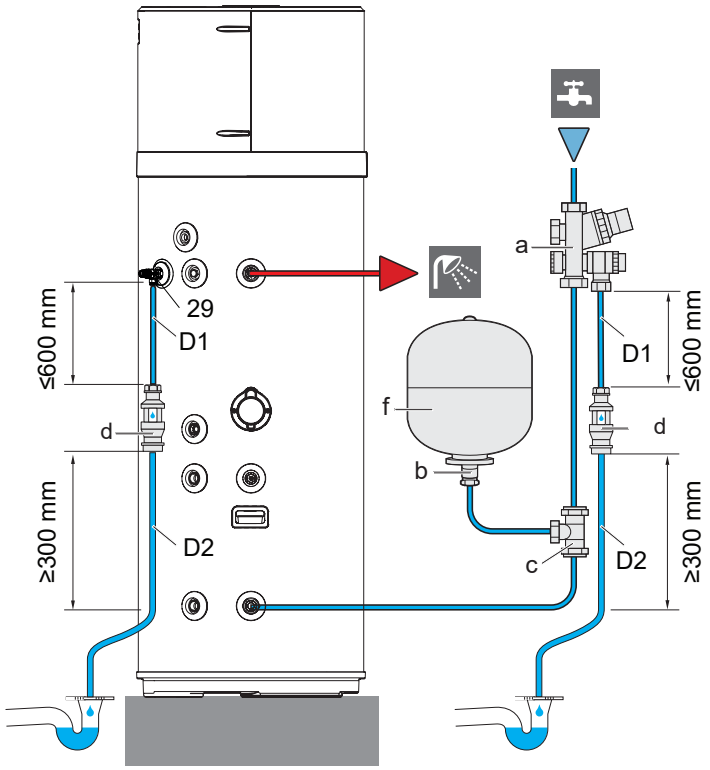


fig. 18

29 - T/P safety relief valve (factory installed)

Components supplied with G3 kit (see "3.1 Receipt" on page 8):

- **a)** 1x PRSV: Pressure reducing valve/pressure relief valve combination (check valve, water pressure regulator default =3,5 bar, water pressure safety valve set=6bar), water inlet and water outlet 22 mm connection, discharge piping connection 15 mm
- **b)** 1x Adaptor (22 mm×3/4" Female BSP)
- **c)** 1x Tee piece (22 mm×22 mm×22 mm)
- **d)** 2x tundishes (15 mm inlet, 22 mm outlet)
- **e)** wall mounting set for expansion vessel
- **f)** 1x expansion vessel 24 liters preset=3,5bar male connection 3/4" BSP

1) Pre-assemble the adaptor (b) and expansion vessel (f) so that the expansion vessel is ready for installation.

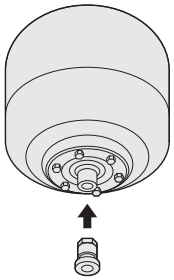


fig. 19

2) Mount the expansion vessel (f) to the wall.

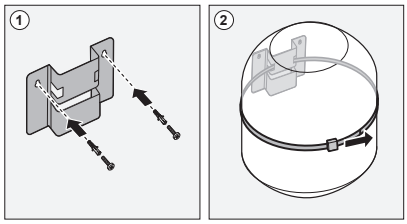


fig. 20

3) Fit the T-piece (c) to the domestic hot water cold water IN pipe of the unit.
4) Connect the pressure reducing valve/pressure relief valve combination (a) to the T-piece (c) with a length of copper tube Ø22 mm (field supply).
5) Connect the expansion vessel (f) to the T-piece (c) with a length of copper tube Ø22 mm (field supply).
6) Connect the pressure reducing valve/pressure relief valve combination (a) to the water mains inlet.
7) Install the tundish (d) in a vertical position within a maximum of 600 mm away from the pressure reducing valve/ pressure relief valve combination.

ATTENTION! Install the tundish away from any electrical device. Possible consequence: Electrical shock or fire.

NB!: To ensure a free water flow through the discharge pipe, manually operate the pressure relief valve by turning its knob left.

8) Using the accessory brass compression coupler (part of the T/P valve installed on the hot water tank), connect the discharge pipe (Ø 15mm) to the T/P valve (29). Install the tundish (d) in a vertical position within a maximum of 600 mm away from the T/P valve.

9) Connect the 2 tundishes, supplied with the G3 kit, to an appropriate drain according to the applicable legislation. The following example shows discharge below fixed grating (Building Regulation G3 section 3.61 gives alternative points of discharge):

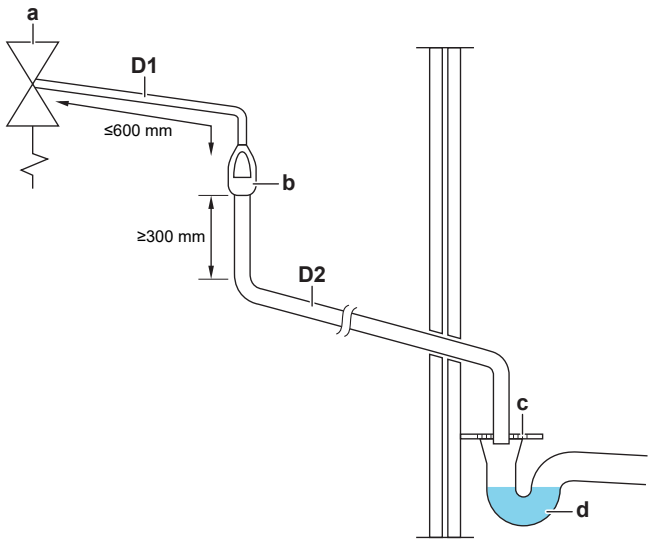


fig. 21

a Safety device (pressure and temperature relief valve of domestic hot water tank; pressure relief valve of domestic hot water tank kit)
b Tundish
c Fixed grating
d Trapped gully
D1 Metal discharge pipe from safety device to tundish
D2 Discharge pipe from tundish, with continuous fall. See Building Regulation G3 section 3.56, Table 03 and worked example.

10) After completing the installation, the installer has to fill out the warning label on the tank with indelible ink.

WARNING TO USER

a. Do not remove or adjust any component part of this unvented water heater; contact the installer.

b. If this unvented water heater develops a fault, such as a flow of hot water from the discharge pipe, switch the heater off and contact the installer.

WARNING TO INSTALLER

a. This installation is subject to the Building Regulations.

b. Use only appropriate components for installation or maintenance.

Installed by:

Name .....

Address .....

Tel. No. .....

Completion date .....

fig. 22

ATTENTION! The discharge pipes from the pressure relief valves MUST terminate in a safe and visible position without forming any risk to persons in the vicinity.

ATTENTION!

- **Discharge piping, tundish, drain valves, etc. MUST be positioned away from any electrical components.**
- **The discharge pipe away from the tundish MUST terminate in a safe, visible position without forming any risk to persons in the vicinity.**

ATTENTION!

- **Do NOT install any valves between the domestic hot water tank and relief valves/expansion vessel..**
- **Do NOT install shut-off valves between the expansion relief valve and the domestic hot water tank.**

NB!:

All pipework and fittings must be flushed free of flux and debris prior to installing the domestic hot water tank kit. Failure to do this may cause irreparable damage to the tank kit controls. Flush the system by opening the hot water tap.

- **The tundish pipework must be a 22 mm metal pipe with a minimal vertical length of 300 mm below the tundish before any elbows or bends in the pipework. All pipework must have a continuous fall of 1 in 200 thereafter. Maximum permitted (equivalent) length of 22 mm pipework is 9 m. Each bend or elbow is equivalent to 0.8 m of pipework.**

The following figures (fig. 23 - fig. 24) illustrate 3 examples of hydraulic connection.

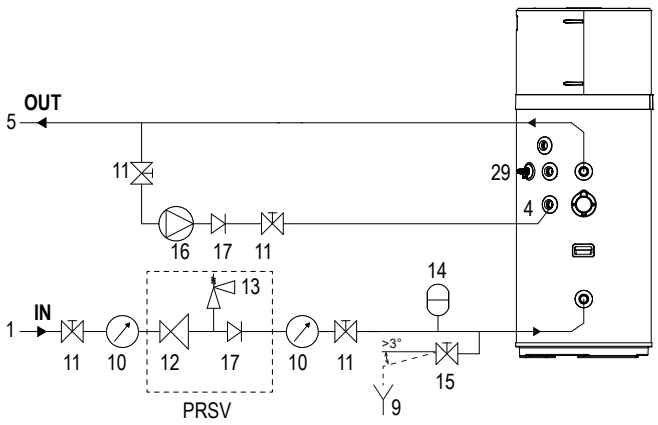


fig. 23 - Example of water system WITHOUT thermostatic mixing valve

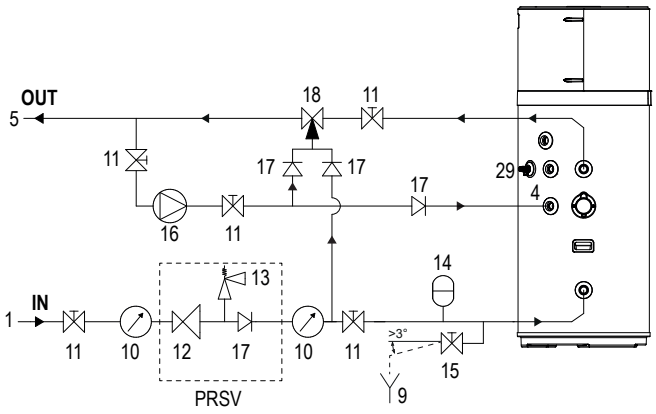


fig. 24 - Example of water system WITH thermostatic mixing valve

Legend (fig. 23 - fig. 24)

1	Water inlet pipe
4	Ricirculation water inlet
5	Hot water outlet pipe
9	Inspectionable end of discharge pipe
10	Pressure gauge
11	Shut-off valve
12	Pressure regulator
13	Shut-off valve
14	Expansion vessel
15	Drain tap
16	Recirculation pump
17	Check valve
18	Automatic thermostat mixing equipment
29	T/p relief safety valve (factory installed)
PRSV	Pressure reducing valve/ pressure relief valve combination
- - -	when the circulation pump is working

NOTE: All piping MUST be installed according to section G3 of the Building Regulations.

7.6.1 Condensate drain connection

The condensate forming during heat pump operation flows through a special drain pipe (1/2"G) that passes inside the insulating casing and comes out at the side of the equipment.
It must be connected, via a trap, to a duct so that the condensate can flow regularly (fig. 25).

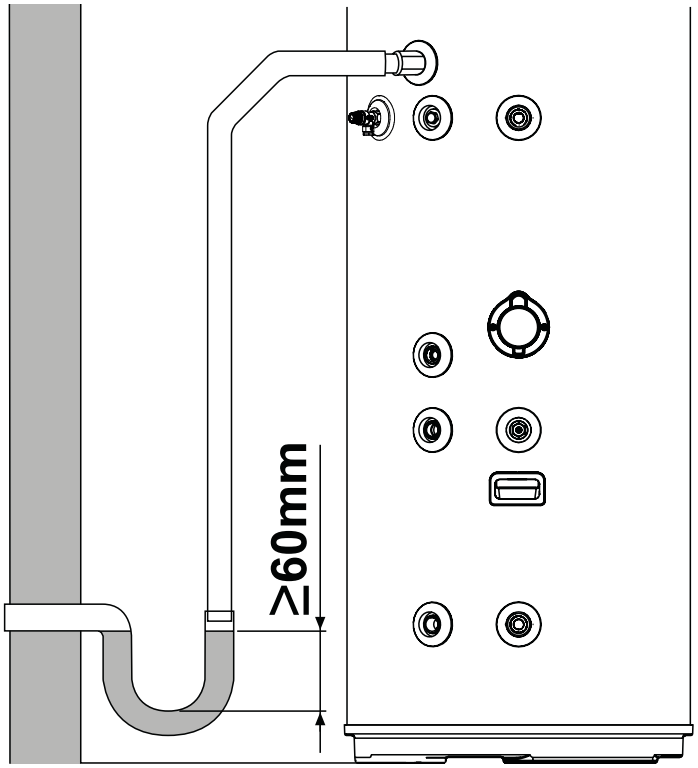


fig. 25- Examples of condensate drain connection via a trap

7.7 Integration with solar thermal system (only for EKHHEU200PCV37 and EKHHEU260PCV37 models)

The following figure (fig. 26) shows how to connect the equipment to a solar thermal system controlled by a dedicated electronic controller (not supplied) that has a "voltage-free contact" type output to be connected to the DIG.1 input of the equipment (see "7.8.1 Remote connections").

To use the equipment in this configuration it is necessary to set the parameter **P16 = 1** (see par. 8.1).

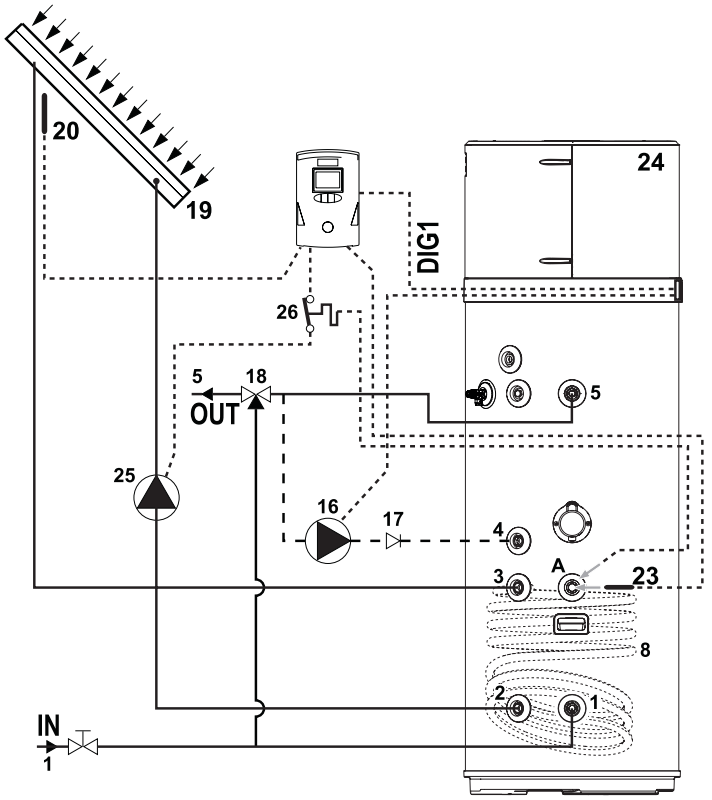


fig. 26

The following figures (fig. 27 and fig. 28) show how to connect the equipment to a solar thermal system controlled directly by the latter, without the aid of a dedicated electronic controller.
In the configuration of fig. 27, in case of solar collector overtemperature a drain valve (not supplied) is activated to discharge in a DHW storage tank (puffer) hot water contained in the equipment.
In the configuration of fig. 28, however, in this condition the solar collector shutter is closed.
In both cases this occurs in order to allow the collector to cool down.

To use the equipment in both these configurations it is necessary to set the parameter **P12 = 2** and **P16 = 2** (see par.9.1).

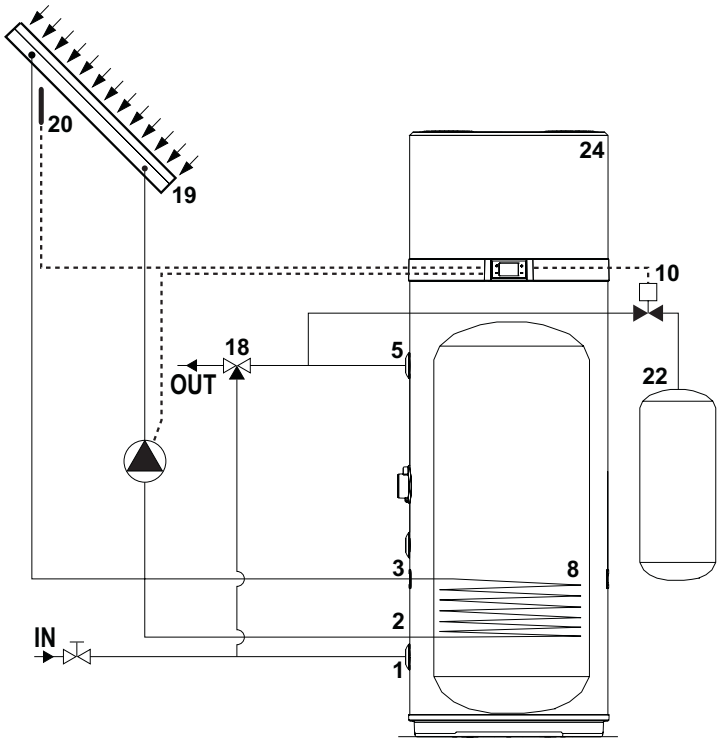


fig. 27

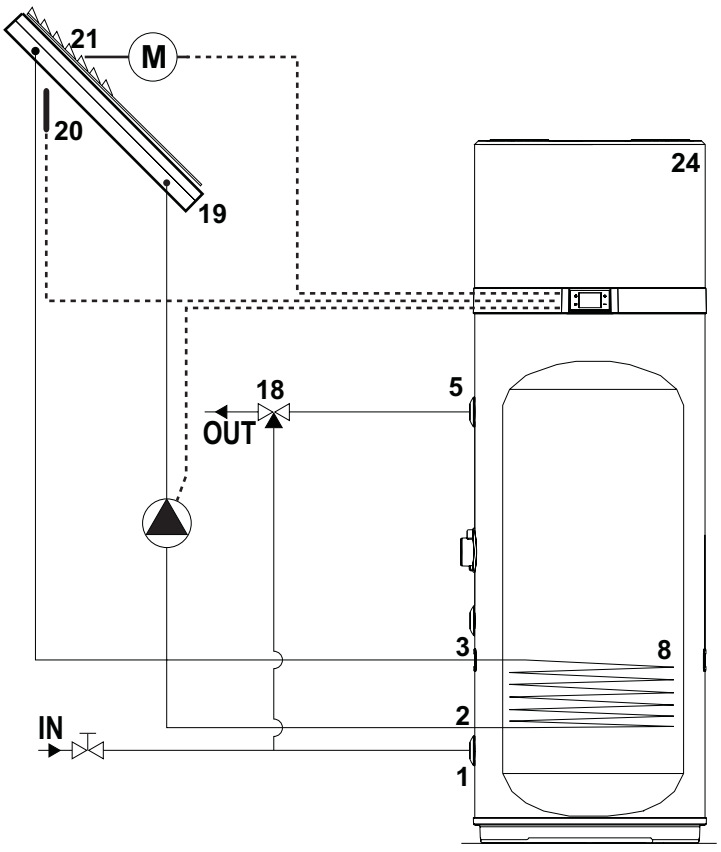


fig. 28

Legend (fig. 26, fig. 27 and fig. 28)

1	Cold water inlet
2	Solar coil outlet
3	Solar coil inlet
4	Recirculation
5	Hot water outlet
8	Solar thermal coil
10	Drain valve
16	Recirculating pump (ON/OFF type)
17	Check valve
18	Automatic thermostatic mixing device
19	Solar collector
20	Solar collector probe (PT1000 not supplied*)
21	Solar collector shutter
22	DHW puffer
23	Solar coil probe (not supplied)
24	Heat pump
25	Solar pump (ON/OFF type)
26	Thermal cut-out (supplied) for solar pump
A	Socket for solar probe and thermal cut-out

*** We advise to use solar collector probe PT1000 (available on manufacturer's accessories list)**

7.8 Electrical connections

Before connecting the appliance to AC mains, a check must be carried out on the electrical system to verify conformity to the regulations in force and that the electrical system can suitably withstand the water heater's maximum power consumption values (refer paragraph 4.2 for technical characteristics), in terms of the size of the cables and their conformity to the regulations in force.

The appliance is supplied with a power cord (fig. 30) which fits English plug with Integrated fuse (13A)

For the connection with AC mains is required:

- a English wall socket (BS1363) (fig. 29) with ground and separate protection
- an omnipolar 16 A circuit breaker with a contact opening of at least 3 mm;
- a 30 mA differential circuit breaker.

It is forbidden to use multiple outlet sockets, extension cables or adaptors.

It is forbidden to use piping from the water, heating and gas systems for earthing the appliance.

Prior to operating the machine, make sure that the electricity mains voltage conforms to the value indicated on the appliance's data plate.

The manufacturer of the appliance shall not be held liable for any damage caused by failure to earth the system or due to anomalies in the electric power supply.

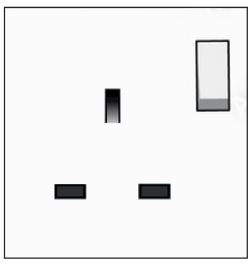


fig. 29 - English socket

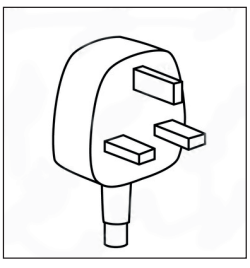


fig. 30 - Unit plug

7.8.1 Remote connections

The equipment is designed to be connected to other remote energy systems or energy meters (solar thermal, photovoltaic, Off-Peak)

INPUTS

- Digital 1 **(DIG1)**. Digital input for solar thermal (*only for models* **PCV3**). In case of a solar thermal system with dedicated control unit, the latter can be connected to the equipment to deactivate the heat pump when there is energy production from solar source. Having a voltage-free contact that closes when the solar system is active, it can be connected to the two **white** and **brown** wires of the 6-core cable supplied with the equipment.

  Set the parameter **P16 = 1** to activate the supplement with solar thermal.
- Digital 2 **(DIG2)**. Digital input for photovoltaic. In case of a photovoltaic system connected to the plant, it can be used to subtract energy in the form of hot water in times of overproduction. If there is a voltage-free contact, e.g. from the inverter, which closes when there is overproduction of energy, it can be connected to the two **green** and **yellow** wires of the 6-core cable supplied with the.equipment.

  Set the parameter **P23 = 1** to activate the supplement with photovoltaic.
- Digital 3 **(DIG3)**. Input for Off-Peak. This function, available only in some countries, allows the equipment to be activated only when there is a signal coming from outside with preferential tariff. If the electric contactor has a voltage-free contact which closes when the preferential tariff is available, it can be connected to the two **gray** and **pink** wires of the 6-core cable supplied with the equipment.

  Set the parameter **P24 = 1** to activate Off-peak in ECO mode or **P24 = 2** for Off-peak in AUTO mode.
- Analog input **(PT1000)** for solar collector probe.

OUTPUTS

230 Vac - 16 A relay output with N.O. contact. for solar thermal / DHW recirculation circulating pump (ON/OFF type).

230 Vac - 5 A relay output with contact N.O. for solar collector shutter / drain valve.
Only for models **PCV3**

Note: For more information on remote connections and the configuration of the equipment with these systems, see the par. **"8.5 OPERATING MODE"** and **"9.1.1 List of equipment parameters"**.

7.8.1.1 Remote connection

For the connection to the digital inputs the equipment is supplied with an additional 6-core cable already connected to the PCBA of the user interface (located inside the device). The remote connections to possible energy systems are the responsibility of the qualified installer (connection boxes, terminals and connection cables).
The following figures give an example of remote connection (fig. 31 and fig. 32) which must not be longer than **3 m**.

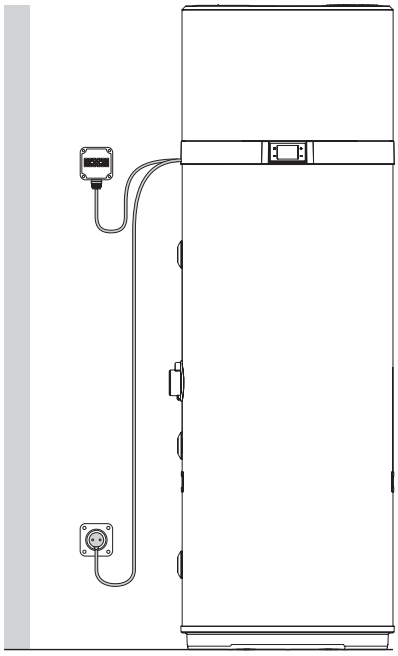


fig. 31- Example of remote connection

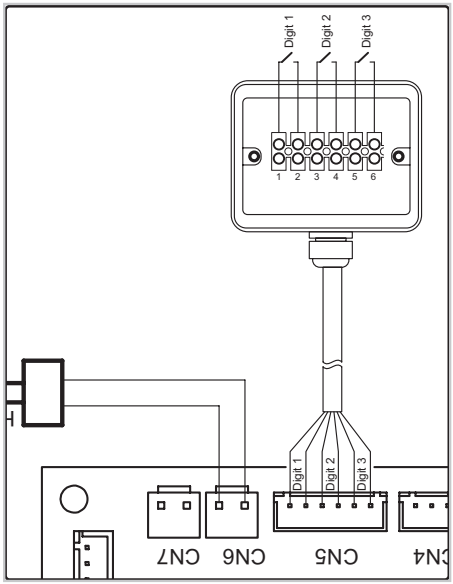


fig. 32

To access the 6-core cable for remote connection, remove the upper cover of the boiler and run to the outside the cable, already present inside the unit, through the special cable gland installed in the back cover.

7.9 Wiring diagram

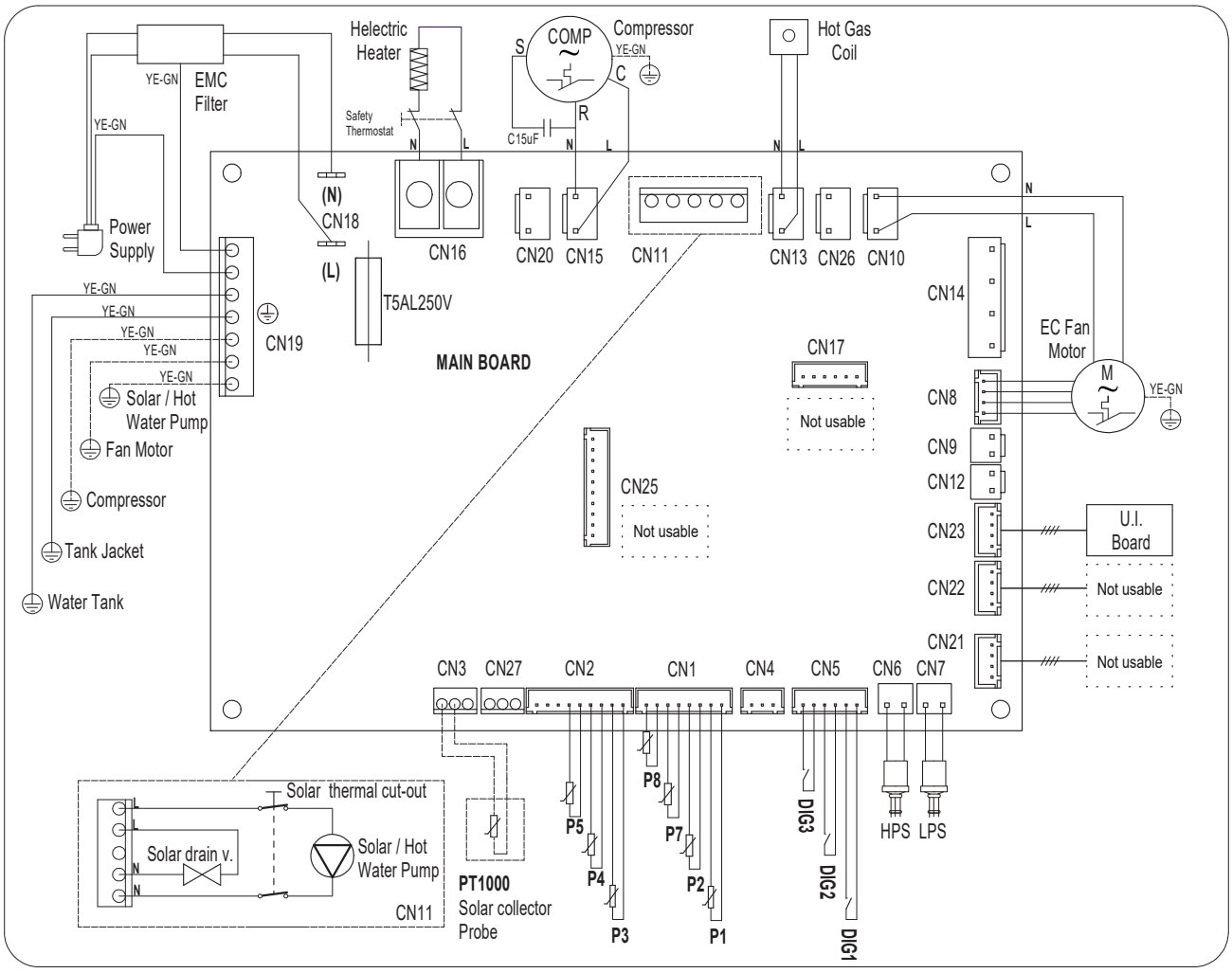


fig. 33- Equipment wiring diagram

Description of connections available on the power board

CN1	Air, defrost and water NTC probes
CN2	Evaporator inlet, evaporator outlet, compressor discharge refrigerant NTC probes
CN3	Probe for solar thermal management - *Only for models* **PCV3**
CN4	Not usable
CN5	Solar digital inputs, PV, Off-peak
CN6	High pressure switch
CN7	Low pressure switch
CN8	Electronic fan PWM control (EC)
CN9+CN12	Not usable
CN10	Fan power supply EC, AC
CN11	Solar thermal/DHW circulating pump (ON/OFF type), drain valve or solar collector shutter - *Only for models* **PCV3**

CN13	Hot gas defrost valve power supply
CN14	Not usable
CN15	Compressor power supply
CN16	Heating element power supply
CN17	Not usable
CN18	Main power supply 230 V - 1 PH - 50 Hz
CN19	Earth connections
CN20	230 Vac power supply for impressed current anode converter
CN21	Connection with end of line inspection/test
CN22	WI-FI card connection (not supplied)
CN23	User interface connection
CN25	Not usable

To connect the thermal cut-off (supplied) for the solar circulation pump, proceed as follows (reserved only for qualified technical personnel):

- Disconnect the power to the appliance;
- Put the bulb fully inside the dedicated tank socket (“A”) and close the cable gland;
- Unwind the capillary enough is necessary to place the thermal cut-out inside an adequate enclosure fixed to the wall;
- Connect the thermal cut-out in series with line (“L”) and neutral (“N”) power-supply connections of solar circulating pump, for all-pole disconnection.
- Verify all connections before power-supply the appliance.

8. DESCRIPTION OF USER INTERFACE AND OPERATION OF EQUIPMENT

fig. 34

Description	Symbol
"On/Off" button for switching on, putting the product in standby mode, unlocking buttons, saving changes	
"Set" button to edit the parameter value, confirm;	
“Increase” button to increase the set-point value, parameter or password	
“Decrease” button to decrease the set-point value, parameter or password	
Heat pump operation (ECO mode)	HP
Heating element operation (ELECTRIC mode)	
AUTOMATIC mode	HP +
BOOST mode (symbols flash)	HP +
Button lock active	
Defrost	
Frost protection	
Anti-legionella cycle	
Holiday mode;	
Operation with time bands	
Clock setting (symbol flashes)	
Connected with WI-FI (not available for these models)	
Photovoltaic mode (with symbol flashing the supplement is not active)	
Solar thermal mode (with symbol flashing the supplement is not active)	
Fault or protection active	
Off-Peak mode (with symbol flashing the equipment remains on standby)	

The user interface of this water heater model consists of four capacitive buttons, and a LED display.

As soon as the water heater is powered the four buttons are backlit and all the icons and display segments light up simultaneously for 3 s.
During normal operation of the product the three digits on the display show the water temperature in °C, measured with the upper water probe if parameter P11 is set to 1 or with the lower water probe if P11 = 0.
During modification of the selected operating mode set-point, the set-point temperature is shown on the display.
The icons indicate the selected operating mode, the presence or not of alarms, Wi-Fi connection status, and other information on product status.

8.1 Turning the water heater on and off and unlocking the buttons

When the water heater is correctly powered it can be "ON" and, therefore, in one of the available operating modes (ECO, Automatic, etc.) or in standby mode.
During standby mode the four capacitive buttons are backlit for easy visibility, the Wi-Fi icon is lit up according to the connection status with an external Wi-Fi router (not supplied) and, in the absence of alarms or frost protection active, all other icons as well as the segments of the three digits are off.

Turning on

With the water heater in standby mode and "button lock" function active (padlock icon at the bottom left lit up), it is necessary to first "unlock" the buttons by pressing the ON/OFF button for at least 3 seconds (the padlock icon goes off), then press the ON/OFF button again for 3 seconds to turn on the water heater.

Turning off

With the water heater on and “button lock" function active, it is necessary to first "unlock" the buttons by pressing the ON/OFF button for at least 3 seconds, then press the ON/OFF button again for 3 seconds to turn off the water heater (putting in standby mode).
In any status, 60 seconds after the last press of any of the four user interface buttons, the button lock function is automatically activated to prevent possible interactions with the water heater, e.g. by children, etc. At the same time the backlighting level of the buttons and display decreases to reduce the unit’s energy consumption.
By pressing any of the four buttons, the backlighting of the buttons and display will immediately return to its normal level for better visibility.

8.2 Setting the clock

With the buttons unlocked, press the button ✓ for 3 seconds to access the clock settings (the symbol 🕒 flashes).
Set the time with the "+" and "-" buttons, press " ✓ " to confirm and then set the minutes.
Press the button ✓ to confirm and exit.

8.3 Setting time bands

The equipment clock must be set before activating the time bands.
Select the desired operating mode then set the time bands.
The time bands can be activated only in the ECO - AUTOMATIC - BOOST - ELECTRIC and VENTILATION modes.
With the buttons released, press th button ✓ and “-” button together for 3 seconds to set the time bands (the symbol 🕒 is displayed).
Set the switch-on time using the “+” and “-” buttons, press “ ✓ ” to confirm and then set the On minutes.
Press ✓ to confirm and go to switch-off time setting.
Press ✓ to confirm, then, using the “+” and “-” buttons, select the desired operating mode for the time band (ECO, AUTOMATIC, BOOST, ELECTRIC, VENTILATION).
Press ✓ to confirm and exit.
Note: At the end of the time band the equipment goes to standby mode and remains there until repetition of the time band the next day

To deactivate the time bands:

- set the on and off times to midnight (00:00);
- press ✓ to confirm;
- press button ✓ and “-” button together for 3 seconds (the symbol 🕒 goes off).

8.4 Setting the hot water set-point

It is possible to adjust the hot water set-point in the ECO, AUTOMATIC, BOOST and ELECTRIC modes
Select the desired mode with the button ✓ , then adjust the set-point with the “+” and “-” buttons.
Press the button ✓ to confirm and ⏻ to exit.

Mode	Hot water set-point	
	Range	Default
ECO	43÷62°C	55°C
AUTOMATIC	43÷62°C	55°C
BOOST	43÷75°C*	55°C
ELECTRIC	43÷75°C	55°C

* In BOOST mode the maximum set-point value for the heat pump is 62°C. Therefore, by setting a higher value this is to be considered only for the heating element.

8.5 OPERATING MODE

The following modes are available for this water heater:
- ECO;
- BOOST;
- ELECTRIC;
- VENTILATION;
- HOLIDAY;
- AUTOMATIC.

The equipment is set in ECO mode; pressing this button ⊘ it is possible to select the desired mode.

For the ECO, BOOST and AUTOMATIC modes, by pressing button "+" and "-" simultaneously for 3 seconds, it is possible to activate the "silent mode" (for example during the night) which reduces the noise of the equipment; in this condition, performance in terms of water heating rate may be lower.
To deactivate this mode, press buttons "+" and "-" again for 3 seconds.

8.5.1 ECO

The display shows the symbol **HP**

With this mode only the heat pump is used within the product operating limits to ensure maximum possible energy saving.
The heat pump is switched on 5 minutes after selecting this mode or from the last switch-off.
In case of switching off, within the first 5 minutes, the heat pump will remain on anyway to ensure at least 5 minutes of continuous operation.

8.5.2 BOOST

The display shows the symbols **HP** + flashing.

This mode uses the heat pump and the heating element, within the product operating limits, to ensure faster heating.
The heat pump is switched on 5 minutes after selecting this mode or from the last switch-off.
In case of switching off, within the first 5 minutes, the heat pump will remain on anyway to ensure at least 5 minutes of continuous operation.
The heating element is switched on immediately.

8.5.3 ELECTRIC

The display shows the symbol .

With this mode only the heating element is used within the product operating limits and is useful in situations of low inlet air temperatures.

8.5.4 VENTILATION

The display shows the message FAn.

With this mode only the electronic fan inside the device is used and is useful for recirculating the air in the installation room if desired.
In automatic mode the fan will be adjusted to the minimum speed.

8.5.5 HOLIDAY

The display shows the symbol .

This mode is useful when away for a limited time and then automatically finding the device working in automatic mode.
Using buttons + and - it is possible to set the days of absence during which you want the equipment to remain in stand-by.
Press ⊘ and then on off to confirm.

8.5.6 AUTOMATIC

The display shows the symbol **HP** + .

With this mode the heat pump is used and, if necessary, also the heating element, within the product operating limits, to ensure best possible comfort.
The heat pump is switched on 5 minutes after selecting this mode or from the last switch-off.
In case of switching off, within the first 5 minutes, the heat pump will remain on anyway to ensure at least 5 minutes of continuous operation.

8.6 ADDITIONAL FEATURES

8.6.1 Solar Mode **HP**+ or **HP**+ + or +

(Only for models PCV3)

When the solar mode is activated from the installer menu, only ECO - AUTOMATIC - HOLIDAY will be available.

When the symbol on the display flashes, the solar mode is not operating and the unit works in the set mode: ECO, AUTOMATIC or HOLIDAY.
When the symbol on the display is lit up, the energy produced by the solar system is used to heat the water inside the tank via the solar coil.

8.6.2 Photovoltaic mode HP+ or HP+ or +

When the photovoltaic mode is activated from the installer menu, only ECO - AUTOMATIC - HOLIDAY will be available.
When the symbol on the display flashes, the photovoltaic mode is not operating and the unit works in the set mode: ECO, AUTOMATIC or HOLIDAY.
When the symbol on the display is lit up, the energy produced by the photovoltaic system is used to heat the water inside the tank.
With ECO mode selected, the heat pump will operate until the set-point is reached and the heating element is switched on until the photovoltaic set-point set from the installer menu is reached.
Otherwise, with AUTOMATIC mode selected, the heating element can also be switched on before reaching the set-point of this mode if the conditions require it.

8.6.3 Off-Peak Mode HP + or HP + +

When the Off-Peak Mode is activated from the installer menu, only ECO - AUTOMATIC will be available.
When the symbol on the display flashes, the Off-Peak mode is not operating and the unit remains on standby and the heat pump and heating element are off.
Otherwise, when the symbol on the display is lit up, the unit works in the ECO or AUTOMATIC mode.

8.6.4 Anti-Legionella

The display shows the symbol .

Every two weeks, at the set time, a water heating cycle is carried out by means of the heating element inside the tank, up to the anti-legionella temperature, maintaining it for the set time.
If, on reaching the anti-legionella temperature, the cycle is not performed correctly within 10 hours, it is stopped and will be run again after 2 weeks.
If the request for the anti-legionella function occurs with HOLIDAY mode selected, the anti-legionella cycle will be carried out immediately when the unit is reactivated after the set days of absence.

Anti-legionella parameters	Range	Default
Anti-legionella temperature set-point (P3)	50÷75°C	75°C
Anti-legionella cycle duration (P4)	0÷90 min	30 min
Anti-legionella cycle activation time (P29)	0÷23 h	23 h

8.6.5 Defrost function

The display shows the symbol .

This device has an automatic evaporator defrost function which is activated, when the operating conditions require it, during heat pump operation.
Defrosting occurs through the injection of hot gas into the evaporator, allowing it to be rapidly defrosted.
During defrosting, the heating element, which the equipment is provided with, is switched off unless otherwise set via the installer menu (parameter P6).
The max. duration of defrosting is 8 minutes.

8.6.6 Frost protection

The display shows the symbol .

This protection prevents the water temperature inside the tank from reaching values close to zero.
With the equipment in standby mode, when the water temperature inside the tank is below or equal to 5°C (parameter configurable via installer menu), the frost protection function activates, which switches on the heating element until 12°C is reached (parameter configurable via installer menu)..

8.7 Faults/protection

This equipment has a self-diagnosis system that covers some possible faults or protections from anomalous operating conditions through: detection, signaling and adoption of an emergency procedure until resolution of the fault.

Fault/Protection	Error code	Display indication
Tank lower probe fault	P01	+ P01
Tank upper probe fault	P02	+ P02
Defrost probe fault	P03	+ P03
Inlet air probe fault	P04	+ P04
Evaporator inlet probe fault	P05	+ P05
Evaporator outlet probe fault	P06	+ P06
Compressor flow probe fault	P07	+ P07
Solar collector probe fault	P08	+ P08
High pressure protection	E01	+ E01
Solar/recirculation circuit alarm	E02	+ E02
Temperature not suitable for heat pump operation alarm (With alarm active the water is heated only with heating element)	PA	+PA
No communication (with alarm active the equipment does not work)	E08	+ E08
Electronic fan fault	E03	+ E03
Low pressure protection	E04	+ E04

In case of any of the above faults, it is necessary to contact the manufacturer's technical assistance service, indicating the error code shown on the display.

9. COMMISSIONING

ATTENTION!: Check that the equipment has been connected to the ground wire.

ATTENTION!: Check that the line voltage is that indicated on the equipment rating plate.

CAUTION: The appliance can only be turned on after it has been filled with water.

Proceed with the following operations for commissioning:

- Once the appliance is installed and all connections are performed (aeraulic, hydraulic, electrical, etc), it must be filled with water from the domestic water supply network. In order to fill the appliance, it is necessary to open the central tap of the domestic network supply and the nearest hot water tap, while making sure that all the air in the tank is gradually expelled.
- Do not exceed the max. permissible pressure indicated in the "general technical data" section.
- Check the water circuit safety devices.
- Plug the unit into the power outlet.
- When the plug is inserted, the boiler is in standby mode, the display remains off, the power button lights up.
- Press the ON/OFF button, the unit is activated in "ECO" mode (factory setting).

In case of a sudden power outage, when restored the equipment will restart from the operating mode prior to the interruption.

9.1 Query, editing operating parameters

This equipment has two distinct menus, respectively, for consulting and editing the operating parameters (see "9.1.1 List of equipment parameters").
With the equipment operating, the parameters can be freely consulted at any time by unlocking the buttons (see "8.1 Turning the water heater on and off and unlocking the buttons") and pressing the " ✓ " and "+" buttons together for 3 seconds. The label of the first parameter is shown on the display with the letter "A". Pressing the "+" button displays its value and, pressing this button again, the label of the second parameter "B" is displayed, and so on.
The entire parameter list can then be scrolled forward/back with the "+" and "-" buttons.
Press the "ON/OFF" button to exit.
Editing one or more operating parameters can only be done with the equipment in standby mode and requires the password to be entered.

NB!: "Use of the password is reserved for qualified personnel; any consequences due to incorrect parameter settings will be the sole responsibility of the customer. Therefore, any interventions requested by the customer from an authorized technical assistance center DAIKIN during the standard warranty period, for product problems due to incorrect settings of password-protected parameters, will not be covered by the standard warranty.".

With buttons unlocked, **only in standby mode**, press the " ✓ " and "+" buttons together for 3 seconds to access the equipment parameter editing menu (password protected: 35). The display shows the two digits "00". Press the " ✓ " button. The digit "0" on the left flashes and with "+" and "-" select the first number to enter (3) and press " ✓ " to confirm. Proceed in the same way for the second digit (5).
If the password is correct, the parameter P1 is displayed. Pressing the "+" button displays the default value of this parameter which can be changed by pressing ✓ , and using the "+" and "-" buttons it is possible to change the value within the permissible range for this parameter. Then press ✓ to confirm and the "+" button to continue with the other parameters.
After editing the desired parameters, press the on/off button to save and exit.
The equipment now returns to standby mode.

9.1.1 List of equipment parameters

Parameter	Description	Range	Default	Notes
A	Lower water temperature probe	-30÷99°C	Measured value	Not modifiable
B	Upper water temperature probe	-30÷99°C	Measured value	Not modifiable
C	Defrosting temperature probe	-30÷99°C	Measured value	Not modifiable
D	Supply-air temperature probe	-30÷99°C	Measured value	Not modifiable
E	Evaporator inlet gas temperature probe	-30÷99°C	Measured value / "0°C" if P33 = 0	Not modifiable (1)
F	Evaporator outlet gas temperature probe	-30÷99°C	Measured value / "0°C" if P33 = 0	Not modifiable (1)
G	Compressor discharge gas temperature probe	0÷125°C	Measured value / "0°C" if P33 = 0	Not modifiable (1)
H	Solar collector temperature probe (PT1000)	0÷150°C	Measured value / "0°C" if P16 = 2	Not modifiable (2)
I	EEV opening step	30÷500	Measured value / P40 value if P39 = 1	Not modifiable (1)
J	Power-board firmware version	0÷99	Current value	Not modifiable
L	User-interface firmware version	0÷99	Current value	Not modifiable
P1	Hysteresis on lower water probe for heat-pump working	2÷15°C	7°C	Modifiable
P2	Electrical heater switching-on delay	0÷90 min	6 min	Function excluded
P3	Antilegionella setpoint temperature	50°C÷75°C	75°C	Modifiable
P4	Antilegionella duration	0÷90 min	30 min	Modifiable
P5	Defrosting mode	0 = compressor stop 1 = hot-gas	1	Modifiable
P6	Electrical heater usage during defrosting	0 = OFF 1 = ON	0	Modifiable
P7	Delay between two consecutive defrosting cycle	30÷90 min	60 min	Modifiable
P8	Temperature threshold for defrosting start	-30÷0°C	-5°C	Modifiable
P9	Temperature threshold for defrosting stop	2÷30°C	3°C	Modifiable
P10	Maximum defrosting duration	3min÷12min	10 min	Modifiable
P11	Water temperature probe value shown on the display	0 = lower 1 = upper	1	Modifiable
P12	External pump usage mode	0 = always OFF 1 = hot-water recirculation 2 = Thermal solar system	1	Modifiable
P13	Hot-water recirculation pump working mode	0 = with heat-pump 1 = always ON	0	Modifiable
P14	Type of evaporator fan (EC; AC; AC with double speed; EC with dynamic speed control)	0 = EC 1 = AC 2 = AC with double speed 3 = EC with dynamic speed control	3	Modifiable
P15	Low pressure selection switch	0 = NC 1 = NO 2 = low pressure selection switch	2	Modifiable
P16	Solar mode integration	0 = permanently deactivated 1 = working with DIG1 2 = Direct control of thermal solar system	0	Modifiable (2)
P17	Heat-pump starting delay after DIG1 opening	10÷60min	20 min	Modifiable (2)
P18	Lower water probe temperature value to stop the heat-pump in solar mode integration = 1 (working with DIG1)	20÷60°C	40°C	Modifiable (2)
P19	Hysteresis on lower water probe to start the pump in solar mode integration = 2 (direct control of thermal solar system solar)	5÷20°C	10°C	Modifiable (2)

Parameter	Description	Range	Default	Notes
P20	Temperature threshold for solar drain valve / solar collector roll-up shutter action in solar mode integration = 2 (direct control of thermal solar system solar)	100÷150°C	140°C	Modifiable (2)
P21	Lower water probe temperature value to stop the heat-pump in photovoltaic mode integration	30÷70°C	62°C	Modifiable
P22	Upper water probe temperature value to stop the electrical heater in photovoltaic mode integration	30÷80°C	75°C	Modifiable
P23	Photovoltaic mode integration	0 = permanently deactivated 1 = activated	0	Modifiable
P24	Off-peak working mode	0 = permanently deactivated 1 = activated with ECO 2 = activated with AUTO	0	Modifiable
P25	Offset value on upper water temp probe	-25÷25°C	2°C	Modifiable
P26	Offset value on lower water temp probe	-25÷25°C	2°C	Modifiable
P27	Offset value on air-inlet temp probe	-25÷25°C	0°C	Modifiable
P28	Offset value on defrosting temp probe	-25÷25°C	0°C	Modifiable
P29	Antilegionella starting hour	0÷23 hours	23 hours	Modifiable
P30	Hysteresis on upper water probe for electrical heater working	2÷20°C	7°C	Modifiable
P31	Heat-pump working period in AUTO mode for heating rate calculation	10÷80 min	30 min	Modifiable
P32	Temperature threshold for electrical heater usage in AUTO mode	0÷20°C	4°C	Modifiable
P33	Electronic-expansion valve (EEV) control	0 = permanently deactivated 1 = activated	1	Modifiable (1)
P34	Superheating calculation period for EEV automatic control mode	20÷90s	30 s	Modifiable (1)
P35	Superheating setpoint for EEV automatic control mode	-8÷15°C	4°C	Modifiable (1)
P36	Desuperheating setpoint for EEV automatic control mode	60÷110°C	88°C	Modifiable (1)
P37	EEV step opening during defrosting mode (x10)	5÷50	15	Modifiable (1)
P38	Minimum EEV step opening with automatic control mode (x10)	3~45	9	Modifiable (1)
P39	EEV control mode	0= automatic 1 = manual	0	Modifiable (1)
P40	Initial EEV step opening with automatic control mode / EEV step opening with manual control mode (x10)	5÷50	25	Modifiable (1)
P41	AKP1 temperature threshold for EEV KP1 gain	-10÷10°C	-1	Modifiable (1)
P42	AKP2 temperature threshold for EEV KP2 gain	-10÷10°C	0	Modifiable (1)
P43	AKP3 temperature threshold for EEV KP3 gain	-10÷10°C	0	Modifiable (1)
P44	EEV KP1 gain	-10÷10	2	Modifiable (1)
P45	EEV KP2 gain	-10÷10	2	Modifiable (1)
P46	EEV KP3 gain	-10÷10	1	Modifiable (1)
P47	Maximum allowed inlet temperature for heat-pump working	38÷43°C	43°C	Modifiable
P48	Minimum allowed inlet temperature for heat-pump working	-10÷10°C	-7°C	Modifiable

Parameter	Description	Range	Default	Notes
P49	Threshold on inlet temperature for evaporator EC or AC with double speed blower speed setting	10÷40°C	25°C	Modifiable
P50	Antifreeze lower water temperature setpoint	0÷15°C	12°C	Modifiable
P51	Evaporator EC blower higher speed setpoint	60÷100%	90%	Modifiable
P52	Evaporator EC blower lower speed setpoint	10÷60%	50%	Modifiable
P53	EC evaporator fan defrost speed setpoint	0÷100%	50%	Modifiable
P54	Low pressure switch bypass time	1÷240 min	1	Modifiable
P55	Band 1 evaporator temperature proportional regulation	1÷20°C	4°C	Modifiable
P56	Differential temperature with activation of maximum speed	P57÷20°C	2°C	Modifiable
P57	Differential temperature with deactivation of maximum speed	1°C÷P56	1°C	Modifiable
P58	Use of the evaporator fan with the compressor off	0 = OFF 1 = ON with manual speed control 2 = ON with automatic speed control	0	Modifiable
P59	Evaporator fan speed (EC) with compressor off	0÷100%	40%	Modifiable
P60	Temperature difference 1 of evaporation of the air for the calculation of the setpoint	1÷25°C	4°C	Modifiable
P61	Temperature difference 2 of evaporation of the air for the calculation of the setpoint	1÷25°C	2°C	Modifiable
P62	Temperature difference 3 of evaporation of the air for the calculation of the setpoint	1÷25°C	6°C	Modifiable
P63	Temperature difference 4 of evaporation of the air for the calculation of the setpoint	1÷25°C	3°C	Modifiable
P64	Temperature difference 5 of evaporation of the air for the calculation of the setpoint	1÷25°C	10°C	Modifiable
P65	Temperature difference 6 of evaporation of the air for the calculation of the setpoint	1÷25°C	18°C	Modifiable
P66	Band 2 evaporator temperature proportional regulation	1÷20°C	2°C	Modifiable
P67	Band 3 evaporator temperature proportional regulation	1÷20°C	9°C	Modifiable
P68	Band 4 evaporator temperature proportional regulation	1÷20°C	5°C	Modifiable
P69	Band 5 evaporator temperature proportional regulation	1÷20°C	10°C	Modifiable
P70	Band 6 evaporator temperature proportional regulation	1÷20°C	5°C	Modifiable
P71	EC evaporator fan speed reduction for silent mode	0÷40%	15%	Modifiable
P72	EC fan speed regulator gain	1÷100	5	Modifiable

(1) = NOT USABLE FOR THIS DEVICE
(2) = ONLY FOR MODELS "EKHHEU200PCV37, EKHHEU260PCV37"

10. TROUBLESHOOTING

CAUTION: Do not attempt to repair your appliance Yourself.
The following checks are reserved for qualified personnel only.

Fault	Recommended action
The equipment does not switch on	• Check that the product is actually powered by the mains. • Disconnect the equipment then reconnect it after a few minutes. • Check the power cable inside the product. • Check that the fuse on the power board is intact. If not, replace it with an IEC-60127-2/II certified time-delay 5 A fuse.
Water cannot be heated via the heat pump in ECO or AUTOMATIC mode	• Switch the equipment off, then switch it on again after a few hours. • Disconnect the equipment from the mains, drain part of the water contained in the tank (approx. 50%) then refill it and switch the equipment on again in ECO mode.
The heat pump remains on without ever stopping	• Without drawing hot water from the product, check that in a few hours heating via heat pump occurs positively.
Water cannot be heated via the integrated heating element in AUTOMATIC mode	• Switch off the equipment and check the safety thermostat of the heating element inside the equipment and reset it if necessary. Then switch on the equipment in AUTOMATIC mode. • Disconnect the equipment from the mains, drain part of the water contained in the tank (approx. 50%) then refill it and switch the equipment back on again in AUTOMATIC mode. • Access the installer menu and increase the value of parameter P32, e.g. to 7°C. • Check that the heating element safety thermostat has not intervened (see 10.2)

10.1 Power board fuse replacement

Proceed as indicated below (reserved for qualified technical personnel only):

- Disconnect the power to the equipment.
- Remove the top cover of the equipment and then the power board cover.
- Remove the fuse cap, then the fuse, using a suitable screwdriver.
- Install a new IEC-60127-2/II certified time-delay 5 A fuse (T5AL250V), then refit the protective cap.
- Reassemble all the plastics and make sure the equipment is correctly installed before powering it.

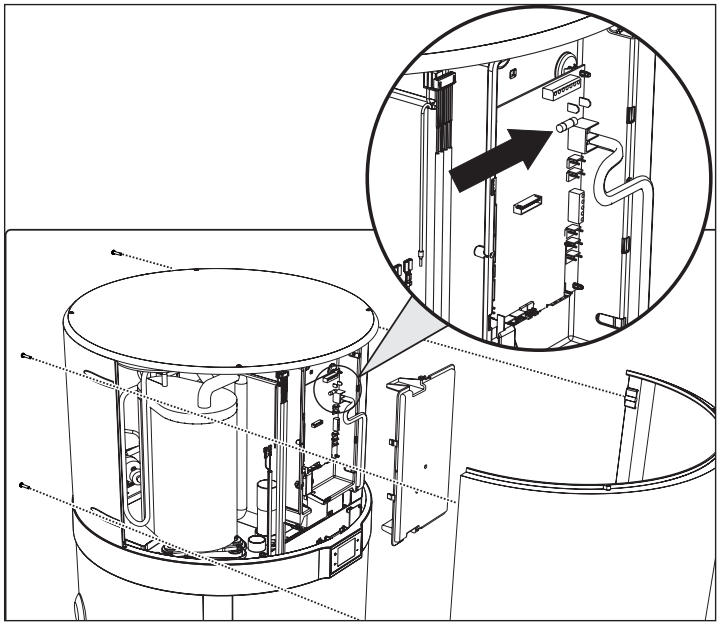


fig. 35

10.2 Heating element safety thermostat reset

This equipment has a manual-reset safety thermostat connected in series with the heating element immersed in water, which interrupts the power supply in case of overtemperature inside the tank.

If necessary, proceed as follows to reset the thermostat (reserved for qualified technical personnel):

- Unplug the product.
- Remove any air ducts.
- Remove the top cover by first undoing the locking screws (fig. 36).
- Remove the front panel and manually reset the tripped safety thermostat (fig. 37). In case of intervention, the central pin of the thermostat comes out by about 2 mm.
- Refit the previously removed top cover.

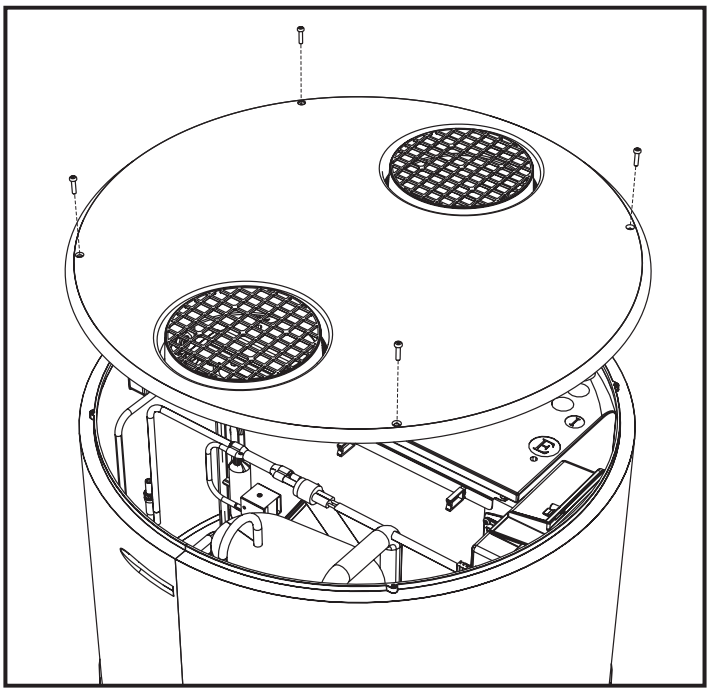


fig. 36- Top cover removal

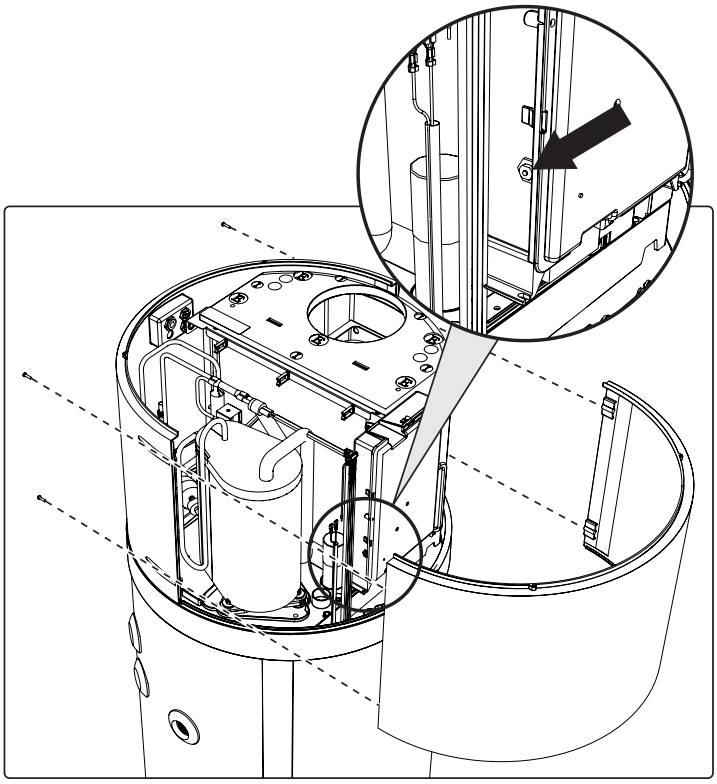


fig. 37- Front panel removal

ATTENTION!: Intervention of the safety thermostat can be caused by a fault linked to the control board or by no water inside the tank.

ATTENTION!: Carrying out repair work on parts with safety function compromises safe operation of the equipment. Replace faulty parts with original spare parts only.

NB!: Intervention of the thermostat excludes operation of the heating element but not the heat pump system within the permitted operating limits.

ATTENTION! If the operator is unable to eliminate the fault, switch off the equipment and contact the Technical Assistance Service, communicating the model of the product purchased.

11. MAINTENANCE

ATTENTION!: Any repairs to the equipment must be carried out by qualified personnel. Improper repairs can put the user in serious danger. If your equipment needs any repair, contact the service center.

ATTENTION!: Before undertaking any maintenance operation make sure the equipment is not and cannot accidentally be electrically powered. Therefore, disconnect the power at every maintenance or cleaning operation.

11.1 Sacrificial anode check/replacement

The magnesium (Mg) anode, also called "sacrificial" anode, prevents any eddy currents generated inside the boiler from triggering surface corrosion processes.
In fact, magnesium is a weakly charged metal compared to the material of which the inside of the boiler is coated, therefore it attracts first the negative charges that form with the heating of water, consuming itself. The anode therefore "sacrifices" itself by corroding itself instead of the tank. The boiler has two anodes, one fitted in the lower part of the tank and one fitted in the upper part of the tank (area more subject to corrosion).
The integrity of the Mg anodes must be checked at least every two years (preferably once a year). The operation must be performed by qualified personnel.
Before doing the check:

- Close the cold water inlet.
- Proceed with emptying the boiler (see par. "11.2 Emptyng the tank").
- Unscrew the upper anode and check its corrosion; if the corrosion affects more than 2/3 of the anode surface proceed with replacement.

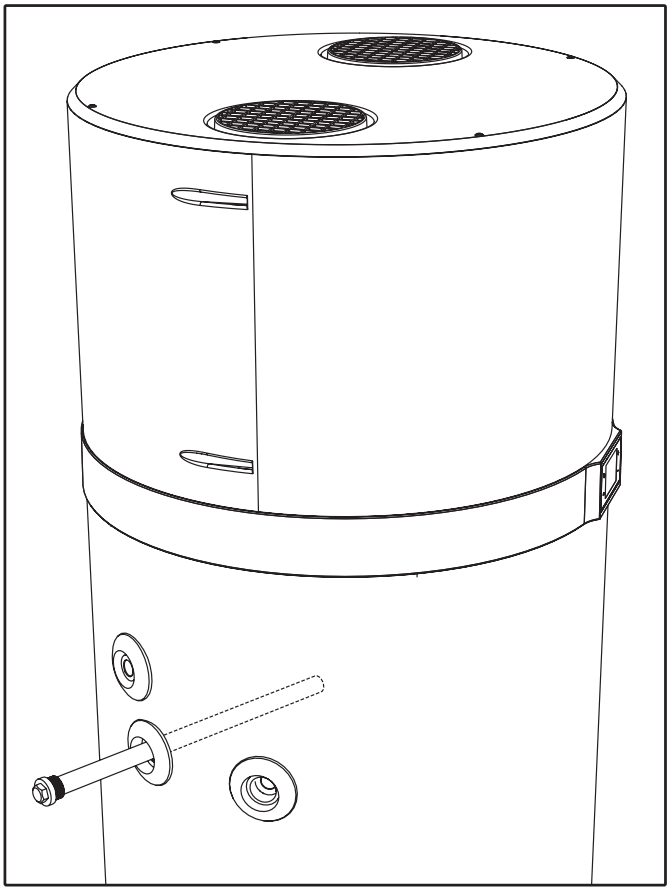


fig. 38

The anodes have a special sealing gasket, to prevent water leaks; it is advisable to use anaerobic thread sealant compatible for use in heating-plumbing systems. The gaskets must be replaced with new ones in case of checking and also anode replacement.

11.2 Emptyng the tank

If not in use, especially in case of low temperatures, it is advisable to drain the water inside the tank.
For the equipment in question, just detach the water inlet connection (see par. "7.5 Hydraulic connections"). Alternatively, when setting up the system, it is advisable to install a drain ball valve fitted with a hose connection.

NB!: In case of low temperatures, remember to empty the system to avoid freezing.

11.3 Tank internal inspection

To inspect the tank internally, follow this procedure:

- empty the tank (as described in paragraph "11.2 Emptyng the tank")
- remove the sacrificial anode (as described in paragraph "11.1 Sacrificial anode check/replacement")
- inspect the inside of the tank using an endoscopic camera evaluating the integrity of the enamelling and metal components.

Once the inspection is complete, reinstall the sacrificial anode and refill the tank as indicated in paragraph "9. Commissioning" on page 29.

12. DISPOSAL

At the end of use, the heat pumps must be disposed of in compliance with current regulations.

ATTENTION!: This equipment contains fluorinated greenhouse gases included in the Kyoto protocol. Maintenance and disposal operations must be carried out only by qualified personnel.

INFORMATION FOR USERS

Pursuant to Directives 2011/65/EU and 2012/19/EU on the restriction of the use of hazardous substances in electrical and electronic equipment, as well as the disposal of waste.

The crossed-out bin symbol on the equipment or on its packaging indicates that, at the end of its useful life, the product must be collected separately from other waste.

Therefore, at the end of its life, the user must give the equipment to the appropriate recycling centers for electrical and electronic equipment, or return it to the dealer when purchasing new, equivalent type equipment, on a one-to-one basis.

Adequate separate waste collection for subsequent sending of the decommissioned equipment to environmentally compatible recycling, treatment and/or disposal helps prevent negative effects on the environment and health and favors the reuse and/or recycling of the materials that make up the equipment.

Unauthorized disposal of the product by the user involves the application of the administrative sanctions provided for by current legislation.

The main materials that make up the equipment in question are:

- steel
- magnesium
- plastic
- copper
- aluminum
- polyurethane

13. PRODUCT SHEET

Descriptions	u.m.	EKHHEU200CV37	EKHHEU260CV37	EKHHEU200PCV37	EKHHEU260PCV37
Declared load profile	-	L	XL	L	XL
Water heater thermostat temperature settings	°C	55	55	55	55
Water heating energy efficiency class (1)	-	A+	A+	A+	A+
Water heating energy efficiency - η_{wh} (1)	%	135	138	135	138
COP_{DHW} (1)	-	3,23	3,37	3,23	3,37
Annual electricity consumption - AEC (1)	kWh	761	1210	761	1210
Water heating energy efficiency - η_{wh} (2)	%	106	112	106	112
COP_{DHW} (2)	-	2,55	2,73	2,55	2,73
Annual electricity consumption - AEC (2)	kWh	944	1496	944	1496
Water heating energy efficiency - η_{wh} (3)	%	162	160	162	160
COP_{DHW} (3)	-	3,89	3,9	3,89	3,9
Annual electricity consumption - AEC (3)	kWh	631	1046	631	1046
Indoor sound power level (4)	dB (A)	53	51	53	51
Outdoor sound power level (4)	dB (A)	45	44	45	44
The water heater can work during off-peak hours only	-	NO	NO	NO	NO
Any specific precautions that shall be taken when the water heater is assembled, installed or maintained	-	See manual			

(1): Data according to EN 16147: 2017 standard for AVERAGE climate (unit in ECO mode; Inlet water = 10 ° C; Inlet air temp = 7 ° C DB / 6 ° C WB)
(2): Data according to EN 16147: 2017 standard for COLDER climate (unit in ECO mode; Inlet water = 10 ° C; Inlet air temp = 2 ° C DB / 1 ° C WB)
(3): Data according to EN 16147: 2017 standard for WARMER climate (unit in ECO mode; Inlet water = 10 ° C; Inlet air temp = 14 ° C DB / 13 ° C WB)
(4): Data according to EN 12102-2: 2019 ECO mode with Inlet air temp = 7 ° C DB / 6 ° C WB

14. PERFORMANCE WITH THE SOLAR THERMAL SYSTEM (ONLY FOR MODS EKHHEU200PCV37 AND EKHHEU260PCV37)

14.1 Solar coil fluid: pure water

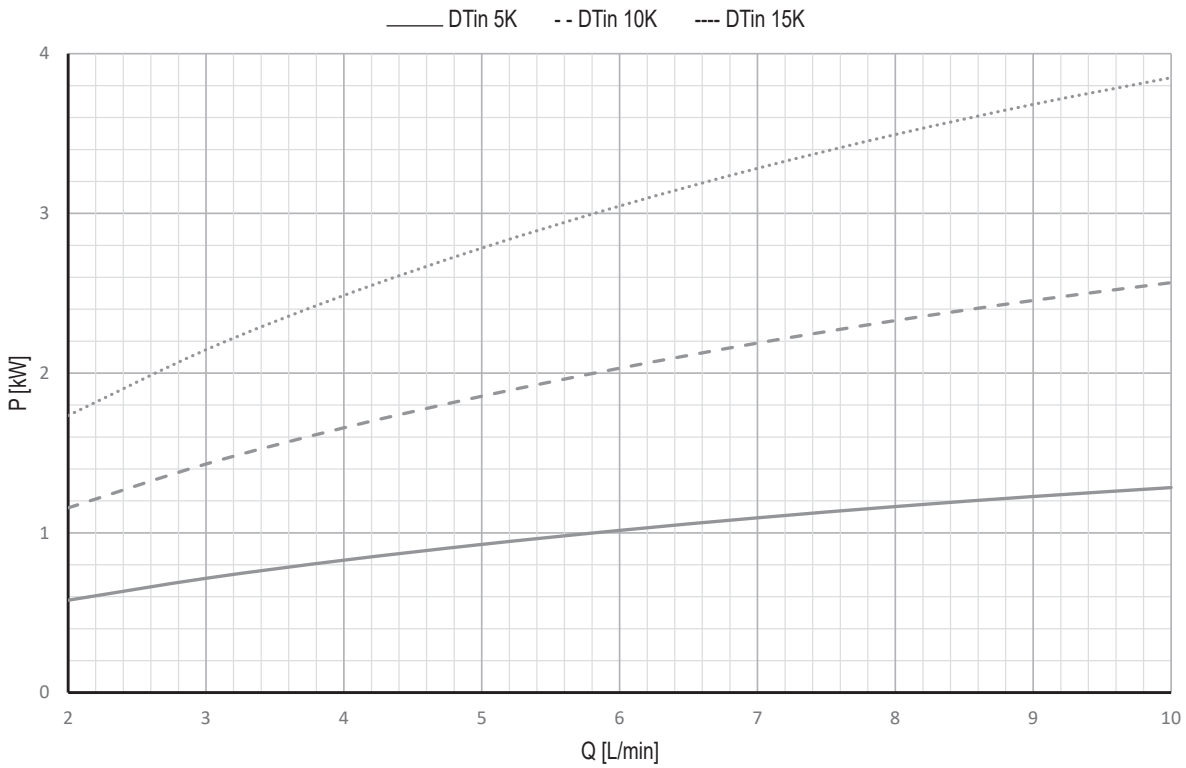


fig. 39

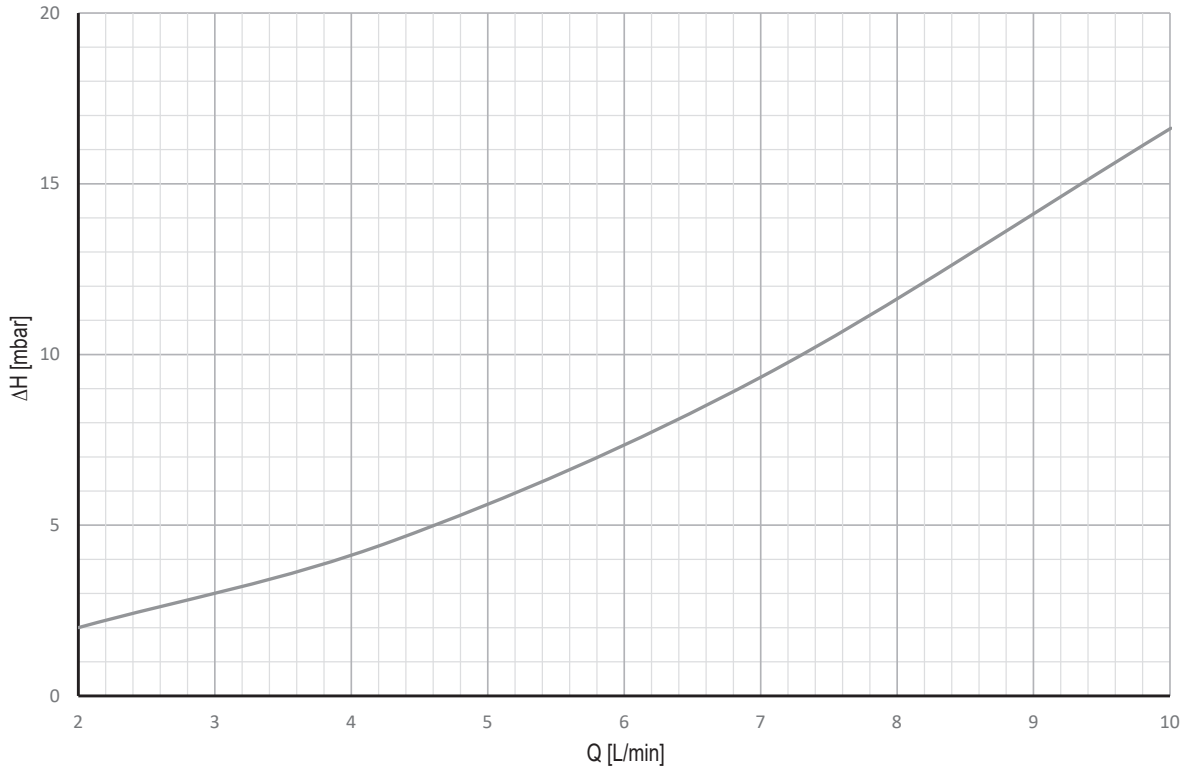


fig. 40

LEGEND
P [kW] = solar panel thermal power
ΔTin [K] = difference between solar coil inlet fluid temperature and tank water temperature
Q [L/min] = solar coil fluid flow rate
ΔH [mbar] = solar coil pressure drop

14.2 Solar coil fluid: mixture + propylene glycol 33% by volume

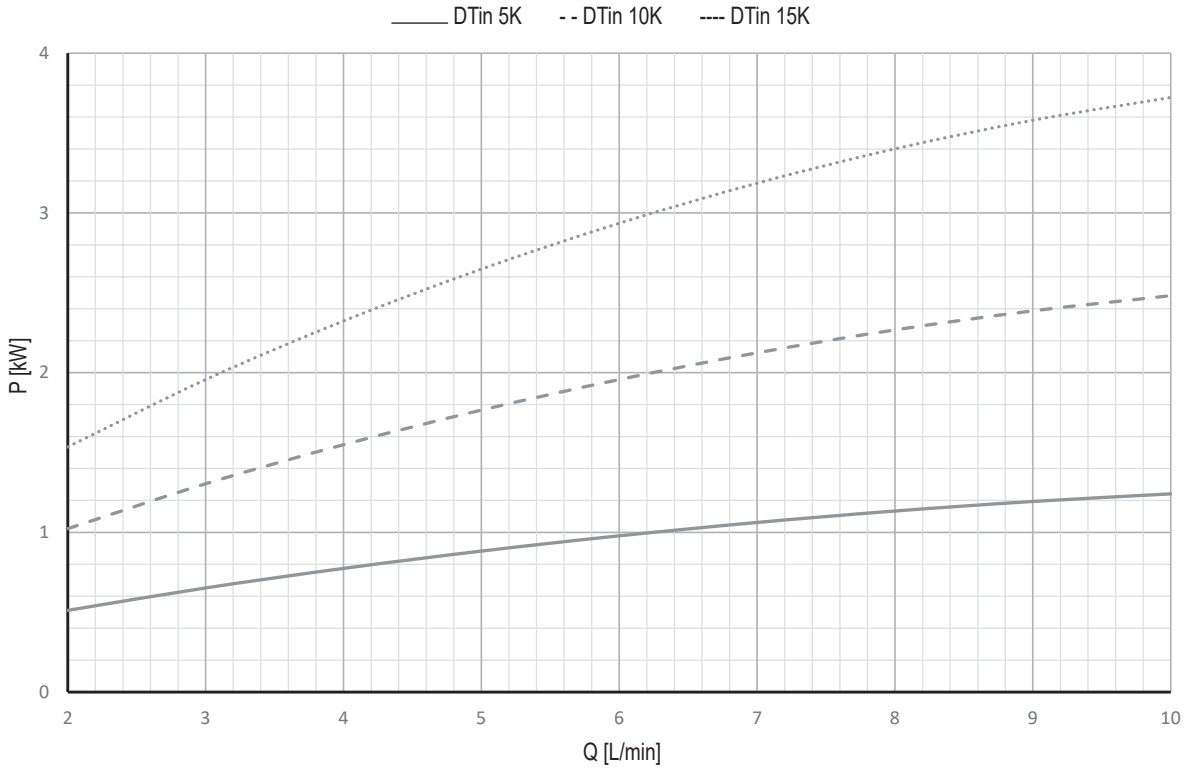


fig. 41

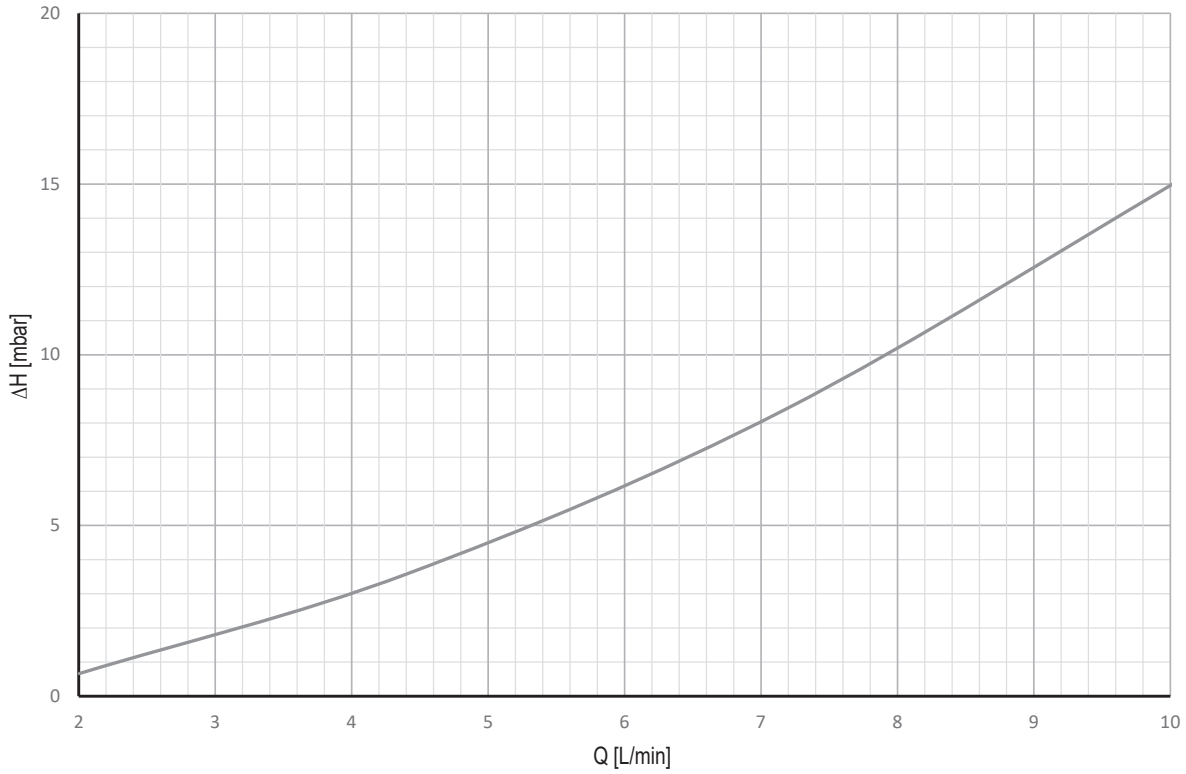


fig. 42

LEGEND
P [kW] = solar panel thermal power
∆Tin [K] = difference between solar coil inlet fluid temperature and tank water temperature
Q [L/min] = solar coil fluid flow rate
ΔH [mbar] = solar coil pressure drop

14.3 Solar coil fluid: mixture + propylene glycol 45% by volume

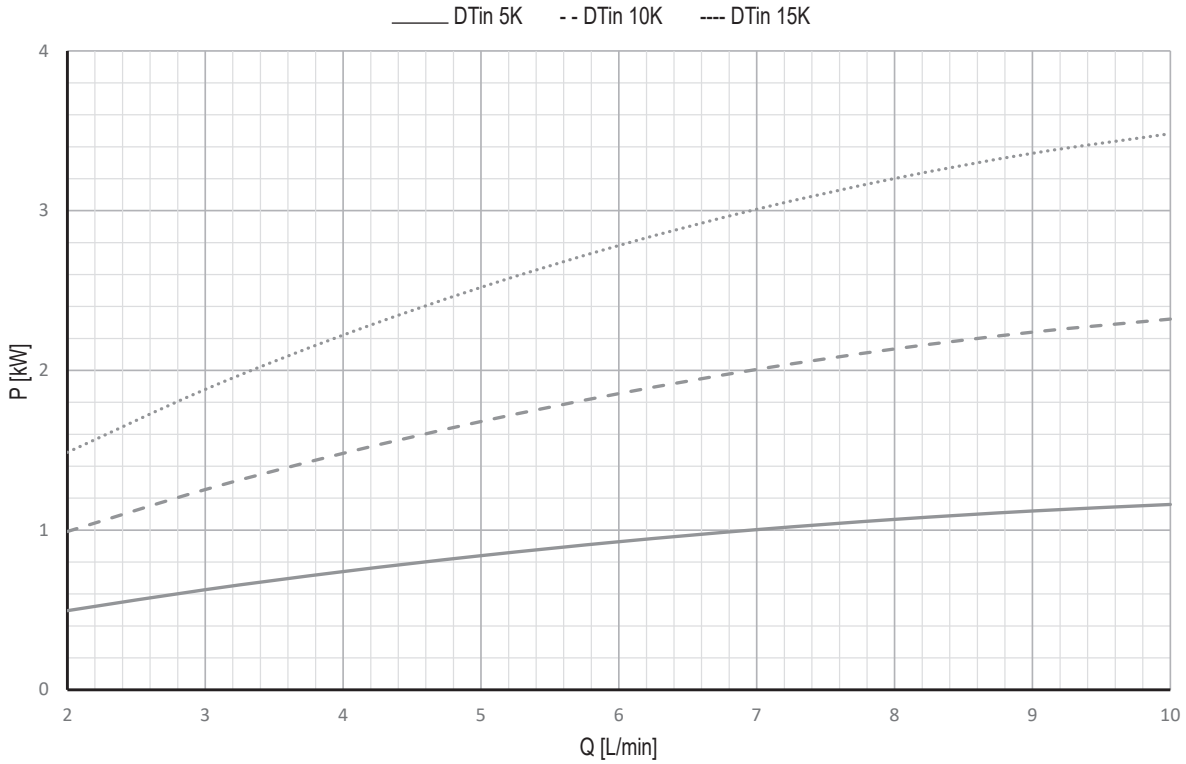


fig. 43

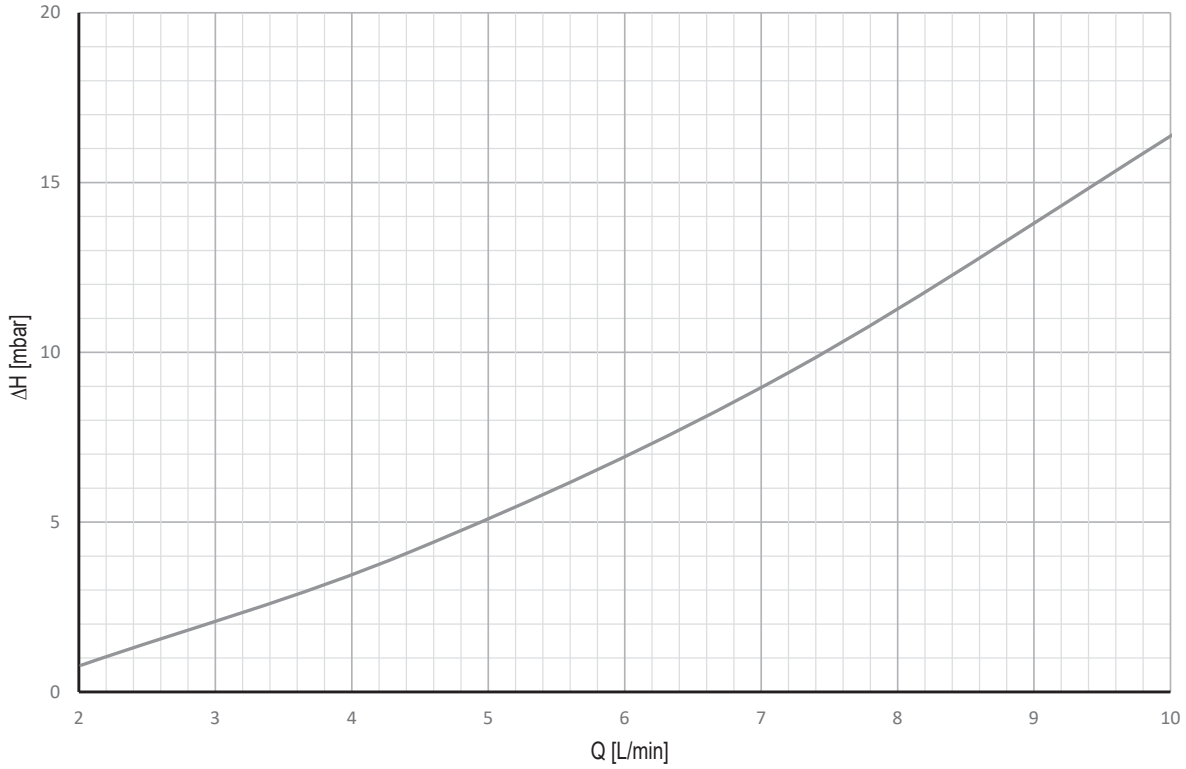


fig. 44

LEGEND

P [kW] = solar panel thermal power

∆Tin [K] = difference between solar coil inlet fluid temperature and tank water temperature

Q [L/min] = solar coil fluid flow rate

ΔH [mbar] = solar coil pressure drop

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Cod. 3540000930 - Rev.03 2023.11